

What's New in Autodesk® Revit® Building 9



The Value...

Works the Way You Think

Enables design thinking, better design insight that works on the whole building

Better Coordination and Quality

Deliver higher quality automatically Coordinated documents that are clear and complete

Better for Your Business

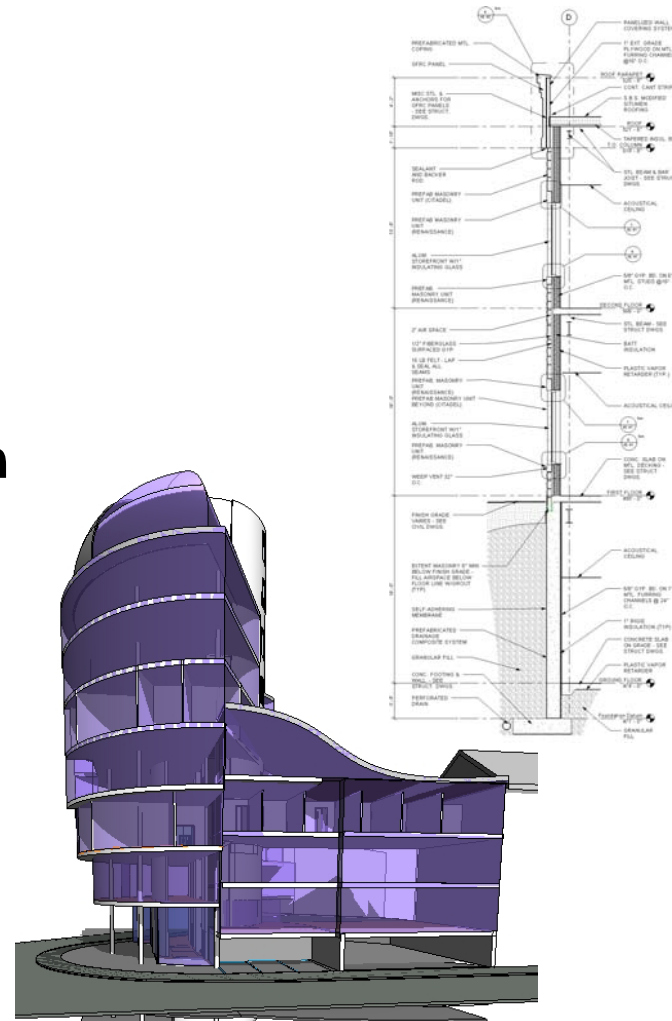
Improves design collaboration that enables better documents and reduces production time

Autodesk®

Feature Focus

Autodesk Revit Building 9

- Construction Documentation
- Openness & Conceptual Design
- Design Insight & Analysis



Top New Features

Autodesk Revit Building 9

- **Works the Way you Think**
 - Volumetric Room Calculations
 - Additional Room Bounding Elements
 - Sun Studies
 - User Defined Selection Filters
- **Better Coordination & Quality**
 - Detail Library
 - Keynoting
 - Reuse Drafting Views, Schedules, & Sheets
 - Material Take Offs
 - Query Elements in Linked Files
 - View Annotations in Linked Files
 - Coordination Monitor – Walls & Slabs
- **Better for Your Business**
 - Properties in 2D DWF
 - DWG Import/Export Improvements
 - IFC Import
- **Competitive Advantages**
 - Expanding the Public API (Application Programming Interface)

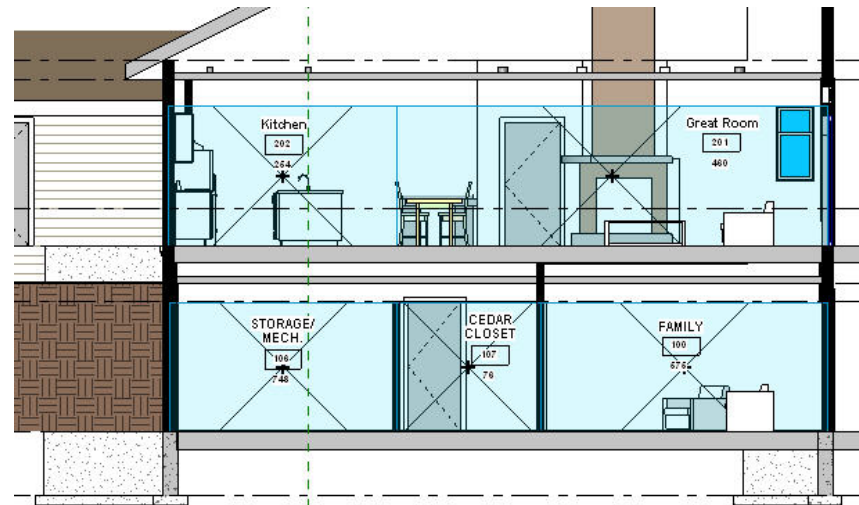
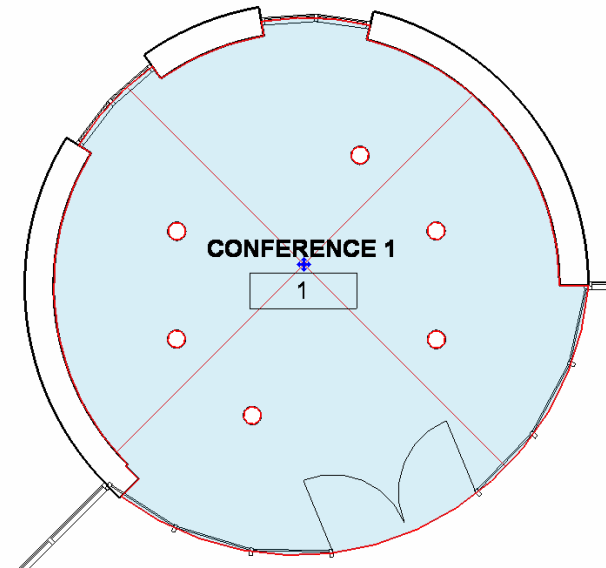
Works the Way You Think



Rooms

Design Insight & Analysis

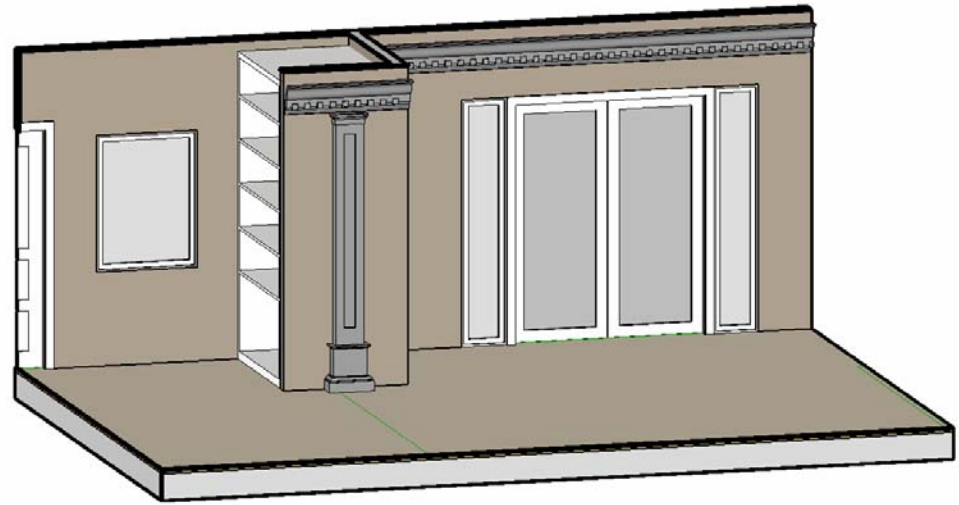
- **Rooms – A New Revit Object**
 - Independent from Room Tags
 - Tag in Section Views
 - Volumetric Room Calculations
 - Additional Room Bounding Elements
 - Columns
 - Roofs
 - In Place Walls
 - Curtain Systems
- “Show” Room Functionality in Schedules



Modeling Enhancements

Openness & Conceptual Design

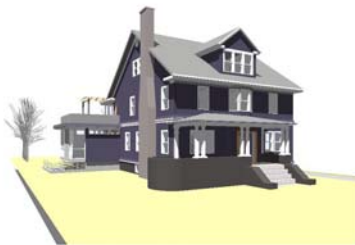
- Sun Studies
- Modeling Sweeps
- 3D 2-Pick Families
- Rehost Elements
- Columns – Top & Bottom Attachment



[9 of 16] [Apr 22, 2006 - 12:09]



[10 of 16] [Apr 22, 2006 - 13:09]



[11 of 16] [Apr 22, 2006 - 14:09]

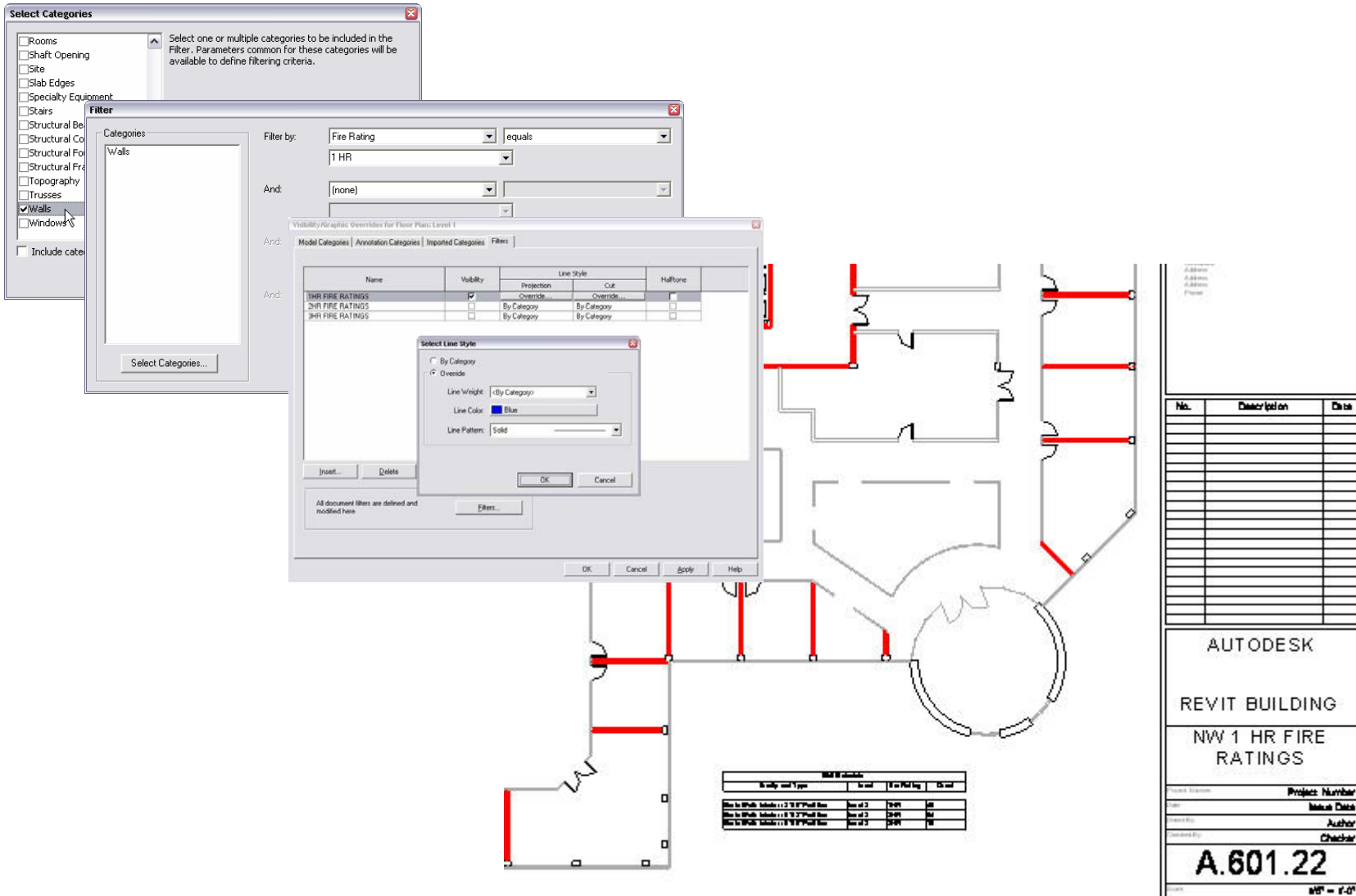


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User Defined Filter Selections

Construction Documentation



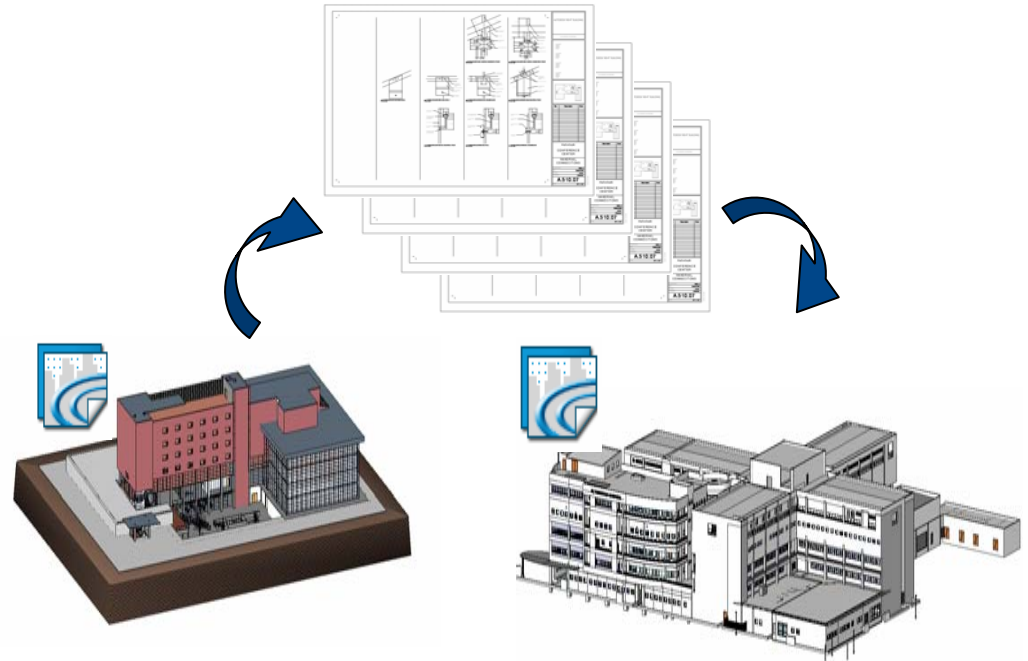
Better Coordination & Quality



Detailing

Construction Documentation

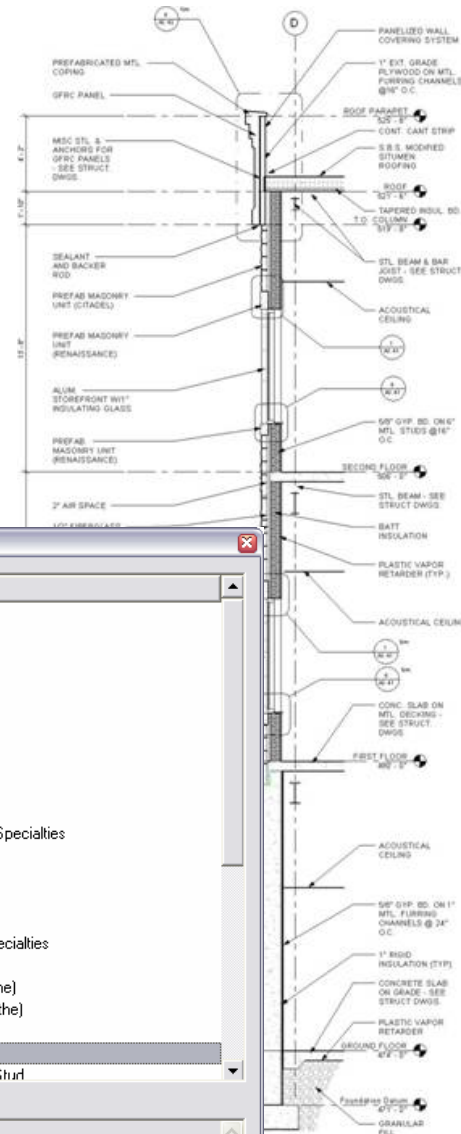
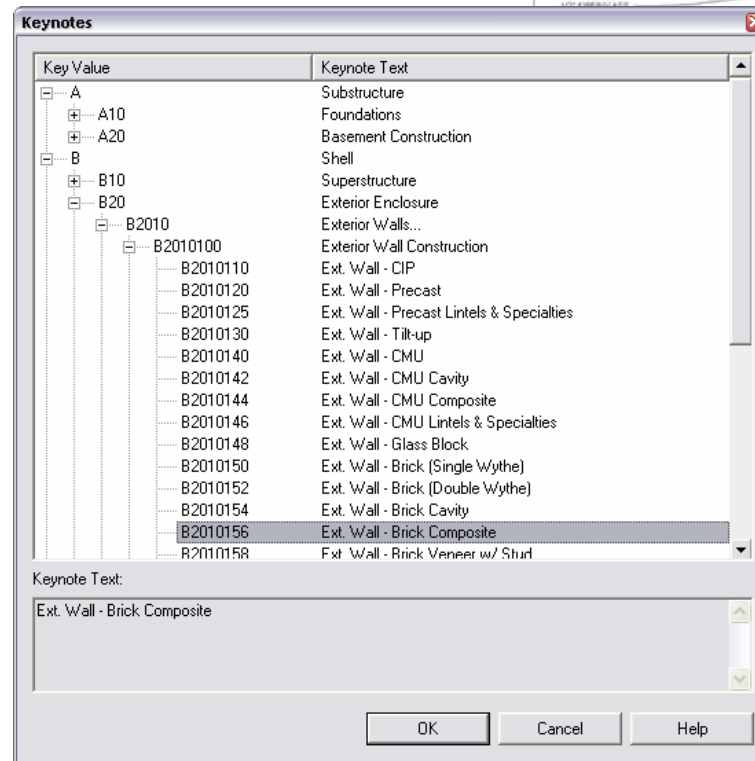
- **Detail Library**
- **Save & Re-use Views**
 - Drafting Views
 - Sheets
 - Schedules
- **2D 2-Pick Components**
- **Display Obscured Elements**
- **Dimensioning non-orthogonal walls**
- **Free and attached Tag Leaders**



Keynoting

Construction Documentation

- **Keynotes**
 - Element
 - Material
 - User
- **External Source**
 - .TXT File
- **Keynote Legends**
 - Sheet
 - Project

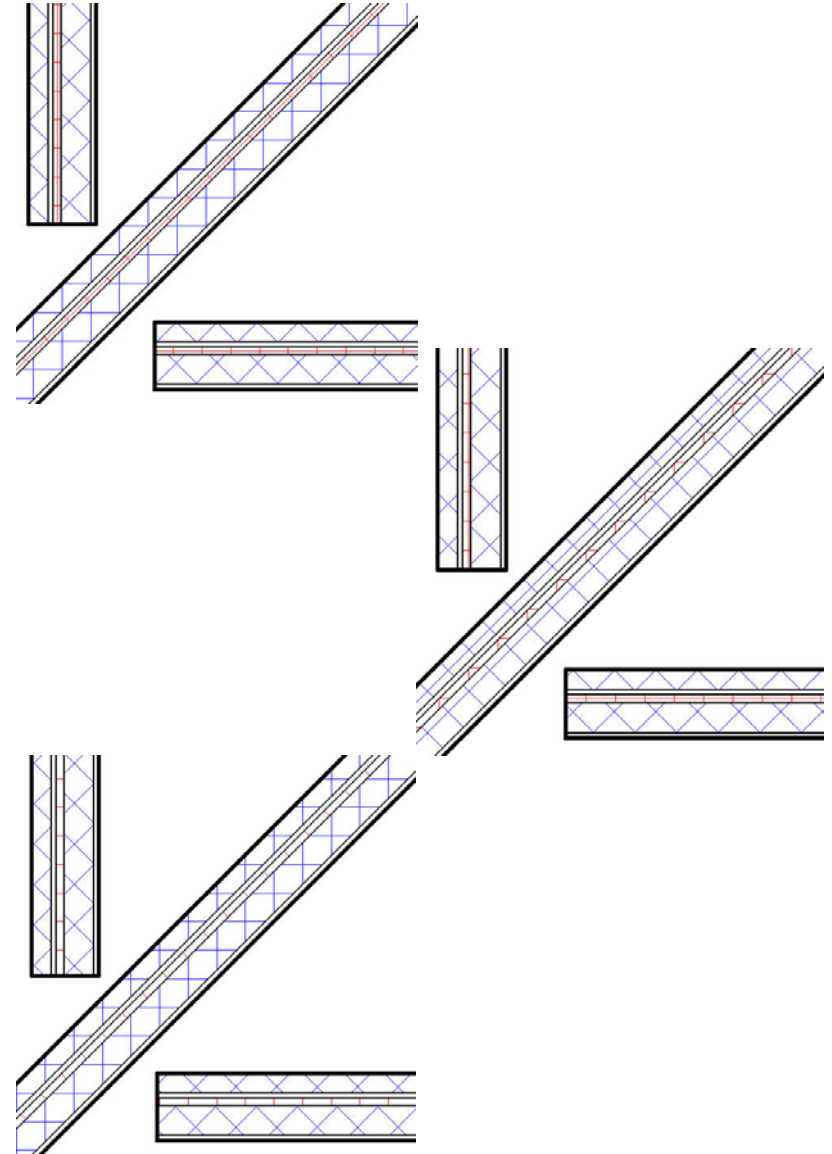


Graphical Output

Construction Documentation

- **Hosts**

- Core Layer Clean-Up control
- Control Visibility of Cut Pattern
- Control Visibility of Cut Lines
- Control Cut Pattern Orientation

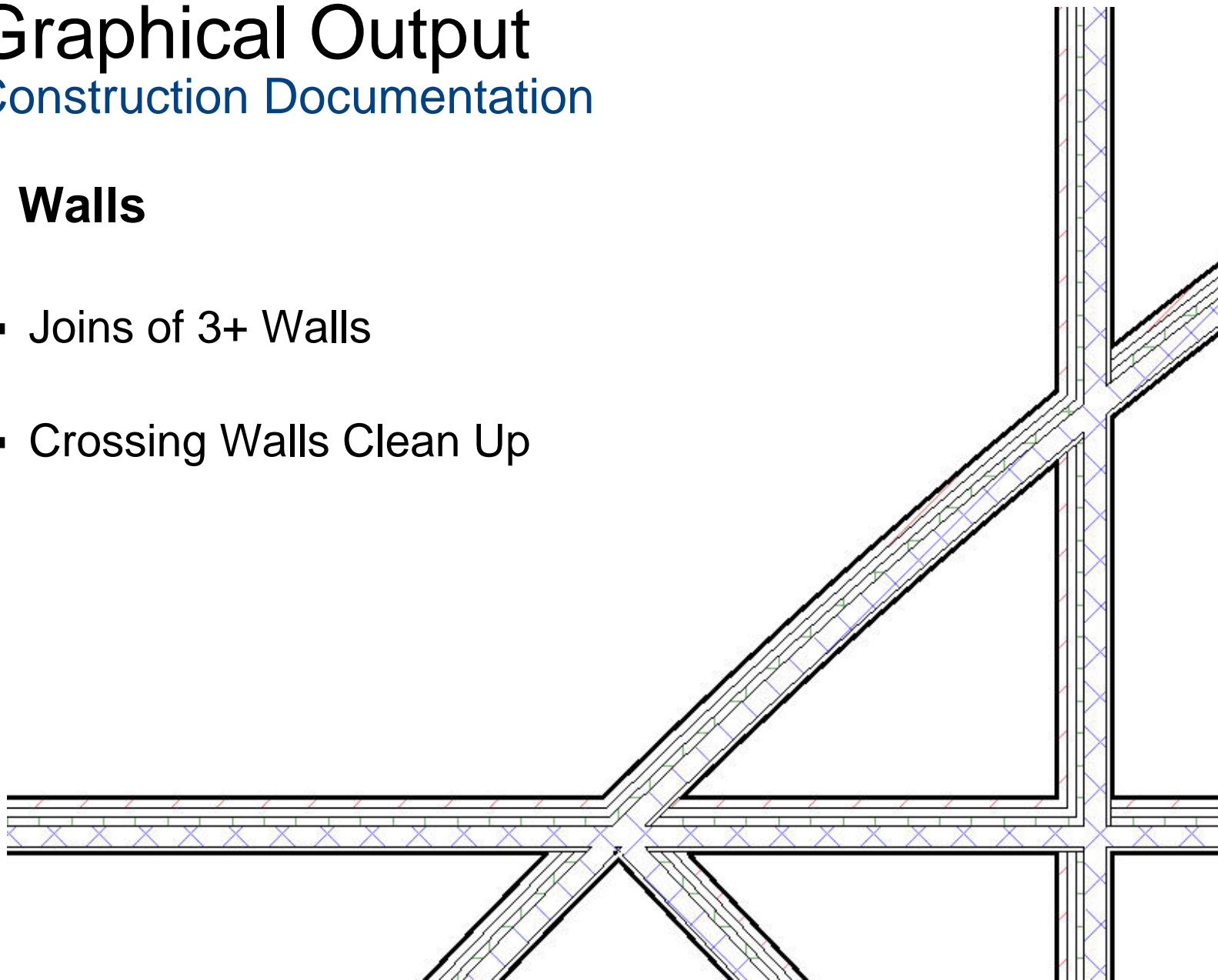


Graphical Output

Construction Documentation

- **Walls**

- Joins of 3+ Walls
- Crossing Walls Clean Up



Materials

Openness & Conceptual Design

- Material Takeoff
- Material Keynotes
- ODBC
- API

ITEMS	Oct 3 Cost	Cost	Difference
1 General Conditions (months)	\$ 841,885	\$ 849,657	\$ 7,772
2 Sitework and Demolition	\$ 146,114	\$ 146,114	\$ -
3 Concrete Substructure	\$ 269,310	\$ 191,190	\$ (78,120)
4 Concrete Slabs-on-Grade and on-Deck	\$ 722,218	\$ 731,947	\$ 9,729
5 Concrete - Framing, Bracing, Columns	\$ 720,000	\$ 720,000	\$ -
6 Steel	\$ 377,165	\$ 380,646	\$ 3,481
7 Interior & Ext Walls Construction - SF	\$ 512,693	\$ 528,119	\$ 15,426
8 Moisture Protection	\$ 249,198	\$ 251,499	\$ 2,301
9 Roofing - SF	\$ 144,136	\$ 127,587	\$ (16,549)
10 Doors	\$ 53,875	\$ 53,484	\$ (391)
11 Windows	\$ 91,833	\$ 91,833	\$ -
12 Wall Finishes - SF	\$ 44,108	\$ -	\$ (44,108)
13 Floor Finish (Carpet) SF	\$ 18,944	\$ -	\$ (18,944)
14 Ceiling Area - SF	\$ 128,889	\$ 128,889	\$ -
15 Specialties	\$ 16,836	\$ 27,173	\$ 10,337
16 Equipment	\$ 5,521	\$ 5,521	\$ -
17 Furnishings	\$ 4,660	\$ 555	\$ (4,105)
18 Casework	\$ 27,603	\$ 27,603	\$ -
19 Special Construction	\$ -	\$ -	\$ -
20 Conveying	\$ 572,482	\$ 577,767	\$ 5,285
21 Light Fixtures	\$ 15,970	\$ 15,970	\$ -
22 Plumbing	\$ 713,919	\$ 720,509	\$ 6,590
23 Plumbing Fixtures	\$ 36,956	\$ 36,956	\$ -
24 Heating and Venting	\$ 922,796	\$ 931,224	\$ 8,428
25 Air Conditioning	\$ 902,581	\$ 910,833	\$ 8,252
26 Sprinklers	\$ 242,863	\$ 244,701	\$ 1,838
27 Electrical	\$ 1,118,823	\$ 1,126,345	\$ 7,522
28 Fee and Contingency	\$ 441,875	\$ 443,822	\$ 1,947
29	\$ -	\$ -	\$ -
30 CONSTRUCTION COST	\$ 9,279,383	\$ 9,320,253	\$ 40,870

Wall Material Takeoff			
Material: Name	Material: Area	Material: Volume	Material: Cost
Concrete - Cast-in-Place Lightweight Concrete	2835 SF	2362.86 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	4486 SF	2990.74 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	2586 SF	2154.87 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	1581 SF	1317.31 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	3787 SF	3155.71 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	1903 SF	1585.81 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	265 SF	221.17 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	275 SF	228.84 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	127 SF	105.89 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	425 SF	353.75 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	175 SF	145.98 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	175 SF	145.98 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	500 SF	414.42 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	3591 SF	2992.27 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	3586 SF	2960.44 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	466 SF	387.92 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	238 SF	197.92 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	45 SF	37.47 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete	93 SF	77.12 CF	10.80
Concrete - Cast-in-Place Lightweight Concrete: 19			

Finishes - Interior - GWB TYPE X layer 2	1850 SF	95.26 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	766 SF	39.91 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	1847 SF	95.07 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	515 SF	26.01 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	1367 SF	71.20 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	763 SF	39.71 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	1306 SF	68.02 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	459 SF	23.91 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	590 SF	30.71 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	42 SF	2.15 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	31 SF	1.61 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	29 SF	1.48 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	38 SF	1.97 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	33 SF	1.69 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	24 SF	1.27 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	22 SF	1.17 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	30 SF	1.54 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	33 SF	1.69 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	24 SF	1.27 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	22 SF	1.17 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	30 SF	1.54 CF	2.11
Finishes - Interior - GWB TYPE X layer 2	705 SF	36.72 CF	2.11
Finishes - Interior - GWB TYPE X layer 2: 22			

Coordination

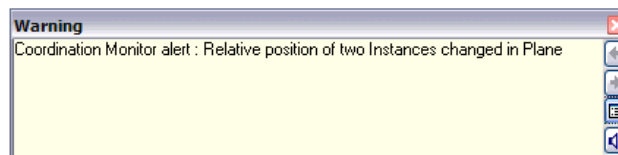
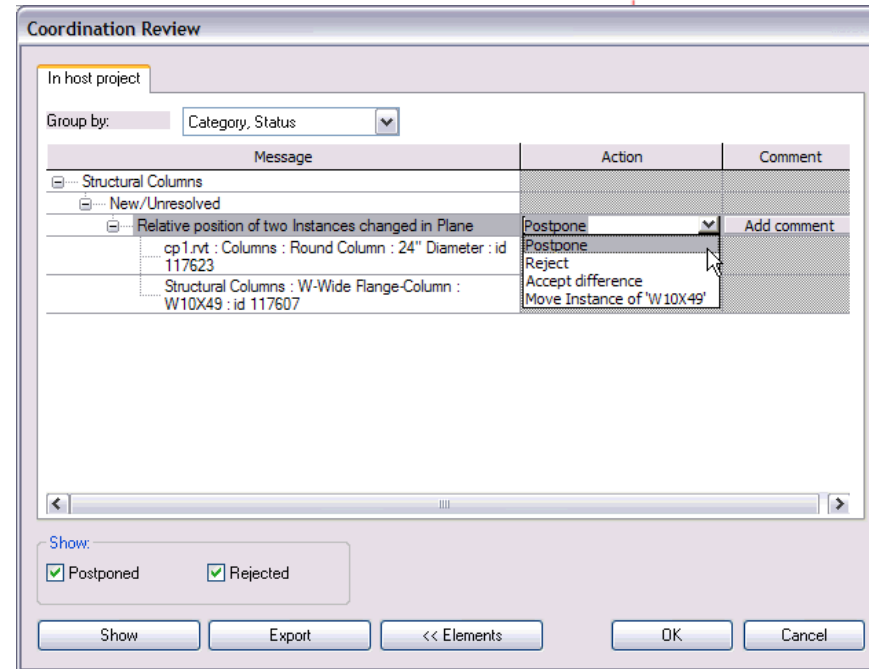
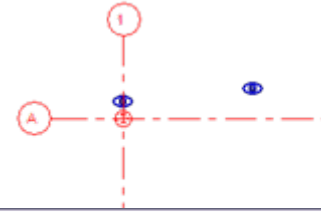
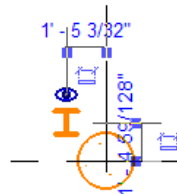
Openness & Conceptual Design

■ Coordination Monitor

- Columns
- Grids
- Levels
- *Walls*
- *Slabs*

■ Compatibility

- Autodesk Revit Structure 3
- Autodesk Revit Systems

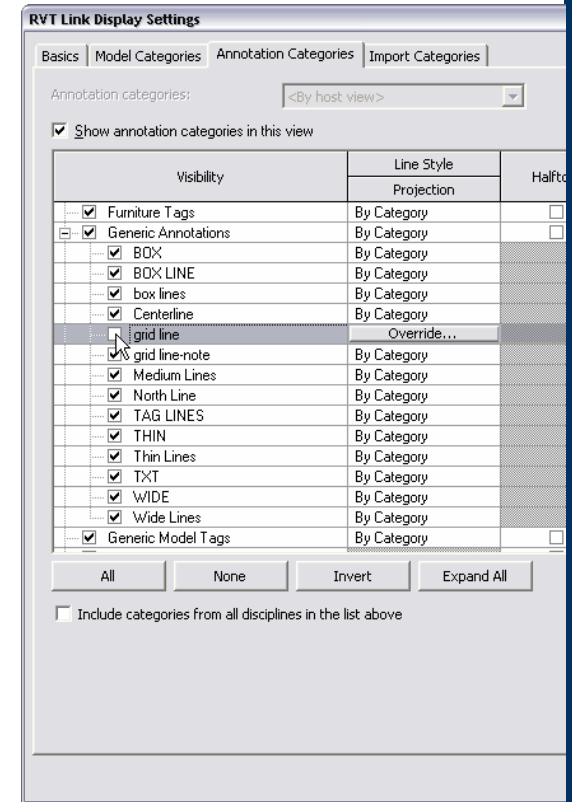
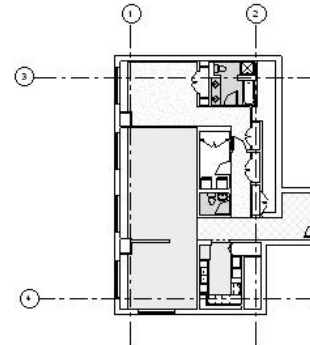
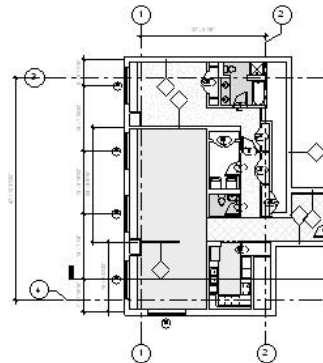
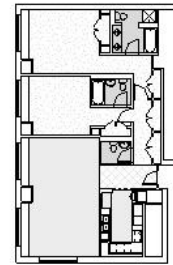


Coordination

Openness & Conceptual Design

■ Linked File Enhancements

- Display & Control Annotations
- View Properties
- Display Design Options
- Object Styles
- Linked Model Visibility
- View DWG



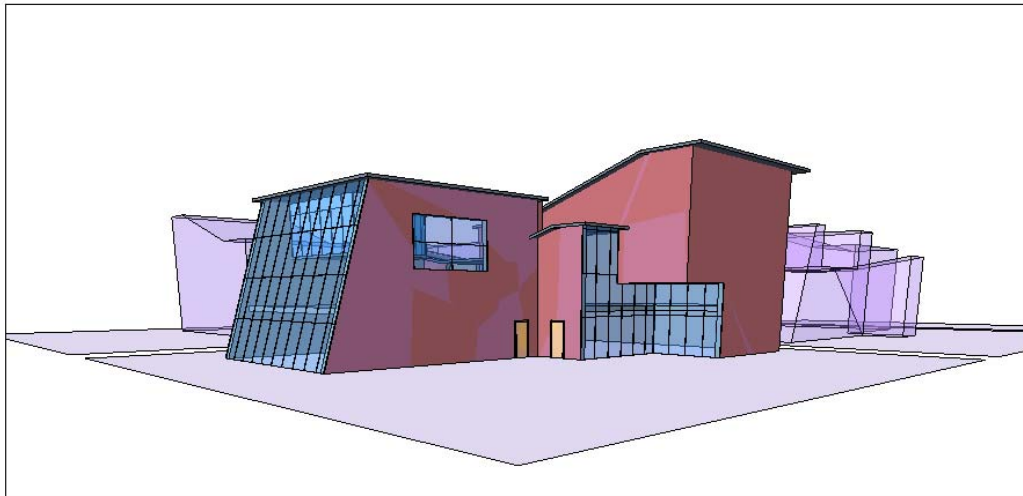
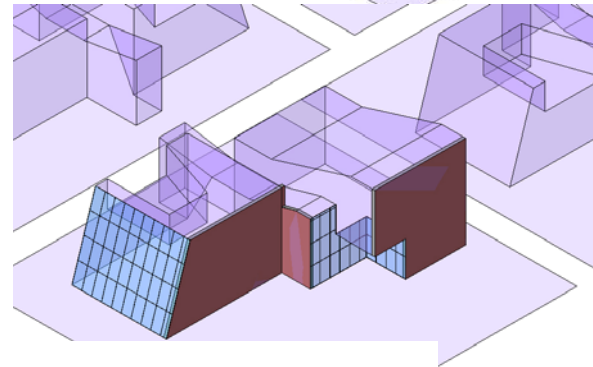
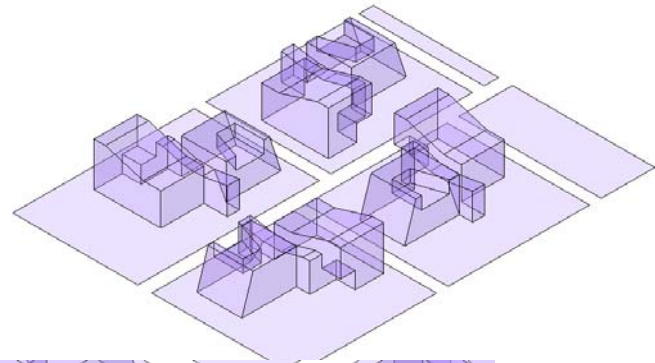
Better for Your Business



Import/Export

Construction Documentation

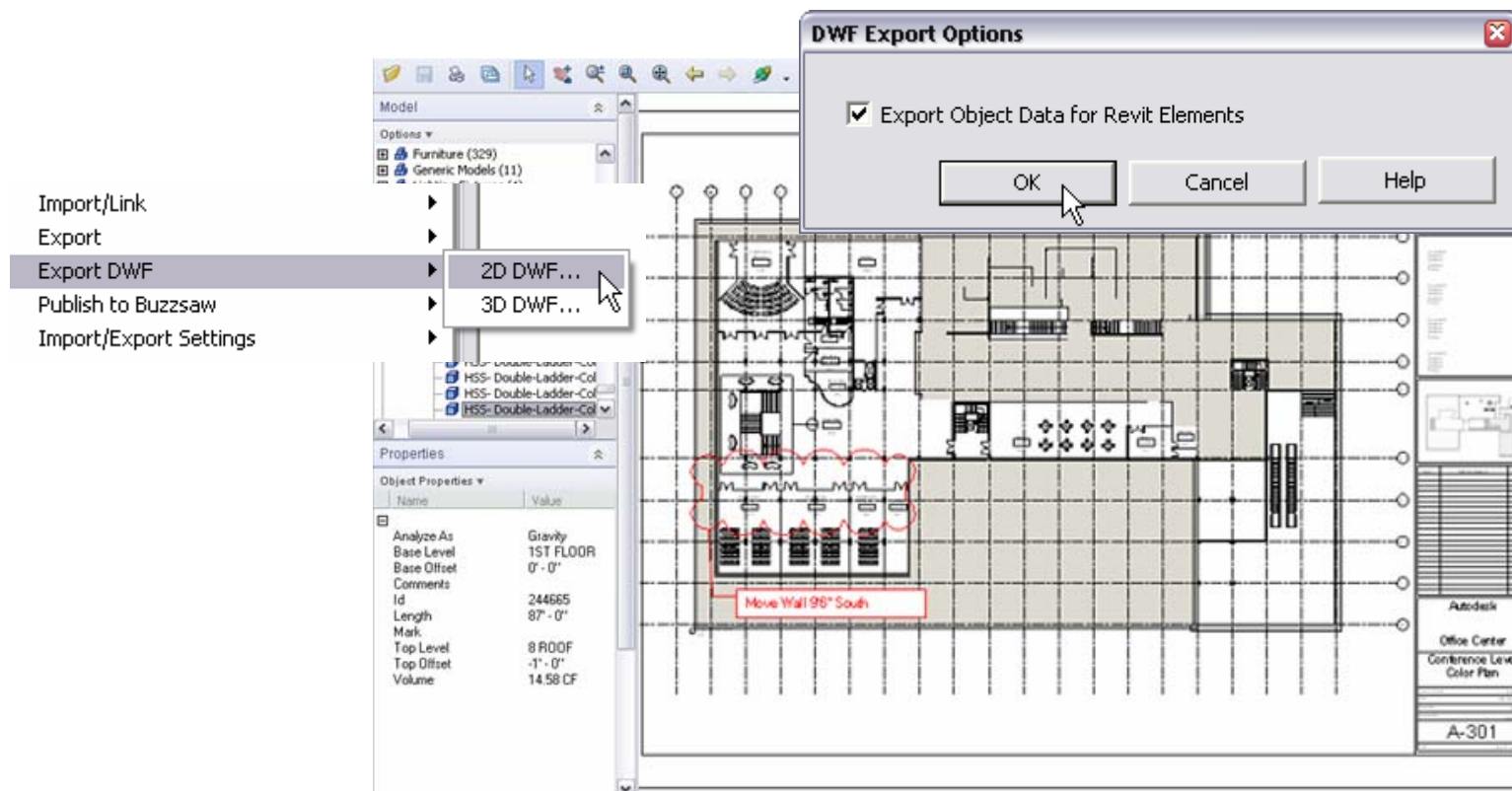
- **GBXML**
- **IFC Import (2x2 Certified)**
- **DWG**
- **SKP**



DWF (Design Web Format)

Openness & Conceptual Design

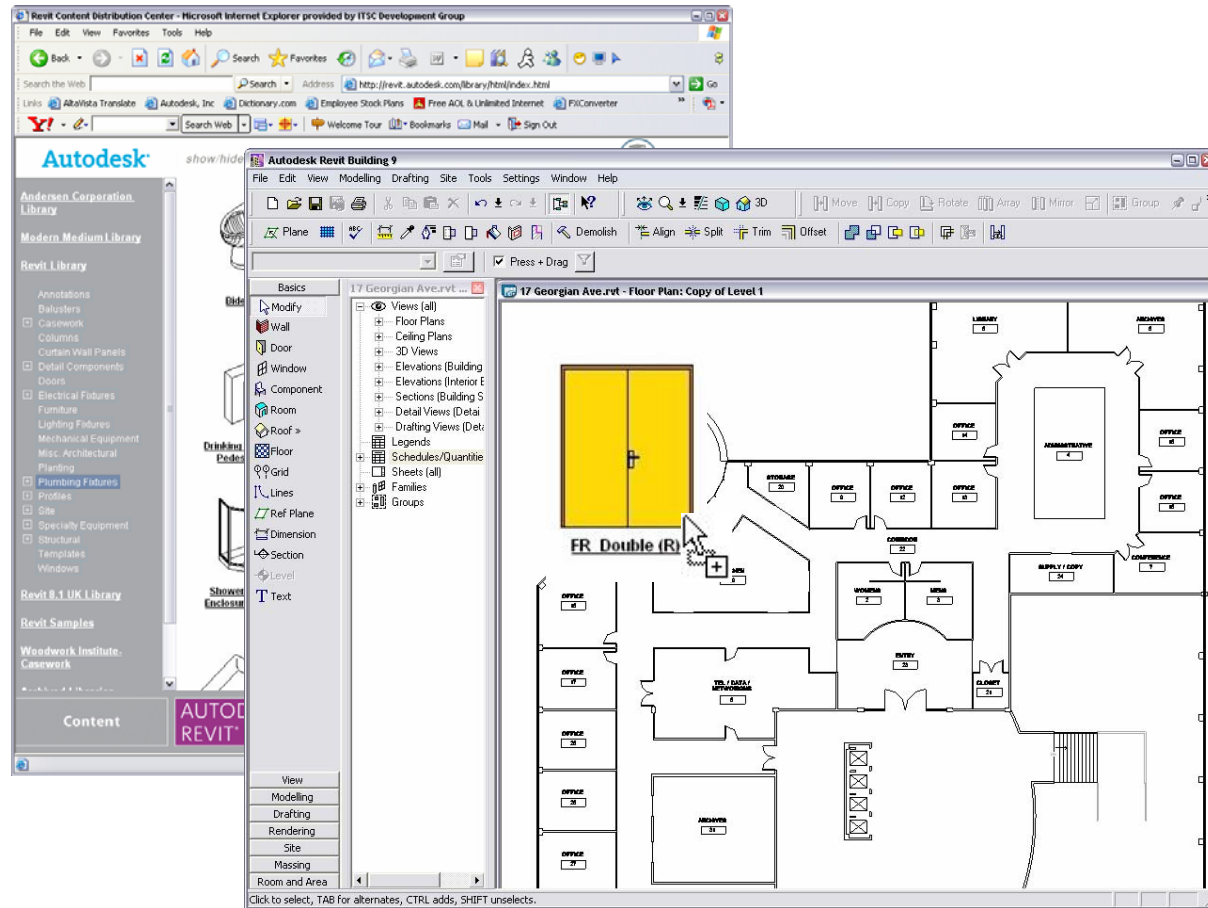
- **2D DWF**
 - Element Properties included in export



Platform

Autodesk Revit Building

- I-Drop



Competitive Advantages



Revit Building API

Openness and Conceptual Design

- **Available to All Users**
- **.NET based API**
 - API based on .NET 2.0 Framework (MS DevStudio 2005)
 - Program in C, C++, VB, C#
- **API enables you to:**
 - Access Elements
 - Query properties
 - Extract geometry
 - Change properties
 - *Create all Family Based Elements*
 - *Generate Dimensions*
 - *Create Views & Sheets*
 - *Place Views on Sheets*
 - *Create Walls, Slabs, Grids, & Levels*
- **Support through ADN (Autodesk Developers Network)**

```
RevitAPI::_Autodesk_Revit_DocumentPtr pDocument = pApplication->ActiveDocument;
mscorlib::IEnumeratorPtr pIter = pDocument->Elements;

while (pIter->MoveNext())
{
    RevitAPI::_Autodesk_Revit_ElementPtr pElement = pIter->Current;
    RevitAPI::_Autodesk_Revit_Geometry_ElementPtr pGeometryElement = pElement->ParseGeomet
    if (pGeometryElement != NULL)
        DrawElement(pGeometryElement);
}

glEnd();

glFinish();
}

void OpenGLContext::DrawElement(RevitAPI::_Autodesk_Revit_Geometry_ElementPtr pGeometryEleme
{
    RevitAPI::_Autodesk_Revit_Geometry_SolidArrayPtr pSolidArray = pGeometryElement->Solids;
    mscorlib::IEnumeratorPtr pIterator = pSolidArray->ForwardIterator();

    while (pIterator->MoveNext())
    {
        RevitAPI::_Autodesk_Revit_Geometry_SolidPtr pSolid = pIterator->Current;
        DrawSolid(pSolid);
    }
}
```

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