

STRUCTURAL NOTES

CONCRETE

- CONFORM WITH ACI 117, ACI 201, ACI 211.1, ACI 301, ACI 302.1R, ACI 305R, ACI 306.1, ACI 308.1, ACI 309R, ACI 315, ACI 318, ACI 330 AND ACI 347R.
- CONCRETE EXPOSED TO WEATHER: NORMAL WEIGHT, $F'c=4000$ PSI WITH A MAXIMUM WATER/CEMENT RATIO=0.45.
CONCRETE FOR FOOTINGS: NORMAL WEIGHT, $F'c=3000$ PSI WITH A MAXIMUM WATER/CEMENT RATIO=0.50.
CONCRETE FOR COMPOSITE SLABS: LIGHTWEIGHT (115 PCF), $F'c=4000$ PSI WITH A MAXIMUM WATER/CEMENT RATIO=0.50.
CONCRETE FOR FOUNDATION WALLS AND PIERS: NORMAL WEIGHT, $F'c=3000$ PSI WITH A MAXIMUM WATER/CEMENT RATIO=0.50.
CONCRETE FOR SLABS-ON-GRADE: NORMAL WEIGHT, $F'c=4000$ PSI WITH A MAXIMUM WATER/CEMENT RATIO=0.45.
- COMPACT THE EXISTING SUBGRADE BENEATH ISOLATED AND SPREAD FOOTINGS WITH 3 PASSES OF A VIBRATING PLATE COMPACTOR AND PRIOR TO CONCRETE PLACEMENT. COMPACT IN ACCORDANCE WITH THE SPECIFICATIONS.
- DEFORMED REINFORCING BARS: ASTM A615/A615M (GRADE 60).
- WELDED WIRE FABRIC: ASTM A185 (GALVANIZED AS INDICATED).
- LAP SPLICE CONCRETE REINFORCEMENT AS INDICATED IN THE LAP SPLICE SCHEDULE ON THIS SHEET. WELDING OF STEEL REINFORCEMENT IS NOT PERMITTED.
- MINIMUM REINFORCING STEEL COVER: FOOTINGS 3", WALLS AND PIERS 2", ELEVATED SLABS 3/4", UNLESS INDICATED OTHERWISE.
- SUPPORT STEEL REINFORCEMENT AND WELDED WIRE FABRIC BY APPROVED MATERIALS.
- CURE ELEVATED SLABS BY MOIST CURING ONLY.
- CURE CONCRETE AS SPECIFIED. CONCRETE NOT CURED WILL NOT BE ACCEPTED.
- NONSHRINK GROUT: ASTM C1107, NONMETALLIC.
- BONDING ADHESIVE: ASTM C1059.
- EPOXY GROUT: ASTM C881, TYPE IV OR V.
- EPOXY ADHESIVE: ASTM C881, TYPE I.
- TAPE AND SEAL JOINTS IN VAPOR RETARDER AT EDGES. SEAL VAPOR RETARDER TO CONCRETE AT EDGES.
- PROVIDE WATERSTOPS AT VERTICAL AND HORIZONTAL COLD JOINTS (AND AS INDICATED) IN THE CONCRETE FOUNDATION AT ELEVATOR.
- COORDINATE FOUNDATION PREPARATION AND DRAINS WITH DETAIL 4/C-501.

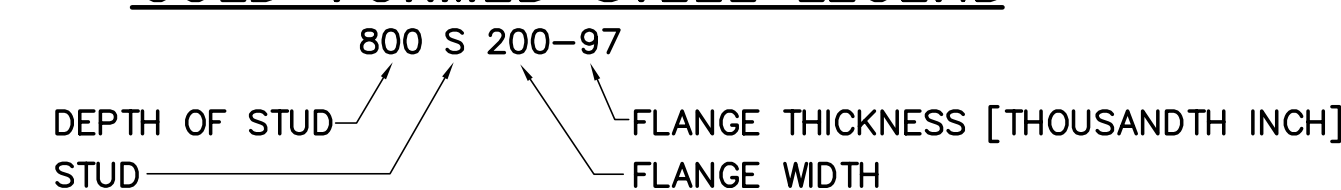
MASONRY

- CONFORM TO ACI 530.1-05/ASCE 6-05/TMS 402-05.
- CONCRETE MASONRY UNITS ASTM C90, TYPE 1, NORMAL WEIGHT.
MORTAR: ASTM C270.
GROUT: ASTM C476 FINE.
DEFORMED REINFORCEMENT: ASTM A615/A615M, GRADE 60.
- CONCRETE MASONRY ASSEMBLIES TO HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH: $F'm = 1500$ PSI.
- SUBMIT SPECIFIED PRE-CONSTRUCTION TESTS TO THE OWNER PRIOR TO STARTING MASONRY CONSTRUCTION. DO NOT CONSTRUCT MASONRY WITHOUT THE REQUIRED PRE-CONSTRUCTION TESTING BEING PERFORMED. MASONRY CONSTRUCTED WITHOUT THE REQUIRED PRE-CONSTRUCTION TESTING WILL NOT BE ACCEPTED.
- PERFORM DAILY MASONRY INSPECTIONS AS SPECIFIED. SUBMIT DAILY MASONRY INSPECTION REPORTS TO THE OWNER WITHIN 24 HOURS AFTER DAY OF INSPECTION. MASONRY CONSTRUCTED WITHOUT THE COMPLETION OF DAILY MASONRY INSPECTIONS WILL NOT BE ACCEPTED AND WILL BE REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE OWNER.
- REINFORCE CONCRETE MASONRY WALLS AND PARTITIONS AS INDICATED WITH CELLS GROUTED SOLID UNLESS NOTED OTHERWISE.
- DO NOT MAKE HOLES OR PENETRATIONS THROUGH CMU BOND BEAMS.
- LAP SPLICE REINFORCING AS INDICATED ON FOUNDATION DETAILS AND MASONRY WALL ELEVATION SHEETS.
- BRACE REINFORCED CMU PARTITION WALLS AT FLOOR/ROOF AS INDICATED.

COLD-FORMED STEEL

- COLD-FORMED METAL FRAMING: GALVANIZED STEEL ASTM A653/A653M, GRADE 33 FOR TRACKS ($F_y=33$ KSI) G90 COATING.
GRADE 50 FOR STUDS: ($F_y=50$ KSI) G90 COATING.
- SECTION PROPERTIES FOR SKYLIGHT SUPPORT FRAMING SHALL BE AS REQUIRED BY STRUCTURAL PERFORMANCE.
- DESIGN COLD-FORMED METAL CONNECTIONS IN ACCORDANCE WITH THE LATEST REVISION OF AISI'S "DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" FOR THE REACTIONS REQUIRED.
- MINIMUM SECTION PROPERTIES FOR FLOOR JOISTS SHALL BE AS FOLLOWS:
800 S 200-97
MINIMUM THICKNESS = $t = 0.102$ IN
MINIMUM AREA = $A = 1.27$ IN²
MINIMUM EFFECTIVE SECTION MODULUS = $S_e = 2.80$ IN³
MINIMUM GROSS MOMENT OF INERTIA = $I_x = 11.2$ IN⁴
- MINIMUM SECTION PROPERTIES FOR STUDS SUPPORTING FLOOR JOISTS SHALL BE AS FOLLOWS:
600 S 162-68
MINIMUM THICKNESS = $t = 0.071$ IN
MINIMUM AREA = $A = 0.693$ IN²
MINIMUM EFFECTIVE SECTION MODULUS = $S_e = 1.16$ IN³
MINIMUM GROSS MOMENT OF INERTIA = $I_x = 3.53$ IN⁴
- PREPARE DESIGN CALCULATIONS AND SHOP DRAWINGS BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MAINE AND SUBMIT FOR REVIEW PRIOR TO CONSTRUCTION OF FRAMING.
- PNEUMATIC FASTENING OF COLD-FORMED FRAMING IS NOT PERMITTED.

COLD-FORMED STEEL LEGEND



STRUCTURAL STEEL

- CONFORM WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION'S "MANUAL OF STEEL CONSTRUCTION FOURTEENTH EDITION".
- STEEL FOR ROLLED SECTIONS: ASTM A992/A992M ($F_y=50$ KSI).
STEEL FOR CONNECTIONS, ANGLES, PLATES AND CHANNELS: ASTM A36 ($F_y=36$ KSI).
RECTANGULAR HOLLOW STRUCTURAL SECTIONS: ASTM A500, GRADE B, ($F_y=46$ KSI).
PIPE SECTIONS: ASTM A53 ($F_y=35$ KSI).
- ANCHOR RODS: ASTM F1554, GRADE 36 ($F_y=36$ KSI).
NUTS: ASTM A563, GRADE A.
WASHERS: ASTM F436, TYPE 1.
PLATE WASHERS: ASTM A36 (AT BASE PLATE OVERSIZED HOLES).
- STRUCTURAL BOLTS: ASTM A325/A325M N, TYPE 1 OR ASTM F1852, TYPE 1, TENSION CONTROL.
WASHERS: ASTM F436M.
NUTS: ASTM A563M.
- HEADED SHEAR CONNECTORS: ASTM A108, GRADE 1015 OR 1020.
- EQUALLY SPACE HEADED SHEAR CONNECTORS UNLESS NOTED OTHERWISE.
- DO NOT SHOP PRIME STEEL SURFACES THAT RECEIVE HEADED SHEAR CONNECTORS.
- WELDING: AWS D1.1 AND AWS D1.3, E70 ELECTRODE.
- GRIND EXPOSED WELDS SMOOTH.
- BEAM TO BEAM AND BEAM TO COLUMN CONNECTIONS ARE INDICATED ON THE CONNECTION SCHEDULES FOR THE FACTORED REACTIONS INDICATED UNLESS NOTED OTHERWISE.
- BRACING CONNECTIONS ARE INDICATED ON SHEET SF201.
- MOMENT CONNECTIONS ARE INDICATED ON SHEET SF602.
- FULLY TENSION BOLTS.
- TEST AND INSPECT FIELD-BOLTED CONNECTIONS ACCORDING TO RCSC'S "LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS".
- SUBMIT INSPECTION REPORTS TO THE OWNER WITHIN 48 HOURS OF COMPLETION. SUBMIT WELDING INSPECTION REPORTS TO THE OWNER WITHIN 48 HOURS OF COMPLETION.

STEEL JOISTS

- CONFORM TO THE REQUIREMENTS OF THE STEEL JOIST INSTITUTE (SJI) STANDARD SPECIFICATIONS AND INSTALLATION REQUIREMENTS. ERECT STEEL JOISTS IN ACCORDANCE WITH SJI PRINTED INSTRUCTIONS.
- PROVIDE A ROW OF HORIZONTAL UPLIFT BRIDGING AT THE FIRST CHORD PANEL POINT FOR ROOF JOISTS AS INDICATED.
- DESIGN ROOF JOISTS FOR A NET WIND UPLIFT OF 15 PSF.

STEEL DECK

- STEEL DECKS: AISI SG03-3 AND STEEL DECK INSTITUTE "DESIGN MANUAL FOR COMPOSITE DECKS, FORM DECKS AND ROOF DECKS". DECK UNITS ASTM A653/A653 SQ, GRADE 33, COATING G90 FOR ASTM A653/A653M. FASTEN COMPOSITE FLOOR DECK WITH 5/8" WELDS ON A 36/4 PATTERN WITH (3) #10 SCREWS PER SPAN (STITCH CONNECTION). FASTEN FORM DECK WITH #12 SCREWS ON A 36/4 PATTERN (NO STITCH CONNECTORS). FASTEN ROOF DECK WITH #12 SCREWS ON A 36/4 PATTERN (NO STITCH CONNECTORS).
STEEL COMPOSITE DECK = NON-CELLULAR, GRADE 33.
MINIMUM DEPTH = 2" (MINIMUM DESIGN THICKNESS: 0.048 IN (18 GAUGE))
MINIMUM SECTION MODULUS = $S_p = 0.518$ IN³
MINIMUM SECTION MODULUS = $S_n = 0.519$ IN³
MINIMUM MOMENT OF INERTIA = $I_x = 0.535$ IN⁴
STEEL ROOF DECK = NON-CELLULAR, GRADE C.
MINIMUM DEPTH = 1-1/2" (MINIMUM DESIGN THICKNESS: 0.048 IN (18 GAUGE))
MINIMUM SECTION MODULUS = $S_p = 0.297$ IN³
MINIMUM SECTION MODULUS = $S_n = 0.304$ IN³
MINIMUM MOMENT OF INERTIA = $I_x = 0.273$ IN⁴
STEEL FORM DECK = NON-CELLULAR, GRADE 33.
MINIMUM DEPTH = 9/16" (MINIMUM DESIGN THICKNESS: 0.024 IN (24 GAUGE))
MINIMUM SECTION MODULUS = $S_p = 0.057$ IN³
MINIMUM SECTION MODULUS = $S_n = 0.057$ IN³
MINIMUM MOMENT OF INERTIA = $I_x = 0.019$ IN⁴
- PROVIDE CONCRETE POUR STOPS/CLOSURE ANGLES AT EDGES OF SLABS.

GRATING

- PROVIDE GALVANIZED STEEL BAR-TYPE GRATING (REMOVABLE) OVER THE ELEVATOR PIT SUMP HOLE.
- INSTALL GALVANIZED STEEL GRATING IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS. MATCH THE GRATING FASTENER MATERIAL WITH THAT OF THE PROVIDED GRATING.
- MINIMUM LIVE LOAD CAPACITY: 100 PSF.

POST INSTALLED ANCHORS

- INSTALL POST INSTALLED ANCHORS IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.
- POST INSTALLED ANCHORS ARE BASED ON HILTI PRODUCTS. SUBMIT ALTERNATE PRODUCTS FOR APPROVAL.
- EPOXY GROUT: ASTM C881.

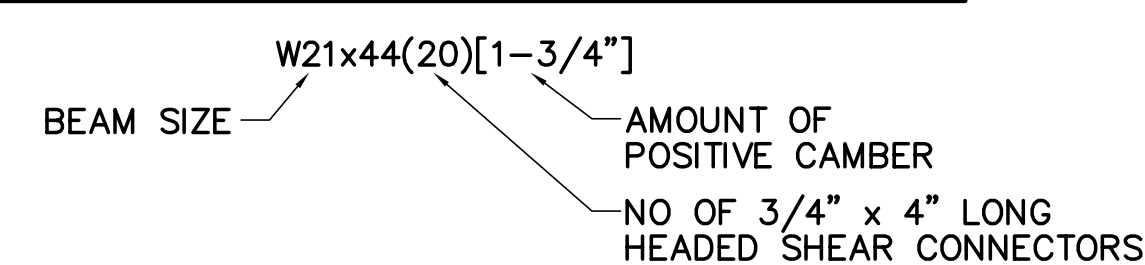
GENERAL NOTES

- FIELD VERIFY DIMENSIONS AND ELEVATIONS OF STRUCTURAL STEEL AND WOOD MEMBERS PRIOR TO FABRICATION OF ANY MEMBERS. REPORT DISCREPANCIES TO THE OWNER PRIOR TO FABRICATION OF MEMBERS.
- PROVIDE TEMPORARY SUPPORT OF FRAMING DURING CONSTRUCTION TO PREVENT FAILURE AND DAMAGE.
- COORDINATE THE LOCATION OF CONCRETE, MASONRY AND STEEL MEMBERS WITH ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING, FIRE PROTECTION, SECURITY, COMMUNICATIONS, AND ELECTRICAL PLANS AND DETAILS.
- ALL REQUIRED TESTS AND INSPECTIONS ARE TO BE COMPLETED AND SUBMITTED TO THE OWNER PRIOR TO ACCEPTANCE OF COMPLETED WORK. ANY MATERIAL PLACED WITHOUT THE REQUIRED CONTRACTOR QUALITY CONTROL TESTS OR REQUIRED INSPECTIONS BEING PERFORMED WILL NOT BE ACCEPTED.
- CONSTRUCTION IS SUBJECT TO SPECIAL INSPECTIONS BY THE OWNER IN ACCORDANCE WITH CHAPTER 17 OF IBC 2009. THE CONTRACTOR WILL BE NOTIFIED OF DEFICIENCIES. NOTIFY THE OWNER AFTER DEFICIENCIES HAVE BEEN CORRECTED.
- NO DEVIATIONS IN CONTRACT DRAWINGS ARE PERMITTED.
- ASSUME FULL RESPONSIBILITY FOR ANY CHANGES IN FOUNDATION OR FRAMING PLANS AND DETAILS UNLESS APPROVED IN WRITING BY THE OWNER.
- REFER TO CIVIL DRAWINGS REGARDING INFORMATION AND LIMITATIONS PERTINENT TO SITE SUBSURFACE SOIL CONDITIONS.
- COORDINATE MECHANICAL OPENINGS THROUGH EXISTING CONCRETE SLAB/DECK WITH MECHANICAL DRAWINGS. SAWCUT AND REMOVE EXISTING CONCRETE SLAB/DECK WITHOUT DAMAGING EXISTING FRAMING AND ADJACENT EXISTING CONCRETE/DECK.

SEQUENCE OF REMOVALS WORK (BASIS OF DESIGN)

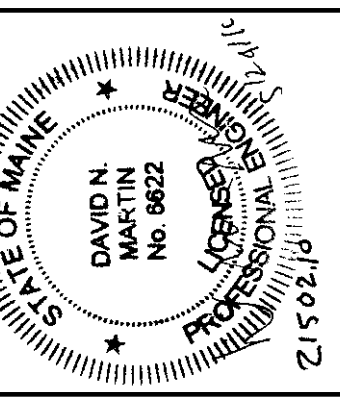
- REMOVE ONLY THE SECTIONS OF LOAD BEARING WALLS INDICATED FOR INSTALLATION OF TEMPORARY BRACING.
- INSTALL TEMPORARY BRACING AND ASSOCIATED CONNECTIONS TO BUILDING STRUCTURE AS INDICATED.
- TEMPORARY BRACING TO REMAIN IN PLACE. REFER TO "SEQUENCE OF TEMPORARY BRACING REMOVAL NOTES" BELOW FOR REMOVAL TIMING.
- ANY DEVIATION FROM THE ABOVE WILL REQUIRE WRITTEN PERMISSION FROM THE OWNER. CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL COST AND RE-DESIGN OF THE TEMPORARY BRACING. DESIGN OF THE TEMPORARY BRACING WILL BE PERFORMED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MAINE. SUBMIT DESIGN CALCULATIONS AND SHOP DRAWINGS TO THE OWNER PRIOR TO IMPLEMENTATION OF ANY PROPOSED CHANGES TO THE TEMPORARY BRACING PLAN.

COMPOSITE FLOOR BEAM LEGEND



REINFORCING STEEL LAP SPLICE SCHEDULE	
BAR SIZE	MINIMUM LAP LENGTH
#4	2'-5"
#5	3'-0"
#6	3'-0"
#7	3'-11"
#8	4'-7"
#9	5'-2"

NOTES:
1. LAP SPLICE LENGTH SHALL BE AS SHOWN ABOVE UNLESS NOTED OTHERWISE.
2. INCREASE SPLICE LENGTH BY 1.3 FACTOR FOR HORIZONTAL REINFORCEMENT WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW.



DESIGNED BY: DNM
DRAWN BY: NJC
CHECKED BY: DNM
PROJECT: 21502.10

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RENOVATIONS TO THE
STEVEN AVENUE ARMORY

STRUCTURAL NOTES

SCALE: AS NOTED
DATE: 05-24-16

DWG. **S-001**