

# REVIT MATERIALS

Tutorial 3

# INTRO TO USING MATERIALS IN REVIT

- Organizing and documenting materials is an important task for the interior design professional.
- This involves developing material collections/ systems for spaces, understanding products being specified (and material options available for them), building code constraints, (flame spread ratings), cost, availability, etc.
- Revit allows much of this to be managed in the BIM database.
- We will cover the basics and apply it to our Law Office project.

# INTRO TO USING MATERIALS IN REVIT

- In Revit, a material is a “container” which helps keep track of:
  - Identity
    - Descriptive information
    - Product information
    - Annotation information
  - Graphics asset
    - Shading
    - Surface pattern and color
    - Cut pattern and color
  - Appearance asset
    - Photo-realistic render appearance
      - Texture
      - Reflectivity
      - Transparency
      - Self-illumination, etc.

# INTRO TO USING MATERIALS IN REVIT

- Physical asset
  - Structural engineering data
    - Concrete
    - Steel
    - Aluminum
    - Wood
  
- Thermal asset
  - Energy Modeling data
    - Thermal conductivity
    - Specific heat
    - Etc.

# INTRO TO USING MATERIALS IN REVIT

- In Revit, a single item called a Material holds all of this information.
- There are three primary ways a material is used, or applied, in a model: by category, by element, by face.

# BY CATEGORY

- When a 3D element does not have a specific Material applied, the project-wide is Object Style is used.
  - Manage → settings → object styles

# BY CATEGORY

Autodesk Revit Architecture 2012 - Office Building - 3D View: 3D View 1

Visibility/Graphic Overrides for 3D View: 3D View 1

Object Styles

Category	Line Weight		Line Color	Line Pattern	Material
	Projection	Cut			
[-] Casework	1	1	Black	Solid	
[-] Ceilings	2	2	Black	Solid	
[-] Columns	1	1	Black	Solid	
[-] Curtain Panels	1	2	Black	Solid	
[-] Curtain Systems	2	2	RGB 000-127-000	Solid	
[-] Curtain Wall Mullions	1	3	Black	Solid	
[-] Detail Items	1		Black	Solid	
[-] Doors	2	2	Black	Solid	
[-] Electrical Equipment	1		Black	Solid	
[-] Electrical Fixtures	1		Black	Solid	
[-] Entourage	1		Black	Solid	
[-] Floors	2	2	Black	Solid	Default Floor
[-] Furniture	1		Black	Solid	
[-] Furniture Systems	1		Black	Solid	
[-] Generic Models	1	1	Black	Solid	
[-] Lighting Fixtures	1		Black	Solid	
[-] Mass	1	2	Black	Solid	Default Mass
[-] Mechanical Equipment	1		Black	Solid	
[-] Parking	1		Black	Solid	
[-] Parts	1	2	Black	Solid	
[-] Planting	1		Black	Solid	
[-] Plumbing Fixtures	1		Black	Solid	
[-] Railings	1	1	Black	Solid	
[-] Ramps	1	1	Black	Solid	

Object Styles dialog buttons: Select All, Select None, Invert, New, Delete, Rename, OK, Cancel, Apply, Help

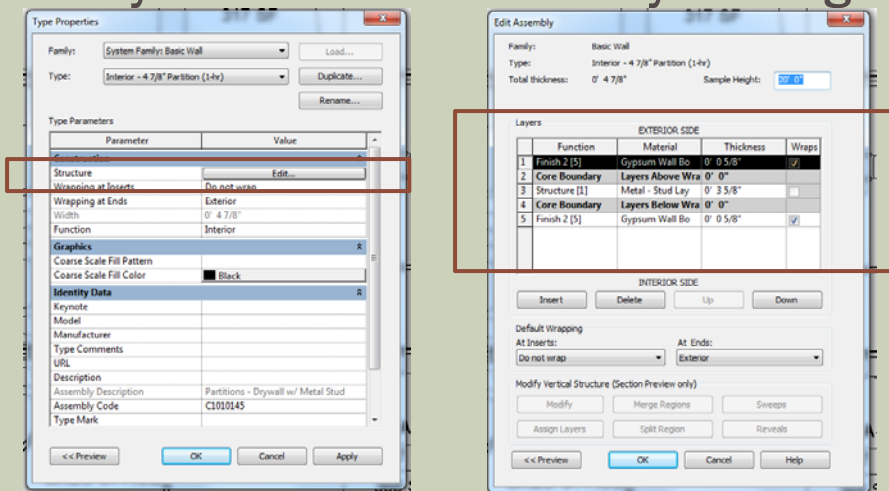
# BY CATEGORY

- On the schedule we just saw, notice the various categories listed: furniture, casework, doors, etc.
- These are hard wired categories Revit uses to organize elements, control visibility and how elements look. Each category may be assigned a default Material.
- When a 3D element has its Material parameter set to <By Category> the Object Style Material is used.



# BY ELEMENT

- The most common way a Material is applied to something is By Element. This is true for systems families and Loadable Families.
- Systems families: walls, ceiling floors. These elements cannot exist outside of a project, therefore the Material adjustment option is built into the dialog box which is used to develop the assembly. The Edit Assembly dialog box is shown below.

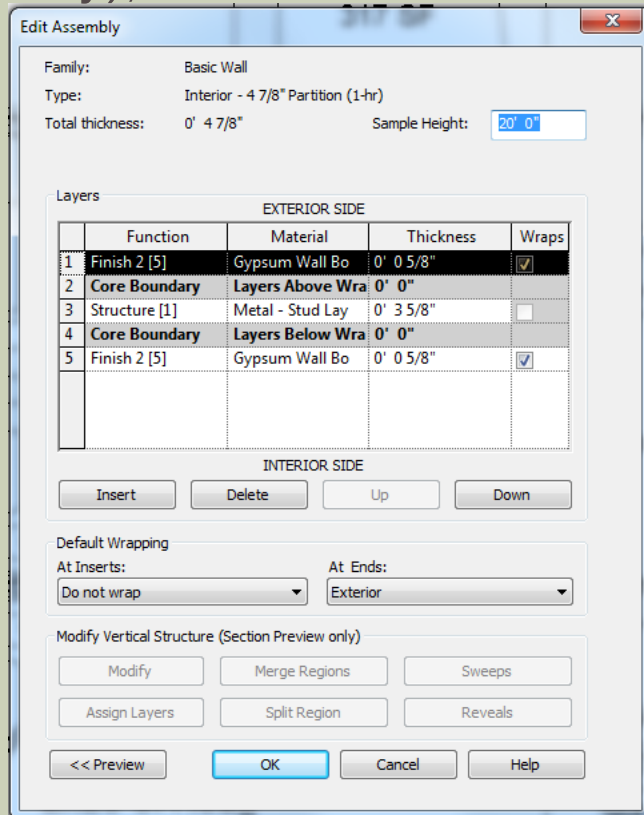


# BY ELEMENT

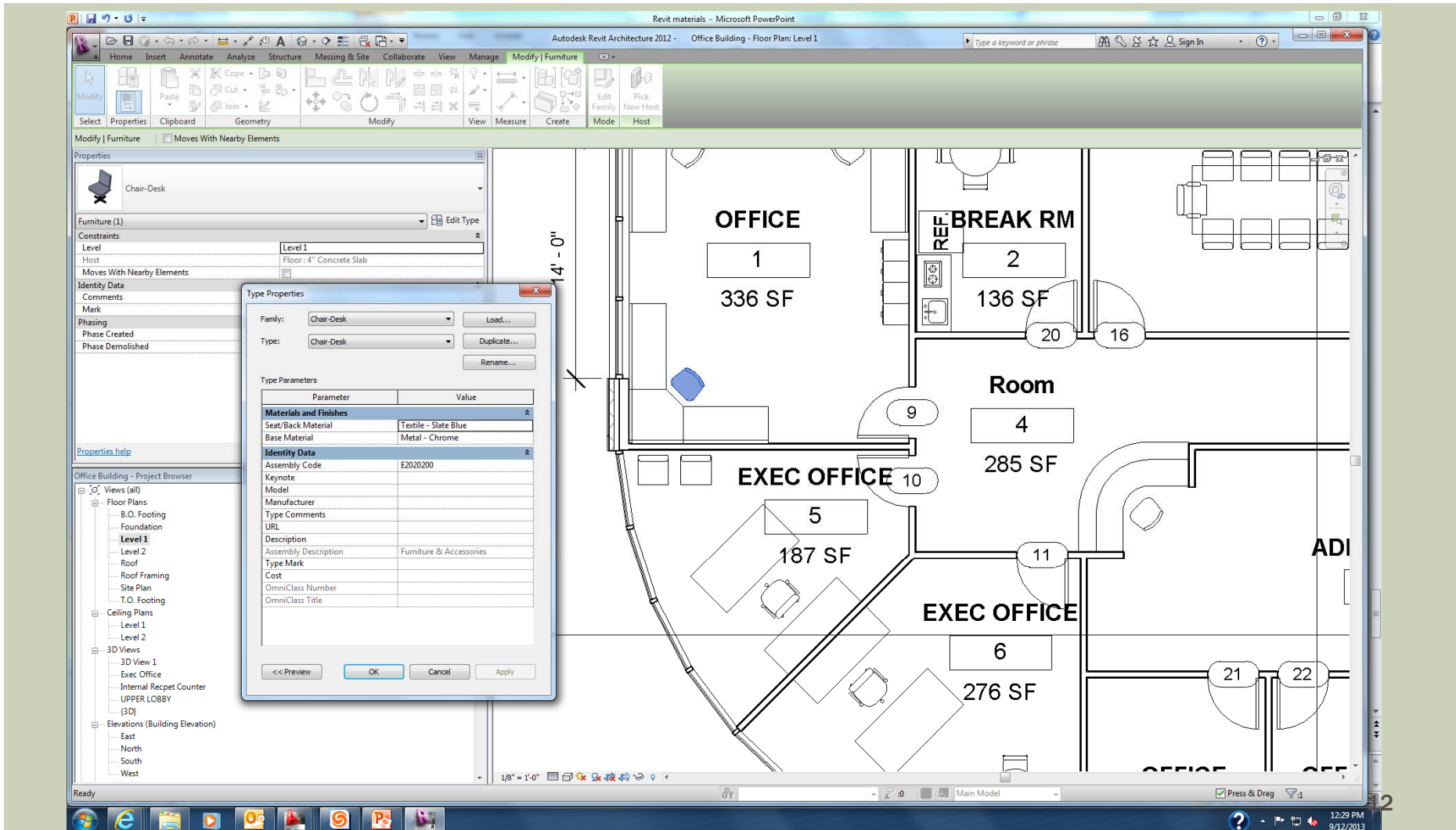
- **Loadable families: furniture, casework, specialty equipment, doors, etc.**
- **These are families which are developed in the Family Editor environment. Every 3D element is a Family has a Material parameter. When the item is first created, the Material parameter is set to By Category. This parameter is usually changed in one of two ways: picking a material, mapping to a material parameter.**

# BY ELEMENT

- The Edit Assembly dialog highlights how the material selection is built into the workflow for developing an assembly (system family), a wall in this case.



# NOTICE THE OPTIONS WHEN CLICKING EDIT/TYPE ON THE CHAIR...



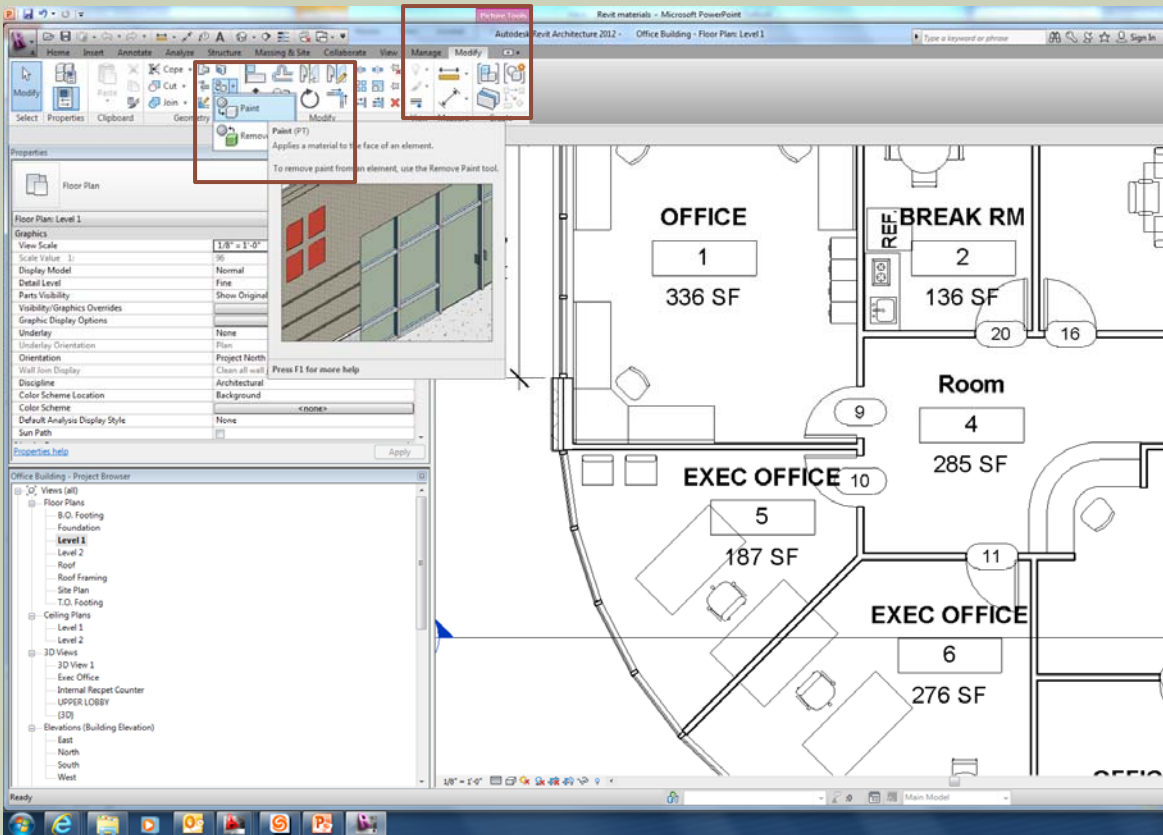
# BY ELEMENT

- Notice the two Material Parameters: Seat/Back Material and Tablet Material.
- These can both be changed to another Material by clicking on the Value field and selecting the small button that appears to the right. This opens the Material Dialog, from which another Material can be selected or created.
- By changing a Type Parameter, every chair of this type within the project will be instantly updated.
- Sometimes you cannot change, for example, the chair legs or back support; they can only be changed in the Family Editor.

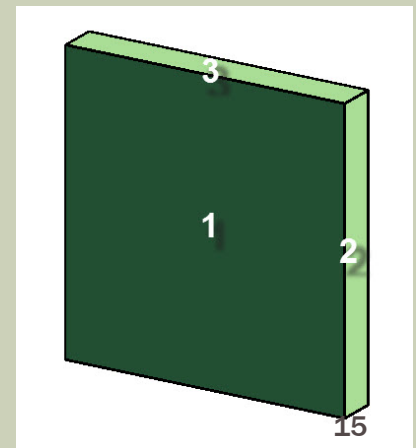
# BY FACE

- The third way in which a Material is typically applied is by using the Paint tool, which adds a material to a single face. This can have some limitations.
- The Paint tool is used on Systems Families, such as walls, floors, ceilings, etc.
- The Paint tool is selected on the modify tab, a material is selected from a dialog that appears, and then individual faces are selected.

# BY FACE



The image below shows a wall with three of the six faces visible from this vantage point. You can only change the surface material of these three faces. You would need to change the view of the wall to override the other faces.



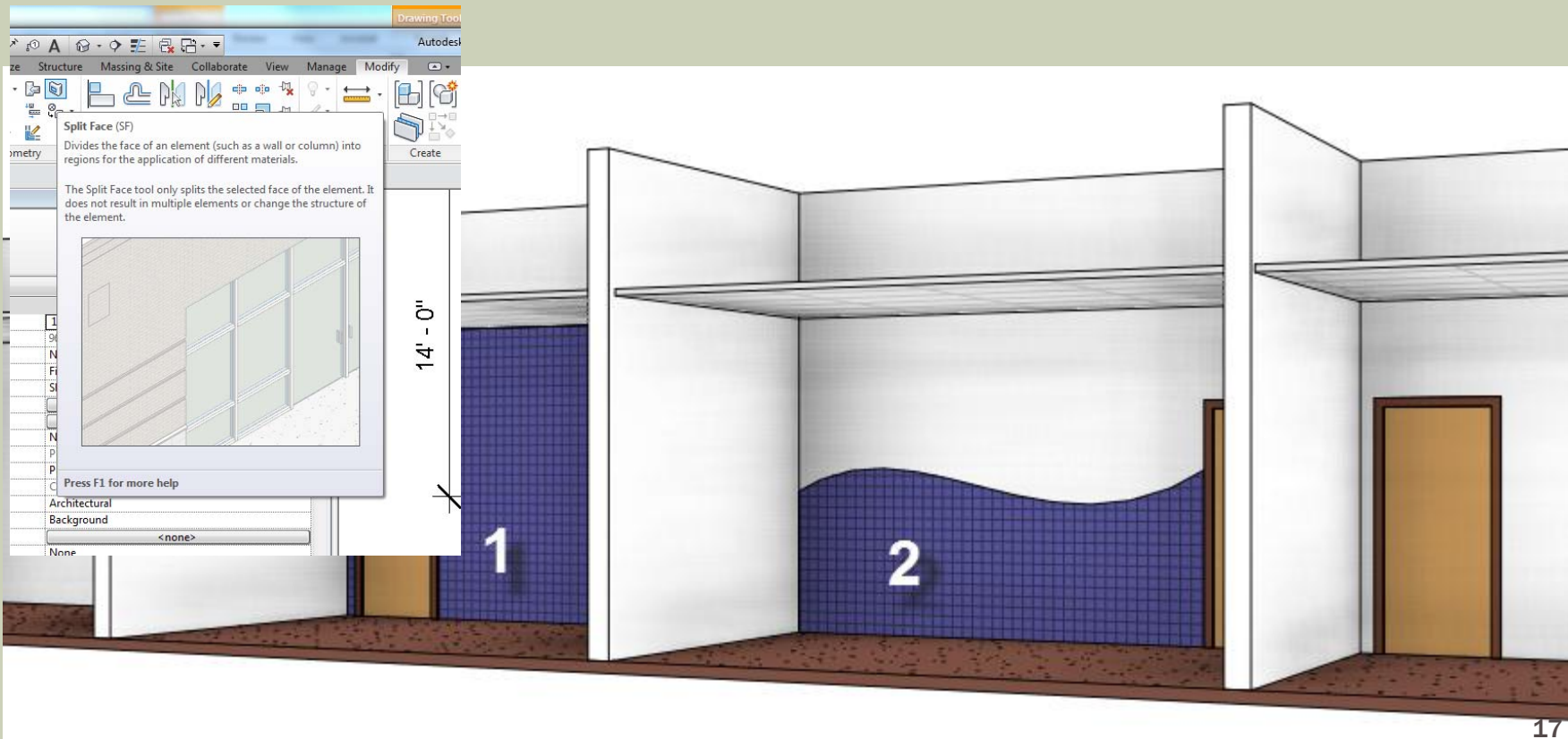
# BY FACE

- When a surface is painted, Revit paints the entire face, not just the portion visible in the current view.
- For example, an interior elevation might be of a wall common to a corridor, or hallway. Revit will paint the entire side of the corridor wall, not just the portion visible in the specific room you are in.

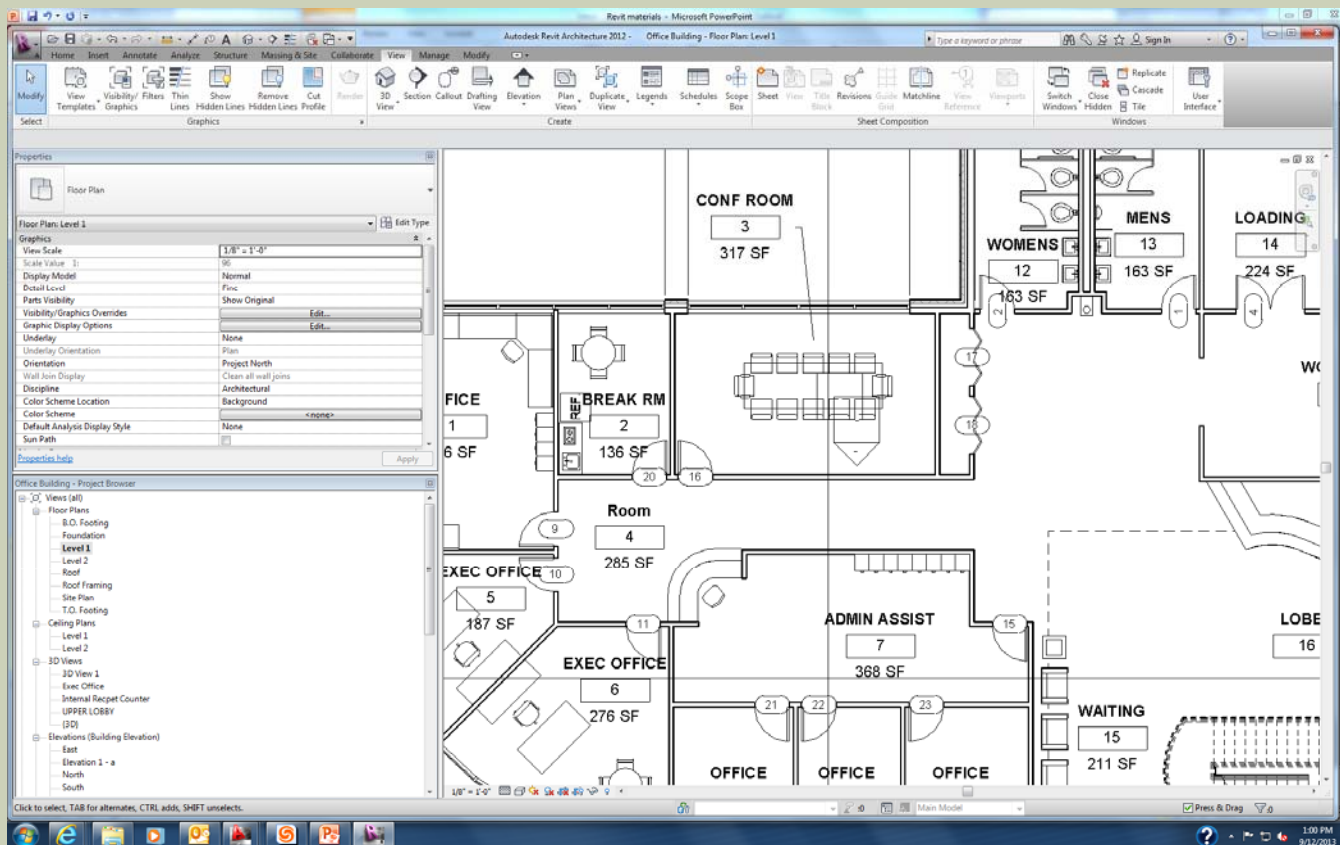


# BY FACE

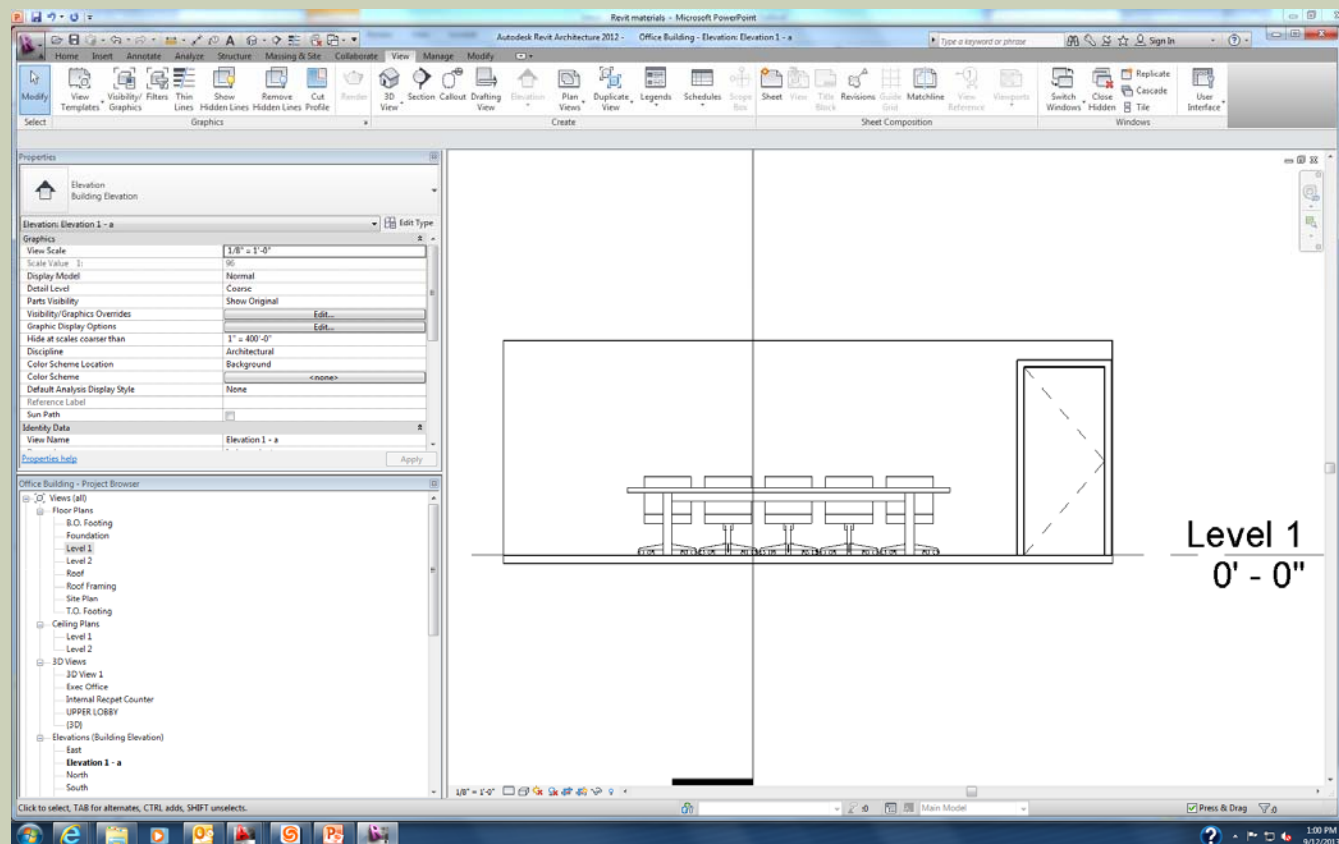
- You can constrain the area, or extents, of a material to be painted on a face. This is done by using the Split Face tool.



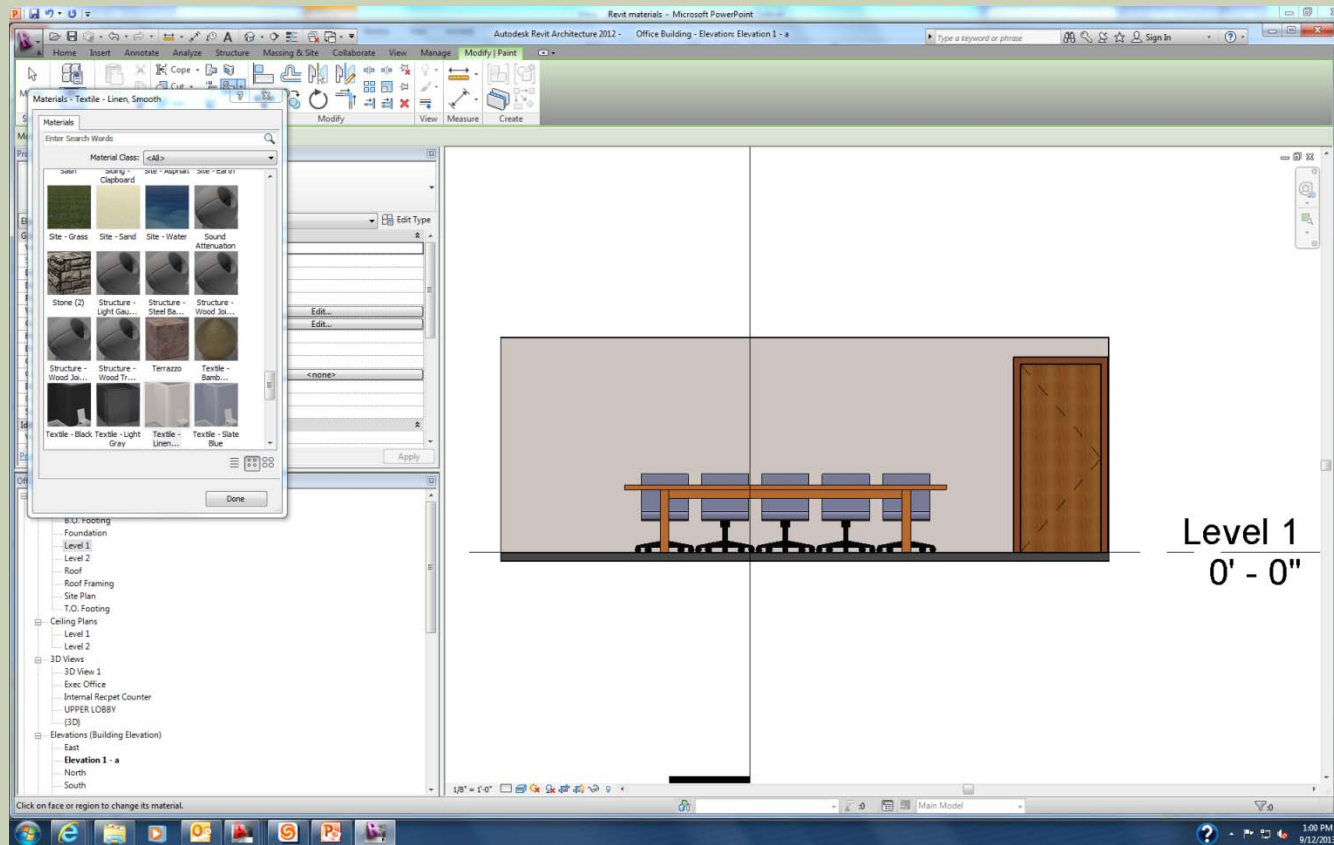
# PLACE ELEVATION IN CONFERENCE ROOM



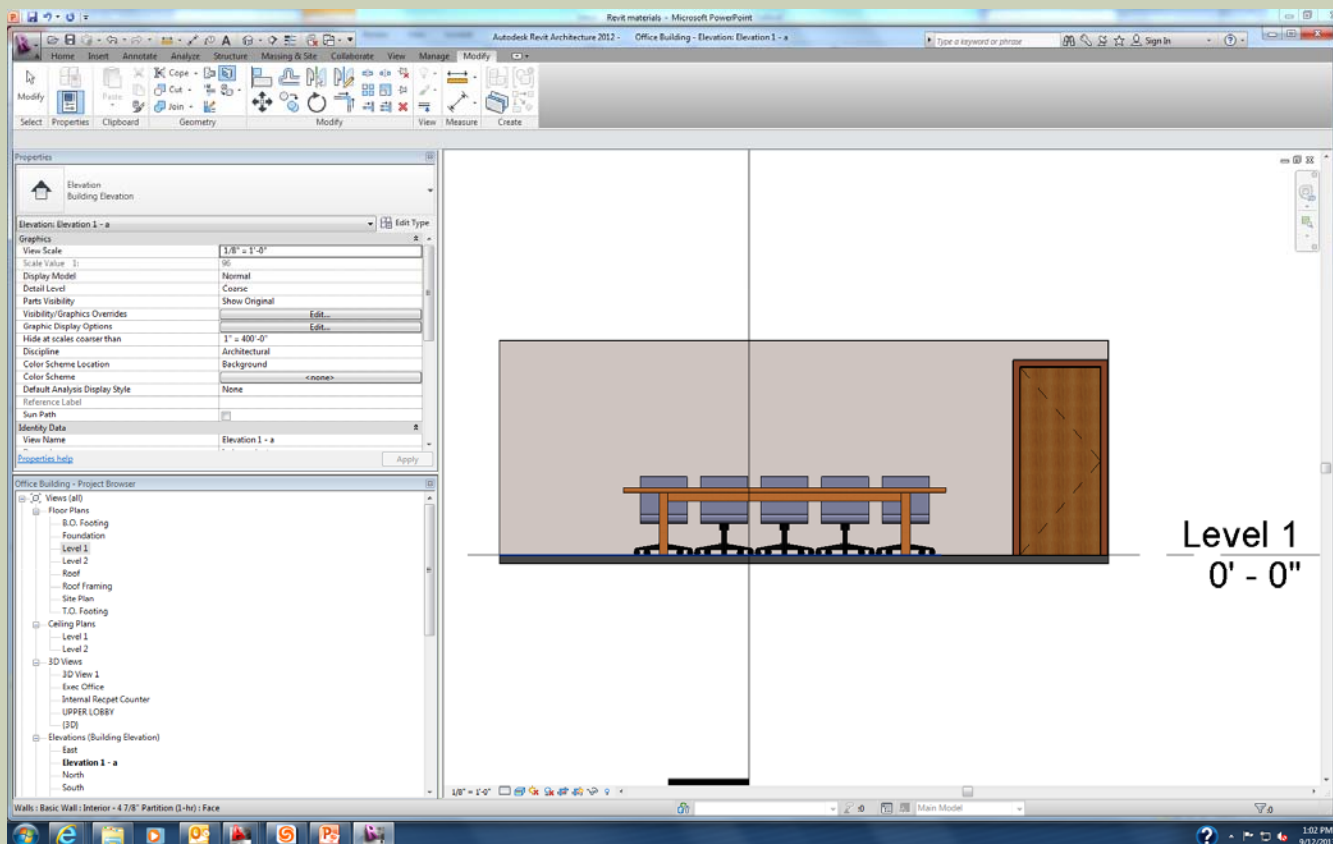
# ELEVATION OF WALL BELOW



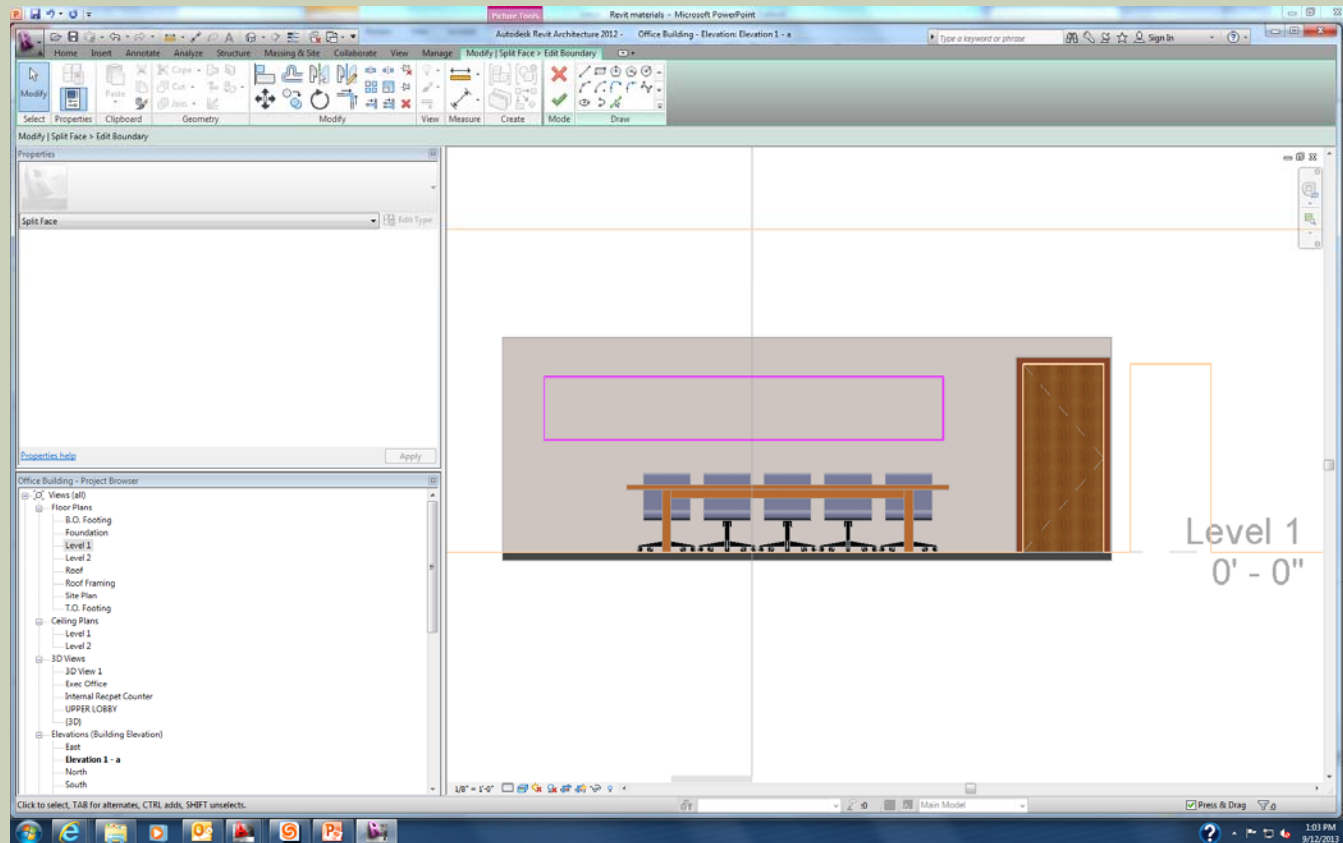
# REALISTIC VIEW, PAINT WALL A NEUTRAL MATERIAL

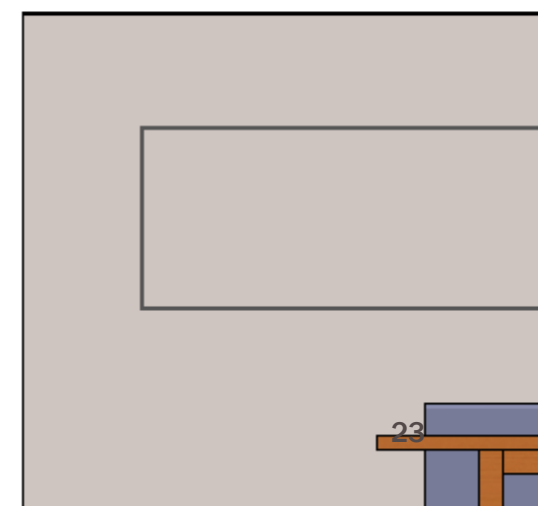
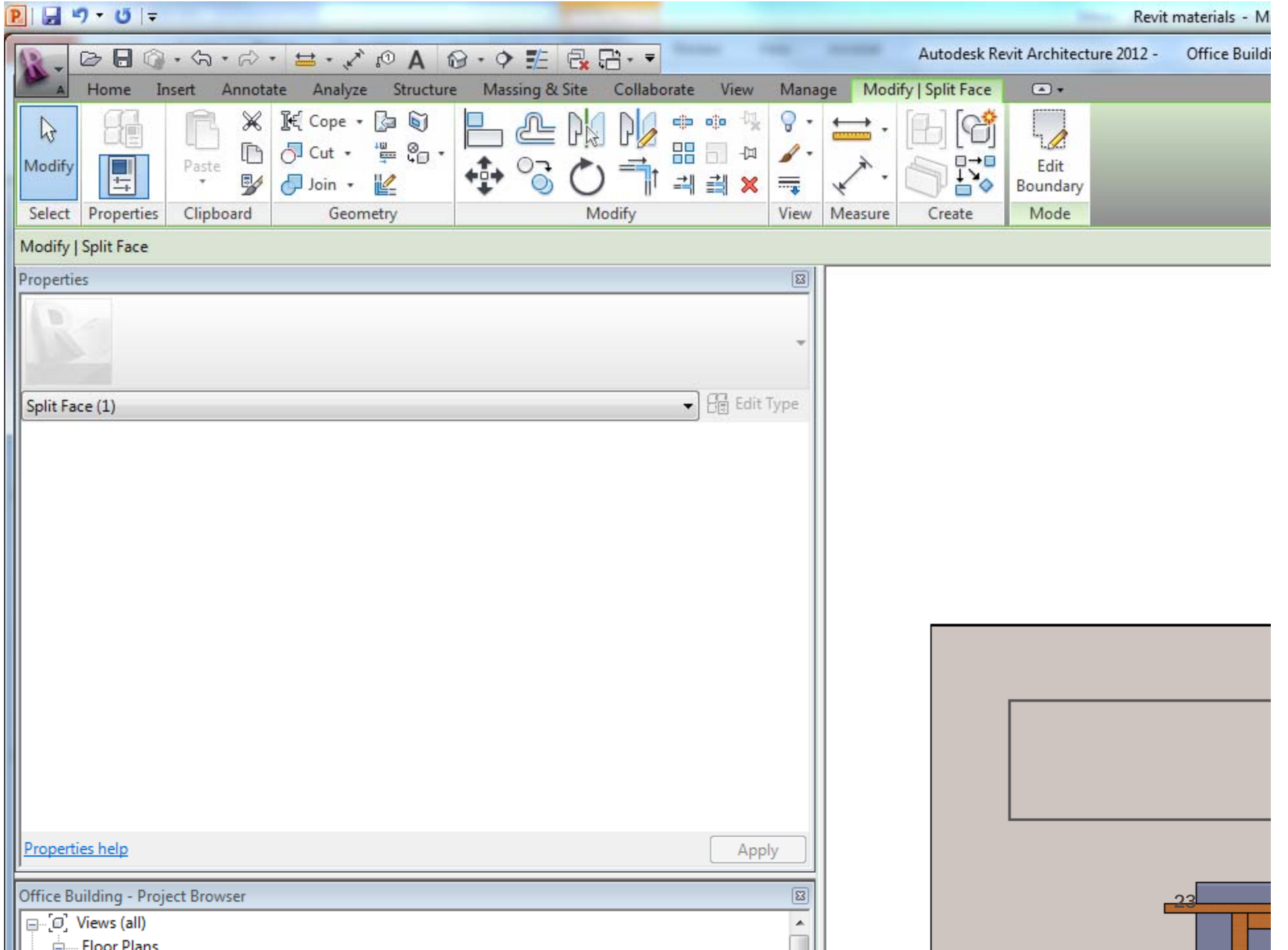


# ELEVATION OF WALL BELOW: NOW CLICK SPLIT FACES, NEXT TO PAINT

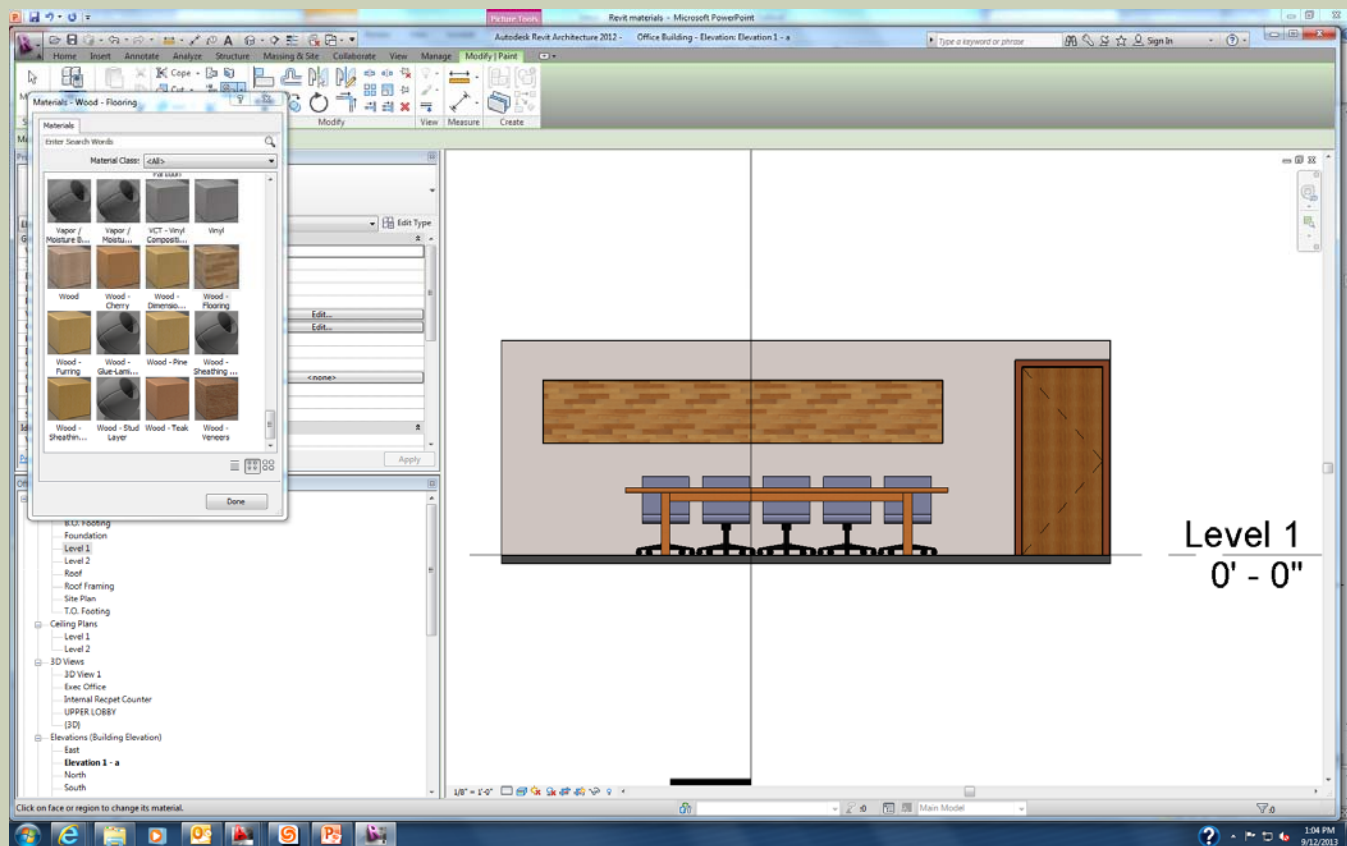


# TAB TO SELECT WALL, SKETCH ANY SHAPE, CLICK GREEN CHECKMARK





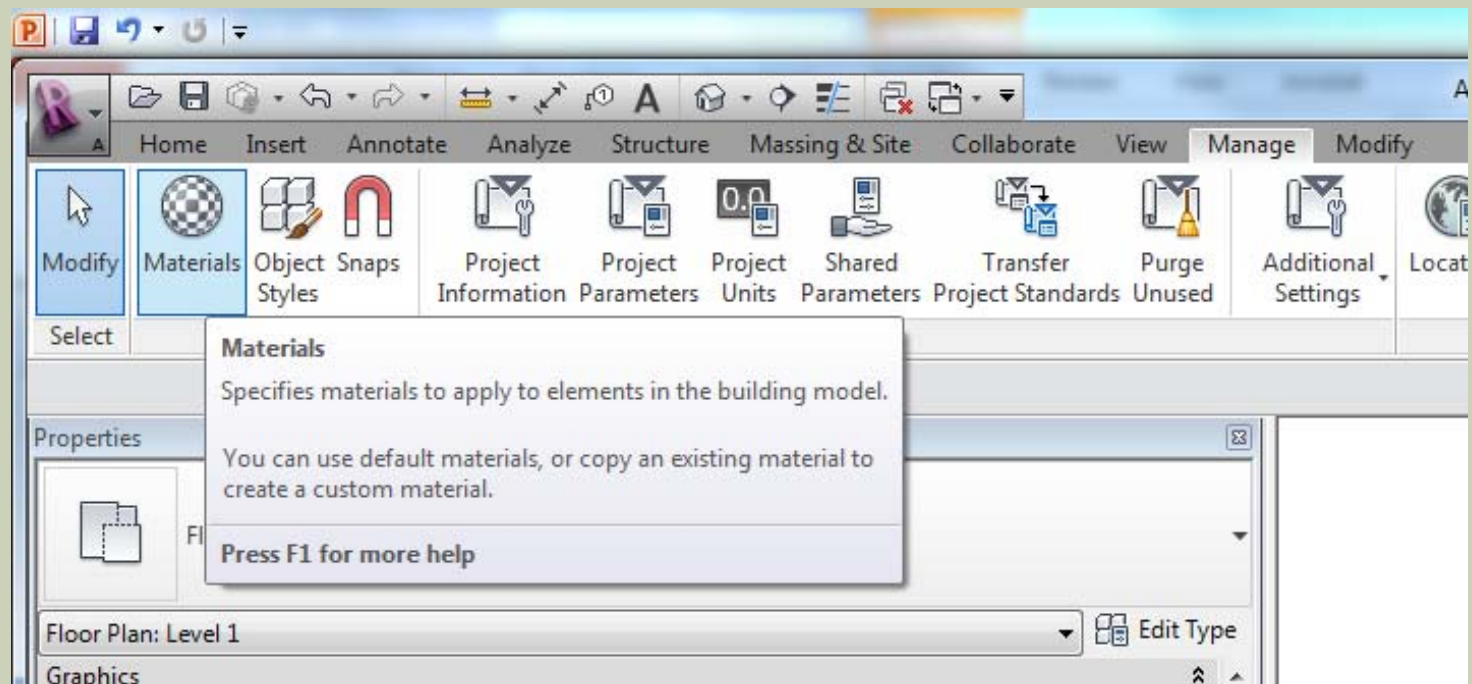
# PAIN T SECOND AREA WITH A DIFFERENT MATERIAL, NOTICE RESULT



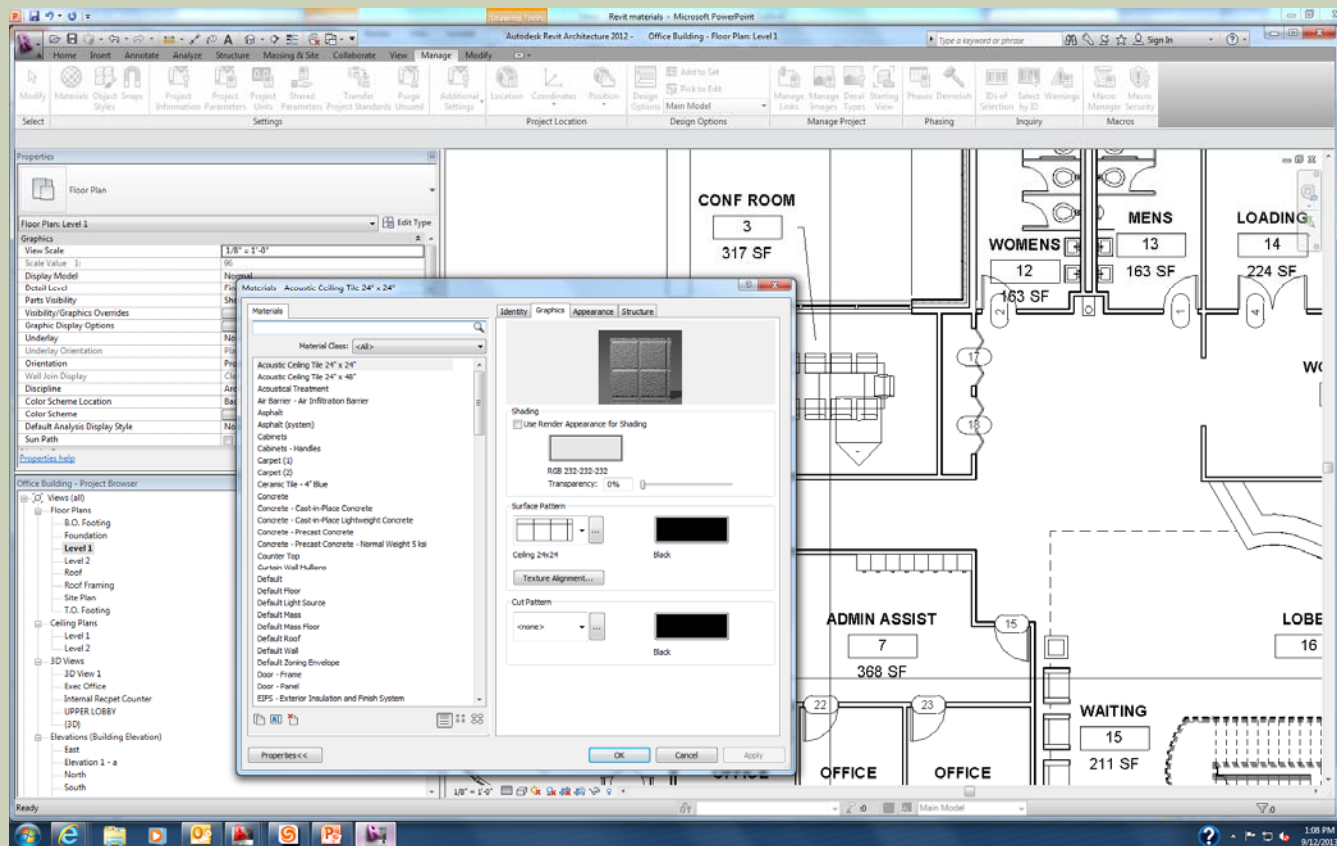


# A DETAILED LOOK AT REVIT MATERIALS

- To explore the Materials in a project, most of which comes from the project template, click the Materials button on the manage tab.



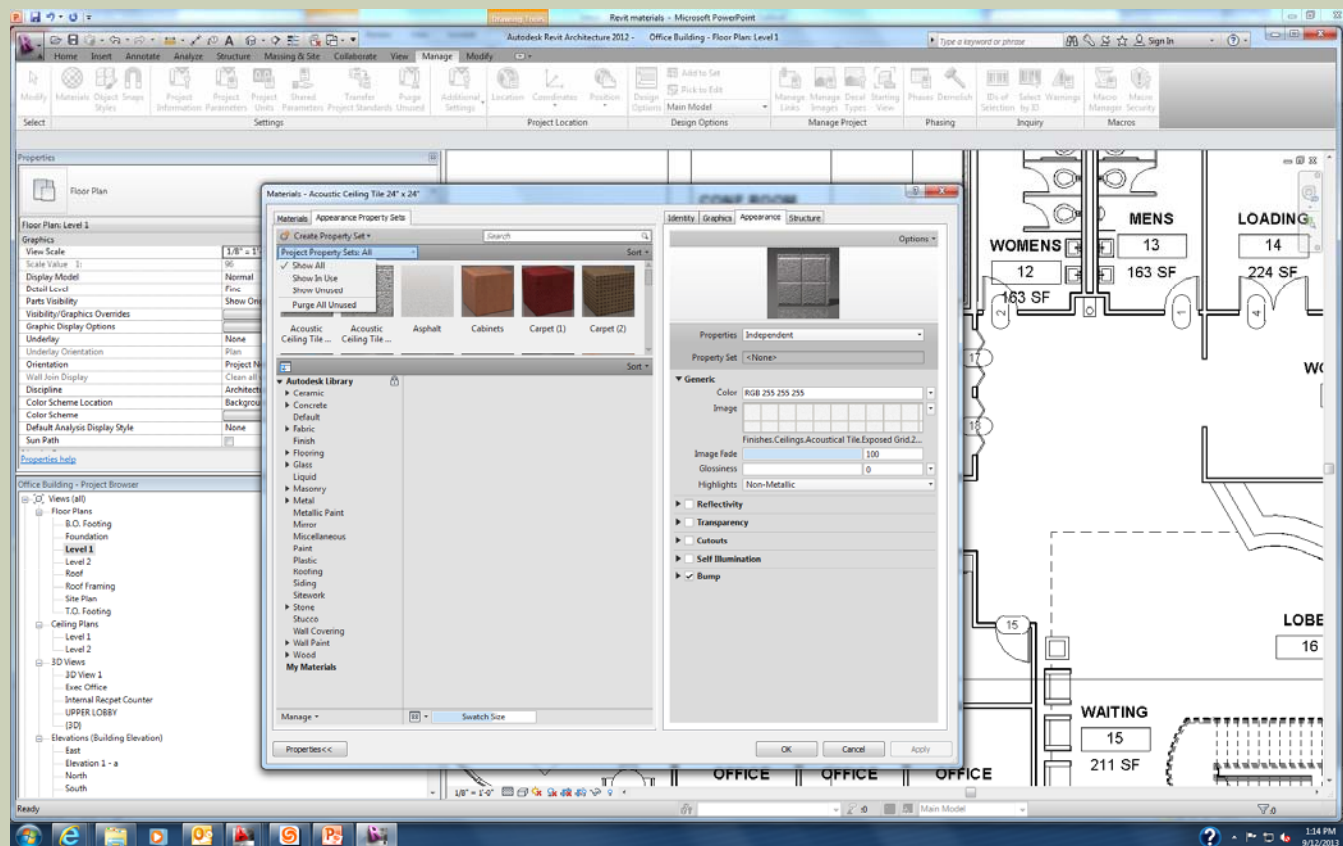
# A DETAILED LOOK AT REVIT MATERIALS → MANAGE → MATERIALS



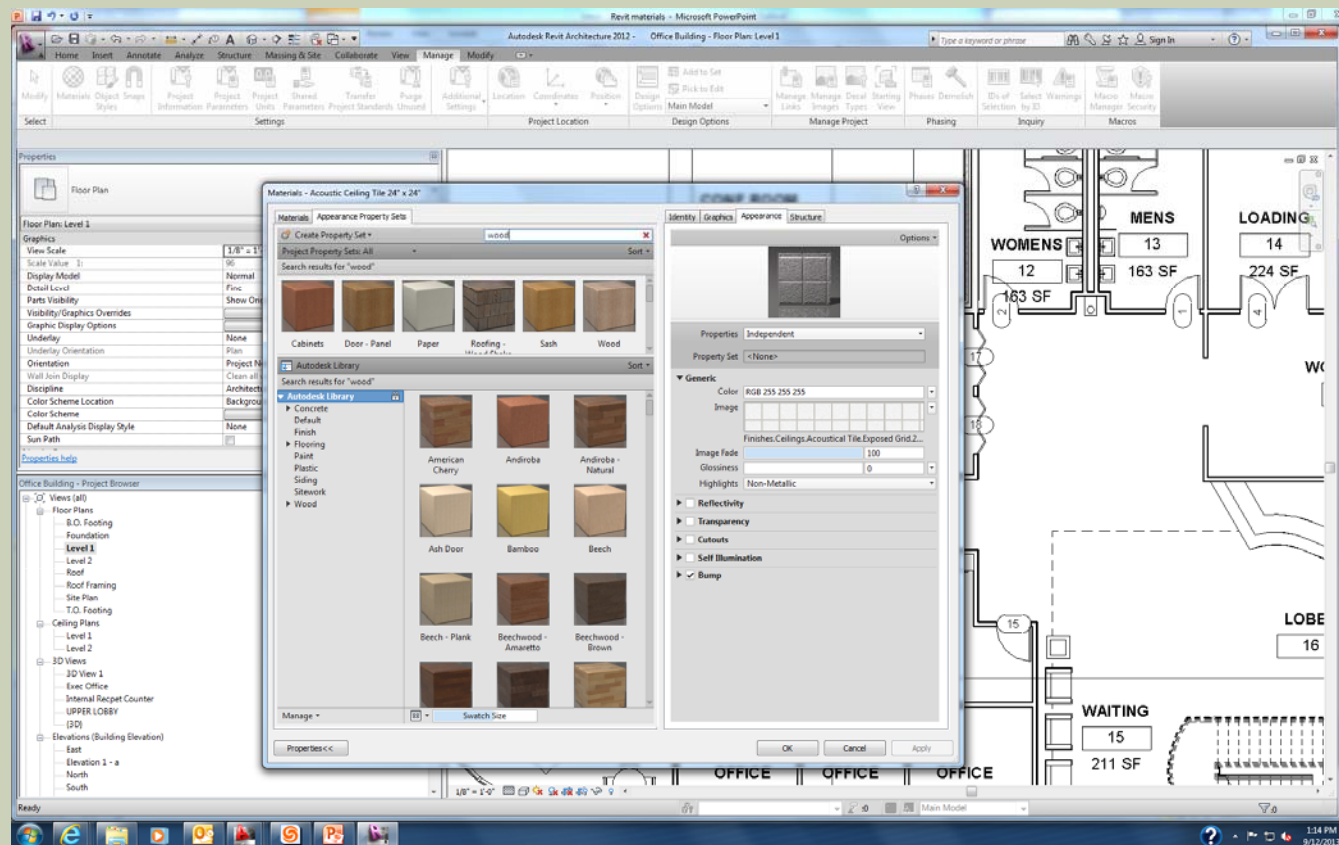
# A DETAILED LOOK AT REVIT MATERIALS

- In the Materials Dialog, notice the list of Materials on the left side of the screen.
- This can be sorted in two ways: Material Usage State, Search Words.
- Selecting the drop down list allows you to narrow the list to just Materials used in the project, or not used. The default is Show All, so both used and not used appear in the list.

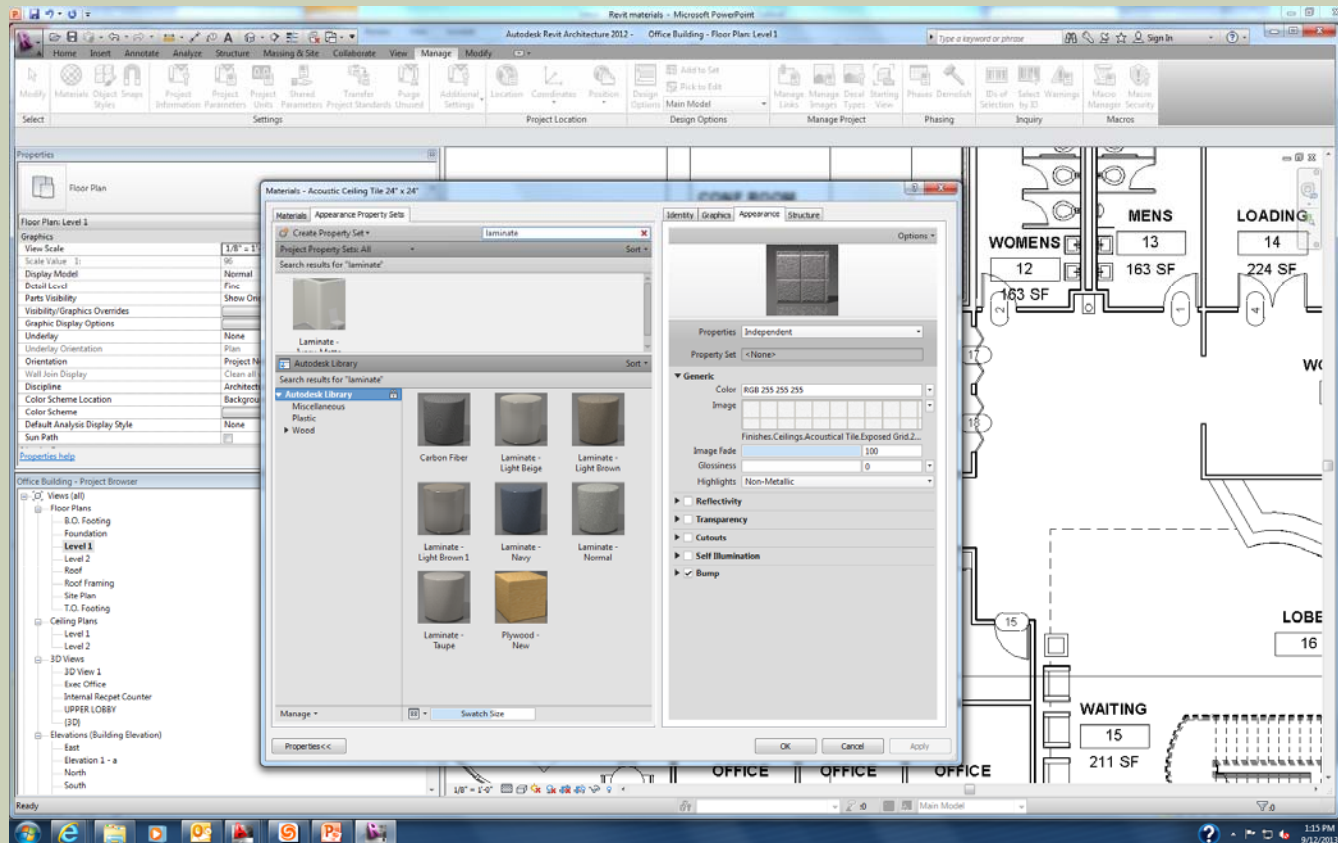
# A DETAILED LOOK AT REVIT MATERIALS



# A DETAILED LOOK AT REVIT MATERIALS: SEARCH FOR WOOD

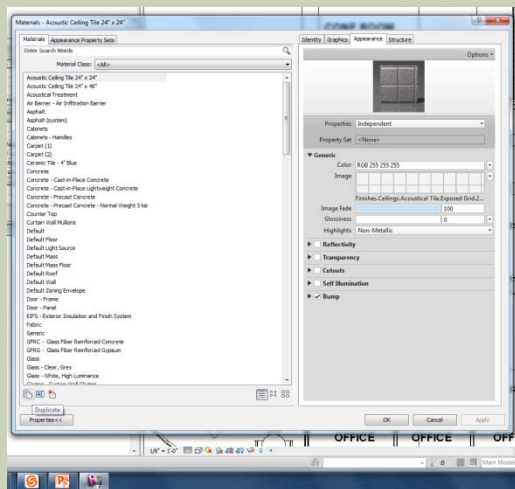


# SEARCH FOR LAMINATES: NOTICE THE RESULTS



# A DETAILED LOOK AT REVIT MATERIALS

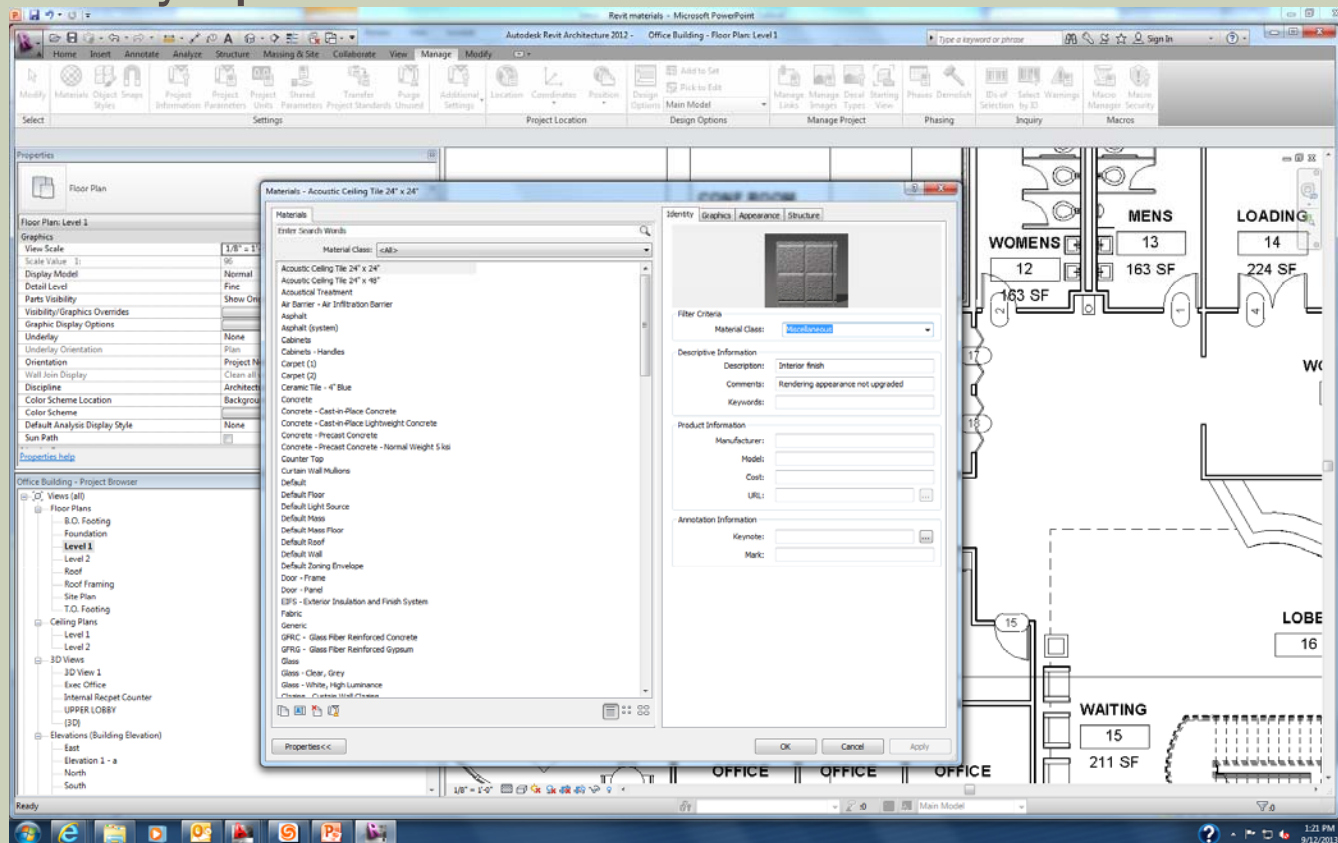
- When you right click on a Material name, you can Duplicate; Rename and Delete materials. Also, at the bottom, you can create a new Material or Duplicate an existing one.



- Now we will take a look at the information contained within each Material.
- This is viewed in the Material Editor dialog, and the information seen is based on which Material is selected in the Material Browser.
- If the Material Editor is not visible, click the small icon in the lower right corner of the Material Browser.

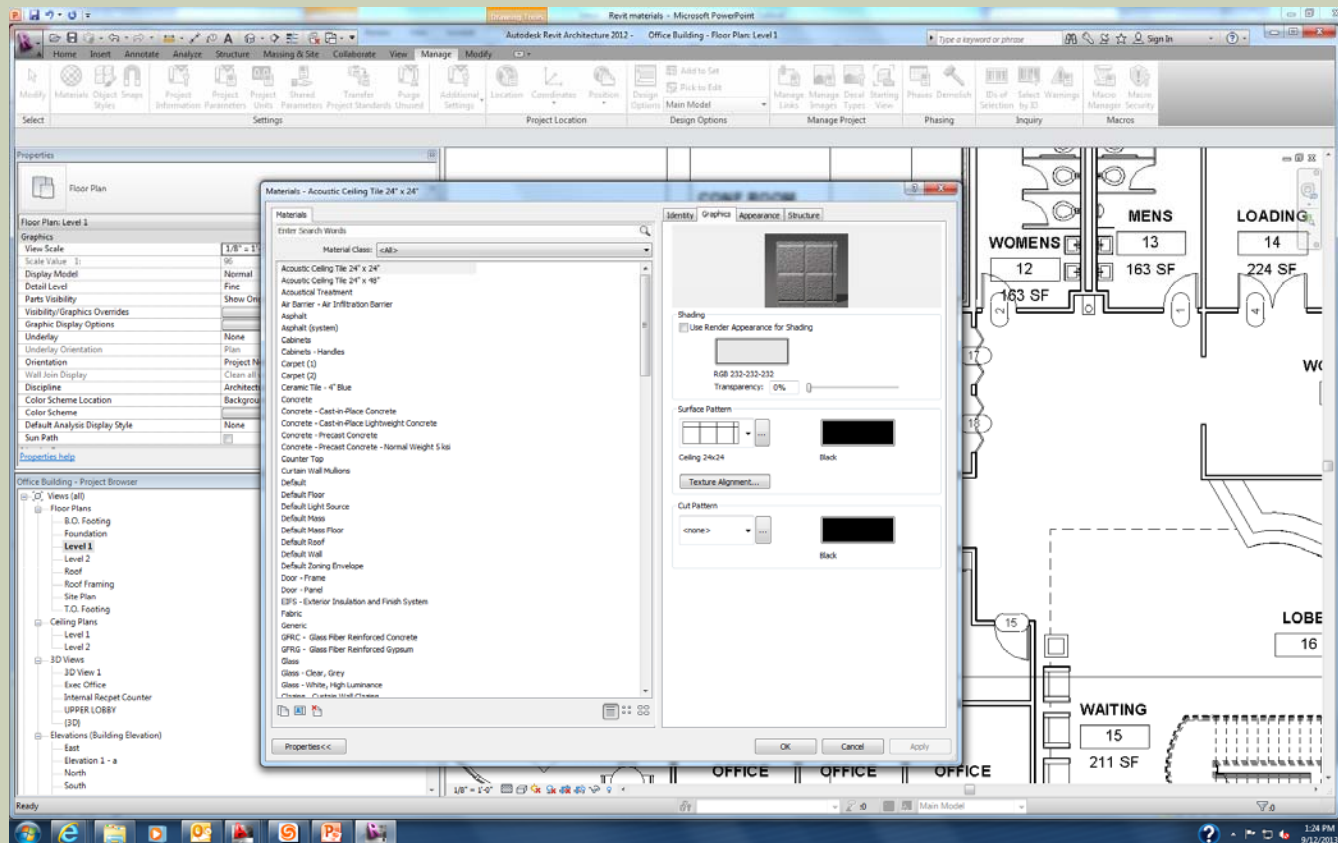


- Identity: with the first material selected in the Material Browser list on the left, Acoustic Ceiling Tile 24"x24", notice the Identity options available.



- **Descriptive Info:** material name and what it is used for
- **Product info:** who makes the material, how much does it cost, where can I find more info.
- **Revit Annotation Info:** it is possible to add smart text with optional arrows, which is called a Tag, in a drawing view to report info about a specific Material. If the info changes, the tag will update automatically. We will learn more about keynoting later.

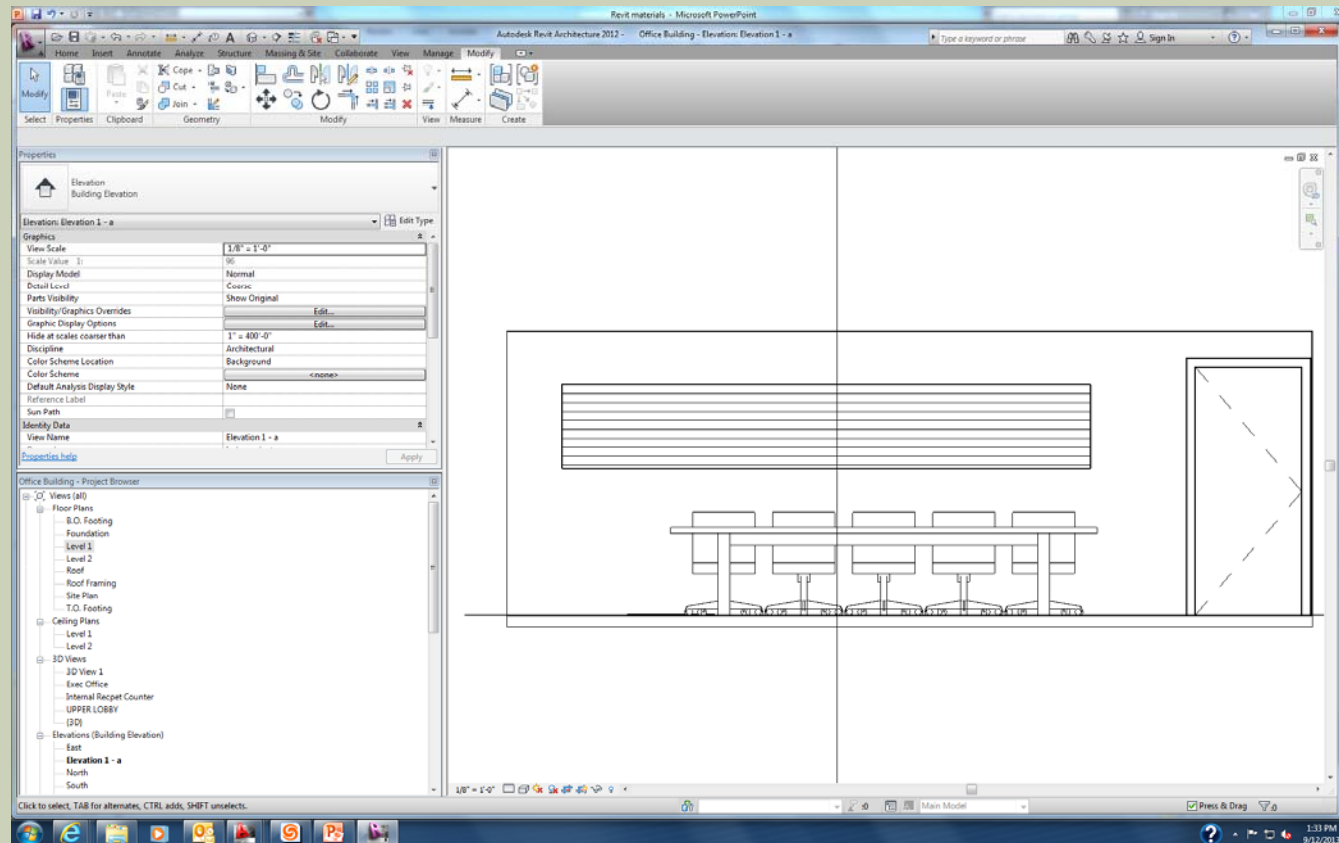
# GRAPHIC ASSET: ACOUSTICAL CEILING TILE 24"X24"



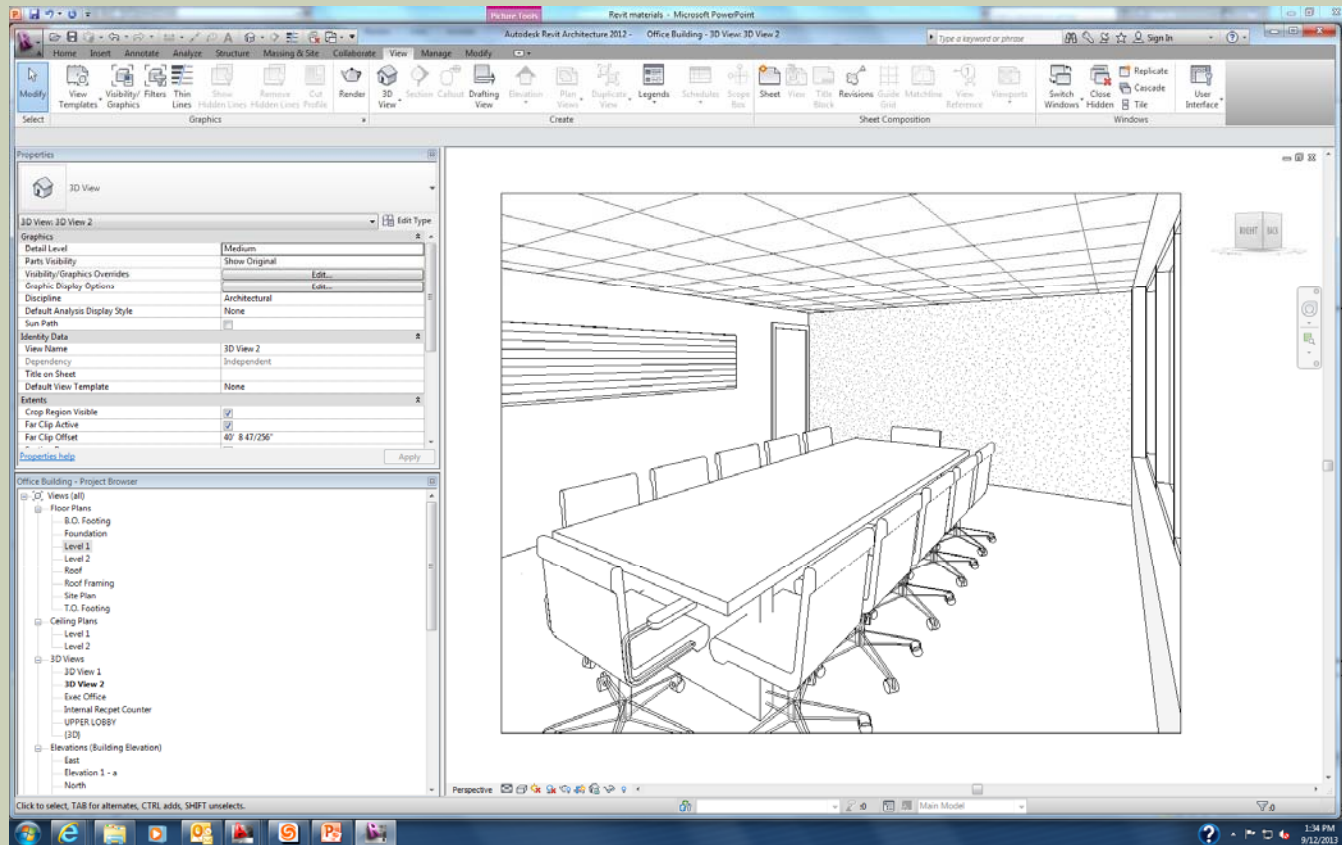
- The info. found in the Graphics panel primarily relates to how the various Materials appear on screen and how they print on paper, or in a PDF. This closely relates to the development of the CD deliverables.
- Shading: this is the solid color used on screen when the visual style is set to Shaded or Consistent Colors.
  - Transparency setting is used to make certain objects see through. This applies to all of the visual styles. The most common application of this is on glass.

- **Surface Pattern and Color:** when a surface pattern is selected, Revit will display this pattern on a surface in a visible view. If the ACT material is applied, you will see it on the ceiling plan and 3D views.
- **Cut Pattern:** when a cut pattern is selected, Revit will display that pattern within the boundary of an object, if the object is being cut in the view. A common example would be walls since a floor plan has a cut plane at 3'-6" above the level.

# SURFACE PATTERN SHOW BELOW: WOOD PORTION OF WALL FROM EARLIER



# HIDDEN LINE 3D: ACT AND WOOD PORTION OF WALL

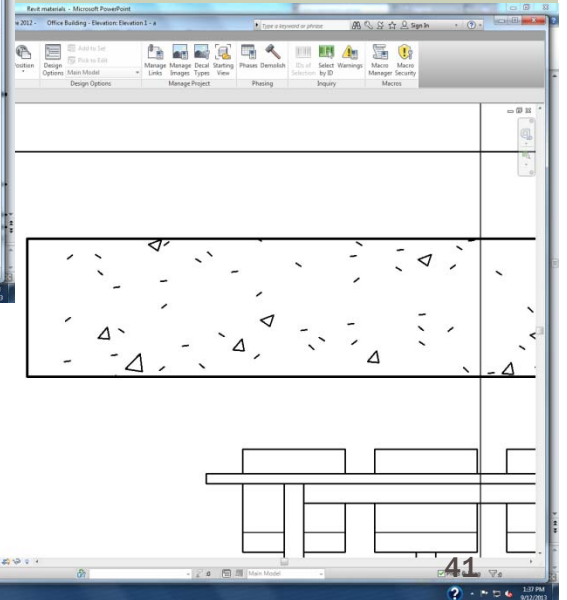
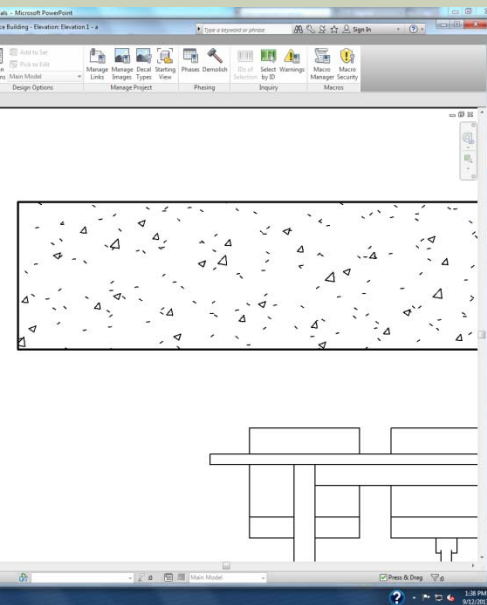
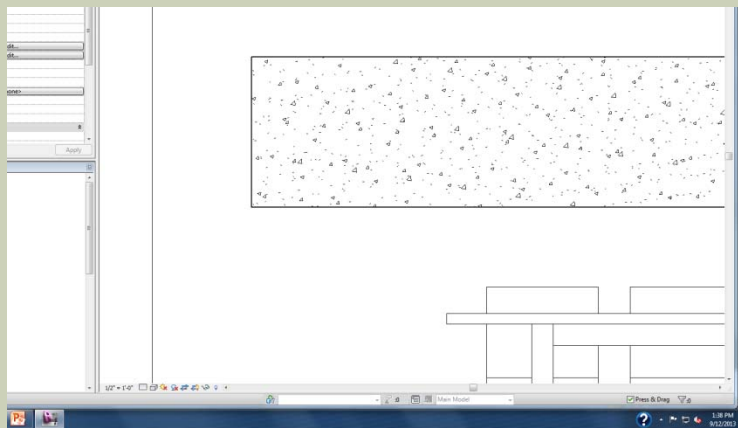


# SURFACE AND CUT PATTERNS (OPTIONAL)

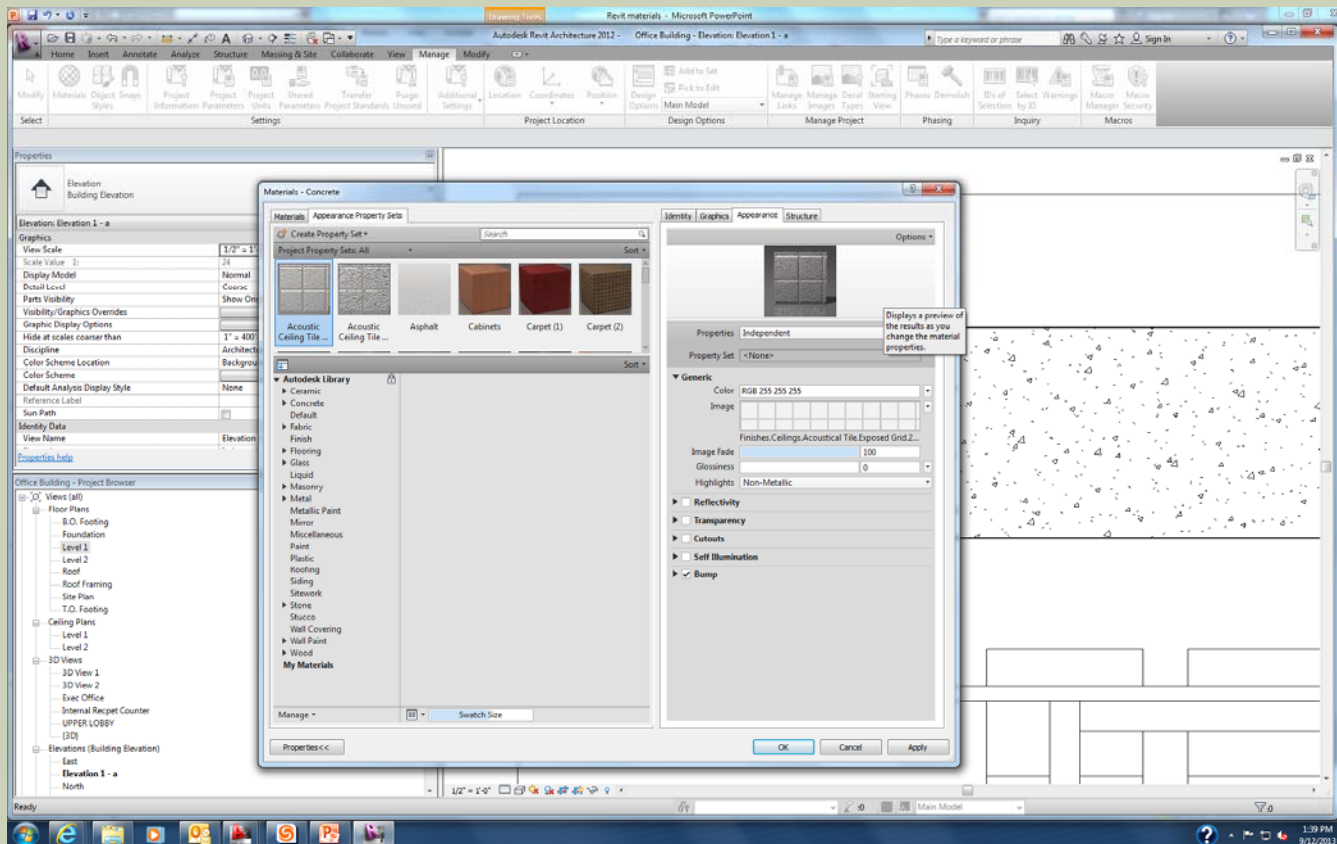
- Keep in mind that surface and cut patterns are optional.
- In large commercial projects it is not desirable to see a floor pattern as the drawing gets too cluttered with notes, dimensions and tags.
- Pattern scale: there are two types of fill patterns in Revit:
  - Model patterns typically represent actual materials such as ceiling tile, concrete block, and brick.
  - Drafting patterns symbolically represent a material. They automatically adjust size with view scale.



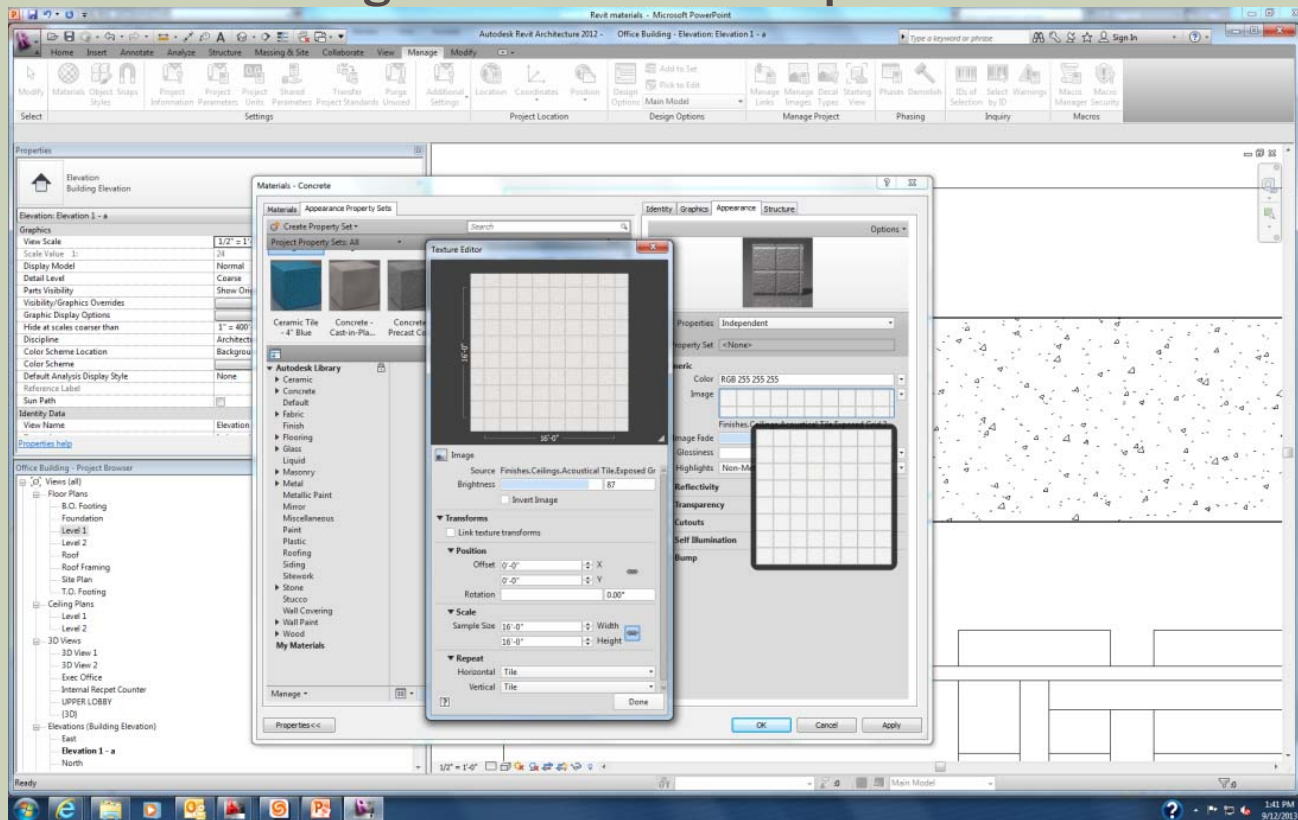
# PATTERN SCALE



# APPEARANCE ASSET



- Double click on the image of the material and another dialog box appears. Here you can adjust how the image is applied to the surface and align it with the fill pattern.



- **Physical Asset:** primarily used by the structural engineer to manage the structural properties for concrete, steel, aluminum and wood.
- **Thermal Asset:** used in energy modeling calculations.
- **Adding or Replacing Assets:** all assets except graphics can be replaced with another option from the provided library.

# MATERIALS LIBRARY

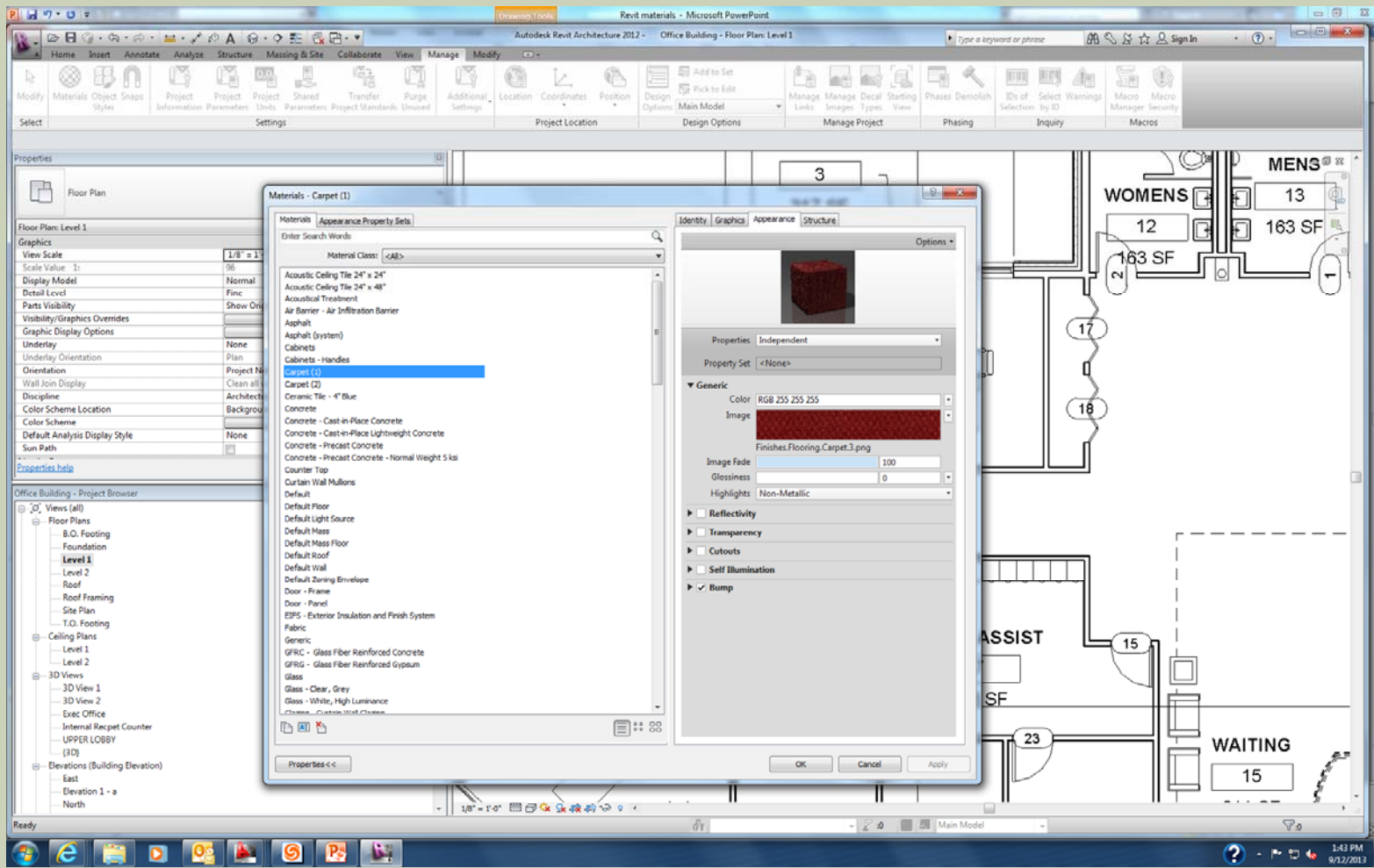
- **Materials Library:** if the material you want is not available in your project, in the In Document Area of the Material Browser, you can either create one or load it from the AEC Materials Library.
- If the material you want exists in the library, this is much faster than creating your own as it has all the assets, including physical and thermal preloaded.

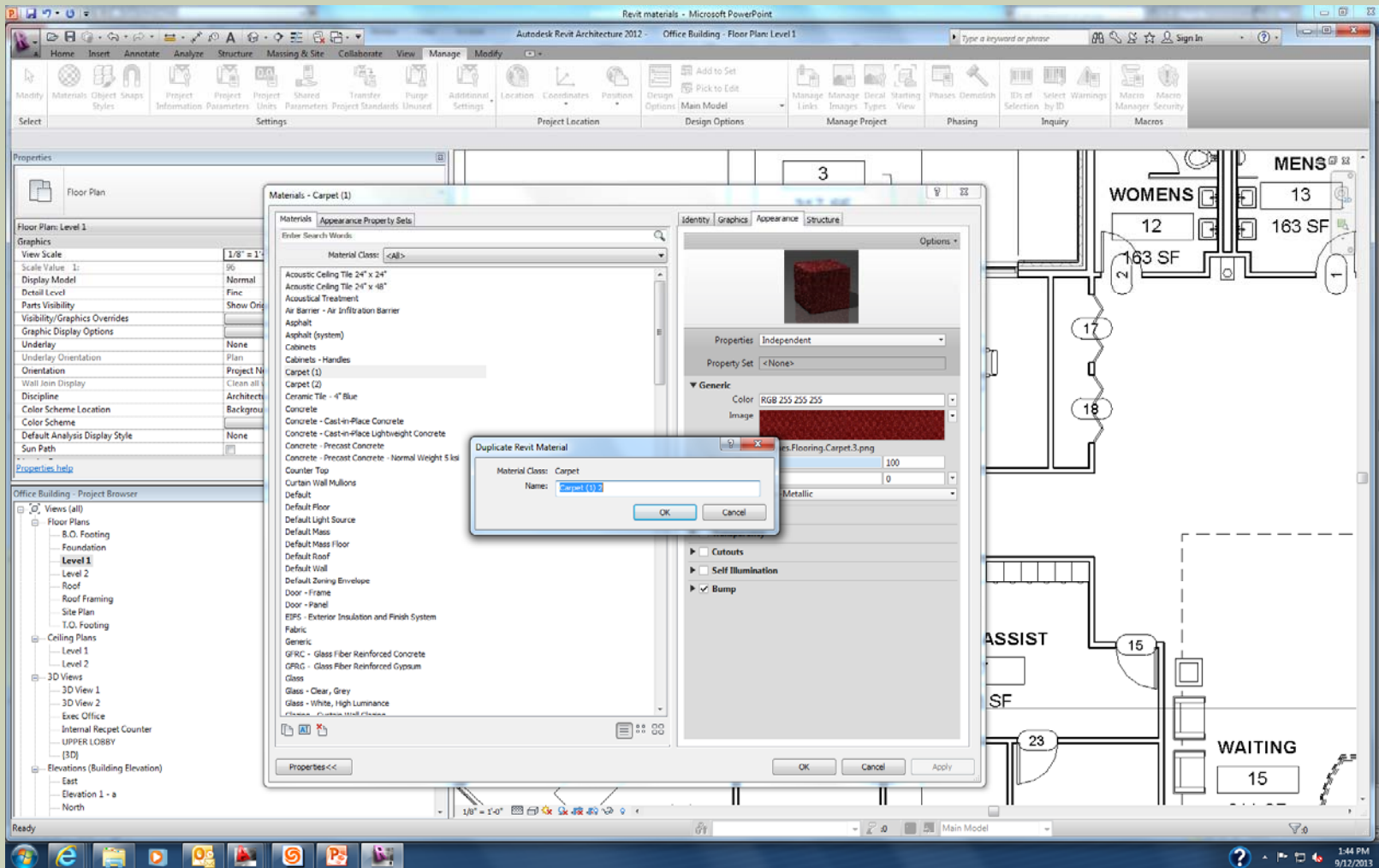
To load a material into your project from the library, simply double click on it.

# CREATING MATERIALS

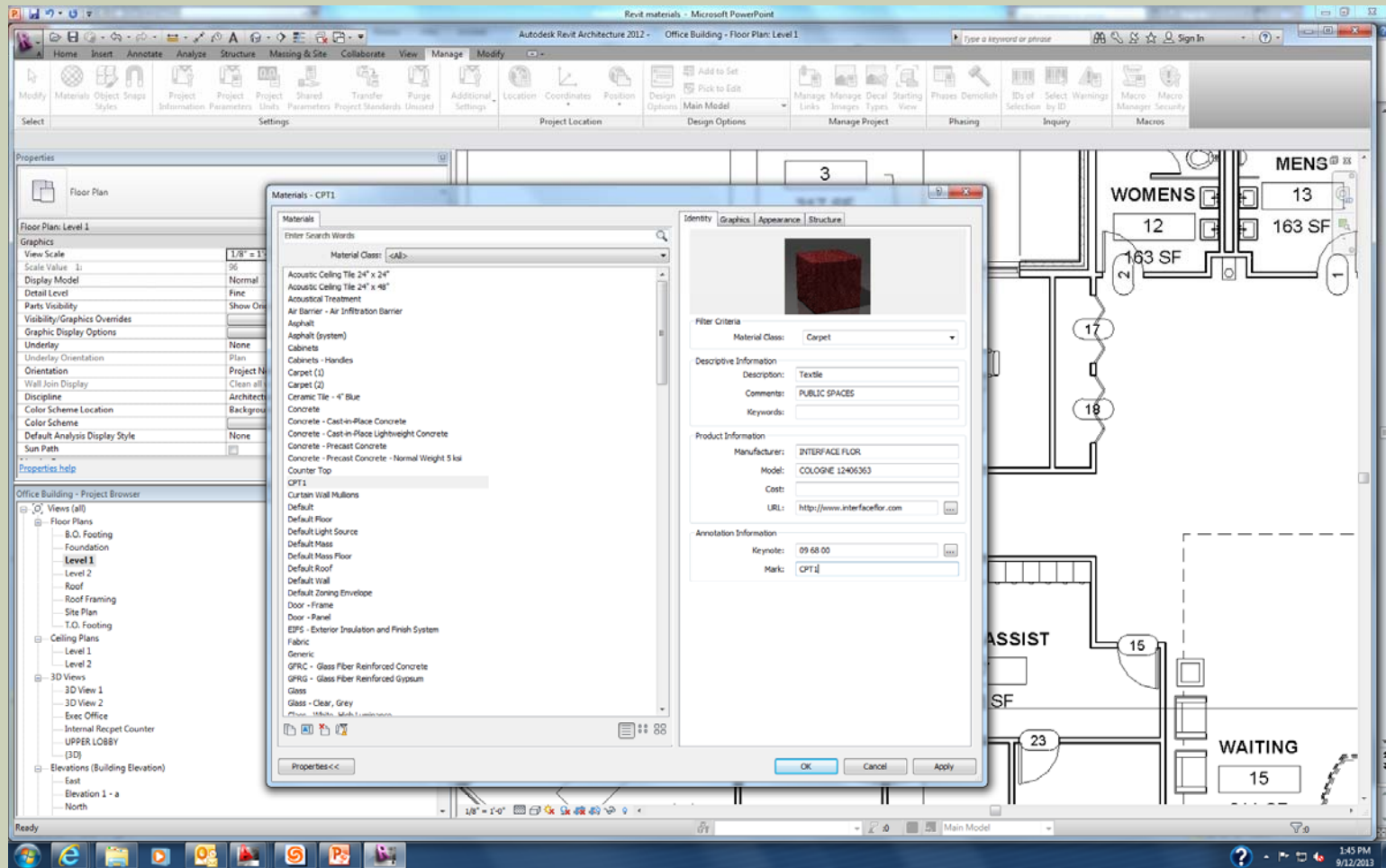
- Open the law office project
- Select manage → settings → materials
- Next you will create a duplicate of the carpet material.
  - First select a similar material to the one you want to create
  - In the materials list we will select carpet-1
  - Right click carpet 1 then duplicate
  - A new material will be created with a name similar to the original
  - Right click to rename and type cpt1

# REVIT MATERIALS CONCEPTS APPLIED - PART 1









Interface.com Product Search Results for COLOGNE









Product Search Results

Your search included the following criteria: Keyword: COLOGNE

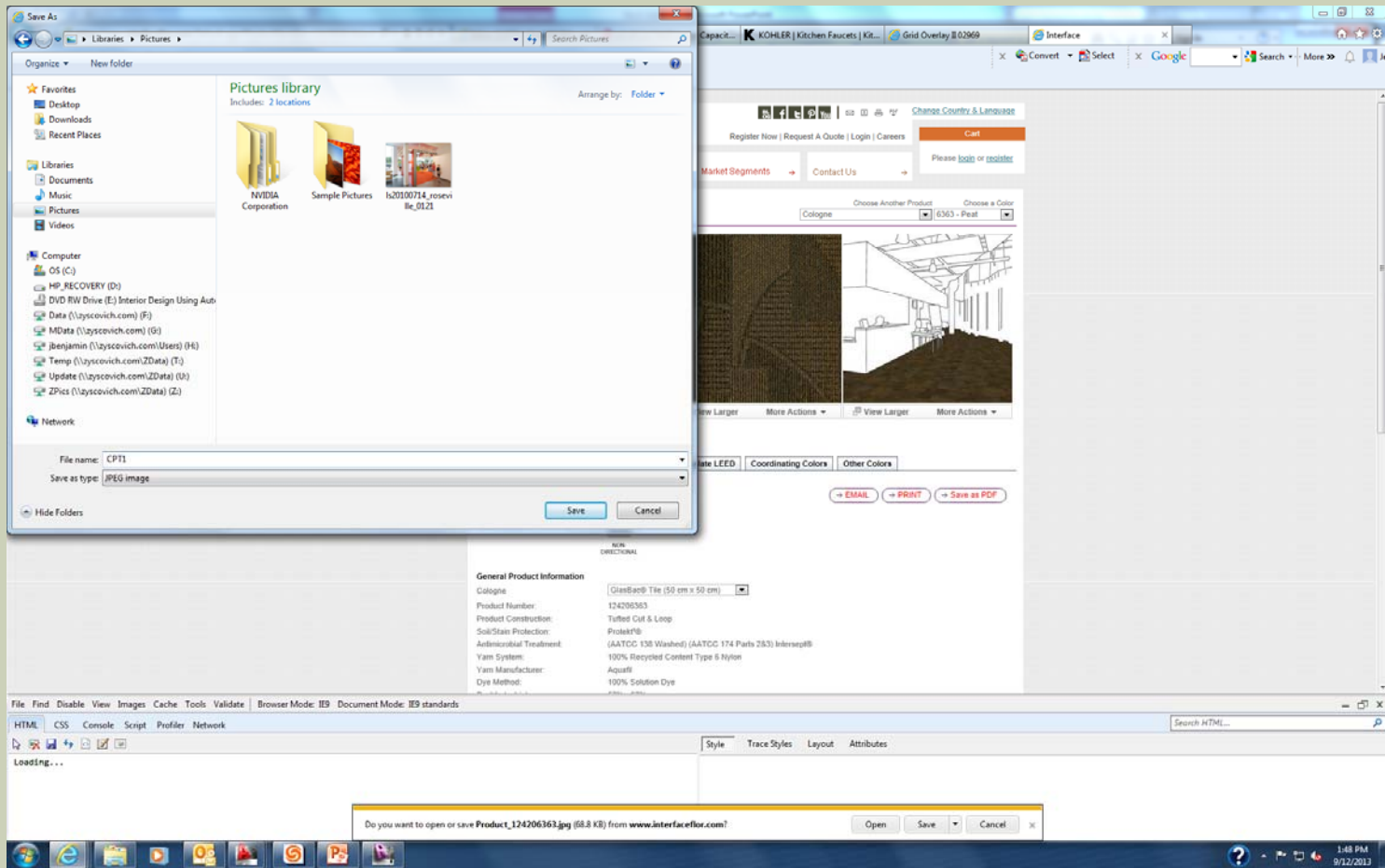
Narrow Results By:

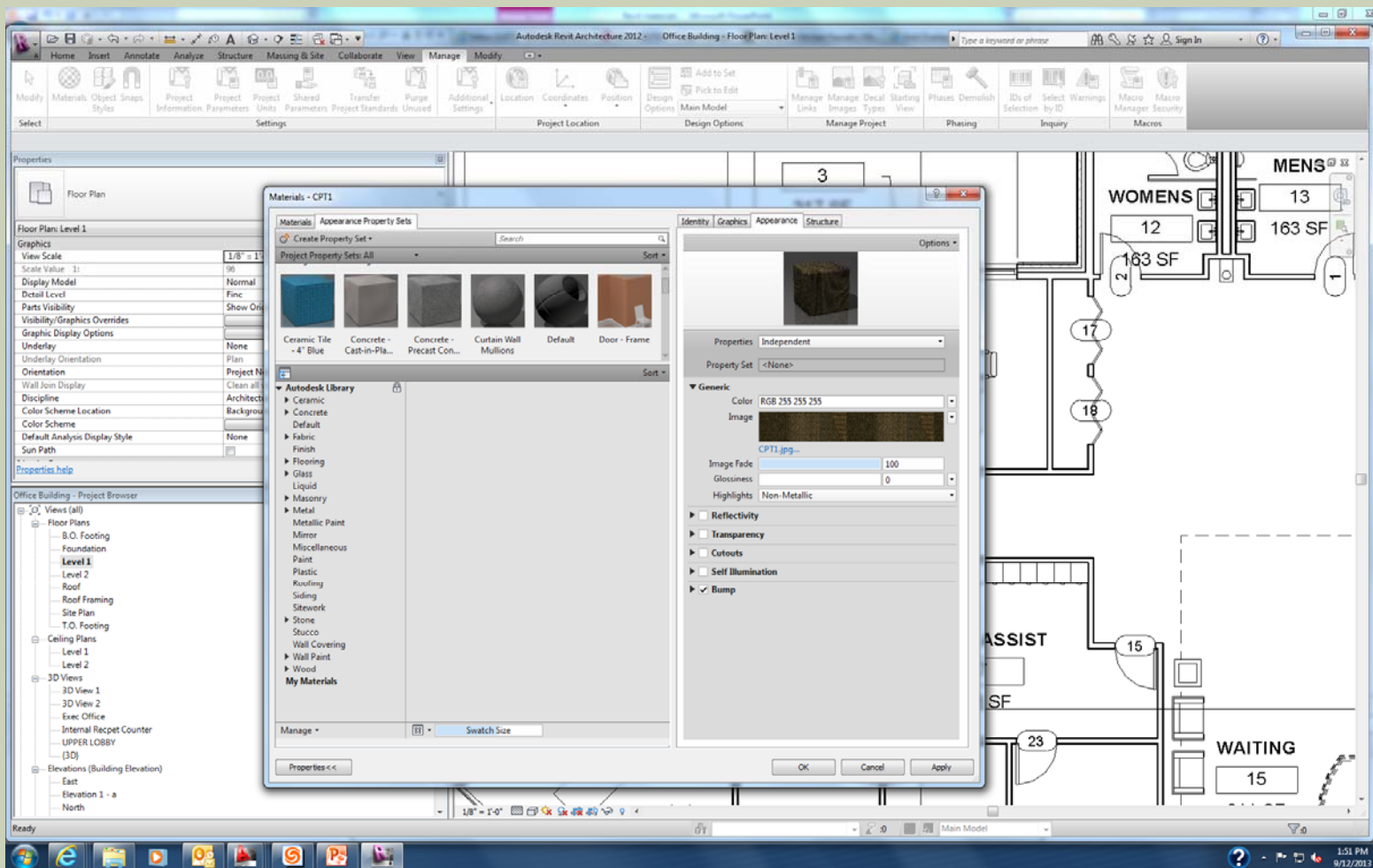
Availability: Any Availability | Pattern: Any Pattern | Pattern Scale: Any Pattern Scale | Color Family: Any Color Family

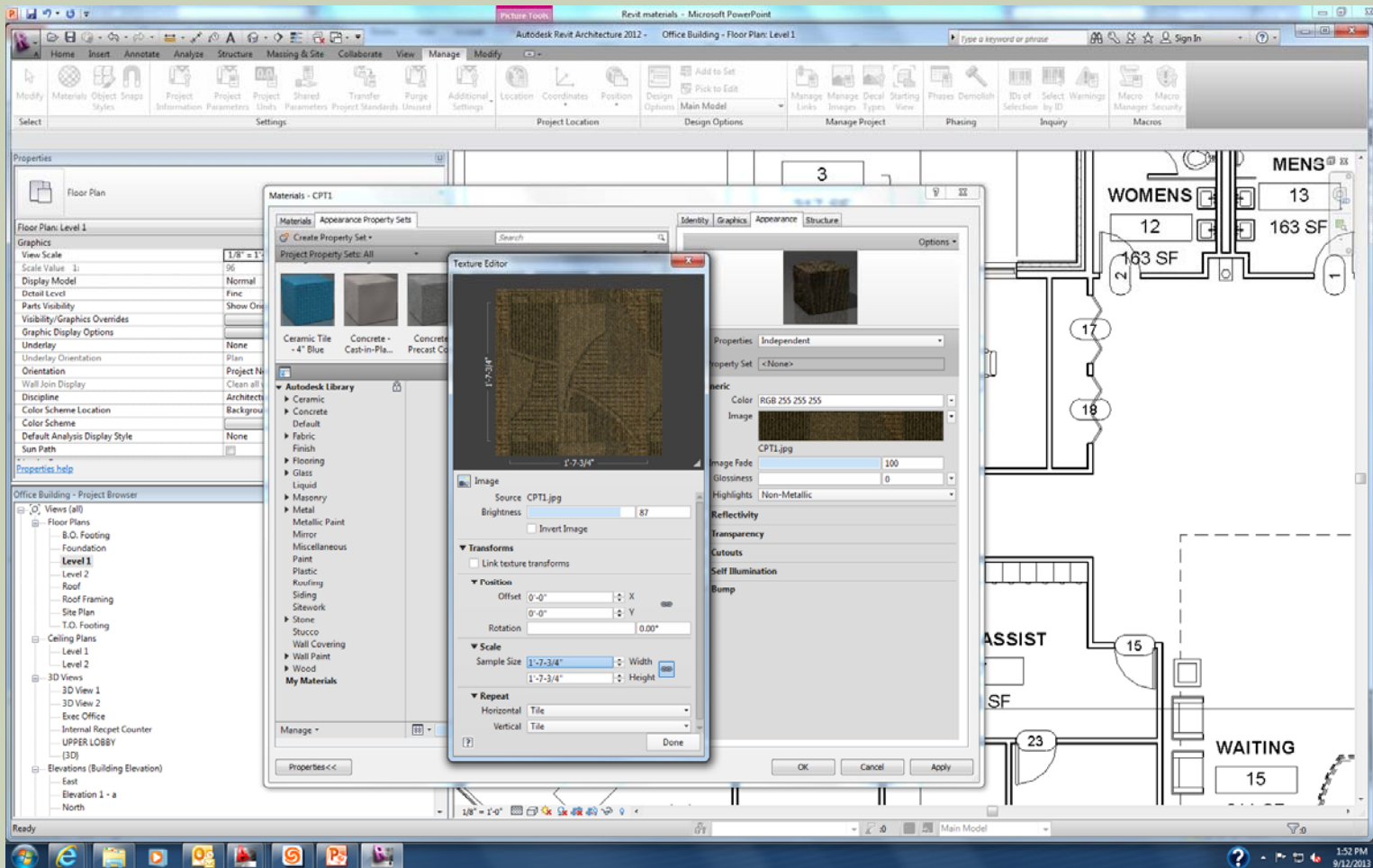
Displaying 1 - 18 of 18

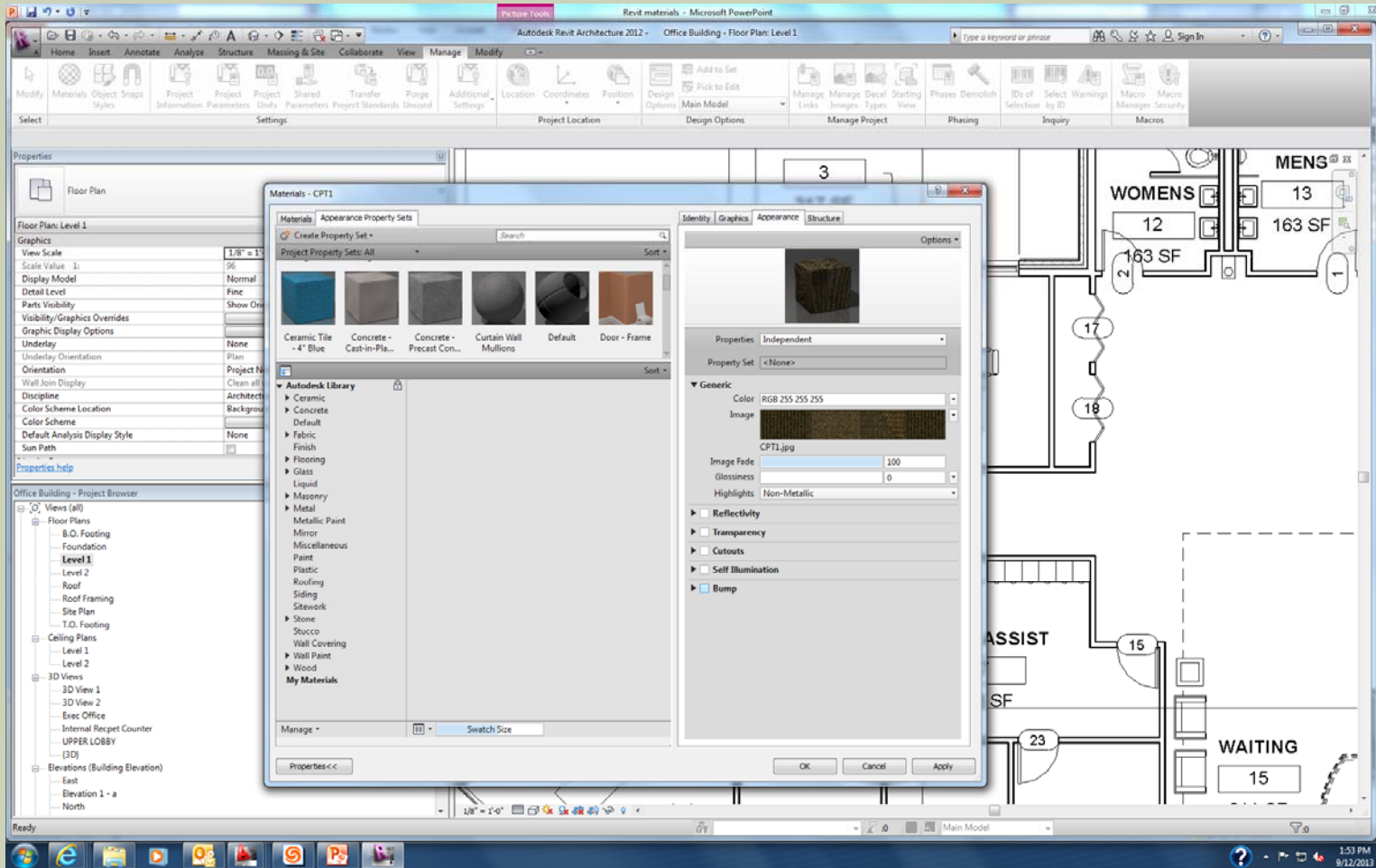
 <p>Compare</p> <p><a href="#">View Details</a> <a href="#">View Larger</a></p> <p>Cologne Shown in Color #8354 (Flagstone)</p> <p><a href="#">View entire color line</a></p> <p>Standard Size: 50 cm x 50 cm Recycled Content: 62% - 62%</p> <p><a href="#">Order Sample(s)</a></p>	 <p>Compare</p> <p><a href="#">View Details</a> <a href="#">View Larger</a></p> <p>Cologne Shown in Color #8355 (Basalt)</p> <p><a href="#">View entire color line</a></p> <p>Standard Size: 50 cm x 50 cm Recycled Content: 62% - 62%</p> <p><a href="#">Order Sample(s)</a></p>	 <p>Compare</p> <p><a href="#">View Details</a> <a href="#">View Larger</a></p> <p>Cologne Shown in Color #8356 (Fossil)</p> <p><a href="#">View entire color line</a></p> <p>Standard Size: 50 cm x 50 cm Recycled Content: 62% - 62%</p> <p><a href="#">Order Sample(s)</a></p>	 <p>Compare</p> <p><a href="#">View Details</a> <a href="#">View Larger</a></p> <p>Cologne Shown in Color #8357 (Nimbus)</p> <p><a href="#">View entire color line</a></p> <p>Standard Size: 50 cm x 50 cm Recycled Content: 62% - 62%</p> <p><a href="#">Order Sample(s)</a></p>
 <p>Compare</p> <p><a href="#">View Details</a> <a href="#">View Larger</a></p> <p>Cologne Shown in Color #8358 (Patina)</p>	 <p>Compare</p> <p><a href="#">View Details</a> <a href="#">View Larger</a></p> <p>Cologne Shown in Color #8359 (Opal)</p>	 <p>Compare</p> <p><a href="#">View Details</a> <a href="#">View Larger</a></p> <p>Cologne Shown in Color #8360 (Marsh)</p>	 <p>Compare</p> <p><a href="#">View Details</a> <a href="#">View Larger</a></p> <p>Cologne Shown in Color #8361 (Sea Glass)</p>

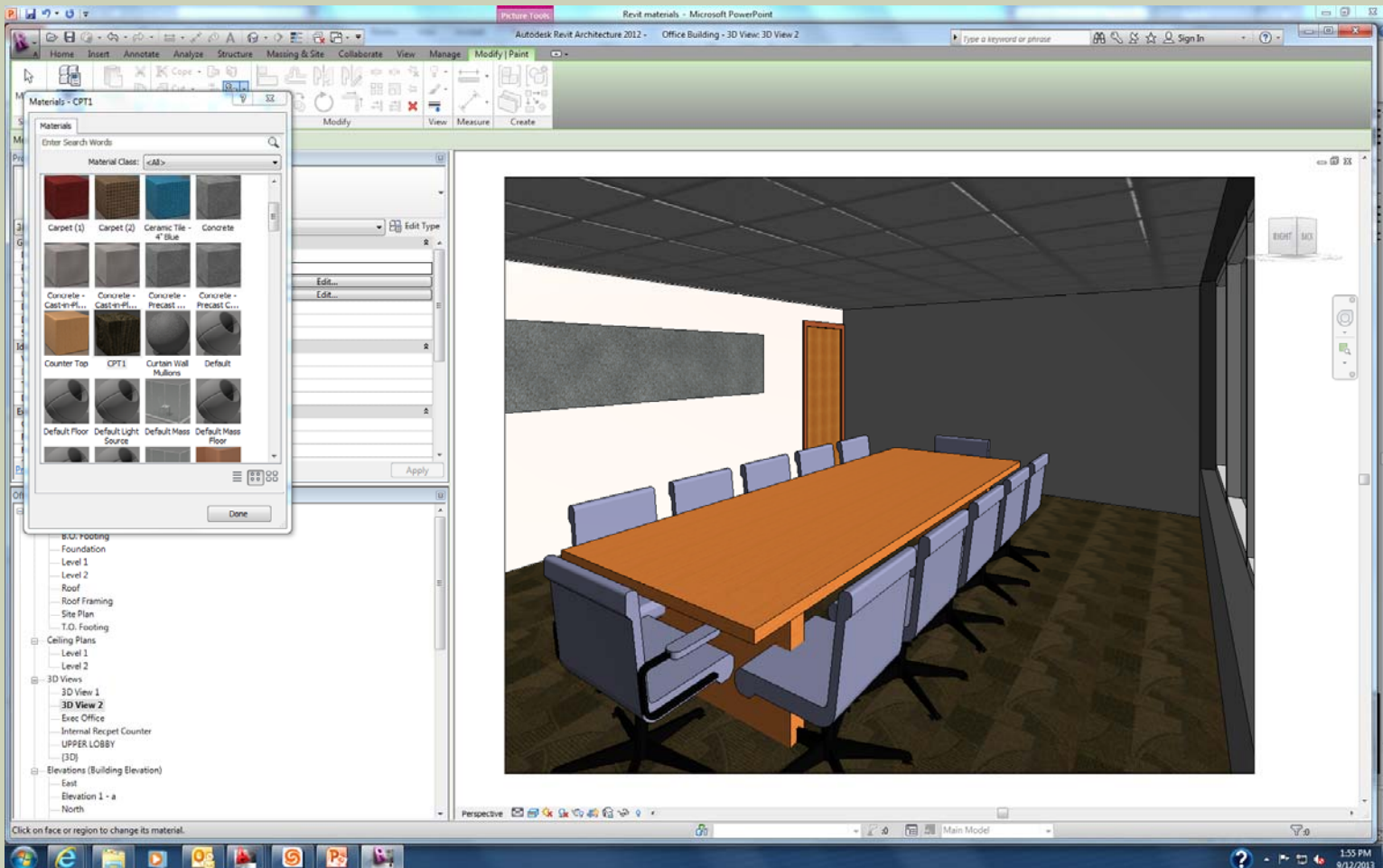
The screenshot shows a web browser window displaying the product page for 'Cologne / Peat' on the Interface for.com website. The browser's address bar shows the URL: <https://www.interfacefor.com/Default.aspx?ProductNumber=124260363&sect=2>. The page features a navigation menu with links for 'Products', 'About Interface', 'Market Segments', and 'Contact Us'. A sidebar on the left contains a 'Product Search' menu with options like 'Product Browser', 'Featured Products', and 'QuickShip Products'. The main content area displays the product name 'Cologne / Peat' and includes a 'Collection: The Plyd' section with details such as 'Style# 12420', 'Color# 6363', and 'Standard Size: 50 cm x 50 cm (19.69 in x 19.69 in)'. There are two images: a close-up of the carpet tile and a 3D architectural rendering of the tile in a room. Below the images are 'View Larger' and 'More Actions' buttons. The page also includes a 'Warranty and Installation & Maintenance Information' section, an 'Order Samples' section with a 'login' link, and a 'Product Details' section with tabs for 'Inventory', 'View in Room', 'Calculate LEED', 'Coordinating Colors', and 'Other Colors'. The 'General Product Information' section lists details such as 'Product Number: 124260363', 'Product Construction: Tufted Cut & Loop', and 'Yarn System: 100% Recycled Content Type 5 Nylon'. At the bottom of the page, there are buttons for 'EMAIL', 'PRINT', and 'Save as PDF'. The browser's status bar at the bottom shows the time as 1:49 PM on 9/12/2013.



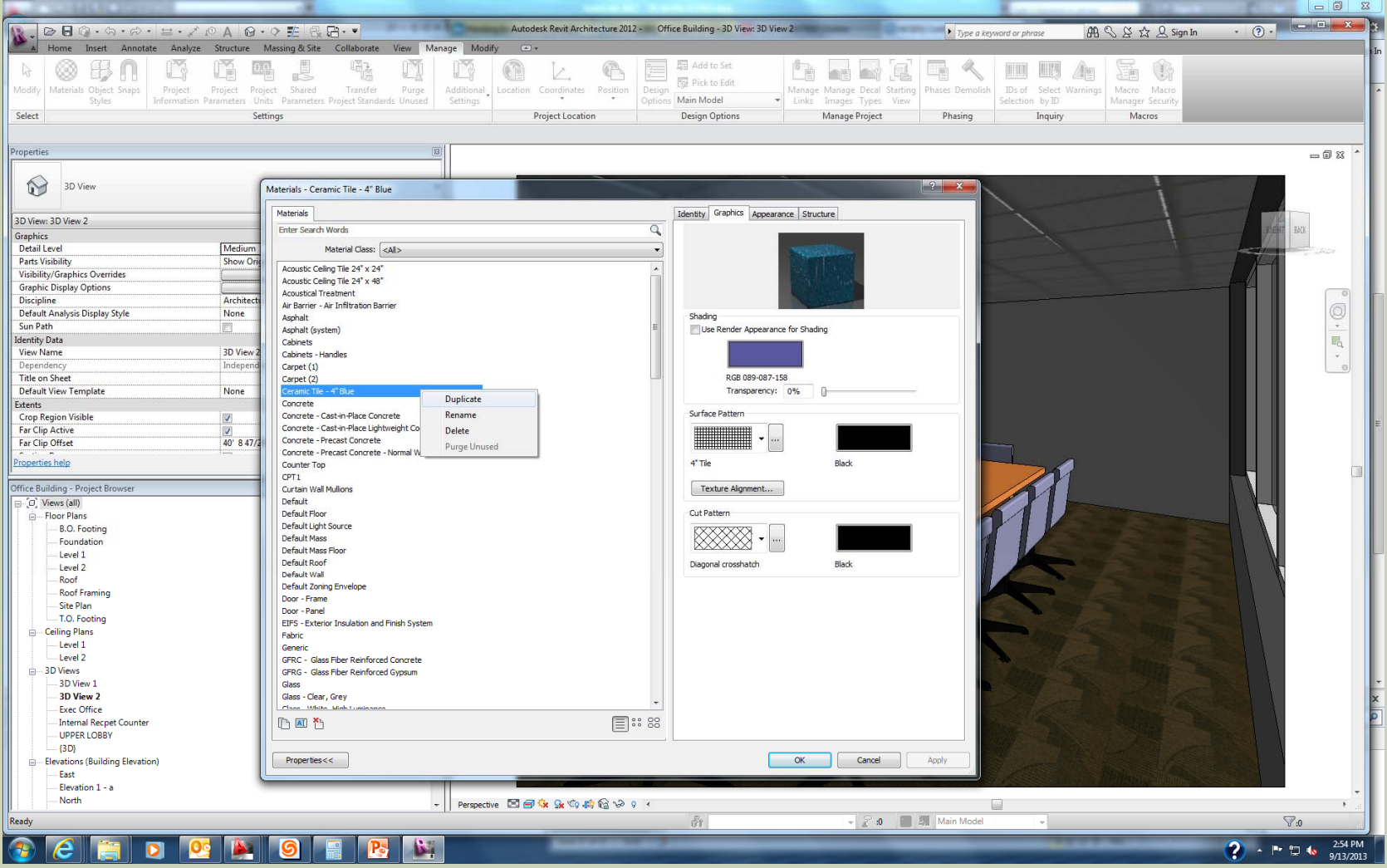


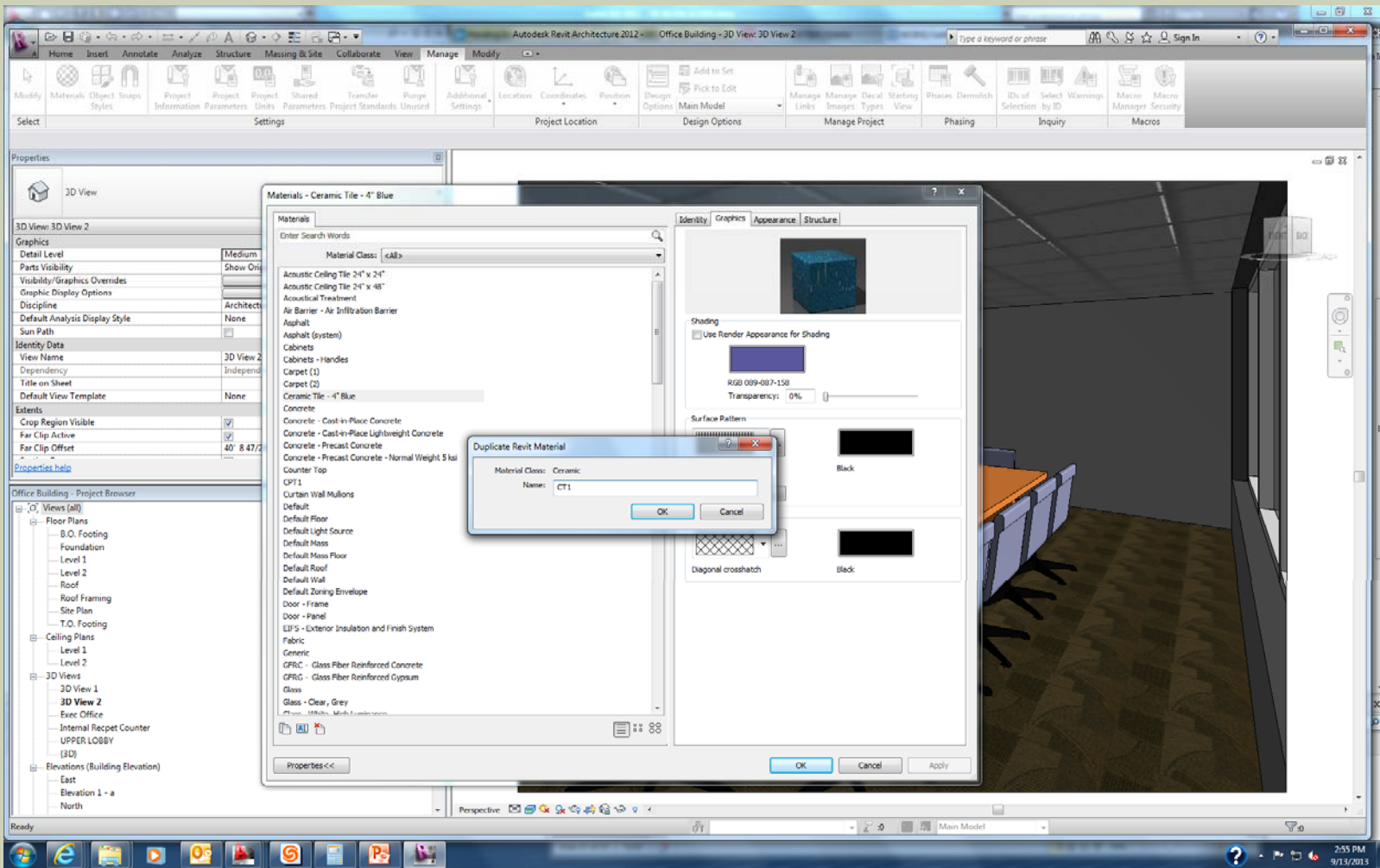








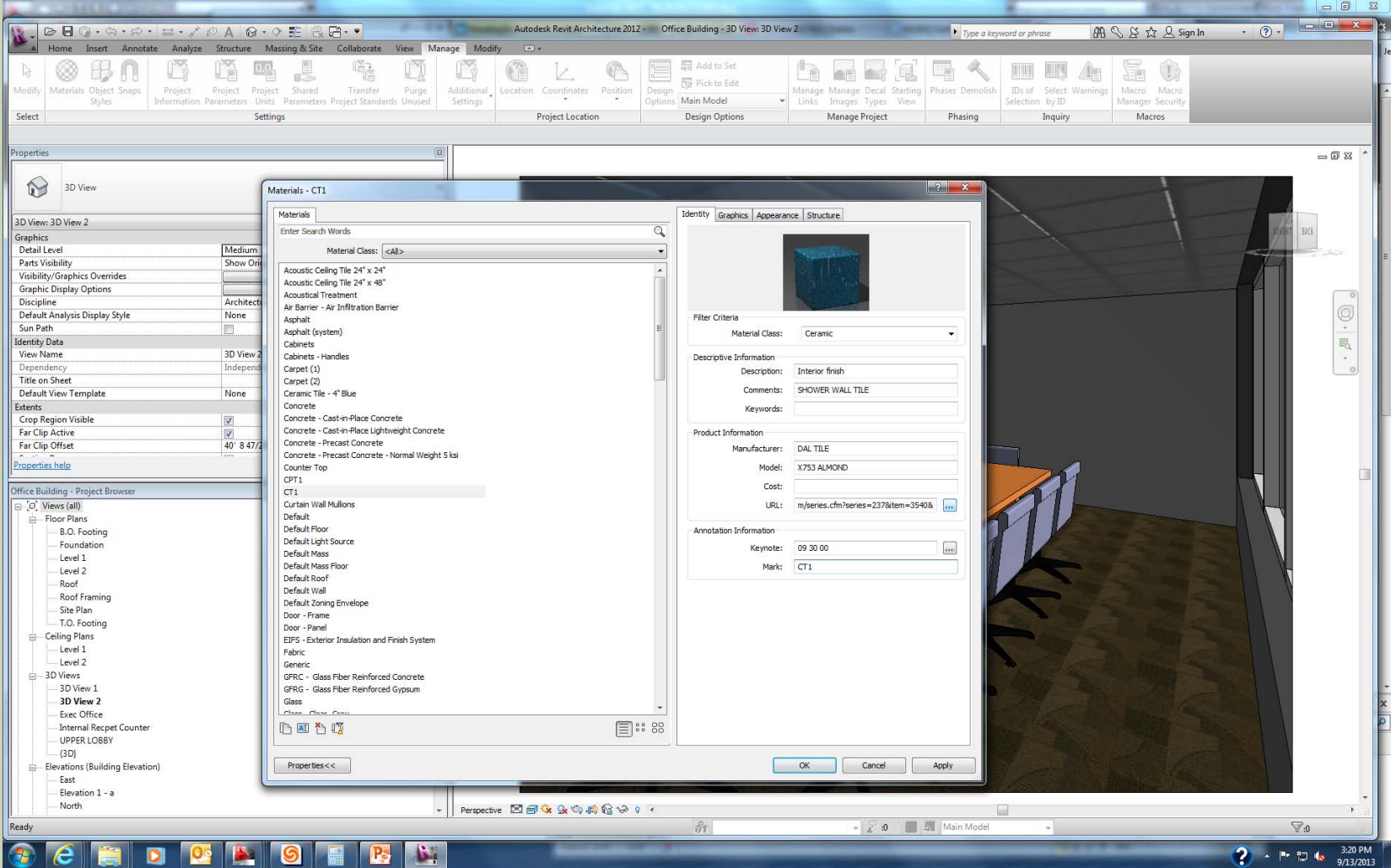




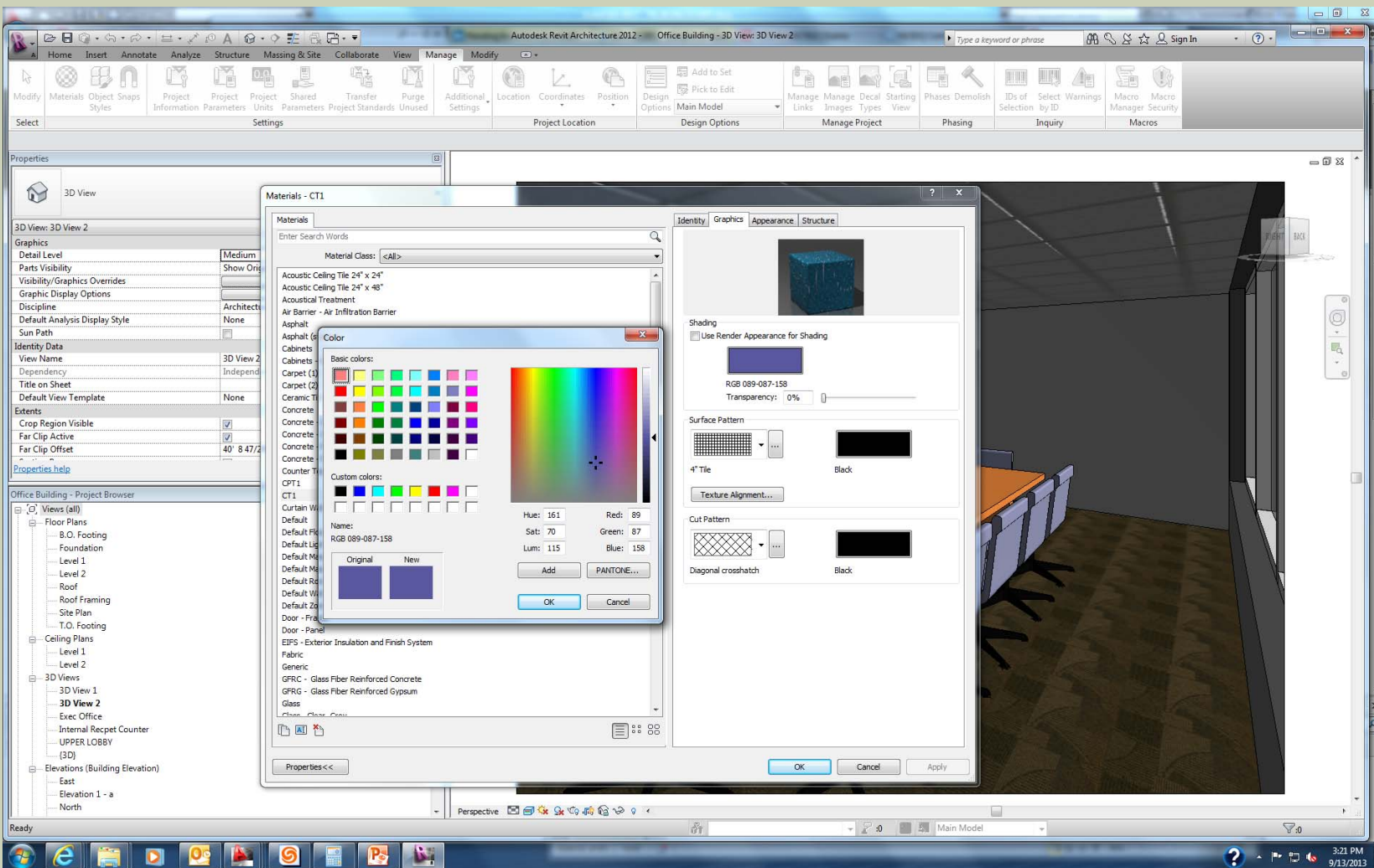


The screenshot displays the Autodesk Revit Architecture 2012 software interface. The main window shows a 3D perspective view of an office building interior. A 'Materials - CT1' dialog box is open in the foreground, displaying a list of material classes and their properties. The dialog box has tabs for 'Identity', 'Graphics', 'Appearance', and 'Structure'. The 'Appearance' tab is active, showing a small 3D preview of a blue material. The 'Filter Criteria' section shows 'Material Class' set to 'Ceramic'. The 'Descriptive Information' section shows 'Description: Interior finish' and 'Comments: Rendering appearance not upgraded'. The 'Product Information' section has fields for 'Manufacturer', 'Model', 'Cost', and 'URL'. The 'Annotation Information' section has fields for 'Keynote' and 'Mark'. The background shows the Revit ribbon with various toolsets like 'Modify', 'Materials', 'Object Snaps', 'Project Information', 'Project Parameters', 'Project Units', 'Shared Parameters', 'Transfer Project Standards', 'Purge Unused', 'Additional Settings', 'Location', 'Coordinates', 'Position', 'Design Options', 'Main Model', 'Manage Project', 'Phasing', 'Inquiry', and 'Macros'. The Properties panel on the left shows settings for the '3D View' and 'Office Building - Project Browser'. The Windows taskbar at the bottom shows the system clock as 2:55 PM on 9/13/2013.

The image shows a screenshot of a web browser displaying the DalTile website. The browser's address bar shows the URL <http://www.daltile.com/>. The website header features the DalTile logo and the tagline "DESIGN WITH CONFIDENCE". A search bar is located in the top right corner, and a navigation menu is positioned below the header. The main content area is a large, light-colored grid. In the center, there are two image-based sections: "COMMERCIAL" and "RESIDENTIAL". Below these, there are four columns of content: "LITERATURE" with an icon of two books, "WHAT'S NEW" with a circular icon and a list of items including "Extreme Home Makeover" and "In The Media", "QUICK LINKS" with a list of links such as "Architectural Tools", "Dealer Tools", "Inspiration Gallery", and "National Accounts", and "SAMPLES" with a lightbulb icon. At the bottom of the browser window, a developer console is open, showing the HTML document structure with the root element `<html>` selected. The Windows taskbar at the very bottom shows the system tray with the date and time set to 2:55 PM on 9/13/2013.



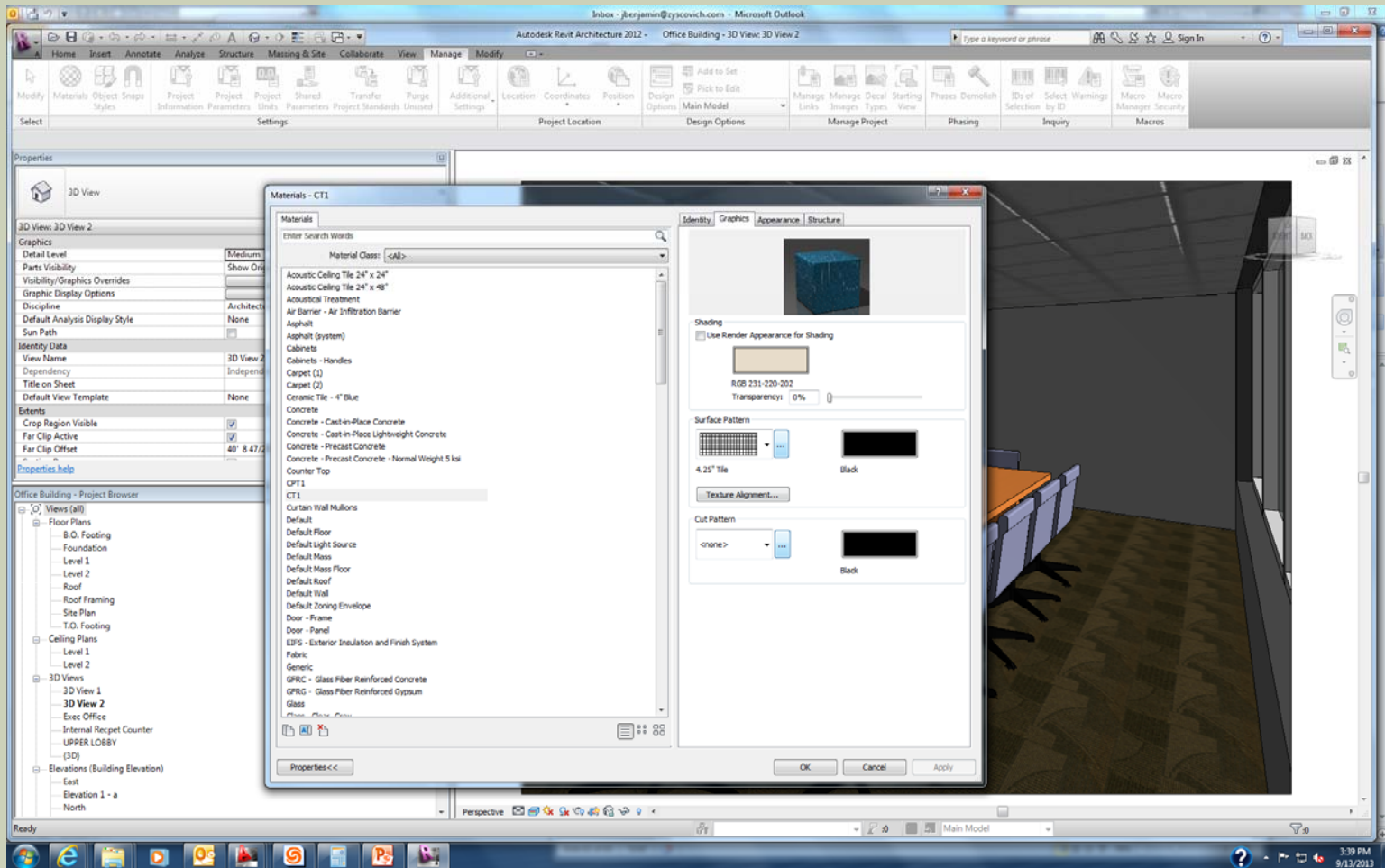
# CLICK APPERANCE TAB, USE RENDER APP. UNCHECKED, CLICK ON BOX



■ Adjust the RGB to the following:

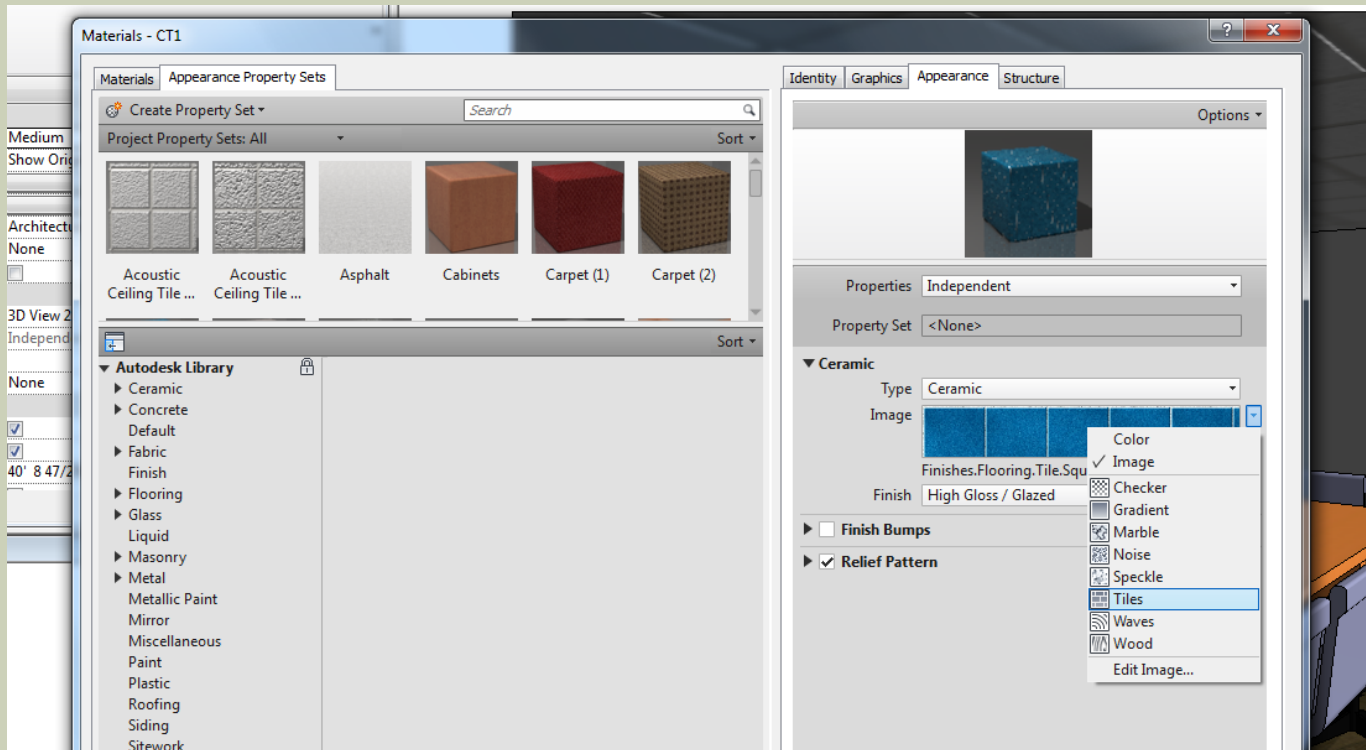
- R=231
- G=220
- B=202

- Click the surface pattern preview, select the model option, and then select 4.25" tile.
- Set the cut pattern for the tile to none, click the preview and then click the no pattern button.

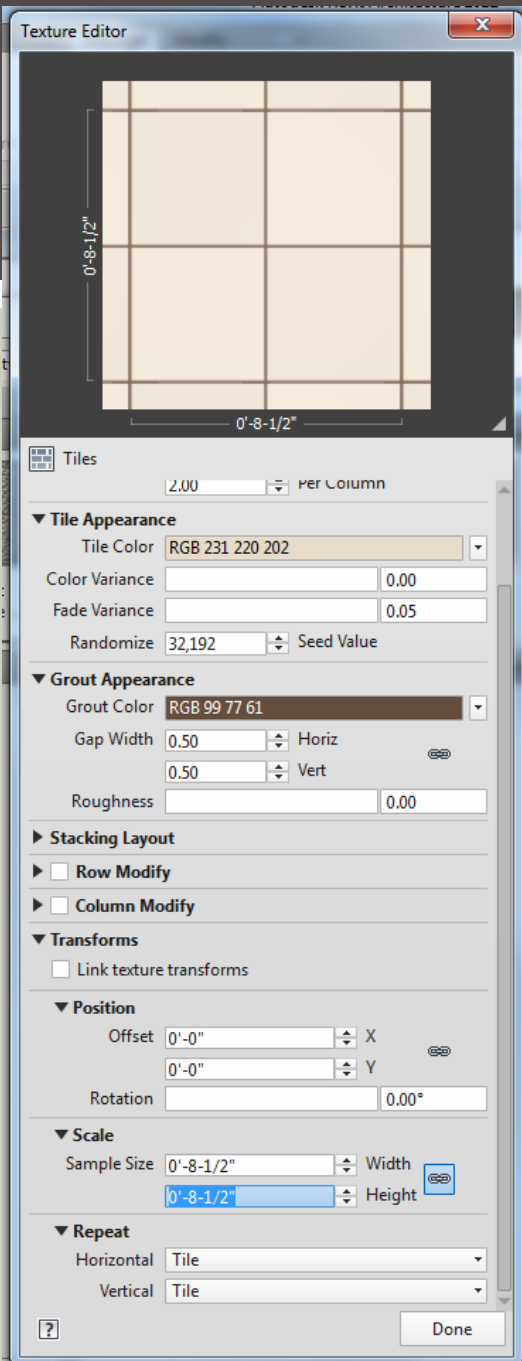




- Switch to the appearance panel
- Click the down arrow to the right of the image preview
- Select tiles from the list

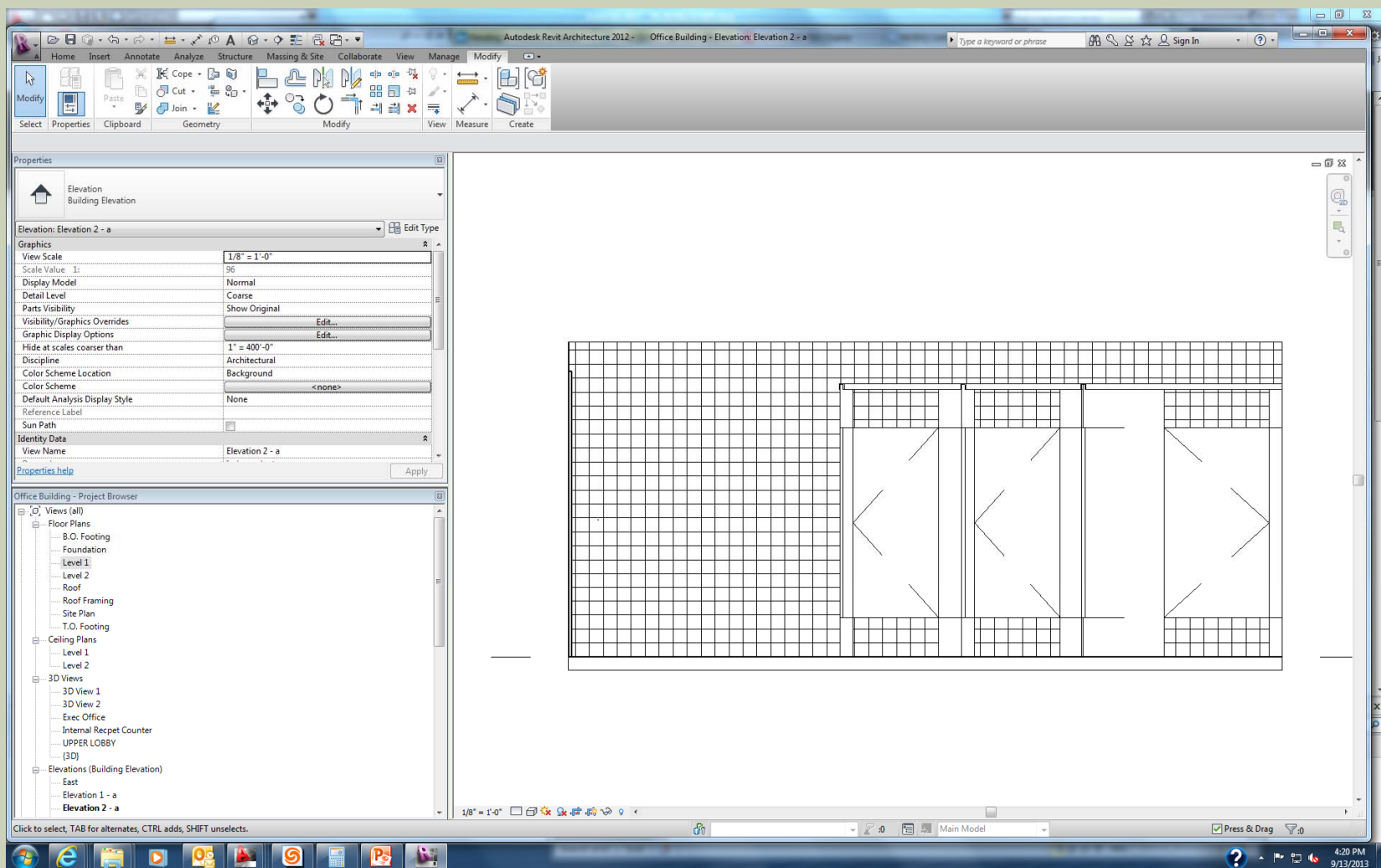


# CHANGE TO REFLECT BELOW

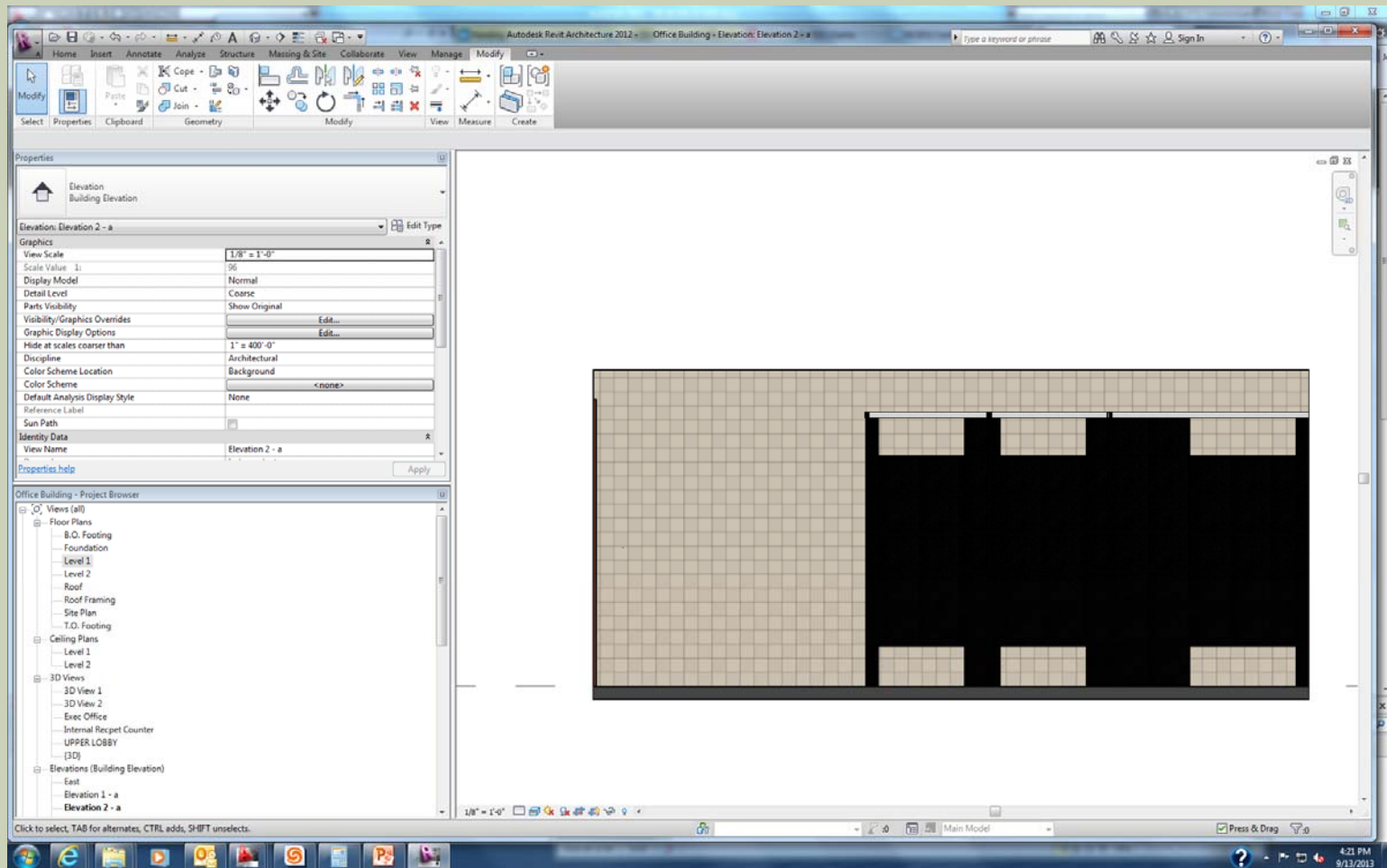


- Repeat the same steps for the relief pattern
- Switch to graphics panel
- Click texture alignment button
- Click arrows if necessary to make fill pattern align with the render appearance pattern
- Click ok to close

# PLACE AN ELEVATION IN THE RESTROOM AND PAINT CT1



# ON REALISTIC



# IN CLASS EXERCISE

- Open a new Revit file
- Draw a 15x15, 20x15 or 10x12 private office
- Draw the walls first
- Add the door(s)
- Add any curtain wall(s) or window(s)
- Add a floor
- You do not have to show furniture
- You do not have to place a ceiling
- Add finishes to the floor and walls based on today's lecture (materials browser, create new mat'l or duplicate)
- Add a camera and set to realistic