

S-5



MECHANICAL / ELECTRICAL ENGINEERS

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SHOP DRAWING REVIEW

Project: MMC – P6 Renovations
 Contractor: Hebert Construction, Titan Mechanical
 Equipment: AHU-042 and AHU-085

Shop Date: 02-22-2010
 Discipline: HVAC

F&T Project #: 09018.00

F&T Shop #: 7330R

<p>ENGINEERS REVIEW:</p> <p><input type="checkbox"/> 1- No exceptions taken</p> <p><input type="checkbox"/> 2 - Note Markings</p> <p><input type="checkbox"/> 3 - Rejected</p> <p><input checked="" type="checkbox"/> 4 - Comments below</p>	<p>RESPONSE REQUIRED OF CONTRACTOR:</p> <p><input type="checkbox"/> A - Confirm</p> <p><input type="checkbox"/> B - Resubmit</p> <p><input type="checkbox"/> C – Submit Additional Info</p>
<p>Engineer's review is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the Contractor from compliance with the project plans and specifications, nor departures therefrom. The Engineer's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Engineer, of any construction means, methods, techniques, sequences, or procedures. The Engineer's approval of a specific item shall not indicate approval of an assembly of which the item is a component. The contractor remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication processes, for techniques of assembly, and for performing his work in a safe manner.</p>	
<p>Fitzmeyer & Tocci Associates, Inc. Stoneham, MA</p>	
<p>By: <u>Stephen Picariello</u> Date: <u>03-02-2010</u></p>	

- 1) Unit casing ability to withstand 8" of static pressure is acceptable per approval of owner.
- 2) The Traq airflow measuring station is acceptable per approval of owner.
- 3) ABB variable frequency drives acceptable per approval of owner.
- 4) No further exceptions taken for AHU-042.
- 5) No further exceptions taken for AHU-085.



TRANE

Re-Submittal

Prepared For: Tom Smith

Date: February 22, 2010

Customer P.O. Number: 26811

Customer Project Number:

Sold To: Titan Mechanical

Job Number:

Job Name:

Maine Medical - P6 Renovations

Trane U.S. Inc. is pleased to provide the enclosed submittal for your review and approval.

Product Summary

Qty	Product
2	Outdoor Central Station Air Handler Units Tagged AHU-042, 085

Re submittal information

1. Dual point power provided per request. A separate feed is required for the lights.
2. Attached document shows AHU fan curves with dirty filters.
3. Ruskin CD-60 Ultra Low Leak Dampers are provided on all dampers
4. Casing will withstand 8" of static not 6"
5. Casing insulation is 2" Foam with an R-12.5 rating
6. Air Flow Monitoring – Section 23 00 00-76 Item O. 1. a, - Using Traq vs. Ebtron.
Using a Trane Traq Damper built into the OA damper using a 0-10v signal with a transducer.
Honeywell has used this feature several times at Maine Medical.
7. Substitute the Trane drive vs. ABB
Maine Medical has many Trane variable speed drives on site.
The unit mounted drive will also be tested and the fan wheel balanced to ensure stable operation throughout the operating range.
ABB drive can be provided but will be required to be field installed as there would be UL issues if Factory mounted on the unit. Need to find a location for the drives if field mounted.
Factory installed Trane or field installed ABB

NOTE: Roof curb provided by others

The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.

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 Outdoor Central Station Air Handler Units41

Tag Data - Outdoor Central Station Air Handler Units (Qty: 2)

Item	Tag(s)	Qty	Description	Model Number
A1	AHU-042	1	Outdoor T-Series Climate Changer air ha	TSCX014
A2	AHU-085	1	Outdoor T-Series Climate Changer air ha	TSCX014

Product Data - Outdoor Central Station Air Handler Units

Item: A1 Qty: 2 Tag(s): AHU-042, 085

Unit level

T - series climate changer
 Unit size 14
 UL Listed Unit
 Factory painted unit - slate gray
 No curb/pier mounted unit
 Lights wired to extl switch w/GFI outlet
 Single point power (two fan motors only)

Extended Depth Pipe Cabinet

One pipe cabinet module
 Pipe cabinet 1 extended depth
 Pipe cabinet 1 left side
 34 inch door width
 19 inch door width
 62 Overall length cabinet 1
 185.50 Starting location cabinet 1
 185.50 Pipe cabinet 1 door location 1
 219.50 Pipe cabinet 1 door location 2

Return Fan (Pos #1)

Insulation 2"(51mm) solid dble wall
 Door right hand Window right hand
 Marine light
 D14 - 18" (457.2 mm) AF
 Inverter balance
 Seismic spring isolation
 Both sides extended grease line
 Vertical Inlet to Return Fan with Protective Covering
 Drive right hand
 1.5 fixed drive
 5 horsepower ODP NEMA premium efficiency motor
 Voltage 460/3
 TR2 Variable frequency drive
 Motor wiring conduit
 Flow meter - Air Flow Monitoring

Economizer (Pos #2)

Return fan economizer module
 Insulation 2"(51mm) solid dble wall
 Door left hand Window left hand
 Outside air - right side of unit
 0-100% outside air economizing -
 OA - hood w/eliminators - Traq - Air Flow Monitoring Damper
 RA damper with parallel blades - Ultra Low Leak
 EA damper w/parallel blades - Ultra Low Leak
 Exhaust hood

Blender (Pos #3)

Insulation 2"(51mm) solid dble wall
 Door right hand Window right hand Marine light

Filters (Pos #4)

Flat filter module
 Insulation 2"(51mm) solid dble wall
 Door right hand
 2" (51mm) filter frame Pleated media filters - MERV 8 (Fld)
 Filter gauge

Steam Heating Coil (Pos #5)

Medium horizontal coil module

Insulation 2"(51mm) solid dble wall
 Extended depth external pipe cabinet -- Std door design
 Type "NS" coil
 Coil supply left hand
 Galvanized steel coil casing
 Steam
 ARI ranges applied ARI rated and certified

Humidifier (Pos #6)

Humid. specialties-Vendor direct ship (Fld)
 Insulation 2"(51mm) solid dble wall
 LH-drain pan stainless steel IAQ - LH
 Supply left hand
 Window left side
 Building Steam
 Electronic control
 Control signal 2-10 Vdc
 Control voltage 24 VAC
 Cast iron trap
 Humidity sensor (Fld)
 Extended depth external pipe cabinet -- Std door design

Chilled Water Coil (Pos #7)

Medium horizontal coil module
 Insulation 2"(51mm) solid dble wall
 LH-drain pan stainless steel IAQ - LH
 Extended depth external pipe cabinet -- Std door design
 Type "UW" coil
 Cooling coil
 Coil supply left hand
 .016" (0.406mm) copper tubes
 1/2" tube diameter (12.7 mm)
 Stainless steel coil casing
 Turbulators

Supply Fan (Pos #8)

Insulation 2"(51mm) solid dble wall
 Door right hand with window
 Marine light
 Inverter balance
 Seismic Spring isolation
 Both sides extended grease line
 Drive right hand
 1.5 fixed drive
 15 horsepower ODP NEMA premium efficiency motor
 Voltage 460/3
 TR2 Variable frequency drive
 Motor wiring conduit
 Flow meter - Air Flow Monitoring

Diffuser (Pos #9)

Diffuser module
 Insulation 2"(51mm) Solid Dble Wall

Cartridge Combo filters (Pos #10)

Cartridge filter module
 Insulation 2"(51mm) solid dble wall
 Door right hand
 12" (305mm) cart 95% eff. - MERV 14
 Filter gauge

Discharge plenum (Pos #11)

Discharge plenum
 Bottom Opening with Protective Covering
 Insulation 2"(51mm) solid dble wall
 Door right hand Window right hand

Performance Data - Outdoor Central Station Air Handler Units

Tags	AHU-042		AHU-085	
Unit level				
Position				
Actual airflow (cfm)	6940		7245	
Elevation relative to sea level (ft)	0.00		0.00	
Unit length (in)	386.000		386.000	
Unit width (in)	72.000		72.000	
Roof curb weight (lb)	761.2		761.2	
Discharge plenum				
Position	#11		#11	
Discharge airflow - bottom (cfm)	6940		7245	
PD - front (in H2O)	0.000		0.000	
PD - bottom (in H2O)	0.020		0.022	
Total discharge plenum PD (in H2O)	0.020		0.022	
Module length (in)	34.000		34.000	
Module weight (lb)	394.0		394.0	
Module width (in)	72.000		72.000	
Module height (in)	46.000		46.000	
Humidifier				
Position	#6		#6	
Steam rate (lb/hr)	93.94		98.07	
Inlet steam pressure (psig)	6.00		6.00	
EDB (F)	55.00		55.00	
EWB (F)	42.11		42.11	
LDB (F)	56.00		56.00	
LWB (F)	48.87		48.87	
Entering RH (%)	30.00		30.00	
Leaving RH (%)	60.00		60.00	
Humidifier module PD (in H2O)	0.065		0.071	
Module length (in)	31.000		31.000	
Module weight (lb)	772.0		772.0	
Diffuser				
Position	#9		#9	
Diffuser module PD (in H2O)	0.308		0.336	
Module length (in)	15.500		15.500	
Module weight (lb)	148.0		148.0	
Module width (in)	72.000		72.000	
Module height (in)	46.000		46.000	
Fan				
Position	#1	#8	#1	#8
Fan airflow (cfm)	5570	6940	5725	7245
ESP (in H2O)	2.000	3.000	1.500	2.500
TSP (in H2O)	3.242	5.785	2.845	5.512
Fan module PD (in H2O)	2.255	3.000	1.769	2.500
Speed (rpm)	1776	2312	1731	2313
Actual motor power (hp)	4.593	9.969	4.318	10.148
Module length (in)	64.500	64.500	64.500	64.500
Module weight (lb)	1400.0	1355.0	1400.0	1355.0
Module width (in)	72.000	72.000	72.000	72.000
Module height (in)	46.000	46.000	46.000	46.000
Fan discharge loss PD (in H2O)	0.255	-	0.269	-
Horizontal coil				
Position	#5	#7	#5	#7
Actual airflow (cfm)	6940	6940	7245	7245
System type	Steam	Chilled	Steam	Chilled

Maine Medical - P6 Renovations

Tags	AHU-042		AHU-085	
		Water		Water
Elevation (ft)	0.00	0.00	0.00	0.00
Fouling factor (hr-sq ft-deg F/Btu)	-	0.00000	-	0.00000
Fluid type	-	Propylene Glycol	-	Propylene Glycol
Fluid concentration (%)	-	40.00	-	40.00
EDB (F)	48.00	79.00	48.00	79.00
EWB (F)	-	66.00	-	66.00
Entering fluid temp (F)	-	44.00	-	44.00
LDB (F)	83.00	55.00	83.00	55.00
LWB (F)	-	54.46	-	54.52
Leaving fluid temp (F)	-	54.17	-	54.56
Standard fluid flow rate (gpm)	-	53.90	-	53.90
Fluid temp rise (F)	-	10.17	-	10.56
Steam pressure (psig)	5.00	-	5.00	-
Sensible capacity (MBh)	-	183.44	-	191.50
Total capacity (MBh)	263.42	244.61	275.00	254.06
Module length (in)	15.500	15.500	15.500	15.500
Module and coil weight (lb)	548.9	786.6	549.3	791.6
Module width (in)	72.000	72.000	72.000	72.000
Module height (in)	46.000	46.000	46.000	46.000
Steam PD (psig)	0.16	-	0.17	-
Face area (sq ft)	13.29	14.22	13.29	14.22
Face velocity (ft/min)	522	488	545	510
Air PD (in H2O)	0.096	0.609	0.107	0.661
Fluid PD (ft H2O)	-	17.70	-	17.70
Fluid velocity (ft/s)	-	3.42	-	3.42
Volume (gal)	2.44	9.22	2.44	9.22
Condensate flow rate (lb/hr)	274.04	-	286.07	-
Coil rigging weight (lb)	111.2	217.3	111.6	222.1
Coil installed weight (lb)	-	305.9	-	310.9
Coil module PD (in H2O)	0.096	0.609	0.107	0.661
Reynolds number (Each)	-	2099.26	-	2110.00
Blender				
Position	#3		#3	
Blender module total PD (in H2O)	0.099		0.108	
Module length (in)	49.500		49.500	
Module weight (lb)	493.0		493.0	
Module width (in)	72.000		72.000	
Module height (in)	46.000		46.000	
Flat filters				
Position	#4		#4	
Filter area (sq ft)	15.00		15.00	
Filter PD (in H2O)	0.266		0.283	
Filter condition	Clean		Clean	
Customer supplied filter PD (in H2O)	0.000		0.000	
Filter module PD (in H2O)	0.266		0.283	
Filter face velocity (ft/min)	463		483	
Module length (in)	11.000		11.000	
Module weight (lb)	152.5		152.5	
Module width (in)	72.000		72.000	
Module height (in)	46.000		46.000	
cartridge, Combo filters				
Position	#10		#10	
Filter airflow (cfm)	6940		7245	
Post-filter area (sq ft)	14.70		14.70	

Tags	AHU-042	AHU-085
Post-filter PD (in H2O)	0.642	0.683
Filter condition	Clean	Clean
Filter face velocity (ft/min)	472	493
Filter module PD (in H2O)	0.642	0.683
Module length (in)	24.500	24.500
Module weight (lb)	314.0	314.0
Module width (in)	72.000	72.000
Module height (in)	46.000	46.000
Economizer		
Position	#2	#2
Return damper airflow (cfm)	6940	7245
Total return damper PD (in H2O)	0.794	0.865
Outside airflow (cfm)	6940	7245
Total outside air PD (in H2O)	0.680	0.741
Exhaust damper airflow (cfm)	6940	7245
Total exhaust air PD (in H2O)	0.987	1.076
Module length (in)	60.500	60.500
Module weight (lb)	817.0	817.0
Module width (in)	72.000	72.000
Module height (in)	46.000	46.000

Mechanical Specifications - Outdoor Central Station Air Handler Units
Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085**GENERAL**

The units must be rigged and lifted in strict accordance with the Installation Operation and Maintenance manual (CLCH-SVX06A-EN). The units are to be installed in strict accordance with the specifications.

Units may be shipped fully assembled up to nominal 25,000 cfm units or disassembled to the minimum component size according to shipping or jobsite requirements. Units shipped in one piece will have no more than 6 points of lift required. These lift points will be permanently attached to the unit base and be designed to accept standard rigging devices. Units shipped in sections will have no more than 4 points of lift required. Units are UL and CUL listed L1995, CSA C-22.2 as manufactured by the factory. Modifications to the units at the job site or by a third party may void this listing. Refer to the Product Data Sheet for door and drain pan connection locations. This mechanical specification describes options selected from all or just one of the T-Series units on the job.

Since The Trane Company has a policy of continuous product improvement, it reserves the right to change design and specification without notice.

Unit Construction

The unit panels feature galvanized steel double wall construction. The casing is able to withstand up to 8 inches of static pressure with no more than 0.005 inch (0.127mm) deflection per inch (25.4mm) of panel span. The entire length and width under the base is sealed for additional water management protection.

Motor Wiring Conduit

High voltage wiring from either a wiring raceway/trough or directly from a motor starter or variable frequency drive to the air handling unit motor(s) shall be done through flexible conduit. Wiring through conduit shall not compromise the UL or ETL certification of the unit.

Panel Construction

Panels feature solid double wall construction with totally enclosed closed-cell insulation providing a minimum R-value of 12. The insulation conforms to NFPA 90 requirements.

Access Doors

Access doors are fully insulated double-wall construction (with solid galvanized steel interior panels). Automotive style neoprene gasketing around the full perimeter of the access doors minimize air leakage. All access doors have a single door handle system. The first handle movement relieves unit pressure.

Stainless Steel IAQ Drain Pan

Drain pans have two-way sloping stainless IAQ drain pan to allow for proper condensate removal in sections specified.

Marine Light

A factory-mounted, 120-volt, weather resistant (enclosed and gasketed), UL listed wet location fluorescent light fixture shall be provided in sections of unit as specified. Fixture shall be complete with junction box, Lexan housing and lens, magnetic ballast, and 13 watt fluorescent bulb.

Unit Roof

Unit roof is constructed of two pieces. Inner roof is installed in such a manner as to prevent air bypass between internal components. Outer roof is sloped either from one side of unit to other, or from center to sides of the unit. Roof assembly overhangs all walls of units by 2" (50.8mm) minimum.

Unit Paint

External surfaces of all unit casings shall be prepared and painted. Color to be standard "Slate Gray". Paint system shall have been tested in accordance with ASTM B117 for a minimum of 500 consecutive hours and shall meet the following requirements following the salt-spray test:

- Mean scribe creepage rating of at least 6 per ASTM D1654 procedure A
- Blister size no larger than #6 per ASTM D714
- Blister density no greater than Medium per ASTM D714
- No onset of red rust

External Light Switch and Receptacle

A combination light switch and 120 volt GFI outlet shall be factory installed on the exterior of the unit casing on or near the main access door to the supply fan. Light switch shall be capable of controlling all interior factory installed service lights. GFI outlet shall be sized for a maximum capacity of 15 amps, at 120 volts. Switch and light assembly shall not

compromise the UL or ETC certification of the unit.

ECONOMIZER SECTION

This section supports damper assemblies for outside, return, and /or exhaust air.

Economizer Dampers

Dampers modulate the volume of outside, return, or exhaust air. Dampers are Ruskin CD-60 with double skin air foil blades, ultra low-leak metal compressible jamb seals, and extruded vinyl blade edge seals. The dampers are rated for a maximum leakage rate of 3 (cfm)/(foot squared) at 1" wg and 8 (cfm)/(foot squared) at 4" wg. Blades rotate on stainless steel sleeve bearings. Dampers are arranged in parallel or opposed blade configuration.

Traq Dampers with Airflow Monitoring Station - 2nd Outside Air Damper Posit

A factory-mounted damper and air flow monitoring station is provided in the right side opening to modulate and measure airflow. Damper blades are galvanized steel, housed in a galvanized steel frame, and mechanically fastened to a rotating axle rod. The damper is rated for a maximum leakage rate of 1 percent of nominal airflow at 1 inch wg. The airflow measurement station measures from 15 to 100 percent of total outside air and/or return air. The airflow measurement station adjusts for temperature variations and provides a 2-10 VDC signal that corresponds to cfm for controlling and documenting airflow. The accuracy of the airflow measurement station is ± 5 percent.

FLAT FILTERS

Filter sections have filter racks, an access door for filter installation & removal, and block-offs as required to prevent air bypass around filters. Units can be supplied with 2-inch (51.8mm) or 4-inch (101.6mm) flat filters.

Pleated Media

Filters are 2-inch or 4-inch thick, made with 100% synthetic fibers that are continuously laminated to a supported steel wire grid with water repellent adhesive. Filters are capable of operating up to 625 fpm face velocity without loss of filter efficiency and holding capacity. Filters have a rated average dust spot efficiency of not less than 35 to 40 percent when tested in accordance with ASHRAE 52.1 atmospheric dust spot method, and MERV 8 rating based on ASHRAE Standard 52.2.

Filter Gauge

A Dwyer 2002, or approved equal, pressure differential gauge shall be factory installed in the airhandling unit casing. Gauge shall be capable of measuring from 0" to 2" of differential pressure across the entire bank of filters.. Gauge shall be visible from the exterior of the unit, flush mounted in the casing, and properly gasketed such that the leak tight integrity of the casing is not compromised. Pneumatic tubing to the gauge shall be installed and protected in such a manner so that it shall be free of possible pinch points that would effect the accuracy of the filter gauge.

CARTRIDGE FILTERS

Filter sections have filter racks, an access door for filter removal, and block-offs as required to prevent air bypass around filters.

Cartridge Filters

Filters are constructed by pleating a continuous sheet of fine-fiber media into closely spaced pleats with safe-edged aluminum separators. This filter is sealed into a metal frame assembled in a rigid manner. All cartridge filters are furnished with a 2-inch (51.8mm) prefilter to provide extended cartridge life. Side access filter racks capable of holding cartridge filters and prefilters are provided.

Filter Efficiency

Efficiency of filter shall be 90 to 95 percent as determined by ASHRAE Standard 52.1 atmospheric dust spot method, and MERV 14 based on ASHRAE Standard 52.2

Filter Gauge

A Dwyer 2002, or approved equal, pressure differential gauge shall be factory installed in the airhandling unit casing. Gauge shall be capable of measuring from 0" to 2" of differential pressure across the entire bank of filters.. Gauge shall be visible from the exterior of the unit, flush mounted in the casing, and properly gasketed such that the leak tight integrity of the casing is not compromised. Pneumatic tubing to the gauge shall be installed and protected in such a manner so that it shall be free of possible pinch points that would effect the accuracy of the filter gauge.

AIR BLENDER

Air blenders are provided to mix outside and return air, minimize stratification, and reduce the risk of frozen coils. The blender size, space upstream, and space downstream are factory engineered for proper performance.

Marine Light

A factory-mounted, 120-volt, weather resistant (enclosed and gasketed), UL listed wet location fluorescent light fixture shall be provided in sections of unit as specified. Fixture shall be complete with junction box, Lexan housing and lens, magnetic ballast, and 13 watt fluorescent bulb.

COILS

Coils have aluminum plate fins and seamless copper tubes. (Copper fins are available on 5/8 inch (15.9mm) tube coils.) Fin collars are drawn, belled, and firmly bonded to the tubes by mechanical expansion of the tubes.

Coils are installed such that headers and return bends are enclosed by unit casings. Coil casings are a minimum of 16-gauge galvanized steel formed end supports, top, and bottom channels. If two or more coils are stacked in the unit, intermediate drain channels are installed between coils to drain condensate to the main drain pans without flooding the lower coils or passing condensate through the airstream of the lower coil.

COILS

Coils have aluminum plate fins and seamless copper tubes. (Copper fins are available on 5/8 inch (15.9mm) tube coils.) Fin collars are drawn, belled, and firmly bonded to the tubes by mechanical expansion of the tubes. Capacities, pressure drops and selection procedure are certified in accordance with ARI Standard 410.

Coils are installed such that headers and return bends are enclosed by unit casings. Coil casings are a minimum of 16-gauge galvanized steel formed end supports, top, and bottom channels. If two or more coils are stacked in the unit, intermediate drain channels are installed between coils to drain condensate to the main drain pans without flooding the lower coils or passing condensate through the airstream of the lower coil.

Coil Casing

Coil casings are a minimum of 16-gauge stainless steel formed end supports, top, and bottom channels in lieu of standard galvanized.

Water Coils

Supply and return headers are clearly labeled on the outside of the unit to ensure that direction of coil water flow is counter to direction of unit airflow. Coils are burst tested to 300 psig and proof tested under water to 200 psig. Coil types are UW,UU,W,WD,D1,D2,K,P,5A,5W and TT coils.

Steam Heating Coils (NS)

Steam coils are pitched in the unit for proper drainage of steam condensate from coils. Inner tubes have orifices that ensure even steam distribution across the coil face. Orifices are directed toward the return connections to ensure that the steam condensate is adequately removed from the coil. Headers are constructed of cast iron. Coils are burst tested to 300-psig and proof tested to 200-psig air pressure under water.

Tube Material

Tubes are 1/2 inch (12.7mm) OD, 0.016 inch (0.41mm) thick copper. (Refer to the Product Data Sheet)

Tube Material

Tubes are 1inch (25.4mm) OD, 0.031 inch (0.787mm) thick copper. (Refer to the Product Data Sheet)

Extended External Pipe Cabinet

Piping cabinet is supplied by the manufacturer factory assembled and constructed the same as the main unit casing. Piping cabinet is mounted external to the unit and shipped separate to be field installed.

FAN SECTION

Fans are factory balanced. Fan shafts are solid, protectively coated with lubricating oil, and designed so fan will not exceed 75 percent of the first critical speed at any cataloged rpm. Fan wheels are keyed to the shaft to prevent slipping. Access doors are provided on the drive side of the fan section. A separate power source is required for each fan section without single point power. Units with single point power require one power source in the supply fan section.

Motor Voltage

460 Volt / 3 Phase / 60 Hz.(Refer to the Product Data Sheet)

Open Drip-Proof Motor

The motor is a T-frame, squirrel cage, open drip-proof with horsepower, type, and electrical characteristics as shown on

equipment schedule. Motor is mounted inside the unit casing integral to an isolated fan assembly. A slide base permits adjustment of drive belt tension..(Refer to the Product Data Sheet)

Fixed Pitch Drives

Sheaves are fixed pitch for constant speed at the specified rpm.

Fan Isolation

Two Inch (51.8mm) Spring Isolators - Fan and motor assembly (sizes #10 - #100) is internally isolated from the unit casing with 2 inch (51.8mm) deflection spring isolators. The fan discharge is also isolated from unit casing by a flexible canvas duct. The isolation system is designed to resist loads produced by external forces such as earthquakes and conform to the current requirements for Seismic Zone IV.

Fan Options

Inverter balancing. Fan systems will be checked with a variable frequency drive for resonant frequencies. Fans, shafts, and drives will meet vibrations tolerance specs from 25% to 100% of selected RPM.

View Window

A glass view window capable of withstanding unit operating pressures is provided in the door.

Flow Meter

Provide an air measurement system to measure fan airflow directly or measure differential pressure that can be used to calculate fan airflow. The system shall predict airflow within +/-5% accuracy when operating from 45% to 95% wide-open volume. The submitted fan air performance and noise levels shall not be affected by the installation of the device. Any device that provides an obstruction to the fan inlet will not be accepted.

DIFFUSER

A diffuser is provided immediately downstream of the fan to help provide equal air distribution to blow-thru components down stream of the diffuser.

DISCHARGE PLENUM

A discharge plenum is provided to efficiently turn air and/or provide sound attenuation. A protective covering will be provided over bottom openings.

VFD / Disconnect Package

Combination VFD / disconnect packages are factory mounted and wired in a weather-tight cabinet and include:

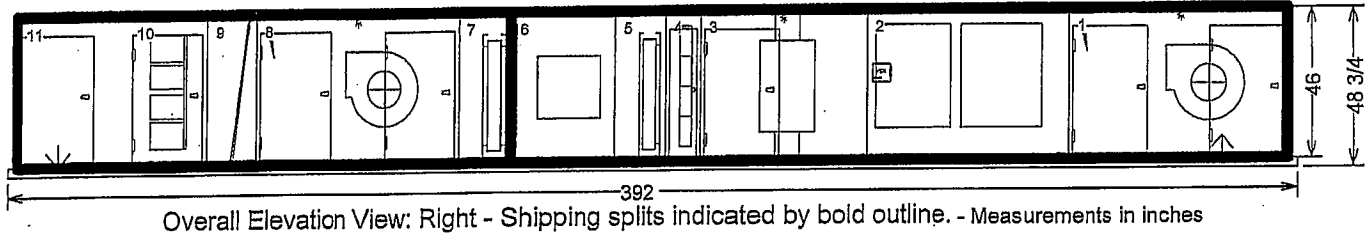
- a) circuit breaker disconnect
- b) Pulse Width Modulated (PWM) VFD w/ intelligent power modules
- c) LCD display and keypad
- d) English language electrical values, parameters, self test, faults, and diagnostics
- e) form C fault contacts
- f) 0-10 V speed input signal
- g) VFD-Hand-Off keypad switch
- h) Electronic manual speed control
- i) auto restart after momentary power loss
- j) critical frequency avoidance
- k) power wiring from VFD to motor
- l) voltage and FLA are factory-set for the exact motor used in the air handler
- m) Factory commissioning

HUMIDIFIER SECTION

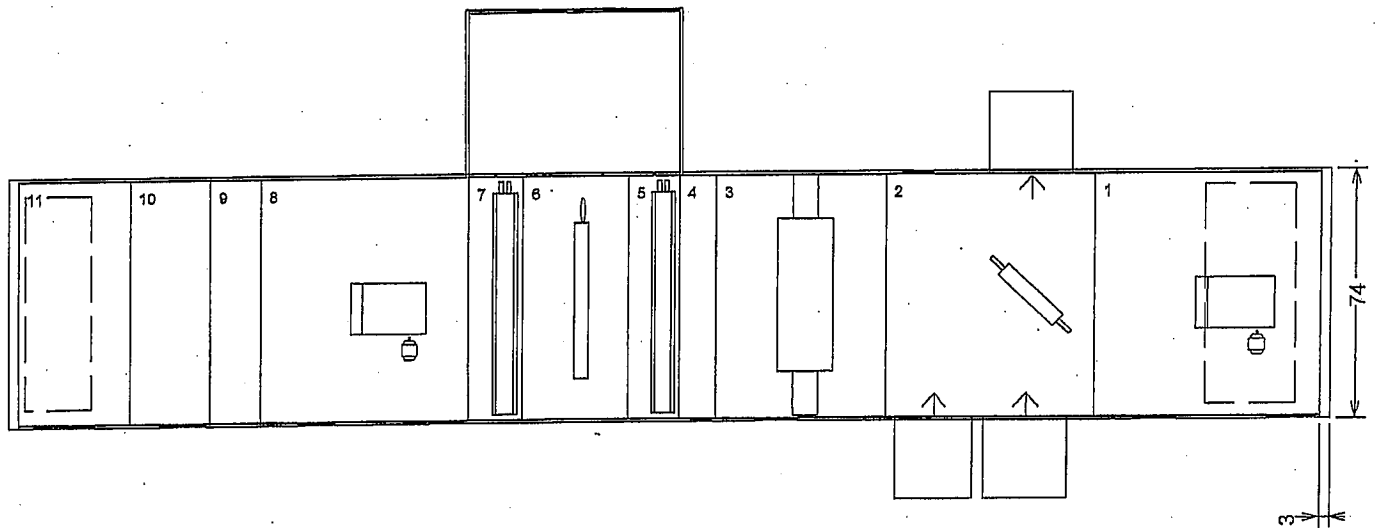
Humidifier module shall be provided. Humidifier shall be designed for building steam. Humidifier shall include a fabricated separator/header and multiple steam dispersion tube design of stainless steel wetted parts. All active tube-to-header (steam handling) joints shall be welded. Assembly shall include inactive tubes to minimize heat gain while shortening non-impinging vapor trail. Humidifier shall provide a uniform discharge of steam. The control valve shall be protected by a steam supply strainer and inverted bucket trap. All pipe connections shall be made from one side of the air handler.

As-Built - Outdoor Central Station Air Handler Units

Item: A1 Qty: 1 Tag(s): AHU-042

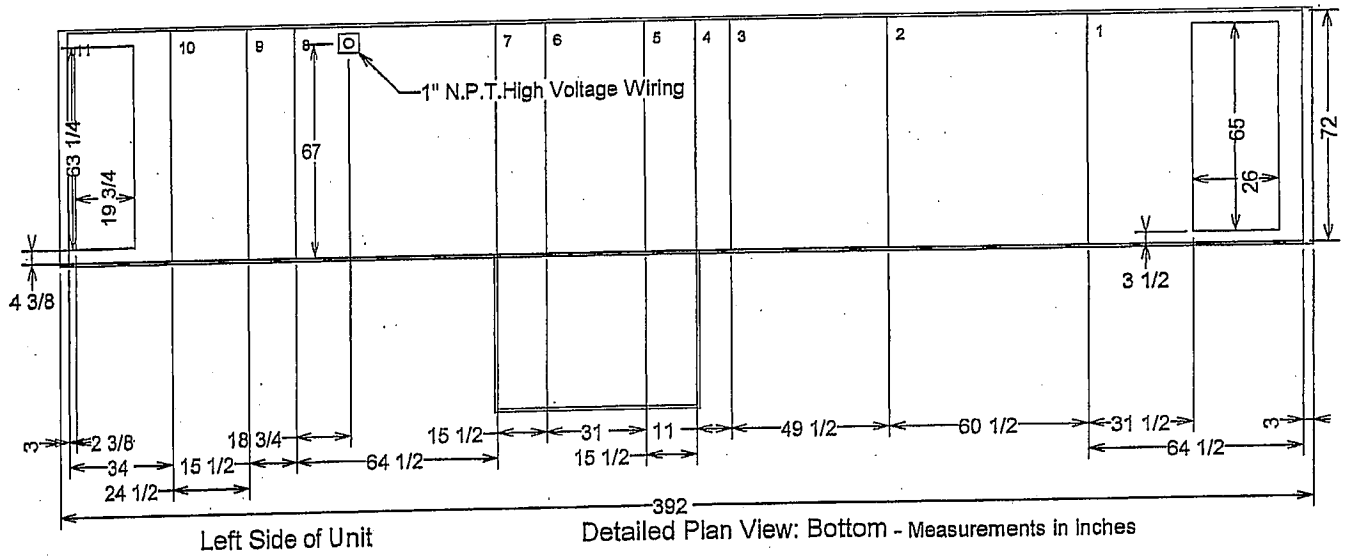
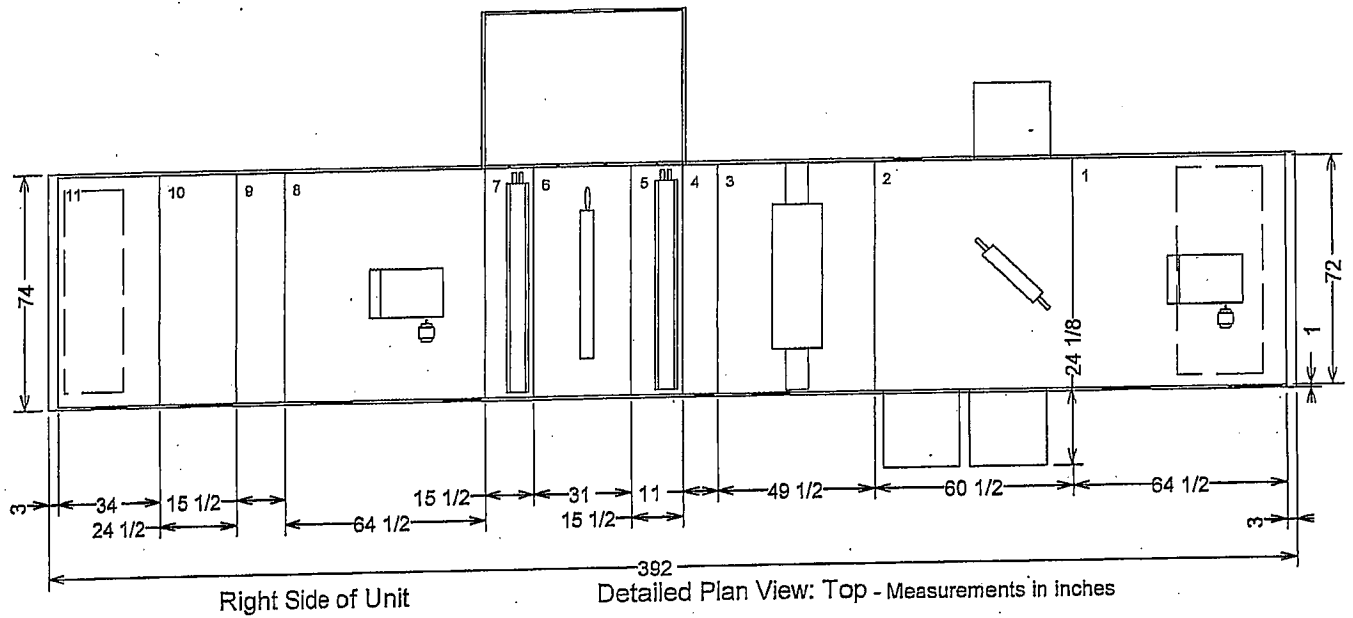


Pos #	Module	Length	Weight
1	Fan	64 1/2	1400.00
2	Economizer	60 1/2	817.00
3	Blender	49 1/2	493.00
4	Flat or angled filters	11	152.50
5	Horizontal coil	15 1/2	548.85
6	Humidifier	31	772.00
7	Horizontal coil	15 1/2	786.55
8	Fan	64 1/2	1355.00
9	Diffuser	15 1/2	148.00
10	Bag, cartridge, HEPA, or Combo filters	24 1/2	314.00
11	Discharge plenum	34	394.00
			Installed Unit Weight 7180.91 lbs

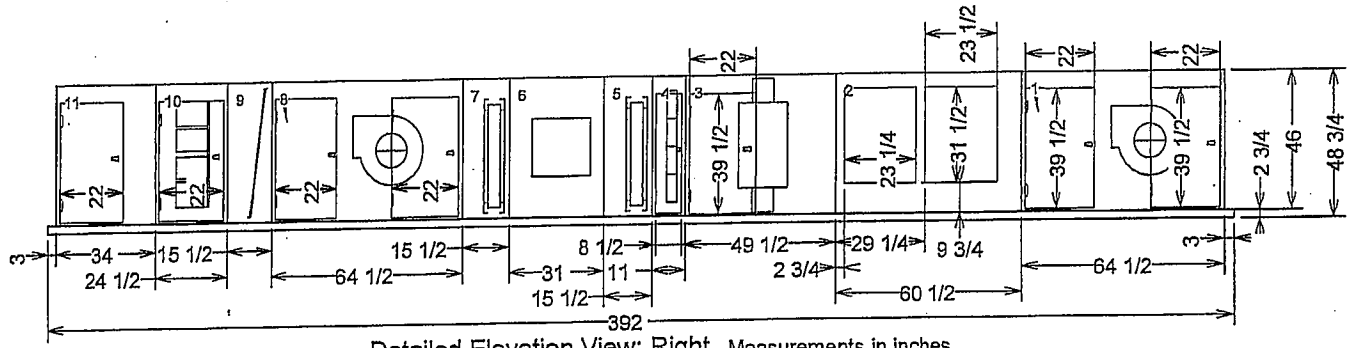


Overall Plan View: Top - Measurements in inches

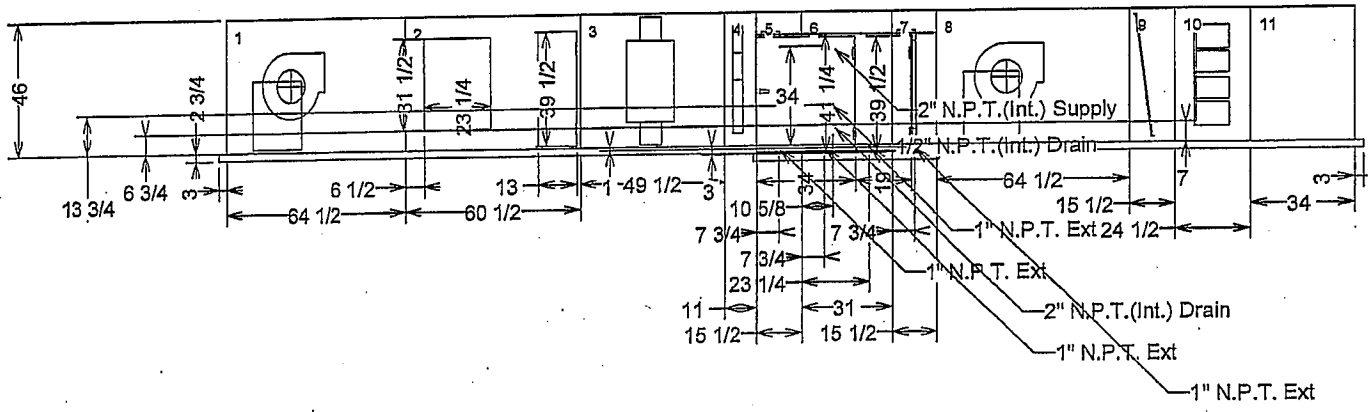
Maine Medical - P6 Renovations
 As-Built - Outdoor Central Station Air Handler Units
 Item: A1 Qty: 1 Tag(s): AHU-042



As-Built - Outdoor Central Station Air Handler Units
Item: A1 Qty: 1 Tag(s): AHU-042

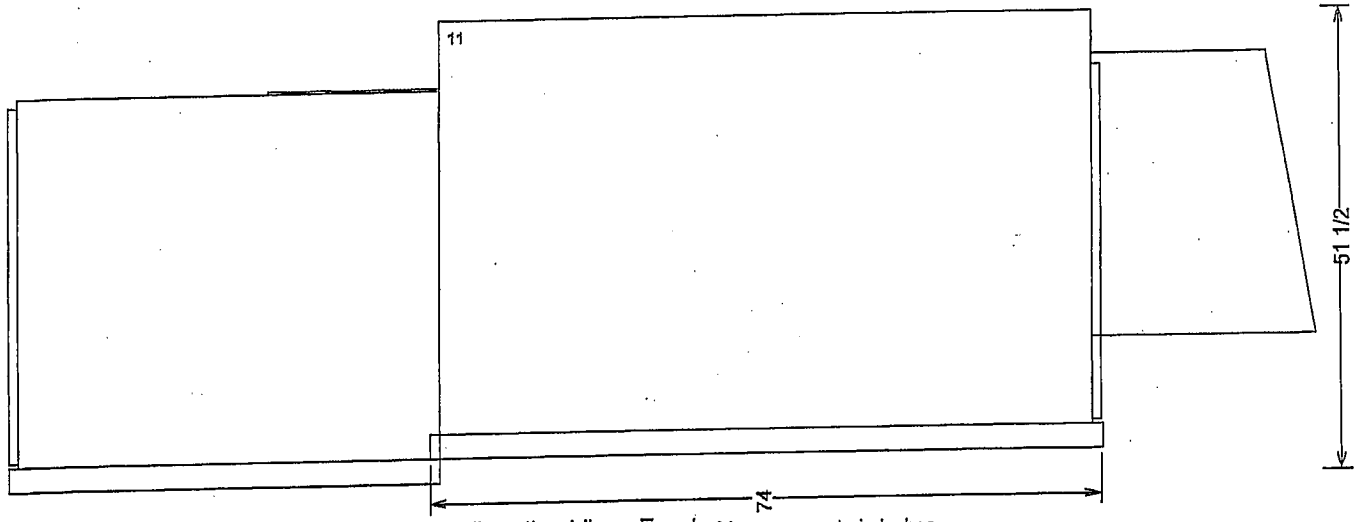


Detailed Elevation View: Right - Measurements in inches

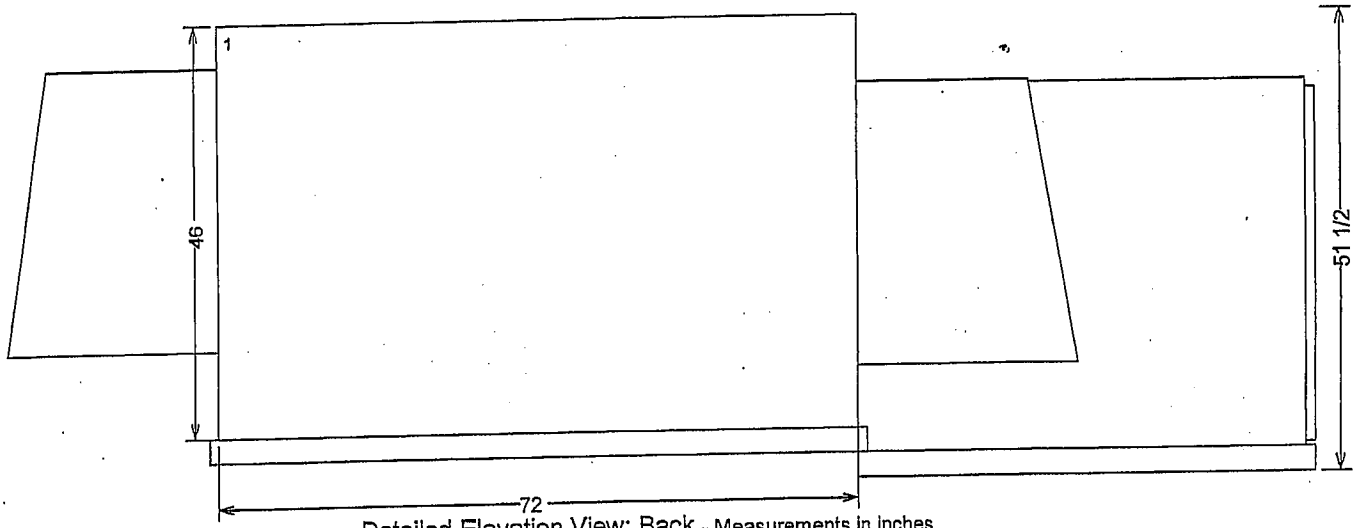


Detailed Elevation View: Left - Measurements in inches

As-Built - Outdoor Central Station Air Handler Units
Item: A1 Qty: 1 Tag(s): AHU-042

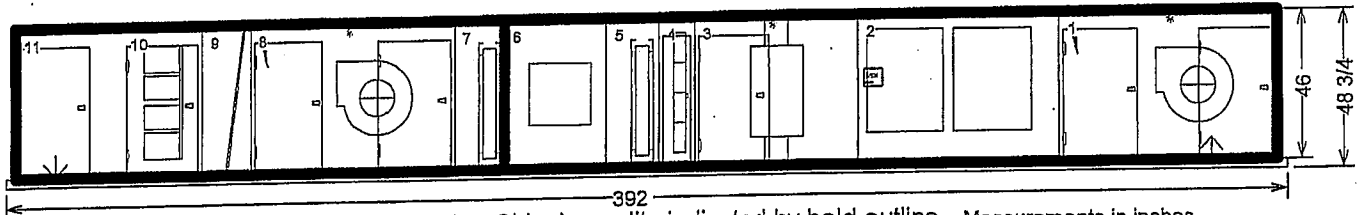


Detailed Elevation View: Front - Measurements in Inches



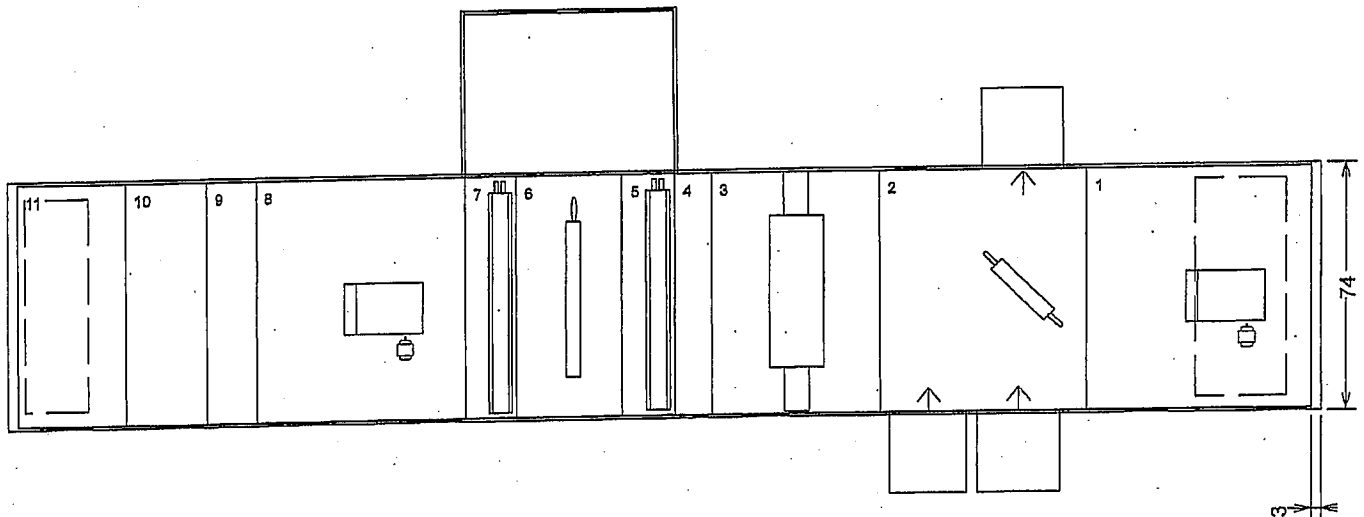
Detailed Elevation View: Back - Measurements in Inches

Maine Medical - P6 Renovations
As-Built - Outdoor Central Station Air Handler Units
 Item: A2 Qty: 1 Tag(s): AHU-085



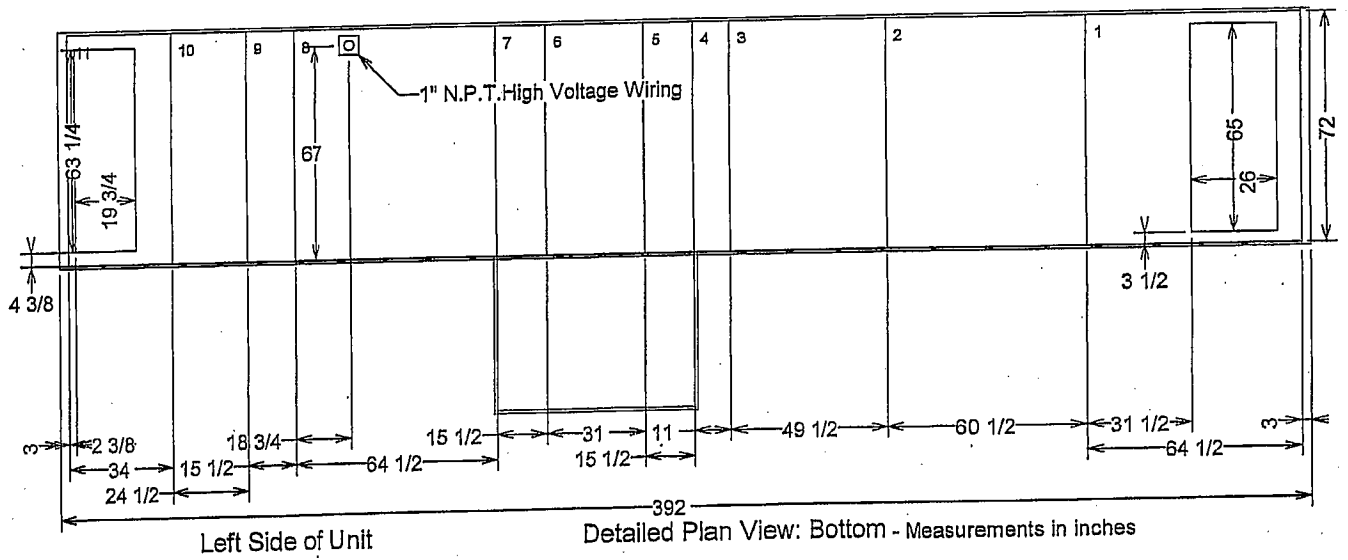
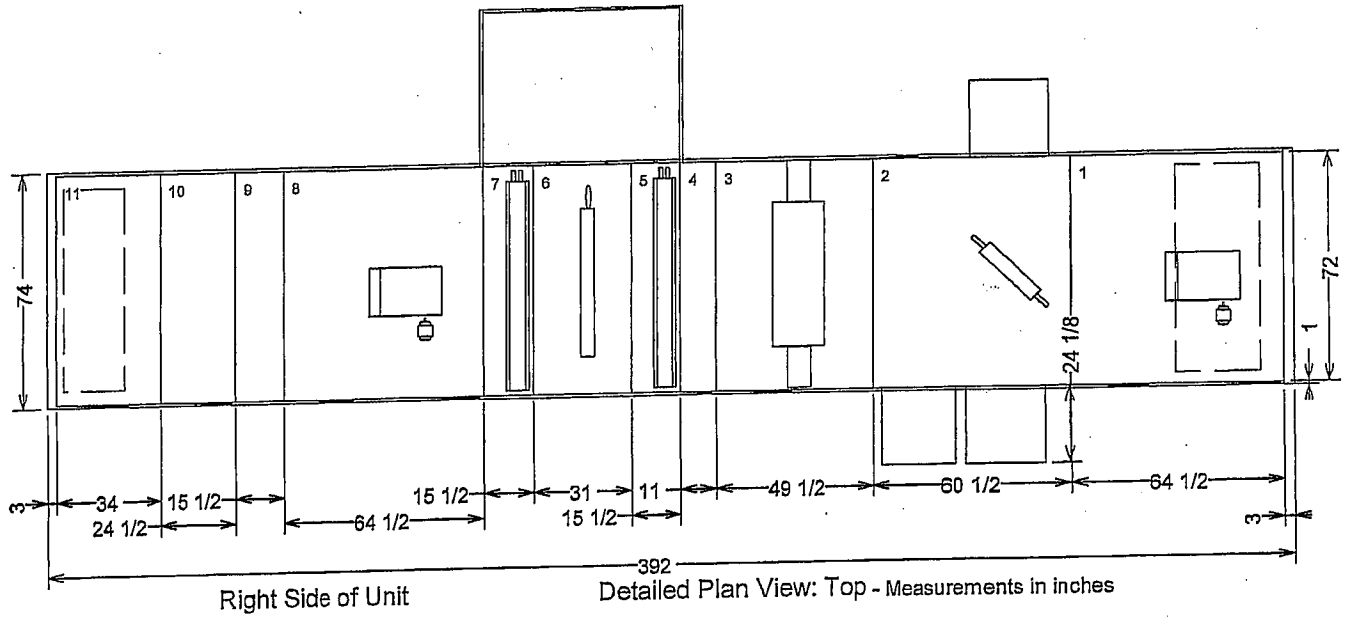
Overall Elevation View: Right - Shipping splits indicated by bold outline. - Measurements in inches

Pos #	Module	Length	Weight
1	Fan	64 1/2	1400.00
2	Economizer	60 1/2	817.00
3	Blender	49 1/2	493.00
4	Flat or angled filters	11	152.50
5	Horizontal coil	15 1/2	549.25
6	Humidifier	31	772.00
7	Horizontal coil	15 1/2	791.55
8	Fan	64 1/2	1355.00
9	Diffuser	15 1/2	148.00
10	Bag, cartridge, HEPA, or Combo filters	24 1/2	314.00
11	Discharge plenum	34	394.00
			Installed Unit Weight 7186.31 lbs

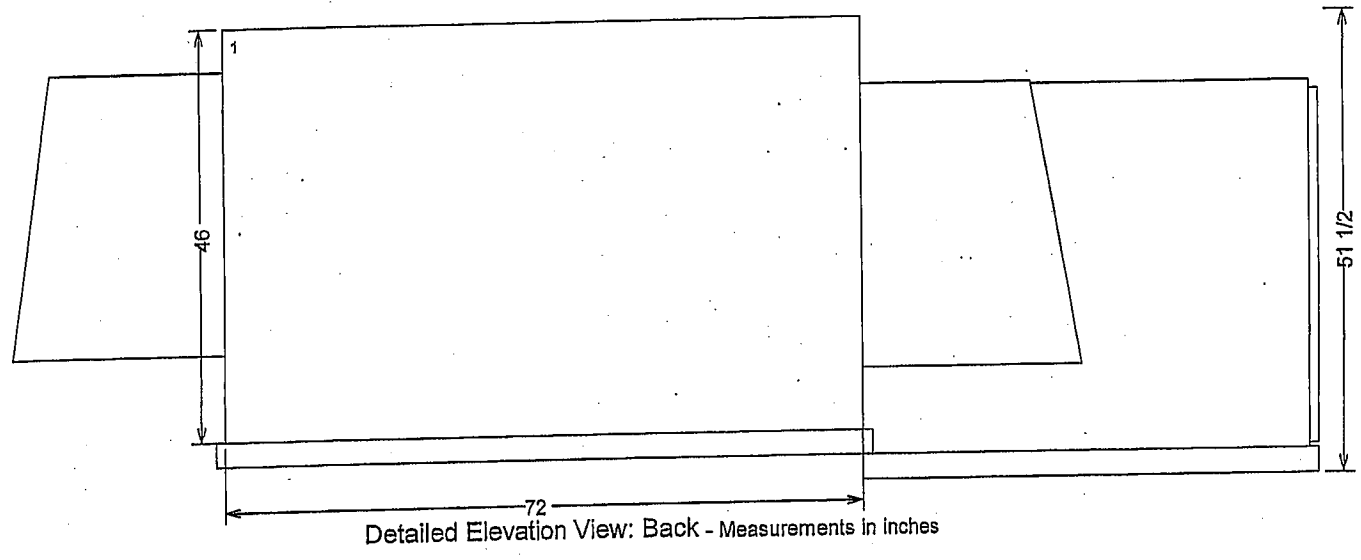
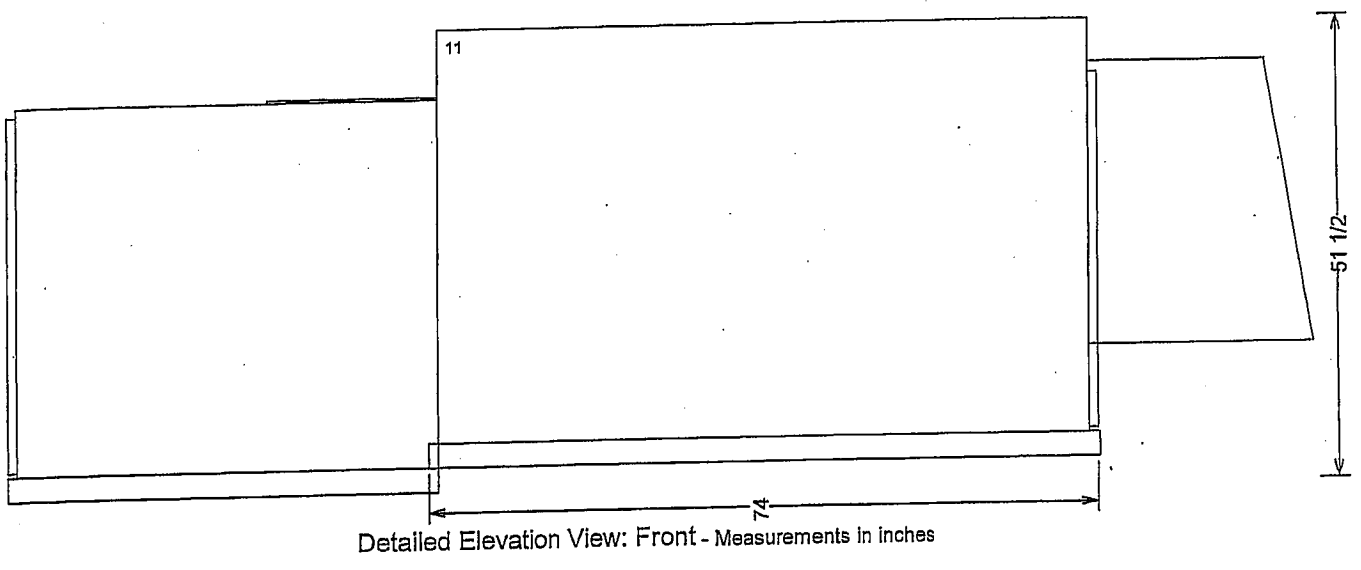


Overall Plan View: Top - Measurements in inches

Maine Medical - P6 Renovations
 As-Built - Outdoor Central Station Air Handler Units
 Item: A2 Qty: 1 Tag(s): AHU-085



Maine Medical - P6 Renovations
As-Built - Outdoor Central Station Air Handler Units
Item: A2 Qty: 1 Tag(s): AHU-085



Fan Curve - Outdoor Central Station Air Handler Units
 Item: A1 Qty: 1 Tag(s): AHU-042

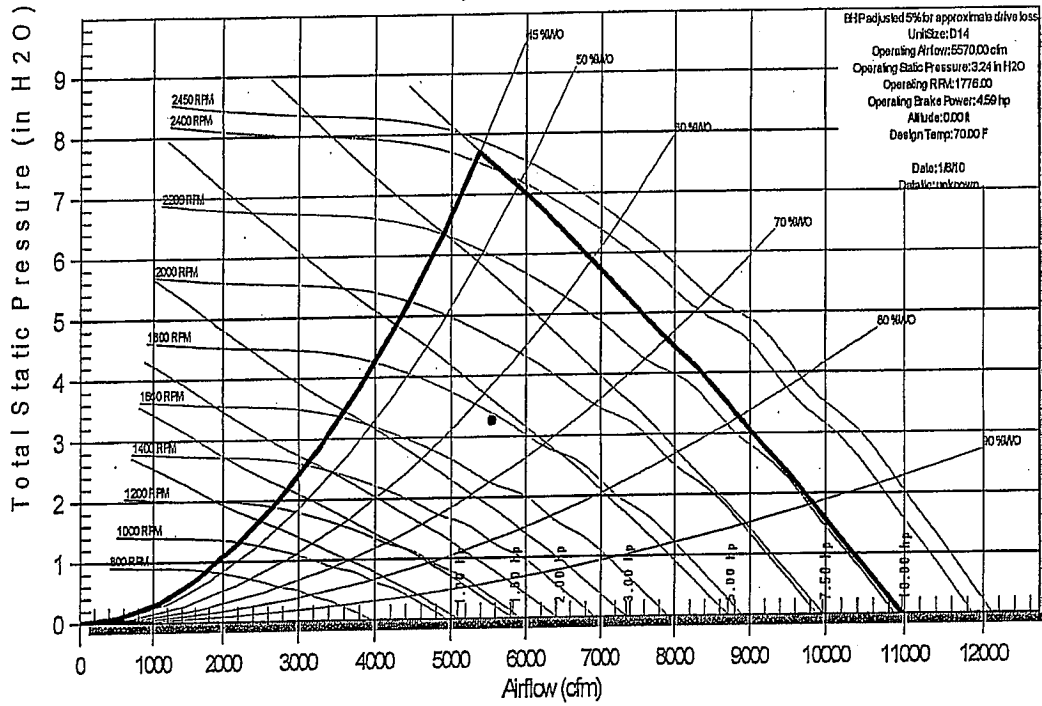
Total Acoustics

	63-hz	125-hz	250-hz	500-hz	1 kHz	2 kHz	4 kHz	8 kHz
Front Discharge	92	88	79	79	79	73	64	59
Side Discharge								
Ducted Inlet	94	90	84	83	77	74	66	58
Casing	86	87	76	79	66	60	54	45

Fan Curve - Outdoor Central Station Air Handler Units
 Item: A1 Qty: 1 Tag(s): AHU-042

V. Return

D14 Draw-Thru, 18-inch AF, Without Inlet Vanes

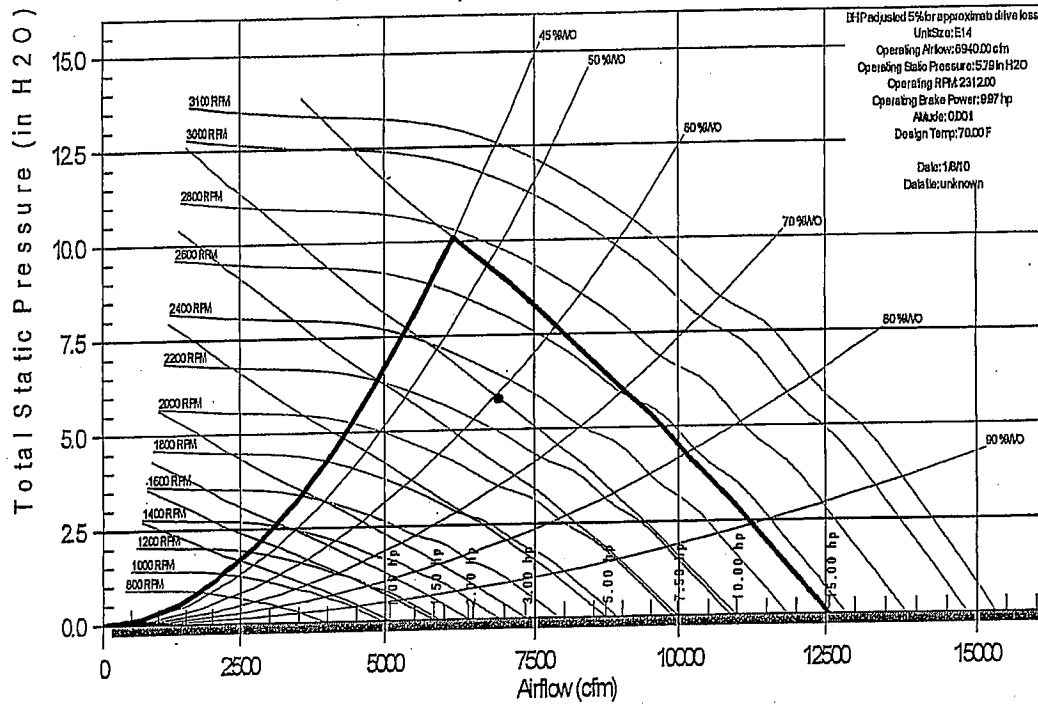


	63-hz	125-hz	250-hz	500-hz	1-k-hz	2-k-hz	4-k-hz	8-k-hz
Front Discharge	82	76	70	58	60	59	44	38
Inlet + Casing	88	85	86	82	78	74	69	61
Ducted Inlet	91	88	84	81	77	72	66	58
Casing	80	81	72	66	58	53	49	38

Fan Curve - Outdoor Central Station Air Handler Units
Item: A1 Qty: 1 Tag(s): AHU-042

H. Supply

E14 Draw-Thru, 18-inch AF, Without Inlet Vanes



	63-hz	125-hz	250-hz	500-hz	1 kHz	2 kHz	4 kHz	8 kHz
Front Discharge	92	88	79	79	79	73	64	59
Inlet + Casing	92	90	80	82	72	70	59	51
Ducted Inlet	91	87	78	79	71	70	57	49
Casing	85	87	75	79	66	60	53	45

Fan Curve - Outdoor Central Station Air Handler Units
 Item: A2 Qty: 1 Tag(s): AHU-085

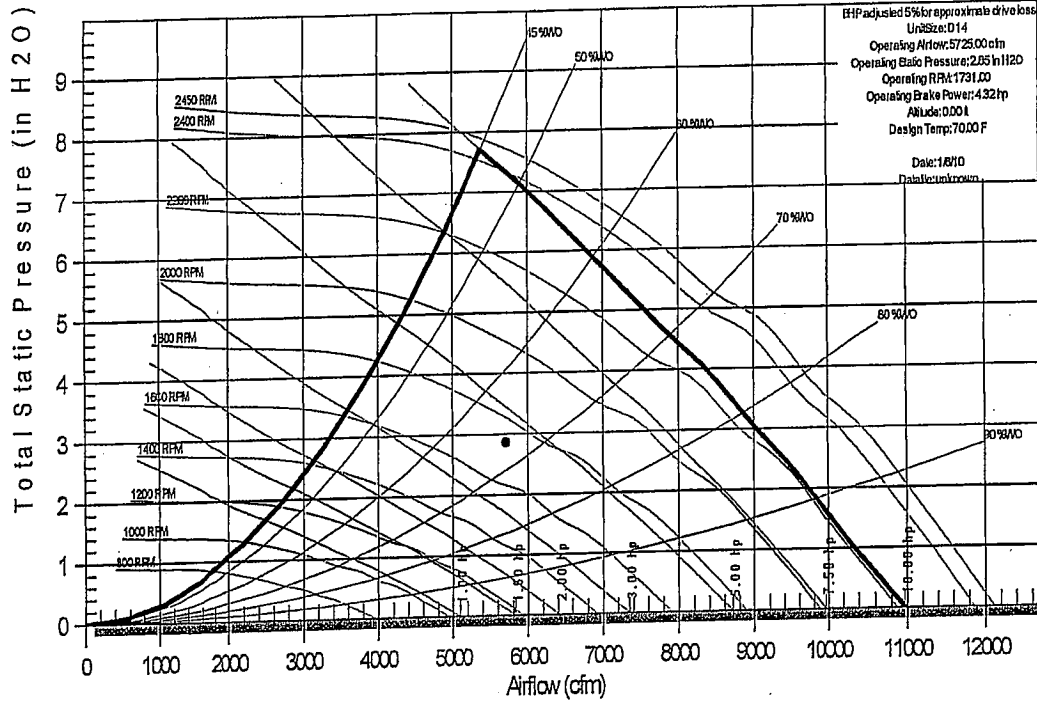
Total Acoustics

	63Hz	125Hz	250Hz	500Hz	1 kHz	2 kHz	4 kHz	8 kHz
Front Discharge	92	88	79	79	79	74	64	59
Side Discharge								
Ducted Inlet	94	90	84	83	77	74	66	57
Casing	85	87	76	79	66	60	54	45

Fan Curve - Outdoor Central Station Air Handler Units
 Item: A2 Qty: 1 Tag(s): AHU-085

V. Return

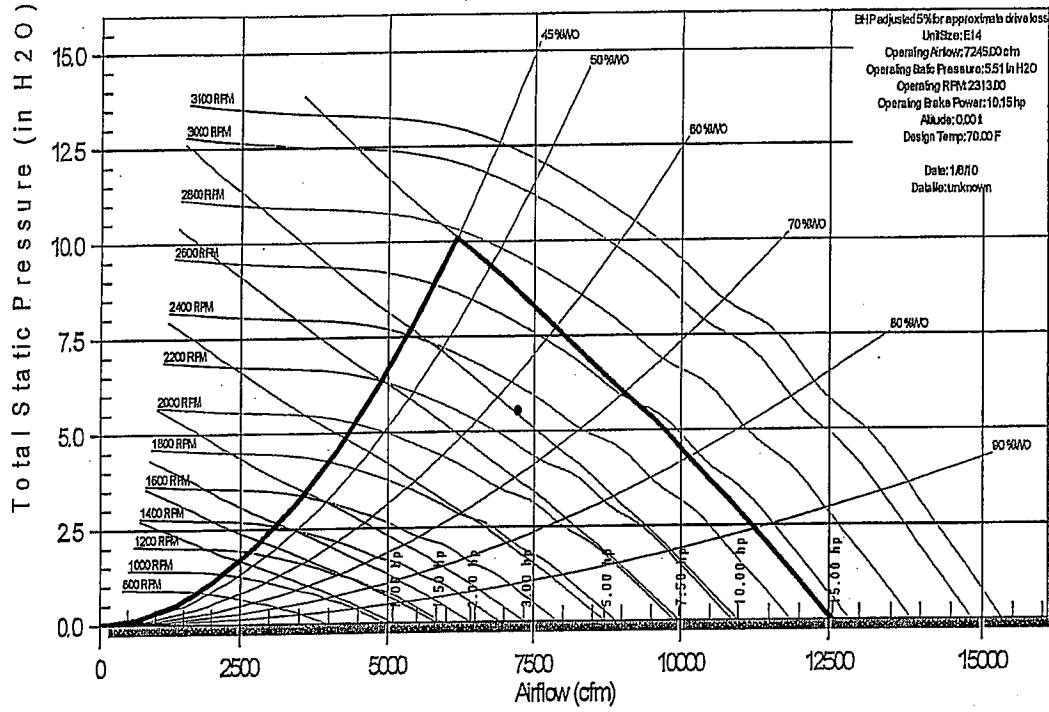
D14 Draw-Thru, 18-inch AF, Without Inlet Vanes



	63-hz	125-hz	250-hz	500-hz	1 kHz	2 kHz	4 kHz	8 kHz
Front Discharge	81	75	69	58	60	58	44	38
Inlet + Casing	87	85	85	82	78	74	69	61
Ducted Inlet	91	87	83	81	76	72	66	57
Casing	79	80	72	66	58	53	48	37

Fan Curve - Outdoor Central Station Air Handler Units
 Item: A2 Qty: 1 Tag(s): AHU-085

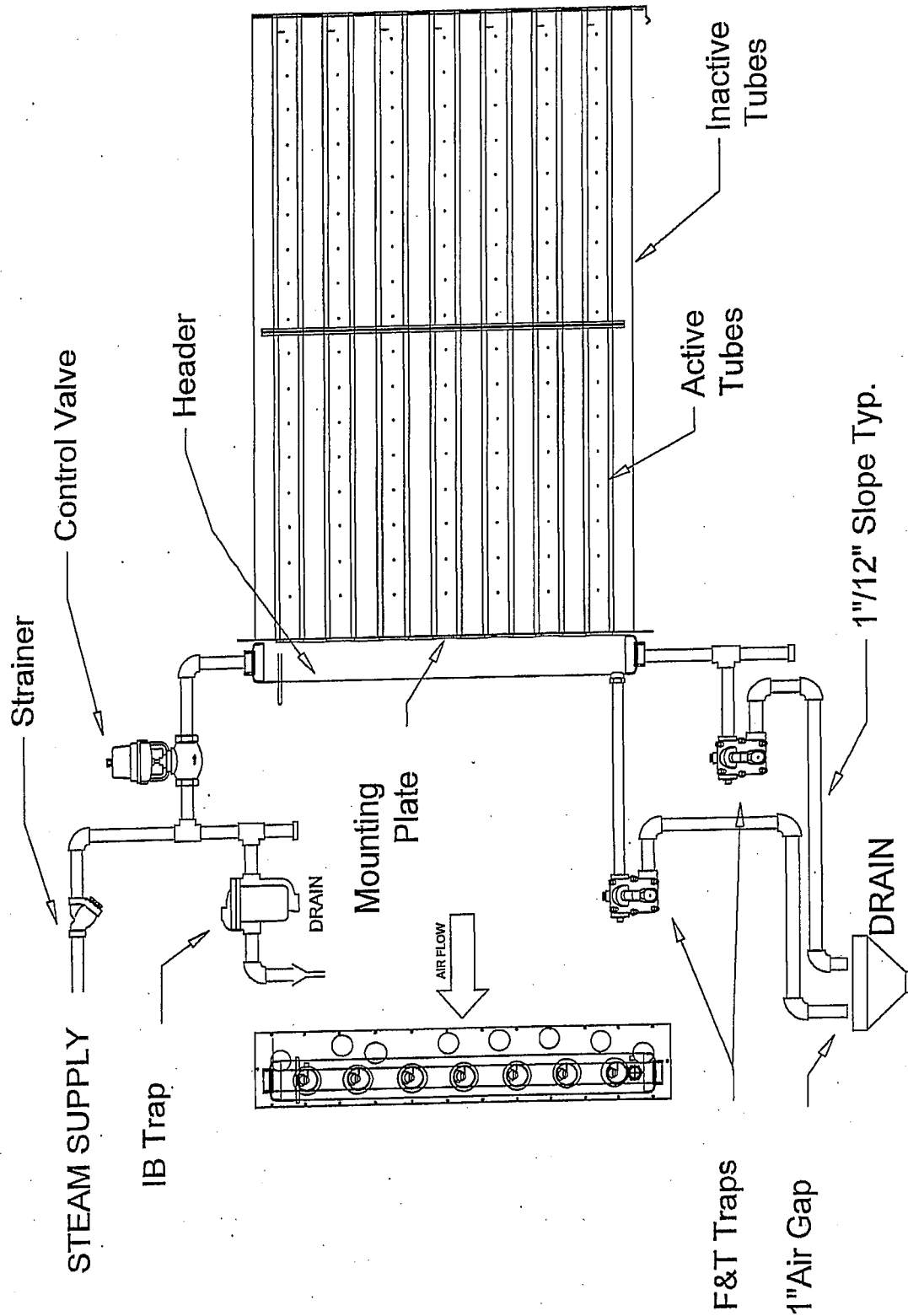
H. Supply
 E14 Draw-Thru, 18-inch AF, Without Inlet Vanes



EHP adjusted 5% for approximate drive loss
 Unit Size: E14
 Operating Airflow: 724500 cfm
 Operating Static Pressure: 5.51 in H₂O
 Operating RPM: 2313.00
 Operating Brake Power: 10.15 hp
 Airside: 0.001
 Design Temp: 70.00 F
 Date: 1/8/10
 Data: unknown

	63-hz	125-hz	250-hz	500-hz	1 kHz	2 kHz	4 kHz	8 kHz
Front Discharge	92	88	79	79	79	74	64	59
Inlet + Casing	92	90	80	83	72	70	59	51
Ducted Inlet	91	87	78	80	71	70	57	49
Casing	85	87	75	79	66	60	53	45

Maine Medical - P6 Renovations
Accessory - Outdoor Central Station Air Handler Units
Humidifier piping detail
Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085

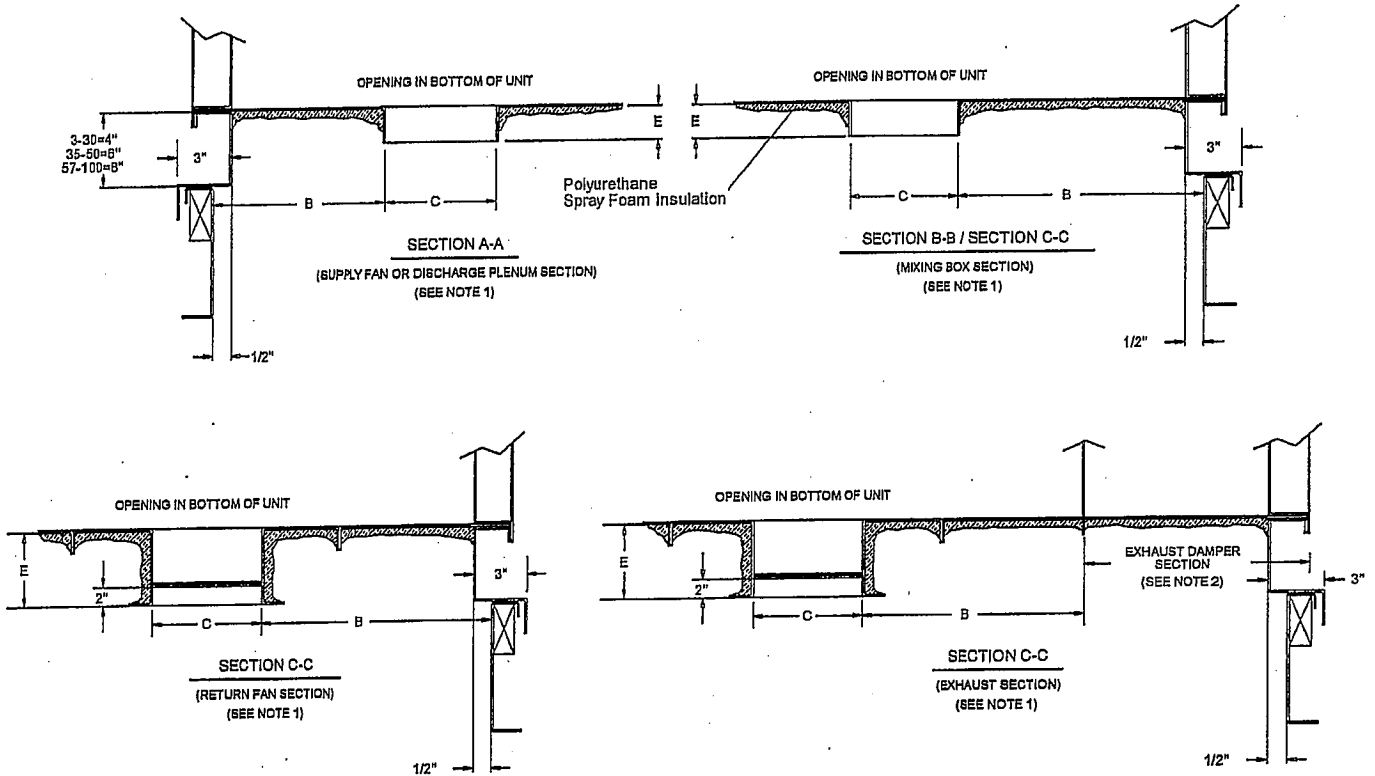


Accessory - Outdoor Central Station Air Handler Units

Discharge Detail

Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085

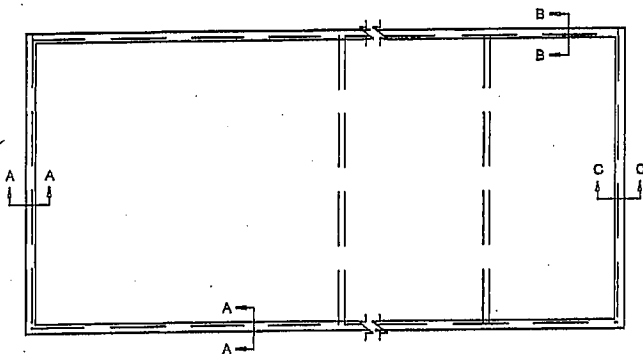
RELATIONSHIP OF CURB TO UNIT AS-BUILT



MODULE	E
Mixing Box	4
Discharge Plenum	4
Bottom Front Discharge Fan	4
Bottom Front Discharge Plenum Fan	n/a
Exhaust / Return Fan	3.875

For Reference Only. Not All Units Selected Include Above Modules.

- NOTE:**
1. B and C are Representative of Dimensions on the Accessory As-Built Used to Locate Opening(s) in the Roof Surface.
 2. Add the Exhaust Damper Section Dimension on the Unit As-Built to the B Dimension.
 3. All Supply and Return openings in the base of the unit must be ducted. Duct work must be attached to the inside of the flange (see dimension E) located in the opening in the bottom of the unit. Mounting hardware must extend from the inside of the duct, through the duct work, and into the flange.



Accessory - Outdoor Central Station Air Handler Units

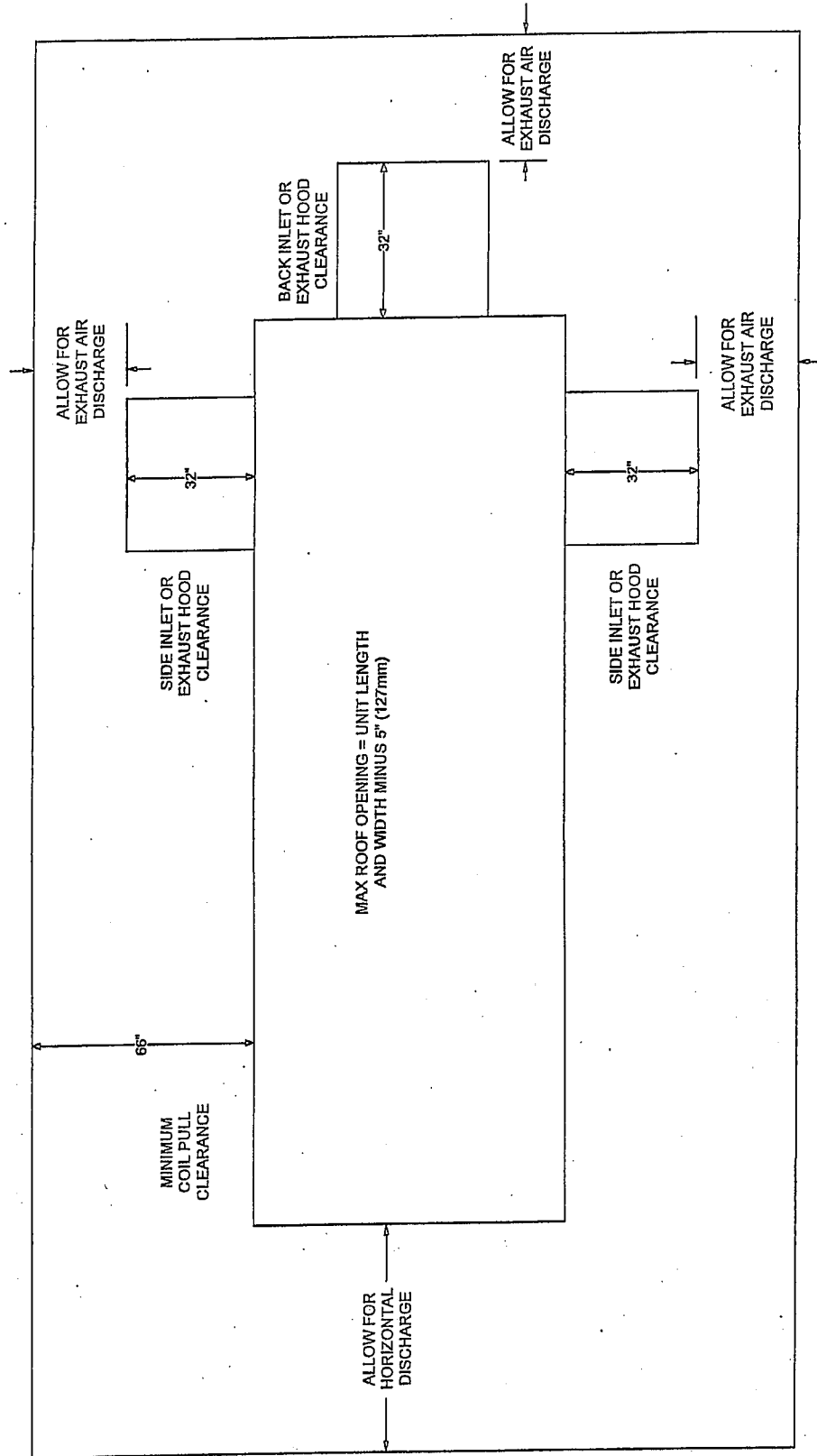
Filter Schedule 03 - 21

Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085

Filters		Unit Size			
		12	14	17	21
Flat/Comb					
2"	Area (Ft2)	13.30	15.00	18.10	20.00
4"	Qty.	6 - 16" x 20"	3 - 16" x 20"	4 - 20" x 20"	4 - 20" x 20"
Perm			3 - 20" x 20"	2 - 20" x 25"	4 - 16" x 20"
Cartridge					
6"	Area (Ft2)	10.00	14.70	16.70	22.00
12"	Qty.	3 - 20" x 24"	2 - 12" x 24"	6 - 20" x 20"	3 - 20" x 24"
Bag			2 - 20" x 24"		3 - 24" x 24"
			1 - 24" x 24"		

For Reference Only. Not all units selected include above filter modules or unit sizes.

Accessory - Outdoor Central Station Air Handler Units
TYPICAL UNIT CLEARANCE DETAIL
Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085

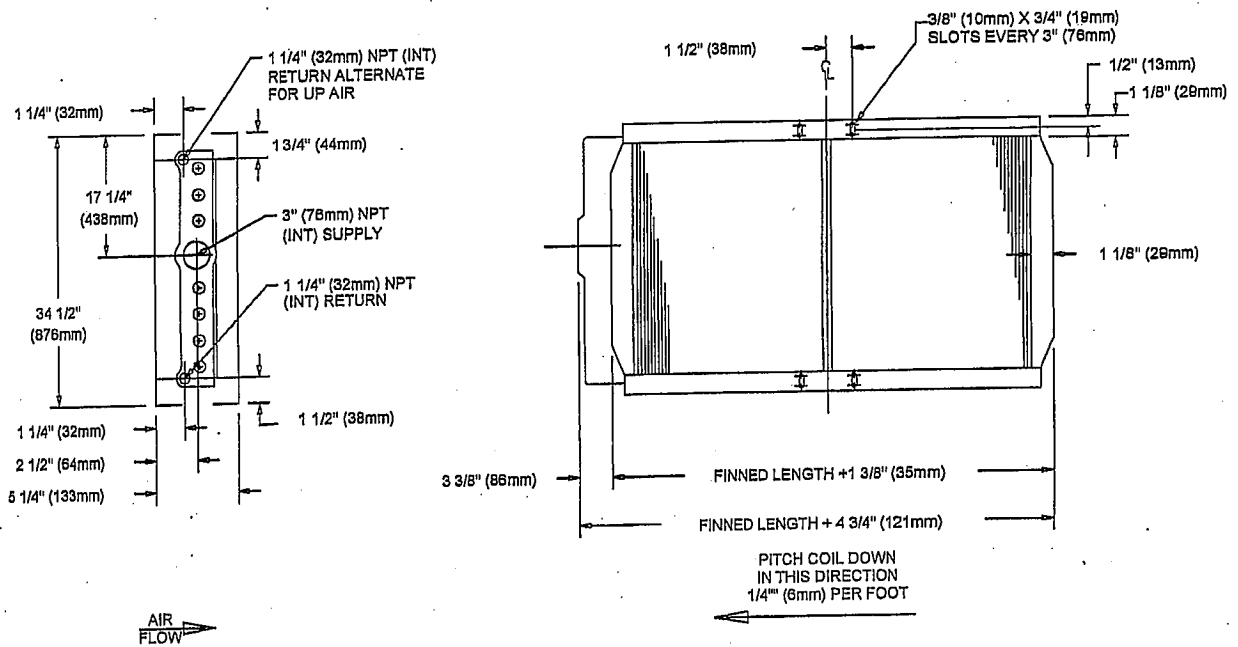


Accessory - Outdoor Central Station Air Handler Units
NS TOP OR SINGLE COIL

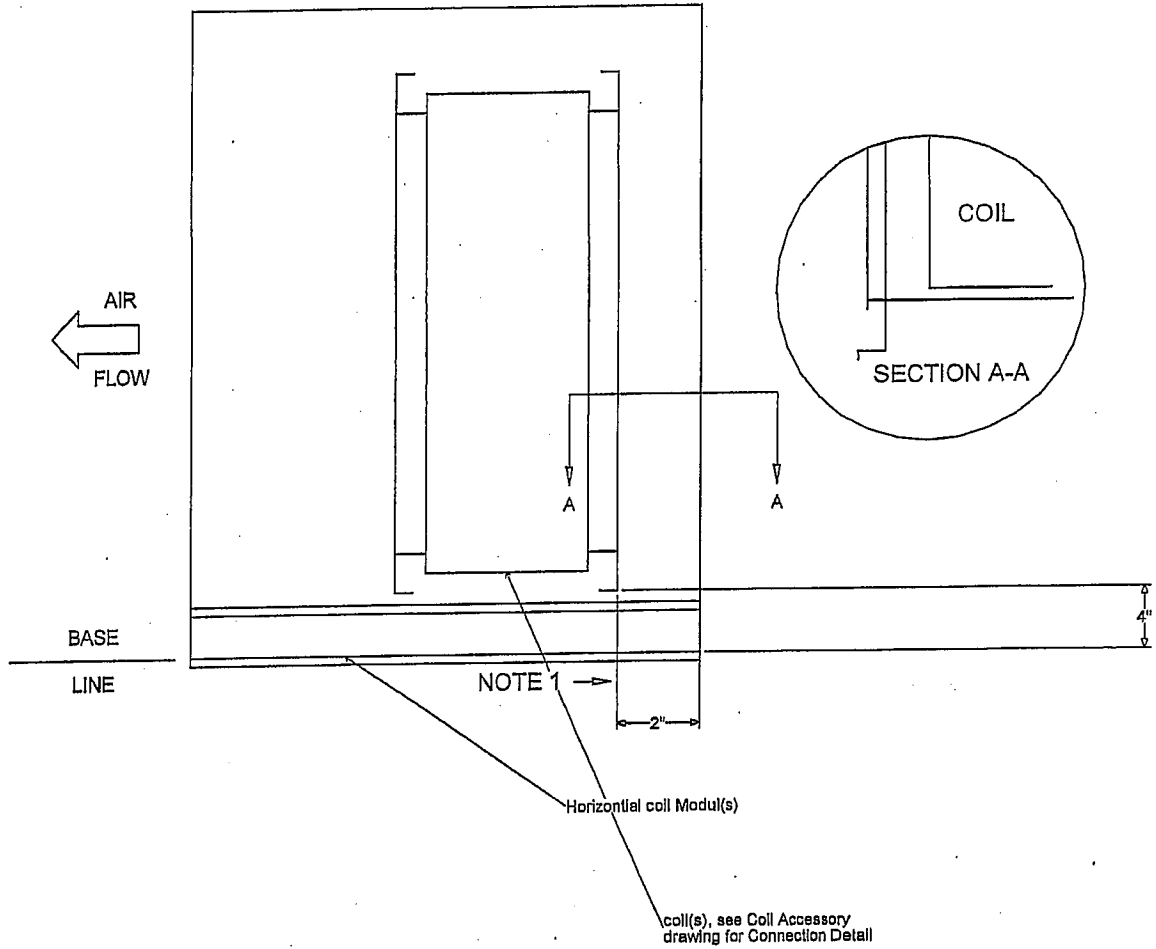
Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085

33" NS 1 ROW

HORIZONTAL AIR FLOW



Accessory - Outdoor Central Station Air Handler Units
COIL LOCATION DETAIL TSCB
 Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085



UNIT SIZE	COIL SIZE	QUANTITY	AREA ft2
14	UNIT	33 X 58	13.29

NOTES

1. THE HORIZONTAL DIMENSION FOR AN 8 ROW UU,UW,UF IN A MEDIUM COIL MODULE.

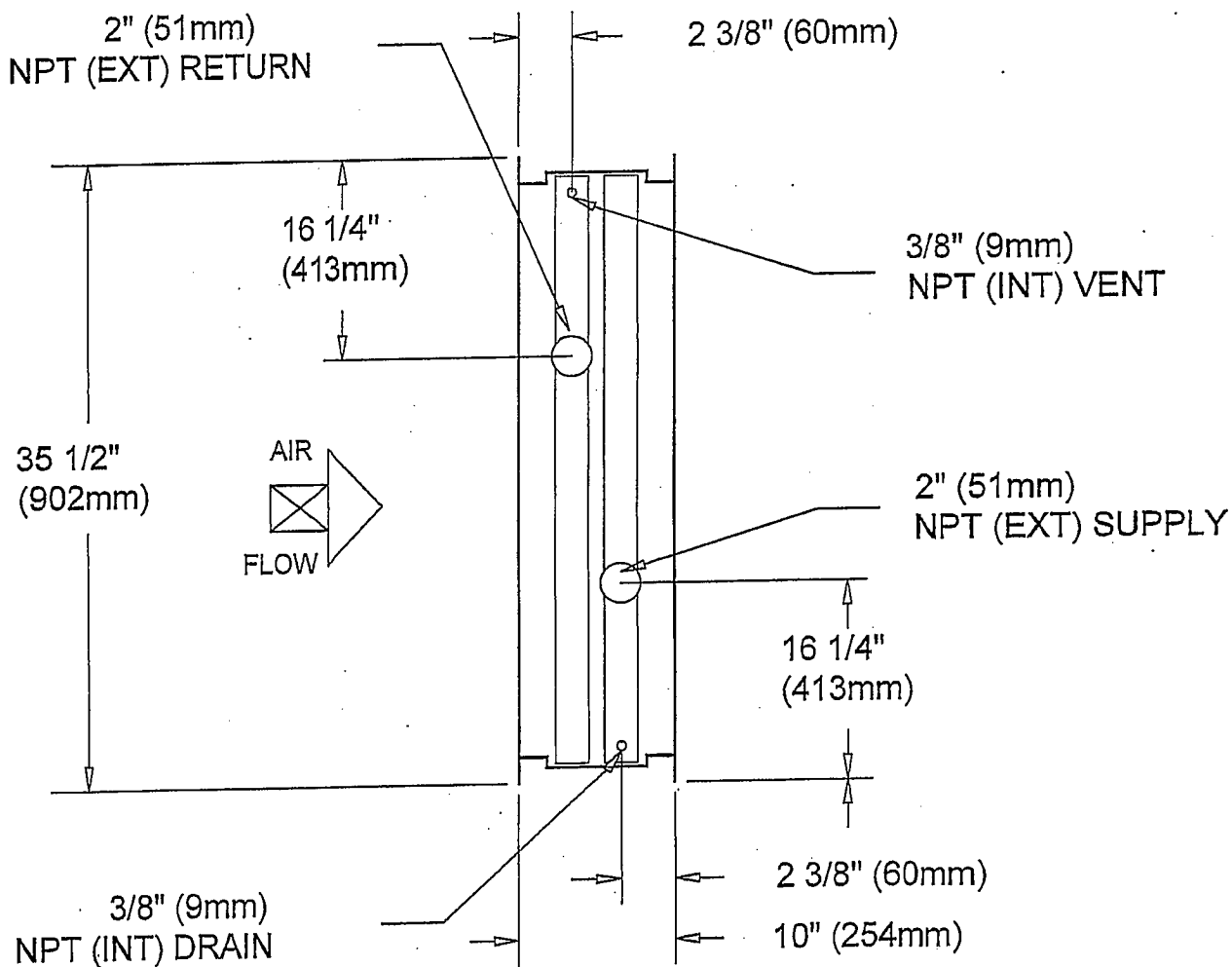
UNIT SIZES 3-30 MINUS 1/2".
 UNIT SIZES 35-40 MINUS 5/8".

Accessory - Outdoor Central Station Air Handler Units

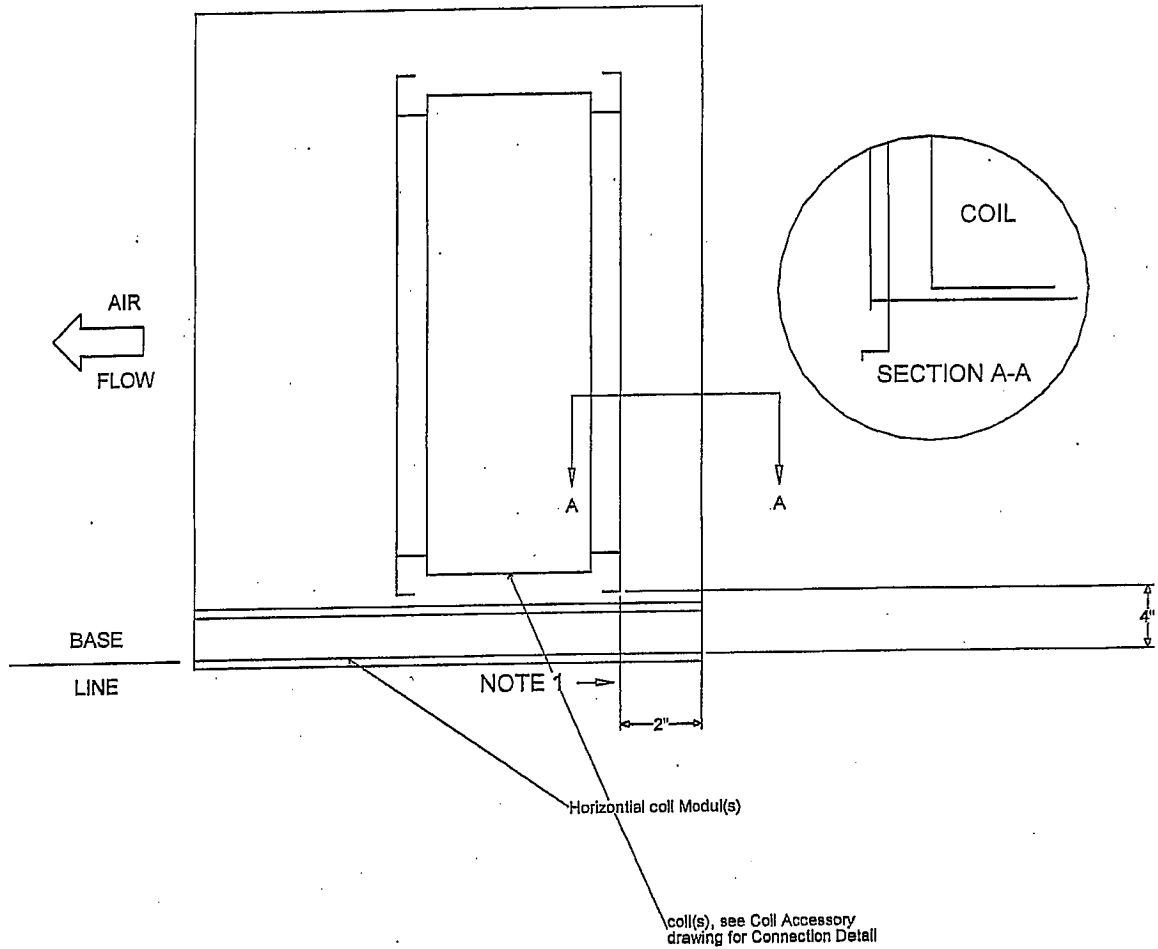
UW 6 ROW UNSTACKED COIL

Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085

35" UW 6 ROW



Accessory - Outdoor Central Station Air Handler Units
 COIL LOCATION DETAIL TSCB
 Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085



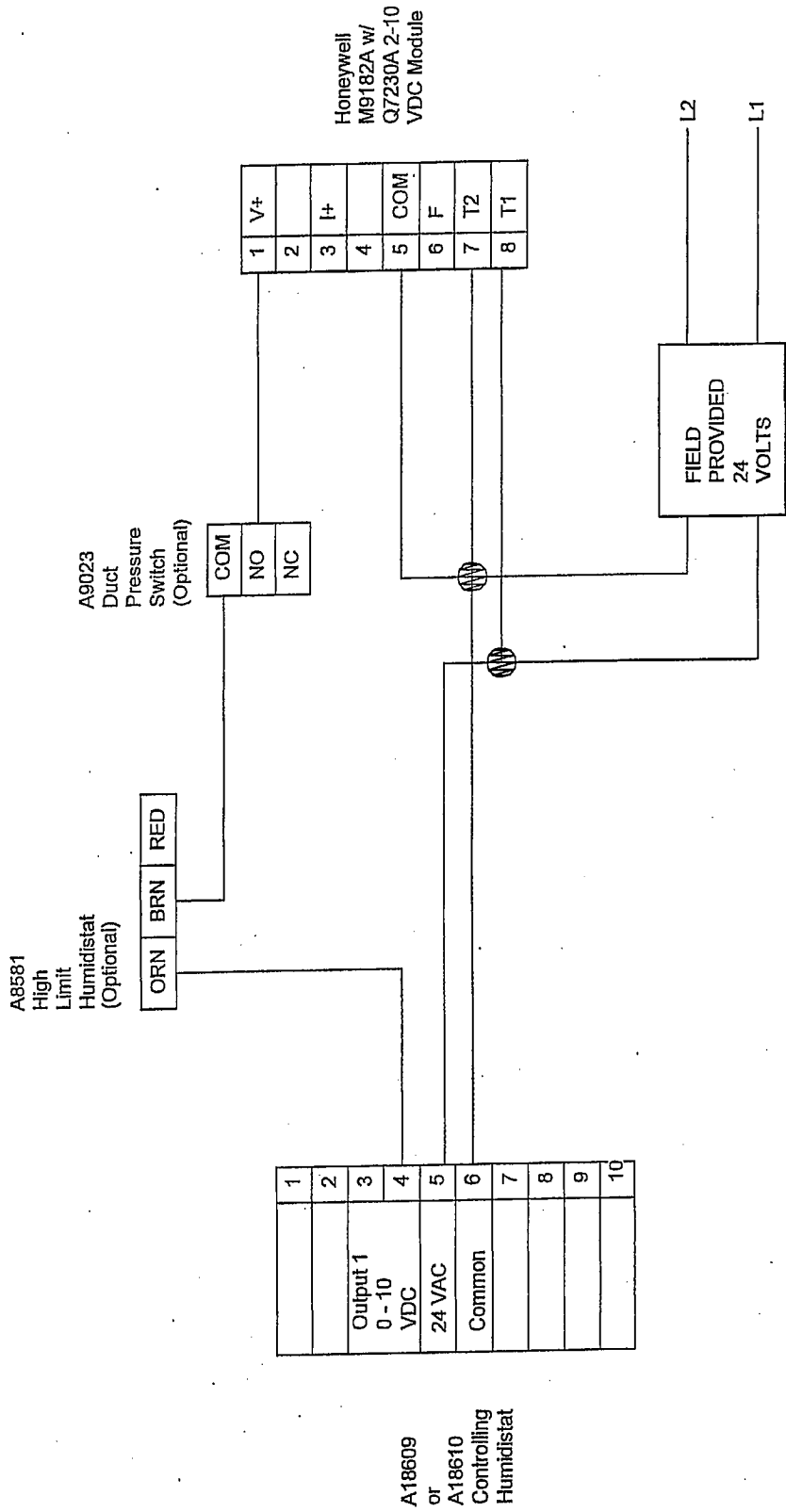
UNIT SIZE	COIL SIZE	QUANTITY	AREA ft ²
14	UNIT	35 X 58.5	14.22

NOTES

1. THE HORIZONTAL DIMENSION FOR AN 8 ROW UU,UW,UF IN A MEDIUM COIL MODULE.

UNIT SIZES 3-30 MINUS 1/2".
 UNIT SIZES 35-40 MINUS 5/8".

Field Wiring - Outdoor Central Station Air Handler Units
 Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085



FIELD WIRING

Field Wiring - Outdoor Central Station Air Handler Units
Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085

WARNING
 HAZARDOUS VOLTAGE!
 SERVICING OF THIS UNIT INVOLVES THE USE OF HIGH VOLTAGE. SERVICING MUST BE DONE BY A QUALIFIED ELECTRICIAN. FAILURE TO FOLLOW THESE PROCEDURES COULD RESULT IN DEATH OR SERIOUS INJURY.

AVERTISSEMENT
 TENSION DANGEREUSE!
 LE TRAVAIL DE SERVICE DE CETTE UNITÉ REQUIERT L'UTILISATION DE HAUTE TENSION. LE SERVICE DOIT ÊTRE RÉALISÉ PAR UN ÉLECTRICIEN QUALIFIÉ. LE NON-RESPECT DE CES PROCÉDURES PEUT CAUSER LA MORT OU DES BLESSURES GRAVES.

ADVERTENCIA
 VOLTAJE PELIGROSO!
 SERVICIOS EN ESTA UNIDAD INVOLUCRAN EL USO DE ENERGÍA ELÉCTRICA ALTA. LOS SERVICIOS DEBEN SER REALIZADOS POR UN ELECTRICISTA CALIFICADO. EL NO REALIZARLO ANTERIORMENTE PODRÍA CAUSAR LA MUERTE O SERIAS LESIONES PERSONALES.

AREA	DEVICE PREFIX	LOCATION CODE
1	HIGH VOLTAGE PANEL	LOCATION
2	LOW VOLTAGE PANEL (UNIT SCHEMATIC)	
3	AIR HANDLER SECTION	

BUSSMAN CLASS T DRIVE FUSE PART NO	HP	PART NO
1F40	1.1, 5	JUN-10
1F41	2	JUN-15
1F42	3	JUN-20
	5	JUN-25
	7.5	JUN-30
	10	JUN-50
	15	JUN-60
	20	JUN-80
	25, 30	JUN-125
	40	FMP-130B
	50	FMP-200B
	1, 1.5	JUS-5
	2, 3	JUS-10
	5	JUS-20
	7.5	JUS-25
	10	JUS-30
	15, 20	JUS-40
	25	JUS-50
	30	JUS-60
	40	JUS-80
	50	JUS-100
	60	JUS-125
	70	FMP-150B
	100	FMP-200B
	125	FMP-250B
	1, 1.5	JUS-5
	2, 3	JUS-10
	5, 7.5	JUS-20
	10	JUS-30
	15, 20	JUS-40
	25	JUS-50
	30	JUS-60
	40	JUS-80
	50	JUS-100
	60	JUS-125
	70	FMP-150B
	100	FMP-200B
	125	FMP-250B
	1, 1.5	JUS-5
	2, 3	JUS-10
	5, 7.5	JUS-20
	10	JUS-30
	15	JUS-40
	20	JUS-50
	25	JUS-60
	30	JUS-80
	40	JUS-100
	50	JUS-125
	60	JUS-150
	75	JUS-100
	100	FMP-125A
	125	FMP-175B

DEVICE DESIGNATION	DESCRIPTION
1CB11	VFD CIRCUIT BREAKER
1F40, 1F41, 1F42	AFC FUSES(S)
1K4	RTNEXH FAN START/STOP RELAY (FIELD SUPPLY)
1P13	PLUG (POWER TRANSFORMER-PRIMARY)
1S4	RTNEXH FAN STOP SWITCH
1TB13	TERMINAL STRIP CONTROL CIRCUIT
TUS	DRIVE CONTROLLER (AFC)
3B2	RTNEXH FAN MOTOR

- NOTES:**
- DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE CONTROL OPTION.
 - REF. CONTROL PANEL SCHEMATIC FOR SPECIFIC DETAIL.
 - ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), STATE AND LOCAL REQUIREMENTS. OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY. FIELD CONDUCTORS SHALL HAVE INSULATION RATING NOT LESS THAN 600V.
 - MINIMUM CIRCUIT AMPACITY AND POWER ISOLATION SWITCH SIZE DETERMINED FROM TOTAL LOAD OF TWO FANS AND CONTROL TRANSFORMER. THE MAXIMUM FUSE AND CIRCUIT BREAKER SIZE ARE BASED ON THE INVERTER LINE INPUT CURRENT FOR THIS FAN PER ARTICLE 430-2 OF THE NATIONAL ELECTRICAL CODE.
 - PROGRAM TERMINAL 18 AS RUN.
 - PROGRAM TERMINAL 27 INV. COASTING STOP.
 - CLOSES TO RUN IN VFD AUTO MODE OR BYPASS AUTO.
 - REMOVE JUMPER AND INSTALL FIELD SAFETY INTERLOCK.
 - FIELD SUPPLIED CONTACTS.
 - 1K4 RELAY ONLY PROVIDED WITH SELECTION OF FACTORY CONTROLS.

CAUTION
 USE COPPER CONDUCTORS ONLY.
 UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPES OF CONDUCTORS.
 FAILURE TO DO SO MAY CAUSE DAMAGE TO THE EQUIPMENT.

PRECAUCIÓN
 UTILICE ÚNICAMENTE CONDUCTORES DE COBRE!
 LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.
 SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.

ATTENTION
 UTILISE UNICAMENTE CONDUCTORES DE COBRE!
 LAS TERMINALES DE LA UNIDAD NO ESTÁN DISEÑADAS PARA ACEPTAR OTROS TIPOS DE CONDUCTORES.
 SI NO LO HACE, PUEDE OCASIONAR DAÑO AL EQUIPO.

Maine Medical - P6 Renovations
 Field Wiring - Outdoor Central Station Air Handler Units
 Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085

SPP - MCA & MOP VALUE CALCULATIONS

Transformers				
	200 V	230 V	460 V	575 V
100 VA	0.5	0.4	0.2	0.2
350 VA	1.8	1.5	0.8	0.6
500 VA	2.5	2.2	1.1	0.9
2000 VA	10.0	8.7	4.5	3.5

CHART #1				
NEC Motor FLA				
NEC				
Motor Hp	200 V	230 V	460 V	575 V
1	4.8	4.2	2.1	1.7
1.5	6.9	6.0	3.0	2.4
2	7.8	6.8	3.4	2.7
3	11.0	9.6	4.8	3.9
5	17.5	15.2	7.6	6.1
7.5	25.3	22.0	11.0	9.0
10	32.2	28.0	14.0	11.0
15	48.3	42.0	21.0	17.0
20	62.1	54.0	27.0	22.0
25	76.2	66.0	34.0	27.0
30	92.0	80.0	40.0	32.0
40	120.0	104.0	52.0	41.0
50	—	130.0	65.0	52.0
60	—	—	77.0	62.0
75	—	—	96.0	77.0
100	—	—	124.0	99.0

CHART #2				
VFD Line Input Current				

Motor Hp	200 V	230 V	460 V	575 V
1	6.3	6.3	2.5	2.3
1.5	6.3	6.3	2.5	2.3
2	7.3	7.3	3.4	2.6
3	10.4	10.4	4.8	3.8
5	16.8	16.8	8.3	5.9
7.5	23.8	23.8	10.6	9.2
10	32.2	32.2	14.2	11.1
15	48.3	48.3	21.0	16.6
20	61.9	61.9	27.6	21.4
25	76.2	76.2	34.0	26.3
30	92.0	92.0	41.0	31.2
40	117.0	101.3	53.0	39.9
50	—	126.6	64.0	50.6
60	—	—	77.0	60.4
75	—	—	104.0	75.0
100	—	—	126.0	92.4

CHART #3				
VFD Line Input Current				

Max Combined				
Motor Hp	200 V	230 V	460 V	575 V
1	6.3	6.3	2.5	2.3
1.5	6.9	6.9	3.0	2.4
2	7.8	7.3	3.4	2.7
3	11.0	10.4	4.8	3.8
5	17.5	16.8	8.3	6.1
7.5	25.3	23.8	11.0	9.2
10	32.2	32.2	14.2	11.1
15	48.3	46.3	21.0	17.0
20	62.1	61.9	27.6	22.0
25	76.2	76.2	34.0	27.0
30	92.0	92.0	41.0	32.0
40	120.0	104.0	53.0	41.0
50	—	130.0	65.0	52.0
60	—	—	77.0	62.0
75	—	—	104.0	77.0
100	—	—	126.0	99.0

NOTES:

- 1.) Starter full-load current based on NEC Table 430.250, 3-Phase, AC Motors, pg 70-311.
- 2.) All Starter / Starter configurations shares a transformer located in the supply fan high voltage box.
- 3.) All configurations have a transformer controlling wired lights, controls, and low limit options are located in supply fan high voltage box.

Continued on next page...

Field Wiring - Outdoor Central Station Air Handler Units
 Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085

SPP - MCA & MOP VALUE CALCULATIONS

NOTES:

- 1.) Starter full-load current based on NEC Table 430.250, 3-Phase, AC Motors, pg 70-311.
- 2.) All Starter / Starter configurations shares a transformer located in the supply fan high voltage box.
- 3.) All configurations have a transformer controlling wired lights, controls, and low limit options are located in supply fan high voltage box.

No Wired Lights & No Controls & No Low Limit Options

- Supply Fan [VFD w/o BP] & Return/Exhaust Fan [VFD w/o BP] (1)
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)]
- Supply Fan [VFD w/o BP] & Return/Exhaust Fan [VFD w/ BP] (1)
- or
- Supply Fan [VFD w/ BP] & Return/Exhaust Fan [VFD w/o BP] (1)
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [100 VA Transformer]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [100 VA Transformer]
- Supply Fan [VFD w/o BP] & Return/Exhaust Fan [Starter]
- or
- Supply Fan [Starter] & Return/Exhaust Fan [VFD w/o BP] (1)
- or
- Supply Fan [Starter] & Return/Exhaust Fan [Starter] (2)
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [350 VA Transformer]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [350 VA Transformer]
- Supply Fan [VFD w/ BP] & Return/Exhaust Fan [VFD w/ BP] (1)
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [100 VA Transformer] + [100 VA Transformer]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [100 VA Transformer] + [100 VA Transformer]
- Supply Fan [VFD w/ BP] & Return/Exhaust Fan [Starter]
- or
- Supply Fan [Starter] & Return/Exhaust Fan [VFD w/ BP] (1)
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [100 VA Transformer] + [350 VA Transformer]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [100 VA Transformer] + [350 VA Transformer]

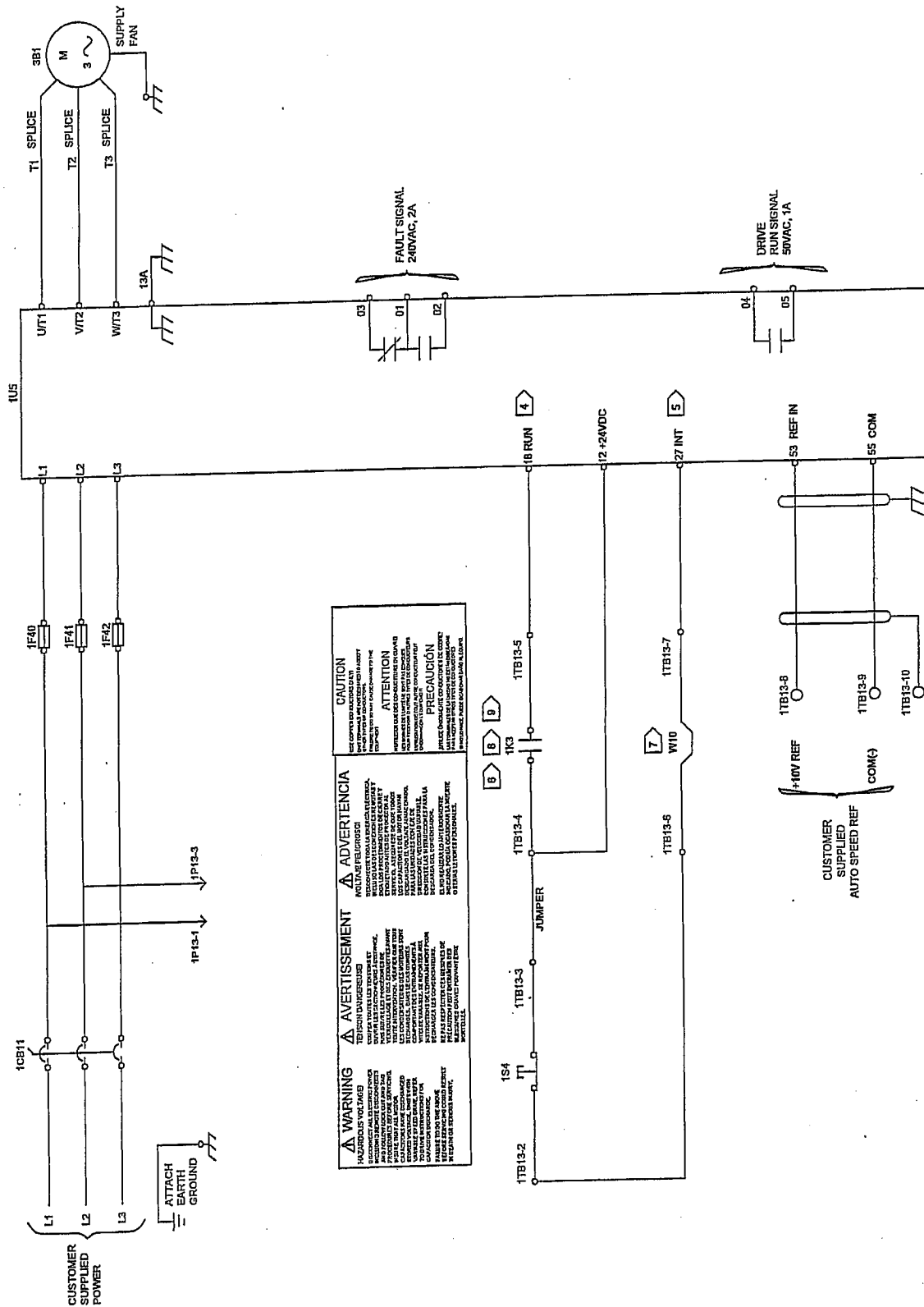
Controls &/or Low Limit Options (No Wired Lights)

- Supply Fan [VFD w/o BP] & Return/Exhaust Fan [VFD w/o BP] (1)
- or
- Supply Fan [VFD w/ BP] & Return/Exhaust Fan [VFD w/o BP] (1)
- or
- Supply Fan [Starter] & Return/Exhaust Fan [VFD w/o BP] (1)
- or
- Supply Fan [Starter] & Return/Exhaust Fan [Starter] (2)
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [500 VA Transformer]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [500 VA Transformer]
- Supply Fan [VFD w/o BP] & Return/Exhaust Fan [VFD w/ BP] (1)
- or
- Supply Fan [VFD w/ BP] & Return/Exhaust Fan [VFD w/ BP] (1)
- or
- Supply Fan [Starter] & Return/Exhaust Fan [VFD w/ BP] (1)
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [100 VA Transformer] + [500 VA Transformer]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [100 VA Transformer] + [500 VA Transformer]
- Supply Fan [VFD w/o BP] & Return/Exhaust Fan [Starter]
- or
- Supply Fan [VFD w/ BP] & Return/Exhaust Fan [Starter]
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [350 VA Transformer] + [500 VA Transformer]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [350 VA Transformer] + [500 VA Transformer]

Wired Lights Option

- Supply Fan [VFD w/o BP] & Return/Exhaust Fan [VFD w/o BP] (1)
- or
- Supply Fan [VFD w/ BP] & Return/Exhaust Fan [VFD w/o BP] (1)
- or
- Supply Fan [Starter] & Return/Exhaust Fan [VFD w/o BP] (1)
- or
- Supply Fan [Starter] & Return/Exhaust Fan [Starter] (2)
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [2000 VA Transformer]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [2000 VA Transformer]
- Supply Fan [VFD w/o BP] & Return/Exhaust Fan [VFD w/ BP] (1)
- or
- Supply Fan [VFD w/ BP] & Return/Exhaust Fan [VFD w/ BP] (1)
- or
- Supply Fan [Starter] & Return/Exhaust Fan [VFD w/ BP] (1)
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [100 VA Transformer] + [2000 VA Transformer]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [100 VA Transformer] + [2000 VA Transformer]
- Supply Fan [VFD w/o BP] & Return/Exhaust Fan [Starter]
- or
- Supply Fan [VFD w/ BP] & Return/Exhaust Fan [Starter]
 MCA = [1.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [350 VA Transformer] + [2000 VA Transformer]
 MOP = [2.25 x Motor (Hp maximum)] + [Motor (Hp minimum)] + [350 VA Transformer] + [2000 VA Transformer]

Maine Medical - P6 Renovations
 Field Wiring - Outdoor Central Station Air Handler Units
 Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085



Field Wiring - Outdoor Central Station Air Handler Units
Item: A1, A2 Qty: 2 Tag(s): AHU-042, AHU-085

DEVICE DESIGNATION	DESCRIPTION
1CB11	VFD CIRCUIT BREAKER
1CB12	SECONDARY CIRCUIT BREAKER
1F1, 1F2	CONTROL CIRCUIT PRIMARY FUSE(S)
1F40, 1F41, 1F42	AFC FUSE(S)
1F45	CONTROL CIRCUIT SECONDARY FUSE
1K3	SUPPLY FAN START/STOP RELAY (FIELD SUPPLY)
1P11	PLUG (POWER TRANSFORMER-SECONDARY)
1P13/1J13	PLUG/JACK (POWER TRANSFORMER-PRIMARY)
1S4	SUPPLY FAN STOP SWITCH
1TB13	TERMINAL STRIP CONTROL CIRCUIT
1U5	DRIVE CONTROLLER (AFC)
3B1	SUPPLY FAN MOTOR

BUSSMAN CLASS T DRIVE FUSE PART NO	HP	PART NO
AFC FUSE	1,1.5	JUN-10
	2	JUN-15
	3	JUN-20
	5	JUN-25
	7.5	JUN-30
	10	JUN-50
	15	JUN-60
	20	JUN-80
	25,30	JUN-125
	40	FWH-150B
50	FWH-200B	
1,1.5	JUS-6	
2,3	JUS-10	
5	JUS-20	
7.5	JUS-25	
10	JUS-30	
15,20	JUS-40	
25	JUS-50	
30	JUS-60	
40	JUS-80	
50	JUS-100	
60	JUS-125	
75	FWH-150B	
100	FWH-200B	
125	FWH-250B	
1,1.5	JIS-3	
2,3	JIS-6	
5,7.5	JIS-10	
10	JIS-15	
15	JIS-20	
20	JIS-30	
25	JIS-35	
30	JIS-45	
40	JIS-60	
50	JIS-80	
60	JIS-90	
75	JIS-100	
100	FWP-125A	
125	FWP-175B	

NOTES:

- DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE CONTROL OPTION. REF. CONTROL PANEL SCHEMATIC FOR SPECIFIC DETAIL.
- ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), STATE AND LOCAL REQUIREMENTS. OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY. FIELD CONDUCTORS SHALL HAVE INSULATION INSULATION RATING NOT LESS THAN 600V.
- THE MINIMUM CIRCUIT AMPACITY, THE MAXIMUM FUSE SIZE, AND DISCONNECT SIZE ARE CALCULATED BASED ON THE INVERTER INPUT LINE CURRENTS PER ARTICLE 430.2 OF THE NATIONAL ELECTRICAL CODE.
 - 4 PROGRAM TERMINAL 18 AS RUN.
 - 5 PROGRAM TERMINAL 27 INV. COASTING STOP.
 - 6 CLOSES TO RUN IN VFD AUTO MODE OR BYPASS AUTO.
 - 7 REMOVE JUMPER AND INSTALL FIELD SAFETY INTERLOCK.
 - 8 FIELD SUPPLIED CONTACTS.
 - 9 1K3 RELAY ONLY PROVIDED WITH SELECTION OF FACTORY CONTROLS.

AREA	DEVICE PREFIX	LOCATION CODE
1	HIGH VOLTAGE PANEL	LOCATION
2	LOW VOLTAGE PANEL (UNIT SCHEMATIC)	
3	AIR HANDLER SECTION	

WARNING
 HAZARDOUS VOLTAGE
 DISCONNECT ALL ELECTRICAL POWER
 BEFORE WORKING ON THIS EQUIPMENT.
 PRECAUTIONS MUST BE OBSERVED.
 ELECTRICAL SHOCK OR BURNING CAN OCCUR.
 ALWAYS USE PROPER SAFETY PROCEDURES.
 TO AVOID ACCIDENTS, ALWAYS WEAR
 APPROPRIATE PPE (PROTECTIVE EQUIPMENT).
 FAILURE TO DO THIS MAY
 RESULT IN PERSONAL INJURY OR DEATH.
 FOR FURTHER INFORMATION, CONTACT THE
 MANUFACTURER'S REPRESENTATIVE.

AVERTISSEMENT
 TENSION DANGEREUSE
 DÉCONNECTER TOUS LA BRÈSSE ÉLECTRIQUE
 AVANT DE TRAVAILLER SUR CE MATÉRIEL.
 DES ÉLECTRICIENS QUALIFIÉS DOIVENT
 ÊTRE EMPLOYÉS POUR RÉPARER CE MATÉRIEL.
 DES LÉZIONS PERSONNELLES POUVAIENT
 ÊTRE CAUSÉES PAR UN CONTACT AVEC
 LE MATÉRIEL ÉLECTRIQUE.
 POUR PLUS D'INFORMATIONS, CONTACTER
 LE REPRÉSENTANT DU FABRICANT.

ADVERTENCIA
 PELIGRO DE VOLTAJE
 DESCONECTAR TODA LA BRÈSSE ELÉCTRICA
 ANTES DE TRABAJAR EN ESTE EQUIPO.
 SÓLO PERSONAL CALIFICADO DEBE
 TRABAJAR EN ESTE EQUIPO.
 LAS LESIONES PERSONALES PUEDEN
 OCURRIR COMO RESULTADO DE UN
 CONTACTO CON EL EQUIPO ELÉCTRICO.
 PARA MÁS INFORMACIÓN, CONTACTAR
 AL REPRESENTANTE DEL FABRICANTE.

CAUTION
 HIGH VOLTAGE
 DISCONNECT ALL ELECTRICAL POWER
 BEFORE WORKING ON THIS EQUIPMENT.
 PRECAUTIONS MUST BE OBSERVED.
 ELECTRICAL SHOCK OR BURNING CAN OCCUR.
 ALWAYS USE PROPER SAFETY PROCEDURES.
 TO AVOID ACCIDENTS, ALWAYS WEAR
 APPROPRIATE PPE (PROTECTIVE EQUIPMENT).
 FAILURE TO DO THIS MAY
 RESULT IN PERSONAL INJURY OR DEATH.
 FOR FURTHER INFORMATION, CONTACT THE
 MANUFACTURER'S REPRESENTATIVE.

PRECAUCION
 ALTA TENSION
 DESCONECTAR TODA LA BRÈSSE ELÉCTRICA
 ANTES DE TRABAJAR EN ESTE EQUIPO.
 SÓLO PERSONAL CALIFICADO DEBE
 TRABAJAR EN ESTE EQUIPO.
 LAS LESIONES PERSONALES PUEEN
 OCURRIR COMO RESULTADO DE UN
 CONTACTO CON EL EQUIPO ELÉCTRICO.
 PARA MÁS INFORMACIÓN, CONTACTAR
 AL REPRESENTANTE DEL FABRICANTE.

ATTENTION
 HAUT TENSION
 DÉCONNECTER TOUS LA BRÈSSE ÉLECTRIQUE
 AVANT DE TRAVAILLER EN CE MATÉRIEL.
 SEUL DU PERSONNEL QUALIFIÉ DOIT
 TRAVAILLER SUR CE MATÉRIEL.
 DES LÉZIONS PERSONNELLES POUVAIENT
 ÊTRE CAUSÉES PAR UN CONTACT AVEC
 LE MATÉRIEL ÉLECTRIQUE.
 POUR PLUS D'INFORMATIONS, CONTACTER
 LE REPRÉSENTANT DU FABRICANT.

Field Installed Options - Part/Order Number Summary

This is a report to help you locate field installed options that arrive at the jobsite. This report provides part or order numbers for each field installed option, and references it to a specific product tag. It is NOT intended as a bill of material for the job.

Product Family - Outdoor Central Station Air Handler Units

Item	Tag(s)	Qty	Description	Model Number
A1	AHU-042	1	Outdoor T-Series Climate Changer air ha	TSCX014
A2	AHU-085	1	Outdoor T-Series Climate Changer air ha	TSCX014

Field Installed Option Description	Part/Ordering Number
Pleated media filters - MERV 8	
Humid. specialties-Vendor direct ship	
Humidity sensor	