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For information about this project, please call (312) 747-3570.

BUILDING CHICAGO TOGETHER
RICHARD M. DALEY, MAYOR

WATER MAIN IMPROVEMENT PROGRAM
DEPARTMENT OF WATER MANAGEMENT

NOTES:

1. TWO SIGNS (ONE ON EACH END OF EACH PIPE PROJECT) MUST BE DISPLAYED FROM THE TIME CONSTRUCTION BEGINS TO THE TIME THAT PAVEMENT IS RESTORED.

2. THE LOCATION OF THE SIGN WILL BE DETERMINED FOR THE RESIDENT ENGINEER.

3. AFTER THE COMPLETION OF THE CONTRACT THE SIGN WILL BE PROPERTY OF THE CITY OF CHICAGO AND MUST BE DELIVERED TO THE APPROPRIATE DISTRICT YARD UNLESS ORDERED TO DISCARD BY THE COMMISSIONER.
LEGEND

- CITY OF CHICAGO - WATER MAINS
  - REGULAR 4-1/2" HYDRANT LOWER LEVEL
  - REGULAR 4-1/2" HYDRANT UPPER LEVEL
  - MAGNETIC GUARD 3-HYDRANT HYDRANT
  - SPHERE TYPE HYDRANT
  - ALCO-347-HYDRANT

- PRIVATE MAINS
- INDICATES VACATED STREETS OR ALLEYS
- EASEMENT
- CITY LIMITS
- TUNNELS

R.O.W. - RIGHT OF WAY LINES
- 6 (CENTER LINE) OF STREET OR R.O.W
- B.S.L. - SOUTH OF SOUTH LINE
- N.S.L. - NORTH OF NORTH LINE
- E.E.L. - EAST OF EAST LINE
- W.E.L. - WEST OF WEST LINE
- S.E.L. - SOUTH OF SOUTH LINE
- N.E.L. - NORTH OF NORTH LINE
- E.W.L. - EAST OF EAST LINE
- W.W.L. - WEST OF WEST LINE
- S.S.E. - SOUTH OF SOUTH EAST CORNER
- N.S.E. - NORTH OF SOUTH EAST CORNER
- W.W.T. - WATER TAP
- V. - VALVE
- B.O. - BLOW-OFF
- C.G. - CONCRETE GROUND
- K.H. - KNOB
- T.C. - TAPPING CONNECTION
- W.M. - WATER MAIN
- GVC - CEMENT CONCRETE WATER MAIN
- INDICATES PRESSURE CONTROL VALVES
- L-GROOFS GIVE DIRECTION OF FLOW (TOWARD)
- LOW (LI) PRESSURE
- C.I.- CAST IRON WATER MAIN
- D.I. - DUCTILE IRON WATER MAIN
- P.S.K - PUMP DISTRICT
- V.W.L. - VALVE BASINS WITH LOCKED LIDS

NOTE: ALL DIMENSIONS ARE MEASURED FROM PROPERTY LINES OR AS NOTED.
<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
<th>SYMBOL</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td></td>
<td><strong>Existing-Water Main</strong></td>
<td></td>
<td><strong>Existing-Curb</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-Water Services</strong></td>
<td></td>
<td><strong>Existing-Sidewalk</strong></td>
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<td></td>
<td><strong>Proposed-Water Main</strong></td>
<td></td>
<td><strong>Existing-Ditches-Creeks-Edge of Water</strong></td>
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<tr>
<td></td>
<td><strong>Proposed-New Water Services</strong></td>
<td><strong>Proposed-ROW</strong></td>
<td><strong>Existing-Edge of Pavement</strong></td>
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<tr>
<td></td>
<td>WM to B-Box</td>
<td><strong>Abandoned-Water Main</strong></td>
<td><strong>Existing-Embankments-Dead Ends-Retaining Walls</strong></td>
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<tr>
<td></td>
<td><strong>Proposed-New Water Services</strong></td>
<td><strong>Existing ROW</strong></td>
<td><strong>Existing-fence</strong></td>
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<tr>
<td></td>
<td>B-Box to Property</td>
<td><strong>Existing ROW (Vacated)</strong></td>
<td><strong>Existing-CIA Buried Electric Cables</strong></td>
</tr>
<tr>
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<td><strong>Proposed-Water Main</strong> (By Others)</td>
<td><strong>Existing ROW (Elevated)</strong></td>
<td><strong>Existing-Railroads</strong></td>
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<tr>
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<td><strong>Abandoned-Water Main</strong></td>
<td><strong>Existing-Easeament</strong></td>
<td><strong>Existing-Buried Street Car Tracks</strong></td>
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<tr>
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<td><strong>Existing ROW</strong></td>
<td><strong>Proposed-ROW</strong></td>
<td><strong>Existing-steam and Cooling Pipes</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing ROW (Vacated)</strong></td>
<td><strong>Existing-City Limits Boundary Line</strong></td>
<td><strong>Existing-City Press Electrical</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing ROW (Elevated)</strong></td>
<td><strong>Existing-Chicago Park District Line</strong></td>
<td><strong>Existing-Hedge Line</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-Easeament</strong></td>
<td><strong>Existing-City Electric</strong></td>
<td><strong>Existing-Woods Tree Line</strong></td>
</tr>
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<td></td>
<td><strong>Proposed-ROW</strong></td>
<td><strong>Existing-ComEd</strong></td>
<td><strong>Proposed-Curb</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-City Limits Boundary Line</strong></td>
<td><strong>Existing-Cable TV</strong></td>
<td><strong>Proposed-Sidewalk</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-Chicago Park District Line</strong></td>
<td><strong>Existing-Telephone</strong></td>
<td><strong>Proposed-Ditches-Creeks-Edge of Water</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-City Electric</strong></td>
<td><strong>Existing-Sewer</strong></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-ComEd</strong></td>
<td><strong>Proposed-Sewer</strong></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-Cable TV</strong></td>
<td><strong>Proposed-Sewer Lateral</strong></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-Telephone</strong></td>
<td><strong>Existing-Sediment Force Main</strong></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-Sewer</strong></td>
<td><strong>Proposed-Sediment Force Main</strong></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Proposed-Sewer</strong></td>
<td><strong>Abandoned-Sewer</strong></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Proposed-Sewer Lateral</strong></td>
<td><strong>Abandoned-Gas</strong></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-Sediment Force Main</strong></td>
<td><strong>Existing-Gas</strong></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Proposed-Sediment Force Main</strong></td>
<td></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Abandoned-Sewer</strong></td>
<td></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Abandoned-Gas</strong></td>
<td></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Existing-Gas</strong></td>
<td></td>
<td><strong>Proposed-Pavement</strong></td>
</tr>
</tbody>
</table>
CONCRETE THRUST RESTRAINT TO 8" DEAD END DIMENSIONS. INSTALL WHEN ALL BRANCH JOINTS ARE NOT RESTRAINED

NOTE:

1. SEE FIRE HYDRANT DRAIN DETAILS.

2. ALL BURIED DUCTILE IRON HYDRANT COMPONENTS MUST BE WRAPPED IN POLYETHYLENE ENCASEMENT.

3. SEE DETAIL D-5 FOR FIRE HYDRANT DRAIN ASSEMBLY
Fire Hydrant Installation Detail

For Vaulted Sidewalks

Diagram includes:
- Joint of sidewalk stone above to come over center of wall
- Blocking to be filled with sand after hydrant is set
- 1" flexible copper tubing to drain
- 1/4" expansion joint
- Curbing above waterproofing
- Curb above
- 2' or 2.5' along I.D.O.T. roadways
- 8" 3'-6"

Note: This detail is provided for reference purposes only and is not a C.D.W.M. water main standard.
DETAIL "A"
DRAIN TILE DRAIN HOLES

NOTES:
1. WATER TABLE MUST BE BELOW BOTTOM OF TRENCH.
2. LAY DRAIN PIPE IN WATER MAIN TRENCH IF HYDRANT LEAD PIPE IS NOT LONG ENOUGH TO ACHIEVE 14" DRAIN PIPE LENGTH.
3. PLACE DRAINPIPES SO HOLES ARE FACING DOWN. SEE DETAIL A.
4. COPPER WATER SERVICE TUBING MUST BE ENCASED IN POLYETHYLENE WRAP.

FIRE HYDRANT DRAIN DETAIL
NOTE:
WATER TABLE MUST BE BELOW BOTTOM OF DRAIN SUMP.

FIRE HYDRANT SUMP DRAIN
FOR RELOCATED HYDRANTS

REV:04.07
CIRCULATED WATER MAINS

- WATER MAINS LARGER THAN 16-INCH
- 12-14-16-INCH WATER MAINS
- 8-INCH WATER MAINS
- 6-INCH WATER MAINS
- 4-INCH WATER MAINS

UNCIRCULATED WATER MAINS - DEAD END

- WATER MAINS LARGER THAN 16-INCH
- 12-16-INCH W.M.
- 8-INCH W.M.
- 6-INCH W.M.
- 4-INCH W.M.

8-BLUE FLANGE Y-YELLOW FLANGE R-RED FLANGE W-WHITE FLANGE
ALL PUBLIC FIRE HYDRANTS ARE TO BE PAINTED RED EXCEPT FOR THE TOP FLANGES WHICH MUST BE COLOR CODED.
NOTES:

1. PROVIDE PIPE BEDDING TO A DEPTH OF 3/8 OF PIPE DIAMETER OR 6" MINIMUM OF COMPACTED CRANULAR MATERIAL, GRAVEL, OR CRUSHED STONE.

2. USE CA-16 BEDDING MATERIAL FOR PIPE SIZES UP TO 16-INCH DIAMETER.

3. USE CA-11 BEDDING MATERIAL FOR PIPE SIZES LARGER THAN 16-INCH DIAMETER.

4. BAGCUFF MUST BE COMPACTED UP TO ONE FOOT ABOVE THE PIPE IN TYPICAL TRENCH TYPE I AND TO THE TOP OF THE TRENCH IN TYPICAL TRENCH TYPE II & III. TRENCH BAGCUFF GRADATION CA-16. EXCEPT IN CENTRAL BUSINESS DISTRICT USE CLSM (FLAMMABLE FILL).


6. WS EPOXY COATED BARS, 18" LONG DRILLED AND ORDNED AT 30" CENTERS. EXCEPT 6" ON 40" STREETS WHERE CLSM USED AS TRENCH BACKCUFF.


8. PLATE ALL UNATTACHED EXCAVATIONS IN PAVERMENT AREAS AND SECURE PLATES TO PAVERMENT AND PROVIDE BARRIERS IN PAVERMENT AREAS.

* CENTRAL BUSINESS DISTRICT IS DEFINED AS THE AREA FROM DIVISION STREET SOUTH TO ROOSEVELT ROAD AND HALSTED STREET EAST TO LAKE MICHIGAN.

---

PIEVE MAIN TRENCH DETAILS

<table>
<thead>
<tr>
<th>PIPE DEPTH REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MINIMUM DEPTH OF COVER FOR WATER MAINS</td>
</tr>
<tr>
<td>SIZE OF PIPE</td>
</tr>
<tr>
<td>3&quot; to 3&quot;</td>
</tr>
<tr>
<td>4&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
</tr>
<tr>
<td>8&quot;</td>
</tr>
<tr>
<td>12&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
</tr>
<tr>
<td>24&quot;</td>
</tr>
<tr>
<td>30&quot; TO 42&quot;</td>
</tr>
<tr>
<td>#8 &amp; LARGER</td>
</tr>
</tbody>
</table>
EXISTING SURFACE

WATER MAIN

PROVIDE INSULATION WHEN DEPTH
OF COVER IS LESS THAN
5 FEET

D+3'

EXISTING SURFACE

BACKFILL MATERIAL

FINE SAND (FA7)

MIN. 2' WIDE BY 4"
THICK INSULATION BOARD (USE
2-2" THICK BOARDS).
Mastic at all joints

EXTEND INSULATION BOARD
DOWN SIDES TO 6" BELOW
WATER MAIN OR SERVICE.

PIPE BEDDING
MATERIAL

6"

WATER MAIN

NOTES:

1. INSULATION BOARD TO BE CLOSED CELL, EXTRUDED POLYSTYRENE
FOAM MEETING ASTM 578, TYPE VI, 40 PSI COMPRESSING STRENGTH (ASTM D1621)
0.1% MAX. WATER ABSORPTION (ASTM C272).

2. BACKFILL MATERIAL AROUND INSULATION MUST BE FINE SAND FREE FROM ROOTS,
ORGANIC MATTER, OR OTHER INJURIOUS MATERIALS.

3. OVERLAP ALL INSULATION BOARD JOINTS.
NOTES:

1. USE ONE LENGTH OF POLYETHYLENE TUBE WRAP FOR EACH LENGTH OF PIPE, OVERLAPPED AT PIPE JOINTS AND FOLD EXCESS OVER TOP OF TUBE FOR SLACK REDUCTION.

2. USE CHART “A” TO SELECT SIZE OF WRAP.

<table>
<thead>
<tr>
<th>PIPE DIAMETER (IN.)</th>
<th>D.I.P. WITH PUSH-ON JOINTS (IN.)</th>
<th>D.I.P. WITH MECHANICAL JOINTS (IN.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>8</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>12</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>16</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>24</td>
<td>53</td>
<td>53</td>
</tr>
</tbody>
</table>
VERTICAL THRUST BLOCK DETAILS

NOTES:
1. FULL CONCRETE THRUST BLOCKS AS SHOWN ARE REQUIRED WHEN THRUST RESTRAIN IS NOT PROVIDED BY OTHER MEANS SUCH AS RESTRAINED JOINT PIPE.
2. WHEN THRUST RESTRAINT GLANDS ARE INSTALLED FOR THE CONNECTIONS, CONCRETE THRUST BLOCKS SHALL BE PROVIDED UP TO THE DOTTED LINE AS SHOWN.
3. ALL BOLTS, NUTS, THRUST RESTRAINT GLANDS AND FITTINGS SHALL BE WRAPPED WITH POLYETHYLENE TUBE TO PREVENT CORROSION AND CONCRETE ADHESION.
4. CONCRETE FOR THRUST BLOCKS MUST NOT CONTAIN FLY ASH.

HORIZONTAL THRUST BLOCK DETAILS

VERTICAL THRUST BLOCK DETAILS

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>DEAD END &amp; TEE</th>
<th>HORIZONTAL 1/8 BEND</th>
<th>HORIZONTAL 1/4 BEND</th>
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</thead>
<tbody>
<tr>
<td>INCH DIA.</td>
<td>D  H  W  CY</td>
<td>D  H  W  CY</td>
<td>D  H  W  CY</td>
</tr>
<tr>
<td>16</td>
<td>1  5.5 4.5 2</td>
<td>1  6.5 5 2.5</td>
<td>1  4.5 4 1.5</td>
</tr>
<tr>
<td>12</td>
<td>1  3.5 3.5 1</td>
<td>1  4 4 1.5</td>
<td>1  3 3 1.75</td>
</tr>
<tr>
<td>8</td>
<td>.5  2.5 2.5 .5</td>
<td>.5  3 3 .5</td>
<td>.5  2 2 .3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>HORIZONTAL 1/8 BEND BOTTOM</th>
<th>HORIZONTAL 1/4 BEND BOTTOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCH DIA.</td>
<td>D  H  W  CY</td>
<td>D  H  W  CY</td>
</tr>
<tr>
<td>16</td>
<td>1  5.5 4.5 2</td>
<td>1  4.5 4 1.5</td>
</tr>
<tr>
<td>12</td>
<td>1  3.5 3.5 1</td>
<td>1  3 3 1.75</td>
</tr>
<tr>
<td>8</td>
<td>.5  2.5 2.5 .5</td>
<td>.5  2 2 .3</td>
</tr>
</tbody>
</table>

D IS THE DIMENSION INTO UNDISTURBED GROUND IN FEET
H IS HEIGHT OF THRUST BLOCK IN FEET
W IS WIDTH OF THRUST BLOCK IN FEET
ALL DIMENSIONS ARE MINIMUM.
THRUST BLOCKS IN LOOSE FILL OR SAND AREAS ARE NOT INCLUDED IN THESE TABLES AND WILL REQUIRE ADDITIONAL ANALYSIS.
HORIZONTAL TEES - LENGTH OF RESTRAINED JOINTS

<table>
<thead>
<tr>
<th>TEE SIZE</th>
<th>L_B</th>
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<tbody>
<tr>
<td>8&quot; x 8&quot; : (8&quot;, 12&quot;, 16&quot; OR 24&quot;) x 12&quot;</td>
<td>0</td>
</tr>
<tr>
<td>16&quot; x 16&quot;</td>
<td>42'</td>
</tr>
<tr>
<td>36&quot; x 24&quot;</td>
<td>277'</td>
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1/8 VERTICAL BENDS - LENGTH OF RESTRAINED JOINTS

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>L1</th>
<th>L2</th>
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<tbody>
<tr>
<td>8&quot;</td>
<td>26'</td>
<td>26'</td>
</tr>
<tr>
<td>12&quot;</td>
<td>37'</td>
<td>11'</td>
</tr>
<tr>
<td>16&quot;</td>
<td>67'</td>
<td>20'</td>
</tr>
<tr>
<td>24&quot;</td>
<td>67'</td>
<td>20'</td>
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DISTANCE OF RESTRAINED JOINTS REQUIRED EITHER SIDE OF BENDS

<table>
<thead>
<tr>
<th>PIPE SIZE</th>
<th>L</th>
<th>1/32</th>
<th>1/16</th>
<th>1/8</th>
<th>1/4</th>
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<tr>
<td>8&quot;</td>
<td>3'</td>
<td>6'</td>
<td>12'</td>
<td>29'</td>
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<td>12&quot;</td>
<td>4'</td>
<td>8'</td>
<td>17'</td>
<td>41'</td>
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</tr>
<tr>
<td>16&quot;</td>
<td>7'</td>
<td>15'</td>
<td>30'</td>
<td>73'</td>
<td></td>
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<tr>
<td>24&quot;</td>
<td>7'</td>
<td>15'</td>
<td>30'</td>
<td>73'</td>
<td></td>
</tr>
</tbody>
</table>

HORIZONTAL BENDS - LENGTH OF RESTRAINED JOINTS

NOTE:
1. MINIMUM LENGTHS OF PIPE REQUIRED TO RESTRAIN FITTINGS SHOWN.
2. LENGTHS BASED ON POLY-WRAPPED PIPE.
PRECAST VALVE BASIN
FOR PIPES UP TO 16" DIA.

**Nominal Pipe Sizes**

<table>
<thead>
<tr>
<th>Pipe Sizes</th>
<th>Opening Dimensions</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>A</td>
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<tr>
<td>8&quot;</td>
<td>11.0&quot;</td>
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<td>12&quot;</td>
<td>15.5&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
<td>19.5&quot;</td>
</tr>
</tbody>
</table>
NOTES:

1. PROVIDE 6" THICK COMPACTED CA-16 BEDDING

2. USE PRECAST CONCRETE BASE OR PROVIDE 6" (MIN.) THICK CONCRETE BASE POURED IN PLACE WITH #4 EPOXY COATED REBARS 4" C/C BOTH WAYS.

3. CUT LIFTING LUGS AFTER PLACING THE PRE-CAST SLAB IN POSITION.

4. ALL JOINTS AND BRICK MASONRY SHALL BE PLASTERED INSIDE AND OUTSIDE WITH 1:2 CEMENT MORTAR.

5. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS RESTRICTED.
NOTES:
1. END SEAL - BRICK AND MORTAR OR SELF CURING RUBBER SEAL.
2. LENGTH OF CASING PIPES UNDER METRA TRACKS SHALL BE EXTENDED TO METRA R.O.W. LINES AND JACKING AND RECEIVING PITS ARE NOT TO BE LOCATED WITHIN TRACK R.O.W.

THIS DETAIL IS PROVIDED FOR REFERENCE PURPOSES ONLY AND IS NOT A C.O.W.M.
WATER MAIN STANDARD
GENERAL NOTES
1. Replace the sewer/drain when the invert of the water main is LESS than 18" ABOVE the crown of the sewer/drain.
2. When a water main crosses UNDER a sewer/drain, see detail “Water Mains Crossing Under Sewers & House Drains.”
3. When the invert of the water main is MORE than 18" ABOVE the crown of the sewer/drain, no sewer/drain replacement is required.

KEY TO SYMBOLS
- W: Proposed Ductile Water Main
- J: Proposed Ductile Water Main Joint (Continuous Pipe Between Joints)
- S: Existing Sewer or House Drain
- R: Proposed Sewer/Drain Replacement
- C: Proposed ASTM C1173 Flexible Transition Coupling for Sewer Piping
- : Proposed Bentonite Seal
- : Undisturbed Soil

SEWER/DRAIN REPLACEMENT NOTES
a. Excavate as needed to replace sewer/drain. Brace and shore trenches and excavations as needed to provide safe working conditions and comply with applicable requirements.
b. Cut existing sewer/drain to remove section to be replaced; breaking or cracking is not allowed.
c. Replace the sewer/drain with a continuous length of ductile iron pipe, the same size as the sewer/drain, cut to fit. Reconnect the sewer/drain with ASTM C1173 Flexible Transition Couplings for Sewer Pipe.
d. Encase the couplings in medium bentonite chips (1/4" - 3/4") mixed with enough clean water to form a stiff clay. Pack the excavations surrounding the couplings to seal off leaks.
e. Center a length of water main pipe (18' typically) over the sewer/drain crossing.
f. Except where bentonite seals are shown, backfill using typical standards.
g. Comply with IL EPA requirements (modified and approved by IL EPA November 13, 2007).
GENERAL NOTES

1. Replace the sewer/drain in all cases when a water main crosses UNDER the sewer/drain.

2. When a water main crosses OVER a sewer/drain, see detail “Water Mains Crossing Over Sewers & House Drains.”

SEWER/DRAIN REPLACEMENT NOTES

a. Minimum clearance between the crown of the water main and the invert of the sewer/drain is 18”.

b. Excavate as needed to replace sewer/drain. Brace and shore trenches and excavations as needed to provide safe working conditions and comply with applicable requirements.

c. Cut existing sewer/drain to remove section to be replaced; breaking or cracking is not allowed.

d. Replace the sewer/drain with a continuous length of ductile iron pipe, the same size as the sewer/drain, cut to fit. Reconnect the sewer/drain with ASTM C1173 Flexible Transition Couplings for Sewer Pipe.

e. Center a length of water main pipe (18” typically) under the sewer/drain crossing.

f. Backfill using typical standards.

g. Comply with IL EPA requirements.

KEY TO SYMBOLS

W Proposed D1 Water Main
J Proposed D1 Water Main Joint (Continuous Pipe Between Joints)
S Existing Sewer or House Drain
R Proposed Sewer/Drain Replacement
C Proposed ASTM C1173 Flexible Transition Coupling for Sewer Piping

"W" Undisturbed Soil

WATER MAINS CROSSING UNDER SEWERS & HOUSE DRAINS

REV:11.07
GENERAL NOTES

1. LOCATION OF UTILITIES AND PROPERTY LINES ARE FROM THE BEST INFORMATION AVAILABLE. EXACT LOCATION AND COMPLETENESS ARE NOT GUARANTEED.


3. TEST PITS MUST BE EXCAVATED IN ADVANCE OF PIPELINE CONSTRUCTION IN ORDER TO CONFIRM DEPTH AND LOCATION OF EXISTING UTILITIES AND WHEN DIRECTED BY THE DEPARTMENT MANAGER, NO ADDITIONAL PAYMENT WILL BE MADE FOR TEST PIT EXCAVATION.

4. IF ANY PUBLIC OR PRIVATE UTILITIES CROSS THE WATER MAIN TRENCH AND MUST REMAIN IN PLACE, THE CONTRACTOR MUST PROTECT SAID UTILITY IN CONFORMANCE WITH THE SPECIFICATIONS OR AS DIRECTED BY THE COMMISSIONER.

5. PROVIDE EROSION CONTROL IN ACCORDANCE WITH THE SPECIFICATIONS.

6. FITTINGS AND THEIR LOCATIONS INDICATED ON THE DRAWINGS ARE TENTATIVE. THE CONTRACTOR MUST COMPLETE THE INSTALLATION WITH THE NECESSARY FITTINGS DICTATED BY FIELD CONDITIONS. NO ADDITIONAL PAYMENT WILL BE MADE FOR DEVIATIONS FROM THE INDICATED FITTINGS.

7. WORK INDICATED ON THE PLANS AND NOT REFERENCED TO A BID ITEM IS CONSIDERED INCIDENTAL TO THE WORK TO WHICH IT APPLIES AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

8. WATER MAIN AND FITTINGS LOCATIONS SHOWN ON THE DRAWINGS FOR THE NEW WATER MAINS AND APPURtenANCES MAY BE CHANGED BY THE COMMISSIONER DUE TO FIELD CONDITIONS. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR SUCH CHANGES, UNLESS PREVIOUSLY APPROVED BY THE COMMISSIONER.

9. THE CONTRACTOR MUST PROVIDE THRUST RESTRAINTS IN ACCORDANCE WITH THE SPECIFICATIONS. THE CONTRACTOR MUST FURNISH AND INSTALL MECHANICAL JOINT THRUST RESTRAINT GLANDS AT ALL FITTINGS AND MECHANICAL JOINTS.

10. THE CONTRACTOR MUST VERIFY THE OPERATION OF EVERY Valve NECESSARY FOR THE REQUIRED WATER MAIN SHUT DOWN FOR EACH PIPE SECTION. FOR VALVES OR WATER MAINS UNDER 16-INCHES IN DIAMETER, THE WORK MUST BE DONE UNDER THE DIRECT SUPERVISION OF A DEPARTMENT REPRESENTATIVE AT LEAST 2 WEEKS PRIOR TO THE START OF THE JOB. A 24 HOUR ADVANCE NOTICE MUST BE GIVEN TO ALL CONSUMERS AFFECTED AND THE BUREAU OF OPERATIONS AND DISTRIBUTION. THE OPERATION OF ALL VALVES 16-INCHES IN DIAMETER AND LARGER MUST BE PERFORMED BY CITY FORCES PURSUANT TO A 72 HOUR ADVANCE NOTIFICATION TO THE DEPARTMENT. ANY VALVE FOUND NOT OPERABLE WILL BE REPAIRED OR REPLACED BY THE DEPARTMENT UNLESS DIRECTED OTHERWISE BY THE COMMISSIONER.

11. IN INSTANCES WHERE CHLORINATION IS TO BE DONE AGAINST ANY EXISTING VALVE, AT THE TIME THAT THE EXISTING WATER MAIN IS BREACHED FOR FINAL CONNECTION, THE CONTRACTOR IS TO VERIFY THAT THE EXISTING VALVES ARE IN GOOD OPERATING CONDITION AND DO NOT LEAK. ANY LEAKING VALVE SHOULD BE BROUGHT TO THE COMMISSIONERS' ATTENTION AND BE REPAIRED OR REPLACED PRIOR TO MAKING PIPE CONNECTIONS TO THE EXISTING WATER MAIN. THE VALVE SHOULD REMAIN IN THE CLOSED POSITION UNTIL THE NEW WATER MAIN IS APPROVED FOR SERVICE.
GENERAL NOTES (CONTINUED)

12. All openings in existing water mains must be plugged or capped with ductile iron fittings until the main is abandoned.

13. All valve basins must be constructed of pre-cast reinforced concrete unless directed otherwise by the commissioner.

14. Notes indicating S.N.L., E.W.L., etc., mean south of the north property line, east of the west property line, etc. and are measured from the nearest street.

15. If a standard mechanical joint sleeve does not fit to make connection of the new pipe to the existing pipe, a transition sleeve must be used. No grinding of the existing pipe is permitted.

16. Buried street car tracks are shown for informational purposes only. Exact locations and dimensions are unknown unless noted otherwise. Caution should be exercised when excavating in the streets containing buried street car tracks. Buried tracks and cables may be used for electrical grounding by the Chicago Transit Authority or members of the Chicago Area Joint Electrolysis Committee Standards. Electrical conductivity must be maintained.

17. House drains are not shown on the drawings. The contractor must locate all house drains within the area of excavation and make adjustments and/or repairs.

18. The department will provide the necessary I.E.P.A. water main construction permits for this contract.

19. Work within state routes are noted on the drawings and will require I.D.O.T. utility permits. The contractor is responsible for securing all permits, initiated by the department and obtaining performance bonds. All work must be in accordance with I.D.O.T. permit requirements. Questions should be directed to I.D.O.T. region one utilities coordinator at (847) 705-4250.

20. Abandon existing water mains in accordance with the specifications.

21. Swab pipe and fittings that will not be pressure tested or chlorinated with chlorine solution during installation and use extra precaution to prevent soil and debris from entering the pipe. Incorporate untested pipe into the flushing routine when possible. When connecting new pipe to the existing water system, use operating pressure to visually inspect for leaks. When feasible, perform inspection prior to backfilling. Comply with all standards and requirements of the bureau of water quality (312) 744-8190.
NOTE:
1½" AND 2" METER VAULT CALL FOR 39" COVER. SEE NEXT PAGE.
NEW COPPER 1\(\frac{1}{2}\)" & 2" WATER SERVICES
STANDARD METER VAULT

REV:04.07

D-24

ALL METER VAULT COVERS AND LIDS SHALL BE HEAVY DUTY. 2 PIECE SHALL BE PLACED DIRECTLY ABOVE THE COMPOUND METER BYPASS. NO CENTER BRACE SHALL BE PERMITTED IN COVER FRAME. VAULT COVER SHALL MEASURE 49 1/2" x 31 1/2" AND COMPLY TO R6663NP NEENAH OR EQUAL. VAULT COVERS TO CONFORM TO R1889 NEENAH OR EQUAL. LADDER TO BE DIRECTLY UNDERCOVER.

FOR BLOCK CONSTRUCTION ON IRON RUNG LADDER ANCHORED TO WALL WITH STEPS 16" MAX.

ON CENTER. FOR PRE-CAST VAULTS USE CAST IRON STEPS R1980-T. BOLTING TO BE INSTALLED IN VERTICAL AT 16" CENTERS. A SUMP PIT SHALL BE INSTALLED NEAR BUT NOT UNDER LADDER. NO MECHANICAL JOINT FITTING ALLOWED IN VAULT. BLOCK SUMP TO BE LOCATED NEAR ACCESS LADDER BUT NOT UNDER LADDER. METER AND VAULTS ETC. TO BE CENTERED IN VAULT.
1. All concrete structures shall be water tight. The contractor will be required to take such means necessary to correct any and all leakage thru floors or walls of structure, without additional compensation.

2. Walls may be constructed of 8" concrete block on a concrete floor slabs may be precast concrete or they be precast concrete reinforced as required.

3. Meter and piping to be set before installing roof slab.

4. All meter vaults shall be furnished with galvanized or aluminum ladders. All openings in meter vaults shall be sealed with 'no shrink' grout.

Rev 04.07

12" Meter Vault with Check Valve
TO PROTECT WATER SYSTEM FROM FREEZING

1. SHUT OFF WATER AT ROUNDWAY
2. REMOVE AND STORE RPZ AND KEEP FROM FREEZING.
3. OPEN LAWN HYDRANT AND LOOSEN METER NUT ON HOUSE SIDE OF METER
4. BLOWOUT WATER LINES FROM RPZ TO METER AND FROM RPZ TO LAWN HYDRANT.
5. IN SPRING REINSTALL RPZ AND ALSO HAVE RPZ TESTED BY LICENSED PERSONEL WITH A PERMIT FROM WATER DEPT. IN CITY HALL.
6. EACH RPZ MUST BE IDENTIFIED OR NUMBERED SO THAT RPZ WILL BE REINSTALLED IN THE SAME LOCATION AT ALL TIMES.
7. EACH LAWN HYDRANT (HOSE CONNECTION) MUST BE MARKED "NON POTABLE WATER DO NOT DRINK".

BACKFLOW PREVENTOR ENCLOSURE

NON POTABLE WATER STAMP ON LID

REDUCED PRESSURE ZONE (RPZ) BACKFLOW PREVENTOR

BUFFALO BOX

CORPORATION COCK

WATER MAIN

COMM. BRICK

ROUNDWAY

SHUT-OFF BOX

EXTRA HEAVY SALT GLAZED VITRIFIED CLAY TILE PIPE

FRAME AND LID (NEENAH R1911C)

1" TYPE K COPPER PIPE

FEMALE FLARED FITTING

1" x 3/4" BRASS BUSHING

3/4" BENT METER COUPLING

METER

FULL PORT CONTROL VALVE

MALE I.P.S. TO FLARED ADAPTER

1" ROUNDWAY

TYPICAL METER INSTALLATION FOR 1" WATER SERVICE WITH LAWN HYDRANT AND BLACKFLOW PREVENTOR

REV:04.07

D-27
INSTALLATION NOTE:
AFTER THE TRANSITION SLEEVE IS TIGHTENED AND THE WATER MAIN PRESSURE TESTED, INSTALL MINIMUM OF FOUR (4) ELECTRICAL CONTINUITY BRACKETS. A MINIMUM OF TWO (2) ARE TO BE INSTALLED ON EACH END OF THE TRANSITION SLEEVE TO PROVIDE ELECTRICAL CONTINUITY FOR PIPE THAWING. EQUALLY SPACE BRACKETS AROUND PIPE (IE. 9 & 3 O’CLOCK POSITION).

FOR 16-INCH DIAMETER CAST IRON PIPE INCREASE THE NUMBER OF ELECTRICAL CONTINUITY BRACKETS TO THREE (3) ON EACH END.

FOR 24-INCH DIAMETER AND LARGER CAST IRON PIPE CONTACT THE D.W.M., BUREAU OF ENGINEERING SERVICES.

ELECTRICAL CONTINUITY BRACKET FOR TRANSITION COUPLING
I. INSTALLATION

- **M.J. Plug**
- **M.J. Resilient Wedge Valve**
  - To be buried (sideways)
- **3BMJ Tee**
- **Existing Service**
- **Proposed Water Main**
- **Existing Water Main**

**Set:**
- 1-4" 3BMJ Tee
- 1-8" M.J Resilient Wedge Valve
- 2-12" M.J Restraint Glands
- 2-8" M.J Restraint Glands
- 3' of 8" D.I.W.P.

**Temporarily plug and brace the valve with:**
- 1-8" M.J Plug

**Note:**
- Minimum 4" Tee to be used for 3" Service Connection.

II. RECONNECTION

- **M.J. Sleeve**
- 1/8 2BMJ Bends
- **CUT, CAP & BRACE THE EXIST. SERVICE**
- **M.J. Resilient Wedge Valve**
  - To be buried (sideways)
- **3BMJ Tee**
- **Existing Service**
- **Proposed Water Main**
- **Existing Water Main**

**After the new water main is approved,**
- **Cut, Cap and Brace the existing 8" Service**
  - With: 1-8" M.J Cap
  - 1-8" M.J Restraint Gland

**Remove temporary plug of note above and connect 8" Service to the M.J. Resilient Wedge Valve**
- With: 2-8" x 1/8 2BMJ Bends
- 1-8" M.J Sleeve
- 7-8" M.J Restraint Glands
- 8' of 8" D.I.W.P.

**Swab the new pipe with HTH chlorine during the installation. Bury the M.J. Resilient Wedge Valve.**

**Note:**
- Mechanical Joint Thrust Restraint Glands or approved equipment fittings to be used with all M.J Fittings.

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**Typical Service Reconnection 3" and Larger Using M.J. Resilient Wedge Valve**

REV: 04.07
NOTES:

1. BACK FILL MATERIAL AROUND INSULATION SHALL BE FINE SAND (FA7), FREE FROM ROOTS, ORGANIC MATTER, LEAVES OR OTHER INJURIOUS MATERIALS.

2. OVERLAP ALL INSULATION BOARD JOINTS.

3. INSULATION BOARD TO BE CLOSED CELL, EXTRUDED POLYSTYRENE FOAM MEETING ASTM 578, TYPE VI, 40 PSI COMPRESSING STRENGTH (ASTM D1621) 0.1% MAX. WATER ABSORPTION (ASTM C272).
EXISTING GRADE

SECTIONAL VIEW

NEW INSPECTION MANHOLE

ACCESS HOLE FOR FRAME/GRATE

CREATE SUMP AT BOTTOM OF MANHOLE BY SLOPING FLOOR @ 1'/ft. SLOPE

6.7' TYP. REDUCE IF REQUIRED TO CLEAR UTILITIES

PLAN

SEE INSPECTION MANHOLE FRAME AND LID DETAIL

EXISTING GRADE

PRECAST TOP SLAB SEE DETAIL

SEAL AREA AROUND PIPE WITH BRICK AND MORTAR (SEE VALVE BASIN DETAIL)

EXPANSION MATERIAL

PRECAST HOLE/ARCH FOR TEE (IF REQUIRED TO ENLARGE USE CONCRETE SAW)

7" (MIN.)

36"

5'-0"

PLACE CONCRETE FILL TO SLOPE BOTTOM OF MANHOLE TO PROVIDE SUMP AREA.

8" PRECAST CONCRETE BASE

6" COMPACTED BEDDING MATERIALS

NOTE:
ALL OPENINGS IN BASIN SHALL BE SEALED WITH "NO SHRINK" GROUT.
NOTE:

1. PROVIDE 6" THICK COMPACTED CA-16 BEDDING
2. USE PRECAST CONCRETE BASE OR PROVIDE 6" THICK IDOT CLASS 'S' CONCRETE BASE POURED IN PLACE WITH #4 EPOXY COATED REBARS 4" C/C BOTH WAYS.
3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING. CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.
4. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS REQUIRED.
5. THE LOCATION OF MANHOLE TO BE DETERMINED ON INDIVIDUAL BASIS.
* 6. OPENING ON TOP SLAB TO BE CENTERED OVER TEST TAP.

SECTIONAL VIEW
SCALE: N.T.S.

USE CITY OF CHICAGO INSPECTION MANHOLE FRAME AND LID
PRECAST CONCRETE ADJUSTING RINGS

PITOMETER TAP BASIN
PRECAST CONCRETE
NOTE:
INSTALL THRUST RESTRAINT GLAND ON ALL MECHANICAL JOINTS.

16" & LARGER WATER MAIN

REV: 04.09

FM-5
1. BUTTERFLY VALVES SHALL BE MANUFACTURED IN ACCORDANCE WITH AWWA SPECIFICATION C-504-87, CLASS 150B, SHORT BODY VALVE WITH MECHANICAL JOINT ACCESSORIES.

2. OPERATORS ARE EQUIPPED WITH OPEN/CLOSE INDICATING ARROW. ASSEMBLY OPEN CLOCKWISE.
NOTES:

1. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS REQUIRED.
2. PRECAST 6" THICK CONCRETE SLAB WITH #4 EPOXY COATED REBARS 4" C/C BOTHWAYS.
3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING. CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.
4. PROVIDE 24-INCH DIAMETER OPENING IN THE CENTER OR AS REQUIRED.
5. THE LOCATION OF MANHOLE TO BE DETERMINED ON INDIVIDUAL BASIS.
6. PROVIDE 6" THICK COMPACTED CA-16 BEDDING.
NOTES:

1. PROVIDE 6" THICK COMPACTED CA-16 BEDDING.

2. USE PRECAST CONCRETE BASE OR PROVIDE 6"
   THICK I.D.O.T. CLASS ‘SI’ CONCRETE BASE Poured
   IN PLACE WITH #4 EPOXY COATED REBARS 4"
   C/C BOTH WAYS.

3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING.
   CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.

4. ALL JOINTS AND BRICK MASONRY SHALL BE
   PLASTERED INSIDE AND OUTSIDE WITH 1:2
   MORTAR TO MAKE THE STRUCTURE WATER TIGHT.

5. PRECAST CONCRETE TOP SLAB TO BE USED WHERE
   HEAD ROOM IS REQUIRED.
NOTES:
1. PROVIDE 6" THICK COMPACTED CA-16 BEDDING

2. USE PRECAST CONCRETE BASE OR PROVIDE
   6" THICK I.D.D.T. CLASS ‘SI’ CONCRETE BASE
   Poured in place with #4 epoxy coated rebars
   4" C/C BOTH WAYS.

3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING.
   CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.

4. ALL JOINTS AND BRICK MASONRY SHALL BE
   PLASTERED INSIDE AND OUTSIDE WITH 1:2 CEMENT
   MORTAR TO MAKE THE STRUCTURE WATER TIGHT.

5. PRECAST CONCRETE TOP SLAB TO BE USED WHERE
   HEAD ROOM IS REQUIRED.
CONCRETE OR BRICK MASONRY 

NOTES:
1. PROVIDE 6" THICK COMPACTED CA-16 BEDDING
2. USE PRECAST CONCRETE BASE OR PROVIDE 6" THICK IDOT CLASS 'S1' CONCRETE BASE POURED IN PLACE WITH #4 EPOXY COATED REBARS 4" C/C BOTH WAYS.
3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING. CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.
4. ALL JOINTS AND BRICK MASONRY SHALL BE PLASTERED INSIDE AND OUTSIDE WITH 1:2 CEMENT MORTAR TO MAKE THE STRUCTURE WATER TIGHT.
5. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS REQUIRED.
6. PROVIDE 2" SLOPE TOWARDS THE SUMP.
7. PROVIDE 1/2" THICK STEEL PLATE SUMP COVER.

TYPICAL BLOW-OFF/FIRE CISTERN-MASONRY PLAN

REV: 04.07
NOTES:
1. PROVIDE 6" THICK COMPACTED CA 16 BEDDING
2. USE PRECAST CONCRETE BASE OR PROVIDE 6" THICK FOOT CLASS 'S1' CONCRETE BASE POURED IN PLACE WITH #4 EPOXY COATED REBARS 4" C/C BOTH WAYS.
3. PROVIDE FOUR #4 REBAR LUGS FOR HANDLING. CUT THE LUGS AFTER PLACING THE SLAB IN POSITION.
4. ALL JOINTS AND BRICK MASONRY SHALL BE PLASTERED INSIDE AND OUTSIDE WITH 1/2 CEMENT MORTAR TO MAKE THE STRUCTURE WATER TIGHT.
5. PRECAST CONCRETE TOP SLAB TO BE USED WHERE HEAD ROOM IS REQUIRED.

TYPICAL BLOW-OFF/FIRE CISTERN-MASONRY
SECTIONAL VIEW
USE CITY OF CHICAGO
STANDARD FRAME WEIGHT 395 Lbs.
AND STANDARD LID WEIGHT 152 Lbs.

NOTE: INSTALL MEGALUGS ON ALL MECHANICAL JOINTS.