DESIGN CRITERIA

BUILDING CODES: 2018 NORTH CAROLINA STATE BUILDING CODE
ASCE 7-10 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY: III

DESIGN LIVE LOADS:	UNIFORM	CONCENTRATED
ROOF	20 PSF	300 LBS

*ALL LIVE LOADS ARE REDUCED BASED ON TRIBUTARY AREA AS ALLOWED BY THE BUILDING CODES.

SNOW LOAD:	GROUND SNOW LOAD, PG	15 PSF
	IMPORTANCE FACTOR, IS	1.1
	SNOW EXPOSURE FACTOR, CE	1.0
	THERMAL FACTOR, CT	1.0
	FLAT ROOF SNOW LOAD, PF	16.5 PSF
WIND LOAD:	BASIC WIND SPEED (3 SECOND GUST)	125 MPH
	EXPOSURE CATEGORY	B
	ENCLOSURE CLASSIFICATION	ENCLOSED
	INTERNAL PRESSURE COEFFICIENT, GCPI	±0.18
	TOPOGRAPHY FACTOR, KZT	1.00
	APPLIED DIRECTIONALITY FACTOR, KD	0.85

**ALL BUILDING COMPONENTS AND CLADDING WITH STRUCTURAL DESIGN DELEGATED TO THE CONTRACTOR/MANUFACTURER/SUPPLIER ARE REQUIRED TO BE DESIGNED FOR WIND LOADS DETERMINED USING THE ABOVE DESIGN CRITERIA IN ACCORDANCE WITH THE GOVERNING BUILDING CODE(S).

SEISMIC LOAD:	USGS DESIGN MAP	ASCE 7-10
	DESIGN METHOD	EQUIVALENT LATERAL FORCE
	IMPORTANCE FACTOR, IE	1.25
	SITE CLASS	D
	MAPPED SPECTRAL RESPONSE ACCEL, SS	17.9%G
	MAPPED SPECTRAL RESPONSE ACCEL,S1	8.5%G
	SPECTRAL RESPONSE COEFFICIENT, SDS	19.1%G
	SPECTRAL RESPONSE COEFFICIENT, SD1	13.6%G
	SEISMIC DESIGN CATEGORY	C

***ALL BUILDING COMPONENTS AND CLADDING WITH STRUCTURAL DESIGN DELEGATED TO THE CONTRACTOR/MANUFACTURER/SUPPLIER ARE REQUIRED TO BE DESIGNED FOR SEISMIC LOADS DETERMINED USING THE ABOVE DESIGN CRITERIA IN ACCORDANCE WITH THE GOVERNING BUILDING CODE(S).

FUTURE LOADS: UNLESS SPECIFICALLY INDICATED ON THE STRUCTURAL DESIGN DRAWINGS THERE HAVE BEEN NO DESIGN PROVISIONS MADE TO ACCOMMODATE FUTURE LOADS OR TO ACCOMMODATE FUTURE ADDITIONS TO THE STRUCTURE.

GENERAL

G-01 THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE STRUCTURAL WORK WITH CIVIL, LANDSCAPE ARCHITECTURAL, ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DOCUMENTS AS WELL AS ANY OTHER APPLICABLE TRADES. THE CONTRACTOR IS TO NOTIFY THE DESIGN TEAM OF ANY IDENTIFIED DISCREPANCIES PRIOR TO THE START OF CONSTRUCTION USING THE REQUEST FOR INFORMATION AND/OR SUBMITTAL PROCESS OUTLINED IN THE PROJECT SPECIFICATIONS.

G-02 THE STRUCTURAL CONTRACT DOCUMENTS REPRESENT THE FINISHED STRUCTURE AND EXCEPT WHERE SPECIFICALLY SHOWN DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCE, AND PROCEDURES.

G-03 THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE AND FOR APPLICATION OF CONSTRUCTION LOADS TO THE STRUCTURE UNTIL THE CONSTRUCTION OF THE STRUCTURE IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, INSTALLATION AND REMOVAL OF ALL TEMPORARY BRACING, FORMWORK, SUPPORTS, AND SHORING REQUIRED TO STABILIZE THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR IS TO UTILIZE A THIRD PARTY STRUCTURAL ENGINEER TO PROVIDE THE DESIGN AND DOCUMENTATION FOR TEMPORARY BRACING, FORMWORK, SUPPORTS AND SHORING AS REQUIRED BY THE PROJECT SPECIFICATIONS.

G-04 THE CONTRACTOR IS TO VERIFY ALL EXISTING SITE GRADING CONDITIONS, EXISTING UTILITIES AND EXISTING BUILDING DIMENSIONS AND CONDITIONS AS THEY APPLY TO THE NEW STRUCTURAL CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE DESIGN TEAM OF ANY IDENTIFIED DISCREPANCIES PRIOR TO THE START OF CONSTRUCTION USING THE REQUEST FOR INFORMATION AND/OR SUBMITTAL PROCESS OUTLINED IN THE PROJECT SPECIFICATIONS.

G-05 THE CONTRACTOR IS TO PROTECT ALL EXISTING AND NEW UTILITIES, STRUCTURES, AND FACILITIES FROM DAMAGE DURING CONSTRUCTION.

G-06 ANY WORK NOT IN CONFORMANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS OR THE APPLICABLE BUILDING CODE(S) WILL BE CORRECTED BY THE CONTRACTOR IN A MANNER ACCEPTABLE TO THE STRUCTURAL ENGINEER OF RECORD.

G-07 SECTIONS, DETAILS AND NOTES APPLY TO ALL LIKE OR SIMILAR CONDITIONS.

G-08 DO NOT SCALE STRUCTURAL DRAWINGS TO OBTAIN DIMENSIONAL INFORMATION. THE CONTRACTOR IS TO REQUEST ANY DIMENSIONAL INFORMATION REQUIRED USING THE REQUEST FOR INFORMATION AND/OR SUBMITTAL PROCESS OUTLINED IN THE PROJECT SPECIFICATIONS.

G-09 THE STRUCTURAL PLANS DO NOT SHOW EVERY OPENING OR PENETRATION REQUIRED THROUGH STRUCTURAL ELEMENTS. THE CONTRACTOR IS TO VERIFY ALL OPENING SIZES AND LOCATIONS WITH OTHER DISCIPLINES, TRADES AND SHOP DRAWINGS. OPENINGS ARE TO BE CONSTRUCTED USING TYPICAL DETAILS AND CRITERIA PROVIDED ON THE STRUCTURAL DRAWINGS. OPENINGS REQUIRED THAT CANNOT CONFORM TO THE TYPICAL DETAILS OR CRITERIA PROVIDED ON THE STRUCTURAL DRAWINGS ARE TO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW.

DEMOLITION

D-01 THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE EXISTING STRUCTURE AND FOR APPLICATION OF CONSTRUCTION LOADS TO THE EXISTING STRUCTURE DURING THE DEMOLITION PROCESS AND UNTIL THE FINAL CONSTRUCTION OF THE STRUCTURE IS COMPLETE. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN, INSTALLATION AND REMOVAL OF ALL TEMPORARY BRACING, FORMWORK, SUPPORTS, AND SHORING REQUIRED TO STABILIZE THE EXISTING STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR IS TO UTILIZE A THIRD PARTY STRUCTURAL ENGINEER TO PROVIDE THE DESIGN AND DOCUMENTATION FOR TEMPORARY BRACING, FORMWORK, SUPPORTS AND SHORING AS REQUIRED BY THE PROJECT SPECIFICATIONS.

D-02 ALL EXISTING FOUNDATIONS AND FRAMING SHOWN ON THE STRUCTURAL CONTRACT DRAWINGS ARE INDICATED FOR REFERENCE ONLY AND ARE TO BE FIELD VERIFIED BY THE CONTRACTOR. NOTIFY THE ENGINEER OF ANY DISCREPANCIES BETWEEN THE EXISTING CONDITIONS AND THOSE SHOWN ON THE STRUCTURAL CONTRACT DOCUMENTS. EXISTING STRUCTURAL FRAMING AND FOUNDATIONS SHOWN ARE BASED ON FIELD VERIFICATION OF VISIBLE ELEMENTS/EXISTING STRUCTURAL DRAWINGS PREPARED BY J.M. KENNEDY ARCHITECT DATED APRIL 1925 AND W.H. PRUDEN II DATED 4/30/19.

POST-INSTALLED ADHESIVE/MECHANICAL ANCHORS

A-01 REFER TO PROJECT SPECIFICATIONS FOR ALL REQUIREMENTS FOR POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS. INFORMATION PROVIDED IN THESE GENERAL STRUCTURAL NOTES IS A BRIEF SUMMARY OF MATERIAL AND CONSTRUCTION REQUIREMENTS. ALL CONSTRUCTION IS TO BE IN FULL AND COMPLETE COMPLIANCE WITH THE PROJECT SPECIFICATIONS.

A-02 POST-INSTALLED ANCHORS ARE TO BE USED ONLY WHERE INDICATED ON THE STRUCTURAL DRAWINGS. THE CONTRACTOR IS TO SUBMIT ANY PROPOSED POST-INSTALLED ANCHORAGE NOT SHOWN ON THE CONTRACT DOCUMENT TO THE ENGINEER FOR REVIEW.

A-03 ALL POST-INSTALLED ANCHORS ARE TO BE INSTALLED AS INDICATED BY THE STRUCTURAL DRAWINGS AND IN STRICT ACCORDANCE WITH THE ANCHOR MANUFACTURER'S INSTRUCTIONS.

A-04 THE BASIS OF DESIGN FOR MECHANICAL ANCHORS ARE THE FOLLOWING PRODUCTS: HILTI KWIK BOLT TZ; SIMPSON STRONG TIE STRONG-BOLT WEDGE ANCHOR; POWERS POWER STUD+SD1

A-05 THE BASIS OF DESIGN FOR ADHESIVES/EPOXY ARE THE FOLLOWING PRODUCTS: HILTI HIT RE 500-SD; SIMPSON STRONG TIE SET-XP; POWERS AC100+GOLD

A-06 THE CONTRACTOR MAY SUBMIT ALTERNATIVE MECHANICAL ANCHORS AND ADHESIVES/EPOXY THAT MEET OR EXCEED THE PROPERTIES AND LOAD CARRYING CAPACITIES OF THE BASIS OF DESIGN PRODUCTS TO THE ENGINEER FOR REVIEW.

A-07 PRIOR TO THE INSTALLATION OF ANY POST-INSTALLED ANCHORS, THE CONTRACTOR IS TO LOCATE ALL REINFORCING STEEL WITHIN STRUCTURAL ELEMENTS USING NON-DESTRUCTIVE METHODS. IF ANCHOR LOCATIONS ARE IN CONFLICT WITH ANY REINFORCING STEEL NOTIFY THE ENGINEER FOR DIRECTION.

CONCRETE AND REINFORCING STEEL

C-01 CONCRETE TO MEET THE FOLLOWING 28 DAY COMPRESSIVE STRENGTHS (F'C):

EXTERIOR SLAB ON GRADE	4,500 PSI, NORMAL WEIGHT W/ 5% AIR CONTENT

C-02 PROVIDE CLEAR COVER ON REINFORCING STEEL PER ACI 318 AND AS INDICATED BELOW:

CONVENTIONALLY REINFORCED CONCRETE	
CONCRETE CAST AGAINST AND EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH AND WEATHER*	2" FOR BARS #6 AND LARGER 1 ½" FOR BARS SMALLER THAN #6

*NOTE: 'EXPOSED TO WEATHER' INCLUDES CONCRETE SURFACES PERMANENTLY EXPOSED TO THE ELEMENTS. CONCRETE SURFACES SUCH AS ROOF SLABS THAT ARE COVERED WITH PROTECTIVE SYSTEMS ARE NOT CONSIDERED TO BE EXPOSED TO WEATHER.

C-03 DETAIL, FABRICATE AND INSTALL ALL REINFORCING STEEL PER STRUCTURAL CONTRACT DOCUMENTS, ACI-318 AND ACI-315.

C-04 DO NOT WELD REINFORCING STEEL UNLESS SPECIFICALLY INDICATED ON STRUCTURAL CONTRACT DOCUMENTS.

C-05 EMBEDDED ITEMS SUCH AS ANCHOR BOLTS, REINFORCING STEEL DOWELS, AND EMBED PLATES ARE TO BE SET AND SECURED IN PLACE PRIOR TO THE PLACEMENT OF CONCRETE. 'WET SETTING' OF EMBEDDED ITEMS IS NOT ACCEPTABLE.

C-06 CLAY BRICK, ROCKS, WOOD, OR CMU BRICK ARE NOT TO BE USED TO SUPPORT REINFORCING STEEL IN SLABS ON GRADE.

C-07 FOLLOW STRUCTURAL DRAWINGS FOR ACCEPTABLE INSTALLATION OF PLUMBING, ELECTRICAL, TELECOMMUNICATION, MECHANICAL OR OTHER UTILITY LINES AND CONDUIT THROUGH AND WITHIN CONCRETE ELEMENTS. THE CONTRACTOR IS TO NOTIFY THE DESIGN TEAM OF ANY CONDITIONS THAT DO NOT COMPLY WITH DETAILS SHOWN ON THE STRUCTURAL DRAWINGS.

C-08 HORIZONTAL CONSTRUCTION JOINTS IN CONCRETE ELEMENTS ARE NOT ACCEPTABLE WITHOUT PRIOR APPROVAL OF THE ENGINEER.

STRUCTURAL STEEL

S-01 REFER TO PROJECT SPECIFICATIONS FOR ALL REQUIREMENTS FOR STRUCTURAL STEEL CONSTRUCTION. INFORMATION PROVIDED IN THESE GENERAL STRUCTURAL NOTES IS A BRIEF SUMMARY OF MATERIAL AND CONSTRUCTION REQUIREMENTS. ALL CONSTRUCTION IS TO BE IN FULL AND COMPLETE COMPLIANCE WITH THE PROJECT SPECIFICATIONS.

S-02 STEEL PROPERTIES:

W-SHAPES AND CHANNELS:	A992 OR A572 (FY=50 KSI)
ANGLES, BARS, RODS:	A36 (FY=36 KSI)
HOLLOW SECTIONS, HSS:	A500, GRADE B (42 KSI ROUND, 46 KSI RECTANGULAR)
PIPE:	A53, GRADE B, TYPE S (FY=35 KSI)
PLATE:	A36 (FY=36 KSI) AND A572, GRADE 50 (50 KSI) WHERE INDICATED
ANCHOR BOLTS:	F1554, GRADE 36

S-03 DESIGN, DETAIL, FABRICATE AND ERECT STRUCTURAL STEEL PER STRUCTURAL CONTRACT DOCUMENTS AND AISC 360-05 AND AISC 325-05.

S-04 WELD ELECTRODES: E70XX. PERFORM ALL WELDING PER AWS D1.1-4.

S-05 ALL STEEL MEMBER CONNECTIONS ARE TO BE DESIGNED BY THE FABRICATOR'S ENGINEER FOR THE LOADS INDICATED. WHEN SPECIFIC REACTIONS ARE NOT PROVIDED ON PLANS OR BY NOTE, CONNECTIONS ARE TO BE DESIGNED FOR THE MAXIMUM ALLOWABLE UNIFORM LOADS AS DETERMINED BY PART 3 OF THE AISC MANUAL OF STEEL CONSTRUCTION FOR THE SECTION, SPAN AND STRENGTH SPECIFIED.

S-06 UNLESS SPECIFICALLY INDICATED, SPLICED STRUCTURAL STEEL MEMBERS ARE NOT ACCEPTABLE. ALL PROPOSED SPLICES MUST BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.

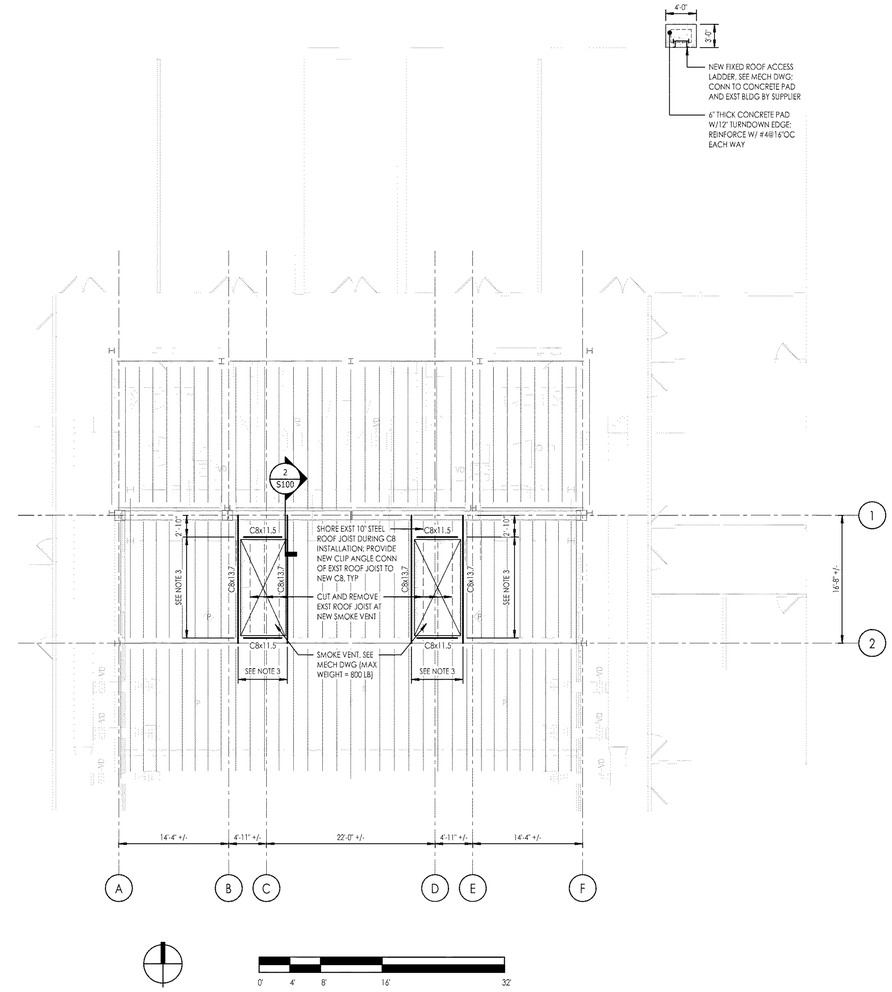
S-07 FIELD MODIFICATION OF STRUCTURAL STEEL MEMBERS AND THEIR CONNECTIONS IS PROHIBITED UNLESS THE PROPOSED MODIFICATIONS HAVE BEEN REVIEWED BY THE ENGINEER.

S-08 REFER TO ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR BLOCK, CLIPS, TABS AND OTHER ATTACHMENTS REQUIRED. SHOW ALL ITEMS ON STRUCTURAL STEEL SHOP DRAWINGS.

S-09 FOLLOW STRUCTURAL DRAWINGS FOR ACCEPTABLE OPENINGS, HOLES AND SPECIAL COPING OF STRUCTURAL STEEL MEMBERS REQUIRED FOR THE INSTALLATION OF PLUMBING, ELECTRICAL, TELECOMMUNICATION, MECHANICAL OR OTHER UTILITY LINES AND CONDUIT THROUGH STEEL MEMBERS. THE CONTRACTOR IS TO NOTIFY THE DESIGN TEAM OF ANY CONDITIONS THAT DO NOT COMPLY WITH DETAILS SHOWN ON THE STRUCTURAL DRAWINGS.

ABBREVIATIONS

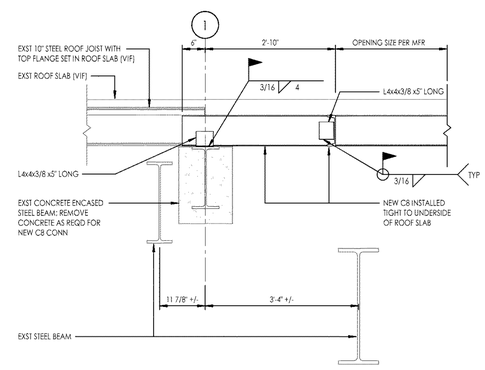
@	AT	HD	HEADED
&	AND	HORZ	HORIZONTAL
#	NUMBER	INT	INTERIOR
AB	ANCHOR BOLTS	INFO	INFORMATION
ADDL	ADDITIONAL	JT	JOINT
AFF	ABOVE FINISHED FLOOR	K	KIPS
ALT	ALTERNATE	KSI	KIPS PER SQUARE INCH
ARCH	ARCHITECT / ARCHITECTURAL	LBS	POUNDS
BOT	BOTTOM	LLH	LONG LEG HORIZONTAL
BCX	BOTTOM CHORD EXTENSION	LLV	LONG LEG VERTICAL
BLDG	BUILDING	LWC	LIGHTWEIGHT CONCRETE
BOS	BOTTOM OF STEEL	MAX	MAXIMUM
BRG	BEARING	MC	MOMENT CONNECTION
BTWN	BETWEEN	MECH	MECHANICAL
CANT	CANTILEVER	MEP	MECHANICAL, ELECTRICAL, PLUMBING
CJ	CONTROL JOINT	MFR	MANUFACTURER
CL	CENTERLINE	MIN	MINIMUM
CLR	CLEAR	MISC	MISCELLANEOUS
CMU	CONCRETE MASONRY UNIT	MOW	MIDDLE OF WALL
COL	COLUMN	NS	NEAR SIDE
CONC	CONCRETE	NTS	NOT TO SCALE
CONN	CONNECTION	NWC	NORMAL WEIGHT CONCRETE
CONS	CONSTRUCTION	OC	ON CENTER
CONT	CONTINUOUS	OPNG	OPENING
CORD	COORDINATE	OPP	OPPOSITE HAND
CTRD	CENTERED	PAF	POWDER ACTUATED FASTENER
d	PENNY (NAILS)	PARL	PARALLEL
DBA	DEFORMED BAR ANCHOR	PERP	PERPENDICULAR
DET	DETAIL	PL	PLATE
DIA	DIAMETER	PSF	POUNDS PER SQAURE FOOT
DIM	DIMENSION	PSI	POUNDS PER SQAURE INCH
DIST	DISTANCE	PT	PRESSURE TREATED
DN	DOWN	P-T	POST TENSIONED
DWG	DRAWING	REF	REFERENCE
DWL	DOWEL	REIN	REINFORCING
EA	EACH	REQD	REQUIRED
EE	EACH END	SCH	SCHEDULE
EF	EACH FACE	SIM	SIMILAR
EJ	EXPANSION JOINT	SOG	SLAB ON GRADE
ELEV	ELEVATION	SPEC	SPECIFICATION(S)
EMBD	EMBEDDED / EMBEDMENT	SQ	SQUARE
ENGR	ENGINEER	STD	STANDARD
EOD	EDGE OF DECK	STIF	STIFFENER
EOS	EDGE OF SLAB	STIR	STIRRUP(S)
EQL	EQUAL	STL	STEEL
EW	EACH WAY	TCX	TOP CHORD EXTENSION
EXST	EXISTING	THRU	THROUGH
EXP	EXPANSION	TOC	TOP OF CONCRETE
EXT	EXTERIOR	TOF	TOP OF FOOTING
FDN	FOUNDATION	TOS	TOP OF STEEL
FFE	FINISHED FLOOR ELEVATION	TOW	TOP OF WALL
FOW	FACE OF WALL	TYP	TYPICAL
FRT	FIRE RETARDANT TREATED	UNO	UNLESS NOTED OTHERWISE
FS	FAR SIDE	VERT	VERTICAL
FTG	FOOTING	VIF	VERIFY IN FIELD
GA	GAUGE	W/	WITH
GALV	GALVANIZED	WP	WORK POINT



NOTES:

1. SEE THIS SHEET FOR STRUCTURAL GENERAL NOTES AND ABBREVIATIONS.
2. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS AND FRAMING PRIOR TO CONSTRUCTION.
3. CONTRACTOR TO COORDINATE SMOKE VENT OPENING SIZE AND C8 LOCATIONS WITH SMOKE VENT SUPPLIER.

1 ROOF FRAMING PLAN
1/8" = 1'-0"



2 SECTION
3/4" = 1'-0"

SCALENE DESIGN
FUNCTION + STRUCTURE + FORM

555 FAYETTEVILLE ST.
SUITE 300
RALEIGH, NC 27601
919.825.0295

FIRM LICENSE #P-1591
SCALENE DESIGN
PROJECT NO
S20-017.00

NORTH CAROLINA PROFESSIONAL SEAL 029410 ENGINEER DENNIS L FOLMAR JR

05/12/2020
THIS DOCUMENT WAS ELECTRONICALLY SIGNED BY DENNIS L FOLMAR JR

CONSTRUCTION DOCUMENTS

REV	DESCRIPTION	DATE	APPROVED

REVISIONS

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DESIGNED BY:	EKB	SCALE:	1/8" = 1'-0"
CHECKED BY:	DLF	RMF JOB NO.:	220031.A0
PROJ. MGR.:	DLF	CLIENT JOB #:	

HOBSON PERFORMANCE CENTER
SMOKE EVACUATION

CAMPBELL UNIVERSITY

ROOF FRAMING PLAN, GENERAL NOTES & ABBREVIATIONS

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