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SPECIFICATIONS:

DESIGN CRITERIA: BUILDING CRITERIA – 2012 INTERNATIONAL BUILDING CODE

DESIGN LOADS:

ROOF DEAD LOAD 20 PSF
ROOF LIVE LOAD 20 PSF

FLAT-ROOF SNOW LOAD, Pf 3.5 PSF
SNOW EXPOSURE FACTOR, Ce 0.9
IMPORTANCE FACTOR 1.1
THERMAL FACTOR, Ct 1.1

WIND VELOCITY Vult=115 MPH PER 2012 INTERNATIONAL BUILDING CODE
OCCUPANCY CATEGORY II
IMPORTANCE FACTOR 1.00
EXPOSURE C
BUILDING IS DESIGNED AS FULLY ENCLOSED
C&C WIND LOADS:
a=7.2'

		20SF	100SF
ROOF:			
ZONE	1	9.1,–23.2	7.7,–21.8
	2	8.3,–32.6	7.0,–23.6
	3	8.3,–45.5	7.0,–25.8
OVERHANG:			
ZONE	2	–33.7	–32.3
	3	–44.3	–16.1
WALLS:			
ZONE	4	22.7,–24.7	20.2,–22.2
	5	22.7,–29.7	20.2,–24.7

IMPORTANCE FACTOR 1.00 — Ss = 30.6%g, S1 = 11.2%g
OCCUPANCY CATEGORY II — Sds = 31.7%g, Sd1 = 17.6%g
SEISMIC DESIGN CATEGORY C
SITE CLASS D (ASSUMED)
(Fa 1.555 Fv 2.353) — DESIGN BASE SHEAR (KIPS) = 44
RESPONSE COEFF = 0.098 — RESPONSE MOD FACTOR, R = 3.25

ANALYSIS: EQUIVALENT LATERAL FORCE PROCEDURE

ALLOWABLE BEARING PRESSURE = 2000 PSF (ASSUMED)

RECOMMENDED SCHEDULE OF SITE OBSERVATIONS:

1. PRIOR TO FIRST CONCRETE PLACEMENT
2. AFTER ROOF DECKING INSTALLATION

THE CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER IN WRITING WHEN THE PROJECT HAS PROGRESSED TO THE POINT WHERE THE ITEMS TO BE REVIEWED ARE IN PLACE AND COMPLETE.

GENERAL:

1. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, SHOP DRAWINGS AND SPECIFICATIONS.
2. GENERAL CONTPACTOR SHALL REVIEW AND STAMP ALL SHOP DRAWINGS BEFORE SUBMITTAL FOR APPROVAL. SHOP DRAWINGS, REVIEWED BY THE GENERAL CONTRACTOR, FOR REINFORCING, JOIST, DECK, STRUCTURAL MEMBERS AND STRUCTURAL STEEL SHALL BE SUBMITTED TO THE ARCHITECT AND A STAMPED APPROVAL RECEIVED PRIOR TO FABRICATION. ERECTION SHALL BE MADE FROM APPROVED SHOP DRAWINGS ONLY.
3. FABRICATOR SHALL HIGHLIGHT CHANGES MADE IN SHOP DRAWINGS WHICH DO NOT COMPLY WITH THE DESIGN DRAWINGS.
4. ALL DIMENSIONS AND CONDITIONS MUST BE VERIFIED IN THE FIELD AND ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR CLARIFICATION BEFORE PROCEEDING WITH THE AFFECTED PART OF WORK.
5. A RECORD SET OF SHOP DRAWINGS SHALL BE KEPT IN THE FIELD BY THE GENERAL CONTRACTOR.
6. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND ELEVATIONS WITH ARCHITECT'S PLANS BEFORE STARTING WORK.
7. VERIFY ALL MECHANICAL EQUIPMENT WEIGHTS, LOCATIONS AND ASSOCIATED OPENINGS WITH MECHANICAL CONTRACTOR. NOTIFY ENGINEER IF ACTUAL WEIGHT EXCEEDS THE DESIGN WEIGHT SHOWN ON THE DRAWINGS.
8. CONTRACTOR SHALL PROVIDE AND MAINTAIN TEMPORARY BRACING, SHORING, GUYING, ETC AND OTHER METHODS TO PREVENT EXCESSIVE STRESSES DURING CONSTRUCTION. THESE PROVISIONS ARE TO REMAIN IN PLACE UNTIL SUFFICIENT PERMANENT MEMBERS ARE CONSTRUCTED TO INSURE THE SAFETY OF THE STRUCTURE.
9. UNLESS OTHERWISE NOTED, DETAILS SHOWN ON ANY DRAWING ARE TO BE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS.

FOUNDATIONS/ SOILS:

1. ALL FOOTINGS SHALL BEAR ON UNDISTURBED EARTH OR ENGINEERED FILL AT ELEVATIONS SHOWN ON PLANS AND DETAILS.
2. ALL FOOTINGS, OR PORTIONS THEREOF BELOW GRADE, MAY BE EARTH FORMED BY NEAT EXCAVATIONS.
3. FOOTINGS SHALL BE CENTERED ON WALLS UNLESS NOTED OTHERWISE.
4. PREPARATION OF THE SITE, INCLUDING INITIAL UNDERCUTTING, FILL/ BACKFILL MATERIAL, FILL/ BACKFILL PLACEMENT, AND COMPACTION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT. ALL SITE WORK SHALL BE UNDER THE DIRECTION OF A QUALIFIED GEOTECHNICAL ENGINEER OR SOILS TECHNICIAN.
5. PROXIMITY OF UTILITY TRENCHES TO THE BUILDING FOUNDATION SYSTEM SHALL BE AS APPROVED BY THE ARCHITECT AND/ OR SOILS ENGINEER TO INSURE THE INTEGRITY OF THE BEARING SOILS.

CONCRETE:

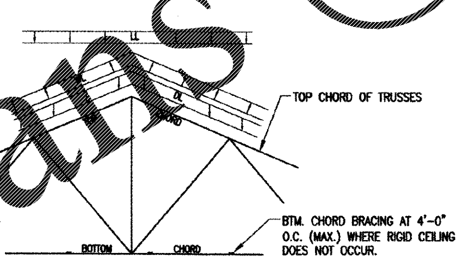
1. CONCRETE SHALL HAVE THE MINIMUM STRENGTH AND MEET THE PROPERTIES AS DESCRIBED BELOW FOR THE VARIOUS CLASSES OF CONCRETE.
2. ALL CONCRETE CONSTRUCTION SHALL CONFORM TO THE CURRENT "ACI MANUAL OF CONCRETE PLACEMENT"
3. PORTLAND CEMENT SHALL CONFORM TO ASTM C150, TYPE I OR II.
4. ALL AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL MEET ASTM C33.
5. ALL REINFORCING SHALL MEET ASTM A615, GRADE 60.
6. ALL REINFORCING SHALL BE DETAILED, FABRICATED AND PLACED PER CRSI AND ACI STANDARDS, INCLUDING CONCRETE COVER AND BAR SUPPORTS (DESIRED METHOD OF SUPPORTING TOP BARS IN THICK MATS SHALL BE VERIFIED WITH ENGINEER.) PROVIDE CORNER BARS AT ALL FOOTINGS AND WALL INTERSECTIONS TO MATCH HORIZONTAL REINFORCING IN SIZE AND SPACING. AT INTERSECTIONS OF CONTINUOUS SPREAD FOOTINGS EXTEND ALL BARS TO THE FAR SIDE OF INTERSECTING FOOTING. LAP BARS AT ALL SPLICES, INCLUDING CORNER BARS AND DOWELS, 40 BAR DIAMETERS. LAP WWF 6" OR ONE FULL MESH, WHICHEVER IS GREATER.
7. CONCRETE PROTECTION FOR REINFORCING: 3" AT FOOTINGS, 2" AT FORMED SURFACES LATER EXPOSED TO SOIL.
8. ALUMINUM SHALL NOT BE EMBEDDED IN ANY CONCRETE.
9. NO HOLES OR OPENINGS THROUGH FOUNDATION WALL AND/OR FOOTINGS WITHOUT ENGINEERS APPROVAL.
10. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4".
11. CONTINUOUS FOOTINGS AND FLOOR SLABS SHALL HAVE KEYED CONSTRUCTION JOINTS SPACED AT 60'-0" MAX ON CENTER EACH WAY.
12. PROVIDE (2) #4 X6' BARS AT MID-DEPTH OF SLAB AT RE-ENTRANT SLAB CORNERS.

CONCRETE MIX DESIGN

MIX TYPE	SUPER P	SLUMP	W/C RATIO	COMMENT	LOCATION
2500 PSI				COARSE GROUT (ASTM C476)	CMU FILL
3000 PSI				4" SLAB	SLAB-ON-GRADE
3000 PSI					FOUNDATIONS

MASONRY:

1. HOLLOW CONCRETE BLOCK (MASONRY) UNITS SHALL CONFORM TO ASTM C90, LIGHTWEIGHT, TYPE N-1 WITH A MINIMUM COMPRESSIVE STRENGTH OF 1900 PSI ON THE NET AREA (f'm = 1500 PSI).
2. ALL MORTAR FOR USE IN MASONRY SHALL CONFORM TO ASTM C270, TYPE S. ALL GROUT FOR USE IN MASONRY SHALL CONFORM TO ASTM C476, MIN 2500 PSI AND NOT LESS THAN A 6-1/2 SACK MIX.
3. REINFORCING BARS SHALL MEET ASTM A615, GRADE 60.
4. PROVIDE AT LEAST 2 VERTICAL BARS AT EACH END, CORNERS, AND INTERSECTION OF ALL WALLS. SEE WALL SECTIONS FOR TYPICAL VERTICAL REINFORCING.
5. BOND BEAM BLOCKS SHALL MEAN OPEN BOTTOM LINTELS UNLESS NOTED OTHERWISE. PROVIDE METAL LATH IN JOINTS BELOW BOTTOM OF BOND BEAM OVER THOSE CELLS THAT ARE NOT GROUT FILLED.
6. VERTICAL AND HORIZONTAL REINFORCING SHALL BE CONTINUOUS AND LAPPED (REF SPLICE TABLE THIS SHT)
7. PROVIDE A MINIMUM OF 1/2" GROUT BETWEEN MAIN REINFORCING AND MASONRY UNITS.
8. PROVIDE STANDARD GAGE TRUSS TYPE JOINT REINFORCEMENT AT 16" OC FOR TYPICAL HORIZONTAL REINFORCING, UNLESS NOTED OTHERWISE.
9. GROUT FILL ALL CELLS IN WALLS BELOW GRADE. SLUSH JOINT BETWEEN MASONRY WYTHES BELOW GRADE.
10. ALL CMU SHALL BE LAID IN RUNNING BOND PATTERN.
11. GROUT FILL ALL CELLS THAT CONTAIN REINFORCING.



TYPICAL ROOF TRUSS LOAD DIAGRAM

NOTE: THIS DIAGRAM IS A SCHEMATIC SHOWING THE APPLICATION OF LOADS STATED HEREIN. LOADS SHALL BE COMBINED AS PROVIDED BY THE GOVERNING BUILDING CODE TO DETERMINE THE MOST UNFAVORABLE EFFECT.

PREFABRICATED ROOF TRUSS DESIGN CRITERIA:

DL = 15 PSF TOP CHORD
LL = 20 PSF TOP CHORD
WL = 115 MPH PER 2012 IBC
DL = 5 PSF BOTTOM CHORD
LL = 0 PSF BOTTOM CHORD

LUMBER & WOOD STRUCTURAL PANEL SHEATHING:

1. ALL ROOF AND FLOOR SHEATHING SHALL BE INSTALLED WITH LONG DIMENSION PERPENDICULAR TO FRAMING AND END JOINTS SHALL BE STAGGERED.
2. ALL ROOF DECK SHALL BE APA RATED 40/20, MIN – 5/8" EXP 1 WOOD STRUCTURAL PANELS ATTACHED WITH 8d RING SHANK NAILS AT 6" OC AT SUPPORTED EDGES, NAIL SPACING AT DIAPHRAGM BOUNDARY IS 4" OC, AND 6" OC IN FIELD.
3. ALL FLOOR SHEATHING SHALL BE APA RATED 48/24, MIN – 3/4" T&G WOOD STRUCTURAL PANELS WITH EXTERIOR GLUE.
   ELEVATED FLOORS:
   ATTACH TO ALL SUPPORTED EDGES WITH 8d NAILS AT 6" O.C., NAIL SPACING AT DIAPHRAGM BOUNDARY IS 6" O.C., AND FIELD NAILING AT 12" O.C. WITH MIN. 1 3/8" PENETRATION INTO FRAMING MEMBER.
4. OPENINGS IN HORIZONTAL DIAPHRAGMS WITH A DIMENSION PERPENDICULAR TO THE JOISTS GREATER THAN 4 FEET SHALL BE BLOCKED BEYOND THE HEADERS AND METAL TIES NOT LESS THAN 16 GAGE BY 1 1/2" WIDE WITH (8) 16d COMMON NAILS ON EACH SIDE OF THE HEADER-JOIST INTERSECTION SHALL BE PROVIDED.
5. ALL MULTIPLE PIECE SOLID SAWN WOOD BEAMS SHALL BE CONNECTED TOGETHER WITH (3) ROWS OF GALV 12d COMMON WIRE NAILS @ 12" OC (UNO).
6. ALL MULTIPLE PIECE ENGINEERED LUMBER BEAMS SHALL BE CONNECTED PER MANUFACTURERS REQUIREMENT.
7. ALL LUMBER DESIGNATED AS "PSL" SHALL BE WOLMANIZED PARALLAM PARALLEL STRAND LUMBER AT SERVICE LEVEL 2
8. ALL LUMBER DESIGNATED AS "LVL" SHALL BE MICROLLAM LAMINATED VENEER LUMBER WITH E=1,900,000 PSI AND Fb=2600 PSI AT 100% LOAD DURATION.
9. UNLESS NOTED OTHERWISE, ALL LUMBER SHALL BE #2 SOUTHERN YELLOW PINE OR BETTER WITH A MAXIMUM MOISTURE CONTENT OF 19%.
10. REFERENCE PLANS AND DETAILS FOR SIMPSON STRONG-TIE CONNECTORS. PROVIDE SIMPSON FASTENERS PER MANUFACTURER'S RECOMMENDATIONS.
11. ALL LUMBER EXPOSED TO THE EXTERIOR ENVIRONMENT SHALL BE PRESSURE IMPREGNATED TO A MINIMUM RETENTION OF 0.25 LBS OF ACQ OR MCQ PER CUBIC FOOT OF WOOD, AND EACH PIECE SHALL BEAR THE THIRD PARTY QUALITY MARK "ABOVE GROUND USE."
12. ALL LUMBER IN CONTACT WITH THE GROUND/CONCRETE SHALL BE PRESSURE IMPREGNATED TO A MINIMUM RETENTION OF 0.40 LBS OF ACQ OR MCQ PER CUBIC FOOT OF WOOD, AND EACH PIECE SHALL BEAR THE THIRD PARTY QUALITY MARK "GROUND CONTACT USE."
13. REF STANDARD AWPA C2 AND ASTM D1760 FOR PRESSURE TREATMENT OF TIMBER PRODUCTS.
14. CONTRACTOR SHALL PROTECT ALL WOOD STRUCTURAL PANELS FROM EXPOSURE TO CONCRETE.
15. AS A MINIMUM, ANCHOR AND NAIL FRAMING SHALL COMPLY WITH "TABLE 2304.9.1 – FASTENING SCHEDULE FOR STRUCTURAL MEMBERS" OF THE INTERNATIONAL BUILDING CODE.
16. COMMON NAILS:
   8d # = 0.131 L = 2 1/2 in
   10d # = 0.148 L = 3 in
   16d # = 0.162 L = 3 1/2 in

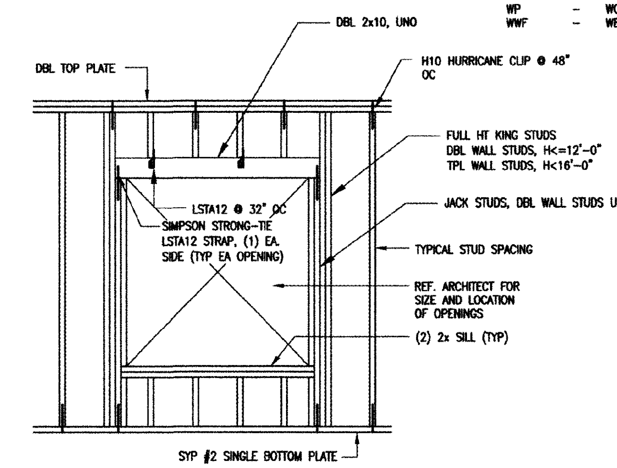
PREFABRICATED TRUSSES:

1. ALL PREFABRICATED TRUSSES SHALL BE DESIGNED TO MEET THE LOADINGS SPECIFIED. FABRICATION AND ERECTION SHALL BE PER TRUSS PLATE INSTITUTE RECOMMENDATIONS AS CONTAINED IN THE APPROPRIATE PUBLICATIONS.
2. SHOP DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED FOR EACH TYPE OF TRUSS SPECIFIED AND SHALL BEAR THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF GEORGIA.
3. ALL LUMBER USED IN THE MANUFACTURING OF WOOD ROOF TRUSSES SHALL BE #2 SOUTHERN YELLOW PINE OR BETTER.
4. PROVIDE ALL TEMPORARY AND PERMANENT TRUSS BRACING AND BRIDGING AS REQUIRED AND SHOWN ON THE TRUSS MANUFACTURERS SHOP DRAWINGS. DIAGONAL BRACING SHOWN ON STRUCTURAL DRAWINGS IS IN ADDITION TO ANY BRACING SHOWN ON THE SHOP DRAWINGS.
5. PROVIDE 2x4 CONTINUOUS BOTTOM CHORD/ CEILING BRACING AT 4 FEET O.C. MAXIMUM WHERE GYPSUM BOARD IS NOT ATTACHED DIRECTLY TO BOTTOM CHORD OF WOOD ROOF TRUSSES.
6. INSTALL STRONG BACKS, BRACING AND/OR BRIDGING PRIOR TO DECK INSTALLATION AND AS TRUSSES ARE ERECTED. FASTEN ALL BRACING TO EACH TRUSS.
7. COORDINATE TRUSS WEB CONFIGURATION WITH MECHANICAL DUCTWORK AS INDICATED ON ARCHITECTURAL AND MECHANICAL SHEETS. PROVIDE CLEAR SPACE BETWEEN WEBS AS REQUIRED TO INSTALL DUCTWORK.

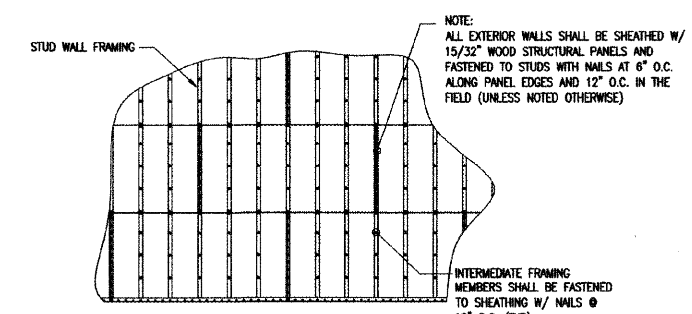
CMU REINF SPLICE TABLE	
SIZE	MIN LAP DIST
#3	19"
#4	26"
#5	32"
#6	38"
#7	49"
#8	63"

STEEL:

1. STRUCTURAL STEEL SHALL MEET THE LATEST AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS".
2. ALL WIDE FLANGE SHAPES SHALL MEET ASTM A992, Fy = 50 KSI. ALL PLATES, CHANNELS, AND ANGLES SHALL MEET ASTM A36, Fy = 36 KSI.
3. ALL PIPES SHALL MEET ASTM A53, GRADE B, Fy = 35 KSI. ALL TUBE STEEL SHALL MEET ASTM A500, GRADE B, Fy = 46 KSI.
4. ALL BOLTS SHALL MEET ASTM A325 HIGH STRENGTH, WITH WASHERS AS REQUIRED, EXCEPT ANCHOR RODS WHICH SHALL MEET ASTM A36 (UNO).
5. WELDING SHALL CONFORM TO THE STANDARDS SET FORTH IN THE AWS PUBLICATION "WELDING IN BUILDING CONSTRUCTION".
6. ALL FIELD AND SHOP CONNECTIONS TO HAVE FILLET WELDS MEETING THE REQUIREMENTS SET FORTH BY AWS D1.1 UNLESS NOTED AS BOLTED CONNECTIONS.
7. ALL FIELD WELDS TO BE WITH E70XX ELECTRODES.
8. ALL ERECTION DRAWINGS SHALL SHOW ALL FIELD WELDS REQUIRED.
9. ELEVATIONS FOR TOP OF STEEL NOTED ON DRAWINGS. BEAM FRAME FLUSH AT TOP UNLESS NOTED (+/-).
10. STEEL FRAMES ARE NOT "SELF-SUPPORTING." ADEQUATE TEMPORY SUPPORT SHALL BE PROVIDED BY THE CONTRACTOR UNTIL REQUIRED ELEMENTS OR CONNECTIONS ARE IN PLACE.
11. WHEN NOT SPECIFICALLY DETAILED ON THE DESIGN DRAWINGS PROVIDE THE FOLLOWING BEAM CONNECTIONS:
   11.1. WHERE BEAM REACTIONS ARE SHOWN, CONNECTIONS SHALL DEVELOP THE REACTION GIVEN.
   11.2. WHEN BEAM REACTIONS ARE NOT SHOWN, CONNECTIONS SHALL BE DESIGNED TO SUPPORT ONE HALF THE TOTAL UNIFORM LOAD CAPACITY SHOWN IN THE ALLOWABLE UNIFORM LOAD TABLES, TABLE 3-6 OF THE AISC MANUAL, FOR THE GIVEN BEAM, SPAN, AND GRADE OF STEEL SPECIFIED.
12. LOADS SHOWN ON PLANS ARE ASD UNLESS NOTED OTHERWISE.



TYPICAL FRAMED WALL OPENING



NOTE:
ORIENTATION OF WALL SHEATHING SHALL BE AT CONTRACTOR'S OPTION.

TYPICAL SHEATHING ATTACHMENT

STRUCTURAL DRAWINGS

S100 STRUCTURAL SPECIFICATIONS
S101 FOUNDATION PLAN
S102 ROOF FRAMING PLANS
S201 STRUCTURAL DETAILS

ABBREVIATIONS:

ARCH	–	ARCHITECTURAL
BC	–	BOTTOM CHORD
BLDG	–	BUILDING
BRG	–	BEARING
BTM	–	BOTTOM
CANT	–	CANTILEVER
CC	–	CENTER TO CENTER
CLR	–	CLEAR COVER
COL	–	COLUMN
CONT	–	CONTINUOUS
DET	–	DETAIL
DWG	–	DRAWING
EA	–	EACH
EF	–	EACH FACE
ELEV	–	ELEVATION
EQ	–	EQUAL
EW	–	EACH WAY
EXIST	–	EXISTING
EXP ANCH	–	EXPANSION ANCHOR
EXP JT	–	EXPANSION JOINT
FFE	–	FINISHED FLOOR ELEVATION
FOC	–	FACE OF CONCRETE
FOM	–	FACE OF MASONRY
FOS	–	FACE OF STEEL
GALV	–	GALVANIZED
HORIZ	–	HORIZONTAL
HSB	–	HIGH STRENGTH BOLT
JST	–	JOIST
LG	–	LONG
LLH	–	LONG LEG HORIZONTAL
LLV	–	LONG LEG VERTICAL
LLBB	–	LONG LEG BACK TO BACK
MAX	–	MAXIMUM
MECH	–	MECHANICAL
MO	–	MASONRY OPENINGS
MIN	–	MINIMUM
NIC	–	NOT IN CONTACT
NTS	–	NOT TO SCALE
O C	–	ON CENTER
O/O	–	OUT-TO-OUT
REF	–	REFERENCE
REINF	–	REINFORCE
REQ'D	–	REQUIRED
SEC	–	SECTION
SHT	–	SHEET
SIM	–	SIMILAR
STD	–	STANDARD
TCX	–	TOP CHORD EXTENSION
TOF	–	TOP OF FOOTINGS
TOM	–	TOP OF MASONRY
TOS	–	TOP OF STEEL
TOW	–	TOP OF WALL
TYP	–	TYPICAL
UNO	–	UNLESS NOTED OTHERWISE
VERT	–	VERTICAL
WP	–	WORKING POINT
WWF	–	WELDED WIRE FABRIC

J. E. STEWART ENGINEERING
237 CHESTERFIELD ST N
AIKEN, SC 29801
(803) 648-4605
JOSH@JESTEWARTENGINEERING.COM

SEALS

GEORGIA REGISTERED PROFESSIONAL ENGINEER PE033257 JOSHUA E. STEWART

DIABLOS

CITY OF AUGUSTA, GEORGIA

REV	DATE	DESCRIPTION	APP

ISSUE DATE: MAR 28, 2016
DESIGNED BY: JES — DRAWN BY: JES
CHECKED BY: — SUBMITTED BY: JES

STRUCTURAL

STRUCTURAL SPECIFICATIONS

S100

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