STRUCTURAL NOTES (DR. WESLEY GRANT SR. CENTER EXPANSION)

GE - GENERAL

1. THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE NORTH CAROLINA STATE BUILDING CODE - 2018 EDITION (2015 INTERNATIONAL BUILDING CODE WITH CURRENT NORTH CAROLINA AMENDMENTS).

2. SPECIAL INSPECTIONS PER CHAPTER 17 OF THE NC STATE BUILDING CODE ARE REQUIRED FOR THIS PROJECT. REFER TO THE PROJECT SPECIFICATIONS FOR THE STATEMENT OF SPECIAL INSPECTIONS AND STATEMENT OF CONTRACTOR RESPONSIBILITY.

3. THE DESIGN LOADS ARE AS FOLLOWS:

LIVE LOAD
- ROOF ____ 20 PSF
- FLOOR (TYPICAL, U.O.N.) ____ 100 PSF

DEAD LOAD
- LOW ROOF ____ 20 PSF
- HIGH ROOF (INCL. SOLAR) ____ 25 PSF

SUPER-IMPOSED DEAD LOAD
- MOVABLE PARTITIONS ____ 20 PSF

SNOW LOAD
- GROUND SNOW LOAD P_G ____ 15 PSF
- FLAT ROOF SNOW LOAD P_F ____ 16.5 PSF
- SNOW EXPOSURE FACTOR C_E ____ 1.0
- SNOW LOAD IMPORTANCE FACTOR I_E ____ 1.1
- THERMAL FACTOR C_T ____ 1.1

WIND LOAD
- BASIC WIND SPEED V_{ULT} (ASCE 7-10) ____ 120 MPH
- RISK CATEGORY ____ III
- WIND EXPOSURE ____ C
- INTERNAL PRESSURE COEFFICIENT GC_{PI} ____ ± 0.18
- COMPONENTS AND CLADDING ____ PER ASCE 7-10
- DESIGN CODE REFERENCE PUBLICATION ____ ASCE 7-10
- DESIGN BASE SHEAR ____ VX= 97 K, VY= 77 K

SEISMIC LOAD
- SEISMIC OCCUPANCY CATEGORY ____ III
- SEISMIC DESIGN CATEGORY ____ C
- SPECTRAL RESPONSE ACCELERATION S_S ____ 31%G; S_1 ____ 11%G
- SPECTRAL RESPONSE COEFFICIENTS S_{MS} ____ 48%G; S_{M1} ____ 26%G; S_{DS} ____ 32%G; S_{D1} ____ 17%G
- SITE CLASS ____ D
- SEISMIC IMPORTANCE FACTOR I_E ____ 1.25
- BASIC SEISMIC-FORCE-RESISTING SYSTEM ____ STRUCTURAL STEEL SYSTEM NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE & INTERMEDIATE REINFORCED MASONRY SHEAR WALLS
- RESPONSE MODIFICATION FACTOR R ____ 3.0
- SEISMIC RESPONSE COEFFICIENT CS ____ 0.11
- DESIGN BASE SHEAR ____ 87 K
- ANALYSIS PROCEDURE ____ EQUIVALENT LATERAL FORCE PROCEDURE (ELF) PER SECTION12.8 ASCE 7-10
- LATERAL DESIGN CONTROL ____ WIND & SEISMIC

PRE-ENGINEERED SYSTEMS AND COMPONENTS SHALL BE DESIGNED BASED ON THE MINIMUM LOAD REQUIREMENTS PER ASCE-7 AND THE ABOVE BASIC LOAD PARAMETERS.

4. THE STRUCTURE HAS BEEN DESIGNED TO WITHSTAND IN-SERVICE LOADS ONLY. 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.

5. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS, AND DRAWINGS OF OTHER TRADES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SEEING THAT THE WORK OF ALL TRADES IS COORDINATED WITH THE STRUCTURAL WORK.

6. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL DIMENSIONS SHOWN ON THE TOTAL CONTRACT DOCUMENTS.

7. ANYTHING WHICH, IN THE OPINION OF THE CONTRACTOR, APPEARS TO BE DEFICIENCIES, OMISSIONS, CONTRADICTIONS, OR AMBIGUITIES IN THE PLANS OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGNER. CORRECTIONS OR WRITTEN INTERPRETATIONS SHALL BE ISSUED BEFORE CONSTRUCTION OF THE AFFECTED WORK MAY PROCEED.

8. DETAILS ARE MARKED AT THE SPECIFIC LOCATION WHERE THEY APPLY, BUT ALSO INDICATE GENERAL CONSTRUCTION REQUIREMENTS FOR OTHER LOCATION WITH SIMILAR CONDITIONS. DETAILS NOTED AS "TYPICAL" MAY NOT BE REFERENCED ON THE DRAWINGS. TYPICAL DETAILS APPLY AT ALL LOCATIONS WHERE THE TYPE OF CONSTRUCTION SHOWN IN THE TYPICAL DETAIL OCCURS.

9. WHERE CONFLICTS OCCUR BETWEEN NOTES, DRAWINGS, OR SPECIFICATIONS, THE CONTRACTOR SHALL NOT PROCEED WITH THE AFFECTED WORK UNTIL THE STRUCTURAL ENGINEER ISSUES A CLARIFICATION.

10. UNIFORM LIVE LOADS HAVE BEEN REDUCED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 1607.9 OF THE NC STATE BUILDING CODE.

11. HORIZONTAL AND VERTICAL CLEARANCES FROM THE EXISTING ADJACENT STRUCTURE SHALL BE VERIFIED BEFORE CONSTRUCTION IS BEGUN. VARIATIONS FROM THE DIMENSIONS INDICATED ON THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND/OR STRUCTURAL ENGINEER.

COMPONETS AND CLADDING ULTIMATE DESIGN PRESSURES (PSF)
V_{ULT} = 120 MPH EXPOSURE C

EWA (FT²) \ ZONE	1		2		3		4		5	
≤10	14.6	-36.1	14.6	-60.4	14.6	-90.9	32.9	-35.7	32.9	-43.9
20	13.7	-35.0	13.7	-54.0	13.7	-75.3	31.5	-34.2	31.5	-41.0
50	12.5	-33.8	12.5	-45.4	12.5	-54.6	29.5	-32.3	29.5	-37.1
100	11.6	-32.9	11.6	-39.0	11.6	-39.0	28.1	-30.8	28.1	-34.2
200	11.6	-32.9	11.6	-39.0	11.6	-39.0	26.6	-29.4	26.6	-31.3
500	11.6	-32.9	11.6	-39.0	11.6	-39.0	24.7	-27.4	24.7	-27.4
1000	11.6	-32.9	11.6	-39.0	11.6	-39.0	24.7	-27.4	24.7	-27.4

NOTES:
1. EWA IS THE EFFECTIVE WIND AREA OF A STRUCTURAL COMPONENT.
2. FOR WALL ZONE DEFINITIONS, SEE ASCE 7-10 TABLE 30.4-1.
3. FOR ROOF ZONE DEFINITIONS, SEE ASCE 7-10 TABLE 30.4-2A.
4. PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARD AND AWAY FROM THE SURFACES RESPECTIVELY.
5. ASD DESIGN PRESSURES = ULT / $\sqrt{1.6}$

FO - FOUNDATION

1. THE SUBSURFACE INFORMATION AND FOUNDATION DESIGN ARE BASED ON A REPORT PREPARED BY MACTEC ENGINEERING AND CONSULTING, INC., REPORT NUMBER 6685091819, DATED SEPTEMBER 21, 2009. THE CONTRACTOR SHALL PERFORM EXCAVATIONS, FOOTING CONSTRUCTION, AND PREPARATION OF THE SUB-GRADE UNDER THE SLAB-ON-GRADE IN ACCORDANCE WITH THE RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT AND THE PROJECT SPECIFICATIONS.

2. FOUNDATION DESIGN IS BASED ON A ALLOWABLE SOIL BEARING PRESSURE OF 1000 PSF.

3. ALL FOOTINGS SHALL BE FOUNDED ON UNDISTURBED SOIL OR A CONTROLLED FILL HAVING A BEARING CAPACITY OF 1000 PSF, AT THE ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS.

4. FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION, WHICH DIFFER FROM THOSE DESCRIBED IN THE GEOTECHNICAL REPORT SHALL BE REPORTED TO THE STRUCTURAL AND GEOTECHNICAL ENGINEER BEFORE FURTHER CONSTRUCTION IS ATTEMPTED.

CO - 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 MINIMUM COMPRESSIVE STRENGTH (F'C) AT 28 DAYS:
   - FOOTINGS ____ 3000 PSI w/ NO ENTRAINED AIR (FLY ASH OPTIONAL)
   - INTERIOR SLAB ON GRADE ____ 3000 PSI w/ NO ENTRAINED AIR (FLY ASH OPTIONAL)
   - INTERIOR SLAB ON GRADE TO BE POLISHED ____ 3500 PSI w/ NO ENTRAINED AIR (NO FLY ASH)
   - EXTERIOR SLABS AND WALKS ____ 4500 PSI w/ 5% ENTRAINED AIR AND FLY ASH
   - SITE RETAINING WALLS ____ 4500 PSI w/ 5% ENTRAINED AIR AND FLY ASH

2. ALL CONCRETE SHALL BE MADE IN ACCORDANCE WITH APPROVED DESIGN MIXES AS REQUIRED FOR THE JOB.

3. ALL CONCRETE SHALL CONTAIN ENTRAINED AIR IN ACCORDANCE WITH ACI 318, TABLE 4.2.1, U.O.N.

4. CONCRETE THAT ARRIVES AT THE JOBSITE WITH A SLUMP GREATER THAN 5" SHALL BE REJECTED. CONCRETE WITH A SLUMP LESS THAN 3" SHALL HAVE AN APPROVED SUPER-PLASTICIZER ADDED SUCH THAT THE MINIMUM 3" SLUMP MAY BE ACHIEVED. THE ADDITION OF WATER AT THE JOBSITE, BEYOND THAT HELD-BACK AT THE CONCRETE PLANT, FOR THE PURPOSE OF INCREASING THE SLUMP IS PROHIBITED.

5. THE UNDER-SLAB ON GRADE VAPOR RETARDER SHALL BE 10 MILS THICK AND MEET THE REQUIREMENTS OF ASTM E 1745, CLASS B. PROVIDE THE MANUFACTURER'S RECOMMENDED ADHESIVE OR PRESSURE-SENSITIVE TAPE. PRODUCT SHALL BE EQUIVALENT TO STEGO WRAP, 10 MILS, MANUFACTURED BY STEGO INDUSTRIES, LLC.

6. CONCRETE WALL FORM TIES SHALL BE FACTORY-FABRICATED, REMOVABLE OR SNAP-OFF METAL OR GLASS-FIBER-REINFORCED PLASTIC FORM TIES DESIGNED TO RESIST LATERAL PRESSURE OF FRESH CONCRETE ON FORMS AND TO PREVENT SPALLING OF CONCRETE ON REMOVAL. FURNISH UNITS THAT WILL LEAVE NO CORRODIBLE METAL CLOSER THAN 1 INCH (25 MM) TO THE PLANE OF EXPOSED CONCRETE SURFACE. FURNISH TIES THAT, WHEN REMOVED, WILL LEAVE HOLES NO LARGER THAN 1 INCH (25 MM) IN DIAMETER IN CONCRETE SURFACE.

7. AT THE INTERFACE OF THE CONCRETE SLAB ON GRADE AND VERTICAL STRUCTURAL MEMBERS (E.G. WALLS, COLUMNS), APPLY A BOND-BREAKER TO THE VERTICAL MEMBER FOR THE FULL DEPTH OF THE SLAB. SATISFACTORY PRODUCTS INCLUDE CURING COMPOUND, FORM RELEASE, AND OTHER SIMILAR PRODUCTS. DO NOT USE ASPHALT IMPREGNATED FIBERBOARD OR FELT.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING ANCHOR BOLTS, CLIPS, INSERTS, CONNECTION PLATES, SLEEVES, SLOTS, AND OTHER REQUIRED ITEMS IN ACCORDANCE WITH THE CONTRACT DRAWINGS, AND IN COOPERATION WITH OTHER TRADES PRIOR TO PLACING THE CONCRETE.

SCHEDULE OF CONCRETE FINISHES:
- INTERIOR SLAB ON GRADE ____ TROWEL FINISH.
- SLABS TO RECEIVE SETTING BEDS ____ SCRATCH FINISH.
- EXTERIOR STEPS AND SIDEWALKS ____ NON-SLIP MEDIUM BROOM FINISH
- POOL DECK ____ NON-SLIP MEDIUM BROOM FINISH
- RESTROOMS ____ NON-SLIP MEDIUM BROOM FINISH

CR - CONCRETE REINFORCEMENT

1. CONCRETE REINFORCEMENT BARS SHALL CONFORM TO ASTM A615, GRADE 60. REINFORCEMENT DESIGNATED AS CONTINUOUS SHALL LAP 36 BAR DIAMETERS AT SPLICES, UNLESS NOTED OTHERWISE. SEE MASONRY SECTION BELOW FOR LAP REQUIREMENTS IN CMU WALLS.

2. WELDED WIRE REINFORCEMENT SHALL CONFORM TO ASTM A185. REINFORCEMENT SHALL BE FURNISHED IN FLAT SHEETS. LAP ONE FULL MESH.

3. ALL CONCRETE REINFORCEMENT BARS AND WWR SHALL BE ACCURATELY AND SECURELY TIED AND ANCHORED IN PLACE TO PREVENT DISLOCATION DURING THE CONCRETE PLACEMENT OPERATION.

4. PROVIDE CORNER REINFORCEMENT, 36 BAR DIAMETERS x 36 BAR DIAMETERS, AT EACH CONTINUOUS FOOTING CHANGE IN DIRECTION.

5. PROVIDE (1) #4 REINFORCEMENT BAR x 4'-0" AT RE-ENTRANT CORNERS AND AROUND THE PERIMETER OF RECTANGULAR HOLES IN THE SLAB, UNLESS OTHERWISE NOTED. PLACE BAR DIAGONAL TO THE CORNER WITH 1" CLEARANCE FROM THE TOP AND THE SIDE OF THE SLAB AT THE CORNER.

6. MINIMUM CONCRETE COVER PROTECTION FOR REINFORCEMENT BARS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE COMMITTEE 318, SECTION 7.7, UNLESS NOTED OTHERWISE.

MA - MASONRY

1. CONCRETE MASONRY SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (F'M) OF 2,000 PSI AT 28 DAYS. CONCRETE MASONRY UNITS (CMU) SHALL HAVE MINIMUM UNIT STRENGTH OF 2,800 PSI AT 28 DAYS FOR THE AVERAGE NET AREA.

2. MORTAR FOR CMU WALLS SHALL BE TYPE 'S" AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 1800 PSI AT 28 DAYS. MORTAR FOR MASONRY VENEERS SHALL BE TYPE 'N" AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 750 PSI AT 28 DAYS.

3. ALL CMU CELLS CONTAINING REINFORCEMENT OR OTHERWISE INDICATED TO BE GROUTED SHALL BE FILLED WITH GROUT CONFORMING TO ASTM C-476 "GROUT FOR MASONRY". THE GROUT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2500 PSI. THE GROUT DESIGN MIX SHALL BE PROPORTIONED SUCH THAT THE SPECIFIED SLUMP RANGE IS 8"-11". IF THE SLUMP IS LESS THAN THE MINIMUM, ADDITIONAL SLUMP MAY BE ATTAINED AT THE JOBSITE BY THE ADDITION OF AN APPROVED SUPER-PLASTICIZER. NO ADDITIONAL WATER MAY BE ADDED TO THE MIX AT THE JOBSITE TO INCREASE THE SLUMP.

4. THE MASONRY GROUT IN THE CELLS SHALL BE CONSOLIDATED IN ACCORDANCE WITH ACI SPECIFICATIONS. FOR POUR HEIGHTS GREATER THAN 4'-0", CONSOLIDATE USING A MECHANICAL VIBRATOR. FOR POUR HEIGHTS UP TO 4'-0", THOROUGH RODDING MAY BE USED IN LIEU OF THE VIBRATOR. ALL VERTICAL BARS ARE TO BE PLACED IN THE VOIDS BEFORE FILLING THE CELLS WITH CONCRETE.

5. PER ACI-530.1, SECTION 3.5D, MAXIMUM GROUT LIFT HEIGHT SHALL BE 5'-0" FOR WALLS WITH CONTINUOUS BOND BEAMS BETWEEN THE TOP AND BOTTOM OF THE POUR HEIGHT. FOR WALLS WHERE THERE ARE NO BOND BEAMS WITHIN THE POUR HEIGHT, THE MAXIMUM GROUT LIFT SHALL BE 8'-0".

6. FOR GROUT POUR HEIGHTS GREATER THAN 5'-0", CLEAN-OUTS SHALL BE PROVIDED IN THE BOTTOM COURSE OF MASONRY. ALL DEBRIS SHALL BE COMPLETELY REMOVED FROM REINFORCED CELLS.

7. FOR CANTILEVERED WALLS WITH POUR HEIGHTS GREATER THAN 5'-0", CLEAN-OUTS SHALL BE PROVIDED AT THE BASE OF THE WALL FOR CLEANING AND INSPECTION. ALL DEBRIS SHALL BE COMPLETELY REMOVED FROM REINFORCED CELLS.

8. ALL VERTICAL REINFORCEMENT IN MASONRY WALLS SHALL BE LATERALLY STABILIZED BY REBAR POSITIONERS - WIRE-BOND MODEL 3401 OR 3402, OR APPROVED EQUIVALENT. THE POSITIONERS SHALL BE INSTALLED SUCH THAT EACH REINFORCEMENT BAR IS SUPPORTED AT THE TOP AND AT THE BOTTOM.

9. BOND BEAMS SHALL BE REINFORCED WITH (2) #4 CONTINUOUS, U.O.N. AND SHALL CONSIST OF AN OPEN-BOTTOM BOND BEAM [illegible] REINFORCED WITH (2) #4 EXTENDING [illegible] BEYOND THE EDGE OF THE OPENING, UNLESS NOTED OTHERWISE. THE BOND BEAM REINFORCEMENT EXTENDS CONTINUOUSLY THROUGH ALL WALL CONTROL JOINTS. PROVIDE A CONTINUOUS POLYPROPYLENE GROUT STOP BENEATH THE BOND BEAM, WIRE-BOND GROUT STOP, OR APPROVED EQUIVALENT.

10. PROVIDE CONTINUOUS HORIZONTAL JOINT REINFORCEMENT AT 16"o.c., U.O.N. THE REINFORCEMENT SHALL BE STANDARD [illegible] LADDER-TYPE WITH 9 GAUGE DIAMETER SIDE RODS AND 9 GAUGE CROSS RODS. FINISH SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION (ASTM A 153, CLASS B2, 1.50 OZ./SQ. FT). ALL CORNERS AND INTERSECTIONS SHALL BE REINFORCED WITH PRE-FABRICATED 'L' AND 'T' SHAPED ASSEMBLIES. NO SITE-CUT REINFORCEMENT IS ALLOWED. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

11. REINFORCEMENT IN CMU DESIGNATED AS CONTINUOUS SHALL LAP 48 BAR DIAMETERS, U.O.N.

12. PROVIDE CORNER BARS, 48 BAR DIAMETERS x 48 BAR DIAMETERS, AT EACH BOND BEAM CHANGE OF DIRECTION.

13. UNLESS OTHERWISE SHOWN, MASONRY WALLS SHALL HAVE CONTROL JOINTS AT A MAXIMUM SPACING OF 25'-4" ON CENTER. THE JOINT SHALL BE FORMED USING PVC MATERIAL CONFORMING TO ASTM D2287, TYPE PVC 654-4. COORDINATE LOCATION OF JOINTS WITH THE ARCHITECTURAL ELEVATIONS.

SR - MINIMUM SEISMIC REINFORCEMENT OF MASONRY STRUCTURES

1. PROVIDE #4 REINFORCEMENT BARS AT THE FOLLOWING LOCATIONS:
   a. FULL HEIGHT, VERTICAL, AT ALL CORNERS AND AT EDGES OF WALL OPENINGS.
   b. HORIZONTALLY AT THE TOPS AND BOTTOMS OF ALL WALL OPENINGS. REINFORCEMENT SHALL EXTEND 24" BEYOND THE EDGE OF THE OPENINGS.
   c. REINFORCEMENT INDICATED ON THE DRAWINGS EQUAL TO OR EXCEEDING THE REQUIREMENTS ABOVE MAY BE USED TO SATISFY THE SEISMIC REINFORCEMENT REQUIREMENTS.

2. WHERE THE VERTICAL REINFORCEMENT INDICATED IN ITEMS A, B, & C ABOVE, RESULT IN VERTICAL REINFORCEMENT AT A GREATER SPACING THAN 4'-0"o.c., ADD VERTICAL REINFORCEMENT AT 4'-0"o.c. IN NO CASE, SHALL ANY WALL HAVE VERTICAL REINFORCING SPACED GREATER THAN 4'-0"o.c.

SS - STRUCTURAL STEEL

1. STRUCTURAL STEEL WIDE-FLANGE SHAPES SHALL CONFORM TO ASTM A992, F_Y = 50 KSI, U.O.N.

2. STRUCTURAL STEEL ANGLES, CHANNELS, AND PLATES SHALL CONFORM TO ASTM A36, F_Y =36 KSI, U.O.N.

3. SQUARE AND RECTANGULAR HSS STRUCTURAL STEEL SHALL CONFORM TO ASTM A500, GRADE B, F_Y = 46 KSI.

4. ROUND HSS STRUCTURAL STEEL SHALL CONFORM TO ASTM A500, GRADE B, F_Y = 42 KSI.

5. STRUCTURAL STEEL PIPE SHALL CONFORM TO ASTM A53, GRADE B, F_Y=35 KSI.

6. BOLTS FOR CONNECTING STRUCTURAL STEEL SHALL BE ¾" DIAMETER, CONFORMING TO ASTM A325-N, TYPE 1, U.O.N.

7. ANCHOR BOLTS SHALL BE HEADED AND CONFORM TO ASTM F1554, GRADE 55.

8. HEADED STUDS FOR THE COMPOSITE STEEL BEAMS SHALL BE MANUFACTURED OF COLD DRAWN CARBON STEEL CONFORMING TO ASTM A-108. STUDS SHALL BE ¾" DIAMETER x 3 ½" LONG. STUDS SHALL BE ATTACHED TO THE BEAMS USING AUTOMATIC END WELDING EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THERE SHALL BE NO PAINT ON THE STEEL SURFACE TO WHICH THE STUDS ARE TO BE WELDED.

9. ALL EXTERIOR EXPOSED FERROUS METAL STRUCTURES SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION, UNLESS OTHERWISE NOTED. THIS INCLUDES, BUT IS NOT LIMITED TO LINTELS IN EXTERIOR WALLS, EXTERIOR STAIRS, EXTERIOR HANDRAILS, AND EXTERIOR LADDERS.

10. FABRICATION AND ERECTION OF ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE CURRENT AISC SPECIFICATIONS.

11. ANY CONNECTION NOT DETAILED ON THE STRUCTURAL DRAWINGS SHALL BE DESIGNED AND DETAILED BY THE STRUCTURAL STEEL FABRICATOR. THE CONNECTIONS FOR HOLLOW STRUCTURAL SECTIONS SHALL BE DESIGNED IN ACCORDANCE WITH THE AISC HOLLOW STRUCTURAL SECTIONS CONNECTION MANUAL, CURRENT EDITION. ALL STEEL-TO-STEEL JOINT CONNECTIONS TYPES SHALL BE 'SNUG-TIGHT', U.O.N.

12. WELDING SHALL CONFORM TO THE AMERICAN WELDING SOCIETY STANDARD D1.1. ELECTRODES FOR SHOP AND FIELD WELDS SHALL CONFORM TO AWS A5.1 OR AWS 5.5, CLASS E70XX, LOW HYDROGEN, UNLESS NOTED OTHERWISE. ONLY WELDERS WHO HAVE BEEN QUALIFIED BY TESTS AS PRESCRIBED IN THE REFERENCED STANDARDS TO PERFORM THE TYPE OF WORK REQUIRED SHALL MAKE WELDS.

13. SPLICING OF STRUCTURAL STEEL MEMBERS WHERE NOT DETAILED ON THE CONTRACT DOCUMENTS IS PROHIBITED WITHOUT THE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER AS TO THE LOCATION, TYPE OF SPLICE, AND CONNECTION TO BE MADE.

14. ENCASE ALL STRUCTURAL STEEL BELOW GRADE WITH CONCRETE WITH A MINIMUM COVERAGE OF 3".

15. ALL STRUCTURAL STEEL ("RED IRON") USED FOR THE SUPPORT OF MECHANICAL/PLUMBING EQUIPMENT, DUCTS AND PIPING SHALL BE FURNISHED BY THE MECHANICAL/PLUMBING CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR. GENERAL CONTRACTOR SHALL PROVIDE RELEVANT INFORMATION OF CONSTRUCTION DOCUMENTS TO MECHANICAL/PLUMBING CONTRACTOR.

SJ - OPEN WEB STEEL JOISTS

1. JOISTS SHALL BE OPEN-WEB STEEL JOISTS CONFORMING TO AND INSTALLED ACCORDING TO ALL APPLICABLE REQUIREMENTS OF THE STEEL JOIST INSTITUTE "STANDARD SPECIFICATIONS- LOAD TABLES & WEIGHT TABLES FOR STEEL JOISTS & JOIST GIRDERS".

2. AN S.J.I. MEMBER SHALL FURNISH ALL JOISTS.

3. FLOOR AND ROOF JOIST BRIDGING SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH APPLICABLE S.J.I. SPECIFICATIONS.

4. WHERE COLUMNS ARE NOT FRAMED IN AT LEAST TWO DIRECTIONS WITH STEEL BEAMS, THE JOIST NEAREST THE COLUMN LINE SHALL BE BOLTED TO THE SUPPORTING MEMBER DURING ERECTION.

5. ALL ROOF JOISTS SHALL BE DESIGNED FOR A NET UPLIFT OF 16 PSF FOR WIND.

MD - METAL DECKING

1. METAL DECKING TO BE PLACED ON JOISTS NOTED AS 1.5" DEEP TYPE "B" METAL DECK SHALL BE 1½" DEEP, 22 GAUGE, TYPE 'B', GALVANIZED (G-90), ROOF DECK. SECTION MODULUS = 0.186 IN³ (MIN.), MOMENT OF INERTIA= 0.155 IN⁴ (MIN.).

2. METAL DECKING TO BE PLACED ON JOISTS NOTED AS 1.5" DEEP TYPE "B" ACOUSTICAL METAL DECK SHALL BE 1½" DEEP, 20 GAUGE, TYPE 'BA', GALVANIZED (G-90), ACOUSTICAL ROOF DECK. SECTION MODULUS = 0.247 IN³ (MIN.), MOMENT OF INERTIA = 0.222 IN⁴ (MIN.).

3. ROOF DECKING SHALL BE ATTACHED TO THE SUPPORTING STRUCTURE W/ POWDER ACTUATED FASTENERS HILTI TYPE 'X-HSN 24' OR APPROVED EQUIV. FASTENED IN A 36/5 ATTACHMENT PATTERN. PROVIDE HILTI 'S-SLC 01 M HWH' SIDE-LAP CONNECTORS AT 12"o.c. AT THE PERIMETER OF ROOF, PROVIDE ATTACHMENT AT 6"o.c. ALONG THE FULL PERIMETER. ALTERNATE FASTENING SYSTEMS MAY BE EVALUATED AT THE CONTRACTOR'S REQUEST. DESIGN SHEAR = 500 PLF (ASD). CONNECTION INSTRUCTIONS SHALL APPEAR ON THE SUPPLIER'S SUBMITTAL DRAWINGS.

4. IF REQUIRED OPENINGS IN THE ROOF DECKING CUT THREE OR MORE LOWER DECK FLANGES, SUPPLEMENTAL STEEL FRAMING OF THE OPENING MUST BE PROVIDED. REFER TO THE SECTION ENTITLED 'TYPICAL FRAMED ROOF OPENING'.

TD - HEAVY TIMBER DECK

1. ALL HEAVY TIMBER ROOF DECKING SHALL CONFORM TO THE STANDARD FOR TONGUE-AND-GROOVE HEAVY TIMBER ROOF DECKING OF THE AMERICAN INSTITUTE OF TIMBER CONSTRUCTION AITC 1[illegible] CURRENT EDITION.

2. ALL HEAVY TIMBER ROOF DECKING SHALL BE COMMERCIAL QUALITY SOUTHERN YELLOW PINE OR APPROVED EQUIVALENT.

3. INSTALL HEAVY TIMBER ROOF DECKING USING CONTROLLED RANDOM LAYUP.

4. EACH PIECE OF [illegible]-INCH THICK ROOF DECK SHALL BE TOE NAILED AT EACH SUPPORT WITH ONE 16d NAIL AND FACE NAILED WITH ONE [illegible] NAIL. REFER TO AITC 112 FOR ADDITIONAL INFORMATION.

5. EACH PIECE OF THREE-INCH THICK ROOF DECK SHALL BE TOE NAILED AT EACH SUPPORT WITH ONE 40d NAIL AND FACE NAILED WITH ONE 60d NAIL. COURSES SHALL BE SPIKED TO EACH OTHER WITH 8" SPIKES AT INTERVALS NOT TO EXCEED 30" THROUGH PREDRILLED EDGE HOLES AND WITH ONE SPIKE AT A DISTANCE NOT EXCEEDING 10" FROM THE END OF EACH PIECE. REFER TO AITC 112 FOR ADDITIONAL INFORMATION.

6. PROVIDE 7/16" MIN. THICKNESS APA RATED SHEATING ON TOP OF TIMBER DECK. FASTEN TO TIMBER DECK WITH 8D NAILS (1 1/2" LONG) AT 4" O.C. AT PANEL EDGES, 12" O.C. FIELD.

PI - POST INSTALLED ANCHORS

1. UNLESS OTHERWISE INDICATED ON PLANS, POST-INSTALLED ANCHORS SHALL CONSIST OF THE FOLLOWING ANCHOR TYPES, OR APPROVED EQUAL:

BASE MATERIAL	ADHESIVE ANCHOR	MECHANICAL ANCHOR
SOLID CONCRETE	HILTI -RE 500 V3 HILTI HY 200 SAFE SET SYSTEM	HILTI KWIK HUS EZ SCREW ANCHOR HILTI KWIK BOLT TZ EXPANSION ANCHOR
GROUTED MASONRY	HILTI HY 70	HILTI KWIK HUS EZ SCREW ANCHOR HILTI KWIK BOLT III EXPANSION ANCHOR
HOLLOW MASONRY	HILTI HY 70 WITH APPROPRIATE SCREEN TUBE	HILTI HY HLC SLEEVE ANCHOR

2. SUBSTITUTION REQUESTS FOR ALTERNATE PRODUCTS MUST BE APPROVED IN WRITING BY THE STRUCTURAL ENGINEER OF RECORD PRIOR TO USE. SUBSTITUTIONS WILL BE EVALUATED BY THEIR HAVING AN ICC ESR REPORT SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE.

3. INSTALL ANCHORS IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. ANCHOR CAPACITY IS DEPENDENT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.

4. ANCHOR CAPACITY IS DEPENDANT ON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.

MI - MISCELLANEOUS ITEMS

1. GROUT FOR SETTING BEARING SURFACES SHALL BE NON-SHRINK, EQUAL TO "MASTERFLOW 928" AS MANUFACTURED BY BASF.

2. WALLS RETAINING EARTH, OTHER THAN WALLS DESIGNED AS CANTILEVERS, SHALL BE ADEQUATELY BRACED UNTIL CONCRETE FOR THE SUPPORTING SLABS HAS BEEN PLACED AND SUFFICIENTLY CURED.

3. UNLESS SPECIFICALLY SHOWN OR NOTED ON THE DRAWINGS, NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED, BORED, OR OTHERWISE WEAKENED WITHOUT THE PERMISSION OF THE STRUCTURAL ENGINEER.

4. CONTRACTOR SHALL VERIFY ALL OPENING SIZES AND LOCATIONS WITH THE MECHANICAL EQUIPMENT SUPPLIER'S DRAWINGS AND ARCHITECTURAL DRAWINGS.

TA - TYPICAL ABBREVIATIONS

1. THE FOLLOWING ARE TYPICAL ABBREVIATIONS USED IN THE STRUCTURAL DRAWINGS:

A.B.	-ANCHOR BOLT	H.S.	-HEADED STUD
ADD'L	-ADDITIONAL	JST.	-JOIST
ARCH'L	-ARCHITECTURAL	JT.	-JOINT
BM	-BEAM	LT.	-LIGHT
BP	-BASE PLATE	MAS.	-MASONRY
BRG.	-BEARING	MAX.	-MAXIMUM
BSMT.	-BASEMENT	MECH.	-MECHANICAL
C.I.P.	-CAST IN PLACE	MFR	-MANUFACTURER
C.J.	-CONTROL OR CONSTRUCTION JOINT	MIN.	-MINIMUM
CLR.	-CLEAR	NOM.	-NOMINAL
CMU	-CONCRETE MASONRY UNIT	NTS	-NOT TO SCALE
COL.	-COLUMN	O.H.	-OPPOSITE HAND
CONC.	-CONCRETE	O.C.	-ON CENTER
CONST.	-CONSTRUCTION	PC	-PRECAST OR PILE CAP
CONT.	-CONTINUOUS	PREFAB.	-PREFABRICATED
COORD.	-COORDINATE	REF.	-REFERENCE
DET.	-DETAIL	REINF.	-REINFORCEMENT
DIA	-DIAMETER	SECT.	-SECTION
DWG.	-DRAWING	SIM.	-SIMILAR
E.B.	-EXPANSION BOLT	STD.	-STANDARD
EL.	-ELEVATION	STRUCT.	-STRUCTURAL
F.F.	-FINISHED FLOOR	T.O.S.	-TOP OF SLAB OR STEEL
FIN.	-FINISH(ED)	TYP.	-TYPICAL
FLR.	-FLOOR	U.O.N.	-UNLESS OTHERWISE NOTED
FOUND.	-FOUNDATION	V.I.F.	-VERIFY IN FIELD
FTG.	-FOOTING	VERT.	-VERTICAL
GALV.	-GALVANIZE (D) (ING)	W.P.	-WORK POINT
H.C.	-HOLLOW-CORE	WT.	-WEIGHT
HORIZ.	-HORIZONTAL	W.W.R.	-WELDED WIRE REINF.
HDG	-HOT-DIP GALVANIZED		

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

STRUCTURAL DESIGN
(Provide on sheet 1 or 2 of the structural sheets)

DESIGN LOADS:

Importance Factors: Wind (I_W) 1.00; Snow (I_S) 1.10; Seismic (I_E) 1.25

Live Loads: Roof 20 psf; Mezzanine N/A psf; Floor 100 psf

Ground Snow Load: 15 psf

Wind Load: Basic Wind Speed 120 mph (ASCE-7); Exposure Category C

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☒ C ☐ D

Provide the following Seismic Design Parameters:

Occupancy Category (Table 1604.5): ☐ I ☐ II ☒ III ☐ IV

Spectral Response Acceleration: S_S 31 %g S_1 11 %g

Site Classification: (ASCE 7) ☐ A ☐ B ☐ C ☒ D ☐ E ☐ F
Data Source: ☐ Field Test ☒ Presumptive ☐ Historical Data

Basic structural system: (check one)
☐ Bearing Wall ☐ Dual w/ Special Moment Frame
☒ Building Frame ☐ Dual w/ Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum

Analysis Procedure: ☐ Simplified ☒ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☒ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☒ Wind ☒

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) 1000 psf
Presumptive Bearing capacity ____ psf
Pile size, type, and capacity N/A

City of Asheville/ Parks & Recreation

DR. WESLEY GRANT SR. CENTER EXPANSION

285 LIVINGSTON STREET
ASHEVILLE, NC 28801

DESIGNER

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828-232-0608
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License C-1207
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(828) 255-0780

PROFESSIONAL SEAL
NORTH CAROLINA SEAL 032890 ENGINEER CHRISTOPHER J. O'NEAL 3/12/2021

SUBMITTAL
03.12.21
CONSTRUCTION DOCUMENTS

REVISIONS

KEY PLAN

SHEET
STRUCTURAL NOTES

S001

DESIGN: KEPA
DRAWN: REM
REVIEW: KEPA

CN 7904-A

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