

# Building Technology 3

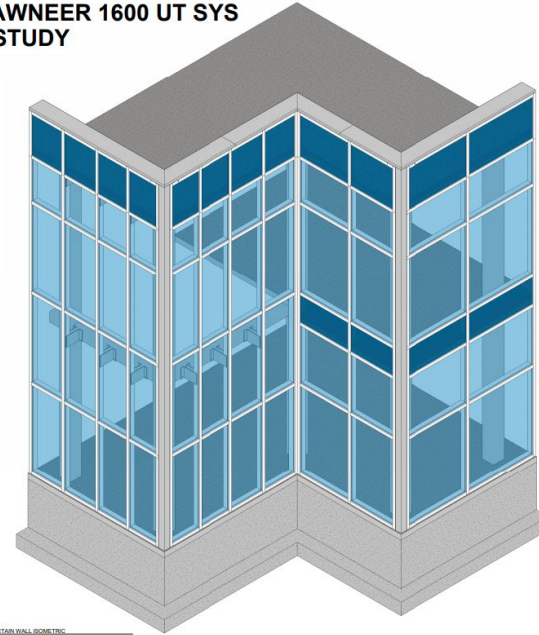
## Opaque / Curtain wall

### Study's

REIDER FIBER C PANEL  
STUDY



KAWNEER 1600 UT SYS  
2 STUDY



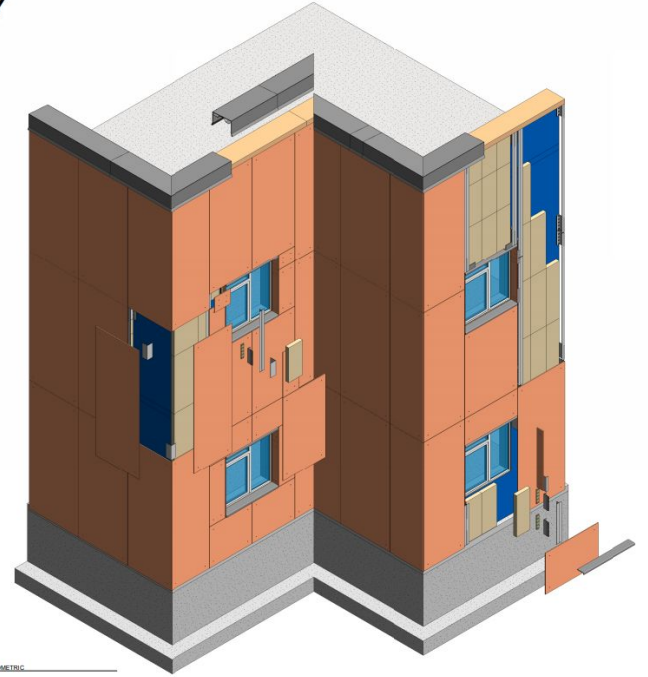
# Opaque System

We were tasked with creating a facade solution for a typical stud wall building with concrete floor slabs. We must understand how our system works:

- Structurally
- Thermally
- Weatherproofing

The building is 2 floors with continuous concrete floor slabs and windows. Once we choose our opaque facade system we had to do research on how the system functions as a whole with the listed characteristics above

REIDER FIBER C PANEL  
STUDY



# Wall Assembly

The stud walls are typical Metal C channel studs nominal 2x4

Studs are built up on a sole plate and capped of with a top plate.

Headers and cripple studs are inserted in the space of window openings as well as the use of reinforcement of king studs on the anterior side

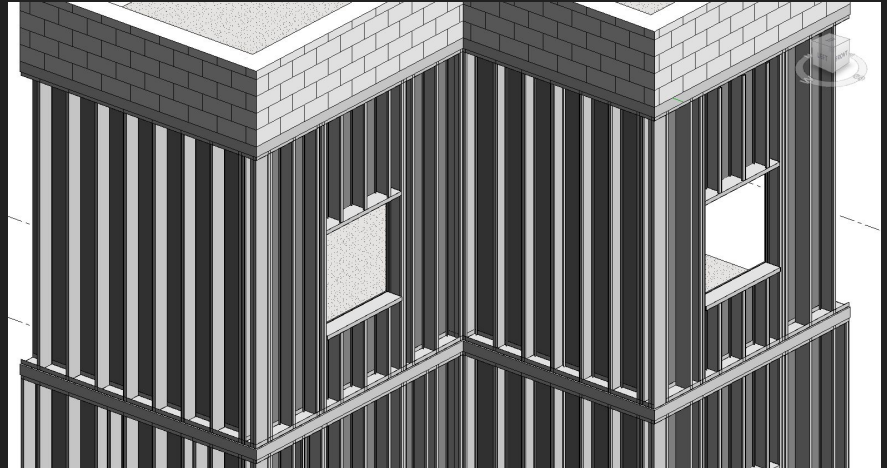


# Interior Sheetrock Panel

$\frac{5}{8}$ " Thick SheetRock by USG (United States Gypsum Corporation) is screwed in from the inside of the building directly into the metal C channel Stud

Typical Sizing of 4'x8'x $\frac{5}{8}$ "

SheetRock Panels are mounted with appropriate hardware such as Drywall Screws

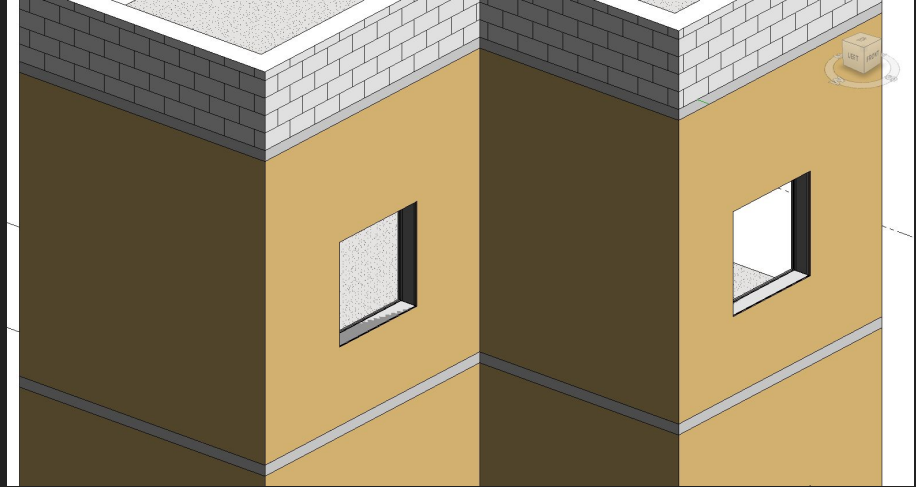


# Exterior OSB Panel

$\frac{3}{4}$ " Oriented Strand Board is screwed into the Metal C channel Studs from the exterior of the building, OSB is one of the most popular choices in construction in the USA.

Typical Size of 4'x8'x $\frac{3}{4}$ "

Use Coarse threaded deck screws to mount

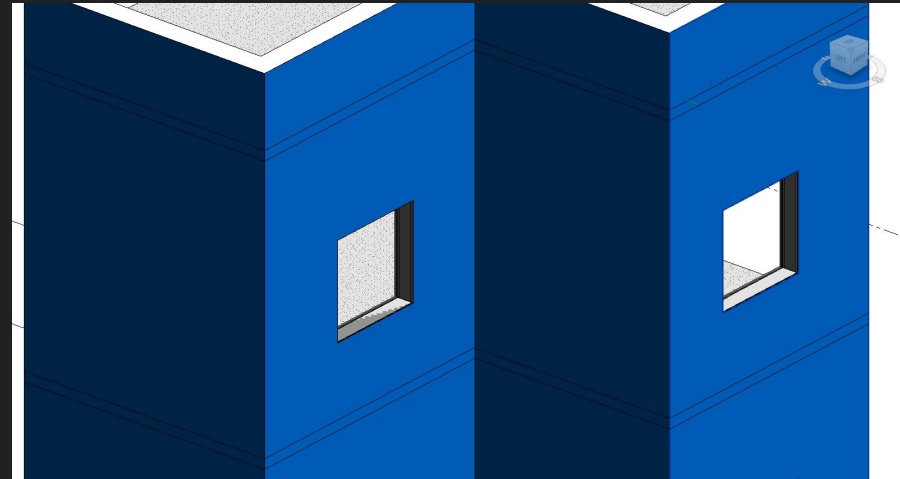


# Weather Barrier

It is important to keep moisture out of buildings to prevent the development of mold, Henry Blueskin Self Adhesive Thru-Wall Flashing Membrane is installed on the exterior of the OSB boards

Rolls of this waterproofing membrane can be purchased in 12", 18", 24", 36" Widths and a standard 75' Length

# Henry®

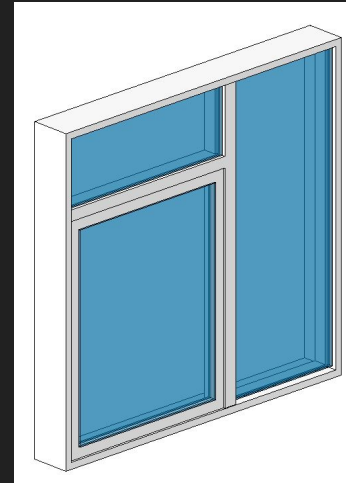
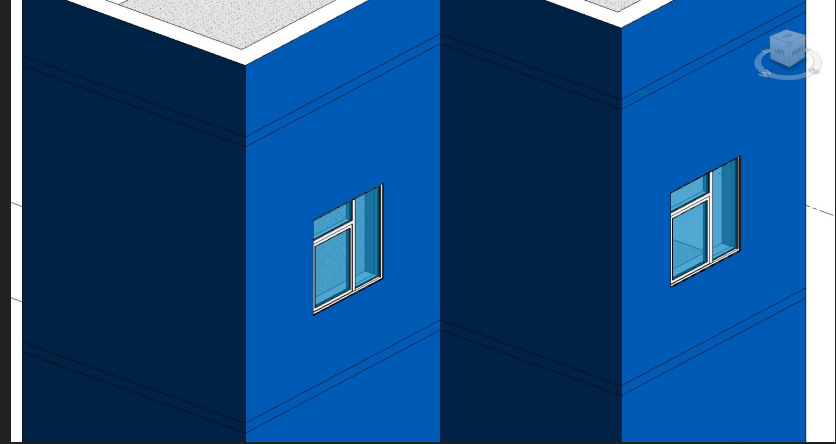


# Window Installation

Typical window is inserted in the opening in the studs, it is important to make sure there is a tight seal around the Blueskin membrane

Use shims, caulk, and baker rods as necessary

Tape and seal all joints around window

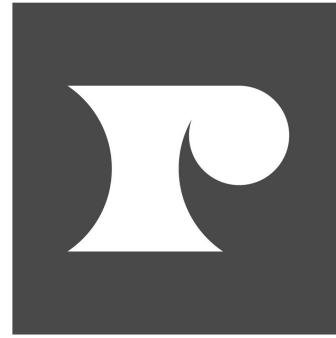


# Rieder Facade System

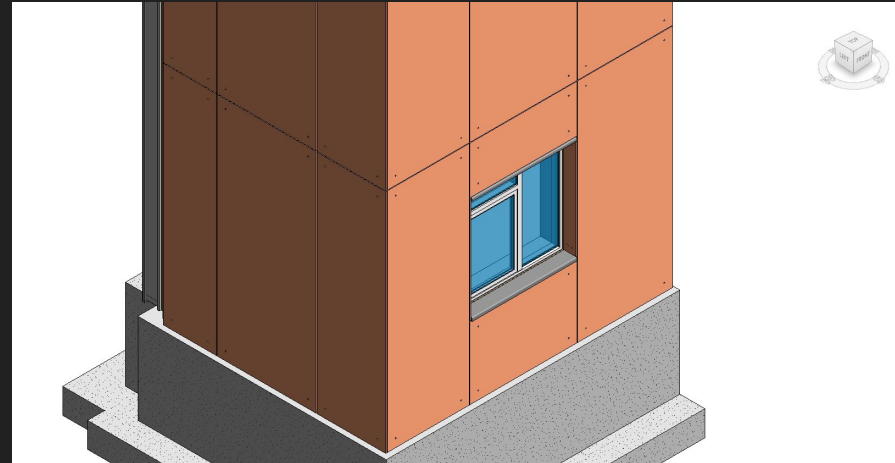
The majority of the opaque wall facade assembly is manufactured by the company Rieder

Rieder specializes in the production of Sustainable facade solutions and economical concrete material's beyond the products protective function

The System I have chosen is a Ventilated Facade System, this means that the panels hang on the exterior of the building and if any water were to enter it would flush out the bottom or evaporate.



**RIEDER**



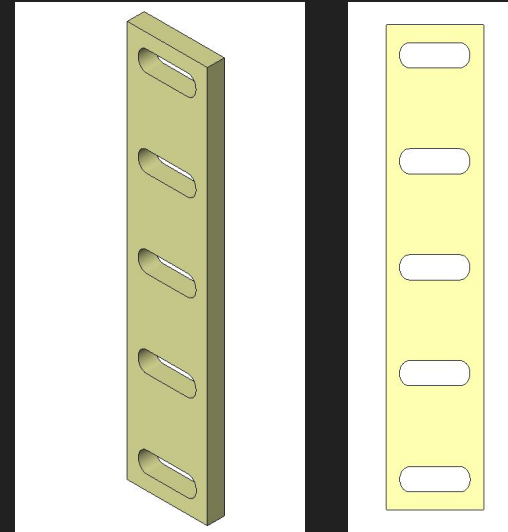
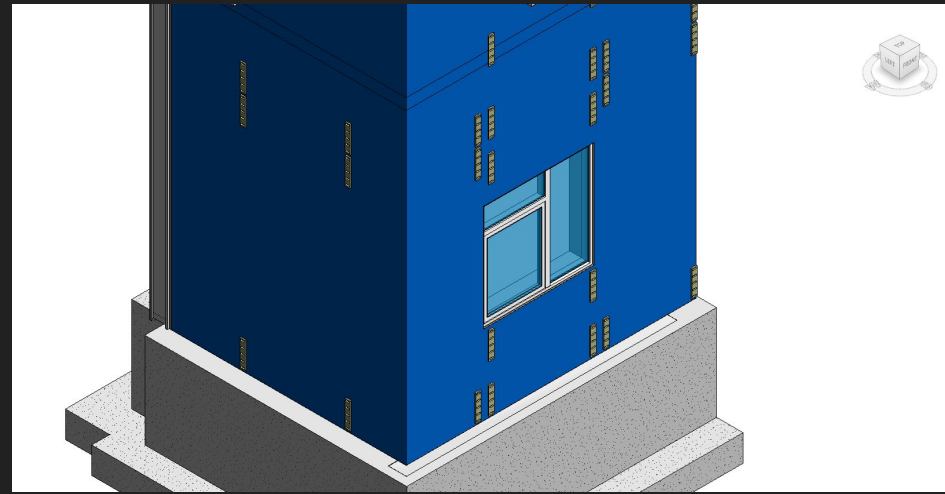


# Thermal Brake

Thermal break allows for the blockage of direct transfer of heat / cold temperatures between elements

This thermal Brake is composed of a non conductive polyethylene.

The thermal brake goes directly on the outside of the building wall lined up with the metal stud's cut outs for bolts to pass thru the assembly system are pre made.



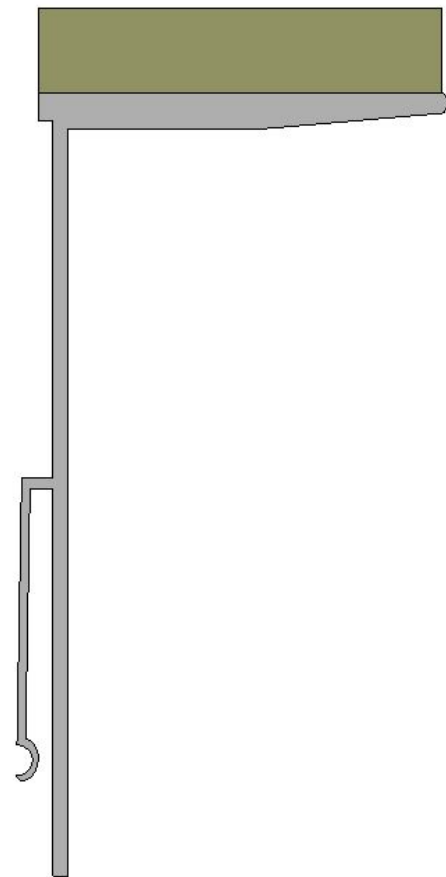
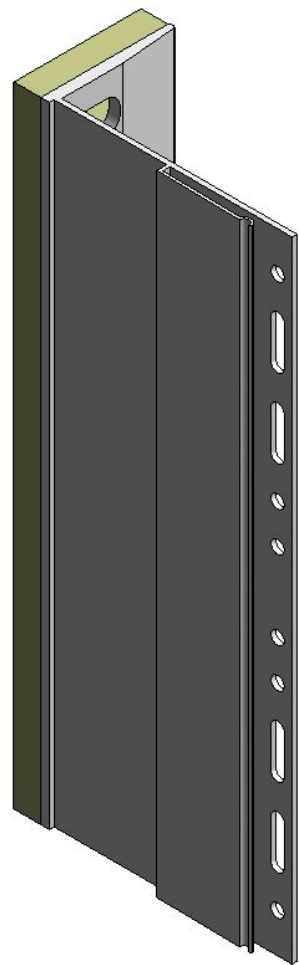
# Mounting Hardware

Once The thermal brake is ready to be installed a vertical Steel L bracket is attached to it. This vertical L bracket has pre drilled holes for the connection of other members Slots are present to allow the shifting of attached vertical mounts

The L bracket works on a V end shape that allows the insertion of Vertical Members, these members click in place and are screwed in respectively.

This connection is bolted directly through to the studs in the Wall.

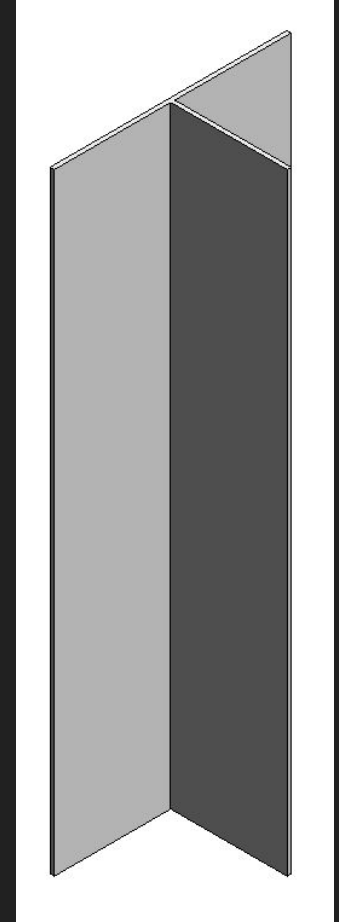
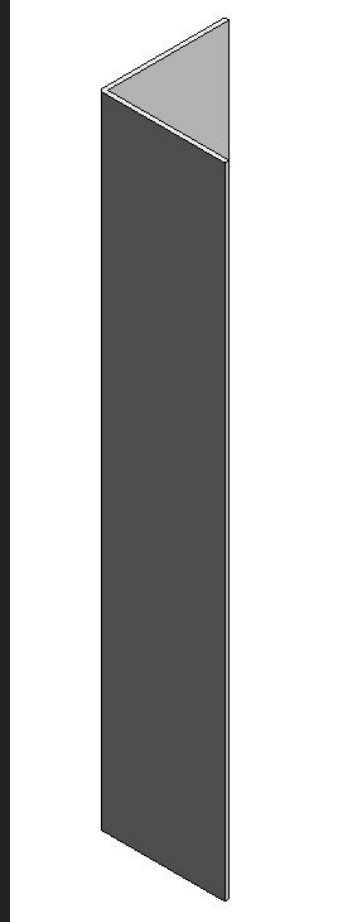


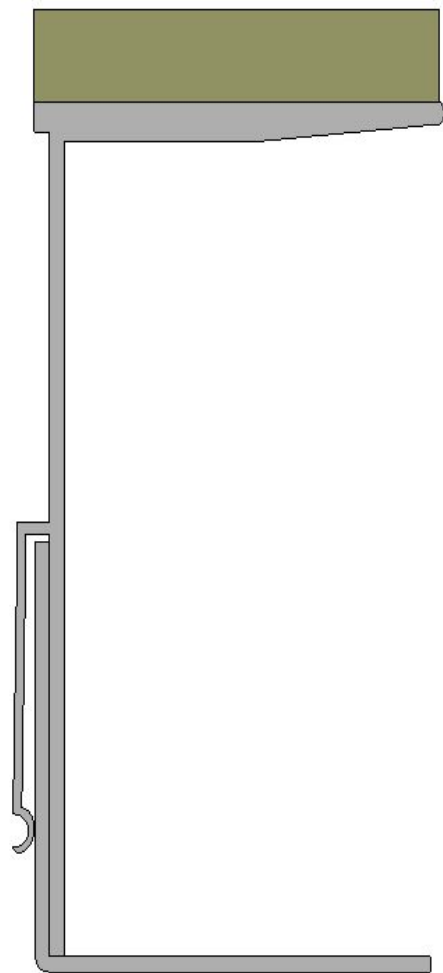
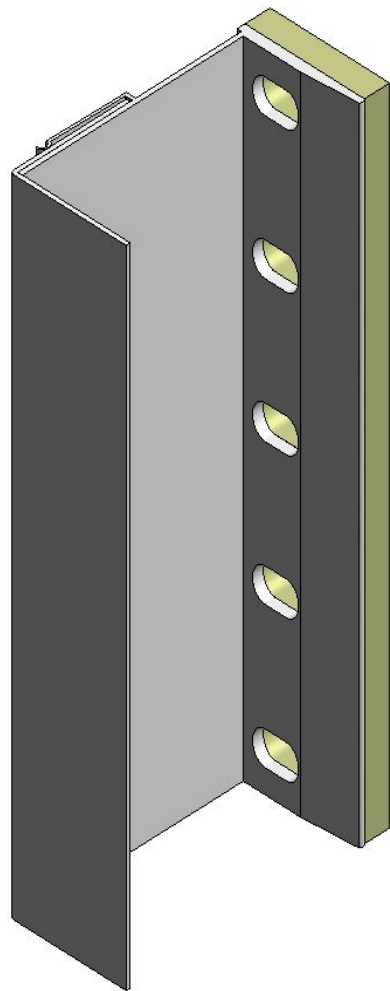


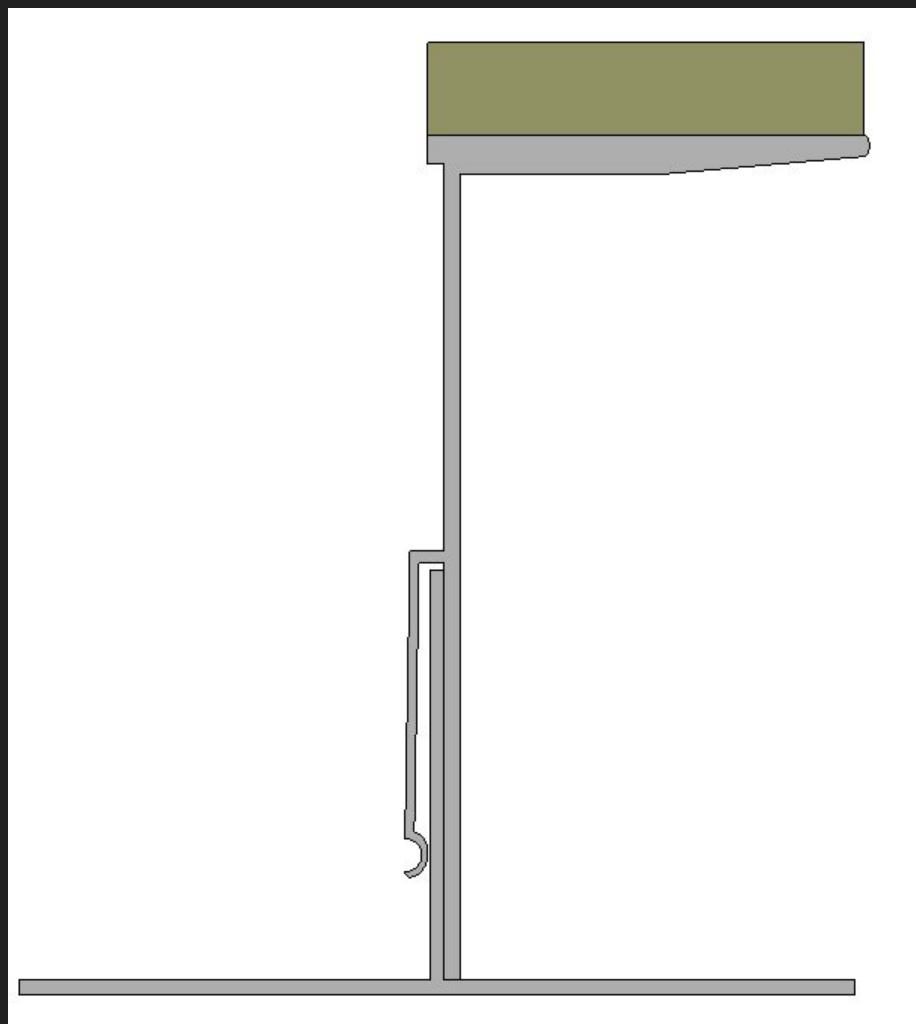
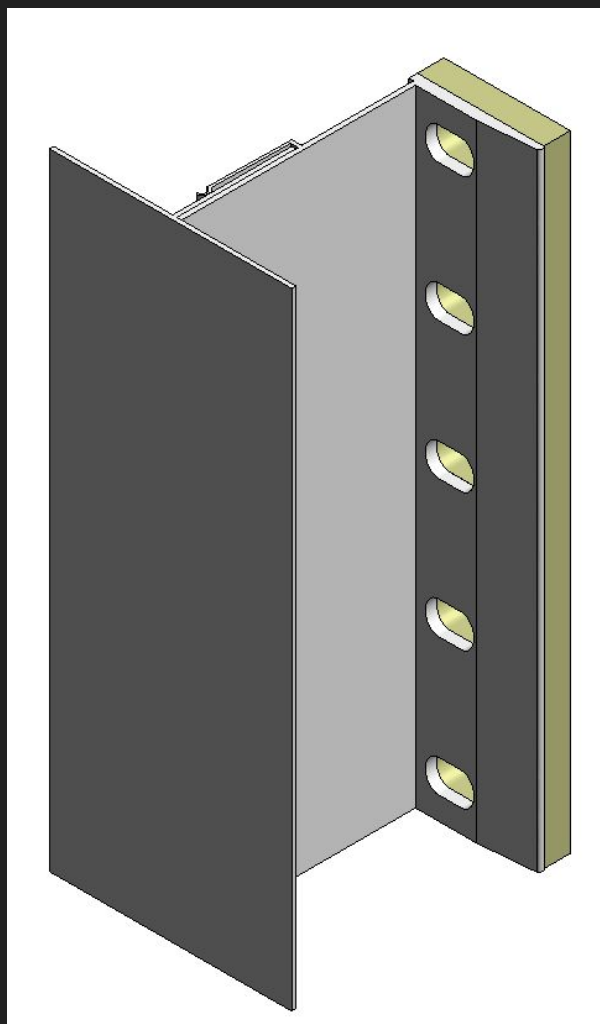
# Vertical Mounting Rail

Depending on location of the rail, 2 shapes are present. The vertical steel rail clicks in place with the Structural L bracket and is screwed in with Self Tapping Screws.

Regular conditions allow for the use of a vertical T steel member and End conditions allow for a Steel L member







# Insulation

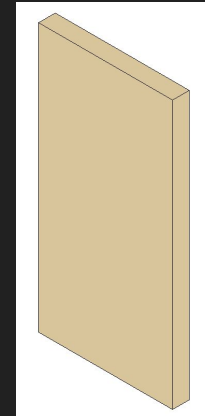
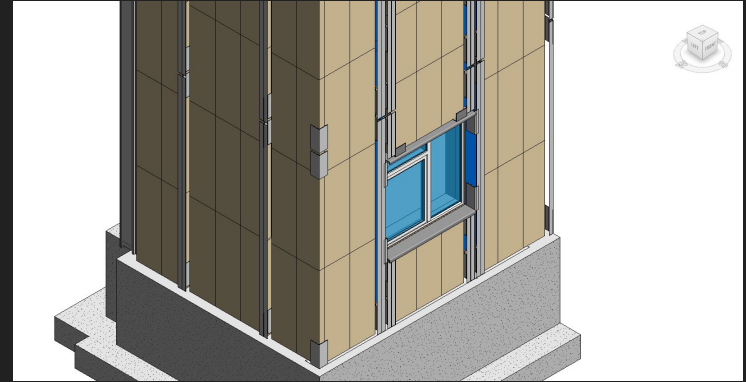
Insulation is mounted to the exterior of the building underneath the facade, I have chosen to use Rockwool semi rigid Mineral Wool insulation.

Rockwool is made from a stone based mineral fiber, This allows the material to be cut easily, fireproof, water and moisture resistant, anti fungal/mold resistant and sound absorbent.

Typical Dimensions: 15"x47", 23"x47", 16"x48", 24"x48"

Thickness ranges from 3.5"-7.25"

Apply hangers as necessary



# Rieder Fiber C Panel

Concrete Skin is a panel that is applicable to exterior building facades.

Performance: The manufacturer claims the panels can “withstand extreme loads with enormous panel sizes.”

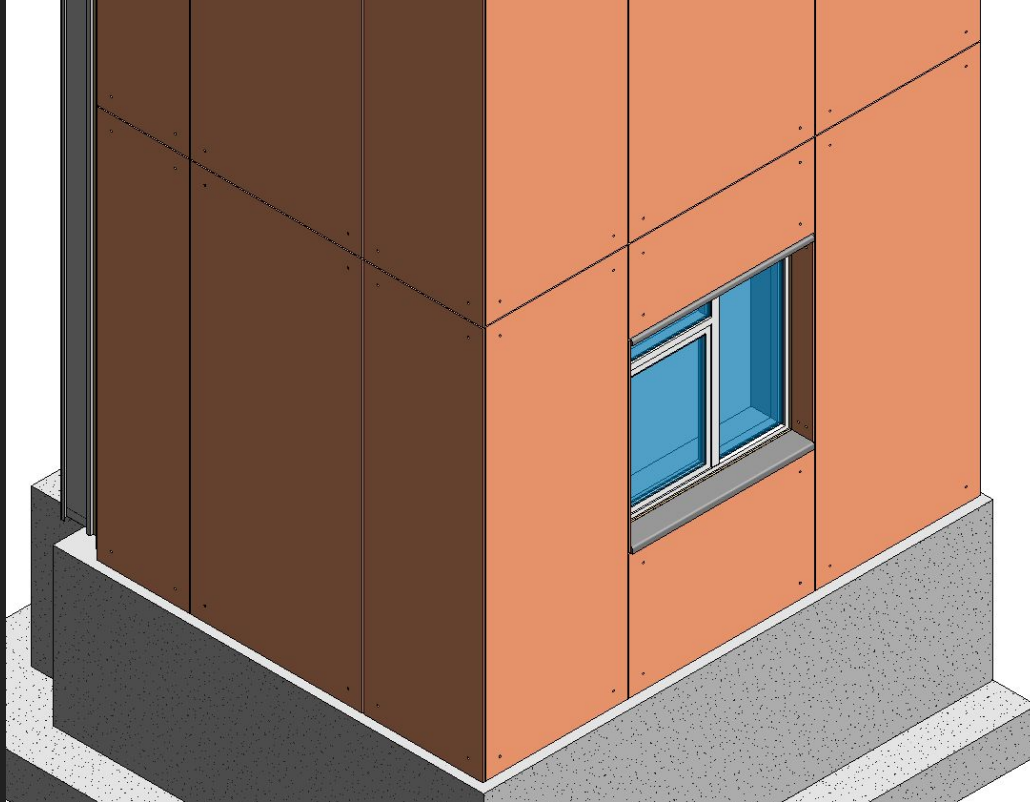
Mounting: These panels are suspended or hung on a “ventilated facade system” with the benefits of building physics, ecology, economy.

This material is Fireproof and Sustainable.

This product's greatest selling point is multi color array of options as well as material textures, providing architects with endless possibilities of exterior facade combinations



# Rieder Fiber C Panel Cont.



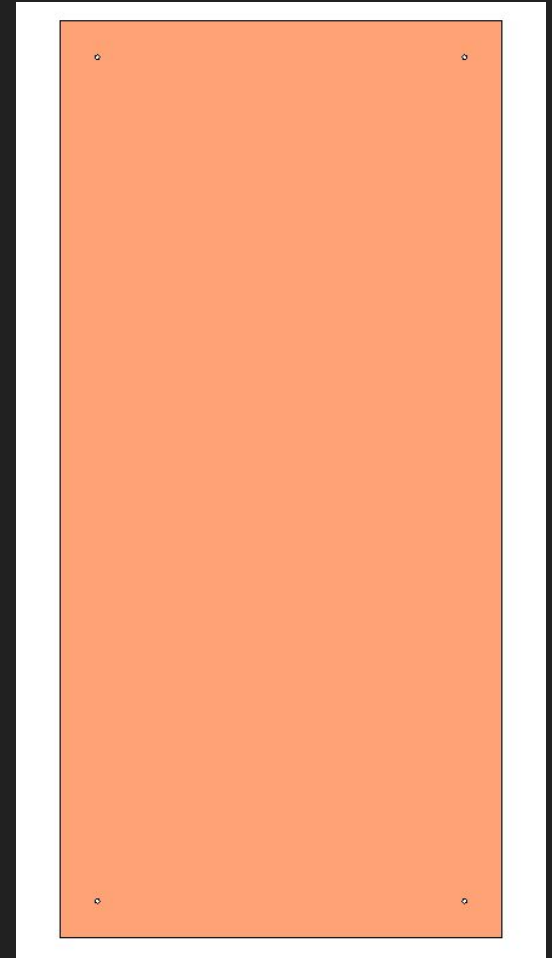
# Fiber C Concrete Skin Panel Specs

The standard panel size for Fiber C panels ranges from:

1200mm wide x (2500mm, 3100mm, 3600mm) Tall

Custom sizes are available for special order.

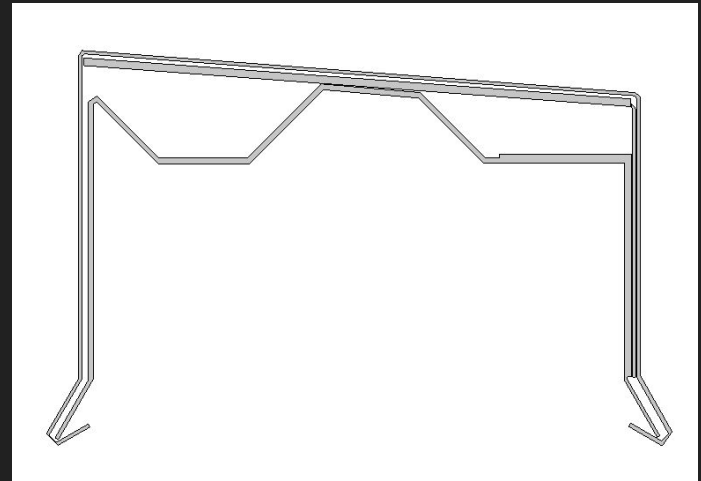
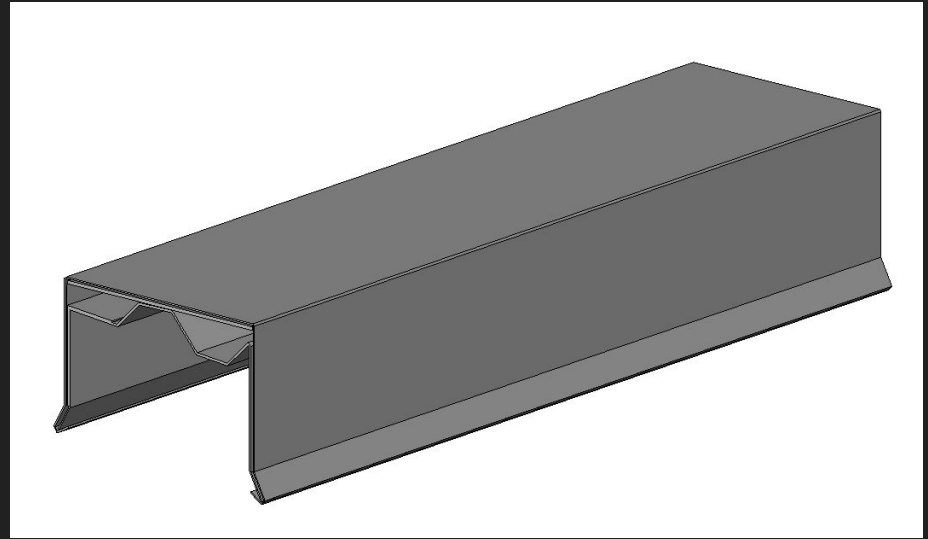
These panels have pre drilled holes at the corners, rivets are used to connect the panel into the vertical structural member, this could be the Steel L mount or Steel T mount.



# Parapet Condition

To prevent water from entering from the Parapet condition we install ATAS Rapid Lok Metal roof coping, this coping is installed on top of a Pressure Treated Wooden coping block.

Proprietary Corrugated steel is attached to manufacturer specification and bolted to Steel L brackets, Once the corrugated metal is installed and the Wooden block is weather proofed the Rapid Lok is snapped onto the corrugation.



ATAS PROPRIETARY RAPID-LOK  
METAL ROOF COPING  
FASTEN AS PER MANUFACTURER  
SPECIFICATION

WOOD COPING BLOCK

RIEDER FIBER C PANEL

ATTACH STEEL T OR L BRACKET  
TO VERTICAL MOUNTING RAIL  
W/ SELF TAPPING SCREW  
(SEE PLAN)

ROCKWOOL INSULATION

HENRY BLUESKIN  
WEATHER BARRIER

CMU PARAPET

SNAP IN PLACE  
ON TOP OF METAL  
CORREGATION  
CAULK ALL CONNECTING  
HARDWARE

1' - 5 7/16"

0' - 4"

TOP OF PARAPET  
27' - 0"

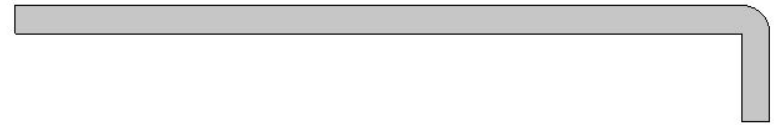
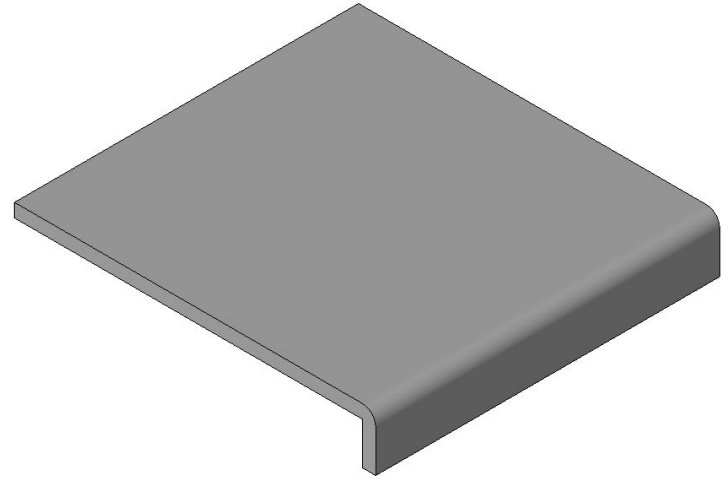
⑤ METAL ROOF COPING DETAIL  
3" = 1'-0"

# Window Sill Condition

To cap off the window sill, we install the Faveton Step Product, this is a similar material to the Rieder Fiber C panel.

The Window sill is mounted at a pitch to prevent the accumulation of water.

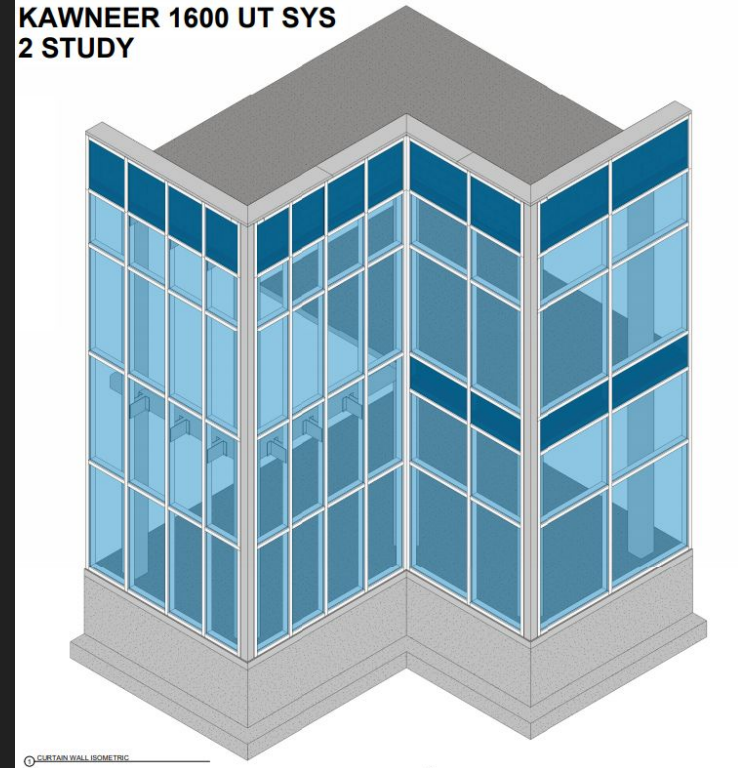
Mount structurally with Steel L bracket to structural vertical member and appropriate adhesive between Step and Steel L bracket



# Curtain Wall System

For the Curtain Wall system we were tasked to create a curtain wall assembly with a building that has a open mezzanine level

This allows us to demonstrate the curtain wall connection to both Concrete slab and Steel beams



# Curtain Wall

For my Curtain wall assembly I have chosen to use the Kawneer 1600 UT System 2

1600 UT Sys 2 is a stick system curtain wall, this means that all the mullions have to be assembled on site, this allows the architect to choose a curtain wall layout that is suited to his needs, allowing for different window glass pane segments, sizes and orientations



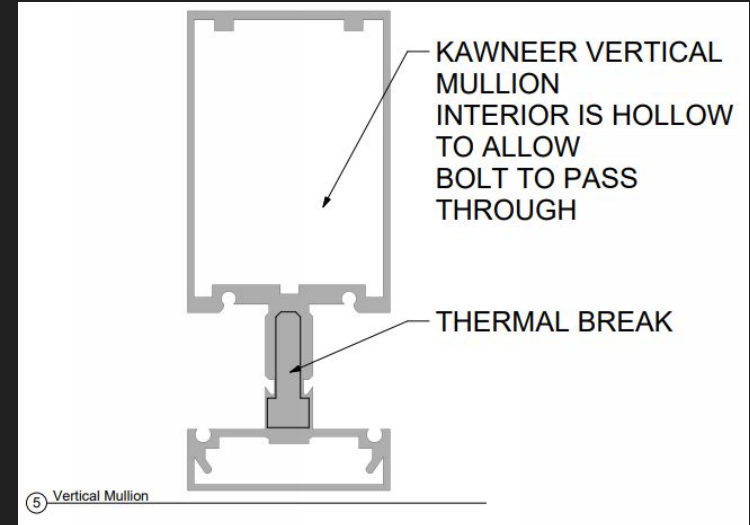
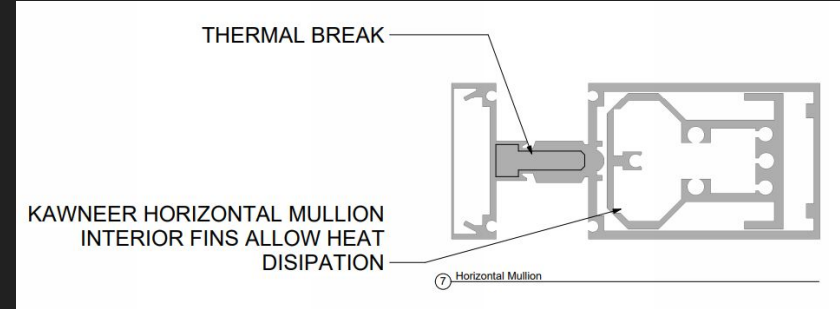
# Mullions

Kawneer produces separate mullions for curtain wall assemblies. This includes both horizontal and vertical members.

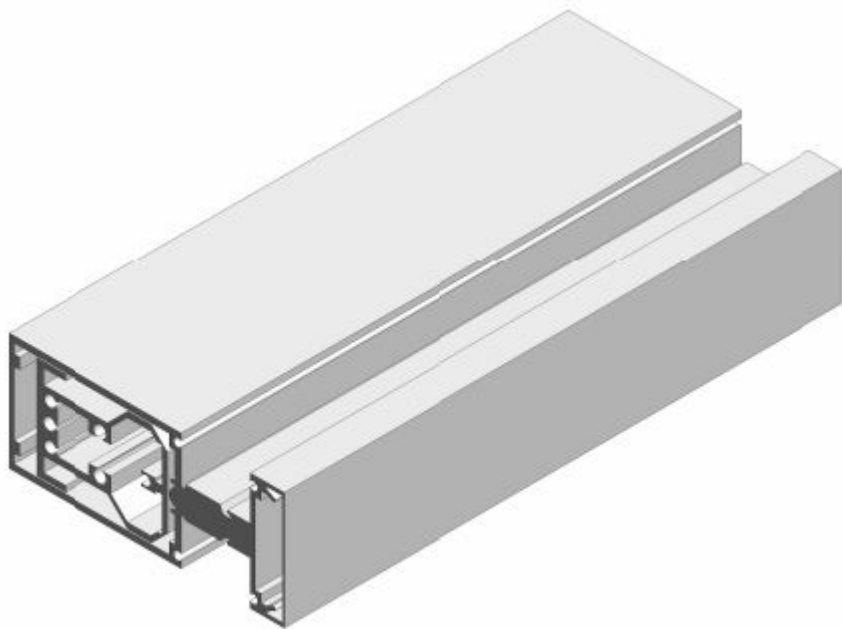
There are slight modifications made to the typical Mullion at conditions such as parapet and floor slab.

Vertical mullions are hollow to allow the bolt to pass through and secure to the concrete slab.

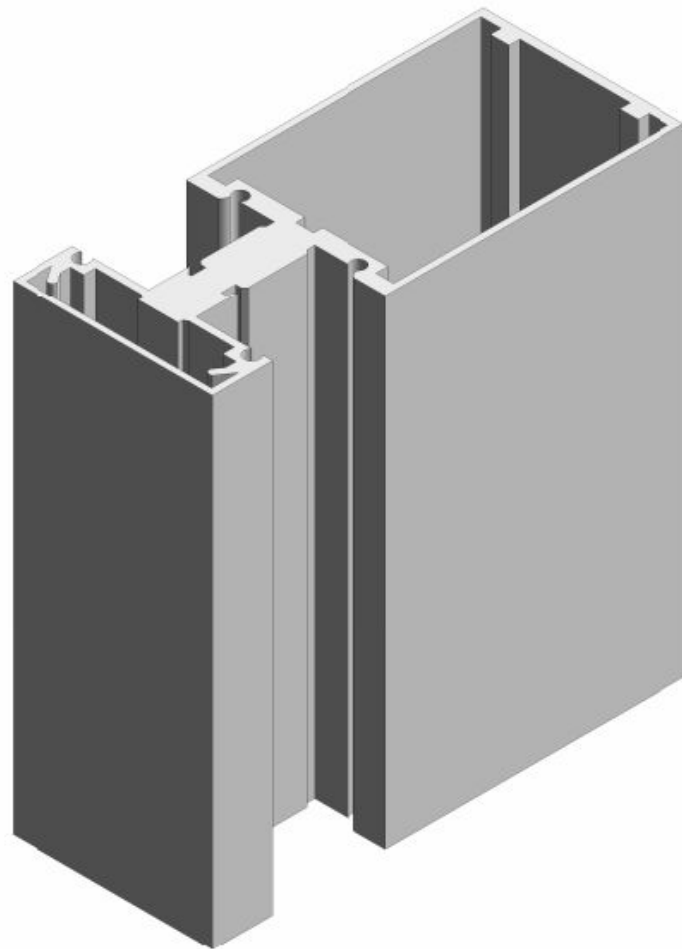
Horizontal Mullions have internal fins to help dissipate and regulate thermal stress.







⑧ Horizontal Mullion Isometric



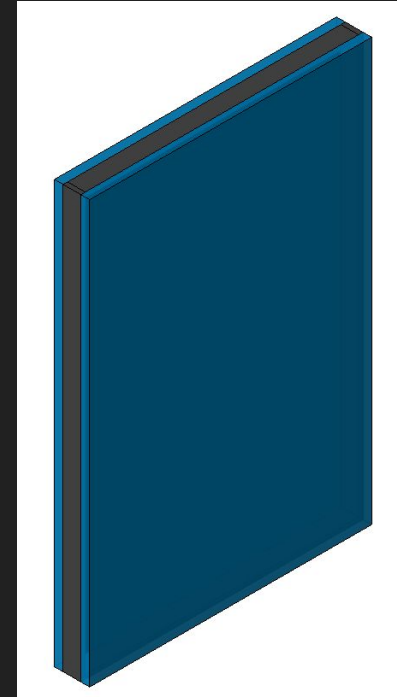
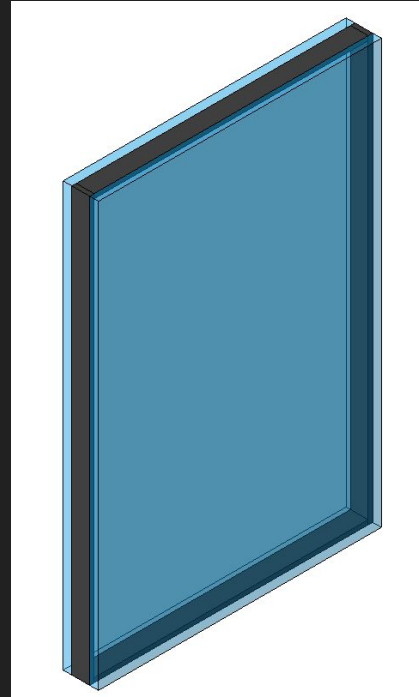
⑥ Vertical Mullion Isometric View

# Glazing

Kawneer offers double pane or triple pane solutions in their window glazings. Advantages between double and triple glass panes allow for greater thermal retention and prevention of heat development in the summer.

Since the system is stick, this allows for different size configurations.

Kawneer offers either Vision Glass or Spandrel Glass options

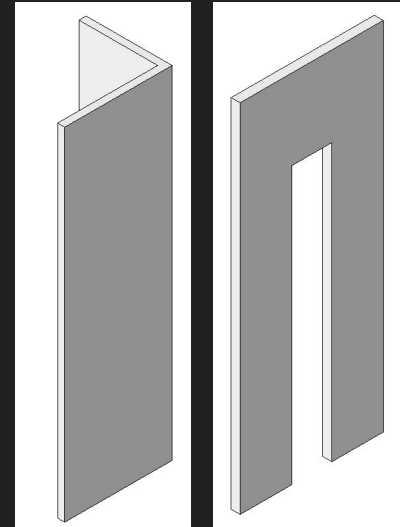
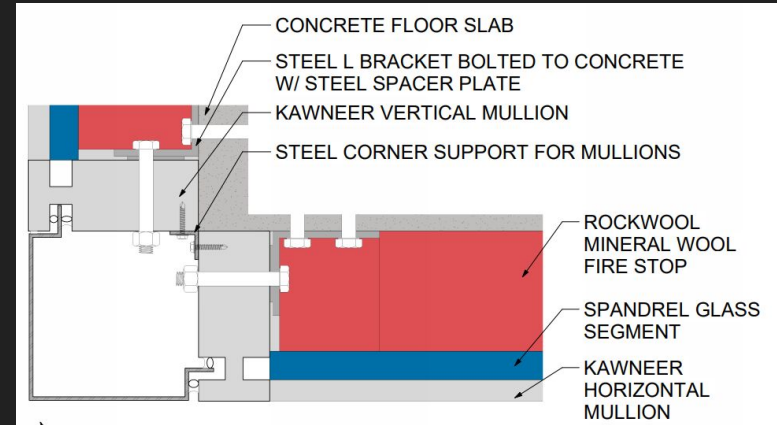


# Structural Connections

The Kawneer 1600 UT Sys 2 mounts to structural members since the curtain wall is non load bearing.

The Curtain wall attaches to the structural members through a Steel L bracket Connection, in between this Steel L bracket is a Steel Spacer plate which allows the assembler to use it for on the go fitment adjustment.

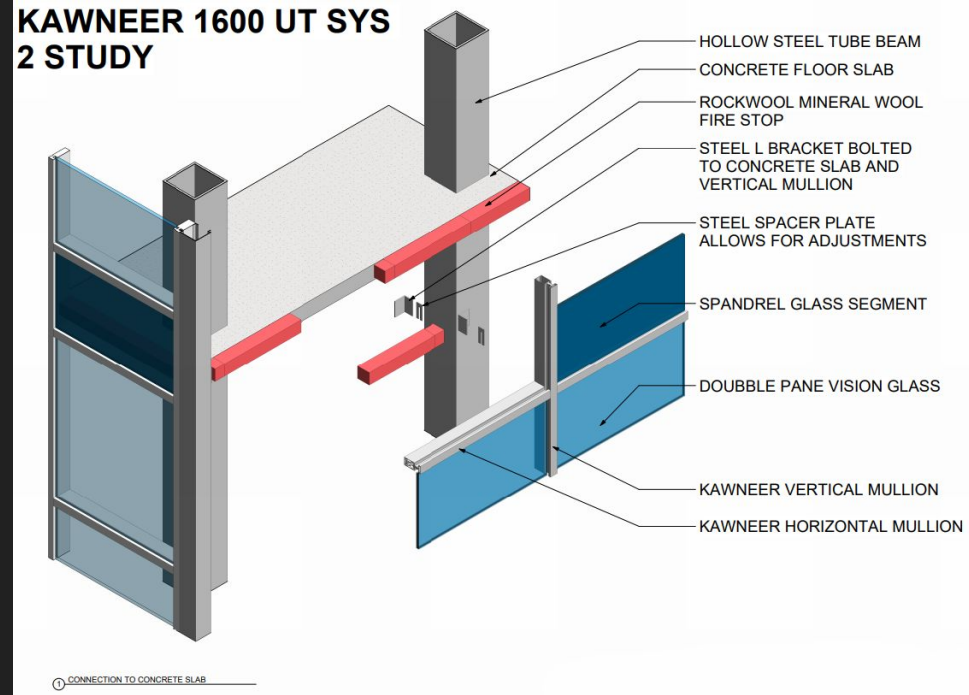
Steel L bracket is bolted Directly Through Mullion and Also bolted into either concrete floor slab or Steel Beam



# Fire Stopping

To prevent fires from traveling between floors a firestop is inserted between floor slab and mullion, Once more Rockwool is used due to the materials Fire Resistance

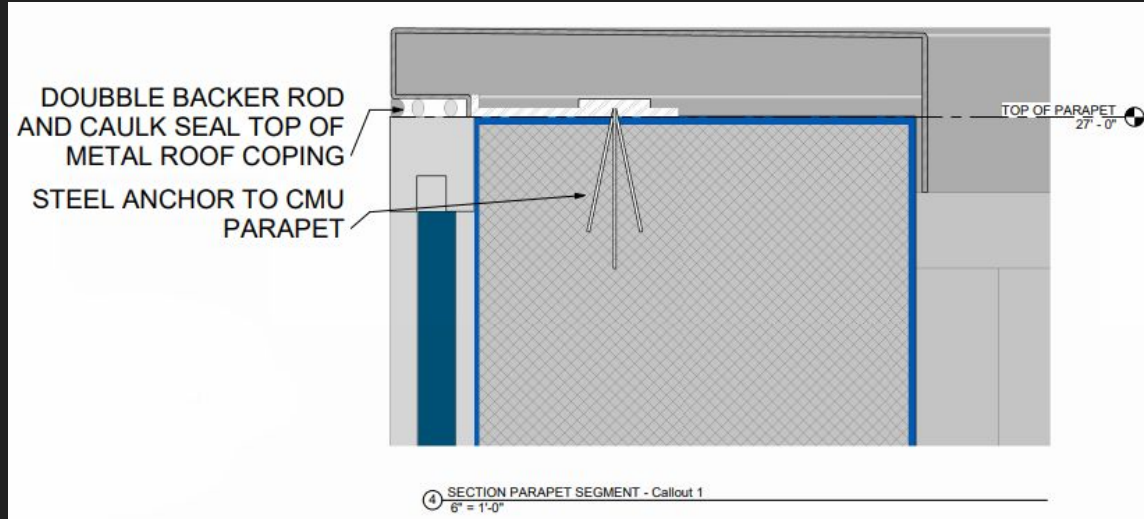
Once the fire stop is inserted it is taped over with a Product like 3M Smoke sealant tape to prevent smoke to pass through the Rockwool



# Kawneer Metal Parapet Coping

Kawneer specifies a metal roof coping that is pitched inward for safety reasons such as snow sliding, or ice, also this is to redirect water to a drain

The Coping is bolted down into the CMU parapet, double backer rod and caulk is used to prevent any water to enter behind the curtain wall mullion. Mullion is also flush at top to prevent water build up.



KAWNEER METAL  
ROOF COPING

KAWNEER 1600 UT  
SYSTEM 2 CURTAINWALL  
MULLION

SPANDREL DOUBBLE  
GLASS PANE

ROCKWOOL MINERAL  
WOOL FIRE STOP

CMU PARAPET

CORRIGATED CONCRETE  
SLAB

KAWNEER  
VERTICAL MULLION

DOUBLE PANE VISION GLAS

4  
1/2-102C

TOP OF PARAPET  
27'-0"

LEVEL 3 ROOF  
24'-0"

5 SECTION PARAPET SEGMENT  
1 1/2" = 1'-0"

# Finishing hardware

To cap curtain wall connections such as internal and external corners, Kawneer produces Steel Corner Panels.

These corner panels are inserted into the grooves on the mullions and are combined with backer rods and caulk, internal corner connections bolt into mullions to add rigidity to the connections, Steel L brackets are used for connections between members

