

LIST OF DRAWINGS

COVER	
S1.1	EXISTING ROOF FRAMING PART PLAN
M1.1	FIRST FLOOR MECHANICAL PART PLANS & DETAILS
E1.1	FIRST FLOOR ELECTRICAL PART PLANS

BOWERS ELEMENTARY SCHOOL
MEDIA CENTER AIR CONDITIONING

141 PRINCETON STREET
MANCHESTER, CONNECTICUT 06040

M/E/P ENGINEER
BEMIS ASSOCIATES LLC
185 MAIN STREET
FARMINGTON,CONNECTICUT
Phone: 860-667-3233
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DESIGN DATA

CODES USED

'2012' INTERNATIONAL BUILDING CODE WITH
'2016' STATE OF CONNECTICUT SUPPLEMENTS
ANSI/ASCE 7-10
AISC ASD-360-10 FOURTEENTH EDITION

DESIGN STRESSES USED

STRUCTURAL STEEL:

STEEL BEAMS:
ASTM A992 Fy = 50.0 k.s.i.
MISCELLANEOUS SHAPES
ASTM A-36 Fy = 36.0 k.s.i.

SNOW LOADS

GROUND SNOW LOAD 30 P.S.F.
SNOW EXPOSURE FACTOR C_s = 1.0
BUILDING RISK CATEGORY CATEGORY III
SNOW IMPORTANCE FACTOR I = 1.10

WIND LOADS

ULTIMATE DESIGN WIND SPEED 135 M.P.H.
ULTIMATE DESIGN WIND SPEED 105 M.P.H.
WIND EXPOSURE CATEGORY C
BUILDING RISK CATEGORY CATEGORY III
WIND IMPORTANCE FACTOR 1.15

SEISMIC DATA

MAPPED SPECTRAL RESPONSE S_s = 0.178
ACCELERATION S₁ = 0.064
SEISMIC DESIGN CATEGORY C
SEISMIC IMPORTANCE FACTOR 1.25

SECTION 05120 - STRUCTURAL STEEL

GENERAL REQUIREMENTS:

- All work shall be provided in accordance with AISC "Code of Standard Practice for Steel Buildings and Bridges", latest edition.
- Erection of structural steel shall be in accordance with Occupational Safety and Health Act, and the Construction Safety Act.
- Contractor shall examine drawings and data and coordinate the work with all related and adjoining work.
- Contractor is to verify and coordinate purchased Roof Top Unit Dimensions with framing dimensions noted. Make necessary adjustments. Verify existing girder and steel roof joist locations with new framing to be placed. Adjust and coordinate new Structural Steel Framing.
- Mechanical Unit curb attachment to steel roof deck support is the responsibility of the equipment supplier. Attachment must meet all of the requirements of the State of Connecticut Building Code. Seismic Criteria must be met in the Design of such attachments.

SUBMITTALS:

- Submit for review prior to fabrication or purchase, shop drawings showing the kind of material, sizes of members, details or pieces worked out with due reference to their position, framing, openings, method of securing same together.
- Review of shop drawings will be for sizes and shapes of main and secondary members only.
- Review of shop drawings will not cover detailed fabricating dimensions. Any errors in dimensions on shop drawings are the responsibility of the Contractor.
- Submit for review, qualifications of welders performing shop and field welding.

MATERIALS:

- Structural steel wide flange beams shall conform to ASTM A992 steel.
- Miscellaneous steel angles and plates shall conform to ASTM A36 steel.
- Structural steel pipes shall conform to ASTM A500, Grade B steel.
- All bolts shall conform to ASTM A325 unless noted otherwise on the drawings.
- Arc welding electrodes shall conform to ASTM Standard Specifications A233. Electrodes shall be of proper classification numbers.

FABRICATION:

- All shop fabrication shall conform to Chapter M, AISC Specifications. All members shall be free of twists, kinks, buckles or open joints. Shearing and punching shall be without ragged or torn edges. Holes shall be enlarged only by reaming.
- All shop connections shall be welded except where otherwise noted.
- All welding, shop and field, shall be performed only by procedures and welders qualified in accordance with standards for workmanship of American Welding Society "AWS D1.1-88, Structural Welding Code - Steel", as amended to date.
- Mill bearing ends of columns at right angles to column axis.
- Where loads are transmitted by direct bearing, set one bearing surface directly over the other in every case. Provide adequate bearing length or stiffeners as required to maintain beam web stresses within allowable limits.

SHOP FINISHING:

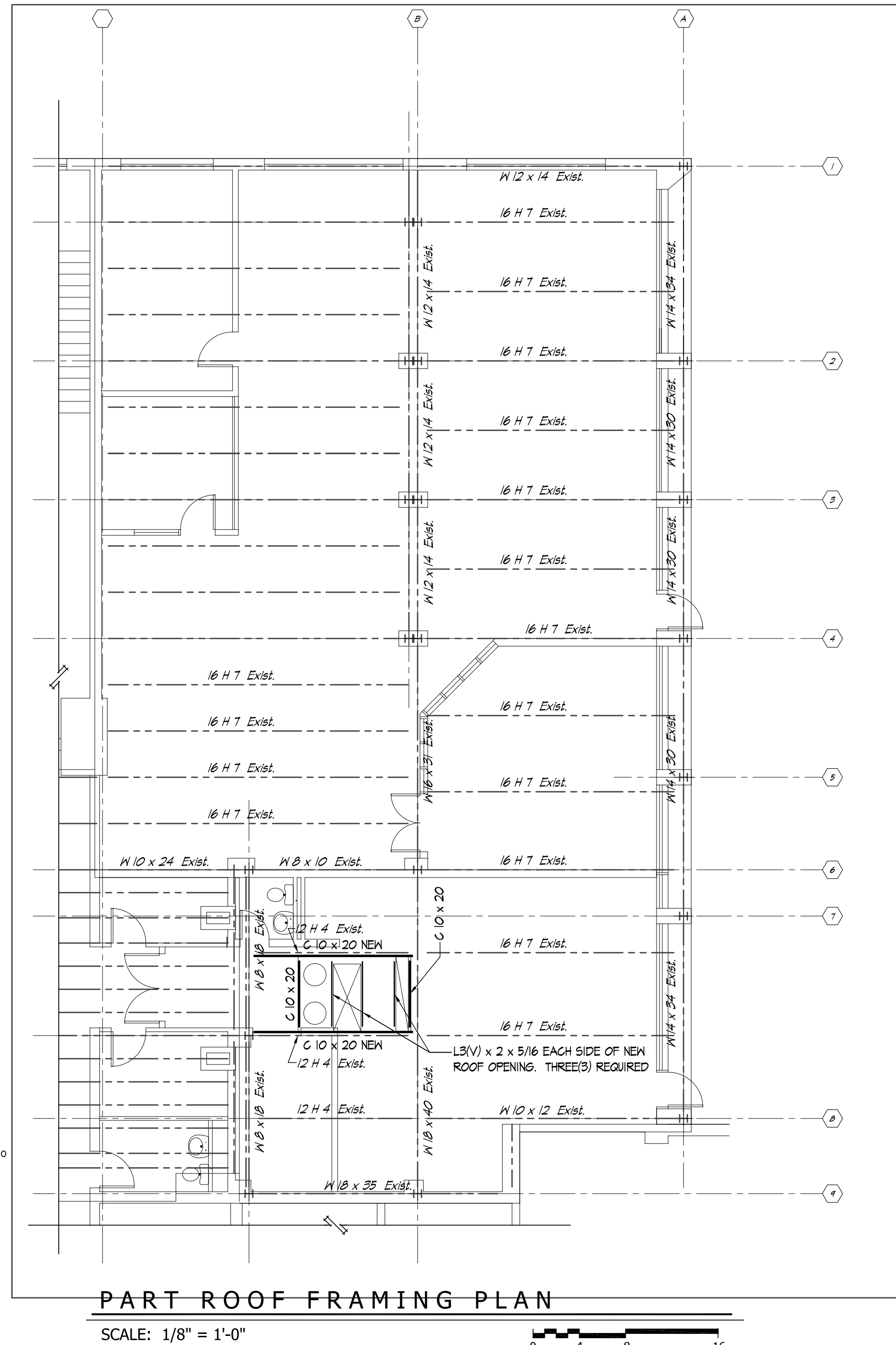
- All steel surfaces shall be cleaned by effective means in accordance with SSPC-SP2

ERECTION:

- Erection of steel shall be done in conformance with Section 7 of AISC "Code of Standard Practice".
- All structural framing shall be accurately set and secured in position.
- All structural steel work shall be maintained in its position with adequate bracing until all permanent field connections are completed.
- All field connections shall be bolted with high strength bolts.
- Make field changes to improper fit only after Engineer's approval.
- All new bolted connections to existing steel framing to be Mag Drilled. No exceptions.
- All precautions are to be taken for drilling through existing primer painted surfaces. Existing steel primer may contain lead based paint. Follow OSHA requirements for drilling of existing lead primer based steel surfaces.

FIELD QUALITY CONTROL

- Testing and Inspections: Owner shall engage a Qualified Testing and Inspecting Agency to perform tests and inspections and prepare test reports.
- Inspections:
 - Inspect installation and tightening of high-strength bolts.
 - Visually inspect all field welds as may be required.
 - Inspect steel frame for conformance with Structural Drawings including member configuration and connection details.
 - Distribute Reports on findings.



GENERAL DEMOLITION NOTES

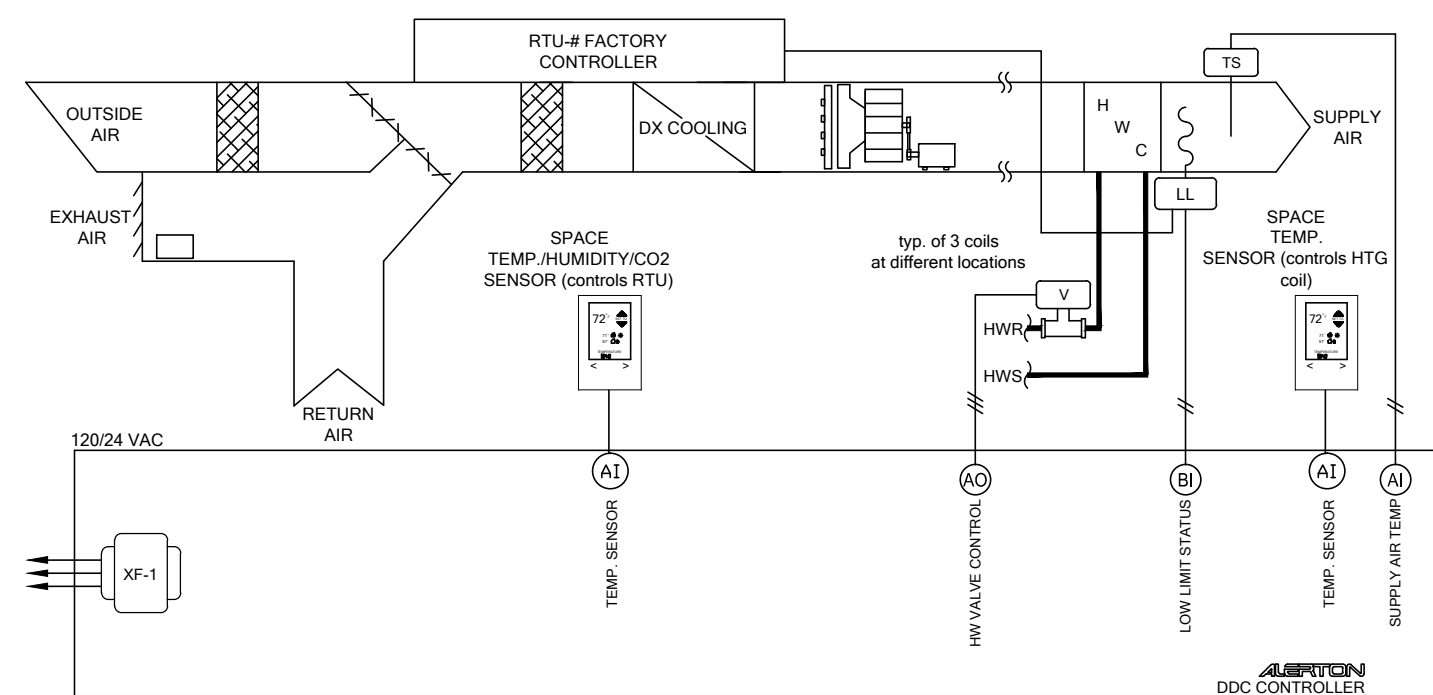
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITY LINES INCLUDING ELECTRICAL, SEWER, WATER, GAS, TELEPHONE, ETC. THE DRAWINGS SHOW DIAGRAMMATICALLY THE APPROXIMATE LOCATION OF UTILITIES WHERE INFORMATION IS AVAILABLE, BUT THE DRAWINGS ARE NOT EXACT AS TO THE QUANTITY, EXTENT OR LOCATION. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING ALL PHASES OF THE WORK TO LOCATE, IDENTIFY, AND PROTECT EXISTING UTILITIES. THE CONTRACTOR SHALL RECORD LOCATION OF AND REPAIR DAMAGE TO EXISTING UTILITIES WHICH ARE ENCOUNTERED AS A RESULT OF WORK UNDER THIS CONTRACT.
- CONTRACTOR SHALL MEASURE AND RECORD AIR FLOWS FOR ALL AIR HANDLING EQUIPMENT (AHU'S) AND EXHAUST FANS THAT ARE IN THE PROJECT AREA PRIOR TO DEMOLITION. REBALANCE THE SYSTEM AFTER INSTALLING THE NEW ROOFTOP UNIT

MECHANICAL DEMOLITION WORK NOTES

- PRIOR TO SUBMITTING BID, VISIT THE SITE AND IDENTIFY EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT WORK TO BE PERFORMED. CONTRACTOR SHALL MEASURE, RECORD AND SUBMIT AIR FLOWS PRIOR TO COMMENCING ANY DEMOLITION WORK. NO COMPENSATION WILL BE GRANTED FOR ADDITIONAL WORK CAUSED BY UNFAMILIARITY WITH SITE CONDITIONS THAT ARE VISIBLE OR READILY CONSTRUED BY EXPERIENCED OBSERVERS. INCLUDE IN THE BID ALL DEMOLITION WORK REQUIRED.
- THE DEMOLITION DRAWINGS ARE INTENDED ONLY TO DEFINE THE GENERAL SCOPE OF DEMOLITION WORK AND TO ASSIST THE CONTRACTOR DURING BIDDING. THE DEMOLITION DRAWINGS MAY NOT SHOW EVERY ITEM WHICH MUST BE DISCONNECTED, REMOVED, OR RELOCATED IN ORDER TO FACILITATE NEW WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION WORK REQUIRED WHETHER OR NOT SHOWN ON THE PLANS.
- COORDINATE AND SCHEDULE ALL WORK WITH THE OWNER TO MINIMIZE INCONVENIENCE TO THE BUILDING OCCUPANTS. ALL SERVICES AND SYSTEMS SERVING OCCUPIED AREAS OF THE BUILDING SHALL BE MAINTAINED IN OPERATION DURING WORKING SHIFTS.
- CONTRACTOR IS RESPONSIBLE FOR ANY TEMPORARY WORK REQUIRED TO KEEP THE BUILDING OCCUPIED DURING CONSTRUCTION.
- REMOVE ALL DEMOLITION MATERIAL FROM THE JOB SITE UNLESS NOTED DIFFERENTLY.
- CONTRACTOR SHALL FIELD VERIFY LOCATION AND SIZE OF EXISTING MECHANICAL EQUIPMENT.

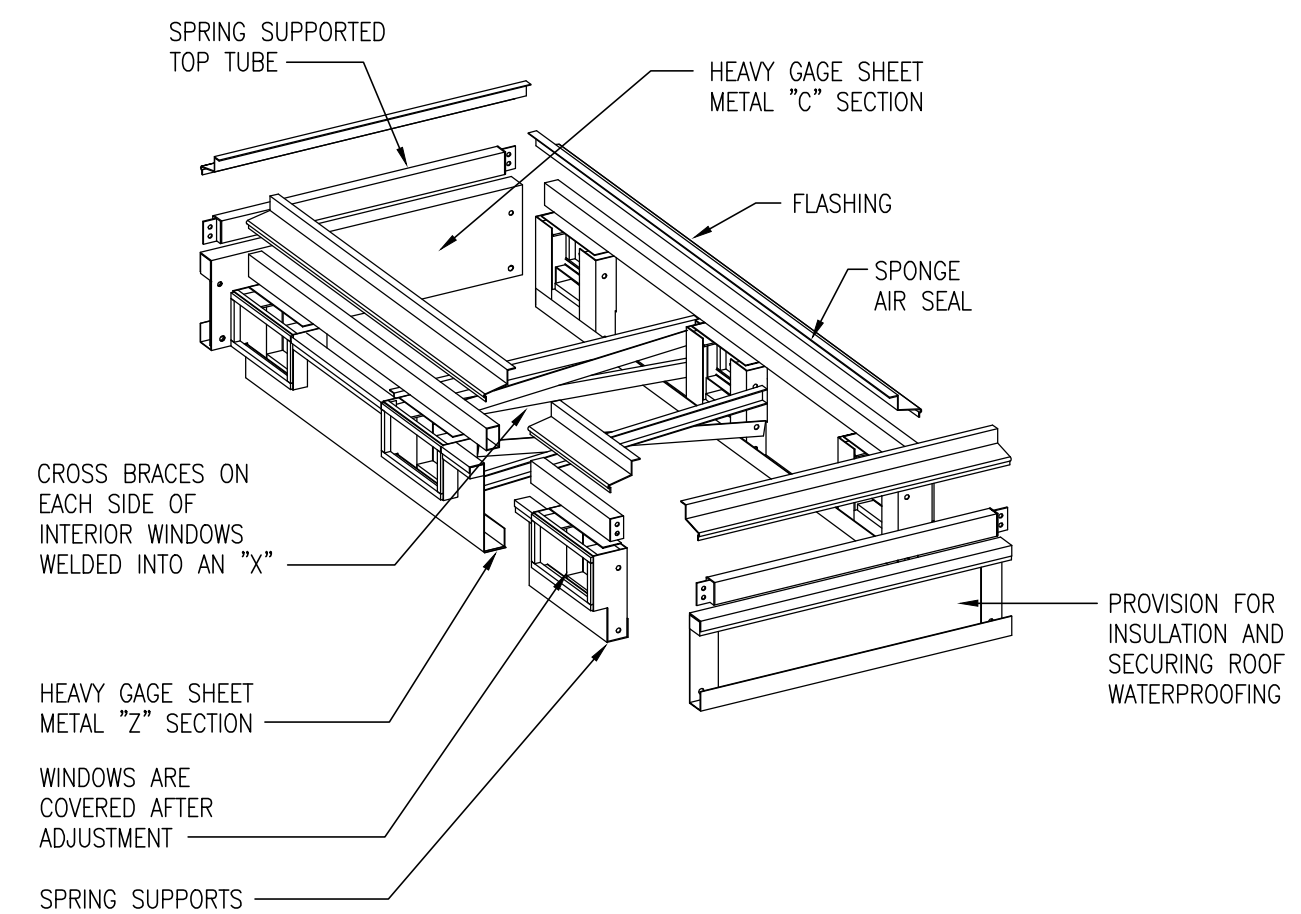
MECHANICAL NEW WORK NOTES

- ALL NEW SUPPLY AND RETURN DUCTWORK IN CONTRACT AREA THAT IS NOT LINED, SHALL BE INSULATED WITH 1-1/2" FIBERGLASS INSULATION. REMOVE AND DISPOSE OF EXISTING DUCT INSULATION IN CONTRACT AREA.



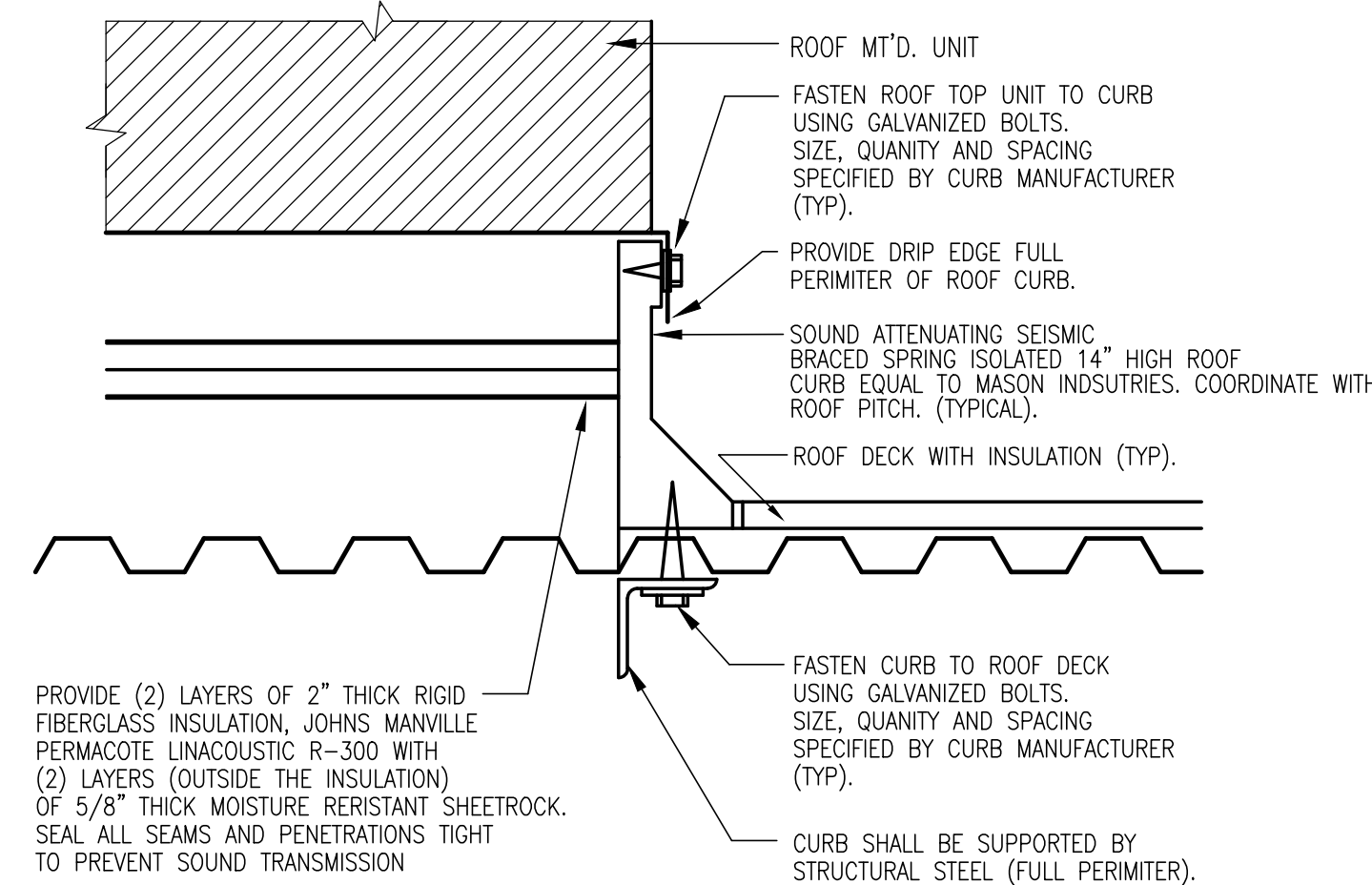
CONTROLS SHALL BE BY ABS OF GLASTONBURY.

PACKAGED RTU WITH HW RE-HEAT FLOW DIAGRAM



ROOF TOP UNIT SEISMIC SPRING SUPPORT CURB

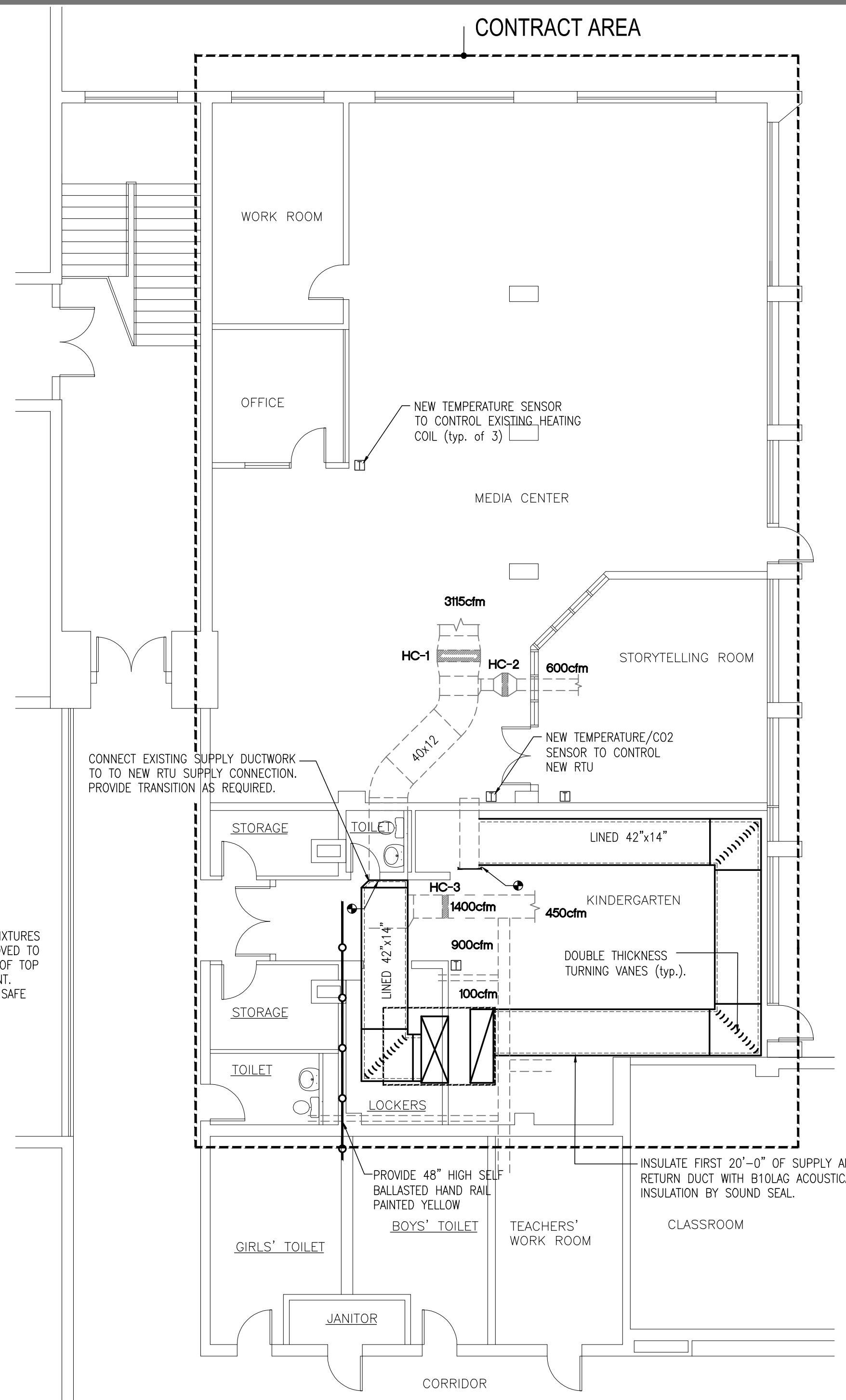
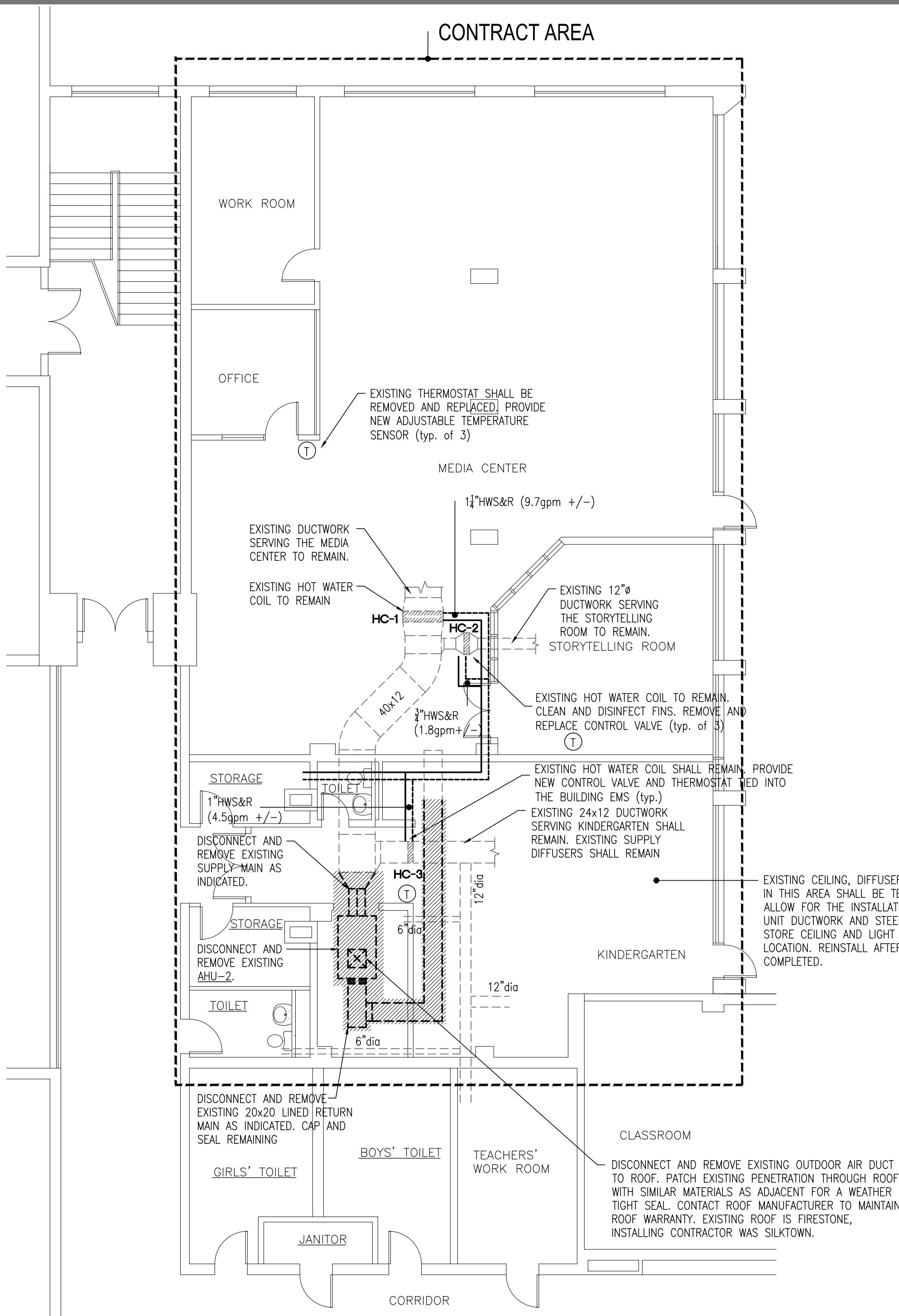
NO SCALE



PROVIDE (2) LAYERS OF 2" THICK RIGID FIBERGLASS INSULATION, JOHNS MANVILLE PERMACOTE UNACOUSTIC R-300 WITH (2) LAYERS (OUTSIDE THE INSULATION) OF 5/8" THICK MOISTURE RESISTANT SHEETROCK. SEAL ALL SEAMS AND PENETRATIONS TIGHT TO PREVENT SOUND TRANSMISSION

FIRST FLOOR PART PLAN - MECHANICAL DEMOLITION

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



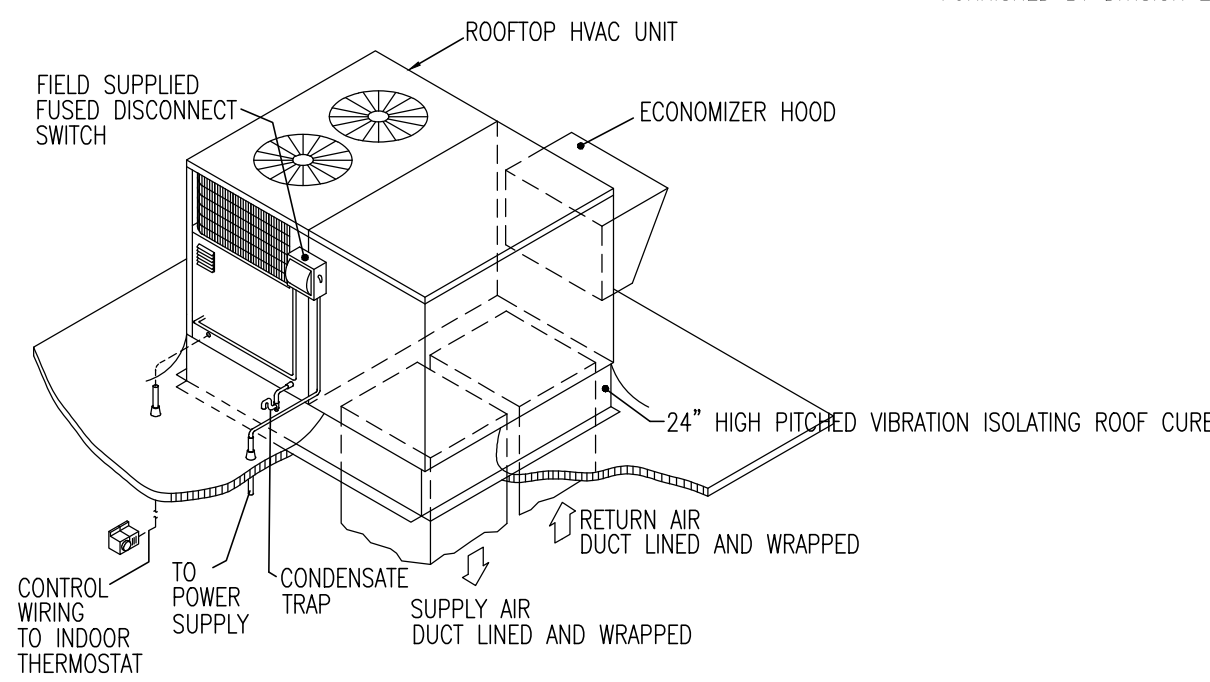
FIRST FLOOR PART PLAN - MECHANICAL NEW WORK

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

ROOFTOP UNIT SCHEDULE																											
UNIT No.	AREA SERVED	MANUFACTURER	MODEL	Min. O.A. (CFM)	SYSTEM FAN DATA				HOT WATER COIL DATA		DX COOLING COIL DATA								ELECTRICAL DATA				REMARKS				
					CFM	ESP	TSP	BHP	HP		EER/IEER	#COILS/#ROWS/FT	Face Vel. ft/min	TMBH	SMBH	EAT(db/wb)	LAT(db/wb)	APD	VOLTS	PHASE	Hz	FLA		MCA	MOP		
RTU-1	MEDIA/KINDERGARTEN	TRANE	THD 150G	1,100	5,100	.75"	1.75"	2.28	4			11.1/18	1/6/15	337	152.78	113.3	80	67	59.77	57.98	0.44	208	3	60	65.0	90	Refer to Notes (1 through 17)

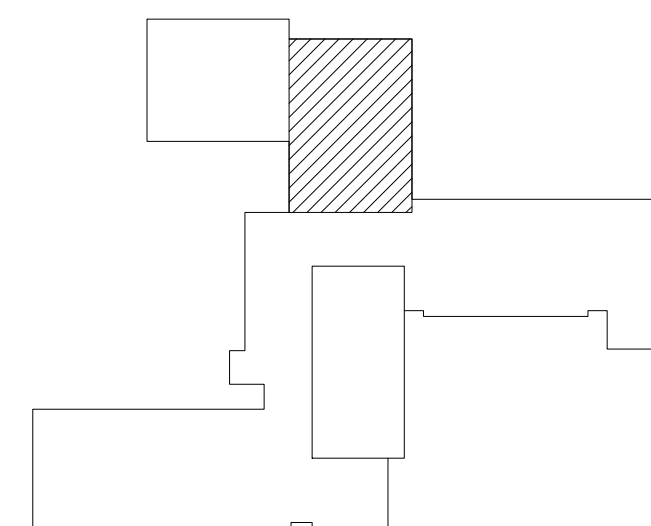
NOTES:

- 14 GAUGE GALVANIZED FLOOR
- DOUBLE WALL, PERFORATED IN FAN SECTION, RA AND SA PLENUMS.
- INSULATED STAINLESS STEEL DRAIN PAN
- PROVIDE (2) SETS OF 30% (MERV 8)
- UNIT SHALL PROVIDE WITH DUAL COMPRESSOR, ONE INVERTER SCROLL FOR PART LOAD CONTROL AND ONE FIXED SPEED SCROLL.
- PROVIDE WITH PREMIUM EFFICIENCY ECM MOTOR



ROOFTOP HVAC UNIT DETAIL

SCALE: N.T.S.



KEY PLAN

NO SCALE

REVISIONS

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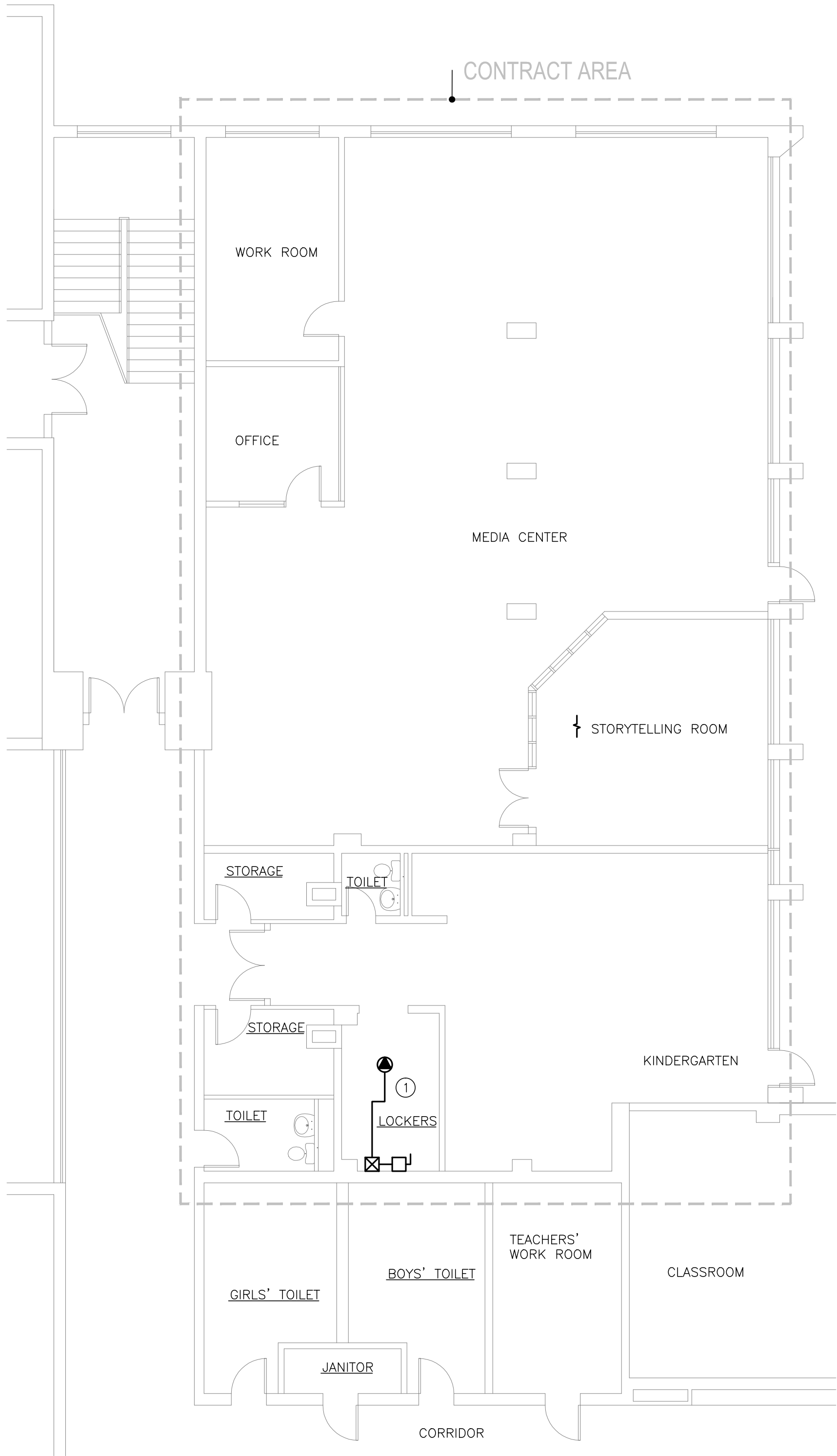
TITLE
**FIRST FLOOR
MECHANICAL PART
PLANS & DETAILS**

DATE **2/14/2018**

DWG. NO.
M1.1

- GENERAL SPECIFICATION NOTES – POWER
- THE CONTRACTOR SHALL VERIFY AND OBTAIN ALL NECESSARY DIMENSIONS AT THE BUILDING.
 - FINISHED WORK: THE INTENT OF THE SPECIFICATIONS AND DRAWINGS IS TO CALL FOR FINISHED WORK, COMPLETED, TESTED AND READY FOR OPERATION.
 - GOOD PRACTICE: IT IS NOT INTENDED THAT THE DRAWINGS SHOW EVERY CONDUIT, JUNCTION BOX, FITTING OR MINOR DETAIL AND IT IS UNDERSTOOD THAT WHILE THE DRAWINGS MUST BE FOLLOWED AS CLOSELY AS CIRCUMSTANCES WILL PERMIT, THE SYSTEMS SHALL BE INSTALLED ACCORDING TO THE INTENT AND MEANING OF THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH GOOD PRACTICE.
 - ANY APPARATUS, APPLIANCE, MATERIAL OR WORK NOT SHOWN ON DRAWINGS BUT MENTIONED IN SPECIFICATIONS OR VICE VERSA, OR ANY INCIDENTAL ACCESSORIES NECESSARY TO MAKE THE WORK COMPLETE AND PERFECT IN ALL RESPECTS AND READY FOR OPERATION, EVEN IF NOT PARTICULARLY SPECIFIED, SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR AT NO ADDITIONAL COST TO OWNER.
 - CODES AND STANDARDS – COMPLY WITH ALL FEDERAL, STATE AND LOCAL CODES AND STANDARDS WHEREVER APPLICABLE INCLUDING THE FOLLOWING: 2009 AMENDMENT TO THE 2016 CONNECTICUT STATE BUILDING CODE SUPPLEMENT, 2012 INTERNATIONAL BUILDING CODE, 2005 CONNECTICUT FIRE SAFETY CODE, 2016 CONNECTICUT FIRE CODE, 2014 NATIONAL ELECTRICAL CODE, ICC/ANSI A117.1–2003 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES, ADA, NFPA, UNDERWRITERS LABORATORIES, FACTORY MUTUAL INSURANCE COMPANY, NEMA STANDARDS.
 - NOTE THAT THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF THE ELECTRICAL EQUIPMENT AND SYSTEMS, WITHOUT SHOWING EVERY DETAIL AND FITTING.
 - RACEWAYS: PROVIDE EMT CONDUIT FOR ALL WIRING. EMT CONNECTORS AND COUPLINGS SHALL BE GALVANIZED STEEL SET–SCREW TYPE. PROVIDE GLAND COMPRESSION CONNECTORS AND COUPLINGS WHERE LOCATED IN DAMP AND WET LOCATIONS. PROVIDE FLEXIBLE STEEL CONDUIT FOR FINAL CONNECTIONS TO MOTOR DRIVEN EQUIPMENT. PROVIDE RIGID GALVANIZED STEEL CONDUIT WHERE LOCATED IN DAMP OR WET AREAS.
 - RACEWAY CIRCUIT CONDUCTORS SHALL BE COPPER, RATED 600 VOLTS, 90 DEG.C., COLOR CODED, TYPE XHHW–2.
 - WIRE SIZE #8 AWG AND LARGER SHALL BE STRANDED. WIRE OF SIZE SMALLER THAN #8 AWG SHALL BE SOLID.
 - MINIMUM SIZE CONDUCTORS FOR POWER AND LIGHTING SHALL BE #12 AWG. PROVIDE MINIMUM #10 AWG SIZE FOR RUNS EXCEEDING 75' IN CONDUCTOR LENGTH, AND #8 AWG SIZE FOR RUNS EXCEEDING 150' IN CONDUCTOR LENGTH. PROVIDE LARGER SIZE CONDUCTORS AS SCHEDULED OR AS NOTED ON THE DRAWINGS.
 - THE NUMBER OF WIRES IN A CONDUIT RUN IS INDICATED ON THE DRAWINGS BY CROSS LINES ON THE CONDUIT RUNS. PROVIDE CODE–SIZED CONDUIT FOR THE NUMBER AND SIZE OF WIRES UNLESS A LARGER SIZE IS SHOWN ON THE DRAWINGS. MINIMUM CONDUIT SIZE SHALL BE 3/4".
 - RACEWAYS SHALL BE CONCEALED WHEREVER POSSIBLE IN ALL FINISHED AREAS.
 - RACEWAYS SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES TO WALL LINES.
 - RACEWAYS SHALL BE SUPPORTED FROM THE STRUCTURE BY STRAP HANGERS, ROD HANGERS, OR RACK MOUNTED, OR OTHER APPROVED ELECTRICAL MOUNTING.
 - PROVIDE FIRE STOPPING AT ALL FIRE AND/OR SMOKE RATED WALL OR CEILING PENETRATIONS IN ORDER TO MAINTAIN ITS ORIGINAL INTEGRITY.
 - OUTLET BOXES SHALL BE CODE GAUGE GALVANIZED STEEL AND SHALL BE OF SHAPES AND SIZES TO SUIT THEIR RESPECTIVE LOCATIONS AND INSTALLATIONS, AND SHALL BE PROVIDED WITH COVERS TO SUIT THEIR FUNCTION AND INSTALLATION. MINIMUM BOX SIZE SHALL BE 4" SQ. X 2 1/8" DEEP (2–GANG). PROVIDE CAST BOXES FOR OUTDOOR WORK.
 - OUTLET BOXES SHALL BE EQUIPPED WITH FIXTURE STUD OR STRAPS WHERE REQUIRED.
 - INSTALL BOXES IN ACCESSIBLE LOCATIONS AND AT UNIFORM HEIGHTS.
 - SET BOXES AND COVERS SQUARE AND TRUE WITH BUILDING FINISH.
 - BRANCH CIRCUIT WIRING AND ARRANGEMENT OF HOME RUNS HAS BEEN DESIGNED FOR MAXIMUM ECONOMY CONSISTENT WITH ADEQUATE SIZING FOR VOLTAGE DROPS, CIRCUIT IMPACTS, AND OTHER CONSIDERATIONS. INSTALL THE WIRING WITH CIRCUITS ARRANGED AS SHOWN ON THE DRAWINGS, EXCEPT AS APPROVED IN ADVANCE BY THE ARCHITECT AND ENGINEER. DO NOT MAKE CHANGES WITHOUT PRIOR APPROVAL.
 - PROVIDE A SEPARATE NEUTRAL CONDUCTOR FOR EACH 120V SINGLE PHASE CIRCUIT. DO NOT USE A COMMON NEUTRAL FOR GROUPS OF CIRCUITS. PROVIDE A SEPARATE GROUND WIRE FOR EACH CIRCUIT BACK TO THE RESPECTIVE PANEL GROUND. IF MORE THAN 5 CURRENT CARRYING CONDUCTORS ARE INSTALLED IN ONE CONDUIT THEY SHALL BE DE–RATED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE. DO NOT INSTALL MORE THAN THREE 30 AMP SINGLE PHASE OR FOUR 20 AMP SINGLE PHASE CIRCUITS IN THE SAME CONDUIT.

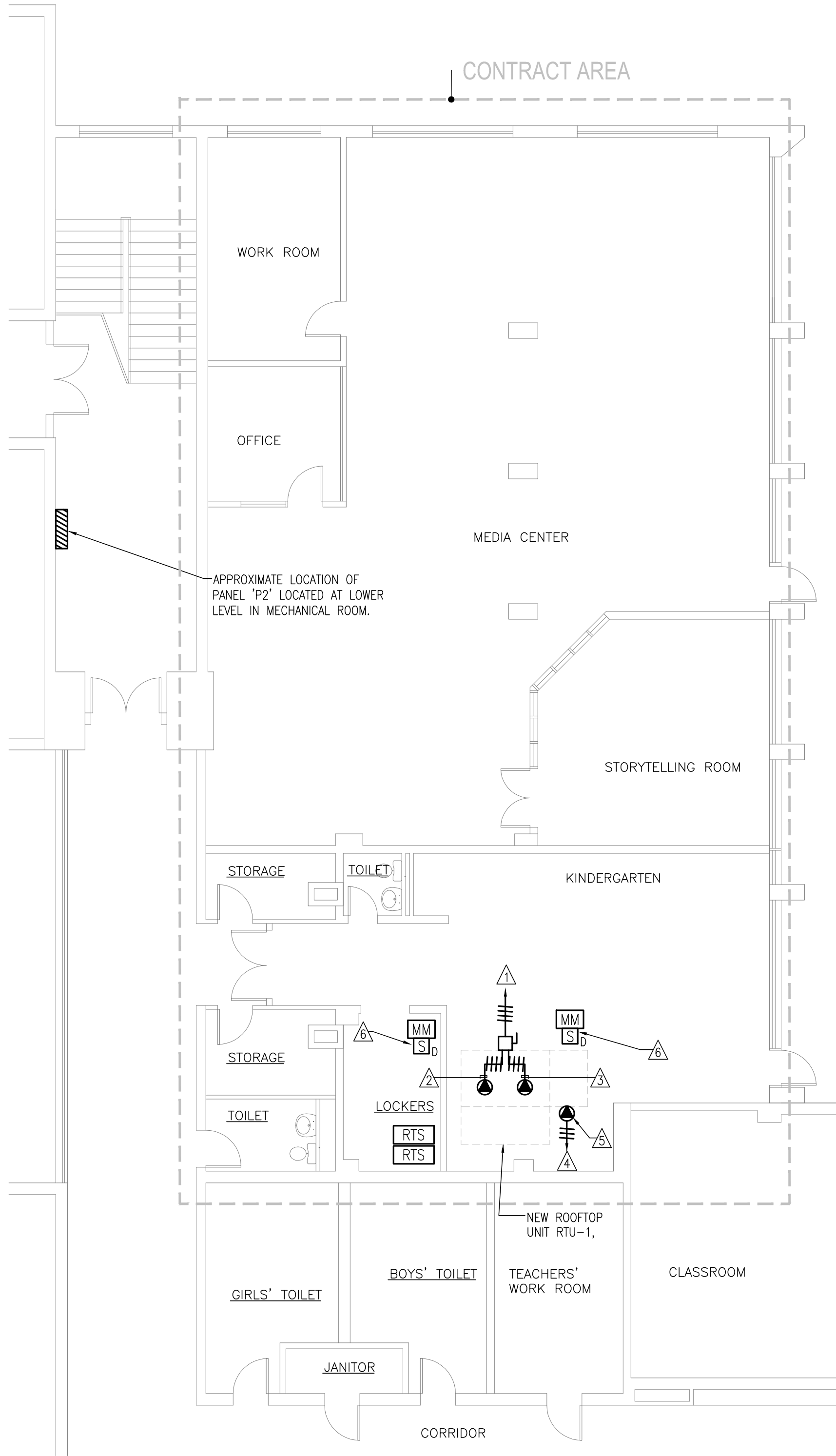
LEGEND	
SYMBOL/ABBREVIATION	DESCRIPTION
	CONDUCTORS IN CONDUIT. CROSS LINES INDICATE NUMBER OF CONDUCTORS.
	BRANCH CIRCUIT HOMERUN IN CONDUIT. CROSS LINES INDICATE NUMBER OF CONDUCTORS.
	STARTER SWITCH.
	DISCONNECT SWITCH.
	SPECIAL EQUIPMENT POWER CONNECTION. EQUIPMENT AS DESIGNATED.
	PANELBOARD.
	MONITOR MODULE
	DUCT SMOKE DETECTOR REMOTE TEST STATION
	DUCT SMOKE DETECTOR.
A	AMPS.
C	CONDUIT.
GND.	GROUND.
P	POLE.
W	WIRE.



FIRST FLOOR PART PLAN - ELECTRICAL DEMOLITION

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

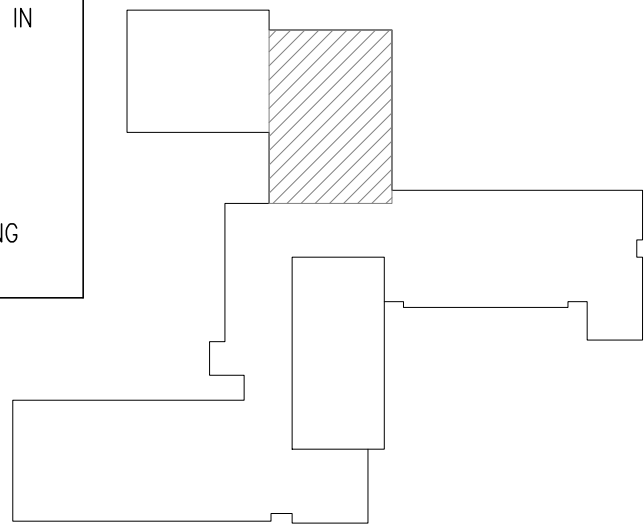
DEMOLITION KEY NOTES
① EXISTING AHU–2 TO BE REMOVED COMPLETELY, INCLUDING ALL WIRING, CONDUIT, STARTERS AND DISCONNECT SWITCH. REMOVE CIRCUIT AND CONDUIT BACK TO SOURCE PANEL, TURN CIRCUIT BREAKER OFF AND LABEL SPARE.



FIRST FLOOR PART PLAN - ELECTRICAL NEW WORK

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

POWER KEY NOTES
PROVIDE 3 X #3 AWG AND 1 X #8 AWG GND. IN 1 1/4" C. FROM A NEW 90A–3P CIRCUIT BREAKER IN PANEL P2, LOCATED IN MECHANICAL ROOM AT LOWER LEVEL.
PROVIDE 3 X #4 AWG AND 1 X #8 AWG GND. IN 1 1/4" C. FROM DISCONNECT TO COMPRESSOR AND CONDENSER FANS CIRCUIT.
PROVIDE 3 X #12 AWG AND 1 X #12 AWG GND. IN 3/4" C. FROM DISCONNECT TO FANS AND CONTROLS CIRCUIT
PROVIDE 2 X #12 AWG AND 1 X #12 AWG GND. IN 3/4" C. FROM A NEW 20A–1P CIRCUIT BREAKER IN PANEL P2, LOCATED IN MECHANICAL ROOM AT LOWER LEVEL.
POWER FOR GFCI RECEPTACLE PROVIDED WITH UNIT. PROVIDE A WEATHER PROOF SWITCH AND WALL MOUNTED LED BARRON LIGHTING FIXTURE MODEL #TLED804–20, MOUNTED TO THE SIDE OF RTU–1, WIRE TOGETHER WITH DUPLEX RECEPTACLE TO CIRCUIT AS INDICATED.
PROVIDE DUCT SMOKE DETECTORS ONE EACH IN THE SUPPLY AND RETURN DUCT. WIRE TO LOCAL FIRE ALARM CIRCUIT SERVING AREA. CURRENT SYSTEM IS MAINTAINED BY TPC (phone number 203 878–1321)



KEY PLAN
NO SCALE

REVISIONS

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BIA

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ELECTRICAL
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