DIVISION 01

GENERAL REQUIREMENTS

Part 1 General

1.1 RELATED REQUIREMENTS

.1 General Conditions – MWSB 1000

.2 All other specification Sections.

1.2 ACCESS AND EGRESS

.1 Design, construct and maintain temporary “access to” and “egress from” work areas, including stairs, runways, ramps or ladders, and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.3 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with the Contract Administrator and the City to facilitate work as stated.

.2 Maintain existing services to building and provide for personnel and vehicle access.

.3 Where security is reduced by work provide temporary means to maintain security.

.4 Make arrangements to provide sanitary facilities for use by Contractor’s personnel. Keep facilities clean.

.5 Use only approved accesses in existing building for moving workers and material.

.1 Protect existing components from damage.

.6 Closures: protect work temporarily until permanent enclosures are completed.

1.4 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations, operations staff and normal use of premises. Arrange with City’s Operations Staff to facilitate execution of work.

1.5 EXISTING SERVICES

.1 Notify City of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give the City 7 days notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working of hours of occupants, preferably on weekends.

1.6 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions.

Part 2 Products

.1 Not used.

Part 3 Execution

.1 Not used.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 City of Winnipeg Standard Construction Specifications

1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

.1 General Requirements

.1 General requirements will be measured and paid in accordance with E4.2.

.2 Conversion of Lane 3 and 4 to hauled wastewater

.1 Underground hauled wastewater piping

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.2 New Manhole on Existing Sewer

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.3 Connection to Existing Building No. 2

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.4 Connection to Existing Sewer

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.5 Connection to Existing Manhole

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.6 Installation of Drop Structure on Manhole 7

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.7 Pavement Restoration

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.8 Demolition in Building No. 2 Dry Pit

.1 Demolition in Building No. 2 Dry Pit will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of demolition completed in accordance with Division 02, accepted and measured by the Contract Administrator.

.9 Snow Melt Pad Modifications and Associated Hydronic System Upgrades

.1 Snow Melt Pad Modifications and Associated Hydronic System Upgrades will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. Removal and disposal of existing pad and piping, installation of new pad, piping, connection of new piping

to existing system and all associated works shall be included in the price in Form B. All work associated with the complete installation and functioning of the new snow melt pad is to be considered incidental to the price. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning associated with work completed in accordance with Divisions 1 and 23, accepted and measured by the Contract Administrator.

.10 Process Integration

.1 Process Integration will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all process integration work completed in accordance with Divisions 1 and 40, accepted and measured by the Contract Administrator.

.11 Electrical and Integrated Automation

.1 Electrical and Integrated Automation will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all electrical and integrated automation work completed in accordance with Divisions 1, 25, 26 and 28 accepted and measured by the Contract Administrator.

.3 Leachate Handling Upgrades

.1 Underground Leachate Piping

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.2 Connection to Existing Sewer

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.3 Underground Flushing Water Piping

.1 As per City of Winnipeg Standard Construction Specification Section 2110.

.4 Watermain Valve

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.5 Fittings

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.6 Underground Potable Water Piping

.1 As per City of Winnipeg Standard Construction Specification Section 2110.

.7 Connecting Existing Copper Water Service to New Water Service

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.8 19 mm Curb Stop

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.9 19 mm Curb Stop Box

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.10 Sewer Services

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.11 Above ground exterior leachate receiving piping and gate

.1 Above ground exterior leachate receiving piping and gate will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation and start-up associated with above ground exterior leachate receiving piping and gate work completed in accordance with Divisions 1 and 40, accepted and measured by the Contract Administrator.

.12 Leachate Sampling Building

.1 Piles

.1 Piles shall include supply and installation and associated incidental costs. Measure and payment for each pile at the site installed as noted in Div. 31, accepted and measured by Contract Administrator.

.2 Substructure

.1 Substructure will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply and installation associated with all substructure work completed in accordance with Divisions 3 and 31, accepted and measured by the Contract Administrator.

.3 Superstructure

.1 Superstructure will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply and installation associated with all superstructure work completed in accordance with Divisions 4, 5, 7, 8, 9 and 31 accepted and measured by the Contract Administrator.

.4 Building Mechanical

.1 Building Mechanical will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all building mechanical work completed in accordance with Divisions 1, 22 and 23, accepted and measured by the Contract Administrator.

.5 Process Integration

.1 Process Integration will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all process integration work completed in accordance with Divisions 1 and 40, accepted and measured by the Contract Administrator.

.6 Sampler and Process Integration

.1 Sampler and associated Process Integration will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all electrical and integrated automation work completed in accordance with Divisions 1 and 25 accepted and measured by the Contract Administrator.

.7 Electrical and Integrated Automation

.1 Electrical and Integrated Automation will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all electrical and integrated automation work completed in accordance with Divisions 1, 11, 25, 26 and 28 accepted and measured by the Contract Administrator.

.4 Miscellaneous Hauled Wastewater Upgrades

.1 Underground Flushing Water Piping

.1 As per City of Winnipeg Standard Construction Specification Section 2110.

.2 Watermain Valve

.1 As per City of Winnipeg Standard Construction Specification Section 2110.

.3 Fittings

.1 As per City of Winnipeg Standard Construction Specification Section 2110.

.4 Underground vent piping

.1 As per City of Winnipeg Standard Construction Specification Section 2130.

.5 Cleanout Assembly

.1 Installation of cleanout assembly as shown on drawings to be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. All materials and labour are to be included in the price. The lump sum amount to be paid will be based on the final installation of the cleanout assembly as accepted and measured by the Contract Administrator.

.6 Removal of Existing Manhole (Pump Chamber)

.1 As per City of Winnipeg Standard Construction Specification Section 2110.

.7 Connection to Existing Sewer

.1 As per City of Winnipeg Standard Construction Specification Section 2110.

.8 Plugging Existing Sewers and Sewer Services Smaller than 300 mm

.1 As per City of Winnipeg Standard Construction Specification Section 2110.

.9 Dewatering Building Flushing Water Modifications

.1 Demolition and Restoration

.1 Demolition and Restoration will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of demolition and restoration completed in accordance with Division 2 and 3, accepted and measured by the Contract Administrator.

.2 Process Integration

.1 Process Integration will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all process integration work completed in accordance with Divisions 1 and 40, accepted and measured by the Contract Administrator.

.3 Electrical and Integrated Automation

.1 Electrical and Integrated Automation will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all electrical and integrated automation work completed in accordance with Divisions 1, 25 and 26, accepted and measured by the Contract Administrator.

.10 Building No. 1 Flushing Water Upgrades

.1 Process Integration

.1 Process Integration will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all process integration work completed in accordance with Divisions 1 and 40, accepted and measured by the Contract Administrator.

.2 Electrical and Integrated Automation

.1 Electrical and Integrated Automation will be measured for payment on a lump sum basis and paid for at the Unit Price

noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all electrical and integrated automation work completed in accordance with Divisions 1, 25 and 26, accepted and measured by the Contract Administrator.

.11 Building No. 2 Flushing Water Upgrades

.1 Process Integration

.1 Process Integration will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all process integration work completed in accordance with Divisions 1 and 40, accepted and measured by the Contract Administrator.

.2 Electrical and Integrated Automation

.1 Electrical and Integrated Automation will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all electrical and integrated automation work completed in accordance with Divisions 1, 25 and 26, accepted and measured by the Contract Administrator.

.12 Building No. 1 Plumbing Upgrades

.1 Building No. 1 plumbing upgrades will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply and installation associated with all building no. 1 plumbing upgrade work completed in accordance with Divisions 22, accepted and measured by the Contract Administrator.

.13 Building No. 2 Plumbing Upgrades

.1 Building No. 2 plumbing upgrades will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply and installation associated with all building no. 2 plumbing upgrade work completed in accordance with Divisions 22, accepted and measured by the Contract Administrator.

.14 Tank Venting Modifications

.1 Tank venting modifications will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply and installation associated with all vent piping modification work completed in accordance with Divisions 22, accepted and measured by the Contract Administrator.

.15 Building No. 1 Man Hatch Upgrade

.1 Man Hatch upgrade will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply and installation

associated with all man hatch modifications work completed in accordance with Division 5, accepted and measured by the Contract Administrator.

.16 Building No. 2 Man Hatch Upgrade

.1 Man Hatch upgrade will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply and installation associated with all man hatch modifications work completed in accordance with Division 5, accepted and measured by the Contract Administrator.

.17 Building No. 1 Sampler Modifications

.1 Process Integration

.1 Process Integration will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all process integration work completed in accordance with Divisions 1 and 40, accepted and measured by the Contract Administrator.

.2 Electrical and Integrated Automation

.1 Electrical and Integrated Automation will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all electrical and integrated automation work completed in accordance with Divisions 1, 25 and 26, accepted and measured by the Contract Administrator.

.18 Building No. 2 Sampler Modifications

.1 Process Integration

.1 Process Integration will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all process integration work completed in accordance with Divisions 1 and 40, accepted and measured by the Contract Administrator.

.2 Electrical and Integrated Automation

.1 Electrical and Integrated Automation will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all electrical and integrated automation work completed in accordance with Divisions 1, 25 and 26, accepted and measured by the Contract Administrator.

.5 Miscellaneous Electrical and Controls Upgrades

.1 Hauler Access System

.1 Hauler access system will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all hauler access system work completed in accordance with Divisions 1, 25 and 26, accepted and measured by the Contract Administrator.

.2 Snow Melt PLC

.1 Snow melt PLC will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all snow melt PLC work completed in accordance with Divisions 1, 25 and 26, accepted and measured by the Contract Administrator.

.3 Security Cameras and Associated Works

.1 Security Cameras and associated works will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage supply, installation, start-up, commissioning and training associated with all cameras and associated works completed in accordance with Divisions 26 and 28, accepted and measured by the Contract Administrator.

.4 PLC and DCS Modifications

.1 PLC and DCS modifications will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all PLC and DCS modification work completed in accordance with Divisions 1, 25 and 26, accepted and measured by the Contract Administrator.

.5 H_2S and LEL System Modifications

.1 H_2S and LEL modifications will be measured for payment on a lump sum basis and paid for at the Unit Price noted in Form B. The lump sum amount to be paid will be based on the percentage of supply, installation, start-up, commissioning and training associated with all H_2S and LEL modification work completed in accordance with Divisions 1, 25 and 26, accepted and measured by the Contract Administrator.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 All other specification Sections.

1.2 ADMINISTRATIVE

.1 Submit to Contract Administrator submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Do not proceed with Work affected by submittal until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Contract Administrator. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrators review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrators review.

.10 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Submit drawings stamped and signed by professional Contract Administrator registered or licensed in Province of Manitoba.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion

of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 14 days for Contract Administrator's review of each submission.

.5 Adjustments made on shop drawings by Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Contract Administrator prior to proceeding with Work.

.6 Make changes in shop drawings as Contract Administrator may require, consistent with Contract Documents. When resubmitting, notify Contract Administrator in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.
- .6 Specification section, title, number and clause.
- .7 Drawing number and detail/section number.

.8 Submissions include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
  - .4 Contractor.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.

.9 Single line and schematic diagrams.

.10 Relationship to adjacent work.

.6 Specification section, title, number and clause.

.9 After Contract Administrator's review, distribute copies.

.10 Submit two sets of hardcopies and 3 PDF copies on CD of all shop drawings for each requirement requested in specification Sections and as Contract Administrator may reasonably request.

.11 Submit 1 electronic copy for requirements requested in specification Sections and as requested by Contract Administrator where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit 1 electronic copy for requirements requested in specification Sections and as requested by Contract Administrator.

.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.

.2 Testing must have been within 1 year of date of contract award for project.

.13 Submit 1 electronic copy of certificates for requirements requested in specification Sections and as requested by Contract Administrator

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit 1 electronic copy of manufacturer’s instructions for requirements requested in specification Sections and as requested by Contract Administrator.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit 1 electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Contract Administrator.

.16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.17 Delete information not applicable to project.

.18 Supplement standard information to provide details applicable to project.

.19 If upon review by Contract Administrator, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.20 The review of shop drawings by the Contract Administrator is for the sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that Contract Administrator approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

.21 Other Considerations

.1 Fabrication, erection, installation or commissioning may require modification to equipment or systems to conform to the design intent. Revise pertinent shop drawings and re-submit.

.2 Material and equipment delivered to the site of works will not be paid for at least until pertinent shop drawings have been submitted and reviewed.

.3 Incomplete show drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.

.4 No delays or cost claims will be allowed that arise become of delays in submissions, re-submissions and review of shop drawings.

1.4 SAMPLES

.1 Submit for review samples as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Contract Administrator's address.

.3 Notify Contract Administrator in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Contract Administrator prior to proceeding with Work.

.6 Make changes in samples which Contract Administrator may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 CERTIFICATES AND TRANSCRIPTS

.1 Immediately after award of Contract, submit Workers' Compensation Board status and all other forms required by this contract.

.2 Submit transcription of insurance immediately after award of Contract.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 General Conditions C11 Inspection

.2 Section 01 98 13 - General Commissioning Requirements

.3 Section 01 78 00 – Closeout Submittals.

1.2 INSPECTION

.1 Allow Contract Administrator access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Contract Administrator.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Contract Administrator will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Contract Administrator shall pay cost of examination and replacement.

1.3 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Contractor for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by the Contractor.

.2 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised Contract Administrator at no cost to Contract Administrator. Pay costs for retesting and reinspection.

1.4 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.5 PROCEDURES

.1 Notify appropriate agency Contract Administrator in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 REJECTED WORK

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Contract Administrator as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Contract Administrator it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, the City will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Contract Administrator.

1.7 REPORTS

.1 Submit 1 electronic copy of inspection and test reports to Contract Administrator.

.2 Provide copies to subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

1.8 TESTS AND MIX DESIGNS

.1 Furnish test results and mix designs as requested.

1.9 MOCK-UPS

.1 A masonry mock-up is required for the brick and stone.

.2 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.

.3 Construct in locations acceptable to Contract Administrator as specified in specific Section.

.4 Prepare mock-ups for Contract Administrator’s review with reasonable promptness and in orderly sequence, to not cause delays in Work.

.5 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.6 If requested, Contract Administrator will assist in preparing schedule fixing dates for preparation.

.7 Remove mock-up at conclusion of Work or when acceptable to Contract Administrator.

1.10 MILL TESTS

.1 Submit mill test certificates as required of specification Sections.

1.11 EQUIPMENT AND SYSTEMS

.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Temporary utilities.

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.3 SUBMITTALS

.1 Provide Submittals in accordance with Section 01 33 00 – Submittal Procedure.

1.4 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.5 DEWATERING

.1 Provide temporary drainage and pumping facilities to keep excavations and site free of standing water.

.2 Do not discharge drainage water into sewers without written approval from governing authorities.

.3 Do not discharge drainage water containing silt into sewage lines.

1.6 WATER SUPPLY

.1 Provide continuous supply of potable water for construction use.

.2 Arrange for connection with local utility company and pay all costs for installation, maintenance and removal.

.3 Pay for utility charges at prevailing rates.

.4 Any use of water from the City's existing building service for construction use will be charged to the Contractor.

1.7 TEMPORARY HEATING AND VENTILATION

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.

.3 Provide temporary heat and ventilation in enclosed areas as required to:

.1 Facilitate progress of Work.

.2 Protect Work and products against dampness and cold.

.3 Prevent moisture and condensation on surfaces.

.4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.

.5 Provide adequate ventilation to meet health regulations for safe working environment.

.4 Maintain temperatures of minimum 10°C in areas in which construction is in progress.

.5 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.

.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

.6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.6 Permanent heating system of the building may be used when available. If use is permitted:

.1 Be responsible for damage to heating system if use is permitted.

.2 On completion of Work for which permanent heating system is used, replace filters, replace damaged or worn components, clean equipment, service, lubricate and adjust to new condition.

.3 Pay costs for manufacturer's representative to facilitate repairs and maintenance necessary to equipment in order that manufacturer's guarantee period will commence on date of the City’s take-over, and not when temporary heating is started.

.7 Ensure Date of Substantial Performance and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by the Contract Administrator.

.8 Pay costs for maintaining temporary heat, when using permanent heating system.

.9 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

.1 Conform with all applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to outside.

.10 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.8 TEMPORARY POWER AND LIGHT

.1 Provide and pay for temporary power required during construction for temporary lighting and the operating of power tools.

.2 Arrange for connection with appropriate utility company. Pay all costs for installation, maintenance and removal.

.3 Temporary power required for new construction shall be an independent service separate from electrical service for existing buildings.

.4 Temporary power for electric cranes and other equipment requiring in excess of the supply required for temporary lighting and power tools is the responsibility of Contractor.

.5 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

.6 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Contract Administrator provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

1.9 TEMPORARY COMMUNICATION FACILITIES

.1 Provide and pay for temporary telephone, fax and data (Internet) hook up, lines and equipment necessary for own use.

.2 Use of existing communication facilities and equipment in existing buildings is not permitted.

1.10 FIRE PROTECTION

.1 Provide and maintain adequate temporary fire protection equipment during performance of Work, as required by local municipal requirement, insurance companies having jurisdiction and governing Codes, regulations and By-Laws.

.2 Burning rubbish and construction waste materials is not permitted on site.

Part 2 Products

2.1 NOT USED

.1 Not Used

Part 3 Execution

3.1 NOT USED

.1 Not used

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 All other specification Sections.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.
- .2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.2 Canadian Standards Association (CSA International)

- .1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .2 CSA-0121-M1978(R2003), Douglas Fir Plywood.
- .3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.
- .4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.4 INSTALLATION AND REMOVAL

.1 Refer to the Drawing 1-0101A-C0001-001 for the location of the Contractor’s lay down area.

.2 Contractor should note that there is a geodetic benchmark located close the Contractor’s lay down area that is not to be disturbed by the Contractor or the construction works in any way. The Contractor will be responsible to correct any damages and return it to original condition should it be disturbed at their own expense.

.3 Provide construction facilities in order to execute work expeditiously.

.4 The Contractor is responsible for the power feed to the construction facilities.

.5 Remove from site all such work after use.

1.5 SCAFFOLDING

.1 Scaffolding in accordance with CAN/CSA-S269.2.

.2 Provide and maintain scaffolding, ramps, ladders, platforms, temporary stairs as required to complete the Work.

1.6 HOISTING

.1 Provide, operate and maintain hoists required for moving of workers, materials and equipment.

.2 Hoists to be operated by qualified operator.

1.7 SITE STORAGE/LOADING

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.8 CONSTRUCTION PARKING

.1 Parking will be permitted on site within the Contractors lay down area noted on Drawing 1-0101A-C0001-001.

.2 Provide and maintain adequate access to project site.

1.9 SECURITY

.1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.10 OFFICES

.1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate seating for 12 people at site meetings and furnished with drawing laydown table.

.2 Provide marked and fully stocked first-aid case in a readily available location.

.3 Subcontractors to provide their own offices as necessary.

.4 Contract Administrator's Site office.

.1 Provide temporary office space for Contract Administrator.

.2 Inside dimensions minimum 3.6 m long x 3 m wide x 2.4 m high, with floor 0.3 m above grade, complete with 2 - 50% opening windows and one lockable door.

.3 Insulate building and provide heating system to maintain 22 degrees C inside temperature at -20 degrees C outside temperature. Provide a cooling system for when ambient temperatures exceed 25 degrees C

.4 Finish inside walls and ceiling with plywood, hardboard or wallboard and paint in selected colours. Finish floor with 19 mm thick plywood.

.5 Install electrical lighting system to provide min 750 lx using surface mounted, shielded commercial fixtures.

.6 Equip office with 1 x 2 m table, 2 chairs, 3 m of shelving 300 mm wide, one 3 drawer filing cabinet, one plan rack and one coat rack and shelf.

.7 Maintain in clean condition. Clean at a minimum weekly

1.11 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.12 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.13 CONSTRUCTION SIGNAGE

.1 Provide and erect project sign, within three weeks of signing Contract, in a location designated by Contract Administrator.

.2 Construction sign size to be approved by the Contract Administrator and shall be constructed of wood frame and plywood construction painted with exhibit lettering produced by a professional sign painter.

.3 Indicate on sign, City of Winnipeg, name of Funding Agencies, Contract Administrator, Contractor and Sub Contractors.

.4 No other signs or advertisements, other than warning signs, are permitted on site.

.5 Provide project identification site sign as required.

.6 Locate project identification sign as directed by Contract Administrator.

.7 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Contract Administrator.

1.14 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Provide access and temporary roads as required.

.2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Contract Administrator.

.3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of

equipment and work, and erection and maintenance of adequate warning, danger, and direction signs

.4 Protect travelling public from damage to person and property.

.5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

.6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.

.7 Construct access and haul roads necessary.

.8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.

.9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.

.10 Dust control: adequate to ensure safe operation at all times.

.11 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.

.12 Provide snow removal during period of Work.

1.15 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways as required to maintain the roadway in clean condition .

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and

walkways, according to [requirements of authorities having jurisdiction] [sediment and erosion control drawings] [sediment and erosion control plan, specific to site, that complies with EPA 832/R-92-005 or requirements of authorities having jurisdiction, whichever is more stringent].

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

END OF SECTION

Part 1 General

1.1 WORK DESCRIPTION

.1 Product quality, availability, storage, handling, protection, and transportation.

.2 Procedures for product substitution.

.3 Manufacturer's instructions.

.4 Quality of Work, coordination and fastenings.

1.2 RELATED WORK

.1 General Requirements (Stantec) – Division 01

.2 All Technical specifications sections

1.3 REFERENCE STANDARDS

.1 Within text of each specifications section, reference may be made to reference standards.

.2 Conform to these reference standards, in whole or in part as specifically requested in specifications.

.3 If there is question as to whether any product or system is in conformance with applicable standards, Contract Administrator reserves right to have such products or systems tested to prove or disprove conformance.

.4 Cost for such testing will be borne by the Contractor.

.5 Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.

1.4 QUALITY

.1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Contract Administrator based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.5 AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of materials, equipment or articles are foreseeable, notify Contract Administrator of such in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In the event of failure to notify the Contract Administrator at commencement of Work, and should it subsequently appear that Work may be delayed for such reason, the Contract Administrator reserves the right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.6 SUBSTITUTIONS

.1 The Work is based on the Materials and methods specified in the specifications.

.2 Should substitutions be required because of unavailability the Contract Administrator will consider proposals to substitute specified products/materials with alternate products/materials.

.3 Substitutions are not allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

.4 Each proposal must:

.1 Include sufficient information in the form of product data, specifications, drawings, and other manufacturer's data to enable the Contract Administrator to properly evaluate the proposal.

.2 Identify changes required in the applicable Work which would become necessary to accommodate the substitute.

.5 The Contract Administrator reserves the right to accept or reject any proposal without prejudice for any reason whatsoever and reserves the right to disclose or not to disclose his reasons for such rejection.

.6 In submittal of a request for substitution it is hereby understood that the person or entity submitting the request is certifying that the proposed substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule.

1.7 STORAGE, HANDLING AND PROTECTION

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber and panels on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Contract Administrator.

.9 Touch-up damaged factory finished surfaces to Contract Administrator's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

.10 Remove and replace damaged products at own expense and to the satisfaction of the Contract Administrator.

1.8 TRANSPORTATION

.1 Pay the costs of transportation of products required in the performance of Work.

.2 Transportation costs of products supplied by the City will be paid for by City, unless specified otherwise. Unload, handle and store such products, unless otherwise specified.

1.9 MANUFACTURERS' INSTRUCTIONS

.1 Unless otherwise indicated in the specifications, install or erect all products in accordance with manufacturer’s recommendations. Do not rely on labels or enclosures that are provided with products. Obtain instructions directly from manufacturers.

.2 Notify Contract Administrator in writing of any conflicts between the Specifications and manufacturer's instructions so that the Contract Administrator may establish the course of action to follow.

.3 Improper installation or erection of products due to failure in complying with these requirements authorizes the Contract Administrator to require any removal and re-installation that may be considered necessary, at no increases in Contract Price or Contract Time.

1.10 QUALITY OF WORK

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Contract Administrator if required Work is such as to make it impractical to produce required results.

.2 Enforce discipline and good order among workers.

.3 Do not employ anyone unskilled in their required duties. Contract Administrator reserves right to require dismissal from site, workers deemed incompetent or careless.

.4 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Contract Administrator, whose decision is final.

1.11 COORDINATION

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Ensure Work of various Subcontractors does not conflict or create interference.

.3 Be responsible for the proper coordination and placement of openings, sleeves, and accessories.

.4 Supply all items required to be built in as and when required, together with templates, measurements and shop drawings.

.5 Ensure all workers examine the drawings and specifications covering the Work of others that may affect the performance of their own Work. Examine the Work of others and report to the Contract Administrator, in writing, any defects, or deficiencies that may affect the Work. In the absence of any report, the Contractor shall be held to have waived all claims for damage to or defects in such Work.

.6 Ensure that components requiring foundations or openings that are required for the installation of Work is coordinated. Furnish the necessary information to the Sections concerned in ample time to permit allowance for such items. Failure to comply with this requirement does not relieve the party at fault of the cost of cutting or drilling at a later date and subsequent patching.

1.12 CONCEALMENT

.1 In finished areas, conceal pipes, ducts, and wiring in floors, walls, and ceilings, except where indicated otherwise.

.2 Before installation, inform Contract Administrator if there is interference. Install as directed by Contract Administrator.

1.13 REMEDIAL WORK

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.14 LOCATION OF FIXTURES

.1 Consider the location of fixtures, outlets and other mechanical and electrical items indicated on drawings as approximate.

.2 Inform the Contract Administrator of an impending installation. Install as directed.

1.15 FASTENINGS

.1 Provide metal fastenings and accessories in same texture, colour, and finish as adjacent materials, unless otherwise indicated.

.2 Prevent electrolytic action between dissimilar metal and materials.

.3 Use non-corrosive hot dip galvanized fasteners and anchors for securing exterior Work, unless stainless steel or other material is specifically requested in the affected Specification Section.

.4 Space anchors within their load limit or shear capacity and ensure they provide positive permanent anchorage. Plugs of wood or any other organic material are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly, and install neatly.

.6 Fastenings, which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.16 FASTENINGS - EQUIPMENT

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.17 PROTECTION OF WORK IN PROGRESS

.1 Protect Work completed or in progress.

.2 Prevent overloading of any part of the building. Do not cut, drill, or otherwise sleeve any load bearing structural member unless specifically indicated on drawings or in Specifications without written approval of the Contract Administrator.

1.18 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants and pedestrian and vehicular traffic.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 General Conditions C-3

.2 Section 01 78 00 – Closeout Submittals.

1.2 REFERENCES

.1 City's identification of existing survey control points and property limits.

1.3 SURVEY REFERENCE POINTS

.1 Existing base horizontal and vertical control points are designated on drawing 1-0101A-C0001-001.

.2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.

.3 Make no changes or relocations without prior written notice to Contract Administrator.

.4 Report to Contract Administrator when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.5 Require surveyor to replace control points in accordance with original survey control.

1.4 SURVEY REQUIREMENTS

.1 Establish lines and levels, locate and lay out, by instrumentation.

.2 Establish pipe invert elevations.

.3 Establish lines and levels for mechanical and electrical work.

1.5 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Contract Administrator of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Contract Administrator.

1.6 RECORDS

.1 Maintain a complete, accurate log of control and survey work as it progresses.

.2 Maintain a complete and accurate control and survey of foundations and major site improvements showing dimensions, locations, angles and elevations of Work.

.3 Record locations of maintained, re-routed and abandoned service lines.

.4 Record and maintain records of directional boring control and survey. Record locator instrument position and elevation at intervals of no more than 4 metres.

1.7 SUBMITTALS

.1 Submit name and address of Surveyor to Contract Administrator.

.2 On request of Contract Administrator, submit documentation to verify accuracy of field Contract Administratoring work.

.3 Submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform to Contract Documents.

1.8 EXISTING CONDITIONS

.1 Promptly notify Contract Administrator in writing if existing conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.

.2 After prompt investigation, should Contract Administrator determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Division 22

.2 Division 23

.3 Division 25

.4 Division 26

.5 Division 40

1.2 REFERENCES

1.3 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by City or other Contractors not associated with this project.

.2 Reuse and recycle the maximum amount of waste as possible.

.3 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on site.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide on-site a minimum of 2 dump containers for collection of waste materials and debris.

.6 Clean interior/exterior Work areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.

.1 The City will not perform any cleaning operations prior to the Contractor starting the Work or at any time during the progress of the Work. The Contractor is responsible for all cleaning operations.

.7 Store volatile waste in anti spill covered metal containers, and remove from premises at end of each working day.

.8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.4 FINAL CLEANING

.1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Prior to final review remove surplus products, tools, construction machinery and equipment.

.4 Remove waste products and debris other than that caused by City or other Contractors not associated with the project.

.5 Clean existing interior building work areas affected by construction dust and debris. Clean existing piping and building areas that are affected by carry over of construction dust and debris.

.6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on site.

.7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.8 Pay all disposal / dumping/ recycling/ tipping fees for waste disposal.

.9 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.10 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floor.

.11 Clean lighting reflectors, lenses, and other lighting surfaces. Clean dust and dirt from the interior of electrical power and control panels.

.12 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.13 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.14 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.15 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.16 Remove dirt and other disfiguration from exterior surfaces.

.17 Clean and sweep roofs, gutters, areaways, and sunken wells.

.18 Sweep and wash clean paved areas. Clean debris and dirt from catch basins and manholes.

.19 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.

.20 Clean roofs, downspouts, and drainage systems.

.21 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.22 Remove snow and ice from access to building.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 78 00 Closeout Submittals

.2 Section 01 79 00 Demonstrating and Training

.3 Section 01 98 13 General Commissioning Requirements

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.1 Contractor's Inspection: Contractor to conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Contract Administrator in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.

.2 Request Contract Administrator's inspection.

.3 Correct any incomplete work and request the Contract Administrator for a re-inspection.

.2 Contract Administrator's Inspection:

.1 Contract Administrator and Contractor are to inspect Work and identify defects and deficiencies.

.2 Contractor to correct Work as directed.

.3 Re-inspect corrected incomplete work when request by the Contractor.

.3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:

.1 Work: completed and inspected for compliance with Contract Documents.

.2 Defects: corrected and deficiencies completed.

.3 Equipment and systems: tested, adjusted and fully operational.

.4 Operation of systems: demonstrated to City's personnel.

.5 Commissioning of Work: completed in accordance with 01 98 13 - General Commissioning Requirements and all Forms executed and provided to the Contract Administrator..

.6 Work: complete and ready for final inspection.

.4 Final Inspection:

.1 When completion tasks are done, request final inspection of Work by Contract Administrator and Contractor.

.2 When Work incomplete according to City and Contract Administrator, complete outstanding items and request re-inspection.

.5 Declaration of Substantial Performance: when Contract Administrator considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of City's acceptance of submitted declaration of Substantial Performance to be date for commencement for period and commencement of lien period unless required otherwise by Manitoba Builder's Lien Act. Total Performance to be the date for the commencement for Warranty period.

.7 Final Payment:

.1 When Contract Administrator considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.3 FINAL CLEANING

.1 Clean in accordance with Section 01 74 11 - Cleaning.

.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Waste Management: separate waste materials for reuse and recycling.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 All other specification Sections.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Warranty Meeting:

.1 Convene meeting one week prior to contract Substantial Performance with contractor's representative and Contract Administrator.

.1 Verify Project requirements.

.2 Review manufacturer's installation instructions and warranty requirements.

.2 Contract Administrator to establish communication procedures for:

.1 Notifying construction warranty defects.

.2 Determine priorities for type of defects.

.3 Determine reasonable response time.

.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 A minimum of fourteen days prior to commissioning and training of the Work, submit to the Contract Administrator, one electronic and one hard copy of draft Operating and Maintenance Manuals in English.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.4 OPERATION AND MAINTENANCE MANUALS

.1 Prepare operation and maintenance manuals and submit five hard copies and one electronic copy containing PDF files to the Contract Administrator.

.2 Operation and maintenance manuals are specified in general in this section, with regard to numbers of binders, preparation, marking, general arrangement, format and general contents. Requirements for mechanical, process equipment, electrical work and other items may be specified in other sections of the specifications, however the general format shall be in accordance with this section.

.3 Provide the services of qualified and experienced personnel to prepare manuals.

.4 Prepare sets of manuals for various divisions using identical bindings, and the same indexing system and format for all manuals (e.g., if there are X number of binder for the entire project they are to be labelled Vol. 1 of X, Vol. 2 of X, Vol. 3 of X, etc..)

.5 Provide binders of suitable size to contain material.

.6 Label the Cover and Spine of each binder as follows:

- .1 Cover
  - .1 Project title (NEWPCC Hauled Wastewater Receiving Facilities and Associated Works Phase 2)
  - .2 Bid Opportunity No. (952-2015)
  - .3 Binder Title (e.g., Mechanical Operation and Maintenance Manual)
  - .4 Volume No. / Contractor Name (e.g., Vol. Y of X_CONTRACTOR)
- .2 Spine
  - .1 Project title
  - .2 Bid Opportunity No.
  - .3 Volume No. / Contractor Name

.7 Arrange each individual binder as follows:

- .1 Title Page (first page on inside of binder)
  - .1 Project title
  - .2 City of Winnipeg
  - .3 Name, address, telephone number for:
    - .1 Contract Administrator
    - .2 General Contractor
    - .3 Subcontractors (list all applicable to binder contents)
- .2 Index (follows Title Page)
  - .1 Project title
  - .2 Bid Opportunity No.
  - .3 Volume No.
  - .4 Table of Contents broken out into three columns as follows:
    - .1 Item No.
    - .2 Specification reference No.
    - .3 Description of item
- .3 Tabs
  - .1 Tab Title Page
    - .1 Item description
    - .2 Manufacturer
    - .3 Agent name
    - .4 Agent address
    - .5 Agent telephone number

.6 Agent fax number
.7 Item No.
.8 Specification reference No.
.9 General description

.2 Contents of each tab
.1 Part number specific to the item provided
.2 Product information specific to the item provided
.3 Operating procedures and instructions specific to the item provided
.4 Preventive maintenance program specific to the item provided
.5 Servicing schedules specific to the item provided
.6 Spare parts list specific to the item provided
.7 Start up documentation and check sheets (if applicable)

.8 An electronic copy containing PDF files is to be provided on disk for each binder. The contents of each disk are to be organized into folders as follows:

.1 Primary folder labelled with Volume Name / Contractor (e.g., VOL 01 of XX_CONTRACTOR_NAME)
.1 Include a PDF of the Title Page (clause 7.1) and Index (clause 7.2) within the primary folder.

.2 Subfolders to be labelled with Tab No. (e.g.,TAB XX)
.1 Include a single PDF including the Tab Title Page (clause 7.3.1) and Tab contents (clause 7.3.2) within the Tab subfolder. The PDF is to be labelled with the specification reference and item description (e.g., 464100_Mixing System).

1.5 PROJECT RECORD DOCUMENTS

.1 The Contractor shall keep one complete set of all construction drawings on the site.

.2 On the set of Contract Drawings on the site, the Contractor shall record any changes that are made during the actual construction of the Work. The purpose of recording these changes is to provide drawings of record at the end of the Work. The Contractor shall be responsible for the adequacy and the reliability of the information recorded on the drawings of record. Marked up drawings shall be made available for inspection by the Contract Administrator on a weekly basis during the construction period.

.3 At the completion of the construction period, the Contractor shall turn over the set of construction drawings, which have been marked up with changes during the course of the Work to the Contract Administrator to permit the Contract Administrator to prepare Drawings of Record for the Work.

.4 Use indelible marking pens, maintaining separate colours for each major system, for recording information.

.5 Record information concurrently with construction progress.

.6 Contract Drawings and shop drawings: mark each item to record actual construction, including:

.1 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.2 Field changes of dimension and detail.

.3 Changes made by change orders.

.4 Details not on original Contract Drawings.

.5 References to related shop drawings and modifications.

.7 Specifications: mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Addenda and change orders.

.8 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

.9 Provide digital photos, if requested, for site records.

.10 The submission of acceptable marked up construction drawings following the completion of the Work will be valued at **$15,000.00** for the purpose of deficiency holdback when not submitted prior to Substantial Performance.

1.6 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.1 Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional requirements: as specified in individual specifications sections.

1.7 MAINTENANCE MATERIALS

.1 Spare Parts:

.1 Provide spare parts, in quantities specified in individual specification sections. Refer to Form S1 for the spare parts sign of sheet.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to location at North End Sewage Treatment Plant as directed; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Contract Administrator.

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

.2 Extra Stock Materials:

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to location at North End Sewage Treatment Plant as directed; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Contract Administrator.

.2 Include approved listings in Maintenance Manual.

.5 Obtain receipt for delivered products and submit prior to final payment.

.3 Special Tools:

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to location at North End Sewage Treatment Plant as directed; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Contract Administrator.

.2 Include approved listings in Maintenance Manual.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and for review by Contract Administrator.

1.9 WARRANTIES AND BONDS

.1 Develop warranty management plan to contain information relevant to Warranties.

.2 Submit warranty management plan, seven days before planned pre-warranty conference, to Contract Administrator for approval.

.3 Warranty management plan to include required actions and documents to assure that Contract Administrator receives warranties to which it is entitled.

.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

.5 Submit, warranty information made available during construction phase, to Contract Administrator for approval prior to each monthly pay estimate.

.6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.

.4 Verify that documents are in proper form, contain full information, and are notarized.

.5 Co-execute submittals when required.

.6 Retain warranties and bonds until time specified for submittal.

.7 Conduct 12 month warranty inspection, measured from time of acceptance, by Contract Administrator.

.8 Include information contained in warranty management plan as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

.2 Provide list for each warranted equipment, item, feature of construction or system indicating:

.1 Name of item.

.2 Model and serial numbers.

.3 Location where installed.

.4 Name and phone numbers of manufacturers or suppliers.

.5 Names, addresses and telephone numbers of sources of spare parts.

.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.

.7 Cross-reference to warranty certificates as applicable.

.8 Starting point and duration of warranty period.

.9 Summary of maintenance procedures required to continue warranty in force.

.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.11 Organization, names and phone numbers of persons to call for warranty service.

.12 Typical response time and repair time expected for various warranted equipment.

.3 Contractor's plans for attendance at 12 month post-construction warranty inspections.

.4 Procedure and status of tagging of equipment covered by extended warranties.

.5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

.9 Respond in timely manner to oral or written notification of required construction warranty repair work.

1.10 WARRANTY TAGS

.1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Contract Administrator.

.2 Attach tags with copper wire and spray with waterproof silicone coating.

.3 Leave date of acceptance until project is accepted for occupancy.

.4 Indicate following information on tag:

.1 Type of product/material.

.2 Model number.

.3 Serial number.

.4 Contract number.

.5 Warranty period.

.6 Inspector's signature.

.7 Construction Contractor.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

SPARE PARTS SIGN OFF SHEET
FORM S1

Item Description	**Quantity**	**Spec Reference**	**Contractor Signature**	**City Signature**
Fuses	**30 of each type & rating**	**25 14 00, 2.15.2**		
Control relays	**2 of each type**	**25 14 00, 2.15.3**		

END OF SECTION

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Division 01 – General Requirements

.2 Division 11 - Parking Control Equipment

.3 Division 23 – Heating, Ventilation and Air Conditioning

.4 Division 25 – Integrated Automation

.5 Division 26 – Electrical

.6 Division 28 – Electronic Safety and Security

.7 Section 40 05 00 – Common Work Results for Process Integration

.8 Division 40 – Process Integration

1.2 DESCRIPTION

.1 This section contains requirements for training the City staff, by persons retained by the Contractor specifically for the purpose of proper operation and maintenance of all equipment supplied and installed under this Contract.

.2 As a minimum, the Contractor is to allow at least the minimum number of hours of operation / maintenance training per City staff shift for each equipment item or system noted in Clause 1.8. The City has 5 shifts at the NEWPCC. The Contractor should take into account that the City requires sessions to be spread out over a two week period.

.3 The intent is that the City should receive sufficient training on the equipment and systems that they are going to operate and maintain. The Contract Administrator shall have the authority to determine if the training is sufficient based on the lesson plan submitted by the Contractor.

.4 Training shall take place prior to commissioning.

1.3 SUBMITTALS

.1 Submit the following information to the Contract Administrator 30 days prior to the first training session. The material will be returned as either “Reviewed”, “Reviewed as Modified” or “Revise and Resubmit”.

.1 Lesson plan and supplemental training manuals, handouts, visual aids and other reference material required for each training session.

.2 Training schedule that indicates the date, time and subject of each training session. Concurrent classes will not be allowed.

.2 Submit Operation and Maintenance Manuals a minimum of 14 days prior to the first training session. Training will not be permitted to start if Operations and Maintenance Manuals have not been submitted.

1.4 QUALITY ASSURANCE

.1 Training sessions to be conducted by qualified factory-trained representatives of the various equipment suppliers with a minimum of two years experience.

1.5 LOCATION

.1 Classroom training sessions shall take place at the NEWPCC Training Room.

.2 Field training sessions shall take place at the equipment location.

1.6 FORMAT AND CONTENT

.1 Familiarization
.2 Safety
.3 Operation
.4 Troubleshooting
.5 Preventive maintenance
.6 Corrective maintenance
.7 Parts
.8 Local representation

.2 Classroom Training

.1 As a minimum, classroom equipment training for operations and maintenance personnel will include:

.1 The specific equipment location in the plant and operational overview. Use slides and drawings to aid discussion.
.2 Purpose and function of equipment.
.3 The operating theory of the equipment.
.4 Start-up, shutdown, normal operation and emergency operating procedures, including system integration and electrical interlocks, if any.
.5 Safety items and procedures.
.6 Routine and preventative maintenance.
.7 Disassembly and assembly of equipment if applicable.
.8 Normal and major repair procedures
.9 Inspection and troubleshooting procedures including the use of applicable test instruments and the ‘pass’ and ‘no pass test instrument readings.
.10 Calibration procedures

.3 Field Training

.1 As a minimum, field equipment training for operation and maintenance personnel will include:

.1 Identification of equipment: location of primary element; location of instrument readout; discuss purpose, basic operation, and information interpretation.

.2 Discussion and demonstration of standard operating procedures and daily visual inspection of system operation.

.3 Discussion and demonstration of the preventative maintenance activities.

.4 Discussion and demonstration of start-up and shutdown procedures.

.5 Demonstration of routine disassembly and assembly of equipment if applicable.

.6 Identification and review of safety items and demonstration of safety procedures, if feasible.

.7 Review of Contractor prepared Operation and Maintenance Manuals.

.8 Demonstration of operating parameter adjustment, if applicable.

1.7 VIDEO RECORDING

.1 The Contractor shall notify all training providers that the training sessions will be videotaped.

.2 The Contractor is to carry the cost of videotaping one training session for each item of equipment of system.

.3 Acceptable videographer is McNeill Media Creations (Don McNeill, (204) 224.2578, mmc@shaw.ca) or approved equal in accordance with B7.

1.8 EQUIPEMENT AND SYSTEMS FOR TRAINING

.1 Training is to be provided for the equipment and systems listed in the following table:

Equipment / System	Specification Reference	Number of Classroom Training Sessions	Minimum hours per Classroom Training session	Number of Field Training Sessions	Minimum hours per Field Training session
HVAC Fans	23 34 00	5	1	5	1
Control Panels	25 14 00	5	2	5	3
Instrumentation	25 31 01	5	1	5	2
Pin Pad	28 13 00	5	1	5	1
DCS	25 14 00	5	2	5	2
Lane Gates	11 20 00	5	1	5	1
Electrical	26 05 01	5	1	5	2
Instrumentation	25 31 01	5	1	5	2

Equipment / System	Specification Reference	Number of Classroom Training Sessions	Minimum hours per Classroom Training session	Number of Field Training Sessions	Minimum hours per Field Training session
Cameras and Associated Works	28 23 00	5	1	5	1
Process Valves	40 05 23	5	1	5	1
Automatic Sampler	25 31 01	5	1	5	1

1.9 TRAINING COMPLETION FORMS

.1 Forms T-1 and T-2 to be signed by the trainer, Contract Administrator and City Staff representative for each City shift when training has been completed. One (1) form is to be used for each item of equipment of system for which training has been provided. Once all training sessions have been completed Forms T-1 and T2 are to be submitted to the Contract Administrator.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Form T-1
CERTIFICATE OF SATISFACTORY CLASSROOM TRAINING

We have completed classroom training in the operation and maintenance of the equipment as listed below.

Project:
Equipment Description:
Equipment Supply Bid Opp. No.:
Equipment Install Bid Opp. No.:
Equipment Tag No.:
Specification Reference:

List of Attendees:

(Trainer)	Date
(Authorized Representative of Contract Administrator)	Date
(Authorized Representative of City)	Date

Form T-2
CERTIFICATE OF SATISFACTORY FIELD TRAINING

We have completed field training in the operation and maintenance of our equipment as listed below.

Project:
Equipment Description:
Equipment Supply Bid Opp. No.:
Equipment Install Bid Opp. No.:
Equipment Tag No.:
Specification Reference:

List of Attendees:

(Trainer)	Date
(Authorized Representative of Contract Administrator)	Date
(Authorized Representative of City)	Date

Part 1 General

1.1 RELATED REQUIREMENTS

.1 Division 01 – General Requirements

.2 Division 23 – Heating, Ventilation and Air Conditioning

.3 Division 25 – Integrated Automation

.4 Division 26 – Electrical

.5 Division 40 – Process Integration

1.2 INTENT

.1 This section describes the Contractor's responsibilities in commissioning and handover of the integrated automation, electrical, process integration and water and wastewater equipment to be installed as part of this Work.

1.3 DEFINITIONS

.1 System: for the purpose of this section, a system shall be defined as the equipment, piping, controls, ancillary devices, electrical power, etc..., which together perform a specific function at the facility.

.2 Commissioning: for the purpose of this section, commissioning shall be defined as successful operation of the system using hauled liquid wastewater and leachate, respectively in accordance with its design requirements for a period of five days.

.3 Acceptance: for the purpose of this section, acceptance shall be defined as the formal turnover of a system to the City for his operation and maintenance. This shall occur after the successful end of commissioning of each system through a formal agreement between the Contract Administrator, the City, and the Contractor. Success of the commissioning is determined by the Contract Administrator.

1.4 COMMISSIONING TEAM

.1 The Work of commissioning will be conducted by the Contractor, the City and the Contract Administrator.

.2 The City's appointed staff shall represent process personnel and operating staff.

.3 The Contractor shall provide personnel representing the appropriate automated integration, electrical, process integration and water and wastewater equipment trades. These personnel shall be skilled workmen, able to expedite and minor repairs, adjustment, etc.., as required to complete commissioning with as few delays as possible.

1.5 COMMISSIONING PLAN

.1 Develop a detailed methodology for the commissioning of each system at least 45 calendar days prior to planned start of commissioning. The plan shall be drafted by the Contractor and submitted to the Contract Administrator for review. The plan shall include the following as a minimum:

.1 Detailed schedule of events. The schedule shall include the date and time for start-up and testing of the individual components identified in Clause 1.6.6, commissioning and acceptance testing.

.2 Contingency plans in the event of a process malfunction.

.3 Drawings and sketches to illustrate the planned sequence of events.

.4 List and details for any temporary equipment required to facilitate commissioning and the acceptance tests.

.5 List of all personnel required for commissioning and handover with information indicating their qualifications for this Work.

.2 The commissioning plan shall be reviewed by the Contract Administration and returned as either "Reviewed", "Reviewed as Modified" or "Revise and Resubmit".

.3 The Contract Administrator with assistance from the Contractor will lead and coordinate the commissioning activities.

1.6 EQUIPMENT START-UP

.1 Form 100 – Certificate of Satisfactory Delivery is required for certain equipment to certify that equipment has been successfully delivered to site.

.2 Form 102 – Certificate of Satisfactory Installation is required for certain equipment to certify that the equipment has been installed correctly and is ready for start-up.

.3 All integrated automation, electrical and process integration equipment shall be successfully installed and tested in accordance with the requirements identified for each equipment item. Following successful commissioning Form 103 – Certificate of Satisfactory Performance is to be completed.

.4 Form 104 – Certificate of Satisfactory Process Performance is required for certain equipment to certify that the equipment is performing in accordance with the specification.

.5 Install temporary equipment required to ensure that equipment operates reliably and consistently during the commissioning period.

.6 Refer to the following table for form requirements for specific equipment:

Equipment	Specification Reference	Form 100	Form 102	Form 103	Form 104
Electrical	Div. 26			X	X
Process Controllers	Div. 25		X	X	X
Instrumentation	Div. 25		X	X	X
Pin Pad	Div. 25		X	X	X
DCS System	25 90 01		X	X	X
Lane gates	28 13 00	X	X	X	X

Equipment	Specification Reference	Form 100	Form 102	Form 103	Form 104
Process Valves	40 05 23	X	X	X	X
HVAC	Div. 23	X	X	X	X

1.7 CONTROLS

.1 All controls which are part of this Work shall be installed and tested prior to commissioning.

.2 The Contract Administrator shall arrange for the simulation of the control sequence identified in the Appendix B – Process Narrative

1.8 MANPOWER

.1 Supply all staff required during commissioning as necessary to assist the City's staff in operation of the system.

.2 Supply competent staff capable of maintaining, repairing and adjusting the equipment and controls to achieve the intended design functions during the commissioning period.

.3 Ensure equipment manufacturer's representatives are available as necessary to certify adjustments in equipment, to guide in setting correct operating limits and to generally provide input as required for the appropriate operation of the equipment.

1.9 SEQUENCE

.1 Systems shall be commissioned in a logical manner.

.2 The following sequence of events shall be followed:

.1 Submit Operation and Maintenance Manuals a minimum of 14 days prior to commissioning.

.2 Operator training shall be completed prior to commissioning.

.3 Individual equipment components shall be operated to confirm proper operation and Forms 102 – Certificate of Satisfactory Installation submitted to the Contract Administrator.

.4 Operate the system in manual mode.

.5 Operate the system in automatic mode.

.6 Commence the 5 day acceptance testing period.

.7 Upon completion of the acceptance testing period, the system shall be granted formal acceptance by the Contract Administrator.

1.10 ACCEPTANCE TESTING

.1 During the acceptance testing period hauled wastewater and leachate shall be introduced through the use of Lanes No. 1, 2, 3 and 4.

.2 All components shall be operated in manual mode, automatic mode, remote mode and local mode.

.3 The system shall be operated through all sequences identified in the Process Narrative (Appendix B).

.4 Ensure all backup provisions function satisfactorily.

.5 All alarm conditions will be simulated to ensure that the system reacts as intended and the applicable alarms are enunciated.

1.11 ACCEPTANCE

.1 The commissioning of a system shall be considered acceptable when the process has operated in a stable manner, satisfying the design intent for a period of 5 days.

.2 All forms identified in Clause 1.6.6 shall be submitted for the Contract Administrator considers the system as acceptable.

.3 The Contract Administrator shall witness commissioning activities and verify results. The Contactor shall notify the Contract Administrator two (2) weeks prior to commissioning.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Form 100
CERTIFICATE OF EQUIPMENT DELIVERY

We certify that the equipment listed below has been delivered into the care and custody of the Installation Contractor. The equipment has been found to be in satisfactory condition. There is no visible evidence of exterior damage or defects.

Project:
Equipment Description:
Equipment Supply Bid Opp. No.:
Equipment Install Bid Opp. No.:
Equipment Tag No.:
Specification Reference:

(Authorized Representative of Supply Contractor)	Date
(Authorized Representative of Install Contractor)	Date
(Authorized Representative of Contract Administrator)	Date

Form 102
CERTIFICATE OF SATISFACTORY INSTALLATION

We have completed our checks and inspection of the installation of our equipment as listed below and confirm that it is satisfactory and that any defects have been remedied except any as noted below.

Project:
Equipment Description:
Equipment Supply Bid Opp. No.:
Equipment Install Bid Opp. No.:
Equipment Tag No.:
Specification Reference:
Outstanding Defects:

(Authorized Representative of Supply Contractor)	Date
(Authorized Representative of Install Contractor)	Date
(Authorized Representative of Contract Administrator)	Date

Form 103
CERTIFICATE OF EQUIPMENT SATISFACTORY PERFORMANCE

We certify that the equipment listed below has been continuously operated for a minimum of three (3) consecutive days and that the equipment operates satisfactorily and meets it's specified operating criteria. No defects in the equipment were found and as such are classified as "conforming".

Project:
Equipment Description:
Equipment Supply Bid Opp. No.:
Equipment Install Bid Opp. No.:
Equipment Tag No.:
Specification Reference:

(Authorized representative of Supply Contractor)	Date
(Authorized representative of Install Contractor)	Date
(Authorized representative of Contract Administrator)	Date

Form 104
CERTIFICATE OF SATISFACTORY PROCESS PERFORMANCE

We certify that the process system listed below has been continuously operated and tested as per the Specifications using process fluid and that the equipment meets its Performance Testing and Operating Criteria. No defects in the process system were found and as such are classified as “conforming”.

Project:
Equipment Description:
Equipment Supply Bid Opp. No.:
Equipment Install Bid Opp. No.:
Equipment Tag No.:
Specification Reference:

(Authorized Representative of Supply Contractor)	Date
(Authorized Representative of Install Contractor)	Date
(Authorized Representative of Contract Administrator i.e. Commissioning Lead or Design Discipline Lead)	Date
(Authorized Representative of City)	Date