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Mr. J. George
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Highway FM 201
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Subject: Cable Tray Support Review Questions
Comanche Peak Steam Electric Station
Independent Assessment Program - Phase 4
Texas Utilities Generating Company
Job No. 84056

Dear Mr. George:

Attachment A to this letter contains additional cable tray support review questions. If there is any question or uncertainty while preparing responses, please call.

Very truly yours,

N. H. Williams
Project Manager

Attachments

cc: Mr. D. Wade (w/attachment)
Mr. G. Grace (w/attachment)
Mr. S. Burwell (w/attachment)
Mr. S. Treby (w/attachment)
Mrs. J. Ellis (w/attachment)
Mr. R. Ballard (w/attachment)

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ATTACHMENT A

CABLE TRAY SUPPORT QUESTIONS

1. Detail "A", drawing 2323-E1-0700-01-S, Hanger numbers: CTH 331 and 332.

The original design calculations for Detail "A" (reference SCS-104C, set 5, sht 1) state that the detail "A" is similar to detail SP-7, therefore no calculations were necessary. Cygna believes that such an assumption may be inaccurate for the following reasons:

- a. The Detail "A" base angle will not be subjected to resisting compressive forces as the base angle of an SP-7 when the support is loaded with vertical and transverse cable tray loads.
- b. The anchor bolts for detail "A" will be loaded primarily in shear while those for an SP-7 are loaded in tension and shear.

Further calculations for this detail included in the design review for CMC 1887, Rev. 0 also assumes tension and shear loadings on the Detail "A" anchor bolts.

Please provide justification for the assumption allowing qualification of the support by similarity to Detail SP-7.

2. Detail "V", drawing 2323-E1-0601-01-S, Hanger number CTH 758.

Calculation SCS-104C, sheet 1/22 states that this detail is similar to Detail "B" in drawing 2323-E1-0713-01. It is Cygna's belief that similarity is not justified since detail "V" has a brace in the top bay only, while Detail "B" has braces in all three bays. The design for Detail "B" (SCS-105C, sheet 1/2-1/3) treats the frame as a truss, i.e., bending moments are precluded in the hangers. If Detail "V" were designed as a truss, the configuration would be unstable. Please provide justification for the use of similarly to Detail "B" in the analysis and design of Detail "V" supports.

3. Detail "K", drawing 2323-E1-0601-S, Hanger numbers: CTH 763, 764

In the review of the calculations for Detail "K" (reference SCS-104C, set 1, sheets 12, 13), Cygna noted that the following assumptions were used in the analysis and design of the support.

- a. Beam design moments were based on an average of moments for fixed end and simply support end conditions;
- b. Base plates were analyzed for loads and moments based on 50 percent of fixed end moments, and;
- c. Torsional moments and moments about the weak axis of the C6 x 8.2 section due to the eccentricity of one tray resting atop a C3 x 5.0 section are neglected.

In addition to these assumptions CMC 53785 against support CTH 764 shows the top bolt removed from the north base plate. Cygna believes that bolt will cause the end connection to behave more as a pin than as a fixed connection. Additional stresses in the plate may develop due to its ability to rotate away from the wall. Please provide:

- a. Justification for the assumptions stated in items a through c above.
 - b. Justification that CTH support 764 will be adequate to resist the applied loads after removal of the anchor bolts as described above.
4. Detail "A", drawing 2323-E1-0500-04-S, Hanger number: CTH 5450.

Design calculation for Detail "A" (reference SCS-103C, set 2, sheets 32 and 53) are based on the values: $h = 1'-4"$ and $L = 1'-0"$. For support 5450 $h = 3'-1"$ and $L = 3'-6"$.

Please provide justification for use of the analysis of the frame with smaller dimensions to qualify support 5450.

5. Detail "C" drawing 2323-E1-0500-01-S, Hanger number: CTH 479.

Drawing FSE-00159, sheet 479, calls for a weld on two sides of the channel at the connection to the base angle of Detail "A". Qualifying calculations (reference SCS-103C, set 1, sheet 8) require a fillet weld on four sides.

Please provide justification for this change in weld pattern.