

## DESIGN CRITERIA

BUILDING CODE:	NORTH CAROLINA STATE BUILDING CODE, 2012 EDITION
CONCRETE DESIGN CODE:	ACI 318-11, BUILDING CODE REQUIREMENTS FOR STRUCTURAL
CONCRETE DESIGN METHOD:	CONCRETE EQUIV. RECTANGULAR STRESS BLOCK
STEEL DESIGN CODE:	AISC MANUAL OF STEEL CONSTRUCTION, LRFD, FOURTEENTH EDITION
STEEL DESIGN METHOD:	ELASTIC ANALYSIS, PLASTIC DESIGN
STEEL JOISTS:	SJI STANDARD SPECIFICATIONS FOR OPEN WEB STEEL JOISTS AND LONGSPAN JOISTS
WOOD DESIGN CODE:	NDS NATIONAL DESIGN SPECIFICATIONS, ASD, 2012 EDITION

## SNOW LOAD

TERRAIN CATEGORY	C
GROUND SNOW LOAD (Pg)	15 PSF
SNOW EXPOSURE FACTOR (Ce)	1.0
THERMAL FACTOR (Ct)	1.0
SNOW IMPORTANCE FACTOR (Is)	1.0
FLAT ROOF SNOW LOAD (Pf)	15 PSF

## WIND LOADS

MINIMUM WIND LOAD	10 PSF
BASIC WIND VELOCITY	90 MPH
RISK CATEGORY	II
WIND IMPORTANCE FACTOR (Iw)	1.0
WIND EXPOSURE CATEGORY	C
INTERNAL PRESSURE COEFFICIENT	±0.18
COMPONENTS & CLADDING	CALCULATED BY PROVIDER PER ASCE 7-05

## SEISMIC DATA

BUILDING OCCUPANCY CATEGORY	II
SEISMIC IMPORTANCE FACTOR (Ie)	1.0
MAPPED SPECTRAL RESPONSE ACCELERATION (SS)	19.8%
MAPPED SPECTRAL RESPONSE ACCELERATION (S1)	7.8%
SITE CLASS	C
DESIGN SPECTRAL RESPONSE ACCELERATION (SDS)	15.9%
DESIGN SPECTRAL RESPONSE ACCELERATION (SD1)	8.8%
SEISMIC DESIGN CATEGORY	B
BASIC SEISMIC FORCE RESISTING SYSTEM	NOT DETAILED
RESPONSE MODIFICATION FACTOR (R)	N/A
DEFLECTION AMPLIFICATION FACTOR (Cd)	N/A
ANALYSIS PROCEDURE	EQUIV. LAT. FORCE

## LIVE LOADS

SLAB ON GRADE	200 PSF
MEZZANINE (MECHANICAL)	50 PSF
ROOF	20 PSF

## GENERAL NOTES

- THE STRUCTURAL DRAWINGS ARE TO BE USED IN CONJUNCTION WITH ARCHITECTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS.
- THE CONTRACTOR WILL COORDINATE BETWEEN ALL TRADES. CONFLICTS BETWEEN THE STRUCTURAL DRAWINGS AND THE DRAWINGS OF OTHERS WILL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND THE STRUCTURAL ENGINEER IN A TIMELY FASHION THAT PERMITS CLARIFICATIONS WITHOUT EFFECTING THE CONSTRUCTION SCHEDULE.
- THESE DRAWINGS ALONG WITH ANY SPECIFICATIONS ISSUED CONSTITUTE THE CONTRACT DESIGN DOCUMENTS FOR THIS PROJECT. ANY DISCREPANCY BETWEEN THE TWO WILL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OR STRUCTURAL ENGINEER FOR CLARIFICATION. FOR ESTIMATING PURPOSES THE CONTRACTOR WILL ASSUME THE MORE COSTLY ALTERNATIVE. NO MATERIALS MAY BE ORDERED, AND NO WORK MAY PROCEED UNTIL THE DISCREPANCY IS RESOLVED BY THE DESIGN PROFESSIONAL.
- ALTERNATES OR SUBSTITUTIONS TO STRUCTURAL MATERIALS OR DESIGN ARE AT THE SOLE DISCRETION OF THE LICENSED STRUCTURAL ENGINEER OF RECORD. ANY MODIFICATION MUST BE APPROVED IN THE MANNER SET FORTH IN THE "FRONT END" SPECIFICATIONS.
- ALL STANDARDS REFERENCED WITHIN THESE DOCUMENTS ARE TO BE THE EDITIONS REFERENCED IN CHAPTER THIRTY-FIVE OF THE INTERNATIONAL BUILDING CODE.
- STRUCTURAL MEMBERS, INCLUDING BEAMS, COLUMNS, JOISTS, TRUSSES, WALLS, SLABS AND BRACING ELEMENTS, ARE DESIGNED FOR THE FINAL DESIGN LOADS GIVEN ON THIS SHEET. THE CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY SHORING AND BRACING. SHORING IS TO BE DESIGNED TO PRECLUDE THE OVERSTRESSING ANY STRUCTURAL ELEMENT (AS REQUIRED AT ANY STAGE OF CONSTRUCTION) UNTIL COMPLETION OF THIS PROJECT.
- THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ON-SITE SAFETY. AT A MINIMUM, THE CONTRACTOR IS TO RESEARCH AND IMPLEMENT ALL SAFETY REGULATIONS IN FORCE IN THE JURISDICTION OF THIS PROJECT. PRIOR TO THE COMMENCEMENT OF WORK, THE CONTRACTOR WILL BRING TO THE ATTENTION OF THE STRUCTURAL ENGINEER ANY STRUCTURAL DETAIL THAT WOULD PRODUCE AN UNUSUALLY UNSAFE CONDITION.

## FOUNDATIONS

- THE PRIMARY BUILDING STRUCTURE IS DESIGNED FOR SUPPORT ON SPREAD FOOTINGS WITH AN ALLOWABLE NET SOIL BEARING PRESSURE OF 2000 PSF ON UNDISTURBED SOILS OR COMPACTED FILL BASED ON THE SITE SPECIFIC GEOTECHNICAL REPORT BY SUMMIT DESIGN & ENGINEERING SERVICES (PROJECT NO. 17-0408.040) DATED MARCH 6, 2018.
- IF SOIL AT THE SCHEDULED FOOTING ELEVATION IS OF QUESTIONABLE BEARING VALUE, THE ARCHITECT AND STRUCTURAL ENGINEER ARE TO BE NOTIFIED IMMEDIATELY. LOWER FOOTING ELEVATIONS IF REQUIRED BY ARCHITECT AND ENGINEER TO REACH FIRM SOIL.
- CONTRACTOR IS TO PROVIDE PROPERLY DESIGNED SHEETING AND SHORING AT ALL OPEN EXCAVATIONS, OR LAY BACK THE CUT AT A SLOPE APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER IN ORDER TO ENSURE SAFE WORKING CONDITIONS AND AS NECESSARY TO COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS. ALL EXCAVATIONS SHALL BE ADEQUATELY DEWATERED BEFORE PLACEMENT OF CONCRETE.

## CONCRETE

- ALL CONCRETE WORK SHALL COMPLY WITH THE SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS, ACI-301 AND THE BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE, ACI-318 (EDITIONS IN FORCE).
- CONCRETE MIX DESIGNS ARE REFERENCED IN THE PROJECT SPECIFICATIONS. FOR EACH DESIGN A SUBMITTAL WILL BE MADE BY THE CONTRACTOR AS OUTLINED IN THE SPECIFICATIONS.
- ALL REINFORCING STEEL IS TO BE TIED TO PREVENT DISPLACEMENT DURING CONCRETE PLACEMENT. TACK WELDING OF REINFORCEMENT STEEL IS PROHIBITED.
- THE CONTRACTOR WILL SUBMIT A COMPLETE LIST OF ACCESSORIES AND PLACING DETAILS WITH SHOP DRAWINGS.
- ALL REINFORCING STEEL IS TO BE CONTINUOUS. LAP BARS 40 DIAMETERS FOR BARS #6 AND SMALLER OR 48 DIAMETERS FOR BARS #7 AND LARGER AT SPLICE UNLESS NOTED OTHERWISE ON SCHEDULES OR DETAILS.
- THE LOCATION OF ALL LAP SPLICES WILL BE SHOWN ON SHOP DRAWINGS.
- NO CONCRETE ELEMENT MAY BE CORED TO PLACE THROUGH ITEMS (Ie PIPES, ELECTRICAL LINES, ETC.). ALL THROUGH ITEMS PENETRATING HORIZONTAL SURFACES ARE TO BE PLACED IN SCHEDULE 40, STEEL, PIPE SLEEVES OF A DIAMETER SUFFICIENT TO ACCOMMODATE THE THROUGH ITEM. AT PENETRATIONS IN THE VERTICAL PLANE OF ELEMENTS THE PIPE SLEEVE DIAMETER WILL BE INCREASED BY AN AMOUNT TO PROVIDE 1 1/2" CLEAR DIMENSION AROUND THE THROUGH ITEM.
- REFER TO ARCHITECTURAL DRAWINGS FOR ALL WATERPROOFING OF CONCRETE BELOW GRADE.
- NO HORIZONTAL CONSTRUCTION JOINTS ARE PERMITTED IN CONCRETE ELEMENTS. LOCATE VERTICAL CONSTRUCTION JOINTS AT THE MIDDLE THIRD OF THE SPAN. PROVIDE 2x4, CONTINUOUS, BEVELED KEYWAYS AT SLABS AND (ONE MINIMUM) AND 2X8 BEVELED KEYWAY AT BEAMS. SUBMIT PROPOSED CONSTRUCTION JOINT LOCATIONS TO THE ARCHITECT AND STRUCTURAL ENGINEER FOR APPROVAL.
- ALL INTERSECTING BEAMS, WALLS, AND FOOTINGS SHALL HAVE CORNER BARS. REFER TO TYPICAL DETAILS.

## REINFORCED MASONRY

- ALL REINFORCED MASONRY WORK SHALL COMPLY WITH THE SPECIFICATIONS FOR MASONRY STRUCTURES, ACI 530.1-95 AND THE BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES, ACI 530-95.
- BLOCK SHALL BE NORMAL WEIGHT WITH MINIMUM f'm = 1500 PSI
- MORTAR SHALL BE TYPE S.
- ALL MASONRY WALLS SHALL HAVE HORIZONTAL REINFORCING FABRICATED WITH GALVANIZED NINE GAGE SIDE RODS IN ALTERNATE COURSES. HORIZONTAL REINFORCING SHALL INCLUDE CORNER AND INTERSECTING WALL PIECES.
- LAP REINFORCING STEEL (#3 AND LARGER) 48 BAR DIAMETERS (MIN.) UNLESS NOTED OTHERWISE.
- ALL EXTERIOR MASONRY WALLS SHALL BE REINFORCED FULL HEIGHT WITH #6 (VERTICAL) AT 2'-0" ON CENTER WITH A #6 X 3'-0" DOWEL HOOKED INTO THE FOOTING AT EACH VERTICAL BAR, UNLESS OTHERWISE NOTED. CENTER ALL REINFORCING STEEL IN THE WALL.
- SEE ARCHITECTURAL DRAWINGS FOR THE LOCATION AND DETAILS OF ALL VERTICAL JOINTS IN MASONRY CONSTRUCTION.

## DIMENSIONAL LUMBER

- CODE FOR MEMBER DESIGN: ANSI/AF&PA NATIONAL DESIGN SPECIFICATION AND SUPPLEMENT. ALL MEMBERS SHALL BEAR AN APPROVED GRADE STAMP.
- DESIGN IS BASED ON SYP. NO. 2 WITH DESIGN PROPERTIES ACCORDING TO THE SOUTHERN PINE 2013 ADDENDUM.
- ALL DIMENSIONAL LUMBER SIZES SHOWN ON DRAWINGS ARE NOMINAL DIMENSIONS.
- UNLESS NOTED OTHERWISE, LOAD BEARING PLATES AND LEDGERS SHALL BE PRESERVATIVE TREATED AND ANCHORED TO MASONRY OR CONCRETE WITH 1/2"xØ ANCHOR BOLTS @ 48" OC
- ALL LUMBER EXPOSED TO THE WEATHER SHALL BE PRESERVATIVE TREATED.

## MATERIALS

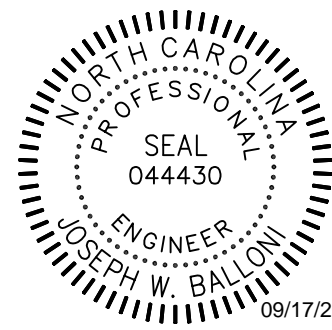
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|---|--|
| 1. <u>STEEL</u><br>WIDE FLANGE MEMBERS<br>ANGLES & CHANNELS<br>PLATES & BARS (GENERAL)<br>PLATES & BARS (MOMENT CONNECTIONS)<br>HOLLOW STRUCTURAL SECTIONS (RECTANGULAR)<br>MISCELLANEOUS PIPES<br>BOLTS (FRAMING MEMBERS)<br>ANCHOR RODS<br>ROOF DECKING | ASTM A992, Fy = 50KSI<br>ASTM A36, Fy = 36KSI<br>ASTM A36, Fy = 36KSI<br>ASTM A572, Fy = 50KSI<br>ASTM A500 GRADE B, Fy = 46KSI<br>ASTM A53, Fy = 35KSI<br>ASTM A352-N<br>ASTM F1554 GRADE 55, WELDABLE<br>ASTM A653SQ, GRADE 33 GALV. |
| 2. <u>REINFORCING STEEL</u><br>GENERAL REINFORCING<br>WELDED WIRE FABRIC  | ASTM A615, Fy = 60KSI<br>ASTM A185, IN FLAT SHEETS   |
| 3. <u>WELD ELECTRODES</u><br>GENERAL - ROLLED OR FORMED MEMBERS<br>DECKING TO FRAME WELDS   | E70xx ELECTRODES, CVN = 20#-FT AT 40 DEG.<br>E70xx OR E60xx  |
| 4. <u>CONCRETE</u><br>FOOTINGS<br>SLABS ON GRADE  | MIX F'c = 3000PSI NORMAL WEIGHT<br>MIX F'c = 4000PSI NORMAL WEIGHT   |

FOUNDATION DESIGNS ARE BASED ON ASSUMED PRE-ENGINEERED METAL BUILDING COLUMN REACTIONS. AFTER COMPLETION OF THE METAL BUILDING DESIGN, THE PRE-ENGINEERED BUILDING DESIGNER SHOULD PROVIDE TRUE COLUMN END REACTIONS FOR VERIFICATION AND FOUNDATION DESIGNS CHANGED AS REQUIRED. THIS DESIGN SET SHOULD NOT BE USED FOR CONSTRUCTION.

ENGINEER NOT RESPONSIBLE FOR BUILDING SYSTEM ABOVE TOP OF SLAB AND ANCHOR BOLTS, U.N.O. USE PRE-ENGINEERED METAL BUILDING SUPPLIER PLANS FOR ANCHOR BOLT LOCATIONS.

PRE-ENGINEERED METAL BUILDING DESIGNER TO ACCOUNT FOR A MINIMUM COLLATERAL DEAD LOAD OF 5 PSF.

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### GENERAL NOTES

DURHAM  
TECHNICAL  
COMMUNITY  
COLLEGE

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PROJECT NUMBER:  
17-0408



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Revisions

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