

# BIM/Revit® and the Future of Pathway and Passive Fire Protection Design

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Specified Technologies, Inc.



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# What is BIM?



- A digital representation of both the physical and functional characteristics of a building
- Provides a platform for effective collaboration between stakeholders over the buildings lifecycle.



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# In Non-Marketing Terms

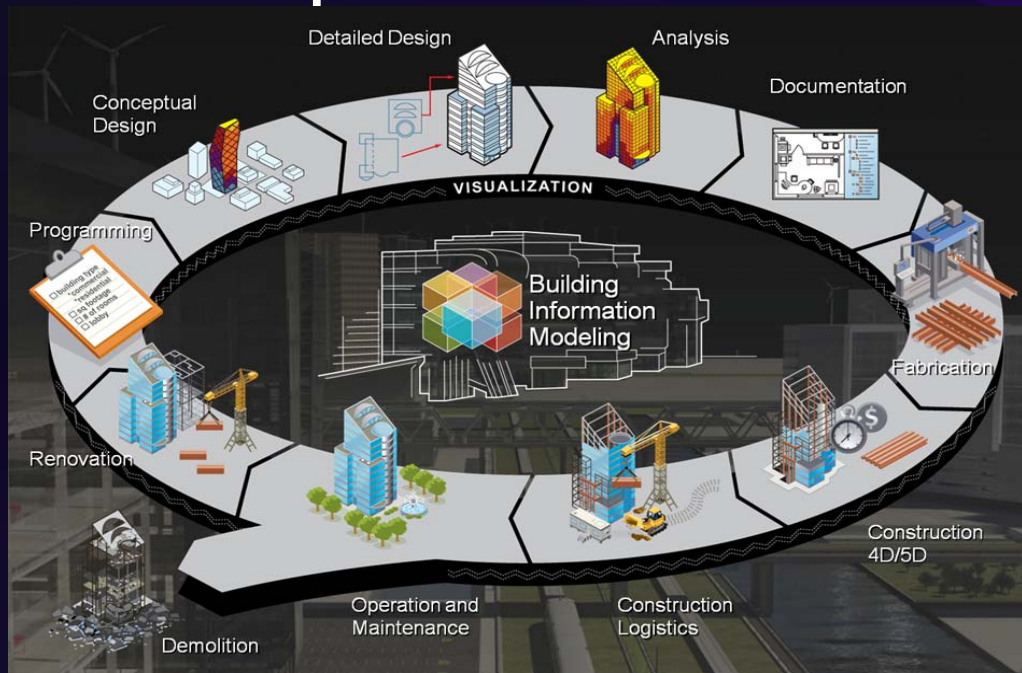
- More than CAD:
  - intelligent 3D model-based process
  - database driven
  - equips architecture, designers, engineering, and construction professionals to be more efficient in projects
  - ability to track all changes within a single model



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# Includes all phases of Construction



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# Advantages of BIM

- Increased efficiency
  - Reduce Rework and Waste
  - Improve Productivity
- Collaboration
  - Reduce issues and omissions in documentation
  - Better Coordination of Trades



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# Building Without BIM

- Weekly Coordination Meetings are Critical
- Constantly checking FTP Sites, DropBox, or E-Mail Inboxes for Updated Plans
- Greater Administrative Burden to mitigate field encountered issues and setbacks



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# The Latest Version of the Plans?

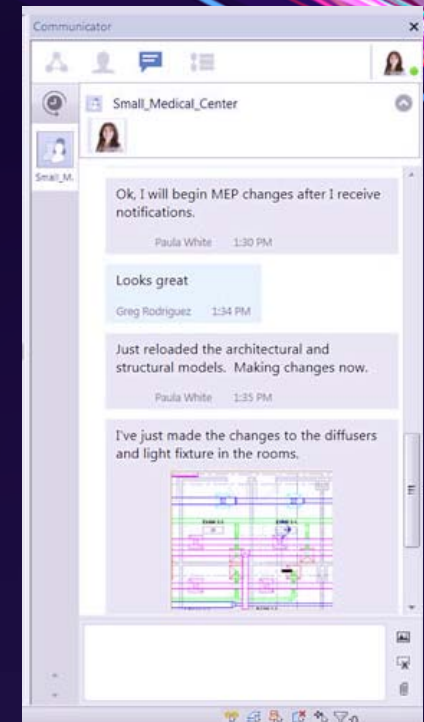


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# Real-Time Collaboration

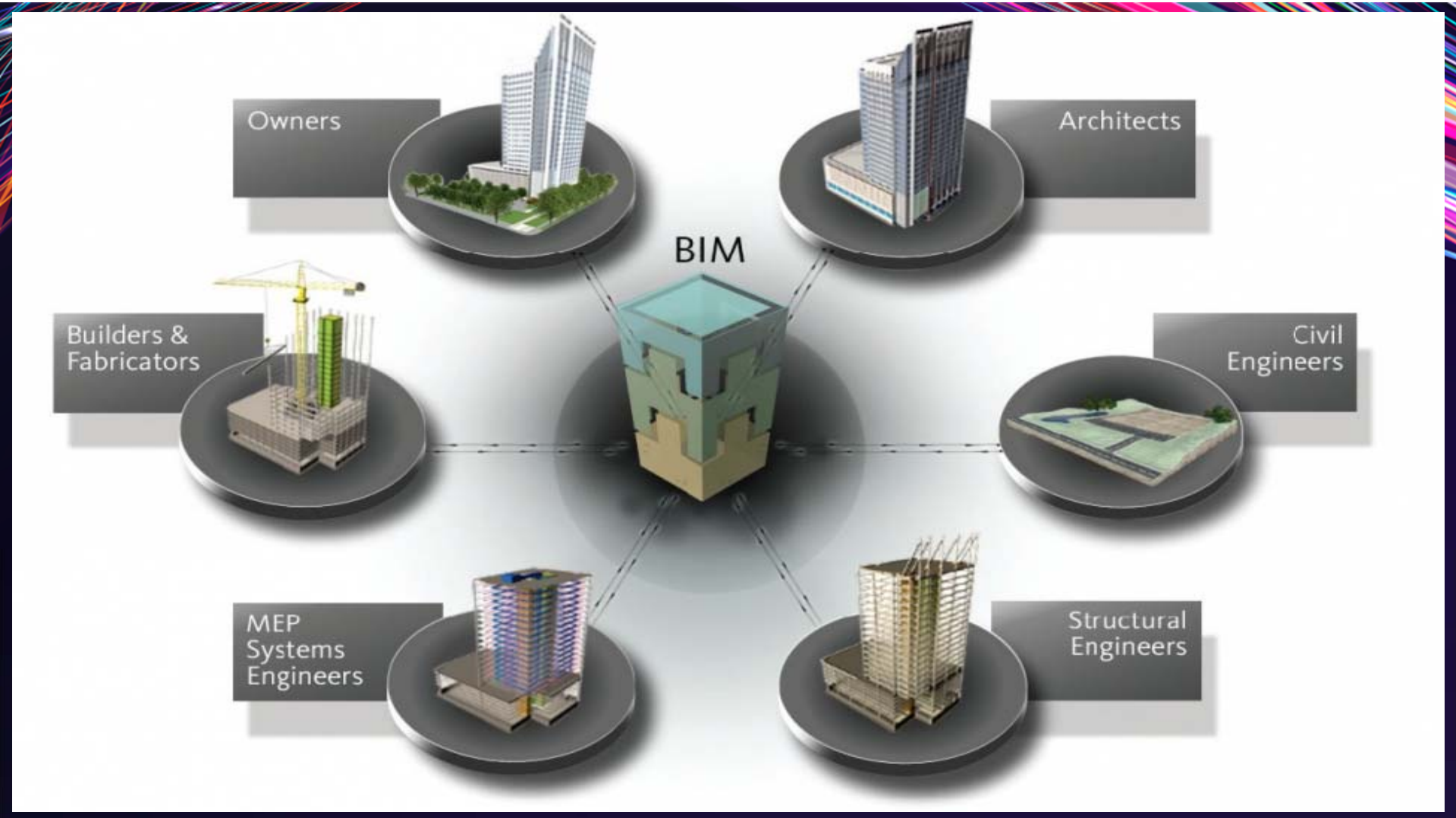
- On-Premises or Cloud Hosted Revit® Models via A360
  - Provides a central workplace for all stakeholders
- Geographically isolated teams can adapt to changes as they happen
  - Drawings are always in sync and current



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# No More Surprise Updates

- Revit® Alerts you of changes impacting your design.
  - In real-time or the next time you open the project



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# Reduce Rework and Change Orders

**Change Order**

Construction Company \_\_\_\_\_ Date: \_\_\_\_\_  
Address \_\_\_\_\_ Owner: \_\_\_\_\_  
City, State, ZIP \_\_\_\_\_ Contractor: \_\_\_\_\_  
Phone Number \_\_\_\_\_ Project name: \_\_\_\_\_  
Change order number: \_\_\_\_\_

Original contract date: \_\_\_\_\_

**You are directed to make the following changes in this contract:**


The original contract sum was: \$ \_\_\_\_\_  
Net amount of previous change orders: \_\_\_\_\_  
Total original contract amount plus or minus net change orders: \_\_\_\_\_  
Total amount of this change order: \_\_\_\_\_  
The new contract amount including this change order will be: \_\_\_\_\_  
The contract time will be changed by the following number of days: ( ) Days  
The date of completion as of the date of this change order is: \_\_\_\_\_

**Contractor:** \_\_\_\_\_ **Owner:** \_\_\_\_\_  
Company name \_\_\_\_\_ Name \_\_\_\_\_  
Address \_\_\_\_\_ Address \_\_\_\_\_  
City, State, Zip \_\_\_\_\_ City, State, Zip \_\_\_\_\_

- Required products are a known quantity
  - Reduce or eliminate last minute additions or change orders
- Avoid rework or redundant design
  - Linked models share resources and design elements



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# Reduce Construction Waste



Howick® LTD Stud Fabricator

- Export model parameters to vendors directly
  - Eliminate field cutting studs and pathway
- On demand or on site material fabrication



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# Implementation Without BIM

- Collisions happen when Teams Don't Communicate!
- Partnering with other Trades Onsite is critical to avoid →

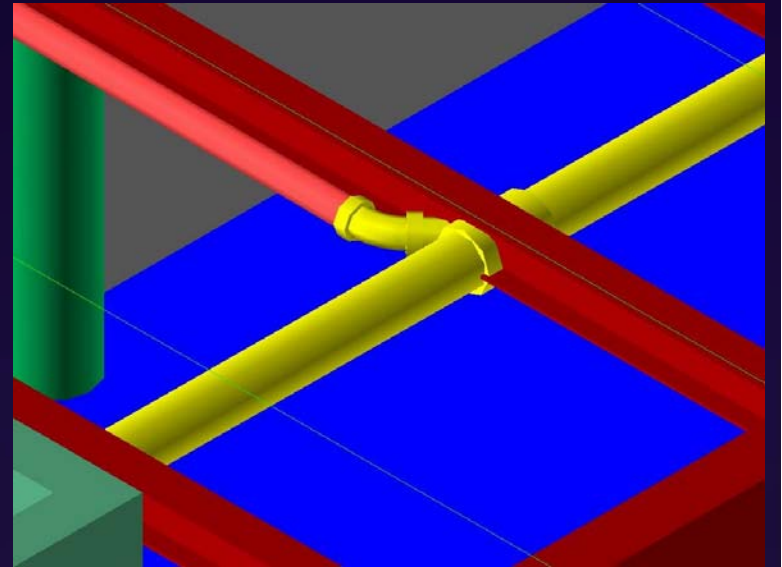


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# Avoid Colliding Services

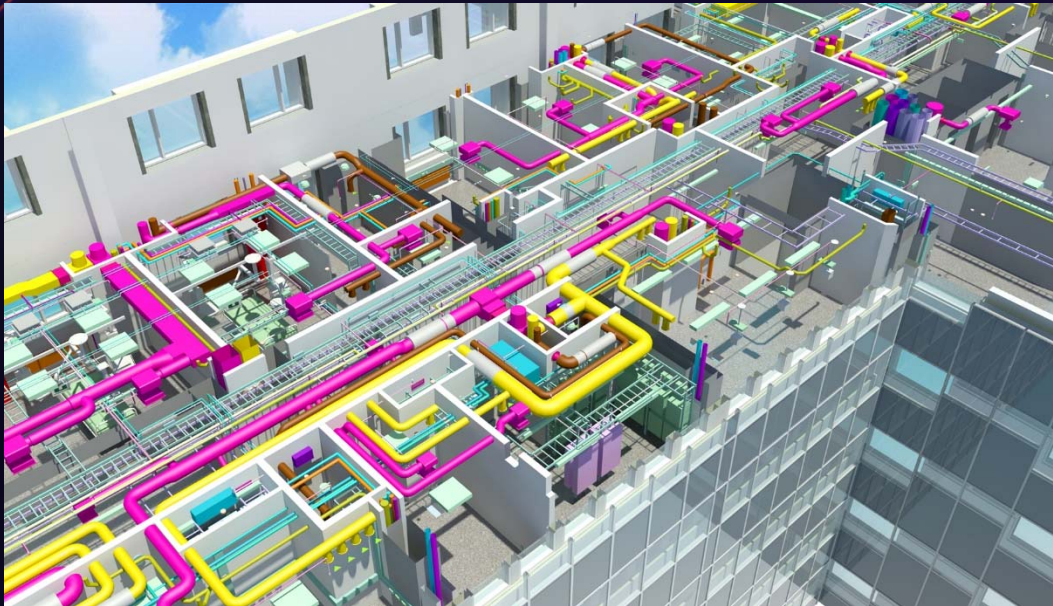
- Clash Detection of building services
  - Better coordination of building trades
  - Avoid ceiling congestion and overlapping services while still in the design phase



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# Services in a 3D Space



- Dimensioning and Spacing of Services are well defined
  - Able to prefabricate building services offsite
  - Reduces waste due to field fabrication

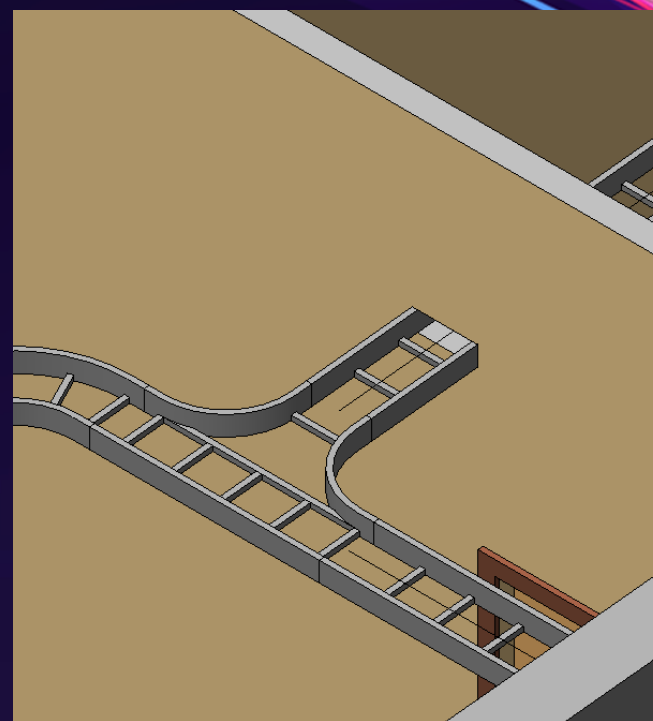


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# Streamlined Design

- Quickly draw out cabling plant
- Easily edit tray dimensions after the fact
- Provide detailed description of tray construction and contents



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# Configure & Deploy

- Create/Modify New or Existing Families
  - Save your common configurations for every project
  - Edit each Instance or Globally across a Model



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Family: Basic Wall  
Type: Gyp Wall - 2 Hr  
Total thickness: 0' 8 1/2" Sample Height: 20' 0"  
Resistance (R): 0.5547 (h-ft<sup>2</sup>-°F)/BTU  
Thermal Mass: 2.8703 BTU/°F

LAYERS					
EXTERIOR SIDE					
Function	Material	Thickness	Wraps	Structural Material	
1 Core Boundary	Layers Above Wrap	0' 0"			
2 Substrate [2]	Gypsum Wall Board	0' 1 1/4"		<input type="checkbox"/>	
3 Structure [1]	<By Category>	0' 6"		<input checked="" type="checkbox"/>	
4 Substrate [2]	Gypsum Wall Board	0' 1 1/4"		<input type="checkbox"/>	
5 Core Boundary	Layers Below Wrap	0' 0"			

INTERIOR SIDE

Insert Delete Up Down

Default Wrapping  
At Inserts: Do not wrap At Ends: None

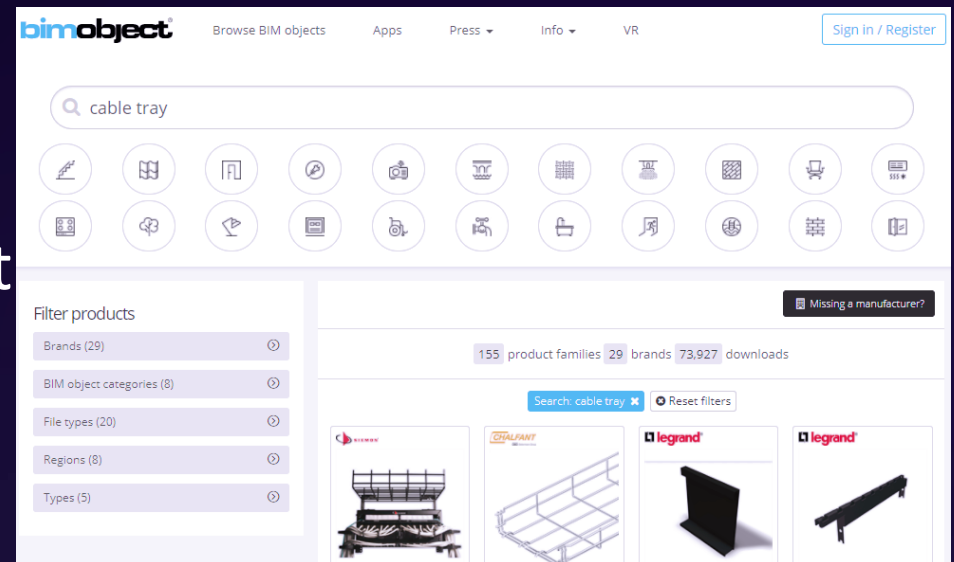
Modify Vertical Structure (Section Preview only)  
Modify Merge Regions Sweeps  
Assign Layers Split Region Reveals

<< Preview OK Cancel Help

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# Smart Objects

- Different Types of Objects
  - Face Based
  - Family Based
- Available directly from vendor's website or object repositories such as BIMObject.com

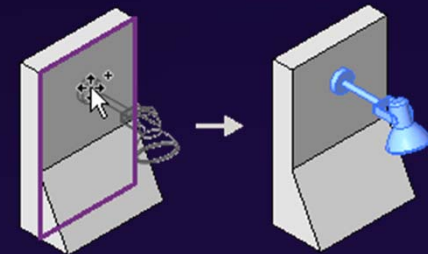


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# Face Based Objects

- Similar to a wall sconce or poster
- Snap to any surface
  - Wall, Floor, table top, Etc.

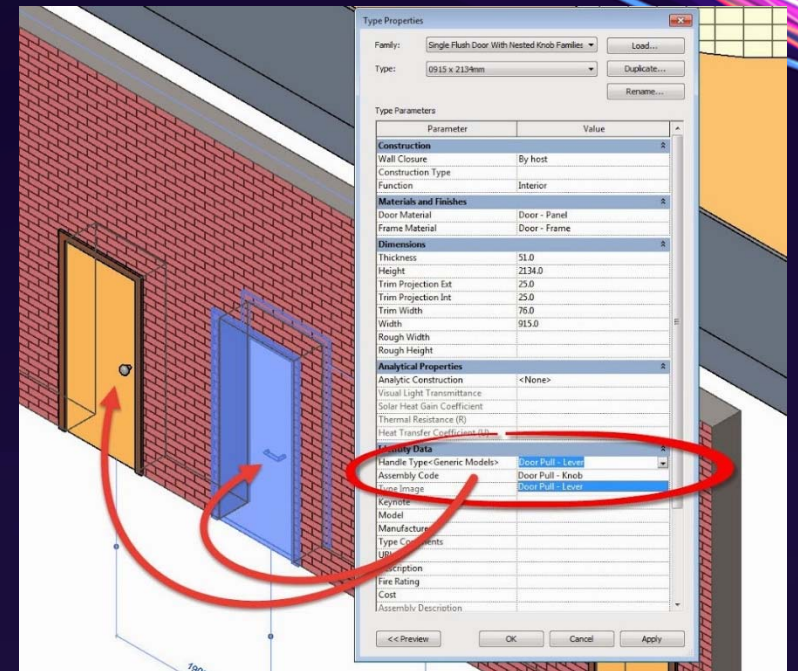


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# Family Based Objects

- Based on assembly type (Wall, Floor, Ceiling, Etc.)
- Aware of and adapt to changes in underlying assembly
- Can Prevent improper usage



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# Object Design

- Typically simple in appearance.
  - Revit® Style Guide sets standards for file size and complexity.
  - The Bigger the Project, the Simpler the Object

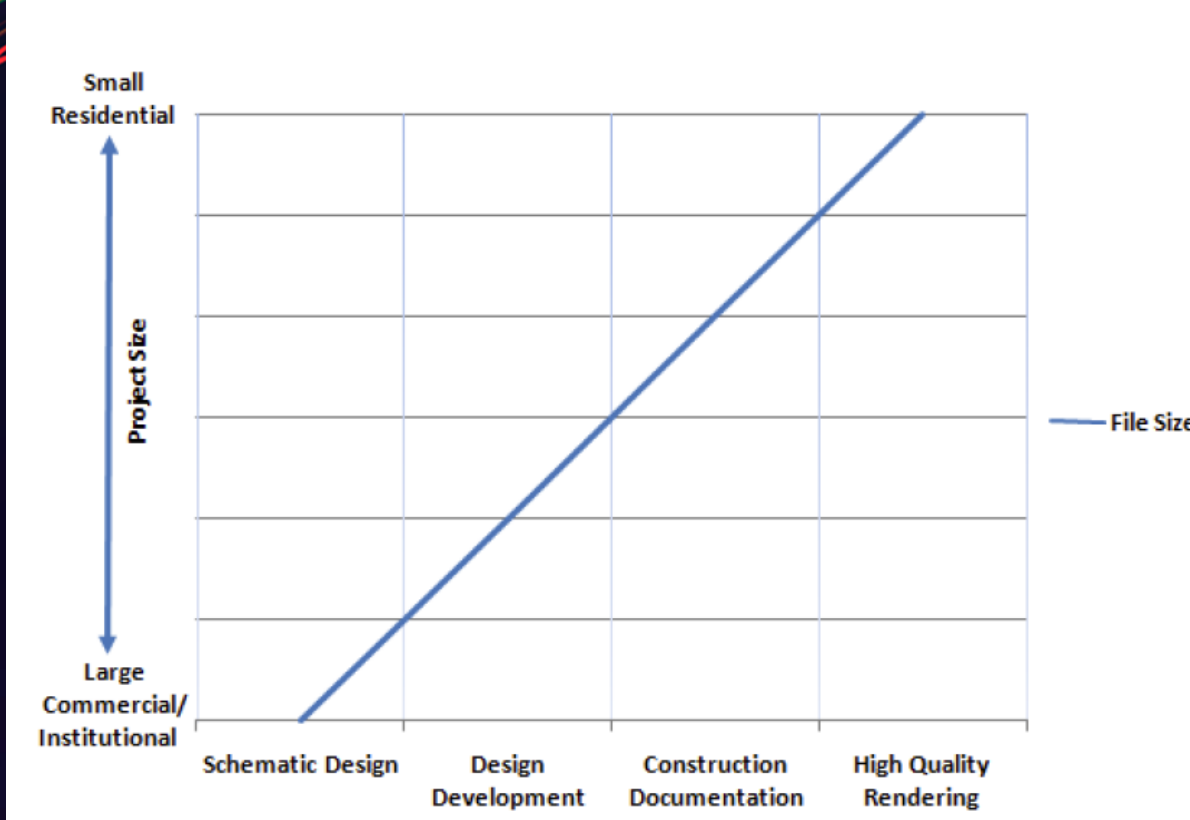


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AREAS TO AVOID FOR OPTIMUM PERFORMANCE	
Use this table as a guide to improve the performance of your families.	
Common Mistake When Creating Families	Recommended Approach
Lack of planning prior to family creation	Before creating a family, use the guidelines outlined in <b>1.4 Planning a Revit Model Family</b> .
Unnecessary parametric relationships	Before adding geometry to a family: <ul style="list-style-type: none"> <li>• Plan the parametric relationships and create a family skeleton that features the main parametric relationships.</li> <li>• Build only the parametric family behavior that you need to avoid over-constraining the model.</li> <li>• Flex the skeleton to test the relationships before you add geometry.</li> </ul>
Use of geometry instead of symbolic lines in plan views	In plan view representations, geometry usually can be represented with symbolic lines, rather than (solid) geometry. Using geometry instead of symbolic lines will create an unnecessarily larger family.
High levels of geometric detail and underuse of visibility settings	Use the guidelines in the <b>Level of Detail</b> and <b>Element Visibility</b> sections of this guide to avoid unnecessarily large family files.
Overuse of voids, formulas, and arrays	Extensive use of voids, formulas, and arrays will add to the overall family size and affect its performance in projects.
Use of too many nested families (families imported into other families)	Nest families to create geometry in other families only when necessary. Only use nested content to share objects among multiple families, for example, door hardware, muntin patterns, and so on.
Large families with many types that do not include type catalogs	The more types (particularly unused) the heavier the family. Create type catalogs for families that contain 6 or more types. See <b>2.10 Type Catalog Standards and Usage</b> .
Inadequate family testing	See <b>3.1 General Family Testing Guidelines</b> .



Impact of Design Complexity and Project Size on Family File Size



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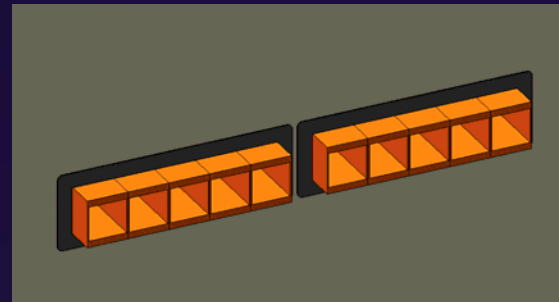


# More Than Just Placeholders

- Contain detailed information about the product chosen
  - Ordering Information
  - Product & Safety Data Sheets
  - Manufacturer Contact Information
  - And More!



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Type Properties

Family: Firestop-EZPath-STI-EZ\_Path\_Series\_44\_for\_Floors Load...

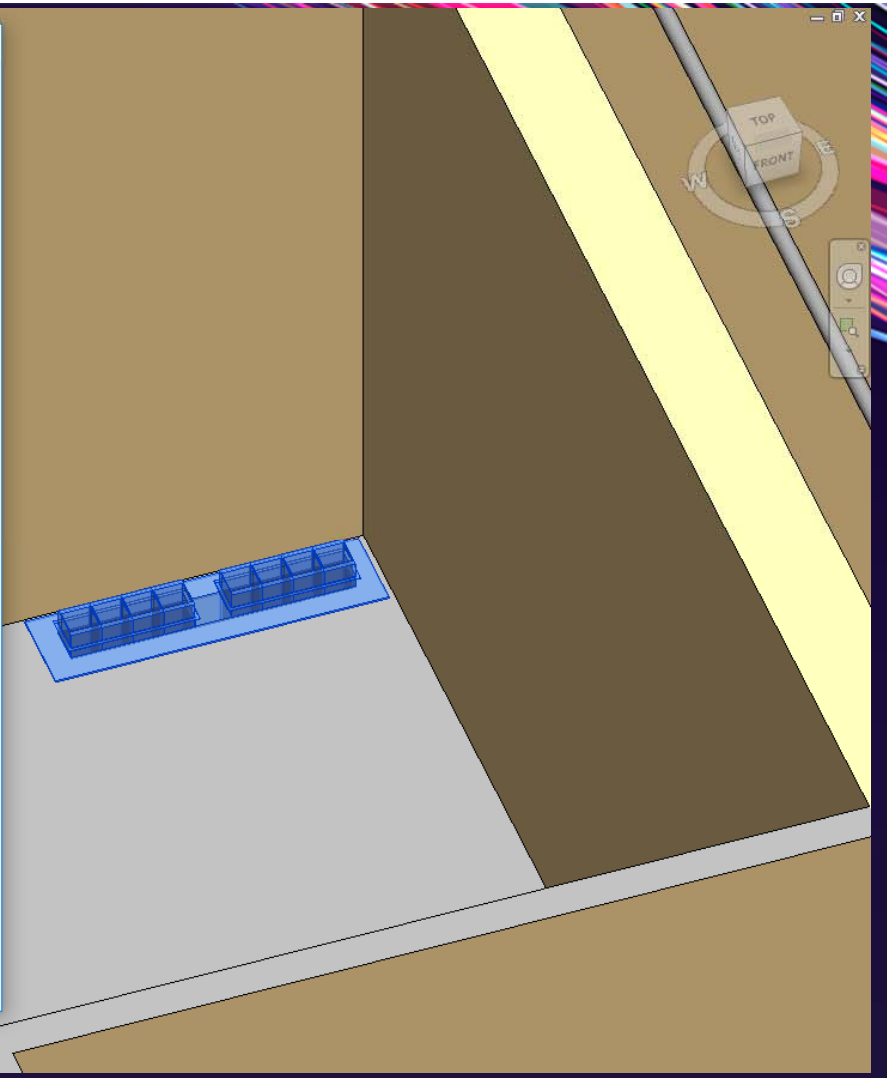
Type: Series 44+ - 2 Bank Floor Grid - Side by Side Duplicate...

Rename...

Type Parameters

Parameter	Value
Base Plate cutout length	0' 4 5/8"
<b>Identity Data</b>	
URL	<a href="https://www.stifirestop.com/">https://www.stifirestop.com/</a>
Tested Systems	<a href="https://systems.stifirestop.com/">https://systems.stifirestop.com/</a>
Safety Data Sheet	<a href="https://files.stifirestop.com/5.%20Safety%20Data%20Sheet/1.%20Eng">https://files.stifirestop.com/5.%20Safety%20Data%20Sheet/1.%20Eng</a>
Region	Global
Product Page	<a href="https://www.stifirestop.com/ez-path/ordering-installation/series-44/">https://www.stifirestop.com/ez-path/ordering-installation/series-44/</a>
Product Data Sheet	<a href="https://files.stifirestop.com/4.%20Product%20Data%20Sheets/1.%20E">https://files.stifirestop.com/4.%20Product%20Data%20Sheets/1.%20E</a>
No. of Devices	8
Model No. (Hanger Bracket)	(2) EZP444MB
Model No. (Device)	EZD44S2
Model No. (Complete Kit)	
Model No. (Brackets)	(2) EZG444
Model No. (Accessory Bracket)	EZG44CP
Model	EZ-Path Series 44+ Fire-Rated Pathway
Manufacturer Phone No.	800.992.1180
Manufacturer Address	210 Evans Way, Somerville, NJ 08876
Manufacturer	Specified Technologies, Inc
Installation Instructions	<a href="http://files.systems.stifirestop.com/8.%20Install%20Sheets/1.%20EZ-">http://files.systems.stifirestop.com/8.%20Install%20Sheets/1.%20EZ-</a>
Fire Rating	Up to 4 Hr
Description	EZ-Path Series 44+ Fire-Rated Pathway with Floor Plates
Contact Technical Service	TechServ@stifirestop.com
Assembly Code	D4030900
Type Image	
Keynote	
Type Comments	
Cost	
Assembly Description	Other Fire Protection Specialties
Type Mark	
OmniClass Number	
OmniClass Title	
Code Name	

<< Preview OK Cancel Apply





# One File, Multiple Configurations

Specify Types

Family: Firestop-EZPath-STI-EZ\_Pat

Types:

Type	Region	No. of Devices	Model No. (Device)	Model No. (Brackets)	Model No. (Hanger Bracket)	Model No. (Accessory Bracket)	Model No. (Complete Kit)	g
	(all)	(all)	(all)	(all)	(all)	(all)	(all)	
Series 44+ - 1 Device Floor Plate	Global	1	EZD44S2	EZP144F			EZDP144FKS2	1
Series 44+ - 1 Bank Floor Grid	Global	4	EZD44S2	EZG444	EZP444MB		EZDG444S2	4
Series 44+ - 2 Bank Floor Grid	Global	8	EZD44S2	EZG844	(2) EZP444MB		EZDG844S2	4
Series 44+ - 4 Bank Floor Grid	Global	16	EZD44S2	EZG1644	(4) EZP444MB		EZDG1644S2	4
Series 44+ - 2 Bank Floor Grid - Side by Side	Global	8	EZD44S2	(2) EZG444	(2) EZP444MB	EZG44CP		4
Series 44+ - 3 Bank Floor Grid - Side by Side	Global	12	EZD44S2	(3) EZG444	(3) EZP444MB	(2) EZG44CP		4
Series 44+ - 4 Bank Floor Grid - Side by Side	Global	16	EZD44S2	(4) EZG444	(4) EZP444MB	(3) EZG44CP		4
Series 44 - 1 Device European Floor Plate	Europe	1	EZD44T	EZG144T				1
Series 44 - 1 Bank European Floor Grid	Europe	4	EZD44T	EZG444T				4
Series 44 - 2 Bank European Floor Grid - Side by Side	Europe	8	EZD44T	EZG844T				4
Series 44 - 1 Device Cast In Place (Concrete Floors Only)	Europe	1	EZD44T	EZP144MBE				1
Series 44 - 2 Devices Cast In Place (Concrete Floors Only)	Europe	2	EZD44T	EZP544MBE				2
Series 44 - 3 Devices Cast In Place (Concrete Floors Only)	Europe	3	EZD44T	EZP544MBE				3
Series 44 - 4 Devices Cast In Place (Concrete Floors Only)	Europe	4	EZD44T	EZP544MBE				4
Series 44 - 5 Devices Cast In Place (Concrete Floors Only)	Europe	5	EZD44T	EZP544MBE				4
Series 44 - 1 Device German Floor Plate	Germany	1	EZD44T	EZG144T				1
Series 44 - 1 Bank German Floor Grid	Germany	4	EZD44T	EZG444T				4
Series 44 - 2 Bank German Floor Grid - Side by Side	Germany	8	EZD44T	EZG844T				4

Select one or more types on the right for each family listed on the left

OK Cancel Help



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# Third-Party Plugins

- Further enhance the suite of tools that Revit® comes with.
- Integrations with outside services/vendors
  - Design, Object Search/Selection, Production, Scheduling



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# FCM<sup>®</sup> – Firestop Clash Management

- Finds where services clash with barriers
- Searches for appropriate Firestop System
- Places firestop marker and product BIM Object



**FCM**  
FIRESTOP CLASH MANAGEMENT  
PLUGIN

**BIM & FIRESTOP**  
INTEGRATION

**Step 1: Clash Detection**  
Scan the Revit<sup>®</sup> model to find clash points where firestopping is required.

**Step 2: System & Product Selection**  
Firestop systems are selected and automatically assigned to each clash point. Chooses the correct firestop product every time and imports relevant information into the model.

**Step 3: Openings Report**  
Generates openings reports with assembly details and firestop system information for coordination meetings.

Clash ID	Clash Type	Clash Description	Clash Location	Clash Status	Clash Date
1	Clash	Clash between wall and ceiling	Level 1	Open	2018-01-01
2	Clash	Clash between wall and ceiling	Level 1	Open	2018-01-01
3	Clash	Clash between wall and ceiling	Level 1	Open	2018-01-01
4	Clash	Clash between wall and ceiling	Level 1	Open	2018-01-01
5	Clash	Clash between wall and ceiling	Level 1	Open	2018-01-01



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# MWF<sup>®</sup> – Metal Wood Framer

- Finds all openings and penetrations through barriers
- Intelligently frames openings & assemblies
- Output framing information for Manufacturing



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# Working Together

- Firestop Clash Management
  - Finds and places firestop systems and products
- Metal Wood Framing
  - Frames walls, floors, ceilings and through openings with steel/wood studs
- Howick
  - Bend and cut steel framing members based on MWF® output on site from sheet steel



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# Virtual Tours

- Plugins like Enscape™ live render Revit® Models into a VR walkthrough
  - Works with HTC Vive or Oculus Rift
- Demo Video <https://youtu.be/890zE2sbtWM>



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