



Guide Documentation

US Army Corps of Engineers Building Information Modeling Template for Revit

Template based on the 2012 Autodesk Revit Software

Electrical Template v1.1

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Overview

The intent of the electrical template is to provide a framework to facilitate electrical design using Revit MEP. It is intended to include but not limited to power, lighting, systems, and other electrical systems as appropriate. This template was developed based on Revit 2012.

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

Browser and View Organization

The default browser setting in the template is organized by View Purpose, Discipline, sub-discipline, and sorted by associated level.

Pre-defined Sub-Disciplines in the templates are Power, Lighting, Systems (data, communication, alarms), Lightning Protection, and Electrical Site.

Pre-defined view purposes are COORD (coordination views), WORK (working views), and DOC (documentation). View purpose is defined as a project parameter and the uppercase abbreviation is also appended to the end of the view names to facilitate user recognition of the views.

Browser View Type	Grouping	Filter
View Purpose_USACE	Group by: View Purpose, Using All Characters Then by: Discipline, Using All Characters Then by: Sub-Discipline, Using All Characters Sort by: Associated Level, Ascending	<None>
Discipline_USACE	Group by: Discipline, Using All Characters Then by: Sub-Discipline, Using All Characters Then by: View Purpose, Using All Characters Sort by: Associated Level, Ascending	<None>
Not on Sheets_USACE	Group by: Family and Type Then by: <None> Then by: <None> Sort by: View Name, Ascending	Filter by: Sheet Name = <None> And: View Purpose = Documentation

Documentation Views

These views are intended to be placed on sheets. Depending on workflow in many, if not, most cases, electrical design is done directly in the documentation views. Appropriate visibility and/or filter settings are applied to display only relevant categories and objects.

Documentation Views - Categories

Sub-Discipline	Hidden Categories	Overrides/Settings/Comments
Power	All Analytical Categories Air Terminals Areas Cable Tray Fittings Cable Trays Ceilings Communication Devices Conduit Fittings Conduits Data Devices All Ducts Entourage Fire Alarm Devices Flex Ducts Flex Pipes HVAC Zones Lighting Devices Lighting Fixtures Mass Nurse Call Devices Parking All Pipes Planting Plumbing Fixtures Raster Images Roads Roofs Rooms Security Devices Shaft Openings Site Sprinklers Structural Area Reinforcement Structural Connections Structural Foundations Structural Path Reinforcement Structural Rebar Structural Stiffeners Telephone Devices Topography	Floors surface patterns hidden
Lighting	All Analytical Categories Air Terminals Areas Cable Tray Fittings Cable Trays Casework Communication Devices Conduit Fittings	Furniture categories set to halftone

	<p> Conduits Data Devices All Ducts Electrical Equipment Electrical Fixtures Entourages Fire Alarm Devices Flex Ducts Flex Pipes Generic Models HVAC Zones Mass Mechanical Equipment Nurse Call Devices Parking Parts All Pipes Planting Plumbing Fixtures Railings Ramps Raster Images Roads Roofs Rooms Security Devices Shaft Openings Site Specialty Equipment Sprinklers All Structural except Columns Telephone Devices Topography </p>	
Systems	<p> All Analytical Categories Air Terminals Areas Communication Devices Conduit Fittings Conduits All Ducts Electrical Equipment Electrical Fixtures Entourages Flex Ducts Flex Pipes Generic Models HVAC Zones Lighting Devices Lighting Fixtures Mass Mechanical Equipment Parking </p>	Furniture categories set to halftone

	<ul style="list-style-type: none"> Parts All Pipes Raster Images Rooms Sprinklers All Structural except Columns Topography Wires 	
Lightning Protection	<ul style="list-style-type: none"> All Analytical Categories --- All Model Categories hidden EXCEPT Electrical Equipment Electrical Fixtures Generic Models Roofs Walls Wires 	<p>Wires category projection line set to Dash. Home Run Arrows and Wire Tick Marks hidden</p> <p>View Filters: Components – nonGrounding_USACE visibility off</p>
Electrical Site	<ul style="list-style-type: none"> All Analytical Categories Air Terminals Areas Casework Ceilings ALL Curtain Categories Detail Items Doors ALL Duct Categories Entourage Furniture Furniture Systems HVAC Zones Nurse Call Devices Plumbing Fixtures Rooms Shaft Openings Structural Area Reinforcement Structural Beam Systems Structural Connections Structural Path Reinforcement Structural Rebar Structural Stiffeners Windows 	

Coordination Views

These views are intended to be used for interference checks and design collaboration between electrical and other disciplines as well as between the electrical sub-disciplines.

Coordination Views - Categories

Sub-Discipline	Hidden Categories	Overrides/Settings/Comments
Electrical	All Analytical Categories Areas Duct Lining Entourage HVAC Zones Mass Nurse Call Devices Parking Planting Raster Images Roads Rooms Shaft Openings Site Structural Area Reinforcement Structural Beam Systems Structural Connections Structural Path Reinforcement Structural Rebar Structural Stiffeners Topography Wires	Floors surface patterns hidden
3D Electrical	All Analytical Categories All Annotation Categories Areas Detail Items Duct Lining Entourage Mass Parking Parts Planting Raster Images Site Structural Area Reinforcement Structural Beam Systems Structural Connections Structural Path Reinforcement Structural Rebar	Floors surface patterns hidden

	Structural Stiffeners Wires	
Electrical Elevations	All Analytical Categories Air Terminals Areas Duct Linings HVAC Zones Mass Nurse Call Devices Parking Parts Raster Images Rooms Spaces Structural Area Reinforcement Structural Beam Systems Structural Connections Structural Path Reinforcement Structural Rebar Structural Stiffeners Wires	
Electrical Site	All Analytical Categories Air Terminals Areas Casework Ceilings Curtain Panels Curtain Systems Curtain Wall Mullions Detail Items Doors All Ducts Entourage Furniture Furniture Systems HVAC Zones Nurse Call Devices Parts Plumbing Fixtures Rooms Spaces Sprinklers Structural Area Reinforcement Structural Beam Systems Structural Connections Structural Path Reinforcement Structural Rebar Structural Stiffeners Windows	
Lightning Protection	All Analytical Categories --- All Model Categories hidden EXCEPT	View Filter: Components – Ground

	Duct Accessories Duct Fittings Duct Placeholders Ducts Electrical Equipment Electrical Fixtures Flex Ducts Flex Pipes Generic Models Lighting Devices Lighting Fixtures Pipe Accessories Pipe Fittings Pipe Placeholders Pipes Roofs Security Devices	System_USACE set to RED and Lineweight 6
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View Filters

View filters on 3D views are intended to serve as an aid to viewing mechanical systems more clearly via color overrides. On Documentation views, the purpose of view filters is to facilitate the use of overrides for proper generation of printed drawing sheets. For filter rules, preference is first given to System Classification. When multiple system types are defined for one system classification, then System Type is used as the filter rule.

Tip: Note that the view filters list in Revit cannot be sorted. They are listed in the order they were created.

View Filter	Included Categories	Filter Rules
Wires – Grounding_USACE	Wires	Number of Conductors = 1 and Ground Conductors = 1
Components - Interior_USACE	Cable Tray Fittings Cable Trays Communication Devices Conduit Fittings Conduits Data Devices Electrical Equipment Electrical Fixtures Fire Alarm Devices Lighting Devices Lighting Fixtures Nurse Call Devices Security Devices Specialty Equipment Switch System	ELECTRICAL SITE COMPONENT does not equal Yes. (This setting is preferred over “=No” so that components not specifically set to Site Component would be displayed.)

	Telephone Devices Wires	
Components - Site_USACE	Cable Tray Fittings Cable Trays Communication Devices Conduit Fittings Conduits Data Devices Electrical Equipment Electrical Fixtures Fire Alarm Devices Lighting Devices Lighting Fixtures Nurse Call Devices Security Devices Specialty Equipment Switch System Telephone Devices Wires	ELECTRICAL SITE COMPONENT = Yes.
Components – Ground System_USACE	Cable Tray Fittings Cable Trays Conduit Fittings Conduits Electrical Equipment Electrical Fixtures Wires	ELECTRICAL GROUNDING SYSTEM = Yes.
Components – nonGrounding_USACE	Cable Tray Fittings Cable Trays Conduit Fittings Conduits Electrical Equipment Electrical Fixtures Wires	ELECTRICAL GROUNDING SYSTEM does not equal= Yes. (This setting is preferred over “=No” so that components no specifically set to Grounding would be displayed.)

Electrical Site Design

A project instance parameter called “ELECTRICAL SITE COMPONENT” is used to designate specific electrical components as items to be shown on the electrical site plan. Note that this is an instance parameter so it requires setting this value as needed for each object as needed.

There is two view filters, *Components - Site_USACE* and *Components - Interior_USACE*, associated with this workflow. The *Components - Interior_USACE* filter is used to select and filter out electrical components that are not intended to be shown on the electrical site documentation plan, such as interior lighting. Setting the project parameter “ELECTRICAL SITE COMPONENT” for each site electrical component is a

manual process. As a visual aid, the view 00_Electrical Site_COORD is set up to display all electrical components with site electrical components displaying in red. In this view, the user can easily see if any objects intended for electrical site plan was missed.

Lightning Protection Design

A project type parameter called “ELECTRICAL GROUNDING SYSTEM” is used to designate electrical fixtures and equipment types as being part of the grounding system. Note that this is a type parameter and needs to be set for each family type as necessary.

There are three view filters, *Components - Grounding System_USACE*, *Components – nonGrounding_USACE*, and *Wires – Grounding_USACE* associated with this workflow. The *Components –nonGrounding_USACE* filter is used to select and filter out electrical components that are not intended to be shown on the lightning protection documentation plan. The *Wires – Grounding_USACE* filter looks for wire annotation with 1 conductor and that one conductor is a ground conductor. The filter overrides the lightning protection ground wires to display dashed. As a visual aid, the view Roof_LightningProt_COORD is set up to display all electrical components with lightning protection components displaying in red. In this view, the user can easily see if any object types intended lightning protection was missed.