# General

**RoD SPEC NOTE:** This Section specifies procedures for closeout submittals, including supply of spare parts and maintenance materials at or near completion of construction.

## Summary

* + 1. The Work of this Section includes, but is not limited to the following:
			1. Operation and maintenance manual (O&M) format, content, Product and finishes content and warranties content.
			2. Contractor’s as-built Drawings
			3. Project record Drawings
			4. Spare parts, maintenance materials, and special tools.

## Operation and maintenance (O&M) manual

* + 1. Prepare a comprehensive operation and maintenance (O&M) manual, in the language(s) of the Contract, using personnel qualified and experienced for this task.
		2. Submit an initial draft of the O&M manual for Consultant’s review. If required by Consultant’s review comments, revise manual contents and resubmit for Consultant’s review. If required, repeat this process until Consultant accepts the draft manual in writing.
		3. Submit final version to Owner in electronic format, as indicated below.
		4. Operation and maintenance (O&M) manual - format:
			1. Organize data in the form of an instructional manual and provide an electronic copy of the O&M manual in .pdf format.
			2. Title page: Identify the title “Operation and Maintenance Manual”, name of Project or facility, and subject matter of contents.
			3. Arrange content by systems, under Section name and numbers, as sequenced within the Table of Contents of the Specifications.
			4. Text: Arial size 10 or 11 font for typed data.
			5. Drawings: Provide in .pdf format.
			6. Provide electronic copy of Shop Drawings in manual, scaled to reflect that of the Drawing details; Files in .dwg format on electronic media acceptable to Owner.
		5. Operation and maintenance (O&M) manual – general content:
			1. Table of contents for each volume.
			2. Introductory information including:
				1. Date of manual submission;
				2. Complete contact information for Consultant, Subconsultants, other consultants, and Contractor, with names of responsible parties;
				3. Schedule of Products and systems indexed to content of volume.
			3. For each Product or system, include complete contact information for Subcontractors, Suppliers and manufacturers, including local sources for supplies and replacement parts.
			4. Product data: mark each sheet to clearly identify specific Products, options, and component parts, and data applicable to installation. Delete or strike out inapplicable information. Supplement with additional information as required.
			5. Reviewed Shop Drawings.
			6. Permits, certificates, letters of assurance and other relevant documents issued by or required by authorities having jurisdiction.
			7. Warranties.
			8. Operating and maintenance procedures, incorporating manufacturer's operating and maintenance instructions, in a logical sequence.
			9. Training materials.
		6. Operation and maintenance (O&M) manual - equipment and systems content:
			1. Each item of equipment and each system: Include description of unit or system and component parts.
				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. Panel board 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 installed control diagrams by controls manufacturer.
			10. Provide original manufacturer's parts list, illustrations, assembly Drawings, and diagrams required for maintenance.
			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. Include testing and balancing reports.
			15. Include additional content as specified in technical trade Sections.
		7. Operation and maintenance (O&M) manual - Products and finishes content:
			1. Include Product data, with catalogue number, options selected, size, composition, and colour and texture designations.
			2. Provide information for re-ordering custom manufactured Products.
			3. Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
			4. Include an outline of requirements for routine and special inspections and for regular maintenance to ensure that on-going performance of the building envelope will meet the initial building envelope criteria.
			5. Include additional content as specified in technical trade Sections.
		8. Operation and maintenance (O&M) manual - warranties content:
			1. Separate each warranty with index tab sheets keyed to Table of Contents listing.
			2. List each warrantor with complete contact information.
			3. Verify that documents are in proper form and contain full information. Ensure that warranties are for the correct duration and are in Owner’s name.

## Contractor’s as-built Drawings

* + 1. Submit final as-built Drawings in the form specified in Section 01 32 00, to Owner and Consultant.

## Project record Drawings

* + 1. Transfer all information marked up on the as-built Drawings during the progress of the Work to a master set of record Drawing files provided by Consultant; Files in .dwg electronic format.
		2. Mark revised Drawings as "RECORD DRAWINGS".
		3. Submit completed record Drawings in electronic form to Owner and Consultant.

## Spare parts, maintenance materials, and special tools

* + 1. Supply spare parts, maintenance materials, and special tools in quantities specified in technical trade Sections.
		2. Ensure spare parts and maintenance materials are new, not damaged nor defective, and of same quality, manufacturer, and batch or production run as installed Products.
		3. Provide tags for special tools identifying their function and associated Product.
		4. Deliver to and store items at location directed by Owner at Place of the Work. Store in original packaging with manufacturer’s labels intact and in a manner to prevent damage or deterioration.
		5. Catalogue all items and submit to Consultant an inventory listing organized by Specifications Section. Include Consultant reviewed inventory listing in operation and maintenance manual.

# Products – not used

# Execution – not used

End of section