

BULLETIN: REQUIREMENTS FOR USE OF ASC STEEL DECK 3WH AND 3WHF METAL DECK WITH CONCRETE FILL

PURPOSE: This bulletin clarifies the requirements for the use of ASC Steel Deck 3WH and 3WHF metal deck with concrete fill in buildings under the jurisdiction of the Division of the State Architect (DSA).

BACKGROUND: ASC Steel Deck stopped producing their 3W and 3WF, 3" deep metal deck around January 2014 and started producing 3WH and 3WHF deck with a narrower flute width of 3 7/8" instead of 4 3/4" used in the 3W and 3WF profiles. Although most properties of the deck are similar, the reduced lower flute width raises the following issues:

- Reduced edge distance for steel headed studs used for composite beam design and lateral load shear transfer.
- Reduced edge distance for post-installed anchors and cast-in-place anchors (inserts) installed in the underside of the deck.

ASC Steel Deck has subsequently begun to produce both 3W and 3WH deck profile lines.

DESIGN REQUIREMENTS: In addition to other design requirements of the CBC (e.g. diaphragm shear capacity, etc.), when ASC Steel Deck 3WH and 3WHF deck is specified or substituted, the following specific requirements shall be addressed.

1. STEEL HEADED STUD ANCHORS USED FOR COMPOSITE BEAM DESIGN:

The nominal shear strength of steel headed stud anchors installed in the low flute of the ASC 3WH profile and used for composite beam design shall comply with AISC 360-10, Section I8. The capacity of the headed studs are largely based on the edge distance (e_{mid-ht}) to the steel deck web in the load bearing direction and the average width (w_r) of the ribs, where both are measured to the mid-height of the deck flutes. When comparing the ASC 3W and 3WH deck profiles, both have the same e_{mid-ht} and w_r dimensions, and hence have the same headed stud capacity. However, with the narrower lower flute of the 3WH deck, the detailing and spacing requirements of AISC 360-10, Section I8.2d need be considered. Particular attention must be given when more than one headed stud is to be installed in the low flute at a given support.

2. STEEL HEADED STUD ANCHORS USED FOR LATERAL LOAD SHEAR TRANSFER:

The nominal shear strength of steel headed stud anchors installed in the low flute of the ASC 3WH profile and used to transfer lateral load shall be determined in accordance with CBC Section 1909A or AISC 360, Section I8 and AISC 341, Section D2.8.

3. POST-INSTALLED ANCHORS AND CAST-IN-PLACE ANCHORS (INSERTS) INSTALLED IN THE UNDERSIDE OF DECK:

- a. The capacity of post-installed anchors and cast-in-place anchors (inserts) installed in the upper flute in accordance with a valid evaluation services report for 3W and 3WF deck profiles can be used in the 3WH and 3WHF deck profiles at the full capacity determined in accordance with the evaluation services report.
- b. The capacity of post-installed anchors and inserts installed in the lower flute shall be determined as follows:
 - i. Post-Installed Anchors:

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- A valid evaluation services report per IR A-5 for installation in 3WH and 3WHF deck profiles.
 - For anchors with an evaluation services report which includes capacities for installation in both a B type deck and a 3W deck profiles, the tension and shear capacity of the anchor shall be taken as the least value for the two deck types.
 - An alternative method that employs a different design method or a test method requires approval and shall be submitted in accordance with Section 4-304, Part 1, Title 24, C.C.R.
- ii. Cast-in-Place Anchors (inserts):
- A valid evaluation services report per IR A-5 for installation in 3WH and 3WHF deck profiles.
 - An alternative method that employs a different design method or a test method requires approval and shall be submitted in accordance with Section 4-304, Part 1, Title 24, C.C.R.

CONSTRUCTION CHANGE SUBMITTAL REQUIREMENTS: All changes to the approved construction documents shall be submitted as a construction change document (CCD) in accordance with DSA IR A-6, and approved prior to fabrication and installation of the deck. The submittal shall consider the applicable requirements of this bulletin and include revised construction documents showing as a minimum the following:

- a. Dimensioned details for placing multiple steel headed studs in the low flute, if applicable.
- b. Details for placement of revised post-installed anchors and inserts used to anchor non-structural components and associated structural calculations.