STRUCTURAL NOTES:

CONCRETE

1. 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.
2. 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 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.
   CONCRETE FOR COMPOSITE SLABS: LIGHTWEIGHT (115 PCF), F'c=4000 PSI WITH A MAXIMUM WATER/CEMENT RATIO=0.50.
3. COMPACT THE STRUCTURAL FILL BENEATH ISOLATED AND SPREAD FOOTINGS WITH A VIBRATING PLATE COMPACTOR AND PRIOR TO CONCRETE REINFORCEMENT PLACEMENT. COMPACT IN ACCORDANCE WITH THE SPECIFICATIONS.
4. DEFORMED REINFORCING BARS: ASTM A615/A615M (GRADE 60).
5. WELDED WIRE FABRIC: ASTM A185 (GALVANIZED AS INDICATED).
6. LAP SPLICE CONCRETE REINFORCEMENT IN ACCORDANCE WITH ACI 301/ACI 318. LAP BARS AS INDICATED IN THE LAP SPLICE SCHEDULE ON SHEET S-001. WELDING OF STEEL REINFORCEMENT IS NOT PERMITTED.
7. MINIMUM REINFORCING STEEL COVER: FOOTINGS 3", WALLS AND PIERS 2", ELEVATED SLABS 3/4", UNLESS INDICATED OTHERWISE.
8. SUPPORT STEEL REINFORCEMENT AND WELDED WIRE FABRIC BY APPROVED MATERIALS.
9. CURE ELEVATED SLABS BY MOIST CURING ONLY.
10. CURE CONCRETE AS SPECIFIED. CONCRETE NOT CURED WILL NOT BE ACCEPTED.
11. NONSHRINK GROUT: ASTM C1107, NONMETALLIC.
12. EPOXY GROUT: ASTM C881, TYPE IV OR V.
13. EPOXY ADHESIVE: ASTM C881.
14. CONCRETE SLAB FINISH:

FLOOR FLATNESS AND LEVELNESS				
SLAB LOCATION	OVERALL VALUE		MIN LOCAL VALUE	
	F_F	F_L	F_F	F_L
SLAB ON GRADE	35	25	24	17

15. PERFORM FLATNESS/LEVELNESS TESTS WITHIN 48 HOURS OF CONCRETE PLACEMENT. SUBMIT TEST RESULTS TO THE OWNER WITHIN 24 HOURS OF TEST COMPLETION.
16. INTERIOR SLABS-ON-GRADE: PROVIDE CONCRETE SLAB PROTECTION (BEYOND THE 7-DAY CURING PERIOD) UNTIL THE BUILDING ENVELOPE COMPLETELY ENCLOSES AND PROTECTS THE SLAB FROM WIND, SUN AND PRECIPITATION.
17. TAPE AND SEAL JOINTS IN VAPOR RETARDER AT EDGES. SEAL VAPOR RETARDER TO CONCRETE AT EDGES.
18. SECURE ANCHOR RODS IN PLACE PRIOR TO PLACING CONCRETE. INCORRECTLY LOCATED OR OUT-OF-PLUMB ANCHORS SHALL BE REPLACED AT NO COST TO THE OWNER. REPLACEMENT METHODS SHALL BE AS DIRECTED BY THE OWNER.
19. COORDINATE FOUNDATION WORK WITH SOIL AND SOIL EXPLORATION NOTES ON SHEET C-001.

STRUCTURAL STEEL

1. CONFORM WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION'S "MANUAL OF STEEL CONSTRUCTION FOURTEENTH EDITION".
2. STEEL FOR ROLLED SECTIONS: ASTM A992/A992M (Fy=50 KSI).
   STEEL FOR CONNECTIONS, ANGLES AND PLATES: ASTM A36 (Fy=36 KSI).
   RECTANGULAR HOLLOW STRUCTURAL SECTIONS: ASTM A500, GRADE C, (Fy=50 KSI).
   PIPE SECTIONS: ASTM A53 (Fy=35 KSI).
3. ANCHOR RODS: ASTM F1554, GRADE 36 (Fy=36 KSI).
   NUTS: ASTM A563, GRADE A.
   WASHERS: ASTM F436, TYPE 1.
4. STRUCTURAL BOLTS: ASTM A325/A325M N, TYPE 1 OR ASTM F1852, TYPE 1, TENSION CONTROL.
   WASHERS: ASTM F436M.
   NUTS: ASTM A563M.
5. HEADED SHEAR CONNECTORS: ASTM A108, GRADE 1015 OR 1020.
6. EQUALLY SPACE HEADED SHEAR CONNECTORS UNLESS NOTED OTHERWISE.
7. DO NOT SHOP PRIME STEEL SURFACES THAT RECEIVE HEADED SHEAR CONNECTORS.
8. WELDING: AWS D1.1 AND AWS D1.3, E70 ELECTRODE.
9. GRIND EXPOSED WELDS SMOOTH.
10. BEAM TO BEAM, BEAM TO COLUMN, AND SEISMIC COLLECTOR CONNECTIONS ARE INDICATED ON THE CONNECTION SCHEDULES FOR THE FACTORED REACTIONS INDICATED UNLESS NOTED OTHERWISE. TYPE OF CONNECTIONS TO DEPEND ON MAGNITUDE OF END REACTIONS.
11. BRACING CONNECTIONS SCHEDULES AND DESIGN FORCES ARE INDICATED ON SHEET SF202.
12. MOMENT CONNECTIONS ARE INDICATED ON SHEET SF606.
13. FULLY TENSION BOLTS.
14. ALTERNATE BEAM TO BEAM AND BEAM TO COLUMN CONNECTIONS, EXCEPT COLLECTOR AND MOMENT CONNECTIONS, MAY BE USED PROVIDED DESIGN CALCULATIONS PREPARED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MAINE ARE SUBMITTED FOR REVIEW. DESIGN ALTERNATE CONNECTIONS FOR THE FACTORED REACTIONS INDICATED.
15. 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".
16. SUBMIT INSPECTION REPORTS TO THE OWNER WITHIN 48 HOURS OF COMPLETION. SUBMIT WELDING INSPECTION REPORTS TO THE OWNER WITHIN 48 HOURS OF COMPLETION.
17. COORDINATE CONNECTION OF LIGHTNING PROTECTION SYSTEM TO STRUCTURAL STEEL WITH LIGHTNING PROTECTION SYSTEM DESIGN.
18. PROVIDE SUPPLEMENTAL FRAMING AT ROOF DRAINS AND SUMPS AS SPECIFIED.

STEEL JOISTS

1. CONFORM TO THE REQUIREMENTS OF THE STEEL JOIST INSTITUTE (SJI) STANDARD SPECIFICATIONS AND INSTALLATION REQUIREMENTS. ERECT STEEL JOISTS IN ACCORDANCE WITH SJI PRINTED INSTRUCTIONS.
2. PROVIDE A ROW OF HORIZONTAL UPLIFT BRIDGING AT THE FIRST CHORD PANEL POINT FOR ROOF JOISTS AS INDICATED.
3. DESIGN ROOF JOISTS FOR A NET WIND UPLIFT USING DEAD LOADS INDICATED ON SHEET S-002 AND WIND PRESSURES INDICATED ON SHEET S-004.
4. DESIGN NON-STANDARD LONG SPAN STEEL JOISTS FOR THE LOADS INDICATED FOR THE LOAD COMBINATIONS OF IBC 2009/ASCE 7-05. SUBMIT DESIGN CALCULATIONS PREPARED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF MAINE.

STEEL DECK

1. 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 FLOOR DECK WITH 3/4" WELDS ON A 36/4 PATTERN WITH (3) 5/8" WELDS PER SPAN (STITCH CONNECTION.) FASTEN ROOF DECK AS INDICATED ON DIAPHRAGM PLAN ON SHEET SF601.

   STEEL ROOF DECK = NON-CELLULAR, GRADE C.

   MINIMUM DEPTH = 1-1/2" (MINIMUM DESIGN THICKNESS: 0.0474 IN (18 GAUGE))
   MINIMUM SECTION MODULUS = Sp = 0.297 IN^3
   MINIMUM SECTION MODULUS = Sn = 0.519 IN^3
   MINIMUM MOMENT OF INERTIA = Ix = 0.535 IN^4

   ACOUSTICAL STEEL ROOF DECK = CELLULAR, GRADE C.

   MINIMUM DEPTH = 3" (MINIMUM DESIGN THICKNESS: 0.0474 IN (TOP AND BOTTOM PLATES)(18 GAUGE))
   MINIMUM SECTION MODULUS = Sp = 0.913 IN^3
   MINIMUM SECTION MODULUS = Sn = 1.315 IN^3
   MINIMUM MOMENT OF INERTIA = Ix = 2.308 IN^4

   ACOUSTIC LONG SPAN STEEL ROOF DECK = NON-CELLULAR GRADE C.

   MINIMUM DEPTH = 6" (MINIMUM DESIGN THICKNESS: 0.0677 IN (14 GAUGE))
   MINIMUM SECTION MODULUS = Sp = 2.46 IN^3
   MINIMUM SECTION MODULUS = Sn = 2.54 IN^3
   MINIMUM MOMENT OF INERTIA = Ix = 9.56 IN^4

   STEEL COMPOSITE DECK = NON-CELLULAR, GRADE 33.

   MINIMUM DEPTH = 2" (MINIMUM DESIGN THICKNESS: 0.0474 IN (18 GAUGE))
   MINIMUM SECTION MODULUS = Sp = 0.518 IN^3
   MINIMUM SECTION MODULUS = Sn = 0.519 IN^3
   MINIMUM MOMENT OF INERTIA = Ix = 0.535 IN^4

2. PROVIDE CONCRETE POUR STOPS/CLOSURE ANGLES AT EDGES OF SLABS. SEE POUR STOP SCHEDULE ON THIS SHEET FOR POUR STOP SIZE AND MAXIMUM OVER HANG DISTANCE.

COLD-FORMED STEEL

1. COLD-FORMED METAL FRAMING: GALVANIZED STEEL ASTM A653/A653M, GRADE 33 FOR TRACKS (Fy=33 KSI) G90 COATING.
   GRADE 50 FOR STUDS: (Fy=50 KSI) G90 COATING.
2. PNEUMATIC FASTENING OF COLD-FORMED FRAMING IS NOT PERMITTED.
3. SECTION PROPERTIES FOR FLOOR JOISTS, WALL STUDS, TRACKS, HEADERS, AND SOFFIT FRAMING SHALL BE AS REQUIRED BY STRUCTURAL PERFORMANCE.
4. 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. DESIGN COLD-FORMED CURTAIN WALLS FOR THE COMPONENT AND CLADDING WIND PRESSURES INDICATED ON SHEET S-003.
5. LIMIT MAXIMUM PERMITTED WIND LOAD DEFLECTION OF EXTERIOR WALLS TO L/360 AT METAL PANEL SYSTEM AND L/600 AT BRICK VENEER.
6. EXTERIOR WALL DEFLECTION TRACK SHALL ALLOW FOR 1-1/2" OF DEFLECTION AT THE FLOOR AND ROOF LEVELS.
7. 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.
8. REFER TO DETAIL 1/SF507 FOR FLOOR BEAM FLANGE BRACING AT EXTERIOR WALLS AND DETAIL 1/SF501 (SIMILAR) FOR ROOF BEAM FLANGE BRACING AT EXTERIOR WALLS.

WOOD

1. WOOD FRAMING AND FASTENERS TO BE IN ACCORDANCE WITH THE 2009 INTERNATIONAL BUILDING CODE AND THE AMERICAN FOREST AND PAPER ASSOCIATION NATIONAL DESIGN SPECIFICATION (2005)(AFPA NDS).
2. EACH PIECE OF LUMBER SHALL BE "S-DRY" AND BEAR THE GRADE STAMP OF A GRADING RULES AGENCY APPROVED BY THE PS-20 "AMERICAN SOFTWOOD LUMBER STANDARDS COMMITTEE".
3. MINIMUM STRUCTURAL PROPERTIES OF WOOD FRAMING ARE AS FOLLOWS:
   WALL STUD FRAMING, ROOF FRAMING AND HEADERS:
   SPRUCE-PINE-FIR NO. 2 OR BETTER WITH MINIMUM DESIGN VALUES:
   Fb=875 PSI, Fv=135 PSI, Ft=450 PSI, Fc =1,150 PSI AND E=1,400,00 PSI.
4. PROVIDE NAILING (OTHER THAN SHEAR WALLS) IN ACCORDANCE WITH TABLE 2304.9.1 OF THE 2009 INTERNATIONAL BUILDING CODE UNLESS NOTED OTHERWISE.
5. CONNECTION HARDWARE TO HAVE MINIMUM ALLOWABLE CAPACITIES AS INDICATED. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS. DESIGN BASED ON SIMPSON STRONG TIE PRODUCTS. ALTERNATE DESIGNS THAT MEET OR EXCEED THE REQUIRED DESIGN CAPACITIES ARE PERMITTED.
6. BOLT HEADS AND NUTS BEARING ON WOOD TO HAVE STANDARD CUT WASHERS. DRILL BOLT HOLES 1/32-INCH IN DIAMETER LARGER THAN BOLT DIAMETER.

STRUCTURAL GLUED LAMINATED TIMBER

1. PROVIDE STRUCTURAL GLUED LAMINATED TIMBER IN ACCORDANCE WITH AITC A190.1, AITC 110 AND AITC 117.
2. PROTECT STRUCTURAL GLUED LAMINATED TIMBER IN ACCORDANCE WITH AITC 111. REMOVE AND REPLACE DAMAGED FRAMING AT THE CONTRACTOR'S EXPENSE.
3. MINIMUM DESIGN VALUES:
   VISUALLY GRADED SOUTHERN PINE (NO "WANE" PERMITTED).
   GRADE = 24F-V3.
   BALANCED LAYUP REQUIRED.
   MODULUS OF ELASTICITY = 1,800,000 PSI.
   Fb_l = 2,400 PSI (4 OR MORE LAMINATIONS).
   Fb_c = 2,000 PSI (4 OR MORE LAMINATIONS).
   Fv = 300 PSI (4 OR MORE LAMINATIONS).

MASONRY

1. CONFORM TO ACI 530-05/ASCE 5-05/TMS 402-05.
2. CONCRETE MASONRY UNITS: ASTM C90, TYPE 1, NORMAL WEIGHT.
   MORTAR: ASTM C270.
   GROUT: ASTM C476 FINE.
   DEFORMED REINFORCEMENT: ASTM A615/A615M, GRADE 60.
3. CONCRETE MASONRY ASSEMBLIES TO HAVE THE FOLLOWING MINIMUM COMPRESSIVE STRENGTH: F'm=2500 PSI.
4. SUBMIT SPECIFIED PRE-CONSTRUCTION TESTS TO THE STRUCTURAL ENGINEER OF RECORD/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.
5. PERFORM DAILY MASONRY INSPECTIONS AS SPECIFIED. SUBMIT DAILY MASONRY INSPECTION REPORTS TO THE STRUCTURAL ENGINEER OF RECORD/OWNER WITHIN 24 HOURS AFTER DAY OF INSPECTION. MASONRY CONSTRUCTED WITHOUT THE COMPLETION OF DAILY MASONRY INSPECTIONS WIL NOT BE ACCEPTED AND WILL BE REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE OWNER.
6. REINFORCE CONCRETE MASONRY WALLS AND PARTITIONS AS INDICATED WITH CELLS GROUTED SOLID, UNLESS NOTED OTHERWISE.
7. DO NO MAKE HOLES OR PENETRATIONS THROUGH CMU BOND BEAMS.
8. LAP SPLICE REINFORCING AS INDICATED ON FOUNDATION DETAILS AND MASONRY WALL ELEVATION SHEETS.
9. BRACE REINFORCED CMU PARTITION WALLS AT FLOOR/ROOF AS INDICATED. SEE DETAIL 15/SF501.

POST INSTALLED ANCHORS

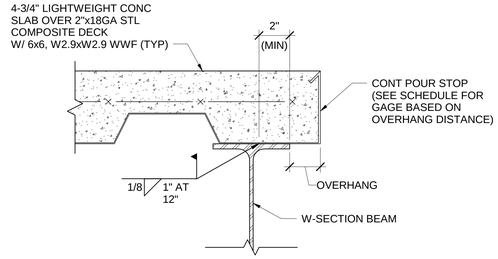
1. INSTALL POST INSTALLED ANCHORS IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS. BASIS OF DESIGN ARE HILTI PRODUCTS.
2. 1/2" DIAMETER ANCHORS/EXPANSION BOLTS SHALL HAVE THE FOLLOWING MINIMUM ALLOWABLE CAPACITIES:
   a. SHEAR = 2,375 LBS.
   b. TENSION = 905 LBS.

GENERAL NOTES

1. PROVIDE TEMPORARY SUPPORT OF FRAMING DURING CONSTRUCTION TO PREVENT FAILURE AND DAMAGE.
2. COORDINATE THE LOCATION OF CONCRETE AND STEEL MEMBERS WITH ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING, FIRE PROTECTION, SECURITY, COMMUNICATIONS, AND ELECTRICAL PLANS AND DETAILS.
3. REQUIRED TESTS AND INSPECTIONS ARE TO BE COMPLETED AND SUBMITTED TO THE OWNER PRIOR TO ACCEPTANCE OF COMPLETED WORK. MATERIAL PLACED WITHOUT THE REQUIRED CONTRACTOR QUALITY CONTROL TESTS OR REQUIRED INSPECTIONS BEING PERFORMED WILL NOT BE ACCEPTED.
4. CONSTRUCTION IS SUBJECT TO SPECIAL INSPECTIONS IN ACCORDANCE WITH CHAPTER 17 OF IBC 2009. NOTIFY THE OWNER OF IDENTIFIED DEFICIENCIES. NOTIFY THE OWNER AFTER DEFICIENCIES HAVE BEEN CORRECTED.
5. NO DEVIATIONS IN CONTRACT DRAWINGS ARE PERMITTED.
6. ASSUME FULL RESPONSIBILITY FOR CHANGES IN FOUNDATION OR FRAMING PLANS AND DETAILS UNLESS APPROVED IN WRITING BY THE OWNER.
7. REFER TO CIVIL DRAWINGS REGARDING INFORMATION AND LIMITATIONS PERTINENT TO SITE SUBSURFACE SOIL CONDITIONS.

POUR STOP SCHEDULE	
OVERHANG (IN)	GAGE
0-1	20
2-3	18
4-5	16
6-7	14
8-9	12
10-12	10

NOTES:
1. SEE DETAIL 1/S-001.



1 TYP POUR STOP DETAIL
S-001 SCALE: 3" = 1'-0"

REINFORCED CONCRETE REINFORCING STEEL LAP SPLICE SCHEDULE	
BAR SIZE	MINIMUM LAP LENGTH
#4	2'-5"
#5	3'-0"
#6	3'-0"

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 CONRETE CAST BELOW.

GRAPHIC SCALE
3"=1'-0" 6" 4" 2" 0 6"
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
		REVISIONS	
		DATE 03/17/17	

STATE OF MAINE — DAVID N. MARTIN No. 6622 — LICENSED PROFESSIONAL ENGINEER

DRAWN BY: MJC
CHECK BY: DNM

STATE OF MAINE
PUBLIC SCHOOL PROJECT
TITLE: PORTLAND PUBLIC SCHOOLS
NEW FRED P. HALL ELEMENTARY SCHOOL
LOCATION: 23 ORONO ROAD, PORTLAND, ME
TITLE THIS DWG: STRUCTURAL NOTES

OAK POINT ASSOCIATES
231 Main Street, Biddeford, Maine 04005 207.283.0193

DRAWING NO. S-001
SHEET NO. 64 OF 312

3/17/2017 2:21:30 PM
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