



**US Army Corps
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Engineer Research and
Development Center

*The CAD/BIM Technology Center
for Facilities, Infrastructure, and Environment*

US ARMY CORPS OF ENGINEERS BUILDING INFORMATION MODELING TEMPLATES FOR REVIT

Templates based on the 2019 Autodesk Revit Software

Master Guide : Mechanical Template v4.3

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1 Overview

The intent of this guide for the Revit MECH Template is to provide a framework to facilitate design using Revit Building Information Modeling (BIM) software. This template was developed based on Revit 2019.

This guide is NOT intended to be a Revit tutorial, but rather assumes the user has a sufficient level of proficiency to comprehend the template descriptions outlined in this guide.

Questions and comments may be submitted to the [USACE Revit Template Team](#).

2 Browser and View Organization

The default browser schema in the template (View Purpose_USACE) is organized by:

- Discipline
- then "ViewPurpose_USACE"
- then Family and Type
- Sorted by View Name

A full list of View browser schemas for the MECH template is in the following tables:

Table 1 Browser View Schema

Browser View Schema	Grouping	Filter
all	Group by: • Family and Type Sort by: • View name (Ascending)	<None>
Discipline_USACE	Group by: • Discipline • Family and Type Sort by: • View Name (Ascending)	<None>
Not on Sheets_USACE	Group by: • Family and Type Sort by: • View Name (Ascending)	Filter by: Sheet Name = <None>

Phase_USACE	Group by: • Phase • Family and Type Sort by: • View Name (Ascending)	<None>
Type/Discipline_USACE	Group by: • Family and Type • Discipline Sort by: • View Name	<None>
View Purpose_USACE	Group by: • Discipline • ViewPurpose_USACE • Family and Type Sort by: • View Name	<None>

Table 2 Schedule Sorting Schema

Browser Schedule Schema	Grouping	Filter
all	Sort by: • View Name (Ascending)	<None>
Plotted Schedule_USACE	Group by: • PlottedSchedule_USACE Sort by: • View Name (Ascending)	<None>
Schedule Purpose_USACE	Group by: • ViewPurpose_USACE Sort by: • View Name (Ascending)	<None>

Table 3 Sheet Sorting Schema

Browser Sheet Schema	Grouping	Filter
all	Sort by: Sheet Number	<None>
Sheet Prefix_USACE	Group by: - Sheet Number (1st Character) Sort by: - Sheet Number	<None>
Sheet Publish Order_USACE	Group by: - PublishOrder_USACE Sort by: - Sheet Number (1st Character) - Sheet Number	

3 View Purpose

In previous versions of the template, the “View Purpose” parameter was used to separate the purposes of the views and make the creation of sheets easier. These view purposes are Working Views (where the main modeling is done), Documentation Views (where the views are set up and annotated for placement on sheets for the official model Documents), Presentation Views (for required or accessory presentation purposes), Coordination and Analysis views (for coordinating between the different disciplines on BIM project) and Export views (for exporting data to other BIM and CAD platforms). Each view that is created will have the “ViewPurpose_USACE” parameter under the “Other” group of parameters to hold this value.

Standard View Purposes:

Table 4 Standard View Purposes

View Purpose Classification	View Type/View Name Extension
1 Working	_WRK
2 Analysis	_ANL
3 Documentation	_DOC
4 Presentation	_PRS
5 Export	_EXP

As stated above, the “View Purpose” parameter is a legacy parameter from earlier versions and is included with the 4.3 version of the MECH template, renamed to “View Purpose_USACE” along with the corresponding “View Purpose_USACE” browser sorting schema to accommodate legacy workflows and standards. New in this template is the use of view templates and view types, which, while referencing and leveraging the view purpose classifications, do not need to use the “ViewPurpose_USACE” parameter value. Either the “all” or “View Purpose_USACE” project browser schemas may be used to group views by purpose – one uses the new view types and the other uses the legacy “ViewPurpose_USACE” parameter.

4 View Templates and View Types

View templates store preset values for selected view properties. Properties stored in a view template can either be applied to a view but remain editable after application, or views can be made dependent on a view template. When a view is dependent on a template, properties that are stored in the template cannot be edited in the view. Changes to a template upon which views are dependent will update all dependent views to those changes.

The “ViewPurpose_USACE” property, among several others, is automatically applied to a view when it is made dependent on a template or when a template’s properties are applied to the view.

New to the USACE_Revit2019_Template_MECH_v4.3.rte template is the use of view types to further automate the application of view template properties or the making of views to be dependent on templates, depending upon the purpose of the view. When a working view is created that does not get plotted or exported for use in other applications, placing it on a view type will apply a template’s properties. When a view is created that will ultimately be plotted or potentially exported for use in other applications, it is made dependent on a view template. In all cases, placing a view on a view type will also perform the same purpose as the legacy “ViewPurpose_USACE” property, because the view type will indicate the purpose of the view, and is used for sorting and grouping in the project browser.

Note: Due to limitations in Revit, 3D views and drafting views cannot have a specific view type assigned to them at the time of creation; the view

must be manually placed on the correct type after creation, for proper sorting in the project browser, and the view template must manually have its properties either applied to the view, or the view made dependent on the template.

View Templates included in the MECH project template:

- 3D Views
 - 3D_Coordination_USACE
 - 3D_HVAC Ducts_WRK_USACE
 - 3D_Hydronic_WRK_USACE
 - 3D_Navisworks Clash Detection_EXP_USACE
 - 3D_Navisworks Quantity Takeoff_EXP_USACE
 - 3D_Plumbing_Natural Gas_WRK_USACE
 - 3D_Plumbing_Domestic_WRK_USACE
 - 3D_Plumbing_Sanitary_WRK_USACE
 - 3D_Plumbing_WRK_USACE
 - 3D_Presentation_PRS_USACE
 - 3D_Mechanical_WRK_USACE
 - Export to Civil Engineering_EXP_USACE
 - *Riser Templates - intended to be applied to 3D Views, then the view Visibility/Graphics Overrides - Filters edited to turn the appropriate Pipe Systems on and off*
 - 3D_Fire Protection_Riser_DOC_USACE
 - 3D_Hydronic Riser_DOC_USACE
 - 3D_Plumbing Riser_DOC_USACE
- Ceiling Plans
 - Ceiling Plan_WRK_USACE
 - Mechanical Ceiling Plan_DOC_USACE
 - Plumbing Ceiling Plan_DOC_USACE
- Floor, Area and Site Plans
 - Floor Plan_Coordination_ANL_USACE
 - Floor Plan_Coordination_WRK_USACE
 - Floor Plan_WRK_USACE
 - HVAC Duct Plan_DOC_USACE
 - HVAC_Duct Plan_WRK_USACE
 - HVAC Zone Plan_WRK_USACE
 - HVAC Space Plan_WRK_USACE
 - HVAC Plan_ANL_USACE
 - Hydronic Plan_DOC_USACE
 - Hydronic Plan_WRK_USACE
 - Key Plan_WRK_USACE
 - Plumbing Plan_Domestic_DOC_USACE
 - Plumbing Plan_Domestic_WRK_USACE
 - Plumbing Plan_NaturalGas_DOC_USACE
 - Plumbing Plan_NaturalGas_WRK_USACE
 - Plumbing Plan_Sanitary_DOC_USACE

- Plumbing Plan_Sanitary_WRK_USACE
- Plumbing Plan_WRK_USACE
- Enlarged Mechanical Plan_DOC_USACE
- Enlarged Plumbing Plan_DOC_USACE
- Site Plan Project North_WRK_USACE
- Site Plan True North_WRK_USACE
- Site Plan Project North_DOC_USACE
- Site Plan True North_DOC_USACE
- Elevations
 - Exterior Elevation_WRK_USACE
 - Mechanical Elevation_DOC_USACE
 - Plumbing Elevation_DOC_USACE
- Sections
 - Mechanical Section_WRK_USACE
 - Mechanical Section_DOC_USACE
 - Plumbing Section_DOC_USACE
 - Plumbing Section_WRK_USACE
 - Section_Coordination_WRK_USACE
 - Site Section_HVAC_DOC_USACE
 - Site Section_Plumbing_DOC_USACE
- Detail Views
 - Detail Plan_HVAC_WRK_USACE
 - Detail Plan_HVAC_DOC_USACE
 - Detail Plan_Plumbing_WRK_USACE
 - Detail Plan_Plumbing_DOC_USACE
 - Detail Section_HVAC_WRK_USACE
 - Detail Section_HVAC_DOC_USACE
 - Detail Section_Plumbing_WRK_USACE
 - Detail Section_Plumbing_DOC_USACE
- Drafting Views
 - Drafting View_HVAC_WRK_USACE
 - Drafting View_HVAC_DOC_USACE
 - Drafting View_Plumbing_WRK_USACE
 - Drafting View_Plumbing_DOC_USACE
- Schedules
 - Schedule_USACE

View Types included in the MECH template:

Table 5 : View Types

View Type	View Template	Template Status
Floor Plans_Coordination_ANL_USACE	Floor Plan_Coordination_ANL_USACE	Dependent
HVAC Duct Plans_DOC_USACE	HVAC Duct Plan_DOC_USACE	Dependent
HVAC Duct Plans_WRK_USACE	HVAC Duct Plan_WRK_USACE	Applied
HVAC Plans_Coordination_ANL_USACE	HVAC Plan_ANL_USACE	Dependent
HVAC Zone Plans_WRK_USACE	HVAC Zone Plan_WRK_USACE	Applied

HVAC Space Plans_WRK_USACE	HVAC Space Plan_WRK_USACE	Applied
Hydronic Plans_DOC_USACE	Hydronic Plan_DOC_USACE	Dependent
Hydronic Plans_WRK_USACE	Hydronic Plan_WRK_USACE	Applied
Key Plans_WRK_USACE	Key Plan_WRK_USACE	Applied
Mechanical Plans_WRK_USACE	Mechanical Plan_WRK_USACE	Applied
Enlarged Mechanical Plans_DOC_USACE	Enlarged Mechanical Plan_DOC_USACE	Dependent
Enlarged Plumbing Plans_DOC_USACE	Enlarged Plumbing Plan_DOC_USACE	Dependent
Plumbing Plans_Domestic_DOC_USACE	Plumbing Plan_Domestic_DOC_USACE	Dependent
Plumbing Plans_Domestic_WRK_USACE	Plumbing Plan_Domestic_WRK_USACE	Applied
Plumbing Plans_Natural Gas_DOC_USACE	Plumbing Plan_Natural Gas_DOC_USACE	Dependent
Plumbing Plan_Natural Gas_WRK_USACE	Plumbing Plan_Natural Gas_WRK_USACE	Applied
Plumbing Plans_Sanitary_DOC_USACE	Plumbing Plan_Sanitary_DOC_USACE	Dependent
Plumbing Plans_Sanitary_WRK_USACE	Plumbing Plan_Sanitary_WRK_USACE	Applied
Plumbing Plans_WRK_USACE	Plumbing Plan_WRK_USACE	Applied
Site Plans Project North_WRK_USACE	Site Plans Project North_WRK_USACE	Applied
Site Plans True North_WRK_USACE	Site Plans True North_WRK_USACE	Applied
Site Plans Project North_DOC_USACE	Site Plans Project North_DOC_USACE	Dependent
Site Plans True North_DOC_USACE	Site Plans True North_DOC_USACE	Dependent
Ceiling Plans_WRK_USACE	Ceiling Plans_WRK_USACE	Applied
Mechanical Ceiling Plans_DOC_USACE	Mechanical Ceiling Plan_DOC_USACE	Dependent
Plumbing Ceiling Plans_DOC_USACE	Plumbing Ceiling Plan_DOC_USACE	Dependent
Exterior Elevations_WRK_USACE	Exterior Elevation_WRK_USACE	Applied
Mechanical Elevations_DOC_USACE	Mechanical Elevation_DOC_USACE	Dependent
Plumbing Elevations_DOC_USACE	Plumbing Elevation_DOC_USACE	Dependent
Mechanical Sections_WRK_USACE	Mechanical Section_WRK_USACE	Applied
Mechanical Sections_Full_DOC_USACE	Mechanical Section_DOC_USACE	Dependent
Mechanical Sections_Partial_DOC_USACE	Mechanical Section_DOC_USACE	Dependent
Plumbing Sections_WRK_USACE	Plumbing Section_WRK_USACE	Applied
Plumbing Sections_Full_DOC_USACE	Plumbing Section_DOC_USACE	Dependent
Plumbing Sections_Partial_DOC_USACE	Plumbing Section_DOC_USACE	Dependent
Sections_Coordinations_WRK_USACE	Section_Coordination_WRK_USACE	Applied
Site Sections_HVAC_DOC_USACE	Site Section_DOC_USACE	Dependent
Site Sections_Plumbing_DOC_USACE	Site Section_Plumbing_DOC_USACE	Dependent
Detail Plans_HVAC_DOC_USACE	Detail Plan_HVAC_DOC_USACE	Dependent
Detail Plans_HVAC_WRK_USACE	Detail Plan_HVAC_WRK_USACE	Applied
Detail Plans_Plumbing_DOC_USACE	Detail Plan_Plumbing_DOC_USACE	Dependent
Detail Plans_Plumbing_WRK_USACE	Detail Plan_Plumbing_WRK_USACE	Applied
Detail Sections_HVAC_DOC_USACE	Detail Section_HVAC_DOC_USACE	Dependent
Detail Sections_HVAC_WRK_USACE	Detail Section_HVAC_WRK_USACE	Applied
Detail Sections_Plumbing_DOC_USACE	Detail Section_Plumbing_DOC_USACE	Dependent
Detail Sections_Plumbing_WRK_USACE	Detail Section_Plumbing_WRK_USACE	Applied

Drafting Views_HVAC_WRK_USACE	Drafting View_HVAC_WRK_USACE	Apply after Creation
Drafting Views_HVAC_DOC_USACE	Drafting View_HVAC_DOC_USACE	Make Dependent after Creation
Drafting Views_Plumbing_DOC_USACE	Drafting View_Plumbing_DOC_USACE	Make Dependent after Creation
Drafting Views_Plumbing_WRK_USACE	Drafting View_Plumbing_WRK_USACE	Apply after Creation

5 View Naming

Naming of views is to follow the standard set in the template and is divided into categories by: [Floor Level]_[View Type]_[Region]_[Function]_View Purpose

- **Floor Number** (Only used for plan views)
- **View Type** (Required)
- **Region** (Optional – user defined – indicates the area of the building)
- **Function** – (Optional – user defined – indicates the specific function of the view when it is not obvious)
- **View Purpose** (Required – must be one of the five view purposes listed above)

Examples:

- Example A: **02_FP_EAST_DOC**
 - 2nd Floor Plan – East region – 3 Documentation view purpose
- Example B: **EL_EAST_WRK**
 - Elevation – East – 1 Working view purpose
- Example C: **03_FP_WEST_HVAC_WRK**
 - 3rd floor Life Safety Plan – West region – 1 Working view purpose

6 Working Views

This set of views (with the “WRK” suffix) are for the main design and layout of the building. These views are not intended for the final documents and are used to support the modeling process (although a View Purpose may be changed to a Documentation – “DOC” view). As views are created they should be placed on the appropriate view type. Doing so will ensure that the proper view template is applied or assigned. Working views will have a working view template applied, however they will not be made dependent on the template, to enable ease of view modification for facilitation of modeling. The “ViewPurpose_USACE” parameter will also automatically be assigned to “1 – Working”.

Note: While a view can be renamed to become a Documentation view by changing the suffix to “DOC”, it should be placed on the appropriate documentation view type and have the appropriate view template assigned to it to ensure proper view properties and correct assignment of the “ViewPurpose_USACE” parameter. View templates are NOT automatically assigned when changing a view from one type to the other – only when initially creating a view on a given type.

7 **Documentation Views**

These views are finished and intended to be placed on sheets. Documentation views may have scope boxes for larger projects. Appropriate visibility and/or filter settings are applied to display only relevant categories and objects. Documentation views, by default, are dependent on view templates. If view properties need adjustment for specific project needs, the view template should be modified to ensure consistency – adjusting the view template will cause all views that are dependent on the template to update accordingly.

To maintain view naming standards for Documentation views that have been added to sheets, utilize the “Title on Sheet” view property to provide an appropriate view title on the sheet.

Table 6 : "Title on Sheet" property

1

NAME HERE FOR SHEET

1/8" = 1'-0"

Properties

Viewport
View - Title - Default_USACE

Viewports (1)

Discipline

Coordination

Scope Box

None

Column Symbolic Offset

1' 0"

Depth Clipping

No clip

Identity Data

View Template

Floor Plan_Dimension_DOC_U

View Name

01_FP_ALL_DIMENSIONS_DOC

Title on Sheet

NAME HERE FOR SHEET

Sheet Name

Unnamed

Referencing Sheet

Referencing Detail

Phasing

Phase Filter

Show All

Phase

New Construction

Other

ViewPurpose_USACE

3 - Documentation

8 View Filters

View filters are used to group elements in Revit based on specific criteria (category, property values, etc.) and are frequently used to further control visibility at a level not provided for in the standard Visibility/Graphics overrides settings at the category level.

The MECH template includes three custom filters that control the visibility of view callout symbols:

- Plotted_USACE
- Presentation_USACE
- Working_USACE

These are intended to group sections, elevations and callouts belonging to view types ending in “DOC”, “PRS” or “WRK” to allow them to be suppressed in cases where their display would not be appropriate. For example, callout tags for working elevations (“WRK”) should not be displayed in a documentation plan view (“DOC”). The view templates controlling documentation plan view settings include turning off all the elevation and section callouts belonging to the “Working_USACE” filter group while allowing those belonging to the “Plotted_USACE” filter group to be displayed.

There are also filters to control the visibility of model elements. The following filters are used to group elements with specific "Fire Rating" properties, primarily for display purposes.

- 0 Hr Smoke Wall_USACE
- 1 Hr Smoke Wall_USACE
- 1 Hr Smoke Wall_USACE
- 2 Hr Fire Smoke Wall_USACE
- 2 Hr Fire Wall_USACE
- 3 Hr Fire Wall_USACE
- 4 Hr Fire Wall_USACE
- Fire Rated Wall (less than 1 hr)_USACE

The following filter is used to identify the Egress Path element in plan views.

- Egress Path_USACE

The following filters are used to control visibility of Mechanical, Electrical and Plumbing elements:

- ALL MEP_USACE
- Components - Interior_USACE (captures all non-site electrical components)
- Components - nonGrounding_USACE
- Components - Site_USACE
- HVAC Ducts_USACE
- Wires - Grounding_USACE

The following filters are used to control visibility of specific piping systems:

- Piping - Domestic Cold Water_USACE
- Piping - Domestic Hot Water Return_USACE
- Piping - Domestic Hot Water_USACE
- Piping - Fire Protection Dry_USACE
- Piping - Fire Protection Other_USACE
- Piping - Fire Protection Pre-Action_USACE
- Piping - Fire Protection Wet_USACE
- Piping - Hydronic Chilled Water Return_USACE
- Piping - Hydronic Hot Water Return_USACE
- Piping - Hydronic Hot Water Supply_USACE
- Piping - Hydronic Return_USACE
- Piping - Hydronic Supply_USACE
- Piping - Natural Gas_USACE
- Piping - Other_USACE
- Piping - Sanitary_USACE
- Piping - Vent_USACE

Note: New to the MECH 4.3 template is the use of System Graphic Overrides to control the colors of ducts and pipes in working plan views. Each duct and pipe system has a unique color assigned to it, to allow for differentiating them in working views. In documentation views, the All

MEP_USACE filter will force all ducts and pipes, as well as all other MEP components to black. These settings are automated through the application of view templates to each view type.

9 Schedules

USACE Schedules are dependent on a view template, “Schedules_USACE”, which controls their appearance on sheets, whose settings are shown below.

Table 7 : Schedule Properties

The screenshot shows the 'Schedule Properties' dialog box with the 'Appearance' tab selected. The 'Graphics' section contains the following settings: 'Grid lines' is checked with a dropdown set to 'Thin Lines'; 'Outline' is checked with a dropdown set to 'Wide Lines'; 'Grid in headers/footers/spacers' is unchecked; and 'Blank row before data' is unchecked. The 'Text' section contains the following settings: 'Show Title' is checked; 'Show Headers' is checked; 'Title text' is set to 'Schedule Title 3/16"_USAC'; 'Header text' is set to 'Schedule Header 1/8"_USA'; and 'Body text' is set to 'Default 3/32"_USACE'. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

Section	Property	Value
Graphics	Grid lines	☒ Thin Lines
	Outline	☒ Wide Lines
	Grid in headers/footers/spacers	☐
	Blank row before data	☐
Text	Show Title	☒
	Show Headers	☒
	Title text	Schedule Title 3/16"_USAC
	Header text	Schedule Header 1/8"_USA
	Body text	Default 3/32"_USACE

Some schedules are intended for use on plotted sheets, while others are intended as working schedules or for project management purposes and are not to be placed on plotted sheets. Non-plotted schedules will be prefixed with “Z-“ and will be named in sentence case. Plotted schedules will be named with all capitalized letters. Schedules that are plotted should have the “PlottedSchedule_USACE” parameter checked on in the view properties for the schedule. Schedules that are not plotted should have checked off.

The following non-plotted schedules are included:

1. Z-Sheet Information List

- This is a working schedule to facilitate the creation of the plotted "SHEET LIST" schedule. It includes three fields to control sorting and grouping in the "SHEET LIST" schedule:
 - Sheet Discipline
 - Discipline Group
 - Publish Order

Table 8 : Z-Sheet Information List

Sheet Information List								
A	B	C	D	E	F	G	H	I
SHEET NUMBER	SHEET TITLE	SHEET DISCIPLINE	DISCIPLINE GROUP	PUBLISH ORDER	DESIGNED BY	DRAWN BY	CHECKED BY	SUBMITTED BY

2. Z-View List

- Shows all views in the project with critical view settings for project management purposes. This can be used to simply review the project views or to make changes where necessary.

Table 9 : Z-View List

View List									
A	B	C	D	E	F	G	H	I	J
View Name	View Template	Discipline	Phase	Scale Value	1:	Detail Level	Associated Level	Sheet Number	Sheet Name
									Title on Sheet

Note: The View List will also group views by View Family, then by View Type.

3. Z-Space Schedule

- Shows all spaces defined in the project.

Table 10 : Z-Space Schedule

<Z-Space Schedule>				
A	B	C	D	E
Name	Number	Perimeter	Zone	Area

4. Z-USACE_abbreviations

- This is a key schedule for abbreviations for all disciplines, and may be used in place of the abbreviations included in the "ABBREVIATIONS AND PROJECT INFORMATION" legend view on the Cover Sheet.
- If used for plotting purposes, rename to "USACE ABBREVIATIONS" to maintain compliance with schedule naming standards, and change the following view properties:
 - USACE_ViewPurpose: "3 - Documentation"
 - PlottedSchedule_USACE: "On"

Table 11 : Z-USACE abbreviations Schedule

<z-USACE abbreviations>			
A	B	C	D
No.	ABB	DEF	DISC
1	A	-----	-
2	A LABEL	CLASS 'A' DOOR	G
3	A/C	AIR CONDITION	G
4	A/C UNIT	AIR CONDITIONING UNIT	G
5	A/E	ARCHITECT/ENGINEER	G
6	AB	ANCHOR BOLT	G
7	ACC	ACCESSIBLE	G
8	ACS	AUTOMATIC CONTROL SYSTEM	G
9	ACS DR	ACCESS DOOR	G

5. Z-Mechanical Equipment Schedule

The Z-Mechanical Equipment Schedule includes a wide variety of information pertaining to mechanical equipment of all types, and is too large to adequately represent graphically on this page.

6. Z-Classification Data Schedule

Table 12 : Z-USACE Classification Data Schedule

<Z-Classification Data>							
A	B	C	D	E	F	G	H
Family	Family and Type	OmniClass Number	OmniClass Title	Assembly Code	Assembly Descripti	Category	Description

7. Z-Duct Schedule

The Z-Duct Schedule includes a wide variety of information pertaining to ducts, and is too large to adequately represent graphically on this page.

8. Z-HVAC Spaces Schedule

The Z-HVAC Spaces Schedule includes a wide variety of HVAC information pertaining to spaces, and is too large to adequately represent graphically on this page.

9. Z-Material Checklist Schedule

Table 13 : Z-USACE Material Checklist Schedule

<Z-Material Checklist>											
A	B	C	D	E	F	G	H	I	J	K	L
Family	Family and Type	Material Descriptio	Material: Keynote	Material: Name	Material: URL	OmniClass Number	OmniClass Title	Model	Manufacturer	Material: Manufact	URL

10. Z-Reference View List

The Z-Reference View List includes a wide variety of information pertaining to views, and is too large to adequately represent graphically on this page.

10 NCS – A/E/C CAD Symbols

Symbol families have been loaded and are in compliance with the current release of the National CAD Standards version 6.0. Refer to Appendix “A” for examples of the symbols used in the project.

11 Annotation/Dimensions

USACE text types are included with the template that are based upon the National CAD Standards version 6.0. Only USACE standard fonts are included in the template. Fonts that do not include the “_USACE” suffix are not USACE standard or approved and should not be used.

Specific text types included are:

11. Default 3/32”_USACE
12. Label 1/8”_USACE
13. Schedule Header 1/8”_USACE
14. Schedule Title 3/16”_USACE
15. Sub-Title 3/16”_USACE
16. Title 1/4”_USACE
17. Title Bold 1/4”_USACE

As with text, NCS 6.0 compliant dimension types are provided with the template, all suffixed with “_USACE” to indicate that they are approved for use. Only USACE standard dimension types are included in the template.

Specific dimension types included are:

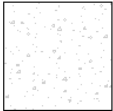
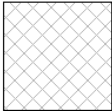
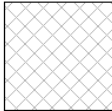
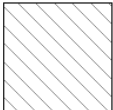
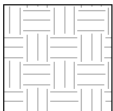
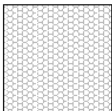
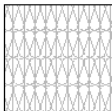
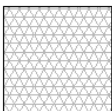
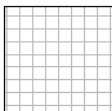
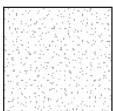
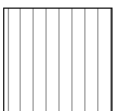
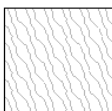
- Linear Dimensions
 - Continuous_USACE
 - ARCHline_USACE
- Angular Dimensions
 - Arrow Line-Leader_USACE
- Radial Dimensions
 - Horizontal_USACE
 - Rotated_USACE

- Diameter Dimensions
 - Horizontal_USACE
 - Rotated_USACE
- Spot Elevations
 - Beam Elevation (Project)_USACE
 - Beam Elevation (Relative)_USACE
 - No Symbol (Project)_USACE
 - No Symbol (Relative)_USACE
 - Target (Project)_USACE
 - Target (Relative)_USACE
- Spot Coordinates
 - Horizontal_USACE
 - Horizontal (w-Elevations)_USACE
- Spot Slopes
 - Spot Slope_USACE

12 Filled Region Types

The following pre-defined Filled Region types are provided in the MECH template.

Table 14 : Filled Region Types

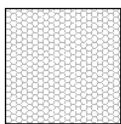
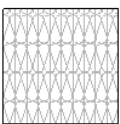
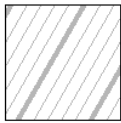
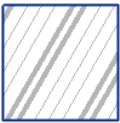
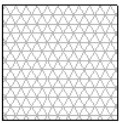
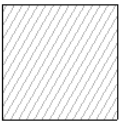
	CONCRETE		DIAGONAL CROSSHATCH		DIAGONAL CROSSHATCH - TRANSPARENT
	DIAGONAL DOWN		DIAGONAL DOWN - TRANSPARENT		DIAGONAL UP
	EARTH		EIFS		FIBERGLASS SEMI-RIGID
	HORIZONTAL LINES		NET3		ORTHO CROSSHATCH
	SAND - DENSE		SOLID BLACK		STONE
	VERTICAL LINES		WOOD 1		WOOD 2

13 Fill Patterns

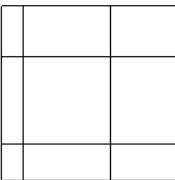
The Following Fill Patterns are also included in the MECH template, in addition to the patterns provided from the default template provided with Revit out of the box and can be used to create additional Filled Region types as needed.

Table 15 : Fill Patterns

DRAFTING FILL PATTERNS

	EIFS_USACE		FIBERGLASS SEMI-RIGID_USACE		FIRE (1-HR)_USACE
	FIRE (2-HR)_USACE		FIRE (3-HR)_USACE		FIRE (4-HR)_USACE
	FIRE AND SMOKE (1-HR)_USACE		FIRE AND SMOKE (2-HR)_USACE		NET3_USACE
	SHAFT (1-HR)_USACE		SHAFT (2-HR)_USACE		SMOKE (0 HR)_USACE
	STONE_USACE				

MODEL FILL PATTERNS

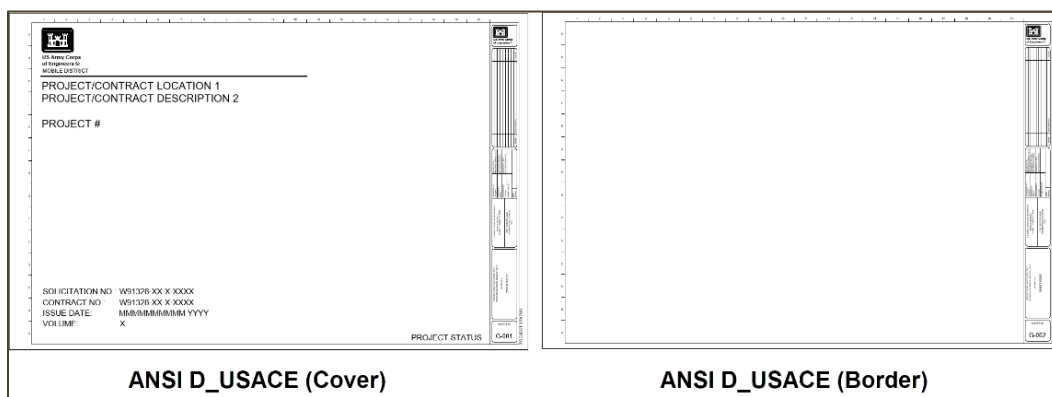
	CEILING 12X12_USACE
---	---------------------

14 Title block/Border Types

There are two title block families loaded into the template.

- **StartupScreen_Border_USACE** – for use with the starting view. *This should not be used for anything else.*
- **ANSI D_USACE** – includes two types:
 - **Cover** – for use as a cover sheet
 - **Border** – for use with standard plotted sheets.

Table 16 : Border Types



Refer to Appendix B for more details on Title blocks and Borders.

15 Pre-Defined Sheets

There are Several pre-defined sheets in the MECH template:

- **0 – Starting View_USACE** – not a plotted sheet. Used as the Revit startup view with critical information about the current project and various USACE standards. Uses the StartupScreen_Border_USACE title block.
- **0.1 - Change Request** - not a plotted sheet. Used for submitting comments, questions, and template change requests to the USACE template team. For instructions, see Appendix G.
- **G-001 – Cover Sheet** – uses the ANSI D_USACE (Cover) title block.

The following sheets use the ANSI D_USACE (Border) title block.

- FP-001 - FIRE PROTECTION LEGEND
- FP-101 - FIRE PROTECTION PLAN
- FP-301 - FIRE PROTECTION SECTION
- FP-401 - FIRE PROTECTION ENLARGED PLANS
- FP-601 - FIRE PROTECTION SCHEDULES
- M-001 - MECHANICAL GENERAL NOTES, ABBREVIATIONS
- M-101 - HVAC PLAN

- M-301 - HVAC SECTION
- M401 - HVAC ENLARGED PLANS
- M-501 -HVAC DETAILS
- M-601 - HVAC SCHEDULES
- MP-001 - HYDRONICS LEGEND
- MP-101 - HYDRONICS PLAN
- MP-301 - HYDRONICS SECTION
- MP-401 - HYDRONICS ENLARGED PLANS
- MP-601 - HYDRONICS SCHEDULES
- P-001 - PLUMBING LEGEND
- P101 - PLUMBING PLAN
- P301 - PLUMBING SECTION
- P401 - PLUMBING ENLARGED PLANS
- P601 - PLUMBING SCHEDULES

16 Starting View

The startup view is a sheet set up to allow users/managers to review/edit project information as well as to refer to additional standards information (browser organization, view naming, sheet naming, sheet disciplines and publish order, etc.) Project information in the startup view is linked to the data in the “Project Information” dialog which is accessible from the “Manage” tab of the ribbon. This information will also populate critical fields in the plot sheets.

Table 17 : Starting View

 US Army Corps of Engineers® REVIT STARTING VIEW Read Me Template Version: Mechanical Template v4.3	SHEET PUBLISH ORDER <table border="1"> <thead> <tr> <th>Discipline</th> <th>Discipline Group</th> <th>Publish Order</th> </tr> </thead> <tbody> <tr><td>General</td><td>1</td><td>10</td></tr> <tr><td>Hazardous Materials</td><td>2</td><td>20</td></tr> <tr><td>Survey/Mapping</td><td>3</td><td>30</td></tr> <tr><td>Geotechnical</td><td>4</td><td>40</td></tr> <tr><td>Civil</td><td>5</td><td>50</td></tr> <tr><td>Landscape</td><td>6</td><td>60</td></tr> <tr><td>Structural</td><td>7</td><td>70</td></tr> <tr><td>Architectural</td><td>8</td><td>80</td></tr> <tr><td>Interiors</td><td>9</td><td>90</td></tr> <tr><td>Equipment</td><td>11</td><td>110</td></tr> <tr><td>Fire Protection</td><td>12</td><td>120</td></tr> <tr><td>Plumbing</td><td>13</td><td>130</td></tr> <tr><td>Process</td><td>14</td><td>140</td></tr> <tr><td>Mechanical</td><td>15</td><td>150</td></tr> <tr><td>Electrical</td><td>16</td><td>160</td></tr> <tr><td>Telecommunications</td><td>17</td><td>170</td></tr> <tr><td>Resource</td><td>18</td><td>180</td></tr> <tr><td>Other Disciplines</td><td>19</td><td>190</td></tr> <tr><td>Contractor/Shop Drawings</td><td>20</td><td>200</td></tr> <tr><td>Operations</td><td>21</td><td>210</td></tr> </tbody> </table>	Discipline	Discipline Group	Publish Order	General	1	10	Hazardous Materials	2	20	Survey/Mapping	3	30	Geotechnical	4	40	Civil	5	50	Landscape	6	60	Structural	7	70	Architectural	8	80	Interiors	9	90	Equipment	11	110	Fire Protection	12	120	Plumbing	13	130	Process	14	140	Mechanical	15	150	Electrical	16	160	Telecommunications	17	170	Resource	18	180	Other Disciplines	19	190	Contractor/Shop Drawings	20	200	Operations	21	210
Discipline	Discipline Group	Publish Order																																																														
General	1	10																																																														
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Civil	5	50																																																														
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Operations	21	210																																																														
BROWSER ORGANIZATION: Browser organization is sorted by view purpose. The view purposes are 1 Working (WRK), 2 Analysis (ANL), 3 Documentation (DOC), 4 Presentation (PRS), 5 Export (EXP). The abbreviation shown enclosed in parenthesis is to be appended to the view name as appropriate. With new created views a purpose is needed to keep views organized. Please select the appropriate purpose for each of your views (See template guides for further definitions on view purpose). View Naming: Naming of views is to follow the standard set in the template and is divided into categories. View Name Examples: <table border="1"> <thead> <tr> <th>Level</th> <th>View Type</th> <th>Function</th> <th>Region</th> <th>View Purpose</th> </tr> </thead> <tbody> <tr> <td>02_</td> <td>FP_FLOOR PLAN_</td> <td>DIMENSIONS_</td> <td></td> <td>DOC</td> </tr> <tr> <td></td> <td>EL_EAST</td> <td></td> <td></td> <td>WRK</td> </tr> <tr> <td>03_</td> <td>MP_MECHANICAL PLAN_</td> <td>HW PIPING_</td> <td>West_</td> <td>PRS</td> </tr> </tbody> </table> Working Schedules: Working Schedules are schedules that are to be used for analyzing model information but are not intended to be put on a sheet. To separate these working schedules the letter Z is to precede the schedule name so that it filters to the bottom in your project browser. Schedule Name Examples: Z-Working Door Schedule Z-Working Structural Framing Schedule Sheet Naming and Organization: Typical naming standards still apply following AEC CAD and NCS Standards. Sheet Examples: S-101 - ROOF FRAMING PLAN M-101 - MECHANICAL PIPING PLAN For More Information: USACE CAD/BIM Technology Center USACE Starting View - Version 4.3	Level	View Type	Function	Region	View Purpose	02_	FP_FLOOR PLAN_	DIMENSIONS_		DOC		EL_EAST			WRK	03_	MP_MECHANICAL PLAN_	HW PIPING_	West_	PRS	PROJECT INFORMATION: USACE District: _____ Project Number: _____ Issue Date: _____ Project Name: _____ Contractor Name and ID Number: _____ Project Address: _____ Contractor Address: _____ Contract Number: _____ Solicit Number: _____ File Number: _____ TEMPLATE NOTES Building ID: This parameter information (BldgID_USACE) is included on a sheet for situations that involve multiple buildings (Building A, Building B, ...), or multiple parts for the building (West Wing, Central Wing, East Wing, ...). This value is a sheet parameter that will be appear when the value is filled out in the sheet properties. View Purpose: This classification (ViewPurpose_USACE) is a parameter assigned to the view category and allows views to be organized in a way to group them and make them easily accessible. Having all views with a single purpose makes it more difficult to find views that are used on sheets, views used for creating Navisworks exports, or for presentation views for clients. New views are automatically assigned the view purpose that is assigned to their view type, as defined by the view template that is used by that view. Sheet Naming: We have included the NCS standard sheet type abbreviation for model view names as part of the standing view naming. These are recommended (refer to template manual for more information): - FP - Floor Plan - GP - Ceiling Plan - EP - Enlarged Plan - EL - Elevation - SP - Site Plan - QP - Equipment Plan																																											
Level	View Type	Function	Region	View Purpose																																																												
02_	FP_FLOOR PLAN_	DIMENSIONS_		DOC																																																												
	EL_EAST			WRK																																																												
03_	MP_MECHANICAL PLAN_	HW PIPING_	West_	PRS																																																												

In addition to the fields in the startup view title block itself, there are two additional “hidden” fields that are accessible by selecting the title block itself and editing the title block properties. After selecting the title block, in the Properties Palette under “Other” are two properties:

- **Email Contact** – selecting this will launch the default email client with an email addressed to the USACE Revit Template Team.
- **USACE Revit Template Contact** – Selecting this will launch a web browser and navigate to the CAD-BIM Technology Center’s home page.

Table 18 : Email Link

Other	
Email Contact	mailto:USACE-Revit-Template-Team@erdc.dren.mil?subject=USA...
USACE Revit Template Contact	https://cadbimcenter.erd.dren.mil/revit%20templates
File Path	

17 Levels

The following levels have been defined in the template:

Table 19 : Levels (Floors)

Level Name	Elevation from Project Datum	Building Story (Y/N)
00 LEVEL TOF	-3'-0"	No
01 LEVEL FF	0'-0"	Yes
02 LEVEL	12'-0"	Yes
03 LEVEL ROOF	24'-0"	Yes

Levels should be moved up or down as required to accommodate individual project needs.

18 Pre-loaded Families

Annotation Families

The following USACE annotation families have been pre-loaded into the MECH template:

Table 20 : Preloaded Annotation Families

Family Name	Source	NCS 6 Compliant
ANSI D_USACE	USACE	Yes
Callout Head_USACE	USACE	Yes
Centerline_USACE	USACE	Yes
Diffuser Tag_USACE	USACE	Yes
Elevation Mark Exterior_USACE	USACE	Yes
Elevation Mark Interior_USACE	USACE	Yes
Elevation Mark Pointer Exterior_USACE	USACE	Yes
Elevation Mark Pointer Interior_USACE	USACE	Yes
Graphic Scales_USACE	USACE	Yes
Grid Head – Circle_USACE	USACE	Yes

Key Plan_USACE	USACE	N/A
Keynote Tag_USACE	USACE	Yes
Level Head – Circle_USACE	USACE	Yes
Material Tag_USACE	USACE	No
North Arrow_USACE	USACE	Yes
Plumbing Fixture Tag_USACE	USACE	Yes
Revision Tag_USACE	USACE	Yes
Room Tag_USACE	USACE	Yes
Section Head – no arrow_USACE	USACE	Yes
Section Head_USACE	USACE	Yes
Section Tail – Filled_USACE	USACE	Yes
Space Tag_USACE	USACE	Yes
Spot Elevation - Crosshair_USACE	USACE	Yes
Spot Elevation – Target Filled_USACE	USACE	Yes
StartupScreen_Border_USACE	USACE	N/A
View Reference_USACE	USACE	Yes
View Title_USACE	USACE	Yes

Air Terminals

The following Air Terminal Families have been loaded into the MECH template in addition to the standard Out of the Box preloaded families:

Table 21 : Preloaded Air Terminal Families

Family Name	Source	Type Definitions
Diffuser_RectFace_RndNeck_USACE	USACE	12x12 - 04 Neck
		12x12 - 06 Neck
		12x12 - 08 Neck
		24x24 - 06 Neck
		24x24 - 08 Neck
		24x24 - 10 Neck
		24x24 - 012 Neck
		24x24 - 14 Neck
		24x24 - 15 Neck

Detail Items

The following Detail Item families have been preloaded into the MECH template in addition to the standard Out of the Box preloaded families:

Table 22 : Preloaded Detail Item Families

Family Name	Source	Type Definitions
KeyPlan_Areas_USACE	USACE	KeyPlan_Areas

Duct Accessories

The following Duct Accessory families have been preloaded into the MECH template:

Table 23 : Preloaded Duct Accessory Families

Family Name	Source	Type Definitions
BalancingDamper_Rect_USACE	USACE	Standard
BalancingDamper_Round_USACE	USACE	Standard

Duct Fittings

The following Duct Fitting families have been preloaded into the MECH template in addition to the standard Out of the Box preloaded families:

Table 24 : Preloaded Duct Fitting Families

Family Name	Source	Type Definitions
Rectangular Elbow-Mitered_USACE	USACE	Standard
Rectangular Elbow_Mitered_Double Thickness_Vanes_USACE	USACE	Standard
Rectangular Tap - Beveled_USACE	USACE	Standard

Mechanical Equipment

The following Mechanical Equipment families have been preloaded into the MECH template in addition to the standard Out of the Box preloaded families:

Table 25 : Preloaded Mechanical Equipment Families

Family Name	Source	Type Definitions
AHU_Modular_USACE	USACE	003
		006
		008
		010
		012
		015
		017
		020
		025
		030
		035
		040
		050
		060
		070
		080
		100
		120
AHU_SplitSystem_Vertical_USACE	USACE	03
		05
		07
		10
Pump_Inline_Ciruculator_USACE	USACE	65 GPM - 2.5 Foot Head
		75 GPM - 9.5 Foot Head
Tank_Expansion_USACE	USACE	020
		055
		075
		115
		155
		185
		235

		290
		340
		395
		475
		790
UnitHeater_USACE	USACE	3-5 kW
		7.5-10 kW
		15-20 kW
		25-50 kW
VAV_Single Duct_Elec Reheat_USACE	USACE	8" - 2kW
		8" - 5kW
		16" - 17kW
VAV_Single Duct_HW Reheat_USACE	USACE	04" HW (1-2 Row Coil) 0-225cfm
		04" HW (3-4 Row Coil) 0-225cfm
		05" HW (1-2 Row Coil) 0-350cfm
		06" HW (1-2 Row Coil) 0-500cfm
		06" HW (3-4 Row Coil) 0-500cfm
		07" HW (1-2 Row Coil) 0-650cfm
		07" HW (3-4 Row Coil) 0-650cfm
		08" HW (1-2 Row Coil) 0-900cfm
		09" HW (1-2 Row Coil) 0-1050cfm
		09" HW (1-2 Row Coil) 0-1050cfm
		12" HW (1-2 Row Coil) 0-2000cfm
		14" HW (1-2 Row Coil) 0-3000cfm
		16" HW (1-2 Row Coil) 0-4000cfm

Pipe Accessories

The following Pipe Accessory families have been preloaded into the MECH template:

Table 26 : Preloaded Pipe Accessory Families

Family Name	Source	Type Definitions
Ball Valve - 2-6 Inch_USACE	USACE	2 1/2"
		2"
		3"
		4"
		6"

Butterfly Valve - 2-12 Inch_USACE	USACE	2 1/2"
		2"
		3 1/2"
		4"
		5"
		6"
		8"
		10"
		12"
Cap Relief Valve - 0.5-2 Inch - Threaded_USACE	USACE	1 1/2"x2 1/2"
		1 1/4"x2"
		1"x1 1/2"
		1/2"x1"
		2"x3"
		3/4"x1 1/4"
		3/4"x1"
Check Valve - 0.375-4 Inch - Threaded_USACE	USACE	1 1/2"
		1 1/4"
		1"
		1/2"
		2 1/2"
		2"
		3"
		3/4"
		3/8"
		4"
Diaphragm Valve - Straight - 2.5-14 Inch_USACE	USACE	2 1/2"
		3"
		4"
		5"
		6"
		8"
		10"
		12"
		14"

Diaphragm Valve - Weir Type - 0.5-12 Inch_USACE	USACE	1 1/2"
		1 1/4"
		1"
		1/2"
		2 1/2"
		2
		3"
		3/4"
		4"
		6"
		8"
		10"
		12"
Diaphragm Valve - Y Pattern - 1.5-3 Inch - Threaded_USACE	USACE	1 1/2"
		2 1/2"
		2"
		3"
Gate Valve - 2-12 Inch_USACE	USACE	2 1/2"
		2"
		3"
		4"
		6"
		8"
		10"
		12"
Globe Valve - 0.375-2 Inch - Threaded_USACE	USACE	1 1/2"
		1 1/4"
		1"
		1/2"
		2"
		3/4"
		3/8"
Level Valve - 0.5-2 Inch - Threaded_USACE	USACE	1 1/2"
		1 1/4"
		1"

		1/2"
		2"
		3/4"
Motor Control Valve - 0.5-2 Inch_USACE	USACE	1 1/2"
		1 1/4"
		1"
		1/2"
		2"
		3/4"
Motor Control Valve - 0.5-2 Inch_USACE	USACE	1 1/2"
		2 1/2"
		2"
Multi-Purpose Valve - Straight - 1.5-2.5 Inch - Threaded_USACE	USACE	1 1/2"
		2 1/2"
		2"
Pressure Regulating Valve - 0.5-2 Inch - Threaded_USACE	USACE	1 1/2"
		1"
		1/2"
		2"
		3/4"
Pressure Relief Valve - 1-10 Inch_USACE	USACE	1 1/2x2"
		1 1/2"x3"
		1"x2"
		2"x3"
		3"x4"
		4"x6"
		6"x8"
		6"x10"
		8"x10"
		10"x12"
Solenoid Valve - 0.5-3 Inch_USACE	USACE	1 1/2"
		1"
		1/2"
		2 1/2"
		2"
		3"
		3/4"

Pipe Fittings

The following Pipe Fitting families have been preloaded into the MECH template in addition to those that are typically found in the Out of the Box architectural template:

Table 27 : Preloaded Pipe Fitting Families

Family Name	Source	Type Definitions
Bend - PVC - Sch 40 - DWV_USACE	USACE	Standard
Coupling - PVC - Sch 40 - DWV_USACE	USACE	Standard
Fixture Fitting Double - PVC - Sch 40 - DWV_USACE	USACE	Standard
Pipe Tee_USACE	USACE	Standard
Plug - PVC - Sch 40 - DWV_USACE	USACE	Standard
Reducer - PVC - Sch 40 - DWV_USACE	USACE	Standard
Tee Sanitary - PVC - Sch 40 - DWV_USACE	USACE	Standard
Union_Threaded_USACE	USACE	Standard
Wye 45 Deg Double - PVC - Sch 40 - DWV_USACE	USACE	Standard

Plumbing Fixtures

The following Plumbing Fixture families have been preloaded into the MECH template:

Table 28 : Preloaded Plumbing Fixture Families

Family Name	Source	Type Definitions
FloorDrain_Rect_USACE	USACE	5"x5" Strainer - 2" Drain
		5"x5" Strainer - 3" Drain
		5"x5" Strainer - 4" Drain
		6"x6" Strainer - 2" Drain
		6"x6" Strainer - 3" Drain
		6"x6" Strainer - 4" Drain
		8"x8" Strainer - 2" Drain
		8"x8" Strainer - 3" Drain
		8"x8" Strainer - 4" Drain
Lavatory_Face Hosted_USACE	USACE	19"x14" - Private
		19"x14" - Public
		20"x18" - Private
		20"x18" - Public
Lavatory_Round_Plane Hosted_USACE	USACE	7" Deep

Sink - Island - Single_USACE	USACE	18"x18" - Private
		18"x18" - Public
Sink - Kitchen - Double_USACE	USACE	42"x21" - Private
		42"x21" - Public
Sink - Mop_USACE	USACE	28"x28"
Toilet_Wall Mounted_Face Hosted_USACE	USACE	15" Seat Height
		19" Seat Height
Urinal-Wall Mounted_Face Hosted_USACE	USACE	Urinal-WallMtd_FaceHosted_USACE

19 Model System Family Types

Duct Systems

The following Duct System types have been created or modified in the MECH Template:

Table 29 : Duct System Types

System Name	Graphic overrides	System Abbreviation
Outside Air	Color: Yellow	OA
Exhaust Air	Color: Green	EX
Return Air	Color: Magenta	RA
Supply Air	Color: Blue	SA

Duct Types

The following Duct Types have been modified from the Out of the Box settings found in the default Mechanical template:

Table 30 : Duct Types

Duct Type	Routing Preferences
	Rectangular Duct
Mitered Elbows/Taps	Elbow
	Rectangular Elbow_Mitered_Double Thickness_Vanes_USACE: Standard
	Preferred Junction Type
	Tap
	Junction
	Rectangular Tap - Beveled_USACE: Standard
	Rectangular Tee: Standard
	Cross
	Rectangular Cross: Standard
	Transition
	Rectangular Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Round
	Rectangular to Round Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Oval
	Rectangular to Oval Transition - Length: Standard
	Multi-shape Transition Oval to Round
	None
	Union
	Rectangular Union: Standard
	Cap
	Rectangular Endcap: Standard

Mitered Elbows/Tees	Elbow
	Rectangular Elbow_Mitered_Double Thickness_Vanes_USACE: Standard
	Preferred Junction Type
	Tee
	Junction
	Rectangular Tee: Standard
	Rectangular Takeoff: Standard
	Cross
	Rectangular Cross: Standard
	Transition
	Rectangular Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Round
	Rectangular to Round Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Oval
	Rectangular to Oval Transition - Length: Standard
	Multi-shape Transition Oval to Round
	None
	Union
	Rectangular Union: Standard
	Cap
	Rectangular Endcap: Standard
Radius Elbows/Taps	Elbow
	Rectangular Elbow - Radius: 1.5 W
	Preferred Junction Type
	Tap
	Junction
	Rectangular Takeoff: Standard
	Rectangular Tee: Standard
	Cross
	Rectangular Cross: Standard
	Transition
	Rectangular Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Round
	Rectangular to Round Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Oval
	Rectangular to Oval Transition - Length: Standard
	Multi-shape Transition Oval to Round
	None
	Union
	Rectangular Union: Standard
	Cap
	Rectangular Endcap: Standard

Radius Elbows/Tees	Elbow
	Rectangular Elbow - Radius: 1.5 W
	Preferred Junction Type
	Tee
	Junction
	Rectangular Tee: Standard
	Rectangular Takeoff: Standard
	Cross
	Rectangular Cross: Standard
	Transition
	Rectangular Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Round
	Rectangular to Round Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Oval
	Rectangular to Oval Transition - Length: Standard
	Multi-shape Transition Oval to Round
	None
	Union
	Rectangular Union: Standard
	Cap
	Rectangular Endcap: Standard
Oval Duct	
Gored Elbows/Taps	Elbow
	Oval Elbow - Gored: Standard
	Preferred Junction Type
	Tap
	Junction
	Oval Tap - Straight: Standard
	Oval Tee - Straight: Standard
	Cross
	Oval Cross - Straight: Standard
	Transition
	Oval Transition - Length: Standard
	Multi-shape Transition Rectangular to Round
	None
	Multi-shape Transition Rectangular to Oval
	Rectangular to Oval Transition - Length: Standard
	Multi-shape Transition Oval to Round
	Oval to Round Transition - Length: Standard
	Union
	Oval Union: Standard
	Cap
	Oval Endcap: Standard

Gored Elbows/Tees	Elbow
	Oval Elbow - Gored: Standard
	Preferred Junction Type
	Tee
	Junction
	Oval Tee - Straight: Standard
	Oval Tap - Straight: Standard
	Cross
	Oval Cross - Straight: Standard
	Transition
	Oval Transition - Length: Standard
	Multi-shape Transition Rectangular to Round
	None
	Multi-shape Transition Rectangular to Oval
	Rectangular to Oval Transition - Length: Standard
	Multi-shape Transition Oval to Round
	Oval to Round Transition - Length: Standard
	Union
	Oval Union: Standard
	Cap
	Oval Endcap: Standard
Mitered Elbows/Taps	Elbow
	Oval Elbow - Mitered: Standard
	Preferred Junction Type
	Tap
	Junction
	Oval Tap - Straight: Standard
	Oval Tee - Straight: Standard
	Cross
	Oval Cross - Straight: Standard
	Transition
	Oval Transition - Length: Standard
	Multi-shape Transition Rectangular to Round
	None
	Multi-shape Transition Rectangular to Oval
	Rectangular to Oval Transition - Length: Standard
	Multi-shape Transition Oval to Round
	Oval to Round Transition - Length: Standard
	Union
	Oval Union: Standard
	Cap
	Oval Endcap: Standard

Mitered Elbows/Tees	Elbow
	Oval Elbow - Mitered: Standard
	Preferred Junction Type
	Tee
	Junction
	Oval Tee - Straight: Standard
	Oval Tap - Straight: Standard
	Cross
	Oval Cross - Straight: Standard
	Transition
	Oval Transition - Length: Standard
	Multi-shape Transition Rectangular to Round
	None
	Multi-shape Transition Rectangular to Oval
	Rectangular to Oval Transition - Length: Standard
	Multi-shape Transition Oval to Round
	Oval to Round Transition - Length: Standard
	Union
	Oval Union: Standard
	Cap
	Oval Endcap: Standard
Round Duct	
Taps	Elbow
	Round Elbow: 1.5 D
	Preferred Junction Type
	Tap
	Junction
	Round Takeoff: Standard
	Round Tee: Standard
	Cross
	Round Cross: Standard
	Transition
	Round Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Round
	Rectangular to Round Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Oval
	None
	Multi-shape Transition Oval to Round
	Oval to Round Transition - Length: Standard
	Union
	Round Union: Standard
	Cap
	Round Endcap: Standard

Taps / Short Radius	Elbow
	Round Elbow: 1 D
	Preferred Junction Type
	Tap
	Junction
	Round Takeoff: Standard
	Round Tee: Standard
	Cross
	Round Cross: Standard
	Transition
	Round Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Round
	Rectangular to Round Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Oval
	None
	Multi-shape Transition Oval to Round
	Oval to Round Transition - Length: Standard
	Union
	Round Union: Standard
	Cap
	Round Endcap: Standard
Tees	Elbow
	Round Elbow: 1.5 D
	Preferred Junction Type
	Tee
	Junction
	Round Tee: Standard
	Round Takeoff: Standard
	Cross
	Round Cross: Standard
	Transition
	Round Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Round
	Rectangular to Round Transition - Angle: 30 Degree
	Multi-shape Transition Rectangular to Oval
	None
	Multi-shape Transition Oval to Round
	Oval to Round Transition - Length: Standard
	Union
	Round Union: Standard
	Cap
	Round Endcap: Standard

Flex Duct Types

The following Flex Duct Types have been modified from the Out of the Box settings found in the default Mechanical template:

Table 31 : Flex Duct Types

Flex Duct Type	Routing Preferences	
Flex Duct Rectangular: Flex - Rectangular	Preferred Junction Type	Tap
	Tee	Rectangular Tee: Standard
	Tap	Rectangular Takeoff: Standard
	Transition	Rectangular Transition - Angle: 30 Degree
	Multi Shape Transition Rect to Round	Rectangular to Round Transition - Angle: 30 Degree
	Multi Shape Transition Rect to Oval	None
	Multi Shape Transition Oval to Round	None
	Union	Rectangular Union: Standard
Flex Duct Round: Flex - Round	Preferred Junction Type	Tap
	Tee	Round Tee: Standard
	Tap	Round Takeoff: Standard
	Transition	Round Transition - Angle: 30 Degree
	Multi Shape Transition Rect to Round	Rectangular to Round Transition - Angle: 30 Degree
	Multi Shape Transition Rect to Oval	None
	Multi Shape Transition Oval to Round	None
	Union	Round Union: Standard

Pipe Systems

The following Pipe System types have been created or edited in the MECH Template:

Table 32 : Pipe System Types

System Name	Graphic overrides	System Abbreviation
Domestic Cold Water	Color: Blue	DCW
Domestic Hot Water	Color: Red	DHW
Domestic Hot Water Return	Color: RGB 255-128-128	DHWR
Fire Protection Dry	Color: RGB 176-250-005	FPD
Fire Protection Other	Color: RGB 128-128-128	FPO
Fire Protection Pre-Action	Color: RGB 064-128-128	FPPA
Fire Protection Wet	Color: RGB 226-092-029	FPW
Hydronic Chilled Water Return	Color: RGB 163-77-170	CHWR
Hydronic Chilled Water Supply	Color: RGB 082-103-165	CHWS

Hydronic Hot Water Return	Color: RGB 255-128-128	HWR
Hydronic Hot Water Supply	Color: RGB 170-000-000	HWS
Hydronic Return	Color: Magenta	HR
Hydronic Supply	Color: Cyan	HS
Natural Gas	Color: RGB 255-128-000	NG
Other	Color: RGB 000-064-128	O
Sanitary	Color: Green	SAN
Vent	Color: RGB 128-128-064	VNT

Pipe Types

The following Pipe Types have been included in the default Mechanical template in addition to the "Standard" Out of the Box Pipe Type:

Table 33 : Pipe Types

Pipe Type	Routing Preferences		
Carbon Steel_USACE	Content	Min. Size	Max. Size
	Pipe Segment		
	Carbon Steel - Schedule 40	1/2"	24"
	Elbow		
	Elbow - Generic: Steel	All	
	Preferred Junction Type		
	Tee	All	
	Junction		
	Tee - Generic: Steel	All	
	Cross		
	Cross - Generic: Steel	All	
	Transition		
	Transition - Generic: Steel	All	
	Union		
	Coupling - Generic: Steel	All	
	Flange		
	None	None	
	Cap		
	None	None	

Chilled Water_USACE	Content	Min. Size	Max. Size
	Pipe Segment		
	Copper - M	3/8"	2 1/2"
	Steel, Carbon - Schedule 40	3"	24"
	Elbow		
	Elbow - Generic: Steel	3/8"	2 1/2"
	Elbow - Welded - Generic: Standard	3"	24"
	Preferred Junction Type		
	Tee	All	
	Junction		
	Tee - Generic: Standard	3/8"	2 1/2"
	Tee - Welded - Generic: Standard	3"	24"
	Cross		
	Cross - Generic: Steel	3/8"	2 1/2"
	Cross - Welded - Generic: Standard	3"	24"
	Transition		
	Transition - Generic: Standard	3/8"	2 1/2"
	Transition - Welded - Generic: Standard	3"	24"
	Union		
	Coupling - Generic: Steel	All	
	Flange		
	None	None	
	Cap		
	None	None	
Domestic Water - Copper_USACE	Content	Min. Size	Max. Size
	Pipe Segment		
	Copper - K	1/4"	12"
	Elbow		
	Elbow - Generic: Standard	All	
	Preferred Junction Type		
	Tee	All	
	Junction		
	Tee - Generic: Standard	All	
	Cross		
	Cross - Generic: Standard	All	
	Transition		
	Transition - Generic: Standard	All	
	Union		
	Coupling - Generic: Standard	All	
	Flange		
	None	None	
	Cap		
	None	None	

DWV - PVC_USACE	Content	Min. Size	Max. Size
	Pipe Segment		
	Polyvinyl Chloride - Rigid - Schedule 40	1/2"	12"
	Elbow		
	Bend - PVC - Sch 40 - DWV_USACE: Standard	All	
	Preferred Junction Type		
	Tee	All	
	Junction		
	Tee Sanitary - PVC - Sch 40 - DWV_USACE: Standar	All	
	Cross		
	Fixture Fitting Double - PVC - Sch 40 - DWV_USAC	All	
	Transition		
	Reducer - PVC - Sch 40 - DWV_USACE: Standard	All	
	Union		
	Coupling - PVC - Sch 40 - DWV_USACE: Standard	All	
	Flange		
	None	None	
	Cap		
	None	None	
DWV Rain Leader - PVC_USACE	Content	Min. Size	Max. Size
	Pipe Segment		
	Plastic - Schedule 40	1/2"	12"
	Elbow		
	Bend - PVC - Sch 40 - DWV_USACE: Standard	All	
	Preferred Junction Type		
	Tee	All	
	Junction		
	Tee Sanitary - PVC - Sch 40 - DWV_USACE: Standar	All	
	Cross		
	Fixture Fitting Double - PVC - Sch 40 - DWV_USAC	All	
	Transition		
	Reducer - PVC - Sch 40 - DWV_USACE: Standard	All	
	Union		
	Coupling - PVC - Sch 40 - DWV_USACE: Standard	All	
	Flange		
	None	None	
	Cap		
	None	None	

Natural Gas_USACE	Content	Min. Size	Max. Size
	Pipe Segment		
	Carbon Steel - Schedule 40	1/2"	24"
	Elbow		
	Elbow - Generic: Steel	All	
	Preferred Junction Type		
	Tee	All	
	Junction		
	Tee - Generic: Steel	All	
	Cross		
	Cross - Generic: Steel	All	
	Transition		
	Transition - Generic: Steel	All	
	Union		
	Coupling - Generic: Steel	All	
Solar Hot Water_USACE	Flange		
	None	None	
	Cap		
	None	None	
	Pipe Segment		
	Copper - K	1/4"	12"
	Elbow		
	Elbow - Generic: Standard	All	
	Preferred Junction Type		
	Tee	All	
	Junction		
	Tee - Generic: Standard	All	
	Cross		
	Cross - Generic: Standard	All	
	Transition		
	Transition - Generic: Standard	All	
	Union		
	Coupling - Generic: Standard	All	
	Flange		
	None	None	
	Cap		
	None	None	

20 References

The location for downloading the templates is <https://cadbim.usace.army.mil/BIM>. Links to documentation, Q&A and a review form is also available on this site.

National CAD Standards (NCS) <https://www.nationalcadstandard.org/ncs6/>

A/E/C Graphics Standard – Release 2.1 *August 2019*

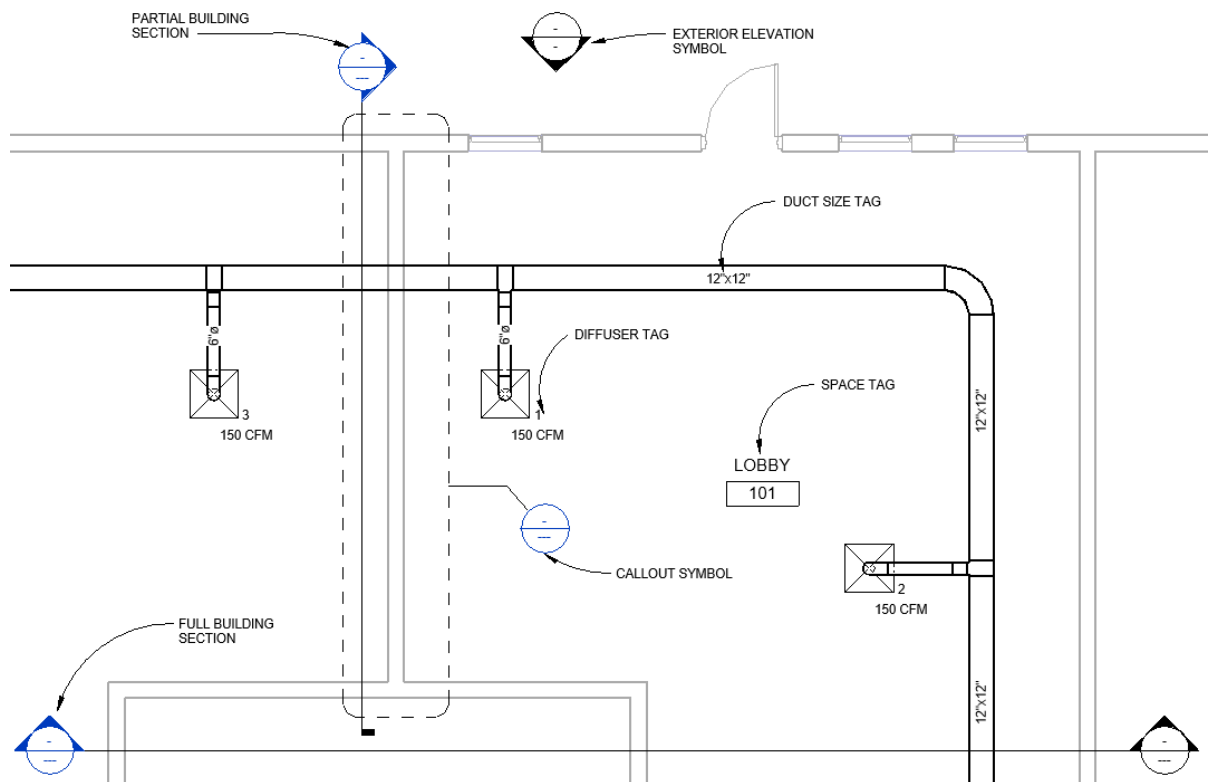
Please direct questions or comments about the templates to: [USACE Revit Template Team](#)

Appendix A: Annotation Symbols and the NCS 6.0

General Symbols

The symbols shown below are based upon the requirements of the NCS 6.1. Images are not to scale.

Table 34 : General Symbols



View Title – Viewports

The following viewport types and their associated titles are in the template:

Table 35 : Viewport Types

View – Title – Default_USACE (default viewport type)		
	Title: ¼" Other text: 3/32"	 01 FLOOR PLAN 1/8" = 1'-0"
	Title:	View Title_USACE: Default
	Show Title:	Yes
	Show Line:	Yes
View – Title – No Number or Line_USACE		
	Title: ¼" Other text: 3/32"	01 FLOOR PLAN 1/8" = 1'-0"
	Title:	View Title_USACE: No Number
	Show Title:	Yes
	Show Line:	No
View – Title – No Number_USACE		
	Title: ¼" Other text: 3/32"	01 FLOOR PLAN 1/8" = 1'-0"
	Title:	View Title_USACE: No Number
	Show Title:	Yes
	Show Line:	Yes
View – Title – No Title, Number or Line_USACE		
	Title: N/A Other text: N/A	
	Title:	<none>
	Show Title:	No
	Show Line:	No
View – Title – Reference Sheet_USACE		
	Title: ¼" Other Text: 3/32"	 01 FLOOR PLAN 1/8" = 1'-0"
	Title:	View Title_USACE: Reference Number
	Show Title:	Yes
	Show Line:	Yes

Veiw - Title - Not to Scale_USACE		
	Title: 1/4" Other Text: 3/32"	 01 FLOOR PLAN
	Title:	View Title_USACE: Not to Scale
	Show Title:	Yes
	Show Line:	Yes

Symbol Component Families

Annotation Families

- Family: Callout_Head_USACE
 - Type: 1/8" Radius
- Family: Centerline_USACE
 - Type: Centerline
- Family: Diffuser Tag_USACE
 - Type: Diffuser Tag
- Family: Elevation Mark Exterior_USACE
 - Type: Detail Number and View Name
- Family: Elevation Mark Interior_USACE
 - Type: Filled Arrow and View Name
- Family: Elevation Mark Pointer Exterior_USACE
 - Type: Detail Number
- Family: Elevation Mark Pointer Interior_USACE
 - Type: Filled Arrow
- Family: Graphic Scales_USACE
 - Type: Arch Scale 1"-1'-0" Scale
 - Type: Arch Scale 1-1/2"=1'- 0" Scale
 - Type: Arch Scale 1/2"=1'- 0" Scale
 - Type: Arch Scale 1/4"=1'- 0" Scale
 - Type: Arch Scale 1/8"=1'- 0" Scale
 - Type: Arch Scale 1/16"=1'- 0" Scale
 - Type: Arch Scale 1/32"=1'- 0" Scale
 - Type: Arch Scale 1/64"=1'- 0" Scale
 - Type: Arch Scale 3"=1'- 0" Scale
 - Type: Arch Scale 3/4"=1'- 0" Scale
 - Type: Arch Scale 3/8"=1'- 0" Scale
 - Type: Arch Scale 3/16"=1'- 0" Scale
 - Type: Arch Scale 6"=1'- 0" Scale
 - Type: Arch Scale 12"=1'- 0" Scale
 - Type: Civil Scale 1 to 1 Scale
 - Type: Civil Scale 1 to 2 Scale
 - Type: Civil Scale 1 to 5 Scale
 - Type: Civil Scale 1 to 5 Scale
 - Type: Civil Scale 1"=20' Scale
 - Type: Civil Scale 1"=30' Scale
 - Type: Civil Scale 1"=40' Scale

- Type: Civil Scale 1"=50' Scale
 - Type: Civil Scale 1"=60' Scale
 - Type: Civil Scale 1"=80' Scale
 - Type: Civil Scale 1"=100' Scale
 - Type: Civil Scale 1"=200' Scale
 - Type: Civil Scale 1"=300' Scale
 - Type: Civil Scale 1"=400' Scale
- Family: Grid Head – Circle_USACE
 - Type: Circle 3/8"
- Family: Keynote Tag_USACE
 - Type: Keynote Number – Boxed – Large
 - Type: Keynote Number – Boxed – Small
 - Type: Keynote Number – Sheet Keynote
- Key Plan_USACE
 - Key Plan_USACE
- Family: Level Head – Circle_USACE
 - Type: Circle
- Family: Material Tag_USACE
 - Type: Material Tag
- Family: North Arrow_USACE
 - Type: Plan North
- Family_Revision Tag_USACE
 - Type: Revision Tag
- Family: Room Tag_USACE
 - Type: Room No. with Area
 - Type: Room No. with Volume
 - Type: Room Tag
- Family: Section Head -no arrow_USACE
 - Type: Section Head – no arrow
- Family: Section Head_USACE
 - Type: Section Head_Filled
- Family: Section Tail – Filled_USACE
 - Type: 1/16" x 1/8"
- Family: Sign Interior Tag_USACE
 - Boxed
 - Full Information
 - Sign ID
 - Sign ID and Information
- Family: Space Tag_USACE
 - Type: Space Tag
 - Type: Space Tag with Area
 - Type: Space Tag with Volume
- Family: Spot Elevation – Target Filled_USACE
 - Type: Spot Elevation – Target Filled
- Family: StartupScreen_Border_USACE
 - Type: Revit Starting View

- Family: View Reference_USACE
 - Type: View Reference
- Family: View Title_USACE
 - Type: Default
 - No Number
 - NTS
 - Reference Number

Appendix B: Key Plans

A Key Plan_USACE Generic Annotation family has been provided for creating Key Plans to be placed on sheets, and will need to be edited on a project-by-project basis. The process for editing the family follows (note: these are top-level steps; it is assumed that this task will be completed by someone familiar with the basics of family editing):

1. Open the Key Plan_USACE family in the Family Editor. A USACE-Standard north arrow symbol has been placed at the insertion point. It can be edited, and the "True North Angle" property modified to accommodate the project's needs.
2. Placeholder linework has been placed to represent a generic building outline. Replace this with linework to represent the building outline of the current project, divided into the various plan areas.
3. Create a Family Type and a Yes/No type-based parameter for each plan area. For each Family Type, set the value for the associated parameter to "Yes", leaving all others to "No".
4. Create Filled Regions for each plan area. For each Filled Region, associate the "Visible" property to the Yes/No parameter for that plan area.
5. Reload the family to the project, over-writing the placeholder family.

Appendix C: Border Sheets

The ANSI D_USACE title block “Cover” and “Border” types meet the USACE A/E/C CAD Standards for 22” x 34” title blocks.

Table 36 : Cover Title Block

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20																			
P R O J E C T / C O N T R A C T / L O C A T I O N / D I S T R I C T	 US Army Corps of Engineers ® DISTRICT																		
	PROJECT/CONTRACT LOCATION 1																		
	PROJECT/CONTRACT DESCRIPTION 2																		
	PROJECT #																		
SOLICITATION NO.: W91328-XX-X-XXXX CONTRACT NO.: W91328-XX-X-XXXX ISSUE DATE: MMMMMMMMMM YYYY VOLUME: X																			
PROJECT STATUS																			
G-001																			

Table 37 : Border Title Block

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20																			
P R O J E C T / C O N T R A C T / L O C A T I O N / D I S T R I C T	 US Army Corps of Engineers ® DISTRICT																		
PROJECT STATUS																			
G-001																			

Text Box:

Most font sizes are 3/32". There is not an "Approved By:" field however there is a "Submitted By:" field. The "ISSUE DATE" field is the Project Issue Date, which is linked to the "Project Issue Date" property in the "Project Information" dialog box, accessible from the "Manage" tab of the ribbon.

Some fields in past versions of the template that might require multiple lines of text have now been converted to multiline text values. Selecting the field to edit it will bring up a dialog box for entering text and allows carriage returns.

The "Sheet Name" property of the sheet is used by the "SHEET NAME" field. This is a single-line text parameter. The "SHEET NAME" field is linked to the "SheetTitle_USACE" property of the sheet. This is a multi-line text parameter and must be edited from the Properties Palette when in the sheet view.

Building ID:

The "BldgID_USACE" sheet property is optional for use in cases where a project is to be segmented into multiple buildings (UNIT "A", UNIT "B", etc.) or separate parts ("EAST", "WEST", etc.). Each sheet may be identified with a specific Building ID label. This label is blank by default. Additionally it can be turned on and off by editing the properties of the title block on the sheet and checking its display on or off.

Revision Box:

There are only seven lines of revisions that will be visible since that will be a USACE standard requirement. The font is set at 3/32" to match the standards. For more revisions than the eight shown, Revit will keep the top 8 most current revisions in the list but will keep the previous ones in memory as part of the Project Information.

Guide Grid

There is a guide grid available for all sheets, with spacing set to 1 1/2" to match the sheet grid. It can be enabled for a sheet by setting the "Guide Grid" property of the sheet to "22x34_USACE".

Project Status

The “PROJECT STATUS” field on the title block is linked to the “Project Status” property in the Project Information dialog box.

Optional Fields

There are two optional fields and associated optional title fields that are invisible by default but that can be turned on by editing the title block border type properties. These fields are linked to the following properties in the Project Information dialog box:

- OPTION TITLE 1 – corresponds to the “AlternateInfoTitle1_USACE” property
- OPTION FIELD 1 – corresponds to the “AlternateInfo1_USACE” property
- OPTION TITLE 2 – corresponds to the “AlternateInfoTitle2_USACE” property
- OPTION FIELD 2 – corresponds to the “AlternateInfo2_USACE” property

Appendix D: Project Parameters

There are several Project and Sheet Parameters defined in the MECH template that will apply to all disciplines. Each discipline will have additional parameters that apply only to that discipline, which will be addressed in the discipline-specific templates and associated documentation.

Many of these parameters are “Shared Parameters” and are dependent upon the existence of the Shared Parameter File:

USACE_SharedParameters_Common_v4.3.txt which should accompany the *USACE_Revit2019_Template_MECH_v4.3.rte* template. These shared parameters allow the custom fields in the title block to be edited. In the case where the fields cannot be edited directly or don’t update when parameters in the project are edited, it is most likely because the connection to the shared parameter file has been lost or was never established. This can be addressed by first locating the file, then establishing it as the current shared parameter file using the “Shared Parameters” tool on the “Manage” tab of the ribbon.

Note: Some custom applications that are available for Revit from a variety of sources will use their own shared parameter file and will replace the default file with their own without warning. That will also cause the title block fields to become non-functional as well.

Project Parameters on Border Title Block

The mapping below shows the Revit Project Information dialog box with the location of the parameters in the list and the corresponding field in the title block of the border sheet. These project level values will be common to all sheets in the project. A change to them in one sheet will affect all sheets.

Table 38 : Title Block - Project Parameters

Parameter	Value
Title Text	
ContractNo_USACE	W91328-XX-X-XXXX
ContractorID_USACE	ID #
ContractorName_USACE	CONTRACTOR NAME
Filename_USACE	USACE_Revit2019_Template_BASE_v4.3.rte
FileNo_USACE	FILE NUMBER
ContractorAddress_USACE	ADDRESS
SolicitNo_USACE	W91328-XX-X-XXXX
ContractorLocation_USACE	CONTRACTOR LOCATION
AlternateInfoTitle1_USACE	OPTION TITLE 1
AlternateInfo1_USACE	OPTION FIELD 1
AlternateInfoTitle2_USACE	OPTION TITLE 2
AlternateInfo2_USACE	OPTION FIELD 2
General	
DistrictName_USACE	DISTRICT
DistrictLocation_USACE	19 SAINT JOSEPH STREET
Other	
Project Issue Date	MMMMMMMMMM YYYY
Project Status	PROJECT STATUS
Client Name	CLIENT NAME
Project Address	PROJECT/CONTRACT LOCATION 1
Project Name	PROJECT/CONTRACT DESCRIPTION 2
Project Number	PROJECT #
ProjectDescriptor_USACE	PROJECT/CONTRACT DESCRIPTION/IDENTI
Volume_USACE	X
ProjectCode_USACE	
ProjectLocation_USACE	
Spec#_USACE	

ISSUE DATE: MMMMMMMMMM YY	DESIGNED BY: Designer	CONTRACT NO.: W91328-XX-X-XXXX	OPTION TITLE 1 OPTION FIELD 1
SOLICITATION NO.: W91328-XX-X-XXXX	DRAWN BY: Author	CHECKED BY: Checker	OPTION TITLE 2 OPTION FIELD 2
CONTRACT NO.: W91328-XX-X-XXXX	SUBMITTED BY:	SIZE: ANSI D	

US ARMY CORPS OF ENGINEERS	CONTRACTOR NAME
DISTRICT	CONTRACTOR LOCATION
19 SAINT JOSEPH STREET	ID #

Sheet Parameters and Additional Project Parameters on Border Title Block

The mapping below shows Revit Sheet Properties and additional Project Properties with the location of the corresponding fields in the Border title block.

Table 39 : Title Block - Sheet Parameters

Parameter	Value
Project Information	
Project Issue Date	MMMMMMMMMM YYYY
Project Status	PROJECT STATUS
Client Name	CLIENT NAME
Project Address	PROJECT/CONTRACT LOCATION
Project Name	PROJECT/CONTRACT DESCRIPTION
Project Number	PROJECT #
Project/Contract Description	PROJECT/CONTRACT DESCRIPTION
Sheet Properties	
Current Revision	
Approved By	Approver
Designed By	Designer
Checked By	Checker
Drawn By	Author
Sheet Number	G-002
Sheet Name	SHEET INDEX
Sheet Issue Date	10/05/20
PlotDate_USACE	
SheetPublishOrder_USACE	
ProductionData_USACE	
BldgID_USACE	BLDG ID
SubmittedBy_USACE	
SheetDiscipline_USACE	GENERAL
Level2Designator_USACE	
SheetTitle_USACE	SheetTitle_USACE
Appears In Sheet List	☒
Revisions on Sheet	Edit...
Other	
File Path	C:\Users\mdillon\Doc...
UserDefined_USACE	
ProjectStatusVisibility_USACE	☒
PublishOrder_USACE	10.000000
DisciplineGroup_USACE	1
PrintSheet_USACE	☒
Guide Grid	<None>

DESIGNED BY:	ISSUE DATE	SOLICITATION	CONTRACT	OPTION TITLE 1	OPTION FIELD 1
DESIGNER	MM/YY/YY	W91328-XX	W91328-XX	OPTION TITLE 1	OPTION FIELD 1
DRAWN BY:					
AUTHOR					
CHECKED BY:					
CHECKER					
SUBMITTED BY:					
SIZE:	OPTION TITLE 2				
ANSI D	OPTION FIELD 2				

PROJECT/CONTRACT LOCATION	PROJECT/CONTRACT DESCRIPTION	PROJECT #	SHEET INDEX	SheetTitle_USACE

Sheet Parameters on Both the Border and Cover Title Blocks

The mapping below shows Revit Sheet Properties that occur on both the Border title block and Cover title block:

Table 40 : Title Block - Sheet Parameters

Drawn By	Author
Sheet Number	G-001
Sheet Name	COVER SHEET
Sheet Issue Date	10/05/20
PlotDate_USACE	
SheetPublishOrder_US...	
ProductionData_USA...	
BldgID_USACE	
SubmittedBy_USACE	
SheetDiscipline_USACE	GENERAL
Level2Designator_US...	
SheetTitle_USACE	
Appears In Sheet List	☒
Revisions on Sheet	Edit...
Other	

PROJECT/CONTRACT LOCATION
PROJECT/CONTRACT DESCRIPTION
PROJECT #
COVER SHEET

SHEET ID
BLDG_ID
G-001

Project Parameters on the Cover Sheet Title Block

The project parameter mappings for the cover sheet title block are shown below.

Table 41 : Cover Sheet - Parameters

Parameter	Value
Title Text	
ContractNo_USACE	W91328-XX-X-XXXX
ContractorID_USACE	ID #
ContractorName_USACE	CONTRACTOR NAME
Filename_USACE	USACE_Revit2019_Template_BASE_v4.3.rte
FileNo_USACE	FILE NUMBER
ContractorAddress_USACE	ADDRESS
SolicitNo_USACE	W91328-XX-X-XXXX
ContractorLocation_USACE	CONTRACTOR LOCATION
AlternateInfoTitle1_USACE	OPTION TITLE 1
AlternateInfo1_USACE	OPTION FIELD 1
AlternateInfoTitle2_USACE	OPTION TITLE 2
AlternateInfo2_USACE	OPTION FIELD 2
General	
DistrictName_USACE	DISTRICT
DistrictLocation_USACE	19 SAINT JOSEPH STREET
Other	
Project Issue Date	MMMMMMMMMM YYYY
Project Status	PROJECT STATUS
Client Name	CLIENT NAME
Project Address	PROJECT/CONTRACT LOCATION
Project Name	PROJECT/CONTRACT DESCRIPTION
Project Number	PROJECT #
ProjectDescriptor_USACE	PROJECT/CONTRACT DESCRIPTION/IDENTI
Volume_USACE	X
ProjectCode_USACE	
ProjectLocation_USACE	
Spec#_USACE	

SOLICITATION NO.: W91328-XX-X-XXX

CONTRACT NO.: W91328-XX-X-XXXX

ISSUE DATE: MMMMMMMMMMMM YYYY

VOLUME: X

PROJECT STATUS

G-001

Multiline Text for Parameters

Custom parameters that may need to have multiple lines of text have been supplied as multi-line text parameters. However, some default parameters that are defined as single-line text parameters cannot be made multi-line as a default property of the parameter. To create multiple lines of text in these types of parameters, such as the “Project Name” parameter in the Project Information dialog box:

- Open Notepad and create multiline text.
- Use “hard returns” to divide lines
- Copy the text to the clipboard
- In Revit, paste the text from the clipboard into the parameter value box.
- Take care not to use more lines of text than the space available on the title block allows.

Sheet Parameters Visibility Settings

There are both Instance and Type parameter title block settings for all title blocks to set visibility of certain fields on the sheet. Type parameter changes will affect the visibility of fields on all sheets of that type. Instance parameter changes will only affect the fields on the current sheet.

Table 42 : Sheet Parameters - Visibility Settings

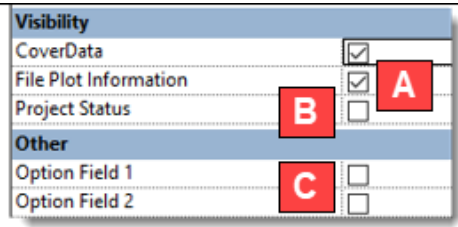
Visibility Settings: Project Level (Type Parameters)		Default Value	
File Plot Information	A	On	
Project Status	B	Off	
Option Field 1		Off	
Option Field 2	C	Off	
Visibility Settings: Sheet Level (Instance Parameter)		Default Value	
Building_ID_Visibility	D	Off	

Table 43 : Project Status, Optional Fields Parameters

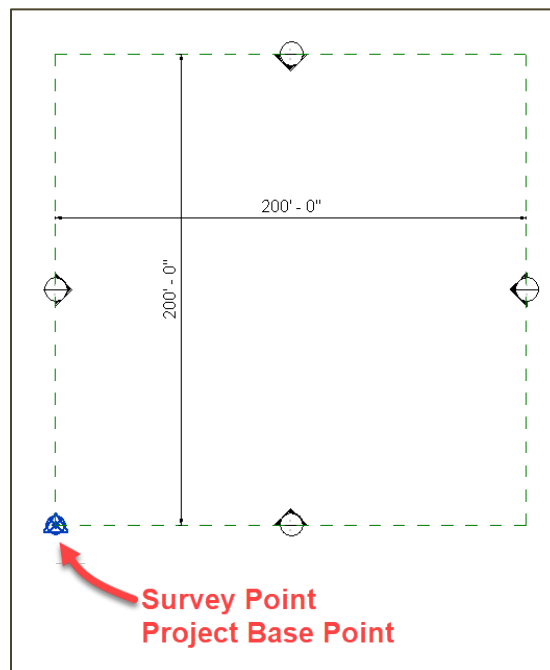
Project Status and Building_ID	Option Fields and File Plot Information																																				
SHEET ID BLDG ID G-002 PROJECT STATUS	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">DESIGNED BY: Designer</td> <td style="width: 20%;">ISSUE DATE: MMMMMMMMMM YYYY</td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> </tr> <tr> <td>DRAWN BY: Author</td> <td>SOLICITATION NO.: W91328-XX-X-XXXX</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>CHECKED BY: Checker</td> <td>CONTRACT NO.: W91328-XX-X-XXXX</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SUBMITTED BY:</td> <td>OPTION TITLE 1 OPTION FIELD 1 </td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>SIZE: ANSI D</td> <td>OPTION TITLE 2 OPTION FIELD 2 </td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>MARK</td> <td>DESCRIPTION</td> </tr> </table> Plot Date: 10/18/2020 4:55:14 PM File Path: c:\Users\mfon\Documents\Drawings	DESIGNED BY: Designer	ISSUE DATE: MMMMMMMMMM YYYY					DRAWN BY: Author	SOLICITATION NO.: W91328-XX-X-XXXX					CHECKED BY: Checker	CONTRACT NO.: W91328-XX-X-XXXX					SUBMITTED BY:	OPTION TITLE 1 OPTION FIELD 1					SIZE: ANSI D	OPTION TITLE 2 OPTION FIELD 2									MARK	DESCRIPTION
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SIZE: ANSI D	OPTION TITLE 2 OPTION FIELD 2																																				
				MARK	DESCRIPTION																																

Appendix E: Coordination of Template

The template has been set up with the elevation views placed around a 200' grid.

A square starting from the Project Base Point/Survey Point has been established as the modeling space. This will provide a consistent starting environment for the models and also facilitates having the model located fully within the positive X,Y quadrant.

Table 44 : Project Location



Appendix F: Special Schedules

Z-Sheet Information Lists and Z-View List

These schedules allow review of information contained in the views (such as view scale, name, associated level, template assignment, sheet number and name, and phase, etc.) and sheets (such as sheet number and name, designer, creator and revision information. These schedules should not be plotted and are intended for internal project management use. The Z-Sheet Information list also includes exposed fields for reviewing and editing sheet disciplines, discipline group and publish order settings.

Note: In general, any schedule whose name begins with "Z-" and is in sentence case is not intended for plotting purposes.

Appendix G: Method for Submitting Comments and Change Requests

Questions and change requests to the template may be submitted using the Sheet: 0.1 - Change Request, shown below. Supply the data requested in the title block using the *Default 3/32" USACE* Text Type, print to PDF and submit to the USACE Revit Template Team following the instructions included in the title block.

Table 45 : Change Request Sheet

U.S. Army Corps of Engineers REVIT TEMPLATE CHANGE REQUEST The proponent agency ERDC	
Complete the form below to submit questions, comments, suggestions, and recommendations for the USACE Revit Template. Your request will be sent to the technical proponent and will be reviewed with the proper personnel. PDF this page and email to "USACE-Revit-Template-Team@erdc.dren.mil"	
1. Which Revit Template Discipline Architectural	
2. Submitters Name	
3. Submitters Email	
4. Submitters District or Company	
5. Technical ☐ Non-technical (spelling or grammar) ☐	
6. Issue or problem	
7. Proposed Solution:	

USACE Revit Template Change Request Page 1 of 2

U.S. Army Corps of Engineers REVIT TEMPLATE CHANGE REQUEST The proponent agency ERDC	
If needed to better describe your request submit a drawing, component, graphic, bitmap, etc of the description on page ones issue and any recommendations for the USACE Revit Template. PDF this page and email to "USACE-Revit-Template-Team@erdc.dren.mil" with page one.	
6. Drawing of issue or problem	
7. Drawing of Proposed Solution	

USACE Revit Template Change Request Page 2 of 2

Appendix H: Change Notes

Version	Changes Made	Effect	Category of Change	Change Date	Purpose
4.3					