SPECIFICATIONS - VOLUME NO.1
DIVISIONS 0 to 14

CERL MAIN BUILDING ADDITION
U of I Project Number U13024
Issued for Bid December 14, 2015

The University of Illinois at Urbana-Champaign
810 South Wright Street
Urbana, Illinois 61801

DESIGN ORGANIZATION, INC.
ARCHITECT
440 NORTH WELLS STREET, SUITE 320
CHICAGO, ILLINOIS 60610

KJWW ENGINEERING CONSULTANTS, PC
MEP/FP ENGINEER
623 26TH AVE,
ROCK ISLAND, ILLINOIS 61201

TERRA ENGINEERING
CIVIL ENGINEERING AND LANDSCAPE ARCHITECT
225 WEST OHIO STREET, 4TH FLOOR
CHICAGO, ILLINOIS 60654

RME ENGINEERS, INC.
STRUCTRUAL ENGINEER
200 SOUTH MICHIGAN AVENUE
CHICAGO, ILLINOIS 60604

LIPP AV DESIGN, INC.
A/V CONSULTANT
420 MAYFAIR LANE
BUFFALO GROVE, ILLINOIS 60089

CARNOW, CONIBEAR & ASSOCIATES, LTD.
ENVIRONMENTAL CONSULTANT
600 WEST VAN BUREN STREET, SUITE 500
CHICAGO, ILLINOIS 60607

SYSKA HENNESSY GROUP, INC.
125 SOUTH WACKER DRIVE, SUITE 300
CHICAGO, ILLINOIS 60606
SECTION 00 0101 - PROJECT TITLE PAGE

SECTION 00 0101

PROJECT TITLE PAGE

PROJECT MANUAL

FOR

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

CONSTRUCTION ENGINEERING RESEARCH LABORATORY (CERL)

MAIN BUILDING ADDITION

University of Illinois at Urbana Champaign

810 South Wright Street

Urbana, Illinois 61801
BIDS DUE:

February 1, 2016, MEP Divisions 22-33
February 3, 2016 General Trades Divisions 2-14
2:30 PM

University of Illinois Facility and Services
1501 South Oak Street, Champaign, Illinois 61820

MANDATORY PREBID MEETING:

01-15-2016
2:00 PM Central Standard Time
CERL Facility: 2902 Newmark Drive
Champaign, Illinois 61822

ISSUED FOR:

Issued for BID 12-14-2015

END OF PROJECT TITLE PAGE
SECTION 00 0110 - TABLE OF CONTENTS

INTRODUCTORY INFORMATION

DIVISION 00 -- INTRODUCTION

00 0101 - Project Title Page
00 0110 - Table of Contents Volume 1
00 0115 - List of Drawing Sheets

BIDDING REQUIREMENTS

DIVISION 00 -- BIDDING

00 1000 - Notice to Bidders
00 2000 - General Instructions to Bidders
00 4000 - Bid
00 4600 - Project Specific Prequalification Statement

CONTRACT REQUIREMENTS

DIVISION 00 -- CONTRACT

00 5000 - Standard Contract Execution Forms
00 6000 - Standard Contract Administration Forms
00 7000 - General Conditions
00 9000 - Addenda and Modifications

SPECIFICATIONS

DIVISION 01 -- GENERAL REQUIREMENTS

01 1000 - Summary
01 1200 - Multiple Contract Summary
01 2300 - Alternates
01 2600 - Contract Modification Procedures
01 3100 - Project Management and Coordination
01 3200 - Construction Progress Documents
01 3300 - Submittal Procedure
01 3515 - LEED Certification Procedures
01 5000 - Temporary Facilities and Controls
01 5639 - Temporary Tree and Plant Protection
01 5713 - Temporary Erosion and Sediment Control
01 5721 - Indoor Air Quality Controls
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 6000</td>
<td>Product Requirements</td>
</tr>
<tr>
<td>01 7329</td>
<td>Cutting and Patching</td>
</tr>
<tr>
<td>01 7419</td>
<td>Construction Waste Management and Disposal</td>
</tr>
<tr>
<td>01 7700</td>
<td>Closeout Procedures</td>
</tr>
<tr>
<td>01 7823</td>
<td>Operations and Maintenance Data</td>
</tr>
<tr>
<td>01 7839</td>
<td>Project Record Documents</td>
</tr>
<tr>
<td>01 7900</td>
<td>Demonstration and Training</td>
</tr>
<tr>
<td>01 8113</td>
<td>Sustainable Design Requirements</td>
</tr>
<tr>
<td>01 8113.56</td>
<td>LEED Submittal Forms</td>
</tr>
<tr>
<td>01 8113.57</td>
<td>LEED Material Cost Summary Form</td>
</tr>
<tr>
<td>01 8113.58</td>
<td>LEED Wood-Containing Product List</td>
</tr>
<tr>
<td>01 8113.59</td>
<td>LEED Metal-Containing Product List</td>
</tr>
<tr>
<td>01 8113.60</td>
<td>LEED New Product Content Form</td>
</tr>
<tr>
<td>01 8113.61</td>
<td>LEED New Product Source Form</td>
</tr>
<tr>
<td>01 8113.62</td>
<td>LEED Reused Product Form</td>
</tr>
<tr>
<td>01 8113.63</td>
<td>LEED Prohibited Content Installer Certification</td>
</tr>
<tr>
<td>01 8133.65</td>
<td>NC2009 Checklist</td>
</tr>
<tr>
<td>01 9113</td>
<td>General Commissioning Requirements</td>
</tr>
<tr>
<td><strong>DIVISION 02 -- EXISTING CONDITIONS</strong></td>
<td></td>
</tr>
<tr>
<td>02 4100</td>
<td>Demolition</td>
</tr>
<tr>
<td>02 4119</td>
<td>Selective Structural Demolition</td>
</tr>
<tr>
<td>02 8200</td>
<td>Asbestos</td>
</tr>
<tr>
<td><strong>DIVISION 03 -- CONCRETE</strong></td>
<td></td>
</tr>
<tr>
<td>03 3000</td>
<td>Cast-in-Place Concrete</td>
</tr>
<tr>
<td><strong>DIVISION 04 -- MASONRY</strong></td>
<td></td>
</tr>
<tr>
<td>04 2000</td>
<td>Unit Masonry</td>
</tr>
<tr>
<td><strong>DIVISION 05 -- METALS</strong></td>
<td></td>
</tr>
<tr>
<td>05 1200</td>
<td>Structural Steel Framing</td>
</tr>
<tr>
<td>05 2100</td>
<td>Steel Joist Framing</td>
</tr>
<tr>
<td>05 3100</td>
<td>Steel Decking</td>
</tr>
<tr>
<td>05 4000</td>
<td>Cold-Formed Metal Framing</td>
</tr>
</tbody>
</table>
05 5000 - Metal Fabrications
05 5113 - Metal Pan Stairs

DIVISION 06 -- WOOD, PLASTICS, AND COMPOSITES
06 1000 - Rough Carpentry
06 2000 - Finish Carpentry
06 4100 - Architectural Wood Casework

DIVISION 07 -- THERMAL AND MOISTURE PROTECTION
07 2100 - Thermal Insulation
07 2119 - Foamed-In-Place Insulation
07 2620 - Fluid-Applied Membrane Air Barriers, Vapor Impermeable
07 4213 - Metal Wall Panels
07 4264 - Metal Composite Material Wall Panels
07 4646 - Fiber Cement Siding
07 5423 - Thermoplastic-Polyolefin Roofing (TPO)
07 6200 - Sheet Metal Flashing and Trim
07 7100 - Roof Specialties
07 7200 - Roof Accessories
07 8400 - Firestopping
07 9005 - Joint Sealers

DIVISION 08 -- OPENINGS
08 1113 - Hollow Metal Doors and Frames
08 1416 - Flush Wood Doors
08 3100 - Access Doors and Panels
08 3313 - Coiling Counter Doors
08 4313 - Aluminum-Framed Storefronts
08 4413 - Glazed Aluminum Curtain Walls
08 5113 - Aluminum Windows
08 5659 - Service and Teller Window Units
08 7100 - Door Hardware
08 8000 - Glazing
08 9100 - Louvers
DIVISION 09 -- FINISHES

09 0561 - Common Work Results for Flooring Preparation
09 2116 - Gypsum Board Assemblies
09 2216 - Non-Structural Metal Framing
09 3000 - Tiling
09 5100 - Acoustical Ceilings
09 6500 - Resilient Flooring
09 6813 - Tile Carpeting
09 7733 - Glass Fiber Reinforced Plastic Panels
09 9000 - Painting and Coating

DIVISION 10 -- SPECIALTIES

10 1400 - Signage
10 2113.19 - Plastic Toilet Compartments
10 2220 - Demountable Partitions
10 2226.33 - Folding Panel Partitions
10 2601 - Wall and Corner Guards
10 2800 - Toilet, Bath, and Laundry Accessories
10 4400 - Fire Protection Specialties
10 5617 - Wall Mounted Standards and Shelving

DIVISION 11 -- EQUIPMENT (NOT USED)

DIVISION 12 -- FURNISHINGS

12 2400 - Window Shades
12 3600 - Countertops
12 4813 - Entrance Floor Mats and Frames
12 9300 - Site Furnishings

DIVISION 13 -- SPECIAL CONSTRUCTION (NOT USED)

DIVISION 14 -- CONVEYING EQUIPMENT

14 2400 - Hydraulic Elevators

END OF TABLE OF CONTENTS
## SECTION 00 0115 - LIST OF DRAWING SHEETS

### 00 - General
1.1 G000 - COVER SHEET- VOLUME NO. 1
1.2 G001 - GENERAL NOTES AND ABBREVIATIONS
1.3 G002 - LIFE SAFETY PLANS
1.4 G110 - INTERIOR PARTITION TYPES
1.5 G111 - INTERIOR PARTITION TYPES
1.6 G121 - CONSTRUCTION SITE PLAN

### 01-Civil
2.1 C000 - GENERAL NOTES
2.2 C001 - KEY PLAN
2.3 C100 - SITE DEMOLITION PLAN
2.4 C200 - SITE DIMENSION PLAN
2.5 C300 - SITE GRADING PLAN
2.6 C400 - SITE UTILITY PLAN
2.7 C500 - SITE DETAILS
2.8 C501 - UTILITY DETAILS

### 02-Landscape
3.1 L100 - LANDSCAPE PLAN

### 03-Asbestos
4.1 ASB100 - FIRST FLOOR ASBESTOS ABATEMENT PLAN

### 04 - Architectural
5.1 A001 - SITE DEMOLITION PLAN
5.2 A011 - REFLECTED CEILING DEMOLITION PLAN
5.3 A021 - EXISTING EXTERIOR ELEVATIONS DEMOLITION
5.4 A111 - ARCHITECTURAL SITE PLAN
5.5 A130 - FOUNDATION PLAN
5.6 A131 - FIRST FLOOR NOTE PLAN
5.7 A132 - SECOND FLOOR NOTE PLAN
5.8 A132A - ALTERNATE #2 - SECOND FLOOR NOTE PLAN
5.9 A133 - FIRST FLOOR DIMENSION PLAN
5.10 A134 - SECOND FLOOR DIMENSION PLAN
5.11 A134A - ALTERNATE #2 - SECOND FLOOR DIMENSION PLAN
5.12 A141 - FIRST FLOOR REFLECTED CEILING PLAN
5.13 A142 - SECOND FLOOR REFLECTED CEILING PLAN
5.14 A142A - ALTERNATE #2 - SECOND FLOOR REFLECTED CEILING PLAN
5.15 A151 - FIRST FLOOR FURNITURE AND EQUIPMENT PLAN
5.16 A152 - SECOND FLOOR FURNITURE AND EQUIPMENT PLAN
5.17 A152A - ALTERNATE #2 - SECOND FLOOR FURNITURE AND EQUIPMENT PLAN
5.18 A161 - FIRST FLOOR FINISH PLAN
5.19 A162 - SECOND FLOOR FINISH PLAN & TRANSITION DETAILS
5.20 A162A - ALTERNATE #2 - SECOND FLOOR FINISH PLAN
5.21 A171 - ROOF PLAN
5.22 A191 - TOILET ROOM PLANS & ELEVATIONS
5.23 A201 - EXTERIOR ELEVATIONS
5.24 A201A - ALTERNATE #3 EXTERIOR ELEVATIONS
5.25 A301 - BUILDING SECTIONS
5.26 A302 - BUILDING SECTIONS
5.27 A311 - WALL SECTIONS
5.28 A312 - WALL SECTIONS
5.29 A313 - WALL SECTIONS
5.30 A314 - WALL SECTIONS
5.31 A411 - ENLARGED STAIR 1 PLANS & SECTIONS
5.32 A412 - ENLARGED STAIR 2 PLANS & SECTIONS
5.33 A413 - STAIR & ELEVATOR DETAILS
5.34 A601 - INTERIOR ELEVATIONS
5.35 A602 - INTERIOR ELEVATIONS
5.36 A603 - INTERIOR ELEVATIONS
5.37 A604 - INTERIOR ELEVATIONS
5.38 A701 - DOOR AND FRAME SCHEDULE
5.39 A711 - WINDOW TYPES/STOREFRONT ELEVATIONS
5.40 A901 - PLAN DETAILS
5.41 A902 - DETAILS
5.42 A903 - DETAILS
5.43 A904 - DETAILS
5.44 A905 - DETAILS
5.45 A906 - DETAILS
5.46 A907 - DETAILS
5.47 A908 - DETAILS
5.48 A909 - MILLWORK DETAILS

05 - Structural

6.1 S001 - STRUCTURAL GENERAL NOTES
6.2 S002 - STRUCTURAL GENERAL NOTES (CONT’D)
6.3 S100 - FOUNDATION AND FIRST FLOOR PLAN
6.4 S101 - SECOND FLOOR FRAMING PLAN
6.5 S102 - ROOF FRAMING PLAN
6.6 S200 - SECTIONS AND DETAILS
6.7 S201 - SECTIONS AND DETAILS
6.8 S202 - SECTIONS AND DETAILS
6.9 S203 - SECTIONS AND DETAILS
6.10 S300 - SECTIONS AND DETAILS
6.11 S301 - SECTIONS AND DETAILS
6.12 S302 - SECTIONS AND DETAILS
6.13 S303 - SECTIONS AND DETAILS
6.14 S304 - SECTIONS AND DETAILS
6.15 S305 - SECTIONS AND DETAILS
6.16 S306 - SECTIONS AND DETAILS
6.17 S400 - SECTIONS AND DETAILS
6.18 S401 - SECTIONS AND DETAILS

06 - Ventilation

7.1 VD101 - FIRST FLOOR PLAN DEMOLITION - VENTILATION
7.2 V111 - FIRST FLOOR PLAN - VENTILATION
7.3 V112 - SECOND FLOOR PLAN - VENTILATION
7.4 V201 - ENLARGED VENTILATION PLANS AND SECTIONS
7.5 V301 - VENTILATION DETAILS
7.6 V501 - VENTILATION SCHEDULES

07 - Heating

8.1 HD111 - FIRST FLOOR PLAN DEMOLITION - HEATING
08 - Temperature Controls
9.1 TC111 - FIRST FLOOR PLAN – TEMPERATURE CONTROLS
9.2 TC112 - SECOND FLOOR PLAN – TEMPERATURE CONTROLS
9.3 TC301 - TEMPERATURE CONTROL DIAGRAM DOAS-1
9.4 TC302 - TEMPERATURE CONTROL DIAGRAMS
9.5 TC303 - TEMPERATURE CONTROL DIAGRAMS

09 - Plumbing
10.1 PD111 - FIRST FLOOR PLAN DEMOLITION - PLUMBING
10.2 P110 - UNDERFLOOR PLAN - PLUMBING
10.3 P111 - FIRST FLOOR PLAN - PLUMBING
10.4 P112 - SECOND FLOOR PLAN - PLUMBING
10.5 P201 - ENLARGED PLUMBING PLANS
10.6 P301 - PLUMBING DETAILS
10.7 P501 - PLUMBING MATERIAL LIST

10 - Fire Protection
11.1 FP111 - FIRST FLOOR PLAN - FIRE PROTECTION
11.2 FP112 - SECOND FLOOR PLAN - FIRE PROTECTION
11.3 FP501 - FIRE PROTECTION SCHEDULES AND DETAILS

11 - Electrical
12.1 E000 - COVER SHEET - ELECTRICAL
12.2 ED100 - SITE PLAN – ELECTRICAL DEMOLITION
12.3 E111 - FIRST FLOOR PLAN - LIGHTING
12.4 E112 - SECOND FLOOR PLAN - LIGHTING
12.5 E112A - ALTERNATE SECOND FLOOR PLAN - LIGHTING
12.6 E121 - FIRST FLOOR PLAN - POWER
12.7 E122 - SECOND FLOOR PLAN - POWER
12.8 E122A - ALTERNATE SECOND FLOOR PLAN - POWER
12.9 E131 - FIRST FLOOR PLAN - SYSTEMS
12.10 E132 - SECOND FLOOR PLAN - SYSTEMS
12.11 E132A - ALTERNATE SECOND FLOOR PLAN - SYSTEMS
12.12 E133 - ROOF PLAN – SYSTEMS
12.13 E300 - DETAILS - ELECTRICAL
12.14 E400 - ONE-LINE DIAGRAM - ELECTRICAL
12.15 E500 - SCHEDULES – ELECTRICAL
12.16 E501 - SCHEDULES - ELECTRICAL
12.17 E502 - SCHEDULES - ELECTRICAL

12 – AUDIO/VISUAL
13.1 AV1 - AV LAYOUTS
13.2 AV2 - AV LAYOUTS
13.3 AV3 - AV LAYOUT ELEVATION
13.4 AV4 - AV BLOCK DIAGRAMS
13.5 AV5 - AV BLOCK DIAGRAMS
13.6 AV6 - AV BLOCK DIAGRAMS
13.7 AV7 - AV CONDUIT
13.8 AV8 - AV CONDUIT

END OF LIST OF DRAWINGS
# Table of Contents

**THE BIDDING AND CONTRACT PROVISIONS**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE BIDDING AND CONTRACT PROVISIONS</td>
<td>1</td>
</tr>
<tr>
<td>DOCUMENT 00 10 00 - NOTICE TO BIDDERS</td>
<td>4</td>
</tr>
<tr>
<td>1.0 PROJECT INFORMATION</td>
<td>4</td>
</tr>
<tr>
<td>2.0 SPECIAL INSTRUCTIONS TO BIDDERS</td>
<td>4</td>
</tr>
<tr>
<td>DOCUMENT 00 20 00 - GENERAL INSTRUCTIONS TO BIDDERS</td>
<td>8</td>
</tr>
<tr>
<td>1.0 EXAMINATION OF THE BIDDING INSTRUCTIONS AND CONTRACT DOCUMENTS</td>
<td>8</td>
</tr>
<tr>
<td>2.0 EXAMINATION OF THE SITE</td>
<td>8</td>
</tr>
<tr>
<td>3.0 INTERPRETATION OF THE CONTRACT DOCUMENTS</td>
<td>8</td>
</tr>
<tr>
<td>4.0 BIDDER’S QUALIFICATIONS</td>
<td>8</td>
</tr>
<tr>
<td>5.0 COMPLIANCE WITH LABOR AND EMPLOYMENT LAWS AND REGULATIONS</td>
<td>12</td>
</tr>
<tr>
<td>6.0 BID PREPARATION AND SUBMISSION</td>
<td>12</td>
</tr>
<tr>
<td>7.0 BID DEPOSIT</td>
<td>16</td>
</tr>
<tr>
<td>8.0 BID MODIFICATION AND WITHDRAWAL</td>
<td>16</td>
</tr>
<tr>
<td>9.0 BID OPENING</td>
<td>17</td>
</tr>
<tr>
<td>10.0 BID ACCEPTANCE OR REJECTION</td>
<td>17</td>
</tr>
<tr>
<td>11.0 METHOD OF AWARD</td>
<td>18</td>
</tr>
<tr>
<td>12.0 MBE/FBE BUSINESS CERTIFICATION, POST REQUIREMENTS</td>
<td>19</td>
</tr>
<tr>
<td>13.0 POST AWARD REQUIREMENTS</td>
<td>19</td>
</tr>
<tr>
<td>14.0 DELAYS</td>
<td>20</td>
</tr>
<tr>
<td>DOCUMENT 00 40 00 - BID</td>
<td>21</td>
</tr>
<tr>
<td>1.0 PROJECTION OF EMPLOYEE UTILIZATION</td>
<td>22</td>
</tr>
<tr>
<td>2.0 CERTIFICATION OF EEO INFORMATION</td>
<td>26</td>
</tr>
<tr>
<td>3.0 UNUSED</td>
<td>26</td>
</tr>
<tr>
<td>4.0 RECEIPT OF ADDENDA</td>
<td>26</td>
</tr>
<tr>
<td>5.0 EXAMINATION OF PROJECT SITE AND CONTRACT DOCUMENTS</td>
<td>26</td>
</tr>
<tr>
<td>6.0 BID PRICES</td>
<td>26</td>
</tr>
<tr>
<td>7.0 CONTRACT TIME</td>
<td>29</td>
</tr>
<tr>
<td>8.0 ASSIGNMENT OF CONTRACTS</td>
<td>30</td>
</tr>
<tr>
<td>9.0 CONTRACTOR’S FEES FOR CHANGES IN THE WORK</td>
<td>30</td>
</tr>
<tr>
<td>10.0 BID DEPOSIT</td>
<td>30</td>
</tr>
<tr>
<td>11.0 STATE CONTRACT CERTIFICATION</td>
<td>31</td>
</tr>
<tr>
<td>DOCUMENT 00 46 00 – PROJECT-SPECIFIC PREQUALIFICATION STATEMENT</td>
<td>40</td>
</tr>
<tr>
<td>DOCUMENT 00 50 00 - STANDARD CONTRACT EXECUTION FORMS</td>
<td>41</td>
</tr>
<tr>
<td>1.0 EXECUTION OF THE AGREEMENT</td>
<td>41</td>
</tr>
<tr>
<td>2.0 EXECUTION OF THE PERFORMANCE BOND AND PAYMENT BOND</td>
<td>41</td>
</tr>
<tr>
<td>3.0 EXECUTION OF THE CERTIFICATE OF INSURANCE</td>
<td>42</td>
</tr>
</tbody>
</table>
18.0 ARTICLE 18 - INDEMNITY AND LIABILITY INSURANCE ................................................................. 133
19.0 ARTICLE 19 - BUILDER’S RISK INSURANCE ........................................................................ 136
20.0 ARTICLE 20 - SUSPENSION ................................................................................................. 141
21.0 ARTICLE 21 - TERMINATION ............................................................................................... 142
22.0 ARTICLE 22 - LABOR AND EMPLOYMENT LAWS AND REGULATIONS ....................... 144
23.0 ARTICLE 23 - RESERVED .................................................................................................. 144
24.0 ARTICLE 24 - ENVIRONMENTAL ISSUES ............................................................................ 144
25.0 ARTICLE 25 - MISCELLANEOUS PROVISIONS .................................................................. 145
DOCUMENT 00 90 00 - ADDENDA AND MODIFICATIONS .......................................................... 147
  1.0 GENERAL NOTE .................................................................................................................... 147
  2.0 ADDENDUM LOG .................................................................................................................. 147
  3.0 MODIFICATION AND BULLETIN LOG ................................................................................. 147
PROJECT LABOR AGREEMENT .................................................................................................. 147
NOTICE TO BIDDERS

The Board of Trustees of the University of Illinois, hereinafter referred to as the "Owner," furnishes the following information and special instruction to prospective bidders desiring to submit bids for the work on the following project:

1.0 PROJECT INFORMATION

1.1 Project Name. CERL Main Building Addition Rebid
1.2 Project Number. U13024-R
1.3 Project Description. Construction of the CERL 20,000 sq ft 2 story Main Building Addition. Project will be constructed of structural steel, metal siding and masonry veneer (facade). The work includes the removal and replacement of the enclosed connecting link. Note: This project will be submitted for LEED Silver Certification.

Refer to Division 01 of the technical specifications for a complete, detailed breakdown of the base bids and alternates for this project.

This project includes a Project Labor Agreement that will be executed between the lowest responsible/responsive bidder and the East Central Illinois Building and Construction Trades Council. A copy of the Project Labor Agreement is included at the end of Section 00 90 00.

1.4 Project Location. CERL Facility: 2902 Newmark Drive, Champaign, Illinois 61822

1.5 Contract Documents Prepared By:

Design Organization, Inc.
440 N Wells Street, Suite 320
Chicago, IL  60654

hereinafter referred to as the Professional Services Consultant.

2.0 SPECIAL INSTRUCTIONS TO BIDDERS

The following bidding instructions are a component part of each bid wherein they are applicable.

2.1 Submission and Receipt of Bids.

2.1.A Contract Divisions of the Project. The Owner will receive separate sealed bids for the following contract divisions of the project:

- 01 - General Work
- 02 - Plumbing Work
- 03 - Heating Work
- 04 - Ventilation Work
- 05 - Electrical Work

2.1.B Assignments. The Owner shall assign the contracts for Contract Divisions

- 02 - Plumbing Work
- 03 - Heating Work
04 - Ventilation Work
05 - Electrical Work

to the Contract Division 01 - General Work, (Contractor) in accordance with paragraph 6.3 of the General Conditions. (Refer to paragraph 6.3 of the General Conditions and Article 5 of the Agreement for requirements concerning assignment of contracts.)

2.1.C Delivery. Submit bids on forms furnished by the Owner.

Deliver all bids to:
Facilities and Services
1501 South Oak Street, Room 115
Champaign, IL 61820

2.1.C.1 Bids will be received up to the hour of 2:30 PM prevailing time, on 02/01/16 for Contract Divisions
02 - Plumbing Work
03 - Heating Work
04 - Ventilation Work
05 - Electrical Work

2.1.C.2 Bids will be received up to the hour of 2:30 PM, prevailing time, on 02/03/16, for Contract Division
01 - General Work.

2.1.D Bid Opening. Immediately after the closing time for receiving bids, they will be opened, publicly read, and tabulated for Contract Divisions 02 - Plumbing Work, 03 - Heating Work, 04 - Ventilation Work, 05 - Electrical Work in Physical Plant Services Building, Room 128, 1501 South Oak Street, Champaign, Illinois 61820 and for Contract Division 01 - General Work in Physical Plant Services Building, Room 128, 1501 South Oak Street, Champaign, Illinois 61820.

2.2 Bid Documents.

2.2.A Bid Documents. The bid documents include, but are not limited to, the Notice to Bidders, bid forms, the project manual (including supplementary conditions, list of drawings, schedules and tables, details, and specifications), drawings, and addenda.

2.2.B Procurement. Up to three [3] set(s) of Bid documents per prequalified bidder of the divisions of work being bid may be obtained from the Professional Services Consultant by depositing a check made payable to the Professional Services Consultant in the amount of $ 200 OR non-cash plan deposit programs which are guaranteed by contractor associations are acceptable.

2.2.C Return. If applicable, the above deposit will be refunded upon the return of the bid documents in good condition within ten (10) days after bid opening date. The bid documents shall remain the property of the Owner. They shall not be returned with the bids, but shall be returned under separate cover to the Professional Services Consultant’s office.

2.2.D Reference Sets. For the convenience of bidders, the project manual, drawings, and all addenda will be available for electronic viewing at no cost to potential bidders. Complete sets of printed documents will also be on file for reference at:
2.3 **Examining the Site.** Arrangements to visit and examine the site in accordance with Document 00 20 00-General Instructions to Bidders may be made by contacting Leslie Gioja, phone 217-373-4523, Leslie.M.Gioja@usace.army.mil.

2.4 **Annual Prequalification.** Each bidder is required to be prequalified on an annual basis with the Owner in accordance with Document 00 20 00-General Instructions to Bidders.

2.5 **Prebid Conference.** A MANDATORY prebid conference for all parties interested in bidding the project will be held in CERL Facility: 2902 Newmark Drive, Champaign, Illinois 61822 at 2:00 PM on 01/15/16.

Representatives of the Owner and the Professional Services Consultant will be present to answer questions regarding the project and bidding procedures. All prospective bidders are REQUIRED to attend.

2.6 **IDOL Schedule of Current Prevailing Wage Rates.** Pursuant to the Prevailing Wage Act, the most current schedule of prevailing wage rates for all crafts (which includes the hourly basic wages, the hourly overtime rates, and the hourly fringe rates for health and welfare, insurance, vacation, and pension benefits) published by the Illinois Department of Labor for the locality in which the work is to be performed, that was available to the Owner at the time the documents were issued for bidding, is attached at the end of Document 00 90 00 and incorporated herein. If the Illinois Department of Labor revises the prevailing rate of hourly wages to be paid by the Owner, the revised rate shall apply to this contract. The prevailing rate of hourly wages is revised by the Illinois Department of Labor and is available on the Illinois Department of Labor’s official website.

2.7 **Builder’s Risk Insurance.** Builder’s Risk Insurance, pursuant to General Conditions Article 19, shall be provided by 01 - General Work for the entire Project as determined by the Owner. Owner-purchased building materials and supplies, equipment, machinery and fixtures intended to become a permanent part of the project valued at $0.00 shall be included in this Builders Risk Insurance coverage.

2.8 **Vendor Registration.** The awarded low, responsive and responsible Bidder will be required to register with the Owner’s Vendor Services Application, and will be required to ensure that all Bidders’ subcontractors, vendors, and suppliers to be included on its Schedule of Values as identified in document 00 70 00 ‘General Conditions’ are also registered in the Owner’s Vendor Services Application. The vendor registration module of the Vendor Services Application can be accessed at:

https://appserv6.admin.uillinois.edu/VendorRegistration/open/VendorSearch.jsp

2.9 **Business Enterprise for Minorities, Females, and Persons with Disabilities Act.**

2.9.A This project has goals for participation by minority and female owned businesses as bidders, subcontractors or suppliers in accordance with the Business Enterprise for Minorities, Females, and Persons with Disabilities Act. Only MBE/FBE/FMB firms certified with the Illinois Department of Central Management Services (CMS) are acceptable. Printed proof of current and valid CMS MBE/FBE/FMB certification must be provided with the bid for each identified MBE/FBE vendor. A print version of the vendor’s CMS Business Enterprise Program (BEP) Vendor Directory results should be the printed proof of the CMS MBE/FBE/FMB certification. This document includes the vendor name, address, ethnicity, county, contact information, certification renewal date and expiration date. If a current and valid CMS BEP certification letter is included with the bid, reconciliation to obtain proper printed proof is allowed. If the CMS BEP certification letter is not current and valid, reconciliation is not permitted.
The IL CMS BEP Vendor Directory can be found at
https://www.illinois.gov/cms/business/sell2/Pages/VendorSearch.aspx

and a tutorial for using the directory is available at
https://www.uocpres.uillinois.edu/UserFiles/Servers/Server_7758/file/training/wbt/WBTMAFBESearch.swf

NOTE: MBE/FBE goals are separate and distinct from workforce projections (Attachment A of Document 00 40 00).

Each Bidder shall name the MBE/FBE owned firm(s) it intends to use to meet the specified goals set for this project on Attachment B – Minority/Female Business Enterprise Program Requirements of bid form document 00 40 00. The MBE/FBE goals for this project are as follows ("N/A" in "Combined Goal" column means split goals are in effect and "N/A" in "Split Goals" column means combined goals are in effect for each specific division of work):

<table>
<thead>
<tr>
<th>Division of Work</th>
<th>Combined Goal(s)</th>
<th>Split Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MBE/FBE</td>
<td>MBE</td>
</tr>
<tr>
<td>01 - General Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>02 - Plumbing Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>03 - Heating Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>04 - Ventilation Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>05 - Electrical Work</td>
<td>15</td>
<td>N/A</td>
</tr>
</tbody>
</table>

If the MBE/FBE goals are not met, the Bidder shall submit within ten (10) calendar days after the bid opening documentation of its good faith efforts to achieve the MBE/FBE goals (See General Instructions to Bidders, Document 00 20 00). Failure to submit such documentation, or to use good faith efforts, shall result in rejection of the bid.

2.9.B Goal Credit. Only those vendors who are certified by the Illinois Department of Central Management Services as of the date of the bid opening will be considered in determining whether the vendor meets the participation goal.

2.9.C MBE/FBE Participation Cure Period. If the Bidders fail to meet the MBE/FBE participation goal at the time of bid submittal, they are granted a cure period of ten (10) calendar days to meet the goal. The cure period shall run concurrently with the Good Faith Effort Period.

2.9.D Bidders may request assistance in locating MBE/FBE businesses from the Director of Diversity, University Office of Capital Programs and Real Estate Services. (http://www.uocpres.uillinois.edu/about/contact)

2.9.E Once the contract is awarded, the awarded contractor is required to submit, in accordance with General Instructions document 00 20 00 a completed Attachment A - MBE/FBE Subcontractor/Supplier Certification Form of the Notice of Intent to Award or Notice of Award letter for each of the MBE/FBE subcontractors/suppliers utilized to meet the goals.

2.9.F The MBE/FBE business named and the subcontract dollar amount on the two forms (Attachment B - Minority/Female Business Enterprise Program Requirements of bid form document 00 40 00 and Attachment A - MBE/FBE Subcontractor/Supplier Certification Form of the Notice of Intent to Award or Notice of Award letter) must match.

END OF DOCUMENT 00 10 00
GENERAL INSTRUCTIONS TO BIDDERS

The following bidding instructions are a component part of each bid wherein they are applicable:

1.0 EXAMINATION OF THE BIDDING INSTRUCTIONS AND CONTRACT DOCUMENTS

The Bidder shall read and thoroughly examine and will be held to have thoroughly read and examined all of the bidding instructions and the Contract Documents (defined in Article 2 of the General Conditions), including but not limited to the drawings, the General Conditions, and all of the specifications which may in any manner affect the Work under this contract prior to submitting a bid. Failure of the Bidder to become fully acquainted with the bidding instructions and Contract Documents or the amount of Work involved in this contract will not be considered subsequently as a basis for additional compensation.

2.0 EXAMINATION OF THE SITE

2.1 Site Visit. The Bidder, before submitting a bid for this Work, shall visit and carefully examine the site of the Work in order to have full knowledge of, and to fully understand and appreciate, the facilities, difficulties, and restrictions attending the performance of the contract for which a bid is submitted. The Bidder shall take all required measurements and carefully inspect all existing conditions, constructions, irregularities, and interferences which may affect the Work under this contract.

2.2 Adjoining Work. Where the Work includes alterations or new Work connecting with existing construction, the Bidder shall determine all alterations and patching which will be required in existing construction to permit the completion of all new Work indicated in general detail to accomplish the ultimate results required by the Contract Documents.

2.3 Conditions Affecting the Cost of the Work. No additional compensation will subsequently be allowed for site conditions affecting the Bidder's cost which could have been discovered, known to, or appreciated by the Bidder during the site examination required prior to the submission of a bid, unless such conditions are determined by the Professional Services Consultant to have been unforeseeable or undiscoverable by the Bidder pursuant to paragraph 14.4 (titled "Claims for Concealed or Unknown Conditions") of the General Conditions.

3.0 INTERPRETATION OF THE CONTRACT DOCUMENTS

3.1 Discrepancies and Omissions. In the event that any discrepancies or omissions (either within the bidding and Contract Documents or between the documents and the conditions of the site) are discovered before the bids are submitted, the Bidder shall immediately report them to the Professional Services Consultant for a decision, and the Professional Services Consultant will instruct all Bidders by an addendum to the Contract Documents.

3.2 Contract Document Interpretation. Interpretation of the Contract Documents, prior to the bid opening date, will be made only by addenda duly issued by the Professional Services Consultant. Any explanations or interpretations not so made will not be binding upon the Professional Services Consultant or the Owner. The Bidder shall acknowledge the receipt of addenda in the bid.

4.0 BIDDER'S QUALIFICATIONS

4.1 Statutory Requirements. In order to sell to or contract with The Board of Trustees of the University of Illinois, the Bidder must comply with the requirements of the Illinois
Procurement Code and the Procurement Rules of the Chief Procurement Office for Public Institutions of Higher Education.

4.2 **Annual Prequalification.** The Bidder shall prequalify in accordance with the instructions contained herein. All Bidders shall be prequalified with the Owner. New Bidders that are not prequalified shall prequalify with the Owner using the Owner's web-based Contractor Annual Prequalification System (CAPS). The Bidder shall follow the instructions contained in the CAPS and submit to the Owner 14 days before bidding a University of Illinois project. The application may take 14 days to process after a complete and accurate application is received by the University of Illinois Campus Construction Unit. The following information is required in the Annual Prequalification Statement:

4.2.A **Federal Taxpayer Identification Number (Section 1).** Enter the Bidder's Federal Taxpayer Identification Number (FTIN). Individuals and sole proprietors should enter their Social Security Number (SSN). All other business entities should enter their Federal Employer Identification Number (FEIN).

4.2.B **Illinois Department of Human Rights Number (Section 2).** Enter the Bidder's Illinois Department of Human Rights (IDHR) number. The Bidder must be prequalified for equal employment opportunity purposes by the Illinois Department of Human Rights, Compliance Division, Public Contracts Section, State of Illinois Building, 100 West Randolph Street, Chicago, Illinois 60601 (telephone 312-814-2431/2).

4.2.C **Illinois Central Management Services Certified Business Enterprise (Section 3).** Identify if the Bidder is a Minority, Female, or Persons with Disabilities Business Enterprise as defined in Section 2 of the Illinois Business Enterprise for Minorities, Females, and Persons with Disabilities Act, as amended (30 ILCS 575/0.01 et. seq.). If so, provide additional information relating to minority or female, the applicable minority category, and the Bidder's certification status with the Illinois Department of Central Management Services (CMS). Additionally, identify if Bidder is a Veteran Owned Small Business or a Service Disabled Veteran Owned Small Business, as defined in the Illinois Procurement Code as amended (30 ILCS 500/45-57).

The following definitions apply:

4.2.C.1 **Minority** means a person who is a citizen or lawful permanent resident of the United States who is:

4.2.C.1.1 Black/African American (a person having origins in any of the black racial groups in Africa);

4.2.C.1.2 Hispanic American (a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race);

4.2.C.1.3 Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent or the Pacific Islands); or

4.2.C.1.4 Native American or Alaskan Native (a person having origins in any of the original peoples of North America).

4.2.C.2 **Female** means a person who is a citizen or lawful permanent resident of the United States who is of the female gender.

4.2.C.3 **Minority-Owned Business (MBE)** means a business concern which is at least 51 percent owned by one or more minority persons, or, in the case of a corporation, at least 51 percent of the stock is owned by one or more minority persons; and the management and daily...
business operations of which are controlled by one or more of the minority individuals who own it.

4.2.C.4 Female-Owned Business (FBE) means a business concern which is at least 51 percent owned by one or more females, or, in the case of a corporation, at least 51 percent of the stock is owned by one or more females; and the management and daily business operations of which are controlled by one or more of the females who own it.

4.2.C.5 Female Minority Owned Business (FMB) means a business concern which is at least 51 percent owned by one or more female minorities, or, in the case of a corporation, at least 51 percent of the stock is owned by one or more female minority; and the management and daily business operations of which are controlled by one or more of the female minority who own it. All FMB firms are considered to be within either “MBE” or “FBE” categories. For purposes of University of Illinois Contract Documents, FMB firms will be included in “MBE/FBE” References.

4.2.C.6 Person with Disability Owned Business (PBE) means a business concern that is at least 51% owned by one or more persons with a disability and the management and daily business operations of which are controlled by one or more of the persons with disabilities who own it. A not-for-profit agency for persons with disabilities that is exempt from taxation under Section 501 of the Internal Revenue Code of 1986 is also considered a “business owned by a person with a disability”.

4.2.C.7 Service-Disabled Veteran-Owned Small Business (SDVOSB) means a small business (i) that is at least 51% owned by one or more qualified service-disabled veterans living in Illinois or, in the case of a corporation, at least 51% of the stock of which is owned by one or more qualified service-disabled veterans living in Illinois; (ii) that has its home office in Illinois; and (iii) for which items (i) and (ii) are factually verified annually by the Department of Central Management Services.

4.2.C.8 Veteran Owned Small Business (VOSB) means a small business (i) that is at least 51% owned by one or more qualified veterans living in Illinois or, in the case of a corporation, at least 51% of the stock of which is owned by one or more qualified veterans living in Illinois; (ii) that has its home office in Illinois; and (iii) for which items (i) and (ii) are factually verified annually by the Department of Central Management Services.

4.2.D Business Organization (Section 4). Provide information indicating whether the Bidder's business organization is a sole proprietorship, partnership, or corporation and provide the additional information requested for the applicable type of business organization. For corporations, the term "registered agent" refers to the contact person identified in the corporation’s annual report filed with the Illinois Secretary of State.

4.2.E Key Personnel, Business, and Financial Information (Sections 5). Provide historical information, business volume, financial references, and the number of managerial and supervisory personnel employed by the Bidder.

4.2.F Disclosures and General Questions (Section 6). Answer all questions in this Section. The questions relate to the Bidder's eligibility to enter into a contract with The Board of Trustees of the University of Illinois and to the statutory
requirements, which may affect the Bidder's ability to perform all contractual responsibilities.

4.2.G Performance Bond and Payment Bond (Section 7). Identify the Bidder's surety, its surety’s A.M. Best Co. Rating, and local agent. The Bidder's surety shall have a policyholder's rating not lower than "A-" and a financial rating not lower than "VI" in the current edition of Best's Key Rating Guide for property/casualty insurance companies. The Bidder’s surety shall also be licensed to write surety bonds in the State of Illinois and shall be listed on the United States’ Department of the Treasury’s Listing of Approved Sureties (Department Circular 570), and shall have an underwriting limitation in an amount not less than the amount bid by Bidder including all alternates, if any.

4.2.H Summary of Work Experience (Section 8). Provide a resume of the Bidder's experience in similar projects, including a list of the following:

4.2.H.1 Similar contracts completed within the last five years.

4.2.H.2 Contracts currently under construction.

4.2.H.3 Contracts upon which the Bidder is negotiating a contract or is the apparent low Bidder even though no contract has yet been awarded.

The Bidder shall list all public works contracts performed within the last two years or the four most recent public works contracts performed, whichever is fewer. The Bidder shall provide information in sufficient detail to enable the Owner to evaluate the Bidder’s capacity and experience to provide project coordination on University of Illinois projects (including assigned contracts) and to ensure the completion of projects within the time specified.

Note: The Owner reserves the right to require from the Bidder a detailed statement regarding the business and technical organization and the physical facilities and equipment of the Bidder that is available for the Work that is contemplated, information pertaining to financial resources and experience of personnel, and any additional information or documentation necessary to satisfy the Owner that the Bidder is equipped and prepared to finance and perform the Work.

4.3 Application for Renewal. A prequalification renewal will be sent to Bidders approximately 45 days before the expiration of current prequalification. Bidders who do not receive a prequalification renewal are responsible for obtaining one at least 30 days prior to expiration. When all information is complete and satisfactory, processing may take up to 14 days. When any information is incomplete or unsatisfactory, a longer processing time will be required. Bidders will be notified when information is incomplete or unsatisfactory. Unless otherwise specified in writing by the Owner, the term of prequalification is one year. When prequalification is granted, the bidder will be notified in writing of the expiration date. The Owner may grant a shorter term of prequalification when a determination is made by the Owner that a shorter period is justified. The Owner, in its discretion, may grant a longer period of prequalification when deemed appropriate.

4.4 Project-Specific Prequalification. The Project-Specific Prequalification Statement shall be submitted to the Owner as soon as possible but in any event not later than the date and time stipulated in the Notice to Bidders. The Project-Specific Prequalification Statement shall be submitted on the forms included with the bid documents and in an envelope marked "Project-Specific Prequalification." Failure to submit the required information by the project-specific prequalification deadline and failure to meet the project-specific prequalification requirements may result in the bid being returned unopened. Project-specific information required by the Owner shall be stated in Document 00 46 00 – Project-Specific Prequalification Form.
Note: The Owner reserves the right to require from the Bidder, prior to the bid opening, a detailed statement regarding the business and technical organization and the physical facilities and equipment of the Bidder that is available for the Work that is contemplated, information pertaining to financial resources and experience of personnel, and any additional information or documentation necessary to satisfy the Owner that the Bidder is equipped and prepared to finance and perform the Work.

4.5 **Owner’s Evaluation.** The Owner shall evaluate the information provided in the Annual Prequalification Statement and Project-Specific Prequalification Statement. The Bidder’s performance on previous projects at the University of Illinois and other available evidence will be used to determine, prior to the opening of bids, whether the Bidder has satisfactorily prequalified to submit a bid for the project. The Owner shall perform all such evaluations in compliance with applicable State and Federal law which define and prohibit unlawful discrimination. Unsatisfactory performance on previous projects may be sufficient cause for disqualifying a Bidder. Any Bidder who is determined to be unqualified on the basis of data submitted and/or investigation completed will be notified at or prior to the bid opening, and any bid submitted will be returned unopened. Prequalification by a Bidder shall not, however, constitute a final determination by the Owner of the qualifications and responsibility of the Bidder. The Owner reserves the right to re-evaluate the Bidder’s qualifications and responsibility and to request additional information and substantiation at any time prior to the award of contract.

4.6 **Actions Affecting Prequalification.** The Owner may, at any time, consider whether action should be taken concerning a Bidder’s prequalification. Actions that may be taken by the Owner include, but are not limited to, one or more of the following: modification or limitation of a Bidder’s ability to bid; suspension of a Bidder’s prequalification; debarment of a Bidder.

5.0 **COMPLIANCE WITH LABOR AND EMPLOYMENT LAWS AND REGULATIONS**

The successful Bidder will be required to pay the prevailing wages and benefits identified therein, to utilize nondiscriminatory and affirmative action hiring practices, and to comply with all laws, statutes, regulations, ordinances, rulings, or enactments of any governmental authority which are applicable to the Work or to the Project.

6.0 **BID PREPARATION AND SUBMISSION**

6.1 **Preparation.** The bid shall be submitted on the form furnished, which shall be used for all contract divisions of the Project. The Bidder shall not make changes in the bid form or bid bond form supplied with the bidding documents. All relevant blanks completed on the bid form shall be typewritten or handwritten in indelible ink. Bidders shall indicate the contract divisions of the Project upon which they are submitting their bid and shall fill in the proper spaces for base bid and alternates for those contract divisions. Where alternates and/or unit prices are required, Bidders shall fill in each alternate and/or unit price applicable to their contract division. Bidder certifies that a signed copy of Certifications and Statutes Requirements form and the Financial Disclosures and Conflicts of Interest form shall be submitted along with the Bid. Copies of these forms can be found at:

https://www.uocpres.illinois.edu/contractors/contracts

6.2 **Minority and Female Business Enterprise Participation.**

Each Bidder shall name the MBE/FBE owned firms it intends to use to meet the specified goals set for this project on Attachment B – Minority/Female Business Enterprise Program Requirements of bid form document 00 40 00. The MBE/FBE goals for this project are as follows (N/A in Combined Goal(s) means Split Goals are in effect, and N/A in Split Goals means Combined Goal(s) is in effect for each specified Division of Work):

<table>
<thead>
<tr>
<th>Division of Work</th>
<th>Combined Goal(s)</th>
<th>Split Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBE/FBE</td>
<td></td>
<td>MBE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FBE</td>
</tr>
</tbody>
</table>
Good Faith Effort Period.

Bidders shall submit within ten (10) calendar days after the bid opening, documentation of their good faith efforts to achieve the MBE/FBE goals if the goals are not met. Failure to submit such documentation, or to use good faith efforts, shall result in rejection of the bid.

MBE/FBE Participation Cure Period.

If the Bidders fail to meet the MBE/FBE participation goal at the time of bid submittal, they are granted a cure period of ten (10) calendar days to meet the goal. The cure period shall run concurrently with the Good Faith Effort Period.

6.2.A Goal Credit. Only those vendors who are certified by the Illinois Department of Central Management Services as of the date of the bid opening will be considered in determining whether the vendor meets the participation goal.

6.2.B Certification. Owner will only accept Minority and Female Business Enterprise (MBE/FBE) firms certified by the Illinois Department of Central Management Services (CMS). A current and valid print version of the vendor’s CMS Business Enterprise Program (BEP) Vendor Directory results is printed proof of the CMS MBE/FBE/FMB certification. This document includes the vendor name, address, ethnicity, county, contact information, certification renewal date and expiration date. If a current and valid CMS BEP certification letter is included with the bid, reconciliation to obtain proper printed proof is allowed. If the CMS BEP certification letter is not current and valid, reconciliation is not permitted.

The IL CMS BEP Vendor Directory can be found at

https://www.illinois.gov/cms/business/sell2/Pages/VendorSearch.aspx

and a tutorial for using the directory is available at

https://www.uocpres.uillinois.edu/UserFiles/Servers/Server_7758/file/training/wbt/WBTMAFBESearch.swf

6.2.C The University of Illinois values the utilization of certified minority and female business enterprises in capital construction. All such enterprises must perform a commercially useful function. Enterprises which might be considered "pass-throughs" or "fronts" are not permitted. Failure to comply with this requirement or false representations may result in termination of contracts related to University capital construction projects and result in criminal and civil penalties.

6.2.D Designated Projects. Owner may designate projects with MBE/FBE Participation Goals. See above for applicable goals for MBE/FBE participation.

6.2.E Bid Form. Each Bidder shall name, on Attachment B - Minority/Female Business Enterprise Program Requirements of the bid form 00 40 00, the IL CMS certified minority and female owned businesses it intends to use to meet the specified goals. If the specified goals are not met, the Bidder shall check the box on the form to request a change in specified goal or waiver of specified goal. Written evidence of good faith efforts to achieve the goals will be submitted within ten
(10) calendar days after the bid opening. Good faith effort documentation is not required when participation goals have been met.

6.2.F MBE/FBE Bidder. If the Bidder is a minority or female owned business, indicate on Attachment B - Minority/Female Business Enterprise Program Requirements of bid form 00 40 00. Owner encourages MBE/FBE prime Bidders to use MBE/FBE subcontractors/suppliers.

6.2.G Joint Venture. If the Bidder is a joint venture, the percentage of ownership held by the MBE/FBE joint venturer may be used to meet the MBE/FBE goal for the contract.

6.2.H Request for Assistance. If the Bidder needs assistance in locating subcontractors or suppliers to meet the goals, Bidder shall contact Director of Diversity, University Office of Capital Programs and Real Estate Services.

6.2.I Good faith effort documentation supporting a request for change of MBE/FBE goal or waiver of MBE/FBE goal must be submitted. The minimum expected documentation includes, but is not limited to:

6.2.I.1 All information indicating why the specified goal cannot be met.

6.2.I.2 A list of all MBE/FBE firms contacted and the dates they were contacted, including documentation from those firms.

6.2.I.3 Copies of all bid solicitation letters to MBE/FBE firms. Letters shall contain, as a minimum:

6.2.I.3.1 Project title and location;

6.2.I.3.2 Classification of work items for which quotations are requested;

6.2.I.3.3 Date, time, and place quotations are due;

6.2.I.3.4 Returnable acknowledgment of the solicitation.

6.2.I.4 Evidence, such as a log, of telephone contact including time and date of call, telephone number, and name of the person called.

6.2.I.5 All other evidence of good faith efforts made by the Bidder to secure eligible MBE/FBE firms to meet the specified goal. Evidence may include documentation that states the following:

6.2.I.5.1 A reasonable number of MBE/FBE firms were contacted.

6.2.I.5.2 The work selected by the Bidder for allocation to MBE/FBE firms was selected in order to increase the likelihood of achieving the specified goal.

6.2.I.5.3 The Bidder negotiated, in good faith, with the potential MBE/FBE firms by not imposing any conditions which are not similarly imposed on all other subcontractors and suppliers, or by denying benefits ordinarily conferred on subcontractors or suppliers for the type of work for which bids were solicited.

6.2.I.5.4 The services of the referral agencies were used by the Bidder in efforts to achieve the specified goal.

6.2.I.5.5 The Bidder attended Owner pre-bid meeting for the project.

6.2.I.5.6 The Bidder contacted the Director of Diversity for the University of Illinois Office of Capital Programs and Real Estate Services.
Estate Services for assistance or to provide notice of difficulties in completing good faith efforts.

6.2.I.6 Other relevant information in support of the change/waiver request.

6.2.J Request for Change of Subcontractor or Supplier. Only upon receipt of Notification of Award (NOA) or Notification of Intent to Award (NOIA) the determined responsive and responsible Bidder may make a request for change of a MBE/FBE subcontractor or supplier which it has previously listed on Attachment B Minority/Female Business Enterprise Program Requirements on bid form 00 40 00. All requests shall be in writing on the Contractor’s letterhead and submitted with documented evidence of cause to Owner’s Director of Diversity, University of Illinois Office for Capital Programs and Real Estate Services. Owner will review each request and may, at its sole discretion, authorize the change.

6.2.J.1 After receipt of NOA and/or NOIA letter, but prior to Contract Execution. The Bidder may request approval of a MBE/FBE subcontractor or supplier other than one listed on Attachment B – Minority/Female Business Enterprise Program Requirements of bid form 00 40 00 provided sufficient information is supplied by the Contractor as deemed appropriate by Director of Diversity, University Office of Capital Programs and Real Estate Services. Owner may require supporting documentation from the MBE/FBE subcontractor or supplier.

6.2.J.2 After Contract Execution. If for any reason an approved MBE/FBE subcontractor or supplier fails to meet its contractual commitment to the Bidder after an award of contract, start of construction, or during construction, the Bidder may request approval of an alternate MBE/FBE subcontractor or supplier. All requests shall be in writing on the Bidder’s letterhead and submitted with documented evidence of cause to Owner’s Director of Diversity, University of Illinois Office of Capital Programs and Real Estate Services. Owner may require supporting documentation from the MBE/FBE subcontractor or supplier.

6.3 Basis of Bid Prices. The Bidders' proposed prices shall be based on the materials, fixtures, furnishings, equipment, and methods specified in the Contract Documents and shall not contain any substitutions, qualifications, or recapitulations of the Work to be done. Certain materials and equipment are specified by manufacturer or trade name and catalog or model number to establish standards of quality and performance and not for the purpose of limiting competition. Proposed product substitutions will not be considered as a basis for awarding contracts but will be evaluated in accordance with paragraph 6.10–Substitutions, of the General Conditions after contracts have been awarded and executed.

6.4 Execution. Bids and bid bonds shall be signed in the firm or corporate name of the Bidder and shall bear the signature of the individual(s) authorized to execute contracts on behalf of the Bidder. All signatures shall be in indelible ink. If the Bidder is a corporation, the bid shall be signed by a duly authorized officer of the corporation, attested to by the secretary, and have the corporate seal affixed thereto. WHERE BIDS ARE SIGNED BY AN AGENT OF THE BIDDER, EVIDENCE OF HIS/HER AUTHORITY TO ACT AS THE BIDDER'S AGENT SHALL ACCOMPANY THE BID. The name of each person signing the bid shall be typed or printed below their signature.

6.5 Delivery. All bids shall be submitted in sealed envelopes identified with the name of the Project, the date of the bid opening, the name of the Bidder, the contract division of the Project to be bid, and shall be addressed to the Owner. Bids shall be delivered to the
7.0 BID DEPOSIT

7.1 Form of Deposit. Each bid shall be accompanied by a bid deposit in the amount of five percent (5%) of the bid, in the form of a cashier's check, certified check, or bank draft in current U.S. funds made payable to The Board of Trustees of the University of Illinois, or a bid bond. The bid bond form is included in the bidding documents (refer to Document 00 40 00-Bid). After the bid opening, Bidders may replace other forms of bid deposits with an acceptable bid bond. Submission of a surety not listed in the Bidder's approved prequalification statement may be rejected.

7.2 Purpose of Deposit. The bid deposit shall ensure that the Bidder's prices will remain firm for the time period specified in the bid and that the successful Bidder will, upon the award of a contract to it by the Owner, execute a contract with and provide satisfactory performance and payment bonds to the Owner within the time period specified in the bid.

7.3 Execution of Bid Bond Form.

7.3.A Execution of Bond. The bid bond shall be executed on the form bound into Document 00 40 00-Bid.

7.3.B Replacement of Surety. Should the surety on said bond at anytime fail financially or be, in the opinion of the Owner, insufficient security for the penalty of said bond, the Owner may, in writing, require said Bidder to furnish a replacement bond thereon, and it shall be satisfactory to the Owner. If the bond has to be replaced, the Bidder must immediately resubmit a prequalification statement to the Campus Construction Unit where the Bidder is submitting a bid.

7.3.C Surety Ratings. The bid bond shall be placed with a surety company having a policyholder’s rating not lower than “A-” and a financial rating not lower than “VI” in the current edition of Best’s Key Rating Guide for property/casualty insurance companies. The Bidder’s surety shall also be licensed to write surety bonds in the State of Illinois and shall be listed on the United States’ Department of the Treasury’s Listing of Approved Sureties (Department Circular 570), and shall have an underwriting limitation in an amount not less than the amount bid by Bidder including all alternates, if any.

7.4 Return of Deposits. The bid deposits of the successful Bidder and all other Bidders will be returned to them when and as stipulated in the bid, except for those deposits which become the property of the Owner as liquidated damages for any of the reasons specified in the bid.

8.0 BID MODIFICATION AND WITHDRAWAL

8.1 Modification Prior to Bid Opening. Bid modifications shall be made in writing and will be considered only if received by the Owner at the location designated for and prior to the date and time specified for the delivery of bids. The words "Bid Modification" shall be prominently incorporated thereon so that the modification can be attached to the proper bid. Bid modifications shall not reveal the bid price, but shall identify a sum to be added to or subtracted from the base bid or the alternate bid to be modified so that the final bid price can be determined only after the sealed bid is opened. Written bid modifications may be conveyed by electronic facsimile, by telegram, or within a sealed envelope, subject to confirmation as noted herein. Telephonic or oral modifications will not be considered.

8.2 Withdrawal Prior to the Bid Opening. Bid withdrawals shall be made in writing or in person. Personal bid withdrawals shall be made by securing the bid, with proper identification, at any time prior to the date and time specified for the delivery of bids. Written bid withdrawals will be considered only if received by the Owner at the location
designated for and prior to the date and time specified for the delivery of bids. Written bid withdrawals may be conveyed by electronic facsimile or by telegram, subject to confirmation as noted herein. Telephonic requests to withdraw a bid will not be considered.

8.3 Written Confirmation of Electronic Facsimiles and Telegrams. When bid modifications or withdrawals are conveyed by electronic facsimile or by telegram, a written confirmation letter shall be executed in the same manner as the original bid and sent to the Owner by registered or certified mail prior to the date and time stated for the receipt of bids. The confirmation letter shall bear sufficient evidence to confirm the date and time of receipt by the U.S. Postal Service and must be received by the Owner at the location designated for the delivery of the bid within five (5) business days of the bid opening. If the above requirements are not met, no consideration will be given to the electronic facsimile or telegraphic conveyance. The Owner may, at its discretion, publicly read any withdrawn bid pending receipt of the confirmation letter, reject a bid, retain the bid deposit until the confirmation letter is received or the validity or fraudulence of the electronic facsimile or telegraphic conveyance is established beyond a reasonable doubt, and take other such actions that it deems necessary and appropriate to protect against fraud or wrongdoing in the bidding process.

8.4 Withdrawal Subsequent to the Bid Opening. Withdrawal of bids after the bid opening will not ordinarily be permitted. However, in those cases where, pursuant to a written request by the Bidder and subject to the determination of the Professional Services Consultant and the Owner that, based on clear and demonstrable evidence, the Bidder has made a bona fide error in the preparation of the bid which will result in a substantial financial loss or hardship to the Bidder, an exception may be made.

9.0 BID OPENING

Immediately after the closing time for receiving bids, all bids will be publicly opened, read, and tabulated. Bids received after closing time will be returned unopened. The public opening and reading is for information only and is not to be construed as acceptance or rejection of any bid.

10.0 BID ACCEPTANCE OR REJECTION

The Owner reserves the right to reject any or all bids or any part thereof, to waive any informalities in the bidding, and to accept the bids deemed to be in the best interests of the Owner after all bids have been examined and evaluated.

10.1 Owner’s Rights. When, in its opinion, it is in the best interest of the University, Owner reserves the right to:

10.1.A Accept or reject any or all bids in accordance with these documents and applicable laws

10.1.B Waive technical deficiencies and irregularities

10.1.C Allow Bidder to remedy technical deficiencies or irregularities within a stated time

10.1.D Rescind any notice of award if Owner determines the notice of award was issued in error

10.1.E Cancel any solicitation or rescind any notice of award when it is in the best interest of the State

10.1.F Rebid any contract

10.2 Bid Rejection.

10.2.A Material Deficiencies. Bids will be rejected for material deficiencies, including but not limited to:
10.2.A.1 Failure to be prequalified with Owner no later than the close of business the day before the bid opening (Section 4.2 and Section 4.4).

10.2.A.2 Being determined non-responsible after bid opening as defined by 30 ILCS 500/30-22 and 44 IL Admin Code 526.2046.

10.2.A.3 Submission of a bid late (Section 9.0).

10.2.A.4 Failure to attend a mandatory pre-bid meeting.

10.2.A.5 Failure to submit a completed Owner bid form 00 40 00 including Attachment B – Minority/Female Business Enterprise Program Requirements.

10.2.A.6 Failure to use good faith efforts to achieve minority/female business enterprise participation goals as required in Section 6.2 of Document 00 20 00 – General Instructions to Bidders and provide documentation of good faith efforts within ten (10) calendar days after bid opening.

10.2.A.7 Failure to register with the State Board of Elections in accord with 30 ILCS 500/20-160, if required. Vendor must be registered at the time of bid. A copy of the certificate of registration is not required with the bid.

10.2.A.8 Failure to submit Certifications and Statutory Requirements form.

10.2.A.9 Failure to submit Financial Disclosures and Conflicts of Interest form.

10.2.A.10 Failure to submit a bid deposit.

10.2.A.11 Failure to include a current and valid printed proof of CMS certification for each identified MBE/FBE vendor as per Section 1.4.A of Document 00 40 00 within ten (10) calendar days after bid opening. A printed vendor’s CMS BEP Vendor Directory document should be the printed proof of the CMS MBE/FBE/FMB certification. This document includes the vendor name, address, ethnicity, county, contact information, and certification, renewal and expiration dates.

The IL CMS BEP Vendor Directory can be found at

https://www.illinois.gov/cms/business/sell2/Pages/VendorSearch.aspx

and a tutorial for using the directory is available at

https://www.uocpres.uillinois.edu/UserFiles/Servers/Server_7758/file/training/wbt/WBTMAFBESearch.swf

10.2.B Technical Deficiencies. When identified by Owner, technical deficiencies may be remedied by the Bidder within ten (10) calendar days of notification. Failure to remedy the bid within ten (10) calendar days may result in rejection of the bid.

10.2.C Owner, at its sole discretion and without conferring any rights on any Bidder, may waive bid technical deficiencies or irregularities that are not in conformance with the bidding documents but whose non-conformance is non-material or minor.

Submittal of conditions or qualifying statements contrary to Owner’s contract terms is not acceptable and, unless rescinded, the bid shall be rejected.

11.0 METHOD OF AWARD
Contracts will be awarded to qualified, responsive, and responsible Bidders that submit the lowest priced bid based on the sum of the base bids and alternates accepted by the Owner. The Owner will not split the award of the base bids and alternates between different Bidders within a particular contract division of the project. Alternates, if considered, will be accepted in any order, as determined by the Owner. The Owner does not obligate itself to accept the lowest or any other bid.

12.0 MBE/FBE BUSINESS CERTIFICATION, POST REQUIREMENTS

12.1 Post-Award Submittal. Following the receipt of the Notice of Intent to Award or Notice of Award letter, the contractor shall submit Attachment A - MBE/FBE Subcontractor/Supplier Certification form, of the Notice of Intent to Award or Notice of Award letter, for each of the IL CMS certified MBE/FBE subcontractor(s) and/or supplier(s) being utilized to meet the designated participation goals as specified on the bid form. The form must be signed by the MBE/FBE subcontractor or supplier and shall be submitted by the Bidder to the Campus Construction Unit (CCU).

12.2 Completion of the Attachment A MBE/FBE Subcontractor/Supplier Certification form, of the Notice of Intent to Award or Notice of Award letter. Attachment A – MBE/FBE Subcontractor/Supplier Certification form, of the Notice of Intent to Award or Notice of Award letter is not required if the Bidder is a MBE or FBE firm. MBE/FBE Bidders are encouraged to utilize MBE/FBE subcontractors/suppliers. If goals are split (separate MBE and FBE goals), then a MBE or FBE firm must supply Attachment A – MBE/FBE Subcontractor/Supplier Certification form, of the Notice of Intent to Award or Notice of Award letter for the subcontractor firm(s) utilized to meet the FBE or MBE goal, respectively.

12.3 Listed Firms. Attachment A – MBE/FBE Subcontractor/Supplier Certification form, of the Notice of Intent to Award or Notice of Award letter shall be completed and submitted for each MBE/FBE firm listed on Attachment B of the bid form. The awarded contractor shall ensure the firm(s) and dollar amount(s) listed on the completed Attachment A – MBE/FBE Subcontractor/Supplier Certification form matches the firm(s) and dollar amount(s) listed on Attachment B of the bid form including any additional firms and/or dollar amounts associated with alternates.

12.4 Compliance. The MBE/FBE participation goal dollar value is based upon the total contract sum (including awarded alternates). The participation goal percentage amount(s) shall meet or exceed the goal(s) as specified on the bid form, or in an approved change/waiver request (refer to Section 6.2 herein).

12.5 Voluntary. Bidders are encouraged to utilize MBE/FBE subcontractors/suppliers for those projects that are not designated for MBE/FBE participation and complete Attachment A - MBE/FBE Subcontractor/Supplier Certification form, of the Notice of Intent to Award or Notice of Award letter for each MBE/FBE firm. MBE/FBE subcontractors/suppliers may be added at any time during the project.

13.0 POST AWARD REQUIREMENTS

13.1 Bidder’s Duty to Comply. The Bidder may not proceed with the Work until the following post award requirements are met. These requirements are part of the contract and failure to comply with these requirements shall constitute a breach of the contract. Owner shall issue Notice to Proceed upon successful completion of these post award requirements.

13.2 Submittals. Within fifteen (15) calendar days from the date of the Notice of Award, or Notice of Intent to Award letter, the Bidder shall furnish, on Owner forms, the following:


13.2.A.1 Contract executed by the Bidder;
13.2.A.2 Contractor Performance Bond;
13.2.A.3 Contractor Payment Bond;
13.2.A.4 Certificate of Insurance;
13.2.A.5 Builder's Risk Insurance (if applicable);
13.2.A.6 Substance Abuse Prevention Program (if the program has been revised since submitted with the annual prequalification).

13.2.B MBE/FBE Subcontractor/Supplier Documentation (if MBE/FBE is utilized). Attachment A – MBE/FBE Subcontractor/Supplier Certification form, of the Notice of Intent to Award or Notice of Award letter. The awarded Bidder shall ensure the firm(s) and dollar amount(s) listed on the completed Attachment A – MBE/FBE Subcontractor/Supplier Certification form matches the firm(s) and dollar amount(s) listed on bid form 00 40 00 Attachment B – Minority/Female Business Enterprise Program Requirements, including any additional firms and/or dollars associated with alternates.

13.3 Cancellation of Award. All post award requirements are mandatory. Noncompliance shall be cause for Owner to cancel the Notice of Award and make a claim against the bid security.

13.4 Post Award Extensions. Owner may extend the time limitations for good cause. No extension shall operate as a waiver of post award requirements, nor shall it extend the contract completion date.

14.0 DELAYS

Any delays to the commencement of the Work due to the Contractor’s failure to meet the post award requirements shall be the responsibility of the Contractor and its surety. Contractor and its surety shall be responsible for the costs of any such delays.

END OF DOCUMENT 00 20 00
THE BIDDING AND CONTRACT PROVISIONS

DOCUMENT 00 40 00 - BID

(Standard Multiple Contract Set)

CERL Main Building Addition Rebid
at the
UNIVERSITY OF ILLINOIS
Urbana-Champaign
Project Number: U13024-R

Bid Date: ________________
Facilities and Services
1501 South Oak Street, Room 115
Champaign, IL 61820

Bid Submitted By:

Bidder: ____________________________________________

Business Address _______________________________________
_____________________________________________________
_____________________________________________________

Phone

Email Address __________________________________________

Contract Division of the Project: __________________________

Bids for Contract Divisions 02 - Plumbing Work, 03 - Heating Work, 04 - Ventilation Work, 05 - Electrical Work will be opened in Physical Plant Services Building, Room 128, 1501 South Oak Street, Champaign, Illinois 61820 at 2:30 PM on 02/01/16.

Bids for Contract Division 01 - General Work will be opened in Physical Plant Services Building, Room 128, 1501 South Oak Street, Champaign, Illinois 61820 at 2:30 PM on 02/03/16.
1.0 **PROJECTION OF EMPLOYEE UTILIZATION**

1.1 **Workforce Projection.** The Bidder has analyzed minority group and female populations, unemployment rates, and availability of workers for the location in which this contract work is to be performed, and for the locations from which the Bidder recruits employees, and hereby submits the following workforce projection, (see Attachment A) including a projection for minority and female employee utilization in all job categories in the workforce to be allocated to this contract.

1.2 **New Employees.** Included in "Total Employees" under Attachment A is the total number of new hires that will be employed in the event the Bidder is awarded this contract. The Bidder projects that the new hires listed in Table 3 will be recruited from the area in which the Project is located and/or the area in which the Bidder's principal office or base of operation is located.

1.3 **Affirmative Action Plan.** The Bidder agrees to comply fully with the Equal Employment Opportunity Act (775 ILCS 5/2-105). The Bidder further agrees, in the event the foregoing minority and female employee utilization projection is determined to be an underutilization of minority persons or females in any job category and in the event that the Bidder is awarded this contract, to develop and submit a written Affirmative Action Plan prior to the commencement of work on this contract. The Affirmative Action Plan shall have a specific timetable, geared to the completion stages of the contract, whereby deficiencies in minority and/or female employee utilization are corrected and shall be subject to approval by the Owner and the Illinois Department of Human Rights.

1.4 **Business Enterprise for Minorities, Females, and Persons with Disabilities Act.**

1.4.A This project has goals for participation by minority and female owned businesses as bidders, subcontractors or suppliers in accordance with the Business Enterprise for Minorities, Females, and Persons with Disabilities Act. Only MBE/FBE/FMB firms certified with the Illinois Department of Central Management Services (CMS) are acceptable. Printed proof of current and valid CMS MBE/FBE/FMB certification must be provided with the bid for each identified MBE/FBE vendor. A print version of the vendor's CMS Business Enterprise Program (BEP) Vendor Directory results is printed proof of the CMS MBE/FBE/FMB certification. This document includes the vendor name, address, ethnicity, county, contact information, and certification renewal date and expiration date. If a current and valid CMS BEP certification letter is included with the bid, reconciliation to obtain proper printed proof is allowed. If the CMS BEP certification letter is not current and valid, reconciliation is not permitted.

The IL CMS BEP Vendor Directory can be found at

https://www.illinois.gov/cms/business/sell2/Pages/VendorSearch.aspx

and a tutorial for using the directory is available at

https://www.uocpres.uiillinois.edu/UserFiles/Servers/Server_7758/file/training/wbt/WBTMAFBESearch.swf

NOTE: MBE/FBE goals are separate and distinct from workforce projections (Attachment A of Document 00 40 00).

Each Bidder shall name the MBE/FBE owned subcontractors and suppliers it intends to use to meet the specified goals set for this project on Attachment B – Minority/Female Business Enterprise Program Requirements of bid form document 00 40 00. The MBE/FBE goals for this project are as follows (N/A in Combined Goal(s) means Split Goals are in effect, and N/A in Split Goals means Combined Goal(s) is in effect for each specified Division of Work):
<table>
<thead>
<tr>
<th>Division of Work</th>
<th>Combined Goal(s)</th>
<th>Split Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MBE/FBE</td>
<td>MBE</td>
</tr>
<tr>
<td>01 - General Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>02 - Plumbing Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>03 - Heating Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>04 - Ventilation Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>05 - Electrical Work</td>
<td>15</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Good Faith Effort Period.**

The Bidder shall submit within ten (10) calendar days after the bid opening, documentation of its good faith efforts to achieve the MBE/FBE goals if the goals are not met (see General Instructions to Bidders, Document 00 20 00). Failure to submit such documentation, or to use good faith efforts, shall result in rejection of the bid.

**MBE/FBE Participation Cure Period.**

If the Bidders fail to meet the MBE/FBE participation goal at the time of bid submittal, they are granted a cure period of ten (10) calendar days to meet the goal. The cure period shall run concurrently with the Good Faith Effort Period.

1.4.B **Goal Credit.** Only those vendors who are certified by the Illinois Department of Central Management Services as of the date of the bid opening will be considered in determining whether the vendor meets the participation goal.

1.4.C Bidders may request assistance in locating MBE/FBE businesses from the Director of Diversity, University Office of Capital Programs and Real Estate Services (http://www.uocpres.uillinois.edu/about/contact.)

1.4.D Once the contract is awarded, the awarded contractor is required to submit, in accordance with General Instructions document 00 20 00 a completed Attachment A - MBE/FBE Subcontractor/Supplier Certification Form of the Notice of Intent to Award or Notice of Award letter for each of the MBE/FBE subcontractors/suppliers utilized to meet the goals.

1.4.E The MBE/FBE business named and subcontract dollar amount on the two forms (Attachment B – Minority/Female Business Enterprise Program Requirements of bid form document 00 40 00 and Attachment A - MBE/FBE Subcontractor/Supplier Certification Form of the Notice of Intent to Award or Notice of Award letter) must match.

1.5 **Minority and Female Business Enterprise Participation.**

1.5.A **Certification.** Owner will only accept Minority and Female Business Enterprise (MBE/FBE) firms certified by the Illinois Department of Central Management Services (CMS). A current and valid print version of the vendor’s CMS Business Enterprise Program (BEP) Vendor Directory is the printed proof of the CMS MBE/FBE/FMB certification. This document includes the vendor name, address, ethnicity, county, contact information, certification renewal date and expiration date. If a current and valid CMS BEP certification letter is included with the bid, reconciliation to obtain proper printed proof is allowed. If the CMS BEP certification letter is not current and valid, reconciliation is not permitted.

The IL CMS BEP Vendor Directory can be found at

https://www.illinois.gov/cms/business/sell2/Pages/VendorSearch.aspx

and a tutorial for using the directory is available at
1.5.B The University of Illinois values the utilization of certified minority and female business enterprises in capital construction. All such enterprises must perform a commercially useful function. Enterprises which might be considered “pass-throughs” or “fronts” are not permitted. Failure to comply with this requirement or false representations may result in termination of contracts related to University capital construction projects and result in criminal and civil penalties.

1.5.C Designated Projects. Owner may designate projects with MBE/FBE Participation Goals. See above for applicable goals for MBE/FBE participation.

1.5.D Bid Form. Each Bidder shall name, on Attachment B-Minority/Female Business Enterprise Program Requirements of the bid form 00 40 00 the IL CMS certified minority and female owned businesses it intends to use to meet the specified goals. If the specified goals are not met, the Bidder shall check the box on the form to request a change in specified goal or waiver of specified goal, indicating written evidence of good faith efforts to achieve the goals will be submitted within ten (10) calendar days after the bid opening. (Not required when participation goals have been met or are not applicable)

1.5.E MBE/FBE Bidder. If the Bidder is a minority or female owned business, indicate on Attachment B – Minority/Female Business Enterprise Program Requirements of bid form 00 40 00. Owner encourages MBE/FBE prime Bidders to use MBE/FBE subcontractors/suppliers.

1.5.F Joint Venture. If the Bidder is a joint venture, the percentage of ownership held by the MBE/FBE joint venturer may be used to meet the MBE/FBE goal for the contract.

1.5.G Subcontracts. Subcontracting of Work to a lower tier non-MBE/FBE firm which would reduce the proceeds received by the subcontracting MBE/FBE firm below the specified goal is prohibited. Owner may, in such cases, reject the bid or terminate the contract

1.5.H Request for Assistance. If the Bidder needs assistance in locating subcontractors or suppliers to meet the goals, Bidder shall contact the Director of Diversity, University Office of Capital Programs and Real Estate Services.

1.5.I Good faith effort documentation supporting a request for change of MBE/FBE goal or waiver MBE/FBE goal must be submitted. The minimum expected documentation includes, but is not limited to:

1.5.I.1 All information indicating why the specified goal cannot be met.

1.5.I.2 A list of all MBE/FBE firms contacted and the dates they were contacted, including documentation from those firms.

1.5.I.3 Copies of all bid solicitation letters to MBE/FBE firms. Letters shall contain, as a minimum:

1.5.I.3.1 Project title and location

1.5.I.3.2 Classification of Work items for which quotations are requested

1.5.I.3.3 Date, time, and place quotations are due

1.5.I.3.4 Returnable acknowledgment of the solicitation

1.5.I.4 Evidence, such as a log, of telephone contact including time and date of call, telephone number, and name of the person called.
1.5.I.5 All other evidence of good faith efforts made by the Bidder to secure eligible MBE/FBE firms to meet the specified goal. Evidence may include documentation that states the following:

1.5.I.5.1 A reasonable number of MBE/FBE firms were contacted.

1.5.I.5.2 The Work selected by the Bidder for allocation to MBE/FBE firms was selected in order to increase the likelihood of achieving the specified goal.

1.5.I.5.3 The Bidder negotiated, in good faith, with the potential MBE/FBE firms by not imposing any conditions which are not similarly imposed on all other subcontractors and suppliers, or by denying benefits ordinarily conferred on subcontractors or suppliers for the type of Work for which bids were solicited.

1.5.I.5.4 The services of the referral agencies were used by the Bidder in efforts to achieve the specified goal.

1.5.I.5.5 The Bidder attended Owner pre-bid meeting for the project.

1.5.I.5.6 The Bidder contacted the Director of Diversity for the University of Illinois Office for Capital Program and Real Estate Services for assistance or to provide notice of difficulties in completing Good Faith Efforts.

1.5.I.6 Other relevant information in support of the change/waiver request.

1.5.J Request for Change of Subcontractor or Supplier. Only upon receipt of Notification of Award (NOA) or Notification of Intent to Award (NOIA) the determined responsive and responsible Bidder may make a request for change of a MBE/FBE subcontractor or supplier which it has previously listed on Attachment B Minority/Female Business Enterprise Program Requirements on bid form 00 40 00. All requests shall be in writing on the Contractor’s letterhead and submitted with documented evidence of cause to Owner’s Director of Diversity for University Office for Capital Programs and Real Estate Services. Owner will review each request and may, at its sole discretion, authorize the change.

1.5.J.1 After receipt of NOA and/or NOIA letter, but Prior to Contract Execution. The Bidder may request approval of an MBE/FBE subcontractor or supplier other than one listed on Attachment B – Minority/Female Business Enterprise Program Requirements of bid form 00 40 00 provided sufficient information is supplied by the Contractor as deemed appropriate by Director of Diversity, University Office of Capital Programs and Real Estate Services. Owner may require supporting documentation from the MBE/FBE subcontractor or supplier.

1.5.J.2 After Contract Execution. If for any reason an approved MBE/FBE subcontractor or supplier fails to meet its contractual commitment to the Bidder after an award of contract, start of construction, or during construction, the Bidder may request approval of an alternate MBE/FBE subcontractor or supplier. All requests shall be in writing on the Bidder’s letterhead and submitted with documented evidence of cause to Owner’s Director of Diversity, University of Illinois Office of Capital Programs and Real Estate Services. Owner may require
supporting documentation from the MBE/FBE subcontractor or supplier.

2.0 CERTIFICATION OF EEO INFORMATION

The Bidder certifies that, to the best of its knowledge and belief, the workforce projection is accurate and complete and that the Bidder is not currently under suspension by the Illinois Department of Human Rights or declared ineligible by said Department to enter into a contract with the Owner.

3.0 UNUSED

4.0 RECEIPT OF ADDENDA

The Bidder acknowledges receipt of the following addenda:

#____ dated ___________
#____ dated ___________
#____ dated ___________
#____ dated ___________
#____ dated ___________
#____ dated ___________
#____ dated ___________
#____ dated ___________
#____ dated ___________

5.0 EXAMINATION OF PROJECT SITE AND CONTRACT DOCUMENTS

The Bidder has visited the site and has become thoroughly familiarized with the local conditions affecting the cost of the work, the Contract Documents entitled:

CERL Main Building Addition Rebid
dated: 12/14/15, prepared by: Design Organization, Inc.

(including the agreement forms, the General Conditions, the specifications and drawings), this bid (if and as accepted by The Board of Trustees of the University of Illinois), the bidding instructions (including the Notice to Bidders and the General Instructions to Bidders) which are hereby incorporated into this bid, and all addenda thereto.

6.0 BID PRICES

The Bidder hereby bids to furnish all labor, materials, equipment, transportation, construction plant and facilities necessary to complete, in a workmanlike manner and in accordance with the Contract Documents, the Contract Division Work bid upon herein for compensation in accordance with the following prices:

NOTE: Owner will consider any Alternate bid prices left blank, marked “N/A” or “No Bid” or other indication that an additional cost is not identified by the bidder to be Zero Dollar ($0.00) bids. Alternates, if considered, will be accepted in any order as determined by the Owner. Bid alternates use a numbering scheme for identification only, not for prioritization.

6.1 01 - General Work

6.1.A Base Bid

All Division 01 - General Work Base Bid Work for the fixed sum of:

______________________________ Dollars ($_____________).

6.1.B Alternates

Alternate #1-Provide single use toilet rooms in 0025 and 0027.

______________________________ Dollars ($_____________).

Alternate #2-Provide field constructed wall assemblies for the research office area on the second floor as indicated in the documents.

______________________________ Dollars ($_____________).
Alternate #3—Provide fiber cement board panels in lieu of metal panels on the south, east and north elevations as indicated in the documents.

______________________________ Dollars ($_____________).

Alternate #4—Provide reinforced walls around the perimeter of meeting rooms 0010/0011/0012

______________________________ Dollars ($_____________).

6.2 02 - Plumbing Work
6.2.A Base Bid
All Division 02 - Plumbing Work Base Bid Work for the fixed sum of:

______________________________ Dollars ($_____________).

6.2.B Alternates
Alternate #1—Provide single use toilet rooms in 0025 and 0027.

______________________________ Dollars ($_____________).

Alternate #2—Provide field constructed wall assemblies for the research office area on the second floor as indicated in the documents.

______________________________ Dollars ($_____________).

Alternate #3—Provide fiber cement board panels in lieu of metal panels on the south, east and north elevations as indicated in the documents.

______________________________ Dollars ($_____________).

Alternate #4—Provide reinforced walls around the perimeter of meeting rooms 0010/0011/0012

______________________________ Dollars ($_____________).

6.3 03 - Heating Work
6.3.A Base Bid
All Division 03 - Heating Work Base Bid Work for the fixed sum of:

______________________________ Dollars ($_____________).

6.3.B Alternates
Alternate #1—Provide single use toilet rooms in 0025 and 0027.
Alternate #2-Provide field constructed wall assemblies for the research office area on the second floor as indicated in the documents.

______________________________ Dollars ($_____________).

Alternate #3-Provide fiber cement board panels in lieu of metal panels on the south, east and north elevations as indicated in the documents.

______________________________ Dollars ($_____________).

Alternate #4-Provide reinforced walls around the perimeter of meeting rooms 0010/0011/0012

______________________________ Dollars ($_____________).

6.4 04 - Ventilation Work

6.4.A Base Bid

All Division 04 - Ventilation Work Base Bid Work for the fixed sum of:

______________________________ Dollars ($_____________).

6.4.B Alternates

Alternate #1-Provide single use toilet rooms in 0025 and 0027.

______________________________ Dollars ($_____________).

Alternate #2-Provide field constructed wall assemblies for the research office area on the second floor as indicated in the documents.

______________________________ Dollars ($_____________).

Alternate #3-Provide fiber cement board panels in lieu of metal panels on the south, east and north elevations as indicated in the documents.

______________________________ Dollars ($_____________).

Alternate #4-Provide reinforced walls around the perimeter of meeting rooms 0010/0011/0012

______________________________ Dollars ($_____________).

6.5 05 - Electrical Work
6.5.A Base Bid
All Division 05 - Electrical Work Base Bid Work for the fixed sum of:
______________________________ Dollars ($_____________).

6.5.B Alternates
Alternate #1-Provide single use toilet rooms in 0025 and 0027.
______________________________ Dollars ($_____________).

Alternate #2-Provide field constructed wall assemblies for the research office area on the second floor as indicated in the documents.
______________________________ Dollars ($_____________).

Alternate #3-Provide fiber cement board panels in lieu of metal panels on the south, east and north elevations as indicated in the documents.
______________________________ Dollars ($_____________).

Alternate #4-Provide reinforced walls around the perimeter of meeting rooms 0010/0011/0012
______________________________ Dollars ($_____________).

7.0 CONTRACT TIME
7.1 Starting Date. The Bidder for Contract Division 01 - General Work hereby agrees that, if awarded a contract for the Work bid upon herein, the Bidder shall commence the Work on the date specified in a written Notice to Proceed from the Owner.

Completion Date. Time is of the essence in this contract. The Bidder agrees to achieve Substantial Completion of the Work bid upon as expeditiously as the Work will permit, in such a manner as to cause no delay to any of the other contractors employed in the Work or to the completion of the Work as a whole and, subject to adjustments as provided by the Contract Documents, no later than 490 calendar days from the date specified in the Notice to Proceed (the “Substantial Completion Date”).

The Bidder agrees to achieve Final Completion of the Work bid upon within thirty (30) days after Substantial Completion. Neither the Substantial Completion Date nor the time for Final Completion shall be changed except by Change Order issued in accordance with the terms of the Contract Documents.

7.2 Starting Date. The Bidder(s) for Contract Division(s) 02 - Plumbing Work, 03 - Heating Work, 04 - Ventilation Work, 05 - Electrical Work hereby agree(s) that, if awarded a contract for the work bid for herein, the Bidder(s) shall commence the Work on the date specified in a written Notice to Proceed from the Owner.

Completion Date. Time is of the essence in this contract. The Bidder(s) agree(s) to achieve Substantial Completion of its Work as expeditiously as the Work will permit, in such a manner as to cause no delay to any of the other contractors employed in the Work or to the completion of the Work as a whole.
8.0 ASSIGNMENT OF CONTRACTS

8.1 The Bidder for Contract Division(s) 02 - Plumbing Work, 03 - Heating Work, 04 - Ventilation Work, 05 - Electrical Work hereby agrees that, if awarded the contract by Owner for the Work bid upon herein, the Bidder's contract (including all of the Bidder's rights against, and duties and obligations to the Owner thereunder) will be assigned to the Contract Division 01 - General Work Contractor who thereupon shall succeed to all the rights and obligations of the Owner under such assigned contract and who shall be obligated to the Owner for the performance of such assigned contract in accordance with its terms and conditions and shall acquire all rights under the contract against the Owner.

8.2 The Bidder for the Contract Division 01 hereby agrees that, if awarded the contract for the General Work Work by the Owner, it will accept the assignment of Contract Division(s) 02 - Plumbing Work, 03 - Heating Work, 04 - Ventilation Work, 05 - Electrical Work contract(s). The Bidder further agrees that the full amount of compensation for this acceptance is included in the base bid.

9.0 CONTRACTOR'S FEES FOR CHANGES IN THE WORK

9.1 Lump Sum or Time and Materials Changes. The Bidder agrees that the following percentages for overhead and profit shall be added to, or as applicable, deleted from, job costs for the net amount of work added to or deleted from the contract by written lump sum or time and material change orders approved by the Owner in accordance with Article 13 of the General Conditions. Insurance, bond, and taxes are considered as job cost items and are not included in the percentages listed below. In any one quotation for added work involving a series of Subcontractors, the cumulative percentages for the Contractor's and Subcontractor's overhead and profit shall not exceed twenty-five percent (25%). All costs shall be net costs including discounts realized by the Contractor.

9.1.A Add to net extra job costs for added work to be performed by:
1) Contractor's own forces 15 %
2) Subcontractors 5%
(including Assigned Subcontractors)

9.1.B Add to net credit for job costs for deleted work originally to have been performed by:
1) Contractor's own forces 5%
2) Subcontractors 0%
(including Assigned Subcontractors)

9.2 Unit Price Changes. The Bidder agrees that all unit price change orders will be based on the unit prices proposed herein as accepted by the Owner in the contract, that the unit prices include the Bidder's overhead and profit for all work to be performed on the unit price basis, and that the above-listed percentages will not be applied to unit price changes.

10.0 BID DEPOSIT

10.1 A bid deposit is enclosed herewith in the form of a certified check, cashier's check, or bank draft in current U.S. funds made payable to the Board of Trustees of the University of Illinois, or a bid bond (on the form attached hereto). The enclosed bid deposit is in the amount indicated on the following schedule, and a separate deposit is included for each Contract Division bid upon herein:

<table>
<thead>
<tr>
<th>Contract Division</th>
<th>Bid Deposit</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 - General Work</td>
<td>5% of base bid</td>
</tr>
<tr>
<td>02 - Plumbing Work</td>
<td>5% of base bid</td>
</tr>
<tr>
<td>03 - Heating Work</td>
<td>5% of base bid</td>
</tr>
<tr>
<td>04 - Ventilation Work</td>
<td>5% of base bid</td>
</tr>
<tr>
<td>05 - Electrical Work</td>
<td>5% of base bid</td>
</tr>
</tbody>
</table>
10.2 The Bidder further agrees that the enclosed bid deposit is the measure of liquidated damages which the Owner will sustain and that the proceeds thereof shall become the property of Owner if for any reason the Bidder:

10.2.A Withdraws its bid after the opening of the bids and prior to the time a formal written agreement evidencing the contract has been signed and delivered to Owner and a satisfactory performance bond and payment bond has been furnished to Owner whether or not the Bidder at the time of such withdrawal has been designated as the successful bidder; or

10.2.B Fails to properly execute, furnish, and deliver to the Owner both (1) the written agreement formally evidencing the contract and (2) the performance bond and payment bond required by the Contract Documents within fifteen (15) days after receiving the written Notice of Award and the above-mentioned documents from the Owner.

10.3 The Bidder agrees that withdrawal of this bid, or failure, upon receipt of a written Notice of Award, to sign the agreement or furnish a satisfactory performance bond and payment bond within fifteen (15) days from written Notice of Award shall automatically bar the Bidder from any further consideration and terminate any and all rights the Bidder may have acquired in, by, or through this bid.

10.4 The Bidder agrees that if the Bidder is one of the two lowest bidders in its contract division, its bid shall remain valid and open for acceptance by the Owner, and the Owner shall have the right to retain the bid deposit, for a period of ninety (90) days from the bid opening date. The Bidder further guarantees the prices bid herein to be firm for the same ninety (90) days. At the expiration of this period (or earlier at the Owner's option), the Bidder understands that said bid deposit shall be returned, unless it has become the property of the Owner as liquidated damages. If the Bidder is not one of the two lowest bidders in its contract division, the Bidder understands that the bid deposit will be returned within ten (10) days from the bid opening date.

11.0 STATE CONTRACT CERTIFICATION

11.1 Bidder certifies that the Certifications and Statutory Requirements form and the Financial Disclosures and Conflicts of Interest form have been fully and properly completed and signed and have been submitted along with the Bid. Copies of these forms can be found at:

http://www.uocpres.uillinois.edu/contractors/contracts

If granted a Contract, Bidder shall provide all required forms completed by subcontractor(s) as required in 00 50 00 – Standard Contract Execution Forms, Article 8 Constitutional and Statutory Provisions.
<table>
<thead>
<tr>
<th>Type of Business Organization</th>
<th>Bidder's Signatures*</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Sole Proprietorship</td>
<td>Firm Name ________________</td>
</tr>
<tr>
<td>☐ Partnership</td>
<td>Address ________________</td>
</tr>
<tr>
<td>☐ Corporation</td>
<td>By ____________________</td>
</tr>
<tr>
<td></td>
<td>Title __________________</td>
</tr>
<tr>
<td></td>
<td>By ____________________</td>
</tr>
<tr>
<td></td>
<td>Title __________________</td>
</tr>
</tbody>
</table>

*Bidder's agents shall attach evidence of their authority to sign.*
<table>
<thead>
<tr>
<th>BID BOND</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROJECT: CERL Main Building Addition</td>
</tr>
<tr>
<td>Rebid</td>
</tr>
<tr>
<td>CONTRACT DIVISION: ________________</td>
</tr>
<tr>
<td>CAMPUS: Urbana-Champaign</td>
</tr>
<tr>
<td>BOND AMOUNT: ________________</td>
</tr>
</tbody>
</table>

KNOW ALL MEN BY THESE PRESENTS: That we ____________________________ (Name and Address of Bidder), a ______________________________________ (Form of Business), as Bidder and Principal, and ____________________________ (Surety), a corporation organized and existing under and by virtue of the laws of the State of ____________, and authorized to do business in the State of Illinois, as Surety, are held and firmly bound unto THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS, hereinafter called the Owner, in the penal sum of ________________ (Total amount in words) Dollars ($__________) lawful money of the United States, well and truly to be paid and for the payment of which we bind ourselves, our successors and assigns, jointly, severally, and firmly by these presents.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH, that whereas the said Principal has submitted a written bid dated ______________ (Date) to the Owner for the construction of the work designated as _____________________________________ (Contract Division), shown on the drawings and described in the specifications entitled, CERL Main Building Addition Rebid, dated 12/14/15, prepared by Design Organization, Inc., 440 N Wells Street, Suite 320, Chicago IL 60654.

NOW, THEREFORE, the Principal and Surety on this bond agree that:

If the Principal shall, upon acceptance by the Owner of its bid within the period of time specified for acceptance, execute a written Agreement with the Owner and give such bonds and other items as are required by the terms of the bid within the time specified, or in the event of the failure to comply with the terms of the bid, if the Principal or Surety shall pay Owner the penal sum of this Bid Bond, then this obligation shall be null and void; otherwise to remain in full force and effect; provided however, that in the event of (a) said failure, and (b) the failure of the Principal or Surety to promptly pay Owner as herein provided, the Principal and the Surety shall be liable to Owner for the full penal sum of this Bid Bond, not as a penalty but as liquidated damages for said failures the actual amount of such damages being difficult, if not impossible, to accurately ascertain.

IN WITNESS WHEREOF, the aforesaid Principal and Surety have executed this instrument hereto this _______ day of ____________________________ .

Principal  
By:  
Title:  
(If a Corporation, President or Vice President should sign. If some other officer signs, evidence of authority must be submitted.)

Corporate Surety  
By:  
Title:  
(Power of Attorney of person signing for Surety must be attached.)
### Attachment A: Contractor’s Workforce (includes Direct Subcontractors)

**TABLE 1**

<table>
<thead>
<tr>
<th>Trade Codes</th>
<th>Job Titles</th>
<th>Total Employee</th>
<th>Black/ African American</th>
<th>Hispanic American</th>
<th>Asian American</th>
<th>Native American/ Alaskan Native</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>F</td>
<td>M</td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td>G1</td>
<td>Laborers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G1</td>
<td>Project Superintendent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2</td>
<td>Equip Operators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2</td>
<td>Truck Drivers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G3</td>
<td>Cement Finishers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4</td>
<td>Brick Masons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G5</td>
<td>Ironworkers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G6</td>
<td>Carpenters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G7</td>
<td>Roofers/Metal Roofers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G8</td>
<td>Glaziers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G9</td>
<td>Ceramic Tile Setters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G9</td>
<td>Painters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G9</td>
<td>Plasterers/Drywallers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G14</td>
<td>Elevator Mechanics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P15</td>
<td>Plumbers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/H15</td>
<td>Insulators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H15</td>
<td>Pipefitters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H15</td>
<td>Refrig Mechanics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H15</td>
<td>Temperature Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V15</td>
<td>Air Test &amp; Balancing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V15</td>
<td>Sheet Metal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP15</td>
<td>Sprinkler Fitters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E16</td>
<td>Electricians</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E16</td>
<td>Telecom Installers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(M = Male, F = Female)

**TABLE 2**

<table>
<thead>
<tr>
<th>Current Employees to be Assigned to Contract</th>
<th>Total</th>
<th>Minority</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>F</td>
</tr>
</tbody>
</table>

**TABLE 3: BREAKDOWN OF APPRENTICES, OJT’S & NEW HIRES**

<table>
<thead>
<tr>
<th>OJT’s &amp; Apprentices</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>New Hires</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Attachment B – Minority/Female Business Enterprise Program Requirements

Project: CERL Main Building Addition Rebid - U13024-R

Bidder Name: ____________________________ Division of Work: ____________________________

Contract Requirements for Minority/Female Business Participation

**MBE/FBE Goals:** This project has goals for participation by minority and female owned businesses as bidders, subcontractors or suppliers in accordance with the Business Enterprise for Minorities, Females, and Persons with Disabilities Act. Only MBE/FBE firms certified with the Illinois Department of Central Management Services (CMS) are acceptable. NOTES: (1) MBE/FBE goals are separate and distinct from workforce projections (Attachment A of Document 00 40 00). (2) N/A in Combined Goal(s) means Split Goals are in effect, and N/A in Split Goals means Combined Goal(s) is in effect for each specified Division of Work.

<table>
<thead>
<tr>
<th>Division of Work</th>
<th>Combined Goal(s)</th>
<th>Split Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MBE/FBE</td>
<td>MBE</td>
</tr>
<tr>
<td>01 - General Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>02 - Plumbing Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>03 - Heating Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>04 - Ventilation Work</td>
<td>15</td>
<td>N/A</td>
</tr>
<tr>
<td>05 - Electrical Work</td>
<td>15</td>
<td>N/A</td>
</tr>
</tbody>
</table>

If the MBE/FBE goals are not met, the Bidder shall submit within ten (10) calendar days after the bid opening documentation of its good faith efforts to achieve the MBE/FBE goals (See General Instructions to Bidders, Document 00 20 00). Failure to submit such documentation, or to use good faith efforts, shall result in rejection of the bid.

**Instructions:** The Bidder shall include below the names of ONLY IL CMS certified minority/female owned business enterprises. These firms will perform at least the percentage of the work specified in the goals listed above and the proposed dollar value of subcontract (**percentage values are not acceptable**). If Bidder is MBE/FBE, include Bidder’s information (total proposed bid value) as well as any additional MBE/FBE subcontractor information in table below. If the Bidder needs assistance in identifying subcontractors or suppliers, contact Owner’s Director of Diversity for University Office of Capital Programs and Real Estate Services prior to submitting the bid and assistance will be provided in accordance with the MBE/FBE requirements in the Contract Documents. Efforts to comply with these requirements will be considered in evaluating whether the bid is responsive. If the percentage of the work is less than the specified goals, Bidder is required to submit within ten (10) calendar days after the bid opening written evidence of its good faith efforts to achieve the goals.

**List the bidder’s MBE/FBE subcontractor/supplier firms which are to be utilized in regard to this contract below.** A current and valid print version of the vendor’s CMS Business Enterprise Program (BEP) Vendor Directory results is printed proof of the CMS MBE/FBE/FMB certification. This document includes the vendor name, address, ethnicity, county, contact information, and certification renewal date and expiration date.

The IL CMS BEP Vendor Directory can be found at

https://www.illinois.gov/cms/business/sell2/Pages/VendorSearch.aspx

and a tutorial for using the directory is available at

https://www.uocpres.uiillinois.edu/UserFiles/Servers/Server_7758/file/training/wbt/WBTMAFBESearch.swf

**All MBE/FBE firms must be certified with Illinois Department of Central Management Services. Only those vendors who are certified by the Illinois Department of Central Management Services as of the date of the bid opening will be considered in determining whether the vendor meets the participation goal.**
(Include base bid below and each alternate on next page(s)): (Attach additional sheet if necessary)
UI Project No: U13024-R

Bidder Name: ___________________________ Division of Work: ___________________________

**BASE BID**

<table>
<thead>
<tr>
<th>MBE/FBE/FMB Firm Name (ONLY include current and valid IL CMS Certified MBE/FBE/FMB firms)</th>
<th>Proposed Dollar Value of Contract/Subcontract</th>
<th>MBE/FBE/FMB Denotation (Must be certified with CMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
</tbody>
</table>

**ALTERNATE BID No.**

<table>
<thead>
<tr>
<th>MBE/FBE/FMB Firm Name (ONLY include current and valid IL CMS Certified MBE/FBE/FMB firms)</th>
<th>Proposed Dollar Value of Subcontract</th>
<th>MBE/FBE/FMB Denotation (Must be certified with CMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
</tbody>
</table>

**ALTERNATE BID No.**

<table>
<thead>
<tr>
<th>MBE/FBE/FMB Firm Name (ONLY include current and valid IL CMS Certified MBE/FBE/FMB firms)</th>
<th>Proposed Dollar Value of Subcontract</th>
<th>MBE/FBE/FMB Denotation (Must be certified with CMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td>MBE FBE FMB</td>
</tr>
</tbody>
</table>
Check the box if the specified MBE/FBE goal has not been met and Bidder is requesting a change from the specified goals or requesting a waiver of the specified goals.

When the MBE/FBE goal is not met, good faith effort documentation (if required per Document 00 40 00 Bid - Section 1.5.I) must be submitted within ten (10) calendar days after the bid opening.

The Bidder represents to Owner that, to the best of its knowledge and belief:

1. Each of the subcontractors and suppliers listed qualifies under the provisions and definitions of the Minority/Female Business Enterprise Program Act as either a minority/female owned business.

2. The subcontract(s) which will be executed by the Bidder for the first level subcontractors and suppliers if the Bidder is awarded this contract by Owner will meet or exceed the proposed dollar value indicated above and will comply with all provisions of the Minority/Female Business Enterprise Program Act.

3. Failure to submit a completed Owner bid form 00 40 00, including Attachment B – Minority/Female Business Enterprise Program Requirements will be considered a Material Deficiency and will result in rejection of bid.

4. Failure to use good faith efforts to achieve minority/female business enterprise participation goals when required in Document 00 40 00 Bid-Section 1.5.I and to provide documentation of good faith efforts within ten (10) calendar days after bid opening shall be considered a Material Deficiency and will result in bid rejection.

Bidder agrees to the contractual requirements specified in Owner's Contract Documents in regard to the Minority/Female Business Enterprise Program Act.

Bidder's Firm Name:_______________________________________________________
Division of Work:__________________________________________________________
__________________________________________________________
Signature, Title Date

SIGNATURE IS REQUIRED
THE BIDDING AND CONTRACT PROVISIONS

DOCUMENT 00 50 00 - STANDARD CONTRACT EXECUTION FORMS

(Standard Multiple Contract Set)

Note: The forms in this document section are included for reference only. Originals will be prepared for execution by the Owner and mailed to the contractor(s) with the Notice of Award.

1.0 EXECUTION OF THE AGREEMENT

1.1 Extraneous Markings. The Agreement shall be kept free from extraneous markings. If the Contractor desires to record the time/date for the receipt of the Agreement, the time/date stamp shall be affixed on a separate piece of paper clipped to the copy of the Agreement.

1.2 Contractor's Signatures. The Agreement shall be signed by the Owner and Contractor. The full name and business address of the Contractor shall be inserted and the Agreement shall be signed with authorized signature(s) described below. The name of the signing party or parties shall be typewritten or printed under all signatures to the Agreement.

1.3 Sole Proprietorships. If the Contractor is an individual, the trade name (if the Contractor is operating under a trade name) shall be indicated in the Agreement and the Agreement shall be signed by such individual. If signed by someone other than the individual, there shall be attached to the Agreement a duly authenticated power-of-attorney evidencing the signer's authority to execute such Agreement for and in behalf of the individual proprietor.

1.4 Partnerships. If the Contractor is operating as a partnership, each partner shall sign the Agreement. If the Agreement is not signed by each partner, there shall be attached to the Agreement a duly authorized power-of-attorney evidencing the signer's (signers') authority to sign such Agreement for and on behalf of the partnership.

1.5 Corporation. If the Contractor is a corporation, the following certification shall be executed and submitted on corporate letterhead:

"I, ____________________________, certify that I am the ____________________________ (officer) of the corporation named as Contractor hereinabove; that ____________________________, who signed the foregoing Agreement on behalf of the Contractor was then ____________________________ (officer) of said Corporation; that said Agreement was duly signed for and in behalf of said Corporation by authority of its governing body, and is within the scope of its corporate powers."

If the Agreement is signed by the secretary of the corporation, the preceding certification shall be executed by some other officer of the corporation. In lieu of the foregoing certification, there may be attached to the Agreement copies of so much of the records of the corporation as will show the official character and authority of the officers signing, duly certified by the secretary or assistant secretary to be true copies.

If the Agreement is signed by someone other than one of the above-mentioned officers of the corporation, there shall be attached to the Agreement a duly authenticated power-of-attorney evidencing the signer's authority to sign the Agreement for and on behalf of the corporation.

2.0 EXECUTION OF THE PERFORMANCE BOND AND PAYMENT BOND

2.1 Execution by the Contractor. The Contractor, as principal, shall be named and shall execute the performance bond and payment bond in the same manner as required for the Agreement.

2.2 Execution by the Surety. The performance bond and payment bond shall be signed and sealed by an authorized representative of the surety, acting on behalf and in the name of such surety, with a duly authenticated power-of-attorney evidencing the signer's authority.
to sign such bond for and on behalf of such surety attached thereto. Attorneys-in-fact who sign the performance bond and payment bonds must file with each bond certified copies of their powers-of-attorney. The power-of-attorney must be dated either before or on the same date as the date of the bond, and the certificate that the power is in force and effect must be dated the same as the date of the bond and be submitted on a full size sheet of paper (8.5” x 11”). The seal must be legible upon conversion to electronic format.

3.0 EXECUTION OF THE CERTIFICATE OF INSURANCE

3.1 Forms and Copies. The certificate of insurance, including builder’s risk insurance, (applicable only to Designated Contractor) shall be furnished in accordance with Articles 18 and 19 of the General Conditions on the ACORD form.

3.2 Required Statements. The certificate of insurance shall contain the following statements:

3.2.A Cancellation. The undersigned agent certifies that none of these policies will be cancelled or changed so as to affect this certificate until thirty (30) days after written notice of such cancellation or change has been delivered to the Owner by certified or registered mail. The undersigned agent agrees to deliver copies of the policies listed in this certificate to the Owner within ten (10) days following the Owner’s request for such copies.

3.2.B Contract Requirements. The undersigned agent certifies that the insurance coverages listed in this certificate include contractual coverages for the indemnity Agreement, Contractor’s liability, and builder’s risk (applicable only to Designated Contractor) to the minimum limits required by the Contract Documents for this project (reference Articles 18 and 19 of the General Conditions). The undersigned agent further certifies that the Owner and its assignees, if any, and additional parties as designated by the Owner, if any, is named as an additional insured on the general liability and builder’s risk (applicable only to Designated Contractor) policies.

END OF INSTRUCTIONS
AGREEMENT

PROJECT: TITLE DIVISION: NUMBER-WORK
PROJECT No: (Contractor) (With Assigned Subcontractors)
PROFESSIONAL SERVICES CONSULTANT: CONTRACT SUM: $ AMOUNT

CAMPUS:

THIS AGREEMENT, made and entered into in the City of CITY, State of Illinois, as of the date of the last signature of the parties hereto, by and between NAME OF CONTRACTOR, ADDRESS OF CONTRACTOR, a (n) INDIVIDUAL, SOLE PROPRIETOR, CORPORATION, OR PARTNERSHIP, existing under the laws of the State of ________________, hereinafter and in the Contract Documents referred to as the "Contractor" whose registered agent in Illinois is NAME OF AGENT, ADDRESS OF AGENT, and THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS, a body corporate and politic of the State of Illinois, with its principal office in Urbana, Illinois, hereinafter and in the Contract Documents referred to as the "Owner",

WITNESSETH: That, for the consideration hereinafter stated, the Contractor and the Owner agree as follows:

1.0 THE CONTRACT WORK

The Contractor shall furnish all of the labor, materials, fixtures, furnishings, equipment, transportation, construction, plant, and facilities required for and shall perform all Work on the Project and shall furnish and do everything required by the Contract Documents.

2.0 THE CONTRACT TIME

2.1 Starting Date. The Contractor shall commence the Work on the date specified in a written Notice to Proceed from the Owner.

2.2 Completion Date. Time is of the essence in this contract. The Contractor shall achieve Substantial Completion of the Work as expeditiously as the Work will permit, in such a manner as to cause no delay to any of the other contractors employed on the Project or to the completion of the Project as a whole and, subject to adjustments as provided by the Contract Documents, no later than ___________ calendar days from the date specified in the Notice to Proceed (the "Substantial Completion Date").

The Contractor shall achieve Final Completion of the Project within thirty (30) days after Substantial Completion. Neither the Substantial Completion Date nor the time for Final Completion shall be changed except by Change Order issued in accordance with the terms of this contract.

2.3 Remedies. In the event Contractor fails to perform under this Agreement, including but not limited to failure to achieve Substantial Completion or Final Completion, or both, in the time and manner provided, Owner shall be afforded the right to pursue any and all remedies available at law and equity.

OR IF LIQUIDATED DAMAGES ALTERNATE IS ACCEPTED:

2.3 Liquidated Damages for Delay. If Contractor fails to achieve Substantial Completion or Final Completion, or both, as required by this contract, Contractor shall be liable to Owner for liquidated damages for unexcused delay as provided below:

A. For Delay in Substantial Completion. Contractor shall pay Owner the sum
of $___________ per day for every calendar day of unexcused delay in achieving Substantial Completion beyond the Substantial Completion Date. Any sums due and payable hereunder by Contractor shall be payable, not as a penalty, but as liquidated damages representing an estimate of delay damages likely to be sustained by Owner, estimated at the time of executing this contract. When Owner reasonably believes that Substantial Completion will be inexcusably delayed, Owner shall be entitled, but not required, to withhold from any amounts otherwise due Contractor an amount then believed by Owner to be adequate to recover liquidated damages applicable to such delays. If and when Contractor overcomes the delay in achieving Substantial Completion, or any part thereof, for which Owner has withheld payment, Owner shall promptly release to Contractor those funds withheld, but no longer applicable, as liquidated damages.

B. For Delay in Final Completion. If Contractor fails to achieve Final Completion within thirty (30) days after Substantial Completion, Contractor shall pay Owner the sum of $___________ per day for each and every calendar day of unexcused delay in achieving Final Completion. Any sums due and payable hereunder by Contractor shall be payable, not as a penalty, but as liquidated damages representing an estimate of delay damages likely to be sustained by Owner, estimated at the time of executing this contract. When Owner reasonably believes that Final Completion will be inexcusably delayed, Owner shall be entitled, but not required, to withhold from any amounts otherwise due Contractor an amount then believed by Owner to be adequate to recover liquidated damages applicable to such delays. If and when Contractor overcomes the delay in achieving Final Completion for which Owner has withheld payment, Owner shall promptly release to Contractor those funds withheld, but no longer applicable, as liquidated damages.

3.0 THE CONTRACT SUM AND TERMS OF PAYMENT

3.1 The Contract Sum. The Owner shall pay to the Contractor or to Assigned Subcontractors on behalf of the Contractor, as applicable, subject to additions to and deductions from the Contract Sum, the total sum of AMOUNT IN WORDS 00/100 Dollars ($) which shall constitute the Contract Sum. The Contract Sum is based upon the following base bid and accepted alternate(s), if any, of Contractor and the Subcontract Sums of all Assigned Subcontractors which are described in Section 5.1 of this Agreement and are hereby accepted by the Owner:

(List Contractor Base Bid and Accepted Alternate(s) Here)

3.2 Payments. The Owner shall make payments for Work under the contract as provided in Articles 6 and 12 of the General Conditions.

3.3 Change Order Markups.

3.3.A Lump Sum and Time and Materials Changes. The following percentages for overhead and profit shall be added to, or, as applicable, deleted from, job costs for the net amount of Work added to or deleted from the contract by written lump sum or time and material Change Orders approved by the Owner in accordance with the General Conditions. Insurance, bond, and taxes are considered as job cost items and are not included in the percentages listed below. In any one quotation for added work involving a series of Subcontractors, including assigned subcontractors, the cumulative percentages for the Contractor’s and Subcontractor’s, including assigned subcontractors, overhead and profit shall not exceed twenty-five percent (25%). All costs shall be net costs including discounts realized by the contractor.
Add to the net extra job costs for added Work to be performed by:

1) Contractor's own forces 15%
2) Subcontractors 5% (including Assigned Subcontractors).

Add to the net credit for job costs deleted for Work originally to have been performed by:

1) Contractor's own forces 5%
2) Subcontractors 0% (including Assigned Subcontractors).

3.3.B Unit Price Changes. Unit price Change Orders shall be based on the unit prices identified in the Contractor's bid, which include the Contractor's overhead and profit for the Work performed on the unit price basis. The above-mentioned percentages shall not be applied to unit price changes.

4.0 THE CONTRACT DOCUMENTS

4.1 The contract between the parties consists of the “Contract Documents”. The Contract Documents include this Agreement, the General Conditions, the Construction Documents, any supplemental conditions, any special conditions, any subsequent Change Orders, field directives, and other written amendments to this Agreement, and all documents expressly annexed as part of this Agreement. Documents not described above are not Contract Documents and do not constitute part of the contract between the parties.

4.2 Addenda. The following addenda were issued prior to bid opening date and are hereby incorporated into this contract: ADDENDA NUMBER, dated DATE.

4.3 Order of Precedence. The order of precedence of the Contract Documents in the event of conflict shall be as defined in the General Conditions.

5.0 ASSIGNMENTS

5.1 Assignment of Contracts. The Owner hereby assigns, transfers, and sets over unto the Contractor, all of the Owner's rights, title, and interest in and to the following described contracts, to wit:

5.1.A KIND OF Contract: A contract entitled "Agreement" for construction of Division NUMBER - KIND OF Work for the NAME OF PROJECT in the total amount of AMOUNT IN WORDS 00/100 Dollars ($), made and entered into as of DATE, by and between the Owner and NAME OF SUBCONTRACTOR, whose address is ADDRESS OF SUBCONTRACTOR, hereinafter referred to as an "Assigned Subcontractor."

5.1.B KIND OF Contract: A contract entitled "Agreement" for construction of Division NUMBER - KIND OF Work for the NAME OF PROJECT in the total amount of AMOUNT IN WORDS 00/100 Dollars ($), made and entered into as of DATE, by and between the Owner and NAME OF SUBCONTRACTOR, whose address is ADDRESS OF SUBCONTRACTOR, hereinafter referred to as an "Assigned Subcontractor."

5.1.C KIND OF Contract: A contract entitled "Agreement" for construction of Division NUMBER - KIND OF Work for the NAME OF PROJECT in the total amount of AMOUNT IN WORDS 00/100 Dollars ($), made and entered into as of DATE, by and between the Owner and NAME OF SUBCONTRACTOR, whose address is ADDRESS OF SUBCONTRACTOR, hereinafter referred to as an "Assigned Subcontractor."

5.1.D KIND OF Contract: A contract entitled "Agreement" for construction of Division NUMBER - KIND OF Work for the NAME OF PROJECT in the total amount of
The Owner further delegates to the Contractor all of the obligations and duties of the Owner to said Assigned Subcontractors subject to all the terms and conditions contained in the assigned contracts.

It is the intention of the parties that the foregoing assignment and delegation shall constitute a novation of the assigned contracts whereby the Contractor is substituted for the Owner as a party thereto.

5.2 Acceptance of Assigned Contracts. The Contractor hereby accepts the assignment and delegation of the hereinabove mentioned contracts, and each of them, upon the terms and conditions thereof and agrees that said Assigned Subcontractors, and each of them, shall be considered as and are the Contractor's Subcontractors to the same extent, for all purposes, and with the same legal effect as if the Contractor had originally bid for the Work under said assigned contracts and, upon the acceptance of such bid by the Owner and the execution of a contract between the Contractor and the Owner for the performance of all of said Work, the Contractor had entered directly into Subcontracts with the Assigned Subcontractors for the performance by them of the portions of the Work covered by their respective contracts with the Owner. The Contractor hereby irrevocably authorizes direct payment to be made by the Owner to each Assigned Subcontractor for the performance of the latter's Work under subcontract in accordance with the contract between the Contractor and the Owner for such Work. The Contractor and its surety shall be as fully responsible to the Owner for acts and omissions of the Assigned Subcontractors as they are for the acts and omissions of other Subcontractors and other persons directly employed by Contractor.

5.3 Consideration for Assigned Contracts. The Contractor has included an assignment fee in the Base Bid and agrees that this amount is adequate to compensate it for the assignment to it of the hereinabove mentioned contracts, its acceptance thereof, and the duties imposed upon it thereby.

5.4 Other Assignments. Except as provided above, this contract shall not be assigned to another contractor. Neither party to the contract shall assign the contract or sublet it as a whole without the written consent of the other. Any purported assignment without such written consent shall constitute a material breach hereof.

6.0 PERFORMANCE BOND AND PAYMENT BOND

The Contractor shall furnish the Owner a performance bond and a payment bond each in the penal sum of AMOUNT IN WORDS 00/100 Dollars ($) as required by and in accordance with the terms of the General Conditions. Each bond shall name Owner as Obligee.

7.0 STATUTORY CERTIFICATIONS

In accordance with applicable laws and subject to applicable penalties for false or misleading statements, the following certifications are made in connection with this Contract:

7.1 The Contractor certifies that _______________is its Federal Taxpayer Identification Number and that it is doing business as a _________________.

7.2 The Contractor certifies that it has complied with the Substance Abuse Prevention on Public Works Projects Act (820 ILCS 265) including the requirement to file with Owner a written program that meets or exceeds the requirements of the Act. Submit a written program to the Owner only if the program has been revised since submitted with the annual prequalification. The requirements of this certification and disclosure are a material part of this Contract and the Contractor shall require this certification provision to be included in all Subcontracts.

Form approved by Legal Counsel - UOCP&RES 11/15
8.0 CONSTITUTIONAL AND STATUTORY PROVISIONS

8.1 If this contract is funded from State of Illinois appropriated funds, the Contractor understands and agrees that this contract is subject to termination and cancellation without any penalty in any fiscal year in which the Illinois General Assembly fails to make an appropriation for payments under the terms of this contract. In the event of termination and cancellation for lack of appropriation, the Contractor shall be paid for services performed under this contract up to the effective date of the termination and cancellation.

8.2 Prevailing Wage.

Pursuant to the Prevailing Wage Act, Contractor shall pay a wage of no less than the general prevailing hourly rate as paid for work of a similar character in the locality in which the work is performed, to all laborers, workers and mechanics, pursuant to definitions, guidelines and procedures set forth in 820 ILCS 130/0.01 et seq. If the Illinois Department of Labor revises the prevailing rate of hourly wages to be paid by the Owner, the revised rate shall apply to this contract. The prevailing rate of hourly wages is revised by the Illinois Department of Labor and is available on the Illinois Department of Labor’s official website.

The Contractor shall submit monthly to Owner a certified copy of the records required under section 130/5(a)(1) of the Act. The certified payroll shall include records of all laborers, mechanics, and other workers employed by the Contractor, including assigned subcontractors, for services performed. The records shall include each worker’s name, address, telephone number when available, social security number, classification or classifications, hourly wages paid in each pay period, number of hours worked each day, and the starting and ending times of each work day. The certified payroll shall be accompanied by a statement signed by the Contractor and statements signed by each subcontractor where appropriate which aver that: (1) such records are true and accurate, (2) the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required under the Act; and (3) the Contractor acknowledges that filing a certified payroll that he or she knows to be false is a Class B misdemeanor.

8.3 The documents and information for the contractors and subcontractors listed in Table 1 and as described below must be provided by the Owner to the Chief Procurement Officer for Higher Education.

Table 1: Contracts and Level Descriptions

<table>
<thead>
<tr>
<th>Contract Type</th>
<th>Level</th>
<th>Contract</th>
<th>Dollar amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor without Assigned</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
<tr>
<td>Contractor with Assigned</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
<tr>
<td>Assigned Subcontractor</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
<tr>
<td>Subcontractor</td>
<td>2</td>
<td>With Level 1</td>
<td>&gt; $50,000</td>
</tr>
<tr>
<td>Subcontractors’ Subcontractor*</td>
<td>3 and below</td>
<td>With Level 2 and below</td>
<td>&gt; $50,000</td>
</tr>
</tbody>
</table>

* For any subcontractor beyond level 3 with a contract value of > $50,000 shall also be included.

**Level 1 Contractor**

The Certifications and Statutory Requirements form and the Financial Disclosures and Conflicts of Interest form submitted by the Level 1 Contractor with the bid documents are hereby made a part of this Contract.

It is the responsibility of the Level 1 Contractor to provide the following with respect to each Level subcontractor* which exceeds $50,000. The forms shall be completed and signed by each Level subcontractor*.
The documents submitted to the Owner shall be in electronic pdf format and follow the Owner’s file naming convention. The forms and file naming convention can be found at: http://www.uocpres.uillinois.edu/contractors/contracts. These documents shall be provided to the Owner within 15 calendar days after the execution of the Contract or after execution of the subcontract, whichever is later.

The Level 1 Contractor must provide the above information for any Level 2 subcontractors added or changed which results in a contract value exceeding $50K during the term of the contract.

Any subcontracts entered into prior to receiving a fully executed copy of the Contract are done at the Contractor and subcontractors own risk.

9.0 NOTICES

All notices shall be given by hand delivery to the Owner’s Representative, the Professional Services Consultant or the Contractor’s Project Manager, as applicable, or by delivery confirmation, to the following addressees:

To Owner:

******************************************************************************

Attention: ____________________________

To Professional Service Consultant:

******************************************************************************

Attention: ____________________________

To Contractor:

******************************************************************************

Attention: ____________________________

All notices shall be effective upon receipt.

10.0 OWNER’S RIGHT TO MAKE GOOD CONTRACTOR’S DEFICIENCIES

If the Contractor should neglect to prosecute the Work or any part thereof diligently and properly or fail to properly perform any provision required by the Contract Documents, the Owner, after three days’ written notice to the Contractor, may, without prejudice to any other remedy it may have, make good such deficiencies and may, by Change Order, deduct the cost thereof from any payment then or thereafter due the Contractor, provided, however, that the Professional Services Consultant shall approve both such action and the amount charged to the Contractor.

11.0 OWNER’S WEB-BASED PROJECT MANAGEMENT SYSTEM (“PRZM”)

Contractor shall use the Owner’s web-based project management system (“PRZM”) to access and exchange project information with team members throughout the Project’s life. This includes providing electronic copies of subcontractor agreements and signed Certifications and Statutory Requirements form and the Financial Disclosures and Conflicts of Interest form for each subcontractor; processing payment applications, schedules, change requests/clarifications; and
other services as identified in this Agreement. Training on this system will be supplied by the Owner and is required to be taken by Contractor and Assigned Subcontractor representative.

12.0 COUNTERPARTS/FACSIMILE SIGNATURES
This Agreement may be signed in counterparts. Facsimile signatures constitute original signatures for all purposes.
IN WITNESS WHEREOF, the parties hereto have executed this Agreement as and of the day and year first hereinabove set forth.

CONTRACTOR:

NAME OF CONTRACTOR

By:_________________________________________ DATE

_________________________________________
PRINT NAME

Title:________________________________________

OWNER:

THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS

By:_________________________________________ DATE

Walter K. Knorr, Comptroller DATE
(For Reference Only)

AGREEMENT

PROJECT: TITLE DIVISION: NUMBER-WORK
(Assigned Subcontractor)

PROJECT No:

PROFESSIONAL SERVICES CONSULTANT

SUBCONTRACT SUM: $ AMOUNT

CAMPUS:

THIS AGREEMENT, made and entered into in the City of CITY, State of Illinois, as of the date of the last signature of the parties hereto, by and between NAME OF SUBCONTRACTOR, ADDRESS OF SUBCONTRACTOR, a (n) INDIVIDUAL, SOLE PROPRIETOR, CORPORATION, OR PARTNERSHIP, existing under the laws of the State of_________________________, hereinafter and in the Contract Documents referred to as the "Assigned Subcontractor" or "Subcontractor" whose registered agent in Illinois is NAME OF AGENT, ADDRESS OF AGENT and THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS, a body corporate and politic of the State of Illinois, with its principal office in Urbana, Illinois, hereinafter and in the Contract Documents referred to as the "Owner",

WITNESSETH: That, for the consideration hereinafter stated, the Contractor and the Owner agree as follows:

1. THE SUBCONTRACT WORK

   The Subcontractor shall furnish all of the labor, materials, fixtures, furnishings, equipment, transportation, construction, plant, and facilities required for and shall perform all Contract Division NUMBER - KIND OF Work on the Project and shall furnish and do everything required by this Agreement and the other Contract Documents listed in paragraph 4 hereof.

2. THE SUBCONTRACT TIME

   2.1 Starting Date. The Subcontractor shall commence its Work under the contract on the date specified in a written Notice to Proceed.

   2.2 Completion Date. Time is of the essence in this contract. The Subcontractor shall achieve Substantial Completion of the Work as expeditiously as the Work will permit, in such a manner as to cause no delay to any of the other contractors employed on the Project or to the completion of the Project as a whole and, subject to adjustments as provided by the Contract Documents, no later than _________calendar days from the date specified in the Notice to Proceed (the "Substantial Completion Date”).

   The Contractor shall achieve Final Completion of the Project within thirty (30) days after Substantial Completion. Neither the Substantial Completion Date nor the time for Final Completion shall be changed except by Change Order issued in accordance with the terms of this contract.

3. THE SUBCONTRACT SUM AND TERMS OF PAYMENT

   3.1 The Subcontract Sum. The Owner shall pay the Subcontractor, subject to additions to and deductions from the Subcontract Sum, the sum of AMOUNT IN WORDS 00/100 Dollars which shall constitute the Subcontract Sum. The
Subcontract Sum is based upon the following base bid and accepted alternate(s), if any, of Subcontractor which are described in the Contract Documents and are hereby accepted by the Owner:

(List Subcontractor Base Bid and Accepted Alternate(s) Here)

3.2 Payments. The Owner shall make payments for work performed by the Subcontractor under the contract as provided in Articles 6 and 12 of the General Conditions.

3.3 Change Order Markups.

A. Lump Sum and Time and Materials Changes. The following percentages for overhead and profit shall be added to, or, as applicable, deleted from, job costs for the net amount of work added to or deleted from the contract by written lump sum or time and material change orders approved by the Owner in accordance with the General Conditions. Insurance, bond, and taxes are considered as job cost items and are not included in the percentages listed below. In any one quotation for added work involving a series of Subcontractors, including assigned subcontractors, the cumulative percentages for the Contractor’s and Subcontractor’s, including assigned subcontractors, overhead and profit shall not exceed twenty-five percent (25%). All costs shall be net costs including discounts realized by the contractor.

Add to the net extra job costs for added Work to be performed by:

1) Subcontractor’s own forces 15 %
2) Subcontractors 5 %

Add to the net credit for job costs deleted for Work originally to have been performed by:

1) Subcontractor’s own forces 5 %
2) Subcontractors 0 %

B. Unit Price Changes. All unit price Change Orders shall be based on the unit prices identified in the Subcontractor’s bid, which include the Subcontractor’s overhead and profit for the Work performed on the unit price basis. The above-mentioned percentages will not be applied to unit price changes.

4. THE CONTRACT DOCUMENTS

4.1 The contract between the parties consists of the “Contract Documents”. The Contract Documents include this Agreement, the General Conditions, the Construction Documents, any supplemental conditions, any special conditions, any subsequent Change Orders, field directives, and other written amendments to this Agreement, and all documents expressly annexed as part of this Agreement. Documents not described above are not Contract Documents and do not constitute part of the contract between the parties.

4.2 Addenda. The following addenda were issued prior to bid opening date and are hereby incorporated into this contract: ADDENDA NUMBER, dated DATE.
4.3 **Order of Precedence.** The order of precedence of the Contract Documents in the event of conflict shall be as defined in the General Conditions.

5. **ASSIGNMENTS**

5.1 **Assignment of Subcontractor’s Contract.** Upon execution of the Agreement between Owner and Contractor and execution of this Agreement between Owner and Assigned Subcontractor, the Owner has assigned, transferred, and set over all of the Owner’s rights, title, and interest in and to this contract unto **NAME OF CONTRACTOR**, whose address is **ADDRESS OF CONTRACTOR**. The Owner has further delegated to said assignee all of the obligations and duties of the Owner to the Subcontractor under this contract, subject to all of the terms and conditions contained herein. Said assignee has, in the Agreement between Owner and Contractor, accepted said assignment and delegation.

5.2 **Consent to Assignment.** The Subcontractor hereby consents to the above-mentioned assignment and delegation and shall become an Assigned Subcontractor to said assignee and have the status set forth in Subparagraph 6.3.A of the General Conditions. It is the intention of the parties that said assignment and delegation shall constitute a novation of this contract whereby the said assignee is substituted for the Owner as a party hereto.

5.3 **Other Assignments.** No other assignments of this contract shall be made.

6. **PERFORMANCE BOND AND PAYMENT BOND**

The Subcontractor shall provide separate payment and performance bonds on the forms provided by the Owner and issued by a surety, or sureties, acceptable to the Owner. Each of the bonds shall include a penal sum in the amount of **AMOUNT IN WORDS 00/100 Dollars ($)** which amount shall be equal to one hundred percent (100%) of the Subcontract Sum. Subcontractor's surety(ies) shall be deemed to have waived notice of, and to have consented to, changes to the Contract Documents, including changes in: (a) the time for performing the Work and payment of compensation to Subcontractor hereunder and (b) the Work to be performed. The Contract Documents shall be incorporated by reference into each of the bonds. Each bond shall name Owner as Obligee. However, upon assignment of this contract as set forth in Section 5 above, each bond shall be assigned to the assignee Contractor and the name of the assignee Contractor shall be deemed substituted as Obligee in lieu of the Owner on each bond.

7. **STATUTORY CERTIFICATIONS**

In accordance with applicable laws and subject to applicable penalties for false or misleading statements, the following certifications are made in connection with this Contract:

7.1 The Subcontractor certifies that ____________ is its Federal Taxpayer Identification Number and that it is doing business as a ________________.

7.2 The Subcontractor certifies that it has complied with the Substance Abuse Prevention on Public Works Projects Act (820 ILCS 265) including the requirement to file with Owner a written program that meets or exceeds the requirements of the Act. Submit a written program to the Owner only if the program has been revised since submitted with the annual prequalification. The requirements of this certification and disclosure are a material part of this Contract and the Subcontractor shall require this certification provision to be included in all subcontracts.
8. **CONSTITUTIONAL AND STATUTORY PROVISIONS**

8.1 If this contract is funded from State of Illinois appropriated funds, the Subcontractor understands and agrees that this contract is subject to termination and cancellation without any penalty in any fiscal year in which the Illinois General Assembly fails to make an appropriation for payments under the terms of this contract. In the event of termination and cancellation for lack of appropriation, the Subcontractor shall be paid for services performed under this contract up to the effective date of the termination and cancellation.

8.2 **Prevailing Wage.**

Pursuant to the Prevailing Wage Act, Subcontractor shall pay a wage of no less than the general prevailing hourly rate as paid for work of a similar character in the locality in which the work is performed, to all laborers, workers and mechanics, pursuant to definitions, guidelines and procedures set forth in 820 ILCS 130/0.01 et seq. If the Illinois Department of Labor revises the prevailing rate of hourly wages to be paid by the Owner, the revised rate shall apply to this contract. The prevailing rate of hourly wages is revised by the Illinois Department of Labor and is available on the Illinois Department of Labor's official website.

The Subcontractor shall submit monthly to Owner a certified copy of the records required under section 130/5(a)(1) of the Act. The certified payroll shall include records of all laborers, mechanics, and other workers employed by the Subcontractor for services performed. The records shall include each worker’s name, address, telephone number when available, social security number, classification or classifications, hourly wages paid in each pay period, number of hours worked each day, and the starting and ending times of each work day. The certified payroll shall be accompanied by a statement signed by the Subcontractor and statements signed by each subcontractor where appropriate which aver that: (1) such records are true and accurate; (2) the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required under the Act; and (3) the Subcontractor acknowledges that filing a certified payroll that he or she knows to be false is a Class B misdemeanor.

8.3 The documents and information for the contractors and subcontractors listed in Table 1 and as described below must be provided by the Owner to the Chief Procurement Officer for Higher Education.

**Table 1: Contracts and Level Descriptions**

<table>
<thead>
<tr>
<th>Contract Type</th>
<th>Level</th>
<th>Contract</th>
<th>Dollar amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor without Assigned</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
<tr>
<td>Contractor with Assigned</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
<tr>
<td>Assigned Subcontractor</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
<tr>
<td>Subcontractor</td>
<td>2</td>
<td>With Level 1</td>
<td>&gt; $50,000</td>
</tr>
<tr>
<td>Subcontractors' Subcontractor</td>
<td>3 and below</td>
<td>With Level 2 and below</td>
<td>&gt; $50,000</td>
</tr>
</tbody>
</table>

* For any subcontractor beyond level 3 with a contract value of > $50,000 shall also be included.

**Level 1 Contractor**

The Certifications and Statutory Requirements form and the Financial Disclosures and Conflicts of Interest form submitted by the Level 1 Assigned Subcontractor with the bid documents are hereby made a part of this Contract.

It is the responsibility of the Level 1 Assigned Subcontractor to provide the following
with respect to each Level subcontract* which exceeds $50,000. The forms shall be completed and signed by each Level subcontractor*.

- subcontractor(s) name(s)
- address(es)
- subcontract value(s)
- general type(s) of work to be performed
- Certifications and Statutory Requirements form(s)
- Financial Disclosures and Conflicts of Interest form(s),

The documents submitted to the Owner shall be in electronic pdf format and follow the Owner’s file naming convention. The forms and file naming convention can be found at: http://www.uocpres.uillinois.edu/contractors/contracts. These documents shall be provided to the Owner within 15 calendar days after the execution of the Contract or after execution of the subcontract, whichever is later.

The Level 1 Assigned Subcontractor must provide the above information for any Level subcontractors added or changed which results in a contract value exceeding $50K during the term of the contract.

Any subcontracts entered into prior to receiving a fully executed copy of the Contract are done at the Assigned Subcontractors own risk.

9. NOTICES

All notices shall be given by hand delivery to the Owner’s Representative, the assignee Contractor, the Professional Services Consultant or the Subcontractor’s Project Manager, as applicable, or by delivery confirmation, to the following addressees:

To Owner

____________________________________
____________________________________
____________________________________
Attention ____________________________

To Assignee Contractor

____________________________________
____________________________________
____________________________________
Attention ____________________________

To Professional Services Consultant:

____________________________________
____________________________________
Attention ____________________________

To Subcontractor

____________________________________
____________________________________
Attention ____________________________

All notices shall be effective upon receipt.

10. OWNER’S RIGHT TO MAKE GOOD SUBCONTRACTOR’S DEFICIENCIES

If the Subcontractor should neglect to prosecute the Work or any part thereof diligently and properly or fail to properly perform any provision required by the Contract Documents, the Owner, after three days’ written notice to the Subcontractor, may, without prejudice to any
other remedy it may have, make good such deficiencies and may deduct the cost thereof from any payment then or thereafter due the Subcontractor.

11. **OWNER’S WEB-BASED PROJECT MANAGEMENT SYSTEM (“PRZM”)**

Subcontractor shall use the Owner’s web-based project management system (“PRZM”) to access and exchange project information with team members throughout the Project’s life. This includes providing electronic copies of sub-subcontractor agreements and signed Certifications and Statutory Requirements form and the Financial Disclosures and Conflicts of Interest form for each sub-subcontractor; processing payment applications, schedules, change requests/clarifications; and other services as identified in this Agreement. Training on this system will be supplied by the Owner and is required to be taken by Subcontractor representative.

12. **COUNTERPARTS/FACSIMILE SIGNATURES**

This Agreement may be signed in counterparts. Facsimile signatures constitute original signatures for all purposes.
IN WITNESS WHEREOF, the parties hereto have executed this Agreement as and of the day and year first hereinabove set forth.

SUBCONTRACTOR

NAME OF SUBCONTRACTOR

By: ______________________________________ DATE

__________________________________________
PRINT NAME

Title: ______________________________________

OWNER

THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS

By:

Walter K. Knorr, Comptroller DATE
(For Reference Only)

AGREEMENT

PROJECT: TITLE
DIVISION: NUMBER - WORK
(No Assignment)

PROJECT No:

PROFESSIONAL SERVICES
CONSULTANT

CONTRACT SUM: $ AMOUNT

CAMPUS:

THIS AGREEMENT, made and entered into in the City of CITY, State of Illinois, as of the date of the last signature of the parties hereto, by and between NAME OF CONTRACTOR, ADDRESS OF CONTRACTOR, a(n) INDIVIDUAL, SOLE PROPRIETOR, CORPORATION, OR PARTNERSHIP, existing under the laws of the State of_________________________, hereinafter and in the Contract Documents referred to as the "Contractor" whose registered agent in Illinois is NAME OF AGENT, ADDRESS OF AGENT, and THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS, a body corporate and politic of the State of Illinois, with its principal office in Urbana, Illinois, hereinafter and in the Contract Documents referred to as the "Owner",

WITNESSETH: That, for the consideration hereinafter stated, the Contractor and the Owner agree as follows:

1. THE CONTRACT WORK

   The Contractor shall furnish all of the labor, materials, fixtures, furnishings, equipment, transportation, construction, plant and facilities required for and shall perform all Contract Division NUMBER - KIND OF Work on the Project and shall furnish and do everything required by the Contract Documents.

2. THE CONTRACT TIME

   2.1 Starting Date. The Contractor shall commence the Work on the date specified in a written Notice to Proceed from the Owner.

   2.2 Completion Date. Time is of the essence in this contract. The Contractor shall achieve Substantial Completion of the Work as expeditiously as the Work will permit, in such a manner as to cause no delay to any of the other contractors employed on the Project or to the completion of the Project as a whole and, subject to adjustments as provided by the Contract Documents, no later than ____________ calendar days from the date specified in the Notice to Proceed (the “Substantial Completion Date”).

   The Contractor shall achieve Final Completion of the Work within thirty (30) days after Substantial Completion. Neither the Substantial Completion Date nor the time for Final Completion shall be changed except by Change Order issued in accordance with the terms of this contract.

   2.3 Remedies. In the event Contractor fails to perform under this Agreement, including but not limited to failure to achieve Substantial Completion or Final Completion, or both, in the time and manner provided, Owner shall be afforded the right to pursue any and all remedies available at law and equity.
2.3 Liquidated Damages for Delay. If Contractor fails to achieve Substantial Completion or Final Completion, or both, as required by this contract, Contractor shall be liable to Owner for liquidated damages for unexcused delay as provided below:

A. For Delay in Substantial Completion. Contractor shall pay Owner the sum of $ per day for every calendar day of unexcused delay in achieving Substantial Completion beyond the Substantial Completion Date. Any sums due and payable hereunder by Contractor shall be payable, not as a penalty, but as liquidated damages representing an estimate of delay damages likely to be sustained by Owner, estimated at the time of executing this contract. When Owner reasonably believes that Substantial Completion will be inexcusably delayed, Owner shall be entitled, but not required, to withhold from any amounts otherwise due Contractor an amount then believed by Owner to be adequate to recover liquidated damages applicable to such delays. If and when Contractor overcomes the delay in achieving Substantial Completion, or any part thereof, for which Owner has withheld payment, Owner shall promptly release to Contractor those funds withheld, but no longer applicable, as liquidated damages.

B. For Delay in Final Completion. If Contractor fails to achieve Final Completion within thirty (30) days after Substantial Completion, Contractor shall pay Owner the sum of $ per day for each and every calendar day of unexcused delay in achieving Final Completion. Any sums due and payable hereunder by Contractor shall be payable, not as a penalty, but as liquidated damages representing an estimate of delay damages likely to be sustained by Owner, estimated at the time of executing this contract. When Owner reasonably believes that Final Completion will be inexcusably delayed, Owner shall be entitled, but not required, to withhold from any amounts otherwise due Contractor an amount then believed by Owner to be adequate to recover liquidated damages applicable to such delays. If and when Contractor overcomes the delay in achieving Final Completion for which Owner has withheld payment, Owner shall promptly release to Contractor those funds withheld, but no longer applicable, as liquidated damages.

3. THE CONTRACT SUM AND TERMS OF PAYMENT

3.1 The Contract Sum. The Owner shall pay to the Contractor, subject to additions to and deductions from the Contract Sum, the sum of AMOUNT IN WORDS 00/100 Dollars ($ which shall constitute the Contract Sum. The Contract Sum is based upon the following base bid and accepted alternate(s), if any, of Contractor which are described in the Contract Documents and are hereby accepted by the Owner:

(List Contractor Base Bid and Accepted Alternate(s) Here)

3.2 Payments. The Owner shall make payments for Work under the contract as provided in Article 12 of the General Conditions.

3.3 Change Order Markups.

A. Lump Sum and Time and Materials Changes. The following percentages for overhead and profit shall be added to or, as applicable, deleted from, job costs for the net amount of Work added to or deleted from the contract by written lump sum or time and material Change Orders approved by the
Owner in accordance with the General Conditions. Insurance, bond, and
taxes are considered as job cost items and are not included in the
percentages listed below. In any one quotation for added work involving a
series of Subcontractors, the cumulative percentages for the Contractor’s
and Subcontractor’s overhead and profit shall not exceed twenty-five percent
(25%). All costs shall be net costs including discounts realized by the
contractor.

Add to the net extra job costs for added Work to be performed by:
1) Contractor’s own forces 15%
2) Subcontractors 5%.

Add to the net credit for job costs deleted for Work originally to have been
performed by:
1) Contractor’s own forces 5%
2) Subcontractors 0%.

B. Unit Price Changes. All unit price Change Orders shall be based on the unit
prices identified in the Contractor's bid, which include the Contractor's
overhead and profit for the Work performed on the unit price basis. The
above-mentioned percentages shall not be applied to unit price changes.

4. THE CONTRACT DOCUMENTS

4.1 The contract between the parties consists of the “Contract Documents”. The
Contract Documents include this Agreement, the General Conditions, the
Construction Documents, any supplemental conditions, any special conditions, any
subsequent Change Orders, field directives, and other written amendments to this
Agreement, and all documents expressly annexed as part of this Agreement.
Documents not described above are not Contract Documents and do not constitute
part of the contract between the parties.

4.2 Addenda. The following addenda were issued prior to bid opening date and are
hereby incorporated into this contract: ADDENDA NUMBER, dated DATE.

4.3 Order of Precedence. The order of precedence of the Contract Documents in the
event of conflict shall be as defined in the General Conditions.

5. ASSIGNMENTS

Neither party shall assign the contract or sublet it as a whole without the written consent of
the other. Any purported assignment without such written consent shall constitute a material
breach hereof.

6. PERFORMANCE BOND AND PAYMENT BOND

The Contractor shall furnish the Owner a performance bond and a payment bond each in the
penal sum of AMOUNT IN WORDS 00/100 Dollars ($) as required by and in accordance
with the terms of the General Conditions. Each bond shall name Owner as Obligee.

7. STATUTORY CERTIFICATIONS

In accordance with applicable laws and subject to applicable penalties for false or misleading
statements, the following certifications are made in connection with this Contract:
7.1 The Contractor certifies that _______________ is its Federal Taxpayer Identification Number and that it is doing business as a ________________.

7.2 The Contractor certifies that it has complied with the Substance Abuse Prevention on Public Works Projects Act (820 ILCS 265) including the requirement to file with Owner a written program that meets or exceeds the requirements of the Act. Submit a written program to the Owner only if the program has been revised since submitted with the annual prequalification. The requirements of this certification and disclosure are a material part of this Contract and the Contractor shall require this certification provision to be included in all Subcontracts.

8. CONSTITUTIONAL AND STATUTORY PROVISIONS

8.1 If this contract is funded from State of Illinois appropriated funds, the Contractor understands and agrees that this contract is subject to termination and cancellation without any penalty in any fiscal year in which the Illinois General Assembly fails to make an appropriation for payments under the terms of this contract. In the event of termination and cancellation for lack of appropriation, the Contractor shall be paid for services performed under this contract up to the effective date of the termination and cancellation.

8.2 Prevailing Wage.

Pursuant to the Prevailing Wage Act, Contractor shall pay a wage of no less than the general prevailing hourly rate as paid for work of a similar character in the locality in which the work is performed, to all laborers, workers and mechanics, pursuant to definitions, guidelines and procedures set forth in 820 ILCS 130/0.01 et. seq. (2010). If the Illinois Department of Labor revises the prevailing rate of hourly wages to be paid by the Owner, the revised rate shall apply to this contract. The prevailing rate of hourly wages is revised by the Illinois Department of Labor and is available on the Illinois Department of Labor’s official website.

The Contractor shall submit monthly to Owner a certified copy of the records required under section 130/5(a)(1) of the Act. The certified payroll shall include records of all laborers, mechanics, and other workers employed by the Contractor, including assigned subcontractors, for services performed. The records shall include each worker’s name, address, telephone number when available, social security number, classification or classifications, hourly wages paid in each pay period, number of hours worked each day, and the starting and ending times of each work day. The certified payroll shall be accompanied by a statement signed by the Contractor and statements signed by each subcontractor where appropriate which aver that: (1) such records are true and accurate, (2) the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required under the Act; and (3) the Contractor acknowledges that filing a certified payroll that he or she knows to be false is a Class B misdemeanor.

8.3 The documents and information for the contractors and subcontractors listed in Table 1 and as described below must be provided by the Owner to the Chief Procurement Officer for Higher Education.

Table 1: Contracts and Level Descriptions

<table>
<thead>
<tr>
<th>Contract Type</th>
<th>Level</th>
<th>Contract</th>
<th>Dollar amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor without Assigned</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
<tr>
<td>Contractor with Assigned</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
<tr>
<td>Assigned Subcontractor</td>
<td>With Owner</td>
<td>All</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>------------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Subcontractor</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Subcontractors’</td>
<td>3 and</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Subcontractor*</td>
<td>below</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

* For any subcontractor beyond level 3 with a contract value > $50,000 shall also be included.

**Level 1 Contractor**

The Certifications and Statutory Requirements form and the Financial Disclosures and Conflicts of Interest form submitted by the Level 1 Contractor with the bid documents are hereby made a part of this Contract.

It is the responsibility of the Level 1 Contractor to provide the following with respect to each Level subcontract* which exceeds $50,000. The forms shall be completed and signed by each Level subcontractor*.

* subcontractor(s) name(s)
* address(es)
* subcontract value(s)
* general type(s) of work to be performed
* Certifications and Statutory Requirements form(s)
* Financial Disclosures and Conflicts of Interest form(s),

The documents submitted to the Owner shall be in electronic pdf format and follow the Owner’s file naming convention. The forms and file naming convention can be found at: http://www.uocpres.uillinois.edu/contractors/contracts. These documents shall be provided to the Owner within 15 calendar days after the execution of the Contract or after execution of the subcontract, whichever is later.

The Level 1 Contractor must provide the above information for any Level subcontractors added or changed which results in a contract value exceeding $50K during the term of the contract.

Any subcontracts entered into prior to receiving a fully executed copy of the Contract are done at the Contractor and subcontractors own risk.

9. **NOTICES**

All notices shall be given by hand delivery to the Owner’s Representative, the Professional Services Consultant or the Contractor’s Project Manager, as applicable, or by delivery confirmation, to the following addressees:

To Owner: ______________________________
______________________________
Attention: _______________________

To Professional Services Consultant: ______________
______________________________
Attention: _______________________

To Contractor: __________________________
______________________________
Attention: _______________________

62 of 168

Form approved by Legal Counsel - UOCP&RES 11/15
All notices shall be effective upon receipt.

10. **OWNER'S RIGHT TO MAKE GOOD CONTRACTOR'S DEFICIENCIES**

   If the Contractor should neglect to prosecute the Work or any part thereof diligently and properly or fail to properly perform any provision required by the Contract Documents, the Owner, after three days' written notice to the Contractor, may, without prejudice to any other remedy it may have, make good such deficiencies and may, by Change Order, deduct the cost thereof from any payment then or thereafter due the Contractor, provided, however, that the Professional Services Consultant shall approve both such action and the amount charged to the Contractor.

11. **OWNER'S WEB-BASED PROJECT MANAGEMENT SYSTEM ("PRZM")**

   Contractor shall use the Owner’s web-based project management system ("PRZM") to access and exchange project information with team members throughout the Project’s life. This includes providing electronic copies of subcontractor agreements and signed Certifications and Statutory Requirements form and the Financial Disclosures and Conflicts of Interest form for each subcontractor; processing payment applications, schedules, change requests/clarifications; and other services as identified in this Agreement. Training on this system will be supplied by the Owner and is required to be taken by Contractor representative.

12. **COUNTERPARTS/FACSIMILE SIGNATURES**

   This Agreement may be signed in counterparts. Facsimile signatures constitute original signatures for all purposes.
IN WITNESS WHEREOF, the parties hereto have executed this Agreement as and of the day and year first hereinabove set forth.

CONTRACTOR:

NAME OF CONTRACTOR

By: ______________________________________ DATE

_______________________________________ PRINT NAME

Title: ______________________________________

OWNER:

THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS

By: ______________________________________

Walter K. Knorr, Comptroller DATE
CONTRACTOR PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we (Insert Proper Name of Surety), a corporation organized and existing under the laws of the State of and duly authorized to do business in the State of Illinois, as surety (“Surety”), and (Insert Proper Name of Contractor), (Insert Address), a (Insert Form of Entity) organized and duly authorized to do business in the State of Illinois, as principal (“Contractor”), enter into, execute this bond (“Performance Bond”), and firmly bind ourselves unto THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS, as Obligee (“Owner”), in the penal sum of (AMOUNT IN WORDS) $____________, as of the date of the last signature of the parties hereto.

WHEREAS, the Contractor has executed a contract with the Owner herewith (“Construction Contract”) for construction of (Insert Description and Location of the Construction Project) (“Project”); and,

WHEREAS, the Owner has required the Contractor to furnish this Performance Bond containing the terms and conditions set forth herein as a condition to executing the Construction Contract with the Contractor;

NOW THEREFORE, the Surety and the Contractor, both jointly and severally, and for themselves, their heirs, administrators, executors, successors, and assigns agree:

1. The Construction Contract is hereby incorporated herein and by reference made a part hereof to the same extent and effect as though it was copied verbatim herein. The Surety and the Contractor are bound for the full performance of the Construction Contract including without exception all of its terms and conditions, both express and implied.

2. If Owner believes there is a possibility that Contractor will not fully perform, Owner reserves the right to contact Surety to notify Surety of potential default and seek preventative action from Surety. If Owner, by written notice to the Contractor and the Surety, declares the Contractor to be in default and terminates the right of the Contractor to proceed, the Surety shall, within 15 working days, proceed to take one, or at its option, more than one of the following courses of action:

A. Complete full performance of the Construction Contract, by using a completing contractor jointly selected by the Surety and the Owner, including, without limitation, correction of defective and nonconforming work performed by or on behalf of the Contractor, pursuant to a written takeover agreement.

B. During such performance by the Surety the Owner shall pay the Surety from its own funds only such sums as would have been due and payable to the Contractor under the Construction Contract as and when they would have been due and payable to the Contractor in the absence of the default and termination.

C. Applicable law permitting, and with the prior written consent of the Owner, obtain bids or proposals from contractors previously identified as being acceptable to the Owner, for full performance of the Construction Contract. The Surety shall furnish the Owner a copy of such bids or proposals upon receipt of same. The Surety shall promptly select, with the agreement of the Owner, the best responsive bid or proposal and shall promptly tender the contractor submitting it, together with a contract for fulfillment and completion of the Construction Contract executed by the completing contractor, to the Owner for the Owner’s execution. Upon execution by the Owner of the contract for fulfillment and completion of the Construction Contract, the completing contractor shall furnish to the Owner a performance bond and a separate payment bond, each in the form of those bonds hereby furnished to the Owner for the Project by the Contractor. Each such bond shall be in the penal sum of the (1) fixed price for completion, (2) guaranteed maximum price for completion, or (3) estimated price for completion, whichever is applicable. The Owner shall pay the completing contractor from its own funds only such sums as would have been due and payable to the Contractor under the Construction Contract as and when they would have been due and payable to the
Contractor in the absence of the default and termination. To the extent that the Owner is obligated to pay the completing contractor sums which would not have then been due and payable to the Contractor under the Construction Contract, the Surety shall provide the Owner with such sums in a sufficiently timely manner that the Owner can utilize such sums in making timely payment to the completing contractor; or,

D. Take any and all other acts, if any, mutually agreed upon in writing by the Owner and the Surety.

3. The Surety shall respond to the Notice within 15 working days of receipt indicating the course of action it intends to take or advising that it requires more time to investigate the default and selection a course of action. If the Surety requires more than 15 working days to investigate the default and select a course of action or if the Surety elects to complete the work with a completing contractor that is not prepared to commence performance within 15 working days after receipt of Notice, and if Owner determines that it is in the best interest of Owner to maintain progress of the work, the Owner may continue to work until the completing contractor is prepared to commence performance. Unless otherwise agreed to by Owner, in no case may the Surety take longer than 30 working days to advise Owner on the course of action it intends to take. The Surety shall be liable for reasonable costs incurred by Owner to maintain the progress to the extent the costs exceed the unpaid sums as would have been due and payable to the Contractor under the Construction Contract in absence of the default and termination, subject to the penal sum of the bond.

4. In addition to those duties set forth hereinabove, the Surety shall promptly pay the Owner all loss, costs, and expenses resulting from the Contractor's default(s), including, without limitation, fees, expenses, and costs for architects, engineers, consultants, testing, surveying and attorneys, liquidated or actual damages, as applicable, for delay in completion of the Project, and fees, expenses and costs incurred at the direction, request, or as a result of the acts or omissions of the Surety.

5. In no event shall the Surety be obligated to the Owner hereunder for any sum in excess of the Penal Sum.

6. The Surety waives notice of any changes to the Construction Contract including, without limitation, changes in the contract time, the contract price, or the work to be performed.

7. This Performance Bond is provided by the Surety for the sole and exclusive benefit of the Owner and, if applicable, any dual obligee designated by rider attached hereto, together with their heirs, administrators, executors, successors or assigns. No other party, person or entity shall have any rights against the Surety hereunder.
8. Any and all notices to the Surety, the Contractor or the Owner shall be given by Certified Mail, Return Receipt Requested, to the address set forth for each party below:

SURETY: 

___________________________________________________________

___________________________________________________________

___________________________________________________________

CONTRACTOR: 

___________________________________________________________

___________________________________________________________

___________________________________________________________

THE BOARD OF TRUSTEES OF
THE UNIVERSITY OF ILLINOIS

C/O (Address of the University of Illinois construction unit responsible for the Project)

___________________________________________________________

9. Any statutory limitation, which may be contractually superseded, to the contrary notwithstanding, any action hereon may be instituted so long as the applicable statute of limitations governing the Construction Contract has not run or expired.

CONTRACTOR: 

___________________________________________________________

SURETY: 

___________________________________________________________

Seal

By: (INSERT PROPER NAME OF CONTRACTOR)

By: (INSERT PROPER NAME OF SURETY)

(SIGNATURE OF AUTHORIZED SIGNATORY)

(SIGNATURE OF AUTHORIZED SIGNATORY)

(OFFICE OR TITLE OF PERSON SIGNING)

(office or title of person signing)

ORIGINAL POWER OF ATTORNEY MUST BE ATTACHED.
CONTRACTOR PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we (Insert Proper Name of Surety), a corporation organized and existing under the laws of the State of and duly authorized to do business in the State of Illinois, as surety (“Surety”), and (Insert Proper Name of Contractor), (Insert Address), a (Insert Form of Entity) organized, and duly authorized to do business in the State of Illinois, as principal (“Contractor”), enter into, execute this bond (“Payment Bond”), and firmly bind ourselves unto THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS, as Obligee (“Owner”), in the penal sum of (AMOUNT IN WORDS) $____________, as of the date of the last signature of the parties hereto.

WHEREAS, the Contractor has executed a contract with the Owner herewith (“Construction Contract”) for construction of (Insert Description and Location of the Construction Project) (“Project”); and,

WHEREAS, the Owner has required the Contractor to furnish this Payment Bond containing the terms and conditions set forth herein as a condition to executing the Construction Contract with the Contractor;

NOW THEREFORE, the Surety and the Contractor, both jointly and severally, and for themselves, their heirs, administrators, executors, successors and assigns agree:

1. The Construction Contract is hereby incorporated herein and by reference made a part hereof to the same extent and effect as though it was copied verbatim herein. The Surety and the Contractor are bound for the full performance of the Construction Contract including without exception all of its terms and conditions, both express and implied, and, without limitation, specifically including Contractor's obligation to pay for labor, materials, services and equipment provided in connection with performance of the Construction Contract;

2. For purposes of this Payment Bond, Beneficiary is defined as a person or entity who has actually provided labor, material, equipment, services or other items for use in furtherance of the Construction Contract, and having:
   A. a direct contract with the Contractor; or
   B. a direct contract with a subcontractor of the Contractor; or
   C. rights, under the laws of the State of Illinois, to file a lien, a claim or notice of lien, or otherwise make a claim against the Project or against funds held by the Owner, if the Project or such funds is, or were, subject to such filing.

3. The Surety shall not be obligated hereunder to a Beneficiary other than a Beneficiary having a direct contract with the Contractor unless such Beneficiary has given written notice of its claim to the Contractor and the Surety within the longer of:
   A. ninety (90) days after such Beneficiary provided labor, material, equipment, services or other items for use in furtherance of the Construction Contract; or,
   B. the period of time provided by the State of Illinois for (1) filing of a lien, claim of lien, notice of lien, if the Project is, or were, subject to such filing, or (2) otherwise making a claim against the Project or against funds held by the Owner stating the amount claimed and identifying, by name and address, the person or entity to whom such labor, material, equipment, services or other items were provided.

4. In no event shall the Surety be obligated hereunder for sums in excess of the Penal Sum.

5. Upon receipt of a claim from a Beneficiary hereunder, the Surety shall promptly, and in no event later than 15 days after receipt of such claim, respond to such claim in writing (furnishing a copy of such response to the Owner) by:

68 of 168

Form approved by Legal Counsel - UOCP&RES 11/15
A. making payment of all sums not in dispute; and

B. stating the basis for disputing any sums not paid.

6. No action shall be commenced by a Beneficiary hereunder after the passage of the longer of one (1) year following final completion of the Construction Contract or, if this bond is provided in compliance with the law of the State of Illinois, any limitation period provided therein. If the limitation period contained in this Paragraph is unenforceable, it shall be deemed amended to provide the minimum period for an action against the Surety on a payment bond by a third-party beneficiary thereof.

7. Any and all notices to the Surety or the Contractor shall be given by Certified Mail, Return Receipt Requested, to the address set forth for each party below:

SURETY:

___________________________________________________________
___________________________________________________________
___________________________________________________________

CONTRACTOR:

___________________________________________________________
___________________________________________________________
___________________________________________________________

THE BOARD OF TRUSTEES
OF THE UNIVERSITY OF ILLINOIS

C/O (Address of the University of Illinois construction unit responsible for the Project)

___________________________________________________________

CONTRACTOR: SURETY:

Seal

By: (INSERT PROPER NAME OF CONTRACTOR) By: (INSERT PROPER NAME OF SURETY)

(SIGNATURE OF AUTHORIZED SIGNATORY) (SIGNATURE OF AUTHORIZED SIGNATORY)

(OFFICE OR TITLE OF PERSON SIGNING) (OFFICE OR TITLE OF PERSON SIGNING)

ORIGINAL POWER OF ATTORNEY MUST BE ATTACHED.
ASSIGNED SUBCONTRACTOR PERFORMANCE AND PAYMENT BONDS

ASSIGNED SUBCONTRACTOR PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we (Insert Proper Name of Surety), a corporation organized and existing under the laws of the State of _________________________ and duly authorized to do business in the State of Illinois, as surety (“Surety”), and (Insert Proper Name of Subcontractor) (Insert Address), a (Insert Form of Entity) organized and duly authorized to do business in the State of Illinois, as principal (“Subcontractor”), enter into, execute this bond (“Performance Bond”), and firmly bind ourselves unto THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS (“Owner”), as Obligee, in the penal sum of (AMOUNT IN WORDS) $___________________________, as of the date of the last signature of the parties hereto.

WHEREAS, the Subcontractor has executed a contract with the Owner herewith (“Construction Contract”) for construction of (Insert Description and Location of the Construction Project) (“Project”); and,

WHEREAS, the Owner has required the Subcontractor to furnish this Performance Bond containing the terms and conditions set forth herein as a condition to executing the Construction Contract with the Subcontractor;

WHEREAS, upon the Subcontractor’s execution of said Construction Contract with the Owner, the Owner has assigned its rights and delegated its duties therein to ____________________ (“Contractor”), the Contractor has accepted said assignment of rights and delegation of duties, the Subcontractor and the Surety have agreed to said assignment of rights and delegation of duties, and the Subcontractor and the Surety each intend that said assignment of rights and delegation of duties constitute a novation whereby the Contractor is substituted for the Owner as a party to the Construction Contract; and,

WHEREAS, the Surety and the Subcontractor, with the Owner’s consent, each intend that the Contractor be substituted for the Owner as the Obligee hereon;

NOW THEREFORE, the Surety and the Subcontractor, both jointly and severally, and for themselves, their heirs, administrators, executors, successors, and assigns agree:

1. The foregoing recitals are hereby incorporated herein and by reference made a part hereof to the same extent and effect as though they were copied verbatim in this Paragraph 1.

2. The Construction Contract is hereby incorporated herein and by reference made a part hereof to the same extent and effect as though it was copied verbatim herein. The Surety and the Subcontractor are bound for the full performance of the Construction Contract including without exception all of its terms and conditions, both express and implied, and, without limitation, specifically including Subcontractor’s obligation to pay for labor, materials, services and equipment provided in connection with performance of the Construction Contract;

3. The Contractor is hereby substituted for the Owner as the Obligee herein.

4. If the Subcontractor is in default of the Construction Contract and the Obligee by written notice to the Subcontractor and the Surety, declares the Subcontractor to be in default and terminates the right of the Subcontractor to proceed, the Surety shall, within 15 working days, proceed to take one, or at its option, more than one of the following courses of action:

   A. Complete full performance of the Construction Contract, by using a completing subcontractor jointly selected by the Surety and Owner, including, without limitation, correction of defective and nonconforming work performed by or on behalf of the Subcontractor, pursuant to a written takeover agreement;

   B. During such performance by the Surety the Obligee shall pay the Surety from its own funds only such sums as would have been due and payable to the Subcontractor under the Construction Contract as and when they would have been due and payable to the Subcontractor in the absence of the default and termination.
C. Applicable law permitting, and with the prior written consent of the Obligee, obtain bids or proposals from contractors previously identified as being acceptable to the Obligee, for full performance of the Construction Contract. The Surety shall furnish the Obligee a copy of such bids or proposals upon receipt of same. The Surety shall promptly select, with the agreement of the Obligee, the best responsive bid or proposal and shall promptly tender the contractor submitting it, together with a contract for fulfillment and completion of the Construction Contract executed by the completing contractor, to the Obligee for the Obligee's execution. Upon execution by the Obligee of the contract for fulfillment and completion of the Construction Contract, the completing contractor shall furnish to the Obligee a performance bond and a separate payment bond, each in a form acceptable to the Obligee. Each such bond shall be in the penal sum of the (1) fixed price for completion, (2) guaranteed maximum price for completion, or (3) estimated price for completion, whichever is applicable. The Obligee shall pay the completing contractor from its own funds only such sums as would have been due and payable to the Subcontractor under the Construction Contract as and when they would have been due and payable to the Subcontractor in the absence of the default and termination. To the extent that the Obligee is obligated to pay the completing contractor sums which would not have then been due and payable to the Subcontractor under the Construction Contract, the Surety shall provide the Obligee with such sums in a sufficiently timely manner that the Obligee can utilize such sums in making timely payment to the completing contractor; or,

D. Take any and all other acts, if any, mutually agreed upon in writing by the Obligee and the Surety.

5. The Surety shall respond to the Notice within 15 working days of receipt indicating the course of action it intends to take or advising that it requires more time to investigate the default and selection a course of action. If the Surety requires more than 15 working days to investigate the default and select a course of action or if the Surety elects to complete the work with a completing contractor that is not prepared to commence performance within 15 working days after receipt of Notice, and if Owner determines that it is in the best interest of Owner to maintain progress of the work, the Owner may continue to work until the completing subcontractor is prepared to commence performance. Unless otherwise agreed to by Owner, in no case may the Surety take longer than 30 working days to advise Owner on the course of action it intends to take. The Surety shall be liable for reasonable costs incurred by Owner to maintain the progress to the extent the costs exceed the unpaid sums as would have been due and payable to the Contractor under the Construction Contract in absence of the default and termination, subject to the penal sum of the bond.

6. In addition to those duties set forth hereinabove, the Surety shall promptly pay the Obligee all loss, costs, and expenses resulting from the Subcontractor's default(s), including, without limitation, fees, expenses, and costs for architects, engineers, consultants, testing, surveying and attorneys, liquidated or actual damages, as applicable, for delay in completion of the Project, and fees, expenses and costs incurred at the direction, request, or as a result of the acts or omissions of the Surety.

7. In no event shall the Surety be obligated to the Obligee hereunder for any sum in excess of the Penal Sum.

8. The Surety waives notice of any changes to the Construction Contract including, without limitation, changes in the contract time, the contract price, or the work to be performed.

9. This Performance Bond is provided by the Surety for the sole and exclusive benefit of the Obligee and, if applicable, any additional obligee designated by rider attached hereto, together
with their heirs, administrators, executors, successors or assigns. No other party, person or entity shall have any rights against the Surety hereunder.

10. Any and all notices to the Surety, the Subcontractor, the Contractor or the Owner shall be given by Certified Mail, Return Receipt Requested, to the address set forth for each party below:

SURETY:
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

SUBCONTRACTOR:
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

CONTRACTOR:
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

THE BOARD OF TRUSTEES OF
THE UNIVERSITY OF ILLINOIS
C/O (Address of the University of Illinois construction unit responsible for the Project)
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

11. Any statutory limitation, which may be contractually superseded, to the contrary notwithstanding, any action hereon may be instituted so long as the applicable statute of limitations governing the Construction Contract has not run or expired.

SUBCONTRACTOR:  

(SIGNATURE OF AUTHORIZED SIGNATORY)  

(OFFICE OR TITLE OF PERSON SIGNING)

SURETY:  

(SIGNATURE OF AUTHORIZED SIGNATORY)  

(OFFICE OR TITLE OF PERSON SIGNING)

Seal

(INSERT PROPER NAME OF SUBCONTRACTOR)  

(INSERT PROPER NAME OF SURETY)

ORIGINAL POWER OF ATTORNEY MUST BE ATTACHED.
The Owner hereby consents to the substitution of the Contractor in lieu of the Owner as Obligee on the foregoing Assigned Subcontractor Performance Bond.

THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS

By: __________________________________________

Walter K. Knorr, Comptroller DATE
ASSIGNED SUBCONTRACTOR PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we (Insert Proper Name of Surety), a corporation organized and existing under the laws of the State of ______________________ and duly authorized to do business in the State of Illinois, as surety ("Surety"), and (Insert Proper Name of Subcontractor) (Insert Address), a (Insert Form of Entity) organized and duly authorized to do business in the State of Illinois, as principal ("Subcontractor") enter into, execute this bond ("Performance Bond"), and firmly bind ourselves unto THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS ("Owner"), as Obligee, in the penal sum of (AMOUNT IN WORDS) $___________________________, as of the date of the last signature of the parties hereto.

WHEREAS, the Subcontractor has executed a contract with the Owner herewith ("Construction Contract") for construction of (Insert Description and Location of the Construction Project) ("Project"); and,

WHEREAS, the Owner has required the Subcontractor to furnish this Payment Bond containing the terms and conditions set forth herein as a condition to executing the Construction Contract with the Subcontractor;

WHEREAS, upon the Subcontractor’s execution of said Construction Contract with the Owner, the Owner has assigned its rights and delegated its duties therein to ____________________ ("Contractor"), the Contractor has accepted said assignment of rights and delegation of duties, the Subcontractor and the Surety have agreed to said assignment of rights and delegation of duties, and the Subcontractor and the Surety each intend that said assignment of rights and delegation of duties constitute a novation whereby the Contractor is substituted for the Owner as a party to the Construction Contract; and,

WHEREAS, the Subcontractor and the Surety, with the Owner’s consent, each intend that the Contractor be substituted for the Owner as the Obligee hereon;

NOW THEREFORE, the Surety and the Subcontractor, both jointly and severally, and for themselves, their heirs, administrators, executors, successors, and assigns agree:

1. The foregoing recitals are hereby incorporated herein and by reference made a part hereof to the same extent and effect as though they were copied verbatim in this Paragraph 1.

2. The Construction Contract is hereby incorporated herein and by reference made a part hereof to the same extent and effect as though it was copied verbatim herein. The Surety and the Subcontractor are bound for the full performance of the Construction Contract including without exception all of its terms and conditions, both express and implied, and, without limitation, specifically including Subcontractor’s obligation to pay for labor, materials, services and equipment provided in connection with performance of the Construction Contract;

3. The Contractor is hereby substituted for the Owner as the Obligee herein.

4. For purposes of this Payment Bond, Beneficiary is defined as a person or entity who has actually provided labor, material, equipment, services or other items for use in furtherance of the Construction Contract, and having:
   A. a direct contract with the Subcontractor; or
   B. a direct contract with a subcontractor of the Subcontractor; or
   C. rights, under the laws of the State of Illinois, to file a lien, a claim or notice of lien, or otherwise make a claim against the Project or against funds held by the Owner or the Contractor, if the Project or such funds is, or were, subject to such filing.

5. The Surety shall not be obligated hereunder to a Beneficiary other than a Beneficiary having a direct contract with the Subcontractor unless such Beneficiary has given written notice of its claim to the Subcontractor and the Surety within the longer of:
A. ninety (90) days after such Beneficiary provided labor, material, equipment, services or other items for use in furtherance of the Construction Contract; or,

B. the period of time provided by the State of Illinois for (1) filing of a lien, claim of lien, notice of lien, if the Project is, or were, subject to such filing, or (2) otherwise making a claim against the Project or against funds held by the Owner or the Contractor, stating the amount claimed and identifying, by name and address, the person or entity to whom such labor, material, equipment, services or other items were provided.

6. In no event shall the Surety be obligated hereunder for sums in excess of the Penal Sum.

7. Upon receipt of a claim from a Beneficiary hereunder, the Surety shall promptly, and in no event later than 15 days after receipt of such claim, respond to such claim in writing (furnishing a copy of such response to the Contractor and the Owner) by:

A. making payment of all sums not in dispute; and,

B. stating the basis for disputing any sums not paid.

8. No action shall be commenced by a Beneficiary hereunder after the passage of the longer of one (1) year following final completion of the Construction Contract or, if this bond is provided in compliance with the law of the State of Illinois, any limitation period provided therein. If the limitation period contained in this Paragraph is unenforceable, it shall be deemed amended to provide the minimum period for an action against the Surety on a payment bond by a third-party beneficiary thereof.

9. Any and all notices to the Surety, the Subcontractor, the Contractor or the Owner shall be given by Certified Mail, Return Receipt Requested, to the address set forth for each party below:

SURETY:

___________________________________________________________

___________________________________________________________

SUBCONTRACTOR:

___________________________________________________________

___________________________________________________________

CONTRACTOR:

___________________________________________________________

___________________________________________________________

THE BOARD OF TRUSTEES OF
THE UNIVERSITY OF ILLINOIS
C/O (Address of the University of Illinois construction unit responsible for the Project)

___________________________________________________________

___________________________________________________________

SUBCONTRACTOR: ________________________ SURETY: ________________________ Seal
The Owner hereby consents to the substitution of the Contractor in lieu of the Owner as Obligee on the foregoing Assigned Subcontractor Payment Bond.

THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS

By: ____________________________________________

Walter K. Knorr, Comptroller   DATE
NOTICE OF INTENT TO AWARD CONTRACT

Subject to review and approval by the Board of Trustees of the University of Illinois and the Procurement Policy Board of the State of Illinois, the University of Illinois intends to award to your firm a contract for the above-referenced division of work on the project identified herein. Please promptly execute and return to the Board of Trustees of the University of Illinois the attached documents indicated below:

1. AGREEMENT. Please execute the documents in accordance with the attached instructions and return all copies to the University for signature. One fully executed copy will be returned to you for your files.

2. PERFORMANCE BOND AND PAYMENT BOND. The contract amount is stated thereon. Please have your bonding company execute the bonds in accordance with the attached instructions and return all executed copies to the University for approval. One approved copy will be returned to you for your files.

3. CERTIFICATE OF INSURANCE. The Certificate of Insurance submittal requirements shall be in accordance with Article 18 of the General Conditions. The Evidence of Property for builder’s risk insurance policy submittal requirements applicable to only the designated party identified on Document 00 10 00 – Notice to Bidders, Paragraph 2.8 shall be in accordance with Article 19 of the General Conditions. Please name The Board of Trustees of the University of Illinois and OTHER DESIGNATED PARTIES TO BE NOTED HERE as additional insured in the appropriate locations.

4. SUBSTANCE ABUSE PREVENTION PROGRAM. Prior to commencement of Work, Contractor shall submit to Owner a written Program that meets or exceeds the requirements of the Substance Abuse Prevention on Public Works Projects Act (820 ILCS 265). Submit a written program to the Owner only if the program has been revised since submitted with the annual prequalification.

5. ATTACHMENT A – MBE/FBE SUBCONTRACTOR/SUPPLIER CERTIFICATION. A copy of Attachment A is enclosed. Please submit a completed and signed Attachment A for each of the IL CMS certified MBE/FBE subcontractor(s) and/or supplier(s) being utilized to meet the designated participation goals as previously specified on Attachment B that was submitted with your bid proposal to the University for this project. Each form must be signed by the MBE/FBE subcontractor or supplier and must be submitted with your executed contract.

6. REQUEST FOR ELECTRONIC PAYMENT: Upon processing of the required form, authorized payments from the University would be made directly to your company’s designated bank account, without the production of a paper check. The University is prepared to offer payment terms of ‘Net 20’, in exchange for your enrollment in ACH/direct deposit. Under this offer, the University shall make every effort possible to deliver payment within 20 days after receipt of a complete and proper invoice. If you are interested in enrolling in our program, please review the instructions with the “Request for Electronic Payment” form, complete the form and submit it according to the instructions. The “Request for Electronic Payment” form along with ‘Terms & Conditions’ and ‘Instructions’ are attached.

All of the above documents are to be returned as a set to Project Manager, (address of the University of Illinois construction unit responsible for the project), as soon as possible but no later than fifteen (15) days after receipt of this notice. Upon official approval by the Board of Trustees of the University of Illinois and the Procurement Policy Board of the State of Illinois, and upon the satisfactory execution and approval of these documents, your firm will be issued written notice of award and notice to proceed. Your bid deposit will be released and you may commence work as specified in the Contract Documents. Please note that the University of Illinois does not have authorization for, nor will it permit, the expenditure of funds prior to approval by the Board of Trustees of the University of Illinois and the Procurement Policy Board of the State of Illinois.

All vendors are required to comply with applicable provisions of the Illinois Procurement Code (30 ILCS 500/1 et seq.). Bidder shall provide all required forms completed by subcontractor(s) as required in 00 50 00 – Standard Contract Execution Forms, Article 8 Constitutional and Statutory Provisions. Electronic copies of the required forms and the file naming convention are available online at: http://www.uocpres.uillinois.edu/contractors/contracts.

The awarded low, responsive and responsible Bidder will be required to register with the Owner’s Vendor Services Application, and will be required to ensure that all Bidders’ subcontractors, vendors, and suppliers to be included on its Schedule of Values as identified in document 00 70 00 ‘General Conditions’ are also registered in the Owner’s Vendor Services Application. The vendor registration module of the Vendor Services Application can be accessed at: https://appserv6.admin.uillinois.edu/VendorRegistration/open/VendorSearch.jsp

A preconstruction conference will be scheduled shortly and you will be notified of its date, time, and location.

I appreciate your cooperation and timely response to this notice and look forward to a pleasant working relationship with your firm on this project.

Sincerely,
UNIVERSITY OF ILLINOIS
Notice of Intent to Award Contract and Notice of Award of Contract
Attachment A: MBE/FBE Subcontractor/Supplier Certification

Section 1: To be completed by Prime Contractor

Project No.: ____________________________
Project Name: ______________________________

Contractor:_______________________________________________________
FTIN Number:_______________________________________________________
Official Address:_______________________________________________________
Area Code/Telephone No:_______________________________________________________

Subcontract/Supplier for:___________________________________________________________
Subcontractor’s/Supplier’s Name:____________________________________________________
FTIN Number:______________________Area Code/Telephone Number:_____________________
Official Address (Street):___________________________________________________________
(City, State, Zip Code):_____________________________________________________________

Section 2: To be completed and signed by each MBE/FBE Subcontractor and/or Supplier.

I. Subcontractor/Supplier certifies that the proposed subcontract will be in the amount of
$____________________for_________________________________________work.

II. Subcontractor/Supplier certifies that the business is certified with CMS and is:
A. ( ) Minority owned: (check one)
   ( ) Black/African American   ( ) Hispanic    ( ) Asian American
   ( ) Native American/Alaskan Native
B. ( ) Female Owned

as defined in Section 2 of the Minority and Female Business Enterprise Act, as amended (30 ILCS 575) (See definitions)

III. Subcontractor/Supplier certifies that the information included herein is true and correct, and that the
subcontractor agrees, if Contractor is awarded the Project, to enter into the indicated subcontract.
Subcontractor/Supplier agrees to immediately notify Owner of all changes to this Certification.

IV. A true copy of the signed subcontract or supply agreement shall be delivered to Owner in
accordance with Document 00 20 00 and Owner shall be given complete and accurate information
from time to time regarding the actual work performed on the project and the payments under the
subcontract.

NOTE: IT IS A CRIME UNDER THE LAWS OF THE STATE OF ILLINOIS TO OBTAIN A STATE CONTRACT BY
MAKING FALSE STATEMENTS OR MISREPRESENTATIONS TO A STATE AGENCY.

Respectfully submitted and signed this_____________day of__________________________.

ATTEST:
By:______________________________________________
Signature:________________________________________
"Signature Required"
Title:____________________________________________

Subcontractor/Supplier Firm Name:_____________________________________________
DEFINITIONS:

A. **Minority Person.** Minority person is a citizen or lawful permanent resident of the United States and who is:
   1. Black/African American (a person having origins in any of the black racial groups in Africa);
   2. Hispanic (a person of Spanish or Portuguese culture with origins in Mexico, Central or South America, or the Caribbean Islands, regardless of race);
   3. Asian American (a person having origins in any of the original peoples of the Far East, southeastern Asia, the Indian Subcontinent or the Pacific Islands); or
   4. Native American/Alaskan Native (a person having origins in any of the original peoples of North America).

B. **Female.** Female is a person who is a citizen or a lawful permanent resident of the United States and who is of the female gender.

C. **Minority owned business.** Minority owned business is a business concern which is at least 51 percent owned by one or more minority persons, or, in the case of a corporation, at least 51 percent of the stock in which is owned by one or more minority individuals; and the management and daily business operations of which are controlled by one or more of the minority individuals who own it.

D. **Female owned business.** Female owned business is a business concern which is at least 51 percent owned by one or more females, or, in the case of a corporation, at least 51 percent of the stock in which is owned by one or more females; and the management and daily business operations of which are controlled by one or more of the females who own it.
University of Illinois
REQUEST FOR ELECTRONIC PAYMENT

<table>
<thead>
<tr>
<th>(to be completed by Company)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Company Name:</strong></td>
</tr>
<tr>
<td><strong>Address:</strong></td>
</tr>
<tr>
<td><strong>City / State / Zip:</strong></td>
</tr>
<tr>
<td><strong>Contact/phone/email:</strong></td>
</tr>
<tr>
<td><strong>Company FEIN Number:</strong></td>
</tr>
</tbody>
</table>

Will any portion of any payment be directed to a foreign bank account? Yes_______ No_______

If you do not currently plan to send funds to a foreign bank but will in the future, you must notify University Payables.

We hereby authorize the University of Illinois to initiate credit entries to the following corporate account at the depository financial institution named below, hereafter called DEPOSITORY, and to credit the same to such account. We acknowledge that the origination of ACH transactions to our account must comply with U.S. law and additionally we agree to be bound by the NACHA Operating Rules for all entries initiated to said account.

Furthermore, in the event that an erroneous credit is initiated to the below described account, we hereby provide authorization to the University of Illinois to initiate a debit in the amount of the erroneous credit entry.

This authorization is to remain in full force and effect until the University of Illinois has received written notification from the undersigned of its termination in such time and in such manner as to afford the University and DEPOSITORY a reasonable opportunity to act on it.

By my signature below, I attest that I have read the Terms and Conditions for Electronic Payment on the back of this form and agree to abide by such terms and that I have the authority to bind my Company in such terms.

<table>
<thead>
<tr>
<th>Signature of Company CFO</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed name of Company CFO</td>
<td>Title</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(to be completed by Financial Institution/Depository)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depository Name:</strong></td>
</tr>
<tr>
<td><strong>Depository Contact Name/Phone:</strong></td>
</tr>
<tr>
<td><strong>City/State/Zip:</strong></td>
</tr>
<tr>
<td><strong>Depository Contact Signature:</strong></td>
</tr>
<tr>
<td><strong>ABA/Routing Transit Number:</strong> (9 digits including the check digit)</td>
</tr>
<tr>
<td><strong>Account Holder Name:</strong> (Name exactly as it appears on the account at the DEPOSITORY)</td>
</tr>
<tr>
<td><strong>Account Number:</strong> (For the account holder at said DEPOSITORY)</td>
</tr>
</tbody>
</table>

(Please see page 2)
University of Illinois
REQUEST FOR ELECTRONIC PAYMENT

Terms & Conditions

* ACH transactions are governed by the operating rules of the National Automated Clearinghouse Association.
* This authorization is to remain in full force and effect until the University of Illinois has received written notification from the Company of its termination in such time and in such manner as to afford the University and DEPOSITORY a reasonable opportunity to act on it.
* This authorization provides for the University to initiate debit entries to correct erroneous credit entries that may occur.
* ALL payments made by the University through University Payables to the Company will be made via ACH and deposited to the single designated vendor account. No provisions are currently available to route specific payments (originated from specific campuses or departments) to different company bank accounts. Once a company authorization is in place, all payments to that company (regardless of the source or nature of the payment) will be delivered to the designated bank account.
* Payments will be made in their entirety to the single designated company account. No provision exists for splitting payments and directing them to multiple accounts.
* ALL payments made by the University through University Payables to the Company will be subject to various banking holidays that may or may not coincide with holidays observed by the University and/or the company.
* In no circumstance is the University responsible for any banking fees assessed by the company’s financial institution.
* Due to the nature of direct deposit, it is not possible to attach contracts, remittance documents or other materials to payments. Companies must be prepared to accept such documents via separate mailings.
* Inquiries from the vendor regarding individual payments should be directed to University Payables Customer Service staff at 217-333-6583, or via email at: “obfsupay@uillinois.edu”.
* All existing University procedures and policies regarding procurement, invoice processing, approval, payment and audit will remain in effect.

Instructions

* Company CFO should review this entire document and complete box #1 of page #1
* Original document should then be routed to the EFT Coordinator of the company’s financial institution (depository)
* Box #2, page #1 should then be completed by the financial institution/depository’s EFT Coordinator
* Then, the original completed document should be mailed to:

University Payables
ATTN: Vendor Maintenance Group
Illini Plaza Building Suite 210 MC-660
1817 South Neil Street
Champaign, IL 61820

* Enrollment or procedural questions may be directed to the address above, or via phone at: 217/333-6583

For University Internal Use Only:

<table>
<thead>
<tr>
<th>Date Received:</th>
<th>Date Contacted:</th>
<th>By:</th>
</tr>
</thead>
</table>

Approved by: 

Processed By: | Date Processed: | Company Banner ID: |
|--------------|-----------------|-------------------|
NOTICE OF AWARD OF CONTRACT

THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS, and the Procurement Policy Board of the State of Illinois have approved the award of your firm's contract for the above-referenced division of work on this project. This award is subject to your promptly executing and returning to THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS the attached documents indicated below:

1. AGREEMENT. Please execute the documents in accordance with the attached instructions and return all copies to the University for signature. One fully executed copy will be returned to you for your files.

2. PERFORMANCE BOND AND PAYMENT BOND. The contract amount is stated thereon. Please have your bonding company execute the bonds in accordance with the attached instructions and return all executed copies to the University for approval. One approved copy will be returned to you for your files.

3. CERTIFICATE OF INSURANCE. The Certificate of Insurance submittal requirements shall be in accordance with Article 18 of the General Conditions. The Evidence of Property for builder's risk insurance policy submittal requirements applicable to only the designated party identified on Document 00 10 00 – Notice to Bidders, Paragraph 2.8, should be in accordance with Article 19 of the General Conditions. Please name The Board of Trustees of the University of Illinois, and its assignees, if any, and OTHER DESIGNATED PARTIES TO BE NOTED HERE as additional insureds in the appropriate locations.

4. SUBSTANCE ABUSE PREVENTION PROGRAM. Prior to commencement of Work, Contractor shall submit to Owner a written Program that meets or exceeds the requirements of the Substance Abuse Prevention on Public Works Projects Act (820 ILCS 265). Submit a written program to the Owner only if the program has been revised since submitted with the annual prequalification.

5. ATTACHMENT A – MBE/FBE SUBCONTRACTOR/SUPPLIER CERTIFICATION. A copy of Attachment A is enclosed. Please submit a completed and signed Attachment A for each of the IL CMS certified MBE/FBE subcontractor(s) and/or supplier(s) being utilized to meet the designated participation goals as previously specified on Attachment B that was submitted with your bid proposal to the University for this project. Each form must be signed by the MBE/FBE subcontractor or supplier and must be submitted with your executed contract.

6. Request for Electronic Payment: Upon processing of the required form, authorized payments from the University would be made directly to your company's designated bank account, without the production of a paper check. The University is prepared to offer payment terms of ‘Net 20’, in exchange for your enrollment in ACH/direct deposit. Under this offer, the University shall make every effort possible to deliver payment within 20 days after receipt of a complete and approved invoice. If you are interested in enrolling in our program, please review the instructions with the “Request for Electronic Payment” form, complete the form and submit it according to the instructions. The “Request for Electronic Payment” form along with ‘Terms & Conditions’ and ‘Instructions’ are attached.

All of the above documents are to be returned as a set to Project Manager, (address of the University of Illinois construction unit responsible for the project), as soon as possible but no later than fifteen (15) days after receipt of this notice. Upon satisfactory execution and approval of these documents, your firm will be issued a written notice to proceed; your bid deposit will be released; and you can commence work as specified in the Contract Documents.

All vendors are required to comply with applicable provisions of the Illinois Procurement Code (30 ILCS 500/1 et seq.). Bidder shall provide all required forms completed by subcontractor(s) as required in 00 50 00 – Standard Contract Execution Forms, Article 8 Constitutional and Statutory Provisions. Electronic copies of the required forms and the file naming convention are available online at: http://www.uocpres.uillinois.edu/contractors/contracts

The awarded low, responsive and responsible Bidder will be required to register with the Owner’s Vendor Services Application, and will be required to ensure that all Bidders’ subcontractors, vendors, and suppliers to be included on its Schedule of Values as identified in document 00 70 00 ‘General Conditions’ are also registered in the Owner’s Vendor Services Application. The vendor registration module of the Vendor Services Application can be accessed at: https://appserv6.admin.uillinois.edu/VendorRegistration/open/VendorSearch.jsp

A preconstruction conference will be scheduled shortly and you will be notified of its date, time, and location.

I appreciate your cooperation and timely response to this notice and look forward to a pleasant working relationship with your firm on this project.

Sincerely,

Project Manager

PM/sec
Attachments
Copies:
UNIVERSITY OF ILLINOIS
Notice of Intent to Award Contract and Notice of Award of Contract
Attachment A: MBE/FBE Subcontractor/Supplier Certification

Section 1: To be completed by Prime Contractor

Project No.: _____________________________
Project Name: ______________________________

Contractor: _________________________________________________________
FTIN Number: _________________________________________________________
Official Address: _________________________________________________________
_______________________________________________________
Area Code/Telephone No: _________________________________________________________

Subcontract/Supplier for: _________________________________________________________
Subcontractor’s/Supplier’s Name: _________________________________________________________
FTIN Number: ______________________ Area Code/Telephone Number: ______________________
Official Address (Street): _____________________________________________________________
(City, State, Zip Code): _______________________________________________________________

Section 2: To be completed and signed by each MBE/FBE Subcontractor and/or Supplier.

I. Subcontractor/Supplier certifies that the proposed subcontract will be in the amount of
$____________________ for __________________________________ work.

II. Subcontractor/Supplier certifies that the business is certified with CMS and is:
   A. ( ) Minority owned: (check one)
      ( ) Black/African American     ( ) Hispanic     ( ) Asian American
      ( ) Native American/Alaskan Native
   B. ( ) Female Owned

as defined in Section 2 of the Minority and Female Business Enterprise Act, as amended (30 ILCS 575) (See definitions)

III. Subcontractor/Supplier certifies that the information included herein is true and correct, and that the
    subcontractor agrees, if Contractor is awarded the Project, to enter into the indicated subcontract.
    Subcontractor/Supplier agrees to immediately notify Owner of all changes to this Certification.

IV. A true copy of the signed subcontract or supply agreement shall be delivered to Owner in
    accordance with Document 00 20 00 and Owner shall be given complete and accurate information
    from time to time regarding the actual work performed on the project and the payments under the
    subcontract.

NOTE: IT IS A CRIME UNDER THE LAWS OF THE STATE OF ILLINOIS TO OBTAIN A STATE CONTRACT BY
MAKING FALSE STATEMENTS OR MISREPRESENTATIONS TO A STATE AGENCY.

Respectfully submitted and signed this __________ day of __________________________.

ATTEST:

By: ____________________________________________________________
Signature: ____________________________________________________________“Signature Required”
Title: ____________________________________________________________

Subcontractor/Supplier Firm Name: ____________________________________________________________
DEFINITIONS:

A. **Minority Person.** Minority person is a citizen or lawful permanent resident of the United States and who is:
   1. Black/African American (a person having origins in any of the black racial groups in Africa);
   2. Hispanic (a person of Spanish or Portuguese culture with origins in Mexico, Central or South America, or the Caribbean Islands, regardless of race);
   3. Asian American (a person having origins in any of the original peoples of the Far East, southeastern Asia, the Indian Subcontinent or the Pacific Islands); or
   4. Native American/Alaskan Native (a person having origins in any of the original peoples of North America).

B. **Female.** Female is a person who is a citizen or a lawful permanent resident of the United States and who is of the female gender.

C. **Minority owned business.** Minority owned business is a business concern which is at least 51 percent owned by one or more minority persons, or, in the case of a corporation, at least 51 percent of the stock in which is owned by one or more minority individuals; and the management and daily business operations of which are controlled by one or more of the minority individuals who own it.

D. **Female owned business.** Female owned business is a business concern which is at least 51 percent owned by one or more females, or, in the case of a corporation, at least 51 percent of the stock in which is owned by one or more females; and the management and daily business operations of which are controlled by one or more of the females who own it.
REQUEST FOR ELECTRONIC PAYMENT

Company Name: ____________________________________________________________
Address: _________________________________________________________________
City / State / Zip: ___________________________________________________________
Contact/phone/email: _______________________________________________________
Company FEIN Number: _____________________________________________________

Will any portion of any payment be directed to a foreign bank account? Yes_______ No_______
If you do not currently plan to send funds to a foreign bank but will in the future, you must notify
University Payables.

We hereby authorize the University of Illinois to initiate credit entries to the following corporate account at the
depository financial institution named below, hereafter called DEPOSITORY, and to credit the same to such
account. We acknowledge that the origination of ACH transactions to our account must comply with U.S. law and
additionally we agree to be bound by the NACHA Operating Rules for all entries initiated to said account.

Furthermore, in the event that an erroneous credit is initiated to the below described account, we hereby provide
authorization to the University of Illinois to initiate a debit in the amount of the erroneous credit entry.

This authorization is to remain in full force and effect until the University of Illinois has received written
notification from the undersigned of its termination in such time and in such manner as to afford the
University and DEPOSITORY a reasonable opportunity to act on it.

By my signature below, I attest that I have read the Terms and Conditions for Electronic Payment on the back of
this form and agree to abide by such terms and that I have the authority to bind my Company in such terms.

Signature of Company CFO: ___________________________ Date: ________________
Printed name of Company CFO: ___________________________ Title: ________________

(to be completed by Financial Institution/Depository)

Depository Name: ____________________________________________________________
Depository Contact Name/Phone: _____________________________________________
City/State/Zip: _____________________________________________________________
Depository Contact Signature: ______________________________________________
ABA/Routing Transit Number: _______________________________________________
(account 9 digits including the check digit)

Account Holder Name: _______________________________________________________
(Account exactly as it appears on the account at the DEPOSITORY)
Account Number: ___________________________________ Account Type: ___________
(For the account holder at said DEPOSITORY) (checking or savings)

(Please see page 2)
University of Illinois
REQUEST FOR ELECTRONIC PAYMENT

Terms & Conditions

* ACH transactions are governed by the operating rules of the National Automated Clearinghouse Association.
* This authorization is to remain in full force and effect until the University of Illinois has received written notification from the Company of its termination in such time and in such manner as to afford the University and DEPOSITORY a reasonable opportunity to act on it.
* This authorization provides for the University to initiate debit entries to correct erroneous credit entries that may occur.
* **ALL** payments made by the University through University Payables to the Company will be made via ACH and deposited to the single designated vendor account. No provisions are currently available to route specific payments (originated from specific campuses or departments) to different company bank accounts. **Once a company authorization is in place, all payments to that company (regardless of the source or nature of the payment) will be delivered to the designated bank account.**
* Payments will be made in entirety to the single designated company account. No provision exists for splitting payments and directing them to multiple accounts.
* **ALL** payments made by the University through University Payables to the Company will be subject to various banking holidays that may or may not coincide with holidays observed by the University and/or the company.
* In no circumstance is the University responsible for any banking fees assessed by the company’s financial institution.
* Due to the nature of direct deposit, it is not possible to attach contracts, remittance documents or other materials to payments. Companies must be prepared to accept such documents via separate mailings.
* Inquiries from the vendor regarding individual payments should be directed to University Payables Customer Service staff at 217-333-6583, or via email at: “obfsupay@uillinois.edu”.
* All existing University procedures and policies regarding procurement, invoice processing, approval, payment and audit will remain in effect.

Instructions

* Company CFO should review this entire document and complete box #1 of page #1
* Original document should then be routed to the EFT Coordinator of the company’s financial institution (depository)
* Box #2, page #1 should then be completed by the financial institution/depository’s EFT Coordinator
* Then, the original completed document should be mailed to:
  
  University Payables  
  ATTN: Vendor Maintenance Group  
  Illini Plaza Building Suite 210 MC-660  
  1817 South Neil Street  
  Champaign, IL 61820

* Enrollment or procedural questions may be directed to the address above, or via phone at: 217/333-6583

<table>
<thead>
<tr>
<th>For University Internal Use Only:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Received: ___________ Date Contacted: ___________ By: __________________________</td>
</tr>
<tr>
<td>Approved by: ___________________</td>
</tr>
<tr>
<td>Processed By: ___________ Date Processed: ___________ Company Banner ID: ___________</td>
</tr>
</tbody>
</table>

87 of 168
Form approved by Legal Counsel - UOCP&RES 11/15
To: Contractor
Address

Date:
Contract Amount:
Project Number:

List contractor and all assigned subcontractor divisions of work here

NOTICE OF AWARD OF CONTRACT/NOTICE TO PROCEED CONSTRUCTION

The BOARD of TRUSTEES of the UNIVERSITY OF ILLINOIS on DATE notified your firm of its intent to award a contract to your firm for the above referenced division of work on this project.

The BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS and the Procurement Policy Board of the State of Illinois have approved the award of your firm’s contract. We have received and executed all required documentation (Agreement, Payment Bond, Performance Bond, required Liability and Builders Risk Insurance, and Substance Abuse Prevention Program) to proceed with awarding you the above contract.

Pursuant to the terms of the Contract Documents, you are hereby notified to commence work at the start of business on DATE.

Please provide a copy of this Notice to each contractor that has been assigned to you as evidence of approval to proceed.

The Substantial Completion Date set forth in the Contract Documents is ## calendar days from the start date shown above, and has been calculated to be DATE.

The Preconstruction Conference has been scheduled for DATE at TIME at the LOCATION. A representative from your firm should be present at this meeting. OR The Preconstruction Conference will be scheduled in the near future. Date, time and location will be forthcoming. A representative from your firm should be present at this meeting.

All vendors are required to comply with applicable provisions of the Illinois Procurement Code (30 ILCS 500/1 et seq.). Bidder shall provide all required forms completed by subcontractor(s) as required in 00 50 00 – Standard Contract Execution Forms, Article 8 Constitutional and Statutory Provisions. Electronic copies of the required forms and the file naming convention are available online at: http://www.uocpres.uillinois.edu/contractors/contracts

The awarded low, responsive and responsible Bidder will be required to register with the Owner’s Vendor Services Application, and will be required to ensure that all Bidders’ subcontractors, vendors, and suppliers to be included on its Schedule of Values as identified in document 00 70 00 ‘General Conditions’ are also registered in the Owner’s Vendor Services Application. The vendor registration module of the Vendor Services Application can be accessed at: https://appserv6.admin.uillinois.edu/VendorRegistration/open/VendorSearch.jsp

I am the Owner’s Representative and am authorized to administer your contract for and in the name of The Board of Trustees of the University of Illinois. A copy of the signed and executed Agreement for this project is enclosed. OR A copy of the signed and executed Agreement for this project will be sent under separate cover.

I appreciate your cooperation in responding to this notice and am looking forward to a pleasant working relationship with your firm on this project.

Sincerely,

OWNER’S REPRESENTATIVE NAME

PM/Sec
(Enclosure)

Copies:
To: Contractor  
Address  
Date:  
Contract Amount:  
Project Number:  
Division:  

List contractor and all assigned subcontractor divisions of work here (No Assignment) or (with Assigned Subcontractors)

NOTICE TO PROCEED

We have received and executed all required documentation (Agreement, Payment Bond, Performance Bond, required Liability and Builders Risk Insurance, and Substance Abuse Prevention Program) to proceed with awarding you the above contract. Pursuant to the terms of the above-referenced contract, you are hereby notified to commence work at the start of business on DATE. Please provide a copy of this Notice to each contractor that has been assigned to you as evidence of approval to proceed.

The Preconstruction Conference has been scheduled for DATE at TIME at the LOCATION. A representative from your firm should be present at this meeting. OR  
The Preconstruction Conference will be scheduled in the near future. Date, time and location will be forthcoming. A representative from your firm should be present at this meeting.

All vendors are required to comply with applicable provisions of the Illinois Procurement Code (30 ILCS 500/1 et seq.). Bidder shall provide all required forms completed by subcontractor(s) as required in 00 50 00 – Standard Contract Execution Forms, Article 8 Constitutional and Statutory Provisions. Electronic copies of the required forms and the file naming convention are available online at: http://www.uocpres.uillinois.edu/contractors/contracts

The awarded low, responsive and responsible Bidder will be required to register with the Owner’s Vendor Services Application, and will be required to ensure that all Bidders’ subcontractors, vendors, and suppliers to be included on its Schedule of Values as identified in document 00 70 00 ‘General Conditions’ are also registered in the Owner’s Vendor Services Application. The vendor registration module of the Vendor Services Application can be accessed at: https://appserv6.admin.uillinois.edu/VendorRegistration/open/VendorSearch.jsp

I am the Owner’s Representative and am authorized to administer your contract for and in the name of The Board of Trustees of the University of Illinois. A copy of the signed and executed Agreement for this project is enclosed. OR A copy of the signed and executed Agreement for this project will be sent under separate cover.

I appreciate your cooperation in responding to this notice and am looking forward to a pleasant working relationship with your firm on this project.

Sincerely,

OWNER’S REPRESENTATIVE NAME

PM/Sec  
(Enclosure)  
Copies:

END OF DOCUMENT 00 50 00
THE BIDDING AND CONTRACT PROVISIONS

DOCUMENT 00 60 00 - STANDARD CONTRACT ADMINISTRATION FORMS

(Standard Multiple Contract Sets)

Note: The forms in this document section are included for reference only. Forms are to be prepared by the Contractor or Professional Services Consultant, as applicable, and submitted at the appropriate time.
**University of Illinois**

**CONTRACTOR’S/ASSIGNED SUBCONTRACTOR’S SCHEDULE OF VALUES**
**(LUMP SUM CONTRACTS)**

**Project:** ______________________________________  
**Firm:** _________________________________________  
**Contract Division:** _____________________________  
**Project #:** _____________________________________

<table>
<thead>
<tr>
<th>Line No.</th>
<th>CSI Sectn</th>
<th>Payment Item</th>
<th>Assigned Subcontractor/ Subcontractor/ Supplier/Vendor (where applicable)</th>
<th>MBE/FBE* Status</th>
<th>Est Qty</th>
<th>Material &amp; Equipment</th>
<th>Installation (Labor, Eq, etc)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>00 70 00</td>
<td>Bonds and Insurance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>00 70 00</td>
<td>Overhead and Profit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>AS #1 CONTRACT DIVISION (for Contractor only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>AS #2 CONTRACT DIVISION (for Contractor only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>AS #3 CONTRACT DIVISION (for Contractor only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>AS #4 CONTRACT DIVISION (for Contractor only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>AS #5 CONTRACT DIVISION (for Contractor only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotal Forward (if applicable): $  

Total Contract Price $  

**ASSIGNED SUBCONTRACTOR’S CERTIFICATION**

Assigned Subcontractor: ________________  
By: ________________________________  
Date: ________________________________

**CONTRACTOR’S CERTIFICATION**

Contractor: ________________________________  
By: ________________________________  
Date: ________________________________

**PROFESSIONAL SERVICES CONSULTANT APPROVAL**

PSC: ________________________________  
By: ________________________________  
Date: ________________________________

**OWNER APPROVAL**

Owner: Board of Trustees of the University of Illinois  
By: ________________________________  
Date: ________________________________

* Indicate if subcontractor is a MBE or FBE otherwise leave blank. Attach MBE/FBE certification form for all MBE/FBE subcontractors/vendors/suppliers identified herein.  
** PSC and Owner’s approvals only required for Contractor’s Schedule of Values since Assigned Subcontractor’s Schedule of Values are inclusive.
PAYMENT APPLICATION: PART I - PAYMENT CERTIFICATE for (mark appropriate box)
1) CONTRACTOR w/ ASSIGNED SUBCONTRACTOR(S)
2) ASSIGNED SUBCONTRACTOR

PROJECT NAME: ____________________________ PROJECT #: ________________

APPLICANT NAME & ADDRESS: ____________________________________________

City: ____________________ State: __________ Zip: __________

CONTRACT DIVISION: ____________________________________________________

VENDOR REFERENCE: __________________________ ENCUMBRANCE # __________

APPLICATION #: ___________________________ FINAL PAYMENT? Y N

PAY PERIOD: __/__/____ TO __/__/____

BANNER VENDOR NUMBER: __________

---

<table>
<thead>
<tr>
<th>1.0 CONTRACTOR’S TOTAL CONSTRUCTION CONTRACT SUM AND ALL CHANGE ORDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>$_________</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.0 CURRENT CONTRACT/AGREEMENT AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Applicant’s Accepted Base Bid and Alternates</td>
</tr>
<tr>
<td>2.2 Authorized Change Orders for Applicant’s Added Work:</td>
</tr>
<tr>
<td>2.3 Authorized Change Orders for Applicant’s Deleted Work:</td>
</tr>
<tr>
<td>2.4 TOTAL (2.1 through 2.3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3.0 CURRENT PAYMENT DUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Total Value of Applicant’s Work Completed to Date</td>
</tr>
<tr>
<td>3.2 Less __________% retained (round to nearest dollar):</td>
</tr>
<tr>
<td>3.3 Less Payments Previously Certified</td>
</tr>
<tr>
<td>3.4 Current Payment Due to Applicant</td>
</tr>
</tbody>
</table>

---

| 4.0 CERTIFICATIONS & APPROVALS |

4.1 Assigned Subcontractor’s Certification
I certify that the work covered by this application for payment has been completed to the point indicated herein, that the completed work is in accordance with the contract documents, and that the current payment identified above is now due. I further certify that, immediately upon receipt of the above payment, all Subcontractors, if any, will be promptly paid.

By: ___________________________ Date: ______________

Authorized Representative

4.2 Contractor’s Approval
I agree that the Assigned Subcontractor’s progress and performance to date on this project is satisfactory and approve payment of the certified amount. IF CONTRACTOR’S PAY APPLICATION: I also certify that the work covered by this application for payment has been completed to the point indicated herein, that the completed work is in accordance with the contract documents, and that the current payment identified above is now due. I further certify that, immediately upon receipt of the above payment, all Subcontractors, if any, will be promptly paid.

By: ___________________________ Date: ______________

Authorized Representative

4.3 Professional Services Consultant’s Certification *
PSC: ___________________________

Based on the contract documents, my own observations of the progress of the work and the data comprising the above application, I certify to the Owner that the work has progressed to the point indicated, that the quality of the work appears to be in accordance with the contract documents, and that the Applicant is entitled to payment of the amount certified by him as being currently due.

By: ___________________________ Date: ______________

Authorized Representative (Place "N/A" on line if not applicable)

4.4 Owner’s Representative’s Approval *
University of Illinois-construction unit responsible for the named project I approve payment of the amount certified above.

By: ___________________________ Date: ______________

Authorized Representative (Place "N/A" on line if not applicable)

* Certification only required for Contractor’s Payment Application

---

CFOAPAL (*required fields)

<table>
<thead>
<tr>
<th>Chart</th>
<th>Fund</th>
<th>Organization</th>
<th>Account</th>
<th>Program</th>
<th>Activity</th>
<th>Location</th>
<th>SEQ #</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
</tbody>
</table>

|       |      |              |         |         |          |          | $     |

---

AUTHORIZED DEPARTMENT APPROVAL

University of Illinois Seal

WE, THE UNDERSIGNED, HEREBY CERTIFY THAT THE PAYEE HAS SIGNED A STATEMENT, AS REQUIRED BY THE ILLINOIS PROCUREMENT CODE, AND THAT THE ABOVE BILL IS CORRECT AND PAYABLE FROM THE APPROPRIATION SHOWN.

X

CHIEF BUSINESS OFFICER, UNIVERSITY OF ILLINOIS

Distribution: University of Illinois construction unit responsible for the named project: Professional Services Consultant: Contractor: Applicant

FOR OBFS

SORT

Chairperson, Board of Trustees
### University of Illinois

**CONTRACTOR’S/ASSIGNED SUBCONTRACTOR’S PAYMENT APPLICATION – PART II**

**SCHEDULE OF WORK: OVERALL SUMMARY & MBE/FBE SUMMARY BY SUBCONTRACTOR**

**Project:** ______________________________________  
**Contractor/Assigned Subcontractor:** ____________________________________________  
**Pay Period:** ____________________ to ____________________  
**Contract Value:** ____________________  
**Application #:** ____________________

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Description of Work</th>
<th>Assigned Subcontractor/ Subcontractor/ MBE/ FBE</th>
<th>Scheduled Value</th>
<th>% Cplt (H/D)</th>
<th>Work Completed: Previously Approved Applications</th>
<th>Work Completed: Due This Period</th>
<th>Total Completed and Stored (F+G)</th>
<th>Balance to Complete (D-H)</th>
<th>Total of: (H / Total of Contract)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal forward:</td>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AS#1 – CONTRACT DIVISION (for contractor only)</td>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>AS#2 – CONTRACT DIVISION (for contractor only)</td>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>AS#3 – CONTRACT DIVISION (for contractor only)</td>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>AS#4 – CONTRACT DIVISION (for contractor only)</td>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>AS#5 – CONTRACT DIVISION (for contractor only)</td>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Running Subtotal:</td>
<td></td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>

93 of 168

Form approved by Legal Counsel - UOCP&RES 11/15
AFFIDAVIT

STATE OF ILLINOIS

COUNTY OF_______________________________________)

The Affiant,_______________________________________________________________ , being first
duly
sworn, upon the oath deposes and says the following:

1. **Identification:** The Affiant states that the Affiant is ___________________ of
   _________________________________, hereinafter termed "the Contractor", who is the
   Contractor for the____________________________________ project, hereinafter termed "the
   Project", constructed for The Board of Trustees of the University of Illinois, hereinafter called
   "the Owner", under a written agreement dated __________________ entered into by and
   between the Contractor and the Owner, and pertaining to said Work on the Project.

2. **Receipt of Previous Payments and Partial Waiver of Lien:** The Affiant further states that the
   Contractor has received payments to date from the Owner totaling
   ______________________________________________________ Dollars ($________________), which includes the sum certified under the Contractor’s previous partial
   payment request, and that the Contractor hereby waives all right to a mechanic’s lien on the
   funds and property of the Owner to the extent to which payment has been made. The
   Contractor, however, reserves all right to a lien against the property or funds of the Owner for
   such work, labor, or material that is yet to be performed or furnished under the above contract
   and for any amount or amounts which may yet be due and owing to the Contractor, including
   retainage held by the Owner. Previously certified payments, if any, that have not been received
   by the Contractor are stated below:

   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
3. **Payments for Work Over $1,000 in Value:** The Affiant further states that the following persons or firms in accordance with Articles 6 and 12 of the General Conditions have been contracted with, have done or are doing labor, have furnished or are furnishing materials, or have performed or are performing services on the project of a total value of more than ONE THOUSAND DOLLARS ($1,000.00):

<table>
<thead>
<tr>
<th>Name of Subcontractor/ Vendor /Supplier</th>
<th>Subcontract Work, Materials, or Equipment Provided</th>
<th>Current Value of Purchase Order Or Subcontract</th>
<th>*Total Paid to Date</th>
<th>*Unpaid Amount Previously Requested (incl. retainage)</th>
<th>*Pending Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTALS**

*Notes:* Pursuant to Articles 6 and 12 of the General Conditions:
1. For all Contractor payment requests except the final, the actual distributions made (or not made) to subcontractors/vendors/suppliers should correspond to amounts requested in the Contractor's previous payment requests.
2. For the Contractor's final payment request, all subcontractors/vendors/suppliers should be paid in full.
3. Provide detailed explanations in section 4 of this form for all payments due to subcontractors from the Contractor's previous payment requests that have not been made in accordance with the abovementioned contract provisions.
CONTRACTOR’S PAYMENT APPLICATION - PART III
AFFIDAVIT AND PARTIAL LIEN WAIVER FOR PREVIOUS PAYMENT REQUEST

4. **Exceptions (Payments Not Made for Work Over $1,000 in Value):** The Affiant further states that the amounts set opposite the preceding names have been paid and completely satisfied and that no such person or firm has any claim against the Owner for any labor, materials, or services furnished or work done by them on such account. Exceptions, if any, are stated below:

<table>
<thead>
<tr>
<th>Firm</th>
<th>$</th>
<th>Firm</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm</td>
<td></td>
<td>Firm</td>
<td></td>
</tr>
<tr>
<td>Firm</td>
<td></td>
<td>Firm</td>
<td></td>
</tr>
<tr>
<td>Firm</td>
<td></td>
<td>Firm</td>
<td></td>
</tr>
</tbody>
</table>

5. **Payments for Work $1,000 or Less in Value:** The Affiant further states that all persons or firms who have done or are doing labor, have furnished or are furnishing materials, or have performed or are performing services on the project of the total value of ONE THOUSAND DOLLARS ($1,000.00) or less, have been paid in full and completely satisfied for the labor done, materials furnished, or service performed to the date hereof, and have no claims against the Owner for labor, materials or services done, furnished or performed by them on such account. Exceptions, if any, are stated below:

<table>
<thead>
<tr>
<th>Firm</th>
<th>$</th>
<th>Firm</th>
<th>$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm</td>
<td></td>
<td>Firm</td>
<td></td>
</tr>
<tr>
<td>Firm</td>
<td></td>
<td>Firm</td>
<td></td>
</tr>
<tr>
<td>Firm</td>
<td></td>
<td>Firm</td>
<td></td>
</tr>
</tbody>
</table>

6. **Compliance with the Contract Documents:** The Affiant further states that this affidavit is made on behalf of the Contractor for the purpose of complying with the Contract Documents.

Subscribed and sworn to before me this __________________day of ____________ 20____.

______________________________
Contractor

______________________________
Notary Public

By __________________________

My Commission Expires ____________

______________________________
Title

(Date)

Page 3 of 3
<table>
<thead>
<tr>
<th>Trade Codes</th>
<th>Job Titles</th>
<th>Total Employee</th>
<th>Black/ African American</th>
<th>Hispanic American</th>
<th>Asian American</th>
<th>Native American/ Alaskan Native</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M  F</td>
<td>M  F</td>
<td>M  F</td>
<td>M  F</td>
<td>M  F</td>
</tr>
<tr>
<td>G1</td>
<td>Laborers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G1</td>
<td>Project Superintendent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2</td>
<td>Equip Operators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2</td>
<td>Truck Drivers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G3</td>
<td>Cement Finishers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4</td>
<td>Brick Masons</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G5</td>
<td>Ironworkers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G6</td>
<td>Carpenters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G7</td>
<td>Roofers/Metal Roofers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G8</td>
<td>Glaziers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G9</td>
<td>Ceramic Tile Setters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G9</td>
<td>Painters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G9</td>
<td>Plasterers/Drywallers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G14</td>
<td>Elevator Mechanics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P15</td>
<td>Plumbers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P/H15</td>
<td>Insulators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H15</td>
<td>Pipefitters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H15</td>
<td>Refrig Mechanics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H15</td>
<td>Temperature Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V15</td>
<td>Air Test &amp; Balancing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V15</td>
<td>Sheet Metal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FP15</td>
<td>Sprinkler Fitters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E16</td>
<td>Electricians</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E16</td>
<td>Telecom Installers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTALS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE A: CONTRACTOR’S WORKFORCE (includes Direct Subcontractors)
### University of Illinois
### CONTRACTOR’S PAYMENT APPLICATIONS: PART IV - EMPLOYEE UTILIZATION REPORT

#### TABLE C: DIRECT SUBCONTRACTORS INCLUDED IN THIS REPORT

<table>
<thead>
<tr>
<th>Subcontractor Included for this Report</th>
<th>Direct Subcontractor</th>
<th>Subcontract and Work</th>
<th>IDHR # (or FEIN)</th>
<th>Applicable Trade Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CERTIFICATION: The undersigned Contractor certifies that the information in this report is true and complete.

By: ________________________________

Title: ________________________________

DISTRIBUTION: Personnel Service EEO Office - 1 copy
Contract File - 1 copy
UNIVERSITY OF ILLINOIS
CONSTRUCTION CONTRACT CHANGE ORDER for

( ) Contractor with Assigned Subcontractor(s) (AS)
( ) Assigned Subcontractor(s) (AS)

Project Name ____________________________ Contractor/AS Project No. ____________________________
Contractor/AS/Address_________________________ PSC Project No. ____________________________

The above referenced contract is hereby amended to provide for the following described change(s) upon the terms set forth below:
Contractor shall provide: (SCOPE)

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
<th>TOTAL A+B+C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor’s Original Base Bid + Accepted Alternate(s) $</td>
<td>Total of Previous Change Order(s) $</td>
<td>Increase/(Decrease) by this Change Order $</td>
<td>Contractor’s Revised Base Bid + Accepted Alternate(s) + Change Orders $</td>
</tr>
<tr>
<td>Total of Previous Change Order(s) Assignment Fee $</td>
<td>TOTAL AS(s) increase(s) by this change order x 0.05 $</td>
<td>Contractor’s Revised Change Order(s) Assignment Fee $</td>
<td></td>
</tr>
<tr>
<td>Contractor’s SUBTOTAL $</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Plumbing AS Original Subcontract Sum $</td>
<td>Total of Previous Change Order(s) $</td>
<td>Increase/(Decrease) by this Change Order $</td>
<td>Revised Subcontract Sum $</td>
</tr>
<tr>
<td>Heating AS Original Subcontract Sum $</td>
<td>Total of Previous Change Order(s) $</td>
<td>Increase/(Decrease) by this Change Order $</td>
<td>Revised Subcontract Sum $</td>
</tr>
<tr>
<td>Ventilation AS Original Subcontract Sum $</td>
<td>Total of Previous Change Order(s) $</td>
<td>Increase/(Decrease) by this Change Order $</td>
<td>Revised Subcontract Sum $</td>
</tr>
<tr>
<td>Electrical AS Original Subcontract Sum $</td>
<td>Total of Previous Change Order(s) $</td>
<td>Increase/(Decrease) by this Change Order $</td>
<td>Revised Subcontract Sum $</td>
</tr>
<tr>
<td>Fire Protection AS Original Subcontract Sum $</td>
<td>Total of Previous Change Order(s) $</td>
<td>Increase/(Decrease) by this Change Order $</td>
<td>Revised Subcontract Sum $</td>
</tr>
<tr>
<td>AS Original Subcontract Sum $</td>
<td>Total of Previous Change Order(s) $</td>
<td>Increase/(Decrease) by this Change Order $</td>
<td>Revised Subcontract Sum $</td>
</tr>
<tr>
<td>GRAND TOTAL (Contractor’s Original Contract Sum) $</td>
<td>GRAND TOTAL of Contractor’s Previous Change Order(s) $</td>
<td>GRAND TOTAL of Contractor’s Increase/(Decrease) by this Change Order $</td>
<td>GRAND TOTAL of Contractor’s SUBTOTAL + Revised Subcontract Sum(s) (“Contractor’s Revised Contract Sum”) $</td>
</tr>
</tbody>
</table>

As changed hereinabove, the above referenced contract shall continue in full force and effect.

As changed hereinabove, the above referenced contract shall continue in full force and effect.

CLASSIFICATION (for UI use only) | BUDGET/SCOPE (for UI use only)
-----------------------------------|----------------------------------
Client Request | PSC Error | CM Error | Code/Std | Unforeseen Conditions | Does NOT affect project budget and/or scope (see attached documentation)
Staff Changes/Scope | PSC Omission | CM Omission | Delivery/ Schedule | Closeout |

THE UNDERSIGNED HEREBY CERTIFY THAT THIS CONTRACT CHANGE ORDER IS GERMANE TO THE ORIGINAL CONTRACT AS SIGNED AND THAT THE CIRCUMSTANCES NECESSITATING THIS CONTRACT CHANGE ORDER WERE NOT REASONABLY FORESEEABLE AT THE TIME THE CONTRACT WAS SIGNED. THIS CONTRACT CHANGE ORDER IS IN THE BEST INTEREST OF THE UNIVERSITY OF ILLINOIS AND IS AUTHORIZED BY LAW.

PSC/Contractor Approvals ____________________________ University of Illinois Approvals ____________________________
Assigned Subcontractor (AS) ____________________________ Date ____________________________ Campus ____________________________

Form approved by Legal Counsel - UOCPP&RES 11/15
Date

Project Title

☐ Emergency Work Authorization (EWA) (No. __________)  
☐ Field Directive (FD) (Reference RFP # _________________)

Reason for Urgency:

Description of Problem:

Action to be Taken:

Total “Not to Exceed” Cost to Complete (Labor, Material, Mark up, etc.):

Minimum information to be included in this section: Costs shall not exceed $AMOUNT without prior written authorization by the Owner. Work to be invoiced on an hourly basis with daily time records submitted to the Contractor and Professional Services Consultant for approval. Time and Material backup information required for full payment at completion of Work. THE UNDERSIGNED HEREBY CERTIFY THAT THIS WORK IS GERMANE TO THE ORIGINAL CONTRACT AS SIGNED AND THAT THE CIRCUMSTANCES NECESSITATING THIS FIELD DIRECTIVE/EMERGENCY WORK AUTHORIZATION WERE NOT REASONABLY FORESEEABLE AT THE TIME THE CONTRACT WAS SIGNED. THIS FIELD DIRECTIVE/EMERGENCY WORK AUTHORIZATION IS IN THE BEST INTEREST OF THE UNIVERSITY OF ILLINOIS AND IS AUTHORIZED BY LAW.

Work Completion Required By: __________ Date __________.

Remarks:

Recommended by:

________________________
CONTRACTOR (Name, Firm and Division(s) of Work)

Reviewed by:

________________________
PSC (scope & estimated cost(s) reviewed)

Reviewed by:

________________________
CM (scope & estimated cost(s) reviewed)

Reviewed by:

________________________
PM (scope & estimated cost(s) reviewed)

Approved by:

________________________
DIRECTOR or above for all EWA’s (CCU/UOCP&RES)  
PROJECT MANAGER or above per approval authority for Field Directives.

pm/sec  
c:  Professional Services Consultant  
    Construction Manager (if applicable)  
    Contractor(s)  
    Project File
STATE OF ILLINOIS )
COUNTY OF __________________________ ) SS

The Affiant, ____________________________________________________________, being first duly sworn, upon oath deposes and says:

1. That the Affiant is ____________________ of __________________________ (hereinafter: "the Contractor") who is the Contractor for the ______________________________________ Work upon the ________________________________ project constructed for The Board of Trustees of the University of Illinois, (hereinafter: "the Owner") under a written contract dated ______________. between the Contractor and the Owner pertaining to the project;

2. That the Work under said contract is at least 90% complete and, to the extent completed, is satisfactory and in accord with the provisions of the contract;

3. That all subcontractors, vendors, and suppliers who have furnished labor, materials, and/or equipment to or who have performed Work for the Contractor in connection with said contract or project of a total value of more than $1,000 have been paid all sums currently due and have no liens, claims, or demands against the Owner or the State of Illinois other than that due for retainage and uncompleted Work or services shown on the attached affidavit for the previous payment request;

4. That all subcontractors, vendors, and suppliers who have furnished labor, materials and/or equipment to or who have performed Work for the Contractor in connection with said contract or project of $1,000 or less in value have been paid in full and have no liens, claims or demands against the Owner or the State of Illinois;

5. That the attached affidavit for the previous payment request, partial and final waivers of lien, or other evidence satisfactory to the Owner cover all labor, materials and equipment furnished and all Work performed upon said project and that there are no other liens, claims, and demands which have been, or could be, asserted against the Owner and/or the State of Illinois in connection with said contract or project;

6. That this affidavit is made on behalf of the Contractor for the purpose of reducing the retainage that has heretofore been withheld by the Owner under the provisions of Article 12 of the General Conditions (entitled "Payments") to the fixed sum of _____________________ Dollars ($____________) (rounded to two significant digits), which represents approximately ______ percent of the total contract value; and

7. That payment of said funds previously retained will satisfy any and all claims and demands which the Contractor may have or assert against the Owner and/or the State of Illinois, except the claim for the remaining unpaid balance on said contract, which includes the above-mentioned remaining retainage.

Subscribed and sworn to before me this

_____ day of ______________, 20_____.  Contractor: __________________________

Notary Public: __________________________  By: __________________________

My Commission Expires: ______________  Title: __________________________

Page 1 of 1
STATE OF ILLINOIS

CONTRACTOR’S AFFIDAVIT FOR FINAL PAYMENT

COUNTY OF __________________________ SS

The Affiant, ____________________________________________________________, being first duly sworn, upon oath deposes and says:

1. That the Affiant is ____________________ of __________________________ (hereinafter: “the Contractor”) who is the Contractor for the ______________________________________ Work upon the ________________________________ project constructed for The Board of Trustees of the University of Illinois, (hereinafter: “the Owner”) under a written contract dated ______________ between the Contractor and the Owner pertaining to the project;

2. That all bills incurred by the Contractor for labor and materials furnished by Contractor and for Work performed by Contractor in connection with said contract or project have been paid in full;

3. That all subcontractors, vendors, and suppliers who have furnished labor, materials, and/or equipment to or who have performed Work for the Contractor in connection with said contract or project have been paid in full and have no liens, claims, or demands against the Owner or the State of Illinois;

4. That this affidavit is made for the purpose of obtaining payment to the Contractor of the sum of ____________________________________________ Dollars ($_____________) which constitutes the full unpaid balance due the Contractor for all labor, materials, and equipment furnished to and all Work performed upon said project by the Contractor, whether under and pursuant to the provisions of said Contract and all subsequent modifications thereof or otherwise; and

5. That the payment of said sum to the Contractor will constitute payment in full to Contractor and will fully satisfy any and all liens, claims, and demands which the Contractor may have or assert against the Owner and/or the State of Illinois in connection with said contract or project.

6. That the total value of the contract as identified above is as follows:

<table>
<thead>
<tr>
<th>Shell</th>
<th>Fixed Equipment</th>
<th>Movable Equipment</th>
<th>Building Service Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSI 01-10, 13, 21, 31-34 (including all changes to contract)</td>
<td>CSI 11, 41, 42, 45 (equipment)</td>
<td>CSI 12 (furnishings)</td>
<td>CSI 14 (conveying systems)</td>
</tr>
</tbody>
</table>
| $ | $ | $ | $

<table>
<thead>
<tr>
<th>Building Service Systems</th>
<th>Building Service Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSI 22, 23, 44 (mechanical)</td>
<td>CSI 25-28, 40, 48 (electrical)</td>
</tr>
<tr>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>

Subscribed and sworn to before me this _____ day of ______________, 20_____.

Contractor: _______________________

Notary Public: _______________________

By: _______________________

My Commission Expires: ______________

Title: _______________________

Page 1 of 1
**University of Illinois**  
**CONTRACTOR’S FINAL RELEASE AND WAIVER OF LIEN**

| Project Name: _____________________________ | Contractor Name: ____________________________ |
| Address: ___________________________ | Address: ___________________________ |
| City                                        State                       Zip | City                                        State                       Zip |

Owner: **The Board of Trustees of the University of Illinois**  
Contract Division: _______________________  
Contract Date: ______/_____/____

**TO ALL WHOM IT MAY CONCERN:**

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the undersigned Contractor hereby waives, discharges, and releases any and all liens, claims, and rights to liens against the above-mentioned project, and any and all other property owned by or the title to which is in the name of the above-referenced Owner and against any and all funds of the Owner or the State of Illinois appropriated or available for the construction of said project, and any and all warrants drawn upon or issued against any such funds or monies, which the undersigned Contractor may have or may hereafter acquire or possess as a result of the furnishing of labor, materials, and/or equipment, and the performance of Work by the Contractor on or in connection with said project, whether under and pursuant to the above-mentioned contract between the Contractor and the Owner pertaining to said project or otherwise, and which said liens, claims or rights of lien may arise and exist under and by virtue of an act of the General Assembly of the State of Illinois entitled, "Mechanics Lien Act", as amended.

The undersigned further hereby acknowledges that the sum of ____________________________ Dollars ($____________________) constitutes the entire unpaid balance due the undersigned in connection with said project whether under said contract or otherwise and that the payment of said sum to the Contractor will constitute payment in full and will fully satisfy any and all liens, claims, and demands which the Contractor may have or assert against the Owner and/or the State of Illinois in connection with said contract or project.

Dated this ___ day of ______ 20____

Witness to Signature: ____________________________  
Contractor By: ____________________________

Title: ____________________________
University of Illinois

FINAL RELEASE AND WAIVER OF LIEN FOR SUBCONTRACTORS/VENDORS/SUPPLIERS

Subcontractor/Vendor/Supplier | Project | Contractor
---|---|---
Name: _____________ | Name: _____________ | Name: _____________
Address: _____________ | Address: _____________ | Address: _____________

TO ALL WHOM IT MAY CONCERN:

For good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the undersigned Subcontractor/Vendor/Supplier hereby waives, discharges and releases any and all liens, claims, and rights to liens against the above-mentioned project, against any and all other property owned by or the title to which is in the name of the above-referenced Owner, against any and all funds of the Owner or the State of Illinois appropriated or available for the construction of said project, and against any and all warrants drawn upon or issued against any such funds or monies, which the undersigned may have or may hereafter acquire or possess as a result of the furnishing by the Subcontractor/Vendor/Supplier of labor, materials, and/or equipment or the performance of Work by the Subcontractor/Vendor/Supplier on or in connection with said project, whether under and pursuant to the subcontract between Subcontractor/Vendor/Supplier and the above-referenced Contractor pertaining to said project or otherwise, and which said liens, claims, or rights of lien may arise and exist under and by virtue of an act of the General Assembly of the State of Illinois entitled, "Mechanics Lien Act", as amended.

The undersigned Subcontractor/Vendor/Supplier acknowledges that it has no claim or demand of any nature or amount against the Owner for furnishing any labor, materials and/or equipment for, or the performance of any work upon said project, or for anything arising or occurring in connection with said project, whether under and pursuant to the undersigned and said Contractor or otherwise, and hereby fully and completely releases and discharges the Owner and/or the State of Illinois from any and all such claims.

Dated this ___ day of _____ 20____

Witness to Signature: ________________________________

__________________________________________________

By: ________________________________

Title: ________________________________

Page 1 of 1
University of Illinois
CERTIFICATE OF SUBSTANTIAL COMPLETION

Project: ______________________________________________
Project #: ______________________
Owner: The Board of Trustees of the University of Illinois
Professional Services Consultant: ______________________________________________

Contractor: ____________________________________________
Inspection Date: _____/___/_______

______________________________________________________
Owner Possession Date: _____/___/_______

Contract Division: ____________________

INSPECTION

<table>
<thead>
<tr>
<th>Inspection Participants</th>
<th>Representing (Firm or Agency)</th>
<th>Areas or Sections Inspected for Occupancy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LIST
A list of items to be completed or corrected by the Contractor prior to final payment has been prepared by the Professional Services Consultant and is attached to this document. Failure to include any uncompleted, faulty or deficient item on the list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise required by the specifications, the Contractor shall guarantee all of the work performed under this contract against defects in material and workmanship in accordance with the Contract Documents and Federal and State laws and regulations.

POSSESSION
The above referenced Project area has been inspected and found to be substantially complete and ready for Owner possession and occupancy in accordance with the Contract Documents. The Owner accepts full possession and responsibility for the above designated Project or area at 12:01 p.m. of the Owner possession date. The responsibility of the Contractor for utilities ceases at the stated possession time. The insurance required under the contract remains the responsibility of the Contractor.

FINAL PAYMENT
The Contractor shall notify the Professional Services Consultant and the Owner in writing (in accordance to Article 9.7 of the General Conditions) when the Work is fully completed and ready for final inspection. The Professional Services Consultant, upon finding the Work acceptable and the contract fully performed, shall promptly certify final payment to the Contractor in accordance with the Contract Documents.
CERTIFICATE OF SUBSTANTIAL COMPLETION
EXTENDED WARRANTIES

Extended warranties are listed below:

<table>
<thead>
<tr>
<th>Item</th>
<th>CSI Section</th>
<th>Date of Commencement</th>
<th>Duration</th>
<th>Date of Expiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>2.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>3.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>4.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>5.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>6.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>7.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>8.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>9.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>10.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>11.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>12.</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
</tbody>
</table>

Failure to include any item on the extended warranty list does not relieve the Contractor of the responsibility to guarantee the Work in accordance with the Contract Documents. (Attach any bonds or guarantees required by the Contract Documents or documentation of extended warranty dates agreed upon by the undersigned parties.)

SIGNATURES

<table>
<thead>
<tr>
<th>Contractor</th>
<th>Firm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Construction Manager (when applicable)</th>
<th>Firm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Professional Services Consultant</th>
<th>Firm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facilities Management Representative (UIC only)</th>
<th>Office/Dept</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Campus Construction Unit PM</th>
<th>Office/Dept</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Copies: All above signed parties

Affirmative Action
Risk Management
UIUC/UIS Physical Plant Representative
UIC Director, Project Management Services, OCP
Campus Parking
Departmental Representative
Project File

Page 2 of 2
**UNIVERSITY OF ILLINOIS**  
Urbana-Chicago-Springfield  

Contractor/Subcontractor Request For Proposal Breakdown Summary

<table>
<thead>
<tr>
<th>RFP INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROJECT:</strong></td>
</tr>
<tr>
<td><strong>RFP NO:</strong></td>
</tr>
<tr>
<td><strong>RFP DATE:</strong></td>
</tr>
<tr>
<td><strong>CONTRACTOR:</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUMMARY OF DETAILED BREAKDOWN</th>
<th>ADDITIONS</th>
<th>DELETIONS</th>
<th>NET TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. MATERIAL</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>B. LABOR</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>C. OTHER</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>D. NET TOTAL</td>
<td>(Lines A+B+C) $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. OVERHEAD AND PROFIT</td>
<td>(Line D x 15%; if net total is credit, then 5%) $</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. SUBTOTAL, CONTRACTOR</td>
<td>(Lines D+E) $</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CONTRACTOR’S MARKUP ON WORK OF SUBCONTRACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUBCONTRACTOR: Firm Name</td>
</tr>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
</tr>
<tr>
<td>G.</td>
</tr>
<tr>
<td>H.</td>
</tr>
<tr>
<td>I.</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PROPOSAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.</td>
</tr>
<tr>
<td>K.</td>
</tr>
<tr>
<td>L.</td>
</tr>
</tbody>
</table>

* Include builder’s risk insurance coverage increase if contractor is carrying builder’s risk insurance and if change order impacts builder’s risk insurance.

The request for proposal will increase (decrease) the contract amount.

Work will increase (decrease) the contract completion date by _____ calendar days.

**CONTRACTOR SIGNATURE:** _________________  
**DATE:** ___________

**Title:** _________________

Rev. 1/01
# Professional Services Billing Form

**University of Illinois**

**Professional Services Consultant (PSC):** ______________________
**Invoice Date:** ____________

**Project:** ______________________
**University Payment #:** ____________

**Owner's Representative:** ______________________
**Pay Period:** ____________ To ____________

**Agreement Date:** ______________________
**FEIN/FTIN #:** ______________________

## Consultant Section: (Includes Subconsultant's fees)

<table>
<thead>
<tr>
<th>Description</th>
<th>Consultant</th>
<th>MBE/FBE/NA Status</th>
<th>Scheduled Value</th>
<th>Earned to Date</th>
<th>Amount Previously Billed</th>
<th>Amount of This Billing</th>
<th>Total Billed To Date</th>
<th>Unbilled Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Totals**

<table>
<thead>
<tr>
<th>Description</th>
<th>Consultant</th>
<th>MBE/FBE/NA Status</th>
<th>Scheduled Value</th>
<th>Earned to Date</th>
<th>Amount Previously Billed</th>
<th>Amount of This Billing</th>
<th>Total Billed To Date</th>
<th>Unbilled Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Subconsultant Section:

<table>
<thead>
<tr>
<th>Subconsultant</th>
<th>Sub Consultant MBE/FBE/NA Status</th>
<th>Scheduled Value</th>
<th>Earned to Date</th>
<th>Amount Previously Billed</th>
<th>Amount of This Billing</th>
<th>Total Billed To Date</th>
<th>Unbilled Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Attach appropriate statements, time sheets, invoices, etc.

**Remarks:** ______________________

**Submitted by:** ______________________
(Professional Services Consultant)

**Approved by:** ______________________
(Owner's Representative)

END OF DOCUMENT 00 60 00
THE BIDDING AND CONTRACT PROVISIONS
DOCUMENT 00 70 00 – GENERAL CONDITIONS
(Standard Multiple and Single Contract Sets)

GENERAL CONDITIONS

1.0 ARTICLE 1 - DEFINITIONS

1.1 "Applicable Laws" means all laws, statutes, ordinances, codes, building codes, regulations, rules, orders and resolutions of all federal, administrative, state, local, municipal, and other governing bodies having jurisdiction over the Project or the performance of the Work.

1.2 "Change Order" means a written order to a Contractor executed by the Owner in accordance with the contract authorizing and directing an addition to, deletion from, or adjustment or revision of the requirements of the Contract Documents, or an adjustment to the compensation payable to Contractor, or to the time for performance of the contract and completion of the Project, or a combination thereof. All additional expenditures related to Work performed or material purchased through an agreement with a Contractor will ultimately take the form of a Change Order.

1.3 "Construction Documents" means the complete and final design and construction documents provided by Professional Services Consultant pursuant to the contract between Owner and Professional Services Consultant and shall include the drawings, specifications, and all changes and modifications thereto, prepared by or on behalf of Professional Services Consultant for use in constructing the Project, performing the Work, and rendering the Project fully operational.

1.4 "Contract Documents" See paragraph 2.1 herein.

1.5 "Emergency Work Authorization" means a written order to a Contractor executed by the Owner in accordance with the Agreement and directing an adjustment to the Contract Document requirements. An Emergency Work Authorization shall be utilized only in instances of a threat to public health or safety, loss of or damage to property or the integrity of vital records, or serious disruption of essential services. Issuance of an Emergency Work Authorization is entirely within the discretion of the Owner. Prior to commencement of Work, the Owner shall set forth on the appropriate form "not-to-exceed" time and material costs for the contemplated expenditure. An Emergency Work Authorization is preliminarily authorized/supported with appropriate documentation and ultimately utilizes the Change Order form.

1.6 "Field Directive" means a written order to a Contractor executed by the Owner in accordance with the contract authorizing and directing an addition to, deletion from, or adjustment or revision to the requirements of the Contract Documents, or an adjustment to the compensation payable to Contractor, or to the time for performance of the contract and completion of the Project, or a combination thereof. Field Directives may only be utilized in distinct and exceptional situations when, due to circumstances beyond the Owner’s control, a proposed Change Order is in dispute or the contemplated time of completion for the normal Change Order process could adversely affect the project. Prior to commencement of Work, the Owner shall set forth on the appropriate form "not-to-exceed" time and material costs for the contemplated expenditure. A Field Directive is preliminarily authorized/supported with appropriate documentation and ultimately utilizes the Change Order form.

1.7 "Final Completion" means the completion by the Contractor of all Work required by, and in strict compliance with, the Contract Documents.
1.8 "Good Faith Effort Period" means the Bidder has ten (10) calendar days after the bid opening to submit documentation of its good faith efforts to achieve the MBE/FBE goals if the goals are not met.

1.9 "MBE/FBE Participation Cure Period" means if the Bidders fail to meet the MBE/FBE participation goal at the time of bid submittal, they are granted a cure period of ten (10) calendar days to meet the goal. The cure period shall run concurrently with the Good Faith Effort Period.

1.10 "Owner's Representative" means the individual named by Owner, in writing and as such writing may be amended from time to time, to act on Owner's behalf in the administration of this contract. Except as set forth in the specifications, Division 01 00 00 - General Project Requirements, the Owner's Representative does not have authority to waive or modify any condition or term of the Contract Documents.

1.11 "Professional Services Consultant" means the architect, engineer or other professional named in the Agreement and any successor that Owner may retain in connection with the Project.

1.12 "Project" means the project identified on page one of the Agreement.

1.13 "Subcontracts" means the contracts between Contractor and any Subcontractor, including any contracts assigned to the Contractor by the Owner.

1.14 "Subcontract Costs" means those sums properly paid or due and payable to Subcontractors under the terms of the Subcontracts.

1.15 "Subcontractor" means any person or entity having a direct or assigned contract or purchase order with Contractor for the performance or supply of all or any portion of the Work required by the Contract Documents or the supply of any materials, services, equipment or installation services required by the Contract Documents.

1.16 "Substantial Completion" means that stage of completion of the Project, or such agreed discrete portion thereof, such that the Work and the Project, or such agreed discrete portion thereof, are functionally and legally usable by Owner for the purpose for which they are intended.

1.17 "Work" means any and all labor, supervision, work, supplies, fixtures, furnishings, vehicles, equipment, services, tools, materials, computers, utilities, items, documents and things required by the Contract Documents to be performed or supplied. For purposes only of determining Final Completion, "Work" shall not include those things expressly required by the Contract Documents following Final Completion.

2.0 **ARTICLE 2 - THE CONTRACT DOCUMENTS**

2.1 **Contract Documents Defined.** The contract between the parties consists of the “Contract Documents.” The Contract Documents include the Agreement, these General Conditions, the Construction Documents, any supplemental conditions, any special conditions, any subsequent Change Orders, field orders, and other written amendments to the Agreement, and all documents expressly annexed as part of the Agreement. Documents not described above are not Contract Documents and do not constitute part of the contract between the parties.

2.2 **Priority of Documents.** In the event of any conflict, discrepancy, or inconsistency among the Contract Documents, interpretation shall be based on the following descending order of priority:

2.2.A the Agreement.

2.2.B supplemental or special conditions (if any).

2.2.C the General Conditions.
2.2.D specifications.

2.2.E drawings, and among the drawings, the following:

2.2.E.1 as between figures given on drawings and scaled measurements, the figures shall govern;

2.2.E.2 as between large scale drawings and small scale drawings, the large scale drawings shall govern.

In the event that Work is called for by the drawings but not by the specifications, or by the specifications but not by the drawings, the Contractor shall be responsible for such Work.

2.3 Intent. The intention of the Contract Documents is to include all labor, materials, equipment, transportation, construction plant, and facilities necessary for the proper execution and completion of the Work, and the terms and conditions of payment therefor. All work not specifically excluded in the Contract Documents which is reasonably and properly inferable therefrom, or from accepted trade practice, or which is necessary for the proper completion of the Work, is included even though not specifically mentioned in or called for by the Contract Documents.

3.0 ARTICe 3 - REPRESENTATIONS AND WARRANTIES

3.1 Representations and Warranties. Contractor makes the following representations and warranties to Owner:

3.1.A Contractor is professionally qualified to act as the Contractor for the Project and has, and shall maintain, any and all licenses, permits, and other authorizations necessary to act as the Contractor for the Project and to perform the Work required hereunder.

3.1.B Contractor has become familiar with the Contract Documents provided to date and will become familiar with all provided hereafter, and has become familiar with the Project site and the local conditions under which the Project is to be constructed.

3.1.C Contractor has the capability and experience, including sufficient qualified and competent supervisory personnel, to efficiently and timely accomplish the Work, and Contractor will continuously furnish sufficient personnel to accomplish the Work in a timely and efficient manner.

3.1.D Contractor shall comply, and shall cause all Subcontractors to comply, with all Applicable Laws.

3.1.E Contractor assumes full responsibility to Owner for the acts and omissions of its officers, employees, Subcontractors, consultants, and others employed or retained by it or them in connection with the performance of the Work.

3.1.F Contractor warrants to Owner that all labor furnished to perform the Work under the Contract Documents will be competent to perform the tasks undertaken, that the product of such labor will yield only first-class results, that materials and equipment furnished will be of good quality and new unless otherwise permitted by the Contract Documents, and that the Work will be of good quality, free from faults and defects, and in strict conformance with the Contract Documents. Any Work not conforming to these requirements may be considered defective.

3.1.G All obligations related to or arising from all representations and warranties made in the Contract Documents shall be obligations of, and shall be deemed incorporated in, the performance bond furnished by Contractor.

3.2 Enumerated Representations and Warranties Not Exhaustive. The representations and warranties enumerated in this Article 3 operate in addition to, and shall not supersede,
limit, or restrict any other duty, responsibility, representation, or warranty, express or implied, created or required by the Contract Documents or by law.

4.0 ARTICLE 4 - CONTRACTOR’S DUTIES: GENERAL PROVISIONS

4.1 Generally. Contractor shall perform and provide the Work required by, or reasonably implied by or inferable from, the Contract Documents, shall be responsible for the construction of the Project in conformance with the requirements of the Contract Documents, and shall pay for all labor, supervision, materials, supplies, furnishings, fixtures, equipment and things required by the Contract Documents.

4.2 Standard of Care. Contractor shall perform the Work at a level, and be judged by a standard of care, that is consistent with the standards and quality prevailing among nationally recognized contracting firms of superior knowledge, skill and experience engaged in projects of similar size and complexity. Contractor shall carry out and complete the Work in an efficient, economical and timely manner, as expeditiously as is consistent with the level of skill and care required hereby and the interests of Owner, and in strict accordance with the Contract Documents.

4.3 Permits, Notices, and Fees. Contractor shall secure and pay for the building permit and other permits and governmental fees, licenses and inspections necessary for completion of the Work which are customarily secured after execution of the contract. The Contractor shall comply with, and give notices required by, Applicable Laws. Except as above provided, Owner shall obtain necessary approvals, easements, and shall pay for assessments and charges required for construction.

4.4 Compliance with Applicable Laws. Contractor shall reasonably ensure that the Work is performed, and the Project is constructed, in a manner which meets the requirements of all Applicable Laws relating to the construction, occupation, and operation of the Project, including, but not limited to, building codes, fire and safety regulations, and environmental regulations. Such Applicable Laws shall be deemed minimum standards for the Project. Where the requirements of the specifications and the accompanying drawings exceed those of the Applicable Laws, the drawings and specifications shall control. Contractor shall immediately report to Owner’s Representative in writing any known or anticipated violation by any Subcontractor of any Applicable Law.

4.5 Communications in Writing. All communications relating to the Project between Contractor and Owner’s Representative shall be in writing or, as applicable, shall be confirmed in writing.

4.6 Reporting Anticipated Delays. Should Contractor, at any time during the course of the Project, have reason to believe that Contractor, Professional Services Consultant, or any Subcontractor will be unable to meet a completion date of any activity which is on the critical path of the Project or which may delay Contractor, any Subcontractor, the Professional Services Consultant, or the progress of the Project, Contractor shall immediately notify Owner’s Representative in writing, stating the reason for the delay, describing steps being taken to remedy the delay, and recommending steps for eliminating or reducing the extent and impact of such delays.

4.7 Duty to Correct. Contractor shall promptly correct any errors, omissions, deficiencies, or conflicts in the Work at its own cost and without additional compensation or reimbursement, and Contractor shall not be compensated or reimbursed for performing any services necessitated by its failure to perform in strict accordance with the Contract Documents.

4.8 Cooperation of Contractor and Subcontractors. The Contractor shall cooperate and work in harmony with its Subcontractors and other contractors so that all of the Work will be performed without undue delay or friction.
The Contractor shall allow its Subcontractors and other contractors adequate time to furnish and locate sleeves, openings, inserts, hangers, anchors, conduits, and other items of any description which are to be built into the Work. Any delays or prospect of delay shall be promptly reported in writing to the Professional Services Consultant.

If any part of the Contractor’s Work depends for proper execution or results upon other work, the Contractor shall inspect and promptly report to the Professional Services Consultant any defects in such Work that render it unsuitable for such proper execution and results. The Contractor’s failure so to inspect and report shall constitute an acceptance of the other work as fit and proper for the reception of the Contractor’s Work, except as to defects which may develop in the other work after the execution of the Contractor’s Work.

To insure the proper execution of the Contractor’s subsequent Work, the Contractor shall measure Work already in place and shall at once report to the Professional Services Consultant any discrepancy between the executed Work and the Drawings.

5.0 **ARTICLE 5 - CONSTRUCTION SCHEDULE**

5.1 **Preparation of Schedule.** Within fifteen (15) days after receipt of the Notice to Proceed from the Owner, Contractor shall provide to Owner’s Representative and Professional Services Consultant a detailed schedule for performance of all of the Work (the “Construction Schedule”). The Construction Schedule shall be in such form as Owner may require, shall, unless otherwise agreed by Owner in writing, utilize the critical path method of scheduling, and shall conform to the established Substantial Completion Date. The Construction Schedule shall coordinate and sequence all activities and performance by all participants in the construction of the Project, including Owner, Contractor, Professional Services Consultant and Subcontractors. The Construction Schedule shall identify those activities and events which are on the critical path.

5.2 **Owner’s Acknowledgment of Construction Schedule.** Upon Owner’s written acknowledgment of the Construction Schedule, Contractor may proceed in accordance therewith; provided, however, Owner’s acknowledgment of any schedule shall only indicate Owner’s acknowledgment of the dates contained therein and shall not constitute ratification or approval of the accuracy, adequacy, or logic of such schedules, or of the means, methods, manner or sequence of Work contained in such schedules. Owner’s acknowledgment of the Construction Schedule shall in no way diminish Contractor’s duties to schedule and coordinate the Work, which shall remain Contractor’s sole responsibility, and shall not diminish or excuse Contractor’s duties to perform in a manner so as to achieve timely completion of the Project. In no event shall updates to the Construction Schedule provided by Contractor whether or not objected to or acknowledged by Owner, constitute evidence of an adjustment in the Substantial Completion Date or Contractor’s entitlement to additional compensation hereunder.

5.3 **Updating of Schedules.** Contractor shall update the Construction Schedule on a monthly basis throughout the construction of the Project to reflect accurately Work accomplished and to be accomplished. Such updates of the Construction Schedule shall be furnished to Owner’s Representative and Professional Services Consultant monthly and shall detail all elements of Project progress and shall identify any delays relating to any activity on the critical path of the Project, the cause and extent of same, the projected impact on Substantial Completion of the Project by the Substantial Completion Date, and steps being taken and recommendations for eliminating or reducing the extent of such delays.

5.4 **Expediting to Maintain Schedule.** Contractor at its sole expense, shall take all reasonable steps to expedite performance of any activity, contract, delivery, or inspection where necessary to mitigate any delay, to maintain the Construction Schedule, and to achieve Substantial Completion by the Substantial Completion Date.

6.0 **ARTICLE 6 - SUBCONTRACTS**
6.1 **Contractor to Subcontract.** Contractor shall enter into Subcontracts with Subcontractors for the performance of those portions of the Work not performed directly by the Contractor. Except as set forth in paragraph 6.2, Contractor shall, within thirty (30) days after notification of award of the contract, notify the Owner and the Professional Services Consultant in writing of the names of Subcontractors proposed for the principal parts of the Work and for such others as the Professional Services Consultant may direct. Contractor shall simultaneously provide the Professional Services Consultant and the Owner's Representative with such written information as Owner deems necessary in order to determine whether to object to the Contractor's hiring of any Subcontractor or consultant, including proof of license. If no objection is interposed by the Owner within seven (7) days of its receipt of such information, Owner shall be deemed to have no such objection and Contractor may execute such Subcontract and shall furnish Owner a copy of same. Contractor shall not subcontract for any part of the Work with any Subcontractor or consultant (including affiliates and subsidiaries of Contractor) who is not properly licensed or against whom Owner has a reasonable objection. The Contractor shall bind every Subcontractor by all of the provisions of the Contract Documents which are applicable to such Subcontractor's Work unless specifically noted to the contrary in a Subcontract approved in writing by the Owner. The Contractor shall pay the Subcontractor the amount allowed to the Contractor on account of the Subcontractor's work to the extent of the Subcontractor's interest therein, or pay the Subcontractor to such extent as may be provided by the Contract Documents or the Subcontract, if either of these provides for earlier or larger payments than the above. Nothing in paragraph 6.1 shall create any obligation on the part of the Owner to pay or to see to the payment of any sums to any Subcontractor.

6.2 **Related Parties.** Contractor must notify Owner in writing of the specific nature of any contemplated transaction with any Related Party and any such transaction must be approved in writing by Owner before the transaction is consummated or costs are incurred. A “Related Party” may include any of the following: a parent, subsidiary or other entity having common ownership or management with Contractor; entities in which stockholders in, or management employees of, Contractor owns an interest; any person or entity with the right to control the business or affairs of Contractor; and any member of the immediate family of any such person. The terms of any such transaction shall conform to the requirements of the Contract Documents, including, but not limited to, the right to audit books and records pertaining to the Work undertaken by such Related Party, which audit may be undertaken by Owner or its representatives. All other terms and provisions of any such subcontract are subject to Owner's approval. All savings under any such subcontract shall be applied to reduce the Owner's costs under this Agreement and profit related to the transaction shall not be payable to any such Related Party.

6.3 **Assignment of Contracts.** In compliance with the Illinois Procurement Code, the following five (5) subdivisions of the Work, if applicable to this Project, were separately advertised for bids by the Owner:

- plumbing;
- heating, piping, refrigeration, and automatic temperature control systems, including the testing and balancing of those systems;
- ventilating and distribution systems for conditioned air, including the testing and balancing of those systems;
- electric wiring; and,
- general contract work.

The Owner has accepted the lowest responsive bid from a responsible bidder for each subdivision of the Work above indicated, and has awarded contracts to
each. Upon executing contracts for the subdivisions of the Work above indicated excluding the subdivision of the Work bid upon by the Contractor, Owner has assigned all of its rights and delegated all of its duties therein to the Contractor who accepts said assignment and delegation, and subsequently shall be responsible to Owner for performance of the Work to be performed pursuant to such assigned contracts. Such assigned contracts, and such assigned contractors, are sometimes referred to herein as "Assigned Subcontracts" and "Assigned Subcontractors", respectively.

6.3.A **Status of Assigned Subcontractors.** Upon such assignments, the contractors holding contracts which have been assigned shall become Subcontractors of the Contractor and shall no longer have any rights under the contracts against the Owner or duties or obligations under the contracts to the Owner, but all of their rights under the contracts shall be against the Contractor and all of their duties and obligations under the contracts shall be to the Contractor. Excluding paragraph 2.3 of the Contractors Agreement (Document Section 00 50 00) between the Owner and the Contractor, the Assigned Subcontractors and the Contractor shall be bound to each other by the Contract Documents to the same effect and extent as the Owner and the Contractor are so bound, but only insofar as the Contract Documents relate to each Assigned Subcontractor's scope of the Work.

6.3.B **Status of the Contractor.** Upon such assignment, the Contractor shall be responsible for the performance of the Work and shall be as fully responsible to the Owner for the acts and omissions of the Assigned Subcontractors and all persons either directly or indirectly employed by them as the Contractor is for the acts and omissions of persons directly employed by the Contractor or with whom the Contractor has directly entered into Subcontracts for portions of the Work to be performed by Contractor.

6.3.C **Payment of Assigned Subcontractors.** The Contractor shall be responsible to the Assigned Subcontractors for all payments and the Assigned Subcontractors shall look to the Contractor for such payments but all payments becoming due to the Owner under the terms and conditions of the Contractor's contract with the Owner for Work performed by an Assigned Subcontractor shall be made by the Owner directly to the Assigned Subcontractor performing such Work upon compliance by the Assigned Subcontractor with the terms, conditions and requirements of its Assigned Subcontract.

6.3.D **Contractor's Approval of Payments to Assigned Subcontractors.** The written approval of the Contractor shall be a condition precedent to payment of any Assigned Subcontractor. Within seven (7) days after a request for approval for the making of a payment to an Assigned Subcontractor has been submitted to the Contractor, the Contractor shall furnish its approval thereof or state in writing its reasons for withholding such approval.

Except as provided in this paragraph 6.2, the Contractor shall subcontract directly with all Subcontractors.

6.4 The documents and information for the contractors and subcontractors listed in Table 1 and as described below must be provided by the Owner to the Chief Procurement Officer for Higher Education.

Table 1: Contracts and Level Descriptions

<table>
<thead>
<tr>
<th>Contract Type</th>
<th>Level</th>
<th>Contract</th>
<th>Dollar amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor without Assigned</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
<tr>
<td>Contractor with Assigned</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
<tr>
<td>Assigned Subcontractor</td>
<td>1</td>
<td>With Owner</td>
<td>All</td>
</tr>
</tbody>
</table>
Subcontractor

<table>
<thead>
<tr>
<th>Subcontractors' Subcontractor</th>
<th>2</th>
<th>With Level 1</th>
<th>&gt; $50,000</th>
</tr>
</thead>
</table>
| * For any subcontractor beyond level 3 with a contract value > $50,000 shall also be included.

### Level 1 Contractor

The Certifications and Statutory Requirements form and the Financial Disclosures and Conflicts of Interest form submitted by the Level 1 Contractor with the bid documents are hereby made a part of this Contract.

It is the responsibility of the Level 1 Contractor to provide the following with respect to each Level subcontract which exceeds $50,000. The forms shall be completed and signed by each Level subcontract.

* subcontractor(s) name(s)
* address(es)
* subcontract value(s)
* general type(s) of work to be performed
* Certifications and Statutory Requirements form(s)
* Financial Disclosures and Conflicts of Interest form(s),

The documents submitted to the Owner shall be in electronic pdf format and follow the Owner's file naming convention. The forms and file naming convention can be found at: http://www.uocpres.uillinois.edu/contractors/contracts. These documents shall be provided to the Owner within 15 calendar days after the execution of the Contract or after execution of the subcontract, whichever is later.

The Level 1 Contractor must provide the above information for any Level subcontractors added or changed which results in a contract value exceeding $50K during the term of the contract.

Any subcontracts entered into prior to receiving a fully executed copy of the Contract are done at the Contractor’s or Assigned Subcontractor’s own risk.

6.5 Coordination of the Subcontracts. Except as set forth in paragraph 6.2 above, neither Owner nor Professional Services Consultant assumes any responsibility for defining the limits on any Subcontracts on account of the arrangement of the specifications or drawings. As part of the bidding and award of Subcontracts, Contractor shall ensure that the Subcontracts are coordinated so that all of the Work is properly and clearly allocated among, and assigned to, Contractor and Subcontractors without omission, conflict, or duplication. Contractor shall carefully review all Subcontracts to ensure: (a) that all subcontracted parts of the Work are assigned to appropriate Subcontractors; (b) that, unless provided for by Contractor, provisions are made for temporary facilities and utilities necessary for the performance of the Work and for Project site facilities necessary for Contractor, Owner, and Professional Services Consultant to perform their duties in the management, inspection, and supervision of the Work; (c) that responsibility for Project safety programs is properly assigned; (d) that they are in compliance with Applicable Laws; and (e) that they are in compliance with Owner’s and Contractor’s guidelines, if any.

6.6 Competitive Procurement. If directed by Owner, Contractor shall use competitive procurement methods in conformance with Owner’s procurement policies and with any rules and regulations of any governing authority who has jurisdiction over the Project.

6.7 Contractor Responsible for Acts of Subcontractors. Contractor’s subcontracting of the Work, and Owner’s consent and approval of Contractor’s subcontracting with any
Subcontractor, shall not relieve Contractor from any liability or obligation under the Contract Documents or under any Applicable Laws. Contractor shall be responsible for any and all acts, defaults, omissions or negligence of its Subcontractors and consultants, and shall be and remain liable and obligated to Owner for all Work subcontracted. Except as set forth in paragraph 6.2, no relationship of agency, employment, contract, obligation or otherwise shall be created between Owner and any Subcontractor or consultant of Contractor, and a provision to this effect shall be inserted into all Subcontracts and other agreements between Contractor and its Subcontractors and consultants. In no event shall Owner be liable to any of Contractor’s Subcontractors for Work performed by such Subcontractor on behalf of the Contractor or for the Project. Professional Services Consultant will not be asked to resolve disputes between Contractor and any Subcontractor or disputes between Subcontractors.

6.8 Procurement of Special Services. Contractor shall schedule and coordinate services from surveyors, testing laboratories, and other special consultants required for the completion of the Work.

6.9 Orders of Materials, Fixtures, Furnishings and Equipment. Contractor shall schedule, coordinate, expedite, and effect the purchase and delivery to the Project site of materials, fixtures, furnishings and equipment required to be provided by Contractor pursuant to the Contract Documents. Contractor shall perform expediting and inspection services after the placement of all such orders.

6.10 Substitutions. If Owner elects to accept any item(s) proposed by Contractor as a substitution, Contractor shall assume full responsibility for the proper performance of such substituted item(s) and shall assume the costs of any changes in the Work which may be due to such substitution.

6.11 Procurement of Materials, Fixtures, Furnishings and Equipment on Owner’s Behalf. Contractor shall be responsible for scheduling and coordinating, and if requested by Owner’s Representative, for purchasing and for arranging appropriate delivery, storage and security for, all materials, furnishings, tools, fixtures, computers, and equipment to be furnished by Owner under the terms of the Contract Documents for use in performance and completion of the Work. The purchase price and transportation and storage costs associated with such items shall be borne by Owner.

7.0 ARTICLE 7 - CONSTRUCTION ADMINISTRATION

7.1 Review and Approval of Subcontractor Schedules of Values. Contractor shall procure, and carefully review, all schedules of values from each Subcontractor, together with any supporting documentation or data which Owner or Contractor may require from the Subcontractors. The purpose of such review and examination shall be to protect Owner and Contractor from front-end loading and an unbalanced schedule of values which allocates greater value to certain elements of the Work than is indicated by such supporting documentation or data or than is reasonable under the circumstances. If any Subcontractor’s schedule of values is found not to be appropriate, or if the supporting documentation or data is deemed to be inadequate, Contractor shall negotiate with the Subcontractor to establish a balanced schedule of values. After making its review and examination, when the Subcontractor’s schedule of values is found by Contractor to be appropriate as submitted, or if necessary, as revised, Contractor shall sign and deliver same to the Professional Services Consultant thereby indicating Contractor’s informed belief that such schedule of values constitutes a reasonable, balanced basis for payment to the Subcontractor. Contractor shall not sign a Subcontractor’s schedule of values in the absence of such belief unless directed to do so, in writing, by Owner’s Representative.

7.2 Supervision. Contractor shall maintain a continuous presence on the Project site at all times through the provision of sufficient qualified supervisory and other personnel to perform the obligations of this contract. Contractor shall continually supervise its own
forces and those of its Subcontractors in a first-class manner. Contractor shall determine
the adequacy of personnel, labor, materials, equipment and direct supervision provided
by Subcontractors and shall monitor their compliance with the Construction Schedule.
The jobsite superintendent shall be present at the project site in strict accordance with
the project specifications, Division 01 00 00 - General Project Requirements. The jobsite
superintendent shall not be changed without the consent of the Professional Services
Consultant and Owner unless the jobsite superintendent proves to be unsatisfactory to
the Contractor and ceases to be in the Contractor's employ. The jobsite superintendent
shall be the Contractor's representative at the jobsite and all directions issued by the
Professional Services Consultant or Owner to the jobsite superintendent shall be as
binding as if given directly to the Contractor. Directions of major importance shall be
confirmed in writing to the Contractor. Directions of lesser importance shall be confirmed
on written request in each case.

7.3 Job Progress Meetings. Contractor shall conduct meetings at least weekly, and at such
additional times as the needs of the Project or good construction practice may require,
with the Subcontractors, and if necessary with Professional Services Consultant, for the
purpose of discussing all matters relating to the quality, quantity, and progress of the
Work. Contractor shall within two (2) working days after each meeting prepare and
distribute minutes of such meeting to Owner's Representative, the Professional Services
Consultant, the participants, and others who should reasonably be informed of the
meetings.

7.4 Requests for Information and Interpretation. Where appropriate, Contractor shall transmit
to Professional Services Consultant, with a copy to Owner's Representative, requests for
information or interpretation from itself or as made by any Subcontractor regarding the
intent and meaning of the Construction Documents. Contractor shall maintain a log of all
requests for information and interpretation (the "Request Log"), recording (a) the date
each request was made; (b) the date the request was transmitted to Professional
Services Consultant and Owner's Representative; (c) the date of receipt of the response
to the request; and, if applicable, (d) the date the response to the request was transmitted
to the Subcontractor.

7.5 Submittals. Contractor shall review, and indicate its approval (or require re-submission if
necessary) prior to forwarding to Professional Services Consultant and Owner each
submittal required by the Contract Documents, including shop drawings, product data,
samples, catalogues, and other submittals (collectively, "Submittals"). Approval by
Contractor of Submittals shall constitute Contractor's representation to Owner and
Professional Services Consultant that such Submittals are in conformance with the
requirements of the Contract Documents. The review and approval required by this
paragraph shall be completed with reasonable promptness, and expedited where
necessary, so as to cause no delay to the Subcontractors, Professional Services
Consultant, or the Project. Contractor shall also maintain a detailed log (the "Submittal
Log"), reflecting: (a) the date, where applicable, the Subcontractors submit to Contractor,
and that Contractor submits to Professional Services Consultant, each Submittal; (b) the
date of approval or rejection of each Submittal by Contractor or Professional Services
Consultant; (c) the reason for the rejection of any Submittal; and (d) the date of each
subsequent action by Contractor, Professional Services Consultant, Owner, or
Subcontractors with respect to any Submittal. Contractor shall immediately report to
Owner's Representative in writing any delays in the Submittal process and the cause
thereof and shall take appropriate steps to coordinate and expedite the Submittal
process. The Professional Services Consultant's review or approval of Submittals shall
not relieve the Contractor from its obligation for performance of the Work in strict
compliance with the Contract Documents.

7.6 Liens. Contractor shall promptly pay all indebtedness for labor, materials, services, tools
and equipment, and for any other items used in the performance of the Work. Contractor
shall not permit any notice of lien or charge to attach to the Work, the premises upon which the Work is being performed or against any public funds being held by the Owner to pay for Work on the Project. If any lien does so attach, Contractor shall promptly procure its discharge and hold Owner harmless from any claims, losses, costs, damages or expenses (including attorney’s fees) incidental thereto.

7.7 Labor Relations. Contractor shall develop and implement a coordinated plan for labor relations to avoid labor disputes and to provide for the uninterrupted and efficient construction of the Project in accordance with the Construction Schedule, shall comply, and shall require all Subcontractors to comply, with Applicable Laws relating to the terms and conditions of employment of any employee who is employed in connection with the Project.

7.8 Protection of Persons and the Work. Contractor shall at all times take, or require to be taken, all necessary steps required to safeguard Owner’s property and employees from injury or loss in connection with the performance of the Work. Contractor shall take, or require to be taken, all necessary steps to protect Owner’s equipment, adjacent facilities, apparatus, and other property and all adjacent Work and property, including, but not limited to, the use of shoring, boarding, and other safeguards. Where the Work endangers the safety of pedestrians and drivers, barricades for traffic shall be used. Contractor shall keep Owner’s property and the Work reasonably free from dampness, dirt, dust, and other damage and shall provide all reasonable security measures necessary to protect the Project from the elements, vandalism, theft, and other risks of property loss. All temporary protections shall be removed by Contractor upon completion of the Work.

7.9 Demolition, Removal of Materials, and Burning. Except with prior written approval of the Owner, the use of explosives will not be permitted. The procedure proposed for the accomplishment of any required demolition work shall be submitted to Professional Services Consultant and Owner’s Representative for approval. The procedure shall provide for safe conduct of the work, careful removal and disposition of materials, protection of property which is to remain undisturbed and coordination with other Work in progress. The procedures shall include a detailed description of the methods and equipment to be used for each operation, and the sequence of operations. All materials indicated to be removed shall be disposed of off the Owner’s property. The use of burning at the Project site to dispose of refuse and debris is not permitted.

7.10 Site Limitation. Contractor shall obtain Owner’s Representative’s written authorization before establishing staging or “lay-down” areas.

8.0 ARTICLE 8 - UNCOVERING AND CORRECTING WORK

8.1 Uncovering Work Covered Contrary to Directions. If any of the Work is covered contrary to the request of Owner’s Representative or the Professional Services Consultant, or contrary to any provision of the Contract Documents, said Work shall, if required by Owner’s Representative or the Professional Services Consultant, be uncovered for inspection and shall be properly replaced at Contractor’s expense without change in the Substantial Completion Date.

8.2 Option to Order Work Uncovered. If the Contract Documents permit the Work to be covered and neither Owner’s Representative nor the Professional Services Consultant has requested that the Work not be covered, the Professional Services Consultant and Owner’s Representative may nevertheless require that such Work be uncovered for inspection. If such Work conforms strictly with the Contract Documents, the cost of uncovering and proper replacement shall by Change Order be charged to Owner with an appropriate adjustment to the Contract Sum and, if appropriate, the Substantial Completion Date. If such Work does not strictly conform with the Contract Documents, Contractor shall pay the cost of uncovering and proper replacement without adjustment to the Contract Sum or the Substantial Completion Date.
8.3 Correction of Defective Work. Contractor shall immediately proceed to correct Work rejected by Owner’s Representative or by the Professional Services Consultant as defective or failing to conform to the Contract Documents, unless such Work is accepted in accordance with paragraph 8.6 below. Contractor shall bear all costs and expenses associated with correcting such rejected Work, including any additional testing and inspections and any fees and expenses of the Professional Services Consultant made necessary thereby, without adjustment to the Contract Sum or the Substantial Completion Date.

8.4 Correction During One Year Following Completion. If within one (1) year after Substantial Completion any of the Work is found to be defective or not in strict accordance with the Contract Documents, Contractor shall correct such Work promptly upon receipt of written notice from Owner and shall bear all costs and expenses associated therewith. This obligation shall survive Final Payment by Owner and termination of this contract.

8.5 No Period of Limitation Established. Nothing contained in paragraph 8.4 shall establish any period of limitation with respect to Contractor’s other obligations and warranties under the contract, including, without limitation, Article 3. Establishment of the one year time period in paragraph 8.4 relates only to Contractor’s specific duty to correct the Work.

8.6 Owner’s Option to Accept Defective Work. Owner may, at its sole discretion, choose to accept defective or nonconforming Work. Such acceptance shall not be effective unless specifically and expressly stated in writing by Owner’s Representative. In such event, any sums then or thereafter due or owing to Contractor shall be reduced by the reasonable costs of removing and correcting the defective or nonconforming Work, regardless of whether Final Payment has been made or the defective Work replaced or corrected, the intent being that Owner may use such funds to remedy such defects at a time and in a manner convenient to Owner. If any such sum is insufficient to compensate Owner for the acceptance of defective or nonconforming Work, Contractor shall, upon written demand from Owner, pay Owner any shortfall of compensation for accepting defective or nonconforming Work.

9.0 ARTICLE 9 - INSPECTIONS AND CERTIFICATIONS OF COMPLETION

9.1 Inspection of Work. Contractor shall, on a continuous basis as a part of its day-to-day supervision of the Project, inspect the Work to ensure that the quality, quantity and progress of the Work meets the requirements of the Contract Documents. In making such inspections, Contractor shall reject Work that is defective or deficient, take steps to avoid unexcused delays in the performance of the Work, and protect Owner from overpayment.

9.2 Equipment and Other Items. When instructed by Owner’s Representative, Contractor shall schedule and perform factory testing and shop inspections of equipment, fixtures, furnishings, and other items. Such testing and inspections shall be performed at times appropriate to the stage of fabrication, construction, installation, and testing of such items. Contractor shall notify Professional Services Consultant and Owner's Representative prior to each such testing or inspection, and Professional Services Consultant and Owner's Representative or designee shall be entitled, but not required, to accompany Contractor for such testings and inspections.

9.3 Inspection upon Arrival, During Installation, and After Installation. Upon arrival of any materials, supplies, systems, equipment, fixtures, furnishings, and other items at the Project site, whether procured by Contractor, Owner, or Professional Services Consultant, Contractor shall inspect such items for damage, for compliance with the Contract Documents and for compliance with all shipping documents and shall arrange for the proper storage and security of such items. Contractor shall also provide for and monitor the proper and timely installation of all such items on the Project. After such items are installed or made ready for use, Contractor shall again inspect all such items.
for damage and shall arrange for and monitor testing of all such items for compliance with the Contract Documents and readiness for use on the Project.

9.4 **Punch Lists.** Professional Services Consultant shall prepare punch lists and other itemizations of defective, deficient, or incomplete Work to be completed by the Contractor.

9.5 **Contractor’s Observation of Testing and Start-Up.** Contractor shall schedule (and notify Professional Services Consultant and Owner’s Representative of such schedule), coordinate, and observe the testing and start-up of all utilities, systems, fixtures, and other equipment and shall report the results of same to Professional Services Consultant and Owner’s Representative in writing.

9.6 **Transfer of the Work and the Project to Owner.** Contractor shall provide assistance in the transfer of the completed Project, and all portions thereof, to Owner. Such assistance shall include procuring certificates of ownership, titles and warranties, keys to the Project, operations and maintenance manuals and instructions, supplies, start-up of Project systems, transferring Project security, arranging for training Owner in the operation and maintenance of all systems and components of the Project, and such other matters as may relate to Owner's initial occupation, possession, and use of the Project or any part thereof.

9.7 **Certification at Final Completion.** When Contractor believes that Final Completion of the entire Project has been achieved, it shall notify Professional Services Consultant and Owner’s Representative in writing and request an inspection for certification of Final Completion of the Project. Contractor's request for final inspection shall constitute a representation by Contractor to Owner that Contractor has made all inspections of the Work as provided in the contract and that all the Work has been completed in strict compliance with the Contract Documents and that the quality of the Work meets or exceeds the requirements of the Contract Documents.

10.0 **ARTICLE 10 - PROJECT DOCUMENTATION**

10.1 **Basic Project Documentation.** Contractor shall maintain the following documents on behalf of and for the use of Owner: (a) a complete set of current Subcontracts and Contract Documents, including a current set of drawings, specifications, Change Orders and modifications reflecting product and materials selections and as-built conditions on the Project; (b) all shop drawings, samples, product data, and other Submittals; (c) a clean set of the principal building layout lines, elevations of the bottom of footings, floor levels, and key site elevations certified by a qualified surveyor or engineer; (d) all required insurance certificates from Subcontractors; and (e) all other documents required by this contract.

10.2 **Daily Log.** Contractor shall maintain a log of daily reports (“Daily Log”) which shall identify daily weather conditions and any impact on the Work caused thereby, Contractor’s personnel on site, all Subcontractors working each day and the number of employees of each on the Project, the Work accomplished each day, any equipment failures or breakdowns, any procurement or delivery problems, any job site accidents or injuries, any safety or environmental violations, warnings or citations, and any other events, circumstances, or occurrences impacting the progress or cost of the Project.

10.3 **Monthly Reports.** Each month Contractor shall prepare and submit to Owner’s Representative and Professional Services Consultant a written report detailing the progress of the Project (the "Monthly Report"). The Monthly Report shall contain Contractor’s estimate of percentage of completion of the Project and each element thereof, identify any and all delays to the Project and the cause and extent thereof and describe the remedial measures being taken to overcome such delays, identify any defective or deficient Work installed during the preceding month and describe the remedial measures being taken to correct the defective or deficient Work, identify any
outstanding requests for information or clarification, requests for interpretation, change order requests, questions, or other matters requiring the response of either Owner, Contractor, Professional Services Consultant, or a Subcontractor and shall include any and all other information required to fully inform Owner and Professional Services Consultant of the status of the Project and the performance of Contractor, Professional Services Consultant, and Subcontractors.

10.4 **Review and Assignment of Warranties.** Contractor shall obtain and shall transmit to Owner’s Representative all special products, system, equipment or material warranties required by the Contract Documents and the Subcontracts. Contractor shall review all such warranties to confirm that the warranties are in compliance with the requirements of the Contract Documents and Subcontracts. Contractor hereby assigns to Owner all of Contractor’s rights, title and interest in and to any and all warranties, including Uniform Commercial Code warranties, that Contractor receives or is entitled to receive from any Subcontractor or supplier in connection with the Project.

10.5 **Operations and Maintenance Documentation.** Contractor shall obtain and transmit to Owner’s Representative all documentation required by the Contract Documents regarding the operation and recommended maintenance programs relating to the various elements of the Project. Such documentation shall be furnished to Owner’s Representative in uniform three-ring binders labeled with the Project name and number.

10.6 **Review and Approval of As-Built Drawings.** Contractor shall provide as-built drawings and shall confirm to Owner that such drawings are adequate and complete and in compliance with the requirements of the Contract Documents.

10.7 **Availability of Project-Related Records to Owner.** All records relating directly or indirectly to the Project which are in the possession or control of Contractor shall be made available to Owner, its designee, and any governmental authority for audit, inspection, and copying upon request of Owner’s Representative. Such records include, without limitation: all drawings, specifications, Submittals, subcontractor bids, the Daily Log, correspondence, the Request Log, the Submittal Log, minutes, memoranda, tape or videotape recordings, or other writings or things which document the Project, its design, and its construction.

10.8 **Maintenance of Project-Related Records.** Contractor shall maintain and protect all Project-related records, other than those required to be returned to Owner, for no less than five (5) years after Final Completion of the Project and for any longer period of time as may be required by law or good construction practice.

10.9 **Project Videotapes and Photographs.** If at any time requested by Owner’s Representative, Contractor shall, at Owner’s expense, record periodic narrated videotapes or take photographs depicting progress of the Work. Any specific safety or environmental incidents shall be videotaped at the time of the incident without waiting for Owner authorization. All videotapes and photographs shall be submitted to Owner’s Representative on a weekly basis.

11.0 **ARTICLE 11 - OWNER’S DUTIES, OBLIGATIONS, AND RESPONSIBILITIES**

11.1 **Provide Project Information.** Owner shall make available to Contractor / Assigned Subcontractor adequate information regarding Owner’s requirements for the Project including adequate complete sets of the Construction Documents. The Contractor / Assigned Subcontractor is responsible for the purchase of these Construction Documents if the desired number of sets exceeds those available from those returned by unsuccessful bidders.

11.2 **Review of Documents.** Owner shall review any documents submitted by Contractor requiring Owner’s decision and shall render any required decisions pertaining thereto.
11.3 **Access to the Site and the Work.** Owner shall provide Contractor access to the site and to the Work as necessary for Contractor to perform the requirements of the Contract Documents.

11.4 **Timely Performance.** Owner shall perform its duties and obligations set forth in this contract in a timely fashion so as to permit the orderly progress of Contractor's Work.

11.5 **Owner's Reviews, Inspections, Approvals, and Payments.** Owner's review, inspection, or approval of any Work, or any documents prepared or submitted by Contractor shall be solely for the purpose of determining whether such Work and such documents are generally consistent with Owner's construction program and requirements, and Contractor understands that Owner is relying on Contractor to assure compliance with the Contract Documents. No review, inspection, or approval by Owner of such Work or documents shall relieve Contractor of its responsibility for the performance of its obligations under the Contract Documents or for the accuracy, adequacy, fitness, suitability, or coordination of its Work. Approval by any governmental or other regulatory agency or other governing body of any Work, design document, or Subcontract shall not relieve Contractor of responsibility for the performance of its obligations under the Contract Documents. Payment by Owner shall not constitute a waiver of any of Owner's rights under the Contract Documents or at law, and Contractor accepts the risk that defects in the Work, if any, may not be discovered until after payment, including Final Payment, is made by Owner.

11.6 **Non-Waiver.** Owner's failure to exercise any right or remedy hereunder or to require compliance with any obligation of Contractor under the Contract Documents shall not constitute a waiver or an estoppel of the right to exercise such right or remedy or to insist on such compliance at any other time or on any other occasion.

12.0 **ARTICLE 12 - PAYMENT**

12.1 **Contract Sum.** The Contract Sum is stated in the Agreement and, including authorized adjustments and any direct payments to any Assigned Subcontractors, is the total amount payable by the Owner to, and on behalf of, the Contractor for performance of the Work under the Contract Documents.

12.2 **Contractor Retainage.** Except as otherwise approved by Owner in writing, Owner shall retain ten percent (10%) of the amounts earned under this contract ("Contract Retainage"), and Owner shall not be responsible for releasing, paying or compensating Contractor any amount on account of such Contract Retainage until such time as specified herein for release of Contract Retainage.

12.3 **Schedule of Values.** Contractor shall prepare and present to the Professional Services Consultant within fifteen (15) days after commencement of the Work, a proposed schedule of values. Contractor's schedule of values shall be prepared in such form, with such detail, and supported by such data as the Professional Services Consultant or the Owner's Representative may require to substantiate its accuracy. Contractor shall not front-end load its schedule of values by imbalancing it or by increasing any element thereof in excess of its anticipated actual value, and such acts shall constitute a material breach of this contract. Contractor's proposed schedule of values shall be used in determining the amounts payable to Contractor and the Assigned Subcontractors hereunder, but only after it has been acknowledged in writing by the Professional Services Consultant and the Owner's Representative. Schedule of Values and Subcontractors listed will only be accepted if the documentation required by applicable law, including the Illinois Procurement Code (30 ILCS 500/1 et seq.) has been provided to the Owner. See Section 6.4 for the requirements.

12.4 **Schedule of Values Shall Identify Subcontractors.** The Contractor's schedule of values shall identify all Subcontractors, vendors, and suppliers with whom a Subcontract or
purchase order in excess of $1,000 is executed or pending in connection with this contract.

12.5 Reporting MAFBE Participation. The Contractor’s schedule of values shall separately identify all of the proposed Subcontractors, vendors, or suppliers that are certified by the Illinois Department of Central Management Services (CMS) as a Minority or Female Business Enterprise (MBE or FBE) as defined by the Business Enterprise for Minorities, Females, and Persons with Disabilities Act. This information is requested only for the Owner’s use in monitoring the level of MBE/FBE participation on its projects.

12.6 Applications for Payment. At least twenty five (25) days before the date established for each payment, the Contractor shall submit to the Professional Services Consultant an itemized Application for Payment for operations completed in accordance with the Contractor’s acknowledged schedule of values. Such application shall be notarized and supported by such data substantiating the Contractor’s right to payment as the Owner or Professional Services Consultant may require, and shall reflect retainage as provided in the Contract Documents.

12.6.A Such applications shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

12.6.B Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in writing in advance by the Owner, payment may be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner’s title to such materials and equipment or otherwise protect the Owner’s interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

12.6.C The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of liens, claims, security interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

12.6.D Lien Waivers

12.6.D.1 Partial lien waivers are not required with the first payment application if payment is less than fifty percent (50%) of the contract amount. Each subsequent payment application shall be accompanied by the Contractor’s partial waiver, and by partial waivers from all assigned subcontractor(s), subcontractor(s), vendor(s), and suppliers who were included in the immediately preceding payment application, to the extent of that payment, as reflects on the payment application form.

12.6.D.2 Partial lien waivers from the Contractor and all assigned subcontractor(s), subcontractor(s), vendor(s) and suppliers shall accompany the first payment application when the amount of payment exceeds fifty percent (50%) of the total contract amount.
Lien waivers are to be in the amount reflected on the payment application form.

12.6.D.3 The Contractor’s request for final payment shall include final lien waivers, on Owner forms, from all assigned subcontractor(s), subcontractor(s), vendor(s), and suppliers in the full amount of their contracts as reflected on the payment application form. The Contractor shall also furnish its own final waiver of lien as reflected on the payment application form.

12.7 Certificates for Payment. The Professional Services Consultant will, within seven (7) days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Professional Services Consultant determines is properly due, or notify the Contractor and Owner in writing of the Professional Services Consultant's reasons for withholding certification in whole or in part.

12.8 Decisions to Withhold Certification. The Professional Services Consultant may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner. If the Professional Services Consultant is unable to certify payment in the amount of the Application, the Professional Services Consultant will notify the Contractor and Owner. If the Contractor and Professional Services Consultant cannot agree on a revised amount, the Professional Services Consultant will promptly issue a Certificate for Payment for the amount which the Professional Services Consultant is able to certify. The Professional Services Consultant may withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Professional Services Consultant’s opinion to protect the Owner from loss for which the Contractor is responsible, because of:

12.8.A defective Work not remedied;
12.8.B third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
12.8.C failure of the Contractor to make payments properly to Subcontractors or for labor, materials or equipment;
12.8.D reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
12.8.E damage to the Owner or another contractor;
12.8.F reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance will not be adequate to cover applicable damages for the anticipated delay; or
12.8.G persistent failure to carry out the Work in accordance with the Contract Documents.

12.9 Certification of Previously Withheld Amounts. When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.

12.10 Partial Payments. The Owner shall make payments for Work performed under the contract as follows:

12.10.A On or about the last day of each month, Owner shall pay to the Contractor and Assigned Subcontractors, that portion of the Contract Sum for which the Professional Services Consultant has issued a Certificate for Payment during such month.
12.10.B Within fifteen (15) days after receipt of any partial payment, the Contractor shall submit to the Professional Services Consultant an affidavit on the Monthly Affidavit Form bound herewith certifying that all debts incurred for Work for which Contractor has been paid have themselves been paid.

12.10.C After the first partial payment, the proper submission by Contractor of such monthly affidavits shall be a condition precedent to future payments.

12.10.D Neither the Owner nor Professional Services Consultant shall have an obligation to pay or to see to the payment of money to a Subcontractor except as may otherwise be required by law.

12.10.E A Certificate for Payment, a partial or final payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

12.11 Failure of Payment. If within sixty (60) days after the date established in subparagraph 12.10 for payment and through no fault of the Contractor, the Owner does not pay the Contractor and Assigned Subcontractors the amount certified by the Professional Services Consultant or, if no amount has been certified by the Professional Services Consultant, the amount properly owed to the Contractor and Assigned Subcontractors, then the Contractor may, following the receipt by Owner and Professional Services Consultant and Assigned Subcontractors of sixty (60) additional days' written notice of its intent to do so, suspend the Work until such payment has been received. In the event of such a suspension by the Contractor, the Contractor shall be entitled to (1) its costs of suspension as provided by, and subject to the provisions of paragraph 20.4, and (2) an extension of time as provided by, and subject to the provisions of paragraph 20.5.

12.12 Substantial Completion.

12.12.A When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Professional Services Consultant and the Owner in writing and request an inspection for certification of Substantial Completion. Simultaneously, the Contractor shall prepare and submit to the Professional Services Consultant and Owner a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

12.12.B Upon receipt of the Contractor's list, the Professional Services Consultant and Owner will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Professional Services Consultant's and Owner's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Professional Services Consultant. In such case, the Contractor shall then submit a request for another inspection by the Professional Services Consultant and Owner to determine Substantial Completion and Contractor shall bear all costs of same.

12.12.C When the Work or designated portion thereof is substantially complete, the Professional Services Consultant will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, and shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of
the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

12.12.D The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment to the Contractor as provided in subparagraph 12.12.E.

12.12.E Payment at Substantial Completion. Provided that all conditions precedent have been satisfied, within thirty (30) days after written acceptance by Owner and Contractor as provided in subparagraph 12.12.D, Owner shall pay Contractor and Assigned Subcontractors all sums due including Contract Retainage, less any amounts attributable to liquidated damages, and less two hundred percent (200%) of the reasonable cost for completing all incomplete Work, correcting and bringing into conformance all defective and nonconforming Work, and handling all unsettled claims. As a further condition precedent to such payment, however, Contractor shall deliver to Owner's Representative the final complete set of as-built drawings in the form of marked-up blueline drawings, all required releases of claim, all certificates of occupancy or similar documents required for the occupation and use of the Project for its intended purposes, all required warranties and all Project Documentation as described in Article 10 herein.

12.13 Partial Occupancy or Use. The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Professional Services Consultant as provided under subparagraph 12.12.A. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Professional Services Consultant. Immediately prior to such partial occupancy or use, the Owner, Contractor and Professional Services Consultant shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

12.14 Final Completion.

12.14.A Written Notice for Final Inspection, Acceptance, and Payment. Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Professional Services Consultant will promptly make such inspection and, when the Professional Services Consultant finds the Work acceptable under the Contract documents and the Contract fully performed, the Professional Services Consultant will promptly issue a final Certificate for Payment.

12.14.B Payment at Final Completion. Provided that all conditions precedent have been satisfied, within thirty (30) days after execution of the final Certificate for Payment, Owner shall pay Contractor and Assigned Subcontractors all unpaid sums due Contractor under this Agreement ("Final Payment"), less any amount properly withheld pursuant to this contract. Contractor's acceptance of Final Payment shall constitute an unconditional waiver and release of all claims by
Contractor for additional compensation beyond that provided in the Final Payment. Final Payment by Owner shall not, however, constitute a waiver by Owner of its rights or claims arising from Contractor's failure to perform the requirements of the Contract Documents.

12.15 Withholding of Payment. Any provision of the Contract Documents notwithstanding, Owner shall not be obligated to make a payment or payments to Contractor or Assigned Subcontractors otherwise due, if, and for so long as, any one or more of the following conditions exist:

12.15.A Contractor's Application for Payment is not in the form or supported by the documentation required by this Contract;

12.15.B Contractor is in default of any of its obligations under the Contract Documents;

12.15.C Any part of such payment is attributable to Work which is defective or not strictly conforming with the requirements of the Contract Documents; provided, however, that payment shall be made as to the part thereof attributable to Work which is rendered or performed in accordance with the Contract Documents and is not defective, subject to other provisions hereof;

12.15.D Contractor has improperly failed to make payments to its Subcontractors, consultants, employees, or others performing Work in connection with the Project or any person has filed a claim that Contractor has failed to make payments due to such person;

12.15.E Any person has asserted a claim against Owner in whole or in part on account of alleged acts or omissions of Contractor;

12.15.F Evidence that the balance of the Work cannot be completed in accordance with the Contract Documents for the unpaid balance of the Contract Sum;

12.15.G Failure or refusal by Contractor to perform the Work in accordance with the Contract Documents;

12.15.H Damage to Owner or to a third party to whom Owner is, or may be, liable; or

12.15.I Any situation or condition exists which, as set forth elsewhere herein or in the Contract Documents, justifies the withholding of payments.

In the event that any of the foregoing conditions exist, Owner shall be entitled to withhold from any sum then due or thereafter to become due, including from retained sums, an amount sufficient in the sole judgment of Owner's Representative to satisfy, discharge, and defend against such claims and to make good any losses, prospective losses, costs, attorney's fees, and other expenses which may result from the existence of such conditions.

12.16 Disputed Payment Applications. In the event Owner's Representative or the Professional Services Consultant disagrees with or questions all or any portion of any Application for Payment, the amount due to Contractor, or the sufficiency of the information and documentation submitted by Contractor, Owner's Representative or the Professional Services Consultant shall notify Contractor in writing and Owner shall pay the undisputed parts of such Application for Payment. If Owner's Representative and Contractor are able to agree on the amount due under the disputed part of any Application for Payment, payment will be made to Contractor within ten (10) days after receipt of a new Application for Payment representing the agreed amount. Pending resolution of any disputed Application for Payment, or other disputes, Contractor shall continue its performance hereunder without interruption.

12.17 Non-Waiver of Claims for Defective Work. Neither entrance, inspection nor use of the Project by Owner, Professional Services Consultant, or their representatives shall be construed as an acceptance of defective or nonconforming Work nor shall such entrance,
inspection or use release Contractor from any of its obligations under the Contract Documents.

13.0 **ARTICLE 13 - CHANGE ORDERS**

13.1 **Authority to Order Changes.** Owner may by written Change Order, and without affecting the validity or enforceability of this contract, direct changes in the Work within the general scope of the Contract Documents, including changes, additions, deletions, modifications, and revisions thereto. Owner may, at its sole discretion, initially direct changes in the Work by a Field Directive or Emergency Work Authorization, as defined in this Article and the Contract Documents. Contractor shall promptly proceed, and cause all Subcontractors to proceed, with the performance of the Work in accordance with Owner’s direction, and failure to agree on the terms of a Change Order shall not excuse Contractor from continued performance of the Work in an expeditious fashion or from proceeding with any directed change.

13.2 **Adjustments to Contract Sum and Contract Time Only by Change Order.** Changes in the Contract Sum and extensions of time for the performance of this contract may only be made by a Change Order issued in accordance with the terms of this Article. Owner shall not be responsible for any change in the Work involving extra cost unless approval in writing is furnished by Owner before such Work is begun. Professional Services Consultant does not have authority to order changes in the Work that involves changes in cost or time.

13.3 **Adjustments to the Contract Sum.** If there is a change in the Work required of Contractor under the Contract Documents, which change increases Contractor's cost of performance, or if Contractor submits a claim for additional compensation pursuant to paragraph 14.2, then, subject to Owner’s approval of Contractor’s claim, the Contract Sum shall be adjusted by a Change Order; provided, however, that no upward adjustment shall be made if the change in the Work, or the basis of the claim for additional compensation, is caused by the fault, in whole or in part, of Contractor, a Subcontractor, or anyone for whom they are, or may be, responsible. If a change in the Work reduces Contractor’s cost of performance, then the Contract Sum shall be decreased accordingly. The amount of any adjustment to the Contract Sum shall be determined by agreement between Owner and Contractor. In the absence of such agreement, the Contractor, upon receipt of a written order from the Owner, shall nevertheless promptly proceed to implement the change. In such case, the Contractor shall keep and present, in such form as the Professional Services Consultant may direct, a correct account of the resulting job costs or savings, or both, with supporting vouchers. The Professional Services Consultant, upon determination of the costs or savings from such account and from any investigation made by it and, after applying the percentages for overhead and profit provided in the Agreement, shall certify the adjusted Contract Sum. Such certification shall be binding upon both parties.

For Lump Sum Change Orders, the Contractor will submit a properly itemized Lump Sum Change Order Proposal covering the additional work and/or the work to be deleted. This proposal will be itemized for the various components of work and segregated by labor, material, and equipment in a detailed format satisfactory to Owner. The Owner will require itemized change orders on all change order proposals related to work to be performed by the Contractor and all Subcontractors. Details to be submitted will include detailed line item estimates showing detailed materials quantity take-offs, material prices by item and related labor hour pricing information and extensions (by line item or by drawing as applicable).

13.4 **Payment.** Requests for payment for performance of Work pursuant to a Change Order shall be made in accordance with, and payment shall be subject to, the provisions of Article 12.
13.5 **Change Orders Final.** The execution of a Change Order by Contractor shall constitute conclusive evidence of Contractor's agreement to the ordered changes in the Work, the Contract Documents as thus amended, the Contract Sum and the Substantial Completion Date. Contractor, by executing the Change Order, waives and forever releases any claim against Owner for additional time or compensation for matters in any manner relating to, arising out of or resulting from the executed Change Order. Any additional Work performed by Contractor or Subcontractors without prior written authorization by Owner shall be performed at the sole risk and expense of Contractor.

13.6 **Field Directives.** In the event of unforeseen circumstances that are beyond the Owner's control as defined in Article 1, Section 1.6, Owner may issue a Field Directive to commence Work. Upon completion of the Work performed under the Field Directive, a Change Order shall be generated in accordance with Article 13 within.

13.7 **Emergency Work Authorization.** In the event of conditions that require immediate action as defined in Article 1, Section 1.5, Owner may issue an Emergency Work Authorization to commence Work. Upon completion of the Work performed under the Emergency Work Authorization, a Change Order shall be generated in accordance with Article 13 herein.

14.0 **ARTICLE 14 - CLAIMS BY CONTRACTOR**

14.1 **Generally.** All claims against Owner shall be initiated by a written notice submitted by Contractor to Owner's Representative and to the Professional Services Consultant. Such notice shall be submitted to, and received by, Owner’s Representative and the Professional Services Consultant not later than seven (7) days after the occurrence of the event, or commencement of the condition, giving rise to the claim. Promptly thereafter, Contractor shall submit its documented claim to Owner’s Representative and to the Professional Services Consultant and shall make available to both all pertinent information requested by either relating to such claim. Contractor and Owner shall continue their performance under this Agreement regardless of the existence of any claims submitted by Contractor.

14.2 **Claims for Additional Compensation.** In the event Contractor seeks to make a claim for an increase in the Contract Sum, then as a condition precedent to any liability of Owner therefor, Contractor shall strictly comply with all of the requirements of paragraph 14.1 and such claim shall be made by Contractor before proceeding to execute any additional or changed work. Failure to satisfy this condition precedent shall constitute a waiver by Contractor of any claim for additional compensation. Any liability of Owner for additional costs to Contractor shall be limited to actual and reasonable direct costs incurred by Contractor and shall in no event include indirect costs or consequential damages of Contractor or others. Absent a Change Order, Owner shall not be liable to Contractor for claims of third parties, including Subcontractors, unless and until liability of the Contractor has been established therefor in a court of competent jurisdiction. No change in the Contract Sum shall be made except by Change Order issued in accordance with the terms of this contract. Claims by Assigned Subcontractors shall be handled by Contractor the same as claims by other Subcontractors. However, any payments otherwise due and payable to Assigned Subcontractors shall be made directly by the Owner.

14.3 **Claims for Extensions of Time.** In the event the Contractor should be delayed in performing any task which at the time of the delay is then critical, or which during the delay becomes critical, as the sole result of any act or omission by the Owner or someone acting in the Owner's behalf, or by Owner-authorized Change Orders, unusually bad weather not reasonably anticipatable, or Acts of God, the Substantial Completion Date, or as applicable, the date for Final Completion, shall be appropriately adjusted by the Owner upon the written claim of the Contractor to the Owner and the Professional Services Consultant. A task is critical within the meaning of this paragraph.
14.3 if, and only if, said task is on the critical path of the Project schedule so that a delay in performing such task will delay the ultimate completion of the Project. As a condition precedent thereto, any claim for an extension of time by the Contractor shall strictly comply with the requirements of paragraph 14.1 above. If the Contractor fails to make such claim as required in this paragraph 14.3, any claim for an extension of time shall be waived.

14.4 Claims for Concealed or Unknown Conditions. In the event the Contractor discovers previously concealed and unknown site conditions which are materially at variance from those typically and ordinarily encountered in the general geographical location of the Project, the Contract Sum shall be modified, either upward or downward, upon the written claim made by either party within seven (7) calendar days after the first appearance to such party of the circumstances. As a condition precedent to the Owner having any liability to the Contractor due to concealed and unknown conditions, the Contractor must give the Owner and the Professional Services Consultant written notice of, and an opportunity to observe such condition prior to disturbing it. The failure by the Contractor to give the written notice and make the claim as provided by this paragraph 14.4 shall constitute a waiver by the Contractor of any rights arising out of or relating to such concealed and unknown condition.

14.5 No Damages for Delay. The Owner shall not be responsible for damages to any extent whatever to the Contractor for delays in furnishing those materials or performing those acts required under the terms hereof to be furnished or performed by the Owner, Owner's employees, agents or assigns, if such delays are the result of causes beyond the Owner's reasonable control or power to avoid.

15.0 ARTICLE 15 - PAYMENT AND PERFORMANCE BONDS
Contractor shall provide separate payment and performance bonds on the forms provided by Owner and issued by a surety, or sureties, acceptable to Owner. The surety companies providing coverage must have a policyholder's rating not lower than “A-” and a financial rating not lower than “VI” in the current edition of Best's Key Rating Guide for property/casualty insurance companies. Each of the bonds shall include a penal sum in the amount of one hundred percent (100%) of the Contract Sum. Contractor's surety(ies) shall be deemed to have waived notice of, and have consented to, changes to the Contract Documents, including changes in: (a) the time for performing the Work and payment of compensation to Contractor hereunder; (b) the sums payable under this contract to Assigned Subcontractors, if applicable; and (c) the Work to be performed. The Contract Documents shall be incorporated by reference into each of the bonds.

16.0 ARTICLE 16 - CONTRACTOR'S PERSONNEL AND SUBCONTRACTORS
16.1 Personnel. Contractor shall assign only qualified personnel to perform the Work.
16.2 Removal of Personnel and Subcontractors. If, at any time during the course of the Project, Owner's Representative reasonably determines that the performance of any member of Contractor's staff or any of Contractor's Subcontractors including Assigned Subcontractors, or consultants working on the Project is unsatisfactory, Owner's Representative may, in writing, require Contractor to remove such staff member or terminate such Subcontractor or consultant from the Project immediately and replace the staff member, Subcontractor or consultant at no cost to Owner, including those resulting from delay or inefficiency the change may cause.
16.3 Employment Taxes. Contractor shall be responsible for payment of all unemployment compensation, social security, and other similar taxes and benefits covering its employees.

17.0 ARTICLE 17 - OWNERSHIP OF DOCUMENTS
All Contract Documents, as well as information and items provided by Owner to Contractor to facilitate Contractor’s performance hereunder, shall remain the exclusive property of Owner, and
all such documents, information, and items, including all copies thereof, shall be returned to Owner’s Representative upon Final Completion and as a condition precedent to Final Payment, provided that Contractor may retain one copy of same for record purposes only.

18.0 **ARTICLE 18 - INDEMNITY AND LIABILITY INSURANCE**

18.1 **Indemnification.** To the fullest extent permitted by law the Contractor agrees to pay and reimburse and indemnify, keep and hold harmless the Owner, its Trustees, officials, agents, employees, servants and their respective heirs, executors, administrators, officers, directors, successors and assigns from and against any and all losses, demands, obligations, costs, damages, liabilities, suits, actions, judgments, claims (including, but not limited to, claims for the infringement of any patents, copyrights, licenses or other intellectual property rights) and expenses, including, but not limited to, attorneys’ consultants’, and experts’ fees and expenses, and including both litigation and pre-litigation expenses, arising out of or connected with: (a) any injury to or death of persons or damage to or loss of destruction of property (other than the Work itself) caused by or attributable to errors or omissions or negligent acts or willful acts, in whole or part, of the Contractor, its sub-consultants, sub-contractors, officers, agents, representatives, or employees; (b) any error, omission, or negligent act; (c) any breach or failure of performance by the Contractor or its sub-consultants, sub-contractors, officers, agents, representatives, or employees under this Agreement. Contractor expressly understands and agrees that any insurance protection required by this Agreement shall in no way limit its responsibilities or liabilities or serve as a limit in recovery.

18.2 **Contractor’s Liability Insurance.** The Contractor agrees to maintain the following minimum insurance coverage for the duration of the Project or the term for which services will be rendered, and for as long as necessary thereafter to cover claims with respect to its performance under this Agreement.

18.2.A The Contractor shall cause a Certificate of Insurance to be issued showing the following required coverage in no less than the minimum coverage limits listed below. The insurance companies providing coverage must have a policyholder’s rating not lower than “A-” and a financial rating not lower than “VI” in the current edition of Best’s Key Rating Guide for property/casualty insurance companies.

<table>
<thead>
<tr>
<th>Coverage</th>
<th>Minimum Limits of Liability</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.2.A.1 Workmen’s Compensation and Occupational Diseases Employer’s Liability (Part B)</td>
<td>Illinois Statutory Limits</td>
</tr>
<tr>
<td></td>
<td>$500,000 per occurrence</td>
</tr>
<tr>
<td>18.2.A.2 Commercial General Liability</td>
<td></td>
</tr>
<tr>
<td>Each Occurrence</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>General Aggregate</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>Products Completed Operation Aggregate</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>Personal and Advertising Injury</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Fire Damage</td>
<td>$ 100,000</td>
</tr>
<tr>
<td>18.2.A.3 Commercial Auto Liability</td>
<td></td>
</tr>
<tr>
<td>Combined Single Limit OR</td>
<td></td>
</tr>
<tr>
<td>Bodily Injury</td>
<td>$1,000,000 per occurrence</td>
</tr>
<tr>
<td>Property Damage</td>
<td>$1,000,000 per occurrence</td>
</tr>
<tr>
<td>18.2.A.4 Evidence of umbrella or excess liability may be used to meet the above required liability limits.</td>
<td></td>
</tr>
<tr>
<td>18.2.A.5</td>
<td>Evidence of waiver of subrogation must be expressly stated on the certificate of insurance form (reference section 18.2.A.8.4).</td>
</tr>
<tr>
<td>18.2.A.6</td>
<td>Subcontractors must comply with the same underlying insurance coverage requirements as Contractor. Subcontractors shall submit the required Certificate of Insurance to the Contractor.</td>
</tr>
<tr>
<td>18.2.A.7</td>
<td>With respect to the required Commercial General Liability insurance, the Certificate of Insurance should include Additional Insured wording that conveys the following: “The Board of Trustees of the University of Illinois, Construction Manager (if applicable), Contractor with assigned subcontractor(s) (if applicable), and additional parties as designated by Owner (if any) shall be named as an additional insured on a primary and non-contributory basis for liability incurred arising from the activities of Contractor or its subconsultants, subcontractors, officers, agents, representatives, or employees performing work on behalf of Contractor.”</td>
</tr>
<tr>
<td>18.2.A.8</td>
<td>General Liability Terms and Conditions. The Contractor's general liability insurance shall include, without limitation, the following coverages:</td>
</tr>
<tr>
<td>18.2.A.8.1</td>
<td>Contractual Liability. Coverage shall cover all contractual obligations which the Contractor has assumed, including the Indemnity Agreement, for the liability limits set forth above. An Owner/Contractor's protective liability policy may be provided in lieu of a commercial general liability policy for the liability limits set forth above.</td>
</tr>
<tr>
<td>18.2.A.8.2</td>
<td>Explosion, Collapse and Underground Hazards. Coverage for “XCU” (explosion, collapse and underground) hazards shall be included for the liability limits set forth above.</td>
</tr>
<tr>
<td>18.2.A.8.3</td>
<td>Completed Operations Coverage. Completed operations coverage in the liability limits set forth above shall be included for a period of not less than one year after the Substantial Completion date.</td>
</tr>
<tr>
<td>18.2.A.8.4</td>
<td>The Contractor's liability insurance policies shall include a waiver of subrogation clause which must be expressly stated on the Certificate of Insurance that conveys the following:</td>
</tr>
</tbody>
</table>

"It is agreed that in no event shall any insurance company of the Contractor have any right of recovery against Owner for any and all damage or loss unless such damage or loss results from the sole gross negligence or willful misconduct of Owner."

| 18.3 | Terms and Conditions |
18.3.A **Modification or Cancellation.** The Contractor's insurance policies shall be modifiable or cancelable only after written notice has been delivered by Contractor to the Owner by certified or registered mail thirty (30) days in advance of such modification or cancellation.

18.3.B **Delivery of Policies.** Upon request, the Contractor shall deliver copies of its newly issued or renewal insurance policies to the Owner within ten (10) days following the Owner's request for such copies. Failure to request such copies of new or renewal insurance policies does not relieve the Contractor of its contractual obligation to provide the insurance coverages set forth.

18.3.C **Notification of Insurance Carriers.** The Contractor shall be responsible for notifying all of its liability insurance carriers of the provisions of this Agreement and for procuring insurance coverage for this contract on a timely basis. The Contractor shall not commence work under this contract until it has obtained all the insurance required under this Article and until certificates of such insurance have been approved by the Owner.

18.3.D **Contractor's Liability.** The procuring of the insurance required under this contract shall be considered solely as securing Contractor's obligations or liabilities assumed under the Contract Documents, including, but not limited to, the obligation to indemnify the Owner assumed under paragraph 18.1 and shall not be considered as satisfaction of, or a substitution for, such obligations and liabilities. The Contractor shall remain liable and responsible for all such obligations whether or not the insurance provided by it is approved by the Owner and whether or not such insurance is sufficient in amount, quality or coverage to protect it against such liability. The Contractor shall pay and make good all such obligations to the full extent thereof and to the extent that such insurance does not cover them.

18.3.E **Enforcement of this Contract.** In the event Owner retains legal counsel to secure performance by Contractor of any of its obligations under this contract, or if Owner retains or utilizes such counsel to represent its interest with respect to any matter for which Contractor has an indemnity obligation to Owner under any provision of this contract or otherwise, Contractor shall pay and reimburse Owner for the cost of such counsel and shall further pay and reimburse Owner for any and all other cost and expense incurred in preparing, negotiating, or prosecuting any claim against Contractor, including, but not limited to, any and all expert witness fees and expenses.

18.3.F **Lapse of Insurance.** In the event Contractor loses insurance coverage, Contractor shall stop work and shall immediately notify Owner of such cancellation or other loss of insurance coverage. Owner shall withhold any future payments due to Contractor until the matter is resolved. Owner reserves the right to pursue any legal action necessary to cover losses. If Contractor procures replacement insurance in accordance with Contract Documents, Owner reserves the right to allow Contractor to continue work. There shall be no time credit for days not worked pursuant to this section.

18.3.G **Uninsured Loss Occurrence.** In the event a loss occurs during the uninsured period, Owner reserves the right to withhold payment due to Contractor. Contractor shall immediately notify Owner of any loss. Owner shall withhold any future payments due to Contractor. Owner reserves the right to pursue any legal action necessary to cover losses. If Contractor remedies the loss and obtains the required insurance coverages, Owner reserves the right to allow Contractor to continue work. There shall be no time credit for days not worked pursuant to this section.
18.3.H The Contractor’s failure to comply with any insurance requirements set forth herein shall be deemed a material breach of the contract terms.

18.3.I Contractor shall furnish any original Certificate(s) of Insurance evidencing the required coverage to be in force on the date of this Contract, and any renewal Certificate(s) of Insurance if coverage has an expiration or renewal date occurring during the term of this Contract to the appropriate contact person as designated. The receipt of any certificate does not constitute an admission by the Owner that insurance requirements have been met. Failure of the Owner to obtain certificates or other insurance evidence from the Contractor shall not be deemed a waiver by the Owner.

19.0  **ARTICLE 19 - BUILDER’S RISK INSURANCE**

19.1  **The Owner’s Risk.** Owner bears the risk of loss or damage for Owner-procured equipment while in transit or in storage away from the jobsite until responsibility for the Owner-procured equipment is accepted by a contractor or the property is transferred to the custody of the designated contractor or the custody of any contractor subject to the supervision of the designated contractor, or any contractor named as an additional insured, or named insured, under the Builder’s Risk/Installation Floater (herein after referred to as “Builder’s Risk” or “policy”). The designated contractor is responsible for providing and paying for the builder’s risk insurance as described in Article 19. Any loss or cost of repair not covered by such insurance shall be borne by the Contractor responsible for the Work, without additional cost to the Owner. The entity (Contractors or Construction Managers) responsible for providing Builder’s Risk Insurance, identified in Document 00-10-00 Section 2.0, will hereinafter be known as the Designated Contractor throughout this Article.

19.2  **The Contractor’s Risk.**

19.2.A  **Designated Contractor with Assigned Subcontractors.** If Builder’s Risk Insurance is required, the Designated Contractor will provide an insurance policy which shall insure against all risks of direct physical loss or damage to the project. Risk of transit and storage for equipment not Owner-procured is the responsibility of each individual Contractor until such time as the equipment is delivered to the jobsite. The Designated Contractor shall be responsible for the deductible.

19.2.B  **Designated Contractor without Assigned Subcontractors or Construction Managers.**

19.2.B.1 If Builder’s Risk Insurance is required and where the Owner has not assigned subcontractors to a Designated Contractor, the Contractor assigned the responsibility of procuring the Builder’s Risk policy will provide an insurance policy that insures against all risks of direct physical loss or damage to the Project. Risk of transit and storage for equipment not Owner-procured is the responsibility of each individual Contractor until such time as the equipment is delivered to the jobsite. Contractors will be responsible for payment of the policy deductible for losses to their portion of the Work. Contractors will be responsible for submitting and negotiating their claims, if any, under the Builder’s Risk policy, and/or for any other coverages that they might procure on their own behalf.

19.2.B.2  **Deductible.** The policy shall be subject to the following deductible schedule, unless a different deductible is approved by the Owner under separate cover:

<table>
<thead>
<tr>
<th>Policy Limit of Builder’s Risk</th>
<th>Maximum Amount of Deductible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to $10,000,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Over $10,000,000</td>
<td>$50,000</td>
</tr>
</tbody>
</table>
The Owner shall not be responsible for any portion of the deductible.

19.3 **Builder’s Risk Policy.**

19.3.A The policy shall be a Completed Value All Risk Builder’s Risk/Installation Floater form or equivalent form issued under an ISO (hereinafter referred to as “Builder’s Risk” or “policy”) with the policy limit equal to one hundred percent (100%) of the total sum of all Agreements, including the value of Owner-purchased building materials and supplies, equipment, machinery and fixtures intended to become a permanent part of the Project.

19.3.B The policy shall be issued in the name of the Designated Contractor with the Owner (The Board of Trustees of the University of Illinois), all assigns, all contractors, subcontractors of every tier, mortgagees and/or loss payees, if applicable and Professional Services Consultants (limited to their site activities) as additional insureds, as their interests may appear.

19.3.C The insurance companies providing coverage must have a policyholder’s rating not lower than A- and a financial rating not lower than VI in the current edition of Best’s Key Rating Guide.

19.3.D The policy will, at a minimum, comply with the requirements set forth. Further, the policy shall include a waiver of subrogation clause which must be expressly stated on the Evidence of Property form that conveys the following:

“It is agreed that in no event shall any insurance company of the Designated Contractor have any right of recovery against Owner for any and all damage or loss unless such damage or loss results from the sole negligence or willful misconduct of Owner.”

19.3.E Contractor shall furnish Evidence of Property Insurance Form evidencing the required Builder’s Risk coverage to be in force on the start of construction at the jobsite, and any renewals if coverage has an expiration or renewal date occurring during the term of this Agreement.

19.3.F Designated Contractor(s) is responsible for and may carry whatever additional insurance they may deem necessary to protect themselves against hazards or perils not covered by the Builder’s Risk policy. Any loss or cost of repair not covered by the Builder’s Risk insurance shall be borne by the Contractor whose Work or property suffers the loss, without additional cost to the Owner.

19.3.G Required Coverage. Policy shall cover all risks of direct physical loss or damage to **covered property** during the policy term, including where applicable, Flood and Earthquake.

19.3.G.1 **Covered Property** (this may be property of the Insured and/or the property of others for which the Insured has assumed responsibility):

19.3.G.1.1 Property which will become a permanent part of the project. This includes materials, supplies, equipment, machinery, foundations, and underground pipes and wiring; owner supplied materials, equipment, machinery and supplies, the value of which has been included in the total project value. Coverage to include commissioning and testing of equipment and systems including boilers, chillers, pumps and other similar equipment.

19.3.G.1.2 Temporary structures including all scaffolding, construction forms, falsework, shoring, cribbing, fencing,
and temporary buildings at the job site, when the value has been included in the total project value.

19.3.G.1.3 Property while in transit from the time of loading until unloading at the final destination (the job site, a temporary offsite location).

19.3.G.1.4 Property while at any location other than the job site, and on a temporary basis.

19.3.G.2 **Required Coverage Extensions.** Policy shall additionally cover the following, subject to policy sub-limits sufficient to cover the exposure, which shall be listed in the policy Declarations.

19.3.G.2.1 Occupancy. The policy shall specifically permit and allow for beneficial or partial occupancy prior to substantial completion of the Project and acceptance by the Owner.

19.3.G.2.2 Landscaping. Coverage shall extend to trees, shrubs, plants, lawns or sod to be planted as part of the insured project.

19.3.G.2.3 Extra Expenses. Extra expenses shall cover reasonable and necessary excess costs incurred during the period of repair of the damaged property and include equipment rental, emergency expenses, and other expenses necessarily incurred to reduce loss. Unless Owner requires it Extra Expenses would not include additional interest or debt service expense, business interruption, loss of earnings/income, or other delay in completion.

19.3.G.2.4 Construction Documents. Construction Documents shall cover Plans, Blueprints, Drawings, Models or other such Documents related to the project.

19.3.G.2.5 Debris Removal. In the event of direct physical loss or damage to the covered property the policy shall pay the necessary and reasonable costs: 1) to remove debris, including necessary demolition expenses, and/or 2) cost of cleanup at the insured site.

19.3.G.2.6 Architects and Engineers Fees

19.3.G.2.7 Expediting Expense

19.3.G.2.8 Fire Dept. Service Charges and Fire Protective Equipment Refill

19.3.G.2.9 Ordinance or Law/Demolition and Increased Cost of Construction

19.3.G.2.10 Water Damage. Flood, as defined by the Owner in Article 19.3.G may or may not be required depending on the Project; however, the following Water Damage coverage is always required: back-up of sewers, drains and sumps; weight of snow, ice, sleet; sprinkler leakage; water under the ground surface pressing on, or flowing or seeping through foundations, walls, floors or paved surfaces – basements, whether paved or not; or doors, windows or other openings.
19.3.G.3 **Coverage options** - Owner may, at their option, additionally require these Coverage options:

19.3.G.3.1 Delay in completion. Policy shall cover business income and extra expense (loss of rental income and/or gross earnings including concession and/or merchandise revenue; soft costs such as legal/accounting fees, design professional fees, insurance premiums for extending or renewing coverage, general overhead, etc.) in the event direct physical loss or damage to the covered project results in delay. Limit of coverage shall be $0.00.

19.3.G.3.2 Flood. As defined by the Owner means the overflow of a body of water onto normally dry land. The policy shall include coverage for loss due to Flood as defined above. The limit of liability for this peril must be equal to the completed value or $5,000,000, whichever is less. The deductible for this peril may be as high as $25,000. Loss limitations or higher deductibles do not relieve the Contractor of responsibility for the uninsured portion of the loss.

19.3.G.3.3 Earthquake. The policy shall include coverage for loss due to earth movement, including earth sinking, rising or shifting related to such event: landslide, including any earth sinking, rising or shifting related to such event, and including mine subsidence, whether man-made or not; earth sinking (other than sinkhole collapse), rising or shifting including soil conditions which cause settling, cracking or other disarrangement of foundations or other parts of realty. The limit of liability for this peril must be equal to the completed value or $5,000,000, whichever is less. The deductible for this peril may be as high as $25,000. Loss limitations or higher deductibles do not relieve the Contractor of responsibility for the uninsured portion of the loss.

19.3.H Policy shall not be required to cover these types of property:

19.3.H.1 Machinery, tools, and equipment that will not become a permanent part of the project.

19.3.H.2 Vehicles licensed for road use, aircraft, watercraft, rolling stock.

19.3.H.3 Existing property at the job site; unless required by contract.

19.3.H.4 Money, securities, accounts, bills, stamps, and other similar items; precious metals and/or stones.

19.3.H.5 Water, timber, crops, animals; trees, shrubs, plants, and lawn or sod already existing at the job site.

19.3.H.6 Land, except excavations, grading, backfilling, filling or other movement of land if such Work is part of the project.

19.3.I Acceptable Policy exclusions:

19.3.I.1 War and Military Action, including:

19.3.I.1.1 War, including undeclared or civil war
19.3.I.1.2 Hostile or warlike action by a military force in time of peace or war;
19.3.I.1.3 Insurrection, rebellion, revolution, civil war, usurped power or action taken by governmental authority in hindering, combating, or defending against any of these;
19.3.I.1.4 Seizure or destruction of property by order of governmental authority.

19.3.I.2 Nuclear reaction, nuclear radiation or radioactive contamination from any other cause, however, loss or damage arising out of a resultant fire shall be covered (subject to the provisions of the insurance policy).

19.3.I.3 Mysterious disappearance or shortage found upon taking inventory;
19.3.I.4 Dishonest or criminal acts of the insured or its employees;
19.3.I.5 Seizure or destruction of property by order of any governmental authority; unless such action is ordered to prevent the spread of fire, in which case the policy shall pay for the damage to the covered property.

19.3.I.6 Loss from fungus, mold, mildew, and the like, unless otherwise specified in the insurance policy;

19.3.I.7 Actual, alleged or threatened release, discharge, seepage, escape, or dispersal of Contaminants or Pollutants. However, if fire arises directly or indirectly from the actual release, discharge, seepage, escape or dispersal of Contaminants or Pollutants, any loss or damage insured under the policy arising directly from that fire shall be covered;

19.3.I.8 Asbestos removal per governmental order, plus any additional costs for such things as demolition, or cost of reconstruction or debris removal, arising out of such order.

19.3.I.9 Normal subsidence and/or normal settling, cracking, shrinking or expanding of foundations or any other part of the covered property;

19.3.I.10 Normal wear and tear, gradual deterioration, rust, corrosion, hidden or latent defect or any quality in the property that causes it to damage or destroy itself;

19.3.I.11 Omission or error in planning, zoning, development, surveying, design or specifications;

19.3.I.12 Defective or inadequate workmanship, materials, or maintenance.

19.4 Terms and Conditions

19.4.A Modification or Cancellation. The Designated Contractor's insurance policies shall be modifiable or cancelable only after written notice has been delivered by Designated Contractor to the Owner by certified or registered mail thirty (30) days in advance of such modification or cancellation. Designated Contractor must agree to maintain such insurance for the duration of the Project.

19.4.B Delivery of Policies. Upon request, the Designated Contractor shall deliver copies of its newly issued or renewal insurance policies to the Owner within ten (10) days following the Owner's request for such copies. Failure to request such copies of new or renewal insurance policies does not relieve the Designated
Contractor of its contractual obligation to provide the insurance coverages set forth.

19.4.C Notification of Insurance Carriers. The Designated Contractor shall be responsible for notifying its insurance carriers of the provisions of this Agreement and for procuring insurance coverage for this contract on a timely basis. The Contractor shall not commence work under this contract until it has obtained all the insurance required and until evidence of such insurance has been approved by the Owner.

19.4.D Designated Contractor's Liability. The procuring of the insurance required under this contract shall be considered solely as securing Designated Contractor's obligations or liabilities assumed under the Contract Documents, including, but not limited to, the obligation to indemnify the Owner assumed under paragraph 18.1 and shall not be considered as satisfaction of, or a substitution for, such obligations and liabilities. The Designated Contractor shall remain liable and responsible for all such obligations whether or not the insurance provided by it is approved by the Owner and whether or not such insurance is sufficient in amount, quality or coverage to protect it against such liability. The Designated Contractor shall pay and make good all such obligations to the full extent thereof and to the extent that such insurance does not cover them.

19.4.E Enforcement of this Contract. In the event Owner retains legal counsel to secure performance by Designated Contractor of any of its obligations under this contract, or if Owner retains or utilizes such counsel to represent its interest with respect to any matter for which Contractor has an indemnity obligation to Owner under any provision of this contract or otherwise, Designated Contractor shall pay and reimburse Owner for the cost of such counsel and shall further pay and reimburse Owner for any and all other cost and expense incurred in preparing, negotiating, or prosecuting any claim against Designated Contractor, including, but not limited to, any and all expert witness fees and expenses.

19.4.F Lapse of Insurance. In the event Designated Contractor loses insurance coverage, Contractor shall stop work and shall immediately notify Owner of such cancellation or other loss of insurance coverage. Owner shall withhold any future payments due to Designated Contractor until the matter is resolved. Owner reserves the right to pursue any legal action necessary to cover losses. If Designated Contractor procures replacement insurance in accordance with Contract Documents, Owner reserves the right to allow Designated Contractor to continue work. There shall be no time credit for days not worked pursuant to this section.

19.4.G Uninsured Loss Occurrence. In the event a loss occurs during the uninsured period, Owner reserves the right to withhold payment due to Designated Contractor. Designated Contractor shall immediately notify Owner of any loss. Owner shall withhold any future payments due to Designated Contractor. Owner reserves the right to pursue any legal action necessary to cover losses. If Designated Contractor remedies the loss and obtains the required insurance coverages, Owner reserves the right to allow Designated Contractor to continue work. There shall be no time credit for days not worked pursuant to this section.

20.0 ARTICLE 20 - SUSPENSION

20.1 Suspension of Work. Owner may for any reason suspend, in whole or in part, performance of the Work and Contractor’s performance under this contract. Owner’s Representative shall give written notice of such suspension to Contractor specifying when such suspension is to become effective and the scope of the Work affected by such suspension.
20.2 **Ceasing Performance upon Suspension.** From and upon the effective date of any suspension ordered by Owner, Contractor shall not incur, nor permit any Subcontractor to incur, any further expense or obligations in connection with the suspended portion of the Work. From and upon the effective date of any suspension ordered by Owner, Contractor shall cease performing Work, and shall cause all Subcontractors to cease performing Work, related to the suspended portion of the Work, and shall utilize its best efforts to mitigate costs resulting from the suspension.

20.3 **Resumption of Work after Suspension.** If Owner lifts the suspension it shall do so in writing signed by Owner’s Representative and Contractor shall promptly resume performance of the Work and cause the Subcontractors to resume performance of the Work, unless, prior to receiving the notice to resume, Contractor has exercised its right of termination as provided in paragraph 21.8 herein.

20.4 **Costs of Suspension.** Within seven (7) days after either the resumption of the suspended portion of the Work or the termination of this contract, Contractor shall submit an itemization of the following cost items reasonably and necessarily expended by Contractor as a direct result of the suspension, together with pricing or other data required by Owner’s Representative:

20.4.A salaries of Contractor’s home or branch office employees, or both, but only to the extent that such employees were directly impacted by said suspension;

20.4.B salaries of Contractor’s field employees, costs of construction tools, equipment, and field office costs but only to the extent that such employees were directly impacted by said suspension; and

20.4.C Subcontract costs reasonably and unavoidably incurred on account of the suspension; and

20.4.D any other items directly related to the suspended part of the Work.

Contractor’s failure to provide such itemized information within such seven (7) day time period shall constitute a waiver of any compensation relating to the suspension of Contractor’s Work under this contract. Owner shall promptly review Contractor’s itemization and shall issue a Change Order providing for payment to Contractor of such amounts, and only such amounts, listed above as may be due on account of the suspension and increasing the Contract Sum by like amount. In no event shall Contractor be entitled to lost profits, other consequential damages, or any items of damage related to or resulting from a suspension of the Work except for those items enumerated in this paragraph.

20.5 **Extension of Time Due To Suspension.** In the event that Work is suspended as provided herein, subject to the provisions of paragraph 14.3, Contractor shall be entitled to an equitable time extension as determined by the Professional Services Consultant.

21.0 **ARTICLE 21 - TERMINATION**

21.1 **Termination for Convenience.** Owner may for any reason terminate performance of the Work, this contract, or any part of any of them, for Owner’s convenience. Owner shall give written notice of such termination to Contractor specifying when termination becomes effective and the scope thereof.

21.2 **Ceasing Performance upon Termination.** From and after the effective date of any termination, Contractor shall not incur, nor permit any Subcontractor to incur, any further expense or obligations in connection with the terminated portion of the Work. From and after the effective date of any termination, Contractor shall cease performance and cause the Subcontractors to cease performance, to the extent of the terminated portion of the Work. In the event of termination of this contract, Contractor shall terminate outstanding Subcontracts and purchase orders related to the terminated portion of the Work unless directed to do otherwise by Owner’s Representative. Owner’s Representative may direct
Contractor to assign, and Contractor hereby agrees to assign Contractor's right, title and interest under open or terminated Subcontracts to Owner or its designee. Unless directed otherwise by Owner's Representative, Contractor shall settle the liabilities and claims arising out of the termination of the Subcontracts. If requested by Owner's Representative, Contractor shall vacate the Project site immediately.

21.3 Submission of Termination Invoice. In the event of termination of all or any part of the Work or this contract for convenience, Contractor shall, within ninety (90) days after the effective date of termination, submit a written termination invoice to Owner specifying the amounts due because of the termination together with costs, pricing, and other supporting documentation or data required by Owner's Representative. Contractor's failure to submit a termination invoice within such ninety (90) day period shall constitute a waiver of any compensation relating to the termination. If a proper termination invoice is submitted, then Owner shall pay Contractor an amount derived in accordance with paragraph 21.4 herein.

21.4 Compensation for Termination for Convenience. As full compensation due to Contractor for any termination for convenience, including any amounts due from Contractor to a Subcontractor on account of such termination, Owner shall, subject to subparagraph E. below, pay Contractor the following amounts:

21.4.A Reasonable costs of settling and paying debts arising out of the termination of Subcontracts pursuant to the order of termination;

21.4.B The unpaid portion of overhead and profit earned to the date of termination;

21.4.C If it appears that the Contractor would not have profited, would have sustained a loss, or that its profit would have been diminished if the entire contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss, if any, notwithstanding the provisions of subparagraphs A., B., C., and D. of this paragraph 21.4.

21.4.D The total sum to be paid the Contractor under this paragraph 21.4 shall not exceed the Contract Sum, as properly adjusted, less those sums paid or to be paid directly by Owner to Assigned Subcontractors, reduced by the amounts of payments otherwise made, and shall in no event include duplication of payment.

21.4.E In no event shall Contractor be entitled to recover from Owner, on its own account or on behalf of a Subcontractor, lost profits or other consequential damages, whether its own or those of a Subcontractor, on account of a termination for convenience or an erroneous termination for cause, as described below.

21.5 Termination for Cause. If Contractor refuses or fails to perform under this contract in a timely manner, supply enough properly skilled supervisory personnel, labor or proper equipment or materials, make prompt payment to its Subcontractors, suppliers, employees, or consultants, or comply with Applicable Laws, or if Contractor is otherwise guilty of a material breach of this contract or any warranty made herein, then Owner may, by written notice to Contractor, and without prejudice to any other right or remedy, terminate the employment of Contractor, in whole or in part, and take possession of the Project site, the Contract Documents, Subcontracts, Project Documentation in the possession of Contractor, and all equipment and materials at the site.

21.6 Erroneous Termination for Cause. In the event the employment of Contractor is terminated by Owner for cause and it is subsequently determined by a court or other tribunal of competent jurisdiction that such termination was without cause, such termination shall thereupon be deemed a Termination for Convenience under paragraph 21.1 and the provisions of paragraph 21.4 regarding compensation shall apply.
21.7 Completion by Owner and Survival of Obligations. Following any termination, whether for convenience or for cause and whether in whole or in part, Owner may complete the terminated portion of the Work by whatever means Owner deems most expedient. Contractor’s obligations and all provisions of this contract shall continue in full force and effect as to all Work performed prior to the effective date of the termination and as to that portion of the Work not affected by the termination.

21.8 Termination by Contractor. If the Work or this contract is suspended by Owner or by governmental authority in its entirety for a period of one hundred and twenty (120) consecutive days or more through no fault of Contractor or the Subcontractors, or if Owner fails to perform its material obligations to the Contractor for a period of sixty (60) days after receipt of written notification from Contractor of its intent to terminate hereunder, then Contractor may, upon seven (7) days written notice to Owner, terminate this contract. In such event, the Contractor shall be entitled to recover from the Owner as though the Owner had terminated the Contractor’s performance for convenience pursuant to paragraph 21.1 above.

22.0 ARTICLE 22 - LABOR AND EMPLOYMENT LAWS AND REGULATIONS

22.1 Illinois Statutes. The Contractor shall comply with all laws, statutes, regulations, ordinances, rulings or enactments of any governmental authority that are applicable to the work or which in any way pertain to the project, including, without limiting the foregoing thereto, the following Illinois statutes:


Pursuant to the Prevailing Wage Act, Contractor shall pay a wage of no less than the general prevailing hourly rate as paid for work of a similar character in the locality in which the work is performed, to all laborers, workers and mechanics, pursuant to definitions, guidelines and procedures set forth in 820 ILCS 130/0.01 et. seq. If the Illinois Department of Labor revises the prevailing rate of hourly wages to be paid by the Owner, the revised rate shall apply to this contract. The prevailing rate of hourly wages is revised by the Illinois Department of Labor and is available on the Illinois Department of Labor’s official website.

The Contractor shall submit monthly to Owner a certified copy of the records required under section 130/5(a)(1) of the Act. The certified payroll shall include records of all laborers, mechanics, and other workers employed by the Contractor, including assigned subcontractors, for services performed. The records shall include each worker’s name, address, telephone number when available, social security number, classification or classifications, hourly wages paid in each pay period, number of hours worked each day, and the starting and ending times of each work day. The certified payroll shall be accompanied by a statement signed by the Contractor and statements signed by each subcontractor where appropriate which aver that: (1) such records are true and accurate, (2) the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required under the Act; and (3) the Contractor acknowledges that filing a certified payroll that he or she knows to be false is a Class B misdemeanor.

22.2 Compliance. The above explanations of these Acts are condensed and not intended to be a complete detailed account of all duties and obligations imposed thereby, and hence by this article of The General Conditions, upon the Contractor. The Contractor shall comply with all of the provisions of the above cited Acts, whether herein set forth or not, as well as with the provisions of all other applicable legislation and regulations issued thereunder.

23.0 ARTICLE 23 - RESERVED

24.0 ARTICLE 24 - ENVIRONMENTAL ISSUES
24.1 **Environmental Licenses, Certifications, and Permits.** Contractor covenants and agrees that during the term of this contract and any extensions or renewals thereof, all of its employees, agents, representatives, and Subcontractors, if any, performing Work will have the requisite skills, licenses, certifications, training, permits and the like mandated by all applicable federal, state and local governing authorities with jurisdiction over environmental matters. Contractor agrees to provide to Owner’s Representative evidence of compliance with the requirements of this paragraph upon demand.

24.2 **Environmental Laws.** Contractor, its Subcontractors, representatives, employees, and agents shall comply with all federal, state, and local laws, rules, and ordinances relating to environmental protection governing the Work.

24.3 **Termination.** Contractor agrees that a breach of any of the terms, conditions, and obligations of this Article would be detrimental to Owner, a material breach of this contract and grounds for Owner’s termination of the contract.

24.4 **Application with Other Provisions.** The provisions of this Article 24 shall operate in addition to, and not in limitation of, any other obligations contained in the Contract Documents.

25.0 **ARTICLE 25 - MISCELLANEOUS PROVISIONS**

25.1 **Successors and Assigns.** Subject to the provisions of the Agreement, Owner and Contractor, respectively, bind themselves, their successors, assigns and legal representatives to the other party and to the successors, assigns and legal representatives of such other party with respect to all terms and conditions of this Contract.

25.2 **Third Party Beneficiaries.** Nothing contained herein shall create a contractual relationship with, or any rights in favor of, any third party, including any Subcontractor.

25.3 **Waiver.** No waiver by Owner of any one or more defaults by Contractor in the performance of the provisions of this contract shall be construed as a waiver of any other defaults, whether of a like kind or different nature.

25.4 **Entire Agreement/Amendments in Writing.** This contract represents the entire agreement between Owner and Contractor and supersedes all prior communications, negotiations, representations, or agreements, either written or oral. Subject only to the provisions of Article 13, this contract may be amended only by written instrument signed by both Owner and Contractor.

25.5 **Governing Law.** This Agreement shall be construed, interpreted, and enforced in accordance with the laws of the State of Illinois.

25.6 "**Including.** The terms "including", "includes", and their derivatives are not intended as terms of limitation, and shall be deemed in each instance to be followed by the phrase "without limitation."

25.7 **Exhibits.** All exhibits annexed hereto are incorporated by reference and made a part of the contract.

25.8 **Headings.** The headings used are merely for convenience and shall have no other force, effect or purpose.

25.9 **Severability.** In the event any provision of this contract shall be held invalid or unenforceable by any court of competent jurisdiction or other competent tribunal or rendered invalid by any legislative or regulatory enactment, the remaining provisions shall remain in full force and effect, and such holding or enactment shall not invalidate or render unenforceable any other provision hereof.

25.10 **Taxes.** The Contractor shall pay all current and applicable city, county, State and Federal taxes, licenses, assessments, including Federal Excise Taxes, due on his work,
including without thereby limiting the foregoing, those required by the Federal Insurance Contributions Act and the Federal and State Unemployment Tax Acts.

The Contractor shall accept exclusive liability for, and pay, all taxes, license fees, assessments, and excises, levied, assessed or imposed upon or on account of the execution of the contract or on the materials therefor, or on the manufacture, storage, sale, receipts from sale, transportation or delivery of the materials therefor, under any Federal, State, or local law or laws, and in the event said taxes, license fees, assessments and excises, or any part thereof, are in the first instance charged to the Owner, the Contractor shall, at the demand of the Owner, pay the Owner the amount thereof, plus any and all penalties which may have accrued thereon.

The Owner is exempted by Section 3-5 of the Illinois Use Tax Act (35 ILCS 105/3-5 (2000)) from paying any of the taxes imposed by that Act, and sales to Owner are exempt by Section 2-5 of the Illinois Retailer's Occupation Tax Act. (35 ILCS 120/2-5 (2000)) from any of the taxes imposed by that Act. The Department of Revenue of the State of Illinois under Rule No. 15, issued August 9, 1961, has declared that sales of materials to construction contractors for conversion into real estate for schools, governmental bodies agencies and instrumentalities, are not taxable retail sales. The Board of Trustees of the University of Illinois has been assigned the following Tax Exemption Number in connection with the Retailers' Occupation Tax, the Service Occupation Tax, the Use Tax, and Service Use Tax in Illinois: E9989-9779-056.

END OF DOCUMENT 00 70 00
THE BIDDING AND CONTRACT PROVISIONS
DOCUMENT 00 90 00 - ADDENDA AND MODIFICATIONS
(Standard Multiple and Single Contract Sets)

1.0 GENERAL NOTE

1.1 Assignment of Section Numbers. 00 90 00 is the CSI Section designated for the control and numbering of addenda and modifications. For purposes of accessibility and control, the documents will be assigned section numbers as shown in the following logs.

1.2 Insertion and Control. Since addenda and modifications are usually issued after the project manual and specifications are assembled and bound, it will not normally be practical to insert copies into this document. It is recommended, however, that the addenda and modifications be posted in the sections of the documents affected and that a complete extra set of the addenda and modifications be kept on file. The following logs for addenda and modifications, bulletins, etc. are provided to assist in the numbering, posting and control of changes to the Contract Documents.

2.0 ADDENDUM LOG

<table>
<thead>
<tr>
<th>#</th>
<th>Section</th>
<th>Description</th>
<th># of Pages</th>
<th>Date Posted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00 90 01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>00 90 02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>00 90 03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>00 90 04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>00 90 05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.0 MODIFICATION AND BULLETIN LOG

<table>
<thead>
<tr>
<th>#</th>
<th>Section</th>
<th>Description</th>
<th># of Pages</th>
<th>Date Posted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>00 95 01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>00 95 02</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>00 95 03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>00 95 04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>00 95 05</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

END OF DOCUMENT 00 90 00

PROJECT LABOR AGREEMENT
AGREEMENT
Between the
EAST CENTRAL ILLINOIS BUILDING & CONSTRUCTION TRADES COUNCIL
And the
THE UNIVERSITY OF ILLINOIS at URBANA-CHAMPAIGN

1. This Agreement is entered into to facilitate the timely completion of construction and renovation projects at the University of Illinois at Urbana-Champaign (UIUC). The UIUC’s academic year schedule, and related student needs, requires the timely completion of projects within precise and limited time parameters. Strikes and other work stoppages could delay the completion of certain projects, disadvantaging UIUC students. Skilled craftsmen are needed by UIUC to achieve the quality of workmanship essential to meeting public expectations and interests. Furthermore, the parties to this Agreement believe it to be in their mutual interest to promote the efficiency of construction operations and provide for peaceful settlement of labor disputes without strikes or lockouts, thereby promoting the public interest in assuring the timely and economical completion of the work. It is also the intent of the parties to set standard working conditions for the efficient performance of work at the UIUC, to establish and maintain harmonious relations between all parties to the Agreement, to secure optimum productivity and to eliminate strikes, lockouts, or delays in the performance of work at UIUC.

2. The UIUC agrees to include the attached Project Labor Agreement (PLA), or mutually agreed successor versions, as part of Advertisements for Bids and Request for Proposals on selected construction projects as determined by UIUC.

3. Any firm, union affiliated or not, may bid on the project. Successful bidders must become party to the Project Labor Agreement to be awarded a contract. This Agreement applies only to selected UIUC projects at Champaign-Urbana, Illinois.

4. The East Central Illinois Building & Construction Trades Council (ECIBCTC), its member Unions, agents, affiliates and surrogates agree to not stop, delay, interrupt, strike, picket, harass or interfere in any way with construction projects, contractors, or employees engaged in UIUC projects covered by a PLA. Any interference, whether lawful or not, shall terminate this Agreement.

5. In the event that no qualified bidders bid on a project or portion thereof, UIUC reserves the right to request new proposals without including the Project Labor Agreement.

6. The terms of this agreement is for one (1) year beginning January 1, 2016 and ending on December 31, 2016.

7. Neither party to this Agreement shall be obligated to enter into any negotiations for the renewal or extension of this Agreement. If either party desires to renew or extend the Agreement, such party will notify the other party in writing at least ninety (90) days prior to the expiration date.
IN WITNESS WHEREOF, the ECIBCTC and University has caused this Agreement to be executed in their respective capacities effective this day, January 1st, 2016.

University of Illinois  
Urbana-Champaign  
(UIUC)

[Signature]
Comptroller

East Central Illinois Building & Construction Trades Council  
(ECIBCTC)

[Signature]
President of ECIBCTC

[Signature]
Secretary of Board of Trustees

[Signature]
Vice President of ECIBCTC

[Signature]
Associate Vice President for Human Resources

[Signature]
Christopher Butler  
Sec/Treasurer of ECIBCTC

[Signature]
Associate Provost for Human Resources

[Signature]
Executive Director, Facilities & Services

APPROVED AS TO FORM:

[Signature]
Office of University Counsel

Agreement between UIUC & ECIBCTC – Extended 2016
East Central Illinois Building & Construction Trades Council  
Project Labor Agreement  

This Agreement is entered into this   day of    by and between
_________________________________________ and the East Central Illinois Building and
Construction Trades Council for and on behalf of its affiliates, individually and collectively, hereinafter referred to as the Union. This Agreement shall apply to work performed by the
Employer and its Contractors and Subcontractors on Construction known as the
_________________________________________ hereinafter referred to as the Project.

Article 1 – Intent and Purposes  

1.1 It is mutually understood that the following terms and conditions relating to employment of
workmen covered by this Agreement have been written in order to promote efficiency of
construction operations and provide for peaceful settlement of labor disputes without strikes or
lockouts, thereby promoting the public interest in assuring the timely and economical completion of
the work. It is also the intent of the parties to set out standard working conditions for the efficient
prosecution of said construction work, herein to establish and maintain harmonious relations
between all parties of the Agreement, to secure optimum productivity and to eliminate strikes,
lockout, or delays in the prosecution of the work.

(a) Therefore, the following provisions will be binding upon ____________________________
and all its sub-contractors (herein jointly referred to as Contractor), who shall be required to
sign the Participation Agreement, attached hereto as Schedule A, and the Unions during the
term of this Agreement and any renewal thereafter. The Unions hereby consent to apply the
terms and conditions of this Project Agreement to said sub-contractors upon their signing the
Participation Agreement. It is understood that each sub-contractor will be considered and
accepted by the Unions as a separate employer for the purposes of collective bargaining. It is
further agreed that the employees working under this Agreement shall constitute a bargaining
unit separate and distinct from all others. This agreement may be modified by mutual consent
in writing by the parties’ signatory hereto.

1.2 The Contractor agrees to be bound by the terms of the Collective Bargaining Agreements and
amendments thereto of the affiliates of the East Central Illinois Building and Construction Trades
Council and the applicable employers association, if any. Such agreements are incorporated herein by
reference, except that the work of the International Union of Elevator Constructors on this Project
shall be performed under the terms of its National Agreements, with the exception of Article XI, XII,
and XIII of this Project Labor Agreement, which shall apply to work. It is mutually understood that
where the provisions of this Agreement are at variance with any other agreement between the
Contractor and the Union, the language of this Agreement shall prevail. In order to comply with the
requirements of the various fringe benefit funds to which the Contractor is to contribute, the
Contractor shall sign such participation agreements when necessary.

1.3 The Contractor and the Union agree that should the collective Bargaining Agreement (CBA)
of any East Central Illinois Building and Construction Trades Council (ECIBCTC) Affiliate signatory
to this Agreement will expire prior to the completion of this project, the expired contracts’ terms will
be maintained until a new CBA is ratified. The wages and fringe benefits included in any new CBA
will be effective on the effective date of the newly negotiated CBA unless wage and fringe benefit
retroactivity is agreed upon by both bargaining parties.

Article 2 - Recognition

2.1 The Contractor recognizes the ECIBCTC and the signatory affiliates as the sole and exclusive bargaining representatives for its craft employees employed on the jobsite. ECIBCTC affiliates signatory to this Agreement will have recognition on the project for their craft.

Article 3 – Administration of Agreement

3.1 In order to assure that all parties have a clear understanding of the Agreement, to promote harmony and address potential problems, a pre-job conference will be held with the Contractor, ECIBCTC Representatives and all signatory parties prior to the start of any work on the project.

3.2 Representatives of the Contractor, the University, or the ECIBCTC may at any time require a meeting to review the operation of this Agreement. Said meeting shall take place within one week of the written request. The representatives at this meeting shall be empowered to resolve any dispute over the intent and application of the Agreement.

3.3 The Contractor shall make available in writing to the ECIBCTC no less than two days prior to these meetings, a job status report, planned activities for the next 30 day period, actual number of craft employees on the project and estimated numbers of employees by craft required for the next 30 day period. The purpose of this report is to allow time to address any potential jurisdictional problems and to ensure that no party signatory to the Agreement is hindering the continuous progress of the project through a lack of planning or shortage of manpower.

Article 4 – Hours of Work Overtime Shifts and Holidays

4.1 The standard work day shall be an established consecutive eight (8) hour period between the hours of 7:00 a.m. and 5:00 p.m. with one-half hour designated as unpaid period for lunch. The standard work week shall be five (5) consecutive days of work commencing on Monday. Starting time, which is to be established at the pre-job conference, will be applicable to all craft employees on the project. Should job conditions dictate a change in the established starting time and/or a staggered lunch period on certain work of the project or with individual crafts, the Contractor, Business Managers of the crafts involved and the ECIBCTC shall mutually agree to such changes. If work schedule change cannot be mutually agreed to between these parties, the hours fixed in the Agreement shall prevail.

4.2 All time before and after the established workday of eight (8) hours, Monday through Friday
and all the time on Saturday shall be paid in accordance with each craft’s current Collective Bargaining Agreement. All time on Sundays and Holidays shall be paid for at the rate of double time.

(a) Fringe benefit payments for all overtime work shall be paid in accordance with each craft’s Current Collective Bargaining Agreement.

4.3 Shifts may be established when considered necessary by the Contractor. Shift pay shall be in accordance with each craft’s current Collective Bargaining Agreement.

(a) Shifts when established shall continue for a minimum of five (5) consecutive days.

4.4 Recognized Holidays shall be as follows: New Year’s Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, the day after Thanksgiving Day and Christmas Day. No work will be performed on Labor Day under any consideration, except in an extreme emergency and then only after consent has been given by the Business Manager.

Article 5 - Absenteeism

5.1 The Contractor and the Union agree that chronic and/or unexcused absenteeism is undesirable and must be controlled. Employees that develop a record of such absenteeism shall be identified by the Contractor to the appropriate referral facility and the Contractor shall support such action with the work record of the involved employee. Any employee terminated for such absenteeism shall not be eligible for rehire on the project for a period of no less than ninety (90) days.

Article 6 – Management Rights

6.1 The Contractor retains and shall exercise full and exclusive authority and responsibility for the management of its operations, except as expressly limited by the terms of this Agreement.

Article 7 - General Working Conditions

7.1 Employment begins and ends at the project site.

7.2 Employees shall be at their place of work at the starting time and shall remain at their place of work until quitting time. The parties reaffirm their policy of a fair days work for a fair days pay.

Page 3 of 18
7.3 The Contractor may utilize brassing, time clocks or other systems to check employees in and out. Should such procedures be required, the techniques and rules regarding such procedures shall be established by mutual consent of the parties at the pre-job conference.

7.4 There shall be no limit on production by workmen or restrictions on the full use of tools or equipment. Craftsmen using tools shall perform any work of the trades and shall work under the direction of the craft foreman. There shall be no restrictions on efficient use of manpower other than as may be required by safety regulations.

7.5 Crew Foreman shall be utilized as per the existing collective bargaining agreements. The Contractor agrees to allow crew Foreman ample time to direct and supervise their crew. The Union agrees there will be no restrictions placed on crew foreman's ability to handle tools and materials.

7.6 The Contractor may utilize the most efficient methods or techniques of construction tools or other labor saving devices to accomplish the work.

7.7 The Contractor may establish such reasonable project rules as the contractor deems appropriate. These rules will be reviewed and established at the pre-job conference and posted at the project site by the contractor.

7.8 It is recognized that specialized or unusual equipment may be installed on the project and in such cases, the Union recognizes the right of the Contractor to involve the equipment supplier or vendor's personnel in supervising the setting of the equipment. These personnel may make modifications and final alignment which may be necessary prior to and during the start-up procedure, in order to protect factory warranties.

7.9 In order to promote a harmonious relationship between the equipment or vendor's personnel and the Building Trades craftsmen, a meeting shall be held between the Contractor and the ECIBCTC prior to any involvement on the project by these personnel. The Contractor will inform the ECIBCTC of the nature of involvement by these personnel and the numbers of personnel to be involved, allowing ample time for the Union representatives to inform their stewards prior to the start of any work.

7.10 Equipment or material delivered to the job site will be unloaded promptly without regard to jurisdictional disputes which will be handled as per the provisions of this Agreement. The Contractor will supply ECIBCTC and affiliated unions with delivery schedules, allowing as much time as possible to ensure the appropriate crafts will be available to unload the materials or equipment.

**Article 8 - Safety**

8.1 The employees covered by the terms of this Agreement shall at all times while in the employ of the Contractor be bound by the safety rules and regulations as established by
the Contractor in accordance with the Construction Safety Act and OSHA.

(a) These rules and regulations will be published and posted at conspicuous places throughout the project.

8.2 In accordance with the requirements of OSHA, it shall be the exclusive responsibility of each Contractor on a jobsite to which this Agreement applies, to assure safe working conditions for its employees and compliance by them with any safety rules contained herein or established by the Contractor. Nothing in this Agreement will make the ECIBCTC or any of its affiliates liable to any employees or to other persons in the event that injury or accident occurs.

Article 9 - Subcontracting

9.1 The Project Contractor agrees neither it nor any of its contractors or subcontractors will subcontract any work to be done on the Project except to a person, firm or corporation who is or agrees to become party to this Agreement. Any contractor or subcontractor working on the Project, shall, as a condition to working on said Project, become signatory to and perform all work under the terms of this Agreement. The furnishing of materials, supplies or equipment and the delivery thereof shall in no case be considered subcontracting, with the exception of ready mix, aggregate, asphalts, brick, block, drywall, and trash removal.

Article 10 - Union Representation

10.1 Authorized representatives of the ECIBCTC and its signatory affiliates shall have access to the project provided they do not interfere with the work of the employees and further provided that such representatives fully comply with the visitor and security rules established for the project.

10.2 Each ECIBCTC affiliate, which is a party to this Agreement, shall have the right to designate a working journeyman as a steward. Such designated steward shall be a qualified worker performing the work of that craft and shall not exercise any supervisory functions. Each steward shall be concerned with the employees of the steward’s employer and not with the employees of any other employer.

10.3 The working steward will be paid at the applicable wage rate for the job classification in which he is employed.

10.4 The working steward shall not be discriminated against because of his activities in performing his duties as steward, and except as otherwise provided in local agreements, shall be the last employee in his craft to be laid off in any reduction in force. Stewards will be subject to discharge to the same extent that other employees are only after notification to the Union Representative. The Contractor will permit stewards sufficient time to perform the
duties inherent to a steward’s responsibilities. Stewards will be offered available overtime work if qualified.

**Article 11 - Work Stoppages and Lockouts**

11.1 During the term of this Agreement there shall be no strikes, picketing, work stoppages, slowdowns or other disruptive activity for any reason by the ECIBCTC, its affiliates or by any employee and there shall be no lockout by the Contractor. Failure of any Union or employee to cross any picket line established at the project site is a violation of this Article.

11.2 The ECIBCTC and its affiliates shall not sanction, aid or abet, encourage or continue any work stoppages, picketing or other disruptive activity and will not make any attempt of any kind to dissuade others from making deliveries to or performing services for or otherwise doing business with the Contractor at the project site. Should any of these prohibited activities occur the Union will take the necessary action to end such prohibited activities.

11.3 No employee shall engage in any activities which violate this Article. Any employee who participates in or encourages any activities which interfere with the normal operation of the project shall be subject to disciplinary action, including discharge, and if justifiably discharged for the above reasons, shall not be eligible for rehire on the same project for a period of not less than ninety (90) days.

11.4 Neither the ECIBCTC nor its affiliates shall be liable for acts of employees for which it has no responsibility. The principal officer or officers of the ECIBCTC will immediately instruct order and use the best efforts of his office to cause the affiliated union or unions to cease any violations of this Article. The ECIBCTC in its compliance with this obligation shall not be liable for unauthorized acts of its affiliates. The principal officer or officers of any involved affiliate will immediately instruct, order or use the best effort of his office to cause the employees the union represents to cease any violations of this Article. A union complying with this obligation shall not be liable for unauthorized acts of employees it represents. The failure of the Contractor to exercise its right in any instance shall not be deemed a waiver of its right in any other instance.

11.5 In lieu of any action at law or equity, any party shall institute the following procedure when a breach of this Article is alleged; after all involved parties have been notified.

(a) The party invoking this procedure shall notify an individual to be mutually agreed upon; whom the parties agree shall be the permanent arbitrator under this procedure. In the event the permanent arbitrator is unavailable at any time, he shall appoint his alternate. Notice to the arbitrator shall be by the most expeditious means available, with notice by service with delivery confirmation to the party alleged to be in violation and all involved parties.

(b) Upon receipt of said notice the arbitrator named above shall set and hold a
hearing within twenty-four (24) hours if it is contended the violation still exist but not before twenty-four (24) after the service with delivery confirmation notice to all parties involved as required above.

(c) The Arbitrator shall notify the parties by service with delivery confirmation of the place and time he has chosen for this hearing. Said hearing shall be completed in one session. A failure of any party or parties to attend said hearing shall not delay the hearing of evidence or issuance of an Award by the Arbitrator.

(d) The sole issue at the hearing shall be whether or not a violation of this Article has in fact occurred. The Award shall be issued in writing within three (3) hours after the close of the hearing, and may be issued without an Opinion. If any party desires an Opinion, one shall be issued within fifteen (15) days, but its issuance shall not delay compliance with, or enforcement of, the Award. The Arbitrator may order cessation of the violation of this Article, and such Award shall be served on all parties by hand or registered mail upon issuance.

(e) Such Award may be enforced by any court of competent jurisdiction upon the filing of the Agreement and all other relevant documents referred to hereinabove in the following manner. Written notice by service with delivery confirmation of the filing of such enforcement proceedings shall be given to the other party. In the proceeding to obtain a temporary order enforcing the Arbitrator's Award as issued under Section 13.5 of this Article, all parties waive the right to a hearing and agree that such proceedings may be exparte. Such agreement does not waive any party's right to participate in a hearing for a final order of enforcement. The Court's order or orders enforcing the Arbitrator's Award shall be served on all parties by hand or by delivery to their last known address or by service with delivery confirmation.

(f) Any rights created by statute or law governing arbitration proceedings inconsistent with the above procedure or which interfere with compliance therewith are hereby waived by parties to whom they accrue.

(g) The fees and expenses of the Arbitrator shall be borne by the party or parties found in violation. In the event that no violation is found, such fees and expenses shall be borne by the moving party.

**Article 12 - Disputes and Grievances**

12.1 This Agreement is intended to provide close cooperation between management and labor. Each of the Unions will assign a representative to this Project for the purpose of completing the construction of the Project economically, efficiently, continuously, and without interruption, delays, or work stoppages.
12.2 The Contractors, Unions, and the employees, collectively and individually, realize
the importance to all parties to maintain continuous and uninterrupted performance of the
work of the project, and agree to resolve disputes in accordance with the grievance-
arbitration provisions set forth in this Article, accept when any craft which has a no strike,
no lockout grievance procedure which results in final and binding arbitration, then they
shall use their local grievance procedures to settle such disputes.

12.3 Any questions or dispute arising out of and during the term of this Project
Agreement (other than Trade jurisdictional disputes) shall be considered a grievance and
subject to resolution under the following procedures:

Step 1: (a) When any employee subject to the provisions of the Agreement feels he or
she is aggrieved by a violation of this Agreement, he or she, through his or her local union
business representative or job steward, shall, within five (5) working days after the occurrence
of the violation, give notice to the work-site representative of the involved Contractor stating
the provision(s) alleged to have been violated. The business representative of the local union or
the job steward and the work-site representative of the involved Contractor and the Project
Contractor shall meet and endeavor to adjust the matter within three (3) working days after
timely notice has been given. The representative of the Contractor shall keep the meeting
minutes and shall respond to the Union representative in writing (copying the Project
Contractor) at the conclusion of the meeting but not later than twenty-four (24) hours
thereafter. If they fail to resolve the matter within the prescribed period, the grieving party may,
within forty-eight 48 hours thereafter, pursue Step 2 of the Grievance Procedure, provided the
grievance is reduced to writing, setting forth the relevant information concerning the alleged
grievance, including a short description thereof, the date on which the grievance occurred, and
the provision(s) of the Agreement alleged to have been violated.

(b) Should the Local Union(s) or the Project Contractor or any Contractor have a
dispute with the other party and, if after conferring, a settlement is not reached within three (3)
working days, the dispute may be reduced to writing and proceed to Step 2 in the same manner
as outlined herein for the adjustment of an employee complaint.

Step 2: The International Union Representative and the involved Contractor shall
meet within seven (7) working days of the referral of a dispute to this second step to arrive
at a satisfactory settlement thereof. Meeting minutes shall be kept by the Contractor. If
the parties fail to reach an agreement, the dispute may be appealed in writing in accordance
with the provisions of Step 3 within seven (7) calendar days thereafter.

Step 3: (a) If the grievance has been submitted but not adjusted under Step 2,
either party may request in writing, within seven (7) calendar days thereafter, that the
grievance be submitted to an Arbitrator mutually agreed upon by them. The Contractor
and the involved Union shall attempt mutually to select an Arbitrator, but if they are unable
to do so, they shall request the American Arbitration Association to provide them with a
list of arbitrators from which the Arbitrator shall be selected. The rules of the American
Arbitration Association shall govern the conduct of the arbitration hearing. The decision
of the Arbitrator shall be final and binding on all parties, the fee and expenses of the
arbiter shall be borne equally between the Contractor and the involved Local Union(s).

(b) Failure of the grieving party to adhere to the time limits established herein shall render the grievance null and void. The time limits established herein may be extended only by written consent of the parties involved at the particular step where the extension is agreed upon. The Arbitrator shall have the authority to make decisions only on issues presented to him or her, and he or she shall not have the authority to change, amend, add to or detract from any of the provisions of this Agreement.

11.4 The Project Contractor and Owner shall be notified of all actions at Steps 2 and 3 and shall, upon their request, be permitted to participate in all proceedings at these steps.

Article 13 - Jurisdictional Disputes

13.1 As used in this Agreement, the term "jurisdictional dispute" shall be defined as any dispute, difference or disagreement involving the assignment of particular work to one class or craft of employees rather than to a different class or craft of employees, regardless of that Contractor’s contractual relationship to any other employer, contractor or organization on the site.

13.2 It is agreed by and between the parties to this Agreement that any and all jurisdictional disputes shall be resolved in the following manner; each of the steps hereinafter listed shall be initiated by the parties in sequence as set forth:

(a) Negotiation by and between the Local Business Representative of the disputing Unions and Contractor assigning the work within 5 business days. Such negotiation shall be pursued until it is apparent that the dispute cannot be resolved at the local level.

(b) The International Representatives of the disputing Union shall meet on the job site by phone conference, e-mail or fax and attempt to resolve said dispute within 5 business days.

(c) The parties to the Jurisdictional Dispute shall submit the dispute directly to an agreed upon arbitrator after complying with paragraph (2b) above within 5 business days. An arbitrator will be selected from a panel of seven (7) arbitrators supplied through the Federal Mediation and Conciliation Service being selected or rejected one at-a-time by the Unions involved. The arbitrator's decision will be final and legally binding on this project only. Further, the losing party(s) will be responsible for the cost of the Arbitrator.

(d) A jurisdictional dispute may be submitted upon a pre-job assignment.

(e) If any party to the jurisdictional dispute does not fully comply with the steps and time limit with each step, then the party in non-compliance will lose by "automatic default".

(f) Time limits at any step can be extended if all parties to the jurisdiction mutually agree in
writing.

(g) All parties to a jurisdictional dispute can mutually agree to waive the time limits in steps 12.2(a) & 12.2(b) and proceed directly to an expedited arbitration hearing.

13.3 The signatory parties to this Agreement agree that all jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage or slow-down of any nature, and the Contractor's assignment shall be adhered to until the dispute is resolved. Individuals violating this section shall be subject to immediate discharge

Article 14 - General Savings Clause

14.1 If any Article or provision of this Agreement shall be declared invalid, inoperative or unenforceable by any competent authority of the executive, legislative, judicial or administrative branch of the Federal or State government, the Employer and the Union shall suspend the operation of such Article and provisions during the period of its invalidity and shall substitute by mutual consent, in its place and stead, an Article or provision which will meet the objections to its validity and which will be in accord with the intent and purpose of the Article or provision in question.

Article 15 - Term Of Agreement

15.1 This Agreement shall be in full force as of and from the date shown above to and including the end of all construction by the Contractor.
Signatures for the Unions:

Asbestos Workers LU #18  Date
International Association of Heat and Frost Insulators

Ironworkers LU #380  Date
International Association of Bridge, Structural & Ornament Iron Workers

Bricklayers & Tileseters LU #8  Date
International Union of Bricklayers & Allied Craftworkers

Laborers LU #703  Date
Laborers’ International Union of North America Laborers

Boilermakers LU #60  Date
International Brotherhood of Boilermakers, Ironship Builders, Blacksmiths, Forgers and Helpers

Millwrights LU #1051  Date
United Brotherhood of Carpenters & Joiners of America of Mid Central Illinois Regional Council

Carpenters LU #243  Date
United Brotherhood of Carpenters & Joiners of America of Mid Central Illinois Regional Council

Operating Engineers LU #841  Date
International Unions of Operating Engineers

Electricians LU #601  Date
International Union of Electrical Workers

Painters LU #363  Date
International Brotherhood of Painters & Allied Trades

Glaziers LU #1168  Date
International Brotherhood of Painters & Allied Trades

Plasterers & Cement Masons LU #143  Date
Operative Plasterers & Cement Masons’ International Association of the United States and Canada
Signatures for the Unions:

Plumbers & Steamfitters LU #149  Date
United Association of Journeymen & Apprentices
of the Plumbing & Pipe Fitting Industry of the
United States & Canada

Road Sprinkler Fitters LU #669  Date
United Association of Journeymen & Apprentices
of the Plumbing & Pipe Fitting Industry of the
United States & Canada

Roofers LU #97  10-6-2015

Robert Champion  10/6/15
Sheet Metal Workers LU #218  Date
Sheet Metal Workers International Association

Teamsters LU #26  Date
International Brotherhood of Teamsters
ADDENDUM A: UNION CONTACT LIST

Boilermakers LU #60
Cooper, Kirk W. – VP, Ass’t Bus Mgr
Lusk, Gary L. – Business Manager
Nelsen, Matthew D. – President, Ass’t Bus Mgr

Company: Boilermakers LU #60
425 W. Edgewood Court
Morton, IL 61550-2497
Business Phone: (309) 266-7144
Business Fax: (309) 266-7539
Mobile Phone:
(309) 339-9815 (Kirk)
(309) 339-9680 (Matthew)
Web Page: http://www.teamclmc.org
Email: kcooper@boilermakers60.org
glusk@boilermakers60.org
mnelsen@boilermakers60.org

Bricklayers & Tile Setters LU #8 IL
Toenjes, David - President
Spence, Peter – Field Rep

Company: Bricklayers & Tile Setters LU #8
7 N. High Street, Suite 401
Belleville, IL 6222
Business Phone: (618) 234-5340
Business Fax: (618) 234-3646
Email: dtoenjes@bac8il.com

3301 Boardwalk Drive
Champaign, IL 61826
Business Phone: (217) 356-0419
Business Fax: (217) 356-0694
Mobile Phone: (217) 369-9987
Web Page: http://www.bac8il.org
Email: pspence@bac8il.com

Carpenters LU #243
Johnson, Randy – 243 Representative

Company: Carpenters LU #243
402 S. Duncan Road
P.O. Box 7170
Champaign, IL 61826-7170
Business Phone: (217) 356-5463
Business Fax: (217) 356-2981
Mobile Phone: (217) 622-4104
Web Page: http://www.teamclmc.org
Email: rjohnson@mcircc.com
Email: Carpenters243@mcircc.com

Glazers LU #1168
Anderson, Chad – Business Rep

Company: Glazers LU #1168
212 S. First Street
Champaign, IL 61820-4186
Business Phone: (217) 356-9114
Business Fax: (217) 356-0381
Mobile Phone: (618) 718-9538
Web Page: http://teamclmc.org
Email: PaintersLocal363@comcast.net

Heat & Frost Insulators LU #18
Smith, Jason – Business Manager

Company: Heat & Frost Insulators LU #18
3302 S. East Street
Indianapolis, IN 46227
Business Phone: (317) 786-3216
Business Fax: (317) 786-3353
Mobile Phone: (317) 430-8037
Email: JasonSmith.Local18@yahoo.com

IBEW LU #601
Hoss, Charlie – Business Manager
Rubenacker, Frank – Ass’t Bus Mgr

Company: IBEW LU #601
3301 Boardwalk Drive
P.O. Box 3902
Champaign, IL 61826-3902
Business Phone: (217) 352-1741
Business Fax: (217) 352-9210
Mobile Phone: (217) 493-4239 (Frank)
(217) 493-4240 (Charlie)
Web Page: http://www.ibew601.org
Email: choss@ibew601.org
frubenacker@ibew601.org

Page 13 of 18
Ironworkers LU #380  
Diskin, Sam (Brian) – Business Rep  
Company: Ironworkers LU #380  
1602 E. Butzow Drive  
Urbana, IL 61801-2008  
Business Phone: (217) 367-6014  
Business Fax: (217) 367-6614  
Mobile Phone: (217) 369-6553  
Web Page: [http://www.teamclmc.org](http://www.teamclmc.org)  
Email: lwLU380@aol.com  

Laborers' Local #703  
Davenport, Russell – Business Mgr  
Roedl, James – Field Representative  
Company: Laborers' Local #703  
108 E. Anthony Drive  
Urbana, IL 61802-7343  
Business Phone: (217) 367-0703  
Business Fax: (217) 384-2122  
Email: rusty703@att.net  
jimmy703@att.net  

Millrights LU #1051  
Hodgson, Nathan – Business Rep  
Company: Millrights LU #1051  
602 Keokuk Street  
Lincoln, IL 62656  
Business Phone: (217) 735-1051  
Business Fax: (217) 732-1051  
Email: nate@local1051.com  

Operating Engineers LU #841  
Wombles, Michael – Business Rep  
Company: Operating Engineers LU #841  
P.O. Box 400  
Oakwood, IL 61858  
Business Phone: (217) 354-4858  
Business Fax: (217) 354-4493  
Mobile Phone: (812) 249-1831  
Web Page: [http://www.iuoecl841.com](http://www.iuoecl841.com)  
Email: MWombles@IUOEclLocal841.com  

Painters LU #363  
Anderson, Chad – Business Rep  
Company: Painters LU #363  
212 S. First Street  
Champaign, IL 61820-4186  
Business Phone: (217) 356-9114  
Business Fax: (217) 356-0381  
Mobile Phone: (618) 731-9538  
Web Page: [http://www.teamclmc.org](http://www.teamclmc.org)  
Email: PaintersLocal363@comcast.net  

Plasterers & Cement Masons LU #143  
Butler, Chris – Business Manager  
Mozingo, Jeff – Business Agent  
Company: Plasters & Cement Masons LU #143  
3301 N. Boardwalk Drive  
P.O. Box 6569  
Champaign, IL 61826-6569  
Business Phone: (217) 356-9313  
Business Fax: (217) 356-9934  
Mobile Phone: (217) 621-9313 (Chris)  
(217) 480-1430 (Jeff)  
Web Page: [http://www.teamclmc.org](http://www.teamclmc.org)  
Email: local143office@OPCMIA143.org
Plumbers & Steamfitters LU #149
Langendorf, Matt – Business Mgr
Sage, Kevin – Business Manager

Company: Plumbers & Steamfitters LU #149
1005 N. Dunlap
P.O. Box 725
Savoy, IL 61874
Business Phone: (217) 359-5201
Business Fax: (217) 359-9875
Mobile Phone: (217) 621-5201 (Matt)
Web Page: http://www.uatlocal149.com
Email: mlangendorf@uatlocal149.com
      ksage@uatlocal149.com

Road Sprinkler Fitters #669 District #11
Rambo, Darrin – District 38 Business Agent

Company: Road Sprinkler Fitters #669 District #11
P.O. Box 848
Salem, IL 62881
Business Phone: (618) 548-9669
Business Fax: (618) 548-8988
Mobile Phone: (618) 629-3437
Web Page: http://www.sprinklerfitters669.org
Email: drambo669@gmail.com

Roofers LU #97
Hardig, Jim – Business Representative

Company: Roofers LU #97
3301 N. Boardwalk Drive
P.O. Box 6569
Champaign, IL 61826-6569
Business Phone: (217) 359-3922
Business Fax: (217) 359-4722
Mobile Phone: (217) 781-1138
Email: roofersbu97@yahoo.com
      local143office@OPCMIA143.org

Sheet Metal Workers LU #218
Champion, Bob – Business Agent

Company: Sheet Metal Workers LU #218
605 S. Country Fair Drive
Champaign, IL 61821-3653
Business Phone: (217) 356-3653
Business Fax: (217) 356-7661
Mobile Phone: (217) 840-5429
Email: dizzychampion1@gmail.com
      SMWIA@SheetMetalWorkersLocal#218

Teamsters LU #26
Marxmill, David – Business Representative
Donovan, Tim – Business Representative

Company: Teamsters LU #26
908 N. Neil Street
Champaign, IL 61820
Business Phone: (217) 352-2236
Business Fax: (217) 352-2259
Mobile Phone: (217) 202-3260 (David)
      (217) 202-3256 (Tim)
Email: dmarxmill@teamsters26.org
      tdonovan@teamsters26.org
Project Name and Contractor Signature Page

IN WITNESS WHEREOF, the ECIBCTC and CONTRACTOR have executed this Project Labor Agreement on the ____________________ day of ____________________, 20____.

Contractor Signature

East Central Illinois Building & Construction Trades Council (ECIBCTC)

Print Name

ECIBCTC President by resolution and authority of the signatory trade unions of the Project Labor Agreement

Title

Company Name

Asbestos Workers LU#18
Bricklayers & Tilesetters LU#18
Boilermakers LU#60
Carpenters LU#243
Electricians LU#601
Glaziers LU#1168
Ironworkers LU#380
Laborers LU#703
Millwrights LU#1051
Operating Engineers LU#841
Painters LU#363
Plasterers & Cement Masons LU#143
Plumbers & Steamfitters LU#149
Road Sprinkler Fitters LU#669
Roofers LU#97
Sheet Metal Workers LU#218
Teamsters LU#26

Address

City, State, Zipcode

Phone

Fax

Email

Website

Page 16 of 18
Participation Agreement

The undersigned Project Contractor, Contractor or subcontractor, subcontracting to

_________________________________________ agrees to be bound to the attached

Project Agreement negotiated between_________________________________________ and the

_________________________________________
Project Contractor, Contractor, Subcontractor

_________________________________________
By

_________________________________________
Date
ADDENDUM B: TABLE OF CONTENTS

ARTICLE 1 - INTENT AND PURPOSES ................................................................. 1

ARTICLE 2 - RECOGNITION ............................................................................. 2

ARTICLE 3 - ADMINISTRATION OF AGREEMENT .......................................... 2

ARTICLE 4 - HOURS OF WORK OVERTIME ShiftS AND HOLIDAYS .................. 2

ARTICLE 5 - ABSENTEEISM ........................................................................... 3

ARTICLE 6 - MANAGEMENT RIGHTS ............................................................... 3

ARTICLE 7 - GENERAL WORKING CONDITIONS .......................................... 3

ARTICLE 8 - SAFETY ........................................................................................ 5

ARTICLE 9 - SUBCONTRACTING ...................................................................... 5

ARTICLE 10 - UNION REPRESENTATION ...................................................... 5

ARTICLE 11 – WORK STOPPAGES AND LOCKOUTS ......................................... 6

ARTICLE 12 - DISPUTES AND GRIEVANCES .............................................. 7

ARTICLE 13 - JURISDICTIONAL DISPUTES .................................................. 9

ARTICLE 14 - GENERAL SAVINGS CLAUSE ............................................... 10

ARTICLE 15 - TERM OF AGREEMENT ......................................................... 10.

SIGNATURES FOR THE UNION ....................................................................... 11

ADDENDUM A: UNION CONTACT LIST ......................................................... 13

PROJECT NAME AND CONTRACTOR SIGNATURE PAGE .......................... 16

PARTICIPATION AGREEMENT ........................................................................ 17

ADDENDUM B: TABLE OF CONTENTS ......................................................... 18
## Champaign County Prevailing Wage for July 2015

(See explanation of column headings at bottom of wages)

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>RG TYP</th>
<th>C Base</th>
<th>FRMAN M-F&gt;8</th>
<th>OSA OSH H/W</th>
<th>Pensn</th>
<th>Vac</th>
<th>Trng</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASBESTOS ABT-GEN</td>
<td>BLD</td>
<td>31.420</td>
<td>32.670</td>
<td>1.5</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASBESTOS ABT-MEC</td>
<td>BLD</td>
<td>22.000</td>
<td>23.000</td>
<td>1.5</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BOILERMAKER</td>
<td>BLD</td>
<td>38.000</td>
<td>41.000</td>
<td>2.0</td>
<td>2.0</td>
<td>7.07</td>
<td>15.99</td>
</tr>
<tr>
<td>BRICK MASON</td>
<td>BLD</td>
<td>31.320</td>
<td>32.820</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.300</td>
</tr>
<tr>
<td>CARPENTER</td>
<td>BLD</td>
<td>35.600</td>
<td>37.850</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>8.000</td>
</tr>
<tr>
<td>CEMENT MASON</td>
<td>BLD</td>
<td>31.010</td>
<td>32.760</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.200</td>
</tr>
<tr>
<td>CEMENT MASON</td>
<td>HWY</td>
<td>31.630</td>
<td>33.130</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>9.050</td>
</tr>
<tr>
<td>CERAMIC TILE FINISHER</td>
<td>BLD</td>
<td>29.580</td>
<td>0.000</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.200</td>
</tr>
<tr>
<td>ELECTRIC PWR EQMT OP</td>
<td>ALL</td>
<td>38.300</td>
<td>45.290</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.150</td>
</tr>
<tr>
<td>ELECTRIC PWR GRNDMAN</td>
<td>ALL</td>
<td>42.540</td>
<td>45.290</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.280</td>
</tr>
<tr>
<td>ELECTRIC PWR LINEMAN</td>
<td>ALL</td>
<td>37.090</td>
<td>39.090</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.070</td>
</tr>
<tr>
<td>ELECTRIC PWR TRK DRV</td>
<td>ALL</td>
<td>37.500</td>
<td>39.500</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.700</td>
</tr>
<tr>
<td>ELECTRICIAN</td>
<td>BLD</td>
<td>37.090</td>
<td>39.090</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.150</td>
</tr>
<tr>
<td>ELECTRONIC SYS TECH</td>
<td>BLD</td>
<td>30.830</td>
<td>32.580</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.300</td>
</tr>
<tr>
<td>ELEVATOR CONSTRUCTOR</td>
<td>BLD</td>
<td>41.690</td>
<td>46.900</td>
<td>2.0</td>
<td>2.0</td>
<td>13.57</td>
<td>14.21</td>
</tr>
<tr>
<td>FENCE ERECTOR</td>
<td>ALL</td>
<td>32.210</td>
<td>34.110</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>8.840</td>
</tr>
<tr>
<td>GLAZIER</td>
<td>BLD</td>
<td>32.380</td>
<td>34.380</td>
<td>1.5</td>
<td>2.0</td>
<td>7.05</td>
<td>8.400</td>
</tr>
<tr>
<td>HT/FROST INSULATOR</td>
<td>BLD</td>
<td>31.230</td>
<td>32.230</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>5.790</td>
</tr>
<tr>
<td>IRON WORKER</td>
<td>ALL</td>
<td>32.210</td>
<td>34.110</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>9.240</td>
</tr>
<tr>
<td>LABORER</td>
<td>BLD</td>
<td>28.920</td>
<td>30.170</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.300</td>
</tr>
<tr>
<td>LABORER</td>
<td>HWY</td>
<td>30.310</td>
<td>31.310</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.300</td>
</tr>
<tr>
<td>LATHER</td>
<td>BLD</td>
<td>35.600</td>
<td>37.850</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>8.000</td>
</tr>
<tr>
<td>MACHINIST</td>
<td>BLD</td>
<td>45.350</td>
<td>47.850</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.260</td>
</tr>
<tr>
<td>MARBLE FINISHERS</td>
<td>BLD</td>
<td>29.580</td>
<td>0.000</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.200</td>
</tr>
<tr>
<td>MARBLE MASON</td>
<td>BLD</td>
<td>31.080</td>
<td>0.000</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.200</td>
</tr>
<tr>
<td>MILLWRIGHT</td>
<td>BLD</td>
<td>31.060</td>
<td>33.310</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>8.000</td>
</tr>
<tr>
<td>MILLWRIGHT</td>
<td>HWY</td>
<td>33.060</td>
<td>34.810</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>8.000</td>
</tr>
<tr>
<td>OPERATING ENGINEER</td>
<td>ALL</td>
<td>29.700</td>
<td>30.700</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.300</td>
</tr>
<tr>
<td>OPERATING ENGINEER</td>
<td>ALL</td>
<td>29.700</td>
<td>30.700</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.300</td>
</tr>
<tr>
<td>OPERATING ENGINEER</td>
<td>ALL</td>
<td>29.700</td>
<td>30.700</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.300</td>
</tr>
<tr>
<td>OPERATING ENGINEER</td>
<td>ALL</td>
<td>29.700</td>
<td>30.700</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.300</td>
</tr>
<tr>
<td>PAINTER</td>
<td>ALL</td>
<td>34.460</td>
<td>35.960</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.200</td>
</tr>
<tr>
<td>PAINTER SIGNS</td>
<td>ALL</td>
<td>34.460</td>
<td>35.960</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.200</td>
</tr>
<tr>
<td>PILEDRIVER</td>
<td>BLD</td>
<td>36.600</td>
<td>38.850</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>8.000</td>
</tr>
<tr>
<td>PILEDRIVER</td>
<td>HWY</td>
<td>35.600</td>
<td>37.350</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>8.000</td>
</tr>
<tr>
<td>PIPE FITTER</td>
<td>BLD</td>
<td>39.400</td>
<td>41.900</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.000</td>
</tr>
<tr>
<td>PLASTERER</td>
<td>BLD</td>
<td>31.000</td>
<td>33.000</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.200</td>
</tr>
<tr>
<td>PLUMBER</td>
<td>BLD</td>
<td>39.400</td>
<td>41.900</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.000</td>
</tr>
<tr>
<td>ROOFER</td>
<td>BLD</td>
<td>29.950</td>
<td>31.450</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>9.250</td>
</tr>
<tr>
<td>SHEET METAL WORKER</td>
<td>BLD</td>
<td>35.740</td>
<td>37.740</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>8.700</td>
</tr>
<tr>
<td>SPRINKLER FITTER</td>
<td>BLD</td>
<td>37.120</td>
<td>39.870</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>8.420</td>
</tr>
<tr>
<td>STONE MASON</td>
<td>BLD</td>
<td>31.320</td>
<td>32.820</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.200</td>
</tr>
<tr>
<td>SURVEY WORKER</td>
<td>ALL</td>
<td>29.700</td>
<td>30.700</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>6.300</td>
</tr>
<tr>
<td>TERRAZZO FINISHER</td>
<td>BLD</td>
<td>29.580</td>
<td>0.000</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.200</td>
</tr>
<tr>
<td>TERRAZZO MASON</td>
<td>BLD</td>
<td>31.080</td>
<td>0.000</td>
<td>1.5</td>
<td>1.5</td>
<td>2.0</td>
<td>7.200</td>
</tr>
<tr>
<td>Occupation</td>
<td>Class</td>
<td>RG (Region)</td>
<td>Trade Type</td>
<td>Base (Base Wage Rate)</td>
<td>FRMAN (Foreman Rate)</td>
<td>M-F&gt;8 (OT required for any hour greater than 8 worked each day, Mon through Fri.)</td>
<td>OSA (Overtime (OT) is required for every hour worked on Saturday)</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------</td>
<td>-------------</td>
<td>------------</td>
<td>------------------------</td>
<td>----------------------</td>
<td>------------------------------------------------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>TILE MASON</td>
<td>BLD</td>
<td>31.080</td>
<td></td>
<td>0.000</td>
<td>1.5</td>
<td>1.5 2.0 7.200 8.550 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TRUCK DRIVER</td>
<td>ALL</td>
<td>1 34.100</td>
<td></td>
<td>37.770</td>
<td>1.5</td>
<td>1.5 2.0 11.40 5.440 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TRUCK DRIVER</td>
<td>ALL</td>
<td>2 34.600</td>
<td></td>
<td>37.770</td>
<td>1.5</td>
<td>1.5 2.0 11.40 5.440 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TRUCK DRIVER</td>
<td>ALL</td>
<td>3 34.820</td>
<td></td>
<td>37.770</td>
<td>1.5</td>
<td>1.5 2.0 11.40 5.440 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TRUCK DRIVER</td>
<td>ALL</td>
<td>4 35.140</td>
<td></td>
<td>37.770</td>
<td>1.5</td>
<td>1.5 2.0 11.40 5.440 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TRUCK DRIVER</td>
<td>ALL</td>
<td>5 36.060</td>
<td></td>
<td>37.770</td>
<td>1.5</td>
<td>1.5 2.0 11.40 5.440 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TRUCK DRIVER</td>
<td>O&amp;C</td>
<td>1 27.280</td>
<td></td>
<td>30.220</td>
<td>1.5</td>
<td>1.5 2.0 11.40 5.440 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TRUCK DRIVER</td>
<td>O&amp;C</td>
<td>2 27.680</td>
<td></td>
<td>30.220</td>
<td>1.5</td>
<td>1.5 2.0 11.40 5.440 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TRUCK DRIVER</td>
<td>O&amp;C</td>
<td>3 27.860</td>
<td></td>
<td>30.220</td>
<td>1.5</td>
<td>1.5 2.0 11.40 5.440 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TRUCK DRIVER</td>
<td>O&amp;C</td>
<td>4 28.110</td>
<td></td>
<td>30.220</td>
<td>1.5</td>
<td>1.5 2.0 11.40 5.440 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TRUCK DRIVER</td>
<td>O&amp;C</td>
<td>5 28.250</td>
<td></td>
<td>30.220</td>
<td>1.5</td>
<td>1.5 2.0 11.40 5.440 0.000                                         0.000</td>
<td></td>
</tr>
<tr>
<td>TUCKPOINTER</td>
<td>BLD</td>
<td>31.320</td>
<td></td>
<td>32.820</td>
<td>1.5</td>
<td>1.5 2.0 7.200 11.57 0.000                                         0.850</td>
<td></td>
</tr>
</tbody>
</table>

Legend:  RG (Region)
TYP (Trade Type - All,Highway,Building,Floating,Oil & Chip,Rivers)
C (Class)
Base (Base Wage Rate)
FRMAN (Foreman Rate)
M-F>8 (OT required for any hour greater than 8 worked each day, Mon through Fri.)
OSA (Overtime (OT) is required for every hour worked on Saturday)
OSH (Overtime is required for every hour worked on Sunday and Holidays)
H/W (Health & Welfare Insurance)
Pensn (Pension)
Vac (Vacation)
Trng (Training)

Explanations

CHAMPAIGN COUNTY

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day and Veterans Day in some classifications/counts. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration. If in doubt, please check with IDOL.

Oil and chip resealing (O&C) means the application of road oils and liquid asphalt to coat an existing road surface, followed by application of aggregate chips or gravel to coated surface, and subsequent rolling of material to seal the surface.

EXPLANATION OF CLASSES

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.
ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

CERAMIC TILE FINISHER, MARBLE FINISHER, TERRAZZO FINISHER

Assisting, helping or supporting the tile, marble and terrazzo mechanic by performing their historic and traditional work assignments required to complete the proper installation of the work covered by said crafts. The term "Ceramic" is used for naming the classification only and is in no way a limitation of the product handled. Ceramic takes into consideration most hard tiles.

ELECTRONIC SYSTEMS TECHNICIAN

Installation, service and maintenance of low-voltage systems which utilizes the transmission and/or transference of voice, sound, vision, or digital for commercial, education, security and entertainment purposes for the following: TV monitoring and surveillance, background/foreground music, intercom and telephone interconnect, field programming, inventory control systems, microwave transmission, multi-media, multiplex, radio page, school, intercom and sound burglar alarms and low voltage master clock systems.

Excluded from this classification are energy management systems, life safety systems, supervisory controls and data acquisition systems not intrinsic with the above listed systems, fire alarm systems, nurse call systems and raceways exceeding fifteen feet in length.

SURVEY WORKER - Operated survey equipment including data collectors, G.P.S. and robotic instruments, as well as conventional levels and transits.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION

Class 1. Drivers on 2 axle trucks hauling less than 9 ton. Air compressor and welding machines and brooms, including those pulled by separate units, truck driver helpers, warehouse employees, mechanic helpers, greasers and tiremen, pickup trucks when hauling materials, tools, or workers to and from and on-the-job site, and fork lifts up to 6,000 lb. capacity.

Class 2. Two or three axle trucks hauling more than 9 ton but hauling less than 16 ton. A-frame winch trucks, hydrolift trucks, vactor trucks or similar equipment when used for transportation purposes. Fork lifts over 6,000 lb. capacity, winch trucks, four axle combination units, and ticket writers.

Class 3. Two, three or four axle trucks hauling 16 ton or more. Drivers on water pulls, articulated dump trucks, mechanics and working forepersons, and dispatchers. Five axle or more combination units.

Class 4. Low Boy and Oil Distributors.
Class 5. Drivers who require special protective clothing while employed on hazardous waste work.

TRUCK DRIVER - OIL AND CHIP RESEALING ONLY.

This shall encompass laborers, workers and mechanics who drive contractor or subcontractor owned, leased, or hired pickup, dump, service, or oil distributor trucks. The work includes transporting materials and equipment (including but not limited to, oils, aggregate supplies, parts, machinery and tools) to or from the job site; distributing oil or liquid asphalt and aggregate; stock piling material when in connection with the actual oil and chip contract. The Truck Driver (Oil & Chip Resealing) wage classification does not include supplier delivered materials.

OPERATING ENGINEERS - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION

Class 1. Draglines, Derricks, Shovels, Gradalls, Mechanics, Tractor Highlift, Tournadozer, Concrete Mixers with Skip, Tournamixer, Two Drum Machine, One Drum Hoist with Tower or Boom, Cableways, Tower Machines, Motor Patrol, Boom Tractor, Boom or Winch Truck, Winch or Hydraulic Boom Truck, Tournapull, Tractor Operating Scoops, Bulldozer, Push Tractor, Asphalt Planer, Finishing Machine on Asphalt, Large Rollers on Earth, Rollers on Asphalt Mix, Ross Carrier or similar Machine, Gravel Processing Machine, Asphalt Plant Engineer, Paver Operator, Dredging Equipment, or Dredge Engineer, or Dredge Operator, Central Mix Plant Engineer, CMI or similar type machine, Concrete Pump, Truck or Skid Mounted, Engineer or Rock Crusher Plant, Concrete Plant Engineer, Ditching Machine with dual attachment, Tractor Mounted Loaders, Hydro Crane, Standard or Dinkey Locomotives, Scoopmobiles, Euclid Loader, Soil Cement Machine, Back Filler, Elevating Machine, Power Blade, Drilling Machine, including Well Testing, Caissons, Shaft or any similar type drilling machines, Motor Driven Paint Machine, Pipe Cleaning Machine, Pipe Wrapping Machine, Pipe Bending Machine, Apsco Paver, Boring Machine, (Head Equipment Greaser), Barber-Greene Loaders, Formless Paver, (Well Point System), Concrete Spreader, Hydra Ax, Span Saw, Marine Scoops, Brush Mulcher, Brush Burner, Mesh Placer, Tree Mover, Helicopter Crew (3), Piledriver-Skid or Crawler, Stump Remover, Root Rake, Tug Boat Operator, Refrigerating Machine, Freezing Operator, Chair Cart- Self-Propelled, Hydra Seeder, Straw Blower, Power Sub Grader, Bull Float, Finishing Machine, Self-Propelled Pavement Breaker, Lull (or similar type Machine), Two Air Compressors, Compressors hooked in Manifold, Chip Spreader, Mud Cat, Sull-Air, Fork Lifts (except when used for landscaping work), Soil Stabilizer (Seaman Tiller, Bo Mag, Rago Gator, and similar types of equipment), Tube Float, Spray Machine, Curing Machine, Concrete or Asphalt Milling Machine, Snooper Truck-Operator, Backhoe, Farm Tractors (with attachments), 4 Point Lift System (Power Lift or similar type), Skid-Steer (Bob Cat or similar type), Wrecking Shears, Water Blaster.

Class 2. Concrete Mixers without Skips, Rock Crusher, Ditching Machine under 6', Curbing Machine, One Drum Machines without Tower or Boom, Air Tugger, Self-Propelled Concrete Saw, Machine Mounted Post Hole Digger, two to four Generators, Water Pumps or Welding Machines,
within 400 feet, Air Compressor 600 cu. ft. and under, Rollers on Aggregate and Seal Coat Surfaces, Fork Lift (when used for landscaping work), Concrete and Blacktop Curb Machine, One Water Pump, Oilers, Air Valves or Steam Valves, One Welding Machine, Truck Jack, Mud Jack, Gunnite Machine, House Elevators when used for hoisting material, Engine Tenders, Fireman, Wagon Drill, Flex Plane, Conveyor, Siphons and Pulsometer, Switchman, Fireman on Paint Pots, Fireman on Asphalt Plants, Distributor Operator on Trucks, Tampers, Self-Propelled Power Broom, Striping Machine (motor driven), Form Tamper, Bulk Cement Plant, Equipment Greaser, Deck Hands, Truck Crane Oiler-Driver, Cement Blimps, Form Grader, Temporary Heat, Throttle Valve, Super Sucker (and similar type of equipment).

Class 3. Power Cranes, Truck or Crawler Crane, Rough Terrain Crane (Cherry Picker), Tower Crane, Overhead Crane.

Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.
SECTION 01 1000 - SUMMARY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Work covered by the Contract Documents.
   2. Type of the Contract.
   3. Work phases.
   4. Work under other contracts.
   5. Products ordered in advance.
   6. Owner-furnished products.
   7. Use of premises.
   8. Owner’s occupancy requirements.
   10. Specification formats and conventions.

B. Related Sections include the following:
   1. Division 01 Section “Multiple Contract Summary” for division of responsibilities for the Work.
   2. Division 01 Section “Temporary Facilities and Controls” for limitations and procedures governing temporary use of Owner’s facilities.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: The Project consists of the CERL Main Building Addition U130024 at the University of Illinois at Urbana-Champaign
   1. Project Location: The UIUC CERL Campus between buildings #301 and #1116, Champaign, Illinois
   2. Project Scope of Work: The work will consist of demolition, site development, general construction, plumbing work, heating, A/C and temperature control work, and electric work.

B. Owner: University of Illinois
   1. Owner’s Representative: Brian Bundren, Project Manager, Physical Plant Building 1501 South Oak Street, Champaign, Illinois 61820


E. Structural Engineer: RME Engineers, Inc. 200 South Michigan Avenue, Chicago, Illinois 60612
F. Civil Engineer: Terra Engineering LTD.; 225 West Ohio Street, 4th Floor, Chicago, Illinois 60610

G. Site Design/Landscape Architect: Terra Engineering LTD., 225 West Ohio Street, 4th Floor, Chicago, Illinois 60610

1.4 TYPE OF CONTRACT

A. Project will be constructed under multiple contracts. See Division 01 Section "Multiple Contract Summary" for a description of work included under each separate contract.

B. Prime Contracts are separate contract between the Owner and separate contractors, representing significant construction activities. Each prime contract is performed concurrently with and closely coordinated with construction activities performed on the Project under other prime contracts. Contracts for this Project include the following:

1. General Trades Contract
2. Plumbing Contract
3. Heating A/C Temperature Control Contract
4. Ventilation Contract
5. Electrical Contract

C. Definitions of extent of Prime Contract Work: The contract Documents indicate the extent of each prime contract. Except where the Contract Documents contain a more specific description, general names and terminology on the Drawings and in the Specification sections determine which prime contract included a specific element of the Project.

1.5 WORK UNDER OTHER CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

1.6 OWNER-FURNISHED PRODUCTS

A. Owner will furnish products indicated. The Work includes providing support systems to receive Owner’s equipment and making electrical connections.

1. Owner will arrange and pay for delivery of Owner-furnished items according to Contractor’s Construction Schedule.

2. After delivery, Owner will inspect delivered items for damage. Contractor shall be present for and assist in Owner’s inspection.

3. If Owner-furnished items are damaged, defective, or missing, Owner will arrange for replacement.

4. Owner will arrange for manufacturer’s field services

5. Owner will furnish Contractor the earliest possible delivery date for Owner-furnished products. Using Owner-furnished earliest possible delivery dates, Contractor shall designate delivery dates of Owner-furnished items in Contractor’s Construction Schedule.

6. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.

7. If Owner-furnished items are damaged as a result of Contractor’s operations, Contractor shall repair or replace them.
8. Contractor shall install and otherwise incorporate Owner-furnished items into the Work as listed below.

B. Owner-Furnished Products:

1. AV Equipment – AV Equipment and Equipment support brackets furnished and installed by Owner. (all rough in conduits, support framing including Unistrut, and final electric power by Electrical Contractor).

2. Projector Screens provided by Owner and Installed by Electrical Contractor. Projector screen supports provided by the Electrical contractor.

3. AV floor boxes supplied by Owner and Installed by Electrical Contractor with adjacent finishes by General Trades Contractor.

4. Furniture – Material and placement of furniture by Owner. (all electric power-rough and finished by Electrical Contractor).

1.7 USE OF PREMISES

A. General: Each Contractor shall have full use of premises for construction operations, including use of Project site, during construction period. Each Contractor’s use of premises is limited only by Owner’s right to perform work or to retain other contractors on portions of Project.

B. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Limits: Confine constructions operations to area shown on Site Plan.

2. Owner Occupancy: Allow for Owner occupancy of Project site and use by the public.

3. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner’s employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
   a. Schedule deliveries to minimize use of driveways and entrances.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Use of Existing Building: Maintain existing buildings in a weathertight condition throughout construction period. Repair damage caused by construction operations. Protect buildings and its occupants during construction period.

1.8 OWNER’S OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: Owner will occupy existing adjacent building during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner’s day-to-day operations. Maintain existing exits, unless otherwise indicated.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and authorities having jurisdiction. Safe pedestrian traffic between existing buildings to be unencumbered at all times throughout construction.

2. Provide not less than 72 hours’ notice to Owner of activities that will affect Owner’s operations.
B. Owner Occupancy of Comtected Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.

1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied before Owner occupancy.

2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.

3. Before partial Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.

4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

1.9 WORK RESTRICTIONS

A. On-Site Work Hours: Work shall be generally performed inside the existing building during normal business working hours of 7:00 a.m. to 5:00 p.m., Monday through Friday, except otherwise indicated.

1. Weekend Hours: To Be reviewed and approved by the Owner

2. Early Morning Hours: To Be reviewed and approved by the Owner

3. Hours for Utility Shutdowns: To Be reviewed and approved by the Owner

4. Hours for Core Drilling: To Be reviewed and approved by the Owner

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect and Owner not less than seven (7) work days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Owner’s written permission.

C. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor air intakes.

1.10 MISCELLANEOUS PROVISIONS

A. Scope of Work Review Meeting:

1. The apparent low bidders will meet with the Owner and the Architect following the bid opening of a post bid scope review of the Project.

B. Commencement of the Work:

1. Upon approval by the Board of Trustees of the University of Illinois in Notice to Proceed the contract will be awarded and the site and building construction will begin.

2. The Contractors shall survey the existing building to establish the lines and levels prior to the commencement of any work.
1.11 P2 PRODUCTS (NOT USED)

1.12 P3 EXECUTION (NOT USED)

END OF SECTION
SECTION 01 1200 - MULTIPLE CONTRACT SUMMARY

PART 1  GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
A. This Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.
B. Specific requirements of each contract are also indicated in individual Specification Sections and on Drawings.
C. Related Sections include the following:
   1. Division 01 Section "Summary" for the Work covered by the Contract Documents, restrictions on use of the premises, Owner-occupancy requirements, and work restrictions.
   2. Division 01 Section "Project Management and Coordination" for general coordination requirements.
   3. Division 01 Section "Temporary Facilities and Controls" for specific requirements for temporary facilities and controls.

1.3 DEFINITIONS
A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 COORDINATION
   1. General Trades Construction Contractor shall act as Project Coordinator.

1.5 PROJECT COORDINATOR
A. General Trades Construction Contractor as Project Coordinator: Full-time Project Coordinator shall be experienced in administration and supervision of building construction, including mechanical and electrical work.
   1. Coordination activities of Project Coordinator include, but are not limited to, the following:
      a. Provide overall coordination of the Work.
      b. Coordinate shared access to workspaces.
      c. Coordinate product selections for compatibility.
      d. Provide overall coordination of temporary facilities and controls.
      e. Coordinate, schedule, and approve interruptions of permanent and temporary utilities, including those necessary to make connections for temporary services.
f. Coordinate construction and operations of the Work with work performed by each contract and Owner’s construction forces.

g. Prepare Coordination Drawings to coordinate work by more than one contract.

h. Construction Project Coordination Meetings as defined in Section 01 20 00 and 01 31 00.

i. Coordinate sequencing and scheduling of the Work. Include the following:

1) Initial Coordination Meeting: At earliest possible date, arrange and conduct a meeting with separate contractors for sequencing and coordinating the Work; negotiate reasonable adjustments to schedules.


3) Distribute copies of schedules to Architect, Owner, and separate contractors.

j. Provide photographic documentation.

k. Provide quality-assurance and quality-control services specified in Division 01 Section "Quality Requirements."

l. Coordinate sequence of activities to accommodate tests and inspections, and coordinate schedule of tests and inspections.

m. Provide information necessary to adjust, move, or relocate existing utility structures affected by construction.

n. Locate existing permanent benchmarks, control points, and similar reference points, and establish permanent benchmarks on Project site.

o. Provide field surveys of in-progress construction and site work.

p. Provide progress cleaning of common areas and coordinate progress cleaning of areas or pieces of equipment where more than one contractor has worked.

q. Coordinate cutting and patching.

r. Coordinate protection of the Work.

s. Coordinate firestopping.

t. Coordinate completion of interrelated punch list items.

u. Coordinate preparation of Project Record Documents if information from more than one contractor is to be integrated with information from other contractors to form one combined record.

v. Print and submit Record CAD Drawings if installations by more than one contractor are indicated on the same Contract Drawing or Shop Drawing.

w. Collect Record Specification Sections from other contractors, collate Sections into numeric order, and submit complete set.
x. Coordinate preparation of operation and maintenance manuals if information from more than one contractor is to be integrated with information from other contractors to form one combined record.

2. Responsibilities of Project Coordinator for temporary facilities and controls include, but are not limited to, the following:
   a. Provide common-use field office for use by all personnel engaged in construction activities.
   b. Provide telephone service for common-use facilities.

3. Coordination activities of Plumbing, Heating A/C Temperature Control, Ventilation and Electrical Coordinator include, but are not limited to, the following:
   a. Schedule and sequence Plumbing, Heating A/C Temperature Control, Ventilation and Electrical activities.
   b. Coordinate sharing access to workspaces by Plumbing, Heating A/C Temperature Control, Ventilation and Electrical Coordinator contractors.
   c. Coordinate integration of Plumbing, Heating A/C Temperature Control, Ventilation and Electrical Coordinator work into limited spaces.
   d. Coordinate protection of Plumbing, Heating A/C Temperature Control, Ventilation and Electrical Coordinator contractors' work.
   e. Coordinate cutting and patching for Plumbing, Heating A/C Temperature Control, Ventilation and Electrical Coordinator.
   f. Obtain Coordination Plumbing, Heating A/C Temperature Control, Ventilation and Electrical Coordinator Coordination Drawings from each contractor.
   g. Coordinate tests and inspections for Plumbing, Heating A/C Temperature Control, Ventilation and Electrical Coordinator work.
   h. Coordinate Plumbing, Heating A/C Temperature Control, Ventilation and Electrical Coordinator temporary services and facilities.

1.6 GENERAL REQUIREMENTS OF GENERAL TRADES, PLUMBING, HEATING A/C TEMPERATURE CONTROL, VENTILATION AND ELECTRIC CONTRACTS

A. Extent of Contract: Unless the Agreement contains a more specific description of the Work, names and terminology on Drawings and in Specification Sections determine which contract includes a specific element of Project.

1. Unless otherwise indicated, the Work described in this Section for each contract shall be complete systems and assemblies, including products, components, accessories, and installation required by the Contract Documents.

2. Local custom and trade-union jurisdictional settlements do not control the scope of the Work of each contract. When a potential jurisdictional dispute or similar interruption of work is first identified or threatened, affected contractors shall negotiate a reasonable settlement to avoid or minimize interruption and delays.

3. Trenches for the Work of each contract shall be provided by each contract for its own Work.

5. Through-penetration firestopping for the Work of each contract shall be provided by each contract for its own Work. It is the General Trades Contractors responsibility to assure the work gets completed prior to advancing any finish work.

6. Within five working days after preliminary horizontal bar-chart-type construction schedule submittal has been received from Project Coordinator, submit a matching preliminary horizontal bar-chart schedule showing construction operations sequenced and coordinated with overall construction.

7. Project closeout requirements.

B. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the Work.

1. Project Coordinator shall coordinate substitutions.

C. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Division 01 Section “Temporary Facilities and Controls,” each contractor is responsible for the following:

1. Installation, operation, maintenance, and removal of each temporary facility usually considered as its own normal construction activity, and costs and use charges associated with each facility.

2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.

3. Its own field office, complete with necessary furniture, utilities, and telephone service.

4. Its own storage and fabrication sheds.

5. Temporary enclosures for its own construction activities.

6. General hoisting facilities for its own construction activities.

7. Waste disposal facilities, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials.

8. Progress cleaning of its own areas on a daily basis.

9. Secure lockup of its own tools, materials, and equipment.

10. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.

D. Temporary Heating, Cooling, and Ventilation: The Heating A/C Temperature Control Contract is responsible for temporary heating, cooling, and ventilation, including utility-use charges, temporary meters, and temporary connections if not connected to Owner's existing gas and electric services. If bottled gas is provided for temporary heating the use cost will be included by the Heating A/C Temperature Control Contract. Use of new HVAC equipment will not be allowed.

E. Use Charges: Comply with the following:

1. Sewer Service: Use cost for sewer service use by all parties engaged in construction activities at Project site shall be paid by the Owner. Temporary and final connections to the Sewer Service as needed shall be in the Plumbing Contract.

2. Water Service: Use cost for water service use by all parties engaged in construction activities at Project site shall be paid by the Owner. Temporary and final connections to or metering of the Water Service as needed shall be in the Plumbing Contract.
3. Electric Power Service: Use cost for electric power service, whether metered or otherwise, for electricity used by all entities engaged in construction activities at Project site shall be paid by the Owner. Temporary and final connection of power for electric service as needed shall be in the Electrical Contract.

1.7 GENERAL TRADES CONSTRUCTION CONTRACT

A. Work in the General Trades Construction Contract includes, but is not limited to, the following:

B. General Trades Contractor shall furnish the necessary supervision, labor, material, equipment, engineering, cartage, scaffolding, and hoisting required to complete the general trades scope of work according to the following requirements, plans and specification and all other Contract Documents. This entire contract shall constitute the Work to be performed by Subcontractors.

C. General Trades Contractor shall review all drawings. Specifications and bid contracts (including those for other trades) to understand the complete scope of work. Subcontractors shall be responsible the entire set of Contract Documents.

D. General Trades Contractor is responsible for Project Coordinator as indicated in Section 1.5

E. General Trades Contractor shall be responsible for the following scope of work as defined and executed in the specifications sections and drawings.

1. Division 1 – General Requirements – All Sections
2. Division 2 – Existing Conditions – All Sections
3. Division 3 – Concrete – All Sections
4. Division 4 – Masonry – All Sections
5. Division 5 – Metals – All Sections
6. Division 6 – Wood and Plastics – All Sections
7. Division 7 – Thermal and Moisture Protection – All Sections
8. Division 8 – Doors and Windows – All Sections
9. Division 9 – Finishes – All Sections
10. Division 10 – Specialties – All Sections
11. Division 11 – Equipment – All Sections
12. Division 12 – Furnishings – All Sections
13. Division 13 - Special Construction
14. Division 14 - Conveying Equipment
15. Division 21 – Fire Suppression – All Sections
16. Division 31 – Earthwork – All Sections
17. Division 32 – Exterior Improvements – All Sections
18. Division 33 - Utilities - All Sections

F. General Trades Contractor shall provide secure storage for all finish hardware. Subcontractor shall provide a hardware representative when unloading the hardware verify quantities and organize.
hardware lockup. Subcontractor is responsible for the hardware until accepted by the Owner, including any lost or stolen parts.

G. General Trades Contractor shall coordinate all subcontractors to protect finished work performed by each trade. Cost of labor and materials for protection is provided by each subcontractor.

H. General Trades Contractor shall provide work force for daily clean up work for the Project, including sorting of materials for construction waste management and sweeping of floors to provide safe working conditions.

I. General Trades Contractor shall coordinate fully with all other prime contractors and their subcontractors. Include reasonable premium time if necessary to ensure full coordination of the a project. Attendance at preconstruction meeting as necessary to confirm sequence, coordination and schedule is included.

J. Proposed location of material and equipment and routing of trucks will be reviewed and coordination on site with the General Trades Contractor and the Owner so as not to adversely affect the operation of other contractors and maintain the safety of the students and staff.

K. General Trades Contractor shall coordinate and cooperate in all respect, during every phase of contractor’s performance of the work, with the Owner, consultants, other contractors, and any public authority of third party who may be employed or engaged in the activity on or near the site in relation to the Project. Subcontractor recognizes and acknowledges that its coordination and cooperation obligations are essential terms of the contract, and shall include without limitation, making work area available to other contractors and occasional disruptions to contractor’s performance of the work. Contractor acknowledges and recognizes that the performance by others involved in the Project of their respective work or the application of this clause may delay contractor in the performance of the work or render the performance thereof more costly than if contractor was not bound by the provisions of this clause.

L. General Trades Contractor shall coordinate access through the contract areas for other contractors to minimize damage to grades and materials. No Subcontractor will allowed in any restricted areas unless approved by the Owner 7 day in advance.

M. General Trades Contractor shall employ the services of all testing agency to perform quality testing of material, component fabrications, and soil compaction at the manufacturing facility or at the Project site, as specified.

N. General Trades Contractor shall review each alternate and determine how, if accepted, each alternate will affect their scope of work and shall insert a value in the appropriate itemized cost. Only three responses will be accepted: A positive dollar value, a negative dollar value, or No Change In Cost. Leaving space blank shall be considered not responsible and shall be a cause for rejection of bid.

O. Temporary facilities and controls in the General Construction Contract include, but are not limited to, the following:

1. Temporary facilities and controls that are not otherwise specifically assigned to the Plumbing, Heating A/C Temperature Control, Ventilation and Electrical Coordinator contractors’ work.

2. Sediment and erosion control.

3. Unpiped sewers and drainage, including drainage ditches, dry wells, stabilization ponds, and containers.

4. Stormwater control.

5. Unpiped temporary toilet fixtures, wash facilities, and drinking water facilities, including disposable supplies.

6. Temporary enclosure for building exterior, except as indicated.
7. Temporary roads and paved areas.
8. Dewatering facilities and drains.
9. Excavation support and protection, unless required solely for the Work of another contract.
10. Special or unusual hoisting requirements for construction activities, hoisting material or equipment into spaces below grade, and hoisting requirements outside building enclosure.
11. Project identification and temporary signs.
12. General waste disposal facilities for recycled and discarded waste.
13. Pest control.
14. Temporary fire-protection equipment.
15. Temporary Fencing, Barricades, warning signs, and lights.
17. Security enclosure and lockup.
18. Environmental protection.
19. Restoration of Owner’s existing facilities used as temporary facilities.

1.8 PLUMBING CONTRACT

A. Work in the Plumbing Contract includes, but is not limited to, the following:
B. Plumbing Contractor shall furnish the necessary supervision, labor, material, equipment, engineering, cartage, scaffolding, and hoisting required to complete the plumbing trades scope of work according to the following requirements, plans and specification and all other Contract Documents. This entire contract shall constitute the Work to be performed by Subcontractors.
C. Plumbing Contractor shall review all drawings, specifications and bid contracts (including those for other trades) to understand the complete scope of work. Subcontractors shall be responsible the entire set of Contract Documents.
D. Plumbing Contractor shall be responsible for the following scope of work as defined and executed in the specifications sections and drawings.
   1. Division 1 – General Requirements – All Sections
   2. Division 2 – Existing Conditions – All Sections
   3. Division 7 – Thermal and Moisture Protection
      a. 07 92 00 Joint Sealants
      b. Division 22 – Plumbing – All Sections
E. Plumbing Contractor shall coordinate all subcontractors to protect finished work performed by each trade. Cost of labor and materials for protection is provided by each subcontractor.
F. Plumbing Contractor shall coordinate fully with all other prime contractors and their subcontractors. Include reasonable premium time if necessary to ensure full coordination of the a project. Attendance at preconstruction meeting as necessary to confirm sequence, coordination and schedule is included.
G. Proposed location of material and equipment and routing of trucks for plumbing work will be reviewed and coordination on site with the General Trades Constructor and the Owner so as not to adversely affect the operation of other contractors and maintain the safety of the students and staff.

H. Plumbing Contractor shall coordinate and cooperate in all respect, during every phase of contractor’s performance of the work, with the Owner, consultants, other contractors, and any public authority of third party who may be employed or engaged in the activity on or near the site in relation to the Project. Subcontractor recognizes and acknowledges that its coordination and cooperation obligations are essential terms of the contract, and shall include without limitation, making work area available to other contractors and occasional disruptions to contractor’s performance of the work. Contractor acknowledges and recognizes that the performance by others involved in the Project of their respective work or the application of this clause may delay contractor in the performance of the work or render the performance thereof more costly than if contractor was not bound by the provisions of this clause.

I. Plumbing contractor shall coordinated with General Trades Contractor the access through the contract areas for other contractors to minimize damage to grades and materials. No Subcontractor will allowed in any restricted areas unless approved by the Owner 7 day in advance.

J. Plumbing Contractor shall employ the services of all testing agency to perform quality testing of material, and component fabrications, as specified.

K. Plumbing Contractor shall perform all cutting, removal, and patching of walls, roofs, and floors to complete the plumbing scope of work.

L. Plumbing Contractor shall provide all flashing and/or counter flashing and other mounting support requirements where work penetrates through the roof or exterior wall.

M. Plumbing Contractor shall furnish and install escutcheon plates at all exposed pipe penetrations through finished walls or ceilings.

N. Plumbing Contractor shall coordinate the installation of all starter, disconnects and electrical items as required for the proper function of the Contractor’s work as indicated in the Contract Documents. Devices furnished will be assembled in accordance with the applicable section of both of the Heating A/C Temperature Control, Ventilation and Electrical specifications. Installation of loose motors and starter will be coordinated with the Electric Contractor so as to ensure a complete installation.

O. Plumbing Contractor shall provide the necessary protection to ensure that the existing structure and new finishes are not damaged during equipment and material delivery and/or installation.

P. Plumbing Contractor shall provide a detailed schedule for their work and material delivery to the General Trades Contractor within two weeks of notice award of contract.

Q. Plumbing Contractor shall review each alternate and determine how, if accepted, each alternate will affect their scope of work and shall insert a value in the appropriate itemized cost. Only three responses will be accepted: A positive dollar value, a negative dollar value, or No Change In Cost. Leaving space blank shall be considered not responsible and shall be a cause for rejection of bid.

R. Temporary facilities and controls in the General Construction Contract include, but are not limited to, the following:

1. Temporary facilities and controls that are not otherwise specifically assigned to the General Trades Contractor, Heating A/C Temperature Control, Ventilation and Electrical Coordinator contractors’ work...

2. Site water supply and distribution.

3. Site sanitary sewerage.
4. Site storm drainage.
5. Site fuel distribution.
6. Site special plumbing systems.
7. Plumbing fixtures.
8. Domestic water distribution.
10. Stormwater drainage.

S. Temporary facilities and controls in the Plumbing Contract include, but are not limited to, the following:
   1. Piped sewerage and drainage.
   2. Piped gas service.
   3. Piped water service.
   4. Piped temporary toilet fixtures, wash facilities, and drinking water facilities.
   5. Plumbing connections to existing systems and temporary facilities and controls furnished by the General Trades Construction Contract

1.9 HEATING A/C TEMPERATURE CONTROL CONTRACT

A. Work in the Heating A/C Temperature Control Contract includes, but is not limited to, the following:

B. Heating A/C Temperature Control Contractor shall furnish the necessary supervision, labor, material, equipment, engineering, cartage, scaffolding, and hoisting required to complete the Heating A/C Temperature Control trades scope of work according to the following requirements, plans and specification and all other Contract Documents. This entire contract shall constitute the Work to be performed by Subcontractors.

C. Heating A/C Temperature Control Contractor shall review all drawings, specifications and bid contracts (including those for other trades) to understand the complete scope of work. Subcontractors shall be responsible the entire set of Contract Documents.

D. Heating A/C Temperature Control Contractor shall be responsible for the following scope of work as defined and executed in the specifications sections and drawings.
   1. Division 1 – General Requirements – All Sections
   2. Division 2 – Existing Conditions – All Sections
   3. Division 7 – Thermal and Moisture Protection
      a. 07 92 00 Joint Sealants
      b. Division 23 – Mechanical
         1) 23 05 00 Basic HVAC Requirements
         2) 23 05 03 Through Penetration Firestopping
3) 23 05 05 HVAC Demolition for Remodeling
4) 23 05 13 Motor
5) 23 05 29 Supports and Anchors
6) 23 05 53 HVAC Identification
7) 23 05 93 Testing, Adjusting and Balancing
8) 23 07 19 Piping Insulation
9) 23 08 00 HVAC Systems Commissioning
10) 23 09 00 Controls, Valves and Actuators
11) 23 09 13 HVAC Instrumentation
12) 23 09 23 Controls LON
13) 23 21 00 Hydronic Piping
14) 23 21 23 HVAC Pumps
15) 23 81 13 Horizontal/Wall-Mounted Fan Coil Units
16) 23 82 00 Terminal Heat Transfer Units
17) 23 82 16 Air Coils

E. Heating A/C Temperature Control Contractor shall coordinate all subcontractors to protect finished work performed by each trade. Cost of labor and materials for protection is provided by each subcontractor.

F. Heating A/C Temperature Control Contractor shall coordinate fully with all other prime contractors and their subcontractors. Include reasonable premium time if necessary to ensure full coordination of the project. Attendance at preconstruction meeting as necessary to confirm sequence, coordination and schedule is included.

G. Proposed location of material and equipment and routing of trucks for heating A/C temperature control work will be reviewed and coordination on site with the General Trades Contractor and the Owner so as not to adversely affect the operation of other contractors and maintain the safety of the students and staff.

H. Heating A/C Temperature Control Contractor shall coordinate and cooperate in all respect, during every phase of contractor’s performance of the work, with the Owner, consultants, other contractors, and any public authority of third party who may be employed or engaged in the activity on or near the site in relation to the Project. Subcontractor recognizes and acknowledges that its coordination and cooperation obligations are essential terms of the contract, and shall include without limitation, making work area available to other contractors and occasional disruptions to contractor’s performance of the work. Contractor acknowledges and recognizes that the performance by others involved in the Project of their respective work or the application of this clause may delay contractor in the performance of the work or render the performance thereof more costly than if contractor was not bound by the provisions of this clause.

I. Heating A/C Temperature Control contractor shall coordinated with General Trades Contractor the access through the contract areas for other contractors to minimize damage to grades and materials. No Subcontractor will allowed in any restricted areas unless approved by the Owner 7 day in advance.
J. Heating A/C Temperature Control Contractor shall employ the services of all testing agency to perform quality testing of material, and component fabrications, as specified.

K. Heating A/C Temperature Control Contractor shall perform all cutting, removal, and patching of walls, roofs, and floors to complete the Heating A/C Temperature Control scope of work.

L. Heating A/C Temperature Control Contractor shall provide all flashing and/or counter flashing and other mounting support requirements where work penetrates through the roof or exterior wall.

M. Heating A/C Temperature Control Contractor shall furnish and install escutcheon plates at all exposed pipe penetrations through finished walls or ceilings along with any required firestopping.

N. Heating A/C Temperature Control Contractor shall coordinate the installation of all starter, disconnects and electrical items as required for the proper function of the Contractor’s work as indicated in the Contract Documents. Devices furnished will be assembled in accordance with the applicable section of both the Heating A/C Temperature Control, Ventilation and Electrical specifications. Installation of loose motors and starter will be coordinated with the Electric Contractor so as to ensure a complete installation.

O. Heating A/C Temperature Control Contractor shall provide the necessary protection to ensure that the existing structure and new finishes are not damaged during equipment and material delivery and/or installation.

P. Heating A/C Temperature Control Contractor shall provide a detailed schedule for their work and material delivery to the General Trades Contractor within two weeks of notice award of contract.

Q. Heating A/C Temperature Control Contractor shall review each alternate and determine how, if accepted, each alternate will affect their scope of work and shall insert a value in the appropriate itemized cost. Only three responses will be accepted: A positive dollar value, a negative dollar value, or No Change In Cost. Leaving space blank shall be considered not responsible and shall be a cause for rejection of bid.

R. Temporary facilities and controls in the Heating A/C Temperature Control Contract include, but are not limited to, the following:

1. Provide temporary shoring and bracing of all excavations as required to properly complete any of the Heating A/C Temperature Control.

2. Coordinate all work with the placement of construction site barricades, temporary fencing gate openings and personnel to protect construction areas, students and staff.

3. Provide for temporary heating, cooling, and ventilation, including utility-use charges, temporary meters, and temporary connections if not connected to Owner’s existing gas and electric services. If bottled gas is provided for temporary heating the use cost will be included by the Heating A/C Temperature Control Contract.

1.10 VENTILATION CONTRACT

A. Work in the Ventilation Contract includes, but is not limited to, the following:

B. Ventilation Contractor shall furnish the necessary supervision, labor, material, equipment, engineering, cartage, scaffolding, and hoisting required to complete the ventilation trades scope of work according to the following requirements, plans and specification and all other Contract Documents. This entire contract shall constitute the Work to be performed by Subcontractors.

C. Ventilation Contractor shall review all drawings, specifications and bid contracts (including those for other trades) to understand the complete scope of work. Subcontractors shall be responsible the entire set of Contract Documents.
D. Ventilation Contractor shall be responsible for the following scope of work as defined and executed in the specifications sections and drawings.

1. Division 1 – General Requirements – All Sections
2. Division 2 – Existing Conditions – All Sections
3. Division 7 – Thermal and Moisture Protection
   a. 07 92 00 Joint Sealants
   b. Division 23 – Mechanical
      1) 23 05 00 Basic HVAC Requirements
      2) 23 05 03 Through Penetration Firestopping
      3) 23 05 05 HVAC Demolition for Remodeling
      4) 23 05 13 Motor
      5) 23 05 29 Supports and Anchors
      6) 23 05 53 HVAC Identification
      7) 23 05 93 Testing, Adjusting and Balancing
      8) 23 07 13 Ductwork Insulation
      9) 23 08 00 HVAC Systems Commissioning
     10) 23 31 00 Ductwork
     11) 23 33 00 Ductwork Accessories
     12) 23 33 13 Control Dampers & Actuators
     13) 23 34 16 Centrifugal Fans
     14) 23 34 23 Power Ventilators
     15) 23 36 00 Air Terminal Units
     16) 23 37 00 Air Inlets and Outlets
     17) 23 40 00 Air Cleaning
     18) 23 73 23 Custom Air Handling Units

E. Ventilation Contractor shall coordinate all subcontractors to protect finished work performed by each trade. Cost of labor and materials for protection is provided by each subcontractor.

F. Ventilation Contractor shall coordinate fully with all other prime contractors and their subcontractors. Include reasonable premium time if necessary to ensure full coordination of the project. Attendance at preconstruction meeting as necessary to confirm sequence, coordination and schedule is included.

G. Proposed location of material and equipment and routing of trucks for ventilation work will be reviewed and coordination on site with the General Trades Contractor and the Owner so as not to adversely affect the operation of other contractors and maintain the safety of the students and staff.
H. Ventilation Contractor shall coordinate and cooperate in all respect, during every phase of contractor’s performance of the work, with the Owner, consultants, other contractors, and any public authority of third party who may be employed or engaged in the activity on or near the site in relation to the Project. Subcontractor recognizes and acknowledges that its coordination and cooperation obligations are essential terms of the contract, and shall include without limitation, making work area available to other contractors and occasional disruptions to contractor’s performance of the work. Contractor acknowledges and recognizes that the performance by others involved in the Project of their respective work or the application of this clause may delay contractor in the performance of the work or render the performance thereof more costly than if contractor was not bound by the provisions of this clause.

I. Ventilation contractor shall coordinate with General Trades Contractor the access through the contract areas for other contractors to minimize damage to grades and materials. No Subcontractor will be allowed in any restricted areas unless approved by the Owner 7 days in advance.

J. Ventilation Contractor shall employ the services of all testing agency to perform quality testing of material, and component fabrications, as specified.

K. Ventilation Control Contractor shall perform all cutting, removal, and patching of walls, roofs, and floors to complete the ventilation scope of work.

L. Ventilation Contractor shall provide all flashing and/or counter flashing and other mounting support requirements where work penetrates through the roof or exterior wall.

M. Ventilation Contractor shall furnish and install escutcheon plates at all exposed pipe penetrations through finished walls or ceilings along with any required firestopping.

N. Ventilation Contractor shall coordinate the installation of all starter, disconnects and electrical items as required for the proper function of the Contractor’s work as indicated in the Contract Documents. Devices furnished will be assembled in accordance with the applicable section of both of the Heating A/C Temperature Control, Plumbing and Electrical specifications. Installation of loose motors and starter will be coordinated with the Electric Contractor so as to ensure a complete installation.

O. Ventilation Contractor shall provide the necessary protection to ensure that the existing structure and new finishes are not damaged during equipment and material delivery and/or installation.

P. Ventilation Contractor shall provide a detailed schedule for their work and material delivery to the General Trades Contractor within two weeks of notice award of contract.

Q. Ventilation Contractor shall review each alternate and determine how, if accepted, each alternate will affect their scope of work and shall insert a value in the appropriate itemized cost. Only three responses will be accepted: A positive dollar value, a negative dollar value, or No Change in Cost. Leaving space blank shall be considered not responsible and shall be a cause for rejection of bid.

R. Temporary facilities and controls in the Ventilation Contract include, but are not limited to, the following:

1. Provide temporary shoring and bracing of all excavations as required to properly complete any of the Ventilation scope of work.

2. Coordinate all work with the placement of construction site barricades, temporary fencing, gate openings, and personnel to protect construction areas, students, and staff.

1.11 ELECTRICAL CONTRACT

A. Work in the Electrical Contract includes, but is not limited to, the following:

B. Electrical Contractor shall furnish the necessary supervision, labor, material, equipment, engineering, cartage, scaffolding, and hoisting required to complete the electrical trades scope of work according to
the following requirements, plans and specification and all other Contract Documents. This entire contract shall constitute the Work to be performed by Subcontractors.

C. Electrical Contractor shall review all drawings, specifications and bid contracts (including those for other trades) to understand the complete scope of work. Subcontractors shall be responsible the entire set of Contract Documents.

D. Electrical Contractor shall be responsible for the following scope of work as defined and executed in the specifications sections and drawings.

1. Division 1 – General Requirements – All Sections
2. Division 2 – Existing Conditions – All Sections
3. Division 7 – Thermal and Moisture Protection
   a. 07 92 00 Joint Sealants
   b. Division 26 – Electrical – All Sections
   c. Division 27 – Communications – All Sections
   d. Division 28 – Electronic Safety and Security

E. Electrical Contractor shall coordinate all subcontractors to protect finished work performed by each trade. Cost of labor and materials for protection is provided by each subcontractor.

F. Electrical Contractor shall coordinate fully with all other prime contractors and their subcontractors. Include reasonable premium time if necessary to ensure full coordination of the a project. Attendance at preconstruction meeting as necessary to confirm sequence, coordination and schedule is included.

G. Proposed location of material and equipment and routing of trucks for ventilation work will be reviewed and coordination on site with the General Trades Contractor and the Owner so as not to adversely affect the operation of other contractors and maintain the safety of the students and staff.

H. Electrical Contractor shall coordinate and cooperate in all respect, during every phase of contractor’s performance of the work, with the Owner, consultants, other contractors, and any public authority of third party who may be employed or engaged in the activity on or near the site in relation to the Project. Subcontractor recognizes and acknowledges that its coordination and cooperation obligations are essential terms of the contract, and shall include without limitation, making work area available to other contractors and occasional disruptions to contractor’s performance of the work. Contractor acknowledges and recognizes that the performance by others involved in the Project of their respective work or the application of this clause may delay contractor in the performance of the work or render the performance thereof more costly than if contractor was not bound by the provisions of this clause.

I. Electrical contractor shall coordinated with General Trades Contractor the access through the contract areas for other contractors to minimize damage to grades and materials. No Subcontractor will allowed in any restricted areas unless approved by the Owner 7 day in advance.

J. Electrical Contractor shall employ the services of all testing agency to perform quality testing of material, and component fabrications, as specified.

K. Electrical Control Contractor shall perform all cutting, removal, and patching of walls, roofs, and floors to complete the electrical scope of work.

L. Electrical Contractor shall provide all flashing and /or counter flashing and other mounting support requirements where work penetrates through the roof or exterior wall.

M. Electrical Contractor shall furnish and install escutcheon plates at all exposed pipe penetrations through finished walls or ceilings along with any required firestopping.
N. Electrical Contactor shall coordinate the installation of all starter, disconnects and electrical items as required for the proper function of the Contractor’s work as indicated in the Contract Documents. Devices furnished will be assembled in accordance with the applicable section of both of the Heating A/C Temperature Control, Plumbing and Ventilation specifications. Installation of loose motors and starter will be coordinated with the Electric Contractor so as to ensure a complete installation.

O. Electrical Contractor shall provide the necessary protection to ensure that the existing structure and new finishes are not damaged during equipment and material delivery and/or installation.

P. Electrical Contractor shall provide a detailed schedule for their work and material delivery to the General Trades Contractor within two weeks of notice award of contract.

Q. Electrical Contractor shall review each alternate and determine how, if accepted, each alternate will affect their scope of work and shall insert a value in the appropriate itemized cost. Only three responses will be accepted: A positive dollar value, a negative dollar value, or No Change In Cost. Leaving space blank shall be considered not responsible and shall be a cause for rejection of bid.

R. Temporary facilities and controls in the Electrical Contract include, but are not limited to, the following:
   1. Electric power service and distribution.
   2. Lighting, including temporary and permanent site lighting.
   3. Electrical connections to existing systems and temporary facilities and controls furnished by the Electrical Contract.

1.12 P2 PRODUCTS (NOT USED)

1.13 P3 EXECUTION (NOT USED)
SECTION 01 2300 - ALTERNATES

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Trade Contractor’s Base Bid to incorporate alternate into the Work. No other adjustments are made to the Base Bid Sum.

1.3 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Alternates will be accepted or rejected on a random basis depending on the funding available for the project at the time of award. The award of each bid package contractor will be based on a combination of their Base Bid proposal AND the amount of each accepted alternate.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

1.4 P2 PRODUCTS (NOT USED)

PART 3 EXECUTION

2.1 SCHEDULE OF ALTERNATES

A. Alternate Bid No. 1 – PROVIDE SINGLE USE TOILET ROOMS IN 0025 AND 0027.

B. Alternate Bid No. 2 – PROVIDE FIELD CONSTRUCTED WALL ASSEMBLIES FOR THE RESEARCH OFFICE AREA ON THE SECOND FLOOR AS INDICATED IN THE DOCUMENTS.

C. Alternate Bid No. 3 – PROVIDE FIBER CEMENT BOARD PANELS IN LIEU OF METAL PANELS ON THE SOUTH, EAST, AND NORTH ELEVATIONS AS INDICATED IN THE DOCUMENTS.

D. Alternate Bid No. 4 – PROVIDE REINFORCED WALLS AROUND THE PERIMETER OF MEETING ROOM 0010/0011/0012.

END OF SECTION
SECTION 01 2600 - CONTRACT MODIFICATION PROCEDURES

PART 1  GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.2 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions.

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.

2. Within 10 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Include an updated Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.

C. Proposal Request Form: Use forms provided by Architect
1.4 CONSTRUCTION CHANGE DIRECTIVE

   1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
   1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701

1.6 P2 PRODUCTS (NOT USED)

1.7 P3 EXECUTION (NOT USED)

END OF SECTION
SECTION 01 3100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations as provided by the General Trades Contractor on this Project including, but not limited to, the following:

1. Coordination Drawings.
2. Administrative and supervisory personnel.
3. Project meetings.
4. Requests for Interpretation (RFIs).

B. Each General Trades Construction Contractor, Plumbing Contractor, Heating A/C, Temperature Control Contractor, Ventilation Contractor and Electrical Contractor shall participate in the coordination requirements.

C. Related Sections include the following:

1. Division 01 Section "Multiple Contract Summary" for a description of the division of Work among separate contracts and responsibility for coordination activities not in this Section.
2. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor’s Construction Schedule.
3. Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
4. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

A. Coordination: General Trades Contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each prime and subcontractor shall coordinate its operations with operations, included in different Sections, with the General Trade Contractor, that depend on each other for proper installation, connection, and operation.

1. General Trades Contractor shall schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. General Trades Contractor shall coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.

3. General Trades Contractor shall make adequate provisions to accommodate items scheduled for later installation.
4. General Trades Contractor, where availability of space is limited, coordinate installation of
different components to ensure maximum performance and accessibility for required maintenance,
service, and repair of all components, including mechanical and electrical.

B. General Trades Contractor shall prepare memoranda for distribution to each party involved, outlining
special procedures required for coordination. Include such items as required notices, reports, and list of
attendees at meetings.

1. General Trades Contractor shall prepare similar memoranda for Owner and separate contractors
if coordination of their Work is required.

C. Administrative Procedures: General Trades Contractor shall coordinate scheduling and timing of required
administrative procedures with other construction activities and activities of other contractors to avoid
conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not
limited to, the following:

1. Preparation of Contractor’s Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

D. Conservation: General Trades Contractor shall coordinate construction activities to ensure that operations
are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into,
the Work. Refer to other Sections for disposition of salvaged materials that are designated as
Owner’s property.

1.5 SUBMITTALS

A. Coordination Drawings: General Trades Contractor shall prepare Coordination Drawings if limited space
availability necessitates maximum utilization of space for efficient installation of different components or
if coordination is required for installation of products and materials fabricated by separate entities.

1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination
Drawings on reproductions of the Contract Documents or standard printed data. Include the
following information, as applicable:

   a. Indicate functional and spatial relationships of components of architectural, structural, civil,
      mechanical, and electrical systems.

   b. Indicate required installation sequences.

   c. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that
      appear to be in conflict with submitted equipment and minimum clearance requirements.
Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

2. **Sheet Size:** At least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).

3. **Number of Copies:** Submit seven opaque copies of each submittal to the Architect.

4. **Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.**

**B. Key Personnel Names:** Within 15 days of starting construction operations, General Trades Contractor shall submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site for each prime contractor to the Architect for distribution to the Owner. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home, cell and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Provide copies for all prime contractors.

### 1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

**A. General:** In addition to Project superintendent, the General Trades Contractor shall provide other administrative and supervisory personnel as required for proper performance of the Work.

### 1.7 PROJECT MEETINGS

**A. General:** General Trades Contractor shall schedule and conduct meetings and conferences at Project site, unless otherwise indicated.

1. **Attendees:** Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.

2. **Agenda:** General Trades Contractor shall prepare the meeting agenda. Distribute the agenda to all invited attendees.

3. **Minutes:** General Trades Contractor shall record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days prior of the next meeting.

**B. Preconstruction Conference:** General Trades Contractor shall schedule a preconstruction conference before starting construction, at a time convenient to Owner, Architect, and Engineers but no later than 15 days after the notice to proceed is issued. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. **Attendees:** Authorized representatives of Owner, Architect, Engineer and Prime Contractors; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. **Agenda:** Discuss items of significance that could affect progress, including the following:
   a. Tentative construction schedule.
   b. Phasing.
   c. Critical work sequencing and long-lead items.
   d. Designation of key personnel and their duties.
   e. Procedures for processing field decisions and Change Orders.
f. Procedures for RFIs.
g. Procedures for testing and inspecting.
h. Procedures for processing Applications for Payment.
i. Distribution of the Contract Documents.
j. Submittal procedures.
k. LEED requirements.
l. Preparation of Record Documents.
m. Use of the premises and existing building.
n. Work restrictions.
o. Owner's occupancy requirements.
p. Responsibility for temporary facilities and controls.
q. Construction waste management and recycling.
r. Parking restrictions.
s. Office, work, and storage areas.
t. Equipment deliveries and priorities.
u. First aid.
w. Progress cleaning.
x. Working hours.

3. Minutes: General Trades Contractor shall record and distribute meeting minutes.

C. Preinstallation Conferences: General Trades Contractor shall conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction trades and activities.

1. Attendees: General Trades Contractor, Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect and Engineers of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:

   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Purchases.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility problems.
k. Time schedules.
l. Weather limitations.
m. Manufacturer’s written recommendations.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: General Trades Contractor shall conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of General Trades Contractor, Owner, Architect and Engineers (bi-weekly), each prime contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. General Trades Contractor’s Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor’s Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      1) Review schedule for next period.

   b. Review present and future needs of each entity present, including the following:
      1) Interface requirements.
      2) Sequence of operations.
      3) Status of submittals.
      4) Deliveries.
      5) Off-site fabrication.
      6) Access.
      7) Site utilization.
      8) Temporary facilities and controls.
      9) Work hours.
     10) Hazards and risks.
     11) Progress cleaning.
     12) Quality and work standards.
     13) Status of correction of deficient items.
     14) Field observations.
     15) RFIs.
     16) Status of proposal requests.
     17) Pending changes.
     18) Status of Change Orders.
     19) Pending claims and disputes.
     20) Documentation of information for payment requests.

3. Minutes: General Trades Contractor shall record and distribute the meeting minutes.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
a. Schedule Updating: General Trades Contractor shall revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

E. Coordination Meetings: General Trades Contractor shall conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to General Trades Contractor, representatives of Owner, Architect and Engineers (bi-weekly), each prime contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

   a. Combined General Trades Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

   b. Schedule Updating: Revise Combined General Trades Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.

   c. Review present and future needs of each contractor present, including the following:

      1) Interface requirements.
      2) Sequence of operations.
      3) Status of submittals.
      4) Deliveries.
      5) Off-site fabrication.
      6) Access.
      7) Site utilization.
      8) Temporary facilities and controls.
      9) Work hours.
     10) Hazards and risks.
     11) Progress cleaning.
     12) Quality and work standards.
     13) Change Orders.

3. Reporting: General Trades Contractor shall record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.
1.8 REQUESTS FOR INTERPRETATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.

1. RFIs shall originate with General Trades Contractor. RFIs submitted by entities other than Contractor will be returned with no response.

2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor’s work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project name.

2. Date.

3. Name of Contractor.

4. Name of Architect or Engineer.

5. RFI number, numbered sequentially.

6. Specification Section number and title and related paragraphs, as appropriate.

7. Drawing number and detail references, as appropriate.

8. Field dimensions and conditions, as appropriate.

9. Contractor’s suggested solution(s). If Contractor’s solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.

10. Contractor’s signature.

11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

   a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Hard-Copy RFIs: as approved by Owner and Architect.

1. Identify each page of attachments with the RFI number and sequential page number.

D. Software-Generated RFIs: Software-generated form with substantially the same content as indicated above.

1. Attachments shall be electronic files in Adobe Acrobat PDF format.

E. Architect, Engineer and General Trades Contractor Action: Architect, Engineer and General Trades Contractor will review each RFI, determine action required, and return it. Allow seven (7) working days for Architect’s response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

   a. Requests for approval of submittals.

   b. Requests for approval of substitutions.
c. Requests for coordination information already indicated in the Contract Documents.

d. Requests for adjustments in the Contract Time or the Contract Sum.

e. Requests for interpretation of Architect's actions on submittals.

f. Incomplete RFIs or RFIs with numerous errors.

2. Architect's or Engineer's action may include a request for additional information, in which case Architect's or Engineer's time for response will start again.

3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."

   a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Engineer in writing within ten (10) days of receipt of the RFI response.

F. On receipt of Architect's and Engineers action, General Trades Contractor shall update the RFI log and immediately distribute the RFI response to affected parties. General Trades Contractor shall review response and notify Architect and Engineer within seven (7) days if Contractor disagrees with response.

G. RFI Log: General Trades Contractor shall prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit monthly log updates that include the following:

   1. Project name.
   2. Name and address of Contractor.
   3. Name and address of Architect and Engineer.
   4. RFI number including RFIs that were dropped and not submitted.
   5. RFI description.
   6. Date the RFI was submitted.
   7. Date Architect's and Engineer's response was received.
   8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

1.9 P2 PRODUCTS (NOT USED)

1.10 P3 EXECUTION (NOT USED)

END OF SECTION
SECTION 01 3200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Preliminary Construction Schedule.
   2. Contractor’s Construction Schedule.
   4. Daily construction reports.
   5. Material location reports.
   6. Field condition reports.
   7. Special reports.
B. Related Sections include the following:
   1. Division 01 Section "Payment Procedures" for submitting the Schedule of Values.
   2. Division 01 Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
   3. Division 01 Section "Submittal Procedures" for submitting schedules and reports.

1.3 DEFINITIONS
A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.
B. Cost Loading: The allocation of the Schedule of Values for the completion of an activity as scheduled. The sum of costs for all activities must equal the total Contract Sum, unless otherwise approved by Architect.
C. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
D. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
E. Event: The starting or ending point of an activity.

F. Float: The measure of leeway in starting and completing an activity.
   1. Float time is for the exclusive use or benefit of the Owner.
   2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
   3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

G. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

H. Major Area: A story of construction, a separate building, or a similar significant construction element.

I. Milestone: A key or critical point in time for reference or measurement.

J. Network Diagram: A graphic diagram of a network schedule, showing activities and activity relationships.

K. Resource Loading: The allocation of manpower and equipment necessary for the completion of an activity as scheduled.

1.4 SUBMITTALS

A. Qualification Data: For scheduling consultant.

B. Submittals Schedule: Submit seven (7) copies of schedule. Arrange the following information in a tabular format:
   1. Scheduled date for first submittal.
   2. Specification Section number and title.
   3. Submittal category (action or informational).
   4. Name of subcontractor.
   5. Description of the Work covered.
   6. Scheduled date for Architect’s final release or approval.

C. Preliminary Construction Schedule: Submit eight (8) opaque copies.
   1. Approval of cost-loaded preliminary construction schedule will not constitute approval of Schedule of Values for cost-loaded activities.

D. Preliminary Network Diagram: Submit eight (8) opaque copies, large enough to show entire network for entire construction period. Show logic ties for activities.

E. Contractor’s Construction Schedule: Submit eight (8) opaque copies of initial schedule, large enough to show entire schedule for entire construction period.
   1. Submit an electronic copy of schedule, using software indicated, on CD-R, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.

F. CPM Reports: Concurrent with CPM schedule, submit eight (8) copies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity
description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of all activities sorted by activity number and then early start date, or actual start date if known.

2. Logic Report: List of preceding and succeeding activities for all activities, sorted in ascending order by activity number and then early start date, or actual start date if known.

3. Total Float Report: List of all activities sorted in ascending order of total float.

G. Daily Construction Reports: Submit eight (8) copies at weekly intervals.

H. Field Condition Reports: Submit eight (8) copies at time of discovery of differing conditions.

1.5 QUALITY ASSURANCE

A. Scheduling Consultant Qualifications: An experienced specialist in CPM scheduling and reporting, with capability of producing CPM reports and diagrams within 24 hours of Architect’s request.

B. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to the Preliminary Construction Schedule and Contractor’s Construction Schedule, including, but not limited to, the following:

1. Review software limitations and content and format for reports.

2. Verify availability of qualified personnel needed to develop and update schedule.

3. Discuss constraints, including phasing, work stages, area separations, interim milestones, and, partial Owner occupancy.

4. Review delivery dates for Owner-furnished products.

5. Review schedule for work of Owner’s separate contracts.

6. Review time required for review of submittals and resubmittals.

7. Review requirements for tests and inspections by independent testing and inspecting agencies.

8. Review time required for completion and startup procedures.

9. Review and finalize list of construction activities to be included in schedule.

10. Review submittal requirements and procedures.

11. Review procedures for updating schedule.

1.6 COORDINATION

A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.

B. Coordinate Contractor’s Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from parties involved.

2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.
PART 2 PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.

1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor’s Construction Schedule.

2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

a. At Contractor’s option, show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor’s Construction Schedule.

2.2 CONTRACTOR’S CONSTRUCTION SCHEDULE, GENERAL

A. Procedures: Comply with procedures contained in AGC’s "Construction Planning & Scheduling."

B. Time Frame: Extend schedule from date established for the Notice of Award to date of Substantial and Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than twenty (20) days, unless specifically allowed by Architect.

2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.

a. Curtain Wall and Glazing System and hardware
b. HVAC Systems
c. Structural Steel
d. Any other item or material considered a potential long lead item


4. Startup and Testing Time: Include not less than fourteen (14) days for startup and testing.

5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect’s and Engineer’s administrative procedures necessary for certification of Substantial Completion.
D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Phasing: Arrange list of activities on schedule by phase.

2. Work under More Than One Contract: Include a separate activity for each contract.

3. Work by Owner: Include a separate activity for each portion of the Work performed by Owner.

4. Products Ordered in Advance: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.

5. Owner-Furnished Products: Include a separate activity for each product. Include delivery date indicated in Division 01 Section "Summary." Delivery dates indicated stipulate the earliest possible delivery date.

6. Work Restrictions: Show the effect of the following items on the schedule:
   a. Coordination with existing construction.
   b. Limitations of continued occupancies.
   c. Uninterruptible services.
   d. Partial occupancy before Substantial Completion.
   e. Use of premises restrictions.
   g. Seasonal variations.
   h. Environmental control.

7. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
   a. Subcontract awards.
   b. Submittals.
   c. Purchases.
   d. Mockups.
   e. Fabrication.
   f. Sample testing.
   g. Deliveries.
   h. Installation.
   i. Tests and inspections.
   j. Adjusting.
   k. Curing.
   l. Startup and placement into final use and operation.
8. **Area Separations:** Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
   a. Structural completion.
   b. Permanent space enclosure.
   c. Completion of mechanical installation.
   d. Completion of electrical installation.
   e. Substantial Completion.

9. **Other Constraints:** to be determined

E. **Milestones:** Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion, and the following interim milestones:
   1. Curtain wall and Glazing installation completion.
   2. Pedestrian Link enclosure completion.
   3. Start-up Commissioning date.

F. **Cost Correlation:** At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests. Allow twenty-nine (29) days for Commissioning Subcontractor.
   1. Refer to Division 01 Section "Payment Procedures" for cost reporting and payment procedures.
   2. Contractor shall assign cost to construction activities on the CPM schedule. Costs shall not be assigned to submittal activities unless specified otherwise but may, with Architect's approval, be assigned to fabrication and delivery activities. Costs shall be under required principal subcontracts for testing and commissioning activities, operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training (if applicable), in the amount of 5 percent of the Contract Sum.
   3. Each activity cost shall reflect an accurate value subject to approval by Architect.
   4. Total cost assigned to activities shall equal the total Contract Sum.

G. **Contract Modifications:** For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

H. **Computer Software:** Prepare schedules using a program that has been developed specifically to manage construction schedules.
   1. Windows Version operating system.

2.3 **PRELIMINARY CONSTRUCTION SCHEDULE**

A. **Bar-Chart Schedule:** Submit preliminary horizontal bar-chart-type construction schedule within seven (7) days of date established for the Notice of Award.

B. **Preparation:** Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first sixty (60) days of
construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

2.4 CONTRACTOR’S CONSTRUCTION SCHEDULE (GANTT CHART) – CONTRACTOR’S OPTION

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor’s Construction Schedule within fifteen (15) days of date established for the Notice of Award. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.5 CONTRACTOR’S CONSTRUCTION SCHEDULE (CPM SCHEDULE) – CONTRACTOR’S OPTION

A. General: Prepare network diagrams using AON (activity-on-node) format.

B. Preliminary Network Diagram: Submit diagram within FIFTEEN (15) days of date established for the Notice of Award. Outline significant construction activities for the first sixty (60) days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

C. CPM Schedule: Prepare Contractor’s Construction Schedule using a computerized, time-scaled CPM network analysis diagram for the Work.

1. Develop network diagram in sufficient time to submit CPM schedule so it can be accepted for use no later than thirty (30) days after date established for the Notice of Award.

   a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Architect’s approval of the schedule.

2. Conduct educational workshops to train and inform key Project personnel, including subcontractors’ personnel, in proper methods of providing data and using CPM schedule information.

3. Establish procedures for monitoring and updating CPM schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.

4. Use "one workday” as the unit of time. Include list of nonworking days and holidays incorporated into the schedule.

D. CPM Schedule Preparation: Prepare a list of all activities required to complete the Work. Using the preliminary network diagram, prepare a skeleton network to identify probable critical paths.

1. Activities: Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Include estimated time frames for the following activities:

   a. Preparation and processing of submittals.
   b. Mobilization and demobilization.
   c. Purchase of materials.
   d. Delivery.
   e. Fabrication.
f. Utility interruptions.
g. Installation.
h. Work by Owner that may affect or be affected by Contractor’s activities.
i. Testing and commissioning.

2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.

3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.

4. Format: Mark the critical path. Locate the critical path near center of network; locate paths with most float near the edges.
   a. Subnetworks on separate sheets are permissible for activities clearly off the critical path.

E. Initial Issue of Schedule: Prepare initial network diagram from a list of straight “early start-total float” sort. Identify critical activities. Prepare tabulated reports showing the following:

1. Contractor or subcontractor and the Work or activity.
2. Description of activity.
3. Principal events of activity.
4. Immediate preceding and succeeding activities.
5. Early and late start dates.
6. Early and late finish dates.
7. Activity duration in workdays.
8. Total float or slack time.
10. Dollar value of activity (coordinated with the Schedule of Values).

F. Schedule Updating: Concurrent with making revisions to schedule, prepare tabulated reports showing the following:

1. Identification of activities that have changed.
2. Changes in early and late start dates.
3. Changes in early and late finish dates.
5. Changes in the critical path.
6. Changes in total float or slack time.

G. Value Summaries: Prepare two cumulative value lists, sorted by finish dates.
1. In first list, tabulate activity number, early finish date, dollar value, and cumulative dollar value.
2. In second list, tabulate activity number, late finish date, dollar value, and cumulative dollar value.
3. In subsequent issues of both lists, substitute actual finish dates for activities completed as of list date.
4. Prepare list for ease of comparison with payment requests; coordinate timing with progress meetings.
   a. In both value summary lists, tabulate "actual percent complete" and "cumulative value completed" with total at bottom.
   b. Submit value summary printouts one week before each regularly scheduled progress meeting.

2.6 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   1. List of subcontractors at Project site.
   2. List of separate contractors at Project site.
   3. Approximate count of personnel at Project site.
   4. Equipment at Project site.
   5. Material deliveries.
   6. High and low temperatures and general weather conditions.
   7. Accidents.
   8. Meetings and significant decisions.
   9. Unusual events (refer to special reports).
   10. Stoppages, delays, shortages, and losses.
   11. Meter readings and similar recordings.
   13. Orders and requests of authorities having jurisdiction.
   14. Change Orders received and implemented.
   15. Construction Change Directives received and implemented.
   16. Services connected and disconnected.
   17. Equipment or system tests and startups.
   18. Partial Completions and occupancies.
   19. Substantial Completions authorized.

B. Material Location Reports: At monthly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.
C. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.7 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor’s personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 EXECUTION

3.1 CONTRACTOR’S CONSTRUCTION SCHEDULE

A. Scheduling Consultant: Engage a consultant to provide planning, evaluation, and reporting using CPM scheduling.

1. In-House Option: Owner may waive the requirement to retain a consultant if Contractor employs skilled personnel with experience in CPM scheduling and reporting techniques. Submit qualifications.

2. Meetings: Scheduling consultant shall attend all meetings related to Project progress, alleged delays, and time impact.

B. Contractor’s Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.

2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.

3. As the Work progresses, indicate Actual Completion percentage for each activity.

C. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.

2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION
SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1  GENERAL

1.1  SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

B. See Division 1 Section "Construction Progress Documentation" for submitting schedules and reports, including Construction Manager’s Construction Schedule and the Submittals Schedule.

C. See Division 1 Section "Quality Requirements" for submitting test and inspection reports and Delegated-Design Submittals.

D. See Division 1 Section "Closeout Procedures" for submitting warranties

1.2  DEFINITIONS

A. Action Submittals: Written and graphic information that requires Architect's/Engineer’s responsive action.

B. Informational Submittals: Written information that does not require Architect's approval. Submittals may be rejected for not complying with requirements.

1.3  SUBMITTAL PROCEDURES

A. General: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Architect for Contractor’s use in preparing submittals.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

   1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

   2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

      a. Architect/Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.

D. All submittals shall be transmitted to the Contractor for distribution to the Architect/Engineer for review.

E. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect’s receipt of submittal.

   1. Initial Review: Allow ten (10) days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect/Engineer will advise Contractor when a submittal being processed must be delayed for coordination. Contractors to submit all components of a system and all finishes together so that reviews can be performed reviewing a complete system, not a partial submittal. If a partial submittal is made, the review will not begin until the final component of the system or finishes is submitted. Upon submittal of the final component, the system or finishes submittal will be deemed complete. At that time, the review period will begin. The Architect/Engineer will provide one review and comments and one revision review to each submittal. Additional reviews shall be the contractors responsibility.
2. If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Allow five (5) days for processing each resubmittal.

4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

F. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space approximately on label or beside title block to record Contractor’s review and approval markings and action taken by Architect/Engineer.

3. Include the following information on label for processing and recording action taken:
   a. Project name.
   b. Date.
   c. Name and address of Contractor
   d. Name and address of Architect.
   e. Name and address of Subcontractor.
   f. Name and address of Supplier.
   g. Name of Manufacturer.
   h. Unique identifier, including revision number.
   i. Number and title of appropriate Specification Section.
   j. Drawing number and detail references, as appropriate.
   k. Other necessary identification.

G. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

H. Additional Copies: Two copies will be retained by the Architect/Engineer for their records. Two copies will be retained by the Contractor. Submit additional copies as needed for Contractor, Subcontractor, Fabricators, and Supplier records.

1. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.

I. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a Submittal Transmittal Form included at the end of this section. Contractor will discard submittals received from sources other than Subcontractor.

1. Include Contractor’s certification stating that information submitted complies with requirements of the Contract Documents.

2. Submittal Transmittal Form: Submitted by Contractor

J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
K. Use for Construction: Use only final submittals with mark indicating action taken by Architect/Engineer in connection with construction.

L. Within seventy-five (75) calendar days of the Notice to Proceed, all submittals are to have been submitted to the Architect/Engineer by all contractors. No further pay requests will be processed for any contractor who does not have all submittals made by this date.

PART 2 PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections to the Construction Manager.

1. Number of Copies: Two copies will be retained by the Architect/Engineer for their records. Two copies will be retained by the Contractor. Submit additional copies as needed for the Contractor, Subcontractor, Fabricators, and Supplier records. Mark up and retain one returned copy as a Project Record Document.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:
   a. Manufacturer’s written recommendations.
   b. Manufacturer’s product specifications.
   c. Manufacturer’s installation instructions.
   d. Manufacturer’s catalog cuts.
   e. Standard color charts
   f. Wiring diagrams showing factory-installed wiring.
   g. Printed performance curves.
   h. Operational range diagrams.
   i. Compliance with recognized trade association standards.
   j. Compliance with recognized testing agency standards.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:
   a. Dimensions.
   b. Identification of products.
   c. Fabrication and installation drawings.
   d. Roughing-in and setting diagrams.
SUBMITTAL PROCEDURES

e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.

f. Shopwork manufacturing instructions.

g. Templates and patterns.

h. Schedules.

i. Notation of coordination requirements.

j. Notation of dimensions established by field measurement.

k. Seal and signature of professional engineer, registered in the State of Illinois, if specified.

2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 24 by 36 inches but no larger than 36 by 48 inches.

D. Coordination Drawings: Comply with requirements in Division 1 Section "Project Management and Coordination."

E. Samples: Prepare physical units of materials or products, including the following:

1. Comply with requirements in Division 1 Section "Quality Requirements" for mockups.

2. Samples for Initial Selection: Submit manufacturer’s color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

   a. Submit a minimum of three (3) full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer’s product line. Architect will retain one (1) and return the remaining submittal with options selected.

3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

   a. Submit a minimum of three (3) full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer’s product line. Architect will retain one (1) and return the remaining submittal with options selected.

4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Architect’s sample where so indicated. Attach label on unexposed side.

5. Submit Samples for review of kind, color, pattern, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed.

6. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

F. LEED Submittals: Comply with requirements specified in Division 01 Section "Sustainable Design Requirements."
SUBMITTAL PROCEDURES

1. Number of Copies: Submit four copies of LEED submittals, unless otherwise indicated.

2. Contractor/Subcontractor: Shall submit a statement indicating detailed cost breakdown for each product having recycled content.

3. Architectural Floor Plans: Auto CAD, dwg format. Electronic files for architectural floor plans are available from the Architect at a cost of $250.00.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections to the Contractor.

1. Number of Copies: Two copies will be retained by the Architect/Engineer for their records. Two copies will be retained by the Contractor. Submit additional copies as needed for Contractor, Subcontractor, Fabricators, and Supplier records. Mark up and retain one returned copy as a Project Record Document.

2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

3. Test and Inspection Reports: Comply with requirements in Division 1 Section "Quality Requirements."

B. Contractor’s Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Product Certificates: Prepare written statements on manufacturer’s letterhead certifying that product complies with requirements.

E. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section "Closeout Procedures."

F. Manufacturer’s Instructions: Prepare written or published information that documents manufacturer’s recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

G. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

PART 3 EXECUTION

3.1 CONTRACTOR’S REVIEW

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Construction Manager.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor’s approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
3.2 ARCHITECT’S /ENGINEER’S ACTION

A. General: Architect/Engineer will not review submittals that do not bear Contractor’s review comments and approval stamp and will return them without action.

B. Action Submittals: Architect/Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect/Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken. Review comments by the Architect/Engineer does not constitute acceptance of any item or action that does not comply with the contract requirements. The Architect/Engineer will provide one review and comments and one revision review to each submittal. Additional reviews shall be the contractor’s responsibility.

C. Informational Submittals: Architect/Engineer will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Architect/Engineer will forward each submittal to appropriate party.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION
SECTION 01 3515 - LEED CERTIFICATION PROCEDURES

PART 1  GENERAL

1.1  PROJECT GOALS

A. This project has been designed to achieve the LEED Silver (minimum 50 points) rating as defined in the LEED® Green Building Rating System™ for New Construction and Major Renovations, Version 3, 2009 Edition.

B. Contractor is not responsible for the application for LEED certification, nor for determination of methods of achieving LEED credits unless specifically so indicated.

C. Many of the LEED credits can be achieved only through intelligent design of the project and are beyond the control of the Contractor. However, certain credits relate to the products and procedures used for construction. Therefore, the full cooperation of the Contractor and subcontractors is essential to achieving final certification.

D. Contractor shall familiarize himself with the relevant requirements and provide the necessary information and instruction to all subcontractors and installers.

E. Since Contractor and subcontractors may not be familiar with LEED requirements, this section includes a summary of the products and procedures intended to achieve LEED credits.

1. Some credits are marked PREREQUISITE; these must be achieved regardless of the level of certification; many are dependent on proper performance by Contractor and subcontractors.

2. Other credits involve quantifying percentages by weight and cost; these require careful recordkeeping and reporting by the Contractor.


1.2  RELATED REQUIREMENTS

A. Sections that include requirements intended to achieve LEED credits include, but are not limited to, the following:

B. Section 01 1000 - Summary:

1. Contractor use of premises; SS Credit 5.1.

C. Section 01 5713 - Temporary Erosion and Sediment Control: Preventive measures and remediation; SS PREREQUISITE 1.

D. Section 01 5721 - Indoor Air Quality Controls:

E. Section 01 6000 - Product Requirements: Overall project requirements for:

F. Section 01 7700 - Closeout Procedures

G. Section 01 7419 - Construction Waste Management and Disposal:

H. Section 01 7900 - Demonstration and Training:

I. Section 01 9113 - General Commissioning Requirements:

J. Section 02 4100 - Demolition:

K. Section 06 1000 - Rough Carpentry:

L. Section 06 2000 - Finish Carpentry:
M. Section 06 4100 - Architectural Wood Casework:

N. Section 07 8400 - Firestopping: LEED-VOC-compliant firestopping sealants; EQ Credit 4.1.

O. Section 07 9005 - Joint Sealers: LEED-VOC-compliant sealants; EQ Credit 4.1.

P. Section 08 4313 - Aluminum-Framed Storefronts:

Q. Section 08 4413 - Glazed Aluminum Curtain Walls:

R. Section 08 5113 - Aluminum Windows:

S. Section 08 8000 - Glazing:

T. Section 09 2116 - Gypsum Board Assemblies:

U. Section 09 6813 - Tile Carpeting: Carpet tile complying with CRI Green Label Plus requirements; EQ Credit 4.3.

V. Section 09 9000 - Painting and Coating: LEED-VOC-compliant interior opaque paints and coatings; EQ Credit 4.2.

W. Section 10 4400 - Fire Protection Specialties: Fire extinguishers that use agents other than Halon: EA Credit 4.

X. Section 12 3600 - Countertops:

Y. Section 12 4813 - Entrance Floor Mats and Frames:

1.3 SUBMITTALS

A. See Section 01 3300 - Submittal Procedures, for additional submittal procedures.

B. Submit LEED submittals and reports to Architect/Engineer, unless otherwise indicated.

C. LEED Submittal/Report: For each product with the notation "show quantity on LEED submittal or report," submit a report with the following information:

   1. Submit with each Application for Payment; update the Report each period with latest period shown separately:

   2. Identify each product with:

      a. Name and manufacturer.

      b. Specification section number.

      c. Applicable Credit(s).

      d. Net weight per unit.

      e. Quantity installed.

      f. Material cost per unit.

      g. Total material cost.

   3. Attach evidence of compliance from either the manufacturer or an independent agency.
PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 ELECTRONIC LEED DOCUMENT SUBMITTAL SERVICE

A. Documents submitted for purposes of LEED certification are to be in electronic (PDF) format and transmitted via an Internet-based submittal service that receives, logs and stores documents, notifies participants, and provides electronic submission to USGBC.

1. The types of submittals for which this service must be used include those for credits that relate to materials, and any others designated by Architect/Engineer.

2. For credits for which achievement requires substantiation of material type, quantity, and cost, submit receipts showing purchase of materials for this project.

3. Contractor and Architect/Engineer are required to use this service.

4. It is Contractor’s responsibility to submit documents in PDF format.

5. Subcontractors, suppliers, and Architect/Engineer’s consultants are to be permitted to use the service at no extra charge.

6. Users of the service need an email address, Internet access, and PDF review software that includes ability to mark up and apply electronic stamps (such as Adobe Acrobat, www.adobe.com, or Bluebeam PDF Revu, www.bluebeam.com), unless such software capability is provided by the service provider.

7. Paper document transmittals will not be reviewed; emailed PDF documents will not be reviewed.

8. All other specified submittal and document transmission procedures apply, except that electronic document requirements to not apply to samples or color selection charts.

B. Cost: The cost of the service is to be paid by Contractor; include the cost of the service in the contract sum.

END OF SECTION
SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Sections include the following:

1. Division 01 Section "Summary" for limitations on utility interruptions and other work restrictions.

2. Division 01 Section "Multiple Contract Summary" for division of responsibilities for temporary facilities and controls.

3. Division 01 Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.

4. Division 01 Section "Execution" for progress cleaning requirements.

5. Divisions 02 through 49 Sections for temporary heat, ventilation, and humidity requirements for products in those Sections.

1.3 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.

1.4 USE CHARGES

A. General: Cost or use charges for temporary facilities shall be provided by Owner. Allow other entities to use temporary services and facilities without cost.

B. Sewer Service: Sewer service will not be available during the renovation of the existing service.

C. Water Service: Water service use charges for normal domestic water used by all entities for construction operations shall be paid for by Owner.

D. Electric Power Service: Pay by owner electric power service use charges for electricity used by all entities for construction operations.

E. Sewer, Water, and Electric Power Service: Use charges are specified in Division 01 Section "Multiple Contract Summary."

F. Water Service: Water from Owner’s existing water system is available for use for construction purposes, provided the Contractor:

   1. Obtains approval from the Owner

   2. Assumes full responsibility for the entire water distribution system.

   3. Pays costs for operation, useage, maintenance and restoration of system.
G. Electric Power Service: Electric power from Owner’s existing system is available for use without metering and without payment of use charges. Provide connections and extensions of temporary services as required for construction operations by electric contractor.

1.5 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.6 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.7 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner’s acceptance, regardless of previously assigned responsibilities.

PART 2 PRODUCTS

2.1 MATERIALS

A. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. Provide galvanized steel bases for supporting posts.. Provide fabric cover on chain link fence to meet City of Chicago specifications.

B. Lumber and Plywood: Comply with requirements in Division 06 Section "Rough Carpentry ."

C. Gypsum Board: Minimum 1/2 inch (12.7 mm) thick by 48 inches (1219 mm) wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36/C 36M.

D. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

E. Paint: Comply with requirements in Division 09 painting Sections.

2.2 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units are allowed.

B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations are not allowed.

1. Store combustible materials apart from building. Approval must be obtained from the Owner.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Authorizes use of permanent HVAC system will not be allowed. Provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control. Obtain approval from the Owner and local authority have jurisdiction.
1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 3 EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

   1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Storm water Drainage: Provide temporary utilities to remove runoff lawfully.

   1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.

   1. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.

D. Sanitary Facilities:

   1. Toilets: Use of Owner's existing toilet facilities will not be permitted.

E. Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

G. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner.

H. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

   1. Install 110V electric power service overhead at all floors unless otherwise indicated.
I. Connect temporary service to Owner’s existing power source, local codes and local authority have jurisdiction.

J. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
   2. Install temporary, overhead power at existing site lighting fixtures disrupted due to the geothermal field construction. Refer to Electrical Drawings.
   3. Provide superintendent with cellular telephone or portable two-way radio for use when away from field office.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
   1. Protect existing site improvements to remain including curbs, pavement, and utilities.
   2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking: On site parking areas for construction personnel are available. Arrange for parking on the site for Contractor and subcontractors vehicles with the owner.

D. Project Identification and Temporary Signs: All signs shall be approved by the Owner. Unauthorized signs are not permitted.
   1. Provide temporary, directional signs for construction personnel and visitors.
   2. Maintain and touchup signs so they are legible at all times.

E. Waste Disposal Facilities: Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."

F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of the Owner and authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements. All Waste collection and containers will be provide by the General Trades Contractor.

G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
   1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities. Usage and schedule of such equipment shall be reviewed and approved by the Owner.

H. Temporary Use of Permanent Stairs: Cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of acceptance.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
   1. Comply with work restrictions specified in Division 01 Section "Summary."
B. Temporary Erosion and Sedimentation Control: Comply with requirements specified in Division 31 Section "Site Clearing."

C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.
   1. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

D. Storm water Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.

E. Tree and Plant Protection: Comply with requirements specified in Division 01 Section "Temporary Tree and Plant Protection."

F. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

G. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

H. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   1. Extent of Fence: As indicated on Drawings.
   2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Provide Owner with one set of keys.
   3. Do not install fence with in-ground posts.
   4. Install privacy fabric per owner requirements on site enclosure fence.

I. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

J. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting. Temporary site lights must be provided at all times during the construction project if service to permanent lighting has to be removed, damaged, or temporary out of service.
   1. General Trades Contractor and Electric Contractor shall verify on a daily basis that the site lighting is in operating before leaving the project site.
   2. Electric Contractor shall coordinate with General Trades Contractor and Heating A/C and Controls Contractor how best to provide temporary electric supply to the site lighting due to site construction installations.

K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
L. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.

1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant plywood on construction operations side.

2. Construct dustproof partitions with 2 layers of 3-mil (0.07-mm) polyethylene sheet on each side. Cover floor with 2 layers of 3-mil (0.07-mm) polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant plywood.
   
   a. Construct vestibule and airlock at each entrance through temporary partition with not less than 48 inches (1219 mm) between doors. Maintain water-dampened foot mats in vestibule.

3. Insulate partitions to provide noise protection to occupied areas.

4. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.

5. Protect air-handling equipment.


7. Provide walk-off mats at each entrance through temporary partition.


1. Prohibit smoking in construction areas. Smoking shall only be allowed at Owner designated areas.

2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.

3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

N. Parking: Construction parking is available at the construction site, coordinate with owner on location.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Operate Project-identification-sign lighting daily from dusk until 12:00 midnight.

D. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

E. Termination and Removal: Remove each temporary facility when needed for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion.
Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.

2. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.

3. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION
SECTION 01 5639 - TEMPORARY TREE AND PLANT PROTECTION

PART I  GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and
      Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
   A. This Section includes the protection and trimming of existing trees that interfere with, or are affected by,
      execution of the Work, whether temporary or permanent construction.
   B. Related Sections include the following:
      1. Division 01 Section "Summary" for limits placed on Contractor’s use of the site.
      2. Division 01 Section "Temporary Facilities and Controls" for temporary tree protection.

1.3 DEFINITIONS
   A. Tree Protection Zone: Area surrounding individual trees or groups of trees to remain during construction,
      and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless
      otherwise indicated.
   B. Protection Barrier: A fence installed as a temporary device for the purpose of preventing unauthorized
      access during the full period of construction and/or protect existing vegetation from damage and
      disturbance.
   C. Damage: Physical change to the site or its vegetation caused by equipment, material, labor or grading
      operations which has occurred after Notice to Proceed has been issued.
   D. Disturbance: Visual change to the site or vegetation caused by equipment, material, labor or grading
      operations which has occurred after a Notice to Proceed has been issued.
   E. Trespass: Any encroachment into protected areas caused by equipment, material, labor or grading
      operations which has occurred after a Notice to Proceed has been issued.
   F. Drip Line: The point where foliage cover concentrates main water on the ground. This line follows the
      general configuration of the outermost edge of a tree or shrub formed by its leaves and branches.
   G. Fine: The dollar value established in the schedule of the Section to be assessed the contractor for each
      violation sighted by the Architect or Owner from the day of sighting each violation.
   H. Existing Vegetation: Any existing trees, shrub, groundcover, wild flower, grass, or weed mass which is
      presently occurs on the site indicated to remain.
   I. Protection: Means of protection existing site features from trespass, damage, or disturbance by the use of
      barriers or other means necessary to prevent such trespass, damage, or disturbance.
   J. Site: The area as shown on the survey belonging to the Owner including areas where construction occurs
      or access to the site is granted.
   K. Violation: Trespass, disturbance or damage caused by any construction, delivery or transportation
      vehicle; construction material through storage or usage; solid or liquid debris; or litter observed by the
      Architect or Owner who conveys the observed violation to the Contractor verbally, if possible, and in
      writing with 7 days of a violation. The written notice, include the date, the approximate time, the general
      location and type of violation as indicated in the Schedule of Fines.

Issued for BID
TEMPORARY TREE AND PLANT PROTECTION
12.14.15
01 5639-1
L. Contract Limit Lines: Construction limits defined as shown and as identified in the field by the Architect.

1.4 SUBMITTALS
A. Product Data: For each type of product indicated.
B. Tree Pruning Schedule: Written schedule from arborist detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.
C. Qualification Data: For tree service firm and arborist.
D. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
E. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

1.5 QUALITY ASSURANCE
A. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed tree protection and trimming work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of tree protection and trimming.
B. Arborist Qualifications: An arborist certified by ISA or licensed in the jurisdiction where Project is located.
C. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."
D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1. Before tree protection and trimming operations begin, meet with representatives of authorities having jurisdiction, Owner, Architect, consultants, and other concerned entities to review tree protection and trimming procedures and responsibilities.

PART 2 PRODUCTS

2.1 MATERIALS
A. Chain-Link Fence: Metallic-coated steel chain-link fence fabric of 0.120-inch- (3-mm-) diameter wire; a minimum of 48 inches (1200 mm) high; with 1.9-inch- (48-mm-) diameter line posts; 2-3/8-inch- (60-mm-) diameter terminal and corner posts; 1-5/8-inch- (41-mm-) diameter top rail; and 0.177-inch- (4.5-mm-) diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.

PART 3 EXECUTION

3.1 PREPARATION
A. Temporary Fencing: Install temporary fencing around tree protection zones to protect remaining trees and vegetation from construction damage. Maintain temporary fence and remove when construction is complete.

1. Install chain-link fence according to ASTM F 567 and manufacturer’s written instructions.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.
C. Protection: Prior to commencing, protect vegetation to be saved by erecting a barrier in the location indicated and as approved in the field by the Architect and Owner. Locate the barrier a minimum of 6 meters (20 feet) from each trunk or at the drip line, which ever is greater. Maintain the barriers in place until the Architect and Owner approve removal.

D. Do not store construction materials, debris, or excavated material inside tree protection zones. Do not permit vehicles or foot traffic within tree protection zones; prevent soil compaction over root systems.

E. Maintain tree protection zones free of weeds and trash.

F. Do not allow fires within tree protection zones.

3.2 EXCAVATION

A. Install shoring or other protective support systems to minimize sloping or benching of excavations.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.

1. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches (75 mm) back from new construction.

2. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

D. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.

1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.

3.3 REGRADING

A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond tree protection zones. Maintain existing grades within tree protection zones.

B. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by arborist, unless otherwise indicated.

1. Root Pruning: Prune tree roots exposed during grade lowering. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots with sharp pruning instruments; do not break or chop.

C. Minor Fill: Where existing grade is 6 inches (150 mm) or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

D. Moderate Fill: Where existing grade is more than 6 inches (150 mm) but less than 12 inches (300 mm) below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:

1. Carefully place drainage fill against tree trunk approximately 2 inches (50 mm) above elevation of finish grade and extend not less than 18 inches (450 mm) from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches (150 mm) below elevation of grade.
2. Place filter fabric with edges overlapping 6 inches (150 mm) minimum.

3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to
required finish elevations.

3.4 TREE PRUNING

A. Prune trees to remain that are affected by temporary and permanent construction.

B. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide
subsequent maintenance during Contract period as recommended by arborist.

C. Cut branches with sharp pruning instruments; do not break or chop.

D. Chip removed tree branches and dispose of off-site.

3.5 TREE REPAIR AND REPLACEMENT

A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs,
and roots according to arborist’s written instructions.

B. Remove and replace trees indicated to remain that die or are damaged during construction operations
that arborist determines are incapable of restoring to normal growth pattern.

1. Provide new trees of same size and species as those being replaced; plant and maintain as
specified in Division 32 Section "Plants."

C. Aerate surface soil, compacted during construction, 10 feet (3 m) beyond drip line and no closer than 36
inches (900 mm) to tree trunk. Drill 2-inch- (50-mm-) diameter holes a minimum of 12 inches (300 mm)
deep at 24 inches (600 mm) o.c. Backfill holes with an equal mix of augered soil and sand.

3.6 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove excess excavated material and displaced trees from Owner’s property.

3.7 SCHEDULE OF FINES

A. The Contractor will be assessed fines per Authority having Jurisdiction laws.

B. Required disturbed or damaged trees to be attended by a tree surgeon approved by the Architect and
pay all costs incurred. The Contractor will be accessed a fine based on a damage appraisal made in
accordance with the latest edition of A guide for Estimating the value of trees and other plants by an
arborist approved by the Architect and Owner.

C. Measure damaged trees for size of truck diameter according to the American Standard for nursery Stock
as prepared by the America Association of Nurserymen, Inc.

1. Take the caliper of the trunk 6 inches above ground level for tress larger that 4 inches up to and
including 12 inch caliper.

2. Take the caliper of the trunk 54 inches above the ground level for trees larger than 12 inch caliper.

END OF SECTION
SECTION 01 5713 - TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Prevention of erosion due to construction activities.
B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
C. Restoration of areas eroded due to insufficient preventive measures.
D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.2  RELATED REQUIREMENTS

A. Section 01 3515 - LEED Certification Procedures: LEED credits relating to erosion and sedimentation control.
B. Section 31 1000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.
C. Section 31 2200 - Grading: Temporary and permanent grade changes for erosion control.
D. Section 32 1123 - Aggregate Base Courses: Temporary and permanent roadways.
E. Section 32 9219 - Seeding: Permanent turf for erosion control.
F. Section 32 9223 - Sodding: Permanent turf for erosion control.
G. Section 32 9300 - Plants: Permanent plantings for erosion control.
H. Section 03 3000 - Cast-in-Place Concrete: Concrete for temporary and permanent erosion control structures indicated on drawings.

1.3  REFERENCE STANDARDS

G. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit; current edition.

1.4  PERFORMANCE REQUIREMENTS

A. Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), Phases I and II,
under requirements for the 2003 Construction General Permit (CGP), whether the project is required by law to comply or not.

B. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.

C. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

D. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
   1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
   2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.

E. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
   1. Control movement of sediment and soil from temporary stockpiles of soil.
   2. Prevent development of ruts due to equipment and vehicular traffic.
   3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

F. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
   1. Prevent windblown soil from leaving the project site.
   2. Prevent tracking of mud onto public roads outside site.
   3. Prevent mud and sediment from flowing onto sidewalks and pavements.
   4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

G. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
   2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

H. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

I. Open Water: Prevent standing water that could become stagnant.

J. Limitation of Area Disturbed
   1. The surface area of erodible earth material exposed at one time by clearing and grubbing, by excavating, by fill, or by borrow shall not exceed 1/2 site area without written approval of the Owner’s Representative.
2. The maximum quantity of exposed area may be increased or decreased based on weather conditions, construction procedures or site condition by Owner's Representative.

K. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Erosion and Sedimentation Control Plan:
   1. Submit within 2 weeks after Notice to Proceed.
   2. Include:
      a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
      b. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
      c. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
      d. Schedule of temporary preventive measures, in relation to ground disturbing activities.
      e. Other information required by law.
      f. Format required by law is acceptable, provided any additional information specified is also included.

3. Obtain the approval of the Plan by authorities having jurisdiction.

4. Obtain the approval of the Plan by Owner.

C. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.

D. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

2.1 MATERIALS

A. Mulch: Use one of the following:
   1. Straw or hay.
   2. Erosion control matting or netting.

B. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

C. Compost Filter Tube
1. Shall be in accordance with the Urban Standard Specifications for Public Improvements Manual (SUDAS), Division 9 – Site Work and Landscaping, Section 9040 and meet all of the requirements of this Section.
   a. Flow rates: AASHTO M 288-96
   b. Strength: The strength of the material shall be sufficient to prevent tearing, ripping, or other significant damage throughout the intended period of use.
   c. Biodegradability: The tube shall be made of natural materials that are biodegradable. Products shall begin to break down in approximately six months.

2. Stabilized Construction Entrance
   a. Maintain existing pavement or provide 6" thick layer of 3" clean stone for a minimum of 50' inside entrance.
   b. Geotextile filter fabric must be installed below stone.

D. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
   1. Certification and Sampling: The Contractor shall furnish a manufacturer’s certifications stating that the material supplied conforms to the requirements of these specifications. The certification shall include, or have attached, typical results of tests for the specified properties representative of the materials supplied. The Owner’s Representative may perform.
   2. Average Opening Size: 30 U.S. Std. Sieve (0.600 mm), maximum, when tested in accordance with ASTM D4751.
   3. Permittivity: 0.05 sec^-1, minimum, when tested in accordance with ASTM D4491.
   4. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355 after 500 hours exposure.
   5. Tensile Strength: 100 lb-f (450 N), minimum, in cross-machine direction; 124 lb-f (550 N), minimum, in machine direction; when tested in accordance with ASTM D4632.
   6. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632.
   7. Tear Strength: 55 lb-f (245 N), minimum, when tested in accordance with ASTM D4533.
   8. Color: Manufacturer’s standard, with embedment and fastener lines preprinted.

E. Silt Fence Posts: One of the following, minimum 5 feet (1500 mm) long:
   1. Steel U- or T-section, with minimum mass of 1.33 lb per linear foot (1.98 kg per linear m).
   2. Softwood, 4 by 4 inches (100 by 100 mm) in cross section.
   3. Hardwood, 2 by 2 inches (50 by 50 mm) in cross section.

F. Gravel: See Section 32 1123 for aggregate.
PART 3 EXECUTION

3.1 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.2 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.3 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B. Construction Entrances: Traffic-bearing aggregate surface.
   1. Width: As required; 20 feet (7 m), minimum.
   2. Length: 50 feet (16 m), minimum.
   3. Provide at each construction entrance from public right-of-way.
   4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences.
   1. Provide linear sediment barriers:
      a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
   2. Space sediment barriers with the following maximum slope length upslope from barrier:
      a. Slope of Less Than 2 Percent: 100 feet (30 m).
      b. Slope Between 2 and 5 Percent: 75 feet (23 m).
      c. Slope Between 5 and 10 Percent: 50 feet (15 m).
      d. Slope Between 10 and 20 Percent: 25 feet (7.5 m).
      e. Slope Over 20 Percent: 15 feet (4.5 m).

D. Storm Drain Curb Inlet Sediment Trap: Protect each curb inlet using one of the following measures:
   1. Filter fabric wrapped around hollow concrete blocks blocking entire inlet face area; use one piece of fabric wrapped at least 1-1/2 times around concrete blocks and secured to prevent dislodging; orient cores of blocks so runoff passes into inlet.
   2. Straw bale row blocking entire inlet face area; anchor into pavement.

E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.

F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

G. Soil Stockpiles: Protect using one of the following measures:
   1. Cover with polyethylene film, secured by placing soil on outer edges.
2. Cover with mulch at least 4 inches (100 mm) thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches (150 mm) of straw or hay.

H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.

I. Temporary Seeding: Use where temporary vegetated cover is required.

3.4 INSTALLATION

A. Traffic-Bearing Aggregate Surface:
   1. Excavate minimum of 6 inches (150 mm).
   2. Place geotextile fabric full width and length, with minimum 12 inch (300 mm) overlap at joints.
   3. Place and compact at least 6 inches (150 mm) of 1.5 to 3.5 inch (40 to 90 mm) diameter stone.

B. Silt Fences:
   1. Store and handle fabric in accordance with ASTM D4873.
   2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch (405 mm) high barriers with minimum 36 inch (905 mm) long posts spaced at 6 feet (1830 mm) maximum, with fabric embedded at least 4 inches (100 mm) in ground.
   3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch (710 mm) high barriers, minimum 48 inch (1220 mm) long posts spaced at 6 feet (1830 mm) maximum, with fabric embedded at least 6 inches (150 mm) in ground.
   4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet (6 m), use nominal 32 inch (810 mm) high barriers with woven wire reinforcement and steel posts spaced at 4 feet (1220 mm) maximum, with fabric embedded at least 6 inches (150 mm) in ground.
   5. Install with top of fabric at nominal height and embedment as specified.
   6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches (460 mm), with extra post.
   7. Fasten fabric to wood posts using one of the following:
      a. Four nails per post with 3/4 inch (19 mm) diameter flat or button head, 1 inch (25 mm) long, and 14 gage, 0.083 inch (2.11 mm) shank diameter.
      b. Five staples per post with at least 17 gage, 0.0453 inch (1.150 mm) wire, 3/4 inch (19 mm) crown width and 1/2 inch (12 mm) long legs.
   9. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches (300 mm) high with post spacing not more than 4 feet (1220 mm).

C. Temporary Seeding:
   1. When hydraulic seeder is used, seedbed preparation is not required.
   2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.

TEMPORARY EROSION AND SEDIMENT CONTROL

01 5713-6 12.14.15
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft (0.5 kg per 100 sq m).

4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft (6 to 8 kg per 100 sq m).

5. Incorporate fertilizer into soil before seeding.

6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep (12 to 25 mm) deep.

7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.

8. Repeat irrigation as required until grass is established.

3.5 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches (13 mm) or more rainfall at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:

1. Promptly replace fabric that deteriorates unless need for fence has passed.

2. Remove silt deposits that exceed one-third of the height of the fence.

3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Clean out temporary sediment control structures weekly and relocate soil on site.

E. Place sediment in appropriate locations on site; do not remove from site.

3.6 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect/Engineer.

B. Clean out temporary sediment control structures that are to remain as permanent measures.

C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION
PART 1 GENERAL

1.1 SECTION INCLUDES

A. Construction procedures to promote adequate indoor air quality after construction.
B. Building flush-out after construction and before occupancy.
C. Testing indoor air quality before commencement of construction; existing building areas only.
D. Testing indoor air quality after completion of construction.
E. Testing air change effectiveness after completion of construction.

1.2 PROJECT GOALS

A. Dust and Airborne Particulates: Prevent deposition of dust and other particulates in HVAC ducts and equipment.
   1. Cleaning of ductwork is not contemplated under this Contract.
   2. Contractor shall bear the cost of cleaning required due to failure to protect ducts and equipment from construction dust.
   3. Establish condition of existing ducts and equipment prior to start of alterations.
B. Airborne Contaminants: Procedures and products have been specified to minimize indoor air pollutants.
   1. Furnish products meeting the specifications.
   2. Avoid construction practices that could result in contamination of installed products leading to indoor air pollution.

1.3 RELATED REQUIREMENTS

A. Section 23 4000 - HVAC Air Cleaning Devices: HVAC filters.
B. Section 23 0593 - Testing, Adjusting, and Balancing for HVAC: Testing HVAC systems for proper air flow rates, adjustment of dampers and registers, and settings for equipment.

1.4 REFERENCE STANDARDS

B. ASTM D5197 - Standard Test Method for Determination of Formaldehyde and Other Carbonyl Compounds in Air (Active Sampler Methodology); 2009.
D. EPA 600/4-90/010 - Compendium of Methods for the Determination of Air Pollutants in Indoor Air; April 1990.
1.5 DEFINITIONS

A. Adsorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, fabrics, fibrous insulation, and other similar products.

B. Contaminants: Gases, vapors, regulated pollutants, airborne mold and mildew, and the like, as specified.

C. Particulates: Dust, dirt, and other airborne solid matter.

D. Wet Work: Concrete, plaster, coatings, and other products that emit water vapor or volatile organic compounds during installation, drying, or curing.

1.6 SUBMITTALS

A. Indoor Air Quality Management Plan: Describe in detail measures to be taken to promote adequate indoor air quality upon completion; use SMACNA IAQ Guidelines for Occupied Buildings Under Construction as a guide.

1. Submit not less than 60 days before enclosure of building.

2. Identify potential sources of odor and dust.

3. Identify construction activities likely to produce odor or dust.

4. Identify areas of project potentially affected, especially occupied areas.

5. Evaluate potential problems by severity and describe methods of control.

6. Describe construction ventilation to be provided, including type and duration of ventilation, use of permanent HVAC systems, types of filters and schedule for replacement of filters.

7. Describe cleaning and dust control procedures.

8. Describe coordination with commissioning procedures.

B. Interior Finishes Installation Schedule: Identify each interior finish that either generates odors, moisture, or vapors or is susceptible to adsorption of odors and vapors, and indicate air handling zone, sequence of application, and curing times.

C. Duct and Terminal Unit Inspection Report.

D. Air Contaminant Test Plan: Identify:

1. Testing agency qualifications.

2. Locations and scheduling of air sampling.

3. Test procedures, in detail.

4. Test instruments and apparatus.

5. Sampling methods.

E. Air Contaminant Test Reports: Show:

1. Location where each sample was taken, and time.

2. Test values for each air sample; average the values of each set of 3.

3. HVAC operating conditions.
4. Certification of test equipment calibration.
5. Other conditions or discrepancies that might have influenced results.

F. Ventilation Effectiveness Test Plan: Identify:
1. Testing agency qualifications.
2. Description of test spaces, including locations of air sampling.
3. Test procedures, in detail; state whether tracer gas decay or step-up will be used.
4. Test instruments and apparatus; identify tracer gas to be used.
5. Sampling methods.

G. Ventilation Effectiveness Test Reports: Show:
1. Include preliminary tests of instruments and apparatus and of test spaces.
2. Calculation of ventilation effectiveness, E.
3. Location where each sample was taken, and time.
4. Test values for each air sample.
5. HVAC operating conditions.
6. Other information specified in ASHRAE 129.
7. Other conditions or discrepancies that might have influenced results.

1.7 QUALITY ASSURANCE
A. Testing and Inspection Agency Qualifications: Independent testing agency having minimum of 5 years experience in performing the types of testing specified.

PART 2 PRODUCTS

2.1 MATERIALS
A. Low VOC Materials: See other sections for specific requirements for materials with low VOC content.

PART 3 EXECUTION

3.1 CONSTRUCTION PROCEDURES
A. Prevent the absorption of moisture and humidity by adsorptive materials by:
   1. Sequencing the delivery of such materials so that they are not present in the building until wet work is completed and dry.
   2. Delivery and storage of such materials in fully sealed moisture-impermeable packaging.
   3. Provide sufficient ventilation for drying within reasonable time frame.
B. Begin construction ventilation when building is substantially enclosed.
C. When working in a portion of an occupied building, prevent movement of air from construction area to occupied area.
D. HVAC equipment and ductwork may NOT be used for ventilation during construction:
1. Provide temporary ventilation equivalent to 1.5 air changes per hour, minimum.
2. Exhaust directly to outside.
3. Seal HVAC air inlets and outlets immediately after duct installation.

E. Do not store construction materials or waste in mechanical or electrical rooms.

F. Prior to use of return air ductwork without intake filters clean up and remove dust and debris generated by construction activities.
   1. Inspect duct intakes, return air grilles, and terminal units for dust.
   2. Clean plenum spaces, including top sides of lay-in ceilings, outsides of ducts, tops of pipes and conduit.
   3. Clean tops of doors and frames.
   4. Clean mechanical and electrical rooms, including tops of pipes, ducts, and conduit, equipment, and supports.
   5. Clean return plenums of air handling units.
   6. Remove intake filters last, after cleaning is complete.

G. Do not perform dusty or dirty work after starting use of return air ducts without intake filters.

H. Use other relevant recommendations of SMACNA IAQ Guideline for Occupied Buildings Under Construction for avoiding unnecessary contamination due to construction procedures.

3.2 BUILDING FLUSH-OUT

A. Contractor’s Option: Either full continuous flush-out OR satisfactory air contaminant testing is required, not both.

B. Perform building flush-out before occupancy.

C. Do not start flush-out until:
   1. All construction is complete.
   2. HVAC systems have been tested, adjusted, and balanced for proper operation.
   3. Inspection of inside of return air ducts and terminal units confirms that cleaning is not necessary.
   4. New HVAC filtration media have been installed.

D. Building Flush-Out: Operate all ventilation systems at normal flow rates with 100 percent outside air until a total air volume of 14,000 cubic feet per square foot (4500 cubic meters per square meter) of floor area has been supplied.
   1. Obtain Owner’s concurrence that construction is complete enough before beginning flush-out.
   2. Maintain interior temperature of at least 60 degrees F (15 degrees C) and interior relative humidity no higher than 60 percent.
   3. If additional construction involving materials that produce particulates or any of the specified contaminants is conducted during flush-out, start flush-out over.
   4. If interior spaces must be occupied prior to completion of the flush-out, supply a minimum of 25 percent of the total air volume prior to occupancy, and:
a. Begin ventilation at least three hours prior to daily occupancy.

b. Continue ventilation during all occupied periods.

c. Provide minimum outside air volume of 0.30 cfm per square foot (0.0015 cu m/s/sq m) or design minimum outside air rate, whichever is greater.

E. Install new HVAC filtration media after completion of flush-out and before occupancy or further testing.

3.3 AIR CONTAMINANT TESTING

A. Contractor’s Option: Either full continuous flush-out OR satisfactory air contaminant testing is required, not both.

B. Perform air contaminant testing before starting construction, as base line for evaluation of post-construction testing.

C. Perform air contaminant testing before occupancy.

D. Do not start air contaminant testing until:
   1. All construction is complete, including interior finishes.
   2. HVAC systems have been tested, adjusted, and balanced for proper operation.
   3. New HVAC filtration media have been installed.

E. Indoor Air Samples: Collect from spaces representative of occupied areas:
   1. Collect samples while operable windows and exterior doors are closed, HVAC system is running normally as if occupied, with design minimum outdoor air, but with the building unoccupied.
   2. Collect samples from spaces in each contiguous floor area in each air handler zone, but not less than one sample per 25,000 square feet (2300 square meters); take samples from areas having the least ventilation and those having the greatest presumed source strength.
   3. Collect samples from height from 36 inches (915 mm) to 72 inches (1830 mm) above floor.
   4. Collect samples from same locations on 3 consecutive days during normal business hours; average the results of each set of 3 samples.
   5. Exception: Areas with normal very high outside air ventilation rates, such as laboratories, do not need to be tested.
   6. When retesting the same building areas, take samples from at least the same locations as in first test.

F. Outdoor Air Samples: Collect samples at outside air intake of each air handler at the same time as indoor samples are taken.

G. Analyze air samples and submit report.

H. Air Contaminant Concentration Limits:
   1. Formaldehyde: Not more than 27 parts per billion.
   2. PM10 Particulates: Not more than 50 micrograms per cubic meter.
   3. Total Volatile Organic Compounds (TVOCs): Not more than 500 micrograms per cubic meter.
4. Chemicals Listed in CAL (CDPH SM) Table 4-1, except Formaldehyde: Allowable concentrations listed in Table 4-1.
5. Carbon Monoxide: Not more than 9 parts per million and not more than 2 parts per million higher than outdoor air.

I. Air Contaminant Concentration Test Methods:
   3. Total Volatile Organic Compounds (TVOC): EPA 625 Method TO-1, TO-15, or TO-17; or EPA 600 Method IP-1.
   4. Chemicals Listed in CAL (CDPH SM) Table 4-1, except Formaldehyde: ASTM D5197, or EPA 625 Method TO-1, TO-15, or TO-17.
   5. Carbon Monoxide: EPA 600 Method IP-3, plus measure outdoor air; measure in ppm; report both indoor and outdoor measurements.

3.4 VENTILATION EFFECTIVENESS TESTING
A. Perform ventilation effectiveness testing before occupancy.
B. Do not begin ventilation effectiveness testing until:
   1. HVAC testing, adjusting, and balancing has been satisfactorily completed.
   2. Building flush-out or air contaminant testing has been completed satisfactorily.
   3. New HVAC filtration media have been installed.
C. Test each air handler zone in accordance with ASHRAE 129.
D. If calculated air change effectiveness for a particular zone is less than 0.9 due to inadequate balancing of the system, adjust, and retest at no cost to Owner.

END OF SECTION
SECTION 01 6000 - PRODUCT REQUIREMENTS

PART 1  GENERAL

1.1  SUMMARY

A. This Section includes administrative and procedural requirements for selecting products for use in Project; product delivery, storage, and handling; manufacturers’ standard warranties on products; special warranties; product substitutions; and comparable products.

B. Related Sections include the following:
   1. Division 01 Section "Alternates" for products selected under an alternate.
   2. Division 01 Section "Closeout Procedures" for submitting warranties for Contract closeout.
   3. Divisions 02 through 49 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.2  DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
   1. Named Products: Items identified by manufacturer’s product name, including make or model number or other designation, shown or listed in manufacturer’s published product literature, that is current as of date of the Contract Documents.
   2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
   3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Trade Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer’s product is named and accompanied by the words “basis of design,” including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

D. Manufacturer’s Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

E. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer’s warranty or to provide more rights for Owner.

1.3  SUBMITTALS

A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer’s name and proprietary product names for each product.
   1. Coordinate product list with Contractor’s Construction Schedule and the Submittals Schedule.
2. Form: Tabulate information for each product under the following column headings:
   a. Specification Section number and title.
   b. Generic name used in the Contract Documents.
   c. Proprietary name, model number, and similar designations.
   d. Manufacturer's name and address.
   e. Supplier's name and address.
   f. Installer's name and address.
   g. Projected delivery date or time span of delivery period.
   h. Identification of items that require early submittal approval for scheduled delivery date.

3. Initial Submittal: Within 15 days after date of commencement of the Work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
   a. At Contractor's option, initial submittal may be limited to product selections and designations that must be established early in Contract period.

4. Completed List: Within 30 days after date of commencement of the Work, submit [3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.

5. Architect's Action: Architect will respond in writing to Contractor within 10 days of receipt of completed product list. Architect's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Architect's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

B. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
   a. Statement indicating why specified material or product cannot be provided.
   b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
   c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
   d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
   e. Samples, where applicable or requested.
   f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

i. Detailed comparison of Construction Manager’s Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time.

j. Cost information, including a proposal of change, if any, in the Contract Sum.

k. Contractor’s certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.

l. Contractor’s waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

2. Architect’s/Engineer’s Action: If necessary, Architect/Engineer will request additional information or documentation for evaluation within one week of receipt of a request for substitution. Architect/Engineer will notify Contractor of acceptance or rejection of proposed substitution within Ten (10) days of receipt of request, or Seven (7) days of receipt of additional information or documentation, whichever is later.

a. Form of Acceptance: Change Order.

b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.

C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 1 Section “Submittal Procedures.” Show compliance with requirements.

1.4 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.

2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer’s written instructions.

1. Schedule delivery with Construction Manager to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to Project site in an undamaged condition in manufacturer’s original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

5. Store products to allow for inspection and measurement of quantity or counting of units.

6. Store materials in a manner that will not endanger Project structure.

7. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.

8. Comply with product manufacturer’s written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

9. Protect stored products from damage.

1.6 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer’s disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

B. Submittal Time: Comply with requirements in Division 1 Section "Closeout Procedures."

PART 2 PRODUCTS

2.1 PRODUCT OPTIONS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

4. Where products are accompanied by the term "as selected," Architect will make selection.

5. Where products are accompanied by the term "match sample," sample to be matched is Architect’s.


B. Product Selection Procedures: Procedures for product selection include the following:

1. Product: Where Specification paragraphs or subparagraphs titled "Product" name a single product and manufacturer, provide the product named.

   a. Substitutions may be considered as per Section 1.3.

2. Manufacturer/Source: Where Specification paragraphs or subparagraphs titled "Manufacturer" or "Source" name single manufacturers or sources, provide a product by the manufacturer or from the source named that complies with requirements.

   a. Substitutions may be considered as per Section 1.3.
3. **Products:** Where Specification paragraphs or subparagraphs titled "Products" introduce a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
   a. Substitutions may not be considered.

4. **Manufacturers:** Where Specification paragraphs or subparagraphs titled "Manufacturers" introduce a list of manufacturers’ names, provide a product by one of the manufacturers listed that complies with requirements.
   a. Substitutions may not be considered.

5. **Visual Matching Specification:** Where Specifications require matching an established Sample, select a product (and manufacturer) that complies with requirements and matches Architect's sample. Architect’s decision will be final on whether a proposed product matches satisfactorily.
   a. If no product available within specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents on "substitutions" for selection of a matching product.

6. **Visual Selection Specification:** Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product (and manufacturer) that complies with other specified requirements.
   a. **Standard Range:** Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, or texture from manufacturer’s product line that does not include premium items.

2.2 **PRODUCT SUBSTITUTIONS**

A. **Timing:** Architect/Engineer will consider requests for substitution if received within Thirty (30) days after commencement of the Work. Requests received after that time may be considered or rejected at discretion of Architect.

B. **Conditions:** Architect/Engineer will consider Contractor’s request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect/Engineer will return requests without action, except to record noncompliance with these requirements:
   1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner’s additional responsibilities may include compensation to Architect/Engineer for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
   2. Requested substitution does not require extensive revisions to the Contract Documents.
   3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   4. Substitution request is fully documented and properly submitted.
   5. Requested substitution will not adversely affect Contractor’s Construction Schedule.
   6. Requested substitution has received necessary approvals of authorities having jurisdiction.
   7. Requested substitution is compatible with other portions of the Work.
   8. Requested substitution has been coordinated with other portions of the Work.
   9. Requested substitution provides specified warranty.
2.3 COMPARABLE PRODUCTS

A. Where products or manufacturers are specified by name, submit the following, in addition to other required submittals, to obtain approval of an unnamed product:

1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.

2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

3. Evidence that proposed product provides specified warranty.

4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.

5. Samples, if requested.

END OF SECTION
SECTION 01 7329 - CUTTING AND PATCHING

PART 1 GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
   A. This Section includes procedural requirements for cutting and patching.
   B. Related Sections include the following:
      1. Divisions 02 through 33 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
      2. Division 07 Section "Penetration Firestopping" for patching fire-rated construction.

1.3 DEFINITIONS
   A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
   B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS
   A. Cutting and Patching Proposal: Submit a proposal describing procedures to the General Trades Contractor at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
      1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
      2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building’s appearance and other significant visual elements.
      3. Products: List products to be used and firms or entities that will perform the Work.
      4. Dates: Indicate when cutting and patching will be performed.
      5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
      6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
      7. Architect’s or Engineer’s Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE
   A. LEED Requirements for Building Reuse:
1. **Credit MR 1.3**: Maintain existing interior nonstructural elements (interior walls, doors, floor coverings, and ceiling systems) not indicated to be removed; do not cut such existing construction beyond indicated limits.

2. **Credit EQ 3.1**: Comply with SMACNA's "SMACNA IAQ Guideline for Occupied Buildings under Construction. Refer to section 01 81 13- Sustainable Design Requirements

**B. Structural Elements**: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

C. **Operational Elements**: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Fire-suppression systems.
4. Mechanical systems piping and ducts.
5. Control systems.
6. Communication systems.
7. Conveying systems.
8. Electrical wiring systems.

D. **Miscellaneous Elements**: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.

E. **Visual Requirements**: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

F. **Cutting and Patching Conference**: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

### 1.6 WARRANTY

A. **Existing Warranties**: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.
PART 2 PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
   1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
   1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
   2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer’s written recommendations.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
   3. Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
   b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
   a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION
SECTION 01 7419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1  GENERAL

1.1  RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2  SUMMARY

A. This Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.

B. Related Sections include the following:

1. Division 01 Section "Multiple Contract Summary" for coordination of responsibilities for waste management.
2. Division 01 Section "Temporary Facilities and Controls" for environmental-protection measures during construction, and location of waste containers at Project site.
3. Division 02 Section "Selective Demolition" for disposition of waste resulting from partial demolition of buildings, structures, and site improvements.
4. Division 04 Section "Unit Masonry" for disposal requirements for masonry waste.

1.3  DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.4  PERFORMANCE REQUIREMENTS

A. General: Develop a waste management plan that results in end-of-Project rates for diverting a minimum of 50 percent (by weight) of total waste generated by the Work with a goal of diverting 75 percent (by weight) of total waste generated from local landfills.

B. Salvage/Recycle Minimum requirements and obtainable goals: Owner’s goal is to salvage, recycle, and divert as much nonhazardous demolition and construction waste from landfills as possible including, but not limited to, the following materials:

1. Demolition Waste:
   a. Asphaltic concrete paving.
b. Concrete.
c. Concrete reinforcing steel.
d. Brick.
e. Concrete masonry units.
f. Wood studs.
g. Wood joists.
h. Plywood and oriented strand board.
i. Wood paneling.
j. Wood trim.
k. Structural and miscellaneous steel.
l. Rough hardware.
m. Roofing.
n. Insulation.
o. Doors and frames.
p. Door hardware.
q. Windows.
r. Glazing.
s. Metal studs.
t. Gypsum board.
u. Acoustical tile and panels.
v. Carpet.
w. Carpet pad.
x. Demountable partitions.
y. Equipment.
z. Cabinets.
  aa. Plumbing fixtures.
  ab. Piping.
  ac. Supports and hangers.
  ad. Valves.
  ae. Sprinklers.
  af. Mechanical equipment.
ag. Refrigerants.
ah. Electrical conduit.
ai. Copper wiring.
aj. Lighting fixtures.
ak. Lamps.
al. Ballasts.
am. Electrical devices.
an. Switchgear and panelboards.
ao. Transformers.

2. Construction Waste:
   a. Site-clearing waste.
   b. Masonry and CMU.
   c. Lumber.
   d. Wood sheet materials.
   e. Wood trim.
   f. Metals.
   g. Roofing.
   h. Insulation.
   i. Carpet and pad.
   j. Gypsum board.
   k. Piping.
   l. Electrical conduit.
   m. Packaging: Regardless of salvage/recycle goal indicated above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
      1) Paper.
      2) Cardboard.
      3) Boxes.
      4) Plastic sheet and film.
      5) Polystyrene packaging.
      7) Plastic pails.
1.5 SUBMITTALS

A. Waste Management Plan: Submit 3 copies of plan within 7 days of date established for the Notice to Proceed.

B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit three copies of report. Include separate reports for demolition and construction waste. Include the following information:
   1. Material category.
   2. Generation point of waste.
   3. Total quantity of waste in tons (tonnes).
   4. Quantity of waste salvaged, both estimated and actual in tons (tonnes).
   5. Quantity of waste recycled, both estimated and actual in tons (tonnes).
   6. Total quantity of waste recovered (salvaged plus recycled) in tons (tonnes).
   7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

C. Waste Reduction Calculations: Before request for Substantial Completion, submit three (3) copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

D. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.

E. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.

F. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

G. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

H. LEED Submittal: LEED letter template for requirement for Credit MR 2.1 and goal for MR 2.2, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.

I. Qualification Data: For Waste Management Coordinator and refrigerant recovery technician.

J. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.6 QUALITY ASSURANCE

A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

B. Waste Management Coordinator- General Contractor’s representative responsible for implementing and enforcing waste management plan. Coordinator will sign LEED letter template stating final rates of diversion from Landfill.

C. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
D. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:

1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
2. Review requirements for documenting quantities of each type of waste and its disposition.
3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
5. Review waste management requirements for each trade.

1.7 WASTE MANAGEMENT PLAN

A. General: Develop plan consisting of waste identification and waste reduction work plan. Include separate sections in plan for demolition and construction waste. Indicate quantities by weight.

B. Waste Identification: Indicate anticipated types and quantities (by weight) of demolition and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.

1. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
2. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
3. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
4. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
5. Handling and Transportation Procedures: Include contact information of qualified waste management company responsible for collecting demolition and construction debris and sorting it offsite.

D. Forms: Prepare waste management plan on forms included at end of Part 3.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement waste management plan as approved by the Architect. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Comply with Division 01 Section "Temporary Facilities and Controls" for operation, termination, and removal requirements.
B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.

C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
   1. Distribute waste management plan to everyone concerned within three days of submittal return.
   2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
   2. Comply with Division 01 Section "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE
A. Salvaged Items for Sale and Donation: Not Permitted on Project site. Items for sale or donation by the contractor are to be taken off site for distribution, unless pickup of such items is approved in advance by the university.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL
A. General: Recycle paper and beverage containers used by on-site workers.
   B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Contractor responsible for the particular recycled materials.
   C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
      1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
         a. Inspect containers and bins for contamination and remove contaminated materials if found.
      2. Materials are not to be stockpiled on site. All recyclable material and debris is to be transported and sorted by qualified receiver offsite.
      3. Remove recyclable waste off Owner’s property and transport to recycling receiver or processor.

3.4 DISPOSAL OF WASTE
A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   B. Burning: Do not burn waste materials.
C. Disposal: Transport waste materials off Owner's property and legally dispose of them.

END OF SECTION
SECTION 01 7700 - CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Project Record Documents.
3. Operation and maintenance manuals.
4. Warranties.
5. LEED Reports and Letter Templates
6. Instruction of Owner’s personnel.

B. Related Sections include the following:

1. Division 01 Section “Payment Procedures” for requirements for Applications for Payment for Substantial and Final Completion.
2. Division 01 Section “Project Record Documents” for submitting Record Drawings, Record Specifications, and Record Product Data.
3. Division 01 Section “Operation and Maintenance Data” for operation and maintenance manual requirements.
4. Division 01 Section “Demonstration and Training” for requirements for instructing Owner’s personnel.
5. Divisions 01 Section “Sustainable Design Requirements” for closeout and special cleaning requirements.
6. Divisions 02 through 33 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Advise Owner of pending insurance changeover requirements.
3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, and similar final record information.
6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer’s name and model number where applicable.
7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner’s personnel of changeover in security provisions.

8. Complete startup testing of systems.


10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.

11. Advise Owner of changeover in heat and other utilities.

12. Submit changeover information related to Owner’s occupancy, use, operation, and maintenance.

13. Complete final cleaning requirements, including touchup painting.

14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

15. Submit LEED Letter templates and reports described in Sections 01 thru 33.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, the Architect/Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor’s list or additional items identified by Architect/Engineer, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit certified copy of Architect’s Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

2. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

3. Instruct Owner’s personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance to the Architect. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit three (3) copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction.
1.5 PROJECT RECORD DOCUMENTS
   A. General: Submit project record documents for as described in Section 017839 for final submittal and review.

1.6 OPERATION AND MAINTENANCE MANUALS
   A. General: Submit project record documents as described in Section 017823 for final submittal and review.

1.7 WARRANTIES
   A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
   B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
      1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper.
      2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
      3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Sub - Contractor.
   C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 PRODUCTS

2.1 MATERIALS
   A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.1 DEMONSTRATION AND TRAINING
   A. General: Complete demonstration and training process as described in Section 017900.

3.2 FINAL CLEANING
   A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
   B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer’s written instructions.
      1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
         a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

d. Remove tools, construction equipment, machinery, and surplus material from Project site.

e. Remove snow and ice to provide safe access to building.

f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

h. Sweep concrete floors broom clean in unoccupied spaces.

i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

k. Remove labels that are not permanent.

l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

m. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to unusual operating conditions.

o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

q. Clean ducts, blowers, and coils

r. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

s. Leave Project clean and ready for occupancy.

END OF SECTION
SECTION 01 7823 - OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.

2. Emergency manuals.

3. Operation manuals for systems, subsystems, and equipment

4. Maintenance manuals for the care and maintenance of products, materials, and finishes, systems and equipment.

B. Related Sections include the following:

1. Division 1 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.

2. Division 01 Section "Multiple Contract Summary" for coordinating operation and maintenance manuals covering the Work of multiple contracts.

3. Division 1 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.

4. Divisions 2 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

A. Initial Submittal: Submit two (2) draft copies of each manual at 50% Payment. Include a complete operation and maintenance directory. Architect will return one copy of draft and mark whether general scope and content of manual are acceptable.

B. Final Submittal: Submit one copy of each manual in final form at least 15 days before final inspection. Architect will return copy with comments within 15 days after final inspection.

1. Correct or modify each manual to comply with Architect’s comments. Submit 3 copies of each corrected manual within 15 days of receipt of Architect’s comments.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.
PART 2 PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:
   1. List of documents.
   2. List of systems.
   3. List of equipment.
   4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of a system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

2.2 MANUALS, GENERAL

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
   1. Title page.
   2. Table of contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:
   1. Subject matter included in manual.
   2. Name and address of Project.
   3. Name and address of Owner.
   4. Date of submittal.
   5. Name, address, and telephone number of Contractor.
   6. Name and address of Architect.
   7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
   1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
   a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
   b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL,” Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.


5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
   a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
   b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:
   1. Product name and model number.
   2. Manufacturer's name.
   3. Equipment identification with serial number of each component.
   4. Equipment function.
   5. Operating characteristics.
   6. Limiting conditions.
   7. Performance curves.
   8. Engineering data and tests.
   9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:
   1. Startup procedures.
   2. Equipment or system break-in procedures.
   3. Routine and normal operating instructions.
   4. Regulation and control procedures.
   5. Instructions on stopping.
   7. Seasonal and weekend operating instructions.
   8. Required sequences for electric or electronic systems.
   9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.4 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:
   1. Product name and model number.
2. Manufacturer’s name.
3. Color, pattern, and texture.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer’s written recommendations and the following:
   1. Inspection procedures.
   2. Types of cleaning agents to be used and methods of cleaning.
   3. List of cleaning agents and methods of cleaning detrimental to product.
   4. Schedule for routine cleaning and maintenance.
   5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
   1. Include procedures to follow and required notifications for warranty claims.

2.5 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL
   A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers’ maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
   B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual’s table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
   C. Manufacturers’ Maintenance Documentation: Manufacturers’ maintenance documentation including the following information for each component part or piece of equipment:
      1. Standard printed maintenance instructions and bulletins.
      2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
      3. Identification and nomenclature of parts and components.
      4. List of items recommended to be stocked as spare parts.
   D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:
      1. Test and inspection instructions.
      2. Troubleshooting guide.
      3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.

5. Aligning, adjusting, and checking instructions.

6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.

2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
F. Drawings: Prepare drawings supplementing manufacturers’ printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.

2. Comply with requirements of newly prepared Record Drawings in Division 1 Section "Project Record Documents."

G. Comply with Division 1 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION
UIUC - CERL Main Building Addition
UIUC Project No. U13024
Issued for BID

OPERATION AND MAINTENANCE DATA
01 7823-8

Issued for BID
12.14.15
SECTION 01 7839 - PROJECT RECORD DOCUMENTS

PART 1  GENERAL

1.1  SUMMARY

A.  This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1.  Record Drawings.
2.  Record Specifications.
3.  Record Product Data.

B.  Related Sections include the following:

1.  Division 01 Section "Multiple Contract Summary" for coordinating Project Record Documents covering the Work of multiple contracts.
2.  Division 01 Section "Closeout Procedures" for general closeout procedures.
3.  Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
4.  Divisions 02 through 33 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.2  SUBMITTALS

A.  Record Drawings: Comply with the following:

1.  Number of Copies: Submit one (1) of marked-up Record Prints.
2.  Number of Copies: Submit copies of Record Drawings as follows:
   a.  Final Submittal: Submit one set of Record CAD Drawing files, one set of Record CAD Drawing plots. Plot and print each Drawing, whether or not changes and additional information were recorded.

   1)  Electronic Media: CD-ROM.

B.  Record Specifications: Submit one (1) copy of Project's Specifications, including addenda and contract modifications.

C.  Record Product Data: Submit one (1) copy of each Product Data submittal.

PART 2  PRODUCTS

2.1  RECORD DRAWINGS

A.  Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1.  Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare marked-up Record Prints.

   a.  Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
b. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Locations and depths of underground utilities.
   d. Revisions to routing of piping and conduits.
   e. Revisions to electrical circuitry.
   f. Actual equipment locations.
   g. Duct size and routing.
   h. Locations of concealed internal utilities.
   i. Changes made by Change Order or Construction Change Directive.
   j. Changes made following Architect’s written orders.
   k. Details not on the original Contract Drawings.
   l. Field records for variable and concealed conditions.
   m. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.

4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

5. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

6. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

7. Identification: As follows:
   a. Project name.
   b. Date.
   c. Designation "PROJECT RECORD DRAWINGS."
   d. Name of Architect.
   e. Name of Contractor.

B. Record CAD Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with Architect and Constructor. When authorized, prepare a full set of corrected CAD Drawings of the Contract Drawings, as follows:

1. Format: Same CAD program, version, and operating system as the original Contract Drawings.

3. Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.

4. Refer instances of uncertainty to Architect through Constructor for resolution.

5. Architect will furnish Contractor one set of CAD Drawings of the Contract Drawings for use in recording information.
   a. Architect makes no representations as to the accuracy or completeness of CAD Drawings as they relate to the Contract Drawings.
   b. CAD Software Program: The Contract Drawings are available in Auto CAD 2004, Microsoft Windows.

### 2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
   3. Record name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
   4. Note related Change Orders, Record Drawings, and Product Data where applicable.

### 2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer’s written instructions for installation.
   3. Note related Change Orders, Record Drawings, and Product Data where applicable.

### 2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

### PART 3 EXECUTION

#### 3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until end of Project.
B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the Construction Manager's field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's/Engineer's reference during normal working hours.

END OF SECTION
SECTION 01 7900 - DEMONSTRATION AND TRAINING

PART 1  GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for instructing Owner’s personnel, including the following:
   1. Demonstration of operation of systems, subsystems, and equipment.
   2. Training in operation and maintenance of systems, subsystems, and equipment.
   3. Demonstration and training videotapes.

B. Related Sections include the following:
   1. Divisions 2 through 33 Sections for specific requirements for demonstration and training for products in those Sections.

1.3 SUBMITTALS

A. Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors’ names for each training module. Include learning objective and outline for each training module.
   1. At completion of training, submit three (3) complete training manual(s) for Owner’s use.

B. Attendance Record: For each training module, submit list of participants and length of instruction time.

C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

D. Demonstration and Training Videotapes by Professional Videographer: Submit two (2) copies at the end of each training module.
   1. Identification: On each copy, provide an applied label with the following information:
      a. Name of Project.
      b. Name and address of photographer.
      c. Name of Architect.
      d. Name of Contractor.
      e. Date videotape was recorded.
      f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

   2. Transcript: Prepared on 8-1/2-by-11-inch (215-by-280-mm) paper, punched and bound in heavy-duty, 3-ring, vinyl-covered binders. Mark appropriate identification on front and spine of each binder. Include a cover sheet with same label information as the corresponding videotape. Include name of Project and date of videotape on each page.
1.4 QUALITY ASSURANCE

A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

B. Photographer: An individual who is experienced in video taping equipment and procedures to record the training session(s).

C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
   1. Inspect and discuss locations and other facilities required for instruction.
   2. Review and finalize instruction schedule and verify availability of educational materials, instructors’ personnel, audiovisual equipment, and facilities needed to avoid delays.
   3. Review required content of instruction.
   4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.5 COORDINATION

A. Coordinate instruction schedule with Owner’s operations. Adjust schedule as required to minimize disrupting Owner’s operations.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
   1. Fire-protection systems, including fire alarm and fire-extinguishing systems.
   2. Intrusion detection systems.
   3. Heat generation, including boilers, heating water equipment, pumps and water distribution piping.
   4. Refrigeration systems, including chillers, condensers, pumps and distribution piping.
   5. HVAC systems, including air-handling equipment, heat pumps, air distribution systems and terminal equipment and devices.
   6. HVAC instrumentation and controls
   7. Electrical service and distribution, including transformers, switchboards panelboards, uninterruptible power supplies and motor controls.
   8. Lighting equipment and controls.
9. Communication systems, including intercommunication, surveillance, clocks and programming, voice and data, and television equipment.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
   a. System, subsystem, and equipment descriptions.
   b. Performance and design criteria if Contractor is delegated design responsibility.
   c. Operating standards.
   d. Regulatory requirements.
   e. Equipment function.
   f. Operating characteristics.
   g. Limiting conditions.
   h. Performance curves.

2. Documentation: Review the following items in detail:
   a. Emergency manuals.
   b. Operations manuals.
   c. Maintenance manuals.
   d. Project Record Documents.
   e. Identification systems.
   f. Warranties and bonds.
   g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:
   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:
   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.

7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.

8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

PART 3 EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner’s personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
   1. Owner will furnish a facility manager to describe Owner’s operational philosophy.
   2. Owner will furnish Contractor with names and positions of participants.

C. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
   1. Schedule training with Owner, through, through Construction Manager, with at least seven days’ advance notice.

D. Evaluation: At conclusion of each training module, assess and document each participant’s mastery of module.

E. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEOTAPES

A. General: Engage a qualified individual to record demonstration and training DVD’s. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
   1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Video Format: Provide high-quality DVD color Diskette.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to show area of demonstration and training. Display continuous running time.

END OF SECTION
SECTION 01 8113 - SUSTAINABLE DESIGN REQUIREMENTS

PART 1  GENERAL

1.1  RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2  SUMMARY

A. Section includes general requirements and procedures for compliance with certain USGBC LEED prerequisites and credits needed for Project to obtain LEED Silver certification based on LEED-NC, Version 3, 2009 edition.

1. Other LEED prerequisites and credits needed to obtain LEED certification depend on material selections and may not be specifically identified as LEED requirements. Compliance with requirements needed to obtain LEED prerequisites and credits may be used as one criterion to evaluate substitution requests and comparable product requests.

2. Additional LEED prerequisites and credits needed to obtain the indicated LEED certification depend on Architect’s design and other aspects of Project that are not part of the Work of the Contract.

3. A copy of the LEED Project checklist is attached at the end of this Section for information only.

B. Related Sections:

1. Divisions 01 through 33 Sections for LEED requirements specific to the work of each of these Sections. Requirements may or may not include reference to LEED.

1.3  DEFINITIONS

A. Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, “FSC Principles and Criteria for Forest Stewardship.” Certificates shall include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.

B. LEED: Leadership in Energy & Environmental Design.

C. Rapidly Renewable Materials: Materials made from plants that are typically harvested within a 10-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.

D. Regional Materials: Materials that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles (800 km) of Project site. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

E. Regionally Manufactured Materials: Materials that are manufactured within a radius of 500 miles (800 km) from Project site. Manufacturing refers to the final assembly of components into the building product that is installed at Project site.

F. Regionally Extracted and Manufactured Materials: Regionally manufactured materials made from raw materials that are extracted, harvested, or recovered within a radius of 500 miles (800 km) from Project site.
G. Recycled Content: The recycled content value of a material assembly shall be determined by weight. The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

1. "Post-consumer" material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.

2. "Pre-consumer" material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.

H. Recycled Content: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (pre-consumer), or after consumer use (post-consumer).

1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.

2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled materials.

1.4 SUBMITTALS

A. General: Submit additional LEED submittals required by other Specification Sections.

B. LEED submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated LEED requirements.

C. Project Materials Cost Data: Provide statement indicating total cost for building materials used for Project, excluding mechanical, electrical, and plumbing components, and specialty items and equipment. Include statement indicating total cost for wood-based materials used for Project.

D. LEED Action Plans: Provide preliminary submittals within 14 days of date established for the Notice to Proceed indicating how the following requirements will be met:

1. Credit MR 2.1 minimum requirement and Credit MR 2.2 as proposed goal: Waste management plan complying with Division 01 Section "Construction Waste Management and Disposal."

2. Credit MR 4.1 minimum requirement and Credit MR 4.2 as proposed goal: List of proposed materials with recycled content. Indicate cost, post-consumer recycled content, and pre-consumer recycled content for each product having recycled content.

3. Credit MR 5.1 as proposed goal: List of proposed regional materials. Identify each regional material, including its source, cost, and the fraction by weight that is considered regional.

4. Credit MR 7: List of proposed certified wood products. Indicate each product containing certified wood, including its source and cost of certified wood products.


E. LEED Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with LEED action plans for the following:

1. Credit MR 2.1 and Credit MR 2.2: Waste reduction progress reports complying with Division 01 Section "Construction Waste Management and Disposal."
2. **Credit MR 4.1 and Credit MR 4.2**: Recycled content.

3. **Credit MR 5.1**: Regional materials.

4. **Credit MR 7**: Certified wood products.

F. **LEED Documentation Submittals:**

1. **Credit EA 5**: Product data and wiring diagrams for sensors and data collection system used to provide continuous metering of building energy-consumption performance over a period of time of not less than one year.

2. **Credit MR 2.1 and Credit MR 2.2**: Comply with Division 01 Section "Construction Waste Management and Disposal."

3. **Credit MR 4.1 and Credit MR 4.2**: Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.

4. **Credit MR 5.1**: Product data indicating location of material manufacturer for regionally manufactured materials. Include statement indicating cost for each regionally manufactured material.
   a. Include statement indicating distance from manufacturer to Project for each regionally manufactured material.

5. **Credit MR 7**: Product data and chain-of-custody certificates for products containing certified wood. Include statement indicating cost for each certified wood product.

6. **Credit EQ 3.1:**
   a. Construction indoor-air-quality management plan.
   b. Product data for temporary filtration media.
   c. Product data for filtration media used during occupancy.
   d. Construction Documentation: Six photographs at three different times during the construction period, along with a brief description of the SMACNA approach employed, documenting implementation of the indoor-air-quality management measures, such as protection of ducts and on-site stored or installed absorptive materials.

7. **Credit EQ 3.2:**
   a. Signed statement describing the building air flush-out procedures including the dates when flush-out was begun and completed and statement that filtration media was replaced after flush-out.
   b. Product data for filtration media used during flush-out and during occupancy.

8. **Credit EQ 4.1**: Product data for adhesives and sealants used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D (EPA Method 24).

9. **Credit EQ 4.2**: Product data for paints and coatings used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D (EPA Method 24).
10. **Credit EQ 4.4:** Product data for products containing composite wood or agrifiber products or wood glues indicating that they do not contain urea-formaldehyde resin.

1.5 **QUALITY ASSURANCE**

A. **LEED Coordinator:** Engage an experienced LEED-Accredited Professional to coordinate LEED requirements. LEED coordinator may also serve as waste management coordinator.

**PART 2 PRODUCTS**

2.1 **RECYCLED CONTENT OF MATERIALS**

A. **Credit MR 4.1 and Credit MR 4.2:** Provide building materials with recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 10 and 20 percent of cost of materials used for Project.

1. Cost of post-consumer recycled content of an item shall be determined by dividing weight of post-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.

2. Cost of post-consumer recycled content plus one-half of pre-consumer recycled content of an item shall be determined by dividing weight of post-consumer recycled content plus one-half of pre-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.

3. Do not include mechanical and electrical components in the calculation.

2.2 **REGIONAL MATERIALS**

A. **Credit MR 5.1:** Provide 10 percent of building materials (by cost) that are regional manufactured materials.

2.3 **CERTIFIED WOOD**

A. **Credit MR 7:** Provide a minimum of 50 percent (by cost) of wood-based materials that are produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

1. Wood-based materials include, but are not limited to, the following materials when made from wood, engineered wood products, or wood-based panel products:

   a. Rough carpentry.

   b. Miscellaneous carpentry.

   c. Finish carpentry.

   d. Architectural woodwork.

   e. Wood ceiling.

   f. Wood cabinets.

2.4 **LOW-EMITTING MATERIALS**

A. **Credit EQ 4.1:** For field applications that are inside the weatherproofing system, use adhesives and sealants that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Wood Glues: 30 g/L.
2. Metal to Metal Adhesives: 30 g/L.
3. Adhesives for Porous Materials (Except Wood): 50 g/L.
4. Subfloor Adhesives: 50 g/L.
5. Plastic Foam Adhesives: 50 g/L.
6. Carpet Adhesives: 50 g/L.
7. Carpet Pad Adhesives: 50 g/L.
8. VCT and Asphalt Tile Adhesives: 50 g/L.
9. Cove Base Adhesives: 50 g/L.
10. Gypsum Board and Panel Adhesives: 50 g/L.
11. Rubber Floor Adhesives: 60 g/L.
12. Ceramic Tile Adhesives: 65 g/L.
13. Multipurpose Construction Adhesives: 70 g/L.
14. Fiberglass Adhesives: 80 g/L.
15. Contact Adhesive: 80 g/L.
16. Structural Glazing Adhesives: 100 g/L.
17. Wood Flooring Adhesive: 100 g/L.
18. Structural Wood Member Adhesive: 140 g/L.
19. Special Purpose Contact Adhesive (contact adhesive that is used to bond melamine covered board, metal, unsupported vinyl, Teflon, ultra-high molecular weight polyethylene, rubber or wood veneer 1/16 inch or less in thickness to any surface): 250 g/L.
20. Top and Trim Adhesive: 250 g/L.
22. ABS Welding Compounds: 400 g/L.
23. CPVC Welding Compounds: 490 g/L.
24. PVC Welding Compounds: 510 g/L.
25. Adhesive Primer for Plastic: 650 g/L.
26. Sheet Applied Rubber Lining Adhesive: 850 g/L.
27. Aerosol Adhesive, General Purpose Mist Spray: 65 percent by weight.
29. Special Purpose Aerosol Adhesive (All Types): 70 percent by weight.
30. Other Adhesives: 250 g/L.
31. Architectural Sealants: 250 g/L.
32. Nonmembrane Roof Sealants: 300 g/L.
33. Single-Ply Roof Membrane Sealants: 450 g/L.
34. Other Sealants: 420 g/L.
35. Sealant Primers for Nonporous Substrates: 250 g/L.
36. Sealant Primers for Porous Substrates: 775 g/L.
37. Modified Bituminous Sealant Primers: 500 g/L.
38. Other Sealant Primers: 750 g/L.

B. **Credit EQ 4.2:** For field applications that are inside the weatherproofing system, use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

1. Flat Paints, Coatings, and Primers: VOC not more than 50 g/L.
2. Nonflat Paints, Coatings, and Primers: VOC not more than 150 g/L.
3. Anticorrosive and Antirust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
4. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
5. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
6. Floor Coatings: VOC not more than 100 g/L.
7. Shellacs, Clear: VOC not more than 730 g/L.
8. Shellacs, Pigmented: VOC not more than 550 g/L.
9. Stains: VOC not more than 250 g/L.
10. Flat Interior Topcoat Paints: VOC not more than 50 g/L.
11. Nonflat Interior Topcoat Paints: VOC not more than 150 g/L.
12. Anticorrosive and Antirust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
13. Clear Wood Finishes, Varnishes and Sanding Sealers: VOC not more than 350 g/L.
14. Clear Wood Finishes, Lacquers: VOC not more than 550 g/L.
15. Floor Coatings: VOC not more than 100 g/L.
16. Shellacs, Clear: VOC not more than 730 g/L.
17. Shellacs, Pigmented: VOC not more than 550 g/L.
18. Stains: VOC not more than 250 g/L.
19. Primers, Sealers, and Undercoaters: VOC not more than 200 g/L.
20. Dry-Fog Coatings: VOC not more than 400 g/L.
22. Pretreatment Wash Primers: VOC not more than 420 g/L.
23. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).

24. Restricted Components: Paints and coatings shall not contain any of the following:
   a. Acrolein.
   b. Acrylonitrile.
   c. Antimony.
   d. Benzene.
   e. Butyl benzyl phthalate.
   f. Cadmium.
   g. Di (2-ethylhexyl) phthalate.
   h. Di-n-butyl phthalate.
   i. Di-n-octyl phthalate.
   j. 1,2-dichlorobenzene.
   k. Diethyl phthalate.
   l. Dimethyl phthalate.
   m. Ethylbenzene.
   n. Formaldehyde.
   o. Hexavalent chromium.
   p. Isophorone.
   q. Lead.
   r. Mercury.
   s. Methyl ethyl ketone.
   t. Methyl isobutyl ketone.
   u. Methylene chloride.
   v. Naphthalene.
   w. Toluene (methylbenzene).
   x. 1,1,1-trichloroethane.
   y. Vinyl chloride.

C. **Credit EQ 4.4:** Do not use composite wood or agrifiber products or adhesives that contain urea-formaldehyde resin.
PART 3 EXECUTION

3.1 REFRIGERANT AND CLEAN-AGENT FIRE-EXTINGUISHING-AGENT REMOVAL

A. **Credit EA 4:** Remove clean-agent fire-extinguishing agents that contain HCFCs or halons and replace with agent that does not contain HCFCs or halons. See Division 21 Section "Clean-Agent Fire Extinguishing Systems" for additional requirements.

3.2 MEASUREMENT AND VERIFICATION

A. **Credit EA 5:** Implement measurement and verification plan consistent with **Option D: Calibrated Simulation, Savings Estimation Method 2 in the EVO’s "International Performance Measurement and Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction,"** and as further defined by the following:

   B. Install metering equipment to measure energy usage. Monitor, record, and trend log measurements.

   C. Evaluate energy performance and efficiency by comparing actual to predicted performance.

   D. Measurement and verification period shall cover at least one year of postconstruction occupancy.

3.3 CONSTRUCTION WASTE MANAGEMENT

A. **Credit MR 2.1 and Credit MR 2.2:** Comply with Division 01 Section "Construction Waste Management and Disposal."

3.4 CONSTRUCTION INDOOR-AIR-QUALITY MANAGEMENT

A. **Credit EQ 3.1:** Comply with SMACNA's "SMACNA IAQ Guideline for Occupied Buildings under Construction."

   1. If Owner authorizes use of permanent heating, cooling, and ventilating systems during construction period as specified in Division 01 Section "Temporary Facilities and Controls," install filter media having a MERV 8 according to ASHRAE 52.2 at each return-air inlet for the air-handling system used during construction.

   2. Replace all air filters immediately prior to occupancy.

B. **Credit EQ 3.2:** Comply with the following requirements:

   1. After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total volume of 14000 cu. ft. (4 300 000 L) of outdoor air per sq. ft. (sq. m) of floor area while maintaining an internal temperature of at least 60 deg F (16 deg C) and a relative humidity no higher than 60 percent.

   2. If occupancy is desired prior to flush-out completion, the space may be occupied following delivery of a minimum of 3500 cu. ft. (1 070 000 L) of outdoor air per sq. ft. (sq. m) of floor area to the space. Once a space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm per sq. ft. (1.52 L/s per sq. m) of outside air or the design minimum outside air rate determined in EQ Prerequisite 1, whichever is greater. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14000 cu. ft./sq. ft. (4 300 000 L/sq. m) of outside air has been delivered to the space.

END OF SECTION
SECTION 01 8113.56 - LEED SUBMITTAL FORMS

PURPOSE

1.1 THESE FORMS ARE FOR THE CONSTRUCTION MANAGER’S USE IN SUBMITTING DOCUMENTATION TO BE USED TO DETERMINE WHETHER PARTICULAR CREDITS HAVE BEEN ACHIEVED. THE COOPERATION OF SUBCONTRACTORS, SUPPLIERS, AND MANUFACTURERS IS REQUIRED.

   A. These forms apply to the following LEED Credits:

   B. MR Credits 3.1 and 3.2 – Materials Reuse.

   C. MR Credits 4.1 and 4.2 – Recycled Content.

   D. MR Credits 5.1 and 5.2 – Regional Materials.

   E. MR Credit 6 – Rapidly Renewable Materials.

   F. MR Credit 7 – Certified Wood.

   G. IEQ Credit 4.1 – Low-Emitting Materials: Adhesives and Sealants.

   H. IEQ Credit 4.2 – Low-Emitting Materials: Composite Wood.

1.2 FORMS

   A. LEED Material Cost Summary Form: Certification by Construction Manager.

   B. LEED Wood-Containing Product List: Certification by Construction Manager.

   C. LEED Metal-Containing Product List: Certification by Construction Manager.

   D. LEED New Product Content Form: Including separate reporting of wood, steel, rapidly renewable, and recycled content; data certification by manufacturer of product; cost and quantity certification by Construction Manager.

   E. LEED New Product Source Form: Data certification by manufacturer of product; cost and quantity certification by Construction Manager.

   F. LEED Reused Product Form: Data certification by manufacturer of product; cost and quantity certification by Construction Manager.

   G. LEED Prohibited Content Installer Certification: Certification by each installer working on project regardless of product type.

1.3 PROCEDURES

   A. All LEED submittal forms are to be submitted by Construction Manager; certifications are to be made by indicated party.

   B. Where a LEED Submittal is called for, fill out and submit the appropriate form.

      1. Fill out one form for each different brand name product and each different manufacturer of a lot of commodity products.

      2. Where required attachments are specified, attach the documentation to the back of the form.

   C. Each form must be signed by the entity capable of certifying the information.

      1. Certification signatures must be made by an officer of the company.
2. For products, certification must be made by the manufacturer not the supplier.

3. For custom fabricated products, certification by the fabricator is acceptable.

D. Submit the completed forms in accordance with the requirements of Section 01300 – Administrative Requirements, as information submittals.

1. Give each form a unique submittal number.

2. Do not combine LEED forms with product data or shop drawing submittals.

E. Submit forms applicable to work for which application for payment is being made, either prior to or concurrent with application for payment; payment will not be made until relevant forms have been submitted.

F. For work covered by multiple applications for payment, the initial submittal of a LEED form is sufficient for subsequent applications unless the nature of the product has changed.

END OF SECTION
SECTION 01 8113.57 - LEED MATERIAL COST SUMMARY FORM

PART 1  GENERAL

1.1 LEED SUBMITTAL FORM

A. Identification:
   1. Project Name:
   2. Owner:
   3. Project No.:
   4. Architect:

B. This form applies to the following LEED Credits:
   1. MR Credits 4.1 - Recycled Content.
   2. MR Credits 5.1 - Regional Materials.
   3. MR Credit 7 - Certified Wood.

C. Procedure:
   1. Because the above listed credits require computations based on the material costs for the project,
      the Construction Manager is required to submit the following cost breakdown, in addition to any
      cost breakdown specified elsewhere.
   2. Costs are to be material costs excluding labor, overhead, and profit, but including delivery,
      storage, and handling charges. Revise cost summary whenever materials actually installed change
      due to contract modifications or Construction Manager preference.

1.2 CERTIFICATION

A. $ __________ Total Cost of All Materials

B. $ __________ Total Cost of Plumbing, HVAC, Electrical, and Communications

C. $ __________ Total Cost of Architectural Equipment in Divisions 11 Through 14

D. $ __________ Total Cost of Wood and Wood-Based Materials, including temporary construction items
   that will neither be incorporated into the work nor returned to their supplier for re-use.

1.3 CERTIFIED BY (GENERAL TRADES CONTRACTOR)

A. Print Name: ____________________________________________

B. Signature: ____________________________________________

C. Title: _______________________ (officer of company),

D. Date: __________________

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION
PART 1 GENERAL

1.1 LEED SUBMITTAL FORM
A. Identification:
   1. Project Name:
   2. Owner:
   3. Project No.:
   4. Architect:
B. This form applies to LEED MR Credit 7 (Certified Wood).

1.2 WOOD-CONTAINING PRODUCTS
A. Wood-containing products are those made of solid wood, wood chip, or wood fiber, or containing components made of solid wood, wood chip, or wood fiber.
B. Rationale: Because the computation for this credit is based on the total material costs for all wood and wood-based products on the project, the Construction Manager is required to submit the following itemization of wood and wood-based products, including materials used during construction but not incorporated into the finished work.
C. Procedure: For each wood-containing product provided for this project, submit "LEED Material Content Form". At minimum, submit for the following products. Initial those for which the material content form is attached.
D. Permanent Wood-Containing Product List:
   1. ___ Excavation supports
   2. ___ Timber piles
   3. ___ Fixed site furnishings
   4. ___ Wood framing, furring, and supports
   5. ___ Sheathing
   6. ___ Blocking, curbing, and nailers
   7. ___ Decking
   8. ___ Siding
   9. ___ Molding and trim
   10. ___ Architectural woodwork
   11. ___ Cabinets and casework
   12. ___ Wood shelving
   13. ___ COMPOSITE DECKING
E. Temporary Wood-Containing Product List:
1. ___ Excavation supports  
2. ___ Concrete formwork and formwork supports  
3. ___ Bracing and shoring

1.3 CERTIFICATION

A. ___ All other wood-containing products used on this project are shown on the attached list.
B. ___ I certify that there are no other wood-containing products used on this project that exceed 1 percent of total material cost.
C. ___ I certify that there are no other temporary facilities or construction using wood-containing products that exceed 1 percent of the total material cost.

1.4 CERTIFIED BY (GENERAL TRADES CONTRACTOR)

A. Print Name: ___________________________________________________________________
B. Signature: ___________________________________________________________________
C. Title: _______________________ (officer of company)
D. Date: _______________________

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION
SECTION 01 8113.59 - LEED METAL-CONTAINING PRODUCT LIST

PART 1 GENERAL

1.1 LEED SUBMITTAL FORM

A. Identification:
   1. Project Name:
   2. Owner:
   3. Project No.:
   4. Architect:

B. This form applies to LEED Credits MR 4.1 (Recycled Content).

1.2 STEEL-CONTAINING PRODUCTS

A. Rationale: Although all steel contains reused steel, steel products often cannot be traced to a certain mill lot and, even when they can, the mill’s certificate usually does not indicate the proportion of new to reused steel.

B. Procedure: Determine recycled steel content by estimating the proportion of reused steel based on trade association surveys of mill practices multiplied by the quantity of steel by weight in the product.


   2. If the mill source cannot be identified, the product will be considered to have the lowest reused steel content reported in referenced mill practices survey.

   3. For each steel-containing product provided for this project, submit "LEED New Product Content Form". At minimum, submit for the following products. Initial those for which the material content form is attached.

C. Steel-Containing Product List:

   1. ___ Helical Screw Foundations
   2. ___ Steel piling and permanent shoring.
   3. ___ Concrete reinforcement bars, mats, wire, mesh, and anchor plates.
   4. ___ Structural steel framing members, plates.
   5. ___ Miscellaneous steel fabrications made from rolled shapes, including equipment supports.
   6. ___ Steel decking.
   7. ___ Light gauge steel framing and trusses.
   8. ___ Steel ladders.
   9. ___ Steel handrails and railings.
   10. ___ Miscellaneous formed steel fabrications.
   11. ___ Steel sheet metal flashing and trim.
12. ___ Steel doors and frames.
13. ___ Non-load-bearing steel framing; studs, and ceiling framing.
14. ___ Gypsum board finishing trim.
15. ___ Suspended ceiling grid.
16. ___ Steel wall louvers and vents.
17. ___ Steel storage shelving brackets and standards.
18. ___ Steel casework and cabinets.
19. ___ All equipment with steel housings, casings, or boxes, except mechanical and electrical; report housing percentage by weight/mass only.
20. ___ Steel pipe culverts.

1.3 CAST IRON-CONTAINING PRODUCTS
A. Rationale: Cast iron is considered 100 percent recycled.
B. For each homogeneous cast iron product, report total cost on "LEED New Product Content Form".
C. Cast Iron Product List:
   1. ___ Cast iron pipe.

1.4 CERTIFICATION
A. ___ All other steel- and cast iron-containing products used on this project are shown on the attached list.
B. ___ I certify that there are no other steel-containing products used on this project that exceed 1 percent of total material cost less material cost attributed to mechanical and electrical.
C. ___ I certify that there are no other cast iron-containing products used on this project that exceed 1 percent of total material cost less material cost attributed to mechanical and electrical.

1.5 CERTIFIED BY (GENERAL TRADES CONTRACTOR)
A. Print Name: ______________________________________________
B. Signature: ________________________________________________
C. Title: _______________________ (officer of company)
D. Date: _________________

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION
SECTION 01 8113.60 - LEED NEW PRODUCT CONTENT FORM

PART 1 GENERAL

1.1 LEED SUBMITTAL FORM

A. Identification:
   1. Project Name:
   2. Owner:
   3. Project No.:
   4. Architect:
   5. Product Name:
      ___________________________________________(brand name, model number, etc.)

   6. Manufacturer:
      ___________________________________________ www._________________________
      Contact: tel: ___________________________
   7. Supplier/Sub:
      ___________________________________________ www._________________________
      Contact: tel: ___________________________

   8. Applicable Specification Section Number(s) ______________________

B. This form applies to LEED Credits MR 4.1 (Recycled Content) and MR 7 (certified wood).

1.2 PRODUCT CERTIFICATION

   1. ______ Product is FSC-trademarked.
   2. ______ FSC Chain-of-Custody certificate number is ______________________
   3. FSC: Forest Stewardship Council Chain-of-Custody number or physical trademark; computation of less than 100 percent certified content in accordance with FSC policy.

B. Steel Content: _________ percent by weight.
   1. ______ Steel Mill Source is: __________________________________________
   2. ______ Mill letter describing mill process and typical re-used steel content is attached.

C. Other Content: (Percentages by weight may not add up to more than 100 percent.)
   1. Pre-Consumer/Post-Industrial Recycled Content: ________ percent by weight.
2. Post-Consumer Recycled Content: ________ percent by weight.

3. Description of Recycled
   a. Content: __________________________________________

4. Definition: Recycled content is defined in accordance with FTC regulations, found in 16 CFR 260.7(e); see www.ftc.gov/bcp/grnrule/guides980427.htm.

D. Total Weight: ___________ per ____________ (unit).

1.3 PRODUCT CERTIFIED BY:  (MANUFACTURER)
   A. Print Name: __________________________________________
   B. Signature: __________________________________________
   C. Title: ______________________ (officer of company)
   D. Date: _________________

1.4 COST CERTIFICATION
   A. Unit Cost: $ ___________ per __________ (same unit as above);

   No. of Units Installed: _____

   OR (enter cost either above or below, not both)

   B. Total Installed Material Cost of This Product: $ ______________

1.5 COST CERTIFIED BY (GENERAL TRADES CONTRACTOR)

Print Name: __________________________________________
Signature: __________________________________________
Title: _______________________ (officer of company)
Date: _____________________

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION
SECTION 01 8113.61 - LEED NEW PRODUCT SOURCE FORM

PART 1  GENERAL

1.1  LEED SUBMITTAL FORM

A.  Identification:

1.  Project Name:
2.  Owner:
3.  Project No.:
4.  Architect:
5.  Product Name:

____________________________________  (brand name, model number, etc.)

6.  Manufacturer:

____________________________  www.___________________________
Contact: ______________________  tel: ____________________________

7.  Supplier/Sub:

____________________________  www.___________________________
Contact: ______________________  tel: ____________________________

8.  Applicable Specification Section Number(s) ______________________

B.  This form applies to LEED MR Credits 5.1 for new products only; see separate form for reused products.

1.2  PRODUCT CERTIFICATION

A.  The following percentages of this product were processed in the locations indicated.  (Indicate N/A in first column if process is not applicable.)

<table>
<thead>
<tr>
<th>PERCENT</th>
<th>HARVEST, EXTRACTION, RECOVERY, OR MANUFACTURING PROCESS</th>
<th>CITY/COUNTY, STATE, COUNTRY</th>
<th>DISTANCE FROM PROJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____</td>
<td>RAW MATERIAL ____:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>_____</td>
<td>RAW MATERIAL ____:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>_____</td>
<td>RAW MATERIAL ____:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>_____</td>
<td>MANUFACTURED AT: (PRIMARY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>_____</td>
<td>MANUFACTURED AT: (PRIMARY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>_____</td>
<td>MANUFACTURED AT: (SECONDARY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>_____</td>
<td>MANUFACTURED AT: (SECONDARY)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>_____</td>
<td>MANUFACTURED AT: (FINAL)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.3 PRODUCT CERTIFIED BY (MANUFACTURER)

Print Name: ____________________________________________________
Signature: ______________________________________________________
Title: __________________________________________________________ (officer of company)
Date: __________________________________________________________

1.4 COST CERTIFICATION

A. Unit Cost: $ ___________ per _________ (unit);
   No. of Units Installed: _______
   OR (enter cost either above or below, not both)

B. Total Installed Material Cost: $ ______________

1.5 COST CERTIFIED BY (GENERAL TRADES CONTRACTOR)

Print Name: ____________________________________________________
Signature: ______________________________________________________
Title: __________________________________________________________ (officer of company)
Date: __________________________________________________________

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION
PART 1 GENERAL

1.1 LEED SUBMITTAL FORM

A. Identification:

1. Project Name: __________________________________________________________
2. Owner: __________________________________________________________
3. Project No.: __________________________________________________________
4. Architect: __________________________________________________________
5. Product Name: __________________________________________________________
   (brand name, model number, etc.)

   Contact: ______________________________ tel: ______________________________

7. Supplier/Sub: __________________________________ www.____________________
   Contact: ______________________________ tel: ______________________________

8. Applicable Specification Section Number(s) _____________________________

B. This form applies to LEED MR Credits 3.1 and 3.2.

1.2 PRODUCT CERTIFICATION

A. Product Description: _________________________________________________

B. Explain Source: ______________________________________________________

C. City/County, State: _________________________________________________

D. Country: ____________________________________________________________

E. Distance From Project: ________________________________________________

1.3 PRODUCT CERTIFIED BY: (SOURCE FIRM)

Print Name: ____________________________________________________________
Signature: ______________________________________________________________
Title: ________________________________ (officer of company)
Date: ________________________________
1.4 COST CERTIFICATION

A. Unit Cost: $___________ per __________ (unit);
   
   No. of Units Installed: ______
   OR (enter cost either above or below, not both)

B. Total Installed Material Cost: $________________

1.5 COST CERTIFIED BY (GENERAL TRADES CONTRACTOR)

Print Name: ________________________________
Signature: ________________________________
Title: ________________________________ (officer of company)
Date: ________________________________

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION
SECTION 01 8113.63 - LEED PROHIBITED CONTENT INSTALLER CERTIFICATION

PART 1 GENERAL

1.1 LEED SUBMITTAL FORM

A. Identification:
   1. Project Name:
   2. Owner:
   3. Project No.:
   4. Architect:

B. This form applies to the following LEED credits:
   1. **Credit IEQ 4.1**: VOC content of field-installed adhesives and sealants.
   2. **Credit IEQ 4.2**: Low Emitting Materials, Paints and Coatings.
   3. **Credit IEQ 4.3**: Low Emitting Materials, Carpet Systems.
   4. **Credit IEQ 4.4**: added-urea-formaldehyde content of composite wood and agrifiber products, defined as particleboard, plywood, medium density fiberboard, wheatboard, strawboard, panel substrates, door cores, and laminating adhesives; applies to manufacturers/suppliers and installers.

C. Procedure:
   1. Because installers are allowed and directed to choose accessory materials suitable for the applicable installation, each installer of work on this project is required to certify that his/their use of these particular materials complies with the contract documents and to provide documentation showing that the products used do not contain the prohibited content.
   2. Volatile organic compounds (VOCs) are defined by the U.S. EPA and State and local regulations applicable to this project. See Contract Documents for minimum criteria.

1.2 PRODUCT CERTIFICATION

A. ___ Adhesives: I certify that the installation work of my firm on this project has not required the use of any adhesives.

   OR (certify either the above or the below, not both)

   ___ Adhesives: I certify that my firm has NOT installed any adhesive with VOC content exceeding that specified in Section 01 6000 on this project; product data and MSDS sheets for all adhesives used, whether specified or not, are attached.

B. ___ Joint Sealants: I certify that the installation work of my firm on this project has not required the use of any gunnable or pourable joint sealants.

   OR (certify either the above or the below, not both)

   ___ Joint Sealants: I certify that my firm has NOT installed any joint sealant with VOC content exceeding that specified in Section 079000 on this project; product data and MSDS sheets for all joint sealants used, whether specified or not, are attached.
C.  ____ Composite Wood and Agrifiber Products: I certify that the work of my firm on this project has not required the use of any composite wood or agrifiber products, as defined above.

OR (certify either the above or the below, not both)

____ Composite Wood and Agrifiber Products: I certify that the composite wood and agrifiber products, as defined above, furnished or installed by my firm DO NOT contain any ADDED urea-formaldehyde binder; product data and MSDS sheets for products used, whether specified or not, are attached.

1.3 CERTIFIED BY (INSTALLER/MANUFACTURER/SUPPLIER FIRM)

Print Name: __________________________________________________
Signature: _____________________________________________________
Title: ____________________________ (officer of company)
Date: ____________________________

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION
<table>
<thead>
<tr>
<th>Sustainable Sites</th>
<th>Responsible</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes  ?  No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y Prereq 1</td>
<td>Construction Activity Pollution Prevention</td>
<td>DO/Terra/GC</td>
</tr>
<tr>
<td>1 Credit 1 Site Selection</td>
<td>DO/Terra</td>
<td></td>
</tr>
<tr>
<td>5 Credit 2 Development Density &amp; Community Connectivity</td>
<td>DO</td>
<td></td>
</tr>
<tr>
<td>1 Credit 3 Brownfield Redevelopment</td>
<td>Not a brownfield site</td>
<td></td>
</tr>
<tr>
<td>6 Credit 4.1 Alternative Transportation, Public Transportation Access</td>
<td>DO</td>
<td></td>
</tr>
<tr>
<td>1 Credit 4.2 Alternative Transportation, Bicycle Storage &amp; Changing Rooms</td>
<td>DO</td>
<td>Existing showers located within 200 yards of building entry.</td>
</tr>
<tr>
<td>3 Credit 4.3 Alternative Transportation, Low-Emitting &amp; Fuel-Efficient Vehicles</td>
<td>DO/Terra</td>
<td>Would need to add preferred parking in nearest lot for alternative fuel vehicles</td>
</tr>
<tr>
<td>2 Credit 4.4 Alternative Transportation, Parking Capacity</td>
<td>DO/Terra</td>
<td>Provide no new parking or determine zoning requirements for parking</td>
</tr>
<tr>
<td>1 Credit 5.1 Site Development, Protect or Restore Habitat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Credit 5.2 Site Development, Maximize Open Space</td>
<td>DO/Terra</td>
<td></td>
</tr>
<tr>
<td>1 Credit 6.1 Stormwater Design, Quantity Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Credit 6.2 Stormwater Design, Quality Control</td>
<td>DO/Terra</td>
<td></td>
</tr>
<tr>
<td>1 Credit 7.1 Heat Island Effect, Non-Roof</td>
<td>Terra</td>
<td>50% of hardscape surfaces</td>
</tr>
<tr>
<td>1 Credit 7.2 Heat Island Effect, Roof</td>
<td>DO</td>
<td>White roof is currently in scope of project</td>
</tr>
<tr>
<td>1 Credit 8 Light Pollution Reduction</td>
<td>KJWW/Terra</td>
<td></td>
</tr>
<tr>
<td>10 8 8 Totals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water Efficiency</th>
<th>Responsible</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes  ?  No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y Prereq 1 Water Use Reduction</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td>4 Credit 1 Water Efficient Landscaping</td>
<td>Terra</td>
<td>Assumed no irrigation</td>
</tr>
<tr>
<td>2 Credit 2 Innovative Wastewater Technologies</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td>3 1 Credit 3 Water Use Reduction</td>
<td>KJWW</td>
<td>Fixtures to be approved by UIUC</td>
</tr>
<tr>
<td>7 8 0 Totals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Energy and Atmosphere</th>
<th>Responsible</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes  ?  No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y Prereq 1 Fundamental Commissioning of the Building Energy Systems</td>
<td>KJWW/GC</td>
<td></td>
</tr>
<tr>
<td>Y Prereq 2 Minimum Energy Performance</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td>Y Prereq 3 Fundamental Refrigerant Management</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td>9 2 Credit 1 Optimize Energy Performance</td>
<td>KJWW/DO</td>
<td></td>
</tr>
<tr>
<td>3 4 Credit 2 On-Site Renewable Energy</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td>2 Credit 3 Enhanced Commissioning</td>
<td>GC</td>
<td>University Standard</td>
</tr>
<tr>
<td>2 Credit 4 Enhanced Refrigerant Management</td>
<td>KJWW/GC</td>
<td>Final unit refrigerant to be confirmed during shop drawings/submittals</td>
</tr>
<tr>
<td>3 Credit 5 Measurement &amp; Verification</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td>2 Credit 6 Green Power</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td>13 16 6 Totals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Materials and Resources

<table>
<thead>
<tr>
<th>Yes</th>
<th>Credit</th>
<th>Description</th>
<th>Responsible</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>3</td>
<td>Building Reuse, Maintain Existing Walls, Floors &amp; Roof</td>
<td>DO/CERL</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>1</td>
<td>Building Reuse, Maintain Existing Interior Non-Structural Elements</td>
<td>DO/CERL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Construction Waste Management</td>
<td>GC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Materials Reuse</td>
<td>DO/CERL</td>
<td>Verify materials to be reused</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>Recycled Content</td>
<td>DO/GC</td>
<td>Will be determined through coordination with GC on total material costs</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>Regional Materials</td>
<td>DO/GC</td>
<td>Will be analyzed during shop drawing and submittal stage with GC. Brick/CMU/Concrete/Steel</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Rapidly Renewable Materials</td>
<td>DO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Certified Wood</td>
<td>GC/DO</td>
<td></td>
</tr>
</tbody>
</table>

| Indoor Environmental Quality
<table>
<thead>
<tr>
<th>Yes</th>
<th>Credit</th>
<th>Description</th>
<th>Responsible</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td>3</td>
<td>Minimum IAQ Performance</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>1</td>
<td>Environmental Tobacco Smoke (ETS) Control</td>
<td>CERL/DO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Outdoor Air Delivery Monitoring</td>
<td>KJWW/DO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Increased Ventilation</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Construction IAQ Management Plan, Before Occupancy</td>
<td>KJWW/GC</td>
<td>Off-gassing period, should be achievable, but needs to be built into schedule</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Construction IAQ Management Plan, During Construction</td>
<td>GC</td>
<td>Pre-construction meeting with subcontractors is critical</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Low-Emitting Materials. Adhesives &amp; Sealants</td>
<td>DO/GC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Low-Emitting Materials. Paints &amp; Coatings</td>
<td>DO/GC</td>
<td>currently specified in project</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Low-Emitting Materials. Flooring Systems</td>
<td>DO/GC</td>
<td>currently specified in project</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Low-Emitting Materials. Composite Wood &amp; Agrifiber Products</td>
<td>DO/GC</td>
<td>currently specified in project</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Indoor Chemical &amp; Pollutant Source Control</td>
<td>KJWW/DO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Controllability of Systems. Lighting</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Controllability of Systems. Thermal Comfort</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Thermal Comfort, Design</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Thermal Comfort, Verification</td>
<td>KJWW</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Daylight &amp; Views, Daylight</td>
<td>DO/KJWW</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Daylight &amp; Views, Views</td>
<td>DO</td>
<td></td>
</tr>
</tbody>
</table>

| Innovation in Design
<table>
<thead>
<tr>
<th>Yes</th>
<th>Credit</th>
<th>Description</th>
<th>Responsible</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>Innovation in Design: Specific Title</td>
<td>CERL/DO</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Innovation in Design: Specific Title</td>
<td>CERL/DO</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Innovation in Design: Specific Title</td>
<td>CERL/DO</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Innovation in Design: Specific Title</td>
<td>CERL/DO</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Innovation in Design: Specific Title</td>
<td>CERL/DO</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>LEED® Accredited Professional</td>
<td>DO</td>
<td></td>
</tr>
</tbody>
</table>

DESIGN ORGANIZATION INC.
<table>
<thead>
<tr>
<th>Regional Priority</th>
<th>Responsible</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Credit 1.1</td>
<td>DD/Terra</td>
<td>Water efficient landscaping - no potable/irrigation</td>
</tr>
<tr>
<td>1 Credit 1.2</td>
<td>DD/Terra</td>
<td>Site Selection: 1 point</td>
</tr>
<tr>
<td>1 Credit 1.3</td>
<td>Terra</td>
<td>Stormwater design - quality control: 1 point</td>
</tr>
<tr>
<td>1 Credit 1.4</td>
<td>DOKJWW</td>
<td>On-site renewable energy: 1 point or Development density and community connectivity: 5 points</td>
</tr>
</tbody>
</table>

Project Totals | 2 2 0 Totals | Certified: 40-49 points, Silver: 50-59 points, Gold: 60-79 points, Platinum: 80+ points
### FTE Staff Occupant Calculations - CERL Main Building Addition

<table>
<thead>
<tr>
<th>Occupants</th>
<th>Persons</th>
<th>Person-Hours per Day</th>
<th>Total Person-Hours per Day</th>
<th>Hours per Day per FTE</th>
<th>FTEs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Executive</strong>*</td>
<td>9</td>
<td>x</td>
<td>8</td>
<td>72</td>
<td>9</td>
</tr>
<tr>
<td><strong>Researchers</strong></td>
<td>17</td>
<td>x</td>
<td>8</td>
<td>136</td>
<td>17</td>
</tr>
<tr>
<td><strong>Jr. Researchers</strong>*</td>
<td>12</td>
<td>x</td>
<td>8</td>
<td>96</td>
<td>12</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>2</td>
<td>x</td>
<td>8</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td><strong>Students</strong></td>
<td>10</td>
<td>x</td>
<td>3</td>
<td>30</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total FTE Staff</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>44</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Transient Occupant Calculation**

<table>
<thead>
<tr>
<th>Occupants</th>
<th>Number at Peak Period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visitors</strong></td>
<td>40</td>
</tr>
</tbody>
</table>

**Summary**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total FTE Staff</strong></td>
<td><strong>44</strong></td>
</tr>
<tr>
<td><strong>Transient Occupants</strong></td>
<td><strong>40</strong></td>
</tr>
</tbody>
</table>

* Executive includes PA, OTTO, and Executive Admins.

** Researchers includes Supervisor

*** Jr. Researchers includes Supervisor Admin.
### SS4.2 Bicycle Storage and Changing Rooms

**Building:**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Calculation/Provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of FTEs</td>
<td>44</td>
</tr>
<tr>
<td>Number of Visitors</td>
<td>40</td>
</tr>
<tr>
<td>Number of Residents</td>
<td>0</td>
</tr>
<tr>
<td>Nonresidential bicycle storage required (5% of FTEs plus visitors)</td>
<td>5</td>
</tr>
<tr>
<td>Number of nonresidential bicycle storage spaces provided</td>
<td>6</td>
</tr>
<tr>
<td>Residential bicycle storage required (15% of residents)</td>
<td>0</td>
</tr>
<tr>
<td>Number of residential covered bicycle storage spaces provided</td>
<td>0</td>
</tr>
<tr>
<td>Showers required (0.5% of FTEs)</td>
<td>0</td>
</tr>
<tr>
<td>Showers provided</td>
<td>0</td>
</tr>
</tbody>
</table>

**Narrative (if showers are not in building):**

- Distance to Men's Showers: 534'
- Distance to Women's Showers: 534'
SECTION 01 9113 - GENERAL COMMISSIONING REQUIREMENTS

PART I - GENERAL

1.1 SCOPE OF WORK

A. Systems to be commissioned include those identified in each respective Section of this Project and at minimum the following:

1. HVAC System
   a. Base Building Mechanical, all Metering, BAS/DDC and other Control Systems
   b. Including all integral equipment controls and IAQ monitoring and control

2. Electrical Systems
   a. Lighting, and lighting controls including occupancy sensors
   b. All electrical systems, metering and distribution
   c. Electrical metering per EA c5
   d. Variable Frequency Drives (VFD’s)
   e. Fire Alarm System integration with new/existing control panel, Lighting, metering and lighting controls

3. Plumbing
   a. Water conservation devices
   b. Related metering

4. Utilities
   a. All other Building level metering and controls not otherwise under Divisions 22, 23, 26 and 33.

5. When included in the Project:
   a. Related HVAC Mechanical including make-up, exhaust and Control Systems

1.2 RELATED REQUIREMENTS

A. Section 22 08 00 - Plumbing Systems Commissioning. "Plumbing Systems Commissioning Process Requirements" for commissioning process activities for plumbing systems, assemblies, equipment, and components.

B. Section 23 05 00 - Basic HVAC Requirements.

C. Section 23 05 93 - Testing, Adjusting, Balancing.

D. Section 23 08 00 - HVAC Systems Commissioning. “HVAC&R Systems Commissioning Process Requirements” for commissioning process activities for heating, ventilating, air-conditioning, and refrigerating systems, assemblies, equipment, and components.

E. Section 26 08 00 - Electrical Systems Commissioning. "Electrical Systems Commissioning Process Requirements" for commissioning process activities for electrical systems, assemblies, equipment, and components.
1.3 RELATED DOCUMENTS

A. Exhibit 01 91 13-1, Commissioning Roles and Responsibilities
B. Exhibit 01 91 13-2, Title List – Prefunctional Checklists and Functional Tests
C. Exhibit 01 91 13-3, Sample Prefunctional Checklist
D. Exhibit 01 91 13-4, Sample Functional Test
E. Exhibit 01 91 13-5, Commissioning Process Definitions
F. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
G. OPR (Owner’s Project Requirements) prepared by Owner and AE & BOD (Basis of Design) documentation prepared by the AE respectively contain requirements that apply to this Section.
H. Industry standards and guidelines are a guide to the commissioning process and are hereby incorporated and will be applied as appropriate. Reference standards and guidelines include, but are not limited, to the following:
I. References:
   2. ASHRAE Guideline 1: The HVAC Commissioning Process
   5. USGBC LEED current version as of Project registration.

1.4 COMMISSIONING PLAN

   1. Design Phase Commissioning Activities
   2. Occupancy & Operation Commissioning Activities
   3. Roles and Responsibilities of all Commissioning Team Member.
   4. The Owner will forward the Commissioning Plan to GC via the PM, who then makes the Plan available on request to the Contractor.
B. Impact on Contractor Responsibility: The Cx Process does not reduce the responsibility of the installing contractors to provide a finished and fully functioning product. The CxA does not have the authority to provide direction to the Contractors. Any issues arising during the Commissioning Process which impact schedules, costs or contractual obligations shall be addressed to the Owner for resolution.
C. Commissioning Process:
1. The documented procedures which comprise the construction-phase commissioning process include the following:

   a. Pre-Commissioning consists of normally specified check-outs or testing, wiring and controls point-to-point verification, etc. to be completed by the respective Contractor before the formal commissioning process outlined in this document begins.

   b. Pre-Functional Procedures (PFPs) consist of a series of field observations conducted during the installation of equipment yet to be commissioned to verify that equipment is installed per the contract documents and is ready for startup.

   c. Contractor Pre-Startup Testing consists of normally specified Contractor testing such as leak testing of ductwork and piping and meter testing of electrical equipment. The commissioning process is used to ensure that this testing is rigorously executed and documented in preparation for equipment startup.

   d. Equipment Startup Procedures ensure that startup is performed per the equipment manufacturer’s recommended procedures and those startup activities and data are documented for future reference.

   e. Contractor TAB (Test and Balance) Plan submitted to the Owner (via the GC) no later than 30 days prior to scheduled Start up shall include sufficient narrative and technical detail identifying the relevant systems, components, instrumentation and sequence of work. This Plan shall also indicate evidence of all presets in preparation.

   f. Contractor Post-Startup Testing consists of normally specified contractor testing activities occurring after startup including test, adjust and balance (TAB) of ventilation and hydronic systems, control system point-to-point testing and testing of BAS sequences of operation. The commissioning process provides oversight during the execution and documentation of these tests to ensure successful system operation.

   g. Witnessing Functional Performance Procedures (FPPs) consists of determining if equipment, sub-systems and major systems operate in accordance with the design intent and the contract documents. Specific issues, which will be evaluated in these procedures, include equipment capacity & efficiency, operation of safeties and interlocks, control system operation, stability and tuning. All post start-up work including debugging is to be completed prior to Functional Performance Witnessing by the Owner.

   h. Operation and Maintenance Manuals will be reviewed by the Owner for both content and organization. The objective of the review process is to provide the Owner with useful, complete, project-specific information needed to successfully operate and maintain the facility after turnover.

   i. Operator Training will be provided and coordinated by the Contractor GC and overseen by the Owner to help ensure that the Owner is adequately prepared to operate and maintain the facility at turnover. Scheduling of Training is to be confirmed in writing no later than the earlier of either Substantial Completion or as this Project requires.

1.5 CONTRACTOR RESPONSIBILITIES

A. General

   1. Contractors providing and/or installing equipment and systems included in the ‘Scope of Work’ above are required to participate fully in the Commissioning Process.

   2. Participating Contractors shall include all costs to complete the Cx requirements in their contract price including all costs for Sub-Contractors, vendors and suppliers.
3. Participating Contractors shall ensure acceptable representation, with the means and authority to prepare, coordinate and execute the Commissioning Process as described in the contract documents.

4. Contractors shall participate in the resolution of system deficiencies identified during the commissioning process, according to the contract documents and the Owner’s Project Requirements.

5. Contractors shall prepare & submit the final as-built design intent and operating parameter documentation for inclusion in the O&M manuals.

6. Contractors shall coordinate with all LEED Section requirements and Quality Section requirements including but not limited to Building flush out.

B. Contractor’s Commissioning Representative (CCR)

1. Each Contractor participating in the Cx Process will each designate a single-point contact person to work with the Owner and the Commissioning Team to coordinate commissioning activities, ensure timely execution of Cx Procedures and prompt resolution of commissioning issues.

2. The CCR shall be the Contractor’s Project Manager, Field Superintendent or similar with authority to do the following:
   a. Make decisions regarding commissioning activities and issues
   b. Schedule technicians for participation in commissioning activities
   c. Interface between the Commissioning Team and the Contractor’s Sub-Contractors, vendors and suppliers.
   d. Commit to commissioning schedules and completion dates.

3. The CCR will be responsible for coordinating the Contractor’s participation in the Cx Process. As part of this role, the CCR shall:
   a. Attend all Commissioning Meetings
   b. Keep the GC, AE, and/or Owner apprised of the Contractor’s progress, schedules and other matters impacting execution of the Commissioning Procedures.
   c. Coordinate the Contractor’s work schedules and staffing to ensure that the qualified technician(s) are available and present during the agreed upon schedules and for sufficient duration to complete procedures, tests, adjustments, and/or problem resolutions.
   d. Ensure that the Contractors Commissioning Notebook(s) and Contractor Commissioning Documents are being maintained on-site, well organized and current as required in item the ‘Commissioning Documentation’ paragraph of this specification. Notebooks and Contractor Commissioning Documents shall be turned over to the Owner as part of the required deliverables for Final acceptance.

4. The Owner reserves the right to question the appropriateness and qualifications of the Contractor’s Commissioning Contact. Qualifications shall include expert knowledge of the equipment and systems being commissioned and a willingness to work cooperatively with Commissioning Team.

C. Field Technicians

1. Each Contractor shall provide qualified field technicians who are trained and familiar with installation, operation and troubleshooting of systems and equipment being commissioned for participation in the commissioning activities outlined in this document.
2. These same technicians shall be made available to assist the Owner in resolving commissioning issues (as reported on the Issue Tracking Report) and for repeat and follow-up commissioning tasks as required.

3. Contractors shall arrange for and provide technicians from their Sub-Contractors, vendors and suppliers where specified and where Contractor’s own personnel lack the required training or experience necessary to ensure that all commissioned equipment and systems are correctly installed and fully functional.

4. System performance problems and discrepancies may require additional technician time, Owner time, reconstruction of systems, and/or replacement of system components. The additional technician time shall be made available for subsequent Cx periods at no cost to the Owner until the required system performance is obtained.

5. The Owner reserves the right to question the appropriateness and qualifications of the technicians relative to each item of equipment, system, and/or sub-system. Qualifications of technicians shall include expert knowledge relative to the specific equipment involved.

1.6 COMMISSIONING AUTHORITIES RESPONSIBILITIES

A. General

1. Organize and monitor the commissioning team.

2. Prepare an initial commissioning plan. Collaborate with each Contractor and with sub-contractors to develop test and inspection procedures. The Commissioning Plan (Cx Plan) is a dynamic document that is continuously updated through Design, Construction and Warranty. Updates shall be provided by the AE / Contractor during and post construction. The Cx Plan shall identify commissioning team member(s) / their responsibilities, by name, firm, and trade specialty, for performance of each commissioning task. Scheduled commissioning activities shall be coordinated with overall Project schedule.

3. Participate in the commissioning team meetings for the purpose of monitoring progress, coordination, communication, and conflict resolution.

a. Clarification: The GC responsibilities include arranging for facilities, preparing agenda and attendance lists, and notifying participants. The GC shall prepare and distribute minutes to commissioning team members and attendees within 5 workdays of the commissioning meeting.

4. At the beginning of the construction phase, the Owner shall coordinate through the GC and conduct an initial construction-phase coordination meeting for the purpose of reviewing the commissioning activities and establishing tentative schedules for operation and maintenance submittals; operation and maintenance training sessions; TAB Work; and Project completion.

5. The Owner will be responsible for observing and inspecting construction, and reporting progress and deficiencies. In addition to compliance with the OPR, BoD, and Contract Documents, inspecting systems and equipment installation for adequate accessibility for maintenance and component replacement or repair.

6. The Owner will preview Project-specific test and inspection procedures and checklists provided by equipment manufacturer / Contractor and assist in scheduling and documenting tests, inspections, and systems startup.

7. The Owner will collect Engineering test data, inspection reports, and certificates from the Contractor and include them in the Systems Manual and Commissioning Report.

8. The Owner will coordinate with the Owner to certify the date of acceptance and startup for each item of equipment for start of warranty periods. Document Extended Warranties due to “early” start-up from approved request and subsequent necessary changes to sequence of operations.

9. The Owner will review Project Record Documents for accuracy. Request revisions from Contractor to achieve accuracy. Project Record Documents requirements are specified in the Division 1 Section "Project Record Documents."

10. The Owner will assemble the final commissioning documentation, including the commissioning report and AE provided Project Record Documents.

1.7 COORDINATION & SCHEDULING

A. Commissioning Meetings

1. Commissioning Orientation (Kick-Off) Meeting
   a. This meeting will be scheduled by the Contractor and coordinated with the AE and Owner after awarding of contracts but prior to the start of construction of the systems included in the commissioning scope.
   b. The Owner will work with the Contractor who coordinates this initial Commissioning Orientation Meeting for the Prime Contractors and selected Sub-Contractors to familiarize all parties with the Cx process, and to ensure that the roles and responsibilities of each party are clearly understood.

2. On-going Commissioning Progress Meetings
   a. These meetings will be scheduled by the Contractor and coordinated with the AE and Owner. The purpose of these meetings will be to coordinate and schedule Cx activities, review Cx activity status, verify Owner’s Project Requirement achievements, and discuss status and resolution of Cx issues. Cx Progress Meetings will start soon after installation of systems to be commissioned begins. Meeting frequency will be determined by the Project Team. Minutes from the commissioning meetings will be recorded and distributed by the Contractor to the full commissioning team.

B. Scheduling of Cx Activities KJWW Comment: Not sure what typically goes here?

C. C.

1.8 COMMISSIONING DOCUMENTATION

A. General

1. Contractor Commissioning Documents which will be completed by the Contractors include the following:
   a. Pre-Functional Checklists
   b. Pre-startup Contractor Procedure / Test Forms
   c. Equipment Startup Plans and Forms
   d. Post-startup Contractor Test Forms & Reports
   e. Functional Procedures / Tests (Contractor may use these for debugging purposes prior to eventual Owner Witnessing). Owner witnesses the Functional Tests/Procedures and documents using these forms.
f. Weekly Cx Status Report

g. Commissioning Notebooks

h. All supporting documentation

2. Documentation which, at the Owner’s discretion, is incomplete or less than fully legible shall be unacceptable. Signatures by the respective individual having authority shall be provided on all forms to certify completion.

3. Commissioning procedures and tests which are rejected by the Owner due to incomplete or illegible Contractor documentation shall be repeated by the Contractor and new Contractor Commissioning Documents shall be prepared to the Owner’s satisfaction at no additional costs to the Owner.

4. All Contractor Commissioning Documents shall be completed on the job-site concurrent with the activities being documented. “After-the-fact” documentation of commissioning activities is unacceptable.

5. All Contractor Commissioning Documents will be promptly submitted to the Owner for review and acceptance upon completion of each respective CC or startup or FPT/FTP.

B. Contractor Commissioning Process Status Tracking System

1. Contractors shall be responsible for maintaining a tracking system to monitor the progress of their commissioning activities. This tracking system will be submitted to the Owner and will include spreadsheet-based tracking forms and/or sets of drawings which will be marked-up by the contractor to indicate status of specified commissioning activities.

2. The Contractors shall regularly update their tracking system forms and/or drawings as commissioning activities are completed so as to provide a readily available report to the [CM/GC] and Owner regarding current status of the Contractors commissioning activities. Updates shall be provided weekly commencing with respective Startups.

C. Commissioning Notebook(s)

1. All Contractor Commissioning Documents (including both in-progress and completed documentation) and Contractor Commissioning Process Status Tracking System forms shall be kept on-site in the Contractor’s field office, neatly organized, in 3-ring notebooks known as Commissioning Notebooks.

2. Commissioning Notebooks shall be labeled on both cover and spine to indicate the Contractor’s name, the project name and the notebook’s contents.

3. The GC will be available to assist the Contractors in setting up, and organizing their Commissioning Notebooks.

4. Commissioning Notebooks shall be kept available to the Owner and GC for their review and shall be turned in at Project Closeout.

D. Access to Contractor Documentation

1. Contractors shall provide access to the shop drawings, coordination drawings, equipment cut-sheets, schematics, in-progress record drawings, etc. to assist the Owner in execution of the Cx process.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT – GENERAL

A. The party responsible for each Commissioning Procedure shall furnish all tools, equipment and instrumentation required for execution of that Procedure.
B. A list of all tools and equipment to be used during Cx shall be submitted to the Owner for review and approval prior to the start of execution.

C. The owner and contractor will furnish utilities for the Cx process pursuant to the Project Manual.

D. Standard tools, testing equipment and instrumentation required for execution of Pre-Functional Procedures, Pre-startup Testing, Startup Procedures, and Post-startup Testing shall be provided by the Contractor responsible for the equipment being tested.

E. Temporary Data-logging equipment and software required to monitor/test equipment (with the exception of medium and higher voltage electrical equipment) will be provided by the Owner.

F. Testing equipment and instrumentation used for execution of Commissioning Procedures shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the Specifications. If not otherwise noted, the following minimum requirements apply:

1. Temperature sensors and digital thermometers: certified calibration within the past year to an accuracy of 0.5°F and a resolution of + or - 0.1°F.

2. Pressure sensors: accuracy of + or - 2.0% of the value range being measured (not full range of meter) and calibrated within the last year.

3. Electrical meters (voltage, current, etc.) shall be true RMS and shall have been calibrated within the last year.

4. Other sensors (RH, CO, CO2, etc.) shall have been calibrated within the last 6 months.

G. All test equipment and instrumentation used for Commissioning Procedures shall be calibrated according to the manufacturer’s recommended intervals and when dropped or damaged.

H. Calibration tags shall be affixed or certificates readily available.

2.2 TEST EQUIPMENT - SPECIAL, PROPRIETARY, OR UNIQUE

A. Equipment and software including that for testing required by any contractor, vendor or equipment manufacturer for programming, start-up, or other commissioning activity whether specified or not, shall be provided by the manufacturer of the equipment for use during commissioning and at no additional cost to the Owner.

B. Equipment, tools and instruments required for testing equipment shall be included in the base bid price to the Contractor and left on site, except for stand-alone temporary data logging equipment that may be used by the Owner.

C. Equipment (and software) including that for testing, shall become the property of the owner upon completion of the Cx process and free of royalties and / or other fees or rental charges.

2.3 BAS HARDWARE AND SOFTWARE SUPPORT

A. The BAS Contractor shall furnish the Owner with two (2) copies of all proprietary hardware and software needed to connect to, communicate with and command the BAS from both the front-end operator workstation and the field panels and controllers at no additional charge to the Owner. Use of hardware and software provided under this section may be limited to the duration of the Cx Process at the BAS Contractor’s discretion, but shall not be terminated until final completion of the Cx Process including resolution of all outstanding construction phase FONs issues and successful execution of Post-Occupancy phase commissioning activities.

B. Hardware and software covered under this requirement includes, but is not limited to:
1. Communication modules, software keys, and similar hardware needed for communication from a laptop computer or PDA to field panels or controllers

2. Proprietary cables required for communication between laptop computers or PDAs to field panels or controllers

3. Proprietary software needed to communicate to field panels or controllers such as HVAC Pro, Metasys, Commissioning Tool, etc.

4. Passwords, access levels and similar software permissions necessary for execution of the Cx Process.

5. Software and hardware manuals for all control system hardware and software provided to the Owner.

C. The BAS Contractor shall also provide technical support to the Owner as reasonably requested by the Owner regarding BAS hardware and software.

PART 3 - EXECUTION

3.1 PRE-FUNCTIONAL PROCEDURES

A. Scope [Note to AE: Edit this paragraph to be project-specific.]

1. The Pre-Functional Procedures (PFP) consists of a series of field observations conducted during the installation of commissioned equipment to verify the following:
   a. Installed equipment matches the specifications and approved submittals
   b. Equipment is installed per the specifications, drawings and manufacturer’s recommendations
   c. Utility connections to equipment, such as electrical, steam, chilled water, etc. have been successfully completed
   d. Equipment is ready for start-up

2. Complete at a minimum one (1) Pre-Functional Checklist for each major piece of equipment covered by the commissioning process such as pumps, fans, air handling units, control panels, switchgear, substations, and electrical distribution panels. The Owner reserves the right to reject incomplete PFCs (CCs) or otherwise questionable answers and at no additional cost to the Project may cause the Contractor to resubmit and/or complete PFCs / CCs for all related components and systems for that Division.

3. Additional checklists will be required to verify installation of distribution systems such as piping, ductwork, electrical wire and conduit, etc. The number of required Pre-Functional Checklists will vary from system to system, but will typically be limited to one form per system per floor or zone.

B. Pre-Functional Checklists [Note to AE: Edit this paragraph to be project-specific.]

1. A sample Pre-Functional Checklist is included in Exhibit 01 91 13-3, Sample Prefunctional Checklist. This sample form is provided for reference only to assist Contractors in preparing their bids for this project. The actual forms used on this project will be similar in scope and format to the sample form.

2. The Pre-Functional Checklists will be provided by the Owner after receipt of equipment Installation and Operation & Maintenance (IOM) Manuals from the Contractors (see paragraph entitled “Contractor Requirements” below).

3. A copy of all completed Pre-Functional Checklists completed that week shall be forwarded to the Owner at the end of that week. The completed originals shall be maintained on-site per the requirements of this specification, paragraph entitled “Commissioning Documentation”.

Issued for BID  GENERAL COMMISSIONING REQUIREMENTS

12.14.15 01 9113-9
C. Contractor Requirements

1. The Contractors shall provide Installation Operation and Maintenance (IOM) Manuals as noted in Section 01 78 23 - Operation and Maintenance Data.

2. The Contractors furnishing and/or installing the equipment being commissioned will be responsible for the execution of the Pre-Functional Procedures and accurate completion of the Pre-Functional Checklists for that equipment.

3. The Owner will provide oversight to the Contractors during the execution of the Pre-Functional Procedures and will periodically review the Contractors’ in-progress Pre-Functional Checklists for accuracy, completeness and to verify that checklists are being kept up-to-date.

4. The Contractors shall regularly review and update the appropriate Pre-Functional Checklists so that installation issues are identified early in the construction process. The Owner will periodically review the Contractor’s in-progress Pre-Functional Checklists to verify that they are current with the project status.

5. Issues observed during the PFPs will be immediately reported in accordance with the procedures outlined in this specification, paragraph entitled “Issue Resolution Log”.

6. PFPs shall be substantially complete, reviewed and accepted by the Owner prior to equipment start-up. Exceptions to this requirement will be at the Owner’s discretion.

7. Contractors shall regularly update their Contractor Commissioning Process Status Tracking System.

8. The Contractor shall furnish all tools, test equipment and instrumentation required for completion of the PFPs. All instruments shall meet the requirements of Part 2 of this specification.

3.2 CONTRACTOR PRE-STARTUP PROCEDURES

A. Scope

1. Commissioning activities and requirements related to Contractor/vendor pre-startup procedures are in addition to the testing requirements specified in other Divisions of these specifications. These do not reduce the Contractor’s responsibility for successfully completing and documenting all testing requirements outlined elsewhere in these specifications.

2. The goal of these activities is to help ensure that the specified testing is rigorously executed using sound test procedures and that all tests are thoroughly documented.

B. Contractor Pre-startup Documentation / Forms

1. The Contractor Pre-startup Procedures shall be documented using test forms which, at a minimum, will record the following information:

   a. Type of test or procedure being performed (hydrostatic leak test, megger test, in-wall inspections, etc.)
   
   b. System or equipment being tested
   
   c. Technician(s) performing the test or procedure
   
   d. Test or procedure date and time
   
   e. Detailed description of section of system being tested (if applicable)
   
   f. All data collected during the test or procedure to quantify test performance (static and differential pressures, test duration, electrical resistance, etc.)
g. Signature of technician(s) performing test or procedure
h. Signature of GC or CxA witnessing the test or procedure

2. Contractors and vendors may use their standard testing forms; providing these forms meet the requirements outlined above and have been previously reviewed and approved by the Owner.

3. All test forms will be fully completed and maintained by the Contractor per the requirements of this specification, paragraph entitled “Commissioning Documentation”.

4. All test forms will be promptly submitted to the Owner for review and acceptance upon completion of the respective test.

C. Contractor Requirements
   1. Prior to initiating any of the Pre-startup Procedures covered by this specification, the Contractor shall meet with the Owner to review the Contractor’s proposed test procedures and test forms.
   2. The Owner will provide oversight in Contractor’s test procedures and test forms.
   3. The Owner will witness selected Pre-startup Tests.
   4. All Pre-startup Tests must be witnessed by either the GC or the Owner. It is the Contractor’s responsibility to coordinate with the GC and Owner in advance of each test to ensure that the appropriate personnel will be available to witness the test. Tests which are not witnessed by the [CM/GC] or Owner are incomplete and shall be re-tested.
   5. Issues observed during the Contractor Pre-startup Procedures will be immediately reported to the GC and Owner in accordance with procedures outlined in this specification, paragraph entitled "Issue Resolution Log".
   6. All Contractor Pre-startup Procedures shall be substantially complete, reviewed and accepted by the Owner prior to equipment start-up. All exceptions to this requirement will be at the Owner’s discretion.
   7. Contractors shall regularly update their Contractor Commissioning Process Status Tracking System. The Owner will periodically review the Contractor’s in-progress test forms and tracking system.
   8. The Contractor shall furnish all tools, test equipment and instrumentation required for completion of the Pre-startup Procedures. All instruments shall meet the requirements of Part 2 of this specification.

3.3 START-UP PROCEDURES
A. Scope
   1. Commissioning activities and requirements related to Equipment Startup are meant to help ensure the following:
      a. Equipment installation and Pre-startup Testing has been fully completed and documented prior to startup.
      b. Startup procedures meet the equipment manufacturer’s recommendations.
      c. Startup activities are fully documented.
   2. Equipment Startup requirements covered by this section of the commissioning specification include the following:
      a. All commissioned equipment requiring startup by the equipment manufacturer, vendor or representative.
b. All rotating equipment including, but not limited to, pumps, fans, compressors, and generators with a motor or engine size greater than 3hp.

c. All electrical equipment including, but not limited to switchgear, substations, transformers and distribution panels operating at 208 Volts or greater.

B. Equipment Startup Plan

1. Prior to Equipment Startup, the responsible Contractor shall prepare and submit a written Startup Plan which will include the following:
   a. Personnel required for startup including vendors, other trades, etc.
   b. Prerequisites required for startup (utility connections, PFPs, Pre-startup Testing, and other as applicable)
   c. Startup procedures
   d. Forms to be used for documenting startup procedures

2. The equipment manufacturer’s standard startup procedures and forms should be used as the basis of the Contractor’s Startup Plan.

3. The Owner will review the Contractor’s proposed Startup Plan(s).

4. Startup of equipment shall be documented using Startup Forms, which have been previously reviewed and approved as part of the Contractor’s Startup Plan.

5. All Startup Forms will be fully completed and maintained by the Contractor per the requirements of this specification paragraph entitled “Commissioning Documentation”.

6. All Startup Forms will be submitted to the Owner for review and acceptance upon completion.

C. Contractor Requirements

1. The Cx team will, in a joint effort, coordinate and schedule startup activities. This will include the following:
   a. Ensuring that all PFPs and Contractor Pre-startup Testing are completed and documented prior to startup.
   b. Ensuring that all required utilities are available prior to startup.
   c. Ensuring that the appropriate personnel have been identified and scheduled to participate including vendors, manufacturer’s representatives, other trades, etc.
   d. Tools, test equipment and/or instrumentation required for startup will be available.

2. No unscheduled startups shall be allowed.

3. The Owner will witness selected startups to ensure that approved procedures are being followed and properly documented.

4. All Startup Procedures must be witnessed by the GC. The Owner may participate. It is the Contractor’s responsibility to coordinate with the GC and Owner in advance of each startup to ensure that the appropriate personnel will be available. Startup Procedures that are not witnessed by the GC or Owner are incomplete and shall be re-done.
5. Issues observed during execution of the Startup Procedures will be immediately reported to the GC and Owner in accordance with procedures outlined in this specification, paragraph entitled “Issue Resolution Log”.

6. Contractors shall regularly update their Contractor Commissioning Process Status Tracking System.

7. The Contractor shall furnish all tools, test equipment and instrumentation required for completion of the Startup Procedures. All instruments shall meet the requirements of Part 2 of this specification.

3.4 CONTRACTOR POST-STARTUP TESTING / PROCEDURES

A. Scope

1. Commissioning activities and requirements related to Contractor Post-startup Testing / procedures are in addition to the testing / procedures requirements specified in other Divisions of these specifications. These do not reduce the Contractor’s responsibility for successfully completing and documenting all testing / procedures requirements outlined elsewhere in these specifications.

2. The goal of these activities is to help ensure that the specified testing and procedures are rigorously executed using sound test procedures and that all tests are thoroughly documented.

B. Contractor Post-startup Procedure Reports

1. The Contractor Post-startup Testing / procedures shall be documented using test forms which, at a minimum, will record the following information:
   a. Type of test being performed (duct traverse, point-to-point checkout, etc.)
   b. System or equipment being tested
   c. Technician(s) performing the test
   d. Test date and time
   e. Detailed description of system or section of system being tested
   f. All data collected during the test to quantify test performance (pressures, flow rates, rpm, volts, amps, temperatures, etc.)
   g. Signature of technician(s) performing test
   h. Signature of GC or CxA witnessing the test (where applicable)

2. Contractors may use their standard testing / procedures forms; providing these forms meet the requirements outlined above and have been previously reviewed and approved by the Owner.

3. All test forms will be fully completed and maintained by the Contractor per the requirements of this specification, paragraph entitled “Commissioning Documentation”.

4. All test forms shall be promptly submitted to the Owner for review and acceptance.

C. General Requirements

1. Prior to initiating any of the Post-startup Testing / Procedures, the Contractor shall meet with the Owner to review the Contractor’s proposed test procedures and test forms.

2. The Contractor shall be responsible for successful completion and documentation of all specified Post-startup Testing / Procedures.
3. The Owner will provide oversight to the Contractors in developing their test procedures and test forms.

4. The Owner will witness selected Post-startup Tests / Procedures.

5. Issues observed during the Contractor Post-startup Testing will be immediately reported to the GC and Owner.

6. Contractors shall regularly update their Contractor Commissioning Process Status Tracking System.

7. The Contractor shall furnish all tools, test equipment and instrumentation required for completion of the Post-startup Testing / Procedures. All instruments shall meet the requirements of Part 2 of this specification.

8. The Contractor shall provide a written list of instrumentation which will be used for Post-startup Testing / Procedures indicating instrument make, model number, serial number, range, accuracy and calibration date to the Owner prior to the start of testing.

D. Test and Balance

1. Testing, Adjusting, and Balance Contractor (TAB) Requirements
   a. The TAB Contractor shall be responsible for successful completion and documentation of all TAB activities specified in Section 23 05 93 – Testing, Adjusting, and Balancing for HVAC and elsewhere in these specifications as appropriate.
   b. Thirty (30) Days prior to the start of TAB activities, the TAB Contractor shall submit proposed TAB Plan (procedures and documentation) to the Owner and AE for review.
   c. After this review, and prior to start of field work, the TAB Contractor will attend one or more planning meetings as required with the Commissioning Team to review and discuss outstanding issues relating to TAB procedures and forms, discuss resolution of issues identified during the TAB Contractor’s plan review and field inspections, and to coordinate field work.
   d. Prior to the start of field work, the TAB Contractor shall issue a final set of TAB procedures and TAB forms incorporating comments received from the Commissioning Team review.
   e. The TAB Contractor shall have at least one certified field technician on site whenever TAB work is being performed.
   f. The TAB Contractor shall notify the Commissioning Team a minimum of two (2) weeks in advance of the time for start of TAB work to allow the Owner and AE time to assess system readiness.
   g. The TAB Contractor shall coordinate with the controls Contractor to ensure that changes made to the control system during TAB (flow coefficients, duct areas, etc.) are archived and become the default or initial values for these parameters.
   h. The TAB Contractor shall provide daily lists of issues and/or problems identified during TAB work to the GC, Owner and AE for follow-up & resolution with the appropriate Contractors.
   i. Participate in verification of the TAB report, which will consist of repeating any selected measurement contained in the TAB report where required by the Owner for sampling or diagnostic purposes.
   j. TAB Contractor shall comply with the requirements listed in the Controls & Instrumentation paragraph below. The TAB Contractor shall coordinate with the controls Contractor to ensure that changes made to the control system during TAB (flow coefficients, duct areas, Temperatures, etc.) are archived and become the default or initial values for these
parameters. Both Preliminary Reports for approval and final TAB Reports shall provide physical evidence of Point-to-Point Checkouts (i.e., all DDC Points commands and responses reporting properly and values reflect calibrated adjustments. Final reported values, when accepted by the Owner, will serve as Functional Testing evidence.

k. The TAB Contractor will provide technicians and instrumentation to support the field verification.

l. Failure of an item during the TAB field verification is defined as:
   1) For all readings other than sound, a deviation of more than 10 percent.
   2) For sound pressure readings, a deviation of 3 decibels. (Note: variations in background noise must be considered).

m. A failure of more than 10% of the readings tested during the field verification shall result in the rejection of the final TAB report and require re-balancing of the system(s) in question (at no additional cost to the Project or the Owner).

E. Controls & Instrumentation System Testing

1. Prior to start of control system Functional Performance Procedures, the Contractor responsible for providing the Building Automation System (BAS) shall verify and document that all control systems are installed and operating properly including the following:

   a. Point-to-Point Checkout shall be completed and documented per the requirements in Sections 23 09 13 – Instrumentation and Control Devices for HVAC and 23 09 23 – Building Automation System (BAS) for HVAC and item 3 below.

   b. Control Sequence Checkout. Contractor shall verify that the control system programming matches the specified sequences of operation. For these checkouts, the Contractor shall simulate actual operating conditions for the various operating modes being tested (heating, cooling, etc) by false-loading systems, adjusting setpoints and similar techniques.

   c. Tune all Control Loops to obtain the fastest stable response without unreasonable hunting, offset or overshoot. Record tuning parameters and response test results for each control loop and provide trend reports to document results. Trend logs shall show both steady-state operation and response to setpoint changes.

   d. Test All Alarms and Safeties. Record all alarm parameters and alarm messages. Document all alarms and safeties have been tested and are functioning properly.

2. The Contractor responsible for the BAS shall work with the TAB Contractor(s) to make sure that changes to the BAS made during TAB, such as flow coefficients, flow setpoints and duct areas are permanently archived in the BAS and become the initial or default values for their respective controllers.

3. Point-to-Point Checkout Requirements

   a. Items described in this section apply to and augment the requirements of Sections 23 09 13 – Instrumentation and Control Devices for HVAC and 23 09 23 – Building Automation System (BAS) for HVAC.

      1) These procedures will verify the following for each physical control point:

         a) Field device is installed per the manufacturer’s recommendations and the project drawings and specifications.

         b) Field verify calibration of all analog inputs and outputs.
c) Verify labeling of controllers, field devices, and wiring.

d) Physical points are correctly addressed and communicating properly between its controller and the field device.

b. Detailed written procedures for execution of Point-to-Point Checkouts shall be submitted to the Owner and AE by the Contractor for review and approval prior to the start of testing. Include proposed test forms as part of this submittal.

c. The Contractor shall provide all tools and instrumentation necessary for execution of this testing. All instrumentation must be in calibration and meet the requirements of Part 2 of this specification.

d. The Owner reserves the right to field verify up to 20% of the Contractor’s Point-to-Point Checkout testing. The Contractor shall provide the technicians and instrumentation used for the original testing to assist the Owner with this field verification.

3.5 FUNCTIONAL PERFORMANCE PROCEDURES

A. Scope

1. Functional Performance Procedures (FPP) are executed after commissioned equipment and systems have been installed, started-up and balanced. The goal of these procedures is to verify that commissioned equipment, sub-systems and major systems operate and perform per the design intent and the project specifications.

2. The role of the Owner is to witness FPPs by documenting the performance. During this phase of Construction the systems are to have been fully contractor verified through all sequences and operations normal to the Project. The Owner is not responsible to help resolve non-performance and/or operating issues etc.

3. Equipment-level FPPs will be used to verify operation and capacity of selected equipment such as boilers, chillers cooling towers, pumps, exhaust fans, air handling units, etc.

4. System-level FPPs will verify the following aspects of system operation:

   a. System operation under both normal and alternate operating conditions and modes

   b. Interactions between equipment and sub-systems

   c. Operation of safeties and interlocks

   d. Control system operation, response time, stability and tuning

   e. System response to abnormal and/or emergency conditions such as fire, equipment failure and power outages

B. Contractor Requirements

1. In order for Functional Performance Procedures/tests to be recorded by the Owner for this project, ALL Installation O&M Manuals must have been submitted and approved.

2. The Cx team will, in a joint effort, coordinate and schedule FPP activities.

3. Scheduling of FPPs shall be contingent on notification from the affected Contractor(s) to the GC and Owner that equipment and systems are ready for checkout.

4. Other prerequisites for execution of FPPs shall include the following
a. All PFP's, Contractor Pre-startup Testing and Startup Procedures have been completed and documented
b. TAB has been completed
c. Field Observation Notes affecting equipment or system performance or operation have been resolved

5. Prior to claiming readiness for FPP, the controls Contractor shall ensure that the following items are completed, debugged, validated and forward all documentation:
   a. Point-to-point checkouts listing command and response values.
   b. Verify that network communication between all devices and systems is established
c. Sequence of Operation checkouts
d. Printed and annotated trend logs and histories establishing acceptable operation including:
   1) Stable control
   2) Recovery from upset/changes (e.g., from setback)
   3) Special and/or seasonal modes
   4) Emergency and alarm modes including loss/restoration of power

6. The Contractors providing and installing the equipment and systems being commissioned shall execute the FPPs.

7. FPPs on individual equipment shall be completed by the installing Contractor. FPPs on complete systems (i.e. chilled water system, hot water heating system, etc.) and sub-systems (i.e. terminal unit controls, etc.) shall be completed by the installing Contractor and the Contractor responsible for providing the BAS in collaboration.

8. The Owner will provide guidance and oversight to the Contractors during their execution of the FPPs and will witness a random sample portion of these procedures.

9. Contractor activities during FPP execution will include the following:
   a. Starting/stopping equipment
   b. Energizing/de-energizing electrical distribution gear
   c. Opening/closing valves and dampers
d. Manipulating BAS inputs, outputs and setpoints
   e. Setup, collection and downloading of BAS trend data
   f. Taking measurements and recording data and observed issues (deviations from the design documents) onto the FPP checklists.

10. Contractors shall conduct seasonal FPPs. This includes performing FPPs on equipment during the season it is intended to operate (i.e. test cooling equipment during the peak cooling season and test heating equipment during the peak heating season, etc.).

11. Tools, test equipment and instrumentation required for completion of the FPPs shall be provided by the Contractor except for special-purpose or proprietary tools, test equipment and instrumentation
which will be provided by the manufacturer of the equipment being tested. All instruments shall meet the requirements of Part 2 of this specification.

3.6 ISSUE RESOLUTION LOG

A. Scope

1. The Owner will maintain and periodically publish a separate Issue Tracking Report (ITRca), which will be used to document issues identified during the commissioning process. This ITRca will track the following information for each identified issue:
   a. Date issue was identified
   b. Issue priority (high, intermediate, low)
   c. Party responsible for issue resolution
   d. Issue description
   e. Actions taken to resolve issue
   f. Issue status (open, closed)
   g. Date issue was resolved

2. The Contractor(s) shall promptly respond to the ITR in writing concerning the status of each open issue identified as their responsibility during execution of the commissioning process. Contractor responses shall include the following information as appropriate:
   a. Explanations of any disagreements
   b. Actions taken to resolve issue
   c. Proposed actions including completion dates

3. The Prime Contractors, including their Sub-Contractors, vendors and suppliers are responsible for resolution of all issues identified during execution of the commissioning process.

4. Issues shall be resolved in a timely manner, typically within 72 hours of notification, to avoid impact to either the construction schedule or commissioning schedule.

B. Failure Due to Manufacturer Defect

1. If 2%, or ten, whichever is greater, of similar types of equipment from one manufacturer or supplier fail to perform to the Contract Documents (mechanically or substantively) due to manufacturing, handling, or similar defect, not allowing it to meet its submitted performance spec, all similar units may be considered unacceptable by the AE or Owner. In such case, the Contractor(s) shall provide the Owner with the following:
   a. Within one week of notification from the AE or Owner, the Contractor shall cause the manufacturer’s representative to examine 10% of other identical units making a record of the findings. The findings shall be provided to the AE and Owner within two weeks of the original notice.
   b. Within two weeks of the original notification, the manufacturer, through the Contractor, shall provide a signed and dated, written explanation of the issue, cause of failures, etc. and all proposed solutions, which shall include full equipment submittals. The proposed solutions shall not significantly exceed the specification requirements of the original installation.
2. The AE and Owner will determine whether a replacement of all identical units or a repair is acceptable.

3. Sufficient examples to allow adequate evaluation of the proposed solution will be installed by the Contractor. The Owner and AE will determine the performance prior to deciding whether to accept the solution.

4. After such procedures are performed and the results have been accepted as noted above, the Contractor and/or manufacturer shall replace or repair all identical items, at their expense and extend the warranty accordingly.

3.7 OPERATION AND MAINTENANCE MANUALS

A. General

1. The Contractor shall provide the Owner with comprehensive, project-specific manuals for the safe and effective Operation and Maintenance (O&M) of the systems and equipment listed, in this specification.

2. O&M Manual requirements included in other Sections of this Specification are in addition to, and do not replace, those required in this Section.

3. Provide (1) complete Electronic Set to the Owner. The format shall be PDF, and/or MS Word, MS Excel, MS Project. On CD Rom, or USB 2.0 drive, or DVD readable on Ms Office 2003 (and 2004 Office for MAC) compatible computers.

B. Submittals

1. Refer to Section 01 78 23 - Operation and Maintenance Data for submittal requirements.

C. Content: Note Section 01 78 23 provides a general listing of content requirements. As part of the Commissioning documentation, provide the following material:

1. Each chapter shall contain the following information in addition to the requirements specified elsewhere in these specifications.

   a. Contact list identifying vendors providing equipment and systems covered in the current chapter. This information shall include vendor name, address, name of contact person(s), phone numbers (including 24 hour service numbers where appropriate), fax numbers, and email addresses.

   b. Equipment/material schedule(s) for all covered equipment and systems showing equipment identification (tag) number, manufacturer, model number, serial number, quantities, area/system served, equipment location, etc.

2. References shall be made, as appropriate, to drawings, schematics, sequences of operation and other information included as part of the construction contract drawings and specifications that show distribution system layout, equipment arrangements and items of control.

3. All information included in the final O&M Manuals, including equipment schedules, manufacturer's literature, drawings, etc. shall represent the "as-built" condition.

4. Manufacturer's literature and other information provided in the O&M Manuals shall be for the actual equipment installed under contract for the particular facility. Where literature (standard product catalogs, cut-sheets, etc.) contains data pertaining to parts, equipment or options other than those specifically provided for this project, the Contractor shall clearly indicate the specific products, model numbers, and options provided. Mark-ups made by the Contractor for this purpose shall be made in a manner that will clearly photocopy (no highlighters).
5. Each chapter shall include the information required in the appropriate section of the specifications plus any additional information necessary for the Owner’s personnel to successfully operate and maintain the systems and equipment covered in that chapter.

6. Information to be provided in the Operation and Maintenance Manuals includes the following:
   a. Warranty information
      1) Provide copies of all warranty certificates from equipment manufacturers
      2) If not included on warranty certificate, provide the start/end dates of warranty period, descriptions of what is and isn’t covered and contact information for warranty claims (if different from contact list described above).
      3) Provide information of an operations or maintenance nature covering warranty items that have not been discussed elsewhere.
   b. Product Information.
      1) Provide manufacturers’ standard, published product literature describing covered materials, equipment and devices including illustrations, exploded views, dimensions, weights, application data, etc.
      2) Where manufacturer’s product information (catalog cut-sheets, etc.) contain data pertaining to parts, equipment or options other than those specifically provided for this project, the Contractor shall clearly indicate the specific products, model numbers, and options provided. Mark-ups made by the Contractor for this purpose shall be made in a manner that will clearly photocopy (no highlighters).
      3) Provide manufacturer’s standard, published Installation, Operation & Maintenance bulletins pertaining to the specific equipment installed.
      4) Provide performance curves and rating data, specific to the equipment installed on the project such as fan and pump curves, chiller selection sheets, sound data, etc.
      5) Provide a copy of all approved shop drawings covering approval of equipment for the project with the product information.
      6) Include all data concerning changes made during construction.
   c. Preventive Maintenance Procedures & Schedules
      1) Provide written preventive maintenance procedures describing each required PM task.
      2) Procedures shall include lists of tools and parts required and all safety precautions to be taken.
      3) State, preferably in tabular form, the recommended frequency for each preventive maintenance task (cleaning, inspection, lubrication, scheduled overhauls, etc.). Task schedules shall be grouped and sorted by frequency (daily, weekly, quarterly, annually, etc.)
      4) Procedures for lubrication of equipment shall indicate both the type and quantity of lubricant to be used.
         a) If periodic inspection of equipment is required for operation, cleaning, or other reasons, indicate the items to be inspected and give the inspection criteria.
b) Provide instruction for the proper handling, disposal and/or removal of hazardous or otherwise special materials such as used filters, refrigerant, oils, chemicals, etc.

c) Provide instruction for minor repairs or adjustments required for preventive maintenance routines. Minor repair and adjustment shall be limited to repairs and adjustments that may be performed without special tools or test equipment and that require no special training or skills. Identify test points and give values for each.

d. Corrective Maintenance Procedures

1) Corrective Maintenance: Corrective maintenance instructions shall be predicated upon a logical effect-to-cause troubleshooting philosophy and a rapid replacement procedure to minimize equipment downtime. Instructions and data shall appear in the normal sequence of corrective maintenance, for example, troubleshooting first, repair and replacement of parts second, and then the parts list.

2) Troubleshooting: This information shall describe the general procedure for locating malfunctions and shall give, in detail, any specific remedial procedures or techniques. The data shown are intended to isolate only the most common equipment deficiencies. Troubleshooting tables, charts, or diagrams may be used to present specific procedures. A guide to this type shall be a three-column chart. The columns shall be entitled Malfunction, Probable Cause, and Recommended Action. The information shall be alphabetically arranged by component, and each component shall, in turn, list deficiencies that may be expected. Each deficiency shall contain one or more problems with a recommended correction.

3) Repair and Replacement: Indicate the repair and replacement procedures most likely to be required in the maintenance of the systems and equipment. Information included here shall consist of step-by-step instructions for repair and replacement of defective items. Include all information required to accomplish repair or replacement, including information such as torque values. Identify all tools, special equipment, and materials that may be required. Identify uses for maintenance equipment. The paragraphs shall contain headings to identify the topics covered.

e. Spare Parts Lists.

1) Provide a list of all spare parts for the covered equipment. The parts list shall include a tabulation of descriptive data for each part including part number and manufacturer. Where available, provide an exploded diagram of the equipment identifying parts listed in the spare parts list.

2) Provide a list of recommended spare parts to be kept in inventory by the Owner’s maintenance staff for performance of preventive maintenance and typical corrective maintenance tasks.

f. System Descriptions:

1) Provide a typewritten narrative describing, in general terms, the covered equipment / system. Topics to be covered in this narrative shall include theory of operation, overall system layout, description of major components, interconnections with utilities and other systems, description of control system layout and operation, identification of unusual features or functions, and major safety precautions. This information should correlate with information provided in the manufacturers’ standard published literature.

2) Provide a list of recommended spare parts to be kept in inventory by the Owner’s maintenance staff for performance of preventive maintenance and typical corrective maintenance tasks.
a) Detailed illustrations and schematic diagrams of each system showing major components, piping, valves, controls, utility connections, and other components, where applicable.

b) Wiring and control diagrams with data to explain detailed operation and control of each component.

c) Control sequences describing start-up, all modes of operation, and shut down.

d) Corrected shop drawings.

e) Copies of approved certifications and laboratory test reports (where applicable).

g. Operating Instructions:

1) Provide condensed, typewritten, instructions for operation of the covered systems and equipment. Where more than one (1) common unit is installed, one set of instructions is adequate. The instructions shall provide procedures for:

a) Starting up the equipment/system.

b) Shutting down the equipment/system.

c) Normal operating procedures.

d) Procedures for operating the equipment / system in emergency or unusual conditions.

e) Safety precautions.

f) Procedures for both short-term and long-term equipment lay-up.

g) Other pertinent data applicable to the operation of particular systems or equipment.

h) The instructions shall be suitable for posting adjacent to the equipment.

h. Factory Test Reports

1) Provide copies of factory test reports specified in the covered section of the specifications.

2) Test reports should include a brief description of the test procedures used, test date, names of personnel performing test, names of personnel witnessing test (if any), test results and comparison of test results with specified acceptance criteria.

i. Field Test Reports

1) Provide copies of field test reports specified in the covered section of the specifications. Samples of field testing include, but are not limited to, leak testing of piping and ductwork and megger testing of electrical distribution systems.

2) Test reports shall clearly indicate the type of test performed, test procedures used, system being tested, section or area of equipment being tested, date of test, signatures of personnel performing and witnessing the test, test results and comparison of test results with specified acceptance criteria.

j. Posted Operating Instructions and Diagrams:

1) Operating Instructions:
a) Where specified, copies of operating instructions shall be posted in the near vicinity of each piece of applicable equipment. The instructions shall be mounted neatly in frames under Plexiglas, where they can be easily read by operating personnel. Instructions mounted outdoors shall be suitably protected from weather.

b) Coordinate with owner regarding size and location of posted operating instructions.

2) Systems Diagrams:

a) Simplified one (1) line diagrams of the systems listed in the attached O&M Manual Matrix shall be developed and posted neatly under Plexiglas in the main or most appropriate equipment room for easy reference by operating and maintenance personnel.

b) These drawings shall be done in a professional manner, which is acceptable to the Owner’s Facility Management staff. The diagrams shall show each component including all valves installed in the system, with name and identifying number. If space does not permit valve numbers on the diagrams, valve charts shall be provided. Explanatory Coordinate with owner regarding locations of posted operating instructions.

c) Coordinate with owner regarding locations of posted operating instructions.

d) These diagrams shall be suitable for reduction in size and use in the operating manual system descriptions previously covered.

3.8 OPERATION AND MAINTENANCE TRAINING

A. General

1. The Contractor shall train the Owner’s personnel in the operation and maintenance of systems and equipment listed in this Section and as mentioned in other sections.

2. The required training and demonstration required in the technical sections of the specifications is supplemental or in addition to the training required in this Section (where not a duplication).

3. Refer to Section 01 79 00 – Demonstration and Training for specific training requirements.

3.9 ACCEPTANCE

A. Satisfactory completion and documentation of the Commissioning Activities described in this specification shall be considered prerequisites for system acceptance.

B. At no time will acceptance be made for individual pieces of equipment. Final acceptance will only be for systems that will operate as intended in the basis of design and the design intent.

END OF SECTION
SECTION 02 4100 - DEMOLITION

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Selective demolition of built site elements.
B. Selective demolition of building elements for alteration purposes.
C. Abandonment and removal of existing utilities and utility structures.

1.2  RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor’s use of site and premises.
B. Section 01 1000 - Summary: Sequencing and staging requirements.
C. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.
D. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
E. Section 01 5639 - Temporary Tree and Plant Protection
F. Section 01 5713 - Temporary Erosion and Sediment Control.
G. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.
H. Section 01 7700 - Closeout Procedures
I. Section 01 7419 - Construction Waste Management and Disposal: Limitations on disposal of removed materials; requirements for recycling.
J. Section 31 1000 - Site Clearing: Vegetation and existing debris removal.
K. Section 31 2200 - Grading: Topsoil removal.
L. Section 31 2200 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
M. Section 02 8200 Asbestos: Other hazardous material remediation and abatement.

1.3  REFERENCE STANDARDS


1.4  SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Site Plan: Showing:
   1. Vegetation to be protected.
   2. Areas for temporary construction and field offices.
C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
2. Identify demolition firm and submit qualifications.

3. Include a summary of safety procedures.

4. NESHAPS Notification: Submit a copy of the National Emissions Standard for Hazard Air Pollutants (NESHAP) Notification Form. Contractor shall be responsible for submitting this notification form to the appropriate regulatory agencies.

D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

E. The Contractor shall submit utility service termination certificates, copies of demolition notices, and permits to the Architect/Engineer or Owner’s Representative prior to removal.

F. The Contractor shall submit demolition procedures and operational sequence for review and acceptance by the Architect/Engineer or Owner’s Representative if a portion of the existing facility is to remain in operation during construction and phasing is not specified in the plans or specifications.

G. Schedule indicating proposed sequence of operations for selective demolition work to Architect/Engineer or Owner’s Representative for review prior to start of work. Include coordination for shutoff, capping, and continuation of utility services as required, together with details for dust and noise control protection.

1.5 QUALITY ASSURANCE

A. Demolition Firm Qualifications: Company specializing in the type of work required.

1. Minimum of 5 years of documented experience.

PART 2 PRODUCTS

2.1 MATERIALS

A. Fill Material: As specified in Section 31 2200 - Grading.

PART 3 EXECUTION

3.1 SCOPE

A. Remove the entire building designated on sheets A001.

B. Remove paving and curbs as required to accomplish new work.

C. Remove concrete slabs on grade within site boundaries.

D. Remove manholes and manhole covers, curb inlets and catch basins.

E. Remove other items indicated, for salvage, relocation, recycling, and reuse.

F. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 2200.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with other requirements specified in Section 01 7000.

B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.

1. Obtain required permits.

2. Comply with applicable requirements of NFPA 241.
3. Use of explosives is not permitted.

4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.

5. Provide, erect, and maintain temporary barriers and security devices.

6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.

7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.

8. Do not close or obstruct roadways or sidewalks without permit.

9. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.

10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

C. Do not begin removal until receipt of notification to proceed from Owner.

D. Do not begin removal until built elements to be salvaged or relocated have been removed.

E. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

F. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

G. If hazardous materials are discovered during removal operations, stop work and notify Architect/Engineer and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB’s, and mercury.

H. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Comply with requirements of Section 01 7419 - Waste Management.
   2. Dismantle existing construction and separate materials.
   3. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

I. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

J. Accurately record locations of capped utilities and subsurface obstructions on the Contractor’s record drawing set.

K. In removing pavement, curb, curb and gutter, gutters, sidewalks, and other similar improvements, and where a portion of such improvements are to be left in place, they shall be removed to an existing joint or to a joint sawed to a minimum depth of 1 inch (25 mm) with a true line and a vertical face. Sufficient removal shall be made to provide for proper grade and connections in the new work regardless of any limits which may be indicated on the Plans.
L. Existing castings and culverts, if salvageable and removed intact, shall remain the property of the Owner. The Contractor shall use reasonable care in their removal and shall leave on the Owner’s property if owned privately or arrange pickup by the appropriate agency if owned publicly.

M. All sewers, drainage pipe, and floor drains which have been or are to be abandoned shall be permanently sealed at the ends with bulkheads constructed of concrete, having a minimum thickness of 8 inch (200 mm). No direct payment will be made for blocking abandoned sewers, drainage pipes, or floor drains.

N. Abandon storm or sanitary sewer structures by breaking the concrete bottom of the structure into pieces no larger than 1 foot (300 mm) in any direction and removing the top of the structure to 3 feet (900 mm) below finished grade. Plug all pipes with concrete and fill structure with compacted sand or 3/4 inch (19 mm) clean gravel.

3.3 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

I. Contractor is responsible for the adjustment of all gas vents, manholes, castings, and water valves to match the new surface. Adjustments shall be coordinated with the utility companies and the cost for all adjustments shall be incidental to construction. Any damage to said structures and appurtenances, that occurs during construction, shall be repaired by the Contractor at no additional cost to the Owner.

3.4 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.

1. Verify that construction and utility arrangements are as shown.

2. Report discrepancies to Architect/Engineer before disturbing existing installation.

3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.

1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000 in locations indicated on drawings.
C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
   2. Remove items indicated on drawings.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. See Section 01 1000 for other limitations on outages and required notifications.
   4. Verify that abandoned services serve only abandoned facilities before removal.
   5. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

3.5 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Remove from site all materials not to be reused on site; comply with requirements of Section 01 7419 - Waste Management.

C. Leave site in clean condition, ready for subsequent work.

D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION
SECTION 02 4119 - SELECTIVE STRUCTURE DEMOLITION

PART 1  GENERAL

1.1  RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2  SUMMARY

A. This Section includes the following:

1. Demolition and removal of selected portions of building or structure.
2. Demolition and removal of selected site elements.
3. Salvage of existing items to be reused or recycled.

B. Related Sections include the following:

1. Division 01 Section "Summary" for use of premises and Owner-occupancy requirements.
2. Division 01 Section "Temporary Facilities and Controls" for temporary construction and environmental-protection measures for selective demolition operations.
3. Division 01 Section "Cutting and Patching" for cutting and patching procedures.
4. Division 01 Section "Construction Waste Management and Disposal" for disposal of demolished materials.
5. Division 31 Section "Site Clearing" for site clearing and removal of above- and below-grade improvements.

1.3  DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4  MATERIALS OWNERSHIP

A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner’s property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.5  SUBMITTALS

A. Qualification Data: For demolition firm.

B. Schedule of Selective Demolition Activities: Indicate the following:
1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner’s on-site operations are uninterrupted.

2. Interruption of utility services. Indicate how long utility services will be interrupted.

3. Coordination for shutoff, capping, and continuation of utility services.

4. Use of elevator and stairs.

5. Locations of proposed dust- and noise-control temporary partitions and means of egress.

6. Coordination of Owner’s continuing occupancy of portions of existing building and of Owner’s partial occupancy of completed Work.

7. Means of protection for items to remain and items in path of waste removal from building.

C. Predemolition Photographs or Videotapes: Show existing conditions of adjoining construction and site improvements, including finish surfaces, that might be misconstrued as damage caused by selective demolition operations. Comply with Division 01 Section "Photographic Documentation." Submit before Work begins.

1.6 QUALITY ASSURANCE

A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.

B. LEED Requirements for Building Reuse:

1. Credit MR 1.3: Maintain existing interior nonstructural elements (interior walls, doors, floor coverings, and ceiling systems) not indicated to be demolished; do not demolish such existing construction beyond indicated limits.

C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

D. Standards: Comply with ANSI A10.6 and NFPA 241.

E. Predemolition Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to selective demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be selectively demolished.

2. Review structural load limitations of existing structure.

3. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.

4. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

5. Review areas where existing construction is to remain and requires protection.

1.7 PROJECT CONDITIONS

A. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

B. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. Hazardous materials will be removed by Owner before start of the Work.

2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Owner will remove hazardous materials under a separate contract.

C. Storage or sale of removed items or materials on-site is not permitted.

D. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Maintain fire-protection facilities in service during selective demolition operations.

1.8 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

1.9 P2 PRODUCTS (NOT USED)

PART 3 EXECUTION

2.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
   1. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

G. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

2.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
   1. Comply with requirements for existing services/systems interruptions specified in Division 01 Section "Summary."

B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.
   1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. Arrange to shut off indicated utilities with utility companies.

3. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

5. Where entire wall is to be removed, existing services/systems may be removed with removal of the wall.

2.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities and Controls."

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.

2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.

4. Cover and protect furniture, furnishings, and equipment that have not been removed.

5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."

C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

1. Strengthen or add new supports when required during progress of selective demolition.

2.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.

2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.

4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

5. Maintain adequate ventilation when using cutting torches.

6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.

7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.

8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

9. Dispose of demolished items and materials promptly. Comply with requirements in Division 01 Section "Construction Waste Management and Disposal."

B. Reuse of Building Elements: Project has been designed to result in end-of-Project rates for reuse of building elements as follows. Do not demolish building elements beyond what is indicated on Drawings without Architect's approval.

C. Removed and Reinstalled Items:
   1. Clean and repair items to functional condition adequate for intended reuse. Paint equipment to match new equipment.
   2. Pack or crate items after cleaning and repairing. Identify contents of containers.
   3. Protect items from damage during transport and storage.
   4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

2.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete: Demolish in small sections. Cut concrete to a depth of at least 3/4 inch (19 mm) at junctures with construction to remain, using power-driven saw. Dislodge concrete from reinforcement at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated for selective demolition. Neatly trim openings to dimensions indicated.

B. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals, using power-driven saw, then remove concrete between saw cuts.

C. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, then remove masonry between saw cuts.

D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break up and remove.
E. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI-WP and its Addendum.
   1. Remove residual adhesive and prepare substrate for new floor coverings by one of the methods recommended by RFCI.

2.6 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner’s property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.
   1. Do not allow demolished materials to accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
   4. Comply with requirements specified in Division 01 Section "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner’s property and legally dispose of them.

2.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION
UIUC - CERL Main Building Addition
UIUC Project No. U13024
Issued for BID

SECTION 02 8200 - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 INTRODUCTION

A. Asbestos abatement and related support work is required to follow IEPA, NESHAP, and applicable OSHA rules. This specification is intended to provide for the removal of friable asbestos containing materials along with any targeted Category I or II non-friable asbestos-containing materials that may become friable during renovation or demolition operations. Abatement of specific materials is specified herein and detailed on the Asbestos Abatement Plan (ASB100).

1.2 DEFINITIONS:

A. In addition to the terms listed below, all definitions in the laws and regulations listed in Section 1.5 are incorporated by reference, whether or not restated herein.

B. Abatement Contractor (AC) means the entity responsible for performing the work in this section, and has the training and accreditation to competently perform the work. This entity will obtain and maintain licenses required for the work specified in this document.

C. Asbestos Abatement Supervisor, hereinafter referred to as Asupervisor@ means any person who supervises asbestos abatement workers. This person must be trained, accredited, and must meet OSHA Acompetent person@ criteria for asbestos abatement.

D. Environmental Project Manager (EPM) is the on-site environmental manager performing the environmental monitoring.

E. HEPA Filter means a High Efficiency Particulate Air filter capable of trapping 99.97% percent of particles greater than 0.3 micrometers in mass median aerodynamic equivalent diameter.

F. IDPH means the Illinois Department of Public Health.

G. IEPA means the Illinois Environmental Protection Agency.

H. MSDS means Material Safety Data Sheet, required by OSHA for any substances which are toxic, caustic, or otherwise hazardous to workers.

I. Plasticize means to apply plastic sheeting over surfaces or objects to protect them from contamination or water damage.

J. PPE (Personal Protection Equipment) means the protective suits, head and foot covers, gloves, respirators and other items used to protect persons from asbestos or other hazards.

K. Work Area means the area or areas where asbestos abatement is being conducted.

1.3 WORK INCLUDED

A. The work includes all labor, equipment, materials, and supplies necessary to perform the Scope of work in the Documents by the procedures or performance standards described herein. The contractor, by submitting a bid for the work, represents itself as knowledgeable and expert in the performance of the work, and includes all things usually and customarily necessary to provide a complete and finished job, whether specifically mentioned or not.

B. Removal of friable and non-friable asbestos-containing materials listed in the Documents, including isolating the work areas, protection of adjacent areas, cleanup, proper packaging and disposal of wastes, and all other steps necessary to complete the scope of work.

C. Compliance with all applicable laws, regulations, standards, and these specifications. In the case of a conflict, the contractor will comply with the most stringent.
D. All licenses, accreditations, permits, fees, notifications, reports, or other documents required by law, regulation, this specification, or the Documents.

E. Provide project closeout documentation to the Environmental Project Manager (EPM) within thirty days (30) days after final clearance. This documentation shall include, but is not limited to, items listed in paragraph 1-7, Submittals.

1.4 LAWS, REGULATIONS AND STANDARDS

A. The following laws, regulations, and standards are incorporated by reference:


3. 29 CFR 1926 US OSHA Construction Standards

4. 29 CFR 1926.1101 US OSHA Asbestos Construction Standards


1.5 ASSESSMENT, MONITORING, TESTING AND ANALYSIS

A. Carnow Conibear & Assoc., Ltd. (Carnow Conibear) will perform inspection and testing services prior to the start of work. The EPM will perform all testing, inspection, and monitoring services during the work and upon its completion:

1. Prior to the start of the work
   a. The EPM shall collect background air samples before conditions are disturbed. Background samples will be analyzed by PCM.

2. During the work, the EPM shall:
   a. Observe the work periodically, with sufficient frequency to ensure contractor compliance.
   b. Assure that all personnel and visitors have the proper current medical screening, respirator fit test, and training for their respective duties prior to entering a regulated area.
   c. Collect air samples in and around the work area, as needed, to verify exposure conditions.
   d. The EPM may stop the work if airborne asbestos concentrations at the work area perimeter exceed 0.01 f/cc. Contractor will be responsible for taking corrective action to reduce exposure levels and prevent recurrence; cleaning adjacent areas that become contaminated by the asbestos abatement activities.

3. Upon completion of the work:
   a. The EPM will visually inspect for visible debris and confirm completion of the scope of work. Contractor shall be required to re-clean the area or portions of areas until no visible debris remains.
   b. Final aggressive clearance samples (PCM) will be collected by EPM.
B. The Contractor shall provide OSHA compliance air monitoring to determine exposures to its employees in accordance with OSHA 29 CFR 1926.1101. Contractor shall contract directly with Environmental Consultant, Carnow, Conibear & Assoc., Ltd for the collection and analysis of OSHA compliance air monitoring. Frequency of monitoring will comply with OSHA requirements for the anticipated and actual exposure levels.

1. A written Exposure Assessment prior to the start of the work to determine the requirements for respiratory protection and frequency of OSHA monitoring for each type of activity. The contractor should note that a Negative Exposure Assessment (NEA) may be possible for these tasks.

2. Analysis may be performed on site.

C. Credentials required for testing and analysis of PCM air samples:

1. Accreditation by AIHA or AAR; or
2. Participation in the Proficiency Analytical Testing (PAT) program.
3. Certification of qualification to read samples on site when on site analysis is conducted.

1.6 SUBMITTALS BY THE CONTRACTOR:

A. NESHAP notification to the Illinois EPA Asbestos Notification on revised form, including inspector name and license no. and landfill permit no.

1. Notifications shall be submitted at least 10 working days prior to start of abatement

2. Notification shall also be submitted to the IDPH at least 2 working days prior to the start of abatement for if quantities are equal or greater than 3 square feet or 3 linear feet or more, but less than 260 linear feet or 160 square feet.

3. Evidence that all contractor employees in the work areas are trained and accredited in accordance with OSHA, NESHAP, and EPA MAP requirements:
   a. Initial training certificate.
   b. Current Annual refresher training certificate.
   c. Current IDPH asbestos license.
   d. Current physician's written opinion
   e. Current respirator fit test for negative pressure respirators when respirators are used.
   f. Copy of OSHA Exposure Assessment, if available.
   g. OSHA compliance air monitoring records generated during the project.
   h. Waste Shipment Records.
   i. Worker license and certification log, supervisors written daily log(s), and all site documentation of personnel.
   j. Material Safety Data Sheets (MSDS) for chemicals used on site.
   k. Work Plan and Schedule.
PART 2 - PRODUCTS

2.1 TOOLS AND EQUIPMENT. ALL EQUIPMENT SHALL AT LEAST CONFORM TO MINIMUM INDUSTRY STANDARDS:

A. Equipment:
   1. Respirators shall be NIOSH approved for use with lead, asbestos, or other contaminants anticipated in the work.
   2. Contractor is fully responsible for complying with OSHA rules for other Safety equipment, such as hard hats, safety harnesses, eye protection, gloves, footwear, and any other safety devices used on the site.

B. Tools:
   1. Power tools such as, but not limited to, saws, pneumatic chisels, brushes, sanders, and needle guns shall be equipped with shrouds and HEPA-filtered local exhaust systems, or water spray systems, to minimize airborne release of particles.

2.2 MATERIALS

A. Installed materials which become a part of the work such as, but not limited to, encapsulants shall be of good quality, non-lead-bearing, free of asbestos, and conform to the respective reinstallation specification sections.
   1. Contractor shall ensure that encapsulants and sealants used as primers, basecoats, or covering existing materials are compatible with the respective existing or reinstallation materials and their manufacturers' warranties.

B. Abatement materials
   1. Poly sheeting for all applications shall be 6 mil nominal thickness.
   2. Tape shall be 2” or 3” duct tape or other waterproof tape suitable for joining poly seams and attaching poly sheeting to surfaces.
   3. Spray adhesives shall be non-flammable and free of methylene chloride solvents.
   4. Disposal bags shall be 6 mil.
   5. Disposable suits, hoods, and foot coverings shall be TYVEK or similar.
   6. Solvents shall be compatible with any primers, mastics, adhesives, paints, coatings, or other surfacing materials to be installed following their use.

PART 3 - EXECUTION

3.1 EMPLOYEE TRAINING, QUALIFICATION AND MEDICAL SCREENING

A. Supervisors and Workers shall be trained, accredited, and licensed in accordance with IDPH rules:
   1. Contractor shall keep copies of licenses, initial training course certificate, and most recent annual refresher training certificate at the jobsite at all times for all contractor personnel.
   2. A supervisor (competent person) shall be present at the work site at all times when work under this section is being conducted.

B. Medical Screening. All contractor personnel shall have a current medical examination in accordance with OSHA requirements. Copies of the Physician=s Written Opinions shall be kept on site.
3.2 PERMISSIBLE EXPOSURE LIMITS

A. The OSHA permissible exposure limit (PEL) for worker exposure to airborne fibers is 0.1 f/cc as an 8-hour time-weighted average (TWA).

B. The OSHA short term excursion limit (STEL) for worker exposure to airborne fibers is 1.0 f/cc for a 30 minute sample.

3.3 EXPOSURE ASSESSMENT AND MONITORING

A. The Contractor shall make a written assessment of the airborne exposures. Assessment shall conform with OSHA requirements and may be based upon:
   1. Initial monitoring of representative workers who the contractor believes are exposed to the greatest airborne concentrations of asbestos, or
   2. Past monitoring (within the past 12 months) or objective data for conditions closely resembling the processes, type of material, control methods, work practices and environmental conditions to be used for this Documents, or
   3. In the absence of a written exposure assessment the contractor shall perform the work in a full negative pressure containment with Type C pressure-demand respirator with auxiliary SCBA escape bottle.

B. The contractor shall perform personal monitoring in accordance with the following requirements:
   1. Initially, to establish an exposure assessment when past monitoring or objective data are not available for an initial determination.
   2. Daily, if the exposures are, or are expected to be, above the PEL of 0.1 f/cc.
   3. Periodically if the exposures are, or are expected to be, below the PEL.
   4. Whenever there has been a change of equipment, process, control, personnel, or a new task has been initiated that may affect employee exposures, the exposure assessment shall be updated, and monitoring shall be reinstituted if exposures are unknown or are expected to exceed the PEL.
   5. Area Monitoring is required at the perimeter of the work area to verify that exposures to adjacent areas are below the PEL.

3.4 RESPIRATORY PROTECTION

A. Respiratory protection shall be worn by all persons potentially exposed to airborne asbestos fibers above the limits shown on the following chart.

<table>
<thead>
<tr>
<th>TASK</th>
<th>Exposure Limit</th>
<th>Respirator Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA Class I (friable)</td>
<td>&lt; 1.0 f/cc</td>
<td>PAPR</td>
</tr>
<tr>
<td></td>
<td>&gt; 1.0 f/cc</td>
<td>Type C Pressure Demand with auxiliary SCBA</td>
</tr>
<tr>
<td>OSHA Class II (non-friable)</td>
<td>&lt; 0.1 f/cc</td>
<td>Recommended, but not required</td>
</tr>
<tr>
<td></td>
<td>&lt; 1 f/cc</td>
<td>1/2 mask APR</td>
</tr>
<tr>
<td></td>
<td>&lt; 5 f/cc</td>
<td>Full face APR when quantitatively fit-tested</td>
</tr>
<tr>
<td></td>
<td>&lt; 10 f/cc</td>
<td>PAPR</td>
</tr>
<tr>
<td></td>
<td>&lt;100 f/cc</td>
<td>Type C Pressure Demand</td>
</tr>
<tr>
<td></td>
<td>&gt;100 f/cc</td>
<td>Type C Pressure Demand with auxiliary SCBA bottle</td>
</tr>
</tbody>
</table>
Any Class work without an OSHA-compliant Exposure Assessment

unknown

Type C Pressure Demand with auxiliary SCBA bottle

B. Contractor shall have a written respiratory protection program in accordance with OSHA 29 CFR 1910.134, including but not limited to, medical screening, semi-annual (every 6 months) fit testing, training, cleaning and maintenance.

C. Respirators shall not be removed while in the work area.

D. Only NIOSH-approved respirators shall be used.

E. Authorized visitors shall be provided with suitable respirators when respirators are required.

F. Additional respiratory protection, such as organic vapor cartridges, may be needed when handling some solvents, coatings, or stripping products. Consult the MSDS, manufacturer, or industrial hygienist, and obtain the proper filters and usage as necessary.

3.5 HYGIENE PRACTICES

A. Eating, drinking, smoking, chewing gum or tobacco, and applying of cosmetics are not allowed in the work area.

B. All persons entering the work area shall wear appropriate PPE when exposures are above the PEL, and shall follow the entry and exit procedures posted in the Personnel Decontamination Enclosure System.

C. Personal Protection Equipment (PPE) shall include:
   1. Full body disposable suits, headgear, and footwear.
   2. Gloves.
   3. Hard hats.
   4. Non-disposable footwear and clothing, which remain in the work area and shall be decontaminated or disposed of as contaminated waste when the job is completed.
   5. Authorized visitors shall be provided with suitable PPE when PPE is required in the work area. The EPM and Contractor shall assure that visitors have proper and current medical screening and fit test (for negative pressure respirators), and awareness training or other appropriate training.
   6. PPE is required when exposures are, or are expected to be above the PEL.

D. Personnel Decontamination Facility is required for this project and shall be attached to the work area when friable materials are removed or when non friable materials may become friable during the removal process.
   1. Establish a negative pressure of at least 0.02 WC between the dirty equipment room and adjacent spaces, including the clean room. Assume NAMs operate at 80% design capacity.
   2. Provide at least 4 air changes per hour within the regulated work area.

E. When exposures are below the PEL, protective disposable suits are recommended, but not required. To exit, persons shall HEPA-vacuum down clothing at the work area entry, and leave the work area. When disposable suits are used, they shall be HEPA-vacumed, stripped off, and deposited in an asbestos disposal bag. Personnel may then leave the work area.
3.6 PROHIBITED ACTIVITIES

A. Dry removal or dry sweeping, except:
   1. During freezing weather. In this case, temperature and weather conditions must be recorded at the start, during, and at the end of the shift.
   2. On roofs with 3:1 slope or greater. In this case, roofing shall be removed in an intact condition, as much as possible.
   3. For roofing areas of less than 25 square feet.
   4. When equipment damage or other hazard exists. In this case, written permission from IEPA is required prior to performing dry removal.

B. Use of compressed air for cleaning.

C. Use of high speed power tools NOT equipped with a HEPA-filtered local exhaust or water spray system.

D. Eating, drinking, smoking, chewing gum, or applying cosmetics in the work area.

E. Removing respirators or other PPE in the work area.

3.7 WORK AREA ISOLATION AND PREPARATION

A. General Preparation (Containment)
   1. Post OSHA asbestos warning signs at entrances to the work area.
   2. Perform all asbestos abatement within a negative pressure work enclosure with attached worker decontamination enclosure system and separate waste decontamination enclosure system.
   3. 6 mil plastic sheeting shall be placed over the ground, foundation, or other surfaces below or adjacent to the abatement area.
   4. Unauthorized entry shall be prevented by using appropriate barriers, such as warning tape, fencing, or other suitable barriers.
   5. All electric power in the work area shall be protected with Ground-Fault Circuit Interrupters.

3.8 ABATEMENT PROCEDURES

A. General Removal Requirements:
   1. Asbestos materials shall be wetted and kept wet during removal.
   2. ACM shall be bagged or containerized as it is removed. Wastes shall not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it shall be lowered via covered, dust-tight chute, crane, hoist, or other means that prevent the wastes from being dropped or thrown.
   3. Appropriate OSHA fall protection shall be provided when appropriate:
      a. scaffolding more than one section high shall be equipped with handrails and midrails designed to provide fall protection, or full-body safety harnesses shall be worn and tied off to a secure anchor point.
      b. Workers in manlifts shall wear full body harnesses and tie to the tie-off point provided on the manlift basket whenever the basket is elevated from ground level.
c. Personal fall protection consisting of full body harnesses, lanyards, and OSHA-compliant lifelines, anchorage, and deceleration devices shall be provided whenever personnel are within 6 feet of an opening, hole, or edge where there is a risk of falling 6 feet or more.

B. Roofing

1. General: Remove in an intact state to the extent feasible. ACM roof mastics, cements, underlayments, and flashings. Asbestos-containing shingles may occasionally break even when removed carefully. The fact that otherwise intact roofing materials become separated or broken does not by itself render them non-intact. However, if they become pulverized, reduced to powder or dust, they have become non-intact.
   a. The contractor shall take care to minimize the amount of roofing material damage, or;
   b. If the materials are rendered non-intact, the AC shall employ methods to contain the dust and debris and utilize hygiene practices appropriate for friable (OSHA Class I) ACM, including PPE, decontamination units, and monitoring. Monitoring may include area samples at the work area perimeter to determine that airborne asbestos fibers are not being released in concentrations above the PEL.

2. Built-up roofing and asphalt shingles:
   a. Power cutting machines shall be equipped with a HEPA-filtered dust collection system and shall be misted during use.
   b. Dust generated by the cutting operation shall be collected with HEPA vacuums or wet cleaning methods.

3. Rigid roofing materials, such as cement asbestos shingles: remove intact and minimize breakage.

C. Transite, Galbestos sheeting (galvanized metal with a baked-on asbestos paint), Asbestos/Cement pipe, or other rigid panels shall be removed using wet methods if cutting of transite is necessary.

D. Other

1. Coatings, electric cable insulation or joint coverings, and other miscellaneous materials that are to be removed with the substrate or that can be removed without becoming friable may be removed as intact (OSHA Class II, EPA NESHAP Category I or II non-friable) in accordance with procedures described in the General and Roofing Sections 3.8 A. and C.

2. Coatings, and other miscellaneous materials that must be removed from the substrate or that otherwise will become friable must be removed as non-intact (OSHA Class I, EPA NESHAP friable) in accordance with procedures described in General and Roofing Sections herein.

3.9 CLEANING AND DECONTAMINATION

A. All visible accumulations of ACM, debris, tools, and unnecessary equipment shall be removed from the work area.

B. Protective poly shall be folded in on itself, rolled up, placed in asbestos disposal bags, and disposed as asbestos waste.

C. Surfaces which have been exposed to friable ACM or its dust shall be wet cleaned and HEPA vacuumed.

D. Dry sweeping of surfaces which have been exposed to friable ACM or its dust is not permitted.
3.10 FINAL CLEARANCE

A. Cleaning may be discontinued when there is no visible debris and area air monitoring verify that exposures are below the PEL.

B. Final clearance samples for any negative pressure work enclosure will be collected by the EPM. The response action shall be considered complete when clearance air samples analyzed by Phase Contrast Microscopy are <0.01 f/cc.

3.11 WASTE DISPOSAL AND EQUIPMENT LOAD-OUT

A. Category I and II non-friable waste may be adequately wetted, double bagged and loaded into lined, enclosed receptacles, such as dumpsters or trailers. Receptacles shall be closeable and lockable to provide security and to prevent air emissions.

B. Packaged all asbestos wastes (RACM):
   1. Asbestos-containing wastes, including removed ACM and debris, poly, critical barrier materials, suits, respirator filters, vacuum HEPA filters, water filters, and other asbestos-containing items shall be properly packaged for disposal.
   2. Use 6 mil plastic bags with a gooseneck seal, or other impermeable containers.
   3. Wrap large or irregular items in 6 mil poly sheeting and seal with tape.
   4. Sharp, jagged, or other items that may puncture poly shall be packaged in rigid impermeable containers such as drums or boxes, or wrapped in burlap or other protective covering before sealing in bags or poly sheeting.
   5. Label containers for friable ACM waste:
      a. OSHA warning label.
      b. DOT performance-oriented hazardous material label.
      c. Name and address of generator and abatement location.

C. Removing items from the work area:
   1. Packaged asbestos wastes shall be HEPA-vacuumed before removing from the work area.

D. Storage of packaged asbestos wastes shall be in a completely enclosed dumpster, or other suitable container that can be secured. The secured area shall be kept locked at all times to prevent unauthorized access.

E. Shipment of items from the project:
   1. Decontaminated tools and equipment may be shipped by normal carrier to warehouse, another job site, or other destination.
   2. For asbestos wastes:
      a. Line, enclosed shipping container with 6 mil poly prior to loading packaged asbestos wastes.
      b. Post NESHAP placards on all perimeter sides of shipping container.
      c. Asbestos containing waste materials shall be transported directly to the landfill. Temporary storage at a location other than the abatement project shall not be permitted.
d. Execute the NESHAP-required Waste Shipment Record (WSR) to be signed by the generator, transporter, and landfill. All WSRs shall be returned to the EPM within 30 days of shipment.

F. Only landfills approved and permitted by Illinois for accepting asbestos wastes may be used for disposal.

G. A punchlist walk through shall be conducted by the EPM, abatement contractor, and owner’s representative for each cleared work area within two working days of clearance testing. All punchlist items shall be completed within five working days of the walk through.

END OF SECTION
SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:
   1. Section 02 4100 "Demolition"
   2. Section 02 4119 "Selective Structural Demolition"
   3. Section 32 1313 "Concrete Paving"

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product including admixtures and concrete accessories such as form ties and bar supports.

B. Design Mixtures: For each concrete mixture. Mix designs shall include previous material strength / cylinder break results.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar lists, schedules, bending details, placing details and placing plans and elevations for fabrication and placing reinforcing steel conforming to ACI Detailing Manual. Placing plans shall include layouts for adhesive dowels and shall include dowel size and embedment length. Include material, grade, stirrup spacing, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

   1. Do not bill wall and slab reinforcing in sections. Show complete elevations of all walls and complete plans of all slabs, except that, when more than one wall or slab are identical, only one such elevation or plan is required. These plans and elevations need not be true views of the walls or slabs shown. Bill every reinforcing bar in a slab on a plan. Bill every reinforcing bar in a wall on an elevation. Take sections to clarify the arrangement of the steel reinforcement. Identify all bars, but do not bill on such sections.

   2. For all reinforcing bars, unless the location of a bar is clear, give the location of such bar or bars by a dimension to some structural feature which will be readily distinguishable at the time bars are placed.

   3. Make the reinforcing steel placing drawings complete for placing reinforcement including the location of support bars and chairs, without reference to the design drawings.

D. Proposed Pour Sequence and Joint Location: Drawings indicating the proposed sequential placement of concrete and the location and spacing of all concrete isolation, construction and contraction joints.

1.3 INFORMATIONAL SUBMITTALS

A. Material certificates, including test certificates of the chemical and physical properties covering each shipment of reinforcing steel bars.

B. Material test reports.

C. Floor surface flatness and levelness measurements indicating compliance with specified tolerances.
1.4 REFERENCES:

A. American Concrete Institute (ACI):
   1. 117, Specification for Tolerances for Concrete Construction and Materials.
   2. 301, Specifications for Structural Concrete.
   3. 302.1R, Guide for Concrete Floor and Slab Construction.
   4. 305.1, Specification for Hot Weather Concreting.
   6. 308.1, Standard Specification for Curing Concrete.
   7. 315, Details and Detailing of Concrete Reinforcement.
   8. 318, Building Code Requirements for Structural Concrete.
   9. 347, Guide to Formwork for Concrete
   10. 363R, Report on High Strength Concrete
   11. ACI SP-4, Formwork for Concrete
   12. ACI SP-66, ACI Detailing Manual

B. ASTM International (ASTM):
   1. A615, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
   2. A1064, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
   11. C231, Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency, acceptable to the Owner, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

C. Testing Requirements: Field testing of concrete for air content, slump and temperature. Laboratory testing for concrete strength in accordance with ASTM C39.

D. Floor flatness and levelness: Survey the elevations of poured concrete slabs in accordance with the requirements of ACI 117 and ASTM E 1115.

1.6 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with the recommendations in ACI 306.1.

1. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with the recommendations in ACI 305.1.

PART 2 PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the ACI publications listed in section 1.4 “References” of this specification.
2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.3 MISCELLANEOUS FORMWORK MATERIALS

A. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
   1. Magic Kote by Dayton Superior Corporation, Miamisburg, OH
   2. Duogard II by W.R. Meadows, Hampshire, IL


C. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal. Use form ties, hangers, and clamps of such type that after removal of the forms, no metal will be closer than one inch from concrete surface. Wire ties will not be permitted. Provide ties with swaged washers or other suitable devices to prevent seepage of moisture along the ties. Leave the ties in place.

2.4 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064, plain, fabricated from as-drawn steel wire into flat sheets.

C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI’s "Manual of Standard Practice."

D. Tie Wire: 16-gauge soft-annealed wire conforming to ASTM A641. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

2.5 CONCRETE MATERIALS

A. Cementitious Materials:
   2. Fly Ash: ASTM C 618, Class F.
   3. Slag Cement: ASTM C 989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33, graded.
   2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.


D. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
1. Water-Reducing Admixture: ASTM C 494, Type A.
2. Retarding Admixture: ASTM C 494, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017, Type II.

E. Water: ASTM C 94 and potable.

2.6 VAPOR RETARDERS
A. Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer’s recommended adhesive or pressure-sensitive tape.

2.7 CURING MATERIALS
A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
D. Water: Potable.
E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
F. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
G. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 25 percent solids, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.

2.8 RELATED MATERIALS

2.9 CONCRETE MIXTURES, GENERAL
A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
B. Cementitious Materials: The maximum quantity of pozzolans, including fly ash, slag cement, and silica fume, as a percent of cementitious material for exposure class F3 concrete, shall not exceed the limits set by ACI 318, Table 4.4.2.
C. Admixtures: Use admixtures according to manufacturer’s written instructions.
   1. Use high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
   2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for pavement slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

2.10 CONCRETE MIXTURES FOR STRUCTURAL ELEMENTS

A. Interior Slabs-on-Grade; Interior Curbs and Pads, Concrete Fill for Metal Pan Stairs:
   1. Normal Weight Concrete; Exposure Categories and Classification: F0S0P0C1
   2. Minimum Compressive Strength: 4000 psi at 28 days.
   3. Maximum W/C Ratio: 0.45.
   4. Slump Limit: Minimum 4 inches before adding high-range water-reducing admixture or plasticizing admixture.
   5. Air Content: 5 percent, plus or minus 1.5 percent at point of delivery for ¾” nominal maximum aggregate size.
   6. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
   7. Concrete mix shall be designed to limit the maximum shrinkage of 0.030 percent in 28 days after a 7-day curing.
   8. If the submitted concrete mix design has an average 28-day strength as determined by cylinder breaks that is greater than 6,000 psi, follow the guidelines provided in ACI 363R “Report on High Strength Concrete”, Chapter 4 “Batching, Mixing, Transporting, Placing, Curing and Control Procedures”.

B. Spread Footings:
   1. Normal Weight Concrete; Exposure Categories and Classification: F0S0P0C1
   2. Minimum Compressive Strength: 4500 psi at 28 days.
   3. Maximum W/C Ratio: 0.45.
   4. Slump Limit: Minimum 4 inches before adding high-range water-reducing admixture or plasticizing admixture.
   5. Air Content: 5 percent, plus or minus 1.5 percent at point of delivery for ¾” nominal maximum aggregate size.
   6. Air Content: Do not allow air content of trowel-finished surfaces to exceed 3 percent.
   7. If the submitted concrete mix design has an average 28-day strength as determined by cylinder breaks that is greater than 6,000 psi, follow the guidelines provided in ACI 363R “Report on High Strength Concrete”, Chapter 4 “Batching, Mixing, Transporting, Placing, Curing and Control Procedures”.

C. Building Exterior Foundation Walls and Curbs:
   1. Normal Weight Concrete; Exposure Categories and Classification: F3S0P0C2
   2. Minimum Compressive Strength: 5000 psi at 28 days.
   3. Maximum W/C Ratio: 0.40.
   4. Slump Limit: Minimum 4 inches before adding high-range water-reducing admixture or plasticizing admixture.
5. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for ¾” nominal maximum aggregate size.

6. Air content: Do not allow air content of trowel-finished surfaces to exceed 3 percent.

D. Interior Foundation Walls, Slabs-on-Deck (unless otherwise noted):
   1. Normal Weight Concrete; Exposure Categories and Classification: F0S0P0C0
   2. Minimum Compressive Strength: 4000 psi at 28 days.
   3. Maximum W/C Ratio: 0.50.
   4. Slump Limit: Minimum 4 inches before adding high-range water-reducing admixture or plasticizing admixture.
   5. Air Content: 5 percent, plus or minus 1.5 percent at point of delivery for ¾” nominal maximum aggregate size.
   6. Air Content: Do not allow air content of trowel-finished surfaces to exceed 3 percent.

2.11 FABRICATING REINFORCEMENT
   A. Fabricate steel reinforcement according to CRSI’s “Manual of Standard Practice.”
   B. Cut bars to required length and bend accurately before placing. Bend bars in the shop unless written approval for field bending is obtained. If field bending is permitted, do it only when the air temperature, where the bending operation is performed, is above 30 degrees F. Do not field bend bars which have been partially embedded in concrete.
   C. Do not fabricate any material before final review and approval of shop drawings.

2.12 CONCRETE MIXING
   A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and furnish batch ticket information.
      1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 EXECUTION

3.1 FORMWORK INSTALLATION AND REMOVAL
   A. All cast concrete for structural elements shall be formed.
   B. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
   C. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
   D. Provide ¾” chamfer at exterior corners and edges of permanently exposed concrete.
   E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces.
      1. Install keyways, reglets, recesses, and the like, for easy removal.
2. Do not use rust-stained steel form-facing material.

F. Form openings, chases, offsets, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

G. Thoroughly clean all forms before reuse and inspect forms immediately before concrete is placed. Remove deformed, broken, or defective forms from the work.

H. Coat the entire inside surfaces of forms with a suitable form release agent just prior to placing concrete. Form release agent is not permitted on the reinforcing steel.

I. Withdraw the removable portion of form ties from the concrete immediately after the forms are removed. Clean and fill tie holes flush with the surface using Portland cement mortar.

3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.3 VAPOR-RETARDER INSTALLATION

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer’s written instructions; place sheets in position with longest dimension parallel with direction of pour.

1. Level and compact base material.

2. Extend vapor barrier to the perimeter of the slab. If practicable, terminate it at the top of the slab, otherwise (a) at a point acceptable to the structural engineer or (b) where obstructed by impediments (such as dowels, waterstops, or any other site condition requiring early termination of the vapor barrier). At the point of termination, seal vapor barrier to the foundation wall, grade beam or slab itself.

3. Lap joints minimum 6 inches and seal with manufacturer’s recommended tape.

4. Apply seam tape to a clean and dry vapor barrier.

5. Seal all penetrations (including pipes) per manufacturer’s instructions.

6. Avoid the use of non-permanent stakes driven through vapor retarder.

7. If non-permanent stakes are driven through vapor retarder, repair as recommended by vapor retarder manufacturer.

8. Repair damaged areas with vapor barrier material of similar (or better) permeance, puncture and tensile.

3.4 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Reinforcing steel shall be delivered without rust other than that accumulated during transportation to the work. At all times, fully protect reinforcing steel from moisture, grease, dirt, mortar and concrete. Before being placed in position, thoroughly clean reinforcing steel of all loose mill scale and rust and of any dirt, oil, grease coatings, or other material that might reduce the bond. If there is a delay in depositing concrete, inspect and satisfactorily clean the steel immediately before the concrete is placed.
2. Place welded wire fabric in the positions shown, specified or required to fit the work. Furnish and place suitable spacing chairs or supports, as specified for bars, to maintain the fabric in the correct location. Provide flat sheets. Install welded wire reinforcement in longest practical lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3. Place reinforcing steel and welded wire fabric and hold in position so that the concrete cover, as measured from the surface of the bar or wire to the surface of the concrete, is as shown or specified.

4. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

5. All placement of steel reinforcing, sleeves and embedments shall be inspected and approved by a Contractor-retained Testing Agency prior to concrete placement.
   a. The Contractor-retained Testing Agency shall issue a report stating compliance of the placement with the Contract Documents and shall note any discrepancies or non-conformances prior to concrete placement.

3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Provide construction joints only at locations and spacings indicated by the Contract Documents. Install so strength and appearance of concrete are not impaired.
   1. Place construction joints in foundation walls no more than 50 feet on center.
   2. Spread footings below building columns shall be placed in one continuous pour without construction joints.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
   1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
   2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as at existing concrete vertical surfaces, column piers, saw-cut edges, foundation walls and other locations as indicated.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. Deposit concrete to avoid segregation.
   1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
C. Where floors slope to drain, provide continuous slope so that puddling does not occur.

D. Building interior floor slabs shall comply with the floor flatness and levelness tolerances in ACI 117, “Conventional” category.

3.7 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
   1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
   1. Apply to concrete surfaces exposed to public view.

C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude of 1/4 inch in one direction.
   1. Apply scratch finish to surfaces indicated and to receive concrete floor toppings or mortar setting beds.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
   1. Apply float finish to surfaces indicated and surfaces to receive trowel finish.

D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
   1. Apply a trowel finish to surfaces indicated or to be covered with a thin-film-finish coating system.
   2. Unless more strict flatness and/or levelness criteria are specified, finish and measure concrete surface so that gap at any point between concrete surface and an unleveled, freestanding, 10-ft.long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated. While concrete is still plastic, slightly scarify surface with a fine broom.
   1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

F. Broom Finish: Apply a broom finish to exterior concrete steps, ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Owner before application.

3.9 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer’s written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer’s written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

   a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies in writing that the curing compound does not interfere with bonding of floor covering used on this Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer’s written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when and as directed by Owner. Remove and replace concrete that cannot be repaired and patched to Owner’s approval.

B. Flatness and Levelness: Where slabs are found to not comply with the floor flatness and/or levelness criteria in this section, the Contractor shall take corrective action acceptable to the Owner at no additional cost to the Owner.

3.11 FIELD QUALITY CONTROL

A. Special Inspections: Contractor will engage a qualified Testing and Inspecting Agency to perform field tests and inspections and prepare test reports as indicated in the Contract Documents.

   1. Testing and Inspecting Agency will cooperate fully and promptly with requests from the Owner or Owner’s designated representatives.
B. Compression Testing: Concrete test cylinders for concrete will be prepared and laboratory tested in compression. The Contractor shall provide compression strength testing as indicated below. Concrete test cylinders shall be prepared at the point of placement.

C. Samples: Samples taken for each class of concrete placed each day will consist of four cylinders from the same batch of concrete. Two cylinders at 7 days and two at 28 days will be tested. Concrete strength will be determined by the average of the two cylinder strengths at each age. Samples will be taken not less than once a day or less than once for each 150 cubic yards of concrete, or 5,000 square feet of area. Test samples shall be prepared as directed by ASTM C31.

D. Field Curing: Field cured cylinders will be tested to determine concrete compressive strength for form removal. Contractor may request additional testing at his expense.

E. Laboratory Curing: Fresh concrete will be sampled in accordance with ASTM C172. Laboratory cured cylinders for strength tests will be molded in accordance with ASTM C31.

F. Slump and Air Content Tests: Slump tests will be performed in accordance with ASTM C143, at the same time cylinders are made. Tests to determine air content of fresh concrete will be made twice daily, at least 4 hours apart, in accordance with either ASTM C173 or with an approved testing device. Concrete with excessive slump or improper air content will be rejected. Deliver no additional concrete until the cause of the deficiency is determined and corrected.

G. Test Requirements: Cylinders will be tested in accordance with ASTM C39 for both the 7-day and the 28-day compressive strength.

H. Successful Testing Requirements: Consider the strength level of the concrete mix for each individual class of concrete satisfactory when:
   1. The average of all sets of three consecutive 28-day strength tests (average of two cylinders) equal or exceed the specified compressive strength (f’c).
   2. No individual 28-day strength test (average of two cylinders) falls below f’c by more than 500 psi.
   3. If either of these requirements is not met, make changes in the mix proportions immediately to achieve the required strength.

I. Low Concrete Strength Test Results:
   1. Test Cores: If concrete strength test results fall below f’c by more than 500 psi, the Contractor shall take test cores from the area in question at locations determined by the District. Three cores for each failed strength test will be taken and tested in accordance with ASTM C42.
   2. Acceptable Levels of Strength: Concrete in the area represented by core tests will be accepted if the average of three cores is equal to or greater than 0.85f’c and no single core is less than 0.75f’c.
   3. Unacceptable Concrete: Remove and replace concrete which does not meet the core test requirements or strengthen the concrete to the satisfaction of the Owner.
   4. The cost of any such additional testing and remedial action shall be borne by Contractor.

J. Floor Slab Survey:
   1. Where requested by the Owner, the Testing and Inspecting Agency shall survey the elevations of poured concrete slabs and assess floor flatness and levelness in accordance with the requirements of ACI 117 and ASTM E 1115. If the survey and assessment shows that the floor slab flatness and levelness falls within ACI tolerances and the requirements of this specification, the cost of the survey and assessment shall be borne by the Owner. Otherwise, the cost of the survey, assessment and any
corrective action required to bring the floor flatness and levelness into compliance shall be borne by the Contractor.

2. Surveys shall be taken as soon as possible after concrete slab placement. However, floor flatness and levelness requirements shall still apply to surveys taken more than 72 hours after concrete slab placement.

K. Test Results: Testing and Inspecting Agency will report test results promptly and in writing to Contractor and Owner.

END OF SECTION
SECTION 04 2000 - UNIT MASONRY

PART 1  GENERAL

1.1 SECTION INCLUDES

A. Concrete Masonry Units.
B. Clay Facing Brick.
C. Mortar and Grout.
D. Reinforcement and Anchorage.
E. Accessories.

1.2 RELATED REQUIREMENTS

A. Section 04 2000 - Cold-Formed Metal Framing.
B. Section 04 0511 - Masonry Mortaring and Grouting.
C. Section 05 5000 - Metal Fabrications: Loose steel lintels.
D. Section 06 1000 - Rough Carpentry: Nailing strips built into masonry.
E. Section 07 2100 - Thermal Insulation: Insulation for cavity spaces.
F. Section 07 6200 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.
G. Section 07 8400 - Firestopping: Firestopping at penetrations of fire-rated masonry and at top of fire-rated walls.
H. Section 07 9005 - Joint Sealers: Backing rod and sealant at control and expansion joints.

1.3 REFERENCE STANDARDS

A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International; 2011.

L. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units; 2013.

M. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2013.


Q. ASTM C652 - Standard Specification for Hollow Brick (Hollow Masonry Units Made From Clay or Shale); 2013.


1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.

C. Samples: Submit four samples for each facing brick unit type to illustrate color, texture, and extremes of color range.

D. Manufacturer’s Certificate: Certify that masonry units meet or exceed specified requirements.

E. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Pre-Faced Units: 50 of each type, size, and color combination.

1.6 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.
   1. Maintain one copy of each document on project site.

B. Fire Rated Assemblies: Conform to applicable code for the assembly requirements for fire rated masonry construction.

1.7 MOCK-UP

A. Construct a masonry wall as a mock-up panel sized 8 feet (2.4 m) long by 6 feet (1.8 m) high; include mortar and accessories and structural backup in mock-up.

B. Locate where directed.
C. Mock-up may not remain as part of the Work.
   1. Approval of mockups is also for other material and construction qualities specifically approved by Architect in writing.
   2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by Architect in writing.
   3. Mockups will be removed at Substantial completion.

1.8 DELIVERY, STORAGE, AND HANDLING

   A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

PART 2 PRODUCTS

2.1 CONCRETE MASONRY UNITS

   A. Concrete Block: Comply with referenced standards and as follows:
      1. Size: Standard units with nominal face dimensions of 16 x 8 inches (400 x 200 mm) and nominal depths as indicated on the drawings for specific locations.
      2. Special Shapes: Provide non-standard blocks configured for corners.
      3. Load-Bearing Units and West Exterior Blast Resistant Wall: ASTM C90, medium weight (120 pcf). Minimum masonry unit strength of 2800 psi
         a. Hollow block, as indicated.
         a. Hollow block, as indicated.

2.2 BRICK UNITS

   A. Manufacturers:
      2. Interstate Brick, represented by Bricks Incorporated - Jay Molenhouse 773-523-5718
      4. Glen-Gery Brick.
      5. Substitutions: See section 01 6000 - Product Requirements.

   B. Facing Brick (Blended Pattern): ASTM C216, Type FBS, Grade SW.
      1. Basis of Design: Interstate Brick; 4" Emperor
      2. Color and texture: Factory mix consisting of 80% Golden Buff Matte base and 20% Terra Cotta Matte.
      3. Nominal size: 4 x 4 x 16 inches.
      4. Special shapes: Molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.
C. **Facing Brick (Terra Cotta):** ASTM C216, Type FBS, Grade SW.
   1. Basis of Design: Interstate Brick; 4" Emperor
   2. Color and texture: Terra Cotta Matte.
   3. Nominal size: 4 x 4 x 16 inches.
   4. Special shapes: Molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.

D. **Facing Brick (Red to Match Existing):** ASTM C216, Type FBS, Grade SW.
   1. Basis of Design: Glen-Gery Brick; 2-1/4" Modular
   2. Color and texture: Modular 53 DD.
   3. Nominal size: 4 x 2-1/4 x 8 inches.

2.3 **MORTAR AND GROUT MATERIALS**

A. Mortar and Grout: As specified in Section 04 0511.

B. Hydrated Lime: ASTM C207, Type S.

C. Mortar Aggregate: ASTM C144.


E. Water: Clean and potable.

F. Accelerating Admixture: Nonchloride type for use in cold weather.
   1. Manufacturers:
      a. Addiment Incorporated; Morter Kick
      b. Eclid Chemical Company; Accelguard
      c. Grace Construction; Morset
      d. Sonneborn. of ChemRex; Trimix-NCA
      e. Substitutions: See Section 01 6000 - Product Requirements.

2.4 **REINFORCEMENT AND ANCHORAGE**

A. Manufacturers of Joint Reinforcement and Anchors:
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Reinforcing Steel: ASTM A615/A615M Grade 60 (420) deformed billet bars; galvanized.
C. Joint Reinforcement: Use ladder type joint reinforcement where vertical reinforcement is involved and truss type elsewhere, unless otherwise indicated.

D. Single Wythe Joint Reinforcement: Truss or ladder type; ASTM A82/A82M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M, Class B; 0.1483 inch (3.8 mm) side rods with 0.1483 inch (3.8 mm) cross rods; width as required to provide not more than 1 inch (25 mm) and not less than 1/2 inch (13 mm) of mortar coverage on each exposure.

E. Multiple Wythe Joint Reinforcement: Truss type; fabricated with moisture drip; ASTM A82/A82M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M, Class B; 0.1483 inch (3.8 mm) side rods with 0.1483 inch (3.8 mm) cross rods; width as required to provide not more than 1 inch (25 mm) and not less than 1/2 inch (13 mm) of mortar coverage on each exposure.

F. Flexible Anchors: 2-piece anchors that permit differential movement between masonry and building frame, sized to provide not more than 1 inch (25 mm) and not less than 1/2 inch (13 mm) of mortar coverage from masonry face.
   1. Steel frame: Crimped wire anchors for welding to frame, 0.25 inch (6.3 mm) thick, with trapezoidal wire ties 0.1875 inch (4.75 mm) thick, hot dip galvanized to ASTM A153/A153M, Class B.

G. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, stainless steel.
   1. Anchor plates: Not less than 0.075 inch (1.91 mm) thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
   2. Wire ties: Manufacturer’s standard shape, 0.1875 inch (4.75 mm) thick.
   3. Vertical adjustment: Not less than 3-1/2 inches (89 mm).

H. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.

2.5 FLASHINGS

A. Metal Flashing Materials: Stainless Steel, as specified in Section 07 6200.

2.6 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
   1. Manufacturers:
      d. Heckmann Building Products, Inc.
      e. Substitutions: See Section 01 6000 - Product Requirements.

B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding; 3/4 inch (19 mm) wide x by maximum lengths available.
   1. Manufacturers:

c. Heckmann Building Products.

d. Substitutions: See Section 01 6000 - Product Requirements.

C. Nailing Strips: Softwood lumber, preservative treated; as specified in Section 06 1000.

D. Termination Bars: Stainless steel; compatible with membrane and adhesives.

E. Weeps: Cotton rope.
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.

F. Cavity Vents: Polyester mesh.
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.

G. Drainage Fabric: Polyester mesh.
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.

H. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.7 MORTAR AND GROUT MIXES

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
   1. Masonry below grade and in contact with earth: Type S.
   2. Exterior, loadbearing masonry: Type S.
   3. Exterior, non-loadbearing masonry: Type N.
   4. Interior, loadbearing masonry: Type S.
   5. Interior, non-loadbearing masonry: Type N.
6. Grouted and reinforced CMU walls (including west building wall): Type S

B. Colored Mortar: Proportion selected pigments and other ingredients to match Architect/Engineer’s sample, without exceeding manufacturer’s recommended pigment-to-cement ratio.

C. Grout: ASTM C476. Consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches (50 mm) or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches (50 mm).

D. Mixing: Use mechanical batch mixer and comply with referenced standards.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.2 PREPARATION

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.3 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

3.4 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

C. Concrete Masonry Units:
   1. Bond: Running.
   2. Coursing: One unit and one mortar joint to equal 8 inches (200 mm).

D. Brick Units:
   1. Bond: Running.

3.5 PLACING AND BONDING

A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
D. Remove excess mortar and mortar smears as work progresses.

E. Interlock intersections and external corners.

F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.

H. Cut mortar joints flush where wall tile is scheduled, resilient base is scheduled, cavity insulation vapor barrier adhesive is applied, or bitumen dampproofing is applied.

I. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.6 WEEPS/CAVITY VENTS

A. Install weeps in veneer and cavity walls at 24 inches (600 mm) on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

B. Install cavity vents in veneer and cavity walls at 32 inches (800 mm) on center horizontally below shelf angles and lintels and near top of walls.

3.7 CAVITY MORTAR CONTROL

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.

C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

3.8 REINFORCEMENT AND ANCHORAGE - GENERAL

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches (400 mm) on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches (400 mm) each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.

D. Lap joint reinforcement ends minimum 6 inches (150 mm).

E. Reinforce joint corners and intersections with strap anchors 16 inches (400 mm) on center.

F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches (900 mm) horizontally and 24 inches (600 mm) vertically.

3.9 REINFORCEMENT AND ANCHORAGE - SINGLE WYTHE MASONRY

A. Install horizontal joint reinforcement 8 inches (200 mm) on center.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches (400 mm) each side of opening.

C. Place continuous joint reinforcement in first and second joint below top of walls.
D. Lap joint reinforcement ends minimum 6 inches (150 mm).
E. Reinforce joint corners and intersections with strap anchors 16 inches (400 mm) on center.

3.10 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER
A. Install horizontal joint reinforcement 16 inches (400 mm) on center.
B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches (400 mm) each side of opening.
C. Place continuous joint reinforcement in first and second joint below top of walls.
D. Lap joint reinforcement ends minimum 6 inches (150 mm).
E. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches (400 mm) on center vertically and 36 inches (900 mm) on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches (200 mm) on center.
F. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 24 inches (610 mm) on center vertically and 24 inches (610 mm) on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches (200 mm) on center.
G. Reinforce joint corners and intersections with strap anchors 16 inches (400 mm) on center.

3.11 REINFORCEMENT AND ANCHORAGES - MULTIPLE WYTHE UNIT MASONRY
A. Install horizontal joint reinforcement 16 inches (400 mm) on center.
B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches (400 mm) each side of opening.
C. Place continuous joint reinforcement in first and second joint below top of walls.
D. Lap joint reinforcement ends minimum 6 inches (150 mm).
E. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Space anchors at maximum of 24 inches (600 mm) horizontally and 16 inches (400 mm) vertically.
F. Reinforce joint corners and intersections with strap anchors 16 inches (400 mm) on center.

3.12 MASONRY FLASHINGS
A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
   1. Extend flashings full width at such interruptions and at least 4 inches (100 mm) into adjacent masonry or turn up at least 4 inches (100 mm) to form watertight pan at non-masonry construction.
   2. Remove or cover protrusions or sharp edges that could puncture flashings.
   3. Seal lapped ends and penetrations of flashing before covering with mortar.
B. Extend metal flashings through exterior face of masonry and turn down to form drip. Install joint sealer below drip edge to prevent moisture migration under flashing.
C. Lap end joints of flashings at least 6 inches (152 mm) and seal watertight with mastic or elastic sealant.
3.13 LINTELS
   A. Install loose steel lintels over openings.
   B. Maintain minimum bearing on each side of opening as shown on structural drawings.

3.14 GROUTED COMPONENTS
   A. Lap splices minimum 24 bar diameters.
   B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch (13 mm) of dimensioned position.
   C. Place and consolidate grout fill without displacing reinforcing.
   D. At bearing locations, fill masonry cores with grout for a minimum 12 inches (300 mm) either side of opening.

3.15 CONTROL AND EXPANSION JOINTS
   A. Do not continue horizontal joint reinforcement through control and expansion joints.
   B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.
   C. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer’s instructions.
   D. Size control joint in accordance with Section 07 9005 for sealant performance.
   E. Form expansion joint as detailed.

3.16 BUILT-IN WORK
   A. As work progresses, install built-in metal door frames and other items to be built into the work and furnished under other sections.
   B. Install built-in items plumb, level, and true to line.
   C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
      1. Fill adjacent masonry cores with grout minimum 12 inches (300 mm) from framed openings.
   D. Do not build into masonry construction organic materials that are subject to deterioration.

3.17 CUTTING AND FITTING
   A. Cut and fit for chases. Coordinate with other sections of work to provide correct size, shape, and location.
   B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.18 FIELD QUALITY CONTROL
   A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.
   B. Clay Masonry Unit Tests: Test each variety of clay masonry in accordance with ASTM C67 requirements, sampling 5 randomly chosen units for each 50,000 installed.
C. Concrete Masonry Unit Tests: Test each variety of concrete unit masonry in accordance with ASTM C140/C140M for conformance to requirements of this specification.

D. Mortar Tests: Test each type of mortar in accordance with ASTM C780, testing with same frequency as masonry samples.

3.19 CLEANING

A. Remove excess mortar and mortar droppings.

B. Replace defective mortar. Match adjacent work.

C. Clean soiled surfaces with cleaning solution.

D. Use non-metallic tools in cleaning operations.

3.20 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION
SECTION 05 1200 - STRUCTURAL STEEL FRAMING

PART 1  GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. The work under this Section includes labor, materials and equipment required for the fabrication and erection of structural steel as detailed on the Drawings or specified herein. Provide structural steel as Architecturally Exposed Structural Steel (AESS), as designated on the Drawings. The work includes furnishing and installing the non-shrink grout beneath the steel column base plates.

2. Structural steel.


B. Related Requirements:

1. Section 03 3000 “Cast-in-Place Concrete”

2. Section 05 4000 “Cold-Formed Metal Framing”

3. Section 05 5113 “Metal Pan Stairs”

4. Section 05 5000 "Metal Fabrications" for other steel items not defined as structural steel.

1.3 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on the Structural or Architectural Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.4 REFERENCES

A. AISC 360 “Specification for Structural Steel Buildings”.

B. AISC 303 “Code of Standard Practice for Steel Buildings and Bridges” with the following exceptions:

1. Fabricator’s engineer shall complete connection detail design while preparing shop and erection drawings using criteria contained in the Contract Documents.

2. Stiffening or reinforcement of members required as a result of the connection design by the fabricator’s engineer is not necessarily shown on the Design Drawings and shall be included in the Contractor’s Bid.

3. The order of precedence between Design Drawings and Specifications shall be as defined in Division 1 of the project specifications.

4. Connection design calculations submitted by the Fabricator’s engineer shall be for the Project Record only and shall not be Approved by the Owner or Owner’s Representative. The Fabricator’s engineer shall be solely responsible for connection structural adequacy.

5. Drawing sheets shall not be considered to be released for construction unless the revision history block on the sheet says “For Construction”, “Issued for Construction” or some similar, close approximation.
6. The Owner’s permitted review period for shop and erection drawings shall be as defined in Division 1 of the project specifications, but shall not be less than 14 calendar days.

7. Owner’s review of shop and erection drawings shall be limited to general conformance with the Contract Documents.

8. The correction of fabrication errors by field welding or cutting is strictly prohibited without prior review and approval by the Owner’s Designated Representative for Design.

C. Research Council on Structural Connections “Specification for Structural Joints Using ASTM A325 or A490 Bolts”.

D. American Welding Society D1.1 “Structural Welding Code – Steel”.

E. Society for Protective Coatings (SSPC) Surface Preparation Standards.

1.5 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers’ written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show fabrication of structural steel components.
   1. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
   2. Include embedment Drawings.
   3. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
   4. AESS Shop Drawing Requirements: Erection drawings shall indicate members designated as AESS. Individual piece mark drawings shall indicate members designated as AESS. Indicate special tolerances and erection requirements. Show complete details of welded and bolted connections.
   5. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical, high-strength bolted connections.
   6. Use or reproduction of any part of the Design Drawings in the creation of the shop or erection drawings shall not be permitted.

C. Welding Procedure Specifications (WPSs) and Procedure Qualification Records (PQRs): Provide according to AWS D1.1, "Structural Welding Code - Steel," for each welded joint type and process, whether prequalified or qualified by testing, including the following:
   1. Power source (constant current or constant voltage).
   2. Electrode manufacturer and trade name, for demand critical welds.
D. Delegated-Design Submittal: For structural steel connections not fully detailed on the drawings and indicated to comply with design loads, include comprehensive calculations signed and sealed by an Illinois-licensed Structural Engineer.

1. The Illinois-licensed Structural Engineer shall be retained by the steel fabricator.
2. The fabricator shall be solely responsible for coordinating the calculations with the shop and erection drawings.
3. The calculations shall be submitted with or prior to the shop and erection drawings. Shop and erection drawings will not be approved until connections calculations acceptable to the Engineer have been submitted.

1.7 INFORMATIONAL SUBMITTALS

A. Fabricator Qualification: Fabricator shall submit current documentation of its participation in the AISC Quality Certification Program and of its status as an AISC Certified Plant. Certification category shall be “Standard for Steel Building Structures”.

B. Erector Qualification: Erector shall submit current documentation of its participation in the AISC Quality Certification Program. Certification category shall be “Certified Steel Erector”.

C. Welder Certificates:

1. Submit certifications for all shop and field welders showing joint and weld type, process and positions for which the welder is certified.
2. Submit log demonstrating welder has been engaged in continuous service as required by AWS.

D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

E. Mill test reports for structural steel, including chemical and physical properties.

F. Product Test Reports: For the following.

1. Bolts, nuts, and washers including mechanical properties and chemical analysis.
2. Tension-control, high-strength, bolt-nut-washer assemblies.
3. Shop primers.

G. Source quality-control reports.

H. Field quality-control and special inspection reports.

1.8 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code - Steel."

B. Comply with applicable provisions of the following specifications and documents:

1. AISC 303 except as noted in the “References” section of this specification section.
2. AISC 360.
3. RCSC’s "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
C. AESS Steel: Comply with the additional requirements of the AISC Code of Standard Practice for Steel Buildings and Bridges, Section 10, and as specified herein.

D. Fabricator Qualifications: A qualified fabricator with a record of at least ten continuous years of successful completion of structural steel erection for projects with similar conditions, size, scope and complexity.
   1. If requested provide references, including current contact information, for three such projects.
   2. The Owner reserves the right to reject, without compensation or increased bid cost, any fabricator which in its opinion is not qualified for the project.

E. Installer Qualifications: A qualified installer with a record of at least ten continuous years of successful completion of structural steel erection for projects with similar conditions, size, scope and complexity.
   1. If requested provide references, including current contact information, for three such projects.
   2. The Owner reserves the right to reject, without compensation or increased bid cost, any erector which in its opinion is not qualified for the project.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
   1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer’s labels intact.
   1. Fasteners may be repackaged provided Contractor’s testing and inspecting agency observes repackaging and seals containers.
   2. Clean and relubricate bolts and nuts that become dry or rusty before use.
   3. Comply with manufacturers’ written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple shear and brace connections required by the Contract Documents to be completed by the structural-steel fabricator, including comprehensive calculations signed and sealed by an Illinois-licensed Structural Engineer, to withstand loads indicated and comply with other information and restrictions indicated.
   1. Select and complete connections using schematic details and forces indicated and AISC 360.

2.2 STRUCTURAL STEEL MATERIALS

A. W-Shapes: ASTM A 992.

B. Channels, Angles, S-Shapes, Plates and Bars: ASTM A 36.

C. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B.

D. Steel Pipe: ASTM A 53, Type E or Type S, Grade B.
1. Weight Class: Standard, unless noted otherwise on the drawings.

2. Finish: Black except where indicated to be galvanized.

E. Welding Electrodes: E70XX, complying with AWS requirements.

2.3 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish. As an alternate, ASTM A 490, Type 1, heavy-hex steel structural bolts may be substituted for ASTM A 325 bolts of the same diameter.

1. Finish: For bolts exposed to weather in the final condition, provide hot-dip zinc coating in conformance with ASTM A 153.

B. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.

C. Anchor Rods: ASTM F 1554, Grade 36, straight.

3. Washers: ASTM F 436, Type 1, hardened carbon steel.
4. Finish: Plain except where exposed to weather in the final condition, in which case finish shall be Hot-dip zinc coating, ASTM A 153, Class C.


2. Washers: ASTM F 436, Type 1, hardened carbon steel.
3. Finish: Hot-dip zinc coating, ASTM A 153, Class C.


2. Washers: ASTM F 436, Type 1, hardened carbon steel.
3. Finish: Hot-dip zinc coating, ASTM A 153, Class C.

2.4 PRIMER

A. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Primer: Comply with Section 099113 "Exterior Painting" and Section 099123 "Interior Painting." If not specified, provide Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

C. Galvanizing Repair Paint: ASTM A 780.
2.5 GROUT

A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time. Use at equipment bases or where grout experiences impact or vibratory loading.

B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time. Use at column bases.

2.6 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 360 and AISC 303, "Code of Standard Practice for Steel Buildings and Bridges" except where noted in this specification.

1. AESS Fabrication Requirements: Fabricate structural steel members as designated on the Drawings to meet the requirements of the AISC Code of Standard Practice for Steel Buildings and Bridges, Section 10, and as specified herein.

2. Camber structural-steel members where indicated.

3. Fabricate beams with rolling camber up.

4. Identify high-strength structural steel according to ASTM A 6 and maintain markings until structural steel has been erected.

5. Mark and match-mark materials for field assembly.

6. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.

C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 2, "Hand Tool Cleaning".

F. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer’s written instructions.

G. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.

2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.

3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

H. AESS Fabrication Requirements:
1. Fabricate structural steel members designated as AESS with special care for best visual appearance and as required by the Drawings and as specified herein. Apply techniques as applicable to produce and maintain quality of work with required tolerances.

2. Preassemble AESS components in shop so as to minimize field splicing and assembly at project site. Disassemble components only to extent necessary for shipping and handling.

3. Steel Surfaces: Surfaces of steel which will be exposed shall be smooth and free of blemishes, pitting, seam marks, roller marks, rolled trade names, roughness and other like conditions or imperfections. Remove such blemishes by welding, grinding or other method prior to starting surface preparation. Sequence work with surface preparation operation.
   a. Filler, caulk or body putty type materials, other than filler metal deposited by welding process, are not acceptable for remedial work.
   b. Epoxy filler may be applied to pockets, voids, pitting or other blemishes on exposed surfaces to be painted, including welds.
   c. Piece Marks Hidden: Fabricate such that piece marks are fully hidden in the final structure or made with such media to permit full removal after erection.
   d. Mill Mark Removal: Deliver steel with no mill marks (stenciled, stamped, raised, etc.) in exposed locations. Mill marks shall be omitted by cutting of mill material to appropriate lengths where possible. Where not possible, fill and/or grind to a surface finish consistent with the approved mockup.

4. Sizes: AESS steel members shall be one piece units and of dimensions required, as applicable.
   a. Locate field joints at concealed locations, if possible.

5. Joints and Connections:
   a. Joints and connections shall be uniform and consistent. Match abutting cross-sectional configurations, except as indicated otherwise on the Drawings.
   c. Joints and connections, including corners and seams, shall be continuously welded, except where members are indicated to be anchored with threaded fasteners.
   d. Conceal fasteners for making joints and connections, except as otherwise required.
   e. Form exposed connections of members to be anchored with threaded fasteners with hairline joints which are flush and smooth.
   f. Coping and Blocking Tolerance: Maintain a uniform gap of 1/8 inch ± 1/32 inch.
   g. Seal weld open ends of hollow structural sections with 3/8 inch closure plates.

6. Workmanship:
   a. Form exposed steel true to line and level with accurate angles and surfaces, and straight sharp edges. Ease edges to a uniform radius of approximately 1/32 inch.
   b. Form bend steel corners to smallest radius possible without causing metal grain separation or otherwise impairing the work.
   c. Cut, drill and tap steel to receive fasteners, hardware and other like devices.
d. Complete cutting, fitting, forming, drilling, grinding and other fabrication operations, remove
arises from cut edges, and provide eased edges and corners, prior to starting surface
preparation.

e. Edges of steel forming perimeter of cutout areas shall be ground smooth and corners square.

f. Grinding of sheared edges: Grind all edges of sheared, punched or flame-cut steel.

g. Rolled Members: Steel members to be rolled to a final curved shape shall be fully shaped in
the shop and tied during shipping to prevent stress relieving.

7. Assembly: Maintain true continuity of line and accurate relation of planes at joints and connections
with hairline fit of contacting members.

8. Welding: Meet requirements of AWS D1.1:

a. Minimum size of fillet weld: ¼ inch.

b. Avoid discoloration of parent steel.

c. Weld show-through, surface bleed of back side welding, on exposed surface is not
acceptable.

d. Continuous welds: Provide continuous welds of a uniform size and profile.

e. Grind exposed welds smooth. Where flush butt welds, plug welds and puddle welds are
required, slightly oversize welds and grind flush with adjacent surfaces and flat. Dress welds
smooth, uniform and consistent, and treat as required to match and blend with adjoining
surfaces of parent steel. For groove welds, the weld shall be made flush to the surfaces each
side, and be within + 1/16 inch, - 0 inch of plate thickness.

f. Contouring and blending of welds: Oversize fillet welds as required and grind to provide a
smooth transition.

g. Appearance of welds shall be consistent.

2.7 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints
Using ASTM A325 or A490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened, except for bolts used in lateral brace connections, in connections which
may experience load reversal or otherwise indicated on the drawings to be pre-tensioned or
slip-critical.

B. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure
specifications, weld quality, and methods used in correcting welding work.

1. Assemble and weld built-up sections by methods that maintain true alignment of axes without
exceeding tolerances in AISC 303 for mill material.

2.8 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a
depth of 2 inches.

2. Surfaces to be field welded.
4. Surfaces to receive sprayed fire-resistant materials (applied fireproofing).
5. Galvanized surfaces.
6. Surfaces enclosed in interior construction and not adjacent to the building exterior wall.

B. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
   1. SSPC-SP 3, "Power Tool Cleaning."

C. Priming: Immediately after surface preparation, apply primer according to manufacturer’s written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
   1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
   2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

D. Painting: Prepare steel and apply a one-coat, nonasphaltic primer complying with SSPC-PS Guide 7.00, "Painting System Guide 7.00: Guide for Selecting One-Coat Shop Painting Systems," to provide a dry film thickness of not less than 1.5 mils.

2.9 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.
   1. Fill vent and drain holes that are exposed in the finished work unless they function as weep holes, by plugging with zinc solder and filing off smooth.
   2. Galvanize all structural steel and hardware left exposed to weather in their final condition or as indicated on the design drawings.
   3. Prepare the surface of galvanized members to be consistent with the post-galvanizing painting system to be applied where applicable.

2.10 SOURCE QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified testing agency to perform shop tests and inspections.
   1. Provide testing agency with access to places where structural steel work is being fabricated or produced to perform tests and inspections.

B. Bolted Connections: Inspect and test shop-bolted connections according to RCSC’s "Specification for Structural Joints Using ASTM A325 or A490 Bolts."

C. Welded Connections: Visually inspect shop-welded connections according to AWS D1.1 and the following inspection procedures, at testing agency’s direction:
   1. Liquid Penetrant Inspection: ASTM E 165.
   2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
4. Radiographic Inspection: ASTM E 94.

D. In addition to visual inspection, test and inspect shop-welded shear connectors according to requirements in AWS D1.1 for stud welding and as follows:
   1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
   2. Conduct tests according to requirements in AWS D1.1/D1.1M on additional shear connectors if weld fracture occurs on shear connectors already tested.

E. Prepare and issue test and inspection reports promptly to Owner.
   1. Reports shall be provided in pdf file format.
   2. Prepare separate pdf files for each day’s testing and for each type of test.
   3. Pdf files shall be given unique, consistent and readily identifiable names which include the date and type of test.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
   1. Prepare a certified survey of existing conditions. Include bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, decking and bracing are in place unless otherwise indicated.

3.3 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

B. AESS Erection Requirements: Erect structural steel members as designated on the Drawings to meet the requirements of the AISC Code of Standard Practice for Steel Buildings and Bridges, Section 10, and as specified herein.

   1. Set plates for structural members on wedges, shims, or setting nuts as required.
   2. Weld plate washers to top of baseplate.
   3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout. For baseplates subjected to tension or reversible loads, pretension instead of snug-tighten anchor rods.
4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer’s written installation instructions for shrinkage-resistant grouts.

D. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

E. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that are in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
   1. Level and plumb individual members of structure.
   2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

F. Splice members only where indicated.

G. Do not use thermal cutting during erection unless previously approved in writing by the Owner or Owner’s Designated Representative for Design.

H. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

I. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer’s written instructions.

J. AESS Erection Requirements:
   1. The steel erector shall check all AESS members upon delivery for twist, kinks, gouges or other imperfections which might result in rejection of the appearance of the member. Coordinate remedial action with the fabricator prior to erection.
   2. Perform erection operations in a manner that close fit and appearance of the steel will not be impaired.
   3. Provide steel within required tolerances. Compensate for temperature variations, cumulative welding draw, construction loadings, sequential applications of permanent dead loads or any predictable condition that could cause distortions to exceed required tolerances.
   4. Do not cut, trim or weld components during erection in a manner that will damage finish, decrease strength or result in visual imperfection or failure in performance of the work.
   5. Repair imperfections in steel surfaces as specified in Part 2. Repair finish to meet specified requirements.
   6. Provide connections for temporary bracing, shoring and supports only where noted on the reviewed shop drawings. Temporary connections not shown shall be made at locations not exposed to view in the final structure or as approved by the Architect/Engineer.
   7. Handle, lift and align steel members using padded slings and/or other protection required to maintain the AESS required appearance through the erection process.
   9. Assembly: Erect components level, plumb, true-to-line, in alignment with established lines and elevations, and with uniform joints and reveals within specified tolerances.
10. Tolerances: Meet the requirements of the AISC Code of Standard Practice for Steel Buildings and Bridges, Section 10, except for more stringent requirements specified herein.
   a. Location Variation: Variation from location of established lines for a member shall not exceed 1/8 inch in 10 feet, any direction, and not more than 3/8 inch for total length, any direction.
   b. Line Variation: Variation from plumb, level or line shall not exceed 1/8 inch in 10 feet for vertical or angular run, or 1/8 inch in 20 feet for horizontal run, and not more than ¼ inch in 40 feet, any direction.
   c. Offset Variations: Variations in offset of end-to-end and edge-to-edge alignment of adjoining and consecutive members which form planes, and continuous runs and profiles shall not exceed the following:
      1) 1/16 inch in flush alignment for members which are to be ½ inch or less out-of-flush, or separated 2 inches or less by a reveal or protrusion in plane.
      2) 1/8 inch in flush alignment for members which are to be more than ½ inch out of flush, or separated more than 2 inches by a reveal or protrusion in plane.

11. AESS Field Welding Requirements:
   a. Verify that weld sizes, fabrication sequence and equipment used for AESS steel will limit distortions to allowable tolerances.
   b. Grind welds smooth. For groove welds, the weld shall be made flush to the surfaces of each side and be within ± 1/16 inch, ±0 inch of plate thickness. Grind smooth exposed fillet welds ½ inch and larger. Grind flush butt welds.
   c. Fillet welds shall be ground-contoured or blended. Oversize welds as required. Grind to provide a smooth transition.
   d. Continuous Welds: Provide continuous welds of a uniform size and profile.
   e. Minimize weld show-through. At locations where welding on the far side of an exposed connection occurs, grind distortion and marking of the steel to a smooth profile with adjacent material.
   f. Removal of Field Connection Aids: Run-out tabs, erection bolts and other steel members added to connections to allow for alignment, fit-up, and welding in the field shall be removed from the structure. Field groove welds shall be selected to eliminate the need for backing bars or to permit their removal after welding. Welds at run-out tabs shall be removed to match adjacent surfaces and ground smooth. Holes for erection bolts shall be plug welded and ground smooth.
   g. Weld profile, quality and finish shall be consistent.

12. Clean exposed surfaces of AESS steel promptly after installation of components, exercising care to avoid damage.
   a. Maintain AESS steel in a clean condition. Remove spillage of materials as they occur.
   b. Protect exposed AESS steel from damage during subsequent work.

13. Touch up painting of field welds, bolted connections, and abraded areas of shop paint shall be completed to blend with the adjacent surfaces of AESS steel.
3.4 FIELD CONNECTIONS

A. High-Strength Bolts: Install high-strength bolts according to RCSC’s "Specification for Structural Joints Using ASTM A325 or A490 Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened, except for bolts used in lateral brace connections or otherwise indicated on the drawings to be pre-tensioned or slip-critical.

B. Weld Connections: Comply with AWS D1.1 for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
   1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
   2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Contractor will engage a qualified special inspector to perform the following special inspections:
   1. Verify structural steel materials and inspect steel frame joint details.
   2. Verify weld materials and inspect welds.
   3. Verify connection materials and inspect high-strength bolted connections.
   4. Additional testing as directed by the Owner.

B. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections.
   1. Testing agency shall cooperate fully and promptly with requests from the Owner or Owner’s designated representatives.
   2. Testing agency shall promptly submit written reports of all inspections performed for the project record.

C. Bolted Connections: Inspect and test bolted connections according to RCSC’s "Specification for Structural Joints Using ASTM A325 or A490 Bolts."

D. Welded Connections: Visually inspect field welds according to AWS D1.1.
   1. In addition to visual inspection, test and inspect field welds according to AWS D1.1 and the following inspection procedures, at testing agency’s direction:
      a. Liquid Penetrant Inspection: ASTM E 165.
      b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
      c. Ultrasonic Inspection: ASTM E 164.
      d. Radiographic Inspection: ASTM E 94.

E. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1 for stud welding and as follows:
1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.

2. Conduct tests according to requirements in AWS D1.1 on additional shear connectors if weld fracture occurs on shear connectors already tested.

F. Prepare and issue field test and inspection reports promptly to Owner.
   1. Reports shall be provided in pdf file format.
   2. Prepare separate pdf files for each day’s testing and for each type of test.
   3. Pdf files shall be given unique, consistent and readily identifiable names which include the date and type of test.
   4. Reports shall be submitted no more than two business days after the test described in the report is performed.

G. Remove and replace work where test results indicate that it does not comply with specified requirements.

H. Additional testing and inspecting, at Contractor’s expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 REPAIRS AND PROTECTION

A. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780.

B. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
   1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

C. Touchup Painting: Cleaning and touchup painting are specified in Section 099113 “Exterior Painting” and Section 099123 “Interior Painting.”
SECTION 05 2100 - STEEL JOIST FRAMING

PART 1  GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   2. KCS-type K-series steel joists.
   4. LH- series long-span steel joists.
   5. Joist accessories.

B. Related Sections:
   1. Section 05 1200 "Structural Steel Framing".
   2. Section 05 3100 “Steel Decking”

1.3 DEFINITIONS

A. SJI's "Specifications": Steel Joist Institute's "Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders."

B. Special Joists: Steel joists or joist girders requiring modification by manufacturer to support nonuniform, unequal, or special loading conditions that deviate from load tables in SJI's "Specifications."

1.4 ACTION SUBMITTALS

A. Product Data: For each type of joist, accessory, and product.

B. Shop Drawings:
   1. Include layout, designation, number, type, location, and spacing of joists.
   2. Include joining and anchorage details, bracing, bridging, and joist accessories; splice and connection locations and details; and attachments to other construction.
   3. Use or reproduction of any part of the Design Drawings in the creation of the shop or erection drawings shall not be permitted.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer.

B. Welding certificates.

C. Manufacturer certificates.

D. Mill Certificates: For each type of bolt.
E. Comprehensive engineering analysis and design of special joists and uplift bridging, signed and sealed by the qualified Illinois-licensed structural engineer responsible for its preparation.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists complying with applicable standard specifications and load tables in SJI’s "Specifications".
   1. Manufacturer’s responsibilities include providing structural engineering services for designing special joists and uplift bridging to comply with performance requirements.

B. Welding Qualifications: Qualify field-welding procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle joists as recommended in SJI’s "Specifications".

B. Protect joists from corrosion, deformation, and other damage during delivery, storage, and handling.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide joists, bridging and connections capable of withstanding design loads indicated.
   1. Unless otherwise noted, loading data provided is service-level loading.
   2. Design special joists to withstand design loads with deflections no greater than the following:
      a. Live load vertical deflection of 1/360 of the span.
      b. Total load vertical deflection of 1/240 of the span.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 50 percent.

2.2 K-SERIES STEEL JOISTS

A. Manufacture steel joists of type indicated according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI’s "Specifications," with steel-angle top- and bottom-chord members, underslung ends, and parallel top chord.

B. Steel Joist Substitutes: Manufacture according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI’s "Specifications," with steel-angle or -channel members.

C. Provide holes in chord members for connecting and securing other construction to joists.

D. Extended Ends: Extend bearing ends of joists with SJI’s Type R extended ends where indicated, complying with SJI’s "Specifications."

E. Camber joists as indicated.

F. Equip bearing ends of joists with manufacturer’s standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.
2.3 LONG-SPAN STEEL JOISTS

A. Manufacture steel joists according to “Standard Specifications for Longspan Steel Joists, LH-Series and Deep Longspan Steel Joists, DLH-Series” in SJI’s “Specifications,” with steel-angle top- and bottom-chord members; of joist type and end and top-chord arrangements as indicated.

2. End Arrangement: Underslung.
3. Top-Chord Arrangement: Parallel, unless otherwise noted.

B. Provide holes in chord members for connecting and securing other construction to joists.

C. Equip bearing ends of joists with manufacturer’s standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

2.4 PRIMERS

A. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services’ “Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers.

B. Primer: Manufacturer’s standard shop primer complying with performance requirements in SSPC-Paint 15.

2.5 JOIST ACCESSORIES

A. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI’s “Specifications” for type of joist, chord size, spacing, and span. Furnish additional erection bridging if required for stability.

B. Fabricate steel bearing plates from ASTM A 36 steel with integral anchorages of sizes and thicknesses indicated. Shop prime paint.

C. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.

1. Finish: Mechanically deposited zinc coating, ASTM B 695, Class 50.

D. Welding Electrodes: Comply with AWS standards.

E. Furnish miscellaneous accessories including splice plates and bolts required by joist manufacturer to complete joist assembly.

2.6 CLEANING AND SHOP PAINTING

A. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories by power-tool cleaning, SSPC-SP 3.

B. Do not prime paint joists and accessories to receive sprayed fire-resistive materials.

C. Apply one coat of shop primer to joists and joist accessories to be primed to provide a continuous, dry paint film not less than 1 mil thick.
PART 3  EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates, embedded bearing plates, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Do not install joists until supporting construction is in place and secured.

B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI’s "Specifications", joist manufacturer’s written recommendations and requirements in this Section.

1. Space, adjust, and align joists accurately in location before permanently fastening.

2. Install temporary bracing and erection bridging, connections and anchors to ensure that joists are stabilized during construction.

3. Delay rigidly connecting bottom-chord extensions to columns or supports until dead loads are applied.

C. Field weld joists to supporting steel. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

D. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to inspect field welds and bolted connections and to perform field tests and inspections and prepare test and inspection reports.

B. Visually inspect field welds according to AWS D1.1.

1. In addition to visual inspection, test field welds according to AWS D1.1 and the following procedures, as applicable:

   a. Liquid Penetrant Inspection: ASTM E 165.

   b. Magnetic Particle Inspection: ASTM E 709.


C. Visually inspect bolted connections.

D. Testing agency will report inspection results promptly and in writing to Contractor and Owner’s Designated Representative.

E. At Contractor’s expense, correct deficiencies in Work that test and inspection reports have indicated are not in compliance with specified requirements.
F. Perform additional testing, at Contractor’s expense, to determine compliance of corrected Work with specified requirements.

3.4 PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer’s written instructions.

B. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists, abutting structural steel, and accessories.
   1. Clean and prepare surfaces by hand-tool cleaning according to SSPC-SP 2, or power-tool cleaning according to SSPC-SP 3.
   2. Apply a compatible primer of same type as primer used on adjacent surfaces.

C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, which ensures that joists and accessories are without damage or deterioration at time of Substantial Completion.

END OF SECTION
SECTION 05 3100 - STEEL DECKING

PART 1  GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
   A. Section Includes:
      1. Roof deck.
      2. Composite floor deck.
   B. Related Requirements:
      1. Section 03 3000 "Cast-in-Place Concrete"
      2. Section 05 1200 "Structural Steel Framing"

1.3 ACTION SUBMITTALS
   A. Product Data: For each type of deck, accessory, and product indicated.
   B. Shop Drawings:
      1. Include layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, jointing, accessories, and attachments to other construction.
      2. Use or reproduction of any part of the Design Drawings in the creation of the shop or erection drawings will not be permitted.

1.4 INFORMATIONAL SUBMITTALS
   A. Welding certificates.
   B. Product Certificates: For each type of steel deck.
   C. Field quality-control reports.

1.5 QUALITY ASSURANCE
   A. Testing Agency Qualifications: Qualified according to ASTM E 329 for testing indicated.
   B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

1.6 DELIVERY, STORAGE, AND HANDLING
   A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.
   B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.
PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

B. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

C. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

D. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 ROOF DECK

A. Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 31, and with the following:
   1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade 33 minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.
   2. Deck Profile: Type WR, wide rib unless otherwise noted on the structural drawings.
   3. Profile Depth: As indicated on the drawings.
   4. Design Uncoated-Steel Thickness: As indicated on the drawings.
   5. Span Condition: Triple span or more.

B. Acceptable Manufacturers:
   1. Vulcraft, Nucor Corp., St. Joe, IN
   2. United Steel Deck, Canam Steel Corp., Peru, IL
   3. Cordeck Building Solutions, Kenosha, WI

2.3 COMPOSITE FLOOR DECK

A. Composite Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 31, with the minimum section properties indicated, and with the following:
   1. Galvanized-Steel Sheet: ASTM A 653, Structural Steel (SS), Grade 33, G60 zinc coating.
   2. Profile Depth: As indicated on the drawings.
   3. Design Uncoated-Steel Thickness: As indicated on the drawings.
   4. Span Condition: Triple span or more.
2.4 ACCESSORIES

A. General: Provide manufacturer’s standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.

G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated.

H. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.

I. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0747 inch thick, with factory-punched hole of 3/8-inch minimum diameter.

J. Flat Sump Plates: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck. For drains, cut holes in the field.

K. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch wide flanges and sloped recessed pans of 1-1/2 inch minimum depth. For drains, cut holes in the field.

L. Galvanizing Repair Paint: ASTM A 780

M. Repair Paint: Manufacturer’s standard rust-inhibitive primer of same color as primer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer’s written instructions, and requirements in this Section.

B. Install temporary shoring after placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.
D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

3.3 ROOF DECK INSTALLATION

A. Fasten roof deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:

2. Weld Spacing: Weld edge and interior ribs of deck units at 12” maximum on center.
3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding 18 inches on center, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, zinc-plated steel screws.
2. As an alternate, fasten with a minimum 1-1/2 inch-long welds at same spacing.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped 2 inches minimum.

D. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and mechanically fasten flanges to top of deck. Space mechanical fasteners not more than 12 inches apart with at least one fastener at each corner.

1. Install reinforcing channels or zees in ribs to span between supports and mechanically fasten.

E. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer’s written instructions. Mechanically fasten to substrate to provide a complete deck installation.

1. Weld cover plates at changes in direction of roof-deck panels unless otherwise indicated.

F. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer’s written instructions to ensure complete closure.

3.4 FLOOR-DECK INSTALLATION

A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:

2. Weld Spacing: Weld edge ribs of panels at each support. Space additional welds a maximum of 12 inches apart.

3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of half of the span or 36 inches, and as follows:
   1. Fasten with a minimum of 1-1/2-inch long welds.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 2 inches, with end joints as follows:
   1. End Joints: Lapped.

D. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations unless otherwise indicated.

E. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

F. Install piercing hanger tabs at locations indicated.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections.

B. Field welds will be subject to inspection.

C. Testing agency will report inspection results promptly and in writing to Contractor and Owner’s Designated Representative.

D. At Contractor’s expense, remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor’s expense, will be performed to determine compliance of corrected work with specified requirements.

3.6 PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A780 and manufacturer’s written instructions.

B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint. Retain one of two subparagraphs below if appearance is important.
   1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck.
   2. Wire brushing, cleaning, and repair painting of bottom deck surfaces are included in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION
SECTION 05 4000 - COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Exterior non-load-bearing wall framing.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 REFERENCE STANDARDS

A. AISI S100 – North American Specification for the Design of Cold-Formed Steel Structural Members
B. AISI S200 - North American Standard for Cold-Formed Steel Framing – General Provisions
C. AISI S211 – North American Standard for Cold-Formed Steel Framing – Wall Stud Design

1.4 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified, Illinois-licensed structural engineer, to design cold-formed steel framing and connections not completely sized and spaced on the design drawings. Where specific member or connection information (type, depth, spacing, etc.) is provided on the drawings, design shall conform to such requirements.

B. Structural Performance: Provide cold-formed steel framing capable of withstanding design loads within limits and under conditions indicated.

   1. Design Loads: Design cold formed members for loads indicated on the design drawings.
   2. Interior Non-Load Bearing Wall Studs: Design for minimum 5 psf reversible load perpendicular to the plane of the wall.
   3. Design loads for the cold-formed link structures between the new and existing buildings between column lines G and I:
      a. Dead Load: Weights of materials and construction
      b. Superimposed Dead Loads: Uniformly distributed load of 40 psf minimum (to account for utilities, interior ceilings and finishes, roofing and insulation). Ignore Superimposed Dead Loads for uplift purposes.
      c. Snow / Live load: Per IBC 2009 Section 1608. Account for windward and leeward snow drift in determining snow loads and design for most severe effects. See structural general notes for snow load parameters applicable to this project. Design roofs for minimum 20 psf live load.
      d. Wind Load: Per IBC 2009 Section 1609. See structural general notes for wind load parameters applicable to this project. (Wall and roof uplift pressures for the cold-formed link structures between the new and existing buildings shall be determined as part of delegated design.)
e. Earthquake Load: Per IBC 2009 Section 1613. See structural general notes for earthquake load parameters applicable to this project. (Base shear in structural general notes is for entire building.)

4. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
   a. Exterior Wall Studs Laterally Supporting Brick Masonry: Horizontal deflection of 1/600 of the wall height (wind load case).
   c. Lateral Drift Magnitude at Roof Elevation: Horizontal deflection of 1/500 of the story height in either primary lateral direction (wind load case).
   d. Joist Vertical Deflection: Vertical deflection of 1/360 of the joist span (live, snow or wind loads), 1/240 of the joist span (total gravity loads).

5. Design framing systems to provide for movement of framing members located outside the insulated building envelope without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F (67 deg C).

6. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
   a. Upward and downward movement of 1 inch (25 mm).

7. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.

C. Cold-Formed Steel Framing Design Standards:
   1. Wall Studs: AISI S211.

D. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.

E. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
   1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of cold-formed steel framing product and accessory.

B. LEED Submittals:

C. Shop Drawings:
   1. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners and all attachments to the supporting base structure.
   2. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
3. Shop drawings shall be fully coordinated with the results of the Delegated Design and shall be reviewed by the Contractor for completeness and conformance with submittal requirements prior to submitting for review.

D. Delegated-Design Submittal: For cold-formed steel framing indicated to comply with design loads, include structural analysis data signed and sealed by the qualified, Illinois-licensed structural engineer responsible for their preparation.
   1. Submit analysis data simultaneous with or before the cold formed metal framing shop drawings.
   2. Analysis shall clearly indicate loads applied by the cold-formed metal framing to the supporting base structure. Show load magnitudes, locations and directions for all applicable load cases.
   3. Delegated Design shall also include design of all attachments to the supporting base structure.
   4. Coordination between the delegated design and shop drawings is the sole responsibility of the delegated design engineer.

1.6 INFORMATIONAL SUBMITTALS
   A. Welding certificates.
   B. Product Test Reports: For each listed product, submit product data and information for tests performed by a qualified testing agency or a manufacturer and witnessed by a qualified testing agency.
      1. Steel sheet.
      2. Expansion anchors.
      4. Mechanical fasteners.
      5. Vertical deflection clips.
      6. Horizontal drift deflection clips
      7. Miscellaneous structural clips and accessories.
   C. Research Reports: For non-standard cold-formed steel framing, from ICC-ES.

1.7 QUALITY ASSURANCE
   A. Product Tests: Mill certificates or data from a qualified independent testing agency or in-house testing with calibrated test equipment indicating steel sheet complies with requirements, including base-metal thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness.
   B. Welding Qualifications: Qualify procedures and personnel according to the following:
      1. AWS D1.1 (D1.1M), "Structural Welding Code - Steel."
      2. AWS D1.3 (D1.3M), "Structural Welding Code - Sheet Steel."

1.8 DELIVERY, STORAGE, AND HANDLING
   A. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling.
PART 2 PRODUCTS

2.1 COLD-FORMED STEEL FRAMING, GENERAL

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Steel Sheet: ASTM A1003 (A1003M), Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
   1. Grade: ST33H (ST230H) for 33- and 43-mil members, ST50H for thicker members.
   2. Coating: G60 (Z180) or equivalent; G90 where shown or noted on the Design Drawings.

C. Steel Sheet for Vertical Deflection Clips: ASTM A653 (A653M), structural steel, zinc coated, of grade and coating as follows:
   1. Grade: 50, Class 1 (340, Class 1), or as required by structural performance.
   2. Coating: G90 (Z275).

2.2 EXTERIOR WALL FRAMING

A. Steel Studs: Manufacturer’s standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: 0.0677 inch (1.72 mm) unless specifically shown otherwise on the drawings.
   2. Flange Width: 1.625 inch (41 mm), or wider if required for structural performance.

B. Steel Track: Manufacturer’s standard U-shaped steel track, of web depths indicated, unpunched, with unstiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: 0.0428 inch (1.09 mm).
   2. Flange Width: 1.25 inch (32 mm).

C. Vertical Deflection Clips: Manufacturer’s standard bypass clips, capable of accommodating upward and downward vertical displacement of primary structure through positive mechanical attachment to stud web. Accommodate a minimum of ¾” vertical deflection of the primary structure without transferring load to the wall studs.

2.3 ROOF JOIST FRAMING

A. Steel Joists: Manufacturer’s standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: 0.0428 inch (1.09 mm).
   2. Flange Width: 1.625 inch (41 mm), minimum.

2.4 CEILING JOIST FRAMING

A. Steel Ceiling Joists: Manufacturer’s standard C-shaped steel sections, of web depths indicated, unpunched, punched with enlarged service holes, or punched with standard holes with stiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: 0.0428 inch (1.09 mm).
2. Flange Width: 1.625 inch (41 mm), minimum.

2.5 SOFFIT FRAMING

A. Exterior Soffit Frame: Manufacturer’s standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows:
   1. Minimum Base-Metal Thickness: 0.0428 inch (1.09 mm).
   2. Flange Width: 1.625 inch (41 mm), minimum.

2.6 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories from steel sheet, ASTM A1003 (A1003M), Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.

B. Provide accessories of manufacturer’s standard thickness and configuration, unless otherwise indicated, as follows:
   1. Supplementary framing.
   2. Bracing, bridging, and solid blocking.
   3. Web stiffeners.
   4. Anchor clips.
   5. End clips.
   6. Foundation clips.
   7. Gusset plates.
   9. Joist hangers and end closures.

2.7 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A36 (A36M), zinc coated by hot-dip process according to ASTM A123 (A123M).

B. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E 488 conducted by a qualified testing agency.

C. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E 1190 conducted by a qualified testing agency.

   1. Head Type: Low-profile head beneath sheathing, manufacturer’s standard elsewhere.

E. Welding Electrodes: Comply with AWS standards.
2.8 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: ASTM A 780.

B. Nonmetallic, Nonshrink Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage-compensating agents, and plasticizing and water-reducing agents, complying with ASTM C1107 (C1107M), with fluid consistency and 30-minute working time.

C. Shims: Load bearing, high-density multimonomer plastic, and nonleaching; or of cold-formed steel of same grade and coating as framing members supported by shims.

D. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer’s standard widths to match width of bottom track or rim track members.

2.9 FABRICATION

A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI’s specifications and standards, manufacturer’s written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.

2. Cut framing members by sawing or shearing; do not torch cut.

3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
   a. Comply with AWS D1.3 (D1.3M) requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
   b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by no fewer than three exposed screw threads.

4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch (3 mm).

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.
3.2 PREPARATION

A. Before sprayed fire-resistive materials are applied, attach continuous angles, supplementary framing, or tracks to structural members indicated to receive sprayed fire-resistive materials.

B. After applying sprayed fire-resistive materials, remove only as much of these materials as needed to complete installation of cold-formed framing without reducing thickness of fire-resistive materials below that are required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.

C. Install load bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch (6 mm) to ensure a uniform bearing surface on supporting concrete or masonry construction.

D. Install sealer gaskets at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing according to AISI S200 and to manufacturer’s written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.

1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch (1.6 mm).

D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.

2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.

   a. Comply with AWS D1.3 (D1.3M) requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

   b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Install insulation, specified in Division 07 section “Thermal Insulation,” in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer’s approved or standard punched openings.

J. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:
   1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 EXTERIOR WALL INSTALLATION

A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated.

B. Fasten both flanges of studs to top and bottom track unless otherwise indicated. Space studs as follows:
   1. Stud Spacing: 16 inch (406 mm), or closer if required by design.

C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.

D. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providing lateral support.
   1. Connect vertical deflection clips to bypassing or infill studs and anchor to building structure.

E. Install horizontal bridging in wall studs, spaced vertically in rows indicated on Shop Drawings but not more than 48 inch (1220 mm) apart. Fasten at each stud intersection.
   1. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 12 inch (305 mm) of single deflection track. Install a combination of bridging and stud or stud-track solid blocking of width and thickness matching studs, secured to stud webs or flanges.
      a. Install solid blocking at centers indicated on Shop Drawings.
   2. Bridging: Provide one of the following bridging options:
      a. Cold-rolled steel channel, welded or mechanically fastened to webs of punched studs.
      b. Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.
      c. Proprietary bridging bars installed according to manufacturer’s written instructions.

F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

3.5 JOIST INSTALLATION

A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Shop Drawings.

B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.
   1. Install joists over supporting frame with a minimum end bearing of 1.5 inch (38 mm).
2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections as indicated on Shop Drawings or as required by Delegated Design.

C. Space joists not more than 2 inch (51 mm) from abutting walls, and as follows:
   1. Joist Spacing: As indicated.

D. Frame openings with built-up joist headers consisting of joist and joist track, or another combination of connected joists if indicated.

E. Install joist reinforcement at interior supports with single, short length of joist section located directly over interior support, with lapped joists of equal length to joist reinforcement, or as indicated on Shop Drawings.
   1. Install web stiffeners to transfer axial loads of walls above.

F. Install bridging at intervals indicated on Shop Drawings or as required by Delegated Design. Fasten bridging at each joist intersection as follows:
   1. Bridging: Joist-track solid blocking of width and thickness indicated, secured to joist webs.
   2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and joist-track solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of joists and secure solid blocking to joist webs.

G. Secure joists to load-bearing interior walls to prevent lateral movement of bottom flange.

H. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.6 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect/Engineer.

D. Remove and replace work where test results indicate that it does not comply with specified requirements.

E. Additional testing and inspecting, at Contractor’s expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.7 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 and manufacturer’s written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION
SECTION 05 5000 - METAL FABRICATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Steel framing and supports for ceiling-hung toilet compartments.
   2. Steel framing and supports for operable partitions.
   3. Steel framing and supports for countertops.
   4. Steel framing and supports for mechanical and electrical equipment.
   5. Steel framing and supports for applications where framing and supports are not specified in other Sections.
   6. Strut framing (continuous slot, bolted metal framing channels) and all associated fittings and hardware.
   7. Steel shapes for supporting elevator door sills.
   8. Shelf angles.
   9. Metal ladders.
   10. Alternating tread devices.
   11. Metal ships' ladders.
   12. Metal floor plate and supports.
   15. Miscellaneous steel trim including steel angle corner guards, steel edgings, and loading-dock edge angles.
   16. Abrasive metal nosings and treads.
   17. Metal downspout boots.
   18. Loose bearing and leveling plates for applications where they are not specified in other Sections.

B. Products furnished, but not installed, under this Section include the following:
   1. Loose steel lintels.
   2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
   3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

1.2 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:
   1. Metal nosings and treads.
   2. Paint products.

B. LEED Submittals:
   1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
   2. Laboratory Test Reports for Credit IEQ 4.2: For primers, documentation indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Small-Scale Environmental Chambers."

C. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:
   1. Steel framing and supports for ceiling-hung toilet compartments.
   2. Steel framing and supports for operable partitions.
   3. Steel framing and supports for countertops.
   4. Steel framing and supports for mechanical and electrical equipment.
   5. Steel framing and supports for applications where framing and supports are not specified in other Sections.
   7. Steel shapes for supporting elevator door sills.
   8. Shelf angles.
   9. Metal ladders.
   10. Alternating tread devices.
   11. Metal ships' ladders.
   12. Metal floor plate and supports.
   15. Miscellaneous steel trim including steel angle corner guards, steel edgings, and loading-dock edge angles.
16. Abrasive metal nosings and treads.
17. Metal downspout boots.
18. Loose steel lintels.

D. Samples for Verification: For each type and finish of extruded nosing and tread.

E. Delegate-Design Submittal: Submit comprehensive design calculations for operable partition supplemental support framing not shown on the design drawings.

1. Calculations shall be signed and sealed by an Illinois-licensed Structural Engineer and coordinated with operable partition requirements.
2. The calculations shall include an assessment of the adequacy of base building structural elements shown on the drawings for loads imposed by the operable partition and its supplemental support framing.
   a. The loads imposed by the operable partition supplemental support framing shall be clearly identified in the calculations.
3. The calculations shall include the estimated total cumulative deflection of the base building support elements and supplemental support framing.
4. All connections and anchorage required between the operable partition supplemental support framing and the base building structure shall be designed by the support framing design engineer and shall address local effects such as anchor pullout and local stress effects on base building structural framing.
5. Submitted calculations shall be the sole responsibility of the supplemental support framing design engineer and shall be treated as For Record Only.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1 (D1.1M), "Structural Welding Code - Steel."
2. AWS D1.2 (D1.2M), "Structural Welding Code - Aluminum."
3. AWS D1.3 (D1.3M), "Structural Welding Code--Sheet Steel."
4. AWS D1.6 (D1.6M), "Structural Welding Code - Stainless Steel."

B. Strut Framing

1. Manufacturers: Firms regularly engaged in the manufacture of bolted metal framing of the types required, whose products have been in satisfactory use in similar service for not less than 5 years
2. Comply with the latest revision of MFMA Standards Publication Number MFMA-4, "Metal Framing Standards Publication".

1.5 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.
PART 2 PRODUCTS

2.1 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

C. Steel Plates, Shapes, and Bars: ASTM A36 (A36M).

D. Rolled-Steel Floor Plate: ASTM A786 (A786M), rolled from plate complying with ASTM A36 (A36M) or ASTM A283 (A283M), Grade C or D.

E. Rolled-Stainless-Steel Floor Plate: ASTM A 793.

F. Abrasive-Surface Floor Plate: Steel plate with abrasive granules rolled into surface or with abrasive material metallically bonded to steel.

G. Steel Tubing: ASTM A500 (A500M), cold-formed steel tubing.

H. Steel Pipe: ASTM A53 (A53M), Standard Weight (Schedule 40) unless otherwise indicated.

I. Strut Framing and Components: Cold-formed metal box channels (struts) complying with MFMA-4 "Metal Framing Standards Publication".

1. Size of Channels: As indicated.

2. Material: Pre-galvanized Steel: Strut shall be made from steel meeting the minimum mechanical properties of ASTM A653 SS, Grade 33, and mill galvanized in accordance with coating designation G90. Fittings shall be manufactured from steel meeting the minimum requirements of ASTM A907 SS, Grade 33. All fittings and hardware shall be zinc plated in accordance with ASTM B633 (SC3 for fittings, SC1 for threaded hardware).

3. Material: Hot-dip Galvanized Steel: Strut shall be made from steel meeting the minimum mechanical properties of ASTM A1011 SS, Grade 33 and shall be hot-dip galvanized after fabrication in accordance with ASTM A123. Fittings shall be manufactured from steel meeting the minimum requirements of ASTM A907 SS, Grade 33, and hot-dip galvanized after fabrication in accordance with ASTM A123. All hardware shall be stainless steel Type 304 or Type 316 or chromium zinc ASTM F1136 Gr. 3. All hot-dip galvanized after fabrication products must be returned to point of manufacture after coating for inspection and removal of all sharp burrs.

4. Stainless Steel: All strut fittings and hardware shall be made of AISI Type 304 or Type 316 stainless steel where indicated.

J. Cast Iron: Either gray iron, ASTM A48 (A48M), or malleable iron, ASTM A47 (A47M), unless otherwise indicated.

K. Aluminum Plate and Sheet: ASTM B209 (B209M), Alloy 6061-T6.

L. Aluminum Extrusions: ASTM B221 (B221M), Alloy 6063-T6.

2.2 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F1941 (F1941M), Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
1. Provide stainless-steel fasteners for fastening aluminum.

2. Provide stainless-steel fasteners for fastening stainless steel.

B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with hex nuts, ASTM A563 (A563M); and, where indicated, flat washers.

C. Stainless-Steel Bolts and Nuts: Regular hexagon-head annealed stainless-steel bolts, ASTM F593 (ASTM F738M); with hex nuts, ASTM F594 (ASTM F836M); and, where indicated, flat washers; Alloy Group 1 (A1).

D. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A563 (A563M); and, where indicated, flat washers.

1. Hot-dip galvanize, or provide mechanically deposited zinc coating where item being fastened is indicated to be galvanized.

E. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488 (E488M), conducted by a qualified independent testing agency.

F. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47 (A47M) malleable iron or ASTM A27 (A27M) cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

G. Post-Installed Anchors: Torque-controlled expansion anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F1941 (F1941M), Class Fe/Zn 5, unless otherwise indicated.


2.3 MISCELLANEOUS MATERIALS

A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.


D. Concrete: Comply with requirements in Section 03 3000 "Cast-in-Place Concrete" for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 3000 psi (20 MPa).

2.4 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1 1/2 inch (3.2 by 38 mm), with a minimum 6 inch (150 mm) embedment and 2 inch (50 mm) hook, not less than 8 inch (200 mm) from ends and corners of units and 24 inch (600 mm) o.c., unless otherwise indicated.

2.5 SHELF ANGLES

A. Fabricate shelf angles from steel angles of sizes indicated and for attachment to concrete framing. Provide horizontally slotted holes to receive 3/4 inch (19 mm) bolts, spaced not more than 6 inch (150 mm) from ends and 24 inch (600 mm) o.c., unless otherwise indicated.
   1. Provide mitered and welded units at corners.
   2. Provide open joints in shelf angles at expansion and control joints. Make open joint approximately 2 inch (50 mm) larger than expansion or control joint.

B. For cavity walls, provide vertical channel brackets to support angles from backup masonry and concrete.

C. prime shelf angles located in exterior walls.

D. Prime shelf angles located in exterior walls with zinc-rich primer.

E. Furnish wedge-type concrete inserts, complete with fasteners, to attach shelf angles to cast-in-place concrete.
2.6 METAL LADDERS

A. General:
   2. For elevator pit ladders, comply with ASME A17.1/CSA B44.

B. Steel Ladders:
   1. Space siderails 16 inches (406 mm) apart unless otherwise indicated.
   2. Siderails: Continuous, 3/8 by 2-1/2 inch (9.5 by 64 mm) steel flat bars, with eased edges.
   3. Rungs: 3/4 inch diameter (19 mm diameter) steel bars.
   4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
   5. Provide nonslip surfaces on top of each rung, either by coating rung with aluminum-oxide granules set in epoxy-resin adhesive or by using a type of manufactured rung filled with aluminum-oxide grout.
   6. Provide platforms as indicated fabricated from welded or pressure-locked steel bar grating, supported by steel angles. Limit openings in gratings to no more than 1/2 inch (12 mm) in least dimension.
   7. Support each ladder at top and bottom and not more than 60 inches o.c. (1500 mm o.c.) with welded or bolted steel brackets.
   8. Prime exterior ladders, including brackets and fasteners, with zinc-rich primer.

2.7 ALTERNATING TREAD DEVICES

A. Alternating Tread Devices: Fabricate alternating tread devices of open-type construction with channel or plate stringers and pipe and tube railings unless otherwise indicated. Provide brackets and fittings for installation.
   1. Tread depth shall be not less than 8 1/2 inch (216 mm) exclusive of nosing or less than 10 1/2 inch (267 mm) including the nosing, tread width shall be not less than 7 inch (178 mm), and riser height shall be not more than 8 inch (203 mm).
   2. Fabricate from steel and assemble by welding or with stainless-steel fasteners.
   3. Comply with applicable railing requirements in Section 05 5213 "Pipe and Tube Railings."

B. Galvanize exterior steel alternating tread devices, including treads, railings, brackets, and fasteners.

C. Prime exterior steel alternating tread devices, including treads, railings, brackets, and fasteners, with zinc-rich primer.

2.8 METAL SHIPS' LADDERS

A. Provide metal ships’ ladders where indicated. Fabricate of open-type construction with channel or plate stringers and pipe and tube railings unless otherwise indicated. Provide brackets and fittings for installation.
   1. Treads shall be not less than 5 inch (127 mm) exclusive of nosing or less than 8 1/2 inch (216 mm) including the nosing, and riser height shall be not more than 9 1/2 inch (241 mm).
   2. Fabricate ships' ladders, including railings from steel.
3. Fabricate treads from welded or pressure-locked steel bar grating. Limit openings in gratings to no more than 3/4 inch (19 mm) in least dimension.

4. Comply with applicable railing requirements in Section 05 5213 "Pipe and Tube Railings."

B. Galvanize exterior steel ships' ladders, including treads, railings, brackets, and fasteners.

C. Prime exterior steel ships' ladders, including treads, railings, brackets, and fasteners, with zinc-rich primer.

2.9 METAL FLOOR PLATE

A. Fabricate from rolled-steel floor plate of thickness indicated below:

   1. Thickness: 3/16 inch (4.8 mm).

2.10 ELEVATOR PIT SUMP COVERS

A. Fabricate from welded or pressure-locked steel bar grating. Limit openings in gratings to no more than 1 inch (25 mm) in least dimension.

B. Provide steel angle supports as indicated.

2.11 STRUCTURAL-STEEL DOOR FRAMES

A. Fabricate structural-steel door frames from steel shapes, plates, and bars of size and to dimensions indicated, fully welded together, with 5/8-by-1-1/2 inch (16-by-38 mm) steel channel stops, unless otherwise indicated. Plug-weld built-up members and continuously weld exposed joints. Secure removable stops to frame with countersunk machine screws, uniformly spaced at not more than 10 inch (250 mm) o.c. Reinforce frames and drill and tap as necessary to accept finish hardware.

   1. Provide with integrally welded steel strap anchors for securing door frames into adjoining concrete or masonry.

B. Extend bottom of frames to floor elevation indicated with steel angle clips welded to frames for anchoring frame to floor with expansion shields and bolts.

C. Galvanize exterior steel frames.

D. Prime exterior steel frames with zinc-rich primer.

2.12 MISCELLANEOUS STEEL TRIM

A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.

B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.

   1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

C. Galvanize exterior miscellaneous steel trim.

D. Prime exterior miscellaneous steel trim with zinc-rich primer.
2.13 ABRASIVE METAL NOSINGS AND TREADS

A. Cast-Metal Units: Cast iron, with an integral-abrasive, as-cast finish consisting of aluminum oxide, silicon carbide, or a combination of both. Fabricate units in lengths necessary to accurately fit openings or conditions.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. American Safety Tread Co., Inc.
   b. Balco, Inc.
   c. Barry Pattern & Foundry Co., Inc.
   d. Granite State Casting Co.
   e. Safe-T-Metal Company, Inc.
   f. Wooster Products Inc.

2. Nosings: Cross-hatched units, 1 1/2 by 1 1/2 inch (38 by 38 mm), for casting into concrete.

3. Treads: Cross-hatched units, full depth of tread with 3/4-by-3/4 inch (19-by-19-mm) nosing, for application over bent plate treads or existing stairs.

B. Extruded Units: Aluminum, with abrasive filler consisting of aluminum oxide, silicon carbide, or a combination of both, in an epoxy-resin binder. Fabricate units in lengths necessary to accurately fit openings or conditions.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
   a. ACL Industries, Inc.
   b. American Safety Tread Co., Inc.
   c. Amstep Products.
   d. Armstrong Products, Inc.
   e. Balco, Inc.
   f. Granite State Casting Co.
   g. Wooster Products Inc.

2. Provide ribbed units, with abrasive filler strips projecting 1/16 inch (1.5 mm) above aluminum extrusion.

3. Nosings: Square-back units, 3 inch (75 mm) wide, for casting into concrete steps.

4. Treads: Square-back units, full depth of tread with 1 3/8 inch (35 mm) lip, for application over existing stairs.

C. Drill for mechanical anchors and countersink. Locate holes not more than 4 inch (100 mm) from ends and not more than 12 inch (300 mm) o.c., evenly spaced between ends, unless otherwise indicated. Provide closer spacing if recommended by manufacturer.
1. Provide two rows of holes for units more than 5 inch (125 mm) wide, with two holes aligned at ends and intermediate holes staggered.

D. Apply bituminous paint to concealed surfaces of cast-metal units.

E. Apply clear lacquer to concealed surfaces of extruded units.

2.14 METAL DOWNSPOUT BOOTS

A. Provide downsput boots made from cast iron in heights indicated with inlets of size and shape to suit downsputs. Provide units with flanges and holes for countersunk anchor bolts.

1. Outlet: At 35 degrees from horizontal, to discharge onto splash block or pavement.

B. Prime cast-iron downsput boots with zinc-rich primer.

2.15 LOOSE BEARING AND LEVELING PLATES

A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.

B. Galvanize plates.

C. Prime plates with zinc-rich primer.

2.16 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inch (200 mm) unless otherwise indicated.

C. Galvanize loose steel lintels located in exterior walls.

2.17 STEEL WELD PLATES AND ANGLES

A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.18 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.19 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153 (A153M) for steel and iron hardware and with ASTM A123 (A123M) for other steel and iron products.

B. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

1. Shop prime with universal shop primer unless zinc-rich primer is indicated.

C. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
D. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

2.20 ALUMINUM FINISHES

A. As-Fabricated Finish: AA-M12.

2.21 OPERABLE PARTITION STEEL SUPPORT FRAMING

A. Provide all necessary supplemental steel support framing for operable partitions whether shown on the design drawings or not.

B. Fabricate supplemental support framing for operable partitions from hot-rolled steel shapes. Provide bearing plates, anchors, bolts, welds and braces as necessary for a complete installation.

C. All supplemental support framing shall have a coat of shop primer and shall be hidden from view in the final condition unless specifically approved otherwise by the Architect.

D. Design of operable partition supplemental steel support framing and the assessment of the loads imposed to the base building structure shall be the responsibility of the operable partition supplier.

1. Connections to base building structure shall not put torsion in structural steel wide flange framing members.

2. Connections to base building structure shall not put concentrated uplift loads into the concrete slab-on-deck.

3. The design shall estimate the total deflection of the base building support elements and supplemental support framing during the operating life of the operable partitions. The operable partitions shall be designed to accommodate this estimated deflection.

4. If required, reinforcement of base-building elements which is necessary because of loads imposed by the operable partition supplemental support framing shall be designed by the support framing design engineer.

E. Cutting of base building structural members shall not be permitted.

F. The cost of delegated design, all necessary supplemental support framing and its anchorage and any reinforcing of the base building structure shall be included in the Base Bid.

PART 3 EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.

2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

F. Corrosion Protection: Coat concealed surfaces of aluminum that come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
   1. Cast Aluminum: Heavy coat of bituminous paint.
   2. Extruded Aluminum: Two coats of clear lacquer.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers’ written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for ceiling hung toilet partitions, operable partitions, and overhead doors securely to, and rigidly brace from, building structure.

C. Support steel girders on solid grouted masonry, concrete, or steel pipe columns. Secure girders with anchor bolts embedded in grouted masonry or concrete or with bolts through top plates of pipe columns.
   1. Where grout space under bearing plates is indicated for girders supported on concrete or masonry, install as specified in "Installing Bearing and Leveling Plates" Article.

D. Install pipe columns on concrete footings with grouted baseplates. Position and grout column baseplates as specified in "Installing Bearing and Leveling Plates" Article.
   1. Grout baseplates of columns supporting steel girders after girders are installed and leveled.

3.3 INSTALLING NOSINGS, TREADS, AND THRESHOLDS

A. Center nosings on tread widths unless otherwise indicated.

B. For nosings embedded in concrete steps or curbs, align nosings flush with riser faces and level with tread surfaces.

C. Seal thresholds exposed to exterior with elastomeric sealant complying with Section 07 9200 "Joint Sealants" to provide a watertight installation.

3.4 INSTALLING BEARING AND LEVELING PLATES


B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with nonshrink grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.
3.5 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0 mil (0.05 mm) dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780 (A780M).

END OF SECTION
PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Preassembled steel stairs with concrete-filled treads.
   2. Steel tube railings attached to metal stairs.
   3. Steel tube handrails attached to walls adjacent to metal stairs.
   4. Railing gates at the level of exit discharge.

1.2 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of anchorages for metal stairs. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

C. Coordinate locations of hanger rods and struts with other work so that they do not encroach on required stair width and are within the fire-resistance-rated stair enclosure.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified, Illinois-licensed structural engineer to design stairs and railings.

B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Uniform Load: 100 lb/sq. ft. (4.79 kN/sq. m)
   2. Concentrated Load: 300 lb (1.33 kN) applied on an area of 4 sq. in. (2580 sq. mm)
   3. Uniform and concentrated loads need not be assumed to act concurrently.
   4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
   5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch (6.4 mm), whichever is less.
   6. Limit deflection of stair stringers to L/360 where L is the stringer horizontal projected dimension between supports.
   7. Where the stair is supported by base building members shown on the structural drawings by hanger supports or other means, the loads imparted to the supporting members shall be centered on the supporting member without creating torsion loads.
   8. Where the stair imparts horizontal load to a supporting base building member, the point of load application shall be as close to the floor slab or roof deck as possible.
   9. Design of the stair shall account for all loads imparted to the stair by the railing.
C. Structural Performance of Railings: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:
   a. Uniform load of 50 lb/ft (0.73 kN/m) applied in any direction.
   b. Concentrated load of 200 lb (0.89 kN) applied in any direction.
   c. Uniform and concentrated loads need not be assumed to act concurrently.

2. Infill of Guards:
   a. Concentrated load of 50 lb (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
   b. Infill load and other loads need not be assumed to act concurrently.

D. Seismic Performance of Stairs: Metal stairs shall withstand the effects of earthquake motions determined according to ACSE/SEI 7 "Minimum Design Loads for Buildings and Other Structures".

1.4 ACTION SUBMITTALS

A. Product Data: For metal pan stairs and the following:

1. Prefilled metal-pan-stair treads.

2. Abrasive nosings.

3. Paint products.

B. LEED Submittals:

1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.

2. Laboratory Test Reports for Credit IEQ 4.2: For primers, documentation indicating that products comply with the testing and product requirements of the California Department of Public Health's (formerly, the California Department of Health Services') "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

C. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Shop drawings shall be fully coordinated with the results of the Delegated Design and shall be reviewed by the Contractor for completeness and conformance with submittal requirements prior to submitting for review.

D. Samples for Verification: For each type and finish of nosing.

E. Delegated-Design Submittal: For stairs and railings, including analysis data signed and sealed by the Illinois-licensed structural engineer responsible for their preparation.

1. Submit analysis data simultaneous with or before the stair and railing shop drawings.

2. Analysis shall clearly indicate loads applied by the stairs and railings to the supporting base building structure. Show load magnitudes, locations and directions for all applicable load cases.
3. Delegated Design shall also include design of all attachments to the supporting base building structure.

4. Stair and railing analysis data shall be submitted for the project record. The stair and railing design engineer is solely responsible for the stair and railing structural adequacy.

1.5 INFORMATIONAL SUBMITTALS

A. Welding certificates:
   1. Submit certifications for all shop and field welders showing joint and weld type, process and positions for which the welder is certified.
   2. Submit log demonstrating welder has been engaged in continuous service as required by AWS.

B. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1 (D1.1M), "Structural Welding Code - Steel."
   2. AWS D1.3 (D1.3M), "Structural Welding Code - Sheet Steel."

PART 2 PRODUCTS

2.1 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

C. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

D. Steel Tubing: ASTM A 500 (cold formed) or ASTM A 513.

E. Uncoated, Cold-Rolled Steel Sheet: ASTM A1008 (A1008M), structural steel, Grade 25 (Grade 170), unless another grade is required by design loads; exposed.

F. Uncoated, Hot-Rolled Steel Sheet: ASTM A1011 (A1011M), structural steel, Grade 30 (Grade 205), unless another grade is required by design loads.

G. Galvanized-Steel Sheet: ASTM A653 (A653M), G90 (Z275) coating, structural steel, Grade 33 (Grade 230), unless another grade is required by design loads.

2.2 ABRASIVE NOSINGS

A. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with manufacturer.

B. Apply bituminous paint to concealed surfaces of cast-metal units set into concrete.

C. Apply clear lacquer to concealed surfaces of extruded units set into concrete.
2.3 METAL NOSINGS

A. Provide roll-formed stainless steel profile with ribbed, 1-3/16 inch (30 mm) wide exposed surface with rounded leading edge and integrated trapezoid-perforated anchoring leg where tile finish is indicated on stair treads.

B. Basis of Design: Schluter Systems; Schluter-TREP-E.

C. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another acceptable manufacturer.

2.4 FASTENERS

A. General: Provide zinc-plated fasteners with coating complying with ASTM B 633 or F1941 (F1941M), Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls. Select fasteners for type, grade, and class required.

B. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A (ASTM F568M, Property Class 4.6); with hex nuts, ASTM A563 (A563M); and, where indicated, flat washers.

C. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A563 (A563M); and, where indicated, flat washers.

1. Provide mechanically deposited or hot-dip, zinc-coated anchor bolts for exterior stairs.

D. Post-Installed Anchors: Torque-controlled expansion anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488 (E488M), conducted by a qualified independent testing agency.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F1941 (F1941M), Class Fe/Zn 5, unless otherwise indicated.


2.5 MISCELLANEOUS MATERIALS

A. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Public Health’s (formerly, the California Department of Health Services’) "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers."

B. Shop Primers: Provide primers that comply with Division 9 Painting Sections.

C. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

D. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

E. Concrete Materials and Properties: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mix concrete with a minimum 28-day compressive strength of 3000 psi (20 MPa) unless otherwise indicated.
F. Nonslip-Aggregate Concrete Finish: Factory-packaged abrasive aggregate made from fused, aluminum-oxide grits or crushed emery; rustproof and nonglazing; unaffected by freezing, moisture, or cleaning materials.

G. Welded Wire Reinforcement: ASTM A185 (A185M), 6 by 6 inches (152 by 152 mm), W1.4 by W1.4, unless otherwise indicated.

2.6 FABRICATION, GENERAL

A. Provide complete stair assemblies, including metal framing, hangers, struts, railings, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
   1. Join components by welding unless otherwise indicated.
   2. Use connections that maintain structural value of joined pieces.

B. Preassembled Stairs: Assemble stairs in shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Form exposed work with accurate angles and surfaces and straight edges.

F. Weld connections to comply with the following:
   1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
   2. Obtain fusion without undercut or overlap.
   3. Remove welding flux immediately.
   4. Weld exposed corners and seams continuously unless otherwise indicated.
   5. At exposed connections, finish exposed welds to comply with NOMMA’s “Voluntary Joint Finish Standards” for Type 3 welds: partially dressed weld with spatter removed.

G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated. Locate joints where least conspicuous.

2.7 STEEL-FRAMED STAIRS

A. NAAMM Stair Standard: Comply with “Recommended Voluntary Minimum Standards for Fixed Metal Stairs” in NAAMM AMP 510, “Metal Stairs Manual,” Commercial Class, unless more stringent requirements are indicated.

B. The stair fabricator shall retain an Illinois-licensed structural engineer to design new stairs not fully detailed on the design drawings. The fabricator’s structural engineer shall submit complete, coordinated and stamped structural calculations of the stair design for the project record. Calculations or shop drawings shall clearly show the loads imparted by the stairs on the supporting base building structure.
C. Stair Framing:

1. Fabricate stringers of steel channels or tubes.
   a. Provide closures for exposed ends of channel or tube stringers.

2. Construct platforms of steel channel or tube headers and miscellaneous framing members as needed to comply with performance requirements.

3. Weld or Bolt stringers to headers; weld or bolt framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.

4. Where stairs are enclosed by gypsum board assemblies, provide hanger rods or struts to support landings from floor construction above or below. Locate hanger rods and struts where they do not encroach on required stair width and are within the fire-resistance-rated stair enclosure.

5. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.

6. Hanger rods and other members supporting new stairs from base building members shall be centered on the supporting members so that they do not impart torsion to the supporting member.

D. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch (1.7 mm).

1. Steel Sheet: Uncoated cold-rolled steel sheet unless otherwise indicated.

2. Directly weld metal pans to stringers; locate welds on top of subtreads where they are concealed by concrete fill. Do not weld risers to stringers.

3. Attach risers and subtreads to stringers with brackets made of steel angles or bars. Weld brackets to stringers and attach metal pans to brackets by welding, riveting, or bolting.

4. Shape metal pans to include nosing integral with riser.

5. Attach abrasive nosings to risers.

6. At Contractor's option, provide stair assemblies with metal pan subtreads filled with reinforced concrete during fabrication.

7. Provide subplatforms of configuration indicated or, if not indicated, the same as subtreads. Weld subplatforms to platform framing.

2.8 STAIR RAILINGS

A. Steel Tube Railings: Fabricate railings to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of tube, post spacings, and anchorage, but not less than that needed to withstand indicated loads.

1. Rails and Posts: 1 1/2 inch diameter (38 mm diameter) top and bottom rails and 1 1/2 inch (38 mm) square posts.

2. Picket Infill: 1" inch (25 mm) round pickets spaced less than 4 inch (100 mm) clear.

3. Gates: Form gates from steel tube of same size and shape as top rails, with infill to match guards. Provide with cam-type, self-closing hinges for fastening to wall and overlapping stop with rubber bumper to prevent gate from opening in direction opposite egress.
B. Welded Connections: Fabricate railings with welded connections. Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

1. Finish welds to comply with NOMMA’s "Voluntary Joint Finish Standards" for Type 1 welds: no evidence of a welded joint as shown in NAAMM AMP 521.

C. Form changes in direction of railings as follows:

1. As detailed.

2. By bending or by inserting prefabricated elbow fittings.

D. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

E. Close exposed ends of railing members with prefabricated end fittings.

F. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch (6 mm) or less.

G. Connect posts to stair framing by direct welding unless otherwise indicated.

H. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.

1. For galvanized railings, provide galvanized fittings, brackets, fasteners, sleeves, and other ferrous-metal components.

2. For nongalvanized railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.

3. Provide type of bracket with flange tapped for concealed anchorage to threaded hanger bolt and that provides 1 1/2 inch (38 mm) clearance from inside face of handrail to finished wall surface.

I. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

2.9 FINISHES

A. Finish metal stairs after assembly.

B. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153 (A153M) for steel and iron hardware and with ASTM A123 (A123M) for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

2. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

C. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
D. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

PART 3 EXECUTION

3.1 INSTALLING METAL PAN STAIRS

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.

C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete unless otherwise indicated.

D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

E. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

F. Field Welding: Comply with requirements for welding in "Fabrication, General" Article.

G. Place and finish concrete fill for treads and platforms to comply with Section 03 3000 "Cast-in-Place Concrete."
   1. Install abrasive nosings with anchors fully embedded in concrete. Center nosings on tread width.

3.2 INSTALLING RAILINGS

A. Adjust railing systems before anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated or, if not indicated, as required by design loads. Plumb posts in each direction. Secure posts and rail ends to building construction as follows:
   1. Anchor posts to steel by welding to steel supporting members.
   2. Anchor handrail ends to concrete and masonry with steel round flanges welded to rail ends and anchored with postinstalled anchors and bolts.

B. Attach handrails to wall with wall brackets. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads. Secure wall brackets to building construction as required to comply with performance requirements.
   1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
   2. For hollow masonry anchorage, use toggle bolts.
   3. For wood stud partitions, use hanger or lag bolts set into studs or wood backing between studs. Coordinate with carpentry work to locate backing members.
   4. For steel-framed partitions, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.
3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0 mil (0.05 mm) dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780 (A780M).

END OF SECTION
UIUC - CERL Main Building Addition
UIUC Project No. U13024
Issued for BID

METAL PAN STAIRS
05 5113-10
Issued for BID
12.14.15
SECTION 06 1000 - ROUGH CARPENTRY

PART 1  GENERAL

1.1 SECTION INCLUDES

A. Rough opening framing for doors, windows, and roof openings.
B. Roof-mounted curbs.
C. Roofing nailers.
D. Roofing cant strips.
E. Preservative treated wood materials.
F. Fire retardant treated wood materials.
G. Miscellaneous framing and sheathing.
H. Communications and electrical room mounting boards.
I. Concealed wood blocking, nailers, and supports.
J. Miscellaneous wood nailers, furring, and grounds.
K. Roof sheathing with factory applied roofing underlayment.

1.2 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Setting anchors in concrete.
B. Section 05 1200 - Structural Steel Framing: Prefabricated beams and columns for support of wood framing.
C. Section 05 5000 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.
D. Section 07 2500 - Weather Barriers: Air barrier over sheathing.
E. Section 07 2500 - Weather Barriers: Water-resistive barrier over sheathing.
F. Section 07 6200 - Sheet Metal Flashing and Trim: Sill flashings.
G. Section 09 2116 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.3 REFERENCE STANDARDS


G. PS 1 - Structural Plywood; 2009.


1.4 SUBMITTALS

A. Product Data: Provide technical data on insulated sheathing.

B. Manufacturer’s Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

C. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner’s name and registered with manufacturer.

D. LEED Submittals: Submit applicable LEED Submittal Form for each different product made of sustainably harvested wood, salvaged and reused wood, wood fabricated from recovered timber, as well as locally-sourced wood, as specified in Section 01 3515.

1.5 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.

1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.

2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

B. Lumber fabricated from old growth timber is not permitted.

C. Provide sustainably harvested wood; see Section 01 6000 for requirements.

D. Provide wood harvested within a 500 mile (805 km) radius of the project site; see Section 01 6000 for requirements for locally-sourced products.

2.2 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
1. Lumber: S4S, No. 2 or Standard Grade.
2. Boards: Standard or No. 3.

2.3 CONSTRUCTION PANELS

A. Roof Sheathing: Oriented strand board structural wood panel, PS 2, with factory laminated roofing underlayment layer.

B. Roof Sheathing: Construction panel laminated to insulation board.
   1. Construction Panel: 1/2 inch Glass Mat Faced Gypsum Sheathing over metal deck and as cover board over tapered insulation.
   2. Insulation Board: Tapered Polyisocyanurate foam plastic with cellulosic felt facer or glass fiber mat facer on major surface opposite construction panel.

C. Wall Sheathing: See Section 09 2116.

D. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch (19 mm) thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

E. Other Applications:
   1. Plywood Concealed From View But Located Within Exterior Enclosure: PS 1, C-C Plugged or better, Exterior grade.
   2. Plywood Exposed to View But Not Exposed to Weather: PS 1, A-D, or better.
   3. Other Locations: PS 1, C-D Plugged or better.

2.4 ACCESSORIES

A. Fasteners and Anchors:
   2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.
   3. Anchors: Toggle bolt type for anchorage to hollow masonry.

B. Sill Gasket on Top of Foundation Wall: 1/4 inch (6 mm) thick, plate width, closed cell plastic foam from continuous rolls.

2.5 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire-Retardant Treated Wood: Mark each piece of wood with producer’s stamp indicating compliance with specified requirements.
   2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:
1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft (4.0 kg/cu m) retention.
   a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
   b. Treat lumber exposed to weather.
   c. Treat lumber in contact with roofing, flashing, or waterproofing.
   d. Treat lumber in contact with masonry or concrete.
   e. No Alkaline Copper Quaternary (ACQ) treated material is allowed. Use Sodium Boron treated material.

PART 3 EXECUTION

3.1 PREPARATION
   A. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.
   B. Coordinate installation of rough carpentry members specified in other sections.

3.2 INSTALLATION - GENERAL
   A. Select material sizes to minimize waste.
   B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
   C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.3 BLOCKING, NAILERS, AND SUPPORTS
   A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
   B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
   C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing.
   D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
   E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
   F. Specifically, provide the following non-structural framing and blocking:
      1. Cabinets and shelf supports.
      2. Wall brackets.
      3. Handrails.
4. Grab bars.
5. Towel and bath accessories.
6. Wall-mounted door stops.
7. Chalkboards and marker boards.
8. Wall paneling and trim.
9. Joints of rigid wall coverings that occur between studs.

3.4 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.
B. Provide wood curb at all roof openings except where specifically indicated otherwise. Form corners by alternating lapping side members.

3.5 INSTALLATION OF CONSTRUCTION PANELS

A. Subflooring/Underlayment Combination: Glue and nail to framing; staples are not permitted.
B. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
   1. At long edges provide solid edge blocking where joints occur between roof framing members.
   2. Screw panels to framing; staples are not permitted. Use screws with lengths capable of extending through bottom flute of metal decking by no more than 1/4 inch.
C. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
D. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches (610 mm) on center on all edges and into studs in field of board.
   1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
   2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
   3. Install adjacent boards without gaps.
   4. Size and Location: As indicated on drawings.

3.6 CLEANING

A. Waste Disposal: Comply with the requirements of Section 01 7419.
   1. Comply with applicable regulations.
   2. Do not burn scrap on project site.
   3. Do not burn scraps that have been pressure treated.
   4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.
B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION
SECTION 06 2000 - FINISH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Finish carpentry items.

1.2 RELATED REQUIREMENTS
A. Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
B. Section 06 4100 - Architectural Wood Casework: Shop fabricated custom cabinet work.
C. Section 09 9000 - Painting and Coating: Painting and finishing of finish carpentry items.

1.3 REFERENCE STANDARDS
B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.
C. PS 1 - Structural Plywood; 2009.

1.4 ADMINISTRATIVE REQUIREMENTS
A. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.
B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.5 SUBMITTALS
A. See Section 01 3300 - Submittal Procedures.
B. Product Data:
   1. Provide instructions for attachment hardware and finish hardware.
C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Provide the information required by AWI/AWMAC/WI Architectural Woodwork Standards.
   2. Include certification program label.
D. Samples: Submit two samples of finish plywood, 12 x 12 inch (____ x ____ mm) in size illustrating wood grain and specified finish.
E. LEED Report: Submit for wood products made from sustainably harvested wood, salvaged and reused wood, wood fabricated from recovered timber, and locally-sourced wood, as specified in Section 01 3515.

1.6 QUALITY ASSURANCE
A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.
B. Quality Certification: Provide AWI Quality Certification Program inspection report and quality certification of completed work.

1. Provide labels or certificates indicating that the work complies with requirements of AWS Grade or Grades specified.

2. Prior to delivery to the site provide shop drawings with certification labels.

3. Provide labels on each product when required by certification program.

4. Upon completion of installation provide certificate certifying that the installation and products meet the specified requirements.

5. Arrange and pay for inspections required for certification.

6. Replace, repair, or rework all work for which certification is refused.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect work from moisture damage.

PART 2 PRODUCTS

2.1 FINISH CARPENTRY ITEMS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI/AWMAC/WI Architectural Woodwork Standards for Premium Grade.

2.2 WOOD-BASED COMPONENTS

A. Wood fabricated from old growth timber is not permitted.

B. Provide sustainably harvested wood, certified or labeled as specified in Section 01 6000.

C. Provide wood harvested within a 500 mile (805 km) radius of the project site.

2.3 SHEET MATERIALS

A. Softwood Plywood Not Exposed to View: Any face species, veneer core; PS 1 Grade A-B; glue type as recommended for application.

2.4 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.2 INSTALLATION

A. Install work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards requirements for grade indicated.
B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch (1 mm). Do not use additional overlay trim to conceal larger gaps.

3.3 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment in accordance with manufacturer’s instructions.

B. Brush apply one coats of preservative treatment on wood in contact with cementitious materials. Treat site-sawn cuts.

C. Allow preservative to dry prior to erecting members.

3.4 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Site Finishing: See Section 09 9000.

C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.5 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch (1.5 mm).

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch (0.7 mm).

END OF SECTION
SECTION 06 4100 - ARCHITECTURAL WOOD CASEWORK

PART 1  GENERAL

1.1  SECTION INCLUDES

A.  Specially fabricated cabinet units.
B.  Cabinet hardware.
C.  Factory finishing.

1.2  RELATED REQUIREMENTS

A.  Section 06 1000 - Rough Carpentry: Support framing, grounds, and concealed blocking.
B.  Section 12 3600 - Countertops.
C.  Section 06 6100 - Simulated Stone Fabrications: Cast plastic countertops.
D.  Section 08 8000 - Glazing: Glass for casework.
E.  Section 09 9000 - Painting and Coating: Site finishing of cabinet exterior.

1.3  REFERENCE STANDARDS

B.  AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.
C.  BHMA A156.9 - American National Standard for Cabinet Hardware; Builders Hardware Manufacturers Association; 2010 (ANSI/BHMA A156.9).
D.  NEMA LD 3 - High-Pressure Decorative Laminates; National Electrical Manufacturers Association; 2005.

1.4  ADMINISTRATIVE REQUIREMENTS

A.  Preinstallation Meeting: Convene a preinstallation meeting not less than one week before starting work of this section; require attendance by all affected installers.

1.5  SUBMITTALS

A.  See Section 01 3300 - for Submittal Procedures.
B.  Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1.  Minimum Scale of Detail Drawings: 1-1/2 inch to 1 foot (1:8).
   2.  Provide the information required by AWI/AWMAC/WI Architectural Woodwork Standards.
   3.  Include certification program label.
C.  Product Data: Provide data for hardware accessories.
D.  Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches (300 mm) square, illustrating proposed cabinet, countertop, and shelf unit substrate and finish.
E.  Samples: Submit actual sample items of proposed pulls, hinges, shelf standards, and locksets, demonstrating hardware design, quality, and finish.
F. LEED Report: Submit for wood products made from sustainably harvested wood, salvaged and reused wood, wood fabricated from recovered timber, and locally-sourced wood, as specified in Section 01 3515.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.
   2. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification: Provide AWI Quality Certification Program inspection report and quality certification of completed work.
   1. Provide labels or certificates indicating that the work complies with requirements of AWS Grade or Grades specified.
   2. Prior to delivery to the site provide shop drawings with certification labels.
   3. Provide labels on each product when required by certification program.
   4. Upon completion of installation provide certificate certifying that the installation and products meet the specified requirements.
   5. Arrange and pay for inspections required for certification.
   6. Replace, repair, or rework all work for which certification is refused.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.8 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.1 CABINETS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI Architectural Woodwork Standards for Premium Grade.

B. Wood Veneer Faced Cabinets: Premium grade.

C. Plastic Laminate Faced Cabinets: Custom grade.

D. Cabinets at Servery and Break room/ Lounge, Copy rooms/ Storage, Filing/Copy, Hall:
2. Finish - Exposed Interior Surfaces: Decorative laminate.
3. Finish - Concealed Surfaces: Manufacturer’s option.
4. Door and Drawer Front Edge Profiles: Square edge with Laminate edge banding.
5. Door and Drawer Front Retention Profiles: Fixed panel.
6. Casework Construction Type: Type A - Frameless.

2.2 WOOD-BASED COMPONENTS
A. Wood fabricated from old growth timber is not permitted.
B. Provide sustainably harvested wood, certified or labeled as specified in Section 01 6000.

2.3 LAMINATE MATERIALS
A. Manufacturers:
   4. Chemetal.
   5. Substitutions: See Section 01 6000 - Product Requirements.
B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
C. Provide specific types as scheduled.
   1. Horizontal Surfaces: HGS, 0.048 inch (1.22 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.
   2. Vertical Surfaces: VGS, 0.028 inch (0.71 mm) nominal thickness, through color, colors as scheduled, finish as scheduled.

2.4 ACCESSORIES
A. Adhesive: Type recommended by AWI/AWMAC to suit application.
B. Fasteners: Size and type to suit application.
C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel finish in exposed locations.
D. Concealed Joint Fasteners: Threaded steel.
E. Grommets: Standard plastic grommets for cut-outs, in color as indicated.

2.5 HARDWARE
A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
B. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated self rests, satin chrome finish, for nominal 1 inch (25 mm) spacing adjustments.
C. Adjustable Shelf Supports: Standard back-mounted system using surface mounted metal shelf standards and coordinated cantilevered shelf brackets, satin chrome finish, for nominal 1 inch (25 mm) spacing adjustments.

D. Drawer and Door Pulls: As indicated on drawings...

E. Catches: Magnetic.

F. Drawer Slides:
   1. Type: Full extension.
   2. Static Load Capacity: Heavy Duty grade.
   4. Stops: Integral type.
   5. Features: Provide self closing/stay closed type.
   6. Products:

G. Hinges: European style concealed self-closing type, steel with satin finish.
   1. Products:
      e. Substitutions: See Section 01 6000 - Product Requirements.

2.6 SHOP TREATMENT OF WOOD MATERIALS
   A. Provide UL approved identification on fire retardant treated material.

2.7 SITE FINISHING MATERIALS
   A. Stain, Shellac, Varnish and Finishing Materials: As specified in Section 09 9000.

2.8 FABRICATION
   A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
   B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet (600 mm) from sink cut-outs.

1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.

2. Cap exposed plastic laminate finish edges with material of same finish and pattern.

E. Matching Wood Grain: Comply with requirements of quality standard for specified Grade and as follows:

1. Provide sequence matching across each elevation.

F. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Seal cut edges.

2.9 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. For opaque finishes, apply wood filler in exposed nail and screw indentations and sand smooth.

C. On items to receive transparent finishes, use wood filler matching or blending with surrounding surfaces and of types recommended for applied finishes.

D. Finish work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 5 - Finishing for Grade specified and as follows:

1. Transparent:
   a. System - 1, Lacquer, Nitrocellulose.
   b. Stain: As selected by Architect/Engineer.
   c. Sheen: Satin.

2. Opaque:
   a. System - 1, Lacquer, Nitrocellulose.
   b. Color: As selected by Architect/Engineer.
   c. Sheen: Satin.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.2 INSTALLATION

A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

B. Use fixture attachments in concealed locations for wall mounted components.

C. Use concealed joint fasteners to align and secure adjoining cabinet units.
D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch (1 mm). Do not use additional overlay trim for this purpose.

E. Secure cabinets to floor using appropriate angles and anchorages.

3.3 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.4 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION
SECTION 07 2100 - THERMAL INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Board insulation and integral vapor retarder at perimeter foundation wall, underside of floor slabs, over roof deck, over roof sheathing, and exterior wall behind masonry, metal siding and aluminum composite panel wall finish.

1.2 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Field-applied termiteicide for concrete slabs and foundations.
B. Section 05 4000 - Cold-Formed Metal Framing: Board insulation as wall sheathing.
C. Section 06 1000 - Rough Carpentry: Supporting construction for batt insulation.
D. Section 06 1000 - Rough Carpentry: Installation requirements for board insulation over steep slope roof sheathing or roof structure.
E. Section 07 2119 - Foamed-In-Place Insulation: Plastic foam insulation other than boards.
F. Section 07 5423 - Thermoplastic Membrane Roofing: Installation requirements for board insulation over low slope roof deck specified in this section.
G. Section 07 5400 - Thermoplastic Membrane Roofing: Installation requirements for board insulation over low slope roof deck specified in this section.
H. Section 07 8400 - Firestopping: Insulation as part of fire-rated through-penetration assemblies.
I. Section 09 2116 - Gypsum Board Assemblies: Acoustic insulation inside walls and partitions.

1.3 REFERENCE STANDARDS


1.4 SUBMITTALS

A. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
B. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.
C. Manufacturer’s Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.
D. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.
1.5 FIELD CONDITIONS
   A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS
   A. Insulation:
      1. Atlas
      2. Dow Chemical Co.
      3. RMax
      4. Carlisle Coating and Waterproofing, Inc.; R2+Sheathe, 1-800-527-7092
      5. Substitutions: See Section 01 6000 - Product Requirements.

2.2 APPLICATIONS
   A. Insulation Under Concrete Slabs: Extruded polystyrene board.
   B. Insulation at Perimeter of Foundation: Extruded polystyrene board.
   C. Insulation Over Metal Stud Framed Walls, Continuous: Polyisocyanurate board.
   D. Insulation Over Roof Deck: Polyisocyanurate board.

2.3 FOAM BOARD INSULATION MATERIALS
   A. Extruded Polystyrene Board Insulation: ASTM C578, Type X; Extruded polystyrene board with either natural skin or cut cell surfaces; with the following characteristics:
      1. Type: ASTM C578, Type IV.
      2. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
      3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
      4. R-value; 1 inch (25 mm) of material at 72 degrees F (22 C): 6.5, minimum.
      5. Complies with fire-resistance requirements shown on the drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
      6. Board Size: 48 x 96 inch (1220 x 2440 mm).
      7. Board Thickness: 2 inches (50 mm).
      9. Water Absorption, Maximum: 0.3 percent, by volume.
      10. Manufacturers:
11. Substitutions: See Section 01 6000 - Product Requirements.

B. Polysocyanurate Board Insulation with Facers Both Sides: Rigid cellular foam, complying with ASTM C1289; Type I, aluminum foil both faces; Class 1, non-reinforced foam core.
   1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Compressive Strength: 25 psi (172 kPa)
   4. Board Size: 48 x 96 inch (1220 x 2440 mm).
   5. Board Thickness: 2 inch (50 mm).

7. Manufacturers:
   c. Dow Chemical Co; Thermax Sheathing: www.dow.com.

8. Substitutions: See Section 01 6000 - Product Requirements.

2.4 ACCESSORIES
   A. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch (50 mm) wide.
   B. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
      1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.
   C. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.1 EXAMINATION
   A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation and adhesive.
   B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.2 BOARD INSTALLATION AT FOUNDATION PERIMETER
   A. Install boards horizontally on foundation perimeter.
   B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
3.3 BOARD INSTALLATION AT EXTERIOR WALLS
   A. Install rigid insulation directly to steel studs or exterior grade sheathing at 16 inches (406 mm) on center
      with manufacturer recommended mechanical fasteners. Tape all joints with manufacturer’s minimum 4 inch
      (102 mm) wide sealant tape; comply with ASTM E2357.
   B. Install boards horizontally on walls.
      1. Place boards to maximize adhesive contact.
      2. Install in running bond pattern.
      3. Butt edges and ends tightly to adjacent boards and to protrusions.
   C. Extend boards over expansion joints, unbonded to wall on one side of joint.
   D. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
   E. Tape insulation board joints.

3.4 BOARD INSTALLATION UNDER CONCRETE SLABS
   A. Place insulation under slabs on grade after base for slab has been compacted.
   B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
   C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.5 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK
   A. Installation of board insulation over low slope roof deck is specified in Section ________.

3.6 PROTECTION
   A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION
SECTION 07 2119 - FOAMED-IN-PLACE INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Foamed-in-place insulation.
   1. In exterior framed walls.
   2. In exterior wall crevices.

1.2 RELATED REQUIREMENTS

1.3 REFERENCE STANDARDS


1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide product description, insulation properties, overcoat properties, and preparation requirements.
C. Certificates: Certify that products of this section meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with not less than three years of documented experience.
B. Applicator Qualifications: Company specializing in performing work of the type specified, with minimum three years documented experience.

1.7 FIELD CONDITIONS

A. Do not apply foam when temperature is below that specified by the manufacturer for ambient air and substrate.
B. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
PART 2 PRODUCTS

2.1 MATERIALS

A. Foamed-In-Place Insulation: Low-density, flexible, open celled, water vapor permeable polyurethane foam; foamed on-site, using blowing agent of water or non-ozone-depleting gas.

1. Regulatory Requirements: Conform to applicable code for flame and smoke limitations.

2. Aged Thermal Resistance (R-value): 3 (deg F hr sq ft)/Btu (0.5 (K sqm)/W), minimum, when tested at 1 inch (25.4 mm) thickness in accordance with ASTM C518 after aging for 180 days at 41 degrees F (23 degrees C).

3. Air Permeance: 0.004 cfm/sq ft (0.2 L/second sq meter), maximum, when tested at intended thickness in accordance with ASTM E2178 or ASTM E283 at 1.5 psf (75 Pa).

4. Surface Burning Characteristics: Flame spread/Smoke developed index of 25/450, maximum, when tested in accordance with ASTM E84.

5. Products:
   d. Henry Company; PERMAX 0.5: www.henry.com.
   g. Substitutions: See Section 01 6000 - Product Requirements.

2.2 ACCESSORIES

A. Primer: As required by insulation manufacturer.

B. Overcoat: Intumescent coating of type recommended by insulation manufacturer and as required to comply with applicable codes.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify work within construction spaces or crevices is complete prior to insulation application.

B. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation or overcoat adhesion.

3.2 PREPARATION

A. Mask and protect adjacent surfaces from over spray or dusting.

B. Apply primer in accordance with manufacturer's instructions.

3.3 APPLICATION

A. Apply insulation in accordance with manufacturer's instructions.

B. Apply insulation by spray method, to a uniform monolithic density without voids.
C. Apply overcoat monolithically, without voids to fully cover foam insulation, to achieve fire rating required.

D. Patch damaged areas.

E. Where applied to voids and gaps assure space for expansion to avoid pressure on adjacent materials that may bind operable parts.

F. Trim excess away for applied trim or remove as required for continuous sealant bead.

3.4 FIELD QUALITY CONTROL

A. Field inspections and tests will be performed by an independent testing agency under provisions of Section 01 4000.

B. Inspection will include verification of insulation and overcoat thickness and density.

3.5 PROTECTION

A. Do not permit subsequent construction work to disturb applied insulation.

END OF SECTION
SECTI0N 07 2620 - FLUID-APPLIED MEMBRANE AIR BARRIERS, VAPOR IMPERMEABLE

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Water-resistant fluid-applied vapor impermeable air barrier in exterior wall assemblies.

1.2 RELATED SECTIONS

A. Division 09 "Gypsum Sheathing" for wall sheathing, and wall sheathing joint and penetration treatments.
B. Division 07 Section "Thermal Insulation" for foam-plastic board insulation.
C. Division 07 "Sheet Metal Flashing and Trim" for sheet metal flashings.
D. Division 07 Section "Joint Sealants" for joint-sealant materials and installation.
E. Division 04 "Unit Masonry", "Stone Masonry", and "Calcium Silicate Stone Masonry" for masonry flashings and masonry anchors designed for use with products specified in this Section.

1.3 PERFORMANCE REQUIREMENTS

A. Air permeance: Not to exceed 0.004 cubic feet per minute per square foot under a pressure differential of 0.3 in. water (1.57 psf) (0.02 L/m² @ 75 Pa.) when tested according to ASTM E 2178.
B. Water Vapor Permeance: Not to exceed 0.08 Perms when tested in accordance with ASTM E96, method BW.
C. Assembly Performance: Provide a continuous air and vapor barrier assembly that has an air leakage not to exceed 0.040 cubic feet per square foot per minute under a pressure differential of 0.3 in. water

1. (1.57 psf) (0.20 L/m² @ 75 Pa.) when tested in accordance with ASTM E 2357, and a vapor permeance of 1 perm (57 mg) or less when tested in accordance with ASTM E 96 using the desiccant method. Assembly shall perform as a liquid drainage plane flashed to discharge condensation or water penetration to the exterior. Assembly shall accommodate movements of building materials by providing expansion and control joints as required, with accessory air and vapor seal materials at such locations, changes in substrate and perimeter conditions.

2. Assembly shall be capable of withstanding combined positive and negative design wind, fan and stack pressures on the envelope without damage or displacement, and shall transfer the load to the structure.

3. Assembly shall not displace adjacent materials under full load.

4. Assembly shall be joined in an airtight and flexible manner to the air barrier material of adjacent assemblies, allowing for the relative movement of assemblies due to thermal and moisture variations and creep, and anticipated seismic movement.

D. Connections to Adjacent Materials: Provide connections to prevent air leakage and vapor migration at the following locations:

1. Foundation and walls, including penetrations, ties, and anchors.
2. Walls, windows, curtain wall framing, storefronts, louvers, or doors.
3. Different wall assemblies, and fixed openings within those assemblies.
4. Wall and roof connections and penetrations.
5. Walls, floor and roof across construction, control and expansion joints.
6. Walls, floors and roof to utility, pipe and duct penetrations.
7. Expansion joints.
8. All other leakage pathways in the new construction of the building envelope.

1.4 SUBMITTALS

A. See Section 01 3300 – Submittal Procedures, for additional submittal requirements.

B. Quality Assurance Program: Submit evidence of current accreditation and certification under the Air Barrier Association of America’s (ABAA) Quality Assurance Program. Submit accreditation number of manufacturer and certification number of installers.

C. Product Data: Submit manufacturer’s product data, installation instructions, and manufacturer’s printed instructions for evaluating, preparing, and treating substrate, temperature and other limitations of installation conditions, technical data, and tested physical and performance properties.
   1. Submit letter from primary materials manufacturer indicating approval of products not manufactured by primary manufacturer.
   2. Include statement that materials are compatible with adjacent materials proposed for use.
   3. Submit reports indicating that field peel-adhesion test on all materials to which sealants are adhered have been performed and the changes made, if required, to other approved materials, in order to achieve successful adhesion.

D. Shop Drawings: Submit shop drawings showing locations and extent of air and vapor barrier assemblies and details of all typical conditions, intersections with other envelope assemblies and materials, membrane counter-flashings, and details showing how gaps in the construction will be bridged, how inside and outside corners are negotiated, how materials that cover the air and vapor barrier are secured with air-tight condition maintained, and how miscellaneous penetrations such as conduits, pipes, electric boxes and similar items are sealed.
   1. Include VOC content of each material, and applicable legal limit in the jurisdiction of the project.
   2. Include statement that materials are compatible with adjacent materials proposed for use.
   3. Include recommended values for field adhesion test on each substrate.
   4. Include details of interface with TPO roof membrane and rubberized asphalt masonry base flashings.

E. Compatibility: Submit letter from manufacturer stating that materials proposed for use are permanently chemically compatible, adhesively compatible, and thermally compatible with adjacent materials proposed for use. Submit letter from manufacturer stating that cleaning materials used during installation are chemically compatible with each of the adjacent materials proposed for use.

1.5 QUALITY ASSURANCE

A. Air Barrier Installer Qualifications: Currently accredited by the Air Barrier Association of America (ABAA) whose applicators are certified in accordance with the ABAA Quality Assurance Program.

B. Manufacturer: Obtain primary materials from a single manufacturer regularly engaged in manufacturing air and vapor barrier membranes. Obtain secondary materials from a source acceptable to the primary materials manufacturer.
C. Accredited Laboratory Testing for Materials: Laboratory accredited by International Accreditation Service Inc. (IAS), American Association for Laboratory Accreditation (A2LA), or the Standards Council of Canada (SCC).

D. VOC Regulations: Provide products which comply with applicable regulations controlling the use of volatile organic compounds for the specific authority of having jurisdiction.

E. Preconstruction Meeting: Convene a minimum of two weeks prior to commencing Work of this Section.
   1. Agenda shall include, at a minimum, construction and testing of mock-up, sequence of construction, coordination with substrate preparation, materials approved for use, compatibility of materials, coordination with installation of adjacent and covering materials, and details of construction. Attendance is required by representative of related trades including cover materials, substrate materials, and adjacent materials.

F. Field Quality Assurance: Implement the ABAA Quality Assurance Program requirements. Cooperate with ABAA inspectors and independent testing and inspection agencies engaged by the Contractor. Do not cover air and vapor barrier until it has been inspected, tested, and accepted.

G. Mock-Up: Build mock-ups to set quality standards for materials and execution.
   1. Provide fluid applied membrane air barrier mockup, incorporating backup wall construction, external cladding, curtain wall, insulation, ties, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations or air-barrier assembly.
      a. Coordinate construction of mockup to permit inspection by Owner’s Commissioning Authority, and Contractor’s testing agency of air barrier before external and internal insulation and cladding are installed.
      b. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.
      c. Mock-up shall be prepared with transition between the back-up wall construction and the following:
         1) Stainless steel masonry base flashings.
         2) TPO Roof membrane.
         3) Aluminum window sill and head flashings.
   2. Approval of mockup does not constitute approval of deviations from the Contract Documents contained in mockup unless Architect specifically approves such deviations in writing.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original packages with seals unbroken, labeled with manufacturer’s name, product, date of manufacture, and directions for storage.

B. Store materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by air and vapor barrier membrane manufacturer. Protect stored materials from direct sunlight.

C. Handle materials in accordance with manufacturer’s recommendations.
1.7 PROJECT CONDITIONS

A. Temperature: Install air and vapor barrier within range of ambient and substrate temperatures recommended by air and vapor barrier manufacturer.

B. Field Conditions: Do not install air and vapor barrier in snow, rain, fog, or mist without temporary protection and supplemental heat as required. Do not install air and vapor barrier when the temperature of substrate surfaces and surrounding air temperatures are below those recommended by the manufacturer. Apply membrane to a surface dry substrate, or in accordance with manufacturer’s recommendations.

1.8 WARRANTY

A. Material Warranty: Provide manufacturer’s standard product warranty, for a minimum 3 years from date of Substantial Completion.

B. Installation Warranty: Provide air barrier subcontractor’s 2 year warranty from date of Substantial Completion, including all components of the air and vapor barrier assembly, against failures including loss of air tight seal, loss of watertight seal, loss of adhesion, loss of cohesion, failure to cure properly.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fluid-Applied Air and Vapor Barrier: Fluid-applied proprietary materials as specified. Use regular or low-temperature formulation depending on site conditions, within temperature ranges specified by manufacturer. Provide related accessories including primer, seam tape, mastic, fluid and sealant recommended by manufacturer. Subject to compliance with requirements, provide one of the following:

1. Carlisle Coatings and Waterproofing:
   a. Fluid-Applied Air and Vapor Barrier Membrane: Barriseal, 40 mils thick (dry).
   b. Water-Based Primer: CCW-AWP Water-Based Primer.
   c. Solvent-Based Primer: CCW-702 Solvent-Based Primer.
   d. Solvent-Based Aerosol Primer: CAV-GRIP.
   e. Mastic: CCW-704 Solvent-Based Rubberized Asphalt Mastic.
   f. Sealants: CCW-703 Vertical Grade Liquiseal membrane or CCW-201 two component polyurethane sealant.
   g. Counterflashing for Masonry Through-Wall Flashings: CCW-705.
   h. Website: www.carlisle-ccw.com.

2. Grace Construction Products:
   b. Water-Based Primer for Transition Strip and Detail Membrane: Perm-A-Barrier WB Primer.
   c. Solvent-Based Primer for Transition Strip and Detail Membrane: Bituthene Primer B-2 and Bituthene Primer B2 LVC.
   d. Through-Wall Flashings or Shelf Angle Flashings: Perm-A-Barrier Wall Flashing.
   e. Mastics, Adhesives and Tapes: As recommended by Grace Construction Products.

g. Termination Mastic: Bituthene Liquid Membrane and as recommended by Grace Construction Products.

h. Window Flashing and Detail Membrane: Perm-A-Barrier Detail Membrane and Perm-A-Barrier Wall Flashing.


3. Hohmann & Barnard, Inc:
   a. Fluid-Applied Air and Vapor Barrier Membrane: Textroflash Liquid Air and Vapor Barrier, 60 mils (wet), 40 mils (dry), approximately 25 square feet per gallon.
   b. Flashing and Transition Membrane: Hohmann and Barnard Textroflash Green, Spun-bonded polypropylene membrane with adhesive and release paper, 40 mils.
   c. Base Flashing: Hohmann and Barnard Flex-Flash Flashing, 40 mil with pressure sensitive adhesive.
   d. Primers: As recommended by manufacturer.
   e. Mastics: As recommended by manufacturer.

4. Sto Corp Products
   a. Fluid-Applied Air and Vapor Barrier Membrane: Stoguard Vaporseal, continuous film that fills and covers voids in the surface.
   b. Water-Based Primer for Temperatures Above 40 degrees F: As recommended by manufacturer.
   c. Solvent-Based Primer for Temperatures Above 30 degrees F: As recommended by manufacturer.
   d. Mastics, Adhesives and Tapes: As recommended by manufacturer.
   e. Website: www.stocorp.com

5. Tremco, Inc.:  
   a. Fluid-Applied Air and Vapor Barrier Membrane: ExoAir 120 SP (Spray Grade) or ExoAir 120 R (Roller Grade), 60 mils (wet), 40 mils (dry); approximately 25 square feet/gallon. 
   b. Water-Based Primer: ExoAir 10 WB Primer.
   c. Solvent-Based Primer: ExoAir 10 Primer.
   d. Transition Strips: ExoAir 110/110 LT.
   e. Counterflashing for Masonry Through-Wall Flashings: ExoAir TWF, Proglaze ETA.
   f. Mastics, Adhesives and Tapes: ExoAir Termination Mastic.
   g. Detail Sealants: Tremflex 834 acrylic latex sealant, Dymonic FC polyurethane sealant, or Spectrum 1 silicone sealant.
h. Adhesives and Tapes: As recommended by manufacturer.

i. Website: www.tremcosealants.com.

B. Substitutions: See Section 01 6000 - Product Requirements.

2.2 AUXILIARY MATERIALS

A. Membrane at Transitions in Substrate and Connections to Adjacent Elements: Neoprene, ASTM D 2000 Designation 2BC415 to 3BC620, 50 to 65 mils (1.3 mm to 1.6 mm) thick with non-corrosive termination bars and fasteners. Adhesive and lap sealant as recommended by manufacturer.

B. Transition Membrane Between Air and Vapor Barrier Membrane and Roofing and Other Adjacent Materials: Comply with both air and vapor barrier manufacturer’s recommendations and roofing material manufacturer’s recommendations.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions under which air and vapor barrier assemblies will be applied, with Installer present, for compliance with requirements.

1. Verify that surfaces and conditions are suitable prior to commencing work of this section. Do not proceed with installation until unsatisfactory conditions have been corrected.

2. Do not proceed with installation until after brick anchors have been installed.

3. Ensure that the following conditions are met:

   a. Surfaces are sound, dry, even, and free of oil, grease, dirt, excess mortar or other contaminants

4. Verify substrate is surface dry. Test for capillary moisture by plastic sheet method according to ASTM D 4263 and take suitable measures until substrate passes moisture test. Surface dry is an acceptable substrate condition if acceptable to the manufacturer.

5. Verify sealants used in sheathing are compatible with membrane proposed for use. Perform field peel-adhesion test on materials to which sealants are adhered.

6. Notify Architect in writing of anticipated problems using air and vapor barrier over substrate prior to proceeding.

3.2 SURFACE PREPARATION

A. Clean, prepare, and treat substrate according to manufacturer’s written instructions. Provide clean, dust-free, and dry substrate for air and vapor barrier application. Mask off adjoining surfaces to prevent overspray and spillage.

B. Prime substrate for application of sheet membrane transition strips as recommended by manufacturer and as follows:

   1. Prime masonry, concrete substrates with conditioning primer.

   2. Prime glass-fiber surfaced gypsum sheathing an adequate number of coats to achieve required bond, with adequate drying time between coats.

   3. Prime wood, metal, and painted substrates with primer.
4. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through air and vapor barrier and at protrusions.

C. Prime substrate for application of fluid-applied air and vapor barrier if recommended by manufacturer based on project conditions and as follows.

3.3 INSTALLATION

A. Air and Vapor Barrier Installation: Install transition strip materials and fluid-applied air and vapor barrier to provide continuity throughout the building envelope. Install materials in accordance with manufacturer's recommendations and as follows, unless manufacturer recommends other procedures in writing based on project conditions or particular requirements of their recommended materials.

B. Install specified materials to create a complete exterior building wall envelope, to stop passage of air and water through exterior walls, through joint between exterior walls and roof, through transition between exterior walls and masonry base flashings, joints around door and window openings, and all penetrations in exterior walls.

C. Comply with manufacturer's installation recommendations and instruction, or the following, whichever is more stringent:

1. Apply primer for transition strips at rate recommended by manufacturer. Allow primer to dry completely before transition strip application. Apply as many coats as necessary for proper adhesion.

2. Apply primer for fluid-applied air and vapor barrier as recommended by fluid-applied air and vapor barrier manufacturer. Based on manufacturer's recommendation, no primer may be required for the fluid-applied materials.

3. Apply fluid-applied air and vapor barrier using equipment and methods recommended by manufacturer, to achieve a dry film thickness as recommended by the manufacturer.

4. Apply fluid-applied air and vapor barrier and transition strips to shed water naturally without interception by a sheet edge, unless that edge is sealed with permanently flexible termination mastic.

5. Position subsequent sheets of transition strips applied above so that membrane overlaps the membrane sheet below by a minimum of 2 inches (50 mm), unless greater overlap is recommended by manufacturer. Roll into place with roller.

6. Overlap horizontally adjacent pieces of transition strips a minimum of 2 inches (50 mm), unless greater overlap is recommended by manufacturer. Roll seams with roller.

7. Seal around all penetrations with termination mastic, extruded silicone sealant, membrane counterflashing or other procedure in accordance with manufacturer's recommendations.

8. Refer to Drawings for details of termination of Fluid Applied System using Fluid Applied System flashing material. Flashing membrane provided with this system shall be glazed into all curtain wall framing pockets.

9. Connect air and vapor barrier in exterior wall assembly continuously to the air barrier of the roof, to concrete below-grade structures, louvers, exterior doors and other intersection conditions and
   a. perform sealing of penetrations, using accessory materials and in accordance with the manufacturer's recommendations.

10. At changes in substrate plane, provide transition material (bead of sealant, mastic, extruded silicone sealant, membrane counterflashing or other material recommended by manufacturer) under
membrane to eliminate all sharp 90 degree inside corners and to make a smooth transition from one plane to another.

11. Provide mechanically fastened non-corrosive metal sheet to span gaps in substrate plane and to make a smooth transition from one plane to the other. Membrane shall be continuously supported by substrate or as recommended by the manufacturer.

12. At through-wall flashings, provide an additional 6 inch wide strip of manufacturer’s recommended membrane counterflashing to seal top of through-wall flashing to membrane or as recommended by manufacturer. Seal exposed top edge of strip with bead of mastic or as recommended by manufacturer.

13. At deflection and control joints, provide backup for the membrane to accommodate anticipated movement.

14. At expansion and seismic joints provide transition to the joint assemblies.

15. Apply a bead or trowel coat of mastic along membrane seams at reverse lapped seams, rough cuts, and as recommended by the manufacturer.

16. At end of each working day, seal top edge of the self-adhered membrane to substrate with termination mastic.

17. Do not allow materials to come in contact with chemically incompatible materials.

18. Do not expose membrane to sunlight longer than as recommended by the manufacturer.

19. Inspect installation prior to enclosing assembly and repair punctures, damaged areas and inadequately lapped seams with a patch of membrane lapped as recommended by manufacturer.

3.4 FIELD QUALITY CONTROL

A. Owner’s Inspection and Testing/ABAA Audits: Cooperate with Owner’s testing agency and ABAA auditors. Allow access to work areas and staging. Notify Owner’s testing agency/ABAA auditor in writing of schedule for Work of this Section to allow sufficient time for testing and inspection. Do not cover Work of this Section until testing and inspection is accepted.

3.5 PROTECTING AND CLEANING

A. Protect air and vapor barrier assemblies from damage during application and remainder of construction period, according to manufacturer’s written instructions.

1. Coordinate with installation of materials which cover air and vapor membrane, to ensure exposure period does not exceed that recommended by the air and vapor barrier manufacturer.

B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction and acceptable to the primary material manufacturer.

END OF SECTION
SECTION 07 4213 - METAL WALL PANELS

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Manufactured metal panels for walls and soffits, with insulation, liners, related flashings, and accessory components.

1.2  RELATED REQUIREMENTS

A. Section 05 4000 - Cold-Formed Metal Framing: Wall panel substrate.
B. Section 06 1000 - Rough Carpentry: Wall panel substrate.
C. Section 07 2100 - Thermal Insulation.
D. Section 07 2500 - Weather Barriers: Weather barrier under wall panels.
E. Section 07 9005 - Joint Sealers.
F. Section 09 2116 - Gypsum Board Assemblies: Wall panel substrate.

1.3  REFERENCE STANDARDS


1.4  SUBMITTALS

A. Shop Drawings: Indicate dimensions, layout, joints, construction details, methods of anchorage.
B. Samples: Submit two samples of wall panel and soffit panel, 12 inch (300 mm) by 12 inch (300 mm) in size illustrating finish color, sheen, and texture.

1.5  QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum Five years of documented experience.
B. Installer Qualifications: Company specializing in manufacturing the products specified in this section with minimum Five years of documented experience.

1.6  DELIVERY, STORAGE, AND HANDLING

A. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
B. Store prefinished material off ground and protected from weather. Prevent twisting, bending, or abrasion, and provide ventilation to stored materials. Slope metal sheets to ensure drainage.
C. Prevent contact with materials that may cause discoloration or staining of products.
1.7 WARRANTY
   A. See Section 01-7700 - Closeout Procedures.
   B. Correct defective work within a Twenty year period after Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.
   C. Correct defective Work within a Two year period after Substantial Completion, including defects in materials and workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS
   B. Other Acceptable Manufacturers:
      4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 MANUFACTURED METAL PANELS
   A. Wall Panel System: Factory fabricated prefinished metal panel system, site assembled.
      1. Provide exterior panels and subgirt framing assembly.
      2. Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall.
      3. Design Pressure: In accordance with applicable codes.
      5. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.
      6. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
      7. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
      8. Corners: Factory-fabricated in one continuous piece with minimum 18 inch (450 mm) returns.
   B. Exterior Panels:
1. Profile: Horizontal; style as indicated.

2. Side Seams: Double-interlocked, tight-fitting, sealed with continuous gaskets.

3. Material: Precoated steel sheet, minimum 22 gage (0.8 mm) thick.

4. Panel Width: 36 inches (900 mm).

5. Color: As selected by Architect/Engineer from manufacturer’s standard line.

C. Subgirts:
   1. 18 gage (1.02 mm) thick formed steel sheet.
   2. Profile as indicated; to attach panel system to building.

D. Internal and External Corners: Same material, thickness, and finish as exterior sheets; seam profile to suit system; shop cut and factory mitered to required angles. Mitered internal corners to be back braced with 22 gage (0.8 mm thick) precoated sheet stock to maintain continuity of profile.

E. Expansion Joints: Same material, thickness and finish as exterior sheets; 22 gage (0.8 mm thick); manufacturer’s standard brake formed type, of profile to suit system.

F. Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

G. Anchors: Galvanized steel.

2.3 MATERIALS

A. Precoated Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M Structural Steel (SS) or Forming Steel (FS), with G90/Z275 coating; continuous coil-coated on exposed surfaces with specified finish coating and on panel back with specified panel back coating.

2.4 ACCESSORIES

A. Gaskets: Manufacturer’s standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.

B. Sealants:
   1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
   2. Concealed Sealant: Non-curing butyl sealant or tape sealant.

C. Sealants: Manufacturer’s standard type suitable for use with installation of system; non-staining.
   1. Color: To be selected by Architect/Engineer.

D. Fasteners: Manufacturer’s standard type to suit application; with soft neoprene washers, stainless steel. Fastener cap same color as exterior panel.

E. Field Touch-up Paint: As recommended by panel manufacturer.

F. Bituminous Paint: Asphalt base.
PART 3 EXECUTION

3.1 EXAMINATION
   A. Verify that building framing members are ready to receive panels.
   B. Verify that weather barrier has been installed over substrate completely and correctly.

3.2 PREPARATION
   A. Install subgirts perpendicular to panel length, securely fastened to substrates and shimmed and leveled to uniform plane. Space at intervals indicated.

3.3 INSTALLATION
   A. Install panels on walls in accordance with manufacturer’s instructions.
   B. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.
   C. Fasten panels to structural supports; aligned, level, and plumb.
   D. Locate joints over supports. Lap panel ends minimum 2 inches (50 mm).
   E. Provide expansion joints where indicated.
   F. Use concealed fasteners unless otherwise approved by Architect/Engineer.
   G. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.4 TOLERANCES
   A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/8 inch (12 mm) in 20 feet.
   B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch (6 mm).

3.5 CLEANING
   A. Remove site cuttings from finish surfaces.
   B. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.
   C. Upon completion of installation, thoroughly clean prefinished aluminum surfaces in accordance with AAMA 609 & 610.

END OF SECTION
SECTION 07 4264 - METAL COMPOSITE MATERIAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Furnishing and installing an aluminum composite panel system for walls, fascias, soffits, beam wraps and column covers, with attachment system components, miscellaneous metal framing, and accessories necessary for a complete system.

2. A factory-formed and -assembled, thermal plastic core metal panel system, in a “rout and return” rain screen configuration, with concealed fasteners.

3. Furnishing and installing associated trim, parapet caps, sealants, and fasteners required for a weather tight enclosure system.

B. Related Sections:

1. Division 05 Section "Cold-Formed Metal Framing" for cold-formed metal framing supporting metal-faced composite wall panels.

2. Division 07 Section "Modified Bituminous Sheet Air Barrier" for air barrier substrate under composite panels.

3. Division 07 Section "Sheet Metal Flashing and Trim" for field-formed flashings and other sheet metal work not part of metal-faced composite wall panel assemblies.

4. Division 07 Section "Joint Sealants" for sealant work at composite panel assemblies.

1.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Capable of withstanding the effects of gravity loads and the following loads and stresses, based on testing according to ASTM E 1592:

B. Delegated Design: Design metal-faced composite wall panel assembly, including comprehensive engineering analysis by a qualified Indiana professional engineer, using performance requirements and design criteria to meet International Building Code, as adopted by the State of Indiana.

C. Weather Resistance: System shall have been tested to demonstrate permanent resistance to leakage as follows with a minimum test pressure differential of 10 percent of the design wind pressure.

1. Air Infiltration: Not more than .01 cfm per square foot when tested in accordance with ASTM E283 @ 6.24 psf

2. Water Infiltration: No uncontrolled water penetration when tested in accordance with ASTM E331 @ 15 psf

3. Dynamic Water Infiltration: No uncontrolled water penetration, tested in accordance with AAMA 501.1 @ 15 psf.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss. System shall be designed to provide for expansion and contraction resulting from ambient temperature range of 120 degrees F. The thermal movement is to be distributed in the panel joinery eliminating panel bow and stress at panel returns.

1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
E. Wind Load: Panel System shall withstand a positive and negative wind load pressure acting inward and outward normal to the plane of the panel to meet the requirements of the International Building Code, as adopted by the State of Indiana. System shall have been tested in accordance with ASTM E330 to withstand a uniform pressure of 50 psf inward and 50 psf outward.

1. Panel system shall be designed to withstand the following wind pressure:
   a. General Areas: positive 20 psf, negative 25 psf.
   b. Corner Areas: 30 psf.
   c. Underside of Overhangs: 40 psf uplift load.

F. At maximum design wind pressure, the perimeter panel framing shall be designed to provide a deflection normal to the plane of the wall between supports not to exceed L/175 or 3/4", whichever is less. Maximum panel deflection normal to the plane of the wall shall not exceed L/60 of the full span of the panel.

1.3 SUBMITTALS

A. Product Data: For each type of panel and accessory indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal faced composite wall panel and accessory. Include installation recommendations, and data that products have been tested and comply with the performance criteria.

B. Shop Drawings: Show elevation layout of panels, including plans, elevations, sections, details, and anchorage and attachments to other work.

1. Include details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, expansion provision and caulking requirements and accessories.

C. Coordination Drawings: Drawn to scale and coordinating metal wall panel installation with penetrations and wall-mounted items.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Metal-Faced Composite Wall Panels: Minimum 12 x 12 inches. Include fasteners, closures, and other metal-faced composite wall panel accessories.

2. Trim and Closures: 12 inches long. Include fasteners and other exposed accessories.

3. Accessories: 12-inch-long Samples for each type of accessory.

4. Attachment Extrusions: 6” long samples of each type.

E. Delegated-Design Submittal: For metal-faced composite wall panel assembly indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified Indiana professional engineer responsible for their preparation.

F. Coordination Drawings: Exterior elevations, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Panels and attachments.

G. Qualification Data: For professional engineer.
H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product.

I. Maintenance Data: For metal wall panels to include in maintenance manuals.

J. Warranties: Samples of warranties.

K. In-Place Mock-up: Upon approval of shop drawings, the Contractor shall proceed with system installation with the understanding that the first area of composite panels to be installed will serve as a full scale mock-up showing attachments and details of the system. Upon approval by the Architect and Owner, the mock-up may become part of the work, and shall serve to represent the quality of work expected for the entire installation.

1. Mock-up shall be constructed after release for fabrication, and after obtaining final field dimensions, but prior to beginning full scale installation of all panels.

2. Mock-up area shall be in a location easily observed from the ground or scaffolding.

1.4 QUALITY ASSURANCE

A. The composite panel system shall have been tested and certified for compliance with requirements as specified herein and designed in accordance with accepted practices of the Curtainwall Manufacturer’s Association utilizing the rain screen wall design principle.

B. The composite metal panel manufacturer and fabricator shall have a minimum 10 years experience in the performance of projects with similar size and scope.

C. Installer Qualifications: An employer of workers trained and approved by manufacturer.

1. Installer’s responsibilities include fabricating and installing metal wall panel assemblies and providing professional engineering services needed to assume engineering responsibility.

2. The composite metal panel installer shall have a minimum 5 years experience in the performance of projects with similar size and scope.

D. Surface-Burning Characteristics: Provide insulated metal wall panels having insulation-core materials with the following surface-burning characteristics as determined by testing identical products per ASTM E 84 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Flame-Spread Index: 25 or less.

2. Smoke-Developed Index: 450 or less.

E. Pre-installation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, composite panel installer, composite panel manufacturer’s representative, structural-support installer, and installers whose work interfaces with or affects metal-faced composite wall panels including installers of doors, windows, and louvers.

2. Review and finalize construction schedule and verify availability of materials, installer’s personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review methods and procedures related to composite panel installation, including manufacturer’s written instructions.

4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect composite panels.

6. Review temporary protection requirements for composite panel assembly during and after installation.

7. Review panel observation and repair procedures after composite wall panel installation.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, sheets, metal composite wall panels, and other manufactured items so as not to be damaged or deformed. Package metal composite wall panels for protection during transportation and handling.

B. Unload, store, and erect metal wall panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Store composite panels vertically, covered with suitable weathertight and ventilated covering. Store panels to ensure dryness, with positive slope for drainage of water. Do not store panels in contact with other materials that might cause staining, denting, or other surface damage. Do not allow storage space to exceed 120 deg F (49 deg C).

D. Protect strippable protective covering on metal wall panels from exposure to sunlight and high humidity, except to extent necessary for period of metal wall panel installation.

1.6 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal wall panels to be performed according to manufacturers’ written instructions and warranty requirements.

B. Field Measurements: Verify locations of structural members and wall opening dimensions by field measurements before metal wall panel fabrication and indicate measurements on Shop Drawings.

1. Established Dimensions: Where field measurements cannot be made without delaying the Work, either establish framing and opening dimensions and proceed with fabricating panels without field measurements, or allow for field trimming of panels. Coordinate wall construction to ensure that actual building dimensions, locations of structural members, and openings correspond to established dimensions.

1.7 COORDINATION

A. Coordinate panel assemblies with flashing, trim, and construction of studs, soffits, and other adjoining work to provide a leakproof, secure, and non-corrosive installation.

1.8 WARRANTY

A. Manufacturer’s warranty in which manufacturer agrees to repair or replace components of composite panel assemblies that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Structural failures, including rupturing, cracking, or puncturing.
   b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: Five years from date of Substantial Completion.
B. Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal wall panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. The composite panel manufacturer shall warrant a color change of no greater than 5 Delta E units in accordance with ASTM D-2244, a maximum chalk rating of 8 in accordance with ASTM 4214 no checking, no crazing or no loss of adhesion for a period of thirty (30) years after completion for coil coated material and five (5) years after completion for off-line, spray coated materials.

C. Contractor Warranty on Material and Workmanship: The composite panel contractor shall warrant that material and workmanship shall be free from defects for a period of not less than five (5) years after date of substantial completion.

PART 2 - PRODUCTS

2.1 PANEL MATERIALS

A. Aluminum Sheet: Coil-coated sheet, ASTM B 209 (ASTM B 209M), 0.50 mm, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.

1. Exposed Finishes:
   a. High-Performance Metallic Organic Finish: thermo-cured system with fluoropolymer coats containing not less than 70 percent polyvinylidene fluoride resin by weight. Coating thickness – 1.0 mil. Minimum 70 percent fluoropolymer resin coating shall conform to AAMA 2605. This shall include coating systems utilizing Kynar 500, Hylar 5000 or Megaflon.
   b. Color: Anodic Clear Mica
   c. Hardness: ASTM D 3363; F minimum using Eagle Turquoise Pencil

2. Face Skin Surface: .020” minimum, smooth, flat aluminum.

3. Concealed Finish: White or light-colored acrylic or polyester backer finish.

4. Core: Extruded thermoplastic polyethylene (PE) material.
   a. For panels at rated exterior walls: Provide panels with fire-resistive core which meets the requirements of NFPA 285 Requirements of the Intermediate Scale Multi-Story Test


6. Panel Thickness: 4 mm.

B. Panel Sealants:

1. Sealant Tape: Pressure-sensitive, gray polyisobutylene compound sealant tape with release-paper backing; 1/2 inch (13 mm) wide and 1/8 inch thick.

2. Sealant: ASTM C 920; as recommended in writing by metal panel manufacturer.

C. Attachment System Components: Formed from extruded aluminum or material compatible with panel facing.

1. Include manufacturer’s standard perimeter extrusions with integral weather stripping, panel stiffeners, panel clips, and anchor channels.

D. Flashing and Trim: Same material, finish, and color as facings of adjacent composite panels, unless otherwise indicated.
2.2 PANEL SYSTEM

A. Thermoplastic-Core Metal Wall Panels: Factory-formed and -assembled, fabricated from two metal facing sheets and core material securely bonded, without use of adhesives, to facing sheets during fabrication; with joints between panels designed to form rainscreen seals. Include all accessories required for rainscreen installation.

B. Composite material shall be 5/32" (4mm) thick with minimum .020" aluminum skins on both sides and a polyethylene (PE) core. To provide ultra-flat material, aluminum skins shall be bonded in tension to an extruded thermo-plastic core formed in a continuous process without the use of glues or adhesives. Laminated panel construction will not be acceptable.

1. Acceptable Manufacturers:
   a. Mitsubishi Chemical America - Alpolic.
   b. Alusuisse Composites, Inc. – Alucobond.
   c. Alcoa Architectural Products – Reynobond.
   d. Kovabond Metal Composite Panel - Kovabond
   e. Coating Metals Group - System 1000
   f. Quality Metalcraft, llc/Americlad - AC-1000

2. Substitutions: See Section 01 6000 - Product Requirements.

C. Fabricated Composite Panel System:

1. Basis of Design:
   a. RLS 9000 System by Shaffner Heaney Associates.
      1) This system establishes the level of quality for the composite metal panel system to be installed on the project.

2. Subject to compliance with requirements of specifications and drawings details, other available systems are as follows:
   b. John W. McDougall Company - Series 400 System.
   c. Universe Corporation – Universe 6000 System.

3. Substitutions: See Section 01 6000 - Product Requirements.

2.3 MISCELLANEOUS MATERIALS

A. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by manufacturer for type of use and finish indicated.

B. Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide semi-exposed fasteners with heads matching color of metal-faced composite wall panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers as required by the manufacturer.
2.4 ACCESSORIES

A. Wall Panel Accessories: Provide components required for a complete metal-faced composite wall panel assembly including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal-faced composite wall panels unless otherwise indicated.

B. Flashing and Trim: Formed from 0.040-inch-minimum thickness, aluminum pre-painted with coil coating. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal-faced composite wall panels.

2.5 FABRICATION

A. General: Fabricate and finish metal wall panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

1. Form panel lines, breaks, and angles to be sharp and true, with surfaces free from warp and buckle.

2. Fabricate wall panels with panel stiffeners as required to maintain fabrication tolerances and to withstand design loads.

3. System Thickness: Nominal 2 inches

4. Panel Fabrication: panel system shall be completely factory fabricated into pans by way of the route and return method and assembled ready for field installation.

5. Panel Joinery: interlocking male/female horizontal and vertical panel joints shall be created by factory attachment of continuous proprietary aluminum extrusions to allow a non-directional installation. Perimeter joint extrusions shall be designed to provide concealed fastening. Perimeter joint extrusions shall also accommodate panel expansion and contraction and provide continuous reinforcement at the panel returns.

6. Panel Stiffeners: extruded aluminum stiffeners shall be shop attached and adhered to the back side of the composite material with structural silicone. Stiffeners shall be used wherever panels exceed 4' x 6' or more frequently as deemed necessary by the panel fabricator.

7. Joint Seals: panel-to-panel joints on vertical surfaces shall receive a pre-finished insert, designed to create joint widths and colors as required by the Drawings.

8. The system to provide 1" deep horizontal and vertical reveal joints using aluminum extrusions.

9. Comply with dimensions, panel sizes, thickness and fabrication details shown on the Drawings.

10. Apply protective strippable film to finished surfaces for protection during fabrication, shipment and installation.

11. Panel Attachment: The panel system is to be installed in a manner to allow removal and replacement of an individual panel without displacement of adjacent panels nor dismantling of the wall section

B. Fabricate metal wall panels in a manner that eliminates condensation on interior side of panel and with joints between panels designed to form rainscreen principle barrier.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
D. Where indicated, fabricate metal wall panel joints with factory-installed captive gaskets or separator strips that provide a tight seal and prevent metal-to-metal contact, in a manner that will minimize noise from movements within panel assembly.

E. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA’s "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.

2.6 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM’s “Metal Finishes Manual for Architectural and Metal Products” for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal-faced composite wall panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal-faced composite wall panel manufacturer.

2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal-faced composite wall panel manufacturer.

3. Verify that weather-resistant air barrier membrane has been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

4. Maximum deviation from vertical and horizontal alignment of substrate shall be no more than ¼” in 20'-0”.

B. Examine roughing-in for components and systems penetrating metal-faced composite wall panels to verify actual locations of penetrations relative to seam locations of panels before panel installation.

C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

D. Proceed with installation only after unsatisfactory conditions have been corrected. Starting work within a particular area will be construed as install’s acceptance of surface conditions.

E. Install flashings and other sheet metal to comply with requirements specified in Division 7 Section "Sheet Metal Flashing and Trim."

3.2 METAL WALL PANEL INSTALLATION, GENERAL

A. General: Install metal-faced composite wall panels according to manufacturer’s written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts and subgirts,
unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Rigidly fasten base end of metal wall panels and allow eave end free movement due to thermal expansion and contraction. Pre-drill panels.
2. Install screw fasteners in predrilled holes.
3. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
4. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated or, if not indicated, as necessary for waterproofing.
5. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

B. Fasteners:
   1. **Aluminum Wall Panels:** There shall be no fasteners exposed on the face of the panels.

C. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal wall panel manufacturer.
   1. Coat back side of aluminum wall panels with bituminous coating where wall panels will contact wood, ferrous metal, or cementitious construction.

D. Attachment System Installation, General: Install attachment system required to support metal-faced composite wall panels and to provide a complete weathertight wall system, including subgirts, perimeter extrusions, tracks, drainage channels, panel clips, and anchor channels.
   1. Include attachment to supports, panel-to-panel joinery, panel-to-dissimilar-material joinery, and panel-system joint seals.
   2. Do not begin installation until weather barrier and flashings that will be concealed by composite panels are installed.

E. Attachment Extrusion Installation: Attach panel extrusion to supports at each metal-faced composite wall panel joint at locations, spacings, and with fasteners recommended by manufacturer. Attach rain screen flanges of wall panels to panel attachment extrusions with manufacturer’s standard fasteners.
   1. Seal horizontal and vertical joints between adjacent panels with sealant backing and sealant.
      a. Install sealant backing and sealant according to requirements specified in Division 07 Section "Joint Sealants."

3.3 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and rainscreen principle mounting, providing for thermal expansion. Coordinate installation with flashings and other components
   1. Install components required for a complete metal wall panel assembly including trim, copings, corners, flashings, sealants, gaskets, fillers, closure strips, and similar items.
   2. Comply with performance requirements, manufacturer’s written installation instructions, and SMACNA’s “Architectural Sheet Metal Manual.” Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with joints, and seams that will be permanently watertight and weather resistant.
3.4 ERECTION TOLERANCES

A. Installation Tolerances: Shim and align metal-faced composite wall panel units within installed tolerance of 1/4 inch in 20 feet, non-accumulative, on level, plumb, and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.5 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal wall panels are installed, unless otherwise indicated in manufacturer’s written installation instructions. On completion of metal wall panel installation, clean finished surfaces as recommended by metal wall panel manufacturer. Maintain in a clean condition during construction.

B. After metal wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace metal wall panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION
SECTION 07 4646 - FIBER CEMENT SIDING

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Wood-fiber cement siding.

1.2 RELATED REQUIREMENTS
A. Section 05 4000 - Cold-Formed Metal Framing: Siding substrate.
B. Section 05 4000 - Cold-Formed Metal Framing: Water-resistive barrier under siding.
C. Section 06 1000 - Rough Carpentry: Siding substrate.
D. Section 06 1000 - Rough Carpentry: Water-resistive barrier under siding.
E. Section 07 9200 - Joint Sealants: Sealing joints between siding and adjacent construction and fixtures.
F. Section 09 2116 - Gypsum Board Assemblies: Siding substrate.
G. Section 09 2116 - Gypsum Board Assemblies: Water-resistive barrier under siding.

1.3 REFERENCE STANDARDS

1.4 SUBMITTALS
A. See Section 01 3300 - Submittal Procedures, for submittal procedures.
B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Minimum Scale of Detail Drawings: 1-1/2 inch to 1 foot (1:8).
C. Product Data: Manufacturer’s data sheets on each product to be used, including:
   1. Manufacturer’s requirements for related materials to be installed by others.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods, including nail patterns.
D. Test Report: Applicable model code authority evaluation report (e.g. ICC-ES).
E. Maintenance Instructions: Periodic inspection recommendations and maintenance procedures.
F. Warranty: Submit copy of manufacturer’s warranty, made out in Owner’s name, showing that it has been registered with manufacturer.
G. Samples: Submit actual samples of Fiber Cement Panel, minimum 12 inches (300 mm) square, illustrating proposed substrate and finish. Include samples of all fastners, joint products, recommended sealants, etc.

1.5 QUALITY ASSURANCE
A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum 3 years of experience.
B. MOCK-UP

1. Provide mock-up of typical installation, including hardware, finishes, and accessories.
2. Locate where directed.
3. Mock-up may remain as part of the Work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store products under waterproof cover and elevated above grade, on a flat surface.

PART 2 PRODUCTS

2.1 SIDING

A. Panel Siding: Vertically oriented panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II; with machined edges, for nail attachment.

1. Length (Height): Up to 96 inches (2400 mm), nominal.
2. Width: Up to 48 inches (1220 mm).
3. Thickness: 1/2 inch (12 mm), nominal.
5. Color: As selected by Architect/Engineer from manufacturers full range of available colors.
6. Warranty: 50 year limited; transferable.
7. Panel Siding Manufacturers:
   d. KMEW CO., LTD.CeraClad Rain Screen Exterior Siding, Contemporary Smooth, www.kmew.co.jp.
   e. Substitutions: See Section 01 6000 - Product Requirements.

2.2 ACCESSORIES

A. Furring Strips: Galvanized metal channels.
B. Trim: Same material and texture as siding.
C. Fasteners: Galvanized or corrosion resistant; length as required to penetrate minimum 1-1/4 inch (32 mm).
D. Sealant: Elastomeric, polyurethane or silyl-terminated polyether/polyurethane, and capable of being painted.
PART 3 EXECUTION

3.1 PREPARATION

A. Examine substrate and clean and repair as required to eliminate conditions that would be detrimental to proper installation.
B. Verify that weather barrier has been installed over substrate completely and correctly.
C. Do not begin until unacceptable conditions have been corrected.
D. If substrate preparation is the responsibility of another installer, notify Architect/Engineer of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Install sheet metal flashing:
   1. Above door and window trim and casings.

3.3 INSTALLATION

A. Install in accordance with manufacturer’s instructions and recommendations.
   1. Read warranty and comply with all terms necessary to maintain warranty coverage.
   2. Install in accordance with conditions stated in model code evaluation report applicable to location of project.
   3. Use trim details indicated on drawings.
   4. Touch up all field cut edges before installing.
   5. Pre-drill nail holes if necessary to prevent breakage.
B. Over Foam Sheathing: Read and comply with sheathing manufacturer’s recommendations.
   1. For sheathing over 1 inch (25 mm) thickness, install furring strips over studs and fasten siding through furring and into studs.
C. Over Steel Studs: Use hot-dipped galvanized self-tapping screws, with the points of at least 3 screws penetrating each stud the panel crosses and at panel ends.
D. Allow space for thermal movement between both ends of siding panels that butt against trim; seal joint between panel and trim with specified sealant.
E. Joints in Vertical Siding: Install Z-flashing in horizontal joints between successive courses of vertical siding.
F. Do not install siding less than 6 inches (150 mm) from surface of ground nor closer than 1 inch (25 mm) to roofs, patios, porches, and other surfaces where water may collect.
G. After installation, seal all joints except lap joints of lap siding. Seal around all penetrations. Paint all exposed cut edges.

3.4 PROTECTION

A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
SECTION 07 5423 - THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Adhered TPO membrane roofing system.
   2. Roof insulation with fasteners.
   3. Sealants
   4. Wood Blocking
   5. Miscellaneous Fasteners, termination and strapping as required.
   6. Gypsum sheathing over metal deck at locations requiring a one-hour fire rating.

B. Related Sections:
   1. Division 06 Section "Miscellaneous Rough Carpentry" for wood nailers, curbs, and blocking.
   2. Division 07 Section "Manufactured Roof Expansion Joints" for one-hour rated roof expansion joint.
   3. Division 07 Section "Sheet Metal Flashing and Trim" for metal roof penetration flashings, flashings, and counter flashings.
   4. Division 07 Section "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
   5. Division 22 Section "Storm Drainage Piping Specialties" for roof drains.

1.3 DEFINITIONS

A. TPO: Thermoplastic polyolefin.

B. Roofing Terminology: See ASTM D 1079 and glossary in NRCA’s "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

C. Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI’s "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," before multiplication by a safety factor.

D. Factored Design Uplift Pressure: The uplift pressure, calculated according to procedures in SPRI’s "Wind Load Design Guide for Fully Adhered and Mechanically Fastened Roofing Systems," after multiplication by a safety factor.

1.4 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.
B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.
   1. Peak Gust Wind Speed: 90 mph at 30 feet above ground.

D. Energy Performance: Provide roofing system with initial Solar Reflectance Index not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

E. Inspection of Installation:
   1. The Owner reserves the right to provide independent roofing inspections whenever roofing system is installed.
   2. Inspector Qualifications: The inspector shall be knowledgeable in roofing specifications and appropriate installation or repair procedures.
   3. Inspection Reports: The inspector shall be required to issue written reports on a daily basis which include, at a minimum, name, address and phone number of the Roofing Constructor, name of the roofing foreman/superintendent, description of the day’s weather, number of roofers/sheet metal mechanics on the project, location of the day’s work, description of work accomplished, deficiencies observed in the work requiring correction, a description of materials incorporated into the work and those stored for later use, and a qualitative summary of unit price items incorporated in to the day's work.
   4. Membrane Manufacturers Inspections: The roof membrane manufacturer shall make a minimum of three visits during the application and one visit at the time of the substantial completion. A written report of each visit to the Architect/Engineer and Owner Project Manager shall be submitted. Manufacturer inspection shall be accomplished by technical representatives with a minimum of five (5) years direct working experience with the technical department of that manufacturer.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
   1. Base flashings and membrane terminations.
   2. Tapered insulation, including slopes.
   3. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
   4. Insulation fasteners

C. Samples for Verification: For the following products:
   1. Sheet roofing, of color specified, including T-shaped side and end lap seam.
   2. Roof insulation.
   3. Walkway pads or rolls.
   4. Metal termination bars.
D. Qualification Data:
   1. For qualified Installer.
   2. For qualified manufacturer.

E. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system.

F. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.

G. Research/Evaluation Reports: For components of membrane roofing system.

H. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
   1. Submit evidence of compliance with performance requirements.

I. Field quality-control reports.

J. Maintenance Data: For roofing system to include in maintenance manuals.

K. Warranties: Warranties specified in this Section.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is approved for membrane roofing system identical to that used for this Project.

B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer’s product and that is eligible to receive manufacturer’s special warranty.

C. Source Limitations: Obtain components including roof insulation, fasteners for membrane roofing system from same manufacturer as membrane roofing or approved by membrane roofing manufacturer.

D. Exterior Fire-Test Exposure: ASTM E 108, Class B; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

E. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119.

F. Preliminary Roofing Conference: Before starting roof deck construction, conduct conference at Project site.
   1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer’s representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
   2. Review methods and procedures related to roofing installation, including manufacturer’s written instructions.
   3. Review and finalize construction schedule and verify availability of materials, Installer’s personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
   5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

7. Review governing regulations and requirements for insurance and certificates if applicable.

8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.

G. Pre-installation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner’s insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer’s representative, deck Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.

2. Review methods and procedures related to roofing installation, including manufacturer’s written instructions.

3. Review and finalize construction schedule and verify availability of materials, installer’s personnel, equipment, and facilities needed to make progress and avoid delays.

4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.

5. Review structural loading limitations of roof deck during and after roofing.

6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.

7. Review governing regulations and requirements for insurance and certificates if applicable.

8. Review temporary protection requirements for roofing system during and after installation.

9. Review roof observation and repair procedures after roofing installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer’s name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer’s written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

E. All flammable material shall be stored in a cool, dry area away from sparks and open flames. Follow precautions outlined on containers or supplied by material manufacture.

F. All material which are determined to be damaged by the Roofing manufactures representative shall be removed from the job site and replaced at no cost to the Owner.
1.8 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer’s written instructions and warranty requirements.

B. Material may be installed under certain adverse weather conditions but only after consultation with manufacture, as installation time and system integrity may be affected.

C. Only as much of the new roofing as can be made weather tight each day, include in wall flashing and detail work, shall be installed. All seams shall be cleaned and heat welded before leaving the job site that day.

D. All surfaces to receive new insulation, membrane, or flashings shall be dry. Should surface moisture occur, the Applicator shall provide the necessary equipment to dry the surface prior to application.

E. All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.

F. Uninterrupted water stops shall be installed at the end of each day’s work and shall be completely removed before proceeding with the next day’s work. Water stops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses contaminated membrane shall be replaced at no cost to the Owner.

G. The Applicator is cautioned that certain membranes are incompatible with asphalt, coal tar, heavy oils, roofing cements, creosote and some preventive materials. Such materials shall not remain in contact with membranes. The Applicator shall consult manufacture regarding compatibility, precautions and recommendations.

H. Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Applicator shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood or plywood over insulation board shall be provided for all new and existing roof areas that receive rooftop traffic during construction.

I. Prior to and during application, all dire, debris and dust shall be removed from surfaces either by vacuuming, sweeping, blowing with compressed air and/or similar methods.

J. All new roofing waste material (i.e. scrap roof membrane, empty cans of adhesive) shall be immediately removed from the site by the Applicator and properly transported to a legal dumping area authorized to receive such material.

K. The applicator shall take precautions that storage and/or application of material and/or equipment does not overload the roof deck or building structure.

L. The Applicator shall follow all safety regulations as required by OSHA and any other applicable authority having jurisdiction.

M. Flammable adhesives shall not be stored and not be used in the vicinity of open flames, sparks and excessive heat.

N. All rooftop contamination that is anticipated or that is occurring shall be reported to the manufacture’s representative to determine the corrective steps to be taken.

O. The Applicator shall verify that all roof drain lines are functioning correctly (not clogged or blocked) before starting work. The Applicator shall report any such blockages in writing to the Owner’s representatives for corrective action prior to installation of the roof system.
P. Applicator shall immediately stop work if any unusual or concealed condition is discovered and shall immediately notify the Owner of such condition in writing for correction at Owner’s expense.

Q. Site clean up, including both interior and exterior building areas that have been affected by roofing construction shall be completed to the Owner’s satisfaction.

R. Precaution shall be taken when using adhesives at or near roof top vents or air intakes. Adhesive odors could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odor while ventilating the building. Keep lids on unused cans at all times.

S. The Applicator shall conduct fastener pullout tests in accordance with the latest revision of the SPRI/ANSI Fastener Pullout Standard to help verify condition of deck/substrate and to confirm expected pullout values.

T. Protective wear shall be worn when using solvents or adhesives or as required by job conditions.

U. Clean overspray and spillage form adjacent construction or building elements, using cleaning agents and procedures recommended by manufacture of affected construction.

1.9 BIDDING REQUIREMENTS

A. All dimensions and quantities shall be determined or verified by the Roofing Contractor. No claims for extra costs will be allowed because of lack of full knowledge of the Contract Documents, or existing conditions during construction, unless agreed to in advanced in writing, with the Owner or Owner’s Representative and Architect.

1.10 WARRANTY

A. Manufacturer’s warranty shall include the following:

1. Roofing System shall be guaranteed against defects in materials and /or workmanship for a period of 20 year NDL (No Dollar Limit) warranty from the date of the Certificate of Substantial Completion. During this period the manufacturer shall pay all costs of repairs to the roof system necessary to correct roof leaks resulting from any one of the following causes:

   a. Improper workmanship in application of roofing system and substrate components.

   b. Deterioration of roof membrane of flashing caused by ordinary weathering and /or exposure to ultra violet light.

   c. Blisters, buckles, ridges, wrinkles, fish mouth, and slips.

   d. Damage to roofing system and substrate due to thermal shock (extreme temperature fluctuations).

   e. Slippage of roofing system components.

   f. Breaks in roofing system or substrate components.

B. During the warranty period, the Manufacturer’s and the Constructor agree that, with 24 hours of receipt of notice from the Owner, they will inspect and make immediate emergency repairs to defects or to leaks in the roofing system.

   1. They further agree that, within a reasonable time, they shall restore the affected items to the standard of the original specifications.

   2. All emergency work and permanent work done during the life of the agreement shall be done without cost to the Owner, except in the event it is determined that such leaks were caused by
Owner abuse, vandalism, lightning, hurricane, tornado, hail storm or unusual climatic phenomena of the elements.

C. Guarantee shall be in written form acceptable to the Owner and shall be made by an authorized representative the manufacturer of the roofing membrane system used and shall be for the full period of time as specified.

1.11 TRAINING

A. Training

1. The Constructor shall provide 4 hours of time, divided into two sessions, to instruct the Owner’s maintenance personnel in proper care and maintenance of the roofing system.

1.12 CONSTRUCTOR REQUIREMENTS

A. Constructor Qualifications

1. All roofing Constructions working on Owner facilities shall have a current State of Indiana license and be certified/approved as a Roofing Constructor by the manufacture for the system being installed or repaired.

2. Roofing contracting firms shall have a minimum of five (5) years of experience installing the type of system specified. This experience shall have been earned by the firm proposing the work, not by individual employees. In addition, the job site superintendent shall have a minimum of five (5) years of experience installing the type of system specified.

B. Protection Plan

1. The Owner requires a specific protection plan for all new and reroofing projects to describe the means of maintaining the building in a safe and watertight condition throughout the construction period. Existing and newly installed roof system shall be considered in the protection plan to ensure roofing operations do not damage them. Areas where the roof deck/structure are (or maybe) damaged or deteriorated shall only be reroofed when the occupied spaces below are unoccupied. Other potential phases of re-roofing operations can be hazardous to the facility and its occupants and shall be carefully reviewed during design bidding and at appropriate phases during construction.

2. Comply with the following:

   a. In absence of prior active reported roof leaks, any leakage from the roof area in to the building during re roofing projects will be assumed to be responsibility of the Constructor.

   b. Prior to starting work of the project the Constructor will verify that all roof drains are working, report any stoppages to the Owner’s Project Manager prior to beginning work.

   c. Do not allow water build up on roof due to changed drainage patterns. Provide for roof drainage during reroofing, either by direct drainage to roof drains of pumps. Do not discharge water from roof directly to grade without specific authorization from the Owner’s Project Manager.

   d. Provide protection for interior spaces, furnishings and equipment.

   e. Provide presence on job site during and immediately after heavy rains in order to identify and repairs leaks clean up water and repair water damage. Immediately remove water from the interior spaces and to wet vac and clean areas in order for the occupants to proceed with their daily duties without interruption or inconvenience. Storage areas, mechanical room and unoccupied areas shall be cleaned and repaired same as occupied areas. Proceed immediately with clean up as soon as discovered; do not wait for the next day to do this work.
f. The Constructor shall be aware that any expenditure by the Owner to repair or stop leaks or provide custodial services will be charged to the Constructor.

g. Promptly repair all damage to Owner’s property, including vegetation and irrigation systems. It is the Constructor’s responsibility to identify area with subsurface irrigation and utility systems.

PART 2 - PRODUCTS

2.1 TPO MEMBRANE ROOFING


1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Carlisle SynTec Incorporated. – Sure Weld TPO
   b. Firestone Building Products Company- .UltraPly TPO System
   c. Stevens Roofing Systems; Division of JPS Elastomerics. – EP System
      1) Thickness: 60 mils (1.5 mm), nominal.
      2) Exposed Face Color: White.
   d. Versico Roofing Systems – VersiWeld TPO.

2. Substitutions: See Section 01 6000 - Product Requirements.

2.2 AUXILIARY MEMBRANE ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
   a. Plastic Foam Adhesives: 50 g/L.
   b. Gypsum Board and Panel Adhesives: 50 g/L.
   c. Multipurpose Construction Adhesives: 70 g/L.
   d. Fiberglass Adhesives: 80 g/L.
   e. Contact Adhesive: 80 g/L.
   f. Other Adhesives: 250 g/L.
   g. Single-Ply Roof Membrane Sealants: 450 g/L.
   h. Non-membrane Roof Sealants: 300 g/L.
   i. Sealant Primers for Nonporous Substrates: 250 g/L.
   j. Sealant Primers for Porous Substrates: 775 g/L.
B. Sheet Flashing: Manufacturer’s standard unreinforced thermoplastic polyolefin sheet flashing, 55 mils (1.4 mm) thick, minimum, of same color as sheet membrane.

C. Bonding Adhesive: Manufacturer’s standard or, water based.

D. Slip Sheet: Manufacturer’s standard, of thickness required for application.

E. Metal Termination Bars: Manufacturer’s standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick; with anchors.

F. Metal Battens: Manufacturer’s standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick (25 mm wide by 1.3 mm thick), prepunched.

G. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.

H. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.3 GYPSUM BOARD SHEATHING

A. Georgia Pacific DensDeck Prime or equal.
   1. Sheet Sizes – 48” x 96”
   2. Thickness – 1/2”

2.4 ROOF INSULATION

A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer’s standard sizes and of thicknesses indicated.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, felt or glass-fiber mat facer on both major surfaces. Compressive Strength 25 psi.
   1. Manufacturers:
      a. Atlas Roofing Corporation – Acfoam II – 25 psi
      b. Johns Manville International, Inc. – Enrgy 3 25 psi
      c. RMAX. – Multi-Max FA-3 25psi
      d. GAF EnergyGuard Polyiso Roof Insulation, 25 psi compressive strength.

C. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches (1:48), unless otherwise indicated. 25, psi compressive strength

D. Provide saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

E. Minimum Insulation Value: Provide an average R-40 minimum insulation over the entire roof area.
   1. Submit calculations confirming R-value compliance.
2.5 INSULATION ACCESSORIES
   A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
   B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
   C. Cold Fluid-Applied Adhesive: Manufacturer’s standard cold fluid-applied adhesive formulated to adhere roof insulation to substrate. Polyurethane adhesive approved for the application and membrane roofing and insulation manufacture.

2.6 RELATED MATERIALS
   A. Wood Nailer or Blocking: Wood nailers or blocking shall be installed at the perimeter of the entire roof projection or penetration as recommended by the membrane manufacture. Thickness of nailers must match the insulation thickness to achieve a smooth transition. Wood mailers shall be treated for fire and rot resistance and be #2 quality of better lumber.

2.7 WALKWAYS
   A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch (5 mm) thick, and acceptable to membrane roofing system manufacturer.

2.8 ROOF EXPANSION JOINT
   A. Refer to Section 07 712.

PART 3 - EXECUTION

3.1 EXAMINATION
   A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
      1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
      2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
      3. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
      4. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
      5. Verify that concrete curing compounds that will impair adhesion of roofing components to roof deck have been removed.
      6. Applicator shall be responsible for acceptance of proper substrate to receive new roof materials. Proceed with installation only after unsatisfactory conditions have been corrected.
      7. Proceeding with work shall be indication of the applicator’s acceptance of the satisfactory condition of the following. Applicator shall verify that the work done under this Section and related sections meets the following conditions:
a. Insulation shall be installed to produce a smooth butt joints and transitions. Alignment between resistant board shall be 1/16” or less. Provide additional joint alignment work as required, before proceeding with membrane installation.

b. Roof curbs, nailers, equipment supports, vents and other roof penetrations shall be properly secured and prepared to receive new roofing materials

c. All surfaces shall be free of water, ice, and snow.

8. Failure of the work to meet the above criteria will be grounds for rejection of the work and replacement of substrate and manufacturer’s product, at no cost the Owner; to produce final conditions as described above.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer’s written instructions. Remove sharp projections.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

D. The roof deck and existing roof construction must be structurally sound to provide support for the new roof system. The Applicator shall load materials on the roof in such a manner to eliminate risk of deck overload due to concentrated weight.

3.3 INSULATION AND OVERLAYMENT BOARD INSTALLATION

A. Install Gypsum Wall Board sheathing on metal deck at locations where a one-hour rated roof construction is required or where indicated in the drawings. Refer to Wall Section and Details.

1. Mechanically fasten gypsum sheathing to metal deck.

B. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.

C. Comply with membrane roofing system and insulation manufacturer’s written instructions for installing roof insulation.

D. Install tapered insulation under area of roofing to conform to slopes indicated.

E. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 4.0 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 12 inches in each direction.

F. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

G. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch (6 mm) with insulation.

1. Cut and fit insulation within 1/4 inch (6 mm) of nailers, projections, and penetrations.
H. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type. Install Gypsum Wall Board sheathing 1/2 Inch Glass Mat Faced Gypsum Sheathing as cover board over tapered insulation.

1. Fasten insulation according to requirements in FM Approvals’ “RoofNav” for specified Windstorm Resistance Classification as specified in Section 1.4.

I. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.

3.4 ADHERED MEMBRANE ROOFING INSTALLATION

A. Install roofing membrane over area to receive roofing according to membrane roofing system manufacturer’s written instructions. Unroll roofing membrane and allow to relax before installing.

1. Install sheet according to ASTM D 5036.

B. Adhere membrane roofing over area to receive roofing and install according to membrane roofing system manufacturer’s written instructions.

C. Start installation of membrane roofing in presence of membrane roofing system manufacturer’s technical personnel.

D. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

E. Bonding Adhesive: Apply solvent-based or water based bonding adhesive to substrate and underside of roofing membrane at rate required by manufacturer and allow to partially dry before installing roofing membrane and to meeting the design uplift requirements. Do not apply bonding adhesive to splice area of roofing membrane.

1. Adhesives must be applies as a continuous layer

2. Storage temperatures in excess of 90 degrees F may affect shelf life of adhesive.

3. If exposed to temperature below 40 degrees F, restore adhesive to a minimum temperature as recommended by the manufacture.

4. Job site conditions may affect performance. Adhesive shall be used if surface and or ambient temperatures are below 40 degrees F are expected during application of subsequent curing time. Verification with manufacture of the adhesive shall be required.

5. No adhesive shall be applied to wet or damp surfaces.

6. No adhesive shall be applied to the seam area.

F. Adhesively fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.

G. In addition to adhering, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeter of roofing.

H. Apply membrane roofing with side laps shingled with slope of roof deck where possible.

I. Seams: Clean seam areas, overlap membrane roofing, and hot-air weld side and end laps of membrane roofing and sheet flashings according to manufacturer’s written instructions to ensure a watertight seam installation.

1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet membrane.
2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.

3. Repair tears, voids, and lapped seams in roofing that does not comply with requirements.

4. Welding equipment shall be provided by an approved manufacturer of the membrane manufacture.
   a. All mechanics intending to use the equipment shall have successfully completed a training course provided by the membrane manufacturer.

J. Spread sealant bed over deck drain flange at roof drains and secure seal membrane roofing in place with clamping ring.

K. Quality Control of Welded Seams: The Applicator shall check all welded seams for continuity. Onsite evaluation of welded seams shall be made daily by the Applicator. Failed seams shall be repaired at no cost to the Owner.

3.5 MEMBRANE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer’s written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and as recommended by manufacturer’s written instructions.

3.6 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer’s written instructions. Refer to roof plan for location and quantity.

3.7 TEMPORARY CUT OFF

A. All flashings shall be installed concurrently with the roof membrane in order to maintain a watertight condition as the work progresses. All temporary waterstops shall be constructed to provide a 100% watertight seal.

B. The stagger of the insulation joint shall be made even by installing partial panels of insulation.

C. The new membrane shall be carried into the waterstop. The waterstop shall be sealed to the deck and or substrate so that water will not be allowed to travel under the new or existing roofing. The edge of the membrane shall be sealed in a continuous heavy application of sealant as described in the manufacturer’s written instructions.

D. When work resumes, the contaminated membrane shall be cut out. All sealant, contaminated membrane, insulation fillers, etc., shall be removed from the work area and properly disposed of off site.

E. If inclement weather occurs while a temporary waterstop is in place, the Applicator shall provide the labor necessary to monitor the situation to maintain a watertight condition.

F. If any water is allowed to enter under the newly completed roofing system, the affected area shall be removed and replaced at the Applicator’s expense.
3.8 FIELD QUALITY CONTROL

A. Installation Contractor: Contractor shall engage a qualified manufacturer’s roof membrane agent to perform roof inspections and to prepare reports as described in Section 1.4E.

B. Final Roof Inspection: Arrange for roofing system manufacturer’s technical personnel to inspect roofing installation on completion and submit report to Architect.

1. Notify Architect or Owner 48 hours in advance of date and time of inspection.

C. Repair or remove and replace components of membrane roofing system where inspections indicate that they do not comply with specified requirements.

D. Additional testing and inspections, at Contractor’s expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.9 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.

C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION
SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, gutters, downspouts, sheet metal roofing, and other items indicated in Schedule.

B. Precast concrete splash pads.

1.2  RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood nailers.

B. Section 06 1000 - Rough Carpentry: Field fabricated roof curbs.

C. Section 07 7100 - Roof Specialties: Preformed flashings and manufactured expansion joint covers.

D. Section 07 7200 - Roof Accessories: Roof-mounted units.

E. Section 07 9005 - Joint Sealers.

F. Section 09 9000 - Painting and Coating: Field painting.

1.3  REFERENCE STANDARDS


B. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.


H. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors’ National Association; 2012.

1.4  ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

1.5  SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
1.6 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.

B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with ____ years of documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.1 SHEET MATERIALS

A. Aluminum: ASTM B209 (ASTM B209M), 3003, 3004, 3105, or 5005 alloy, suitable for forming and structural performance required, but not less than H14 temper; .040 for gutters, copings and gravel stops; .063 for downspouts inch (____ mm) thick; anodized finish of color as selected.

   1. Clear Anodized Finish: AAMA 611 AA-M12C22A41 Class I clear anodic coating not less than .7 mils (0.018 mm) thick.

B. Lead: ASTM B749, 2.5 lb/sq ft (0.99 mm) thick.

C. Stainless Steel: ASTM A666 Type 304, soft temper, (24 gauge) .024 inch (____ mm) thick; smooth No. 4 finish.

2.2 ACCESSORIES

A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers.

B. Underlayment: ASTM D226/D226M, organic roofing felt, Type I ("No. 15").

C. Primer: Zinc chromate type.

D. Protective Backing Paint: Zinc molybdate alkyd.

E. Sealant: Type ____ specified in Section 07 9005.

F. Plastic Cement: ASTM D4586, Type I.

2.3 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18 inch (450 mm) long legs; seam for rigidity, seal with sealant.

F. Fabricate flashings to allow toe to extend 2 inches (50 mm) over roofing gravel. Return and brake edges.
2.4 GUTTER AND DOWNSPOUT FABRICATION


B. Downspouts: Rectangular profile; open faced.

C. Gutters and Downspouts: Size for rainfall intensity determined by a storm occurrence of 1 in 100 years in accordance with SMACNA Architectural Sheet Metal Manual.

D. Accessories: Profiled to suit gutters and downspouts.
   1. Anchorage Devices: In accordance with SMACNA requirements.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.

E. Splash Pads: Precast concrete type, of size and profiles indicated; minimum 3000 psi (21 MPa) at 28 days, with minimum 5 percent air entrainment.

F. Downspout Boots: Cast iron.

G. Seal metal joints.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.2 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil (0.4 mm).

3.3 INSTALLATION

A. Conform to drawing details.

B. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

C. Apply plastic cement compound between metal flashings and felt flashings.

D. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

E. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.
   1. Coat back side of uncoated aluminum and stainless-steel sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
   2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene sheet.
F. Secure gutters and downspouts in place using concealed fasteners.

G. Slope gutters 1/4 inch per 10 feet (2.1 mm per m), minimum.

H. Connect downspouts to downspout boots. Grout connection watertight.

I. Set splash pads under downspouts.

END OF SECTION
SECTION 07 7100 - ROOF SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Manufactured roof specialties, including copings.

1.2 RELATED REQUIREMENTS
   A. Section 07 7200 - Roof Accessories: Manufactured curbs, roof hatches, and snow guards.
   B. Section 07 9005 - Joint Sealers.

1.3 REFERENCE STANDARDS
   D. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors’ National Association; 2012.

1.4 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
   C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.
   D. Samples: Submit two appropriately sized samples of coping and gravel stop.
   E. Manufacturer’s Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.5 QUALITY ASSURANCE
   A. Perform work in accordance with NRCA ML104 details.

PART 2 PRODUCTS

2.1 MANUFACTURERS
   A. Roof Edge Flashings and Copings:
      4. Substitutions: See Section 01 6000 - Product Requirements.
B. Pipe and Penetration Flashings:
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.2 COMPONENTS
A. Roof Edge Flashings: Factory fabricated to sizes required; mitered, welded corners; concealed fasteners.
   1. Configuration: Fascia, cant, and edge securement for roof membrane;
   2. Pull-Off Resistance: Tested in accordance with SPRI ES-1 RE-1 and RE-2 to positive and negative design wind pressure as defined by applicable code.
   3. Material: Formed aluminum sheet, 0.050 inch (1.3 mm) thick, minimum.

B. Copings: Factory fabricated to sizes required; mitered, welded corners; concealed fasteners.
   1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness and finish as cap; concealed stainless steel fasteners.
   2. Pull-Off Resistance: Tested in accordance with SPRI ES-1 RE-3 to positive and negative design wind pressure as defined by applicable code.
   3. Material: Formed aluminum sheet, 0.050 inch (1.3 mm) thick, minimum.
   5. Finish: Mill finish.

C. Pipe and Penetration Flashing: Base of rounded aluminum, compatible with sheet metal roof systems, and capable of accommodating pipes sized between 0.375 inches (9.5 mm) and 12 inches (30.5 cm).

2.3 ACCESSORIES
A. Sealant for Joints in Linear Components: As recommended by component manufacturer.
B. Adhesive for Anchoring to Roof Membrane: Compatible with roof membrane and approved by roof membrane manufacturer.

2.4 FINISHES
A. Clear Anodized Finish: AAMA 611 AA-M12C22A41 Class I clear anodic coating not less than 0.7 mils (0.018 mm) thick.
B. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; color as selected from manufacturer’s standard colors.

PART 3 EXECUTION
3.1 EXAMINATION
A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.2 INSTALLATION
A. Install components in accordance with manufacturer’s instructions.
B. Conform to SMACNA Architectural Sheet Metal Manual (ASMM) drawing details as noted:

C. Coordinate installation of components of this section with installation of roofing membrane and base flashings.

D. Coordinate installation of sealants and roofing cement with work of this section to ensure water tightness.

E. Coordinate installation of flashing flanges into reglets.

END OF SECTION
SECTION 07 7200 - ROOF ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Manufactured curbs, equipment rails, and pedestals.
B. Roof hatches.

1.2 RELATED REQUIREMENTS

A. Section 07 6200 - Sheet Metal Flashing and Trim: Roof accessory items fabricated from sheet metal.
B. Section 07 7100 - Roof Specialties: Other manufactured roof items.

1.3 REFERENCE STANDARDS


1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer’s data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.
C. Shop Drawings: For non-penetrating rooftop supports, submit detailed layout developed for this project, with design calculations for loadings and spacings.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer’s unopened packaging until ready for installation.
B. Store products under cover and elevated above grade.

PART 2 PRODUCTS

2.1 MANUFACTURED CURBS

A. Manufactured Curbs, Equipment Rails, and Other Roof Mounting Assemblies:
   4. Substitutions: See Section 01 6000 - Product Requirements.
B. Manufactured Curbs, Equipment Rails, and Other Roof Mounting Assemblies: Factory-assembled hollow sheet metal construction with fully mitered and welded corners, integral counterflashings, internal reinforcing, and top side and edges formed to shed water.
1. Sheet Metal: Hot-dip zinc coated steel sheet complying with ASTM A653/A653M, SS Grade 33 (230); G90 (2275) coating designation; 18 gage, 0.048 inch (1.21 mm) thick.

2. Roofing Cants: Provide integral sheet metal roofing cants dimensioned to begin slope at top of roofing insulation; 1:1 slope; minimum cant height 4 inches (200 mm).

3. Manufacture curb bottom and mounting flanges for installation directly on roof deck, not on insulation; match slope and configuration of roof deck.

4. Provide the layouts and configurations shown on the drawings.

C. Curbs Adjacent to Roof Openings: Provide curb on all sides of opening, with top of curb horizontal for equipment mounting.

   1. Provide preservative treated wood nailers along top of curb.

   2. Insulate inside curbs with 1-1/2 inch (38 mm) thick fiberglass insulation.

   3. Height Above Finished Roof Surface: 8 inches (203 mm), minimum.

   4. Height Above Roof Deck: 16 inches (406 mm), minimum.

D. Equipment Rails: Two-sided curbs in straight lengths, with top horizontal for equipment mounting.

   1. Provide preservative treated wood nailers along top of rails.

   2. Height Above Finished Roof Surface: 8 inches (203 mm), minimum.

   3. Height Above Roof Deck: 16 inches (406 mm), minimum.

E. Pipe, Duct, and Conduit Mounting Pedestals: Vertical posts, minimum 8 inches (400 mm) square unless otherwise indicated.

   1. Provide sliding channel welded along top edge with adjustable height steel bracket, manufactured to fit item supported.

   2. Height Above Finished Roof Surface: 8 inches (203 mm), minimum.

   3. Height Above Roof Deck: 16 inches (406 mm), minimum.

2.2 ROOF HATCHES

A. Manufacturers - Roof Hatches:


   7. Substitutions: See Section 01 6000 - Product Requirements.

B. Roof Hatches: Factory-assembled steel frame and cover, complete with operating and release hardware.
1. **Style:** Provide flat metal covers unless otherwise indicated.

2. **Mounting:** Provide frames and curbs suitable for mounting on flat roof deck.

3. **Size(s):** As indicated on drawings; single-leaf style unless indicated as double-leaf.

4. **For Ships Ladder Access:** Single leaf; 30 by 54 inches (762 by 1372 mm).

**C. Frames/Curbs:** One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.

   1. **Material:** Galvanized steel, 14 gage, 0.0747 inch (1.90 mm) thick.
   2. **Finish:** Factory prime paint.
   3. **Insulation:** 2 inches (50 mm) rigid glass fiber, located on outside face of curb.
   4. **Curb Height:** 16 inches (406.4 mm) from finished surface of roof, minimum.

**D. Metal Covers:** Flush, insulated, hollow metal construction.

   1. **Capable of supporting 40 psf (1.92 kPa) live load.**
   2. **Material:** Galvanized steel; outer cover 14 gage, 0.0747 inch (1.90 mm) thick, liner 22 gage, 0.03 inch (0.76 mm) thick.
   3. **Finish:** Factory prime paint.
   4. **Insulation:** 1 inch (25 mm) rigid glass fiber.
   5. **Gasket:** Neoprene, continuous around cover perimeter.

**E. Hardware:** Steel, zinc coated and chromate sealed, unless otherwise indicated or required by manufacturer.

   1. **Lifting Mechanisms:** Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf (475 kPa) load.
   2. **Hinges:** Manufacturer’s recommended type.
   3. **Hold open arm with vinyl-coated handle for manual release.**
   4. **Latch:** Upon closing, engage latch automatically and reset manual release.
   5. **Manual Release:** Pull handle on interior.
   6. **Locking:** Padlock hasp on interior.

**PART 3 EXECUTION**

3.1 **EXAMINATION**

   A. Do not begin installation until substrates have been properly prepared.

   B. If substrate preparation is the responsibility of another installer, notify Architect/Engineer of unsatisfactory preparation before proceeding.

3.2 **PREPARATION**

   A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION
   A. Install in accordance with manufacturer’s instructions, in manner that maintains roofing weather integrity.

3.4 CLEANING
   A. Clean installed work to like-new condition.

3.5 PROTECTION
   A. Protect installed products until completion of project.
   B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
SECTION 07 8400 - FIRESTOPPING

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.2  REFERENCE STANDARDS


F. FM 4991 - Approval of Firestop Contractors; Factory Mutual Research Corporation; 2001.


1.3  SUBMITTALS

A. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

B. Product Data: Provide data on product characteristics, performance ratings, and limitations.

C. LEED Report: Submit VOC content documentation for all non-preformed materials.

D. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.

1.4  QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated and ASTM E814.
   1. Listing in the current-year classification or certification books of UL or FM will be considered as constituting an acceptable test report.
   2. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.

B. Installer Qualifications: Company specializing in performing the work of this section and:
FIRESTOPPING

1. Trained by the manufacturer.
2. Approved by Factory Mutual Research under FM Standard 4991, Approval of Firestop Contractors, or meeting any two of the following requirements:
3. With minimum 5 years documented experience installing work of this type.
4. Able to show at least 5 satisfactorily completed projects of comparable size and type.

1.5 FIELD CONDITIONS

A. Comply with firestopping manufacturer’s recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.1 FIRESTOPPING - GENERAL REQUIREMENTS

A. Manufacturers:
   1. 3M Fire Protection Products: www.3m.com/firestop.
   3. Tremco.
   4. DAP, Inc.
   5. Firestop Systems, Inc.
   6. Substitutions: See Section 01 6000 - Product Requirements.

B. Firestopping: Any material meeting requirements.

C. Firestopping Materials with Volatile Content: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

D. Mold Resistance: Provide firestopping materials with mold and mildew resistance rating of 0 as determined by ASTM G21.

E. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

F. Fire Ratings: See Drawings for required systems and ratings.

2.2 FIRESTOPPING ASSEMBLY REQUIREMENTS

A. Perimeter Fire Containment Firestopping: Use any system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of the floor assembly.
   1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
   2. Temperature Rise: In addition, provide systems that have been tested to show T Rating as indicated.
   3. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.
B. Head-of-Wall Firestopping at Joints Between Non-Rated Floor and Fire-Rated Wall: Use any system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.

C. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use any system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.

D. Through Penetration Firestopping: Use any system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.

2.3 FIRESTOPPING FOR FLOOR-TO-FLOOR, WALL-TO-FLOOR, AND WALL-TO-WALL JOINTS

A. Gypsum Board Walls:

1. Wall to Wall Joints:
   a. 2 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
   b. 1 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.

2. Top of Wall Joints at Underside of Steel Beam and Concrete Over Metal Deck Floor with Sprayed On Fireproofing:
   a. 1 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.

3. Top of Wall Joints at Concrete Over Metal Deck, Wall Parallel to Ribs:
   a. 1 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.

4. Top of Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Cut to Fit Ribs:
   a. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.

5. Top of Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Not Cut to Fit:
   a. 1 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.

2.4 FIRESTOPPING PENETRATIONS THROUGH CONCRETE AND CONCRETE MASONRY CONSTRUCTION

A. Blank Openings:

1. In Floors or Walls:
   a. 2 Hour Construction: UL System C-AJ-0090; Hilti FS-ONE Intumescent Firestop Sealant.

B. Penetrations Through Floors or Walls By:

1. Multiple Penetrations in Large Openings:
   a. 2 Hour Construction: UL System C-AJ-8143; Hilti FS-ONE Intumescent Firestop Sealant.

2. Uninsulated Metallic Pipe, Conduit, and Tubing:
   a. 2 Hour Construction: UL System C-AJ-1421; Hilti FS-ONE Intumescent Firestop Sealant or CP 604 Self-Leveling Firestop Sealant.

3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
FIRESTOPPING

Issued for BID

07 8400-4
12.14.15

2.5 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.

1. Fire Ratings: Use any system listed by UL or tested in accordance with ASTM E814 that has F Rating equal to fire rating of penetrated assembly and T Rating Equal to F Rating and that meets all other specified requirements.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify openings are ready to receive the work of this section.

3.2 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

C. Install backing materials to arrest liquid material leakage.

3.3 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer’s instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by authority having jurisdiction.

3.4 CLEANING

A. Clean adjacent surfaces of firestopping materials.

3.5 PROTECTION

A. Protect adjacent surfaces from damage by material installation.

END OF SECTION
SECTION 07 9005 - JOINT SEALERS

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Sealants and joint backing.
B. Precompressed foam sealers.

1.2 RELATED REQUIREMENTS
A. Section 07 8400 - Firestopping: Firestopping sealants.
B. Section 08 8000 - Glazing: Glazing sealants and accessories.
C. Section 09 2116 - Gypsum Board Assemblies: Acoustic sealant.
D. Section 09 3000 - Tiling: Sealant used as tile grout.

1.3 REFERENCE STANDARDS

1.4 ADMINISTRATIVE REQUIREMENTS
A. Coordinate the work with other sections referencing this section.

1.5 SUBMITTALS
A. Product Data: Provide data indicating sealant performance criteria.
B. Samples: Submit two samples, 1/2 x 3 inch (____x____ mm) in size illustrating sealant colors for selection.
C. LEED Report: Submit VOC content documentation for all non-preformed sealants and primers.
D. Manufacturer’s Installation Instructions: Indicate special procedures.

1.6 QUALITY ASSURANCE
A. Applicator Qualifications: Company specializing in performing the work of this section with minimum three years documented experience and approved by manufacturer.

1.7 FIELD CONDITIONS
A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.8 WARRANTY
A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
B. Correct defective work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 SEALANTS

A. Sealants and Primers - General: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No. 1168.

B. General Purpose Exterior Sealant: Polyurethane; ASTM C920, Grade NS, Class 25, Uses M, G, and A; single component.
   1. Color: Match adjacent finished surfaces.
   2. Applications: Use for:
      a. Control, expansion, and soft joints in masonry.
      b. Joints between concrete and other materials.
      c. Joints between metal frames and other materials.
      d. Other exterior joints for which no other sealant is indicated.
   3. Polyurethane Products:
      b. Tremco, Vulkem 931.
      c. Sonneborn, Div. of ChemRex Inc.; NP-1.
      d. Substitutions: See Section 01 6000 - Product Requirements.

C. Exterior Expansion Joint Sealer: Precompressed foam sealer; urethane with water-repellent;
   1. Face color: to match adjacent surfaces.
   2. Size as required to provide weathertight seal when installed.
   3. Provide product recommended by manufacturer for traffic-bearing use.
   4. Applications: Use for:
      a. Exterior wall expansion joints.
   5. Products:
      d. Substitutions: See Section 01 6000 - Product Requirements.
D. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C834, Type OP, Grade NF single component, paintable.

1. Color: Match adjacent finished surfaces.

2. Applications: Use for:
   a. Interior wall and ceiling control joints.
   b. Joints between door and window frames and wall surfaces.
   c. Other interior joints for which no other type of sealant is indicated.

3. Products:
   c. Sonneborn; Sonolac.
   d. Substitutions: See Section 01 6000 - Product Requirements.

E. Acoustical Sealant for Concealed Locations:

1. Composition: Acrylic latex emulsion sealant.

2. Applications: Use for concealed locations only:
   a. Sealant bead between top stud runner and structure and between bottom stud track and floor.

3. Products:
   c. OSI Sealants; SC-170 Acoustical Sound Sealants.
   d. Substitutions: See Section 01 6000 - Product Requirements.


3. Service Temperature Range: -40 to 180 degrees F (-40 to 82 degrees C).


5. Products:
   c. Tremco; Vulkem 300 SSL.
   d. Substitutions: See Section 01 6000 - Product Requirements.
G. Type Single Component - Silicone Sealant: ASTM C920, Grade NS, Class 25, Uses NT, A, G, M, O; single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding.

1. Color: Match adjacent finished surfaces.
3. Service Temperature Range: -65 to 180 degrees F (-54 to 82 degrees C).
4. Products:
   d. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.1 EXAMINATION
   A. Verify that substrate surfaces are ready to receive work.
   B. Verify that joint backing and release tapes are compatible with sealant.

3.2 PREPARATION
   A. Remove loose materials and foreign matter that could impair adhesion of sealant.
   B. Clean and prime joints in accordance with manufacturer’s instructions.
   C. Perform preparation in accordance with manufacturer’s instructions and ASTM C1193.
   D. Protect elements surrounding the work of this section from damage or disfigurement.

3.3 INSTALLATION
   A. Perform work in accordance with sealant manufacturer’s requirements for preparation of surfaces and material installation instructions.
   B. Perform installation in accordance with ASTM C1193.
   C. Perform acoustical sealant application work in accordance with ASTM C919.
   D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.
   E. Install bond breaker where joint backing is not used.
   F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
   G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
   H. Tool joints concave.
   I. Precompressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch (3 to 6 mm) below adjoining surface.
J. Concrete Floor Joint Filler: Install concrete floor joint filler per manufacturer’s written instructions. After floor joint filler is fully cured, shave joint filler flush with top of concrete slab.

3.4 CLEANING

A. Clean adjacent soiled surfaces.

3.5 PROTECTION

A. Protect sealants until cured.

END OF SECTION
SECTION 08 1113 - HOLLOW METAL DOORS AND FRAMES

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Non-fire-rated steel doors and frames.
B. Steel frames for wood doors.
C. Fire-rated steel doors and frames.
D. Thermally insulated steel doors.
E. Steel glazing frames.

1.2  RELATED REQUIREMENTS

A. Section 08 1416 - Flush Wood Doors
B. Section 08 7100 - Door Hardware.
C. Section 08 8000 - Glazing: Glass for doors and borrowed lites.

1.3  REFERENCE STANDARDS

G. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2006.
1.4 SUBMITTALS

A. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.

B. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, anchorage, connections, and identifying location of different finishes, if any.

C. Samples: Submit two samples of metal, 2 x 2 inches (50 x 50 mm) in size showing factory finishes, colors, and surface texture.

D. Manufacturer’s Certificate: Certification that products meet or exceed specified requirements.

E. LEED Report: Submit for metal products made from sustainable and/or recycled materials as specified in Section 01 3515.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Maintain at the project site a copy of all reference standards dealing with installation.

C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at as close to neutral pressure as possible according to NFPA 252.

D. Fire-Rated, Borrowed-Light Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled, by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9. Label each individual glazed lite.

E. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store in accordance with NAAMM HMMA 840.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

C. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.

1. Provide additional protection to prevent damage to finish of factory-finished units.

D. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.

E. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch (102 mm) high wood blocking. Do not store in manner that traps excess humidity.

1. Provide minimum 1/4 inch (6 mm) space between each stacked door to permit air circulation.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.
1.8 COORDINATION

A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   3. Kewanee Corp.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. MATERIALS

1. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
2. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
3. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum A40 (ZF120) metallic coating.
4. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40z (12G) coating designation; mill phosphatized.
   a. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hot-dip galvanized according to ASM A 153/A 153M, Class B.
5. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
6. Glazing: Comply with requirements in Division 08 Section "Glazing".

2.2 DOORS AND FRAMES

A. Requirements for All Doors and Frames:
   2. Door Top Closures: Flush with top of faces and edges.
   3. Door Edge Profile: Beveled on both edges.
   5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
   6. Hardware Preparation: In accordance with BHMA A156.115, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
7. Galvanizing for Units in Wet Areas: All components hot-dipped zinc-iron alloy-coated (galvannealed), manufacturer’s standard coating thickness.

8. Finish: Factory primed, for field finishing.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.3 STEEL DOORS

A. Exterior Doors:
   1. Grade: ANSI A250.8 Level 4, physical performance Level A, Model 2, seamless.
   2. Thickness: 1 3/4"
   3. Core: Steel channel grid.
   4. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with manufacturer’s standard coating thickness.
   5. Insulating Value: U-value of 0.50, when tested in accordance with ASTM C1363.
   6. Weatherstripping: Separate, see Section 08 7100.

B. Interior Doors, Non-Fire-Rated:
   1. Grade: ANSI A250.8 Level 2, physical performance Level B, Model 1, full flush.
   2. Core: Steel channel grid.
   3. Thickness: 1-3/4 inches (44 mm).

C. Interior Doors, Fire-Rated:
   1. Grade: ANSI A250.8 Level 2, physical performance Level B, Model 1, full flush.
   2. Thickness: 1 3/4"
   3. Fire Rating: As indicated on Door and Frame Schedule, tested in accordance with UL 10C (“positive pressure”).
      a. Provide units listed and labeled by UL.
      b. Attach fire rating label to each fire rated unit.

2.4 STEEL FRAMES

A. General:
   1. Comply with the requirements of grade specified for corresponding door.
      a. ANSI A250.8 Level 1 Doors: Interior: 16 gage frames.
      b. ANSI A250.8 Level 3 Doors: Exterior: 14 gage frames.
c. Frames for Wood Doors: Comply with frame requirements specified in ANSI A250.8 for Level 1, 18 gage

d. Frames for Sound-Rated Wood Doors: Comply with frame requirements specified in ANSI A250.8 for Level 1, 16 gage

2. Finish: Factory primed, for field finishing.

3. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

4. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches (100 mm) high to fill opening without cutting masonry units.

B. Exterior Door Frames: Face welded, seamless with joints filled.

1. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness.

2. Weatherstripping: Separate, see Section 08 7100.

C. Interior Door Frames, Non-Fire-Rated: Fully welded type.

1. Terminated Stops: Provide at all interior doors; closed end stop terminated 6 inches (150 mm) above floor at 45 degree angle.

D. Interior Door Frames, Fire-Rated: Fully welded type.

1. Fire Rating: Same as door, labeled.

E. Mullions for Pairs of Doors: Fixed, except where removable is indicated, of profile similar to jambs.

F. Frames for Interior Glazing or Borrowed Lights: Construction and face dimensions to match door frames, and as indicated on drawings.

2.5 ACCESSORY MATERIALS

A. Louvers: Roll formed steel with overlapping frame; finish same as door components; factory-installed.

1. In Fire-Rated Doors: UL-listed fusible link louver, same rating as door.

B. Louvers: Specified in Section 08 9100.

C. Glazing: As specified in Section 08 8000, factory installed.

D. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.

E. Astragals for Double Doors: Specified in Section 08 7100.

1. Fire-Rated Doors: Steel, shape as required to accomplish fire rating.

F. Frame Anchors

1. Jamb Anchors:

   a. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size, not less than 0.042 inch (1.0 mm) thick, with corrugated or perforated straps not less than 2 inches (50 mm) wide by 10 inches (250 mm) long; or wire anchors not less than 0.177 inch (4.5 mm) thick.
b. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042 inch (1.0 mm) thick.

c. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.

d. Postinstalled Expansion Type for In-Place Concrete or Masonry: Minimum 3/8 inch (9.5 mm) diameter bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

2. Floor Anchors: Formed from same material as frames, not less than 0.042 inch (1.0 mm) thick, and as follows:

a. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

b. Separate Topping Concrete Slabs: Adjustable-type anchors with extension clips, allowing not less than 2 inch (50 mm) height adjustment. Terminate bottom of frames at finish floor surface.

G. Hollow Metal Panels
1. Provide hollow metal panels of same materials, construction, and finish as specified for adjoining hollow metal work.

H. Stop and Moldings
1. Moldings for Glazed Lites in Doors: Minimum 0.032 inch (0.8 mm) thick, fabricated from same material as door face sheet in which they are installed.

2. Fixed Frame Moldings: Formed integral with hollow metal frames, a minimum of 5/8 inch (16 mm) high unless otherwise indicated.

3. Loose Stops for Glazed Lites in Frames: Minimum 0.032 inch (0.8 mm) thick, fabricated from same material as frames in which they are installed.

4. Terminated Stops: Where indicated on interior door frames, terminate stops 6 inches (152 mm) above finish floor with a 45-degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.

a. Provide terminated stops where indicated.

I. Grout for Frames: Portland cement grout of maximum 4-inch slump for hand troweling; thinner pumpable grout is prohibited.

J. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.

K. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

2.6 FINISH MATERIALS

A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer’s standard.

B. Bituminous Coating: Asphalt emulsion or other high-build, water-resistant, resilient coating.

2.7 FABRICATION

A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble
units in manufacturer’s plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.

C. Hollow Metal Doors:

1. Exterior Doors: Provide weep-hole openings in bottom of exterior doors to permit moisture to escape. Seal joints in top edges of doors against water penetration.

D. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.

2. Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.

3. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

4. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.

5. Jamb Anchors: Provide number and spacing of anchors as follows:

   a. Fire ratings may require additional anchors.

   b. Masonry Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:

      1) Two anchors per jamb up to 60 inches (1524 mm) high.

      2) Three anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.

      3) Four anchors per jamb from 90 to 120 inches (2286 to 3048 mm) high.

      4) Four anchors per jamb plus 1 additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 120 inches (3048 mm) high.

   c. Stud-Wall Type: Locate anchors not more than 18 inches (457 mm) from top and bottom of frame. Space anchors not more than 32 inches (813 mm) o.c. and as follows:

      1) Three anchors per jamb up to 60 inches (1524 mm) high.

      2) Four anchors per jamb from 60 to 90 inches (1524 to 2286 mm) high.

      3) Five anchors per jamb from 90 to 96 inches (2286 to 2438 mm) high.

      4) Five anchors per jamb plus 1 additional anchor per jamb for each 24 inches (610 mm) or fraction thereof above 96 inches (2438 mm) high.

      5) Two anchors per head for frames above 42 inches (1066 mm) wide and mounted in metal-stud partitions.

   d. Compression Type: Not less than two anchors in each jamb.

   e. Postinstalled Expansion Type: Locate anchors not more than 6 inches (152 mm) from top and bottom of frame. Space anchors not more than 26 inches (660 mm) o.c.
6. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
   a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
   b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.

7. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.

8. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
   a. Locate hardware as indicated, or if not indicated, according to ANSI/SDI A250.8.
   b. Reinforce doors and frames to receive nontemplated, mortised and surface-mounted door hardware.
   c. Comply with applicable requirements in ANSI/SDI A250.6 and ANSI/DHI A115 Series specifications for preparation of hollow metal work for hardware.
   d. Coordinate locations of conduit and wiring boxes for electrical connections with Division 26 Sections.

9. Stops and Moldings: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.
   a. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames.
   b. Provide loose stops and moldings on inside of hollow metal work.
   c. Coordinate rabbet width between fixed and removable stops with type of glazing and type of installation indicated.

PART 3 EXECUTION

3.1 EXAMINATION
A. Verify existing conditions before starting work.
B. Verify that opening sizes and tolerances are acceptable.
C. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
D. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
E. Retain first paragraph below if required.
F. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
G. Proceed with installation only after unsatisfactory conditions have been corrected.
3.2 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

B. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.

3.3 INSTALLATION

A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.

B. In addition, install fire rated units in accordance with NFPA 80.

C. Coordinate frame anchor placement with wall construction.

D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

E. Coordinate installation of hardware.

F. Coordinate installation of glazing.

G. Coordinate installation of electrical connections to electrical hardware items.

H. Touch up damaged factory finishes.

I. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer’s written instructions.

J. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.

K. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.

1. Non-Fire-Rated Standard Steel Doors:
   a. Jambs and Head: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
   b. Between Edges of Pairs of Doors: 1/8 inch (3 mm) plus or minus 1/16 inch (1.6 mm).
   c. Between Bottom of Door and Top of Threshold: Maximum 3/8 inch (9.5 mm).
   d. Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch (19 mm).

2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.

L. Glazing: Comply with installation requirements in Division 08 Section “Glazing” and with hollow metal manufacturer’s written instructions.

1. Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches (230 mm) o.c. and not more than 2 inches (50 mm) o.c. from each corner.

3.4 TOLERANCES

A. Maximum Diagonal Distortion: 1/16 in (1.5 mm) measured with straight edge, corner to corner.
3.5 ADJUSTING

A. Adjust for smooth and balanced door movement.

B. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.

C. Remove grout and other bonding material from hollow metal work immediately after installation.

D. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.

END OF SECTION
SECTION 08 1416 - FLUSH WOOD DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Flush wood doors; flush configuration; non-rated.

1.2 RELATED REQUIREMENTS

A. Section 06 2000 - Finish Carpentry: Wood door frames.
B. Section 08 1113 - Hollow Metal Doors and Frames.
C. Section 08 7100 - Door Hardware.
D. Section 08 8000 - Glazing.
E. Section 09 2116 - Gypsum Board Assemblies.
F. Section 09 9000 - Painting and Coating: Site finishing of doors.

1.3 REFERENCE STANDARDS

B. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.
E. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2013.

1.4 SUBMITTALS

A. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
B. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
   1. Provide the information required by AWI/AWMAC/WI Architectural Woodwork Standards.
C. Specimen warranty.
D. Samples: Submit two samples of door veneer, 6 by 6 inch (____ by ____ mm) in size illustrating wood grain, stain color, and sheen.
E. LEED Submittals:
   1. Certificates for Credit MR 7: Chain-of-custody certificates certifying that flush wood doors comply with forest certification requirements. Include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.
2. Product Data for Credit EQ 4.4: For adhesives and composite wood products, indicating that product contains no urea formaldehyde.

3. LEED Report: Submit for wood products made from sustainably harvested wood, salvaged and reused wood, wood fabricated from recovered timber, and locally-sourced wood, as specified in Section 01 3515.

F. Manufacturer’s Installation Instructions: Indicate special installation instructions.

G. Warranty, executed in Owner’s name.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification: Provide AWI Quality Certification Program inspection report and quality certification of completed work.

1. Provide labels or certificates indicating that the work complies with requirements of AWS Grade or Grades specified.

2. Prior to delivery to the site provide shop drawings with certification labels.

3. Provide labels on each product when required by certification program.

4. Upon completion of installation provide certificate certifying that the installation and products meet the specified requirements.

5. Arrange and pay for inspections required for certification.

6. Replace, repair, or rework all work for which certification is refused.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer’s packaging. Inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.7 PROJECT CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature between 60 and 90 deg F (16 and 32 deg C) and relative humidity between 25 and 55 percent during the remainder of the construction period.

1.8 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Interior Doors: Provide manufacturer’s warranty for the life of the installation.
C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Wood Veneer Faced Doors:
   3. Algoma Hardwoods, Inc.
   4. VT Industries, Inc.
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.2 DOORS AND PANELS

A. All Doors: See drawings for locations and additional requirements.
   1. Quality Level: Premium Grade with A grade veneer, in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.
   2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches (44 mm) thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at all locations .
   2. Wood veneer facing with factory transparent finish where indicated on drawings.

2.3 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated above.

2.4 DOOR FACINGS

A. Wood Veneer Facing for Transparent Finish: Natural birch, veneer grade as specified by quality standard, plain sliced, book veneer match, running assembly match; unless otherwise indicated.
   1. Vertical Edges: Same species as face veneer.

B. Veneer Facing for Opaque Finish: Medium density overlay (MDO).

2.5 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge and top of door for closer for hardware reinforcement.

C. Glazed Openings: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.

D. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

1. Exception: Doors to be field finished.

F. Provide edge clearances in accordance with the quality standard specified.

2.6 VENEERED-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:

1. Grade: Premium, with Grade AA faces.
2. Species: Select white birch.
3. Cut: Plain sliced (flat sliced).
5. Assembly of Veneer Leaves on Door Faces: Running match.
6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
7. Room Match: Match door faces within each separate room or area of building. Corridor door faces do not need to match where they are separated by 10 feet (3 m) or more.
8. Room Match: Provide door faces of compatible color and grain within each separate room or area of building.
10. Core: Particleboard or Glued wood stave.
11. Construction: Five or Seven plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering.

2.7 DOORS FOR OPAQUE FINISH

A. Interior Solid-Core Doors:

1. Grade: Premium.
2. Faces: Medium-density overlay.
   a. MDF Faces: ANSI A208.2, Grade 150 or 160.
5. Construction: Five or Seven plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering.
6. WDMA I.S.1-A Performance Grade: Extra Heavy Duty.

2.8 FACTORY FINISHING - WOOD VENEER DOORS

A. Finish work in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 5 - Finishing for Grade specified and as follows:

1. Transparent:
a. System - 1, Lacquer, Nitrocellulose.

b. Sheen: Satin.

B. Factory finish doors in accordance with approved sample.

**PART 3 EXECUTION**

**3.1 EXAMINATION**

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

**3.2 INSTALLATION**

A. Install doors in accordance with manufacturer’s instructions and specified quality standard.

1. Install fire-rated doors in accordance with NFPA 80 requirements.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

**3.3 TOLERANCES**

A. Conform to specified quality standard for fit and clearance tolerances.

B. Conform to specified quality standard for telegraphing, warp, and squareness.

**3.4 ADJUSTING**

A. Operation: Rehung or replace doors that do not swing freely.

B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

C. Adjust doors for smooth and balanced door movement.

D. Adjust closers for full closure.

**3.5 SCHEDULE - SEE DRAWINGS**

**END OF SECTION**
SECTION 08 3100 - ACCESS DOORS AND PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Wall access door and frame units.
B. Ceiling access door and frame units.
C. Floor access door and frame units, interior and exterior.
D. Fire rated access doors and frames.

1.2 RELATED REQUIREMENTS

A. Section 09 9000 - Painting and Coating: Field paint finish.
B. Section 23 3300 - Air Duct Accessories: Access doors in ductwork.

1.3 REFERENCE STANDARDS


1.4 SUBMITTALS

A. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
B. Shop Drawings: Indicate exact position of all access door units.
C. Access Door and Frame Schedule: Provide complete access door and frame schedule, including types, locations, sizes, latching or locking provisions, and other data pertinent to installation.
D. LEED Submittals: Submit applicable LEED Submittal Form for each different product, showing recycled content and geographic source of products.
E. Project Record Documents: Record actual locations of all access units.

1.5 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of access door(s) and frame(s) through one source from a single manufacturer.
B. Fire-Rated Access Doors and Frames: Units complying with NFPA 80 that are identical to access door and frame assemblies tested for fire-test-response characteristics per the following test method and that are listed and labeled by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
   1. NFPA 252 or UL 10B for vertical access doors and frames.
   2. ASTM E 119 or UL 263 for horizontal access doors and frames.
C.
1.6 COORDINATION

A. Size and Location Verification: Determine specific locations and sizes for access doors required to gain access to concealed plumbing, mechanical, or any other concealed work requiring access. Provide and install all access panels required.

PART 2 PRODUCTS

2.1 ACCESS DOOR AND PANEL APPLICATIONS

A. Walls, Unless Otherwise Indicated:
   1. Material: Steel.
   2. Size: 12 x 12 inches (300 x 300 mm), unless otherwise indicated.
   4. Tool-operated spring or cam lock; no handle.
   5. In All Wall Types: Surface mounted face frame and door surface flush with frame surface.
   6. In Gypsum Board: Drywall bead frame with door surface flush with wall surface.

B. Walls in Wet Areas: Any location requiring access to plumbing.
   1. Material: Steel, hot-dipped zinc or zinc-aluminum-alloy coated.
   2. Size: minimum 12 x 12 inches (300 x 300 mm), unless otherwise indicated.
   4. Tool-operated spring or cam lock; no handle.
   5. In All Wall Types: Surface mounted face frame and door surface flush with frame surface.
   6. In Gypsum Board: Drywall bead frame with door surface flush with wall surface.
   7. In Masonry: Surface mounted frame with door surface flush with frame surface.

C. Fire Rated Walls: See drawings for wall fire ratings.
   1. Material: Steel.
   2. Size: minimum 12 x 12 inches (300 x 300 mm), unless otherwise indicated.
   3. Insulated, double skin door panel.
   4. Key-operated cylinder lock with cam latch; no handle.

D. Ceilings, Unless Otherwise Indicated: Same type as for walls.
   1. Material: Steel.
   2. Size in Lay-in Grid Ceilings: To match grid module.
   3. Size in Other Ceilings: minimum 12 x 12 inches (300 x 300 mm), unless otherwise indicated.
   4. Standard duty, hinged door.
5. Tool-operated spring or cam lock; no handle.

E. Floor Access Doors, Interior:
   1. Size: 36 by 36 inches (915 by 915 mm).

F. Floor Access Doors, Exterior:
   1. Size: 36 by 36 inches (915 by 915 mm).

2.2 WALL AND CEILING UNITS

A. Manufacturers:
      a. Units in Walls, Unless Otherwise Indicated: ACUDOR ADWT.
      b. Units in 2 Hour Fire-Rated Walls: ACUDOR FB-5015.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Access Doors: Factory fabricated door and frame units, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies units are to be installed in.
      b. Door: Minimum 0.060-inch- (1.5-mm-) thick sheet metal, set flush with exposed face flange of frame.
      c. Frame: Minimum 0.060 inch (1.5 mm) thick sheet metal with 1 inch (25 mm) wide, surface-mounted trim.
      d. Hinges: Spring-loaded, concealed-pin type.
      e. Latch: Cam latch operated by screwdriver with interior release.
      f. Lock: Cylinder.
      b. Door: Minimum 0.060 inch (1.5 mm) thick sheet metal, set flush with surrounding finish surfaces.
      c. Frame: Minimum 0.060 inch (1.5 mm) thick sheet metal with [drywall] [plaster] bead flange.
      d. Hinges: Spring-loaded, concealed-pin type.
      e. Latch: Cam latch operated by screwdriver with interior release.
f. **Lock**: Cylinder.
   1) **Lock Preparation**: Prepare door panel to accept cylinder specified in Division 08 Section "Door Hardware."

   a. **Locations**: Wall and Ceiling surfaces.
   b. **Door**: Minimum 0.040-inch- (1.0-mm-) thick, metallic-coated steel sheet; flush panel construction with manufacturer’s standard 2-inch- (50-mm-) thick fiberglass insulation.
   c. **Frame**: Minimum 0.060 inch (1.5 mm) thick extruded aluminum.
   d. **Hinges**: Continuous piano, zinc plated.
   e. **Lock**: Dual-action handles with key lock.

   a. **Locations**: Wall and Ceiling surfaces.
   b. **Fire-Resistance Rating**: Not less than that of adjacent construction.
   c. **Temperature Rise Rating**: 250 deg F (139 deg C) at the end of 30 minutes.
   d. **Door**: Flush panel with a core of mineral-fiber insulation enclosed in sheet metal with a minimum thickness of 0.036 inch (0.9 mm).
   e. **Frame**: Minimum 0.060 inch (1.5 mm) thick sheet metal with 1 inch (25 mm) wide, surface-mounted trim.
   f. **Hinges**: Concealed-pin type.
   g. **Automatic Closer**: Spring type.
   h. **Latch**: Self-latching bolt operated by flush key with interior release.
   i. **Lock**: Cylinder.
      1) **Lock Preparation**: Prepare door panel to accept cylinder specified in Division 08 Section "Door Hardware."

5. **Fire Rated, Uninsulated, Flush Access Doors and Frames with Exposed Trim**: Fabricated from steel sheet.
   a. **Locations**: Wall surfaces.
   b. **Fire-Resistance Rating**: Not less than that of adjacent construction.
   c. **Door**: Minimum 0.060 inch (1.5 mm) thick sheet metal, flush construction.
   d. **Frame**: Minimum 0.060 inch (1.5 mm) thick sheet metal with 1 inch (25 mm) wide, surface-mounted trim.
   e. **Hinges**: Concealed-pin type.
   f. **Automatic Closer**: Spring type.
g. Latch: Cam latch operated by screwdriver with interior release.

h. Lock: Cylinder.
   1) Lock Preparation: Prepare door panel to accept cylinder specified in Division 08 Section "Door Hardware."

2.3 FLOOR UNITS

A. Floor Access Doors:
   1. Acudor Products Inc; ACUDOR FRFD: www.acudor.com. (aluminum only)
   3. Milcor, Inc.
   4. __________.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Floor Doors, General: Equip each door with adjustable counterbalancing springs, heavy-duty hold-open arm that automatically locks door open at 90 degrees, release handle with red vinyl grip that allows for one-handed closure, and recessed lift handle.

C. Watertight Aluminum Floor Door: Single-leaf opening. Extruded-aluminum gutter frame with NPS 1 1/2 (DN 40) drainage coupling and 1/4 inch (6.4 mm) thick, diamond-pattern, aluminum tread plate door; watertight; loading capacity to support 150 lbf/sq. ft. (7.2 kN/sq. m) pedestrian live load.

D. Steel Angle-Frame Floor Door: Single-leaf opening. Prime-painted structural-steel frame with 3/16 inch (4.8 mm) or 1/4 inch (6.4 mm) thick, diamond-pattern, prime-painted structural-steel tread plate door; nonwatertight; loading capacity to support 150 lbf/sq. ft. (7.2 kN/sq. m) pedestrian live load.
   1. Fire-Resistance Rating: Not less than that of adjacent construction.
   2. Finish painted in yellow with wording "FIRE DOOR - DO NOT STORE MATERIALS ON SURFACE."

E. Hardware: Provide the following:
   2. Latch: Stainless-steel slam latch.
   3. Lock: Keyed deadlock bolt
   4. Hardware Material: Manufacturer’s standard.

F. Insulation: Urethane with liner pan.

2.4 FABRICATION

A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.

B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.

C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of supports indicated.
1. Exposed Flanges: As indicated.

2. For trimless frames with drywall bead, provide edge trim for gypsum board and gypsum base securely attached to perimeter of frames.

3. Provide mounting holes in frames for attachment of units to metal or wood framing.


D. Recessed Access Doors: Form face of panel to provide recess for application of applied finish. Reinforce panel as required to prevent buckling.

1. For recessed doors with plaster infill, provide self-furring expanded metal lath attached to door panel.

E. Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed.

1. For cylinder lock, furnish two keys per lock and key all locks alike.

2. For recessed panel doors, provide access sleeves for each locking device. Furnish plastic grommets and install in holes cut through finish.

PART 3  EXECUTION

3.1  EXAMINATION

A. Verify that rough openings are correctly sized and located.

3.2  INSTALLATION

A. Install units in accordance with manufacturer’s instructions.

B. Install frames plumb and level in openings. Secure rigidly in place.

C. Position units to provide convenient access to the concealed work requiring access.

D. Install doors flush with adjacent finish surfaces or recessed to receive finish material.

3.3  ADJUSTING AND CLEANING

A. Adjust doors and hardware after installation for proper operation.

B. Remove and replace doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION
SECTION 08 3313 - COILING COUNTER DOORS

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Non-fire-rated coiling counter doors and operating hardware.

1.2 RELATED REQUIREMENTS
A. Section 06 1000 - Rough Carpentry: Openings.
B. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.
C. Section 08 7100 - Door Hardware: Cylinder cores and keys.
D. Section 09 2116 - Gypsum Board Assemblies: Openings.
E. Section 09 9000 - Painting and Coating: Field paint finish.

1.3 REFERENCE STANDARDS

1.4 SUBMITTALS
A. Product Data: Submit manufacturer’s standard literature showing materials and details of construction and finish.
B. Shop Drawings: Indicate rough and actual opening dimensions, anchorage methods, hardware locations, and installation details.
C. Samples: Submit two slats, 4 inches long (100 mm long) illustrating shape, color and finish texture.
D. Manufacturer’s Instructions: Indicate installation sequence and installation, adjustment, and alignment procedures.
E. Operation and Maintenance Data: Indicate modes of operation, lubrication requirements and frequency, and periodic adjustments required.

PART 2 PRODUCTS

2.1 MANUFACTURERS
A. Coiling Counter Doors:
   2. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another acceptable manufacturer.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.2 COILING COUNTER DOORS
A. Coiling Counter Doors, Non-Fire-Rated: Aluminum slat curtain.
2. Provide integral frame and sill of same material and finish.
4. Slat Profile: Flat, perforated.
5. Finish: Anodized.
6. Color: As selected by Architect/Engineer from manufacturer's standard range.
7. Guides: Formed track; same material and finish unless otherwise indicated.
10. Exterior keyed lock and latch handle.

2.3 MATERIALS
A. Curtain Construction: Interlocking, single thickness slats.
   1. Slat Ends: Alternate slats fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
   2. Curtain Bottom: Fitted with angles to provide reinforcement and positive contact in closed position.
   3. Aluminum Slats: ASTM B221 (ASTM B221M), aluminum alloy Type 6063; minimum thickness 0.05 inch (1.3 mm).
B. Guide Construction: Continuous, of profile to retain door in place, with mounting brackets of same metal.
   1. Aluminum Guides: Extruded aluminum channel, with wool pile runners along inside.
C. Hood Enclosure: Internally reinforced to maintain rigidity and shape.
D. Lock Cylinders: Specified in Section 08 7100.
E. Latching: Inside mounted, sliding deadbolt.
F. Roller Shaft Counterbalance: Steel pipe and torsion steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb (10 kg) nominal force to operate.

PART 3 EXECUTION
3.1 EXAMINATION
A. Verify that opening sizes, tolerances and conditions are acceptable.

3.2 INSTALLATION
A. Install units in accordance with manufacturer's instructions.
B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.
D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

E. Coordinate installation of sealants and backing materials at frame perimeter as specified in Section 07 9005.

F. Install perimeter trim as indicated.

3.3 TOLERANCES

A. Maintain dimensional tolerances and alignment with adjacent work.

B. Maximum Variation From Plumb: 1/16 inch (1.5 mm).

C. Maximum Variation From Level: 1/16 inch (1.5 mm).

D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 ft (3 mm per 3 m) straight edge.

3.4 ADJUSTING

A. Adjust operating assemblies for smooth and noiseless operation.

3.5 CLEANING

A. Clean installed components.

B. Remove labels and visible markings.

END OF SECTION
SECTION 08 4313 - ALUMINUM-FRAMED STOREFRONTS

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.
B. Aluminum doors and frames.
C. Weatherstripping.
D. Perimeter sealant.

1.2  RELATED REQUIREMENTS

A. Section 05 1200 - Structural Steel Framing: Steel attachment members.
B. Section 05 5000 - Metal Fabrications: Steel attachment devices.
C. Section 07 2500 - Weather Barriers: Perimeter air and vapor seal between glazing system and adjacent construction.
D. Section 07 8400 - Firestopping: Firestop at system junction with structure.
E. Section 07 9005 - Joint Sealers: Perimeter sealant and back-up materials.
F. Section 08 4413 - Glazed Aluminum Curtain Walls.
G. Section 08 5113 - Aluminum Windows: Operable sash within glazing system.
H. Section 08 7100 - Door Hardware: Hardware items other than specified in this section.
I. Section 08 8000 - Glazing: Glass and glazing accessories.

1.3  REFERENCE STANDARDS

A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 2012.
B. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage; American Architectural Manufacturers Association; 2009 (part of AAMA 501).
E. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; American Society of Civil Engineers; 2011.

1.4 ADMINISTRATIVE REQUIREMENTS
A. Coordinate with installation of other components that comprise the exterior enclosure.
B. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.5 SUBMITTALS
A. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, internal drainage details.
B. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
C. Samples: Submit two samples 12_x12 inches (___x___ mm) in size illustrating finished aluminum surface, glass, infill panels, glazing materials.
D. Manufacturer’s Certificate: Certify that the products supplied meet or exceed the specified requirements.
E. Design Data: Provide framing member structural and physical characteristics, engineering calculations, dimensional limitations.
F. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
G. Manufacturer’s Certificate: Certify that the products supplied meet or exceed the specified requirements.
H. Report of field testing for water leakage.
I. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner’s name and registered with manufacturer.

1.6 QUALITY ASSURANCE
A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed at the State in which the Project is located.
B. Manufacturer and Installer Qualifications: Company specializing in manufacturing aluminum glazing systems with minimum three years of documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Handle products of this section in accordance with AAMA CW-10.
B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.8 FIELD CONDITIONS
A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C). Maintain this minimum temperature during and 48 hours after installation.

1.9 WARRANTY
A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS
2.1 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING
A. Front-Set Style, Thermally-Broken:
   1. Basis of Design: Kawneer, Trifab 601T, Storefront Framing.
   2. Vertical Mullion Dimensions: 2 inches wide by 6 inches deep (50 mm wide by 152 mm deep).
B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
   2. Tubelite.
C. Substitution Procedures: See Section 01 6000 - Product Requirements.

2.2 BASIS OF DESIGN -- FRAMING FOR MONOLITHIC GLAZING
A. Center-Set Style:
   1. Basis of Design: Kawneer; Trifab VersaGlaze 450 Storefront Framing.
   2. Vertical Mullion Dimensions: 1-3/4 inches wide by 4-1/2 inches deep (44 mm wide by 114 mm deep).
B. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
   2. Tubelite.
C. Substitutions: See Section 01 6000 - Product Requirements.
2.3 BASIS OF DESIGN -- SWINGING DOORS

A. Medium Stile, Monolithic Glazing:
   1. Basis of Design: Kawneer; 350 Medium Stile Entrance.
   2. Thickness: 1-3/4 inches (43 mm).

B. Medium Stile, Insulating Glazing, Thermally-Broken:
   1. Basis of Design: Kawneer; 360 Insulclad Thermal Entrance.
   2. Thickness: 2-1/4 inches (57.1 mm).

C. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
   2. Tubelite.

2.4 STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Unitized, shop assembly.
   2. Glazing Rabbet: For 1 inch (25 mm) insulating glazing.
   3. Finish: Class I natural anodized.
      a. Factory finish all surfaces that will be exposed in completed assemblies.
      b. Touch-up surfaces cut during fabrication so that no natural aluminum is visible in completed assemblies, including joint edges.
      c. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
   4. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
   7. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F (95 degrees C) over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
   8. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
   9. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
10. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glazing and inner sheet of infill panel and heel bead of glazing compound.


B. Performance Requirements:

1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
   a. Design Wind Loads: Comply with requirements of Local code.
   b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.

2. Wind-Borne-Debris Resistance: Identical full-size glazed assembly without auxiliary protection, tested by independent agency in accordance with ASTM E1996 for Wind Zone 4, Basic Protection, for Large and Small Missile impact and pressure cycling at design wind pressure.

3. Water Penetration Resistance: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8.00 lbf/sq ft (390 Pa).

4. Air Leakage: Maximum of 0.06 cu ft/min/sq ft (0.3 L/s/sq m) of wall area, when tested in accordance with ASTM E283 at 6.27 pounds per square foot (300 Pa) pressure differential across assembly.

5. Condensation Resistance Factor of Framing: 50, minimum, measured in accordance with AAMA 1503.

2.5 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, drainage holes and internal weep drainage system.
   1. Framing members for interior applications need not be thermally broken.

B. Glazing: As specified in Section 08 8000 - Glazing.

C. Swing Doors: Glazed aluminum.
   1. Bottom Rail: 10 inches (254 mm) wide.
   2. Glazing Stops: Square.
   3. Finish: Same as storefront.

2.6 MATERIALS


C. Structural Steel Sections: ASTM A36/A36M; galvanized in accordance with requirements of ASTM A123/A123M.

D. Fasteners: Stainless steel.

E. Concealed Flashings: Sheet aluminum, 26 gage, 0.017 inch (0.43 mm) minimum thickness.

F. Concealed Flashings: 0.018 inch (0.5 mm) thick galvanized steel.

G. Perimeter Sealant: Type recommended by manufacturer specified in Section 07 9005.

H. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

I. Glazing Accessories: As specified in Section 08 8000.

J. Shop and Touch-Up Primer for Steel Components: Zinc oxide, alkyd, linseed oil primer appropriate for use over hand cleaned steel.

K. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

2.7 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating or AAMA 612 clear anodic coating with electrolytically deposited organic seal; not less than 0.7 mils (0.018 mm) thick.

B. Touch-Up Materials: As recommended by coating manufacturer for field application.

2.8 HARDWARE

A. For each door, include weatherstripping, sill sweep strip, and threshold.

B. Other Door Hardware: As specified in Section 08 7100.

C. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.

D. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.

E. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all doors.

F. Automatic Door Operators and Actuators: As specified in Section 08 4229.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.2 INSTALLATION

A. Install wall system in accordance with manufacturer’s instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Coordinate attachment and seal of perimeter air and vapor barrier materials.

I. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

J. Set thresholds in bed of mastic and secure.

K. Install glass and infill panels in accordance with Section 08 8000, using glazing method required to achieve performance criteria.

L. Install perimeter sealant in accordance with Section 07 9005.

M. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.3 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inches every 3 ft (1.5 mm/m) non-cumulative or 1/16 inches per 10 ft (1.5 mm/3 m), whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch (0.8 mm).

3.4 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for independent testing and inspection requirements. Inspection will monitor quality of installation and glazing.

B. Test installed storefront for water leakage in accordance with AAMA 501.2.

3.5 ADJUSTING

A. Adjust operating hardware and sash for smooth operation.

3.6 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

C. Remove excess sealant by method acceptable to sealant manufacturer.

3.7 PROTECTION

A. Protect installed products from damage during subsequent construction.

END OF SECTION
PART 1 GENERAL

1.1 SECTION INCLUDES
A. Aluminum-framed curtain wall, with vision glazing and glass infill panels.
B. Perimeter sealant.
C. Firestopping between curtain wall and edge of floor slab.

1.2 RELATED REQUIREMENTS
A. Section 03 3000 - Cast-in-Place Concrete: Weld plates embedded in concrete for attachment of anchors.
B. Section 05 1200 - Structural Steel Framing: Steel attachment members.
C. Section 05 5000 - Metal Fabrications: Steel attachment devices.
D. Section 07 2500 - Weather Barriers: Perimeter air and vapor seal between glazing system and adjacent construction.
E. Section 07 8400 - Firestopping: Firestop at system junction with structure.
F. Section 07 9005 - Joint Sealers: Perimeter sealant and back-up materials.
G. Section 08 4313 - Aluminum-Framed Storefronts: Entrance framing and doors.
H. Section 08 8000 - Glazing.
I. Section 09 2116 - Gypsum Board Assemblies: Metal stud and gypsum board wall at interior of curtain wall.

1.3 REFERENCE STANDARDS
A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 2012.
C. AAMA 501.2 - Field Check of Metal Storefronts, Curtain Walls, and Sloped Glazing Systems for Water Leakage; American Architectural Manufacturers Association; 2009 (part of AAMA 501).


1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glazing and infill, internal drainage details.

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.

D. Samples: Submit two samples 12x12 inches (____x____ mm) in size illustrating finished aluminum surface, glazing, infill panels, glazing materials.

E. Manufacturer’s Certificate: Certify that the products supplied meet or exceed the specified requirements.

F. Design Data: Provide framing member structural and physical characteristics and engineering calculations, and identify dimensional limitations; include load calculations at points of attachment to building structure.

G. Structural Glazing Adhesive: Submit product data and calculations showing compliance with performance requirements.

H. Design Data: Provide framing member structural and physical characteristics and engineering calculations, and identify dimensional limitations; include load calculations at points of attachment to building structure.

I. Report of field testing for water leakage.

J. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner’s name and registered with manufacturer.

1.6 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed at the State in which the Project is located.

B. Manufacturer and Installer Qualifications: Company specializing in manufacturing aluminum glazing systems with minimum three years of documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.
B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.8 FIELD CONDITIONS
A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C). Maintain this minimum temperature during and 48 hours after installation.

1.9 WARRANTY
A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.1 BASIS OF DESIGN
A. Blast Mitigation Tested:
   1. Basis of Design: Kawneer; 1620 Curtain Wall.

B. Pressure Cap Four Sides; Not Unitized, Field Assembled.
   1. Basis of Design: Kawneer; 1620 Curtain Wall.

C. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
   3. Tubelite.

2.2 CURTAIN WALL
A. Aluminum-Framed Curtain Wall: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Finish: Class I natural anodized.
      a. Factory finish all surfaces that will be exposed in completed assemblies.
      b. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
   2. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   4. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
   5. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glazing and heel bead of glazing compound.
6. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

B. Structural Performance Requirements: Design and size components to withstand the following load requirements without damage or permanent set.

1. Design Wind Loads: Comply with the requirements of local code.

2. Wind-Borne-Debris Resistance: Identical full-size glazed assembly without auxiliary protection tested by independent agency in accordance with ASTM E1996 for Wind Zone 4 - Additional Protection for Large and Small Missile impact and pressure cycling at design wind pressure.

3. Movement: Accommodate the following movement without damage to components or deterioration of seals:
   a. Expansion and contraction caused by 180 degrees F (82 degrees C) surface temperature.
   b. Expansion and contraction caused by cycling temperature range of 170 degrees F (95 degrees C) over a 12 hour period.
   c. Movement of curtain wall relative to perimeter framing.
   d. Deflection of structural support framing, under permanent and dynamic loads.

C. Water Penetration Resistance: No uncontrolled water on indoor face when tested as follows:

1. Test Pressure Differential: 10 lbf/sq ft (480 Pa).

D. Air Leakage: Maximum of 0.06 cu ft/min/sq ft (0.3 L/s/sq m) of wall area, when tested in accordance with ASTM E283 at 6.27 pounds per square foot (300 Pa) pressure differential across assembly.

E. Thermal Performance Requirements:

1. Condensation Resistance Factor of Framing: 50, minimum, measured in accordance with AAMA 1503.

2.3 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.

1. Cross-Section: 6-1/2 x 2 inch (____ by____ mm) nominal dimension.

2. Provide 1600 System 1, 2 sightline 1-1/4” projection trim on exterior perimeter.


B. Glazing: As specified in Section 08 8000.

2.4 MATERIALS


C. Structural Supporting Anchors: See Section 05 1200.

D. Structural Supporting Anchors Attached to Structural Steel: Design for bolted attachment.
E. Structural Supporting Anchors Attached to Reinforced Concrete Members: Design for welded attachment to weld plates embedded in concrete.

F. Fasteners: Stainless steel; type as required or recommended by curtain wall manufacturer.

G. Concealed Flashings: Stainless steel, 24 gage, .024 inch (.61 mm) minimum thickness.

H. Exposed Flashings: .040 inch (1.02 mm) thick aluminum sheet; finish to match framing members.

I. Firestopping: As specified in Section 07 8400.

J. Structural Glazing Adhesive: Silicone, neutral cure; formulated specifically for structural sealant glazing and complying with ASTM C1184.
   1. Ultraviolet radiation resistant for 2000 to 4000 micro-watts minimum for 21 days.
   2. Adhesion when subjected to ultraviolet radiation through glass in accordance with ASTM C794 without failure.
   3. Minimum adhesion tensile strength of 100 psi (690 kPa).
   4. Tested for compatibility with glazing accessories and weatherseal sealant.

K. Weatherseal Sealant: Silicone, same type as glazing adhesive.

L. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, and compatible with flashing material.

M. Perimeter Sealant: Specified in Section 07 9005.

N. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

O. Glazing Accessories: As specified in Section 08 8000.

2.5 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating or AAMA 612 clear anodic coating with electrolytically deposited organic seal; not less than 0.7 mils (0.018 mm) thick.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

C. Verify that anchorage devices have been properly installed and located.

3.2 INSTALLATION

A. Install wall system in accordance with manufacturer’s instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
E. Provide thermal isolation where components penetrate or disrupt building insulation.
F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
G. Coordinate attachment and seal of perimeter air and vapor barrier materials.
H. Install firestopping at each floor slab edge.
I. Pressure Plate Framing: Install glazing and infill panels in accordance with Section 08 8000, using exterior dry glazing method.
J. Install perimeter sealant in accordance with Section 07 9005.
K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.3 TOLERANCES
A. Maximum Variation from Plumb: 0.06 inches every 3 ft (1.5 mm/m) non-cumulative or 0.5 inches per 100 ft (12 mm/30 m), whichever is less.
B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch (0.8 mm).
C. Sealant Space Between Curtain Wall Mullions and Adjacent Construction: Maximum of 3/4 inch (19 mm) and minimum of 1/4 inch (6 mm).

3.4 FIELD QUALITY CONTROL
A. Provide the services of the manufacturer’s field representative to observe installation and make report.
B. Test installed curtain wall for water leakage in accordance with AAMA 501.2.
C. Replace curtain wall components that have failed field testing and retest until performance is satisfactory.

3.5 CLEANING
A. Remove protective material from pre-finished aluminum surfaces.
B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
C. Remove excess sealant by method acceptable to sealant manufacturer.

3.6 PROTECTION
A. Protect installed products from damage during subsequent construction.

END OF SECTION
SECTION 08 5113 - ALUMINUM WINDOWS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Extruded aluminum windows with fixed sash, operating sash, and infill panels.
B. Factory glazing.

1.2 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Steel lintels.
B. Section 06 1000 - Rough Carpentry: Rough opening framing.
C. Section 07 2500 - Weather Barriers: Perimeter air and vapor seal between window frame and adjacent construction.
D. Section 07 9005 - Joint Sealers: Perimeter sealant and back-up materials.
E. Section 08 4313 - Aluminum-Framed Storefronts: Operable sash within framing system.
F. Section 08 8000 - Glazing.

1.3 REFERENCE STANDARDS

D. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site; American Architectural Manufacturers Association; 2012.


1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week before starting work of this section.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide component dimensions.

C. Grade Substantiation: Provide specified Grade Substantiation before submitting shop drawings or starting fabrication.

D. Shop Drawings: Indicate opening dimensions, elevations of different types, framed opening tolerances, method for achieving air and vapor barrier seal to adjacent construction, anchorage locations, and installation requirements.

E. Samples: Submit two samples, 12 x 12 inch (300 x 300 mm) in size illustrating typical corner construction, accessories, and finishes.

F. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.

1.6 QUALITY ASSURANCE

A. Manufacturer and Installer Qualifications: Company specializing in fabrication of commercial aluminum windows of types required, with not fewer than three years of experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of AAMA CW-10.

B. Protect finished surfaces with wrapping paper or strippable coating during installation. Do not use adhesive papers or sprayed coatings that bond to substrate when exposed to sunlight or weather.

1.8 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C).

B. Maintain this minimum temperature during and 24 hours after installation of sealants.

1.9 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.
PART 2 PRODUCTS

2.1 BASIS OF DESIGN - ARCHITECTURAL CLASS WINDOWS

A. Provide products tested for compliance with AAMA/WDMA/CSA 101/LS.2/A440 Class AW with Performance Grade at least as high as specified design pressure.

B. Blast Resistance Tested:

C. Projected, Face of Sash and Frame in Approximately Same Plane:

D. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of one of the manufacturers listed below:
   2. Kawneer
   3. Graham
   4. Oldcastle

E. Substitution Procedures: See Section 01 6000 - Product Requirements.
   1. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.2 WINDOWS

A. Aluminum Windows: Extruded aluminum frame and sash, factory fabricated, factory finished, with operating hardware, related flashings, and anchorage and attachment devices.
   1. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors; fasteners and attachments concealed from view; reinforced as required for operating hardware and imposed loads.
   2. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
   3. Movement: Accommodate movement between window and perimeter framing and deflection of lintel, without damage to components or deterioration of seals.
   4. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.

B. Performance Requirements: Provide products that comply with the following:
1. Grade Substantiation: Either AAMA Certification Label or independent test report itemizing compliance will constitute acceptable evidence of compliance.

2. Design Wind Load: Per Local Building Code

3. Wind-Borne-Debris Resistance: Identical full-size glazed assembly without auxiliary protection, tested by independent agency in accordance with ASTM E1996 for Wind Zone 4, Basic Protection, for Large and Small Missile impact and pressure cycling at design wind pressure.

4. Blast Hazard Mitigation Design Requirements per DoD Unified Facilities Criteria UFC 4-010-01 9 February 2012.
   a. All calculations must be prepared by a Registered Structural Engineer.
   b. Blast Loading: A multiple of equivalent 3 sec. duration design load, based on ASTM F 2248, shall be used for framing and connection design, in accordance with the Department of Defense Unified Facilities Criteria UFC 4-010-01 "Minimum Anti-Terrorism Standards for Buildings: 9 February 2012. Windows shall be designed using the following:
      1) North/South Elevation
         a) Application Level of Protection shall be Low.
         b) Charge Wt: I
      2) West Elevation (Entrance and West)
         a) Application Level of Protection shall be Low.
         b) Standoff distance shall be 36’
         c) Charge WT: I

5. Water Leakage: No uncontrolled leakage on interior face when tested in accordance with ASTM E331 at differential pressure of 12.11 pounds per square foot (580 Pa).

6. Air Leakage: Maximum of 0.1 cu ft/min/sq ft at 6.27 pounds per square foot (0.5 L/sec/sq m at 300 Pa) differential pressure, when tested in accordance with ASTM E283.

7. Condensation Resistance Factor of Frame: 50, measured in accordance with AAMA 1503.

8. Overall U-value, Including Glazing: 0.35, maximum, measured on the window size required for this project.

9. Forced Entry Resistance: Tested to comply with ASTM F588 requirements for performance level 10 for specific window style required.

C. Fixed, Non-Operable Type:
   2. Glazing: Double; clear; transparent.
   3. Interior Finish: Class I natural anodized.

2.3 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

B. Sheet Aluminum: ASTM B209 (ASTM B209M), 5005 alloy, H32 temper.
C. Concealed Steel Items: Profiled to suit mullion sections; galvanized in accordance with ASTM A123/A123M.

2.4 FINISHES
A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils (0.018 mm) thick.
B. Touch-Up Primer for Galvanized Steel Surfaces: SSPC-Paint 20, zinc rich.

PART 3 EXECUTION

3.1 EXAMINATION
A. Verify that wall openings and adjoining air and vapor seal materials are ready to receive aluminum windows.

3.2 INSTALLATION
A. Install windows in accordance with manufacturer’s instructions.
B. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.
C. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent work.
D. Install sill and sill end angles.
E. Provide thermal isolation where components penetrate or disrupt building insulation. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
F. Coordinate attachment and seal of perimeter air barrier and vapor retarder materials.

3.3 TOLERANCES
A. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft (1.5 mm/m) non-cumulative or 1/8 inches per 10 ft (3 mm/3 m), whichever is less.

3.4 FIELD QUALITY CONTROL
A. Test installed windows for compliance with performance requirements for water penetration, in accordance with ASTM E1105 using uniform pressure and the same pressure difference as specified for laboratory testing.
   1. Test one window of each type, as directed by Architect/Engineer.
   2. If any window fails, test additional windows at Contractor’s expense.
B. Replace windows that have failed field testing and retest until performance is satisfactory.

3.5 CLEANING
A. Remove protective material from factory finished aluminum surfaces.
B. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.

END OF SECTION
SECTION 08 5659 - SERVICE AND TELLER WINDOW UNITS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Service and teller window units.
B. Pass drawer/devices.
C. Accessories.

1.2 RELATED REQUIREMENTS

A. Section 07 9005 - Joint Sealers: Perimeter sealant and back-up materials.

1.3 REFERENCE STANDARDS

I. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordinate work with adjacent materials specified in other sections and as indicated on drawings and approved shop drawings.
B. Preinstallation Meeting: Prior to start of installation arrange a meeting on site to familiarize installer and installers of related work with requirements relating to this work.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Submit manufacturer’s product data for specified products indicating materials, operation, glazing, finishes, and installation instructions.
C. Shop Drawings: Indicate configuration, sizes, rough-in, mounting, anchors and fasteners, and installation clearances.
D. Test Data: Test reports for specific window model and glazing to be furnished, showing compliance with all specified requirements; window and glazing may be tested separately, provided window test sample adequately simulates the glazing to be used.

E. Samples for Selection of Finishes:
   1. Color Anodized Finishes: Frame member sections showing range of color to be expected in finished work.
   2. Color Anodized Finishes: Submit two samples, 4 by 4 inches (100 by 100 mm) in size illustrating metal finishes for each finish specified.

F. Installer qualification data.

G. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner’s name and registered with manufacturer.

1.6 QUALITY ASSURANCE
   A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum 5 years documented experience, with ability to provide test reports showing that their standard manufactured products meet the specified requirements.
   B. Installer Qualifications: Company specializing in performing work of the type specified in this section.
   C. Testing Agency Qualifications: Independent testing agency able to show experience in conducting tests of the type specified and experienced in the type of testing specified.

1.7 DELIVERY, STORAGE, AND HANDLING
   A. Deliver units in manufacturer’s original packaging and unopened containers with identification labels intact.
   B. Store units in area protected from exposure to weather and vandalism.

1.8 WARRANTY
   A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
   B. Provide manufacturer’s warranty agreeing to repair or replace units and their components that fail in materials or workmanship within two years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 SERVICE AND TELLER WINDOW UNITS
   A. Service/Teller Window with Pass-Thru Device:
      1. Location: Interior.
      2. Forced Entry Resistance: Tested to meet ASTM F588 Grade 10 (window) and ASTM F1233 Class 1.0 (glazing).
      3. Ballistic Resistance: Tested to meet UL 752 Level 1.
         a. Size: As indicated on drawings.
         b. Material: Aluminum.
c. Finish: Natural anodized.

d. Finish Color: As selected from manufacturer’s standard colors.

5. Glazing: Single (monolithic), clear.

6. Pass-Thru Device: Deal tray built into window sill.
   a. Finish: Stainless Steel.
   b. Finish Color: As selected from manufacturer’s standard colors.


8. Products:
   b. Other Manufacturers: Provide either the product identified as “Basis of Design” or an equivalent product of another acceptable manufacturer.
   c. Substitutions: See Section 01 6000 - Product Requirements.

2.2 COMPONENTS

A. Windows: Factory-fabricated, -finished, and -glazed, extruded aluminum frame and glazing stops; complete with hardware and anchors.
   1. Provide window units that are re-glazable from the secure side without dismantling the non-secure side of framing.
   2. Rigidly fit and secure joints and corners with internal reinforcement. Make joints and connections flush, hairline, and weatherproof. Fully weld corners.
   3. Apply factory finish to all exposed surfaces.

2.3 MATERIALS

A. Aluminum Extrusions: Minimum 0.125 inch (3.2 mm) thick frame and sash material complying with ASTM B221 and ASTM B221M.

B. Stainless Steel: Type 304 with No.3 finish.

C. Concealed Steel Items: Galvanized in accordance with ASTM A123/A123M to thickness Grade 85, 2.0 ounces per square foot (610 gm/sq m).
   1. Touch-Up Primer for Galvanized Steel Surfaces: SSPC Paint 20 zinc rich.

D. Ballistic Resistant Glazing: Laminated plastic and glass construction, with glass on both faces; complying with performance level indicated.

2.4 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils (0.018 mm) thick.

2.5 ACCESSORIES

A. Speak-Thru Portal: Heavy duty, non-electric, stainless steel unit; UL 752 Level 3 bullet resistant.
PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that window openings are ready for installation of windows.

B. Verify that correct embedded anchors are in place and in proper location; repair or replace anchors as required to achieve satisfactory installation.

C. Notify Architect/Engineer if conditions are not suitable for installation of units; do not proceed until conditions are satisfactory.

3.2 INSTALLATION

A. Install in accordance with manufacturer’s instructions.

B. Install units in correct orientation (inside/outside or secure/non-secure).

C. Anchor units securely in manner so as to achieve performance specified.

D. Seal perimeter joints as specified in Section 07 9005.

3.3 CLEANING AND PROTECTION

A. Remove protective material from factory finished surfaces.

B. Clean exposed surfaces promptly after installation without damaging finishes.

C. Remove and replace defective work.

D. Provide temporary protection to ensure that security windows are without damage at time of Substantial Completion.

END OF SECTION
SECTION 08 7100 - DOOR HARDWARE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes:
   1. Mechanical and electrified door hardware for:
      a. Swinging doors.
      b. Sliding doors.
   2. Electronic access control system components, including:
      a. Exit device trim.

B. Exclusions: Unless specifically listed in hardware sets, hardware is not specified in this section for:
   1. Windows
   2. Cabnins (casework), including locks in cabinets
   3. Signage (see individual hardware sets)
   4. Toilet accessories
   5. Overhead doors

C. Related Sections:
   1. Division 01 Section “Alternates” for alternates affecting this section.
   2. Division 07 Section “Joint Sealants” for sealant requirements applicable to threshold installation specified in this section.
   3. Division 26 sections for connections to electrical power system and for low-voltage wiring.
   4. Division 28 sections for coordination with other components of electronic access control system.

1.3 REFERENCES

A. Fire/Life Safety
   1. NFPA - National Fire Protection Association
      a. NFPA 70 – National Electric Code
      b. NFPA 80 - Standard for Fire Doors and Fire Windows
      d. NFPA 105 - Smoke and Draft Control Door Assemblies
B. UL - Underwriters Laboratories
   1. UL 10B - Fire Test of Door Assemblies
   2. UL 10C - Positive Pressure Test of Fire Door Assemblies
   3. UL 1784 - Air Leakage Tests of Door Assemblies
   4. UL 305 - Panic Hardware

C. Accessibility
   1. ADA - Americans with Disabilities Act.

D. DHI - Door and Hardware Institute
   1. Sequence and Format for the Hardware Schedule
   2. Recommended Locations for Builders Hardware
   3. Key Systems and Nomenclature

E. ANSI - American National Standards Institute
   1. ANSI/BHMA A156.1 - A156.29, and ANSI A156.31 - Standards for Hardware and Specialties

1.4 SUBMITTALS

A. General:
   1. Submit in accordance with Conditions of Contract and Division 01 requirements.
   2. Highlight, encircle, or otherwise specifically identify on submittals deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
   3. Prior to forwarding submittal, comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, "EXAMINATION" article, herein.

B. Action Submittals:
   1. Product Data: Product data including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
   2. Riser and Wiring Diagrams: After final approval of hardware schedule, submit details of electrified door hardware, indicating:
      a. Wiring Diagrams: For power, signal, and control wiring and including:
         1) Details of interface of electrified door hardware and building safety and security systems.
         2) Schematic diagram of systems that interface with electrified door hardware.
         3) Point-to-point wiring.
         4) Risers.
3. **Samples for Verification:** If requested by Architect, submit production sample or sample installations of each type of exposed hardware unit in finish indicated, and tagged with full description for coordination with schedule.
   
a. Samples will be returned to supplier in like-new condition. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.

4. **Door Hardware Schedule:** Submit schedule with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:
   
a. Door Index; include door number, heading number, and Architects hardware set number.
   
b. Opening Lock Function Spreadsheet: List locking device and function for each opening.
   
c. Type, style, function, size, and finish of each hardware item.
   
d. Name and manufacturer of each item.
   
e. Fastenings and other pertinent information.
   
f. Location of each hardware set cross-referenced to indications on Drawings.
   
g. Explanation of all abbreviations, symbols, and codes contained in schedule.
   
h. Mounting locations for hardware.
   
i. Door and frame sizes and materials.
   
j. Name and phone number for local manufacturer’s representative for each product.
   
k. **Operational Description** of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and access control components). Operational description should include how door will operate on egress, ingress, and fire and smoke alarm connection.
      
1) **Submittal Sequence:** Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work that is critical in Project construction schedule.

5. **Key Schedule:**
   
a. After Keying Conference, provide keying schedule listing levels of keying as well as explanation of key system’s function, key symbols used and door numbers controlled.
   
b. Use ANSI A156.28 “Recommended Practices for Keying Systems” as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
   
c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
   
d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
   
e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion.
1) Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.

f. Prepare key schedule by or under supervision of supplier, detailing Owner’s final keying instructions for locks.

6. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory prepared for door hardware installation.

C. Informational Submittals:

1. Qualification Data: For Supplier, Installer and Architectural Hardware Consultant.

2. Product Certificates for electrified door hardware, signed by manufacturer:
   a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

3. Certificates of Compliance:
   a. Certificates of compliance for fire-rated hardware and installation instructions if requested by Architect or Authority Having Jurisdiction.
   b. Installer Training Meeting Certification: Letter of compliance, signed by Contractor, attesting to completion of installer training meeting specified in “QUALITY ASSURANCE” article, herein.
   c. Electrified Hardware Coordination Conference Certification: Letter of compliance, signed by Contractor, attesting to completion of electrified hardware coordination conference, specified in “QUALITY ASSURANCE” article, herein.

4. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by qualified testing agency, for door hardware on doors located in accessible routes.

5. Warranty: Special warranty specified in this Section.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
   a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
   b. Catalog pages for each product.
   c. Name, address, and phone number of local representative for each manufacturer.
   d. Parts list for each product.
   e. Final approved hardware schedule, edited to reflect conditions as-installed.
   f. Final keying schedule
   g. Copies of floor plans with keying nomenclature
   h. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.
   i. Copy of warranties including appropriate reference numbers for manufacturers to identify project.
1.5 QUALITY ASSURANCE

A. Product Substitutions: Comply with product requirements stated in Division 01 and as specified herein.

1. Where specific manufacturer’s product is named and accompanied by “No Substitute,” including make or model number or other designation, provide product specified. (Note: Certain products have been selected for their unique characteristics and particular project suitability.)

   a. Where no additional products or manufacturers are listed in product category, requirements for “No Substitute” govern product selection.

2. Where products indicate “acceptable substitute” or “acceptable manufacturer”, provide product from specified manufacturers, subject to compliance with specified requirements and “Single Source Responsibility” requirements stated herein.

B. Supplier Qualifications and Responsibilities: Recognized architectural hardware supplier with record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that provides certified Architectural Hardware Consultant (AHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.

   1. Warehousing Facilities: In Project’s vicinity.
   2. Scheduling Responsibility: Preparation of door hardware and keying schedules.
   3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer’s standard units in assemblies similar to those indicated for this Project.
   4. Coordination Responsibility: Coordinate installation of electronic security hardware with Architect and electrical engineers and provide installation and technical data to Architect and other related subcontractors.

      a. Upon completion of electronic security hardware installation, inspect and verify that all components are working properly.

C. Installer Qualifications: Qualified tradesmen, skilled in application of commercial grade hardware with record of successful in-service performance for installing door hardware similar in quantity, type, and quality to that indicated for this Project.

D. Architectural Hardware Consultant Qualifications: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:

   1. For door hardware, DHI-certified, Architectural Hardware Consultant (AHC).
   2. Can provide installation and technical data to Architect and other related subcontractors.
   3. Can inspect and verify components are in working order upon completion of installation.
   5. Capable of coordinating installation of electrified hardware with Architect and electrical engineers.

E. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

   1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated.
2. Manufacturers that perform electrical modifications and that are listed by testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

F. Fire-Rated Door Openings: Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by Underwriters Laboratories, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

G. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

H. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

I. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release latch. Locks do not require use of key, tool, or special knowledge for operation.

J. Accessibility Requirements: For door hardware on doors in an accessible route, comply with governing accessibility regulations cited in “REFERENCES” article, herein.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of wrist and that operate with force of not more than 5 lbf (22.2 N).

2. Maximum opening-force requirements:
   a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
   b. Sliding or Folding Doors: 5 lbf (22.2 N) applied parallel to door at latch.
   c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with slope of not more than 1:2. Provide thresholds not more than 1/2 inch (13 mm) high.

4. Adjust door closer sweep periods so that, from open position of 70 degrees, door will take at least 3 seconds to move to 3 inches (75 mm) from latch, measured to leading edge of door.

K. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01.


2. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
   a. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
   b. Preliminary key system schematic diagram.
   c. Requirements for key control system.
   d. Requirements for access control.
e. Address for delivery of keys.

L. Pre-installation Conference: Conduct conference at Project site

1. Review and finalize construction schedule and verify availability of materials, Installer’s personnel, equipment, and facilities needed to make progress and avoid delays.
2. Inspect and discuss preparatory work performed by other trades.
3. Inspect and discuss electrical roughing-in for electrified door hardware.
4. Review sequence of operation for each type of electrified door hardware.
5. Review required testing, inspecting, and certifying procedures.

M. Coordination Conferences:

1. Installation Coordination Conference: Prior to hardware installation, schedule and hold meeting to review questions or concerns related to proper installation and adjustment of door hardware.
   a. Attendees: Door hardware supplier, door hardware installer, Contractor.
   b. After meeting, provide letter of compliance to Architect, indicating when meeting was held and who was in attendance.
2. Electrified Hardware Coordination Conference: Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.
   a. Attendees: electrified door hardware supplier, doors and frames supplier, electrified door hardware installer, electrical subcontractor, Owner, Owner’s security consultant, Architect and Contractor.
   b. After meeting, provide letter of compliance to Architect, indicating when coordination conference was held and who was in attendance.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

1. Deliver each article of hardware in manufacturer’s original packaging.

C. Project Conditions:

1. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
2. Provide secure lock-up for door hardware delivered to Project, but not yet installed. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

D. Protection and Damage:

1. Promptly replace products damaged during shipping.
2. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work.
3. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

E. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.7 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

E. Direct shipments not permitted, unless approved by Contractor.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Years from date of Substantial Completion, for durations indicated.

a. Closers:
   1) Mechanical: 30 years

b. Automatic Operators: 1 year.

c. Exit Devices:
   1) Mechanical: 3 years.
   2) Electrified: 1 year.

d. Locksets:
   1) Mechanical: 3 years.

e. Continuous Hinges: Lifetime warranty

   1) Key Blanks: Lifetime

2. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

1.9 MAINTENANCE

A. Maintenance Tools:
1. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Approval of manufacturers other than those listed shall be in accordance with QUALITY ASSURANCE article, herein.

B. Approval of products from manufacturers indicated as “Acceptable Manufacturer” is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer’s product.

C. Item | Scheduled Manufacturer | Acceptable Manufacturer
---|---|---
1. Hinges | Ives (IVE) | Hager, McKinney
2. Electric Power Transfer | Von Duprin (VON) | ABH, Adams Rite
3. Flush Bolt | Ives (IVE) | Burns, Trimco
4. Coordinators | Ives (IVE) | Burns, Trimco
5. Locksets & Deadlocks | Schlage (SCH) | Best, Sargent
6. Exit Devices & Mullions | Von Duprin (VON) | Precision, Sargent
7. Electric Strikes | Von Duprin (VON) | HES, Folger Adam
8. Cylinders & Keying | Schlage (SCH) | No Substitute
9. Door Closers | LCN (LCN) | Norton
11. Door Trim | Ives (IVE) | Burns, Trimco
12. Protection Plates | Ives (IVE) | Burns, Trimco
13. Overhead Stops | Glynn-Johnson (GLY) | Rixson, Sargent
14. Stops & Holders | Ives (IVE) | Burns, Trimco
15. Thresholds & Weatherstrip | National Guard Products | Reese, Zero
16. Silencers | Ives (IVE) | Burns, Trimco
17. Door Position Switches | Schlage Electronics (SCE) | GE, Sargent
18. Key Cabinets | Telkee (TEL) | HPC, Lund
19. Pivots | Ives (IVE) | McKinney, Rixon
20. Key Management Software | Schlage (SCH) | Corbin-Russwin, Medeco, Sargent
21. Sliding Door Hardware | Hettich Grant (HEG) | Henderson, Johnson Hardware
D. **Hand of Door:** Drawings show direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.

E. **Where specified hardware is not adaptable to finished shape or size of members requiring hardware,** furnish suitable types having same operation and quality as type specified, subject to Architect’s approval.

### 2.2 MATERIALS

A. **Fasteners**

1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.

2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.

3. Provide concealed fasteners for hardware units exposed when door is closed except when no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.

4. Install hardware with fasteners provided by hardware manufacturer.

B. **Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.**

   1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

C. **Cable and Connectors:** Hardwired Electronic Access Control Lockset and Exit Device Trim:

   1. **Data:** 24 AWG, 4 conductor shielded, Belden 9843, 9841 or comparable.

   2. **DC Power:** 18 AWG, 2 conductor, Belden 8760 or comparable.

   3. Provide type of data and DC power cabling required by access control device manufacturer for this installation.

### 2.3 HINGES

A. **Provide five-knuckle, ball bearing hinges.**

   1. **Manufacturers and Products:**


B. **Requirements:**

   1. **1-3/4 inch (44 mm) thick doors,** up to and including 36 inches (914 mm) wide:

      a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high

      b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

   2. **1-3/4 inch (44 mm) thick doors** over 36 inches (914 mm) wide:
a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
b. Interior: Heavy weight, steel, 5 inches (127 mm) high

3. 2 inches or thicker doors:
   a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
   b. Interior: Heavy weight, steel, 5 inches (127 mm) high

4. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.

5. Where new hinges are specified for existing doors or existing frames, provide new hinges of identical size to hinge preparation present in existing door or existing frame.

6. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
   a. Steel Hinges: Steel pins
   b. Non-Ferrous Hinges: Stainless steel pins
   c. Out-Swinging Exterior Doors: Non-removable pins
   d. Out-Swinging Interior Lockable Doors: Non-removable pins
   e. Interior Non-lockable Doors: Non-rising pins

7. Width of hinges: 4-1/2 inches (114 mm) at 1-3/4 inch (44 mm) thick doors, and 5 inches (127 mm) at 2 inches (51 mm) or thicker doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.

8. Doors 36 inches (914 mm) wide or less furnish hinges 4-1/2 inches (114 mm) high; doors greater than 36 inches (914 mm) wide furnish hinges 5 inches (127 mm) high, heavy weight or standard weight as specified.

9. Provide hinges with electrified options as scheduled in the hardware sets. Provide with number and wire gage to accommodate electric function of specified hardware. Locate electric hinge at second hinge from bottom or nearest to electrified locking component.

10. Provide mortar guard for each electrified hinge specified, unless specified in hollow metal frame specification.

11. Provide spring hinges where specified. Provide two spring hinges and one bearing hinge per door leaf for doors 90 inches (2286 mm) or less in height. Provide one additional bearing hinge for each 30 inches (762 mm) of additional door height.

2.4 ELECTRIC POWER TRANSFER

A. Manufacturers:
   1. Scheduled Manufacturer: Von Duprin
   2. Acceptable Manufacturers: Adams Rite, ABH

B. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires sufficient to accommodate electric function of specified hardware.

C. Locate electric power transfer per manufacturer’s template and UL requirements, unless interference with operation of door or other hardware items.
2.5 FLUSH BOLTS
   A. Manufacturers:
      1. Scheduled Manufacturer: Ives
      2. Acceptable Manufacturers: Burns, Trimco
   B. Requirements:
      1. Provide automatic, constant latching, and manual flush bolts with forged bronze or stainless steel face plates, extruded brass levers, and with wrought brass guides and strikes. Provide 12 inch (305 mm) steel or brass rods at doors up to 90 inches (2286 mm) in height. For doors over 90 inches (2286 mm) in height increase top rods by 6 inches (152 mm) for each additional 6 inches (152 mm) of door height. Provide dust-proof strikes at each bottom flush bolt.

2.6 COORDINATORS
   A. Manufacturers:
      1. Scheduled Manufacturer: Ives
      2. Acceptable Manufacturers: Burns, Trimco
   B. Requirements:
      1. Where pairs of doors are equipped with automatic flush bolts, an astragal, or other hardware that requires synchronized closing of the doors, provide bar-type coordinating device, surface applied to underside of stop at frame head.
      2. Provide filler bar of correct length for unit to span entire width of opening, and appropriate brackets for parallel arm door closers and surface vertical rod exit device strikes. Factory-prep coordinators for vertical rod devices if required.

2.7 MORTISE LOCKS
   A. Manufacturers and Products:
      1. Scheduled Manufacturer and Product: Schlage L9000 series
      2. Acceptable Manufacturers and Products: Best 45H series, Sargent 8200 series
   B. Requirements:
      1. Provide mortise locks certified as ANSI A156.13, Grade 1 Operational, Grade 1 Security, and manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to “KEYING” article, herein.
      2. Provide locks with standard 2-3/4 inches (70 mm) backset with full 3/4 inch (19 mm) throw stainless steel mechanical anti-friction latchbolt. Provide deadbolt with full 1 inch (25 mm) throw, constructed of stainless steel.
      3. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
      4. Provide electrified options as scheduled in the hardware sets. Provide electrified locksets with micro switch (RX) option that monitors retractor crank, and is actuated when rotation of inside or outside lever rotates retractor hub. Provide normally closed contacts or normally open contacts as required by security system.
5. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses and external lever spring cages. Provide thru-bolted levers with 2-piece spindles.
   a. Lever Design: Schlage 07A.
   b. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.8 EXIT DEVICES

A. Manufacturers and Products:
   1. Scheduled Manufacturer and Product: Von Duprin 99/33 series
   2. Acceptable Manufacturers and Products: Precision Apex series

B. Requirements:
   1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1, and UL listed for Panic Exit or Fire Exit Hardware. Cylinders: Refer to “KEYING” article, herein.
   2. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
   3. Touchpad: Extend minimum of one half of door width. Match exit device finish, stainless steel for US26, US26D, US28, US32, and US32D finishes; and for all other finishes, provide compatible finish to exit device. Provide compression springs in devices, latches, and outside trims or controls; tension springs also acceptable.
   4. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
   5. Provide exit devices with manufacturer’s approved strikes.
   6. Provide exit devices cut to door width and height. Locate exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
   7. Mount mechanism case flush on face of doors, or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
   8. Provide cylinder dogging at non-fire-rated exit devices, unless specified less dogging.
   9. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion that is removed by use of a keyed cylinder, which is self-locking when re-installed.
  10. Where lever handles are specified as outside trim for exit devices, provide heavy-duty lever trims with forged or cast escutcheon plates. Provide vandal-resistant levers that will travel to 90-degree down position when more than 35 pounds of torque are applied, and which can easily be re-set.
      a. Lever Style: Match lever style of locksets.
      b. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.
   11. Provide UL labeled fire exit hardware for fire rated openings.
   12. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
13. Provide electrified options as scheduled.

2.9 CYLINDERS

A. Manufacturer:
   1. Scheduled Manufacturer: Schlage, No Substitute

B. Requirements: Provide cylinders/cores complying with the following requirements.
   1. Cylinders/cores compliant with ANSI/BHMA A156.5; latest revision, Section 12, Grade 1;
      permanent cylinders; cylinder face finished to match lockset, manufacturer’s series as indicated.

C. Full-sized cylinders in the below-listed configuration(s), distributed throughout the Project as indicated.
   1. Conventional cylinder with interchangeable core with keyway compatible with existing system.

2. Keying:

D. Manufacturer-keyed permanent cylinders/cores, configured into existing keying system per “KEYING” article herein.
   1. Features: Cylinders/cores shall incorporate the following features.

E. Nickel silver bottom pins.
   1. Identification:
      a. Mark permanent cylinders/cores and keys with applicable blind code per DHI publication
         “Keying Systems and Nomenclature” for identification. Blind code marks shall not include
         actual key cuts.
      b. Identification stamping provisions must be approved by the Architect and Owner.
      c. Failure to comply with stamping requirements shall be cause for replacement of
         cylinders/cores involved at no additional cost to Owner.

F. Replaceable Construction Cores..
   1. Provide temporary construction cores replaceable by permanent cores, furnished in accordance with
      the following requirements.

G. 12 construction change (day) keys.
   1. Owner or Owner’s Representative will replace temporary construction cores with permanent cores.

2.10 KEYING

A. Keying System: Factory registered, complying with guidelines in ANSI/BHMA A156.28, incorporating
   decisions made at keying conference.

B. Keying Requirements – General
   1. Keying system tied into existing system as directed by the Owner.
      a. Forward bitting list and keys separately from cylinders, by means as directed by Owner.
         Failure to comply with forwarding requirements shall be cause for replacement of
         cylinders/cores involved at no additional cost to Owner.

C. Keys
1. Material: Nickel silver; minimum thickness of 0.092-inch (2.3mm)

2. Identification:

D. Coordinate with cylinder/core and key identification requirements above.

E. Stamp keys with Owner’s unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with “DO NOT DUPLICATE” along with the “PATENTED” or patent number to enforce the patent protection.

F. Failure to comply with stamping requirements shall be cause for replacement of keys involved at no additional cost to Owner.

1. Quantity: Furnish in the following quantities.
   a. Change (Day) Keys: 3 per cylinder/core.
   b. Permanent Control Keys: 3.
   d. Unused balance of key blanks shall be furnished to Owner with the cut keys.

2.11 KEY CONTROL SYSTEM

A. Key Control System Manufacturers:
   1. Scheduled Manufacturer: Telkee
   2. Acceptable Manufacturers: HPC, Lund

B. Requirements:

1. Provide key control system, including envelopes, labels, tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of number of locks required for Project.
   a. Provide complete cross index system set up by hardware supplier, and place keys on markers and hooks in cabinet as determined by final key schedule.
   b. Provide hinged-panel type cabinet for wall mounting.

C. Key Management Software Manufacturers and Products:
   1. Scheduled Manufacturer and Product: Schlage SITEMASTER 200
   2. Acceptable Manufacturers and Products: Best Keystone 600N, Sargent KeyWizard

D. Key Management Software Requirements:

1. Software: Provide tracking, issuing, collecting and transferring information regarding keys. Provide customized query, reporting, searching capability, comprehensive location hardware listings, display key holder photos and signature for verification, and provide automatic reminders for maintenance, back-ups and overdue keys.

2. Provide training for Owner's personnel on proper operation and application of key management software.
2.12 DOOR CLOSERS

A. Manufacturer and Product: LCN 4040XP series. No Substitute

B. Acceptable Manufacturers: Norton

C. Requirements:
   1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. ISO 9000 certify closers. Stamp units with date of manufacture code.
   2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
   3. Cylinder Body: 1-1/2 inch (38 mm) diameter with 3/4 inch (19 mm) diameter double heat-treated pinion journal.
   4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
   5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
   6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
   7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
   8. Pressure Relief Valve (PRV) Technology: Not permitted.
   9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
   10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.13 ELECTRO-HYDRAULIC AUTOMATIC OPERATORS

A. Manufacturers and Products:

   1. Scheduled Manufacturer and Product: Horton 4000 series (exterior doors); Horton 7000 series (interior doors).

B. Requirements:

   1. Provide low energy automatic operator units with hydraulic closer complying with ANSI A156.19.
   2. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
   3. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check, and opening and closing speed adjustment valves to control door
4. Provide units with on/off switch for manual operation, motor start up delay, vestibule interface delay, electric lock delay, and door hold open delay.

5. Provide units with conventional door closer opening and closing forces unless power operator motor is activated. Provide door closer assembly with adjustable spring size, back-check valve, sweep valve, latch valve to control door.

6. Provide drop plates, brackets, or adapters for arms as required for details.

7. Provide hard-wired actuator switches for operation as specified.

8. Provide weather-resistant actuators at exterior applications.

9. Each operator shall incorporate a safety feature that automatically re-opens the door if it is stopped during the closing cycle.

10. Provide complete assemblies of controls, switches, power supplies, relays, and parts/material recommended and approved by manufacturer of automatic operator for each individual leaf. Actuators control both doors simultaneously at pairs. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings as directed by Architect. Locate actuators, key switches, and other controls as directed by Architect.

11. Provide units with vestibule inputs that allow sequencing operation of two units, and SPDT relay for interfacing with latching or locking devices.

12. Touch Activated Automatic Door Controls: 36" INGRESS'R as manufactured by Wikk Industries, Inc. (WIK), P.O. Box 167, 6169B Industrial Court, Greensdale, Wisconsin 53129.


2.14 DOOR TRIM

A. Manufacturers:

   1. Scheduled Manufacturer: Ives.

B. Requirements:

   1. Provide push plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick and beveled 4 edges. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.
   2. Provide push bars of solid bar stock, diameter and length as scheduled. Provide push bars of sufficient length to span from center to center of each stile. Where required, mount back to back with pull.
   3. Provide offset pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
   4. Provide flush pulls as scheduled. Where required, provide back-to-back mounted model.
   5. Provide pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
   6. Provide pull plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick, beveled 4 edges, and prepped for pull. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.
7. Provide wire pulls of solid bar stock, diameter and length as scheduled.
8. Provide decorative pulls as scheduled. Where required, mount back to back with pull.

2.15 PROTECTION PLATES
A. Manufacturers:
   1. Scheduled Manufacturer: Ives.
B. Requirements:
   1. Provide kick plates, mop plates, and armor plates minimum of 0.050 inch (1 mm) thick as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
   2. Sizes of plates:
      a. Kick Plates: 10 inches (254 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs
      b. Mop Plates: 4 inches (102 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs
      c. Armor Plates: 36 inches (914 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs

2.16 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS
A. Manufacturers:
   1. Scheduled Manufacturers: Glynn-Johnson
   2. Acceptable Manufacturers: Rixson, Sargent
B. Requirements:
   1. Provide heavy duty concealed mounted overhead stop or holder as specified for exterior and interior vestibule single acting doors.
   2. Provide heavy duty concealed mounted overhead stop or holder as specified for double acting doors.
   3. Provide heavy or medium duty and concealed or surface mounted overhead stop or holder for interior doors as specified. Provide medium duty surface mounted overhead stop for interior doors and at any door that swings more than 140 degrees before striking wall, open against equipment, casework, sidelights, and where conditions do not allow wall stop or floor stop presents tripping hazard.
   4. Where overhead holders are specified provide friction type at doors without closer and positive type at doors with closer.

2.17 DOOR STOPS AND HOLDERS
A. Manufacturers:
   1. Scheduled Manufacturer: Ives.
B. Provide door stops at each door leaf:
   1. Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.
   2. Where a wall stop cannot be used, provide universal floor stops for low or high rise options.
   3. Where wall or floor stop cannot be used, provide medium duty surface mounted overhead stop.

2.18 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:
   1. Scheduled Manufacturer: National Guard Products.

B. Requirements:
   1. Provide thresholds, weatherstripping (including door sweeps, seals, astragals) and gasketing systems (including smoke, sound, and light) as specified and per architectural details. Match finish of other items.
   2. Size of thresholds:
      a. Saddle Thresholds: 1/2 inch (13 mm) high by jamb width by door width
      b. Bumper Seal Thresholds: 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width
   3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

2.19 SILENCERS

A. Manufacturers:
   1. Scheduled Manufacturer: Ives.

B. Requirements:
   1. Provide "push-in" type silencers for hollow metal or wood frames.
   2. Provide one silencer per 30 inches (762 mm) of height on each single frame, and two for each pair frame.
   3. Omit where gasketing is specified.

2.20 DOOR POSITION SWITCHES

A. Manufacturers:
   1. Scheduled Manufacturer: Schlage Electronics.

B. Requirements:
   1. Provide recessed or surface mounted type door position switches as specified.
2. Coordinate door and frame preparations with door and frame suppliers. If switches are being used with magnetic locking device, provide minimum of 4 inches (102 mm) between switch and magnetic locking device.

2.21 SLIDING DOOR HARDWARE

A. Manufacturers:
   1. Scheduled Manufacturer: Hettich Grant.
   2. Acceptable Manufacturers: Henderson, Distributed by Pemko; Johnson Hardware.

B. Requirements:
   1. Track and Carriers: Designed as a set, to suit operational configuration, weight of doors, and manufacturer's limitations, if any, and as follows:
      a. Track: Extruded aluminum track, mounted on underside of opening header, unless otherwise indicated.
         1) Finish: Mill finish aluminum.
         2) Length: As indicated on drawings.
      b. Number of Carriers: Two per panel.
      c. Heavy-Duty, Up To 325 pounds (147 kg) Per Panel: Box style track.
         1) Comply with ANSI/BHMA A156.14 Grade 1.
         2) Carriers: Four-wheeled, steel housing with ball bearing nylon rollers; mounted to top of door with quick-release steel plate; spring-latch leading edge that couples with track-mounted end stop catch.
         3) Minimum Door Thickness: 1.75 inches (44.5 mm).
         4) Maximum Vertical Adjustment: 0.375 inch (9.5 mm).
         5) Minimum Headroom: 2.75 inches (70.0 mm).
         6) Maximum Headroom: 3.125 inches (79.4 mm).
         7) Wall-Mounted Bracket.
         8) Basis of Design: Hettich Grant 325.
   2. Floor Guides: Manufacturer's standard; Zinc diecast, one pair per door panel.

2.22 PIVOTS

A. Manufacturers:
   1. Scheduled Manufacturer: Ives

B. Adjustable Pivots: Each exterior door shall have adjustable offset pivots and adjustable offset intermediate pivots.
2.23 FINISHES

A. Finish: BHMA 626/652 (US26D); except:
   1. Hinges at Exterior Doors: BHMA 630 (US32D)
   2. Continuous Hinges: BHMA 630 (US32D)
   4. Protection Plates: BHMA 630 (US32D)
   5. Overhead Stops and Holders: BHMA 630 (US32D)
   6. Door Closers: Powder Coat to Match
   7. Wall Stops: BHMA 630 (US32D)
   8. Weatherstripping: Clear Anodized Aluminum
   9. Thresholds: Mill Finish Aluminum

PART 3 EXECUTION

3.1 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.
   2. Custom Steel Doors and Frames: HMMA 831.

B. Install each hardware item in compliance with manufacturer’s instructions and recommendations, using only fasteners provided by manufacturer.

C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

F. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.
G. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

H. Lock Cylinders: Install construction cores to secure building and areas during construction period.
   1. Replace construction cores with permanent cores as indicated in keying section.

I. Wiring: Coordinate with Division 26, ELECTRICAL sections for:
   1. Conduit, junction boxes and wire pulls.
   2. Connections to and from power supplies to electrified hardware.
   3. Connections to fire/smoke alarm system and smoke evacuation system.
   4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
   5. Testing and labeling wires with Architect’s opening number.

J. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

K. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Closers shall not be visible in corridors, lobbies and other public spaces unless approved by Architect.

L. Closer/Holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

M. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.
   1. Configuration: Provide least number of power supplies required to adequately serve doors with electrified door hardware.

N. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

O. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

P. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

Q. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

R. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.3 FIELD QUALITY CONTROL

A. Architectural Hardware Consultant: Engage qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
   1. Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.
3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three months after date of Substantial Completion, Installer’s Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.
B. Clean operating items as necessary to restore proper function and finish.
C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DEMONSTRATION

A. Provide training for Owner’s maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 01 Section "Demonstration and Training."

3.7 DOOR HARDWARE SCHEDULE

A. Locksets, exit devices, and other hardware items are referenced in the following hardware sets for series, type and function. Refer to the aboveSpecifications for special features, options, cylinders/keying, and other requirements.

B. Hardware Sets:

3.8 HARDWARE SET # 01

A. FOR USE ON DOOR #(S):

1. 0001B

B. EACH TO HAVE:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PIVOT SET</td>
<td>7212V SET</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>2. INTERMEDIATE PIVOT</td>
<td>7212V INT</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>3. POWER TRANSFER</td>
<td>EPT10</td>
<td>689</td>
<td>VON</td>
</tr>
<tr>
<td>4. PANIC HARDWARE</td>
<td>CD-9949-EO</td>
<td>626</td>
<td>VON</td>
</tr>
</tbody>
</table>
6. EA ELEC PANIC HARDWARE LX-RX-LC-QEL+-SD-9949-NL-OP-110MD 626 VON
7. EA RIM CYLINDER 20-057 626 SCH
8. EA MORTISE CYLINDER 20-061 626 SCH
9. EA 90 DEG OFFSET PULL 8190 10" STD 630 IVE
10. EA SURFACE CLOSER 4040XP SCUSH 689 LCN
11. EA AUTO OPERATOR 4100 689 HOR
12. EA PA MOUNTING PLATE 4040-18PA 689 LCN
13. EA ACTUATOR I36-5 630 WIK
14. EA DOOR CONTACT 679-05HM BLK SCE
15. EA POWER SUPPLY PS902 900-2RS LGR VON

a. CARD ACCESS SYSTEM, READER, WIRING AND CONNECTIONS BY SECURITY PROVIDER.

b. WEATHERSTRIPPING/ASTRAGAL BY DOOR MANUFACTURER.

c. POSITIVE CARD READ TO POWER OUTSIDE ACTUATOR AFTER HOURS. DOORS TO BE DOGGED DURING THE DAY.

3.9 HARDWARE SET # 02

A. FOR USE ON DOOR #(S):
1. 0001A

B. EACH TO HAVE:
1. DESCRIPTION CATALOG NUMBER FINISH MFR
2. EA PIVOT SET 7212V SET 626 IVE
3. EA INTERMEDIATE PIVOT 7212V INT 626 IVE
4. EA DUMMY PUSH BAR 330 626 VON
5. EA 90 DEG OFFSET PULL 8190 10" STD 630 IVE
6. EA SURFACE CLOSER 4040XP SCUSH 689 LCN
7. EA AUTO OPERATOR 4100 689 HOR
8. EA PA MOUNTING PLATE 4040-18PA 689 LCN
9. EA ACTUATOR I36-5 630 WIK
10. EA DRIP CAP 16A CL NGP
11. EA DOOR SWEEP 200NA CL NGP
12. EA THRESHOLD 327 AL NGP

a. WEATHERSTRIPPING BY ALUMINUM DOOR MANUFACTURER.
## 3.10 HARDWARE SET # 03

**A. FOR USE ON DOOR #:**

1. 0019A 0007A 0029A

**B. EACH TO HAVE:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA PIVOT SET</td>
<td>7212V SET</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>EA INTERMEDIATE PIVOT</td>
<td>7212V INT</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>EA POWER TRANSFER</td>
<td>EPT10</td>
<td>689</td>
<td>VON</td>
</tr>
<tr>
<td>EA ELEC PANIC HARDWARE</td>
<td>LX-RX-LC-QEL+-SD-99-NL-OP-110MD</td>
<td>US26D</td>
<td>VON</td>
</tr>
<tr>
<td>EA RIM CYLINDER</td>
<td>20-057</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>EA MORTISE CYLINDER</td>
<td>20-061</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>EA 90 DEG OFFSET PULL</td>
<td>8190 10&quot; STD</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>EA SURFACE CLOSER</td>
<td>4040XP SCUSH</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>EA PA MOUNTING PLATE</td>
<td>4040-18PA</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>EA DRIP CAP</td>
<td>16A</td>
<td>CL</td>
<td>NGP</td>
</tr>
<tr>
<td>EA DOOR SWEEP</td>
<td>200NA</td>
<td>CL</td>
<td>NGP</td>
</tr>
<tr>
<td>EA SADDLE THRESHOLD</td>
<td>425</td>
<td>719</td>
<td>NGP</td>
</tr>
<tr>
<td>EA DOOR CONTACT</td>
<td>679-05HM</td>
<td>BLK</td>
<td>SCE</td>
</tr>
<tr>
<td>EA POWER SUPPLY</td>
<td>PS902 900-2RS</td>
<td>LGR</td>
<td>VON</td>
</tr>
</tbody>
</table>

- **a. CARD ACCESS SYSTEM, READER, WIRING AND CONNECTIONS BY SECURITY PROVIDER.**
- **b. WEATHERSTRIPPING BY ALUMINUM DOOR MANUFACTURER.**

## 3.11 HARDWARE SET # 04

**A. FOR USE ON DOOR #:**

1. 0011 0028A

**3.12 EACH TO HAVE:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>EA HINGE</td>
<td>5BB1 5 X 4.5 NRP</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>EA PANIC HARDWARE</td>
<td>CD-99-L-NL-07</td>
<td>626</td>
<td>VON</td>
</tr>
<tr>
<td>EA RIM CYLINDER</td>
<td>20-057</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>EA MORTISE CYLINDER</td>
<td>20-061</td>
<td>626</td>
<td>SCH</td>
</tr>
</tbody>
</table>
### 3.13 HARDWARE SET # 05

**A. FOR USE ON DOOR #(S):**

1. 0029B

**B. EACH TO HAVE:**

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 EA</td>
<td>PIVOT SET</td>
<td>7212V SET</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>2 EA</td>
<td>INTERMEDIATE PIVOT</td>
<td>7212V INT</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>2 EA</td>
<td>DUMMY PUSH BAR</td>
<td>330</td>
<td>626</td>
<td>VON</td>
</tr>
<tr>
<td>2 EA</td>
<td>90 DEG OFFSET PULL</td>
<td>8190 10&quot; Std</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>1 EA</td>
<td>SURFACE CLOSER</td>
<td>4040XP</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>1 EA</td>
<td>AUTO OPERATOR</td>
<td>7100</td>
<td></td>
<td>HOR</td>
</tr>
<tr>
<td>1 EA</td>
<td>PA MOUNTING PLATE</td>
<td>4040-18PA</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>1 EA</td>
<td>ACTUATOR</td>
<td>136-5</td>
<td>630</td>
<td>WIK</td>
</tr>
<tr>
<td>2 EA</td>
<td>WALL STOP</td>
<td>WS406/407CVX</td>
<td>689</td>
<td>LCN</td>
</tr>
</tbody>
</table>

### 3.14 HARDWARE SET # 06

**A. FOR USE ON DOOR #(S):**

1. 0007B

**B. EACH TO HAVE:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIVOT SET</td>
<td>7212V SET</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>INTERMEDIATE PIVOT</td>
<td>7212V INT</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>DUMMY PUSH BAR</td>
<td>330</td>
<td>626</td>
<td>VON</td>
</tr>
<tr>
<td>90 DEG OFFSET PULL</td>
<td>8190 10&quot; STD</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>SURFACE CLOSER</td>
<td>4040XP EDA</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>PA MOUNTING PLATE</td>
<td>4040-18PA</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>WALL STOP</td>
<td>WS406/407CVX</td>
<td>630</td>
<td>IVE</td>
</tr>
</tbody>
</table>
3.15 HARDWARE SET # 07

A. FOR USE ON DOOR #(S):
   1. 0019B

B. EACH TO HAVE:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIVOT SET</td>
<td>7212V SET</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>INTERMEDIATE PIVOT</td>
<td>7212V INT</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>DUMMY PUSH BAR</td>
<td>330</td>
<td>626</td>
<td>VON</td>
</tr>
<tr>
<td>90 DEG OFFSET PULL</td>
<td>8190 10&quot; STD</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>SURFACE CLOSER</td>
<td>4040XP CUSH</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>PA MOUNTING PLATE</td>
<td>4040-18PA</td>
<td>689</td>
<td>LCN</td>
</tr>
</tbody>
</table>

3.16 HARDWARE SET # 08

A. FOR USE ON DOOR #(S):
   1. 0030

B. EACH TO HAVE:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW HINGE 5BB1HW 4.5 X 4.5</td>
<td>5BB1HW 4.5 X 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>CONST LATCHING BOLT FB51P</td>
<td>FB51P</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>DUST PROOF STRIKE DP2</td>
<td>DP2</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>FIRE EXIT HARDWARE 9950-WDC-L-8E-F-07-LBL-SNB</td>
<td>9950-WDC-L-8E-F-07-LBL-SNB</td>
<td>626</td>
<td>VON</td>
</tr>
<tr>
<td>SURFACE CLOSER 4040XP CUSH</td>
<td>4040XP CUSH</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>SURFACE CLOSER 4040XP EDA</td>
<td>4040XP EDA</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>KICK PLATE 8400 10&quot; X 1&quot; LDW</td>
<td>8400 10&quot; X 1&quot; LDW</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>WALL STOP WS406/407CVX</td>
<td>WS406/407CVX</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>SEALS 5050CL</td>
<td>5050CL</td>
<td>CLR</td>
<td>NGP</td>
</tr>
<tr>
<td>SEALS 5060CL 7'</td>
<td>5060CL 7'</td>
<td>CLR</td>
<td>NGP</td>
</tr>
</tbody>
</table>

3.17 HARDWARE SET # 09

A. FOR USE ON DOOR #(S):
   1. 0022A

B. EACH TO HAVE:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
</table>
**UIUC - CERL Main Building Addition**  
**UIUC Project No. U13024**  
**Issued for BID**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Catalog Number</th>
<th>Finish</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Hinge</td>
<td>5BB1 5 X 4.5 NRP</td>
<td>IVE</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Const Latching Bolt</td>
<td>FB51P</td>
<td>IVE</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Dust Proof Strike</td>
<td>DP2</td>
<td>IVE</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Storeroom Lock</td>
<td>L9080R 07A</td>
<td>SCH</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Coordinator</td>
<td>COR X FL</td>
<td>IVE</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Mounting Bracket</td>
<td>MB</td>
<td>IVE</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Surface Closer</td>
<td>4040XP CUSH</td>
<td>LCN</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Drip Cap</td>
<td>16A</td>
<td>CL NGP</td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>Seals</td>
<td>5050CL</td>
<td>CLR NGP</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>Seals</td>
<td>5060CL 7’</td>
<td>CLR NGP</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Door Sweep</td>
<td>200NA</td>
<td>CL NGP</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Panic Threshold</td>
<td>896S</td>
<td>719 NGP</td>
<td></td>
</tr>
</tbody>
</table>

3.18 Hardware Set # 10

A. FOR USE ON DOOR #(S):

1. 0002A 0002B

B. EACH TO HAVE:

1. DESCRIPTION | CATALOG NUMBER | FINISH | MFR
2. Hinge | 5BB1 5 X 4.5 NRP | IVE    |
5. Rim Cylinder | 20-057 | 626 SCH |
6. Mortise Cylinder | 20-061 | 626 SCH |
7. Surface Closer | 4040XP EDA | 689 LCN |
8. Wall Stop | WS406/407CVX | 630 IVE |
9. Seals | 5050CL | CLR NGP |
10. Mullion Seal | 5100 | BLK NGP |
11. Door Sweep | 200NA | CL NGP |

3.19 Hardware Set # 12

A. FOR USE ON DOOR #(S):

1. 0230
B. EACH TO HAVE:

<table>
<thead>
<tr>
<th></th>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>HW HINGE</td>
<td>'5BB1HWSC 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>2.</td>
<td>CONST LATCHING BOLT</td>
<td>FB51P</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>3.</td>
<td>DUST PROOF STRIKE</td>
<td>DP2</td>
<td>626</td>
<td>IVE</td>
</tr>
<tr>
<td>4.</td>
<td>FIRE EXIT HARDWARE</td>
<td>9950-WDC-L-BE-F-07-LBL-SNB</td>
<td>626</td>
<td>VON</td>
</tr>
<tr>
<td>5.</td>
<td>SURFACE CLOSER</td>
<td>4040XP CUSH</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>6.</td>
<td>SURFACE CLOSER</td>
<td>4040XP EDA TEMPLATE FOR 180 DEGREES</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>7.</td>
<td>KICK PLATE</td>
<td>8400 10&quot; X 1&quot; LDW</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>8.</td>
<td>WALL STOP</td>
<td>WS406/407CVX</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>9.</td>
<td>SEALS</td>
<td>5050CL</td>
<td>CLR</td>
<td>NGP</td>
</tr>
<tr>
<td>10.</td>
<td>SEALS</td>
<td>5060CL 7'</td>
<td>CLR</td>
<td>NGP</td>
</tr>
</tbody>
</table>

3.20 HARDWARE SET # 13

A. FOR USE ON DOOR #{S}:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0018A</td>
<td>0018B</td>
<td>0020A</td>
</tr>
</tbody>
</table>

B. EACH TO HAVE:

<table>
<thead>
<tr>
<th></th>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>HINGE</td>
<td>5BB1 4.5 X 4.5 NRP</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>2.</td>
<td>PANIC HARDWARE</td>
<td>CD-99-L-2-07-SNB</td>
<td>626</td>
<td>VON</td>
</tr>
<tr>
<td>3.</td>
<td>RIM CYLINDER</td>
<td>20-057</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>4.</td>
<td>MORTISE CYLINDER</td>
<td>20-061</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>5.</td>
<td>SURFACE CLOSER</td>
<td>4040XP EDA</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>6.</td>
<td>KICK PLATE</td>
<td>8400 10&quot; X 2&quot; LDW</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>7.</td>
<td>WALL STOP</td>
<td>WS406/407CVX</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>8.</td>
<td>SEALS</td>
<td>5050CL</td>
<td>CLR</td>
<td>NGP</td>
</tr>
<tr>
<td>9.</td>
<td>DOOR SWEEP</td>
<td>200NA</td>
<td>CL</td>
<td>NGP</td>
</tr>
</tbody>
</table>

3.21 HARDWARE SET # 14

A. FOR USE ON DOOR #{S}:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0028B</td>
<td>0228</td>
</tr>
</tbody>
</table>
### DOOR HARDWARE

<table>
<thead>
<tr>
<th>HARDWARE SET #</th>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>EA HINGE</td>
<td>5BB1 4.5 X 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>16</td>
<td>EA PASSAGE SET</td>
<td>L9010 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>17</td>
<td>EA SURFACE CLOSER</td>
<td>4040XP</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>17</td>
<td>EA WALL STOP</td>
<td>WS406/407CVX</td>
<td>630</td>
<td>IVE</td>
</tr>
</tbody>
</table>

#### FOR USE ON DOOR #(S):

<table>
<thead>
<tr>
<th>HARDWARE SET #</th>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>EA HINGE</td>
<td>5BB1HW 5 X 5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>16</td>
<td>EA STOREROOM LOCK</td>
<td>L9080R 807A 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>17</td>
<td>EA SURFACE CLOSER</td>
<td>4040XP</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>17</td>
<td>EA WALL STOP</td>
<td>WS406/407CVX</td>
<td>630</td>
<td>IVE</td>
</tr>
</tbody>
</table>

#### FOR USE ON DOOR #229:

<table>
<thead>
<tr>
<th>HARDWARE SET #</th>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>EA HINGE</td>
<td>5BB1 4.5 X 4.5 NRP</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>17</td>
<td>EA STOREROOM LOCK</td>
<td>L9080R 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
</tbody>
</table>

#### FOR USE ON DOOR #225:

<table>
<thead>
<tr>
<th>HARDWARE SET #</th>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>EA HINGE</td>
<td>5BB1 4.5 X 4.5 NRP</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>17</td>
<td>EA STOREROOM LOCK</td>
<td>L9080R 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
</tbody>
</table>
4. EA SURFACE CLOSER 4040XP EDA 689 LCN
5. EA WALL STOP WS406/407CVX 630 IVE

3.25 HARDWARE SET # 18
A. FOR USE ON DOOR #(S):
   1. 0026
B. EACH TO HAVE:
   1. DESCRIPTION CATALOG NUMBER FINISH MFR
   2. EA HINGE 5BB1 4.5 X 4.5 652 IVE
   3. EA STOREROOM LOCK L9080R 07A 626 SCH
   4. EA SURFACE CLOSER 4040XP 689 LCN
   5. EA WALL STOP WS406/407CVX 630 IVE

3.26 HARDWARE SET # 19
A. FOR USE ON DOOR #(S):
   1. 0240
B. EACH TO HAVE:
   1. DESCRIPTION CATALOG NUMBER FINISH MFR
   2. EA HINGE 5BB1 4.5 X 4.5 652 IVE
   3. EA STOREROOM LOCK L9080R 07A 626 SCH
   4. EA OH STOP 90S 630 GLY
   5. EA SURFACE CLOSER 4040XP 689 LCN

3.27 HARDWARE SET # 20
A. FOR USE ON DOOR #(S):
   1. 0008
B. EACH TO HAVE:
   1. DESCRIPTION CATALOG NUMBER FINISH MFR
   2. EA HINGE 5BB1 4.5 X 4.5 652 IVE
   3. EA STOREROOM LOCK L9080R 07A 626 SCH
   4. EA SURFACE CLOSER 4040XP H 689 LCN
   5. EA KICK PLATE 8400 10" X 2" LDW 630 IVE
   6. EA WALL STOP WS406/407CVX 630 IVE
### HARDWARE SET # 21

**A. FOR USE ON DOOR #(S):**

1. 0203

**B. EACH TO HAVE:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>HINGE</td>
<td>5881 4.5 X 4.5 NRP</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>STOREROOM LOCK</td>
<td>L9080R 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>SURFACE CLOSER</td>
<td>4040XP HCUSH</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>KICK PLATE</td>
<td>8400 10&quot; X 2&quot; LDW</td>
<td>630</td>
<td>IVE</td>
</tr>
</tbody>
</table>

### HARDWARE SET # 22

**A. FOR USE ON DOOR #(S):**

1. 0024

**B. EACH TO HAVE:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>HINGE</td>
<td>5881 5 X 4.5 NRP</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>STOREROOM LOCK</td>
<td>L9080R 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>SURFACE CLOSER</td>
<td>4040XP CUSH</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>SET SEALS</td>
<td>5050CL</td>
<td>CLR</td>
<td>NGP</td>
</tr>
</tbody>
</table>

### HARDWARE SET # 23

**A. FOR USE ON DOOR #(S):**

1. 0009A 0009B

**B. EACH TO HAVE:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>HINGE</td>
<td>5881 4.5 X 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>CLASSROOM LOCK</td>
<td>L9070R 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>SURFACE CLOSER</td>
<td>4040XP</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>KICK PLATE</td>
<td>8400 10&quot; X 2&quot; LDW</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>WALL STOP</td>
<td>WS406/407CVX</td>
<td>630</td>
<td>IVE</td>
</tr>
</tbody>
</table>

### HARDWARE SET # 24

**A. FOR USE ON DOOR #(S):**

1. A0025 A0027
B. EACH TO HAVE:

1. DESCRIPTION       CATALOG NUMBER       FINISH   MFR
2. EA HINGE          5BB1 4.5 X 4.5        652      IVE
3. EA PRIVACY LOCK   L9040 07A            626      SCH
4. EA SURFACE CLOSER 4040XP                689      LCN
5. EA MOP PLATE      8400 4" X 1" LDW       630      IVE
6. EA WALL STOP      WS406/407CVX          630      IVE

3.32 HARDWARE SET # 25

A. FOR USE ON DOOR #(S):

1. 0004 0005 0204 0205

B. EACH TO HAVE:

1. DESCRIPTION       CATALOG NUMBER       FINISH   MFR
2. EA HINGE          5BB1 4.5 X 4.5        652      IVE
3. EA PUSH PLATE     8200 4" X 16"          630      IVE
4. EA PULL PLATE     8302 10" 4" X 16"      630      IVE
5. EA SURFACE CLOSER 4040XP                689      LCN
6. EA KICK PLATE     8400 10" X 2" LDW       630      IVE
7. EA MOP PLATE      8400 4" X 1" LDW       630      IVE
8. EA WALL STOP      WS406/407CVX          630      IVE

3.33 HARDWARE SET # 26

A. FOR USE ON DOOR #(S):

1. 0246

B. EACH TO HAVE:

1. DESCRIPTION       CATALOG NUMBER       FINISH   MFR
2. EA HINGE          5BB1 4.5 X 4.5        652      IVE
3. EA OFFICE W/SIM RETRACT L9056R 07A       626      SCH
4. EA SURFACE CLOSER 4040XP                689      LCN
5. EA KICK PLATE     8400 10" X 2" LDW       630      IVE
6. EA WALL STOP      WS406/407CCV           630      IVE

3.34 HARDWARE SET # 27

A. FOR USE ON DOOR #(S):

Issued for BID 12.14.15
DOOR HARDWARE 08 7100-33
1.  0014  0016A  0016B

**B. EACH TO HAVE:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. EA HINGE</td>
<td>5BB1 4.5 X 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>3. EA CLASSROOM LOCK</td>
<td>L9070R 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>4. EA WALL STOP</td>
<td>WS406/407CVX</td>
<td>630</td>
<td>IVE</td>
</tr>
</tbody>
</table>

3.35 HARDWARE SET # 28

A. FOR USE ON DOOR #'(S):

1. NOT USED

3.36 HARDWARE SET # 29

A. FOR USE ON DOOR #'(S):

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. EA HINGE</td>
<td>5BB1 4.5 X 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>3. EA OFFICE W/SIM RETRACT</td>
<td>L9056R 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>4. EA WALL STOP</td>
<td>WS406/407CCV</td>
<td>630</td>
<td>IVE</td>
</tr>
</tbody>
</table>

B. EACH TO HAVE:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. EA HINGE</td>
<td>5BB1 4.5 X 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>3. EA OFFICE W/SIM RETRACT</td>
<td>L9056R 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>4. EA OH STOP</td>
<td>90S</td>
<td>630</td>
<td>GLY</td>
</tr>
</tbody>
</table>

3.37 HARDWARE SET # 30

A. FOR USE ON DOOR #'(S):

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 0003</td>
<td>0245 0248 0250</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B. EACH TO HAVE:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. EA HINGE</td>
<td>5BB1 4.5 X 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>3. EA OFFICE W/SIM RETRACT</td>
<td>L9056R 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>4. EA OH STOP</td>
<td>90S</td>
<td>630</td>
<td>GLY</td>
</tr>
</tbody>
</table>

DOOR HARDWARE

08 7100-34

Issued for BID

12.14.15
### 3.38 HARDWARE SET # 31

**A. FOR USE ON DOOR #(#):**

1. A0241

**B. EACH TO HAVE:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. EA HINGE</td>
<td>5BB1 4.5 X 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>3. EA PASSAGE SET</td>
<td>L9010 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>4. EA WALL STOP</td>
<td>WS406/407CVX</td>
<td>630</td>
<td>IVE</td>
</tr>
</tbody>
</table>

### 3.39 HARDWARE SET # 32

**A. FOR USE ON DOOR #(#):**

1. 0210

**B. EACH TO HAVE:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. EA HINGE</td>
<td>5BB1 4.5 X 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>3. EA PASSAGE SET</td>
<td>L9010 07A</td>
<td>626</td>
<td>SCH</td>
</tr>
<tr>
<td>4. EA OH STOP</td>
<td>90S</td>
<td>630</td>
<td>GLY</td>
</tr>
</tbody>
</table>

### 3.40 HARDWARE SET # 33

**A. FOR USE ON DOOR #(#):**

1. 0021 0029C

**B. EACH TO HAVE:**

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. EA HW HINGE</td>
<td>5BB1HW 4.5 X 4.5</td>
<td>652</td>
<td>IVE</td>
</tr>
<tr>
<td>3. EA PUSH PLATE</td>
<td>8200 4&quot; X 16&quot;</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>4. EA PULL PLATE</td>
<td>8302 10&quot; 4&quot; X 16&quot;</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>5. EA SURFACE CLOSER</td>
<td>4040XP SCUSH</td>
<td>689</td>
<td>LCN</td>
</tr>
<tr>
<td>6. EA AUTO OPERATOR</td>
<td>7100</td>
<td></td>
<td>HOR</td>
</tr>
<tr>
<td>7. EA ACTUATOR</td>
<td>136-5</td>
<td>630</td>
<td>WIK</td>
</tr>
<tr>
<td>8. EA ARMOR PLATE</td>
<td>8400 36&quot; X 1&quot; LDW B4E</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>9. EA WALL STOP</td>
<td>WS406/407CCV</td>
<td>630</td>
<td>IVE</td>
</tr>
<tr>
<td>10. EA DOOR SWEEP</td>
<td>200NA</td>
<td>CL</td>
<td>NGP</td>
</tr>
</tbody>
</table>
3.41 HARDWARE SET # 34

A. FOR USE ON DOOR #(S):
   1. 0013B

B. EACH TO HAVE:

<table>
<thead>
<tr>
<th></th>
<th>DESCRIPTION</th>
<th>CATALOG NUMBER</th>
<th>FINISH</th>
<th>MFR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>TRACK</td>
<td>113 428 X</td>
<td>MILL</td>
<td>HEG</td>
</tr>
<tr>
<td>2.</td>
<td>CARRIER</td>
<td>113 427 7</td>
<td>652</td>
<td>HEG</td>
</tr>
<tr>
<td>3.</td>
<td>FLOOR GUIDE</td>
<td>050 562</td>
<td>675</td>
<td>HEG</td>
</tr>
<tr>
<td>4.</td>
<td>WALL MOUNT BRACKET</td>
<td>113 442 3</td>
<td>719</td>
<td>HEG</td>
</tr>
<tr>
<td>5.</td>
<td>ENDSTOP CATCH</td>
<td>113 424 7</td>
<td>652</td>
<td>HEG</td>
</tr>
</tbody>
</table>

   a. PROVIDE HARDWARE AS REQUIRED FOR A COMPLETE INSTALLATION.

C.END OF SECTION
SECTION 08 8000 - GLAZING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Glass.

B. Glazing compounds and accessories.

1.2 RELATED REQUIREMENTS

A. Section 06 4100 - Architectural Wood Casework: Cabinets with requirements for glass shelves and ________.

B. Section 07 2500 - Weather Barriers.

C. Section 07 9005 - Joint Sealers: Sealant and back-up material.

D. Section 08 1113 - Hollow Metal Doors and Frames: Glazed doors and borrowed lites.

E. Section 08 1416 - Flush Wood Doors: Glazed lites in doors.

F. Section 08 4313 - Aluminum-Framed Storefronts: Glazing furnished by storefront manufacturer.

G. Section 10 2800 - Toilet, Bath, and Laundry Accessories: Mirrors.

1.3 REFERENCE STANDARDS


J. GANA (GM) - GANA Glazing Manual; Glass Association of North America; 2009.


1.4 ADMINISTRATIVE REQUIREMENTS
   A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.5 SUBMITTALS
   A. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
   B. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
   C. Samples: Submit two samples 12 x 12 inch (305 x 305 mm) in size of glass units.
   D. Certificates: Certify that products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE
   A. Perform Work in accordance with GANA Glazing Manual and GANA Sealant Manual for glazing installation methods.

1.7 FIELD CONDITIONS
   A. Do not install glazing when ambient temperature is less than 50 degrees F (10 degrees C).
   B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.8 WARRANTY
   A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
   B. Sealed Insulating Glass Units: Provide a ten (10) year warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.
   C. Laminated Glass: Provide a ten (10) year warranty to include coverage for delamination, including replacement of failed units.

PART 2 PRODUCTS

2.1 GLAZING TYPES
   A. Type IG-1 - Sealed Insulating Glass Units: Vision glazing.
      1. Application(s): All exterior glazing unless otherwise indicated.
      2. Outboard Lite: Annealed float glass, 1/4 inch (6 mm) thick, minimum.
         a. Tint: Clear.
         b. Coating: Low-E type, on #2 surface.
      3. Inboard Lite: Annealed float glass, 1/4 inch (6 mm) thick, minimum.
         a. Tint: Clear.
      4. Total Thickness: 1 inch (25 mm).
      5. Total Visible Light Transmittance: 62 percent, minimum.
6. Total Solar Heat Gain Coefficient: 0.28 percent, maximum.
7. Total Shading Coefficient: 0.32 percent, minimum.

2.2 BASIS OF DESIGN - INSULATING GLASS UNITS

A. Type IG-1 - Sealed Insulating Glass Units: Vision glazing, low-E.
   1. Application(s): All exterior glazing unless otherwise indicated.
   2. Substitutions: Refer to Section 01 6000 - Product Requirements.
      a. Other products of the basis of design manufacturer and products of other manufacturers will be considered provided the overall performance is within the specified range(s) and the overall appearance is not significantly different from that of the specified product.
      b. Architect/Engineer’s decision on substitutions is final.
   3. Between-lite space filled with argon.
   4. Thermal Resistance (U-Value): 0.29, maximum.
   5. Total Solar Heat Gain Coefficient: 0.28, maximum.
   7. Basis of Design: Viracon VNE 1-2M.
   8. Outboard Lite: Annealed float glass, 1/4 inch (6 mm) thick, minimum.
      a. Tint: Clear.
      b. Low-E Coating: Sputtered on second surface.
   9. Inboard Lite: Annealed float glass, 1/4 inch (6 mm) thick.
      a. Tint: Clear.
      b. Low-E Coating: Sputtered on second surface.
   10. Total Thickness: 1 inch (25 mm).
   11. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another acceptable manufacturer.
   12. Substitution Procedures: See Section 01 6000 - Product Requirements.
      a. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.3 GLAZING UNITS

A. Type IG-3 - Sealed Insulating Glass Units: Safety Glazing:
   1. Applications: Provide this type of glazing in the following locations as shown:
      a. Glazed lites in exterior doors as scheduled.
      b. Glazed sidelights and panels next to doors.
c. Other locations required by applicable federal, state, and local codes and regulations.

d. Other locations indicated on the drawings.

2. Type: Same as other vision glazing except use fully tempered float glass for both outboard and inboard lites.

B. Sealed Insulating Glass Units: - Security Glazing: Laminated glass/plastic glazing.

1. Application: Locations indicated on the drawings.

2. Product: Solarban 60 Clear by PPG Industries, Inc.

3. Outer Layer: 3/16" clear tempered - .090 SGP

4. Interlayer: 1/4" Solarban" 60 #4 surface w/ 1/2" air space with Argon and warm edge spacer

5. Inner Layer: 3/16" clear tempered - .090 SGP - 1/4" clear HS.


2.4 EXTERIOR GLAZING ASSEMBLIES

A. Structural Design Criteria: Select type and thickness to withstand dead loads and wind loads acting normal to plane of glass at design pressures calculated in accordance with local code.

1. Use the procedure specified in ASTM E1300 to determine glass type and thickness.

2. Limit glass deflection to 1/200 or flexure limit of glass, whichever is less, with full recovery of glazing materials.

3. Thicknesses listed are minimum.

2.5 GLASS MATERIALS

A. Float Glass Manufacturers:


2. Oldcastle Glass Group

3. Viracon.

4. Substitutions: Refer to Section 01 6000 - Product Requirements.

B. Float Glass: All glazing is to be float glass unless otherwise indicated.

1. Annealed Type: ASTM C1036, Type I, transparent flat, Class 1 clear, Quality Q3 (glazing select).


3. Tinted Types: Color and performance characteristics as indicated.

4. Thicknesses: As indicated; for exterior glazing comply with specified requirements for wind load design regardless of specified thickness.

C. Laminated Glass: Float glass laminated in accordance with ASTM C1172.

1. Laminated Safety Glass: Comply with 16 CFR 1201 test requirements for Category II.

2. Plastic Interlayer: 0.060 inch (1.52 mm) thick, minimum.
3. Where fully tempered is specified or required, provide glass that has been tempered by the tong-less horizontal method.

4. Manufacturers:
   c. Substitutions: Refer to Section 01 6000 - Product Requirements.

2.6 SEALED INSULATING GLASS UNITS

A. Manufacturers:
   1. Any of the manufacturers specified for float glass.
   2. Substitutions: Refer to Section 01 6000 - Product Requirements.

B. Sealed Insulating Glass Units: Types as indicated.
   1. Locations: Exterior, except as otherwise indicated.
   2. Durability: Certified by an independent testing agency to comply with ASTM E2190.
   3. Edge Spacers: Aluminum, bent and soldered corners.
   4. Edge Seal: Glass to elastomer with supplementary silicone sealant.
   5. Purge interpane space with dry hermetic air.

2.7 GLAZING ACCESSORIES

A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness, ASTM C864 Option I. Length of 0.1 inch for each square foot (25 mm for each square meter) of glazing or minimum 4 inch (100 mm) x width of glazing rabbet space minus 1/16 inch (1.5 mm) x height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness, ASTM C864 Option I. Minimum 3 inch (75 mm) long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.

C. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; _____x____ inch (_____x_____ mm) size; black color.

D. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option I; architect selected color.

E. Glazing Clips: Manufacturer’s standard type.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that openings for glazing are correctly sized and within tolerance.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.
3.2 PREPARATION
   A. Clean contact surfaces with solvent and wipe dry.
   B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
   C. Prime surfaces scheduled to receive sealant.
   D. Install sealants in accordance with ASTM C1193 and GANA Sealant Manual.
   E. Install sealant in accordance with manufacturer’s instructions.

3.3 GLAZING METHODS

3.4 INSTALLATION - EXTERIOR/INTERIOR DRY METHOD (GASKET GLAZING)
   A. Place setting blocks at 1/4 points with edge block no more than 6 inches (150 mm) from corners.
   B. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.
   C. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.5 MANUFACTURER’S FIELD SERVICES
   A. See Section 01 4000 - Quality Requirements, for additional requirements.
   B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
   C. Monitor and report installation procedures and unacceptable conditions.

3.6 CLEANING
   A. Remove glazing materials from finish surfaces.
   B. Remove labels after Work is complete.
   C. Clean glass and adjacent surfaces.
   D. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.

3.7 PROTECTION
   A. After installation, mark pane with an ‘X’ by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

END OF SECTION
SECTION 08 9100 - LOUVERS

PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Louvers, frames, and accessories.

1.2 RELATED REQUIREMENTS
   A. Section 07 6200 - Sheet Metal Flashing and Trim.
   B. Section 07 9005 - Joint Sealers.
   C. Section 08 4313 - Aluminum-Framed Storefronts: Prepared openings for louvers.
   D. Section 09 9000 - Painting and Coating: Field painting.

1.3 REFERENCE STANDARDS

1.4 SUBMITTALS
   A. Product Data: Provide data describing design characteristics, maximum recommended air velocity, design free area, materials and finishes.
   B. Shop Drawings: Indicate louver layout plan and elevations, opening and clearance dimensions, tolerances; head, jamb and sill details; blade configuration, screens, blankout areas required, and frames.
   C. Samples: Submit two samples 2 by 2 inches (50 by 50 mm) in size illustrating finish and color of exterior and interior surfaces.
   D. Test Reports: Independent agency reports showing compliance with specified performance criteria.
   E. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE
   A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section, with minimum three years of documented experience.

1.6 WARRANTY
   A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
   B. Provide twenty year manufacturer warranty against distortion, metal degradation, and failure of connections.
      1. Finish: Include coverage against degradation of exterior finish.
PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Wall Louvers:
   5. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another acceptable manufacturer.
   6. Substitutions: See Section 01 6000 - Product Requirements.

2.2 LOUVERS

A. Louvers: Factory fabricated and assembled, complete with frame, mullions, and accessories; AMCA Certified under AMCA 511.
   1. Wind Load Resistance: Design to resist positive and negative wind load as required by code without damage or permanent deformation.
   2. Intake Louvers: Design to allow maximum of 0.01 oz/sq ft (3.1 g/sq m) water penetration at calculated intake design velocity based on design air flow and actual free area, when tested in accordance with AMCA 500-L.
   3. Drainable Blades: Continuous rain stop at front or rear of blade aligned with vertical gutter recessed into both jambs of frame.
   4. Screens: Provide insect screens at intake louvers and bird screens at exhaust louvers.

B. Stationary Louvers: Horizontal blade, extruded aluminum construction, with intermediate mullions matching frame.
   2. Frame: 6 inches (150 mm) deep, channel profile; corner joints mitered and, with continuous recessed caulking channel each side.
   3. Metal Thickness: Frame 0.081 inch (2.06 mm); blades 0.081 inch (2.06 mm).
   4. Finish: Clear anodized; finish welded units after fabrication.
   5. Product: Use one of the following or any equivalent made by one of the listed manufacturers: Air Flow Company, Inc. EA-613.

2.3 MATERIALS


B. Bird Screen: Intertwoven wire mesh of steel, 0.050 inch (____ mm) diameter wire, 3/4 inch (____ mm) open weave, diagonal design.

C. Insect Screen: 18 x 16 size aluminum mesh.
2.4 FINISHES
   A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils (0.018 mm) thick.

2.5 ACCESSORIES
   A. Blank-Off Panels: Aluminum face and back sheets, polyisocyanurate foam core, 2 inch (50.8 mm) thick, painted black on exterior side; provide where duct connected to louver is smaller than louver frame, sealing off louver area outside duct.
   B. Screens: Frame of same material as louver, with reinforced corners; removable, screw attached; installed on inside face of louver frame.
   C. Bird Screen: Interwoven wire mesh of aluminum, 16 gage, 0.050 inch (___ mm) diameter wire, 3/4 inch (____ mm) open weave, diagonal design.
   D. Insect Screen: 18 x 16 size aluminum mesh.
   E. Fasteners and Anchors: Stainless steel.
   F. Flashings: Of same material as louver frame, formed to required shape, single length in one piece per location.

PART 3 EXECUTION

3.1 EXAMINATION
   A. Verify that prepared openings and flashings are ready to receive work and opening dimensions are as indicated on shop drawings.
   B. Verify that field measurements are as indicated.

3.2 INSTALLATION
   A. Install louver assembly in accordance with manufacturer’s instructions.
   B. Install louvers level and plumb.
   C. Install flashings and align louver assembly to ensure moisture shed from flashings and diversion of moisture to exterior.
   D. Secure louver frames in openings with concealed fasteners.
   E. Install perimeter sealant and backing rod in accordance with Section 07 9005.
   F. Coordinate with installation of mechanical ductwork.

3.3 CLEANING
   A. Strip protective finish coverings.
   B. Clean surfaces and components.

END OF SECTION
SECTION 09 0561 - COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. This section applies to all floors identified in the contract documents as to receive the following types of floor coverings:
   1. Resilient tile and sheet.
   2. Carpet tile.
   3. Thin-set ceramic tile and stone tile.
B. Preparation of new concrete floor slabs for installation of floor coverings.
C. Testing of concrete floor slabs for moisture and pH.
D. Remediation of concrete floor slabs due to unsatisfactory moisture or pH conditions.
   1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency’s report and is due to a condition not under Contractor’s control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

1.2 RELATED REQUIREMENTS

A. Section 01 2200 - Unit Prices: Bid pricing for remediation treatments if required.
B. Section 01 2300 - Alternates: Bid pricing for remediation treatments if required.
C. Section 01 4000 - Quality Requirements: Additional requirements relating to testing agencies and testing.
D. Section 01 7419 - Construction Waste Management and Disposal: Handling of existing floor coverings removed.
E. Section 03 3000 - Cast-In-Place Concrete: Moisture emission reducing curing and sealing compound for slabs to receive adhered flooring, to prevent moisture content-related flooring failures; to remain in place, not to be removed.
F. Section 03 3000 - Cast-In-Place Concrete: Concrete admixture for slabs to receive adhered flooring, to prevent moisture content-related flooring failures.
G. Section 03 3000 - Cast-In-Place Concrete: Limitations on curing requirements for new concrete floor slabs.

1.3 PRICE AND PAYMENT PROCEDURES

A. Alternates: See Section 01 2300 - Alternates.
B. Alternate for Alternate Flooring Adhesive: Do not include the cost of the alternate adhesive in the base bid; state on the bid form the total additional cost for the alternate adhesive, installed, in the event such remediation is required.
C. Alternate for Remedial Floor Coating: Do not include the cost of floor coating in the base bid; state on the bid form the total additional cost for the floor coating, installed, in the event such remediation is required.
1.4 REFERENCES


C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.


1.5 ADMINISTRATIVE REQUIREMENTS

A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.

1.6 SUBMITTALS

A. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and pH limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

B. Testing Agency’s Report: Include:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and pH test reports.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Include certification of accuracy by authorized official of testing agency.
   7. Submit report to Architect/Engineer.
   8. Submit report not more than two business days after conclusion of testing.

C. Adhesive Bond and Compatibility Test Report.

1.7 QUALITY ASSURANCE

A. Moisture and pH testing shall be performed by an independent testing agency employed and paid by Contractor.

B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
   1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner’s project contact information.

C. Contractor’s Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.
2. Confirm date of start of testing at least 10 days prior to actual start.

3. Allow at least 4 business days on site for testing agency activities.

4. Achieve and maintain specified ambient conditions.

5. Notify Architect/Engineer when specified ambient conditions have been achieved and when testing will start.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer’s instructions and recommendations.

B. Deliver materials in manufacturer’s packaging; include installation instructions.

C. Keep materials from freezing.

1.9 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F (18 degrees C) or more than 85 degrees F (30 degrees C).

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

PART 2 PRODUCTS

2.1 MATERIALS

A. Patching Compound: Floor covering manufacturer’s recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:

1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.

2. Latex or polyvinyl acetate additions are permitted; gypsum content is prohibited.

3. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.

B. Alternate Flooring Adhesive: Floor covering manufacturer’s recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

C. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer’s emission limits, resistant to the level of pH found, and suitable for adhesion of flooring without further treatment.

1. Thickness: 1/8 inch (3 mm), maximum.

2. If testing agency recommends any particular products, use one of those.

3. Products:


e. ProSpec, an Oldcastle brand; Moisture Guard Max: www.prospec.com.


PART 3 EXECUTION

3.1 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:

1. Preliminary cleaning.

2. Moisture vapor emission tests; 3 tests in the first 1000 square feet (100 square meters) and one test in each additional 1000 square feet (100 square meters), unless otherwise indicated or required by flooring manufacturer.

3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.

4. pH tests; in same locations as moisture vapor emission tests, unless otherwise indicated.

5. Specified remediation, if required.

6. Patching, smoothing, and leveling, as required.

7. Other preparation specified.


9. Protection.

B. Remediations:

1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.

2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating over entire suspect floor area.

3. Excessive pH: If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.
3.2 PRELIMINARY CLEANING

A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.

B. Do not use solvents or other chemicals for cleaning.

3.3 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer’s requirements conflict with either the referenced test method or this specification, comply with the manufacturer’s requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer’s limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet (1.4 kg per 93 square meters) per 24 hours.

F. Report: Report the information required by the test method.

3.4 PH TESTING

A. Where the floor covering manufacturer’s requirements conflict with either the referenced test method or this specification, comply with the manufacturer’s requirements.

B. Note: This procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor’s convenience.

C. Use a wide range pH paper, its associated chart, and distilled or deionized water.

D. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch (25 mm) in diameter. Allow the puddle to set for approximately 60 seconds, then dip the pH paper into the water, remove it, and compare immediately to chart to determine pH reading.

E. In the event that test values exceed floor covering manufacturer’s limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value is over 10.

3.5 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

D. Do not fill expansion joints, isolation joints, or other moving joints.

3.6 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.
3.7 APPLICATION OF REMEDIAL FLOOR COATING
   A. Comply with requirements and recommendations of coating manufacturer.

3.8 PROTECTION
   A. Cover prepared floors with building paper or other durable covering.

END OF SECTION
SECTION 09 2116 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SECTION INCLUDES

   A. Performance criteria for gypsum board assemblies.
   B. Metal stud wall framing.
   C. Metal channel ceiling framing.
   D. Acoustic insulation.
   E. Gypsum sheathing.
   F. Cementitious backing board.
   G. Gypsum wallboard.
   H. Joint treatment and accessories.
   I. Water-resistive barrier over exterior wall sheathing.

1.2 RELATED REQUIREMENTS

   A. Section 05 4000 - Cold-Formed Metal Framing: Exterior wind-load-bearing metal stud framing.
   B. Section 06 1000 - Rough Carpentry: Building framing and sheathing.
   C. Section 07 2100 - Thermal Insulation: Acoustic insulation.
   D. Section 07 2500 - Weather Barriers: Water-resistive barrier over sheathing.
   E. Section 07 8400 - Firestopping: Top-of-wall assemblies at fire rated walls.
   F. Section 07 9005 - Joint Sealers: Acoustic sealant.
   G. Section 09 2216 - Non-Structural Metal Framing.
   H. Section 09 3000 - Tiling (Tile): Tile backing board.

1.3 REFERENCE STANDARDS

H. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2011.


S. ASTM E413 - Classification for Rating Sound Insulation; 2010.


1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.

C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.

D. Product Data: Provide manufacturer’s data on partition head to structure connectors, showing compliance with requirements.

E. Samples: Submit two samples of predecorated gypsum board, 12 by 12 inches (300 by 300 mm) in size, illustrating finish color and texture.

F. Samples: Submit two samples of gypsum board finished with proposed texture application, 12 by 12 inches (300 by 300 mm) in size, illustrating finish color and texture.

G. LEED Submittals:
   1. For steel products, submit documentation of steel mill process, location of mill, and location of manufacture.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing gypsum board application and finishing, with minimum ___ years of documented experience.
PART 2 PRODUCTS

2.1 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 45-49 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Shaft Walls at HVAC Shafts: Provide completed assemblies with the following characteristics:
   1. Air Pressure Within Shaft: Sustained loads of 5 lbf/sq ft (0.24 kPa) with maximum mid-span deflection of L/240.
   2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.2 METAL FRAMING MATERIALS

A. Manufacturers - Metal Framing, Connectors, and Accessories:
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf (240 Pa).
   1. Studs: "C" shaped with flat or formed webs with knurled faces.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: C shaped.
   4. Furring: Hat-shaped sections, minimum depth of 7/8 inch (22 mm).

C. Exterior Non-Loadbearing Studs and Furring for Application of Gypsum Board: As specified in Section 09 2216.

D. Loadbearing Studs for Application of Gypsum Board: As specified in Section 05 4000.

E. Shaft Wall Studs and Accessories: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 and specified performance requirements.
   1. Manufacturers - Shaft Wall Studs and Accessories:
      a. Same manufacturer as other framing materials.

F. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.

G. Partition Head To Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.
2.3 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
   9. Substitutions: See Section 01 6000 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Glass-mat-faced gypsum panels as defined in ASTM C1658/C1658M, suitable for paint finish, of the same core type and thickness may be substituted for paper-faced board.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
   4. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   5. Thickness:
      a. Vertical Surfaces: 5/8 inch (16 mm).
      b. Ceilings: 5/8 inch (16 mm).
      c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.

C. Abuse-Resistant Wallboard:
   1. Application: Interior drywall with exception of soffits.
   2. Surface Abrasion: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
   3. Surface Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
   4. Soft-body Impact: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
   5. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   6. Type: Fire-resistance rated Type X, UL or WH listed.
   7. Thickness: 5/8 inch (16 mm).

9. Products:
   a. American Gypsum; M-Bloc AR Type X.
   b. Georgia-Pacific Gypsum; DensArmor Plus Abuse-Resistant.
   c. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold Guard Abuse-Resistant.
   d. National Gypsum Company; Gold Bond Hi-Abuse XP Gypsum Board.
   e. National Gypsum Company; Gold Bond eXP Interior Extreme AR Gypsum Panel.
   f. Substitutions: See Section 01 6000 - Product Requirements.

D. Backing Board For Wet Areas: One of the following products:

1. Application: Surfaces behind tile in wet areas including mop basins, water closets, sinks, lavatories, and urinals.

2. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
   a. Thickness: 5/8 inch (16 mm).
   b. Products:
      1) Custom Building Products; Wonderboard.
      3) National Gypsum Company; PermaBase Brand Cement Board.
      4) National Gypsum Company; PermaBase Flex Brand Cement Board.
      5) USG Corporation; Durock Brand Cement Board.
      6) Substitutions: See Section 01 6000 - Product Requirements.

3. Glass-Mat-Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178.
   a. Standard Type: Thickness 1/2 inch (12.7 mm).
   b. Fire-Resistant Type: Type X core, thickness 5/8 inch (16 mm).
   c. Products:
      1) Georgia-Pacific Gypsum; DensShield Tile Backer.
      2) National Gypsum Company; Gold Bond eXP Tile Backer.
      3) Temple-Inland Building Product by Georgia-Pacific, LLC; GreenGlass Tile Backer.
      4) Substitutions: See Section 01 6000 - Product Requirements.

E. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.

1. Application: Vertical surfaces behind thinset tile, except in wet areas.
2. Type: Regular and Type X, in locations indicated.

3. Type X Thickness: 5/8 inch (16 mm).

4. Regular Board Thickness: 1/2 inch (13 mm).

5. Edges: Tapered.

F. Ceiling Board: Special sag-resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.

1. Application: Ceilings, unless otherwise indicated.

2. Thickness: 5/8 inch (___ mm).


4. Products:
   a. American Gypsum; Interior Ceiling Board.
   b. CertainTeed Corporation; ProRoc Interior Ceiling.
   c. Georgia-Pacific Gypsum; ToughRock CD Ceiling Board.
   d. Lafarge North America Inc; Sagcheck.
   e. National Gypsum Company; High Strength Brand Ceiling Board.
   f. Pacific Coast Building Products, Inc; PABCO Ceiling Board.
   g. Temple-Inland Building Products by Georgia-Pacific, LLC; Span24 Ceiling Board.
   h. USG Corporation; Sheetrock Brand Sag-Resistant Interior Gypsum Ceiling Board.
   i. Substitutions: See Section 01 6000 - Product Requirements.

G. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.

1. Application: Exterior sheathing, unless otherwise indicated.

2. Glass-Mat-Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.

3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.

4. Core Type: Type X, as indicated.

5. Type X Thickness: 5/8 inch (16 mm).

6. Edges: Square, for vertical application.

7. Glass Mat Faced Products:
   b. Continental Building Products; Weather Defense Platinum Sheathing Type X.
   c. Georgia-Pacific Gypsum; DensGlass Sheathing.
   d. Georgia-Pacific Gypsum; DensGlass Fireguard Sheathing.
e. National Gypsum Company; Gold Bond eXP Sheathing.

H. Exterior Soffit Board: Exterior gypsum soffit board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Ceilings and soffits in protected exterior areas, unless otherwise indicated.
   2. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X.
   3. Types: Type X, in locations indicated.
   4. Type X Thickness: 5/8 inch (16 mm).
   5. Edges: Tapered.
   6. Products:
      a. American Gypsum; Exterior Soffit Wallboard.
      b. CertainTeed Corporation; ProRoc Brand Exterior Soffit Board.
      c. Georgia-Pacific Gypsum; ToughRock Soffit Board.
      d. Lafarge North America Inc; Soffitboard.
      e. National Gypsum Company; Gold Bond Brand Exterior Soffit Board.
      f. Pacific Coast Building Products, Inc; PABCO.
      g. Temple-Inland Building Products by Georgia-Pacific, LLC; Exterior Gypsum Soffit Board.
      h. USG Corporation; Sheetrock Exterior Gypsum Ceiling Board.
      i. Substitutions: See Section 01 6000 - Product Requirements.

I. Shaftwall and Coreboard: Type X; 1 inch (25 mm) thick by 24 inches (610 mm) wide, beveled long edges, ends square cut.
   1. Paper Faced Type: Gypsum shaftliner board or gypsum coreboard as defined ASTM C1396/C1396M; water-resistant faces.
   2. Glass Mat Faced Type: Glass mat shaftliner gypsum panel or glass mat coreboard gypsum panel as defined in ASTM C1658/C1658M.
   3. Products:
      a. American Gypsum; Shaft Liner.
      b. CertainTeed Corporation; ProRoc Brand Shaftliner Type X.
      c. Georgia-Pacific Gypsum; ToughRock Shaftliner.
      d. National Gypsum Company; Gold Bond Brand 1” Fire-Shield Shaftliner.
      e. National Gypsum Company; Gold Bond Brand 1” Fire-Shield Shaftliner XP (mold-resistant).
      f. National Gypsum Company; Gold Bond Brand eXP Extended Exposure Shaftliner.
      g. Pacific Coast Building Products, Inc; PABCORE Gypsum Shaftliner Board type X.
h. Temple-Inland Building Products by Georgia-Pacific, LLC; GreenGlass Liner Panel.

i. Temple-Inland Building Products by Georgia-Pacific, LLC; SilentGuard Gypsum Shaftliner.

j. USG Corporation; Sheetrock Gypsum Liner Panels.

k. USG Corporation; Sheetrock Gypsum Liner Panels--Enhanced (mold-resistant).

l. Substitutions: See Section 01 6000 - Product Requirements.

2.4 ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced.

B. Acoustic Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Water-Resistive Barrier: No. 15 asphalt felt.

D. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless otherwise indicated.

1. Types: As detailed or required for finished appearance.

2. Wall Reveals: Extruded aluminum profile incorporating a continuous integral fin for surface contact to installed gypsum drywall. Fins shall be 7/8" wide and shall be tapered to the edge. Fins are to be punched with holes staggered to accept standard screw fastening. Profiles shall be primed with corrosion-resistant primer compatible with materials used for installation of drywall.


E. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.

F. Screws for Attachment to Steel Members Less Than 0.03 inch (0.7 mm) in Thickness, to Wood Members, and to Gypsum Board: ASTM C1002; self-piercing tapping type; cadmium-plated for exterior locations.

G. Screws for Attachment to Steel Members From 0.033 to 0.112 inch (0.8 to 2.8 mm) in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.2 SHAFT WALL INSTALLATION

A. Shaft Wall Framing: Install in accordance with manufacturer’s installation instructions.

   1. Install studs at spacing required to meet performance requirements.

B. Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs.

   1. On walls over sixteen feet high, screw-attach studs to runners top and bottom.

   2. Seal perimeter of shaft wall and penetrations with acoustical sealant.
3.3 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer’s instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.

C. Studs: Space studs as permitted by standard.
   1. Extend partition framing to structure where indicated and to ceiling in other locations.
   2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer’s instructions.
   3. Partitions Terminating at Structure: Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs with continuous bridging.

3.4 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer’s instructions.

3.5 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer’s instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
   1. Paper-Faced Sheathing: Immediately after installation, protect from weather by application of water-resistive barrier.

C. Exterior Soffits: Install exterior soffit board perpendicular to framing, with staggered end joints over framing members or other solid backing.

D. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer’s instructions.

3.6 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

B. Corner Beads: Install at external corners, using longest practical lengths.

3.7 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch (0.8 mm).
3.8 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet (3 mm in 3 m) in any direction.

END OF SECTION
SECTION 09 2216 - NON-STRUCTURAL METAL FRAMING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Metal partition, ceiling, and soffit framing.
B. Framing accessories.

1.2 RELATED REQUIREMENTS

A. Section 05 2100 - Steel Joists: Execution requirements for anchors for attaching work of this section.
B. Section 05 4000 - Cold-Formed Metal Framing: Structural load bearing metal stud framing and Exterior wall stud framing.
C. Section 05 5100 - Metal Stairs: Execution requirements for anchors for attaching work of this section.
D. Section 06 1000 - Rough Carpentry: Wood blocking within stud framing.

1.3 REFERENCE STANDARDS


1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Shop Drawings:
   1. Indicate prefabricated work, component details, stud layout, framed openings, anchorage to structure, acoustic details, type and location of fasteners, accessories, and items of other related work.
   2. Describe method for securing studs to tracks, splicing, and for blocking and reinforcement of framing connections.
C. LEED Submittal: Documentation of recycled content and location of manufacture.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years experience.

PART 2 PRODUCTS

2.1 FRAMING MATERIALS

A. Fire Rated Assemblies: Comply with applicable code and as follows:
2. Fire Rated Structural Column Framing: Listed assembly by UL, No. X528; 1 hour rating.

3. Fire Rated Shaft Wall Requirements: Listed assembly by UL, No. U469; 1 hour rating.

B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf (240 Pa).
   1. Studs: C shaped with flat or formed webs with knurled faces.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: C shaped.
   4. Furring: Hat-shaped sections, minimum depth of 7/8 inch (22 mm).

C. Loadbearing Studs: As specified in Section 05 4000.

D. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.

E. Partition Head to Structure Connections: Provide track fastened to structure with legs of sufficient length to accommodate deflection, for friction fit of studs cut short and fastened as indicated on drawings.

F. Tracks and Runners: Same material and thickness as studs, bent leg retainer notched to receive studs with provision for crimp locking to stud.

G. Furring and Bracing Members: Of same material as studs; thickness to suit purpose; complying with applicable requirements of ASTM C754.


I. Sheet Metal Backing: 0.036 inch (0.9 mm) thick, galvanized.


K. Acoustic Insulation: As specified in Section 07 2100.

L. Acoustic Sealant: As specified in Section 09 2116.

M. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that rough-in utilities are in proper location.

3.2 INSTALLATION OF STUD FRAMING

A. Comply with requirements of ASTM C754.

B. Extend partition framing to structure where indicated and to ceiling in other locations.

C. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer’s instructions.
D. Partitions Terminating at Structure:Attach extended leg top runner to structure, maintain clearance between top of studs and structure, and brace both flanges of studs as indicated.

E. Align and secure top and bottom runners at 24 inches (600 mm) on center.

F. At partitions indicated with an acoustic rating:
   1. Place one bead of acoustic sealant between runners and substrate, studs and adjacent construction.
   2. Place one bead of acoustic sealant between studs and adjacent vertical surfaces.

G. Fit runners under and above openings; secure intermediate studs to same spacing as wall studs.

H. Install studs vertically at spacing indicated on drawings.

I. Align stud web openings horizontally.

J. Secure studs to tracks using crimping method. Do not weld.

K. Stud splicing is not permissible.

L. Fabricate corners using a minimum of three studs.

M. Double stud at wall openings, door and window jambs, not more than 2 inches (50 mm) from each side of openings.

N. Brace stud framing system rigid.

O. Coordinate erection of studs with requirements of door frames; install supports and attachments.

P. Coordinate installation of bucks, anchors, and blocking with electrical, mechanical, and other work to be placed within or behind stud framing.

3.3 CEILING AND SOFFIT FRAMING

A. Install furring after work above ceiling or soffit is complete. Coordinate the location of hangers with other work.

B. Install furring independent of walls, columns, and above-ceiling work.

C. Securely anchor hangers to structural members or embed in structural slab. Space hangers as required to limit deflection to criteria indicated. Use rigid hangers at exterior soffits.

D. Space main carrying channels at maximum 72 inch (1 800 mm) on center, and not more than 6 inches (150 mm) from wall surfaces. Lap splice securely.

E. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.

F. Place furring channels perpendicular to carrying channels, not more than 2 inches (50 mm) from perimeter walls, and rigidly secure. Lap splices securely.

G. Reinforce openings in suspension system that interrupt main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24 inches (600 mm) past each opening.

3.4 TOLERANCES

A. Maximum Variation From True Position: 1/8 inch in 10 feet (3 mm in 3 m).
B. Maximum Variation From Plumb: 1/8 inch in 10 feet (3 mm in 3 m).

END OF SECTION
SECTION 09 3000 - TILING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Tile for floor applications.
B. Tile for wall applications.
C. Tile for stairs.
D. Cementitious backer board as tile substrate.
E. Stone thresholds.
F. Ceramic accessories.
G. Ceramic trim.
H. Non-ceramic trim.

1.2 RELATED REQUIREMENTS

A. Section 07 1400 - Fluid-Applied Waterproofing.
B. Section 07 9005 - Joint Sealers.
C. Section 09 2116 - Gypsum Board Assemblies: Installation of tile backer board.

1.3 REFERENCE STANDARDS

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.5 SUBMITTALS

A. Product Data: Provide manufacturers’ data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

B. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.

C. Samples for Initial Selection: For each type of tile and grout indicated. Include samples of accessories involving color selection.

D. Samples for Verification:
   1. Full-size units of each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.
   2. Samples: Mount tile and apply grout on two plywood panels, minimum 18 x 18 inches (450 x 450 mm) in size illustrating pattern, color variations, and grout joint size variations.
   3. Full-size units of each type of trim and accessory for each color and finish required.
   4. Edge stipps in 6 inch lengths.

E. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.

F. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

G. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Tile: 2 percent of each size, color, and surface finish combination.

1.6 QUALITY ASSURANCE

A. Maintain one copy of and ANSI A108/A118/A136.1 and TCNA (HB) on site.

B. Installer Qualifications: Company specializing in performing tile installation, with minimum of 5 years of documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer’s instructions.

1.8 FIELD CONDITIONS

A. Do not install solvent-based products in an unventilated environment.

B. Maintain ambient and substrate temperature of 50 degrees F (10 degrees C) during installation of mortar materials.
PART 2 PRODUCTS

2.1 TILE

A. Manufacturers: All products of each type by the same manufacturer.
   1. Substitutions: See Section 01 6000 - Product Requirements.

B. Porcelain Tile Type T1: ANSI A137.1, and as follows:
   1. Size and Shape: 24 by 48 inch (609.6 by 1219.2 mm).
   2. Thickness: 3/8 inch (9.5 mm).
   3. Edges: Square.
   5. Color(s): As scheduled.
   7. Products:
      a. Basis of Design: Stone Source; Floor Tech Floor 4.0.
      b. Crossville; Shades
      c. Ergon; Stone Project - Natual controfala

C. Porcelain Tile Type T2: ANSI A137.1, and as follows:
   1. Size and Shape: 8 by 32 inch (203.2 by 812.8 mm).
   2. Thickness: 3/8 inch (9.5 mm).
   3. Edges: Square.
   5. Color(s): As scheduled.
   7. Products:
      a. Basis of Design: Stone Source; Floor Tech Floor 1.0.
      b. Crossville; Shades
      c. Ergon; Stone Project - Natual controfala

D. Porcelain Tile Type T3: ANSI A137.1, and as follows:
   1. Size and Shape: 16 by 32 inch (406.4 by 812.8 mm).
   2. Thickness: 3/8 inch (9.5 mm).
   3. Edges: Square.
5. Color(s): As scheduled.
7. Products:
   b. Atlas Concord - Seastone
   c. Ergon; Stone Project - Strutturato

E. Porcelain Tile Type T4, T5: ANSI A137.1, and as follows:
   1. Size and Shape: 12 by 24 inch (304.8 by 609.6 mm).
   2. Thickness: 3/8 inch (9.5 mm).
   3. Edges: Square.
   5. Color(s): As scheduled.
   7. Products:
      a. Basis of Design: Stone Source; T4: Floor Tech Floor 1.0; T5: Floor Tech 4.0.
      b. Crossville; Shades
      c. Ergon; Stone Project - Natual controfala

2.2 TRIM AND ACCESSORIES
A. Ceramic Accessories: Unglazed finish, same color and finish as adjacent field tile; same manufacturer as tile.
B. Non-Ceramic Trim: Brushed stainless steel, style and dimensions to suit application, for setting using tile mortar or adhesive.
   1. Applications:
      a. Open edges of wall tile.
      b. Wall corners, outside.
   2. Manufacturers:
      c. Other Manufacturers: Provide either the product identified as “Basis of Design” or an equivalent product of another acceptable manufacturer.
      d. Substitutions: See Section 01 6000 - Product Requirements.
C. Thresholds: Marble, white, honed finish; 2 inches (50 mm) wide by full width of wall or frame opening; 1/2 inch (12 mm) thick; beveled one long edge with radiused corners on top side; without holes, cracks, or open seams.

1. Applications: Provide at the following locations:
   a. At toilet room doorways.

2.3 SETTING MATERIALS

A. Provide setting materials made by the same manufacturer as grout.


1. Application(s): Use this type of bond coat where indicated and where no other type of bond coat is indicated.

2. Products:
   a. ARDEX Engineered Cements; ARDEX X 77 MICROTEC: www.ardexamericas.com.

2.4 GROUTS

A. Manufacturers:


B. Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.

1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.

2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.

3. Color(s): As selected by Architect/Engineer from manufacturer's full line.

C. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.

1. Applications: Between tile and plumbing fixtures.

2. Color(s): As selected by Architect/Engineer from manufacturer's full line.

3. Products:

e. Substitutions: See Section 01 6000 - Product Requirements.

D. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.

1. Composition: Water-based colorless silicone.
2. Color(s): As selected by Architect/Engineer from manufacturer’s full line.
3. Products:
   b. Other Manufacturers: Provide either the product identified as “Basis of Design” or an equivalent product of another acceptable manufacturer.
   c. Substitutions: See Section 01 6000 - Product Requirements.

2.5 THIN-SET ACCESSORY MATERIALS

A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.

1. Thickness: 20 mils (0.5 mm), maximum.
2. Crack Resistance: No failure at 1/16 inch (1.6 mm) gap, minimum.
3. Products:
   c. Proflex Products, Inc; Maxxim Sim-40: www.proflex.us.
   d. Substitutions: See Section 01 6000 - Product Requirements.

B. Waterproofing Membrane: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.

1. Type: Fluid-applied.
3. Thickness: 25 mils (0.6 mm), minimum, dry film thickness.
4. Products:
   b. AVM Industries, Inc; System 750 (AVM Yellow) with polyester fabric reinforcing at edges, corners, joints, and cracks: www.avmindustries.com.
   f. Substitutions: See Section 01 6000 - Product Requirements.
C. Underlayment at Floors: Specifically designed for bonding to thin-set setting mortar; not primarily a waterproofing material and having the following characteristics:
   3. Do Not Use: Gypsum or cementitious based self-leveling underlayment.

D. Cementitious Backer Board: ANSI A118.9; High density, cementitious, glass fiber reinforced, 1/2 inch (13 mm) thick; 2 inch (50 mm) wide coated glass fiber tape for joints and corners.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

C. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.

D. Verify that concrete sub-floor surfaces are ready for tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by tile manufacturer and setting materials manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

A. Protect surrounding work from damage.

B. Vacuum clean surfaces and damp clean.

C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

D. Install backer board in accordance with ANSI A108.11 and board manufacturer’s instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

3.3 INSTALLATION - GENERAL

A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1A thru A108.13, manufacturer’s instructions, and TCNA (HB) recommendations.

B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

E. Form internal angles square and external angles bullnosed.

F. Install ceramic accessories rigidly in prepared openings.
G. Install non-ceramic trim in accordance with manufacturer’s instructions.
H. Install thresholds where indicated.
I. Sound tile after setting. Replace hollow sounding units.
J. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
K. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
L. Grout tile joints. Use standard grout unless otherwise indicated.
M. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.4 INSTALLATION - FLOORS - THIN-SET METHODS
A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
   1. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout.

3.5 INSTALLATION - WALL TILE
A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.
B. Over gypsum wallboard on wood or metal studs install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat, unless otherwise indicated.

3.6 CLEANING
A. Clean tile and grout surfaces.

3.7 PROTECTION
A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION
SECTION 09 5100 - ACOUSTICAL CEILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Suspended metal grid ceiling system.
B. Acoustical units.
C. Supplementary acoustical insulation above ceiling.

1.2 RELATED REQUIREMENTS

A. Section 05 3100 - Steel Deck: Placement of special anchors or inserts for suspension system.
B. Section 07 2100 - Thermal Insulation: Acoustical insulation.
C. Section 07 9005 - Joint Sealers: Acoustical sealant.
D. Section 08 3100 - Access Doors and Panels: Access panels.
E. Section 28 3100 - Fire Detection and Alarm: Fire alarm components in ceiling system.
F. Section 21 1300 - Fire-Suppression Sprinkler Systems: Sprinkler heads in ceiling system.
G. Section 23 3700 - Air Outlets and Inlets: Air diffusion devices in ceiling.
H. Section 26 5100 - Interior Lighting: Light fixtures in ceiling system.

1.3 REFERENCE STANDARDS

E. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2008e1.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
B. Do not install acoustical units until after interior wet work is dry.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on suspension system components.

C. Samples: Submit two samples 4 x 4 inch (____x____ mm) in size illustrating material and finish of acoustical units.

D. Samples: Submit two samples each, 6 inches (____ mm) long, of suspension system main runner.

E. Manufacturer’s Installation Instructions: Indicate special procedures.

F. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

G. LEED Submittal: Documentation of recycled content and location of manufacture.

1.6 QUALITY ASSURANCE

A. Fire-Resistive Assemblies: Complete assembly listed and classified by UL for the fire resistance indicated.

B. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.7 FIELD CONDITIONS

A. Maintain uniform temperature of minimum 60 degrees F (16 degrees C), and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acoustic Panels:
   4. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another acceptable manufacturer.

B. Suspension Systems:
   3. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another acceptable manufacturer.

2.2 ACOUSTICAL UNITS

A. Manufacturers:
3. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another acceptable manufacturer.

B. Acoustical Units - General: ASTM E1264, Class A.
1. Units for Installation in Fire-Rated Suspension System: Listed and classified for the fire-resistant assembly the suspension system is a part of.

C. Acoustical Tile Type ACT-1, ACT-3: Painted mineral fiber, ASTM E1264 Type III, with the following characteristics:
   1. Size: 24 x 24 inches (600 x 600 mm).
   2. Thickness: 3/4 inches (19 mm).
   4. Light Reflectance: 90 percent, determined as specified in ASTM E1264.
   5. NRC Range: 0.70 to 0.80, determined as specified in ASTM E1264.
   7. Edge: Beveled tegular.
   9. Suspension System: Exposed grid Type As scheduled.

D. Acoustical Tile Type ACT-2: Painted mineral fiber, ASTM E1264 Type III, with the following characteristics:
   1. Size: 24 x 24 inches (600 x 600 mm).
   2. Thickness: 3/4 inches (19 mm).
   4. Light Reflectance: 86 percent, determined as specified in ASTM E1264.
   5. NRC Range: 0.70 to 0.80, determined as specified in ASTM E1264.
   7. Edge: Beveled tegular.
   9. Suspension System: Exposed grid Type As scheduled.

E. Acoustical Tile Type ACT-4: Painted mineral fiber, ASTM E1264 Type III, with the following characteristics:
   1. Size: 12 x 48 inches (300 x 1219 mm).
   2. Thickness: 3/4 inches (19 mm).

4. Light Reflectance: 90 percent, determined as specified in ASTM E1264.

5. NRC Range: 0.65 to 0.70, determined as specified in ASTM E1264.


7. Edge: Beveled tegular.


9. Suspension System: Exposed grid Type As scheduled.


F.

2.3 SUSPENSION SYSTEM(S)

A. Manufacturers:


B. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.

C. Exposed Steel Suspension System Type For ACT-1, ACT-2, ACT-3: Formed steel, commercial quality cold rolled; heavy-duty.

1. Profile: Tee; 9/16 inch (14 mm) wide face.

2. Finish: Painted white.


D. Exposed Steel Suspension System Type For ACT-4: Formed steel, commercial quality colded rolled; heavy-duty.

1. Profile: Tee; 15/16 inch (23.8 mm) wide face.

2. Finish: Painted white.


2.4 ACCESSORIES

A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.

1. Hanger wire shall be 12 gage galvanized iron wire, specifically manufactured for use with suspended ceilings.

B. Perimeter Moldings: Same material and finish as grid.

1. At Exposed Grid: Provide L-shaped molding for mounting at same elevation as face of grid. Provide profile heights as indicated on the drawings.

C. Acoustical Sealant For Perimeter Moldings: Specified in Section 07 9005.

D. Touch-up Paint: Type and color to match acoustical and grid units.

**PART 3 EXECUTION**

3.1 **EXAMINATION**

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.2 **INSTALLATION - SUSPENSION SYSTEM**

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer’s instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Locate system on room axis according to reflected plan.

D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

E. Provide hanger clips during steel deck erection. Provide additional hangers and inserts as required.

F. Fasteners: Anchors for hanger wires in a concrete deck shall be drilled-in, wedge-type expansion anchors only. Powder-actuated fasteners shall not be used except in concrete on metal decking or structural steel framing members.

G. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

H. 48 Inch Spacing: All hanger wires shall be spaced no more than 48 inches apart in any direction. Extra wires shall be provided near light fixtures, so that a wire supports each corner of the fixture.

1. Hanger Wires shall be installed as nearly vertical as possible. If an obstruction (such as ductwork) interferes with spacing, a “trapeze” shall be used. Wires shall not be supported from ductwork, conduit or piping, only the building structure. Both ends of hanger wires shall be tightly wrapped with a minimum of 3 twists.

I. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

J. Support fixture loads using supplementary hangers located within 6 inches (150 mm) of each corner, or support components independently.

K. Do not eccentrically load system or induce rotation of runners.

L. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.

1. Install in bed of acoustical sealant.

2. Use longest practical lengths.

3. Overlap and rivet corners.
3.3 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Fit border trim neatly against abutting surfaces.

D. Install units after above-ceiling work is complete.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:
   1. Cut to fit irregular grid and perimeter edge trim.
   2. Make field cut edges of same profile as factory edges.

G. Where round obstructions occur, provide preformed closures to match perimeter molding.

H. Lay acoustical insulation for a distance of 48 inches (1 200 mm) either side of acoustical partitions as indicated.

I. Install hold-down clips on each panel to retain panels tight to grid system; comply with fire rating requirements.

END OF SECTION
SECTION 09 6500 - RESILIENT FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Resilient tile flooring.

B. Resilient base.

C. Installation accessories.

1.2 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.

B. Section 09 0561 - Common Work Results for Flooring Preparation: Independent agency testing of concrete slabs, removal of existing floor coverings, cleaning, and preparation.

1.3 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.


F. GEI (SCH) - GREENGUARD "Children and Schools" Certified Products; GREENGUARD Environmental Institute; current listings at www.greenguard.org.


H. SCS (CPD) - SCS Certified Products; Scientific Certification Systems; current listings at www.scscertified.com.

1.4 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Shop Drawings: Indicate seaming plan.

D. Verification Samples: Submit two samples, 4 x 4 inch (102 x 102 mm) in size illustrating color and pattern for each resilient flooring product specified.

E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

F. LEED Report: Report recycled content and VOC emission of flooring; VOC content of adhesives.

G. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.

1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Flooring Material: 50 square feet (4.6 square meters) of each type and color.
3. Extra Wall Base: 50 linear feet (15 linear meters) of each type and color.

H. LEED Submittal: Documentation of recycled content and location of manufacture.

1.5 DELIVERY, STORAGE, AND HANDLING
A. Protect roll materials from damage by storing on end.

1.6 FIELD CONDITIONS
A. Maintain temperature in storage area between 55 degrees F (13 degrees C) and 90 degrees F (72 degrees C).
B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F (21 degrees C) to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F (13 degrees C).

PART 2 PRODUCTS

2.1 TILE FLOORING
A. Vinyl Composition Tile (VCT1-VCT3): Homogeneous, with color extending throughout thickness, and:
   1. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
   2. Size: 12x24 inch (304.8x609.6 mm).
   3. VOC Content: Certified as Low Emission by one of the following:
   4. Thickness: 0.125 inch (3.2 mm).
   5. Pattern: Marbleized.
   6. Manufacturers:
      c. Azrock; Product TexTile Select.
B. Vinyl Composition Tile (VCT4): Homogeneous, with color extending throughout thickness, and:
   1. Minimum Requirements: Comply with ASTM F1066, of Class corresponding to type specified.
   2. Size: 12x12 inch (304.8x304.8 mm).
   3. VOC Content: Certified as Low Emission by one of the following:
   4. Thickness: 0.125 inch (3.2 mm).
   5. Pattern: Marbleized.
6. Manufacturers:

C. Vinyl Tile: Printed film type, with transparent or translucent wear layer, and:
   1. Minimum Requirements: Comply with ASTM F1700, of Class corresponding to type specified.
   2. VOC Content: Certified as Low Emission by one of the following:
   3. Plank Size: 6 by 36 inch (152 by 1219 mm).
   4. Wear Layer Thickness: .04 inch (1 mm).
   5. Total Thickness: 0.100 inch (2.5 mm).
   7. Manufacturers:
      b. Karndean; Product Art Select.
      c. Armstrong; Product Natural Creations.

2.2 RESILIENT BASE

A. Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set straight at carpet, cove at resilient flooring, and as follows:
   1. Height: 4 inch (100 mm).
   2. Thickness: 0.125 inch (3.2 mm) thick.
   4. Length: Roll.
   5. Color: As scheduled.
   6. Accessories: Premolded external corners and end stops.
   7. Manufacturers:

2.3 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
B. Primers, Adhesives, and Seaming Materials: Waterproof; types recommended by flooring manufacturer.

1. Provide only products having lower volatile organic compound (VOC) content than required by the more stringent of the South Coast Air Quality Management District Rule No. 1168 and the Bay Area Air Quality Management District Regulation 8, Rule S1.

C. Moldings, Transition and Edge Strips: Same material as flooring.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for resilient flooring installation by testing for moisture and pH.

1. Test in accordance with ASTM F710.

2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

C. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is cured.

D. Clean substrate.

3.3 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.

B. Install in accordance with manufacturer’s instructions.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Fit joints tightly.

E. Set flooring in place, press with heavy roller to attain full adhesion.

F. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

G. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.

2. Resilient Strips: Attach to substrate using adhesive.

H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

I. Install flooring in recessed floor access covers, maintaining floor pattern.
3.4 TILE FLOORING
   A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless manufacturer’s instructions say otherwise.

3.5 RESILIENT BASE
   A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches (45 mm) between joints.
   B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
   C. Install base on solid backing. Bond tightly to wall and floor surfaces.
   D. Scribe and fit to door frames and other interruptions.

3.6 CLEANING
   A. Remove excess adhesive from floor, base, and wall surfaces without damage.
   B. Clean in accordance with manufacturer’s instructions.

3.7 PROTECTION
   A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION
SECTION 09 6813 - TILE CARPETING

PART 1  GENERAL

1.1  SECTION INCLUDES

A. Carpet tile, fully adhered.

1.2  RELATED REQUIREMENTS

A. Section 01 7419 - Construction Waste Management and Disposal: Reclamation/Recycling of new carpet tile scrap.

B. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors.

C. Section 09 0561 - Common Work Results for Flooring Preparation: Independent agency testing of concrete slabs, removal of existing floor coverings, cleaning, and preparation.

D. Section 22 1006 - Plumbing Specialties: Plumbing floor cover plate with recess for carpet.

1.3  REFERENCE STANDARDS


C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2011.

D. CRI (CIS) - Carpet Installation Standard; Carpet and Rug Institute; 2009.

E. CRI (GLP) - Green Label Plus Carpet Testing Program - Approved Products; Carpet and Rug Institute; Current Edition.


1.4  SUBMITTALS

A. Shop Drawings: Indicate layout of joints, direction of carpet pile, and location of edge moldings.

1. Indicate columns, doorways, enclosing walls partitions, built-in cabinets, and locations where cutouts are required in carpet.

2. Show installation details at special conditions.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.

1. Four (4) full-size samples of each carpet tile required

D. Submit two, 6 inch (152 mm) long samples of edge strip.

E. LEED Report: Submit data documenting VOC content of carpet tile and adhesives; copy of current CRI Approved Products Listing is acceptable.

F. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.
1. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet with minimum 5 years experience.

C. Factory Runs: Provide carpet from one factory run and one dye lot with colors and shades guaranteed to be uniform throughout the entire area run for type of carpet specified.

D. Provide carpet compatible with installation over concrete slab on grade floors.

E. All carpet supplied to each project under this Standard shall be clearly identified with the appropriate markings of the applicable testing and inspecting organization for each test required below.

1. Fire Performance Characteristics: Provide carpet meeting or exceeding the fire performance requirements listed in the "Codes, Standards and Regulations" document within these Standards.

2. Appearance Retention Characteristics: Provide carpet meeting or exceeding the following:
   a. Appearance Retention Rating (ARR): Carpet and Rug Institute (CRI) test TMI101 graded in accordance with ASTM D-5252 (hexapod). Rating shall be a minimum of 3.0 after 12k revolutions.
   b. Colorfastness to Light: Test Method AATCC-16-E with a rating of 3 minimum, 4 for heavy light exposure locations, after 40 AATCC fading units using AATCC gray scale for color change.
   c. Soiling Resistance: AATCC 171 (HWE) for 2 washings to simulate removal of topical treatments by hot water extraction, followed by AATCC 175. Minimum rating of 7 using AATCC Red 40 Stain Scale.

3. Durability Characteristics: Provide carpet meeting or exceeding the following:
   a. Tuft Bind / Edge Ravel: ASTM D1335, minimum of 8 lbs-force or higher, wet.
   b. De-lamination Strength of Secondary Backing: ASTM D-3936 minimum 2.5 lbs per inch width.

F. The carpet manufacturer and/or their authorized representative will be required to complete all certifications required to support the specified warranties with the Contractor and Owner’s Representative prior to start or work.

G. Static Control: By permanent means (i.e. antistatic filaments) and without chemical treatment, static generation below 3.5 kilovolts under standard conditions of 65 F and 20% relative humidity. Electrostatic Propensity (static delayed signal): AATCC134.

1.6 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: All products by the same manufacturer.

B. Basis of Design: Shaw; Product CPT1: Diffuse; CPT2: Tru Colours; CPT3: Scape Tile.
C. Other Acceptable Manufacturers:
   2. Masland.

2.2 MATERIALS

A. Carpet Tile Type CPT1: Tufted, manufactured in one color dye lot.
   1. Product: Diffuse 59575 manufactured by Shaw.
   2. Tile Size: 24x24 inch (60.9x60.9 mm), nominal.
   4. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
   5. VOC Content: Provide CRI Green Label Plus certified product; in lieu of labeling, independent test report showing compliance is acceptable.
   6. Pile Weight: 18 oz/sq yd (610 gm/sq m).
   7. Primary Backing Material: Synthetic.
   9. Total Weight: 126.37 oz/sq yd (4285 g/sq m).

B. Carpet Tile Type CPT2: Tufted, manufactured in one color dye lot.
   1. Product: Tru Colours 59368 manufactured by Shaw.
   2. Tile Size: 24x24 inch (60.9x60.9 mm), nominal.
   4. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
   5. VOC Content: Provide CRI Green Label Plus certified product; in lieu of labeling, independent test report showing compliance is acceptable.
   6. Pile Weight: 24 oz/sq yd (814 gm/sq m).
   7. Primary Backing Material: Synthetic.
   9. Total Weight: 148 oz/sq yd (5018 g/sq m).

C. Carpet Tile Type CPT3: Tufted, manufactured in one color dye lot.
   1. Product: Scape Tile 5T080 manufactured by Shaw.
   2. Tile Size: 24x24 inch (60.9x60.9 mm), nominal.
4. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.

5. VOC Content: Provide CRI Green Label Plus certified product; in lieu of labeling, independent test report showing compliance is acceptable.

6. Pile Weight: 24 oz/sq yd (814 gm/sq m).

7. Primary Backing Material: Synthetic.


9. Total Weight: 148 oz/sq yd (5018 g/sq m).

D.

2.3 ACCESSORIES

A. Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: Rubber, color as selected.

C. Adhesives: Acceptable to carpet tile manufacturer, compatible with materials being adhered; maximum VOC of 50 g/L; CRI Green Label certified; in lieu of labeled product, independent test report showing compliance is acceptable.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to sub-floor surfaces.

C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for flooring installation by testing for moisture and pH.

1. Test in accordance with ASTM F710.

2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

D. Verify that required floor-mounted utilities are in correct location.

3.2 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

C. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

D. Vacuum clean substrate.

3.3 INSTALLATION

A. Starting installation constitutes acceptance of sub-floor conditions.
B. Install carpet tile in accordance with manufacturer’s instructions and CRI Carpet Installation Standard.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction alternating to next unit, set aligned as indicated on shop drawings.

F. Locate change of color or pattern between rooms under door centerline.

G. Fully adhere carpet tile to substrate.

H. Trim carpet tile neatly at walls and around interruptions.

I. Complete installation of edge strips, concealing exposed edges.

J. At doorways, center seams under door in closed position; do not place seams perpendicular to door frame, in direction of traffic through doorway. Do not bridge building expansion joints with continuous carpet.

K. Extend carpet under removable flanges and furnishings and into alcoves and closets of each space.

L. In corridor areas, use full tiles down the center and cut perimeter tile borders.

3.4 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION
SECTION 09 7733 - GLASS FIBER REINFORCED PLASTIC PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Glass fiber reinforced plastic panels.
B. Trim.

1.2 REFERENCE STANDARDS
F. FM 4880 - Class 1 Fire Rating of Insulated Wall or Wall and Roof/Ceiling Panels, Interior Finish Materials or Coatings and Exterior Wall Systems; 2010.

1.3 SUBMITTALS
A. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
B. Samples: Submit two samples 6 by 6 inch (____x____ mm) in size illustrating material and surface design of panels.
C. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.
   1. Extra Panels: Quantity equal to 5 percent of total installed.

1.4 DELIVERY, STORAGE, AND HANDLING
A. Store panels flat, indoors, on a clean, dry surface. Remove packaging and allow panels to acclimate to room temperature for 48 hours prior to installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS
A. Glass Fiber Reinforced Plastic Panels:
   4. Other Manufacturers: Provide either the product identified as “Basis of Design” or an equivalent product of another acceptable manufacturer.
5. Substitutions: See Section 01 6000 - Product Requirements.

2.2 PANEL SYSTEMS

A. Wall Panels:
   1. Panel Size: 4 by 8 feet (1219 mm by 2438 mm).
   2. Panel Thickness: 0.075 inch (1.9 mm).
   5. Attachment Method: Adhesive only, sealant joints, no trim.

2.3 MATERIALS

A. Panels: Glass fiber reinforced plastic, complying with ASTM D5319.
   1. Surface Burning Characteristics: Flame Spread Index of 25, maximum; Smoke Developed Index of 450, maximum; when whole system is tested in accordance with ASTM E84.
   2. Class 1 fire rated as tested in accordance with FM Approval Standard 4880.
   3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   4. Scratch Resistance: Barcol hardness score of not less than 35, when tested in accordance with ASTM D2583.
   5. Impact Strength: Not less than 6 ft-lb/in, when tested in accordance with ASTM D256.

B. Trim: Vinyl; color coordinating with panel.

C. Adhesive: Type recommended by panel manufacturer.

D. Sealant: Type recommended by panel manufacturer; color matching panel.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions and substrate flatness before starting work.

B. Verify that substrate conditions are ready to receive the work of this section.

3.2 INSTALLATION - WALLS

A. Install panels in accordance with manufacturer’s instructions.

B. Cut and drill panels with carbide tipped saw blades or drill bits, or cut with snips.

C. Apply adhesive to the back side of the panel using trowel recommended by adhesive manufacturer.

D. Apply panels to wall with seams plumb and pattern aligned with adjoining panels.

E. Install panels with manufacturer’s recommended gap for panel field and corner joints.

F. Place trim on panel before fastening edges, if required.

G. Fill channels in trim with sealant before attaching to panel.
H. Install trim with adhesive and screws or nails as required.

I. Seal gaps at floor, ceiling, and between panels with specified sealant to prevent moisture intrusion.

J. Remove excess sealant as paneling is installed.

END OF SECTION
SECTION 09 9000 - PAINTING AND COATING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints, stains, varnishes, and other coatings.

C. Scope: Finish all interior and exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:

1. Both sides and edges of plywood backboards for electrical and telecom equipment before installing equipment.

2. Elevator pit ladders.

3. Exposed surfaces of steel lintels and ledge angles.

4. Interior walls and bottom of fountains.

5. Mechanical and Electrical:
   a. In finished areas, paint all insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
   b. In finished areas, paint shop-primed items.
   c. Paint interior surfaces of air ducts and convector and baseboard heating cabinets that are visible through grilles and louvers with one coat of flat black paint to visible surfaces.

D. Do Not Paint or Finish the Following Items:

1. Items fully factory-finished unless specifically so indicated; materials and products having factory-applied primers are not considered factory finished.

2. Items indicated to receive other finishes.

3. Items indicated to remain unfinished.

4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.

5. Non-metallic roofing and flashing.

6. Stainless steel, anodized aluminum, bronze, terne, and lead items.

7. Marble, granite, slate, and other natural stones.

8. Floors, unless specifically so indicated.

9. Ceramic and other tiles.


11. Glass.

12. Acoustical materials, unless specifically so indicated.

13. Concealed pipes, ducts, and conduits.
14. Flexible ventilation duct connections.
15. Flexible hose/pipe connectors.
17. Equipment performance/rating information labels.

1.2 RELATED REQUIREMENTS
A. Section 01 3515 - LEED Certification Procedures: LEED rating system definition.
B. Section 05 5000 - Metal Fabrications: Shop-primed items.
C. Section 05 5100 - Metal Stairs: Shop-primed items.

1.3 DEFINITIONS
A. Conform to ASTM D16 for interpretation of terms used in this section.

1.4 REFERENCE STANDARDS
D. GreenSeal GS-11 - Paints; 1993.

1.5 SUBMITTALS
A. Product Data: Provide complete list of all products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. MPI product number (e.g. MPI #47).
   3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
   4. Manufacturer's installation instructions.
B. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, submit each color in each sheen available.
C. Certification: By manufacturer that all paints and coatings comply with VOC limits specified.
D. Certification: By manufacturer that all paints and coatings do not contain any of the prohibited chemicals specified; GreenSeal GS-11 certification is not required but if provided shall constitute acceptable certification.

E. LEED Report: VOC content of all interior opaque coatings actually used.

F. Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

G. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Paint and Coatings: 1 gallon (4 L) of each color; store where directed.
   3. Label each container with color in addition to the manufacturer’s label.

1.6 QUALITY ASSURANCE
   A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.
   B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 5 years experience.
   C. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats. Verify from the manufacture that each prime coat is compatible for the finish coats.

1.7 DELIVERY, STORAGE, AND HANDLING
   A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
   B. Container Label: Include manufacturer’s name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
   C. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer’s instructions.

1.8 FIELD CONDITIONS
   A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
   B. Follow manufacturer’s recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
   C. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
   D. Minimum Application Temperatures for Latex Paints: 45 degrees F (7 degrees C) for interiors; 50 degrees F (10 degrees C) for exterior; unless required otherwise by manufacturer’s instructions.
   E. Minimum Application Temperature for Varnish Finishes: 65 degrees F (18 degrees C) for interior or exterior, unless required otherwise by manufacturer’s instructions.
   F. Provide lighting level of 80 ft candles (860 lx) measured mid-height at substrate surface.

1.9 WARRANTY
   A. Provide manufacturer’s warranties as follows:
1. Interior Paints and Coatings: 7 to 10 years.
2. Exterior Paints and Coatings: 5 to 7 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Provide all paint and coating products used in any individual system from the same manufacturer; no exceptions.

B. All paints and coatings shall be architectural grade as opposed to contractor grade.

C. Paints:
   4. Pittsburgh

D. Transparent Finishes:

E. Stains:

2.2 PAINTS AND COATINGS - GENERAL

A. Paints and Coatings: Ready mixed, unless intended to be a field-catalyzed coating.

1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.

2. Provide paints and coatings of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.

3. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

4. For opaque finishes, tint each coat including primer coat and intermediate coats, one-half shade lighter than succeeding coat, with final finish coat as base color.

5. Supply each coating material in quantity required to complete entire project’s work from a single production run.

6. Do not reduce, thin, or dilute coatings or add materials to coatings unless such procedure is specifically described in manufacturer’s product instructions.
B. Primers: Where the manufacturer offers options on primers for a particular substrate, use primer categorized as "best" by the manufacturer.

1. Gypsum Board: Interior Institutional Low Odor/VOC Primer Sealer; MPI #149.
2. Steel, Exterior Uncoated: Anti-Corrosive Alkyd Primer for Metal; MPI #79.
3. Steel, Interior Uncoated: Interior Rust-Inhibitive Water Based Primer; MPI #107.
4. Steel -- Shop Primer: Interior/Exterior Quick Dry Alkyd Primer for Metal; MPI #76.
5. Galvanized Steel: Interior Water Based Galvanized Primer; MPI #134.
6. Products:
   a. Steel
      1) Benjamin Moore; Iron Clad Alkyd Low Lustre Metal & Wood Enamel C163; VOC 380.0 g/L.
      2) MAB Paint; Rust O Lastic Anti-Corrosive Primer 073, VOC 450 g/L.
      3) Sherwin-Williams; Kem Kromik Universal Metal Primer B50NZ6/B50WZ1, VOC 340 g/L: Applied at a dry film thickness of not less than 3.0 mils (0.076 mm).
   b. Gypsum board: VOC 150 g/L or less limit.
      1) M. A. B. Paint; Enviro Pure Primer; VOC 1.0 g/L.
      2) Pittsburgh Paints; 6-2 SpeedHide Interior Quick-Drying Latex Sealer; VOC 118.0 g/L.
      3) Sherwin-Williams; PrepRite 200 Latex Wall Primer B28W900 Series, VOC 0.0 g/L: Applied at a dry film thickness of not less than 1.3 mils (0.041 mm).
   c. Galvanized Steel
      1) Benjamin Moore; Iron Clad Alkyd Low Lustre Metal & Wood enamel C163; VOC 380.0 g/L.

C. Volatile Organic Compound (VOC) Content:

1. Provide coatings that comply with the most stringent requirements specified in the following:
   b. Architectural coatings VOC limits of the State in which the Project is located.
   c. USGBC LEED Rating System, edition as stated in Section 01 3515; for interior wall and ceiling finish (all coats), anti-corrosive paints on interior ferrous metal, clear wood stains and finishes, sanding sealers, other sealers, shellac, and floor coatings.

2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

D. Chemical Content: The following compounds are prohibited:

1. Intentionally added methylene chloride or perchloroethylene.
2. Aromatic Compounds: In excess of 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).

3. Acrolein, acrylonitrile, antimony, benzene, butyl benzyl phthalate, cadmium, di (2-ethylhexyl) phthalate, di-n-butyl phthalate, di-n-octyl phthalate, 1,2-dichlorobenzene, diethyl phthalate, dimethyl phthalate, ethylbenzene, formaldehyde, hexavalent chromium, isophorone, lead, mercury, methyl ethyl ketone, methyl isobutyl ketone, methylene chloride, naphthalene, toluene (methylbenzene), 1,1,1-trichloroethane, vinyl chloride.

E. Flammability: Comply with applicable code for surface burning characteristics.

F. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect/Engineer from the manufacturer’s full line.

G. Colors: As indicated on drawings
   1. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.
   2. In utility areas, finish equipment, piping, conduit, and exposed duct work in colors according to the color coding scheme indicated.

2.3 PAINT SYSTEMS - EXTERIOR

A. Paint ME-OP-3A - Ferrous Metals, Unprimed, Alkyd, 3 Coat:
   1. One coat of alkyd primer.

B. Paint ME-OP-2A - Ferrous Metals, Primed, Alkyd, 2 Coat:
   1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.

2.4 PAINT SYSTEMS - INTERIOR

A. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals, wood, and ______:
   1. Medium duty applications include doors, door frames, railings, handrails, guardrails, and balustrades
   2. Two top coats and one coat primer.
   3. Semi-Gloss: MPI gloss level 5; use this sheen at all locations.
   4. Primer(s): As follows unless other primer is required or recommended by manufacturer of top coats:
      a. Wood: MPI #39, Latex Primer for Interior Wood.
      b. Steel, Uncoated: MPI #79, Anti-Corrosive Alkyd Primer for Metal.
      c. Steel -- Shop Primer: MPI #76, Quick Dry Alkyd Primer for Metal.
      d. Galvanized Steel: MPI #134, Water Based Galvanized Primer.
      e. Gypsum Board: MPI #50, Interior Latex Primer Sealer.
B. Paint I-OP-DF - Dry Fall: Metals; exposed structure and overhead-mounted services, including shop primed steel deck, structural steel, metal fabrications, galvanized ducts, galvanized conduit, and galvanized piping.
   1. Top Coat: MPI Latex Dry Fall; MPI #118, 155, 226.
   2. Flat: MPI gloss level 1; use this sheen at all locations.

C. Paint I-TR - Transparent Finish on Wood, Unless Otherwise Indicated:
   1. Stain: MPI Semi-Transparent Stain for Wood; MPI #90.
   2. Top Coat(s): Polyurethane Varnish, High Build.
   3. Satin: MPI gloss level 4; use this sheen at all locations.

D. Paint I-TR-C - Transparent Finish on Concrete Floors, Unless Otherwise Indicated:
   1. 1 coat stain.
   2. Stain: Semi-Transparent Stain for Concrete Floors; MPI #58.
   3. Sealer: Water Based for Concrete Floors; MPI #99.
   4. Eggshell: MPI gloss level 3; use this sheen at all locations.

E. Paint MI-OP-3L - Ferrous Metals, Unprimed, Latex, 3 Coat:
   1. One coat of latex primer.
   2. Semi-gloss: Two coats of latex enamel; ____.

F. Paint MI-OP-2L - Ferrous Metals, Primed, Latex, 2 Coat:
   1. Touch-up with latex primer.
   2. Semi-gloss: Two coats of latex enamel; ____.

G. Paint MgI-OP-3L - Galvanized Metals, Latex, 3 Coat:
   1. One coat galvanize primer.
   2. Semi-gloss: Two coats of latex enamel; ____.

H. Paint GI-OP-3LA - Gypsum Board/Plaster, Latex-Acrylic, 3 Coat:
   1. One coat of alkyd primer sealer.
   2. Eggshell: Two coats of latex-acrylic enamel; ________________.

2.5 ACCESSORY MATERIALS

A. Accessory Materials: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required to achieve the finishes specified whether specifically indicated or not; commercial quality.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.
PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
   3. Concrete Floors and Traffic Surfaces: 8 percent.

3.2 HEALTH AND SAFETY

A. Physical Barrier: A continuous physical barrier shall be maintained between work areas and occupied/populated areas, especially indoors.

B. Fresh Air: Fresh air shall be provided in appropriate quantities and temperatures while painting within CERL/University buildings.

C. Protect from Fumes: Appropriate steps shall be taken to protect all personnel, especially building occupants and/or pedestrians, from dust and/or fumes that are potentially harmful.

D. Lead Paint: When existing lead paint is encountered it shall be addressed in compliance with the requirements of the Safety and Compliance section within the General Requirements of the U of I Facilities Standards.

3.3 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to coating application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

G. Asphalt, Creosote, or Bituminous Surfaces to be Painted: Remove foreign particles to permit adhesion of finishing materials. Apply latex based sealer or primer.

H. Insulated Coverings to be Painted: Remove dirt, grease, and oil from canvas and cotton.

I. Concrete Floors and Traffic Surfaces to be Painted: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
J. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

K. Corroded Steel and Iron Surfaces to be Painted: Prepare using at least SSPC-PC 2 (hand tool cleaning) or SSPC-SP 3 (power tool cleaning) followed by SSPC-SP 1 (solvent cleaning).

L. Uncorroded Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by hand or power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

M. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.

N. Interior Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

O. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.4 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer’s instructions.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

F. Sand wood and metal surfaces lightly between coats to achieve required finish.

G. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

H. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.5 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.

3.6 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.7 PROTECTION

A. Protect finished coatings until completion of project.
B. Touch-up damaged coatings after Substantial Completion.

END OF SECTION
SECTION 10 1400 - SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Room and door signs.
   B. Building identification signs.

1.2 RELATED REQUIREMENTS
   A. Section 22 0553 - Identification for Plumbing Piping and Equipment.
   B. Section 26 0553 - Identification for Electrical Systems.
   C. Section 26 5100 - Interior Lighting: Exit signs required by code.

1.3 REFERENCE STANDARDS

1.4 SUBMITTALS
   A. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
   B. Shop Drawings: Show fabrication and installation details for signs.
      1. Show sign mounting heights, locations of supplementary supports to be provided by others, and accessories.
      2. Provide message list, typestyles, graphic elements, including tactile characters and Braille, and layout for each sign.
   C. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
      1. When room numbers to appear on signs differ from those on the drawings, include the drawing room number on schedule.
      2. When content of signs is indicated to be determined later, request such information from Owner through Architect/Engineer at least 2 months prior to start of fabrication; upon request, submit preliminary schedule.
      3. Submit for approval by Owner through Architect/Engineer prior to fabrication.
   D. Samples: Submit two samples of each type of sign, of size similar to that required for project, illustrating sign style, font, and method of attachment.
   E. Manufacturer's Installation Instructions: Include installation templates and attachment devices.
   F. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.
1.5 QUALITY ASSURANCE
   A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.6 DELIVERY, STORAGE, AND HANDLING
   A. Package signs as required to prevent damage before installation.
   B. Package room and door signs in sequential order of installation, labeled by floor or building.
   C. Store tape adhesive at normal room temperature.

1.7 FIELD CONDITIONS
   A. Do not install tape adhesive when ambient temperature is lower than recommended by manufacturer.
   B. Maintain this minimum temperature during and after installation of signs.

PART 2 PRODUCTS

2.1 MANUFACTURERS
   A. Flat Signs:
      4. Substitutions: See Section 01 6000 - Product Requirements.
   B. Dimensional Letter Signs:
      3. Substitutions: See Section 01 6000 - Product Requirements.

2.2 SIGNAGE APPLICATIONS:
   A. Accessibility Compliance: All signs are required to comply with ADA Standards for Accessible Design and ANSI/ICC A 117.1 and applicable building codes, unless otherwise indicated; in the event of conflicting requirements, comply with the most comprehensive and specific requirements.
   B. Room and Door Signs: Provide a sign for every doorway, whether it has a door or not, not including corridors, lobbies, and similar open areas.
      1. Sign Type: Flat signs with engraved panel media as specified.
      2. Provide “tactile” signage, with letters raised minimum 1/32 inch (0.8 mm) and Grade II braille.
      3. Character Height: 1 inch (25 mm).
      4. Sign Height: 2 inches (50 mm), unless otherwise indicated.
      5. Office Doors: Identify with the room numbers shown on the drawings; in addition, provide “window” section for replaceable occupant name.
6. Conference and Meeting Rooms: Identify with the room numbers shown on the drawings; in addition, provide "window" section with sliding "In Use/Vacant" indicator.

7. Service Rooms: Identify with the room names and numbers shown on the drawings.

8. Rest Rooms: Identify with pictograms, the names "MEN" and "WOMEN", room numbers shown on the drawings, and braille.

C. Building Identification Signs:
   1. Use individual metal letters.
   2. Mount on outside wall in location shown on drawings.

2.3 SIGN TYPES

A. Flat Signs: Signage media without frame.
   1. Edges: Square.
   2. Corners: Square.

B. Color and Font: Unless otherwise indicated:
   1. Character Font: Coordinate with Cerl Facilities Representative.
   2. Character Case: Upper case only.
   3. Background Color: Match (P5).

2.4 TACTILE SIGNAGE MEDIA

A. Engraved Panels: Laminated colored plastic; engraved through face to expose core as background color:
   1. Total Thickness: 1/16 inch (1.6 mm).

2.5 DIMENSIONAL LETTERS

A. Metal Letters:
   1. Metal: Stainless steel sheet, formed.
   2. Finish: Brushed, satin.

2.6 ACCESSORIES

A. Concealed Screws: Stainless steel, galvanized ste, chrome plated, or other non-corroding metal.

B. Tape Adhesive: Double sided tape, permanent adhesive.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.
B. Verify that items, including anchor inserts, and electrical power are sized and located to accommodate signs.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install in accordance with manufacturer’s instructions.

B. Install neatly, with horizontal edges level.

C. Locate signs where indicated:
   1. Room and Door Signs: Locate on wall at latch side of door with centerline of sign at 60 inches (1525 mm) above finished floor.
   2. If no location is indicated obtain Owner’s instructions.

D. Protect from damage until Substantial Completion; repair or replace damage items.

END OF SECTION
SECTION 10 2113.19 - PLASTIC TOILET COMPARTMENTS

PART 1  GENERAL

1.1  SECTION INCLUDES

A.  Solid plastic toilet compartments.
B.  Urinal screens.

1.2  RELATED REQUIREMENTS

A.  Section 05 5000 - Metal Fabrications: Concealed steel support members.
B.  Section 06 1000 - Rough Carpentry: Blocking and supports.
C.  Section 10 2800 - Toilet, Bath, and Laundry Accessories.

1.3  REFERENCE STANDARDS

A.  ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.

1.4  ADMINISTRATIVE REQUIREMENTS

A.  Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.5  SUBMITTALS

A.  Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.
B.  Product Data: Provide data on panel construction, hardware, and accessories.
C.  Manufacturer’s Installation Instructions: Indicate special procedures.

PART 2  PRODUCTS

2.1  MANUFACTURERS

A.  Solid Plastic Toilet Compartments:
   3.  Accurate Partitions Corporation; Product Solid Plastic (HDPE).
   4.  Substitutions: Section 01 6000 - Product Requirements.

2.2  SOLID PLASTIC TOILET COMPARTMENTS

A.  Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), floor-mounted headrail-braced.
   1.  Color: Single color as selected.
B.  Doors:
   1.  Thickness: 1 inch (25 mm).
   2.  Width: 24 inch (610 mm).
3. Width for Handicapped Use: 36 inch (915 mm).
4. Height: 80 inch (2032 mm).

C. Panels:
   1. Thickness: 1 inch (25 mm).
   2. Height: 80 inch (2032 mm).
   3. Depth: As indicated on drawings.

D. Pilasters:
   1. Thickness: 1 inch (25 mm).
   2. Width: As required to fit space; minimum 3 inches (76 mm).

E. Screens: Without doors; to match compartments; mounted to wall with two panel brackets with vertical support/bracing same as compartments.

2.3 ACCESSORIES

A. Pilaster Shoes: Formed ASTM A666, Type 304 stainless steel with No. 4 finish, 3 in (75 mm) high, concealing floor fastenings.
   1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.

B. Head Rails: Hollow stainless steel, 1 x 1-1/2 inch (25 x 38 mm) size, with anti-grip profile and cast socket wall brackets.

C. Pilaster Brackets: Polished stainless steel.

D. Wall Brackets: Continuous type, polished stainless steel.

E. Attachments, Screws, and Bolts: Stainless steel, tamper proof type.

F. Hardware: Satin stainless steel:
   1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
   2. Door Latch: Slide type with exterior emergency access feature.
   3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
   4. Coat hook with rubber bumper; one per compartment, mounted on door.
   5. Provide door pull for outswinging doors.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.
B. Verify correct spacing of and between plumbing fixtures.
C. Verify correct location of built-in framing, anchorage, and bracing.

3.2 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer’s instructions.
B. Maintain 3/8 to 1/2 inch (9 to 13 mm) space between wall and panels and between wall and end pilasters.

C. Attach panel brackets securely to walls using anchor devices.

D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

E. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

3.3 TOLERANCES

A. Maximum Variation From True Position: 1/4 inch (6 mm).

B. Maximum Variation From Plumb: 1/8 inch (3 mm).

3.4 ADJUSTING

A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch (5 mm).

B. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.

1. Adjust hinges on all accessible stalls to return to closed position.

C. Adjust adjacent components for consistency of line or plane.

END OF SECTION
SECTION 10 2226.33 - FOLDING PANEL PARTITIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Folding panel partitions.
B. Ceiling track, ceiling guards, and operating hardware.

1.2 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Overhead track structural support framing.
B. Section 06 1000 - Rough Carpentry: Wood blocking and track support shimming.
C. Section 07 9005 - Joint Sealers: Acoustical sealant.
D. Section 09 6800 - Carpeting: Product requirements for carpet finish for installation by this section.

1.3 REFERENCE STANDARDS

C. ASTM E413 - Classification for Rating Sound Insulation; 2010.

1.4 SUBMITTALS

A. Product Data: Provide data on partition materials, operation, and hardware and accessories.
B. Shop Drawings: Indicate opening sizes, track layout, details of track and required supports, adjacent construction and finish trim, and stacking depth.
C. Samples for Review: Submit two samples of surface finish, 12 x 12 inches (300 x 300 mm) size, illustrating quality.
D. Certificates: Certify that partition system meets or exceeds specified acoustic requirements.
E. Delegated Design: For operable panel partitions indicated to comply with performance requirements, including analysis data and calculations signed and sealed by the qualified professional engineer responsible for their preparation.
F. Manufacturer’s Instructions: Indicate special procedures.
G. Certificates: Certify that partition system meets or exceeds specified acoustic requirements.
H. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods. Describe cleaning materials detrimental to finish surfaces and hardware finish.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified this section with minimum three years of documented experience.
B. Installer Qualifications: Company specializing in performing work of this section with minimum 5 years of experience.

C. Preinstallation Conference: Conduct conference at Project site.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of operable panel partitions that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Faulty operation of operable panel partitions.
   b. Deterioration of metals, metal finishes, and other materials beyond normal wear.

B. Warranty Period: Two years from date of Substantial Completion.

1. Suspension System Warranty: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Design is based on Modernfold, Inc.; Product Acousti-Seal Encore - Paired Panel.

B. Other Acceptable Manufacturers:


2.2 COMPONENTS

A. Operable Panel Partition: Center opening; paired panels; center stacking; manually operated.

2. Sound Transmission Class (STC): 53-57 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90, on panel size of 100 sq ft (9.3 sq m).
3. Surface Burning Characteristics of Panel Finish: Flame spread/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84.
4. Installed partition system track capable of supporting imposed loads, with maximum deflection of 1/360 of base building steel support framing span. Note that anticipated structural support deflection is significantly greater than 1/8" per foot of opening width. Partition shall be designed to accommodate this larger deflection.

B. Panel Construction:

C. Core: 16 gage (1.5 mm thick) formed sheet steel frame top, bottom, jambs, and intermediates; welded construction, with acoustical insulation fill.

2. Factory applied surface finish.
3. Trim: Trimless.
4. Hinges: Full leaf butt type, 18 gage (1.2 mm) stainless steel.

5. Panel to Panel Seals: Grooved and gasketed astragals; continuous aluminum astragals with tongue and groove configuration in each panel edge. Rigid plastic astragals are not acceptable.

D. Track: Formed steel; 1-1/4 x 1-1/4 inches (32 x 32 mm) size; thickness and profile designed to support loads, steel sub-channel and track connectors.

E. Carriers: Ball bearing, steel wheels on trolley carrier at top of every single panel, sized to carry imposed loads, with threaded pendant bolt for vertical adjustment.

F. Hardware: Latching door handles of cast steel, satin chrome finish master keyed to building keying system.

G. Acoustic Seals: Flexible acoustic seals at jambs, meeting mullions, ceilings, retractable floor and ceiling seals, and above track to structure acoustic seal.

H. Vinyl Coated Fabric: ASTM F793 Category VI, polyvinyl fluoride finish for washability and improved flame retardance color as selected from manufacturer’s standard range.

I. Accessories: White enameled ceiling closure; aluminum jamb and head molding, fittings and attachments.

J. Pocket Enclosures: Door, frame, and trim to match adjacent walls.
   1. Pocket door configuration shall be manually operated.
   2. Type III double doors hinged to a jamb on each side and closing in the center. One of the door panels is equipped with a smaller hinged panel that folds back when the operable partition is extended into the pocket.

K. Acoustic Sealant: Specified in Section 07 9005.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify track supports are laterally braced and will permit track to be level within 1/4 inch (6 mm) of required position and parallel to the floor surface.

C. Verify floor flatness of 1/8 inch in 10 feet (3 mm / 3 m), non-cumulative.

D. Verify wall plumbness of 1/8 inch in 10 feet (3 mm / 3 m), non-cumulative.

3.2 INSTALLATION

A. Install partition in accordance with manufacturer’s instructions and ASTM E557.

B. Fit and align partition assembly and pocket doors level and plumb.

C. Lubricate moving components.

D. Apply acoustic sealant to achieve required acoustic performance.

3.3 FIELD QUALITY CONTROL

A. Repair or replace operable panel partitions that do not comply with requirements.
3.4 ADJUSTING
   A. Adjust partition assembly to provide smooth operation from stacked to full open position. Do not over-compress acoustic seals.
   B. Visually inspect partition in full extended position for light leaks to identify a potential acoustical leak.
   C. Adjust partition assembly to achieve lightproof seal.

3.5 CLEANING
   A. Clean finish surfaces and partition accessories.

3.6 CLOSEOUT ACTIVITIES
   A. Demonstrate operation of partition and identify potential operational problems.

END OF SECTION
SECTION 10 2601 - WALL AND CORNER GUARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Corner guards.
B. Impact resistant wall coverings.

1.2 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Anchors for attachment of work of this section, concealed in wall.
B. Section 06 1000 - Rough Carpentry: Blocking for wall and corner guard anchors.

1.3 REFERENCE STANDARDS


1.4 SUBMITTALS

A. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Wall and Corner Guards:
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 COMPONENTS

A. Corner Guards - Surface Mounted: Extruded one-piece unit without splices, installed with adhesive.
   1. Material: Type 304 stainless steel, No. 4 finish.
   2. Thickness: 18 gage, 0.05 inch (1.3 mm).
   3. Width of Wings: 1-1/2 inches (37 mm).
   4. Styles: Provide 90 degree corners and wall end protectors.

2.3 FABRICATION

A. Fabricate components with tight joints, corners and seams.
B. Pre-drill holes for attachment.
C. Form end trim closure by capping and finishing smooth.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.
B. Verify that field measurements are as indicated on Drawings.

3.2 INSTALLATION

A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.

B. Position corner guard 4 inches (102 mm) above finished floor to 36 inches (914 mm) high.

END OF SECTION
SECTION 10 2800 - TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Accessories for toilet rooms, showers, and utility rooms.
B. Electric hand/hair dryers.
C. Grab bars.

1.2 RELATED REQUIREMENTS

A. Section 10 2113.19 - Plastic Toilet Compartments.

1.3 REFERENCE STANDARDS

D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2010.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.
C. Operation and Maintenance Data: Provide manufacturer’s operation and maintenance instructions for electric hand/hair dryers.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Toilet Accessories:


B. Electric Hand/Hair Dryers:

3. Dyson; Airblade V, Sprayed Nickel

C. All items of each type to be made by the same manufacturer.

2.2 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.

B. Keys: Provide Two keys for each accessory to Owner; master key all lockable accessories.

C. Stainless Steel Sheet: ASTM A666, Type 304.

D. Stainless Steel Tubing: ASTM A269, Type 304 or 316.

E. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.

F. Adhesive: Two component epoxy type, waterproof.

G. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof, security type.

2.3 FINISHES

A. Stainless Steel: No. 4 satin brushed finish, unless otherwise noted.

2.4 TOILET ROOM ACCESSORIES

A. Toilet Paper Dispenser: Double roll, surface mounted bracket type, stainless steel, spindleless type for tension spring delivery designed to prevent theft of tissue roll.

B. Electric Hand Dryers: Traditional fan-in-case type, with downward nozzle.
   2. Style: Contemporary styling, fixed nozzle.
      a. Tamper-resistant screw attachment of cover to mounting plate.
   5. Total Wattage: 1500 W, maximum.
   6. Runtime: Field adjustable, from approximately 10 seconds to approximately 35 seconds
   7. Supply Voltage: As indicated on drawings.
   8. Warranty: 3 years.

C. Combination Towel Dispenser/Waste Receptacle: Recessed with projecting waste receptacle, stainless steel; seamless wall flanges, continuous piano hinges, tumbler locks on upper and lower doors.
   1. Waste receptacle liner: Reusable, heavy-duty vinyl.
2. Towel dispenser capacity: 400 C-fold.
3. Waste receptacle capacity: 4 gallons (1.5 liters).

D. Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gage refill indicator, tumbler lock.
   1. Minimum Capacity: 48 ounces (1.5 liters).

E. Mirrors: Stainless steel framed, 6 mm thick float glass mirror.
   1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
   2. Size: 24 x 36 inches.
   3. Frame: 0.05 inch (1.3 mm) angle shapes, with mitered and welded and ground corners, and tamperproof hanging system; No.4 finish.

F. Grab Bars: Stainless steel, nonslip grasping surface finish.
   1. Standard Duty Grab Bars:
      a. Push/Pull Point Load: 250 pound-force (1112 N), minimum.
      b. Dimensions: 1-1/4 inch (32 mm) outside diameter, minimum 0.05 inch (1.3 mm) wall thickness, exposed flange mounting, 1-1/2 inch (38 mm) clearance between wall and inside of grab bar.
      c. Length and Configuration: As indicated on drawings.

G. Combination Sanitary Napkin/Tampon Dispenser: Stainless steel, recessed.
   1. Door: Seamless 0.05 inch (1.3 mm) door with returned edges and tumbler lock.
   2. Cabinet: Fully welded, 0.03 inch (0.8 mm) thick sheet.
   3. Operation: 25 cent coin required to operate dispenser. Provide locked coin box, separately keyed.
   4. Identify dispensers slots without using brand names.
   5. Minimum capacity: 15 napkins and 20 tampons.

H. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.

2.5 UTILITY ROOM ACCESSORIES

A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch (1.3 mm) thick stainless steel, Type 304, with 1/2 inch (12 mm) returned edges, 0.06 inch (1.6 mm) steel wall brackets.
   1. Drying rod: Stainless steel, 1/4 inch (6 mm) diameter.
   2. Hooks: 2, 0.06 inch (1.6 mm) stainless steel rag hooks at shelf front.
   3. Mop/broom holders: 3 spring-loaded rubber cam holders at shelf front.
   4. Length: Manufacturer’s standard length for number of holders/hooks.
PART 3 EXECUTION

3.1 EXAMINATION
   A. Verify existing conditions before starting work.
   B. Verify exact location of accessories for installation.
   C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.
   D. Verify that field measurements are as indicated on drawings.

3.2 PREPARATION
   A. Deliver inserts and rough-in frames to site for timely installation.
   B. Provide templates and rough-in measurements as required.

3.3 INSTALLATION
   A. Install accessories in accordance with manufacturers' instructions in locations indicated on the drawings.
   B. Install plumb and level, securely and rigidly anchored to substrate.
   C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

3.4 PROTECTION
   A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION
SECTION 10 4400 - FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Fire extinguishers.
   B. Fire extinguisher cabinets.
   C. Accessories.

1.2 RELATED REQUIREMENTS
   A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

1.3 REFERENCE STANDARDS

1.4 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Shop Drawings: Indicate cabinet physical dimensions.
   C. Product Data: Provide extinguisher operational features, color and finish, and anchorage details.
      1. For fire extinguisher cabinets, include rough-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style, door construction, panel style, and materials.
   D. Manufacturer’s Installation Instructions: Indicate special criteria and wall opening coordination requirements.
   E. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.
   F. Maintenance Data: Include test, refill or recharge schedules and re-certification requirements.

1.5 FIELD CONDITIONS
   A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.1 MANUFACTURERS
   A. Fire Extinguishers:
      3. JL Industries, Inc.; Product Cosmic.
   B. Fire Extinguisher Cabinets and Accessories:

2.2 FIRE EXTINGUISHERS
A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL for the purpose specified and indicated.
B. Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gage.
   1. Cartridge Operated: Spun shell.
   2. Class: A:B:C.
   3. Size: 10 pound (4.54 kg).

2.3 FIRE EXTINGUISHER CABINETS
A. Cabinet Configuration: Recessed type.
   1. Sized to accommodate accessories.
   2. Trim: Flat, 3/8 inch (9.5 mm) wide face.
B. Door: 0.036 inch (0.9 mm) thick, reinforced for flatness and rigidity; latch. Hinge doors for 180 degree opening with continuous piano hinge. Provide roller type catch.
   1. Special Requirement: Provide recessed concealed handle with cam action latch.
C. Identify fire extinguisher in cabinet with FIRE EXTINGUISHER lettering applied to door vertically. Provide lettering to comply with authorities having jurisdiction for letter style, red in color, size, spacing, and location.
D. Door Glazing: Plastic, clear, 1/8 inch (3 mm) thick acrylic. Set in resilient channel gasket glazing.
E. Cabinet Mounting Hardware: Appropriate to cabinet. Pre-drill for anchors.
F. Weld, fill, and grind components smooth.
G. Finish of Cabinet Exterior Trim and Door: Baked enamel, White color.
H. Finish of Cabinet Interior: White enamel.

2.4 ACCESSORIES
A. Extinguisher Brackets: Formed steel, chrome-plated.

PART 3 EXECUTION
3.1 EXAMINATION
A. Verify existing conditions before starting work.
B. Verify rough openings for cabinet are correctly sized and located.

3.2 INSTALLATION
A. Install in accordance with manufacturer’s instructions.
B. Install cabinets plumb and level in wall openings, 42 inches (1067 mm) from finished floor to center of door.

C. Secure rigidly in place.

D. Place extinguishers and accessories in cabinets.

END OF SECTION
SECTION 10 5617 - WALL MOUNTED STANDARDS AND SHELVING

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Shelf standards, brackets, and accessories.
B. Closet rods for mounting on brackets.
C. Shelves.
D. See drawings for locations and configurations.

1.2 RELATED REQUIREMENTS
A. Section 06 1000 - Rough Carpentry: Wood blocking in walls for attachment of standards.
B. Section 06 2000 - Finish Carpentry: Wood shelves.
C. Section 09 2116 - Gypsum Board Assemblies: Blocking in metal stud walls for attachment of standards.

1.3 REFERENCE STANDARDS
A. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.4 SUBMITTALS
A. Product Data: Manufacturer's data sheets on each product to be used.
B. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Brackets: Ten of each size of standard straight bracket.

1.5 DELIVERY, STORAGE, AND HANDLING
A. Store products under cover and elevated above grade.
B. Store products in manufacturer’s unopened packaging until ready for installation.

PART 2 PRODUCTS

2.1 MANUFACTURERS
A. Shelf Standards and Brackets:
   2. Other Manufacturers: Provide either the product identified as "Basis of Design" or an equivalent product of another acceptable manufacturer.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.2 MATERIALS
A. Extra Heavy Duty Shelf Standards: Single-slotted channel standards for brackets adjustable in 1 inch (25 mm) increments along entire length of standard, drilled and countersunk for screws.
2. Load Capacity: Recommended by manufacturer for loading of 540 to 1,060 pounds (245 to 480 kg) per pair of standards.

3. Face Width: 5/8 inch (16 mm), single slotted.

4. Material: 12 gage 0.105 inches (2.7 mm) steel.

5. Lengths: As indicated on drawings.


7. Brackets: 12 gage 0.105 inches (2.7 mm) steel, reinforced, locking into slots with molded nylon cam lock lever; size to suit shelves; same finish as standards.

8. Bracket Quantity: Provide one bracket for each 36 inches (914 mm) of standard length.

B. Shelf Standard Accessories:

1. Provide other accessories as indicated.

C. Closet Rods: Steel tubing for wall mounting in flange fittings.

1. Type: Round chrome look, extra heavy duty; 1-5/16 inch (33 mm) outside diameter, 0.109 inch (2.77 mm) wall thickness.

2. Length: As required for application, up to 12 feet (3655 mm).

3. Provide mounting fittings to suit application.

D. Laminate Faced Shelves: Particleboard or medium density fiberboard covered with high pressure decorative laminate on both sides.

1. Edge Finish: Matching laminate, all four edges.

2. Substrate Thickness: 3/4 inch (19 mm), nominal.

3. Length: As indicated on drawings.

4. Laminate: NEMA LD 3 Type HGL.

5. Laminate Color and Pattern: As shown on drawings.

E. Fasteners: Screws as recommended by manufacturer for intended application or as otherwise required by project conditions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect/Engineer of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
3.3 INSTALLATION
   A. Install in accordance with manufacturer’s instructions.
   B. Bracket Spacing: Shelving shall be supported on brackets and standards no more than 8 inches from each end and no more than 30 inches apart throughout the length of the shelf.
   C. Mount standards to solid backing capable of supporting intended loads.
      1. On gypsum wallboard substrates, use steel toggles or expansion anchors only.
   D. Install brackets, shelving, and accessories.

3.4 PROTECTION
   A. Protect installed products until completion of project.
   B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
WALL MOUNTED STANDARDS AND SHELVING

Issued for BID

10 5617-4

12.14.15
SECTION 12 2400 - WINDOW SHADES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Window shades and accessories.

B. Section includes window shades and related accessories as indicated and as specified. All window shades and accessories is to be supplied and installed by others and is not part of this contract.

1.2 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.

B. Section 09 2116 - Gypsum Board Assemblies: Substrate for window shade systems.

1.3 REFERENCE STANDARDS


1.4 ADMINISTRATIVE REQUIREMENTS

A. Sequencing:

1. Do not fabricate shades until field dimensions for each opening have been taken.

2. Do not install shades until final surface finishes and painting are complete.

1.5 SUBMITTALS

A. Product Data: Provide manufacturer’s standard catalog pages and data sheets including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.

B. Shop Drawings: Include shade schedule indicating size, location and keys to details, head, jamb and sill details, mounting dimension requirements for each product and condition, and operation direction.

C. Source Quality Control Submittals: Provide test reports indicating compliance with specified fabric properties.

D. Verification Samples: Minimum size 6 inches (150 mm) square, representing actual materials, color and pattern.

E. Manufacturer’s Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.

F. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of shop drawings.

G. Warranty: Submit sample of manufacturer’s warranty and documentation of final executed warranty completed in Owner’s name and registered with manufacturer.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of experience.
B. Installer Qualifications: Company specializing in performing work of this type with minimum 5 years of experience.

C. Fire-Test-Response Characteristics: Provide roller shade band materials with the fire-test-response characteristics indicated, as determined by testing identical products per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

D. Product Standard: Provide roller shades complying with WCMA A 100.1.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.
B. Handle and store shades in accordance with manufacturer's recommendations.

1.8 FIELD CONDITIONS
A. Do not install products under environmental conditions outside manufacturer's absolute limits.
B. Environmental Limitations: Do not install roller shades until construction and wet and dirty finish work in spaces, including painting, is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
C. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operable glazed units' operation hardware throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.9 WARRANTY
A. See Section 01 7800 - Closeout Requirements, for additional warranty requirements.
B. Provide manufacturer's warranty from the Date of Substantial Completion, covering the following:
   1. Shade Hardware: one year.
   2. Fabric: one year.
   3. Aluminum and Steel Coatings: one year.

PART 2 PRODUCTS

2.1 MANUFACTURERS
A. Manually Operated Roller Shades:
   4. Substitutions: See Section 01 6000 - Product Requirements.
B. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.
2.2 WINDOW SHADE APPLICATIONS

A. Shades at Meeting Room 1 (0010) and Meeting Room 3 (0012): Blackout shades with second shade in same opening.
   1. Type: Roller shades.
   2. Fabric: To be determined.
   3. Color: As selected by Architect/Engineer from manufacturer's full range of colors.

2.3 ROLLER SHADES

A. Roller Shades: Fabric roller shades complete with mounting brackets, roller tubes, hembars, hardware and accessories; fully factory-assembled.
   1. Drop: Regular roll.
   2. Size: As indicated on drawings.

B. Fabric: Non-flammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation; PVC-free; 100 percent recycled.
   1. Privacy Shades: Soften the light yet still reveal some details to the outside; moderate privacy; Openness Factor approximately equal to 1 percent.
   2. Blackout Shades: Block virtually all the light; Openness Factor equal to zero (0).
   3. Flammability: Pass NFPA 701 large and small tests.
   4. No growth, tested to ASTM G21 for ATCC9642, ATCC9348, and ATCC9645.

C. Roller Tube: As required for type of operation, extruded aluminum with end caps.
   1. Dimensions: Manufacturer's standard, selected for suitability for installation conditions, span, and weight of shades.
   2. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge.

D. Hembars and Hembar Pockets: Wall thickness designed for weight requirements and adaptation to uneven surfaces, to maintain bottom of shade straight and flat.
   1. Style: Exposed aluminum bottom bar, flat profile with closed ends, containing a spline groove top to receive and secure fabric end.
   2. Finish: Anodized.

E. Manual Operation: Clutch operated continuous loop; beaded ball chain meeting WCMA A100.1.

2.4 ACCESSORIES

A. Brackets and Mounting Hardware: As recommended by manufacturer for mounting configuration and span indicated.
B. Fasteners: Non-corrosive, and as recommended by shade manufacturer.

2.5 FABRICATION

A. Field measure finished openings prior to ordering or fabrication.

B. Fabricate shades to fit openings within specified tolerances.
   1. Vertical Dimensions: Fill openings from head to sill with 1/2 inch (13 mm) space between bottom bar and window stool.
   2. Horizontal Dimensions - Inside Mounting: Provide symmetrical light gaps on both sides of shade not to exceed 0.75 inches (19.05 mm) total.

C. Dimensional Tolerances: As recommended in writing by manufacturer.

D. At openings requiring continuous multiple shade units with separate rollers, locate roller joints at window mullion centers; butt rollers end-to-end.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine finished openings for deficiencies that may preclude satisfactory installation.

B. If substrate preparation is the responsibility of another installer, notify Architect/Engineer of unsatisfactory preparation before proceeding.

C. Start of installation shall be considered acceptance of substrates.

3.2 PREPARATION

A. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.

B. Coordinate with window installation and placement of concealed blocking to support shades.

3.3 INSTALLATION

A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.

B. Installation Tolerances:
   1. Inside Mounting: Maximum space between shade and jamb when closed of 1/16 inch (1.5 mm).
   2. Maximum Offset From Level: 1/16 inch (1.5 mm).

C. Replace blinds that exceed specified dimensional tolerances at no extra cost to Owner.

D. Adjust level, projection and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure shades for smooth operation.

3.4 ADJUSTING

A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.5 CLEANING

A. Clean soiled shades and exposed components as recommended by manufacturer.
B. Replace shades that cannot be cleaned to "like new" condition.

C. See Section 01 7419 - Construction Waste Management and Disposal for additional requirements.

3.6 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

B. See Section 01 7900 - Demonstration and Training, for additional requirements.

C. Demonstration: Demonstrate operation and maintenance of window shade system to Owner’s personnel.

D. Training: Train Owner’s personnel on operation and maintenance of system.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
   2. Provide minimum of two hours training by manufacturer’s authorized personnel at location designated by the Owner.

3.7 PROTECTION

A. Protect installed installed products from subsequent construction operations.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
SECTION 12 3600 - COUNTERTOPS

PART 1  GENERAL

1.1  SECTION INCLUDES
A. Countertops for architectural cabinetwork.

1.2  RELATED REQUIREMENTS
A. Section 06 4100 - Architectural Wood Casework.

1.3  REFERENCE STANDARDS
D. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards; 2009.
F. PS 1 - Structural Plywood; 2009.

1.4  SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer’s data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.
C. Verification Samples: For each finish product specified, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
D. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
E. LEED Report: Submit for wood products made from sustainably harvested wood, salvaged and reused wood, wood fabricated from recovered timber, and locally-sourced wood, as specified in Section 01 3515.
F. Maintenance Data: Manufacturer’s instructions and recommendations for maintenance and repair of countertop surfaces.

1.5  QUALITY ASSURANCE
A. Fabricator Qualifications: Same fabricator as for cabinets on which tops are to be installed.
B. Installer Qualifications: Fabricator.

1.6  DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer’s unopened packaging until ready for installation.
B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.1 COUNTERTOP ASSEMBLIES

A. Quality Standard: See Section 06 4100.

B. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.

1. Flat Sheet Thickness: 1/4 inch (6 mm), minimum.

2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA-2 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.

   a. Surface Burning Characteristics: Flame spread 25, maximum; smoke developed 450, maximum; when tested in accordance with ASTM E84.

   b. NSF approved for food contact.

   c. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.

   d. Color and Pattern: As indicated on drawings.

   e. Manufacturers:


      5) LG Surfaces

      6) Substitutions: See Section 01 6000 - Product Requirements.

3. Other Components Thickness: 1/2 inch (12 mm), minimum.

4. Exposed Edge Treatment: Built up to minimum 1-1/2 inch (38.1 mm) thick; eased edge.

5. Back and End Splashes: Same sheet material, square top; minimum 3 inches (76.2 mm) high where indicated.

6. Fabricate in accordance with AWI/AWMAC/WI (AWS) standards, Section 11 - Premium Grade.

2.2 ACCESSORY MATERIALS

A. Wood-Based Components:

1. Wood fabricated from old growth timber is not permitted.
2. Provide sustainably harvested wood, certified or labeled as specified in Section 01 6000.

3. Provide wood harvested within a 500 mile (805 km) radius of the project site.

B. Plywood for Supporting Substrate: PS 1 Exterior Grade, A-C veneer grade, minimum 5-ply; minimum 3/4 inch (19 mm) thick; join lengths using metal splines.

C. Particleboard for Supporting Substrate: ANSI A208.1 Grade 2-M-2, 45 pcf (20 kg/cu m) minimum density; minimum 3/4 inch (19 mm) thick; join lengths using metal splines.


E. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

2.3 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch (25 mm) except where top butts against cabinet or wall.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
   1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
   2. Height: 3 inches (76 mm), unless otherwise indicated.

C. Solid Surfacing: Fabricate tops up to 144 inches (3657 mm) long in one piece; join pieces with adhesive sealant in accordance with manufacturer’s recommendations and instructions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect/Engineer of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Seal joint between back/end splashes and vertical surfaces.
3.4 CLEANING
   A. Clean countertops surfaces thoroughly.

3.5 PROTECTION
   A. Protect installed products until completion of project.
   B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
SECTION 12 4813 - ENTRANCE FLOOR MATS AND FRAMES

PART 1 GENERAL

1.1 SECTION INCLUDES
   A. Extruded aluminum entrance floor grilles.

1.2 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide data indicating properties of walk-off surface, component dimensions and recessed frame characteristics.
   C. Shop Drawings: Indicate dimensions and details for recessed frame.
      1. For recessed frames located within a dimensionally restricted area, show dimensions of space within which the frame will be installed.
   D. Samples: Submit two samples, 12x12 inch (305x305 mm) in size illustrating pattern, color, finish, edging.
   E. LEED Submittals: Report recycled content and source of product.
   F. Maintenance Data: Include cleaning instructions, stain removal procedures.

1.3 PROJECT CONDITIONS
   A. Field Measurements: Indicate measurements on shop drawings.

1.4 COORDINATION
   A. Coordinate size and location of recesses in concrete to receive foot grill and frames.

PART 2 PRODUCTS

2.1 MANUFACTURERS
   A. Entrance Floor Grilles:
      3. Balco, Inc.; FG1C.
      4. Substitutions: See Section 01 6000 - Product Requirements.

2.2 ENTRANCE FLOOR GRILLES AND GRATINGS
   A. Entrance Floor Grilles: Recessed extruded aluminum grille assembly with nominal 1-3/8 inch (35 mm) wide tread strips running perpendicular to traffic flow, slots between treads, and perimeter frame forming sides of recess; grille hinged for access to recess.
      1. Recess Depth: 1-5/8 inches (41.3 mm).
      2. Tread Surfaces: Nylon carpet.
      3. Colors: To be selected by Architect/Engineer from manufacturer’s standard selection.
5. Frame: Anodized aluminum for embedding in concrete; minimal exposed trim; stud or hook concrete anchors.

6. Support System:
   a. Level Bed Applications: Provide manufacturer’s standard, vinyl cushion support system.

B. Mounting: Top of non-resilient members level with adjacent floor.

C. Structural Capacity: Capable of supporting a rolling load of 500 pounds (226.8 kg) without permanent deformation or noticeable deflection.

D. Vibration Resistant Fabrication: All members welded, riveted, or bolted; no snap or friction connections.

E. Aluminum Finishes
   1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
   2. Class I, Clear Anodic Finish: AA-M12C22A41 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.

2.3 FABRICATION

A. Construct recessed mat frames square, tight joints at corners, rigid. Coat surfaces with protective coating where in contact with cementitious materials.

B. Fabricate mats in single unit sizes; fabricate multiple mats where indicated.

C. Shop fabricate foot grilles to greatest extent possible in sizes as indicated. Unless otherwise indicated, provide each grille as a single unit; do not exceed manufacturer’s recommended maximum sizes for units that are removed for maintenance and cleaning. Where joints in grilles are necessary, space symmetrically and away from normal traffic lanes.

D. Fabricate frame members in single lengths or, where frame dimensions exceed maximum available lengths, provide minimum number of pieces possible, with hairline joints equally spaced and pieces spliced together by straight connecting pins.

E. Comply with NAAMM’s "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

F. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that floor opening for mats are ready to receive work.

3.2 PREPARATION

A. Mats: Verify size of floor recess before fabricating mats.

B. Vacuum clean floor recess.

3.3 INSTALLATION

A. Install frames to achieve flush plane with finished floor surface.
B. Install walk-off surface in floor recess flush with finish floor after cleaning of finish flooring.

3.4 TOLERANCES

A. Maximum Gap Formed at Recessed Frame From Mat Size: 1/4 inch (6 mm).

END OF SECTION
ENTRANCE FLOOR MATS AND FRAMES

Issued for BID

12 4813-4

12.14.15
SECTION 12 9300 - SITE FURNITURE

PART 1 GENERAL

1.1 SUMMARY

A. Section includes site furnishings and related as indicated and as specified. All site furniture is to be supplied and installed by others and is not part of this contract.

B. SUBMITTAL

1. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, operating characteristics, fittings, accessories, and finishes for all materials.

2. Shop Drawings: Submit four sets of prints indicating the location, manufacturer, finish, materials, color, connection details, dimensions, and relationship to adjacent materials. Include plans, elevations, and show general arrangement, jointing, fittings, accessories, grounding, anchoring and include details of foundation systems as necessary.

3. Delegated-Design Submittal: For flagpole assemblies indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer licensed in the State of Illinois responsible for their preparation.

4. Contractor shall submit operation/maintenance recommendations, spare parts, manuals and warranties to the Owner.

C. QUALITY ASSURANCE

1. Source limitations: Obtain flagpole as complete unit, including fittings, accessories, bases, and anchorage devices, from single source from single manufacturer.

D. DELIVERY, STORAGE AND HANDLING

1. Provide blocking and lateral support during transport and storage of site furniture units which is clean, non-staining, and will not cause harm to exposed finishes.

2. Protect edges of exposed members to prevent staining, chipping, or spalling.

PART 2 PRODUCTS

2.1 BICYCLE RACKS

A. Bicycle racks shall be in configuration as indicated on the plans and have the following characteristics:

1. Materials: 1½” Schedule 40 (.148” Wall) Black Iron Pipe, O.D. = 1.90”

2. Coating of Part As Follows:
   a. Color: Black
   b. Texture: Regular Grain
   c. Gross: Semi-Matte
   d. Hardness: Shore A – 95 +/-3
   e. Tensile Strength: 1800 PSI Min.
   f. Mildew resistant additive
g. U.V. screening additive
h. Resistant to color change
i. Resistance to abrasion when used as intended.
j. Primer: Entire part is primed even though it is completely coated

B. FLAGPOLE

1. Manufacturer: Subject to compliance with requirements, provide products by one of the following
   a. The Flagpole Warehouse, A Division of the Flag Company, Inc.
      1) Illuminator Architectural Series
      2) Model Number: IL30V
      3) Pole Mounted Light Model Number: ORN-FPB-8-359-D-120V
   b. American Flagpole; a Kearney-National Inc. Company
      1) Architectural Elite Series
      2) Model Number: ESR/EDR
      3) American Beacon Flagpole Light
   c. Eagle Mountain Flag and Flagpoles
      1) Eagle United NightGuard Downlighter Flagpole Series
   d. Pole-Tech co., Inc.

2. Substitutions: See Section 01 6000 - Product Requirements.


PART 3 EXECUTION

3.1 PREPARATION

A. All surfaces shall be properly prepared and level prior to installation and placement of site furniture. Contractor shall coordinate placement of site furnishings with work of other trades.

B. INSTALLATION OF FURNITURE

1. Each piece of site furniture shall be installed and placed in accordance with manufacturer’s standards and specifications and in accordance with the plans. Any changes from the manufacturer’s specifications must be approved by the Owner’s Representative.

2. All site furniture shall be installed plumb and level.

C. CLEAN-UP

1. The area shall be kept clean at all times, and following installation, all materials and debris shall be removed from the area.

2. Marred areas on metal finishes shall be touched-up with primer and two coats of paint.
3. Exposed mounting hardware shall be touched-up with primer and two coats of approved paint.

4. Acid solutions, steel or any other wool, or any other harsh abrasives shall not be used.

END OF SECTION
SECTION 14 2400 - HYDRAULIC ELEVATOR

PART 1  GENERAL

1.1  GENERAL REQUIREMENTS

A.  Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to work performed under this section.

B.  Respondent must clearly identify any and all exceptions, clarifications or other variations from contract documents, citing the affected requirement by version date, sheet or section, paragraph or detail and page, providing the proposed substitution, alternative or economic credit represented in their response, prominently and conspicuously displayed with underline or highlight, adjacent to or referenced in their offer pricing.

C.  Error in or conflict among requirements not specifically identified in the response shall be resolved by application of the most stringent and/or beneficial to the owner, at the sole determination of the architect.

1.2  DESCRIPTION

A.  Work Included: Provide materials, labor, and services necessary for the installation of one (1) in-ground oil hydraulic elevator as shown and specified.

B.  Where a component, device, system or part of the equipment is referred to in the singular, such reference shall not limit the quantity furnished and shall apply to any and all of such devices or parts as may be required for a complete installation.

C.  Related Work Specified Elsewhere:

   1.  Note: The work specified pertains to all elevators unless otherwise noted.

      a.  Hoistway, pit and machine room.

      b.  Louvers and screens.

      c.  Lighting of pit and machine room.

      d.  Ventilation of hoistway and machine room.

      e.  Access doors, ladders, guards, guardrails and locks.

      f.  Installation of embeds as furnished and instructed by elevator subcontractor.

      g.  Supports for cylinder head or plunger/cylinder assembly, buffers and entrance installation.

      h.  Overhead hoist beam.

      i.  Installation of pipe sleeves.

      j.  Electric power feeders and fused disconnect switches or circuit breakers, including auxiliary contacts for standby power or battery-powered evacuation, connected within elevator controller panels.

      k.  Auxiliary contacts on the disconnect switch and wiring to the elevator for standby power operation. Verify requirements with the Contractor.

      l.  120-volt 15-amp disconnect switch or circuit breaker for each elevator including feeder wiring to control panels for car lights.

      m.  120-volt G.F.C.I. convenience outlets in machine room and pit.
n. Conduit to remote locations for elevator intercommunication and alarm systems.
o. Indicated or required chases and openings.
p. Finish painting except as noted.
q. Guarding and protecting hoistway during construction.
r. Storage space for tools and materials.
s. Electric power for testing and adjusting equipment.
t. Telephone wiring to control panels.
u. Telephone jacks furnished by others and installed by the Contractor.
v. Vertical tube intermediate guide rail supports
w. Paging safety speakers furnished by others and installed by the Contractor.
x. Grouting under entrance sills.
y. Smoke detectors.
z. Signals from fire alarm system.

aa. Shunt trip device.

ab. Life safety speakers furnished by others and installed by the Contractor.
ac. CCTV cameras furnished in elevators by others and installed by the Contractor.
ad. Card Readers furnished by others and installed by the Contractor.

1.3 REFERENCES
A. Applicable Codes:
   8. OSHA Occupational Safety and Health Administration.
   10. Authorities having jurisdiction.
1.4 DEFINITIONS

A. The following definitions apply to work of this Section:

1. "Provide": to furnish and install, complete for safe operation, unless specifically indicated otherwise.
2. "Install": to erect, mount and connect complete with related accessories.
3. "Supply": to purchase, procure, acquire and deliver complete with related accessories.
4. "Work": labor and materials required for proper and complete installation.
5. "Wiring": raceway, fittings, wire, boxes, and related items.
6. "Concealed": embedded in masonry or other construction, installed in furred spaces, within double partitions or hung ceilings, in trenches, in crawl spaces or in enclosures.
7. "Exposed": not installed underground or "concealed" as defined above.
8. "Indicated", "shown", or "noted": as indicated, shown or noted on drawings or as specified.
9. "Similar" or "equal": of base bid manufacturer, equal in materials, weight, size, design and efficiency of specified product, conforming to "acceptable manufacturers."
10. "Reviewed", "satisfactory", "accepted", or "directed": as reviewed, satisfactory, accepted or directed, by or to Owner.

1.5 OPERATION PERFORMANCE

A. The control system shall provide smooth acceleration and deceleration with 1/4-inch leveling accuracy at all landings, from no load to full rated load in the elevator, under normal or unloading conditions. The self-leveling shall, within its zone, be entirely automatic and independent of the operating device and shall correct for over travel and under travel. The car shall remain at the landing irrespective of load. Clearance between the car sill and the hoistway landing shall not exceed 1 1/4-inch.

B. The floor-to-floor performance time under the above criteria shall be 18.4-seconds (floor-to-floor time is measured from the start of door close at one floor to 3/4 open at the next floor).

C. The door open time shall be 3.1 seconds for from start of door open to fully open.

D. The door close time shall be based on the Code requirements with a door delay feature. The door delay is the minimum acceptable time from notification that a car is answering a call (lantern and audible signal) until the doors of the car start to close. Time shall be calculated by the following equation:

1. \[ T = \frac{D}{1.5 \text{ ft/s}} \]
2. \[ T = \text{Total time in seconds.} \]
3. \[ D = \text{Distance from a point in the lobby 5' 0” directly in front of the hall station to the centerline of the door opening.} \]

E. Car Call: The minimum acceptable time for doors to remain fully open shall not be less than 5-seconds.

F. The speed of the elevator shall not vary plus or minus 10-percent under loading conditions.

G. Ride Quality requirements shall include a horizontal acceleration measured inside of the cab during all conditions to not exceed 12 mg peak to peak within the 1-10 mz range.

H. Prior to final acceptance and prior to the termination of the maintenance period, the elevators shall be adjusted as required to meet these performance requirements.
I. Limit overall elevator noise emissions to the building to the following maximum A-weighted sound pressure levels in any mode of operation:

1. 80-decibels measured 3-feet from any piece of equipment in the machine room.
2. 50-decibels measured 5-feet above the cab floor near the center during all sequences of operation, exhaust air blower and annunciators.
3. 45-decibels measured in the elevator lobby 10-feet from the elevator doors.

1.6 SUBMITTALS

A. Shop Drawings and Samples:

1. Provide quantities per Section 01 30 00 Submittals or as indicated herein.
2. Prior to installation, furnish three sets of job specific manufacturer equipment brochures and service manuals.
3. Shop Drawings: Provide complete shop drawings. Include layouts of pits, machine rooms, overhead requirements, power and heat data for all equipment, static and impact loads, seismic loads, reaction points and required clearances. Include job specific details of car and hall fixtures.
4. Samples: Materials and finishes exposed to public view, 6-inch by 6-inch panels or 12-inch lengths as applicable.

B. Equipment Brochures and Service Manuals:

1. Provide quantities per Section 01 70 00 Contract Closeout or as indicated herein.
2. Before acceptance of work, furnish three (3) sets of job specific manufacturer equipment brochures and service manuals.
3. Manuals shall be job specific. Assemble manuals in chronological order according to the specification alphanumerical system. Provide in manufacturers standard binders consisting of:
   a. Equipment and components, descriptive literature.
   b. Performance data, model number.
   c. Installation instructions.
   d. Operating instructions.
   e. Maintenance and repair instructions.
   f. Spare parts lists.
   g. Lubrication instructions.
   h. Record layout drawings.
   i. Wiring diagrams.

C. Machine Room Prints. Provide one (1) complete set of “record” field wiring and straight line wiring diagrams showing all electrical circuits in the hoistway as well as the machine room. These diagrams shall be bound in an 8 1/2-inch by 11-inch binder and located in the elevator machine room as directed.
D. Keys: Before acceptance of work, furnish three (3) sets of keys for all key switches installed as part of this project, including controller cabinet, fire service, stop switch, service cabinet, inspection and others if provided.

1.7 QUALITY ASSURANCE

A. Quality and Gauges of Materials:
   1. New, best of their respective kinds free from defects.
   2. Gauges as noted.
   3. Components shall be made available to the Owner for a period of not less than 20-years.

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Ship in original crated sections of a size to permit passage through available space.
B. Obtain approval and schedule delivery of material to meet Owner requirements.
C. Storage of equipment and materials shall be coordinated with Owner.

1.9 WARRANTY

A. The elevators and associated equipment shall be free of defective material, imperfect work and faulty operation not due to ordinary wear and tear or improper use or care, for a period of twelve (12) months from final acceptance of all elevator work. Defective work shall be repaired or replaced at no additional cost to the Owner.

1.10 MAINTENANCE SERVICE

A. Provide 12-month maintenance service during warranty period by trained mechanics. Warranty maintenance shall commence upon completion and acceptance of all elevator work and shall include examination, adjustment, greasing, oiling, parts replacement, tests, and emergency service.

1. The Contractor shall keep the elevator maintained to operate at the original contract speed, keeping the original performance times, including acceleration and retardation as designed and installed by the manufacturer. The door operation shall be adjusted as required to maintain the original door opening and door closing times, within legal limits.

2. Regular maintenance is to be performed during regular working hours of regular working days. Examinations shall be performed once a month, providing a minimum of 1 hour per visit, of preventative maintenance service. All preventative maintenance shall be scheduled in advance with Owner in advance.

3. The Contractor shall not responsible for repairs to finish materials such as front rear panels, entrance columns, strike jambs, transoms, wall panels, reveals, ceilings, lighting fixtures, handrails, flooring, entrances, doors and thresholds. In addition, Contractor shall not be responsible for underground cylinders or buried piping.

4. The Contractor shall not be required to make renewals or repairs necessitated by reason of negligence or misuse of the equipment or by reason of any other cause beyond the Contractor’s control except ordinary wear and tear unless the Contractor receives just compensation.

5. Provide emergency and trouble call service at no additional cost to Owner. Calls shall be answered promptly at all hours of the day or night, seven days a week. Emergency calls shall be responded to within 30-minutes during and to trouble calls within 1-hour. Should overtime work be required, the Owner will pay the premium portion of the wage, and the Contractor will pay the basic hourly rate.
6. Conduct safety tests as required by local jurisdiction, including test weights, instruments, and submitting documentation to the appropriate authority.

7. No fewer than ninety (90) calendar days prior to the expiration of the equipment warranty, the Subcontractor shall send and confirm receipt of written notification to the Owner that the initial warranty/maintenance period is nearing its end and cooperatively determine a date that a technician can be available to facilitate access to all equipment, its dedicated spaces and all maintenance and callback records for inspection and review.

   a. Within thirty (30) days of receiving said notice, the owner or their representative will conduct a scheduled, thorough maintenance inspection of all elevators covered under the contract. At the conclusion of this inspection, the Owner shall give the Subcontractor written notice of any deficiencies found. The Subcontractor shall be responsible for correction of these deficiencies, including a technician's return for re-inspection and all other costs of re-inspection, without additional cost to the owner, within thirty (30) days of receipt of such notice.

      1) In the event the Subcontractor is delayed in providing the initial notice, both the equipment warranty and its maintenance shall continue indefinitely, uninterrupted, at no additional cost to the owner, but no less than ninety (90) days from the date notice is initially provided.

   b. This requirement shall survive and be independent of any agreement between Subcontractor and Contractor or between Owner and Contractor.

1.11 ELECTRIC SERVICE

   A. Power: 480-volts, 3-phase, 60 hertz. Contractor to verify.

   B. Lighting: 120-volts, 1-phase, 60-hertz.

1.12 PERMITS AND INSPECTION FEES

   A. The Contractor shall obtain without cost to the Owner, all permits and certificates as required.

PART 2 PRODUCTS

2.1 MANUFACTURERS

   A. Product of individuals, firms or corporations regularly engaged in manufacturing elevators comparable with this contract and in satisfactory operation for a period of not less than five years.

   B. Qualified Bidders:

      1. ThyssenKrupp Elevator Company / (Endura)

      2. Approved Equal

         a. Minnesota Elevator, Inc.

         b. Canton Elevator

2.2 MATERIALS

   A. Aluminum: Extrusions as per ASTM B221.


   C. Plastic Laminates: As per NEMA LD-3, with suitable backer sheets to minimize warping, fire rated Grade HGF, .062 inch thick and applied under conditions that ensure prevention of separation or delaminating.
D. Sheet Steel (Painted) - ASTM A1008; cold-rolled, stretcher-leveled, furniture grade; free from defects.

E. Stainless Steel – Interior Applications: As per ASTM A167, Type 302/304 series, with finish as specified.
   1. Note: Certain ferritic stainless alloys may be acceptable, subject to approval of finish samples.

F. Patterned Stainless Steel: As per ASTM A167, Type 304, textured/patterned stainless steel with satin finish as specified.

G. Nickel Silver: Extrusions of CDA Alloy C79800

H. Structural Steel: As per ASTM A36.

2.3 OUTLINE OF EQUIPMENT

A. Elevator No. 1:
   1. Elevator Use: Passenger
   2. Contract Load, in Pounds: 3500
   3. Contract Speed, in FPM: 125
   4. Class of Loading: A
   5. Rise: 19'-8"
   6. Serves: Floors 1 & 2
   7. Number of Stops: Two (2)
   8. Number of Openings: Two (2) front
   9. Machine Location: As shown on drawings
   10. Machine Type: Oil hydraulic, in-ground, with automatic two way leveling
   11. Type of Control: Hydraulic Valve
   12. Operation: Selective Collective
   13. Hoistway Size: 8'-4" wide by 6'-11" deep
   14. Clear Car Inside: 6'-8" wide by 5'-5" deep
   15. Car/Hoistway Door Size: 3'-6" wide by 7'-0" high
   16. Car/Hoistway Door Type: Single-speed, center opening
   17. Door Operation: High-speed, heavy-duty (min. opening speed 3.0 FPS)
   18. Door Protection: Infrared Detector
   19. Hoistway Entrance: Brushed stainless steel
   20. Cab Enclosure: As specified
   21. Car Operating Station: Single
   22. Direction Indicator: Dual In-Car Lanterns
   23. Hall Call Stations: Single riser
24. Special Features: Communication System, Accessibility Features

2.4 MACHINE ROOM EQUIPMENT

A. Provide equipment to fit space conditions shown. All equipment shall be provided in the designated machine room and not within the elevator pit.

1. Tank: Provide welded reinforced steel structure designed to support the tank. Tank shall have surge control to prevent oil from leaving the tank when elevator descends, protective vent opening and overflow connection. Provide oil heater in tank to ensure constant oil temperature and operation of elevator. Capacity of tank shall be sufficient to lift elevator to top landing plus minimum of 10-gallons.

2. Pump: Provide positive displacement pump designed to give smooth and quiet operation. Mount pump and motor on common bedplate with sound and vibration absorbing devices. Provide 40 durometer double deflection neoprene mounts sized for a static deflection under load of minimum 1 1/4-inch for mounting the pumping unit on the floor. Acceptable mounts are Mason Industries Type ND or equivalent. Pump shall provide 400 PSI maximum working pressure.

3. Motor: Provide alternate current induction type motor designed for hydraulic elevator starting and running requirements.

4. Motor Starter: Provide Solid-state starter (across-the-line starting will not be acceptable) to control the voltage and current that are utilized to start the hydraulic pump motor.

5. Control Valves: Valves including main, leveling, safety check, up and down direction, lowering valve including down leveling and manual leveling shall be provided. Control valves shall be magnetic type and designed to open and close gradually to give smooth control. Manual shut off valve shall be in line adjacent to pump unit.

6. Piping: Provide approved steel or wrought iron piping of appropriate schedule designed for a maximum 400 PSI working pressure. A blow-out proof oil line muffler near pump unit. Piping: Provide approved steel Schedule 80 piping designed for a maximum 400 PSI working pressure. A blowout proof oil line muffler and two (2) sound isolating couplings shall be provided in oil line near pump unit. The first sound isolation coupling shall be installed close to the muffler and the second coupling a minimum of 4’ 0” downstream of the first coupling. The hydraulic piping must turn ninety (90) degrees (an elbow) between the couplings. The diameter of the pipe between the couplings to be sized so that the fluid velocity in the pipe does not exceed 20’/second. The isolation couplings shall be manufactured by Maxton Valve (no equal).

a. Provide a rubber isolation gasket between oil line and any pipe hangers or Unistrut of suspended oil lines. Provide single deflection Mason Type N or equivalent, or 1/4” thick plumbing felt or 3/8” ribbed neoprene isolation gasket, between oil line and any pipe hangers or Unistrut of suspended oil lines. Isolate hangers from building structure.

b. Piping outside the machine room or hoistway shall have all threaded connections, reside entirely on one side of any seismic joint and be fully enclosed within PVC pipe where routed over occupiable spaces.

c. A minimum of two (2) shut-off valves, one in the pit and one in the machine room, with oil pressure gauge.

B. Hydraulic Fluid: Provide low-fire-potential hydraulic fluid of proper composition, viscosity and thermal stability, as specified by the equipment manufacturer, to ensure optimal operation and extended service life.
C. Sleeves, when passing through walls, shall have a minimum 1-inch clearance between piping and sleeve. Fill with fiberglass packing and seal both ends with fireproof non-hardening mastic, ¼” minimum thickness. The Contractor shall provide sleeves and coordinate the installation of sleeves at all wall penetrations.

D. Controller: Provide a solid-state control system. The system shall utilize isolated solid-state input/output interface for the majority of signals. It is understood, where required by code, relays contacts are to be utilized for safety and power control considerations. The use of relays as input or output devices are not acceptable.

1. All controller components shall be designed to provide the required operation as herein specified.

2. All assemblies, power supplies, switches, relays and other items shall be securely mounted on a substantial, self-supporting steel frame of angles or channels and shall be totally enclosed with covers in a cabinet.

3. All controller switches and relays shall be magnet operated with contacts of design and material to insure maximum conductivity, long life and reliable operation without overheating or excessive wear and shall provide a wiping action to prevent sticking due to fusion.

4. Each device on all panels shall be properly identified by name, letter, or standard symbol that shall be neatly stencil painted (or otherwise marked), in an indelible and legible manner, on device or panel. Identification markings shall be coordinated with identical markings used on wiring diagrams. The ampere rating shall be marked adjacent to all fuse holders. All spare conductors shall be neatly formed, laced and identified.

5. System shall provide accurate and reliable car positioning utilizing tape, magnets targets and car top sensors. Systems using hoistway vanes and infrared switches are also acceptable.

6. System memory shall be provided so that data shall not be lost in the event of a power failure or disturbance.

E. Diagnostic Tools: Contractor shall provide all diagnostic tools and documentation required for the adjustment, troubleshooting, and reprogramming of the elevator system upon completion, including:

1. Passwords or identification codes required to gain access to each software program in order to perform diagnostics or program changes.

2. A composite listing of the individual settings chosen for variable software parameters stored in the software programs.

3. The diagnostic tool shall be an adjuster level tool, providing all capabilities required to fully adjust, troubleshoot and test the elevator system.

2.5 OPERATING SYSTEMS

A. Provide operation as indicated.

B. Two Stop Collective:

1. Momentary pressure of car or hall button, other than landing at which car is parked, shall automatically start the car and dispatch the car to the corresponding floor for which that call was registered. If a call is registered at the floor when the car is idle, the doors shall automatically open.

2. When the direction of travel has been established, the car shall answer all calls corresponding to the direction of travel and shall not reverse direction until all car and hall calls, in that direction, have been answered.
3. Calls registered for the opposite direction of car travel shall remain registered and shall be answered after car has completed its calls in the direction of travel.

4. If no car buttons are pressed, and car starts up in response to several down calls, the car shall answer highest down call first and then reverse to collect other down calls.

5. The car shall remain at the arrival floor for an adjustable interval to permit passenger transfer. Doors shall close after a predetermined interval after opening unless closing is interrupted by car door reversal device or door open button in car.

C. Independent Service: Provide controls to remove elevator from normal operation and provide control of the elevator from car buttons only. Car shall travel at contract speed and shall not respond to corridor calls.

D. Car Top Operation: Provide per Code.

E. Emergency Recall Operation (Fire Service): Provide operation and equipment per Code. Contractor shall provide relays, wiring, and terminal strips to receive signals from the fire alarm system.

F. Motor Timer Control: If the pump motor should run continuously for 20-seconds longer than the period of time necessary to move the elevator (in normal operation) from the bottom floor to the top floor, a time protective device shall return the elevator to the lowest level, park and remove power from the pump motor. All control buttons, except car alarm, shall be inoperative.

G. Low Oil Control: In the event the oil level is insufficient for travel to the top floor, controls shall be provided to return the elevator to the main level and park until oil is added. All control buttons, except car alarm, shall be inoperative.

H. Fan and Light Output Timer: Provide an adjustable timer (Range 1 to 10 minutes) that when activated will turn off the fan and light within the car. The time will start when the car becomes inactive.

1. Door Hold Operation: Provide controls and a button within operating panel which shall hold the doors open for an adjustable period of 30 to 90-seconds.

2. The following shall resume normal door operation:

3. Activation of door close button.

4. Activation of any floor button within the elevator.

5. Expiration of time period.

I. Speed Regulation:

1. The rate of acceleration and deceleration of the cars under any condition of load shall be as nearly constant as is possible with the method of control specified and employed and shall be independent of the operating devices in the car.

2. Entire elevator equipment including pump tank unit and controllers shall operate without irregularities and quietly by use of high-grade materials, first-class workmanship and adjustments.

J. Battery Lowering Device: Provide a separate battery powered unit that senses loss of power. Battery shall be 12-volt minimum, sealed nickel cadmium or gel cell construction. When loss of power occurs, elevator shall descend to lowest landing and open doors automatically on passenger elevators. After a predetermined time, the doors shall close and the elevator shall remain inoperative until normal power is restored. The door open button shall operate under battery power. On freight elevators the power operation of hoistway doors and car gates shall be provided with an immediate emergency manual operation upon loss of power.
2.6 HOISTWAY EQUIPMENT

A. Well Hole and Casings: Drill holes and provide steel driven well casing of sufficient diameter to allow PVC casing and cylinder to be set plumb on desired centerlines. Provide protective casing made of standard-weight pipe with continuous welded watertight connections to line the jack hole. The casing shall have a minimum diameter of 20-inches and shall extend a minimum of 3 feet below the bottom of the installed cylinder.

B. PVC Casing: Provide 1/2-inch thick PVC casing inside the well casing. Exterior surface of casing shall be cleaned prior to application of solvent welding material to ensure watertight connections. After PVC casing is set it shall be free of any liquid ensuring a dry condition prior to the installation of the cylinder. The bottom of the PVC casing shall be capped. Fill space between well and PVC casing and fill space with pea gravel to prevent movement and fill void. Provide positive sealing element at the top of the PVC casing to make joints watertight.

C. Cylinder: Provide equipment as applicable for direct plunger type elevator. cylinder shall include a double closed bottom a bottom plate plus a safety bulkhead seamless steel pipe with sufficient thickness to sustain 400-PSI test. The external surface shall be coated with heavy, double hot mopped bitumastic or asphaltum compound and allowed drying prior to installation or double wrapped with tacecoat. Provide cylinder head with adjustable packing gland that shall prevent excessive oil leakage. The cylinder head shall be provided with means to release air from cylinder and be easily repackable.

D. Plunger: Polished selected steel tubing of proper diameter turned true and smooth. Join multiple section plungers by means of internal couplings. Secure to car frame with suitable isolated platen plates. Provide stop ring to prevent plunger from leaving cylinder. Immediately prior to Final Acceptance, replace and adjust the packing gland and seals.

E. Guide Rails: Planed steel, standard T-sections. Extend rails from pit floor to underside of ceiling at top of hoistway.
   1. Provide necessary car rail brackets of sufficient size and design to ensure substantial rigidity within compliant deflection and to prevent spreading or distortion of rails under any condition.
   2. Slotted or oversized holes shall be fitted with flat washers.
   3. Provide individual brackets of sufficient length to span between the guide rail assembly and the building structure. Provide any additional bracing required.
   4. Guide rail loads shall be shown on drawings. Include running, loading and seismic loads.

F. Buffers: Spring type with pipe struts and braces as required. Mount on continuous steel channels secured to guide rails.


H. Wiring:
   1. Conductors: Provide copper insulated wiring with flame retarding and moisture resisting outer cover. Install in galvanized metal wire ways and raceways. Conductors from shaft riser to door interlocks shall be SF 2 type or equal, maximum operating temperature 392-degrees F. All terminations shall be insulated to maintain integrity of wiring. Flexible conduit may be used for short connections. Provide 10-percent spare conductors throughout.
   2. Trail Cables: UL labeled fire and moisture resistant outer braid and steel supporting strand. Provide four pairs of shielded communication wires and car lighting circuits. Provide coax cable for CCTV camera. Provide Security reader wiring. Prevent cables from rubbing or chafing against hoistway or car items.

4. Work Light and Plug Receptacles: Provide on top and bottom of car with lamp guards.

5. Stop Switches: Provide Code required stop switches in the pit

2.7 DOOR AND ENTRANCE EQUIPMENT

A. General: Provide entrance assembly with UL 1-1/2 hour rating.

1. Frames: Fabricate from manufacturer’s standard gauge cold rolled furniture steel, of bolted construction, to form a one piece unit. A fireproof and sound-deadening material shall be applied to the unexposed side of each frame. Finish shall be brushed stainless steel.
   a. Provide accessibility designations at a height of 5’ 0” above the floor.
   b. The plaques shall have white numerals on a black background.
   c. Designations shall be flush with inconspicuous mechanical mounting.
   d. Provide medical emergency designations identifiable by a 3-inch high “Star of Life” plaque on each side jamb of the designated elevator.

B. Sills: Extruded nickel silver with a non-slip surface.

C. Struts: Minimum 3” continuous hot rolled or formed steel angle with secure fastening to sill and floor beam above.

D. Headers: Minimum 3/16” thick formed steel designed to support hangers. Header shall be bolted to supporting struts.

E. Dust Covers: Removable, full length, manufacturer’s standard gauge steel. Covers shall be made in sections for convenient access to hangers.

F. Fascia: Manufacturer’s standard gauge sheet steel sections extending from top of header to sill of door above, or beam above if there is no door opening. Provide continuous fascia if front hoistway walls are not built out where openings do not exist.

G. Toe Guards: Manufacturer’s standard gauge sheet steel.

H. Doors:
   1. Door panels shall be hollow metal flush door construction, manufacturer’s standard gauge furniture steel. Fill with fireproof, sound deadening material. Provide reinforcement by formed vertical sections running full height of door.
   2. Doors shall be provided with two (2) removable, non-metallic gibs with fire tabs, located at the leading and trailing edge of the door panel. A third metal fire stop shall be mounted between the two gibs.
   3. Finish shall be brushed stainless steel.
   4. There shall be no visible exposed or protruding fasteners.

I. Sight Guards: Provide for each landing door panel, constructed of manufacturer’s standard gauge furniture steel. Finish matching doors.

J. Hangers: Provide two-point suspension sheave type with provisions for vertical and lateral adjustments. Sheaves shall be minimum 2 1/4-inches in diameter with sealed ball or roller bearings.
K. Tracks: Cold drawn steel shaped and finished to permit free movement of sheaves. Bottom of track shall be in contact with up thrust roller.

L. Closers: Sash, spring or spirators type.

M. Interlocks: Electrical contacts shall prevent the operation of the elevator by normal operating devices unless hoistway doors are closed or within tolerances allowed by Code.

2.8 CAR EQUIPMENT

A. Loading Classification and Requirements: The elevator shall be designed for Class A passenger/freight loading, following the design data and formulas identified in the Code, including, but not limited to, the car frame, platform and guides.

B. Car Frame: Welded or bolted, heavy gauge or structural steel channel construction.

C. Platform: Isolated type, steel frame with steel or wood sub floor, fireproof on underside.

D. Guide Shoes: Provide roller type guides to provide smooth and quiet ride free of rumbles, bumps, vibrations, and excessive sway. Guides shall consist of three or more spring mounted rollers per guide assembly to maintain rail contact and include adjustable stops to control to post wise float. Rollers shall be constructed of neoprene or other similar sound deadening material. Rollers shall have high memory characteristics, enabling the rollers to quickly regain their round shape after an elevator sits still overnight or for a moderate period of time.

E. Sill: Extruded nickel silver with a non-slip surface.

F. Toe Guard: Per Code.

G. Hangers and Tracks: Same as hoistway entrance doors hangers and tracks.

H. Door Protection:

I. Infrared Detector:
   1. Provide an infrared door edge that projects an infrared curtain of light guarding the door opening. Arrange to reopen doors if one beam of the curtain is penetrated. Unit shall have Transmitters and Receivers spaced at a minimum distance to provide the maximum amount of protection within the height of the doorway. Systems which have the availability to turn OFF or ON individual zones within the curtain will not be allowed.

   2. Differential Door Timing Feature: Provide adjustable timers to vary the time that the doors remain open in response to a car or hall call. The doors shall remain open for one second in response to a car call and five to eight-seconds for a hall call. This time shall be reduced to 1/2-second if the proximity detector is interrupted. The doors shall remain open as long as passengers are crossing the threshold.

   3. Nudging: When doors are prevented from closing for twenty (20) seconds due to failure of the proximity device or obstruction, the doors shall close at reduced speed and a buzzer shall sound.

J. Door Operator: Provide a high-speed, heavy-duty master electric power door operator to automatically open and close the car and hoistway doors. The operator shall utilize velocity and distance feedback speed control. The doors shall be capable of smooth and quiet operation without slam or shock.

K. Opening speed shall not be less than 3.0 f.p.s. with reversal in no more than 2 1/2”.

L. An auxiliary-closing device shall automatically close hoistway doors if car leaves the landing zone.
M. In case of power interruption, it shall be possible to manually operate car and hoistway doors from inside the cab, if the car is within the landing zone.

N. Car Door Contacts: Electrical contacts shall prevent the operation of the elevator by normal operating devices unless car doors are closed or within tolerances allowed by Code.

O. Door Restrictor: Provide door-restricting device to prohibit the opening of car doors by more than 4” when outside of the unlocking zone.

P. Car Top Service Guardrail: Provide a 3’ 6” high railing on the car top with intermediate rail, toe board and stationary posts per Code.

Q. Car Enclosure: An approved company shall manufacture Car enclosure. Provide the following features:
   1. General: The enclosure shall be adequately reinforced and ventilated to meet Code requirements. Provide sound-deadening mastic to exterior.
   2. Shell: Sides and back shall be manufacturer’s standard gauge sheet steel with baked enamel interior finish. Baked enamel color as selected by the Architect. Arrange shell to accept removable interior panels as specified.
   3. Canopy:
      a. Provide 8'-0” clear height under canopy. Reinforced manufacturer’s standard gauge furniture steel or laminated construction of adequate and code-compliant strength.
      b. Underside painted baked enamel reflective white. Arrange for hinged top emergency exit including lock and contact as required by Code.
      c. Suspended Ceiling and Lighting:
         1) Provide manufacture’s standard grid with aluminum frame and translucent white plastic diffusers.
         2) Provide energy efficient T8 fluorescent type lighting fixtures that uniformly distribute the light at handrail height as required by Code.
         3) Lighting fixtures shall be designed to protect passengers from dislodged bulbs or broken glass while providing code compliant illumination.
         4) Provide clear access to the emergency exit per Code requirements.
      d. Front Return Panels and Strike Columns: manufacturer’s standard gauge sheet stainless steel. Return panel shall be swing type to allow access to car station wiring and fixtures. Provide cabinets for special operating features and flush mounted speaker grills for the “Hands Free” telephone and intercom required by these specifications. Finish shall be stainless steel No. 4 brushed.

R. Transoms: Manufacturer’s standard gauge stainless steel No. 4 finish matching front return panels and strike columns.

S. Car Door Panels: Same construction as hoistway door panel. Finish shall be stainless steel No. 4 brushed finish.

T. Interior Panels: Provide as detailed by the Architect. Provide mounting method that prevents rattling or vibration.
U. Handrails: Provide a 1 1/2-inch diameter stainless steel No. 4 brushed finish cylindrical handrail on the rear wall. Return ends to wall. Provide adequate mounting. Top of handrail to be 32-inches above the finished floor.

V. Bases: Provide a 4” high base. Finish shall be stainless steel No. 4 brushed finish.

W. Pads and Hooks: Provide pad hooks and pads. Pad hooks shall be conspicuous type (buttons) at front return panels and inconspicuous type (“S”) hooks at sides and rear walls. Mount pad hooks at sides and rear above suspended ceiling line. Pads shall cover all walls and front return panels and include cutouts for access to the operating fixtures.

X. Ventilation: Two-speed exhaust fan.

2.9 SIGNALS AND FIXTURES

A. Provide manufacturer’s standard or premium model fixtures, selected from product brochures depicting typical devices and arrangements.

1. Car Operating Station:
   a. Provide one (1) car operating station, integral in swing return front panel. Station shall have illuminating pushbuttons numbered to conform to floors served. Buttons shall illuminate to show registration and extinguish when car stops in response to a call. Buttons shall have a minimum dimension of 3/4”, be raised 1/8” (plus or minus 1/32”) above the surrounding surface, be of square shouldered design, and have a detectable mechanical motion. A minimum clear space of 3/8” or other suitable means of separation shall be provided.

b. Braille/Arabic designations shall be identified by a minimum of 5/8-inch Arabic numeral, standard alphabet character, or standard symbol immediately to the left of the control button. Braille shall be located immediately below the numeral, character or symbol. Controls and emergency equipment shall be identified by raised symbols, including but not limited to, door open, door close, alarm bell, emergency stop and telephone. The call button for the main entry floor shall be designated by a raised star at the left of the floor designations. Braille and Arabic designations shall be flush with inconspicuous mechanical mounting. The plaques shall have raised white colored characters on a black background.

c. Panel shall include an Alarm button, Door Open and Door Close buttons. All operating controls shall be located no higher than 4’ 0” above the car floor; the alarm button shall be located no lower than 2’ 11” above finished floor height.

d. Provide in main car station a fire emergency service cabinet containing: Phase II emergency fire service switch, fire jewel, fireman’s phone jack, fire operating instructions on the inside face of the cabinet door, Call Cancel button and Door Open and Door Close buttons.

e. Provide an intercom grill and flush mounted speaker grill for the “Hands-free” telephone.

f. Provide a lockable service cabinet with concealed hinges. Cabinet door shall be flush with the faceplate with hairline joints. Door shall include a flush integral certificate frame for viewing the operating permit. The window shall be constructed of durable Plexiglas or similar material and be accessible from backside of locked door. Minimum window size to be 7” wide by 3” high.

g. Cabinet shall contain the following toggle type controls:
   1) A light switch.
   2) Stop Switch
3) Two speed fan switch.
4) Inspection switch, conforming to the ASME Code.
5) Independent service switch.
6) Emergency light test button
7) A duplex 120-volt, A.C. G.F.C.I convenience outlet.

h. Engrave the car operating panels with the following:

i. Elevator Number over operating buttons. Minimum ¼” high lettering.

j. Elevator Capacity. Minimum ¼” high lettering.

k. Car Position Indicators: Provide LED digital readout type with 2-inch high (minimum) indications. Locate at top of car operating panel at a height no lower than 6'-6” above the finished floor. Indicator shall provide car position and direction of travel and include an adjustable electronic floor passing chime. As the car passes or stops at a floor served by the elevator, the corresponding designation shall illuminate, and an audible signal will sound. The audible signal shall be no less than 20-decibels with a frequency no higher than 1500.

l. Car Direction (Arrival) Lanterns: Provide arrow shaped UP and DOWN lanterns mounted in both car entrance jambs with audible signals. The visual signal for each direction, minimum 2 1/2” wide by 2 ½” high, shall be visible from the proximity of the hall station. Indicators shall include audible signal consisting of volume adjustable chime that shall sound once for the up direction twice for the down direction of rise, initiated as the car door begins to open after the car’s arrival at the landing. Locate fixture a minimum of 6’-0” above finished floor height. Finish matching the entrance columns.

m. Hall Buttons:

1) Provide one riser of hall pushbuttons for each elevator. Stations shall include flush mounted faceplates. Centerline of riser (call button or centerline of two-button pattern) to be at 3’ 6” above the finished floor. Buttons shall have a minimum dimension of ¾”, be raised 1/8” (plus or minus 1/32”) above the surrounding surface, be of square shouldered design, and have a detectable mechanical motion. A minimum clear space of 3/8” separation shall be provided. Buttons shall illuminate white across the entire surface of the button.

2) Provide Code-required pictograph fire signs above the hall buttons, at all floors. Provide 3-position Code-required Phase I key switch and operational instructions engraved minimum 1/8-inch high on the faceplate, at the main lobby. Fire signs with minimum 1/2-inch high characters shall be engraved on the faceplate, at all floors.

3) Faceplate edges shall be relieved. Finish shall be stainless steel No. 4 brushed finish. Backfill for engraving shall be epoxy.

4) Provide spanner type security fasteners. Finish matching faceplate.

5) No objects adjacent to, and below, the hall push button station shall project more than 4-inches from the wall.

n. Hoistway Access Switches: Provide without faceplate in entrance frame side jamb at all top and bottom terminals.
2.10 COMMUNICATION SYSTEM

A. Telephone System: Provide automatic dial “Hands-Free” telephone station located in the car station. A button shall suitably identify activation of auto dialer for the visually impaired. Speaker shall be mounted without faceplate or visible fasteners and located either behind the control station or within the telephone box. Voice communication shall be audible on both ends, regardless of the elevator occupant’s location within the car enclosure.

B. Provide a compliant telephone symbol and Braille designation adjacent to a separate activation button mounted on the car operating panel.

C. Provide engraved emergency instructions above the activation button. Instructions shall read: “To use emergency telephone, press button below. Dialing will occur automatically.”

D. Provide a visual indication or jewel that illuminates when the initiated call has been received by the master station. Instructions under the visual indicator or within the lighted jewel shall read: “Help coming”.

E. Provide wiring from car to telephone terminal box in elevator machine room.

F. Provide permanent means of communication between the elevator car and the machine room if required by Code.

G. Provide installation of Life Safety speaker provided by others within the elevator cab. Provide wiring from car to Life Safety junction box in machine room.

PART 3 EXECUTION

3.1 EXAMINATION OF BUILDING AND CONTRACT DOCUMENTS

A. The Contractor shall examine the supporting structure and the conditions under which the work shall be installed and notify the Contractor of any conditions detrimental to the proper and timely completion of the work. Do not proceed with the installation until unsatisfactory conditions have been corrected and are acceptable.

B. Verify dimensions of supporting structure at the site by accurate field measurements. The work shall be accurately fabricated and fitted to the structure. Contractor shall be satisfied by review of the working drawings and field observation that the clearances and the alignments are proper for the installation of this work.

C. Coordinate works with the work of other trades, and provide items to be placed during the installation at the proper time to avoid delays in the overall work. Use Contractor’s benchmarks where necessary.

D. The Contractor shall review the electrical drawings and verify all conditions for proper installation of this work. Verify the size of all feeders and related equipment and furnish all equipment for proper operation.

3.2 FIELD QUALITY CONTROL

A. Tests:
   1. Perform as required by code, and authorities having jurisdiction.
   2. Provide labor, material, equipment and connections.
   3. Repair or replace defective work as required.
   4. Pay for restoring or replacing damaged work due to tests.
B. Final Inspection: When all work is completed, and tested, notify the Owner in writing that the elevator is ready for final inspection and acceptance test. A testing and inspection date shall then be arranged. The proper operation of every part of the elevator system and compliance with contract requirements of the Code shall be demonstrated to the Owner. Furnish all test instruments, weights, and materials, required at the time of final inspection. The following tests shall be made on each elevator at the time of final inspection:

1. Test Period: The elevator shall be subjected to a test for a period of one-hour continuous run, with full-specified load in the car. During the test run, the car shall be stopped at all floors in both directions of travel for a standing period of 10-seconds per floor.

   a. Speed Load Tests: The actual speed of the elevator car shall be determined in both directions of travel with full contract load and with no load in the elevator car. Speed shall be determined by a tachometer. The actual measured speed of elevator car with full load shall be within 10-percent of rated speed. The maximum difference in actual measured speeds obtained under the various conditions outlined between the up and the down directions shall be checked.

   b. Floor-to-floor times with no load and full load in the car shall be checked.

   c. Car Leveling Tests: Elevator car leveling devices shall be tested for accuracy of landing at all floors with no load and full load in the car, in both directions of travel. Accuracy of floor landing (plus or minus 1/8-inch shall be determined both before and after the full-load run test.

   d. Final System Tests for Smoke Detection/Fire Elevator Recall: After work is completed, conduct a final test of entire system. Submit results on approved test report forms.

C. Re-inspection: If any equipment is found to be damaged or defective, or if the performance of the elevator does not conform to the requirements of the contract specifications or the Safety Code, no approval or acceptance of the elevators shall be issued until all defects have been corrected. When the repairs and adjustments have been completed and the discrepancies corrected. The Owner shall be notified and the elevator shall be re-inspected. Rejected elevators shall not be used until they have been re-inspected and approved.

D. Elevators rejected by the authority having jurisdiction for reasons outside the Subcontractor's control, including but not limited to the incomplete or faulty equipment or work of others, shall entitle the Subcontractor to compensation for all costs of the failed inspection, including fees, fines, travel time and site labor expended.

3.3 ADJUSTING, CLEANING, LUBRICATION AND PAINTING

A. Perform the following work prior to final testing and acceptance:

1. Adjust all equipment for optimum performance, including controllers, motors, landing systems, hoistway switches, door operating equipment and safety equipment to achieve the required performance levels.

2. Thoroughly clean all equipment and equipment areas free of all dust, dirt, debris and oil and grease.

3. Lubricate all equipment in accordance with manufacturer’s guidelines.

4. Patch and paint exposed work soiled or damaged during installation. Repair to match adjoining work prior final acceptance.

5. Clean and paint the following equipment and areas: pit floor and machine room floor.
3.4 INSTRUCTIONS

A. Upon completion of all work, the Contractor/Installer shall provide an instruction period. Instructions shall be given by technically competent personnel and shall apply to actual project conditions. The instructions shall cover, but shall not be limited to the following:

1. Operation of elevators under routine and emergency conditions, proper maintenance of finish surfaces and protocol for placing emergency or trouble calls and authorizing overtime work.

2. Operation of elevator fire recall system and tenant security system.

3. Operation of elevator communication, door reversal device, etc.

4. Routine operational items and frequent, common, external causes of elevator failure that the Owner or designated occupant should inspect and verify before calling for service, in order to avoid unnecessary additional charges.

END OF SECTION