THE CITY OF EDMONTON

PROJECT AGREEMENT
VALLEY LINE LRT – STAGE 1

Schedule 9

Quality Management

SCHEDULE 9

QUALITY MANAGEMENT

TABLE OF CONTENTS

1. Project Co Responsibilities 1
2. Quality Management System 1
   2.1 Quality Management System Requirements 1
   2.2 Quality Management System Certification 1
   2.3 Compliance with Quality Management System 2
   2.4 Continuous Improvement of the Quality Management System 2
3. Quality manual and phase specific quality Management Plans 2
   3.1 Submission and Timing 2
   3.2 Specific Requirements 3
   3.3 Updates 4
4. Quality Personnel 4
   4.1 Quality Director 4
   4.2 Quality Manager 5
   4.3 Engineer(s) of Record 6
   4.4 Field Review Engineer(s) 6
   4.5 Specific Responsibilities 7
5. Quality Control – Inspections and Testing 7
   5.1 Quality Control Requirements 7
   5.2 Inspection and Test Plans 7
   5.3 Accreditation Standards 8
   5.4 Notice of Inspection and Testing 8
   5.5 Not Used 9
   5.6 Remedial work 9
6. Quality Auditing 9
   6.1 Quality Auditing 9
   6.2 Project Co Audits 10
   6.3 Specific Requirements 10
   6.4 Third Party Audits 10
7. City Audits 11
   7.1 General 11
   7.2 City Audits 11
   7.3 Cost of City Audits 12
8. Quality Documentation 12
   8.1 ISO Reference Documents 12

8.2 Submission of Quality Documentation 13
8.3 Changes to Quality Documentation 13
8.4 Quality Records 13
8.5 Monthly Quality Management Reports 14
8.6 Additional Information 15
9. Nonconformities 15
9.1 Specific Requirements 15
9.2 Nonconformity Report Tracking System 17
9.3 Unremedied Nonconformity 17
9.4 Nonconformity Records 17

SCHEDULE 9

QUALITY MANAGEMENT

1. PROJECT CO RESPONSIBILITIES

Project Co acknowledges and agrees that Project Co is solely responsible for the quality of the Project Work.

Project Co is responsible for all quality activities required to manage its own processes as well as those of the Project Co Persons throughout the Term. Project Co shall throughout the Term ensure that all aspects of the Project Work are subject to the Quality Management System, and shall comply with, and cause each of the Project Co Persons to comply with, the requirements of the Quality Management System.

In fulfilling their obligations under Schedule 9, while not derogating from such obligations, Project Co, the Quality Director and the Quality Manager may obtain assistance from the Project Contractors.

2. QUALITY MANAGEMENT SYSTEM

Project Co shall develop and implement a Quality Management System in accordance with the requirements of this Schedule.

2.1 Quality Management System Requirements

The Quality Management System shall conform to the requirements and principles of the ISO 9001:2008 Standard and shall cover all activities, products and services related to the Project Work. The Quality Management System shall address the ISO 9001:2008 Standard's eight principles of quality management:

(a) customer focused organization;

(b) leadership;

(c) involvement of people;

(d) process approach;

(e) system approach to management;

(f) continuous improvement;

(g) factual approach to decision making; and

(h) mutually beneficial supplier relationships.

2.2 Quality Management System Certification

2.2.1 Within 365 days after the Effective Date, Project Co shall obtain ISO 9001:2008 Standard certification of the Quality Management System from an accredited ISO 9001:2008 Standard certification agency, acceptable to the City, acting reasonably.

2.2.2 Within 180 days after the Effective Date, Project Co shall submit details to the City of the accredited ISO 9001:2008 Standard certification agency that Project Co proposes to use for certification of the Quality Management System.

2.2.3 Within 10 Business Days after:

(a) initial certification of the Quality Management System; and

(b) each anniversary of the Effective Date,

Project Co shall submit to the City confirmation, from an accredited ISO 9001:2008 Standard certification agency, that the Quality Management System:

(c) covers all activities, products and services related to the Project Work, including all aspects of Design, Construction and Services, including Handback; and

(d) is in all respects compliant with all applicable requirements and principles of the ISO 9001:2008 Standard.

2.2.4 Project Co shall maintain the ISO 9001:2008 Standard certification of the Quality Management System throughout the Term.

2.3 Compliance with Quality Management System

Project Co shall, and shall ensure that all Project Co Persons, comply with the Quality Management System, the Quality Manual and all relevant Quality Management Plans as each relates to the Project Work, or a portion thereof. Each Sub-Contractor shall have a quality representative who shall provide reports directly to the Quality Manager.

2.4 Continuous Improvement of the Quality Management System

Project Co shall:

(a) implement a continuous improvement program and shall have processes in place, such as management reviews and Quality Audit programs, to allow all identified opportunities for improvement to be recorded, tracked, implemented and closed out; and

(b) ensure that all of the Project Co Persons are aware of the importance of continuous improvement and are actively engaged in its implementation in connection with the performance of the Project Work.

The continuous improvement program shall be used to continually improve the effectiveness and efficiency of the Quality Management System. Management reviews for continuous improvement shall be conducted not less than annually, commencing on the first anniversary of the Effective Date.

3. QUALITY MANUAL AND PHASE SPECIFIC QUALITY MANAGEMENT PLANS

3.1 Submission and Timing

3.1.1 Project Co shall prepare:

(a) a Quality Manual in accordance with Appendix 9A *[Quality Manual]* of this Schedule; and

(b) phase specific Quality Management Plans in accordance with Appendix 9B *[Design Quality Management Plan]*, Appendix 9C *[Construction Quality Management Plan]*, Appendix 9D *[Environmental Quality Management Plan]* and Appendix 9E *[Services Quality Management Plan]* of this Schedule.

3.1.2 Each Quality Management Plan shall:

(a) at all times meet the requirements of the Quality Manual; and

(b) describe the processes and procedures to be used by Project Co to plan, monitor, assess and track conformance of the Project Work to all of the Project Requirements.

3.1.3 Each of the Quality Manual, Design Quality Management Plan, Construction Quality Management Plan and Environmental Quality Management Plan shall be submitted to the City within 90 days after the Effective Date.

3.1.4 The Services Quality Management Plan shall be submitted to the City not less than 180 days prior to the Target Service Commencement Date.

3.1.5 Project Co shall fully implement:

(a) the accepted Quality Manual, Design Quality Management Plan, Construction Quality Management Plan and Environmental Quality Management Plan within 150 days after the Effective Date; and

(b) the accepted Services Quality Management Plan at least 90 days prior to the Target Service Commencement Date.

3.2 **Specific Requirements**

All of the Quality Documentation shall:

(a) generally follow the ISO 9001:2008 numbering system and nomenclature and will include:

(i) any requirements therefor specified in this Schedule;

(ii) a description of the processes needed for the effective implementation of the Quality Management System, and:

(1) a determination of the sequence and interaction of these processes;

(2) a determination of the criteria and methods needed to ensure that the operation and control of these processes is effective;

(3) a commitment to ensure the availability of resources and information necessary to support the operation and monitoring of these processes;

(4) a procedure to monitor, measure and analyze these processes; and

(5) a procedure to implement the actions necessary to achieve the process objectives, and to ensure continuous improvement.

(b) demonstrate Project Co's commitment to the development, effective implementation and continuous improvement of the Quality Management System by providing that Project Co will:

(i) perform regular scheduled Quality Audits of the Quality Management System;

(ii) implement, prior to commencement of the Project Work, a quality policy which is appropriate for the Project Work;

(iii) implement, prior to commencement of the Project Work, Quality Objectives and monitor their effectiveness;

(iv) effectively communicate to Project Co's management team the importance of conforming to all quality requirements;

(v) ensure the adequacy of resources required to meet the Quality Objectives; and

(vi) conduct an annual management review to assess the effectiveness of the Quality Management System and implement measures required for continuous improvement.

3.3 Updates

Project Co shall update its Quality Management System and all Quality Documentation to ensure that the Quality Management System and all Quality Documentation is, and at all times remains, in full compliance with the ISO 9001:2008 Standard and the requirements of this Schedule. Notwithstanding the preceding sentence, Project Co shall only be obligated to continue updating the Design Quality Management Plan and the Construction Quality Management Plan after Service Commencement, to the extent that the applicable Project Work requires performance of design or construction activities.

4. QUALITY PERSONNEL

4.1 Quality Director

Throughout the Term, Project Co shall retain a Quality Director who will report directly to Project Co's most senior management team (excluding those responsible for Design and Construction; provided that the Quality Director may consult with and receive input from Persons responsible for Design and Construction or Services as necessary or desirable for the Quality Director to discharge its duties in accordance with both Good Industry Practice and internal policies) and whose sole responsibility for the Project will be quality management. The Quality Director shall have the authority to immediately stop any work activity not being performed in accordance with the Project Requirements, the Final Designs or any applicable Quality Documentation. From the Effective Date until 180 days after the Service Commencement Date, the Quality Director shall be a full time position and shall have the qualifications set out in Section 4.1.1 *[Quality Director]* of this Schedule. From 180 days after the Service Commencement Date until the end of the Term: (A) the Quality Director may perform other duties, provided that such other duties do not impair or compromise the Quality Director's ability to perform the responsibilities required of the Quality Director; and (B) the Quality Director need not have the

qualification set out in Section 4.1.1 *[Quality Director]* of this Schedule, but shall have direct and timely access to individuals having such qualifications.

The Quality Director shall be a Key Individual subject to the requirements of Schedule 26 *[Representatives and Key Individuals]*.

4.1.1 The Quality Director shall:

(a) be a Professional Engineer registered and in good standing with APEGA;

(b) have a minimum of ten years of relevant quality management experience in one or more quality management representative role(s) for similar projects within the last fifteen years; and

(c) have successfully completed formal training as a quality auditor.

4.1.2 Without limiting the generality of the foregoing, the job specification and responsibilities of the Quality Director shall include the following:

(a) developing, implementing and maintaining, and ensuring the effective operation of, the Quality Management System;

(b) preparing Quality Audit Plans and scheduling and coordinating Quality Audits of key processes with Project Co and applicable Project Co Persons;

(c) developing and effectively maintaining an effective process for:

(i) Nonconformity identification and reporting;

(ii) implementing Corrective Action and Preventive Actions; and

(iii) identifying and implementing continuous improvement;

(d) managing and overseeing all reviews, checking, testing and inspection activities and personnel;

(e) managing any third party testing agencies;

(f) ensuring all materials or equipment received for the Project Work meet the specified requirements for quality;

(g) ensuring a complete and accurate record of all quality-related activities is maintained;

(h) conducting Project Co management reviews on an annual basis;

(i) effectively liaising on all quality matters with the City; and

(j) carrying out any other matters which, in accordance with this Agreement, are the responsibility of the Quality Director.

4.2 **Quality Manager**

Throughout the Term, Project Co shall retain a Quality Manager who will report directly to the Quality Director (and not report to those managers of Project Co responsible for Design and Construction; provided that the Quality Manager may consult with and receive input from managers and other Persons

responsible for Design and Construction or Services as necessary or desirable for the Quality Manager to discharge its duties in accordance with both Good Industry Practice and internal policies) and whose sole responsibility for the Project will be quality management. The Quality Manager shall have the authority to immediately stop any work activity not being performed in accordance with the Project Requirements, the Final Designs or any applicable Quality Documentation. Prior to the Service Commencement Date, the Quality Manager shall be a full time position and shall have the qualifications set out in Section 4.2.1 *[Quality Manager]* of this Schedule. After the Service Commencement Date: (A) the Quality Manager may perform other duties, provided that such other duties do not impair or compromise the Quality Manager's ability to perform the responsibilities required of the Quality Manager; and (B) the Quality Manager need not have the qualifications set out in Section 4.2.1 *[Quality Manager]* of this Schedule, but shall have direct and timely access to individuals having such qualifications.

4.2.1 The Quality Manager shall:

(a) be a Professional Engineer registered and in good standing with APEGA;

(b) have a minimum of five years of relevant quality management experience in one or more quality management representative role(s) for similar projects within the last ten years; and

(c) have successfully completed formal training as a quality auditor.

4.2.2 Without limiting the generality of the foregoing, the job specification and responsibilities of the Quality Manager shall include the following:

(a) providing reports in support of Project Co's quality obligations directly or indirectly to the Quality Director;

(b) developing, implementing, maintaining and ensuring the effective operation of the Quality Management Plans in the context of the Quality Management System; and

(c) managing, and if appropriate delegating, the quality assurance and quality control activities described in the Quality Management Plans for Project Work.

4.3 Engineer(s) of Record

Project Co shall, or shall cause the Design Builder to, retain suitably experienced Engineer(s) of Record (as defined in the Alberta Building Code) who shall be responsible for the integrity and completeness of the Design and all subsequent field reviews in accordance with the requirements of APEGA. The Engineer(s) of Record shall be Professional Engineer(s) registered and in good standing with APEGA with at least 10 years of relevant experience and its/their work shall not be directed by those managers of Project Co or the Design-Builder responsible for Design and Construction.

4.4 Field Review Engineer(s)

Project Co shall, or shall cause the Design Builder to, retain a sufficient number of suitably experienced field review engineer(s) for each discipline, reporting to the Engineer(s) of Record. The field review engineer(s) shall be Professional Engineer(s) registered and in good standing with APEGA with at least 5 years of relevant experience and their work shall not be directed by those managers of Project Co or the Design-Builder responsible for Design and Construction. The field review engineer(s) shall ensure that

their respective component is constructed in accordance with the Alberta Building Code, if applicable, the Final Design and the Project Requirements.

4.5 Specific Responsibilities

At all times when Project Co is performing construction activities, Project Co shall have at least one qualified person on Site having the authority to immediately stop any work or activity which is not being performed or carried out in accordance with the Project Requirements, the Final Designs and the Quality Documentation applicable thereto.

5. QUALITY CONTROL – INSPECTIONS AND TESTING

5.1 Quality Control Requirements

Where:

(a) Project Co is required by this Agreement, any of the Project Requirements, or any Quality Documentation; or

(b) any Submittal, specifies or otherwise indicates the need,

to carry out any check, review, inspection, monitoring, calibration, sample, test or trial, such check, review, inspection, monitoring, calibration, sample, test or trial shall be carried out in accordance with the provisions of this Section 5 *[Quality Control – Inspections and Testing]* and the provisions of the relevant Quality Documentation.

Project Co shall monitor the performance of the Project Work by it and any Project Co Persons or any entity performing Project Work by performing appropriate checks, reviews, inspections, monitoring, calibrations, samples, tests, trials and any other actions required by the Quality Documentation. Project Co shall ensure compliance with the Submittals, the Quality Documentation and the requirements of this Agreement, including the Project Requirements.

5.2 Inspection and Test Plans

Project Co shall create one or more phase-specific Inspection and Test Plans as part of each of the Design Quality Management Plan, the Construction Quality Management Plan, the Environmental Quality Management Plan and the Services Quality Management Plan. Inspection and Test Plans shall be completed in accordance with Appendix 9F *[Document Submission Summary]*. An Inspection and Test Plan shall set out inspection and monitoring activities and documentation requirements to ensure that the Project Work conforms to the Project Requirements, required standards or codes and Good Industry Practice.

Each Inspection and Test Plan shall define the type and frequency of the inspection and testing activities and shall include as a minimum:

(a) inspection or test activity;

(b) frequency of inspections and tests;

(c) reference to inspection / test procedures, standards or codes;

(d) personnel responsible;

(e) level of inspection;

(f) documentation requirements; and

(g) Witness Points (including identification of Project Co and proposed City attendance) provided that the City may add Witness Points, in its discretion, during its review of the Inspection and Test Plans.

Project Co shall complete all inspections and testing described in the Inspection and Test Plan. In order to corroborate any inspection and testing performed, Quality Assurance re-testing shall be performed as required. Quality Control and Quality Assurance inspection and testing will be done by different personnel and their work shall not be directed by personnel responsible for initial inspection and testing.

5.3 Accreditation Standards

5.3.1 All Quality Control activities including checks, reviews, inspections, monitoring, calibrations, samples, tests and trials shall be carried out by agencies, personnel and laboratories that are duly accredited for the carrying out of such activities.

5.3.2 Laboratories shall be accredited in accordance with any laboratory accreditation requirements specifically identified in this Agreement or, if none are identified, ISO/IEC 17025, as amended, updated or replaced from time to time, provided that, for specific activities the City's Representative may require other industry-recognized accreditation in lieu of ISO/IEC 17025, including;

(a) concrete and cementatious materials (including activities of sampling, making, storing and transport of test pieces, taking concrete cores and carrying out concrete strength, slump, air content and density tests): CSA A283, "Qualification Code for Concrete Testing Laboratories", to the appropriate category for the tests being done and a minimum of Category II in accordance with Clause 5.3 in CSA A283 and using testing procedures in accordance with the latest edition of CSA A23.1 and A23.2;

(b) structural steel and welding: CSA W178.1, "Certification of Welding Inspection Organizations", to the level appropriate for the inspection being carried out; and

(c) protective coatings: "National Association of Corrosion Engineers", as appropriate to the work being carried out.

5.3.3 Where a laboratory accreditation standard has not be specifically identified in this Agreement, Project Co may request the City's consent to the use of a laboratory accredited in accordance with an alternate industry recognized laboratory accreditation standard. The City's consent shall not be unreasonably withheld or delayed if the proposed accreditation standard is applicable to the Project Work for which it is proposed and provides an equivalent level of quality control.

5.4 Notice of Inspection and Testing

Notice of all Quality Control activities for which there is an associated Witness Point in the relevant Inspection and Test Plan and any changes to those Quality Control activities, shall be given to City's Representative:

(a) at least 5 Business Days prior to the start of the check, review, inspection, monitoring, calibration, sample, test or trial, where such activity is being performed in the City of Edmonton;

(b) at least 21 days prior to the start of the check, review, inspection, monitoring, calibration, sample, test or trial, where such activity is being performed in the rest of North America; and

(c) at least 45 days prior to the start of the check, review, inspection, monitoring, calibration, sample, test or trial, where such activity is being performed outside of North America.

5.5 **Not Used**

5.6 **Remedial work**

Project Co shall be responsible for any remedial work, including the reperformance of any Quality Control activity required as a result of any failure to pass any check, review, inspection, monitoring, calibration, sample, test or trial required in accordance with this Agreement, any of the Project Requirements or any Quality Documentation or as a result of any laboratory not being duly accredited as required by Section 5.3 *[Accreditation Standards]* of this Schedule. Any such remedial work shall only be accepted when it meets with all the requirements of this Agreement, including the Project Requirements.

Test pieces which represent rejected material shall be retained and preserved by Project Co, when requested by the City, for a period of time to be mutually agreed upon between the City and Project Co.

6. QUALITY AUDITING

6.1 **Quality Auditing**

6.1.1 Not later than 90 days after the Effective Date, Project Co shall submit the Quality Audit Plans to the City's Representative in accordance with the Review Procedure. Project Co shall submit updated Quality Audit Plans to the City's Representative, in accordance with the Review Procedure, at 12 month intervals thereafter.

6.1.2 Project Co shall provide the following advance notice to the City's Representative prior to the start of any Quality Audit, or any change to the planned date for a Quality Audit:

(a) at least 7 Business Days for Quality Audits performed in Alberta;

(b) at least 14 days for Quality Audits performed in the rest of North America; and

(c) at least 30 days for Quality Audits performed outside of North America.

The notice shall describe the scope and objectives of the applicable Quality Audit.

6.1.3 Quality Audit Plans shall detail the Quality Audits that shall be conducted by Project Co on its own processes and those of Sub-Contractors, the planned dates of such Quality Audits and the conditions or circumstances which will otherwise give rise to an unscheduled Quality Audit.

6.2 Project Co Audits

Project Co shall conduct Quality Audits of its own processes and those of its Sub-Contractors in accordance with the requirements of this Schedule, the Quality Documentation and the Quality Audit Plans referred to therein, provided that the Design Quality Management Plan and the Environmental Quality Management Plan shall each be subject to an initial Quality Audit within 180 days after the Effective Date. Project Co's quality auditing process shall identify Nonconformities, necessary Corrective Actions and Preventive Actions and facilitate continuous improvement.

Within 7 days after completion of any Quality Audit, Project Co shall document, or cause to be documented, the results of such Quality Audit in an audit report and make such report available to the City's Representative promptly thereafter.

6.3 Specific Requirements

Without limiting any other provisions of this Schedule:

(a) Quality Audits shall be conducted generally in accordance with ISO 19011: 2002 and shall confirm that all activities comprising the Project Work are in compliance with the processes documented in the applicable Quality Management Plan;

(b) Quality Audits shall be performed by personnel with the combination of education, work experience, auditor training and audit experience required to perform the function and a demonstrated ability to successfully apply these attributes to the role;

(c) the Quality Director shall schedule Quality Audits to ensure that all key processes are reviewed at least annually;

(d) where necessary, follow-up Quality Audits shall be scheduled to ensure that identified Corrective Actions and Preventive Actions are carried out in a timely fashion;

(e) Quality Audits shall be scheduled taking into account the status and importance of the processes being audited as well as the results of previous Quality Audits; and

(f) Quality Audits shall be scheduled taking into account the duration of the work to ensure that each Sub-Contractor is subject to at least one Quality Audit.

6.4 Third Party Audits

Annual third party accreditation Quality Audits shall be conducted as required under the ISO 9001:2008 Standard by an accredited certification agency retained by Project Co and acceptable to the City, acting reasonably. The resulting audit reports shall be Quality Records and shall be made available to City's Representative upon request. Project Co shall provide written notice to the City within 2 days after receiving any third party Quality Audit report.

All deficiencies identified by the independent third-party auditor during a Quality Audit shall be addressed and Corrective Actions implemented by Project Co within 30 days of completion of the Quality Audit. Project Co shall communicate the results of all Quality Audits to the City within 7 days of the completion of the Quality Audit.

7. CITY AUDITS

7.1 General

The City's Representative may, pursuant to the submission of the Quality Documentation in accordance with this Schedule, review the Quality Documentation to identify the activities and processes identified in the Quality Manual and Quality Management Plans on which the City's auditing efforts and resources should be directed.

Project Co shall provide and shall ensure the Project Co Persons provide the City's auditors with all documentation, records, access, facilities and assistance reasonably required for the safety and convenience of the City's auditors.

The City may employ independent auditors, and inspection and testing agencies. These agents of the City will be afforded the same facilitation provided to the City.

7.2 City Audits

7.2.1 The following types of Quality Audits may be conducted by, or on behalf of, the City in its discretion:

(a) **Work Component Audits** – May be scheduled or unscheduled, at the City's discretion. The Work Component Audit is a field audit conducted to verify a specific task or component of the Project Work. The objective of these audits is to evaluate the performance of the Project Work activities performed by Project Co or a Project Co Person in respect of the Project Requirements.

(b) **Quality Process Audits** – May be scheduled or unscheduled, at the City's discretion. Quality Process Audits are conducted to determine whether Project Co is in full compliance with the quality processes outlined in a Quality Management Plan. Examples of these processes are Nonconformity process, Corrective Action and Preventive Action process and continuous improvement process.

(c) **Subcontractor Audits** – Scheduled or unscheduled audits conducted on a random basis or on specific areas of interest throughout the Term. The objective of the audit is to determine whether the Sub-Contractors are in full compliance with the Quality Management System. Audit plans may take into account different methods of implementing quality processes; however, all Sub-Contractors must comply with the Quality Management System.

7.2.2 Within 20 Business Days after completion of a City Quality Audit, and receipt of notice of any observed Nonconformities or audit recommendations, Project Co shall prepare a Corrective Action Plan and submit it to the City pursuant to the Review Procedure. The City reserves the

right to conduct follow up audits or reviews on reasonable notice to Project Co, to determine if Project Co's Corrective Action Plan has been implemented and completed.

7.2.3 The City may carry out increased levels of Quality Audits (whether in number, duration or detail) of all or any aspect of the Quality Management System until such time as the City is reasonably satisfied that Project Co is in full compliance with the Quality Management System.

7.2.4 In addition to carrying out any scheduled and unscheduled Quality Audits of the Quality Management System (including compliance with all Quality Documentation) as provided in Section 7.2 *[City Audits]* of this Schedule, the City's Representative may, at its discretion, monitor and verify the operation of the Quality Management System by, *inter alia*, carrying out spot checks and making independent inspections and tests of the Lands or the Infrastructure, equipment, material, tools, supplies or other items provided in connection with those, including any areas of the Lands or the Infrastructure or material which fails any test or is suspected by the City's Representative of not complying with the requirements of this Agreement.

7.3 Cost of City Audits

If the City's Representative carries out any Quality Audit pursuant to Section 7.2 *[City Audits]* of this Schedule, and the results of such audit shows any material Nonconformity in respect of the Project Work, then without limiting any other rights and remedies of the City, Project Co shall compensate the City for all costs reasonably incurred in carrying out such audit (including the relevant administrative expenses of the City, including an appropriate sum in respect of general staff costs and overheads). Otherwise, Project Co shall not be required to compensate the City for Quality Audits carried out by the City's Representative pursuant to Section 7.2 *[City Audits]* of this Schedule.

8. QUALITY DOCUMENTATION

The minimum requirements and principles which apply to the Quality Documentation are set out in Appendices 9A to 9E, inclusive to this Schedule.

A summary of document submittal requirements is included in Appendix 9F *[Document Submission Summary]*.

8.1 ISO Reference Documents

Without limiting the requirement of the Quality Management System to comply with the ISO 9001:2008 Standard, the Quality Management System shall also incorporate the requirements and principles of the following:

(a) ISO 9004 Standard;

(b) ISO 9000 Standard;

(c) ISO 19011 Standard; and

(d) ISO 10005 Standard.

8.2 Submission of Quality Documentation

Project Co shall prepare and submit all required Quality Documentation to the City in accordance with the Review Procedure. All Quality Documentation submitted to the City shall be complete. If the Quality Documentation relies on or incorporates any quality manual, plan, procedure or like document then that document shall also be submitted or have been previously submitted to the City. The City may require the amendment of any such quality manual, plan, procedure or other document to the extent necessary to enable the relevant Quality Documentation to satisfy the requirements of this Schedule.

8.3 Changes to Quality Documentation

8.3.1 Project Co shall be responsible for proactively updating its Quality Management System and all Quality Documentation from time to time, in accordance with the procedures set forth in this Agreement, to ensure that the Quality Management System and all Quality Documentation are, and at all times remain, in full compliance with the ISO 9001:2008 Standard and the requirements of this Agreement.

8.3.2 Prior to implementation of any update or change to the Quality Management System or any Quality Documentation, Project Co shall submit the proposed amendments to the City in accordance with the Review Procedure;

8.3.3 If Project Co does not propose modifications to the Quality Management System and the Quality Documentation, as and when required pursuant to Section 8 *[Quality Documentation]* of this Schedule, then the versions of the Quality Management System and the relevant Quality Documentation, then in effect, shall be deemed to have been resubmitted to the City for its review in accordance with the Review Procedure and Project Co shall address any comments or observations provided by the City in accordance with Schedule 2 *[Submittal Review Procedure]* and any such comments or observations shall not be treated as a Change.

8.3.4 If there is no unresolved objection by the City under the Review Procedure to a part of the Quality Documentation pursuant to Section 8.2 *[Submission of Quality Documentation]* of this Schedule or to a modification, addition or revision proposed pursuant to Section 8.3 *[Changes to Quality Documentation]* of this Schedule, then the Quality Documentation shall be amended to incorporate such part, modification, addition or revision.

8.4 Quality Records

8.4.1 All Quality Control activities shall be recorded and such documentation shall be considered a Quality Record.

8.4.2 Project Co shall ensure that a complete and accurate set of quality management records (the "***Quality Records***") are maintained in accordance with the Quality Management System and Schedule 19 *[Records and Reports]*. Without limiting the documentation requirements of this Agreement, the applicable standards and the Quality Documentation, all Quality Records and other Quality Control-related documentations shall include the following:

(a) identification and the traceability to the work or item tested;

(b) identification and traceability of the test equipment used, if applicable;

(c) results of the applicable Quality Control procedure;

(d) remarks regarding conformance with this Agreement;

(e) calibration certificates and records for testing equipment used;

(f) name, position and contact information of the Project Co Person responsible for the Quality Control activity; and

(g) name, position and signature and contact details of the person (e.g., Quality Manager, inspector) who verified and approved the measurements.

8.4.3 The Quality Records shall provide objective evidence of conformance with all requirements of this Agreement, compliance with the ISO 9001:2008 Standard and the effective operation of the Quality Management System.

8.4.4 Unless otherwise agreed by the City in writing, all Quality Records and other Quality Control-related documentation shall be made available to the City upon request and shall be retained in accordance with the Records Management Protocol and the requirements of Schedule 19 *[Records and Reports]*.

8.5 Monthly Quality Management Reports

Project Co shall prepare and submit for review to the City a monthly quality summary report, no later than the 7th day of each month during the Term. As a minimum, the report shall include the following:

(a) a summary of all the monthly quality management activities under a Quality Management Plan performed during the applicable reporting period and any outstanding quality issues which arose;

(b) a summary of all Quality Control activities performed during the applicable reporting period complete with a brief summary of any inspections or tests which were not acceptable;

(c) a three month look-ahead summary of all Quality Control activities planned, including any off-site inspections performed by suppliers such as factory acceptance testing;

(d) a summary of all Nonconformities including a running total of all Nonconformities which are open, closed and a brief description of any issues with Nonconformities which have exceeded the prescribed rectification periods;

(e) a summary of any audits performed during the applicable reporting period, complete with any finding from the audits, including Nonconformities, opportunities for improvement and a brief audit summary;

(f) a three month look-ahead for any Quality Audits planned;

(g) a summary of all continuous improvement initiatives taken;

(h) any other information required to be included in the Quality Management System reports pursuant to any of the Appendices to this Schedule or the terms of the relevant Quality Management Plan; and

(i) a summary of any changes or revisions to any Quality Manual or Quality Management Plan or related quality procedure or plan made in compliance with this Agreement.

8.6 Additional Information

Notwithstanding any other provision of this Schedule, Project Co shall provide the City with such information as the City may reasonably request from time to time to demonstrate compliance with the Agreement and this Schedule.

9. NONCONFORMITIES

9.1 Specific Requirements

The Nonconformity reporting process, from initial creation through to closeout, is as follows:

(a) Upon discovery of a Nonconformity, Project Co shall enter a Nonconformity Report into the Nonconformity Tracking System, including at least the information required in Section 9.4 *[Nonconformity Records]* of this Schedule, within two Business Days of the discovery. All Non-Performance Events shall be identified in the Nonconformity Tracking System.

(b) If at any time the City becomes aware of a Nonconformity, the City may issue a Nonconformity Report by inputting the Nonconformity Report into the Nonconformity Tracking System, without prejudice to any other right or remedy available to the City.

(c) The Quality Director shall be responsible for:

(i) ensuring that the Nonconformity Report is assigned a reference number with the status ‘open’ within 2 Business Days of it being entered into the Nonconformity Tracking System, including the ‘open date’, the time required for preparing the Proposed Plan and the time required for implementing the Final Plan;

(ii) developing or obtaining a proposed disposition plan for Corrective Action or Preventive Action (if any action is required) including the timing and scope of the Corrective Action or Preventive Action (the “***Proposed Plan***”) within 14 days of the Nonconformity Report, or another date if such other date is: (i) appropriate based on the nature of the Nonconformity; and (ii) acceptable to the City, acting reasonably;

(iii) reviewing any plans or processes that relate to the Nonconformity (including if applicable the Quality Management Plan) and, if the Quality Director identifies any amendments or changes that need to be made to such plans, entering a Nonconformity Report (or comparable Corrective Action or Preventive Action report) with respect to such in accordance with Section 9.1 *[Specific Requirements]* of this Schedule;

(iv) finalizing the Proposed Plan, including if applicable obtaining the consent of any individuals that will be responsible for certifying completion of the relevant Project Work (including the Engineer of Record), and including the timing and scope of the Corrective Action or the Preventive Action (the "***Final Plan***");

(v) documenting and verifying the implementation of the Final Plan and final rectification of the Nonconformity, including, if applicable, obtaining the consent of any individuals responsible for certifying completion of the relevant Project Work; and

(vi) assigning the Nonconformity Report with the status 'closed' and recording the 'closed date'.

(d) If the City issues the Nonconformity Report under Section 9.1(b) *[Specific Requirements]* of this Schedule, and acting reasonably, considers that Project Co ought to have identified and reported the occurrence of the Nonconformity before the City did so:

(i) the Final Plan may, at the City's discretion, be subject to the Review Procedure;

(ii) the City may assign NPE Points in respect of the Nonconformity and the failure to submit a Nonconformity Report; and

(iii) the City shall have the right to mandate a maximum time period for developing the Proposed Plan in Section 9.1(c)(ii) *[Specific Requirements]* of this Schedule, and/or a maximum time period for implementing the Final Plan in respect of the Nonconformity in Sections 9.1(c)(ii) *[Specific Requirements]* and 9.1(c)(iv) *[Specific Requirements]* of this Schedule.

(e) Any Final Plan or portion thereof, that requires changes to any document that would otherwise be the subject to the Review Procedure (or other review procedures) shall remain subject to all such procedures. In addition, the City may in its discretion require any Final Plan to be subject to the Review Procedure; and

(f) Notwithstanding anything else to the contrary, Project Co shall not be entitled to proceed with any portion of the Project Work until a Nonconformity Report that is related to or forms part of such portion of the Project Work is assigned the status 'closed' in accordance with Section 9.1(c)(vi) *[Specific Requirements]* of this Schedule, unless the individuals responsible for certifying completion of all related Project Work including relevant Engineers of Record permit such in writing;

(g) Not Used; and

(h) Not Used.

9.2 Nonconformity Report Tracking System

Within 90 days after the Effective Date, Project Co shall fully implement, and shall maintain throughout the Term, a Nonconformity Tracking System to monitor the status of all Nonconformity Reports initiated by Project Co and the City. The Nonconformity Tracking System shall be fully operational and shall:

(a) comprise a single repository containing both Project Co and City initiated Nonconformity Reports;

(b) have the ability to attach supporting material such as photos and documents to a Nonconformity Report;

(c) provide remote access to:

(i) input and update Nonconformity Reports; and

(ii) the current status, dates, data and supporting material for all Nonconformity Reports;

(d) be available to designated City Persons at all times without payment, using a secure online Internet based system, acceptable to the City acting reasonably;

(e) include links to Corrective Actions and Preventive Actions related to the Nonconformity Reports;

(f) provide automatic, user configurable, notifications whenever a Nonconformity Report is inputted or any information regarding a Nonconformity Report is updated or modified;

(g) produce summary reports for delivery to the City of Nonconformity Reports, NPE Points and Default Points accrued within each performance threshold category in any given month, and the total NPE Points and Default Points accrued across all performance threshold categories in any given month; and

(h) have built-in query functionality that can be used to produce ad hoc summary reports.

9.3 Unremedied Nonconformity

The City may issue further Nonconformity Reports if a Nonconformity identified in a Nonconformity Report continues unremedied.

9.4 Nonconformity Records

Project Co shall maintain records of:

(a) each Nonconformity, traceable to processes, actual parts, components, locations, drawings and data sheets as appropriate;

(b) the reference numbers of all Nonconformity Reports;

(c) a description of all Nonconformity Reports;

(d) the proposed disposition by Project Co to rectify or correct each Nonconformity;

(e) the date and time at which Nonconformities were identified or discovered;

(f) the date and time at which Nonconformities were entered into the Nonconformity Tracking System ('opened date');

(g) the due date for preparation of the Proposed Plan and the due date for rectifying the Nonconformity; and

(h) the date and time at which a Nonconformity specified in a Nonconformity Report was rectified ('closed date').

APPENDIX 9A

QUALITY MANUAL

1.1 Project Co shall prepare and submit a comprehensive Quality Manual that describes the Quality Management System for all aspects of the Project Work including the Design, Construction and the Services. This Quality Manual shall be submitted to the City within 90 days after the Effective Date in accordance with the Review Procedure.

1.2 The Quality Manual shall establish the Quality Policy and Quality Objectives for all aspects of the Project Work and, in accordance with the requirements of the ISO 9001:2008 Standard, shall describe the processes that shall be established, implemented, controlled, and continually improved to achieve the established Quality Objectives.

1.3 The Quality Objectives described in the Quality Manual shall be measurable and consistent with the Quality Policy while meeting with ISO 9001:2008 Standard's eight principles of quality as well as the requirements of the Agreement and the City.

1.4 The Quality Manual shall detail the ISO-mandated procedures including:

(a) documented document control procedure;

(b) documented records control procedure;

(c) documented audit procedure; and

(d) documented nonconformity procedure.

1.5 The Quality Manual shall detail the hierarchy and links between all Quality Documentation.

1.6 The Quality Manual shall describe in detail how Project Co's key management personnel shall interface to achieve the Quality Objectives. An organizational chart shall be included as well as a summary of the responsibilities of all key personnel.

APPENDIX 9B

DESIGN QUALITY MANAGEMENT PLAN

1.1 Project Co shall prepare and submit a comprehensive Design Quality Management Plan that describes how Project Co will manage the Design activities in accordance with the Quality Manual, the Agreement and all Project Requirements. At all times Project Co shall remain solely responsible for the quality of the Design.

1.2 The Design Quality Management Plan shall be submitted to the City within 90 days after the Effective Date in accordance with the Review Procedure.

1.3 The Design Quality Management Plan shall, at a minimum, describe how Project Co will perform the following processes:

(a) design input and output review;

(b) design verification to ensure that design input requirements have been met;

(c) design validation to ensure that the final product is capable of meeting its intended use;

(d) design change management;

(e) interdisciplinary coordination;

(f) design Sub-Contractor quality assessment and procurement;

(g) Quality Audits of Project Co and Sub-Contractors;

(h) Corrective Actions, Preventive Actions and opportunities for improvement;

(i) document management; and

(j) control of Quality Records.

1.4 The Design Quality Management Plan shall describe in detail how the key Design personnel shall interface to achieve the Design requirements. An organizational chart shall be included as well as a summary of the responsibilities and authorities of all key personnel.

1.5 The Design Quality Management Plan shall describe in detail the organizational interfaces between the Design Manager and his design quality management team and the Quality Director.

1.6 At all times the Design Quality Management Plan shall be in compliance with APGEA Quality Management guidelines.

1.7 The following Quality Control processes in respect of Design shall be performed by Project Co in accordance with the requirements and principles of ISO 9001:2008 requirements:

(a) Design Input Identification - Design inputs shall be identified by Project Co prior to the assignment of any design work. The design criteria shall be identified to clearly define the conditions and standards on which the designs will be based and comply with the Project Requirements. All design inputs shall be recorded as a Quality Record.

(b) Design Outputs - All design outputs shall meet the design input requirements as confirmed through a systematic checking, reviewing and approval process before release for procurement and/or construction.

(c) Reviewing - All designs shall be reviewed by Project Co. Design review is a basic and required process and should be performed by the entity producing a design document. As a minimum, all design documents shall be reviewed to ensure general conformance with established procedures, the appropriate format is achieved, practicality of numbers, and there are no missing items. A permanent record of all design reviews is required in accordance with Section 5.2 *[Inspection and Test Plans]* of this Schedule.

(d) Internal Checking - All design documents must be checked by qualified engineer(s) who were not responsible for the original design before the design documents are submitted to the City. This internal check engineer shall be registered as a professional engineer in their home jurisdiction. Checking is a detailed methodical process to verify the design documents are technically functional and appropriate and in compliance with Project Requirements, regulatory requirements and current codes.

(e) Design Verification - The verification process entails the comparison of all design concepts, design assumptions, inputs and outputs with the Project Requirements to confirm that the design satisfies the functional requirements. Design verifications are formal processes which shall be planned to correspond with major milestones of the design and, at the City's discretion, include representatives from the City. A permanent record of all verification reviews is required in accordance with Section 5.2 *[Inspection and Test Plans]* of this Schedule.

(f) Design Validation - Design validation will be performed upon completion of the construction of every major component of the Project to determine if the final product is capable of meeting the objectives and requirements for the specified application or intended use. A permanent record of all validation reviews is required in accordance with Section 5.2 *[Inspection and Test Plans]* of this Schedule.

(g) Design Change Management - As design changes are inevitable any contemplated design change shall be reviewed by the Project Co with the same processes as with an original design. Design changes and modifications are required to be identified, documented, reviewed and approved to the same level as the original design. A permanent record of all design change reviews is required in accordance with Section 5.2 *[Inspection and Test Plans]* of this Schedule.

(h) Interdisciplinary Coordination - Interdisciplinary coordination is the process whereby decisions made by one engineering discipline are communicated to all other disciplines to

ensure coordination and to help mitigate the possibility of contradictory design outputs. When numerous disciplines contribute to a design output, an interdisciplinary coordination process is required. A permanent record shall be retained of all interdisciplinary coordination reviews in accordance with Section 5.2 *[Inspection and Test Plans]* of this Schedule.

(i) Software Calibrations - Project Co's designers shall make certain all design software is calibrated or compared with manual calculations or calculations generated by another software package to ensure accuracy.

(j) Independent Checking - The Checking Team procedure is detailed in Schedule 4 *[Design and Construction Protocols]*.

APPENDIX 9C

CONSTRUCTION QUALITY MANAGEMENT PLAN

1.1 Project Co shall prepare and submit a comprehensive Construction Quality Management Plan that describes how Project Co will manage the Construction activities in accordance with the Quality Manual, the Agreement and all Project Requirements. At all times Project Co shall remain solely responsible for the quality of the Construction.

1.2 This Construction Quality Management Plan shall be submitted to the City within 90 days after the Effective Date in accordance with the Review Procedure.

1.3 The Construction Quality Management Plan shall, at a minimum, describe how Project Co will perform the following processes:

(a) inspection, calibration, sampling, testing, trials and monitoring;

(b) materials identification and traceability;

(c) Sub-Contractors' quality assessment and procurement;

(d) Quality Audits, including of Sub-Contractors engaged in Construction activities;

(e) control of nonconforming product;

(f) Corrective Actions, Preventive Actions and opportunities for improvement;

(g) document management; and

(h) control of Quality Records.

1.4 In addition to any other requirements of this Agreement, the Construction Quality Management Plan shall include:

(a) an organizational chart identifying key Construction quality management personnel (including the Quality Manager and a quality control manager) and the linkage with the Quality Director for Project Co's overall Quality Management System as documented in the Quality Manual;

(b) a description of the responsibilities, qualifications, and authority of the above personnel;

(c) a description of the organizational interfaces between the above personnel and the design and other disciplines;

(d) identification of all Sub-Contractors engaged in Construction activities; and

(e) identification of all laboratories, inspection agencies and inspectors used by Project Co in connection with the Construction activities, including evidence of their accreditations and contact information.

APPENDIX 9D

ENVIRONMENTAL QUALITY MANAGEMENT PLAN

1.1 Project Co shall prepare and submit a comprehensive Environmental Quality Management Plan, that describes how Project Co intends to monitor performance of Project Co's Environmental Obligations in connection with the Project Requirements and this Agreement. The Environmental Quality Management Plan shall define Project Co's approach to achieving and verifying compliance with the requirements of this Agreement relating to Project Co's Environmental Obligations.

1.2 This Environmental Quality Management Plan shall be submitted to the City within 90 days after the Effective Date in accordance with the Review Procedure.

1.3 In addition to any other requirements of this Agreement, the Environmental Quality Management Plan shall contain:

(a) an organizational chart identifying key environmental management personnel and the relationship with the Quality Director as documented in the Quality Manual;

(b) a description of the responsibilities, qualifications, and authority of the above personnel;

(c) a description of the organizational interfaces between the environmental management and other disciplines such as Design, Construction, and Services; and

(d) a description of how environmental Nonconformities will be addressed using the Nonconformity Tracking System.

1.4 Project Co shall develop documented quality system procedures and process flow charts to ensure that all performance specifications and requirements in this Agreement in respect of Project Co's Environmental Obligations are met or exceeded. The Environmental Quality Management Plan shall, at a minimum, include or reference detailed quality system procedures and process flow charts for the following processes:

(a) obtaining and maintaining Project Approvals;

(b) environmental monitoring and reporting;

(c) environmental incident reporting and tracking;

(d) Quality Audits of Project Co quality processes;

(e) Quality Audits of Sub-Contractors;

(f) control of nonconforming products and services;

(g) Corrective Actions, Preventive Actions and opportunities for improvement;

(h) document management; and

(i) control of Quality Records.

APPENDIX 9E

SERVICES QUALITY MANAGEMENT PLAN

1.1 Project Co shall prepare and submit a comprehensive Services Quality Management Plan, that describes how Project Co intends to monitor and measure the Services activities in connection with the Project in accordance with the ISO 9001:2008 Standard, the Quality Management System requirements stated in the Quality Manual and the provisions of this Agreement, to the City in accordance with the Review Procedure at least 180 days prior to the Target Service Commencement Date. The Services Quality Management Plan shall be aligned with all relevant Service Performance Measures and define Project Co's approach to achieving compliance with the requirements of this Agreement relating to the Services activities.

1.2 In addition to any other requirements of this Agreement, the Services Quality Management Plan shall contain:

(a) an organizational chart identifying key Services personnel (including the Quality Manager) and the relationship with the Quality Director for Project Co's Quality Management System as documented in the Quality Manual;

(b) a description of the responsibilities, qualifications, and authority of the above personnel; and

(c) a description of the organizational interfaces between the Services and other disciplines such as design, construction, supply, safety and environmental management.

1.3 Project Co shall develop documented quality system procedures and process flow charts to ensure that all performance specifications and requirements in this Agreement in respect of Services are met or exceeded. These procedures and flow charts shall document who does the work, what they do, and what evidence is generated that they have done the work correctly.

1.4 The Services Quality Management Plan shall be reviewed by Project Co at a minimum on a yearly basis.

APPENDIX 9F

DOCUMENT SUBMISSION SUMMARY

1.1 Project Co shall prepare and submit all documents and deliverables as and when required pursuant to this Schedule 9 *[Quality Management]*, including the following:

Deliverable Name	Due Date	Section Reference	Review or Information
Quality Manual	Submitted within 90 days after the Effective Date	Appendix 9A	Review Procedure
Design Quality Management Plan	Submitted within 90 days after the Effective Date	Appendix 9B	Review Procedure
Design Inspection and Test Plans	Submitted at least 30 days prior to the start of the applicable Design activities	Appendix 9B	Review Procedure
Construction Quality Management Plan	Submitted within 90 days after the Effective Date	Appendix 9C	Review Procedure
Construction Inspection and Test Plans	Submitted at least 30 days prior to the start of the applicable Construction activities	Appendix 9C	Review Procedure
Environmental Quality Management Plan	Submitted within 90 days after the Effective Date	Appendix 9D	Review Procedure
Environmental Inspection and Test Plans	Submitted at least 30 days prior to the start of the applicable environmental activities	Appendix 9D	Review Procedure
Services Quality Management Plan	Submitted at least 180 days prior to the Target Service Commencement Date	Appendix 9E	Review Procedure
Services Inspection and Test Plans	Submitted at least 30 days prior to the start of the applicable Service activities	Appendix 9E	Review Procedure
Quality Audit Plans	Submitted within 90 days after the Effective Date	6.1	Review Procedure
Quality Audit Plans Updates	Submitted at twelve month intervals after submission of the initial Quality Audit Plans	6.1	Review Procedure

Deliverable Name	Due Date	Section Reference	Review or Information
Monthly Quality Management System reports	Submitted on or before the 5th day of the following month	8.5	Informational Submission
Corrective Action Plan	Submitted within 20 Business Days	7.2	Review Procedure

1.2 Project Co shall not commence or permit the commencement of any aspect of the Project Work before those parts of the Quality Documentation that concern such aspect of the Project Work have been submitted to the City in accordance with this Schedule and the Review Procedure.