



ARCH 2431 BUILDING TECHNOLOGY III

STEEL BUILDING CASE STUDY & DRAWING SET

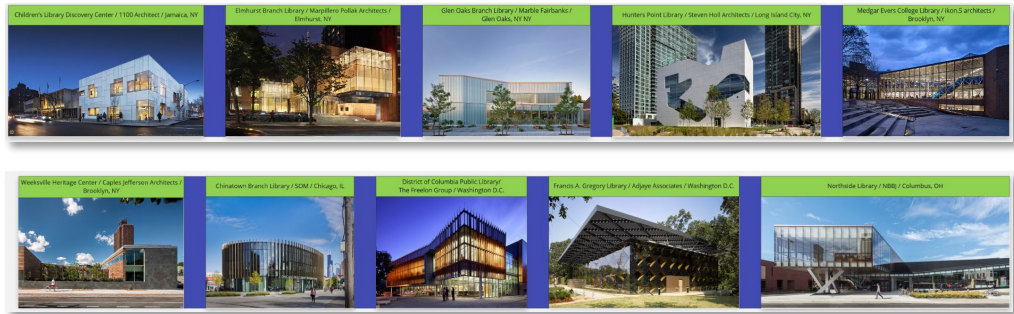
Overview:

This assignment will occupy a third of your semester and represents 30% of your final grade. Beginning with case study research, we will select an existing steel building and model this building to produce a set of well-coordinated construction documents using Revit. The first assignment is a team based case study presentation. This information will be used as a resource by all members of the team to help them develop their Revit Drawing Set. While research may be shared, each student must develop their own set of Revit drawings.

As you research and draw look to investigate how the building was constructed and organized. There are many questions to consider. What materials is it made from and how is the building assembled? Where is the structure, what are the spans and how far apart are the columns? What is the exterior skin and how it is attached? Where are the mechanical components, the air intake, the mechanical room and how is fresh air circulated? Where are the main circulation components, the stairs and elevators and how do they facilitate safe egress from the building?

Selecting a Project

The chosen building must be a multi-story steel building that contains both elevator and stair cores. It is best if the facade contains two different materials and that the building includes a lobby/atrium with a double height space. These two criteria are helpful but not mandatory. Preferred choices are public buildings (Museums & Libraries) located in New York or the vicinity so they can be visited. Virtual visits of buildings outside of NY will be considered. You must be able to find enough detailed information about the building so you can model it in Revit. This includes full plans, sections & elevations that show structure and include dimensions. Consider reaching out directly to the architect, look to their websites and look for buildings that are well published. We will provide a list of buildings for consideration. Recommended choices are available on OpenLab.



Case Study Presentation Choices

A template will be provided with guidelines for the case study presentation. Each member of the team must contribute to the creation of slides (indicated by your initials) and each student must participate in the oral presentation. To be posted in MIRO.



Sample Case Study Presentation Slide Show – in Miro

We will pinup progress work of your Individual Revit Drawings in MIRO. You will be required to post for each class. Your professor will determine the requirements for each pinup as the project progresses.



Sample Miro.com Case Study – Individual Progress Pinups

Pinup Requirements:

Our printed work will be reviewed in a series of class pinups using **Miro.com** or live pinup on the wall.

- ***Presentation #1** – In teams – select a case study option and produce a presentation.
 - Use the template provided and show the following: Your Team, Building Specifications, Exterior Photographs, Exterior Elevations, Façade Materials, Floor Plans, Structure & Dimensions, Interior Photographs, Building Sections, Mechanical Systems, Unique Features, Sources.
 - If needed make copies of the sample slides when a topic requires multiple slides
 - In addition to understanding the building the primary goal is to identify all dimensional information needed to draw the building in Revit. Start with a structural grid & levels and the exterior wall.

- **Pinup #3.1** – (Individual) Detailed research of selected steel buildings (see options provided on OpenLab)
 - Team members will share research but each team member is required to draw on their own – **No sharing!**
 - Study the project and determine the best sheet size. Start with 22 x 34 sheet & 1/8" Plans & Bldg. Elevations
 - Create your own titleblock – as always add your name and photograph.
 - Layout a single floor plan and all exterior elevations. Minimum of 2 sheets. (See numbering below)

- **Pinup #3.2, #3.3, 3.4, etc. . . .** – (All Individual) a series of progress pinups are required on a weekly basis
 - As the building is developed in Revit, weekly progress is posted for each student in the class **Miro** board.
 - Pinups will include but will not be limited to the following:
 - Cover Sheet -A 000 (with drawings list, abbreviations, symbols & 3D views)
 - Floor Plans -A 100 series (includes walls, wall type designations, doors, door numbers & schedule, room names & numbers)
 - Reflected Ceiling Plans -A 200 series (RCP) (includes room names & numbers, ceiling materials, lights, mechanical supply & return, sprinklers, exit signs. A version of this will include color coded walls based on fire ratings)
 - Exterior Elevations -A 300 series (includes windows, curtain walls, exterior doors & materials designations for the façade)
 - Building Sections -A 300 series (includes two full building sections one in each direction – showing floor to floor levels, room names & numbers)
 - Details -A 400 series (includes plan & sectional details & callouts)
 - Occupancy & Egress -A 500 series (Occupancy identifies the area of rooms to determine the number of permitted occupants. Egress diagrams calculate door sizes and travel distances for rooms to egress stairs. As rated walls and exit signs are to be indicated this drawing is typically an overlay on the RCP.
 - Structural Drawings -S 100 series (includes plan & sectional drawings indicating only structural elements – steel & concrete, slab openings, shear walls, steel size designations)
 - **All drawings are to contain annotation (notes/leaders/dimensions & materials designation)**

- ***Pinup #5** – (Individual) Structural Submission - Graded
 - Complete structural set pinup and final grading

- **Pinup #6** – (Individual) Pre-Final Architectural Set
 - Complete pinup of progress. Will be given a preliminary peer grade (A/B/C/D)
 - Primary focus of review will be on the A-100, A-200, A-300 series drawings but must also include preliminary versions of the A-400 & A-500 series drawings.
 - This set must include every drawing that will be part of the final set.

- ***Pinup #7** – (Individual) Final Architectural Set- Graded
 - Complete pinup and final grading (A/B/C/D/+)

***Indicates Graded Archived Submissions**

Revit Specific Tasks:

- **Customize the titleblock.** Using a 22 x 34 titleblock – 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 Building Set Semester-Professor.rvt) File name for a student named Louis Sullivan in Prof. King's Fall 2020 class would be (Louis.Sullivan ARCH2431 Building Set 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. It is recommended that you create a free MIRO account. The pinup space will be provided for you with a single starting 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. You must re-sort your frames to keep your own work together and in order.
- To post your work in Miro - print each sheet from Revit to a separate PDF and then paste it onto the frame.

Grading & Rubric:

- **Grading:**
 - For the case studies- Pinup #1 will receive an individual grade, Pinup #3 will receive a team grade.
 - Drawings set grades will be individual (Pinup #5 structural set & Pinup #8 architectural set)
- **Rubric:** Assignments will be graded on the following criteria. Additional criteria may be given during discussions.
 - Completeness of submission & deadlines. Proper file name, sheet name/number and format of titleblock
 - Formatting and organization – Are the sheets laid out well, with appropriate views and information, organized and numbered properly? Do views align, is there limited wasted (white) space?
 - Annotation & appropriate scale of views. Use a scale that clearly represents the information and allows for proper annotation to be added including, hatch patterns, detail items, notes/leaders & dimensions.
 - Level of detail – Do the studies show enough to explain the construction? This requires that drawings exist at multiple scales 1/8” or ¼” for plans with larger plans at ½”. Details at (½” or ¾”) with a second set of callout details at larger scales. (1 ½”, 3” or 6”)
 - Demonstration of the mastery of the Revit software. Good control over views, proper organization of project browser, creation and organization of sheets with title blocks, proper printing to PDF, etc.
 - 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.
 - **Presentation #1** – Team Case Study Presentation – Group Graded
 - **Pinup #5** – Structural Submission – individual - Graded
 - **Pinup #7** – Final Architectural Set- individual - Graded