

MECHANICAL SPECIFICATIONS

I. GENERAL

- A. SCOPE INCLUDES WORK AT 255 WILMONT RD, NEW ROCHELLE, NY. THE OVERALL WORK SCOPE INCLUDES SPLIT AIR HANDLER UNITS, VRF AIR-CONDITIONING, VENTILATION, BOILER AND HEATING SYSTEMS.
- B. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE 2020 NEW YORK STATE BUILDING CODES, AND LOCAL BUILDING DEPARTMENT STANDARDS.
- C. PRIOR TO SUBMISSION OF THEIR FORMAL BID, THIS CONTRACTOR SHALL REVIEW ALL DRAWINGS OF THE ENTIRE PROJECT INCLUDING MECHANICAL, ELECTRICAL AND PLUMBING.
- D. PRIOR TO SUBMISSION OF THIS BID, THIS CONTRACTOR SHALL VISIT THE JOB SITE IN ORDER TO ACQUAINT THEMSELVES WITH ACTUAL FIELD CONDITIONS AS IT RELATES TO THE SCOPE OF WORK. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO THE SUBMISSION OF HIS BID. DISCREPANCIES NOT RESOLVED TO THE SATISFACTION OF THIS CONTRACTOR SHALL BE INCLUDED AS A WRITTEN DOCUMENT OF THE BID PACKAGE.
- E. ALL WORK SHALL BE INSTALLED IN A NEAT WORKMAN LIKE MANNER. ALL EQUIPMENT SHALL BE INSTALLED WITH ADEQUATE CLEARANCE FOR PROPER BALANCING, MAINTENANCE AND REPAIR OF THE EQUIPMENT.
- F. DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF WORK AND EQUIPMENT. FINAL LOCATIONS TO BE COORDINATED WITH FIELD CONDITIONS.
- G. INSTALLATION OF ALL NEW EQUIPMENT, DEVICES, AND PIPING SHALL BE COORDINATED WITH ALL TRADES. CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND GENERAL CONTRACTOR.
- H. THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION: AIA DOCUMENT A201-2001 AND THE ARCHITECT'S SPECIFICATIONS ARE INCLUDED AS PART OF THIS CONTRACT.
- I. ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF OWNER AND ENGINEER. THIS CONTRACTOR IS TO PROCURE MANUFACTURER REPRESENTATIVES FOR PROPER START UP AND OPERATION OF INSTALLED EQUIPMENT.

2. SCOPE OF WORK

- A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT AND CONTRACTOR'S SURVEYS NECESSARY FOR A COMPLETE SAFE INSTALLATION OF THIS SCOPE OF WORK. ALL WORK SHALL CONFORM TO THE 2020 NEW YORK STATE BUILDING CODE AND ALL AUTHORITIES HAVING JURISDICTION.
- B. PAY ALL FEES AND CHARGES FOR WORK INSTALLED, CERTIFYING COMPLIANCE WITH THE NEW YORK STATE BUILDING CODES AND AUTHORITIES HAVING JURISDICTION.
- C. THIS CONTRACTOR SHALL PROCURE A LICENSED ENGINEER TO PERFORM ALL SIGN-OFF INSPECTIONS IN A TIMELY MANNER.
- D. GENERAL CONTRACTOR SHALL PROVIDE ON-SITE SUPERVISION OF ALL SUB-CONTRACTORS AND SUB-CONTRACTORS SHALL PROVIDE ON-SITE SUPERVISION OF ALL OF THEIR PERSONNEL. G.C. SHALL SCHEDULE AN ON-SITE CONSTRUCTION MEETING WITH ALL SUB-CONTRACTORS ON A WEEKLY BASIS AND AS NECESSARY TO RESOLVE ALL FIELD CONFLICTS.
- E. ALL CONTRACTORS AND SUB-CONTRACTORS SHALL CARRY GENERAL LIABILITY INSURANCE AS WELL AS BONDING REQUIRED BY THE CLIENT. ALL INSURANCE REQUIREMENTS MUST BE CONFIRMED WITH CLIENT PRIOR TO BIDDING PROJECT.
- F. CONTRACTOR TO FOLLOW ALL BUILDING REGULATIONS DURING DEMOLITION, CONSTRUCTION, TESTING AND SUBMISSION PHASES. NO WORK SHALL COMMENCE UNTIL CONTRACTOR HAS REVIEWED AND ACCEPTED BUILDING RULES & REGULATIONS.
- G. GENERAL SCOPE OF WORK AS FOLLOWS:

GENERAL (NOTES APPLY TO ALL CONTRACTORS)

- REVIEW OF PROJECT DOCUMENTS AND VISIT TO JOB SITE PRIOR TO SUBMISSION OF BID.
- PROVIDE FULL SUBMITTAL AND SHOP DRAWINGS FOR ALL WORK.
- SUBMIT AS-BUILTS, TEST REPORTS AND EQUIPMENT MANUALS TO ENGINEER FOR REVIEW.
- CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY TESTING AND INSPECTIONS.
- CONTRACTOR IS RESPONSIBLE TO FUNCTIONALLY TEST SYSTEM TO ENSURE COMPLIANCE TO DESIGN DOCUMENTS AND PROPER OPERATION OF SYSTEM.
- CONTRACTOR TO FOLLOW ALL BUILDING REGULATIONS DURING CONSTRUCTION, TESTING AND SUBMISSION PHASES.
- CONTRACTOR RESPONSIBLE FOR START-UP AND COMMISSIONING OF ALL EQUIPMENT. RETAIN MANUFACTURER REPRESENTATIVES AS NECESSARY.
- CONTRACTOR IS RESPONSIBLE TO INSTALL A WORKING SYSTEM AND ASSIST ALL TRADES TO ASSURE SYSTEM IS OPERATIONAL AND FUNCTIONS AS DESIGNED.

MECHANICAL CONTRACTOR

- MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE TO DEMOLISH ALL SYSTEMS AND EQUIPMENT AS INDICATED ON PLANS AND AS NECESSARY.
- PROVIDE AND INSTALL NEW EQUIPMENT, PIPING, AND ALL OTHER ACCESSORIES AS SCHEDULED ON PLANS.
- DUCTWORK, PIPING, HANGERS, EQUIPMENT, INSULATION AND ACCESSORIES AS SHOWN ON PLANS AND AS NECESSARY FOR A COMPLETE JOB.
- BALANCE ALL AIR SYSTEMS AS SHOWN ON PLANS.
- PROVIDE AND INSTALL FIRE DAMPER AND ACCESS DOORS IN ALL RATED WALLS AND AS INDICATED ON DESIGN DRAWINGS. CONFIRM RATING REQUIREMENTS WITH ARCHITECT.

ELECTRICAL CONTRACTOR

- ELECTRICAL POWER AND CONTROL WIRING SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

GENERAL CONSTRUCTION CONTRACTOR

- PROVIDE ALL NECESSARY CUTTING, PATCHING, SEALING AND FIRESAFING FOR COMPLETION OF SCOPE OF WORK.

3. SHOP DRAWINGS

- A. GENERAL CONTRACTOR AND ALL SUB-CONTRACTORS ARE TO FACILITATE THE COORDINATION THE EXTENT OF WORK REQUIRED TO BE COMPLETED UNDER THIS CONTRACT. FAILURE TO EXAMINE ALL THE CONTRACT DOCUMENTS FOR THIS PROJECT WILL NOT RELIEVE THE CONTRACTOR OF HIS/HER RESPONSIBILITIES TO PERFORM THE WORK REQUIRED FOR A COMPLETE FULLY FUNCTIONAL AND SATISFACTORY INSTALLATION.
- B. SUBMIT TWO HARD PRINTS AND ONE DIGITAL PDF IN E-MAIL AND/OR CD OF SHEET METAL AND/OR PIPING SHOP DRAWINGS, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT CERTIFIED EQUIPMENT CUTS WITH CONSTRUCTION WIRING DIAGRAMS AND AUTOMATIC TEMPERATURE CONTROL SHOP DRAWINGS.
- C. ALL BIDS ARE TO BE BASED ON EQUIPMENT SPECIFIED AND SCHEDULED. IF A SUBSTITUTION IS PROPOSED CUTS SHALL BE PROVIDED TO OWNERS/ENGINEERS HIGHLIGHTING THE SUBSTITUTION AND THE REASON FOR THE PROPOSED SUBSTITUTION. ALL SUBSTITUTIONS ARE SUBJECT TO OWNERS AND ENGINEERS APPROVAL. JMW SHALL BE COMPENSATED ON AN HOURLY RATE BASIS FOR TIME SPENT REVIEWING SUBSTITUTE EQUIPMENT AND ANY TIME NECESSARY TO REVISE PLANS FOR FILING.
- D. ONLY E-MAILED SUBMISSION SHALL NOT BE ACCEPTABLE.
- E. THIS CONTRACTOR SHALL PREPARE AND SUBMIT FOR APPROVAL DRAWINGS ON A SCALE NOT LESS THAN 3/8"= 1'-0"
- F. SUBMIT SHOP DRAWINGS, EQUIPMENT SUBMITTALS WHICH SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
- DUCT LAYOUT AND APPURTENANCES
  - EQUIPMENT LAYOUT
  - CERTIFIED BALANCING REPORT
  - EQUIPMENT
  - DUCTWORK AND AIR HANDLERS
  - CONTROLS DRAWING
- G. JMW SHALL REVIEW AND COMMENT ON SUBMITTED SHOP DRAWING AND EQUIPMENT SUBMITTALS, SCAN THE SHOP DRAWINGS AND DISTRIBUTE VIA E-MAIL. COMMENTS ON LARGE SUBMITTALS WILL BE SUMMARIZED ON THE COVER SHEET AND THAT COVER SHEET WILL BE RETURNED.
- H. SHOP DRAWINGS SHALL INDICATE OTHER ELEMENTS LOCATED IN THE VICINITY OF THE DUCTWORK AND PIPING SYSTEM, SUCH AS: STRUCTURAL ELEMENTS, ELECTRICAL FIXTURES, CONDUITS, OTHER PIPING SYSTEMS, EQUIPMENT, APPLIANCES, FIXTURES, ETC.
- I. SUBMIT DUCT CONSTRUCTION STANDARDS BASED ON SMACNA

4. AS-BUILTS DRAWINGS AND OPERATING AND SERVICE MANUALS

- A. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL DEVELOP AS BUILT DRAWINGS ACCURATELY REFLECTING THE INSTALLATION OF THE COMPLETE SYSTEM, RECORDING ALL CHANGES FROM THE ORIGINAL DESIGN THAT OCCURRED DURING THE CONSTRUCTION PROCESS.
- B. AFTER COMPLETION OF THE PROJECT THE CONTRACTOR SHALL FULLY INSTRUCT THE APPROPRIATE OWNERS PERSONAL ON THE OPERATIONS OF ALL SYSTEMS INSTALLED.
- C. THE CONTRACTOR SHALL DEVELOP OPERATION AND SERVICE MANUALS CONSISTING OF ALL OPERATION PROCEDURES FOR THE WHOLE SYSTEM, INCLUDING ORIGINAL SYSTEM SETTINGS, ALL REQUIREMENTS, TESTS AND PROCEDURES, INCLUDING RECOMMENDED SERVICE PERIODS, ALL ORIGINAL EQUIPMENT SUBMITTALS WITH ENGINEERING DATA, ALL EQUIPMENT INSTALLATION MANUALS AND PARTS LISTS.
- D. AS PART OF FINAL ACCEPTANCE OF INSTALLATION THE CONTRACTOR SHALL SUPPLY THE OWNERS WITH TWO COPIES (2) OF CONTRACT CLOSE OUT DOCUMENTS INCLUDING SHOP-DRAWINGS, AS BUILT DRAWINGS, OPERATION AND MAINTENANCE MANUALS, AIR BALANCING REPORTS SIGNED OFF BY A LICENSED BALANCER AND ALL APPLICABLE WARRANTY AND PRODUCT REGISTRATION INFORMATION. THIS SHALL BE PROVIDED IN A DIGITAL IN ADDITION TO A BINDER WITH LAMINATED SHEETS. IN ADDITION, PROVIDE A DIGITAL COPY TO THE ENGINEER, ARCHITECT AND OWNER FOR THEIR RECORDS.

5. FINAL ACCEPTANCE, GUARANTEES AND WARRANTIES

- A. AS PART OF THE CONTRACT THE CONTRACTOR SHALL GUARANTEE AND SERVICE THE FINAL INSTALLATION FOR ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE INSTALLATION. (DEFINED BELOW)
- B. UP UNTIL FINAL ACCEPTANCE AND THE ONE YEAR GUARANTEE FOLLOWING, THE CONTRACTOR SHALL REPLACE OR REPAIR ANY EQUIPMENT OR MATERIAL FOUND TO BE DEFECTIVE AT THE CONTRACTORS EXPENSE. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ANY DAMAGE CAUSED TO THE SURROUNDING AREAS RELATED TO THE ISSUE. IF A PRODUCT UNDER WARRANTY REQUIRES A REPAIR DURING THIS PERIOD, THE CONTRACTOR IS FULLY RESPONSIBLE FOR COORDINATING THE MANUFACTURER'S REMEDIATION WORK TO THE EQUIPMENT.
- C. FINAL ACCEPTANCE OF INSTALLATION SHALL BE CONFIRMED AFTER THE CONTRACTOR HAS INSTALLED AND BALANCED ALL SYSTEMS TO THE OWNERS/ENGINEERS APPROVAL. SUBMITTED AS BUILTS AND OPERATION AND MAINTENANCE MANUALS AND HAS OBTAINED ALL REQUIRED CERTIFICATES OF INSPECTIONS AND APPROVALS.
- D. FOR ALL APPLICABLE EQUIPMENT THE CONTRACTOR SHALL COMPLETE ALL WARRANTY AND PRODUCT REGISTRATION INFORMATION AND SUBMIT TO MANUFACTURERS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH COPIES OF ALL WARRANTIES FOR THEIR RECORDS.

6. CONNECTIONS TO EXISTING WORK, REMOVAL AND RELOCATION

- A. PLAN INSTALLATION OF ALL NEW WORK INCLUDING CONNECTIONS TO EXISTING WORK TO ENSURE MINIMUM INTERFERENCE WITH REGULAR OPERATION OF EXISTING BUILDING FACILITIES. ALL REQUIRED SYSTEM SHUTDOWNS AFFECTING OTHER AREAS SHALL BE COORDINATED WITH THE BUILDING.
- B. CONNECT NEW WORK TO EXISTING WORK IN A NEAT AND APPROVED MANNER. RESTORE EXISTING WORK WHICH WAS DISTURBED WHILE INSTALLING NEW WORK TO A CONDITION ACCEPTABLE TO THE OWNER.
- C. REMOVAL AND RELOCATION OF SOME EXISTING MATERIAL, EQUIPMENT, OR PIPING WILL BE NECESSARY FOR THE PROPER INSTALLATION OF NEW WORK. ALL EXISTING CONDITIONS HAVE NOT BEEN COMPLETELY DETAILED ON THE DRAWINGS.

7. CUTTING AND PATCHING

- A. ALL NECESSARY CUTTING CORE DRILLING AND PATCHING FOR THE INSTALLATION OF THE MECHANICAL WORK SHALL BE PERFORMED BY THIS CONTRACTOR.
- B. COORDINATE ALL CUTTING AND PATCHING FOR INSTALLATION OF MECHANICAL EQUIPMENT WITH BUILDING OWNERS AND OTHER BUILDING TENANTS WHO WILL BE EFFECTED BY THE WORK.
- C. FIRE-STOPPING SHALL BE THE SOLE RESPONSIBILITY OF THIS CONTRACTOR. ALL EXISTING AND NEW PENETRATIONS MUST BE PROPERLY FIRE-STOPPED WITH APPROVED FIRE-STOPPING SEALANT.
8. HANGING REQUIREMENTS
- HANGERS SHALL ONLY BE HUNG DIRECTLY FROM STRUCTURAL STEEL WHERE HANGERS CANNOT BE SUPPORTED DIRECTLY FROM BUILDING STEEL. ALTERNATE HANGING METHODS MAY ATTACH TO THE STRUCTURAL SLAB TO THE FOLLOWING:
- A. HANGERS SUPPORTING LOADS OF MORE THAN 100 POUNDS MUST BE ATTACHED DIRECTLY TO THE BEAMS
- B. ATTACHMENT TO THE SLAB SHALL UTILIZE EXPANSION BOLTS.
- C. FIELD TESTS MUST BE PERFORMED UTILIZING THE ACTUAL EQUIPMENT PROPOSED FOR USE IN THE BUILDING.
- D. EACH HANGER SHALL BE ATTACHED TO A MOUNTING ANGLE WITH A MINIMUM DIMENSION OF 2 X 2 X 3/16. EACH ANGLE SHALL HAVE AT LEAST TWO SUPPORTS. SUPPORTS SHALL BE SPACED AT LEAST FIVE INCHES APART.
- E. THE MINIMUM SIZE OF SUPPORTS SHALL BE 3/8 INCH. POWER AND POWER ACTUATED FASTENERS WILL NOT BE PERMITTED. THE INTENTION IS TO PROVIDE SUPPORT WHICH IN EACH CASE, SHALL NOT WEAKEN OR UNDULY STRESS THE BUILDING CONSTRUCTION.
- F. NO EQUIPMENT MAY BE HUNG OF WOOD CONSTRUCTION.

9. PIPING AND TUBING

- WROUGHT-COPPER FITTINGS AND SILVER SOLDER INSTALLED JOINTS.
- A. HOT WATER SUPPLY & RETURN: COPPER TYPE L, WROUGHT COPPER FITTINGS, SILVER SOLDERED-BRAZED.
- B. REFRIGERANT PIPING: COPPER TYPE ACR, WROUGHT COPPER FITTINGS, AUS FILLER BRAZED.
- C. CONDENSATE PIPING: TYPE L DRAIN-TEMPER COPPER TUBING, WROUGHT-COPPER FITTINGS AND SILVER SOLDER BRAZED.
- D. INSTALL DRAINS CONSISTING OF 3/4" TEE FITTINGS AND BALL VALVES, AND SHORT NPS 3/4" THREADED NIPPLE WITH CAP FOR ANY LOW POINTS IN THE SYSTEM OR ANY AREAS THAT MAY REQUIRE A DRAINAGE.
- E. PIPING SHALL BE SUPPORTED WITH APPROVED CLEVELIS HANGERS AND ADJUSTABLE THREADED RODS AND SUITABLE CLAMPS OR MEANS OF BOLTING TO THE BUILDING STRUCTURE. MAXIMUM SPACING SHALL BE 8'-0". HANGERS FOR INSULATED PIPES SHALL FIT OVER OUTSIDE OF THE INSULATION AND SHALL BE PROVIDED WITH PROTECTIVE SADDLES. HANGERS SHALL BE MASON, OR APPROVED EQUAL.
- F. PROVIDE DIELECTRIC FITTINGS BETWEEN ALL DIS-SIMILAR METALS.
- G. PVC OR CPVC ARE NOT ACCEPTABLE.

10. PIPE FITTINGS

- A. BRONZE FLANGES AND FLANGED FITTINGS: ASME B16.24.
- B. FITTINGS: ANSI/ASME B16.18 CAST COPPER OR ANSI/ASME B16.22 SOLDER WROUGHT COPPER.
- C. JOINTS:
- a. BRAZED JOINTS: JOINTS SHALL BE MADE UP IN ACCORDANCE WITH RECOMMENDED PRACTICES OF THE MATERIALS APPLIED. APPLY 95% TIN AND ANTIMONY ON ALL COPPER PIPING.
- b. 50 MM (2 INCHES) AND SMALLER: SCREWED OR WELDED JOINTS.
- c. BUTT WELDING: ASME B16.3 WITH THE SAME WALL THICKNESS AS CONNECTING PIPING.
- d. FORGED STEEL, SOCKET WELDING OR THREADED: ASME B16.11.
- e. SCREWED: 150 POUND MALLEABLE IRON, ASME B16.3, 125 POUND CAST IRON, ASME B16.4, MAY BE USED IN LIEU OF MALLEABLE IRON. BUSHING REDUCTION OF A SINGLE PIPE SIZE, OR USE OF CLOSE NIPPLES, IS NOT ACCEPTABLE.
- f. UNIONS: ASME B16.33.
- g. BUTT WELDING: ASME B16.3 WITH THE SAME WALL THICKNESS AS CONNECTING PIPING. ELBOWS SHALL BE LONG RADIUS TYPE, UNLESS OTHERWISE NOTED.
- j. WELDING FLANGES AND BOLTING: ASME B16.5
- D. FLANGE BOLTING: CARBON STEEL MACHINE BOLTS OR STUDS AND NUTS, ASTM A307, GRADE B.
- E. WELDED BRANCH AND TAP CONNECTIONS: FORGED STEEL WELDOLETS, OR BRANCHLETS AND THREADOLETS MAY BE USED FOR BRANCH CONNECTIONS UP TO ONE PIPE SIZE SMALLER THAN THE MAIN. FORGED STEEL HALF-COUPINGS, ASME B16.11 MAY BE USED FOR DRAIN, VENT AND GAUGE CONNECTIONS.

11. VALVES

- A. ASBESTOS PACKING IS NOT ACCEPTABLE.
- B. ALL VALVES OF THE SAME TYPE SHALL BE PRODUCTS OF A SINGLE MANUFACTURER.
- C. VALVE 2-1/2" AND LESS SHALL BE ALL BRONZE, THREADED OR SOLDER ENDS. VALVES ABOVE 2-1/2" SHALL BE IRON BODY BRONZE AND SHALL HAVE FLANGED OR BUTT-WELDED ENDS.
- D. SHUT-OFF VALVES:
- a. BALL VALVES (PIPE SIZES 1/2" TO 1-1/2"): SCREWED CONNECTIONS, BRASS OR BRONZE BODY WITH CHROME-PLATED BALL WITH FULL PORT AND TEFLON SEAT AT 600 PSIG WORKING PRESSURE RATING WITH SINGLE UNION END AND HI-FLOW HOSE DRAIN CONNECTION: WEBSTORE SERIES 4043. PROVIDE STEM EXTENSION TO ALLOW 2" OF PIPE INSULATION WHERE APPLICABLE.

- b. BALL VALVES (PIPE SIZES 1-1/2" TO 4"): MSS-8P 100 SOLDER CONNECTIONS, BRASS OR BRONZE BODY WITH CHROME-PLATED BALL WITH FULL PORT AND TEFLON SEAT AT 600 PSIG WORKING PRESSURE RATING. PROVIDE STEM EXTENSION TO ALLOW OPERATION WITHOUT INTERFERING WITH PIPE INSULATION.
- D. GATE: SHALL BE OF SOLID WEDGE DISK TYPE CLASS 150, TRAVELING STEM UNION BONNET. SIMILAR TO STOCKHAM B-180 OR EQUIVALENT.
- E. BUTTERFLY (2" AND ABOVE): ONE PIECE BODY CONSTRUCTION HARD BACKED SEATS, TWO PIECE STAINLESS STEEL STEM, STEM BUSHINGS, O-RING STEM SEAL, EPDM SEAT, STEATHLINE DISK, EXTENDED NECK FOR PIPE INSULATION, 10 POSITION LEVER LOCK. HAMMOND MODEL 60000 SERIES MODEL 6211-01.
- F. CHECK: SWING TYPE, SCREWED CAPS, CLASS 150 BRONZE BODY, REGIND BRONZE DISC, SCREWED ENDS, CHECK TO BE SIMILAR TO STOCKHAM MODEL B-321 OR EQUIVALENT.
- G. STRAINERS - (THREADED, FLANGED OR BUTT WELDED ENDS) BRONZE BODY, SCREEN RETAINER WITH CENTERED BLOW DOWN FITTED WITH PIPE PLUG, MINIMUM FREE AREA 2-1/2 TIMES INLET AREA PERFORATIONS 1/16. SCREEN WIRE GAUGE TO SUIT SIZE AND SERVICE. BOLT ON FLANGE WITH TAP FOR BLOW DOWN.
- H. 3-PORT HYDRONIC MIX VALVE: PROVIDE 3-PORT HYDRONIC MIX VALVE OF CAST BRONZE BODY WITH COPPER, BRASS AND POLYSULFONE INTERNAL PARTS AVAILABLE IN 3/4" AND 1". THE ACTUATOR FOR THE PISTON SHALL HAVE LINEAL EXPANSION CHARACTERISTICS, AND SHALL BE COMPLETELY FILLED WITH TEMPERATURE SENSITIVE WAX. EACH PORT SHALL HAVE A UNION TO ALLOW FOR EASY SERVICE. THE MIX VALVE SHALL BE CAPABLE OF DELIVERING WATER TEMPERATURES RANGING FROM 100° TO 180°F. VALVE IS SIMILAR TO WATTS MIXTEMP 180 OR SIMILAR.

- I. BUTTERFLY MOTORIZED CONTROL VALVE: PROVIDE BUTTERFLY MOTORIZED CONTROL VALVE DESIGNED FOR USE IN ANSI CLASS 150 CHILLER PIPING SYSTEM. SEAT AND DISC DESIGN FOR USE WITH 150 PSI VALVE AND SEALING. MAINTAINING LOW SEATING TORQUE. VALVE SHALL BE ABLE TO CLOSE-OFF UP TO 50 PSI WITH A 200 PSI BODY RATING. VALVE IS APPLICABLE FOR 2-WAY APPLICATIONS. THIS VALVE HAS SPRING RETURN AND SHALL FUNCTION AS FAIL-CLOSE. THIS VALVE IS ABLE TO COMMUNICATE WITH PLC CONTROLLERS AND IS SIMILAR TO BELIMO MODEL: HDU SERIES OR EQUIVALENT.
- J. THERMOMETERS: "ALL ANGLE" UNIVERSAL, SEPARATE SOCKET, INDUSTRIAL TYPE, 1/2" DIA. STAINLESS STEEL EXTENSION. NECK WELLS, WEISS OR APPROVED EQUAL.
- K. PRESSURE GAUGES: BOURBON TUBE SPRING TYPE WITH 1/4-1/2 DIA. SIZE, BRONZE TUBE, ALUMINUM CASE, WEISS OR APPROVED EQUAL.
- L. DIELECTRIC FITTING: FLANGE UNION TYPE. RATING SHALL BE COMPATIBLE WITH SYSTEM PRESSURES. INSTALL ON ALL STEEL TO COPPER PIPE. EFCO MODEL #GXV.
- M. VALVE TAGS: BRASS, MINIMUM 2" DIAMETER, 1/16" THICK, STAMPED INDICATING SERVICE AND VALVE NUMBER.

12. DUCTWORK

- A. DUCTWORK SHALL BE FABRICATED OF GALVANIZED STEEL AND INSTALLED IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
- B. ALL DUCT SEAMS SHALL BE SEALED WITH BENJAMIN FOSTER 30-02 DUCT SEALANT. DUCT SHALL BE SEALED AND TESTED TO CONFORM TO SMACNA AIR LEAKAGE TEST MANUAL, 2012 EDITION, MEDIUM AND HIGH PRESSURE SEAL CLASS "A", LOW PRESSURE SEAL CLASS "C".
- C. ACOUSTICALLY LINED DUCTWORK WITH MAT-FACED GLASS DUCT LINER, 15" THICK AND 1-1/2" LB OF DENSITY. ALL DUCT SIZES SHOWN ARE CLEAR NET INSIDE DIMENSIONS. INSTALL ACOUSTICALLY LINED DUCT WHERE SHOWN ON DRAWINGS AND/OR AS LISTED HERE:
- a. ALL DUCTWORK IN AREAS WITH EXPOSED CEILING WHERE DUCTWORK IS VISIBLE
- b. MINIMUM 150" FROM AIR CONDITIONING UNIT DISCHARGE AND INTAKE
- D. ALL SUPPLY DUCTS NOT ACOUSTICALLY LINED AND IN AREAS WITH DROP CEILING WHERE DUCT WILL NOT BE VISIBLE SHALL BE INSULATED WITH 2" THICK FOIL FACED VAPOR BARRIER FIBERGLASS WIRED IN PLACE.
- E. FLEXIBLE DUCT SHALL BE PRE-INSULATED CHLOROPRENE RUBBER COATED, CLASS FABRIC ZINC COATED METAL FLEXIBLE DUCTING, DUCT TO BE APPROVED EQUAL. FLEXIBLE DUCT SHALL ONLY BE USED FOR FINAL CONNECTIONS TO TERMINAL DEVICES. FLEXIBLE DUCT SHALL NOT EXCEED 91X (6) FEET TOTAL. FLEXIBLE DUCT SHALL ONLY BE INSTALLED IN AREAS WHERE IT WILL BE CONCEALED AND NOT VISIBLE.
- F. LOUVERED PLENUMS INCLUDING CONDENSER AIR INLET AND DISCHARGE SHALL BE MADE OF 1/2" THICK RIGID BOARD INSULATION, 61B DENSITY. BOARD TO HAVE FACTORY APPLIED WHITE FIRE RETARDING JACKET WITH MECHANICAL FASTENER.
- G. PROVIDE FLEX CONNECTIONS AT ALL FAN DISCHARGE FLANGES.
- H. VOLUME DAMPERS - GALVANIZED STEEL, PER SMACNA STANDARDS. DAMPER ROD TO HAVE BEARING AT ONE END AND LEVER AND LOCK SCREW AT OTHER END.
- I. DUCTWORK ACCESS DOOR TO BE FABRICATED OF GALVANIZED STEEL, 14X14, LATCHED ALL AROUND SIMILAR TO VENTLOK. PROVIDE INSULATED ACCESS DOORS FOR ACOUSTICALLY LINED DUCTWORK INSTALLATION.
- J. FUSIBLE LINK FIRE DAMPER, GALVANIZED STEEL FABRICATED WITH SHUTTER TYPE MECHANISM OUT OF AIRSTREAM, TYPE B OR APPROVED EQUAL. DAMPERS INSTALLED IN HORIZONTAL DIRECTION SHALL BE SPRING LOADED. FIRE DAMPERS TO BE INSTALLED IN DUCTS PENETRATING RATED WALLS AND ON OUTSIDE AIR LOUVERS, WHERE SHOWN ON DRAWING AND AS REQUIRED BY THE NEW YORK STATE BUILDING CODE.
- K. CABLE OPERATED DAMPERS SHALL BE EXTRUDED ALUMINUM, SPRING LOADED WITH STEEL ROTARY CABLE. ROTO-TWIST RT-100, CABLE OPERATED DAMPERS TO BE USED IN ALL IN-ACCESSIBLE CEILING AND ALL FLOATING CEILINGS.

13. INSULATION

- A. FOR THE PURPOSES OF THIS SECTION, EXPOSED DEFINES DUCTS OR PIPES WHICH ARE VISIBLE, AS IN EQUIPMENT ROOMS, REVERED OUTDOORS IN SERVICE TUNNELS AND IN ROOMS WITHOUT CEILINGS. CONCEALED DEFINES DUCT OR PIPING WHICH ARE NOT NORMALLY VISIBLE, AS IN PLENUMS, CHASES, SHAFTS, AND ABOVE CEILINGS. OUTDOORS DEFINES DUCT OR PIPING WHICH ARE EXPOSED TO RAIN, SNOW, AND/OR SUNLIGHT.

B. ACCEPTABLE MANUFACTURERS OF THERMAL INSULATION PRODUCT ARE:

- a. AR18STRONG
- b. CERTANTEED
- c. JOHNS-MANVILLE
- d. KNAUF
- e. QUENS-CORNING
- f. ARMACELL
- C. ADHESIVES AND INSULATION MATERIALS: COMPOSITE FIRE AND SMOKE HAZARD RATING MAXIMUM 25 FOR FLAME SPREAD AND 50 FOR SMOKE DEVELOPED PER ASTM E 84. ADHESIVES SHALL BE WATERPROOF.
- D. IDENTIFICATION: PROVIDE COMPOSITE MATERIAL WITH LEGIBLY PRINTED MANUFACTURER'S NAME, NOMINAL THICKNESS, FLAME SPREAD, AND SMOKE DEVELOPED RATINGS PER NFPA 90A AND UL 181.
- F. CONCEALED DUCTS: PROVIDE R6 MINIMUM INSULATION FOR ALL SUPPLY DUCTWORK COVER WITH FLEXIBLE GLASS FIBER INSULATION, K-VALUE AT 75 DEGREE FAHRENHEIT MAXIMUM 29 BTU-IN/HR-SQ FT F, 1/8" PCF MINIMUM DENSITY, WITH FACTORY APPLIED, GLASS REINFORCED ALUMINUM FOIL AND KRAFT PAPER VAPOR BARRIER ALL-SERVICE JACKET. MAXIMUM PERMEABILITY OF VAPOR BARRIER TO BE .02 PERMS.
- G. ACOUSTIC LINING: CLASS 1 GLASS FIBER INSULATION WITH K-VALUE AT 75 DEGREE FAHRENHEIT MAXIMUM 24 BTU-IN/HR-SQ FT F, 3 PCF MINIMUM DENSITY, AND SHALL BE COMPLETELY EXPOSED SURFACE NOT TO EXCEED 204 FT. COATED TO PREVENT FIBER EROSION AT AIR VELOCITIES UP TO 4,000 FPM. COMPLY WITH THE REQUIREMENTS OF ASTM C 1071.
- H. WHERE INSULATION REQUIRES SEALING AND TAPING, COMPLETE REQUIRED PROCEDURES AT THE SAME TIME. INSULATING MATERIAL IS APPLIED TO ENSURE CLEAN SURFACES EXIST FOR PROPER ADHESION.
- I. SECURE FLEXIBLE INSULATION TO DUCTWORK SURFACES WITH ADHESIVE AND WELDED CUFFED HEAD PINS, 12" ON CENTER, BOTH WAYS. BUTT INSULATION AND SEAL JOINTS AND BREAKS WITH 2" OVERLAP OF FOIL ADHERED OVER JOINT.
- J. ALL PIPING AS FOLLOWED IN THE CHART BELOW: MOLDED GLASS FIBER WITH ALL SERVICE JACKET. OUTDOOR PIPING WITH 2 COATS OF BITUMASTIC

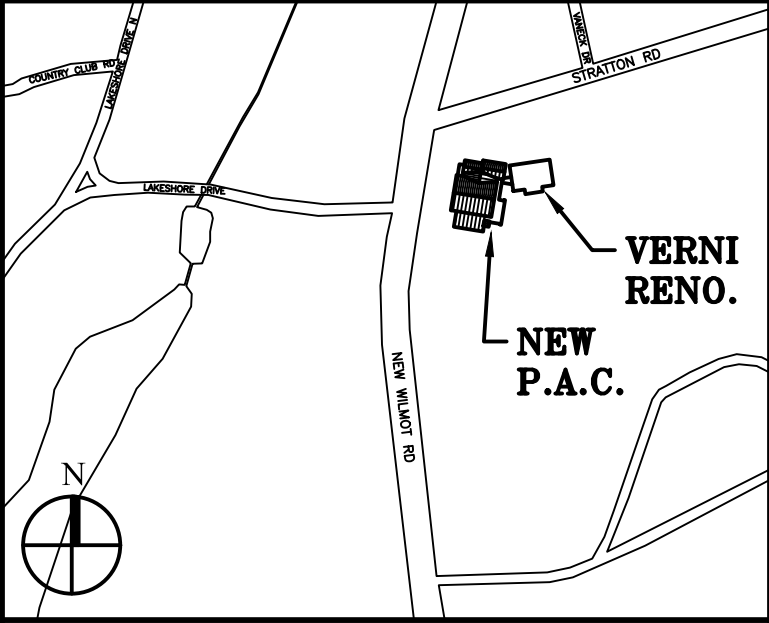
FLUID TEMP.	NOMINAL PIPE OR TUBE SIZE			
	<1"	1" TO <1 1/2"	1 1/2" TO <4"	4" TO <8"
<40°F	1"	1"	1"	1"
40-60°F	1"	1"	1"	1"
105-140°F	1.5"	1.5"	1.5"	1.5"
141-200°F	1.5"	1.5"	2"	2"

K. REFRIGERANT PIPING:

- a. INDOOR REFRIGERANT PIPING 1" AP ARMAFLEX CLOSED-CELL ELASTOMERIC THERMAL INSULATION.
- b. OUTDOOR REFRIGERANT PIPING: 1.5" AP ARMAFLEX WITH PAINTED UB FINISH TO PROTECT PIPE.
- L. SUPPORTS UTILIZE ARMAFLEX INSULATED PIPE HANGERS AT ALL SUPPORTS.

14. EQUIPMENT

- A. PROVIDE ALL EQUIPMENT AND ACCESSORIES OF THE SIZES AND CAPACITIES AS SCHEDULED AND AS INDICATED ON THE DRAWINGS.
- B. INSTALL EQUIPMENT IN ACCORDANCE WITH APPROVED SHOP DRAWINGS, MANUFACTURERS INSTRUCTIONS AND ALL CODES AND REGULATIONS WHICH APPLY. CEILING MOUNTED EQUIPMENT, PROVIDE SUPPORTS WITH APPROVED ANCHORS SUSPENDED DIRECTLY FROM BUILDING STEEL STRUCTURE. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT THE LOAD.
- C. EQUIPMENT SHALL BE INSTALLED ON VIBRATION ISOLATORS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE UNLESS OTHERWISE SPECIFIED (BASED ON MASON INDUSTRIES).
- a. FLOOR MOUNTED EQUIPMENT- TYPE SUPER WSW
- b. CEILING MOUNTED EQUIPMENT- TYPE 30N
- D. TAG ALL EQUIPMENT, COMPONENTS, CONTROL DEVICE VALVES AND PIPING. EQUIPMENT MARKERS SHALL BE ENGRAVED LAMINATED PLASTIC. INCLUDE CONTACT-TYPE PERMANENT ADHESIVE OR SELF-TAPPING, STAINLESS STEEL SCREWS. LABEL UNITS TO REFLECT BASE BUILDING NOMENCLATURE.



Key Plan (not to scale)

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MEP ENGINEER JMW CONSULTING ENGINEERING, P.C. 37 W. 59 STREET, 7TH FLOOR NEW YORK, NY 10019 212-662-9855		
ROOFING CONSULTANT WATSKY ASSOCIATES 20 MADISON AVENUE VALHALLA, NY 10986 914-945-3450		

Stamp

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Drawing Title

MECHANICAL  
SPECIFICATIONS I

Scale Job No. Date Drawing No.

NTS 1818 04/03/2019

Drawn

M-101

Peter Gisolfi Associates  
Architects Landscape Architects, LLP  
588 Warburton Avenue  
Hastings on Hudson, NY 10706  
914 478 3677

PETER GISOLFI ASSOCIATES



MECHANICAL SPECIFICATIONS

14.EQUIPMENT (CONTINUED)

E. SIZE: 2-1/2"x4" - FOR CONTROL DEVICES AND DAMPERS 1/2" LETTER SIZE OF DATA INCLUDES:

- a.NAME AND PLAN NUMBER  
b.EQUIPMENT SERVICE  
c.DESIGN CAPACITY

F. VALVE TAGS, 1-1/2" ROUND, STAMPED OR ENGRAVED WITH 1/4" LETTER FOR PIPING SYSTEM ABBREVIATION AND 1/2" NUMBERS WITH NUMBERING SCHEME. 5/32" HOLE FOR 8-HOOK FASTENER. MATERIAL: .032 IN THICK BRASS OR 3/32" THK LAMINATED PLASTIC WITH 2 BLACK SURFACES AND WHITE INNER LAYER.

G. LETTER SIZE, 1/2", DUCT MARKERS: ENGRAVED, COLOR-CODED LAMINATED PLASTIC, INCLUDE DIRECTION AND QUANTITY OF AIRFLOW AND DUCT SERVICE. INCLUDE PERMANENT ADHESIVE.

H. MANUFACTURED PIPE MARKERS, PREPRINTED, COLOR-CODED, WITH LETTER INDICATING SERVICE AND SHOWING DIRECTION OF FLOW.

15.CLEANING, BALANCING, AND ADJUSTMENTS

A. THOROUGHLY CLEAN ALL NEW AND REUSED APPARATUS (COILS, REPLACE FILTERS, ETC.) PRIOR TO PLACING IN OPERATION. CALIBRATE, AND/OR REPLACE FAULTY CONTROLS ON EXISTING EQUIPMENT AS REQUIRED OR NOTED ON THE DRAWINGS. RESTORE FINISHED SURFACE, IF DAMAGED. 4 DELIVER ENTIRE INSTALLATION IN AN APPROVED CONDITION.

B. THE CONTRACTOR SHALL TEST ALL MATERIALS AND EQUIPMENT FURNISHED OR INSTALLED UNDER THIS CONTRACT TO SEE THAT THEY OPERATE PROPERLY, QUALITY AND IN A SATISFACTORY MANNER AND ARE FREE FROM DEFECTS OF ANY DESCRIPTION.

C. THE EQUIPMENT SHALL BE STARTED-UP, TESTED, ADJUSTED AND GENERALLY DE-BUGGED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATION AND RECOMMENDATIONS.

D. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEE THAT ALL MOTORS AND BEARINGS ARE PROPERLY LUBRICATED AS SOON AS THEY ARE CONNECTED BY THE ELECTRICAL CONTRACTOR AND BEFORE OPERATION OF THE EQUIPMENT.

E. ALL DEFECTIVE MATERIALS AND WORKMANSHIP DISCLOSED BY THE TESTS, SHALL BE REMOVED AND REPLACED WITH NEW AND THE TEST REPEATED.

F. AIR BALANCING WORK SHALL BE PERFORMED BY AN INDEPENDENT AABC CERTIFIED COMPANY, NOT ASSOCIATED WITH THE CONTRACTOR.

G. UPON COMPLETION OF ALL HVAC WORK, TEST, ADJUST BALANCE NEW AIR DISTRIBUTION SYSTEMS TO PROVIDE AIR QUANTITIES INDICATED WITHIN PLUS OR MINUS 5%.

H. WATER SYSTEMS SHALL BE BALANCED TO PROVIDE FLOW QUANTITIES INDICATED ON THE DRAWINGS. MARK VALVE TAG OF EACH BALANCING VALVE TO INDICATE POSITION OF VALVE. SYSTEM CERTIFIED. REPORT INDICATING METHOD OF BALANCING AND PIPING LAYOUT WITH FLOW VALVES AND LOCATIONS INDICATED.

I. WATER SYSTEMS SHALL BE TESTED AT 1-1/2 TIMES ITS NORMAL OPERATING PRESSURE FOR A PERIOD OF 24 HOURS PRIOR TO START-UP OF SYSTEM. LEAKS MUST BE REPAIRED AND SYSTEM RE-TESTED PRIOR TO COMMISSIONING.

J. WATER SYSTEMS SHALL BE CHEMICALLY CLEANED BY AN INDEPENDENT PIPE CLEANING CONTRACTOR FOR A PERIOD OF NO LESS THAN 8-HOUR PERIOD. MECHANICAL CONTRACTOR SHALL INSTALL APPROPRIATE VALVES FOR PROPER CLEANING. COORDINATE WITH BASE BUILDING TO WITNESS THE CLEANING.

16. ACCESS PANELS

A. CONTRACTOR TO PROVIDE AND INSTALL ACCESS PANELS FOR MAINTENANCE ON ALL EQUIPMENT ABOVE HARD CEILING OR BEHIND HARD WALLS. THIS INCLUDES BUT IS NOT LIMITED TO STRAINERS, SHUTOFF VALVES, CONTROL VALVES. COORDINATE SIZE AND LOCATION OF ALL ACCESS PANELS WITH FIELD CONDITIONS, ARCHITECT AND ENGINEER.

17. VOLUME DAMPERS

A. DAMPERS SHALL BE GABLE (NOT CORD TYPE) ROTARY, TWIST TYPE TO TURN GEAR ON AIR FOIL TYPE DAMPER FRAME AND BLADES SHALL BE CONSTRUCTED OF ALUMINUM WITH TOLERANCES TO PREVENT DAMPER HANG-UP.

B. ROTO TWIST MODEL 100, DISTRIBUTED BY AIR DISTRIBUTION SYSTEMS.

18.DIFFUSERS, GRILLES AND REGISTER

A. SUPPLY AIR REGISTERS SHALL BE TITUS TYPE OMNI, R-OMNI, FLOWAIR OR AS APPROVED.

B. RETURN AIR GRILLES SHALL BE TITUS 350 RL OR AS APPROVED.

C. DIFFUSERS AND REGISTERS SHALL BE COMPATIBLE WITH THE CEILING OR WALL CONSTRUCTION TO WHICH THEY ARE INSTALLED.

D. FINISH SHALL BE WHITE UNLESS NOTED. FINISH TO BE APPROVED BY THE ARCHITECT AS SPECIFIED BY THE ARCHITECT.

19. HEAT PUMP VRF CONDENSING UNIT

A. GENERAL:

a. THE CONDENSING UNIT SHALL BE FACTORY ASSEMBLED AND PREWIRED WITH ALL NECESSARY ELECTRONIC 4 REFRIGERANT CONTROLS. THE REFRIGERATION CIRCUIT OF THE CONDENSING UNIT SHALL CONSIST OF SCROLL COMPRESSORS, MOTORS, FANS, CONDENSER COIL, ELECTRONIC EXPANSION VALVES, SOLENOID VALVES, 4-WAY VALVE, DISTRIBUTION HEADERS, CAPILLARIES, FILTERS, SHUT OFF VALVES, OIL SEPARATORS, SERVICE PORTS. 4 REFRIGERANT REGULATOR. HIGH/LOW PRESSURE GAS LINE, LIQUID AND SUCTION LINES MUST BE INDIVIDUALLY INSULATED BETWEEN THE CONDENSING AND INDOOR UNITS.

b. THE SYSTEM WILL AUTOMATICALLY RESTART OPERATION AFTER A POWER FAILURE AND WILL NOT CAUSE ANY SETTINGS TO BE LOST, THUS ELIMINATING THE NEED FOR REPROGRAMMING.

c. THE UNIT SHALL INCORPORATE AN AUTO-CHARGING FEATURE.

d. THE FOLLOWING SAFETY DEVICES SHALL BE INCLUDED ON THE CONDENSING UNIT, HIGH PRESSURE SENSOR AND SWITCH, LOW PRESSURE SENSOR, CONTROL CIRCUIT

FUSES, CRANKCASE HEATERS, FUSIBLE PLUG, OVERLOAD RELAY, INVERTER OVERLOAD PROTECTOR, THERMAL PROTECTORS FOR COMPRESSOR AND FAN MOTORS, OVER CURRENT PROTECTION FOR THE INVERTER AND ANTI-RECYCLING TIMERS.

e. OIL RECOVERY CYCLE SHALL BE AUTOMATIC OCCURRING 2 HOURS AFTER START OF OPERATION AND THEN EVERY 8 HOURS OF OPERATION. THE CONDENSING UNIT WILL BE FACTORY CHARGED WITH R-410A.

f. THE SYSTEM MUST BE INSTALLED BY A FACTORY TRAINED CONTRACTOR/DEALER. THE BIDDERS SHALL BE REQUIRED TO SUBMIT TRAINING CERTIFICATION PROOF WITH BID DOCUMENTS.

g. UNIT TO COME WITH A ONE (1) YEAR WARRANTY ON ALL MATERIAL AND WORKMANSHIP, AND A SIX (6) YEAR EXTENDED WARRANTY ON COMPRESSORS.

h. THE SYSTEM WILL BE PRODUCED IN AN ISO 9001 AND ISO 14001 FACILITY, STANDARDS SET BY THE INTERNATIONAL STANDARD ORGANIZATION (ISO). THE SYSTEM SHALL BE FACTORY TESTED FOR SAFETY AND FUNCTION.

i. ADVANCED DIAGNOSTICS - SYSTEMS SHALL INCLUDE A SELF DIAGNOSTIC, AUTO-CHECK FUNCTION TO DETECT A MALFUNCTION AND DISPLAY THE TYPE AND LOCATION.

B. UNIT CABINET:

a. THE CONDENSING UNIT SHALL BE COMPLETELY WEATHERPROOF AND CORROSION RESISTANT. THE UNIT SHALL BE CONSTRUCTED FROM RUST-PROOFED MILD STEEL PANELS COATED WITH A BAKED ENAMEL FINISH.

C. FAN:

a. THE CONDENSING UNIT SHALL CONSIST OF ONE OR MORE PROPPELLER TYPE, DIRECT-DRIVE 350 OR 150 W FAN MOTORS THAT HAVE MULTIPLE SPEED OPERATION VIA A DC (DIGITALLY COMMUTATING) INVERTER.

b. THE CONDENSING UNIT FAN MOTOR SHALL HAVE MULTIPLE SPEED OPERATION OF THE DC INVERTER TYPE.

c. THE FAN MOTOR SHALL HAVE INHERENT PROTECTION AND PERMANENTLY LUBRICATED BEARINGS AND BE MOUNTED.

d. THE FAN MOTOR SHALL BE PROVIDED WITH A FAN GUARD TO PREVENT CONTACT WITH MOVING PARTS.

D. CONDENSER COIL:

a. THE CONDENSER COIL SHALL BE MANUFACTURED FROM COPPER TUBES EXPANDED INTO ALUMINUM FINS TO FORM A MECHANICAL BOND.

b. THE HEAT EXCHANGER COIL SHALL BE OF A WAFFLE LOWER FIN AND RIBBED BORE TUBE DESIGN TO ENSURE HIGH EFFICIENCY PERFORMANCE.

c. THE HEAT EXCHANGER ON THE CONDENSING UNITS SHALL BE MANUFACTURED FROM HI-X SEAMLESS COPPER TUBE WITH N-SHAPE INTERNAL GROOVES MECHANICALLY BONDED ON TO ALUMINUM FINS TO AN E-PASS DESIGN.

d. THE FINS ARE TO BE COVERED WITH AN ANTI-CORROSION ACRYLIC RESIN AND HYDROPHILIC FILM TYPE EI.

E. COMPRESSOR:

a. THE INVERTER SCROLL COMPRESSORS SHALL BE VARIABLE SPEED (VFM INVERTER) CONTROLLED WHICH IS CAPABLE OF CHANGING THE SPEED TO FOLLOW THE VARIATIONS IN TOTAL COOLING AND HEATING LOAD AS DETERMINED BY THE SUCTION GAS PRESSURE AS MEASURED IN THE CONDENSING UNIT. IN ADDITION, SAMPLINGS OF EVAPORATOR AND CONDENSER TEMPERATURES SHALL BE MADE SO THAT THE HIGH/LOW PRESSURES DETECTED ARE READ EVERY 20 SECONDS AND CALCULATED.

b. THE INVERTER DRIVEN COMPRESSOR IN EACH CONDENSING UNIT SHALL BE OF HIGHLY EFFICIENT RELUCTANCE DC (DIGITALLY COMMUTATING), HERMETICALLY SEALED SCROLL 'G2-TYPE' WITH A MAXIMUM SPEED OF 1,980 RPM.

c. NEODYMIUM MAGNETS SHALL BE ADOPTED IN THE ROTOR CONSTRUCTION TO YIELD A HIGHER TORQUE AND EFFICIENCY IN THE COMPRESSOR INSTEAD OF THE NORMAL PERMITE MAGNET TYPE. AT COMPLETE STOP OF THE COMPRESSOR, THE NEODYMIUM MAGNETS WILL POSITION THE ROTOR INTO THE OPTIMUM POSITION FOR A LOW TORQUE START.

d. THE CAPACITY CONTROL RANGE SHALL BE AS LOW AS 4% TO 100%.

e. EACH COMPRESSOR SHALL BE EQUIPPED WITH A CRANKCASE HEATER, HIGH PRESSURE SAFETY SWITCH, AND INTERNAL THERMAL OVERLOAD PROTECTOR.

f. OIL SEPARATORS SHALL BE STANDARD WITH THE EQUIPMENT TOGETHER WITH AN INTELLIGENT OIL MANAGEMENT SYSTEM.

g. THE COMPRESSOR SHALL BE SPRING MOUNTED.

20. FAN COIL UNITS

A. PROVIDE AND INSTALL HORIZONTAL OR VERTICAL, COOLING FAN COIL UNITS.

B. COOLING COIL SHALL BE CONSTRUCTED OF COPPER TUBES AND ALUMINUM PLATE TYPE FINS. COIL SHALL BE SET IN STAINLESS STEEL DRAIN PAN WITH FLOAT SWITCH TO DE-ENERGIZE UNIT UPON A HIGH WATER CONDITION.

C. CABINET SHALL BE CONSTRUCTED OF GALVANIZED STEEL WITH THERMAL/ACOUSTICAL INSULATION ON REMOVABLE PANELS.

D. FIELD INSTALL PLEATED FILTER WITH 20% ASHRAE EFFICIENCY RATING.

E. UNITS SHALL BE PROVIDED IN SIZES AS SCHEDULED.

22. THERMOSTATS AND SENSORS (COOLING/HEATING)

A. NEW THERMOSTATS SHALL BE PROGRAMMABLE THERMOSTAT CAPABLE OF ALL REQUIRED FUNCTIONS TO MEET THE SEQUENCE OF OPERATION.

B. NEW SENSORS SHALL BE COMPATIBLE FOR TIE IN TO MANUFACTURER WALL CONTROLLER.

C. THERMOSTAT SHALL BE LCD, 1-DAY PROGRAMMABLE, PROPORTIONAL INTEGRAL CONTROL WITH 2 OCCUPIED/UNOCCUPIED PERIODS PER DAY.

23. BOILER

A. PROVIDE AND INSTALL NATURAL GAS BOILER AS SPECIFIED ON PLANS.

B. THE ENTIRE BOILER SYSTEM AND ITS INSTALLATION SHALL CONFORM TO THE MANUFACTURER'S INSTRUCTIONS, APPLICABLE LOCAL, STATE AND FEDERAL CODES AND

ASSOCIATED NATIONAL BOARD REQUIREMENTS.

C. BOILERS MUST BE FULLY FACTORY TEST FIRED PRIOR TO SHIPMENT. MANUFACTURER SHALL SUPPLY COPIES OF THE TEST FIRE REPORT, INCLUDING FUEL/AIR SETTINGS AND COMBUSTION TEST RESULTS.

D. HEAT EXCHANGER, PRESSURE VESSEL AND CONDENSATION COLLECTION BASIN SHALL CARRY A 10 YEAR WARRANTY AGAINST DEFECTS IN MATERIALS OR WORKMANSHIP AND FAILURE DUE TO THERMAL SHOCK.

E. THE BOILER SHALL BE CONSTRUCTION AND STAMPED IN ACCORDANCE WITH SECTION IV OF THE ASME CODE OF LOW PRESSURE HEATING BOILERS WITH A MAXIMUM WATER WORKING PRESSURE OF 160 PSIG.

F. BOILER(S) SHALL BE 84% MINIMUM AHRI CERTIFIED THERMAL EFFICIENT AS REQUIRED BY B19 2000.

G. BOILER SHALL BE CAPABLE OF FULL MODULATION FIRING WITH A TURN DOWN OF UP TO 5 TO 1.

H. DESCRIPTION: BOILER SHALL BE NATURAL GAS FIRED AND VERTICAL WATER TUBED DESIGN. THE BOILER SHALL BE BUILT ON A STEEL BASE INCLUDING INSULATED JACKET, FLUE GAS VENT, COMBUSTION AIR INTAKE CONNECTION, WATER SUPPLY, RETURN, AND CONDENSATE DRAIN CONNECTIONS, AND CONTROLS.

I. HEAT EXCHANGER: THE HEAT EXCHANGER SHALL BEAR THE ASME "H" STAMP FOR 160 PSI WORKING PRESSURE AND SHALL BE NATIONAL BOARD LISTED. THE HEAT EXCHANGER SHALL BE A "FIN TUBE" DESIGN WITH 3/8" I.D. STRAIGHT COPPER TUBES HAVING EXTRUDED INTEGRAL FINS SPACED SEVEN FINS PER INCH.

J. BURNER: NATURAL GAS, FORCED DRAFT SINGLE BURNER PREMIX DESIGN. THE BURNER SHALL BE HIGH TEMPERATURE STAINLESS STEEL.

K. BLOWER: BOILER SHALL BE EQUIPPED WITH A PULSE WIDTH MODULATING BLOWER SYSTEM TO PRECISELY CONTROL THE FUEL/AIR MIXTURE TO PROVIDE MODULATING BOILER FIRING RATES FOR MAXIMUM EFFICIENCY.

L. GAS TRAIN: THE BOILER SHALL BE SUPPLIED WITH A GAS TRAIN DESIGNED WITH NEGATIVE PRESSURE REGULATION AND SHALL BE CAPABLE OF A MINIMUM 5:1 TURNDOWN.

M. CASING:

a. THE JACKET SHALL BE 18 GAUGE PRE-PRIMED AND PAINTED STEEL JACKET.

b. THE INSULATION SHALL BE A MINIMUM 1/2 INCH THICK, MINERAL FIBER INSULATION SURROUNDING THE HEAT EXCHANGER.

O. ELECTRICAL POWER: SINGLE POINT FIELD POWER CONNECTION SHALL HAVE FACTORY INSTALLED AND FACTORY WIRED SWITCHES, MOTOR CONTROLLERS, TRANSFORMERS, AND OTHER ELECTRICAL DEVICES NECESSARY AND SHALL PROVIDE A SINGLE POINT FIELD POWER CONNECTION TO THE BOILER.

P. TESTS AND INSPECTIONS: PERFORM INSTALLATION AND STARTUP CHECKS ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS.

Q. PERFORMANCE TESTS: ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT COMPONENT ASSEMBLIES AND EQUIPMENT INSTALLATIONS, INCLUDING CONNECTIONS, AND TO CONDUCT PERFORMANCE TESTING.

R. CONTROL: BOILER CONTROLS SHALL FEATURE A STANDARD, FACTORY INSTALLED 8" LCD SCREEN DISPLAY WITH THE FOLLOWING STANDARD FEATURES:

a. BOILER SHALL CALCULATE THE SET POINT USING A FIELD INSTALLED, FACTORY SUPPLIED OUTDOOR SENSOR AND AN ADJUSTABLE RESET CURVE.

b. BOILER SHALL ENERGIZE ANY PUMP IT CONTROLS FOR AN ADJUSTABLE TIME IF THE ASSOCIATED PUMP HAS BEEN OFF FOR A TIME PERIOD OF 24 HOURS.

c. BOILER SHALL MAKE THE DOMESTIC HOT WATER CALL FOR HEAT A PRIORITY OVER ANY SPACE HEATING CALL AND ADJUST THE BOILER SET POINT TO THE DOMESTIC HOT WATER BOILER SET POINT.

d. BOILER SHALL HAVE A FC PORT ALLOWING THE CONNECTION OF FC BOILER SOFTWARE.

24. PUMPS

A. PROVIDE AND INSTALL NEW VERTICAL PUMPS

B. PUMP CASING SHALL BE CONSTRUCTED OF ASTM A48 CLASS 30 CAST IRON. THE PUMP CASING SHALL BE RATED FOR 250 PSI WORKING PRESSURE.

C. THE IMPELLER SHALL BE ASTM B584-836/875 BRONZE AND HYDRAULICALLY BALANCED. THE IMPELLER SHALL BE DYNAMICALLY BALANCED TO ANSI GRADE G6.3 AND SHALL BE FITTED TO THE SHAFT WITH A KEY.

D. ALL PUMPS SHALL BE FITTED WITH A DISCHARGE MULTI-PURPOSE BALANCING VALVE OR OTHER MEANS OF PROVIDING SYSTEM BALANCE, ISOLATION, AND CHECK FEATURE FOR REVERSE FLOW. THE VALVE SHALL BE STRAIGHT OR ANGLE PATTERN.

E. THE PUMP SHALL HAVE A FACTORY INSTALLED VENT/FLUSH LINE TO INSURE REMOVAL OF TRAPPED AIR FROM THE CASING AND MECHANICAL SEAL COOLING.

F. PROVIDE MANUFACTURER'S STANDARD WARRANTY ON ALL PUMPS.

25. EXPANSION TANK (BLADDER TYPE)

A. PROVIDE AND INSTALL NEW EXPANSION TANK THAT IS CONSTRUCTION: WELDED STEEL, DESIGNED, TESTED AND STAMPED IN ACCORDANCE WITH ASME (BPV CODE SEC. VIII, DIV. I) SUPPLIED WITH NATIONAL BOARD FORM U-1, RATED FOR PROPER SYSTEM WORKING PRESSURE, WITH FLEXIBLE SEAMLESS HEAVY DUTY BUTYL RUBBER DIAPHRAGM. DIAPHRAGM SHALL BE ABLE TO ACCEPT THE PARTIAL VOLUME OF THE EXPANSION TANK.

B. SYSTEM CONNECTION WILL BE VIA A 3/4 INCH NPT CONNECTION ON THE TOP OF THE TANK. A SCHRADER VALVE FITTING SHALL BE INSTALLED AT THE BOTTOM OF THE TANK TO ALLOW EXTERNAL PRESSURIZATION OF THE BLADDER.

C. PROVIDE TANK AS SCHEDULED ON PLAN.

26. AIR SEPARATOR

A. PROVIDE AND INSTALL NEW AIR REMOVAL DEVICE THAT IS CONSTRUCTED OF STEEL AND SHALL BE DESIGNED, FABRICATED AND STAMPED PER ASME SECTION VIII DIVISION I.

B. THE UNIT SHALL BE PAINTED WITH ONE COAT OF RED OXIDE PRIMER.

27. FLUE PIPE

A. PROVIDE AND INSTALL FLUE AS FOLLOWS:

B. DURAVENT POLYPRO SYSTEM

C. INSTALL FLUE WITH POSITIVE SLOPE UPWARDS FROM APPLIANCES.

D. PROVIDE ALL NECESSARY MANUFACTURER FLUE FITTINGS FOR A COMPLETE INSTALLATION.

E. FLUE INSTALLATION TO MEET ALL REQUIREMENTS OF THE 2020 NEW YORK STATE FUEL AND GAS CODE AND ALL OTHER APPLICABLE CODES.

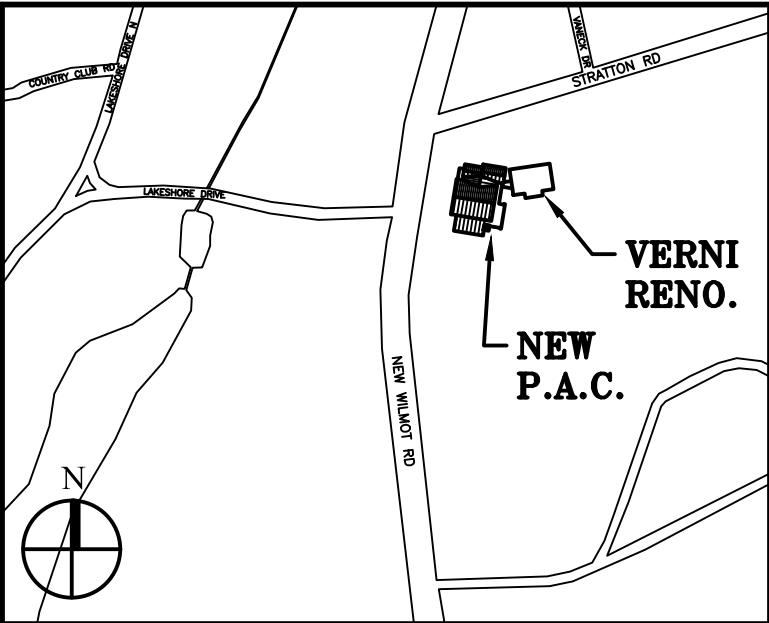
28. LABELING

A. LABEL ALL PIPE EVERY 20 FT.

B. LABEL ALL RATED WALLS THAT PIPE PASSES THROUGH

C. TAG ALL VALVES AND PROVIDE VALVE TAG

HVAC SYMBOL LIST			
	EXISTING DUCTWORK		NEW HOT WATER SUPPLY PIPE
	EXISTING DUCTWORK OR HVAC EQUIPMENT TO BE REMOVED		NEW HOW WATER RETURN PIPE
	NEW DUCTWORK		NEW CONDENSATE PIPE
	NEW ACOUSTICALLY LINED DUCTWORK		NORMALLY OPEN NORMALLY CLOSED
	EXISTING HVAC EQUIPMENT		DIRECTION OF FLOW PIPE UP PIPE DOWN
	NEW HVAC EQUIPMENT		PIPE CONTINUATION
	DUCT UP		CAPPED PIPE
	DUCT DOWN		CONNECT TO EXISTING
	12"x6"		BALL VALVE
	AIR FLOW DIRECTION		BUTTERFLY VALVE
	250		GATE VALVE
	CEILING DIFFUSER		TWO WAY CONTROL VALVE
	WALL GRILLE OR LINEAR BAR		THREE WAY CONTROL VALVE
	RETURN GRILLE		CHECK VAVLE
	FIRE DAMPER / ACCESS DOOR		STRAINER
	FIRE SMOKE DAMPER / ACCESS DOOR		TEMPERATURE GAUGE
	MOTORIZED DAMPER		PRESSURE GAUGE
	VOLUME DAMPER		BALL SHUTOFF AND GAUGE PORT / DRAIN
	DUCT DETECTOR		SENSOR
	CONDENSATE PUMP		T = TEMPERATURE F = FLOW
	LEAK DETECTOR		WATER PRESSURE REDUCTION VALVE
	EXISTING AIR HANDLER		AIR SEPARATOR
	NEW WALL MOUNTED VRF AIR HANDLER		RELIEF VALVE
	DRAWING NOTE		RPZ
	CEILING ACCESS DOOR		PLUG VALVE
	VARIABLE FREQUENCY DRIVE		PUMP
	TYPICAL		INLINE PUMP
	EXPANSION TANK		FUNNEL DRAIN FLOOR DRAIN
	CLEARANCE AROUND EQUIPMENT		EXISTING TO REMAIN RELOCATED
	THERMOSTAT FOR AHU-1		TEMPERATURE SENSOR



Key Plan (not to scale)

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MEP ENGINEER ROOFING CONSULTANT		
JMY CONSULTING WATSKY ASSOCIATES		
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212-662-9855		

Stamp

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IONA PREPARATORY SCHOOL  
ADDITION AND ALTERATION TO THE  
PAUL VERNI FINE ARTS CENTER

Project Address  
IONA PREPARATORY SCHOOL  
255 Wilmot Road  
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Drawing Title  
MECHANICAL  
SPECIFICATIONS II

Scale	Job No.	Date	Drawing No.
NTS	1618	04/03/2019	M-102
Drawn			

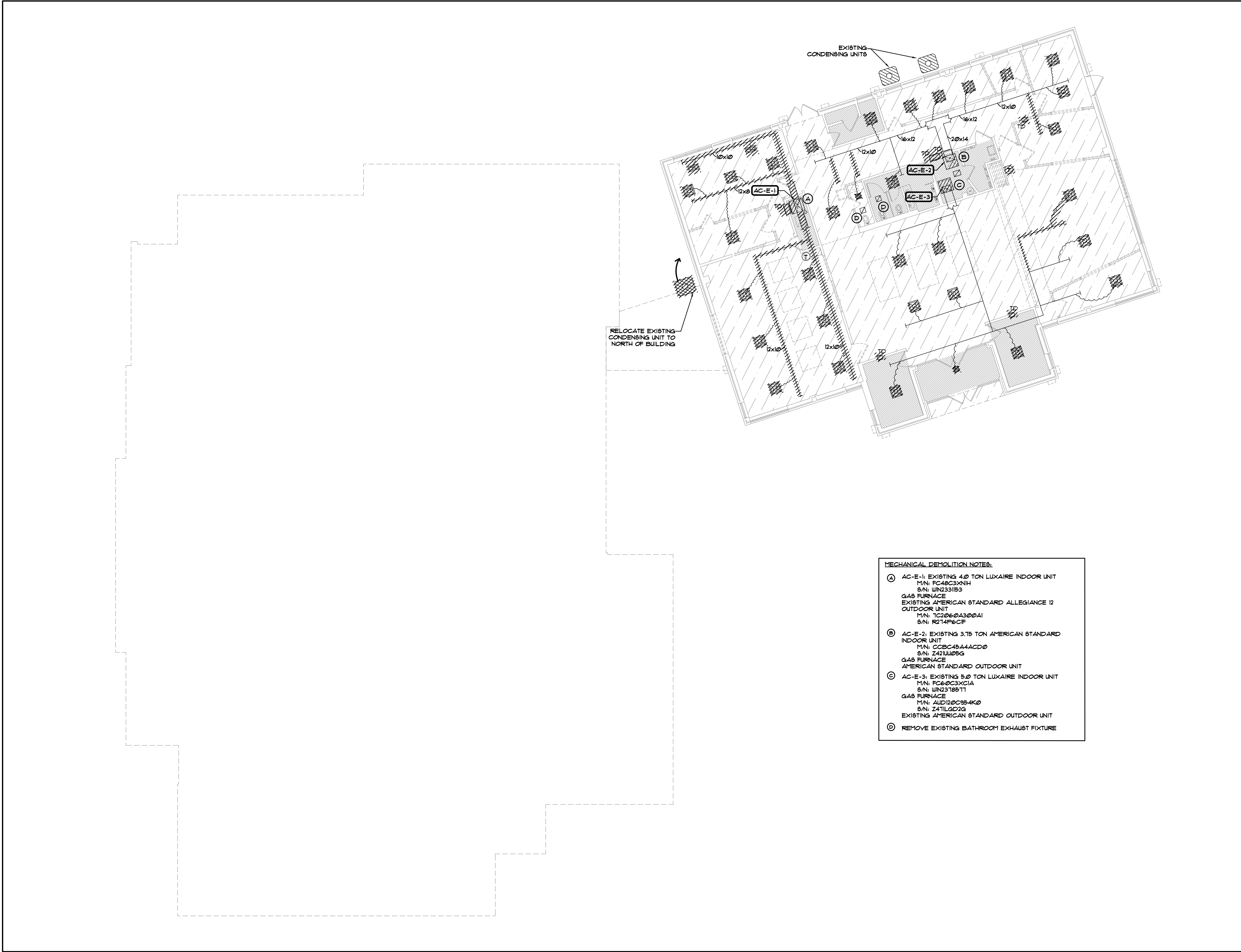
Peter Gisolfi Associates  
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586 Warburton Avenue  
Hastings on Hudson, NY 10706  
914 478 3677

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Drawing Title

FIRST FLOOR MECHANICAL  
DEMOLITION PLAN

Scale Job No. Date Drawing No.

1/8"=1'-0" 1618 04/03/2019 M-201

Drawn

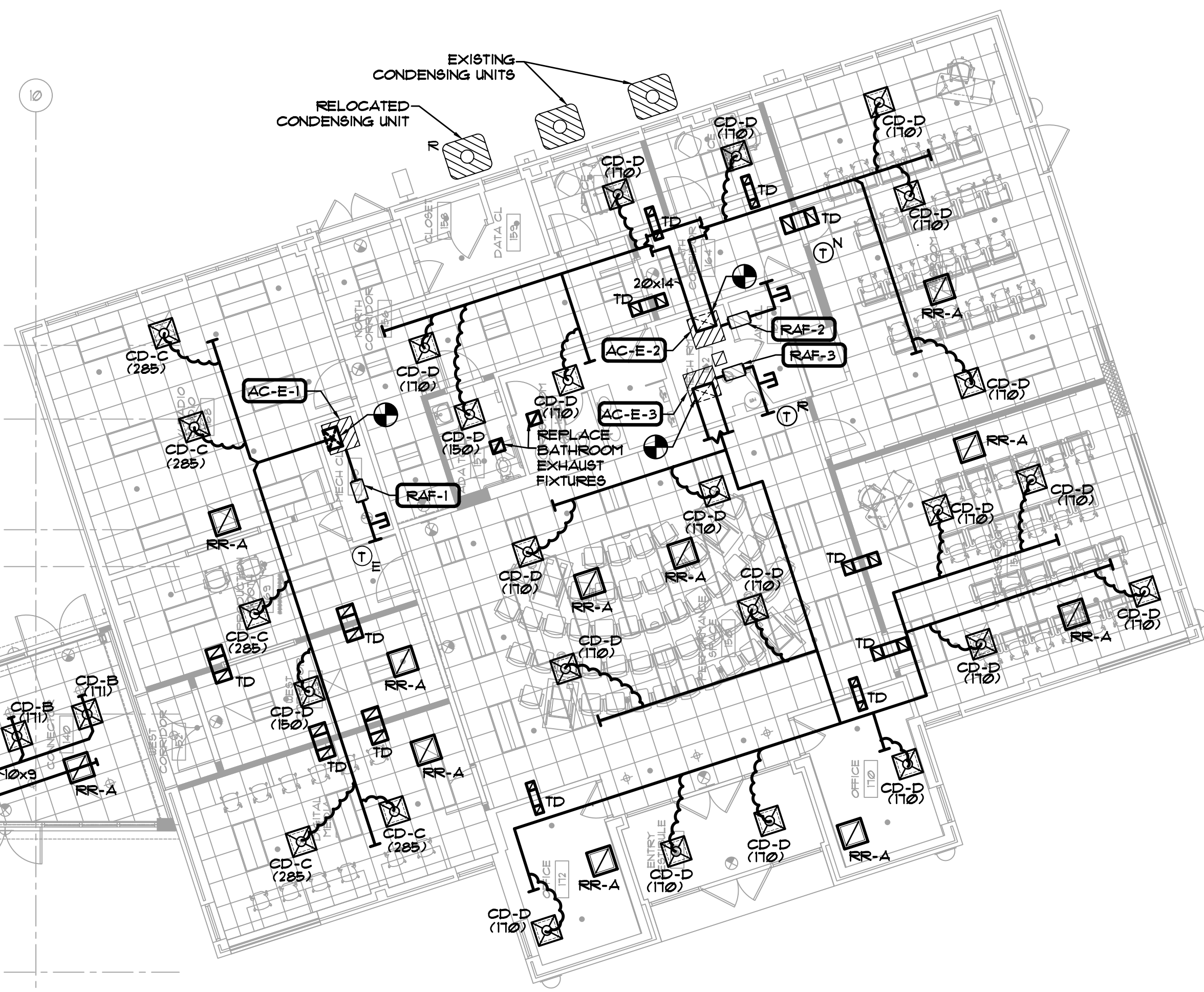
Peter Gisolfi Associates  
Architects Landscape Architects, LLP

566 Warburton Avenue  
Hastings on Hudson, NY 10706

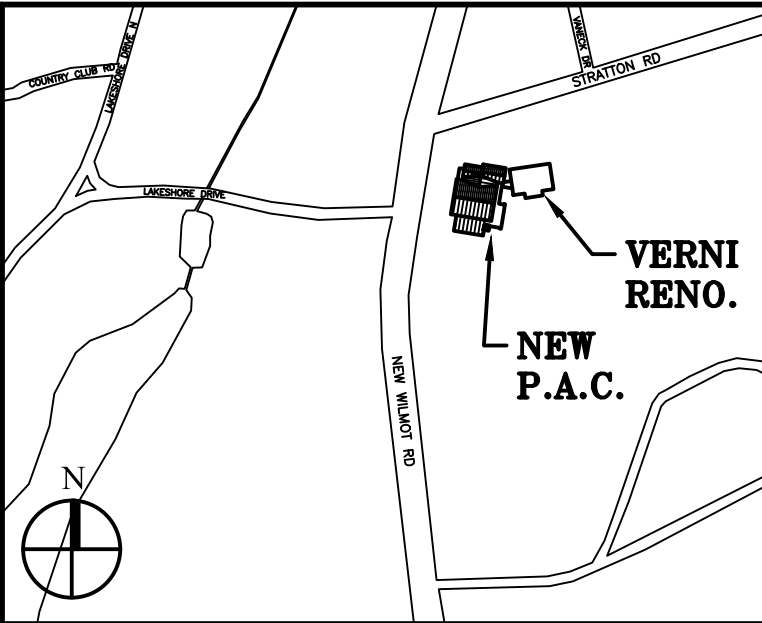
914 478 3677

PETER GISOLFI ASSOCIATES





- (1) PROVIDE, STORE, RIG AND INSTALL NEW HORIZONTALLY SUSPENDED FAN COIL UNIT. CONTRACTOR TO PROPERLY HANG UNIT FROM SUPPLEMENTAL STEEL. PROVIDE THREADED RODS AND VIBRATION ISOLATORS. SEE AC HANGING DETAIL ON DRAWING FOR FURTHER DETAIL.
- (2) PROVIDE, STORE, RIG AND INSTALL NEW HORIZONTALLY SUSPENDED AIR HANDLER UNIT. CONTRACTOR TO PROPERLY HANG UNIT FROM SUPPLEMENTAL STEEL. PROVIDE THREADED RODS AND VIBRATION ISOLATORS. SEE AC HANGING DETAIL ON DRAWING FOR FURTHER DETAIL. COORDINATE HANGING WITH STRUCTURAL ENGINEER.
- (3) FOR ALL NEW FAN COIL UNITS AND AIR HANDLERS PROVIDE AND INSTALL NEW GALVANIZED STEEL AUXILIARY FAN WITH LIQUID DETECTOR SENSOR TO SHUT DOWN UNIT UPON THE DETECTION OF LIQUID. CONTRACTOR TO LOCATE SENSOR AT LOWEST POINT IN FAN. SEE DETAIL ROUTE COPPER CONDENSATE DRAIN PIPE TO NEAREST DRAIN
- (4) PROVIDE AND INSTALL NEW WALL MOUNT FAN COIL UNIT AS SCHEDULED. PROVIDE NEW AUXILIARY DRAIN PAN WITH LEAK DETECTOR. AUXILIARY DRAIN PAN SHALL BE CLOSE TO THE WALL AS NOT TO IMPEDE SUPPLY AIRFLOW
- (5) PROVIDE AND INSTALL NEW FLOWBARS AND LINEAR BARS FOR SUPPLY AND RETURN AS SCHEDULED AND INDICATED ON PLANS.
- (6) BALANCE NEW SYSTEMS TO ACHIEVE CFM QUANTITIES SHOWN.
- (7) PAINT ALL SUPPLY AND RETURN PLenums FLAT BLACK ON INTERIOR OR AS SPECIFIED BY ARCHITECT.
- (8) INSTALL CABLE OPERATED VOLUME DAMPERS (COD) IN ALL BRANCH DUCTS. NOT ALL DAMPERS ARE SHOWN ON PLANS. DAMPERS ARE REQUIRED TO PROPERLY BALANCE EACH AIR TERMINAL. REFER TO SPECIFICATION FOR MORE INFO.
- (9) INSTALL DUCTWORK WITH 1-1/2" THICK ACOUSTICAL LINING AS SHOWN ON DRAWINGS AND/OR A MINIMUM OF 15'-0" FROM AC UNIT DISCHARGE AND INTAKE.
- (10) CONTRACTOR TO COORDINATE NEW DUCT ROUTING WITH ALL TRADES AND GENERAL FLOOR CONDITIONS. CONFLICTS THAT CAN NOT BE SOLVED IN FIELD, SHALL BE BROUGHT TO ARCHITECT/ENGINEER'S ATTENTION.
- (11) PROVIDE AND INSTALL NEW HARD-WIRED, BATTERY BACK-UP, PROGRAMMABLE THERMOSTATS WITH TWO OCCUPIED AND (2) UN-OCCUPIED SETTINGS PER DAY. COORDINATE EXACT LOCATION WITH ARCHITECT. PRIOR TO ROUGHING IN WIRES.
- (12) PROVIDE DURABLE POLYPRO PIPE FOR BOILER AND HOT WATER HEATER VENT AND COMBUSTION AIR FLUES. PROVIDE ALL NECESSARY ACCESSORIES FOR COMPLETE INSTALLATION.
- (13) PROVIDE AND INSTALL NEW CONDENSING UNIT. PROVIDE NEW MANUFACTURER WALL BRACKET. MOUNT UNIT ON NEOPRENE ISOLATION PADS, ABIDE BY ALL MANUFACTURER'S CLEARANCE REQUIREMENTS. EXTEND ALL NECESSARY SERVICES FOR PROPER FUNCTIONALITY OF UNIT.
- (14) ROUTE INSULATED REFRIGERANT PIPING FROM NEW CONDENSING UNITS TO AIR HANDLERS. ENSURE TO STAY WITHIN MANUFACTURER'S MAXIMUM PIPING GUIDELINES.
- (15) GC TO PROVIDE PENETRATIONS FOR NEW REFRIGERANT PIPE, CONDENSATE PIPE, CONTROL CONDUIT AND ELECTRICAL PIPING THROUGH WALLS AND FLOORS. FIRE SAFE AND SEAL TO CODE UPON COMPLETION
- (16) PROVIDE AND INSTALL NEW FAN AS SCHEDULED. HANG FROM THREADED RODS AND MANUFACTURER'S VIBRATION ISOLATORS.
- (17) CONTRACTOR TO PROPERLY FLASH ALL DUCT AND PIPE PENETRATIONS. PENETRATIONS TO BE WEATHER-TIGHT. FINAL LOCATIONS TO BE COORDINATED WITH FIELD CONDITIONS.
- (18) PROVIDE AND INSTALL NEW SPILL AIR FAN. PROVIDE ANGLE-IRON TO REINFORCE NEW OPENING THROUGH ROOF. SEAL AND FLASH NEW PENETRATION. ROOFING CONTRACTOR TO PROVIDE AND INSTALL NEW CUSTOM CURB FOR PITCHED ROOF.
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- (20) PROVIDE AND INSTALL NEW ENERGY RECOVERY VENTILATOR AS SCHEDULED. PROVIDE ANGLE-IRON TO REINFORCE NEW OPENING THROUGH ROOF. SEAL AND FLASH NEW PENETRATION. ROOFING CONTRACTOR TO PROVIDE AND INSTALL NEW CUSTOM CURB FOR PITCHED ROOF.
- (21) NEW BOILER AND HOT WATER HEATER FLUES DISCHARGE ON ROOF A MINIMUM IN ACCORDANCE TO THE 2020 FUEL GAS CODE OF NEW YORK STATE B03.6.5. CONTRACTOR TO PROPERLY SEAL WEATHER-TIGHT AND FIRE-SAFE ROOF PENETRATION. SEE SCHEDULE FOR SIZE OF VENTS.
- (22) 10" HIGH DUCTS MAX
- (23) SEE A-410 FOR SPACE ALLOCATED FOR DUCT SERVING AHU 1-2
- (24) SEE A-100 FOR FLOWBAR INSTALLATION DETAIL



**Key Plan** (not to scale)

7.	6/01/2021	ISSUED FOR BID
6.	5/07/2021	RD- ISSUED FOR BUILDING PERMIT REVIEW
5.	2/01/2021	ISSUED FOR BUILDING PERMIT REVIEW
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1.	1/10/2020	ISSUED FOR DD ESTIMATE
No.	Date	Revision/Submission
<b>STRUCTURAL &amp; CIVIL ENGINEER</b>		
DOMINICK R PILA		
ASSOCIATES, P.C.		
145 MAIN STREET		
NYACK, NY 10960		
845-727-7793		
<b>MRF ENGINEER</b>		<b>ROOFING CONSULTANT</b>
JMV CONSULTING		WATSKY ASSOCIATES
ENGINEERING, P.C.		20 MADISON AVENUE
57 W. 59 STREET, STH 703		VALHALLA, NY 10595
NEW YORK, NY 10018		914-645-3450
122-852-8855		
Stamp		

**Project Title**

**IONA PREPARATORY SCHOOL  
ADDITION AND ALTERATION TO THE  
PAUL VERNI FINE ARTS CENTER**

**Project Address**  
**IONA PREPARATORY SCHOOL**  
**255 Wilmot Road**  
**New Rochelle, NY 10804**

Drawing Title

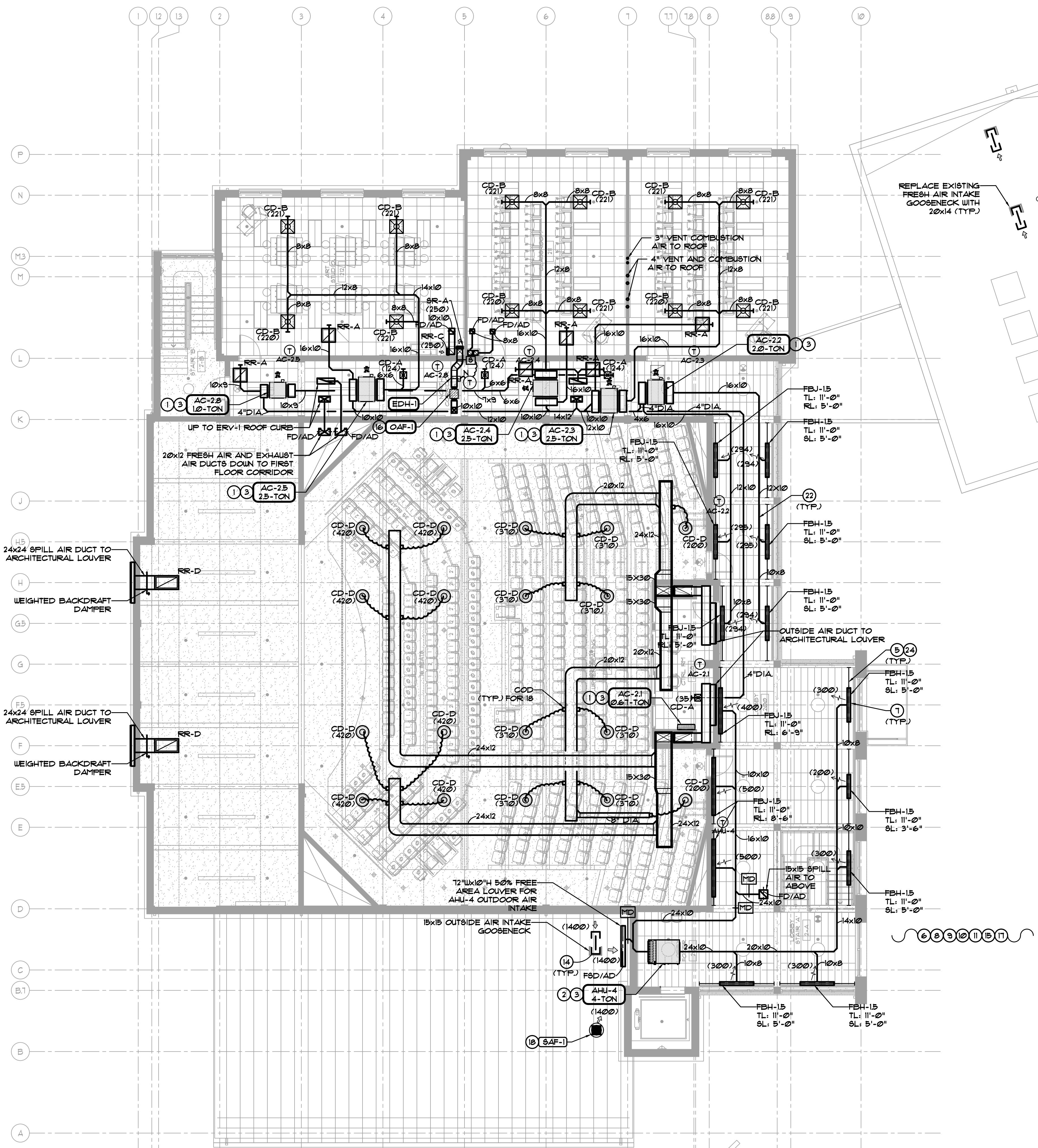
FIRST FLOOR MECHANICAL  
CONSTRUCTION PLAN

Scale	Job No.	Date	Drawing No.
1/8"=1'-0"	1618	04/03/2019	M-301
Drawn			

**Peter Gisolfi Associates**  
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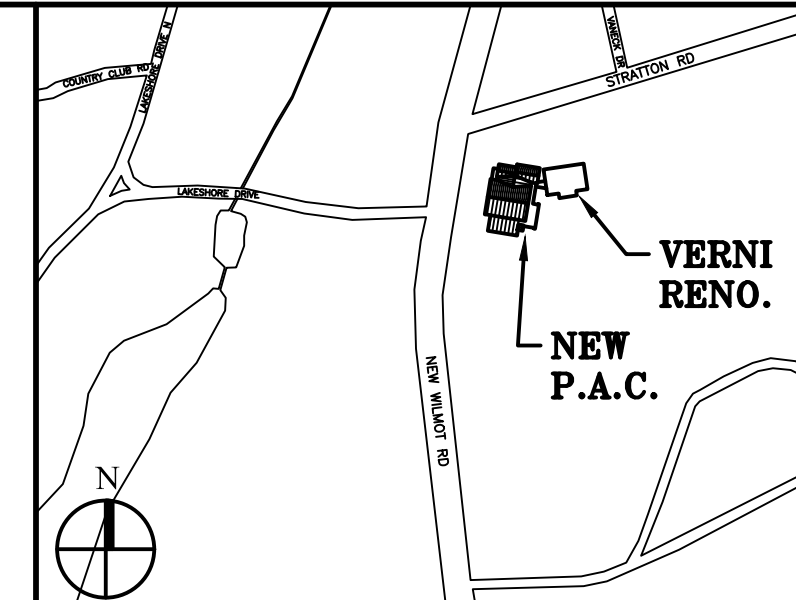


REPLACE EXISTING  
FRESH AIR INTAKE  
GOOSENECK WITH  
20x14 (TYP.)

EXISTING 8" FURNACE FLUE

EXISTING 6" FURNACE FLUE

- MECHANICAL CONSTRUCTION NOTES:**
- PROVIDE, STORE, RIG AND INSTALL NEW HORIZONTALLY SUSPENDED FAN COIL UNIT. CONTRACTOR TO PROPERLY HANG UNIT FROM SUPPLEMENTAL STEEL. PROVIDE THREADED RODS AND VIBRATION ISOLATORS. SEE AC HANGING DETAIL ON DRAWING FOR FURTHER DETAIL.
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Key Plan (not to scale)

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DOMINICK R. PILLA		
ASSOCIATES, P.C.		
143 MAIN STREET		
NYACK, NY 10960		
845-727-7793		
<b>MEP ENGINEER</b>		
JMY CONSULTING		
ENGINEERING, P.C.		
37 W. 59 STREET, STE 705		
NEW YORK, NY 10019		
212-662-9855		
<b>ROOFING CONSULTANT</b>		
WATSKY ASSOCIATES		
20 MADISON AVENUE		
VALHALLA, NY 10986		
914-945-3450		
Stamp		

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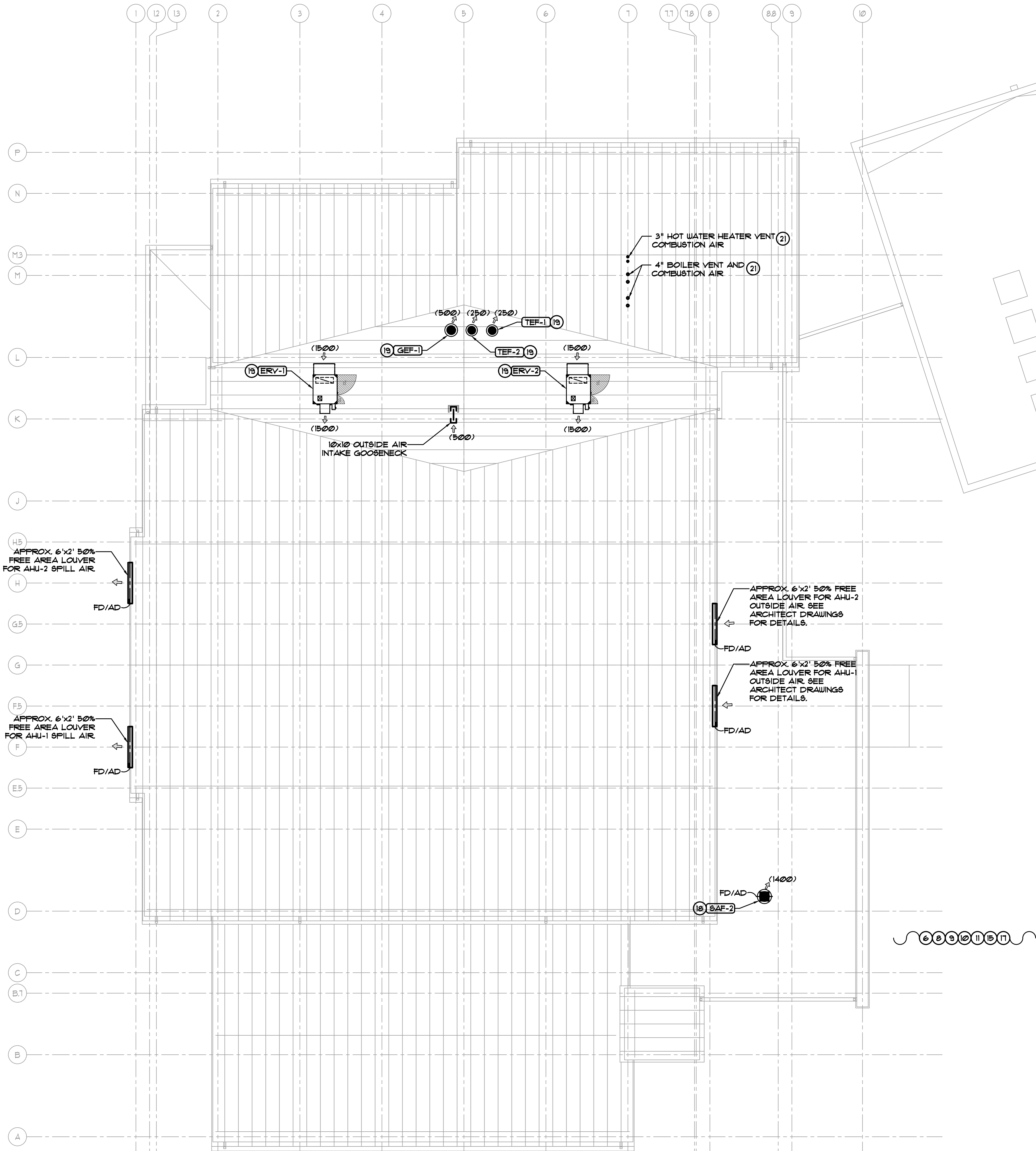
Drawing Title  
**SECOND FLOOR MECHANICAL  
CONSTRUCTION PLAN**

Scale	Job No.	Date	Drawing No.
1/8"=1'-0"	1618	04/03/2019	M-302

Drawn  
**Peter Gisolfi Associates  
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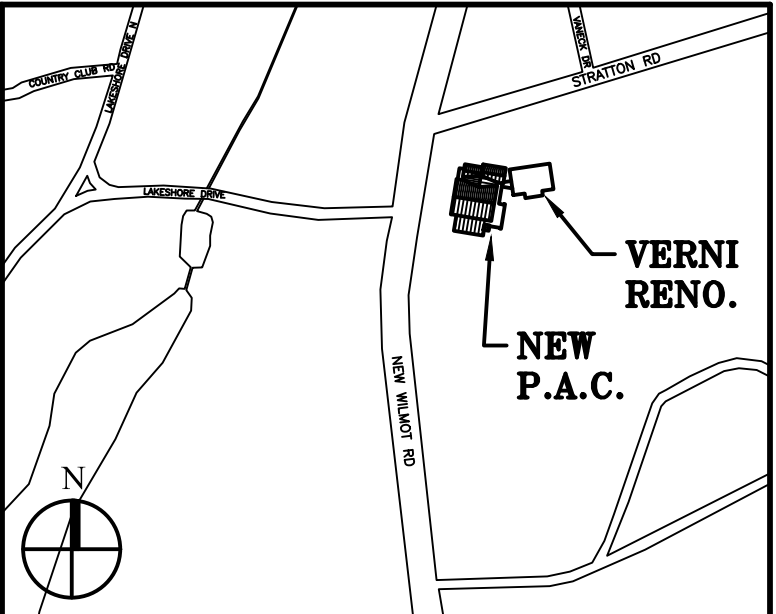
**PETER GISOLFI ASSOCIATES**





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- SEE A-100 FOR FLOWBAR INSTALLATION DETAIL.



Key Plan (not to scale)

7.	6/01/2021	ISSUED FOR BID
6.	5/07/2021	RE-ISSUED FOR BUILDING PERMIT REVIEW
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1.	1/10/2020	ISSUED FOR DD ESTIMATE
No.	Date	Revision/Submittal
<b>STRUCTURAL &amp; SITE CIVIL ENGINEER</b>		
DOMINICK R. PILLA		
ASSOCIATES, P.C.		
143 MAIN STREET		
NYACK, NY 10960		
845-727-7793		
<b>MEP ENGINEER</b>		
JMY CONSULTING		
ENGINEERING, P.C.		
37 W. 59 STREET, STE 703		
NEW YORK, NY 10019		
212-862-9855		
<b>ROOFING CONSULTANT</b>		
WATSKY ASSOCIATES		
20 MADISON AVENUE		
VALHALLA, NY 10986		
914-945-3450		
Stamp		

Project Title  
**IONA PREPARATORY SCHOOL  
ADDITION AND ALTERATION TO THE  
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Project Address  
**IONA PREPARATORY SCHOOL  
255 Wilmot Road  
New Rochelle, NY 10804**

Drawing Title  
**ROOF MECHANICAL  
CONSTRUCTION PLAN**

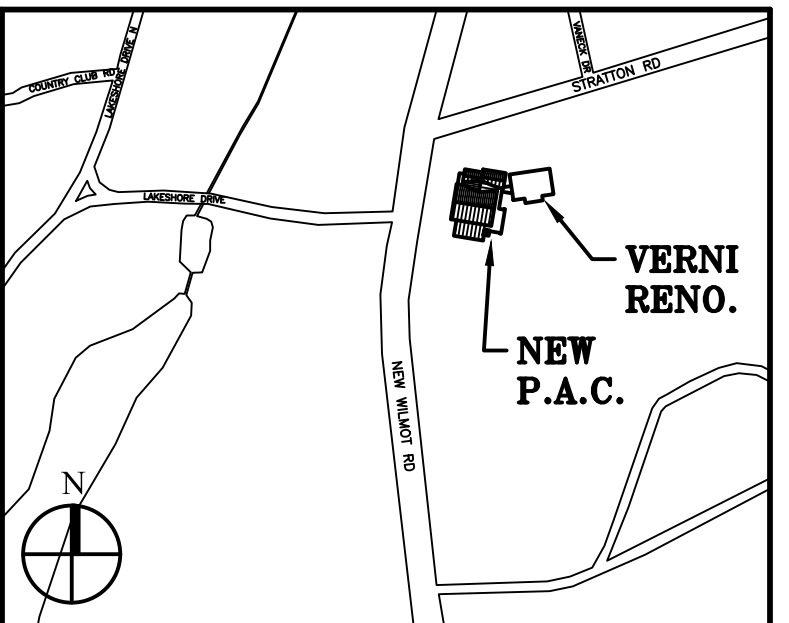
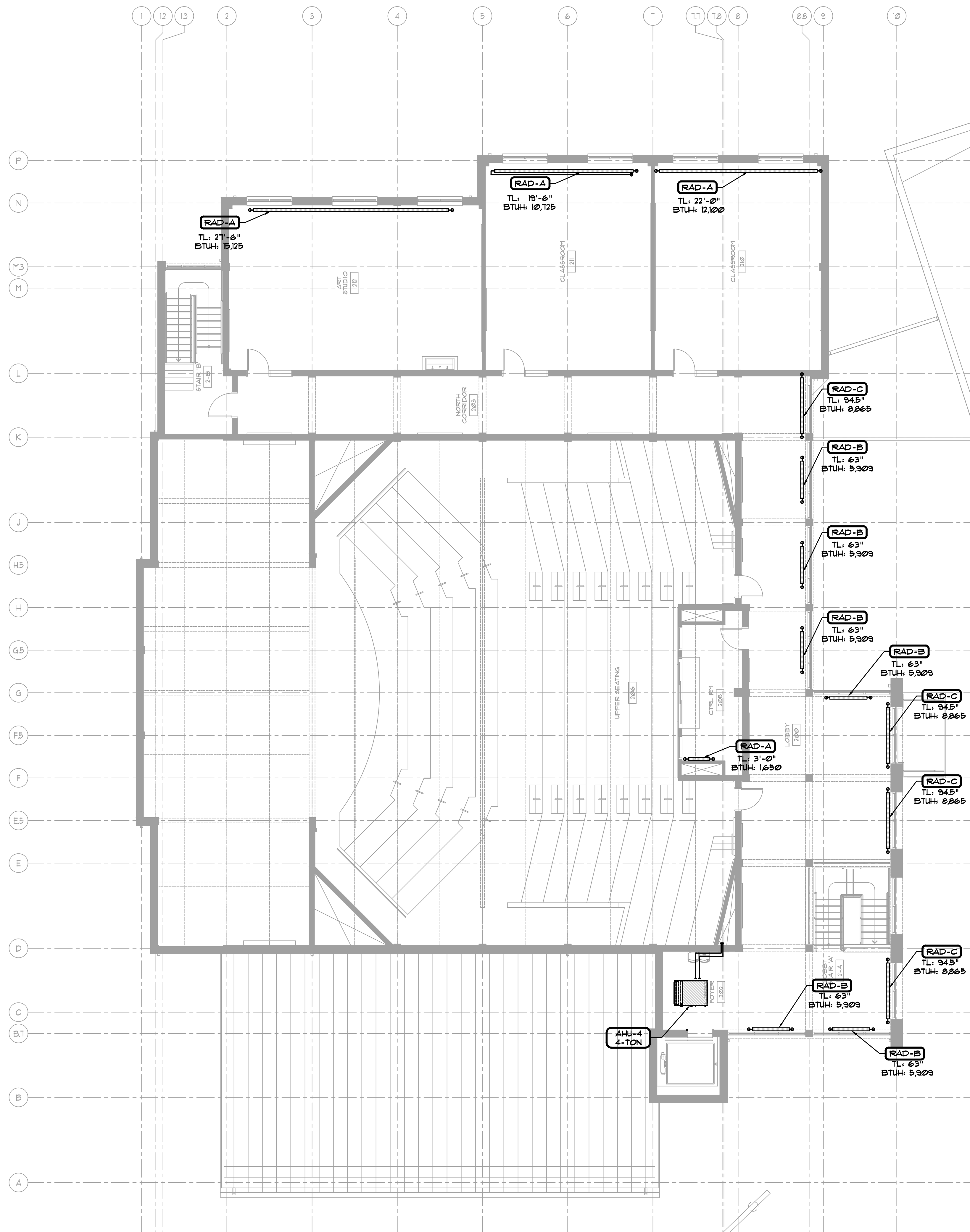
Scale	Job No.	Date	Drawing No.
1/8"=1'-0"	1618	04/03/2019	M-303

Drawn  
**Peter Gisolfi Associates  
Architects Landscape Architects, LLP**  
566 Warburton Avenue  
Hastings on Hudson, NY 10706  
914 478 3677  
**PETER GISOLFI ASSOCIATES**









**Key Plan** (not to scale)

7.	6/01/2001	ISSUED FOR BID
6.	6/07/2001	RE-ISSUED FOR BUILDING PERMIT REVIEW
5.	6/01/2001	ISSUED FOR BUILDING PERMIT REVIEW
4.	10/14/2000	ISSUED FOR PLANNING BOARD REVIEW
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DOMINICK R. PILLA		
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NYACK, NY 10960		
845-727-7793		
<b>MFP ENGINEER</b>		
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37 W. 30 STREET STE 703		
NEW YORK, NY 10018		
212-652-9855		
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WATSKY ASSOCIATES		
23 MADISON AVENUE		
VALEZILLA, NY 10096		
914-948-9450		

**Stamp**

<b>Project Title</b> <b>IONA PREPARATORY SCHOOL</b> <b>ADDITION AND ALTERATION TO THE</b> <b>PAUL VERNI FINE ARTS CENTER</b>
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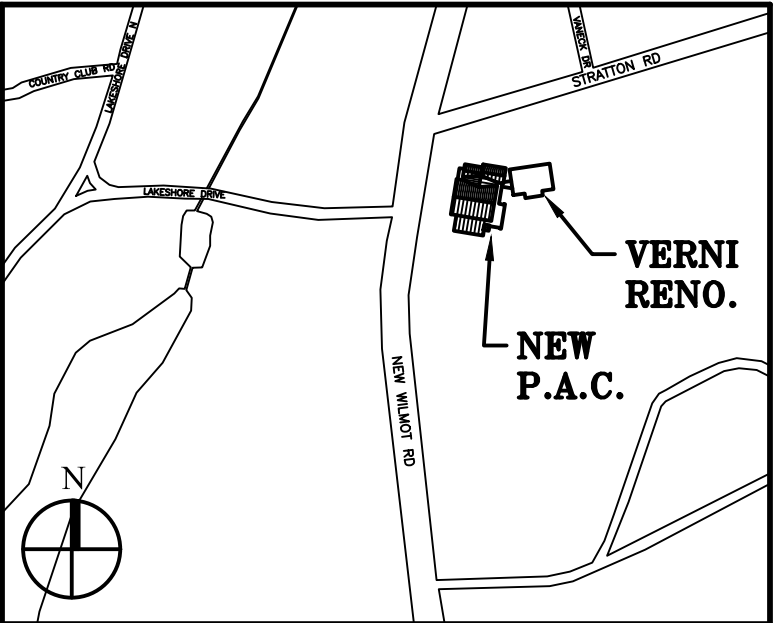
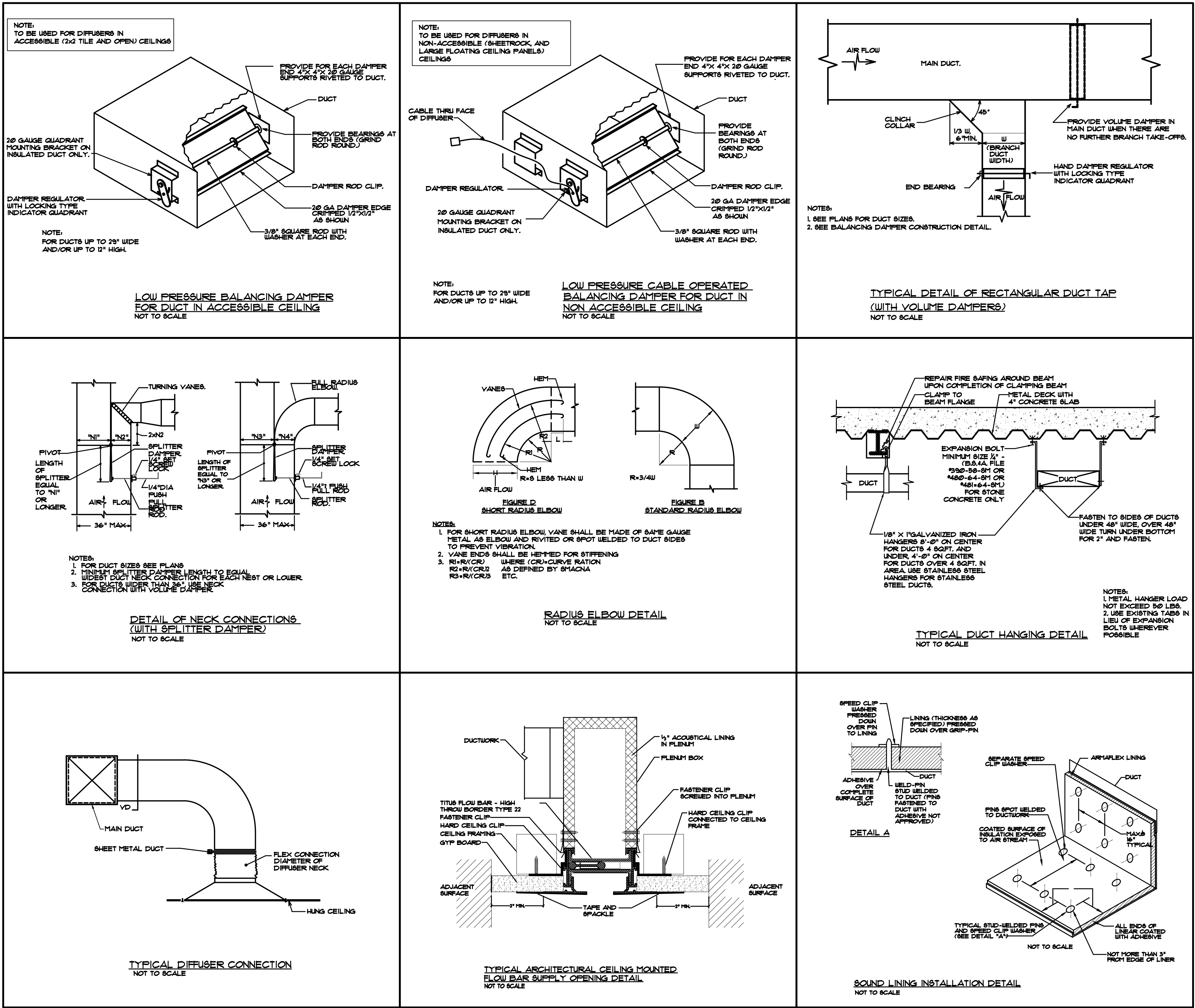
<p><b>Drawing Title</b></p> <p><b>SECOND FLOOR MECHANICAL PIPING PLAN</b></p>
---

Scale	Job No.	Date	Drawing No.
1/8"=1'-0"	1618	04/03/2019	
Drawn			M-312

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**P E T E R   G I S O L F I   A S S O C I A T E S**





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ENGINEERING, P.C.		20 MADISON AVENUE
37 W. 59 STREET, STE 703		VALHALLA, NY 10986
NEW YORK, NY 10019		914-945-3450
212-862-9855		

Stamp

Project Title  
IONA PREPARATORY SCHOOL  
ADDITION AND ALTERATION TO THE  
PAUL VERNI FINE ARTS CENTER

Project Address  
IONA PREPARATORY SCHOOL  
255 Wilmot Road  
New Rochelle, NY 10804

Drawing Title  
MECHANICAL DETAILS I

Scale Job No. Date Drawing No.

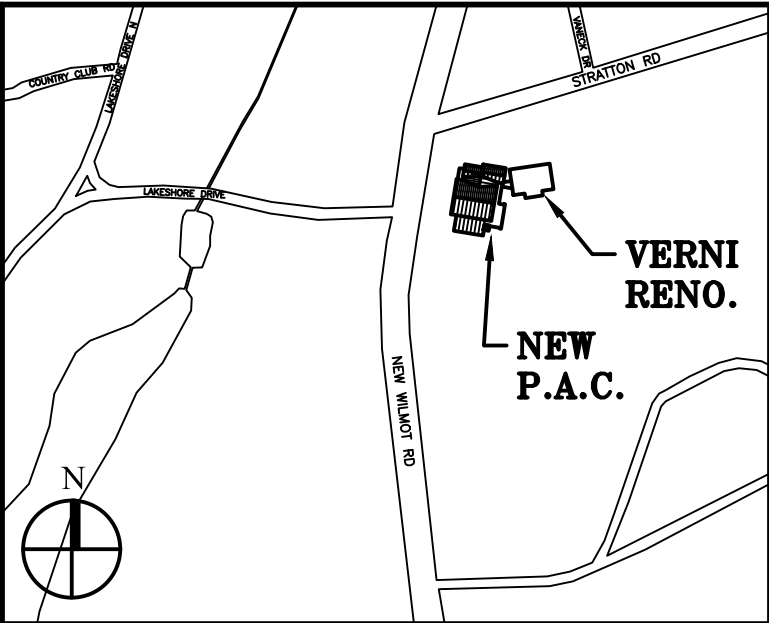
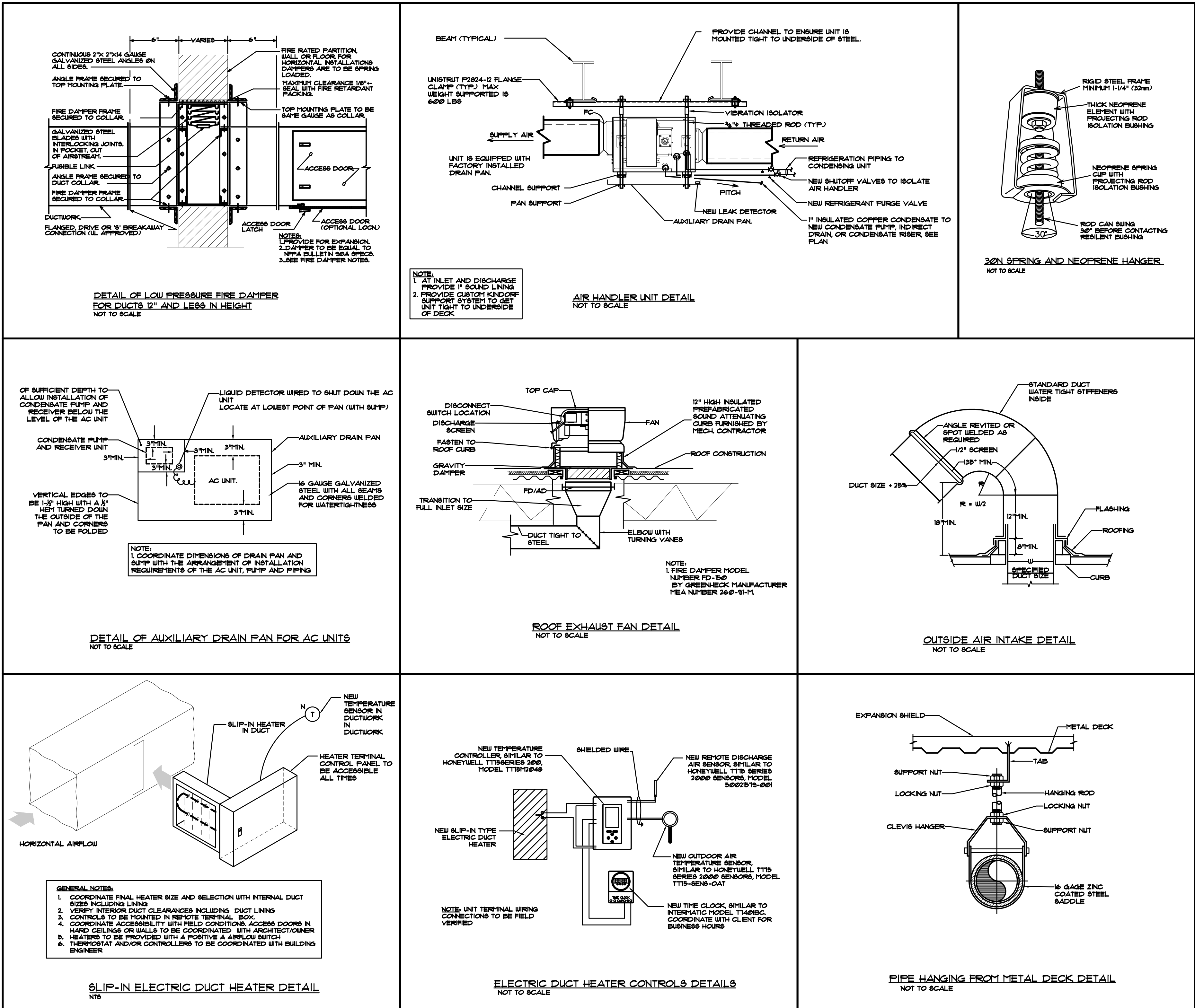
NTS 1618 04/03/2019 M-401

Drawn

Peter Gisolfi Associates  
Architects Landscape Architects, LLP  
588 Warburton Avenue  
Hastings on Hudson, NY 10706  
914 478 3677

PETER GISOLFI ASSOCIATES





Key Plan (not to scale)

7.	6/01/2021	ISSUED FOR BID
6.	5/07/2021	RE-ISSUED FOR BUILDING PERMIT REVIEW
5.	2/01/2021	ISSUED FOR BUILDING PERMIT REVIEW
4.	10/14/2020	ISSUED FOR PLANNING BOARD REVIEW
3.	9/23/2020	RESUBMITTED FOR ZONING REVIEW
2.	8/28/2020	ISSUED FOR PRELIMINARY DOB REVIEW
1.	1/10/2020	ISSUED FOR DD ESTIMATE
No.	Date	Revision/Submission
<b>STRUCTURAL &amp; SITE CIVIL ENGINEER</b>		
DOMINICK R. PILLA		
ASSOCIATES, P.C.		
145 MAIN STREET		
NYACK, NY 10960		
845-727-7793		
<b>MEP ENGINEER</b>		
JMY CONSULTING		
ENGINEERING, P.C.		
37 W. 59 STREET, STE 703		
NEW YORK, NY 10019		
212-862-9855		
<b>ROOFING CONSULTANT</b>		
WATSKY ASSOCIATES		
20 MADISON AVENUE		
VALHALLA, NY 10986		
914-945-3450		

Stamp

Project Title  
IONA PREPARATORY SCHOOL  
ADDITION AND ALTERATION TO THE  
PAUL VERNI FINE ARTS CENTER

Project Address  
IONA PREPARATORY SCHOOL  
255 Wilmot Road  
New Rochelle, NY 10804

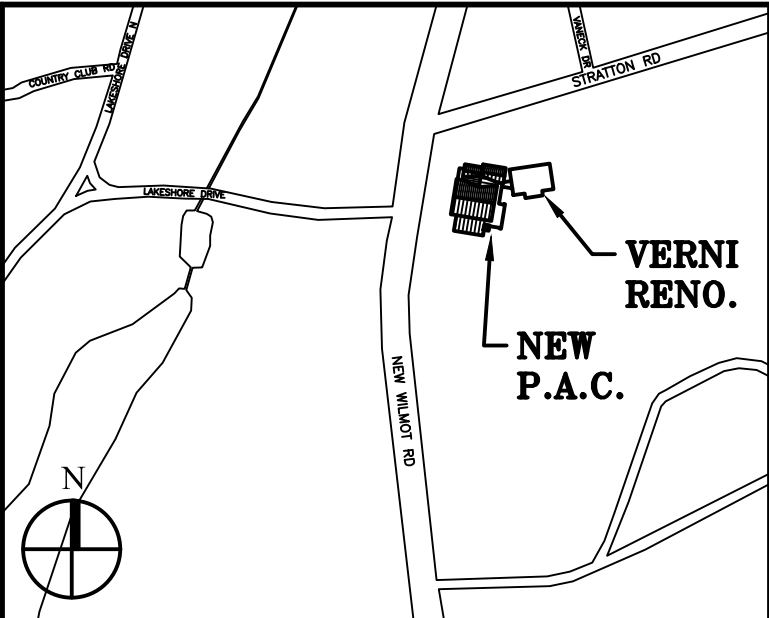
Drawing Title  
MECHANICAL DETAILS II

Scale	Job No.	Date	Drawing No.
NTS	1818	04/03/2019	M-402
Drawn			

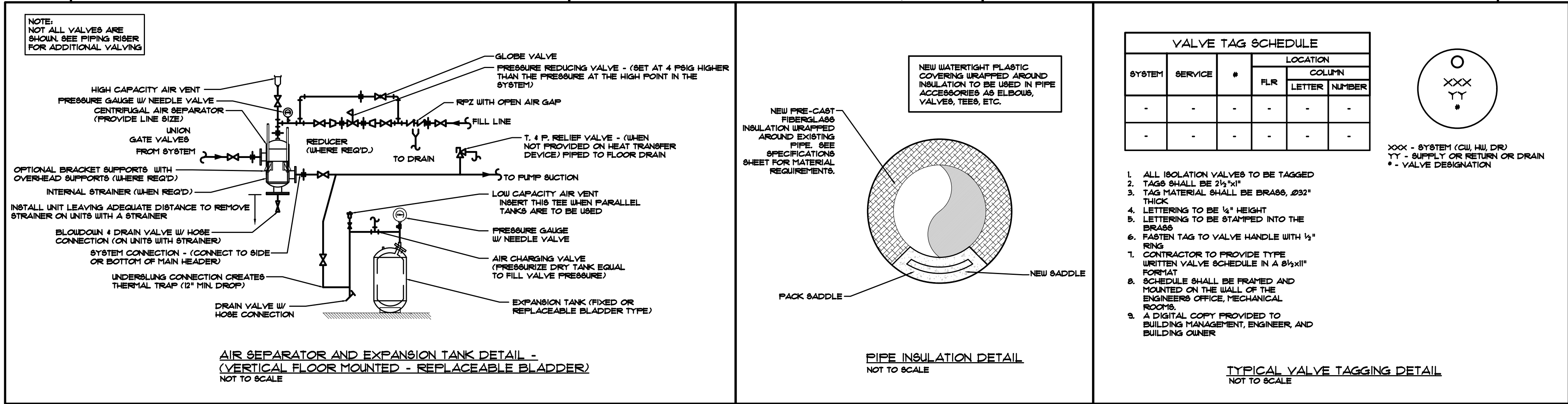
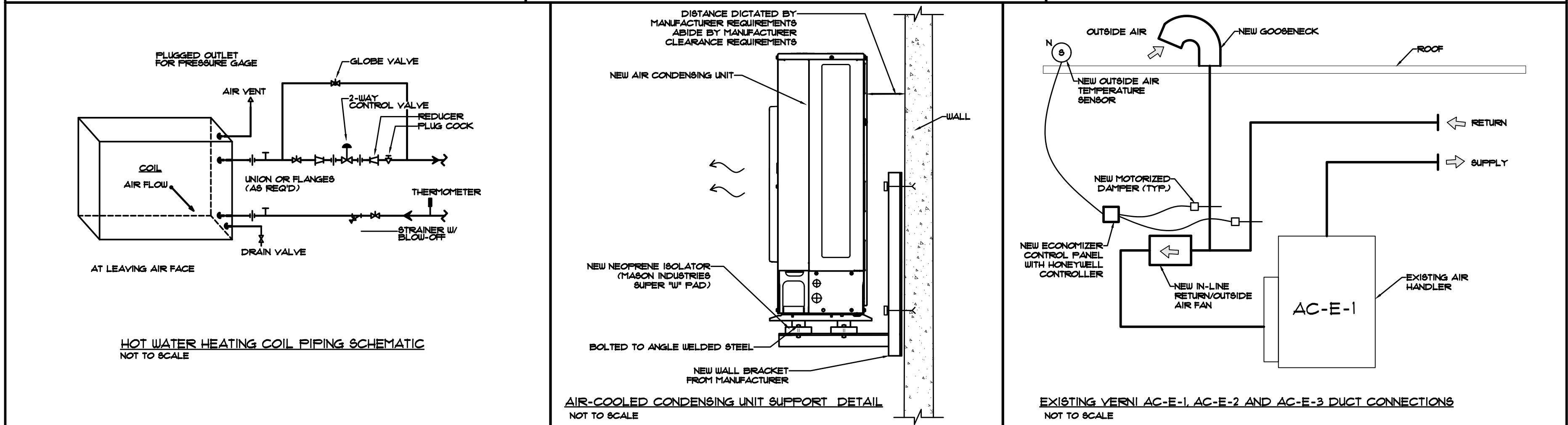
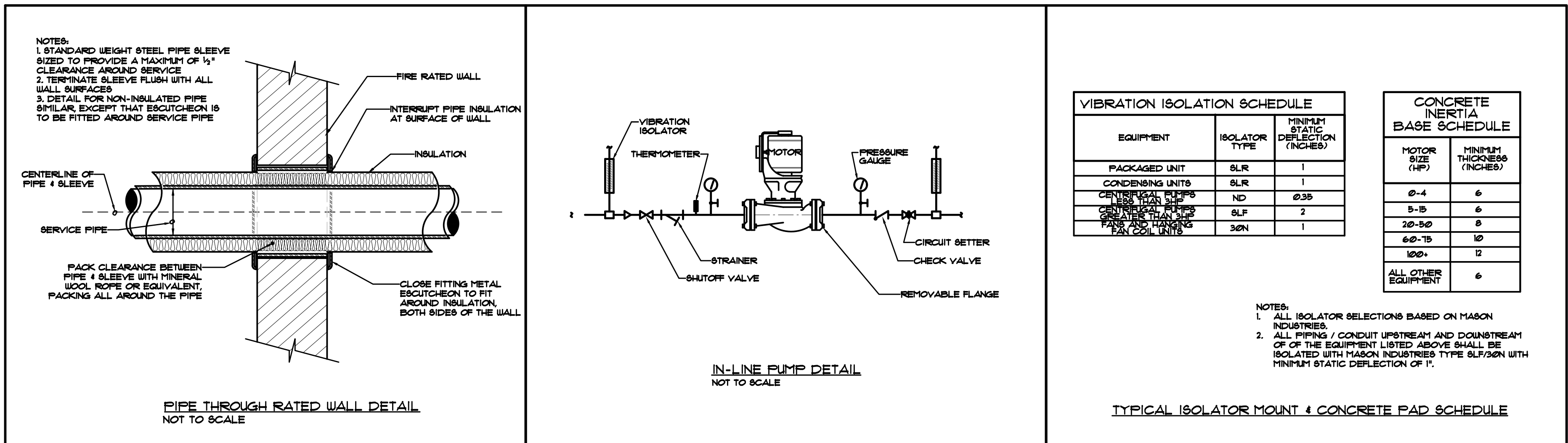
Peter Gisolfi Associates  
Architects Landscape Architects, LLP  
588 Warburton Avenue  
Hastings on Hudson, NY 10706  
914 478 3677

PETER GISOLFI ASSOCIATES





Key Plan (not to scale)



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No.	Date	Revision/Submittal
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DOMINICK R. PILLA		
ASSOCIATES, P.C.		
145 MAIN STREET		
NYACK, NY 10960		
845-727-7793		
MEP ENGINEER		
JMV CONSULTING		
ENGINEERING, P.C.		
37 W. 59 STREET, STE 703		
NEW YORK, NY 10019		
212-862-9855		
ROOFING CONSULTANT		
WATSKY ASSOCIATES		
20 MADISON AVENUE		
VALHALLA, NY 10986		
914-945-3450		

Stamp

Project Title

IONA PREPARATORY SCHOOL  
ADDITION AND ALTERATION TO THE  
PAUL VERNI FINE ARTS CENTER

Project Address

IONA PREPARATORY SCHOOL  
255 Wilmot Road  
New Rochelle, NY 10804

Drawing Title

MECHANICAL DETAILS III

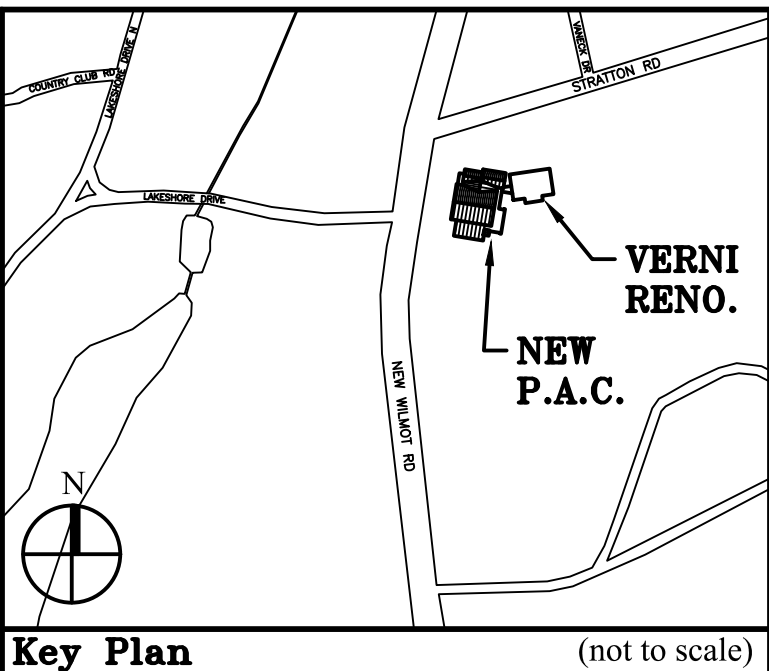
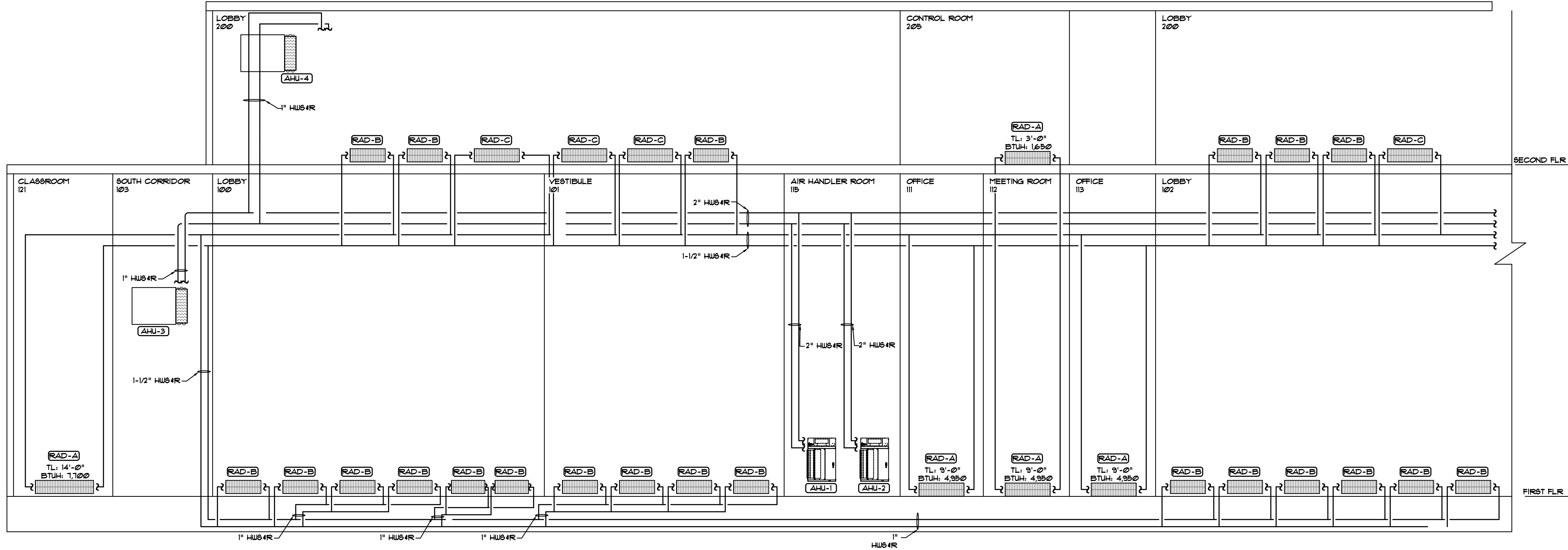
Scale	Job No.	Date	Drawing No.
NTS	1818	04/03/2019	M-403
Drawn			

Peter Gisolfi Associates  
Architects Landscape Architects, LLP

588 Warburton Avenue  
Hastings on Hudson, NY 10706  
914 478 3677

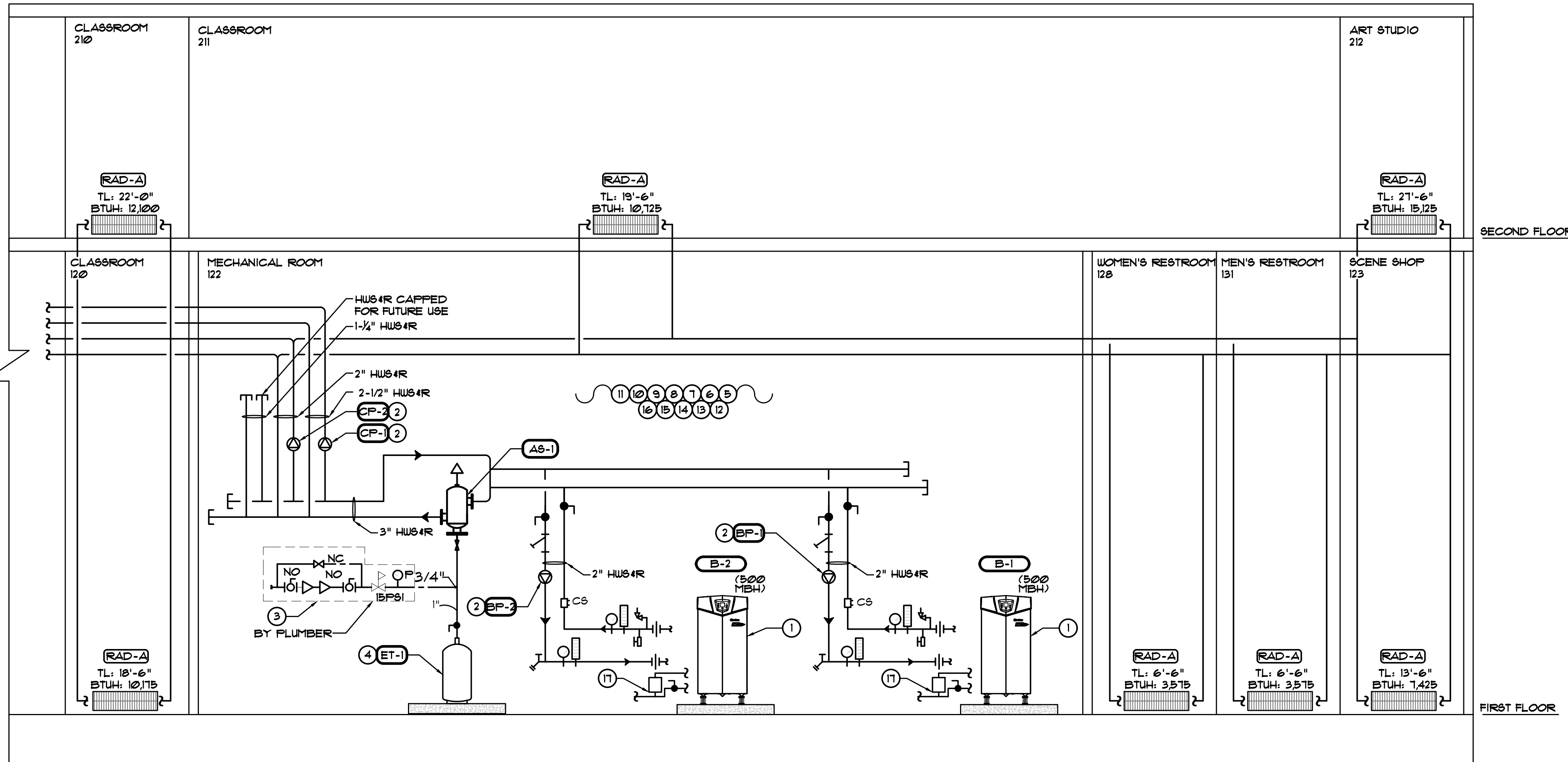
PETER GISOLFI ASSOCIATES





Key Plan (not to scale)

- CONSTRUCTION NOTES:**
1. PURCHASE, STORE, TRANSPORT, RIG AND INSTALL NEW BOILER. ABIDE BY ALL MANUFACTURER'S CLEARANCE REQUIREMENTS. EXTEND ALL NECESSARY SERVICES FOR PROPER FUNCTIONALITY OF UNIT.
  2. PROVIDE AND INSTALL NEW PUMP SETUP. ABIDE BY ALL MANUFACTURER'S CLEARANCE REQUIREMENTS. EXTEND ALL NECESSARY SERVICES FOR PROPER FUNCTIONALITY.
  3. TAP EXISTING COLD WATER LINE WITH MANUAL (NO) SHUT OFF VALVES, AND AN APPROVED SECONDARY RPZ VALVE TO FEED MAKE-UP SYSTEMS.
  4. PROVIDE AND INSTALL NEW EXPANSION TANK. INSTALL NEW VALVES & GAUGES AS REQUIRED.
  5. PROVIDE AND INSTALL ALL NEW PIPING AS SHOWN AND AS NECESSARY.
  6. CONTRACTOR TO PROVIDE & INSTALL VALVE AND DEVICE TAGS FOR EACH VALVE & DEVICE INSTALLED. CONTRACTOR SHALL PROVIDE LAMINATED VALVE IDENTIFICATION SHEET.
  7. RETAIN 3RD PARTY BALANCING COMPANY TO BALANCE SYSTEMS TO ACHIEVE PROPER GPM QUANTITIES SHOWN. PROVIDE 3RD PARTY BALANCING REPORT.
  8. PROVIDE NEW MANUALLY OPERATED REMOTE EMERGENCY GAS SHUTOFF FOR EMERGENCY SHUTDOWN OF ALL OF THE BURNER CONTROLS, WHICH WILL IN EFFECT SHUTDOWN ALL OTHER COMPONENTS OF THE BOILER SYSTEM. LOCATE OUTSIDE OF BOILER ROOM, AND PROVIDE TAMPER PROOF COVER TO AVOID ACCIDENTAL TAMPERING.
  9. PROVIDE ALL VALVING AS SHOWN ON RISER DIAGRAM, ON DETAILS AND AS NECESSARY FOR A COMPLETE SYSTEM. VALVING AND PIPE APPARATUS NOT SHOWN ON PLAN.
  10. PROVIDE KINDOFF SUPPORTS FOR ALL NEW PANELS AND CONTROLS.
  11. PROVIDE NEW KINDOFF BRACKET SUPPORTS FOR ALL NEW INLINE PUMPS. SUPPORT OFF WALL WHEN NECESSARY.
  12. PROVIDE AND INSTALL NEW TAMPERPROOF OUTDOOR AIR SENSOR LOCATED OUT ON STREET. TIE BACK INTO BOILER CONTROLS.
  13. G.C. TO FIRE SAFE ALL OPENINGS IN WALLS AND CEILING. CONTRACTOR RESPONSIBLE FOR FIRE RATING NEW AND EXISTING PENETRATIONS.
  14. MECHANICAL CONTRACTOR TO RETAIN PLUMBER TO PERFORM ALL COLD WATER, HOT WATER AND HOT WATER RETURN PIPING DISCONNECT AND RECONNECT. PLUMBER TO PERFORM THE FOLLOWING:
    - DEMO EXISTING PLUMBING PIPING FROM TURBOMAX UNIT.
    - PIPE DOMESTIC WATER TO NEW WATER HEATERS AND PROVIDE ALL NECESSARY VALVING.
    - INSULATE ALL PIPING TO MEET CODE.
    - TIE PIPING BACK TO MIXING VALVE AND ENSURE ALL CONTROLLERS ARE WORKING PROPERLY.
    - EXTEND NEW COLD WATER TO NEW PRVS AND RPZ'S IN BOILER ROOM. INSTALL ONE FOR CONDENSER WATER SYSTEM AND ONE FOR HOT WATER SYSTEM.
    - COORDINATE ALL WORK WITH MECHANICAL CONTRACTOR
    - EXTEND GAS TO NEW BOILERS AND PROVIDE ALL APPROPRIATE VALVING.
  15. MECHANICAL CONTRACTOR TO RETAIN LICENSED ELECTRICAL CONTRACTOR TO PERFORM ALL ELECTRICAL WORK IN SCOPE.
  16. NEW 1" DRAIN LINE TO INDIRECT DRAIN. PROVIDE CONDENSATE NEUTRALIZING SYSTEM FOR CONDENSING BOILER PRIOR TO ENTERING DRAIN DRAIN TO BE CPVC BEFORE KIT AND COPPER AFTER.



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212-662-9865		
<b>ROOFING CONSULTANT</b>		
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20 MADISON AVENUE		
VALHALLA, NY 10986		
914-945-3450		

Stamp

Project Title  
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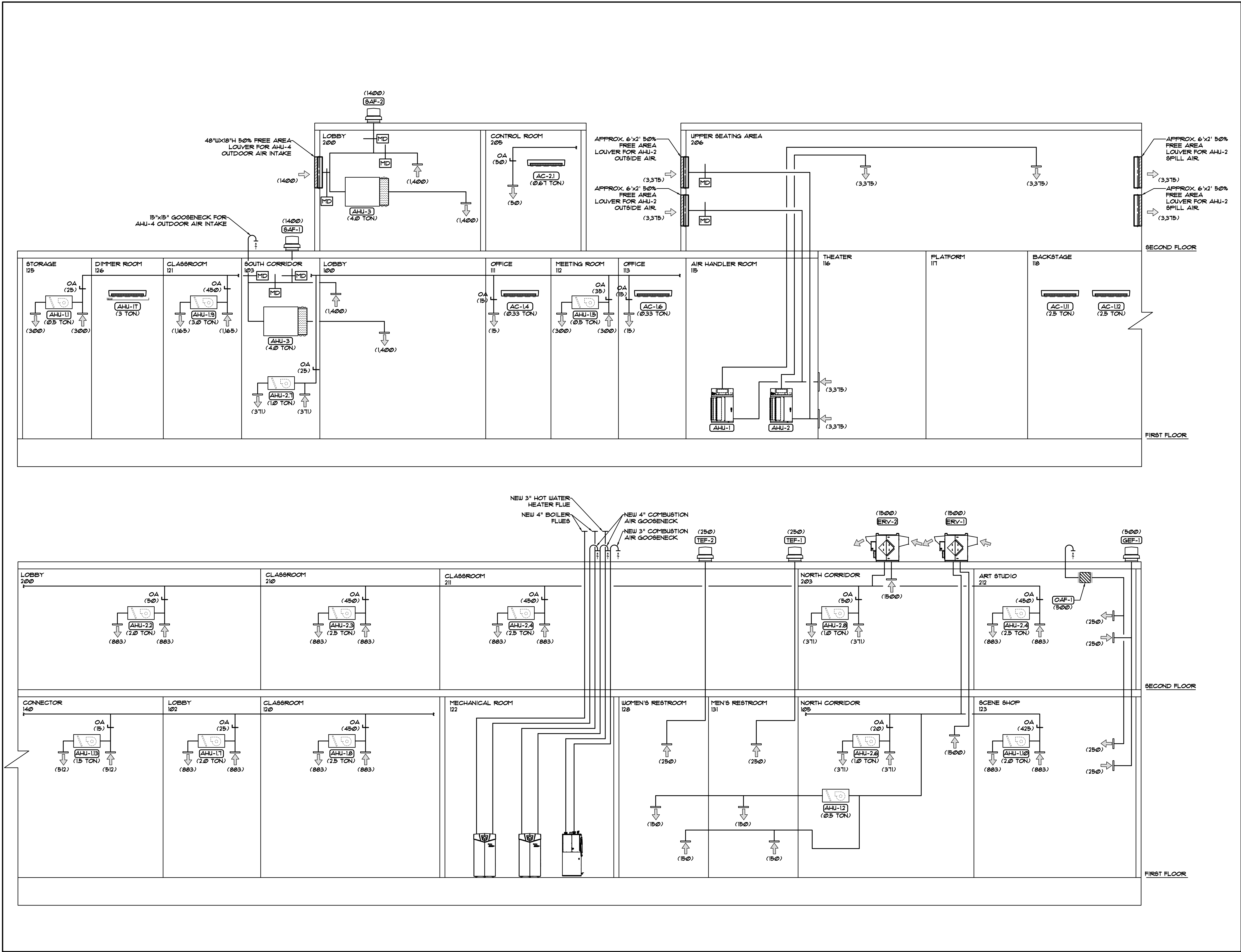
Project Address  
IONA PREPARATORY SCHOOL  
255 Wilmot Road  
New Rochelle, NY 10804

Drawing Title  
MECHANICAL HOT WATER  
RISER DIAGRAM

Scale	Job No.	Date	Drawing No.
NTS	1818	04/03/2019	M-501

Peter Gisolfi Associates  
Architects Landscape Architects, LLP  
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Hastings on Hudson, NY 10706  
914 478 3677  
PETER GISOLFI ASSOCIATES





**Key Plan** (not to scale)

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1. 1/10/2020 ISSUED FOR DD ESTIMATE

No. Date Revision/Submission

STRUCTURAL & SITE CIVIL ENGINEER

DOMINICK R. PILLA  
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NYACK, NY 10960  
845-727-7793

MEP ENGINEER  
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212-862-9855

ROOFING CONSULTANT  
WATSKY ASSOCIATES  
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VALHALLA, NY 10986  
914-945-3450

Project Title

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ADDITION AND ALTERATION TO THE  
PAUL VERNI FINE ARTS CENTER

Project Address

IONA PREPARATORY SCHOOL  
255 Wilmot Road  
New Rochelle, NY 10804

Drawing Title

MECHANICAL AIR RISER  
DIAGRAM

Scale Job No. Date Drawing No.

NTS 1818 04/03/2019 M-502

Drawn

Peter Gisolfi Associates  
Architects Landscape Architects, LLP  
586 Warburton Avenue  
Hastings on Hudson, NY 10706  
914 478 3677

PETER GISOLFI ASSOCIATES

SPLIT AIR CONDITIONING UNIT SCHEDULE																											
AIR HANDLING UNIT															AIR COOLED CONDENSING UNIT												
AHU NO.	SERVICE	NOMINAL TONNAGE	COOLING CAPACITY (BTUH)	HEATING CAPACITY (BTUH)	CR1	MAX ESP	MANUF.	TYPE	MODEL	UNIT ELECTRICAL CHAR			AIR HANDLER WEIGHT (LBS)	SOUND PRESSURE (dBA)	PHYSICAL DIMENSIONS HxWxD (IN.)	COND UNIT	MANUF.	MODEL*	COOLING CAPACITY (BTUH)	HEATING CAPACITY (BTUH)	SOUND PRESSURE (dBA)	COND. UNIT ELEC.			COND. UNIT WEIGHT (LBS)	EFF	PHYSICAL DIMENSIONS HxWxD (IN.)
					HIGH/LOW					VOLTS-PHASE	MCA	MOCP										VOLTS - PHASE	MCA	MOP			
AC-11	STORAGE 134	0.5	6,000	6,700	300 212	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P06NMAU-E3	200/1	1.1	15	49	29	9-7/8" x 27-9/16" x 28-7/8"	ACCU-5	ME	FUHY-P168TNU-A	168,000	188,000	65	200/3	59	90	713	EER 112 IEER 23.4 COP 3.59	71-10/16" x 68-15/16" x 29-3/16"
AC-12	WOMEN'S RESTROOM 133 & MEN'S RESTROOM 139	0.5	6,000	6,700	300 212	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P06NMAU-E3	200/1	1.1	15	49	29	9-7/8" x 27-9/16" x 28-7/8"												
AC-13	DELETED																										
AC-14	OFFICE 114	0.33	4,000	4,500	148 117	N/A	mitsubishi electric	WALL MOUNTED CASSETTE	PKFY-P04NLMU-E	200/1	0.2	15	24	28	11-25/32" x 30-7/16" x 9-11/32"												
AC-15	FACULTY LOUNGE 115	0.5	6,000	6,700	300 212	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P06NMAU-E3	200/1	1.1	15	49	29	9-7/8" x 27-9/16" x 28-7/8"												
AC-16	OFFICE 116	0.33	4,000	4,500	148 117	N/A	mitsubishi electric	WALL MOUNTED CASSETTE	PKFY-P04NLMU-E	200/1	0.2	15	24	28	11-25/32" x 30-7/16" x 9-11/32"												
AC-17	LOBBY 102	2.0	24,000	27,000	883 618	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P24NMAU-E3	200/1	2.1	15	67	39	9-7/8" x 43-5/16" x 28-7/8"												
AC-18	CLASSROOM 120	2.5	30,000	34,000	883 618	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P30NMAU-E3	200/1	2.1	15	67	39	9-7/8" x 43-5/16" x 28-7/8"												
AC-19	CLASSROOM 121	3.0	36,000	40,000	1165 812	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P36NMAU-E3	200/1	3.32	15	86	41	9-7/8" x 55-1/8" x 28-7/8"												
AC-110	SCENE SHOP 122	2.0	24,000	27,000	883 618	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P24NMAU-E3	200/1	2.1	15	67	39	9-7/8" x 43-5/16" x 28-7/8"												
AC-111	STAGE 118	2.5	30,000	34,000	850 710	N/A	mitsubishi electric	WALL MOUNTED CASSETTE	PKFY-P30NKMU-E	200/1	0.5	15	46	49	14-3/8" x 46-1/16" x 11-5/8"												
AC-112	STAGE 118	2.5	30,000	34,000	850 710	N/A	mitsubishi electric	WALL MOUNTED CASSETTE	PKFY-P30NKMU-E	200/1	0.5	15	46	49	14-3/8" x 46-1/16" x 11-5/8"												
AC-113	PASSAGEWAY 140	1.5	18,000	20,000	512 424	0.4	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P18NMAU-E3	200/1	1.56	15	58	32	9-7/8" x 35-7/16" x 28-7/8"												
AC-21	CONTROL ROOM 215	0.67	8,000	9,000	237 141	N/A	mitsubishi electric	WALL MOUNTED CASSETTE	PKFY-P08NLMU-E	200/1	0.3	15	25	35	11-25/32" x 30-7/16" x 9-11/32"	ACCU-6	ME	FUHY-P120TNU-A	120,000	135,000	62	200/3	41	60	594	EER 12.3 IEER 23.6 COP 3.8	71-10/16" x 48-14/16" x 29-3/16"
AC-22	LOBBY 201	2.0	24,000	27,000	883 618	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P24NMAU-E3	200/1	2.1	15	67	39	9-7/8" x 43-5/16" x 28-7/8"												
AC-23	CLASSROOM 220	2.5	30,000	34,000	883 618	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P30NMAU-E3	200/1	2.1	15	67	39	9-7/8" x 43-5/16" x 28-7/8"												
AC-24	CLASSROOM 221	2.5	30,000	34,000	883 618	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P30NMAU-E3	200/1	2.1	15	67	39	9-7/8" x 43-5/16" x 28-7/8"												
AC-25	ART STUDIO 222	2.5	30,000	34,000	883 618	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P30NMAU-E3	200/1	2.1	15	67	39	9-7/8" x 43-5/16" x 28-7/8"												
AC-26	FIRST FLOOR NORTH CORRIDOR 105	1.0	12,000	13,500	371 265	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P12NMAU-E3	200/1	1.2	15	49	34	9-7/8" x 27-9/16" x 28-7/8"												
AC-27	FIRST FLOOR SOUTH CORRIDOR 103	1.0	12,000	13,500	371 265	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P12NMAU-E3	200/1	1.2	15	49	34	9-7/8" x 27-9/16" x 28-7/8"												
AC-28	SECOND FLOOR NORTH CORRIDOR 203	1.0	12,000	13,500	371 265	0.6	mitsubishi electric	DUCTED - CEILING UNIT	PEFY-P12NMAU-E3	200/1	1.2	15	49	34	9-7/8" x 27-9/16" x 28-7/8"												

\* SELECTIONS BASED ON MITSUBISHI ELECTRIC. CONTACT MALCOLM SIGELBAUM - 718 269 3650  
\* PROVIDE FILTER RACK FOR DUCTED UNITS AND (2) SPARE FILTERS  
\* PROVIDE HARD-WIRED THERMOSTAT FOR EACH AIR HANDLING UNIT AND (2) MASTER WIFI-ENABLED THERMOSTAT MODEL: AE-200A.

SPLIT AIR HANDLER UNIT SCHEDULE																														
INDOOR UNIT																	OUTDOOR UNIT													
AHU NO.	LOCATION	NOMINAL TONNAGE	COOLING CAPACITY (BTUH)	CFM	ESP	HOT WATER COIL							MANUF.	MODEL	UNIT ELECTRICAL CHAR			AIR HANDLER WEIGHT (LBS)	PHYSICAL DIMENSIONS HxWxD (in.)	COND UNIT	LOCATION	MANUF.	MODEL*	COND. UNIT ELEC.			COND. UNIT WEIGHT (LBS)	PHYSICAL DIMENSIONS HxWxD (in.)	REF	EFF. (COOL.)
						EAT DB (°F)	LAT DB (°F)	TH (MBH)	EWT (°F)	LWT (°F)	FLOW (GPM)	PD (FT)			VOLTS-PHASE	MCA	MOCP													
																								VOLTS-PHASE	MCA	MFA				
AHU-1	THEATER 110	12	149,080	3375	1.75	45.5	97.0	196.8	16.0	139.9	2.0	2.2	AAON	V3-DRB-8-0-162C-12L	208 - 3 PH	11.0	15	750	73-1/8 x 56-1/8 x 34-1/4	ACCU-1	CARPARK	AAON	CFA-013-B-A-8-DC00K	208 - 3 PH	55	70	1154	57x94x46-3/7	R-410A	10.3
AHU-2	THEATER 110	12	149,080	3375	1.75	45.5	97.0	196.8	16.0	139.9	2.0	2.2	AAON	V3-DRB-8-0-162C-12L	208 - 3 PH	11.0	15	750	73-1/8 x 56-1/8 x 34-1/4	ACCU-2	CARPARK	AAON	CFA-013-B-A-8-DC00K	208 - 3 PH	55	70	1154	57x94x46-3/7	R-410A	10.3
AHU-3	LOBBY FOYER 103	4	49,470	1400	0.6	42.5	94.8	83.3	16.0	137	7.4	0.4	AAON	H3-BRB-8-0-161C-12N	208 - 3 PH	4.0	15	596	22-1/8 x 57 x 42-3/8	ACCU-3	CARPARK	AAON	CFA-004-A-A-8-DC00H	208 - 3 PH	23	35	454	56-1/4x61-1/2x29-1/4	R-410A	12.0
AHU-4	LOBBY FOYER 203	4	49,470	1400	0.6	42.5	94.8	83.3	16.0	137	7.4	0.4	AAON	H3-BRB-8-0-161C-12N	208 - 3 PH	4.0	15	596	22-1/8 x 57 x 42-3/8	ACCU-4	CARPARK	AAON	CFA-004-A-A-8-DC00H	208 - 3 PH	23	35	454	56-1/4x61-1/2x29-1/4	R-410A	12.0

SELECTIONS BASED ON AAON. CONTACT PAUL JOHNSTON (GIL-BAR) - 212 331 8272  
REFER TO MANUFACTURER'S INSTALLATION GUIDELINES FOR MORE INFORMATION

FLOW BAR DIFFUSER SCHEDULE													*RETURN AIR BASED ON 500 CFM
DESIGNATION	TYPE	NOMINAL FLOWBAR OPENING (IN)	* OF SLOTS	CFM/FT	TOTAL LENGTH (FT)	ACTIVE LENGTH (FT)	TOTAL SUPPLY (CFM)	NC	MAX. THROW	MOUNTING	BORDER TYPE	MODEL	REMARKS
FBJ-1	SUPPLY / RETURN	1"	1	9: 70 R: 42	SEE PLAN	SEE PLAN	VARIABLES	20	20	WALL/CEILING	22	FL-10 JT	PROVIDE 1" LINED PLENUM BOX
FBJ-15	SUPPLY / RETURN	15"	1	9: 120 R: 63	SEE PLAN	SEE PLAN	VARIABLES	22	26	WALL/CEILING	22	FL-15 JT	PROVIDE 1" LINED PLENUM BOX
FBJ-2	SUPPLY / RETURN	2"	1	9: 195 R: 84	SEE PLAN	SEE PLAN	VARIABLES	29	34	WALL	22	FL-20 JT	PROVIDE 1" LINED PLENUM BOX
FBH-1	SUPPLY / RETURN	1"	1	9: 55 R: N/A	SEE PLAN	SEE PLAN	VARIABLES	26	21	CEILING	22	FL-10 HT	PROVIDE 1" LINED PLENUM BOX
FBH-15	SUPPLY / RETURN	15"	1	9: 60 R: N/A	SEE PLAN	SEE PLAN	VARIABLES	31	25	CEILING	22	FL-15 HT	PROVIDE 1" LINED PLENUM BOX
FBH-2	SUPPLY / RETURN	2"	1	9: 75 R: N/A	SEE PLAN	SEE PLAN	VARIABLES	33	27	CEILING	22	FL-20 HT	PROVIDE 1" LINED PLENUM BOX

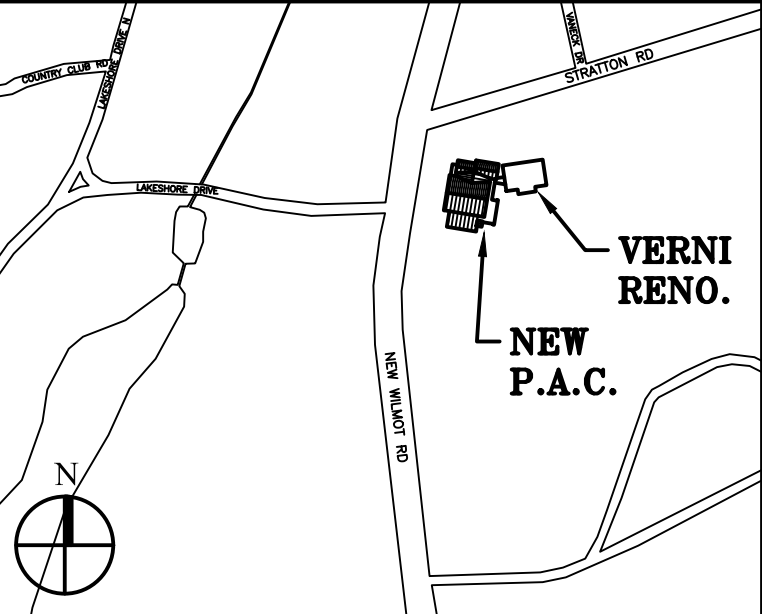
SELECTIONS BASED ON "TITUS" MANUFACTURER  
-PROVIDE SOUND ATTENUATION FOR ALL SUPPLY AND RETURN PLENUM BOXES  
-DUCTWORK FABRICATOR TO VERIFY PLENUM SIZES WITH ALL CONSTRUCTION DETAILS. COORDINATE WITH G.C. FOR CUSTOM CUTS TO ACCOMMODATE FRAMING.  
-PROVIDE BLANK OFFS FOR UNUSED SECTION OF FLOWBAR (ACCESSORY MODEL\* FBB0 BLANK-OFF)  
-PROVIDE INSULATED RETURN HOOD / LIGHT SHIELD FOR PLENUM RETURN SECTIONS OF FLOWBAR (ACCESSORY MODEL \* FBRI INSULATED RETURN HOOD / LIGHT SHIELD)  
-FOR PORTIONS OF HIGH-THROW FLOWBAR THAT ARE UTILIZED FOR RETURN CONTRACTOR RESPONSIBLE FOR FIELD CUTTING OUT BAFFLE AND INSTALL INSULATED RETURN HOOD/PLENUM.

CEILING DIFFUSER SCHEDULE							
DESIGNATION	NOMINAL SIZE	MODEL	NECK SIZE	CFM RANGE	MAX. THROW	MAX. NC	REMARKS
CD-A	12x12	OMNI	8"	0-244	16	17	SQUARE CEILING DIFFUSER
CD-B	24x24	OMNI	8"	0-244	10	12	SQUARE CEILING DIFFUSER
CD-C	24x24	OMNI	10"	245-400	13	17	SQUARE CEILING DIFFUSER
CD-D	22.5"D	R-OMNI	10"	0-400	13	20	CIRCULAR CEILING DIFFUSER

SELECTIONS ARE BASED ON "TITUS" MANUFACTURER

SINGLE DEFLECTION SUPPLY REGISTERS						
DESIGNATION	CFM	SIZE	NC	THROW	MODEL	REMARKS
SR-A	0-285	12x8	15	24	30IRL	-

SELECTIONS ARE BASED ON "TITUS" MANUFACTURER  
REGISTERS ARE DOUBLE DEFLECTION WITH 3/4" BLADE SPACING, STEEL MATERIAL, WELDED BORDER  
FINAL COLOR SHALL BE APPROVED BY ARCHITECT.





IT ROOM SPLIT AIR CONDITIONING UNIT SCHEDULE																												
INDOOR UNIT															OUTDOOR UNIT													
AHU NO.	LOCATION	NOMINAL TONNAGE	COOLING CAPACITY (BTUH)	CFM		ESP	MANUF.	TYPE	MODEL	UNIT ELECTRICAL CHAR			AIR HANDLER WEIGHT (LBS)	SOUND PRESSURE H/M/L	PHYSICAL DIMENSIONS HxWxD (in.)	COND UNIT	LOCATION	MANUF.	MODEL*	COOLING CAPACITY (BTUH)	COND. UNIT ELEC.			SOUND PRESSURE dB(A)	COND. UNIT WEIGHT (LBS)	PHYSICAL DIMENSIONS HxWxD (in.)	REF	EFF. (COOL.)
				MAX	MIN					VOLTS-PHASE	MCA	MOCP									VOLTS-PHASE	MCA	MFA					
AC-IT	IT ROOM	3	34600	887	389	-	mitsubishi electric	WALL MOUNTED CASSETTE	MSY-D36NA	208 - 1 PH	1	15A	40	51/42/32	14-3/8x46-1/16x11-5/8	ACCU-IT	ROOF	mitsubishi electric	MUY-D36NA	34600	208-230/1	21	25	56	126	33-7/16x33-1/16x13	R-410A	SEER 15.1

SELECTIONS BASED ON 'MITSUBISHI ELECTRIC' MANUFACTURER. CONTACT MALCOLM SIGELBAUM - 718 269 3650  
PROVIDE ALL AIR HANDLERS WITH HARD WIRED THERMOSTATS. ALL THERMOSTATS TO BE ENCLOSED IN TAMPER-PROOF CASES PROVIDED BY G.C.  
PROVIDE LOW AMBIENT WIND Baffles (2 PER CONDENSING UNIT).  
REFER TO MANUFACTURER'S INSTALLATION GUIDELINES FOR MORE INFORMATION

FAN SCHEDULE												
FAN DESIGN.	AREA SERVED	CFM	STATIC PRESSURE (INCHES)	ELEC.CHAR. (V-FH-HZ)	MOTOR (HP)	FAN TYPE	RPM	MODEL *	MANUFACTURER	DIMENSIONS WxDxH OR DIA (IN)	REMARKS	
TEF-1	WOMEN'S RESTROOM 133	250	0.5"	115-1-60	1/20	ROOF MOUNTED	1550	G-080-DG	GREENHECK	19.4x19.4x12.1	INTEGRATE INTO LIGHTING CONTROL FOR ROOM AND OPERATE ON 15 MIN TIME DELAY AFTER LIGHTS TURN OFF. PROVIDE VARIGREEN DIAL CONTROL.	
TEF-2	MEN'S RESTROOM 133	250	0.5"	115-1-60	1/20	ROOF MOUNTED	1550	G-080-DG	GREENHECK	19.4x19.4x12.1	INTEGRATE INTO LIGHTING CONTROL FOR ROOM AND OPERATE ON 15 MIN TIME DELAY AFTER LIGHTS TURN OFF. PROVIDE VARIGREEN DIAL CONTROL.	
GEF-1	SCENE SHOP 122/ ART STUDIO 222	500	0.4"	115-1-60	1/6	ROOF MOUNTED	1550	G-030-VG	GREENHECK	21.75x21.75x14.6	PROVIDE LOCAL SWITCH IN SCENE SHOP AND ART STUDIO. PROVIDE VARIGREEN DIAL CONTROL.	
OAF-1	SCENE SHOP 122/ ART STUDIO 222	500	0.4"	115-1-60	1/6	IN-LINE	1550	SG-95-VG	GREENHECK	15x16x15	INTERLOCK OAF-1 WITH GEF-1 SERVING SCENE SHOP AND ART STUDIO. PROVIDE VARIGREEN DIAL CONTROL.	
SAF-1	LOBBY FOYER 103	1400	0.5"	115-1-60	1/3	ROOF MOUNTED	1480	CUE-121	GREENHECK	25x28x25	-	
SAF-2	LOBBY FOYER 203	1400	0.5"	115-1-60	1/3	ROOF MOUNTED	1480	CUE-121	GREENHECK	25x28x25	-	
RAF-1	AC-E-1	398	0.25"	115-1-60	1/10	IN-LINE	1300	SG-90	GREENHECK	15x16x15	INTERLOCK RAF-1 WITH EXISTING AC-E-1. PROVIDE 3 SPEED CONTROL.	
RAF-2	AC-E-2	398	0.25"	115-1-60	1/10	IN-LINE	1300	SG-90	GREENHECK	15x16x15	INTERLOCK RAF-2 WITH EXISTING AC-E-2. PROVIDE 3 SPEED CONTROL.	
RAF-3	AC-E-3	398	0.25"	115-1-60	1/10	IN-LINE	1300	SG-90	GREENHECK	15x16x15	INTERLOCK RAF-3 WITH EXISTING AC-E-3. PROVIDE 3 SPEED CONTROL.	

SINGLE DEFLECTION RETURN/EXHAUST REGISTER SCHEDULE					
DESIGNATION	CFM	SIZE	NC	MODEL	REMARKS
RR-A	0-2250	24x24	25	350RL	-
RR-B	0-810	24x12	13	350RL	-
RR-C	0-285	12x8	10	350RL	-
RR-D	0-3375	42x24	20	350RL	-

SELECTIONS ARE BASED ON 'TITUS' MANUFACTURER.  
REGISTERS HAVE 35° DEFLECTION WITH 3/4" BLADE SPACING.  
FINAL COLOR SHALL BE APPROVED BY ARCHITECT.

ENERGY RECOVERY UNIT																							
UNIT NO.	SERVICE	LOCATION	FRESH AIR FLOW (CFM)	FRESH AIR FLOW ESP (IN WC)	SPACE EXHAUST AIR FLOW (CFM)	SPACE EXHAUST FLOW ESP (IN WC)	WINTER OPERATION			SUMMER OPERATION			UNIT ELECTRICAL CHAR.				PHYSICAL SIZE				MANUFACT.	MODEL*	FITRATION
							ROOM AIR (°F)	TOTAL EFFECTIVENESS	OUTSIDE AIR (°F)	ROOM AIR (°F)	TOTAL EFFECTIVENESS	OUTSIDE AIR (°F)	VOLTS-PHASE	HP	MCA	MOCP	LENGTH	WIDTH	HEIGHT	MAX WEIGHT (LBS)			
ERV-1	1ST FLR	ROOF	1500	10	1533	10	70	66.0%	13.9	75	50.3%	92.4	208/3/60	2 @ 15	10.8	15	87.5"	43.4"	43.9"	689	RENEWAIRE	HE-2XJRTV-535UJ	FRESH AIR = MERV 8 EXHAUST AIR = MERV 8
ERV-2	2ND FLR	ROOF	1500	0.75	1524	0.5	70	66.0%	13.9	75	50.3%	92.4	208/3/60	2 @ 15	10.8	15	87.5"	43.4"	43.9"	689	RENEWAIRE	HE-2XJRTV-535UJ	FRESH AIR = MERV 8 EXHAUST AIR = MERV 8

\* SELECTION BASED ON 'RENEW AIRE' MANUFACTURER  
\*\* STANDARD FEATURES: NON-FUSED DISCONNECT, 24 VAC TRANSFORMER/RELAY PACKAGE  
\*\*\* PROVIDE TWO (2) ADDITIONAL MERV 8 FILTERS  
\*\*\*\* PROVIDE BACKDRAFT DAMPER  
\*\*\*\*\* PROVIDE PAINTABLE 6" LOUVERED WALL VENT  
\*\*\*\*\* PROVIDE TEMPERATURE SENSOR - DUCT MOUNT (DS-600)

CONDENSING BOILER SCHEDULE													OPERATING SUPPLY WATER TEMPERATURE: 160°F					
UNIT NO.	LOCATION	BOILER INPUT (BTUH) MAX/MIN	THERMAL EFFICIENCY AFUE	BOILER OUTPUT (BTUH) MAX	MANUFACTURER	MODEL NO.	OPERATING WEIGHT (LBS)	DIMENSIONS (W X D X H)	VENT DIAMETER	PIPE CONNECTION SIZING			GAS CONNECTION SIZE	COMBUSTION AIR SIZE	FLOW MIN/MAX (GPM)	HEX WATER VOLUME (GAL.)	RELIEF VALVE PRESSURE RATING	MAX WORKING PRESSURE
										HUB & R	BOILER DRAIN	CONDENSATE CONNECTION						
B-1	MECH RM	500,000/ 50,000	91.7%	489,000	LOCHINVAR	FTX500N	460	26 1/4"x27 1/8"x53 1/4"	4" DIA	2" DIA	1" DIA	1" DIA	1" DIA	4" DIA	10/105	3.5	50 PSI	160 PSI
B-2	MECH RM	500,000/ 50,000	91.7%	489,000	LOCHINVAR	FTX500N	460	26 1/4"x27 1/8"x53 1/4"	4" DIA	2" DIA	1" DIA	1" DIA	1" DIA	4" DIA	10/105	3.5	50 PSI	160 PSI

PROVIDE ALL NECESSARY CONTROLS FOR BOILER OPERATION INCLUDING RESET CONTROLS, ALL SAFETIES, PUMP CONTROLS, ETC.

CIRCULATOR PUMP SCHEDULE											
PUMP NO.	LOCATION	DUTY	MODEL	MFR	TYPE	WATER TEMP. (°F)	GPM	HEAD (FT.H <sub>2</sub> O)	RPM	MOTOR HP	ELEC.CHAR. (VOLTS-PHASE)
BP-1	MECH. RM.	BOILER CIRCULATOR	ECOCIRC XL 20-140	B4G	CIRCULATOR	140	100 (MAX)	10	-	1/2	208/1/60
BP-2	MECH. RM.	BOILER CIRCULATOR	ECOCIRC XL 20-140	B4G	CIRCULATOR	140	100 (MAX)	10	-	1/2	208/1/60
CP-1	MECH. RM.	AIR HANDLER HEATING LOOP	ECOCIRC XL 65-130	B4G	CIRCULATOR	140	55	25	-	1	208/1/60
CP-2	MECH. RM.	RADIATOR HEATING LOOP	ECOCIRC XL 65-130	B4G	CIRCULATOR	140	40	35	-	1	208/1/60

ELECTRIC CABINET HEATER SCHEDULE							
DESIGNATION	LOCATION	HEATER TYPE	KW	ELEC.CHAR. (VOLTS-PH.)	SERIES	MODEL	MANUFACTURER
ECH-1	MECHANICAL ROOM	FAN FORCED WALL HEATER	3	208-1	ALUFA	ALUFA3008	STELPRO
ECH-2	STORAGE	FAN FORCED WALL HEATER	3	208-1	ALUFA	ALUFA3008	STELPRO
ECH-3	STORAGE	FAN FORCED WALL HEATER	3	208-1	ALUFA	ALUFA3008	STELPRO
ECH-4	STAIR 1-B	FAN FORCED WALL HEATER	3	208-1	ALUFA	ALUFA3008	STELPRO
ECH-5	MECHANICAL ROOM	FAN FORCED WALL HEATER	3	208-1	ALUFA	ALUFA3008	STELPRO

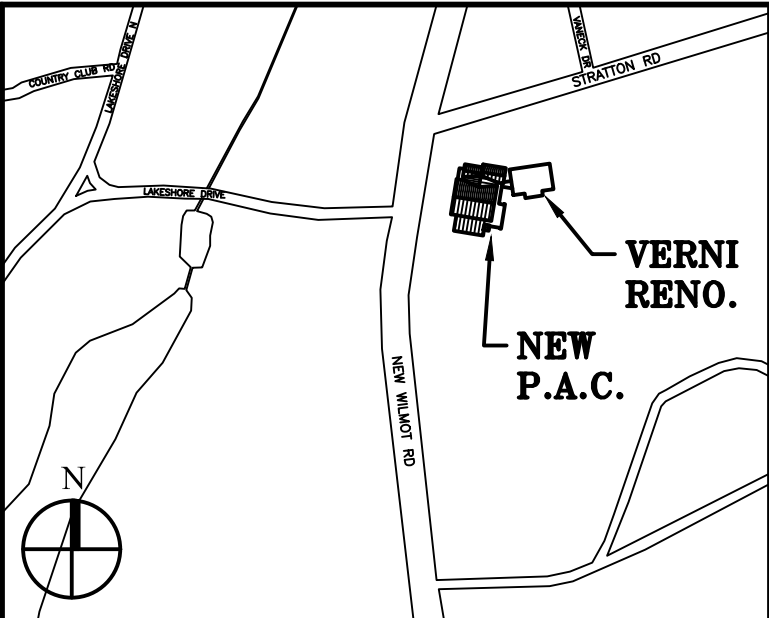
\*PROVIDE ADAPTOR KIT FOR SIDES OF HEATER WHEN NOT RECESSED IN WALL.  
WHEN UNIT CAN BE RECESSED THEY SHOULD BE. COORDINATE EACH LOCATION WITH ARCHITECT.  
\*PROVIDE WALL MOUNTED DIGITAL THERMOSTAT

AIR SEPARATOR SCHEDULE									
UNIT DES.	SERVICE	CAPACITY GPM	FLANGED TANGENTIAL OPENING (IN.)	MODEL	STRAINER	OPER. WT.	P.D. FT HD	MANUFACTURER	REMARKS
AS-1	HOT WATER	190	3"	RL-3F	N	-	1	BELL & GOSSETT	

EXPANSION TANK SCHEDULE										
UNIT DES.	SERVICE	FLUID	TOTAL SYSTEM VOLUME (GAL)	TANK TOTAL VOL. (GAL)	TANK ACCEPTANCE (GAL)	DIMENSIONS HEIGHT (IN) DIA (IN)	WATER LOGGED WEIGHT (LBS)	MODEL	MANUFACTURER	REMARKS
ET-1	HOT WATER HEATING SYSTEM	WATER	70	10.9	2.4	26-1/2" 12"	136	D-20V	BELL & GOSSETT	DIAPHRAGM-TYPE TYPICAL FOR 1

ELECTRIC DUCT HEATER SCHEDULE												BASED ON 0 DEG EAT
DESIGNATION	LOCATION	CFM	DUCT SIZE	AIR VELOCITY (FPM)	DUCT HEATER CHARACTERISTICS							REMARKS
					HEATER TYPE	KW	NO OF HEATING STAGES	ELEC.CHAR. (VOLTS-PH.)	SIZE	MIN. REQUIRED AIR VELOCITY (FPM)	MODEL	
EDH-1	NORTH CORRIDOR 203	500	10x10	775	OPEN COIL	11	MODULATING	208-3PH	10x10	-	QUA	PROPORTIONAL MODULATING CONTROL

BASED ON 'INDEECO' MANUFACTURER.  
- "K" CONTROLS OPTION WHICH INCLUDES AUTOMATIC RESET THERMAL CUTOUPS.  
SAFETY MAGNETIC CONTACTORS, FUSES, TRANSFORMER TO SUPPLY INTERNAL CONTROL CIRCUIT AND SAFETY DISCONNECT SWITCH.  
- INCLUDE AIRFLOW INTERLOCK & DUCT MOUNTED THERMOSTAT  
- INCLUDE OVERTEMPERATURE PROTECTION.



Key Plan (not to scale)

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No.	Date	Revision/Submission
<b>STRUCTURAL &amp; SITE CIVIL ENGINEER</b> DOMINICK R PILLA ASSOCIATES, P.C. 145 MAIN STREET NYACK, NY 10960 845-727-7793		
<b>MEP ENGINEER</b> JMY CONSULTING ENGINEERING, P.C. 37 W. 59 STREET, STE 705 NEW YORK, NY 10019 212-662-9865		
<b>ROOFING CONSULTANT</b> WATSKY ASSOCIATES 20 MADISON AVENUE VALHALLA, NY 10995 914-945-3450		
Stamp		

Project Title  
IONA PREPARATORY SCHOOL  
ADDITION AND ALTERATION TO THE  
PAUL VERNI FINE ARTS CENTER

Project Address  
IONA PREPARATORY SCHOOL  
255 Wilmot Road  
New Rochelle, NY 10804

Drawing Title  
MECHANICAL SCHEDULES II

Scale Job No. Date Drawing No.  
NTS 1618 04/03/2019

Drawn M-602

Peter Gisolfi Associates  
Architects Landscape Architects, LLP  
586 Warburton Avenue  
Hastings on Hudson, NY 10706  
914 478 3677  
PETER GISOLFI ASSOCIATES

**PACKAGED AIR HANDLING UNITS**

A. AIR HANDLER SHALL OPERATE AS SCHEDULED TO PROVIDE COOLING TO DESIGNATED AREAS. THE UNIT SHALL BE CONTROLLED VIA LOCAL THERMOSTAT. THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:

OCCUPIED MODE:

THE UNIT SHALL MAINTAIN -

A 12° (ADJ.) COOLING SETPOINT

A 10° (ADJ.) HEATING SETPOINT

UNOCCUPIED MODE:

THE UNIT SHALL MAINTAIN -

A 80° (ADJ.) COOLING SETPOINT

A 64° (ADJ.) HEATING SETPOINT

B. UPON A CALL FOR COOLING ASSOCIATED CONDENSER SHALL ENERGIZE AND REFRIGERANT SHALL FLOW THROUGH THE EVAPORATOR COIL.

C. UPON A CALL FOR HEATING THE BOILER SHALL ENERGIZE AND THE CONTROL VALVES SHALL OPEN AND HOT WATER SHALL FLOW THROUGH THE HOT WATER HEATING COIL.

D. UPON DETECTION OF WATER IN DRAIN PAN OR WATER PROOF CURB RELAY SIGNAL SHALL BE SENT TO THE AIR HANDLER UNIT TO SHUT-DOWN.

E. UPON SENSING AN AIR TEMPERATURE BELOW 0°F THE FREEZE STAT SHALL SEND A SIGNAL TO THE AIR HANDLER TO SHUT.

F. MOTORIZED DAMPERS SHALL HAVE THE FOLLOWING SEQUENCE:

**NORMAL OCCUPIED MODE**

- OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN MINIMUM REQUIRED OUTSIDE AIR FROM CO2 READING

**UNOCCUPIED MODE**

- OUTSIDE AIR DAMPER SHALL REMAIN SHUT AND AIR SHALL CIRCULATE TO MAINTAIN UNOCCUPIED SPACE SETPOINT.

**ECONOMIZING MODE**

- OUTSIDE AIR DAMPER SHALL MODULATE TO PROVIDE FULL ECONOMIZING IN ALL OUTSIDE AIR TEMPERATURE CONDITIONS WHEN THE SPACE CALLS FOR COOLING.

- SPILL AIR DAMPERS SHALL MODULATE TO PROVIDE FULL SPILL AIR FOR AHU-344 SPILL AIR FANS SHALL ENERGIZE.

- RETURN AIR DAMPERS SHALL CLOSE.

**VRF AIR HANDLING UNIT**

1) AIR HANDLER SHALL OPERATE AS SCHEDULED TO PROVIDE COOLING TO DESIGNATED AREAS. THE UNIT SHALL BE CONTROLLED VIA LOCAL THERMOSTAT.

2) THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:

OCCUPIED MODE:

THE UNIT SHALL MAINTAIN-

A 12° (ADJ.) COOLING SETPOINT

A 10° (ADJ.) HEATING SETPOINT

(WHEN RADIATORS ARE NOT REACHING LOAD)

UNOCCUPIED MODE:

THE UNIT SHALL MAINTAIN-

A 80° (ADJ.) COOLING SETPOINT

A 64° (ADJ.) HEATING SETPOINT

(WHEN RADIATORS ARE NOT REACHING LOAD)

3) UPON DETECTION OF WATER IN DRAIN PAN OR WATER PROOF CURB RELAY SIGNAL SHALL BE SENT TO THE FAN COIL UNIT TO SHUT-DOWN.

4) SET UP SYSTEM TO HAVE MANUAL CHANGEOVER FROM HEATING TO COOLING MODES.

**CONDENSING UNIT**

A) CONDENSING UNIT SHALL ENERGIZE UPON CALL FOR COOLING AT ASSOCIATED AIR HANDLER.

**BOILER**

A. BOILER SHALL FIRE UPON CALL FROM HEAT AT ANY HEATING ZONE IN THE HOUSE OR UPON CALL FOR HEATING TO HOT WATER HEATER.

B. BOILER SHALL CALCULATE THE WATER TEMPERATURE SET POINT BASED ON THE OUTDOOR AIR TEMPERATURE FOR OUTDOOR AIR RESET.

C. BOILER SHALL COME EQUIPPED WITH ALL SAFETY FEATURES.

D. BOILER SHALL MEET THE FOLLOWING START UP SEQUENCE.

- UPON CALL FOR HEAT THE GAS PRESSURE SWITCH MUST BE CLOSED.
- ONCE GAS PRESSURE SWITCHES ARE CLOSED, THE CONTROLLER SHALL TURN ON THE APPROPRIATE PUMPS (SYSTEM AND BOILER PUMPS). THE FLOW SWITCH AND / OR LUCO MUST CLOSE.
- THE CONTROL STARTS THE PRE-PURGE CYCLE.
- THE CONTROL STARTS THE TRIAL FOR IGNITION BY FIRING THE SPARK ELECTRODE AND OPENING THE GAS VALVE.
- IF NO FLAME IS DETECTED AFTER SPARKING THE CONTROL WILL PERFORM A POST-PURGE AND START THE SEQUENCE AGAIN.
- IF FLAME IS DETECTED, IT SHALL HOLD THE FIRING RATE UNTIL THE FLAME STABILIZES AND THEN MODULATE HEATER BASED ON SETPOINT AND OUTDOOR AIR TEMPERATURE.
- ONCE THE CALL FOR HEAT IS SATISFIED THE CONTROLLER WILL SHUT OFF THE BURNER AND START THE POST PURGE CYCLE.
- ANY PUMP RUNNING WILL CONTINUE TO RUN FOR THEIR RESPECTIVE PUMP DELAY TIMES BEFORE TURNING OFF. A 60 SECOND ANTI-CYCLING PERIOD WILL START UNTIL A NEW CALL FOR HEAT CAN BE SATISFIED.
- IF NO NEW CALLS FOR HEAT SYSTEM SHALL GO BACK INTO STAND-BY MODE.

**PUMPS**

A. PUMPS SHALL OPERATE BASED ON COMMAND FROM PUMP CONTROLLER AND BOILER THAT A ZONE IS CALLING FOR HEATING.

B. BOILER PUMP SHALL REMAIN IN OPERATION WHEN BOILER IS OPERATIONAL.

**RADIATORS**

A. RADIATORS WILL HAVE ELECTRONIC CONTROL VALVES THAT WILL OPEN AND CLOSE ON CALL FOR HEAT FROM ASSOCIATED PROGRAMMABLE THERMOSTAT.

**TOILET EXHAUST FAN (TEF-142)**

A. TOILET EXHAUST FANS TO BE INTERLOCKED WITH LIGHTS WITH A 15-MINUTE TIME DELAY AFTER LIGHTS ARE SWITCHED OFF.

**GENERAL EXHAUST FAN (GEF-1)**

A. GENERAL EXHAUST FANS TO RUN OFF LOCAL SWITCH IN SCENE SHOP AND ART STUDIO.

**OUTSIDE AIR FAN (OAF-1)**

A. OUTSIDE AIR FAN TO BE INTERLOCKED WITH GENERAL EXHAUST FAN GEF-1.

**GENERAL CONTROLS NOTES:**

A. FURNISH AND INCLUDE A COMPLETE AUTOMATIC TEMPERATURE CONTROLS SYSTEM INCLUDING NEW HUMAN INTERFACE SYSTEM, ROUTERS, ZONE CONTROLLER, UNIT CONTROLLERS, CONTROL MODULES, ALL SENSORS, RELAYS, ACTUATORS, CONTROL VALVES, SWITCHES, CONTROL BOX ENCLOSURES, CONDUIT, WIRE, JUNCTION BOXES, ZONE EXPANSION DEVICES, MOUNTING ACCESSORIES, ETC. FOR A COMPLETELY PROPERLY FUNCTIONAL SYSTEM THAT MEETS ALL REQUIREMENTS OF THE CONTROL DIAGRAM, SEQUENCE OF OPERATION, AND REQUIREMENTS OF THE OWNERS.

B. CONTROLS CONTRACTOR TO PROVIDE THE FOLLOWING

- CONTROL WIRING DIAGRAM OF ENTIRE SYSTEM
- CUT SHEETS OF ALL EQUIPMENT TO BE INSTALLED
- FINAL SEQUENCE OF OPERATION AND PROGRAMMING FOR THE PROPOSED SYSTEM.

C. CONTRACTOR RESPONSIBLE FOR PROVIDING ALL NECESSARY PENETRATIONS. ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE FIRE-SAFED TO MAINTAIN FIRE-RATING.

D. CONTRACTOR TO PROVIDE ALL CONDUIT, WIRING, JUNCTION & SPlice BOXES, STUD-UPS AND ALL OTHER ELECTRICAL EQUIPMENT NECESSARY FOR A COMPLETE SYSTEM.

E. ALL DEVICES AND INSTALLATION SHALL MEET THE REQUIREMENT OF UNDERWRITERS LABORATORIES, IEEE, STATE CODE, NATIONAL ELECTRIC CODE, AND NFPA.

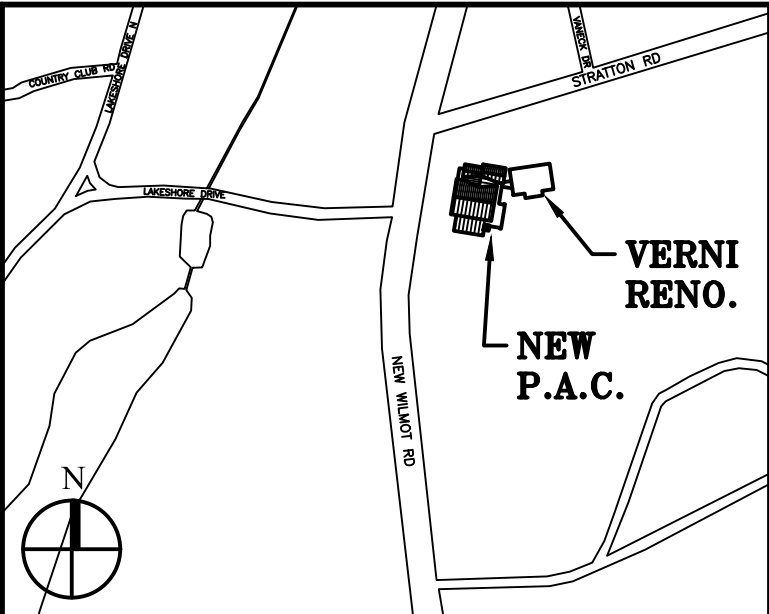
F. ALL CONTROLS WIRING IN OPEN AREAS ROUTED IN MINIMUM 3/4" EMT AND SECURE TO BUILDING STRUCTURE. PROVIDE JUNCTION BOXES AS NECESSARY AND AS REQUIRED.

G. ALL CONTROL WIRING SHALL BE SUPPORTED TIGHT TO SLAB BY BUILDING STRUCTURE. CABLING AND CONDUIT SHALL NOT BE SUPPORTED OFF OF OTHER TRADE EQUIPMENT.

H. ROUTE ALL NEW LOW VOLTAGE WIRING IN SEPARATE CONDUIT FROM ALL LINE VOLTAGE WIRING.

I. ALL WIRING SHALL BE PLENUM RATED AND INSTALLATION SHALL MEET LOCAL AND NATIONAL CODES.

J. ALL WIRING PATHS TO BE CONFIRMED WITH EXISTING FIELD CONDITIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION FOR DIRECTION.



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<b>STRUCTURAL &amp; SITE CIVIL ENGINEER</b> DOMINICK R. PILLA ASSOCIATES, P.C. 143 MAIN STREET NYACK, NY 10960 845-727-7793		
<b>MEP ENGINEER</b> JMY CONSULTING ENGINEERING, P.C. 37 W. 59 STREET, STE 703 NEW YORK, NY 10019 212-862-9855		
<b>ROOFING CONSULTANT</b> WATSKY ASSOCIATES 20 MADISON AVENUE VALHALLA, NY 10986 914-945-3450		
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Drawing Title

MECHANICAL SEQUENCE  
OF OPERATIONS

Scale	Job No.	Date	Drawing No.
NTS	1618	04/03/2019	M-801
Drawn			

Peter Gisolfi Associates  
Architects Landscape Architects, LLP  
588 Warburton Avenue  
Hastings on Hudson, NY 10706  
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