# 1. GENERAL

## 1.1. RELATED SECTIONS

.1 Section 01 78 00 – Closeout Submittals

## 1.2. CONTRACTOR USE OF PREMISES

.1 Contractor has use of Site with the following restrictions.

.2 Use Site for Work, for storage, and for access, limited to the areas indicated on the drawings or as directed by Contract Administrator. Co-ordinate use of premises under direction of Contract Administrator. Assume full responsibility for protection and safekeeping of products under this Contract.

.3 Obtain and pay for use of additional storage or Work areas needed for operations under this Contract.

## 1.3. COMPLEMENTARY DOCUMENTS

.1 Drawings, specifications, and schedules are complementary to the other and what is called for by one to be binding as if called for by all. Should any discrepancy appear between documents which leave doubt as to the intent or meaning, abide by Precedence of Documents article in Section 01 19 00 - Specifications and Documents or obtain direction from the Contract Administrator in writing **before submitting a Bid in accordance with B4.** If this is not done it will be assumed that the most expensive alternative has been included in the Bid price. For any ruling to become binding, the Contract Administrator must issue the new direction in a published addendum.

.2 Drawings indicate general location and route of conduit and wire/conductors. Install conduit or wiring/conductors and plumbing piping not shown or indicated diagrammatically in schematic or riser diagrams to provide an operational assembly or system.

.3 Install components to physically conserve headroom, to minimize furring spaces, or obstructions.

.4 Locate devices with primary regard for convenience of operation and usage.

.5 Examine all discipline drawings, specifications, and schedules and related Work to ensure that Work can be satisfactorily executed without changes to the building or Contract value. Conflicts or additional Work beyond Work described to be immediately brought to attention of the Contract Administrator.

.6 In case of conflict, codes and regulations take precedence over the Contract Documents. In no instance reduce the standard or scope of Work or intent established by the drawings and specifications by applying any of the codes referred to herein. Any discrepancies must be brought to the Contract Administrator's attention in writing.

## 1.1. WORK COVERED BY CONTRACT DOCUMENTS

Refer to City of Winnipeg Bid Opportunity No.54-2017; Section D2 SCOPE OF WORK.

## 1.2. DOCUMENTS PROVIDED

.1 Contractor Administrator will supply the Contractor with five (5) sets of Contract Documents for construction purposes.

.2 The Contractor may obtain additional sets of Contract Documents at the cost of printing, handling and shipping.

## 1.3. DOCUMENTS REQUIRED

.1 Maintain at job Site, one of 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 City of Winnipeg Forestry Guidelines.
.12 Other documents as specified.

**END OF SECTION**

# 1 GENERAL

## 1.1 RELATED REQUIREMENTS

.1 Section 01 32 16 – Construction Progress Schedules.

.2 Section 01 56 00 - Temporary Barriers and Enclosures

## 1.2 ACCESS AND EGRESS

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

## 1.3 USE OF SITE AND FACILITIES

.1 Where security is reduced by Work provide temporary means to maintain security.

.2 Closures: protect Work temporarily until permanent enclosures are completed.

## 1.4 EXISTING SERVICES

.1 Notify, Contract Administrator 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 72 hours of notice for necessary interruption of mechanical or electrical service throughout course of Work. Keep duration of interruptions minimum. Carry out interruptions after normal Working hours of occupants, preferably on weekends.

.3 Provide for pedestrian and vehicular traffic.

.4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

## 1.5 SPECIAL REQUIREMENTS

.1 Ensure Contractor's personnel employed on Site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.2 Keep within limits of Work and avenues of ingress and egress.

## 1.6 BUILDING SMOKING ENVIRONMENT

.1 Comply with smoking restrictions. Smoking is not permitted.

## 2 PRODUCTS

### 2.1 NOT USED

.1 Not Used.

## 3 EXECUTION

### 3.1 NOT USED

.1 Not Used.

**END OF SECTION**

## 1. GENERAL

### 1.1. RELATED SECTIONS

.1 Refer to City of Winnipeg Bid Opportunity N0. 54-2017; General Conditions.

.2 Section 01 11 00 – Summary of Work.

### 1.2. COMPLEMENTARY DOCUMENTS

.1 Generally, drawings indicate graphically, the dimensions and location of components and equipment. Specifications indicate specific components assemblies, and identify quality.

.2 Drawings, specifications, diagrams and schedules are complementary, each to the other and what is required by one, to be binding as if required by all.

.3 Should any conflict or discrepancy appear between documents which leaves doubt as to the intent or meaning, apply the Precedent of Documents article below or obtain guidance or direction from the Contract Administrator.

.4 Examine all discipline drawings, specifications, schedules, diagrams and related Work to ensure that Work can be satisfactorily executed without changes to the building or Contract value.

.5 Where a particular product, system or technique is specified, a bid submitted by the Contractor for installation of such a system shall be considered complete. And inclusive of all materials and labour required to carry out the installation, in its entirety. No extras shall be granted where the Contractor did not include in his price all components required for installation.

.6 All specification sections of the Project manual and Drawings are affected by requirements of Division 01 sections.

**END OF SECTION**

## 1. GENERAL

### 1.1. RELATED DOCUMENTS

.1 Refer to City of Winnipeg Bid Opportunity N0. 54-2017; General Conditions.

.2 Section 01 33 00 – Submittal Procedures.

### 1.2. SUMMARY

.1 This section includes administrative and procedural requirements for handling requests for equals and substitutions made after award of the Contract.

.2 Related Sections: The following Sections contain requirements that relate to this Section:

.1 Division 01 Section 01 33 00 - Submittal Procedures specifies requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule.

### 1.3. SUBMITTALS

.1 Refer to Section 01 33 00 – Submittal Procedures.

## 2. PRODUCTS

### 2.1. SUBSTITUTES

.1 Refer to City of Winnipeg Bid Opportunity N0. 54-2017; Section B7 – Substitutes.

## 3. EXECUTION

### 3.1. NOT USED

.1 Not Used.

**END OF SECTION**

# 1 GENERAL

## 1.1 RELATED REQUIREMENTS

.1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Contract Administrator are specified under various sections.

## 1.2 APPOINTMENT AND PAYMENT

.1 Contract Administrator will appoint and pay for services of testing laboratory except follows:
- .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
- .2 Inspection and testing performed exclusively for Contractor's convenience.
- .3 Full time review of pile foundation installation by a qualified Geotechnical Engineer, or their duly appointed representative, registered in the Province of Manitoba.
- .4 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
- .5 Inspection and testing performed for the purposes of quality control and as specified under various sections herein.
- .6 Inspection and testing performed for the purposes of preparation of concrete substrates prior to installation of resilient flooring products.
- .7 Mill tests and certificates of compliance.
- .8 Tests specified to be carried out by Contractor under supervision of Contract Administrator.
- .9 Additional tests specified in the following paragraph.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Contract Administrator to verify acceptability of corrected Work.

## 1.3 CONTRACTOR'S RESPONSIBILITIES

.1 Provide labour, equipment and facilities to:
- .1 Provide access to Work for inspection and testing.
- .2 Facilitate inspections and tests.
- .3 Make good Work disturbed by inspection and test.
- .4 Provide storage on Site for laboratory's exclusive use to store equipment and cure test samples.

.2 Notify Contract Administrator 48 hours minimum sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Contract Administrator.

## 2 PRODUCTS

### 2.1 NOT USED

.1 Not Used.

## 3 EXECUTION

### 3.1 NOT USED

.1 Not Used.

**END OF SECTION**

## 1. GENERAL

### 1.1. ADMINISTRATIVE

.1 Contractor will schedule, and administer project meetings throughout the progress of the Work at the call of Contract Administrator.

.2 Contractor will prepare agenda for project meetings.

.3 Contractor will distribute written notice of each meeting five days in advance of meeting date to Contract Administrator.

.4 Contractor will provide physical space and make arrangements for meetings.

.5 Contractor will preside at meetings.

.6 Contractor will record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Contractor will reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance.

.8 Representative of Contractor, major Subcontractor, other Subcontractors involved in Work and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

### 1.2. CONSTRUCTION ORGANIZATION AND STARTUP

.1 Within 15 Working days after award of Contract, a meeting of parties in Contract will be held to discuss and resolve administrative procedures and responsibilities.

.2 Senior representatives of City, Contractor, major Subcontractors, field inspectors and supervisors, and Contract Administrator will be in attendance. Ensure project schedule efficiencies through monitoring.

.3 Contractor shall establish time and location of meeting and notify parties concerned minimum 10 Working days before meeting.

.4 Agenda to include following:

- .1 Appointment of official representative of participants in Work.
- .2 Schedule of submission of shop drawings, samples, and colour chips in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Requirements for temporary facilities, Site sign, offices, storage sheds, utilities, fences in accordance with Section 01 51 00 - Temporary Utilities.
- .4 Site security in accordance with Section 01 52 00 - Construction Facilities.
- .5 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
- .6 Record drawings in accordance with Section 01 78 00 - Closeout Submittals.
- .7 Maintenance in accordance with Section 01 78 00 - Closeout Submittals.
- .8 Take-over procedures, acceptance, and warranties in accordance with Section 01 77 00 - Closeout Procedures and 01 78 00 - Closeout Submittals.
- .9 Monthly progress claims, administrative procedures, photographs, and holdbacks.
- .10 Appointment of inspection and testing agencies or firms in accordance with Section 01 45 00 - Quality Control.
- .11 Insurances and transcript of policies.

.5 Comply with Contractor's allocation of mobilization areas of Site; for field offices and sheds, for, access, traffic, and parking facilities.

.6 During construction co-ordinate use of Site and facilities through Contractor's procedures for intra-project communications: Submittals, reports and records, schedules, coordination

of drawings, recommendations, and resolution of ambiguities and conflicts.

.7 Comply with instructions of Contractor for use of temporary utilities and construction facilities.

.8 Coordinate field engineering and layout Work with Contractor.

**1.3. CONSTRUCTION PROGRESS MEETINGS**

.1 During course of Work and two weeks prior to project completion, Contractor will schedule and attend progress meetings monthly or as determined by Contract Administrator.

.2 Contractor, major Subcontractors involved in Work, Contract Administrator and City are to be in attendance. Include costs for execution, preparation and reproduction of schedule submittals in bid documents.

.3 Contractor will notify parties minimum five days prior to meetings.

.4 Contractor will record minutes of meetings and circulate to attending parties and affected parties not in attendance within three days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, and conflicts.

.4 Problems that impede construction schedule.

.5 Review of off-Site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding Work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for affect on construction schedule and on completion date.

.12 Other business.

.6 Review of progress and status of Critical Path activities.

**1.4. PCN PRICING**

**.1** The Contractor shall provide PCN pricing from three separate sub-trades for each PCN issued.

**1.5. ON-SITE DOCUMENTS**

.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.

**1.6. SCHEDULES**

.1 Submit preliminary construction progress schedule in accordance with Section 01 32 16 – Construction Progress Schedule to Contract Administrator coordinated with Contract Administrator's projects schedule.
.2 After review, revise and resubmit schedule to comply with revised project schedule.
.3 During progress of Work revise and resubmit monthly, or as directed by Contract Administrator.

**1.7. SUBMITTALS**

.1 Prepare and issue submittals to Contract Administrator for review.
.2 Submit preliminary shop drawings, product date and samples to Section 01 33 00 – Submittal Procedures for review compliance with Contract Documents. After review, revise and resubmit for transmittal to Contract Administrator.
.3 Submit requests for payment for review, and for transmittal to Contract Administrator.
.4 Submit requests for interpretation of Contract Documents and obtain instructions through Contract Administrator.
.5 Process substitutions through Contract Administrator.
.6 Process change order through Contract Administrator.
.7 Deliver closeout submittals for review and preliminary inspections, for transmittal to Contract Administrator.

**1.8. CLOSEOUT PREOCEDURES**

.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 occupied areas.
.4 Notify Contract Administrator of instructions for completion of items of Work determined in Contract Administrator's final inspection.
.5 Provide Construction Schedule indicating completion of items of Work and corrections of items of Work following Substantial Performance. Total Completion (Excluding Seasonal Deficiencies) shall be within 40 days of Substantial Performance.

**END OF SECTION**

# 1 GENERAL

## 1.1 RELATED REQUIREMENTS

.1 Section 01 32 16 – Construction Progress Schedules.

.2 Section 01 33 00 - Submittal Procedures.

.3 Section 01 45 00 – Quality Control.

.4 Section 01 52 00 - Construction Facilities.

.5 Section 01 56 00 - Temporary Barriers and Enclosures.

.6 Section 01 78 00 - Closeout Submittals.

.7

## 1.2 ADMINISTRATIVE

.1 Contractor will schedule and administer project meetings throughout the progress of the Work as required.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting five (5) Working days in advance of meeting date to all parties required to attend.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record accurate and complete meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants and, affected parties not in attendance.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

## 1.3 PRECONSTRUCTION MEETING

.1 Within 15 days after award of Contract, request a meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities.

.2 Contractor, major Subcontractors, Contract Administrator will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days

before meeting.

.4 Agenda to include:
- .1 Appointment of official representative of participants in the Work.
- .2 Schedule of Work: in accordance with Section 01 32 16.07 - Construction Progress Schedules - Bar (GANTT) Chart.
- .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Requirements for temporary facilities, Site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
- .5 Site security in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.
- .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
- .7 City provided products.
- .8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
- .10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .11 Monthly progress claims, administrative procedures, photographs, and hold backs.
- .12 Appointment of inspection and testing agencies or firms in accordance with Section 01 45 00 – Quality Control.
- .13 Insurances, and transcript of policies.

.5 Comply with Contractor's allocation of mobilization areas of Site; for field offices and sheds, for access, traffic, and parking facilities.

.6 During construction co-ordinate use of Site and facilities through Contractor's procedures for intra-project communications: Submittals, reports and records, schedules, coordination of drawings, recommendations, and resolution of ambiguities and conflicts.

.7 Comply with instructions of Contractor for use of temporary utilities and construction facilities.

.8 Coordinate field engineering and layout Work with Contractor.

## 1.4 PROGRESS MEETINGS

.1 During course of Work and two weeks prior to project completion, schedule progress meetings monthly as required.

.2 Contractor, major Subcontractors involved in Work, Contractor, Contract Administrator, and City are to be in attendance. Include costs for execution, preparation and reproduction of schedule submittals in bid documents

.3 Notify parties minimum five (5) Working days prior to meetings.

.4 Contractor will record accurate and complete minutes of meetings and circulate to attending parties and affected parties not in attendance within three Working days after meeting.

.5 Agenda to include the following:
- .1 Review, approval of minutes of previous meeting.
- .2 Review of Work progress since previous meeting.
- .3 Field observations, problems, conflicts.
- .4 Problems which impede construction schedule.
- .5 Review of off-Site fabrication delivery schedules.
- .6 Corrective measures and procedures to regain projected schedule.
- .7 Revision to construction schedule.
- .8 Progress schedule, during succeeding Work period.
- .9 Review submittal schedules: expedite as required.
- .10 Maintenance of quality standards.
- .11 Review proposed changes for affect on construction schedule and on completion date.
- .12 Other business.

.6 Review of progress and status of Critical Path activities.

## 2 PRODUCTS

### 2.1 NOT USED

.1 Not Used.

## 3 EXECUTION

### 3.1 NOT USED

.1 Not Used.

**END OF SECTION**

## 1. GENERAL

### 1.1. DEFINITIONS

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

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

.3 Baseline: original approved plan (for project, Work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five-day Work week and define schedule calendar Working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of Work periods (not including holidays or other nonWorking periods) required to complete activity or other project element. Usually expressed as Workdays or Workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision-making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Contract Administrator to enable monitoring of project Work in relation to established milestones.

### 1.2. REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately ten (10) Working days, to allow for progress reporting.

.4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Substantial Certificate and Final Certificate as defined times of completion are of essence of this Contract.

### 1.3. ACTION AND INFORMATIONAL SUBMITTALS

.1 Refer to City of Winnipeg Bid Opportunity No. 54-2017.

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

.3 Submit to Contract Administrator within ten (10) Working days of receipt of acceptance of Master Plan.

### 1.4. MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 Contract Administrator will review and return revised schedules within five (5) Working days.

.3 Revise impractical schedule and resubmit within five (5) Working days.

.4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

### 1.5. PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.
.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
  .1 Award.
  .2 Shop Drawings, Samples.
  .3 Permits.
  .4 Mobilization.
  .5 Building foundation.
  .6 Structural Steel.
  .7 Hollow core.
  .8 Cladding and Roofing.
  .9 Interior Architecture (Walls, Floors and Ceiling).
  .10 Plumbing.
  .11 Lighting.
  .12 Electrical.
  .13 Heating, Ventilating, and Air Conditioning.
  .14 Fire Stopping Systems.
  .15 Millwork.
  .16 Testing and Commissioning.
  .17 Supplied equipment long delivery items.
  .18 Engineer supplied equipment required dates.

**1.6. PROJECT SCHEDULE REPORTING**

.1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

**1.7. PROJECT MEETINGS**

.1 Discuss Project Schedule at regular Site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
.2 Weather related delays with their remedial measures will be discussed and negotiated.

**END OF SECTION**

# 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 co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

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

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

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

.11 Contractor to issue Request for Information [RFI] for required approvals. Response to be within five (5) business days.

## 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 Submit drawings stamped and signed by professional engineer registered or licensed in province of Manitoba, Canada.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design

drawings and specifications.

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

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

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

.7 Accompany submissions with transmittal letter, in duplicate, containing:
- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.8 Submissions include:
- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor'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.

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

.10 Submit four (4) prints of shop drawings for each requirement requested in specification Sections and as Contract Administrator may reasonably request.

.11 Submit four (4) copies 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 Submit four (4) copies of test reports 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 3 years of date of Contract award for project.

.13 Submit four (4) copies of certificates for requirements requested in specification Sections and as requested by Contract Administrator.
- .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
- .2 Certificates must be dated after award of project Contract complete with project name.

.14 Submit four (4) copies of manufacturer's instructions for requirements requested in specification Sections and as requested by Contract Administrator.
- .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit four (4) copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Contract Administrator.

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

.17 Submit four (4) copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Contract Administrator.

.18 Delete information not applicable to project.

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

.20 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.

.21 The review of shop drawings by the Contract Administrator is for 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.

## 1.3 SAMPLES

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

.2 Deliver samples prepaid to Contract Administrator's business 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 MOCK-UPS

.1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

## 1.5 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic copy colour digital photography in jpg format, fine resolution monthly with progress statement and as directed by Contract Administrator.

.2 Project identification: name and number of project and date.

.3 Number of viewpoints: 2 locations.
.1 Viewpoints and their location as determined by Contract Administrator.

.4 Frequency of photographic documentation: daily.
.1 documenting the progress of the Work and at all concealed areas prior to being covered.

## 1.6 CERTIFICATES AND TRANSCRIPTS

.1 Refer to City of Winnipeg Bid Opportunity No. 54-2017; Sections D8 - Authority to Carry on Business, D9 - Safe Work Plan, D10 - Insurance, and D12 - Performance Security.

# 2 PRODUCTS

## 2.1 SUBSTITUTES

.1 Refer to City of Winnipeg Bid Opportunity No. 54-2017; Section B7 Substitutes.

## 3 EXECUTION

### 3.1 NOT USED

.1 Not Used.

**END OF SECTION**

# 1. GENERAL

## 1.1. REFERENCES

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

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

.1 Material Safety Data Sheets (MSDS).

.3 Province of Manitoba

.1 The Workers Compensation Act RSM 1987 - Updated 2015.

.4 City of Winnipeg

.1 Contractor Safety – A Shared Responsibility; available on the Information Connection page at the City of Winnipeg, Corporate Finance, Materials Management Division webSite at http://www.winnipeg.ca/matmgt/safety/

.2 City of Winnipeg Safe Work Plan; available on the Information Connection page at the City of Winnipeg, Corporate Finance, Materials Management Division webSite at http://www.winnipeg.ca/matmgt/safety/

## 1.1. ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit Site-specific Health and Safety Plan: Within seven (7) days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of Site specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for Site tasks and operation found in Work plan.

.3 Submit two (2) copies of Contractor's authorized representative's Work Site health and safety inspection reports to Contract Administrator and authority having jurisdiction, weekly.

.4 Submit copies of reports or directions issued by Federal, and Provincial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 81 00 - Hazardous Materials.

.7 Contract Administrator will review Contractor's Site-specific Health and Safety Plan and provide comments to Contractor within 5 days after receipt of plan.

Revise plan as appropriate and resubmit plan to Contractor Administrator within five (5) days after receipt of comments from Contract Administrator.

.8 Contract Administrator's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for Site personnel prior to commencement of Work, and submit additional certifications for any new Site personnel to Contract Administrator.

.10 On-Site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

**1.2. FILING OF NOTICE**

.1 File Notice of Project with Provincial authorities prior to beginning of Work.

**1.3. SAFETY ASSESSMENT**

.1 Perform Site specific safety hazard assessment related to project.

**1.4. MEETINGS**

.1 Schedule and administer Health and Safety meeting with Contract Administrator prior to commencement of Work.

**1.5. REGULATORY REQUIREMENTS**

.1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

**1.6. GENERAL REQUIREMENTS**

.1 Develop written Site-specific Health and Safety Plan based on hazard assessment prior to beginning Site Work and continue to implement, maintain, and enforce plan until final demobilization from Site. Health and Safety Plan must address project specifications.

.2 Contract Administrator may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

**1.7. RESPONSIBILITY**

.1 Be responsible for health and safety of persons on Site, safety of property on Site and for protection of persons adjacent to Site and environment to extent that they may be affected by conduct of Work.

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with Site-specific Health and Safety Plan.

**1.8. COMPLIANCE REQUIREMENTS**

.1 Comply with The Workers Compensation Act, Workplace Safety Regulation, Manitoba Reg. R.S.M. 1987.

**1.9. UNFORSEEN HAZARDS**

.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Contract Administrator verbally and in writing.

**1.10. HEALTH AND SAFETY CO-ORDINATOR**

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Have minimum two (2) years' Site-related Working experience specific to activities associated with health and safety

.2 Have Working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter Site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring Site-specific Contractor's Health and Safety Plan.

.5 Be on Site during execution of Work.

**1.11. POSTING OF DOCUMENTS**

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on Site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Contract Administrator.

**1.12. CORRECTION OF NON-COMPLIANCE**

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Contract Administrator.

.2 Provide Contract Administrator with written report of action taken to correct non-compliance of health and safety issues identified.

.3 Contract Administrator may stop Work if non-compliance of health and safety regulations is not corrected.

**1.13. POWDER ACTUATED DEVICES**

.1 Use powder actuated devices only after receipt of written permission from Contract Administrator.

**1.14. WORK STOPPAGE**

.1 Give precedence to safety and health of public and Site personnel and protection

of environment over cost and schedule considerations for Work.

## 2. PRODUCTS

### 2.1. NOT USED

.1 Not used.

## 3. EXECUTION

### 3.1. NOT USED

.1 Not used.

**END OF SECTION**

# 1. GENERAL

## 1.1. REFERENCES

.1 Definitions:

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

.2 Reference Standards:

.1 The City of Winnipeg General Conditions for Construction (Revision 2006 12 15), available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division webSite at http://www.winnipeg.ca/matmgt/gen_cond.stm

.2 U.S. Environmental Protection Agency (EPA)/Office of Water

.3 EPA 832/R-92-005-92, Storm Water Management for Construction Activities, Chapter 3.

## 1.2. ACTION AND INFORMATIONAL SUBMITTALS

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

## 1.3. FIRES

.1 Fires and burning of rubbish on Site not permitted.

## 1.4. DISPOSAL OF WASTES

.1 Do not bury rubbish and waste materials on Site.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

## 1.1. DRAINAGE

.1 Provide temporary drainage and pumping required to keep excavations and Site free from water.

.2 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.

.3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

## 1.2. SITE CLEARING AND PLANT PROTECTION

.1 Protect trees and plants on Site and adjacent properties as indicated.

.2 Wrap in burlap, trees and shrubs adjacent to construction Work, storage areas and trucking lanes, and encase with protective wood frameWork from grade level to height of 2 m minimum.

.3 Protect roots of designated trees to dripline during excavation and Site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated or designated by Contract Administrator.

## 1.3. WORK ADJACENT TO WATERWAYS

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material.

.3 Do not dump excavated fill, waste material or debris in waterways.

.4 Design and construct temporary crossings to minimize erosion to waterways.

.5 Do not skid logs or Construction materials across waterways.

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.7 Do not blast under water or within 100 m of indicated spawning beds.

## 1.4. POLLUTION CONTROL

.1 Maintain temporary erosion and pollution control features installed under this Contract.

.2 Control emissions from equipment and plant to local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

.4 Provide temporary enclosures as required.

.5 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

## 1.5. NOTIFICATION

.1 Contract Administrator will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or

regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Contract Administrator of proposed corrective action and take such action as approved by Contract Administrator.

.3 Contract Administrator will issue stop order of Work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

## 2. PRODUCTS

### 2.1. NOT USED

.1 Not Used.

## 3. EXECUTION

### 3.1. CLEANING

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

.2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Construction Waste Management and Disposal.

.3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

**END OF SECTION**

## 1. GENERAL

### 1.1. REFERENCES AND CODES

.1 Perform Work in accordance with 2015 National Building Code of Canada (NBC 2015) 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.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

### 1.2. HAZARDOUS MATERIAL DISCOVERY

.1 Asbestos: Stop Work immediately when materials believed to contain asbestos be encountered during execution of the Work and notify Contract Administrator. Do not proceed until written instructions have been received from the Contract Administrator. Perform asbestos abatement and repair in accordance with the Province of Manitoba asbestos regulations, Latest Edition.

.2 PCB: Polychlorinated Biphenyl: stop Work immediately when materials believed to contain Polychlorinated Biphenyl is encountered during execution of the Work and notify Contract Administrator. Do not proceed until written instructions have been received from the Contract Administrator. Perform asbestos abatement and repair in accordance with the Province of Manitoba asbestos regulations, Latest Edition.

.3 Mould: stop Work immediately should material resembling mould be encountered during the execution of Work and notify Contract Administrator. Do not proceed until written instructions have been received from Contract Administrator.

### 1.3. NON SMOKING ENVIRONMENT

.1 Comply with the Non Smoking Health Protection Act.

### 1.4. RELICS AND ANTIQUITIES

.1 Protect relics, antiquities, items of historical or scientific interest such as cornerstones and contents, commemorative plaques, inscribed tablets, and similar objects found during course of Work.

.2 Give immediate notice to Contract Administrator and await Contract Administrator‘s written instructions before proceeding with Work in this area.

.3 Relics, antiquities and items of historical or scientific interest remain Her Majesty’s property.

## 2. PRODUCTS

### 2.1. NOT USED

.1 Not Used.

## 3. EXECUTION

### 3.1. NOT USED

.1 Not Used.

**END OF SECTION**

## 1. GENERAL

### 1.1. RELATED DOCUMENTS

.1 Drawings and general provisions of this Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this section.

### 1.2. INDUSTRY STANDARDS

.1 Unless the Contract Documents include more stringent requirements, applicable Construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made part of the Contract Documents by reference.

.2 All Construction industry standards referenced in this specification to meet the edition of the standard referenced by the 2015 National Building Code of Canada (NBC). If the Construction industry standard is not referenced in the NBC, the latest edition of the standard shall apply.

.3 Each entity engaged in Construction on this Project must be familiar with construction industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Construction Documents.

.1 Where copies of Construction industry standards are needed to perform a required construction activity, obtain copies directly from publication source and make them available upon request.

### 1.1. ABBREVIATIONS AND ACRONYMS FOR INDUSTRY ORGANIZATIONS

.1 Where abbreviations and acronyms are used, they shall mean the recognized name of the entities in the following list. Names are believed to be accurate and up-to-date as of the date of the Contract Documents.

.2 Industry Organizations:

.1 Air Conditioning and Mechanical Contractors Association (AMCA).

.2 Air Conditioning and Refrigeration Institute (ARI).

.3 Americans with Disability Act (ADA).

.4 Air Movement and Control Association (AMCA).

.5 The Aluminum Association, Inc. (AA).

.6 American Contract Administrator Rural Manufacturers Association (AAMA).

.7 American Association of State Highway and Transportation Officials (AASHTO).

.8 American Association of Textile Chemists and Colourists (AATCC).

.9 American Bearing Manufacturers Association (ABMA).

.10 American Boiler Manufacturer's Association (ABMA).

.11 American Concrete Institute (ACI).

.12 American Industrial Hygiene Association (AIHA).

.13 American Institute of Steel Construction (AISC).

.14 American Iron & Steel Institute (AISI).

.15 American National Standards Institute (ANSI).

.16 American Petroleum Institute (API).

.17 American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE).

.18 American Society of Mechanical Engineers (ASME).

.19 American Society of Sanitary Engineer's (ASSE).

.20 American Society for Testing and Materials (ASTM).

.21 American Water Works Association (AWWA).

.22 American Welding Society (AWS).

.23 American Wood-Preservers' Association (AWPA).

.24 Contract Administrator Rural WoodWork Institute (AWI).

.25 Contract Administrator Rural WoodWork Manufacturers Association of Canada (AWMAC).

.26 Asphalt Institute (AI).

.27 Associated Air Balance Council (AABC).

.28 Association of the Wall and Ceilings Industries International (AWEI).

.29 Atomic Energy Control Board Regulations.

.30 Brick Industry Association (BIA).

.31 Building Industry Consulting Services International (BICSI).

.32 Canada Green Building Council (CaGCB).

.33 Canada Labour Code.

.34 Canadian Council of Ministers of the Environment (CCME).

.35 Canadian Code for Preferred Packaging.

.36 Canadian Construction Materials Centre (CCMC).

.37 Canadian Environmental Protection Act (CEPA).

.38 Canadian Gas Association (CGA).

.39 Canadian General Standards Board (CGSB).

.40 Canadian Institute of Steel Construction (CISC).

.41 Canadian Nursery Landscape Association (CNLA).

.42 Canadian Paint Manufacturer's Association (CPMA).

.43 Canadian Roofing Contractors' Association (CRCA).

.44 Canadian Sheet Steel Building Institute (CSSBI).

.45 Canadian Standards Association (CSA).

.46 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).

.47 Canadian Urethane Foam Contractors' Association Inc. (CUFCA).

.48 Carpet and Rug Institute (CRI).

.49 Ceramic Tile Institute (CTI).

.50 Consumer Electronics Association (CEA).

.51 Cooling Technology Institute (CTI).

.52 Department of Justice Canada (Jus).

.53 Electrical and Electronic Manufacturers' Association of Canada (EEMAC).

.54 Electronic Industries Alliance (EIA).

.55 Environment Canada (EC).

.56 The Environmental Choice Program.

.57 Environmental Protection Agency (EPA).

.58 Environmental Protection Services (EPS).

.59 ETL Listing Laboratories (ETL).

.60 Factory Mutual (FM).

.61 Federal Communications Commission (FCC).

.62 Flat Glass Manufacturers Association (FGMA).

.63 Green Seal Environmental Standards.

.64 Health Canada - Workplace Hazardous Materials Information System (WHMIS).

.65 Hydraulics Institute (HI).

.66 Hydronic Institute of Boiler and Radiator Manufacturers (IBR).

.67 Industry Canada - Terminal Attachment Program.

.68 Institute of Electrical and Electronics Engineers (IEEE).

.69 nstitute for Research in Construction (IRC).

.70 Insulated Cable Engineers Association (ICEA).

.71 International Electro Technical Commission (IEC).

.72 International Masonry Industry All-Weather Council (IMIAC).

.73 International Standards Organization (ISO).

.74 Laminators Safety Glass Association (LSGA).

.75 Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).

.76 Master Painters Institute (MPI).

.77 Model National Energy Code of Canada for Buildings (MNECB).

.78 National Association of Contract Administrator Rural Metal Manufactures (NAAMM).

.79 National Association of Corrosion Engineers (NACE).

.80 National Building Code of Canada (NBC).

.81 National Bureau of Standards/Products Standard (NBS/PS).

.82 National Electrical Manufacturers Association (NEMA).

.83 National Environmental Balancing Bureau (NEBB).

.84 National Fire Code of Canada (NFC).

.85 National Fire Protection Association (NFPA).

.86 National Floor Covering Association (NFCA).

.87 National Hardwood Lumber Association (NHLA).

.88 National Lumber Grades Authority (NLGA).

.89 National Plumbing Code of Canada (NPC).

.90 National Research Council Canada (NRC).

.91 National Roofing Contractors Association (NRCA).

.92 National Sanitation Foundation (NSF).

.94 Plumbing and Drainage Institute (PDI).

.96 Provincial Boiler, Pressure Vessel and Compressed Gas Regulations.

.97 Scientific Equipment and Furniture Association (SEFA).

.98 Sealant and Waterproofer's Institute.

.99 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).

.100 Society of Automotive Engineers (SAE).

.101 The Society for Protective Coatings (SSPC).

.102 South Coast Air Quality Management District (SCAQMD).

.103 Telecommunications Distribution Methods Manual (TDMM).

.104 Telecommunications Industries Association (TIA).

.105 Terrazzo Tile and Marble Association of Canada (TTMAC).

.106 Thermal Insulation Association of Canada (TIAC).

.107 Transport Canada (TC).

.108 Transport Canada - Marine Safety (TCMS).

.109 Treasury Board of Canada (TB).

.110 Treasury Board Information Technology Standard (TBITS).

.111 Truss Plate Institute of Canada (TPIC).

.112 Underwriters' Laboratories Inc. (UL).

.113 Underwriter's Laboratories of Canada (ULC).

.114 United States Federal Trade Commission (US Federal Trade Commission).

.115 U.S. Coast Guard Equipment List (USCG).

.116 U.S. Department of Transportation (DOT).

## 2. PRODUCTS

### 2.1. NOT USED

.1 Not Used.

## 3. EXECUTION

### 3.1. NOT USED

.1 Not Used.

**END OF SECTION**

## 1. GENERAL

### 1.1. RELATED REQUIREMENTS

.1 All Sections within Divisions 02 31 through 33.

### 1.2. INSPECTION

.1 Allow Contract Administrator access to Work.

.2 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.

.3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Contract Administrator's instructions, or law of Place of Work. Provide photo documentation where applicable in accordance with Sections 01 11 00 – Summary of Work and 01 33 00 – Submittal Procedures.

.4 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.

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

### 1.3. INDEPENDENT INSPECTION AGENCIES

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

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

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

### 1.1. 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.

### 1.2. 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.

**1.3. 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, Contract Administrator will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined Contract Administrator.

**1.4. REPORTS**

.1 Submit four (4) copies 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.

**1.1. TESTS AND MIX DESIGNS**

.1 Furnish test results and mix designs as requested.

.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Contract Administrator and may be authorized as recoverable.

**1.2. MOCK-UPS**

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

.2 Construct in locations acceptable to Contract Administrator.

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

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

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

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

.7 Mock-ups may remain as part of Work when acceptable to Contract Administrator.

.8 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

**1.01. EQUIPMENT AND SYSTEMS**

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

**END OF SECTION**

## 1. GENERAL

### 1.1. REFERENCES

.1 U.S. Environmental Protection Agency (EPA) / Office of Water

.1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

### 1.2. ACTION AND INFORMATIONAL SUBMITTALS

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

### 1.3. INSTALLATION AND REMOVAL

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

.2 Remove from Site all such Work after use.

### 1.4. DEWATERING

.1 Provide temporary drainage and pumping facilities to keep excavations and Site free from standing water.

### 1.5. WATER SUPPLY

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

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

### 1.6. TEMPORARY HEATING AND VENTILATION

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

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

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

.1 Facilitate progress of Work.

.2 Protect Work and products against dampness and cold.

.3 Prevent moisture condensation on surfaces.

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

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

.6 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.

.4 Ventilating:

.1 Prevent accumulations of dust, fumes, mists, vapours or gases in

areas occupied during construction.

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

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

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

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

.5 Permanent heating system of building may NOT be used when available.

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

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

.1 Conform to applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to outside.

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

**1.7. TEMPORARY POWER AND LIGHT**

.1 Contractor will provide and pay for temporary power during construction for temporary lighting, operating of power tools, electric cranes and all other equipment requiring electric power.

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

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

.4 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Contract Administrator provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps that have been used for more than 1 month.

**1.8. TEMPORARY COMMUNICATION FACILITIES**

.1 Provide and pay for temporary telephone, fax and data hook up, lines

necessary for own use.

**1.9. FIRE PROTECTION**

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

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

**END OF SECTION**

## 1. GENERAL

### 1.1. RELATED REQUIREMENTS

.1 All Sections within Divisions 02 through 13, 21 through 28, and 31 through 33.

### 1.2. REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.

.2 CGSB 1.59-97, Alkyd Exterior Gloss Enamel.

.2 Canadian Standards Association (CSA International)

.1 CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA-0121-M1978(R2003), Douglas Fir Plywood.

.3 CAN/CSA-S269.2-M1987(R2003), Access Scaffolding for Construction Purposes.

.4 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

.3 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.

.4 U.S. Environmental Protection Agency (EPA) / Office of Water

.1 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

### 1.3. ACTION AND INFORMATIONAL SUBMITTALS

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

### 1.4. INSTALLATION AND REMOVAL

.1 Contractor to prepare and submit Site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation to Contract Administrator for approval.

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

.3 Indicate use of supplemental or other staging area.

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

.5 Remove from Site all such Work after use.

### 1.5. SCAFFOLDING

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

.2 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms and temporary stairs.

### 1.6. HOISTING

.1 Provide, operate and maintain hoists and/or cranes required for moving of Workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.

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

**1.7. SITE STORAGE/LOADING**

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

.2 Store materials in areas designated by Contract Administrator.

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

**1.8. CONSTRUCTION PARKING**

.1 Parking will be permitted on Site provided it does not disrupt performance of Work. Contractor to submit parking and Site use plan to Contract Administrator for approval.

.2 Provide and maintain adequate access to project Site.

**1.9. SECURITY**

.1 Provide secure Site through completion of Work.

**1.10. OFFICES**

.1 Provide office heated to 21 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate Site meetings and furnished with drawing laydown table.

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

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

**1.11. EQUIPMENT, TOOL AND MATERIALS STORAGE**

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

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

**1.12. SANITARY FACILITIES**

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

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

**1.13. CONSTRUCTION SIGNAGE**

.1 Contract Administrator to provide 4’x8’ project sign. Erect wood frame in a location designated by Contract Administrator.

.2 Construction sign to be no more than 4’x8’, of wood frame and plywood construction, digital print or painted with exhibit lettering produced by a professional sign painter.

.3 Subcontractor signs to be no more than 4’x4’, of wood frame and plywood construction, digital print or painted with exhibit lettering produced by a professional sign painter.

**1.14. PROTECTION AND MAINTENANCE OF TRAFFIC**

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

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

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

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

.5 Provide snow removal during period of Work.

**1.15. CLEAN-UP**

.1 Remove construction debris, waste materials, and packaging material from Work as necessary.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

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

.4 Stack stored new or salvaged material as to not impede the Work.

**END OF SECTION**

## 1. GENERAL

### 1.1. REFERENCES

.1 Canadian General Standards Board (CGSB)

.1 CGSB 1.59-97, Alkyd Exterior Gloss Enamel 01 61

.2 CAN/CGSB 1.189-00, Exterior Alkyd Primer for Wood.

.2 Canadian Standards Association (CSA International)

.1 CSA-O121-M1978(R2003), Douglas Fir Plywood.

### 1.2. INSTALLATION AND REMOVAL

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

.2 Remove from Site all such Work after use.

### 1.3. SITE ENCLOSURE

.1 Use existing chain link fence as temporary Site enclosure, repair as needed. Provide one lockable truck gate. Maintain fence in good repair.

.2 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

### 1.4. GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guardrails and barricades around deep excavations, open shafts, open stairwells, open edges of floors and roofs.

.2 Provide as required by governing authorities.

### 1.5. HOARDING

.1 Erect temporary Site enclosures using 38 x 89 mm construction grade lumber framing at 600 mm centres, installed on 89 x 89 mm wood posts at 2400 mm centres or 50 mm dia. steel posts at 2400 mm centres. Posts to be place in post holes filled with concrete to minimum 900 mm depth. Finish temporary Site enclosures with and 1200 x 2400 x 13 mm exterior grade fir plywood to CSA O121 or chain link fence fabric to Section 32 31 13 – Chain Link Fences and Gates.

.1 Apply plywood panels or chain link fence fabric vertically flush and butt jointed.

.2 Provide one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.

.3 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.

.4 Paint public side of Site enclosure in selected colours with one coat primer to CAN/CGSB 1.189 and one coat exterior paint to CGSB 1.59. Maintain public side of enclosure in clean condition.

.5 Provide barriers around trees and plants designated to remain as per City of Winnipeg Tree Protection Specifications. Protect from damage by equipment and construction procedures.

### 1.2. WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior Work for temporary heat.

.3 Design enclosures to withstand wind pressure and snow loading.

.4 Erect enclosures to allow access for installation of materials and Working inside enclosure.

**1.1. DUST TIGHT SCREENS**

.1 Provide dust tight screens or insulated partitions to localize dust-generating activities, and for protection of Workers, finished areas of Work and public.

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

**1.2. ACCESS TO SITE**

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

.2 Build and maintain temporary roads where indicated or directed and provide snow removal during period on Work.

.3 If authorized to use existing roads for access to project Site, maintain such roads for duration of Contract and make good damage resulting from Contractor's use of roads.

**1.3. PUBLIC TRAFFIC FLOW**

.1 Contractor shall allow for continued public access to the Site throughout the Construction period and shall ensure that the Work is maintained to the approval of the Local Authorities having Jurisdiction, local by-laws, and Work Place Safety and Health Policies. This will also be applicable to street accesses.

.2 Contractor shall observe and enforce all Construction safety measures required by the Manitoba Building Code, Worker's Compensation Board, Municipal Statute or By-Laws. In the event of a conflict between any provisions of the above authorities, the most restrictive provision shall apply.

.3 Contractor shall maintain traffic flow around the Work Area. Contractor's operations shall in no way interfere with the safe movement of pedestrian traffic.

**1.4. FIRE ROUTES**

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

**1.5. PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

**1.6. PROTECTION OF BUILDING FINISHES**

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

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Contract Administrator locations and installation schedule three (3) days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

## 1.7. PROTECTION OF EXISTING TREES

.1 The Contractor shall take the following precautionary steps to prevent damage from Construction activities to existing boulevard trees within the limits of the Construction area. If you require further information on these specifications, please contact the City of Winnipeg Forestry Branch at 204-986-2004:

.1 For trees greater than 100 mm in diameter, attach wood strapping material having a minimum thickness of 25 millimetres and minimum length of 2440 millimetres around tree trunks in a manner that will not harm the trees. Do not use nails or other fasteners that penetrate into trees. The width of strapping should suit the size of the tree being protected. Length of strapping may be reduced to suit tree being protected as approved by the Contract Administrator.

.2 For trees less than 100 mm in diameter, install snow fencing around the tree to a 2.0 meter radius complete with installation hardware. The 2.0 meter radius of the snow fencing may be reduced to suit the tree being protected as approved by the Contract Administrator.

.3 Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform Work. Equipment shall not be parked, repaired, refueled; Construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of the trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.

.4 Repair, replace and maintain tree protection material during Construction of the Work.

.5 Remove snow fencing and strapping material without harming trees as soon as the Construction and restoration Work is complete.

.2 Obtain approval from the Contract Administrator to excavate within 2.0 meters of a tree.

.3 Excavate in a manner to minimize damage to root systems. Keep exposed roots in excavations and trenches moist or shaded.

.4 Prune exposed roots with equipment such as trenchers, chain saws, root cutters or other methods acceptable to the Contract Administrator in a manner that will leave a neat, clean root end.

.5 Take precautions to ensure tree limbs overhanging the Site are not damaged by Construction equipment. Contact the Forestry Branch for consultation on pruning of overhanging or damaged limbs and branches and other unanticipated problems with trees during Construction of the Works.

.6 Elm trees are not to be pruned between April 1st and August 1st of any year under provisions of The Dutch Elm Disease Act.

.7 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the Forestry Branch. Damages must be repaired by an individual with a Manitoba Arborist license or by the Forestry Branch.

.8 The Forestry Branch will remove and replace any trees deemed to have died or that are dying due to damage from carelessness during Construction. Removal and replacement costs will be determined by size, market price of the largest transplantable tree of same or different species and may include appraised value of existing tree as determined by current International Society of Arboriculture evaluation procedure presently used by Forestry Branch in conjunction with City Claims Branch. Estimated replacement cost of a

25 and 60 cm diameter American elm on a boulevard based on an appraised value is approximately $5,000.00 and $30,000.00 respectively.

.9 Protection of existing trees, repair of trees and pruning of damaged limbs will not be measured for payment and will be included with Underground or Surface Works. Removal and replacement of existing trees by the Forestry Branch deemed to have died or that are dying due to damage from carelessness during Construction will be at own costs and will be invoiced for or deducted from any payments owing.

**END OF SECTION**

## 1. GENERAL

### 1.1. REALTED SECTIONS

.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

.2 City of Winnipeg Tree Protection Specifications.

### 1.2. SUMMARY

.1 Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent Construction. Protect all trees within area of construction.

### 1.3. TREE PROTECTION DURING CONSTRUCTION

.1 Construction activities near trees may result in injury to the trunk, limbs or roots of trees causing damage or death of the tree. In order to prevent such damage:

.1 Trees within or adjacent to a construction area must be protected during Construction by means of a barrier surrounding a “Tree Protection Zone” (TPZ).

.2 Activities which are likely to injure or destroy the tree are not permitted within the TPZ.

.3 Tree pruning or root pruning of City of Winnipeg owned trees may only be done by a Contractor approved by the project’s Qualified Tree Contract Administrator or Urban Forestry Branch.

.4 No objects may be attached to trees protected by City of Winnipeg by-laws without written authorization by the City of Winnipeg.

.5 No City of Winnipeg tree or tree protected by a City of Winnipeg by-law may be removed without the written permission of the City of Winnipeg.

.2 Tree Protection Zone

.1 The following is a chart showing optimal distances for determining a tree protection zone (The roots of a tree can extend from the trunk to approximately 2- 3 times the distance of the drip line). Some Site conditions may dictate the need for a smaller TPZ. The City of Winnipeg Urban Forestry Branch must be notified in these instances. Forestry will determine if the smaller TPZ is acceptable in the specific circumstance and advise of any additional tree protection or removal requirements.

**Tree Protection Zones**

| Trunk Diameter* | Minimum Protection** |
|---|---|
| (DHB) | Distance Required |
| <10cm | 2.0m |
| 11-40cm | 2.4m |
| 41-50cm | 3.0m |
| 51-60cm | 3.6m |
| 61-70cm | 4.2m |

| | |
|---|---|
| 71-80cm | 4.8m |
| 81-90cm | 5.4m |
| 91-100cm+ | 6.0m |

* Diameter at breast height (DBH) measurement of tree trunk taken at 1.4m above ground.

** Tree Protection Zone distances are to be measured from the outside edge of the tree base towards the drip line and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the construction Work.

.3 Tree Protection Barriers

.1 Trees within tree protection zones shall be protected by means of a “tree protection barrier” meeting the following specifications:

.1 The required barrier is a 1.2 metre (4 ft) high orange plastic web snow fencing on 2” x 4” frame or as directed by the City of Winnipeg Urban Forestry Branch in accordance with City of Winnipeg Protection of Existing Tree Specifications. The barrier can be lowered around branches lower than 1.2 metres (4 ft). The barrier location can be adjusted to align with curbs and edges at clear path of travel zones.

.2 Tree strapping material will be installed on individual trees, in accordance with CW1140, where Work will be completed within the TPZ.

.3 Tree protection barriers are to be erected prior to the commencement of any Construction or grading activities on the Site and are to remain in place throughout the entire duration of the Project. The applicant shall notify the City of Winnipeg prior to commencing any Construction activities to confirm that the tree protection barriers are in place.

.4 All supports and bracing used to safely secure the barrier should be located outside the TPZ. All supports and bracing should minimize damage to roots.

.5 No grade change, storage of materials or equipment is permitted within this area. The tree protection barrier must not be removed without the written authorization of the City of Winnipeg.

.4 Utility Construction and Engineering and Capital Construction Projects

.1 It is recognized that there are cases where trees are growing overtop existing utilities or beside capital infrastructure. While the guidelines in this section still apply, in these cases some modification to Table 1 in addition to root pruning may be permitted provided non-open trench methods of Construction are employed (refer to City of Winnipeg Standard Construction Specifications CW2110 and CW2130).

.2 Root Pruning will be required to be done under the direction of - and along with - written sign-off by the Project’s Qualified Tree Contract Administrator. The objective is to avoid severance of anchor roots, which provide upright support for trees and minimize damage to the tree.

.3 Above ground clearance for overhanging branches in the Work zone must be anticipated. The utility or it’s Contract Administrator is required to have a Forestry approved tree service raise the crown of all branches to provide adequate clearance for Construction equipment.

.5 Qualified Tree Contract Administrators

.1 An arborist certified by the International Society of Arboriculture (ISA) who has a

diploma (minimum) in arboriculture or urban forestry.

**2.0. PRODUCTS**

**2.1.** NOT USED

.2 Not Used.

**3.0. EXECUTION**

**3.1. NOT USED**

.1 Not Used.

**END OF SECTION**

## 1. GENERAL

### 1.1. RELATED SECTIONS

.1 Section 01 35 43 - Environmental Protection.

.2 Division 31 - EarthWork.

.3 Division 32 – Exterior Improvements.

.4 Division 33 - Utilities.

### 1.2. INTRODUCTION

.1 Site clearing and earth moving during construction often results in significant soil erosion if adequate environmental protection strategies are not put into practice. Develop and implement an *Erosion and Sedimentation Control Plan* to prevent these problems from occurring.

### 1.3. SECTION INCLUDES

.1 Create an erosion and sediment control plan.

.2 Prevent loss of soil during construction by storm water runoff and wind erosion.

.3 Protect stockpiled topsoil.

.4 Prevent sedimentation of storm water and receiving streams.

.5 Prevent pollution of the air with dust and particulate matter.

### 1.4. REFERENCES

.1 LEED Canada Reference Guide for Green Building Design and Construction 2009

.1 Sustainable Sites PrerequiSite 1 Construction Activity Pollution Prevention.

.2 www.cagbc.ca

.2 2003 United States Environmental Protection Agency Document (EPA) Construction General Permit.

.3 Credit Interpretation Requests relating to the credits specified in this Section may apply in projects exhibiting exceptional circumstances as deemed necessary by the Contract Administrator.

### 1.1. DEFINITIONS

.1 Erosion: Deterioration, displacement, or transportation of land surface by wind or water, intensified by land-clearing practices related to construction activates.

.2 Rain or Rain Storm: An event defined causing the pooling of water on road or other impervious surfaces.

.3 Sediment: Particulate matter transported and depoSited as a layer of solid particles within a body of water.

.4 Snow Melt: An event in snow conditions when the temperature is above 0 degrees C or when environmental conditions causing snow on the ground to melt.

**1.2. SUBMITTALS**

.1 Provide requested information specified in Section 01 33 00 – Submittal Procedures.

.2 Application for Payment: Concurrent with each application, provide the following Inspection Log information:

.1 Weekly inspection log.

1.1 Maintain weekly monitoring and log listing for all ESC measures. Record and document the following; inspection date, ESC measure, location on Site, general observations, deficiencies, corrective measures and initials of recording member complete with photographs.

.2 Identify and address standing rainwater or snowmelt conditions.

.3 Photographs:

.1 A minimum of three (3) digital photographs shall be taken (from various viewpoints) of each ESC measure implemented on-Site immediately following installation.

.2 A minimum of three (3) digital photographs shall be taken (from various viewpoints) of ESC measure implemented on-Site at the end of construction or prior to dismantling, whichever comes first.

.3 Submit all digital photographs to Contract Administrator for documentation within seven (7) days of being taken.

**2. PRODUCTS**

**2.1. SILT FENCING**

.1 Posts: Steel "T" cross section, of lengths as required.

.2 Geotextile: Woven polypropylene filter fabric, resistant to ultra-violet degradation. Filtering efficiency 75%-85% minimum.

**3. EXECUTION**

**3.1 IMPLEMENTATION**

.1 Prevent cleared topsoil and excavated earth stockpiled on Site from being eroded by rain storm, snow melt or wind.

.2 Install silt fencing.

.3 Maintain silt fencing at a height of no less than 400 mm above grade, and no greater than 800 mm.

.4 Extend geotextile filter fabric 150 mm below grade, and return 150 mm towards the oppoSite direction of flow.

.5 Space posts not further than 1800 mm apart.

.6 Limit operation of vehicles on Site to paved surfaces or temporary gravel surfaces in order to avoid the disturbing soil.

.7 All ESC measures shall be inspected weekly and following any significant storm ensuring effectiveness and original good Working order. If repair is required ensure Work is carried out within 24 hours of report.

.8 Protect catch basins, drains, culverts and other points of entry into municipal storm water collection systems.

.9 All ESC measures shall not be removed and shall be fully inspected and maintained until final landscaping is complete.

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## 1. GENERAL

### 1.1. REFERENCES

.1 Within text of each specifications section, reference may be made to reference standards. Conform to these reference standards, in whole or in part as specifically requested in specifications.

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

.3 Cost for such testing will be borne by Contractor in event of conformance with Contract Documents or by Contractor in event of non-conformance.

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

### 1.1. QUALITY

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

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

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

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

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

### 1.2. AVAILABILITY

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. 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.

.2 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.

### 1.3. PRODUCT CHANGES

.1 Products substitution or alternative shall be submitted in accordance with Section 01 25 00 – Substitution Procedures.

### 1.4. 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 Contract Administrator.

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

**1.5. TRANSPORTATION**

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

.2 Transportation costs of products supplied by City will be paid for by Contract Administrator. Unload, handle and store such products.

.3 Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.

**1.6. MANUFACTURER'S INSTRUCTIONS**

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's 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 will 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.

**1.7. 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 his or her required duties. Contract Administrator reserves right to require dismissal from Site, Workers deemed incompetent or careless.

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

**1.8. CO-ORDINATION**

.1 Ensure co-operation of Workers in laying out Work. Maintain efficient and continuous supervision.

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

**1.9. 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.

**1.10. REMEDIAL WORK**

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

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

**1.11. 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.

**1.12. 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.

**1.13. 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.

**1.14. PROTECTION OF WORK IN PROGRESS**

.1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Contract Administrator.

**1.15. 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.

**END OF SECTION**

## 1. GENERAL

### 1.1. RELATED SECTIONS

.1 Individual product Sections: cutting and patching incidental to Work of section. Advance notification to other sections required.

### 1.2. ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Submit written request in advance of cutting or alteration which affects:

.1 Structural integrity of elements of project.

.2 Integrity of weather-exposed or moisture-resistant elements.

.3 Efficiency, maintenance, or safety of operational elements.

.4 Visual qualities of sight-exposed elements.

.5 Work of City or separate Contractor.

.3 Include in request:

.1 Identification of project.

.2 Location and description of affected Work.

.3 Statement on necessity for cutting or alteration.

.4 Description of proposed Work, and products to be used.

.5 Alternatives to cutting and patching.

.6 Effect on Work of City or separate Contractor.

.7 Written permission of affected separate Contractor.

.8 Date and timeWork will be executed.

### 1.3. MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 – Submittal Procedures.

### 1.4. PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas, which are to be exposed by uncovering Work; maintain excavations free of water.

### 1.5. EXECUTION

.1 Execute cutting, fitting, and patching to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Remove samples of installed Work for testing, if not designates in the respective Section as remaining as part of the Work.

.6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry Work without prior approval.

.10 Restore Work with new products in accordance with requirements of Contract Documents.

.11 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material in accordance with Section 07 84 00 - Firestopping, for full thickness of the construction element.

.13 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

.14 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

**END OF SECTION**

## 1. GENERAL

.1 Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.

.2 Store volatile waste in covered metal containers and remove from premises at end of each Working day.

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

### 1.1. RELATED REQUIREMENTS

.1 All Sections within Divisions 02 31 through 33.

### 1.2. PROJECT CLEANLINESS

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

.2 Remove waste materials from Site at regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on Site, unless approved by Contract Administrator.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only.

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

.5 Provide Containers:

.1 Provide on-Site steel framed, hinged lid containers for collection of waste materials and debris.

.2 Provide and use clearly marked, separate bins for recycling.

.6 Dispose of waste materials and debris off Site.

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

.8 Store volatile waste in covered metal containers, and remove from premises at end of each Working day.

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

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

.11 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. CLEANING PRIOR TO ACCEPTANCE

.1 Prior to applying for Substantially Performance of the Work 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 including that caused by City or other Contractors.

.5 Remove waste materials from Site at regularly scheduled times or dispose of as directed by Contract Administrator. Do not burn waste materials on Site, unless approved by Contract Administrator.

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

.7 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.

.8 Remove stains, spots, marks and dirt from decorative Work, electrical and mechanical fixtures, furniture fitments, walls, floors and ceilings.

.9 Clean lighting reflectors, lenses, and other lighting surfaces.

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

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

.12 Inspect finishes, fitments and equipment and ensure specified Workmanship and operation.

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

.14 Remove dirt and other disfiguration from exterior surfaces.

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

.16 Sweep and wash clean paved areas.

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

.18 Clean roofs, downspouts, and drainage systems.

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

.20 Remove snow and ice from access to building.

**1.4. FINAL CLEANING**

.1 Refer to General Conditions.

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

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

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

.5 Remove waste products and debris including that caused by other Contractors.

.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 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.

.9 Remove stains, spots, marks and dirt from decorative Work, electrical and mechanical fixtures, window treatments, furniture fitments, walls, floors and ceilings.

.10 Clean lighting reflectors, lenses, and other lighting surfaces.

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

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

.13 Inspect finishes, fitments and equipment and ensure specified Workmanship and operation.

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

.15 Remove dirt and other disfiguration from exterior surfaces.

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

.17 Sweep and wash clean paved areas.

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

**1.5. WASTE MANAGEMENT AND DISPOSAL**

.1 Separate waste materials in accordance with Section 01 74 19 - Construction Waste Management and Disposal.

**END OF SECTION**

## 1. GENERAL

### 1.1. RELATED SECTIONS

.1 Construction Waste Management - Relates to ALL Sections.

### 1.2. REFERENCES

.1 www.cagbc.org

.2 The Contractor is to divert a minimum of 75% of the demolition and construction waste from the landfill by recycling and salvaging.

### 1.3. REQUIREMENTS

.1 All sub-trades are to conform to the construction waste management requirements.

.2 The Contractor in conjunction with the Contract Administrator is to develop and implement a Construction Waste Management Plan. The Contractor shall be responsible for sourcing appropriate recycling and reuse facilities. A draft preliminary plan has been attached to spec 01 74 19 – Construction Waste Management and Disposal.

.3 Weekly construction waste progress reports, Contract Administrator during both demolition and construction.

.4 A consistent method of measurement is to be used; all information is to be provided in metric tonnes.

### 1.4. INFORMATIONAL SUBMITTALS

.1 Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information on the tracking template:

.1 Date,

.2 Type of waste.

.3 Diversion location or recycler and end use

.4 Total quantity of waste in tonnes.

.5 Quantity of waste salvaged or recycled, in tonnes.

.6 Total quantity of waste recovered as a percentage of total waste.

.2 Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests,

weight tickets, receipts, and invoices.

.3 Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

### 1.4. STORAGE, HANDLING AND PROTECTION

.1 Provide on-Site facilities for collection, handling, and storage of anticipated quantities of reusable and/or recyclable materials.

.2 Provide containers to deposit reusable and/or recyclable materials.

.3 Place containers in strategic locations to facilitate deposit of materials without hindering daily operations. Recycle containers are to be located closer to the Work area and be more readily accessible than waste containers to encourage recycling.

.4 Separate salvaged materials into separate piles or containers on Site and protect them from damage. Transport offSite to approved and authorized recycling facility.

.5 Mark containers and/or stockpile areas.

.6 Stockpile areas to be consistent with applicable fire regulations.

.7 Unless otherwise specified, materials for removal become Contractor's property.

.8 On Site sale of salvaged, reusable, or recyclable materials is not permitted.

### 1.5. DISPOSAL OF WASTES

.1 Do not bury or incinerate rubbish or waste materials.

.2 Do not dispose of waste, volatile materials, mineral spirits, oil, and paint thinner into waterways, storm, or sanitary sewers.

### 1.6. SCHEDULING

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

### 1.7. CLEANING

.1 Remove tools and waste materials on completion of Work, and leave Work area in clean and orderly condition.

.2 Maintain a clean and safe Work area as Work progresses.

.3 Source separate materials to be reused/recycled into specified sort areas.

## 2. PRODUCTS

### 2.03. NOT USED

.1 Not Used.

## 3. EXECUTION

### 3.3. APPLICATION

.1 Do Work in compliance with CWM plan.

.2 Burning and incineration of rubbish and waste cannot be used as an alternative method for diverting waste from the landfill.

.3 Burying of waste and rubbish is prohibited, unless approved by the sustainability Contract Administrator.

.4 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

## 3.4. DIVERSION OF MATERIALS

.1 Provide instruction regarding disposal practices to all sub-trades.

.2 It is required that every effort be taken to divert 100% of the following materials acquired during construction, from the landfill as long as recycling facilities exist:

.1 Cardboard
.2 Plastic Packaging
.3 Rubble
.4 Steel
.5 Wood (clean)
.6 Wood (used)
.7 Concrete
.8 Other metals
.9 Masonry
.10 Other materials if recycling facilities exist.

## 3.5. DISPOSAL OF WASTES

.1 Hazardous materials are to be disposed of in accordance with Section 01 35 43 - Environmental Procedures.

.2 Disposal of waste, volatile materials, mineral spirits, oil, and/or paint thinner into waterways, water table, storm, and/or sanitary sewers is prohibited.

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## 1. GENERAL

### 1.1. RELATED REQUIREMENTS

.1 Section 01 78 00 – Closeout Submittals

.2 Section 01 74 19 - Construction Waste Management and Disposal.

### 1.2. REFERENCES

.1 Canadian Environmental Protection Act (CEPA)

.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

### 1.3. ADMINISTRATIVE REQUIREMENTS

.1 Acceptance of Work Procedures:

.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 submit verification that corrections have been made.

.2 Request Contract Administrator's inspection.

.2 Contract Administrator's Inspection:

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

.2 Contractor to correct Work as directed.

.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 balanced and fully operational.

.4 Certificates required by Fire Commissioner: submitted.

.5 Operation of systems: demonstrated to The City's personnel.

.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's, and Contractor.

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

.5 Declaration of Substantial Performance: when Contract Administrator considers deficiencies and defects corrected and requirements of Contract substantially

performed, make application for Certificate of Substantial Performance.

.6 Commencement of Lien and Warranty Periods: date of City's acceptance of submitted declaration of Substantial Performance to be date for commencement for 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.

**1.04. FINAL CLEANING**

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

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

.2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19 - Construction Waste Management and Disposal.

**2. PRODUCTS**

**2.01. NOT USED**

.1 Not Used.

**3. EXECUTION**

**3.01. NOT USED**

.1 Not Used.

**END OF SECTION**

## 1. GENERAL

### 1.1. ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting two (2) weeks prior to Contract completion with Contractor's representative and Contract Administrator, in accordance with Section 01 31 00 - Project Management and Coordination to:

1.1 Verify Project requirements.

1.2 Review manufacturer's installation instructions and warranty requirements.

.2 Contract Administrator to establish communication procedures for:

2.1 Notifying construction warranty defects.

2.2 Determine priorities for type of defects.

2.3 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 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.3 Prepare instructions and data using personnel experienced in maintenance and operation of described products

.4 Two (2) weeks prior to Substantial Performance of the Work, submit to the Contract Administrator, four final copies of operating and maintenance manuals in English.

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

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

.7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

.8 Pay for costs of transportation.

### 1.1. FORMAT

.1 Organize data as instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose-leaf 219 x 279 mm (8 ½" x 11") with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings.

.1 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 flyleaf 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.

.8 Drawings: provide with reinforced punched binder tab.

.1 Bind in with text; fold larger drawings to size of text pages.

**1.2. CONTENTS - PROJECT RECORD DOCUMENTS**

.1 Table of Contents for Each Volume: provide title of project;

.1 Date of submission; names.

.2 Addresses, and telephone numbers of Contract Administrator and Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data.

.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

**1.3. AS -BUILT DOCUMENTS AND SAMPLES**

.1 Maintain, in addition to requirements in General Conditions, at Site for Contract Administrator one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Change Orders and other modifications to Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.

.1 Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by the Contract Administrator.

**1.4. RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS**

.1 Record information on set of black line opaque drawings, and in copy of Project manual, provided by Contract Administrator.

.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress.

.1 Do not conceal Work until required information is 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.

.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.

.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.

.7 Provide digital photos, if requested, for Site records.

**1.5. EQUIPMENT AND SYSTEMS**

.1 For each item of equipment and each system include description of unit or system, and component parts.

.1 Give function, normal operation characteristics and limiting conditions.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.

.1 Include regulation, control, stopping, shutdown, and emergency instructions.

.2 Include summer, winter, and any special operating instructions.

.4 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing,

and checking instructions.

.5 Provide servicing and lubrication schedule, and list of lubricants required.

.6 Include manufacturer's printed operation and maintenance instructions.

.7 Include sequence of operation by controls manufacturer.

.8 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.9 Provide installed control diagrams by controls manufacturer.

.10 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.

.11 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.12 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.13 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.

## 1.6. MATERIALS AND FINISHES

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

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

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

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

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

## 1.7. WARRANTIES AND BONDS

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

.2 Submit warranty management plan, thirty (30) days before planned pre-warranty conference, to Contract Administrator approval.

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

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

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

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

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

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

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

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

.5 Co-execute submittals when required.

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

.7 Except for items put into use with The City's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.

.8 Conduct joint twelve (12) month warranty inspection, measured from time of acceptance, by Contract Administrator.

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

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

.2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, HVAC balancing, pumps, motors, transformers, and commissioned systems such as alarm systems, lightning protection systems.

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

3.1 Name of item.

3.2 Model and serial numbers.

3.3 Location where installed.

3.4 Name and phone numbers of manufacturers or suppliers.

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

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

3.7 Cross-reference to warranty certificates as applicable.

3.8 Starting point and duration of warranty period.

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

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

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

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

.4 Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.

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

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

.10 Respond in timely manner to oral or written notification of required construction warranty repair Work.

.11 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Contract Administrator to proceed with action against Contractor.

**1.8. WARRANTY TAGS**

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

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

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

.4 Indicate following information on tag:

.1 Type of product/material.

.2 Model number.

.3 Serial number.

.4 Contract number.

.5 Warranty period.

.6 Inspector's signature.

.7 Construction Contractor.

**END OF SECTION**

## Part 1 General

### 1.1 SECTION INCLUDES

.1 This section contains general requirements for commissioning the facility's systems and components.

### 1.2 DESCRIPTION

.1 The purpose of the Commissioning process is to provide the City of the facility with the assurance that the building systems have been installed according to the Contract Documents and will operate within the performance guidelines set out in the Design Intent and the Specifications. The commissioning process includes specific tasks to be conducted during each phase in order to verify that design, construction, and training meets the City's project requirements. Commissioning shall:

.1 Verify that applicable equipment and systems are installed according to the Contract documents, manufacturer's recommendations, and industry accepted minimum standards and that they receive adequate operational checkout by installing Contractors.

.2 Verify and document proper performance of equipment and systems.

.3 Verify that O&M documentation left on Site is complete.

.4 Verify that the the City's operating personnel are adequately trained.

.2 All Contractors and related subcontractors shall be responsible for cooperating and coordinating their Work with the commissioning team. The Contractors shall be responsible for carrying out all the activities required for the initial installation of components and systems, and for operating the systems as required during the commissioning process.

.3 The Commissioning process does not reduce the responsibility of the installing Contractors to provide a fully functional finished product in accordance with the Contract Documents.

### 1.3 REFERENCES

.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 specification sections, apply to this section.

.2 ASHRAE Guideline 0-2013

.3 Associated Air Balance Council (AABC): National Standards for Field Measurements and Instrumentation, Total Systems Balance, Air Distribution-Hydronics Systems

.4 Manitoba Hydro New Buildings Program 2.0: Performance Path Program Guide

### 1.4 QUALITY ASSURANCE

.1 Cooperate with testing organization services under provisions specified in Section 01 45 00 — Quality Control.

.2 Complete the Testing, Adjusting and Balancing requirements specified in the Project manual.

.3 Complete, document, and submit quality assurance, quality control, and testing of electrical Work as recommended by manufacturers, as required by the authority having jurisdiction, and as specified in the Project manual.

.4 Comply with applicable procedures and standards of the certification sponsoring association.

.5 Perform services under direction of supervisor qualified under certification requirements of sponsoring association.

.6 Equipment shall not be started up for temporary use until pre-start-up checklists and procedures from the manufacturer have been completed, and moisture, dust, and other environmental/building integrity issues have been addressed.

## 1.5 DEFINITIONS

.1 Checklists - Verification checklists that are developed and used during all phases of the commissioning process to verify that the the City's project requirements are being achieved. This includes checklists for general verification, plus testing, training, and other specific requirements.

.2 Commissioning Authority (Contract Administrator) - The entity identified by the The City who leads, plans, schedules, and coordinates the commissioning team to implement the commissioning process.

.3 Commissioning Officer (CxO) - The entity identified by the Contractor who coordinates with commissioning activities between the Contractor and sub-Contractors, and the Commissioning Authority.

.4 Commissioning Plan - An overall plan developed by the commissioning agent that provides the structure, schedule and coordination planning for the commissioning process.

.5 Deferred Performance Tests (DPTs) - Performance tests that are performed, at the discretion of the Contract Administrator, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design, or other Site conditions that disallow the test from being performed.

.6 Issues Log - A formal and ongoing record of problems or concerns – and their resolution – that have been raised by members of the commissioning team during the course of the commissioning process.

.7 Quality Based Sampling - A process for evaluating a sub-set (sample) of the total population. The sample is based upon a known or estimated probability distribution of expected values; an assumed statistical distribution based upon data from a similar product, assembly, or system; or a random sampling that has scientific statistical basis.

.8 Seasonal Performance Tests - Performance tests that are deferred until the system(s) will experience conditions closer to their design conditions based on weather conditions.

.9 Startup - The initial starting or activating of dynamic equipment, including completing construction checklists.

.10 Training Plan - A written document that details the expectations, schedule, budget, and deliverables of commissioning process activities related to training of project operating and maintenance personnel, users, and occupants.

.11 Verification - The process by which specific documents, components, equipment, assemblies, systems, and interfaces among systems are confirmed to comply with the criteria described in the City's Project Requirements.

## 1.6 ACRONYMS

.1 Acronyms used within this section are as follows:

.1 AHJ – Authority Having Jurisdiction
.2 BAS – Building Automation System
.3 Contract Administrator – Commissioning Authority
.4 CxO – Commissioning Officer
.5 DDC – Direct Digital Control
.6 EC – Electrical Contractor
.7 GC – Contractor
.8 MC – Mechanical Contractor
.9 PM – Project Manager
.10 TAB – Testing, Adjusting, and Balancing Contractor

## 1.7 Coordination

.1 Project Commissioning Team - The members of the project commissioning team will consist of the commissioning authority and any support personnel, the Commissioning Officer (CxO), the City's facility staff (FS) or designee, the Contractor, subcontractors and/or vendors as required, and the Contract Administrator/ engineer (CONTRACT ADMINISTRATOR).

.2 Management - The Contract Administrator coordinates the commissioning activities through the CxO. All members shall Work together to fulfill their contracted responsibilities and meet the objectives of the Contract documents.

.3 Scheduling - The Contract Administrator, through the City or CxO, will provide sufficient notice to the Contractor for scheduling commissioning activities with respect to the City's participation. The Contractor will integrate all commissioning activities into the overall project schedule. All parties will address scheduling problems and make necessary notifications in a timely manner in order to expedite the commissioning process.

## 1.8 Commissioning Plan

.1 The Contract Administrator will develop the commissioning plan which shall be included in the project schedule when approved by the City or CxO. The following narrative provides a brief overview of the typical commissioning tasks during construction and the general order in which they occur.

.1 Commissioning during construction begins with an initial commissioning meeting conducted by the Contract Administrator where the

commissioning process is reviewed with the project commissioning team members.

.2 Additional meetings will be required throughout construction, scheduled by the Contract Administrator, through the City or CxO, with necessary parties attending to plan, scope, coordinate, schedule future activities and resolve problems.

.3 Equipment documentation is submitted to the Contract Administrator, through the City or CxO, during normal submittals, including detailed startup procedures.

.4 The construction checklists are to be completed by the Contractor (or its subcontractors), before and during the startup process.

.5 Construction checklists, TAB and startup must be completed before performance testing.

.6 Items of non-compliance in material, installation, or setup shall be corrected at no expense to the City.

.7 The Contractor ensures that the subcontractors' construction checklists are executed and documented and that startup and initial checkout are performed. The Contract Administrator verifies that the TAB, construction checklists and startup were completed according to the approved plans. This includes the Contract Administrator approving TAB, checklists and startup plans. This also includes witnessing startup of selected equipment. Any testing failure is to be corrected at no additional cost to the City, and a re-test is to be performed, observed, and documented.

.8 The Contract Administrator develops and implements equipment and system performance test procedures. The forms and procedures are approved by the City, CxO and CONTRACT ADMINISTRATOR.

.9 The performance tests are executed by the Contractor under the direction of the Contract Administrator with the assistance of the facility staff. All documentation is by the Contract Administrator.

.10 The Contract Administrator reviews the O&M documentation for completeness and provides the commissioning record for the O&M manuals.

.11 Commissioning should be completed before substantial completion.

.12 The Contract Administrator develops procedures, reviews, pre-approves, coordinates, and implements the training provided by the Contractor.

.13 Deferred testing is conducted as specified or required.

## 1.9 Commissioning Team

.1 The commissioning team will include a third party Commissioning Agent appointed by the City of Winnipeg, the Mechanical and Electrical Design Consultants, the Contract Administrator, the City's facility management staff/building operator, Contractor, and Subcontractor(s). A brief description of the roles of these various team members is outlined below.

.2 The commissioning team shall be responsible for ensuring that the technical subsystems Work with one another to produce an integrated facility that functions as specified in the design intent manual. These subsystems shall include, but not be restricted to, HVAC systems, building automation systems, plumbing systems, fire protection systems, electrical systems, and communication systems and equipment.

.3 Members appointed by Contractors:

.1 CxO - The Contractor will appoint a Commissioning Officer who will participate in and coordinate all Cx activities and procedures.

.2 Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated actions. The commissioning team shall consist of, but not be limited to, representatives of each Contractor, including project superintendent and subcontractors, installers, suppliers, and specialists deemed appropriate by the Contract Administrator.

.4 Members appointed by the City:

.1 Contract Administrator - An entity identified by the City who leads, plans, schedules, and coordinates the commissioning team to implement the commissioning process. The City will engage the Contract Administrator under a separate Contract.

.2 Representatives of the facility user and operation and maintenance personnel.

.3 Contract Administrator and engineering design professionals.

**1.10 Commissioned Equipment**

.1 Mechanical and electrical equipment, systems and subsystems (including associated duct Work, piping, wiring, and conduit) will be commissioned in this project. A complete list of commissioned equipment will be included in the Cx Plan following the submittal of shop drawings.

**Part 2 Products**

**2.1 TEST EQUIPMENT**

.1 All standard testing equipment required to perform startup and initial checkout and required performance testing shall be provided by the Contractor for the equipment being tested.

**Part 3 Execution**

**3.1 COMMISSIONING TEAM MEETINGS**

.1 Meetings will be scheduled by the PM, in coordination with the Contract Administrator and Contractor. These meetings will generally be held regularly following mobilization of the MC and EC.

.2 Coordination meetings will include members of the commissioning team as required, and will be used to plan, discuss, and review commissioning activities. Meetings shall take place until Work has been completed, or as appropriate.

.3 The construction schedule, commissioning schedule, and the commissioning plan shall be reviewed and updated as required. Upcoming tests and equipment start-ups will be reviewed and completed test results will be evaluated.

**3.2 Submittals**

.1 The Contract Administrator will provide appropriate Contractors with a specific request for the type of submittal documentation the Contract Administrator requires facilitating the commissioning Work. These requests will be integrated into the normal submittal process and protocol of the construction team.

.2 A copy of all approved shop drawings associated with equipment to be commissioned shall be forwarded to the Contract Administrator after review by the CxO or PM.

.1 The Contract Administrator shall review the Shop Drawings, and make comments to the PM as necessary.

.3 Electrical distribution testing carried out as specified by Division 26 and as required by the AHJ shall be documented and copies submitted to the Contract Administrator.

**3.3 COMMISSIONING FORM COMPLETION and Documentation**

.1 Equipment Verification Sheets - Equipment verification forms will be used to track the commissioned equipment from the design phase through submittals and installation.

.2 Installation checklists - Installation checklists will be used to document and verify that commissioned equipment is installed as designed and as per manufacturers' recommendations. They should be completed prior to startup. Installation checklists may be combined with equipment verification sheets or separate manufacturers' sheets may be used at the discretion of the Contract Administrator.

.3 Start-up checklists - The related installation subcontractor shall complete all start-up checklists as provided by the manufacturer or supplier. Where start-up checklists are not available from the manufacturer, the Contract Administrator may provide alternate forms.

.4 Functional performance test forms - The Contract Administrator shall provide supplementary forms as required for commissioning equipment. The forms will be based on the approved shop drawings for the integrated automation system. The Contract Administrator shall witness all testing and repeated testing and sign the completed forms.

.5 The related installation subcontractor shall complete equipment verification sheets as provided by the Contract Administrator. Completed checklists and forms shall be promptly forwarded to the Contract Administrator.

**3.4 Equipment and System Startup**

.1 Startup and Checkout Plan - The Contract Administrator will assist the project commissioning team members responsible for startup of any equipment. The primary goal of the Contract Administrator in this process is to ensure that there is written documentation for installation, start-up and commissioning has been completed.

.1 The Contractor shall determine which trade is responsible for executing and documenting each of the line item tasks and transmit the checklists to

the responsible subcontractors. Each form may have more than one trade responsible for its execution.

.2 The Contractor will communicate the full startup plan the Cx Team for their review and use.

.2 Contract Administrator Involvement - The Contract Administrator may witness system start-up procedures for equipment within a system in order to verify that start-up was conducted according to manufacturer's recommendations and the Contract Documents. Contractors will do their best to coordinate start-ups in order to minimize the number of necessary Site visits.

3.5 Checklists and Startup Approval

.1 The Contractor shall ensure that the subcontractors clearly list any outstanding items of the initial startup and construction checklist procedures that were not completed successfully, on an attached sheet. The form and any outstanding deficiencies shall be provided, through CxO, to the Contract Administrator within two days of test completion.

.2 The Contract Administrator will review the report and issue either a non-compliance report or an approval form, through the CxO, to the Contractor. The installing subcontractors or vendors shall correct all areas that are deficient or incomplete in the checklists and tests in a timely manner, shall notify the CxO as soon as outstanding items have been corrected, and resubmit an updated startup report with a Statement of Correction on the original non-compliance report. When satisfactorily completed, the Contract Administrator will recommend approval of the execution of the checklists and startup of each system.

**3.6 SYSTEM PREPARATION and INSPECTION REQUIREMENTS**

.1 The Contractor will be tasked with effectively preparing all systems for commissioning. Once equipment is running, the Contractor shall check that the equipment is operating according to specifications and manufacturers guidelines.

.2 The Contractor will adjust, repair, or correct all items that are found not to be operating according to Specification.

.3 All mechanical systems will be observed under actual operating conditions for sufficient time to ensure proper operation under varying conditions.

.4 The Contractor shall periodically check the following items and make corrections, adjustments, or repairs, as required:

.1 Strainers and filters are in place and are changed as specified

.2 Control system is functioning as per the Sequence of Operations

.3 Safety valves and seals are tight and fully operational; there are no system leaks

.4 All mechanical equipment is operating with pressures and temperatures within Manufacturer's recommendations.

.5 All gauges are adjusted and reading properly

.6 Excessive oil and grease is cleaned on a regular basis

.7 Dampers and valves close tightly and stroke fully

.5 Equipment and systems are to be demonstration ready for the Contract Administrator prior to Functional Performance Testing. Additional Site visits that are required due to systems that are not demonstration ready will be at Contractors Expense.

## 3.7 FUNCTIONAL PERFORMANCE TESTING

.1 Functional Performance Tests are to be done to verify the performance of individual systems, as well as the interactions between systems as they operate together. Test procedures will be identified on the Functional performance Test forms provided by the Contract Administrator.

.2 The Contractor shall provide test equipment, and demonstrate system operation to the Contract Administrator as deemed necessary.

.3 Functional Performance Testing shall begin only after all mechanical testing; start-up checklists; and testing, adjusting, and balancing required by the Contractor have been completed, and when the Contract Administrator has acknowledged that the physical installation of components and systems being tested is substantially installed in accordance with the Contract Documents.

.4 The testing schedule will be coordinated by the PM and the Commissioning Team. Adequate notice will be provided to all parties involved in performing & witnessing tests.

.5 The Mechanical Contractor shall Work in consultation with the Contract Administrator, PM, and related Subcontractor to complete functional performance testing for all installed equipment and systems.

.6 Performance testing and verification may be achieved by manual testing or by monitoring the performance and analyzing the results using the control system's trend log capabilities or by stand-alone data loggers. The Contract Administrator may substitute specified methods or require an additional method to be executed other than what was specified, with the approval of the CONTRACT ADMINISTRATOR and the City. The Contract Administrator will determine which method is most appropriate for tests that do not have a specified method.

.7 Functional performance tests may include the demonstration of any or all of the following sequences controlled by the BAS:

- .1 Start-up/shutdown
- .2 Occupied/unoccupied modes
- .3 Modulation of device range or capacity
- .4 Power failure
- .5 Alarms
- .6 Equipment staging
- .7 Interlocks with other equipment
- .8 Sensor and actuator calibrations

.8 The Contract Administrator may use the BAS or any other instrumentation necessary for mechanical systems testing. The BAS shall be programmed by the Controls Subcontractor to record trend data over a time period specified by the PM or Contract Administrator.

.9 The Contract Administrator may use trend data to evaluate the performance of the systems in conjunction with other recorded data.

.10 Tests shall be conducted systematically, starting from the primary energy system through to the system components and controls.

.11 The Mechanical Contractor shall report all test failures to the PM and Contract Administrator.

.12 Unsuccessful tests will be repeated until they are successful, at no additional cost to the Contract.

.13 The burden of responsibility to solve, correct, and retest malfunctions/failures is with the Contractor, with CONTRACT ADMINISTRATOR approval as required.

3.8 Non-Conformance (Commissioning Issues Log)

.1 Corrections of minor deficiencies identified may be made during the tests at the discretion of the Contract Administrator. In such cases the deficiency and resolution will be documented on the procedure form or on an attached sheet as corrected on Site (COS).

.2 As tests progress and issues are identified, the Contract Administrator shall discuss the issue with the commissioning team, and the Contractor.

.1 When there is no dispute on the issue and the Contractor accepts responsibility to correct it:

.1 The Contract Administrator will document the issue and the Contractor's response and intentions. The Contractor corrects the issue, signs the statement of correction at the bottom of the non-compliance form certifying that the equipment is ready to be retested and sends it back to the Contract Administrator.

.2 The Contractor shall reschedule the test; and the test repeated.

.2 If there is a dispute about an issue that cannot be resolved within the Cx Team, the dispute shall be documented with the Contractor's response and forwarded to the Project Team to be dealt with as a deficiency.

.3 Cost of retesting a performance test shall be the Contractor's. Retesting shall not be considered a justified reason for a claim of delay or for a time extension by the Contractor.

.4 The Contractor shall submit in writing to the Cx Team at least as often as commissioning meetings are being scheduled, the status of each outstanding discrepancy identified during commissioning. Discussion shall cover explanations of any disagreement and proposals for their resolutions.

**3.9 SYSTEM ACCEPTANCE**

.1 All test forms shall be completed and signed promptly after testing, and submitted to the Contract Administrator for review and approval.

.2 Prior to final project completion, the Contract Administrator shall assemble the completed testing forms into a single document.

.3 Where equipment does not meet the design intent or The City's Requirements, the system will be adjusted and re-tested until performance is acceptable.

.4 Where necessary, the PM shall issue corrective measures if acceptable performance is not achieved.

.5 The Contract Administrator shall review the results of the Functional Performance Tests and shall submit a report on the findings to the PM. This report shall make recommendations for improving system performance whenever possible.

## 3.10 SEASONAL/ DEFERRED COMMISSIONING

.1 A schedule for the deferred commissioning will be drawn up at the time of construction completion which will identify all performance testing which could not be undertaken due to season, lack of occupancy, or for any other reason.

.2 The Contract Administrator will arrange with the City to prepare a schedule for seasonal commissioning which allows the systems to be tested under varying operating conditions, including extreme heat and cold.

.3 Seasonal and other deferred Commissioning must be completed within the warranty period.

.4 Any problems which are uncovered during testing shall be reported to the Contract Administrator, including suggestions for corrective actions to be taken to resolve the problem.

## 3.11 OPERATIONS & MAINTENANCE MANUALS

.1 The commissioning process requires detailed O&M documentation as identified in this section and technical specifications.

.2 The project team, Contractors, and subcontractors shall coordinate to supply the Contract Administrator with draft copies of the complete operating and maintenance manual for review by the Contract Administrator and Contract Administrator.

.3 The Contractor will compile the information received into an O&M manual which meets the criteria as specified elsewhere or as follows (whichever is more stringent):

- .1 Information is complete and applicable
- .2 The O&M document is bound and labeled as per the Mechanical Specification
- .3 Instructions for installation, maintenance, replacement, and start-up instructions are included
- .4 A list of replacement parts, special tools required, and local sources is included
- .5 Warranty information is identified
- .6 As-built controls package for all sequences and modes of operation are included
- .7 A description of each sequence of operation has been written
- .8 Single-line schematic control drawings have been included

.4 Contractor shall submit corrected final approved manuals prior to substantial completion. Prior to final submittal, the Contract Administrator shall review the O&M manuals (in addition to the initial draft O&M manual), and documentation, with redline as-builts, for systems that were commissioned to verify compliance with the specifications. The Contract Administrator will communicate, through the CxO, deficiencies in the manuals to the Contractor or CONTRACT ADMINISTRATOR, as requested. Upon a successful review of the corrections, the Contract Administrator will recommend approval and acceptance of these sections of the O&M manuals. The Contract Administrator will also review each equipment warranty and verify that all requirements to keep the warranty valid are clearly stated. This Work does not supersede the CONTRACT ADMINISTRATOR's review of the O&M manuals according to the CONTRACT ADMINISTRATOR's Contract.

## 3.12 Demonstration, TRAINING AND ORIENTATION

.1 Staff training shall be provided by the appropriate Contractor under the supervision of the Contractor, as specified elsewhere in the Project manual or as follows (whichever is more stringent).

.2 Training will continue until the City is satisfied that adequate training has been provided.

.3 Training sessions should be documented in a durable form for future reference. Where training is for the BAS controls system or other systems using a computer Workstation, the screen of the computer shall be recorded directly using appropriate computer software during training sessions using screen capture software and a microphone for the technician providing the training.

.4 Training sessions will fulfill all requirements for Commissioning, including but limited to:

.1 Identification of the general purpose of system (design intent)

.2 Instruction on how to use the O&M Manuals

.3 Review of as-built control drawings and schematics

.4 Start-up, normal operation, shut-down, unoccupied operation, seasonal changeover, manual operation, control setup and programming troubleshooting and alarms

.5 Demonstration of interactions between systems, and optimized methods for energy conservation

.6 Identification of health and safety issues

.7 Special maintenance and replacement sources

.8 Occupant interaction issues

.9 System response to different operating conditions

**END SECTION**