

Agenda item: 650-591

Title: Figure F-2, 16t, Maximum Width

Date: Nov. 14, 2005 Revision: 1
 May 17, 2004 Revision: 0

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Purpose: More clearly depict, in API 650 Figure F-2, the limit of "16tb max" for horizontal members that are wider than 16 tb.

Source: 650-I-35/03

Impact: Business impact is low. This agenda item is needed to prevent the misinterpretation of existing rules.

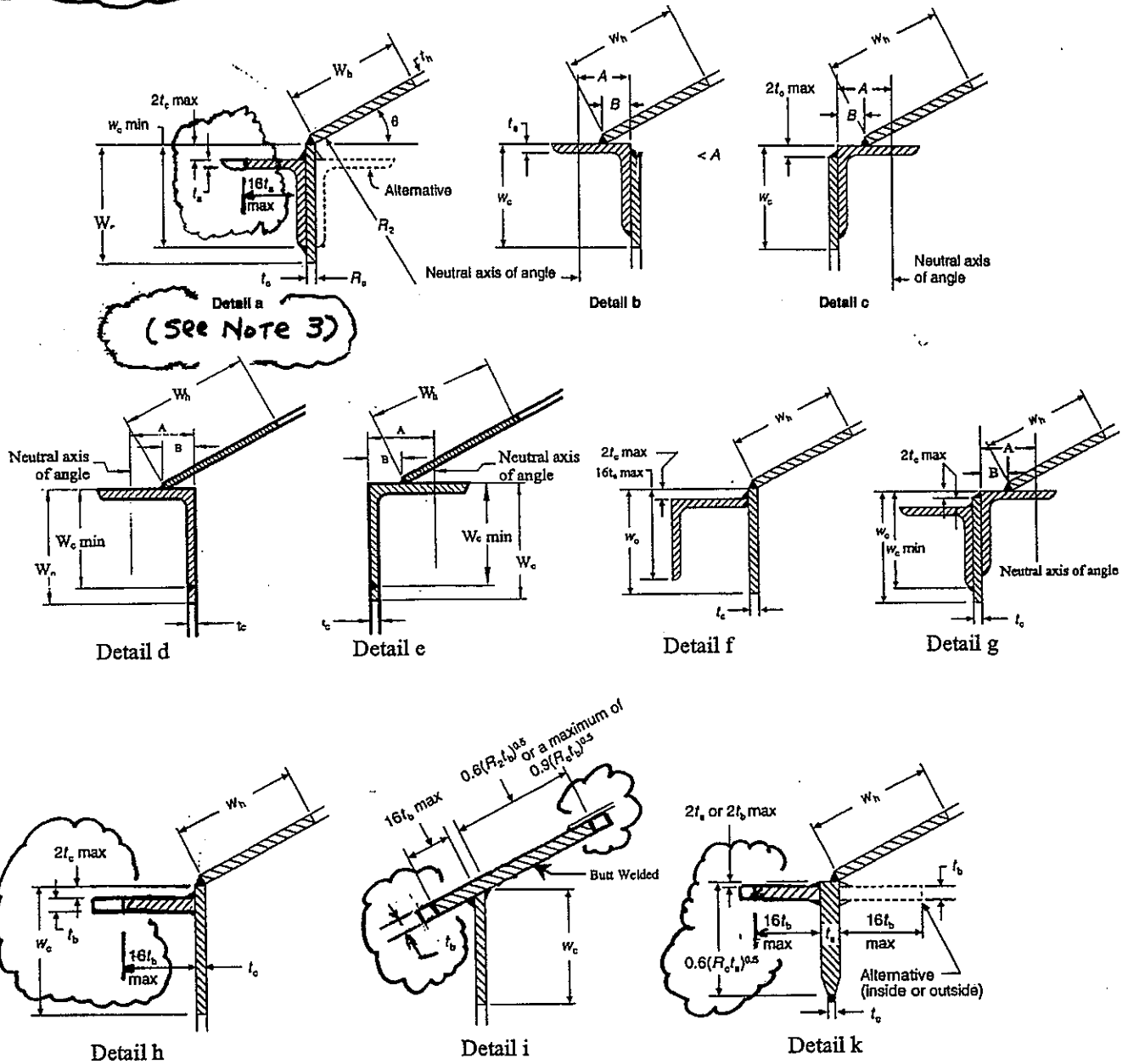
Rationale: The original inquiry dealt with Addendum 2, Figure F-2, detail g only. This issue is common to other bar details. Agenda item scope was extended to rim angles. Details a-j, excluding detail f, have been altered to make it clear that members can be wider, but no credit is allowed in the compression area calculation.

Completion of this agenda item was placed on "working" status pending the outcome of Agenda Item 620-267.

Proposal: Modify Figure F-2 per attached figure, dated 11/14/05.

Proposed Figure F-2

Agenda 650-545 Was ALREADY APPROVED FOR PUBLICATION



- t_a = thickness of angle leg,
- t_b = thickness of bar,
- t_c = thickness of shell plate,
- t_h = thickness of roof plate,
- t_s = thickness of thickened plate in shell,
- W_c = maximum width of participating shell = $0.6(R_c t)^{0.5}$ where $t = t_c$ or t_s as applicable,

- W_b = maximum width of participating roof = $0.3(R_2 t_h)^{0.5}$ or 300 mm (12 in.), whichever is less,
- R_c = inside radius of tank shell,
- R_2 = length of the normal to the roof, measured from the vertical centerline of the tank, = $R_c / (\sin \theta)$.

Notes:

1. All dimensions and thicknesses are in mm (in.)
2. Dimension B in details b, c, d, and e is: $0 \leq B \leq A$.

add:

3. The limit on the horizontal dimension, $16 t_a$, for rim angles applies to details a thru e and g.

Figure F-2 Permissible Details of Compression Rings

Agenda Item: 620-267

As passed
to publ'n

Title: Area of Angle for Compression Area Design

Date: September 10, 2004

Contact: Name: Ramesh Gandhi
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Purpose: Clarification for effective area added for reinforcement in compression ring design.

Source: Original Inquiry 620-I-10-02 (#15)

Revision:
Impact: None

Background : API 620 Section 5.12.4 provides the design of compression ring and the participating width (W_c , W_h) of the shell/roof plate resisting the compressive force. Fig. 5-6 shows the Details of compression ring junction with added reinforcement by means of angle, bars or ring girders within the W_c or W_h . There may be a case where the actual size of the angle, bar or any member added to provide the reinforcement extends beyond the calculated width W_c or W_h .

The inquiry asked whether or not it is permissible to consider full area of added angle as reinforcement for compression area design.

Proposal: Propose to revise 5.12.5.3 as follows:

5.12.5.3 Such an angle, bar, or ring girder, if used, may be located either inside or outside the tank (see Figure 5-6) and shall have a cross section with dimensions that satisfy the following conditions:

a. The cross-sectional area within the limit of W_c or W_h makes up the deficiency between the area A_c required by Equation 27 and the cross-sectional area provided by the compression-ring region in the walls of the tank.

Rationale: The maximum stress caused by the compressive force is at the juncture and reduces significantly within the short distance (W_c or W_h) away from the juncture. The effective area resisting this force is considered to be within this limit.

Notes:

(for reference only)