PEPPER CONSTRUCTION

Quality Technical Bulletin

Shelf Angles & Steel Connections to Concrete

Issue 20 | 051000 | 29 May 2013

BUILDING QUALITY AT EVERY LEVEL

Structural steel connections to existing concrete beams and columns typically are never clean and easy. (Yes, shelf angles are structural steel connections!) We need to make sure that the concrete is either relatively flat or the steel is properly shimmed. The steel and the concrete MUST have full contact with each other (properly shimmed) in order for the bolts and steel to perform as designed. If the steel is not fully in contact with the concrete, the bolts will be over stressed and have a potential to shear off.

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We Should Be Looking Out For

- Being able to move or rotate the washer.
- Verify that the connections are properly torqued...review Mfr Information, Drawings, and specifications. [SLIP CRITICAL]
- Checking to see if the bolt penetrates out of the face of the nut.

- Reviewing if there is a space between the concrete surface and the steel?
- Verifying the bolt count.
- Confirming bolt diameter.
- Checking the bolt clearance from concrete edge.
- Verify shim material
- Verifying metal shim compatibility—different metals.
- Confirm shim allowance with Manufacturer and Specifications

► When we shim an angle or steel connection, we need to make sure that the shim is full depth or we weld, per specifications, a shim on top AND bottom, if required.

►The shim must be metal (typically the same metal & finish), unless specifically approved by the engineer of record.

►The shim must be located at EACH bolt.

►Shelf angles lower legs should be set level or slightly tipped forward in order to shed water. NEVER set a shelf angle with a slight back pitch. Utilize a wedge washer in order to obtain the proper slope.

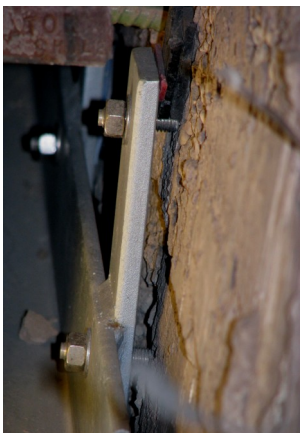
►The shelf angle should always support 2/3's of the depth of the masonry/stone, unless specifically identified in the job specifications. (Example: a 4" nominal brick face should be no more than 7/8" from the toe of the angle.) Keep in mind that the dimension to the toe will change as the depth of the material being supported grows or shrinks.

►Prior to drilling the hole for the bolts, we need confirm that the holes are within the specified edge distance from the concrete beam or identified material in the drawings.

►Verify that the hole in the steel is no more than 1/16" greater than the diameter of the specified bolt, unless noted otherwise on the drawings. ***(I KNOW FOR INSTALLATION PURPOSES, WE GENERALLY WOULD LIKE TO SEE THE HOLES 1/8" LARGER THAN THE BOLT, HOWEVER, WE NEED TO DISCUSS WITH THE ARCHITECT/ENGINEER PRIOR TO ORDERING, FOR APPROVAL.)***

►Holes in steel must be drilled or punched...***NEVER TORCHED***.

►The washer and nut MUST be fully engaged onto the steel and possibly torque, if specified by the drawings. A wedge washer might be needed due to concrete tolerances.



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