

Part 1 General

1.1 SECTION INCLUDES

- .1 Coordination Work and Project Conditions
- .2 Start-up Meeting
- .3 On-Site Documents
- .4 Construction Progress Schedule
- .5 Construction Progress Meetings
- .6 Site Foreman
- .7 Construction Force
- .8 Quality Assurance
- .9 Products
- .10 Closeout Procedures

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 78 10 – Closeout Submittals
- .3 Section 01 45 00 – Quality Control

1.3 COORDINATION AND PROJECT CONDITIONS

- .1 Coordinate scheduling, submittals, use of Site, temporary utilities, construction facilities, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- .2 Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- .3 Coordinate space requirements, supports, and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- .4 In finished areas, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- .5 Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.
- .6 After City occupancy of premises, coordinate access to Site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of City's activities.

1.4 START-UP MEETING

- .1 Within fifteen (15) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Senior representatives of the City, Contract Administrator, and Contractor, major Subcontractors, field inspectors and are to be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum five (5) days before meeting.
- .4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- .5 Agenda to include following:
 - .1 Appointment of official representative of participants in Work;
 - .2 Schedule of Work;
 - .3 Schedule of submission of shop drawings, samples, and colour chips as specified in Section 01 33 00;
 - .4 Delivery schedule of specified equipment;
 - .5 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements;
 - .6 City-furnished Products (if applicable);
 - .7 Monthly progress claims, administrative procedures, photographs, and holdbacks; and,
 - .8 Insurances and transcript of policies.
- .6 Comply with Transit's allocation of mobilization areas of Site; for field offices and sheds, access, traffic, and parking facilities.
- .7 During construction, coordinate use of Site and facilities through Contract Administrator's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.
- .8 Comply with instructions of Contract Administrator for use of temporary utilities and construction facilities.
- .9 Coordinate field engineering and layout work with Contract Administrator.

1.5 ON-SITE DOCUMENTS

- .1 Maintain at job Site, one copy each of the following:
 - .1 Contract drawings;
 - .2 Specifications;
 - .3 Addenda;
 - .4 Reviewed shop drawings;
 - .5 Change orders;
 - .6 Other modifications to Contract;
 - .7 Field test reports;
 - .8 Copy of approved Work schedule;
 - .9 Manufacturers' installation and application instructions;

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- .10 Labour conditions and wage schedules; and,
 - .11 Applicable current editions of municipal regulations and by-laws. Current building codes complete with addenda bulletins applicable to the place of the Work.

1.6 CONSTRUCTION PROGRESS SCHEDULE

- .1 Submit preliminary construction progress schedule to Contract Administrator which is coordinated with Contract Administrator's project schedule.
- .2 After review, revise and resubmit schedule to comply with revised project schedule.
- .3 During progress of Work revise and resubmit as directed by Contract Administrator.

1.7 CONSTRUCTION PROGRESS MEETINGS

- .1 Schedule and administer bi-weekly project meetings throughout progress of Work or as determined by Contract Administrator.
- .2 Attendance Required: Job superintendent, major Subcontractors and suppliers, City, Contract Administrator, as appropriate to agenda topics for each meeting.
- .3 Prepare Agenda as follows:
 - .1 Review minutes of previous meetings;
 - .2 Review of Work progress;
 - .3 Field observations, problems, and decisions;
 - .4 Identification of problems which impede planned progress;
 - .5 Review of submittals schedule and status of submittals;
 - .6 Review of off-Site fabrication and delivery schedules;
 - .7 Review construction schedule and corrective measures to regain projected schedules;
 - .8 Planned progress during succeeding work period;
 - .9 Maintenance of quality and work standards;
 - .10 Effect of proposed changes on progress schedule and completion date; and,
 - .11 Other business relating to Work.
- .4 Record Minutes including significant proceedings, decisions and required action by the affected parties within three days after meeting. Distribute copies to Contractor, City, participants, and those affected by decisions made.

1.8 SUBMITTALS

- .1 Prepare and issue submittals to Contract Administrator for review as per requirements of Section 01 33 00, Submittals.

1.9 SITE FOREMAN

- .1 A full-time (on-Site) foreman shall be employed for the duration of the project and shall be on the job during all working periods. Upon request, the Contractor shall provide written evidence of his qualifications, competence and experience, including a list of similar projects completed under his personal direction.
- .2 Particular emphasis shall be placed on the foreman's ability to co-ordinate trades and maintain the schedules required to perform the work.

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- .3 The City reserves the right to request an alternative foreman if project co-ordination is unsatisfactory.

1.10 CONSTRUCTION FORCE

- .1 The Contractor shall provide and maintain a sufficient crew of labourers, mechanics, and foremen to perform the Work at all times during the performance of the Contract.
- .2 The City reserves the right to request that additional forces be provided to meet project schedule.

1.11 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- .1 Refer to Section 01 45 00, Quality Control.

1.12 PRODUCTS

- .1 Do not use materials, Products, or equipment removed from existing premises, except as specifically permitted by the Contract Documents. Co-ordinate with City before discarding existing equipment.
- .2 Provide interchangeable components of the same manufacture for components being replaced.

1.13 CLOSEOUT PROCEDURES

- .1 Notify Contract Administrator when Work is considered ready for Substantial Performance.
- .2 Accompany Contract Administrator on preliminary inspection to determine items listed for completion or correction.
- .3 Comply with Contract Administrator's instructions for correction of items of Work listed in executed certificate of Substantial Performance and for access to City-occupied areas.
- .4 Notify Contract Administrator of instructions for completion of items of Work determined in Contract Administrator 's final inspection.
- .5 Refer to Section 01 78 10, Closeout Submittals, for requirements.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Submittal procedures
- .2 Shop Drawings and Product data
- .3 Submittal checklist

1.2 RELATED SECTIONS

- .1 Section 01 78 10, Closeout Submittals

1.3 SUBMITTAL PROCEDURES

- .1 Submit to Contract Administrator submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Work affected by submittal shall not proceed until review is complete.
- .3 Present Shop Drawings, product data, samples and mock-ups in SI Metric and [Imperial inch-pound in brackets] units.
- .4 Where items or information is not manufactured or produced in SI Metric units, converted values within the metric measurement tolerances are acceptable.
- .5 Review submittals prior to submission to Contract Administrator. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.
- .6 Submittals not stamped, signed, dated, identified as to specific project, and attesting to their being reviewed will be returned without being examined and shall be considered rejected.
- .7 Notify Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .8 Verify field measurements and affected adjacent Work is coordinated.
- .9 Contractor's responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
- .10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator review.
- .11 Keep one reviewed copy of each submission on-Site.

1.4 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 the Contractor to illustrate details of a portion of the Work.

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- .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 Contractor is responsible to field verify all dimensions of new components (e.g., coils, fin tube, reheat coils, and convectors), which integrate with existing Site and equipment conditions, before processing shop drawings. Should dimensions conflict with Site conditions, request clarification from Contract Administrator before proceeding. **The City will not be responsible for replacing ordered components which do not fit the Site conditions.**
 - .4 Allow ten 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 any revisions other than those requested.
 - .7 Accompany submissions with transmittal letter, containing:
 - .1 Date;
 - .2 Project title and number;
 - .3 Contractor's name and address;
 - .4 Identification and quantity of each shop drawing, product data and sample; and,
 - .5 Other pertinent data.
 - .8 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

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- .9 Single line and schematic diagrams
 - .10 Relationship to other parts of the Work
 - .9 After Contract Administrator's review, distribute copies.
 - .10 Submit six (6) prints or electronic copy of Shop Drawings for each requirement requested in specification sections and as Contract Administrator may reasonably request.
 - .11 Submit six (6) copies or electronic copy of product data sheets or 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.
 - .12 Delete information not applicable to project.
 - .13 Supplement standard information to provide details applicable to project.
 - .14 If upon review by Contract Administrator, no errors or omissions are discovered or if only minor corrections are made, print copies or electronic copy will be returned and fabrication and installation of Work may proceed. If Shop Drawings are rejected, noted copy will be returned and re-submission of corrected Shop Drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.5 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

1.6 SUBMITTAL CHECKLIST

- .1 The following is a list of documents that are required to finalize this contract:
 - .1 Statutory Declaration that all debts associated with the Contract have been paid;
 - .2 A letter from the Worker's Compensation Board indicating the status of the Contractor;
 - .3 Transcription of insurance immediately after award of Contract;
 - .4 Operation and Maintenance Manual and Parts List for all equipment;
 - .5 "As-built" record drawings and documents showing revisions to the system made during construction;
 - .6 DDC printout showing all set-points and settings with present operating conditions including all alarm set-points and sensor locations;
 - .7 Valve tag directory;
 - .8 Certificate indicating factory start-up of major equipment;
 - .9 Electrical inspection certificate from the electrical power authority;
 - .10 Mechanical and electrical inspection certificates from the authorities having jurisdiction; and,
 - .11 Warranties and bonds fully executed and notarized.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Inspection and testing, administrative and enforcement requirements.
- .2 Written and electronic reports.
- .3 Testing requirements for equipment and systems.
- .4 Quality Assurance

1.2 REFERENCES

- .1 ISO/IEC 17025:2005 - General Requirements for the Competence of Testing and Calibration Laboratories.
- .2 SCC (Standards Council of Canada).

1.3 INSPECTION BY AUTHORITY

- .1 Allow Authorities Having Jurisdiction access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection whenever portions of the Work are designated for special tests, inspections or approvals, either when described in the Contract Documents or when required by-law in the Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

1.4 REVIEW BY CONTRACT ADMINISTRATOR

- .1 Contract Administrator may order any part of the Work to be reviewed or inspected if Work is suspected to be not in accordance with Contract Documents.
- .2 If, upon review such work is found not in accordance with Contract Documents, correct such Work and pay cost of additional review and correction.
- .3 If such Work is found in accordance with Contract Documents, City will pay cost of review and replacement.

1.5 INDEPENDENT INSPECTION AGENCIES

- .1 Employment of inspection and testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .2 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and testing to ascertain full degree of defect. Correct defect and irregularities as advised by Contract Administrator at no cost to City. Pay costs for retesting and re-inspection.

1.6 ACCESS TO WORK

- .1 Allow inspection and testing agencies access to Work, off-Site manufacturing and fabrication plants.

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- .2 Cooperate to provide reasonable access and facilities for such access.

1.7 PROCEDURES

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

1.8 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, City may deduct from Contract Price the difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Contract Administrator.

1.9 REPORTS

- .1 Submit one printed copy or electronic copy of signed inspection and test reports to Contract Administrator.
- .2 Provide signed paper copy(s) to Subcontractor(s) of work being inspected or tested.

1.10 TESTING REQUIREMENTS FOR EQUIPMENT AND SYSTEMS

- .1 Submit Testing report(s) for mechanical, electrical and building equipment systems.
- .2 Plumbing and Drainage shall be tested in conformance with the Plumbing Code of Canada.

1.11 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- .1 Monitor quality control over suppliers, manufacturers, Products, services, Site conditions, and workmanship, to produce Work of specified quality.
- .2 Comply with manufacturers' instructions, including each step in sequence.
- .3 Should manufacturers' instructions conflict with Contract Documents, request clarification from Contract Administrator before proceeding.
- .4 Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- .5 Perform Work by persons qualified to produce required and specified quality. Employ only tradesmen holding valid Provincial Trade Qualification certificates.

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- .6 Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
 - .7 Contractor is responsible to field verify all dimensions of new components (e.g., preheat coils, fin tube, reheat coils, and convectors.), which integrate with existing Site and equipment conditions, before processing shop drawings. Should dimensions conflict with Site conditions, request clarification from Contract Administrator before proceeding. **The City will not be responsible for replacing ordered components which do not fit the Site conditions.**
 - .8 Secure Products in-place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.
 - .9 No part of the building structure shall be loaded during construction with a load greater than it can bear safely when completed. The Contractor shall notify the Contract Administrator if there is any question on the load bearing capacities of the structure. The Contractor shall be liable for any damage resulting from any violation of this requirement.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Product quality, availability, storage, handling, protection and transportation
- .2 Product substitution procedures
- .3 Manufacturer's instructions
- .4 Quality of Work, coordination and fastenings
- .5 Existing facilities

1.2 RELATED SECTIONS

- .1 01 31 00 – Project Managing and Coordination

1.3 TERMINOLOGY

- .1 New: Produced from new materials
- .2 Renewed: Produced or rejuvenated from an existing material to like-new condition to serve a new or existing service
- .3 Defective: A condition determined exclusively by the Contract Administrator

1.4 PRODUCT QUALITY

- .1 Products, materials, equipment, parts or assemblies incorporated in Work: New, not damaged or defective, of best quality for purpose intended. If requested, provide evidence as to type, source and quality of Products provided.
- .2 Defective Products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective Products at own expense and be responsible for delays and expenses caused by rejection.
- .3 Should any dispute arise as to quality or fitness of Products, decision rests strictly with Contract Administrator.
- .4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .5 Permanent labels, trademarks and nameplates on Products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.5 AVAILABILITY

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

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

1.6 STORAGE AND PROTECTION

- .1 Store and protect Products in accordance with manufacturers' written instructions.
- .2 Store with seals and labels intact and legible.
- .3 Store sensitive Products in weather tight, climate controlled, enclosures in an environment favourable to Product.
- .4 For exterior storage of fabricated Products, place on sloped supports above ground.
- .5 Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- .6 Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- .7 Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- .8 Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.7 TRANSPORTATION AND HANDLING

- .1 Transport and handle Products in accordance with manufacturer's written instructions.
- .2 Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.
- .3 Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.8 PRODUCT CHANGES

- .1 Change in Product / Products: Submit request for substitution or alternative in accordance with Section 01 62 00.

1.9 MANUFACTURER'S WRITTEN INSTRUCTIONS

- .1 Unless otherwise indicated in specifications; install or erect Products to manufacturer's written instructions. Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.
- .2 Notify Contract Administrator in writing, of conflicts between specifications and manufacturer's instructions, so that Contract Administrator may establish course of action.
- .3 Improper installation or erection of Products, due to failure in complying with these requirements, authorizes Contract Administrator to require removal and re-installation at no increase in Contract Price or Contract Time.

1.10 QUALITY OF WORK

- .1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Contract Administrator if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. Contract Administrator reserves right to require dismissal from Site any workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Contract Administrator, whose decision is final.

1.11 COORDINATION

- .1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.12 CONCEALMENT

- .1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation, inform Contract Administrator if there is interference. Install as directed by Contract Administrator.

1.13 REMEDIAL WORK

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

1.14 LOCATION OF FIXTURES

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Contract Administrator of conflicting installation. Install as directed.

1.15 FASTENINGS

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

1.16 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- .2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use Type 304 or 316 stainless steel for exterior areas.
- .3 Bolts may not project more than one (1) diameter beyond nuts.
- .4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.17 PROTECTION OF WORK IN PROGRESS

- .1 Prevent overloading of any part of the Project.
- .2 Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated, without written approval of Contract Administrator.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Substitutions
- .2 Alternatives

1.2 RELATED SECTIONS

- .1 The City of Winnipeg Bid Opportunity Document

1.3 SUBSTITUTIONS

- .1 "Substitutions" in accordance with B7.

1.4 ALTERNATIVES

- .1 "Alternatives" in accordance with B7.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by City or other Contractors or their employees.
- .2 Remove waste materials from Site at daily regularly scheduled times or dispose of as directed by Contract Administrator.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-Site containers for collection of waste materials and debris.
- .5 Dispose of waste materials and debris off-Site.
- .6 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .7 Store volatile waste in 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.

1.2 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 their employees.
- .5 Remove waste materials from Site at regularly scheduled times or dispose of as directed by Contract Administrator.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

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- .7 Clean and polish mechanical and electrical fixtures.
 - .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures.
 - .9 Vacuum clean and dust building interiors, behind grilles, louvers and screens.
 - .10 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
 - .11 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
 - .12 Remove dirt and other disfiguration from exterior surfaces.
 - .13 Clean and sweep roofs, gutters, areaways, and sunken wells.
 - .14 Sweep and wash clean paved areas. Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
 - .15 Clean roofs, downspouts, and drainage systems.

Part 1 Products

1.1 NOT USED

- .1 Not Used.

Part 2 Execution

2.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 DEFINITIONS

- .1 Recyclable: Ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse by others.
- .2 Recycle: Process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .3 Recycling: Process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .4 Reuse: Repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects; and,
 - .2 Returning reusable items including pallets or unused products to vendors.
- .5 Salvage: Removal of structural and non-structural materials from deconstruction / disassembly projects for purpose of reuse or recycling.
- .6 Separate Condition: Refers to waste sorted into individual types.
- .7 Source Separation: Acts of keeping different types of waste materials separate beginning from first time they became waste.

1.2 DISPOSAL OF WASTES

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner or similar material into waterways, storm, or sanitary sewers.
- .3 Remove materials from demolition as Work progresses.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 APPLICATION

- .1 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.
- .2 Prior to disposal of removed equipment and materials confirm with Transit Facility Manager if product is to be turned over to Transit.

3.2 CLEANING

- .1 Remove tools and waste materials on completion of Work, and leave work area in clean and orderly condition.
- .2 Clean-up work area as work progresses.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Inspections and declarations.
- .2 Closeout submittals
- .3 Operation and maintenance manual format
- .4 Contents each volume
- .5 Recording actual Site conditions
- .6 Record (as-built) documents and samples
- .7 Record documents
- .8 Final survey
- .9 Warranties and bonds

1.2 RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 45 00 - Quality Control
- .3 Section 01 79 00 - Demonstration and Training

1.3 INSPECTIONS AND DECLARATIONS

- .1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Contract Administrator in writing of satisfactory completion of Contractor's Inspection and that corrections have been made; and,
 - .2 Request Contract Administrator's Inspection.
- .2 Contract Administrator's Inspection: Contract Administrator and Contractor will perform inspection of Work to identify defects or deficiencies. Correct defective and deficient Work accordingly.
- .3 Completion: Submit written certificate that following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents;
 - .2 Defects have been corrected and deficiencies have been completed;
 - .3 Equipment and systems have been tested adjusted, balanced, commissioned and are fully operational;
 - .4 Certificates required by authorities having jurisdiction have been submitted;
 - .5 Operation of systems has been demonstrated to City's personnel; and,
 - .6 Work is complete and ready for Final Inspection.
- .4 Final Inspection: When items noted above are completed, request final inspection of Work by Contract Administrator and Contractor. If Work is deemed incomplete by City or Contract Administrator, complete outstanding items and request re-inspection.

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- .5 Declaration of Substantial Performance: when Contract Administrator considers deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for Substantial Performance of the Work.
 - .6 Commencement of Warranty Periods: the date of Substantial Performance of the Work shall be the date for commencement of the warranty period.
 - .7 Commencement of Lien Periods: the date of publication of the certificate of Substantial Performance of the Work shall be the date for commencement of the lien period, unless required otherwise by the lien legislation applicable at the Place of the Work.
 - .8 Final Payment: When Contract Administrator considers final deficiencies and defects have been corrected and it appears requirements of Contract have been completed, make application for final payment.
 - .9 Payment of Hold-back: After issuance of certificate of Substantial Performance of the Work, submit an application for payment of hold-back amount.

1.4 CLOSEOUT SUBMITTALS

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .2 Copy will be returned after final inspection with Contract Administrator's comments.
- .3 Revise content of documents as required prior to final submittal.
- .4 Two (2) weeks prior to Substantial Performance of the Work, submit to the Contract Administrator, three (3) final copies of operating and maintenance manuals in Canadian English.
- .5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.

1.5 OPERATION AND MAINTENANCE MANUAL FORMAT

- .1 Organize data in the form of an instructional manual.
- .2 Binders: vinyl, hard covered, three 'D' ring, loose leaf 8.5 x 11 inch with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: Manufacturer's printed data, or typewritten data.

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- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
 - .9 Submit one (1) draft copy of completed volumes fifteen (15) days prior to final inspection. This copy will be reviewed and returned after final inspection, with Contract Administrator comments. Revise content of all document sets as required prior to final submission.
 - .9 Submit two (2) sets of revised final volumes, within ten (10) days after final inspection.
 - .10 Provide one (1) electronic copy of drawings in AutoCAD format if possible.

1.6 CONTENTS - EACH VOLUME- O & M

- .1 Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, typed on 20 pound white paper, in three (3) parts as follows:
 - .1 Part 1: Directory, listing names, addresses, and telephone numbers of Contract Administrator, Contractor, Subcontractors, and major equipment suppliers;
 - .2 Part 2: Operation and maintenance instructions arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - .1 Significant design criteria
 - .2 List of equipment
 - .3 Parts list for each component
 - .4 Operating instructions
 - .5 Maintenance instructions for equipment and systems
 - .3 Part 3: Project documents and certificates, including the following:
 - .1 Shop drawings and product data
 - .2 Air and water balance reports
 - .3 Certificates
 - .4 Photocopies of warranties
- .2 Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .3 Certificate of Acceptance: Relevant certificates issued by authorities having jurisdiction, including code compliance certificate, life safety systems performance certificate, hydronic pressure test certificate and commissioning certificate.
- .4 Training: Refer to Section 01 79 00.

1.7 EQUIPMENT AND SYSTEMS – O & M

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.

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- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
 - .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - .6 Provide servicing and lubrication schedule, and list of lubricants required.
 - .7 Include manufacturer's printed operation and maintenance instructions.
 - .8 Include sequence of operation by controls manufacturer.
 - .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
 - .10 Provide installed control diagrams by controls manufacturer.
 - .11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.
 - .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
 - .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
 - .14 Include test reports as specified in Section 01 45 00.
 - .15 Additional requirements: As specified in individual specification sections.

1.8 MATERIALS AND FINISHES – O & M

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
- .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 Building Envelope: include copies of drawings of building envelope components, illustrating the interface with similar or dissimilar items to provide an effective air, vapour and thermal barrier between indoor and outdoor environments. Include an outline of requirements for regular inspections and for regular maintenance to ensure that on-going performance of the building envelope will meet the initial building envelope criteria.
- .5 Additional Requirements: as specified in individual specifications sections.

1.9 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings, and within the Project Manual, provided by Contract Administrator.
- .2 Annotate with coloured felt tip marking pens, maintaining separate colours for each major system, for recording changed information.

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- .3 Record information concurrently with construction progress. Do not conceal Work of the Project until required information is accurately recorded.
 - .4 Contract drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum;
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements;
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction;
 - .4 Field changes of dimension and detail;
 - .5 Changes made by change orders;
 - .6 Details not on original Contract Drawings; and,
 - .7 References to related shop drawings and modifications.
 - .5 Specifications: legibly 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; and,
 - .2 Changes made by Addenda and change orders.
 - .6 Other Documents: Maintain manufacturer's certifications, inspection certifications, field test records required by individual specifications sections.

1.10 RECORD (AS-BUILT) DOCUMENTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the Site for Contract Administrator and City, one record copy of:
 - .1 Contract Drawings;
 - .2 Specifications;
 - .3 Addenda;
 - .4 Change Orders and other modifications to the Contract;
 - .5 Reviewed shop drawings, product data, and samples;
 - .6 Field test records;
 - .7 Inspection certificates; and,
 - .8 Manufacturer's certificates.
- .2 Store as-built documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label as-built documents and file in accordance with section number listings in List of Contents of the Project Manual. Label each document "AS-BUILT DOCUMENTS" in neat, large, printed letters.
- .4 Maintain as-built documents in clean, dry and legible condition. Do not use as-built documents for construction purposes.
- .5 Keep as-built documents and samples available for inspection by Contract Administrator.
- .6 Submit final as-built documents (hard copy of Drawings and Specifications) to the Contract Administrator. The Contract Administrator will make changes to the electronic set of Record Drawings and Specifications.

1.11 FINAL SURVEY

- .1 Not applicable.

1.12 WARRANTIES AND BONDS

- .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) days after completion of the applicable item of work.
- .4 Except for items put into use with City's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- .5 Verify that documents are in proper form, contain full information, and are notarized.
- .6 Co-execute submittals when required.
- .7 Retain warranties and bonds until time specified for submittals.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

- .1 Demonstrate operation and maintenance of equipment and systems to City's personnel two (2) weeks prior to date of final inspection.
- .2 City will provide list of personnel to receive instructions, and will co-ordinate their attendance at agreed-upon times.

1.2 QUALITY CONTROL

- .1 When specified in individual sections require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct City's personnel, and provide written report that demonstration and instructions have been completed.

1.3 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit reports within one (1) week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .3 Give time and date of each demonstration, with list of persons present.

1.4 CONDITIONS FOR DEMONSTRATIONS

- .1 Equipment has been inspected and put into operation in accordance with Division 23.
- .2 Testing and adjusting has been performed and equipment and systems are fully operational.
- .3 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.5 PREPARATION

- .1 Verify that conditions for demonstration and instructions comply with requirements.
- .2 Verify that designated personnel are present.

1.6 DEMONSTRATION AND INSTRUCTIONS

- .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at scheduled times, at the equipment location.
- .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
- .3 Review contents of manual in detail to explain aspects of operation and maintenance.
- .4 Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instructions.

1.7 TIME ALLOCATED FOR INSTRUCTIONS

- .1 Ensure amount of time required for instruction of each item of equipment or system as follows:
 - .1 Division 22 – Compressed Air Systems: two (2) hours of instruction on-Site; and,

.2 Division 25 - Control System: four hours of instruction on-Site.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION