



Attachment 1A

Rocky Mountain Power

**Electronic Project Document
Formatting and Requirements**

**Thermal Generation Support
January 2017**

ATTACHMENT 1A**Document Revision Record**

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1.0 General Requirements

The purpose of Attachment 1A is to provide Contractor with format requirements of all listed items selected in Attachment 1B and shall be provided as deliverables under this scope of work.

Contractors and their Subcontractors (hereafter referred to as Contractor) shall comply with the documentation and formatting requirements outlined in this document. Contractor shall direct all requests for exception through Company representative (project manager). Exceptions must be approved in written form by Company drafting support and document management groups.

All documents (printed and electronic) shall be provided in English. Documents delivered to Company by Contractor shall clearly identify the following information on each drawing (including all sheets) and the first page of all other documents:

- Plant Name
- Plant Unit
- Document Title
- Document Number* – according to plant numbering standards
- Document Issue Date
- Revision Number
- Revision Date
- Contract Number
- Project Number - PacifiCorp WBS (provided by Company)
- Equipment Tag Numbers** – according to plant tagging and labeling standard
- System
- Sub-system

*All documents shall be given numbers per plant numbering standard.

**All equipment shall be given a tag number per plant tagging and labeling standard. Tag numbers shall be used to reference all instruments on drawings, instrument indexes and data sheets.

2.0 Terms and Definitions

The terms and definitions below are used throughout this document and pertain to Attachment 1A and Attachment 1B:

- As-Built/As-Installed – Documents submitted by Contractor reflecting all changes at the completion of the project
- Company – Rocky Mountain Power Thermal Generation (RMP Thermal Generation)
- Contractor – Refers to all Contractors, Subcontractors and/or Vendors
- OEM – Original Equipment Manufacturer
- O&M – Operation and Maintenance

3.0 Transmittal Indexes

Contractor shall provide two complete indexes of all project document deliverables in a functional (unprotected) Microsoft Excel format.

One index shall list drawings and one index shall list non-drawing documents. The non-drawing index should include, but it is not limited to the following: equipment manuals, operation and maintenance manuals, as-built manuals, reports, procedures, data books, specifications and preventative maintenance documents. Contractor shall update and maintain each index throughout the duration of the project each time it is submitted to Company. These indexes will be used by Company to track documents received from the Contractor during each phase of the project (preliminary, construction, as-built/as-installed, etc.). Company will use the indexes as a basis for document management and database entry. Index templates are provided by Company in the AutoCAD support.zip File.

4.0 Deliverables

4.1. AutoCAD Support File

The AutoCAD Support File contains supporting files specific to this project scope of work. These supporting files provide tools and standards for drafting or document turnover to assist Contractor in conforming to Company standards. This zip file contains, but is not limited to, the following:

- Additional Notes and Views
- Cable and Conduit Schedule (samples) – contact plant drafting representative for plant-specific templates
- Circuit Schedule (samples) – contact plant drafting representative for plant-specific templates
- Drafting Procedures
- Drafting Standards - Engineering Handbook Volume 9 (9A and 9B.10)
- Drawing Index Template
- Non-Drawing Index Template
- Panel Schedule (samples) – contact plant drafting representative for plant-specific templates
- Pen Settings
- Borders and Templates

4.2. Drawings

Drawings shall contain details indicating, but not limited to, the following: equipment, dimensions, arrangement, weight of each component, operation of component material and devices, external connections, anchorages and required supports. Dimensions needed for installation and correlation with other materials and equipment are required. Contractor as-built drawings shall be included in all equipment installation, operation and maintenance manuals.

During construction of the project, Contractor shall maintain updated files in the field. This includes current mark-ups of all drawings and data sheets to agree with actual work undertaken. The mark-ups shall be clear and legible in full size and B size reduction. Contractor shall provide new versions of Subcontractor drawings if Company judges originals to be too damaged, deteriorated, or illegible.

4.2.1. Drawing Standards

Drawings created specifically for this project shall be prepared according to Company's AutoCAD/Drafting Standards, also known as 9A and 9B.10. Company document management group is available through the project's duration to field any compliance or drawing-related issues or questions. Contractor shall be responsible for any discrepancies, errors or omissions on the drawings.

The measurement system shall be U.S. Customary System and all drawings and dimensions shall be to scale. Not-to-Scale (NTS) dimensions on drawings shall not be permitted on scalable drawings. A scale bar shall be included to permit use following image reduction.

4.2.2. Submission of Drawings

Contractor shall submit drawings for review, comment, or approval to Company according to the project schedule as identified in Attachment 1B. Drawings shall be updated as the design progresses so they continuously reflect the current designs. Revisions shall be identified according to AutoCAD/Drafting Standards 9A and 9B.10.

Company shall review the drawings for conformance with the Contract and will red-line or comment to indicate necessary changes or corrections. Contractor shall resubmit the corrected drawings according to AutoCAD/Drafting Standards 9A and 9B.10.

Once drawings meet requirements, Company will submit written approval to Contractor. Contractor shall supply one (1) hard copy and one (1) electronic copy of each approved drawing to Company for record. Company will inform the Contractor when these drawings have been received.

4.2.3. AutoCAD Review by Company

Early in the design process, as new AutoCAD drawings are produced Contractor shall provide to Company a minimum of three (3) AutoCAD drawings from each discipline for review and verification of compliance with the AutoCAD/Drafting Standards 9A and 9B.10. When document management confirms Contractor understands, complies with, and is meeting the drawing standard requirements, no other formal AutoCAD review will be required. The final as-built drawing package will be reviewed by Company for compliance. Work completed before the review of drawings shall be at Contractor's risk and any necessary design changes to comply with the requirements and objectives of the Contract shall be made at no additional cost to Company or delay to the project.

4.2.4. Final Drawings

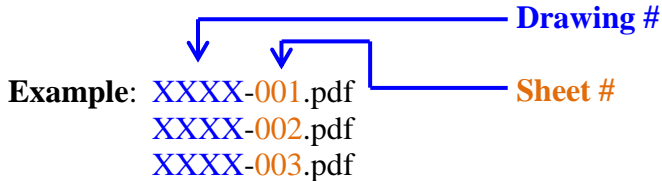
Contractor shall provide as-built drawings representing the as-constructed condition of the entire project. These drawings would consist of, but are not limited to, the following: plan and profile sheets, foundation detail, mechanical,

electrical, civil, one-line, schematic, control logic, wiring, raceways, conduit, isometric piping and duct banks. Contractor shall revise applicable drawings to incorporate all as-built information until Company is satisfied that the drawings are correct and the AutoCAD/Drafting Standards 9A and 9B.10 have been met. Drawings shall be prepared in such a way that image reduction to B size shall result in a legible and useable drawing. Marked-up sketches, references, other field markings or red-lines are not acceptable. All cloud, revision diamonds, and other interim control markings shall be removed. Final drawings shall state as-built conditions according to the schedule.

One electronic copy for each drawing shall be supplied in AutoCAD format. Any exception to this must be approved in written form by Company drafting support and document management groups.

4.2.5. Drawings within Manuals

Contractor must provide all drawings within the manuals in two ways: 1) as part of the manual, and 2) as separate, single page pdf copies (generic OEM drawings may be excluded from this requirement). The drawings shall be current with no field markings or red-lines, legible (if scanned, 300 dots per inch (dpi) minimum) and properly oriented. Contractor shall identify file names by drawing number and sheet number. They shall also provide the drawings in numerical order and include them on the index. Below is a typical file name example:



4.3. Non-Drawings

Contractor shall provide all non-drawing documents as individual files limited to 40 megabytes (MB). All documents shall reflect final or as-installed condition and cannot include marked-up sketches, references or other field markings. Files must be organized and delivered so that each file may be accessed independently. The content in each document must match the table of contents, and the pages must be legible, oriented properly and bookmarked for accessibility. Bookmarks/links are acceptable only if they reference existing sections within the same document. Bookmarks/links to websites or other external documentation are unacceptable. If documents are scanned, resolution must be 300 dpi or greater. Each document shall be titled, including file name, as it corresponds to the content equipment name and tag number. If a file is larger than 40 MB, it must be separated by chapter, tab, or section according to the table of contents.

4.3.1. Non-Drawing Descriptions and Requirements

- Non-drawings include, but are not limited to the following:
- Data Book/System Turnover Package/System Description
 - Forms (Blank Templates)

- Lists (Shall be furnished in an Excel compatible file format)
 - Accessories
 - Bill of Materials
 - Circuit
 - Conduit
 - Drawings
 - Equipment
 - Instrument
 - Piping
 - Preventative Maintenance
 - Raceway
 - Spare Parts
- Manuals
 - Maintenance Bulletin/Technical Information Letter
 - Original Equipment Manufacturer (OEM)
 - Installation, Operation and Maintenance (IO&M)
 - Service and Repair
 - Training
- Procedures
- Reports
 - Critical Lift Plan
 - Engineering
 - Geotechnical
 - Inspection
 - Performance
 - Relay
 - Testing
- Specifications
 - Construction Specification
 - Design Criteria
 - Equipment Specification
 - Standard Specification
 - Scope of Work
 - Turn-Key Specification

4.3.2. List Requirements

- Instrumentation Lists and Data Sheets:
 - Instrument list and data sheets for each instrument shall reference vendor, model numbers, conditions of service, construction material, specifications, tag number, etc.
 - Multi-conductor signal wire scheme shall match the existing specific plant system.
- Equipment Lists:
 - All equipment shall be given a tag number identifying the type of equipment, the media that it services and a numeric reference according to existing specific plant standard.
 - Equipment indexes shall reference service location, drawing references, ratings, manufacturers, data sheet locations, etc.

- Electric Circuit Schedule:
 - All electrical cables shall be given a circuit number that meets specific plant standards. Information on existing system will be provided upon Contractor selection.
 - Multi-conductor signal wire scheme shall match the existing specific plant standard.
 - The circuit numbers will be used to reference all equipment on drawings, instrument indexes and data sheets.
 - Circuit indexes shall reference service location, drawing references, rating, manufacturers, data sheet locations, etc.
- Piping Line List:
 - All piping shall be given a line number that matches the existing specific plant standard.
 - The line number will be used to reference all pipes on area/routing drawings, indexes and line lists.
 - The line list shall contain line sizes, description of starting and ending locations, operating design and design location, insulation, drawing references, etc.

4.3.3. Manual Requirements

All manuals shall be supplied by Contractor. Large project manuals containing a collection of manuals for multiple systems are not acceptable. Manuals shall contain relevant equipment-specific data applying to system design and installation, operation, maintenance, and repair, but not for alternative or optional equipment. If generic documents are included, the non-applicable portions shall be crossed out.

Contractor shall be responsible for working with plant representatives (i.e. Management of Change (MOC) Coordinator, MOC committee, and/or Plant Designer) to ensure manuals meet plant needs. Should plant requirements for manuals differ from those listed here, the plant representative's instructions shall supersede section 4.3.3.

Contractor shall also be responsible for supplying additional information or replacing information to keep the manual complete and updated, including as-built or certified drawings. If field inspections of equipment indicate omissions or inaccuracy of the manuals, they must be updated. Incomplete manuals will be unacceptable and returned to Contractor for completion and re-submittal.

Note: For drawings within manuals, see section [4.2.5](#).

4.3.4. Submission of Non-Drawings

Non-drawing documents shall be submitted to Company for review, comment, or approval according to the project schedule as identified in Attachment 1B. Non-drawings shall be updated as the design progresses.

Company shall review the non-drawings for conformance with the Contract and will red-line or comment to indicate necessary changes or corrections.

Contractor shall resubmit the corrected documentation. Once non-drawings meet requirements, Company will submit written approval to Contractor.

5.0 Software Requirements

Contractor shall provide all document deliverables to Company in the required file formats listed in the Table 1 below, or as directed by Company representative. This requirement applies to both Contractor and/or OEM provided deliverables. All Contractor deliverables shall be provided in a data format that allows Company to input documents into existing applications. Company will provide Contractor with formatting information as requested. Contractor shall provide electronic submittals and “as-built” or “as-installed” documents in the following software formats:

Software Function	Software Name
Word processing	*Microsoft Word
Spreadsheets	*Microsoft Excel
Lists	*Microsoft Excel
Design/Construction & Original OEM Drawings	*AutoCAD (Company will provide current AutoCAD version information)
Project Schedules	Primavera/Microsoft Project as directed by Company.
Scanned Material and OEM Documents	Adobe Acrobat (.pdf) Image (.tif)
*version should not be newer than that currently being used by Company	

Table 1

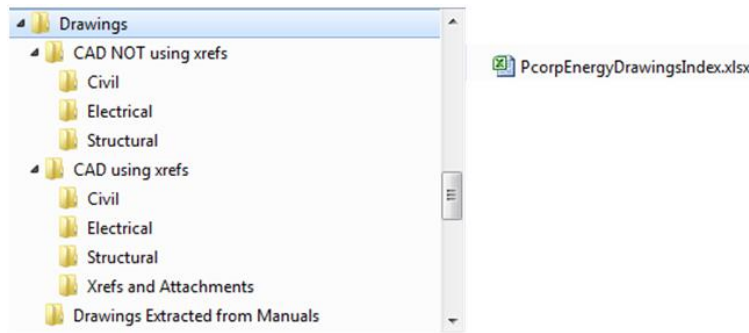
6.0 Document Turnover CD Format

File names and paths combined cannot exceed 175 characters.

6.1. Drawing Compact Discs (CDs)

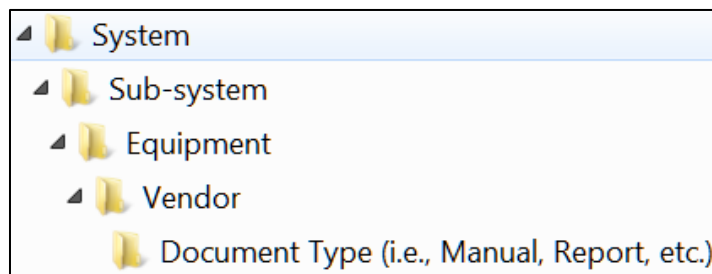
Contractors shall provide drawings on a separate set of CDs and identify them as “As-Built.” The first disc shall include the most current index. All file content shall be organized in folders and structured by three basic groups:

- 1) CAD drawings using external references (xref'd) indicating disciplines and a separate folder for all xrefs and attachments.
- 2) CAD drawings not using external references (non-xref'd) indicating disciplines.
- 3) Drawings extracted from manuals. An example is shown below:



6.2. Non-Drawing CDs

All final/complete non-drawing documents listed in Attachment 1B shall be submitted to Company representative. Contractor shall provide non-drawings on CDs separate from drawings, and identified as final "as-installed". The first disc shall include the most current index. All file content shall be organized in folders and structured by system, sub-system, equipment and document type (report, manual, specification, etc.). An example is shown below:



Note: Company representative may request Contractor to provide a hard copy of non-drawing documents as designated in Attachment 1B.

6.3. CD Identification

Each disc shall be identified with the following:

- Plant Name
- Plant Unit Number
- Project Name
- Date
- Disc Number
- Drawings/Non-Drawings
- Status – As Built (for drawings)
- Status – As-Installed (for non-drawing documents)
- WBS Project Number (provided by Company)

Lightscribe, legible handwriting, or direct printing to record this information on discs is acceptable. Adhesive labels are *not* acceptable.