

Approved: 2006-03-31

**Part 1            General**

**1.1                DEFINITIONS**

- .1        The word “provide” means “supply and install”.

**1.2                DESCRIPTION OF WORK**

- .1        The work site is located in Gimli, Manitoba. Gimli is approximately 100 km north of Winnipeg via Highway 9.
- .2        The scope of work under this Contract includes, but is not limited to, the following:
  - .1        Establish temporary traffic and pedestrian protection.
  - .2        Establish temporary environmental protection.
  - .3        Provide new pre-engineered building including interior wall panels, exterior finish, roofing, support framing for mural, framing for doors and windows, and all miscellaneous building finishes as indicated.
  - .4        Mechanical and electrical scope of work as indicated on associated drawings.
- .3        The work to be done by the Contractor under this Contract includes all superintendence, overhead, labour, materials, equipment, tools, supplies, insurance, and all things necessary for and incidental to the satisfactory performance and completion of all work as specified herein. All work to be done in accordance with details shown on the accompanying drawings and as specified herein.

**1.3                MEASUREMENT FOR PAYMENT**

- .1        General
  - .1        Provide advanced notice to Contact Administrator to permit required confirmation of measurements for payment.
  - .2        At least 14 days prior to submittal of first application for payment, provide to DFO Representative (DFO) a cost breakdown, Progress Payment in detail as directed by DFO for parts of work aggregating total amount of Contract Price, to allow evaluation for payment. After approval by DFO, cost breakdown will be used as basis for progress payments.
- .2        Mobilization and Demobilization
  - .1        Lump sum payment provided for all works required, including:
    - .1        Mobilize equipment, materials, tools, supplies, labour and supervisors.
    - .2        Insurance required for duration of construction.
    - .3        Fees, certificates, and work permits.
    - .4        Temporary construction facilities.
    - .5        Signage.
    - .6        Security work and storage areas.
    - .7        Vehicle and pedestrian protection.
    - .8        Daily site cleaning, and

- .9 Demobilization of aforementioned items upon completion of project.

#### **1.4 WORK SCHEDULE**

- .1 Provide within 10 working days after contract award, a construction schedule indicating anticipated progress stages and final completion of work within time period indicated herein.
- .2 Work under this contract shall be substantially completed by **January 12<sup>th</sup>, 2018**.
- .3 Interim reviews of work progress based on work schedule will be conducted as determined by DFO Representative. Contractor to update schedule in conjunction with DFO Representative's review and approval.
- .4 Work under this Contract is to be performed in a timely manner. Commence planning and preparatory work immediately upon receipt of official notification of acceptance of Contract. Schedule work according to the DFO Procurement Policy.
- .5 Before work is undertaken ensure all materials and trades required are available to complete the work with no delay.
- .6 Obtain DFO Representative's approval prior to scheduling any weekend work.

#### **1.5 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately following award of Contract, submit Workers' Compensation Board status.

#### **1.6 FEES, PERMITS, AND CERTIFICATES**

- .1 Provide authorities have jurisdiction with information requested. Pay fees and obtain certificates and work permits as required.
- .2 Provide certificates and permits when requested.

#### **1.7 INTERPRETATION OF DOCUMENTS**

- .1 Drawings and Specifications are to be read together. All work indicated on the Drawings or within the Specifications, whether reflected in both documents or not, is included in this Contract.
- .2 The sub-division of the Specification into sections, identified by title and number, is for convenience only and does not modify the singularity of the document, nor does it operate to make or imply that the DFO Representative is an arbiter to establish the limits or extent of Contract between Contractor and Subcontractors or to determine the limits or extents of work that may be decided by trade unions or contractors' organizations. Extras to the Contract will not be considered based on the grounds of differences in interpretation of the Specification and/or Drawings as to which trade performs the work.
- .3 Do not scale off drawings.

#### **1.8 CONTRACTOR'S USE OF SITE**

- .1 Co-ordinate use of premises under direction of DFO Representative.
- .2 Do not unreasonably encumber the site with materials and equipment.
- .3 Contractor assumes full responsibility for protection and safekeeping of products under this Contract.

**1.9 AS-BUILT RECORD DRAWINGS**

- .1 Contractor to supply 3 copies of As-Built Drawings to DFO Representative following completion of project.

**1.10 EXISTING SERVICES**

- .1 Establish location and extent of service lines in area of work prior to start of work.
- .2 Notify DFO Representative and utility companies of intended interruption of services and obtain required permissions.
- .3 Where work involves connecting to existing services provide DFO Representative 72 hours notice.
- .4 Submit schedule to and obtain approval from DFO Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .5 Where unknown services are encountered, immediately advise DFO Representative and record findings in writing.
- .6 Protect, relocate, or maintain existing active services. When inactive services are encountered, terminate in manner approved by authorities having jurisdiction.
- .7 Record locations of maintained, re-routed, and abandoned service lines.

**1.11 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy of each documents as follows:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Reviewed Shop Drawings.
  - .5 Change Orders.
  - .6 Other modifications to Contract.
  - .7 Copy of approved work Schedule.
  - .8 Health and Safety Plan and other related safety documents.
  - .9 Other documents as specified.

**1.12 PROJECT MEETINGS**

- .1 DFO Representative will arrange project meetings and assume responsibility for setting times, recording of minutes, and distribution of minutes.

**1.13 SITE INSPECTION**

- .1 The submission of a tender is deemed to be a confirmation that the Tenderer has inspected the site and is fully conversant with the site and all conditions under which the work is to be carried out.

**1.14 SECURING WORK AREA**

- .1 Secure work areas in an approved manner. This includes fencing or barricades to prevent public access to areas of construction or areas where construction materials are stored.

**1.15 CONSTRUCTION FACILITY**

- .1 Provide heated, lighted, and ventilated office space of sufficient size to accommodate site meetings, and laydown table.
- .2 Provide sanitary facilities for workforce in accordance with OHSA.

**1.16 DRAWINGS**

- .1 The following Drawings are to be read in conjunction with this specification:
  - .1 JML 2016083 S-1 Rev.3 – Plan, Site Plan, Detail, General Notes and Specifications
  - .2 JML 2016083 S-2 Rev.3 – Roof Plan and Schedules
  - .3 JML 2016083 S-3 Rev.3 – Sections and Elevations
  - .4 TBTE 16-336 M1 Rev. 3 – Main and Partial Main Floor Plumbing Plans, Plumbing Notes and Gas Line Spacing Schedule
  - .5 TBTE 16-336 M2 Rev. 3 – Main Floor HVAC Plan, Section, HVAC Notes and Grille/Diffuser Schedule
  - .6 TBTE 16-336 M3 Rev. 3 – Sections, Details and DWV Piping Isometric
  - .7 TBTE 16-336 M4 Rev. 3 – Sections, Details and Water Heater Piping Isometric
  - .8 TBTE 16-336 M5 Rev. 3 – Equipment List, Sequence of Operation and Commissioning Notes
  - .9 TBTE 16-336-E1 Rev. 4 – Electrical – Partial Site Plan, Electrical Legend, Details, Single Line Diagram
  - .10 TBTE 16-336-E2 Rev. 4 – Electrical – Boathouse Floor Plan, Lighting Layout
  - .11 TBTE 16-336-E3 Rev. 4 – Electrical – Boathouse Floor Plan Power Requirements, Panel Schedules
  - .12 For reference only - AECOM Sheet No. SB100 – Boat House Building, Foundation, General Notes
  - .13 For reference only - AECOM Sheet No. SB101 – Boat House Building, Foundation Plan and Typical Details

**1.17 CLEANING**

- .1 Maintain work areas in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste material off site at regular intervals and dispose of appropriately. Obtain permits and pay fees as necessary.
- .3 Do not burn waste materials on site.
- .4 At Substantial Completion remove surplus products, tools, and equipment not required to complete remaining work.

**1.18**            **CLOSEOUT**

- .1            Refer to Section 01 78 00 – Closeout Submittals

**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 DFO Representative 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 DFO Representative. 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 DFO Representative, 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 DFO Representative's review of submittals.
- .9     Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by DFO Representative review.
- .10    Keep one reviewed copy of each submission on site.

### **1.2               SHOP DRAWINGS AND PRODUCT DATA**

- .1     The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2     Submit drawings stamped and signed by professional engineer registered or licensed in 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 7 days for DFO Representative's review of each submission.
- .5     Adjustments made on shop drawings by DFO Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to DFO Representative prior to proceeding with Work.

- .6 Make changes in shop drawings as DFO Representative may require, consistent with Contract Documents. When resubmitting, notify DFO Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .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 DFO Representative's review, distribute copies.
- .10 Submit electronic copy and 3 prints of shop drawings for each requirement requested in specification Sections and as DFO Representative may reasonably request.
- .11 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by DFO Representative where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by DFO Representative.

- .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 electronic copies of certificates for requirements requested in specification Sections and as requested by DFO Representative.
  - .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 electronic copies of manufacturer's instructions for requirements requested in specification Sections and as requested by DFO Representative.
  - .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 electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by DFO Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by DFO Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by DFO Representative, 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 Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.
  - .1 This review shall not mean that PWGSC 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 DFO Representative.
- .3 Notify DFO Representative 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 DFO Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to DFO Representative prior to proceeding with Work.
- .6 Make changes in samples which DFO Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

**1.4 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .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               MEASUREMENT AND PAYMENT**

- .1       Payment for environmental protection shall be by lump sum and shall include all labour, equipment and materials required for environmental protection as outlined in this section.

**1.2               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 humans; or degrade environment aesthetically, culturally and/or historically.
  - .2       Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

**1.3               FIRES**

- .1       Fires and burning of rubbish on site is not permitted.

**1.4               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.

**1.5               POLLUTION CONTROL**

- .1       Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- .2       Prevent extraneous materials from contaminating air and waterways beyond application area.
- .3       Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .4       Locate temporary fuel storage 100 meters from shore and comply with Provincial Environmental legislation.
- .5       Refueling, servicing or cleaning of equipment within 100 meters of shore is prohibited.
- .6       Contractor shall ensure all equipment operating on project is free of external fluid leaks, grease, oil and mud.
- .7       Contractor to contain all oil leaks from equipment working adjacent to waterways.

**1.6 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. Hazardous waste including fuels, oils and lubricants to be disposed of by a licensed hazardous waste carrier/handler in accordance with Provincial Environmental Legislation.
- .3 Collect all rubbish and waste material and dispose of in accordance with applicable governing authorities.
- .4 Do not allow debris of any type to enter waterway.
- .5 Reuse and recycle wherever possible. Return packaging to manufacturer for reuse.

**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                INSPECTION**

- .1     Allow Engineer access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2     Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Engineer.
- .3     Engineer will order 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.

**1.2                INDEPENDENT INSPECTION AGENCIES**

- .1     Independent Inspection/Testing Agencies will be engaged by Engineer for purpose of inspecting and/or testing portions of Work.
- .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 Engineer at no cost to Owner. Pay costs for retesting and reinspection.

**1.3                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.

**1.4                PROCEDURES**

- .1     Notify Engineer 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.

**1.5                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 Engineer 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 Engineer it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Engineer.

**1.6 TESTS AND MIX DESIGNS**

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

**1.7 MILL TESTS**

- .1 Submit mill test certificates as requested.

**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                RELATED REQUIREMENTS**

- .1        Section 01 11 00 – General Instructions.
- .2        Section 01 33 00 – Submittal Procedures.

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

**1.4                ACTION AND INFORMATIONAL SUBMITTALS**

- .1        Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2        Two weeks prior to Substantial Performance of the Work, submit to the DFO Representative four final copies of operating and maintenance manuals in English.
- .3        Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- .4        Provide evidence, if requested, for type, source and quality of products supplied.

**1.5                FORMAT**

- .1        Organize data as 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.

- .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 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.
  - .1 Bind in with text; fold larger drawings to size of text pages.
- .9 Provide 1:1 scaled CAD files in dwg format on CD or flash drive clearly labeled as to contents.

## **1.6 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 Consultant 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.

## **1.7 AS -BUILT DOCUMENTS AND SAMPLES**

- .1 Maintain at site for DFO Representative 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 DFO Representative.

## **1.8 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS**

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by DFO Representative.
- .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: 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: 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.

## **1.9 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 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
  - .1 Include regulation, control, stopping, shut-down, and emergency instructions.
  - .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control.
- .15 Additional requirements: as specified in individual specification sections.

## **1.10 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.

### **1.11 MAINTENANCE MATERIALS**

- .1 Spare Parts:
  - .1 Provide spare parts, in quantities specified in individual specification sections.
  - .2 Provide items of same manufacture and quality as items in Work.
  - .3 Deliver to site; place and store.
  - .4 Receive and catalogue items.
    - .1 Submit inventory listing to DFO Representative.
    - .2 Include approved listings in Maintenance Manual.
  - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
  - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
  - .2 Provide items of same manufacture and quality as items in Work.
  - .3 Deliver to site; place and store.
  - .4 Receive and catalogue items.
    - .1 Submit inventory listing to DFO Representative.
    - .2 Include approved listings in Maintenance Manual.
  - .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
  - .1 Provide special tools, in quantities specified in individual specification section.
  - .2 Provide items with tags identifying their associated function and equipment.
  - .3 Deliver to site; place and store.
  - .4 Receive and catalogue items.
    - .1 Submit inventory listing to DFO.
    - .2 Include approved listings in Maintenance Manual.

### **1.12 DELIVERY, STORAGE AND HANDLING**

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

### **1.13 WARRANTIES AND BONDS**

- .1 Submit all warranty information to DFO Representative for approval.
- .2 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.
- .3 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
  - .4 Respond in timely manner to oral or written notification of required construction warranty repair work.
  - .5 Written verification to follow oral instructions.
    - .1 Failure to respond will be cause for the DFO Representative to proceed with action against Contractor.

#### **1.14 WARRANTY TAGS**

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

#### **Part 2 Products**

##### **2.1 NOT USED**

- .1 Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1                Not Used.

**END OF SECTION**