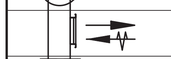
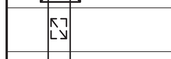
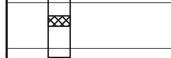
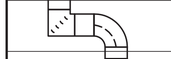
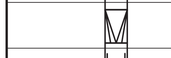
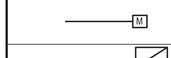
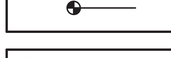
ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
BCU	BUILDING CONTROL UNIT
BTU	BRITISH THERMAL UNIT
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
COMM.	COMMUNICATION
CV	CONTROL VALVE
(D)	DEMOLISH
DB	DRY BULB
DCV	DEMAND CONTROLLED VENTILATION
DEG. F	DEGREES FAHRENHEIT
DIA	DIAMETER
DX	DIRECT EXPANSION
'E'	ELECTRICAL CONTRACTOR
(E)	EXISTING
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EER	ENERGY EFFICIENCY RATING
ESP	EXTERNAL STATIC PRESSURE
FAI	FRESH AIR INTAKE
FD	FLOOR DRAIN
FLA	FULL LOAD AMPS
FT. H20	FEET OF WATER
'G'	GENERAL CONSTRUCTION CONTRACTOR
GPM	GALLONS PER MINUTE
GPH	GALLONS PER HOUR
H	HEIGHT
'H'	HVAC CONTRACTOR
HP	HORSEPOWER
IN.	INCHES
IN. W.C. (W.G.)	INCHES WATER COLUMN (WATER GAUGE)
KW	KILOWATTS
L	LENGTH
LAT	LEAVING AIR TEMPERATURE
LBS	POUNDS
LCD	LIQUID CRYSTAL DISPLAY
LDB	LEAVING DRY BULB TEMPERATURE
LPR	STEAM CONDENSATE RETURN
LPS	LOW PRESSURE STEAM
LWB	LEAVING WET BULB TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
M	METER
MAX	MAXIMUM
MBH	1,000 BTU PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MIN	MINIMUM
MNF	MANUFACTURER
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OAI	OUTDOOR AIR INTAKE
OD	OUTER DIAMETER
OED	OPEN ENDED DUCT
'P'	PLUMBING CONTRACTOR
(P)	PROPOSED
PD	PRESSURE DROP
PSIG	LBS / SQUARE INCH (GAUGE PRESSURE)
RD	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
SAT	SUPPLY AIR TEMPERATURE
SEER	SEASONAL ENERGY EFFICIENCY RATING
TEMP	TEMPERATURE
TG	TRANSFER GRILLE
TYP	TYPICAL
VFD	VARIABLE FREQUENCY DRIVE
W	WIDTH
WB	WET BULB
WMS	WIRE MESH SCREEN

DUCTWORK LEGEND

SYMBOL	ABBREV	DESCRIPTION
		DUCTWORK BRANCH CONNECTION
	VD	VOLUME DAMPER
	CD	ROUND FACE SUPPLY DIFFUSER
	SEE AIR DEVICE SCHEDULE	SIDEWALL SUPPLY, RETURN OR EXHAUST GRILLE/REGISTER
	SEE AIR DEVICE SCHEDULE	SQUARE FACE SUPPLY DIFFUSER
	SEE AIR DEVICE SCHEDULE	BOTTOM RETURN OR EXHAUST GRILLE/REGISTER
	FC	FLEXIBLE CONNECTION
		TURNING VANES
		RECTANGULAR TO ROUND TRANSITION
	AL	ACOUSTICAL LINING
		END CAP
	SEE AIR DEVICE SCHEDULE	SUPPLY DIFFUSER WITH DIRECTIONAL FLOW (SOLID HATCH INDICATES BLANK OFF PANEL)
		SUPPLY DUCT DROP (TURN DOWN)
		RETURN/EXHAUST DUCT DROP (TURN DOWN)
		SUPPLY DUCT RISE
		RETURN/EXHAUST DUCT RISE
	DSD	DUCT SMOKE DETECTOR
	MD	MOTORIZED DAMPER WITH ACTUATOR
	AD	ACCESS DOOR
	FD/AD	FIRE DAMPER WITH ACCESS DOOR
	FSD/AD	FIRE SMOKE DAMPER WITH ACCESS DOOR
		FAN
		WORK TO BE REMOVED
		POINT OF DISCONNECTION FROM EXISTING
		POINT OF CONNECTION TO EXISTING

CONTROLS LEGEND

SYMBOL	ABBREV	DESCRIPTION
C		CARBON MONOXIDE SENSOR
T		THERMOSTAT
S		DIGITAL TEMPERATURE SENSOR
H		HUMIDITY SENSOR
CO2		CARBON DIOXIDE SENSOR
P		PRESSURE SENSOR

PIPING LEGEND

SYMBOL	ABBREV	DESCRIPTION
		NEW WORK
		PIPING DOWN/ PIPING UP
		BALL VALVE WITH HOSE END CONNECTION
	TH	THERMOMETER
	U	UNION
	FPC	FLEXIBLE PIPE CONNECTION
		DIRECTION OF FLOW
	PSR	PRESSURE SAFETY AND RELIEF VALVE
	PRV	PRESSURE REDUCING VALVE
	BV	BALL VALVE
	BA	BALANCING VALVE
	BFV	BUTTERFLY VALVE
		TEMPERATURE SENSOR WITH THERMOWELL
	GA	GATE VALVE
	GB	GLOBE VALVE
	AV	AUTOMATIC AIR VENT
	CV	2-WAY ELECTRONIC CONTROL VALVE
	CV	3-WAY ELECTRONIC CONTROL VALVE
	CV	2-WAY PNEUMATIC CONTROL VALVE
	CV	3-WAY PNEUMATIC CONTROL VALVE
	STR	STRAINER WITH BLOW OFF VALVE WITH HOSE END CONNECTION
	FD	FLOOR DRAIN
		AIR SEPARATOR
		STEAM TRAPS (INDICATE TYPE)
	CH	CHECK VALVE
	PG	PRESSURE GAUGE WITH GAUGE COCK
	RED	REDUCER
	CO	CLEANOUT END CAP
		PIPE GUIDE
		PIPE ANCHOR
		CAPPED PIPE
		PUMP
		WORK TO BE REMOVED
		POINT OF DISCONNECTION FROM EXISTING
		POINT OF CONNECTION TO EXISTING
	TDV	TRIPLE DUTY VALVE

GENERAL ASBESTOS ABATEMENT NOTES:

1. ALL ASBESTOS ABATEMENT WORK SHALL CONFORM TO ALL APPLICABLE CODE REQUIREMENTS ALONG WITH SPECIFICATION SECTION 028200 AND INDUSTRIAL CODE RULE 56.
2. ALL MATERIALS ASSOCIATED WITH THIS PROJECT HAVE BEEN TESTED FOR THE PRESENCE OF ASBESTOS. SEE SPECIFICATION SECTION 022600 - HAZARDOUS MATERIAL ASSESSMENT FOR LOCATIONS OF MATERIALS THAT HAVE BEEN TESTED POSITIVE.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO PERFORM PERSONAL AIR MONITORING ON ITS EMPLOYEES IN ACCORDANCE WITH OSHA REGULATIONS.
4. THIRD PARTY PROJECT MONITORING AND AIR SAMPLING SHALL BE CONDUCTED BY A CONSULTANT FIRM HIRED DIRECTLY BY THE OWNER.
5. THE CONTRACTOR SHALL BE RESPONSIBLE TO FILE FOR ALL PERMITS AND NOTIFY ALL REGULATORY AGENCIES AS REQUIRED FOR THE WORK AND PAY ALL FEES ASSOCIATED WITH THE AFOREMENTIONED.
6. UPON COMPLETION OF THE DEMOLITION WORK, THE CONTRACTOR SHALL SUBMIT COPIES OF ALL WASTE MANIFEST AND LANDFILL RECEIPTS TO THE ARCHITECT AS PART OF THE REQUIRED CLOSEOUT DOCUMENTS.
7. ALL OPENINGS AND PENETRATIONS INCLUDING BUT NOT LIMITED TO WINDOWS, DOORS, DUCTS, LOUVERS AND GRILLES WITHIN OR OPEN TO THE ROOF AREA SHALL BE COVERED WITH A MINIMUM OF TWO (2) LAYERS OF 6 MIL PLASTIC.
8. CONTRACTOR SHALL BE RESPONSIBLE TO PROTECT ALL EXISTING HVAC EQUIPMENT AND ROOF VENTS.

GENERAL NOTES

1. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
2. THE CONTRACTOR, BY PRESENTING THEIR BID FOR THE WORK, REPRESENTS THAT HE/SHE HAS INSPECTED THE SITE AND IS COMPLETELY FAMILIAR WITH THE SCOPE OF WORK AND ALL FIELD CONDITIONS RELATED TO, AND AFFECTING THE WORK AND ITS PERFORMANCE. EXCEPTIONS AFFECTING THE WORK AND ITS PERFORMANCE, OR CONFLICTS BETWEEN FIELD CONDITIONS, SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO THE SUBMISSION OF BIDS.
3. PERFORM ALL WORK IN ACCORDANCE WITH THE PLUMBING CODE, FIRE CODE, MECHANICAL CODE, ENERGY CONSERVATION CONSTRUCTION CODE, AND FUEL GAS CODE OF NEW YORK STATE AND THE REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION.
4. COMPLY WITH THE NATIONAL ELECTRIC CODE AND THE REQUIREMENTS OF DIVISION 26 FOR ALL ELECTRICAL INSTALLATIONS.
5. FIRE STOP ALL OPENINGS IN FIRE RATED CONSTRUCTION FOR PIPING, DUCTWORK, CONDUIT, ETC. PROVIDE FIRE DAMPERS AND ACCESS DOORS IN ALL OPENINGS IN FIRE RATED FLOORS, PARTITIONS, AND WALLS FOR DUCTWORK AS PER THE MECHANICAL CODE OF NEW YORK STATE. (SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF FIRE RATED CONSTRUCTION.)
6. DO NOT SCALE DRAWINGS. DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY. THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE. COORDINATE CONTRACT DOCUMENTS, PROJECT REQUIREMENTS, WORK OF OTHERS, AND EQUIPMENT AND MATERIALS PURCHASED WITH FIELD DIMENSIONS. INSTALL ALL EQUIPMENT AS PER MANUFACTURER'S REQUIREMENTS TO PROVIDE PROPER CLEARANCE FOR INSTALLATION, OPERATION, AND MAINTENANCE. CONTRACTOR'S INTENDED MEANS AND METHODS OF INSTALLATION AND CONTRACTOR'S FABRICATED ITEMS SHALL ENSURE A PROPER "FIT" AND INSTALLATION. BRING ANY CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER DURING THE SUBMITTAL PHASE FOR RESOLUTION PRIOR TO PURCHASING ANY EQUIPMENT.
7. MAINTAIN MAXIMUM HEADROOM AND SPACE CONDITIONS AT ALL POINTS, WHERE HEADROOM AND SPACE CONDITIONS APPEAR INADEQUATE, NOTIFY THE ARCHITECT/ENGINEER PRIOR TO PROCEEDING WITH INSTALLATION. MAINTAIN A MINIMUM OF 6'-8" CLEARANCE FROM FINISHED FLOOR TO UNDERSIDE OF PIPES, DUCTS, CONDUITS, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL ROOMS.
8. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION. MAKE MODIFICATIONS IN THE LAYOUT AS NEEDED TO PREVENT CONFLICT WITH WORK OF OTHER TRADES OR FOR PROPER EXECUTION OF THE WORK. OBTAIN THE APPROVAL OF THE ARCHITECT/ENGINEER FOR MODIFICATIONS.
9. PROVIDE PRODUCTS OF ONE MANUFACTURER WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF MATERIAL OR EQUIPMENT IS REQUIRED.
10. INSTALL ALL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS. REFER TO DETAILS FOR ADDITIONAL PIPING AND EQUIPMENT INSTALLATION REQUIREMENTS.
11. LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTION OF PIPE OR DUCT UP- AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER TO ENSURE MANUFACTURER CERTIFIED ACCURACY.
12. COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS. COORDINATE AND PROVIDE ALL PIPING AND DUCT TRANSITIONS REQUIRED FOR FINAL CONNECTIONS TO EQUIPMENT.
13. COORDINATE LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS WITH ALL OTHER TRADES. COORDINATE ALL PIPING AND EQUIPMENT SUPPORTED FROM STRUCTURE WITH GENERAL CONSTRUCTION WORK.
14. COORDINATE INSTALLATION OF SUPPLY AND RETURN GRILLES WITH INSTALLATION OF FINISHED CEILINGS.
15. COMPLETE ALL PRESSURE TESTS BEFORE ANY MECHANICAL EQUIPMENT, DUCTWORK, OR PIPING INSULATION IS APPLIED.
16. TESTING, ADJUSTING, AND BALANCING AGENCY SHALL BE A MEMBER OF THE ASSOCIATED AIR BALANCE COUNCIL (AABC) OR THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB). PERFORM ALL TESTING, ADJUSTING, AND BALANCING IN ACCORDANCE WITH THE SPECIFICATIONS.
17. MAKE ALL ATTACHMENTS TO JOISTS, TRUSSES, OR JOIST GIRDERS AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. THE USE OF C-CLAMPS IS NOT PERMITTED.
18. PROVIDE CONCRETE PADS A MINIMUM OF 6 INCHES HIGH FOR ALL FLOOR MOUNTED EQUIPMENT. EXTEND PAD 4 INCHES BEYOND THE EQUIPMENT ON ALL SIDES.
19. INTERNALLY LINE ALL SUPPLY AND RETURN DUCTWORK WITHIN 20 FEET UPSTREAM AND DOWNSTREAM OF FANS WITH 1" THICK INSULATION. INTERNALLY LINED DUCTWORK MEETING THIS REQUIREMENT SHALL ALSO BE PROVIDED WITH EXTERNALLY APPLIED INSULATION AS REQUIRED BY THE SPECIFICATIONS. SEE SPECIFICATION SECTION 230719 FOR ADDITIONAL REQUIREMENTS.
20. PROVIDE TRAPPED DRAIN PIPING FROM DRAIN PANS OF ALL COOLING COILS, FANS, AND OTHER ACTIVE DRAINS EXPOSED TO SYSTEM AIR STREAM. PROVIDE TRAP AT CONNECTION, WATER SEAL DEPTH 1 INCH GREATER THAN UNIT OPERATING PRESSURE. DIRECT DRAINS TO NEAREST FLOOR DRAIN, MOP SINK, OR OTHER LOCATION APPROVED BY THE ARCHITECT/ENGINEER.
21. INSTALL PIPING, DUCTWORK, AND CONDUIT CONCEALED IN AREAS HAVING HUNG CEILINGS AND/OR FURRED SPACES UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

WORK IN EXISTING AREAS

1. EXISTING CONDITIONS, INCLUDING EQUIPMENT, DUCT AND PIPE SIZES AND LOCATIONS, INDICATED ON THE DRAWINGS ARE DIAGRAMMATIC. CONFIRM ALL EXISTING CONDITIONS PRIOR TO PROCEEDING WITH THE WORK.
2. CUT AND ROUGH PATCH EXISTING CONSTRUCTION AS REQUIRED FOR THE PERFORMANCE OF THE WORK. FINISH PATCHING AND FLASHING REQUIREMENTS ARE SHOWN ON THE ARCHITECTURAL DRAWINGS. PERFORM ALL CUTTING AND PATCHING WORK IN A MANNER SUCH THAT ANY EXISTING WARRANTEES/GUARANTEES ARE NOT VOIDED. USE QUALIFIED PERSONNEL IN PERFORMANCE OF THE WORK.

CONTRACT 'H' SCOPE NOTES

1. INSTALL SMOKE DETECTORS IN DUCTWORK FOR AIR HANDLING UNITS RATED AT 2,000 CFM OR GREATER. SMOKE DETECTOR SUPPLY AND WIRING IS PART OF CONTRACT 'E'.
2. FURNISH AND INSTALL ALL NECESSARY CONTROL WIRING, CONDUIT, AND ACCESSORIES AS REQUIRED TO PROVIDE FULLY FUNCTIONING SYSTEMS AND SEQUENCES OF OPERATION.
3. FURNISH ALL LINTELS FOR DUCT AND PIPE PENETRATIONS IN INTERIOR MASONRY WALLS FOR INSTALLATION BY CONTRACT 'G'.
4. FURNISH ALL SLEEVES FOR PIPE AND CONDUIT FLOOR, WALL, PARTITION, AND ROOF PENETRATIONS FOR INSTALLATION BY CONTRACT 'G'.
5. FURNISH ALL CURBS FOR ALL ROOF MOUNTED EQUIPMENT AND DUCT PENETRATIONS FOR INSTALLATION BY CONTRACT 'G'.
6. REMOVE CHASE ENCLOSURE COVER WHEN PERFORMING WORK IN ANY CHASE, AND REINSTALL THE CHASE ENCLOSURE COVER WHEN WORK IS COMPLETE.
7. PERFORM ALL CUTTING AND ROUGH PATCHING AS REQUIRED IN THE EXECUTION OF THE WORK. FINISH PATCHING AND FLASHING IS PART OF CONTRACT 'G'.

LEGENDS/ABBREVIATIONS NOTES

1. ABBREVIATIONS AND SYMBOLS ON THIS SHEET DO NOT DEFINE THE SCOPE OF WORK.

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CONSULTANTS:

MARK	DATE	DESCRIPTION
	11-18-2021	FINAL BID DOCUMENT

STATE OF NEW YORK · ALEXANDER HOCHHAUSL · 073570 · LICENSED PROFESSIONAL ENGINEER

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
CAK	CAK	BMC	AEH

PROJECT No.:	DATE:	SCALE:
IRSD 1910	NOVEMBER 2021	AS SHOWN

CLIENT

Irvington Union Free School District

Main Street School Renovations

101 Main Street
Irvington, NY 10533

SED Number:66-04-02-02-0-001-016

CONTRACT

CONTRACT G
GENERAL CONSTRUCTION

STATUS

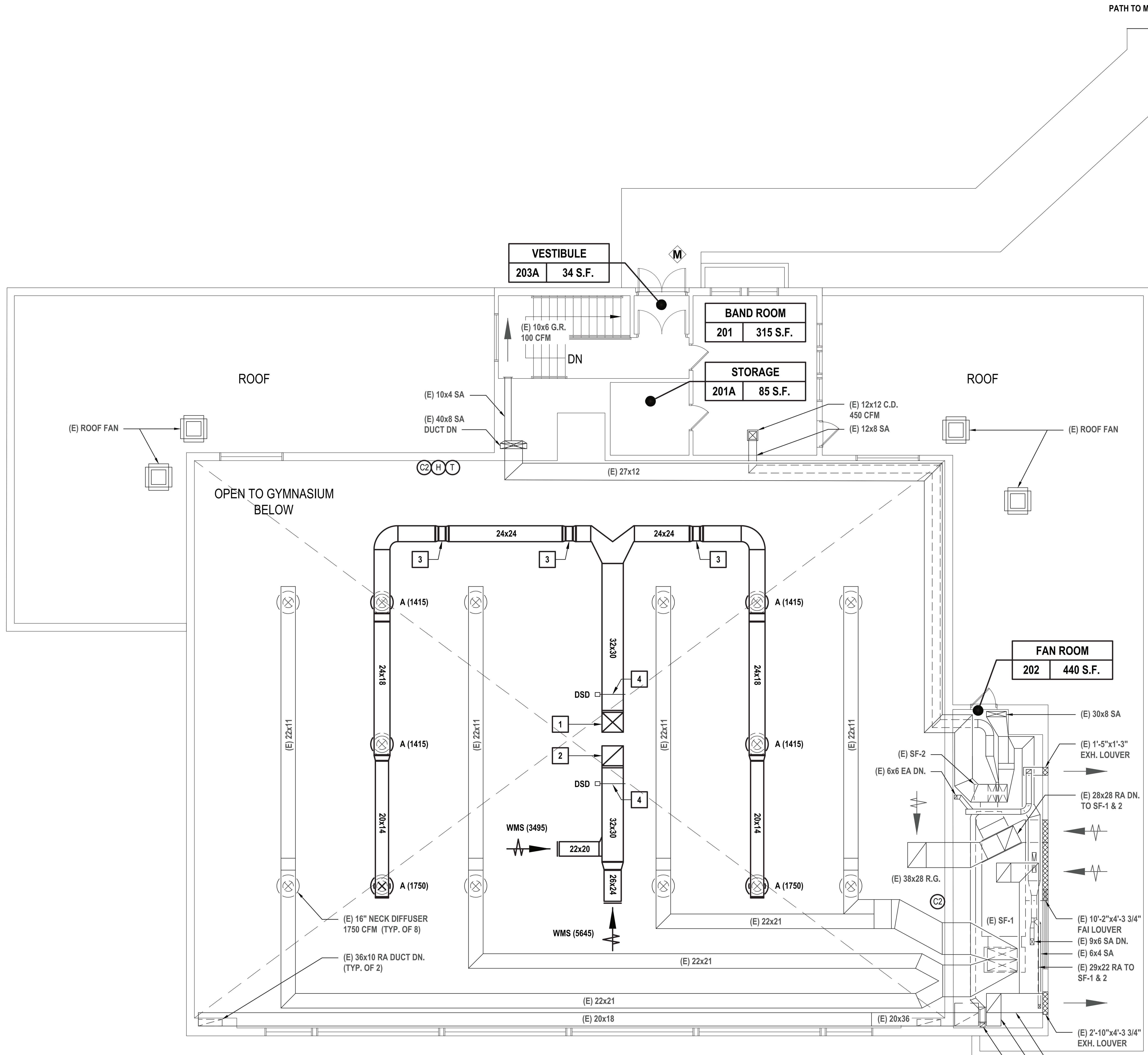
FINAL BID DOCUMENT

SHEET TITLE

HVAC LEGENDS, SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES

DRAWING No.

H0.0



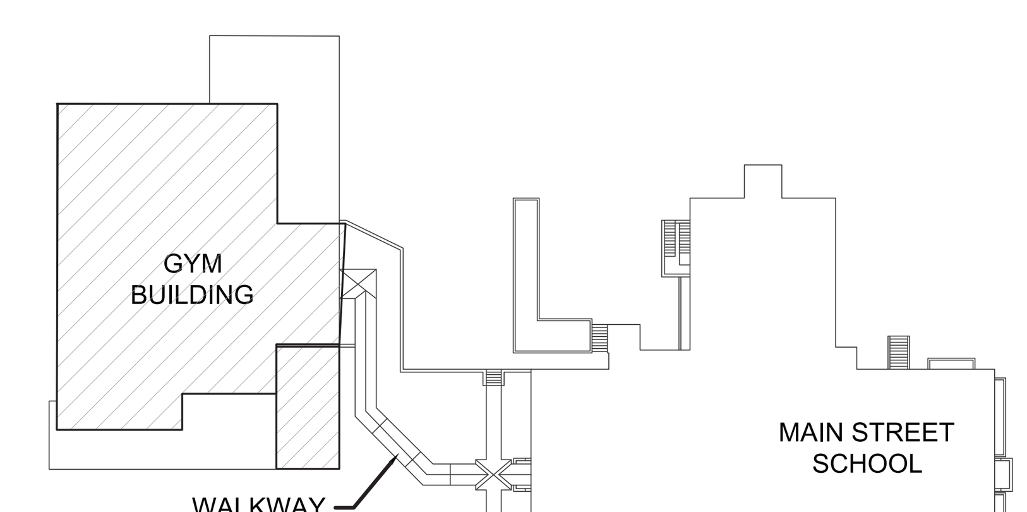
Upper Gymnasium Plan
SCALE: 1/8"=1'-0"

KEYED NOTES:

1. PROVIDE AND INSTALL NEW SUPPLY AIR DUCT DOWN FROM NEW ROOFTOP UNIT. PROVIDE AND INSTALL REQUIRED TRANSITION FROM ROOFTOP UNIT OUTLET TO LISTED SUPPLY DUCT SIZE. MOUNT DUCTWORK AT ELEVATION OF EXISTING DUCTWORK TO MAINTAIN AESTHETIC.
2. PROVIDE AND INSTALL NEW RETURN AIR DUCT UP TO NEW ROOFTOP UNIT. PROVIDE AND INSTALL REQUIRED TRANSITION TO ROOFTOP UNIT INLET FROM LISTED RETURN DUCT SIZE. MOUNT DUCTWORK AT ELEVATION OF EXISTING DUCTWORK TO MAINTAIN AESTHETIC.
3. ROUTE NEW SUPPLY DUCT THROUGH EXISTING JOISTS. TRANSITION DUCT TO 22x20 TO FIT THROUGH WEBBING AND TRANSITION BACK TO 24x24 ONCE CLEAR. COORDINATE FINAL LOCATION OF DUCTWORK MAIN WITH OPENINGS IN THE JOIST.
4. PROVIDE AND INSTALL DUCT SMOKE DETECTORS IN THE SUPPLY AND RETURN DUCT MAINS.

GENERAL NOTES:

1. COORDINATE ALL WORK WITH EXISTING CONDITIONS AND OTHER TRADES. LOCATIONS OF EXISTING SUPPLY DUCTS, DIFFUSERS, RETURNS, FANS, EQUIPMENT, ETC. HAVE BEEN PROVIDED FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING LOCATIONS OF ALL EXISTING EQUIPMENT.
2. EXISTING CONDITIONS ARE BASED ON A LIMITED FIELD SURVEY. CONTRACT IS RESPONSIBLE FOR VERIFICATION OF EXISTING CONDITIONS FOR ALL CONFLICTS AND SHALL ALERT ENGINEER PRIOR TO COMMENCEMENT OF NEW WORK AND PURCHASE OF EQUIPMENT.
3. DO NOT SCALE DRAWINGS. LINE WORK SHOWN IS SCHEMATIC. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS BASED ON DESIGN INTENT, SURVEY OF EXISTING CONDITIONS, AND COORDINATION WITH OTHER TRADES.
4. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S REQUIRED MAINTENANCE CLEARANCES AND PREVAILING CODE.
5. SUBMIT EQUIPMENT / DUCTWORK SHOP DRAWINGS TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PURCHASE / RELEASE.
6. CONTRACTOR TO COORDINATE THE PLACEMENT OF ALL TEMPERATURE / HUMIDITY / CO2 SENSORS WITH THE OWNER / DISTRICT.
7. ALL EXISTING HEATING AND VENTILATION EQUIPMENT, DUCTWORK, DIFFUSERS, ETC. ARE TO REMAIN.



Key Plan
SCALE: 1/64"=1'-0"

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CONTRACT
CONTRACT G
GENERAL CONSTRUCTION

STATUS
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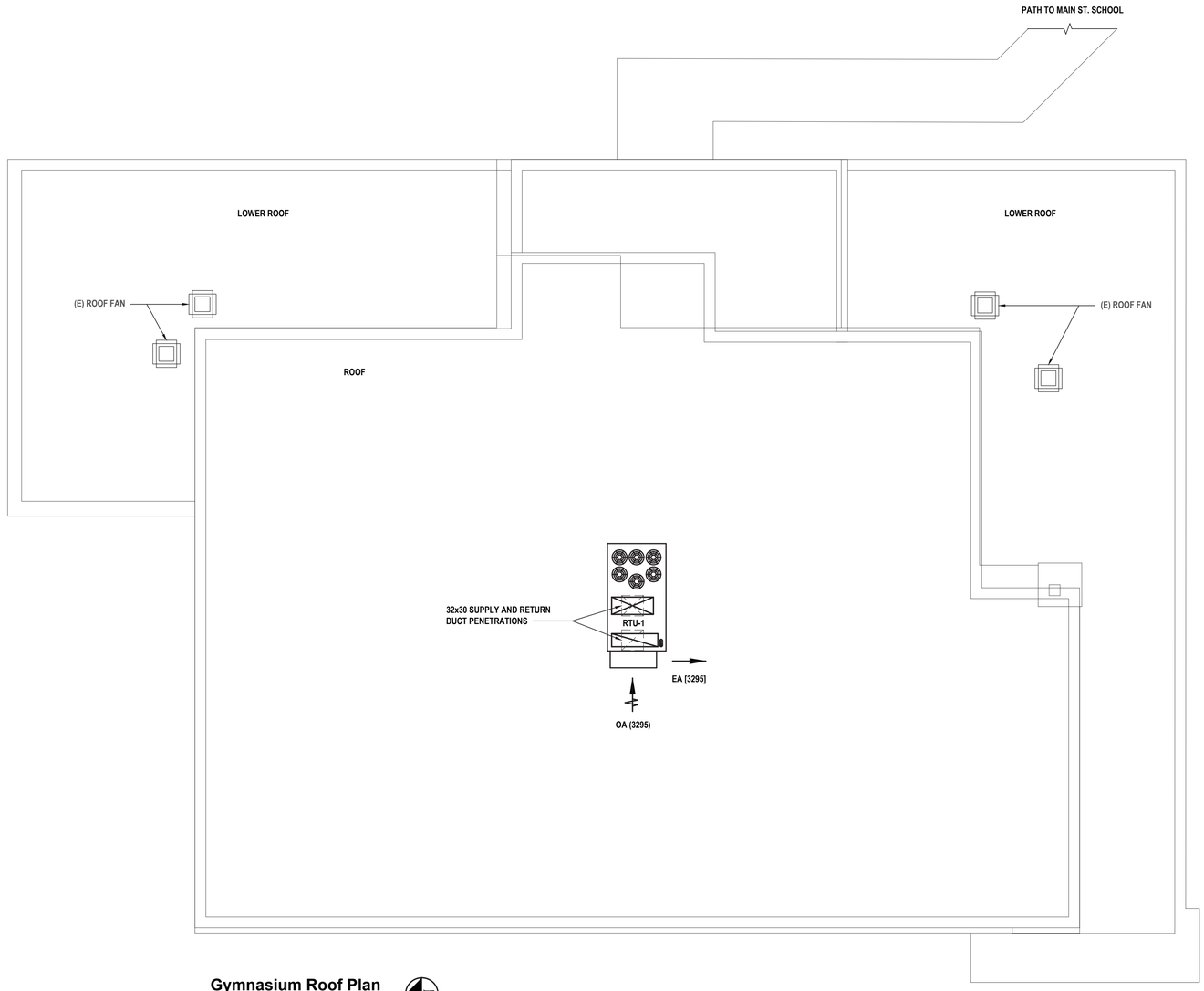
SHEET TITLE
HVAC UPPER GYMNASIUM CONSTRUCTION PLAN

DRAWING No.
H1.0



Gymnasium Roof Plan

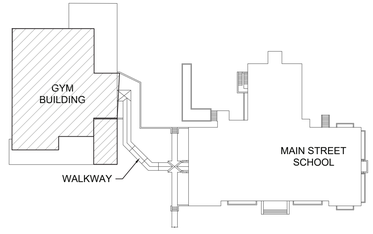
SCALE: 1/8"=1'-0"

GENERAL NOTES:

1. COORDINATE ALL WORK WITH EXISTING CONDITIONS AND OTHER TRADES. LOCATIONS OF EXISTING ROOFTOP EQUIPMENT HAVE BEEN PROVIDED FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING LOCATIONS OF ALL EXISTING EQUIPMENT.
2. CONTRACTOR TO INSTALL NEW ROOFTOP UNIT IN COMPLIANCE WITH MANUFACTURER'S REQUIRED MAINTENANCE CLEARANCES, AND APPLICABLE MECHANICAL CODE CLEARANCE REQUIREMENTS.
3. SUBMIT EQUIPMENT SHOP DRAWINGS TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO PURCHASE. DO NOT SCALE DRAWINGS. LINE-WORK SHOWN IS SCHEMATIC.
4. TERMINATE ROOFTOP UNIT CONDENSATE LINES AT THE NEAREST ROOF DRAIN (IF FEASIBLE).
5. CONTRACTOR TO PROVIDE SEISMIC/WIND RATED ROOF CURB MANUFACTURED THYBAR OR APPROVED EQUAL.
6. CONTRACTOR TO PROVIDE PROJECT SPECIFIC ROOF CURB DESIGNED IN ACCORDANCE WITH WIND LOADS PROVIDED ON DRAWINGS, SIGNED AND SEAL BY A LICENSED PROFESSIONAL ENGINEER REPRESENTING THE ROOF CURB MANUFACTURER.

WIND LOADS (MC 301.15 & BC 1609)

ZONE ID	POSITIVE WIND PRESSURE (PSF)	NEGATIVE WIND PRESSURE (PSF)
ROOF (INT. ZONE)	11.3	-44.1
ROOF (END ZONE)	11.3	-58.2
ROOF (CORNER ZONE)	11.3	-79.4
WALLS (INT. ZONE)	27.7	-30.1
WALLS (END ZONE)	27.7	-37.1



Key Plan

SCALE: 1/64"=1'-0"

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CONTRACT

CONTRACT G
GENERAL CONSTRUCTION

STATUS

FINAL BID DOCUMENT

SHEET TITLE

HVAC GYMNASIUM ROOF CONSTRUCTION PLAN

DRAWING No.

H1.1

PACKAGED ROOFTOP UNITS

EQUIPMENT NO.	LOCATION	AREA SERVED	PERFORMANCE/CONSTRUCTION REQUIREMENTS									
			REQUIRED ENERGY EFFICIENCY RATING (EER/IEER)	SUPPLY FAN(S)			OUTSIDE AIR FLOW (CFM)	COOLING COIL				FILTERS
				MAXIMUM FLOW (CFM)	EXT. S.P. (IN W.G)	BHP		TOTAL CAPACITY (MBH)	REFRIGERANT TYPE	AIR DATA		TYPE
										ENT. DB/WB (DEG. F)	MAX LVG DB/WB (DEG F)	
RTU-1	ROOF	GYMNASIUM	-	9140	1.5	7.42	3295	292.78	R410A	81.8 / 67.9	59.8 / 57.9	2" MERV-8

PACKAGED ROOFTOP UNITS (CONTINUED)

EQUIPMENT NO.	BASIS OF DESIGN INFORMATION							REMARKS
	MNF	MODEL NO.	NOMINAL DIMENSIONS LxWxH	NOMINAL OPERATION WEIGHT (LBS)	ELECTRICAL DATA			
					VOLTS/PHASE	SUPPLY FAN(S) HP	MCA/MOCP	
RTU-1	CARRIER	50LC0A26E3M5-1S2C0	158 x 87 x 59	3384	208/3	10	158 / 200	1-17

NOTES:

1. ROOFTOP UNIT TO BE INSTALLED ON ROOF DUNNAGE
2. RA & SA SMOKE DETECTORS, CO2 SENSORS QNTY. 2
3. DEMAND CONTROLLED VENTILATION
4. POWERED CONVENIENCE OUTLET
5. SINGLE POINT POWER CONNECTION
6. VARIABLE SPEED COMPRESSOR
7. HOT GAS MODULATING REHEAT
8. VERTICAL SUPPLY/RETURN
9. VARIABLE FREQUENCY DRIVE
10. COOLING MODE (DX COIL) ONLY
11. NON-FUSED DISCONNECT
12. LOW VOLTAGE CONTROLLER
13. OUTDOOR AIR MONITOR
14. LOW SOUND BLANKET
15. BACNET COMPATIBLE
16. POWERED EXHAUST
17. ECONOMIZER

DUCT ACCESS DOORS

DUCT SIZE PERPENDICULAR TO AIR FLOW (IN)	ACCESS DOOR HEIGHT (IN)	ACCESS DOOR WIDTH (IN)
6" - 24"	2" SMALLER THAN DUCT SIZE	8" MINIMUM OR EQUAL TO ACCESS DOOR HEIGHT
25" - 48"	2" SMALLER THAN DUCT SIZE	2'-0"
OVER 48"	3'-10"	2'-0"
PLENUMS AND WALK IN ACCESS	5'-6"	2'-0"

RTU-1 COMMON VENTILATION INDEX BASED ON 2020 MECHANICAL CODE OF NEW YORK STATE SECTION 403.3.1.1

ROOM #	ROOM NAME	OCCUPANCY CLASSIFICATION	FLOOR AREA (SF) Az	SUPPLY AIR (CFM)	OCCUPANCY LOAD (PERSONS/ 1000 SF)	NUMBER OF OCCUPANTS Pz	OCCUPANT BASED OA RATE (CFM/OCCUPANT) Rp	AREA BASED OA RATE (CFM/SF) Ra	NON-ADJUSTED TOTAL OA REQUIRED (CFM)	ZONE EFFECTIVENESS FACTOR	ZONE OUTDOOR AIRFLOW	PRIMARY OUTDOOR AIR FRACTION Zp	SPACE VENTILATION EFFICIENCY Ev	CORRECTED OA BASED ON A COMMON VENTILATION SYSTEM (CFM)
-	GYMNASIUM	AMUSEMENT: GYM	5645	5645	0	0	0	.30	1694	.8	2118	38.00%	0.77	2033
-	SPECTATOR AREA	AMUSEMENT: SPECT.	1170	3495	150	176	7.5	.06	1391	.8	1739	50.00%	0.65	1259

NOTES:

1. VENTILATION RATE CALCULATED IN ACCORDANCE WITH SECTION 403.3.1.1.2.3 (MULTIPLE ZONE RECIRCULATING SYSTEMS) OF THE 2020 MECHANICAL CODE OF NYS. THIS VENTILATION SYSTEM SERVES SPACES WITH DIFFERENT VENTILATION REQUIREMENTS.
2. NUMBER OF OCCUPANTS ARE BASED ON OCCUPANCY LOAD REQUIREMENTS.
3. A DIVERSITY FACTOR OF .28 WAS USED TO DETERMINE THE REQUIRED OA RATE.

   $D = Ps / (\Sigma Pz) = 50 / 176$

   WHERE: D = OCCUPANT DIVERSITY
   Ps = PEAK SYSTEM POPULATION
   Σ Pz = SUM OF DESIGN ZONE POPULATION.
4. AN OUTDOOR AIR INTAKE FLOW RATE (Vot) OF 3295 CFM WAS CALCULATED.

   $Vot = Vou / Ev$

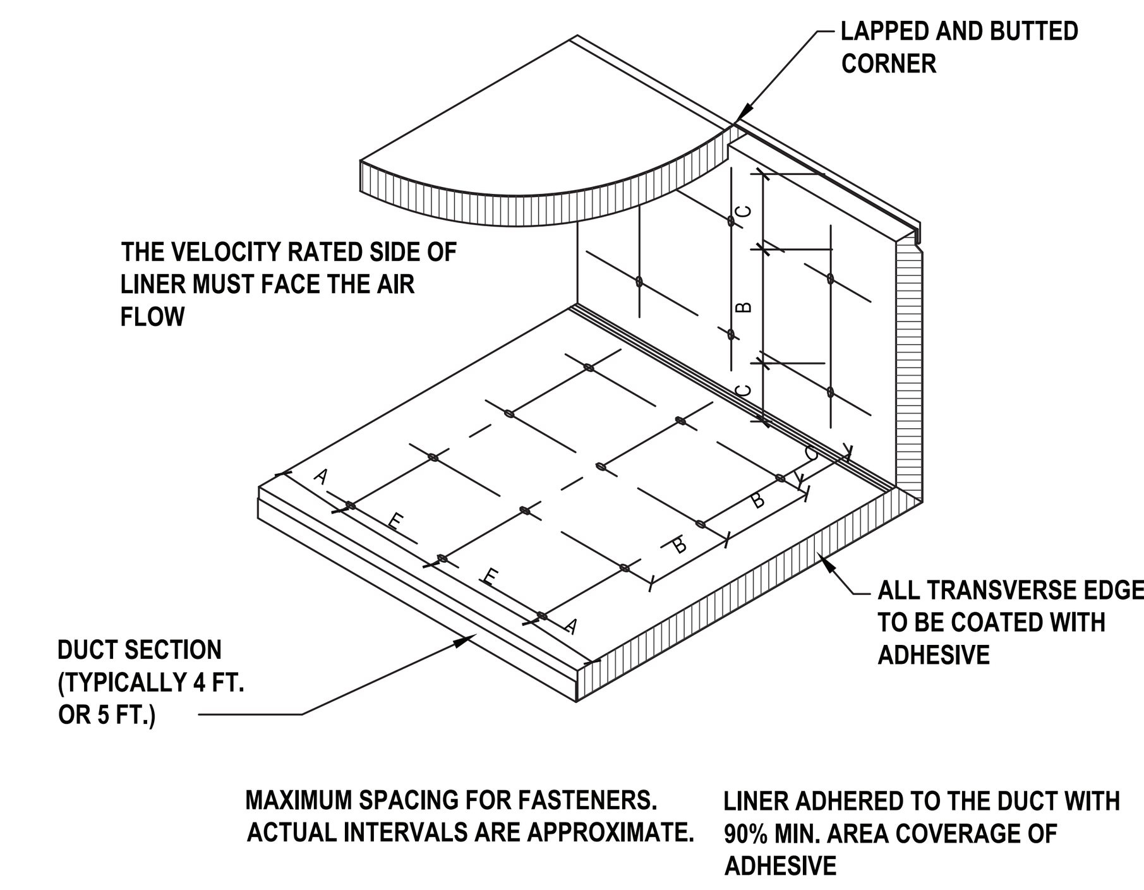
   WHERE: Vou = UNCORRECTED OUTDOOR AIR INTAKE FLOW RATE = $D * \Sigma Rp * Pz + \Sigma Ra * Az$
   Ev = SPACE VENTILATION EFFICIENCY FACTOR BASED ON THE LARGEST OA FRACTION.
5. ENERGY RECOVERY VENTILATION SYSTEM NOT REQUIRED UNDER EXCEPTION 9, "SYSTEMS EXPECTED TO OPERATE LESS THAN 20 HOURS PER WEEK AT THE OUTDOOR AIR PERCENTAGE COVERED BY TABLE C403.2.7(1)."

AIR OUTLETS

DESIGNATION	SYMBOL	BASIS OF DESIGN: MNF/ MODEL NO.	DESCRIPTION	FACE SIZE (IN)	AIR FLOW RANGE (CFM)		NECK SIZE DIAMETER (IN.)	REMARKS
					MIN	MAX		
A	⊗	NAILOR/R-UNI	ROUND FACE DUCT MOUNTED DIFFUSER	34" DIA	-	1415 1750	16	1-3

NOTES:

1. FOR CONSTRUCTION DETAILS AND ACCESSORIES SEE THE SPECIFICATIONS.
2. PROVIDE OPPOSED BLADE DAMPER AND EQUALIZING GRID FOR ALL DIFFUSERS.
3. PROVIDE ALL REQUIRED MATERIALS TO MOUNT DIFFUSERS TO DUCTWORK.



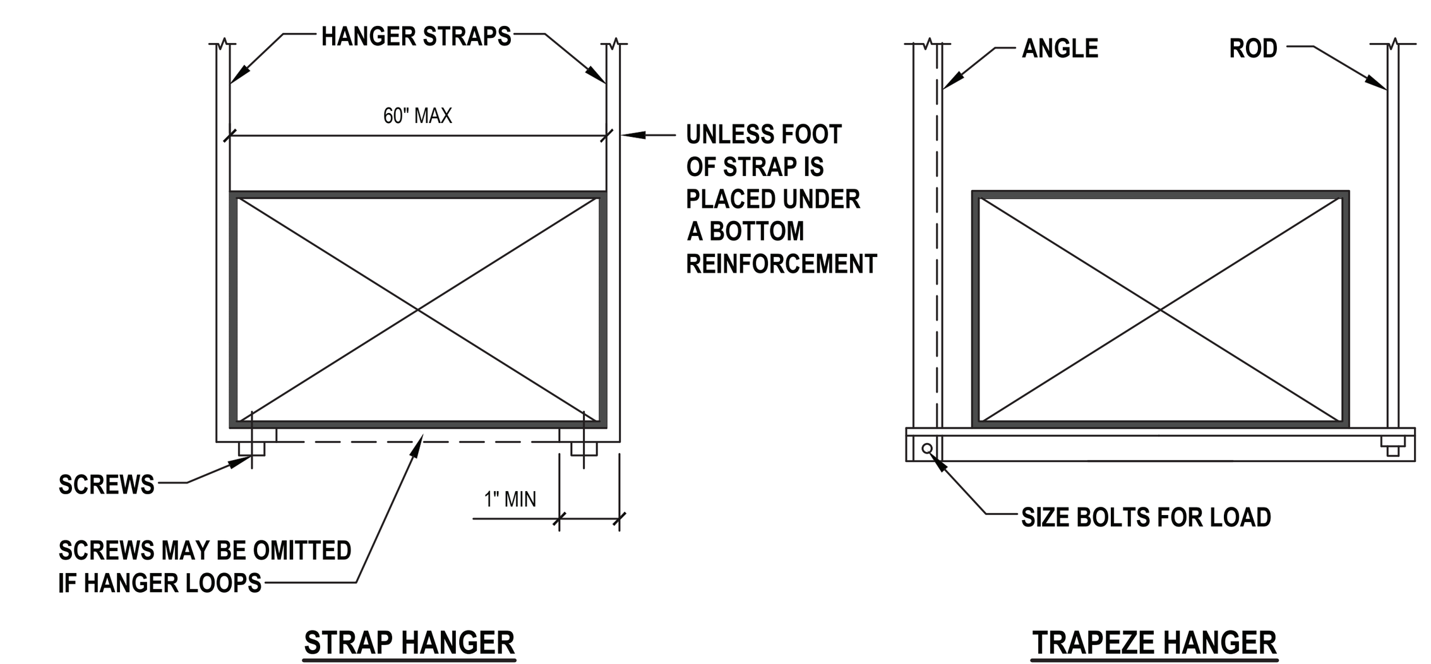
MAXIMUM SPACING FOR FASTENERS. ACTUAL INTERVALS ARE APPROXIMATE.

LINER ADHERED TO THE DUCT WITH 90% MIN. AREA COVERAGE OF ADHESIVE

VELOCITY*	DIMENSIONS			
	A	B	C	E
0-1500 FPM	3"	12"	4"	18"
1501-3500 FPM	3"	6"	4"	16"

* UNLESS A LOWER LEVEL IS SET BY MANUFACTURER OR LISTING AGENCY

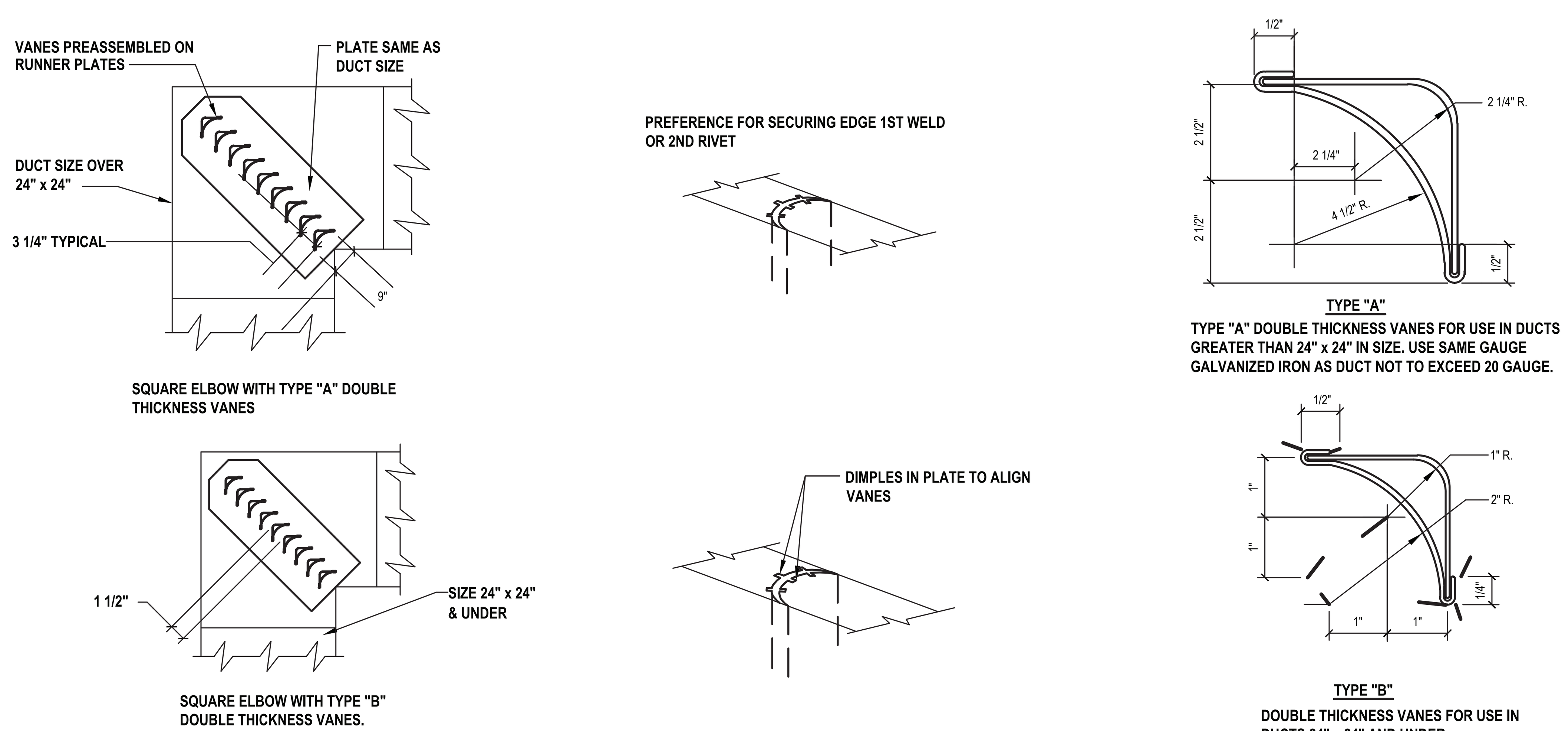
3 Acoustical Liner Fastening Detail
SCALE:NTS (DETAIL #)



NOTES:

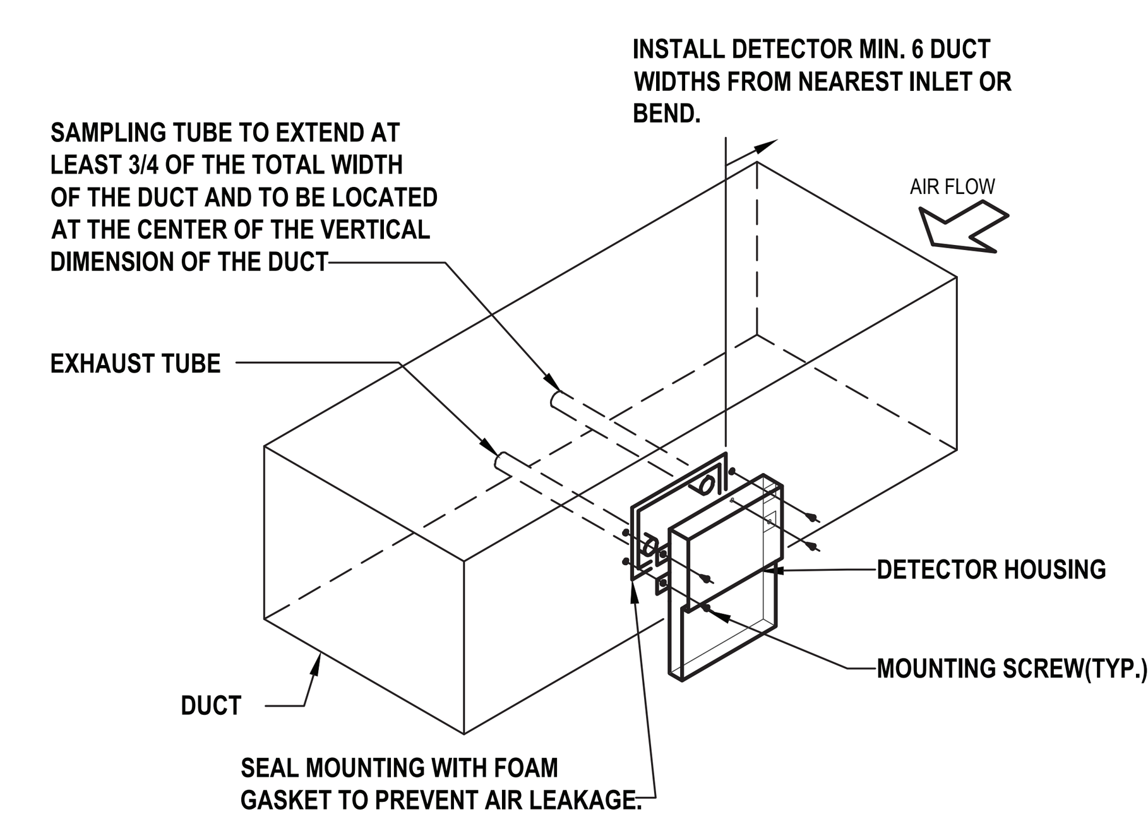
1. SIZE ALL SUPPORTS IN ACCORDANCE WITH THE SMACNA DUCT CONSTRUCTION STANDARDS, LATEST EDITION.

4 Hanger Detail
SCALE:NTS



NOTE:
USE GALVANIZED STEEL FOR VANES IN EITHER STEEL OR ALUMINUM DUCTWORK.

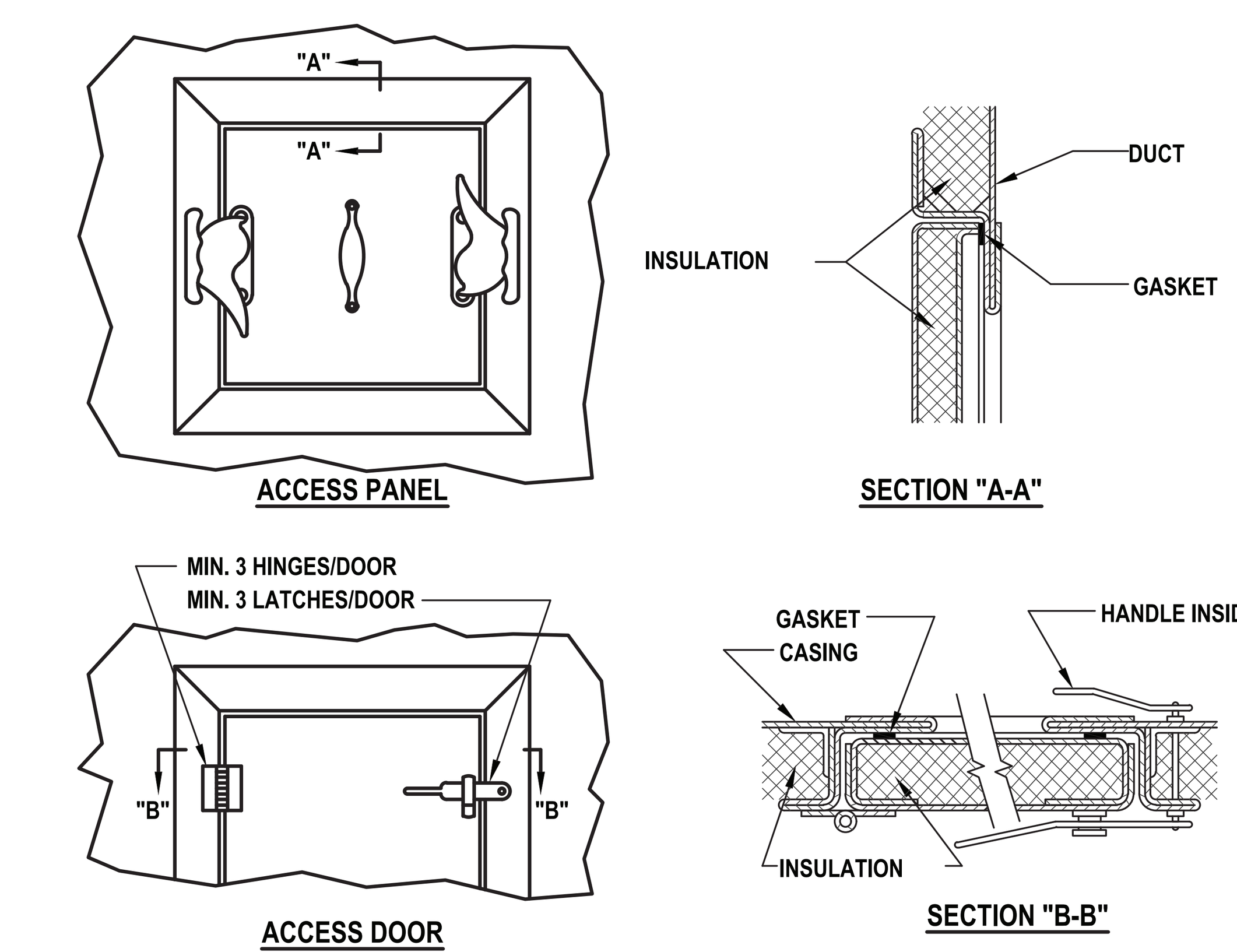
1 Turning Vanes Detail
SCALE:NTS (DETAIL #)



NOTES:

1. INTERFACE OF NEW DUCT SMOKE DETECTORS W/ EXISTING BUILDING FIRE ALARM SYSTEM BY CONTRACT 'E'.

2 Duct Mounting Smoke Detector Detail
SCALE:NTS (DETAIL #)



NOTES:

1. LATCHES SHALL BE OF THE WEDGE TYPE TO CLOSE DOORS TIGHTLY.
2. HINGES ON THE ACCESS DOORS SHALL HAVE NON-CORROSIVE PINS.
3. PROVIDE ACCESS DOORS ON AIR HANDLING UNITS AND DUCTWORK INSTALLED IN EQUIPMENT ROOMS. PROVIDE ACCESS PANELS ON ALL EQUIPMENT AND DUCTWORK INSTALLED ABOVE FINISHED CEILINGS WHERE SPACE LIMITATIONS DO NOT ALLOW HINGED DOORS TO OPEN.

5 Access Door & Panel Details
SCALE:NTS (DETAIL #)

H2M architects + engineers
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Purchase, NY 10577
914.358.5623 ▪ www.h2m.com

CONSULTANTS:

MARK	DATE	DESCRIPTION
	11-18-2021	FINAL BID DOCUMENT

STATE OF NEW YORK · ALEXANDER HOCHHAUSL · LICENSED PROFESSIONAL ENGINEER · 073570

DESIGNED BY:	DRAWN BY:	CHECKED BY:	REVIEWED BY:
CAK	CAK	BMC	AEH

PROJECT No.:	DATE:	SCALE:
IRSD 1910	NOVEMBER 2021	AS SHOWN

CLIENT
Irvington Union Free School District

Main Street School Renovations

101 Main Street
Irvington, NY 10533

SED Number:66-04-02-02-0-001-016

CONTRACT
CONTRACT G
GENERAL CONSTRUCTION

STATUS
FINAL BID DOCUMENT

SHEET TITLE
HVAC SCHEDULES AND DETAILS

DRAWING No.
H2.0