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**Subject:** Chilmark Community Center/ ventilation/ air conditioning  
**Date:** Monday, August 29, 2022 11:10:22 PM

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Dear Town of Chilmark:

We separately wrote you about the urgent need to upgrade the lighting at the Center after a summer of heavy and successful use. In addition to all of the summer camp programs that utilized the Center hall, we had our administrative office, infirmary and snack bar inside the building. We also ran a very full adult exercise program in the Center, an Author Series with 6 sold out talks, and two sold out fundraisers featuring major stand up comedians.

While we are lucky to have this wonderful large hall, there is an urgent need to improve its ventilation system. After each event, I am grateful that no one expired or that no one stormed out in anger over the terrible conditions. It feels that we are on borrowed time in the space. The two home sized ceiling fans are inadequate for a hall that holds almost 300 people. The exhaust fan system is too loud to run while holding any activity in the hall involving people speaking and listening. Considering our increasingly warm summers and our aging population, an air conditioning system is a matter of urgency. A cooling system is needed for fitness classes, for town meetings, for early voting, for the author series and, most importantly, to welcome community members in a comfortable setting. With its large windows, the room would also benefit from an industrial sized ceiling fan so that air conditioning is not always needed.

We understand that this investment has previously been approved by the Town. We hope that you can follow up and implement it this winter. We would be happy to help in any way that we can and we would appreciate the opportunity to be consulted on the design decisions.

Thank you and best wishes,

Suellen Lazarus/ CTAC Board

# Specifications for Chilmark Community Center HVAC Systems

520 South Road, Chilmark, MA 02535



February 21, 2020

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If you have any questions, please call Roger S. Harris @1-413-519-7542.

**Note to the successful bidder: This specification set must be given to the on site installers in order for them to fully comprehend the installation of the work. There is insufficient space on the designated plan size for this project to put all applicable installation notes which are part of this document. Both plans and written specifications must be provided to installers.**

**MECHANICAL SPECIFICATIONS – SECTION 230000****1. EQUIPMENT AND SITE**

- a. See the M-1 plan for the major equipment schedules and M-2 and M-3 for the mechanical equipment locations. The contractor must verify the locations on site for each piece of equipment before ordering.
- b. Provide and install all necessary duct work from the ERV unit to the points of delivery within the main hall.
- c. Provide and install new mechanical insulation as noted below.
- d. Provide and install new Energy Recovery Ventilators (ERV), each unit shall be safety listed. Units shall have a built in GFCI Convenience Outlet, drain overflow switch, and come with a G5 Core for air exchange. The ERVs shall be UL listed under Standard 1812 for Ducted Air-To-Air Heat Exchangers and have a fixed plate exchanger with **latent and sensible** transfer. The units shall have 2” nominal thickness, MERV 8 pleated disposable filters.
- e. The outside air louvers shall have field installed automatic dampers provided and installed on the intake and exhaust connections to automatically close upon unit shut down. Additional dampers are required on for the economizer mode of operation.
- f. Provide and install the ductless split systems shown on the equipment schedule. Install any necessary ancillary equipment with systems for full and proper operation according to the manufacturer’s instruction manual.
- g. Provide and install the two air handlers shown on the equipment schedule.
- h. Please note that these specifications are for mechanical HVAC systems and do not encompass the electrical modifications necessary to power these systems. The installing contractor shall have their electrical sub-contractor make a determination regarding the size of electrical service necessary to handle all existing and proposed building loads. Each outside CU AH and ERV unit shall have an accessible disconnect switch. Outdoor rated service outlets shall be provided in proximity of the outside units as necessary per code.
- i. All equipment provided and installed shall be **current models** as shown in the manufacturer’s catalog with replacement parts readily available.
- j. Provide all necessary start up and programming for the installed equipment.

- k. Equipment shall be installed in accordance with the manufacturer's instructions, and applicable codes. If there is a question about conflicts between any instructions on a detail, the installing contractor shall contact RISE Engineering to resolve issue before work commences.
- l. Equipment installed shall have all necessary ancillary equipment for the proper, safe and efficient functioning of the complete system including, but not limited to, all components noted in the specifications and plans.
- m. Equipment shall be installed in a location so as to not prevent maintenance of adjacent equipment and to allow new equipment to be serviced properly.
- n. The installation will have a one year labor and materials warranty by the installing contractor. In addition, there will be longer manufacturer's materials warranties which will apply.
- o. All of above equipment will be provided with adequate manufacturer service manuals and warranty.
- p. Provide all necessary cutting and patching of roofs, ceilings, floors, partitions, walls, and other surfaces as necessary for the installation of mechanical work in this and other sections. This includes new duct runs. This includes fire sealing of pre-existing and new holes in the walls and ceiling of the affected areas.
- q. If applicable, any piping, guy wires, curbs, ductwork or unit venting which penetrates a bonded roof or roof currently under warranty shall be done under this contract by the original roof installer.
- r. Each listed equipment item on the plans shall be labeled with installing contractor name and phone number, filter size (as applicable) and installation date. Each ductless split system, air handler and ERV systems shall be marked (with at least 26 font size letters) with the equipment reference number shown on the M-1 schedule.
- s. The approval of substitution of equipment does not relieve the installing contractor from the responsibility for any valid charges for additional work which may have to be performed by other trades as a result of any substitution.
- t. Contractors are responsible for providing equipment submittals before ordering equipment. If the contractor's submittal is not initially approved it is their responsibility to make all necessary corrections in the re-submittal. Third, fourth or fifth reviews by the engineer of the same equipment submittal must be compensated by the mechanical contractor.
- u. Provide and install Mason Industries (or approved equal by others) seismic rated secondary support cables and joints accordingly:

1. Seismic supports must have positive attachment, transverse and longitudinal bracing capabilities.
2. Restraints must be installed in strict compliance with seismic codes, material, equipment and building construction standards and codes.
3. The seismic support system manufacturer must provide submittals, installation instructions and shop drawings to the installing contractor and a representative of the Town of Chilmark showing the seismic support system sizes and locations as applicable to this project. The manufacturer will provide the calculations on such systems as applied to the new HVAC equipment, applicable intake and exhaust ductwork and piping to show compliance with the current edition of the Massachusetts Building Code according to the "G" forces requirements shown for applicable zone.
5. Piping will be addressed, except as noted below.
6. Additional exceptions include:
  - a. Equipment weighing less than 400 pounds, which is supported directly on the floor or roof.
  - b. Equipment weighing less than 20 pounds, which is suspended from the roof or floor or hung from a wall.
  - c. All other piping less than 2 ½ inches inside diameter, except for automatic fire suppression systems.
  - d. All piping suspended by individual hangers, 12 inches or less in length from the top of pipe to the bottom of the support for the hanger

## 2. DEMOLITION AND REMOVAL

- a. The existing oil-fired furnace, associated ductwork and oil tank shall all remain in place given that the Town of Chilmark wishes to use it as a back-up source of heat for the building. Therefore, there are no mechanical systems to remove.

## 3. CODES

Job to include all work necessary to complete task according to local, state and national codes including electrical and mechanical permits. Copies of permits will be provided to the building owner and RISE Engineering before payment is made. **Permits must be pulled in advance of starting work.**

## 4. DUCT WORK

- a. Make any duct work connections in a workmanship like manner using standard SMACNA practices of the trade. Straight duct runs shall be provided at the supply and return connections of each mechanical unit for a minimum of three feet to reduce pressure loss and noise and

improve air flow performance. Alternatively provide a minimum of 3 times the air handler equivalent outlet diameter in straight duct off the unit. Limit slope of transitional fittings directly off the air handler to 30 degrees.

- b. Ductwork shall be of the gauge galvanized steel (exception: 304 grade stainless steel, double wall insulated duct is required in the crawl space), and constructed and erected in accordance with the appropriate Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Standards and NFPA guidelines. See the M-1 plan Duct Construction Detail chart for more information. Pre-insulated ductwork shall meet the section 7 insulation requirements.
- c. Seal all cleaned duct joints with a water-based duct sealer. Make supply and return connections in an airtight fashion. All duct seams must be sealed with quality duct sealant/caulking before wrapping with insulation. Before applying sealant, the duct seam must be clean and free of moisture, cutting oil and other contamination. Ducts to be enclosed within fixed building components shall be sealed with Iron Grip by Hardcast Carlisle or approved equal duct sealant. Tapes and mastics used with flexible air ducts shall be listed and labeled in accordance with UL 181B.
- d. Make any necessary supply and return transitions in a free air flow manner and with clean cuts into transitional ductwork.
- e. The use of rectangular duct elbows must include a single internal turning vane per 12” width and include throat and external radius curves. Square throat angles are not acceptable for this sound sensitive application.
- f. Provide and install Greenheck model ESD-65, (or approved equal), 24” wide by 30” height, or approved equal, 6” deep wall louvers for intake and exhaust ventilation air. Louvers shall be bronze color and site conditions shall be confirmed by contractor with RISE Engineering before ordering.
- g. All elbows shall be made with wide sweep curved duct transitions and all take off fittings shall be angled. The use of 90 degree stick on take-off branch fittings is expressly not allowed. The use of wyes is required for branches is preferable; the use of 45 degree angular take offs is acceptable.
- h. Provide and install a fire and smoke seal by Dow-Corning, 3M Construction or other approved equal around all new duct penetrations through all roofs, floors, partitions, and walls. UL listed sealant material must be approved by BOCA, Massachusetts Building Code, NFPA 70 and 101 codes, National Electrical Code and any other applicable codes. The seal must not have a rating of less than the floor or wall assembly to which it is applied.
- i. Provide and install new filters on the ERV units after three months of full completion of the systems. Filters shall be 2” pleated filters specified with original equipment.

j. Affix a label (with 26 point font or larger lettering) on the side of the ERV unit indicating: “The air filters are recommended to be replaced every 3 (three) months or as required to ensure efficient operation”.

k. The ERV and AH units shall have flexible vinyl connectors for supply air and return air plenums prior to the plenum being connected.

l. Turning/splitter vanes by Ductmate or equivalent for rectangular duct elbows shall allow the elbow to have a maximum .09 coefficient of loss.

m. Contractor is responsible, within the scope and fee of the contract and subject to approval of the Owner and/or Engineer, to make necessary adjustments to the duct, registers, and grill layouts shown to avoid wires, light fixtures and other features and obstacles.

n. Duct hangers shall be constructed and spaced according to SMACNA Duct Construction Standards. Straps and angles shall be galvanized steel; rods shall be uncoated or galvanized steel. Perforated iron band or wire is prohibited as means of duct support. Rod anchors into the building shall be concrete inserts, powder actuated fasteners (for concrete slabs these allowed when the slab is greater than or equal to 4 inches thick) or structural steel fasteners which are compatible with the adjoining building material. Any screwed fasteners shall be load rated for the specific application.

o. Ducts must be supported and reinforced in a manner as to not allow sheet metal deflection in excess of the following chart:

<u>Duct Size</u>	<u>Deflection Limit</u>
12” or less	½”
13-18”	5/8”
19-24”	¾”
25” and above	1”

p. Support vertical round duct work a maximum of every 12 feet; support vertical rectangular duct work a maximum of every 10 feet. Vertical supports shall band around the duct entirely. The following chart lists the maximum spacing of suitable horizontal duct supports:

<u>Duct Area (Sq. Ft.)</u>	<u>Duct Diameter (Inches)</u>	<u>Maximum Spacing (Ft.)</u>
Less than 4	less than 5	8
4 to 10	5 to 38	6
Greater than 10	Greater than 38	4

q. The five existing floor registers shall remain in place for ventilation supply air.



- r. Provide and install wall return grilles to be Metal Aire RH (or approved equal by Price), series and specified floor register without a damper, or approved equal. Color selection by Owners representative before ordering.
- s. Duct work shall be low pressure rated and shall be leakage tested before the insulation is installed. Flexible duct work is not allowed for this project.
- t. To the extent possible, duct work shall be round for maximum air flow performance, radial rigidity and lowest installed cost.
- u. See the note on plans for the installation of 1” duct liner within the transitions to the return air grilles. Duct size shall be large enough such that the inside dimensions with the liner will accommodate the specified air flow.
- v. Round duct work installed under the main hall shall be double-walled, pre-insulated 304 grade stainless steel ductwork.
- w. If other construction will occur during duct insulation, seal HVAC supply and return openings to protect them from dust infiltration during such activities as drywall installation and floor sanding. If installing a new duct system, follow SMACNA guidelines “Duct Cleanliness for New Construction Guidelines” according to *advanced* levels of cleanliness. Of specific importance are the following:
1. Specify that ductwork be sealed during transport.
  2. Store ductwork in clean, dry conditions and keep sealed.
  3. Wipe down internal surfaces of ductwork immediately prior to installation.
  4. Seal open ends of completed and “in-progress” ductwork.
  5. During installation protect ductwork with surface wrapping.

## 5. CONDENSATE PIPING

- a. PVC condensate piping for the air conditioning system shall be installed as necessary to meet the following table of values:

<u>Pipe Size</u>	<u>Tons of Cooling (Max.)</u>
3/4”	2
1”	5
1 1/4”	30

- b. PVC condensate drain piping to be secured to building a maximum of every two feet and run properly pitched 1/8” per foot of length and terminate into existing vented plumbing drains or to the outside if approved by the Authority Having Jurisdiction. For all condensate piping, all elbows will be in the form of tees with a clean out plug. Do not use clear flexible plastic piping

for condensate since it can deteriorate and restrict flow over time. Do not install condensate piping along floor in a manner which could be trip or slip hazard.

c. Provide all necessary sleeves as follows:

1. Galvanized-Steel Sheet: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.
2. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.
3. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral water stop, unless otherwise indicated.
4. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.
  - A. Underdeck Clamp: Clamping ring with setscrews.

d. Pipe shall be cut accurately to measurements established at building, worked into place without springing or forcing; properly clearing all windows, doors and other openings. Excessive cutting or other weakening of building structure, to facilitate pipe installation will not be permitted. Pipe shall have burrs removed by reaming and so installed as to permit free expansion and contraction without damage to joints or hangers. Changes in direction shall be made with fittings, except that bending of pipe will be permitted, provided a hydraulic pipe bender is used. Bent pipe showing kinks, wrinkles or other malformation shall not be acceptable. Horizontal mains shall pitch up in a direction of flow with a grade of not less than 1" in 40'. Piping connection to equipment shall be in accordance with details shown on drawings. Open ends of pipe lines to equipment shall be properly capped or plugged during installation to keep dirt or other foreign matter out of system. Install piping in a direct, neat manner to conform to field conditions, taking into consideration, appearance of final installation of minimum interference with other trades.

e. See condensate piping detail and notes on M-2 plan.

## 6. AIR CONDITIONING SYSTEM PIPING

a. All refrigerant piping shall be properly sized by the installing contractor in strict adherence to the manufacturer's equipment installation instructions. See guidance from the equipment manufacturer.

b. Piping must be kept clean and dry inside until fully connected.

c. Lead-bearing solder is not to be used for liquid and suction lines.

d. During high temperature soldering of fittings, dry nitrogen gas shall be "bled" through the piping to ensure that oxides do not form inside the piping.

- e. The suction line shall be pitched downward in the direction of flow. Provide a one-inch pitch in the suction and liquid lines towards the evaporator for every ten feet of run to prevent condensing refrigerant from flowing to the compressor when the unit is off.
- f. The system shall be leak tested before it is put into operation. Properly evacuate piping after leak testing.
- g. The systems shall be properly charged with R-410A refrigerant in accordance with the manufacturer's instructions. Use only the proper type oils with R-410A refrigerant.
- h. Provide and install air conditioning specialties as necessary to complete this job including but not limited to the applicable manufacturer specified sizes of filter-dryers, liquid indicators, solenoid valves, thermal expansion valves, refrigerant fill and reclaim ports, etc. all installed per the equipment manufacturer's instructions. The liquid line filter-dryer with a rated working pressure of a minimum of 600 psig must be of the replaceable core type to permit proper system cleanup, filtration and moisture removal.
- i. Pipe liquid and suction copper lines in parallel in the most direct acceptable route around the various obstacles to reduce the amount of system refrigerant. Route and sizing of liquid suction lines should not cause excessive pressure drops which can reduce the compressor capacity and efficiency. All refrigerant piping routes shall be coordinated with the building owner before installation. Elbows must have a minimum of a 4" radius.
- j. The enclosure of the refrigerant piping/condensate lines exposed within the building (and mounted along the outside wall of the building) is the responsibility of the HVAC contractor. The use of plastic enclosures of a brown color acceptable to the building owner is required. Separately, down the road, the Town of Chilmark will be providing and installing wooden covers with an inside dimension of six inches over the plastic covers.
- k. Considering total length of lines restrictions per air conditioning equipment manufacturer, the refrigerant pipe must be sized to consistently return oil to the compressor.
- l. The refrigerant piping shall also maintain sufficient sub cooling to provide a continuous column of liquid refrigerant at the thermal expansion valve. In order that proper operation is provided throughout the range of operating conditions, the liquid line pressure drop should not exceed the unit's minimum sub cooling value less five degree F. Generally speaking, each ten feet of vertical rise in the liquid line will reduce sub cooling by 2.8 degrees F. and each ten feet of vertical drop will add 1.1 degrees F. of sub cooling.
- m. Size the suction lines so that the refrigerant velocity equals or exceeds the required minimum velocity required by the equipment manufacturer but not more than 4000 feet per minute.

n. Affix a label (with 26 point font or larger lettering) on the side of condensing unit noting the type of refrigerant charge in the system.

## 7. MECHANICAL DUCT AND PIPE INSULATION

a. Insulate the ERV and AH outside air, supply, exhaust and stale return air duct work to a minimum R-12 value. (In the case of ductwork installed in the crawl space under the Main Hall floor level, the ductwork will be pre-insulated per the above specifications. The duct work under the stage will be field insulated per this section of the specifications.)

b. Blanket type duct wrap insulation shall consist of a blanket of glass fibers factory-laminated to a reinforced foil/kraft (FRK) vapor retarder facing with a 2" stapling and taping flange on one edge. Insulation shall have a composite UL rating of 25/50 (flame spread/developed smoke).

c. The refrigerant lines to be insulated per the manufacturer's recommendations. Exposed to the outside lines insulated shall have a minimum of ¾" (1" for 1 ½" or greater pipe size) wall thickness insulation which is **protected from the ultraviolet rays of the sun.**

d. Subject to compliance with the above requirements, provide products of one of the following brands:

1. Knauf Fiber Glass GmbH.
2. Johns Manville
3. Certain Teed
4. Owens-Corning Fiberglas Corp., or approved equal.

## 8. AIR FLOW BALANCE

a. All air flow measurement instruments used by the balance company must have been calibrated within two years of the on-site measurement date.

b. An independent air flow balance company hired by the Mechanical Contractor of record will provide a report of each of the two ERVs (with the associated AHs) with air flow to each floor register and return grille after making attempts to bring air flow as close to the specified amounts as possible.

c. The report shall be conducted after the owner has signed off on the completion of the work. If the quality of the duct work installation has compromised the air flow beyond what could be balanced the mechanical contractor must correct deficiencies and the air flow balance company must make an additional recheck.

d. The air flow balance company must be certified by either the Associated Air Balance Council (AABC) or the National Environmental Balancing Bureau (NEBB). The air flow balance company must be a totally separate independent entity from the mechanical contractor.

## 9. SEQUENCE OF OPERATIONS

a. Each heat pump unit must be wired to a wall mounted wired, seven day programmable thermostat provided and installed under this scope of work. For each of the Mitsubishi inside units, the PAR-32MAA-J wired MA control is to be provided and installed or equivalent equal if another brand heat pump unit is accepted. For the main hall, the CU-2, CU-3 and CU-4 shall operate together with the associated inside blower units. There are three thermostats which shall call on the three sets of blower units. A second main hall thermostat (near stage) shall call on AH-1 and AH-2 subject to the below sequence sections. The thermostat shall be set to 73°F cooling (adjustable) and 70°F heating (adjustable) during occupied periods and 80°F (adj.) cooling/60°F (adj.) heating during unoccupied periods. The low voltage thermostat wiring shall be covered by Wire Mold or equal approved covering and installed along side of the refrigerant piping. The local thermostats can be overridden by the remote thermostats noted in item f. below.

b. The ERV-1 and ERV-2 shall be controlled to operate only during building occupied cooling and heating periods on an electronic time clock. The new motorized dampers, noted as “MP” on the plans, are to be installed just inside the outside wall under the stage. They will only be controlled to open during which time the ERV units are in operation. The AH-1 and AH-2 shall operate with the associated ERV and CU-8 and CU-9 which again shall only operate during the building occupied cooling and heating periods. The ERVs/AHs and associated CUs shall remain off until the minimum of 600 ppm (adjustable) level of Carbon Dioxide is sensed in the Main Hall by the sensor marked “DCV” on the wall. The Demand Control Ventilation system is intended to prevent the ERVs and associated equipment from operating unless there is more than minimal occupancy levels. The AHs shall not be operated during unoccupied periods to provide heating or cooling to the space given they are not designed to operate at those temperature extremes. The AHs heating and cooling activation shall be controlled to operate based upon a heating and cooling discharge air temperature sensor for each unit. The control shall cycle the associated outside CU to maintain the temperature in the associated duct work. The discharge air temperature sensor adjustment control shall be located in the back stage next to the time clock for the ERVs.

c. Provide and install one Honeywell H705A Enthalpy Controller with W7459 Logic Module (or approved equal) sensing and switching device (Honeywell W7215A) to control operation of the economizer cycle (opens BP{By Pass}dampers) for ERV-1 and ERV-2 when in the cooling mode. During the economizer mode the initial trial setting will be 55 degrees F. on and 75 degrees F. and 60% RH off. This device may require an additional outside sensor for the low end of the economizer dead band. This shall function as an economizer regardless of the time of day as long as the thermostat is in the cooling mode – it can provide nocturnal pre-cooling of the

space during the evening with associated dampers being overridden during the economizer mode. The economizer control package shall encompass a lock out of the CU-8 and CU-9 during that period.

d. Provide and install a Vulcain, Honeywell or approved equal, refrigerant monitor panel in the main hall. The monitor panel shall include a detector located where a refrigerant leak could concentrate. The detector shall be equipped to trigger an alarm both inside and outside main hall as well as activate ERV-1 and ERV-2 for if it is not already on. The alarms provided shall be visible and audible within that area and will be interlocked with the CU-1, CU-2, CU-3, CU-4, CU-5, CU-6, CU-7, CU-8 and CU-9 to shut them all down upon a threshold of refrigerant sensing. System must comply with ASHRAE standard 15-2007.

e. The refrigerant monitoring device shall be commissioned by a factory-authorized representative to inspect the installation for compliance of the ASHRAE 15 requirements, test the alarm set points with calibration gases and verify sequence of operation. A written report shall be provided to the building owner and the HVAC engineer.

f. Provide and install all necessary components for the Mitsubishi Kumo Cloud or approved equal to allow for the remote control the ductless split inside blower units. The Kumo Cloud is a Wi-Fi interface of which requires (1) interface for (each) indoor unit. Since there are 15 indoor units, 15 Kumo Cloud Interfaces shall be connected to the Kumo Cloud Network which can be accessed via the Kumo Cloud app user. The Kumo Cloud option shall allow the user to see the room temperature conditions remotely and provide schedule and temperature setpoints for the various zones.

g. Each inside wall mounted unit requires a Mitsubishi MAC-334IF unit for interface.

h. Provide full start-up of all controls including programming and testing.

i. Provide an accessory drain pan with a float sensor under each horizontal AH under the stage. The float sensor shall turn of the associated condensing unit if condensate is sensed in the pan.

j. The building management is encouraged to enable the DCV controlled ERV units continuously during building occupied hours for proper air turnover when occupancy warrants.

## **END OF MECHANICAL TECHNICAL SPECIFICATIONS**

## 10. GENERAL REQUIREMENTS

- a. The selected Contractor will be required to provide (1) copy of submittals for the equipment to be installed to the building owner and RISE Engineering for review and approval before ordering equipment and materials. This can be provided electronically.
- b. The installation will have a one year labor and materials warranty by the installing contractor. In addition, there may be longer manufacturer's materials warranties.
- c. Contractor Responsibility - The Contractor is responsible for successful completion of all phases of this project including but not limited to paying for and pulling **all appropriate permits as required by law before commencement of work.**
- d. The Contractor must use good workmanship in performing work as specified. Any deviations of the above work must be approved by RISE Engineering and the building owner
- e. The workers shall leave the inside and outside of the building in a reasonably clean condition. Grounds shall be left in original condition except where otherwise approved by the building owner.
- f. Commencement of work shall be within thirty (30) days from the date of the award and contract. Completion shall be within sixty (60) following commencement.
- g. Contractor's price shall be good for a minimum of the installation period.
- h. The Contractor shall schedule the work with the customer directly with sufficient lead time to allow any notifications within the building. If the contractor is running late, a call is appreciated to let the customer know. The Contractor shall also call or fax actual start date to RISE Engineering and the Town of Chilmark. Once started, the work shall continue on each successive normal work day until it is completed. Interruptions in work to perform work for other customers shall not be allowed unless explicitly approved by the customer in advance. The owner retains the right to impose a \$100/working day penalty charge as a deduction from the Contractor's invoice, on work not completed within the time frame in which it was promised by the Contractor.
- i. The Contractor shall, at all times, fully protect his work and materials from injury loss by others. Any injury or loss which may occur shall be made without expense to the building owner. The Contractor shall be responsible for the proper protection of his materials and tools until the building is accepted by the Owner. The Contractor will be working in and adjacent to the resident's living space and has to be aware of resident's safety.
- j. The Contractor shall refer to the drawings for a full comprehension of the work to be done and for conditions affecting the locations and placement of his equipment and materials. These drawings are intended to be supplementary to the specifications, and any work indicated,

mentioned or implied in either is to be considered as specified by both. Should the character of the work herein not be sufficiently explained in the specifications or drawings, the Contractor may apply to the owner for further information and shall conform to such when given as it may be consistent with the original intent. The owner reserves the right to make any reasonable changes in location prior to installation at no expense to the owner. All items are diagrammatic and exact locations are subject to the approval of the owner. The Contractor shall verify conditions on site.

k. The Contractor shall at all times have a foreman on the project authorized to make decisions and receive instructions exactly as if the contractor himself were present.

l. It shall be understood that these documents are intended to perform as a guide and that omission of any specific item or failure to mention any local, state or federal requirements of law specifically shall not relieve the installing contractor firm from full and complete responsibility in furnishing a complete and satisfactory installation.

m. The Contractor must furnish and install all materials as specified above. All bids must include all costs associated with the work to be done, including but not limited to overhead, profit, materials, design (if any) and labor.

n. The building owner has the right to reject any or all bids for the above work.

o. Bids must be signed by an authorized representative of the company, signifying acceptance of the specifications.

p. All bids shall be provided on form provided as itemized.

q. The Contractor shall pay all fees, charges and permits, including but not limited to, those as required by the Commonwealth of Massachusetts which may be required by the production, sale, transportation, delivery, use, and installation of the materials, sold hereunder.

r. All Work shall be executed in accordance with the latest Building Codes, local inspection authorities and Occupational Safety and Health Administration (OSHA). It shall be understood that these documents are intended to perform as a guide and that omission of any specific item or failure to mention any local, state or federal requirements or authorities of law specifically shall not relieve the installing Contractor firm from full and complete responsibility in furnishing a complete, code compliant and satisfactory installation. Such requirements include or are based upon standards by, but are not limited to the following:

American National Standards Institute (ANSI)

American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)  
Standard 62-2001.



American Society of Testing Materials (ASTM)

American Standards Association (ASA)

Factory Mutual Association (FM)

National Board of Fire Underwriters (NBFU)

National Electric Code (NEC)

National Fire Protection Association (NFPA)

Massachusetts Building Code

Town of Chilmark, MA Building Regulations and Ordinances.

s. The work within the building on this project will be limited to between the hours of 8AM until 5 PM.

## 11. TRAINING & MANUAL REQUIREMENTS

- a. Prior to final completion, but after substantial completion, the Contractor shall provide all warranties and manuals to the Owner, along with a 24-hour emergency call number.
- b. Contractor shall provide operations & maintenance manuals for every piece of new equipment installed.
- c. Contractor shall develop and provide to the Owner a comprehensive maintenance schedule indicating the type of service and the periodic intervals at which the maintenance should occur.
- d. All Schedules, equipment manuals, and training materials shall be consolidated into three-ring or equivalent binders with a table of contents and labeled dividers to create comprehensive installed systems operations manual. Manuals shall have a title page inserted in the sleeve of the front of the binder and repeated inside. Manual binders should be sized to allow for the incorporation of new materials throughout the life of the building. Each manual shall also include all systems manufacturer's warranty documentation.
- e. Three (3) copies of the complete installed systems operations manual shall be provided to the Owner.

- f. The Contractor shall provide training to the Owner's personnel to the satisfaction of the owner's Facilities Director. The Contractor shall, at minimum develop and provide one hour of training (coordinated with RISE Engineering) to the individuals specified by the owner. Training shall have written handouts, as well as hands-on demonstrations and verbal descriptions of the operation and maintenance requirements of the systems installed.

## 12. WARRANTY, EMERGENCY SERVICE & POST WARRANTY SERVICE CONTRACTS

- a. Contractor shall provide a 100% comprehensive warranty the project for the first full year of operation for both parts and labor with a copy of said warranty included in each installed system's manual. In addition, contractor shall service and implement any manufacturer's warranties during this period.
- b. During the above warranty period, the Contractor or the Contractor's Subcontractor, shall be available via a 24-hour emergency call number to provide service and repairs 24 hours a day, 7 days a week. The contractor shall provide emergency response in less than 2 hours.
- c. Contractor shall provide an optional annual cost proposal for on-going service, maintenance and 24/7 emergency repair response to commence in the second year, upon expiration of the first year's warranty.
- d. For any services outside the scope of the Contractor's direct expertise, such as building temperature controls, the contractor shall indicate an available service provider for each major piece of equipment.

RSH 2/11/20

END OF DOCUMENT

PROVIDE AND INSTALL BELOW EQUIPMENT MODEL NUMBERS OR APPROVED EQUAL

AIR COOLED CONDENSING UNIT SCHEDULE													
ID	MANUFACTURER (MITSUBISHI) MODEL NUMBER	CONDENSING UNIT LOCATION	AC BLOWER UNIT(S) SERVED	REFRIG.	COOLING TONS CAPACITY OF COND. UNIT	HEATING CAPACITY AT 17 °F BTU/HR.	SEER/ HSPF	MAX FUSE SIZE (AMPS.)	MIN. AMPACITY MCA	HEIGHT WIDTH/ DEPTH (IN)	WEIGHT (PDS.)	POWER SUPPLY VOLTAGE	NOTES:
CU-1	MUZ-GL24NA	LEFT SIDE	STAGE - AC1	R-410A	2/2	24.600	20.5/10.0	20	17.1	34 5/8 X 31 1/16 X 13	119	1/60/208-230	LOCATE ON A 18" STAND
CU-2	MXZ-8C48NA	FRONT LEFT	PERFORMANCE HALL - AC2a/AC2b	R-410A	4/4	36.600	18.9/11.4	40	37	52 11/16 X 41 11/32 X 14	269	1/60/208-230	LOCATE ON A 18" STAND
CU-3	MXZ-8C48NA	FRONT LEFT	PERFORMANCE HALL - AC3a/AC3b	R-410A	4/4	36.600	18.9/11.4	40	37	52 11/16 X 41 11/32 X 14	269	1/60/208-230	LOCATE ON A 18" STAND
CU-4	MXZ-8C48NA	FRONT LEFT	PERFORMANCE HALL - AC4a/AC4b	R-410A	4/4	36.600	18.9/11.4	40	37	52 11/16 X 41 11/32 X 14	269	1/60/208-230	LOCATE ON A 18" STAND
CU-5	MXZ-8C48NAH2	FRONT CENTER	LOBBY - AC5a/AC5b	R-410A	4/4	54.000	18.9/11.0	50	42	52 11/16 X 41 11/32 X 14	276	1/60/208-230	LOCATE ON A 18" STAND
CU-6	MUZ-GL24NA	REAR OF BUILDING	KITCHEN - AC6	R-410A	2/2	24.600	20.5/10.0	20	17.1	34 5/8 X 31 1/16 X 13	119	1/60/208-230	LOCATE ON A 18" STAND
CU-7	MXZ-3C30NA	RIGHT REAR	OFFICE & RESTROOMS - AC7a/AC7b/AC7c	R-410A	2.5	16.000	17.6/10.1	25	17.1	31 11/32 X 37 13/32 X 13	137	1/60/208-230	LOCATE ON A 18" STAND
CU-8	SUZ-KA18NAR1	LEFT SIDE	AH-1	R-410A	1.5	11.600	17.6/12.5	15	14	33 7/16 X22 1/16 X 13	119	1/60/208-230	LOCATE ON A 18" STAND
CU-9	SUZ-KA18NAR1	LEFT SIDE	AH-2	R-410A	1.5	11.600	17.6/12.5	15	14	33 7/16 X22 1/16 X 13	119	1/60/208-230	LOCATE ON A 18" STAND

\*Hyper-Heat model for deep winter heating capacity, may require branch box accessory

AIR CONDITIONING INSIDE EVAPORATOR UNIT SCHEDULE													
ID	MANUFACTURER (MITSUBISHI) MODEL NUMBER	SERVES LOCATION/ROOM NO.	COOLING BLOWER CAP. (BTU/H)	HEATING BLOWER RATED CAP. (BTU/H)**	Note 2. HEATING CAPACITY AT TEMP.	POWER SUPPLY VOLTAGE	COND. DRAIN LINE SIZE (IN)	Note 1. LIQUID LINE SIZE (IN O.D.)	Note 1. SUCTION LINE SIZE (IN O.D.)	WIDTH/ DEPTH/ HEIGHT (IN)	WEIGHT (PDS.)	CONTROL AND OTHER DETAILS	NOTES:
AC1	MSZ-GL24NA	STAGE	22,500	24,600	17 °F	208-230	5/8	3/8	5/8	43 5/16 X 9 3/8 X 12 13/16	37	SEE SPECS	WASHABLE AIR FILTER
AC2a	MSZ-GL24NA	PERFORMANCE HALL	22,500	16,000	17 °F	208-230	5/8	3/8	5/8	43 5/16 X 9 3/8 X 12 13/16	37	SEE SPECS	WASHABLE AIR FILTER
AC2b	MSZ-GL24NA	PERFORMANCE HALL	22,500	16,000	17 °F	208-230	5/8	3/8	5/8	43 5/16 X 9 3/8 X 12 13/16	37	SEE SPECS	WASHABLE AIR FILTER
AC3a	MSZ-GL24NA	PERFORMANCE HALL	22,500	16,000	17 °F	208-230	5/8	3/8	5/8	43 5/16 X 9 3/8 X 12 13/16	37	SEE SPECS	WASHABLE AIR FILTER
AC3b	MSZ-GL24NA	PERFORMANCE HALL	22,500	16,000	17 °F	208-230	5/8	3/8	5/8	43 5/16 X 9 3/8 X 12 13/16	37	SEE SPECS	WASHABLE AIR FILTER
AC4a	MSZ-GL24NA	PERFORMANCE HALL	22,500	16,000	17 °F	208-230	5/8	3/8	5/8	43 5/16 X 9 3/8 X 12 13/16	37	SEE SPECS	WASHABLE AIR FILTER
AC4b	MSZ-GL24NA	PERFORMANCE HALL	22,500	16,000	17 °F	208-230	5/8	3/8	5/8	43 5/16 X 9 3/8 X 12 13/16	37	SEE SPECS	WASHABLE AIR FILTER
AC5a	MSZ-GE24NA	LOBBY	24,000	27,000	17 °F	208-230	5/8	3/8	5/8	43 5/16 X 9 3/8 X 12 13/16	37	SEE SPECS	WASHABLE AIR FILTER
AC5b	MSZ-GE24NA	LOBBY	24,000	27,000	17 °F	208-230	5/8	3/8	5/8	43 5/16 X 9 3/8 X 12 13/16	37	SEE SPECS	WASHABLE AIR FILTER
AC6	MSZ-GL24NA	KITCHEN	22,500	16,000	17 °F	208-230	5/8	3/8	5/8	43 5/16 X 9 3/8 X 12 13/16	37	SEE SPECS	WASHABLE AIR FILTER
AC7a	MSZ-GL9NA	MEN'S ROOM	9,000	6,700	17 °F	208-230	5/8	1/4	3/8	31-7/16 X 9 1/8 X 11 5/8	22	SEE SPECS	WASHABLE AIR FILTER
AC7b	MSZ-GL9NA	SMALL OFFICE	9,000	6,700	17 °F	208-230	5/8	1/4	3/8	31-7/16 X 9 1/8 X 11 5/8	22	SEE SPECS	WASHABLE AIR FILTER
AC7c	MSZ-GL18NA	WOMENS ROOM	18,000	13,600	17 °F	208-230	5/8	1/4	1/2	36 5/16 X 9 3/8 X 12	28	SEE SPECS	WASHABLE AIR FILTER

\*\* Maximum capacity is higher, Note 1: Where multiple indoor units are connected to a single outside condensing unit, the liquid and suction pipe sizes may vary according to the manufacturer's manual.  
 Note 2: It is recognized that the actual cold weather design temperature is less than 17°F. However, the heating performance of the units will still meet the design day load.

AIR HANDLER SCHEDULE														
ID	MANUFACTURER (MITSUBISHI) MODEL NUMBER	LOCATION	AIR SUPPLY AIRFLOW (CFM)	FAN	MBTU/HR COOLING COIL CAPACITY	MBTU/HR HEATING COIL CAPACITY	REFRIG.	SUCTION LIQUID LINE SIZE	VOLT/ PH/ HZ	FLA/ MN. CKT. AMPS	INLET FILTERS	PHYSICAL CABINET LENGTH/ WIDTH/ HT. (IN)	WEIGHT (LB)	NOTES
AH-1	SVZ-KP18NA	HORIZONTALLY SUSPENDED UNDER STAGE	580 @ ~0.45 ESP	EC MOTOR DIRECT DRIVE	18	11.6	R-410A	1/2"-1/4"	208-230/1/60	2.4/3	MERV 8	21 5/8/ 17/ 39 13/16	93	1,2,3,4
AH-2	SVZ-KP18NA	HORIZONTALLY SUSPENDED UNDER STAGE	580 @ ~0.45 ESP	EC MOTOR DIRECT DRIVE	18	11.6	R-410A	1/2"-1/4"	208-230/1/60	2.4/3	MERV 8	21 5/8/ 17/ 39 13/16	93	1,2,3,4

NOTES: 1. CONDENSATE PUMP, 2. DRAIN PAN LEVEL SENSOR, 3. 18" OUTDOOR UNIT STAND, 4. COMPATIBLE PROGRAMMABLE THERMOSTAT.

ENERGY RECOVERY VENTILATOR SCHEDULE													
ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	AIR TYPE	AIR MAXIMUM AIRFLOW RATE (CFM)	UNIT RATED STATIC PRESSURE (IN. WATER)	FAN MOTOR QUANTITY (#)	LECTRICAL MOTOR SIZE (HP)	WATTS	FLA/RPM	OLT/PH/H	PHYSICAL LENGTH/ WIDTH/ HEIGHT (IN)	NOTES
ERV-1	RENEWAIRE HE1X1NH	UNDER STAGE	CROSS FLOW STATIC PLATE	HUMIDITY TRANSFER	580	0.42	2	0.5	360 MAX.	3.3 FLA	208-230/1/60	54.75X23.75 X35.75	DIRECT DRIVE EC MOTORS, MERV 8 FILTERS, BP ECON. DAMPER
ERV-2	RENEWAIRE HE1X1NH	UNDER STAGE	CROSS FLOW STATIC PLATE	HUMIDITY TRANSFER	580	0.42	2	0.5	360 MAX.	3.3 FLA	208-230/1/60	54.75X23.75 X35.75	DIRECT DRIVE EC MOTORS, MERV 8 FILTERS, BP ECON. DAMPER.

ADDITIONAL REQUIREMENTS:

- A. PLEASE SEE THE SPECIFICATIONS FOR ADDITIONAL PROJECT REQUIRED EQUIPMENT.
- B. WHERE MULTIPLE INSIDE UNITS ARE CONNECTED TO ONE OUTSIDE UNIT, BRANCH BOXES MAY BE REQUIRED BY THE MANUFACTURER AND SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR OF RECORD.
- C. REFRIGERANT PIPING BENDS MUST HAVE AT LEAST A FOUR INCH RADIUS.
- D. INSTALL A VISIBLE, QUALITY REFRIGERANT PRESSURE GAUGE ON FIELD INSTALLED PIPING FOR EACH CONDENSING UNIT. MARK EACH GAUGE WITH POINT WHERE PRESSURE IS AT START OF PROPER OPERATION.
- E. PLEASE REVIEW THE EQUIPMENT INSTALLATION MANUAL FOR A FULL UNDERSTANDING OF THE VARIOUS PARTS NECESSARY FOR THE INSTALLATION.

**IMPORTANT NOTE:**  
 THESE PLANS MUST BE SUPPLEMENTED BY THE WRITTEN SPECIFICATIONS FOR A FULL UNDERSTANDING OF THE SCOPE OF WORK FOR THIS PROJECT. PLEASE MAKE SURE THE ON SITE TECHNICIANS HAVE THE FULL PLAN SET INCLUSIVE OF THE SPECIFICATION SHEETS ON SITE DURING THE HVAC SYSTEM INSTALLATION.

RISE ENGINEERING,  
 1341 ELMWOOD AVE.,  
 CRANSTON, RI 02910

CHILMARK COMMUNITY CENTER  
 520 SOUTH ROAD, CHILMARK, MA  
 HVAC SYSTEMS

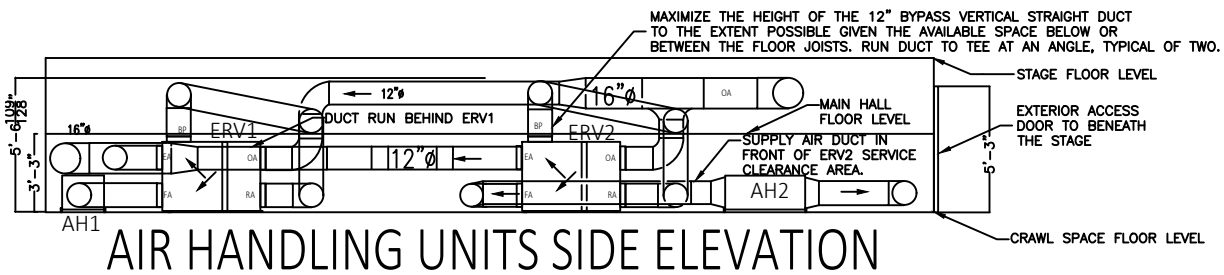
BIDDING DOCUMENTS

Date									
Revision/Issue									
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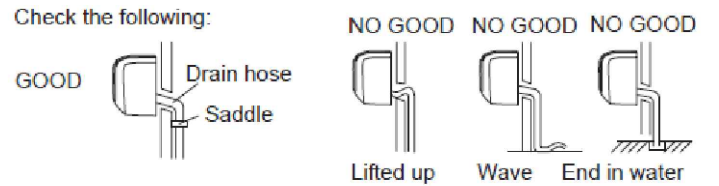
PROPOSED WORK EQUIPMENT SCHEDULE

Project No: RIS-87-19-0772  
 Drawn By: RSH  
 Checked By: ARN  
 Scale: N/A  
 Date: 2/21/20

Drawing No: M-1.0

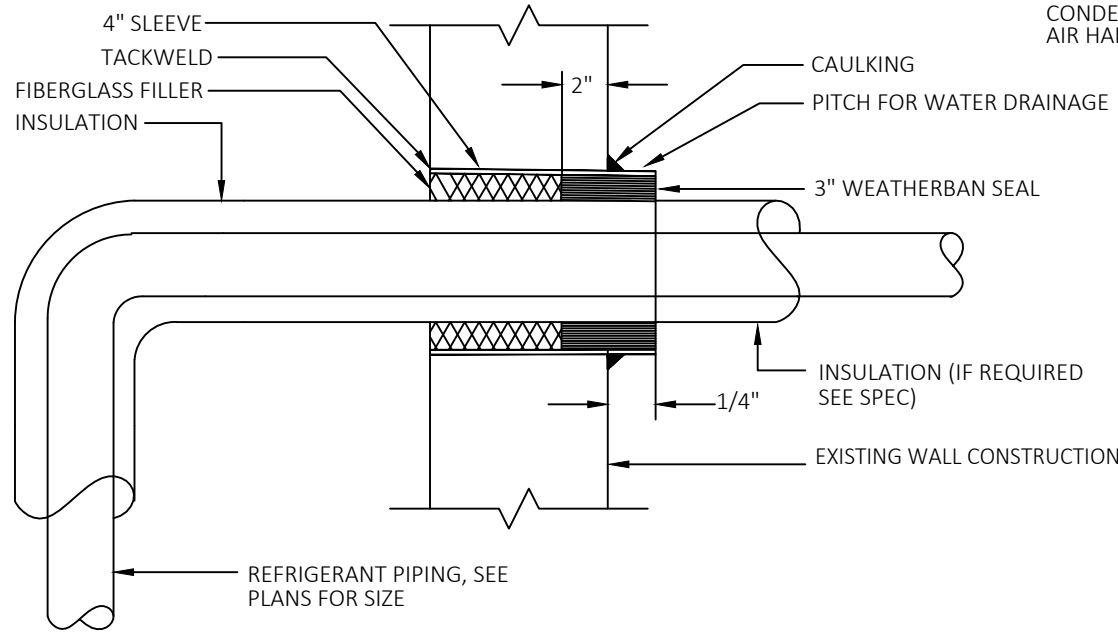


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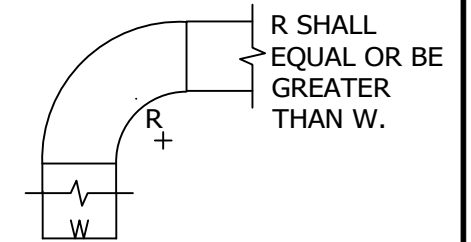
### EVAPORATOR UNIT DRAIN PIPE DETAIL

NTS CONDENSATE DRAINS TO OUTSIDE FOR WALL UNITS.  
CONDENSATE DRAINS TO CONDENSATE PUMPS FOR TWO AIR HANDLERS. THEN SOLID PVC PIPING TO OUTSIDE DISCHARGE.



### REFRIGERANT PIPING WALL PENETRATION DETAIL

NTS

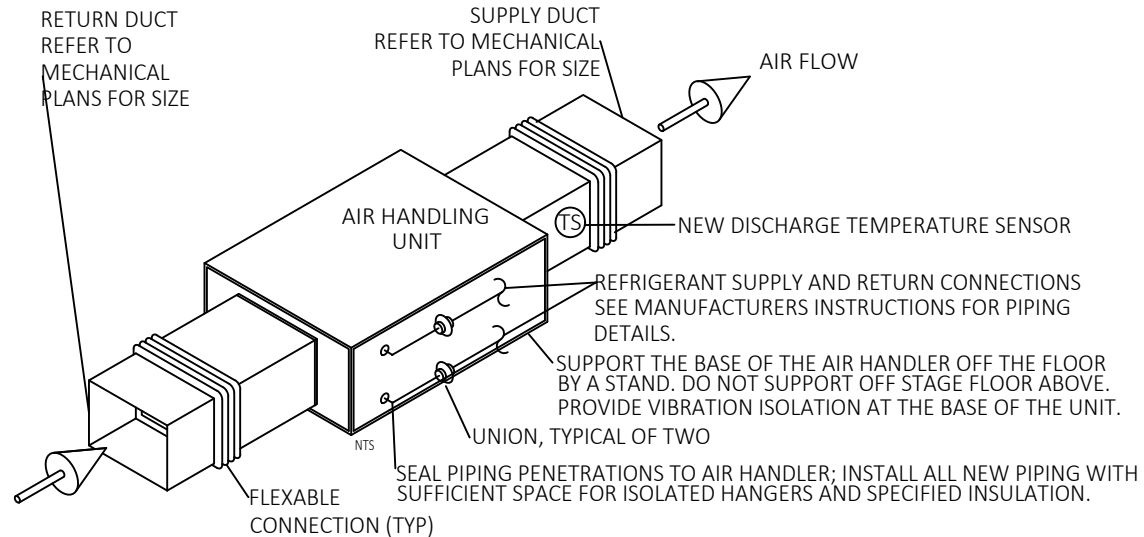


### LONG RADIUS ELBOW

**NOTE:**  
THE INTERIOR SURFACE OF ALL RADIUS ELBOWS SHALL BE MADE ROUND.

### LONG RADIUS ELBOW DUCT FITTING

NTS



### AIR HANDLING UNIT DETAIL

NTS

## DUCT CONSTRUCTION DETAIL

DIMENSION OF LONGEST SIDE (INCHES)	SHEET METAL GAUGE (ALL FOUR SIDES)	MINIMUM REINFORCING ANGLE SIZE & MAXIMUM LONGITUDINAL SPACING BETWEEN TRANSVERSE JOINTS & / OR INTERMEDIATE REINFORCING	MINIMUM 'H' DIMENSION (INCHES)	DRIVE SLIP	HEMMED 'S' SLIP	ALTERNATE BAR SLIP	REINFORCED BAR SLIP	ANGLE SLIP	STAND. SEAM	ANGLE REINFORCED STAND. SEAM	POCKET LOCK		
				PLAIN 'S' SLIP							RECOMMENDED GAUGE	RECOMMENDED GAUGE	RECOMMENDED GAUGE
UP THRU 12	26	NONE REQUIRED	1		26	26	24	24	24	NOT REQUIRED	NOT REQUIRED	24	NOT REQUIRED
13 - 18	24	NONE REQUIRED	1		24	24	24	24	24	NOT REQUIRED	NOT REQUIRED	24	NOT REQUIRED
19 - 30	24	1"x1"x1/8" AT 60"	1		-	24	24	24	24	NOT REQUIRED	NOT REQUIRED	24	NOT REQUIRED
31 - 42	22	1"x1"x1/8" AT 60"	1		-	-	22	22	22	NOT REQUIRED	NOT REQUIRED	22	NOT REQUIRED
43 - 54	22	1-1/2"x1-1/2"x1/8" AT 60"	1-1/2"		-	-	22	22	22	1 1/2" x 1 1/2" x 1/8"	NOT REQUIRED	22	NOT REQUIRED
55 - 60	20	1-1/2"x1-1/2"x1/8" AT 60"	1-1/2"		-	-	-	22	22	1 1/2" x 1 1/2" x 1/8"	NOT REQUIRED	22	NOT REQUIRED
61 - 84	20	1-1/2"x1-1/2"x1/8" AT 60"	1-1/2"		-	-	-	22	22	1 1/2" x 1 1/2" x 1/8"	1 1/2" x 1 1/2" x 1/8"	22	1 1/2" x 1 1/2" x 1/8"

**NOTE: 1.** TRANSVERSE REINFORCING SIZE IS DETERMINED BY DIMENSION OF SIDE TO WHICH ANGLE IS APPLIED.

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1341 ELMWOOD  
CRANSTON, RI 02

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520 SOUTH ROAD, CHILMARK, MA  
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Date	
Revision/Issue	
No.	

SIDE ELEVATION PLAN AND DETAILS

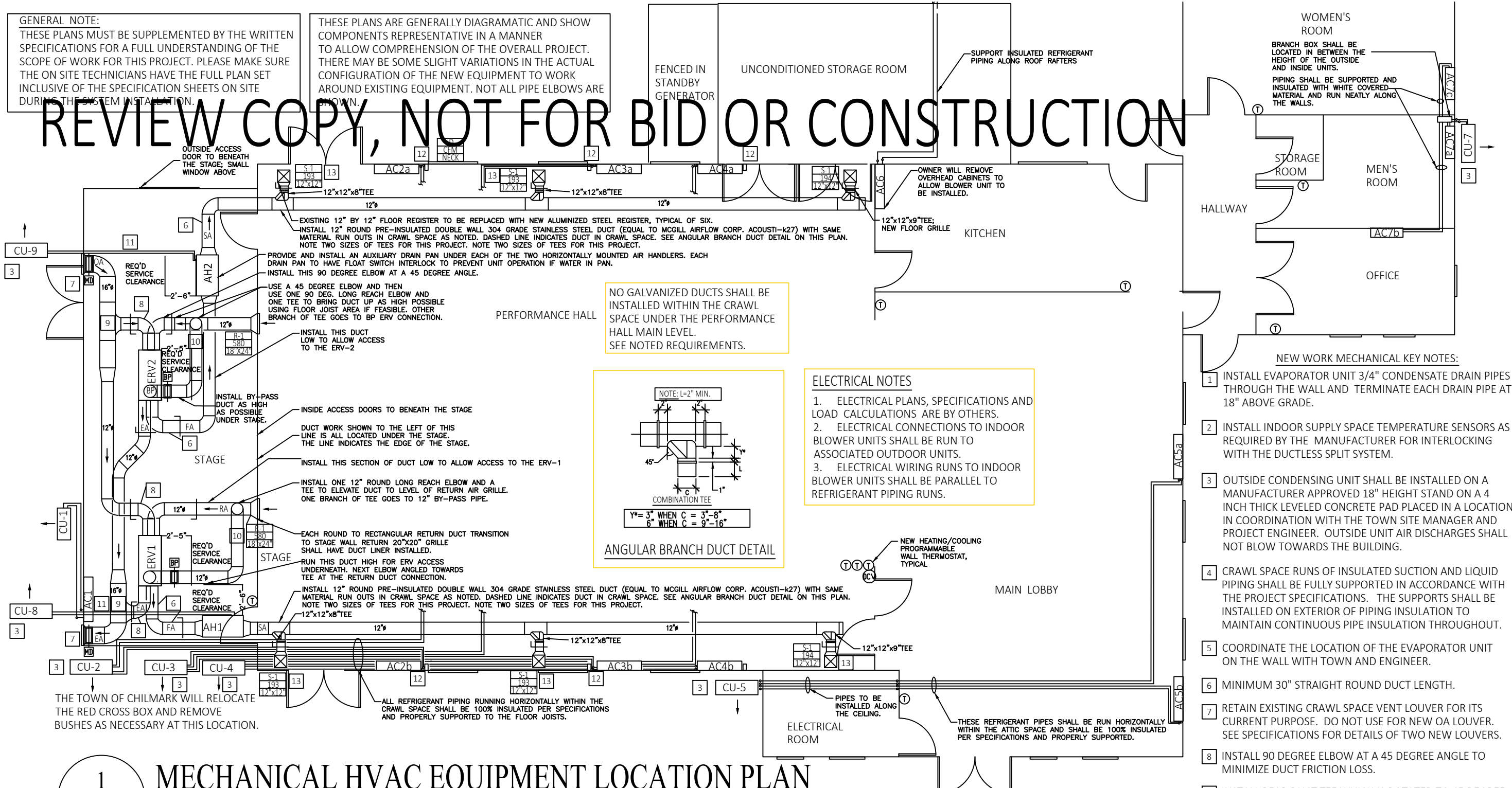
Project No: RIS-87-19-0772  
Drawn By: RSH  
Checked By: ARN  
Scale: 1/8" = 1'  
Date: 2/21/20

Drawing No: M-2.0

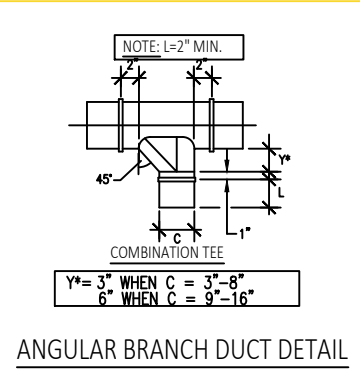
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THESE PLANS ARE GENERALLY DIAGRAMATIC AND SHOW COMPONENTS REPRESENTATIVE IN A MANNER TO ALLOW COMPREHENSION OF THE OVERALL PROJECT. THERE MAY BE SOME SLIGHT VARIATIONS IN THE ACTUAL CONFIGURATION OF THE NEW EQUIPMENT TO WORK AROUND EXISTING EQUIPMENT. NOT ALL PIPE ELBOWS ARE SHOWN.

# REVIEW COPY, NOT FOR BID OR CONSTRUCTION



NO GALVANIZED DUCTS SHALL BE INSTALLED WITHIN THE CRAWL SPACE UNDER THE PERFORMANCE HALL MAIN LEVEL. SEE NOTED REQUIREMENTS.



**ELECTRICAL NOTES**

- ELECTRICAL PLANS, SPECIFICATIONS AND LOAD CALCULATIONS ARE BY OTHERS.
- ELECTRICAL CONNECTIONS TO INDOOR BLOWER UNITS SHALL BE RUN TO ASSOCIATED OUTDOOR UNITS.
- ELECTRICAL WIRING RUNS TO INDOOR BLOWER UNITS SHALL BE PARALLEL TO REFRIGERANT PIPING RUNS.

- NEW WORK MECHANICAL KEY NOTES:**
- INSTALL EVAPORATOR UNIT 3/4" CONDENSATE DRAIN PIPES THROUGH THE WALL AND TERMINATE EACH DRAIN PIPE AT 18" ABOVE GRADE.
  - INSTALL INDOOR SUPPLY SPACE TEMPERATURE SENSORS AS REQUIRED BY THE MANUFACTURER FOR INTERLOCKING WITH THE DUCTLESS SPLIT SYSTEM.
  - OUTSIDE CONDENSING UNIT SHALL BE INSTALLED ON A MANUFACTURER APPROVED 18" HEIGHT STAND ON A 4 INCH THICK LEVELLED CONCRETE PAD PLACED IN A LOCATION IN COORDINATION WITH THE TOWN SITE MANAGER AND PROJECT ENGINEER. OUTSIDE UNIT AIR DISCHARGES SHALL NOT BLOW TOWARDS THE BUILDING.
  - CRAWL SPACE RUNS OF INSULATED SUCTION AND LIQUID PIPING SHALL BE FULLY SUPPORTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. THE SUPPORTS SHALL BE INSTALLED ON EXTERIOR OF PIPING INSULATION TO MAINTAIN CONTINUOUS PIPE INSULATION THROUGHOUT.
  - COORDINATE THE LOCATION OF THE EVAPORATOR UNIT ON THE WALL WITH TOWN AND ENGINEER.
  - MINIMUM 30" STRAIGHT ROUND DUCT LENGTH.
  - RETAIN EXISTING CRAWL SPACE VENT LOUVER FOR ITS CURRENT PURPOSE. DO NOT USE FOR NEW OA LOUVER. SEE SPECIFICATIONS FOR DETAILS OF TWO NEW LOUVERS.
  - INSTALL 90 DEGREE ELBOW AT A 45 DEGREE ANGLE TO MINIMIZE DUCT FRICTION LOSS.
  - INSTALL REAR DUCT TEE WHICH IS ROTATED TO 45 DEGREE ANGLE TO MINIMIZE DUCT FRICTION LOSS.
  - INSTALL DUCT AT AN ANGLE TO MINIMIZE DUCT FRICTION LOSS AND MAXIMIZE ACCESS ROOM UNDERNEATH.
  - INSTALL INSULATED REFRIGERANT PIPING WITH PROPER SUPPORTS TO THE FLOOR JOISTS IN A MANNER AS TO NOT IMPEDE ACCESS TO THE HVAC SYSTEMS UNDER THE STAGE.
  - INSTALL INSULATED REFRIG. PIPING, CONDENSATE DRAIN PIPING EACH WITH PROPER SUPPORTS UNDER 4" BROWN PLASTIC COVER ALONG THE ARCHITECTURAL ELEMENTS.
  - RETAIN EXISTING FLOOR GRILL FOR FIVE LOCATIONS. TAG SHOWS CFM FOR AIR BALANCE.

## 1 M-2 MECHANICAL HVAC EQUIPMENT LOCATION PLAN

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



DIFFUSER, REGISTER & GRILLE SCHEDULE								
TAG NO.	SIZE (IN)	NECK SIZE (IN)	SERVICE	DAMPER	CFM RANGE		MANUFACTURER MODEL NUMBER	REMARKS
					MIN	MAX		
S-1	12"x12"	-	SUPPLY	-	-	254	METALAIRE MODEL 2000 F 0 DEG. DEFLECTION	NC <15; QUANTITY: 1 WITH FLOOR FLANGE; BLACK
R-1	18"x24"	-	RETURN	-	-	580	METALAIRE MODEL RH	NC = / < 25; QUANTITY: 2 BROWN - CUSTOM COLOR

RISE ENGINEER  
 1341 ELMWOOD /  
 CRANSTON, RI 02

CHILMARK COMMUNITY CENTER  
 520 SOUTH ROAD, CHILMARK, MA  
 HVAC SYSTEMS

Project: CHILMARK COMMUNITY CENTER  
 Date: BIDDING DOCUMENTS  
 Revision/Issue: [Table with 4 columns: No., Date, Revision/Issue, Description]  
 Sheet Title: PLAN OF HVAC SYSTEM  
 Project No: RIS-87-19-0772  
 Drawn By: RSH  
 Checked By: ARN  
 Scale: 1/8" = 1'  
 Date: 2/21/20  
 Drawing No: M-3.0