

SECTION 01 78 00
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Project Record Documents.
- B. Operation and Maintenance Manuals.
- C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

- A. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- B. Section 01 77 00 - Closeout Procedures: Contract closeout procedures.
- C. Individual Product Sections: Specific requirements for operation and maintenance data.
- D. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

- A. Record Drawings:
 - 1. Draft: Submit one copy of marked-up record prints in electronic color PDF format as well as an AutoCAD or Revit file, prior to request for review for Substantial Completion.
 - 2. Final: Submit three paper copy sets, an electronically scanned copy of marked up prints, in addition to the AutoCAD or Revit file(s) within 30 days of dated established for Substantial Completion or prior to request for review for final completion, whichever occurs first.
 - 3. Approved permit set of plans.
 - 4. Provide all electronic files and documents required by the BIM execution plan.
- B. Record Specifications:
 - 1. Draft: Submit one copy of marked-up copy of Project Manual in electronic color PDF format prior to request for review for Substantial Completion.
 - 2. Final: Submit three copies of marked-up copy of Project Manual and one electronically scanned copy within 30 days of date established for Substantial Completion or prior to request for review for final completion, whichever occurs first.
- C. Operation and Maintenance Manuals:
 - 1. Draft: Submit one copy of draft manuals in electronic color PDF format prior to request for review for Substantial Completion. Architect will review draft and return one copy with comments. Revise content of all document sets as required prior to final submission.
 - 2. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
 - 3. Final: Submit three sets of revised Manuals and an electronically scanned copy in final form prior to request for review for final completion.
- D. Warranties and Bonds:
 - 1. Submit a summary of warranties included in the bid within seven days after Notice of Intent to Award Contract (Prior to Execution of the Contract). Indicate duration of each warranty and start date.
 - 2. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
 - 3. Draft: Submit as part of normal submittal process.
 - 4. Final: Submit final forms of warranties prior to request for review for final completion.
- E. PDF Format: Submit searchable hyper-linked PDF electronic files. File names shall clearly identify the Owner, project name, drawing or specification number and name and date. File name shall be established to list in the same order as identified in the Contract Documents.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS

- A. Maintain on site one complete set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and Construction Change Directives.
 - 5. ASIs and responses to RFIs.
 - 6. Reviewed shop drawings, product data, and samples.
 - 7. Manufacturer's instruction for assembly, installation, and adjusting.
 - 8. Architect will provide one hard copy (if applicable) and one hyper-linked PDF electronic file of a conformed set of Contract Documents (both drawings and specifications), that have been extracted directly from the Revit model incorporating addenda for use by Contractor in developing and maintaining Record Drawings.
 - a. Architect will provide initial linking of the PDF including at a minimum:
 - 1) Hyperlinked Table of Contents for both drawings and specifications.
 - 2) Bluebeam studio (or approved other) initiated for use by project teams.
- B. The record documents shall include all disciplines of work whether changes occur or not. These documents, as well as the approved permit set of plans, shall be available to the Architect and Owner at the site and reviewed with them on a monthly basis. The record documents will be maintained by the Contractor and shall incorporate all updates from Subcontractors and their scope of work. Satisfactory maintenance of up-to-date record drawings on a monthly basis will be a requirement for approval of progress payments.
- C. The dynamic PDF will be used as the most current and up-to-date approved set of documents for access by the entire project team.
- D. Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.
- E. Record Drawings: Once received, continue to hyperlink the drawings and specifications to include at a minimum:
 - 1. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Addenda.
 - k. Changes made by Change Order or Construction Change Directive.
 - l. Changes made following Architect's written orders, including ASIs and responses to RFIs.
 - m. Details not on the original Contract Drawings.
 - n. Field records for variable and concealed conditions.
 - 1) Include pre-cover photographs of every room and include link to the dynamic PDF.

- o. Record information on the Work that is shown only schematically.
 - p. Drawing details linked within drawings, all building section details and other details will be linked within the interactive PDF to allow easy navigation.
 - 2. Record drawings shall include, as a minimum, the location and performance data on each piece of equipment, detailed configuration of duct and pipe distribution system, including sizes, and the terminal air and water design flow rates updated to show approved balancing of systems.
 - 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints. Bluebeam Studio, or approved other, shall be utilized for collaboration and approval of marked-up record documents.
 - 4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 - 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 - 6. Mark revisions and/or clarifications issued by Addenda, ASI, Construction Change Directive, Change Orders or responses to RFIs to reflect the change. Each such revision shall be graphically depicted to represent physical construction and clearly noted with the applicable Addenda, ASI, Change Order or RFI number. Notation of the Addenda, RFI, ASI, Construction Change Directive or Change Order number alone will not be acceptable. All originating documents shall be linked and accessible within the dynamic PDF drawings.
 - 7. Ensure entries are complete and accurate, enabling future reference by Owner.
 - 8. Scanned Drawings: After review of draft drawings by Architect, incorporate necessary changes and prepare a full set of scanned Contract Drawings and Shop Drawings on CD-ROM.
- F. Specifications: Legibly mark and record at each product section a description of actual products installed, including the following:
- 1. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 2. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 3. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals.
 - 4. Mark revisions and/or clarifications issued by Addenda, ASI, Construction Change Directive, Change Orders or responses to RFIs to reflect the change. Each such revision shall be graphically depicted to represent physical construction and clearly noted with the applicable Addenda, ASI, Change Order or RFI number. Notation of the Addenda, RFI, ASI, Construction Change Directive or Change Order number alone will not be acceptable.
 - 5. Format: Submit record Specifications as approved record PDF electronic file(s) of the Specifications.

3.02 OPERATION AND MAINTENANCE DATA

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For Each Product, Applied Material, and Finish:
 - 1. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
 - 2. Product data, with catalog number, size, composition, and color and texture designations.
 - 3. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- D. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- E. Additional information as specified in individual product specification sections.
- F. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For Each Item of Equipment and Each System:
 - 1. Description of unit or system, and component parts.
 - 2. Identify function, normal operating characteristics, and limiting conditions.
 - 3. Include performance curves, with engineering data and tests.
 - 4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- E. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- F. Provide servicing and lubrication schedule, and list of lubricants required.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide control diagrams by controls manufacturer as installed.
- K. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- L. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- M. Include test and balancing reports.

- N. Additional Requirements: As specified in individual product specification sections.
- O. Hold several meetings with Owner, Architect and Contractor to determine O&M data to be included and linked to the dynamic PDF.

3.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

- A. Assemble operation and maintenance data into durable manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.
- B. Where systems involve more than one specification section, provide separate tabbed divider for each system.
- C. Binders: Commercial quality, 8-1/2 by 11 inch three D side ring binders with durable plastic covers; 2 inch maximum ring size. When multiple binders are used, correlate data into related consistent groupings.
- D. Cover: Identify each binder with typed or printed title OPERATION AND MAINTENANCE INSTRUCTIONS; identify title of Project; identify subject matter of contents.
- E. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
- F. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.
- G. Dividers: Provide tabbed dividers for each separate product and system; identify the contents on the divider tab; immediately following the divider tab include a description of product and major component parts of equipment.
- H. Text: Manufacturer's printed data, or typewritten data on 24 pound paper.
- I. Drawings: Provide with reinforced punched binder tab. Bind in with text. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.
- J. Arrangement of Contents: Organize each volume in parts as follows:
 - 1. Project Directory.
 - 2. Table of Contents, of all volumes, and of this volume.
 - 3. Operation and Maintenance Data: Arranged by system, then by product category.
 - a. Source data.
 - b. Product data, shop drawings, and other submittals.
 - c. Operation and maintenance data.
 - d. Field quality control data.
 - e. Photocopies of warranties and bonds.
 - 4. Design Data: To allow for addition of design data furnished by Architect or others, provide a tab labeled "Design Data" and provide a binder large enough to allow for insertion of at least 20 pages of typed text.
- K. PDF Electronic File: After review of draft manuals, assemble each manual into a composite electronically-indexed file. Submit on digital media acceptable to Architect.
 - 1. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically-linked operation and maintenance directory.
 - 2. Enable inserted reviewer comments on draft submittals.
 - 3. File Names and Bookmarks: Enable bookmarking of individual documents based upon file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel upon opening file.
 - 4. Incorporate O&M data to be included and linked to the dynamic PDF.

3.06 WARRANTIES AND BONDS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
 - 2. The Owner reserves the right to refuse to accept or pay for Work for the Project where a Special Warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.
- E. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Completion is determined.
- F. Verify that documents are in proper form and contain full information.
- G. Co-execute submittals when required.
- H. Retain warranties and bonds until time specified for submittal.
- I. Manual: Bind in commercial quality 8-1/2 by 11 inch three D side ring binders with durable plastic covers.
- J. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- K. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.
 - 1. Product or work item.
 - 2. Installer of product or item, with name of principal, address, and telephone number.
 - 3. Describe the work provided by this installer/Subcontractor, under this Contract.
 - 4. Date of beginning of warranty or service and maintenance contract. (See General Condition's Warranty paragraph.)
 - 5. Duration of warranty or service maintenance contract.
 - 6. Information for Owner's personnel, including:
 - a. Proper procedure in case of failure.
 - b. Contact phone numbers of manufacturer.
 - 7. Instances that might affect validity of warranty or bond.
 - 8. Contractor, name of responsible principal, address, and telephone number.
- L. Schedule of Warranties: Provide a summary schedule of start and end date of each warranty.

SECTION 01 78 00
CLOSEOUT SUBMITTALS

- M. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION