



ARCH 2330

BUILDING TECHNOLOGY III

Fall 2012

Assignment Number: viii, collaborative research exterior façade

Computer Program(s): Revit, Web Browser, Excel and or Word, and Blackboard

Student Learning Objectives:

Upon successful completion of this assignment, the student will:

1. Create an appropriate enclosure system for your model
2. Gain an understanding of researching building assemblies
3. Learn the requirements for exterior cladding
4. Gain an understanding of a particular cladding assembly.

Assessment:

To evaluate the student's achievement of the learning objectives, the professor will do the following:

1. Assess quality and appropriateness of the exterior assemblies researched
2. Evaluate the students comparative assembly chart
3. Check that the required drawing details have been researched and included.
4. Evaluate the drawings study drawings to see if they show understanding of the assembly.
5. Check the quality and completeness of the assembly created for their BIM models.

Project Description:

Students will be divide into groups of three or four. Each group students will research several exterior wall systems. The research system will be used develop your projects enclosure and façade details. All work must be shared among them members. Work and research for this unit will be posted up to the classes open lab website. The project will consist of four parts.

Part one: Each student will identify a different manufacturer of their assigned category of exterior wall system. They will research and collect documentation on the components of your system and the way in which they function. The collected documentation must include the manufacturer's information, specific type specifications and construction details. The details should include at least the typical wall section, a typical corner, and opening (window) header detail.

Wall types: (to be assigned to groups by the professor)

1. EIFS (Exterior Insulation and Finish Systems)
2. Storefront and spandrel wall
3. Masonry wall system; brick veneer
4. Masonry wall system; CMU
5. Metal panel
6. Precast; brick panel
7. Precast; concrete panel
8. Terra-cotta rainscreen
9. Thin stone veneer panels

Part two: The students will compare their exterior wall systems and weigh the merits and disadvantages of each. The comparison must evaluate at least three different systems. This analysis should look at the systems in the context of the building they will be covering. Each team must create a chart with your cladding systems and rating at least four at your attributes for comparison. A some example of attributes for comparison are the insulation rating, ease of construction, assembly cost, availability of construction details, durability, and damp proof,/waterproof details. At the end of the analysis one manufacturer for all teams member's exterior wall assembly needs to be selected. All research and detail material should be archived for your own use as you develop your drawings/projects. Each student must keep a copy of the comparison and the researched documentation.

Part three: Each individual student will go into the neighborhood and sketch a building that uses a wall assembly identical (or as close as possible) to the system type they have selected for their project. Look for the buildings under construction as sketching opportunities. These buildings may allow you to see inside the wall assemblies. Include the address of your building subject on your drawing(s). If you are unable to find your particular system under construction sketch building openings (Windows and doors) and corner conditions to investigate the way the material wraps the building. Include the address of the building being sketch on the sketch.

Part four: Take the system that you have researched and selected use it to clad your building project. Construct a new wall system from scratch in Revit. Use your research material to make it as specific as possible to the selected manufacture. Include manufacturer information and model types in your Revit wall type. Create a 3D oriented view detail of your wall assemblies and post it. Note this drawing will be developed further to show various conditions in the building it will include more details and labels.

Process:

1. Divide into research teams assigned by the Prof.
2. Each team member researches a specific manufacturer
3. Each team member collects general data and required details
4. Teams compare the wall systems and chart their results.
5. The teams chart is submittal (indicate clearly the selected system).
6. Each team selects one assembly manufacture/system for use in their projects.
7. Document the following details of your assembly for your project:
 - a. the typical wall section detail (how the system attaches to your structure)
 - b. a typical corner detail
 - c. (window) head detail w/ flashing
 - d. (window) Jamb detail w/ flashing
 - e. (window) Sill detail w/ flashing
 - f. manufacturer's technical specifications
8. Option Consider include the following recommended:
 - a. Interface between interior and exterior wall
 - b. Vertical expansion joint
 - c. Typical round penetration
 - d. Typical square penetration
 - e. Through wall flashing
 - f. Outside corner detail
 - g. Wall to balcony transition
 - h. Horizontal interface between barrier and drained wall
 - i. Vertical interface between barrier and drained wall
9. Save the research in a research folder with your project (each team member needs a copy of this material)
10. Post your research and chart to the open lab website

11. Research where you can find similar buildings under construction or recently completed.
12. Visit the site and make sketches including the address of the sketch building
 - a. create two sketches if the building is under construction
 - b. create 4 sketches if you have only access to Windows and corners
13. Post your sketches up to the open lab website in the sketches area

14. User research to construct a new Revit wall type for your project
15. Draw a detail callout on your plan of your new exterior wall type.
16. Use the call out to create a 3D oriented view detail of your wall assemblies
17. exploring your view 3-D detail as an image (JPEG) file
18. Post your work up to the open lab website

Submittals:

System comparison chart
Researched exterior assembly data
Hand sketches (2 under construction or 4 existing)
3D view detail of your wall assembly

Optional submittals:

Additional analytical research sketches

Reading assignment:

http://www.wbdg.org/design/env_wall.php