Metrolinx Electrification Project

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Submitted by

Parsons Brinckerhoff
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APPENDICES

Appendix A – Abbreviations & Acronyms
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Appendix C – Document Control Form
1.0 QAP – Quality Assurance Program

1.1 QAP & Policy

The Parsons Brinckerhoff QAP is part of a Quality Management System (QMS) which conforms to the International Organizations Standard ISO 9001:2008 – Quality Management Systems. The QAP describes all the necessary functions for ensuring project success. Implementation of the QMS will continue to improve the quality of Parsons Brinckerhoff services and products, including –

- Planning
- Design (drawings, specifications, cost estimates)
- Project management
- Program management
- Engineering/scientific consultancy
- Construction management services.

It is essential that these services meet the client’s requirements as well as Parsons Brinckerhoff’s quality standards. This means that all contract commitments must be met, and all services executed in a professional manner with the utmost regard for the protection of public health, welfare, and safety. The implementation of Parsons Brinckerhoff’s QAP will ensure that these objectives are met and our ISO 9001 certification provides further assurance that our quality system works.

ISO 9001:2008, a universal standard for quality in the design/development and service industries, is a tool Parsons Brinckerhoff has used to help achieve our quality objective. Parsons Brinckerhoff has made the strategic decision to incorporate the requirements of ISO 9001:2008 into its existing quality management system as ISO registration is fundamental for any company that does business worldwide.

The Parsons Brinckerhoff QAP is in compliance with and has satisfied the requirements of ISO 9001:2008. Registrar audits by DNV, a world-leading certification body, will occur throughout the project to validate and maintain the ISO 9001:2008 certification of the Quality Management System.

1.1.1 Quality Policy

The Parsons Brinckerhoff Quality Policy presented on the following page exemplifies the commitment to objectives associated with providing professional services in a manner that achieves project cost effectiveness, improved project delivery methods, and client satisfaction.
Quality Policy

As the Chief Executive Officer of Parsons Brinckerhoff, I personally affirm my commitment to quality. Through this statement of quality I wholeheartedly endorse and incorporate this as the Quality Policy.

Quality professional services are required from every employee in the company. To illustrate the solid quality commitment the company is making, I am taking full and personal responsibility for the entire Business Management System (BMS). I expect supervisors at all levels to convey the essence and requirements of the BMS to the employees they supervise.

The objectives of the quality system are:

- to satisfy all business requirements in a cost-effective manner,
- to continue to improve the methods used to deliver our professional services, and
- to seek ways to increase client satisfaction with our performance.

Your contribution to quality goals and objectives is fundamental to maintaining Parsons Brinckerhoff’s position at the forefront of the industry on into the 21st Century. Let's work together to meet these objectives.

George J. Pierson
President and Chief Executive Officer
March 2012
1.2 Commitment to Quality Management

Parsons Brinckerhoff’s commitment to quality is an ongoing process which we build and strengthen to achieve the highest possible standards. Our quality management system is managed in accordance with ISO 9001 requirements and documents the key business processes and procedures for delivering high quality outcomes conforming to contractual requirements. Utilization of this QAP will result in consistent client confidence and satisfaction and will facilitate continual improvement and the inclusion of best practices.

QA/QC relates to the establishment and implementation of processes and procedures governing how services will be provided, measured, and verified. The objective of the Parsons Brinckerhoff’s internal QA/QC program is to ensure that services are provided in a manner that meets or exceeds client expectations. QA/QC review procedures are described in Section 1.3.2.

QA/QC and risk management is integral to the successful completion of all projects in a time and cost effective manner throughout both design and construction. Parsons Brinckerhoff sets aside a portion of the project’s budget to be used for QA/QC reviews during the course of the project.

Quality requires a total team commitment from project planning to project construction. Parsons Brinckerhoff views its subconsultants as an extension of the firm and expects the same degree of accountability. Parsons Brinckerhoff requires that its subconsultants submit a project-specific quality plan prior to work commencement which is reviewed by the Project Manager to assure that their product will meet the Parsons Brinckerhoff’s standards and, more importantly, those of its clients. To assure consistency of the plans from all team members, Parsons Brinckerhoff provides its subconsultants with computer aided drafting and design (CADD) standards for their use, and reviews their work prior to submittal to the client.

During the design process, quality control checking of calculations, drawings and deliverables is a standard procedure within each of the respective disciplines. It is each person’s responsibility to ensure an independent check is performed on all work products at all levels.

Adherence to the quality policy will be achieved by implementing the applicable sections of the Parsons Brinckerhoff QAP throughout a project. The purpose of the QAP is to define the organization’s policy on quality assurance and to describe all the necessary procedures required to provide this. It is also a guide to identify the interactions with other entities, documents, and manuals. Parsons Brinckerhoff applies the QAP to all tasks, regardless of the type of task, client or funding source.

1.3 Quality Procedures

1.3.1 Project-specific Quality Management System

The Parsons Brinckerhoff’s procedures describe the incorporation of Quality Management System principals into projects and internal office operations. All applicable sections of this QAP will be adhered to during the duration of this project, unless otherwise noted in the Project Management Plan (PMP), which is created at Project Start-up (please see Section 3.0).
1.3.2 QA/QC Review Procedures

Quality control is comprised of detailed inspection processes to verify that technical quality has been achieved by technical experts for each package. Quality Assurance includes a review of all plans and actions taken to provide confidence that the review process for the deliverable has been followed and will be designed and constructed in such a manner that the level of desired quality will be achieved.

The Project Manager or respective staff member will coordinate and schedule the internal review of the respective tasks/deliverables with the appropriate reviewer. Written and/or marked up review comments will be written onto the draft document (calculations, designs, reports, etc), and returned to the Project Manager and respective task leader within the appropriate time frame set prior to the start of the review period. Additional sheets for comments will be affixed to the marked-up documents.

The respective task leader or project engineer will be responsible for addressing the review comments and distributing the revised document(s) to the original reviewer or other designated staff member. The review process will continue until the reviewer is satisfied that the document meets the particular project criteria and requirements. The Project Manager will be informed and updated on QC/QA activities. Reviewed documents and comments will be stored as part of the project file system.

Figure 1-1 provides a visual flowchart of the Parsons Brinckerhoff QA/QC process.

Figure 1-1  QA/QC Flowchart

If applicable, the QC/QA reviewers will select and utilize the appropriate check sheets in performing their reviews. If needed, the check sheets may be modified to accommodate particular project tasks, deliverables, or other pertinent items. The documents to be reviewed consist of calculations, design, reports, sketches, plan sheets, estimates, specifications, and/or any other project related items affecting the quality of the final product delivered to the client. For the Metrolinx Electrification Project, a specific check sheet has been established and is presented in Appendix B.
1.3.3 QC/QA Review Records
Internal quality control and assurance activities will be documented on QC review forms, QA review check lists, and/or other written or electronic memos that indicate the completion of quality reviews. The Project Manager or designee will review QA/QC activities, and maintain a file of the completed review forms and check lists.

An interim QA/QC compliance statement indicating that the plans were developed according to the approved QA/QC plan will be sent with every milestone submittal. A certification form addressing QA/QC compliance will be included with the final plan submittal.

1.3.4 Review Duration
Internal quality assurance reviews will be scheduled prior to submittal to the client to enable responses and revisions to the respective plans and/or other deliverable documents. Comments received from the client reviews will be addressed as needed.

1.3.5 Document Control
All project documents will follow procedures indicated in the PMP and will comply with the client’s numbering convention(s) and configuration management controls. All documents will be subject to the review and filing activities associated with this plan and/or as stated in the Document Control section of Parsons Brinckerhoff’s business systems procedures. Document control will be applied to all hard copy and electronic files.

The Project Manager or designee will perform periodic spot checks of the files and document index to verify that the system is operational and that documents can be easily located. A separate section of the project files will be used to hold all the marked QA/QC review documents, responses, and resolutions. Smaller project documents, such as letters and meeting minutes, will be stored in the office central file system in a file cabinet drawer with the appropriate file number designation.

Documentation within this file system will be organized per subject content. Larger project documents, such as drawings, will be stored in a flat file located with the appropriate tile number designation. All files will be in chronological order with the latest copy on top. The Project Manager or designee will be responsible for the file structure and set-up and will ensure that the project team is aware of the file locations. The project administrator will help maintain the file system, as needed.

Superseded or obsolete progress documents will be marked as ‘superseded’ and/or moved to a ‘superseded’ file. Superseded or obsolete hard copy final or construction documents will be removed from all points of issue or use in accordance with the Parsons Brinckerhoff quality procedures. Each version of a final or construction document must be identified, preserved, and archived as per Parsons Brinckerhoff quality procedures.

A document control form, shown in Appendix C, will be used throughout the Metrolinx Electrification Project.
2.0 Project Delivery

2.1 Introduction

Project delivery is the process of managing client relations and project resources to deliver the technical and commercial requirements of a contract. The combination of adhering to a clearly defined process and implementing proper control will result in a well-coordinated, comprehensive project delivery system with a reduction of risks normally associated with projects and achieving of client satisfaction.

This section outlines the management system for project delivery. It introduces the technical and administrative procedures for project delivery and describes the roles and responsibilities of Parsons Brinckerhoff’s key project personnel.

2.2 Roles & Responsibilities

The individuals with specific responsibilities associated with the project delivery system described below are –

- Principal-in-Charge
- Project Manager
- Project Administrator
- Project Staff

**Principal-in-Charge**

The principal-in-charge is responsible for adding value to the project delivery process (quality and project management), providing general project oversight and guidance, and acting on behalf of Parsons Brinckerhoff to maintain a high level of client satisfaction. The principal-in-charge will be a well-established technical resource and demonstrate management proficiency. Specifically the principal-in-charge will –

- Provide appropriate mentorship to the Project Manager in the performance of the project to achieve technical accuracy and financial success and client satisfaction
- Obtain feedback from the client regarding Parsons Brinckerhoff’s performance and ensure that the appropriate action is being taken to resolve issues
- Assist the Project Manager with resolution of project issues related to technical management.

**Project Manager**

The Project Manager has the responsibility of managing the assigned project and providing project services that meet the agreed quality level. The Project Manager leads the project team and is accountable for technical and financial success, schedule compliance, and client satisfaction. Unless otherwise stated, all actions arising from project delivery, as discussed in Section 3.0 herein, are the responsibility of the assigned Project Manager. Specific responsibilities include –
- Develop, manage, and track the work breakdown structure (WBS) tasks, and estimated costs by WBS task
- Set-up and control of the project, scope, schedule and budget
- Administer the prime contract and any subcontracts, including billing and collecting
- Ensure projects use the agreed systems for risk quality, peer and technical reviews, and verification
- Establish and maintain quality of services and deliverables
- Coordinate with the Parsons Brinckerhoff's service line manager to ensure that project resource requirements are communicated and addressed in a timely fashion
- Keep the task leaders and principal-in-charge informed and aware of project activities and issues
- Prepare and maintain the project management plan, the risk management plan, project schedules, and budgets to reflect contract modifications, changes in key project personnel, and/or other significant changes to the project plan or methods
- Adhere to terms of the contracts and subcontracts
- Communicate with the client on a regular basis, maintaining client satisfaction and responding to client reviews by the principal-in-charge
- Close out the project.

The overall performance of the project is monitored and managed by the Deputy Project Manager and the task leaders.

**Project Administrator**
The project administrator is the prime administrative support to the Project Manager. The project administrator assists the Project Manager by creating and maintaining project files, reports and financial records, and monitoring the project to aid in ensuring conformance to the contract and standard procedures with the ultimate goal of completing the project successfully. A project administrator’s duties may include –

- Administrates main contract, contract modifications and project-specific vendor and subcontract or contracts administration
- Brings improperly allocated expenditures to the Project Manager’s attention
- Participates in project reviews as necessary
- Assists with the preparation of cost proposals, as necessary
- Assists in the preparation of subcontract agreements as necessary
- Processes insurance requests and other subcontractor certifications
- Sets up project filing and document control system
- Prepares invoices for clients and monitors until collected
- Reconciles client payments and subcontractor payments
- Submits contracts and modifications to legal services for review
- Reports financial progress to the Project Manager
- Assists with project progress reports
- Processes financial close-out documents.

**Project Staff**
The project staff is generally comprised of Parsons Brinckerhoff employees and may include subconsultants. The project staff is responsible for technical tasks and/or support functions and report to a task leader relative to task activities. The Project Manager verifies that assigned tasks are completed in accordance with the PMP.
2.3 Procedures Summary

The elements of project delivery can be summarized under six major activities which are introduced below and detailed in Section 3.0 to 8.0 –

- Project start-up
- Project controls
- Project execution
- Project technical review and verification
- Management of subconsultants
- Project closeout.

These procedures have been developed at the corporate level to standardize project delivery practices and implement best management practices for work processes that involve project delivery personnel. Successful implementation of the system improves the professional services provided to Metrolinx.

The subsections below describe these key elements of the project delivery process.

Project Start-Up Project start-up describes the technical and administrative requirements for starting a project and includes the –

- Contract administration
- Document control process
- Internal project numbering process
- Work breakdown structure (WBS) process
- Project management plan (PMP) process.

Project Controls These procedures are concerned with management of scope, schedule, budget and quality and are applied by the Project Manager.

Project Execution How Parsons Brinckerhoff manages and controls project work that is undertaken.

Project Technical Review & Verification This element includes the technical review of deliverables such as specifications, calculations, reports, drawings and construction, engineering and inspection reporting during project execution of the project for the project records.

Management of Subconsultants This procedure describes the requirements for the management of subconsultants from the selection, during execution and final evaluation. Included in project closeout is information on subcontractor performance.

Project Closeout This procedure describes the requirements for the technical conclusion of the project. Included in project closeout is information on subcontractor performance, distribution of records and advanced notice on pending claims and potential liabilities that have not been mitigated by the Parsons Brinckerhoff’s risk process.

Figure 2-1 provides the graphic representation of the project delivery procedures, and the following major sections detail each element.
Figure 2-1  Project Delivery Flow
3.0 Project Start-Up

3.1 Procedure

On award of contract or notification of authorization to proceed, all files (both soft and paper) relating to the pursuit will be formally transferred to the Project Manager and managed in accordance with the project delivery procedures, including requirements for retention of documents and archiving.

3.2 PMP – Project Management Plan

At project initiation, the Project Manager will develop a tailored PMP at project start-up detailing the project team (i.e., Project Manager, principal-in-charge, task leaders, and project administrator), project requirements, project resources and a clear statement as to what defines ‘client success’. The PMP will be reviewed and approved by the principal-in-charge, and other technical managers. The PMP will be of a size and in a format appropriate for the project. QA/QC, risk management, environmental and safety plans will be included in the PMP as appropriate.

The PMP is intended to be the main source of information required by the project team to effectively and efficiently manage and complete the project. It includes both quantitative and qualitative information, including –

- Scope of work
- Project team
- Quality procedures specific to the project
- Applicable external standards
- Project review requirements
- Document and change control procedures
- Procedures to resolve technical difficulties
- Project schedule
- Project budget
- Understanding of issues and goals of the project
- Identifying the roles/responsibilities of the project team members
- Schedule of deliverables, budgets, communication protocol
- Document control procedures
- Quality review procedures
- Discipline disagreement resolution hierarchy.

The PMP will be communicated to all team members and its implementation will be monitored by the Project Manager. Regularly scheduled team meetings will be held to review quality progress and control, assess risks, identify dependent needs, resolve problems, and maintain a coordinated effort between various disciplines and subconsultants on the project. The PMP is updated throughout the project’s duration to reflect current conditions. This is an important step as Parsons Brinckerhoff believes keeping up-to-date and applying lessons learned throughout the process improves the overall quality of a project and reduces risk.
The principal-in-charge will periodically seek feedback on project performance and take necessary measures to correct any issues. For example, highly experienced senior engineering managers from Parsons Brinckerhoff will provide QA/QC reviews by discipline and/or electrification system element. Reviews are performed to ensure that the requirements of the PMP are met throughout the design and implementation of the project. Additionally, at project commencement, each subconsultant will identify a QC manager who will be responsible for the initial QC prior to a deliverable being forwarded to Parsons Brinckerhoff. The Parsons Brinckerhoff QA manager will then review the deliverables prior to their submission to the client to ascertain that the design packages are complete and consistent with the client’s needs and standards, the plans are checked, and the proposed design is sound, economical, and meets best engineering practices.

The project-specific PMP will jointly meet the QA/QC requirements of the client, project stakeholders, and Parsons Brinckerhoff.

3.2.1 QA/QC Plan
Developing a project-specific QA/QC plan is a key element in the planning process at the onset of the project. The QA/QC plan establishes the parameters within which the project team will function and clearly identifies how the Project Manager will control the quality of services via the management of scope, schedule, and budget. The project-specific QA/QC plan will be periodically reviewed and updated as the project progresses and/or significant changes are made to the contract deliverables/tasks.

The project QA/QC plan will address the following elements –

**General Quality Control Procedures** A statement or outline of the general quality control procedures to be followed by the project staff. This should include references to any manuals or procedures prescribed by the client or considered appropriate by the Project Manager.

**Detailed Quality Control Procedures** Written instructions that give clear guidance to the project staff on the subjects of –

- Project technical criteria to be used
- Control of design consistency, compatibility and cross checking of details
- Checking frequency, initialing, and signatures
- Checking of finished deliverables
- Maintenance and checking of calculations and computer results
- Assigned technical resources and the criteria and frequency of their use
- Procedure for project milestone reviews
- A schedule for the frequency and level of reviews applied to deliverables
- Individuals responsible for quality control and quality assurance.

**Quality Assurance Procedures**
- Who will be responsible for quality assurance actions?
- What actions will be taken and at what points in the project execution?
- Comments on QC and required responses including recording of actions
- QC issues resolution.
QA/QC Budget  A listing of the hours allotted for the quality control and quality assurance reviews required by the project quality control plan. This list should be technical discipline specific and required milestone progress review. It should indicate any hours allocated to outside reviewers or other special requirements.

Critical Project Elements  Identify any technical or other requirements that will require special attention during the work. Include a statement of action anticipated to address each issue and the name of the project professional responsible for the outcome.

Outside Technical Assistance Required  Identify any special outside technical assistance needed and give the task assigned. Show the budget for this work and give an indication of the contractual commitment in force with the specialists.

Procedure to Resolve Technical Differences  Describe the procedure to be used to resolve differences of technical opinion relating to the contract deliverables. Include a clear statement about the final authority for such decisions and the name of the responsible professional.

Planned Special Quality Attention  Identify any special precautions or procedures to be taken by the project professionals. Describe the project tasks and name the responsible professionals.

Change Procedures  Give clear steps required to make changes due to criteria modifications, changes in scope, or discovery of unforeseen site conditions. Communicate changes to project team and client. Identify and implement a change control approval procedure for complex projects with critical budgetary restrictions.

Approval Procedures  A clear flow chart, written or graphical, which can be used by all project staff to understand the approval process of the project.

Assessment of Meeting Client’s Needs  Define what constitutes client success (eg: client feedback requirements).

Project Reviews  Management of various reviews and verifications (eg: peer reviews and technical reviews).

Identification of Project Audits  Define what specific internal and external audits will be required as part of company certification programs and client requirements.

3.3 Document Control

Document control is a process by which the Project Manager is able to store and retrieve all documents pertaining to the development of a project. Document control should begin upon notice of selection to track all pre-contract documents. A document control system will be established to suit the requirements of the project in accordance with Parsons Brinckerhoff document control procedures. This will comprise a predetermined filing plan with defined protocols for the retention and issue of all hard copy documents, email, and soft copy for incoming and outgoing documents. All documents will be referenced to include the project number.
3.3.1 Correspondence Numbering
All correspondence will contain the applicable project number assigned by the Project Manager. This pertains to letters, faxes, memos, phone call records, email, and other project related documentation.

3.3.2 Correspondence & Communication
Project-related communications will be handled by the Project Manager or designee. Communication activities may be coordinated by other team members, as delegated by the Project Manager. The Project Manager will be copied on any correspondence submitted by the project team. The Project Manager will coordinate the distribution of all communications for information and filing.

All communication with the client must be forwarded to the Project Manager for his review and/or signature. When letters are written by staff members, the originals will be sent to the Project Manager for his signature. Incoming communications are to be brought to the Project Manager’s attention, so that copies may be directed through the proper channels for early action (if required).

All incoming and outgoing project-related mail/correspondence will be stamped or marked with the receipt date and a copy retained in the project files.

3.3.3 Telephone & Email Communication Records
Critical telephone communications, particularly those with the client, will be recorded as part of an email distributed to all necessary internal parties. The Project Manager will be copied on all telephone communication emails. All pertinent information discussed in the telephone conversation will be included in the email. This may be done in the form of written paragraphs or the use of key bullet points or sequential numbers. If needed, the appropriate follow-up action regarding the phone conversation will be taken and distributed to the respective team and client representatives (email, letter, etc). If email is not available, a written memo may be used and distributed to the project team. Records of all phone conversations will be stored in the project file system.

Email is the primary form of communication on the project. The subject line on emails should contain a project description and the particular issue being addressed. All project-related emails will be copied to a project email address.

Where time allows or if signatures are required, the preferred method of communication will be by letter, each of which will be scanned and transmitted via email or via ProjectSolve2. Letters will be used to transmit all milestone deliverables.

A detailed outline of all communications procedures can be found in Parsons Brinckerhoff’s project-specific Communications & Consultation Plan, V01a.

3.3.4 Meeting Minutes
The Parsons Brinckerhoff team will provide minutes regarding each specific project meeting on an as-required basis (including face-to-face meetings and teleconferences) and distribute draft minutes to participants for comments. Once all comments have been addressed, the minutes will be considered final and redistributed to all team and client members. Action items related to the meeting will be included with all minutes. The Project Manager will monitor the action items to ensure that they are
being addressed. Resolution of the action Items may be recorded in an email or other form of project correspondence.

Other action Items or directives not included as part of a meeting will be shown in a separate ‘project issues and action items’ file that will be distributed to the project team via email on a regular basis. All meeting minutes and directives will be kept and maintained as part of the project file system.

3.4 Safety

If field work is part of the scope of work, the Project Manager will develop a project safety plan and implement it where and when possible. The field inspection team leader will ensure that adequate safety measures are taken for the inspection team and others who may be affected by field investigation.

3.5 Measurement, Analysis & Improvement

As the project proceeds, the control processes for inspection, measuring and test equipment (IM & TE) will be defined and published. The QM will be responsible for ensuring requirements to National Standards for IM & TE are met. The QM will verify adherence to IM & TE requirements through quality audits and will review and facilitate recommended process improvements.
4.0 Project Controls

Project controls are concerned with managing scope, schedule, budget, and quality in accordance with the contract. Key elements in project control include establishing and adjusting plans, measuring performance, and documenting results. Project resources, task descriptions, projected timeframes and costs and satisfactory delivery are monitored using project controls. It is the Project Manager’s responsibility to apply project controls for the client and for the Parsons Brinckerhoff team. If the tasks assigned are under the scope of program management, design management or construction management, the same diligence and understanding of third-party performance is delivered through project controls. Understanding the development from the highest level to the most detailed level gives the Project Manager the insight to advise the client on courses of action.

4.1 Scope Management

Project scope is the work that must be done to meet contractual requirements and defines the boundaries within which the delivery team and the external stakeholders work. Effective scope management requires an accurate definition of client requirements from the proposal phase through negotiations and a systematic process for monitoring and managing all factors that may impact or change the client’s requirements throughout the project delivery process.

Scope is typically identified in the prime agreement under a separate section entitled 'Scope of Services'. However, it is common for services to be identified in the general and special provisions or other appendices. In some cases, the prime agreement incorporates Parsons Brinckerhoff’s technical and/or cost proposal into the contract, thereby potentially expanding the definition of what services are to be provided under the terms of the agreement. The Project Manager prepares a list identifying each scope of service item identified in the contract and the general method for each service, including any general or special provisions before the work begins.

4.2 Schedule Management

A project schedule defines the project delivery process and establishes a timeline to be followed. Avoiding schedule slippage is a key objective of schedule management. Comprehensive project schedules will identify all project stages, phases, and activities assigned to each team member mapping them to a timeline that measures key milestones (dates) that are used to keep track of work progress. Schedule management interfaces directly with scope, cost, and quality management, as team member roles and activities are defined, coordinated, and continually monitored.

The master schedule is a summarized schedule of the project. Developed from the WBS, it provides a road map showing all planning, design and construction activities/contracts, pre-construction procurement activities, and all construction activities from notice-to-proceed through the punch list and closeout processes. In a time-scaled graphic format, it will depict all key project milestones, major work elements, their interrelationships and any external relationships or constraints that may affect performance. The master schedule will be developed by the Parsons Brinckerhoff team using the scheduling software, Primavera, in an iterative fashion. Initially, all requirements from the planning,
design and construction bid documents, procurement and preliminary construction schedules, as well as any constraints imposed by other adjacent projects, completion milestones or other requirements will be incorporated. Other scheduling software can be used on less complex projects or according to client-driven mandates.

‘Look-ahead’ schedules are used to provide a snapshot reflecting the current period (e.g., two weeks, three weeks, one quarter). This enables project delivery teams to focus on the current work and effort needed to maintain schedule compliance. Look-ahead schedules are used to document project status, progress, and changes.

4.3 Budget/Cost Management

Cost control requires continual systematic cost management beginning with estimates and the establishment of budgets that align with scope, schedule, and quality requirements and continue with estimates-to-complete, change management impacts, and corrective actions. Team costs are mostly impacted by resource usage and scope accomplishment. If a task was to include the development of 30% design submittal and the estimate of required resources, cost management could track the hours expended and the work accomplished. These two indicators could be compared to the schedule to provide the Project Manager with a project status. If plans are not being realized, the timely reporting of this status could enable adjustments such that the task still can be completed on-schedule.

A budget is the financial starting point for a project and is the baseline against which progress can be measured. Three common types of budgets are—

- **Project Budget** Includes all consulting, procurement, real estate, construction, and commissioning
- **Construction Budget** Includes contractor bid/award and changes (current and forecasted)
- **The Parsons Brinckerhoff Team Budget** Includes direct labour hours and costs, overheads, contingency, and margin.

The Project Manager is responsible for managing all three types of budgets as applicable to the work/deliverable. While scope, schedule and budget are of high importance, budget frequently receives the most attention as performance relative to the budget is a clear indicator of project success. To manage the budget, the Project Manager must have a clear understanding of the project’s deliverables, scope, and schedule. If necessary, the budget will vary as changes to scope, schedule, or deliverables will be integrated into the budget.

The original budget cannot be altered until it is replaced by an approved current budget. In maintaining the budget, it is necessary to make frequent estimates of work required to complete the project, to assess the actual cost of work completed to date, and to take into account changes in process or changes being contemplated. The most effective tool for maintaining the budget is rapid, complete, and accurate communication of information, followed by equally swift action with regard to needed corrective measures. It is not possible to undo costs once they are realized.

Changes, while frequently necessary, have an impact on cost control. All proposed changes must be evaluated relative to the budget, and the evaluation must be objective. Change control procedures will be used by the Project Manager, even for relatively minor matters.
The cost control system should involve validation of all data by an established project procedure and be in a format that is easy to follow. The cost control system includes, at a minimum—

- Keying all data into the WBS
- All cost-bearing activities
- Use of the base lined budget as the basis of comparison
- Contingency allowance (shown separately)
- Actual costs incurred
- Estimate to complete
- Forecast cost, including future changes and potential claims.

### 4.4 Quality Control

Quality control begins by matching expected quality levels with budget and scope during the proposal phase and continues through to project delivery with a program of reviews, inspections, tests, and certifications. The Parsons Brinckerhoff team implements a standard of quality control that includes checks, peer reviews, design coordination, interface management and risk management efforts that yield quality products that meet schedule and budget expectations.

### 4.5 Change Control

A structured procedure for handling contract changes on a project allows for an equitable entitlement and timely disposition of contract changes. Any change that could affect the project’s scope of work, along with its elements, should be tracked in the Parsons Brinckerhoff team project files and the WBS should be updated to reflect the modifications to task(s), schedule(s) and cost(s).
5.0 Project Execution

5.1 Reporting

Reporting is critical to overall project success. The Project Manager is required to report in a timely fashion on various items so that the required overview and governance can be applied. In addition, the Project Manager must fulfill reporting procedures in accordance with the contract and client needs. This includes any requirements for client invoice approval and information required by the client’s Project Manager.

Our Project Manager will report on –

- Project management monitoring of planned schedule to progress-to-date
- Project management monitoring of planned cost to actual cost-to-date
- Project resource planning (a forward estimate of remaining work)
- Remaining cost to complete the project (including both inter-office and inter-service line progress and that of any sub consultants) compared to work performed
- Results of periodic project reviews which cover costs-to-date, estimate to complete vs plan, accounts receivable, unbilled costs, project percent complete and earned value, as well as any other technical or financial issues that add risk
- Unresolved issues with the potential to impact any of the above items.

Internal reporting is required at every four-week period to compare project plan with actual work completed.

5.2 Communications

The Project Manager has the key role of communicating among all entities including the client, stakeholders, Parsons Brinckerhoff staff, subconsultants, and other external entities. There are many techniques, mediums, and tools that can be used to communicate, such as –

- Oral and written communications
- WBS and online business systems
- Reports
- Meeting minutes
- Contract documents
- ProjectSolve2.

The level and structure of the communications systems will vary depending on the project and the number of stakeholders and subconsultants. However, the consistent factor in all forms of project communication is that whatever is recorded in emails, letters, meeting minutes, reports, etc, must be written in a manner suitable to be viewed by all concerned and interested parties. All work is subject to public scrutiny and must therefore always be prepared in a professional manner. The Project Manager is the final authority on what should be communicated from the project.
5.3 Interface Management

All projects require the Project Manager to manage project interfaces. The Project Manager is responsible for identifying all project interfaces and incorporating them into their project management plan. The principal-in-charge is responsible for providing assistance and guidance to the Project Manager in the development of the interfaces and following up with the Project Manager on an ongoing basis to verify the management of the interfaces.

Properly managed interfaces will result in successful project delivery. The techniques employed are dependent on the project and will require a very structured system. Interfaces can be categorized into six areas –

1. **Physical**  The elements of the work being planned, designed and/or constructed.
2. **Functional**  The interrelationships between the designed systems which make them work properly.
3. **Operational**  How the designed/constructed element(s) perform their intended function.
4. **Financial**  Relationships between work and cost, budget/baseline costs vs actual cost, trending and forecasting, cash flow and incremental funding.
5. **Contractual**  Obligations of the participating parties based on contracts (client, consultant, agency, contractor, subconsultant), plans and specifications, codes, standards and regulations.
6. **Organizational**  Roles, responsibilities, delegation and authority.

Comments generated by the client or third-party for each of the respective deliverables or plan submittals will be addressed and recorded as part of a Disposition of Comments form. The Disposition of Comments will include each comment and respective responses. It will be transmitted to the client on the subsequent submittal. The Disposition of Comments will be stored with the respective deliverables in the project file system.

5.4 Succession Planning & Change of Project Manager Audit

This section establishes a plan that will aid in the transition and replacement of the incumbent Project Manager. The plan will help maintain fundamental adherence to scope, schedule, budget and contract terms, and communicate Project Manager changes to the client. Upon determination that the Project Manager is to be replaced, the following actions will be taken –

- The principal-in-charge and/or Parsons Brinckerhoff service line manager confers with the Project Manager on current status
- Obtain permission from the client for the Project Manager’s replacement and introduce the new Project Manager
- The existing Project Manager will review and update project data and estimates to complete and meet with the new Project Manager to assess the overall status.
The new Project Manager will –

- Establish a transition plan based on the review
- Advise the task leaders of any perceived issues relating to the transition plan
- Revise the contract as needed to incorporate changes in key personnel
- Meet with the staff and assume control of the project
- Identify any unstated risks or issues that were not previously identified by the independent review.

5.5 Best Practices – Continual Improvement Process

A key component of a successful project is to document best practices and potential improvements. The process of recording the best practices should be a standard mode of operation for the Project Manager to be accomplished after each deliverable. Sharing the successes and issues with the task leaders, principal-in-charge and others will improve delivery and client satisfaction.

Senior management regularly participates in reviews of quality issues and is apprised of activities of quality improvement meetings and has mandated that all employees receive training on this quality system as a part of the employee’s initial orientation to the company. Parsons Brinckerhoff has adopted an individual employee suggestion program and a team continual improvement program that function to provide continual improvement to operations throughout the organization.

5.6 Control of Non-Conforming Product, Material or Service

Project plans, quality plans, health and safety plans, environmental plans, standards, and specifications may identify the requirements for conforming products, materials, or services. It is the responsibility of the Project Manager to ensure that non-conforming products are segregated, identified, and prevented from being used or from further processing. Services provided to the client that do not comply with the stated requirements will be deemed non-conforming. The non-conforming condition will be documented, reviewed and a decision made to determine the appropriate action. Where appropriate, non-conforming services will be suspended, pending resolution. Once non-conformance is identified, measures will be taken to segregate physical works such as non-conforming products and materials to prevent inadvertent use. Suitable labelling will be applied to non-conforming products and materials to clearly identify status, product or part number, and quantity. Manufacturer or supplier reference numbers will be retained to ensure full traceability. Non-conforming services will be clearly identified in project records and reported to the Project Manager.

5.7 Actions Relating to Non-Conforming Product, Material or Service

The Project Manager or designee will take appropriate actions to eliminate detected nonconformity. Records of actions taken, including communication with manufacturers and suppliers, will be retained.

The Project Manager or designee may authorize a non-conforming product or material for use, release,
or acceptance under concession by a relevant authority, including the client. Where a ‘concession’ is not authorized, the Project Manager, or designee, will take action to preclude the non-conforming product or material from its original intended use or application. Records of all actions will be retained.

The Project Manager or designee will record actions taken in respect of non-conforming services, which may include repetition of services or provision of amended services. Where a non-conforming product or material is corrected or reworked, it will be re-verified to demonstrate conformance to requirements. Where a non-conforming product is detected after delivery or use has started, the Project Manager, or designee, will consider the effects, or potential effects, of the nonconformity and will take appropriate action to notify the client, to investigate cause and effect and to prevent recurrence.

5.8 Calibration

The Project Manager is responsible for ensuring that all project equipment is properly calibrated and in operating condition prior to its use on the project. The task leader is responsible for ensuring that the equipment is properly calibrated and in operating condition prior to its use in task activities.

When not in use, field equipment will be stored in a secure, dry, indoor location, protected from the elements and from extreme temperature variations.

A sign-out log of field equipment will be maintained so that the proper staff can be notified if calibration issues arise.

Equipment requiring calibration will be calibrated in accordance with manufacturer criteria in compliance with a nationally or internationally-recognized standard. The status of the equipment as received by the service provider will be documented and retained in the files. It is recognized that manufacturer’s recommendation may call for more frequent calibrations than are necessary for the types of services. Calibrations may be at less frequent intervals where there is technical expertise to support less frequent calibration and is approved by the Project Manager. The frequency of calibration for equipment requiring calibration will be noted in a calibration log.

Prior to initiating field activities, the task leader or user will inspect necessary equipment to verify that it is in working condition. Any suspect equipment will be clearly marked ‘Do Not Use’, reported to the Project Manager, and will not be used until its status has been clarified. If equipment is found to be out of calibration after use, the extent will be quantified and the Project Manager or task leader that has used the equipment since the last calibration will assess the impact and take corrective action. The affected project records will show the level of consequence or a description of the corrective action.

Field equipment damaged during use on a project will be reported by the appropriate task leader and repaired or replaced as directed by the owner of the equipment. Upon completion of the fieldwork, all equipment used will be checked to ensure that it is still in working condition and returned to its proper storage location. Suspect equipment will be identified and reported as indicated above.
5.9 Control of Client-Supplied Documents & Material

The following procedure describes the requirements for controlling client or third-party supplied data, equipment, and documents –

1. The Project Manager establishes an accessible storage location. The selected storage location provides adequate protection from damage or loss.

2. The Project Manager reviews all client or third-party supplied items and identifies their suitability and criteria for use on the project. A log is maintained of client or third-party supplied items that are expected to be returned to the client or third-party at the conclusion of the project or when they are no longer needed. The log may include a description of the item, the date of its receipt, the date of receipt of any modifications to the item, an indication of its suitability and criteria for use, the physical storage location of the item and the expected date of its return to the client.

3. If material is received that is damaged, lost or questionable in content, the Project Manager notifies the client or third-party of the flaw in the materials received. Records of the resolutions of such issues are maintained.

4. The Project Manager distributes copies or a list of the available data, documents, and equipment to the affected task leaders and other project staff, as appropriate, advising of their presence, their suitability, and the criteria for their use.

5. If requested by the provider, upon completion of the related work, the Project Manager returns the client or third-party supplied items. If permission to copy the documents has been received, a copy may be made of the materials before they are returned.
6.0 Project Technical Reviews & Verification

Technical review includes review of methodologies, design parameters, technical approach, and application of available knowledge. Technical verification includes the review and assessment of the technical adequacy and correctness of deliverables such as specifications, calculations, drawings, letters and reports.

The review of deliverables prior to submission to the client is a joint effort between the appropriate Parsons Brinckerhoff technical resource centre, service line managers, and the project team. The Project Manager is responsible for establishing the level of technical review required for the project, for selecting appropriately qualified personnel to perform the required reviews, and for defining the level of review and verification in the PMP. The Project Manager is also responsible for maintaining a record of each review, the disposition of the review comments, and all correspondence.

The task leader is responsible for preparing project discipline criteria and for designating technical resources to prepare materials and personnel to manage and check the deliverables.

6.1 Reviews

A review is performed for each project deliverable prior to its submittal to the client and at least two other times prior to the completion of the deliverable. The review evaluates the overall validity of the deliverable with respect to the project requirements and is independent of document checking, which takes place prior to the review. The intensity of the review depends on the size and complexity of the project.

The PMP developed by the Project Manager specifies the review schedule, type, intensity, and the appropriate personnel to perform the review. This may include experienced staff actively involved in other aspects of the project, Parsons Brinckerhoff staff not involved in the project, or independent consultants called in solely for the purpose of the review. The Project Manager should draw on the guidance of other service line managers and should involve other Parsons Brinckerhoff technical experts wherever practical.

The deliverable review assesses the project deliverable against the following –

- Applicable project design criteria and requirements
- Applicable codes, technical guidelines and professional standards
- Available design documents
- Incorporation of Parsons Brinckerhoff experience on other projects
- Previous review comments, if applicable
- Interface requirements with other system elements
- Accepted industry practices and best practice experience
- Cost effectiveness
6.2 Checking Calculations

The originator reviews the results of calculations to verify that results are reasonable and signs and dates the first page of the output document. Calculations are checked for clarity and legibility, proper documentation, technical concept and numerical accuracy.

The checker gives the originator comments and required corrections on a copy of the original computation sheets.

The originator and checker discuss the checker's comments and corrections until all differences are resolved. The task leader determines a course of action for any unresolved differences. The originator makes the necessary changes or initials changes made by the checker.

If corrections are significant, the original calculation is regenerated and checked as new.

If the results of an independent check differ from the original calculation, the task leader determines which of the approaches is more appropriate for the design in question and that calculation is then subjected to checking.

For computer-generated calculations, the checker verifies that the program is appropriate, all input data is correct, and the results are reasonable and correct.

If required, the originator revises the input. The checker manually signs and dates the front page of the finished output document.

Computer-assisted calculations, such as those using spreadsheets, are spot-checked and signed and dated manually on front page of the calculations.

6.3 Specification Review

The task leader collects available standards or sample documents from the client to form a basis for the project specifications. If the client does not have defined standards, industry standards appropriate to the type of work performed are used, as defined by the task leader.

The project specifications will be reviewed by the Project Manager to verify completeness and consistency with client and project requirements and to verify that all specification sections are coordinated among the various disciplines on the project. Any changes necessary as a result of the review will be communicated to the originators and checkers.
6.4 Report Writing

Reports include short reports and emails to the client (ie, letter reports) as well as more elaborate reports (ie, inspection reports, engineering design reports, alternative alignment studies, environmental impact statements, major investment studies or other multi-discipline reports). The Project Manager communicates the objectives of the report and any specific requirements for content or format to the preparer, contributors, and checker.

The checker investigates materials included in the report and verifies that the information presented conforms to the requirements established for the project, that the presentation is effective and orderly, and that the material included has been checked for accuracy.

The checker also evaluates the report to establish that the material presented justifies any conclusions drawn and that the report addresses the appropriate issues in accordance with the scope of the assignment.

Typically, a single person prepares a short report, which is checked by the task leader. If it is prepared by the task leader, the report is checked by the Project Manager prior to submittal to the client.

Revisions resulting from the internal checking process are reviewed and initialled by the originator(s) prior to being incorporated into the submission-ready report.

The 'as-submitted' copy of the report is initialled by the checker as evidence of the review. All marked copies need not be kept unless required by the contract.
7.0 Management of Subconsultants

7.1 Introduction

The Project Manager is responsible for assessing the quality and completeness of each subconsultant’s work. The Project Manager will delegate an individual to review the quality of subconsultant work-in-progress prior to invoice approval and submission of deliverables to the client.

The following procedures apply to all subconsultants assisting Parsons Brinckerhoff to provide input in the development of client deliverables –

- Selection of subconsultants
- Proposed services by subconsultant
- Subconsultant quality control plans
- Quality assurance of subconsultant work
- Review of subconsultant deliverables
- Evaluation of subconsultant performance.

The subsections below describe the procedures and requirements.

Subconsultants used to augment Parsons Brinckerhoff staff or to provide advice or a service that is not directly related to deliverables are excluded from these requirements.

7.2 Selection of Subconsultants

The selection of subconsultants is done on a proposal-by-proposal or task-by-task basis. The Project Manager evaluates the qualifications of all possible subconsultants and selects the best one using a ‘best value’ approach, if possible. The inclusion of the subconsultant’s name in the proposal signed by the business manager, or designee, acts as a record of the approval. If the subconsultant is added to the project team during the course of the work, the Project Manager evaluates the subconsultant’s qualifications, has the subconsultant approved by the principal-in-charge, informs the client of the selection, and requests the client’s approval, if required by the contract.

7.3 Proposed Services by Subconsultants

The scope of work, schedule, and budget of tasks to be performed by the subconsultant is established by the Project Manager and the subconsultant. Upon award of the contract to Parsons Brinckerhoff, the Project Manager informs the subconsultant and prepares a subcontract agreement. The agreement addresses subconsultant scope, schedule, and budget. At a minimum, the subcontract agreement includes QA/QC provisions for the subconsultant to provide evidence of internal review of deliverables, to cooperate with Parsons Brinckerhoff audits (if required), and to initiate and implement any corrective actions. The Project Manager will not authorize the subconsultant to start work pending the execution of the subcontract agreement until after their submittal of insurance certificates.
7.4 Subconsultant Quality Control Plans

Each subconsultant is required to document its quality control measures including the identification of key personnel and the quality for the work to be performed. For specialty or small assignments, the subconsultant’s plan could be a one paragraph statement ensuring that the work will be performed by the individuals named in the proposal, and that all work will be checked by a qualified person prior to submittal to Parsons Brinckerhoff. For significant multidisciplinary design assignments, the plan will be a document with separate sections containing the following elements –

- Scope of work and deliverables
- Schedule or milestones
- Team organization
- Document control procedure
- Design review requirements and procedure
- Change control procedures
- Other procedures, as applicable.

A subconsultant may adopt and use the Parsons Brinckerhoff quality procedures. A template for a subconsultant QA/QC Plan using Parsons Brinckerhoff procedures can be provided if necessary.

If the subconsultant’s quality assurance system is certified to be in accordance with ISO 9001:2008 by an accredited Registrar, the subconsultant is required to confirm that the work will be performed in accordance with the requirements and procedures established as part of its certification. In such an event, no documentation in addition to the subconsultant agreement is required.

The subconsultant’s quality control plan for the project should be up-to-date and accessible to key subconsultant staff involved in project activities. A subconsultant project quality control plan, if needed, can be found on Parsons Brinckerhoff intranet. A copy of the subconsultant’s project quality control plan or confirmation of ISO certification is maintained in the Parsons Brinckerhoff project files.

7.5 Quality Assurance of Subconsultant Work

Internal project quality assurance reviews are conducted by the subconsultant to verify that project activities are being performed in accordance with the quality control plan or established procedures. For each project deliverable that is to be incorporated into the work, the subconsultant must forward a record of the internal review to the Parsons Brinckerhoff Project Manager.

Under normal circumstances, quality audits of subconsultants by Parsons Brinckerhoff are not required. However, if the Project Manager chooses to perform such audits, or the contract requires it, the audits are defined in the subcontract agreement. Each audit assesses whether the project activities being performed by the subconsultant are in accordance with the established subconsultant project quality plan or existing project quality procedures. A report is prepared identifying deviations and is forwarded to the subconsultant.

The subconsultant responds to the audit report and prepares and implements corrective actions, as required. The Project Manager may choose to follow up to assure that corrective actions have been
implemented and are effective. The audit report and the subconsultant's response are maintained in the project files.

7.6 Review of Subconsultant Deliverables

The Project Manager or designee reviews all subconsultant work products prior to its use or incorporation into other project work and submission to the client. All work is reviewed for technical adequacy, consistency with the scope of work, and meeting the project quality requirements.

7.7 Evaluation of Subconsultant Performance

Annually, and at project closeout, the Project Manager evaluates subconsultant project performance relative to responsiveness, timeliness, and adequacy of deliverables. The annual evaluation is in the form of a memo to the file and is copied to the principal-in-charge. The 'Subconsultant Evaluation Form' is completed as part of the project closeout report.
8.0 Project Closeout

8.1 Introduction

Project closure is initiated when the final deliverables have been accepted by the client and all invoices have been paid. Particular attention should be paid to the following points—

- When the technical objectives of the project/task have been achieved, the Project Manager will notify the team of the impending closure to avert any non-productive charges to the project.
- The project administrator will close the project or task when the Project Manager is satisfied that all time, expenses, invoices and payments have been entered on the Parsons Brinckerhoff team and that the system data accurately represents the forecast revenues and costs.

8.2 Procedure

The Project Manager will close out the project taking the following steps—

- Notify team of closure
- Close all tasks
- Create technical closeout report.

The Project Manager will complete the financial portion of the closeout process with the project administrator using the current Parsons Brinckerhoff procedure for project financial closeout.

Upon technical closure, the Project Manager should initiate a review with the client of the project team’s performance.

Additionally, staff engaged with the project will be requested to submit their feedback to the Project Manager for inclusion in the closeout report as appropriate. The closeout report will be reviewed and approved by the principal-in-charge and disseminated as appropriate. Where project performance is significantly at variance from that assumed at the start, a closeout report will be based not only on customer feedback but also on an internal review by the Project Manager and principal-in-charge of the project.

The Project Manager will arrange for all project documentation, including email and soft files, to be adequately indexed and archived. Soft files will be saved in accordance with Parsons Brinckerhoff IT guidelines. If this is not possible, a hard copy will be printed and filed. The principal-in-charge will ensure the archive arrangements are in accordance with Parsons Brinckerhoff policy for record retention.
# APPENDIX A – ABBREVIATIONS & ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMS</td>
<td>(Parsons Brinckerhoff's) Business Management System</td>
</tr>
<tr>
<td>QA/QC</td>
<td>Quality Assurance/Quality Control</td>
</tr>
<tr>
<td>CADD</td>
<td>Computer Aided Drafting and Design</td>
</tr>
<tr>
<td>QAP</td>
<td>Quality Assurance Program</td>
</tr>
<tr>
<td>DNV</td>
<td>Det Norske Veritas</td>
</tr>
<tr>
<td>QM</td>
<td>Quality Manager</td>
</tr>
<tr>
<td>ISO 9000:2008</td>
<td>Quality Management System</td>
</tr>
<tr>
<td>NTP</td>
<td>Notice to Proceed</td>
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<tr>
<td>RQQ</td>
<td>Request to Qualify and Quote</td>
</tr>
<tr>
<td>PMP</td>
<td>Project Management Plan</td>
</tr>
<tr>
<td>WBS</td>
<td>Work Breakdown Structure</td>
</tr>
</tbody>
</table>
APPENDIX B – QA/QC CHECK LIST (TEMPLATE)

To: Zvonko Trajkovic
From: **QAQC reviewer**
Date: March XX, 2013
Re: Parsons Brinckerhoff QA/QC Initial Review – Metrolinx Electrification - **name of deliverable**

Our Ref No.: PB Reference No.: PB xxx

Project Name: Metrolinx Electrification
Contract No.: RQQ-2011-PP-032
GO Project No: 109503
Document: **name of deliverable, version and date**

Kevin,

Please find attached QA/QC review for **name of deliverable**. This memo is split into two sections. The first section involves review of the QA/QC report and highlights known deficiencies. The second section is suggested updates to improve accuracy/integration or readability of the document as it pertains to a performance specification, if required.

This constitutes a final QA/QC check of this deliverable.

Best Regards,

**name of reviewer**
**reviewer title**

Parsons Brinckerhoff

cc: Neil Mullen
George Pristach

Attachments: **list any**
<table>
<thead>
<tr>
<th>Item#</th>
<th>Item</th>
<th>Description</th>
<th>Remark</th>
<th>Conformance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Scope</td>
<td>Scope applies to scope of work as per the contract RQQ Appendix B page xx clause xx.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Planning</td>
<td>List of design reference documents has been provided to the all the design teams.</td>
<td>The Deputy PM provided list of design reference documents to the design team at the beginning of the project, with updates distributed as new documents are made available.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Work Plan has been provided to all the design teams.</td>
<td>The Deputy PM posted the current Work Plan to PS2 and advised the design team accordingly.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A list of the design standards and guidelines have been provided to all the design teams.</td>
<td>The Deputy PM posted the available design standards and guidelines to PS2 and advised the design team accordingly, with updates distributed as new documents are made available.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conflicts (if any) among the design standards and guidelines identified and directions requested from Metrolinx.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Design</td>
<td>Internal peer review of each design discipline within the design scope performed. Errors and omissions found have been documented and sent back to the design team for correction.</td>
<td><strong>peer reviewers must forward copy of their reviews to PM’s to add to QAQC review file</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Requirements for various contract deliverables relevant to each discipline within the design scope established.</td>
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<tr>
<td></td>
<td></td>
<td>A consistent basis for CADD drawing creation and distribute CADD instructions to the Parsons Brinckerhoff CADD team has been</td>
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<td></td>
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<tr>
<td>Item#</td>
<td>Item</td>
<td>Description</td>
<td>Remark</td>
<td>Conformance</td>
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<td></td>
<td>Parsons Brinckerhoff PM has reviewed in-progress submissions for compliance to the established guidelines. Errors and omissions found have been documented and sent back to the design team for correction.</td>
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<td>Regular design team progress meetings were held and coordination among all the design disciplines involved on the project has taken place. Errors and omissions found have been documented and sent back to the design team for correction.</td>
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<td>Regular meetings with Metrolinx have been conducted to review progress and compliance with the standards and guidelines.</td>
<td>The Deputy PM posted the progress and technical meeting minutes to PS2 and advised the design team accordingly.</td>
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<td>Draft designs have been shared with Metrolinx to ensure that majority of the design issues are addressed prior to formal milestone submission.</td>
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<td>Each Parsons Brinckerhoff design discipline (design lead and internal peer reviewer) has signed off on their associated section of the design.</td>
<td><strong>Peer reviewer to provide email stating &quot;I have reviewed and signed off on <em>deliverable</em>&quot; as evidence of <em>sign-off</em> to allow PM to insert digital signatures into the Sign-Off cover page to go with the submission to client.</strong></td>
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<td>Parsons Brinckerhoff PM has signed off on each milestone design submission.</td>
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### RECOMMENDED ITEMS TO BE REVIEWED

#### High Priority Comments:

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<th>General</th>
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#### Specific Comments:

1. 
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3. 
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8. 

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RQQ-2011-PP-032 Project No.1095038-1  Appendix B
# APPENDIX C – DOCUMENT CONTROL FORM

## DOCUMENT CONTROL FORM

### File Codes

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Number</th>
<th>Project Manager</th>
<th>Location</th>
<th>Service Line</th>
<th>Client Name</th>
<th>Client Contact</th>
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### 0.0 *File Index

- **0.1** *File Code List
- **0.2** *Doc. Control Procedures

### 1.0 *Pre-Contract (Originals in Central, Copies in Department)

1.1 RFEOI (Solicitation)
1.2 Technical Proposal (Unpriced Proposal)
1.3 *Cost Proposal/Scope of Work
   - 1.3.1 Parsons Brinckerhoff
   - 1.3.2 Subs
1.4 *Negotiation Meeting Minutes
1.5 *Correspondence (Pre-contract)
   - 1.5.1 *To Client
   - 1.5.2 *From Client
   - 1.5.3 *Parsons Brinckerhoff Internal
   - 1.5.4 Subs
1.6 Proposal Documentation
   - 1.6.1 Form 3
   - 1.6.2 Cost Proposal Form
   - 1.6.3 Request Authority to Contract (Margin Analysis)
   - 1.6.4 Request to start Work w/o Contract

### 2.0 *Contract: (Originals in Central, Copies in Department)

- **2.1** NTP/Advance Authorization
2.1.1 *NTP Letter Parsons Brinckerhoff
2.1.2 Notification to Parsons Brinckerhoff Affiliates
2.1.3 Notification to Subs

2.2 *Prime Contract
2.2.1 *Base Agreement
2.2.2 Supp. (Contract Mods)

2.3 Sub Agreements
2.3.1 Subs Base Agreement
   2.3.1.1 RBA
   2.3.1.2 JMT
   2.3.1.3 AmerCom
   2.3.1.4 GEOD
   2.3.1.5 Robinson
   2.3.1.6 InfraMap

2.3.2 Subs Supp. (Contract Mods)
   2.3.2.1 RBA
   2.3.2.2 JMT
   2.3.2.3 AmerCom
   2.3.2.4 GEOD
   2.3.2.5 Robinson
   2.3.2.6 InfraMap

2.4 Insurance Certificates

3.0 Project Control (Department Project Files)
3.1 *Quality Control Plans
   3.1.1 Parsons Brinckerhoff
   3.1.2 RBA
   3.1.3 JMT
   3.1.4 AmerCom
   3.1.5 GEOD
   3.1.6 Robinson
   3.1.7 InfraMap

3.2 *PMP
   3.2.1 PMP
   3.2.2 Risk Management Plan
   3.2.3 Project Safety Plan

3.3 *Evaluations/Audits
   3.3.1 Client Ratings
   3.3.2 Project Technical Review
   3.3.3 Client Feedback

3.4 *Schedule (with Updates)
3.5 *Meeting Minutes
3.6 Owner Furnished Data
3.6.1 Third-party Log
3.6.2 ProCims Log
3.6.3 NJTA CADD Procedures

4.0 *Financial Management (Originals in Finance, Copies in Department)
4.1 *Parsons Brinckerhoff Invoices
   4.1.1 Monthly Invoice
4.2 Sub Invoices
   4.2.1 Parsons Brinckerhoff
   4.2.2 RBA
   4.2.3 JMT
   4.2.4 AmerCom
   4.2.5 GEOD
   4.2.6 Robinson
   4.2.7 InfraMap
4.3 *Progress Reports
   4.3.1 *Parsons Brinckerhoff
   4.3.2 RBA
   4.3.3 JMT
   4.3.4 AmerCom
   4.3.5 GEOD
   4.3.6 Robinson
   4.3.7 InfraMap
4.4 *PBIS Reports (Monthly)
4.5 *Work Breakdown Structure
4.6 *Final Margin Goal/Contingency (project binder in Finance copy in the Central F.)
4.7 Overhead Adjustments

5.0 *Project Data/Working Files
5.1 Project Video(s) Photograph Log
5.2 Structures
5.3 Survey
5.4 Civil
5.5 Traffic
5.6 Geotechnical
5.7 Environmental
5.8 Hydraulic/Hydrologic Analysis
5.9 Right-of-Way
5.10 Utilities
5.11 Lighting
5.12 Community Involvement
5.13 Working copies of Project Reports
   5.13.1 * Detour Report
   5.13.2 Phase A Report
   5.13.3 Geotechnical / Foundation Report
5.13.4 Other Reports
5.14 Previous Reports
5.15 Previous Plans (transmittals w/ reference to flat file, if applicable)

6.0 *Correspondence/Communication (Originals in Central File Chronologically, Copies in Department Project Files)
6.1 *Project Contact List
6.2 Client
   6.2.1 *To client
   6.2.2 *From client
6.3 *Parsons Brinckerhoff Internal
6.4 Subconsultants
6.5 Agencies
   6.5.1 Utilities
6.6 Telephone memorandums

7.0 *Project Deliverables (Phase)
7.1 From Subconsultants
7.2 *Parsons Brinckerhoff Deliverables to Client
   7.2.1 Pre-Phase A
   7.2.2 Phase A
   7.2.3 Phase B
   7.2.4 Phase C
   7.2.5 Phase D
   7.2.6 Other
7.3 *QA/QC Documentation
   7.3.1 *Parsons Brinckerhoff Deliverable
      7.3.1.1 Pre-Phase A
      7.3.1.2 Phase A
      7.3.1.3 Phase B
      7.3.1.4 Phase C
      7.3.1.5 Phase D
   7.3.2 Sub Deliverable
      7.3.2.1

8.0 Construction Services
8.1 Correspondence to/from client
8.2 Correspondence to/from Contractor
8.3 Correspondence to/from Subconsultants/Vendors
8.4 Telephone Conversation/In-house Memos
8.5 Request For Information (RFI's) & Shop/Working Drawing Logs
8.6 Other Correspondence (Agencies, Utilities, etc.)
8.7 Minutes of Meetings
8.8 Construction Schedule Information

9.0 Final Project Deliverables/ Close Out
9.1 From Subconsultants
9.1.1

9.2 *Parsons Brinckerhoff Deliverables to Client
9.3 *QA/QC Documentation
9.3.1 *Parsons Brinckerhoff
9.3.2 Subconsultants
9.4 *Closeout Report

* Required at initial project set-up