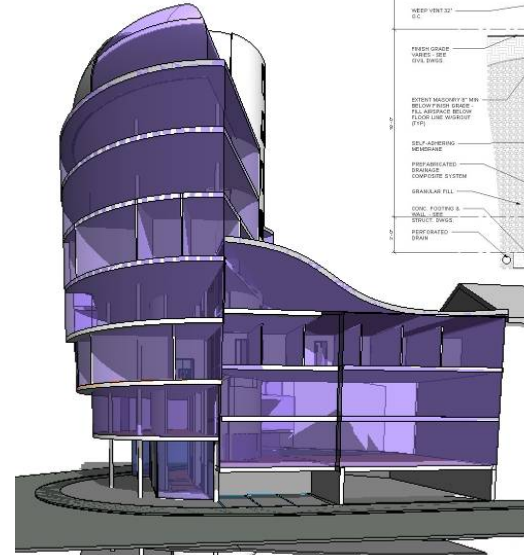


What's New in Autodesk® Revit® Building 9 & 9.1

Feature Focus

Autodesk Revit Building 9.1

- **Openness & Conceptual Design**
 - SketchUp Import
 - Coordination Monitor
 - IFC Export...
- **Construction Documentation**
 - Detailing
 - Keynoting
 - Material Take Off...
- **Design Insight & Analysis**
 - Rooms
 - Sun Studies
 - gbXML..



Works the Way You Think

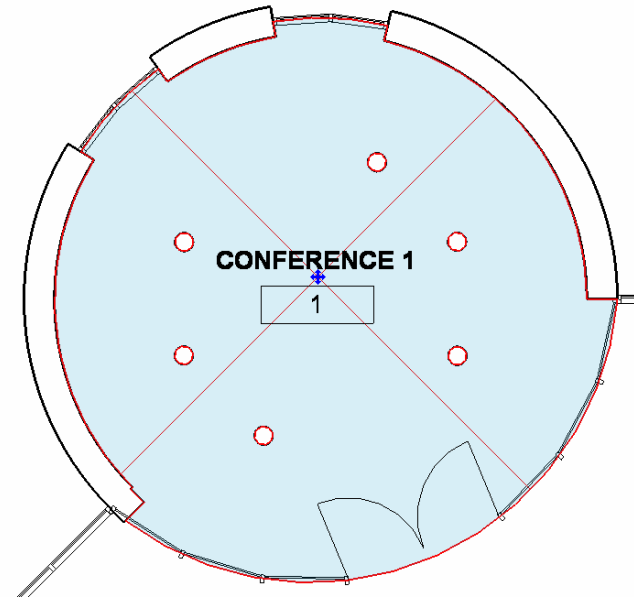


Rooms

Design Insight & Analysis

Room Object

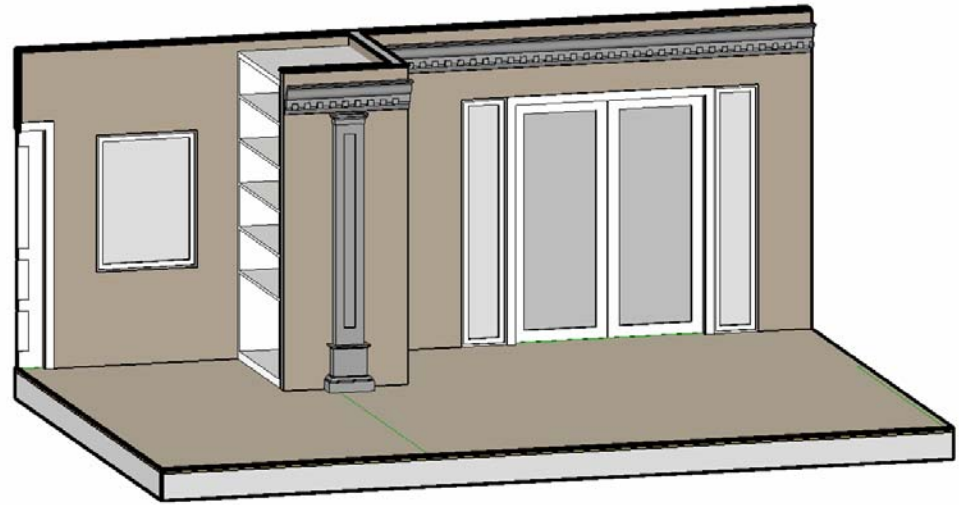
- Visual Representation of Rooms
- Consistent Object/Annotation Behavior
 - Properties stored in Room Objects
 - Properties are reported by Tag
- 'Show Room' functionality in schedules
- Select and Tag Rooms in Section and Elevation
- Room Volumes
- New Room Bounding Objects
 - Columns
 - In-place Families
 - Curtain Systems
- Rooms with Location
 - Split Levels
 - Multi Story Rooms



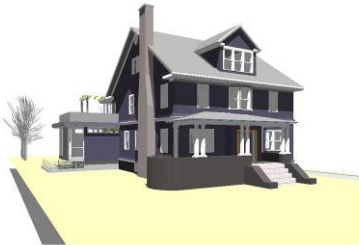
Modeling Enhancements

Openness & Conceptual Design

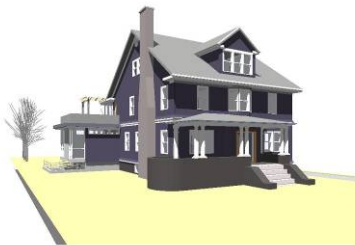
- Sun Studies
- Modeling Sweeps
- 3D 2-Pick Families
- Rehost Elements
- Columns – Top & Bottom Attachment



[9 of 16] [JUN 22, 2006 - 12:06]



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



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

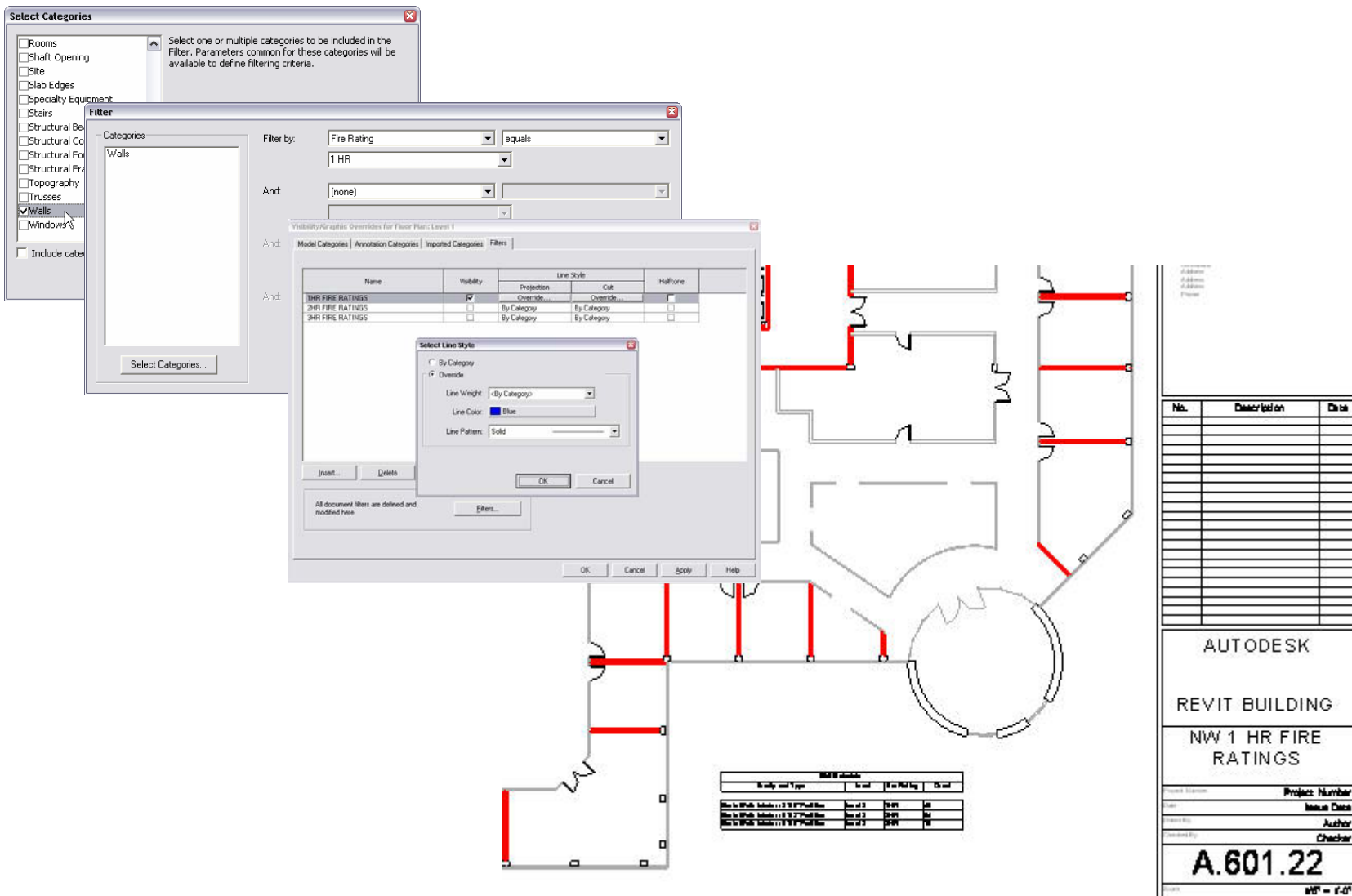


[12 of 16] [JUN 22, 2006 - 15:09]

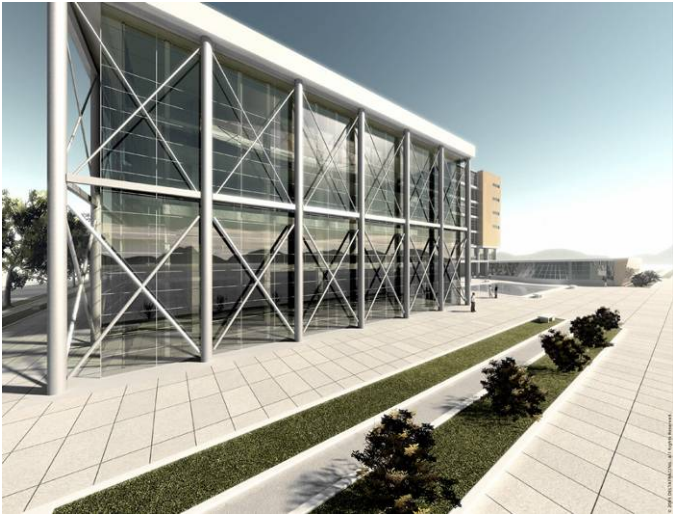


User Defined Filters

Construction Documentation



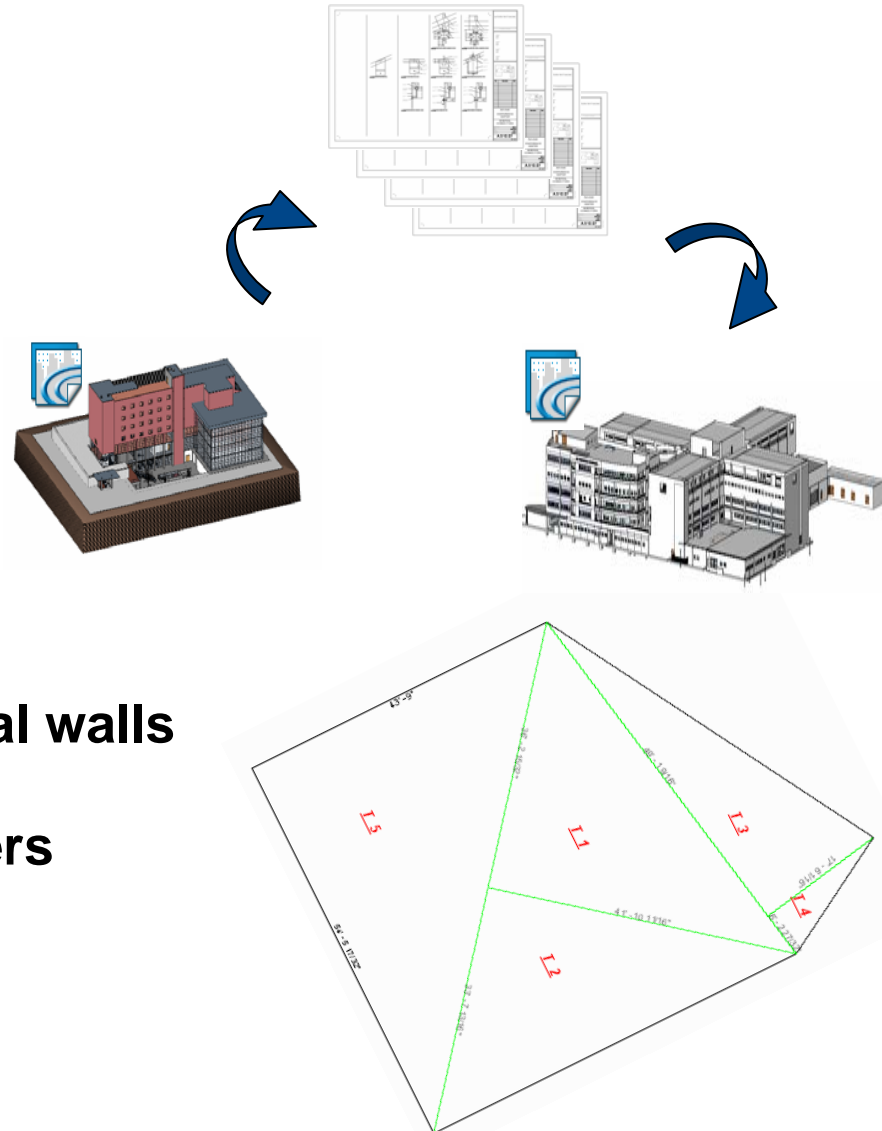
Better Coordination & Quality



Detailing

Construction Documentation

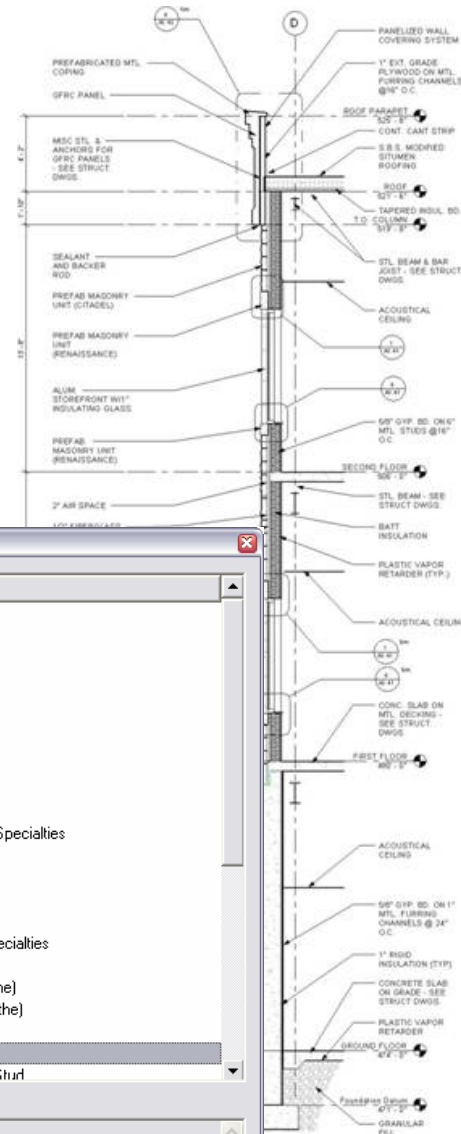
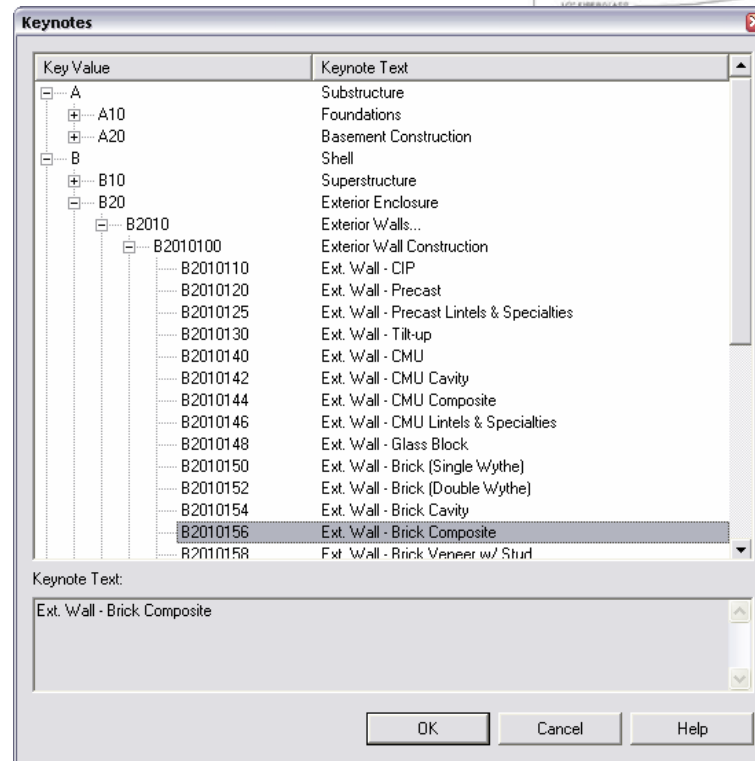
- **Detail Library**
- **Save & Re-use Views**
 - Drafting Views
 - Sheets
 - Schedules
- **2D 2-Pick Components**
- **Display Obscured Elements**
- **Dimensioning non-orthogonal walls**
- **Free and attached Tag Leaders**
- **Room & Area Reports**
 - Calculation by Triangulation



Keynoting

Construction Documentation

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

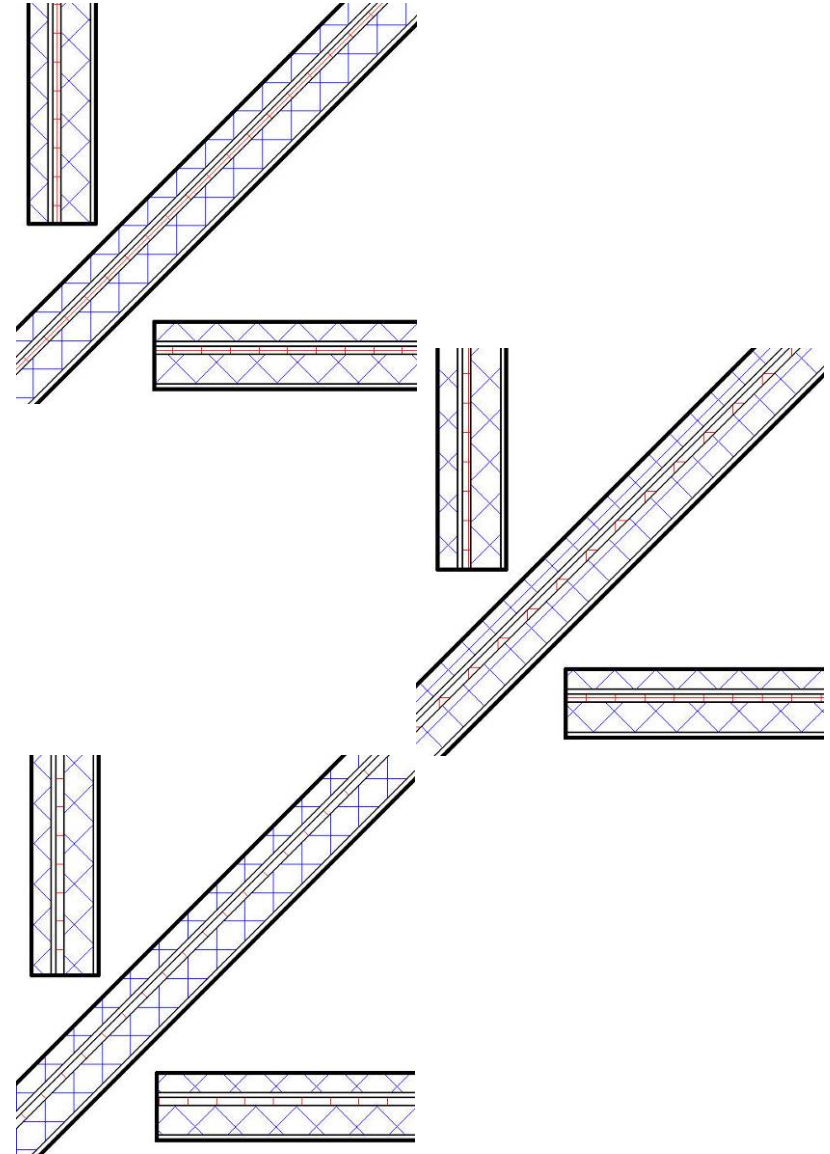


Graphical Output

Construction Documentation

- **Hosts**

- Core Layer Cleanup control
- Control Visibility of Cut Pattern
- Control Visibility of Cut Lines
- Control Cut Pattern Orientation

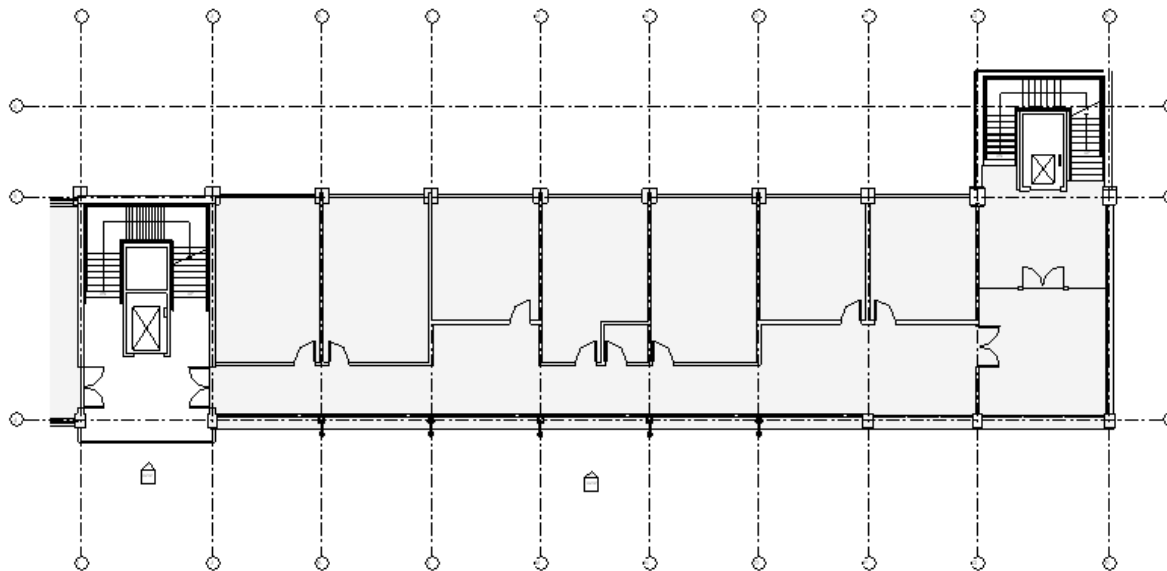


Graphical Output

Construction Documentation

- **Walls**

- Joins of 3+ Walls
- Crossing Walls Cleanup



Materials

Openness & Conceptual Design

- Material Takeoff
- Material Keynotes
- ODBC
- API

Microsoft Excel - TOTAL PROJECT COST.XLS

ITEMS	Oct 3 Cost	Cost	Difference
1 General Conditions (months)	\$ 841,885	\$ 849,657	7,772
2 Sitework and Excavation	\$ 146,114	\$ 146,114	-
3 Concrete Substrate	\$ 289,310	\$ 991,190	(701,880)
4 Concrete Slabs-on-Grade and on-Deck	\$ 722,218	\$ 731,947	(9,729)
5 Concrete - Framing, Bracing, Columns	\$ 720,869	\$ 720,900	(31)
6 Steel	\$ 377,465	\$ 389,646	(12,181)
7 Interior & Ext Walls Construction - SF	\$ 512,693	\$ 528,119	(15,426)
8 Moisture Protection	\$ 249,199	\$ 251,499	(2,300)
9 Roofing - SF	\$ 144,136	\$ 177,587	(33,451)
10 Doors	\$ 53,875	\$ 53,484	391
11 Windows	\$ 91,633	\$ 91,633	-
12 Wall Finishes - SF	\$ 44,168	-	(44,168)
13 Floor Finish (Carpet) SF	\$ 16,944	-	(16,944)
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	\$ 955	(3,705)
18 Casework	\$ 27,683	\$ 27,683	-
19 Special Construction	\$ -	\$ -	-
20 Contracting	\$ 572,482	\$ 577,767	(5,285)
21 Light Fixtures	\$ 15,970	\$ 15,970	-
22 Plumbing	\$ 713,919	\$ 720,569	(6,650)
23 Plumbing Fixtures	\$ 36,956	\$ 36,956	-
24 Heating and Venting	\$ 922,796	\$ 931,224	(8,428)
25 Air Conditioning	\$ 982,591	\$ 910,833	71,758
26 Sprinklers	\$ 212,863	\$ 214,781	(1,918)
27 Electrical	\$ 1,118,823	\$ 1,128,345	(9,522)
28 Fee and Contingency	\$ 441,875	\$ 443,822	(1,947)
29			
30 CONSTRUCTION COST	\$ 9,279,383	\$ 9,320,263	(40,880)

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

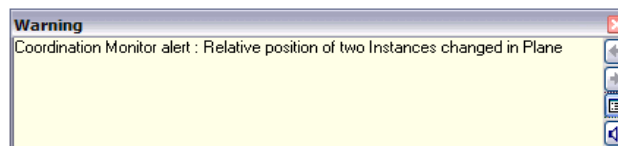
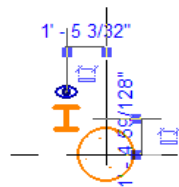
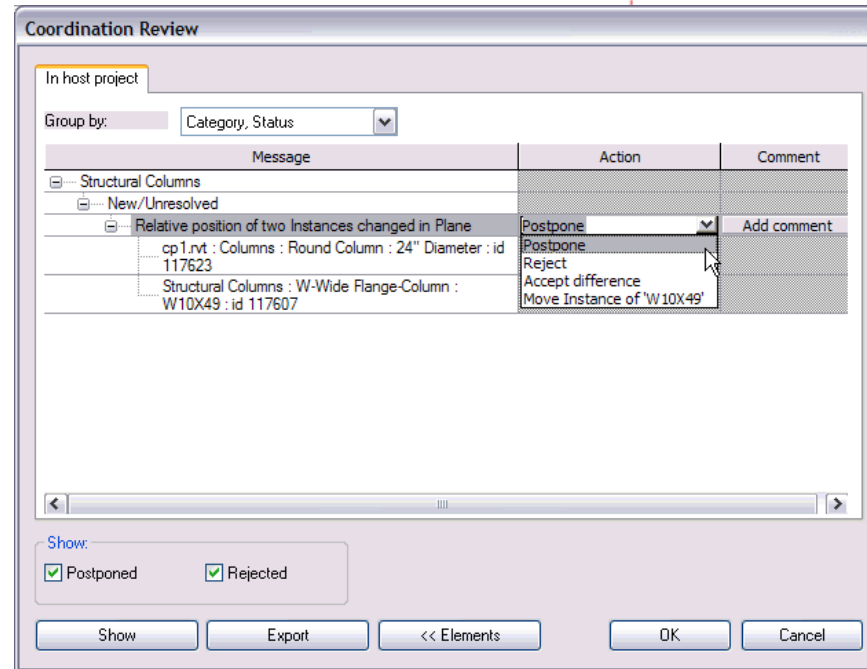
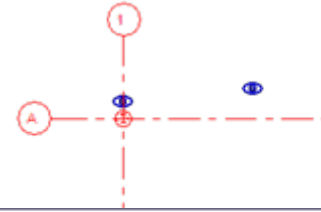
Openness & Conceptual Design

■ Coordination Monitor

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

■ Compatibility

- Autodesk® Revit® Structure 4
- Autodesk® Revit® Systems

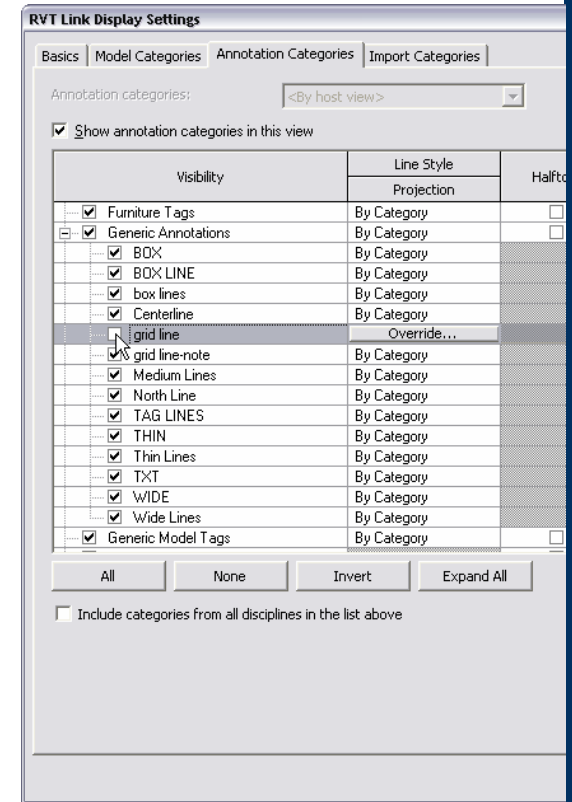
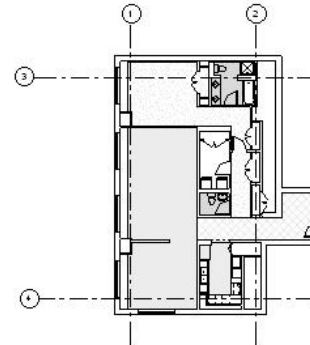
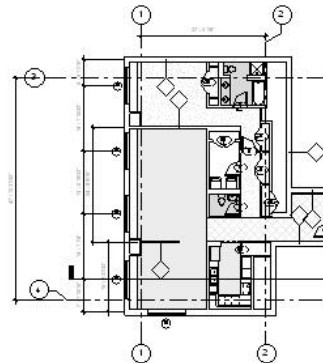
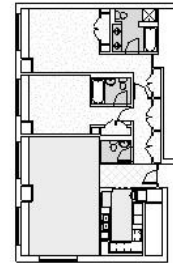


Coordination

Openness & Conceptual Design

■ Linked File Enhancements

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



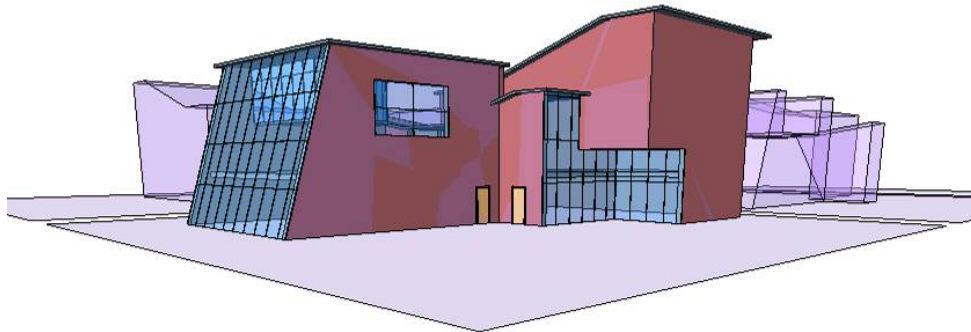
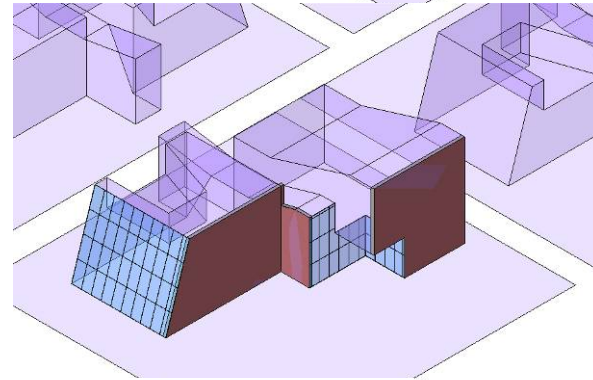
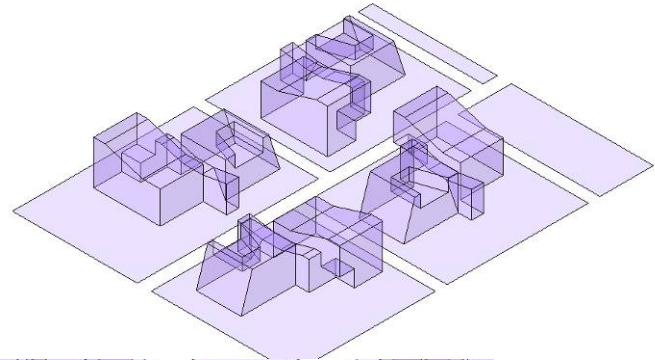
Better for Your Business



Import/Export

Construction Documentation

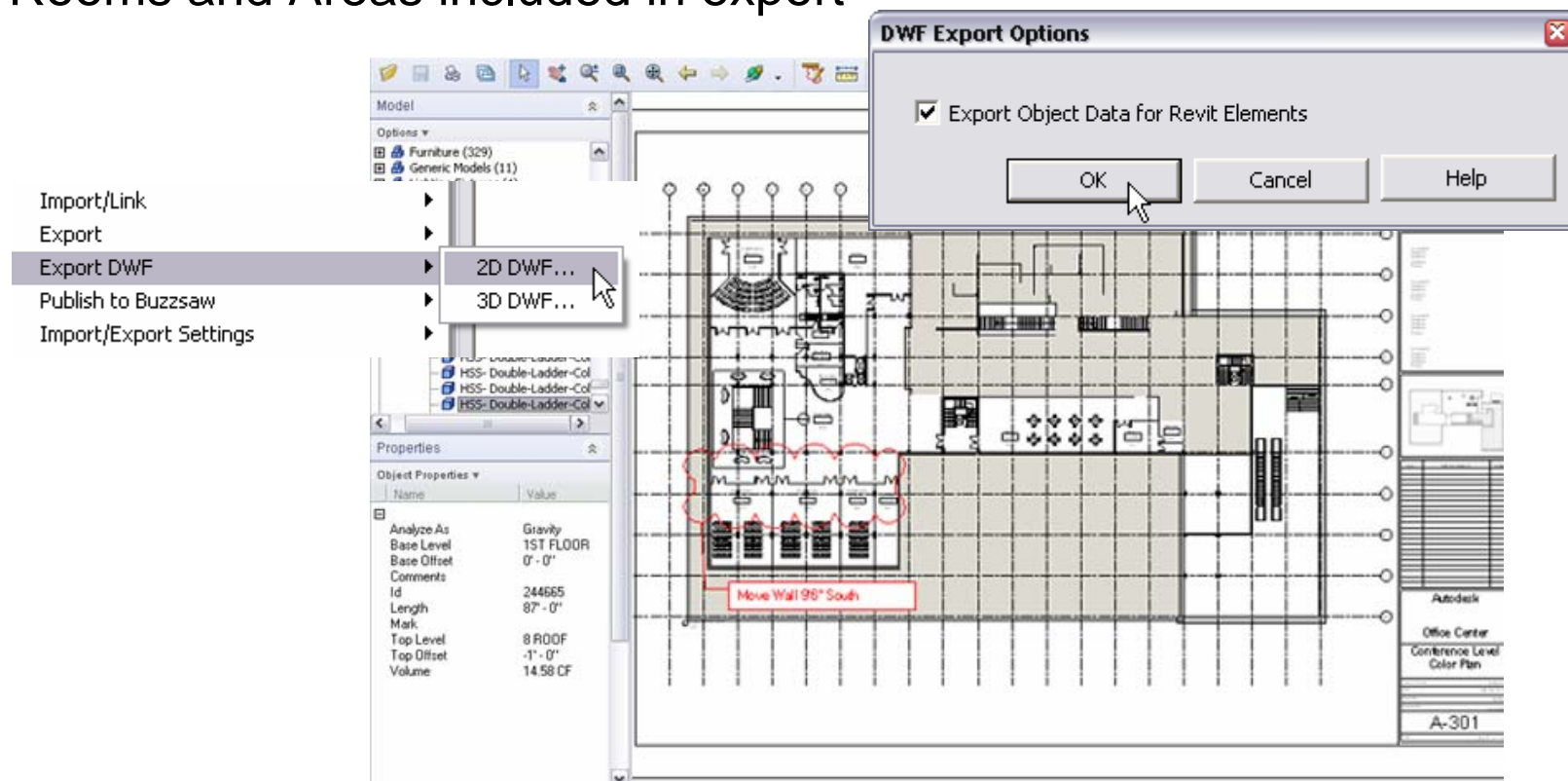
- gbXML
- IFC Import
- DWG 2007
- SKP
- PNG



DWF

Openness & Conceptual Design

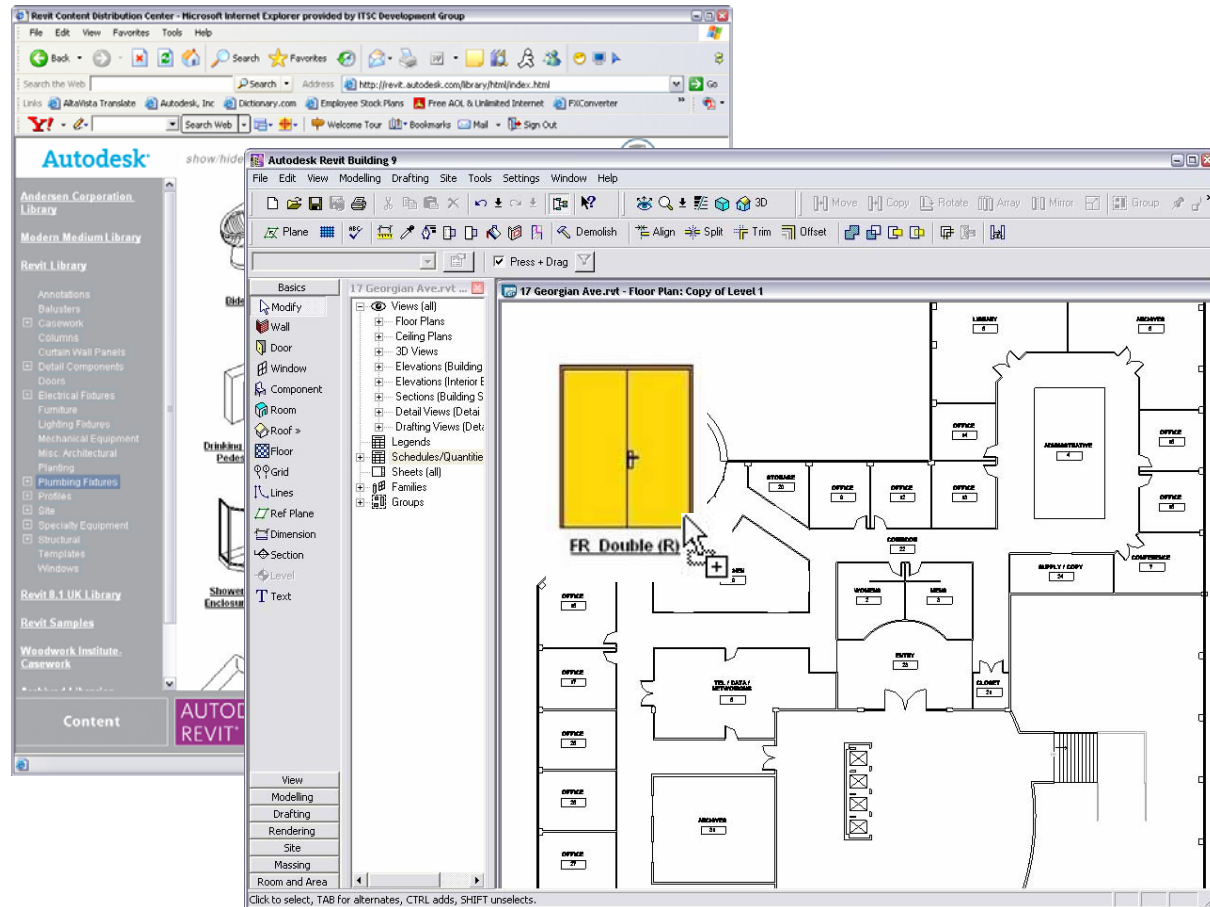
- **2D DWF™**
 - Element Properties included in export
 - Rooms and Areas included in export



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 & Change properties
 - Extract geometry
 - *Generate Dimensions*
 - *Create Views & Sheets*
 - *Create Rooms & Room Tags*
 - *Place Views on Sheets*
 - Create all Family Based Elements
 - *Access to Fill and Color Info*
 - *Create Walls, Slabs, Grids, & Levels*
 - *Create Openings, Model Lines, & Reference Planes*
 - 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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