NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL

65 NORTH SCHOOL STREET
MANCHESTER, CT

Architect's Project No. 2014-108B

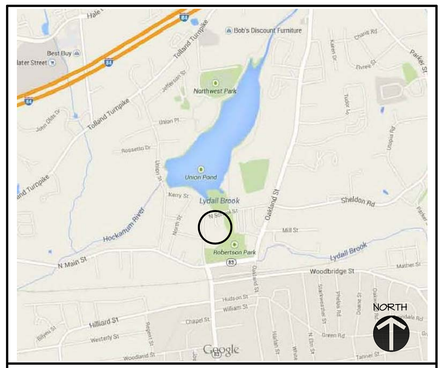
ISSUED FOR BID
APRIL 8, 2015

SUPERINTENDENT OF SCHOOLS
MATTHEW GEARY

ARCHITECT
FRIAR ASSOCIATES INC.
281 FARMINGTON AVENUE
FARMINGTON, CONNECTICUT 06032

MECHANICAL / ELECTRICAL ENGINEER
FRIAR ASSOCIATES II, LLC
281 FARMINGTON AVENUE
FARMINGTON, CONNECTICUT 06032

INDEX OF DRAWINGS



SITE LOCATION MAP

SET NUMBER

ELECTRICAL MOUNTING HEIGHTS

ALL MOUNTING HEIGHTS TO BE COORDINATED WITH BLOCK COURSING AS OCCURS. CONSULT ARCHITECT IF EXISTING CONDITIONS DIFFER

ALL DIMENSIONS ARE TO THE CENTER OF THE DEVICE UNLESS OTHERWISE NOTED.
SEE ELECTRICAL DRAWINGS FOR TYPES AND LOCATIONS.

RECEPTACLES: 18" A.F.F. (AT LOCATIONS ABOVE CASEWORK, MOUNT BOTTOM OF RECEPTACLE AT 2" ABOVE BACKSPLASH.
AT LOCATIONS BELOW CASEWORK, MOUNT AT 24" A.F.F.)

WIREMOLD: 24" A.F.F. (AT LOCATIONS ABOVE CASEWORK, MOUNT BOTTOM OF WIREMOLD AT 2" ABOVE BACKSPLASH)

EXTERIOR RECEPTACLES: 24" A.F.G. (20" A.F.F.)

SWITCHES: 48" A.F.F.

BOILER EMERGENCY SWITCHES : 60" A.F.F.

DATA / PHONE OUTLETS: 18" A.F.F.

TV OUTLETS: 18" A.F.F. OR 18" BELOW FINISHED CEILING*
* FIELD VERIFY CEILING HEIGHTS WITH COORDINATION DRAWINGS

WALL PHONE: 48" A.F.F. TO CENTER OF EARPIECE

SECURITY KEYPAD: 48" A.F.F.

MICROPHONE WALL JACK : 18" A.F.F.

FIRE ALARM PULL STATION: 48" A.F.F.

FIRE ALARM VISUAL/AUDIO INDICATING UNITS: 6'-8" TO BOTTOM OF UNIT

AREA OF REFUGE CALL STATION: 48" A.F.F.

EMERGENCY SHUT-OFF SWITCH / PUSH BUTTON: 48" A.F.F.

EMERGENCY CALL SWITCH: 36" A.F.F.

EMERGENCY CALL BELL / LIGHT: +/- 7'-6" A.F.F., CENTER ABOVE DOOR

WALL MOUNTED EXIT SIGNS: 7'-6" A.F.F.

CONSTRUCTION NOTES

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL NATIONAL, STATE AND LOCAL CODES AND ORDINANCES.
2. DO NOT SCALE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CLARIFICATION OF DIMENSIONS FROM THE ARCHITECT BEFORE CONTINUING WITH CONSTRUCTION.
3. CONTRACT DRAWINGS MAY VARY FROM ACTUAL FIELD CONDITIONS. CONTRACTOR SHALL CORRECT DIMENSIONS OF ALL MATERIALS TO CARRY OUT THE INTENT OF THE CONTRACT DRAWINGS. VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS IN FIELD BEFORE ORDERING ANY MATERIALS. CONTRACTOR SHALL NOTIFY ARCHITECT PROMPTLY OF ANY CRITICAL DISCREPANCIES BEFORE PROCEEDING WITH WORK.
4. ALL NEW WORK SHALL BE IMPLEMENTED SO AS TO PROVIDE A SMOOTH AND CONTINUOUS SURFACE WITH ALL EXISTING CONDITIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK NECESSARY TO ACHIEVE THIS REQUIREMENT, EVEN THOUGH PROCEDURES ARE NOT DETAILED FOR EACH SPECIFIC CONDITION OR COMBINATION OF CONDITIONS. QUALITY OF WORKMANSHIP, MATERIALS AND FINISHES SHALL BE EQUAL TO THE LEVEL ESTABLISHED FOR SIMILAR CONSTRUCTION, EXCEPT WHERE EXISTING APPEARANCE IS TO BE MATCHED TO ACHIEVE CONTINUITY.
5. CUTTING AND PATCHING SHALL BE THE RESPONSIBILITY OF THE TRADE WHOSE WORK RESULTS IN THE NEED FOR CUTTING AND PATCHING UNLESS A SPECIFIC CONTRACTOR IS CALLED OUT ON THE DRAWINGS. ALL HOLES LEFT BY REMOVING MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT, ETC. SHALL BE PATCHED.
6. UNLESS OTHERWISE NOTED OR DIMENSIONED, NEW PARTITIONS SHALL BE CENTERED ON BUILDING COLUMN GRID OR WINDOW MULLIONS.
7. CONTRACTOR SHALL PROVIDE WOOD BLOCKING AT WALLS AS REQUIRED TO SUPPORT SHELVES, CABINETS TV BRACKETS AND RELATED ITEMS.
8. WHERE REQUIRED, SEISMIC BRACING SHALL BE PROVIDED AT SUSPENDED CEILINGS.
9. ALL EGRESS DOORS SHALL BE NON-LOCKING IN DIRECTION OF TRAVEL.
10. ALL PARTITIONS ARE TO EXTEND TO UNDERSIDE OF DECK ABOVE.

DEMOLITION NOTES

1. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL NATIONAL, STATE, LOCAL CODES & ORDINANCES
2. THE PLANS ARE DIAGRAMMATIC AND INTENDED TO SHOW THE GENERAL EXTENT OF THE WORK ONLY. THE CONTRACTOR SHALL INCLUDE ALL DEMOLITION WORK REQUIRED TO ACCOMPLISH THE INTENT OF THE PLANS AND SPECIFICATIONS.
3. ALL DEMOLISHED ITEMS SHALL BE REMOVED FROM BUILDING / SITE UNLESS OTHERWISE NOTED. COORDINATE WITH OWNER FOR DELIVERY OF ITEMS NOTED TO REMAIN OWNERS PROPERTY. THE PROJECT SITE/ BUILDING SHALL BE CLEANED OF DEBRIS ON A DAILY BASIS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING AND SUPPORT (TEMPORARY OR PERMANENT) FOR ALL PORTIONS OF CONSTRUCTION DURING DEMOLITION AND CONSTRUCTION.
5. ALL ABANDONED MECHANICAL / ELECTRICAL / PLUMBING LINES SHALL BE CAPPED OFF BEHIND FINISHES, UNLESS OTHERWISE NOTED. REFER TO MECHANICAL / ELECTRICAL / PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION.
6. CONTRACTOR SHALL SAWCUT ALL MASONRY OR CONCRETE OPENINGS INDICATED. MASONRY SHALL BE TOOTHED IN AND / OR RETURNED TO FINISHED OPENING
7. ALL OPENINGS WHERE EXISTING CONSTRUCTION HAS BEEN REMOVED, AND WHICH ARE NOT NOTED TO REMAIN, SHALL BE FILLED AND / OR PATCHED TO MATCH THE ADJACENT EXISTING OR NEW FINISH, INCLUDING ANY FIRE RATINGS REQUIRED.
8. ALL AREAS OF FLOORS, WALLS AND CEILINGS DISTURBED BY DEMOLITION SHALL BE FILLED, PATCHED OR OTHERWISE REFINISHED TO MATCH EXISTING OR NEW FINISH AS DESIGNATED, INCLUDING ALL REQUIRED RATINGS.
9. CONTRACTOR MUST VERIFY LOCATIONS OF ALL EXISTING STRUCTURAL, MECHANICAL, PLUMBING & ELECTRICAL ELEMENTS PRIOR TO START OF DEMOLITION.

ARCHITECTURAL SYMBOLS

BUILDING SECTION — SECTION NUMBER / SHEET NUMBER

WALL SECTION — SECTION NUMBER / SHEET NUMBER

COLUMN CENTERLINE — NUMBERS - (VERT.) / LETTERS - (HORIZ.)

DETAIL DESIGNATION, PLAN DETAIL, LARGE SCALE PLANS — DETAIL NUMBER / SHEET NUMBER

INTERIOR ELEVATIONS — ELEVATION NUMBER / SHEET NUMBER

CASEWORK ELEVATIONS — ELEVATION NUMBER

CEILING DESIGNATION — CEILING TYPE (LETTER) / CEILING HEIGHT (NUMBER)

ROOM NUMBER — NUMBER

DOOR NUMBER — NUMBER/TYPE

WINDOW DESIGNATION — LETTER/TYPE

DEMOLITION TAG — NUMBER

WALL TYPES — NUMBER

REVISION NUMBER — NUMBER

DATUM / ELEVATION / LEVEL LINE

EXISTING CONSTRUCTION TO REMAIN

NEW STUD CONSTRUCTION

NEW CONCRETE BLOCK

SOFFITS / OVERHANG ABOVE

ACCESSIBLE ELEMENT

ARCHITECTURAL MATERIALS

ACOUSTICAL TILE
BATT INSULATION
BITUMINOUS
C.M.U.
CONCRETE
EARTH
GRAVEL
GYPSUM BOARD
PLYWOOD (SMALL)
RIGID INSULATION
ROUGH WOOD (CONTINUOUS)
ROUGH WOOD (INTERRUPTED)

ELEVATIONS

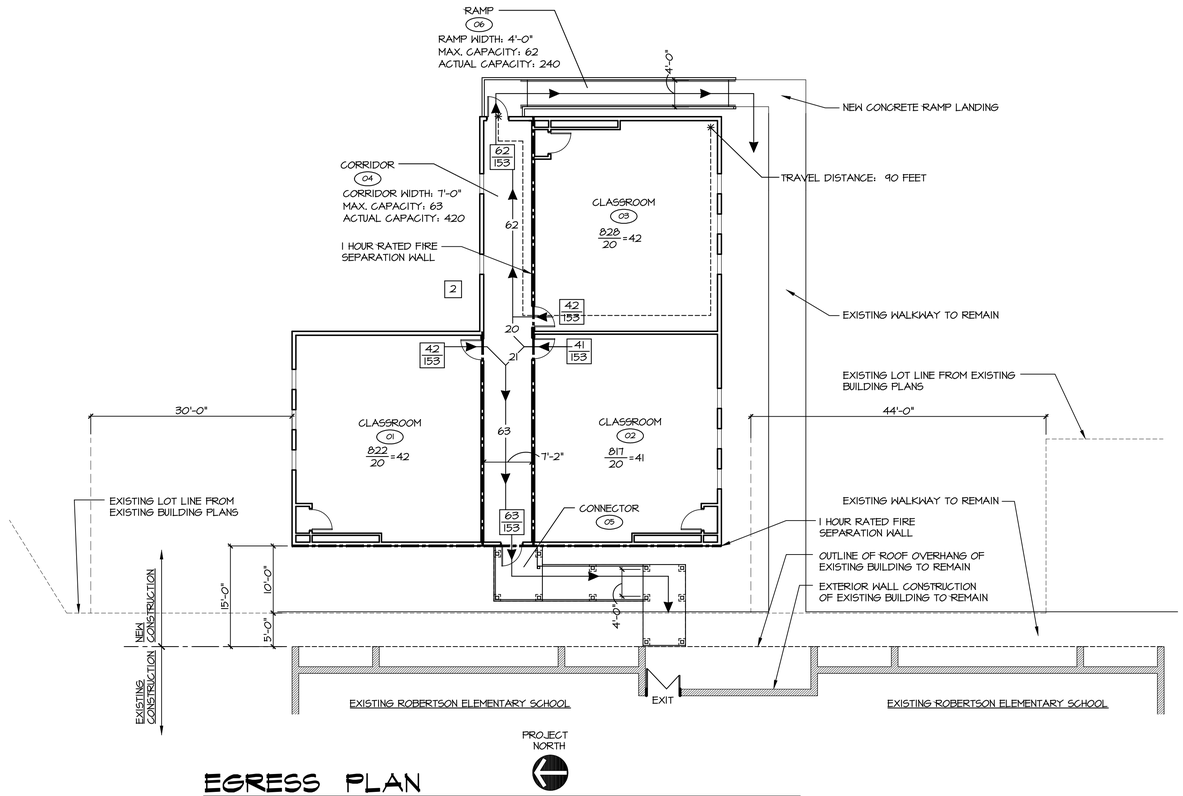
BRICK
CONCRETE BLOCK
CERAMIC TILE
GLASS
SHINGLES

GENERAL NOTES

1.) DIMENSION CRITERIA

A. FROM FACE OF METAL STUD TO FACE OF METAL STUD.
B. FROM FACE OF METAL STUD TO FACE OF CONCRETE MASONRY UNIT.
C. FROM FACE OF CONCRETE MASONRY UNIT TO FACE OF CONCRETE MASONRY UNIT.

2.) REFER TO FLOOR PLAN SHEET A1.1 FOR WALL TYPES.



EGRESS PLAN

SCALE: 3/32"=1'-0"

SMOKE STOPPING:
INSTALL SMOKE STOPPING AT ALL NEW CORRIDOR WALLS TOP & BOTTOM & AT ALL PENETRATIONS, TYPICAL. THE BASIS OF DESIGN: PRODUCT - CP 506 AS MANUFACTURED BY HILTI, INC.

1-HOUR RATED FIRE STOPPING SYSTEM - UL SYSTEM NO. W-L-1054
METAL PIPE THROUGH GYPSUM WALL ASSEMBLY. INSTALL AT 1- HOUR RATED WALL ASSEMBLY, TYPICAL. THE BASIS OF DESIGN: PRODUCT - FS-ONE OR CP 606 AS MANUFACTURED BY HILTI, INC. FOR 1 HOUR RATED WALL

1-HOUR RATED WALL OPENING PROTECTIVE MATERIALS:
THE BASIS OF DESIGN: PRODUCT CP 617 FIRESTOP PUTTY PADS AS MANUFACTURED BY HILTI, INC. FOR 1 HOUR RATED WALL

EGRESS PLAN LEGEND

101 — ROOM NUMBER

ROOM OCCUPANCY LOAD
125 / 20 = 7 — AREA IN SQUARE FEET / OCCUPANCY LOAD FACTOR

EXIT CAPACITY
342 / 342 — ACTUAL EGRESS OCCUPANCY OF DOOR OR STAIR / MAXIMUM ALLOWABLE EGRESS OCCUPANCY OF DOOR OR STAIR

15 — DIRECTION OF TRAVEL WITH ACCUMULATED OCCUPANCY LOAD

MAXIMUM TRAVEL DISTANCE FROM FURTHEST POINT

1 HOUR RATED WALL (TIGHT TO DECK ABOVE)

2 HOUR FIRE WALL (TIGHT TO DECK ABOVE)

SMOKE PARTITION (TIGHT TO DECK ABOVE)

NOTES:

1. A VALUE OF 0.2 INCHES OF WIDTH PER OCCUPANT HAS BEEN USED TO CALCULATE DOOR AND CORRIDOR EGRESS CAPACITY. IN ALL CASES, THE ACTUAL CLEAR OPENING OF THE DOOR AND ACTUAL CLEAR WIDTH OF CORRIDOR IS USED.
2. A VALUE OF 0.3 INCHES OF WIDTH PER OCCUPANT HAS BEEN USED TO CALCULATE STAIRWAY EGRESS CAPACITY. IN ALL CASES, THE ACTUAL CLEAR WIDTH BETWEEN HAND-RAILS IS USED.

CODE INFORMATION

Date of Original Construction: 1969 — Addition: 2015

1. GROUP CLASSIFICATION
   (Primary) / (Incidental): E - EDUCATIONAL / -
2. CONSTRUCTION TYPE (Chapter 6)
   Minimum Type Required: 5B
   Actual Type Provided: (existing) 5B / (new) -
3. BUILDING HEIGHT (Chapter 5)
   Allowable Height (story/feet): 1 STORY - 20'
   Actual Height (story/feet): 1 STORY - 15'
   (Stories Above Grade): 1
4. BUILDING AREA (Chapter 5)
   (Portable Addition)
   Total New Construction: 3,200 s.f.
8. FIRE-RESISTANCE RATED REQUIREMENTS FOR BUILDING ELEMENTS (Table 601)
   1) Structural Frame: including columns, girders, trusses: 0 Hr(s)
   2) Bearing Walls: Exterior: 0 Hr(s) / Interior: 0 Hr(s)
   3) Nonbearing walls and partitions (Exterior): see Table 602
   4) Nonbearing walls and partitions (Interior): 0 Hr(s)
   5) Floor Construction (Including supporting beams and joists): 0 Hr(s)
   6) Roof Construction, (Including supporting beams and joists): 0 Hr(s)
9. OCCUPANCY LOAD
   Design Total for Portable Addition: 125
   Total Exit Capacity for Portable Addition: 306
11. ACCESSIBLE BUILDING: X Designated / ___ Non-designated
13. SPRINKLER PROTECTION: NONE Entire Building / NONE Limited Area
14. CODES TO WHICH THIS PROJECT WAS DESIGNED

	Dated:
State Building Code w/Supplement	2005
State Fire Code w/Supplement	2005
State Health Code	2002 w/current amendment
OSHA	Current
Section 504	1973 w/current amendment
ADA	2010
Other	-

15. THRESHOLD BUILDING CONDITIONS: ___ Yes X No

Plotted on Recycled Paper

DATE: 03/31/15
DRAWN BY: PEH
SCALE: AS NOTED
REVIEWED BY: RMR
PROJECT NO.: 14-108B
R1 Reference / Code

REVISIONS

NO.	DATE	DESCRIPTION

Code Info, Reference & Egress Plan

ARCHITECT'S PROJECT NO. 2014-108B
NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL
65 NORTH SCHOOL STREET
MANCHESTER, CT

FRIAR ASSOCIATES INC.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.
R1.1

DEMO NOTES

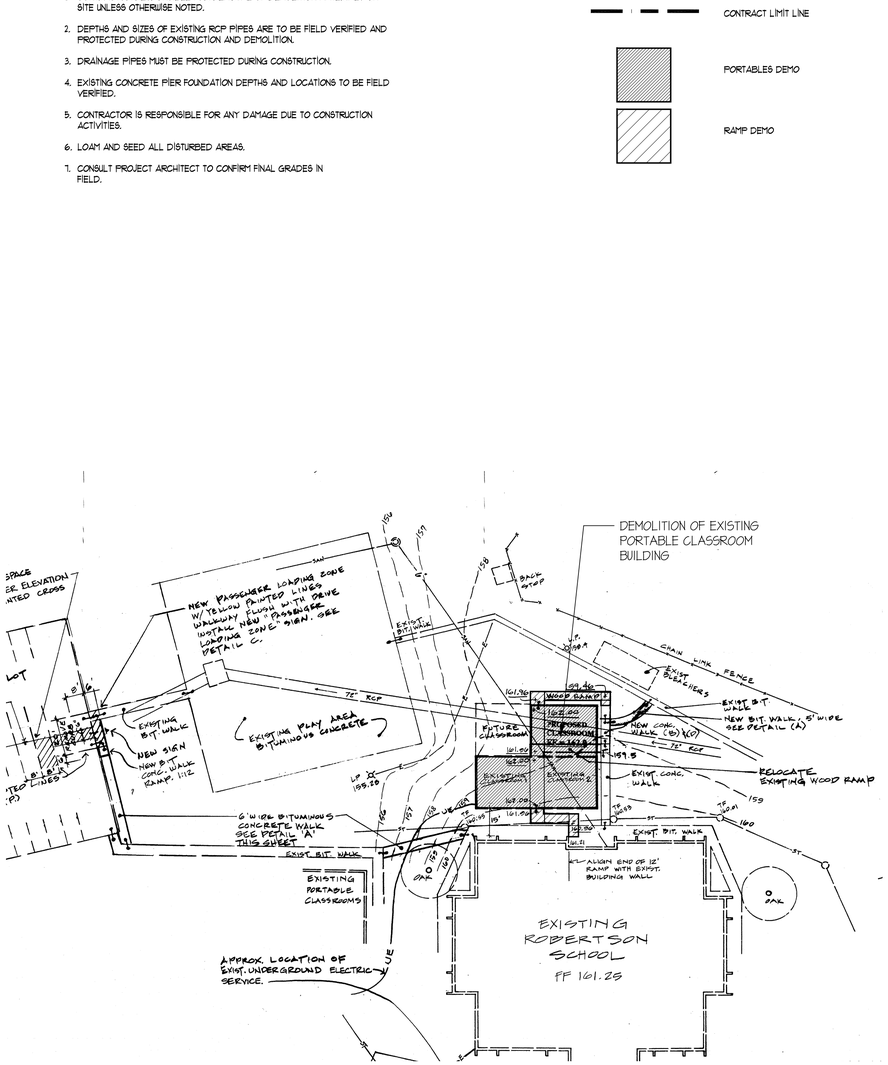
1. CONTRACTOR RESPONSIBLE FOR REMOVAL OF DEMOLITION MATERIALS OFF SITE UNLESS OTHERWISE NOTED.
2. DEPTHS AND SIZES OF EXISTING RCP PIPES ARE TO BE FIELD VERIFIED AND PROTECTED DURING CONSTRUCTION AND DEMOLITION.
3. DRAINAGE PIPES MUST BE PROTECTED DURING CONSTRUCTION.
4. EXISTING CONCRETE PIER FOUNDATION DEPTHS AND LOCATIONS TO BE FIELD VERIFIED.
5. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DUE TO CONSTRUCTION ACTIVITIES.
6. LOAM AND SEED ALL DISTURBED AREAS.
7. CONSULT PROJECT ARCHITECT TO CONFIRM FINAL GRADES IN FIELD.

LEGEND

CONTRACT LIMIT LINE

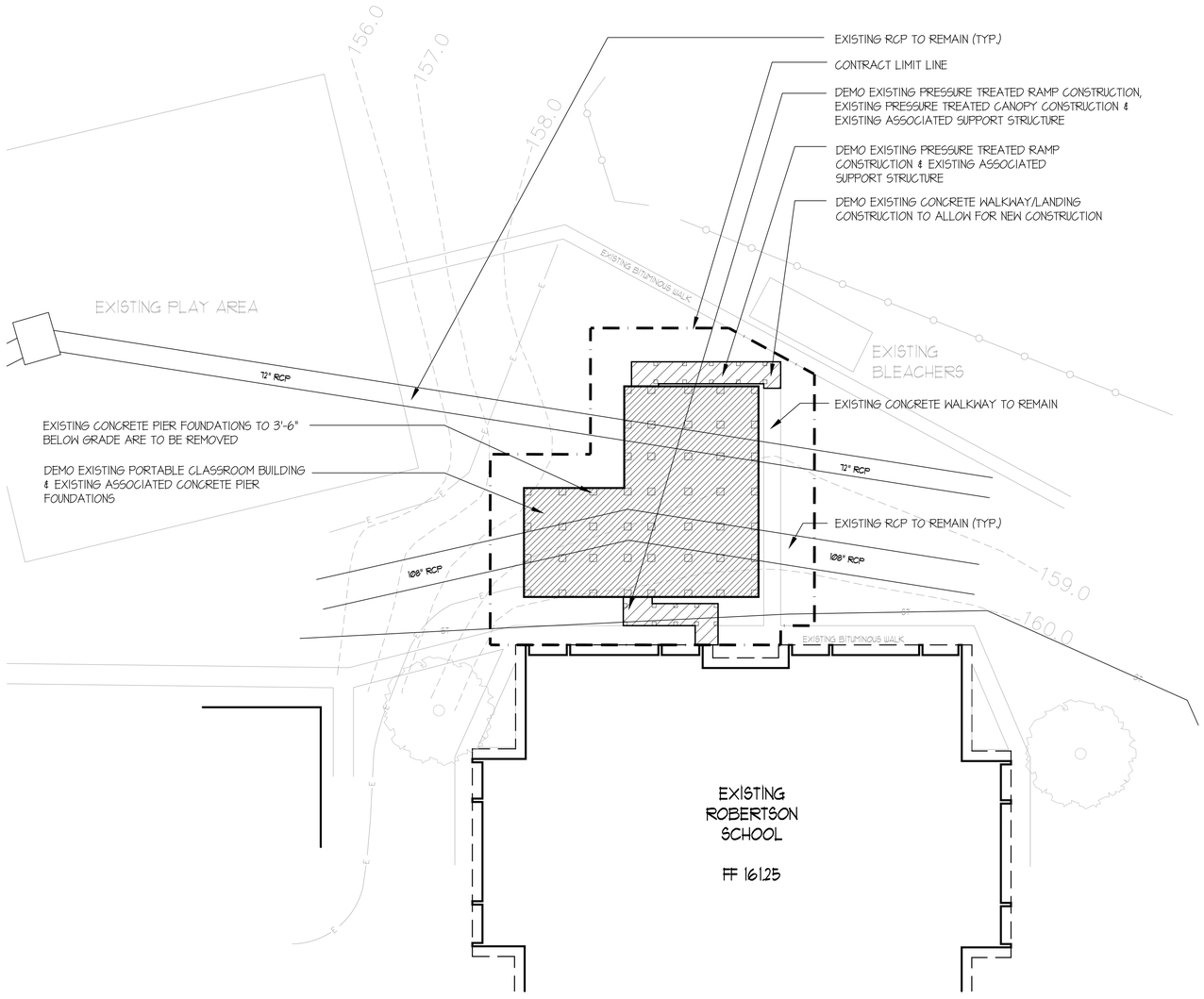
PORTABLES DEMO

RAMP DEMO



2 OVERALL SITE DEMO PLAN

SCALE: 1" = 30'



1 SITE DEMOLITION PLAN

SCALE: 1" = 20'

NORTH

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 3.31.2015
DRAWN BY: LRC
SCALE: AS NOTED
REVIEWED BY: RMR
PROJECT NO. 14-1028
(L1.1) SITE DEMO

SITE DEMOLITION PLAN

PLAN

ARCHITECT'S PROJECT NO. 2014-1088
NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL
65 NORTH SCHOOL STREET
MANCHESTER, CT

FRIAR ASSOCIATES INC.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.

L1.1

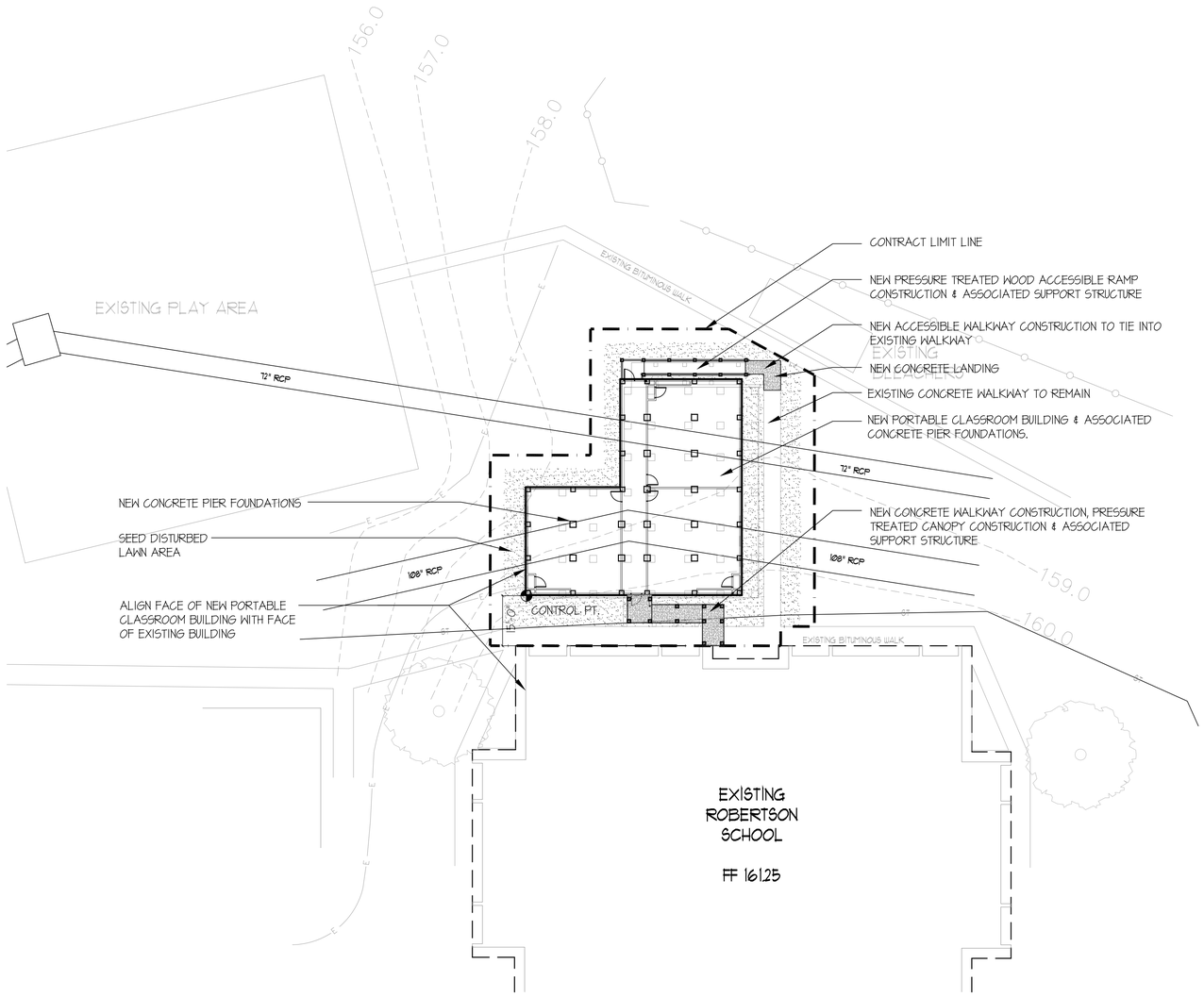
LAYOUT NOTES

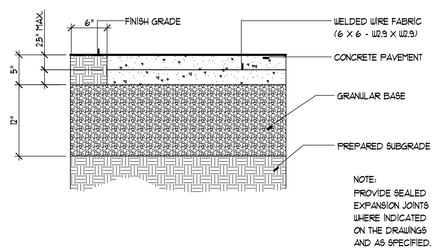
1. CONCRETE PIER FOUNDATIONS MUST BE LOCATED A MINIMUM OF 5' FROM THE EXISTING PIPES.
2. DEPTHS AND SIZES OF EXISTING RCP PIPES ARE TO BE FIELD VERIFIED AND PROTECTED DURING CONSTRUCTION. WHERE POSSIBLE, LOCATE NEW CONCRETE PIER FOUNDATIONS 5'-0" FROM EXISTING RCP'S.

LEGEND

PROPOSED SEEDED LAWN

CONTRACT LIMIT LINE





2 CONCRETE WALK
SCALE: 1"=1'-0"

1 SITE LAYOUT
SCALE: 1" = 20'

NORTH

REVISIONS		
NO.	DATE	DESCRIPTION

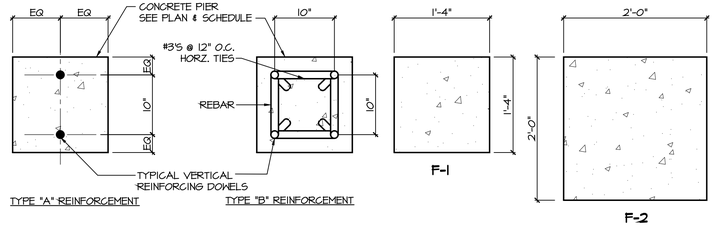
DATE: 3.31.2015
DRAWN BY: LRC
SCALE: AS NOTED
REVIEWED BY: RDMR
PROJECT NO. 14-1028
(L2.1) SITE LAYOUT

SITE LAYOUT PLAN

ARCHITECT'S PROJECT NO. 2014-1028
NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL
65 NORTH SCHOOL STREET
MANCHESTER, CT

FRIAR ASSOCIATES INC.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.
L2.1

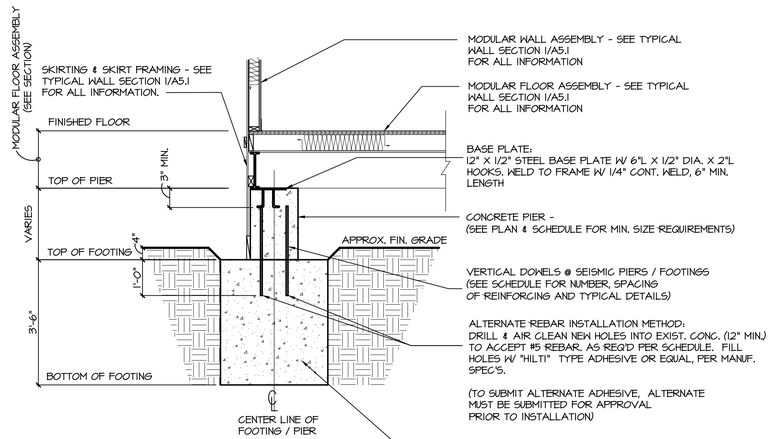


3 REBAR CAGE DETAILS

SCALE: 1"=1'-0"

4 TYP. PIER DETAILS

SCALE: 1"=1'-0"



2 TYPICAL PIER & FOOTING SECTION

SCALE: 1/2"=1'-0"

GENERAL NOTES :

LOADS

1. Design Live Loads: See "Design Data"

EXCAVATION & BACKFILL

1. Footings shall rest on inorganic undisturbed soil or compacted gravel backfill.
2. All fill and backfill inside the foundation must be approved gravel compacted to 95% optimum density.
3. No backfill shall be placed against any foundation wall until walls are properly braced or floors are erected & anchored in place.
4. Maximum assumed soil bearing capacity: 4000 lbs/sq ft. (to be verified by a Soils Engineer).

POURED IN PLACE CONCRETE

1. All concrete is to have a minimum 28 day compressive strength (f'c) as noted in "Structural Design Data".
2. Concrete coverage of reinforcing steel: 3" at bottoms of footings, 2" for other steel with soil contact, otherwise 1 1/2", except 3/4" for slabs.
3. Reinforcing steel shall be Grade 60, new billet steel, of intermediate or hard grade conforming to ASTM A-615.
4. Welded wire fabric shall conform to ASTM A-185. Fabric in slabs on grade shall be in the upper 1/3 of slab.
5. All continuous reinforcing bars shall lap 24 diameters unless noted otherwise. Vertical bars in columns and piers shall lap a minimum of 30 bar diameters.
6. Slab elevations are to tops of slabs. Slabs on grade shall be poured in panels not exceeding 1000 square feet having length to with ratio not exceeding 3.
7. The General Contractor shall install all anchors, pipe sleeves, inserts,etc. in concrete as required by the trades, and shall coordinate and verify the locations before proceeding with concrete work.
8. Key all construction joints with a beveled 2x4. Dowel all reinforcing a minimum of 24 diameters at joints, more if noted.
9. Piping, conduit, etc. passing through or embedded in concrete shall be placed strictly in accordance with ACI recommendations. Aluminum products shall not be placed in concrete.
10. All openings in concrete walls shall have 2 additional #5 rebars all around opening, extending 12" beyond opening.

STRUCTURAL STEEL

1. All structural steel shall be fabricated & erected in accordance with AISC type 2 construction, unless noted.
2. Connections shall be designed for not less than 10 kips for welded and 7 kips for bolted connections, but equal to the uniform load capacity as set forth in the AISC beam load tables.
3. All structural steel shall be as noted in "Structural Design Data".
4. No penetrations shall be made through any structural members unless shown on the structural drawings.

WOOD FRAMING

1. Structural lumber includes: roof joists, built-up header beams, stud walls, ties and blocking. Use new lumber conforming to nominal sizes indicated.
2. All Lumber support framing shall be Douglas Fir #2 or better, and have the following minimum strength properties:

Modulus of elasticity	E = 1600000 p.s.i.
Bending stress	Fb = 875 p.s.i.
Compression perpendicular to grain	Fc = 625 p.s.i.
Compression parallel to grain	Fc⊥ = 1300 p.s.i.
Horizontal shear	Fv = 95 p.s.i.
Tension parallel to grain	Ft = 575 p.s.i.

3. Panel Spacing: 1/16" at ends - 1/8" at edges U.O.N., stagger joints.
4. Structural plywood shall conform to requirements of American Plywood Assoc. (APA) Exposure.

REINFORCEMENT SCHEDULE - ONE STORY UNITS SEISMIC REQUIRED PIERS & FOOTINGS ONLY (*)				
SEISMIC REQUIRED PIER & FOOTING LOCATION (*)	PIER HEIGHT (MAXIMUM)	PIER SIZE	REINF. TYPE	VERTICAL PIER REINF.
EXTERIOR	1'6"	16" X 16"	"A"	2 - #5
	4'0"	16" X 16"	"B"	4 - #5
	6'6"	16" X 16"	"B"	4 - #5
INTERIOR	1'6"	24" X 24"	"A"	2 - #5
	4'0"	24" X 24"	"B"	4 - #5
	6'6"	24" X 24"	"B"	4 - #5

STRUCTURAL DESIGN DATA

DESIGN:

CONFORM TO THE 2003 BOCA NATIONAL BUILDING CODE AND CONNECTICUT 2003 SUPPLEMENT

FLOOR LIVE LOAD DESIGN:

CLASSROOMS:	40 PSF + 20 PSF PARTITION LOAD
CORRIDORS:	100 PSF

ROOF SNOW LOAD DESIGN:

GROUND SNOW LOAD :	Pg = 30 PSF
FLAT ROOF SNOW LOAD:	Pf = 30 PSF
SNOW EXPOSURE FACTOR:	Ce = 0.7
SNOW LOAD IMPORTANCE FACTOR:	I=1.0

WIND LOAD DESIGN:

BASIC WIND SPEED:	85 MPH
WIND IMPORTANCE FACTOR	(I) = 1.08
WIND EXPOSURE	"C"

SEISMIC DESIGN:

PEAK VELOCITY - RELATED ACCELERATION (Av) = 0.11
PEAK ACCELERATION (Aa): 0.14
SEISMIC HAZARD EXPOSURE GROUP: II
SEISMIC PERFORMANCE CATEGORY: C
SOIL PROFILE (S): 1.5 (ASSUMED)
BASIC STRUCTURAL SYSYTEM: LOADBEARING WALL
SEISMIC-RESISTING SYSTEM: LIGHT-FRAMED WALLS WITH SHEAR PANELS
RESPONSE MODIFICATION FACTOR (R): 6 1/2
DEFLECTION AMPLIFICATION FACTOR (Cd): 4
ANALYSIS PROCEDURE: EQUIVALENT LATERAL FORCE PROCEDURE

SOIL BEARING CAPACITY

ALLOWABLE SOIL BEARING CAPACITY = 4,000 PSF (ASSUMED)

ALLOWABLE STRESSES

CONCRETE (NORMAL WEIGHT)
F'c= 3,000 PSI (28 DAYS) MIN. - FOOTINGS AND FOUNDATION WALLS.
F'c = 3,500 PSI (28 DAYS) MIN. - ALL INTERIOR SLABS
F'c = 4,000 PSI (28 DAYS) MIN. - ALL EXTERIOR SLABS

REINFORCING STEEL - ASTM A-615 GRADE 60 (Fy = 60,000 PSI)

STRUCTURAL STEEL - ASTM A-36 (Fy = 36,000 PSI) PLATES, ANGLES, MISC.
ASTM A-572 Grade 50 (Fy = 50,000 PSI) COLUMNS AND WIDE FLANGE BEAMS
ASTM A-500 Grade B (Fy = 46,000 PSI) TUBE SECTIONS
ASTM A-53 Grade B (Fy = 35,000 PSI) PIPE SECTIONS.

WOOD FRAMING - SEE "GENERAL NOTES".

"THE FOUNDATION DESIGN IS BASED ON A ASSUMED ALLOWABLE SOIL BEARING CAPACITY OF 4,000 POUNDS PER SQUARE FOOT. A SUBSURFACE EXPLORATION AND A GEOTECHNICAL REPORT ARE REQUIRED BEFORE COMMENCEMENT OF ANY REBAR SHOP DRAWINGS AND FOUNDATION RELATED WORK. ALL RECOMMENDATIONS MADE BY THE GEOTECHNICAL ENGINEER MUST BE INCLUDED DURING CONSTRUCTION. THE FINAL FOUNDATION DESIGN MUST BE STAMPED AND SIGNED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CONNECTICUT."

OPEN-WEB TRUSS JOISTS

1. Chord memebers shall be laminated veneer lumber (LVL) or machine stress rated (MSR) structural sawn dimensional lumber.
2. Web members shall be die stamped from electronically welded, cold rolled steel tubing having a minimum yield strength of 45,000 p.s.i.
3. Connecting pins and bearing shall be of material and size as required by design.
4. Materials shall comply with NES report No. NER-148 or ICBO ES report No. PFC-4354.

PREFABRICATED WOOD TRUSSES

1. Prefabricated wood trusses shall be fabricated to carry loads as shown.
2. Design and fabrication of wood trusses shall be in accordance with the State of Connecticut Basic Building code and applicable AITC Standards.
3. Furnish and install temporary and permanent truss bracing as required by applicable codes and standards.
4. Fabricator to submit shop drawings for review and approval prior to manufacture of trusses. They shall show all member sizes and connection details, and be signed and sealed by a liscensed professional engineer of the State of Connecticut.
5. Top and bottom chords of roof trusses shall have a minimum size of 2 x 6.

MICROLLAM (LVL)

1. Microllam laminated venneer lumber (LVL) shall be fabricated of Eastern Species (ES) or Western Species (WS). The finish product shall have the following minimum properties:

Shear modulus of elasticity	G = 118,750 p.s.i.
Modulus of elasticity	E = 1,900,000 p.s.i.
Flexural stress	Fb = 2600 p.s.i.
Compression perpendicular to grain parallel to glue line	Fc = 750 p.s.i.
Compression parallel to grain	Fc = 2310 p.s.i.
Horizontal shear perpendicular to glue line	Fv = 285 p.s.i.

2. Microllam manufacturer shall provide all metal hangers for microllam beams as required.

DIMENSIONS

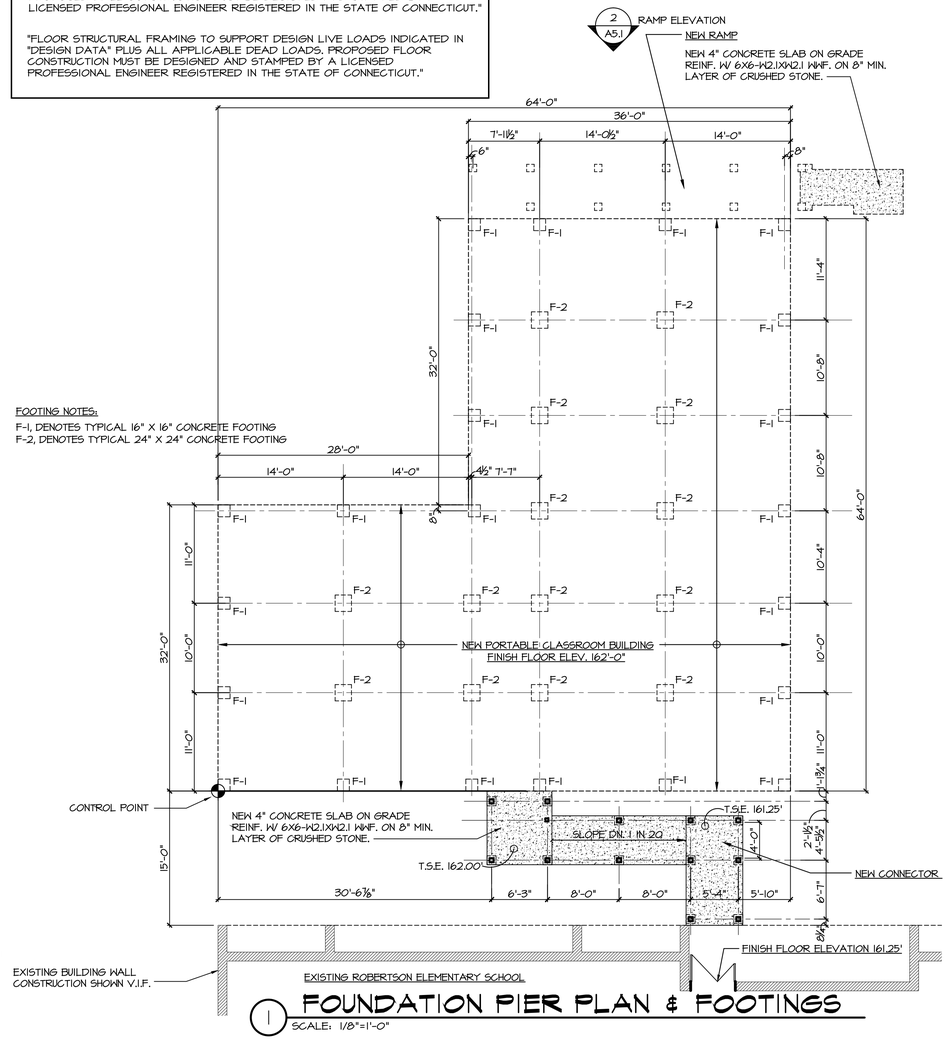
1. The General Contractor shall coordinate the dimensions and locations of the roof, floor, & wall openings so the framing properly fits the requirements of all trades.
2. The General Contractor shall field verify all dimensions related to the existing construction prior to beginning construction. Report all conflicts to the Architect immediately.

"BEARING WALLS MUST BE DESIGNED TO SUPPORT TRIBUTARY DEAD AND LIVE LOADS. SHEAR WALLS MUST BE DESIGNED TO RESIST TRIBUTARY WIND AND/OR SEISMIC LOADS. COMBINED BEARING AND SHEAR WALLS MUST BE DESIGNED TO SUPPORT THE TRIBUTARY COMBINATION OF GRAVITY AND LATERAL LOADS.

MAXIMUM WIND DESIGN PRESSURES ARE AS FOLLOWS:
WINDWARD DESIGN PRESSURE = +20.4 PSF
LEEWARD DESIGN PRESSURE = -14.5 PSF
SIDE WALL AND ROOF SUCTION DESIGN PRESSURE = -18.8 PSF
SEISMIC BASE SHEAR IS V=CSW. THE SEISMIC DESIGN COEFFICIENT (CS) = 0.054.
"W" INCLUDES THE FOLLOWING:
- ROOF AND FLOOR DEAD LOADS
- 0.20 X SNOW LOAD
- 10 PSF FOR FLOOR INTERIOR PARTITIONS
- TRIBUTARY LOADS FROM EXTERIOR WALLS
- OPERATING WEIGHT OF PERMANENT EQUIPMENT

PROPOSED WALL CONSTRUCTION MUST BE DESIGNED AND STAMPED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CONNECTICUT."

"FLOOR STRUCTURAL FRAMING TO SUPPORT DESIGN LIVE LOADS INDICATED IN "DESIGN DATA" PLUS ALL APPLICABLE DEAD LOADS. PROPOSED FLOOR CONSTRUCTION MUST BE DESIGNED AND STAMPED BY A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF CONNECTICUT."



1 FOUNDATION PIER PLAN & FOOTINGS

SCALE: 1/8"=1'-0"

FOOTING NOTES:

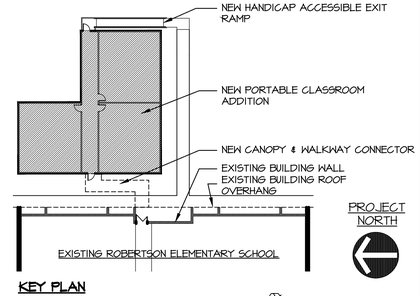
F-1, DENOTES TYPICAL 16" X 16" CONCRETE FOOTING
F-2, DENOTES TYPICAL 24" X 24" CONCRETE FOOTING

GENERAL NOTES:

1. CONCRETE SHALL BE AIR ENTRAINED & SHALL HAVE MIN. DESIGN STRENGTH OF 3000 PSI AT 28 DAYS.
2. ALL ACTUAL DIMENSIONS TO BE DETERMINED BY "ON SITE" CONDITIONS.
3. FOOTING SIZE INDICATED ARE BASED UPON 2 TON / SQ. FT. SOIL BEARING CAPACITY. SHOULD LESS SOIL CAPACITY BE ENCOUNTERED, FOOTING SIZE SHALL BE ADJUSTED ACCORDINGLY.

TYPICAL VERTICAL PIER DOWEL NOTES:

1. BAR TO EXTEND A MIN. OF 12" INTO FOOTING & A MIN. OF 3" FROM THE TOP OF THE PIER
2. ALL HORIZONTALLY PLACED CROSS MEMBERS TO BE 3/8" DIA. (#3 MIN.) REBAR @ 12" o.c. FROM BOTTOM OF VERTICAL DOWELS
3. ALL 6" HOOKS TO POINT TO THE CENTER OF THE PIERS



KEY PLAN

Plotted on Recycled Paper

DATE: 03/31/15
DRAWN BY: PEH
SCALE: AS NOTED
REVIEWED BY: RMR
PROJECT NO.:14-108B
A0.1 Foundation Plan

REVISIONS

NO.	DATE	DESCRIPTION

Foundation Plan, Details, Notes & Schedules

ARCHITECT'S PROJECT NO. 2014-108B

NEW PORTABLE CLASSROOMS

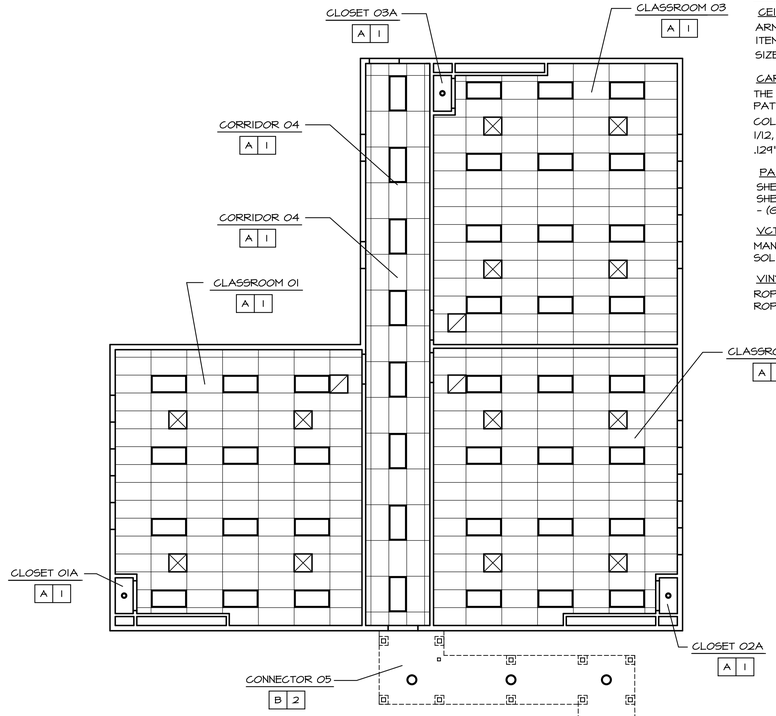
ROBERTSON ELEMENTARY SCHOOL

65 NORTH SCHOOL STREET
MANCHESTER, CT

FRIAR ASSOCIATES INC.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.

A0.1



2 REFLECTED CEILING PLAN

SCALE: 1/8"=1'-0"

CEILING PLAN LEGEND

CEILING SYMBOLS

LIGHTING FIXTURES. REFER TO ELECTRICAL DRAWINGS & SCHEDULES FOR SPECIFIC FIXTURE TYPES.

CEILING TYPE AND HEIGHT SYMBOL - REFER TO ADJACENT SCHEDULES

CEILING HEIGHT (NUMBER)

CEILING TYPE (LETTER)

NEW SUPPLY AND RETURN GRILLES. REFER TO MECHANICAL DRAWINGS FOR SPECIFIC INFORMATION.

GENERAL NOTES

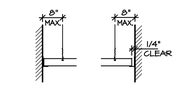
1. IN ALL AREAS OF SUSPENDED ACOUSTICAL CEILINGS, THE SPRINKLER LINES SHALL BE INSTALLED CONCEALED REFER TO FIRE PROTECTION DRAWINGS FOR SPRINKLER HEAD LOCATIONS AND RELATED INFORMATION.
2. REFER TO ELECTRICAL DRAWINGS FOR LIGHTING FIXTURE TYPES, REQUIRED WORK AND FOR OTHER CEILING MOUNTED EQUIPMENT NOT INDICATED ON THESE DRAWINGS.
3. REFER TO DETAILS 3/A1.1 FOR SEISMIC BRACING DETAILS FOR NEW SUSPENDED CEILINGS.
4. CUT CEILING TILES AS REQUIRED FOR INSTALLATION AROUND VENT PIPING, EXHAUST DUCTS, SPRINKLER HANGER RODS, CONDUIT, ETC.

CEILING HEIGHT SCHEDULE

1	8'-0"
2	7'-6" MIN.

CEILING TYPE SCHEDULE

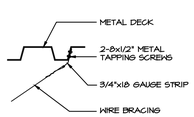
A	2x4 SUSPENDED ACOUSTICAL TILE
B	EXPOSED P.T. WOOD CANOPY STRUCTURE



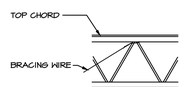
ATTACHED AT STARTING AND ONE ADJACENT WALL

CLEARANCE AT OPPOSITE WALLS (NOT ATTACHED)

RUNNERS AT WALLS

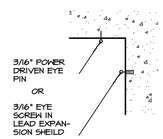


BRACE AT METAL DECK

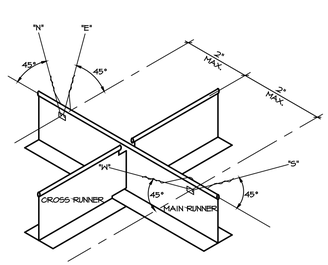


WRAP AND TIE WIRE AROUND TOPS OF WEB MEMBERS

BRACE @ OPEN WEB JOIST



BRACE @ EXISTING CONCRETE



NOTES:

1. #12 GAUGE WIRE BRACING IN PLANE OF EACH RUNNER. VERTICAL ANGLE = 45°
2. HANGER WIRES "N" AND "S" ARE IN THE SAME VERTICAL PLANE AS THE MAIN RUNNER. HANGER WIRES "E" AND "W" ARE IN THE VERTICAL PLANE PERPENDICULAR TO THE MAIN RUNNER.

3 TYPICAL SEISMIC BRACING DETAILS

SCALE: NOT TO SCALE

FINISH SCHEDULE:

CEILING TYPE: C-1

ARMSTRONG: FINE FISSURED SQUARE LAY-IN MEDIUM TEXTURE ITEM NO. 1714
SIZE: 2' X 4' X 3/4", CLASS A, GRID SYSTEM 15/16" PRELUDE XL

CARPET TYPE:

THE MOHAWK GROUP, BIGELOW COMMERCIAL CARPET, COLOR: TBD PATTERN: REVIVE MODULAR MT-135TBD, PILE : TEXTURED MULTI - COLORED LOOP, TILE SIZE 24" X 24", 10 YEAR WARRANTY, GAGE: 1/12, PILE WEIGHT: 22.9 OZ. / SQUARE YARD, PILE THICKNESS: .129" PER ASTM D 6859

PAINT TYPE:

SHERWIN WILLIAMS: LATEX PAINT - (GYP. BD. WALLS)
SHERWIN WILLIAMS: EPOXY PAINT / LOW VOC - (GYP BD.)

VCT TYPE:

MANNINGTON COMMERCIAL, SIZE - 12 X 12 STYLE: SOLID POINT COLOR: TBD

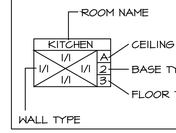
VINYL BASE TYPE:

ROPPE, 4" COVE BASE (VCT) - TYPE TS COLOR: TBD
ROPPE, 4" CARPET BASE - TYPE TS COLOR: TBD

ROOM FINISH LEGEND:

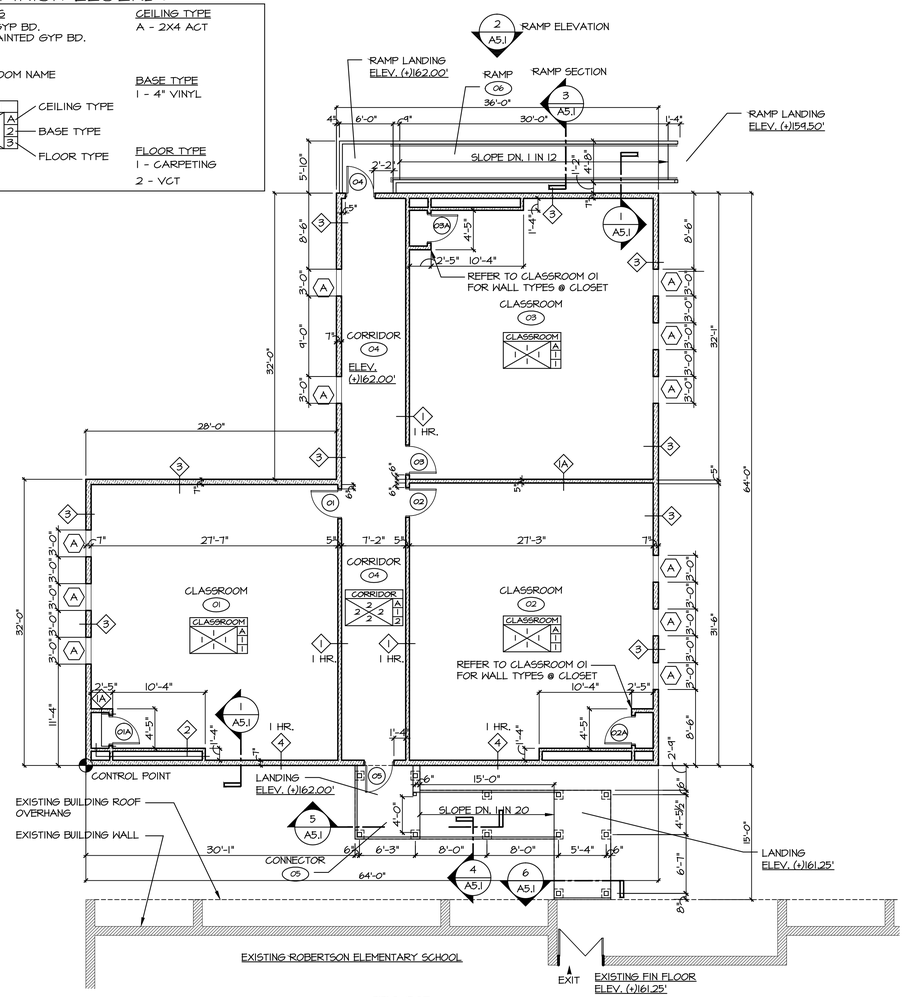
WALL FINISHES
1 - PAINTED GYP BD.
2 - EPOXY PAINTED GYP BD.

CEILING TYPE
A - 2X4 ACT



BASE TYPE
1 - 4" VINYL

FLOOR TYPE
1 - CARPETING
2 - VCT

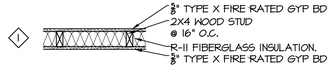


1 FLOOR PLAN

SCALE: 1/8"=1'-0"

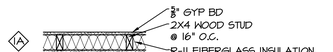
PROJECT NORTH

NEW WALL TYPES



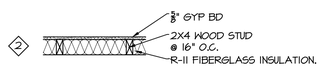
1 — TYPICAL 1 HOUR RATED INTERIOR WALL

- 5/8" TYPE X FIRE RATED GYP BD
- 2X4 WOOD STUD @ 16" O.C.
- R-11 FIBERGLASS INSULATION.
- 5/8" TYPE X FIRE RATED GYP BD



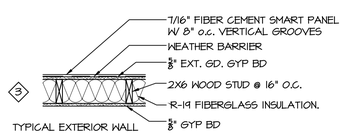
1A — TYPICAL INTERIOR WALL

- 5/8" GYP BD
- 2X4 WOOD STUD @ 16" O.C.
- R-11 FIBERGLASS INSULATION.
- 5/8" GYP BD



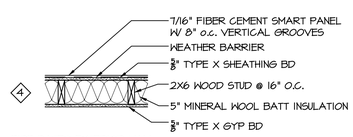
2 — TYPICAL INTERIOR CHASE WALL

- 5/8" GYP BD
- 2X4 WOOD STUD @ 16" O.C.
- R-11 FIBERGLASS INSULATION.



3 — TYPICAL EXTERIOR WALL

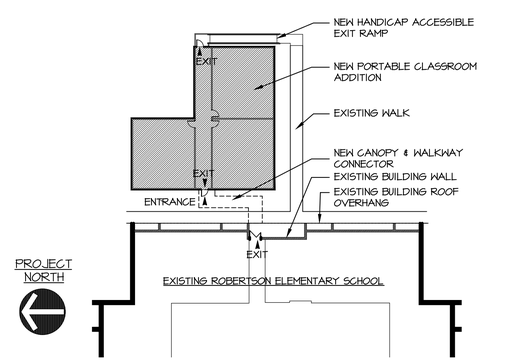
- 7/16" FIBER CEMENT SMART PANEL W/ 8" o.c. VERTICAL GROOVES
- WEATHER BARRIER
- 5/8" EXT. GD. GYP BD
- 2X6 WOOD STUD @ 16" O.C.
- R-19 FIBERGLASS INSULATION.
- 5/8" GYP BD



4 — FIRE RATED EXTERIOR WALL

- 7/16" FIBER CEMENT SMART PANEL W/ 8" o.c. VERTICAL GROOVES
- WEATHER BARRIER
- 5/8" TYPE X SHEATHING BD
- 2X6 WOOD STUD @ 16" O.C.
- 5" MINERAL WOOL BATT INSULATION
- 5/8" TYPE X GYP BD

FIRE WALL CONSTRUCTION:
1 HR. RATED U.L. DESIGN NO. U303



KEY PLAN

Plotted on Recycled Paper

DATE: 03/31/15
DRAWN BY: PEH
SCALE: AS NOTED
REVIEWED BY: RMR
PROJECT NO.2014-108B
A1.1 Floor Plan - RCP

REVISIONS

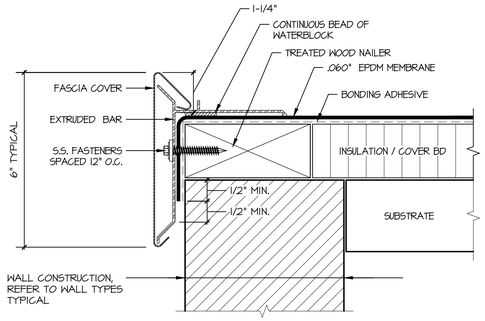
NO.	DATE	DESCRIPTION

Floor Plan, Reflected Ceiling Plan & Schedules

ARCHITECT'S PROJECT NO. 2014-108B
NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL
65 NORTH SCHOOL STREET
MANCHESTER, CT

FRIAR ASSOCIATES INC.
281 Farmington Avenue
Farmington, CT. 06032

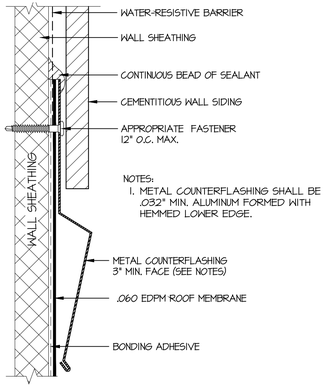
SHEET NO.
A1.1



WOOD NAILER MUST BE INSTALLED TO MEET APPLICABLE BUILDING CODES OR 200 LBS PER LINEAR FOOT MINIMUM IN ANY GIVEN DIRECTION.

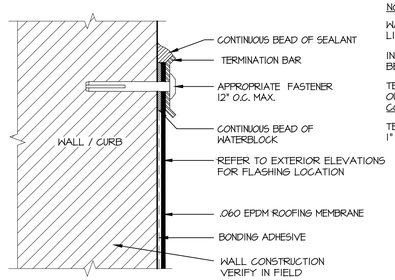
7 TYPICAL ROOF EDGE DETAIL

SCALE: N.T.S.



6 WALL FLASHING DETAIL @ SIDING

SCALE: NOT TO SCALE



NOTES:

WATER BLOCK APPLIED AT THE RATE OF 10 LINEAR FEET PER TUBE.

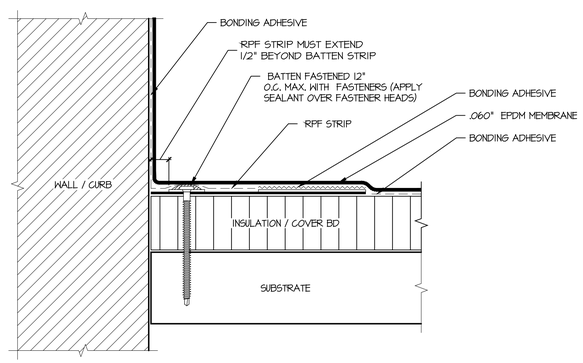
INSTALL TERMINATION BAR W/ 1/4" BETWEEN ADJOINING SECTIONS.

TERMINATION BAR MUST BE CUT AT INSIDE AND OUTSIDE CORNERS. DO NOT BEND AROUND CORNERS.

TERMINATION BAR MUST BE FASTENED WITHIN 1" MAX. OF ALL SECTION ENDS.

5 TYPICAL WALL FLASHING DETAIL

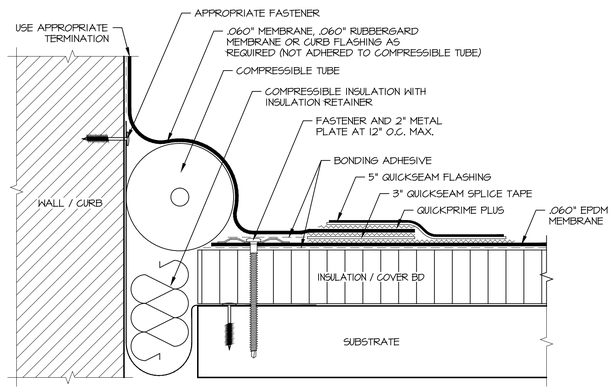
SCALE: NOT TO SCALE



4 TYPICAL ROOF/WALL FLASHING DETAIL

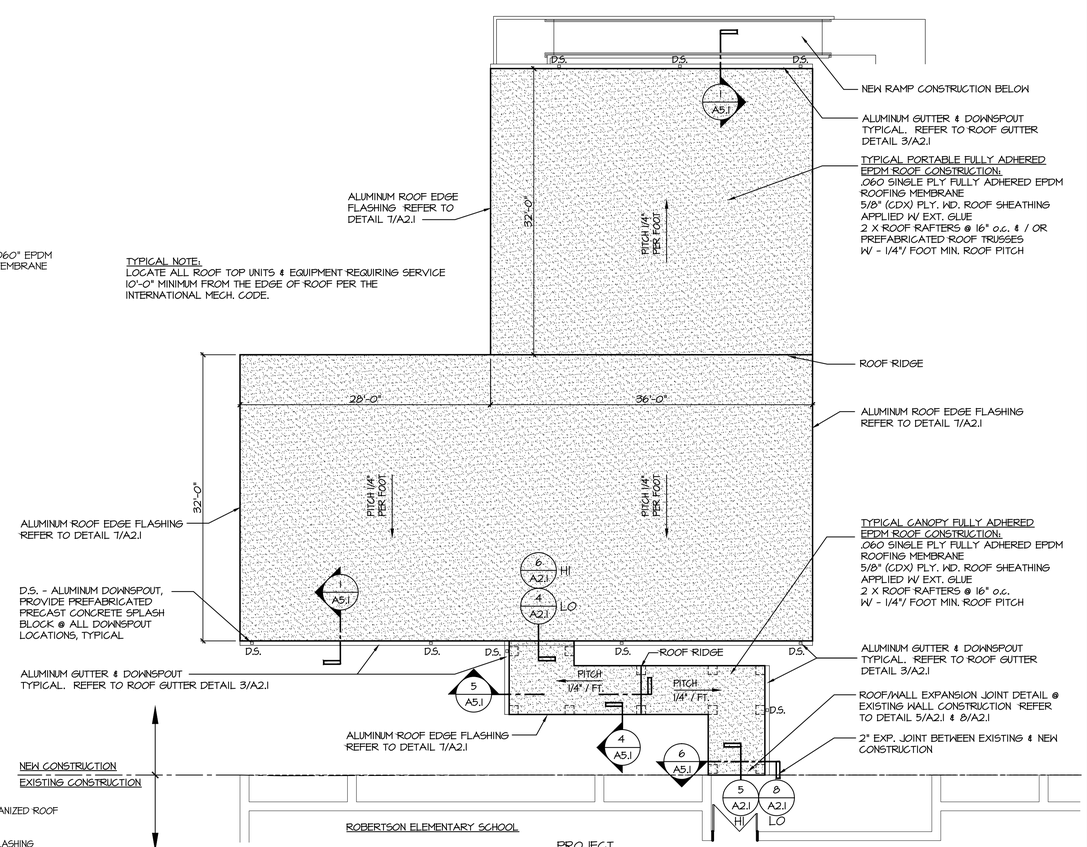
SCALE: NOT TO SCALE

NOTE: COMPRESSIBLE TUBE DIAMETER MUST EXCEED THE DECK OPENING BY 50% MIN. OR DESIGNED MOVEMENT (WHICHEVER IS GREATER).



8 ROOF/WALL EXPANSION JOINT

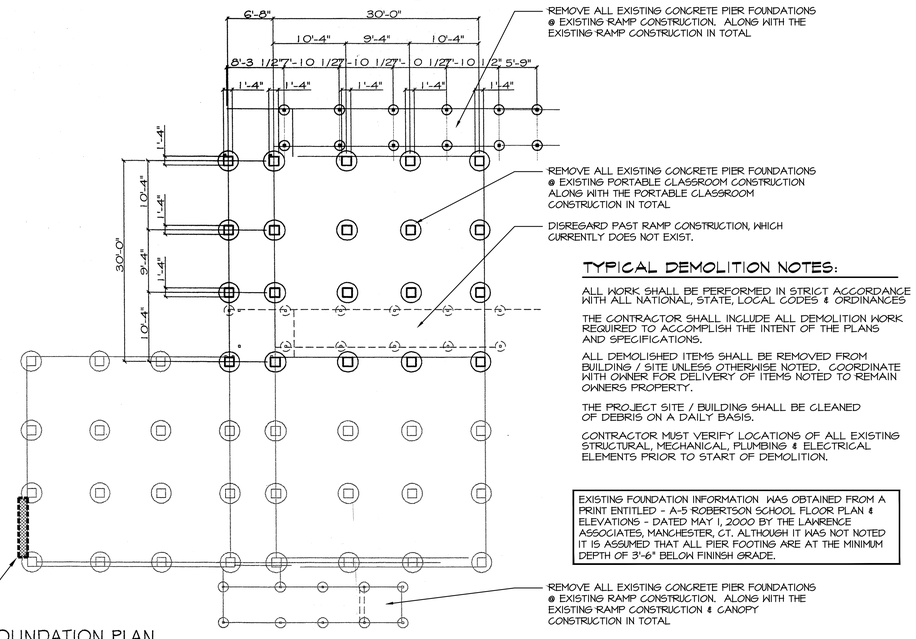
SCALE: NOT TO SCALE



1 ROOF PLAN

SCALE: 1/8"=1'-0"

PROJECT NORTH



TYPICAL DEMOLITION NOTES:

ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL NATIONAL, STATE, LOCAL CODES & ORDINANCES

THE CONTRACTOR SHALL INCLUDE ALL DEMOLITION WORK REQUIRED TO ACCOMPLISH THE INTENT OF THE PLANS AND SPECIFICATIONS.

ALL DEMOLISHED ITEMS SHALL BE REMOVED FROM BUILDING / SITE UNLESS OTHERWISE NOTED. COORDINATE WITH OWNER FOR DELIVERY OF ITEMS NOTED TO REMAIN OWNERS PROPERTY.

THE PROJECT SITE / BUILDING SHALL BE CLEANED OF DEBRIS ON A DAILY BASIS.

CONTRACTOR MUST VERIFY LOCATIONS OF ALL EXISTING STRUCTURAL, MECHANICAL, PLUMBING & ELECTRICAL ELEMENTS PRIOR TO START OF DEMOLITION.

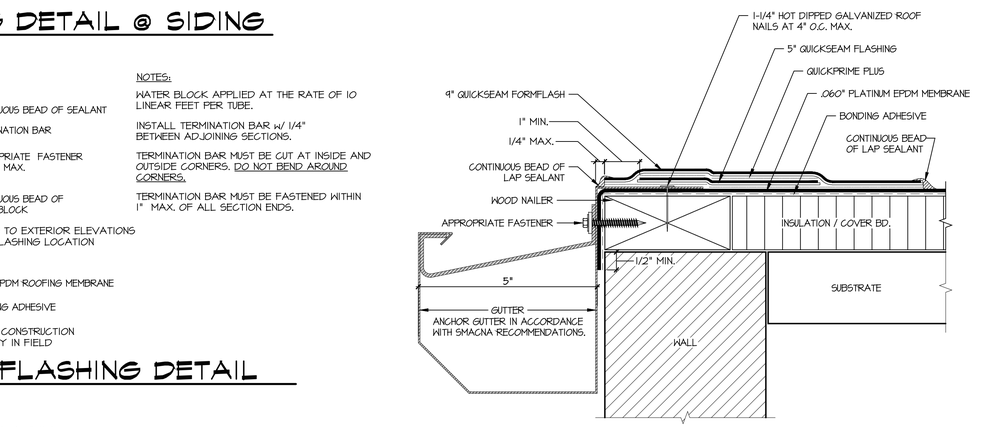
EXISTING FOUNDATION INFORMATION WAS OBTAINED FROM A PRINT ENTITLED - A-5 ROBERTSON SCHOOL FLOOR PLAN & ELEVATIONS - DATED MAY 1, 2000 BY THE LAWRENCE ASSOCIATES, MANCHESTER, CT. ALTHOUGH IT WAS NOT NOTED IT IS ASSUMED THAT ALL PIER FOOTING ARE AT THE MINIMUM DEPTH OF 3'-6" BELOW FININSH GRADE.

FOUNDATION PLAN

PROJECT NORTH

2 DEMOLITION PLAN

SCALE: 3/32"=1'-0"



3 TYPICAL ROOF GUTTER DETAIL

SCALE: 1/2"=1'-0"

ASBESTOS ABATEMENT NOTES:

IT IS BELIEVED THAT THE INTERIOR OF THIS BUILDING DO NOT CONTAIN ANY ASBESTOS CONTAINING MATERIAL (ACM). IT IS ASSUMED THAT THE ROOF FLASHING MATERIAL MAY CONTAIN ACM. PRIOR TO COMMENCEMENT OF CONSTRUCTION VIEW ALL DOCUMENTATION/REPORTS FROM THE TOWN OF MANCHESTER PERTAINING TO HAZARDOUS MATERIALS. DEMOLITION SHALL BE PERFORMED CAREFULLY AND SHALL INITIALLY BE LIMITED TO THE AMOUNT NECESSARY TO VISUALLY INSPECT CONCEALED AREAS IN ORDER TO ASCERTAIN WHETHER OR NOT ASBESTOS CONTAINING MATERIALS ARE PRESENT. IF ASBESTOS OR ANY OTHER HAZARDOUS MATERIALS ARE SUSPECTED DURING THE COURSE OF DEMOLITION, NOTIFY THE HAZMAT CONSULTANT/OWNER IMMEDIATELY.

THE EXISTING UNDERGROUND ELECTRICAL SERVICE, WHICH SERVES THE EXISTING PORTABLES TERMINATES IN THE SHADED AREA. VERIFY IN FIELD ALL EXISTING EQUIPMENT PRIOR TO DEMOLITION. DISCONNECT ALL SERVICE CONNECTIONS AND MAINTAIN ELECTRICAL EQUIPMENT FOR RECONNECTION ONCE THE NEW PORTABLE CLASSROOM BUILDING IS IN PLACE. RETAIN EXISTING 2 X WALL CONSTRUCTION IN THIS AREA THRU DEMOLITION & CONSTRUCTION TO MAINTAIN EXISTING ELECTRICAL EQUIPMENT, CONDUITS, & MAINTAIN SERVICES. REFER TO EXTERIOR ELEVATIONS FOR LOCATION & ELECTRICAL DRAWINGS FOR ELECTRICAL SCOPE OF WORK.

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 03/31/15
DRAWN BY: PEH
SCALE: AS NOTED
REVIEWED BY: RMR
PROJECT NO.: 14-108B
A2.1 Roof Plan/Details

Roof Plan, Demolition

Plan & Roof Details

ARCHITECT'S PROJECT NO. 2014-108B

NEW PORTABLE CLASSROOMS

ROBERTSON ELEMENTARY SCHOOL

65 NORTH SCHOOL STREET

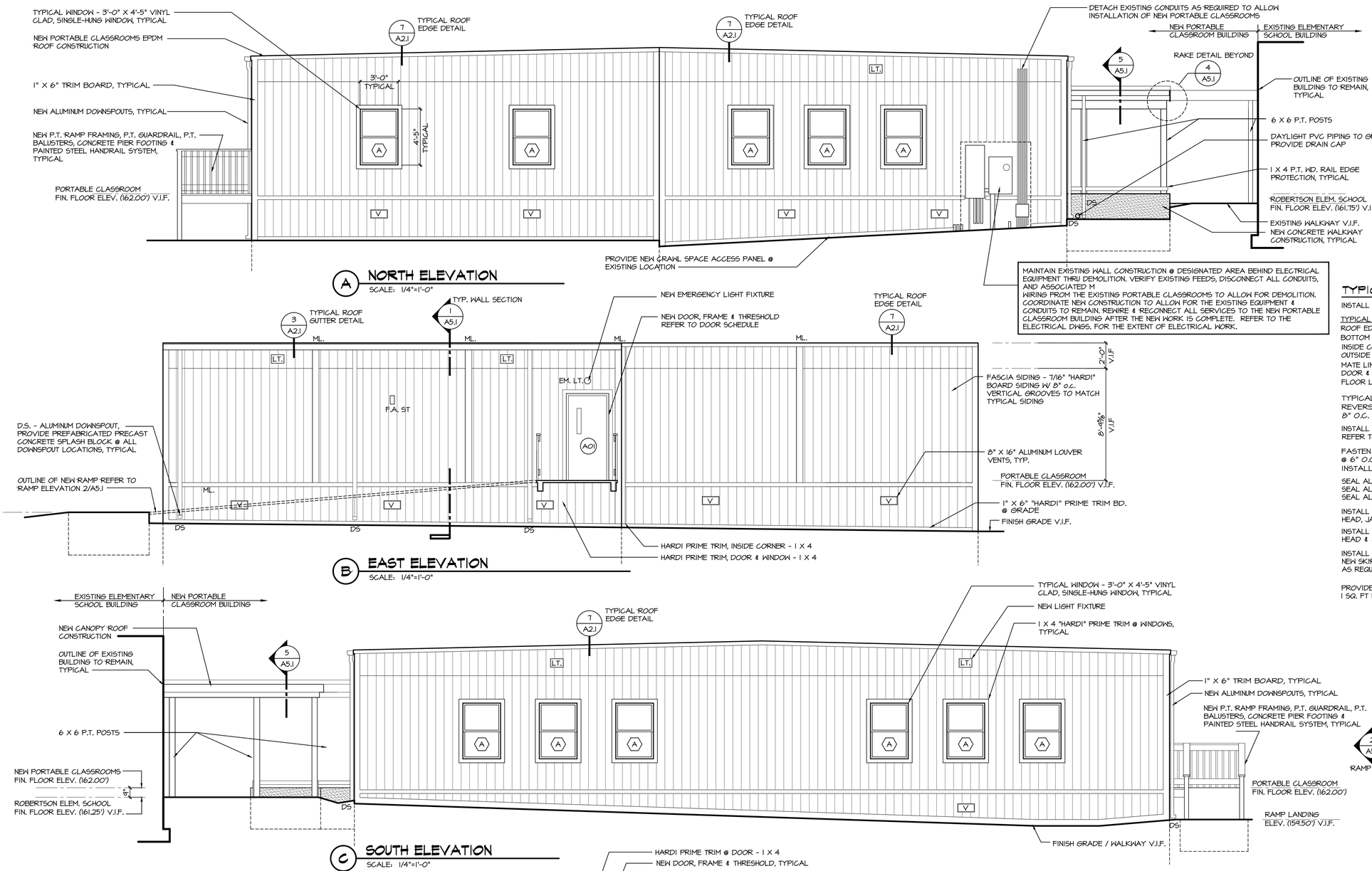
MANCHESTER, CT

FRIAR ASSOCIATES INC.

281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.

A2.1



LEGEND

LT. - EXTERIOR LIGHT FIXTURE

V - ALUM. VENT (PAINT TO MATCH SIDING)

DS - ALUM. DOWNSPOUT

F.A. ST - FIRE ALARM/STROBE LIGHT

EM. LT - EMERGENCY LIGHT FIXTURE

SEC. CAMERA - SECURITY CAMERA & ELECTRICAL CONNECTION

ML. - MATE LINE

TYPICAL NOTES:

INSTALL NEW SIDING & TRIM @ THE BUILDING'S EXTERIOR.

TYPICAL "HARDI" PRIME TRIM:
ROOF EDGE - 1 X 6
BOTTOM TRIM @ GRADE - 1 X 6
INSIDE CORNER - 1 X 4
OUTSIDE CORNER - 1 X 6
MATE LINES - 1 X 6
DOOR & WINDOW TRIM - 1 X 4
FLOOR LINE TRIM - 1 X 4

TYPICAL SIDING - 7/16" PRE-FINISHED HARDIBOARD SIDING W/ REVERSED BOARD & BATTEN PATTERN & 8" O.C. VERTICAL GROOVES.

INSTALL NEW BUILDING WRAP BEFORE INSTALLING NEW SIDING, REFER TO SIDING MANUFACTURER'S RECOMMENDATIONS

FASTEN TYPICAL SIDING WITH 8d x 2 1/2" COMMON NAILS @ 6" O.C. (EDGES) AND @ 6" O.C. (FIELD) INSTALLED PER MANUFACTURER'S SPECIFICATIONS

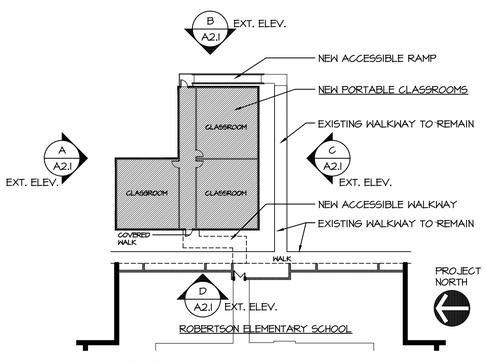
SEAL ALL JOINTS PER SIDING MANUFACTURER'S RECOMMENDATIONS, SEAL ALL JOINTS AT EXISTING WINDOWS SCHEDULED TO REMAIN, & SEAL ALL JOINTS AT ALL BUILDING PENETRATIONS, TYPICAL

INSTALL SIDING MANUFACTURER'S STANDARD METAL TRIM @ WINDOW HEAD, JAMB & SILL, TYPICAL.

INSTALL SIDING MANUFACTURER'S STANDARD METAL TRIM @ DOOR HEAD & JAMB, TYPICAL.

INSTALL 2 X BLOCKING & 2 X P.T. BLOCKING FOR INSTALLATION OF NEW SKIRTING, LIGHT FIXTURES, CAMERA, ACCESS DOOR & VENTING AS REQUIRED FOR COMPLETE INSTALLATION

PROVIDE CRAWL SPACE VENTILATION PER 2005 CT. SBC. 1 SQ. FT PER 300 SQ. FT.



KEY PLAN

DATE: 03/31/15
DRAWN BY: PEH
SCALE: AS NOTED
REVIEWED BY: RMR
PROJECT NO.2014-108B
A3.1 Exterior Elevations

REVISIONS

NO.	DATE	DESCRIPTION

Exterior Elevations

ARCHITECT'S PROJECT NO. 2014-108B
NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL
65 NORTH SCHOOL STREET
MANCHESTER, CT

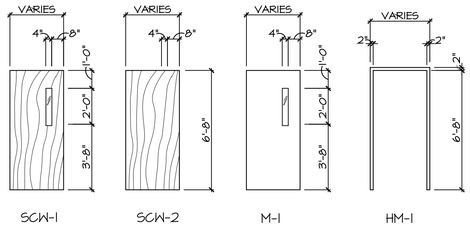
FRIAR ASSOCIATES INC.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.
A3.1

Plotted on Recycled Paper

DOOR AND FRAME SCHEDULE

DOOR NUMBER	NEW DOOR & FRAME	DOOR SIZE: DOOR WIDTH	DOOR SIZE: DOOR HEIGHT	DOOR: TYPE	FRAME: TYPE	FRAME: HEAD DETAIL	FRAME: JAMB DETAIL	FIRE RATING	THRESHOLD DETAIL	DOOR HARDWARE: PANIC RELEASE LATCH	DOOR HARDWARE: WEATHER STRIPPING	DOOR HARDWARE:	DOOR HARDWARE: AUTO CLOSER	DOOR HARDWARE: POSITIVE LATCHING	DOOR HARDWARE: DELAYED ACTION CLOSER	DOOR HARDWARE: LEVER HANDLES	DOOR HARDWARE: TACTILE WARNING	DOOR HARDWARE: 16" HIGH KICK PLATES	DOOR HARDWARE: ACCESSIBLE THRESHOLD	SIGNAGE TEXT: MOUNTING HEIGHT: 60" O.C. ABOVE FINISH FLOOR	SIGNAGE TYPES: REFER TO DETAIL 2/A4.1
01	●	3'-0"	6'-8"	SCW-1	HM-1	2-2X6	2-2X4	1 HR					●	●		●		●		CLASSROOM	2
01A	●	3'-0"	6'-8"	SCW-2	HM-1	2-2X6	2-2X4							●		●	●			CLOSET	2
02	●	3'-0"	6'-8"	SCW-1	HM-1	2-2X6	2-2X4	1 HR					●	●		●		●		CLASSROOM	2
02A	●	3'-0"	6'-8"	SCW-2	HM-1	2-2X6	2-2X4							●		●	●			CLOSET	2
03	●	3'-0"	6'-8"	SCW-1	HM-1	2-2X6	2-2X4	1 HR					●	●		●		●		CLASSROOM	2
03A	●	3'-0"	6'-8"	SCW-2	HM-1	2-2X6	2-2X4							●		●	●			CLOSET	2
04	●	3'-0"	6'-8"	M-1	HM-1	3-2X6	2-2X6	--	SEE NOTES	●	●		●	●		●		●	●		3, 4
05	●	3'-0"	6'-8"	M-1	HM-1	3-2X6	2-2X6	1 HR	SEE NOTES	●	●		●	●		●		●	●		3, 4



TYPICAL DOOR NOTES:

DOOR MANUFACTURER MUST PROVIDE SUFFICIENT REINFORCING FOR ALL DOOR HARDWARE.

INSTALLERS WILL MAKE ANY FINAL ADJUSTMENTS TO ASSURE THE SMOOTH OPERATION OF THE DOOR & DOOR HARDWARE

1 DOOR & FRAME SCHEDULE / ELEVATIONS

SCALE: NOT TO SCALE

EXTERIOR DOOR HARDWARE SET (M-3)

ITEM:	DESCRIPTION:	MANUFACTURER:
1 HINGE , CONTINUOUS GEARED	780-111HD / 112 HD- 85" - CLEAR - CONCEALED LEAF (VERIFY MODEL REQUIRED)	ROTON
EXIT DEVICE W/ LEVER EXIT TRIM	8888SL88F 32D RIM EXIT DEVICE PANIC BAR W/ EXIT TRIM	ARROW
1 CLOSER, OVERHEAD PARALLEL ARM	UNI - 7500 - 689 (P Stop @ 90 Degrees) (All Brackets & Supports for a Blade Stop Application)	NORTON
1 KICK PLATE	10" x 34" - 18 Ga - US32D	ROCKWOOD
1 GASKETING	588D - 36" x 86"	PEMKO
1 THRESHOLD	2005AT x 36"	PEMKO
1 WEATHERSTRIP	BY METAL DOOR SUPPLIER	
1 DOOR BOTTOM SWEEP	BY METAL DOOR SUPPLIER	

ADDITIONAL DOOR HARDWARE NOTES:

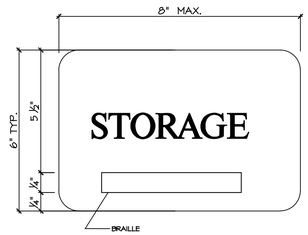
TYPICAL INTERIOR WOOD DOOR & H.M. FRAME - CLASSROOM DOORS 01, 02 & 03 (SCW-1):
36" X 80" IMPERIAL OAK SOLID CORE DOOR W/ (16 Ga.) STEEL DOOR JAMBS. DOOR LITE GLAZING - SAFETY GLASS. DOOR HARDWARE CLASSROOM FUNCTION LEVER SET , GRADE 2 W/ LCN CLOSER.

INTERIOR WOOD DOOR & H.M. FRAME - CCLOSET DOORS 01A, 02A, 03A (SCW-2):
36" X 80" IMPERIAL OAK SOLID CORE DOOR W/ (16 Ga.) STEEL DOOR JAMBS. DOOR HARDWARE CLOSET FUNCTION W/ LEVER SET, GRADE 2.

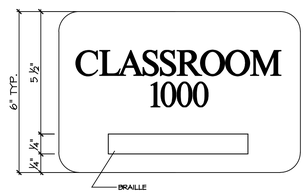
EXTERIOR EXIT DOOR & FRAME - DOOR 04 (M-2):
36" X 80" (18 Ga.) INSULATED STEEL DOOR W/ (16 Ga.) STEEL DOOR JAMBS. DOOR GLAZING - 1/2 LITE SAFETY GLAZED INSULATED GLASS. DOOR HARDWARE LCN CLOSER, LEVER HANDLE, PANIC HARDWARE, WEATHER STRIPPING & HANDICAP ACCESSIBLE THRESHOLD. REFER TO EXTERIOR DOOR HARDWARE SET ABOVE FOR ADDITIONAL INFORMATION

FIRE RATED EXTERIOR DOOR & FRAME - DOOR 05 (M-2):
36" X 80" (18 Ga.) INSULATED STEEL DOOR W/ (16 Ga.) STEEL DOOR JAMBS. 60 MIN. FIRE CORE DOOR. DOOR LITE GLAZING - FIRE RATED SAFETY GLASS. DOOR HARDWARE PANIC FUNCTION/LEVER SET , GRADE 2 W/ LCN CLOSER. REFER TO EXTERIOR DOOR HARDWARE SET ABOVE FOR EXIT DEVICE, LEVER SET, CLOSER, KICK PLATE, THRESHOLD & CONTINUOUS HINGE.

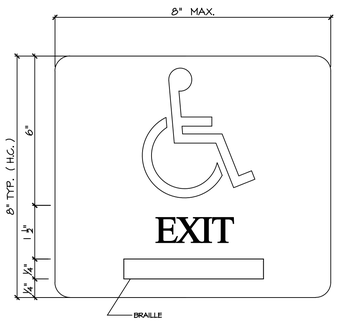
KEYING NOTE:
KEY WAY TO MATCH OWNER'S EXISTING KEY WAY SYSTEM.



STANDARD SIGN
TYPE 1



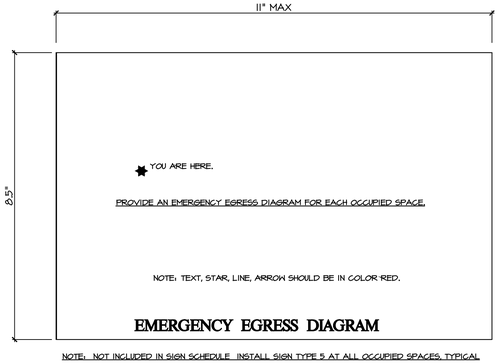
TWO LINE SIGN
TYPE 2



ACCESSIBLE
TYPE 3

* PROVIDE A VISITOR'S SIGN AT EACH EXIT

VISITORS SIGN
TYPE 4



NOTE: NOT INCLUDED IN SIGN SCHEDULE INSTALL SIGN TYPE 5 AT ALL OCCUPIED SPACES, TYPICAL

EMERGENCY EGRESS DIAGRAM
TYPE 5

2 SIGN TYPES

SCALE: NOT TO SCALE

REFER TO SPECIFICATION SECTION 101400 - SIGNAGE FOR ADDITIONAL REQUIREMENTS.

Plotted on Recycled Paper

DATE: 03/31/15
DRAWN BY: PEH
SCALE: AS NOTED
REVIEWED BY: RMR
PROJECT NO.: 14-108B
A4.1 Door Schedule

REVISIONS

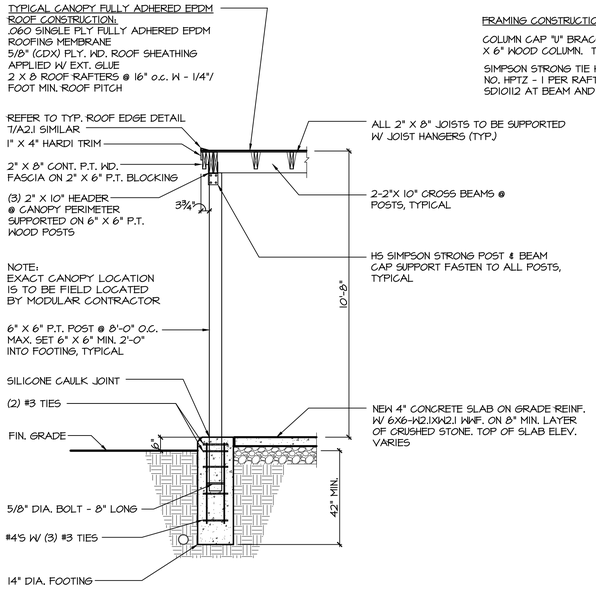
NO.	DATE	DESCRIPTION

Door Schedule & Misc. Details

ARCHITECT'S PROJECT NO. 2014-108B
NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL
65 NORTH SCHOOL STREET
MANCHESTER, CT

FRIAR ASSOCIATES INC.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.
A4.1



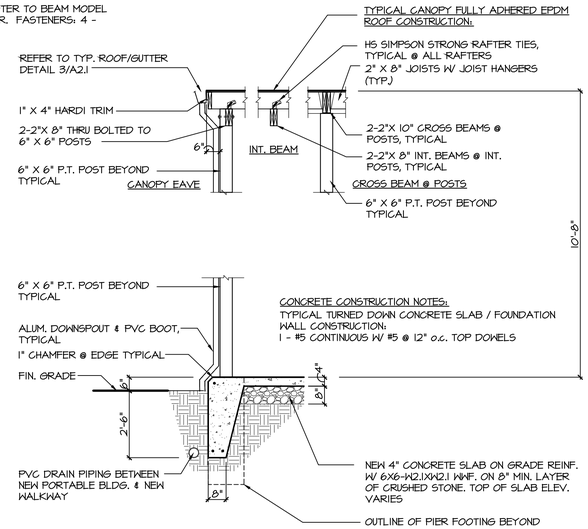
4 TYPICAL SECTION @ NEW CANOPY

SCALE: 3/8"=1'-0"

FRAMING CONSTRUCTION NOTES:

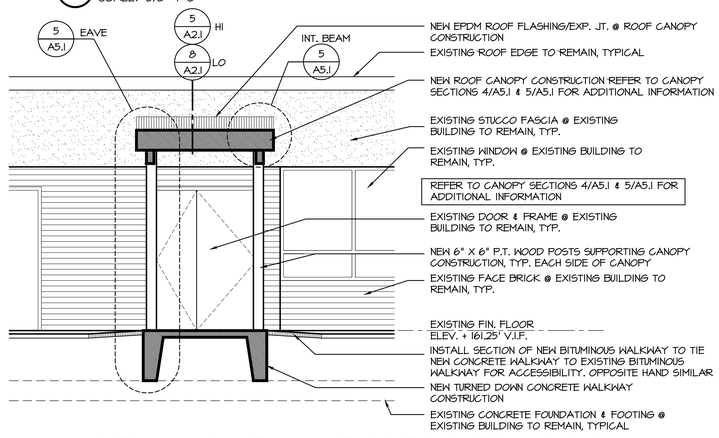
COLUMN CAP "U" BRACKET - 5" H X 16" L X 5/16" FASTEN TO 6" X 6" WOOD COLUMN. THRU BOLT TO COLUMN CAP - TYPICAL

SIMPSON STRONG TIE HURRICANE TIE RAFTER TO BEAM MODEL NO. HPTZ - 1 PER RAFTER @ EACH RAFTER. FASTENERS: 4 - SDI0112 AT BEAM AND RAFTER



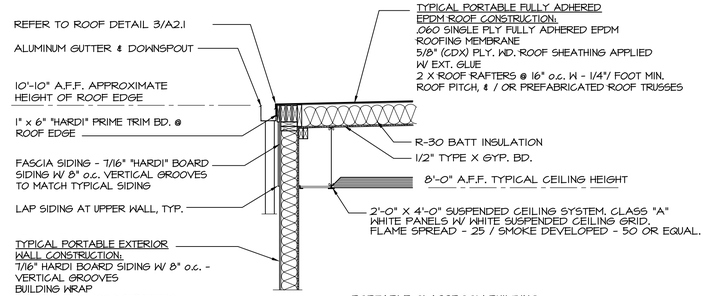
5 TYPICAL SECTION @ NEW WALKWAY

SCALE: 3/8"=1'-0"



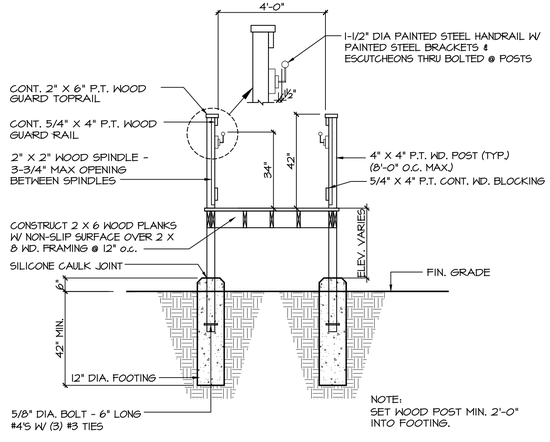
6 NEW CANOPY @ EXISTING BUILDING

SCALE: 3/8"=1'-0"



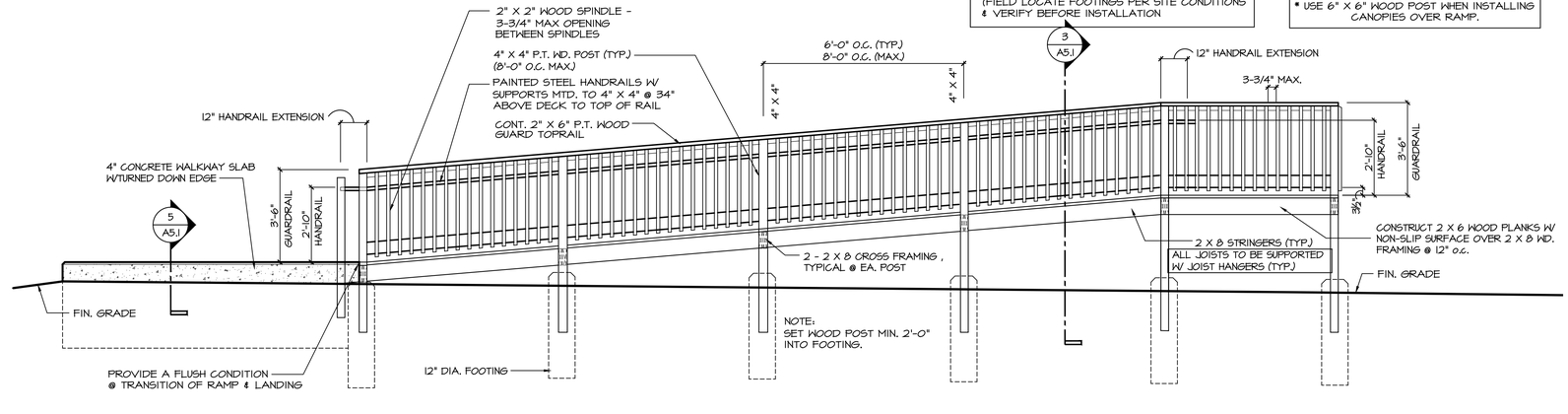
1 TYP. WALL SECTION @ NEW PORTABLE BLDG.

SCALE: 1/2"=1'-0"



3 TYPICAL SECTION @ NEW RAMP

SCALE: 3/8"=1'-0"



2 ELEVATION @ NEW RAMP

SCALE: 3/8"=1'-0"

Plotted on Recycled Paper

REVISIONS		
NO.	DATE	DESCRIPTION

DATE: 03/31/15
DRAWN BY: PEH
SCALE: AS NOTED
REVIEWED BY: RWR
PROJECT NO.14-108B
A5.1 Sections & Details

Sections & Details

ARCHITECT'S PROJECT NO. 2014-108B
NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL
65 NORTH SCHOOL STREET
MANCHESTER, CT

FRIAR ASSOCIATES INC.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.

A5.1

H.V.A.C. SPECIFICATIONS

CENTRAL AC/HTR SYSTEM: ROOF MOUNTED UNIT

A COMPLETE WALL MOUNTED PACKAGE, AIR CONDITIONING / HEATING SYSTEM,
SHALL BE INSTALLED THROUGHOUT THIS MODULAR BUILDING.
80% EFFICIENCY RATING AND / OR MIN. 10 EER REQUIRED.
THE ROOFTOP PACKAGE HVAC UNITS SHALL BE MANUFACTURED BY:
TRANE
EACH BUILDING REQUIRES (1) 4 TON HVAC UNIT W/15KW

THE HVAC PACKAGED UNITS WILL CONSIST OF THE FOLLOWING EQUIPMENT:

- ☑ FULL MODULATING ECONOMIZER 0-100% FRESH AIR
- ☑ ROOF CURB (SHIPPED KNOCKDOWN)
- ☑ FILTER FRAME KIT
- ☑ ELECTRIC HEAT PACKAGE 15 KW
- ☑ ELECTRIC / ELECTRIC

THE AC/HTR UNIT (S) SHALL PROVIDE A MINIMUM OF 20 CFM PER PERSON OF FRESH AIR ADDED TO ROOM AIR.

☑ AIR SUPPLY DUCT: (GALVANIZED STEEL)

THE AIR SUPPLY DUCT SYSTEM SHALL BE DESIGNED FOR .08 STATIC PRESSURE
UTILIZING GALVANIZED STEEL COMPONENTS GALVANIZED PLENUM SLEEVE / BOX SHALL BE LOCATED IN THE ROOF CAVITY DIRECTLY BELOW THE ROOF MOUNTED AC/HTR UNIT AND TRANSFER AIR TO THE DUCT SYSTEM.
NO EXPOSED WOOD SHALL COME IN CONTACT WITH TREATED AIR.

ALL GALVANIZED STEEL COMPONENTS SUCH AS SLEEVES, BOXES, TRUNK DUCT, DUCT TRANSITIONS TAP-INS, ELBOWS, ETC. SHALL BE WRAPPED W/ 1-1/2" VINYL
FIBERGLASS INSULATION. BRANCHES SHALL BE GALVANIZED PIPE WRAPPED W/ 1/2" VINYL FIBERGLASS INSULATION OR 1" FIBERGLASS INSULATED FLEXILE DUCT. ALL DUCTWORK CONSTRUCTION SHALL BE PER SMACNA STANDARDS.

☑ CENTRAL RETURN AIR SYSTEM:(GALVANIZED STEEL)

MODULAR BUILDINGS ROOMS SHALL HAVE AN AIR RETURN DUCT DROP DIRECTLY BELOW THE ROOF MOUNTED AC/HTR UNIT AND TERMINATES IN A 24" X 24" RETURN AIR GRILLE INSTALLED IN THE SUSPENDED CEILING GRID.
THE TRANSITION SHALL BE FABRICATED GALVANIZED STEEL FABRICATED TAP-INS AND CONNECTORS PER SMACNA STANDARDS.

NOTE: SEE M1.1 FOR SIZE AND LOCATION OF RETURN GRILLES.

☑ HVAC ROOF TOP UNIT GUARDS: (IMC 2003 304.8)

INSTALL GUARD TAILS @ ALL HVAC UNITES LESS THAN 10'-0" FROM ROOF EDGE. (INSTALLATION PER IMC 2003 304.8) THE TOP OF THE GUARD SHALL BE CONSTRUCTED SO AS TO PREVENT THE PASSAGE OF 21" SPHERE.

HVAC & DESIGN & CALCULATION DATA:

WINTER:

OUTSIDE DB __7_____°F INSIDE DB __72____°F

WINTER DESIGN TEMPERATURE DIFFERENCE 65_____°F

SUMMER:

OUTSIDE DB _88_____°F INSIDE DB __75____°F

SUMMER DESIGN TEMPERATURE DIFFERENCE ___13____°F

HEATING DEGREE DAYS (BELOW 65°F) __6170__

GRAINS (55% R.H.) ___22__°F DAILY RANGE _18M____°F

DATA PER MANUAL "N" AIR CONDITIONING CONTRACTOR'S OF AMERICA, ASHRAE - 90.1 1989, 1996 I.M.C. DATA IS TAKEN FROM BRAINARD FIELD - HARTFORD, CT.

CONTROLS:

☑ INDOOR THERMOSTAT, WALL MOUNTED: ELECTRONICALLY CONTROLLED, PROGRAMMABLE WALL MOUNTED THERMOSTAT, MOUNTED @ 48" A.F.F. PROVIDES THE FOLLOWING FEATURES:

LOW TEMPERATURE SET BACK AT NIGHT ON HEAT CYCLE

3 HOUR MANUAL TEMPERATURE OVERRIDE ON COOLING AND HEAT CYCLE DURING NIGHT AND WEEKEND OPERATION

HEATING SETBACK AND COOLING SETUP CYCLE TO BE CONTROLLED BY A 7 (SEVEN) DAY FEATURE WHICH PROVIDES AUTOMATIC SWITCHOVER FROM WORKDAY OPERATIONS TO NIGHT AND / OR WEEKEND SET BACK.

☑ (T) WORKING HOUR THERMOSTAT

☑ ☒ STEEL AIR SUPPLY DIFFUSER W/ ADJUSTABLE DAMPER, REMOVABLE CORE, LAY IN BORDER, FLUSH FACE, FACTORY PROVIDE ROUND ADAPTER AND 4 WAY THROW DIRECTIONAL LOUVERS.

☑ ▨ STEEL AIR RETURN DIFFUSER W/ 35 DEGREE LOUVERS, 1/2" SPACING AND FLANGED BORDER.

☑ (AS) ROOF TOP AC.HTR AIR SUPPLY OPENING AT CURB.

☑ (RA) ROOF TOP AC.HTR AIR RETURN OPENING AT CURB.

☑ AIR SUPPLY DIFFUSERS (CEILING MOUNTED) SHALL BE PRE-FINISHED WHITE STAMPED STEEL W/8" COLLAR AND 8" ADJUSTABLE BUTTERFLY DAMPERS.

DIFFUSERS SHALL BE 24" X 24" AND PATTERNED 4 WAY OR 3 WAY DIRECTIONAL AS DICTATED BY LOCATION.

DESIGN DATA: CALCULATED TOTAL

#1 VENTILATION AIR 1,200 CFM (SUPPLIED BY EACH UNIT) #1 FRESH AIR 860 CFM (INDUCED BY EACH UNIT)

- (A) TOTAL FRESH AIR = 860 CFM
- (B) TOTAL VENTILATION AIR= 1,550 CFM
- (C) NO. OF PEOPLE 43 PEOPLE (CALCULATED TOTAL)
- (D) MIN. FRESH AIR 20 CFM / PERSON
- (E) MIN. VENTILATION AIR 25 CFM / PERSON

FRESH AIR CALCULATIONS:

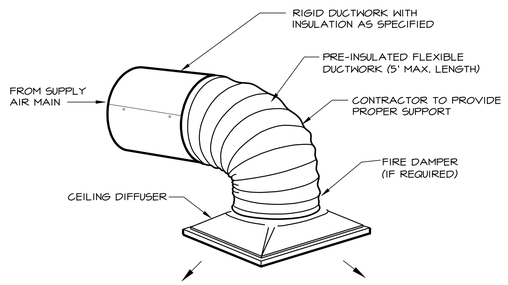
(D) x (C) CFM REQUIRED < (A) CFM ACTUAL
(20 X 43) = 860 CFM REQUIRED < 870 CFM ACTUAL

VENTILATION CALCULATIONS:

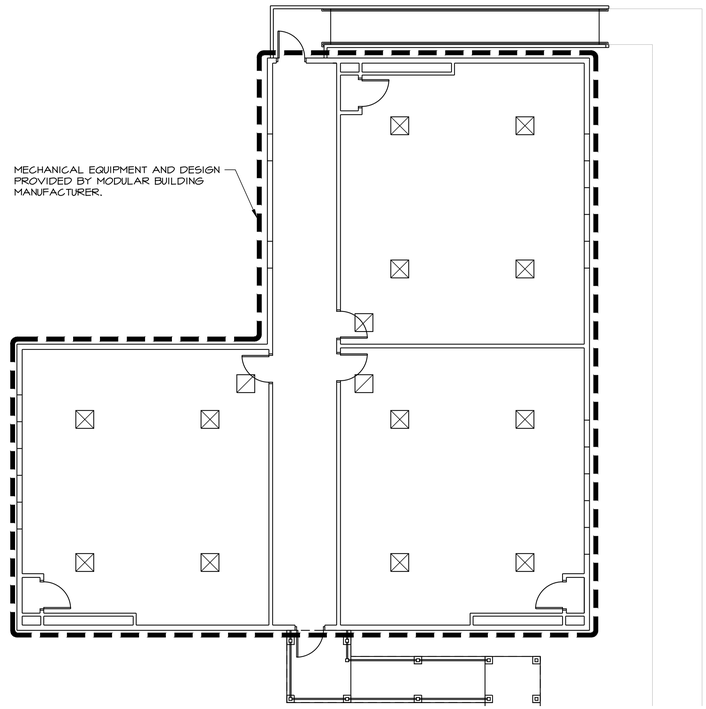
(E) x (C) CFM REQUIRED < (B) CFM ACTUAL
(20 X 43) = 1,075 CFM REQUIRED < 1,200 CFM ACTUAL

NOTES:

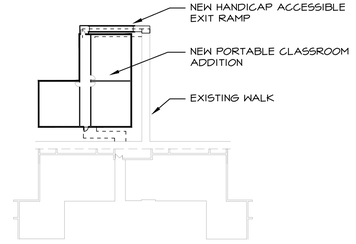
1. ALL MECHANICAL SYSTEMS SHOWN SHALL BE FACTORY FURNISHED, INSTALLED AND WIRED BY THE PORTABLE CLASSROOM MANUFACTURER PRIOR TO DELIVERY TO THE SITE. IT IS THE PORTABLE CLASSROOM MANUFACTURER'S RESPONSIBILITY TO COORDINATE ALL SYSTEMS WITH STRUCTURAL RESTRAINTS AND ELECTRICAL REQUIREMENTS. MANUFACTURER SHALL PROVIDE DETAILED SHOP DRAWINGS SHOWING FINAL LAYOUT OF UNITS, DUCTS, COMPONENTS, AND COORDINATION WITH ALL TRADES.



1 DIFFUSER MOUNTING DETAIL
SCALE: NOT TO SCALE



MECHANICAL PLAN
SCALE: 1/8"=1'-0"



EXISTING ROBERTSON ELEMENTARY SCHOOL

PROJECT NORTH

KEY PLAN

Plotted on Recycled Paper

DATE: 03-31-15
DRAWN BY: REJ
SCALE: 1/8"=1'-0"
REVIEWED BY: REJ
PROJECT NO. 2014-08B

REVISIONS

NO.	DATE	DESCRIPTION

MECHANICAL PLAN, NOTES AND DETAIL

ARCHITECT'S PROJECT NO. 2014-108B
NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL
65 NORTH SCHOOL STREET
MANCHESTER, CT

ENGINEER'S SEAL

FRIAR ASSOCIATES II, L.L.C.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.
M1.1

PART 1 - GENERAL
1.1 GENERAL

A. Architect's General Conditions are a part of this Division. All work shall be done in strict accordance with all applicable Codes and Regulations of local and State Agencies, Owner's insurance underwriter, IRI or FM, local Fire Marshal and utility companies. The portable classroom contractor shall bear the cost of all fees, permits, licenses and taxes and any utility company charges in connection with the work. All equipment installed shall be UL listed.

1.2 SCOPE

A. Provide a full and complete HVAC system for the portable classroom structure. HVAC systems shall be factory installed and wired prior to delivery to the site. Systems shall consist of, but not be limited to, the following:
1. Packaged HVAC units.
2. Registers, grilles, diffusers.
3. Electric baseboard radiation.
4. Controls.
5. Hangers and supports.
6. Insulation.
7. Documentation and training.

1.3 SHOP DRAWING SUBMITTALS

A. Submit shop drawings on all equipment and materials, in sextuplet (6 copies), to the Architect for approval. The Drawings shall include ratings, performance information, operating data and wiring diagrams. The Contractor shall assume full responsibility for work performed or equipment supplied that is not in agreement with approved shop drawings.

B. Submit six (6) copies of ductwork coordination shop drawings indicating clearances with structural members, piping, lighting and major equipment of other trades. Shop drawings shall be done on minimum 1/4" = 1'-0" scale.

C. Submit for record an itemized list detailing mechanical and electrical systems and components to be seismically restrained and associated seismic restraint system to be used.

1.4 RECORD DRAWINGS

A. Neatly and accurately record all changes to Contract Documents on record set of drawings furnished by the General Contractor. These record "as-built" drawings shall include locations of specific items as listed in the various specification DIVISIONS. Upon project completion, these record drawings shall be turned over to the Engineer.

1.5 DEFINITIONS

A. As used on Contract Drawings, the term "to provide" shall mean "to furnish", install and connect completely in the specified or approved manner the item or material described."

1.6 GUARANTEE

A. Materials, equipment and workmanship shall have standard warranty against defects in material and workmanship. Failures due to defective or improper material, equipment, workmanship or design shall be made good, forthwith, by and at the expense of the Contractor, including damage done to areas, materials and other systems resulting from such failures. Guarantee period shall extend for one year from the Date of Acceptance.

1.7 INSPECTION

A. Contract Drawings are diagrammatic and do NOT show every required fitting, etc. The portable classroom Contractors shall examine the architectural and MEP Drawing and Specifications to determine the scope of work and familiarize themselves with existing site conditions prior to submitting a design, and shall include all equipment and accessories necessary for complete and operational systems.

B. The Contractor shall coordinate locations of equipment with all trades before starting construction. Any modification to the equipment layout required for installation shall be performed at no additional cost to the Owner.

1.8 ARRANGEMENT OF WORK

A. Work shall be coordinated between trades to prevent interference. Work shall present a neat coordinated appearance. Install work as necessary to provide maximum possible headroom, adequate clearance and ready access for inspection, operation, safe maintenance and repair and Code conformance.

1.9 WORKMANSHIP

A. Equipment and materials shall be new, of first quality, selected and arranged to fit properly into spaces indicated. Install equipment and materials in accordance with manufacturer's recommendations.

1.10 OPERATION OF SERVICES AND UTILITIES

A. Shutdown of existing services and utilities shall, without exception, be coordinated with the proper utility and with the Owner as to date, time of day, and duration before any service is interrupted. Notify the Owner of estimated duration of shutdown period at least ten days in advance of proposed shutdown.

1.11 PROTECTION

A. Close open ends of work with temporary covers or plugs during construction to prevent entry of foreign material. Protect existing property, equipment and finishes from damage. Repair, to original condition, existing property that has been damaged during execution of the work.

1.12 CLEANING

A. Work site must be kept clean. Rubbish, debris and leftover or excess materials shall be removed daily.

1.13 LUBRICATION

A. No equipment shall be operated for temporary service or testing without proper lubrication. Items requiring lubrication shall be left freshly and fully lubricated at time of substantial completion. Furnish Owner with one complete new set of any special lubrication devices required for servicing, e.g., grease guns, fittings and adapters.

1.14 PAINTING

A. Equipment and materials shall have standard manufacturer's finish except where otherwise noted.

1.15 CUTTING AND PATCHING

A. Cutting and patching to be performed by Contractor. Painting of finished surfaces after patching shall be as specified by Architect or shall match adjacent finishes.

1.16 WATERPROOFING

A. Provide necessary sleeves, caulking and flashing required to make openings waterproof.

1.17 FIREPROOFING

A. At closing of each working day, provide temporary firestopping in every opening cut between floors and through fire-rated partitions. Permanent firestops shall be provided around sleeves and at other permanent openings through fire-rated partitions and floors, as required. Materials used for fire stopping shall be Class A "Incombustible" with firestopping capabilities equal to that of adjacent construction.

1.18 BASES AND SUPPORTS

A. Provide necessary supports, pads, bases and piers for equipment. Equipment shall be securely attached to building structure in acceptable manner in compliance with BOCA Seismic Building Code. Attachments shall be of strong and durable nature, as determined by the Owner.

1.19 SEISMIC REQUIREMENTS

A. Submit six (6) copies of a final inspection report which includes: Sealed certification by a Structural Engineer with P.E. registration in the State of Connecticut, that:
1. Engineer has reviewed the project.
2. Engineer has approved the use of the devices for the particular applications.
3. The devices satisfy Specification- and Code-mandated seismic criteria.

B. Refer to individual Divisions for specific requirements.

1.20 ACCESS

A. Provide adequately sized access doors, for access to concealed equipment and components requiring servicing or inspection. Doors shall have fire ratings equal to construction in which they are located.

1.21 TESTS

A. Performing tests required by the Owner, legal authorities and agencies. Each piece of equipment, including motors and controls, shall be operated continuously for minimum one-hour test. Correct all defects appearing during tests, and repeat tests until no defects are disclosed. Final tests shall be made in the Owner's presence.

1.22 SYSTEMS OPERATION AND MAINTENANCE

A. Upon completion of the work and at a time designated by the Engineer, the Contractor shall furnish (3) instruction manuals including data,
warranties, etc., and shall instruct the Owner or his representative as to the arrangement, location and operation of all equipment and systems furnished and installed under the Mechanical and Electrical Contract.
1.23 PERMITS, LAWS, ORDINANCES, CODES and STANDARDS

A. Obtain and pay for permits, inspections, licenses and certificates required. Work of this Contract shall meet State Building Code, State Fire Safety Code and other laws, rules and regulations of local, State and Federal authorities; National Fire Protection Association #13, latest Edition; National Fire Protection Association #90A and #90B; National Fire Protection Association #99, Latest Edition; International Mechanical Code, latest Edition of the International Plumbing Code, latest Edition; National Electrical Code, latest Edition. Equipment, materials and components listed UL Product Directories, shall bear UL labels.

1.24 FILTERS AND STRAINERS

A. Any equipment which operates with filters or strainers shall have filters and strainers installed at all times.

1.25 INSURANCE

A. Furnish insurance certificates required by the Owner.

PART 2 - PRODUCTS

2.1 DUCTWORK

A. All ductwork and accessories shall be constructed, fabricated and installed in accordance with the latest SMACNA Standards manuals for low pressure ducts, fire damper installations and flexible ductwork.

B. Supply and return ductwork shall be galvanize sheet metal with 1" thick, duct wrap with vapor barrier.

C. Install adequate balancing devices; e.g., volume dampers, extractors, etc., as required to balance each system to its design airflows.

D. Furnish and install UL listed fire dampers and access doors at all duct penetrations of walls, floors, partitions, etc., that are required to have a fire resistance rating. Fire dampers, sleeves, access doors, etc., shall be constructed and installed in conformance to the manufacturer's instructions, NFPA 90A and the building official.

2.2 DIFFUSERS, REGISTERS AND GRILLES

A. See drawings for R.G.D. specifications. Manufacturers shall be Metal* Aire, Price or Titus.

B. Units shall be of steel or aluminum construction with baked enamel finish.

C. Provide opposed blade damper and square to round transitions as necessary.

2.3 ELECTRIC FINNED-TUBE RADIATORS

A. Manufacturers shall be Berko, Chromax, Marley or Q-Mark.

B. Heating Elements: Nickel-chromium heating wire element enclosed in metallic sheath mechanically expanded into fins, with high-temperature cutout. Element supports eliminate thermal expansion noise.

C. Enclosure: Enameled steel with easily jointed components for wall-to-wall installation, rigidly supported on wall- or floor-mounting brackets.
1. Enclosure 18 inches (450 mm) and less in height: 0.0478-inch- (1.2-mm-) thick steel.
2. Support Brackets: Locate at maximum 36-inch (900-mm) spacing.
3. Finish: Factory-applied baked enamel in color selected by Architect from manufacturer's standard colors.
4. Enclosure Style: Sloped top with front inlet grille.

D. Unit Controls: Integral line-voltage thermostat with range of 40 to 100 deg F (5 to 40 deg C).

E. Accessories:
1. Blank sections, corners, relay sections, and splice plates.
2. Pedestals.

F. Capacity: 250 W/L.F.

2.4 ROOFTOP AIR CONDITIONER

A. Manufacturer shall be Trane, York, Carrier, or Lennox.

B. Description: Factory assembled and tested; designed for exterior installation; consisting of compressor, indoor and outside refrigerant coils, indoor fan and outside coil fan, refrigeration and temperature controls, filters, and dampers.

C. Casing: Galvanized-steel construction with enamel paint finish, removable panels or access doors with neoprene gaskets for inspection and access to internal parts, minimum 1/2-inch- (13-mm-) thick thermal insulation, knockouts for electrical and piping connections, exterior condensate drain connection, and lifting lugs.

D. Indoor Fan: Forward curved, centrifugal, belt driven by single-speed motor.

E. Outside Coil Fan: Propeller type, directly driven by motor.

F. Refrigerant Coils: Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.

G. Compressor: Hermetic scroll compressor with integral vibration isolators, internal overcurrent and overtemperature protection, internal pressure relief.

H. Refrigeration System:
1. Compressor.
2. Outside coil and fan.
3. Indoor coil and fan.
4. Four-way reversing valve and suction line accumulator.
5. Expansion valve with replaceable thermostatic element.
6. Refrigerant dryer.
7. High-pressure switch.
8. Low-pressure switch.
9. Thermostat for coil freeze-up protection during low-ambient temperature operation or loss of air.
10. Low-ambient switch.
11. Brass service valves installed in discharge and liquid lines.
12. Charge of refrigerant.

I. Filters: 1-inch- (25-mm-) thick, fiberglass throwaway filters in filter rack.

J. Electric Heat: Helix-wound, nickel-chrome, electric-resistance elements, factory wired for single-point wiring connection; with time delay for element staging, and overcurrent and overheat protective devices.

K. Outside-Air Damper: Linked damper blades, for 0 to 25 percent outside air, with fully modulating, spring-return damper motor and hood.

L. Economizer: Return- and outside-air dampers with neoprene seals, outside-air filter, and hood.
1. Damper Motor: Fully modulating spring return with adjustable minimum position.
2. Control: Electronic-control system uses outside-air enthalpy to adjust mixing dampers.
3. Relief Damper: Gravity actuated with bird screen and hood.

M. Power Connection: Provide for single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in circuit breaker.

N. Provide programable setback thermostat, wall mounted.

PART 3 - EXECUTION

3.1 BALANCING AIR AND WATER SYSTEMS

A. This contract is for all labor, materials and equipment required for the air and water systems.

B. Air systems to be balanced include air conditioning, make-up and exhaust systems. Balancing shall include rebalancing (adjusting of sheaves and replacing belts, and motors as indicated) of exhaust fans, rooftop air conditioning units and make-up air units as required to provide air flows specified. The Balancing Contractor shall secure a set of as-built ductwork plans prior to commencing work.

C. Upon completion of all tests and balancing operations, the Contractor shall submit six (6) copies of the certified balancing report to the Architect. This report shall include all data for each of the air systems.

D. Balancing of systems shall be followed up after building is occupied; any rebalancing shall be done as required to meet occupant's requirements without extra charge.

DATE: 03-31-15
DRAWN BY: REJ
SCALE: NONE
REVIEWED BY: REJ
PROJECT NO. 2014-108B

REVISIONS
NO. | DATE | DESCRIPTION

MECHANICAL

SPECIFICATIONS

ARCHITECT'S PROJECT NO. 2014-108B
NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL
65 NORTH SCHOOL STREET
MANCHESTER, CT

ENGINEER'S SEAL

FRIAR
ASSOCIATES II, L.L.C.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.
M2.1

ELECTRICAL SYMBOLS LEGEND

POWER

- PWR-RECEPT DUPLEX - 20 AMP - 120V DUPLEX RECEPTACLE. 18" A.F.F. UNLESS OTHERWISE NOTED ON PLANS.
- WP GFI — PWR-RECEPT DUPLEX - 20 AMP - "WEATHER PROOF" 120V GFI DUPLEX RECEPTACLE. SEE NOTE 11 OF ELECTRICAL NOTES
- NON-FUSED DISCONNECT SWITCH, HEAVY DUTY RATED.
- PANEL# — ELECTRICAL DISTRIBUTION PANEL AND/OR SUB PANEL - BOTTOM FEED, W/ REMOVABLE ACCESS COVER. DISTRIBUTION PANEL W/ MAIN BREAKER (EXISTING).; 100A 208/120V 3Φ, 4W SUB PANEL W/ MAIN LUGS ONLY.

SWITCH & MISC. BLOCKS

- S — 120V SINGLE POLE TOGGLE SWITCH. INSTALL 48" A.F.F. UNLESS OTHERWISE NOTED ON PLANS.
- S_F — 120V SINGLE POLE FAN TOGGLE SWITCH. INSTALL 48" A.F.F. UNLESS OTHERWISE NOTED ON PLANS.
- S_3 — 120V SINGLE POLE THREE WAY TOGGLE SWITCH. INSTALL 48" A.F.F. UNLESS OTHERWISE NOTED ON PLANS.

SPECIAL

- PUBLIC ADDRESS & INTERCOM LOCATION SYMBOL. LOCATE A 4" X 4" BOX WITH SINGLE GANG PLASTERS RING AND 3/4" EMT TO A POINT ABOVE THE SUSPENDED CEILING. INSTALL INTERCOM HANDSET BOX @ 48" A.F.F. AND PUBLIC ADDRESS SPEAKER BOX @ 84" A.F.F. UNLESS OTHERWISE NOTED ON PLANS.
- 2 — COMMUNICATION LOCATION SYMBOL WITH TWO (2) DATA & ONE (1) TELEPHONE OUTLETS. LOCATE A 4" X 4" BOX WITH SINGLE GANG PLASTERS RING AND 3/4" EMT TO A POINT ABOVE THE SUSPENDED CEILING. INSTALL @ 18" A.F.F. UNLESS OTHERWISE NOTED ON PLANS. PROVIDE DATA & PHONE CABLES TO IDF ROOM ADJACENT TO MEDIA CENTER (REFER TO KEY PLAN). TERMINATION OF CABLES IN IDF ROOM SHALL BE BY OWNER.
- WP — WEATHERPROOF EXTERIOR WALL MOUNT SECURITY CAMERA; PROVIDE WALL BRACKET AND LV VIDEO CABLING TO OWNER'S VIDEO HEADEND.

LIGHTING

- X — LITE-EXIT-DBL-GLG LED TYPE EXIT SIGN, WALL MOUNTED 6" HIGH RED LETTERS ON A WHITE FIELD, W/ BATTERY BACK UP & DIRECTIONAL INDICATORS AS INDICATED ON PLAN. 90 MIN. BACK UP MINIMUM
- X — LITE-EXIT-SNGL-GLG LED TYPE EXIT SIGN, WALL MOUNTED 6" HIGH RED LETTERS ON A WHITE FIELD, W/ BATTERY BACK UP & DIRECTIONAL INDICATORS AS INDICATED ON PLAN. 90 MIN. BACK UP MINIMUM
- LITE-REMOTE HEAD DUAL INSTALL WEATHERPROOF REMOTE EXTERIOR HEADS OVER EXTERIOR DOOR, 6V, 8 WATT; WIRE TO INTERIOR 90 MINUTE BATTERY UNIT.
- EXTERIOR (WALL MTD.) LIGHT FIXTURE, ON PHOTO CELL CONTROLLED CIRCUIT.
- 2" X 4" FLUORESCENT FIXTURE. W/ A-12 ACRYLIC LENS AND W/ (3) 32T-8 LAMPS W/ APPROVED TYPE ELECTRONIC BALLAST.
- EM — LITE-WALLPACK-EM DUAL HEAD EMERGENCY LIGHTS, COMPLETE W/ TRICKLE CHARGER AND BATTERY BACK UP, 90 MIN. RUN TIME. PROVIDE UNIT WITH CAPACITY FOR REMOTE HEADS
- WET LOCATION FLUORESCENT SURFACE MOUNT 1'X1' FIXTURE; WIRE TO EXTERIOR LIGHTING CIRCUIT, CONTROL BY PHOTOCELL
- RECESSED FLUORESCENT DOWNLIGHT

FIRE ALARM

- EM — FIRE-ALARM CONTROL RELAY/MODULE
- S — FIRE-SMOKE DETECTOR
- FIRE-AUDIO/VISUAL
- F — FIRE-MANUAL PULL STATION; PROVIDE "STOPPER" COVER

MODULAR BUILDING ELECTRICAL SERVICE SCHEDULE

PANEL MDP (EXISTING 400A)				PANEL-2			
ITEM	QUANTITY	WATTS / ITEM	TOTAL WATTS	ITEM	QUANTITY	WATTS / ITEM	TOTAL WATTS
EXTERIOR LIGHT	2	26	52	HVAC UNIT	1	30,000	30,000
EXIT SIGNS	2	5	10	2 X 4 LIGHT FIXTURE	12	94	1,128
EMERGENCY LIGHTS	3	8	24	EMERGENCY LIGHTS	2	8	16
OUTLETS	2	180	360	RECEPTACLES	8	180	1,440
PANEL MDP-2 (125A/3P)	1	32,584	32,584			TOTAL WATTS	32,584
PANEL MDP-2 (125A/3P)	1	32,584	32,584	1. TOTAL WATTS: 32,584 WATTS AT 120/208 V, 3Φ, 4W, 60HZ, AC TOTAL WATTS / 360 = ACTUAL LOAD X 1.25			
PANEL MDP-3 (125A/3P)	1	35,356	32,584	2. CONNECTED LOAD: 90.5 AMPS			
		TOTAL WATTS	98,198	3. SIZE OF PANEL: 125 AMPS			

1. TOTAL WATTS: 98,198 WATTS
2. CONNECTED LOAD: 197.6 AMPS
3. SIZE OF SERVICE: 400 AMPS

AT 120/208 V, 3Φ, 4W, 60HZ, AC
TOTAL WATTS / 360 = ACTUAL LOAD X 1.25

PANEL-1			
ITEM	QUANTITY	WATTS / ITEM	TOTAL WATTS
HVAC UNIT	1	30,000	30,000
2 X 4 LIGHT FIXTURE	12	94	1,128
EMERGENCY LIGHTS	2	8	16
RECEPTACLES	8	180	1,440
		TOTAL WATTS	32,584

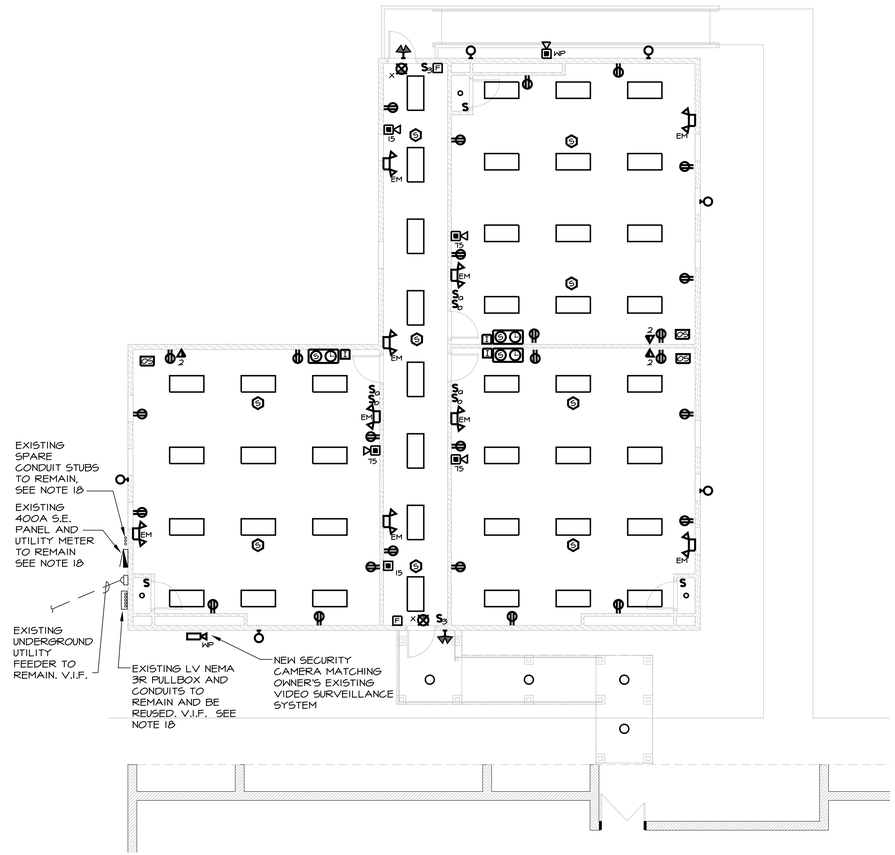
1. TOTAL WATTS: 32,584 WATTS AT 120/208 V, 3Φ, 4W, 60HZ, AC TOTAL WATTS / 360 = ACTUAL LOAD X 1.25
2. CONNECTED LOAD: 90.5 AMPS
3. SIZE OF PANEL: 125 AMPS

PANEL-3			
ITEM	QUANTITY	WATTS / ITEM	TOTAL WATTS
HVAC UNIT	1	30,000	30,000
2 X 4 LIGHT FIXTURE	12	94	1,128
EMERGENCY LIGHTS	2	8	16
RECEPTACLES	8	180	1,440
		TOTAL WATTS	32,584

1. TOTAL WATTS: 32,584 WATTS AT 120/208 V, 3Φ, 4W, 60HZ, AC TOTAL WATTS / 360 = ACTUAL LOAD X 1.25
2. CONNECTED LOAD: 90.5 AMPS
3. SIZE OF PANEL: 125 AMPS

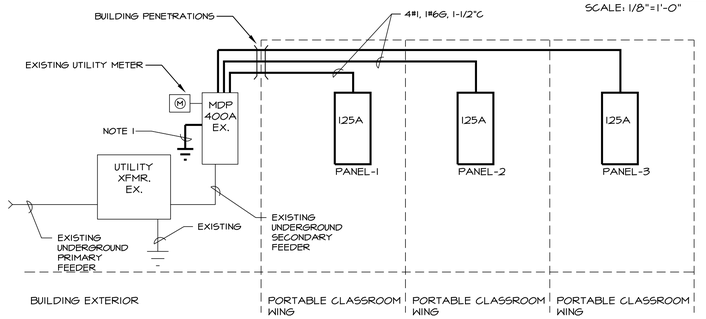
ELECTRICAL NOTES:

1. ALL BRANCH CIRCUIT WIRING TO BE #12/3 AWG. MIN ALL CONDUCTORS TO BE COPPER MC (METAL CLAD) CABLING, #12 COPPER MIN. THROUGHOUT.
2. ALL BRANCH CIRCUIT HOMERUNS SHALL BE TO 20A/1P CIRCUIT BREAKER TO THE LOCAL PANEL, WITH EXCEPTION OF RTU'S. RTU WIRING AND BREAKER SIZE SHALL BE AS REQUIRED BY EQUIPMENT MANUFACTURER.
3. ALL FIXTURES AND EQUIPMENT TO BE UL APPROVED.
4. ALL BRANCH CIRCUIT BREAKERS TO BE 10,000 A.I.C. MINIMUM, DISTRIBUTION PANEL C.B.'S SHALL BE 10,000 A.I.C.
5. ALL WIRING TO HAVE GROUNDED CONDUCTOR TO BE CONNECTED TO A GROUNDING BAR IN THE DISTRIBUTION PANEL.
6. FROM THE MAIN DISTRIBUTION PANEL, A BARE COPPER CONTINUOUS LOOP TO BOND EACH INDIVIDUAL STEEL FRAME. (DISREGARD IF STEEL FRAMES HAVE BEEN WELDED TOGETHER).
7. STATE AND LOCAL CODES REQUIRE QUALIFIED, LICENSED TECHNICIANS FOR COMPLETION OF THE ELECTRICAL SYSTEM ON SITE.
8. THE NEUTRAL CONDUCTOR SHALL BE INSULATED FROM THE GROUND.
9. ALL WIRING SHALL BE WIRED SUBJECTED TO A DIELECTRIC TEST OF 1080 VOLTS FOR ONE SECOND.
10. THIS BUILDING SHALL BE WIRED ACCORDING TO THE 2011 NATIONAL ELECTRIC CODE
11. RECESSED LIGHT FIXTURE AND EXHAUST FANS INSTALLED IN SUSPENDED CEILING GRID SHALL BE SUPPORTED BY MEANS OF #12 JACK CHAIN, TWO CORNERS (MIN.)
12. PROVIDE WEATHERPROOF, GFI SERVICE RECEPTACLE ADJACENT TO EXTERIOR HVAC EQUIPMENT.
13. PROVIDE CAT 6a DATA CABLE FROM EACH COMMUNICATION OUTLET. ROUTE CAT 6 CABLE TO OWNER'S COMMUNICATION NETWORK ROOM. PROVIDE R.J-45 DATA JACK AT EACH OUTLET. PROVIDE J-HOOK SUPPORTS.
14. PROVIDE 18/3 TSP CABLE FROM EACH INTERCOM OUTLET TO THE IDF CLOSET (REFER TO KEY PLAN FOR LOCATION). PROVIDE HANDSET AND WALL SPEAKER. EQUIPMENT DEVICES IN CLASSROOMS SHALL MATCH BUILDING EXISTING SYSTEM.
15. ALL DEVICE HEIGHTS ARE FROM FLOOR TO CENTER OF BACK BOX.
16. EMERGENCY LIGHTING UNITS AND EXIT SIGNS SHALL BE WIRED TO LOCAL LIGHTING CIRCUIT AHEAD OF LOCAL SWITCHING SERVING THAT AREA.
17. FIRE ALARM CONTROL MODULES AT THE HVAC EQUIPMENT SHALL SHUT DOWN THE CORRESPONDING UNIT UPON ACTIVATION OF THE FIRE ALARM SYSTEM.
18. EXISTING EXTERIOR BUILDING MOUNTED ELECTRICAL METER, PANEL, PULL BOX AND CONDUITS SHALL BE TEMPORARILY SUPPORTED TO ALLOW FOR EXISTING PORTABLE DEMOLITION. ALL EXISTING BRANCH WIRING AND PANEL FEEDERS SHALL BE REMOVED BACK TO 400A S.E. PANEL. LV CABLING SHALL BE REMOVED BACK TO PULL BOX. EXISTING EXTERIOR EQUIPMENT SHALL THEN BE RE-MOUNTED TO NEW STRUCTURE. PROVIDE NEW POWER CABLING AND LV CABLING FROM EXISTING EQUIPMENT AS REQUIRED FOR COMPLETE AND FUNCTIONAL SYSTEMS.



POWER AND LIGHTING PLAN

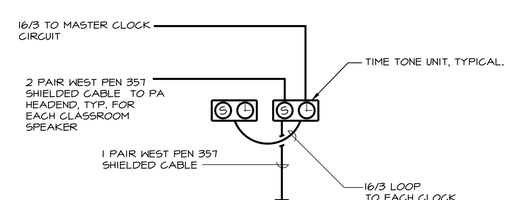
SCALE: 1/8"=1'-0"



NOTES:
1. ALL GROUNDING SHALL BE IN ACCORDANCE WITH 2011 NATIONAL ELECTRICAL CODE. PROVIDE 1#1/0, 3/4"C TO DRIVEN GROUND ROD, NEAREST GROUNDED BUILDING STEEL, AND TO NEAREST METAL COLD WATER SUPPLY PIPE.

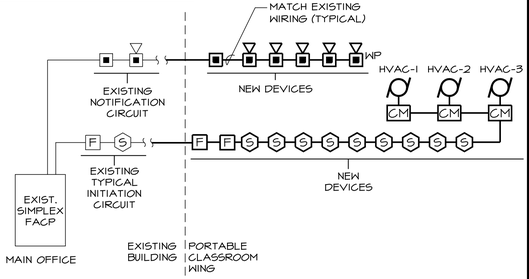
PARTIAL POWER ONE-LINE DIAGRAM

SCALE: NOT TO SCALE



PARTIAL LOW VOLTAGE ONE-LINE DIAGRAM

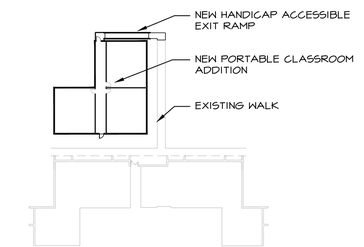
SCALE: NOT TO SCALE



NOTES:
1. FIRE ALARM SYSTEM DEVICES SHALL BE COMPATIBLE WITH AND MATCH THE EXISTING SIMPLEX FIRE ALARM SYSTEM. MAIN FACP LOCATED IN MAIN OFFICE
2. ALL WIRING SHALL BE PER MANUFACTURE'S REQUIREMENTS.
3. PROVIDE ALL NECESSARY SYSTEM PROGRAMMING FOR COMPLETE OPERATIONAL SYSTEM.

PARTIAL FIRE ALARM RISER

SCALE: NOT TO SCALE



KEY PLAN

Plotted on Recycled Paper

DATE: 03-31-15
DRAWN BY: BD
SCALE: 1/8"=1'-0"
REVIEWED BY: RM
PROJECT NO. 2014-108B

REVISIONS

NO.	DATE	DESCRIPTION

POWER AND LIGHTING
FLOOR PLAN

ARCHITECT'S PROJECT NO. 2014-108B

NEW PORTABLE CLASSROOMS
ROBERTSON ELEMENTARY SCHOOL
65 NORTH SCHOOL STREET
MANCHESTER, CT

ENGINEER'S SEAL

FRIAR ASSOCIATES II, L.L.C.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.
E1.1

ELECTRICAL SPECIFICATIONS

PART 1-

1.1 GENERAL

A. Architect's General Conditions are a part of this Division. All work shall be done in strict accordance with all applicable Codes and Regulations of local and State Agencies, Owner's insurance underwriter, IRI or FM, local Fire Marshal and utility companies. This Contractor shall bear the cost of all fees, permits, licenses and taxes and any utility company charges in connection with the work. All equipment installed shall be UL listed.

1.2 SCOPE

A. New Work:

1. Furnish and install a complete electrical system for the new building, including, but not limited to: electrical service, lighting, power distribution, connection of mechanical equipment, telecommunications raceway system and wiring and all other equipment as indicated on the plans, as herein specified and as necessary to provide complete and operational systems. Systems shall be complete in all respects, tested, approved and ready to operate.

2. Provide complete electrical lighting, power, fire alarm and special systems as indicated on the Contract Drawings and specified herein. Electrical systems shall be complete in all respects, tested, approved and ready for operation.

3. Provide all electrical work necessary to power Owner-supplied equipment. Provide all receptacles, power wiring, etc., necessary for a complete installation.

B. Work by Others:

1. The General Contractor shall install all access doors where required; doors needed for access to mechanical and electrical systems shall be furnished by the specific trade Contractor.

2. Other Trade Contractors shall install all motors for equipment provided under their trade work contracts; motors shall be ready for wiring by the Electrical Contractor. The Electrical Contractor shall provide motor starters and disconnect switches. Other Trade Contractors shall furnish relays and control equipment to the Electrical Contractor who shall install and wire these devices. Other Trade Contractors shall furnish and deliver to the Electrical Contractor wiring diagrams for all electrically operated equipment.

3. The General Contractor shall provide excavation, backfill, chases, openings, cutting, patching, painting and finish work.

1.3 SHOP DRAWING SUBMITTALS

A. Submit shop drawings on equipment and materials, in sextuplet (6 copies), to the Architect for approval. The Drawings shall include ratings, performance information, operating data and wiring diagrams. The Contractor shall assume full responsibility for work performed or equipment supplied that is not in agreement with approved shop drawings.

B. The following list of electrical items which shall be submitted by Contractor for approval:

1. Panelboards
2. Circuit breakers
3. Safety Switches
4. Starters
5. Wiring devices and plates
6. Lighting fixtures
7. Fire alarm components
8. Conduit and fittings
9. Wire

C. Submit for record an itemized list detailing electrical systems and components to be seismically restrained and associated seismic restraint system to be used.

1.4 RECORD DRAWINGS

A. Neatly and accurately record all changes to Contract Documents on record set of drawings furnished by the General Contractor. These record "as-built" drawings shall include locations of specific items as listed in the various Specification DIVISIONS. Upon project completion, these record drawings shall be turned over to the Engineer.

1.5 INSPECTION

A. Contract Drawings are diagrammatic and do NOT show every required fitting, etc. The Contractors shall examine the architectural and MEP Drawing and Specifications to determine the scope of work and familiarize themselves with existing site conditions prior to submitting a bid, and shall include all equipment and accessories necessary for complete and operational systems.

1.6 GUARANTEE

A. Materials, equipment and workmanship shall have standard warranty against defects in material and workmanship. Failures due to defective or improper material, equipment, workmanship or design shall be made good, forthwith, by and at the expense of the Contractor, including damage done to areas, materials and other systems resulting from such failures. Guarantee period shall extend for one year from the Date of Acceptance.

1.7 ARRANGEMENT OF WORK

A. Work shall be coordinated between trades to prevent interference. Work shall present a neat coordinated appearance. Install work as necessary to provide maximum possible headroom, adequate clearance and ready access for inspection, operation, safe maintenance and repair and Code conformance. Where space appears inadequate, consult the Architect before proceeding with installation.

1.8 WORKMANSHIP

A. Equipment and materials shall be new, of first quality, selected and arranged to fit properly into spaces indicated. Install equipment and materials in accordance with manufacturer's recommendations.

1.9 DEFINITION

A. As used on Contract Drawings, the term "to provide" shall mean "to furnish, install and connect completely in the specified or approved manner the item or material described."

1.10 NOT USED

1.11 OPERATION OF SERVICES AND UTILITIES

A. Shutdown of utilities shall, without exception, be coordinated with the proper utility and owner as to date, time of day, and duration. a minimum of 48 hours notice shall be provided prior to shut down.

1.12 PROTECTION

A. Close open ends of work with temporary covers or plugs during construction to prevent entry of foreign material. Protect existing property, equipment and finishes from damage. Repair, to original condition, existing property that has been damaged during execution of the work.

1.13 CLEANING

A. Work site must be kept clean. Rubbish, debris and leftover or excess materials shall be removed daily.

1.14 LUBRICATION

A. No equipment shall be operated for temporary service or testing without proper lubrication. Items requiring lubrication shall be left freshly and fully lubricated at time of substantial completion. Furnish Owner with one complete new set of any special lubrication devices required for servicing, e.g., grease guns, fittings and adapters.

1.15 CUTTING AND PATCHING

A. Cutting and patching to be performed by General Contractor. Painting of finished surfaces after patching shall be as specified by Architect or shall match adjacent finishes.

1.16 PAINTING

A. Equipment and materials shall have standard manufacturer's finish except where otherwise noted.

1.17 WATERPROOFING

A. Provide necessary sleeves, caulking and flashing required to make openings waterproof.

1.18 FIREPROOFING

A. At closing of each working day, provide temporary firestopping in every opening cut between floors and through fire-rated partitions. Permanent firestops shall be provided around sleeves, all wiring and at other permanent openings through fire-rated partitions and floors, as required. Materials used for fire stopping shall be Class A "Incombustible" with firestopping capabilities equal to that of adjacent construction.

1.19 BASES AND SUPPORTS

A. Provide necessary supports, pads, bases and piers for equipment. Equipment shall be securely attached to building structure in acceptable manner in compliance with BOCA 1113 Seismic. Attachments shall be of strong and durable nature, as determined by the Owner.

1.20 SEISMIC REQUIREMENTS

A. Submit six (6) copies of a final inspection report which includes: Sealed certification by a Structural Engineer with P.E. registration in the State of Connecticut, that:

1. Engineer has reviewed the project.
2. Engineer has approved the use of the devices for the particular applications.
3. The devices satisfy Specification- and Code-mandated seismic criteria.

1.21 ACCESS

A. Provide adequately sized access doors, for access to concealed equipment and components requiring servicing or inspection. Doors shall have fire ratings equal to construction in which they are located.

1.22 SYSTEMS OPERATION AND MAINTENANCE

A. Upon completion of the work, the Contractor shall furnish (3) instruction manuals including data, warranties, etc., and shall instruct the Owner or his representative as to the arrangement, location and operation of all equipment and systems furnished and installed under the Mechanical and Electrical Contract.

1.23 TESTS

A. Perform tests required by the Owner, legal authorities and agencies. Each piece of equipment, including motors and controls, shall be operated continuously for minimum one-hour test. Correct all defects appearing during tests, and repeat tests until no defects are disclosed. Final tests shall be made in the Owner's presence.

1.24 PERMITS, LAWS, ORDINANCES, CODES AND STANDARDS

A. Obtain and pay for permits, inspections, licenses and certificates required. Work of this Contract shall meet State Building Code, State Fire Safety Code and other laws, rules and regulations of local, State and Federal authorities; National Fire Protection Association #90A and #90B; National Fire Protection Association #99, Latest Edition; National Electrical Code, 1999 Edition. Equipment, materials and components listed UL Product Directories, shall bear UL labels.

1.25 INSURANCE

A. Furnish insurance certificates required by the Owner.

PART 2-PRODUCTS

2.1 WIRE, CABLE AND RACEWAYS

A. Rigid galvanized steel conduit (RGS) shall be used for all exterior wiring and where subject to dampness, except as noted below or as specifically noted on the Drawings.

B. Electrical Metallic Tubing (EMT) shall be used for feeders run above ground in dry areas, and all exposed branch circuit wiring.

C. Flexible Metallic Conduit (FMC) or liquid-tight flexible metallic conduit (LFMC) shall be used for connections to vibrating equipment; maximum length shall be 6'-0".

D. Type (MC) metal-clad cable may be used for branch wiring to light fixtures, receptacles and switches. Wherever (MC) cable is used for light fixture wiring, leave sufficient slack for future removal or servicing of fixtures in finished ceilings. The (MC) cable shall be UL listed, 600V, 90 degree C rated, metal clad with THHN insulation and green insulated ground wire. All cables shall be rigidly supported from the building structure at least 4' O.C. and within 12" from every fitting and shall run in lines parallel or perpendicular to building structural members. Cable shall not rest on the ceiling structure. Type (MC) cable shall not be used for homeruns.

E. Minimum sizes shall be as follows:
1. Conduit and EMT: 3/4" unless otherwise noted.
2. Flexible Metal Conduit: 3/4".
3. Wireway: 4" x 4".

F. Wire #10 and smaller shall be solid conductor with THWN/THHN insulation, Size #8 and larger shall be stranded conductors with THWN/THHN insulation. Size #3 and larger shall be stranded conductors with XHHW insulation. Minimum size wire for light and power circuits shall be #12 AWG. The Contractor shall include an individual code sized green insulated ground conductor for all circuits; the use of the conduit system or cable covering as the sole means of grounding will not be permitted.

G. Common neutrals shall not be used for receptacle circuits, unless otherwise noted on plans. When used, common neutral conductor ampere rating shall be double the phase conductor rating.

H. All conduits and wiring shall be run concealed inside walls where possible. Exposed conduits where allowed shall be run neatly in lines parallel or perpendicular to building walls.

I. All splices for #10 or smaller shall be made with "Scotchlok" spring connectors or equal. Splices for #8 or larger shall be made with UL approved compression connectors.

J. Provide nylon pull lines for all empty conduits.

2.2 PANELBOARDS

A. Panelboards shall be by Square D, General Electric, Cutler-Hammer or equal.

B. Panelboard shall have mains and branches as scheduled. Unless otherwise noted, breakers shall be fully rated. Panelboards shall be as follows:
1. 120/208V lighting and small panelboards shall be Square D "NQOD" or equal with minimum 10,000 AIC rating.
   a. Panelboards shall confirm to standards of NEMA PB-1. Panelboards shall have distribution phase bussing throughout. Unless noted otherwise, panels shall be surface-mounted and main lugs shall be at top or bottom. Panels shall include ground bus.
   b. Each cabinet shall have hinged locking metal door and card holder for directory. All locks shall be fitted to same key. Panelboards card directories shall be completely filled out (typewritten) upon completion of project.

C. Cover trims for panelboards shall be hinged to box with full height semi-concealed piano hinges and be fastened to box lip with screws. Trim clamps may only be used on opening part of trim. Trim door shall also be hinged. Trim shall be UL labeled.

2.1 SAFETY SWITCHES.

A. Safety switches shall be 600 VAC, heavy-duty type in NEMA enclosures suitable for the environment in which they shall be installed. Switches shall be Square D, General Electric or Cutler-Hammer equivalent to the following Square D types:
1. Non-fused disconnect switches: "Type HU".
2. Fused or non-fused, raintight (NP) disconnect switches in NEMA 3R enclosure: "Type H-R" and/or "Type HJ-R".

2.2 FUSES

A. Fuses for circuit protection shall be UL listed, non-renewable, low peak, dual-element, time delay fuses. Bussman Type FRN-RK (250 Volt) or FRS-RK (460 Volt) UL Class RK5 or approved equal.

2.3 OUTLET AND JUNCTION BOXES

A. Switch and receptacle outlet boxes in partitions where wiring is concealed shall be standard 4 inches square, 1-1/2 inches deep, hot-dipped, galvanized steel, with device ring for boxes installed in sheetrock walls.

B. Boxes shall be securely fastened to the building structure. Suitable means shall be provided to support outlet boxes to take the weight of fixtures. Recessed outlet boxes or their extension covers shall be set flush with face of finished wall, but in no case set greater than 1/4 inch behind finished face of wall. The Contractor shall check with the Architectural Drawings for possible box interference.

C. Junction boxes shall be sized in accordance with Code requirements.

D. Junction and outlet boxes where exposed to the weather and wet locations shall be threaded hub type and provided with watertight screw-on covers and gaskets.

2.4 SWITCHES, RECEPTACLES AND PLATES

A. Switches and receptacles shall be as manufactured by Hubbell, Arrow-Hart, Leviton or Pass and Seymour and equivalent to the following specification grades, with color matching Building Standard:
1. Single-pole switches shall be Hubbell #1221.
2. 3-way switches shall be Hubbell #1223.
3. Duplex grounding type receptacles shall be 20 Ampere Hubbell #5362.
4. Ground fault type receptacles shall be Hubbell #GF5362 feed-through receptacles.
5. Occupancy sensor switches shall be Sensor Switch #WSD-PDT motion and sound dual technology line voltage wallbox type rated to control up to 600 Watts at 277 VAC. Units shall have adjustable light level and off-time.

B. Provide specification grade stainless steel (Type 302) wall plates on all switches and receptacles.

C. Where there are multiple devices in one location, devices shall be ganged under one cover plate. All wall switches shall be flush mounted, where applicable.
1. Receptacles shall be mounted 18 inches above finished floor with U ground up unless otherwise indicated.
2. Wall switches shall be mounted 48 inches above finished floor, on strike side of door, unless otherwise indicated.

D. Receptacles located within 6'-0" of a water source shall be ground fault type.

2.5 LIGHTING FIXTURES

A. The Contractor shall furnish and install all lighting equipment as shown on the Drawings and specified on Drawings complete with lamps ready for operation.

B. All lamps for new fluorescent fixtures shall be T-8 type, 3500 degree K color unless otherwise indicated. Lamps shall be Philips, General Electric or Osram/Sylvania.

C. Ballasts for fluorescent fixtures shall be electronic high power factor, CBM/ETL certified with an "A" sound rating. Ballasts shall be by Advance, Motorola, Valmont or Universal.
1. Fluorescent ballasts shall be approved for local Utility Rebate Program and be in conformance with the latest Utility Ballast Eligibility List. Ballasts shall meet or exceed FCC Regulations Part 10.
2. Ballasts operating at 120Vshall have less than 10 percent Total Harmonic Distortion (THD).
3. Ballasts shall have minimum ballast factor of 0.87, minimum power factor of 0.90, and maximum lamp current crest factor of 1.7.
4. Ballasts shall produce normal rated life for lamps specified.

D. Unless otherwise noted, fluorescent ballast for interior application shall be electronic, high frequency, full light output type with a minimum 50 degree F starting temperature; for use with 265 mA, rapid start T-8 lamps.

E. Ballasts for compact fluorescent lamps (PL, DTT, TT or BIAXX), shall be Class P with "A" noise rating, high power factor.

F. Installation of lighting fixtures:
1. Fixtures shall be securely attached to the building structure by mechanical means and by safety wire. Provide box-mounted studs and additional structural supports as required. Provide two safety wires per fixture. Each safety wire shall be capable of supporting four times the weight of the fixture. Safety wire shall be adjusted to be in slack tension.

H. Exit signs shall comply with U.L. 924 for sign colors and lettering size. Exit signs shall be installed such that they are visible from any direction.

2.6 COMMUNICATIONS

A. The contractor shall furnish and install a full communications raceway system as shown on drawings and specified herein.

B. Equipment and final connections to Owner's communications head end networks shall be provided by Owner's Telecommunications staff.

2.7 SEISMIC RESTRAINT

A. Provide seismic bracing and restraint on wiring systems where conduit or cable tray is supported by hangers longer than 12" "s measured from bottom of supporting structure to top of conduit.

B. Restraints shall be as follows:
1. Light fixtures; fixtures shall be securely attached to the building structure by mechanical means and by safety wire. Provide box-mounted studs and additional structural supports as required. Provide two safety wires per fixture. Each safety wire shall be capable of supporting four times the weight of the fixture. Safety wire shall be adjusted to be in slack tension.
2. Panelboards; Mason Industries Type PB.
3. Conduits, 2 1/2" and larger; Mason Industries Type SCB/SSB, conduit racks/cable tray: Mason Industries Type SCB/SSB.
4. Certified seismic anchor bolt: M.I. Type SAB.
5. Certified seismic anchor stud: M.I. Type SAS.
6. Bolt isolation washer bushing: M.I.Type HS.
7. Seismic cable brace anchor and assembly: M.I. Type SLB.
8. Seismic cable brace hook anchor assembly: M.I. Type SCBH.
9. Seismic solid brace swivel anchor assembly: M.I. Type SSB.

2.8 FIRE ALARM

A. Contractor shall modify the existing building fire alarm system (Simplex) as indicated in the drawings and on the single line diagram.

B. Match existing wiring and conduits. Provide new wire where devices are being relocated. T-taps and splices shall not be allowed.

C. Provide revised battery calculations for the existing fire alarm system and additional indicating devices. If required, the contractor shall provide a remote transponder panel mounted in the corridor to power the additional fire alarm indicating devices. The transponder shall be powered from a 20 amp single pole circuit in panel PANEL-I, provide locking circuit breaker..

D. Upon a fire alarm condition, the control modules located at each HVAC unit shall interrupt power to the associated HVAC unit control system.

E. Upon a fire alarm condition, the system shall activate all fire alarm A/V devices.

2.9 P.A., CLOCK, SPEAKER SYSTEMS

A. Provide new intercom handset and speaker devices suitable for operation with the existing intercom system.

B. Provide new 12" round clock device suitable for operation with the existing clock system.

3.1 LOAD BALANCE

A. The Electrical Contractor shall balance the loads on the three phases in the electrical panelboard in which he does work insofar as physically possible, and report each panel loading to the Engineer.

3.2 CIRCUIT BREAKER TESTING/SETTING

A. Feeder circuit breakers shall be tested by an independent testing firm with 10 years experience, prior to installation.

B. Tests shall be performed at specified trip setting to ensure proper operation.

C. Results of test shall be furnished to Owner for record.

D. Verify final trip settings for adjustable or interchangeable circuit breaker elements. Instantaneous settings shall be minimum unless noted otherwise.

3.3 GENERAL WIRING TESTS

A. At the time of final inspection and test, all wiring and connections throughout the renovation areas must be completed, devices and equipment properly operating, lighting fixtures installed, and power and lighting circuit and control wiring clearly identified with approved tags ready for acceptance. Each system shall test free from short circuit and grounds.

B. Insulation resistance for low voltage cables and wiring shall be performed at 1000 Volt D.C. for one-half (1/2) minute. When insulation resistance must be determined, switchboards, panelboards, fuse holders, switches and overcurrent devices shall be in place, and the insulation resistance when tested at 500 Volts D.C. shall be no less than 100,000 ohms for #14 and #12 wire and 250,000 ohms for #10 wire and larger.

3.4 OPERATIONAL TESTS

A. Each piece of electrical equipment, including lighting fixtures, motors and controls shall be operated continuously for minimum test period of one hour.

B. Demonstrate by operating equipment that circuits and devices are in good operating condition. Each item of control equipment shall be operated minimum of five times. Demonstration shall be performed after wiring tests.

3.5 MECHANICAL SYSTEM ADJUSTMENT AND TESTING

A. Be present during adjustment period and final testing of mechanical systems. Take readings necessary to ensure that electrical systems are operating properly. Tests for mechanical work are detailed under Division 15, Mechanical Work.

B. Take ampere readings with true RMS reading ammeter at each electrical component, such as motor and heating coil, to determine proper operation.

C. Record readings and submit them in triplicate to the Engineer for review.

3.6 FIRE ALARM SYSTEM INSTALLATION AND TESTING

A. Fire alarm wiring shall be run in fire alarm rated MC cable; devices shall be securely affixed to building surfaces.

B. Junction boxes, pull boxes, outlet boxes and covers in the fire alarm raceway system shall be painted red.

C. Test every device and operation, including test by simulation of trouble, in presence of the Owner and the Architect. Notify the Owner, the Architect and interested parties of test 72 hours in advance.

D. The system as described shall be installed, tested and delivered to the Owner in fully operational and first-class condition. The system shall include all required hardware, raceways interconnecting wiring, software and reprogramming to accomplish the requirements of this Contract. The fire alarm equipment supplier will have had ten (10) years previous experience with facility operations and requirements.

3.7 LABELING

A. Label all new disconnects, starters, motors, furniture feeder boxes, in a manner acceptable to the Architect. Provide updated panel schedules in all panelboards within the scope of work.

B. All manufacturer's nameplates shall be kept clean and free of paint.

C. Data/communications wiring done under this Contract shall be recorded on cable management drawings. Each outlet shall be assigned a number which shall be keyed to its punchdown location.

END OF SECTION

DATE: 03-31-15
DRAWN BY: BD
SCALE: AS NOTED
REVIEWED BY: RM
PROJECT NO. 2014-108B

REVISIONS

NO.	DATE	DESCRIPTION

ELECTRICAL SPECIFICATIONS

ARCHITECT'S PROJECT NO. 2014-108B

NEW PORTABLE CLASSROOMS

ROBERTSON ELEMENTARY SCHOOL

65 NORTH SCHOOL STREET
MANCHESTER, CT

ENGINEER'S SEAL

FRIAR
ASSOCIATES II, L.L.C.
281 Farmington Avenue
Farmington, CT. 06032

SHEET NO.

E2.1