Apperson Hall Renovation: Exterior Walls and Floors

The following lab has been developed for CCE203, and covers items relative to the course requirements. For additional information, training, and tutorials visit Autodesk - Revit Architecture.

Determining Distances from Digital Plans

One of the easiest methods for determining quantities, estimating lengths, and creating a model from 2D plans is to use On-Screen Takeoff. This program is pre-loaded into all engineering computers and offers a suite of tools used to determine areas, lengths, radii, and angles for creating your model.

Placing Walls

1. Navigate to your First Floor Plan and select Wall under Home Tab > Build > Wall > Architectural Wall. With Exterior CMU on Mtl. Stud highlighted, select Element Properties > Edit Type… > Duplicate… and name the new wall > Stone Wall with Metal Studs
2. Next, Select the Edit… button next to Structure and set the following parameters:
   A. Edit Structure dialogue and change the thickness values to match what is shown below. Remove the Plywood layer by right clicking and deleting > ok

B. Create a new material for the stone by clicking the 3 dots
   Then click the circle with the plus sign
And choose duplicate selected material. Name it Stone or something similar. This will allow you to make a material that looks most like the stone wall we have on Kearney.

C. Next select the Appearance tab and change the Image type by clicking on the file name below the Image. You can now choose what the rendered stone looks like. Try to find one that looks like the stone on Kearney!

D. Ok > takes you back to the Instance Properties dialogue and specify a Base Offset value to -4’ 0” (this is an arbitrary assumption of the depth of the wall beyond grade. This exterior wall will be used for the first two floors of the building. Set Top constraint to level 3. The 3rd floor has a stucco veneer and not the stone work. So a new wall type should be created. The process is similar to what we did in this exercise. However, the stone will not be used and in its place stucco. To get the details for the exterior walls can be found on Sheet A000 Detail 1 A-L

3. Trace out the exterior wall perimeters according to dimensions taken from sheet S101. Pay particular attention to the Location line information displayed in the Options Bar and place around the footings. Try Location line – finish interior and place walls around footings. For
the bay windows you can create construction lines to help. To create lines > Annotate > Detail > Detail Lines. These are temporary lines that should be deleted.

4. Next we have Shear Walls that are used to help resist lateral loads on the structure. These walls are located here:

Use the Structural Wall, basic wall duplicated it and make it Shear Wall. Thickness is set to 10 in by entering the Edit Type menu. These walls will go all the way up to the roof (verify level from plans). Set the base constraint and base offset the same as the exterior walls, set the top constraint to the roof.
**Note:** Along grid lines A and F and grid line 2 (reference image above) the north and south sections of the exterior stone wall does **NOT have metal studs**. Along these sections use only stone wall (make a new wall type) and add interior Shear Walls here.

**Kearney Floors**

The Floors on the first floor of Kearney hall have different elevations! So we have several different floors to create for the First floor. Pictures below illustrate where the different elevations are located and also the different floor thicknesses. To create different floor thicknesses the process is nearly the same as we did for creating walls. Duplicate the basic floor type and edit the features.

To place a floor – Architecture tab – the software goes into a sketch mode, set Height Offset from Level as noted in instructions below, and check box (in top options) Extend into wall core. Select the Draw tool of your preference, such as pick walls or pick lines. Close floor (floor must be closed...no gaps or overshoots) and select the GREEN check to finish.

First Floor Flooring (S101): inside stair well, 4” concrete slab on grade (S.O.G.), which means base constraint is level 1, height offset 0’ 5 1/2”
First Floor Flooring: 4” concrete, height offset 0’-0” should +2’-6 1/2”

First Floor Flooring: 4” concrete, height offset -2’ 6 ½”...Should be 0’-0”
2nd and 3rd floors – 1/8” metal decking with 6” concrete, See S603

ROOF: S111 and S605, 2” metal deck with 2 locations of 4” concrete.
BUILT UP ROOF w/ LIGHT GA. METAL STUD FRAMING ABOVE STRUCTURAL FLAT ROOF, TYP. ALL FOUR SIDES. REF. ARCH. DWGS. AND 1&2/S&D5, TYP.