GENERAL STRUCTURAL NOTES

1. CODES AND MANUALS:
   INTERNATIONAL BUILDING CODE, 2015 EDITION
   MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, ASCE 7-10,
   AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION
   ACI BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318
   AWS D1.1 AND D1.3

2. DESIGN CRITERIA:
   A. VERTICAL:
      LIVE LOAD
      ROOF (SNOW) 20 PSF

      Is (IMPORTANCE FACTOR FOR SNOW) 1.0
      * LOAD HAS NOT BEEN REDUCED
   B. HORIZONTAL LOADS:
      (1) WIND*
      PROCEDURE PER SECTION 1609

      P = WIND PRESSURE x λ Iw

WIND SPEED	V3s=115 MPH
WIND PRESSURE : END ZONE	21.0 PSF
INTERIOR ZONE	13.9 PSF

      HEIGHT & EXPOSURE ADJUSTMENT COEFFICIENT FROM FIGURE 6-2 IN ASCE
      IMPORTANCE FACTOR Iw = 1.0
      HORIZONTAL WIND LOAD:

	END	INTERIOR
0' - 15'	24.4 PSF	16.2 PSF
15' - 20'	25.9 PSF	17.4 PSF
20'- 25'	27.1 PSF	18.2 PSF

      (2) SEISMIC* V = Sds Ie W/ R

SPECTRAL ACCELERATIONS	Ss=0.135
	S1=0.052
SITE CLASS	D
IMPORTANCE FACTOR	Ie = 1.25
DESIGN SPECTRAL RESPONSE	Sds = 0.144
ONE SECOND PERIOD RESPONSE ACCEL.	Sd1 = 0.083
RESPONSE MODIFICATION COEFFICIENT	R = 2.5
SEISMIC FORCE	V = 0.058 X W
SEISMIC DESIGN CATEGORY	C

      * ALLOWABLE 1/3 STRESS INCREASE FOR SEISMIC LOADING
   C. ALLOWABLE SOIL BEARING PRESSURE = 1500 PSF

3. GENERAL:
   A. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
   B. SHOP DRAWINGS, IN HARD COPY FORM, SHALL BE FURNISHED AND REVIEWED BEFORE ANY FABRICATION OR ERECTION IS STARTED.
   C. THE CONTRACTOR SHALL REVIEW AND APPROVE SHOP DRAWINGS PRIOR TO SUBMITTAL TO THE ARCHITECT FOR REVIEW. POORLY EXECUTED SHOP DRAWINGS WILL BE REJECTED AND REQUIRE RESUBMITTAL.
   D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE SHORING FOR ALL PARTS OF THE STRUCTURE DURING CONSTRUCTION.
   E. TEMPORARY PROVISIONS SHALL BE MADE FOR STRUCTURAL STABILITY DURING CONSTRUCTION. THE STRUCTURE SHOWN ON THE DRAWINGS HAS BEEN DESIGNED FOR STABILITY UNDER FINAL CONFIGURATION.
   F. THE CONTRACTOR SHALL COORDINATE AND VERIFY ALL OPENINGS IN FLOORS, ROOF, WALLS AND BEAMS WITH THE INDIVIDUAL TRADES.
   G. NOTCHING OR CUTTING ANY STRUCTURAL MEMBER IN THE FIELD IS PROHIBITED.
   H. THE CONTRACTOR SHALL VERIFY THE SIZE AND LOCATION OF FOUNDATIONS UNDER MECHANICAL AND ELECTRICAL EQUIPMENT AS REQUIRED. NO CONCRETE PADS SHALL BE LOCATED ON ROOF UNLESS SHOWN ON STRUCTURAL DRAWINGS.
   I. REMOVAL OF FORMS SHALL BE IN ACCORDANCE WITH ACI 347. WHERE CONCRETE MUST SUPPORT SUPERIMPOSED LOADS PRIOR TO ATTAINING THE SPECIFIED DESIGN STRENGTH, RESHORE CONCRETE IN ACCORDANCE WITH ACI 347. RESHORING SHALL NOT BE REMOVED SOONER THAN 28 DAYS FROM THE DATE OF POUR OR UNTIL CONCRETE HAS ATTAINED THE SPECIFIED DESIGN STRENGTH.

4. MATERIALS:
   A. CAST-IN-PLACE CONCRETE:
      (1) ALL CONCRETE SHALL CONFORM TO THE SPECIFICATIONS FOR STRUCTURAL CONCRETE, ACI 301-96.
      (2) ALL EXPOSED EDGES OF CONCRETE SHALL HAVE A ¾" CHAMFER UNLESS NOTED OTHERWISE.
      (3) NORMALWEIGHT CONCRETE:
         A. F'C = 4000 PSI @ 28 DAYS (AIR ENTRAINED) - ALL EXPOSED EXTERIOR CONCRETE FLAT WORK. (I.E. SLABS, EQUIPMENT PADS, ETC.).
         B. F'C = 3000 PSI @ 28 DAYS - ALL INTERIOR CONCRETE (AIR ENTRAINED) IE. , FOOTINGS, PEDESTALS, STEM WALLS, ETC.)
         C. F'C = 3000 PSI @ 28 DAYS - ALL INTERIOR SLABS ON GRADE.
      (4) THE CONTRACTOR SHALL NOT CAST FOUNDATIONS, STEM WALLS OR RETAINING WALLS AGAINST EXCAVATED VERTICAL SIDE SURFACES.
      (5) FLYASH ADDITIVES MAY NOT EXCEED 20% OF THE CEMENTITIOUS MATERIAL.
      (6) THE MAXIMUM WATER TO CEMENTITIOUS MATERIAL RATIO, BY WEIGHT, MAY NOT EXCEED 50%.
      (7) THE OWNER'S SPECIAL INSPECTOR SHALL MONITOR SAMPLING & TESTING PERFORMED BY THE CONTRACTOR'S TESTING AGENCY.
      (8) MAXIMUM SLUMP FOR CONCRETE MIX DESIGN IS 4".
   B. REINFORCING STEEL:
      (1) ALL REINFORCING STEEL SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE (ACI 318) AND THE STANDARD MANUAL (ACI 315-99).
      (2) ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 GRADE 60 EXCEPT STIRRUPS, TIES AND FIELD-BENT BARS WHICH SHALL CONFORM TO ASTM A615 GRADE 40.
      (3) ALL SLABS SHALL BE REINFORCED AS SHOWN ON THE DRAWINGS.
      (4) WHERE LAPPED SPLICES IN REINFORCING OCCUR, THE MINIMUM LAP SHALL BE MADE AS FOLLOWS UNLESS NOTED OTHERWISE ON DRAWINGS:
         A. VERTICAL REINFORCING:30 BAR DIA. (18" MINIMUM)
         B. HORIZONTAL REINFORCING:30 BAR DIA. (18" MINIMUM)
      (5) ALL HORIZONTAL REINFORCING IN FOOTINGS, BEAMS, AND WALLS SHALL BE CONTINUOUS AROUND CORNERS OR HAVE CORNER BARS OF THE SAME SIZE AND SPACING AS THE HORIZONTAL BARS AND LAP A MINIMUM OF 30 BAR DIAMETERS, (18 INCHES MINIMUM).
      (6) CONCRETE COVER FOR REINFORCING SHALL BE AS FOLLOWS UNLESS OTHERWISE NOTED:
         A. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH...3"
         B. CONCRETE EXPOSED TO EARTH OR WEATHER:
            1. BARS LARGER THAN NO. 5............2"
            2. BARS NO. 5 OR SMALLER............1½"
      (7) FORM TIES SHALL BE EITHER OF THE THREADED OR SNAP-OFF TYPE SO THAT NO METAL WILL BE LEFT WITHIN 1 INCH OF THE SURFACE OF THE WALL.
      (8) BAR SUPPORTS AND SPACERS FOR REINFORCING SHALL BE PROVIDED IN ACCORDANCE WITH ACI 315-99. CHAIRS WITH 22 GA. SAND PLATES OR PRECAST BLOCKS SHALL BE PROVIDED FOR ALL REINFORCING OF CONCRETE IN CONTACT WITH GRADE. REINFORCING SHALL BE SECURELY TIED TO SUPPORTS.
      (9) REINFORCING SHALL NOT BE TACK WELDED OR WELDED IN ANY MANNER UNLESS SPECIFICALLY DETAILED ON THE STRUCTURAL PLANS. IF DRAWINGS SHOW REBAR TO BE WELDED, USE ASTM A706 REBAR.
   C. STRUCTURAL AND MISCELLANEOUS STEEL:
      (1) ALL STRUCTURAL STEEL SHALL BE DETAILED AND FABRICATED IN ACCORDANCE WITH THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
      (2) ALL W-SHAPED MEMBERS SHALL CONFORM TO ASTM A992 (Fy=50KSI). ALL CHANNELS, ANGLES, & PLATES SHALL BE ASTM A36 (Fy=36KSI). ALL PIPE STEEL SHALL BE ASTM A501 (Fy=36KSI).
      (3) ALL COLD FORMED STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE B. FY = 46 KSI.
      (4) BOLTS SHALL CONFORM TO ASTM A325 TENSION CONTROL BOLTS UNLESS NOTED OTHERWISE, WITH SIZES AS SHOWN ON THE DRAWINGS. WHERE CLEARANCE WITHIN A CONNECTION DOES NOT PERMIT THE USE OF TENSION CONTROL BOLTS, STANDARD A325 BOLTS SHALL BE USED AND INSPECTED IN ACCORDANCE WITH THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS".
      (5) ALL BOLTS SHALL BE TIGHTENED SO AS TO SHEAR THE SPLINE OFF THE BOLT.
      (6) ANCHOR BOLTS EMBEDDED IN CONCRETE SHALL BE ASTM A307 BOLTS OR A36 THREADED BARS. PROVIDE FLAT WASHERS BETWEEN ALL NUTS AND BASEPLATES.
      (7) ALL WELDING SHALL BE DONE IN ACCORDANCE WITH THE LATEST STANDARDS OF THE AWS STRUCTURAL WELDING CODE.
      (8) ALL BOLT HOLES THAT ARE REQUIRED TO BE FIELD DRILLED SHALL BE DRILLED WITH A MAG DRILL. FLAME CUTTING OF HOLES OR ENLARGING OF UNFAIR HOLES WILL NOT BE ALLOWED.
      (9) HEADED CONCRETE ANCHORS AND SHEAR CONNECTORS SHALL BE TYPE B, IN CONFORMANCE WITH AWS D1.1 "STRUCTURAL WELDING CODE-STEEL". STRUCTURAL STEEL TO RECEIVE SHEAR CONNECTIONS SHALL BE FREE OF PAINT. WELDING PRE QUALIFICATION REQUIRED.

5. POST INSTALLED ANCHORS

   POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER-OF-RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS. CARE SHALL BE TAKEN IN PLACING POST-INSTALLED ANCHORS TO AVOID CONFLICTS WITH EXISTING REBAR. HOLES SHALL BE DRILLED AND CLEANED IN ACCORDANCE WITH THE MANUFACTURERE'S WRITTEN INSTRUCTIONS. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER-OF-RECORD ALONG WITH CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERTINENT EQUIVALENT PERFORMANCE VALUES (MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE BUILDING CODE. PROVIDE CONTINUOUS SPECIAL INSPECTION FOR ALL ADHESIVES AND MECHANICAL ANCHORS PER THE PRODUCT'S APPLICABLE ICC-ES EVALUATION REPORT (ICC-ES-ESR). CONTACT MANUFACTURER'S REPRESENTATIVE FOR THE INITIAL TRAINING AND INSTALLATION OF ANCHORS AND FOR PRODUCT RELATED QUESTIONS AND AVAILABILITY. CALL SIMPSON STRONG-TIE AT (800) 999-5099 OR HILTI AT (866) 445-8827.

   A. CONCRETE ANCHORS:
      1. MECHANICAL ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 3552 AND ICC-ES AC193 FOR CRACKED AND UNCRACKED CONCRETE RECOGNITION. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
         a. SIMPSON STRONG-TIE "TITEN HD" (ICC-ES ESR-2713)
         b. SIMPSON STRONG-TIE "STRONG-BOLT" (ICC-ES ESR-1771) OR HILTI "KWIK BOLT TZ" (ICC-ES ESR-1917)
      2. ADHESIVE ANCHORS SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC308 FOR CRACKED AND UNCRACKED CONCRETE RECOGNITION. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
         a. SIMPSON STRONG-TIE "SET-XP" (ICC-ES ESR-2508) OR HILTI "HIT-RE 500-SD" (ICC-ES ESR-2322)

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ALL DIMENSIONS ARE TO BE FIELD VERIFIED. IF THERE ARE DISCREPANCIES, PLEASE NOTIFY THE ARCHITECT. DRAWING ARE NOT TO BE SCALED. USE DIMENSIONS FOR ACCURACY.

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GENERAL STRUCTURAL NOTES

4/13/2020

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DRAWN BY: DR
CHECKED BY: MJW
VERIFIED BY:

REVISIONS

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