3E.3 Essential Service Water Buildings

Description of the Essential Service Water Building Analysis and Design

Four Essential Service Water Buildings (ESWB) are located adjacent to the NI Common Basemat Structures and in the general vicinity of the Emergency Power Generating Buildings (EPGB).

Cross sections and plans associated with each typical ESWB are provided in Section 3.8.4, Figure 3.8-95, Figure 3.8-96, Figure 3.8-97, Figure 3.8-98, Figure 3.8-99, Figure 3.8-100, Figure 3.8-101, and Figure 3.8-102. A general description of the structure, including descriptions of functional equipment at all floor levels, is provided in Section 3.8.4.1.5. It is acknowledged that the GT STRUDL FEM provided in Figure 3.7.2-59 and Figure 3.7.2-60 differs from what is illustrated in this appendix, in that the basemat has been extended 10 ft – 0 in on all sides of the structure. This is further addressed in Section 3E.3.1.

The lateral load resisting system primarily consists of interior and exterior reinforced concrete shear walls and a concrete basemat foundation situated at 22 ft – 0 in below grade. The structural elements pertaining to the ESWBs are described in Sections 3.8.4.1.5 and 3.8.5.1.3.

Upon evaluation of the ESWBs, the following critical sections have been identified:

- Basemat Foundation at Elevation -16 ft – 0 in (3E.3.1).
- Shear Wall at Column Line 4 (3E.3.2).
- Fan Deck Slab at Elevation 63 ft – 0 in (3E.3.3).

Design Criteria

SSI analysis by the Bechtel Code SASSI 2000 (v. 3.1) is used to determine enveloping structural response accelerations for development of equivalent static SSE loads for the GT STRUDL FEM.

The use of GT STRUDL for the design of the critical sections is described in Sections 3.8.4.4.4 and 3.8.5.4.4. Design forces and moments are extracted from GT STRUDL analyses for basemat foundation and superstructure component design.

All applicable loads used for the design of the critical sections located within the ESWBs are described in Sections 3.8.4.3.1 and 3.8.5.3; the applicable loading combinations are described in Sections 3.8.4.3.2 and 3.8.5.3. The design also accommodates the soil analysis cases shown in Table 3.7.1-6.

Reinforced concrete components are designed in accordance with the applicable codes, standards, and specifications described in Sections 3.8.4.2 and 3.8.5.2.

The planar reference system for the GT STRUDL finite element analysis output is provided in Figure 3E.3-1—GT STRUDL Finite Element Planar Reference Frame System. The positive direction of the finite element bending moments M_{xx}, M_{yy} and M_{xy} and out-of-plane shear forces V_{xx} and V_{yy} are shown in a) Plate Bending, included on Figure 3E.3-1. The positive direction of the finite element in-plane forces N_{xx}, N_{yy} and N_{xy} are the same as the positive orientation of the plane stresses S_{xx}, S_{yy} and S_{xy} shown in b) Plane Stress/Strain, included on Figure 3E.3-1.

3E.3.1 Basemat Foundation at Elevation -16 ft – 0 in (Top of Concrete)

This critical section presents the structural design of the reinforced concrete basemat required to support the ESWBs. The ESWBs are composed of a 6 ft – 0 in thick reinforced concrete basemat foundation. The basemat foundation of the ESWB is a safety-related, Seismic Category I structure, as described in Section 3.8.5.

Description of the Critical Section and Computer Model

The overall layout and dimensions of each ESWB basemat foundation are described in Section 3.8.5.1.3. ESWBs 1, 2, 3, and 4 are essentially identical; therefore, only one of the ESWBs is evaluated as a critical section.

As described in Section 3.8.5.1.3, GT STRUDL is used to create a FEM to analyze the ESWBs for the forces and moments applied to the ESWB basemat foundation. Figure 3E.3-2—ESWB Basemat Foundation – FEM shows a GT STRUDL FEM view of the ESWB basemat foundation. The typical element size for the elements shown in Figure 3E.3-2 ranges between approximately 4 ft and 7 ft with the aspect ratio kept between 1 and 3.

As shown in Figure 3E.3-3—Reinforcement Sketch for ESWB Basemat Foundation, the basemat foundation extends an additional 10 ft – 0 inches in width on all sides of the structure.

Applicable Loadings, Analysis, and Design Methods

In addition to the loads described in Section 3.8.5.3, the GT STRUDL finite element analysis for the basemat foundation for the ESWB incorporates:

- Buoyant forces associated with the high water level (Elevation -1 ft – 0 in, or 21 ft – 0 in of hydrostatic head) for stability design.
- Finite elements representing the superstructure, for accurate load transfer to the basemat foundation.

To provide resistance against overturning, the basemat foundation of the ESWB is extended 10 ft – 0 in beyond the building perimeter. The preliminary basemat design is based on boundary conditions defined such that the basemat does not exhibit uplift, which is consistent with the current assumption in Bechtel Code SASSI 2000 regarding soil separation.

Results of Critical Section Design

The structural design for the critical section provides reinforcement to resist element forces and moments as described below.

Table 3E.3-1—Governing Forces and Moments for the ESWB Basemat Foundation shows the governing forces and moments for the design of the ESWB basemat foundation.

Based on the governing values shown in Table 3E.3-1, the basemat foundation typical reinforcement configuration is shown in Figure 3E.3-3.

Section thicknesses and reinforcing quantities may be optimized based on subsequent analysis results.

3E.3.2 Shear Wall at Column Line 4

This critical section presents the structural design of the reinforced concrete shear wall at column line 4. The typical wall along column line 4 in the ESWB is a safety-related, Seismic Category I structure, as described in Section 3.8.4.

Description of the Critical Section and Computer Model

The reinforced concrete shear wall at column line 4 is selected as a critical section because the wall spans from the basemat foundation elevation at -16 ft – 0 in to the roof elevation at 96 ft - 0 in and has two large openings. The shear wall at column line 4 is shown in Figure 3E.3-7—Reinforcement Configuration for ESWB Wall at Column Line 4.

As described in Section 3.8.4.4.4, GT STRUDL is used to create a FEM to analyze the ESWBs for all forces and moments applied to the ESWB wall at column line 4. The mesh of GT STRUDL elements is established at dimensions ranging approximately between 4 ft and 7 ft with the aspect ratio kept between 1 and 3. A FEM view of the reinforced concrete shear wall at column line 4 is shown in Figure 3E.3-4—ESWB Wall at Column Line 4 - FEM.

Applicable Loadings, Analysis, and Design Methods

All applicable loads and loading combinations applied to the reinforced concrete shear wall at column line 4 are described in Section 3.8.4.3.1 and 3.8.4.3.2, respectively. The soil analysis cases shown in Table 3.7.1-6 are incorporated into the design.

Section cuts are used to determine the forces and moments throughout the reinforced concrete shear wall at column line 4. Section cut locations are determined through a review of enveloping distributions of forces and moments. The sign convention describing the nomenclature for horizontal and vertical cuts applicable to this critical section is shown in Figure 3E.3-5—Sign Convention for ESWB Horizontal and Vertical Cuts at Column Line 4; the section cut locations are shown in Figure 3E.3-6—Vertical and Horizontal Section Cuts for ESWB Wall at Column Line 4.

Results of Critical Section Design

The structural design for the critical section provides reinforcement to resist element forces and moments as described below.

Governing design data is determined from local section cuts for vertical reinforcement, horizontal reinforcement, and shear friction, which is shown in Tables 3E.3-2—Governing Design Data for ESWB Wall at Column Line 4 (Local Section Cut for Vertical Reinforcement), Table 3E.3-3—Governing Design Data for ESWB Wall at Column Line 4 (Local Section Cut for Horizontal Reinforcement), and Table 3E.3-4—Governing Design Data for ESWB Wall at Column Line 4 (Local Section Cut for Shear Friction Design), respectively. Governing design data for in-plane shear is determined from a long section cut for horizontal reinforcement, and is shown in Table 3E.3-5—Governing Design Data for ESWB Wall at Column Line 4 (Long Section Cut for Horizontal Reinforcement).

Due to the varying reinforcement configurations determined throughout the reinforced concrete shear wall at column line 4, the reinforcement required to support this critical section is shown in several locations throughout Figure 3E.3-7.

Section thicknesses and reinforcing quantities may be optimized based on subsequent analysis results.

3E.3.3 Fan Deck Slab at Elevation 63 ft – 0 in

This critical section presents the structural design of the reinforced concrete fan deck slab at elevation 63 ft – 0 in. The fan deck slab of the ESWB is a safety-related, Seismic Category I structure, as described in Section 3.8.4.

Description of the Critical Section and Computer Model

The ESWB fan deck is a 2 ft – 6 in thick reinforced concrete slab, which is located at elevation 63 ft – 0 in.

As described in Section 3.8.4.4.4, GT STRUDL is used to create a FEM to analyze the ESWBs for all forces and moments applied to the ESWB fan deck slab at elevation 63 ft – 0 in. The mesh of GT STRUDL elements is established at dimensions ranging between 4 ft and 7 ft approximately with the aspect ratio kept between 1 and 3. A FEM view of the fan deck slab at elevation 63 ft – 0 in is shown in Figure 3E.3-8—ESWB Fan Deck Slab at Elevation 63 ft, 0 inches-FEM.

Applicable Loadings, Analysis, and Design Methods

All applicable loads and loading combinations applied to the fan deck slab at elevation 63 ft – 0 in are described in Section 3.8.4.3.1 and 3.8.4.3.2, respectively. The soil analysis cases shown in Table 3.7.1-6 are incorporated into the design.

In addition to the loads described in Section 3.8.4.3.1, the equipment weight of the two fans is included in both the Bechtel Code SASSI 2000 SSI analysis and the GT STRUDL finite element analysis. In-Structure Acceleration Response Spectra are obtained at the fan mounting locations, as described in Section 3.7.2.

Results of Critical Section Design

The structural design for the critical section provides reinforcement to resist element forces and moments as described below.

Governing forces and moments for out-of-plane design for the x-axis and z-axis are shown in Tables 3E.3-6—Governing Design Data for ESWB Fan Deck Slab at Elevation 63 ft – 0 in (Out-of-Plane Design, X-Axis), and 3E.3-7—Governing Design Data for ESWB Fan Deck Slab at Elevation 63 ft – 0 in (Out-of-Plane Design, Z-Axis), respectively. Governing design data for tension and in-plane shear is shown in Tables 3E.3-8—Governing Design Data for ESWB Fan Deck Slab at Elevation 63 ft – 0 in (Tension), and 3E.3-9—Governing Design Data for ESWB Fan Deck Slab at Elevation 63 ft – 0 in (In-Plane Shear), respectively.

The typical required reinforcement configuration for the fan deck slab at elevation 63 ft – 0 in is shown in Figure 3E.3-9—Reinforcement Sketch for ESWB Fan Deck Slab at Elevation 63 ft – 0 in.

Section thicknesses and reinforcing quantities may be optimized based on subsequent analysis results.

Table 3E.3-1—Governing Forces and Moments for the ESWB Basemat Foundation
Sheet 1 of 2

Loading Combination	Joint	N_{XX} (k/ft)	N_{YY} (k/ft)	N_{XY} (k/ft)	M_{XX} (k-ft/ft)	M_{YY} (k-ft/ft)	M_{XY} (k-ft/ft)	V_{XX} (k/ft)	V_{YY} (k/ft)
D + F + L + H + EX + 0.4EY - 0.4EZ	394	**-79**	16	14	-82	-512	44	48	-13
D + F + L + H + 0.4EX - 0.4EY - EZ	83	24	**-78**	-19	-36	318	100	0	-88
D + F + L + H + 0.4EX - 0.4EY + EZ	319	8	-17	**59**	-85	-64	65	6	0
D + F + L + H + EX - 0.4EY + 0.4EZ	1	16	-5	-0	**1070**	872	-300	59	-64
D + F + L + H + 0.4EX - 0.4EY - EZ	85	-13	27	-0	716	**1655**	178	75	35
D + F + L + H + EX - 0.4EY - 0.4EZ	14052	6	-20	-4	-8	290	**374**	57	20
D + F + L + H + EX - 0.4EY - 0.4EZ	14050	41	-23	10	191	408	208	**169**	54
D + F + L + H + 0.4EX - 0.4EY - EZ	13931	-21	61	3	295	638	77	10	**196**
D + F + L + H + EX + 0.4EY - 0.4EZ	394	**-90**	17	15	-103	-525	40	54	-10
D + F + L + H - EX + 0.4EY + 0.4EZ	14064	0	**-80**	-2	-2	59	-11	-17	0
D + F + L + H + 0.4EX - 0.4EY + EZ	319	4	-19	**71**	-76	-66	56	3	0
D + F + L + H + 0.4EX + EY - 0.4EZ	302	5	48	12	**-738**	-189	20	6	-9
D + F + L + H + 0.4EX + 0.4EY - EZ	523	13	-42	6	-725	**-778**	-68	57	54
D + F + L + H + 0.4EX + EY - 0.4EZ	508	-4	25	33	-129	-48	**-159**	-36	-21
D + F + L + H + 0.4EX + 0.4EY - EZ	14179	-12	2	-20	-54	-392	-27	**102**	6
D + F + L + H + 0.4EX + 0.4EY - EZ	13928	12	-50	1	-369	-89	-7	6	**104**
D + F + L + H + EX + 0.4EY - 0.4EZ	394	**-99**	17	15	-122	-524	35	59	-6
D + F + L + H - EX + 0.4EY + 0.4EZ	14064	-0	**-88**	-2	-2	63	-14	-18	0
D + F + L + H + 0.4EX - 0.4EY + EZ	319	2	-22	**84**	-65	-50	47	1	0

Table 3E.3-1—Governing Forces and Moments for the ESWB Basemat Foundation
Sheet 2 of 2

Loading Combination	Joint	N_{XX} (k/ft)	N_{YY} (k/ft)	N_{XY} (k/ft)	M_{XX} (k-ft/ft)	M_{YY} (k-ft/ft)	M_{XY} (k-ft/ft)	V_{XX} (k/ft)	V_{YY} (k/ft)
D + F + L + H + 0.4EX + 0.4EY - EZ	523	15	-51	6	**-797**	-832	-70	62	61
D + F + L + H + 0.4EX + 0.4EY - EZ	523	15	-51	6	-797	**-832**	-70	62	61
D + F + L + H - 0.4EX + 0.4EY - EZ	14112	-2	40	20	-13	-197	**159**	-18	-22
D + F + L + H + 0.4EX + 0.4EY - EZ	14179	-12	-1	-23	-60	-413	-19	**111**	6
D + F + L + H + 0.4EX + 0.4EY - EZ	13928	13	-57	2	-402	-87	-4	5	**113**

Table 3E.3-2—Governing Design Data for ESWB Wall at Column Line 4 (Local Section Cut for Vertical Reinforcement)

				Factored Load for Local Design						
Critical LC	Local Cut at (Long Cut)	Thickness	Cut Length	Effects of Seismic	FX (k)	FY (k)	FZ (k)	MX (k-ft)	MY (k-ft)	MZ (k-ft)
D + F + L + H + 0.4EX - 0.4EY – EZ	H1	3 ft – 0 in	6 ft – 9 in	GLOBAL	-524	-579	286	1789	1569	1626
(7170: high water)				LOCAL	-6	-60	57	383	281	30
D + F + L + H + 0.4EX + 0.4EY – EZ	H2	3 ft – 0 in	12 ft – 8 $^3/_8$ in	GLOBAL	429	-27	-151	1824	92	610
(7169: high water)				LOCAL	14	-3	16	334	17	23
D + F + L + H + 0.4EX + 0.4EY - EZ	H3 at (HJ)	3 ft – 0 in	12 ft – 8 $^3/_8$ in	GLOBAL	509	-310	299	-2981	75	1042
(7169: high water)				LOCAL	20	12	107	-956	37	44
D + F + L + H - 0.4EX - 0.4EY - EZ	H4	3 ft – 0 in	3 ft – 3 in	GLOBAL	236	-470	208	1078	-691	-565
(7172: high water)				LOCAL	-2	-26	40	224	-125	1
D + F + L + H - 0.4EX + 0.4EY + EZ	H5	2 ft – 0 in	6 ft – 6 in	GLOBAL	93	248	-104	-968	-9	-268
(7119: high water + buoyancy)				LOCAL	-5	8	-57	-428	6	14
D + F + L + H - 0.4EX + 0.4EY + EZ	H6	2 ft – 0 in	6 ft – 6 in	GLOBAL	-99	-114	9	-420	-50	-303
(7167: high water)				LOCAL	1	9	-19	-170	12	6
D + F + L + H + EX - 0.4EY - 0.4EZ	H7 at (HD)	3 ft – 0 in	5 ft – 9 in	GLOBAL	-461	-1383	107	252	52	990
(7104: high water + buoyancy)				LOCAL						

Note:

1. Global effect of seismic addresses structural response while local effect of seismic address local flexibilities.

Table 3E.3-3—Governing Design Data for ESWB Wall at Column Line 4 (Local Section Cut for Horizontal Reinforcement)

				Factored Load for Local Design						
Critical LC	Local Cut at (Long Cut)	Thickness	Cut Length	Effects of Seismic	FX (k)	FY (k)	FZ (k)	MX (k-ft)	MY (k-ft)	MZ (k-ft)
D + F + L + H + 0.4EX + 0.4EY + EZ	V1 at (HK)	3 ft – 0 in	15 ft – 9 $^{15}/_{16}$ in	GLOBAL	270	250	-560	-373	-6126	-2928
(7141: low water + buoyancy)				LOCAL	30	-34	-103	-102	-1164	-1
D + F + L + H + 0.4EX + 0.4EY + EZ	V2 at (HK)	3 ft – 0 in	11 ft – 0 in	GLOBAL	-455	-193	136	-493	-3088	-1367
(7165: high water)				LOCAL	-16	10	-44	-123	-470	27
D + F + L + H + EX - 0.4EY - 0.4EZ	V3 at (HK)	3 ft – 0 in	3 ft – 0 in	GLOBAL	-806	-303	106	-284	-372	-1264
(7152: high water)				LOCAL						
D + F + L + H + 0.4EX + 0.4EY + EZ	V4 at (HK)	3 ft – 0 in	8 ft – 0 in	GLOBAL	106	-182	-215	-170	-2569	-53
(7141: low water + buoyancy)				LOCAL	10	-18	-42	-54	-462	18
D + F + L + H + 0.4EX + 0.4EY + EZ	V5 at (HG)	2 ft – 0 in	5 ft – 6 ½ in	GLOBAL	83	-10	-47	-7	-272	59
(7165: high water)				LOCAL	8	-10	-15	7	-134	32
D + F + L + H + EX + 0.4EY - 0.4EZ	V6 at (HL)	3 ft – 0 in	3 ft – 6 in	GLOBAL	1158	280	22	-103	40	-1380
(7150: high water)				LOCAL						
D + F + L + H - EX - 0.4EY - 0.4EZ	V7 at (HA)	3 ft – 0 in	3 ft – 3 in	GLOBAL	-19	-526	55	-10	642	856
(7132: low water + buoyancy)				LOCAL						
D + F + L + H + EX + 0.4EY - 0.4EZ	V8 at (HL)	3 ft – 0 in	2 ft – 4 ½ in	GLOBAL	-8	-104	11	-38	83	230
(7108: high water + buoyancy)				LOCAL						

Note:

1. Global effort of seismic addresses structural response while local effort of seismic address local flexibilities.

Table 3E.3-4—Governing Design Data for ESWB Wall at Column Line 4 (Local Section Cut for Shear Friction Design)

				Factored Load for Shear Friction Design						
Critical LC	Long cut at (Local Cut)	Thickness	Cut Length	Effects of Seismic	FX (k)	FY (k)	FZ (k)	MX (k-ft)	MY (k-ft)	MZ (k-ft)
D + F + L + H + 0.4EX + 0.4EY - EZ (7169: high water)	HJ at (H3)	3 ft – 0 in	161 ft – 6 in	GLOBAL	3157	-3251	1706	-17334	-24386	-59323
D + F + L + H + EX - 0.4EY - 0.4EZ (7104: high water + buoyancy)	HD at (H7)	3 ft – 0 in	63 ft – 0 in	GLOBAL	-5987	-1092	706	2749	1719	124190

Table 3E.3-5—Governing Design Data for ESWB Wall at Column Line 4 (Long Section Cut for Horizontal Reinforcement)

				Factored Load for In-plane Shear Design						
Critical LC	Long Cut at (Local Cut)	Thickness	Cut Length	Effects of Seismic	FX (k)	FY (k)	FZ (k)	MX (k-ft)	MY (k-ft)	MZ (k-ft)
D + F + L + H + 0.4EX + 0.4EY + EZ (7141: low water + buoyancy)	HK at (V1)	3 ft – 0 in	161 ft – 6 in	GLOBAL	-3945	12986	-1172	4017	17903	66852
D + F + L + H + 0.4EX + 0.4EY + EZ (7165: high water)	HK at (V2)	3 ft – 0 in	161 ft – 6 in	GLOBAL	-3937	13013	-1174	3960	17925	65669
D + F + L + H + EX - 0.4EY - 0.4EZ (7152: high water)	HK at (V3)	3 ft – 0 in	161 ft – 6 in	GLOBAL	-11147	162	521	-1928	-5747	204910
D + F + L + H + 0.4EX + 0.4EY + EZ (7141: low water + buoyancy)	HK at (V4)	3 ft – 0 in	161 ft – 6 in	GLOBAL	-3945	12986	-1172	4017	17903	66852
D + F + L + H + 0.4EX + 0.4EY + EZ (7165: high water)	HG at (V5)	2 ft – 0 in	127 ft – 0 in	GLOBAL	-1269	5863	-1227	-11099	185	10758
D + F + L + H + EX + 0.4EY - 0.4EZ (7150: high water)	HL at (V6)	3 ft – 0 in	161 ft – 6 in	GLOBAL	-13853	7266	382	-201	-5447	253772
D + F + L + H - EX - 0.4EY - 0.4EZ (7132: low water + buoyancy)	HA at (V7)	3 ft – 0 in	26 ft – 6 in	GLOBAL	4368	-91	199	1376	-1657	-29438
D + F + L + H + EX + 0.4EY - 0.4EZ (7108: high water + buoyancy)	HL at (V8)	3 ft – 0 in	161 ft – 6 in	GLOBAL	13592	1775	382	-461	-4657	-192320

Table 3E.3-6—Governing Design Data for ESWB Fan Deck Slab at Elevation 63 ft – 0 in (Out-of-Plane Design, X-Axis)

			Results for Out-of-Plane Shear and Moment Design						
Critical LC	Local Cut	Cut Length	Effects of Seismic	FX (k)	FY (k)	FZ (k)	MX (k-ft)	MY (k-ft)	MZ (k-ft)
D + L + EY (LC 8000)	Mx1	6 ft – 3 5/8 in	Vertical	18	181	0	-47	-3	1271
0.4EX (0.4 × LC 500)			Horizontal	64	42	34	-57	-92	420
D + L + EY (LC 8000)	Mx2	6 ft – 3 5/8 in	Vertical	26	-160	6	-13	20	1047
0.4EX (0.4 × LC 500)			Horizontal	63	-16	-22	22	-77	173

Table 3E.3-7—Governing Design Data for ESWB Fan Deck Slab at Elevation 63 ft – 0 in (Out-of-Plane Design, Z-Axis)

			Results for Out-of-Plane Shear and Moment Design						
Critical LC	Local Cut	Cut Length	Effects of Seismic	FX (k)	FY (k)	FZ (k)	MX (k-ft)	MY (k-ft)	MZ (k-ft)
D + L + EY (LC 8000)	My1	6 ft – 6 in	Vertical	-10	168	17	-1038	-25	33
0.4EZ (0.4 × LC 700)			Horizontal	-66	18	90	-178	-164	-23

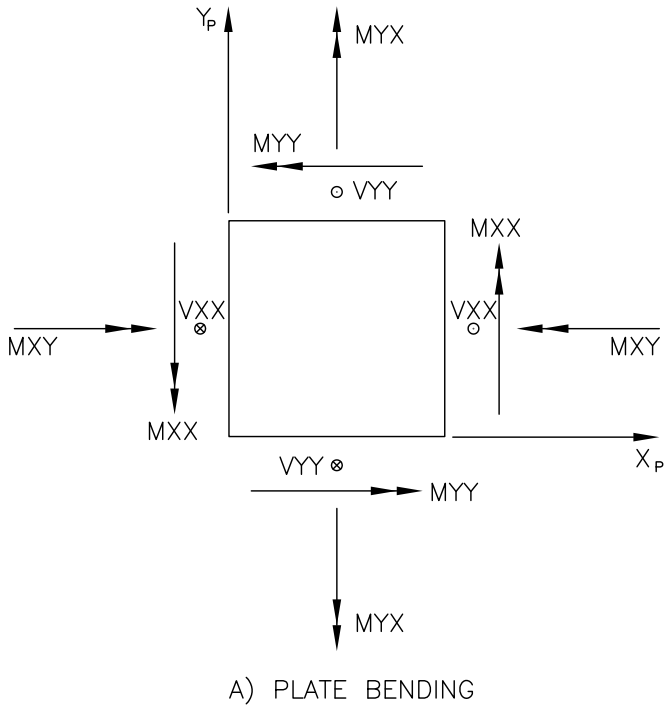
Table 3E.3-8—Governing Design Data for ESWB Fan Deck Slab at Elevation 63 ft – 0 in (Tension)

Direction	Tension (k/ft)
X-axis	30
Z-axis	40

Table 3E.3-9—Governing Design Data for ESWB Fan Deck Slab at Elevation 63 ft – 0 in (In-Plane Shear)

			Results for In-Plane Shear Check					
Critical LC	Long Cut	Cut Length	FX (k)	FY (k)	FZ (k)	MX (k-ft)	MY (k-ft)	MZ (k-ft)
D + F + L + H + 0.4EX - 0.4EY - EZ (7122)	FANDECK_IN -PLANE SHEAR	63 ft – 0 in	413	127	2628	979	6499	-257

Figure 3E.3-1—GT STRUDL Finite Element Planar Reference Frame System



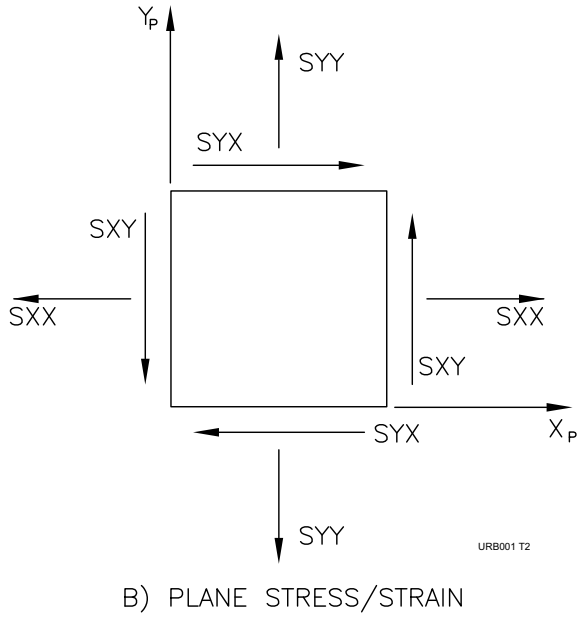


Figure 3E.3-2—ESWB Basemat Foundation - FEM

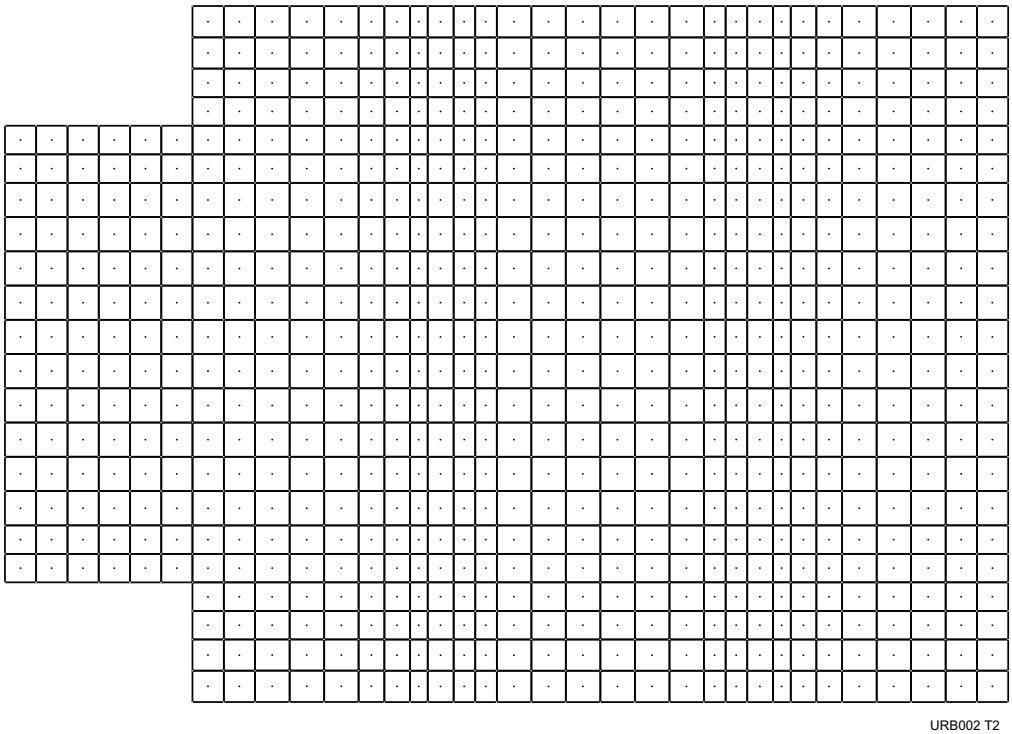


Figure 3E.3-3—Reinforcement Sketch for ESWB Basemat Foundation

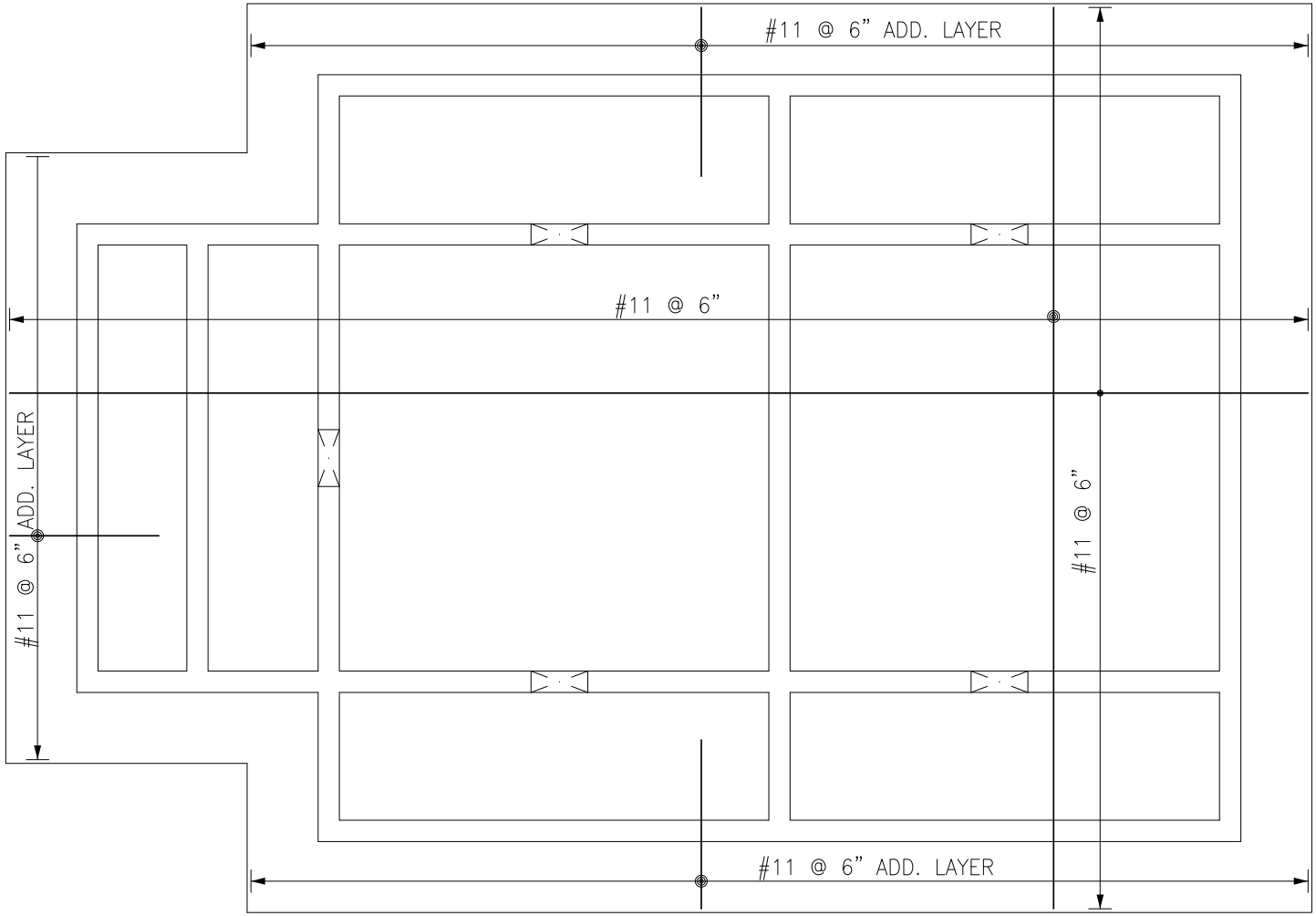


Figure 3E.3-4—ESWB Wall at Column Line 4 - FEM

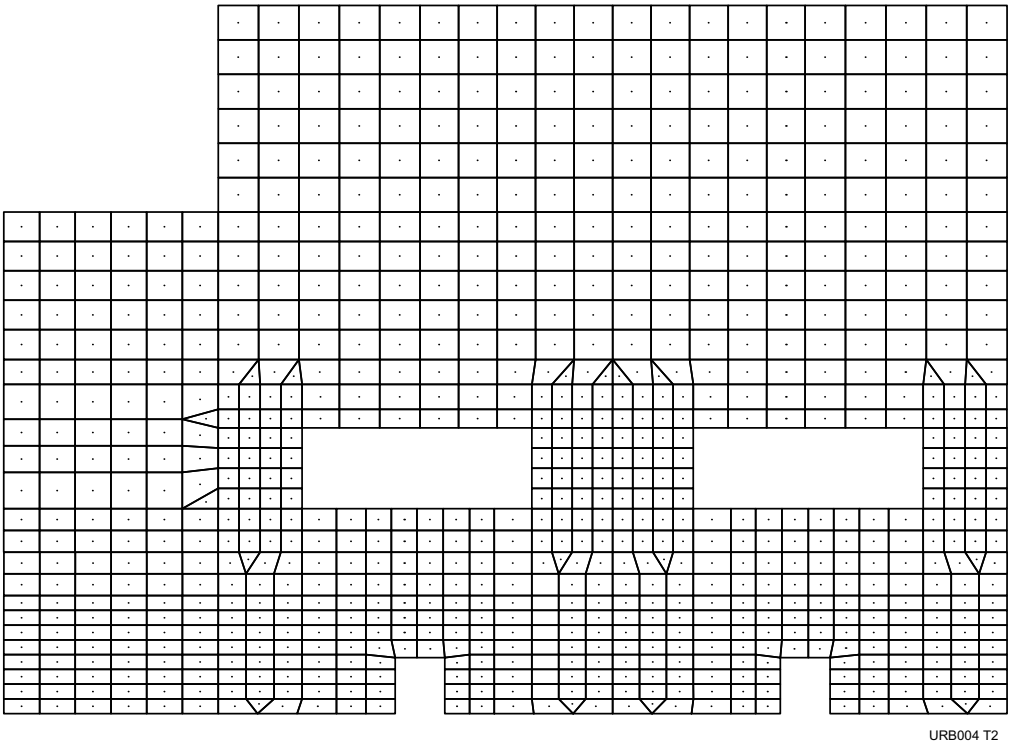


Figure 3E.3-5—Sign Convention for ESWB Horizontal and Vertical Cuts at Column Line 4

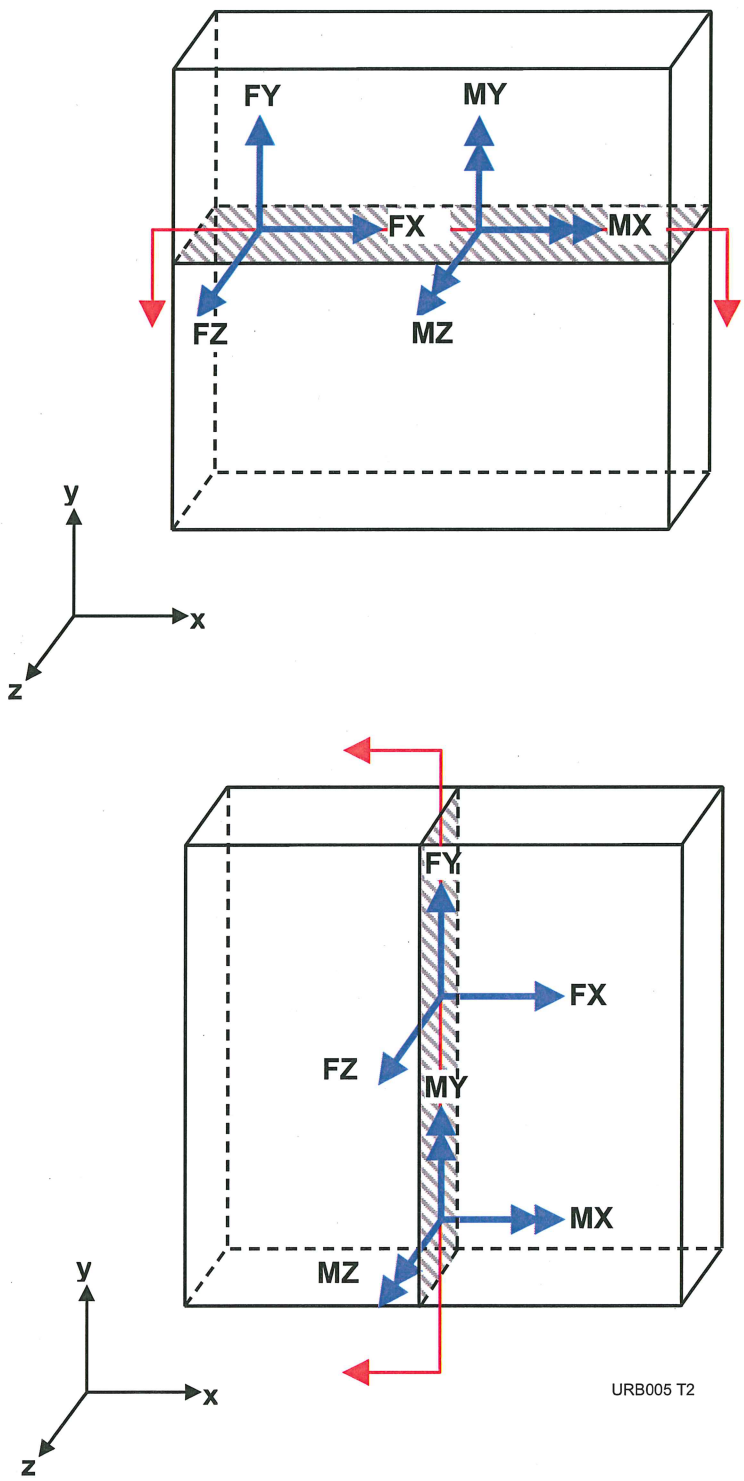


Figure 3E.3-6—Vertical and Horizontal Section Cuts for ESWB Wall at Column Line 4

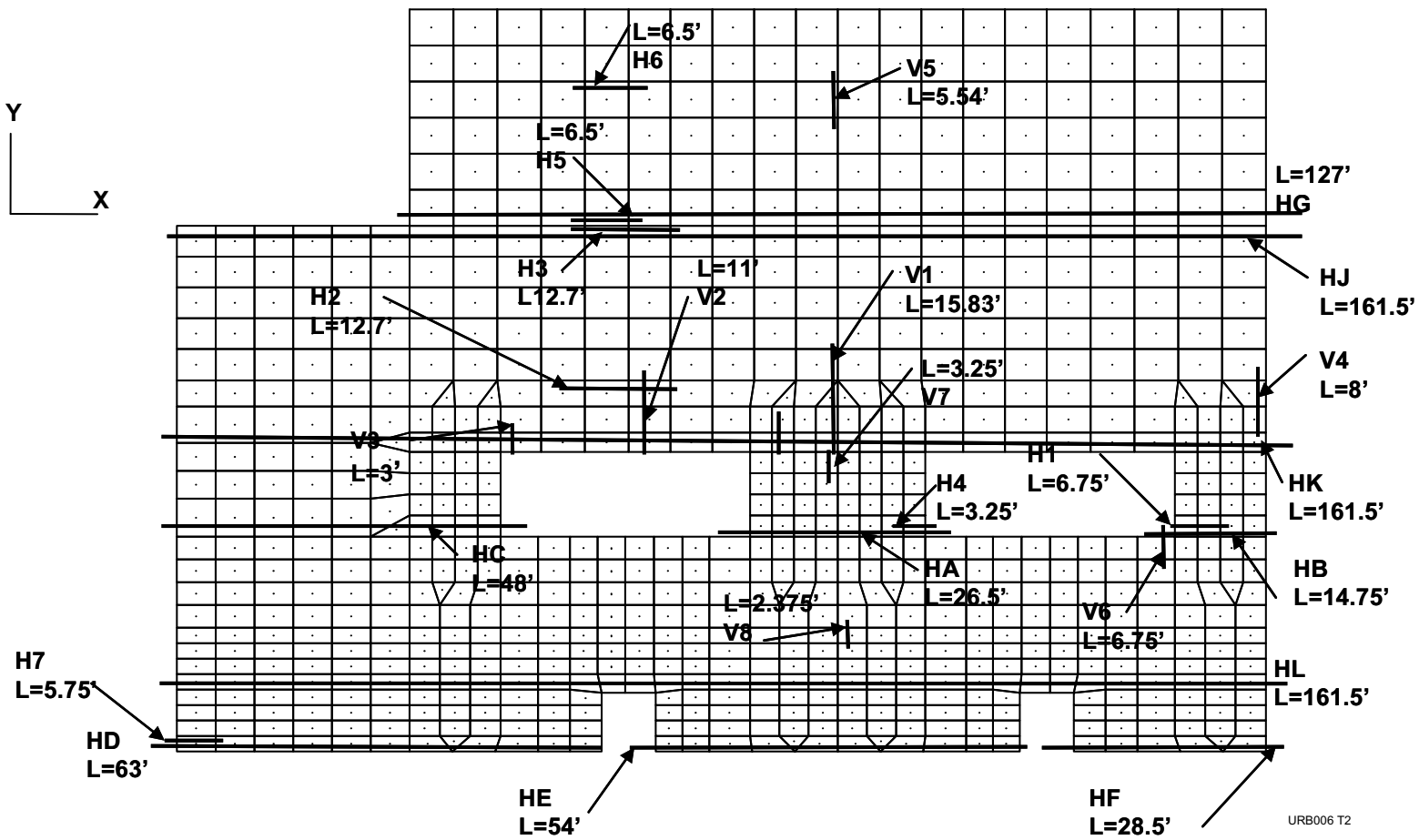


Figure 3E.3-7—Reinforcement Configuration for ESWB Wall at Column Line 4

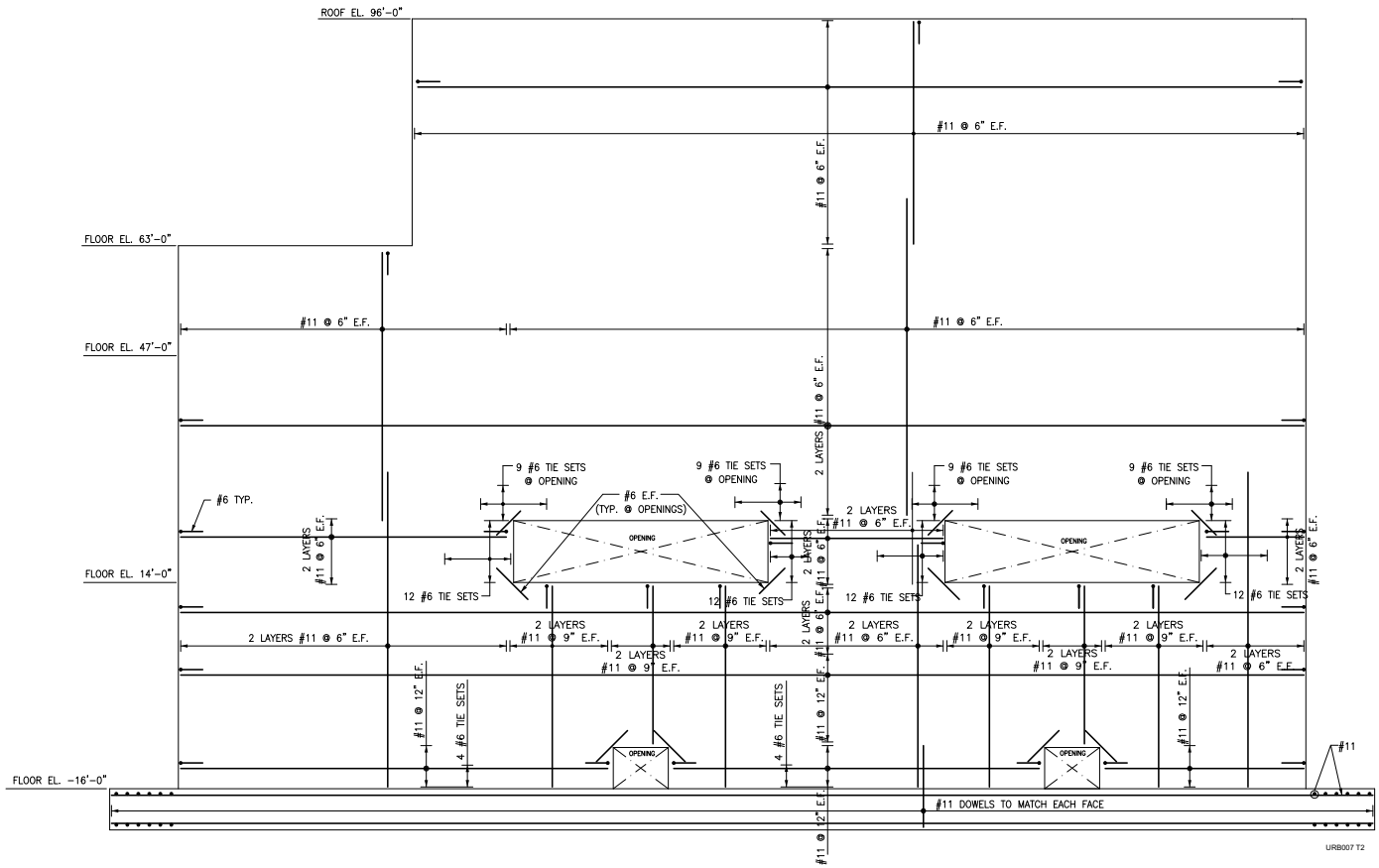
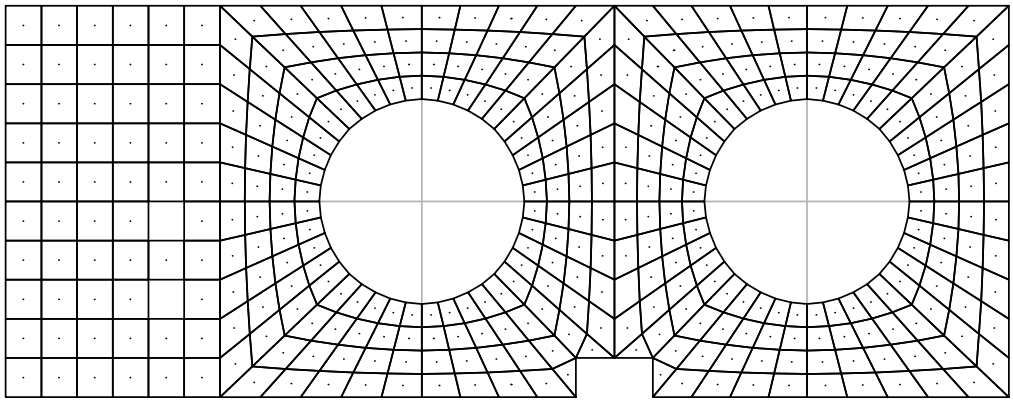


Figure 3E.3-8—ESWB Fan Deck Slab at Elevation 63 ft, 0 inches-FEM



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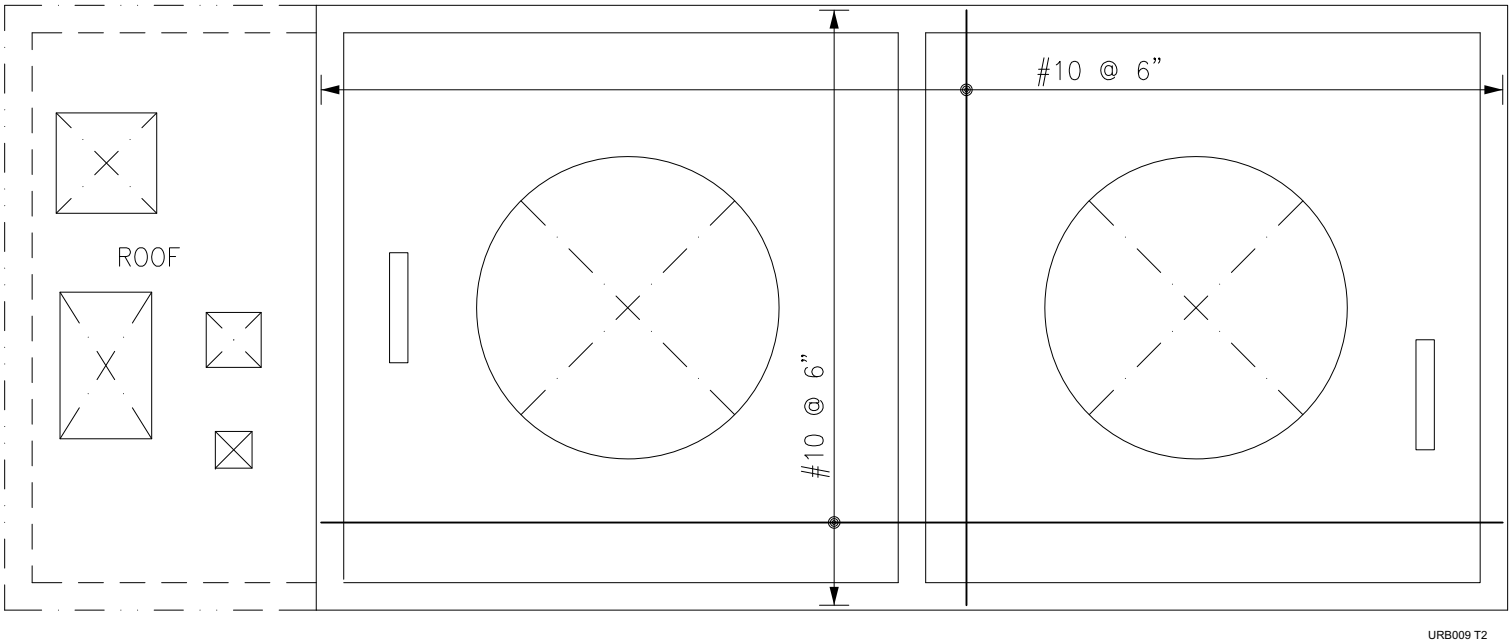
Figure 3E.3-9—Reinforcement Sketch for ESWB Fan Deck Slab at Elevation 63 ft, 0 inches