

ARCHITECTS PC ONE KATHERINE STREET LITTLE FERRY, NJ 07643 201 641 0600, FAX 201 641 0626 WWW.AIARCHS.COM EDWARD ARCARI NY#020765 ANTHONY IOVINO NY#023349 Omdex Incorporated Consulting Engineers 21 Cross Avenue Midland Park, NJ 07432—1811 (201) 444—0753 FAX (201) 444—0839 MECHANICAL DEMOLITION PLAN SCALE: AS NOTED M.001 DATE: 08.25.2023 FILE: 2260\Current\ ©2023 arcari & iovino ARCHITECTS PC

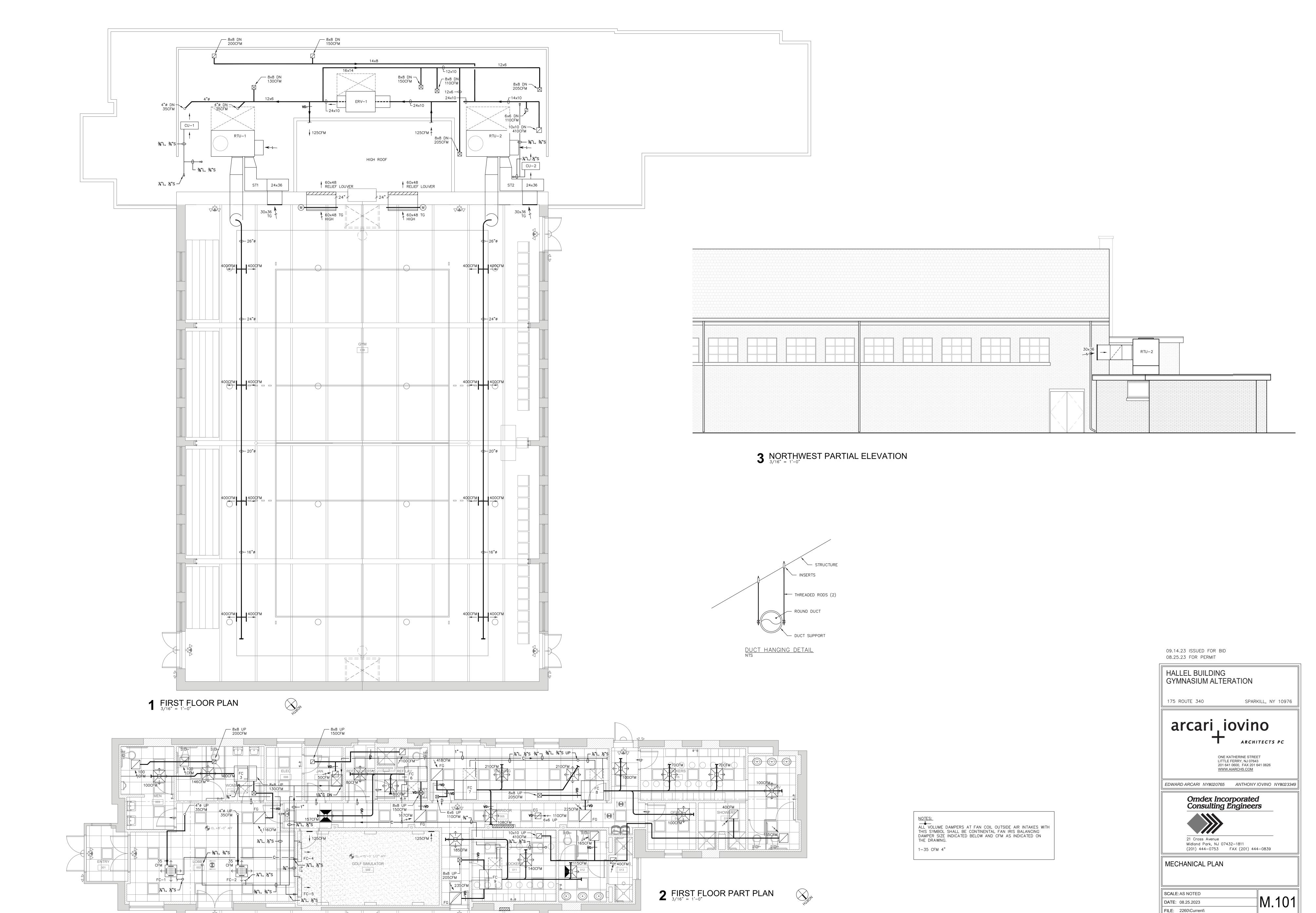
08.25.23 FOR PERMIT

09.14.23 ISSUED FOR BID

HALLEL BUILDING GYMNASIUM ALTERATION

SPARKILL, NY 10976

175 ROUTE 340



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	FAN SCHEDULE														
UNIT No.	SERVICE	LOCATION	TOTAL AIR CAP. CFM	EXTERNAL S.P. IN INCHES OF W.G.	FAN RPM	MOTOR HP / WATT	BHP	SONES	TYPE OF FAN	TYPE OF DRIVE	INTERLOCK WITH	VOLTS/PH/HZ	MANUFACTURER	MODEL No.	SEE NOTES
TEF-A	PUBLIC TOILETS	IN CEILING	100	0.25	650	29.7W	-	2.0	CEILING	DIRECT	RTU-1 & 2	120/1/60	GREENHECK	SPB1105S	1,2
TEF-B	LOCKER ROOM TOILETS	IN CEILING	205	0.375	1000	67W	-	2.0	IN-LINE	DIRECT	RTU-1 & 2	120/1/60	GREENHECK	CSP-A250	1,3

1. MULTIPLE UNITS, SEE PLAN. 2. CONTINUOUS VENTILATION COMPATIBLE. 3. WC-8x8 HOODED WALL CAP.

SCHEDULE FOR SIDEWALL SUPPLY AIR GRILLES										
CFM RANGE	NECK SIZE W X H INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE W X H INCHES	MANUFACTURER	MODEL No.					
125	8×8	600	9-3/4" X 9-3/4"	TITUS	300RS					

S	SCHEDULE FOR	R NON DUCTE	D TRANSFER AIR G	RILLES T.G.	
SYMBOL	NECK SIZE W X H INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE W X H INCHES	MANUFACTURER	MODEL No.
	22x22	250	24x24	TITUS	350RL

SCH	HEDULE FOR S	SPIRAL DUCT	MOUNTED SUPPLY	GRILLES (SG)	
CFM	NECK SIZE W X H INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE W X H INCHES	MANUFACTURER	MODEL No.
400	12"x10"	600	13-3/4" X 11-3/4"	TITUS	S300 FS

WITH EXTRACTOR SET AT 45° DN.

SCHE	DULE FOR CE	EILING MOUNT	ED SUPPL	Y AIR DIFFUS	SERS
CFM RANGE	NECK SIZE INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE INCHES	MANUFACTURER	MODEL No.
0-100	6"ø	600	24"X24"	TITUS	OMNI
101-200	8 " ø				
201-320	10"ø	Y	V	Y	V

ALL DIFFUSERS TO HAVE EQUALIZING GRID; NO DAMPER 2 WAY 3 WAY DIFFUSERS NECK SIZE BASED ON 200% & 133% OF INDICATED CFM RESPECTIVELY.

SCHE	EDULE FOR DI	JCT SYSTEM	RETURN/EXHAUST	AIR RE	GISTER	S		
CFM RANGE	NECK SIZE W X H INCHES	MAXIMUM NECK VELOCITY FPM	OVERALL SIZE W X H INCHES	MANUFA	ACTURER	MODEL No		
0-75	6"X6"	400	7-3/4" X 7-3/4"	TI.	Lnz	35!	5RL	
76-140	8"X8"		9-3/4" X 9-3/4"					
141-300	12"X12"		13-3/4" X 13-3/4"					
315-705	22"X22"	V	23-3/4" X 23-3/4"					
3000	30"X30"	550	31-3/4" X 31-3/4"		,	,	V	

ABBREVIATION	SYMBOL	DESCRIPTION	ABBRE VIATION	SYMBOL	DESCRIPTION
		FLEXIBLE DUCTWORK	TR		TOP REGISTER
	<u> </u>	NEW DUCTWORK	AHU		AIR HANDLING UNIT
		DUCTWORK WITH INTERNAL ACOUSTIC LINING	EF		EXHAUST FAN
		SUPPLY AIR DUCTWORK	CU		CONDENSING UNIT
	- 1-	RETURN AIR DUCTWORK	SP		STATIC PRESSURE
	T SD	SPLITTER DAMPER	UH		UNIT HEATER
	77	90 DEGREES DUCT ELBOW WITH DOUBLE TURNING VANES	ESP		EXTERNAL STATIC PRESSURE
		SUPPLY DUCT RISER UP	ПΑ		DUTSIDE AIR
		SUPPLY DUCT RISER DOWN	FF		FINISH FLOOR
		RETURN/EXHAUST DUCT RISER UP	AFF		ABOVE FINISH FLOOR
		RETURN/EXHAUST DUCT RISER DOWN	HC		HUNG CEILING
CD		FOUR WAY BLOW CEILING DIFFUSER	NIC		NOT IN CONTRACT
CD		THREE WAY BLOW CEILING DIFFUSER	FPM		FEET PER MINUTE
CD		TWO WAY BLOW CEILING DIFFUSER	NTS		NOT TO SCALE
CD		TWO WAY BLOW CEILING DIFFUSER	CFM	\$	CUBIC FEET PER MINUTE
CR		CEILING REGISTER		(2)	DUCT MOUNTED SMOKE DETECTI
VD	/	MANUAL VOLUME DAMPER	AD		ACCESS DOOR
FC	₩FC	FLEXIBLE CONNECTION	FD		FIRE DAMPER
BG		BOTTOM GRILLE		©	CARBON DIOXIDE SENSOR
DO	-	DUCT OPENING ABOVE HUNG CLG.		Ū	THERMOSTAT
SQ.FT.		RETURN AIR PATH MIN. SQ. FT. OPEN IF WALL GOES UP TO SLAB			
	-	DOOR LOUVER	CFM		CUBIC FEET PER MINUTE
		1" DOOR UNDERCUT			
TD _	-	TRANSFER DUCT & GRILLE	SD	<u></u> S	SMOKE DAMPER
TD		TRANSFER OPENING	MD		MOTORIZED DAMPER

	SCHEDULE OF ELBOW SILENCERS														
NO.	SERVICE	AIR QTY.	TRAP SIZE	TRAP SIZE MANUFACTURER		DYNAMIC INSERTION LOSS DB OCTAVE BAND									
NO.	SLIVVICE	CFM	P.D. IN INCHES OF W.G.	W x H IN.	MINITOT NOTONEK	MODEL NO.	1	2	3	4	5	6	7	8	
ST-1	RTU-1 RETURN	3200	0.13	24 × 32	BRD HUSHCORE	HD-EZ40MRE	10	15	18	20	26	31	30	25	
ST-2	RTU-2 RETURN	3200	0.13	24 × 32	BRD HUSHCORE	HD-EZ40MRE	10	15	18	20	26	31	30	25	

IAC 3ELBM-LFM ELBOW SILENCERS ARE APPROVED EQUAL.

	SCHEDULE OF ENERGY RECOVERY VENTILATOR BASED ON CONSERV NEWTON METALLO 732-893-8585																
UNIT	SERVICE	LOCATION	SUPPLY RETURN ATION AIR	ETURN AIR DB/WB		RETURN LEAVING AIR DB/WB AIR TEMP DB/WB			TOTAL CAPACITY MBH		ELECTRICAL DATA		4	UNIT MODEL No.	WT. LBS	SEE NOTES	
NO.			CAPACITY CFM	COOLING	HEATING	COOLING	HEATING	COOLING	HEATING	COOLING	HEATING	VOLTS/PH/HZ	MCA	моср			
ERV-1	OUTSIDE AIR	ROOF	995/995	95/75	10	75/63	70	80.4/66.6	54	32	47	208/1/60	12	15	N2XH	700	1-4

1. PROVIDE ECM MOTORS, MOTORIZED DAMPERS STARTER WITH MANUAL ADJUSTMENT, NON-FUSED DISCONNECT, 24v TRANSFORMER/RELA

2. MERV 8 TA FILTERS.

3. INSTALL ON ROOF CURB 4. INTERLOCK WITH TRANE CONTROL PANEL

12	15	N2XH	700	1-4
LAY P	ACKAGE.			

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF
INDOOR UNIT SCHEDULE

	System Tag	System 1	System 1	System 1	System 1	System 1	System 1	System 2	System 2	System 2
	Tag Reference	FC-1	FC-2	FC-3	FC-4	FC-5	FC-6	FC-7	FC-8	FC-9
	Room Name									
Ø	M-NET Address	1	2	3	4	5	6	7	8	9
al Data	Model	TPLFYP008FM140A	TPLFYP008FM140A	TPEFYP006MS140C	TPKFYP008HM142A	TPKFYP008HM142A	TPEFYP006MS140C	TPEFYP018MS140C	TPEFYP018MS140C	TPEFYP018MS140C
omina	Туре	Ceiling-Cassette (Four-Way)	Ceiling-Cassette (Four-Way)	Ceiling-Concealed (Ducted)	Wall -Mounted	Wall -Mounted	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)	Ceiling-Concealed (Ducted)
2	Nominal Cooling Capacity (BTU/h)	8,000	8,000	6,100	8,000	8,000	6,100	18,100	18,100	18,100
	Nominal Heating Capacity (BTU/h)	9,000	9,000	6,800	9,000	9,000	6,800	20,100	20,100	20,100
σ	Cooling Design Entering Temp DB/WB (°F) / [Water in temp]	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0	80.0/67.0
ditions	Heating Design Entering Temp DB/WB (°F) / [Water in temp]	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Conc	Cooling Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
esign	Heating Diversity Full/Partial (See Note 5, 6)	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND	FULL DEMAND
Ŏ	Refrig Pipe Dim Liquid/Suction (inch)	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2	1/4 / 1/2
	Cooling Total Capacity (BTU/h)	8,010.7	8,010.7	6,108.1	8,010.7	8,010.7	6,108.1	18,124.1	18,124.1	18,124.1
Data	Cooling Sensible Capacity (BTU/h)	6,221.6	6,221.6	5,143.2	6,815.5	6,815.5	5,143.2	12,805.8	12,805.8	12,805.8
lance	Heating Capacity (BTU/h)	8,996.1	8,996.1	6,797.1	8,996.1	8,996.1	6,797.1	20,091.3	20,091.3	20,091.3
erforn	Estimated Cooling Coil LAT (°F) / [LWT]	61.3	61.3	60.3	64.4	64.4	60.3	57.2	57.2	57.2
ď	Estimated Heating Coil LAT (°F) / [LWT]	96.5	96.5	95.5	90.2	90.2	95.5	105.1	105.1	105.1
	Fan Speed Setting	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH	HIGH
er Flow ta	Peak Fan Airflow (cfm) / [Design gpm]	315	315	247	413	413	247	530	530	530
/ Water Data	Max Fan ESP Setting 208V/230V (IN WG)			0.2/0.2			0.2/0.2	0.2/0.2	0.2/0.2	0.2/0.2
Fan	Sound Pressure Per Fan Speed 208V/230V (dBA)	26-30-33	26-30-33	22-24-28/22-24-28	34-39-43	34-39-43	22-24-28/22-24-28	30-34-37/30-34-37	30-34-37/30-34-37	30-34-37/30-34-37
	Voltage / Phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase	208/230V/1-phase
al Data	Power Cooling 208V/230V (kW)	0.020	0.020	0.050	0.030	0.030	0.050	0.090	0.090	0.090
Electrica	Power Heating 208V/230V (kW)	0.02	0.02	0.03	0.03	0.03	0.03	0.07	0.07	0.07
Ë	Electrical MCA/MFS	0.28/0.28/15	0.28/0.28/15	0.47/0.50/15	0.38(208V)/0.38(230V)/15	0.38(208V)/0.38(230V)/15	0.47/0.50/15	1.20/1.33/15	1.20/1.33/15	1.20/1.33/15
	Condensate Removal Rate (gal/hr)	0.25	0.25	0.12	0.15	0.15	0.12	0.66	0.66	0.66
	Actual Port Assignments									
Notes / Options	Applicable System Notes - See Notes Below	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5	1, 2, 3, 4, 5

Notes & Options:

1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB) 2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB)

3 See outdoor unit schedule for outdoor ambient conditions, connected capacity, and other factors associated with corrected capacities

4 See schematic piping/control diagram for indication of required indoor unit remote controllers, system controllers, and integration devices. 5 Full demand corrected capacity includes de-rate associated with indoor vs. outdoor connected capacity indicated on outdoor unit schedule for associated system.

Partial corrected capacity assumes sufficient diversity exists such that the connected capacity de-rate does not apply. It is the designer's responsibility to ensure "Diamond System Builder" is set in the appropriate output capacity setting (full demand/partial demand) prior to generating this schedule.

6 It is recommended to always base heating corrected capacity on full demand. 7 Provide Condensate Pump for Wall Mounted Indoor Units up to 120,000 BTUs 100-240VAC

MITSUBISHI ELECTRIC TRANE HVAC US: CITY MULTI VRF OUTDOOR UNIT SCHEDULE

System Tag		System 1	System 2
Tag Reference		ACCU-1	ACCU-2
Nominal Data	M-NET Address	51	57
	Model Number	NTXMSM60A182AA	NTXMSM60A182AA
	Modules	P60	P60
	Nominal Cooling Capacity (BTU/h)	60,000	60,000
	Nominal Heating Capacity (BTU/h)	66,000	66,000
	Cooling Efficiency IEER/EER [SEER]	0 / 12.2 [18.9]	0 / 12.2 [18.9]
	Heating COP @ 47°F [HSPF]	3.9 [11.35]	3.9 [11.35]
	Nom System Connected Capacity (% of NOM)	73.3 %	90.0 %
Design Conditions	Design Cooling Outdoor Temp DB (°F)	95.0	95.0
	Design Heating Outdoor Temp WB (°F)	43.0	43.0
	Max Pipe Length from BC or 1st Joint (feet)	0.0	0.0
	Refrig Pipe Dim High/Low Pressure (inch) (See Note 4)	3/8 / 3/4	3/8 / 3/4
Performance Data	Corrected Cooling Total Capacity (BTU/h)	60,080.0	60,080.0
	Corrected Heating Capacity (BTU/h)	64,652.0	64,652.0
	Sound Pressure (dBA)	58/59	58/59
Compres sor Data	Compressor Type	SCROLL	SCROLL
	Compressor Quantity	1	1
	Preliminary Added Field Charge (See Note 5)	5.6	5.6
Electrical Data	Voltage / Phase	208/230V / 1-phase	208/230V / 1-phase
	MCA 208/230 or [460V]	36	36
	Recommended Fuse Size (RFS)	40	40
	MOCP	50	50
Notes / Options	Applicable System Notes - See Notes Below	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9

Notes & Options: 1 Nominal cooling capacities are based on indoor coil EAT of 80/67°F (DB/WB), outdoor of 95°F (DB)

2 Nominal heating capacities are based on indoor coil EAT of 70°F (DB), outdoor of 43°F (WB) 3 Efficiency values for EER, IEER, COP are based on AHRI 1230 test method for mixture of ducted & non-ducted indoor units.

4 For systems with multiple modules, refrigerant pipe dimensions indicate total system combined piping downstream of module twinning. 5 Added field charge listed is in addition to factory charge, this must be updated based upon final as-built piping layout.

6 Factory representatives shall review the project prior to and throughout the installation of CITY MULTI equipment 7 Factory representatives shall startup and commission CITY MULTI equipment upon completion of equipment installations

8 Factory representatives shall provide on-site assistance for the BMS integration of the CITY MULTI equipment 9 Factory representatives shall provide end-user training on the CITY MULTI equipment upon completion of the installation of equipment

NEW ROOFTOP UNIT SCHEDULE DESIGNATION SERVES GYM DISCHARGE HORIZONTAL THREE STAGE COOLING THREE STAGE COOLING CONTROL MULTI SPEED FAN MULTI SPEED FAN AIR QUANTITY (CFM) EXT. S.P. (IN. WG) DIRECT DRIVE DRIVE 3 HP MOTOR 3 HP MOTOR COOLING COIL: EAT DB/WB (°F.) LAT DB/WB (°F.) 57.2/55.5 57.2/55.5 TOTAL LOAD (MBH) SENSIBLE LOAD (MBH) OUTSIDE AIR (CFM) HEATING CAPACITY: HEATING INPUT (MBH) HEATING OUTPUT (MBH) NO. OF STAGES ELECTRICAL DATA: VOLTS/PHASE/HZ 208/3/60 208/3/60 COMPRESSOR NO. 1 (RLA) COMPRESSOR NO. 2 (RLA) OUTDOOR FAN QTY. OUTDOOR FAN (FLA EA.) INDOOR FAN (FLA) MCA (AMPS) (UNIT) MAX. FUSE SIZE (AMPS) APPROX. WEIGHT (LBS.) EER / SEER OR IEER 11.0/14.6 11.0/14.6 MANUFACTURER MODEL NUMBER YSJ120A350M YSJ120A350M 1 THROUGH 11 SEE NOTES THROUGH 11 NOTES: Included System Options
1. MODULATING HOT GAS REHEAT — FAC 2. HINGED ACCESS DOORS - FAC 3. 2 IN MERV 8 FILTERS — FAC 4. STANDARD ECONOMIZER — FAC BAROMETRIC RELIEF BY CONTRACTOR DISCONNECT - FAC MULTISTAGE VOLUME - FAC 8. ROOF CURB 9. HUMIDITY SENSOR — FLD 10. GFCI — FLD WIRED/FAC 11. BACNET COMPATIBLE 7-DAY PROGRAMMABLE THERMOSTAT Standard Features 1. Crankcase Heater

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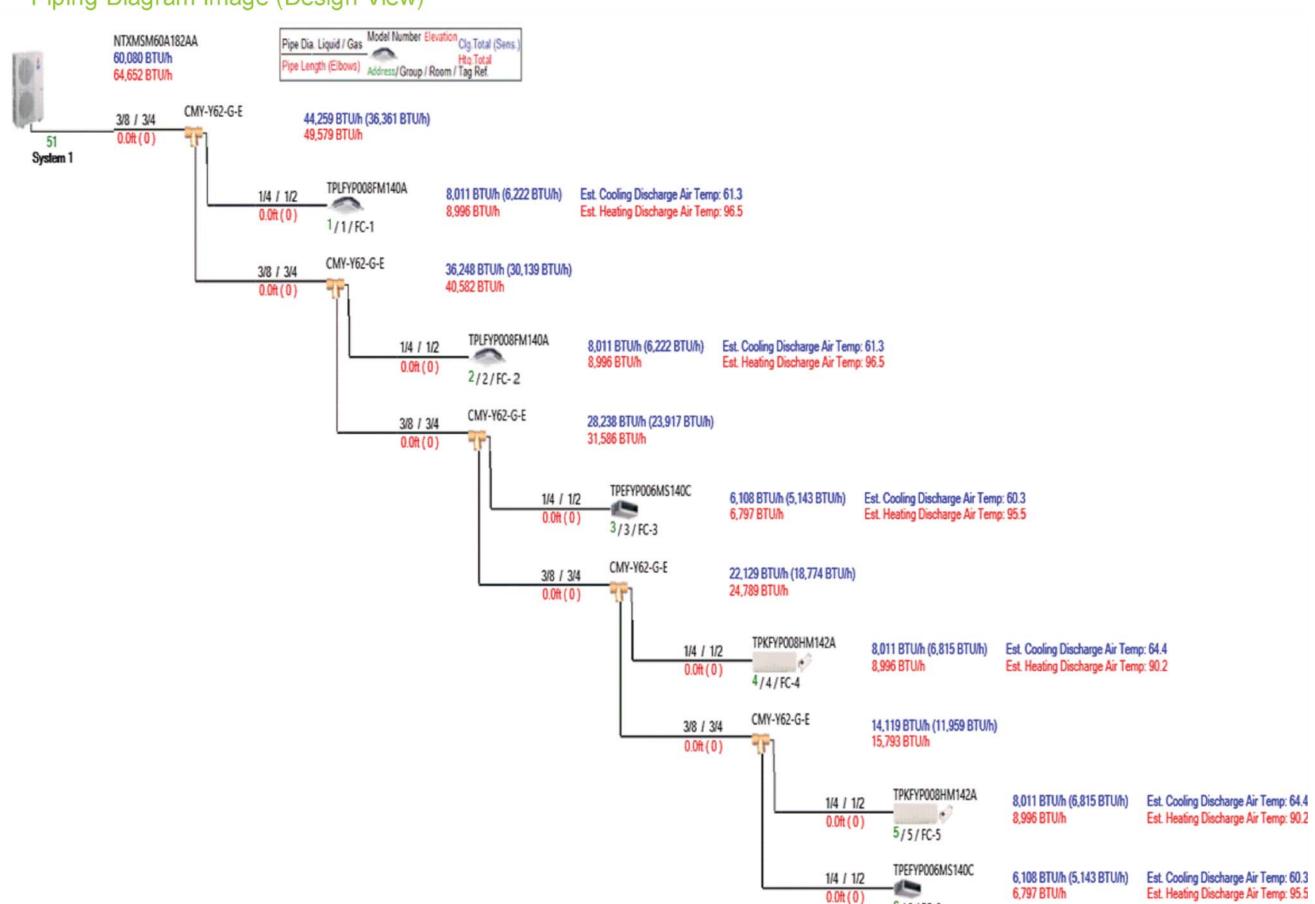
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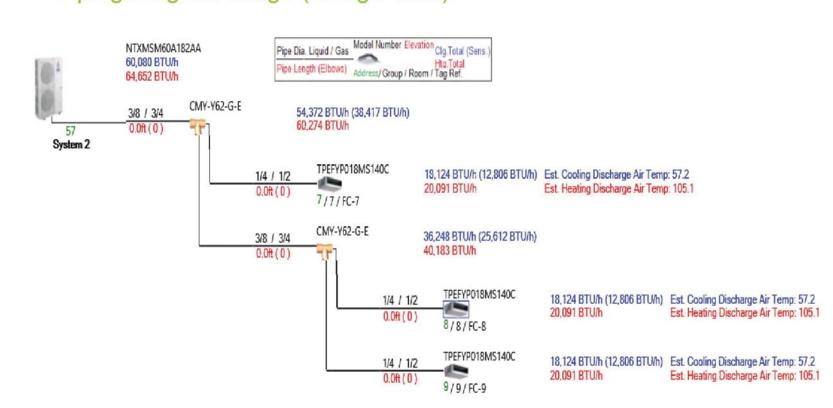
Centralized System - 1 : System 1

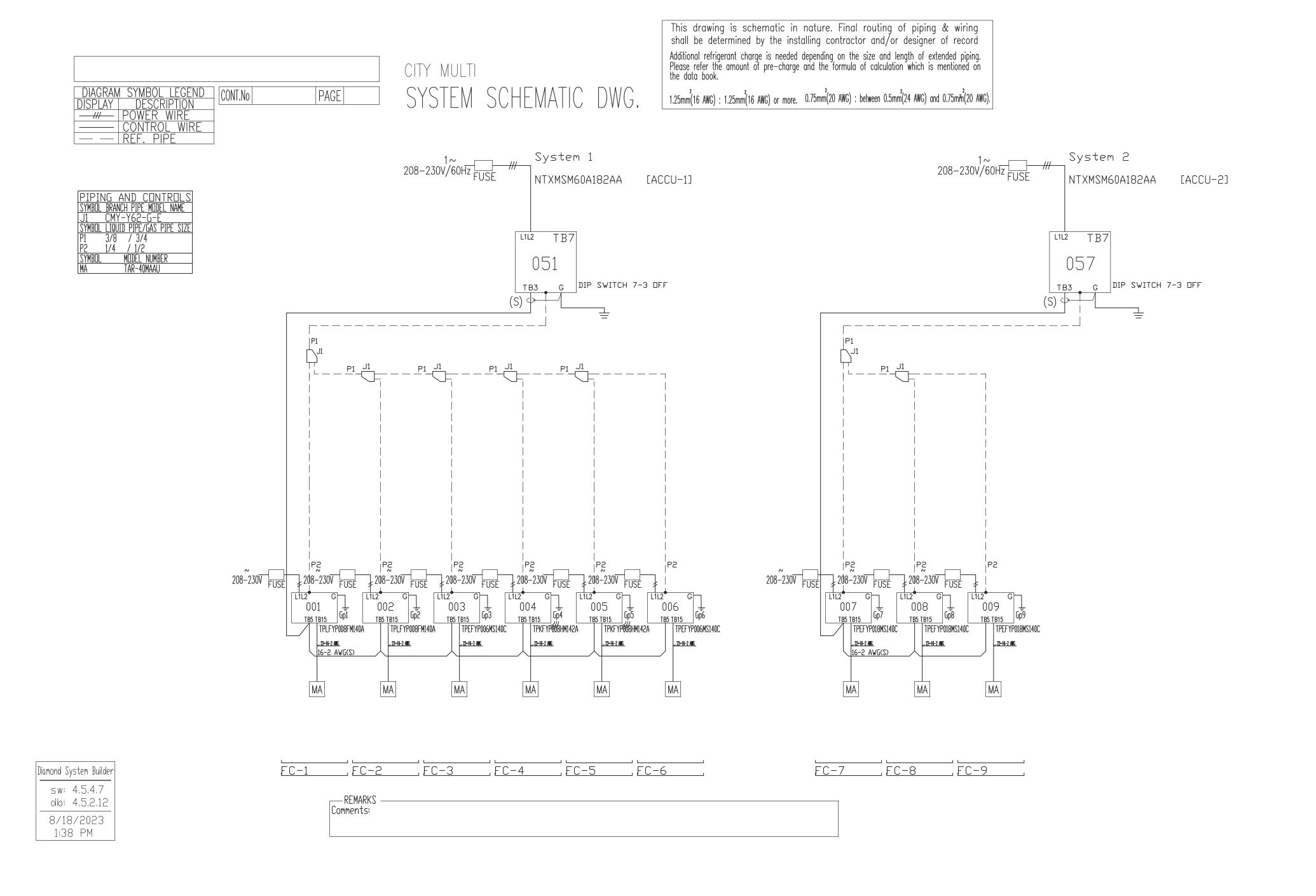
Piping Diagram Image (Design View)



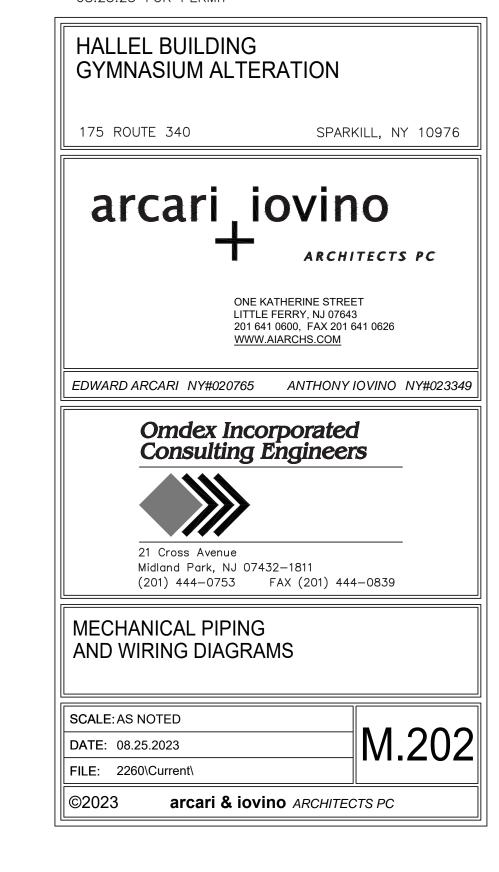
Centralized System - 1 : System 2

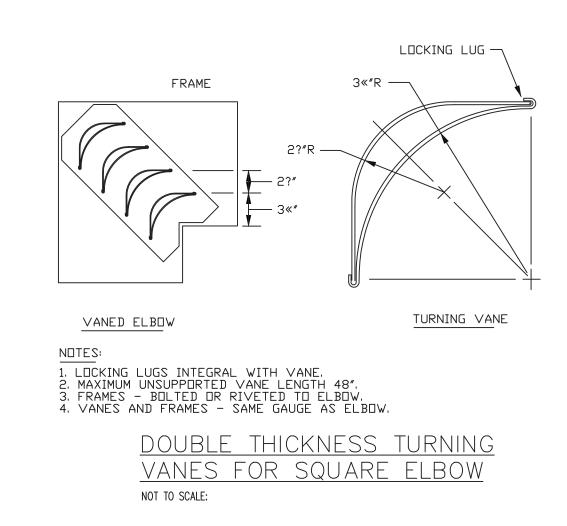
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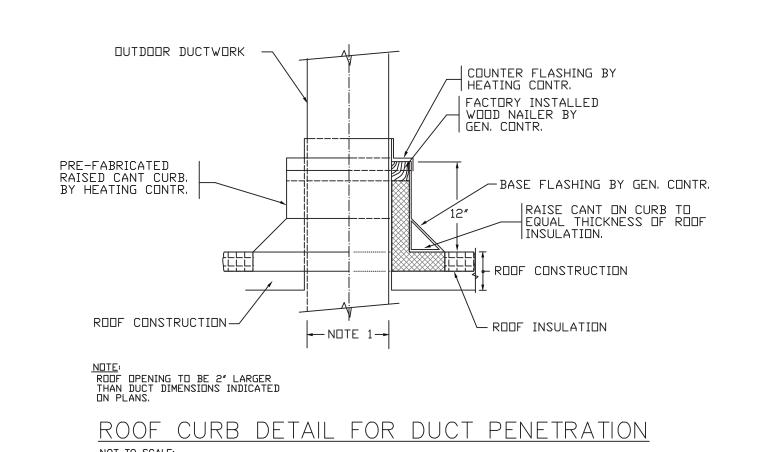


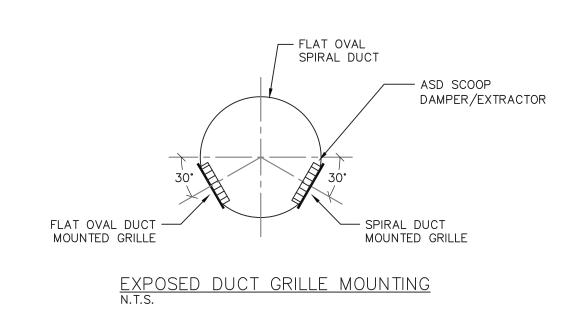


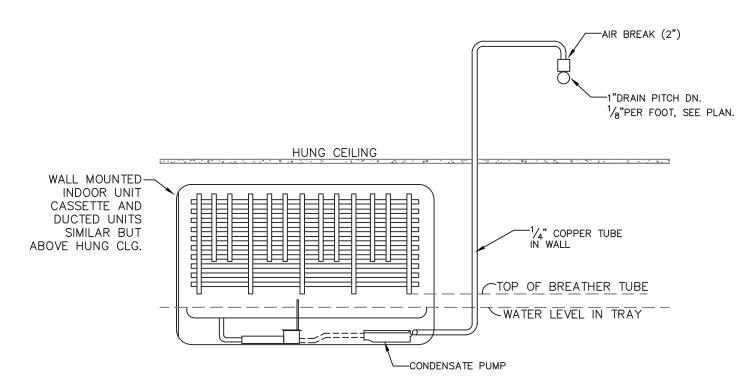
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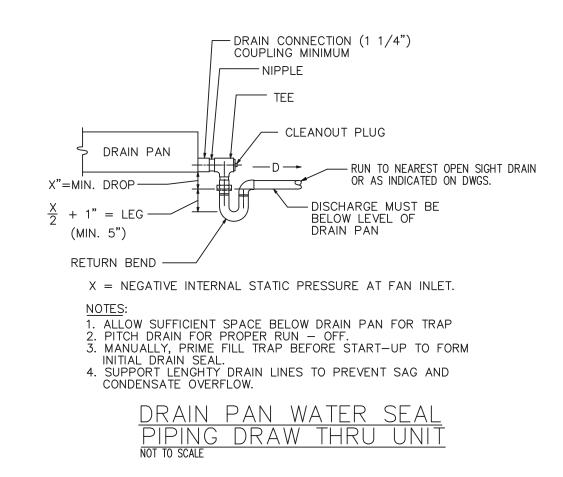


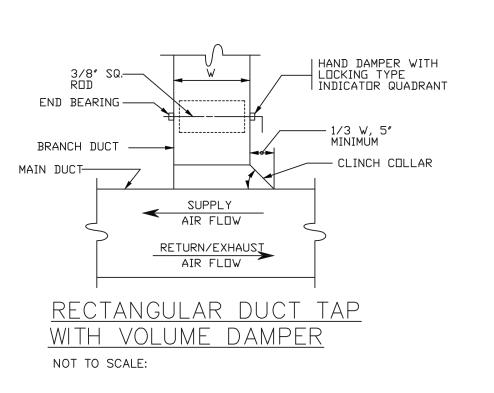


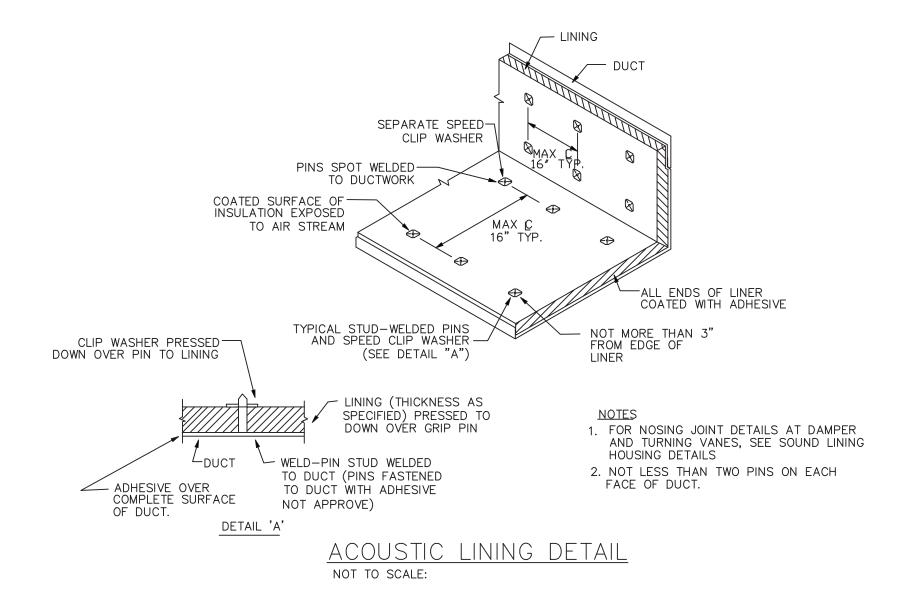


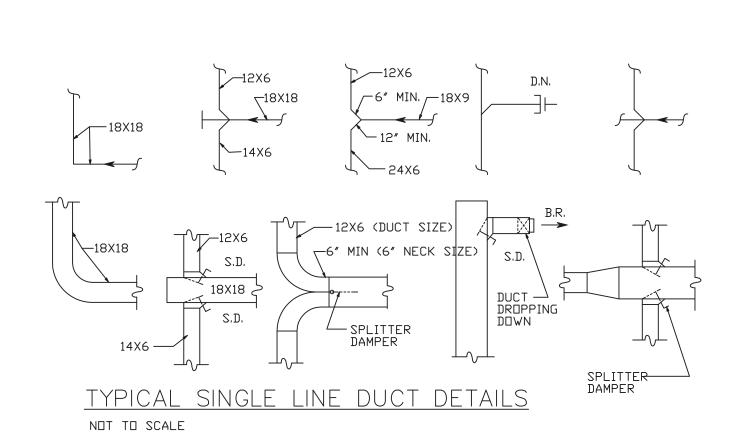
ENSURE THAT END OF DISCHARGE TUBE IS HIGHER THAN WATER LEVEL IN EVAPORATOR DRAIN PAN. END OF TUBE MUST EMPTY INTO LARGER DIAMETER DRAIN PIPE AND MUST HAVE AIR BREAK TO PREVENT SIPHONING.

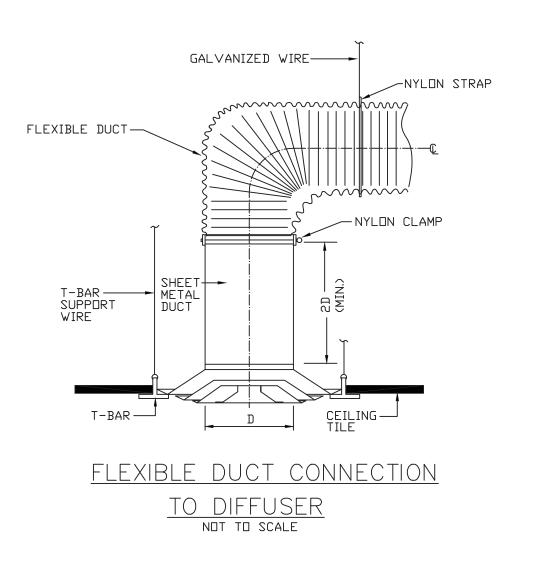
INDOOR UNIT CONDENSATE REMOVAL DETAIL NO SCALE

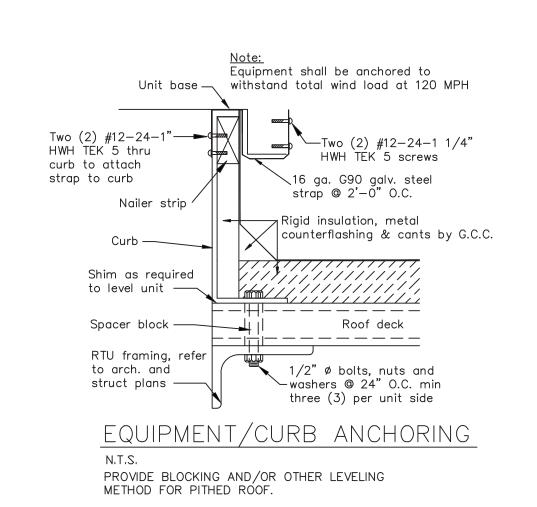














- PART 1 _ GENERAL
- 1.1 GENERAL CONDITIONS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this Section; consult them in detail for applicable instructions.

B. Manufacturers referenced in the technical specifications are for the purpose of establishing a standard of quality. Alternate manufacturers providing the same quality equipment will be given consideration by the Engineer and Architect if they are notified in writing. 1.2 DESCRIPTION

A. WORK INCLUDED: Provide all labor, materials, equipment, plant, tools, and management services for proper and complete execution of all HVAC work. Without restricting the generality of the foregoing, the following items of work are included:

1. Furnish and install (2) two electric cooling gas heating RTUs for the volleyball court. 2. Furnish and install (2) two variable refrigerant flow systems for the first floor lobby, locker rooms and golf simulator consisting of two separate outdoor heat pumps, (9) nine fan coil units and one

rooftop energy recovery unit. 3. Furnish and install all ductwork, duct insulation and air outlets as shown on the drawings or as 4. Furnish and install Fire Dampers and ceiling radiation dampers in all fire rated walls and ceilings whether or not shown on drawings

Furnish and install volume dampers as shown on the drawings and/or as required to balance system.

Furnish and install all refrigerant and condensate piping, drain pans, accessories, traps and insulation.

Provide shop drawings for all ductwork, controls, mechanical equipment and accessories being 9. Furnish and install all necessary sleeves, inserts, hanger and supports. 10. Furnish and install complete electric/electronic automatic control systems including all wiring as

2. Obtaining and paying for all necessary permits, inspections and certificates required in connection with 13. Guarantee all work for a period of one year from the final date of acceptance.

1.3 CODES AND QUALITY ASSURANCE

14. As built drawings.

Furnish and install elbow silencers.

UL — Underwriters' Labs.

such examination

Contractor's expense.

Requirements of the Owner's Insurance Underwriter

A. The Contractor is responsible for performing all work in a neat, workmanlike manner. All operating procedures shall be strictly adhered to. Each Bidder shall visit the site and become informed as to the conditions of the premises and the extent and character of the work required. No consideration will be granted for any alleged misunderstanding of the Work to be done. B. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

C. All HVAC work, equipment and apparatus shall conform to the most recent requirements of the

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NY2020 — Building Code of New York State
2018 International Building Code
2018 International Mechanical Code
2018 International Fuel Gas Code
2018 International Energy Conservation Code
ADA — Americans with Disabilities Act
Local Codes and Utility Requirements
NFPA - National Fire Protection Association
NSPC — National Standard Plumbing Code
AMCA _ Air Movement and Control Association, Inc.
SMACNA _ Sheet Metal and Air Conditioning Contractors National Association, Inc.
ASHRAE _ American Society of Heating, Refrigerating, and Air_Conditioning Engineers, Inc.
ASTM _ American Society for Testing and Materials
NEC — National Electrical Code of the NFPA 2005
ASME — American Society of Mechanical Engineers
AABC — Associated Air Balance Council
ARI — Air Conditioning and Refrigeration Institute
National Board of Fire Underwriters
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Without additional cost to the Owner, provide such other labor and materials as are required to complete the Work of this Section in accordance with the regulations of the current editions of these codes, and the requirements of governmental agencies having jurisdiction, regardless of whether such materials and labor are called for elsewhere in these Specifications. These rules, regulations and codes shall govern as a minimum standard. In the event of conflict with the Contract Drawings or Specifications requiring workmanship or material of a higher quality than required by the above_mentioned rules, regulations, codes and authorities, the most stringent of these documents shall govern.

D. During this work, the Contractor shall be responsible for maintaining safety among persons in his employ in accordance with the standards set by the OCCUPATIONAL SAFETY AND HEALTH ACT of 1970. The Engineer and Architect shall be held harmless for any accident, injury, or any other incident resulting from non_compliance with these or any other standards.

E. Drawings are schematic with regard to exact locations and dimensions. Review all Drawings provided, including; Architectural and Structural Drawings, reflected ceiling plans, Plumbing, HVAC, and Electrical Drawings, to confirm all requirements and identify all constraints. The Contractor shall coordinate his work with that of all other trades to avoid conflicts. It is the Contractor's responsibility to confirm that all equipment will fit. Any discrepancies or inconsistencies are to be reported immediately to the Architect and Engineer for clarification. Refer to the actual dimensions on the Architectural Drawings and successive related shop drawings. Exact locations of diffusers, registers, thermostats shall be directed by F. Examination of the site shall be made by the Contractor, who shall compare it with the Drawings and Specifications and who shall satisfy himself as to the conditions under which the work is to be performed. No allowance shall subsequently be made for any extra expense incurred due to failure or neglect to make

G. During the execution of work under this Contract the Contractor shall be responsible for protecting any equipment or structures in the work and adjacent areas. H. Secure and pay for required authorizations from governmental agencies having jurisdiction.

I. All Work shall be guaranteed to be free from leaks or defects. Any defective materials or workmanship as well as damage to the work of all trades resulting from the same shall be replaced or repaired as directed for the duration of stipulated guarantee periods.

J. COORDINATION: Each Contractor shall be responsible for coordinating their work with that of all other trades. No installation shall take place without approval of onsite entity (General Contractor, Construction Manager, etc.) responsible for coordination. Any work installed without approval and which interferes with the work of other trades that have been approved shall be removed and replaced at the

K. EXPOSED PIPING, DUCTWORK AND CONDUIT: There shall be no exposed piping, ductwork or conduit of any sort; plumbing, fire protection, HVAC or electrical, whether implied by the MEP drawings or not, unless expressly approved by the Architect. 1.4 SUBMITTALS

- A. Comply with pertinent provisions of the General Conditions.
- B. Product data: In accordance with procedures outlined in the General Conditions, submit: Materials list of items proposed to be provided under this Section, with sources of supply and manufacture: 2. Manufacturers' specifications, catalog cuts and other data needed to prove compliance with the specified requirements. Include shop standards for ductwork fabrication, cuts of duct hangers, clips, supports, attachments, anchors, etc., labeled as to the respective conditions or locations to which they 3. Product substitutions are to be requested in writing, and only in conformance with General Condition's procedures. At the time of submission of cuts for review for all substitutions, clearly indicate

Specification Section; provide complete information on the original product and the proposed product for review, and all deviations. a. Designs are based on a particular manufacturer as shown on the drawing. The structural design, equipment layout, electric systems, gas piping, efficiencies, rebates and aesthetic considerations, are based upon the manufacturer shown on the drawings. While other manufacturers equipment which is mentioned in the specifications may have the same output (tons, CFM, BTUH etc.) they may not have the same weight, dimensions, efficiencies or electrical or gas requirements.

Therefore, if ANY equipment is submitted OTHER THAN those models shown ON THE DRAWINGS, the contractor shall be required to pay for ALL designs, material, labor and equipment required to modify structure, equipment layout, electric, gas, aesthetic, efficiencies (including extra operating costs over a 25 year period) and rebates which are incurred by using said equipment.

Provide Samples of items scheduled to be exposed in the final structure. When specifically so requested by the Contractor and permitted by the Engineer, authorized samples will be returned to the Contractor for installation in the Work.

Before fabrication or purchase of any work, major equipment or controls, prepare and submit for review, shop drawings of ductwork and major equipment in accordance with "General Conditions". Include all fire dampers, access provisions, etc. Coordinate all of the above with all other trades. .. Prepare and submit Shop Drawings, showing at a scale not smaller than ¼"= 1'_0" all details of items to be shop fabricated under this Section. Maximum sheet size 30" x 42". 3. Clearly identify by circle and by note "DEVIATION" and by note "INTERFERENCE", in large bold lettering, and deviations from Drawings and Specifications and any potential or unresolved interference condition and assume full responsibility for failure to do so. 4. Submittal shall confirm fabrication and installation is in accordance with recommendations and applicable standards.

5. For mandatory coordination of all work, including that which penetrates structural members, consult

E. Installation Requirements: Furnish and erect all ductwork, hangers, dampers, and all accessories specified, indicated on the drawings or required to assure proper operation of all systems installed under this Section and of all connected equipment furnished under other Sections of these Specifications but requiring services furnished under this Section.

Manuals: Upon completion of this portion of the Work, and as a condition of its acceptance, deliver to the Engineer four copies of an operation and maintenance manual compiled in accordance with the provisions of the General Conditions, and these Specifications. Include in each manual: Copy of the authorized Record Documents of this portion of the Work. Copies of all warranties and guarantees.

G. As_built Drawings (maintain in accordance with "General Conditions"): Concurrent with the progress of the Work, the Contractor shall maintain a set of as_built record prints noting in red all changes in the Work. Upon completion of the Work this marked up set of prints is to be turned over to the Owner for

H. All required permits, fees and inspections shall be arranged and paid for by the Contractor. The Contractor shall present to the Owner, properly signed, all required certificates of final inspection and authorization before the Work will be accepted as complete.

A. General Protection: Do not allow equipment, insulation material, or associated items to become wet, soiled or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

PART 2 - PRODUCTS

2.2 RECTANGULAR DUCTWORK

A. Provide only materials that are new, of the type and quality specified. Where no standards have been established for such materials, provide only materials bearing the UL Label.

A. Sheet metal construction shall conform to this Section and applicable requirements of: SMACNA 15D High Pressure Duct Construction Standards SMACNA 15D Low Pressure Duct Construction Standards Ducted Electric Heat Guide for Air Handling Systems Fire Damper Guide for Air Handling Systems.

B. Except where noted otherwise, sheet metal ductwork shall be constructed of galvanized steel sheets, ASTM A525, A527 and A90.

C. Ductwork shall be detailed and fabricated to keep resistance losses to a minimum. Provide double thickness airfoil type turning vanes for square elbows and use gradual transformations and offsets. Where radius type elbows are used, minimum throat radius shall be equal to the duct width.

D. Duct, plenum and casing access doors, whether or not shown on the Drawings, shall be provided for access to control and indicating instruments, dampers, both sides of coils and filters and to any other device requiring inspection or maintenance. Hardware shall be as manufactured by Ventfabrics, Inc. or

Provide splitter dampers to adjust the air volume in the branch ductwork of all duct systems. Dampers shall have an indicating and locking device. Dampers in rectangular ductwork shall be blade type. Provide single blade damper up to 12" size and opposed blade type dampers in ducts over 12" size. Damper construction shall be as recommended in the applicable SMACNA duct manual. F. Provide test openings with covers for taking pressure and velocity readings as required for balancing

and adjusting the air system. G. Fans and air handling units shall be isolated from ductwork and casings with waterproof and fire resistant fabric connections, Ventfabrics Inc. or authorized equal. Connectors shall have minimum of 3" between metal ends with approximately $1_1/2$ of slack and shall be arranged to prevent vibration transmission from fans and units to the ductwork or casing.

H. Rectangular ductwork shall be constructed in accordance with SMACNA LP Duct Manual and SMACNA Standards 15d for minimum of 2" W.G. static pressure positive, and 2" W.G. negative, including metal gauges, reinforcing, fittings, connections, access doors and other accessories.

Where space permits, duct elbows shall have a centerline radius and 1_1/2 times the dimensions of the duct in the plane of the bend. Where space does not permit use of this radius, a minimum radius of 1.25 may be used without using concentric splitters, or else turning vanes with square elbows shall be used. Turning vanes shall be of the double walled type of Tuttle & Bailey, or authorized equal make. spaced in accordance with duct size. Shop fabricated turning vanes may be submitted for authorization before erection. Ducts up to 13" deep shall have 2" radius blades on 2" centers; ducts from 13" to 24" shall have 3" radius blades on 3" centers. Where concentric splitters are used, the radii of the bends shall be carefully located for low loss elbows. All elbows shall be made to produce no greater air resistance than elbow with a1.25 radius.

J. Interior of return air duct shall be painted black at areas inside return air grilles only. 2.3 ROUND AND OVAL DUCTWORK

A. Provide double-wall, internally insulated factory fabricated equal to United McGill Corp., United Sheet Metal Division, Acousti—k27, thermal conductivity 0.27 BTU/hr./SF/Deg. F at 75 F. Except where noted otherwise, sheet metal ductwork shall be constructed of galvanized steel sheets, ASTM A527—67.

B. Branch connections shall be conical tees or laterals. Straight tees or laterals will not be permitted. C. Round ductwork and fittings shall have lock type spiral construction. Insulation shall be minimum 1"thick. Flame spread 10-20; fuel contributed 10-15, smoke developer

0-20, all per UL ratings. Joints in round and oval ductwork shall be designed to be airtight without the use of tape. Total allowable duct leakage shall conform to Section 4.06 of these specifications.

F. Sheet metal construction shall conform to this Section and applicable requirements of: High Pressure Duct Construction Standards SMACNA 15D Low Pressure Duct Construction Standards Ducted Electric Heat Guide for Air Handling Systems

Fire Damper Guide for Air Handling Systems. Provide splitter dampers to adjust the air volume in the branch ductwork of all duct systems. Dampers shall have an indicating and locking device. Dampers in rectangular ductwork shall be blade type. Provide single blade damper up to 12" size and opposed blade type dampers in ducts over 12" size.

Damper construction shall be as recommended in the applicable SMACNA duct manual. H. Provide test openings with covers for taking pressure and velocity readings as required for balancing and adjusting the air system.

I. Fans and air handling units shall be isolated from ductwork and casings with waterproof and fire resistant fabric connections, Ventfabrics Inc. or authorized equal. Connectors shall have minimum of 3" between metal ends with approximately $1_1/2$ of slack and shall be arranged to prevent vibration transmission from fans and units to the ductwork or casing. 2.4 FLEXIBLE DUCTWORK

A. Flexible ductwork may be used for heating/cooling, exhausting or cooling only applications and shall be as manufactured by Thermoflex, Wiremold, Genflex, or authorized equal. Duct shall be continuous and insulated with 1" thick fiberglass insulation having an outer moisture barrier consisting of a reinforced metalized Mylar/Neoprene laminate with integral attaching devices. Minimum pressure rating shall be 6" W.G. positive and 1" W.G. negative. Operating temperature range shall be -20 to +250° F. Thermal conductance: 0.23 BTU/hr/SF/F at 75° F.

B. Duct shall be UL listed under UL-181 as Class I Air Duct and shall be IMC authorized for installation in ceiling return air plenum. C. Use flexible ductwork to connect rigid sheet metal elbow at supply registers to metal supply ductwork. Install using maximum length of 5 feet of flexible ductwork with minimum centerline radius of bends not less than twice duct diameter and with no more offsets than an equivalent 90 degree elbow. Provide

band strap hangers with saddle supports under flexible duct runs to keep supports from sagging. Stretch duct enough to smooth out internal corrugations. Connect flexible ductwork to collars of rigid ductwork and air delivery devices with locking clamps and "3M Brand" EC800 tape or authorized equal.

2.5 INTERIOR DUCTWORK INSULATION A. Provide insulation (R-8) for all concealed supply and return ductwork. Ductwork located in attic shall

B. Insulate with a flexible fiberglass insulation. "Ductwrap", 2-1/4" thick, 3/4 pound per cubic foot density, "K" value at 75° F, maximum 0.26 BTU/HR/SF/degrees F/HR with factory applied reinforced multi-purpose black polyethylene vapor barrier

Insulation for concealed ductwork shall be secured to the ductwork with adhesive, Benjamin Foster 81-91, or authorized equal. Apply adhesive in strips with a minimum 50% coverage. Seal all joints with 3" wide strips of the facing material applied using Benjamin Foster 81—91 on both surfaces.

Acceptable Manufacturers: Certainteed Corp., Valley Forge, PA Owens-Corning Fiberglas Corp., Toledo, OH Armstrong Cork Co., Lancaster, PA

Adhesives and insulation materials: composite fire and smoke hazard ratings maximum 25 for Flame

Spread and 50 for Fuel Contributed and Smoke Developed. Adhesives to be waterproof.

- A. A/C unit drain: Type "L" copper pipe with wrought copper 95-5 soldered fittings.
- B. Refrigerant: ACR copper tubing with 300 lb. brazed fittings. C. Combustion Exhaust & Intake: Schedule 40 PVC as recommended by Furnace Manufacturer.

2.7 PIPE INSULATION

A. All insulation shall have composite (insulation, jacket facing and adhesive used to adhere jacket or facing to the insulation) fire an smoke hazard ratings as tested by Procedure ASTM E-84, NFPA 255 and UL 73, not exceeding flame spread of 24, fuel contributed of 50 and smoke developed of 50. Accessories such as

adhesives, mastics, cements, tapes and cloths for fittings shall have component ratings as listed above. B. The materials as specified below have been selected from the catalog of Owens—Corning Fiberglass Corporation and are representative of the quality, design and finish as desired. Insulation as manufactured by other manufacturers may be submitted for approval, provided the products meet fully in all respects (such as density, moisture absorption, alkalinity, thermal—conductivity, jacket, etc.) to the materials as delineated below.

C. Insulate AC unit drain piping runouts with 1/2" thick section fiberglass pipe

insulation with all service jacket. D. Insulate all refrigerant piping with 1" thick Armaflex.

2.8 FIRE STOPPING A. Packing of openings, where ducts and pipes penetrate fire barriers, shall be done with Rockwool insulation as made by United States Gypsum Co. or 3M Fire Barrier 2001 Silicone RTV Foam.

B. Insulation shall comply with Fed. Spec. HH-1-558, Form A, Class 4, K=0.24, melting point 2000

2.9 DIELECTRIC PIPE FITTINGS

A. Provide at all connections between dissimilar metals (e.g. steel, copper, iron, etc.), nylon insulator, Buna-N gasket, maximum temperature 210° F, 250 psig pressure rating, conforming to ANSI B16.39, B2.1 and B1.201 and Federal Specification WWU-531E and WWU-516B.

A. Provide all other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the authorization of the Engineer.

PART 3 _ FANS AND HVAC EQUIPMENT 3.1 GENERAL REQUIREMENTS

A. The following requirements apply in general to all equipment specified. Certain items may not appropriately apply to every piece of equipment.

B. Provide required copies of manufacturers catalog or data sheets for each piece of equipment showing

illustrations, details, sizes, dimensions, performance characteristics, wiring diagrams, controls and other C. All main service supplies shall match the characteristics in the Drawings.

D. All equipment wires, and electrical fittings shall be copper only except the internal wire of control transformers which may be aluminum, if copper termination is provided. E. All motors shall be built and tested in accordance with the latest standards of NEMA, ANSI, IEEE and the National Electric Code, as applicable, and shall be energy efficient motors of NEMA Design A or B. Minimum motor full load power factor shall be 85%. Motors shall be capable of a minimum 20 second stall

F. Based on 1800 RPM, 3 phase operation for all HVAC equipment, motors shall be guaranteed by the motor manufacturer and when tested in accordance with IEEE Test #112A, Method B, shall be as follows:

```
DRIP PROOF
HORSEPOWER RATING EFFICIENCY
                  86.5%
                                   88.5%
                   87.5%
                                   88.5%
   7 1/2 _ 10
                  89.5%
                                   91.0%
                  91.0%
                                   91.7%
  15 _ 20
                   93.0%
                   94.1%
```

at locked rotor without damaging the insulation or windings.

G. Provide gaskets installed to prevent leakage between each filter and between the filter and its supporting frame. Filter efficiencies shall be average atmospheric dust spot efficiencies tested in accordance with ASHRAE Standard 52_76. H. Fans shall be tested and rated in accordance with the applicable AMCA Standard Test Code and Certified Ratings Program, and shall bear the AMCA Certified Rating Seal. I. Motor drives shall be protected by belt guards furnished by the equipment manufacturer in accordance with SMACNA and OSHA requirements. 3.2 MOTOR STARTERS

A. Furnish motor starters for every item which requires a starter, furnished under this Section.

PART 4 _ EXECUTION

for guidance in such regard.

such items factory pre-painted.

these Specifications.

4.1 TEMPORARY HEAT, POWER AND LIGHTING A. Provide temporary heat to allow all sections to work unencumbered at a temperature minimum of 55

F, 24/7. Heating equipment and fuel source shall be independent of the Owner's system and shall be at the expense of this contractor only. Owner's heating system and fuel source shall not be used during construction.

B. It is the Contractor's responsibility to run power from point of availability as provided in the Electrical Contract, to the point of use. Provide local temporary lighting as required for performance of the work in 4.2 EXISTING CONDITIONS

A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected. 4.3 PREPARATION

. Coordinate as necessary with other Sections to assure proper and adequate provision in the work of those Sections for interface with the work of this Section. 2. Coordinate the installation of air distribution items with the schedule for work of other trades to prevent unnecessary delays in the total work. 3. Where ductwork and other air distribution items are shown in conflict with locations of structural members and mechanical or other equipment, provide required supports and ductwork to clear the

4. Coordinate fire damper locations and sizes with trades responsible for constructing the walls, floors and ceilings in which they are to be mounted. 5. Demolition: Contractor shall perform all demolition of the existing installation as required to complete construction as indicated on the Drawings. Coordinate all work with Owner. B. Data indicated on the Drawings and in these Specifications are intended to convey the Engineer's intentions only, as such their accuracy is not warranted. The exact locations, distances, levels, and other conditions will be governed by actual construction and the Drawings and Specifications should be used only

Where devices are not specifically located on the Drawings, locate as determined in the field by the Architect or Engineer. Where devices are installed without such specific direction, relocate as directed by the Architect or Engineer, at no additional cost to the Owner.

D. Verify all measurements at the site. No extra compensation will be allowed because of differences between work shown on the Drawings and actual measurements at the site of construction. E. Provide all cutting and patching, fire caulking and sealing to standards of applicable Sections of

F. The HVAC Drawings are diagrammatic, but are required to be followed as closely as actual construction and work of other Sections will permit. Where deviations are required to conform with actual construction and the work of other Sections, make such deviations without additional cost to the Owner. 4.4 INSTALLATION

Ductwork and Register Installation: Ductwork shall be suspended or supported in accordance with SMACNA, latest edition. Unless indicated otherwise, branch connections to the main shall be "Boot" type connections. Ductwork in back of registers and grilles shall be painted flat black as ductwork is being installed. 4. Paint inside of all air outlets and connecting plenums with one coat of black paint, or provide all

Paint exposed duct runs, to standards of the Architect. 6. Cap duct openings to exclude dirt until registers and equipment are installed. Vacuum clean all ductwork prior to installation of registers, etc. 7. Clean all registers and diffusers.

B. Sleeves or holes in masonry: Provide and install accurately dimensioned and shaped to permit passage of items of this Section.

C. Install draft stops to seal all openings in floors and walls around piping and ductwork. Draft stops shall be neatly fitted to completely seal all openings, securely fastened to the piping, ductwork and building construction, and adequately braced, where required. Draft stop material and construction shall be in accordance with latest applicable NFPA requirements, local building codes and shall have a fire resistive rating as required by the authority having jurisdiction or of the construction penetrated, whichever is more stringent.

D. Equipment Access Install piping, equipment, doors and accessories to permit access for maintenance. Relocate items as necessary to provide such access, and without additional cost to Owner. 2. Provide access doors for installation by others where valves, motors, coils; or equipment requiring access for maintenance is located in walls or above ceilings. Coordinate location of access doors with Architect and other trades as required.

3. Provide and install access doors where required in ductwork. Pipe Supports

Support suspended piping with clevis or trapeze hangers and rods. Space hangers and support for horizontal steel pipes according to the following schedule: Maximum spacing on centers: 3/4" and smaller:

1" and greater: 3. Space hangers and supports for horizontal copper tubing according to the following schedule: Maximum spacing on centers: Tube size: 1 ¼" and smaller: 1 1/2" and over:

4. Paint all hangers and rods with 2 coats of an authorized Rustoleum or equal LEAD FREE product, with each coat of a different color or shade. Coordinate colors with Architect. 5. Cast Iron Soil Pipe: at 5 foot intervals and behind every hub.

F. Touch up scratches and abrasions to be invisible to the unaided eye from a distance of 5'_0". G. For electrically operated equipment, verify the electrical characteristics actually available for the work of this Section and provide equipment meeting those characteristics. H. Penetration Caulking: caulk all floor and wall penetrations with fire retardant material meeting ASTM 814 and UL 1479 Fire Test Standards. Metcaulk or authorized equal. I. Control Wiring: provide control wiring as required, to the standards and workmanship of all applicable

J. FIRE BARRIER PLASTIC PIPE CAULKING: Provide where plastic pipe penetrates a rated wall, intumescent-type sealant complying with UL Fire Resistance Directory and ULC Volume 3 Fire Resistance Ratings, UL classified for use with PVC, CPVC, CCPVC, ABS, CCABS, PVDF, PP, PB and FRPP, HILTI FS—ONE

4.5 PROTECTION AND CLEANING

4.6 TESTING, BALANCING AND ADJUSTING

A. Maintenance of Systems during Temporary Use

Lubricate bearings in HVAC Work systems during temporary use. Maintain limit controls, overload devices, and safety controls in operating condition during use. B. Clean work furnished and installed as part of the Work, including but not limited to equipment, control panels and devices.

Comply with requirements for cleaning during construction. Remove debris, leftover piping, tubing, ducting, metal, insulation, cartons, papers, etc., resulting from

2. Remove all rust, dirt, etc., from Work to be painted and maintain in condition ready for painting.

A. Supply and return air ductwork shall be tested during installation and before application of any exterior insulation or enclosing of the ductwork. Total leakage shall not exceed 5% of design cfm. Provide services of an independent testing and balancing agency; perform work in accordance with Associated Air Balance Council Field Measurement and Instrument form No. 12173, Volume II. All leak testing shall be done in accordance with SMACNA "HVAC AIR DUCT LEAKAGE TEST MANUAL" 15d, First Edition 1985, leakage class 12, seal class C, Table 4-1 and Appendix E for round metal duct. All outlets shall be temporarily capped and sealed securely for leak testing. Test setup shall be as per Figure 3—1 in

Assure that all filters are clean prior to conducting of any testing and balancing.

Provide a new set of filters on all HVAC equipment prior to official opening of building. C. Test and adjust each piece of equipment and each system as required to assure proper balance and Test and regulate ventilation and air conditioning systems to conform to the air volumes shown on the authorized shop drawings. Make tests and adjustments in apparatus and ducts for securing the proper volume and face distribution of air for each grille and ceiling outlet, test and reset each fire damper. Where required, provide pulleys for fans at no additional cost to the Owner, set to drive the fans at speed needed to give the indicated volume.

a. Air volumes at all supply, return, and exhaust outlets; Total cfm supplied;

Total cfm returned; Total static pressure at each fan and at each system;

4. For each system, take the following data in tabulated form:

Motor speed, fan speed, and input ampere rating for each fan. Documented changes after each trial balance. Noise level both in dba and NC, in each room

Date of each set of data collected shall be indicated on each page of report. Minimum CFM of outside air required by Code, CFM specified, CFM actual.

D. Submit six (6) sets of test and balance reports to the Engineer for review and authorization. E. Eliminate noise and vibration, and assure proper function of all controls, maintenance of temperature, and operation in accordance with the authorized requirements and applicable codes and standards.

Secure required authorization from governmental agencies having jurisdiction, and furnish copies of

4.7 INSTRUCTION AND DEMONSTRATION

such to Owner and Architect.

and systems.

A. Prior to Final Completion, thoroughly demonstrate and instruct Owner's designated representatives in care and operation of all heating and ventilating systems and equipment provided in Heating Work Prime Contract. Provide necessary skilled labor to operate all systems for not less than 5 days and provide required instruction.

B. In addition to Prime Contractor's instruction, arrange for technically qualified factory representatives to train Owner's representative in care, maintenance, and operation of following manufacturer's equipment

Temperature controls. Central Station air handling equipment and units.

Unit heaters Exhaust Fans

5. Air conditioning units and equipment

C. Coordinate and schedule time and place of all training through Architect at Owner's convenience.

D. Submit letters verifying satisfactory completion of all instruction including date of instruction, names of persons in attendance and countersigned by authorized representative of Owner. E. Until final acceptance, Prime Contractor retains full responsibility for systems, even though operated by Owner's personnel during instruction, unless otherwise agreed in writing. During instruction, provide list, sealed in clear plastic, outlining operating, maintenance, and starting

precautions and procedures to be followed by Owner for operating systems and equipment.

A. Guarantee all HVAC work for a period of one year after date of completion as measured from date of acceptance by the Owner. Promptly repair and make good any damage to his or the work of other Contractors or Subcontractors during that period that may be caused by defective materials or workmanship. Correct any defects in materials and workmanship without further expense to the Owner. Deliver said written guarantee at time of Owner's acceptance.

A. Routinely remove, in an orderly and efficient manner, (and cart away and dispose of, by legal means, off the site and premises), all debris related to work of this Section; worksite and staging areas shall be kept clear of all debris on a daily basis; permit no debris accumulation which poses any threat to life, safety or property. Non—conformance with the foregoing Contract requirements will be subject to all

END OF SECTION

remedies established by the Project General Conditions.

4.9 DEBRIS REMOVAL

09.14.23 ISSUED FOR BID 08.25.23 FOR PERMIT



MECHANICAL SPECIFICATIONS

21 Cross Avenue

Midland Park, NJ 07432-1811

(201) 444-0753 FAX (201) 444-0839

SCALE: AS NOTED DATE: 08.25.2023

FILE: 2260\Current\

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