CONSTRUCTION SAFETY GENERAL NOTE

THE STRUCTURAL ENGINEER SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS, SINCE THESE ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY.

CONCRETE GENERAL NOTES

1. All detailing, fabrication and placing of reinforcing steel shall conform to the ACI standard "Details and Detailing of Concrete Reinforcement" (ACI 315).
2. Concrete mix designs shall meet the following requirements:

Location	Minimum Compressive Strength (psi)	Maximum Aggregate Size	Maximum Water/Cement Ratio	Slump (in.)	Air Entrainment Percent (%)
Interior Slabs	4000	3/4"	.50	4 ±1	0
Exterior Slabs	3500	3/4"	.50	4 ±1	6 ±1
Perimeter Foundations	3000	1"	.50	4 ±1	6 ±1

3. Reinforcing bars #4 and larger (except ties and stirrups) shall meet ASTM A615 with Supplementary Requirements (S1), Grade 60. Smaller bars shall be grade 40.
4. All reinforcing bar splices shall be 44 bar diameters.
5. All reinforcing bar hooks shall be ACI standard 90 degree hook, unless noted otherwise.
6. All bars are to be supported in forms and spaced with wire bar supports per ACI "Manual of Standard Practice for Detailing Concrete Structures" (latest edition). Bars shall be securely wired per latest edition of CRSI's "Recommended Practice for Placing Reinforcing Bars". Accessories for exposed concrete shall be plastic or have plastic-tipped feet.
7. The top of concrete pedestal shall be square, smooth & level to receive the metal building base plates.
8. Smooth dowels shall be steel conforming to ASTM A36.
9. All slots, sleeves and other embedded items such as strap-tie holdowns shall be set before concrete is placed. See Architectural, Electrical, Mechanical and vendor's drawings for sizes & locations.
10. Electrical conduit to be placed below slab shall be located by electrician prior to placement of slab reinforcements. Slab shall be thickened in these areas to accommodate a minimum of 3" top covering and 3" bottom clearance.
11. Fly ash shall not be used unless approved in writing by the Engineer. Fly ash, if approved, shall conform to ASTM C618 and shall not exceed 15% of the total cement volume.
12. All concrete is reinforced unless specifically called out as unreinforced. Reinforce all concrete not otherwise shown with same steel as in similar sections or areas.
13. No aluminum items shall be embedded in any concrete or placed in contact with concrete.
14. Concrete coverage of reinforcement shall have the following clear distances unless noted otherwise on the drawings:
    - Cast against earth: 3"
    - Formed concrete exposed to earth or weather: 2"
    - Slabs not exposed to earth or weather: 1"
    - Beams & columns not exposed to weather: 1 1/2"
15. Embedded and all reinforcing bars marked continuous shall be embedded to develop the full tension capacity of the bar. Laps shall be Class B tension lap unless specified otherwise on the drawings. Unless shown otherwise, splice top bars near midspan and splice bottom bars over supports.
16. Supply corner bars 4'-0" long (min. 2'-0" in each direction) in outside face of wall at corners of all walls and continuous footings, matching size and spacing of horizontal bars. Where there are no vertical bars in outside face of wall, supply three (3) #4 vertical support bars for corner bars.
17. Concrete placed during <u>cold weather</u> shall conform to the requirements of ACI 306R-10. Cold weather is defined as a period when, for more than 3 successive days, the mean daily temperature drops below 40°F.
18. Concrete placed during <u>hot weather</u> shall conform to the requirements of ACI 305R-10. Hot weather is defined as that combination of air temperature, relative humidity and wind speed that will cause a rate of evaporation of 0.2 lb/sq.ft./hr. or more as defined by Figure 2.1.5 of ACI 305R-10.
19. Do not add water to concrete during delivery, at Project Site, or during placement, unless approved by the Engineer of Record.
20. Reinforcing shall have the following lap splice and hook lengths:

Lap Splice & Hook Lengths		
Bar Size	Lap Splice	Hook
#4	2'-0"	8"
#5	2'-6"	10"
#6	3'-0"	1'-0"
#7	3'-6"	1'-2"
#8	4'-0"	1'-4"

21. Maximum net allowable bearing pressure for footings = 2,000 psf. Bottom of footings shall bear on compacted structural fill as described in the Soils Report Project Number No. 37095043 dated December 10, 2009, by Terracon. Bottom of footings shall bear at or below minimum bearing depth. Minimum bearing depth is 18" below lowest adjacent finished grade.

STRUCTURAL STEEL GENERAL NOTES

1. All detailing, fabrication and erection of structural steel shall conform to the requirements of the AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
2. Hollow Structural Section (HSS) shall conform to ASTM A500, Grade B with a yield strength of 46 ksi.
3. W-Shapes shall conform to ASTM A992 with a yield strength of 50 ksi. All other structural steel shall conform to the requirements of ASTM A36.
4. All anchor rods shall conform to ASTM F1554, Grade 36. Nuts for anchor rods shall conform to ASTM A563, Grade A, heavy hex and anchor rod washers shall conform to FS F-W-92.
5. All welding shall conform to the Specifications of the American Welding Society. Welding electrodes shall be E-70 series. Welding shall be done by a certified welder.
6. All bolts shall be tightened to a snug-tight condition. A snug tight condition is defined as the tightness attained by a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench. All connected elements must be brought into snug contact.
7. Bearing ends of all columns shall be square cut.
8. No openings shall be cut in structural members unless shown on the drawings.
9. Anchor rod holes in base plates shall be sized in accordance with AISC "Detailing for Steel Construction".

PRE-ENGINEERED BUILDING DESIGN LOADS

1. Building Code: 2017 FBC
2. Roof Dead Load: per MBM
3. Sprinkler System to Structural System: 250# At All Points Of Attachment
4. Roof Collateral Load: 3 psf
5. Roof Live Load: (L.L. reduction shall not be allowed) 20 psf
6. Ground Snow Load: 0 psf
7. Wind Load:
    - Ultimate Design Wind Speed, Vult (3-second gust) 157 mph
    - Nominal Design Wind Speed, Vasd (3-second gust) 122 mph
    - Risk Category II
    - Wind Exposure C
    - Internal Pressure Coefficient (GCp) = ±0.18
8. ASD Load Combinations (Based on Ultimate Design Wind Speed) :
    - D
    - D + Lr
    - D + 0.75Lr
    - D + 0.6W (or 0.7E)
    - D + 0.75Lr + 0.75 (0.6W or 0.7E)
    - 0.6D + 0.6W
    - 0.6D + 0.7E
9. Seismic:
    - Site Coefficient
      Fa = 1.600
      Fv = 2.400
    - S_S = 0.057
    - S_1 = 0.029
    - S_{DS} = 0.06
    - S_{D1} = 0.047
    - Site Class D
    - Seismic Design Category A
    - Basic Structural System = Per MBM
    - Seismic Resisting System = Per MBM
    - Response Modification Coefficient (R) = Per MBM
    - Deflection Amplification Factor (Cd) = Per MBM
    - Design Base Shear, V = Per MBM
    - Analysis Procedure = Per MBM

REQUIRED SPECIAL INSPECTIONS

(BY TESTING AGENCY)

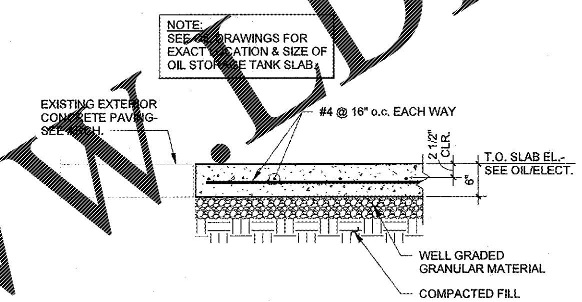
IN ADDITION TO THE REGULAR INSPECTIONS REQUIRED BY SECTION 110, THE FOLLOWING ITEMS REQUIRE SPECIAL INSPECTION IN ACCORDANCE WITH SECTION 1704, 1706 & 1707 OF THE 2017 FBC.

ITEM	SECTION
Inspection of Fabricators	
- Verify fabrication/quality control procedures	1704.2.1
Concrete Construction	
- Reinforcing Steel Installation	Table 1705.3
- Cast-in Place Anchor Bolts	Table 1705.3
- Verify Design Mix	Table 1705.3
- Fresh Concrete Sampling	Table 1705.3
- Concrete Placement	Table 1705.3
- Concrete Curing Operations	Table 1705.3
- Evaluation of Concrete Strength	Table 1705.3
Soils	
- Verify materials below are adequate to achieve design bearing capacity	Table 1705.6
- Verify excavations are extended to proper depth and have reached proper bearing material	Table 1705.6
- Perform classification and testing of controlled fill materials	Table 1705.6
- Verify site preparation with soils report	Table 1705.6
- Verify use of proper materials, densities and lift thickness during placement and compaction of controlled fill	Table 1705.6

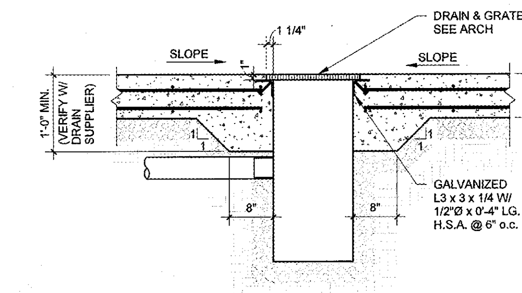
REQUIRED SPECIAL INSPECTION NOTES:
1. General Contractor shall coordinate any additional special inspection requirements with Owner and applicable building authorities.
2. Special Inspections are the responsibility of the Owner.
3. The names of persons or firms who are to perform the Special Inspections shall be forwarded to the Building Official for approval.
4. The Special Inspector(s) shall complete and submit all forms required by the Local Jurisdiction.

TYPICAL STRUCTURAL ABBREVIATIONS

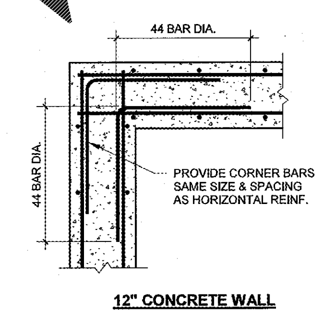
ACI	AMERICAN CONCRETE INSTITUTE	EXP.	EXPANSION	PED	PEDESTAL
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	FLR.	FLOOR	PL	PLATE
A.R.	ANCHOR ROD	FDN.	FOUNDATION	PLF	POUNDS PER LINEAR FOOT
ARCH.	ARCHITECT	FTG.	FOOTING	PROJ.	PROJECTION
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS	F.S.	FAR SIDE	PSF	POUNDS PER SQUARE FOOT
BLDG.	BUILDING	GA.	GAUGE	PSI	POUNDS PER SQUARE INCH
BM.	BEAM	GALV.	GALVANIZED	R	RADIUS
BOTT.	BOTTOM	HK.	HOOK	REINF.	REINFORCEMENT
BRG.	BEARING	HORIZ.	HORIZONTAL	REQ'D	REQUIRED
℄	CENTERLINE	H.S.A.	HEADED STUD ANCHOR	RTU	ROOF TOP UNIT
CLR.	CLEAR	I.F.	INSIDE FACE	SCHED.	SCHEDULE
COL.	COLUMN	JBE	JOIST BEARING ELEVATION	SECT.	SECTION
CONC.	CONCRETE	JST.	JOIST	SIM.	SIMILAR
CONN.	CONNECTION	JT.	JOINT	SJI	STEEL JOIST INSTITUTE
CONT.	CONTINUOUS	LG.	LONG	S.O.G.	SLAB-ON-GRADE
CTRD.	CENTERED	LLH	LONG LEG HORIZONTAL	SPA.	SPACING
DEG. or °	DEGREE	LLV	LONG LEG VERTICAL	SPECS	SPECIFICATIONS
DIA. or Ø	DIAMETER	LONG.	LONGITUDINAL	STD.	STANDARD
DIM.	DIMENSION	MAX.	MAXIMUM	STIFF.	STIFFENER
DN	DOWN	MBM	METAL BUILDING MANUFACTURER	STL.	STEEL
do	DITTO	MECH.	MECHANICAL	TOC	TOP OF CONCRETE
DTL.	DETAIL	MFR.	MANUFACTURER	TOF	TOP OF FOOTING
DWG.	DRAWING	MIN.	MINIMUM	TOW	TOP OF WALL
DWL.	DOWEL	MISC.	MISCELLANEOUS	TRANS.	TRANSVERSE
EA.	EACH	MTL.	METAL	TYP.	TYPICAL
EL.	ELEVATION	N.S.	NEAR SIDE	U.N.O.	UNLESS NOTED OTHERWISE
EQ.	EQUAL	o.c.	ON CENTER	VERT.	VERTICAL
EW	EACH WAY	O.F.	OUTSIDE FACE	W/	WITH
EXIST.	EXISTING	OPNG.	OPENING	W.P.	WORK POINT
		PAF	POWDERED ACTUATED FASTENER	WWF	WELDED WIRE FABRIC



8 **OIL STORAGE TANK SLAB SECTION**
3/4" = 1'-0"

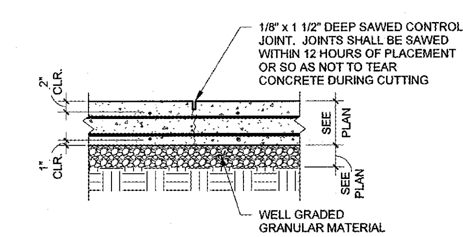


7 **DRAIN PIT SECTION**
3/4" = 1'-0"

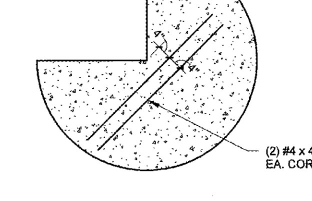


12" CONCRETE WALL

6 **TYP. CONCRETE WALL CORNER DETAIL**
NOT TO SCALE

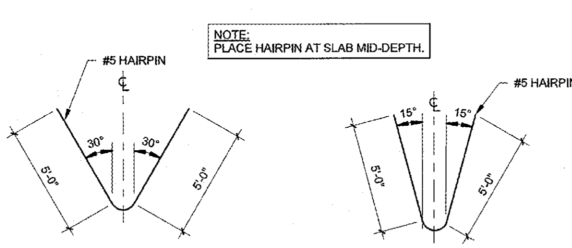


5 **TYP. SLAB-ON-GRADE CONTROL JOINT DETAIL**
3/4" = 1'-0"



4 **SECTION**
1/2" = 1'-0"

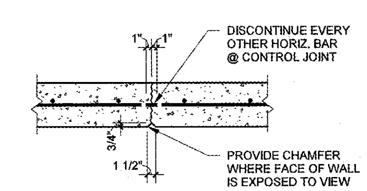
NOTE:
PLACE HAIRPIN AT SLAB MID-DEPTH.



TYP. CONDITION
1/4"=1'-0"

CORNER CONDITION
1/4"=1'-0"

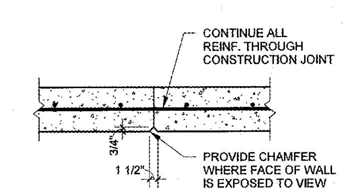
3 **TYP. HAIRPIN DETAILS**
AS NOTED



10" CONCRETE WALL

NOTE: LOCATE CONTROL JOINT AT 24'-0" o.c. MAXIMUM.

2 **TYP. CONCRETE WALL CONTROL JT. DETAIL**
NOT TO SCALE



10" CONCRETE WALL

NOTE: CONSTRUCTION JOINT MAY BE SUBSTITUTED FOR CONTROL JOINT.

1 **TYP. CONCRETE WALL CONSTRUCTION JT. DETAIL**
NOT TO SCALE

HFA ARCHITECTS ENGINEERS INTERIORS
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