

STRUCTURAL NOTES

A. GENERAL

1. THE FOUNDATION IS DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, 2003 EDITION, WITH LOCAL AMENDMENTS.
2. THE DESIGN GRAVITY LOADS ARE AS FOLLOWS:
SUPERIMPOSED DEAD LOAD (INCLUDED BUT NOT LIMITED TO THE FOLLOWING):

MECHANICAL AND CEILING.....	5 PSF
MECHANICALLY FASTENED SINGLE PLY ROOF.....	2 PSF
FINISHES.....	AS REQUIRED
SPRINKLER SYSTEMS.....	AS REQUIRED

(FIRE SPRINKLER PIPING SUPPORTED BY THE STRUCTURAL SYSTEM IS TO BE DISTRIBUTED SO THAT THE WEIGHT OF THE WATER-FILLED PIPE DIVIDED BY TRIBUTARY AREA OF THE SUPPORTING MEMBER DOES NOT EXCEED 5 POUNDS PER SQUARE FOOT, AND THE LOADING IMPARTED TO ANY ONE STRUCTURAL MEMBER DOES NOT EXCEED 50 POUNDS PER LINEAR FOOT. EACH STRUCTURAL SUPPORT OF THE PIPING SHALL BE DESIGNED TO SUPPORT A LOAD EQUAL TO THE WEIGHT OF THE WATER-FILLED PIPE PLUS 250 POUNDS).

MECHANICAL AND PIPING LOADS	AS NOTED ON PLANS
LIVE LOADS	
ROOF	20 PSF

3. THE FOUNDATION HAS BEEN DESIGNED TO WITHSTAND THE WIND PRESSURES SPECIFIED IN CHAPTER 16, SECTION 1609, OF THE INTERNATIONAL BUILDING CODE, USING EXPOSURE CATEGORY C AND USING A BASIC WIND SPEED OF 90 MILES PER HOUR AT A STANDARD HEIGHT OF 33 FEET ABOVE THE GROUND.
4. THE FLOOR SYSTEM HAS BEEN DESIGNED TO WITHSTAND A CONCENTRATED LOAD OF 2000 POUNDS PLACED UPON ANY SPACE 2'-6" SQUARE, IN ACCORDANCE WITH SECTION 1607.4 OF THE INTERNATIONAL BUILDING CODE.
5. METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
6. THE STRUCTURE HAS BEEN DESIGNED FOR THE IN-SERVICE LOADS ONLY. THE METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUPPORTING FORMWORK FOR THE CONCRETE CONSTRUCTION SHALL NOT BE REMOVED BEFORE THE CONCRETE HAS GAINED SUFFICIENT STRENGTH TO SAFELY SUPPORT THE DEAD AND SUPERIMPOSED LOADS WHICH WOULD BE SUBSEQUENTLY APPLIED. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
7. THE GENERAL CONTRACTOR AND SUB-CONTRACTORS SHALL DETERMINE THE SCOPE OF THE STRUCTURAL WORK FROM THE CONTRACT DOCUMENTS TAKEN AS A WHOLE. THE STRUCTURAL DRAWINGS SHALL NOT BE CONSIDERED SEPARATELY FOR PURPOSES OF BIDDING THE STRUCTURAL WORK. DUE CONSIDERATION SHALL BE GIVEN TO OTHER STRUCTURAL WORK OR WORK RELATED TO THE STRUCTURE, INCLUDING NECESSARY COORDINATION DESCRIBED OR IMPLIED BY THE ARCHITECTURAL AND MECHANICAL DRAWINGS.
8. THE REPRODUCTIVE USE OF THE STRUCTURAL CONTRACT DOCUMENTS OR ELECTRONIC FILES AS STRUCTURAL SHOP DRAWING DOCUMENTS BY THE CONTRACTOR OR SUB-CONTRACTORS IS AT THEIR OWN RISK. HAYNES WHALEY ASSOCIATES, INC. ASSUMES NO LIABILITY AS THE RESULT OF THE REPRODUCTIVE USE OF THE STRUCTURAL CONTRACT DOCUMENTS FOR SHOP DRAWINGS.
9. SCALES NOTED ON THE DRAWINGS ARE FOR GENERAL REFERENCE ONLY. NO DIMENSIONAL INFORMATION SHALL BE OBTAINED BY DIRECT SCALING OF THE DRAWINGS.
10. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL RESULTING REMISIONS TO THE STRUCTURAL SYSTEM OR OTHER TRADES AS A RESULT OF ACCEPTANCE OF CONTRACTOR PROPOSED ALTERNATIVES OR SUBSTITUTIONS.
11. REFER TO DRAWINGS PREPARED BY THE PREFABRICATED BUILDING MANUFACTURER FOR FRAMING OF THE STEEL SUPERSTRUCTURE. THE CONTRACTOR SHALL PROVIDE AND SET ANCHOR BOLTS IN THE FOUNDATION CONSTRUCTION IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS PROVIDED BY THE PREFABRICATED BUILDING MANUFACTURER.
12. HAYNES WHALEY ASSOCIATES, INC. IS RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE FOUNDATION ONLY. THE METAL BUILDING MANUFACTURER SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN OF THE SUPERSTRUCTURE. THE DESIGN OF THE SUPERSTRUCTURE SHALL BE IN COMPLIANCE WITH THE GOVERNING CODES AND THE OUTLINE SPECIFICATIONS GIVEN IN THESE NOTES. FOR PERMITTING OF THE SUPERSTRUCTURE, THE METAL BUILDING MANUFACTURER SHALL SUBMIT TO THE BUILDING OFFICIAL ALL ERECTION AND FABRICATION SHOP DRAWINGS BEARING THE SEAL OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF TEXAS WHO IS RESPONSIBLE FOR THE DESIGN PERFORMANCE OF THE SUPERSTRUCTURE.

B. FOUNDATION AND SLAB ON GRADE

1. THE SUBSURFACE INFORMATION AND FOUNDATION DESIGN ARE BASED ON A REPORT PREPARED BY KLEINFELDER, INC, REPORT NUMBER 95812, DATED AUGUST 20, 2008. THE CONTRACTOR SHALL PERFORM EXCAVATIONS, FOOTING CONSTRUCTION, AND PREPARATION OF THE SUBGRADE UNDER THE SLAB ON GRADE IN ACCORDANCE WITH THE RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT AND THE PROJECT SPECIFICATIONS.
2. THE FOUNDATION FOR THE STRUCTURE HAS BEEN DESIGNED FOR THE FOLLOWING ALLOWABLE SOIL BEARING PRESSURES AT A MINIMUM BEARING DEPTH OF APPROXIMATELY 2'-0" BELOW FINISH GRADE.
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|------------|----------|
| TOTAL LOAD | 2500 PSF |
|------------|----------|
3. EXCAVATIONS FOR SPREAD FOOTINGS, COMBINED FOOTINGS, CONTINUOUS FOOTINGS AND/OR MAT FOUNDATIONS SHALL BE CLEANED AND HAND TAMPED TO A UNIFORM SURFACE. FOOTING EXCAVATIONS SHALL HAVE THE SIDES AND BOTTOMS TEMPORARILY LINED WITH 6 MIL VISQUEEN IF PLACEMENT OF CONCRETE DOES NOT OCCUR WITHIN 24 HOURS OF THE EXCAVATION OF THE FOOTING.
4. FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION, WHICH DIFFER FROM THOSE DESCRIBED IN THE GEOTECHNICAL REPORT SHALL BE REPORTED TO THE ARCHITECT, GEOTECHNICAL ENGINEER AND HAYNES WHALEY ASSOCIATES, INC., BEFORE FURTHER CONSTRUCTION IS ATTEMPTED.
5. GENERAL CONTRACTOR SHALL NOTIFY THE ARCHITECT AND HAYNES WHALEY ASSOCIATES, INC., 24 HOURS PRIOR TO PLACEMENT OF CONCRETE IN THE FOOTINGS.
6. REINFORCEMENT PLACEMENT SEQUENCE FOR FOOTINGS IS NOTED ONLY FOR MAJOR REINFORCEMENT BAR LAYERS. IN SPREAD FOOTINGS AND MATS THE CONTRACTOR SHALL SEQUENCE ALL OTHER BAR PLACEMENTS AS REQUIRED TO CONFORM TO THE CONTRACT DOCUMENTS.
7. DURING CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING OF WALLS WHICH ARE ULTIMATELY SUPPORTED TOP AND BOTTOM. SUCH SHORING SHALL NOT BE REMOVED UNTIL THE SUPPORTING ELEMENTS ARE IN PLACE, THE CONCRETE IN THE WALLS AND SUPPORTING ELEMENTS HAS ATTAINED THE SPECIFIED 28 DAY COMPRESSIVE STRENGTH (FC) AND COMPACTION OF THE BACKFILL AGAINST THE WALL HAS BEEN COMPLETED..
8. A GRAVITY DRAINAGE SYSTEM IS REQUIRED TO PREVENT THE BUILD-UP OF HYDROSTATIC PRESSURE BEHIND THE WALLS.
9. SUBGRADE UNDER SLABS ON FILL SHALL HAVE A MAXIMUM PLASTICITY INDEX OF 15 AND SHALL BE PREPARED, PLACED AND COMPACTED IN ACCORDANCE WITH THE RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT.
10. SLAB ON GRADE MAY, AT THE CONTRACTOR'S OPTION, BE UNDERLAIN BY A MAXIMUM OF 2 INCHES OF SAND.
11. A VAPOR BARRIER WITH A PERFORMANCE EQUIVALENT TO A 10 MIL STEGOWRAP SHALL BE PLACED BENEATH THE SLAB ON GRADE.
12. SLABS ON GRADE SHALL HAVE CONSTRUCTION JOINTS OR CRACK CONTROL JOINTS AT EACH COLUMN LINE IN EACH DIRECTION. ADDITIONAL CRACK CONTROL JOINTS SHALL BE PROVIDED, SUCH THAT NO AREA BOUNDED BY CONSTRUCTION AND/OR CRACK CONTROL JOINTS CONTAINS MORE THAN 450 SQUARE FEET OF SLAB AREA, THE SPACING OF THE JOINTS DOES NOT EXCEED 36 TIMES THE SLAB THICKNESS, AND THE RESULTING ASPECT RATIO OF THE DIMENSIONS OF SLAB AREA DOES NOT EXCEED 1.5 TO 1. CRACK CONTROL JOINTS SHALL BE MADE USING A "SOFT-CUT" CONCRETE SAW AS SOON AS THE SLAB WILL SUPPORT THE WEIGHT OF THE SAW AND OPERATOR WITHOUT DISTURBING THE FINAL FINISH. THE CRACK CONTROL JOINTS SHALL BE CUT A MAXIMUM WIDTH OF 1/8 INCH AND A MINIMUM DEPTH OF 1/3 THE SLAB THICKNESS. REFER TO THE DRAWINGS FOR INFORMATION ON CONTROL JOINTS, CONSTRUCTION JOINTS, REINFORCEMENT DETAILS AND JOINT SEALANT DETAILS.
13. WHERE THE SLAB IS TO RECEIVE SENSITIVE ARCHITECTURAL FLOOR FINISHES, ALL JOINTS IN THE SLAB CONSTRUCTION SHALL BE PLACED TO ALIGN WITH JOINTS IN THE FLOOR FINISHES.

C. CONCRETE

1. CONCRETE IN THE FOLLOWING AREAS SHALL HAVE NATURAL SAND FINE AGGREGATE AND NORMAL WEIGHT COARSE AGGREGATES CONFORMING TO ASTM C33, TYPE I PORTLAND CEMENT CONFORMING TO ASTM C150, AND SHALL HAVE THE FOLLOWING COMPRESSIVE STRENGTH (FC) AT 28 DAYS:

SPREAD FOOTINGS	3,000 PSI
PLINTHS	3,500 PSI
GRADE BEAMS	3,500 PSI
SLABS ON GRADE	3,500 PSI

2. FLY ASH MAY BE USED AS A POZZOLAN TO REPLACE A PORTION OF THE PORTLAND CEMENT IN A CONCRETE MIX, SUBJECT TO THE APPROVAL OF THE GENERAL CONTRACTOR AND THE STRUCTURAL ENGINEER. FLY ASH, WHEN USED, SHALL CONFORM TO ASTM C618, TYPE C OR F. CONCRETE MIXES USING FLY ASH SHALL BE PROPORTIONED TO ACCOUNT FOR THE PROPERTIES OF THE SPECIFIC FLY ASH USED AND TO ACCOUNT FOR THE SPECIFIC PROPERTIES OF THE FLY ASH CONCRETE THUS RESULTING. THE RATIO OF THE AMOUNT OF THE FLY ASH TO THE TOTAL AMOUNT OF FLY ASH AND CEMENT IN THE MIX SHALL NOT EXCEED 25 PERCENT.
3. GROUT FOR BASE PLATES SHALL BE NONSHRINKABLE, NON-METALLIC CONFORMING TO ASTM C827, AND SHALL HAVE A SPECIFIED COMPRESSIVE STRENGTH AT 28 DAYS OF 5000 PSI. PREGROUTING OF BASE PLATES WILL NOT BE PERMITTED.
4. DETAILING OF CONCRETE REINFORCEMENT BARS AND ACCESSORIES SHALL CONFORM TO THE RECOMMENDATIONS OF ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT" AND ACI SP-66 "DETAILING MANUAL". PLACING OF REINFORCING BARS SHALL CONFORM TO THE RECOMMENDATIONS OF ACI 318R "MANUAL OF ENGINEERING AND PLACING DRAWINGS FOR REINFORCED CONCRETE STRUCTURES" AND CRSI "MANUAL OF STANDARD PRACTICE".
5. MIXING, TRANSPORTING, AND PLACING OF CONCRETE SHALL CONFORM TO ACI 301.
6. MINIMUM CONCRETE COVER PROTECTION FOR REINFORCEMENT BARS SHALL BE AS FOLLOWS: (SEE ACI 318 SECTION 7.7 FOR CONDITIONS NOT NOTED)

CONCRETE EXPOSED TO WEATHER	
#5 BARS AND SMALLER	1 - 1/2 INCHES
ALL OTHER BARS	2 INCHES
CONCRETE CAST AGAINST EARTH	3 INCHES
GRADE BEAMS:	
TOP	1 - 1/2 INCHES
BOARD FORMED SIDES	2 INCHES
EARTH FORMED SIDES	3 INCHES
BOTTOM	3 INCHES
SLABS ON GRADE	
SINGLE LAYER OR TOP LAYER	2 INCHES
BOTTOM LAYER CAST AGAINST SOIL	3 INCHES
BOTTOM LAYER NOT CAST AGAINST SOIL	2 INCHES
PILASTERS & PLINTHS	2 INCHES
BEAMS	1 - 1/2 INCHES
SLABS ON METAL FORMS	3/4 INCHES (TOP)
WALLS BELOW GRADE (BACKFILLED SIDE)	2 INCHES
WALLS BELOW GRADE (NO BACKFILL)	3/4 INCHES

- PROVIDE STANDARD BAR CHAIRS AND SPACERS AS REQUIRED TO MAINTAIN CONCRETE PROTECTION SPECIFIED.
7. CONCRETE REINFORCEMENT BARS SHALL CONFORM TO ASTM A615, GRADE 60.
8. REINFORCEMENT BARS SHALL NOT BE TACK WELDED, WELDED, HEATED, OR CUT UNLESS INDICATED ON THE CONTRACT DOCUMENTS OR REVIEWED BY THE STRUCTURAL ENGINEER.
9. REINFORCEMENT DESIGNATED AS "CONTINUOUS" MAY BE SPLICED USING TYPE "B" SPLICES. REINFORCEMENT BAR SPLICE LENGTHS IN BEAMS WHICH ARE LOCATED AT THE CENTERLINE OF SUPPORTS FOR BOTTOM BARS AND AT MIDSPAN FOR TOP BARS MAY BE 36 BAR DIAMETERS, UNLESS NOTED OTHERWISE. PROVIDE STANDARD ACI HOOKS FOR TOP AND BOTTOM BARS AT DISCONTINUOUS ENDS OF ALL GRADE BEAMS.
10. HORIZONTAL FOOTING AND HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90-DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED 36 BAR DIAMETERS, AT CORNERS AND INTERSECTIONS.
11. HORIZONTAL JOINTS WILL NOT BE PERMITTED IN CONCRETE CONSTRUCTION EXCEPT AS SHOWN ON THE CONTRACT DOCUMENTS. VERTICAL JOINTS MAY OCCUR AT CENTER OF SPANS AT LOCATIONS REVIEWED BY HAYNES WHALEY ASSOCIATES, INC..
12. CONSTRUCTION JOINTS BETWEEN PIERS AND PIER CAPS, FOOTINGS AND WALLS OR COLUMNS, OR WALLS, COLUMNS, BEAMS, AND THE FLOOR SYSTEM THEY SUPPORT SHALL BE PREPARED BY ROUGHENING THE CONTACT SURFACE TO A FULL AMPLITUDE OF APPROXIMATELY 1/4 INCH LEAVING THE CONTACT SURFACE CLEAN AND FREE OF LAITANCE.
13. PROVIDE 1- NO. 4 REINFORCEMENT BAR X 4'-0" AT RE-ENTRANT CORNERS AND AROUND RECTANGULAR HOLES IN SLABS UNLESS NOTED OTHERWISE. PLACE BAR DIAGONAL TO CORNER WITH 1" CLEARANCE FROM THE TOP AND THE SIDE OF THE SLAB AT THE CORNER.
14. PROVIDE 2- NO. 4 REINFORCEMENT BARS X 4'-0" AT RE-ENTRANT CORNERS OF SLAB ON GRADE AT FOUR STRIPS AND COLUMN BLOCKOUTS. PLACE BARS CENTERED IN THE SLAB AND DIAGONAL TO THE CORNER WITH 1" CLEARANCE FROM THE SLAB AT THE CORNER.
15. CONDUIT, PIPES, AND SLEEVES EMBEDDED IN CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, CHAPTER 6.3.

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