

## **SECTION 01 78 39**

### **PROJECT RECORD DOCUMENTS**

#### **PART 1 – GENERAL**

##### **1.01 RELATED DOCUMENTS**

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

##### **1.02 SUMMARY**

A. Section includes administrative and procedural requirements for project record documents, including the following:

<b>DOCUMENT</b>	<b>PROVIDED BY</b>	<b>DU</b> <b>E</b>
As-Built Drawings, Specifications and Shop Drawings	Contractor	Substantial Completion
Record Drawings	Architect / Engineer	30 days following Substantial Completion
As-Built Models	Contractor	Substantial Completion
Record Models	Architect / Engineer	30 days following Substantial Completion
Record Survey Data	Contractor	Substantial Completion
Record Specifications	Architect / Engineer	30 days following Substantial Completion
Record Product Data	Contractor	Substantial Completion
Record Test Certificates	Contractor	Substantial Completion
Permit and Inspection Records	Contractor	Final Completion
Record Storm Water Documents	Architect / Engineer	30 days following Substantial Completion
Miscellaneous Record Submittals	Contractor	As indicated in Contract Documents or no later than Substantial Completion

B. Related Requirements:

1. Section 01 32 33 "Photographic Documentation for project photographic and video documentation requirements.
2. Section 01 73 00 "Execution" for final property survey and utility as-builts.
3. Section 01 77 00 "Closeout Procedures" for general closeout procedures.

4. Section 01 78 23 “Operation and Maintenance Data” for operation and maintenance manual requirements.

### **1.03 QUALITY CONTROL REQUIREMENTS**

- A. Print legibly and clearly relevant construction changes/data on current print of Contract Drawings and Shop Drawings to a high standard of quality to create “As-Built Documents.” Accurately record information in an understandable drawing technique. Require individual or entity who obtained record data to prepare the marked-up record prints.
- B. Contractor shall maintain at its project site office a full set of all As-Built Documents showing as-built design clarifications and construction progress. Post changes and revisions to documents as they occur; do not wait until end of Project. Owner will review monthly As-Built Drawings and Specifications. In the event record documents are not maintained, Owner may withhold monthly payment.
- C. Record additional construction information on As-Built Documents.
- D. All Project record document submittals shall be reviewed and approved by Architect prior to submittal to Owner.

### **1.04 SUBMITTALS**

- A. Deliver As-Built and design-build Record Documents to Owner in accordance with the schedule in Paragraph 1.02(A) of this Section. Accompany submittal with transmittal letter containing date, project title and number, Contractor’s name and address, title and number of each record document, certification that each document as submitted is complete and accurate, and signature of Contractor, or its authorized representative.
- B. Unless otherwise required, provide one (1) hard copy set and one (1) digital set in AutoCAD or Revit with Linked AutoCAD (or other native file format) and PDF on CD of all documents required by this Section, unless noted otherwise.
- C. Organize hard copies into sets. Bind and label sets for Owner’s continued use. Bind each set with durable-paper cover sheets. Include appropriate identification, including titles, dates, and other information on the cover sheets.
- D. Organize AutoCAD or Revit with Linked AutoCAD information into separate electronic files that correspond to each sheet of the Contract Drawings or Shop Drawings. Name each file with the sheet identification. Include identification in each AutoCAD or Revit with Linked AutoCAD file.

## **PART 2 – PRODUCTS**

### **2.01 AS-BUILT AND RECORD DRAWINGS**

- A. As-Built Drawings and design-build Record Drawings (if any): Maintain one clean, undamaged set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.
  1. Preparation: Mark As-Built Drawings to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is installer, subcontractor, or

similar entity, to prepare the mark-up records that shall be considered “**As-Built Drawings**”.

- a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
- b. Accurately record information in an understandable drawing technique.
- c. Scanning of the red-lined hard copy originals is permitted.

2. Content: Mark record prints to show actual installation where installation varies from that shown originally. 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. Indicate foundation elevations relative to first floor elevation.
  - d. Horizontal locations and vertical depths of underground utilities and appurtenances, including both site utilities and those under buildings and structures, referenced to permanent surface improvements.
  - e. Horizontal and vertical locations of internal utilities and appurtenances, concealed in construction, referenced to visible, accessible, permanent features of the buildings or structures.
  - f. Revisions to routing of piping and conduits.
  - g. Revisions to electrical circuitry.
  - h. Actual equipment locations.
  - i. Duct size and routing.
  - j. Changes made by Change Order or Construction Work Directive, Architect's Supplemental Instructions or Bulletins.
  - k. Changes made following Architect's written orders and pertinent graphic and written responses to requests for information (RFI).
  - l. Details not on the original Contract Drawings or Shop Drawings.
  - m. Field records for variable and concealed conditions.
  - n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.

5. Mark important additional information that was either shown schematically or omitted from original Drawings. Mark new information that is important to Owner but was not shown on Contract Drawings or Shop Drawings.
6. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later. Do not permanently conceal any Work until required information has been recorded.
7. Note Construction Work Directive numbers, alternate numbers, Change Order numbers, request for information (RFI) numbers, and similar identification, where applicable.
8. Identify and date each drawing; include the printed designation "AS-BUILT DRAWINGS" in 2 inch high letters in a prominent location on each drawing.
9. Provide identification as follows:
  - a. Project name.
  - b. Date.
  - c. Designation "AS-BUILT DRAWINGS."
  - d. Name of Architect.
  - e. Name of Contractor.

## 2.02 AS-BUILT AND RECORD DRAWINGS (CAD DELIVERABLES) FOR PROJECTS NOT REQUIRED TO USE REVIT LINKED MODELS

- A. Contractor shall provide (1) hard copy set and one (1) digital set on CD of Subcontractor's As-Built Drawings to Architect/Engineer for development of Record Drawings, organized and bound into sets as indicated in Paragraph 1.04.C. Scanning of the red-lined hard copy originals is permitted.
- B. Contractor shall also provide (1) hard copy set and one (1) digital set on CD of Subcontractor's As-Built Drawings to Owner for record.
- C. Architect and design team will update the electronic contract drawing files with the information contained in the original hard copy red-lined as-built sets. These files will be considered "**Record Drawings**". For any design-build elements, Contractor shall update the AutoCAD files; scanning of the marked-up hard-copy originals is not permitted.
- D. For design-build subcontractors, Architect will review as-built documents and, once approved, attach them to their Record Drawings.
- E. All parties creating and submitting AutoCAD files should restrict themselves to the guidelines outlined in the USC CAD and Layering Standards referenced in Section 01 33 00, "Submittal Procedures."

## 2.03. AS-BUILT AND RECORD MODELS FOR PROJECTS REQUIRED TO USE REVIT LINKED MODELS

- A. For projects being designed and constructed utilizing Revit models with linked AutoCAD drawings ("Revit Linked Models"), provide As-Built information to

Owner in accordance with the University Record Revit Model Requirements included in the Exhibits to the Agreement.

- B. Contractor shall submit Subcontractor's as-built native format models to Owner. These are considered "As-Built Models." System run categories shall include: cable trays, conduit, ducts, pipes, wires, and associated fittings, insulation, linings, hangars, and placeholders.
- C. Architect, Mechanical Engineer, Electrical Engineer and their consultants will update the Contract Document Revit models with the information contained in the Subcontractor's As-Built Models. These Revit files will be considered "Record Models". All Record Models except for Architecture shall include the following equipment categories: air terminals, communication devices, data devices, duct accessories, electrical circuits, equipment and fixtures, fire alarm devices, lighting devices and fixtures, mechanical equipment, nurse call devices, pipe accessories, plumbing fixtures, security devices, sprinklers, switch systems, and telephone devices. The Architecture Record Model shall include the following equipment categories: casework, curtain systems, doors, electrical equipment and fixtures, furniture, furniture systems, lighting fixtures, mechanical equipment, plumbing fixtures, specialty equipment, and windows.
- D. For design-build Subcontractors, Architect will review As-Built Models and once approved, consider them a federated model supplement to be linked to their Record Models.
- E. The Revit Record Models are to have completed USC Shared Parameters data as a supplement to the requirements of the Operations and Maintenance Manuals required by the Contract. The required USC Shared Parameters are Revit parameters whose values are to be input through Revit template spreadsheets synchronized to the **Revit Linked Models**. Refer to the latest version of the University Record Revit Model Requirements for information regarding the **Revit Linked Models** and the USC Shared Parameters.

#### 2.04. RECORD SURVEY DATA

- A. Contractor shall submit record survey data to Owner. The approved land surveyor performing Work shall record vertical and horizontal record survey locations per the requirements of Section 01 73 00 "Execution Requirements" and shall submit the following:
  1. Utility As-Builts.
  2. Certified Survey.
  3. Final Property Survey.
- B. Maintain a separate set of Record Survey Data. This set shall be separate from other As-Built and Record Drawings.
- C. Contractor shall provide one (1) set of hard copy Record Survey Data to Owner and one (1) digital set on CD in the latest version of AutoCAD, or other digital data software in which the original drawings were created, organized and bound into sets as indicated in Paragraph 1.04.C. Scanning of the marked up hard copy originals is not permitted.

## 2.05. RECORD SPECIFICATIONS

- A. Contractor shall mark specifications to indicate actual product installation where installation varies from that indicated in the Contract Documents or Shop Drawings. Contractor will include notations in the table of contents to allow easy identification of sections that have been amended. Architect will update its electronic file from information contained in Contractor's red-lined original hard copy as-built set.
- B. Give particular attention to information on concealed products and installations that would be difficult to identify and record later.
- C. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
- D. Record the name of the manufacturer, supplier, installer, and other information necessary to provide a record of selections made.
- E. Note Construction Work Directive numbers, alternate numbers, Change Order numbers, request for information (RFI) numbers, and similar identification, where applicable.
- F. Use pen and black ink so marks will reproduce clearly.
- G. Scanning of the marked up hard copy originals is acceptable.

## 2.06 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
- B. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
- C. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
- D. Note related Change Orders, Contract Drawings where applicable.
- E. Use pen and black ink so marks will reproduce clearly.
- F. Scanning of the marked up hard copy originals is acceptable.
- G. Submit one (1) electronic copy of all product submittals in PDF format to Owner on CD, DVD, or other storage device. Hard copies are not required.

## 2.07 RECORD TEST CERTIFICATES

- A. Contractor shall bind, in a separate binder, record test certificates and identify each, ready for continued use and reference. Digital set shall be an annotated PDF electronic file. Scanning of the hard copy originals is acceptable.
- B. Assemble test certificates required for record keeping and submittal in connection with actual performance of the Work.
- C. Categories of requirements resulting in test certification records include, but are not limited to the following:
  1. Equipment start-up reports.
  2. Air and Hydronic Test and Balance reports.

3. Pipe Pressure test reports.
4. Pipe Cleaning reports.
5. Duct Pressure test reports.
6. Back Flow Prevention device certifications.
7. Domestic Water Chlorination reports.
8. Electrical Acceptance test reports.

## 2.08 PERMIT AND INSPECTION RECORDS

- A. Contractor shall bind, in a separate binder, permit and inspection records and identify each, ready for continued use and reference. Digital set shall be an annotated PDF electronic file. Scanning of the hard copy originals is acceptable.
- B. Prints or other documents used to obtain permits from authorities having jurisdiction. Submit all prints and documents bearing official approval stamp of authorities having jurisdiction.
- C. Originals of all permits issued for the Work by authorities having jurisdiction.
- D. Originals of inspection cards completed by authorities having jurisdiction.
- E. Equipment operating permits.

## 2.09 RECORD STORM WATER DOCUMENTS

- A. Architect shall provide one (1) set of hard copy Record Storm Water Documents and one (1) digital set submitted through PMIS as a PDF electronic file.
  1. Approved Low Impact Development (LID) plan.
  2. Recorded O & M covenant.
  3. Engineer of Record stamped Storm Water Observation Form.

## 2.10 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required elsewhere in the Contract Documents for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
  1. Categories of requirements resulting in miscellaneous records include, but are not limited to, the following:
    - a. Field records on excavations and foundations.
    - b. Field records on underground construction and similar Work.
    - c. Authorized measurements utilizing unit prices or allowances.
    - d. Records of plant treatment.
    - e. Ambient and substrate condition tests.
    - f. Certifications received in lieu of labels on bulk products.

- g. Batch mixing and bulk delivery records.
- h. Testing and qualification of tradesmen.
- i. Documented qualification of installation firms.
- j. Load and performance testing.
- k. Leakage and water-penetration tests.
- l. Fire-resistance and flame-spread test results.
- m. Final inspection and correction procedures.
- n. Field test reports.

## **PART 3 - EXECUTION**

### **3.01 RECORDING AND MAINTENANCE**

- A. Recording: Maintain one copy of each submittal during the construction period for record document purposes. Post changes and modifications to As-Built Documents as they occur, but within 24 hours maximum; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use record documents for construction purposes. Maintain record documents in good order legible condition, and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to record documents for Owner's and Architect's reference during normal working hours.
  - 1. Maintain one (1) set of all record documents at the Project site for the entire duration of construction.
  - 2. Clearly label each document or item "AS-BUILT DRAWING," "PROJECT RECORD SAMPLE," "AS-BUILT SPECIFICATIONS," or similar as appropriate and applicable.
- C. Do not conceal Work requiring verification for record documents until such information has been verified and recorded.
- D. Certification: Within the title block or immediately adjacent, on each drawing sheet of both the original mark-up record drawings and the front covers of record specifications, include the following statement signed by Contractor:

"I certify to the best of my knowledge, information and belief that the information recorded on this drawing/specification is a complete and accurate record of the final Work of this Contract."

*Name (printed)*

*Title*

*Signature*

*Date*

## **END OF SECTION 01 78 39**