

**ADDENDUM TO THE
CITY OF AKRON
AKRON ENGINEERING BUREAU
CONSTRUCTION AND MATERIAL SPECIFICATIONS
2008 EDITION**

112 OPERATION AND MAINTENANCE MANUALS

The following section is a supplement to CMS General Provisions Section 100.

112.01 General Description. The Contractor shall prepare and furnish operating and maintenance instructions for installation, maintenance and operation of all equipment as specifically required by the contract documents.

112.02 Summary. Work under this specification includes submittal of Operation and Maintenance Manuals as defined in Items 112.03 and 112.04 of this specification.

All Final O&M Manuals required by the contract documents must be submitted and approved by the Engineer prior to sub-final acceptance.

The process for developing O&M manuals is summarized in a flowchart provided at the end of this section for reference.

112.03 Contractor's Initial Equipment Operation & Maintenance Manual Submittal (Initial Manual). First submittal of equipment O&M Manual shall include manufacturers operation and maintenance data for specific equipment required by the contract documents.

The Contractor shall submit an initial electronic version of each Operation and Maintenance Manual (Initial Manual) through OPCM for review by the Engineer. In response to comments and requests from the Engineer, the Contractor shall resubmit such Initial Manual electronically through OPCM and provide three original/first generation copies of the revised Initial Manual. Hard copy format shall be submitted per 112.06.

All Initial Manuals shall be specific for the equipment. Any portions of the submittal not pertinent to the equipment or component shall be crossed out with a bold line or marked with "Does Not Apply", or clearly identify and without question the portions of the submittal that are pertinent. Submittals shall be rejected when this is not done. NOTE: Highlighting of submittals is not an acceptable means of denoting information. It either does not persist on copies of the submittal, or interferes with making photo copies.

112.04 Contractor's Final Equipment Operation & Maintenance Manual Submittal (Final Manual). Final submittal of equipment O&M Manual shall include Initial O&M Manual with revisions incorporated from field installation verifications and any equipment commissioning.

After the Initial Manual has been accepted by the Engineer, it has been field verified and all corrections have been made by the Contractor, seven (7) copies of an electronic version and seven (7) original/first generation copies of the Manual shall be submitted to the Engineer. The electronic Manual shall be in a multi-page Portable Document Format (PDF) format, fully searchable and unlocked. O&M documents shall be formatted complete with text-interactive index page and table of contents. The electronic submittal shall be provided on an appropriately labeled CD-ROM or DVD. Final Manuals must be approved by the Engineer prior to sub-final acceptance. Hard copy format shall be submitted per 112.06.

112.05 Manual Requirements. Manuals shall present full documentation throughout, as described in this specification, and shall be complete enough to fully delineate the internal functions of all purchased encapsulated components or similar “black box” devices to the satisfaction of the Engineer.

The Initial Manual shall be prepared, submitted, and accepted prior to equipment being released for shipment. The Initial Manual shall contain, unless otherwise specified, not less than the following information:

- (a) **Manufacturer’s and Product Data:** Include general descriptive bulletins, brochures, or catalog sheets used to describe the equipment.
- (b) **Manufacturer’s Instructions:** This shall include instruction for storage, installation, routine preventive maintenance, and lubrication.
- (c) **Parts List:** Include assembly, exploded view illustrations, or sectional drawings with all parts identified.
- (d) **Spare Parts and Maintenance Materials:** List recommended replacement parts, special tools, and consumable materials used in cleaning, maintenance, and repair.
- (e) **Supplier Data:** Provide addresses, telephone numbers, and names of contact persons for the equipment manufacturer and manufacturer’s representative. Include both regional (local) and home offices.
- (f) **Warranties and Guarantees:** Include terms and conditions of warranties and guarantees.

Within 2 weeks of equipment delivery, submit ten copies of any maintenance, operations, and installation instructions shipped with the equipment which have not been included in the Initial Manual submittal.

Submit additional information as required by the contract documents.

The Final Manual (electronic version) shall be prepared, submitted, and approved by the Engineer prior to sub-final acceptance.

- (a) The Contractor shall verify the accuracy of each Initial Manual submittal by visual and physical inspection of the equipment.
- (b) Correct all errors in the Initial Manual found in the installed equipment.
- (c) Submit Final Manual (electronic version) with any changes, additions, or deletions to the Initial Manual identified during field verification to the Engineer in accordance with Item 112.04 of this specification.

After completion of field verification and equipment commissioning, the Contractor shall submit a CAD file of all corrected drawings or diagrams included in the Initial Manual.

In the event approved changes are made to the equipment following field verification and acceptance of the electronic Final Manual, the Contractor shall submit a supplement of accepted revisions to the electronic Final Manual to the Engineer. The Engineer shall perform final compilation and re-binding of the Initial Manuals into the Final Manuals, after all changes thereto are complete.

112.06 Submittal Format. The materials submitted for the operating and maintenance instructions in accordance with this specification shall be suitable for final compilation by the Engineer, and re-binding as Final Manual in 3-ring binders. No materials shall be thermal-, spiral-, or comb- bound.

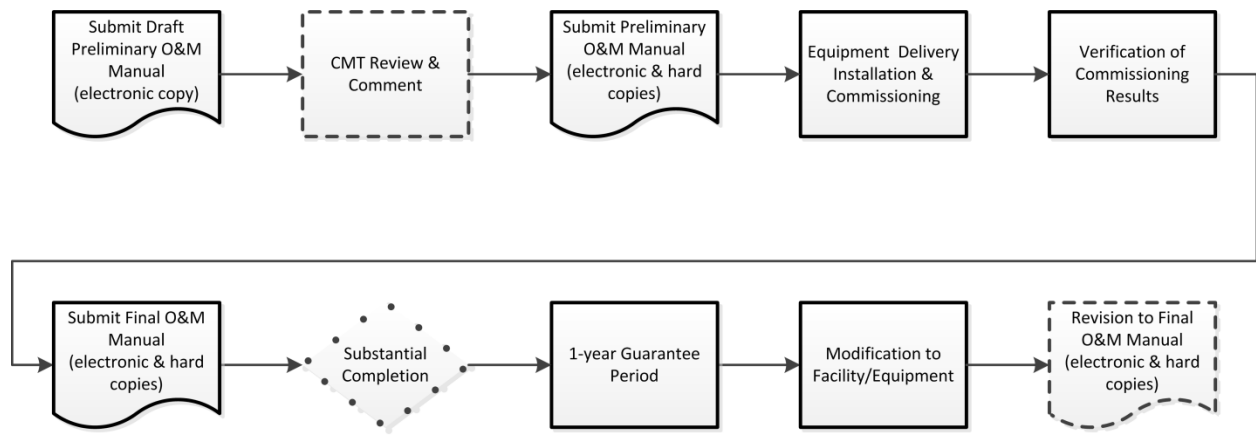
All materials shall be first-generation from the original master and shall be high quality photographic copies. Illegible copies or copies on plasticoid or plastic-surfaced electrostatic materials will not be acceptable. All information included in each submittal or resubmittal shall be field verified and so noted by the Contractor.

All pages of all submittals shall be punched and otherwise prepared for 3-hole binding at the left edge, via not less than 5/16-inch holes, on accurate 4¼-inch centers, with not less than 7/32 gage from sheet edge to hole perimeter. Center holes shall be exactly 5½ inches from tops of sheets. The binding edges of all folded materials, and of all indexes, covers, and legend sheets, shall be reinforced with vinyl, mylar, or polyester tape prior to punching. Any material with inaccurate or overlapping punching shall be rejected. All Manuals shall be submitted in black Tyvek-hinged, moisture-resistant pressboard ACCO #25071, binders, or accepted equal. Maximum sheet capacity shall be 1½ inch per binder. All binders shall have front and side clear vinyl to protect inserted front cover sheet and side identification label. All 3-ring binders are to be of a positive locking design in the closed position to prevent any accidental opening of the binders. Each ring shall have a male and female pin/slot to ensure papers cannot dislodge from the binder. A white identification label (minimum 2 inch by 3 inch) shall be fixed to the front cover and protected with clear vinyl or clear Mylar tape. Label shall contain the following information: contract number and name, submittal number and date of submittal.

The size of all sheets in any submittal shall be 8½ inches by 11 inches. All reproducible copies provided for drawings larger than 8½ inches by 11 inches shall be on standard size material with outside dimensions of 11 inches by 17 inches or 22 inches by 34 inches. Odd size reproducible which does not meet these standard print paper dimensions will be rejected. All submittals larger than 8½ inches by 11 inches shall be submitted punched and folded. Reproducible copies shall not be folded, but shall be rolled and protected from crushing, tearing, or water damage. Each reproducible copy shall contain only one (1) drawing. Multiple drawings on a single reproducible sheet will be rejected. Prints of all drawings shall, when folded display the drawing title in the lower right-hand corner.

Reproducible copies shall be provided with a space for the Design Professional's stamp. This space is in addition to that required for the Contractor's approval stamp. 8½-inch by 11-inch submittal documents, for which copies are to be generated by photocopying, are not required to have a clear space for stamps.

All Manuals shall be submitted in the following format: Manuals shall be organized into sections or categories of information as needed, such as manufacturer's data, operating instructions, preventative maintenance, drawings, electrical and mechanical diagrams, troubleshooting data, test and adjustment procedures, parts list, repair parts and maintenance materials, software documentation, approved submittals and warranties and guarantees. Use indexed tabs and dividers to separate sections and include a table of contents. Any revisions to the Manual, as a result of the submittal review by the Engineer or field verification, shall include revisions not only to the content of the Manual but also to the indexed tabs and table of contents.



NOTES:

Provide number of manuals specified



O&M Manual Development
Flowchart

END OF SECTION