Administrative Procedure

PRC-PRO-EN-440

Engineering Documentation Preparation and Control

Revision 1, Change 1

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Administrative Use

CH2MHILL
Plateau Remediation Company

CHANGE SUMMARY

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Description of Change

Rev 1-1; - Revised procedure to point and link to the Review Guidelines for Engineering on the Central Engineering Web site and deleted the Appendix specifying the Review Guidelines.
- Added additional option to allow for engineering test documentation to be added as a Work Package section.
- Added note regarding Altered Item drawings to the Vendor Information Files change section.
Rev 1-0; This is a major rewrite of this procedure. The procedure has been rewritten in its entirety.
The scope of this procedure has been expanded to discuss the preparation, approval, and release of engineering related documentation. The procedure also discusses the change processes to be used for each engineering document type.
The procedure points to the new set of engineering standards which define the format and content requirements for preparation of each engineering document type. This procedure along with the new engineering standards replaces the following engineering procedures:
PRC-PRO-EN-709, PRC-PRO-EN-8258, PRC-PRO-EN-8259, PRC-PRO-EN-16406, and PRC-GD-EN-8004.
Rev. 0-1, 06/02/09: Editorial change to update references, titles, and company names due to contract transition. Variance #9 remains in effect.

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1.0   INTRODUCTION

1.1   Purpose

This procedure describes the process for preparation, review, approval, release, and issue of engineering documentation including drawings for the CH2M HILL Plateau Remediation Company (CHPRC).

This procedure also describes the change control methods used for previously issued engineering documentation.

1.2   Scope

This Level 2 Management Control Procedure applies to engineering documentation created and maintained by CHPRC personnel for CHPRC work scope. Documentation to which this procedure applies is considered formal engineering documentation which includes the following types:

1. Drawings
2. Specifications
3. Calculations
4. Engineering Test Plans, Specifications, Procedures, and Reports
5. Functional Design Criteria (FDC)
6. Conceptual Design Report (CDR)
7. Preliminary Design Report (PDR)/Final Design Report (FDR)
8. System Design Description (SDD)
9. Vendor Information (VI) Files
10. Support Documents (e.g., Engineering Study, Engineering Analysis, Technical Basis)

This procedure applies to engineering documentation intended to be released and issued into the Document Management and Control System (DMCS) and Integrated Document Management System (IDMS) as records.

1.3   Applicability

Applicability of this procedure is as follows:

- Engineering documentation previously released into the DMCS are accepted as is and do not require revision to comply with this procedure.

- Changes or revision made to previously released engineering documentation shall comply with this procedure. Revisions to legacy documents not prepared using a specified standard shall comply with this procedure for release and change control. Use of the specified standard for legacy documentation is recommended for guidance using a graded approach.

- Engineering drawings prepared for CHPRC by off-site architectural/engineering firms or vendors which are intended to be released into DMCS and IDMS shall comply with CHPRC-00263, *Offsite Vendor Instructions for Preparation and Control of Engineering Drawings,* and released and controlled in accordance with this procedure.

- This procedure does not apply to engineering documentation prepared for CHPRC by off-site architectural/engineering firms or vendors unless those documents are intended to be released into DMCS/IDMS.

- This procedure does not apply to non-engineering technical and administrative documentation. Non-engineering technical and administrative documentation is controlled in accordance with PRC-PRO-IRM-9679, *Administrative and Technical (Non-Engineering) Document Control*.

- Engineering documentation prepared for use in formal projects are issued and controlled in accordance with PRC-PRO-EN-40271, *Engineering Design Process*, PRC-PRO-IRM-232, *Project Files Management* and PRC-PRO-EN-8016, *Design Change Notice Process* during the life of the project. Upon project turnover and acceptance by Operations, engineering documentation to be placed under configuration control for operations shall be released and controlled in accordance with this procedure.

1.4   Implementation

This procedure is effective upon publication.

2.0   RESPONSIBILITIES

All responsibilities associated with this procedure are identified in the process steps.

3.0   PROCESS

This section describes the process for creating new engineering documentation, changing existing engineering, and superseding or cancelling previously released change documentation.

This section is organized as follows:

Section 3.1   Preparation of New Engineering Documentation including the following subsections:

Subsection 3.1.1	Drawings
Subsection 3.1.2	Specifications
Subsection 3.1.3	Calculations
Subsection 3.1.4	Engineering Test Documentation
Subsection 3.1.5	Functional Requirements Document
Subsection 3.1.6	Functional Design Criteria
Subsection 3.1.7	Conceptual Design Report
Subsection 3.1.8	Preliminary Design Report/Final Design Report
Subsection 3.1.9	System Design Description
Subsection 3.1.10	Vendor Information Files
Subsection 3.1.11	Supporting Documents

Section 3.2   Change Control of Existing Engineering Documentation including the following subsections:

Subsection 3.2.1	Drawings
Subsection 3.2.2	Calculations
Subsection 3.2.2	Engineering Text Documents
Subsection 3.2.3	Vendor Information

Section 3.3   Supersedure or Cancellation of Change Documents

The following table summarizes relevant information pertaining to the various types of engineering documentation:

Table 1 – Engineering Documentation Summary

Type	Media	Format	Preparation Standard	Initial Release Via	Change Via
Drawings	Graphical	CAD	PRC-STD-EN-40279, *Engineering Drawing Standards*	Facility Modification Plan (FMP)	FMP
Specifications	Textual	Standalone or FMP Section	PRC-STD-EN-40280, *Engineering Specifications*	FMP or Engineering Document Change (EDC)	FMP or EDC
Calculations	Calculation	Standalone or FMP Section	PRC-STD-EN-40259, *Engineering Calculations*	FMP or EDC	FMP or EDC
Engineering Test Documentation	Textual	Standalone or FMP Section	PRC-PRO-EN-286, *Testing of Equipment and Systems*	FMP, EDC, or Work Package	FMP, EDC, or Work Package
Functional Requirements Document (FRD)	Textual	Standalone	PRC-STD-EN-40254, *Functional Requirements Document*	FMP or EDC	FMP or EDC
FDC	Textual	Standalone or FMP Section	PRC-STD-EN-40255, *Functional Design Criteria*	FMP or EDC	FMP or EDC
CDR	Textual	Standalone	PRC-STD-EN-40261, *Conceptual Design Report*	FMP or EDC	FMP or EDC
PDR/FDR	Textual	Standalone	PRC-STD-EN-40258, *Preliminary/Final Design Report*	FMP or EDC	FMP or EDC
SDD	Textual	Standalone	DOE-STD-3024, *Content of System Design Description*	FMP or EDC	FMP or EDC
VI Files	Various	File	NA	FMP or EDC	FMP or EDC
Supporting (Specialty) Documents	Textual	Standalone	NA	FMP or EDC	FMP or EDC

All CHPRC engineering documentation to be entered into the Hanford configuration management (DMCS) and records management (IDMS) systems shall use either a FMP or EDC form to document the release.

Standalone engineering documents have their own number and stand on their own. Engineering Documents released with an FMP as an FMP Section are considered an integral part of the FMP.

3.1   Preparation of New Engineering Documentation

This section describes the process for preparing, approving, and releasing engineering drawings, calculations, vendor information, and the various types of text based engineering documents. Each major type of engineering document will be discussed in its own section.

3.1.1   Drawings

All new engineering drawings are required to be released using an FMP in accordance with PRC-PRO-EN-2001*, Facility Modification Package Process.*

New engineering drawings are created using the site standard CAD software package identified in PRC-STD-EN-40279, *Engineering Drawing Standards.* CAD data files are configuration controlled using the DMCS.

Altered Item Drawings (new engineering drawings created form vendor drawings contained in VI files) shall also be prepared as new drawings.

Actionee	*Step*	*Action*
Engineer/ Designer/ Drafter	1.	DETERMINE need for new engineering drawing to support the FMP scope.
Designer/ Drafter	2.	OBTAIN new drawing number from the Hanford Document Numbering System (HDNS). Refer to PRC-STD-EN-40279 for selection of correct drawing number prefix (i.e. H-1, H-2, etc.).
	3.	CREATE new CAD data file and PREPARE new drawing in accordance with PRC-STD-EN-40279.
	4.	WHEN drawing is considered finished, THEN OBTAIN a Drafting Check.
Drafting Checker	5.	CHECK drawing for clarity, completeness, and compliance with Hanford drawings standards as described in PRC-STD-EN-40279.
Designer/ Drafter	6.	UPDATE drawing with results from the Drafting Check AND SUBMIT for inclusion in the FMP.

Actionee	*Step*	*Action*
Designer/ Drafter	7.	Upon work completion of the FMP, PERFORM the following to approve the new drawing:

    a. IF known, THEN ADD the names of the approvers onto the drawings Approval Block as described in Table 2.

    b. SUBMIT the new drawings CAD data file into the DMCS Check-in process.

    c. PLOT the new drawing <u>AND</u> ENSURE the same PLOTID number is shown on the CAD data file and the hardcopy plot.

    d. OBTAIN approvals on the hardcopy plot in accordance with Table 2. Additional approvals are as specified by the Design Authority using the <u>Review Guidelines for Engineering</u> provided on the CHPRC Central Engineering Web.

8. SUBMIT approved drawing hardcopy along with the FMP to the Information Records Management (IRM) Release Station for processing, release, and record retention.

Table 2 – **New Drawing Approval Summary**

Position	Approval Block	Reason	Note
Drafter/ Designer	Print Initials and Surname/Date/Company in the "DRAWN BY" block	Identify drawing creator	
Drafting Checker	Print Initials and Surname/Date/Company and provide signature in the "DRAFTING APPROVED" block	Indicates drawing complies with Hanford Drawing Standards	Cannot be the Drafter/ Designer
Engineer	Print Initials and Surname/Date/Company and provide signature in the "ENGINEER" block	Indicates technical content of the drawing is correct	
Design Authority	Print Initials and Surname/Date/Company and provide signature in the "DESIGN AUTHORITY" block.	Indicates new drawing adequately reflects the technical baseline and meets design requirements, has the necessary reviews and approvals, and is ready for release	Can be the Engineer, but separate signature needed

Position	Approval Block	Reason	Note
Additional Approvals (if specified)	Print Initials and Surname/Date/Company and provide signature in an available approval block	Indicates approval of the design for implementing functional area requirements (e.g. fire protection, QA, Nuclear Safety, Radiation Protection, etc.)	As specified by the Design Authority.

3.1.2   Specifications

The following three options are available for specifications:

- Prepare the specification as a section of an FMP and release with the FMP.
- Prepare the specification as a standalone document and release with an FMP.
- Prepare the specification as a standalone document and release with an EDC.

Actionee	Step	Action
Engineer/ Author	1.	DETERMINE need for a new engineering specification.
	2.	DETERMINE if the specification will be a standalone document or will be an FMP section.
	3.	IF the specification is to be a standalone, THEN OBTAIN a specification number from the Hanford Document Numbering System (HDNS). Specification numbers can be CHPRC Company specific (e.g., CHPRC-XXXXX) or Project specific (e.g., D&D-XXXXX, SGW-XXXXX).
	4.	PREPARE new specification in accordance with PRC-STD-EN-40280.
	5.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
		a. Minimum approvals needed for an engineering specification is the Author, Design Authority/Technical Authority (DA/TA), and the DA/TA Manager. Required approvals are identified on the FMP or EDC.
		b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational requirements.
	6.	PREPARE release documentation for the specification.
		a. For FMP integration, ADD the specification as an FMP section to the FMP.

Engineer/
Author

    b. For a standalone specification to be released with an FMP when the FMP is initially released, IDENTIFY the specification in the FMP's Document Index and designate it as "N" (New).

    c. For a standalone specification to be released with an FMP when the FMP is work complete, IDENTIFY the specification in the FMP's Document Index and designate it as "NWC" (New Work Complete).

    d. For a standalone specification to be released separately from an FMP, PREPARE an EDC in accordance with Appendix B, Engineering Document Change Form.

7. OBTAIN document approvals as identified on the FMP or EDC.

8. SUBMIT the specification and FMP/EDC to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file of the specification to the IRM Release Station.

3.1.3   Calculations

The following three options are available for calculations:

- Prepare the calculation as a section of an FMP and release with the FMP.
- Prepare the calculation as a standalone document and release with an FMP.
- Prepare the calculation as a standalone document and release with an EDC.

Calculations may be prepared using electronic worksheets (e.g., Mathcad, Excel) or hand prepared worksheets.

The following requirements apply to calculations that are prepared for Office of Civilian Radioactive Waste Management (OCRWM) activities:

- The Calculation Author and Checker shall meet the applicable indoctrination, training, and qualification requirements described in PRC-PRO-QA-20765, *OCRWM Personnel Training.*

- OCRWM related calculations shall be issued and controlled as standalone documents.

- OCRWM related calculations shall have a *Review Checklist* (Site Form A-6004-797) prepared by the Calculation Checker. The *Review Checklist* shall be included in a Technical Check section of the calculation (see PRC-STD-EN-40259).

- The Calculation Checker shall provide comments on a calculation copy or shall provide comments on a *Review Comment Record (RCR)* (Site Form A-6004-835). If comments are to be provided on a calculation copy, all pages of the calculation copy shall be initialed by the Checker.

Actionee	*Step*	*Action*
Engineer/ Author	1.	DETERMINE need for a new engineering calculation.
	2.	DETERMINE if the calculation will be a standalone document or will be an FMP section.
	a.	IF the calculation is to be a standalone, THEN OBTAIN a calculation number from the HDNS. Calculation numbers can be CHPRC Company specific (e.g., CHPRC-XXXXX) or Project specific (e.g., D&D-XXXXX, SGW-XXXXX, PRC-STP-CN-Topic-XXXXX).
	b.	IF the calculation is to be an FMP section, THEN the calculation number is the FMP Section number (e.g., CALC-1, CALC-2) for calculations as described in PRC-PRO-EN-2001, Facility Modification Package Process.
	3.	PREPARE new calculation and a *CHPRC Calculation Cover Sheet* (Site Form A-6004-793) in accordance with PRC-STD-EN-40259.
	4.	OBTAIN calculation check from a qualified checker as required in PRC-PRO-EN-8336, *Design Verification.*
Calculation Checker	5.	PERFORM a technical check of the calculation. The calculation check shall include checking of all sections of the calculations (purpose, approach, assumptions, inputs, equations, references, conclusions, etc.) for adequacy, accuracy, and completeness. DOCUMENT the check on a copy of the calculation as follows:
	a.	**For OCRWM Calculations:** PREPARE a *CHPRC Review Checklist* (A-6004-797) for each OCRWM Calculation and provide comments back to the Calculation Author. Comments shall be documented using one of the following two methods:
	1)	PROVIDE markups/comments on the calculation copy as needed. INITIAL each page of the calculation copy.
	2)	PREPARE a *RCR* (A-6004-835) to document the review and comments.
	b.	**For other Calculations**: MARK UP a copy of the calculation, PREPARE a documented list of the comments, or prepare a *RCR* (A-6004-835) and PROVIDE to the Calculation Author.

Actionee	Step	Action
Engineer/ Author	6.	RESOLVE comments with the Checker and revise the calculation per the agreed upon resolution. COMPLETE the *RCR* form if one is provided. WHEN complete, THEN SIGN and DATE the *CHPRC Calculation Cover Sheet* (A-6004-793) and OBTAIN the Checkers signature.
	7.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
		a. Minimum approvals needed for an engineering calculation is the Preparer, Design Authority/Technical Authority (DA/TA), and the DA/TA Manager. Required approvals are identified on the FMP or EDC.
		b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational requirements.
	8.	PREPARE release documentation for the calculation.
		a. For FMP integration, ADD the calculation as an FMP section to the FMP.
		b. For a standalone calculation to be released with an FMP when the FMP is initially released, IDENTIFY the calculation in the FMP's Document Index and designate it as "N" (New).
		c. For a standalone calculation to be released with an FMP when the FMP is work complete, IDENTIFY the calculation in the FMP's Document Index and designate it as "NWC" (New Work Complete).
		d. For a standalone calculation to be released separately from an FMP, PREPARE an EDC in accordance with Appendix B, Engineering Document Change Form.
	9.	OBTAIN document approvals as identified on the FMP or EDC.
	10.	SUBMIT the calculation and FMP/EDC to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file (for electronic calculations) of the calculation to the IRM Release Station.

3.1.4 Engineering Test Documentation

Engineering Test Documentation can include any single or combination of the following types:

- Test Plan
- Test Specification
- Test Procedure
- Test Report

The following four options are available for Engineering Test Documentation:

- Prepare the test documentation as a section of an FMP and release with the FMP.
- Prepare the test documentation as a standalone document and release with an FMP.
- Prepare the test documentation as a standalone document and release with an EDC.
- Prepare the test documentation as a section of a Work Package (WP).

Actionee	Step	Action
Engineer/ Author	1.	DETERMINE need for new engineering test documentation.
	2.	DETERMINE if the engineering test documentation will be a standalone document or will be an FMP or WP section.
		a. IF the engineering test documentation is to be a standalone, THEN OBTAIN an engineering test documentation number from the HDNS. Engineering test documentation numbers can be CHPRC Company specific (e.g., CHPRC-XXXXX) or Project specific (e.g., D&D-XXXXX, SGW-XXXXX).
	3.	PREPARE new engineering test documentation in accordance with PRC-PRO-EN-286.
	4.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
		a. Minimum approvals needed for engineering test documentation is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the FMP or EDC.
		b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational requirements.

Actionee	Step	Action
Engineer/ Author	5.	PREPARE release documentation for the engineering test documentation.
		a. For FMP integration, ADD the engineering test documentation as an FMP section to the FMP.
		b. For standalone engineering test documentation to be released with an FMP when the FMP is initially released, IDENTIFY the engineering test documentation in the FMP's Document Index and designate it as "N" (New).
		c. For standalone engineering test documentation to be released with an FMP when the FMP is work complete, IDENTFY the engineering test documentation in the FMP's Document Index and designate it as "NWC" (New Work Complete).
		d. For standalone engineering test documentation to be released with an EDC, PREPARE the EDC in accordance with Appendix B.
		e. For inclusion as a WP section, ADD the engineering test documentation as a WP section in accordance with PRC-PRO-WKM-12115, *Work Management*.
	6.	OBTAIN document approvals as identified on the FMP or EDC.
	7.	SUBMIT the engineering test documentation and FMP/EDC to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file of the engineering test documentation to the IRM Release Station.

3.1.5 Functional Requirements Document

FRDs are standalone documents which are typically released with an EDC but can be released with an FMP. For FRD approval, a Project Engineer may be considered to be the DA/TA, and a Project Engineering Manager may be considered to be the DA/TA Manager.

Actionee	Step	Action
Engineer/ Author	1.	DETERMINE need for a FRD.
	2.	OBTAIN a FRD number from the HDNS. FRD numbers can be CHPRC Company specific (e.g., CHPRC-XXXXX) or Project specific (e.g., D&D-XXXXX, SGW-XXXXX).
	3.	PREPARE new FRD in accordance with PRC-STD-EN-40254.

Actionee	Step	Action
Engineer/ Author	4.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web. a. Minimum approvals needed for a FRD is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the EDC or FMP. b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational or project requirements.
	5.	PREPARE release documentation for the FRD. a. PREPARE an FMP to release the FRD as an "N" (New) document, or b. PREPARE an EDC in accordance with Appendix B for release of the FRD.
	6.	OBTAIN document approvals as identified on the EDC or FMP.
	7.	SUBMIT the FRD and FMP/EDC to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file of the FRD to the IRM Release Station.

3.1.6   Functional Design Criteria

The following three options are available for FDC documents:

- Prepare the FDC as a section of an FMP and release with the FMP.
- Prepare the FDC as a standalone document and release with an FMP.
- Prepare the FDC as a standalone document and release with an EDC.

For FDC approval, a Project Engineer may be considered to be the DA/TA and a Project Engineering Manager may be considered to be the DA/TA Manager.

Actionee	Step	Action
Engineer/ Author	1.	DETERMINE need for a new FDC document.
	2.	DETERMINE if the FDC will be a standalone document or will be an FMP section. a. IF the FDC is to be a standalone, THEN OBTAIN an FDC number from the HDNS. FDC numbers can be CHPRC Company specific (e.g., CHPRC-XXXXX) or Project specific (e.g., D&D-XXXXX, SGW-XXXXX).

Actionee	Step	Action
Engineer/ Author	3.	PREPARE new FDC in accordance with PRC-STD-EN-40255.
	4.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
		a. Minimum approvals needed for an FDC is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the FMP or EDC.
		b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational or project requirements.
	5.	PREPARE release documentation for the FDC.
		a. For FMP integration, ADD the FDC as an FMP section to the FMP.
		b. For a standalone FDC to be released with an FMP when the FMP is initially released, IDENTIFY the FDC in the FMP's Document Index and designate it as "N" (New).
		c. For a standalone FDC to be released with an FMP when the FMP is work complete, IDENTIFY the FDC in the FMP's Document Index and designate it as "NWC" (New Work Complete).
		d. For a standalone FDC to be released separately from an FMP, PREPARE an EDC in accordance with Appendix B.
	6.	OBTAIN document approvals as identified on the FMP or EDC.
	7.	SUBMIT the FDC and FMP/EDC to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file of the FRD to the IRM Release Station.

3.1.7 Conceptual Design Report

CDRs are standalone documents which are typically released with an EDC but can be released with an FMP. For CDR approval, a Project Engineer may be considered to be the DA/TA and a Project Engineering Manager may be considered to be the DA/TA Manager.

Actionee	Step	Action
Engineer/ Author	1.	DETERMINE need for a CDR.
	2.	OBTAIN a CDR number from the HDNS. CDR numbers can be CHPRC Company specific (e.g., CHPRC-XXXXX) or Project specific (e.g., D&D-XXXXX, SGW-XXXXX).

Actionee	Step	Action
Engineer/ Author	3.	PREPARE new CDR in accordance with PRC-STD-EN-40261.
	4.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
		a. Minimum approvals needed for a CDR is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the EDC or FMP.
		b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational or project requirements.
	5.	PREPARE release documentation for the CDR.
		a. PREPARE an FMP to release the CDR as an "N" (New) document, or
		b. PREPARE an EDC in accordance with Appendix B, Engineering Document Change Form for release of the CDR.
	6.	OBTAIN document approvals as identified on the EDC or FMP.
	7.	SUBMIT the CDR to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file of the CDR to the IRM Release Station.

3.1.8   Preliminary Design Report/Final Design Report

PDRs and FDRs are standalone documents which are typically released with an EDC but can be released with an FMP. For PDR/FDR approval, a Project Engineer may be considered to be the DA/TA, and a Project Engineering Manager may be considered to be the DA/TA Manager.

Actionee	Step	Action
Engineer/ Author	1.	DETERMINE need for a PDR or FDR.
	2.	OBTAIN a PDR/FDR number from the HDNS. PDR/FDR numbers can be CHPRC Company specific (e.g., CHPRC-XXXXX) or Project specific (e.g., D&D-XXXXX, SGW-XXXXX).
	3.	PREPARE new PDR or FDR in accordance with PRC-STD-EN-40258.

Actionee	Step	Action
Engineer/ Author	4.	DETERMINE reviews and approvals needed for release using the [Review Guidelines for Engineering] provided on the CHPRC Central Engineering Web. a. Minimum approvals needed for a PDR/FDR is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the EDC or FMP. b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational or project requirements.
	5.	PREPARE release documentation for the PDR/FDR. a. PREPARE an FMP to release the PDR/FDR as an "N" (New) document, or b. PREPARE an EDC in accordance with Appendix B, EDC Form for release of the PDR/FDR.
	6.	OBTAIN document approvals as identified on the EDC.
	7.	SUBMIT the PDR/FDR and FMP/EDC to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file of the PDR/FDR to the IRM Release Station.

3.1.9   System Design Description

SDDs are standalone document which are typically released with an EDC but can be released with an FMP. SDDs should be considered as configuration baseline documentation for a Configuration Managed Structure, System, or Component (CM SSC).

Actionee	Step	Action
Engineer/ Author	1.	DETERMINE need for a SDD.
	2.	OBTAIN a SDD number from the HDNS. SDD numbers can be CHPRC Company specific (e.g., CHPRC-XXXXX) or Project specific (e.g., D&D-XXXXX, SGW-XXXXX).
	3.	PREPARE new SDD using DOE-STD-3024 as guidance. SDDs may be tailored to meet the requirements of the system and facility.

Actionee	Step	Action
Engineer/ Author	4.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.

    a. Minimum approvals needed for an SDD is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the EDC or FMP.

    b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational or facility requirements.

  5. PREPARE release documentation for the SDD.

    a. PREPARE an FMP to release the SDD as an "N" (New) document, or

    b. PREPARE an EDC in accordance with Appendix B for release of the SDD.

  6. OBTAIN document approvals as identified on the EDC.

  7. SUBMIT the SDD and FMP/EDC to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file of the SDD to the IRM Release Station.

3.1.10 Vendor Information Files

VI Files are standalone files contained in IRM Central Files. The following two options are available for capturing vendor information:

- Prepare a standalone VI File and release with an FMP.
- Prepare a standalone VI File and release with an EDC.

A VI File consists of the following items:

- Vendor provided information arranged in a logical manner.
- A *Vendor Information (VI) Form* (Site Form A-6004-969) listing the contents of the VI File.

VI File numbers are obtained from IRM Central Files. The VI Form provides data about the VI File and provides an index to the file.

Vendor information may need to be captured for existing equipment or components. New vendor information for existing equipment may be released with an EDC.

VI may be available in either hardcopy or electronic format. VI in electronic format is available in the IDMS but may not contain the whole VI File. Complete VI Files are available only from IRM Central Files in hardcopy format.

Actionee	Step	Action
Engineer/ Design Authority	1.	DETERMINE need for capturing vendor information within a VI File.
	2.	OBTAIN a VI File Number from IRM Central Files.
	3.	DETERMINE reviews and approvals needed for release using the [Review Guidelines for Engineering](#) provided on the CHPRC Central Engineering Web.
		a. Minimum approvals needed for a VI File is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the FMP or EDC.
		b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational requirements.
	4.	PREPARE the VI File.
		a. Identify contents and arrange in a logical manner.
		b. PREPARE a VI Form (A-6004-969) to identify associated equipment, Manufacturer info, System where installed, and other related data. IDENTIFY and INDEX the contents of the VI File on the form. REFER to Appendix D, Engineering Vendor Information (VI) Form, for instructions on preparing an Engineering VI Form.
	5.	PREPARE release documentation for the VI File.
		a. For a standalone VI File to be released with an FMP when the FMP is initially released, IDENTIFY the VI in the FMP's Document Index and designate it as "N" (New).
		b. For a standalone VI File to be released with an FMP when the FMP is work complete, IDENTIFY the VI in the FMP's Document Index and designate it as "NWC" (New Work Complete).
		c. For a standalone VI File to be released with an EDC, PREPARE an EDC in accordance with Appendix B.
	6.	OBTAIN DA approval on *the VI Form*.
	7.	OBTAIN VI File approvals as identified on the FMP or EDC.
	8.	SUBMIT the standalone VI File and FMP/EDC to the IRM Release Station for processing, release, and retention in IRM Central Files.

3.1.11 Supporting Documents

Supporting Documents are standalone documents which are prepared for specific purposes. Supporting Documents include the following:

- Engineering Reports
- Engineering Studies
- Engineering Analysis
- Technical Basis Documentation
- Safety Basis Documentation
- Other technical reports or documentation needing to be configuration controlled.

Supporting Documents are typically released with an EDC but can be released with an FMP.

Actionee	Step	Action
Engineer/ Author	1.	DETERMINE need for supporting documentation.
	2.	OBTAIN a supporting document number from the HDNS. Supporting Document numbers can be CHPRC Company specific (e.g., CHPRC-XXXXX) or Project specific (e.g., D&D-XXXXX, SGW-XXXXX).
	3.	PREPARE new supporting documentation. There is no engineering standard for supporting documents. FORMAT for supporting documentation will vary depending on the type and purpose of the document.
	4.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
		a. Minimum approvals needed for a supporting document is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the EDC or FMP.
		b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational or facility requirements.
	5.	PREPARE release documentation for the supporting document.
		a. PREPARE an FMP to release the supporting document as an "N" (New) document, or
		b. PREPARE an EDC in accordance with Appendix B for release of the supporting document.

Actionee	Step	Action
Engineer/ Author	6.	OBTAIN document approvals as identified on the FMP or EDC.
	7.	SUBMIT the supporting document and FMP/EDC to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file of the supporting document to the IRM Release Station.

3.2   Change Control of Existing Engineering Documentation

This section describes the process for changing and revising engineering drawings, textual documents, and vendor information.

3.2.1   Drawings

Drawings revisions are authorized with a FMP prepared and performed in accordance with PRC-PRO-EN-2001.

Drawings are revised using the site standard CAD software package identified in PRC-STD-EN-40279.

CAD data files for drawings are configuration controlled using the DMCS. Revisions to existing CAD based drawings require the CAD data file to be checked out of DMCS. The revised CAD data file is checked backed in with the next higher revision number upon completion and approval of the drawing.

Manual drawings may be revised manually by checking out the drawing from IRM Central Files. It is recommended that manual drawings be converted to a Compound Drawing (electronic drawing consisting of raster image and vector data) prior to revision. The Compound Drawing is then released and controlled within DMCS. Refer to Appendix E. Compound Drawing Creation, for information on Compound Drawing creation.

The following are two special types of drawing revision actions with specific requirements:

- Supersedure: Developing or revising a drawing that replaces an SSC documented on another drawing or replaces a manual drawing requires the older drawing to be superseded. Both drawings are revised to provide two-way traceability between the superseding and superseded drawings

- Void: Drawings placed into Void status shall not be revised, referenced, or used for any activity.

Drawings may also be <u>inactivated</u>. Drawings may be inactivated without requiring a revision. Inactivation is performed by setting the drawing status in DMCS to "Inactive." Drawings placed in Inactive status shall not be revised, referenced, or used for any activity.

Actionee	Step	Action
Engineer/ Designer/ Drafter	1.	DETERMINE need to revise an existing engineering drawing to support an FMP scope.
Designer/ Drafter	2.	CHECK OUT drawing to be revised:
		a. For a CAD drawing, CHECK OUT the CAD data file from DMCS.
		b. For a manual drawing, OBTAIN hardcopy from IRM Central Files. Consider creating an electronic Compound Drawing from the manual drawing in accordance with Appendix E.
	3.	PREPARE drawing revision in accordance with PRC-STD-EN-40279.
		a. For drawing Supersedure, PROVIDE supersedure information on both superseding and superseded drawings in accordance with PRC-STD-EN-40279. IDENTIFY both the superseding drawing and superseded drawings on the FMP.
		b. To Void a drawing, MARK drawing as void in accordance with PRC-STD-EN-40279. IDENTIFY drawing to be voided on the FMP.
	4.	SUBMIT revised drawing for inclusion in the FMP.
	5.	Upon work completion of the FMP, PERFORM the following to approve the revised drawing:
		a. ADD the names of the approvers onto the drawings Revision Block as described in Table 3 and PRC-STD-EN-40279.
		b. SUBMIT the revised drawings CAD data file into the DMCS Check-in process.
		c. PLOT the revised drawing and ensure the same PLOTID number is shown on the CAD data file and the hardcopy plot.
		d. OBTAIN approvals on the hardcopy plot in accordance with Table 3. Additional approvals are as specified by the Design Authority using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
	6.	SUBMIT approved revised drawing hardcopy to the IRM Release Station for processing, release, and record retention.

Table 3 – Drawing Revision Approval Summary

Position	Revision Block	Reason	Note
Drafter/ Designer	Print Initials and Date in the "REV BY DATE" Block	ID drawing creator	
Drafting Checker	Initials and Dates in an available revision approval block.	Indicates drawing complies with Hanford Drawing Standards	Cannot be the Drafter/ Designer
Engineer	Initials in the "ENGR" Block and provide date and company information in the "DATE/COMPANY" Block.	Indicates the drawing change reflects the direction of the FMP.	Cannot be the Drafter/ Designer
Additional Approvals (if specified)	Initials and Dates in an available revision approval block.	Indicates approval of the drawing revision for functional area requirements.	As specified by the Design Authority

3.2.2   Calculations

Calculations shall be revised when corrections need to be made. Revisions made to the calculation shall be performed by using a copy of the original calculation and strikeout method whenever possible.

The following requirements apply to revised calculations prepared for OCRWM activities:

- The Calculation Author and Checker shall meet the applicable indoctrination, training, and qualification requirements described in PRC-PRO-QA-20765.

- OCRWM related Calculations shall be issued and controlled as standalone documents.

- OCRWM related Calculations shall have a *Review Checklist* (A-6004-797) prepared by the Calculation Checker. The *Review Checklist* shall be included in a Technical Check section of the calculation (see PRC-STD-EN-40259).

- The Calculation Checker shall provide comments on a calculation copy or shall provide comments on a *Review Comment Record (RCR)* (A-6004-835). If comments are to be provided on a calculation copy, all pages of the calculation copy shall be initialed by the Checker.

Actionee	*Step*	*Action*
Engineer/ Author	1.	DETERMINE need to revise an existing calculation.
	2.	MAKE required changes to the Calculation. Changes to released calculations shall be performed using one of the following methods appropriate for the method used to prepare the original Calculation:

Actionee	Step	Action
Engineer/ Author		a. **For Handwritten Calculations:** MAKE corrections or changes on a copy of the original. USE a single line strike out to make the correction, add the new entry, and initial next to the correction.
		b. **For Electronic Calculations:** USE a strikeout option if available. Otherwise, MAKE the change and provide a brief description within the worksheet of what the change is for each correction.
	3.	ENSURE the Calculation complies with the requirements of PRC-STD-EN-40259 and includes a *CHPRC Calculation Cover Sheet* (A-6004-793)
	4.	OBTAIN calculation check from a qualified checker.
Calculation Checker	5.	PERFORM a technical check of the calculation. The calculation check shall include checking of all sections of the calculations (purpose, approach, assumptions, inputs, equations, references, conclusions, etc.) for adequacy, accuracy, and completeness. DOCUMENT the check on a copy of the calculation as follows:
		a. **For OCRWM Calculations**: PREPARE a *CHPRC Review Checklist* (A-6004-797) for each OCRWM Calculation and PROVIDE comments back to the Calculation Author. Comments shall be documented using one of the following two methods:
		1) PROVIDE markups/comments on the calculation copy as needed. Initial each page of the calculation copy.
		2) PREPARE an RCR (A-6004-835) to document the review and comments.
		b. **For other Calculations**: MARK UP a copy of the calculation, PREPARE a documented list of the comments, or PREPARE a *RCR* (A-6004-835) and PROVIDE to the calculation author.
Engineer/ Author	6.	RESOLVE comments with the Checker and revise the calculation per the agreed upon resolution. COMPLETE the RCR form if one is provided. WHEN complete, THEN SIGN and DATE the *CHPRC Calculation Cover Sheet* (A-6004-793) and OBTAIN the Checkers signature.
	7.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
		a. Minimum approvals needed for an engineering calculation is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the FMP or EDC.

Actionee	Step	Action
Engineer/ Author	b.	The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational or facility requirements.
	8.	PREPARE the release documentation for the revised engineering calculation.
	a.	For a calculation that is an FMP section, ADD the revised calculation to the FMP.
	b.	For a revised standalone calculation to be released with an FMP, IDENTIFY the calculation in the FMP's Document Index and designate it as "R" (Revised).
	c.	For a revised standalone calculation to be released with an EDC, PREPARE an EDC in accordance with Appendix B.
	9.	OBTAIN document approvals as identified on the FMP/EDC and Record of Revision.
	10.	SUBMIT the revised calculation and FMP/EDC to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file (for electronic calculations) of the revised calculation to the IRM Release Station.

3.2.3　Engineering Text Documents

Engineering Text Documents are text based non-graphical documents and include specification, calculations, FDCs, SDDs, engineering reports, design reports, etc. Engineering Text Document revisions are authorized using either an FMP or EDC using one of the following three methods:

- Direct Revision – Changes a document in its entirety. The whole document is provided with the FMP or EDC. Full number revision (e.g., Rev 1, Rev 2, etc.) are required for Direct Revisions. The change package consists of:

  o The revised document
  o Record of Revision of the document
  o FMP or EDC authorizing the change

- Page Change – Only changes individual pages of a document. Only the changed pages are provided to IRM Release Station. New or additional pages may be added to a document with this method. Additional pages to be inserted between existing pages shall use decimal numbering (e.g. new pages 6.1 and 6.2 to go between existing pages 6 and 7). Page Changes are numbered with alphanumeric designation (e.g. 0A, 0B, 1A, 1B, etc.). The change package consists of:

  o The individual pages
  o Record of Revision of the document
  o FMP or EDC authorizing the change

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- <u>Void</u> – This will void the document and set its status to "Void" in DMCS. Voided documents shall not be revised, referenced, or used for any activity. Voided documents are revved to the next higher revision. Only the documents Title Page needs to be provided. The change package consists of:

  - o A revised Title Page of the document showing the new revision number
  - o Record of Revision of the document
  - o FMP or EDC authorizing the change

Actionee	Step	Action
Engineer/ Author	1.	DETERMINE need to revise an existing engineering text document.
	2.	DETERMINE the type of revision method:
	a.	Direct Revision – REVISE document and PROVIDE the whole document in the change package.
	b.	Page Change – REVISE individual pages of a document and PROVIDE the individual pages in the change package.
	c.	Void – REVISE the document Title Page with the next revision number and PROVIDE the Title Page only in the change package.
	3.	PREPARE the document revision in accordance with the appropriate standard for the document type as defined in Table 1.
	4.	PREPARE a Record of Revision to describe the change in accordance with Appendix C, Record of Revision.
	5.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
	a.	Minimum approvals needed for an engineering text document is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the FMP or EDC.
	b.	The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational or facility requirements.
	6.	PREPARE the release documentation for the revised engineering textual document.
	a.	For a revised engineering text document to be released with an FMP when the FMP is initially released, IDENTIFY the document in the FMP's Document Index and designate it as "R" (Revised).

Actionee	Step	Action
Engineer/ Author	b.	For a revised engineering text document to be released with an FMP when the FMP is work complete, IDENTIFY the document in the FMP's Document Index and designate it as "RWC" (Revise Work Complete).
	c.	For a revised engineering text document to be released separately from an FMP, PREPARE an EDC in accordance with Appendix B.
	7.	OBTAIN document approvals as identified on the FMP/EDC and Record of Revision.
	8.	SUBMIT the engineering text document and FMP/EDC to the IRM Release Station for processing, release, and record retention. PROVIDE a pdf and native file of the revised document to the IRM Release Station.

3.2.4   Vendor Information

VI Files are changed through use of VI File Supplements or Addendums.

• Supplement -- add data, information, pages to existing documentation within a VI File. Supplements are "inserted" into existing VI data in order to provide supplement information. An example of a VI File Supplement would be the addition of pages provided by the manufacturer to an operating manual contained within the VI File. A VI File Supplement package consists of:

    o   The data and/or documentation to be added into an existing VI File.

    o   A completed Engineering *Vendor Information (VI) Form* (A-6004-969) identifying the documentation to be added.

    o   The FMP or EDC authorizing the change to the VI File.

• Addendum -- refers to replacement or changing of data, information, or documentation within an existing VI file. An example of a VI File Addendum would be replacement of an older operating manual with a completely new manual provided by the manufacturer. If a component of a piece of equipment or system is replaced with a different component, a VI File Addendum is used to replace the previous components information with that of the newer component. A VI File Addendum package consists of:

    o   The data and/or documentation used to change or replace existing items within a VI File.

    o   A completed *Engineering Vendor Information (VI) Form* (A-6004-969) identifying the replacement documentation.

    o   The FMP or EDC authorizing the change to the VI File.

VI File Supplements are identified by adding "SUPPL" plus the next sequential number to the original VI File Number. If the original VI File Number is 18331, the first VI supplement would be 18831-SUPPL1, the second would be 18831-SUPPL2, etc.

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VI File Addendums are identified by adding "ADD" plus the next sequential number to the original VI File Number. If the original VI File Number is 18331, the first VI addendum would be 18831-ADD1, the second would be 18831-ADD2, etc.

If needed, check with IRM Central Files to ensure assignment of the correct Supplemental or Addendum number.

NOTE: *Changes to vendor drawings require creation of Altered Item Drawings as described in Section 3.1.1 of this procedure and PRC-STD-EN-40279.*

Actionee	Step	Action
Engineer/ Author	1.	DETERMINE need to revise an existing Vendor Information File.
	2.	DETERMINE the type of revision method:
		a. Supplemental – data, information, and/or documentation needs to be added to a VI File to "supplement" existing information.
		b. Addendum – data, information, and/or documentation needs to be replaced within an existing VI File.
	3.	COMPILE the VI File Supplemental or Addendum data, information, and/or documentation.
	4.	DETERMINE the VI File Supplemental or Addendum as follows:
		a. Supplement – add "SUPPL" plus the next sequential number to the original VI File Number (e.g., 18831-SUPPL1).
		b. Addendum – add "ADD" plus the next sequential number to the original VI File Number (e.g., 18831-ADD1).
	5.	PREPARE a *VI Form* (A-6004-969) in accordance with Appendix D.
	6.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
		a. Minimum approvals needed for a VI File is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the FMP or EDC.
		b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational or facility requirements.

Actionee	*Step*	*Action*
Engineer/ Author	7.	PREPARE the release documentation for the VI File Supplement or Addendum.
		a. For a VI File Supplement or Addendum to be released separately by an FMP when the FMP is initially released, IDENTIFY the VI File Supplement or Addendum in the FMP's Document Index and designate it as "R" (Revised).
		b. For a VI File Supplement or Addendum to be released with an FMP when the FMP is work complete, IDENTIFY the VI File Supplement or Addendum in the FMP's Document Index and designate it as "RWC" (Revise Work Complete).
		c. For a VI File Supplement or Addendum to be released separately from an FMP, PREPARE an EDC in accordance with Appendix B, Engineering Document Control Form.
	8.	OBTAIN document approvals as identified on the FMP/EDC and Engineering Vendor Information (VI) Form.
	9.	SUBMIT the VI File Supplement or Addendum change package to the IRM Release Station for processing, release, and record retention.

3.3   Supersedure or Cancellation of Change Documents

Previously released change documentation (FMPs or EDCs) are superseded or cancelled with FMPs or EDCs.

- Supersedure – Supersedes a previously released change document in its entirety and completely replaces the superseded change document.

- Cancellation – Cancels a previously released change document.

Previously released change documentation to be superseded or cancelled is identified in an FMP or EDC Document Index.

Actionee	*Step*	*Action*
Engineer/ Author	1.	DETERMINE need to cancel or supersede a previously released FMP or EDC.
	2.	DETERMINE whether the change document will be cancelled or superseded via an FMP or EDC.
	3.	PREPARE the FMP or EDC which will cancel or supersede the previously released change document. An FMP or EDC whose sole purpose is to cancel or supersede the previous change document may be prepared, or the cancellation/supersedure information may be included on an FMP/EDC performing other scope.

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Actionee	Step	Action
Engineer/ Author	4.	DETERMINE reviews and approvals needed for release using the Review Guidelines for Engineering provided on the CHPRC Central Engineering Web.
		a. Minimum approvals needed for an FMP or EDC cancellation or supersedure is the Author, DA/TA, and the DA/TA Manager. Required approvals are identified on the FMP or EDC.
		b. The Review Guidelines for Engineering provides guidance for reviews. Additional approvals may be requested based on organizational or facility requirements.
	5.	OBTAIN document approvals as identified on the FMP/EDC.
	6.	SUBMIT the new change documentation to the IRM Release Station for processing, release, and record retention.

4.0   FORMS

CHPRC Calculation Cover Sheet, A-6004-793
CHPRC Review Checklist, A-6004-797
Engineering Document Change, A-6004-684
Engineering Vendor Information (VI) Form, A-6004-969
Record of Revision, A-6004-786
Review Comment Record, A-6004-835
Vendor Information (VI) Form, A-6004-969

5.0   RECORD IDENTIFICATION

All records are required to be managed in accordance with PRC-PRO-IRM-10588, *Records Management Processes*. OCRWM records are also managed in accordance with PRC-PRO-QA-19579, *OCRWM Records Management*. Performance of this procedure may generate the following records.

Records Capture Table

Name of Record	Submittal Responsibility	Retention Responsibility	OCRWM Retention Schedule (if OCRWM Related)
Drawings	Preparer/DA	DMCS/IDMS	Lifetime
Specifications	Preparer/DA	DMCS/IDMS	Lifetime
Calculations	Preparer/DA	DMCS/IDMS	Lifetime
Acceptance Test Documentation	Preparer/DA	DMCS/IDMS	Lifetime
FDC	Preparer/DA	DMCS/IDMS	Lifetime
CDR	Preparer/DA	DMCS/IDMS	Lifetime
SDD	Preparer/DA	DMCS/IDMS	Lifetime
VI Files	Preparer/DA	DMCS/IDMS	Lifetime
Supporting Documents	Preparer/DA	DMCS/IDMS	Lifetime

6.0   SOURCES

6.1   Requirements

10 CFR 830, *Nuclear Safety Management*
CRD O 414.1C, *Quality Assurance*
CRD O 433.1A Supplement Rev 1, *Maintenance Management Program for DOE Nuclear Facilities*
PRC-RD-EN-1819, *CHPRC Engineering Requirements*

6.2   References
DOE-STD-3024, *Content of System Design Description*
CHPRC-00263, *Offsite Vendor Instructions for Preparation and Control of Engineering Drawings*
PRC-PRO-EN-2001, *Facility Modification Package Process*
PRC-PRO-EN-8016, *Design Change Notice Process*
PRC-PRO-EN-8336, *Design Verification*
PRC-PRO-EN-40271, *Engineering Design Process*
PRC-PRO-IRM-232, *Project Files Management*
PRC-PRO-IRM-10588, *Records Management Processes*
PRC-PRO-IRM-9679, *Administrative and Technical (Non-Engineering) Document Control*
PRC-PRO-NS-062, *Unreviewed Safety Question Process*
PRC-PRO-QA-19579, *OCRWM Records Management*
PRC-PRO-QA-20765, *OCRWM Personnel Training*
PRC-PRO-WKM-12115, *Work Management*
PRC-PRO-EN-286, *Testing of Equipment and Systems*
 PRC-STD-EN-40254, *Functional Requirements Document*
PRC-STD-EN-40255, *Functional Design Criteria*
PRC-STD-EN-40258, *Preliminary / Final Design Report*
PRC-STD-EN-40259, *Engineering Calculations*
PRC-STD-EN-40261, *Conceptual Design Report*
PRC-STD-EN-40279, *Engineering Drawing Standards*
PRC-STD-EN-40280, *Engineering Specifications*

7.0   APPENDIXES

Appendix A -   ENGINEERING DOCUMENT CHANGE (EDC) FORM
Appendix B -   RECORD OF REVISION
Appendix C -   ENGINEERING VENDOR INFORMATION (VI) FORM
Appendix D -   COMPOUND DRAWING CREATION

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Appendix A - ENGINEERING DOCUMENT CHANGE (EDC) FORM

An EDC form may be used when releasing or revising standalone engineering textual documents. An EDC form is available on site forms as *Engineering Document Change*, A-6004-684.

EDC are typically issued for single documents. If warranted, multiple related documents may be issued with a single EDC.

NOTE: *EDC page numbers are for the form only. Included documentation is paginated separately from the form.*

The following instructions provide guidance for preparing an EDC:

Block Number	Block Title	Instructions
Header	ECR-__-_____	Enter the EDCs ECR number obtained from the Document Management and Control System (DMCS).
1	Title/Key Words	Enter a Title that describes the action being made by this EDC (e.g. "Initial Release of CHPRC-XXXX"). Provide related Key Words that will aid future searches or queries in DMCS/IDMS.
2	Project No. / Work Package No.	Identify the Project Number and/or associated Work Package Number(s) if applicable. If not, enter NA.
3	Area	Identify the associated Area(s).
4	Building	Identify the associated Building(s).
5	Facility	Identify the associated Facility(s).
6	System No.	Identify the associated System(s). Use the SystemID from the CHPRC Central Engineering web site.
7	Release	For use by the IRM Release Station. The IRM Release Station release stamp shall be placed here.
8	USQ Required?	If within the scope of the USQ process (see PRC-PRO-NS-062, *Unreviewed Safety Question Process*), check either the USQ or CX box, enter the USQ or CX Number, and the name/initials of the person performing the determination. If not within the scope of the USQ process, enter NA.
9	Distribution	Enter the names and MSIN of persons on distribution for the EDC.
10	Description	Provide text that describes the purpose of the EDC (e.g. initial release, change, void). If the EDC is for the initial release of a document, provide a summary. If the EDC changes a document, describe the reason for the change.
11	Approvals	Identify the Approvers needed for the EDC. Minimum approvals needed are the Author (or Change Originator), DA/TA (Design Authority/Technical Authority), and the Engineering Manager/TA Manager (or DA/TA Manager). Add additional approval rows as needed.

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Block Number	Block Title	Instructions
12	Document Index	Identify the document(s) released, changed, voided, superseded or cancelled by this EDC. Indicate in the Action column which of the following actions is being performed by the EDC for each item listed in the Document Index: • New (N) -- The EDC issues a new text document into the DMCS. • Direct Revision (DR) -- The EDC issues a complete revision of the document in its entirety. • Page Change (PC) -- This EDC changes only individual pages of a document. Only the individual changed pages are provided with the EDC. • Cancel (C) -- This EDC cancels another EDC. • Supersedure (S) -- This EDC supersedes another EDC. • Void (V) – The EDC voids the document. Provide the Number and Title of the affected document. Provide the Rev (being issued) revision number of the document being issued or changed. New document are Rev. 0, revised documents use the next higher revision number. For a "Page Change" EDC, identify the pages being changed in Change Page(s) (NOTE: leave this field blank for other Actions). Check the Config Baseline box if the document is to become part of CM SSCs configuration baseline. Leave the box unmarked if it is not part of a configuration baseline. (NOTE: To be included in a CM SSCs configuration baseline, the correct SystemID must be identified in Block 6).
13	Potentially Affected Documents	Identify other documents that may be affected by the EDC. If no documents are identified, enter NA. Completion of this block is not mandatory but is encouraged. Information included will assist Technical Authorities for documents affected by this.

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Appendix B - RECORD OF REVISION

A *Record of Revision* (Form A-6004-786) shall be prepared in accordance with the following instructions for each revision to an engineering text document.

Block Number	Block Title	Instructions
1	Document Number	Enter the Number of the Engineering Document.
2	Title	Enter the Title of the Engineering Document.
3	Revision	Enter the revision number of the revised document. The revision number for the initial issue of a document is Rev. 0. Page Changes use the current revision number plus alpha characters (e.g. Rev. 0A, Rev. 0B, Rev. 1A, Rev. 1B, etc.). Direct Revision use the next numerical number in the sequence (e.g. Rev. 1, Rev.2, etc.).
4	Description of Change	Provide a brief summary of the change(s) made to the document. Identify page changes, addition, and deletions.
5	DA/TA Date	Obtain the Design Authority/Technical Authority approval signature and date.

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Appendix C - ENGINEERING VENDOR INFORMATION (VI) FORM

An Engineering VI Form may be used when releasing or revising Vendor Information Files. A VI form is available on site forms as *Engineering Vendor Information (VI) Form*, A-6004-969.

The following instructions provide guidance for preparing an Engineering VI Form:

Block Number	Block Title	Instructions
1	VI No.	Enter the VI Number obtained from the IRM Release Station.
2	FMP/EDC No.	Enter the FMP or EDC number authorizing release of the VI data into DMCS.
3	Rev. No.	Enter the revision number of the FMP/EDC.
4	Cost Center	Provide the number of the Cost Center funding the entry of the VI data into DMCS.
5	CACN/COA	Provide the charge code for entry of the VI data.
6	Date	Enter the date.
7	Page	Enter the page number and total number of pages of the form. Page numbers are for the form only. Included VI data is paginated separately from the form.
8	Supplemental No.	If the VI action is to supplement or add to an existing VI file, enter the supplemental or addendum number. IRM Central Files can provide this number if needed.
9	Project Number	If associated with a formal EPC project, enter the Project Number.
10	PO Number	Identify the Purchase Order (PO) Number authorizing the purchase.
11	Equipment No./Title	Enter the equipment number and title.
12	Bldg./Area No.	Enter the building number(s) and Area(s) where the equipment is installed.
13	System No.	Enter the SystemID of the system(s) in which the equipment is installed.
14	Manufacturer/Vendor Name	Enter the complete name of the manufacturer (NOTE: The supplier name is not entered).
15	DA/SE Name	Print the Design Authority/System Engineers (DA/SE) name. The DA/SE signs and enters the date the form is signed.
16	Distribution	Provide the number of copies, Name, and MSIN of those on distribution for the VI File.
17	Item	Provide a sequential number for Items in the VI File.

Block Number	Block Title	Instructions
18	Format	Identify the format of the VI data: • DWG = AutoCad drawing file • MSFT = Microsoft Format file (Word, Excel, Access, PowerPoint) • PDF = Portable Document Format • HC = Hardcopy
19	Document Description	Enter the description of the Vendor Information
20	Reference	Identify the engineering document detailing where the item is installed/schematically located or the specification and paragraph that authorized the procurement.

Appendix D - COMPOUND DRAWING CREATION

Compound Drawings are a combination of a raster image and vector data for a specific electronic drawing. Compound Drawings are created from manual drawings and provide a cost effective method for converting manual drawings into electronic drawings when needed for CHPRC activities. Compound Drawings are stored as .tif files (raster image) and .dwg files (vector data) in a common folder. Once created, Compound Drawings are configuration controlled within the Document Management and Control System (DMCS).

AutoDesk's Raster Design is imaging software that extends AutoCAD so that it can display and plot raster images along with a CAD files vector data. While the normal AutoCAD image is vector data, raster images are obtained by scanning a manual drawing and saving the file in a raster image format (e.g. .tif, .jpg, etc.). One can use various raster image editing software to change, modify, or use these scanned drawings but Raster Design allows editing and viewing of both the vector and raster image together transparently within AutoCAD, giving the appearance these images are one file. The AutoCAD command used will determine which image is edited.

AutoDesk does not provide a method to "bind, explode, or convert" these two files into one image file. Therefore the final output will be a Compound Drawing consisting of two files:

- One .dwg file containing the vector image/data.
- One .tif file containing the raster image/data.

These two files are combined into one folder and stored in DMCS as the Compound Drawing. The raster image part of a Compound Drawing is quite large and will take longer to "Final Plot" as compared to a conventional AutoCAD drawing. Compound Drawings can be viewed and plotted on any AutoCAD workstation but can only be revised using Raster Design.

Creation of a Compound Drawing

The following steps provide guidance on creating a Compound Drawing:

Actionee	Step	Action
Designer/ Drafter	1.	Obtain the manual drawing to be converted to a Compound Drawing from IRM Central Files.
	2.	Scan the manual drawing with a high resolution scanner (300 pixels/inch or higher) to obtain a scanned image. The scanned image may be saved as .tif, .jpg, or other similar file type. Compressed .tif is preferred.
	3.	Create a new drawing in AutoCAD using the appropriate discipline template.
	4.	Import/Insert the raster image into AutoCAD. This will start Raster Design.

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Actionee	*Step*	*Action*
Designer/ Drafter	5.	Save this drawing and raster image to a common folder using the drawing number less extension for the folder name (e.g., H-4-123456). Save the two image files to this folder using the drawing name and appropriate file extension for each file (e.g., H-4-123456.dwg and H-4-123456.tif).
	6.	Perform the following actions, saving often as AutoCAD's autosave only saves the AutoCAD file and not the image file:
		a. Clean up the image using Raster Design Cleanup commands Deskew and Despeckle.
		b. Resize the raster image to 28"x40" and move origin to 0,0 using AutoCAD commands.
		c. Remove raster image of title, drawing number and sheets, building numbers, index numbers and last revision number. Replace these items with AutoCAD text and metadata using HTP.
		d. Move around the image removing speckles, unwanted lines, and smudges captured in the scan using Raster Design Remove commands. Check the image for unreadable geometry and text. Use AutoCAD vectors, text, and lines to replace raster data, or use Raster Design to copy readable raster images.
	7.	Revise the drawing as needed.
	8.	WHEN revision is complete, THEN these two files are released into DMCS as a "Compound Drawing" with HTP.