

Ownership matrix	<b>RPP-27195</b>
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## TABLE OF CONTENTS

1.0	PURPOSE AND SCOPE .....	2
2.0	IMPLEMENTATION .....	2
3.0	RESPONSIBILITIES.....	2
3.1	Design Engineering.....	2
3.2	Preparer (Designer/Drafter) .....	2
3.3	Checker .....	2
3.4	Engineering Manager.....	3
3.5	Design Engineer (Design Agent).....	3
3.6	Discipline Engineering Group Lead .....	3
3.7	Engineering Peer Reviewer.....	3
3.8	Design Authority.....	3
4.0	PROCEDURE .....	4
4.1	General Requirements.....	4
4.2	Drawing Numbering, Categorization, and Creation .....	6
4.3	Drawing Preparation .....	8
4.4	Sketches .....	10
4.5	Engineering Data Transmittal Preparation.....	10
4.6	Review and Approval of the EDT Drawing Package .....	13
4.7	Drawing Revision .....	18
4.8	Changing Drawing Ownership .....	18
4.9	ECN and DCN Incorporation.....	19
4.10	Field Verification.....	21
4.11	Establishing and Controlling Facility, Project, and Shared Drawings.....	22
5.0	DEFINITIONS.....	22
6.0	RECORDS .....	24
7.0	SOURCES.....	24
7.1	Requirements .....	24
7.2	References.....	25

## TABLE OF FIGURES

Figure 1. Drawing Process.....	26
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## TABLE OF TABLES

Table 1. Drawing Number Series.....	8
-------------------------------------	---

## TABLE OF ATTACHMENTS

ATTACHMENT A - DRAWING CATEGORIES.....	28
ATTACHMENT B – CRITERIA FOR AS-BUILT DRAWINGS.....	29

## 1.0 PURPOSE AND SCOPE

(7.1.11, 7.1.12)

This procedure describes the process used to prepare, verify, approve, and revise two and three dimensional engineering drawings initiated by or for Tank Operations Contractor (TOC) personnel. This procedure applies to all H series drawings that are released into SmartPlant® Foundation (SPF) by or for the TOC. If a drawing is owned by another contractor, i.e., HMIS, the drawing will not exist in SPF, and as such must be transferred to WRPS before changes can be made to the drawing. See section 4.8.

Any deviation from this procedure must have the approval of the procedure owner.

## 2.0 IMPLEMENTATION

This procedure is effective on the date shown in the header. There may be specific circumstances, as discussed in Section 4.6, in which electronic review and approval is not possible or permitted, in which case manual/hard copy review and approval may be required. As of Revision E to this procedure, the Engineering Data Transmittal (EDT) is no longer to be used for release of text documents.

## 3.0 RESPONSIBILITIES

### 3.1 Design Engineering

- Authorizes drafter/designer (“TOC Designer” role) access to SPF to allow: checkout of existing drawing files to be used for revision updates to incorporate Drawing Change Notices (DCN) and Engineering Change Notices (ECN) (including legacy Document Modification (DM) and Facility Modification (FM) ECNs); creation and release of new drawings; and support for development and maintenance of auxiliary support files and information for the preparation of drawings. The available files and information include:
  - Drawing start models (AutoCAD template drawings)
  - Copies of engineering change notices and associated files
  - Files of existing, released drawings
  - Symbol libraries (e.g., architectural, electrical, control systems, Piping & Instrument Diagrams [P&ID]).
- Ensures timely incorporation of appropriate DCNs and work-completed ECNs into drawings.
- Creates ECN attachment pages for new modification work to be performed in TOC facilities.

### 3.2 Preparer (Designer/Drafter)

Prepares/modifies drawings in accordance with TOC procedures and standards.

### 3.3 Drafting Checker

- Checks the drawing in accordance with TFC-ENG-DESIGN-C-52 and TFC-ENG-DESIGN-P-54.

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 3 of 30 February 17, 2021</b>
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- Verifies ECN changes/manual to AutoCAD conversions are correctly incorporated and complete, and that TFC-ENG-STD-10 drafting requirements are met.

### **3.4 Design Verifier (Checker)**

- Checks the drawing in accordance with TFC-ENG-DESIGN-C-52 and TFC-ENG-DESIGN-P-54.
- Verifies ECN changes/manual to AutoCAD conversions are correctly incorporated and complete.

### **3.5 Peer Reviewer**

Performs an informal technical review to assure technical accuracy and completeness of documents prior to wider review and approval as described in TFC-ENG-DESIGN-C-52. A peer review is normally performed by a peer of the originator.

### **3.6 Responsible Engineering Manager**

Ensures quality of the drawing; i.e., title blocks are correct, data is presented logically, and the drawing adheres to this procedure and TFC-ENG-STD-10.

### **3.7 Design Engineer (Design Agent)**

- Ensures the design depicted by the drawing is consistent with the existing facility configuration, related calculations, specifications, requirements and criteria, and prepared in accordance with the applicable procedure(s).
- Ensures the technical accuracy of the drawing, sufficient justification, completeness of design, and identification of applicable affected documents.
- Works directly with the preparer to ensure the drawings and engineering work supporting the drawings is performed in a quality manner in accordance with TOC procedures and standards.

### **3.8 Discipline Engineering Group Lead**

- Is Design Service's discipline-specific lead engineer.
- Ensures ECNs/manual to AutoCAD conversions listed in the revision block are correctly incorporated in the drawing.
- Approves non-technical baseline affecting drawings/revisions in place of the DA (e.g., work-completed ECN incorporations).

### **3.9 Engineering Peer Reviewer**

- Provides an engineering discipline specific review of the drawing.
- Is knowledgeable in the area of design for which they are reviewing.
- Is qualified to perform similar design activities by training or experience.
- Is only required for review of new drawings and direct revisions to drawings.

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<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 4 of 30 February 17, 2021</b>
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### 3.10 Design Authority

- Approves technical baseline affecting drawings for initial release.
- Ensures the design is technically acceptable.
- Ensures the design has received the proper reviews and approvals.
- Ensures the design process was followed.
- Determines project drawings to be as-built.

#### 3.10.1 Project Engineer Design Authority

A Project Engineer having design authority (DA) responsibility delegation for a particular project.

#### 3.10.2 System Engineer Design Authority

A Cognizant System Engineer (CSE) having DA responsibility delegation for a particular Structure, System, or Component (SSC).

### 4.0 PROCEDURE

(7.1.3, 7.1.8)

See Figure 1 for drawing process flow diagram.

### 4.1 General Requirements

1. The requirements for timely incorporation of appropriate DCNs and work-completed ECNs into drawings are based on the following Drawing Categories:
  - Essential drawings - Revise within 30 calendar days from the first work-completed ECN work-completion date.
  - Support drawings with AutoCAD file - Revise within 60 calendar days from the third work-completed ECN work-completion date.
  - Support drawings without AutoCAD file - Revise within 90 calendar days from the sixth work-completed ECN work-completion date.
  - Reference drawings – Are not kept current; however, outstanding work-completed ECNs shall be incorporated prior to re-categorizing the drawing as either an essential or support drawing.
2. Drawing Configuration Management:
  - a. Each active drawing is assigned one of the following Project Status Codes in SPF to identify the current drawing use:
    - 1) **Facility:** Used to designate drawings used to support operations of a facility.
    - 2) **Project:** Used to designate new drawings developed by a project for design, fabrication, and construction.

<b>Engineering Drawings</b>	<b>Manual Document</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering</b>
	<b>Page</b>		<b>5 of 30</b>
	<b>Issue Date</b>		<b>February 17, 2021</b>

- 3) **Shared:** Used to designate existing facility drawings that are impacted by a project and subject to modification by a project.
- b. All new drawings and drawing sheets that either modify existing systems within the TOC facilities or construct new systems shall be designated as Project status at the time of their release. New drawings in Project Status shall have a Drawing Category of REFERENCE. The new drawings and drawing sheets shall remain in Project status until the project is turned over to operations at which time they shall be changed to Facility status and the Drawing Category will be changed to ESSENTIAL OR SUPPORT as determined by the System Engineer DA. Any existing drawings that are being modified by a project shall be placed into Shared status and remain in Shared status until the project is turned over to Operations, at which time they shall be returned to Facility status.
    - 1) All new drawings and drawing sheets shall be placed into Project Status by identifying a Project Status Code of “Project” in SPF during initial drawing creation.
    - 2) Changing the Project Status Code for an existing released drawing is performed by SPF Administration personnel and requires an email to ^SPF Administration.
  - c. New drawings and drawings sheets that are being placed in Project or Shared status shall have the associated Project Number identified in SPF.
    - 1) Project numbers shall be identified in SPF during initial creation of each new project drawing.
    - 2) Project numbers shall be added to existing facility drawings being placed into shared status by SPF Administration personnel with an email.
    - 3) Existing project numbers are selectable in SPF.
    - 4) New project numbers will need to be added to SPF prior to being able to be used. They will need to be issued via the Project Navigator System (PNS) per TFC-PRJ-PM-C-02, and then added to SPF. Contact ^SPF Administration to get new project numbers added to SPF.
3. An Engineering Data Transmittal (EDT) document shall be used to transmit all drawings for review, approval, and initial release or revision to document control as discussed in Section 4.5.
    - Project numbers must be provided on the EDT and on the transmitted drawings, for drawings being released in project or shared status.
  4. Each Essential and Support drawing is assigned a Design Authority Designator in SPF to identify the Primary and Backup DA assigned responsibility for the drawing.
    - a. A system (SYS) DA Designator indicates the primary drawing responsibility resides with the System Engineer DA.

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 6 of 30 February 17, 2021</b>
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- b. A project (PRJ) DA Designator indicates the primary responsibility for the drawing resides with the Project Engineer DA.
5. Sketches for Lockout/Tagout, or Excavation, Shoring or Trenching are documented and approved using the Lockout/Tagout Sketch Sheet (A-6003-128) or the Excavation, Shoring and Trenching Sketch Sheet (A-6003-916).  
  
Lockout/Tagout and Excavation, Shoring and Trenching Sketches are not to be used to correct errors or inconsistencies in drawings.
  6. Drawings are not to be used to control text only information. Text documents are controlled by TFC-ENG-DESIGN-C-25.
  7. Requests for new DA Designators, Project Numbers, Buildings/Facilities/Portables, and Systems to be added to SPF shall be identified as soon as possible by contacting ^SPF Administration.
  8. For information on the processing and categories of vendor drawings, see TFC-ENG-STD-10, Section 3.2.4.
  9. **Drawing Category Changes:**
    - a. Drawings with an Essential category being changed to Support or Reference require a revision.
    - b. Drawings with a Support OR Reference category being changed to Essential require a revision.
    - c. Drawing category changes from Support to Reference OR Reference to Support may be done by sending an email request to ^SPF Administration.
  10. Drawings that are having their Drawing Category changed from Reference to either Essential or Support must have all of their outstanding work completed ECNs/DCNs incorporated, and must have a field walkdown performed to verify existing conditions and the drawing released as a new revision via an EDT. This can be done concurrent with the Drawing Category revision/change. A drawing going from reference to support or essential must be signed as if it were a new drawing, see section 4.3.12. The releasing EDT must be signed as if the drawing being released were a new drawing, see section 4.5.6.b. Drawings being changed from Essential or Support to Reference do not require a field walkdown, nor do their associated work completed ECN(s)/DCN(s) need to be incorporated. However, a revision is required for drawings being changed from Essential to Reference, see 4.1.9.a.
  11. Changes made to Waste Transfer Piping Diagram P&ID's may require initiating a change to update the Electronic Routing Board (ERB). Refer to TFC-ENG-FACSup-C-41 for instructions.

#### 4.2 Drawing Numbering, Categorization, and Creation

Drawings are defined by a unique drawing number using a series, sequence and sheet identifier. Drawing sheets are created as a new Drawing document in SPF. Use Table 1 to determine the

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 7 of 30 February 17, 2021</b>
-----------------------------	----------------------------------------	--------------------------------------	----------------------------------------------

drawing number series for all new TOC Facility drawings; use the Hanford Document Numbering System (HDNS) to determine the drawing sequence number, except for with drawings controlled by H-14-020000. Existing drawings that are re-categorized shall retain their original numbers, except for H-2 or H-6 series drawings. Use SPF to determine the next available sheet number.

- |                     |                                                                                                                                                                                                                                                                                                                                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Engineering Manager | <ol style="list-style-type: none"> <li>1. Assign a qualified design engineer to develop the design and oversee the production of the required drawings. (7.1.1)</li> <li>2. Assign a qualified designer/drafter to prepare the required drawings.</li> <li>3. Provide design and schedule requirements to the designer/drafter and design engineer.</li> </ol> |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

NOTE: Only Essential and Support drawings for initial release require DA approval prior to release.

- |                           |                                                                                                                               |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Preparer/Design Authority | <ol style="list-style-type: none"> <li>4. Working with the DA, determine the drawing category, using Attachment A.</li> </ol> |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------|

- |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Preparer | <ol style="list-style-type: none"> <li>5. Create a new Drawing document in SPF: <ol style="list-style-type: none"> <li>a. Identify the drawing title. <ul style="list-style-type: none"> <li>• Drawing Title Line 1, 2, and 3 should be entered in SPF exactly how they are required to appear in the drawing title block.</li> </ul> <ol style="list-style-type: none"> <li>1) Use Upper Case Text only for the drawing title.</li> </ol> </li> <li>b. In Table 1, identify the drawing number series. <p>NOTE: A new drawing is the initial release of a drawing depicting new work to be performed or depicting new information.</p> </li> <li>c. For new drawings, obtain the drawing sequence from the HDNS or H-14-020000 as appropriate. <p>NOTE: A new drawing sheet is the initial release of a sheet added to an existing drawing set, depicting new work to be performed or new information.</p> </li> <li>d. For new drawing sheets being added to an existing drawing set, obtain the next available sheet number from SPF.</li> <li>e. Identify the drawing category in SPF.</li> <li>f. For new drawings, identify the Project Status Code as “Project” in SPF in accordance with Section 4.11.</li> <li>g. Determine and enter applicable Drawing Index Codes in SPF.</li> </ol> </li> </ol> |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Table 1. Drawing Number Series.**

<b>Drawing Series</b>	<b>Usage Description</b>
H-2-XXXXXX	Use for 200 Area Effluent Treatment Facility (ETF), Liquid Effluent Retention Facility (LERF), Treatment Effluent Disposal Facility (TEDF) and Tank Farm facility reference, support, and essential drawings except those drawings for the single-shell and double-shell tank farms.
H-6-XXXXXX	Use for 600 Area drawings within WRPS' scope (outside the 200 East and 200 West Areas).
H-9-XXXXXX	Use as a Vendor Item Control Drawing for establishing design interfaces and dimensional envelopes for procuring engineered Structures, Systems, and Components.
H-13-XXXXXX	Use for topographic, electrical distribution system and Hanford Facility Resource Conservation and Recovery Act (RCRA) permit maps.
H-14-0XXXXX	Use for essential drawings for the single-shell and double-shell tank farms. The H-14-0XXXXX drawing numbers are assigned and controlled in accordance with drawing H-14-020000.  Essential drawings for Tank Retrieval/Closure Projects may be identified as H-14-1XXXXX drawings.
H-14-1XXXXX	Use for project or facility reference or support drawings for the single-shell and double-shell tank farms.
H-15-XXXXXX	Use for three dimensional drawings.
H-16-XXXXXX	Use exclusively for the LAWPS project.
SK-2-XXXXXX	Use for drawings that will not become part of the permanent facility. An SK-2 sketch may be approved and released like an H-series drawing or may be included as a figure or attachment in a released document.

### 4.3 Drawing Preparation

Preparer 1. Prepare a new drawing sheet in accordance with TFC-ENG-STD-10.

NOTE: Setting these values will ensure that a PDF of the native CAD file is created by SPF.

2. Using "Files → Attach File," attach the CAD file in SPF.

a. Set "Include in Final Record PDF" to "Yes."

b. PDF Order = 1.

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 9 of 30 February 17, 2021</b>
-----------------------------	----------------------------------------	--------------------------------------	----------------------------------------------

3. Ensure the proper level of protection is identified and provided for all classified and unclassified information in accordance with MSC-PRO-RM-184 and MSC-PRO-SEC-54603.
4. Using the “Document → Update latest Revision” in SPF, complete each entry on the main details form for the drawing sheet.
5. For drawings in Project or Shared Status, identify the Project Number/s in the “Project Details” section in SPF.
6. Using TFC-ENG-STD-46, determine if the drawing/sketch is a technical baseline document and complete the “Technical Baseline Details” section.
  - a. Complete the Technical Baseline Document field.
  - b. If the drawing is technical baseline, identify the Design Authority Designator.

NOTE 1: All drawings are required to have at least one related building, facility, structure, or portable identified in SPF prior to submission for review and approval.

NOTE 2: If a drawing is associated with multiple buildings or structures, all associated buildings, facilities, structures, and portables should be identified.

NOTE 3: If the drawing is associated with a lower level structure in a farm or facility, such as a valve pit, identify the primary farm or facility in addition to the lower level structure (e.g., for pit 241-AN-01A, also identify 241-AN tank farm as related).

7. Identify the related buildings, facilities, or portables associated with the drawing in SPF.
8. In SPF, identify the related system/s associated with the drawing, as applicable.

NOTE: It is essential to carefully identify all equipment depicted on the drawing (e.g., for P&IDs all Equipment Identification Numbers [EINs] shown on the drawing should be identified and related in SPF).

9. In SPF, identify all related equipment that is identified on the drawing.
10. In SPF, identify any documents that are related to the drawing, such as calculations or specifications, as applicable.

NOTE 1: Identifying reviewers/approvers for individual drawing sheets can be performed at the time the EDT is prepared and the drawing sheet is added to the EDT for transmittal.

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 10 of 30 February 17, 2021</b>
-----------------------------	----------------------------------------	--------------------------------------	-----------------------------------------------

NOTE 2: Approval signatures recorded by either telecon or email will not be noted as such in the signature blocks of the drawings, but will be noted in the metadata in SPF.

11. Using “Assign Responsibilities,” assign the individuals identified as reviewers/approvers to the individual drawing sheet(s). For new drawings, the minimum approvers include:

- Preparer/Drafter
- Drafting Checker
- Design Engineer/Design Agent
- Engineering peer reviewer
- Design Authority (for technical baseline drawings)
- Design Engineering Group Lead (DEGL) (for non-technical baseline drawings).

12. Prepare an EDT in accordance with Section 4.5.

#### 4.4 Sketches

Sketches (SK-2-XXXXX) are not required to follow TFC-ENG-STD-10, with the exception of the title block information. SK – series drawings shall be prepared as temporary drawings and shall depict:

- Experimental equipment
- Limited use test equipment
- Limited use interface information (i.e., conceptual designs, etc.)
- Short-term application (i.e., temporary changes in design to facilities, hardware and/or equipment)
- Design criteria to equipment vendors.

SK-series drawings shall not be used for permanent records. If the SK is used for a prototype which is incorporated into a permanent facility, it shall be “As-Built” and renumbered as an H-drawing.

SK numbers shall NOT be changed to H numbers by changing the SK to H; complete new numbers are to be assigned.

SK drawings used for conceptual designs or to convey design criteria to equipment vendors shall be identified as conceptual or Vendor Information using 0.25 inch high lettering immediately above the title block.

#### 4.5 Engineering Data Transmittal Preparation

The Engineering Data Transmittal (EDT) is used to transmit a drawing package consisting of new drawings and/or drawing revisions for review, approval, and submittal to document control for release into the records system. The EDT allows individual drawing sheet approvals to be

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 11 of 30 February 17, 2021</b>
-----------------------------	----------------------------------------	--------------------------------------	-----------------------------------------------

obtained together with overall drawing package approvals. It is intended that technical approvals of the drawing should be captured directly against the specific drawings to which they apply. Transmittal approvals should contain only the minimal approvals necessary for the transmittal together with approvals that apply to the entire package, such as USQ review.

NOTE 1: Tank farm Route Drawings must be routed to the Civil/Structural EDL for review and approval when they are released by direct revision.

NOTE 2: Instructions for filling in the EDT fields are available on the SPF intranet web page under SPF Form Instructions.

Originator/  
Design Engineer

1. Create a new Engineering Data Transmittal document in SPF, which will assign the EDT number, and complete each entry on the EDT form, as applicable.
2. Perform a Process Hazard Analysis (PrHA) screening in accordance with TFC-ENG-DESIGN-C-35.
  - a. If this screening results in the need for a PrHA, perform it in accordance with TFC-ENG-DESIGN-C-47.
  - b. Identify the PrHA Number in SPF, or NA if applicable.
3. Using TFC-ENG-DESIGN-C-52, determine if design verification is required.
  - a. If required, check the design verification required field as “Yes” in SPF.
  - b. Perform design verification in accordance with TFC-ENG-DESIGN-C-52 and TFC-ENG-DESIGN-P-17.
4. Add the drawings to be transmitted for review and approval to the EDT under the “Transmitted Documents” tab in SPF.

NOTE 1: SPF allows multi-selection of drawings under the transmitted documents tab, allowing reviewers and approvers to be assigned to multiple drawings at once.

NOTE 2: For new drawings, the minimum approvers include:

- Preparer/Drafter
- Drafting Checker
- Design Engineer/Design Agent
- Engineering Peer Reviewer
- Design Authority (for technical baseline drawings)
- DEGL (for non-technical baseline drawings).

NOTE 3: For drawing revisions (direct revisions and ECN/DCN incorporation), the minimum approvers include:

- Preparer/Drafter

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 12 of 30 February 17, 2021</b>
-----------------------------	----------------------------------------	--------------------------------------	-----------------------------------------------

- Drafting Checker
  - Design Authority (for direct revisions of technical baseline drawings only)
  - DEGL (ECN/DCN incorporations and direct revisions of non-technical baseline drawings).
5. Identify reviewers and approvers for each drawing sheet being transmitted.
- a. If not already performed during drawing preparation, use “Assign Responsibilities” from the Transmitted Documents tab to assign the individuals identified as reviewers/approvers to the individual drawing sheet(s).

NOTE 1: Either the Design Authority or DEGL may act as the Design Engineer. In SPF, Design Engineer is mandatory on both new drawings and drawing revisions.

NOTE 2: DA approval on drawing revisions to technical baseline drawings is not required since that approval is obtained on the ECN.

- b. If the DA or DEGL acts as Design Engineer, assign the user name of the DA/DEGL as both the Design Engineer and DEGL.
- DA approval on drawing revisions to technical baseline drawings is not required since that approval is obtained on the ECN.

6. Identify reviewers and approvers for the overall package approval.

NOTE 1: Checking is performed at the individual drawing level, not at the package level. Checking is performed by a combination of the Drafting Checker, Design Engineer, Engineering Peer Reviewer and DEGL/Design Authority as applicable. For drawing revisions, fewer approvals are required since the review and approval of the design occurs on the ECN/DCN in accordance with TFC-ENG-DESIGN-C-06.

NOTE 2: Approval signatures recorded by either telecon or email will not be noted as such in the signature blocks of the drawings or the EDT, but will be noted in the metadata in SPF.

- a. Using TFC-ENG-DESIGN-C-52, identify independent reviewers/approvers using the “Approval Designator” field in the “Approvals” section of the drawing’s main details form in SPF.

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 13 of 30 February 17, 2021</b>
-----------------------------	----------------------------------------	--------------------------------------	-----------------------------------------------

- 1) Use Table 1 of TFC-ENG-DESIGN-C-52 to determine drawing review/approval, including drawings containing multi-discipline review/approval.

NOTE 1: For new drawings and direct drawing revisions, the minimum approvals on the EDT include:

- EDT Originator
- Engineering Peer Reviewer
- Design Verifier (if required by TFC-ENG-DESIGN-C-52)
- Engineering Manager
- USQ Evaluator (assigned later).

NOTE 2: For drawing revisions (ECN/DCN incorporation), the minimum approvals include:

- EDT Originator.

- b. Identify EDT reviewers/approvals either from right clicking on the EDT and selecting “Assign Responsibilities” or navigating to the “Transmittal Approvals” tab in the EDT Update Latest Revision form and clicking the “Assign Responsibilities” button.

NOTE: SPF will perform automatic distribution of the released EDT to other SPF users identified on the Distribution tab.

7. Enter the distribution list for the EDT on the “Distribution” tab in SPF.
  - a. If distribution is required to non-SPF users, include a separate list of external distribution as an attachment to the EDT, and check “controlled distribution” on the “Document Control/Clearance review” tab in SPF, which will prompt document control to make a manual distribution to those users.

#### 4.6 Review and Approval of the EDT Drawing Package

The standard method to be used for review and approval of drawings is electronic review and approval in SPF. There may be specific circumstances, as discussed below, in which electronic review and approval is not possible or permitted, in which case manual/hard copy review and approval may be required.

WAC 196-23-070 requires either a “wet signature” or a true digital signature by the professional engineer (PE). Electronic approvals provided by SPF and most other on-site electronic approval systems do not currently meet the full requirements for a true digital signature. Therefore,

drawings requiring PE signature and stamping, will need be approved by the PE in hard copy form, and signed by hand. The stamped and signed drawing will be submitted to document control, which will scan the drawing to PDF. Because of this current limitation on electronic approval of PE signed and stamped drawings, it is recommended that PE stamping be only requested where absolutely required.

For electronic review and approval, follow Section 4.6.1. For manual review and hard copy approval, follow Section 4.6.2.

#### 4.6.1 Electronic Review and Approval

This section applies when a new drawing sheet is being prepared. When a revision to an existing drawing occurs or a new sheet to an existing drawing is being added due to ECN incorporation, proceed to Section 4.7.

NOTE: The individual that submits the EDT to the workflow will be assigned the tasks to resolve comments and ensure package is ready for submittal to the next stage of the workflow.

Originator/Design Engineer

1. Using “Workflow → Attach Workflow” in SPF, submit the EDT drawing package (drawing sheets with related documentation and background information) to the assigned reviewer(s) in SPF via the EDT workflow.

NOTE 1: The specific drawings that need to be reviewed by each reviewer can be identified on the “Document Approvals” tab of the EDT.

NOTE 2: Approval signatures recorded by either telecon or email will not be noted as such in the signature blocks of the EDT but will be noted in the metadata in SPF.

Identified Reviewer(s)

2. Perform technical reviews for transmitted drawings attached to the EDT in accordance with TFC-ENG-DESIGN-C-52. (7.1.1)

Originator/Design Engineer

3. Review and reconcile the comments received.
  - a. If there are no comments, proceed to step 8.
  - b. If there are comments, identify the comments to be resolved to the preparer/designer, and proceed to step 4.

Preparer

4. Review and incorporate the reviewers’ and checker’s comments into the CAD file.
  - a. Resolve conflicts and discrepancies, as necessary, with the reviewer, drafting checker, and the lead discipline design engineer.
  - b. As required, provide a copy of the drawing sheet for back checking.

- |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Originator/Design Engineer   | <p>5. If changes were made to the drawing package/CAD files to resolve comments, resubmit for another review cycle in order to regenerate a new PDF.</p> <p>6. If a Review Comment Record (RCR) was used to collect comments, ensure that all comments have been documented as resolved on the RCR and all final approvals are completed on the form.</p> <p>7. Once all comments have been resolved, submit the EDT package for approval.</p>                                                                                                                                                                                                                                                                                               |
| Individual Drawing Approvers | <p>8. Approve assigned drawings as indicated on “Document Approvals” tab in SPF, verifying/indicating the transmitted drawings are:</p> <ul style="list-style-type: none"> <li>• Technically correct</li> <li>• Complete and compliant with requirements</li> <li>• Appropriate reviewers were selected</li> <li>• Appropriate approvers were selected</li> <li>• Comments were resolved.</li> </ul> <p>NOTE: Drawing approvals recorded in SPF will be electronically transferred to the AutoCAD drawing title block.</p> <p>9. Approve the drawings by selecting the drawing and specific responsibility to be approved, right clicking “Record Signature.”</p> <p>NOTE: This may be verified by reviewing the Document approvals tab.</p> |
| Originator/Design Engineer   | <p>10. Verify that all approvals have been received on all drawings, and submit the EDT package for USQ Review.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| USQ Evaluator                | <p>11. Perform a USQ review in accordance with TFC-ENG-SB-C-03:</p> <ul style="list-style-type: none"> <li>a. Record the USQ number in SPF using “Update Latest Revision.”</li> <li>b. Approve using “Record Signature” on “Transmittal Approvals” in SPF.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| PrHA Lead                    | <p>12. If applicable, verify or add applicable PrHA Screening Form No.</p> <ul style="list-style-type: none"> <li>a. If not already entered, find and relate the applicable PrHA screening number in SPF using “Update Latest Revision.”</li> <li>b. Approve using “Record Signature” on “Transmittal Approvals” in SPF.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                          |
| Originator/Design Engineer   | <p>13. Verify the users assigned to approve the EDT are still correct and submit for final approval of the EDT.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| EDT Approvers                | <p>14. Approve the overall EDT package, verifying/indicating:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

- All drawings have been reviewed and approved
- The package is complete and compliant with requirements
- Comments were resolved
- Appropriate reviewers and approvers were selected
- The EDT is complete and ready to submit for release.

Originator/Design Engineer 15. Submit the EDT drawing package to the Document Service Center (DSC) via the workflow for release in SPF and transfer of record PDF copies to IDMS and DMCS.

#### 4.6.2 Manual/Hard Copy Review and Approval

Originator/Design Engineer 1. Provide a copy of the drawing package (drawing sheets with related documentation and background information) to the assigned reviewer(s).

Identified Reviewer(s) 2. Perform technical reviews for transmitted drawings attached to the EDT in accordance with TFC-ENG-DESIGN-C-52. (7.1.1)

Originator/Design Engineer 3. Review and reconcile comments received.

- a. If there are no comments, proceed to step 6.
- b. If there are comments, identify the comments to be resolved to the preparer/designer and proceed to step 4.

Preparer 4. Review and incorporate the reviewers' and checker's comments into the CAD file.

- a. Resolve conflicts and discrepancies, as necessary, with the reviewer, drafting checker, and the lead discipline design engineer.
- b. As required, provide a copy of the drawing sheet for back checking.

Originator/Design Engineer 5. If changes other than minor editorial changes were made to the drawing package/CAD files to resolve comments, resubmit for another review cycle.

6. If an RCR was used to collect comments, ensure that all comments have been documented as resolved on the RCR and all final approvals are completed on the form.

Preparer 7. Once all comments have been resolved, submit all final CAD files into SPF and plot/print the drawings and EDT for approval and release.

NOTE: Performing a check out/in process in SPF updates the PLOT ID number and updates the drawing title block to include the PLOT ID and stores the PLOT ID in the SPF database.

- |                            |     |                                                                                                                                                                                                                                                                                                               |
|----------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | a.  | Ensure all final AutoCAD drawing files are checked back in to SPF.                                                                                                                                                                                                                                            |
|                            | b.  | Open the drawing files in AutoCAD and plot the drawing/s for approval and release.                                                                                                                                                                                                                            |
|                            | c.  | Print the EDT for approval.                                                                                                                                                                                                                                                                                   |
| Originator/Design Engineer | 8.  | Compile a final copy of the drawing package for approval.                                                                                                                                                                                                                                                     |
| Preparer                   | 9.  | Approve the drawing by printing name, signing, and dating the Drafter approval block.                                                                                                                                                                                                                         |
| Drafting Checker           | 10. | Approve the drawing by printing name, signing, and dating the Drafting Checker approval block.                                                                                                                                                                                                                |
| Design Engineer            | 11. | Approve the drawings by printing name, signing, and dating the Design Engineer approval block.                                                                                                                                                                                                                |
| Professional Engineer (PE) | 12. | If a professional engineer signature and stamp is required, affix the stamp to the drawing, and obtain the signature of the PE on the drawing prior to the Design Authority or DEGL engineer signing the drawing.                                                                                             |
| Design Authority           | 13. | For drawings that affect the technical baseline (TFC-ENG-STD-46), approve the drawing by printing name, signing and dating the Design Authority approval block. (7.1.10)                                                                                                                                      |
| DEGL                       | 14. | For drawings that do not affect the technical baseline, approve the drawing by printing name, signing and dating the DEGL approval block.                                                                                                                                                                     |
| USQ Evaluator              | 15. | Perform a USQ review in accordance with TFC-ENG-SB-C-03: <ul style="list-style-type: none"> <li>a. Record the USQ number in the USQ Block of the EDT.</li> <li>b. Approve by printing name, signing, and dating in approvals block of the EDT.</li> </ul>                                                     |
| PrHA Lead                  | 16. | If applicable, verify or add applicable PrHA Screening Form No. <ul style="list-style-type: none"> <li>a. If not already entered, note the applicable PrHA screening number in the PrHA Block of the EDT.</li> <li>b. Approve by printing name, signing, and dating in approvals block of the EDT.</li> </ul> |
| EDT Approvers              | 17. | Approve the overall EDT package, verifying/indicating: <ul style="list-style-type: none"> <li>• All drawings have been reviewed and approved</li> <li>• The package is complete and compliant with requirements</li> </ul>                                                                                    |

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 18 of 30 February 17, 2021</b>
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- Comments were resolved
- Appropriate reviewers and approvers were selected
- The EDT is complete and ready to submit for release.

Originator/Design Engineer      18. Submit the EDT drawing package to the DSC for release in SPF and transfer of record PDF copies to IDMS and DMCS.

#### 4.7 Drawing Revision

Drawing revision consists of either:

1. Incorporating supplemental changes to drawings documented in DCNs and work-completed ECNs (or legacy DM and FM ECNs) in accordance with TFC-ENG-DESIGN-C-06, and/or
2. Direct revision to incorporate changes to a drawing identified through field walkdowns or the redline process described in TFC-ENG-DESIGN-C-31. The conditions under which a drawing may be directly revised are discussed in Section 4.9.1.

An EDT shall be used to release all drawing revisions.

#### 4.8 Changing Drawing Ownership

A number of drawings in DMCS are owned by other Hanford contractors, but in some cases should be WRPS. In these cases, the drawings will not exist in SPF so an ownership transfer to WRPS is required before changes can be made to the drawings. See TFC-ENG-DESIGN-D-06.1, section 4.6 for guidance.

- Preparer
1. If the drawing is owned by Hanford Mission Integration Solutions (HMIS), or another contractor, but describes only tank farm-owned facilities, prepare a “DMCS Change Notice” to transfer ownership to WRPS. Follow the instructions below:
    - a. Prepare a DMCS Change Notice Form (A-6003-917 on site forms)
    - b. Obtain Engineering approvals from both contractors (i.e. requestor and releasing ownership)
    - c. Obtain manager’s approval from both contractors (i.e. HMIS & WRPS)

NOTE: Approved Change Notices can be scanned and emailed to ^SPF Administration.

- d. Submit the approved Change Notice to SPF and DMCS.

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 19 of 30 February 17, 2021</b>
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#### 4.9 ECN and DCN Incorporation

- Preparer
1. Using “Edit → Revise” on the current revision of the drawing sheet in SPF:
    - a. Increment the revision number for the drawing. SPF increments the revision number automatically; however, the revision number remains editable to the user.
    - b. Attach the CAD data set for the drawing to be revised

NOTE: Temporary Modification ECNs (TM ECN) are not incorporated into drawings.

    - c. Obtain DCNs/ECNs to be incorporated into the drawing.
  2. Using “Document → Update Latest Revision,” update document information specific to the new revision. In particular:
    - a. Identify the ECN or DCN being incorporated on the “Incorporated ECN” tab.
    - b. Identify any added or deleted Buildings/Facilities or Systems by modifying relationships on their applicable tabs.
    - c. Identify any added or deleted EINs by modifying the relationships on the “Related EIN(s)” tab.
  3. Prepare the drawing sheet revision in accordance with Section 4.3, incorporating the ECN/DCN changes into the CAD data set:
    - a. Remove “Essential Drawing.”
    - b. Remove “Impact Levels.”
    - c. Remove “Confidence Levels.”
    - d. Remove “For Field Verification” block.
    - e. Remove signed stamps, such as: “Professional Engineer (PE), National Association of Corrosion Engineers (NACE) Info, etc.”
    - f. Update the Title Block to the current DOE Office of River Protection (ORP) Title Block.
    - g. Ensure Panelboard Circuit Totals are the sum of the Individual Breaker Circuit Values.
    - h. Remove the off-site A-E and vendor logos from the drawing.
    - i. Remove Hanford grid coordinate equation conversion notes.

4. Prepare an EDT to release the revised drawing in accordance with Section 4.5 and review, approve, and release in accordance with Section 4.6.

#### 4.9.1 Direct Revisions

Direct revisions involve a direct change to the drawing without the need for supplemental change documentation released separately from the drawing and later incorporated. Direct revisions shall only be used to reflect changes that do not modify the existing facility configuration.

Communication of the description of the change between the engineer and designer is typically accomplished either informally via direct communication or using the redline process as described in TFC-ENG-DESIGN-C-31 in organizations that have direct access to drafter/designers. Examples of situations where direct revision is appropriate include:

- VOID a drawing
- Corrections to facility drawings to describe existing configuration
- Document as-builts to drawings including redline incorporation in accordance with TFC-ENG-DESIGN-C-31
- Changes to fabrication drawings in accordance with TFC-ENG-DESIGN-C-61
- Modification of standard detail drawings
- Changes, additions and/or deletions of drawing meta-data in Smartplant that is not technical baseline (e.g., building numbers, related equipment identification numbers, reference drawings, system codes, etc.)
- Conversion of a manual drawing to an AutoCAD file. For these drawing conversions, the revision description on the drawing sheet shall include the following description: “manual to AutoCAD conversion.”

Preparer

1. Using “Edit → Revise” on the current revision of the drawing sheet in SPF:

NOTE: SPF increments the revision number automatically; however, the revision number remains editable to the user.

- a. Increment the revision number for the drawing.
  - b. Attach the CAD data set for the drawing to be revised.
  - c. Obtain any redlines necessary to describe the change to be made to the drawing.
2. Using “Document → Update Latest Revision,” update the document information specific to the new revision. In particular:
    - a. Identify any added or deleted Buildings/Facilities or Systems by modifying the relationships on their applicable tabs.

- b. Identify any added or deleted EINs by modifying the relationships on the “Related EIN(s)” tab.
  3. Prepare the drawing sheet revision in accordance with Section 4.3, incorporating the changes into the CAD data set:
    - a. Remove “Essential Drawing.”
    - b. Remove “Impact Levels.”
    - c. Remove “Confidence Levels.”
    - d. Remove the “For Field Verification” block.
    - e. Remove signed stamps, such as: “Professional Engineer (PE), National Association of Corrosion Engineers (NACE) Info, etc.”
    - f. Update the Title Block to the current DOE Office of River Protection (ORP) Title Block.
    - g. Ensure the Panelboard Circuit Totals are the sum of the Individual Breaker Circuit Values.
    - h. Remove the off-site A-E and vendor logos from the drawing.
    - i. Remove the Hanford grid coordinate equation conversion notes.
  4. Prepare an EDT to release the revised drawing in accordance with Section 4.5.
    - a. Describe/summarize the changes made to drawings in Purpose section of the EDT, including justification for the changes.
    - b. Update the drawing revision block to note “Revised in Accordance with EDT-XXXXXX.”
  5. Review, approve, and release the revised drawings in accordance with Section 4.6.

#### **4.10 Field Verification**

##### **Design Authority**

1. When requested by Projects, determine drawings that need to be as-built, using Attachment B for guidance.
2. Ensure the selected drawings are as-built and released in accordance with Section 4.5 and 4.6.

<b>Engineering Drawings</b>	<b>Manual Document Page Issue Date</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering 22 of 30 February 17, 2021</b>
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#### 4.11 Establishing and Controlling Facility, Project, and Shared Drawings

This activity involves overlapping responsibilities between the Project Engineer Design Authority and the System Engineering Design Authority. Each role is specifically identified in the steps below.

- Design Engineer
1. As mentioned in Section 4.2, place new drawings and drawing sheets into “Project” status by identifying a Project Status Code of “Project” in SPF during initial drawing creation.

NOTE: SPF Administration personnel will update the Facility, Project, and Shared status.

- Project Engineer DA
2. Coordinating with the System Engineering Design Authority, identify existing released drawings/documents that are to be added to, deleted from Facility, Project, or Shared Status with an email to ^SPF Administration.

NOTE: SPF Administration personnel will update the Facility, project, and Shared status.

- Design Authority
3. Identify released drawings/documents that are to be changed from Project or Shared status to Facility status with an email to ^SPF Administration.

#### 5.0 DEFINITIONS (7.1.2)

As-Built drawings. A drawing classified as ‘Essential’ or ‘Support’ drawing, including all unincorporated ECNs.

Controlled print file. A drawing/document file that provides operating organizations with a controlled set of hard copy drawings/documents and change documentation that is maintained current with released changes by the Document Service Center (DSC) staff.

Design Engineer. The engineer in charge of the design shown on the drawing medium. The design engineer may provide direction, sketches, and/or calculations as input to the design illustrated on the drawing. This role may be filled by any appropriately qualified TOC engineer or an A-E engineer qualified under the A-E’s ASME NQA-1 program.

Drafting Checker. An individual who is trained and knowledgeable with the drafting and layering requirements as contained in this procedure and in TFC-ENG-STD-10 or, if for an architect-engineer, is qualified under their Quality assurance (QA) program to perform drafting checking.

Essential drawings. A category of engineering drawings that depict active facility (e.g., nuclear and chemical storage facilities) systems, structures, and components (SSCs) and are necessary to support emergency response actions.

Facility as-building. An engineering activity to integrate newly released project As-Built drawings into the existing facility drawings. This activity is usually funded by the project and performed by the Architect Engineer as a separate contract activity. Facility as-building should

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<b>Engineering Drawings</b>	<b>Manual Document</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering</b>
	<b>Page</b>		<b>23 of 30</b>
	<b>Issue Date</b>		<b>February 17, 2021</b>

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be completed prior to placing equipment into service to insure that drawings are readily available for use.

Facility status. The status of drawings/documents that are being used to support operations of a facility or system. Changes to these drawings/documents require approval of the facility Design Authority.

Professional Engineer. An engineer employed by an A&E who is licensed by the State of Washington with full authority to place their stamp and approval signature in their specific discipline on a design drawing when required by the statement of work.

Project status. The status of drawings/documents that are being used for project activities (design, fabrication, and construction). Changes to these drawings/documents require the approval of the project engineer.

Project as-building. Activities performed by the constructor include:

- Update project drawings to show current configuration
- Perform field verification of updated drawings
- Update project design documents such as construction specifications, procurement specifications, and design specifications.

Reference drawings. A category of drawings that supplement essential and support drawings and provide construction, additional design, or historical information. Reference drawings may be used as “best available information,” but may not be used as the basis for design, maintenance, or operation decisions without confirmation. Reference drawings are not kept current but may be updated to support a facility upgrade or project activities with approval of an engineering manager.

Shared status. The status of drawings/documents that are jointly being used to support facility/system operation and to support project activities. Changes to these drawings/documents require the approval of both the project engineer and the facility system engineer.

Support drawings. A category of drawings that, in addition to Essential, provides Engineering, Maintenance, and Operations the details necessary for plant operations.

Technical Baseline Document. A design or engineering document that serves as the basis or physical description of structures, systems, and components. The technical baseline is the starting point for design modifications to the facility. The technical baseline is updated (as-built, ECNs incorporated, etc.) once modifications are complete. See TFC-ENG-STD-46.

## 6.0 RECORDS

The following records are generated during the performance of the procedure.

- Drawings
- RCR Comment forms
- DMCS Change Notice form (A-6003-917)
- Engineering Data Transmittals (EDT)
- Sketch drawings (“SK” series)
- Lockout/Tagout Sketch Sheet (A-6003-128)
- Excavation, Shoring and Trenching Sketch Sheet (A-6003-916).

The record custodian identified in the Company Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM\_DC-C-02.

## 7.0 SOURCES

### 7.1 Requirements

- 7.1.1 10 CFR 830.122, “Quality Assurance Criteria,” Paragraph (f)(4).
- 7.1.2 RPP-PLAN-39432, “As-Built Program Description,” Section 3.0, “Terms and Definitions.”
- 7.1.3 RPP-PLAN-39432, “As-Built Program Description,” Section 5.1, “Identification and Application of Criteria.”
- 7.1.4 RPP-PLAN-39432, “As-Built Program Description,” Section 5.1.1, “Essential Drawings.”
- 7.1.5 RPP-PLAN-39432, “As-Built Program Description,” Section 5.1.2, “Support Drawings.”
- 7.1.6 RPP-PLAN-39432, “As-Built Program Description,” Section 5.1.3, “Reference Drawings.”
- 7.1.7 RPP-PLAN-39432, “As-Built Program Description,” Section 5.1.4, “Criteria for As Built Drawings.”
- 7.1.8 RPP-PLAN-39432, “As-Built Program Description,” Section 5.2, “Closeout Process.”
- 7.1.9 RPP-PLAN-39434, “Construction and Acceptance Testing Program,” Section 4.0, “Responsibilities.”
- 7.1.10 TFC-PLN-02, “Quality Assurance Program Description.”
- 7.1.11 [TFC-PLN-03](#), “Engineering Program Management Plan.”

## 7.2 References

- 7.2.1 MSC-PRO-RM-184, "Information Clearance."
- 7.2.2 MSC-PRO-SEC-54603, "Identifying, Marking, and Protecting Official Use Only (OUO) Information."
- 7.2.3 TFC-BSM-IRM\_DC-C-02, "Records Management."
- 7.2.4 TFC-ENG-DESIGN-C-06, "Engineering Change Control."
- 7.2.5 TFC-ENG-DESIGN-C-25, "Technical Document Control."
- 7.2.6 TFC-ENG-DESIGN-C-31, "Redline Engineering Change Control."
- 7.2.7 TFC-ENG-DESIGN-C-35, "Process Hazard Analysis Determination and Technique Screening."
- 7.2.8 TFC-ENG-DESIGN-C-47, "Process Hazard Analysis."
- 7.2.9 TFC-ENG-DESIGN-C-52, "Technical Reviews."
- 7.2.10 TFC-ENG-DESIGN-P-17, "Design Verification."
- 7.2.11 TFC-ENG-DESIGN-P-54, "Checking of Engineering Documents."
- 7.2.12 TFC-ENG-FACSUP-C-41, "Electronic Routing Board Change Control."
- 7.2.13 TFC-ENG-STD-03, "Waste Transfer Confinement Configuration."
- 7.2.14 TFC-ENG-STD-10, "Drawing Standard."
- 7.2.15 TFC-ENG-STD-46, "Technical Baseline Management."

Figure 1. Drawing Process.

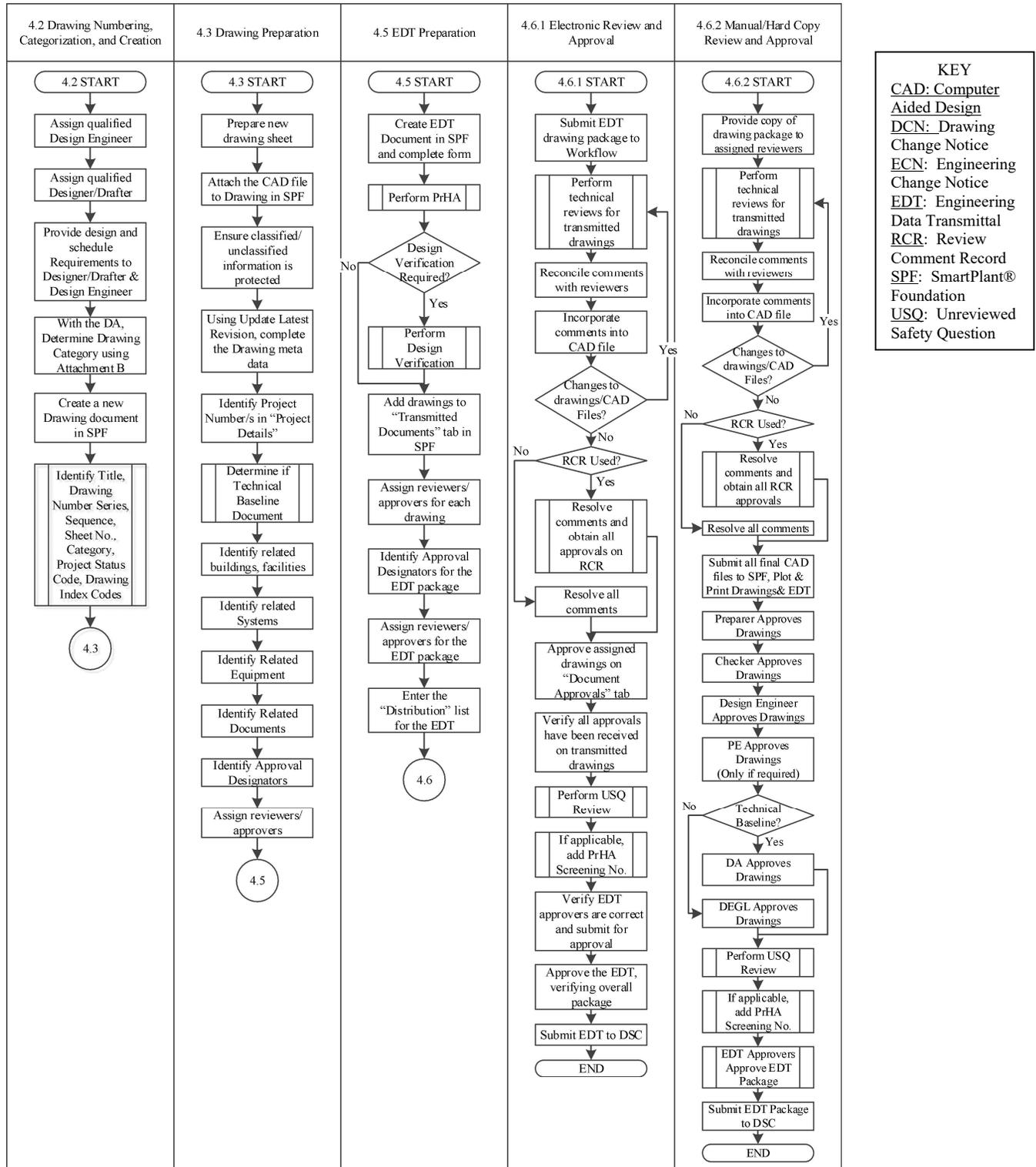
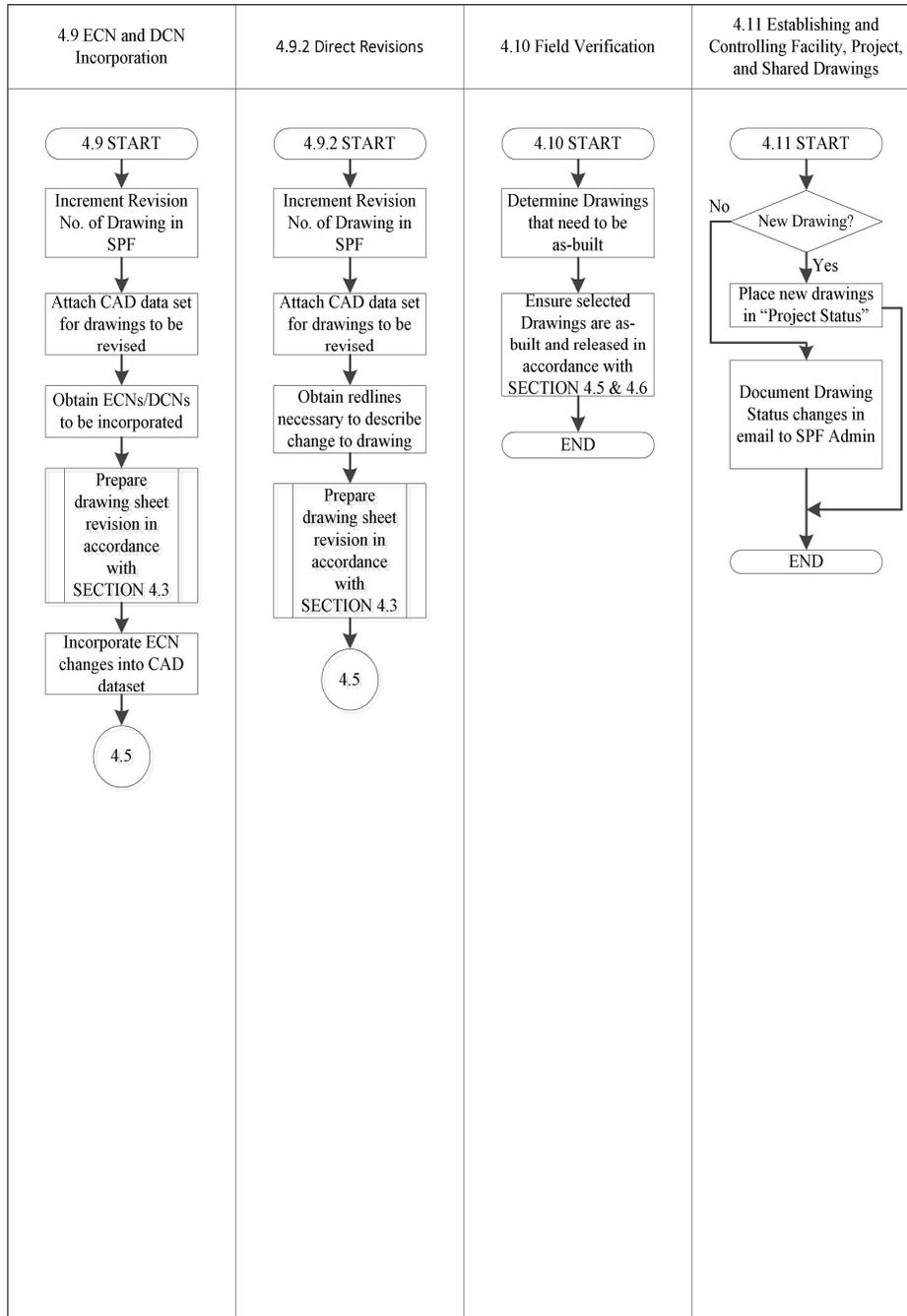


Figure 1. Drawing Process. (cont.)



<b>Engineering Drawings</b>	<b>Manual Document</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering</b>
	<b>Page</b>		<b>28 of 30</b>
	<b>Issue Date</b>		<b>February 17, 2021</b>

## ATTACHMENT A - DRAWING CATEGORIES

(7.1.4, 7.1.5, 7.1.6)

Management determines categories in collaboration with Operations, Emergency Preparedness, and the cognizant system engineer. Drawing categories are tracked in SPF but are not shown on the drawing face.

Essential drawings: A category of engineering drawings that depict active facility (e.g., nuclear and chemical storage facilities) SSCs and are necessary to support emergency response actions, including:

- Drawings required as a ready reference to operations and emergency response personnel when evaluating and responding to an event condition
- Drawings that are called out by emergency or alarm response procedures
- Drawings used to identify the correct isolation boundaries for electrical or high-pressure fluid systems to implement the lock and tag program.

Consider the following example drawing types when selecting essential drawings:

- Piping and Instrumentation Diagrams (P&ID)
- Electrical one-line diagrams
- Electrical Elementary Diagrams
- Ventilation flow diagrams
- Active waste transfer piping diagrams
- All Electrical Panelboard Schedules .

Support drawings: A category of drawings that, in addition to essential, provides Engineering, Maintenance, and Operations the details necessary for plant operations, including:

- Drawings that clearly and completely represent the configuration to enable the user to make valid, informed, and timely decisions that directly support the safe conduct of operations
- Drawings required for compliance with active environmental permits
- Drawings required to ensure process routings and operational readings are performed correctly and safely within the authorization basis.

Consider the following example drawing types when selecting support drawings:

- Piping and equipment arrangement diagrams
- Ventilation and exhaust system diagrams
- Process monitoring and control system diagrams.

Reference drawings: A category of drawings that supplement essential and support drawings and provide construction, additional design, or historical information. Reference drawings may be used as “best available information,” but may not be used as the basis for design, maintenance, or operation decisions without confirmation. Reference drawings are not kept current/routinely revised, but may be updated to support a facility upgrade or project with approval of an engineering manager. Reference drawings include construction and fabrication drawings.

<b>Engineering Drawings</b>	<b>Manual Document</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering</b>
	<b>Page</b>		<b>29 of 30</b>
	<b>Issue Date</b>		<b>February 17, 2021</b>

## **ATTACHMENT B – CRITERIA FOR AS-BUILT DRAWINGS**

(7.1.7)

The project engineer shall determine those drawings developed during the project phase of a facility modification that need to be as-built when the project is completed.

The following criteria are used to select drawings required to be as-built, prior to release:

Drawing sheets are to be “As-Built” if they depict structures, systems, or components (SSCs) that:

- Are important to safety
- Are used to establish or verify safe operating condition
- Require routine maintenance to preserve an SSC in a condition so that it can be relied upon
- Are installed in portions of a facility with restricted access or are buried/embedded.
- Are Waste Transfer Confinement Systems.

### **Criterion 1: Important to Safety**

Drawings that depict safety class or safety significant SSCs, as identified in the Safety Equipment Compliance Database (SECD) or HNF-SD-CP-SEL-001 (222-S Laboratories Facilities Safety Equipment List), must be as-built.

### **Criterion 2: Establish or Verify Safe Operating Condition**

The following additional guidelines should be considered in determining which drawing sheets need to be as-built.

- Operability – Drawings depicting SSCs that are required to operate within established design tolerances, such as:
  - Equipment line-up and valve positions (operating configuration)
  - Pressure limits of equipment/system (e.g., pressure relief valve)
  - Electrical power systems (one-line diagrams, motor control centers)

### **Criterion 3: Require Maintenance**

SSCs that require maintenance to ensure that it is in a condition that can be relied upon should be shown on as-built drawings. The following guidelines should be considered in determining which drawing sheets need to be as-built.

- Maintenance - Drawings depicting SSCs that are require maintenance, such as:
  - Instrumentation or equipment requiring in the field calibration (e.g., flow transmitters)
  - Equipment requiring periodic replacement (e.g., to support planning)
  - Equipment used for hoisting or lifting (e.g., cranes, hoists, etc.).

<b>Engineering Drawings</b>	<b>Manual Document</b>	<b>TFC-ENG-DESIGN-C-09, REV E-11</b>	<b>Engineering</b>
	<b>Page</b>		<b>30 of 30</b>
	<b>Issue Date</b>		<b>February 17, 2021</b>

## ATTACHMENT B - CRITERIA FOR AS-BUILT DRAWINGS (cont.)

### Criterion 4: Restricted Access

Areas within a facility with physical restrictions for access to an SSC that may be required to support planned or unplanned maintenance, modification, or emergency response should be shown on as-built documentation. The following guidelines should be considered in determining which drawing sheets need to be as-built.

- Confined Spaces – For tank farms, these could include tanks, pits, and other underground structures.
- Difficult to Access – The SSC locations that require scaffolding, man-lift, or similar means to gain access, such as towers, high-bay lighting, and buried tanks.
- Hazardous Environments – The SSC locations that are unsafe due to radiological or toxicological conditions, such as waste tanks, pits, or cells.

### Criterion 5: Buried/Embedded

Buried or embedded SSCs are not readily accessible for visual inspection. . The following guidelines should be considered in determining which drawing sheets need to be as-built.

- Hazard Potential – The subsurface SSCs that could constitute a safety or environmental hazard, such as buried utility power lines and process piping.
- Sensitive – The subsurface SSCs that, if inadvertently damaged, could cause a significant negative impact on company operations, such as computer networks and fiber optic cables.
- Utilities – Difficult to detect and locate SSCs in areas of frequent re-excavation, such as buried piping.

### Criterion 6: Waste Transfer Confinement Systems

Drawings that depict Waste Transfer Confinement Systems as defined in TFC-ENG-STD-03, “Waste Transfer Confinement Configuration.”

Drawing sheets depicting systems not important to safety (e.g., not safety class or safety significant SSCs) that are readily visible, such as support facilities, fences, non-buried instrumentation normally do not need to be as-built.