

PART 1 GENERAL**1.1 RELATED SECTIONS**

- . 1 Section 01 45 00 – Quality Control.
- . 2 Section 01 91 13 – General Commissioning (Cx) Requirements.

1.2 ADMINISTRATIVE REQUIREMENTS

- . 1 Pre-warranty Meeting:
 - . 1 Convene meeting one week prior to contract completion with contractor's representative and Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
 - . 1 Verify Project requirements.
 - . 2 Review warranty requirements.
 - . 2 Departmental Representative 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.

1.3 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 Departmental Representative, four final copies and an electronic copy 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.

1.4 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, filled no more than 2/3rds full.
- .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 or process flow, 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.
- .9 Provide one copy of the operating and maintenance manuals in digital

1.5 CONTENTS – PROJECT RECORD DOCUMENTS

- .1 Table of Contents: 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 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.

1.6 AS -BUILT DOCUMENTS AND SAMPLES

- . 1 In addition to requirements in General Conditions, maintain at the site for Departmental 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. 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. Label each document "PROJECT RECORD" in neat, large, printed letters.
- . 4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
 - . 5 Keep record documents and samples available for inspection by Departmental Representative.

1.7 RECORDING ACTUAL SITE CONDITIONS

- . 1 Contractor shall maintain during construction two sets of white prints for record drawing purposes. Record changes and at completion of project submit one marked copy to the Departmental Representative.
- . 2 Use 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 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 and addenda.
 - . 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 At completion of project, transfer recorded changes to Construction Drawings and submit as-built drawings to Departmental Representative. Departmental Representative will furnish copy of original construction drawings in electronic format. As built drawing submissions shall include one (1) marked copy of the Construction Drawings, one (1) hard copy of the As-built drawings and one (1) copy of As-built drawings in electronic format: AutoCad 2004 or later. All drawings shall be submitted and marked As-Built.
- . 8 Provide digital photographs, if requested by Departmental representative.

1.8 EQUIPMENT AND SYSTEMS

- .1 Each item of equipment and each system: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions.
 - . 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 Panelboard 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 coordination drawings, with installed colour coded piping diagrams.
- . 12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- . 13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- . 14 Additional requirements: As specified in individual specification sections.

1.9 MATERIALS AND FINISHES

- . 1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
- . 2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- . 3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- . 4 Additional Requirements: as specified in individual specifications sections.

1.10 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 Departmental Representative.

1.11 WARRANTIES AND BONDS

- . 1 Develop warranty management plan to contain information relevant to Warranties.
- . 2 Submit warranty management plan, 30 days before planned prewarranty conference, to Departmental Representative for approval.
- . 3 Warranty management plan to include required actions and documents to assure that Departmental Representative 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 Departmental Representative 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 Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
 - . 8 Conduct joint 11 month warranty inspection, measured from time of acceptance, by Departmental Representative.
 - . 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 HVAC balancing, pumps, motors, and commissioned systems such as fire protection, alarm systems, and sprinkler systems.
 - . 3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - . 1 Name of item.
 - . 2 Model and serial numbers.
 - . 3 Location where installed.
 - . 4 Name and phone numbers of manufacturers or suppliers.
 - . 5 Names, addresses and telephone numbers of sources of spare parts.
 - . 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.
 - . 7 Cross-reference to warranty certificates as applicable.
 - . 8 Starting point and duration of warranty period.
 - . 9 Summary of maintenance procedures required to continue warranty in force.

- . 10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
- . 11 Organization, names and phone numbers of persons to call for warranty service.
- . 12 Typical response time and repair time expected for various warranted equipment.
- . 4 Contractor's plans for attendance at 11 month postconstruction 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 Departmental Representative to proceed with action against Contractor.

1.12 WARRANTY TAGS

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