

Vogle PEmails

From: Habib, Donald
Sent: Wednesday, June 6, 2018 7:18 AM
To: Vogle PEmails
Subject: FW: LAR-17-037 site audit June 7-8 2018 Draft A.pptx
Attachments: LAR-17-037 site audit June 7-8 2018 Draft A.pptx

From: Redd, Jason P. [mailto:JPREDD@southernco.com]
Sent: Wednesday, June 06, 2018 12:20 AM
To: Habib, Donald <Donald.Habib@nrc.gov>; Hoellman, Jordan <Jordan.Hoellman2@nrc.gov>
Cc: Hicks, Thomas E. <X2TEHICK@southernco.com>; Haggerty, Neil <X2NHAGGE@SOUTHERNCO.COM>; Pugh, Amanda Louise <ALPUGH@southernco.com>; Clough, Ken <X2KCLOUG@SOUTHERNCO.COM>
Subject: [External_Sender] LAR-17-037 site audit June 7-8 2018 Draft A.pptx

Don,

As we discussed Monday, attached please find three topical excerpts from Vogle UFSAR Version 7.0 related to critical sections which appear as typical examples of changes which may be proposed to be evaluated under the LAR-17-037-proposed Tier 2* change process. The attached is a working draft for the Staff's consideration prior to Thursday's audit. We will be pleased to provide additional examples during the audit; in the interest of e-mail file size I selected those attached Tier 2* text, table, and Figures. No SUNSI material is contained in the attached Working Draft.

Again, we look forward to Thursday and Friday's audit. If you have any questions or comments, or need to reach me for any reason over the next few days, please call or text my cell at 205-329-4759; thank you.

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Examples of Potential Application of the LAR-17-037-Proposed Tier 2* Change Process to Critical Sections in support of June 7-8, 2018 Onsite NRC Audit

Jason Redd, PE

**WORKING
DRAFT**



Figure 3H.5-7 – Typical Reinforcement and Connection to the Shield Building

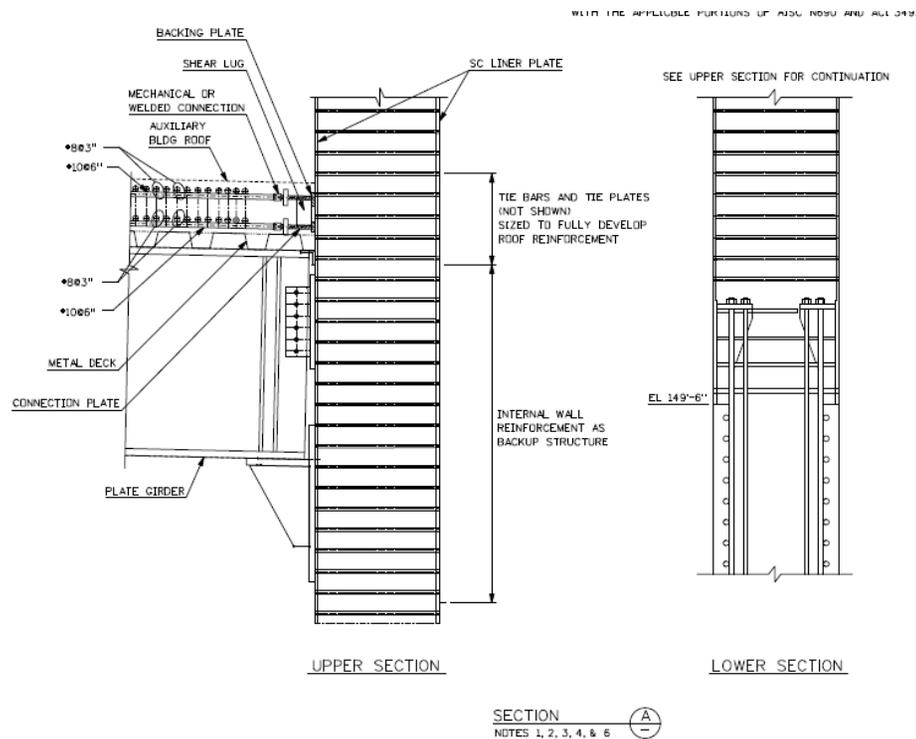


Figure 3H.5-7
[Typical Reinforcement and Connection to Shield Building]*



3H.5.2.1 - Roof at Elevation 180'-0", Area 6 (Critical Section is between Col. Lines N & K-2 and 3 & 4)

- *[The layout of this segment of the roof is shown in Figure 3H.5-7 as Region "B." The concrete slab is 15 inches thick, plus 4.5-inch deep metal deck ribs. It is composite with 4 feet deep plate girders by using shear connectors. The girder spacing is a range of 13'-0" to 14'-2" center to center. The girder flanges are 26" x 2 1/2" and the web is 43" x 1". The girders span approximately 64 feet in the north south direction and are designed as simply supported. The concrete slab between the girders behaves as a one-way slab and is designed to span between the girders....]**
- Tier 2* text describes girder depth, flange, and web dimensions to the 1/2". For ease of procurement, fabrication, shipment, handling, or installation, the Licensee may prefer to construct this critical section with girders of slightly different dimensions. The Licensee should be able to evaluate use of beams with similar dimensions and properties on an engineering basis, i.e. ACI 349-01 and AISC N690-01 as supplemented by the UFSAR, and if a suitable candidate girder shape is identified, per the B.5.b process and LAR-proposed criteria to determine if such deviation is acceptable without prior NRC approval.

Figure 3.8.3-8 (Sheet 1 of 3) – Structural Modules – Typical Design Details

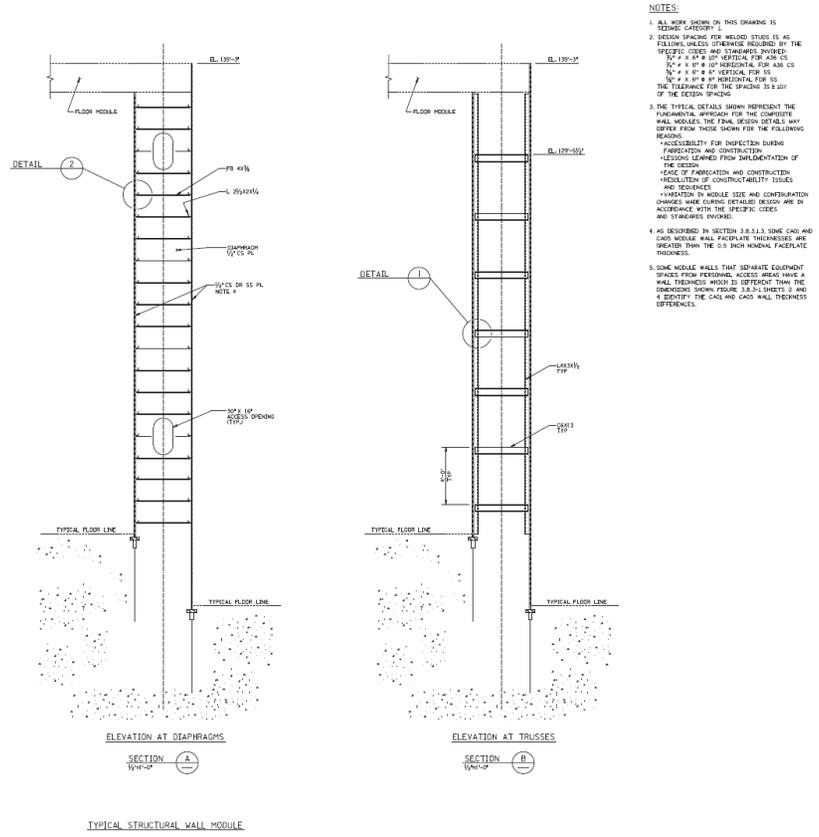


Figure 3.8.3-8 (Sheet 1 of 3) [Structural Modules – Typical Design Details]*



3H.5.5 - Structural Modules

- [... *The modules consist of steel faceplates connected by steel trusses as shown in Figure 3.8.3-2. The primary purpose of the trusses is to stiffen and hold together the faceplates during handling, erection, and concrete placement. The thickness of the steel faceplates is 0.5 inch.....*]*
- Tier 2* text describes structural module faceplates as 0.5” in thickness. Removal of welded attachments (i.e. for handling or temporary supports) or the repair of surface defects may locally reduce the faceplate thickness below of Tier 2* value of 0.5”. Under the proposed process, the Licensee should be able evaluate the proposed change in accordance the design basis code(s), and if technically acceptable, with the B.5.b process and LAR-proposed criteria to determine if such local deviation is acceptable without prior NRC approval.

Figure 3H.5-14 – {Shield Building} Elevation View of Tension Ring and Air Inlets

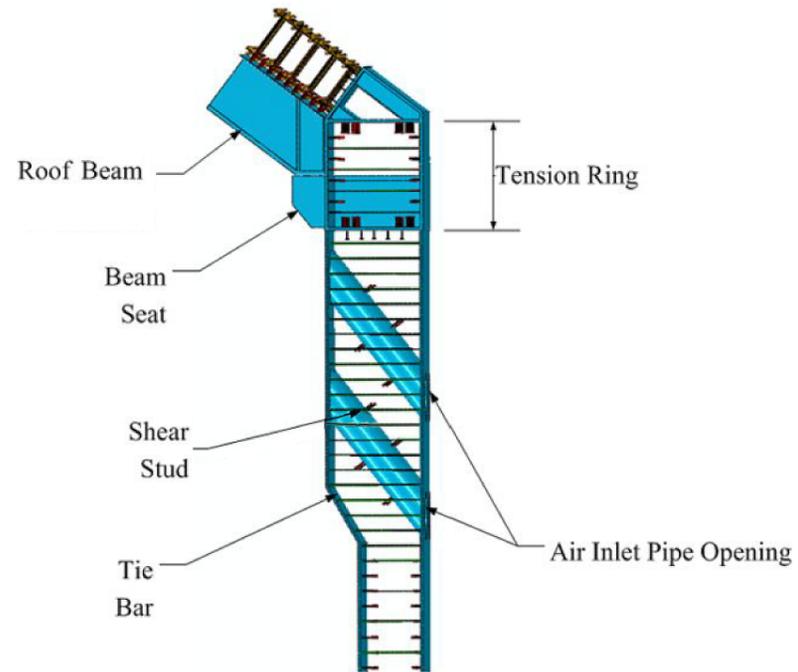


Figure 3H.5-14
Elevation View of Tension Ring and Air Inlets



3H.5.6.1 – {Shield Building} Air Inlets and Tension Ring

- [... *The air inlet openings are formed using pipe at a downward inclination of 38 degrees from the vertical. The pipe spacing is approximately 2.81 degrees circumferentially with shear studs welded to the outside surface of the pipes. The tie bars are located with three bars between adjacent air inlets at each elevation at maximum design spacing of 8.5 inches vertically.....*]*
- Tier 2* text describes the Shield Building air inlet pipes geometry down to a hundredth of a degree horizontally and single degree vertically. In such a congested rebar location as the air inlet region (see Figures 3H.5-11 and 3H.5-14), it would not be unexpected for either of these field geometric properties to slightly deviate from the Tier 2* values. Likewise, a maximum design spacing of 8.5” vertically is prescribed for the tie bars between air inlets. Again, obstructions may result in local exceedances of that parameter. Under the proposed process, the Licensee should be able evaluate a proposed change in accordance the design basis code(s), and if technically acceptable, with the B.5.b process and LAR-proposed criteria to determine if such local deviation is acceptable without prior NRC approval.



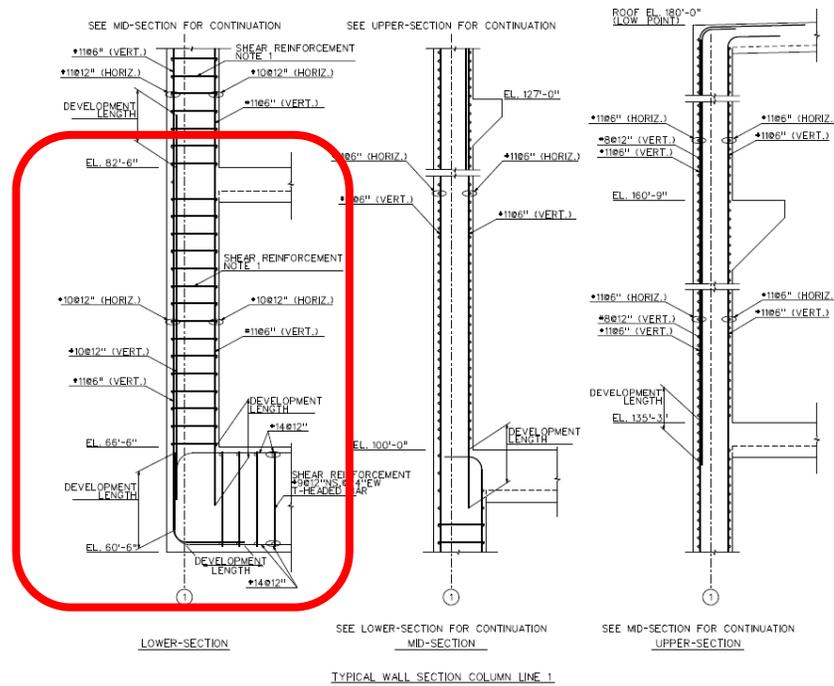
Table 3H.5-3 – Provided Minimum Reinforcement

Table 3H.5-3
Exterior Wall on Column Line 1 Details of Wall Reinforcement (in ²/ft)
 (See Figure 3H.5-2 for Locations of Wall Sections.)

| Wall Segment (See detail in Subsection 3H.5.1.1.) | Location | Required ⁽²⁾ | | | [Provided (Minimum)]* | | |
|---|--------------|-------------------------|------------|----------------------|-----------------------|------------|----------------------|
| | | Vertical | Horizontal | Shear ⁽³⁾ | Vertical | Horizontal | Shear ⁽³⁾ |
| Wall Section 1, 6 | | | | | | | |
| Elevation 180'-0" to 135'-3" | | | | NR | | | None |
| | Outside Face | 3.48 | 2.65 | | [3.91 | 3.12 | |
| | Inside Face | 1.94 | 1.52 | | 3.12 | 3.12]* | |
| Wall Section 2, 3, 7 | | | | | | | |
| Elevation 135'-3" to 100'-0" | | | | NR | | | None |
| | Outside Face | 1.88 | 3.04 | | [3.12 | 3.12 | |
| | Inside Face | 1.77 | 2.23 | | 3.12 | 3.12]* | |
| Wall Section 4, 8 | | | | | | | |
| Elevation 100'-0" to 82'-6" | | | | 0.003 | | | [0.44]* |
| | Outside Face | 1.42 | 0.70 | | [3.12 | 1.56 | |
| | Inside Face | 1.01 | 0.70 | | 3.12 | 1.27]* | |
| Wall Section 5, 9 | | | | | | | |
| Elevation 82'-6" to 66'-6" | | | | 0.27 | | | [0.88]* |
| | Outside Face | 2.29 | 0.87 | | [4.39 | 1.27 | |
| | Inside Face | 1.87 | 0.87 | | 3.12 | 1.27]* | |



Figure 3H.5-3 – Typical Reinforcement in Wall on Column Line 1



NOTE 1:
REFER TO SUBSECTION 3.8.4.4.1 FOR THE REQUIREMENTS FOR
SHEAR REINFORCEMENT AND TABLE 3H.5-3 FOR SHEAR
REINFORCEMENT PROVIDED.

Figure 3H.5-3
[Typical Reinforcement in Wall on Column Line 1]*



Table 3H.5-3 and Figure 3H.5-3 – Column Line 1 Wall Reinforcement

- Table 3H.5-3 defines the minimum provided Column Line 1 wall reinforcement in terms of square inches of steel per foot of wall; these values are designated as Tier 2* material. Corresponding Tier 2* Figure 3H.5-3 visually expresses those minimum provided reinforcement values in terms of rebar sizes and spacing.
- The wall along Column Line 1 is a traditional reinforced concrete wall designed and constructed per ACI 349-01. As shown in Table 3H.5-3, the minimum provided reinforcement exceeds the required reinforcement, typically by a significant amount. While not planned, field construction (even within the UFSAR, ACI 349-01, and Engineer tolerances) may reveal obstructions or interferences which require deviation from the Tier 2* values over a local area – an example being omission of a single vertical rebar at an obstruction, or the substitution of slightly smaller bars in a uniquely congested area which still exceed the required reinforcement but are less than the Tier 2* minimum value. Under the proposed process, the Licensee should be able evaluate a proposed change(s) in accordance the design basis code(s), and if technically acceptable, with the B.5.b process and LAR-proposed criteria to determine if such local deviation is acceptable without prior NRC approval.



Southern Nuclear