



**US Army Corps
of Engineers®**
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 2020 Autodesk Revit Software

Master Guide : Base Template v4.3

Authors: Matt Dillon, Director AETG Services, / Lou Verenini,
Solutions Specialist, Applied Software Technologies, Inc.

November 2020

USACE: Hai K. Le - Mobile District, Kevin Russ, David J. Carulli
- Sacramento District, David Dawson - Honolulu District, Van
Woods, James Snyder- Seattle District, David M. Johnson -
ERDC Vicksburg

The U.S. Army Engineer Research and Development Center (ERDC) solves the nation's toughest engineering and environmental challenges. ERDC develops innovative solutions in civil and military engineering, geospatial sciences, water resources, and environmental sciences for the Army, the Department of Defense, civilian agencies, and our nation's public good. Find out more at www.erdclibrary.usace.army.mil.

To search for other technical reports published by ERDC, visit the ERDC online library at <http://acwc.sdp.sirsi.net/client/default>.

Contents

Tables	2
1 Overview	4
Purpose	4
2 Browser and View Organization	4
3 View Purpose	6
4 View Templates and View Types	7
5 View Naming	9
6 Working Views	9
7 Documentation Views	10
8 View Filters	10
9 Schedules	11
10 NCS – A/E/C CAD Symbols	13
11 Annotation/Dimensions	13
12 Title block/Border Types	14
13 Pre-Defined Sheets	15
14 Starting View	15
15 Levels	16
16 Pre-loaded Families	17
17 References	18
Appendix A: Annotation Symbols and the NCS 6.0	18
General Symbols	18
View Title – Viewports	19
Symbol Component Families	20
Annotation Families	20
18 Appendix B: Border Sheets	22
Text Box:	23
Building ID:	23
Revision Box:	23

Guide Grid.....	23
Project Status	24
Optional Fields.....	24
19 Appendix C: Project Parameters.....	24
Project Parameters on Border Title Block	25
Sheet Parameters and Additional Project Parameters on Border Title Block	25
Sheet Parameters on Both the Border and Cover Title Blocks	26
Project Parameters on the Cover Sheet Title Bock.....	27
Multiline Text for Parameters.....	27
Sheet Parameters Visibility Settings	28
20 Appendix D: Coordination of Template	29
21 Appendix E: Special Schedules.....	29
Z-Sheet Information Lists and Z-View List.....	29
22 Appendix F: Method for submitting comments	30
23 Appendix J: Change Notes.....	30
Report Documentation Page	

Tables

Table 1 Browser View Schema	4
Table 2 Schedule Sorting Schema.....	5
Table 3 Sheet Sorting Schema.....	5
Table 4 Standard View Purpose	6
Table 5 : View Types	8
Table 6 : Title on Sheet property	10
Table 7 : Schedule Properties.....	11
Table 8 : Sheet List Schedule	12
Table 9 : Sheet Information List	12
Table 10 : Border Types	15
Table 11 : Starting View.....	16
Table 12 : Email Link.....	16
Table 13 : Levels (Floors).....	17
Table 14 : Preloaded Families	17
Table 15 : General Symbols	18
Table 16 : Viewport Types.....	19

Table 17 : Cover Title Block	22
Table 18 : Border Title Block.....	22
Table 19 :Title Block - Project Parameters	25
Table 20 : Title Block - Sheet Parameters.....	26
Table 21 : Title Block - Sheet Parameters	26
Table 22 : Cover Sheet - Parameters	27
Table 23 : Sheet Parameters - Visibility Settings	28
Table 24 : Project Status, Optional Fields Parameters.....	28
Table 25 : Project Location.....	29

1 Overview

Purpose

The intent of this guide for the Revit BASE 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

There are no pre-defined sub-disciplines in the BASE template.

A full list of View browser schemas for the BASE template is in the following table:

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:	Filter by: Sheet Name = <None>

	View Name (Ascending)	
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: - Associated Level	<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:	<None>

	• 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 Purpose

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

Note: In the BASE template, only the 1 Working (_WRK), 4 Presentation (_PRS) and 5 Export (_EXP) view purpose classifications are in use, however discipline-specific templates based on the BASE template will include the 2 Analysis (_ANL) and 3 Documentation (_DOC) view purpose classifications.

As stated above, the “View Purpose” parameters is a legacy parameter from earlier versions, and is included with the 4.3 version of the BASE template, along with the corresponding “View Purpose_USACE” browser sorting schema to accommodate legacy workflows and standards. New in this template with 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_BASE_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 BASE project template:

- 3D Views
 - Export to Civil Engineering_EXP_USACE
 - 3D_WRK_USACE
 - 3D_Presentation_PRS_USACE
- Ceiling Plans
 - Ceiling Plan_WRK_USACE
- Floor, Area and Site Plans
 - Floor Plan_WRK_USACE
 - Area Plan_WRK_USACE
 - Site Plan Project North_WRK_USACE
 - Site Plan True North_WRK_USACE
 - Key Plan_WRK_USACE
- Elevations
 - Exterior Elevation_WRK_USACE
 - Interior Elevation_WRK_USACE
 - Interior Section_WRK_USACE
- Sections
 - Building Section_WRK_USACE
 - Wall Section_WRK_USACE
- Detail Views
 - Detail Plan_WRK_USACE
 - Detail Section_WRK_USACE
- Drafting Views
 - Drafting View_WRK_USACE
- Schedules
 - Schedule_USACE

Table 5 : View Types

View Type	View Template	Template Status
Ceiling Plans_WRK_USACE	Ceiling Plans_WRK_USACE	Applied
Floor Plans_WRK_USACE	Floor Plans_WRK_USACE	Applied
Detail Plan_WRK_USACE	Detial 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
Key Plans_WRK_USACE	Key Plans_WRK_USACE	Applied
Exterior Elevations_WRK_USACE	Exterior Elevations_WRK_USACE	Applied
Interior Elevations_WRK_USACE	Intereior Elevations_WRK_USACE	Applied
Building Sections_WRK_USACE	Building Sections_WRK_USACE	Applied
Wall Sections_WRK_USACE	Wall Sections_WRK_USACE	Applied
Detail Sections_WRK_USACE	Detail Section_WRK_USACE	Applied
Drafting Views_WRK_USACE	Drafting Views_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_FRAMING_DOC**
 - 2nd Floor Plan – East region – framing plan – 3 Documentation view purpose
- Example B: **EL_EAST_WRK**
 - Elevation – East – 1 Working view purpose
- Example C: **03_MP_WEST_HW PIPING_ANL**
 - 3rd floor Mechanical Plan – West region – hot water piping – 2 Analysis 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”.

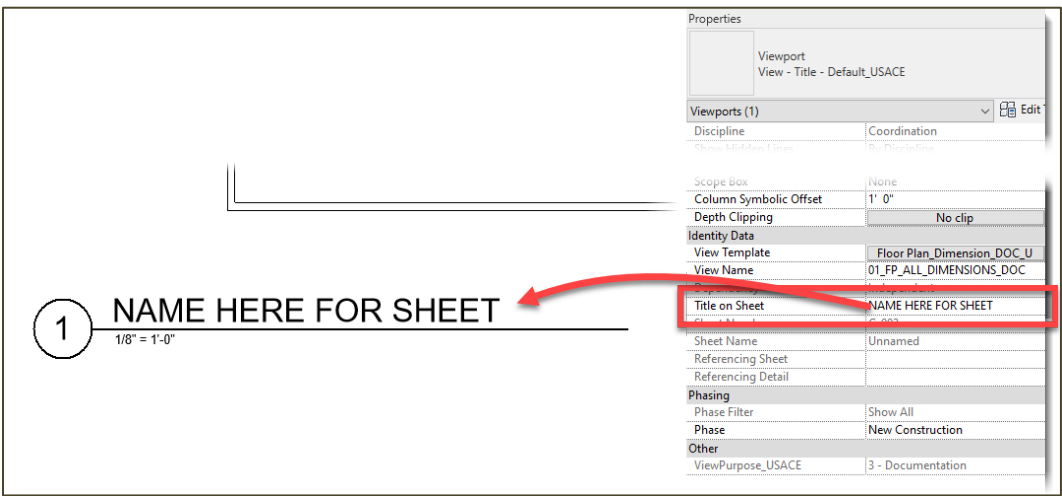
Note: While a view can be renamed to become a Documentation view by changing the suffix to “DOC”, it should be placed on the appropriate documentation view type and have the appropriate view template assigned to it to ensure proper view properties and correct assignment of the “ViewPurpose_USACE” parameter. 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



Note: The BASE template does not contain any pre-configured documentation views or view types – these will be found in the discipline-specific templates.

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 BASE template includes three custom filters:

- 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.

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' and 'Show Headers' are both 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 right 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.

There are three schedules provided with the BASE template:

- **SHEET LIST**

- This is a schedule intended for plotting and will include all sheets whose “Appears in Sheet List” property is turned on. It uses hidden fields for sorting and grouping of sheets. These fields are exposed for editing in the working “Z-Sheet Information List” schedule, which is described below.
- *This schedule should not be edited directly* – instead use the “Z-Sheet Information List” schedule to make any changes. These will be reflected in the “SHEET LIST” schedule as well.

Table 8 : Sheet List Schedule

<SHEET LIST>	
A	B
SHEET NUMBER	SHEET TITLE

- **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 9 : 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

- **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.

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
								Sheet Info	
								Title on Sheet	

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

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:

- Default 3/32”_USACE
- Label 1/8”_USACE
- Schedule Header 1/8”_USACE
- Schedule Title 3/16”_USACE
- Sub-Title 3/16”_USACE
- Title 1/4”_USACE
- 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:

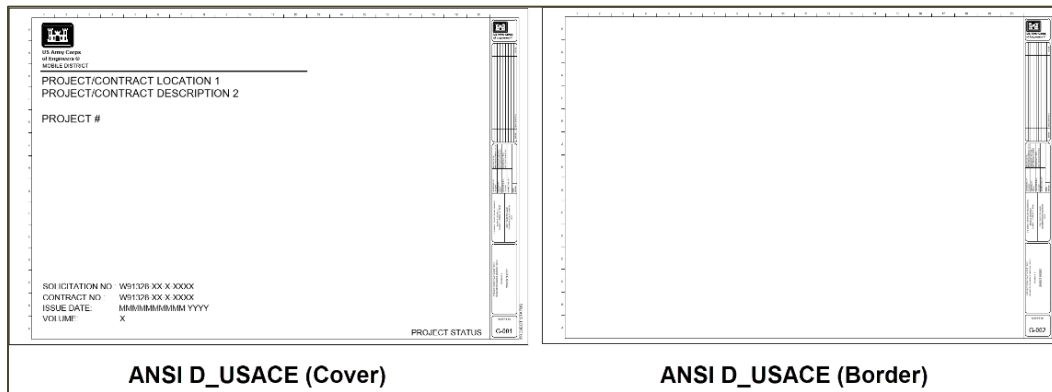
- Linear Dimensions
 - Continuous_USACE
 - Baseline_USACE
- Angular Dimensions
 - Arrow Line-Leader_USACE
- Radial Dimensions
 - Horizontal_USACE
 - Rotated_USACE
- Diameter Dimensions
 - Horizontal_USACE
 - Rotated_USACE
- Spot Elevations
 - Beam Elevation (Project)_USACE
 - Beam Elevation (Relative)_USACE
 - 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 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 10 : Border Types



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

13 Pre-Defined Sheets

There are three pre-defined sheets in the BASE 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.
- **G-001 – Cover Sheet** – uses the ANSI D_USACE (Cover) title block.
- **G-002 – Sheet Index** – uses the ANSI D_USACE (Border) title block.

14 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 11 : Starting View

 US Army Corps of Engineers® REVIT STARTING VIEW Read Me Template Version: Base 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																																																														
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																																																														
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>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 the schedule list 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	Level	View Type	Function	Region	View Purpose	02_	FP_FLOOR PLAN_	DIMENSIONS_		DOC	03_	MP_MECHANICAL PLAN_	HW PIPING_	West_	PRS	PROJECT INFORMATION: USACE District: DISTRICT Project Number: PROJECT # Issue Date: M/M/M/M/M/M/Y/Y/Y/Y Project Name: PROJECT/CONTRACT DESCRIPTION Contractor Name: CONTRACTOR NAME and ID Number: ID # Project Address: PROJECT/CONTRACT LOCATION Contractor Address: CONTRACTOR LOCATION Address: Contract Number: WY1328-XX-X-XXXX Solicit Number: WY1328-XX-X-XXXX File 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 items and make them quickly 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 - CP - Ceiling Plan - EP - Elevation Plan - EL - Elevation - SP - Site Plan - QP - Equipment Plan																																																
Level	View Type	Function	Region	View Purpose																																																												
02_	FP_FLOOR PLAN_	DIMENSIONS_		DOC																																																												
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 12 : 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	

15 Levels

The following levels have been defined in the template:

Table 13 : 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.

16 Pre-loaded Families

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

Table 14 : Preloaded Families

Family Name	Source	NCS 6 Compliant
ANSI D_USACE	USACE	Yes
Callout Head_USACE	USACE	Yes
Centerline_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
Keynote Tag_USACE	USACE	Yes
Level Head – Circle_USACE	USACE	Yes
Material Tag_USACE	USACE	No
North Arrow_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 – Target Filled_USACE	USACE	Yes

StartupScreen_Border_USACE	USACE	No
View Reference_USACE	USACE	Yes
View Title_USACE	USACE	Yes

17 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*

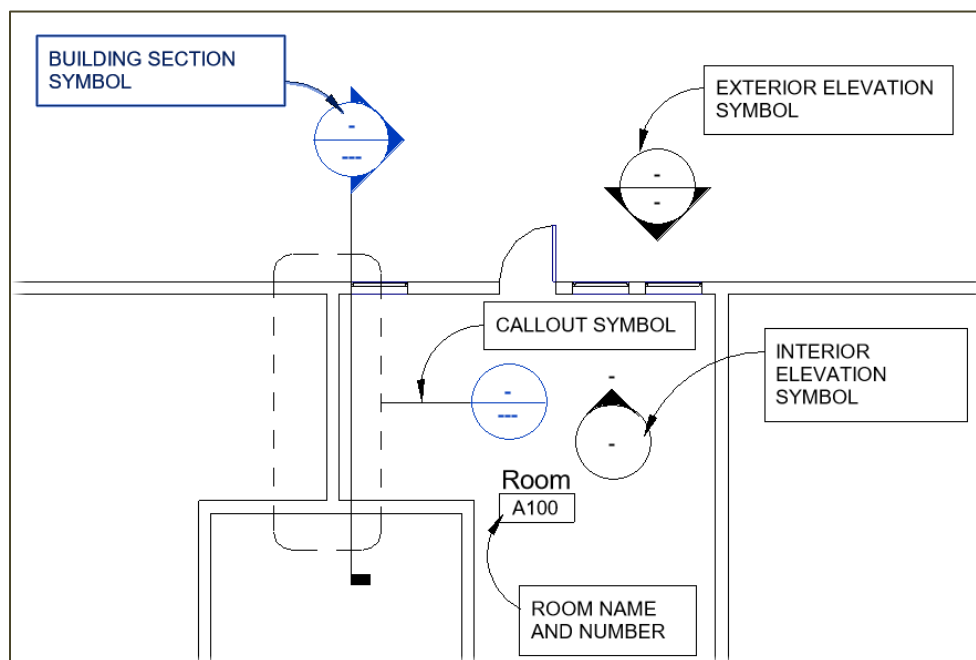
Please direct questions or comments about the templates to: [USACE Revit Template Team](#)

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 15 : General Symbols



Note: Symbols shown are discipline-independent; discipline-specific symbols are addressed in the discipline specific templates for architectural, mechanical, electrical, and structural disciplines.

View Title – Viewports

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

Table 16 : Viewport Types

View – Title – Default_USACE (default viewport type)		
	Title: ¼" Other text: 3/32"	
	Title:	View Title_USACE: Default
	Show Title:	Yes
	Show Line:	Yes
View – Title – No Number or Line_USACE		
	Title: ¼" Other text: 3/32"	
	Title:	View Title_USACE: No Number
	Show Title:	Yes
	Show Line:	No
View – Title – No Number_USACE		
	Title: ¼" Other text: 3/32"	
	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"	
	Title:	View Title_USACE: Reference Number
	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: 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
- 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: 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

Appendix B: 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 17 : Cover Title Block

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20																						
F E D C B A	 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																						
<table border="1"><tr><td colspan="2">SHEET ID</td></tr><tr><td colspan="2">G-001</td></tr></table>																			SHEET ID		G-001	
SHEET ID																						
G-001																						

Table 18 : Border Title Block

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20																						
F E D C B A	 US Army Corps of Engineers ® DISTRICT																					
PROJECT STATUS																						
<table border="1"><tr><td colspan="2">SHEET ID</td></tr><tr><td colspan="2">G-001</td></tr></table>																			SHEET ID		G-001	
SHEET ID																						
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 C: Project Parameters

There are several Project and Sheet Parameters defined in the BASE 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_BASE_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 19 : Title Block - Project Parameters

Parameter	Value
Title Text	
ContractNo_USACE A	W91328-XX-X-XXXX
ContractorID_USACE	ID # C
ContractorName_USACE	CONTRACTOR NAME
Filename_USACE	USACE_Revit2019_Template_BASE_v4.3.rte
FileNo_USACE	FILE NUMBER
ContractorAddress_USACE	ADDRESS
SolicitNo_USACE B	W91328-XX-X-XXXX
ContractorLocation_USACE	CONTRACTOR LOCATION C
AlternateInfoTitle1_USACE	OPTION TITLE 1
AlternateInfo1_USACE D	OPTION FIELD 1
AlternateInfoTitle2_USACE	OPTION TITLE 2
AlternateInfo2_USACE	OPTION FIELD 2 E
General	
DistrictName_USACE F	DISTRICT
DistrictLocation_USACE	19 SAINT JOSEPH STREET
Other	
Project Issue Date G	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	

G	B	A	D
ISSUE DATE: MMMMMMMMMM YY	SOLICITATION NO.: W91328-XX-X-XXXX	CONTRACT NO.: W91328-XX-X-XXXX	OPTION TITLE 1 OPTION FIELD 1
DESIGNED BY: Designer	DRAWN BY: Author	CHECKED BY: Checker	SUBMITTED BY:
US ARMY CORPS OF ENGINEERS DISTRICT 19 SAINT JOSEPH STREET			OPTION TITLE 2 OPTION FIELD 2 E
CONTRACTOR NAME CONTRACTOR LOCATION ID #			SIZE: ANSI D

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 20 : Title Block - Sheet Parameters

Project Information

Parameter	Value
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/ID

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...	☒
PublishOrder_USACE	10.000000
DisciplineGroup_USACE	1
PrintSheet_USACE	☒
Guide Grid	<None>

DESIGNED BY:	ISSUE DATE
Designer	MMMMMM
DRAWN BY:	SOLICITATION
Author	W91328-XX
CHECKED BY:	CONTRACT
Checker	W91328-XX
SUBMITTED BY:	OPTION TITLE
	OPTION FIELD
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 21 : Title Block - Sheet Parameters

Drawn By	Author
Sheet Number	G-001
Sheet Name	COVER SHEET
Sheet Issue Date	10/05/20
PlotDate_USACE	
SheetPublishOrder_USACE	
ProductionData_USACE	
BldgID_USACE	
SubmittedBy_USACE	
SheetDiscipline_USACE	GENERAL
Level2Designator_USACE	
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 22 : Cover Sheet - Parameters

Parameter	Value
Title Text	
ContractNo_USACE	W91328-XX-X-XXXX A
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 C
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	

A SOLICITATION NO.: W91328-XX-X-XXXX **B**
H CONTRACT NO.: W91328-XX-X-XXXX
C ISSUE DATE: MMMMMMMMMM YYYY
H VOLUME: X

D PROJECT STATUS

D 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 23 : Sheet Parameters - Visibility Settings

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

Table 24 : Project Status, Optional Fields Parameters

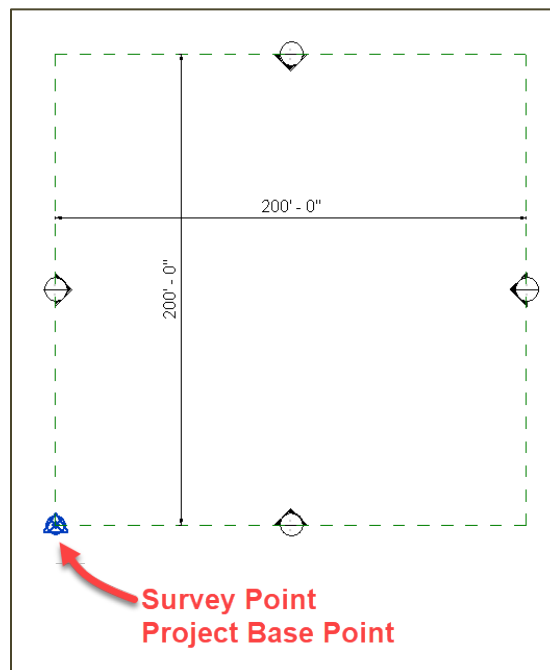
Project Status and Building_ID	Option Fields and File Plot Information
SHEET ID BLDG ID G-002 PROJECT STATUS	DESIGNED BY: Designer DRAWN BY: Author CHECKED BY: Checker SUBMITTED BY: SIZE: ANSI D ISSUE DATE: MMMMMMMM YYYY SOLICITATION NO.: W91328-XX-X-XXXX CONTRACT NO.: W91328-XX-X-XXXX OPTION TITLE 1 OPTION TITLE 2 OPTION FIELD 1 OPTION FIELD 2 MARK DESCRIPTION Plot Date: 10/16/2020 4:55:14 PM File Path: C:\Users\indian\Documents\Drawings

Appendix D: Coordination of Template

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

A square starting from the base 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 25 : Project Location



Appendix E: 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.

Appendix F: Method for submitting comments

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

Appendix J: Change Notes

Version	Changes Made	Effect	Category of Change	Change Date	Purpose
4.3					