

**DIVISION 01**

**GENERAL REQUIREMENTS**

**Part 1 General**

**1.1 WORK DESCRIPTION**

- .1 Although the Bid Opportunity sets forth the Work of various trades under separate Divisions, it is not intended that the Work of that trade is limited to or includes all work set forth in that particular Division. The Contractor shall delegate the extent of the Work to be done by the various trades and shall coordinate execution of the Work by all trades.
- .2 Although the specifications are separated into titled Divisions, neither the Contract Administrator nor the City will be an arbitrator to establish limits of any agreements between the Contractor and his Subcontractor.
- .3 The construction schedules may differ. The Contractor is required to coordinate with other contractors working on the St. Boniface Industrial Park Phase 2 project site. This pumping station and the associated sewer construction will be carried out under different contracts. Special attention has to be paid to the coordination with the wastewater sewer construction contractor for connecting this pumping station to the incoming sewer and outgoing forcemain or any other connections. Such connections are to be completed with mutual coordination of all relevant contractors without any cost and/or time impact to this pumping station project.

**1.2 MECHANICAL, ELECTRICAL AND CONTROLS COORDINATION**

- .1 The Contractor shall examine the electrical, mechanical, structural and architectural drawings before beginning the Work and report to the Contract Administrator any discrepancies or interferences.
- .2 Electrical and mechanical system layouts shown on the drawings may be diagrammatic and locations of outlets, fittings and equipment are approximate. Exact routing of conduits, wiring, pipes and tables shall be determined and coordinated by the Contractor to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Obtain the Contract Administrator's approval for locations of outlets, fittings and equipment.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 CUTTING AND PATCHING**

- .1 The Contractor shall do all cutting, fitting, or patching of the Work that may be required to make its several parts come together properly and fit it to receive or be received by work of other contractors shown in, or reasonably implied by, the Contract documents.
- .2 Any cost caused by cutting and patching due to ill-timed work shall be borne by the Contractor .

- .3 The Contractor shall not endanger any adjacent property or portion of the Work by cutting, digging or any other method, and shall be responsible for any damages caused by him.
- .4 Where new work connects with existing work, and where existing work is altered, cut and patch as required.
- .5 Coordinate the Work to minimize the amount of cutting and patching required.
- .6 Do no cutting that may impair the strength of structures. Obtain the Contract Administrator's approval before cutting, boring or sleeving load-bearing members.
- .7 Make cuts clean and smooth and make patches equivalent to new work.
- .8 Provide openings, holes and sleeves as required for process mechanical, building mechanical, electrical and all other components of the Work. Provide openings in pre-cast work and cast-in-place work.
- .9 Drill or field cut smaller openings or holes and cast openings larger than 100 mm diameter.

### **3.2 CONCEALMENT**

- .1 Conceal pipes, ducts, conduits within walls and ceilings of finished areas, as required by the Bid Opportunity.

**END OF SECTION**

**Part 1            General**

**1.1                THE WORKSITE**

- .1        The Contract Administrator will provide detailed layout of the Work in addition to the provisions of the General Conditions, limited as follows:
  - .1        The Contractor shall be responsible for the correctness of the elevations and dimensions from the references provided by the Contract Administrator.
  - .2        The layout of the Work shall be in accordance with the Work Schedule which is prepared by the Contractor, submitted to the Contract Administrator for review and is updated monthly.
  - .3        If the Contractor requests a change in layout procedure or sequence, he shall submit the request to the Contract Administrator, giving a minimum of 48 hours notice of new or revised activities, unless otherwise agreed between the Contract Administrator and the Contractor.
  - .4        The notice requesting a change shall be extended to 96 hours whenever a long weekend is involved.

**1.2                MAJOR STRUCTURES**

- .1        The Contract Administrator will provide a baseline, reference points and a benchmark.

**1.3                TRENCHING AND UNDERGROUND PIPE, GRADING, CURB AND GUTTER**

- .1        The Contract Administrator will provide a layout survey, including offset grade stakes and grade sheets.

**1.4                SURVEY ASSISTANCE**

- .1        The Contractor shall supply acceptable survey assistants to the Contract Administrator to assist in measuring, surveying, driving stakes and such other work as the Contract Administrator requires to lay out the Work.
- .2        For setting out line and stakes, two assistants shall be provided.
- .3        For survey levelling and preparation of grade sheets, one assistant shall be provided.
- .4        Survey assistants shall not be changed without the approval of the Contract Administrator.
- .5        If the Contractor fails to provide survey assistants that are acceptable to the Contract Administrator, the Contract Administrator will obtain assistants and deduct the cost and expenses thereof from the Progress Payment Certificates.

**1.5                REFERENCE POINTS AND LAYOUT**

- .1        The Contract Administrator will establish base lines and reference points, for the location of principal components of the Work, as well as bench marks in reasonable proximity to the Work.

- .2 The Contractor shall be responsible for protection and preservation of bench marks, reference points and stakes, and legal survey pins, and in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their loss or disturbance.
- .3 The Contractor shall provide all detailed layout of dimensions, locations, and elevations of the Work from the base lines, reference points, and bench marks set by the Contract Administrator.
- .4 The Contractor shall not proceed with the Work until he has received from the Contract Administrator such base lines, reference points, elevations, and other points and instructions as are required for the execution of the Work.
- .5 The Contractor shall, before commencing work at any point, satisfy himself as to the meaning and correctness of all stakes and instructions. No claims shall be considered for any allowance based on alleged inaccuracies, failure to read reference points correctly, or failure to interpret instructions correctly.
- .6 If the Contractor, in the course of executing the Work, finds any discrepancy between the drawings and the physical conditions of the locality, or any errors, omissions or discrepancies in drawings or in the layout as given by points and instructions, he shall inform the City immediately in writing, and the City or the Contract Administrator shall promptly verify the same and issue appropriate instructions. Any work done after discovery of errors, omissions or discrepancies, before further work is authorized, will be done at the Contractor's risk.
- .7 The Contract Administrator will set all grade lines and bench marks by means of stakes, or marks and the Contractor shall make the completed work conform to the lines and marks thus indicated.
- .8 The Contract Administrator shall supply the surveyor and the survey equipment necessary to set the above noted stakes and marks.
- .9 The Contract Administrator shall be notified immediately of the disturbance of any stakes or marks. The cost of correcting any errors existing out of neglect of the Contractor to so notify the Contract Administrator shall be borne entirely by the Contractor, as well as the cost of replacing any disturbed stakes or marks. The cost to replace the control line stakes or marks shall be at a rate of \$160.00 per hour.
- .10 Before commencing work, the Contractor shall satisfy himself as to the meaning and correctness of all stakes and marks and no claims shall be entertained by the Contract Administrator on account of any alleged inaccuracies.

## **1.6 CONSTRUCTION STAKES AND MATERIALS**

- .1 The Contractor shall provide stakes including laths and hubs and any other required materials including flagging, ribbon, chalk, etc.

**Part 2            Products**

**2.1                NOT USED**

**Part 3            Execution**

**3.1                NOT USED**

**END OF SECTION**

## **Part 1           General**

### **1.1               WORK COVERED BY CONTRACT DOCUMENTS**

- .1       Work of this Contract comprises general construction of a new pumping station and tie in to existing gravity wastewater sewer and forcemain. Pumping station components include two below ground FRP wells (wet and dry), vertical end suction centrifugal pumps, gravity sewer tie in to the wet well, pumps discharge connection to the existing buried force main, indoor control panel, emergency power generator, superstructure, HVAC, driveway, electrical, controls and associated works, as specified in the Contract documents.
- .2       The Work, unless specifically stated otherwise, shall include the furnishing of all Material, Product, Plant, labour and transportation necessary to complete the Work. The intent is that the Contractor provides a complete job.
- .3       The Work shall not be deemed complete until all components are placed in operation by the Contractor, and are operating satisfactorily.
- .4       Any minor item of the Work not called for in the specifications or shown on the drawings but clearly required to meet the intent of design and normally provided for the proper operation of the Work shall be provided as if specifically called for in the Contract documents.

### **1.2               CONTRACT METHOD**

- .1       Construct work under single unit price contract.
- .2       Relations and responsibilities between Contractor and Subcontractors and suppliers assigned by City are as defined in Conditions of Contract.

### **1.3               WORK BY OTHERS**

- .1       Co-operate with other Contractors in carrying out their respective works and carry out instructions from Contract Administrator.
- .2       Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Contract Administrator, in writing, any defects which may interfere with proper execution of work.

### **1.4               SPECIFICATIONS**

- .1       Sentence structure in parts of the specifications is abbreviated, and phrases such as "shall be," and "the Contractor shall" are deliberately omitted. Such sentences shall be read as though they are complete.
- .2       The use of the word "Provide" means "supply and install"; or "supply labour and materials for the installation of". It does not mean supply only.
- .3       The word "concealed" in connection with piping, electrical work, controls and wherever used in other sections shall mean "hidden from sight" as in ceiling spaces or furred out spaces, and not normally visible to persons in the construction area.

- .4 The word "exposed" in connection with piping, electrical work, controls and whenever used in other sections shall mean visible to persons within a building, in normal working areas.

## **1.5 STANDARDS**

- .1 Wherever standards (e.g., CSA, ASTM and others), are referred to in these Contract documents the current edition at the date of closing of the Bids shall apply.
- .2 Where there is a clear conflict between the referenced Standard and the Contract documents, the Contract documents shall apply.
- .3 Where there is an ambiguity between a Standard and any term of these Contract documents, the Contract Administrator shall, in the first instance, give an interpretation of the intent of the Contract.

## **1.6 EXISTING SERVICES**

- .1 Notify, Contract Administrator, City and utility companies of intended interruption of services and obtain required permission.
- .2 Where work involves breaking into or connecting to existing services, give Contract Administrator 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, vehicular traffic and City operations.
- .3 Provide alternative routes for personnel, pedestrian and vehicular traffic.
- .4 Establish location and extent of service lines in area of work before starting work. Notify Contract Administrator of findings.
- .5 Submit schedule to and obtain approval from Contract Administrator for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .7 Where unknown services are encountered, immediately advise Contract Administrator and confirm findings in writing.
- .8 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- .9 Record locations of maintained, re-routed and abandoned service lines.

## **1.7 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy each document as follows:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Reviewed Shop Drawings.
  - .5 List of Outstanding Shop Drawings.
  - .6 Change Orders.

- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related documents.
- .11 Other documents as specified.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**

**Part 1           General**

**1.1               THE WORKSITE**

- .1       The City will provide the lands upon which the Work related to the wastewater pumping station is to be constructed.

**1.2               CONTRACTOR'S USE OF THE WORKSITE**

- .1       The Contractor shall have exclusive use and control of the Worksite, but permit access to the City, the Contract Administrator and other Contractors on the Worksite for purposes of inspections, reviews, tests and carrying out the activities related to the Work.
- .2       Contractor's use of the Worksite for storage is limited to the area within the property limits of the proposed wastewater pumping station.
- .3       The City shall have unfettered use of thoroughfares, streets, lanes and other areas within the Worksite until the Contractor requires those areas for execution of the Work, and after the Contractor has finished the portions of the Work in those areas.
- .4       Unless otherwise agreed with the City, the Contractor shall give forty-eight (48) hours notice to the City before entering a particular Area of the Worksite to execute the Work .
- .5       Only after achieving Substantial Performance, the City shall have use of the area and shall be responsible for Health and Safety Requirements and security of the area.
- .6       During the Contractor's use of a particular area of the Worksite to execute the Work, the Contractor shall be responsible primarily for security and for ensuring compliance with Health and Safety Regulations.
- .7       The Contractor shall be responsible for access to the Worksite by means of temporary roads, tote roads, or agreements with the appropriate authorities to use existing means of access.

**Part 2           Products**

**2.1               NOT USED**

**Part 3           Execution**

**3.1               NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1                DESCRIPTION OF WORK**

- .1        Payments will be made on the basis of the lump sum prices bid in the Bid Opportunity, in accordance with Form B: Prices of the Bid Opportunity.
- .2        Payments for the Lump Sum items will be made on the basis of the following:
  - .1        Lump Sum items based on the Schedule of Breakdown Prices offered by the Contractor for use as a basis for progress payment. The Contractor should note that the City may refuse to accept any breakdown which he considers to be unbalanced and may require an adjustment to correct any such imbalance, without changing the Total Bid Price.
  - .2        For each Lump Sum item in the Schedule of Prices, the Contract Administrator will, in cooperation with the Contractor estimate the percentage of the item completed at the end of the payment period.
- .3        The prices bid for various items of work, unless specifically noted otherwise, shall include the supply of all labor, Plant, Material and Product equipment necessary to construct the Work in accordance with the specifications.
- .4        The prices bid for supply and installation shall be full compensation for supplying, hauling, installing, cleaning, testing, and placing in service together with all other work subsidiary and incidental thereto for which separate payment is not provided elsewhere.
- .5        The method of measurement of the quantities for payment and the basis for payment will be in accordance with the items described in Clause 1.2. All measurement will be done by the Contract Administrator using generally accepted field survey methods.
- .6        Other materials on site, whether existing structures, vegetation, topsoil, gravel, sand or other excavated or piled materials, are the property of the City or of the City of the land on which the Work is located. Only those materials specifically noted in the specification or on drawings as belonging to the Contractor shall become the Contractor's property.
- .7        Where there are excess excavated materials, unsuitable materials excavated or materials of any kind that are excavated but not used in the Work, such materials are not the property of the Contractor unless authorized in writing by the Contract Administrator or specified to be disposed of by the Contractor.
- .8        With each progress claim, the Contractor shall certify a claim for payment for the Work completed during that claim period.
- .9        Progress payments will not be made for Material and Product unless they are incorporated into the Work.
- .10       Restoration of existing surfaces disturbed by construction to pre-construction or better condition is incidental to the Work.
- .11       Upon Total Completion of the Work, the Contractor shall credit the City for Material paid for as supplied on the Worksite, but not incorporated in the Work, and remove the surplus Material from the Worksite.

## 1.2 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

### .1 General

- .1 Include costs associated with the following items in the contract lump sum price bid for “General Conditions”, “Supplementary Conditions”, Mobilization to the site; demobilization from the site.  
Measurement: Measured as a 5% (maximum) of the dollar value of the total contract price.  
Payment: Contract Lump Sum Price.

### .2 Site Works (General)

- .1 Site Works - General shall include, but is not limited to the earth works associated with installation of wet and dry wells and associated works including excavation, dewatering, removal of surface water, shoring, removal of rock or boulders from excavations, loading and hauling, rock or boulder removal for disposal, backfilling, compaction, grading, base preparation, surface works, and all incidental work for which payment is not specified elsewhere.  
Measurement: Field verification of the percentage of work completed.  
Payment: Contract Lump Sum Price.

### .3 Site Works (Driveway)

- .1 Site Works – Driveway shall include, but is not limited to the following in relation to the access driveway: excavation, dewatering, removal of rock or boulders from excavations, loading and hauling, rock or boulder removal for disposal, backfilling, compaction, grading, base preparation, subgrade, base, pavement and surface works, and all incidental work for which payment is not specified elsewhere.
- .2 All works related to the driveway will be completed before Substantial Performance except concrete pavement which will be carried out in May-June 2017.  
Measurement: Field verification of the percentage of work completed.  
Payment: Contract Lump Sum Price.

### .4 Site Works (Underground Piping and Connections)

- .1 Site Works - Underground Piping and Connections shall include, but is not limited to: installation of underground piping, including excavation, coring, shoring, dewatering, removal of rock or boulders from excavations, loading and hauling, rock or boulder removal for disposal, utility crossings, bedding, joining, laying, connections to existing, backfilling, compaction, grading, flushing, testing, surface restoration and all incidental work for which payment is not specified elsewhere.  
Measurement: Field verification of the percentage of work completed.  
Payment: Contract Lump Sum Price.

**.5 Pumping Station Substructure**

- .1 Pumping Station Substructure shall include, but is not limited to provision of: wet and dry wells, concrete base section, installation of FRP wells, pipes and supports, waterproofing, and all incidental work for which payment is not specified elsewhere.

Measurement: Field verification of the percentage of work completed.

Payment: Contract Lump Sum Price.

**.6 Pumping Station Process Mechanical**

- .1 Pumping Station Process Mechanical shall include all mechanical work required to provide an operational pumping lift station. This shall include, but is not limited to: pumps, process piping, fittings and valves, testing, commissioning and incidentals.

Measurement: Field verification of the percentage of work completed.

Payment: Contract Lump Sum Price.

**.7 Pumping Station Miscellaneous Metals**

- .1 Pumping Station Miscellaneous Metals shall include, but is not limited to provisions of: access hatches, pipe supports, guard rails, hand holds, bolting, crane beam and all incidental work for which payment is not specified elsewhere.

Measurement: Field verification of the percentage of work completed.

Payment: Contract Lump Sum Price.

**.8 Pumping Station Process Electrical and Control**

- .1 Pumping Station Electrical and Control shall include all electrical work required to provide an operational lift station. This shall include, but is not limited to: process control panels, instruments, electrical conduit, electrical wiring and terminations, testing, and commissioning.

Measurement: Field verification of the percentage of work completed.

Payment: Contract Lump Sum Price.

**.9 Pumping Station Building Foundation**

- .1 Pumping Station Building Foundation shall include, but not limited to provision of: concrete piles, concrete floor, foundation, insulation, concrete equipment pads, entrance pad, and all incidental work for which payment is not specified elsewhere.

Measurement: Field verification of the percentage of work completed.

Payment: Contract Lump Sum Price.

- .2 Pumping Station Building Superstructure shall include, but is not limited to: structure framing, roofing, insulation, finished surface, doors, interior and exterior finishes, and all incidental work for which payment is not specified

elsewhere.

Measurement: Field verification of the percentage of work completed.

Payment: Contract Lump Sum Price.

- .3 Pumping Station Building Mechanical shall include all mechanical work required for the building. This shall include, but is not limited to: piping/plumbing fittings and valves, HVAC including dry well, generator air supply and exhaust, gas supply, overhead crane system, testing, commissioning and incidentals.

Measurement: Field verification of the percentage of work completed.

Payment: Contract Lump Sum Price.

- .4 Pumping Station Building Electrical shall include all electrical work required to provide an operational lift station in conjunction with the building. This shall include but is not limited to: generator, automatic transfer switch, electrical service, telephone service, lighting, life safety systems, building control panels, electrical conduit, building electrical wiring and terminations, electrical heating, electrical building systems, electrical connection of mechanical systems, testing, and commissioning.

Measurement: Field verification of the percentage of work completed.

Payment: Contract Lump Sum Price.

#### **.10 Shop Drawings (For Wet and Dry Wells)**

- .1 The lowest responsive bidder may be requested by the City to start with the wet and dry wells shop drawing preparation upon notification from the City before the official contract award to facilitate the schedule. Should the contract not be awarded to the requested bidder, the requested bidder will be compensated for preparation of the shop drawings in the amount shown in the Form B:Prices, line item – Shop Drawings.

Measurement: Shop drawings for wet and dry well including miscellaneous metals submitted by the requested bidder and approved by the Contract Administrator.

Payment: Contract Lump Sum Price.

#### **.11 Additional Work**

- .1 Additional work may be necessitated due to unforeseen circumstances that may arise during the course of the project due to:
- .1 Additions to the scope of work by the Contract Administrator, beyond that defined herein.
  - .2 Other issues that occur on site, which require significant contractor time to address.
- .2 Additional services will not be initiated for:
- .1 Reasons of lack of performance or errors in execution.
  - .2 Scheduling changes initiated by the City, where at least 24 hours notice is given prior to the Contractor's scheduled time to be on site.

- .3 Should it be determined that additional material or services are required, the Contract Administrator shall approve the Work, prior to commencement of the additional work.
- .4 The Contract Administrator may also request a written quotation for the additional work. For any work, where a written quotation is provided, and subsequently authorized, the valuation of the Work shall be as per the quotation, regardless of the actual cost to the Contractor.
  - .1 Quotations shall indicate the labour hours and base cost of material, as well as mark-up factors.
  - .2 Rates and Mark-up factors shall correspond to Form B, unless specifically authorized by the Contract Administrator.
- .5 Measurement and Payment
  - .1 Additional material will be reimbursed by the actual base cost of the material, multiplied by a mark-up factor of 1.15, as indicated on Form B: Item 11.
    - .1 The base cost is to be the wholesale cost of the material, regardless of the Contractor or Subcontractor supplying the material. In the event that the Subcontractor(s) is/are supplying the material, the Contractor is responsible for coordinating the split of the 1.15 mark-up between the Contractor and Subcontractor(s).
  - .6 Additional labour will be reimbursed at the rate specified on Form B: line items 15 through 19. The rate will not be adjusted for Subcontractors or individuals with specialized skills, without specific approval of the Contract Administrator.

**.12 Cash and Contingency Allowances**

- .1 Hydro Allowance

Hydro Allowance shall be used to cover the cost associated with Hydro work associated with this project. This shall include general service/power upgrades, service to new facilities, and site time for their inspection personnel required when working in the facility. Only actual expenditures made upon the written consent of the Contract Administrator, shall be paid out of this Cash Allowance, and if a Cash Allowance is not sufficient to cover the component of work, then the Contract Price shall be increased, and if the Cash Allowance is greater than required, the Contract Price shall be decreased. Cash Allowances shall include the net cost of the Work, meals, accommodation, travel, applicable taxes and duties. Cash Allowances shall not include coordination, handling, protection, overhead and profit by the Contractor.

**Part 2            Products**

**2.1                NOT USED**

**Part 3            Execution**

**3.1                NOT USED**

**END OF SECTION**

**Part 1           General**

**1.1               CONSTRUCTION SCHEDULE**

- .1       Upon award of the Contract and prior to commencement of the Work, the Contractor shall submit for approval to the Contract Administrator a construction schedule in critical path method format showing all the principal phases of the work. No Progress Payment Claim shall be certified until an acceptable Construction Schedule has been received by the Contract Administrator.
- .2       The Construction Schedule shall be updated monthly against actual progress of the Work by the Contractor.
- .3       If, in the opinion of the Contract Administrator, any Construction Schedule is inadequate as a control tool or if it does not show the Work being fully completed by the Contract Completion Date, the Engineer may reject it and the Contractor shall provide a Construction Schedule and work program that is acceptable to the Contract Administrator.

**Part 2           Products**

**2.1               NOT USED**

**Part 3           Execution**

**3.1               NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1                ADMINISTRATIVE**

- .1        Submit to Contract Administrator submittals listed for review. Submit promptly and in orderly sequence to not cause delay in work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2        Do not proceed with work affected by submittal until review is complete.
- .3        Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4        Where items or information is not produced in SI Metric units converted values are acceptable.
- .5        Review submittals prior to submission to Contract Administrator. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of work and Contract documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6        Notify Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract documents stating reasons for deviations.
- .7        Verify field measurements and affected adjacent work are coordinated.
- .8        Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
- .9        Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Contract Administrator's review.
- .10      Keep one reviewed copy of each submission on site.

**1.2                SHOP DRAWINGS AND PRODUCT DATA**

- .1        The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by contractor to illustrate details of a portion of work.
- .2        Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .3        Make submittals far enough in advance to allow adequate time for coordination, Contract Administrator's review, revisions and resubmittals, and for supply and delivery in time for the scheduled installation in the Work.
- .4        Allow 14 calendar days for Contract Administrator's review of each submission.

- .5 Adjustments made on shop drawings by Contract Administrator are not intended to change Contract Price. If adjustments affect value of work, state such in writing to Contract Administrator prior to proceeding with work.
- .6 Make changes in shop drawings as Contract Administrator may require, consistent with Contract documents. When resubmitting, notify Contract Administrator in writing of revisions other than those requested.
- .7 Submissions shall include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract documents.
  - .5 Details of appropriate portions of work as applicable:
    - .1 Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.
    - .7 Operating weight.
    - .8 Wiring diagrams.
    - .9 Single line and schematic diagrams.
    - .10 Relationship to adjacent work.
- .8 After Contract Administrator's review, distribute copies.
- .9 Submission of electronic copies of shop drawings for each requirement requested in specification Sections and as Contract Administrator may reasonably request.
- .10 Submit 1 electronic copy of product data sheets/brochures for requirements requested in specification Sections and as requested by Contract Administrator where shop drawings will not be prepared due to standardized manufacture of product.
- .11 Submit 4 hard copies of test reports or 1 electronic copy for requirements requested in specification Sections and as requested by Contract Administrator.
  - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
  - .2 Testing must have been within 1 year of date of contract award for project.

- .12 Submit 4 hard copies or 1 electronic copy of certificates for requirements requested in specification Sections and as requested by Contract Administrator
  - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
  - .2 Certificates must be dated after award of project contract complete with project name.
- .13 Submit 4 hard copies or 1 electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Contract Administrator.
  - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .14 Submit 4 hard copies or 1 electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Contract Administrator.
- .15 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .16 Delete information not applicable to project.
- .17 Supplement standard information to provide details applicable to project.
- .18 If upon review by Contract Administrator, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of work may proceed.
- .19 The review of shop drawings by the Contract Administrator is for the sole purpose of ascertaining conformance with general concept.
  - .1 This review shall not mean that Contract Administrator approves detail design inherent in shop drawings, responsibility for which shall remain with contractor submitting same, and such review shall not relieve contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract documents.
  - .2 Without restricting generality of foregoing, contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of work of sub-trades.
- .20 Costs due to delays in making submittals shall be borne solely by the Contractor.

### **1.3 SAMPLES**

- .1 Submit for review samples in triplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Contract Administrator's address.

- .3 Notify Contract Administrator in writing, at time of submission of deviations in samples from requirements of Contract documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Contract Administrator are not intended to change Contract Price. If adjustments affect value of work, state such in writing to Contract Administrator prior to proceeding with work.
- .6 Make changes in samples which Contract Administrator may require, consistent with Contract documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed work will be verified.

**1.4 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status and all other forms required by this contract.
- .2 Submit transcription of insurance immediately after award of Contract.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1                REFERENCES AND CODES**

- .1        The Laws and Regulations of the Province of Manitoba shall govern.
- .2        Perform work in accordance with National Building Code of Canada (NBC) including amendments up to Bid closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .3        In the event of a dispute resolution by arbitration, the arbitration shall be governed by the Arbitration clause of General Conditions and the Manitoba Arbitration Act.
- .4        The Contractor shall ensure compliance on his part and on the part of all of his Subcontractors with the Manitoba Occupational Health and Safety Act and Regulations thereunder.
- .5        Meet or exceed requirements of:
  - .1        Contract documents.
  - .2        Specified standards, codes and referenced documents.
- .6        The attention of the Contractor is drawn to the requirements of the Manitoba Builders' Lien Act and Regulations thereunder.
- .7        Where the Work under this Contract is carried out within the requirements of the Manitoba Public Works Act, the Manitoba Public Works Act shall apply.
- .8        All other Manitoba Acts and Regulations thereof shall apply and the Contractor shall comply with the requirements thereof as though they had been specifically named in these specifications.

**1.2                BUILDING SMOKING ENVIRONMENT**

- .1        Comply with smoking restrictions and municipal by-laws.

**1.3                BURNING**

- .1        Comply with restrictions of federal, provincial and municipal authorities and obtain permits from authorities having jurisdiction.

**1.4                PERMITS**

- .1        The Contractor is required to obtain all applicable permits including Building Permits and Plumbing Permit from local Municipal and Provincial authorities having jurisdiction.

**1.5                REGULATIONS, STANDARDS, AND CODES**

- .1        Codes, Standards and Regulations are specified in other sections of the specifications and The Work shall be done in accordance with those Codes, Standards and Regulations where applicable.

- Part 2**            **Products**
- 2.1**              **NOT USED**
- Part 3**            **Execution**
- 3.1**              **NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1                GENERAL**

- .1        The Contractor is totally responsible for the quality of Material and Product which he provides and for the Work.
- .2        The Contractor is responsible for quality control and shall perform such inspections and tests as are necessary to ensure that the Work conforms to the requirements of the Contract documents.
- .3        During the progress of the Work, a sufficient number of tests shall be performed by the Contractor to determine that Material, Product and installation meet the specified requirements.
- .4        Minimum requirements regarding quality control are specified in various sections of the specifications, however, the Contractor shall perform as many inspections and tests as are necessary to ensure that the Work conforms to the requirements of the Contract documents.
- .5        Testing shall be in accordance with pertinent codes and regulations, and with selected standards of the American Society for Testing and Materials (ASTM) and Canadian Standards Association (CSA).

**1.2                INSPECTION**

- .1        Refer to inspection clause of General Conditions.

**1.3                INDEPENDENT INSPECTION AGENCIES**

- .1        Independent Inspection/Testing Agencies will be engaged by contractor for purpose of inspecting and/or testing portions of work. Cost of such services will be borne by the Contractor.
- .2        If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defects and irregularities as advised by Contract Administrator at no cost to Contract Administrator or City. Pay costs for retesting and re-inspection.

**1.4                ACCESS TO WORK**

- .1        Allow inspection/testing agencies access to work, off site manufacturing and fabrication plants.
- .2        Co-operate to provide reasonable facilities for such access.

**1.5                PROCEDURES**

- .1        Notify appropriate agency and Contract Administrator in advance of requirement for tests, in order that attendance arrangements can be made.
- .2        Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in work.

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

**1.6 REJECTED WORK**

- .1 Remove defective work, whether result of poor workmanship, use of defective products or damage and whether incorporated in work or not, which has been rejected by Contract Administrator as failing to conform to Contract documents. Replace or re-execute in accordance with Contract documents.
- .2 Make good other contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Contract Administrator it is not expedient to correct defective work or work not performed in accordance with Contract documents, the City will deduct from Contract Price difference in value between work performed and that called for by Contract documents, amount of which will be determined by Contract Administrator.

**1.7 REPORTS**

- .1 Submit 4 hard copies or 1 electronic copy of inspection and test reports to Contract Administrator.
- .2 Provide copies to subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

**1.8 TESTS AND MIX DESIGNS**

- .1 Furnish test results and mix designs as requested.

**1.9 MILL TESTS**

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

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1                TEMPORARY UTILITIES**

- .1 Gasoline and Other Fuels
  - .1 Provide and pay all costs for gasoline and other fuels required for the performance of the Work, in accordance with governing regulations and ordinances, and the Contract document's.
  - .2 Furnish and install all necessary temporary piping and upon completion of the Work remove all such temporary piping.
- .2 Water
  - .1 Provide and pay all costs for all water required for the performance of the Work, in accordance with governing regulations and ordinances, and the Contract document's.
  - .2 Furnish and install all necessary temporary piping and upon completion of the Work remove all such temporary piping.
- .3 Electricity and Lighting
  - .1 Provide and pay all costs for electricity and artificial lighting required for the performance of the Work, in accordance with governing regulations and ordinances, and the Contract document's.
  - .2 Furnish and install all necessary temporary wiring, distribution boxes, panels, etc., and upon completion of the Work, remove all such temporary installations.
- .4 Heating and Ventilating
  - .1 Provide and pay all costs for heating and ventilating, coverings and enclosures as necessary to protect and perform the Work.
  - .2 Furnish and install all necessary temporary equipment, piping, wiring, ducting, and other materials to perform the Work and upon completion of the Work, remove all such temporary equipment.
  - .3 Temporary heating and ventilating shall be in accordance with all governing regulations and ordinances, and the Contract document's.
- .5 Sanitary Facilities
  - .1 Furnish and install all required temporary toilet buildings with sanitary toilets for use of all workmen; comply with all minimum requirements of the Health Department or other public agency having jurisdiction; maintain in a sanitary condition at all times.
- .6 Fire Protection
  - .1 Provide and pay all costs for adequate fire protection of the Work and adjacent property.
  - .2 Furnish and install temporary extinguishers, hydrants and other equipment, and upon completion of the Work remove all such temporary equipment.

**1.2                CONSTRUCTION AIDS**

- .1 Temporary Plant

- .1 Provide, arrange for, maintain and pay for all temporary items such as, but not limited to, stairs, ladders, scaffolding, ramps, transportation of labour and Material, runways, chutes, hoists, elevators, tools, templates, as required for the completion of the Work.
- .2 The location of such items shall be such as to prevent interference with, marking of, or damage to any portion of the Work.
- .3 All such items shall conform to all applicable national and local ordinances regulating safety, and to the National Building Code of Canada, and to the requirements of the Contract document's.
- .2 Temporary Enclosures
  - .1 Furnish, install, and maintain for the duration of construction all required scaffolds, tarpaulins, barricades, canopies, warning signs, steps, bridges, platforms, and other temporary construction necessary for proper completion of the Work in compliance with all pertinent safety and other regulations.
- .3 Falsework and Temporary Construction Supports
  - .1 The Contractor shall be responsible for means and methods used for the falsework and temporary construction supports.
  - .2 If required by the Contract, employ a qualified Registered Professional Contract Administrator for the design of temporary works, and design in accordance with CSA S269.1.
  - .3 Record design calculations and drawings to show that temporary works are adequate. Provide design loads, material details, and dimensions. Sign and seal design calculations and drawings, and revisions thereto.
  - .4 The Contract Administrator's approval to proceed with falsework and temporary construction supports shall not relieve the Contractor of his responsibility under the Contract. The Contract Administrator's review shall be for general conformance to the intent of design and for permanent effects on the Worksite, or areas adjacent to the Worksite.
- .4 Temporary Excavation
  - .1 The Contractor is responsible for the means and methods of making temporary excavations in order to install components of the Work.
- .5 Winter Construction
  - .1 Special construction methods required to perform the Work in severe weather shall be the responsibility of the Contractor.
  - .2 Where the specifications call for work to be performed within a given temperature range or above a minimum temperature, it shall be the Contractor's responsibility to provide all temporary enclosures and heat necessary to provide the conditions specified.
  - .3 Where compaction of backfill is specified, the Contractor shall perform the Work in a manner such that compaction can be achieved.
  - .4 Where weather conditions are such that compaction of backfill consisting of excavated materials is not possible, the Contractor shall provide unfrozen granular material for backfill, at the Contractor's expense.
- .6 Access Roads
  - .1 Construct temporary access roads as necessary to perform the Work, and maintain temporary access roads until construction is over or until permanent access is established.

- .2 Locations and drainage facilities for temporary access roads are subject to the approval of the Contract Administrator.
- .3 No direct payment will be made to the Contractor for construction of temporary access roads.
- .4 The Contractor shall be responsible for keeping existing streets cleaned of spilled materials and for any damage during the construction.

### **1.3 PROTECTION**

- .1 Remove trees, fences and other structures from the site of the Work, as necessary to perform the Work.
- .2 Remove only those items that must be removed, or are clearly shown on the drawings to be removed.
- .3 Only items contained within the clearing area shown on the drawings may be removed. Damage to trees, fences and structures outside these limits shall be rectified/replaced at the Contractor's expense.
- .4 Protect all remaining trees, plants, fences and other items from damage during construction.

### **1.4 EXISTING UTILITIES AND STRUCTURES**

- .1 Existing utilities and structures include pipes, culverts, ditches or other items which are a part of an existing sewerage, drainage or water system; or which are a part of a gas, electrical, telephone, television, telecommunications or other utility system. Also included are sidewalks, curbs, gutters, swales, poles, fences or any other structures encountered during construction.
- .2 The Contractor shall be responsible for location, protection, removal or replacement of existing utilities and structures, or for repair of any damage which may occur during construction.
- .3 Existing utilities and structures may be shown on the drawings, or described in the specifications. Such information is shown for design purposes and the existence, location and detail given is information that is obtained during the design period and is not necessarily complete, correct or current.
- .4 The Contractor shall pay all costs and be responsible for establishing locations and state of use of all existing utilities that may affect the Work. The Contractor shall make satisfactory arrangements with the utilities companies involved for the location, protection and inspection of existing utilities.
- .5 Notice in writing shall be given by the Contractor to the utilities companies at least 48 hours before work commences in the vicinity of existing utilities.
- .6 The Contractor shall pay all the costs involved in protection of utilities, inspection of utilities, and all costs due to delays because of existing utilities and structures.
- .7 The Contractor shall provide for the uninterrupted flow of all water courses, sewers and drains encountered during the Work.
- .8 Access shall be maintained to all existing structures such as valves, hydrants, meter chambers and control structures at all times during construction.

- .9 If interruption of service provided by an existing utility is necessary, the planned shut-down shall be approved by the City of the utilities. Requests for shut-down shall be made by the Contractor in writing at least 48 hours in advance.
- .10 The Contractor shall notify all customers or make arrangements with the utility company to notify all customers 24 hours in advance of a shut-down.
- .11 Unless otherwise specified the Contractor shall make arrangements for relocation of existing utilities that the Contract Administrator requests to be relocated; and the actual relocation shall be constructed by the City of the utility. The Contractor will be reimbursed the invoiced cost of the relocation. No extra payment is permitted for delays, or standby time.

## **1.5 TEMPORARY CONTROLS**

- .1 Noise Controls
  - .1 Perform the Work in conformity with all municipal by laws with respect to noise, hours of work, night work and holiday work. Night work or holiday work requires the written permission of the Contract Administrator.
- .2 Dust Control
  - .1 Perform the Work in a manner that will not produce an objectionable amount of dust. Dust control measures shall be paid for by the Contractor.
- .3 Pollution Control
  - .1 Perform the Work in conformance with the applicable sections of the Provincial Regulations with respect to air and water pollution control requirements.
- .4 Disposal Of Wastes
  - .1 Burying of rubbish and waste on site is not permitted.
  - .2 Disposal of waste or volatile materials into waterways, storm or sanitary sewers is not permitted.
  - .3 Pumping or draining water containing silt in suspension into waterways, sewers or drainage systems is prohibited.
  - .4 Abide by requirements of Statute, Bylaw and Regulations respecting disposal of wastes.
  - .5 Obtain required Permits for waste disposal.

## **1.6 WORK ADJACENT TO WATERWAYS**

- .1 Do not operate construction equipment in waterways, nor remove borrow material nor dump fill material into waterways, except as approved and permitted by the appropriate authorities. Obtain any required Permits.

## **1.7 TRAFFIC CONTROL**

- .1 The Contractor shall be responsible for the regulation of traffic during construction, and shall perform the Work in a manner that will cause the least disruption of traffic.
- .2 The Contractor shall co-ordinate the Work with the Contract Administrator, and the City to reduce traffic problems.
- .3 Provision of flagmen, traffic signs, and other traffic controls shall be the Contractor's responsibility and shall be in accordance with the TAC Manual of Uniform Traffic Control Devices.

- .4 The Contractor shall supply all barriers, barricades, warning signs, detours, fences, flagmen and all other devices to protect the public. All applicable safety standards shall be followed.
- .5 The Contractor shall obtain approval to block traffic temporarily if it is necessary to do so to perform the Work. Obtain the written approval of applicable municipal departments, the City and the Contract Administrator. At least 48 hours prior to actually blocking traffic notify the following:
  - Roadway Authority
  - Public Works Departments
  - Utilities Companies
  - Fire Department
  - Police Department
- .6 Adequate construction parking, meeting local regulations, shall be provided by the Contractor.
- .7 Haul routes shall be maintained by the Contractor. They shall be kept open to traffic and shall be clean at all times.
- .8 Obtain permits as required to use public roads or streets for haul routes.

**1.8 CONTRACTOR'S FIELD OFFICE**

- .1 Furnish and install a field office building adequate in size and accommodation for all contractor's offices, supervisor's office, supply and tool room throughout the entire construction period. It will be equipped with modern communication facilities and HVAC system. This office will also include a working desk with a chair and all related facilities for the City / Contract Administrator use at no extra cost to the City / Contract Administrator.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1    Product quality, availability, storage, handling, protection, and transportation.
- .2    Procedures for product substitution.
- .3    Manufacturer's instructions.
- .4    Quality of work, coordination and fastenings.

**1.2                REFERENCE STANDARDS**

- .1    Within text of each specifications section, reference may be made to reference standards.
- .2    Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3    If there is question as to whether any product or system is in conformance with applicable standards, Contract Administrator reserves right to have such products or systems tested to prove or disprove conformance.
- .4    Cost for such testing will be borne by the City in event of conformance with Contract documents or by the Contractor in event of non-conformance.
- .5    Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.

**1.3                QUALITY**

- .1    Refer to General Conditions and Specification's Section 01 45 00.
- .2    Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .3    Defective products, whenever identified prior to completion of work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4    Should any dispute arise as to quality or fitness of products, decision rests strictly with Contract Administrator based upon requirements of Contract documents.
- .5    Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6    Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

#### **1.4 AVAILABILITY**

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of materials, equipment or articles are foreseeable, notify 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 work.
- .2 In the event of failure to notify the Contract Administrator at commencement of work, and should it subsequently appear that work may be delayed for such reason, the Contract Administrator reserves the right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

#### **1.5 SUBSTITUTIONS**

- .1 The Work is based on the materials and methods specified in the specifications.
- .2 Substitutions are not permitted unless application has been made in accordance with B7.

#### **1.6 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of the Contract Administrator.
- .9 Touch-up damaged factory finished surfaces to the Contract Administrator 's satisfaction. Use touch-up materials to match original. Do not paint over name plates.
- .10 Remove and replace damaged products at own expense and to the satisfaction of the Contract Administrator.

#### **1.7 TRANSPORTATION**

- .1 Pay the costs of transportation of products required in the performance of work.
- .2 Transportation costs of products supplied by the City will be paid for by City, unless specified otherwise. Unload, handle and store such products, unless otherwise specified.

### **1.8 MANUFACTURERS' INSTRUCTIONS**

- .1 Unless otherwise indicated in the specifications, install or erect all products in accordance with manufacturer's recommendations. Do not rely on labels or enclosures that are provided with products. Obtain instructions directly from manufacturers.
- .2 Notify the Contract Administrator in writing of any conflicts between the Specifications and manufacturer's instructions so that the Contract Administrator may establish the course of action to follow.
- .3 Improper installation or erection of products due to failure in complying with these requirements authorizes the Contract Administrator to require any removal and re-installation that may be considered necessary, at no increases in Contract Price or Contract Time.

### **1.9 QUALITY OF WORK**

- .1 Refer to Specification's Section 01 45 00 – Quality Control.
- .2 Ensure Quality of work is of 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.
- .3 Enforce discipline and good order among workers.
- .4 Do not employ anyone unskilled in their required duties. The Contract Administrator reserves right to require dismissal from site, workers deemed incompetent or careless.
- .5 Decisions as to standard or fitness of quality of work in cases of dispute rest solely with the Contract Administrator, whose decision is final.

### **1.10 COORDINATION**

- .1 Refer Specification's Section 01 00 20 – Coordination.
- .2 Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision.
- .3 Ensure work of various Subcontractors does not conflict or create interference.
- .4 Be responsible for the proper coordination and placement of openings, sleeves, and accessories.
- .5 Supply all items required to be built in as and when required, together with templates, measurements and shop drawings.
- .6 Ensure all workers examine the drawings and specifications covering the work of others that may affect the performance of their own work. Examine the work of others and report to the Contract Administrator, in writing, any defects, or deficiencies that may affect the Work. In the absence of any report, the Contractor shall be held to have waived all claims for damage to or defects in such work.
- .7 Ensure that components requiring foundations or openings that are required for the installation of work is coordinated. Furnish the necessary information to the Sections concerned in ample time to permit allowance for such items. Failure to comply with this requirement does not relieve the party at fault of the cost of cutting or drilling at a later date and subsequent patching.

**1.11 CONCEALMENT**

- .1 Refer Specification's Section 01 00 20 – Coordination.
- .2 In finished areas, conceal pipes, ducts, and wiring in floors, walls, and ceilings, except where indicated otherwise.
- .3 Before installation, inform the Contract Administrator if there is interference. Install as directed by Contract Administrator.

**1.12 REMEDIAL WORK**

- .1 Refer to General Conditions.
- .2 Perform remedial work required to repair or replace parts or portions of work identified as defective or unacceptable. Coordinate adjacent affected work as required.
- .3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of the Work.

**1.13 LOCATION OF FIXTURES**

- .1 Consider the location of fixtures, outlets and other mechanical and electrical items indicated on drawings as approximate.
- .2 Inform the Contract Administrator of an impending installation. Install as directed.

**1.14 FASTENINGS**

- .1 Provide metal fastenings and accessories in same texture, colour, and finish as adjacent materials, unless otherwise indicated.
- .2 Prevent electrolytic action between dissimilar metal and materials.
- .3 Use non-corrosive hot dip galvanized fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in the affected Specification Section.
- .4 Space anchors within their load limit or shear capacity and ensure they provide positive permanent anchorage. Plugs of wood or any other organic material are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly, and install neatly.
- .6 Fastenings, which cause spalling or cracking of material to which anchorage is made are not acceptable.

**1.15 FASTENINGS - EQUIPMENT**

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
- .3 Bolts may not project more than one diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

**1.16 PROTECTION OF WORK IN PROGRESS**

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

**1.17 EXISTING UTILITIES**

- .1 When breaking into or connecting to existing services or utilities, execute work at times directed by local governing authorities, with minimum of disturbance to work, and/or building occupants and pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1                SURVEY REFERENCE POINTS**

- .1 Existing base horizontal and vertical control points are designated on drawings.
- .2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
- .3 Make no changes or relocations without prior written notice to Contract Administrator.
- .4 Report to Contract Administrator when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .5 Replace control points in accordance with original survey control.

**1.2                SURVEY REQUIREMENTS**

- .1 Establish lines and levels, locate and lay out, by instrumentation.
- .2 Establish pipe invert elevations.
- .3 Establish lines and levels for mechanical and electrical work.

**1.3                LOCATION OF EQUIPMENT AND FIXTURES**

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Contract Administrator of impending installation and obtain approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Contract Administrator.

**1.4                RECORDS**

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 Maintain a complete and accurate control and survey of foundations and major site improvements showing dimensions, locations, angles and elevations of work.
- .3 Record locations of maintained, re-routed and abandoned service lines.
- .4 Record and maintain records of directional boring control and survey. Record locator instrument position and elevation at intervals of no more than 4 metres.

**1.5                SUBMITTALS**

- .1 On request of Contract Administrator, submit documentation to verify accuracy of field Engineering work.

**1.6 EXISTING CONDITIONS**

- .1 Promptly notify Contract Administrator in writing if existing conditions at Place of Work differ materially from those indicated in Contract documents, or a reasonable assumption of probable conditions based thereon.
- .2 After prompt investigation, should Contract Administrator determine that conditions do differ materially, instructions will be issued for changes in work as provided in Changes and Change Orders.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1                RELATED SECTIONS**

- .1        Division 01 – General Requirements
- .2        All Technical specification sections

**1.2                PROJECT CLEANLINESS**

- .1        Maintain work in tidy condition, free from accumulation of waste products and debris, other than that caused by City or other contractors not associated with this project.
- .2        Reuse and recycle the maximum amount of waste as possible.
- .3        Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on site.
- .4        Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5        Provide on-site a minimum of 2 dump containers for collection of waste materials and debris. Dispose of waste materials and debris off site.
- .6        Clean interior/exterior work areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
  - .1        The City will not perform any cleaning operations prior to the contractor starting the Work or at any time during the progress of the Work. The Contractor is responsible for all cleaning operations.
- .7        Store volatile waste in anti- spill covered metal containers, and remove from premises at end of each working day.
- .8        Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .9        Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .10      Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

**1.3                FINAL CLEANING**

- .1        When work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining work.
- .2        Remove waste products and debris other than that caused by others, and leave work clean and suitable for occupancy.
- .3        Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4        Remove waste products and debris other than that caused by City or other contractors not associated with the project.

- .5 Clean existing interior building work areas affected by construction dust and debris. Clean existing piping and building areas that are affected by carry over of construction dust and debris.
- .6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on site.
- .7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .8 Pay all disposal / dumping/ recycling/ tipping fees for waste disposal.
- .9 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .10 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floor.
- .11 Clean lighting reflectors, lenses, and other lighting surfaces. Clean dust and dirt from the interior of electrical power and control panels.
- .12 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .13 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- .14 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .15 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .16 Remove dirt and other disfiguration from exterior surfaces.
- .17 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .18 Sweep and wash clean paved areas. Clean debris and dirt from catch basins and manholes.
- .19 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .20 Clean roofs, downspouts, and drainage systems.
- .21 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.
- .22 Remove snow and ice from access to building.

#### **1.4 WASTE MANAGEMENT AND DISPOSAL**

- .1 Meet the requirements stated in Section 01 74 21 – Waste Management and Disposal.

**Part 2            Products**

**2.1                NOT USED**

**Part 3            Execution**

**3.1                NOT USED**

**END OF SECTION**

**Part 1 General**

**1.1 WASTE MANAGEMENT OBJECTIVES**

- .1 Of the inevitable waste that is generated, the waste materials designated in this specification shall be salvaged for recycling. Waste disposal in landfills or incinerators shall be minimized. This means careful recycling of job site waste.
- .2 The Contractor shall:
  - .1 Institute construction waste reduction practices.
  - .2 Effect optimum control of construction waste.
  - .3 Transport and dispose of waste materials that are not identified to be recycled at permitted landfill facilities.

**1.2 RELATED WORK**

- .1 General Conditions
- .2 All specification sections

**1.3 WASTE MANAGEMENT PLAN**

- .1 Waste Management Plan: The Contractor is encouraged to implement a waste management plan to maximize recycling of construction wastes. As a minimum, recycling of the following designated materials are recommended.
  - .1 Old corrugated cardboard, paper and packaging.
  - .2 Clean dimensional wood, palette wood.
  - .3 Concrete/Concrete Block/Asphalt.
  - .4 Scrap metals.
  - .5 Unpainted gypsum wallboard.
  - .6 Glass and plastics.
  - .7 Beverage containers.
  - .8 Land clearing debris.
  - .9 Paint (to be returned to Paint Depot).

**1.4 HAZARDOUS WASTE**

- .1 Separate waste defined as hazardous from recyclable and reusable materials. Place hazardous materials in designated containers.
- .2 Handle, transport and dispose hazardous materials not scheduled for reuse or recycling in accordance with applicable local, Provincial/Territorial and National regulations.
- .3 Unused chemicals, admixtures, additives, sealants, caulking, and surface coating materials must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

- .4 Divert hazardous materials from landfill and dispose of at official hazardous material collections site.
- .5 Ensure emptied containers are sealed and stored safely for disposal away from children.
- .6 Unused or damaged glazing materials are not recyclable. These materials must not be disposed of with materials destined for recycling.
- .7 Plastic containers from toxic and hazardous materials are not recyclable and must not be diverted for recycling with other plastic materials. Do not dispose of empty containers with plastic materials destined for recycling.

### **1.5 STORAGE, HANDLING AND PROTECTION**

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Contract Administrator.
- .2 Protect, stockpile, store and catalogue salvaged items.
- .3 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .4 Protect structural components not removed for demolition from movement or damage.
- .5 Support affected structures. If safety of building is endangered, cease operations and immediately notify Contract Administrator.
- .6 Protect surface drainage, mechanical and electrical from damage and blockage.
- .7 Separate and store materials produced during dismantling of structures in designated areas.
- .8 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
  - .1 On-site source separation is recommended.
  - .2 Remove co-mingled materials to off-site processing facility for separation.

### **1.6 DISPOSAL OF WASTES**

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste or volatile materials into waterways, storm, or sanitary sewers.

### **1.7 USE OF SITE AND FACILITIES**

- .1 Execute work with least possible interference or disturbance to normal use of premises.

### **1.8 SCHEDULING**

- .1 Co-ordinate work with other activities at site to ensure timely and orderly progress of work.

**Part 2            Products**

**2.1                NOT USED.**

**Part 3            Execution**

**3.1                APPLICATION**

- .1            Do work in compliance with the City's By-laws.
- .2            Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

**3.2                CLEANING**

- .1            Remove tools and waste material on completion of work, and leave work area in clean and orderly condition.
- .2            Clean-up work area as work progresses.
- .3            Source separate materials to be reused/recycled into specified sort areas.

**END OF SECTION**

**Part 1            General**

**1.1                ADMINISTRATIVE REQUIREMENTS**

- .1    Acceptance of Work Procedures:
  - .1    Contractor's Inspection: Contractor to conduct inspection of work, identify deficiencies and defects, and repair as required to conform to Contract documents.
    - .1    Notify Contract Administrator in writing of satisfactory completion of the Contractor's inspection and submit verification that corrections have been made.
    - .2    Request Contract Administrator's inspection.
    - .3    Correct any incomplete work and request the Contract Administrator for a re-inspection.
  - .2    Contract Administrator's Inspection:
    - .1    Contract Administrator and the Contractor are to inspect work and identify defects and deficiencies.
    - .2    Contractor to correct work as directed.
    - .3    Contract Administrator will re-inspect corrected incomplete work when requested by the Contractor.
  - .3    Completion Tasks: submit written certificates in English that tasks have been performed as follows:
    - .1    Work: completed and inspected for compliance with Contract documents.
    - .2    Defects: corrected and deficiencies completed.
    - .3    Equipment and systems: tested, adjusted and fully operational.
    - .4    Operation of systems: demonstrated to City's personnel.
    - .5    Commissioning of Work: completed in accordance with 01 91 13 - General Commissioning Requirements and all forms executed and provided to the Contract Administrator.
    - .6    Work: complete and ready for final inspection.
  - .4    Final Inspection:
    - .1    When completion tasks are done, request final inspection of work by Contract Administrator and the Contractor.
    - .2    When work incomplete according to the City and Contract Administrator, complete outstanding items and request re-inspection.
  - .5    Declaration of Substantial Performance: when Contract Administrator considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
  - .6    Commencement of Lien and Warranty Periods: date of the City's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.

- .7 Final Payment:
  - .1 When Contract Administrator considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
- .8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

**1.2 CLEAN UP**

- .1 Maintain the working area in a clean and orderly manner as the Work progresses, and upon completion of construction, remove all waste materials, and all temporary facilities from the site.
- .2 Haul surplus or salvage materials that are the property of the City to the City's storage site.
- .3 Remove surplus or salvaged materials belonging to the Contractor from the site.
- .4 Clean haul routes.
- .5 Remove grease, dust, dirt, stains, labels, finger prints and other foreign materials from sight on exposed interior and exterior finished surfaces, including glass and other polished surfaces.
- .6 Clean lighting reflectors, lenses and other lighting surfaces.
- .7 Broom clean paved surfaces, rake clean other surfaces of ground.
- .8 Remove debris and surplus materials from roof areas and accessible concealed spaces.
- .9 Remove snow and ice from access to the Work.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1            ADMINISTRATIVE REQUIREMENTS**

- .1    Pre-Warranty Meeting:
  - .1    Convene meeting one week prior to contract Substantial Performance with the Contractor's representative and Contract Administrator.
    - .1    Verify Project requirements.
    - .2    Review manufacturer's installation instructions and warranty requirements.
  - .2    Contract Administrator to establish communication procedures for:
    - .1    Notifying construction warranty defects.
    - .2    Determine priorities for type of defects.
    - .3    Determine reasonable response time.
  - .3    Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
  - .4    Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

**1.2            ACTION AND INFORMATIONAL SUBMITTALS**

- .1    Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2    A minimum of thirty (30) calendar days prior to commissioning of the Work, submit to the Contract Administrator, five final copies of Operating and Maintenance Manuals in English.
- .3    Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4    Provide evidence, if requested, for type, source and quality of products supplied.

**1.3            OPERATION AND MAINTENANCE MANUALS**

- .1    Prepare operation and maintenance manuals and submit five hard copies and one electronic copy containing PDF files to the Contract Administrator a minimum of thirty (30) days prior to commissioning.
- .2    Operation and maintenance manuals are specified in general in this section, with regard to numbers of binders, preparation, marking, general arrangement, format and general contents. Requirements for mechanical, process equipment, electrical work and other items may be specified in other sections of the specifications, however the general format shall be in accordance with this section.
- .3    Provide the services of qualified and experienced personnel to prepare manuals.

- .4 Prepare sets of manuals for various divisions using identical bindings, and the same indexing system and format for all manuals (e.g., if there are X number of binder for the entire project they are to be labelled Vol. 1 of X, Vol. 2 of X, Vol. 3 of X, etc..)
- .5 Provide binders of suitable size to contain material.
- .6 Label the Cover and Spine of each binder as follows:
  - .1 Cover
    - .1 Project title (St. Boniface Industrial Park Phase 2 Pumping Station)
    - .2 Binder Title (e.g., Mechanical Operation and Maintenance Manual)
    - .3 Volume No. / Contractor Name (e.g., Vol. Y of X\_CONTRACTOR)
  - .2 Spine
    - .1 Project title
    - .2 Month and year of commissioning
    - .3 Volume No. / Contractor Name
- .7 Arrange each individual binder as follows:
  - .1 Title Page (first page on inside of binder)
    - .1 Project title
    - .2 City of Winnipeg
    - .3 Name, address, telephone number for:
      - .1 Contract Administrator
      - .2 General Contractor
      - .3 Subcontractors (list all applicable to binder contents)
  - .2 Index (follows Title Page)
    - .1 Project title
    - .2 Volume No.
    - .3 Table of Contents broken out into three columns as follows:
      - .1 Item No.
      - .2 Specification reference No.
      - .3 Description of item
  - .3 Tabs
    - .1 Tab Title Page
      - .1 Item description
      - .2 Manufacturer
      - .3 Agent name
      - .4 Agent address
      - .5 Agent telephone number
      - .6 Agent fax number
      - .7 Item No.
      - .8 Specification reference No.
      - .9 General description

- .2 Contents of each tab
  - .1 Part number specific to the item provided
  - .2 Product information specific to the item provided
  - .3 Operating procedures and instructions specific to the item provided
  - .4 Preventive maintenance program specific to the item provided
  - .5 Servicing schedules specific to the item provided
  - .6 Spare parts list specific to the item provided
  - .7 Start-up documentation and check sheets (if applicable)
- .8 An electronic copy containing PDF files is to be provided on CD or USB memory stick for each binder. The contents of each CD/USB memory stick are to be organized into folders as follows:
  - .1 Primary folder labelled with Volume Name / Contractor (e.g., VOL 01 of XX\_CONTRACTOR\_NAME)
    - .1 Include a PDF of the Title Page (clause 7.1) and Index (clause 7.2) within the primary folder.
  - .2 Subfolders to be labelled with Tab No. (e.g., TAB XX)
    - .1 Include a single PDF including the Tab Title Page (clause 7.3.1) and Tab contents (clause 7.3.2) within the Tab subfolder. The PDF is to be labelled with the specification reference and item description (e.g., St. Boniface Industrial Park - Phase 2 Wastewater Pumping Station).

#### **1.4 PROJECT RECORD DOCUMENTS**

- .1 The Contractor shall keep one complete set of all construction drawings on the site.
- .2 On the set of Contract Drawings on the site, the Contractor shall record any changes that are made during the actual construction of the Work. The purpose of recording these changes is to provide drawings of record at the end of the Work. The Contractor shall be responsible for the adequacy and the reliability of the information recorded on the drawings of record. Marked up drawings shall be made available for inspection by the Contract Administrator during the construction period.
- .3 At the completion of the construction period, the Contractor shall turn over the set of construction drawings, which have been marked up with changes during the course of the Work to the Contract Administrator to permit the Contract Administrator to prepare Drawings of Record for the Work.
- .4 Use indelible marking pens, maintaining separate colours for each major system, for recording information.
- .5 Record information concurrently with construction progress.
- .6 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - .2 Field changes of dimension and detail.

- .3 Changes made by change orders.
- .4 Details not on original Contract Drawings.
- .5 References to related shop drawings and modifications.
- .7 Specifications: mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.
- .8 Other documents: Maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .9 Provide digital photos, if requested, for site records.
- .10 The submission of acceptable marked up construction drawings following the completion of the Work will be valued at **\$10,000.00** for the purpose of deficiency holdback when not submitted prior to Substantial Performance.

## **1.5 MATERIALS AND FINISHES**

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
  - .1 Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

## **1.6 MAINTENANCE MATERIALS**

- .1 Spare Parts:
  - .1 Provide spare parts, in quantities specified in individual specification sections.
  - .2 Provide items of same manufacture and quality as items in Work.
  - .3 Deliver to location of The Work as directed; place and store.
  - .4 Receive and catalogue items.
    - .1 Submit inventory listing to Contract Administrator.
    - .2 Include approved listings in Maintenance Manual.
  - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
  - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
  - .2 Provide items of same manufacture and quality as items in work.
  - .3 Deliver to location of the Work as directed; place and store.

- .4 Receive and catalogue items.
  - .1 Submit inventory listing to Contract Administrator.
  - .2 Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
  - .1 Provide special tools, in quantities specified in individual specification section.
  - .2 Provide items with tags identifying their associated function and equipment.
  - .3 Deliver to location of the Work as directed; place and store.
  - .4 Receive and catalogue items.
    - .1 Submit inventory listing to Contract Administrator.
    - .2 Include approved listings in Maintenance Manual.

**1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Contract Administrator.

**1.8 WARRANTIES AND BONDS**

- .1 Submit warranty information made available during construction phase, to Contract Administrator for approval prior to each monthly pay estimate.
- .2 Conduct 12 month warranty inspection, measured from time of acceptance, by Contract Administrator.
- .3 Respond in timely manner to oral or written notification of required construction warranty repair work.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 NOT USED**

**END OF SECTION**

**Part 1            General**

**1.1                DESCRIPTION**

- .1        The Contractor shall provide, commission and turn over to the City one (1) complete operating sewage lift station and associated works as described herein the specifications.
- .2        For commissioning purposes the term "facility" shall mean the works of this Contract entirely. Items in this Contract that require commissioning include, but are not limited to:
  - .1        Pumps, piping, crane, flowmeter and valves
  - .2        Emergency generators,
  - .3        Control systems,
  - .4        Underground piping and valves,
  - .5        HVAC systems.
- .3        Testing and commissioning shall normally proceed in four steps:
  - .1        Test all individual items and items forming sub-systems, ready for operation.
  - .2        Commission respective components of the Lift Station, Generator, HVAC and associated works.
  - .3        Commission the Work of this Contract entirely.
  - .4        Turn over the Work to the City.
- .4        Testing and commissioning shall be performed by the Contractor, in the presence of and with input from the Contract Administrator and the City's representative.
- .5        The Contractor shall inform all Subcontractors and Suppliers/Manufacturers of the requirements herein and include all costs for the following services in his Bid Price for the Work specified. Where a minimum amount of time is stated in the specifications for a Manufacturer's services, any additional time required to perform the specified services satisfactorily shall be at no additional cost to the City.
- .6        The Contractor is responsible for all chemicals, power, consumables during Commissioning, Performance Verification and Acceptance Testing.

**1.2                RELATED WORK SPECIFIED ELSEWHERE**

- .1        All other specification sections.

**1.3                PREPARATION**

- .1        Establish a written detailed procedure and schedule and submit to the Contract Administrator at least 14 calendar days prior to the commencement of the Work. The commissioning plan shall include:
  - .1        Detailed schedule of events
  - .2        Method for introducing flow
  - .3        Planned attendance schedule for manufacturer's representatives
  - .4        Detailed procedures and order of events relating to operation/decommissioning of existing infrastructure
  - .5        Drawings and sketches as required to illustrate the planned sequence of events
- .2        The commissioning plan shall be reviewed and agreed by the Contract Administrator/City prior to its implementation.
- .3        Follow the procedure and schedule unless otherwise agreed.

- .4 Inspect all Material and Product to ensure that the Work is complete, that Material and product are in place and secure, and that the recommendations of the Manufacturer/Supplier have been complied with.
- .5 Inspect and clean all pipe, equipment, and all electrical connections.

#### **1.4 PERSONNEL**

- .1 A team comprised of personnel from the Contractor, Contractor's sub-trades and representatives from various equipment Suppliers/manufacturers will conduct the Work of commissioning.
- .2 The Contractor shall be responsible for overall co-ordination and direction of the Work with input/approval from the Contract Administrator and the City.
- .3 Provide competent, experienced, factory trained technical personnel to supervise the installation, inspection, testing and commissioning of Product supplied and installed under this Contract.
- .4 The Contractor shall provide and pay for all such personnel, regardless of the length of time required to commission the Work.
- .5 The Contractor shall provide personnel representing the appropriate trades, including control and instrumentation personnel during the commissioning. These personnel shall be skilled workmen, able to expedite any minor repairs, adjustments, etc. as are required to complete commissioning with as few delays as possible.

#### **1.5 TESTING INDIVIDUAL EQUIPMENT**

- .1 Every individual item of equipment shall be tested by itself and in combination with related items to ensure that the item and the subsystem are in perfect operating condition, comply with specified requirements and are ready for operation in the overall system and entire facility operation.
- .2 All testing, checking, calibration, adjustments, making of connections, setting, lubrication and other requirements shall be carried out and a brief report submitted to the Contract Administrator for each item tested individually.
- .3 Other sections of the specifications may contain specific testing, cleaning, disinfecting, balancing and operation requirements which are to be followed in conjunction with this Section.
- .4 The Contractor shall arrange for the simulation of the control sequences of key equipment and processes. Every effort shall be made to ensure that the commissioning period provides for full and comprehensive operation of the equipment under all anticipated normal and adverse operating conditions.
- .5 Inspection and testing shall include, but shall not be limited to:
  - .1 Soundness — without damaged parts,
  - .2 Completeness in all details as specified,
  - .3 Correctness of setting, alignment and arrangements of parts,
  - .4 Adequacy and correctness of packing, sealing and lubrication.
- .6 Contactor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

## **1.6 CONTROLS**

- .1 All controls which are the responsibility of the Contractor shall be installed and tested prior to commissioning.
- .2 The Contract Administrator shall arrange for the simulation of the control sequences or shall allow for the operation of the system without the features included in the work of others. Every effort shall be made to ensure that the commissioning period provides for the full and comprehensive operation of the equipment under all anticipated normal and adverse operating conditions.

## **1.7 COMMISSIONING**

- .1 During the commissioning period the Contractor shall appoint one qualified person to lead the commissioning group of Contractor's personnel, Subcontractor's personnel and Manufacturer's/Supplier's representatives.
- .2 The Contract Administrator may order changes in procedure, operation methods or may take whatever actions are necessary to ensure correct commissioning.
- .3 During the commissioning period, the Contractor shall demonstrate that the operation of the facility as a whole, as well as all components, is correct and in accordance with the Contract requirements.
- .4 All components shall be demonstrated over the entire range of operation specified, including variations in flow, pressures, speeds and controls.
- .5 All malfunctions, alarms, safety devices, interlocks, and annunciation shall be demonstrated by simulation of malfunctions as necessary.
- .6 During the commissioning period, the Contractor shall operate the systems installed in this Contract, and the City's personnel shall observe and receive operation instructions.
- .7 Contract Administrator will issue Substantial Performance Certificate when:
  - .1 Completed commissioning document has been received, reviewed for suitability and approved by Contract Administrator.
  - .2 Equipment, components and systems have been commissioned.
  - .3 Performance testing of the Work is complete and accepted by the Contract Administrator as meeting the Contract requirements.
  - .4 Specified Operator training has been completed and signed off by the City.
  - .5 Meeting the requirements of the Manitoba Builder's Lien Act.

## **1.8 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS**

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during commissioning, correct deficiencies, re-verify equipment and components within the non-functional system, including related systems as deemed required by Contract Administrator, to ensure effective performance.
- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by the Contractor. Above cost to be in form of progress payment reductions or hold-back assessments.

## **1.9 COMPLETION OF COMMISSIONING**

- .1 Upon completion of commissioning leave system in normal operating mode.

- .2 **Complete Form 104 – Certificate of Satisfactory Commissioning for each equipment, controls, instrument and sub-system.**
- .3 Commissioning to be considered complete when Contract commissioning deliverables including Form 104 have been submitted and accepted by Contract Administrator.
- .4 When changes are made to baseline components or system settings established during commissioning process, provide updated commissioning form for affected item.

**Part 2 Products**

**2.1 NOT USED**

**Part 3 Execution**

**3.1 INSTALLATION ASSISTANCE AND INSPECTIONS**

- .1 The Contractor shall arrange with the Suppliers of the Contractor supplied equipment for the provision of the Supplier services specified herein. The Contractor shall coordinate and expedite the provision of these services and include all the related costs in the Bid Price.
- .2 The Contractor shall ensure that skilled servicemen from the Suppliers of equipment have instructed the Contractor in the proper installation of the equipment and that the Contractor has obtained and understands all necessary written installation instructions.
- .3 Toward the end of the installation period, after informing the Contract Administrator, notify the Supplier to send his skilled serviceman to check over the completed installation of equipment specified. The serviceman shall make a detailed check of the installation including alignment, belt tension, bolt tensions, running clearances, lubrication and workmanship and all other items as required to ensure proper operation of the equipment. Promptly remedy any defects to the satisfaction of the Supplier's skilled serviceman. The equipment shall then be run and tested in the presence of the serviceman and the Contractor.
- .4 The Supplier's skilled serviceman shall then certify in written form that the installation is satisfactory.

**3.2 START UP ASSISTANCE**

- .1 Notify the Supplier and the Contract Administrator fourteen (14) days ahead of the date when start-up is to take place. Have the Supplier send a skilled serviceman to the site. The site visit may be concurrent with the check of satisfactory installation if mutually agreed by the Supplier, the Contractor and the Contract Administrator.
- .2 On his start-up visit the Supplier's skilled serviceman shall make all the necessary checks to equipment and if necessary advise the Contractor as to any further checking, flushing or cleaning required prior to confirming that the equipment is ready to run.
- .3 The Contractor and the Supplier's skilled representative shall then operate the equipment to demonstrate to themselves the operation of the equipment and controls and shall take any necessary remedial steps to ensure satisfactory operation.
- .4 The Contractor shall then notify the Contract Administrator of his readiness to demonstrate the operation of the equipment and the Contract Administrator shall arrange to promptly attend such demonstration together with the City's representative.

- .5 The Contractor and the serviceman shall then demonstrate to the Contract Administrator's satisfaction that the equipment is properly aligned, that there is no pipe stress, etc. Then they shall demonstrate the satisfactory operation of the equipment and shall prove out the satisfactory operation of all controls over several cycles. The Contractor shall carry out such tests as required by the Contract Administrator. All pieces of equipment shall be tested in the presence of the Contract Administrator to ascertain that the equipment conforms with the Contract requirements. For example, drawdown and power draw tests will be carried out on pumps to ascertain whether the performance agrees with the published pump curve. The results of such tests shall be recorded by the Contractor on forms whose format has been agreed to by the Contract Administrator and the completed forms, signed by the Contractor, shall be given to the Contract Administrator. The Contractor shall arrange to provide any necessary water and/or chemicals to demonstrate operation satisfactory to the Contract Administrator, unless the Contract Administrator requires a demonstration run using sewage.
- .6 Should the demonstration reveal any defects then such shall be promptly rectified by the Contractor and the demonstration of the equipment repeated to the satisfaction of the Contract Administrator. Should such repeat demonstration require a second, or subsequent visit to the site by the Contract Administrator and/or the City's representative, then the additional costs incurred shall, at the discretion of the Contract Administrator, be paid for by the Contractor. Upon satisfactory completion of this demonstration the equipment shall then be commissioned as scheduled by the Contractor and approved by the Contract Administrator.

**3.3 CITY'S OPERATOR TRAINING**

- .1 Arrange with the Supplier of Contractor supplied equipment for the provision of a qualified Supplier's representative to provide training of the operations staff with respect to the operation and maintenance of the lift station equipment, as specified in these specifications.
- .2 The training sessions shall be in accordance with the respective equipment specifications of Divisions 25, 26 and 40. Training sessions shall be undertaken prior to successful completion of the commissioning activities for the specified work.
- .3 Minimum number of days to be allowed for to meet the requirements of installation assistance, start-up assistance, commissioning and operator training. The Contractor may combine trips for installation, start-up assistance, commissioning, and operator training. Where full days are not required, partial days are acceptable.

<b>Equipment</b>	<b>Start-up</b>	<b>Training</b>
Wastewater Pumps	1 day	1 day
Electrical Instrumentation and Controls and HVAC	1 day	1 day
Emergency Genset	½ day	½ day

**3.5 SERVICES FOR CONTRACTOR SUPPLIED EQUIPMENT**

- .1 The Contractor shall include in the Bid Price for the Contract the cost to cover the provision of all services by the Contractor and contractor selected Supplier of equipment and systems to be installed.

**END OF SECTION**

**CERTIFICATE OF SATISFACTORY COMMISSIONING**

**FORM 104**

Commissioning has been completed in accordance with the specification, except as noted below:

**PROJECT:** \_\_\_\_\_

**ITEM OF EQUIPMENT:** \_\_\_\_\_

**TAG NO.:** \_\_\_\_\_

**REFERENCE  
SPECIFICATION:** \_\_\_\_\_

**OUTSTANDING DEFECTS:** \_\_\_\_\_

\_\_\_\_\_  
(Contractor, Name, Signature)

\_\_\_\_\_  
Date

\_\_\_\_\_  
(Equipment Supplier, Name, Signature)

\_\_\_\_\_  
Date