



ARCH 2431 BUILDING TECHNOLOGY III

MATERIALS RESEARCH & FAÇADE STUDIES

**Overview:**

This assignment is a third of your semester and represents 30% of your final grade. Each student will select two manufacturers of façade materials, one **Opaque material** and one **Glass Curtain Wall**.

**Opaque Materials** (stone panels, metal panels, rainscreens etc.)

- *Masonry & precast concrete facades are not permitted as these are covered in other courses.*

**Glass Curtainwall:** For the glass curtain walls you will select one option from the either **Glass Curtain Wall Systems** (stick system or unitized system) or **Structural Glazing Systems**.

- **Glass Curtain Wall Systems** are those that are used for the façade of a multi-story building where the curtain wall attaches to the slab edge.
- **Structural Glazing Systems** are typically used for Atriums or Airports or other locations where a multi-story indoor space is required. These systems typically connect to a secondary structural system of steel columns and beams.

You will be provided with a Revit template file to complete the two studies. This template will ask you to apply each of the materials to a two-story façade with parapet, that includes both inside and outside corner plan conditions. In section you will study the assembly from the base at the ground floor, to the middle condition to the connection at the roof & parapet.

**Analysis:**

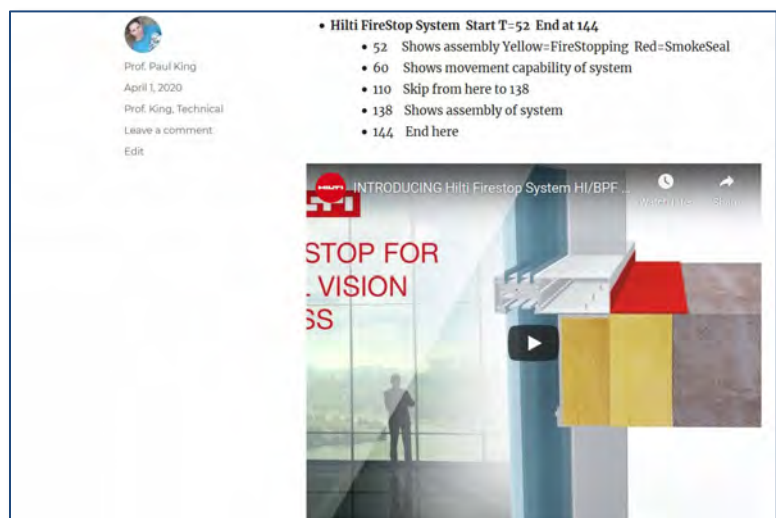
When looking at the façade you should focus on 6 primary questions which your drawings & presentation must address.

- How does it function structurally?
- What is the waterproofing strategy?
- How does it function thermally?
- How is it fireproofed?
- How does it allow for movement? (expansion and contraction) & (assembly adjustment)
- What was the order of assembly & installation?

**Materials Case Studies:**

We will begin with case study research on the two systems. As you conduct your research look to answer questions as to how the façade material connects back to a steel building structure? What are the advantages/disadvantages of the specific system and what is the process of assembly, installation and construction?

Locate **YouTube videos** of the product to aid in your understanding. Write a timeline outline to highlight the critical points.



Sample YouTube Video with timeline outline



**Pinup Requirements:** Our work will be reviewed in a series of class pinups using **Miro.com** or in-person class posted pinups.

- **Pinup #1** – Case Study Presentations – Opaque and Glass Curtainwall - graded
  - Create a series of slides in PowerPoint or any program you choose – export each slide as an individual PDF and set them up in frames, so you can use Miro’s presentation mode.
  - Locate a YouTube video of the product. Write a timeline outline to highlight the most critical points.
  - **Post to Miro** (post both your slideshow and your YouTube video)
  
- **Pinup #2** – Opaque Mockup
  - Use the Revit template and layout your study in either horizontal or vertical format
  - Add wall section and plan details (remember to consider groups of 4 – plan, elevation/section, isometric)
  - **Post to Miro**
  
- **Pinup #3** – Glass Curtainwall Mockup
  - Use the Revit template and layout your study in either horizontal or vertical format
  - Add wall section and plan details (remember to consider groups of 4 – plan, elevation/section, isometric)
  - **Post to Miro**
  
- **Pinup #4.1, 4.2, 4.3 . . .** – Progress Pinups both studies
  - Weekly progress on both studies **posted in Miro**
  
- **Pinup #5** – Pre-Final Review
  - Class pinup and pre-final review of both studies
  - Preview of Process of Construction “Animation” (Use this tool <https://gifmaker.me/>)
  - Preview of PowerPoint/PDF Materials Case Study Presentation
  
- **Pinup #6** – Final Review both studies- graded
  - Materials Case Study Presentation
  - Façade System Drawings & Presentation
  - Process of Construction “Animation” (Use this tool <https://gifmaker.me/>)
  - **All Posted in MIRO**

#### **Revit Specific Tasks:**

- **Customize the titleblock.** For this presentation we will use a customized titleblock 22 x 60 in either horizontal or vertical format. Customize this family and add course and individual information to the titleblock. You may have to adjust locations of lines, etc. Add Personal Information (portrait photo & name), Class Information (Course Name/Number & Professor) and Sheet Information (Sheet number/name) to all titleblocks
- **Project Browser Cleanup** - When you create new views either using duplicate or creating new views as callouts, sections or elevations, be certain to rename these views appropriately.
- **Revit File Name** – Each of you must name your Revit file in the format (Firstname.LastName ARCH2431 Façade Studies Semester-Professor.rvt) File name for a student named Louis Sullivan in Prof. King’s Fall 2020 class would be **(Louis.Sullivan ARCH2431 Façade Studies FA20-King.rvt)**

#### **MIRO & Pinups -**

- We will be conducting “virtual pinups”, using a shared pinup board hosted on **Miro.com**. We may also conduct a live pinup in the classroom. You will not be required to create an account to work with Miro. The pinup space will be provided for you with a single frame for each of you. You will need to rename this frame to claim your pinup space and you will duplicate and place each additional sheet below, creating a vertical column of sheets for each student.
- To post your work in Miro - print each sheet from Revit to a separate PDF and then paste it onto the frame
- For PowerPoint style presentations you will need to print each slide to a separate PDF and post it, in order to Miro
- YouTube Videos can be embedded and linked in Miro

### Grading & Rubric:

- **Grading:**
  - You will receive grades for your first material case study presentation and your final presentations.
- **Rubric:** Assignments will be graded on the following criteria. Additional criteria may be given during discussions. There are three primary components to your presentation, your materials case study, your two façade studies and your process of construction “animation”
  - **Materials Case Study Presentation** – (PDF/PowerPoint) Highlights the systems of your façade studies.
  - **Façade System Drawings Pinup Presentation** – The primary goal is for your drawings to speak for themselves. Do the drawings demonstrate a clear understanding of the façade system presented? Have you included a complete explanation in the form of details with annotation?
  - **Process of Construction “Animation”** – Have you demonstrated a clear understanding of the process of construction of your two façade assemblies? For this presentation you need to clearly describe your façade using the following categories – these should be color coded. (Use this tool <https://gifmaker.me/>)
    - Structure **(Green)**
    - Waterproofing **(Blue)**
    - Thermal **(Orange)**
    - Fireproofing **(Red)**
  - **Oral Presentation** – Students ability to describe what has been drawn.

### Archive Submission:

- In addition to class Miro pinup boards, each student will need to post the completed final assignments in blackboard. For these submissions, you must combine the individual PDF files into a single PDF and then upload this to the proper directory in blackboard. You must also include your Revit file. All of your Revit family files are embedded in your main project file and should not be uploaded as part of this submission.
- Failure to submit the archive file on a timely basis may lower your grade.
  - **Pinup #1** – Original Materials Case Study Presentations – Individual – Graded (PDF)
  - **Pinup #6** – Final presentation. Final submission must include your Materials Case Study Presentation, your Façade System Drawings and your Process of Construction “Animation” These can be uploaded as (3) three separate PDF’s to blackboard. Also include your façade Revit file.