Revit course notes and video descriptions

- Jump to the BIM 201 - Intermediate course
- Jump to the BIM 322 - Revit Plumbing course

BIM 101 – Beginner course (77 videos):

Lesson 1:

Video 1 – Introduction to Revit and Revit file types. Hierarchy of elements.

Video 2 – Creating a new project using a generic template. Turning off tool tabs in the Revit interface.

Video 3 – Explaining various basic commands in the ribbon on top. Explaining the Properties Pallet, the Project Browser on the left side, the View Control Bar on the bottom, and the Selection Options on the bottom right.

Video 4 – Adding a shortcut for a folder. Explaining the functions on the mouse.

Video 5 – Miscellaneous stuff. Hiding stuff in a view.

Video 6 – Creating new view types. Creating a callout. Right-click on callout boundary to go to view. Toggling Thin Lines. Hiding Grids.

Video 7 – Bringing back the gridlines that were hidden using Visibility and Graphics Overrides. Using Visibility and Graphic Overrides to hide/show elements. Using Materials/Object Style in the Manage tab to change colors of elements. Using Visibility and Graphics Overrides to overrides the Materials/Object Style setting in a particular view. Setting Line Weights through the Additional Settings button in the Manage tab.

Video 8 – Moving grid lines and the cautions that need to be taken.

Video 9 – Creating Building Section views. Change to “Tiled View” in the View tab to view 2 pages at the same time.

Video 10 – Viewing the project in 3D. Using the Section Box.

Video 11 – Switching from the Orthopedic View to the Perspective View in 3D. Using the Camera View in 3D. Turning on the Shadows, **turning on the Shading View (colors)**, and adjusting the Lighting and Sun - use the Visual Styles (bottom left). Adding a Silhouette and Sketchy Lines (jitter).

Video 12 – Creating our first project – The Habitat for Humanity house. Opening a Revit model that’s already been set up.

Video 13 – Setting and adjusting the datums (levels). Setting the Wall Type and choosing the proper Location Line.

Lesson 2:

Video 1, 2, and 3 – Drawing walls. Using the Aligned Dimension tool and using the Tab button to pick edge/center of wall. Changing the Scale. Using the “EQ” option to locate walls equally. Creating a new wall type with the parameters that you set.

Video 4 – Finishing drawing and dimensioning walls.

Video 5 – Adding doors. Using the Move Tool.

Video 6 – Continuing to add doors. Using the Align Tool to place doors. Changing the door parameters.

Video 7 – Adding windows. Edit Type of window to adjust size. Setting the sill height. Using the Aligned Dimension tool to set window locations. Using the Temporary Dimensions to set window locations. Using the Align Tool to set window locations.

Video 8 – Looking at the model in 3D. Using the Create Similar command to add more windows. Changing the View Range to see all items in a wall. Using the Plan Region tool under Plan Views in the View tab to edit the View Range for select locations.

Video 9 – Creating a floor. Editing floor type.

Video 10 – Creating a roof. Defining the overhang dimension. Defining the slope of the roof. Attaching the walls to the roof.

Video 11 – Adding plumbing fixtures. Loading new fixtures from AutoDesk Families.

Video 12 – Adding a kitchenette (cabinets, sink, and appliances already combined).

Video 13 – Defining Rooms and adding Room Tags. Creating a room boundary line with the Room Separator tool. Changing room names. Relocating Room Tags and adding leaders to the tags. Changing the Arrow on the Leader to a Dot.

Video 14 – Adding dimensions. Using the “EQ” option. Using the “Edit the Witness Lines” to pick back up on where you left off. Adjusting the Project Units (measurement units). Suppressing 0’ and suppressing spaces in the measurements. Adjusting the text (measurements) in relation to their location on the dimension string. Relocating the measurement text away from the dimension string on tight dimensions.

Video 15 – Toggling EQ to toggle between EQ and the actual dimension. Using the Create Similar tool to create a similar type measurement string. Adding text (example - TYP) to a dimension.

Video 16 – Adjusting the View Range for the roof. Adjusting the Underlay to adjust or eliminate transparency through the roof. Changing the Visual Style (bottom left) to Wire Frame to be able to see walls through the roof. Using the Line Work tool in the Modify tab to change the line styles (such as Hidden Lines). Adjusting the roof overhang dimension. Using the Spot Slope tool to label the roof slope.

Video 17 – Creating Sheets for the drawings.

Video 18 – Establishing the Crop Region for views. Putting views on the sheets.

Video 19 – Adjusting the Level Lines on the elevation views.

Video 20 – Printing Sheets to PDF. Explaining the printing options.

Video 21 – End of lesson. Pretty much nothing.

Lesson 3:

Video 1 – Introduction to lesson 3. Pretty much nothing.

Video 2 – Opening the pre setup Revit template to start the next project – The Office Building.

Video 3 – Establishing/modifying the Datum elements such as the levels of the building using the Elevation view. 2 options for adding levels to a project. Creating a Plan View for any level.

Video 4 – Adjusting wall options (type, location line, and top constraint). A quirk with Revit in using the Rectangle option for creating walls (be sure to go from the top down, and to the right when creating rectangle). Converting Temporary dimensions to Permanent dimensions (but they go to centers of walls. To fix, toggle the button at the witness line or drag the witness line.).

Video 5 – Adding vertical grids to the building (Grid Option in Architecture tab). Be sure to draw grid lines in from the bottom to the top to have the Grid Bubbles at the top. Renaming the grid lines. Locating the grids.

Video 6 – Adding horizontal grids. Using the Copy tools to add more grids. Adding dimensions to grids. Using the "EQ" option to set grid locations.

Video 7 – Double checking everything. Checking the 3D view.

Video 8 – Adding interior walls. Using the Copy tool to add a wall. Using the Trim tools (Trim/Extend a corner) in the Modify tab. Using the Split Element tool and Trim (Single Element) tool to modify a wall. Using the Split Element tool (Delete Inner Segment) to modify a wall.

Video 9 – Using the Temporary Dimension option and the "EQ" option to set a wall location. Using the Mirror/Pick Axis tool in the Modify tab to place walls.

Video 10 - Using the Mirror/Pick Axis tool in the Modify tab to place wall. Using the Split Element tool and Trim/Extend a Corner to modify walls.

Video 11 – Using the Offset tool after adjusting the value of the offset (and deciding whether to Copy or not) to place walls in the lobby. Using Trim/Extend a Corner & Trim/Extend Single Element to fine tune the new walls. And then adjusting the height of the walls in the Properties Panel.

Video 12 – Checking the progress in the 3D view.

Video 13 – Changing the wall types of the walls that we've already drawn. Selecting all of the interior walls using a "Crossing". Then using the Filter Option to uncheck some items.

Video 14 – Making changes to the exterior wall in the 3D view (at the entrance) by using the Edit Profile tool.

Video 15 – Splitting an exterior and interior wall using the Split tool (leaving Delete Inner Segment unchecked). Using the Align tool in the Modify tab to align the walls. Changing the Detail Level (bottom left) to Medium. Changing to Thin Lines. Using the **Wall Join tool in the Modify tab** to join the interior and exterior walls.

Video 16 – Adding doors. Using the Mirror/Pick Axis tool to add doors. Using the Create Similar tool to add doors. Loading Family of doors to find a new door type. Using a Crossing and the Filter command to select doors to copy them to the clipboard to paste (Aligned) to level 2.

Video 17 – Adding windows. Selecting a window that's close to what we're looking for in the Properties Panel. And then hit Edit Type, and Duplicate view to make a new window size. And then adjusting the parameters for the new size and sill height. Using the Mirror/Pick Axis tool to place additional windows. Then going to the elevation view, right clicking on 1 level 1 window and selecting All Instances, then using Copy (not copy to clipboard) to copy the level 1 windows to level 2.

Video 18 – Drawing ribbon windows using the Curtain Wall command. Adding Reference Planes to begin. Setting Reference Plane locations. Using the Mirror/Pick Axis tool to copy locations. Select the Wall tool, then select Curtain Walls in Properties, then check Automatically Embed in the Edit Type to place windows. Changing window parameters (such as mullions and other things) in the Edit Type box.

Video 19 – Double checking the size of the ribbon windows in Edit Type. Changing the bottom and top constraints. Using Create Similar to add additional ribbon windows on level 1. Use Control to select both level 1 ribbon windows in the 3D view, then copy to clip board, then use the Paste/Aligned option to place the same windows on level 2.

Lesson 4:

Video 1 – Creating the level 1 floor slab. Edit Type and Duplicate to create new floor type. Adjust parameters. Click into the Materials section, then click browse to go to the Material Library, then select concrete. Change the surface pattern by clicking on Sand and then clicking on "No pattern". Leave it "Concrete" in the Cut Pattern.

Video 2 – Creating the level 2 floor slab.

Video 3 – Adding ceilings on level 1 on the Ceiling Plans. Adjust parameters in the Properties tab. Using the Automatic Ceilings option. Use the tab key or use a Crossing to select ceilings. Use Edit Type to change a ceiling type. Create a new type by hitting Edit Type and Duplicate, and then change the parameters. The Sand Pattern works good for drywall ceilings.

Video 4 – Adding ceilings on level 2 on the Ceiling Plans. Moving the ceiling grid layout around.

Video 5 – Creating the roof plan. Go to Roof in the Architectural tab. Choose a roof type from the Properties Menu. Uncheck Defined Slope in the Options bar to gain access to more tools to use.

Video 6 – Adding ridge lines and low points on the roof. Use Add Split Line option to establish ridge lines. Then go to Sub Elements in the Modify tab to set the height of the ridge lines. In the Options Bar, set the Elevation Base to Top Plane and change the elevation to 8" (or whatever). To add the low points, select the Add Point option. Then go to Sub Elements to set the height of the low points to 0" (or whatever). It will automatically add the Value Lines (slope lines) to the drawing.

Video 7 – Adding annotations to the roof to add Spot Slope and Spot Elevation. The instructor uses ¼"/ft for slope on flat roofs. For Spot Elevations, you can select what elevation you want (i.e. top of steel, top of finish roof, etc.). Changing the Leader Arrow to 1/16" dot filled in Edit Type.

Video 8 – Choosing whether the steel or the insulation creates the slope. Go to the Section button in the Quick Launch bar at the top to create a section. Double click on the section tag to view the section. Change Detail Level to medium to see individual parts of the construction of the roof. To change the method used to create the slope, go to Edit Type, select one of the layers (i.e. insulation) and change it to Variable which will make the insulation create the slope. Attaching walls to the roof. Select All Instances to attach all of the walls to the roof. To join the roof & the walls and the floors & the walls on the drawing, go to the Modify tab and select Join. Then select items to join.

Video 9 – Drawing the curtain wall at the entrance. Adding the vertical grids using the Curtain Grid option. Adding the horizontal grids. Changing one of the bays to a door – use the Curtain Grid option, using the One Segment, set the horizontal grid at the top of the door for however high the door will be. Use Add/Remove Segment to remove the horizontal grid from the middle of the door.

Video 10 – Changing the panel at the door location to a door (you don't use the regular door command for curtain wall doors) – set it to a System Panel type that is a door in Properties. Since there are no door types in Properties, use Edit Type, then select the Option to Load, then Load. In the Imperial Library, select a door, and then load. It will then show up in Properties. Adding mullions (Architectural tab, Mullion). Select a corner mullion for the corner. Use the All Grid Lines to place all of the mullions on a wall at the same time. Delete one mullion at the base of the door.

Video 11 – Adding the stairs. Start on level 1. Select Stair in the Architecture tab. Select stairs in Properties. Adjust Run Width (3' – 8" in this instance). Draw stairs off to the side at first. Use the Move tool to move the stairs into place, with the bottom run in the position that you want. Then use the Move tool again to move the top run into place. Then click Finish. Adjust the annotation if desired. Then select both the stairs and the annotation and use the Mirror/Pick Axis tool to copy the stairs to the other end of the building using grid line 3 (center) as the axis.

Video 12 – Modifying the floor boundary on level 2 to accommodate the newly added stairs. Select floor, select Edit Boundary, use the Lines tool to add new lines around the stairs, and then use the Trim tool to delete unneeded lines. Then click Finish. When a warning pops up, click Do Not Attach.

Lesson 5:

Video 1 – Adding furniture. Go to Insert and then Load Autodesk Family. In the Imperial Library, look for furniture. Select the chairs, cabinets, and shelving that are wanted and click Load. Then select Component in the Architecture tab. Then select items that were loaded in the Properties tab. Place them where you want, using the space bar to rotate items. Creating a Model Group with one set of furniture – select the items wanted, then select Create Group, and then name the group. Then select the model group and use the Mirror/Pick Axis tool to copy that group into the other offices using walls as the axis points. Then select one group, right click and choose Select All Instances, copy, then use Paste Aligned to selected levels to paste them to level 2. When adding a new piece of furniture to a group, select the group, then select the Edit Group tool, then use the Add option to add the new furniture to the group. Then click Finish.

Video 2 – Adding plumbing fixtures. Select Component on the Architecture tab. Select the fixture in the Properties tab. Use Space to rotate the fixture. Load Autodesk Family to find toilets and other fixtures. Copying one group of plumbing fixtures and pasting into another bathroom using the wall as

the reference. Then copy all fixtures on level 1 using the Copy to Clipboard tool and use Paste Aligned to select level 2.

Video 3 – Adding a room separator – select Room Separator from the Architecture tab. Adding rooms with Tag on Placement selected. Renaming the rooms and room numbers. Tagging multiple rooms at one time. Using the Dropdown to select room name after at least one of those types have been named. Relocating room tags – add a leader and change the leader arrow to 1/16" dot filled. Then repeat the same process for level 2. Changing room tags to include area – Right click on one of the tags, choose Select All Instances on Project, then change to Room Tag with Area. You will have to replace the room tag leaders since they got deleted when the Room Tag Type was changed.

Lesson 6:

Video 1 – Adding a Color Fill Legend – Click Annotate tab, then Color Fill Legend, then select Rooms and Department on the pop-up menu. Then assign departments for all of the rooms by selecting all rooms of one type (i.e. Office, Restroom, Conference Room, etc.) and select Department in the Properties tab, then select name (Administration for example). To change Color Scheme colors, select the Color Fill Legend, then select Edit Color Fill Scheme. Tip – use the Crossing to select multiple rooms.

Video 2 – Cleaning up and adjusting the drawing. To change furniture colors – select Object Styles in the Manage tab, select furniture and change the color. To change furniture to the same colors as the rooms – select the Color Fill Scheme, then change it to Foreground in the Properties tab. To clean up the stairs view – select Visibility/Graphics Override, go to stairs, then you can turn off items that are above the cut line (such as supports, riser lines, and railings). To change the size of the color swatches or text at the Color Fill Legend – select Color Fill Legend, then Edit Type in the Properties tab.

Video 3 – Working on building elevation drawings. To shorten the grid or level lines on the elevation drawings without also effecting the lines on the floor plan drawings, tighten up the crop region on the elevation drawing first (changes the lines from 3D to 2D). To add a heavy line at the base of the building – use the Fill Region tool in the Annotate tab, change the type to "Solid Black" in the Type Selector in the Properties tab, switch view to Thin Lines, use the Rectangle tool to draw along the base of the building (setting it about 1' tall). To break the section cut symbol line – click on the break in the middle and drag the ends to the desired location. **To add colors** – change the Visual Style at the bottom left from Wireframe to Shaded.

Video 4 – Turn on Shadow (bottom left) to add depth to the elevation drawing. To change Shadows, Sketchy Lines, Depth Cuing, Lighting, Realistic, and Background, go to the Graphics Display option in the Properties tab and click Edit. Adjust the sun direction in the Sun Settings. To change the colors of the objects on the elevation drawing (such as the glass), select a glass panel, then click Edit Type in the Properties tab. Then click the button next to "Glass" to open a settings dialog box. Then change shaded Appearance.

Video 5 – Making adjustments to the Building Section drawing and the lobby. Creating a soffit. Also creating a "soffit wall". Adding a railing.

Video 6 – Using the 3D Camera tool. Making adjustments to the 3D view – adding and adjusting shadows and adjusting lighting. Using the Sketchy Lines tool. Turning on Extensions for the appearance.

Video 7 – Creating a sheet for the drawings. Making adjustments to the level 1 and level 2 floor plans. Switching an “EQ” dimension to the actual dimension. Copying dimension strings from level 1 to level 2. Hiding the Color Fill Legend on level 2.

Video 8 – Putting the views (drawings) on a sheet. Deleting the Department Legend on level 2. Changing the view numbers. Increasing the size of a view on the sheet – select the crop region, select Size Crop at the top, then change the width and height of the view.

Video 9 – Making adjustments before printing the sheet. Making an adjustment to eliminate some ghost lines from level 1 on the level 2 drawing. Printing the sheet.

BIM 201 – Intermediate course (86 videos):

Lesson 1:

Video 1 – Using Design Options – go to Visibility/Graphics Override, change view options if desired.

Video 2 – Steps to create a design option (bathrooms in this case) – delete rooms and room tags in the rooms that the design option will occupy (ignore the warning), select Design Options at the bottom bar, select New option set and rename it if desired, also rename the option(s) if desired, note that it’s set to Main Model at the bottom bar, change to Option 1 at the bottom bar and most everything goes grey, uncheck the Active Only box at the bottom enables work in the options area, click on all of the items that you want in the option set using the control key, click on Move to Option Set at the bottom bar, repeat all of these steps on level 2, select Design Options at the bottom bar and create a new option (option 2), on level 1 go to Visibility/Graphics Overrides, select Design Options, note that it’s set to automatic which automatically shows the Primary Option, switch to Option 2 and hit OK (ignore the warning) and level will show the design option 1 and level 2 will have the area blank, add a Room Separator at the hall to avoid conflicts with surrounding areas, also add a room separator on level 1 at the same location, on level 1 go to Visibility/Graphics Override, set to Option 2. Now it is ready to draw in the new layout.

Video 3 – Continuing with the Design Option – drawing in the new walls being sure that Main Model is switched to Option 2 at the bottom bar.

Video 4 – Adding bathroom partitions after selecting Component in the Architecture tab, download from Load Autodesk Families if the partitions aren’t already shown in the Properties tab, adjusting the size of the partition by selecting Edit Type and then selecting Parameters, then change the depth that the partition needs to be, then use the Move tool to put the partition in place, to adjust the width – measure the space, then Edit Type in the Properties tab, then change the parameter to the dimension that you measured. OR (preferred in this case), Modify the Family so that this is an Instance Parameter – select the partition, select Edit Family, go to Reference Level in the Drawings tab, select the Width Parameter dimension on the drawing, check the Instance Parameter box at the top, then Load it back into the project (for warning – select Override Existing Version), then you can adjust the width in the Properties tab as needed, then move into place using the Move tool. Use the Mirror/Pick Axis tool to copy it into the men’s bathroom using the center wall as the axis.

Video 5 – Adding the other partition in the women's bathroom. Removing the partition side panel in the Properties bar. Using the toggle to flip the partition around. Using the Move tool to set it in place. Adding the urinal screen in the men's bathroom. Adding the toilets in the women's bathroom by selecting Component in the Architecture tab. Using the Mirror/Pick Axis tool to place the men's toilet. Adding the urinal in the men's bathroom. Adding the lavatories. Select all of the elements (plumbing fixtures, partitions, and doors) and Copy them to Clipboard, then go to level 2 and use Paste Aligned to Current View to place everything on level 2.

Video 6 – Making adjustments to the door locations in the option. Adding a Handicap 'circle' – go to the Annotate tab, then select Detail Line and draw a circle with a 5' diameter using the Circle option, use the Hidden line type to make the line dashed, then move it to where it clears all other objects (doors, walls, fixtures), and then Copy the circle to the other bathroom.

Video 7 – Adding the rooms and room tags back into the option – select Room in the Architecture tab, note that while in the Main Model option (bottom bar) it uses the original design option regarding the room boundaries, change it to option 2 to be able to place rooms/room tags in the new option (disregard warning). Do the same things for both levels.

Video 8 – Creating a callout on level 1 of the design option area by selecting Callout in the View tab while being sure that Active Only (at the bottom bar) is off. Level 1 Callout will now appear in the Project Browser tab. Rename it to "Level 1 – Restroom option A". Then right click on "Level 1 – Restroom option A" in the Project Browser tab. Then select Duplicate with Detailing. Then rename that one to be "Restroom option B". Then select Visibility/Graphics Override and change Option 2 to Option 1 and hit OK. Change to Main Model (bottom bar) and go to Design Options in Visibility/Graphics Overrides and set it to Automatic and it will show the Primary Option. If you want to change the Primary option, go into the Design Options settings and select Option 2 to Make Primary (disregard warning). Changing the Detail Levels to Medium. Override the other option view by changing it from Automatic to Option 1. Changing the Option names from options 1 and 2 to options A and B. Option B should now be the Primary Option and Option A needs to be the original one (set that to option A). Set the other view to Automatic to always show the Primary Option. That will cause the room tags to disappear. Go to Annotate and then Room Tag to add them back in. On Option A, we had previously eliminated the rooms and room tags. Adding the rooms and room tags back in to Option A. Now, do all of those steps again for level 2.

Video 9 – Adjusting the settings for the views in preparation of putting them on a sheet – change the Detail Level to Medium, set the scale to 1/8"/ft. To make these changes to all of the views at the same time, select each of them in the Project Browser using the control key, then change the scale and detail level for all of them in the Properties tab. Tightening up the grid lines. Creating an 11" x 17" sheet and naming it. Putting the views on the sheet. Showing how to move things around on the sheet.

Video 10 – Printing to PDF. Setting the printing options.

Lesson 2:

Video 1 – Creating a new family from scratch. Open the "Casework – wall based" template. Changing the measurement parameters on the template.

Video 2 – Modeling a lower cabinet. On the Right Elevation view, use the Extrusion tool to draw a box – select Extrusion in the Create tab, use the Rectangle shape to draw a rectangle on the Reference Plane lines, lock all of the padlocks since we want the measurements to be constrained, then click the green Check to exit the edit mode. Adjusting the length and of the box we drew. Checking to see that everything moves along with changes to the dimensions on the reference planes.

Video 3 – On the Right Elevation drawing, we use the Extrusion tool (in Create tab) to create a toe kick. Drawing horizontal and vertical reference planes for the toe kick by selecting Reference Plane (RP) in the Create tab, then add dimensions for the horizontal and vertical reference planes, then select Align Dimension in the Annotate tab, then click on the horizontal Reference Level (not the geometry plane) and the horizontal reference plane that we just created, then do the same thing for the original vertical reference plane and the vertical reference plane that we just created, change the depth dimension to 3” and lock it so that it will never change, and then we set a parameter for the height dimension by selecting the dimension, then in the Modify/Dimensions tab click on the Label drop-down and note that “Toe kick” doesn’t exist yet, click the button next to the Label drop-down to create a new parameter, name the parameter in the Parameter Properties dialog box “Toe space height”, leave it as a Type parameter and click OK, then change the dimension on the drawing to 4”.

Video 4 – On the Right elevation drawing, select Void Forms and then select Void Extrusion, use the Rectangle tool to create a rectangle at the toe space, lock all of the padlocks, then finish the sketch by clicking the green check mark. By changing the height of the toe kick, you can verify that everything is correct if everything moves. Use the Align tool in the Reference Level drawing to stretch the toe kick out to 4’ long since 1’ is Revit’s default measurement, then padlock the dimension to lock the constraint. Opening the 3D view and double checking the Family parameters by selecting Family Types. Adjust the length in the dialog box to 6’ to confirm that it does get longer. Adjust the height to 2’ – 10” to confirm that it does get shorter. Adjust the depth to 3’ to confirm that it does get deeper and that the toe kick does move with it. Adjust the height of the toe kick to confirm that it does get taller. Then reset all dimensions back to their original dimensions.

Video 5 – Modeling an upper wall cabinet. On the Reference Level view, draw a Reference Plane horizontally across the length of the base cabinet, then draw a dimension from the reference plane we drew to “Reference Plane – Back Reference” (check bottom left bar when you hover over wall). Then select the measurement, click the button next to the Label button and name the new parameter “Upper Cabinet Depth” in the dialog box. Then change the dimension to 1’ – 2”. Go to the Right Elevation. Draw (2) horizontal reference planes for the wall cabinet. Draw dimensions from the floor reference plane to both the bottom and top reference planes of the wall cabinet. Set the bottom dimension to 4’ – 6” and the top dimension to 8’ – 0”. Create a box for the wall cabinet at the reference planes by using the Extrusion tool and the Rectangle tool in the Create tab. Then lock all 4 padlocks. Then finish the sketch by clicking the Green Check mark. Go to the Placement Side elevation view, Use the grip to drag the wall cabinet to the same length as the base cabinet. Then lock the padlock. To double check everything, go to the 3D view, select the wall cabinet, select Family Type, change the length to 6’ – 0” in the dialog box to ensure that everything moves together. Then change the length back to 4’ – 0”. Then change the depth to 2’ – 0” to ensure that everything moves and then switch the dimension back to 1’ – 2”.

Video 6 – To have a dotted line appear on the floor plans where the wall cabinets are located, go to the Reference Level view, select Symbolic Line in the Annotate tab, click the drop-down at

Subcategory and select Hidden Lines – Projection. Then uncheck the Chain box on the bar. Then draw a line along the reference plane at the front of the cabinet. Then lock both padlocks. To double check that the symbolic line moves with the cabinet – on the view, change the wall cabinet depth to 1' – 0" to ensure that the symbolic line moves with the cabinet, then change the dimension back to 1' – 2". Then change the length to 5' – 0" to ensure that the symbolic line moves. Then change the length back to 4' – 0".

Video 7 – To control the visibility of the individual cabinets (sometimes you may not always want both cabinets at the same location) – select the wall cabinet, click on Visibility Settings, uncheck the When Cut in Plan/RCP box, then click OK. You can also – select the wall cabinet, in the Properties tab in the Graphics section there is a Visible option, select the button to the right of the Visible option, a new parameter will need to be created since there are none listed in the dialog box yet, click the button at the bottom left corner of the dialog box and a new dialog box will appear, name the new parameter "Upper Cabinet", then select Visibility in the Group Parameter Under drop-down, hit OK twice. The Symbolic Line for the wall cabinet will also need to be adjusted so that it doesn't appear in instances where there is no wall cabinet – select the Symbolic Line, click the button to the right of the Visible option under Graphics in the Properties tab, select "Upper Cabinet" in the dialog box and hit OK.

Video 8 – Types can now be assigned to this Family before we load it into the project – select Family Types, name it "36"H x 24"D with upper" and hit OK, then do the same thing but name this one "36"H x 24D" and uncheck the "upper cabinet" in the Visibility section and hit OK, select Load into Project. Place cabinet into the drawing at the Breakroom, then select Edit Family, click on the length parameter, check the Instance Parameter box at the top and hit Save, click on "Overwrite the Existing Version" in the dialog box. Now, grips will appear on the cabinet and it can be stretched out to fit.

Video 9 – Adding furniture to the breakroom - select Component in the Architecture tab, select Table – Dining Round with Chairs in the Properties tab, place the table in 4 locations. Moving the Room Tag out of the way. Click on one of the tables and select Rotate at the top to rotate the table to a 45-degree angle. Rotate all of the other tables. Click on a table and then select Edit Family at the top. Showing how the family can be adjusted, such as by changing the diameter. It will automatically add chairs as the table size increases.

Video 10 – Creating a Work Station Family – select the File tab, select New, select Family, select Furniture Systems. Explaining why/how this needs to be created. Select file, select Open, select the Revit Families folder in the BIM 201 folder, select and open multiple files. Start by opening the chair, then select Family Types at the top, ensure that the Shared box is checked and hit OK. Repeat the same steps for the Standing Desk and file cabinet. Save the Reference Level view – select Save As in the File tab, then select Family, name it "Workstation" and select the folder to save it in. To load those 3 families into our Workstation Family – go to the chair view, select Load into Project at the top, select Workstation in the dialog box, then place the chair in the Reference Level view, close the chair view and go to the standing desk view, repeat the same steps as for the chair, and repeat all of the same steps for the file cabinet.

Video 11 – Loading the rest of the items for the workstation – select Load Family in the Insert tab, select Revit Families in the BIM 201 folder, select multiple files using the control key, select Open. Then select Component in the Create tab, select 3" x 36" Post in the Properties tab, place the Post, use the Align tool to set it in place. Repeat those steps for the 24" x 36" partition panel. Use Copy and

Create Similar (CS) to place additional panels using the Align tool (AL) to set them in place. Then select Component in the Create tab, select the 48” x 24” Standing Desk in the Properties tab and place the desk. Repeat those steps for the 72” x 24” Work Surface. Move the chair into place using the Space bar to rotate it. Then move the file cabinet into the corner. Click on Save, Overwriting the Existing Version in the dialog box.

Video 12 – Select Component in the Architecture tab in the level 1 view. Select the Workstation and place it using the Space bar to flip it. Use the Mirror/Pick Axis tool to add another workstation. Then select both of those workstations (using the control key) and use the Mirror/Pick Axis (MM) tool to add 2 more. And then Mirror it one more time for a total of 6 workstations. Create a vertical Reference Plane in the middle of the space. Select all of the workstations using a Crossing and drag them all to the center. Check the clearance dimensions on each side. Move the whole group to have at least 3’ on each side. Select the 4 bottom workstations and use Mirror/Pick Axis to create 4 more. Select those bottom 4 workstations and move them down 3’. Then select all 10 workstations and move them to where there is 3’ of clearance between the bottom workstations and the wall. Then Copy all 10 of the workstations. Select Paste (Aligned to Current View) in the level 2 view. Move the entire group of 10 workstations to where the bottom 2 workstations contact the wall on level 2. Move the room tag out of the room using the Leader option. Placing the cabinets on level 2 – select the cabinet in the Properties tab after selecting Component in the Architecture tab, place the cabinet, then stretch it across using the grips.

Video 13 – Select File, then New, then Family, then Family Templates in the BIM 201 folder, then select the Door Tag file. Draw a rectangle using the Line tool and then the Rectangle option. Set the horizontal dimension to ½” and the vertical dimension to 5/16”. Divide the box horizontally in half by using the Line tool in the Create tab. Then draw a vertical line from the bottom up to the midpoint line we just drew. Select Line in the Create tab. Select the Fillet Arc tool, check the Radius box and define the radius as 1/8”. Then select each of the 2 lines that make up the corners and it will round them all off.

Video 14 – Creating door tags - select Label in the Create tab. Select Door from the drop down in the dialog box. Then also select Mark. Then click the Add button in the top center of the dialog box to add Mark as a parameter name to the label. Enter 101 in the Sample Value of the Mark parameter. Then hit OK. 101 should appear in the drawing. Click on the number and use the directional arrows on the keyboard to center it. You can also change the label type from Opaque to Transparent if you want by selecting Edit Type in the Properties tab. Select Label in the Create tab again. Select Doors in the drop down. Select Width in the choices below that. Select the Units Symbol at the bottom center. Uncheck the Project Settings box, selects Inches from the drop down next to the Units line, change the Units Symbol to “ from the drop down and hit OK. Enter 36” into the Sample Value next to the Width parameter and hit OK. On the drawing, shrink the text box and center the text in the space. Then copy that label into the space to the right. Select that newest label and select Edit Label. In that dialog box, remove the width parameter by clicking the Remove button (middle center). Then add Height as the new parameter. Then go through the same process that we went through for the Width, except that on this one we need to set it to Fractional Inches and set the Sample Value to 84”. And for whatever reason (he screwed up), we go back to change the Width to fractional inches too by clicking on it, selecting Edit Label, and change it to fractional inches too. Then Save As / Family / and name it “Door Tag – Width Height”, and hit Save. Then select Load into Project and hit OK.

Video 15 – Placing the door tags – he prefers to use the Tag by Category in the annotate tab, but in this case we use Tag All - check the Door Tags box in the dialog box, check the Leader box and hit OK, drag all of the door tags into their proper positions by using the Move symbol on each tag. The reason that all of the tags are so far out of place is because he screwed up. On the original Door Tag drawing, our door tag was not centered on the drawing. It should have been moved to center before saving the drawing. To tag all of the windows – select Tag All, select Window Tags in the dialog box. Changing the Window Tag name to "A". Select Yes in the warning box. Then tag all of the doors and windows on the level that you didn't do yet.

Lesson 3:

Video 1 – Doing some housekeeping on our Save folder by deleting old incremental saves that aren't needed anymore.

Video 2 – Tagging furniture – select Tag by Category in the Annotate tab, select a table on level 1, select Yes on the dialog box asking if you want to Load a Furniture Tag, select Furniture Tag in the BIM 201 folder and Family Templates folder, then add the tag to the table. Note that the leader is already checked and you have the option to have the end Attached or Free End in the Properties tab. Free End gives you more flexibility. Hit Escape twice. Then click on the tag and type in T-1. Select "Yes" in the dialog box that pops up so that any additional tables that get tagged will automatically have the same T-1 designation. Click on the table and select Create Similar (CS) and then click on one of the chairs. Label the chair as C-3 and select Yes in the dialog box. Select Edit Type in the Properties tab to add a 1/16" dot on the end of the furniture tag leaders.

Video 3 – Select Tag by Category in the Annotate tab and click on one of the workstations, select "Yes" in the dialog box, select Furniture System Tag in the BIM 201 folder and Family Templates folder, add the tag to the workstation, label the tag WS-1, select Edit Type and add a 1/16" dot for the arrowhead. Select Tag by Category and click on one of the standing desks using the Tab key to cycle through the furniture choices, label it SD-1 and click Yes in the dialog box, Select Tag by Category and click on one of the file cabinets, label it FC-2, repeat those steps for the chair and label it C-1.

Video 4 – Tagging plumbing fixtures – move the Men and Women room tags out of the bathrooms, being sure that the Leader box is checked. Select Tag by Category in the Annotate tab and click on one of the lavatories, click Yes in the dialog box, select Plumbing Fixture Tag in the BIM 201 folder and Family Templates folder, add the tag to the lavatory, label it L-1, click Yes in the dialog box, use the Create Similar tool (CS) to tag the other lavatory, then tag the urinal, name it UR-1 and click Yes in the dialog box, then tag a toilet, name it WC-1 and click Yes in the dialog box, then tag the other 2 toilets, then add 1/16" dots for the arrowheads by selecting Edit Type in the properties tab.

Video 5 – Creating an enlarged Typical Office Layout plan – select Callout in the View tab, be sure that it is set to Floor Plan in the Properties tab, draw the boundary line around one of the offices on level 1, double click on the callout tag and it will open the view in a new tab, right click on Level 1 - Callout in the Project Browser and rename it Typical Office Layout, hide the grid lines by selecting them and then right click, then select Hide in View and Element, select Tag by Category in the Annotate tab and tag the desk, label it D-1 and click Yes in the dialog box, select Tag by Category and tag the task chairs, select Tag by Category and tag the shelving unit, rename it S-1 and click yes in the dialog box, select Tag by Category and tag the file cabinet, rename it FC-1 and click yes in the

dialog box, select Tag by Category and tag the executive chair, rename it C-1 and click yes in the dialog box, hide the Crop Region in the bottom bar.

Video 6 – Tag everything on level 2, most tags will all automatically have the right designations since they have already been used on level 1, select Tag by Category and tag the conference room table, rename it T-2 and click yes in the dialog box. Creating a Reference View for the Typical Office Layout – select Callout in the View tab, then check the Reference Other View box and select Typical Office Layout in the drop down, then draw in the callout. To remove the “Sim” label next to the callout – select Edit Type and delete “Sim” next to Reference Label and leave it blank.

Video 7 – Creating a sheet for the floor plans – select Sheet in the View tab, select the 30” x 42”, ensure that Detail Level is set to medium or fine and adjust the crop regions on the views to be placed, rename the new sheet to A2.1, drag the level 1 and Level 2 floor plans from the Project Browser and place them on the sheet, make adjustments as necessary to get everything aligned, drag the Typical Office Layout view from the Project Browser onto the sheet.

Video 8 – Creating the door schedule – select Schedules then Schedule/Quantities from the View tab, Filter everything except Architecture to shrink the selection list, select Doors and hit OK, the Schedule Properties dialog box will pop up, select Mark to add to Scheduled Fields (you can either use the Move button in the middle or just double click on Mark), then add the following: Type Mark, Width, Height, Thickness, Finish, Frame Material, Family, and Level to the Scheduled Fields, select the paper w/ yellow circle button in the middle to add a new parameter, name it Door Material in the dialog box, select the Type button to the right, select Text in the drop down under Data Type, select Materials and Finishes in the drop down under Group Parameter Under and hit OK, then move the new Door Material parameter up to just above Finish using the Move Up bottom at the bottom, repeat those exact same steps and name this one Frame Finish, move it up in the Scheduled Fields list to just above Family, then hit OK and the door schedule will open.

Video 9 – Organizing the door schedule – click on Edit next to Sorting/Grouping in the Properties tab, select Level in the Sort By drop down, check the Header box under Sort By, select Mark in the Then By drop down, hit OK, note that you can click on the door number and select Highlight in Model and it will take you to a view of that door, right click on the Level column and select Hide Column.

Video 10 – click and drag across the C, D, and E columns to highlight them and select Group Headers, Type in “Door Size” on the line above Width, Height, and Thickness, do the same thing for columns F and G and name them “Door”, do the same thing for columns H and I and name them “Frame”, change the “Frame Material” title to just “Material, change the “Frame Finish” title to just “Finish, stretch the J column a little bit wider so that the writing is all visible by dragging it to the right.

Video 11 – rename the Type Mark for door 101 to “AA” (it’s a double door) and hit OK in the dialog box, rename the Type Mark for door 102 to “B” and hit OK, rename the Type Mark for door 113 to “A” and hit OK, rename the Type Mark for door 211 to “C” and hit OK. On door 101 – enter ALUM under the Door Material column and FF under the Door Finish column and hit OK in the dialog box, enter ALUM under the Frame Material column and FF under the Frame Finish column and hit OK in the dialog box. On door 102 – enter WD under the Door Material column and hit OK (that will populate all of the doors that are Type Marked B, the Door Finish is set as an instance parameter and won’t populate all of the other Type B doors (you’d have to enter it on each one), it’s easier to go to the level 1 floor plan and select one of the Type B doors and right click on it, then select All Instances in Entire

Project, then enter PT-1 in the box next to Finish in the Properties tab, enter WD in the box next to Frame Material, the door schedule will now be populated in those categories for the Type B doors, then enter PT-1 under the Frame Material column and hit OK, on door 113 – enter ALUM and FF under both Door Material & Finish and do the same for Frame Material & Finish and hit OK, on door 211 – enter WD and PT-1 in those same columns.

Video 12 – click on Edit on the Appearance line in the Properties tab, check the Outline box and select Wide Lines and hit OK, click on “Door Schedule” at the top and highlight the text, select Font, change the Text size to 3/16” and check the box next to Bold and hit OK, go to the A2.1 sheet view, drag the Door Schedule from the Project Browser to the sheet, drag the side of the door schedule to make it wider so that all of the writing fits on one line.

Video 13 – Creating a Door Types Legend – select Legends and then Legend in the View tab, name it “Door Types Legend” and hit OK, select Detail Line in the Annotate tab, select Wide Lines and use the Line tool to draw a horizontal line about 36’ long, click on the Component drop down and select Legend Component, then click on the Family drop down in the thin bar at the top and select “Doors: Door-Curtain-Wall-Double-Storefront”, change the View in the drop down to “Elevation: Front” in the thin bar at the top, Change the Host Length dimension to 7’ – 0” in the thin bar at the top, place the door on the Detail Line. Repeat the steps above and select “Door : Single-Flush : 36” x 84”” and place it on the line, do the same thing again and select “Doors : Door-Double-Glass : 72” x 84””. Adding tags under the doors – select Text in the Annotate tab, select 3/32” Arial for the text in the Properties tab, draw a text box under the first door and name it “A – SINGLE STOREFRONT” and hit Enter to create a new line and add “AA – DOUBLE STOREFRONT”, drag the text box to center it, name the next door “B – SINGLE FLUSH”, and name the last door “C – DOUBLE GLASS”.

Video 14 - Add width and height dimensions to all 3 doors using Aligned Dimension (DL), click on the width and height dimensions text, check the box for Replace With Text and enter “PER SCHEDULE” on both the width and the height of each of the 3 doors, note that the B – SINGLE FLUSH door in the center should be dimensioned inside the door frame and the other 2 should be dimensioned to the outside of their frames. Add another text box to the glass at the first door and enter GL-1, hold the control key and drag that text to the next glass and it will copy, add another text box with “T” at the bottom of the glass, copy the “T” to the other glass, then select one GL-1 label and one T label (using the control key, then hold the control key while dragging those 2 texts to the door on the far right, change that one to GL-2, then copy and paste those two to the other door. Then go to the A2.1 view, drag the Door Types Legend from the Project Browser onto the sheet.

Video 15 – Creating a Multi-Category Schedule – select Schedules and then Schedule/Quantities in the View tab and hit OK on the first dialog box. Add Type Mark, Family and Type, Category, Count, and Cost to the Scheduled Fields and hit OK. Click on Edit next to Filter in the Properties tab. Select Category in the drop down next to Filter By. Select “Does Not Equal” in the next drop down to the right from Filter By. Select “Doors” in the drop down farthest away from Filter By. Select Category, Does Not Equal, and Windows in the 3 drop downs next to And. Select Category, Does Not Equal, and Curtain Panels in the 3 drop downs next to the next And. Select Category, Does Not Equal, and Casework in the 3 drop downs next to the next And. Select Category, Does Not Equal, and Specialty Equipment in the 3 drop downs next to the next And. Then hit OK. Then click Edit next to Sorting/Grouping in the Properties tab, select Category in the drop down next to Sort By, check the Header box, select Type Mark next to Then By, then hit OK. Enter $250 in the cost column to one of

the lavatories and click Ok in the dialog box. Enter $400 for the Urinals and $550 for the Water Closets. Add $2,500 for the Workstations, $900 for the SD-1 standing desks, $150 for the file cabinets, $500 for the T-1 tables, and $350 for the C-3 chairs.

Video 16 – select Edit at Sorting/Grouping in the Properties tab, uncheck the Itemize Every Instance box and hit OK, select Edit at Formatting in the Properties tab, click on Cost in the fields, select Calculate Totals in the drop down at the bottom and hit OK, select Edit at Sorting/Grouping in the Properties tab, check the Footer box and select Totals Only from the drop down, check the Blank Line box, check the Grand Totals box and select Title and Totals from the drop down, now go to the Formatting tab in that same dialog box, select Category and check the Hidden Field box, now go to the Appearance tab in that same dialog box, check the Outline box and change it to Wide Lines, and hit OK. Click on the Multi-Category Schedule title to highlight it, select the Font tool, change the font size to 3/16” and check the Bold box, then hit OK. Select Edit next to Fields in the Properties tab, create a new parameter by clicking the Page icon with the yellow circle, select the Check All button under the Categories list, change it from an Instance to a Type parameter by clicking the button, name it “Sorting”, change it to “Text” in the drop down for Data Type and hit OK, select the Filter tab in the Schedule Properties dialog box, he looks at it and doesn’t do anything, then hit OK. Enter an “X” into each of the Furniture items, Furniture System items, and Plumbing Fixtures items in the Sorting column and click OK on each dialog box. Select Edit next to Filter in the Properties tab, add another “And” filter field by selecting Sorting in the first drop down, leave the center drop down as Equals, enter “X” into the last drop down on the right and hit OK. Click Edit next to Fields in the Properties tab, select the Formatting tab in the dialog box, select Sorting in the Fields, check the Hidden Field box and hit OK, drag and stretch the columns wider on the schedule so that all of the words fit on one line. Go to the A2.1 sheet view, drag the Multi-Category Schedule onto the sheet from the Project Browser, drag and stretch the columns wider so that all of the writing remains on one line. To modify the schedule – right click on it and select Edit Schedule, select Edit next to Formatting in the Properties tab, select Cost in the Fields, change the Alignment to Right, click on the Field Format button, uncheck the Use Project Settings box, change the Unit Symbol to “$” and hit OK, and hit OK again.

Video 17 – Creating a Room Schedule – select Schedules and then Schedule/Quantities in the View tab, uncheck all of the items in the Filter list except Architecture, select Rooms in the Category list and hit OK. Add Number, Name, Floor Finish, and Area to the Scheduled Fields in the Schedule Properties dialog box, create a new parameter by clicking the page icon (with yellow circle) in the middle, name it “Material Cost Per SF”, change Data Type to Number, select Construction under Group Parameter Under and hit OK. Select the *fx* button (Calculated Value) in the middle to create another parameter, name it “Total Material Cost”, change the Type to Area, click on the browse button to the right of the Formula line, select Area and hit OK, add an * on the Formula line (after Area) to represent a multiplication symbol, then click on the browse button again and select Material Cost Per SF and hit OK, select the Sorting/Grouping tab in the Schedule Properties dialog box, select Number from the drop down next to Sort By, check the Grand Totals box and select Title and Totals from the drop down next to it, then go to the Formatting tab, select Area from the Fields, select Calculate Totals from the drop down at the bottom, then select Total Material Cost in the Fields, select Calculate Totals from the drop down at the bottom, then go to the Appearance tab, check the Outline box and change the drop down to Wide Lines, then go back to the Formatting tab, select Material Cost Per SF from the fields, select Right for the Alignment, select Total Material Cost from the Fields and select Right for the Alignment, select Material Cost Per SF from the Fields (AGAIN!), click the Field Format

button, uncheck the Use Default Settings box, select Currency next to Units, select 2 Decimal Places under Rounding and hit OK, select Total Material Cost in the Fields (AGAIN!), select the Field Format button, uncheck Use Project Settings, change Units to Square Feet, set Rounding to 2 Decimal Places, set Unit Symbol to None and hit OK, and hit OK again. Select the Isolate button at the top, select the room numbers that are remaining by pressing and dragging, select Delete at the top and click OK on the dialog box, select Show at the top. Enter “T-1” in the Floor Finish column and “18” in the Material Cost Per SF column for room 101.

Video 18 - Adding more info to the Room Schedule - enter “CP-1” in the Floor Finish column for each of the offices (you can find it in the drop down on each line after entering it once), enter “8” in the Material Cost Per SF column for each of the offices, enter “CP-2” and “8” for both Halls, “R-1” and “4” for each of the Stairs, “T-2” and “12” for both Men and Women, “LVT-1” and “10” for the Break Room, “CP-3” and “8” for both Open Offices, and “CP-2” and “8” for the Conference Room. Highlight the Room Schedule title, select Font, change the Font Size to 3/16” and check the Bold box and hit OK. Go to the A2.1 sheet view, drag the Room Schedule from the Project Browser onto the sheet. Spread the columns out by dragging them so that the writing fits on one line. Name the sheet “FLOOR PLANS, SCHEDULES, AND LEGENDS”.

Video 19 - Open the printer dialog, set Page Size to 30” x 42”, set Paper Placement to Center, Zoom to 100%, check the Hide Unreferenced View Tags box, click Export, select Yes in the dialog box, name it 30x42 and hit OK. Going back and making adjustments to Room Tag locations (being sure that the Leader box is checked), going through the printing process again.

Lesson 4:

Video 1 - Introduction to lesson 4.

Video 2 - Creating an Area Plan - select Area and then Area Plan in the Architecture tab, select Gross Building for the Type in the dialog box, hold the control key and select both Level 1 and Level 2 and hit OK, select “No” in both of the dialog boxes that pop up. *Open the Level 1 Area Plan in the Project Browser, select Area Boundary in the Architecture tab, select the Line tool, draw a line around the outside of the exterior walls of the whole building, select Area and then Area in the Architecture tab, place the Area tag in the middle of the building, repeat those same steps on Level 2. Since there are a couple of areas that are open to below, a couple of additional boundaries will need to be created on Level 2 - select Area Boundary in the Architecture tab, select the Rectangle tool, draw rectangles on the insides of the walls just where the stairs are, select the Line tool and draw the boundary on the insides of the walls and curtain walls at the open area in the Lobby. Then go to Area and then Area in the Architecture tab, place the Area tag in the middle of the building. Change the name of both Area tags to Level 1 and Level 2.

Video 3 - Hiding Sections and Grid Lines and adding Color Fill on the Area plans - The first option for hiding grid lines: select a grid line and then right click, select Hide in View and then Category. The second option is: open Visibility/Graphics Override (VV), select the Annotation Categories tab in the dialog box, uncheck the Elevations box and the Sections box and hit OK, turn on and adjust the Crop Region (bottom bar), turn off the Crop Region. To add Color Fill - either select Color Fill Legend in the Annotate tab or use the Color Scheme in the Properties tab. Select the space next to Color Scheme in the Properties tab and an Edit Color Scheme dialog box will appear, select the box under Color to open a Color dialog box, select a color and hit OK, and hit OK again and the color will fill in. Change

the Color Scheme Location in the Properties tab from Background to Foreground and hit Apply to color in the furniture. Instead of having to go through this whole process for Level 2, you can select View Templates and then Create Template from Current View in the View tab, name it “Gross Area Plan” in the New View Template dialog box and hit OK, hit OK after checking the parameters that will be included in the View Templates dialog box. *Select Gross Area Plan in the drop down next to View Template in the Properties tab, go to the Level 2 Area plan and do the same thing and it will fill with color too. Adjust the crop region on Level 2 and then hide the crop region.

Video 4 - Creating a sheet for the Area plans - select Sheet in the View tab, select the 30 x 42 Titleblock and hit OK, name the sheet “BUILDING AREA PLANS”, drag the Level 1 and Level 2 Area plans onto the sheet from the Project Browser, rename the Level 1 title to “Level 1 - GROSS AREA” and select “No” in the dialog box that pops up, Do the same thing for Level 2.

Video 5 - Creating the Gross Area Schedule - select Schedules and then Schedule/Quantities in the View tab, select Area (Gross Building) in the Category list on the New Schedule dialog box that pops up, hit OK, select Name and Area from the Available Fields list in the Schedule Properties dialog box, then select the Sorting/Grouping tab, check the Grand Totals box and select Title, Count, and Totals in the drop down next to it, select the Formatting tab, select Area in the Fields list, select Calculate Totals in the drop down on the bottom, select the Appearance tab, check the Outline box and change the drop down next to it to Wide Lines, hit OK and the Area Schedule (Gross Building) will open, stretch the columns wider by dragging them, highlight the “Area Schedule (Gross Building) title and select Font, change the font size to 3/16” and check the Bold box and hit OK. Go to the A2.2 Building Area plans view, drag the Area Schedule (Gross Building) onto the sheet from the Project Browser. Right click on the schedule and select Edit Schedule, select Edit next to Formatting in the Properties tab, select Area under Fields, change Alignment to Right and hit OK.

Video 6 - Creating the Rental Area plans - select Area and then Area Plan in the Architecture tab, select Rentable under Type, select both Level 1 and Level 2 and hit OK, select “No” in both dialog boxes that pop up. Open the Level 1 plan under Area Plans (Rentable) in the Project Browser, select Area Boundary in the Architecture tab and select the Line tool, draw lines around the whole building on the inside face of the exterior walls, draw lines around the stairs on the outside face of the walls, do the same for the Lobby and the bathrooms. Select Area and then Area in the Architecture tab, select Building Common Areas in the drop down next to Area Type in the Properties tab, tag the lobby and the bathrooms, select Major Vertical Penetration from the drop down next to Area Type in the Properties tab, tag both of the stairs, then change the Area Type to Office Area and tag the office area.

Video 7 - Change the text on the lobby Area tag to “LOBBY”, do the same for both Stairwells, Office Area, and Restrooms. Creating a View Template - select the space next to View Template in the properties tab, select Gross Area Plan in the Names list on the dialog box that pops up and hit OK, then select Gross Area Plan next to View Template in the Properties tab, select None under the Names list and hit OK. Select Color Fill Legend in the Annotate tab, place the Color Fill Legend on the drawing and hit OK on the dialog box that pops up, the colors will now be filled in on the drawing. To change the colors, select the Color Fill Legend, select Edit Scheme at the top, select Rentable Area in the list on the left, click on the color that you want to change and select it in the next dialog box and hit OK, select Apply to see the new color on the drawing, and hit OK. Select View Templates and then

Create Template From Current View in the View tab, name it “Rentable Area Plan” and hit OK, check that the correct parameters are checked in the View Template dialog box and hit OK.

Video 8 - Go to the Level 2 Area Plan (Rentable) view, select Area Boundary in the Architecture tab, draw the boundary around the exterior of the building on the inside of the walls, draw the boundaries around the stairs and the open area in the lobby and the bathrooms. Select Area and then Area in the Architecture tab, select Office Area next to Area Type in the Properties tab and place the tag in the office area, select Building Common Area next to Area Type in the Properties tab and place the tag in the bathroom area, select Major Vertical Penetration next to Area Type in the Properties tab and place the tag in both stairways. Change the area tag names to Stairwell, Restroom, and Office Area. Then select the space next to View Template in the Properties tab, select Rentable Area Plan from the names list in the Assign View Template dialog box and hit OK. Go back to the Level 1 Area Plan (Rentable) view, select Area Boundary in the Architecture tab, use the Line tool to draw a boundary for the exterior overhang in front of the lobby, select Area and then Area in the Architecture tab and place the Area tag, select Exterior Area next to Area Type in the Properties tab, rename that tag “Exterior”.

Video 9 - Preparing to place the Rentable Area Plans on a sheet - turn on and adjust the crop region and then hide the crop region, change the Rentable Area Legend from 1 column to 2 by dragging the bottom horizontal extent up until it automatically changes to 2 columns. Drag the Level 1 Area Plan (Rentable) from the Project Browser onto the A2.2 Building Area Plans sheet. Do the same thing for the Level 2 Area Plan (Rentable). Change the names on the titles to Level 1 (Rentable Area) and Level 2 (Rentable Area) and select No in the dialog box that pops up,

Video 10 - Creating a Rentable Areas Schedule - select Schedules and then Schedule/Quantities in the View tab, select Areas (Rentable) in the Category list on the New Schedule dialog box and hit OK, select Area Type, Name, Area, and Level from the Available Fields list, go to the Sorting /Grouping tab, select Level next to Sort By and check both the Header and Footer boxes and select Title and Totals in the drop down next to that and check the Blank Line box next to that, select Area Type in the drop down next to Then By, check the Grand Total box and select Title and Totals in the drop down next to it, go to the Formatting tab, select Area in the Fields list, change Alignment to Right, select Calculate Totals in the drop down on the bottom, select Level in the Fields list, check the Hidden Field box, go to the Appearance tab, check the Outline box and select Wide Lines, hit OK and the Area Schedule (Rentable) will appear. Drag the columns to widen them, highlight the Area Schedule (Rentable) title and select Font, change the font size to 3/16” and check the Bold box and hit OK. Go to the A2.2 - Building Area Plans view, drag the Area Schedule (Rentable) onto the sheet from the Properties tab, adjust the columns so that all of it is on single lines.

Video 11 - Showing how it works when you let Revit automatically create the boundary lines.

Lesson 5:

Video 1 - Introduction to lesson 5.

Video 2 - Modifying the curtain wall - go to the 3D view (very top bar), select the horizontal curtain wall grid line at the top of the door, select Add/Remove Segments from the top tab, add horizontal segments on each side of the door and hit the escape key, select Curtain Grid in the Architecture tab,

add a grid on the side wall at the same height as the one at the door. I stopped taking so many notes here since this is probably not very important for me to try to remember.

Video 3 - Continuing with modifying the curtain wall.

Video 4 - Continuing with modifying the curtain wall.

Video 5 - Continuing with modifying the curtain wall. Creating a new mullion profile.

Video 6 - Continuing with modifying the curtain wall.

Video 7 - Creating a new control joint profile.

Video 8 - Loading the new control joint into the project. Adding vertical control joints to the brick.

Video 9 - Adding horizontal control joints to the brick.

Video 10 - Creating a new profile for the metal coping on top of the parapet wall. Adding the metal coping to the top of the parapet wall.

Video 11 - Creating custom geometry for the ceiling. Creating an interior elevation view. Drawing a reference plane (RP).

Video 12 - Continuing to create the custom geometry for the ceiling. Using the Extrusion tool.

Video 13 - Creating a custom bench.

Video 14 - Continuing with creating a custom bench. Using the 3D section box to zoom into the bench.

Video 15 - Showing how walls can be set to slant at varying degrees.

Lesson 6:

Video 1 - Introduction to lesson 6.

Video 2 - Creating a Building Section. Adding a footing around the perimeter of the building. Using the Join tool to join the geometry of walls, floors, and roof on the elevation drawing. Adjusting the section cut lines.

Video 3 - Adding room tags to the building section. Creating a View Template of the Building Section. Using the Join tool to join the geometry of walls, floors, and roof on the elevation drawing. Adjusting the view depth of the building section view.

Video 4 – Creating a wall section of the exterior wall and added additional details.

Video 5 – Renaming the wall section “Wall Section 1”. Renaming the building sections.

Video 6 – Creating a new Drafting View and importing a CAD file of a Door Threshold.

Video 7 – Converting the AutoCad Door Threshold elements into Revit elements.

Video 8 – Continue with placing Revit details on the CAD Door Threshold detail.

Video 9 – Creating a footing detail.

Video 10 – Adding additional details to the footing detail.

Video 11 – Adding additional details to the footing detail.

Video 12 – Adding additional details to the footing detail.

Video 13 – Creating a Window Head detail.

Video 14 – Adding details to the Window Head detail.

Video 15 – Adding more details to the Window Head detail.

Video 16 – Preparing the sheets for printing.

**** I completed 163 videos at this point.

BIM 322 – Revit Plumbing (66 videos):

Lesson 1:

Video 1 - Introduction to the course. Opening Revit's Plumbing template file.

Video 2 - Linking in the Architectural background - select Link Revit in the Insert tab, select and open the MEP Architectural file from VDCI's folder. Checking to make sure that everything is lining up right - select Section in the very top bar, draw a vertical section across the building, right click on the section and select Go to View, select the level 2 elevation line and click on the dimension, change it to 13' - 0" to match up with the other Level 2 elevation. Go to the 3D view (at the very top bar), note that 2 of the levels are part of the Live Model and the other levels shown are part of the Revit link, select Copy/Monitor and then Select Link in the Collaberate tab, select the linked part of the Architectural drawing, then select Monitor in the panel above, click on level 1 of the live model and level 1 of the Revit link, a square symbol will appear in the middle which confirms that they are now linked, then do the same thing for level 2. Then select Copy in the panel above, click on all levels except levels 1 and 2, then hit Finish in the panel above. Hit Escape, and now all of those levels should be part of the live model now.

Video 3 - Go to the Level 1 Plumbing view, click on the model to highlight it, select Edit Type in the Properties tab, check the Room Bounding box and hit OK, then select Space in the Analyze tab and you can place Spaces manually OR you can select Place Spaces Automatically in the Modify/Place Space tab. Do the same thing for Level 2, Then select Space Naming in the Analyze tab, hit OK in the Space Naming dialog box. Creating a Space Schedule - select Schedules and then Schedule/Quantities in the View tab, select Spaces in the Category list and hit OK, select Level, Number, and Name in the Available Fields to add them to the Scheduled Fields, select the Sorting/Grouping tab, set Sort By to Level, set Then By to Number, hit OK and the Space Schedule will open, select all of the ones with the name "Space" (using the shift key) on both level 1 and level 2, select Delete in the tab above and hit OK in the dialog box that pops up.

Video 4 - Select the File tab and then Open. To find the file - go to My Computer/Local Disk (C)/Program Files/Autodesk/Revit 2026/Samples - select the Snowdon Towers Sample Plumbing file and hit Open. Go to the 3D view. To turn off all Revit Links - use the keyboard shortcut VV (Visibility/Graphics Overrides), select the Revit Links tab, uncheck all of them and hit Apply. Turn on Thin Lines (top bar). Showing the settings - select one of the cold water pipes, select Edit Type in the Properties tab, select Edit next to Routing Preferences, hit OK twice to get out of that.

Video 5 - Close all inactive windows and go to the Level 1 Plumbing view. Select Pipe in the Systems tab, select Edit Type in the Properties tab, select Duplicate, name it “Copper” and hit OK, select Edit next to Routing Preferences, set Copper - K Minimum Size to ¾” and Maximum Size to 6”, hit OK, and then hit Apply and OK in the other dialog box. Set the Middle Elevation in the Properties tab to -3’ - 6” (to be underground), change the System Type in the Properties tab to Domestic Cold Water, and change the Diameter in the Properties tab to 4”. Draw a vertical line into the Mechanical room and hit Escape. The pipe is not showing up on the drawing because the pipe is underground. It can be seen in the 3D view. Go back to the level 1 plan, select Edit next to View Range in the Properties tab, select Associated Level in the drop down next to View Depth Level and set the Offset to -6 - 0”, change the Bottom of the Primary Range to -4 - 0”. Hit Apply and OK. The pipe can be seen now.

Video 6 - select the Section tool at the very top and draw a vertical section next to the water main in the Mechanical room. Double click on the section tag to go to that view. Select Tile View (WT) in the View tab, close the 3D view and hit (WT) again, Right click on the Drag at the left end of the water main in the section view, select Draw Pipe and draw a vertical line straight up, change the Detail Level to Fine, adjust the vertical dimension to 9’ - 6”. Right click on the Drag, select Draw Pipe and draw a horizontal pipe to the left, set the plan view Detail Level to Fine too. Select the Split Element tool in the Modify tab, click 2 points on the vertical pipe in the elevation drawing, delete the section between the 2 points, also delete the couplings, drag the upper vertical pipe closer to the wall, draw a 45 degree offset on the lower pipe, Trim/Extend Single Element (TR) to join the 2 pipes together.

Video 7 - Go to the Level 1 Plumbing drawing, select Pipe in the Systems tab, double check that it’s the correct pipe type, system type, and elevation in the Properties tab, change the Diameter to 3”, change the Middle Elevation to 9’ - 6” in the bar just above the drawing, drawing some piping.

Video 8 - Change the size of the first branch to 2”, also change the line coming out of the end to 2”. To change the 90 to 2”, there are 2 choices - change the dimension on one side of the 90 to 2” (all sides will then change), or do a crossing over the 90, delete it, and use the Trim tool to join them together again. Then select Pipe in the Systems tab again, change the System Type to Domestic Hot Water in the Properties tab, draw piping to follow alongside the cold water main. Highlight both the hot and cold water tees using the control key, select Selection Box in the panel above, a 3D view of that area will open, change the Detail Level to Fine. Go back to the level 1 Plumbing plan.

Video 9 - Notice the colors of the piping. Click the + symbol next to Piping Systems within Families in the Project Browser to expand the group, click on the + again, select Domestic Cold Water and the data will appear in the Properties tab, right click on Domestic Cold water in the Project Browser and select Type Properties, select Edit next to Graphic Overrides, note that the Pattern and the Weight are not given - this is because they are currently governed by the Object Styles of the project under the Manage tab. Explaining what all of the other options are. Click OK twice to get out of the dialog boxes. Make a crossing (or “drag a window” as this instructor says) over a large part of the middle of the building, select Filter, click on Select None, select Pipe Fittings and Pipe in the Categories, hit Apply and OK, select Copy to Clipboard, open the level 2 Plumbing plan, select Aligned to Current View in the Paste drop down, change the Detail Level to Fine.

Lesson 2:

Video 1 - Select Pipe in the Systems tab, set the elevation to 10’ - 6”, this pipe can’t be seen because it’s above the View Range, select Edit next to View Range in the Properties tab, change the Top

Offset to 11’ - 0” and hit OK, drawing more pipes, change the Visual Style to Wireframe in the section view. Go to the 3D view, uncheck Section Box in the Properties tab to expand the view, note that you can also draw pipe in the 3D view. To change the pipe elevation on the 3D view - be sure to select the correct level next to Reference Level in the Properties tab. To Pin the Linked Revit Model so that you can be sure that you don’t accidentally move anything - select the whole drawing (everything should turn to blue except the plumbing), select the Pin tool in the Modify/Revit Links tab.

Video 2 - Click Open, select Water Heater in the Families and References folder and Open, select the Rheem Water Heater that I downloaded from Rheem’s website (since it is not in the folder that I downloaded from VDCI). Select File - then New - then Family - then Open Mechanical Equipment (template). Go ahead and save this - click File - Save As - Family - name it BIM - 322 - Water Heater - hit Save. Select Extrusion and then the Circle tool, draw a 13” radius circle, click Finish. Double click on Front View in the Project Browser, select Reference Plane (PR) in the Create tab, draw a horizontal line a few feet high, select Align in the Modify tab, click on the reference plane and the top of the cylinder and then lock the padlock, select Aligned Dimension (DI) from the Annotate tab, use the tab key to be sure that you’re attaching to the lower Reference Plane and not the Reference Level, then click, then click on the upper reference plane, select the top reference plane and then enter 6’ - 6” for the dimension. Then select the dimension string, click on Create Parameter (page icon with yellow circle at top, to the right of Label), name it “Height” and hit OK. To create a parameter for the width - go back to the Reference Level view, select the extrusion that we created, select Edit Extrusion in the top panel, select the dimension string, click on Create Parameter (page icon with yellow circle at top, to the right of Label), name it “Tank Radius” and hit OK. Click Finish (green check mark). Select Family Types in the panel above, note that the Height and Tank Width parameters can be seen and changed here, select Height and click Edit (pencil at bottom left of dialog box), rename it “Tank Height” and hit OK, and hit OK again.

Video 3 - Creating a water connection on the tank - select Extrusion and the Circle tool in the Create tab, draw a 2” radius circle in the middle and hit Finish (green check mark), open a 3D view, change the Visual Style (bottom bar) to Wireframe, raise the new smaller cylinder to the top, go to the Front view, then use the Align tool to align the bottom of the new smaller cylinder with the top of the tank and lock the padlock. Change the new extrusion height to 2” tall - select it, change the Extrusion End to 6’ - 8” in the Properties tab. To be sure that the small cylinder on the top always moves with the tank - select Reference Plane (RP) in the Create tab, draw a horizontal line above the top of the tank, use Aligned dimension (DI) to measure between the reference plane at the top of the tank to the new reference plane, set the dimension to 2” and lock the padlock, select the Align tool, click on the top reference line and the top of the small cylinder and lock the padlock. Go to the Front view, select Extrusion and the Circle tool from the Create tab, draw a 2” radius circle in the center about 2’ - 0” high and hit Finish, go to the 3D view, drag the bottom of the new cylinder up so that it protrudes from both sides of the tank, go to the reference level plan, drag the end of the new cylinder to just inside of the upper perimeter of the tank, drag the top of the new cylinder down until it’s just above the upper perimeter of the tank, go to the 3D view. Select Pipe Connector in the Create tab, click on the faces of each of the small cylinders, hit escape twice, select the top connector, select Domestic Cold Water next to System Classification in the Properties tab (He got this backwards. The connection at the top of the tank should be hot water), also set it to In for the Flow Direction (This is wrong too), select the lower connection on the side of the tank and set it to Domestic Hot Water with the Flow Direction set to Out (Wrong again). Select Join from the Modify tab, click on the tank and the lower connector on

the side. Save and then Load into Project. Place 2 water heaters in the Mechanical room using the Space bar to rotate them.

Video 4 - The instructor forgot to size the connectors on the water heaters. So click on one of the water heaters and select Edit Family in the panel above, click on the connector on top and change the diameter to 1" in the Properties tab, change the connector on the side to 1 ½", select Load into Project, select Yes in the dialog box asking if you want to overwrite. Draw pipes coming out of the side of the heaters (right click at the connector and select Draw Pipe), draw the pipes to connect the hot water. To connect the cold water - select Pipe in the Systems tab (PI), change the diameter to 1", change the System Type to Domestic Cold Water in the Properties tab, change the Middle Elevation to 9' - 6", draw in the pipes to connect the cold water to the heaters. Use the Align tool (AL) to make the offset and connect the 2 water main ends together.

Video 5 - Showing how to have a vertical drop automatically added - draw a line at one elevation, change the elevation, continue drawing a line and the vertical portion will automatically be added. Also showing - use the Tab (or Control) key to select multiple pipes, select the Section Box and it will open a condensed 3D view that only shows what was selected. Raised the water mains on both levels in the section view to get them above the ceiling. Creating drops for the individual sinks and using the Copy tool to duplicate them - create the first set of drops, use Tab select and the Control key or drag a window to select all of the pipes and fittings in the one drop, select the Copy tool and copy the drops to all of the other locations with the same orientation, then also copy to one of the locations with the opposite orientation, use the Rotate tool to rotate it 180 degrees, use the Move tool to put it in place, then use the Copy tool to copy the drops to all of the locations with that same orientation.

Video 6 - Select the Trim/Extend Multiple Elements tool in the Modify tab, select the main, and then select each branch to tie them in.

Video 7 - Note that you can use the Align tool to center a pipe drop in a wall. Draw the hot and cold water line branches running into the gang bathrooms, use the Tab key (just one click on each item) and Control key to select all of them and then Copy to Clipboard, then use Paste - Aligned to Selected Levels and select Level 2 to paste them on level 2. Use the Trim/Extend Multiple Elements tool in the Modify tab to tie in all of the branches to the water mains on level 1 and level 2.

Video 8 - Note that you can rotate sections.

Lesson 3:

Video 1 - The plumbing fixtures that are currently shown are part of the linked Architectural model. Using the Copy/Monitor function allows you to monitor changes that are made by the Architect and other trades. The Architect uses plumbing fixture families that do not have connectors on them. When loading Autodesk Families, note that there are 2 separate lists of plumbing fixtures - one that doesn't have connectors in the Architectural section, and one that does have connectors in the MEP section. Select Copy/Monitor and then Select Link in the Collaborate tab, click on the box that surrounds the building in the 3D view, select Coordination Settings in the panel above, set Copy Behavior to Allow Batch Copy, set Mapping Behavior to Specify Type Matching, then select Type Matching under Plumbing Fixtures in the Category list, we need to load more fixture families before we make changes to the In the Host Model list on the Coordination Settings dialog box that pops up, hit Save & Close,

select Cancel in the panel above. Select Load Autodesk Family in the Insert tab, select Plumbing in the Category list, select Lavatories in the MEP section, select Lavatory - Oval and Lavatory - Vanity, click on Load. Select Load Autodesk Family again, go up 2 tiers and select MEP in the Categories list, select Urinals, select Urinal - Wall Hung, click Load. Select Load Autodesk Family, go up 1 tier and select Fixtures, select Water Closets from the Categories list, click Toggle View Type to see a more detailed description of each fixture, select Water Closet - Flush Valve - Wall Mounted, click Load. Select Load Autodesk Family, go up 1 tier and select Fixtures, select Sinks from the Categories list, select Sink - Island - Single, click Load.

Video 2 - Hover over one of the classroom sinks in the 3D view, use the tab key to toggle until the sink is highlighted and then click, select Edit Type in the Properties tab to open the Type Properties dialog box, click OK. Select Sink - Island - Single in the Project Browser under Plumbing, then right click on the 18” x 18” - Public, select Duplicate, rename the new sink “30” x 21” - Public”, right click on it and select Type Properties, change the width to 1’ - 9” and the length to 2’ - 6” and hit OK. Select Lavatory - Vanity in the Project Browser, right click on 30” - 18” - Public, select Duplicate, rename it 48” x 18” - Public, double click to open the Type Properties dialog box, change the width to 4’ - 0” and hit OK. Now we are ready to set up Copy/Monitor - select Copy/Monitor and then Link in the Collaborate tab, then click on the blue boundary (Architectural link) on the 3D view, select Coordination Settings in the panel above, expand Plumbing Fixtures in the Category list, select Type Mapping under Plumb=ing Fixtures (** I had to change Mapping Behavior to Specific Type Mapping for Fixtures before I could get a Type Mapping option under Plumbing Fixtures in the Category list **), in the Host Column - change the Lavatory - Vanity to Lavatory - Vanity : 48” x 18” - Public, change the Lavatory-Oval-A to Lavatory - Vanity : Oval 25” x 20” - Public, change the Sink_Kitchen-Single to Sink - Island - Single : 30” x 21” - Public, change the Urinal-Wall Hung-A to Urinal - Wall Hung : ¾” Flush Valve, change Water closet - Wall Mounted to Water Closet - Flush Valve - Wall Mounted : Public - 1.6 gpf, * He said to click on Copy in the dialog box, but my Copy button wasn’t highlighted and I couldn’t click on it. So instead, I clicked on Save and Close. And then I clicked on the green check mark to Finish *. I finally figured out that I could use the Copy command in the panel above to select each fixture individually. It appears to be working correctly. When I move a toilet I get a warning from Revit - select Finish on the Copy/Monitor tab, select Coordination Review and then Select Link in the Collaborate tab, click on the Revit link (surrounding blue box outline), select Move Instance in the drop down next to the Relative Position of Two Fixtures Changed message, the toilet will move back to its original position and the Coordination Review will be cleared up, hit OK.

Video 3 - go to the level 1 plumbing view, place a Section on one of the classroom sinks, go to the section view, right click on the sink on the floor, select Select All Instances in Entire Project, select the Move command, click on the rim of the sink and on the top of the countertop, disregard the warning, hit Escape and right click on the sink again, select Select All Instances in Entire Project, move the sink by dragging it. Creating a gas system - go to Piping Systems under Families in the Project Browser, right click on Other, select Duplicate, rename it Natural Gas, right click on it and select Type Properties, click Edit next to Graphic Overrides, select the box next to Color, pick a Cyan color and hit OK on the 3 dialog boxes, set size and System Type, draw pipe.

Video 4 - Adding a gas meter - select Load Family from the Insert tab, select the gas meter from VDCI’s folder and hit Open, select Mechanical Equipment in the Systems tab (note that you can also select Component in the Architecture tab), place the gas meter using the Space bar to rotate it, go to

the 3D view, use a section to look at the meter, move the meter up 1’ - 0”, draw pipe from the Global Connectors on the gas meter.

Video 5 - Preparing to put the views on sheets - right click on Level 1 Plumbing and select Duplicate View and then Duplicate With Detailing, rename it “1 - Plumbing - Sheet View”, do the same thing for Level 2, right on Sheets (all) in the Project Browser and select New Sheet, select Load in the dialog box, select the 30 x 42 Horizontal from the VDCI download folder and hit Open, select it in the New Sheet dialog box and hit OK, rename it “P-101” on the sheet, rename the sheet “FIRST FLOOR PLUMBING” in the project browser and hit OK, right click on the sheet in the project browser and select Duplicate Sheet and then Duplicate Empty Sheet, renumber the duplicated sheet “P-102” in the project browser and rename it “SECOND FLOOR PLUMBING” and hit OK, drag the Level 1 Plumbing - Sheet View onto the P-101 sheet, change the View Scale in the Properties tab to 3/32” = 1’ - 0” and hit Apply, do the same thing for the Level 2 Plumbing. While on the P-102 sheet (with the view highlighted), name the Title on Sheet as “LEVEL 2 PLUMBING” in the properties tab. Do the same thing for the P-101 sheet. Turning off the elevations - click the view on the sheet, type VV (Visibility/Graphics Overrides), select Annotation Category, uncheck the Elevations box and hit OK. Creating a View Template - go to the Level 2 Plumbing Sheet View, type VV, uncheck Room Separators (if you have them), to be continued in the next video.

Video 6 - continued from the last video - right click on Level 2 Plumbing - Sheet View in the project browser and select Create View Template From View, name it PLUM-FLOOR PLAN and hit OK, hit OK again in the dialog box that pops up, then click on the box next to View Template in the Properties tab, select PLUM-FLOOR PLAN in the Names list and hit OK. Then go to the Level 1 Plumbing - Sheet View, click on the box next to View Template in the Properties tab, select PLUM-FLOOR PLAN and hit Apply and OK. Click on the box next to View Template in the properties tab, click on the box next to View Range in the dialog box that popped up, set the Top Offset to 12’ - 0” and hit OK twice. If you want the drawing to be a single line diagram for documentation purposes - click on the box next to View Template in the properties tab, change the Detail Level to Medium and hit OK. Create a Guide Grid to ensure that the different floor levels appear on their respective sheets in the same location on each sheet - select Guide Grid in the View tab while on the P-101 - FIRST FLOOR PLUMBING sheet view, make SURE that you’re not clicked into the view or the Guide Grid button will not work!, name the Guide Grid “Overall”, double click on the view, select Reference Plane (RP), draw horizontal and vertical reference planes from the top left corner of the building with the lines running out, right click and select Deactivate the View, select Move (MV), click on the corner of the building and one of the nearby grid intersections, reduce the size of the grid by dragging the sides until that one grid intersection is the only one that you can see, go to the P102 - SECOND FLOOR PLUMBING view, select Overall in the box next to Guide Grid in the properties tab and hit Apply, click on the view, select (MV), click on the corner of the building and then the Guide Grid intersection.

Video 7 - printing the project for the midterm grade.

Lesson 4:

Video 1 - Drawing sloped drainage piping - select Pipe Type in the properties tab, select Edit Type, select Edit next to Routing Preferences, change Elbow, Preferred Junction Type, Transition, etc. to the appropriate fittings and hit OK, change System Type to Sanitary.

Video 2 - Drawing pipe. Using the Section Box to adjust fittings (good example of rotating a fitting and using the Trim/Extend tool).

Video 3 - Using the Inherent Elevation setting to tie in the waste branches.

Video 4 - Drawing more pipe.

Video 5 - Showing an example of using the Align tool (AL) to center the pipes in the walls.

Video 6 - Drawing more pipe.

Video 7 - Changing the View Depth on level 2 so that the pipe below the floor becomes visible on level 2,

Video 8 - Drawing more pipe.

Video 9 - Working using the Tiled Window (WT) view.

Video 10 - Inserting P-traps on the lavatory drain connections.

Video 11 - Connecting water and drains to sinks and lavatories.

Video 12 - Connecting water and drains to the classroom sinks.

Video 13 - Connecting water and drains to the classroom sinks.

Lesson 5:

Video 1 - Aligning all of the pipes in the walls.

Video 2 - Connecting the water pipes for the classroom sinks using the Trim tool in the 3D view.

Video 3 - Changing the fitting types used - downloading Revit families and changing the Routing Preferences. Changing the fitting types that have already been drawn - right click on one fitting and then select All Instances in Project, click on the fitting type in the Properties tab and change it to the desired fitting. Connecting the classroom sink drains to the stacks in the 3D view. Turning off the Architectural link to see the plumbing system more clearly in the 3D view - select Graphics/Overrides (VV), uncheck the MEP Architectural box in the Revit Links tab.

Video 4 - Connecting more classroom sink drains in the 3D view.

Video 5 - Drawing the water pipe for the lavatories in the bathrooms.

Video 6 - Drawing the water pipe for the lavatories in the bathrooms in the 3D view. Using the Trim tool extensively. Using the System Browser - select User Interface in the View tab and then check the System Browser box, you can then see the system information regarding assigned/unassigned items and GPM flow rates.

Video 7 - Using Tab Select to change sizes of multiple segments of pipe, Using Create Similar to add a p-trap.

Video 8 - Connecting lavatory drains in the Section view.

Video 9 - Creating the sanitary vent system. Changing 1/4 bends to tees. Note that when transitioning to different system type (i.e. sanitary line turning into a vent) it works better in the Section view than it does in 3D.

Video 10 - Adding p-traps for the urinals. Setting a pipe length while drawing a pipe - enter the dimension after beginning to draw the pipe.

Video 11 - Running vents for the bathrooms. Selecting multiple pipes and setting the elevations at the same time.

Video 12 - Connecting the vents for the bathrooms. Changing a tee to a ¼ bend. Using the Trim/Extend Multiple Elements tool.

Video 13 - Running the vents up through the roof. Changing the stacks above the level 2 classroom sink connections to vent stacks - delete the segments first and then redraw them as vent pipes.

Video 14 - Drawing the vent stacks in for the classroom sinks. Adding ridiculous 'revents' for the level 1 classroom sinks.

Video 15 - Continuing to run the vent stacks for the classroom sinks through the roof. Assigning a color and a line style for the vent system - expand the Families group in the Project Browser, expand Piping Systems, right click on Vent and select Type Properties, click Edit next to Graphic Overrides, select a color, and then select Dash Dot Dot 1/8 (or whatever) for the Pattern.

Video 16 - Reviewing/adjusting the model for any issues or problems (checking in the 3D view). Adding insulation to the hot water system - use tab select in the 3D view to select the entire hot water system, select Add Insulation from the panel above. To adjust the appearance of the insulation - select Visibility/Graphics Overrides (VV), click on the box under Transparency in the Pipe Insulations row, change the Transparency to 75 (or whatever).

Lesson 6:

Video 1 - Creating new sheets - right click on Sheets in the project browser, select New Sheet, select the E1 30" x 42" Horizontal. Right click on the new sheet in the project browser and select rename. Set Number to P-001 and Name it PLUMBING TITLE SHEET. Then create 4 more new sheets. Note that you can also use the Function 2 key to rename the sheets, just as you can with renaming files and folders in Windows. Go to the Level 1 Plumbing Sheet view and select Callout in the View tab. Create Callouts around the water heaters in the mechanical room and also the gang bathrooms. Move the callout tags so that the leader winds up with an angle and a turn. Go to the level 2 Plumbing Sheet view and draw a callout around the gang bathrooms. Rename Callout 1 in the project browser to LEVEL 1 - ENLARGED MECHANICAL ROOM. Rename callout 2 to LEVEL 1 - ENLARGED BATHROOMS. Rename the callout for level 2 to LEVEL 2 - ENLARGED BATHROOMS. Go to the P-401 sheet and drag the 3 enlarged plans onto it. Creating a new View Template - select 1 of the views on the sheet and then select the Plumbing Plan in the box next to View Template in the properties tab, select the Duplicate button on the lower left corner of the dialog box, name it Plumbing Enlarged Plan - ¼", change the View Scale to ¼" and hit OK, and then for each of the other 2 views on the sheet - click on the view, select Plumbing Plan next to View Template and change the scale to ¼". Select all 3 views on the sheet and uncheck the Crop Region box in the properties tab. To change the titles on

each of the views - select a view on the sheet, type in your title in the box next to Title on Sheet in the properties tab.

Video 2 - Working on the new sheets. To hide the sections on the sheets - select View Template in the properties tab, select Plumbing Enlarged Plan in the Names list of the dialog box, select Edit next to V/G Overrides Annotation, uncheck the box next to Sections and hit OK. Putting space tags on the enlarged views - select Space Tag in the Annotate tab. Tagging the pipe sizes - select Tag by Category in the Annotate tab. Assigning pipe tag abbreviations - go to Piping Systems under Families in the project browser, select a piping system, right click and select Type Properties, type in your abbreviation in the box next to Abbreviation and hit OK. Editing the pipe tags - select a pipe tag, select Edit Family in the panel above, click on Size in the window and select Edit next to Label in the properties tab, select System Abbreviation in the Category Parameters list, (I also selected Spot Bottom Elevation), change the Sample Value next to System Abbreviation to "?", then add a space in the Suffix box next to Size and hit OK, then select Load into Project and Overwrite the existing version (I also checked the Break box on System Abbreviation, inserted "BOP= " in the Prefix for Spot Elevation, and put a "?" in the Sample Value column, and checked the Wrap Between Parameters Only box at the top. I also removed the 0 with the slash through it (denoting diameter) by selecting Mechanical Settings under the drop down for MEP Settings in the Manage tab, then selecting Pipe Settings in the list, and deleting the 0 with the slash through it on the Pipe Suffix line. I also horizontally aligned the writing to the left.). (I also rounded off the BOP dimensions to the nearest 1/8" on the pipe tags - select one of the tags and select Edit Family in the ribbon, click on the label in the window, select Edit Label in the ribbon, select Spot Bottom Elevation on the parameter list, click on the icon to the right of the E with the arrow pointed down, set the Rounding to the nearest 1/8"). (I also changed the settings to always put the pipe tag text horizontal - click on a pipe tag, select Edit Family in the ribbon, DON'T select anything in the view, uncheck the Rotate with Components box, then Load into Project and click OK on Overwriting).

Video 3 - Continuing to tag (TG) the pipe sizes.

*Video 4 - Tagging the fixtures - select Tag by Category (TG), clicking on a fixture won't produce anything on the tag without it being defined yet. To define the fixtures first - click on a classroom sink and select Edit Type in the properties tab, then enter "S1" in the Value next to Type Mark and hit OK, OR, click on the blank fixture tag and enter S1 (I also set my Leader Type to Free End and changed the leader arrowhead to 1/16" Dot Filled). Turning off the plumbing fixtures in the Revit link so that you don't accidentally select them - select the View Template in the properties tab, select PLUM-FLOOR PLAN in the Names list, select Edit next to V/G Overrides RVT Links, select By Host View under Display Settings, select the Custom button, select the Model Categories tab, change Model Categories to Custom in the drop down, uncheck the box for Plumbing Fixtures in the Visibility column and hit OK. To reveal the underground piping - select View Template in the properties tab, select Edit next to the View Range parameter, change the View Depth to -4' - 0" and hit OK (I kept mine the same because I wanted the underground piping on a separate sheet). Changing the line style for the underground piping to differentiate it from the above ground piping - create a Filter first - select the View Template, select Edit next to V/G Overrides Filters, select Edit/New at the bottom left corner, select New (page icon w/ yellow circle), name it Underground Piping and hit OK, check the Pipes box in the Categories list, select Upper End Centerline Elevation in the drop down next to Pipes under Filter Rules, select Is Less Than in the drop down under Pipes, enter 0' - 0" in the box to the

right and hit OK, then select Add and choose Underground piping and hit OK, click on Override under Lines, select Dash 1/16” in the drop down for Pattern and hit OK. Adding Spot Slope tags. Adjusting the View Range in order to hide/reveal piping below floors.

Video 5 - Using the Add/Remove Host tool to tag multiple pipes/fixtures with one tag.

Video 6 - Continuing to tag pipes, fixtures, gas meter, and water heaters. Adding Text Notes (such as for pipes going up or down) - select Text (TX) in the Annotate tab, change the text font size to 3/32” in the properties tab.

Video 7 - Creating Section Views to put on the sheets. Creating a Sub Discipline parameter so that the section views can be sorted - select all of the section views in the project browser, select Plumbing in the box next to Sub-Discipline in the properties tab, click on each of the sections individually and name them in the box next to View Name in the properties tab. Set the scale to 1/8” = 1’ - 0” in the properties tab for each of the section views on the sheet. Creating a View Template for the elevation drawings - right click on one of the sections in the project browser and select Create View Template From View, name it Plumbing Section - 1/8” and hit OK, hit OK on the other dialog box too, then click on the box next to View Template in the properties box, then select Plumbing Section - 1/8” and hit OK, then apply that same View Template to any other section views by clicking on it in the properties tab. Putting pipe tags on the elevation views. Putting Space Tags on the elevation views.

*Video 8 - Creating a 3D isometric view for the sheets - right click on the 3D view in the project browser and select Duplicate View and then Duplicate with Detailing (He didn’t say to do this, but you also need to turn off everything except plumbing items in Visibility/Graphics Overrides.). Rename the 3D (Copy) view to PLUMBING ISOMETRIC in the project browser. Change it to a Coarse detail level. Crop the view. Go into Visibility/Graphics Overrides (VV) and uncheck the Levels box in the Annotation tab and hit OK to turn off the level lines in the 3D drawing. Create a new sheet for the isometric view and name it P-701 and PLUMBING ISOMETRIC. Put the 3D view onto the sheet. Locking the 3D view so that it can be tagged - click on the Lock 3D View button (little house) at the bottom left. Using the Tag All tool to tag all of the fixtures on the 3D drawing - select Tag All Not Tagged in the Annotation tab, select Plumbing Fixture Tag, check the Leader box and set it to ¼” and hit OK. Changing the detail level of the plumbing fixtures to Fine on the 3D view while leaving all of the piping set to coarse - go to Visibility/Graphics Overrides (VV), change the Detail Level for Plumbing Fixtures to Fine and hit OK.

Video 9 - Continuing to tag the fixtures on the 3D view. Creating a Scope Box.

Video 10 - Duplicating the 3D view. Rename it TITLE SHEET IMAGE. Select Visibility/Graphics Overrides (VV), turn back on the Revit Link by checking the box next to MEP Architectural in the Revit Links tab, then uncheck all boxes in the Annotation tab and hit OK. Then put the Title Sheet Image onto the Title Sheet and change it to 1/16” = 1’ - 0”. Adding the Legend to the Title sheet - select Insert From File in the Insert tab, go to the Families and References folder in the BIM 322 folder and open the Details and Schedules file, then select Water Hammer Arrestor, Trap Primer, Standard Valve Detail, and the Plumbing Legend and hit OK, hit OK on the dialog box that pops up, change the Discipline for each of those items to Plumbing in the properties tab, then put each of them onto the Title sheet. Remove the title on the Plumbing Legend view on the Plumbing Title sheet - click on the legend, select Edit Type in the properties tab, select Duplicate and rename it No Title, change the box

next to Title to None, uncheck the box next to Extension Line and hit OK. Adding the details to the Detail sheet.

Video 11 - Explaining the benefits of saving detail views for use on other projects. Creating a plumbing fixture schedule - select Schedules and then Schedules/Quantities in the View tab, select Plumbing Fixtures in the Categories List and hit OK, select Type Mark, Family, Type, Manufacturer, Model, Type Comments from the Available Fields list, select Type Mark next to Sort By in the Sorting/Grouping tab, change Alignment to Center for the first 4 items in the Fields list in the Formatting tab, check the Outline box and change the line weight to DETAIL LW 3 in the Appearance tab, change the Title Text to ¼" Arial, the Header Text to 3/32" Arial, and the Body Text to 3/32" Arial and hit OK. Select Edit next to Fields in the properties tab, uncheck the Itemize Every Instance box in the Sorting/Grouping tab and hit OK. Expand the columns on the fixture schedule as needed. Adding Manufacturer names for the fixtures. Change the titles for each of the columns to MARK, DESCIPTION, SPECIFICATIONS, MANUFACTURER, MODEL, COMMENTS. Change the title to all capital letters.

Video 12 - Putting the schedules on the Schedules sheet. Creating a Mechanical Equipment schedule - select Schedules and then Schedule/Quantities in the View tab, select Mechanical Equipment in the Category List and hit OK, select Mark, Family, Manufacturer, Model, and Type Comments in the Available Fields list and hit OK, select Edit next to Sorting/Grouping in the properties tab, select Mark next to Sort By, uncheck the Itemize Every Instance box and hit OK, select Edit next to Appearance in the properties tab, check the Outline box and set it to DETAIL LW 3, set the Title Text to ¼" Arial and 3/32" Arial for Header Text and Body Text and hit OK, change the column headings to MARK, DESCRIPTION, MANUFACTURER, MODEL, and COMMENTS, change the title to all capital letters. To change the name in the Description column - right click on the item in the Families area in the project browser and rename it. Select Edit next to Formatting in the properties tab, set the alignment to Center for the top 4 items in the Fields List and hit OK. Put the Mechanical Equipment Schedule onto the Schedules sheet.

Video 13 - Editing the font size for the sheet name label - click on the sheet and then select Edit Family, select the Sheet Name on the sheet and change the font size by clicking Tag Label in the properties tab. Printing the sheets for the final.