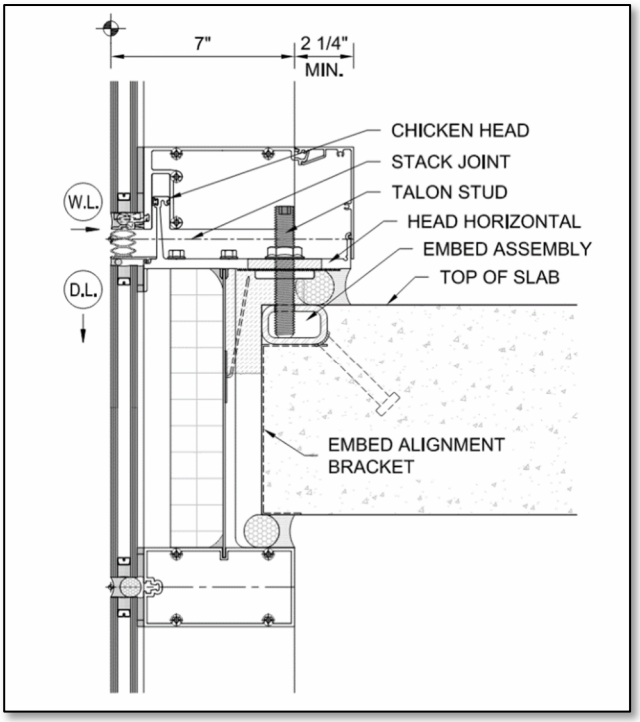
Guide to Surrounding Structure

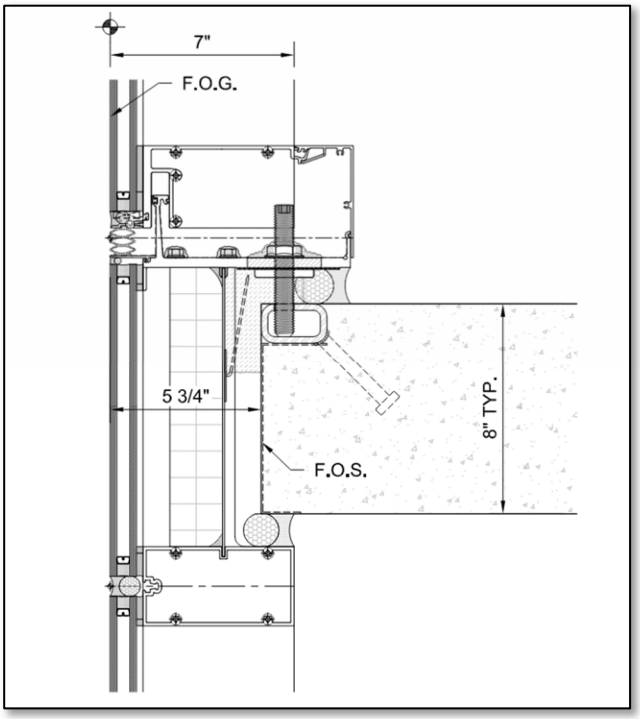
April 12, 2024

This is a general guide for Talon Wall and how it interacts with the surrounding building structure. Some of these items are a hard number that cannot vary, while others are a guide and have some flexibility. Reach out to a Peerless Design Engineer if there are any questions.

A) Typical Requirements:

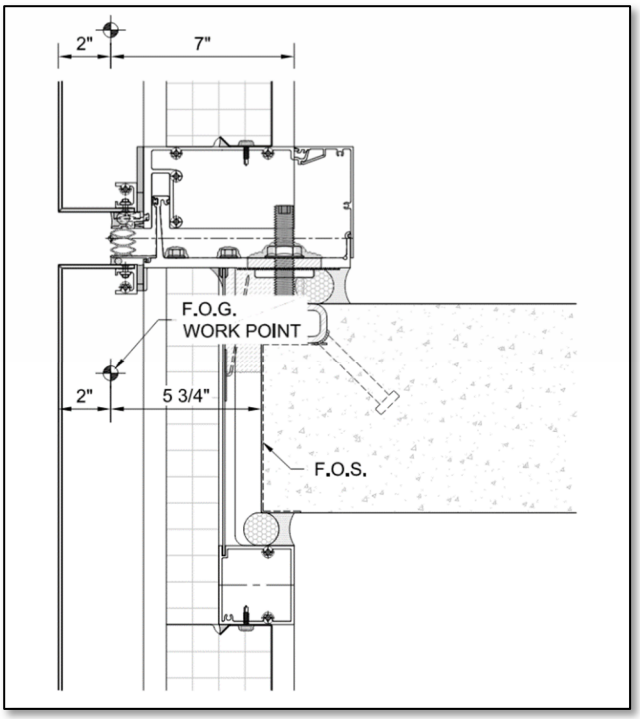


1) In its native format, the Talon Wall system is dead loaded at the top of the unit. The unit hangs off the top of the slab, generally with two "Talon Studs" per unit that sleeve into an embed assembly. This embed assembly has alignment brackets attached so that it can be easily placed and attached to the concrete formwork. The next unit on the floor above is stacked on top, and this connection is referred to as the stack joint. This means the break between two stacked units occurs at top of slab as well. The primary air/water barrier occurs at what is nicknamed the "chicken head", where the two stacked units physically sleeve together. Typical system depth is 7", with the sill trim extending beyond that.

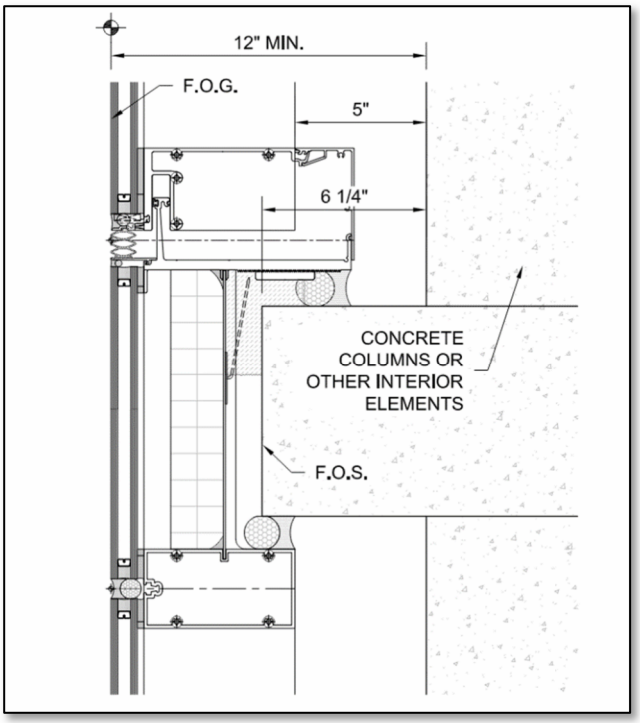


2) At typical stack joints, Face of Slab (F.O.S.) is located 5 ¾" from Face of Glass (F.O.G.). This dimension cannot vary. This is assuming a standard 1" O.A. glass infill, and no more than 1" concrete in/out construction tolerances.

3) Minimum concrete slab thickness is generally 8". Thinner slabs require further review by a structural engineer to determine if they are acceptable. Thicker slabs require a larger mullion notch-out, which can potentially require additional mullion reinforcing, or even supplemental anchoring at underside of slab. Generally, up to a 10" thick slab works without issue on Talon Wall.

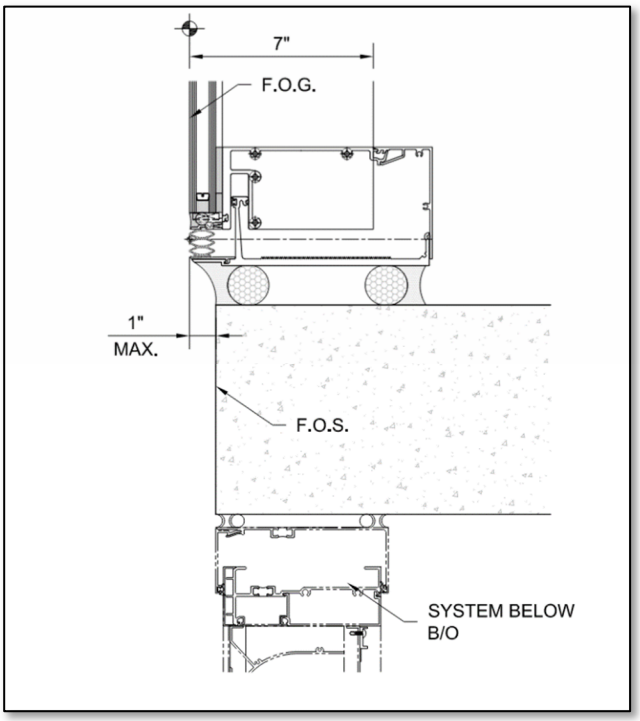


4) If a thicker infill is used, for example a protruding metal panel, the 5 ¾" dimension to Face of Slab is still from the theoretical Face of Glass (this can also be referred to as the face of system workpoint). The protruding infill will extend out beyond this workpoint.

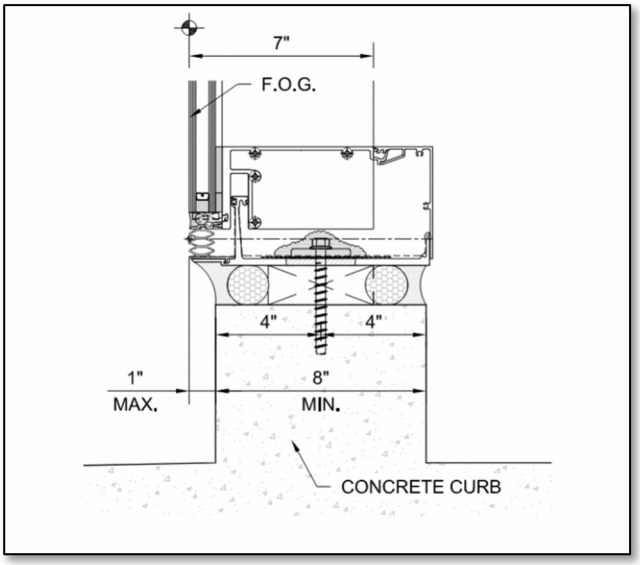


5) Interior elements that are present prior to unit installation, like concrete columns, elevator shafts, steel structure, etc., need to be located at least 12" back from Face of Glass. This equates to a 5" clearance from back of system, or 6 ¼" clearance from Face of Slab at stack joint locations. Note this assumes the standard sill trim is used. If a deeper sill trim profile is used, the required clearance may need to be increased. Note if the interior element only occurs at bottom of slab, like a beam, this clearance dimension may be able to be reduced depending on the element.

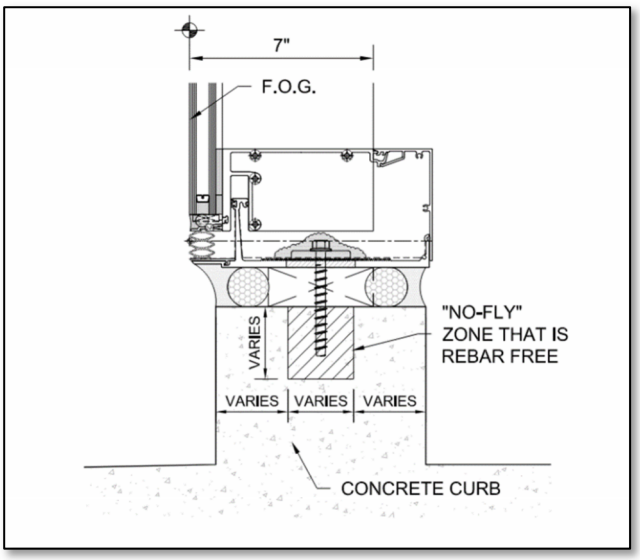
   At long runs, like elevator shafts and shear walls, the sill trim can be left out entirely. The noted 12" clearance dimension is still applicable, but can potentially be reduced to 10 ½" depending on the application.



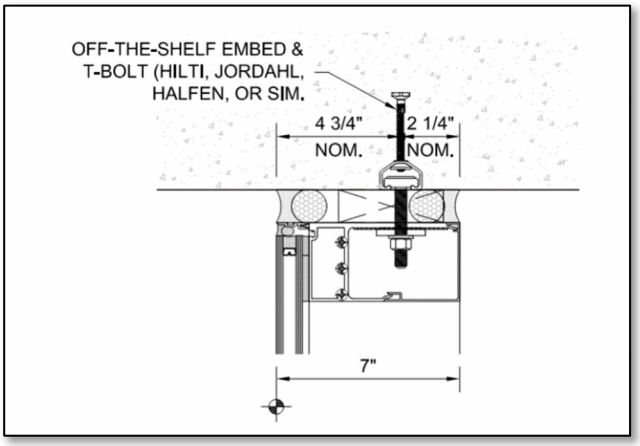
6) At starter track locations, Face of Slab needs to be flush with Face of Glass, or at maximum, located 1” behind Face of Glass and a sweeping sealant joint can be utilized.



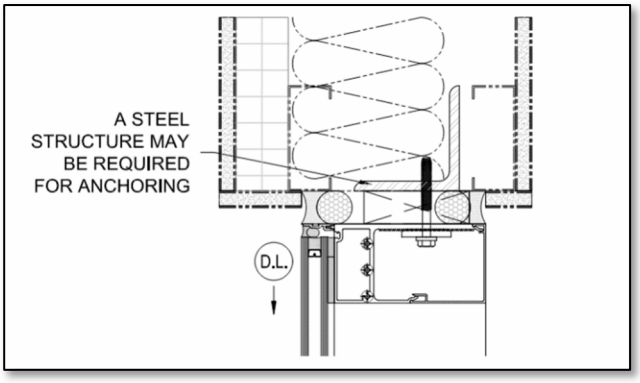
7) If a starter track occurs at a curb, the face of the curb should be flush with Face of Glass, or at maximum, located 1” behind Face of Glass and a sweeping sealant joint can be utilized. The concrete curb width should also be at least 8” to achieve the minimum edge distance required for the anchor fasteners.



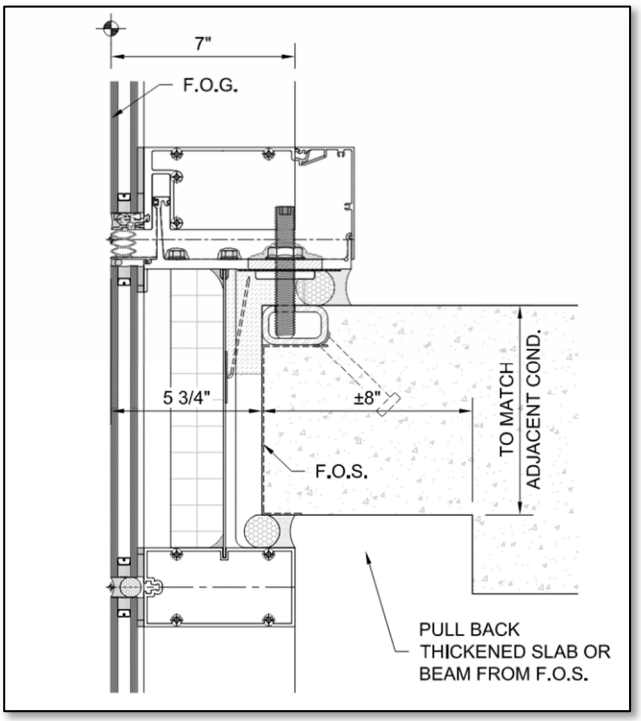
8) At concrete that is not post-tensioned, such as curbs, where drilled concrete anchors are used, a “no-fly” zone should be coordinated that provides a rebar-free area at anchor locations. The size of the zone will vary per project anchoring requirements, but the location of these zones will generally be located roughly 4” to the left & right of each mullion.



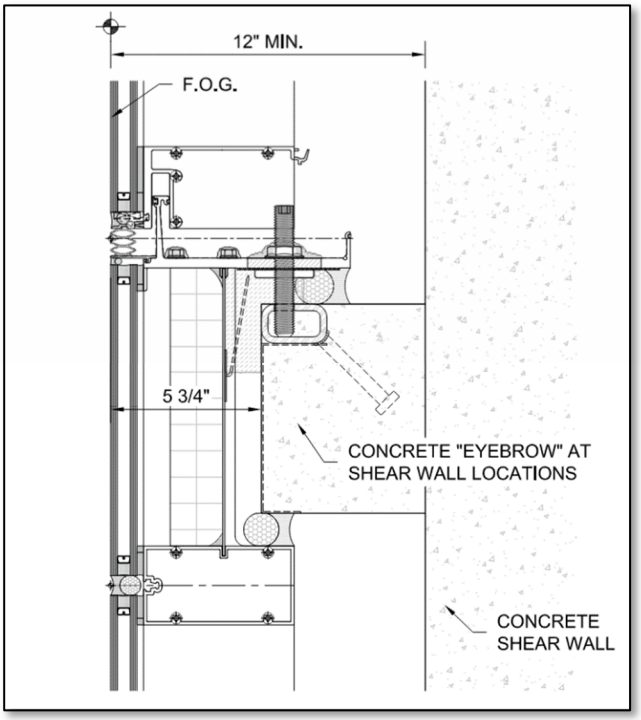
9) When anchoring a unit at underside of slab, such as at balcony conditions, a typical embed channel and T-Bolt will be used from a manufacturer like Hilti, Jordahl, Halfen, or similar.



10) When anchoring a unit at an overhang condition that has a drop ceiling, keep in mind that Talon Wall is dead loaded at the head. This means the substrate being anchored to needs to be robust enough to handle the weight of the unit. It’s not uncommon for the substrate of a drop-down ceiling to just be shown as a metal stud framing system, which may not be adequate.

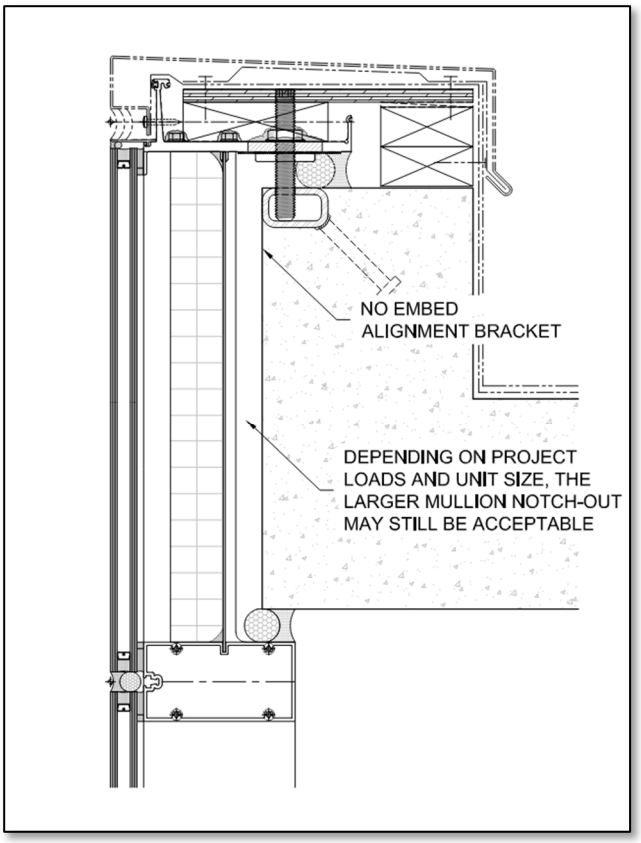


11) Since Talon Wall "swallows" the edge of slab, concrete thickness and thickness changes are critical. If a thickened slab or beam runs to Face of Slab, it is recommended exploring with the design team if the thickened portion of the concrete can be pulled back in order to maintain a consistent edge of slab thickness. This may not always be possible for structural reasons, and if changes can't be made, the Talon Wall units will need to accommodate the varying slab thicknesses. If this is the case, it's critical these thickness changes are clearly noted and dimensioned on the shop drawings.



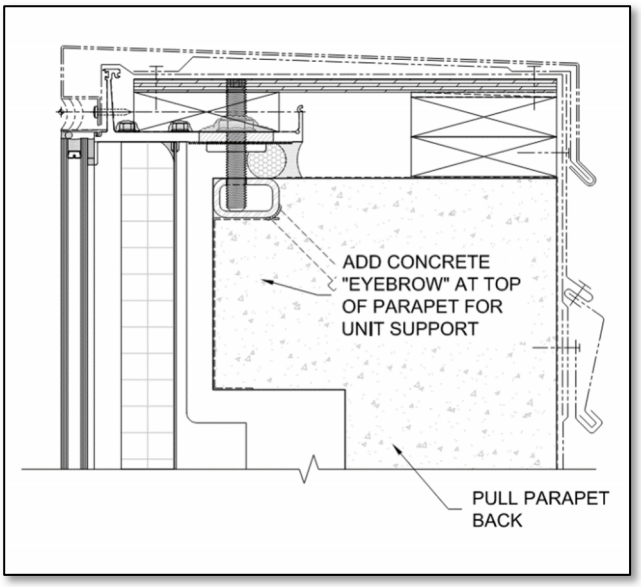
12) Where concrete shear walls occur, it's recommended to explore with the design team if an "eyebrow" can be added to the face that mimics the adjacent concrete slabs. This allows for consistent and typical embed placement. If this cannot be accommodated, a custom steel support structure will be required.

Note that regardless, special accommodations need to be made at shear wall and similar locations, since access from the interior is blocked. Exterior access is likely needed for the sealant work and to aid in unit installation, and it may be prudent to add "last bay" units close to the area, depending on the installation sequence.

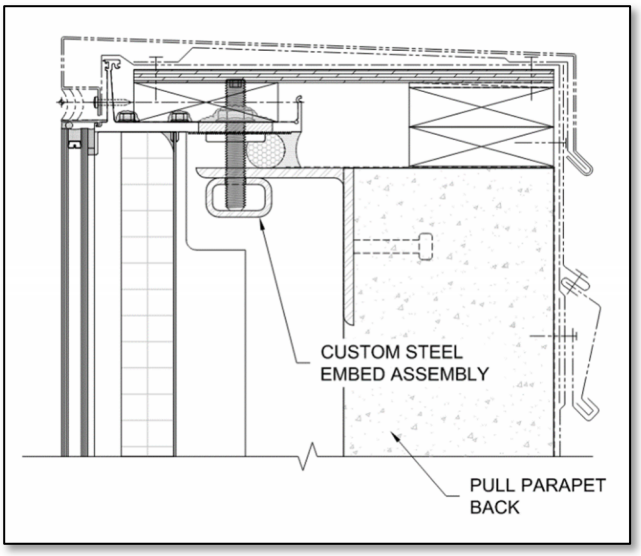


13) Where concrete parapets occur, and the height of the parapet is minimal, a typical unit configuration may still be acceptable depending on the loads of the project and the size of the unit. This will result in a larger mullion notch-out, which as noted previously will likely require mullion reinforcing and even supplemental anchoring at underside of slab. Note at these locations, the embed assemblies will not come with alignment brackets, since they would be large and unwieldly.

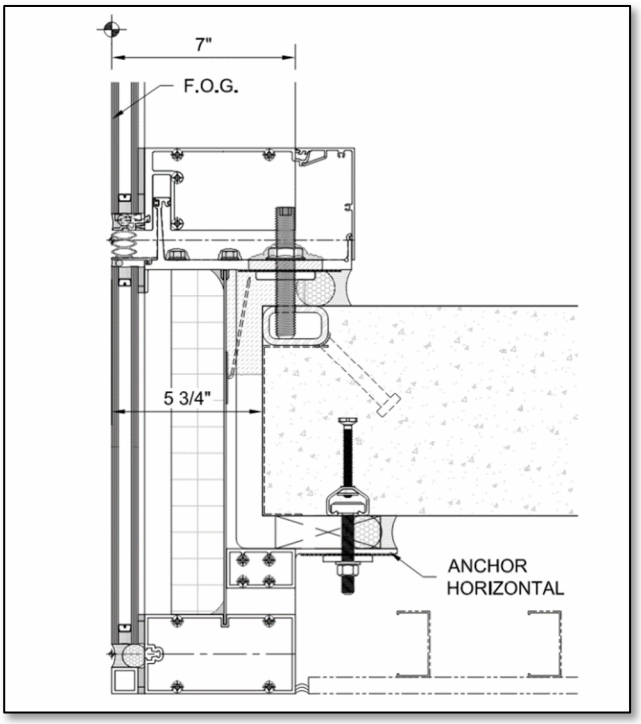
This applies to stack joints as well that may be at similar curb conditions or thickened slabs.



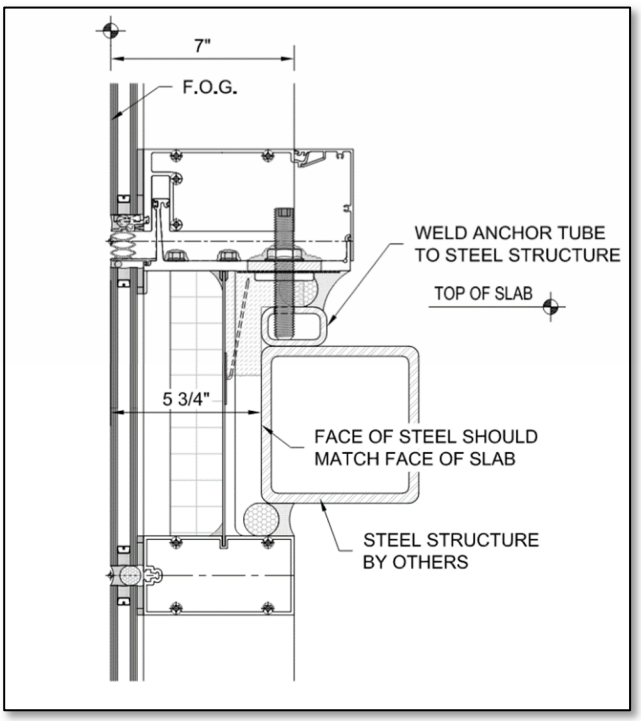
14) Where large concrete parapets occur, it is recommended to explore with the design team if the parapet can be pulled back, with a concrete “eyebrow” added at the top of the parapet that mimics a typical slab edge condition. This allows the mullion notch-out to be minimized, and avoids custom embeds or steel structure.



15) Where large concrete parapets occur, and Item 14 cannot be accommodated, the next best solution requires pulling the concrete parapet back and using a custom embed assembly at the top for unit anchoring. The steel angle should be continuous in order to provide a sealant surface. The steel tube below is only required at mullion locations.

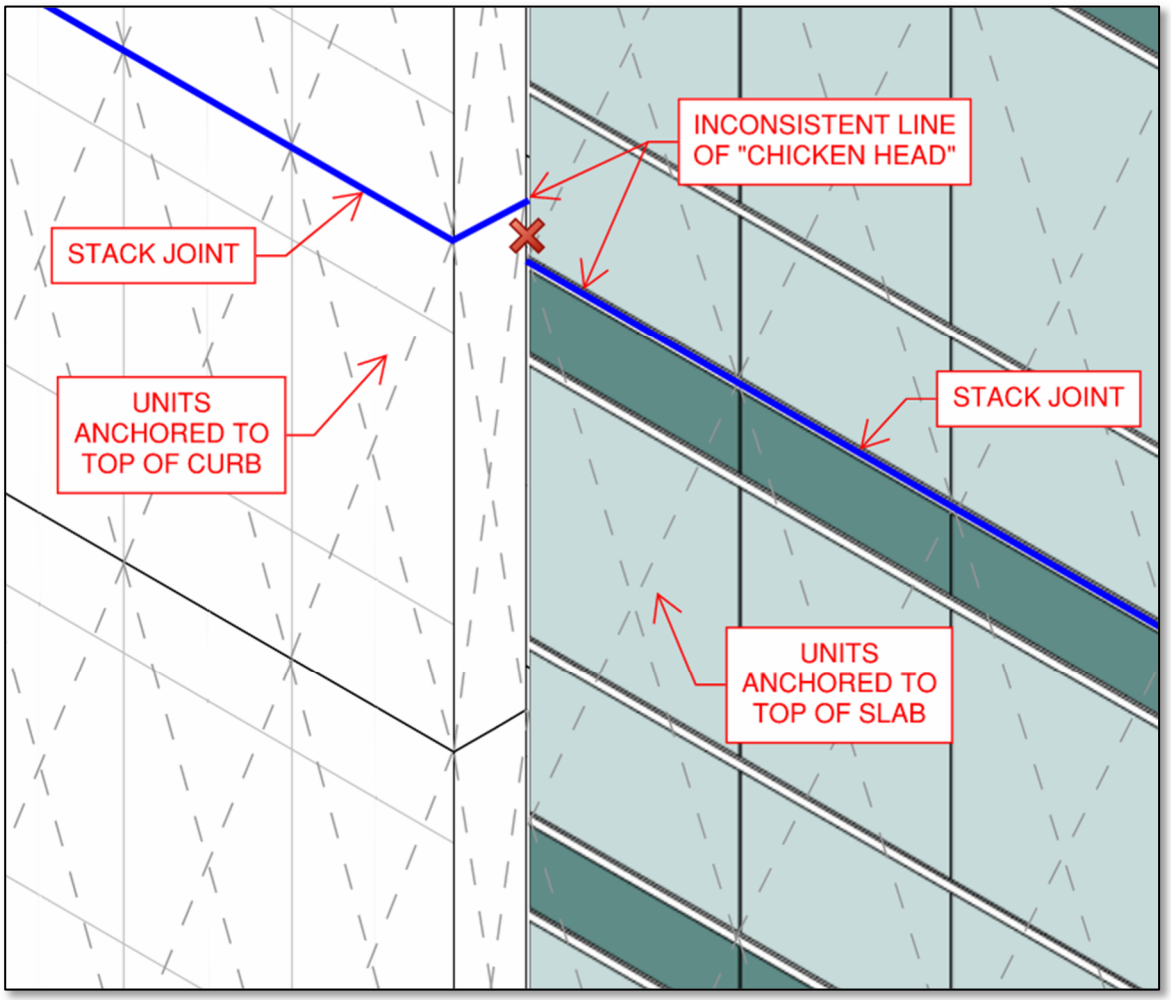


16) If a project requires “slab edge cover” units, this can be accomplished by using the custom horizontal member that allows for supplemental anchoring at underside of slab. There is a limit to how far the unit can cantilever down past bottom of slab, which will vary per project loads.



17) If a concrete slab is not present, and units are to be anchored to steel structure by others, a common way to accomplish this is to run an HSS steel tube with an anchor tube welded to the top. This anchor tube will be similar in function to the typical Talon Wall embed assembly. This means the top of the anchor tube should match the top of slab elevation benchmark. Note the interior sealant work and edge of slab insulation are likely not critical at areas like this since they are often “double span” and not a floor-to-floor connection. Its assumed conditions like this are either at mechanical areas where the exposed steel is acceptable, or that interior cladding by others will be provided to cover the steel.

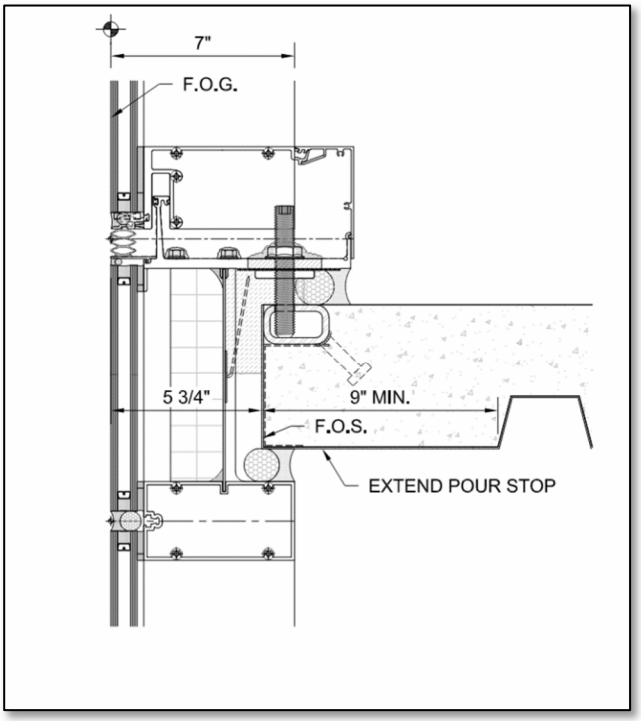
18) Talon Wall should have a consistent line of chicken head (i.e. the stack joint at head horizontal or starter track) along a consistent run of units. If units are broken by work by others, this is not important. Since it's common for Talon Wall to completely enclose a building, this usually means the entire perimeter should have a consistent top of concrete (or whatever structure is being anchored to) elevation benchmark. If units terminate at different points on different parts of the building (for example, some portions anchor to a curb, rather than top of slab), and these units need to transition to each other, the resulting step is difficult to accommodate. Depending on the project and how prevalent these poor transitions are, significant changes to the overall design may be required to avoid this.



19) Similar to Item 18, at starter track conditions, these usually occur at the ground floor or at terraces where it's common to have curbs. These curbs often start and stop, which would create the unfavorable chicken head transition noted above. Since there are often doors at ground floor and terraces, it is recommended to utilize the natural starter track break at the door in order to make the transition step. This may require modifications to the curb layout, which should be coordinated with the architect. The earlier this is coordinated, the easier it will be to implement.

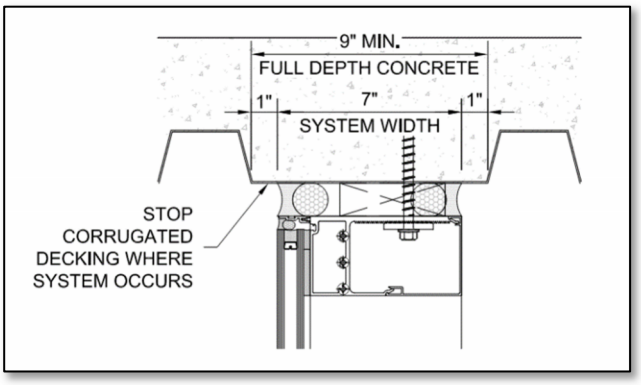
B) Composite Concrete Slab Specific Requirements

The items above assume a typical post-tensioned concrete slab construction. If a project has a composite concrete slab consisting of corrugated decking with a concrete topping slab, special accommodations will be required to allow for Talon Wall installation. Note all of the applicable items above still apply to composite concrete slabs.



20) Wherever the typical Talon Wall stack joint occurs, the steel decking will need to be held back at minimum 9" from Face of Slab (to be confirmed on a per-project basis). The Talon Wall embeds require a minimum amount of concrete surrounding them, which can only be accomplished if the edge of the slab has monolithic, full-depth concrete. In general, this can be accomplished by extending the concrete pour stop as needed. Full depth concrete at Face of Slab also provides a consistent sealant surface at underside of slab.

21) The slab thickness of composite concrete slabs is generally thinner than post-tensioned slabs. It's recommended that a structural engineer provides a preliminary review on a per-project basis, since the loads the embeds can handle are reduced due to the thinner slab.



22) If anchoring to underside of a composite concrete slab, the corrugated decking needs to stop where the Talon Wall units are located, and a full-depth slab is required. This is to avoid the anchor bolts occurring at the high point of the corrugated decking, as well as providing a consistent sealant surface.