

Part 1 General

1.1 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, in accordance with relevant municipal, provincial and other regulations.

1.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with the Contract Administrator to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security.
- .4 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- .5 Keep within limits of work and avenues of ingress and egress.

1.3 WORKING HOURS

- .1 Working hours will be restricted to between 8:00 a.m. and 5:00 p.m. Monday through Friday.
- .2 No work permitted on Saturdays, Sundays and Statutory holidays.
- .3 Notwithstanding the above, all Work shall be completed in conformance with City of Winnipeg Neighbourhood Liveability By-Law No. 1/2008.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Submit to the 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 Review submittals prior to submission to the 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.
- .4 Notify the Contract Administrator, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .5 Verify field measurements and affected adjacent Work are co-ordinated.
- .6 Contractor's responsibility for errors and omissions in submission is not relieved by the Contract Administrator's review of submittals.
- .7 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by the Contract Administrator review.
- .8 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit shop drawings bearing stamp and signature of qualified 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 5 working days for Contract Administrator's review of each submission.
- .5 Adjustments made on shop drawings by the Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to the Contract Administrator prior to proceeding with Work.
- .6 Make changes in shop drawings as the Contract Administrator may require, consistent with Contract Documents. When resubmitting, notify the Contract Administrator in writing of revisions other than those requested.

- .7 After the Contract Administrator's review, distribute copies.
- .8 Submit electronic copy in PDF format of shop drawings for each requirement requested in specification Sections and as the Contract Administrator may reasonably request.
- .9 Submit electronic copy in PDF format of product data sheets or brochures for requirements requested in specification Sections and as requested by the Contract Administrator where shop drawings will not be prepared due to standardized manufacture of product.
- .10 Delete information not applicable to project.
- .11 Supplement standard information to provide details applicable to project.
- .12 If upon review by the 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.

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 the Contract Administrator's business address.
- .3 Notify the 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 the Contract Administrator are not intended to change Contract Price. If adjustments affect value of Work, state such in writing prior to proceeding with Work.
- .6 Make changes in samples which the 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 for approval by Contract Administrator.

1.5 CERTIFICATES AND TRANSCRIPTS

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

- Part 2** **Products**
- 2.1** **NOT USED**
- .1 Not Used.

- Part 3** **Execution**
- 3.1** **NOT USED**
- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.2 WATER SUPPLY

- .1 The City will make available, for the extent that it is available, a supply of potable water for construction use at no charge to the Contractor
- .2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.
- .3 The Contractor shall provide all necessary hoses, lines, connections, and other ancillary hardware which may be required.
- .4 The services are to be returned to their original condition at the temporary locations, or left in an altered condition only as approved by The City.

1.3 TEMPORARY HEATING AND VENTILATION

- .1 Permanent heating system of building will remain in operation during construction.
- .2 Provide temporary heating required during construction period as required to supplement the permanent heating system of building, including attendance, maintenance and fuel.
 - .1 Construction heaters used inside building must be vented to outside or be flameless type. Solid fuel salamanders are not permitted.
 - .2 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.
- .3 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.
- .7 Control humidity levels in construction areas to accommodate specified products.
- .5 Permanent heating system of building, may be used for heating. Be responsible for damage to heating system if use is permitted.
- .6 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .7 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.4 TEMPORARY POWER AND LIGHT

- .1 The City will make available, for the extent that it is available temporary power during construction for temporary lighting and operating of power tools.
- .2 Connect to existing power supply in accordance with Canadian Electrical Code and provide meters and switching.
- .3 Arrange for connection with appropriate utility company. Pay costs for installation, maintenance and removal.
- .4 Temporary power for equipment requiring in excess of that available on-site is responsibility of the Contractor.
- .5 Provide and maintain temporary lighting throughout project.

1.5 TEMPORARY COMMUNICATION FACILITIES

- .1 Provide and pay for cellular telephone for site superintendent and use of the Contract Administrator

1.6 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.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CSA-A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CSA O121-08, Douglas Fir Plywood.

1.2 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
 - .1 Submit shop drawings bearing the seal of professional engineer registered in the Province of Manitoba.

1.3 SCAFFOLDING

- .1 Design and erect scaffolding in accordance with Manitoba Regulation 217/2006 and CAN/CSA S269.2.
 - .1 Where Manitoba Regulation 217/2006 requires scaffolds to be designed by a professional engineer. Submit shop drawings bearing the seal of professional engineer registered in the Province of Manitoba.

1.4 SITE STORAGE/LOADING

- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.5 CONSTRUCTION PARKING

- .1 Parking will be permitted on site provided it does not interfere with normal operations, access buy tenants or the public, or disrupt performance of Work.

1.6 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof bins for storage of tools, equipment and materials.
- .2 Locate materials not required to be stored in weatherproof bins on site in manner to cause least interference with work activities.

1.7 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.

1.8 POLLUTION CONTROL

- .1 The use of gas or diesel powered equipment within interior areas is strictly prohibited.
- .2 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures and/or other control methods. If necessary, arrange for shutdown of air handling units which have air intakes in the vicinity of the work. Dust can trigger fire alarm smoke detectors and can plug ducts and filters. Dust and suspended particles can damage air-cooled mechanical and electrical equipment. If necessary, arrange for shutdown of this equipment. Contractor shall be responsible for all damages. Prior to start of work, identify locations of air intakes and air-cooled mechanical and electrical equipment within and adjacent to the area of work.
- .3 Control noxious and hazardous gases. Prevent hazardous accumulations. Control emission from equipment and plant to local authority's emission requirements.
- .4 On exterior, cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.9 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.2 HOARDING

- .1 The Contractor must barricade off the area under construction to prevent the general public from improper access to the construction area. Suitable barricades and protection systems include:
 - .1 Lock and barricade existing doors to work areas. Post warning signage on doors.
 - .2 Erect barricades within work areas around open through slab repairs with materials design to withstand guard loading.
- .2 Repair surface coatings and finishes which are damaged by temporary hoardings and barricades.
- .3 Provide adequate signage, fencing, etc. to inform the public of the work being undertaken.
- .4 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.

1.3 DUST TIGHT SCREENS

- .1 Provide dust tight screens 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.

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

- Part 2** **Products**
- 2.1** **NOT USED**
- .1 Not Used.

- Part 3** **Execution**
- 3.1** **NOT USED**
- .1 Not Used.

END OF SECTION

Part 1 General

1.1 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 Conform to latest date of issue of referenced standards in effect on date of submission of Tenders, except where specific date or issue is specifically noted.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, the Contract Administrator reserves right to have such products or systems tested to prove or disprove conformance.
- .4 The Cost for such testing will be borne by the Contractor or Supplier.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with the Contract Administrator based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 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 the Contract Administrator of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- .2 In event of failure to notify the Contract Administrator at commencement of Work and should it subsequently appear that Work may be delayed for such reason, the Contract Administrator reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

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

1.5 TRANSPORTATION

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

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 the Contract Administrator in writing, of conflicts between specifications and manufacturer's instructions, so that the Contract Administrator will establish course of action. Where conflicts exist, the more stringent instruction will be enforced.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Contract Administrator to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 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 the Contract Administrator if required Work is such as to make it impractical to produce required results.
- .2 Do not employ anyone unskilled in their required duties. The 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 the 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 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.

1.10 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 the Contract Administrator.

1.11 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.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by The City or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times. Do not burn waste materials on site.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Dispose of waste materials and debris off site.
- .6 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2 HIGH LEVEL CLEANING

- .1 At completion of Work, complete a high level cleaning of the arena staging area.
- .2 Clean ductwork and mechanical equipment in areas affected by construction work.
- .3 Provide scaffolding if required to complete high-level cleaning. Remove scaffolding upon completion of cleaning.
- .4 Clean by wet wipe and vacuum accessible horizontal surfaces and ledges including but not limited to:
 - .1 Structural steel members not covered by the removal and installation of scoreboards. Including but not limited to:
 - .1 Exposed steel beam flanges.
 - .2 Truss chords.
 - .3 Bridging members.
 - .2 Mechanical and electrical fixtures.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by The City or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times. Do not burn waste materials on site.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Remove stains, spots, marks and dirt from existing surfaces, fixtures, and finishes within the work area affected by the Work.
- .8 Sweep and power wash clean all work areas.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 General Conditions C12.
- .2 Supplemental Conditions Part D.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Conduct the following in addition to requirements outlined in General Conditions C12 and Supplemental Conditions Part D.
- .2 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify the 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 The Contract Administrator and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit written certificates that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Work: complete and ready for final inspection.
 - .4 Final Inspection:
 - .1 When completion tasks are done, request final inspection of Work by The City, The Contract Administrator, and Contractor.
 - .2 When Work incomplete according to The City and the Contract Administrator, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when the Contract Administrator considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
 - .6 Commencement of Lien and Warranty Periods: date of The City's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
 - .7 Final Payment:
 - .1 When the Contract Administrator considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
 - .2 Refer to General Conditions C12: when Work deemed incomplete by the Contract Administrator, complete outstanding items and request re-inspection.

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

1.3 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

- .1 Operation and maintenance data.
- .2 As-built drawings, samples, and specifications.
- .3 Product data, materials and finishes, and related information.
- .4 Record documents.
- .5 Final site survey.
- .6 Equipment and systems.
- .7 Spare parts, special tools and maintenance materials.
- .8 Warranties and bonds.

1.2 SUBMISSION

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

1.3 OPERATION AND MAINTENANCE MANUAL FORMAT

- .1 Organize data in the form of an instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: Manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.4 CONTENTS - EACH VOLUME

- .1 Table of Contents: provide title of project;
 - .1 date of submission;
 - .2 names, addresses, and telephone numbers of The City, Contract Administrator and Contractor with name of responsible parties; and
 - .3 schedule of products and systems, indexed to content of volume.
- .2 For each product or system, 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 clearly 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. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.5 AS-BUILT DOCUMENTS AND SAMPLES

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

- .5 Keep as-built documents and samples available for inspection by the Contract Administrator.

1.6 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings, and in a copy of the Project Manual, provided by the Contract Administrator.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. 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 Field changes of dimension and detail.
 - .2 Changes made by change orders.
 - .3 Details not on original Contract Drawings.
 - .4 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.

1.7 RECORD DOCUMENTS

- .1 Prior to Substantial Performance of the Work, electronically transfer the marked up information from the as-built documents to a master set of drawing and specification files provided by the Contract Administrator, as follows:
 - .1 Drawings: AutoCAD Release 2017.
 - .2 Specifications: Adobe Acrobat 2019.
- .2 Mark revised documents as "RECORD DOCUMENTS". Include all revisions.
- .3 Employ a competent computer draftsman to indicate changes on the electronic set of record drawings. Provide updated record drawings in AutoCAD Release 2017.
- .4 Employ a competent specification writer to indicate changes to the electronic set of record specifications. Provide updated record specifications in Adobe Acrobat 2019.
- .5 Submit completed record documents to the Contract Administrator on a CD-ROM.

1.8 MATERIALS AND FINISHES

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

1.9 SPARE PARTS

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to the Place of the Work; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to the Contract Administrator. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered Products and submit prior to final payment.

1.10 MAINTENANCE MATERIALS

- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to the Place of the Work; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to the Contract Administrator. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered Products and submit prior to final payment.

1.11 SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to the Place of the Work; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to the Contract Administrator. Include approved listings in Maintenance Manual.

1.12 STORAGE, HANDLING AND PROTECTION

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.

- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged Products at own expense and to satisfaction of the Contract Administrator.

1.13 WARRANTIES AND BONDS

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

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY

- .1 Section includes: Indoor electronic LED hockey scoreboards including wireless controllers and other accessories for complete installation.

1.2 RELATED WORK

- .1 Include the grounding of scoreboards and support structures, site grounding and wiring methods in conformance with electronic scoreboard manufacturers written instructions.

1.3 REFERENCES

- .1 American Society for Testing and Materials (ASTM) Publications:
1. ASTM B221 – Aluminum-Alloy Extruded Bar, Rod, Wire, Shape and Tube.
 2. Federal Communications Commission (FCC), Part 15 Rules and Regulations.
 3. CSA, UL, C-UL, UL-48 Standards for Electric Signs.
 4. National Electrical Code (NEC).
- .2 Provide in accordance with Section 01 33 00 – Submittal Procedures.
- .1 Product data for scoreboards, controls and accessories. Include descriptions of control functions.
 - .2 Shop Drawings showing locations, face layout, dimensions, construction, electrical wiring diagrams, interface with structural supports, and method of anchorage.
 - .3 Finish samples.
 - .4 Copy of guarantee for review by Contract Administrator.
 - .5 Manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

- .1 Source limitation: All components including scoreboard, control center, control cable, and other accessories and installation hardware shall be products of a single manufacturer. All parts components must be manufactured in North America. All scoreboard cabinets must be manufactured from aluminum.
- .2 Manufacturer qualifications: Company specializing in manufacturing electronic scoreboards with 5 years minimum successful experience.
- .3 Scoreboards shall be designed for interior installation and not rated for outdoor use.
- .4 Scoreboards and other electrical components shall be certified for use in Canada by Underwriter Laboratories, (UL) Inc. or Canadian standards association and shall bear either UL, CSA, or C-UL label.
- .5 Scoreboards and other electrical components shall be electrically grounded in accordance with National Electrical Code (NEC), Article 600.

1.5 GUARANTEE

- .1 Provide under provisions of Section 01 78 00 – Closeout Submittals: Warranties to cover defects in materials and workmanship.

PART 2 PRODUCTS

1.1 ACCEPTABLE PRODUCT – SCOREBOARD(S)

- .1
 - a) **St. James Civic Centre Indoor Arena:** Electronic Hockey Scoreboard, Model No. 6229, 7.010 m long x 1.168 m high x 102 mm deep dimensions, 82 kg. weight, Red SMT LED displays for time, scores, period, possession and bonus indicators, as manufactured by OES Scoreboards Inc., or an approved alternate in accordance with Clause B7 - Substitutes.
 - b) **Eric Coy Indoor Arena:** Electronic Hockey Scoreboard, Model No. 6210, 2.743 m long x 2.337 m high x 102 mm deep dimensions, 68 kg. weight, Red SMT LED displays for time, scores, period, possession and bonus indicators, as manufactured by OES Scoreboards Inc., or an approved alternate in accordance with Clause B7 – Substitutes
- .2 Enclosures: Shall be constructed of 5052-H32 aluminum, 1.6 mm thick front and back faces. Top, bottom and sides shall be 2.3 mm thick.
- .3 Finish: Powder coated on all sides, front and back of scoreboard with die cast aluminum complete with option of white stripping to separate scoreboard features. Colour shall be selected by Contract Administrator.
- .4 Hardware: Corrosion resistant coating or stainless steel fasteners, screws and other exposed hardware.
- .5 Plexi Digit Covering: Standard colour is red. Clear will be used on digits that are yellow, green, blue and white. Plexi glass is standard for indoor scoreboards.
- .6 Digits: Seven segment digit control per digit display. Provide acrylic coating for moisture resistant use in indoor application with high humidity. Digital boards are FR4 fire rated fiber glass with 1 OZ copper boards. All digit and indicator boards will use a black screen and solder mask on the face of the board to help hide the board from view.
- .7 LED's: Scoreboards shall use LED's for digits, dots, arrows, team names and possession indicators. The digits shall use 7 segment configuration type.
- .8 LED Indoor: LED's shall be SMT with a viewing angle of 120°.
 - .1 Rated life/viewing angle:

Red	-	100,000 hours/120°
Yellow	-	100,000 hours/120°
White	-	100,000 hours/120°
Green	-	100,000 hours/120°
Blue	-	100,000 hours/120°
 - .2 Viewing Distance: Digits have a clear viewing distance of approximately 50 feet for 1 inch of digit size.
- .9 Digit Control Boards: Control boards shall be conformal coated in arenas that suffer from high humidity.

- .10 Battery Back-up: Scoreboards shall utilize a RTC (Real Time clock) with a ten year lithium battery back-up chip.
- .11 Power Requirements: 110 volts, 5 amps, 50/60 Hz, requires earth ground.
- .12 Letters and Captions: Standard lettering used on the face of the scoreboards shall be made of UV and weather resistant vinyl with pressure sensitive adhesive. Standard colour is white with Swiss Font 721.
- .13 Scoreboard Horn: Horn shall be made with a stainless steel diaphragm, 4' in width, 4" in height and 2 ½" in depth, produce 100 dba at 10 feet distance, electrical input of 120 VAC, 60 Hz at 0.8 Amps.
- .14 Control Cable: Belden 9502 twisted pair cable with professional XLR connections.
- .15 Ad Box: Matches width and depth of scoreboard and 18 inch tall,

2.2 ACCESSORIES

- .1 Provide each scoreboard with control cable of length required and approved Shop drawings, mounting hardware, and other accessories as required for complete functional installation.

2.3 ACCEPTABLE PRODUCT - CONTROL CENTER(S)

- .1 St. James Civic Centre Indoor Arena and Eric Coy Indoor Arena:
Quantity 2 - Model No. ISC9000-X9 Wireless Microprocessor based operator's control centers designed to operate different models of scoreboards and accessories by interchange of keyboard overlay and changing user accessible software settings, as manufactured by OES Scoreboards, Inc., or an approved alternate in accordance with Clause B7 – Substitutes.
- .2 Quantity 2 - Consoles: One (1) piece powder coated die cast aluminum case, 320 mm width x 210 mm depth x 100 mm height, and 2 kg. weight.
- .3 Control Center Features:
 - .1 Microprocessor and quartz crystal based operation.
 - .2 Operating Frequencies: ISM 902-928 MHz.
 - .3 Power Output: 250 mW.
 - .4 Range: 300 feet (90 m) indoor.
 - .5 Certification: Shall comply with Part 15 of FCC rules and regulations.
 - .6 Input: Full function keyboard with 4x8 key and 3x4 keyboards with separate dedicated run, stop and horn keys, and interchangeable keyboard overlays for 4x8 keyboard used for different sports.
 - .7 Two (2) configurable remote input ports.
 - .8 Battery backed memory game data saved on power off position.
 - .9 Display: 129.5 mm full graphic backlit LCD display.
 - .10 Outputs: One (1) RS485 2-wire communication port for game data. One (1) RS232 communication port for game data. Additional RS485 2-wire communication port for multi-controller setups or stat system. One (1) USB communication port for diagnostics and upgrades.
 - .11 WIFI/Ethernet cable port.
 - .12 Dimmer Control: 10 level dimmer control for scoreboards.

- .13 Wired hand-held remote control time switch.
- .4 Power Requirements: 120 volts, 20 watts, 50/60 Hz, 1 amp fuse.
- .5 Carrying Case: Medium duty, 388 mm x 343 mm x 140 mm, 1.03 kg. weight, black polyethylene with foamed padded interior, mechanical latches and hinges.

END OF SECTION