



WMU Design Guidelines Instructions: These guidelines are to be used by the Design Professional to inform the design process and outline WMU-specific desires for University projects. Text appearing in blue indicates a WMU design guideline which must be met for all campus projects unless approved in writing by the University. Blue text that is struck out indicates products or practices that are **not** acceptable, and shall not be included unless similarly approved. Any text remaining in black is to be edited by the Design Professional as part of the normal specifications-writing process. Guidelines language shall be included in the project specifications and their intent incorporated into the drawings.

SECTION 01 7839 - PROJECT ~~RECORD~~ AS-BUILT DOCUMENTS

Designer Note: For close-out procedures, WMU distinguishes between As-built and Record documents as follows: As-built documents are the marked-up copies of the contract documents, created by the Contractor, that reflect actual built conditions. These are given over to the Design Professional at Substantial Completion and are used by the Design Professional to create the Record documents. This section has been edited to reflect that language.

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project ~~record~~ as-built documents, including the following:
1. ~~Record~~ As-built Drawings.
 2. ~~Record~~ As-built Specifications.
 3. ~~Record~~ As-built Product Data.
 4. Miscellaneous ~~Record~~ As-built submittals.

1.2 CLOSEOUT SUBMITTALS

Designer Note: WMU requires PDF versions of the as-built documents, either published from the software they were marked up in (ideally) or scanned versions of marked-up physical copies of same. Design Professional may desire something in addition to this—edit accordingly.

- A. ~~Record~~ As-built Drawings: Comply with the following:
1. ~~Number of Copies: Submit one <Insert number> set(s) of marked-up record as-built prints.~~
 2. Number of Copies: Submit copies of ~~record~~ as-built Drawings as follows:
 - a. Initial Submittal:
 - 1) ~~Submit [one] <Insert number> paper copy set(s) of marked-up record prints.~~
 - 2) Submit PDF electronic files of scanned ~~record~~ as-built prints and ~~[one] <Insert number> set(s) of file prints.~~
 - 3) Submit ~~record~~ as-built digital data files and [one] <Insert number> set(s) of plots.
 - 4) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.



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b. Final Submittal:

- 1) ~~Submit [three] <Insert number> paper copy set(s) of marked-up record prints.~~
- 2) Submit PDF electronic files of ~~scanned record~~ as-built prints and [three] ~~<Insert number> set(s) of prints.~~
- 3) Print each drawing, whether or not changes and additional information were recorded.

c. Final Submittal:

- ~~1) Submit [one] <Insert number> paper copy set(s) of marked-up record prints.~~
- 2) Submit ~~record~~ as-built digital data files and [three] ~~<Insert number>~~ set(s) of ~~record~~ as-built digital data file plots.
- 3) Plot each drawing file, whether or not changes and additional information were recorded.

B. ~~Record~~ As-built Specifications: Submit ~~[one paper copy] [<Insert number> paper copies]~~ annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. ~~Record~~ As-built Product Data: Submit ~~[one paper copy] [<Insert number> paper copies]~~ annotated PDF electronic files and directories of each submittal.

1. Where ~~record~~ as-built Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

D. Miscellaneous ~~Record~~ As-built Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit ~~[one paper copy] [<Insert number> paper copies]~~ annotated PDF electronic files and directories of each submittal.

E. Reports: Submit written report [weekly] indicating items incorporated into project ~~record~~ as-built documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.3 RECORD AS-BUILT DRAWINGS

Designer Note: WMU requires fully marked-up as-built drawings depicting actual installation of all elements and systems, to be turned over to the Design Professional to create final record documents. Again, Design Professional may desire something in addition to this—edit accordingly.

A. ~~Record~~ As-built Prints: Maintain one set of marked-up ~~paper~~ copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark ~~record~~ as-built prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained ~~record~~ as-built data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up ~~record~~ as-built prints.
 - 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 acceptable drawing technique.



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- c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference ~~record~~ as-built prints to corresponding photographic documentation.
2. 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.
 - 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 Change Order or [**Construction**] [**Work**] Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract 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 and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up ~~record~~ as-built prints.
4. Mark ~~record~~ as-built 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. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. ~~Record~~ As-built Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up ~~record~~ as-built prints with Architect [**and Construction Manager**]. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
 2. Format: [**DWG**] [**DXF**] [**DGN**], Version <Insert designation>, [**Microsoft Windows**] [**Apple Macintosh**] operating system.
 3. Format: Annotated PDF electronic file [**with comment function enabled**].
 4. Incorporate changes and additional information previously marked on ~~record~~ as-built prints. Delete, redraw, and add details and notations where applicable.
 5. Refer instances of uncertainty to Architect [**through Construction Manager**] for resolution.
 6. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.
 - a. See Section 01 3100 "Project Management and Coordination" for requirements related to use of Architect's digital data files.
 - b. Architect will provide data file layer information. Record markups in separate layers.



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- C. Format: Identify and date each **record as-built** Drawing; include the designation "PROJECT **RECORD AS-BUILT** DRAWING" in a prominent location.
1. **Record As-built** Prints: Organize **record as-built** prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. **Format: Annotated PDF electronic file [with comment function enabled]**.
 3. **Record As-built** Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. **Identification: As follows:**
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT **RECORD AS-BUILT** DRAWINGS."
 - d. Name of Architect **[and Construction Manager]**.
 - e. Name of Contractor.

1.4 **RECORD AS-BUILT SPECIFICATIONS**

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether **record as-built** Product Data has been submitted in operation and maintenance manuals instead of submitted as **record as-built** Product Data.
 5. Note related Change Orders, **[record as-built Product Data,]** and **record as-built** Drawings where applicable.

Designer Note: Either annotated PDF files OR scanned PDF files of marked-up paper copy of Specifications are acceptable to WMU.

- B. Format: Submit **record as-built** Specifications as **[annotated PDF electronic file] [~~paper copy~~] [scanned PDF electronic file(s) of marked-up paper copy of Specifications]**.

1.5 **RECORD AS-BUILT PRODUCT DATA**

- A. Recording: Maintain one copy of each submittal during the construction period for project **record as-built** document purposes. Post changes and revisions to project **record as-built** documents as they occur; do not wait until end of Project.
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.



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2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders, [~~record as-built Specifications,~~] and ~~record as-built Drawings~~ where applicable.

Designer Note: Either annotated PDF files OR scanned PDF files of marked-up paper copy of Product Data are acceptable to WMU.

- C. Format: Submit ~~record as-built~~ Product Data as [**annotated PDF electronic file**] [~~paper-copy~~] [**scanned PDF electronic file(s) of marked-up paper copy of Product Data**].

1. Include ~~record as-built~~ Product Data directory organized by Specification Section number and title, electronically linked to each item of ~~record as-built~~ Product Data.

1.6 MISCELLANEOUS ~~RECORD AS-BUILT~~ SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections 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.

- B. Format: Submit miscellaneous ~~record as-built~~ submittals as [**PDF electronic file**] [~~paper-copy~~] [**scanned PDF electronic file(s) of marked-up miscellaneous record submittals**].

1. Include miscellaneous ~~record as-built~~ submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous ~~record as-built~~ submittals.

1.7 MAINTENANCE OF ~~RECORD AS-BUILT~~ DOCUMENTS

- A. Maintenance of ~~Record As-built~~ Documents: Store ~~record as-built~~ documents in the field office apart from the Contract Documents used for construction. Do not use project ~~record as-built~~ documents for construction purposes. Maintain ~~record as-built~~ documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project ~~record as-built~~ documents for Architect's [**and Construction Manager's**] reference during normal working hours.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 01 7839