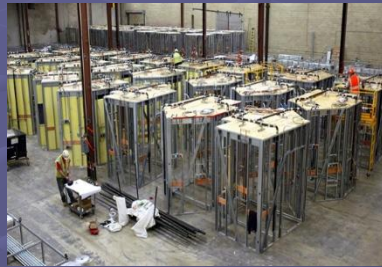


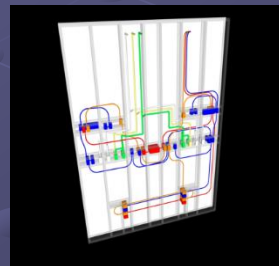
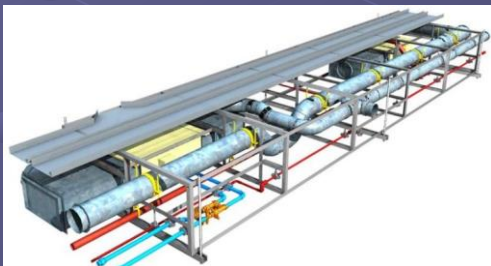
The Prefab Industry as a Whole

Modular Boxes



Structural Components

M.E.P. Assemblies



Architectural



Value

- Lower structural requirements than precast due to lightweight prefabricated panels.
- Reduced jobsite manpower needed for exterior wall installation.
- Jobsite scaffolding unnecessary for exterior wall installation.



Speed

- Pre-determined and carefully controlled installation time.
- Increased productivity as a result of experienced fabricators.
- Construction schedule compression: panels can be manufactured while your site is being excavated and are ready for installation as soon as the site is ready.
- Reduced onsite clutter and interference (i.e., scaffolding and debris).



Quality

- Precisely engineered prefabricated panels and connections.
- Quality controlled fabrication: skilled craftsmen fabricate panels in a climate-controlled environment and materials adhere to strict manufacturers' recommendations (including temperature and humidity requirements) under a stringent QA/QC program.
- Extensive shipping protection prevents damage to the panels' factory-precise finish.
- Code compliant systems.
- Single source warranty.
- Experienced panel installers.



Safety

- OSHA refers to the controlling of a safety hazard at its source as Engineering Control. Prefabrication is viewed as a way of controlling potential jobsite hazards by moving the scope of this work to an offsite location. For example: of the “Fatal Four” cause of jobsite fatalities that OSHA lists on their site, falls account for almost 39% of total deaths in construction. (<https://www.osha.gov/oshstats/commonstats.html>)
- Our experience with prefabricating walls, roof systems and other materials is that we can limit the amount of exposure a worker has when it comes to height. This is almost always *substantially* less than what the worker would experience building it on site.
- Being able to build in a controlled, offsite environment with a qualified, lean construction crew makes it much easier to enforce safety protocols & procedures than on an active jobsite that is using “stick frame” construction. Added obstruction of the available space typically increases the chance of injury for one of the workers on these sites.

Costs

- Misconception that prefab is cheaper in comparison to field framing. In reality it is not. Prefab is a premium...
- ...However prefab DOES offer significant cost savings when it comes to the total job costs.
- Job Schedule: Prefab can help improve and tighten the schedule for your construction project, in some cases as much as several months sooner than traditional framing. (E.G. Reduces schedule up to two months on an average 20,000 SFT building.)
- Lean Construction: No matter the weather, a prefab constructor can be working non-stop on their contracted scope for a project. Even if the jobsite itself is shut down, the prefab constructor continues to push forward to meet and exceed schedule deadlines. Fabrication continues efficiently during inclement weather.

Costs part 2

- Labor savings: With material being assembled in an offsite area, less manpower is needed for the prefab portion on site. Less subsequent material needs to be provided on site. Typically Wall Panels only require 4 people to install (compared to 16 to do the same scope in traditional framing).
- Prefab Wall Panels can encompass up to seven CSI spec sections and four trades into one complete assembly.
- Quality: Building in a climate controlled environment allows prefab manufactures greater control over the manufacturing quality of their scope. Greater control equals tighter QC protocol.
- You need to consider the total job costs when comparing prefab vs. traditional framing.

Typical Panel Types

- Curtain Wall (non-load bearing)
 - Vertical
 - Horizontal
 - JHS (Jamb, Header, Sill)
- Load Bearing
 - Horizontal



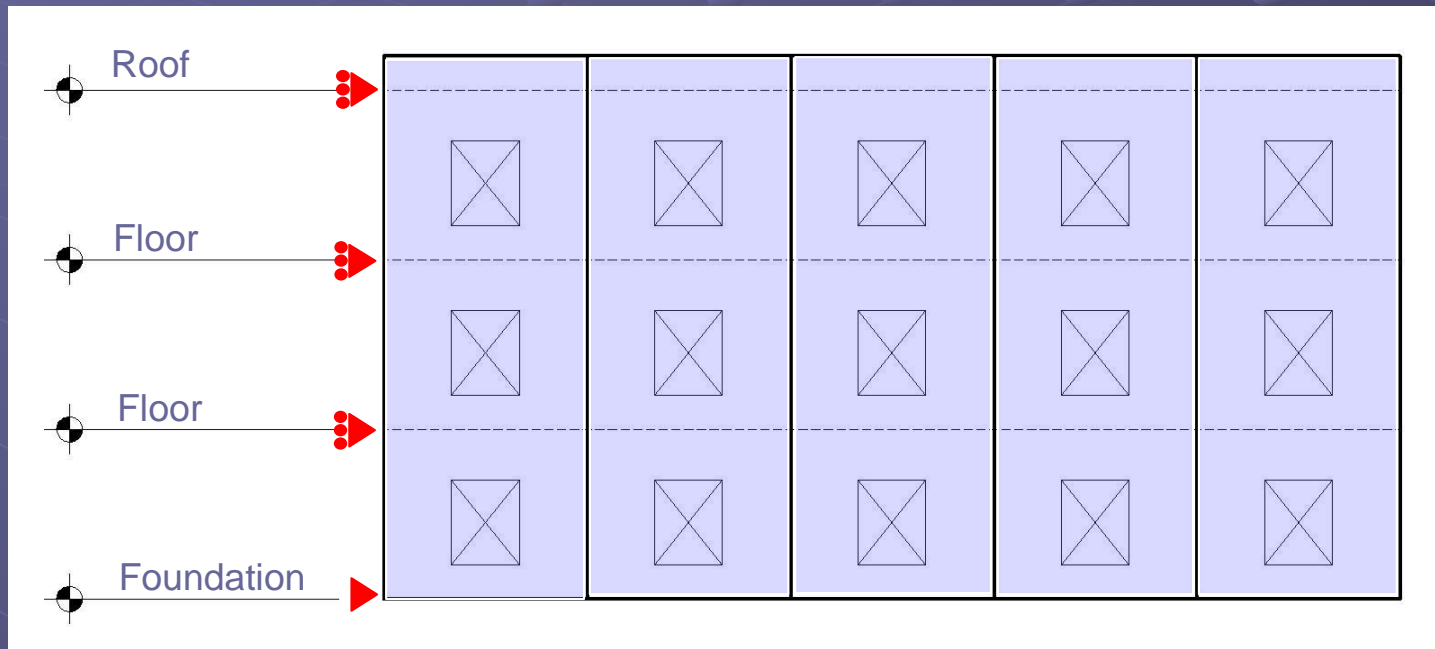
Curtain Wall - Vertical

- Multi-Story Residential
- Industrial (tilt-up)
- Commercial / Facilities



- Ideal Conditions:
 - Vertically Aligned Punched Openings
 - 1 to 4 Stories

Curtain Wall - Vertical



▶ : Laterally & Vertically Supported

▶▶▶ : Laterally Supported Only

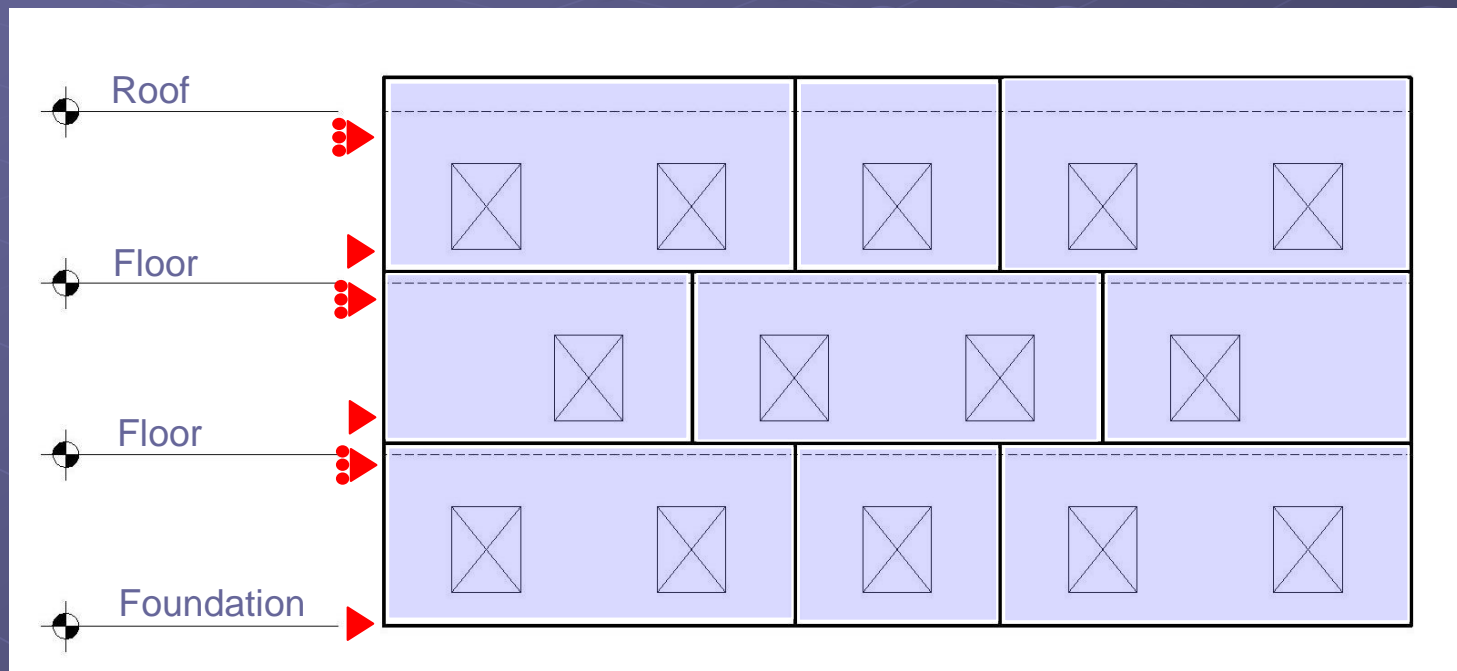
Curtain Wall - Horizontal

- Multi-Story Residential
- Multi-Story Office
- Healthcare



- Ideal Conditions:
 - Punched Openings, Assorted Locations
 - 1 or More Stories
 - When Intermediate Bearing is Required
 - Load Bearing Systems

Curtain Wall - Horizontal



▶ : Laterally & Vertically Supported

▶▶ : Laterally Supported Only

Curtain Wall - JHS (Jamb, Header, & Sill)

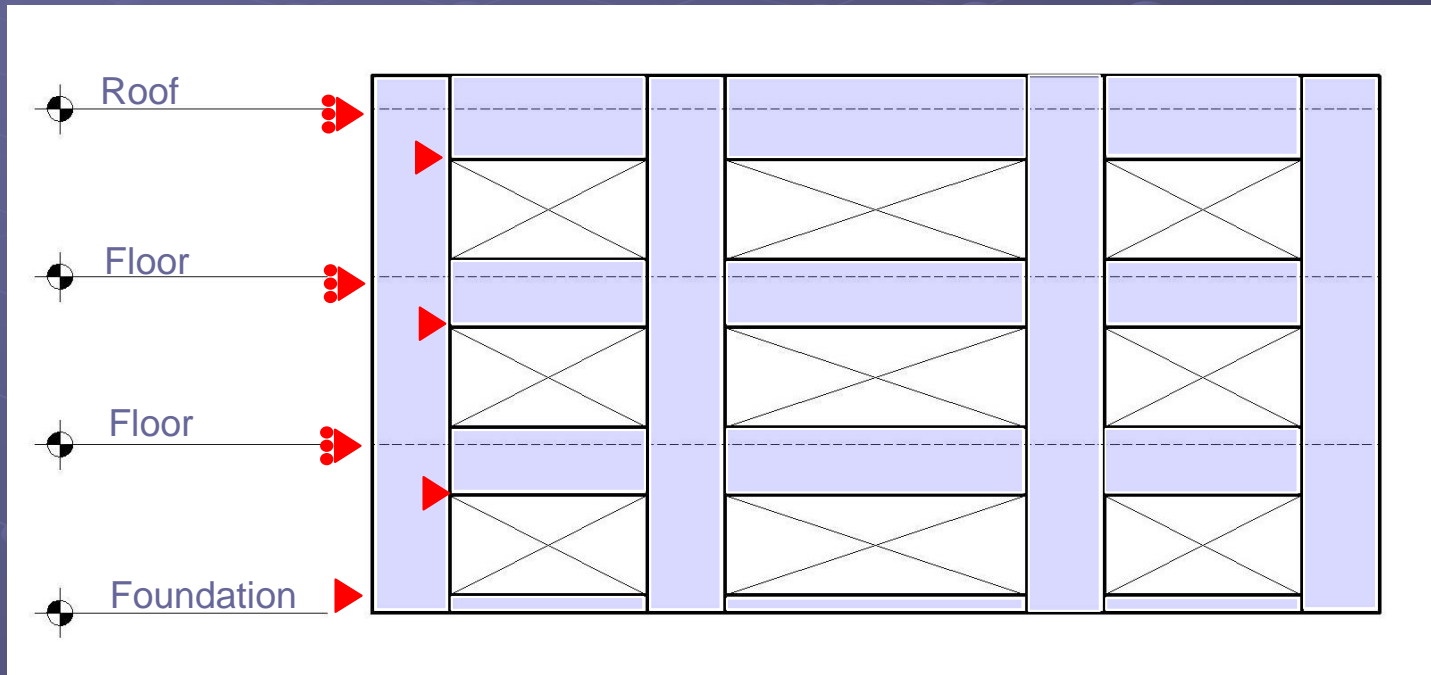
- Office
- Healthcare
- Retail

● Ideal Conditions:

- Large Openings Not Containable in a Single Panel



Curtain Wall – JHS (Jamb, Header, & Sill)



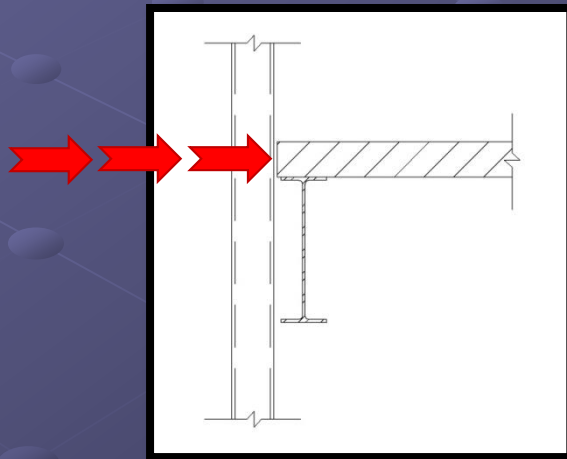
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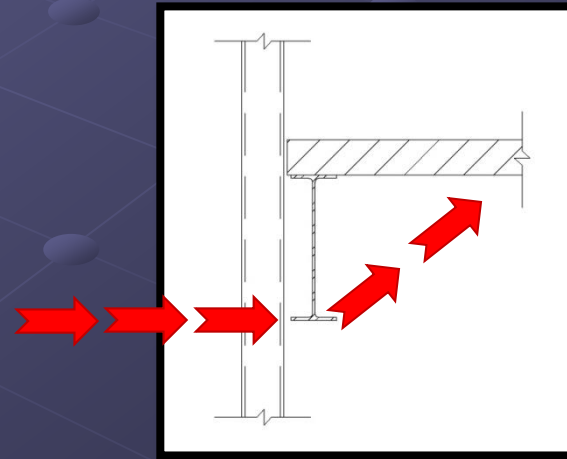
Connections

● Connection Challenges

- Proper Load Paths
- Capacities (Wall Member, Connector, or Building Element)
- Maximize Exterior Finish / Scope Potential
- Accessibility



Ideal Lateral Load Path #1

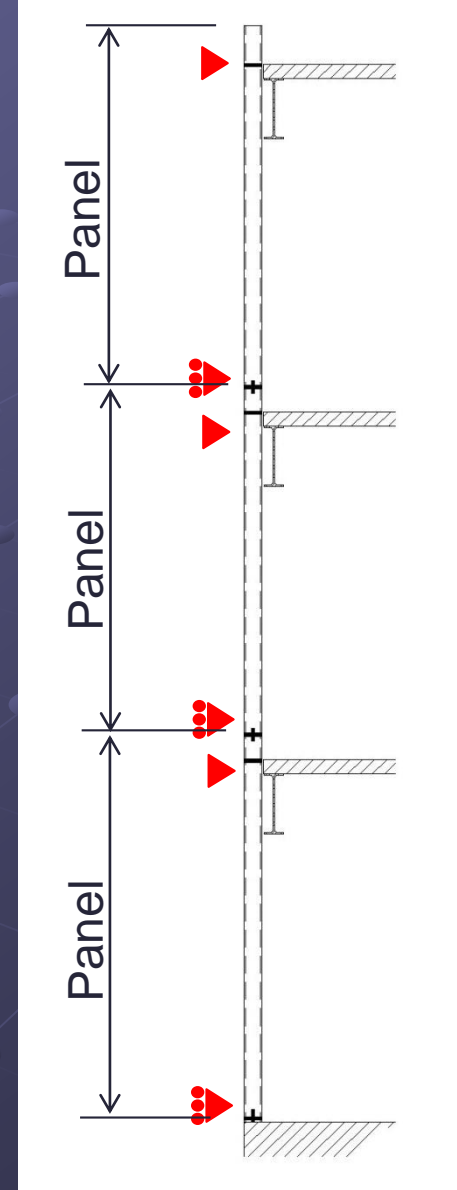
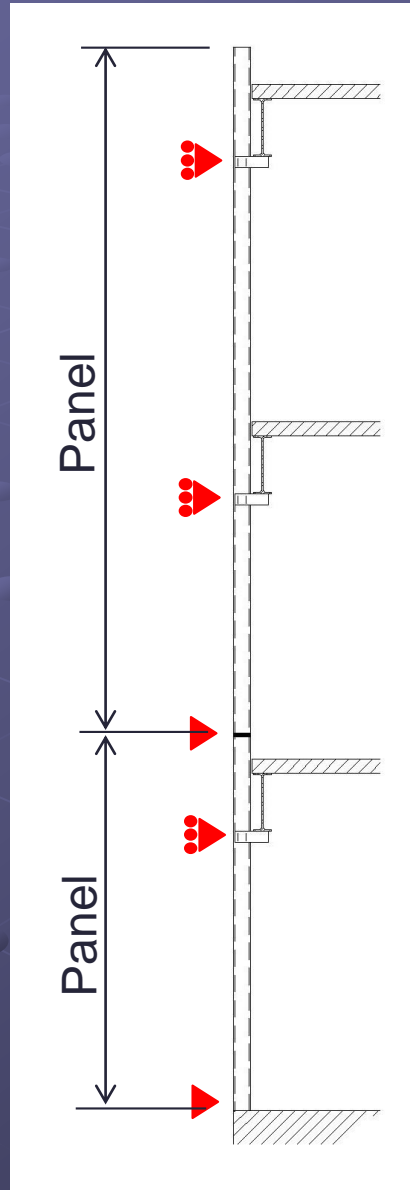
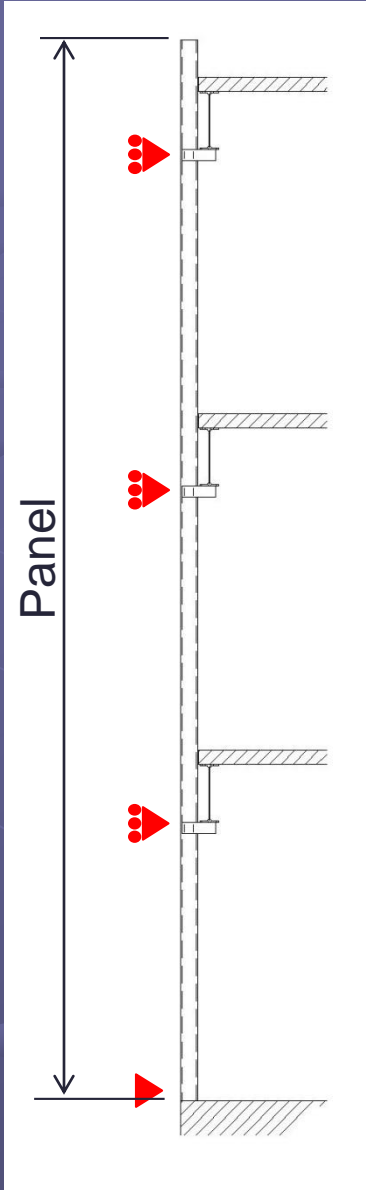


Ideal Lateral Load Path #2

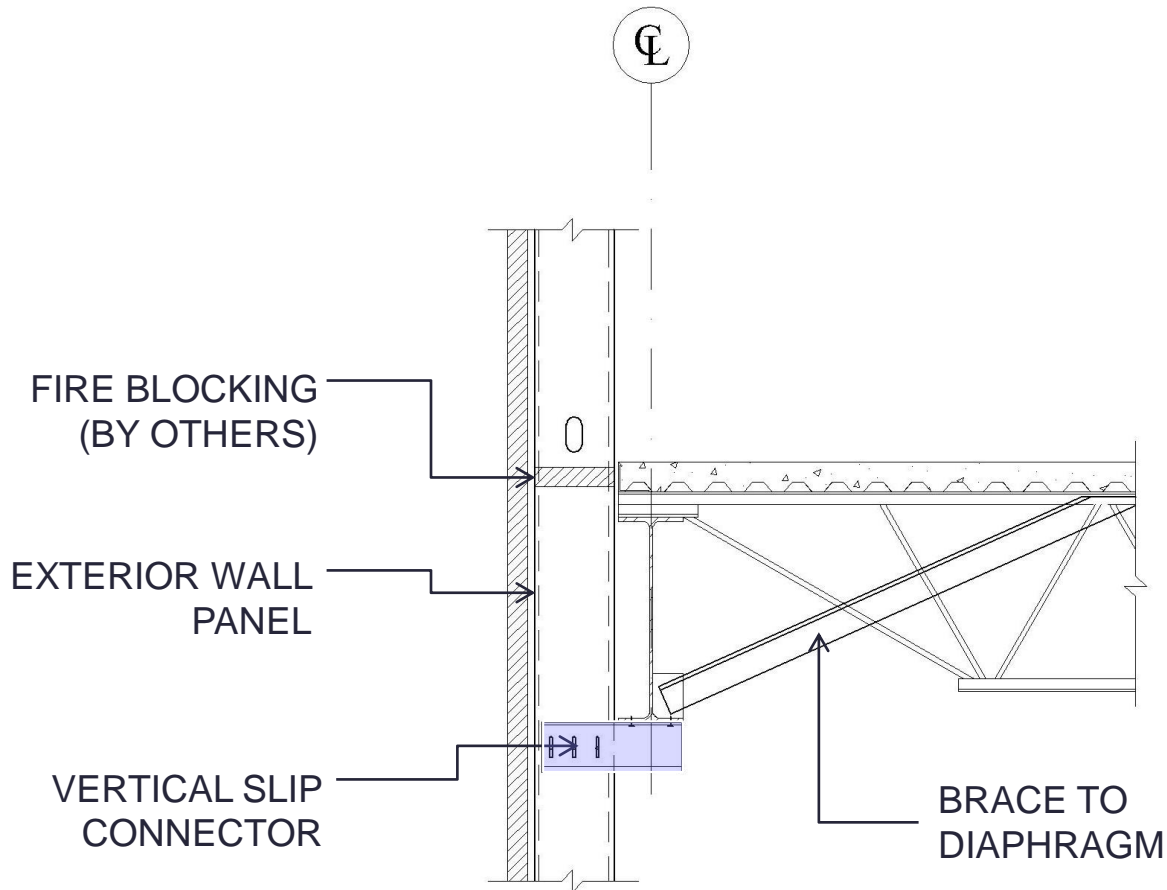
▶ : Laterally & Vertically Supported

▶▶ : Laterally Supported Only

Connections

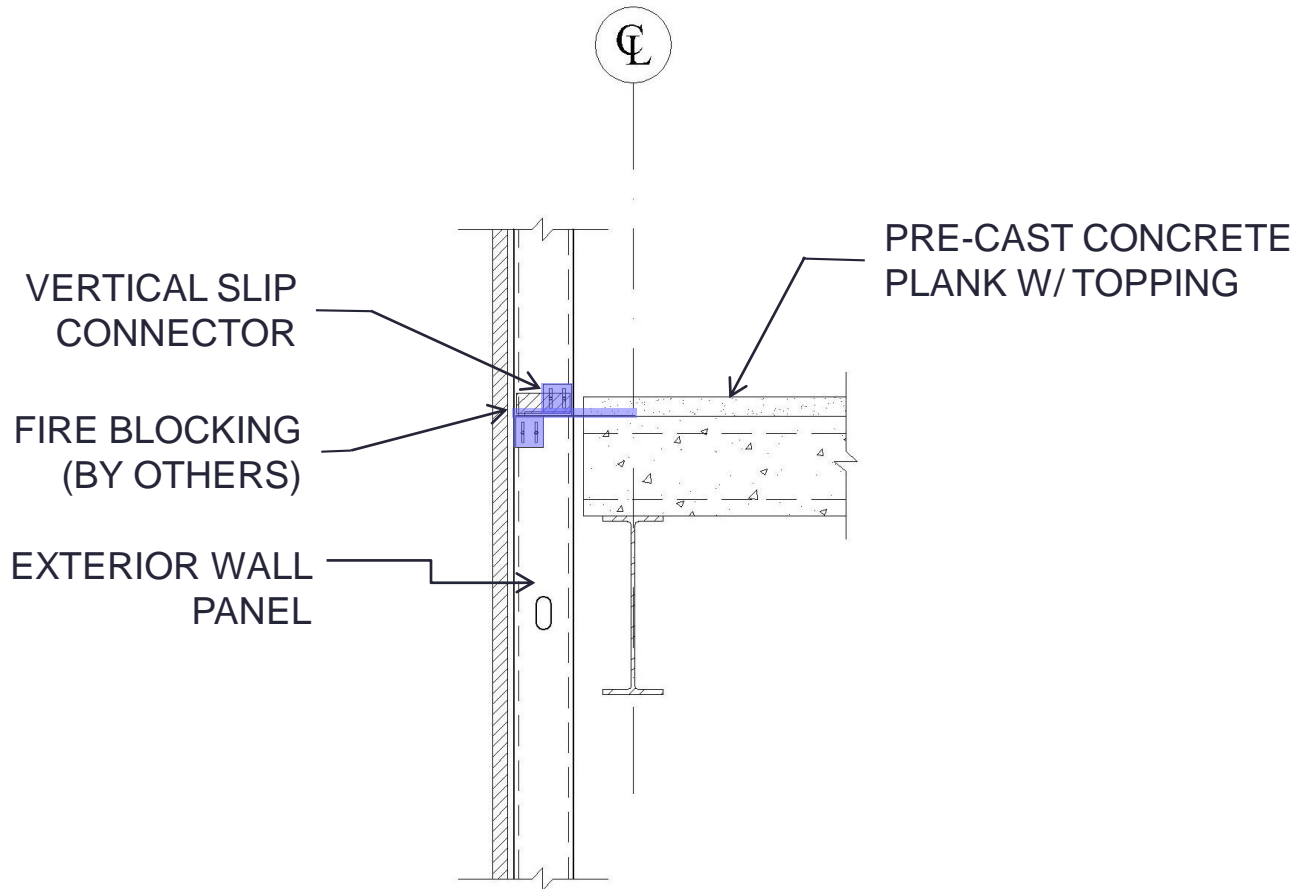


Connections



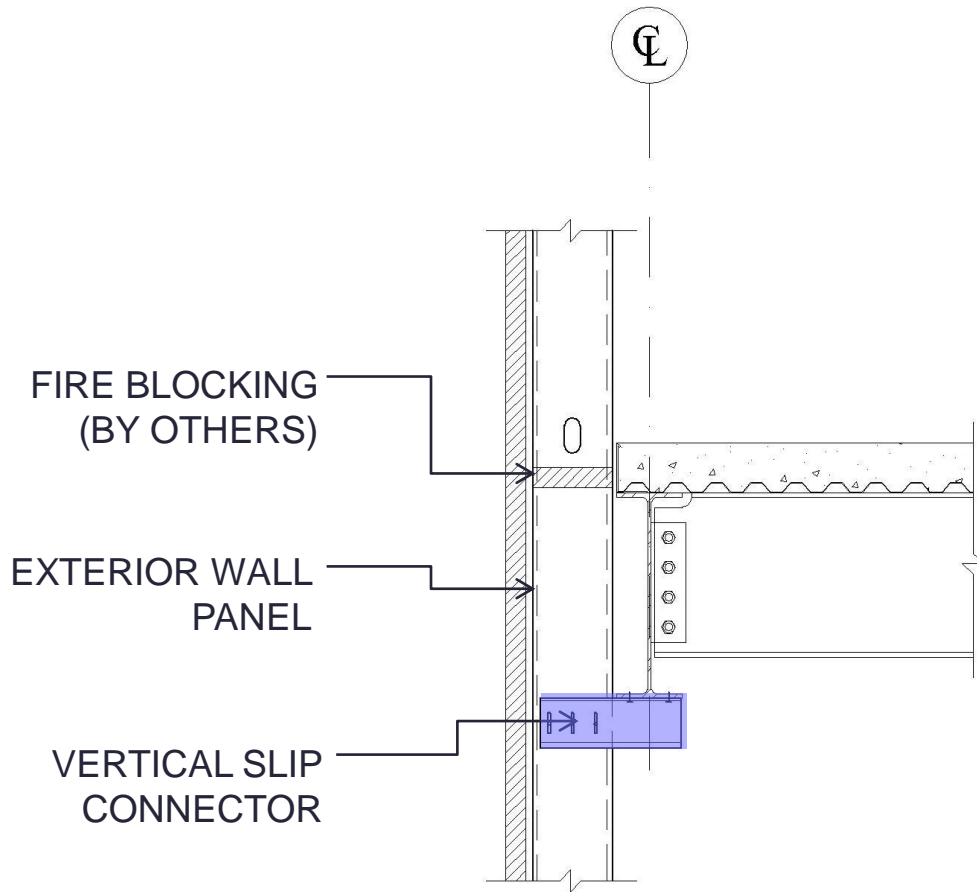
TYPICAL BY-PASS CONNECTION

Connections



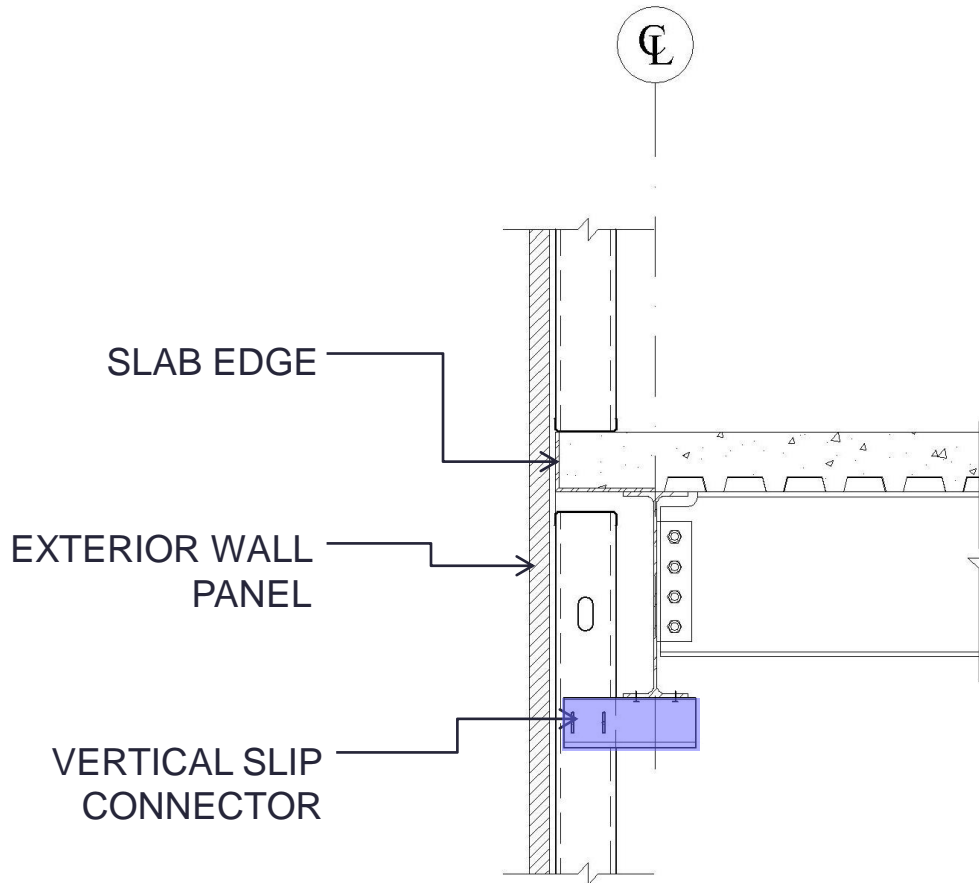
BY-PASS CONNECTION AT TOP OF PLANK

Connections



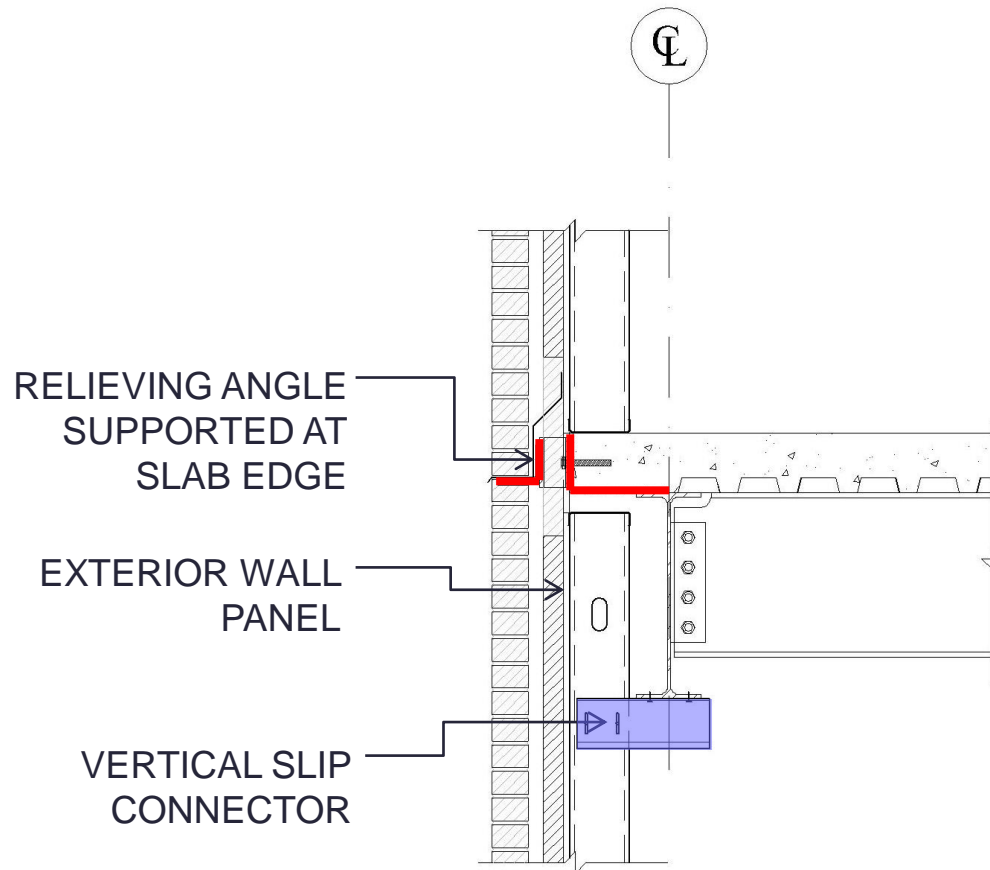
TYPICAL BY-PASS CONNECTION

Connections



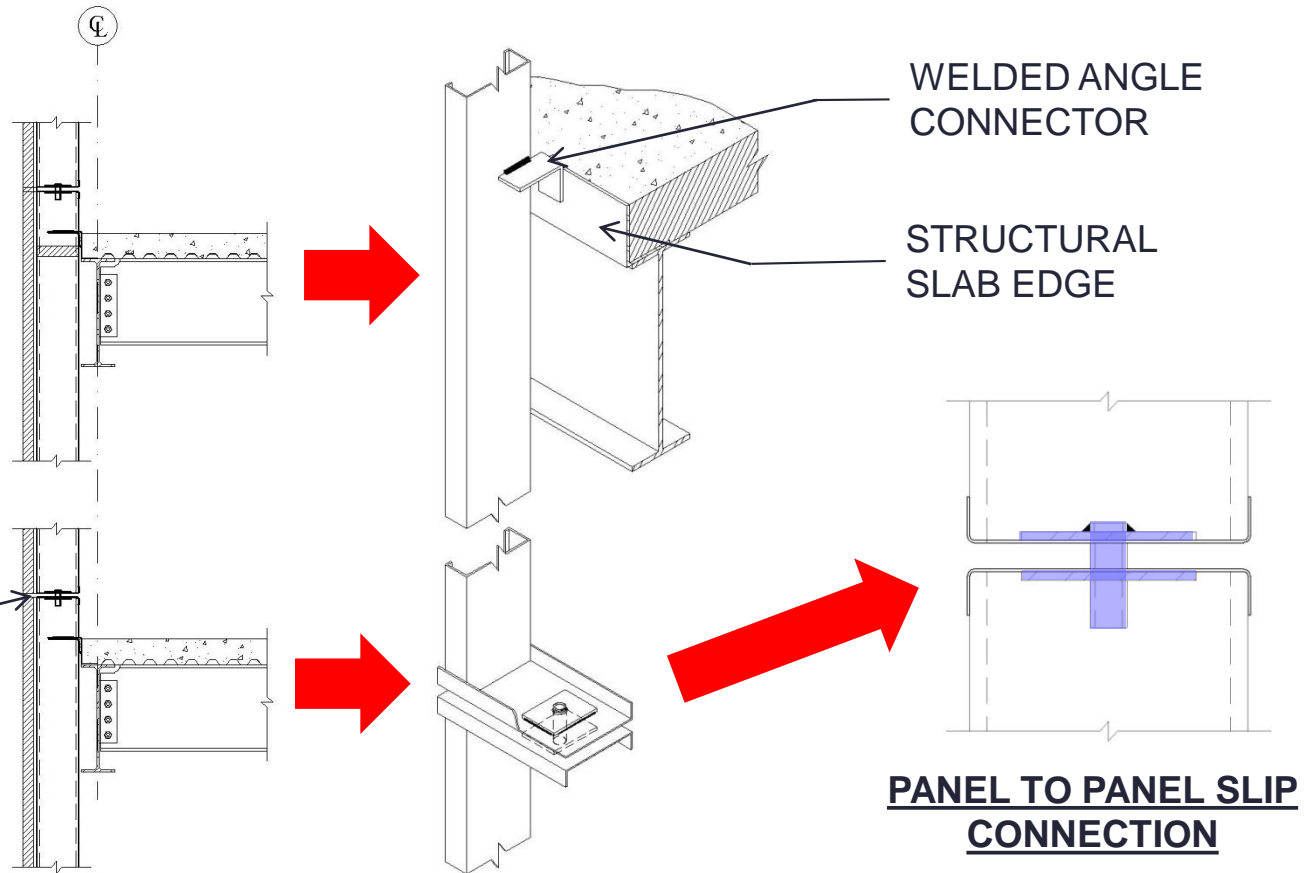
TYPICAL BY-PASS CONNECTION
AT CANTILEVERED SLAB EDGE

Connections



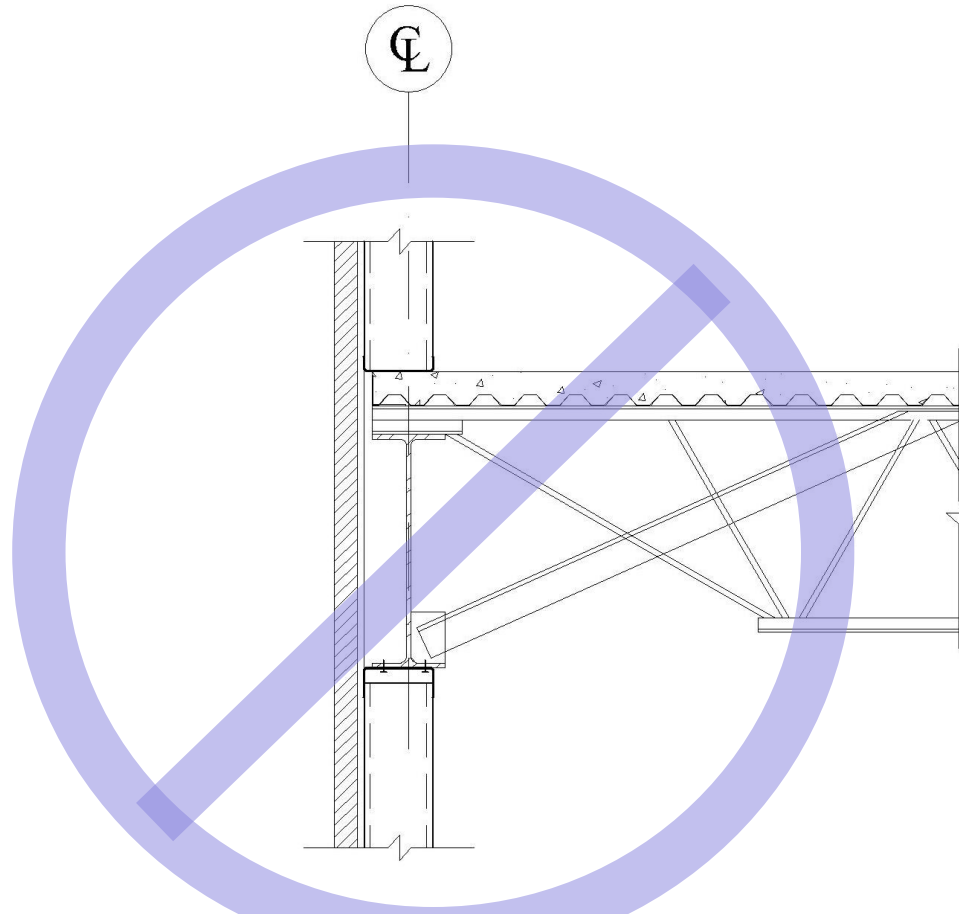
**TYPICAL BY-PASS CONNECTION AT
SLAB EDGE SUPPORTED RELIEVING ANGLE**

Connections



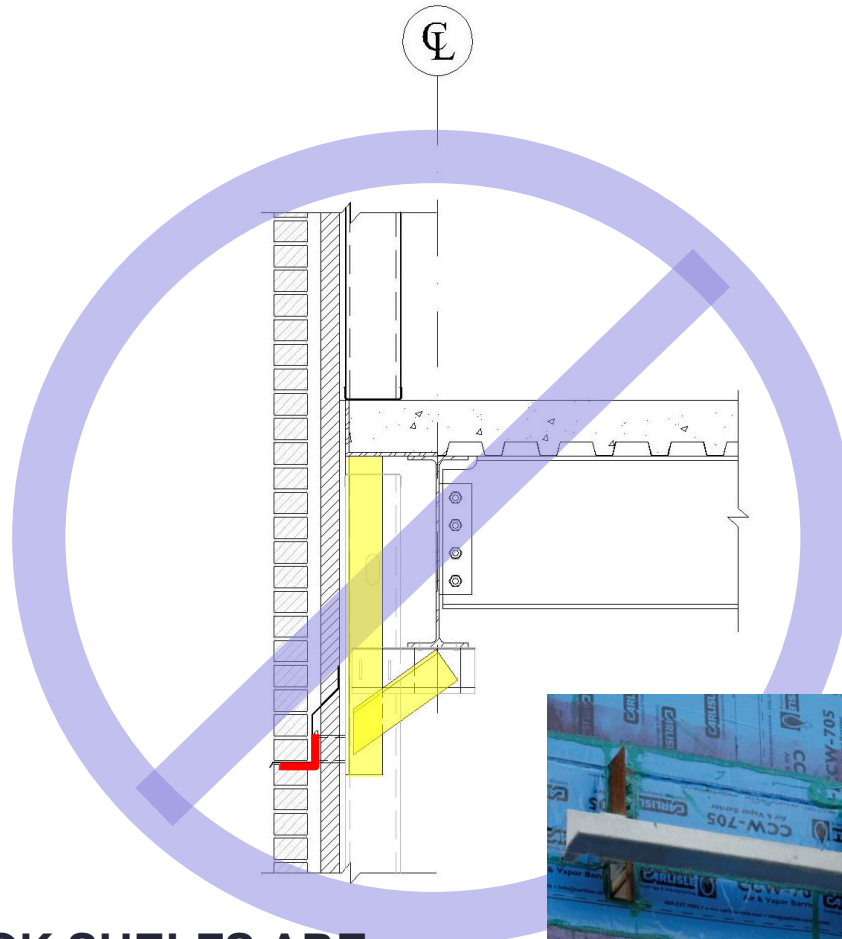
TYPICAL WELDED SLAB EDGE SUPPORTED BY-PASS CONNECTION

Connections



**IN-LINE FRAMING IS NOT A FRIEND
OF PANELIZATION**

Connections



HUNG BRICK SHELFs ARE NOT A FRIEND OF PANELIZATION

