CONTROL OF WORK

1. GENERAL

1.1 Plant and Hours of Construction

.1 Furnish equipment which will be efficient, appropriate, and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the Work within the Contract time. If at any time such equipment appears to the Contract Administrator to be inefficient, inappropriate, or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, the Contract Administrator may order the Contractor to increase the efficiency, change the character, or otherwise improve the equipment, and the Contractor shall conform to such order. Failure of the Contract Administrator to give such an order shall in no way relieve the Contractor of their obligations to secure the quality of the work and rate of progress required.

.2 Normal construction activity shall take place only between the hours of 7:30 a.m. to 4:00 p.m., excluding Saturdays, Sundays, and legal holidays. Work by the Contractor shall occur within these hours unless prior arrangement have been made with the Contract Administrator.

.3 Workers shall display visible identification as Contractors or visitors.

1.2 Care and Protection of Property and Premises

.1 Co-ordinate use of premises under direction of the Contract Administrator.

.2 The Contractor shall be responsible for the preservation of all public and private property and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the Contractor, at their expense, to a condition equal or better to that existing before the damage was done, or they shall make good the damage in other manner acceptable to the Contract Administrator.

.1 Provide protection for existing building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Protect property surrounding the Site from damage during performance of Work.

1.3 Interference with Existing Works

.1 Construction of the Work shall allow for continual operation of the Tache Booster Pumping Station and Tache Surge Tower. Any interruptions in operation shall be coordinated with the Contract Administrator.

.2 Execute Work with least possible interference or disturbance to facility operation, and normal use of premises. Coordinate with the Contract Administrator to facilitate the execution of Work to minimize disruption.

.1 City Operation staff will be working around the Site during the entire construction period for execution of normal operations.

.2 Co-operate with the City staff in scheduling operations and maintenance to minimize conflict.

.3 Coordinate all outages, including power, with the City and the Contract Administrator in advance of the Work (minimum five (5) business days advance notice).

.3 Repair or replace portions of existing work which have been altered or damaged during construction operations to match existing or adjoining work, as directed by the Contract Administrator at no additional cost.

1.4 Protection and Relocation of Existing Structures and Utilities

.1 Assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. Carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by the Contractor at their expense.

.2 Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the Work under the Contract.

.3 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.1 Locate and record the following areas:

.1 The following shall be considered critical pipelines and water infrastructure for this project:

.1 1200 mm Branch I Aqueduct.

.2 1050 TBPS Suction Line.

.3 1650 Aqueduct Line Entering the Tache Surge Tower.

1.5 Access to Site

.1 Refer to General Conditions S8.

.2 Provide and maintain access roads, sidewalk crossings, ramps, and construction runways as may be required for access to Work.

.3 Maintain access to property including overhead clearances for use by emergency response vehicles.

.4 Provide full access to/from the Site for personnel and vehicular traffic.

.5 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.

1.6 Cleanup and Disposal of Excess Material

.1 During the course of the Work, the Contractor shall keep the site of their operations in as clean and as neat a condition as is possible. They shall dispose of all residue resulting from the construction work and, at the conclusion of the Work, they shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire Site of the Work in a neat and orderly condition.

1.7 Building Non-Smoking Environment

.1 Smoking is not permitted on the Site.

1.8 Documents Required

.1 Maintain at job site, one (1) printed copy of each document as follows:

.1 Latest revisions of Construction Contract Drawings;

.2 Specifications;

.3 Addenda;

.4 Reviewed Shop Drawings;

.5 List of outstanding Shop Drawings;

.6 Proposed Change Notices (PCNs);

.7 Change of Work Orders (CWOs);

.8 Other modifications to the Construction Contract including RFIs and associated responses;

.9 Field Test Reports;

.10 Copy of approved Work Schedule;

.11 Health and Safety Plan and Other Safety Related Documents;

.12 Project meeting minutes; and

.13 Other documents as specified.

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

MEASUREMENT AND PAYMENT

1. GENERAL

1.1 Description

.1 Summary:

.1 Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

.2 See General Conditions C12.

1.2 Schedule of Values

.1 Provide Schedule of Values with submission of monthly progress estimates.

.2 Schedule of Values to be supported by evidence as Contract Administrator may reasonably direct and, when accepted by Contract Administrator, to be used as basis for progress estimates.

1.3 Measurement and Payment

.1 No payment(s) will be made prior to the completion of Contract execution by both parties and all requisite bonds and insurance have been submitted and approved.

.2 For each lump sum price item, the Contract Administrator will calculate payment based upon the Bid lump sum price for each item in the Form B: Prices and the Contract Administrator's estimate of the percentage of Work completed for each item.

1.4 Items covered by Contract Prices

.1 In addition to covering the cost of various items of the Work, the Contract lump sum price shall cover the cost of furnishing all materials, tools, equipment, labour, services transportation, and incidentals necessary for executing the Work. Any item of work not specifically listed under Contract unit or lump sum prices shall be considered incidental to such other items as are listed. Payment for work performed under the various Divisions of the Contract shall be made at the respective lump sum price breakdown for that item.

.2 Payment for work performed under the various Divisions of the Contract shall be made at the respective lump sum price breakdown for that item.

.3 Insurance and bonding shall be considered incidental to the Work. There shall be no separate payment for these items.

2. MEASUREMENT AND PAYMENT

2.1 Payment

.1 Reference City of Winnipeg, General Conditions for Construction C12.

3. PRODUCTS (NOT USED)

4. EXECUTION (NOT USED)

END OF SECTION

CONSTRUCTION PROGRESS SCHEDULE

1. GENERAL

1.1 Definitions

.1 Activity: element of the Work performed during the course of the Project. Activity normally has an expected Duration, an expected cost, and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (Gantt Chart) (in Microsoft Project and PDF): graphic display of schedule-related information. In a typical bar chart, activities or other Project elements are listed down the left side of chart, dates are shown across the top, and Activity Durations are shown as date-placed horizontal bars. Generally, the Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan or schedule (for Project, work package, or Activity), plus or minus approved scope changes. This will be used to determine whether items are behind schedule.

.4 Duration: number of work periods (not including holidays) required to complete Activity or other project elements. Expressed as Working Days.

.5 Project Schedule or Schedule: planned dates for performing activities and the planned dates for meeting Substantial Performance. A dynamic, detailed record of tasks or activities alongside a critical path that must be accomplished to satisfy Project objectives. Project Schedule must be displayed using a Gantt Chart highlighting the critical tasks.

1.2 Requirements

.1 Provide the Contract Administrator with a Project Schedule on a monthly basis in the form of a Gantt chart showing time on the horizontal axis and tasks on the vertical axis.

.1 Monthly schedule updates will form a part of the Contractor’s Progress Claim submission to the Contract Administrator.

.2 Ensure details of Project Schedule are practical and contribute to Substantial and Total Performance in accordance with specified dates.

1.3 Action and Informational Submittals

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

.2 Submit to the Contract Administrator, within fourteen (14) Working Days of Award of Contract, the Project Schedule and prior to the Contractor’s first Progress Claim submission.

1.4 Progress Meetings

.1 Discuss the project schedule at the regular job meetings in accordance with the Supplemental Conditions.

.2 Identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than the current approved dates shown on the project schedule.

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

SUBMITTAL PROCEDURES

1. GENERAL

1.1 Description

.1 Submit to the Contract Administrator the submittals required by individual Specification Sections for review. Submit promptly and in an 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 the submittal until reviewed by the Contract Administrator.

.3 Present Shop Drawings, product data, and samples in SI Metric units.

.1 Where items or information is not produced in SI Metric units, converted units are acceptable.

.4 Review submittals prior to submission to Contract Administrator. The Contractor review represents that necessary requirements have been determined and verified, for incorporation into Work.

.5 The review by the Contract Administrator is for the sole purpose of ascertaining conformance with general concept. It does not provide 'approval' of the detail design inherent in Shop Drawings (which remains with the Contractor), nor does it relieve the Contractor of responsibility for errors or omissions in Submittal or for meeting all requirements of the Work.

.6 Verify that field measurements and affected adjacent Work are coordinated in advance of the Submittal to the Contract Administrator.

.7 The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of submittals. The Contractor shall direct specific attention in writing on resubmitted submittals to revisions other than the corrections requested by the Contract Administrator on previous submission.

.8 Keep one (1) reviewed hard copy of each submission on Site.

1.2 Submittal Procedures

.1 Direct submittals to the Contract Administrator.

.2 Hardcopy Submittals: Submit hardcopies only where specifically required under individual Specifications sections.

.3 Electronic Submittals: Submittals made in electronic format shall be as follows:

.1 Each submittal shall be electronic file in Adobe Acrobat Portable Document Format (PDF), and native files (e.g. Word, Excel, AutoCAD, etc.). Use 2010 version or newer.

.2 Electronic files that contain more than ten (10) pages in PDF format shall contain internal book marking from index page to major sections of document.

.3 PDF files shall be set to open “Bookmarks and Page” view.

.4 Add general information to each PDF file, including title, subject, author, and keywords.

.5 PDF files shall be set up to print legibly at 215.9 mm by 279.4 mm (8.5” by 11”), 279.4 mm by 431.8 mm (11” by 17”), or 559 mm by 864 mm (22” by 34”). No other paper sizes will be accepted.

.6 Submit new electronic files for each resubmittal.

.7 Include copy of transmittal of Contractor’s submittal.

.8 Contract Administrator will reject submittals that are not accompanied by an electronic copy.

.4 Schedule of Submittals:

.1 Prepare a table listing all anticipated submittals required to complete the Work.

.2 For each Specification Section show, at a minimum, the following:

.1 Specification Section.

.2 Total number of submittals for each Specification Section.

.3 Identify each submittal by its submittal number in accordance with a numbering and tracking system.

.4 Identify each submittal by its name or title.

.5 Identify the estimated date of submission to the Contract Administrator.

.6 State the revision number and status for each submittal.

.3 On a monthly basis, submit an updated schedule of submittals to the Contract Administrator if changes have occurred.

.5 Transmittal of Submittal:

.1 Stamp each submittal with uniform approval stamp before submitting to Contract Administrator.

.1 Stamp to include project name, submittal number, Specification number, Contractor’s reviewer name, date of Contractor’s approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with Contract. Stamp will be provided with the Contractor’s signature.

.2 Contract Administrator will not review submittals that do not bear Contractor’s approval stamp and will return them without action.

.2 Identify each submittal with the following:

.1 Numbering and tracking system:

.1 Sequentially number each submittal.

.2 Resubmission of a submittal shall have original number with sequential alphabetic suffix.

.2 Specification Section and paragraph to which submittal applies.

.3 Project title and City Tender number.

.4 Date of transmittal.

.5 Name of Contractor.

.3 Identify and describe each deviation or variation from Contract.

.4 Include Contractor's written response to each of Contract Administrator's review comments with resubmission of submittals.

.6 Format:

.1 Do not base Shop Drawings on reproductions of Contract Documents.

.2 Package submittal information by individual Specification Section. Do not combine different Specification Sections together in submittal package, unless otherwise directed in Specification.

.3 Present in a clear and thorough manner and in sufficient detail to show kind, size, arrangement, and function of components, materials, and devices, and compliance with Contract.

.7 Timeliness:

.1 Submit Shop Drawings and samples well in advance of scheduled delivery date for associated equipment or material and in an orderly sequence so as to cause no delay in the Work.

.8 Processing Time:

.1 Time for review shall commence on Contract Administrator's receipt of submittal.

.2 Contract Administrator will act upon Contractor's submittal and transmit response to Contractor not later than ten (10) Working Days after receipt, unless otherwise specified.

.3 Resubmittals will be subject to the same review time.

.4 The review time required will not alleviate the Contractor of his responsibility to deliver the completed Work within the required time frame and schedule. Planning for submittal reviews and the risk to the construction schedule remains the Contractor's sole responsibility.

.9 Resubmittals:

.1 Clearly identify each correction or change made and include revision date.

.2 No adjustment of the schedule outlined in the Supplemental Conditions or Contract Price will be allowed due to delays in progress of Work caused by rejection and subsequent resubmittals.

.3 The City may deduct cost of additional reviews from the Contract Price.

1.3 Shop Drawings and Product Data

.1 The term “Shop Drawing” as defined in the City’s General Conditions for Construction.

.2 In general, all equipment to be installed at the Site will require Shop Drawings, which shall be submitted to the Contract Administrator.

.3 Adjustments made on Shop Drawings by the Contract Administrator are not intended to change the Contract Price. If adjustments affect the value of the Work state such in writing to the Contract Administrator prior to proceeding with the Work.

1.4 Samples

.1 As required in the Contract Documents the Contractor shall submit samples of items or components to be incorporated in the Work which shall be submitted to the Contract Administrator. Coordinate location of samples to be delivered to the Contract Administrator’s office at the cost of the Contractor. If the Contract Administration determines that the sample is to be kept on the project site, provide a heated, secured space for the samples to be located in and readily accessible by the Contract Administrator for the duration of the on-site Works.

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

1.5 Requests for Information

.1 In the event that the Contractor or any Subcontractor involved in the Work, determines that some portion of the Drawings, Specifications, or other Contract documents requires clarification or interpretation by the Contract Administrator, the Contractor shall submit a Request for Information (RFI) Form in writing to the Contract Administrator.

.2 Submission Procedure:

.1 Submit RFI’s to the Contract Administrator on the “Request for Information” form appended to this Section. The Contract Administrator shall not respond to a RFI except as submitted on this form. The link to the City’s RFI form is provided below:

https://www.winnipeg.ca/infrastructure/templates/ExecutionControl/Request_for_Information_(RFI)_v2.0.docx

.2 Number RFI’s consecutively in one sequence in order submitted, in a numbering system established by the Contract Administrator.

.3 Submit one (1) distinct subject per RFI request. Do not combine unrelated items on one (1) form.

.4 Where RFI form does not have sufficient space, attach additional sheets as required.

.5 Submit with RFI form all necessary supporting documentation.

.3 In the RFI, the Contractor shall clearly and concisely set forth:

.1 The issue for which clarification or interpretation is sought and why a response is needed from the Contract Administrator; and

.2 An interpretation or understanding of the requirement along with reasons why such an understanding was reached.

.4 The Contract Administrator will review all RFIs to determine whether they are valid RFIs. If it is determined that the document is not a valid RFI, it will be returned to the Contractor not having been reviewed with an explanation why it was deemed not valid.

.5 An RFI response shall be issued within ten (10) Working Days of receipt of the request from the Contractor unless the Contract Administrator determines that a longer time is necessary to provide an adequate response. When the RFI submission is received by the Contract Administrator before noon, the review period commences on that Working Day. When the RFI submission is received by the Contract Administrator after noon, the review period commences on the subsequent Working Day.

.6 If, at any time, the Contractor submits a large number of RFI's or the Contract Administrator considers the RFI to be of such complexity that the Contract Administrator cannot process the RFI's within ten (10) Working Days, the Contract Administrator shall confer with the Contractor within five (5) Working Days of receipt of such RFI's and the Contract Administrator and the Contractor will jointly prepare an estimate of the time necessary for processing same as well as an order of priority among the RFI's submitted. The Contractor shall accommodate such necessary time at no impact to the schedule and at no additional cost to the Contract.

.7 If the Contractor submits a RFI on an activity with ten (10) Working Days or less of available time to the impacted activity on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Contractor Administrator to respond to the request provided that the Contract Administrator responds within the ten (10) Working Days set forth above.

.8 An RFI response from the Contract Administrator will not change any requirement of the Contract. In the event the Contractor believes that the RFI response from the Contract Administrator will cause a change to the requirements of the Contract, the Contractor shall within ten (10) Working Days give written notice to the Contract Administrator stating that the Contractor believes the RFI response will result in the Contract and the Contractor intends to submit a change request. Failure to give such written notice of fourteen (10) Working Days shall waive the Contractor's right to seek additional time or cost under the requirements of the Contract.

1.6 Closeout Submittals

.1 Refer to Section 01 78 00 - Closeout Submittals for closeout submittal requirements.

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

SAFETY PROCEDURES

1. GENERAL

1.1 References

.1 The Workplace Safety and Health Act, Province of Manitoba.

1.2 Requirements

.1 Appoint a suitably qualified employee who has sole responsibility with regards to safety on Site on behalf of the Contractor. Advise the Contract Administrator in writing as to the identity of this individual.

.2 Establish and maintain Safety and Health procedures for construction of the Works.

.3 Comply with additional safety requirements as specified in the General Conditions and Supplemental Conditions.

1.3 Safety and Health Regulations

.1 Contractor shall have certification from SAFE Work Manitoba as described in the Bidding Procedures.

.2 Contractor shall provide a Safe Work Plan (SWP) as referenced in the Supplemental Conditions. SWPs shall include Lock-Out-Tag-Out (LOTO) procedures.

.3 Keep a hard copy of the relevant construction occupational safety and health regulations on Site at all times. Post the policies and notices for the information of workers.

.4 Ensure that workers are instructed and trained in safe and healthy working practices; take immediate action to correct any unsafe conditions and hold regular weekly safety (toolbox) meetings with all workers.

.5 Establish Job Safety and Health Procedures and provide copies for the Contract Administrator's information.

.6 Provide Safety Orientation for all Contractor Personnel.

.1 All Contractor Personnel must attend the Contractor's Safety Orientation before access to the Site is granted.

1.4 First Aid Facilities and Services

.1 The Contractor shall provide first aid services at the Site, including their Subcontractors, until Total Performance.

.2 Provide first aid coverage for the Site at all times, including periods outside of normal work hours (evenings, weekends, and holidays) as required to support the work of Subcontractors.

.3 Make all provisions and pay all installation, manpower, equipment, medical supplies, restocking, and other costs for the first aid facilities in order to provide ongoing service for the Site in accordance with the requirements of this Specification.

.4 Locate the first aid facility in a convenient location within the Site. The Contractor shall provide and maintain unobstructed emergency vehicle access to the main door of the first aid facility, including appropriate signage as required.

.5 Arrange and supply transportation for injured workers both on and off Site.

.6 The Contract Administrator will review the Contractor's first aid facility, personnel, procedures, and safety and health program. The Contract Administrator is to have full access to the Work and the Contractor's first aid facilities and records at all times.

1.5 General Site Rules

.1 Ensure that all workers comply with "NO SMOKING" regulations on the Site.

.2 Wear hard hats and safety footwear on the Site at all times. Wear reflective vests as required by Site policy.

.3 Wear eye protection where there is a risk of eye injury; this includes chipping, grinding, welding, drilling, sawing, concrete placing, etc.

.4 Wear hearing protection device where required and ensure all workers have a valid hearing test.

.5 Use scaffolding that complies with regulations.

.6 Obtain a valid certificate of inspection for all cranes and boom trucks before coming on Site.

.7 Immediately report all hazardous situations to the Contract Administrator.

1.6 Submittals

.1 Submit in writing to the Contract Administrator the identity of the Contractor representative responsible for safety on Site as described in 1.2.1.

.2 Submit, by presentation to the Contract Administrator, the safety orientation for all Contractor’s Personnel. This presentation must be made before commencement of the Work.

.3 Make available on the Site to the Contract Administrator minutes of safety meetings, accident investigations, safety inspections, safety and health program, safety orientation records, hearing test records, copies of safe work procedures, and copies of training records as appropriate.

1.7 Confined Space Entry

.1 Be aware the Surge Tower is considered a confined space by the City as a result of access and possible hazards.

.2 Follow all applicable Safe Work Procedures for any Work requiring entry into confined spaces. Ensure all personal don all required Personal Protective Equipment for safe entry into a confined space.

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

QUALITY CONTROL

1. GENERAL

1.1 Description

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

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

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

1.2 References

.1 Within the text of the Specifications, reference may be made to the following standards and statutes:

.1	ACI	American Concrete Institute
.2	AISC	American Institute of Steel Construction
.3	ANSI	American National Standards Institute
.4	ASTM	American Society for Testing and Materials
.5	AWWA	American Water Works Association
.6	CAN	National Standard of Canada
.7	CGSB	Canadian Government Specification Board
.8	CISC	Canadian Institute of Steel Construction
.9	CPCI	Canadian Pre-stressed Concrete Institute
.10	CRCA	Canadian Roofing Construction Association
.11	CSA	Canadian Standards Association
.12	MPI	Master Paint Institute
.13	NAAMM	National Association of Architectural Metal Manufacturers
.14	NACE	National Association of Corrosion Engineers
.15	NBC	National Building Code
.16	ULC	Underwriters Laboratories of Canada

.17 SSPC Society for Protective Coatings

.2 Conform to the latest version of such standards available at the time of tendering, in whole or in part, as specified.

.3 If there are questions as to whether any product or system is in conformance with applicable standards, the Contract Administrator reserves the right to have such products or systems tested to prove or disprove conformance with Contract Documents, or by the Contractor in the event of non-conformance.

1.3 Independent Inspection Agencies

.1 Independent inspection/testing agencies may be engaged by the City for the purpose of inspecting and/or testing portions of the Work. The cost of such services will be borne by the City. Costs of additional tests required due to defective Work shall be paid by the Contractor.

.2 All equipment required for executing inspection and testing will be provided by the respective agencies.

.3 Employment of inspection/testing agencies does not relieve or relax the Contractor's responsibility to perform the Work in accordance with the Contract Documents.

.4 If defects are revealed during inspection and/or testing, the appointed agency will request additional inspection and/or testing to ascertain the full degree of defect. Correct the defect and irregularities as advised by the Contract Administrator at no cost to the City. The Contractor shall be responsible for the costs of the subsequent testing and inspection of the corrected Work. The City shall deduct such costs from the Contract, amount of which will be determined by the Contract Administrator.

1.4 Access to Work

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

.2 The City, the Contract Administrator, and other authorities having jurisdiction shall have access to the Work, off Site manufacturing, and fabrication plants. Do not cover or enclose systems prior to inspection.

1.5 Procedures

.1 Notify appropriate agency and the Contract Administrator a minimum of seventy-two (72) hours in advance of requirement for tests, in order that attendance arrangements can be made.

1.6 Rejected Work

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

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

TEMPORARY UTILITIES

1. GENERAL

1.1 Installation and Removal

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

.2 Remove from Site all such Work after use.

1.2 Water Supply

.1 City will provide continuous supply of potable water for construction use at the Site. Water supply is restricted to the capacity of the existing Tache Booster Pumping Station potable water system.

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

.3 Pay for utility charges at prevailing rates.

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

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

.1 Conform with 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.

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

1.4 Temporary Power and Light

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

.2 Arrange for connection with the Contract Administrator. Pay costs for installation, maintenance and removal.

.3 Maximum power supply from the Tache Booster Pumping Station is 3 Phase, 208V, 50 amps. Connect to existing power supply in accordance with Canadian Electrical Code.

.1 Contractor to supplement temporary power in excess of the above as required for the Work.

1.5 Temporary Communication Facilities and Internet/Email

.1 Provide a cellular telephone to the Contractor's on-site Superintendent. Cellular communication is required twenty-four (24) hours a day from the Contract Administrator.

.2 Provide internet access to the Contractor's on-site Superintendent. Email communication is required twenty-four (24) hours a day from the Contract Administrator.

1.6 Fire Protection

.1 Provide and maintain temporary fire protection equipment during performance of Work.

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

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

CONSTRUCTION FACILITIES

1. GENERAL

1.1 Reference Standards

.1 Canadian Standards Association (CSA International):

.1 CSA-0121,Douglas Fir Plywood.

.2 CAN/CSA-S269.2, Access Scaffolding for Construction Purposes.

1.2 Shop Drawings

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

.2 Submit a Temporary Hoarding and Scaffolding Plan Shop Drawing for the Tache Surge Tower activities:

.1 Protection of the existing interior components that are to remain, including the inner brick veneer void to interior concrete wall face, during Section 02 41 99 - Demolition of Minor Works activities.

.2 Protection of the existing exterior components of the structure that are to remain, during Section 02 41 99 - Demolition of Minor Works activities.

.3 Protection of the existing interior components that are to remain, including the inner brick veneer void to interior concrete wall face, following the Section 02 41 99 - Demolition of Minor Works activities until the Tache Surge Tower's new roof assembly is completely installed and the new roof is watertight in accordance with Section 07 52 00 - Modified Bituminous Membrane Roofing. System to allow for installation material(s) such as, but not limited to, Section 03 41 00 - Precast Structural Concrete.

.4 Protection and access to complete the Work under Section 04 03 07 - Masonry Repointing and Section 07 92 00 - Joint Sealants

.5 Protection of the existing (open) potable water section of the Tache Surge Tower structure at all times during the Work at the Tache Surge Tower until the new roof assembly is completely installed and the new roof is watertight in accordance with Section 07 52 00 - Modified Bituminous Membrane Roofing.

.6 Clearly indicate means and methods, design briefs, crane lifting sequences including crane locations on-site, crane locations dimensions and ground loading conditions including dimensions to the following areas listed in this Specification Section:

.1 1200 mm Branch I Aqueduct.

.2 1050 TBPS Suction Line.

.3 1650 Aqueduct Line Entering the Tache Surge Tower.

.3 Temporary Hoarding and Scaffolding Plan Shop Drawings and design briefs are to bear the seal of a Professional Engineer registered in the Province of Manitoba.

.4 Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation, and coordination of all parts of the Work rests with the Contractor.

1.3 Installation and Removal

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

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

.5 Remove from site all such work after use.

1.4 Scaffolding

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

.2 Provide and maintain scaffolding and protective barriers during the Work.

1.5 Dust Tight Screens

.1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, existing systems and building, and public.

.2 Maintain and relocate protection until such work is complete.

1.6 Hoisting

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

.2 Hoists and cranes to be operated by qualified operator.

1.7 Site Storage/Loading

.1 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 provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project Site.

.3 Clean areas where used by Contractor's equipment.

1.9 Security

.1 Secure the Site main entrance gate during and after hours. Do not allow unauthorized access to the Site, excluding City Operations staff. Coordinate gate security with Contract Administrator to ensure City Operations staff have Site access at all times.

1.10 Office

.1 Provide office heated to 22°C, lighted 750lx and ventilated in accordance with the Manitoba Building Code and related Amendments, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

.1 Provide washroom facility (heated or non heated) adjacent to office complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels, toilet tissue and hand sterilizing gel.

.2 1 x 2.4 m table, six (6) chairs intended for site meetings.

.2 Maintain the office and washroom facility in clean, operable conditions at all times.

.3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

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.

.3 Do not utilize the City’s washroom facilities in the Tache Booster Pumping Station.

1.13 Construction Signage

.1 No other signs or advertisements, other than construction warning signs, are permitted on Site.

1.14 Protection and Maintenance of Traffic

.1 Maintain and protect traffic on affected roads during construction period.

.2 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.

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

.4 Construct temporary access roads and crane support pads necessary.

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

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

.7 Provide snow removal during period of Work.

.8 Remove, upon completion of Work remove all temporary access roads and crane supporting pads.

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.

2. PRODUCTS (NOT USED)

3. EXECUTION

3.1 Examination

.1 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.1 Locate and record the following areas:

.1 The following shall be considered critical pipelines and water infrastructure for this project:

.1 1200 mm Branch I Aqueduct.

.2 1050 TBPS Suction Line.

.3 1650 Aqueduct Line Entering the Tache Surge Tower.

END OF SECTION

COMMON PRODUCT REQUIREMENTS

1. GENERAL

1.1 References

.1 Conform to reference standards, in whole or in part as specifically requested in the Contract Documents.

1.2 Quality

.1 Products, materials, equipment, and articles incorporated in the Work shall be new, not used, damaged, or defective, and of the best quality for the 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 a precaution against oversight or error. Remove and replace defective products at Contractor's own expense and be responsible for delays and expenses caused by rejection.

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

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

1.3 Availability

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

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

1.4 Metric Project

.1 Unless otherwise noted, this Project has been designed and is to be constructed in the International System (SI) of Units metric system of measurements.

.2 During construction, when specified metric elements are unattainable at the time they are required to meet the construction schedule, the Contractor shall notify the Contract Administrator in writing and suggest alternative substitutions. Costs due to these substitutions shall be borne by the Contractor.

1.5 Manufacturer's Instructions

.1 Unless otherwise indicated in the Specifications, install or erect products in accordance with the Manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from the Manufacturers.

.2 Notify the Contract Administrator in writing, of conflicts between the Specifications and the Manufacturer's instructions, so that the Contract Administrator will establish a course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Contract Administrator to require removal and re-installation at no increase in Contract Price or Contract Time.

1.6 Co-Ordination

.1 See to the co-operation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves, and accessories.

1.7 Concealment

.1 In work area, conceal pipes, ducts, and wiring in the floors, walls. and ceilings, except where indicated otherwise.

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

1.8 Remedial Work

.1 Perform remedial work required to repair or replace parts or portions of the Work identified as defective or unacceptable. Co-ordinate 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.

1.9 Fastenings

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

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel 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 individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood or any other organic material plugs 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.

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

DELIVERY, STORAGE, AND HANDLING

1. GENERAL

1.1 General Requirements

.1 This Section specifies the general requirements for the delivery, storage, handling, and protection for all items required in the construction of the Work. Specific requirements, if any, are specified with the related item.

1.2 Transportation and Delivery

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

.2 Transport and handle items in accordance with manufacturer's printed instructions.

.3 Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the Site more than one (1) month prior to installation without written authorization from the Contract Administrator.

.4 Ship equipment, material, and spare parts complete except where partial disassembly is required by transportation regulations or for protection of components.

.5 The Contractor shall ensure that they are fully informed of precautions to be taken in the unloading of the equipment and subsequent storage including any required maintenance.

.6 The Contractor shall be responsible for all equipment at the Site or any alternative storage location.

.7 If off-Site storage of equipment is required, then the second move of the equipment to the Site will be at the Contractor’s cost.

.8 Carefully pack and crate equipment for shipment. Protect polished and machined metal surfaces from corrosion and damage during shipment and installation.

.9 Deliver products to the Site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting, and installing.

.10 Assume responsibility for equipment material and spare parts just before unloading from carrier at the Site.

.11 All items delivered to the Site shall be unloaded and placed in a manner which will not hamper the Contractor's normal construction operation or those of subcontractors, other contractors, or City Operations staff and will not interfere with the flow of necessary traffic or impede access to equipment or areas required for use by operators. Storage of components is to be limited in the following areas:

.1 1200 mm Branch I Aqueduct.

.2 1050 TBPS Suction Line.

.3 1650 Aqueduct Line Entering the Tache Surge Tower.

.12 Provide equipment and personnel to unload all items delivered to the Site.

1.3 Storage and Protection

.1 Handle and store products and equipment to prevent damage, adulteration, deterioration, and soiling in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Contract Administrator and the City. Instructions shall be carefully followed and a written record of this kept by the Contractor for each product and pieces of equipment.

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

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

CERTIFICATE OF EQUIPMENT DELIVERY
FORM 100

We certify that the equipment listed below has been received and delivered into the care of the Contractor. The equipment has been found to be in satisfactory condition. No defects in the equipment were found.

PROJECT: _____

ITEM OF EQUIPMENT: _____

_____

TAG NO: _____

REFERENCE SPECIFICATION: _____

_____ _____
(Authorized Signing Representative of the Contractor) Date

_____ _____
(Authorized Signing Representative of the Manufacturer) Date

_____ _____
(Authorized Signing Representative of the Contract Administrator) Date

CLEANING

1. GENERAL

1.1 Project Cleanliness

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by the City or other Contractors.

.2 Remove waste materials from the Site at weekly regularly scheduled times or dispose of it as directed by the Contract Administrator.

.3 Conduct cleaning and disposal operations to comply with local codes, ordinances, regulations, and anti-pollution laws. Do not burn or bury rubbish or waste materials on the Site. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains. Do not dispose of wastes into streams or waterways.

.4 Provide on-Site containers for collection of waste materials and debris.

.5 Provide and use marked separate bins for recycling.

.6 Dispose of waste materials and debris at designated dumping areas off Site.

.7 Clean interior areas prior to start of finishing work and maintain areas free of dust and other contaminants during finishing operations.

.8 Store volatile waste in covered metal containers and remove from premises at end of each Business Day.

.9 Provide adequate ventilation during use of volatile or noxious substances.

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

2. PRODUCTS

2.1 Materials

.1 Use only those cleaning materials which will not create hazards to property and persons or damage surfaces of material to be cleaned.

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

3. EXECUTION

3.1 Cleaning During Construction

.1 At all times maintain areas covered by the Contract and adjacent properties and public access roads free from accumulations of waste, debris, and rubbish caused by construction operations.

.2 During execution of Work, clean Site and dispose of produced waste materials, debris, and rubbish to assure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish. Unneeded construction equipment shall be

removed, and all damage repaired, so that the public and property owners will be inconvenienced as little as possible.

.3 Wet down dry materials and rubbish to lay dust and prevent blowing dust as applicable.

.4 Where material or debris has washed or flowed into or been placed in existing potable water piping and aqueducts, watercourses, ditches, gutters, drains, pipes structures, work done under this Contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the Work, and the areas shall, upon completion of the Work, be left in a clean and neat condition.

.5 On or before the completion of the Work, the Contractor shall, unless otherwise especially directed or permitted in writing, return the Site to acceptable condition.

.1 The Contractor shall tear down and remove all temporary buildings and structures built by them.

.2 The Contractor shall remove all temporary works, tools, and machinery or other construction equipment furnished by them.

.3 The Contractor shall remove all rubbish from any grounds which they have occupied and shall leave the roads and all parts of the premises and adjacent property affected by their operations in a neat and satisfactory condition.

.6 When Substantial Performance has been achieved, remove surplus products, tools, construction machinery, and equipment not required for performance of the remaining Work.

3.2 Final Cleaning

.1 Final cleaning shall be completed prior to issuance of Total Performance.

.2 Remove waste products and debris other than that caused by others and leave Work Site 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 the City or other Contractors.

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

.6 Clean any Contractor installed interior items free of dust.

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

.8 Exterior Work:

.1 Broom clean and wash exterior walks, steps, and surfaces (if disturbed) as applicable.

.2 Remove dirt and other disfiguration from exterior surfaces.

.3 Repair landscaping (if disturbed).

.9 Restore and clean the existing equipment and building, if damaged as a result of this Work.

.10 Sweep and wash clean paved areas.

.11 Remove debris and surplus materials from accessible concealed spaces as applicable.

END OF SECTION

CLOSEOUT SUBMITTALS

1. GENERAL

1.1 Submittals

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Total Performance shall not be granted until review and acceptance of all Closeout Submittals is achieved.

1.2 Closeout Submittals

.1 Operating and Maintenance Manuals:

.1 Refer to Section 01 91 51 - Operating and Maintenance Manual.

.2 As-Built Drawings:

.1 Possess a complete set of Drawings for the purpose of maintaining project as-built Drawings. Accurately mark up deviations from the Contract caused by the Site conditions and changes ordered by the Contract Administrator. Update daily.

.2 The Contractor shall keep one (1) complete set of white prints at the Site during the Work, including all addenda, change orders, Site instructions, clarifications, and revisions for the purpose of the as-built and Record Drawings. As the Work proceeds, the Contractor shall clearly mark up the white prints in red pen all the Work which deviated from the original Contract. The marked-up information is to include locations of all devices and locations of all equipment.

.3 Identify Drawings as "Project Record Copy". Maintain in good condition and make available for review on-site by the Contract Administrator at all times.

.4 On completion of the Work, submit as-built Drawings to the Contract Administrator for review.

.3 Other Submittals:

.1 Include test reports as specified in individual Specification Sections.

.2 Satisfy additional requirements as specified in individual Specification Sections.

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

1. GENERAL

1.1 Work Included

.1 Furnish complete operations manuals and maintenance information as specified in this Section for operation and maintenance requirements.

1.2 General Requirements

.1 Prepare operating and maintenance manuals using recommended information acquired from Manufacturers that describes the maintenance and operation of described products.

.2 One (1) advance copy of the operating and maintenance manuals shall be submitted to the Contract Administrator for review and comments. After review and acceptance by the Contract Administrator, submit five (5) hard copies and one (1) electronic (PDF) copy of the final operating and maintenance manuals no later than four (4) weeks prior to Total Performance.

.3 Format of the operating and maintenance manuals to be as follows:

.1 Binders: vinyl, hard covered, 3 'D' ring, with spine and face pockets.

.2 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.

.3 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

.4 Standard letter size paper 216 mm x 279 mm (8.5 inch x 11 inch).

.5 Drawings, diagrams, and schematics to be professionally prepared, legible, and of equal quality as the originals.

.6 Provide electronic copies of all O&M Manuals in searchable PDF formats. The table of contents must be created using hyperlinks that link the headings in the table of contents to the headings in the O&M Manuals. Electronic copies must be acceptable to the Contract Administrator.

.1 Provide materials of equal clarity and quality as the originals.

.2 Provide drawings, diagrams, and Manufacturer's literature which are legible.

.7 All instructions in the O&M Manuals are to be in simple language (English).

.8 All measurements to be SI units.

.9 Edit Manufacturers' standard documents to delete extraneous information not applicable to the item, assembly, subassembly, or material supplied. Cross out or remove and eliminate any extraneous material for models, options, or sizes not furnished.

1.3 Contents and Organization

.1 Arrange the O&M Manual to match the numbering system in the Specifications.

.2 Provide the Manufacturers' standard O&M Manuals for items supplied. If the Manufacturers' standard manuals do not contain all the required information, provide the missing information in supplementary documents and Drawings.

.3 One (1) set of O&M manuals may be provided when more than one piece of similar items are supplied, such as different sizes of the same model and all similar pieces are covered in the same standard Manufacturer's O&M Manual.

.4 Provide a cover page as the first page of each manual, with the following information:

.1 Contract name and number.

.2 Item model number.

.5 Provide a table of contents listing the contents of the manual and identifying where specific information can be located.

.6 Include the specific information described below in the O&M Manuals:

.1 General Information:

.1 Functional title of the system, or material.

.2 Relevant Specification Section number and Drawing reference.

.3 Address and telephone number of the Manufacturers.

.2 Technical Data:

.1 Insert Manufacturers' technical specification and data sheets.

.3 Maintenance Information:

.1 Provide descriptions and schedules for Manufacturers' recommended routine preventative maintenance procedures.

1.4 Warranties

.1 Provide a separate Section labelled "Warranties" including:

.1 A list, in Specification Section order, of all warranties and guarantees required by the Contract Documents and all Manufacturers' standard warranties and guarantees received from the supplier. Include contact names and telephone numbers. Indicate the time frame of each warranty or guarantee on the list.

2. PRODUCTS (NOT USED)

3. EXECUTION (NOT USED)

END OF SECTION

DEMOLITION FOR MINOR WORKS

1. GENERAL

1.1 References

.1 Canadian Standards Association (CSA):

.1 CSA Z783, Deconstruction of Buildings and Their Related Parts.

1.2 Shop Drawings

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

.2 Hot Work Permit(s).

.3 Submit a Demolition Plan Shop Drawing for the Tache Surge Tower existing roof assembly; concrete encapsulated steel beam supporting substrate, and interior concrete walls to be modified to suit the installation of the new Precast Structural Concrete components.

.1 Clearly indicate means and methods, design briefs, crane lifting sequences including crane locations on-site, crane locations dimensions and ground loading conditions including dimensions to the following areas:

.1 The following shall be considered critical pipelines and water infrastructure for this project:

.1 1200 mm Branch I Aqueduct.

.2 1050 TBPS Suction Line.

.3 1650 Aqueduct Line Entering the Tache Surge Tower.

.4 Demolition Plan Shop Drawing and design briefs are to bear the seal of a Professional Engineer registered in the Province of Manitoba.

.5 Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation, and coordination of all parts of the Work rests with the Contractor.

1.3 Site Conditions

.1 Review "Tache Booster Pump Station and Surge Tower Upgrades, RFP No. 193-2022" and take precautions for flammable substances.

.2 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Contract Administrator immediately.

.1 Proceed only after receipt of written instructions have been received from Contract Administrator.

.3 Notify Contract Administrator before disrupting building access or services.

2. PRODUCTS (NOT USED)

3. EXECUTION

3.1 Examination

.1 Inspect existing Tache Booster Pumping Station and Tache Surge Tower with Contract Administrator and verify extent and location of items designated for removal, disposal, and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.1 Locate and record the following areas:

.1 The following shall be considered critical pipelines and water infrastructure for this project:

.1 1200 mm Branch I Aqueduct.

.2 1050 TBPS Suction Line.

.3 1650 Aqueduct Line Entering the Tache Surge Tower.

.3 Protect the exterior and interior surfaces of the Tache Booster Pump Station and Tache Surge Tower to remain.

.4 Notify and obtain approval of utility companies before starting demolition.

.5 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the Authorities Having Jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.

.1 Immediately notify Contract Administrator and utility company concerned in case of damage to any utility or service, designated to remain in place.

.2 Immediately notify the Contract Administrator should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.2 Preparation

.1 Protection of In-Place Conditions:

.1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building to remain in place. Provide bracing and shoring as required.

.2 Keep noise, dust, and inconvenience to local residences to minimum.

.3 Protect building systems, services and equipment.

.4 Provide temporary dust screens, covers, railings, supports and other protection as required.

.5 Maintain a safe access for City Operators to the building throughout demolition.

.6 Protect trees, plants and foliage on site and adjacent properties.

.2 Demolition/Removal:

.1 Remove items as indicated.

.2 Remove parts of existing building to permit new construction.

3.3 Hot Work Permits

.1 For demolition of components adjacent to and inside the Tache Booster Pumping Station and Tache Surge Tower:

.1 Coordinate start time for each Hot Work Permit with the Contractor's Superintendent.

.2 Complete Hot Work Permits in accordance with CSA-W117.2 including the following:

.1 Fire Watcher to be continuous for one (1) hour followed by half hour (30 minutes) spot checks for the next three (3) hours (total six (6) spot checks).

3.4 Cleaning

.1 Leave Work area clean at end of each day.

.2 Remove debris, trim surfaces and leave work site clean, upon completion of Work.

3.5 Protection

.1 Repair damage to adjacent materials or property caused by demolition activities.

END OF SECTION

CONCRETE ACCESSORIES

1. GENERAL

1.1 Work Included

.1 Pre-mix patching mortar for isolated remediation areas.

.2 Bonding agent.

.3 Anchoring adhesive.

.4 Moisture retention film.

.5 Epoxy injection system

1.2 Quality Control

.1 All Reference Standards shall be the latest edition at the time of Contract award.

.2 Submit Quality Control items including proof of qualifications in accordance with Section 01 33 00 - Submittal Procedures.

.3 The Contractor shall be fully responsible for quality control of all aspects of production, pre-placement, placement, and post-placement of non-ferrous grout and concrete, related testing.

.4 Submit and implement a Quality Control Plan a minimum of six (6) weeks prior to first scheduled casting of the pre-mixed patching mortar for exterior isolated remediation areas. The Quality Control Plan shall include at least the following:

.1 Identify the Quality Control Manager.

.2 Qualifications of construction supervisory personnel.

.3 Quality Control testing plan for concrete.

.4 Pre-placement procedures, including means and methods for maintain areas in a saturated surface dry state, checklists, and project specific finishing procedures for concrete.

.5 Procedures for placement of concrete in hot and cold weather.

.6 Post-placement procedures and checklists for concrete including means and methods for maintain areas in a saturated surface dry state.

.5 Epoxy injection installations are to be done by an established firm having at least ten (10) years of proven, satisfactory experience in this trade and employing skilled personnel.

.6 Submit proof of qualifications in writing to the Contract Administrator prior to commencement of Work.

1.3 Shop Drawings

.1 Submit Product Data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit Product Data Sheets for all components denoted as requiring NSF 61 approval.

.3 Submit proof of qualifications as described in clause 1.2.5 of this Specification Section.

2. PRODUCTS

2.1 Materials

.1 Non-Ferrous Grout: pre-mixed, non-shrink, Master Builders MasterFlow 713, Sika M-Bed, CPD Non-Shrink Grout (Pre-Mix) or approved equal in accordance with B7.

.1 Use Non-Ferrous Grout for infilling of existing refuse chute base area and related hollowcore voids.

.1 For thickness greater than 150 mm deep (6”), extended Non-Ferrous Grout utilizing 10 mm (3/8”), clean washed round stone at a rate of 12 kg of stone per individual bag of Non-Ferrous Grout.

.2 Repair Mortar areas as noted on the Drawings:

.1 Meadow-Crete H by W.R. Meadows, SikaTop-122 PLUS by Sika for horizontal substrates or approved equal in accordance with B7.

.2 Meadow-Crete OV by W.R. Meadows, SikaTop-123 PLUS for vertical substrates or approved equal in accordance with B7.

.3 Extend Repair Mortar materials in accordance with mortar manufacturers written instructions utilizing 10 mm (3/8”), clean washed round stone.

.3 Bonding agent for Repair Mortar areas as recommended by the Repair Mortar manufacturer’s written instruction.

.4 Reinforcing steel anchoring adhesive and anchor rod: Hilti Canada Ltd. or approved equal in accordance with B7.

.5 Moisture retention film: W.R. Meadows ‘1100’, Master Builders MasterKure ER 50, Sika Film, TK Products Tri Film or approved equal in accordance with B7.

.6 Epoxy injection system with NSF 61 approval: Specton Flex F1000, Water Activated Polyurethane Grout or approved equal in accordance with B7.

3. EXECUTION

3.1 Examination

.1 Before starting this Work, examine Work done by others that affects this Work.

.2 Notify the Contract Administrator of any conditions that would prejudice proper completion of this Work.

.3 Commencement of Work implies acceptance of existing conditions.

3.2 Installation

.1 Install all concrete accessories in accordance with Drawings and Manufacturer's recommendations and ensure compatibility. Install straight, level, and plumb.

.2 Intentionally roughen the interfacing surfaces of existing to new concrete as indicated in the Drawings.

.3 Ensure the surface of the existing concrete substrate and surround existing concrete substrate to remain, is in a saturated surface dry state utilizing potable water, for a minimum of twenty-four (24) hours prior to application of the bonding agent and patching material.

.4 Apply bonding agent and cast the Repair Mortar in accordance with the Manufacturer’s written instructions.

.5 Ensure items are not disturbed during concrete placement.

.6 Apply the moisture retention film in accordance with Manufacturer’s written instructions.

.7 Maintain the areas repaired with the Wall Patch material in a saturated surface dry state for a minimum of seven (7) days from the date of casting.

.8 Coordinate Work of this Section with other construction.

3.3 Finishing Formed Concrete

.1 Allow the Contract Administrator to review concrete surfaces immediately upon removal of the forms.

.2 Modify or replace concrete not conforming to qualities, lines, details, and elevations specified herein or indicated on the Drawings to the satisfaction of the Contract Administrator.

.3 Finish formed surfaces to Smooth-Form Finish conforming to CSA A23.1 complete with tie holes infill.

3.4 Epoxy Injection

.1 Allow Contract Administrator to review dry temperature and shrinkage cracks prior to injection.

.2 Inject all dry temperature and shrinkage cracks as required to completely encapsulate the existing cracked concrete substrate.

.3 Clean the cracks using the Manufacturer’s approved cleaning agent and procedures prior to injection of resin.

.4 Injection to be completed in accordance with the Manufacturer’s written instructions.

.5 Remove any cured injection resin from the surface of the structure.

.6 Allow minimum twenty-four (24) hours for the injection resin to cure prior to removal and patching of the packer holes.

END OF SECTION

PRECAST STRUCTURAL CONCRETE

1. GENERAL

1.1 Scope

.1 Supply, delivery, storage and erection of bearing assemblies, anchor bolts, removal and patching of erection devices, transverse connections, and field grouting of grout keys between precast members and any other items associated with these works.

.2 Permanent Anchor Systems for fall arrest.

.3 Permanent Equipment Davit Sleeves.

1.2 References

.1 All Reference Standards shall be the latest edition at the time of Contract award.

.2 Canadian Standards Association (CSA):

.1 CAN/CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.

.2 CAN/CSA A23.3, Design of Concrete Structures for Buildings.

.3 CAN/CSA A23.4, Precast Concrete Materials and Construction.

.4 CSA A251, Qualification Code for Manufacturers of Architectural and Structural Precast Concrete.

.5 CAN/CSA G30.18, Billet Steel Bars for Concrete Reinforcement.

.6 CAN/CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.7 CAN/CSA G164, Hot Dip Galvanizing of Irregularly Shaped Articles.

.8 CSA G279, Steel for Prestressed Concrete Tendons.

.9 CAN/CSA S6.1, Design of Highway Bridges.

.10 CSA W47.1, Certification of Companies for Fusion Welding for Steel Structures.

.11 CSA W48.1, Carbon Steel Covered Electrodes for Shielded Metal Arc Welding.

.12 CSA W59, Welded Steel Construction (Metal Arc Welding).

.13 CSA W186, Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.3 Design Requirements

.1 Design precast elements to CAN/CSA A23.3 and CAN/CSA A23.4 to carry handling stresses.

.2 Design precast elements to carry loads specified by on the Drawings in accordance with National Building Code of Canada (NBC).

.3 Carry out vibration analysis as per the NBC.

.4 Design connections/attachments of precast elements to load/forces specified by on the Drawings in accordance with NBC.

.5 Design Permanent Anchor System for fall arrest in accordance with Manitoba Workplace Safety and Health Act and Regulation requirements for “Fixed Support System Requirement” (ultimate capacity of at least 22.2 kN in any direction).

.6 Design Equipment Davit Sleeve for fall arrest in accordance with Manitoba Workplace Safety and Health Act and Regulation requirements for “Fixed Support System Requirement” (ultimate capacity of at least 22.2 kN in any direction).

.7 Submit one (1) copy of detailed calculations and design drawings signed and stamped by a professional engineer registered in Manitoba for typical precast elements and connections for the Contract Administrator's approval two (2) weeks prior to manufacture.

1.4 Performance Requirements

.1 Tolerance of precast elements to CAN/CSA A23.4.

1.5 Submittals

.1 Submit Shop Drawings and detailed calculations in accordance with Section 01 33 00 - Submittal Procedures.

.2 Include the following items:

.1 Design calculations for items designed by manufacturer.

.2 Details of prestressed and non prestressed members, reinforcement and their connections.

.3 Camber.

.4 Finishing schedules.

.5 Methods of handling and erection.

.6 Openings, sleeves, inserts and related reinforcement.

.3 Ensure each drawing submitted bears the stamp and signature of qualified Professional Engineer registered or licensed in the Province of Manitoba, Canada.

1.6 Qualifications

.1 Precast concrete elements shall be fabricated and erected by a manufacturing plant certified by Canadian Standards Association in the appropriate category according to CSA A23.4.

.2 The precast concrete manufacturer shall be certified in accordance with CSA Standard A23.4 "Precast Concrete Materials and Construction" prior to submitting tender and to specifically verify as part of tender that plant is currently certified.

.3 Only precast elements fabricated in such certified plants shall be acceptable to the City, and plant certification shall be maintained for the duration of fabrication, erection, and until warranty expires.

.4 Welding companies shall be certified to CSA W47.1.

2. PRODUCTS

2.1 Materials

.1 Cement to CAN/CSA-A3001, Type GU/GUb.

.2 Aggregates, water, admixtures: to CAN/CSA A23.1 and CAN/CSA A23.4.

.3 Reinforcing steel: to CAN/CSA G30.18, epoxy coated.

.4 Prestressing steel tendons and bars: to CAN/CSA S6 and CSA G279.

.5 Welded wire fabric: to CSA G30.15.

.6 Hardware and miscellaneous materials: to CAN/CSA A23.1.

.7 Forms: to CAN/CSA A23.4.

.8 Welding materials: to CSA W48.1.

.9 Welding electrodes: to CSA W48.1 and certified by Canadian Welding Bureau.

.10 Connection point to existing concrete wall: A316 stainless steel.

.11 Connection plate to Pre-manufactured Permanent Anchor System for Fall Arrest: A316 stainless steel.

.12 Epoxy coating: to ASTM A 775/A 775M.

.13 Post tensioning ducts: to CAN/CSA A23.1.

.14 Bearing pads: neoprene elastomeric, continuous.

2.2 Mixes

.1 Concrete:

.1 Proportion normal density concrete in accordance with CAN/CSA A23.1, Alternative 1, to give following properties: for concrete in roof tees and joint grout as indicated.

.1 Cement: use Type GU Portland cement.

.2 Minimum compressive strength at fifty-six (56) days: 35 MPa.

.3 Class of exposure: C-1.

.4 Nominal size of coarse aggregate: 20 mm.

.5 Water cement ratio: .40 max.

.6 Air content: 5-8%.

.2 Grout:

.1 Cement grout: GU Portland cement.

.2 Minimum compressive strength at fifty-six (56) days: 35 MPa, flowable.

.3 Exposure Class: C-1.

.4 Air Content: 5-8%.

2.3 Manufactured Units

.1 Manufacture units in accordance with CAN3 A23.4, and CSA A251.

.2 Mark each precast unit to correspond to the identification mark on the Shop Drawings for location with the date cast on part of the unit which will not be exposed.

.3 Provide hardware suitable for handling elements.

.4 Hot-dip the galvanized anchors and steel inserts after fabrication and touch-up on the anchors after welding excluding stainless steel components.

.5 Do not expose concrete to temperature below freezing until the specified strength has been attained.

.6 No cracks, fins or protrusions, or surface holes larger than 6mm nominal diameter shall be permitted on exposed surfaces.

.7 Structural repairs to units shall not be permitted unless accepted by the Contract Administrator in writing. Comply with CSA A23.4 for cosmetic repairs where required.

.8 Fabricate units in accordance with dimensional tolerances to comply with CSA A23.4.

.9 Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation, and coordination of all parts of the Work rests with the Contractor.

2.4 Pre-manufactured Permanent Anchor System for Fall Arrest

.1 As manufactured by Sky Climber, LLC; model ARS-WLD-0-25 with nominal 635 mm long galvanized steel body and A304 stainless steel eye with nominal 54 mm eye opening or approved equal in accordance with B7.

2.5 Pre-manufactured Permanent Anchor System for Equipment Davit Sleeves

.1 As manufactured by 3M DBI-SALA; model 8512827 center mount; material type A304 stainless steel; complete with model 8510827 heavy-duty stainless steel cap or approved equal in accordance with B7.

.1 Bolted anchorage of the Equipment Davit Sleeve by Precast Structural Concrete manufacturer utilizing A306 through bolts and related appurtenances. Nuts to be tack welded to bolt once assembled.

2.6 Source Quality Control

.1 Provide the Contract Administrator with certified copies of quality control tests related to this project as specified in CAN3 A23.4, CSA A251 and CSA G279.

.2 Inspect prestressed concrete tendons in accordance with CSA G279.

.3 Provide records from the in-house quality control programme based upon plant certification requirements to the Contract Administrator for inspection and review.

.4 Upon request, provide the Contract Administrator with a certified copy of the mill test report of the reinforcing steel supplied, showing the physical and chemical analysis.

.5 Precast plants should keep complete records of the supply source of concrete material, steel reinforcement, prestressing steel and provide to the Contract Administrator for review upon request.

3. EXECUTION

3.1 Erection

.1 Do precast concrete work in accordance with CAN/CSA A23.4, CAN/CSA A23.3 and CAN/CSA S6.

.2 Do welding in accordance with CSA W59, for welding to steel structures and CSA W186, for welding of reinforcement.

.3 Do welding in accordance with CSA W59 for welding of Pre-manufactured Permanent Anchor System for Fall Arrest to embedded plate and related embedded permanent anchorage.

.1 Touch-up galvanizing with minimum two (2) coats of zinc rich primer. Zinc rich primer to contain a minimum of 93% pure zinc.

.4 Erect precast elements within allowable tolerances as specified.

.5 Set elevations and alignment between units to within allowable tolerances before connecting units.

.6 Grout the underside of unit bearing plates with shrinkage compensating grout.

.7 Fasten precast units in place as indicated on approved Shop Drawings.

.8 Secure with bolts using lock washers or tack weld nut to bolt.

.9 Uniformly tighten bolted connections with torque indicated.

.10 Do not weld or secure bearing plates at sliding joints.

.11 Install precast concrete closures between stems of flanged units where indicated.

.12 Accurately level tops of slabs to a maximum 20 mm differential camber.

.13 After installation, remove temporary lifting and handling devices which are visible, submerged, or interfere with other trades. Cut lifting and handling devices a minimum of 25 mm below surface of unit and patch depression with an epoxy or latex modified mortar. Finish to match surrounding concrete.

.14 Grout side grout keys using a grout mixture of proper consistency to ensure that all voids are filled.

.15 Use grout to align elevations of surfaces at joints. Slope grout not more than 1:12.

.16 Weld Permanent Anchor System for Fall Arrest to embedded weld plate.

.17 Bolt Permanent Anchor System for Equipment Davit Sleeve through precast assembly and tack-weld nut to bolt for tamper proof securement. Utilize dry-pack grout to ensure fully direct contact from davit sleeve plate to chambered precast finished surface.

3.2 Cleaning

.1 Remove all broken concrete rubble or other debris resulting from Work of this Section and leave Site in clean condition.

END OF SECTION

MASONRY REPOINTING

1. GENERAL

1.1 Work Included

.1 Provide all materials and labour to perform the repointing of mortar.

1.2 References

.1 CSA A179 Mortar and Grout for Unit Masonry.

1.3 Information

.1 The Tache Surge Tower is a designated Heritage Structure as designated by the City's List of Historical Resources as "Tache Avenue", "Winnipeg Aqueduct St. Boniface Surge Tank".

.2 The Tache Booster Pumping Station is not a designated Heritage Structure as designated by the City's List of Historical Resources.

1.4 Samples

.1 Complete mortar colour mock-ups on-site.

.2 Submit Product Data of the materials for the Work in accordance with Section 01 33 00 - Submittal Procedures.

.3 Submit Masonry Subcontractor experience in accordance with Section 01 33 00 - Submittal Procedures.

.4 Submit Project Supervisor experience in accordance with Section 01 33 00 - Submittal Procedures.

.5 Submit Mason(s) experience including proof of certificate of qualification in accordance with Section 01 33 00 - Submittal Procedures.

1.5 Quality Assurance:

.1 Perform repointing Work by the Masonry Subcontractor with minimum twenty (20) years of proven, satisfactory and successful repointing experience on projects of similar size and nature.

.2 Masonry Subcontractor:

.1 Use single Masonry Subcontractor for masonry work.

.2 Masonry Subcontractor to have experience in historic brick and stone masonry repair and conservation work on projects of similar size and complexity to Work of this Contract.

.3 Masonry Subcontractor will be responsible for all aspects of masonry work for duration of project.

.3 Project Supervisor:

.1 Masonry Subcontractor to employ a Project Supervisor with documented successful experience of historic masonry repair and conservation work required for this Contract. Project Supervisor shall have a minimum of fifteen (15) years of overall experience. Project Supervisor to be present on Site full-time for duration of Work.

.2 Demonstrate competence levels to satisfaction of Contract Administrator undertaking Work.

.4 Masons:

.1 Masons to have certificate of qualification in historic brick and stone masonry repair and conservation work required for this Contract.

.2 Masons to have proof of licence certification for proprietary restoration mortars.

.5 Grouting: grouting activities should be undertaken by workers experienced in manipulation and grouting methods.

.6 Contract Administrator reserves the right to reject Masonry Contractor or proposed Project Supervisor, mason or apprentice if, documentation provided does not demonstrate level of experience or skill required for successful completion of Work of this Contract.

.7 Obtain written approval from the Contract Administrator for changes to qualified personnel.

1.6 Mock-up

.1 Construct mock-ups where directed by the Contract Administrator.

.1 Scaffolding access to the mock-up locations shall be included in the cost of the Work.

.2 One (1) full mortar depth mock-up on the Tache Booster Pumping Station existing brick veneer.

.3 One (1) partial mortar depth mock-up on the Tache Booster Pumping Station existing brick veneer.

.4 One (1) full mortar depth mock-up on the Tache Surge Tower existing brick veneer.

.5 One (1) partial mortar depth mock-up on the Tache Surge Tower existing brick veneer.

.6 One (1) full mortar depth mock-up on the Tache Surge Tower existing tyndall stone cope or parapet as dictated by the Contract Administrator.

.7 One (1) partial mortar depth mock-up on the Tache Surge Tower existing tyndall stone cope or parapet as dictated by the Contract Administrator.

.2 Work not to proceed prior to approval of mock-ups. Allow seventy-two (72) hours for review of mock-ups by Contract Administrator before proceeding with masonry repointing work.

.3 Repeat mock-ups until results obtained are to satisfaction of the Contract Administrator.

.4 Mock-up will be used to:

.1 Judge quality of work, substrate preparation, operation of equipment, material preparation and application, and curing methods.

.2 Determine joint finish required and colour matching existing mortar to remain.

.3 Test to determine compliance with property requirements.

.5 Accepted mock-ups will demonstrate minimum standard for this work. Mock-up will remain as part of finished work.

.1 Record location of accepted mock-ups for future on-site reference.

1.7 Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

1.8 Site Conditions

.1 Ambient conditions:

.1 Maintain masonry temperature between 10 and 27°C for duration of Work.

.2 When ambient temperature is below 10°C or is forecast to fall below 10°C within twenty-four (24) hours:

.1 Maintain temperature of materials and within enclosure to maintain a minimum of 20 degrees.

.2 Provide enclosure system around curing area to ensure that stated conditions are maintained for curing period.

.2 When ambient temperature is above 21°C:

.1 Protect repointed areas from direct sunlight and wind.

.2 Provide humid cure for a minimum of seven (7) days.

2. PRODUCTS

2.1 Materials

.1 Mortar and grout: conforming to CAN/CSA-A179.

.2 Aggregate: conforming to CAN/CSA-A179.

.3 Water: clean, potable, free of injurious amounts of acids, alkalis, and organic material.

.4 Masonry cement: conforming to CAN/CSA-A3002, Type S.

.5 Portland cement: conforming to CAN/CSA-A3001, normal Type GU.

.6 Hydrated lime: conforming to ASTM C207.

.7 Dirt resistant additives: aluminum tristearate, calcium stearate, or ammonium stearate.

2.2 Material Source

.1 Use same brands of materials and source of aggregate for entire project.

2.3 Mortar Types

.1 Mortar for all masonry:

.1 Type S based on Property Specifications.

3. EXECUTION

3.1 Mixing

.1 Do masonry mortar and grout Work in accordance with CSA A179 except where specified otherwise.

.2 Mix grout to semi-fluid consistency.

.3 Incorporate admixtures into mixes in accordance with Manufacturer's instructions.

.4 Comply with cold weather requirements specified in CSA A371 Masonry Construction for Buildings.

3.2 Special Techniques

.1 Examine mortar joints.

.1 Examine horizontal and vertical joints to determine which were struck first and whether they are the same style, as well as aspects of quality of work which establish authenticity of original work.

.2 Replicate the style of the existing mortar to remain.

3.3 Raking Joints

.1 Use tool to obtain clean masonry surfaces.

.1 Remove deteriorated and adhered mortar from masonry surfaces to sound mortar leaving square corners and flat surface at back of cut.

.2 Clean out voids and cavities encountered.

.2 Remove mortar without chipping, altering or damaging masonry units.

.3 Where use of power tools to remove mortar is acceptable, prior to removing remaining mortar with hand tools.

.4 Flush open joints and voids; clean open joints and voids with low pressure water and if not free draining blow clean with compressed air.

.5 Leave no standing water.

.6 Remove mortar from top, bottom and side joints, with back surface of joint square and of an even depth.

.7 Retain all brick and stone veneer for re-use.

3.4 Repointing

.1 Before repointing, wash down wall to be repointed and allow to dry to damp, but not wet. Ensure that dust and debris are removed from joints and wall surfaces prior to repointing.

.2 Keep masonry damp while pointing is being performed.

.3 Completely fill joint with mortar.

.1 If surface of masonry units has worn rounded edges keep pointing back 1 mm from surface to maintain same width of joint.

.2 Avoid feathered edges.

.3 Pack mortar firmly into voids and joints, ensuring full contact with back and sides of joint and leaving no voids.

.4 Build-up pointing in layers not exceeding 12 mm in depth.

.1 Allow each layer to set before applying subsequent layers.

.2 Maintain joint width.

.3 Compact and finish using jointing tool to force mortar into joint. Use tools of varying widths to meet this requirement.

.5 Remove excess mortar from masonry face before it sets.

3.5 Protection During Curing Process

.1 Cover completed and partially completed work not enclosed or sheltered at end of each workday.

.1 Membranes should extend to 0.5 m over surface area of work and be tightly installed to prevent finished work from drying out too rapidly.

.2 Cover with waterproof tarps to protect newly laid mortar from frost, rainfall and rapid drying conditions such as wind.

.1 Ensure that bottoms of tarps permit airflow to reach mortar in joints.

.3 Secure coverings in position.

.4 Damp cure:

.1 Install and maintain wetted burlap protection during the curing process, using heavy and tight-woven burlap:

.1 Minimum three (3) days.

.2 Wet mist burlap only - ensure no direct spray reaches surface of curing mortar.

.3 Ensure burlap is not in contact with masonry. Leave air space of minimum 50 mm between burlap and masonry.

.4 Shade areas of work from direct sunlight and maintain constant dampness of burlap.

.5 Provide for off-hours and week-end work as required to maintain specified curing conditions.

.5 Protect from drying winds.

3.6 Cleaning

.1 Leave Work area clean at end of each day.

.2 Clean surfaces thoroughly of mortar droppings, stains and other blemishes resulting from work of this contract daily, as work progresses.

.3 Remove droppings and splashings using clean water and thick cotton rags.

.4 Clean masonry with stiff natural bristle brushes and plain water only if mortar has fully cured.

3.7 Protection of Completed Work

.1 Protect adjacent finished work against damage.

END OF SECTION

METAL FABRICATIONS

1. GENERAL

1.1 Work Included

.1 Shop fabricated ferrous metal items, galvanized. The following is a list of principal items only. Refer to Drawing details for items not specifically listed.

.1 New interior guardrails and kickplates.

.2 New interior staircases.

.3 Securement of Precast Roof Tees.

.4 Sump pit cover.

.5 Anchors, bolts, nuts, screws, brackets, etc., required for Work of this Section.

.6 Roof hatches.

.7 Hot Work Permit(s).

.8 Field touch-up of galvanized surfaces including field welding.

1.2 Design Code, Quality Assurance

.1 Perform welding in accordance with requirements of CSA W59.

.2 Welding work on all load carrying structures and assemblies is to be performed by a firm certified by the Canadian Welding Bureau to the requirements of CSA W47.1 in Division 2.

.3 All welders employed to weld load carrying structures in the field are to possess valid "S" Classification Class "O" certificates issued by the Canadian Welding Bureau except for floor and roof hatches.

.4 Hot Work Permit in accordance with CAN/CSA-W117.2-12.

.5 Steel preparation in accordance with The Society for Protective Coatings (SSPC).

.6 All Reference Standards shall be the latest edition at the time of Contract award.

1.3 Submittals

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

.2 Submit Shop Drawings and welding procedures.

.3 Shop Drawings shall clearly indicate profiles, sizes, connections, attachments, reinforcing, anchorage, steel preparation, size and type of fasteners, hole sizes and accessories. Where specific welding and hole sizes are used on the Drawings, maintain the specified Drawing requirements.

.4 Indicate welded connections using CISC standard welding symbols. Clearly indicate net weld lengths.

.5 Shop Drawings and design briefs are to bear the seal of a Professional Engineer registered in the Province of Manitoba excluding Shop Drawings for roof hatches.

.6 Submit Shop Drawing of zinc rich primer used for touching-up galvanized substrate.

.7 Submit example of Contractor's Hot Work Permit for welding and grinding within the Tache Booster Pumping Station and Surge Tower.

.8 Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation, and coordination of all parts of the Work rests with the Contractor.

1.4 Inspection and Testing

.1 Shop and field inspection and testing, when required by the Contract Administrator, shall be performed by an Inspection and Testing Firm appointed and paid by the City.

.2 Welds shall be considered defective if they fail to meet quality requirements of CSA W59.

.3 Provide free access to all portions of the Work in the shop and in the field and cooperate with the appointed firm.

.4 Pay all additional costs for inspection and re-inspection due to defective workmanship or materials.

.5 Visually inspect all welds.

.6 If requested by the Contract Administrator, submit mill test reports, properly correlated to materials actually used.

1.5 Maintenance Data

.1 Provide operation and maintenance data for the roof hatches into maintenance manual specified in Section 01 91 51 - Building Management Manual.

2. PRODUCTS

2.1 Materials

.1 Structural channels, angles, plates, channels and miscellaneous steel: conforming to CSA G40.21; Type W with minimum yield strength of 300 MPa. All components to be galvanized.

.2 Galvanized Steel Guardrails and Handrails: conforming to ASTM A53/A53M, DN 40 XS (Schedule 80). All components to be galvanized.

.3 Angles, plates, channels and miscellaneous steel: conforming to CSA G40.21, Grade 300 W with minimum yield strength of 300 MPa.

.4 Galvanized Steel Grating: Type 30-102M as manufactured by Fisher & Ludlow or approved equal in accordance with B7. Non-serrated top surface for interior grating.

.5 Securement for Precast Roof Tees: A316 stainless steel.

.6 Sump pit cover: A304 stainless steel checker plate.

.7 Welding materials: conforming to CSA W59.

.8 Bolts, nuts, and washers: conforming to ASTM A325 for steel members and stainless steel Type 316 for connection of galvanized members unless noted otherwise.

.9 Rods: conforming to ASTM F1554; Grade 55 (Yield Strength 380 MPa).

.10 Galvanizing for pipes and steel shapes unless noted otherwise: conforming to ASTM A 123/A 123M. Coating Grade 45 (320 g/m^2).

.11 Galvanizing for steel fasteners: conforming to ASTM A 153/A 153M.

.12 Touch-up galvanizing with minimum three (3) coats of zinc rich primer. Colour of primer is to match the colour of galvanizing substrate.

.13 Access Hatches: Model E-AL by Bilco, fabricated utilizing aluminum cover, custom height aluminum curbs with concealed 25 mm fiberglass thick insulation and complete with all standard features including

.1 Included are all parts of the latch and lifting mechanism assemblies; hold-open and guide arm and guides; and all brackets, hinges, pins and fasteners; hinges, slam lock with fixed interior handle and removable exterior turn and lift handle with removable gasketed screw plug, lift assistance and automatic hold open device: Type A316 stainless steel.

2.2 Finishes

.1 Galvanizing: conforming to ASTM A 123/A 123M.

.2 Touch-up galvanizing with minimum two (2) coats of zinc rich primer. Zinc rich primer to contain a minimum of 93% pure zinc.

2.3 Steel Preparation

.1 Clean all new members receiving galvanizing material to SSPC SP SP-10 “Near-White Blast Cleaning”.

.2 Clean existing steel guardrail components to suit remediation and new welding.

2.4 General Fabrication

.1 Verify all dimensions on-site prior to shop fabrication. Notify Contract Administrator of discrepancies between Drawings and field measurements.

.1 Coordinate refuse area gate dimensions with Contract Administrator.

.2 Field verify sizes of existing guardrail components.

.2 Fabricate items of sizes and profiles detailed on Drawings, with joints neatly fitted and properly secured.

.3 Fit and shop assemble in largest practical sections, for delivery to Site.

.4 Supply all components required for proper anchorage of miscellaneous metals. Fabricate anchorage and related components of same material and finish as metal fabrications, unless otherwise specified or shown.

.5 Accurately form all connections and joints with exposed faces flush, mitres and joints tight.

.6 Exposed welds and metal sections shall be smooth and flush; grind or file as required.

.7 Match position of bearing bars and cross bars in adjacent panels to preserve a continuous appearance.

3. EXECUTION

3.1 Examination

.1 Before starting erection, examine other Work that may affect this Work.

.2 Notify the Contract Administrator of any conditions that would prejudice proper installation of this Work.

.3 Commencement of erection Work implies acceptance of existing conditions.

3.2 Hot Work Permits

.1 For field welding of components adjacent to existing building finishes:

.1 Coordinate start time for each Hot Work Permit with the Contract Administrator.

.2 Complete Hot Work Permits in accordance with CSA-W117.2 including the following:

.1 Fire Watcher to be continuous for one (1) hour followed by half hour (30 minutea) spot checks for the next three (3) hours (total six (6) spot checks).

3.3 Erection

.1 Obtain the Contract Administrator’s permission prior to site cutting or making adjustments that are not part of the scheduled Work.

.2 Install items plumb, square, and level, fitted accurately and maintain free from distortion or defects detrimental to appearance and performance.

.3 Keep Work in alignment at all times.

.4 Replace items damaged in course of installation.

.5 Perform required field welding. Exposed welds shall be smooth and flush; grind or file as required.

.6 Perform all field assembly bolting and welding to match standard of shop bolting and welding.

.7 After installation, touch-up galvanized bolts, nuts, welds, and scratched and damaged primed surfaces.

.8 Supply, to appropriate sections, items required to be cast into concrete, complete with necessary setting templates.

.9 Install roof hatches in accordance with the roof hatch manufacturer's written instructions.

.1 Paint underside of roof aluminum hatch curb surfaces in contact with a concrete substrate with bituminous based coating. Bituminous Paint: to MPI (Master Paint Institute) EXT 5.5D, without thinner.

.2 Secure roof hatch curb to concrete substrate utilizing stainless steel anchors.

END OF SECTION

ALUMINUM FABRICATIONS

1. GENERAL

1.1 Work Included

.1 Tache Surge Tower ladder assembly.

.2 Stainless steel bolts for bolted connections.

.3 Stainless steel anchor bolts and anchorages for all aluminum equipment supplied.

.4 Up Post, Ladder-Up extension post assembly.

1.2 Design Standards, Code Requirements

.1 CSA S157 Strength Design in Aluminum.

.2 CSA W59.2, Welded Aluminum Construction.

.3 CSA S244, Welded Aluminum Design and Workmanship.

.4 *CSA W47.2 Certification of Companies for Fusion* Welding of Aluminum.

.5 ASTM A 307, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile.

.6 ASTM A 325M, Specification for High-Strength Bolts for Structural Steel Joints.

.7 ASTM F 593 Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

.8 Aluminum Association Standard SSA-46.

.9 Use loads, load combinations and stress levels in accordance with the National Building Code of Canada.

.10 Connections are to be designed by a Professional Engineer registered in the Province of Manitoba. Design connections for loads indicated on the Drawings as a minimum.

1.3 Qualifications

.1 All Work is to be performed by a firm certified by the Canadian Welding Bureau to the requirements of CSA W47.2 in Division 2.

1.4 Inspection and Testing

.1 Shop and field inspection and testing, when required by the Contract Administrator, shall be performed by an Inspection and Testing Firm appointed and paid by the City.

.2 Welds shall be considered defective if they fail to meet quality requirements of CSA W59.

.3 Provide free access to all portions of the Work in the shop and in the field and cooperate with the appointed firm.

.4 Pay all additional costs for inspection and re-inspection due to defective workmanship or materials.

.5 Visually inspect all welds.

.6 If requested by the Contract Administrator, submit mill test reports, properly correlated to materials actually used.

1.5 Submittals

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

.2 Shop Drawings shall clearly indicate profiles, sizes, connections, attachments, reinforcing, anchorage, steel preparation, size and type of fasteners, hole sizes and accessories. Where specific welding and hole sizes are used on the Drawings, maintain the specified Drawing requirements.

.3 Indicate welded connections using CISC standard welding symbols. Clearly indicate net weld lengths.

.4 Shop Drawings and design briefs are to bear the seal of a Professional Engineer registered in the Province of Manitoba.

.5 Submit example of Contractor's Hot Work Permit for welding and grinding within the Tache Booster Pumping Station and Surge Tower.

.6 Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation, and coordination of all parts of the Work rests with the Contractor.

1.6 Maintenance Data

.1 Provide maintenance data for cleaning of aluminum fabrications complete with pertinent details, and warnings against harmful maintenance materials and practices for manual specified in Section 01 91 51 - Operation and Maintenance Manual.

2. PRODUCTS

2.1 Materials

.1 All materials shall be new.

.2 Aluminum to CSA S157, 6061-T6 aluminum alloy. All aluminum shapes to be anodized in accordance with Aluminum Association Standard SSA-46, designation A41, clear (natural) coating, Architectural Class 1, 18 uM (0.007 mils). Structural design based on Alcan structural shapes.

.3 Nuts, bolts, and fastening devices connecting aluminum parts to aluminum, concrete, or other materials: Stainless steel to Series 300 as specified in AISI Steel Products manual No. 12, with appropriate isolation devices.

.4 Welding materials: conforming to CSA W59.2.

.5 Bituminous Paint: to MPI (Master Paint Institute) EXT 5.5D, without thinner.

.6 Concrete Anchors: Stainless Steel as manufactured by Hilti (Canada) Ltd. where indicated or approved equal in accordance with B7.

.7 Up Post: LadderUp, model number LU-4 in mill finish aluminum complete with stainless steel bolts as manufactured by Bilco or approved equal in accordance with B7. One (1) LadderUp assembly per individual ladder.

2.2 Fabrication

.1 Fabricate aluminum members in accordance with CSA S157 Strength Design in Aluminum using Alcan structural shapes.

.2 Conform to requirements of CSA W59.2 for recommended filler alloy and welding.

.3 Verify all Drawing dimensions prior to commencing fabrication.

.4 Provide bolted connections wherever possible. Bolted connections shall be bearing-type connections with the thread excluded from the planes of shear. Welded connections will not be permitted unless approved by the Contract Administrator. Inform Contract Administrator if required welding procedures will negatively influence the original yield strength of the members at the compression or tension flange. Adjust welding procedures as required by the Contract Administrator at no additional cost.

.5 Accurately cut and mill column ends and bearing plates to assure full contact of bearing surfaces prior to welding.

.6 Grind all exposed welds flush with surface of welded members.

3. EXECUTION

3.1 Examination

.1 Before starting erection, take field measurements and examine other Work may affect this Work.

.2 Notify the Contract Administrator of any conditions which would prejudice proper installation of this Work.

.3 Commencement of this Work implies acceptance of existing conditions.

3.2 Damaged Members

.1 Repair or replace members damaged during transit or erection, before securing in position.

3.3 Erection

.1 Erect aluminum in accordance with CSA S157 and Drawings.

.2 Field connections are to be bolted wherever possible. Field welding of aluminum will not be permitted unless approved by the Contract Administrator.

.3 Perform required field welding. Visible field welds to be smooth, grind or file as required. Touch-up galvanizing as required.

.4 Install items plumb, square and level; fit accurately, and maintain free from distortion or defects detrimental to appearance and performance.

.5 Obtain Contract Administrator's written permission prior to field cutting or altering structural members.

.6 Paint aluminum surfaces in contact with concrete with two (2) coats of alkali-resistant bituminous paint. Bituminous Paint: to MPI (Master Paint Institute) EXT 5.5D, without thinner.

.7 Prevent electrolysis between aluminum and dissimilar metals in contact with appropriate isolation devices.

END OF SECTION

ROUGH CARPENTRY

1. GENERAL

1.1 Work Included

.1 Wood framing and related appurtenances.

.2 Wood treatment.

1.2 References

.1 CSA O80M - Wood Preservation.

.2 NLGA - Standard Grading Rules for Canadian Lumber.

.3 CSA O121M - Douglas Fir Plywood.

.4 CSA O141 - Softwood Lumber.

.5 CSA O151M - Canadian Softwood Plywood.

.6 All Reference Standards shall be the latest edition at the time of Contract award.

1.3 Quality Assurance

.1 Lumber grading agency: NLGA members accredited by the Canadian Lumber Standards Accreditation Board (CLSAB) and by the American Lumber Standard Committee, Incorporated (ALSC).

.2 Wood treatment: CSA O80M.

1.4 Delivery, Storage, and Handling

.1 Protect Products of this Section under waterproof coverings.

2. PRODUCTS

2.1 Materials

.1 Softwood lumber: CSA O141, S4S 19% (S-dry) maximum moisture content or less.

.2 Miscellaneous wood blocking around new door frames: pressure treated exterior lumber shall conform to CSA O80, Use Category UC3.1 utilizing:

.1 Colour: brown.

.3 Galvanizing for steel shapes: conforming to ASTM A 123/A 123M.

.4 Galvanizing for steel fasteners: conforming to ASTM A 153/A 153M unless noted otherwise on the Drawings.

2.2 Wood Treatment

.1 Wood preservative pressure treatment: CSA 080.2 using waterborne preservative with 0.30% retainage, manufactured by Wolman (BASF) or approved equal in accordance with B7.

3. EXECUTION

3.1 Site Applied Wood Treatment

.1 Apply preservative treatment in accordance with CSA 080.2 Manufacturer's instructions.

.2 Treat site-sawn ends.

.3 Allow preservative to cure prior to erecting members.

3.2 Installation

.1 Erect wood members level and plumb.

.2 Place miscellaneous blocking, furring, strapping, nailing strips, framing and sheathing where indicated on Drawings and as required for secure support of anchorage of other specified materials. Place members true to lines and levels. Secure rigidly in place.

.3 Utilize galvanized (hot-dip) fasteners in contact with pressure treated lumber unless noted otherwise on the Drawings.

END OF SECTION

1. GENERAL

1.1 Reference Standards

.1 ASTM International Inc.:

.1 ASTM C728, Standard Specification for Perlite Thermal Insulation Board.

.2 ASTM D41, Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.

.3 ASTM D312, Standard Specification for Asphalt Used in Roofing.

.4 ASTM D2178, Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.

.5 ASTM D6162, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fibre Reinforcements.

.6 ASTM D6163, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fibre Reinforcements.

.7 ASTM D6164, Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.

.8 ASTM D6222, Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcement.

.9 ASTM D6223, Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcement.

.10 ASTM D6509, Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcement.

.2 Canadian Roofing Contractors Association (CRCA):

.1 CRCA Roofing Specifications Manual.

.3 Canadian Standards Association (CSA International):

.1 CSA-A123.3, Asphalt Saturated Organic Roofing Felt.

.2 CSA-A123.4, Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems.

.4 Canadian Standards Association:

.1 CSA A123.21-14 Standard Test Method for the Dynamic Wind Uplift Resistance of Membrane-Roofing System.

.5 Health Canada / Workplace Hazardous Materials Information System (WHMIS):

.1 Material Safety Data Sheets (MSDS).

.6 Underwriters Laboratories' of Canada (ULC):

.1 CAN/ULC-S701, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

.2 CAN/ULC-S704-[03], Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.

1.2 Action and Informational Submittals

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

.2 Product Data:

.1 Provide one (1) electronic submittal of most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Provide Shop Drawings:

.1 Indicate tapered insulation, Extruded Polystyrene Insulation, and details.

.2 Provide layout for tapered insulation.

.4 Provide Manufacturer’s written declaration to Contract Administrator that materials and components, as assembled in system, meet the requirements of the Contract.

.5 Manufacturer's field report: submit in accordance with the following:

.1 Submit field report for each layer of the roofing system as noted below:

.1 Vapour Retarder.

.2 Installation of the tapered insulation and related adhesive.

.3 Installation of the rigid insulation and related adhesive.

.4 Installation of the Base Sheet Membrane.

.5 Installation of the Cap Sheet Membrane.

.6 Installation of the Base Sheet Membrane at the parapet.

.7 Installation of the Cap Sheet Membrane at the parapet.

.2 Reports: indicate procedures followed, ambient temperatures and wind velocity during application, material description of products used in the assembly. Report to include photos of the component used in the assembly.

.6 Submit Contractor's Hot Work Permit.

.7 Submit Installer's proof of qualifications in accordance with clause 1.4 of this Specification Section.

1.3 Quality Assurance

.1 Installer qualifications: company or person specializing in application of modified bituminous roofing systems approved by manufacturer with documented fifteen (15) experience.

1.4 Maintenance Data

.1 Provide operation and maintenance data for the roofing assembly into maintenance manual specified in Section 01 91 51 - Building Management Manual.

1.5 Hot Work Permits

.1 For application of the roofing assembly.

.2 Record start time for each Hot Work Permit.

.3 Complete Hot Work Permits in accordance with CSA-W117.2 including the following:

.1 Fire Watcher to be continuous for one (1) hour followed by half hour (30 minutes) spot checks for the next three (3) hours (total six (6) spot checks) before sign-off on the permit is completed.

1.6 Delivery, Storage and Handling

.1 Deliver, store, protect and handle materials in accordance with manufacturer's written instructions.

.2 Storage and Handling Requirements:

.1 Provide and maintain dry, off-ground weatherproof storage.

.2 Store rolls of felt and membrane in upright position. Store membrane rolls with salvage edge up.

.3 Remove only in quantities required for same day use.

.4 Place plywood runways over completed Work to enable movement of material and other traffic.

.5 Store sealants at +5°C minimum.

.6 Store insulation protected from weather and deleterious materials.

.3 Packaging Waste Management: remove for reuse and waste components in accordance with Section 02 41 99 - Demolition for Minor Works.

1.7 Site Conditions

.1 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system. Install roofing in accordance with the manufacturer's written instructions.

2. PRODUCTS

2.1 Performance Criteria

.1 Compatibility between components of roofing system is essential. Provide written declaration to Contract Administrator that materials and components, as assembled in system, meet the requirements of the Contract.

.2 Roofing System: to CSA A123.21 for wind uplift resistance.

2.2 Primer

.1 Primer for thermofusible membrane as recommended by the Vapour Retarder Sheet Manufacturer.

.2 Primer for self-adhesive membrane as recommended by the Vapour Retarder Sheet Manufacturer.

2.3 Vapour Retarder

.1 Base sheet vapour retarder: to CSA A123.23, Type B, Grade 3.

.1 Application: Torch on.

.2 Top surfaces: sanded.

.3 Bottom surfaces: polyethylene.

.4 Nominal thickness: 3.5 mm.

.2 Supply and install two (2) layers of Vapour Retarder to the Pre-cast substrate and existing parapet assembly.

.1 Stagger subsequent Vapour Retarder joints in both longitudinal and transverse directions from the first layer.

2.4 Membrane

.1 Base sheet:

.1 Type self-adhesive.

.2 Nominal thickness 2.5 mm.

.3 Type: A.

.4 Grade 3.

.5 Top and bottom surfaces:

.1 Thermofusible plastic film/Self-adhesive.

.6 Base sheet membrane properties: to CSA A123.23:

.1 Strain energy (MD/XD): 1/1 kN/m.

.2 Dimensional Stability: +/- 0.3%.

.2 Base Sheet for Flashings and Upstands:

.1 Type self-adhesive.

.2 Nominal thickness 3.0 mm.

.3 Type: C.

.4 Grade 3.

.5 Top and bottom surfaces:

.1 Thermofusible plastic film/Self-adhesive.

.6 Base sheet membrane properties: to CSA A123.23:

.1 Strain energy (MD/XD): 8/6.5 kN/m.

.2 Dimensional Stability: +/- 0.2%.

.3 Cap sheet membrane: Type thermofusible.

.1 Nominal thickness 4.0 mm.

.2 Type: C.

.3 Grade 1.

.4 Top and bottom surfaces:

.1 Granular/polyethylene.

.2 Granular colour: Gray.

.5 Cap sheet membrane properties: to CSA A123.23.

.1 Strain energy (min MD/XD): 7.3/6.5 kN/m.

.2 Dimensional Stability: less than 1.0.

.4 Supplementary Cap sheet membrane at Roof Walkway Area: Type fully adhered.

.1 Nominal thickness 4.0 mm.

.2 Type: C.

.3 Grade 1.

.4 Top and bottom surfaces:

.1 Granular/polyethylene.

.2 Granular colour: Gray.

.5 Cap sheet membrane properties: to CSA A123.23:

.1 Strain energy (min MD/XD): 7.3/6.5 kN/m.

.2 Dimensional Stability: less than 1.0.

.5 Membrane Termination Bar and Anchorage:

.1 Provide continuous A304 stainless steel termination bar at discontinuous ends of the base membrane, cap membrane and supplementary cap membrane.

.2 Mechanically fasten the stainless steel termination bar with stainless steel screw anchors into masonry or stone substrate.

2.5 Adhesive

.1 Adhesive for securing insulation: Purpose made.

2.6 Tapered Insulation (Polyisocyanurate Insulation)

.1 Polyisocyanurate insulation with inorganic facer in accordance with CAN/ULC-S704, Type 2, nominal thickness to suit slopes indicated on the Drawings.

.1 RSI value in accordance with CAN/ULC S770.

.2 Minimum vertical compressive strength in accordance with ASTM D1621: 138 kN/m^2.

2.7 Rigid Insulation (Polyisocyanurate Insulation)

.1 Polyisocyanurate insulation with inorganic facer in accordance with CAN/ULC-S704, Type 2, nominal thickness 51 mm.

.1 RSI value in accordance with CAN/ULC S770.

.2 Minimum vertical compressive strength in accordance with ASTM D1621: 138 kN/m^2.

2.8 Sealants

.1 Purpose made as recommended by membrane manufacturer.

3. EXECUTION

3.1 Quality of Work

.1 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual.

.2 Do priming in accordance with manufacturers written recommendations.

3.2 Examination of Roof Decks

.1 Verification of Conditions:

.1 Inspect pre-cast deck conditions including existing parapets, roof drains, plumbing vents and ventilation outlets to determine readiness to proceed.

.2 Evaluation and Assessment:

.1 Prior to beginning of Work ensure:

.1 Pre-cast components are smooth, dry, free of snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.

.2 Roof drains, roof anchors and roof hatches have been installed at proper elevations relative to finished roof surface. Roof completed assembly to drain water to the roof drains.

.3 Do not install roofing materials during rain or snowfall.

3.3 Protection of In-Place Conditions

.1 Cover walls and adjacent work where materials hoisted or used.

.2 Use warning signs and barriers. Maintain in good order until completion of Work.

.3 Clean off drips and smears of bituminous material immediately.

.4 Dispose of rain water off roof and away from face of building until roof drains or hoppers installed and connected.

.5 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.

3.4 Vapour Retarder

.1 Two (2) layers of modified bituminous vapour retarder sheet staggering joints between subsequent layers.

.2 Polyisocyanurate insulation: adhered, utilizing purpose made adhesive. Adhesive to be in accordance with the insulation manufacturer’s written instruction.

.3 Tapered insulation fully adhered, utilizing purpose made adhesive. Adhesive to be in accordance with the insulation manufacturer’s written instruction.

.4 Base sheet application:

.1 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and reroll from both ends.

.2 Unroll and torch base sheet onto base sheet taking care not to burn membrane or its reinforcement.

.3 Lap sheets 75 mm minimum for side laps and 150 mm minimum for end laps. Offset joints in cap sheet 300 mm minimum from those in base sheet.

.4 Application to be free of blisters, fishmouths and wrinkles.

.5 Do membrane application in accordance with manufacturer's recommendations.

.5 Cap sheet and supplementary Cap sheet membrane at Roof Walkway Area applications:

.1 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and reroll from both ends.

.2 Unroll and torch cap sheet onto base sheet taking care not to burn membrane or its reinforcement.

.3 Lap sheets 75 mm minimum for side laps and 150 mm minimum for end laps. Offset joints in cap sheet 300 mm minimum from those in base sheet.

.4 Application to be free of blisters, fishmouths and wrinkles.

.5 Do membrane application in accordance with manufacturer's recommendations.

.6 Flashings:

.1 Do work in accordance with Section 07 62 00 - Sheet Metal Flashing and Trim.

.7 Roof penetrations:

.1 Install roof drain pans, vent stack covers and other roof penetration flashings and seal to membrane in accordance with roof membrane manufacturer's recommendations and details.

3.5 Cleaning

.1 Remove bituminous markings from finished surfaces.

.2 In areas where finished surfaces are soiled caused by Work of this Section, consult manufacturer of surfaces for cleaning advice and complying with their written instructions.

.3 Repair or replace defaced or disfigured finishes caused by Work of this Section.

END OF SECTION

SHEET METAL FLASHING AND TRIM

1. GENERAL

1.1 References

.1 ASTM International (ASTM):

.1 ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy- Coated (Galvannealed) by the Hot-Dip Process.

.2 Canadian Roofing Contractors Association (CRCA):

.1 Roofing Specifications Manual.

1.2 Shop Drawings

.1 Submit Shop Drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Clearly indicate profiles, sizes, connections, attachments, reinforcing, bends to resist “oil canning”, anchorage, steel preparation, size and type of fasteners, hole sizes and accessories.

.3 Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation, and coordination of all parts of the Work rests with the Contractor.

.4 Samples:

.1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colours. Contract Administrator will provide the colour for each individual flashing area of the Tache Booster Pumping Station and Tache Surge Tower.

1.3 Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with manufacturer’s instructions.

2. PRODUCTS

2.1 Prefinished Steel Sheet

.1 Pre-finished galvanized flashing: ASTM A653; G90 zinc coating; minimum 0.46 mm thick (26 gauge) core steel; factory pre-finished with exposed face of material to be standard colour selection utilizing a WeatherXL coating or approved equal in accordance with B7. Non-exposed sides factory pre-finished in WeatherXL coating or approved equal in accordance with B7.

2.2 Accessories

.1 Isolation coating: alkali resistant bituminous paint.

.2 Plastic cement: to manufacturer’s recommendations.

.3 Underlay for metal flashing: to ASTM D4586.

.4 Sealants: in accordance with Section 07 92 00 - Joint Sealants.

.5 Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.

.6 Fasteners: of same material as sheet metal, purpose made.

.7 Washers: of same material as sheet metal, 1 mm thick with rubber packings.

.8 Touch-up paint: as recommended by prefinished material manufacturer.

2.3 Fabrication

.1 Fabricate metal flashings and other sheet metal work as indicated.

.2 Minimize joints were possible, however form pieces in 2400 mm maximum lengths.

.1 Make allowance for expansion at joints.

.3 Hem exposed edges on underside 12 mm.

.1 Mitre and seal corners with sealant.

.4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.1 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

.5 When the face exceeds 250 mm, fabricate flashings in two pieces or use stiffening ribs, v-groove, or cross break to avoid “oil canning”.

3. EXECUTION

3.1 Manufacturer's Instructions

.1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 Installation

.1 Install flashings in accordance with CRCA recommendations and as indicated on Drawings Use concealed fastenings except where approved before installation.

.2 Provide underlay under sheet metal.

.1 Secure in place and lap joints 100 mm.

.3 Joints using S-lock forming tight fit over hook strips.

.4 Lock end joints and caulk with sealant making them watertight.

.5 Counter-flash all mechanical and electrical items projecting through building elements.

3.3 Cleaning

.1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.2 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

JOINT SEALANTS

1. GENERAL

1.1 Work Included

.1 Supply and installation of all sealant and backing materials at concrete substrate.

.2 Supply and installation of all sealant and backing materials at new person door and frame for interior and exterior surfaces.

1.2 Quality Assurance and Regulatory Requirements

.1 Installation of sealant work shall be carried out by a recognized specialized applicator having skilled mechanics, thoroughly trained and competent in all phases of sealant work, with at least five (5) years experience.

1.3 Environmental Conditions

.1 Sealant and substrate materials to be minimum 5°C.

.2 Should it become necessary to apply sealants below 5°C, consult sealant Manufacturer and follow their recommendations.

1.4 Submittals

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

.2 Submit sealant colour samples.

.3 Submit proof of qualifications in accordance with clause 1.2 of this Specification Section.

1.5 Maintenance Data

.1 Provide operation and maintenance data for incorporation into maintenance manual specified in Section 01 91 51 - Operation and Maintenance Manual.

2. PRODUCTS

2.1 Materials

.1 Primers: type recommended by sealant manufacturer.

.2 Joint Fillers:

.1 General: compatible with primers and sealants, outsized 30 to 50%.

.2 Polyethylene, urethane, neoprene or vinyl: extruded closed cell foam, Shore A hardness 20, tensile strength 140 to 200 kPa.

.3 Bond Beaker: pressure sensitive plastic tape, which will not bond to sealants.

.4 Joint Cleaner: non-corrosive type recommended by sealant manufacturer and compatible with sealant.

.5 Sealants – Exterior:

.1 Dow Corning 790 Silicone Building Sealant or approved equal in accordance with B7, colours to be selected by Contract Administrator to match substrate colour. Colours are to be chosen from the manufacture's standard colours.

.1 Mock-ups: Provide the Contract Administrator with on-site, field installed mock-up of the available standard colours for Tache Booster Pumping Station and Tache Surge Tower.

.1 Provide a minimum of three (3) colour mock-ups at each substrate type for each of the Tache Booster Pumping Station and Tache Surge Tower.

.2 Record the mock-up colours for the various areas at each of the Tache Booster Pumping Station and Tache Surge Tower.

.3 Removal and replace all mock-ups once the various standard colours are chosen for both the Tache Booster Pumping Station and Tache Surge Tower in order to provide a consistent, monolithic, hand tooled final appearance.

.6 Sealants – Interior Dry Areas (non fire rated):

.1 DAP Alex Plus Acrylic Latex Caulk Plus Silicone (paintable) or approved equal in accordance with B7.

3. EXECUTION

3.1 Preparation

.1 Remove dust, paint, loose mortar and other foreign matter. Dry joint surfaces.

.2 Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.

.3 Remove oil, grease, and other coatings from nonferrous metals with joint cleaner.

.4 Prepare concrete, glazed, and vitreous surfaces to sealant Manufacturer's instructions.

.5 Examine sealant joint sizes and correct to achieve depth ratio 1/2 of joint width with minimum width and depth of 6 mm, maximum width 25 mm.

.6 Install joint filler to achieve correct joint depth.

.7 Where necessary to prevent staining, mask adjacent surfaces prior to priming and sealant.

.8 Apply bond breaker tape where required to Manufacturer's instructions.

.9 Prime sides of joints in accordance with sealant Manufacturer's instructions immediately prior to application of sealant.

3.2 Application

.1 Apply sealants, primers, joint fillers, bond breakers, to Manufacturer's instructions. Apply sealant using gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.

.2 Apply sealant to joints between access frames to adjacent building components, around perimeter of every external opening, to control joints in concrete slabs.

.3 Hand tool all sealant.

END OF SECTION

METAL DOORS AND FRAMES

1. GENERAL

1.1 Design Requirements

.1 Design the exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -40°C to 35°C.

.2 Install Work to CSDMA (Canadian Steel Door Manufacturers' Association) Installation Guide.

1.2 Quality Assurance

.1 Source Limitations: Obtain doors and frames through one source from a single manufacturer.

1.3 Submittals

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

.2 Indicate each type of door and frame, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, and arrangement of hardware.

.3 Include schedule identifying each unit, with door marks and numbers relating to the numbering on the Drawings.

1.4 Maintenance Data

.1 Provide operation and maintenance data for incorporation into maintenance manual specified in Section 01 91 51 - Operating and Maintenance Manual.

1.5 Delivery, Storage, and Handling

.1 Brace and protect doors and frames to prevent distortion during shipment. Store in a secure dry location.

.2 Store doors vertically, resting on planks, with blocking between to allow air to circulate.

2. PRODUCTS

2.1 Materials

.1 Metallic Coated Sheet Steel: ASTM A568M Class 1 Commercial grade steel, hot dip galvanized to ASTM A 653/A653M Z275 zinc coated (Galvanized).

.2 Minimum Core Thickness, Without Coating: Metallic Coated Sheet Steel:

.1 Exterior Door Frames, welded type, thermally Broken: 1.6 mm (16 gauge) size to fit into existing openings.

.2 Exterior doors:

.1 Welded stiffener construction.

.2 Face sheets: 1.6 mm (16 gauge).

.3 Vertical Stiffeners, 1.6 mm (16 gauge).

.4 Infill voids with batt insulation.

.3 Lock and Strike Reinforcements: 1.6 mm (16 gauge).

.4 Hinge and Pivot Reinforcements: 2.66 mm thick by minimum 38 mm wide x minimum 150 mm longer than hinge and pivot, secured by not less than 6 spot welds.

.5 Reinforcements for Closer, Holder and other surface applied hardware: 1.21 mm (18 gauge).

.6 Top and Bottom End Channels: and Caps: 1.21 mm (18 gauge).

.7 Steel top caps: 0.91 mm (20 gauge).

.8 Mortar Guard Boxes: 0.759 mm (22 gauge).

.9 Floor Anchors: 1.51 mm (16 gauge).

.10 Jamb Spreaders: 0.91 mm (20 gauge).

.3 Frame Anchors:

.1 Existing wall style to suit installation to existing masonry wall through the new longitudinal wood blocking at the Tache Booster Pumping Station.

.4 Adhesives for Steel Components: Heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.

.5 Touch-up galvanizing with minimum two (2) coats of zinc rich primer.

.6 Door Silencers: Single stud rubber or neoprene.

.7 Filler: Metallic paste, Manufacturer's standard.

.8 Exterior Door Frame Insulation: closed-cell foam with water-resistant outer skin when cured, Great Stuff as manufactured by Dow Chemical or approved equal in accordance with B7. Utilize Great Stuff unless otherwise required to maintain specified fire and smoke rating.

.9 At each longitudinal door side from existing concrete level to roof soffit for the Tache Booster Pumping Station supply and install ‘U’ shaped sheet metal closure from existing brick veneer to new door frame for both the exterior and interior areas utilizing:

.1 Metallic Coated Sheet Steel: ASTM A568M Class 1 Commercial grade steel, hot dip galvanized to ASTM A 653/A653M Z275 zinc coated (Galvanized).

.2 Sheets: 1.6 mm (16 gauge).

.3 Site confirm dimensions.

2.2 Fabrication – General

.1 Fabricate Work in accordance with CSDMA specifications.

.2 Blank, reinforce, drill and tap units for mortised, templated hardware, and electronic hardware using templates provided by the hardware suppliers. Reinforce units for surface mounted hardware.

.3 Do welding to CSA W59, Welded Steel Construction.

.4 Apply, at factory, touch-up primer to doors and frames where coating has been removed during fabrication.

.5 Make provisions in doors and frames to suit requirements of Section 08 71 00 - Door Hardware.

.6 Site confirm existing door frame size and door slab size. Match existing sizes minus nominal tolerances to achieve installation in an existing opening.

2.3 Fabrication – Frames

.1 Fabricate frames to profiles and maximum face sizes as required to suit design and are to be of welded construction.

.2 Punch or saw-mitered at the Manufacturer’s discretion. All profile welded frame product exposed faces shall be filled and ground to a smooth, uniform seamless surface.

.3 Protect mortised cut-outs with mortar guard boxes in masonry. Conceal fastenings except where exposed fastenings are required. Supply and Install appropriate anchorage to floor and wall construction.

.4 Supply and install jamb anchors for fixing at floor.

.5 Supply and install three door silencers on strike jamb for each single door, and two bumpers at head of frame for each door leaf in double doors.

2.4 Fabrication – Doors

.1 Longitudinal edges shall be tack welded at top and bottom of door, above and below each edge cut out and at 150 mm on centre, filled and sanded flush.

.2 Vertical steel stiffeners shall be securely welded to each face sheet at 150 mm on centre maximum.

.3 Provide top and bottom of doors with inverted, recessed, welded steel channels.

.4 Provide exterior doors with flush PVC top caps.

3. EXECUTION

3.1 Installation – General

.1 Install Work to CSDMA (Canadian Steel Door Manufacturers Association) Guide Specification for Installation and Storage of Hollow Metal Doors and Frames.

.2 Touch-up with primer galvanized finish damaged during installation.

.3 Apply touch-up primer to doors and frames where coating has been damaged.

3.2 Installation – Frames

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent existing and new wall infill construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings exceeding 1200 mm in width.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Apply insulation to fill voids in exterior frame assemblies.

.6 Secure ‘U’ shaped sheet metal closure from existing brick veneer to new door frame for both the exterior and interior areas utilizing stainless steel pan head screws.

3.3 Installation – Doors

.1 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows:

.1 Hinge side: 3 mm.

.2 Latchside and head: 3 mm.

.3 Finished floor for non-rated assemblies: 12 mm, unless otherwise indicated.

.2 Adjust operable parts for correct function.

3.4 Cleaning

.1 Clean and make good all surfaces soiled or otherwise damaged in connection with Work. Upon completion of Work and remove debris, equipment and excess material from Site.

END OF SECTION

FIBERGLASS DOORS

1. GENERAL

1.1 Reference Standards

.1 The latest edition of all Reference Standards shall be the latest edition at the time of Contract award.

.2 ASTM International Inc.:

.1 ASTM D523 Standard Test Methods for Specular Gloss.

.2 ASTM D635, Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.

.3 ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials.

1.2 Design Requirements

.1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -40°C to 35°C.

1.3 Quality Assurance

.1 Source Limitations: Obtain doors and frames through one source from a single manufacturer.

1.4 Submittals

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

.2 Indicate each type of door and frame, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, and arrangement of hardware.

.3 Include schedule identifying each unit, with door marks and numbers relating to the numbering on the Drawings.

1.5 Maintenance Data

.1 Provide operation and maintenance data for door hardware for incorporation into maintenance manual specified in Section 01 91 51 - Operation and Maintenance Manual.

1.6 Delivery, Storage, and Handling

.1 Packing, Shipping, Handling and Unloading: Package door opening assemblies in manufacturer's standard containers.

.2 Store door assemblies in manufacturer's standard containers, on end, to prevent damage to face corners and edges.

2. PRODUCTS

2.1 Materials

.1 Fiberglass Mat: Minimum 0.45 kg/sq.m.

.1 Fire performance: Maximum flame spread 25 in accordance with ASTM E84, self-extinguishing in accordance with ASTM D 635.

.2 Resins: Manufacturer's formulation for fabricating units to meet specified requirements.

.3 Anchors: Manufacturer's standard stainless steel expansion anchors for existing openings, and stainless steel masonry tee anchors for new construction.

.4 Fasteners: Stainless steel.

2.2 Fabrication – General

.1 Make provision and reinforce doors and frames for mortised hardware. Reinforce doors and frames for surface mounted hardware.

.2 Doors:

.1 Minimum glass fiber to resin ratio: 30%.

.2 Mortise for lockset, and recess for strike plate in lock stile.

.3 Embed steel reinforcement in fiberglass matrix; provide for hinge leaf recesses in hinge stile.

.3 Frames:

.1 Mortise for lock strike, and recess for strike plate in lock jamb.

.2 Reinforce for hinges and other indicated hardware.

.3 Frame anchors: Types recommended by manufacturer for securement to the existing brick veneer.

.4 Make provisions in doors and frames to suit requirements of Section 08 71 00 - Door Hardware.

2.3 Fabrication – Non-Rated Assemblies

.1 Doors:

.1 Thickness: 45 mm.

.2 Thermal insulating value: RSI 1.9.

.3 Core: End grain balsa wood, resin-impregnated.

.4 Door faces: Moulded in one continuous piece, resin reinforced with hand-laid glass fiber mat, nominal 3 mm thick, minimum 0.4 mm gel-coated surface.

.5 Door edges: Minimum three layers resin-reinforced glass fiber mat, nominal 10 mm thick, machine tooled.

.6 Finish: Smooth gloss surface, minimum value 88 in accordance with ASTM D 523. Colour to manufacturer's standard offering.

.2 Frames:

.1 One-piece pultruded fiberglass reinforced plastic, minimum 6 mm wall thickness, jamb-to-head joints mitered and reinforced with fiberglass reinforced plastic clips and stainless steel fasteners; performance equivalent to 1.6 mm thick steel frames.

.2 Finish: Satin finish, with true and consistent color throughout frame thickness. Color to match door face.

3. EXECUTION

3.1 Examination

.1 Verify openings are correctly sized and prepared to receive work of this Section.

3.2 Installation - General

.1 Install work in accordance with reviewed Shop Drawings, and manufacturer's printed installation instructions, using installation methods and materials specified in installation instructions.

.2 Install door hardware in accordance with manufacturer's printed instructions, using through-bolts to secure surface applied hardware.

.3 Site tolerances: Maintain plumb and level tolerances specified in manufacturer's printed installation instructions.

3.3 Installation - Frames

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent existing and new wall infill construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings exceeding 1200 mm in width.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Apply insulation to fill voids in exterior frame assemblies.

.6 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.7 Site confirm existing door frame size and door slab size. Match existing sizes minus nominal tolerances to achieve installation in an existing opening.

3.4 Installation – Doors

.1 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows:

.1 Hinge side: 3 mm.

.2 Latchside and head: 3 mm.

.3 Finished floor for non-rated assemblies: 12 mm.

3.5 Installation – Doors

.1 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows:

.1 Hinge side: 3 mm.

.2 Latchside and head: 3 mm.

.3 Finished floor for non-rated assemblies: 12 mm, unless otherwise indicated.

.2 Adjust operable parts for correct function.

3.6 Cleaning

.1 Clean and make good all surfaces soiled or otherwise damaged in connection with Work. Upon completion of Work and remove debris, equipment and excess material from Site.

END OF SECTION

ALUMINUM WINDOWS

1. GENERAL

1.1 Reference

.1 All Reference Standards shall be the latest edition at the time of Contract award.

.2 CAN/CSA-A440 Windows.

.3 Galvanizing for steel shapes: conforming to ASTM A 123/A 123M.

.4 Galvanizing for steel fasteners: conforming to ASTM A 153/A 153M.

1.2 Submittals

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

.2 Submit Shop Drawings, test reports, performance requirements and installer experience level.

.3 Indicate materials and details in scale full size for head, jamb, sill, and profiles of components, elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes, fasteners and sealant. Indicate location of Manufacturer's nameplates.

1.3 Test Reports

.1 Submit test reports from approved independent testing laboratories, certifying compliance with Specifications, for:

.1 Windows.

.2 Anodized finish.

.3 Air tightness.

.4 Water tightness.

.5 Wind load resistance.

.6 Condensation resistance.

1.4 Performance Requirements

.1 Submit test reports from approved independent testing laboratories, certifying compliance with Specifications, for:

.1 Fixed Window:

.1 Air tightness: Fixed.

.2 Water tightness: B7.

.3 Wind load resistance: C5.

.4 Condensation resistance: Temperature Index, I=58 minimum.

.5 Forced entry: F10.

1.5 Maintenance Data

.1 Provide operation and maintenance data for incorporation into maintenance manual specified in Section 01 91 51 - Operation and Maintenance Manual.

2. PRODUCTS

2.1 Materials

.1 Materials: to CAN/CSA-A440 supplemented as follows.

.1 All windows by same manufacturer.

.2 Exterior Main Frame:

.1 Aluminum thermally broken, head, jambs, sill: 1990 Series FeatureLine, Rain Screen Design with 130 mm depth by Alumicor Limited or approved equal as per B7. Extruded aluminum alloy: 6063-T6.

.2 Isolation coating: alkali resistant bituminous paint.

.3 Fasteners: Non-magnetic, stain and corrosion resistant stainless steel to ASTM E-149.

.4 Exterior glass protection: 6 mm nominal thickness, UV resistant, solid, clear polycarbonate plastic (Lexan) secured to the exterior of the window frame with stainless steel screws and washers. Provide 12 mm high open vent space at the bottom of the inside window frame dimension. Oversize the screw holes to allow for expansion and contraction of the clear polycarbonate sheet.

2.2 Window Type and Classification

.1 Exterior Type:

.1 Fixed: with removable dual glazing insulating glass.

.2 Glazing components to be removable without the use of specialty tools.

2.3 Fabrication

.1 Fabricate in accordance with CAN/CSA-A440 supplemented as follows.

.1 Face dimensions detailed are maximum permissible sizes.

.2 Brace frames to maintain squareness and rigidity during shipment and installation.

.3 Finish clips and reinforcement to frame Manufacturers' written recommendation.

2.4 Aluminum Finishes

.1 Exterior exposed aluminum surfaces: To AAMA 2604, 2-coat, thermal setting enamel consisting of primer and topcoat, 0.03 mm (1.2 mil) minimum total thickness. Colour: custom colour as directed by the Contract Administrator.

.1 Acceptable material; PPG Industries Inc., Duranar or approved equal in accordance with B7.

.2 Interior exposed aluminum surfaces: To AA DAF-45-M12C22A31, Architectural Class II, clear anodized 10 µm (0.0004 inches) minimum thickness.

.1 Acceptable material: Alumicor Ltd. or approved equal in accordance with B7, Class II Anodic Finish.

2.5 Isolation Coating

.1 Isolate aluminum from following components, by means of isolation coating:

.1 Dissimilar metals except stainless steel, zinc or white bronze of small area.

.2 Concrete, mortar and masonry.

.3 Wood.

2.6 Foam Insulation

.1 Spray Foam Insulation: closed-cell foam with water-resistant outer skin when cured, Great Stuff as manufactured by Dow Chemical or approved equal in accordance with B7. Low expansion for windows.

3. EXECUTION

3.1 Window Installation

.1 Install in accordance with CAN/CSA-A440.

.2 Window installers to have a minimum five (5) years experience in this type of Work.

.3 Arrange components to prevent abrupt variation in colour.

3.2 Sill Installation

.1 Install metal sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Use one piece lengths at punched window locations.

.2 Cut sills to fit window opening.

.3 Secure sills in place with anchoring devices located at end joints of continuous sills and evenly spaced 600 mm on centre in between.

3.3 Foam Installation

.1 Install foam insulation between building elements and window frame. Ensure foam insulation fills void but does not damage window frame components.

3.4 Sealant

.1 Seal joints between windows and window sills with sealant. Bed sill cover plates and drip deflectors in bedding compound. Seal between sill upstand and window-frame.

END OF SECTION

DOOR HARDWARE

1. GENERAL

1.1 Quality Assurance

.1 Furnish services of a Door and Hardware Institute Certified Consultant for preparation of hardware Shop Drawings, keying, and coordination with other Sections.

.2 Inspect all hardware after installation by the Manufacturer's Representative who shall certify in writing to the City, that all hardware has been supplied and installed in accordance with the Specifications and reviewed Shop Drawings and are functioning properly.

.3 Provide to applicable Sections templates and information required for proper preparation and application of hardware in ample time to facilitate progress of Work.

.4 Before supplying and installing any hardware, carefully check Hardware Schedule, Drawings and Specifications. Verify door hands, door and frame material and operating conditions, and assure that hardware will fit work to which it is to be attached. Advise the Contract Administrator in writing of required revisions.

.5 Templates: Check Hardware Schedule, Drawings and Specifications, and Supply promptly to applicable Sections any templates, template information and Manufacturer's literature, required for proper preparation for hardware, in ample time to facilitate progress of Work.

.6 Provide services of competent mechanics for the installation of hardware. Make adjustments necessary to leave hardware in perfect working order. Provide written summary of Work completed and status of all items, including any adjustments, revisions or modifications.

.7 Source Limitations: Obtain each type of product from a single Manufacturer.

1.2 Regulatory Requirements

.1 All door hardware shall be supplied and installed to in accordance with the latest addition of CSA B651-Accessibe Design for the Built Environment.

1.3 Shop Drawings, Submittals

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

1.4 Maintenance Data

.1 Provide operation and maintenance data for incorporation into maintenance manual specified in Section 01 91 51 - Operation and Maintenance Manual.

2. PRODUCTS

2.1 Materials

.1 Metal Finishes: Free from defects, clean and unstained, and of uniform colour.

.2 Fasteners: Screws, bolts, expansion shields and other fastening devices as required for satisfactory installation and operating of hardware.

.3 Same finish as hardware to which it is to be fastened.

.4 Supply hardware complete with all necessary screws, bolts and other fastening of suitable size and type to anchor the hardware in position neatly and properly in accordance with the best practices and to the Contract Administrator's approval.

.5 Fastenings: All fastenings shall harmonize with the hardware materials and finishes.

.6 Hinges:

.1 All Doors: Full mortised, stainless steel, standard weight, 3 knuckles, concealed ball bearing, stainless steel screws.

.2 Stamp hinge catalogue numbers on face of leaf of each hinge at factory to enable easy recognition of hinge material and manufacture after doors are hung.

.3 Where doors are required to swing to 180 degrees, Supply and Install hinges of sufficient throw to clear trim.

.7 Locksets:

.1 Backset: shall be 70 mm for interior doors.

.2 Cylinders, keys will be supplied by the City for the following door locations:

.1 Exterior doors.

.3 Strikes: Stainless Steel, ANSI standard size with curved lip strikes for latch bolts and no lip strikes for dead locks. Provide complete with wrought boxes finished to match strike.

.8 Closers:

.1 Hydraulically controlled and full rack and pinion operation, clear anodized aluminum arm and full cover.

.2 Adjustable closing speed, latch speed and back check control.

.3 Adjustable swing power.

.4 Install all necessary attaching brackets, mounting channels, cover plates where necessary for correct application of door closers.

.9 Construction Keying:

.1 Equip lock cylinders in construction system.

.2 Provide four (4) keys for each construction key cylinder for City Operations Staff usage.

.3 The construction key system to be inoperative once the City's keys are inserted in the cylinders.

2.2 Keying System

.1 The City will pay for the final Keying. Coordinate final keying with the Contract Administrator.

3. EXECUTION

3.1 Preparation

.1 Trim undesignated openings with hardware of equal quality and design to that specified for similar opening.

.2 Furnish door and frame Manufacturers with complete instructions and templates for preparation of their Work to receive hardware.

3.2 Installation

.1 Install finish hardware to template in accordance with Manufacturer's written instructions. Do not modify finish hardware without Manufacturer's written approval.

.2 Install finish hardware secure, plumb, level, and true to line.

.3 Cut and fit to substrates avoiding damage and weakening. Reinforce attachment substrate as necessary for proper installation and operation.

.4 Size cut-outs so that hardware item completely covers cut-out.

.5 Mortise work to correct location and size without gouging, splintering, and causing irregularities in exposed finish work.

.6 Where cutting and fitting is required on substrates to be painted or similarly finished, install, fit, and adjust hardware prior to finishing.

.7 Remove hardware and place in original packaging.

.8 Re-install hardware after finishing operation is complete.

.9 Set, fit and adjust hardware according to Manufacturer's templates and instructions. Hardware shall operate freely. Protect installed hardware from damage and paint spotting.

.10 Pre-drill kickplates and doors before attachment of plates. Apply with water resistant adhesive and countersunk stainless steel screws.

.11 The following dimensions are only to be used as a general guide in the placement of hardware. Where special items are concerned, or uncertainty exists, check with the Contract Administrator before fitting. Dimensions indicated are from finish floor to centre line of item, except as noted.

.1 Panic set, single dead bolts locks shall be between 900 mm to 1100 mm.

.12 After installation of hardware under this Section, check opening units for correct fit and uniformity of space around perimeter of units, or between units. Provide smoothly operating opening units free from binding.

3.3 Adjustments and Cleaning

.1 Adjust and clean hardware according to Manufacturer's written instructions.

.2 Continued Maintenance Service: Approximately six (6) months after the date of Final Completion, the installer, accompanied by hardware Manufacturer's Representative, shall return to the Work and re-adjust every item of hardware to restore proper function of doors and finish hardware. Clean and lubricate operational items wherever required.

.1 Coordinate on-site hardware adjustment meeting with the Contract Administrator.

3.4 Hardware Schedule

.1 Tache Booster Pumping Station front entrance (exterior door): non-Fire Rated; provided listed items or approved equal in accordance with B7:

Description	Manufacturers Name	Model	Finish
3 Butt Hinges	Stanley	CB 1960R NRP	US32D
Exit Device	Von Duprin	9875NL	US26D
Lever/Trim	Von Duprin	VR914M-NL	US32D
Closer	LCN	4040XP-3049 Hold Open	US26D
1 Kickplate	-	250 high x 50 less door width (interior face)	US32D
1 Threshold	Draftseal	DS501TBA	AL
Weatherstrip	Zero International	326AA	AL
1 Sweep (interior face)	Zero International	339AA	AL
1 Sweep (exterior face)	Zero International	8198AA	AL
Hold Open	Glynn-Johnson	90H – Hold Open	US26D

.2 Tache Booster Pumping Station interior vestibule door (door to remain): non-Fire Rated; provided listed items or approved equal in accordance with B7:

Description	Manufacturers Name	Model	Finish
3 Butt Hinges	Stanley	CB 1960R	US32D
Passage Set	Schlage	A10S ORB	US26D

.3 Tache Surge Tower (near grade elevation) entrance: non-Fire Rated; provided listed items or approved equal in accordance with B7.

Description	Manufacturers Name	Model	Finish
3 Butt Hinges	Stanley	CB 1960R, Dark Bronze, NRP	Bronze
Lever/Trim	Standard Metal	H411 SS – Satin Bronze, Oxidized and Oil Rubbed	10B
Deadbolt	Sargent	485 Series – Dark Anodized Satin Bronze	10B
Closer	LCN	4040XP-3049 Hold Open	US26D
1 Threshold	Zero International	265 B-ORB, Aluminum Oil Rubbed Bronze	AL; US10B
Weatherstrip (interior face)	Zero International	326, B-ORB, Aluminum Oil Rubbed Bronze	AL; US10B
1 Sweep (exterior face)	Zero International	329, B-ORB, Aluminum Oil Rubbed Bronze	AL; US10B

END OF SECTION

GLAZING

1. GENERAL

1.1 Design Requirements

.1 Hermetically sealed unit for new door.

.2 Hermetically sealed unit for new exterior window.

.3 Pre-manufacture glass blocks.

1.2 Quality Assurance

.1 Perform Work in accordance with FGMA Glazing Manual IGMAC and Laminators Safety Glass Association - Standards Manual for glazing installation methods.

1.3 Submittals

.1 Submit Shop Drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit samples of the pre-manufacture glass blocks in accordance with Section 01 33 00 - Submittal Procedures.

2. PRODUCTS

2.1 References

.1 ANSI/ASTM E330 Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

.2 ASTM C542 Specification for Lock-Strip Gaskets.

.3 ASTM D790 Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

.4 ASTM D2240 Test Method for Rubber Property - Durometer Hardness.

.5 ASTM E84 Test Method for Surface Burning Characteristics of Building Materials.

.6 CAN/CGSB-12.1 Tempered or Laminated Safety Glass.

.7 CAN/CGSB-12.11-M - Wired Safety Glass.

.8 CAN/CGSB-12.3 Flat, Clear Float Glass.

.9 CAN/CGSB-12.4 Heat Absorbing Glass.

.10 CAN/CGSB-12.8 Insulating Glass Units.

.11 CAN/CGSB-12.10 Glass, Light and Heat Reflecting.

.12 Flat Glass Manufacturers Association (FGMA) Glazing Manual.

.13 Laminators Safety Glass Association Standards Manual.

.14 CAN/CGSB-19.13 Sealing Compound, One Component, Elastomeric Base, Chemical Curing.

.15 CAN/CGSB-19.21 Sealing and Bedding Compound Acoustical.

.16 CAN/CGSB-19.24 Sealing Compound, Multi-Component, Chemical Curing.

2.2 Performance Requirements

.1 Provide continuity of building enclosure vapour and air barrier using glass and glazing materials as follows:

.1 Size glass to withstand wind loads, dead loads and positive and negative live loads.

.2 Limit glass deflection to flexural limit of glass but not over 1/200 with full recovery of glazing materials.

2.3 Environmental Requirements

.1 Install glazing when ambient temperature is 10°C minimum. Maintain ventilated environment for twenty-four (24) hours after application.

.2 Maintain minimum ambient temperature before, during and twenty-four (24) hours after installation of glazing compounds.

2.4 Glass Materials

.1 Clear Glass: Float glass, annealed to CAN/CGSB-12.3M, glazing quality.

.2 Sealed insulated units: to CAN/CGSB-12.8.

.3 Tempered Glass: Clear, fully tempered: to CAN/CGSB-12.1M.

.1 Appearance: Must be tint-free, optically clear fire rated glazing.

.4 Glass blocks: purpose made, closely matching the Tache Booster Pumping Station glass blocks to remain.

.1 Contract Administrator will determine if the glass block samples match the existing glass blocks to remain.

2.5 Hermetically Sealed Window Units

.1 Fixed and Operable Window: Insulating Glass Units to CAN/CGSB-12.8M, double pane, 6 mm outer pane of clear tempered glass; 6 mm inner pane of annealed glass with low “E” coating on third surface from outside, soft or sputter coated, argon filled space; complete with architectural profile edge tech – super spacer of 13 mm for all exterior windows.

2.6 Glazing and Sealing Compound Materials

.1 Sealant compound: one (1) component acrylic base, to CGSB 19-GP-5M, gun grade. If sealant is exposed to view, provide sealant colour closely matching supporting base substrate colour.

.2 Setting blocks: neoprene, Shore “A” durometer hardness 70-90, sized to suit Manufacturer’s specifications.

.3 Tremco 3 mm polyshim tape.

.4 Spacer shims: neoprene. Shore durometer hardness 50, 75 mm long x 24 mm thick.

.5 Primer-sealers and cleaners: to glass Manufacturers recommendations.

.1 Glazing splines: resilient polyvinyl chloride silicone, extruded shape to suit glazing channel retaining slot, black colour.

.2 Lock-strip gaskets: to ASTM C542.

3. EXECUTION

3.1 Examination

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.2 Preparation

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.3 Workmanship

.1 Remove protective coatings and clean contact surfaces with solvent and wipe dry.

.2 Apply primer-sealer to contact surfaces.

.3 Place setting blocks as per Manufacturer’s instructions.

.4 Install glass, rest on setting blocks, push against tape or compound with sufficient pressure to ensure full contact and adhesion at perimeter.

.5 Install removable stops, avoiding displacement of tape or sealant, exert pressure for full continuous contact.

.6 Provide edge clearance of 3 mm minimum except where indicated otherwise.

.7 Insert spacer shims to centre glass in space. Place shims at 300 mm on centre and keep 6 mm below sight line.

.8 Apply cap bead of sealant at exterior void.

.9 Apply sealant to uniform and level line, flush with sightline and tooled or wiped with solvent to smooth appearance.

.10 Do not cut or abrade tempered, heat treated or coated glass.

3.4 Exterior Glazing

.1 Combination method - tape/sealant:

.1 Cut glazing tape to proper length and set against permanent stops, 5 mm below sightline. Install horizontal strips first; extend over entire width of opening before applying vertical strips. Weld corners together by butting tape and dabbing with sealant.

.2 Fill gap between glass and applied stop with specified sealant to depth equal to bit of frame on glass but no more than 3 mm below sightline.

.2 Pre-manufactured Glass Blocks:

.1 Set glass blocks with purpose made grouting components. Grouting components colour to closely match surrounding existing grouting components to remain. Grouting component are to be purpose made for exterior usage.

3.5 Finishing

.1 Immediately remove sealant and compound dropping from finished surfaces. Remove labels after Work is completed.

3.6 Cleaning

.1 Remove glazing materials from finish surfaces.

.2 Remove labels after Work is complete.

.3 Clean glass.

END OF SECTION

PAINTING

1. GENERAL

1.1 Summary

.1 Finish painting defined under this Section is to specify the general requirements of the Work and is applicable to items not covered under other Sections of this Specification.

1.2 Quality Assurance/Submittals

.1 Submit samples and applicator experience in accordance with Section 01 33 00 - Submittal Procedures.

.2 Perform painting Work by applicator with minimum five (5) years of proven, satisfactory and successful painting experience on projects of similar size and nature. Provide qualified crew of painters and full time review of Work by qualified supervisor for duration of Work.

.3 Submit in writing list of proposed materials, for approval at least six (6) weeks before materials are required. The list shall contain the following for records:

.1 Manufacturer's product number, Master Paint Institute (MPI) Product Index Number and application instructions.

.2 Finish formula.

.3 Product type.

.4 Colour number.

.5 Maximum VOC classification.

.6 Ecologo certification where applicable.

.4 Samples: Submit at least four (4) weeks prior to painting Work commencing at the Site, two (2) identified (with Project Name, the finish, colour name and number, sheen and gloss values) samples of the following:

.1 Each colour in each finish coat material on minimum 150 mm x 300 mm coated stock card.

1.3 Environmental Requirements

.1 Comply with requirements of WHMIS regarding use, handling, storage, and disposal of hazardous materials; and material safety data sheets acceptable to Ministry of Labour.

.2 Ventilate area of Work by use of portable supply and exhaust fans. Provide continuous ventilation during and after application of paint. Run ventilation system twenty-four (24) hours per day during installation; provide continuous ventilation for seven (7) days after completion of application of paint. Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within the Manufacturer’s recommendations. Substrate and ambient temperature shall be within limits prescribed by the Manufacturer.

.3 Provide heating to maintain minimum temperatures recommended by the Manufacturers.

.4 Apply paint finish only in areas where dust is no longer being generated by related construction operations such that airborne particles will not affect the quality of the finished surface. Apply paint only when surface to be painted is dry, properly cured and adequately prepared.

.5 Protect floors by means of tarpaulins and metal pans.

1.4 Painting and Finishing Work Standards

.1 The best practices specified or recommended in MPI Architectural Painting Specification Manual are to govern for painting methods and procedures, unless specified otherwise in this Section.

1.5 Colour Selections

.1 Provide one (1) different top coat colour for each exterior (interior surfaces will match the exterior paint colour) surfaces of:

.1 Exterior steel door frame and door slabs.

.2 Fiberglass door frame and fiberglass door slab.

.2 Provide one (1) different top coat colour for all guardrail assemblies, handrail assemblies and Section 05 50 00 - Metal Fabrications interior surfaces (excluding interior galvanized steel floor grating).

.3 Provide one (1) different top coat colour for longitudinal areas each side of the Tache Booster Pumping Station adjacent to the new door frame.

1.6 Extra Stock

.1 Prior to final completion, supply and deliver to the Site, 1 L of extra stock for products for which less than 45 L were used, 4 L of extra stock when from 45 to 180 L were used, and 10 L of extra stock when in excess of 180 L were used.

2. PRODUCTS

2.1 Painting, Finishing, and Coating Products

.1 Only materials (primers, paints, coatings, fillers, etc.) listed in the latest edition of the MPI Approved Product List (APL) are acceptable for use at this Site unless specifically noted in the schedule of Paint Formulas. All such material shall be from a single manufacturer for each system used.

.2 Design is based on Dulux.

.3 Equivalent manufacturers or approved equal in accordance with B7, for utilizing the same MPI Product Index Number as the Design Standard are the following:

.1 Sherwin Williams.

.2 Benjamin Moore.

.3 Pittsburgh Paints.

.4 Finishing products such as oils or putties not specified in this Section are to be premium quality and as recommended by the Manufacturer of the paint or finish product it is associated with.

.5 On surfaces, no defects shall be visible from a distance of 1000 mm at 90° to surface. On ceilings no defects shall be visible from floor to surface when viewed using final lighting source. Final coat shall exhibit uniformity of colour and uniformity of sheen across full surface area.

3. EXECUTION

3.1 Examination of Substrate

.1 Examine surfaces to receive paint or protective coating to ensure that they are in the proper condition to be painted or coated. Commencement of painting and protective coating Work will be interpreted as acceptance of the surface to receive the Work. Correction of defective painting or protective coating Work resulting from application to unsatisfactory surfaces will be the responsibility of the Contractor.

3.2 Special Conditions

.1 Post "Wet Paint" signs throughout freshly finished areas and remove when finishes are dry.

.2 Prohibit traffic where possible, from areas where painting is being carried out until paint is cured.

3.3 Protection

.1 Cover or mask surfaces adjacent to those receiving treatment and finishing to protect the Work of others from damage and soil. Mask instruction and specification plates and controls attached to equipment being painted.

.2 Coordinate with the appropriate trades for the removal from finished surfaces, storage and reinstallation after finish Work is completed of finish hardware, switch and receptacle plates, escutcheons, luminarie frames, and similar items.

3.4 Preparation of Surfaces

.1 General:

.1 Vacuum clean areas inside the building(s) immediately prior to commencing finishing Work.

.2 Arrange for finishing hardware, electrical plates, accessories, and similar removable fittings on surfaces to be finished to be removed. Mask any other Work that is not removable.

.2 Cleaning Procedures:

.1 Surface preparation methods shall remove any contaminant that will interfere with full adhesion of protective painting and coating systems.

3.5 General Application of Paint and Finishes

.1 Maintain at the Site at all times until the Work is completed, a moisture meter, hygrometer, and thermometer to verify surface and environmental conditions.

.2 Make clean, true junctions with no overlap between adjoining applications of finish coatings.

.3 Unless otherwise specified, DO NOT apply paint or finish to the following:

.1 Finishing hardware.

.2 Equipment nameplates and other such identification.

.3 Switch, receptacle and other electrical device faceplates.

.4 Exposed copper, brass, plastic, acrylic and FRP unless otherwise specified.

.5 Lighting fixtures.

.6 Stainless steel.

.7 Chrome plated surfaces, and polished or lacquered brass or bronze surfaces.

.8 Surfaces factory coated with baked epoxy or enamel.

.9 Plastic laminate surfaces.

.10 Recessed electrical boxes and similar recessed equipment.

.11 Exterior poured concrete.

.12 Circuit breakers, switches, receptacles, and similar electrical devices.

.13 Exterior sealant joints.

3.6 Paint Formula

.1 Design Standard of acceptance is Dulux.

.1 Accepted alternate paint manufacturers or approved equal in accordance with B7: Benjamin Moore, Behr, Cloverdale and Para.

.1 Each accepted alternate paint manufacturer shall be the requirements of the Design Standard manufacturer.

.2 Apply paint to surfaces with the following:

.1 All exterior Steel Doors and Frames (steel and fiberglass) and longitudinal areas each side of the Tache Booster Pumping Station adjacent to the new door frame:

.1 Exterior surfaces:

.1 Minimum preparation: SSPC-1.

.2 One (1) coat Dulux X-Pert Gripper (250) or approved equal in accordance with B7. Coat thickness 1.8 - 2.0 mils DFT.

.3 Minimum of two (2) coats Dulux Diamond Exterior Latex Semi-gloss (1650.501) or approved equal in accordance with B7. Each coat at 1.2 mils DFT per coat. Colour to match existing south door slab.

.2 All guardrail assemblies, handrail assemblies and Section 05 50 00 - Metal Fabrications interior surfaces (excluding interior galvanized steel floor grating):

.1 Minimum preparation: SSPC-3. Utilize SSPC-2 where SSPC-3 in not possible.

.2 Primer: One (1) coat Dulux X-Pert Gripper (250) or approved equal in accordance with B7. Coat thickness 1.8 - 2.0 mils DFT.

.3 Minimum of two (2) coats Dulux Diamond Interior Acrylic Eggshell (14220) or approved equal in accordance with B7. Each coat at 1.0 mils DFT per coat. Colour to match existing guardrails within the building.

3.7 Adjustment and Cleaning

.1 Touch-up and refinish minor defective Work. Refinish the entire surface where the finish is damaged or not acceptable, including areas exhibiting incomplete or unsatisfactory coverage. Patching will not be permitted.

.2 Remove spilled or splattered finish materials from surfaces of Work performed under other Sections. Do not mar surfaces while removing.

.3 Upon completion, remove masking and clean adjacent surfaces free of over spray spatters, drips, smears and over spray.

3.8 Disposal of Paint Waste

.1 Dispose paint that cannot be recycled as hazardous waste. Generators of hazardous waste shall be registered and disposal shall be in accordance with regulations of authorities.

END OF SECTION

SPECIALTY COATINGS FOR CONCRETE

1. GENERAL

1.1 Work Included

.1 Supply and installation of specialty coatings for concrete used for other areas as indicated on the Drawings.

1.2 Qualification

.1 Installation is to be done by an established firm having at least ten (10) years of proven, satisfactory experience in this trade and employing skilled personnel. The firm is to be authorized by the coating manufacturer to install the specified product and product line.

.2 Submit proof of qualifications and authorization in writing to the Contract Administrator, four (4) weeks prior to commencement of Work. Submit in accordance with Section 01 33 00 - Submittal Procedures.

1.3 Design Standards, Code Requirements

.1 Conform to requirements of Steel Structures Painting Council (SSPC) Publications, explanatory notes, comments and appendixes:

.1 SSPC-PA-1 Shop, field and maintenance painting.

.2 SSPC-SP-1 Solvent cleaning.

.3 SSPC-SP-2 Hand cleaning.

.4 SSPC-SP-3 Power tool cleaning.

.5 SSPC-SP-5 White Metal Blast Cleaning.

.6 SSPC-SP-6 Commercial blast cleaning.

.7 SSPC-SP-7 Brush off blast cleaning.

.8 SSPC-SP-10 Near white metal blast cleaning.

.9 SSPC-SP-13 Surface Preparation of Concrete.

.2 Concrete profile to: International Concrete Repair Institute (ICRI) visual standards.

1.4 Submittals

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

.2 Submit proof of qualifications in accordance with clause 1.2.

.3 Submit colour samples of coating, minimum colour sample size 50 mm x 100 mm. Colour to be chosen by Contract Administrator from manufacturer’s standard colour chart.

.4 Indicate location of where the specific coating is to be applied.

.5 Submit Manufacturer's product data sheets and installation guides. A minimum of one (1) copy of the reviewed product data sheets and installation guides shall remain on-site at all times for all to view.

1.5 Inspection and Testing

.1 Allow ample time for notification, review, and corrective Work, if required, before scheduling coating installation.

.2 Notify the Contract Administrator at least forty-eight (48) hours in advance of any coating installation or final substrate preparation.

2. PRODUCTS

2.1 General

.1 The same manufacture is to be used for the entire project.

.2 Abbreviations; P = primer, I = intermediate coat, TC = tack coat, SC = saturant coat and F = finish coat, DFT = dry film thickness, WFT = wet film thickness.

.3 Coating Formulas:

.1 Exposed ends of existing reinforcing steel: Reinforce-1.

.4 Formula Designations:

.1 Coating Reinforce-1.

.1 Preparation: SSPC-3, Power Tool Cleaning.

.2 Primer: one (1) coat Carboguard 890 by Carboline or approved equal in accordance with B7. Each coat at 6.0 – 8.0 mils DFT per coat.

.3 Top coat: one (1) coat Carboguard 890 by Carboline or approved equal in accordance with B7. Each coat at 6.0 – 8.0 mils DFT per coat.

3. EXECUTION

3.1 Pre-Installation Conference

.1 Pre-installation conference for specialty coating products: prior to installation of specialty coating products, conduct a meeting with applicator, installers of Work adjacent to or that penetrates the specialty coating products, the Contract Administrator and Manufacturer's Technical Representative to review the following:

.1 General project requirements.

.2 Manufacture's product data sheets and installation guides.

.3 Substrate conditions, moisture content, procedures for substrate preparation, and product installations.

.4 The Manufacture's Technical Representative is to issue reports to the Contract Administrator confirming that the substrate conditions and installation procedures are being followed where the specific product is being utilized.

.5 Responsibility and costs associated with verification and correlation of field dimensions, fabrication processes, techniques of construction, installation, and coordination of Work and Manufacture's Technical Representative for all parts of the Work rests with the Contractor.

.6 Contractor to generate and distribute meeting minutes to all meeting attendants, the City and Contract Administrator within two (2) days of the meeting completion.

3.2 General

.1 Notify the Contract Administrator of any conditions which would prejudice proper installation of this Work.

.2 Commencement of this Work implies acceptance of existing conditions.

.3 Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.4 Remove defective or damaged coatings as required by the Contract Administrator. Cost for defective or damaged coating removal and replacement will be at the Contractor's expense.

3.3 Protection

.1 Protect other surfaces from substrate preparation, coatings and damage. Repair damage.

.2 Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

.3 Collect waste, cloths and material which may constitute a fire hazard, place in closed metal containers and remove daily from Site.

3.4 Brush Application

.1 Work paint into cracks, crevices and corners and paint surfaces by brush.

.2 Brush out runs and sags.

.3 Remove runs, sags and brush marks from finished Work and repaint.

END OF SECTION