MECHANICAL LEGEND

HVAC

SYMBOL	DESCRIPTION
	CONNECT NEW TO EXISTING
GV	GATE VALVE (HORIZ. - VERT.)
GLV	GLOBE VALVE (HORIZ. - VERT.)
BFV	BUTTERFLY VALVE (HORIZ. - VERT.)
BV	BALL VALVE (HORIZ. - VERT.)
3W 2W	CONTROL VALVE (2-WAY, 3-WAY)
	TRIPLE-DUTY VALVE
P	PRESSURE GAUGE
T	TEMPERATURE GAUGE / THERMOMETER
	PRESSURE REDUCING VALVE
	STRAINER
	CHECK VALVE
	FLOW INDICATOR
	BALANCE VALVE
	EXISTING PIPING/DUCT/EQUIPMENT TO REMAIN
	EXISTING PIPING/DUCT/EQUIPMENT TO BE REMOVED
	CAP OR PLUG
	PIPE DOWN, PIPE UP
	INCREASER / REDUCER
FS	FLOW SWITCH (FS)
FM	FLOW METER (FM)(DDC)
TS	TEMP SENSOR (TS)(DDC)
	MANUAL AIR VENT
	AUTOMATIC AIR VENT
XX-XX	EQUIPMENT IDENTIFICATION
X MX.XX	DETAIL NO./ SHEET NO.
X MX.XX	SECTION NO / SHEET NO.
XX	INDICATED TAG OR SHEET NOTE
XX	DEMOLITION NOTE
##	REVISION TAG
	EXTENT OF DEMOLITION
	EXPANSION JOINT
	PIPE ANCHOR
	COMBINATION FLOW INDICATOR / BALANCING (4"-SMALLER)
36"	COMBINATION FLOW INDICATOR / BALANCING (5"-LARGER)
	TEMP./ PRESS. RELIEF VALVE
	FLANGED CONNECTION
	UNION
	FLEXIBLE CONNECTION
	PUMP
CD	CONDENSATE DRAIN LINE
HWR	HOT WATER RETURN PIPING
HWS	HOT WATER SUPPLY PIPING

ABBREVIATIONS

AFC	ABOVE FINISHED CEILING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU-X	AIR HANDLING UNIT
AS-X	AIR SEPARATOR
ATV	AUTO. TEMPERING VALVE
B-X	BOILER
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
C	COMMON
CAS-X	VARIABLE REFRIGERANT CASSETTE UNIT
CFM	CUBIC FEET PER MINUTE
CH-X	CHILLER
CT-X	COOLING TOWER
CU-X	CONDENSING UNIT
E-X	EXHAUST AIR DEVICE
EF-X	EXHAUST FAN DESIGNATION
EH-X	ELECTRIC HEATER
ERU-X	ENERGY RECOVERY UNIT
ESP	EXTERNAL STATIC PRESSURE
EXT-X	EXPANSION TANK
FCU-X	FAN COIL UNIT
FZT	FREEZSTAT
GBD	GRAVITY BACKDRAFT DAMPER
GPM	GALLONS PER MINUTE
HP	HORSEPOWER
HP-X	HEAT PUMP UNIT
HT-X	HEAT TRACE
HX-X	HEAT EXCHANGER
KW	KILOWATT
L-X	LOUVER DESIGNATION
MAU-X	MAKE-UP AIR UNIT
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
P-X	PUMP
PRV	PRESSURE REDUCING VALVE
R-X	RETURN AIR DEVICE
RTU-X	ROOFTOP UNIT
S-X	SUPPLY AIR DEVICE
SF-X	SUPPLY FAN DESIGNATION
SP	TOTAL STATIC PRESSURE
T-X	TRANSFER AIR DEVICE
VAV-X	VARIABLE AIR VOLUME BOX
X	EXISTING

GENERAL DEMOLITION NOTES:

A. GENERAL MECHANICAL DEMOLITION NOTES APPLY TO ALL MECHANICAL SHEETS.

B. SEE ARCHITECTURAL DRAWINGS FOR BUILDING FLOOR PLAN LAYOUT.

C. THE EXISTING CONDITIONS REPRESENTED ON PLANS DEPICT APPROXIMATE LOCATIONS AND SIZES OF EQUIPMENT AND COMPONENTS. FIELD-VERIFY ACTUAL CONDITIONS AND DETERMINE ACTUAL LOCATIONS AND SIZES OF EQUIPMENT PRIOR TO COMMENCING WORK.

D. SUBSTANTIAL DEVIATIONS BETWEEN THE CONTRACT DOCUMENTS DEMOLITION SCOPE AND ACTUAL CONDITIONS SHALL BE REPORTED TO THE ARCHITECT/ENGINEER IN THE FORM OF A REQUEST FOR INFORMATION WITH THE DESCRIPTIONS AND SKETCHES.

E. SCHEDULING OF ALL DEMOLITION OPERATIONS SHALL BE COORDINATED WITH OWNER NO LATER THAN THE DATE OF THE PROJECT PRECONSTRUCTION MEETING.

F. PROVIDE DEMOLITION WORK SHOWN ON THE DRAWINGS AND ALL INCIDENTAL DEMOLITION WORK REQUIRED TO COMPLETE NEW CONSTRUCTION WORK.

G. PROTECT EXISTING EQUIPMENT, PIPING, DUCTWORK, AIR OPENINGS, ETC. FROM DIRT AND DAMAGE DURING DEMOLITION AND CONSTRUCTION.

H. COMPLETELY REMOVE ALL COMPONENTS INDICATED ON PLANS FOR DEMOLITION INCLUDING REMOVAL OF ALL SUPPORTS, HANGERS, PIPING, WIRING, ECT. THAT ARE ASSOCIATED WITH THE COMPONENT BEING REMOVED, UNLESS OTHERWISE STATED.

I. CONTRACTOR SHALL PATCH AND REPAIR ALL DAMAGE ASSOCIATED WITH DEMOLITION. ALL FINISHED SURFACES (FLOORS, WALLS, CEILINGS, ROOF, ETC.) SHALL MATCH EXISTING CONDITIONS.

J. PROVIDE 1-HOUR FIRE RATED DUST PROOF BARRIERS (UL DESIGN U309) TO SEPARATE DEMOLITION AREA FROM THE REST OF THE FACILITY.

K. WHERE DUST CREATED DURING DEMOLITION MAY ENTER AN HVAC SYSTEM RETURN AIR DUCT, PROVIDE TEMPORARY FILTERS AS REQUIRED TO PREVENT DUST INTRUSION.

L. MAINTAIN OPERATION OF ALL EXISTING SERVICES AND UTILITIES SERVING AREAS THAT ARE OCCUPIED OR IN OPERATION DURING DEMOLITION WORK. COORDINATE AND SCHEDULE ALL DISRUPTIONS TO SERVICES OR UTILITIES WITH OWNER TWO WEEKS IN ADVANCE OF INTERRUPTION.

M. REMOVE, RELOCATE AND REINSTALL ANY COMPONENTS WHEN REQUIRED TO ACCOMMODATE DEMOLITION OR NEW WORK SCOPE. COMMUNICATE TO ARCHITECT/ENGINEER THE EXTENT OF ITEMS TO BE REMOVED PRIOR TO BEGINNING THE WORK.

N. STORE AND PROTECT ALL EXISTING ITEMS WHICH ARE TO BE RELOCATED OR REUSED.

O. WHERE DEMOLITION/RE-WORK OF EXISTING MEP ITEMS CONTAINING HAZARDOUS MATERIALS OCCUR, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER FOR ABATEMENT AND REMEDIATION AS REQUIRED.

MECHANICAL GENERAL NOTES:

A. REFER TO SPECIFICATIONS AND THE CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

B. ALL MECHANICAL WORK SHALL BE PERFORMED BY A LICENSED MECHANICAL CONTRACTOR.

C. ALL WORK SHALL BE COORDINATED AND SCHEDULED WITH THE CONSTRUCTION MANAGER (CM) OR GENERAL CONTRACTOR (GC), OTHER TRADES, THE OWNER, AND RELATED UTILITY COMPANIES. ALL WORK SHALL COINCIDE WITH THE CONSTRUCTION PHASING PER THE CONTRACT DOCUMENTS OR CONSTRUCTION DOCUMENTS AND/OR AS MODIFIED BY THE CM/GC AND APPROVED BY THE OWNER AND DESIGN TEAM. THE MECHANICAL CONTRACTOR SHALL COORDINATE AND DEVELOP A PHASING PLAN WHERE ONE IS NOT EXPLICITLY SHOWN AND SHALL ENSURE THAT SAID PHASING PLAN IS APPROVED PRIOR TO PROCEEDING WITH WORK. ANY AND ALL DEMOLITION SHALL NOT PERMIT INTERRUPTION OF SERVICE IN AN OCCUPIED BUILDING UNLESS COORDINATED AND APPROVED.

D. ALL DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENTS OR GEOMETRICAL RELATIONSHIPS OF DUCTWORK, PIPING, EQUIPMENT, AND SERVICES. THEY ARE NOT INTENDED TO SPECIFY OR SHOW EVERY OFFSET, SEQUENCE, DEVICE, OPTION, FITTING, VALVE, OR COMPONENT. CONTRACTOR TO PROVIDE ANY ADDITIONAL DUCT OR PIPING OFFSETS AND/OR FITTINGS, INCLUDING DIVIDED DUCTS AND FLATTENED DUCTS, REQUIRED FOR PROPER INSTALLATION AND TO MAINTAIN CLEARANCES AS ENCOUNTERED IN THE FIELD.

E. THE MECHANICAL CONTRACTOR SHALL OBTAIN A COPY OF THE ENTIRE SET OF CONTRACT DOCUMENTS PRIOR TO BID AND SHALL COORDINATE ROUTING AND INSTALLATION OF MECHANICAL DUCTWORK, PIPING, AND EQUIPMENT WITH ALL OTHER DISCIPLINES AND TRADES INCLUDING BUT NOT LIMITED TO CIVIL, ARCHITECTURAL, STRUCTURAL, FIRE SUPPRESSION, PLUMBING, AND ELECTRICAL.

F. REFER TO THE ENTIRE SET OF CONTRACT DOCUMENTS FOR DETAILS OF CONSTRUCTION AND INSTALLATION REQUIREMENTS. FURNISH ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED FOR COMPLETION AND OPERATION OF A FULLY FUNCTIONAL MECHANICAL SYSTEM AND IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS INCLUDING BUT NOT LIMITED TO THE KENTUCKY BUILDING CODE, ASHRAE, IMC, IECC, SMACNA, AND NFPA.

G. THE EXACT LOCATIONS OF ALL EQUIPMENT, DUCTS, DIFFUSERS, ETC. SHALL BE COORDINATED WITH ALL OTHER TRADES. CEILING MOUNTED LIGHTING AND ELECTRICAL REQUIREMENTS TAKE PRECEDENCE OVER CEILING MOUNTED MECHANICAL EQUIPMENT. SEE ARCHITECTURAL REFLECTED CEILING PLANS FOR CEILING GRID AND LIGHTING LAYOUT FOR COORDINATION OF FINAL DIFFUSER LOCATIONS.

H. THE MECHANICAL DRAWINGS REFLECT A "BASIS OF DESIGN" HVAC SYSTEM THAT HAS BEEN DESIGNED AROUND SPECIFIC PRODUCTS/MANUFACTURER'S (SEE SCHEDULES). THE SELECTION OF A "BASIS OF DESIGN" HAS INFLUENCED THE DESIGNS OF OTHER TRADES (ELECTRICAL, STRUCTURAL, ETC.). THE CONTRACTOR MAY USE "NON-BASIS OF DESIGN" PRODUCTS/MANUFACTURER'S AS PERMITTED BY THE SPECIFICATIONS AND/OR CONTRACT DOCUMENTS. COORDINATION OF ALL MODIFICATIONS TO EACH DISCIPLINE WHICH RESULT FROM THE USE OF "NON-BASIS OF DESIGN" EQUIPMENT OR MATERIALS SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR. IF "NON-BASIS OF DESIGN" MANUFACTURERS, SIZES, OR MODEL NUMBERS ARE BID, SUBMITTED, OR INSTALLED, IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR AND ALL OF HIS OR HER SUBCONTRACTORS TO COORDINATE ALL DIFFERENCES PRIOR TO BID. ALL COSTS OF ALL TRADES ASSOCIATED WITH THE USE OF "NON-BASIS OF DESIGN" EQUIPMENT SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR AND SHALL BE INCLUDED IN THE BID. SUBSEQUENTLY, ANY ADDITIONAL COST BORE BY THE ENGINEER (MECHANICAL, ELECTRICAL, ETC) TO ACCOMMODATE "NON-BASIS OF DESIGN" EQUIPMENT SHALL BE BORE BY THE CONTRACTOR AND PAID TO THE ENGINEER OF RECORD DURING SUBMITTALS.

I. EQUIPMENT OR MATERIALS AS ALLOWED BY THE SPECIFICATIONS AND/OR CONTRACT DOCUMENTS, WHICH ARE INSTALLED AND SUBSEQUENTLY VIEWED UNSATISFACTORY BY THE OWNER AND/OR ENGINEER WITHIN THE WARRANTY PERIOD, SHALL BE REMOVED COMPLETELY BY THE CONTRACTOR AND REPLACED WITH THE ORIGINAL DESIGN OR CORRECTED AS DIRECTED BY THE ENGINEER WITHOUT ADDITIONAL COST TO THE OWNER.

J. CONTRACTOR SHALL VISIT THE JOB SITE, FIELD VERIFY FIT, COORDINATE WITH OTHER TRADES, AND BECOME FAMILIAR WITH ALL PROJECT CONDITIONS PRIOR TO FABRICATING DUCTWORK, INSTALLING EQUIPMENT, ETC. NO ALLOWANCES WILL BE MADE FOR LACK THEREOF.

K. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND COSTS FOR ALL PERMITS, TESTING, AND INSPECTIONS.

L. CONTRACTOR TO REMOVE UNUSED/ABANDONED HVAC SYSTEMS AND EQUIPMENT UNLESS INDICATED OTHERWISE ON THE CONTRACT DOCUMENTS.

M. COORDINATE WITH THE CONTRACT DOCUMENTS AND PROVIDE TEMPORARY HEAT AS REQUIRED.

N. INFORMATION AND COMPONENTS SHOWN ON RISER DIAGRAMS OR DETAILS BUT NOT SHOWN ON PLANS AND VICE VERSA, SHALL BE PROVIDED AS IF REQUIRED BY BOTH.

O. THE ENTIRE MECHANICAL INSTALLATION SHALL BE AS REQUIRED TO MAINTAIN FIRE/SMOKE RATINGS AND/OR "UL" ASSEMBLY RATINGS AS REQUIRED BY THE CONTRACT DOCUMENTS AND AS SHOWN ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS. SEAL AROUND ALL PENETRATIONS THROUGH ALL FIRE/SMOKE SEPARATIONS AND/OR "UL" RATED ASSEMBLIES. COORDINATE ALL PENETRATIONS WITH THE CONSTRUCTION MANAGER AND/OR GENERAL CONTRACTOR. PROVIDE ADDITIONAL FIRE DAMPERS, SMOKE DETECTORS, AND SMOKE DAMPERS (INCLUSIVE OF WIRING) AS REQUIRED FOR A FULLY FUNCTIONAL AND CODE COMPLIANT SYSTEM.

P. ALL DUCTWORK, PIPING, AND MECHANICAL EQUIPMENT SHALL BE SUPPORTED DIRECTLY FROM THE STRUCTURE. NO OTHER TRADES, I.E. ELECTRICAL, CEILING, PLUMBING, ETC., SHALL BE SUSPENDED, HUNG, OR SUPPORTED FROM MECHANICAL DUCTWORK OR MECHANICAL PIPING.

Q. ALL BUILDING PENETRATIONS MUST BE COORDINATED WITH THE ARCHITECT AND SHALL BE FLASHED AND SEALED WEATHER-TIGHT. ALL MATERIALS AND COLORS MUST BE PRE-APPROVED BY THE ARCHITECT. NEW OPENINGS AND/OR PENETRATIONS FOR MECHANICAL ITEMS SHALL BE CUT, SLEEVED, ETC. BY THE MECHANICAL CONTRACTOR. ALL OPENINGS SHALL BE CORE DRILLED OR SAW-CUT. NO "HAMMER DRILLING" WILL BE ALLOWED.

R. ROUTE DUCTWORK AS HIGH AS POSSIBLE TO FACILITATE ACCESS TO ABOVE CEILING SPACE. COORDINATE ROUTING WITH OTHER SERVICES AND TRADES. PROVIDE ADDITIONAL DUCTWORK, OFFSETS, ETC. TO ACCOMMODATE FIELD CONDITIONS AS REQUIRED FOR A COMPLETE AND FUNCTIONING SYSTEM AT NO ADDITIONAL COST. ADDITIONAL OFFSETS REQUIRE APPROVAL FROM THE ENGINEER. ROUTE DUCTWORK BETWEEN JOISTS WHERE POSSIBLE.

S. ALL AIR DEVICES LOCATED ABOVE GYPBOARD OR HARD CEILINGS SHALL HAVE ACCESSIBLE BALANCING DAMPERS.

T. ALL DUCTWORK SHALL BE CONSTRUCTED AND INSTALLED PER SMACNA HVAC DUCT CONSTRUCTION STANDARDS.

U. PROVIDE AND INSTALL DUCT ACCESS DOORS FOR INSPECTION OF ALL INSTALLED FIRE DAMPERS AS DIRECTED BY SMACNA HVAC CONSTRUCTION STANDARDS.

V. MAXIMUM FLEXIBLE DUCT LENGTH SHALL BE 5'-0". ALL FLEXIBLE DUCT SHALL CONFORM TO THE REQUIREMENTS OF UL 181 FLEXIBLE AIR DUCTS. SUPPORT TO ELIMINATE SAGGING AND KINKING. INSULATED FLEXIBLE DUCTS SHALL MEET MINIMUM R-VALUES REQUIRED BY THE IECC.

W. ALL HVAC EQUIPMENT TO BE INSTALLED PER MANUFACTURER'S REQUIREMENTS. UTILIZE FACTORY FILTERS DURING CONSTRUCTION.

X. THE OWNER SHALL CONTRACT DIRECTLY WITH A THIRD-PARTY TESTING AND BALANCING COMPANY TO BALANCE SYSTEM TO AIR QUANTITIES INDICATED ON PLANS AND PROVIDE OWNERS REPRESENTATIVES WITH COMPLETE NEBB/AABC BALANCE REPORT. THE MECHANICAL CONTRACTOR SHALL PROVIDE AS MANY ADDITIONAL SITE VISITS BY THE LICENSED TAB CONTRACTOR AS REQUIRED BY THE ENGINEER FOR A COMPLETE AND FUNCTIONING AND APPROVED SYSTEM IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

Y. ALL RECTANGULAR 90 DEG. AND 45 DEG. ELBOWS SHALL HAVE TURNING VANES.

Z. PROVIDE A MANUAL VOLUME DAMPER AT ALL BRANCH TAKE-OFFS ON SUPPLY, RETURN, AND OUTSIDE AIR DUCTWORK AT NO ADDITIONAL COST. PROVIDE A MAIN RETURN DAMPER UPSTREAM OF OUTSIDE AIR CONNECTIONS IN RETURN AIR PLENUM DESIGNS. COORDINATE ADDITIONAL MANUAL VOLUME DAMPER LOCATIONS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM WITH THE ENGINEER PRIOR TO ORDER, FABRICATION, OR INSTALLATION.

AA. ALL DUCT DIMENSIONS SHOWN ARE INTERIOR "CLEAR" DUCT DIMENSIONS.

AB. MAINTAIN 10'-0" MINIMUM CLEARANCE BETWEEN OUTDOOR AIR INTAKES AND EXHAUST, PLUMBING VENTS, ETC. AND/OR AS REQUIRED BY IMC, WHICHEVER IS MORE STRINGENT.

AC. MAINTAIN 10'-0" MINIMUM CLEARANCE FROM EDGE OF ROOFTOP EQUIPMENT TO ROOF EDGE UNLESS RAILING OR PARAPET OF SUFFICIENT HEIGHT IS TO BE PROVIDED IN ACCORDANCE WITH ALL APPLICABLE CODES INCLUDING BUT NOT LIMITED TO: IBC, IMC, LOCAL CODES, OSHA GUIDELINES (WHERE APPLICABLE). REFER TO ARCHITECTURAL.

AD. PROVIDE CONDUIT, BOXES AND CONTROL WIRING IN COMPLIANCE WITH THE NEC AND DIVISION 26.

AE. MECHANICAL CONTRACTOR SHALL COORDINATE WITH ELECTRICAL CONTRACTOR AND DRAWINGS FOR CONNECTIONS AND LOCATION OF ALL EQUIPMENT.

AF. CONTRACTOR SHALL PROVIDE ADDITIONAL OFFSETS OR BENDS IN PIPING AS REQUIRED TO ALLOW FOR EXPANSION AND CONTRACTION DUE TO TEMPERATURE CHANGES AND DIFFERENCES IN THE AMBIENT TEMPERATURE WHEN PIPING AND EQUIPMENT IS INSTALLED.

AG. PROVIDE MANUAL AIR VENTS AT HIGH POINTS AND DRAIN VALVES AT LOW POINTS OF ALL HYDRONIC PIPING. AUTOMATIC AIR VENTS SHALL BE INSTALLED WHERE INDICATED IN THE CONTRACT DOCUMENTS AND/OR AS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM.

AH. MECHANICAL CONTRACTOR SHALL COORDINATE WITH THE ARCHITECTURAL PLANS AND GC/CM ALL AREAS WHERE MECHANICAL / ELECTRICAL EQUIPMENT AND DEVICES ARE INDICATED TO BE DEMOLISHED AND THE REQUIRED REPAIR AND RESTORATION OF ALL WALLS, ROOFS, CEILINGS, FLOORS, ETC. SHALL BE INCLUDED IN THEIR BID.

AI. ALL ROOF PENETRATIONS SHALL BE IN COMPLIANCE WITH THE ROOFING MANUFACTURER'S GUIDELINES AND THE AMERICAN ROOFING COUNCIL. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE AS NECESSARY TO MAINTAIN ALL WARRANTIES.

AJ. STRUCTURAL MEMBERS SHALL NOT BE CUT OR COMPROMISED IN ANY WAY.

AK. DO NOT BLOCK ACCESS TO HVAC OR ELECTRICAL EQUIPMENT. DO NOT INSTALL PIPING, DUCTWORK, OR EQUIPMENT OVER ELECTRICAL PANELS/SWITCHGEAR OR THE 30" x 42" (W x D) CLEARANCE IN FRONT OF THESE ELECTRICAL ITEMS. COORDINATE ADDITIONAL REQUIREMENTS WITH NEC.

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Lexington - Louisville - Charleston
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BIDDING DOCUMENTS

COMMONWEALTH OF KENTUCKY
BRANDON JAMES SLUSHER
19010
LICENSED PROFESSIONAL ENGINEER
1/18/2024

Conner High School Fieldhouse
Boone County Schools Board of Education
3310 Cougar Path
Hebron, KY 41048
Mr. Matt Turner, Superintendent

SHEET TITLE
MECH LEGEND & GENERAL NOTES

BG #
#23-470

REH #
#129-523-A

DATE
02-08-2024

M0.1

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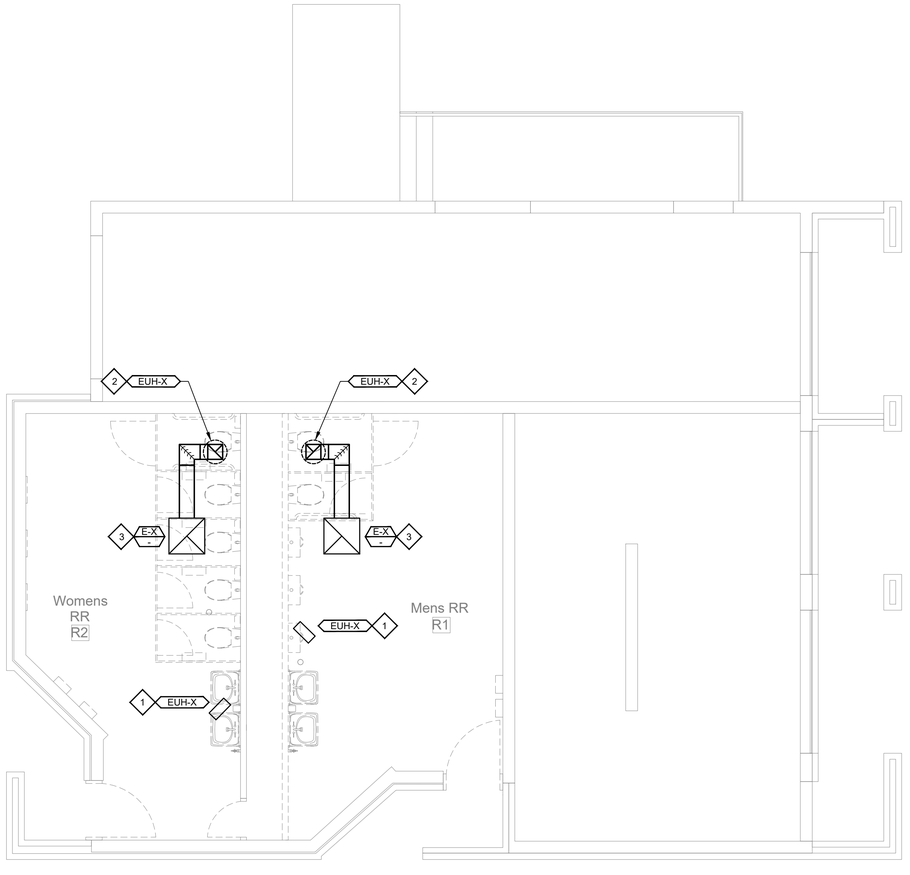
GENERAL NOTES:

A. REFER TO SHEET M0.1 FOR GENERAL MECHANICAL NOTES.

◇ SHEET KEYNOTES:

1. EXISTING WALL-MOUNTED ELECTRIC UNIT HEATER TO BE DEMOLISHED AND REMOVED.
2. EXISTING ROOFTOP EXHAUST FAN AND ALL ASSOCIATED DUCT WORK & ACCESSORIES TO BE DEMOLISHED AND REMOVED.
3. EXISTING 24x24 EXHAUST GRILLE TO BE DEMOLISHED AND REMOVED.



CONCESSIONS & RESTROOM BUILDING - DEMOLITION PLAN - MECHANICAL

SCALE: 1/4"=1'-0"

0 2' 4' 8'

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BIDDING DOCUMENTS

STATE OF KENTUCKY
BRANDON JAMES SLUSHER
19410
LICENSED PROFESSIONAL ENGINEER
1/18/2024

Conner High School Fieldhouse

Boone County Schools Board of Education
3310 Cougar Path
Hebron, KY 41048
Mr. Matt Turner, Superintendent

SHEET TITLE
CONC. & RR BLDG - MECH DEMO

BG #
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02-08-2024

MD1.1

STW #23074

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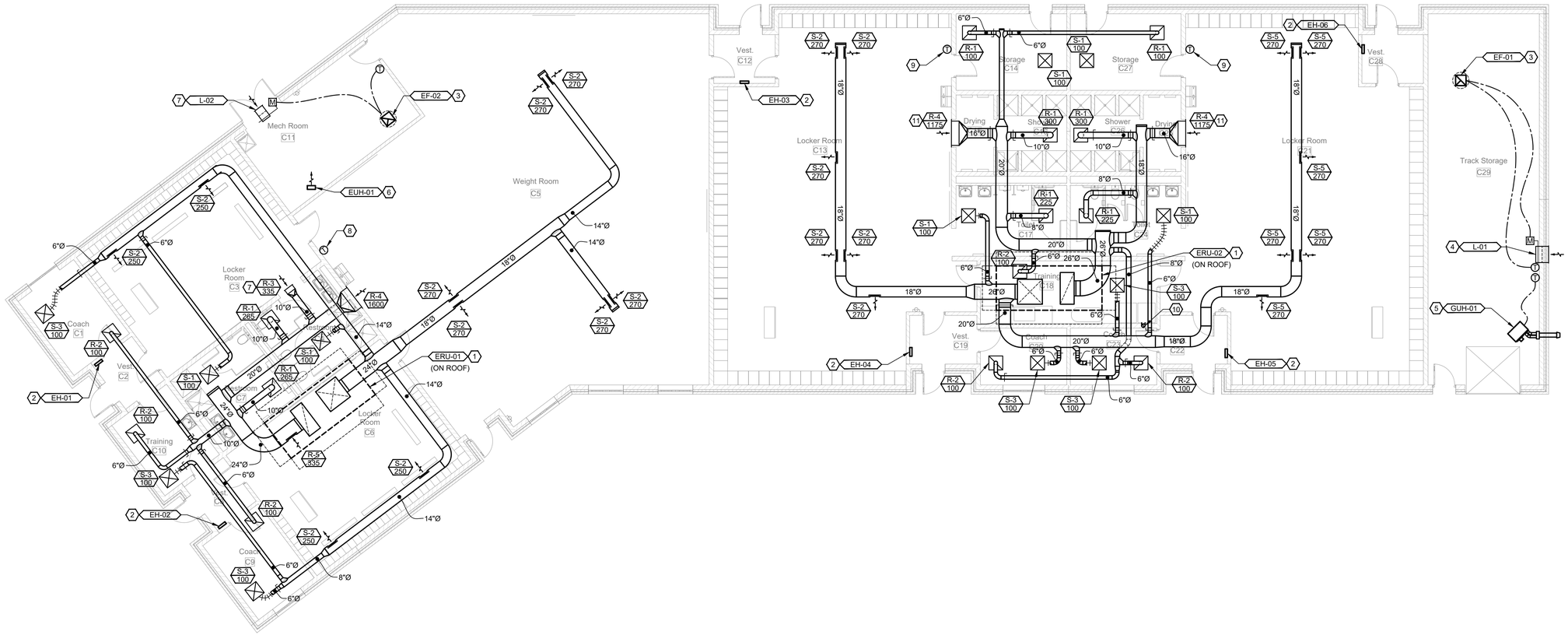
GENERAL NOTES:

A. REFER TO SHEET M0.1 FOR MECHANICAL GENERAL NOTES.
B. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
C. ALL DUCTWORK ROUTED IN EXPOSED AREAS THAT REQUIRES INSULATION SHALL BE DOUBLE-WALL DUCTWORK WITH PAINT-GRIP FINISH.
D. REFER TO SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
E. ALL CONTROL WIRING SHALL BE ROUTED IN CONDUIT.
F. ALL THERMOSTATS SHALL BE MOUNTED AT 48" AFF.

SHEET KEYNOTES:

1. PACKAGED ROOFTOP ENERGY RECOVERY UNIT. SEE PLUMBING DRAWINGS FOR GAS PIPING.
2. WALL-MOUNTED ELECTRIC CONSOLE HEATER MOUNTED AT 12" AFF TO BOTTOM.
3. ROOFTOP EXHAUST FAN. FAN SHALL BE INTEGRATED WITH WALL-MOUNTED THERMOSTAT SET TO 80 DEGREES (ADJ).
4. COMBINATION LOUVER/DAMPER WITH 24V ACTUATOR INSTALLED AT 8'-0" AFF TO BOTTOM. LOUVER TO OPEN FULLY UPON ACTIVATION OF EXHAUST FAN EF-01 AND SHALL REMAIN FULLY CLOSED OTHERWISE.
5. WALL-MOUNTED GAS-FIRED UNIT HEATER TO BE MOUNTED AT 9'-6" AFF. HEATER SHALL BE INTEGRATED WITH A 24V WALL-MOUNTED THERMOSTAT SET TO 60 DEGREES (ADJ). SEE PLUMBING DRAWINGS FOR GAS PIPING.
6. ELECTRIC UNIT HEATER MOUNTED AT 8'-0" AFF TO BOTTOM. PROVIDE WITH WALL MOUNTING BRACKET. HEATER SHALL HAVE INTEGRAL THERMOSTAT SET TO 60 DEGREES (ADJ).
7. COMBINATION LOUVER/DAMPER WITH 24V ACTUATOR INSTALLED CENTERED ABOVE DOOR OPENING AT 10'-0" TO BOTTOM. LOUVER TO OPEN FULLY UPON ACTIVATION OF EXHAUST FAN EF-02 AND SHALL REMAIN FULLY CLOSED OTHERWISE.
8. COMBINATION THERMOSTAT/HUMIDISTAT MOUNTED AT 48" AFF FOR CONTROL OF ERU-01.
9. COMBINATION THERMOSTAT/HUMIDISTAT FOR CONTROL OF ERU-02. THESE TWO LOCATIONS SHALL INDICATE AVERAGING TEMPERATURE/HUMIDITY READINGS.
10. PROVIDE AND CONNECT 4" DRYER VENT. ROUTE UP THROUGH ROOF TO GOOSENECK TERMINATION.
11. AIR DEVICE SHALL BE INSTALLED CENTERED ABOVE OPENING AT 10'-0" AFF TO BOTTOM.



FIELDHOUSE - FLOOR PLAN - MECHANICAL

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

0 4' 8' 16'

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BIDDING DOCUMENTS

STATE OF KENTUCKY BRANDON JAMES SLUSHER 29210 LICENSED PROFESSIONAL ENGINEER 1/18/2024

Conner High School Fieldhouse
Boone County Schools Board of Education
3310 Cougar Path
Hebron, KY 41048
Mr. Matt Turner, Superintendent

SHEET TITLE
FIELDHOUSE PLAN - MECHANICAL

BG #
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M1.1

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GENERAL NOTES:

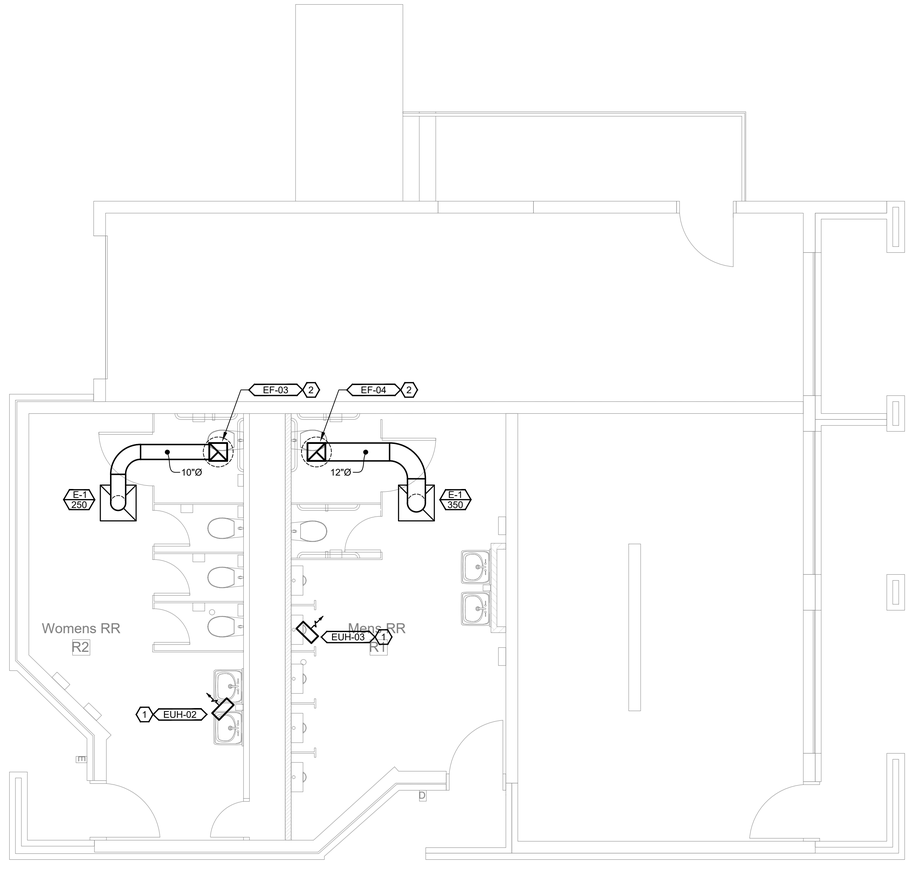
A. REFER TO SHEET M0.1 FOR GENERAL MECHANICAL NOTES.

B. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

C. SEE SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.

⬡ SHEET KEYNOTES:

1. WALL-MOUNTED ELECTRIC UNIT HEATER MOUNTED AT 8'-0" AFF TO BOTTOM. HEATER SHALL HAVE INTEGRAL THERMOSTAT SET TO 60 DEGREES (ADJ).
2. ROOFTOP EXHAUST FAN. FAN SHALL OPERATE ON A 7-DAY PROGRAMMABLE TIME CLOCK LOCATED IN PLUMBING CHASE.



CONCESSIONS & RESTROOM BUILDING - FLOOR PLAN - MECHANICAL

SCALE: 1/4"=1'-0"

0 2' 4' 8'

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STATE OF KENTUCKY
BRANDON JAMES SLUSHER
19010
LICENSED PROFESSIONAL ENGINEER
1/18/2024

Conner High School Fieldhouse

Boone County Schools Board of Education
3310 Cougar Path
Hebron, KY 41048
Mr. Matt Turner, Superintendent

SHEET TITLE
CONC. & RR BLDG - MECH

BG #
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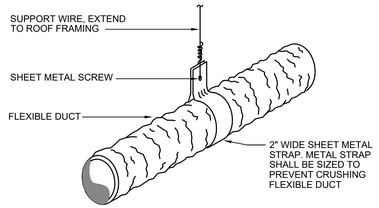
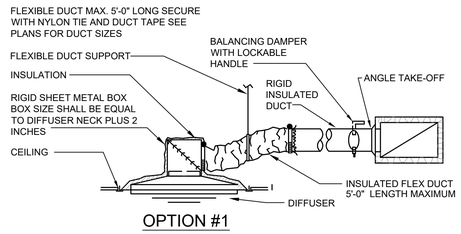


FLEXIBLE DUCT SUPPORT DETAILS

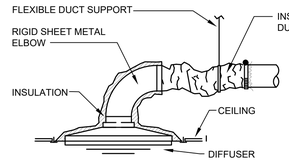
NOT TO SCALE

NOTE:
PROVIDE A MINIMUM OF FOUR (4) SHEET METAL SCREWS THRU 3-WRAPS OF DUCT TAPE TO SECURE FLEXIBLE DUCT TO THE SHEET METAL PRIOR TO INSTALLING THE 1/4" WIDE PLENUM RATED NYLON TIE. THE FLEXIBLE DUCT INSULATION SHALL BE SECURED WITH 3-WRAPS OF DUCT TAPE.

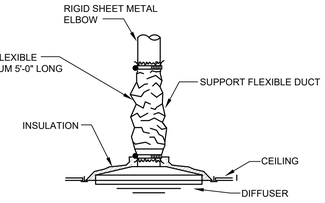


OPTION #1

NOTE:
ALL MATERIALS USED FOR DUCT CONNECTION MUST BE PLENUM RATED.



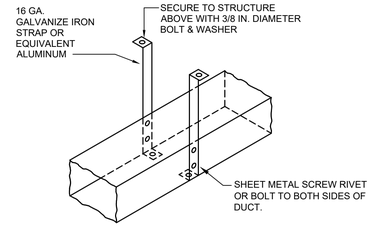
OPTION #2



OPTION #3

DIFFUSER RUNOUT DETAIL

NOT TO SCALE



NOTE:
(8 FT. MAX. HANGER SPACING)
ALSO PROVIDE 3 HANGERS AT EACH TAKE-OFF OR BRANCH

RECTANGULAR DUCT HANGER DETAIL

NOT TO SCALE

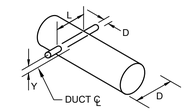


FIGURE A

FIGURE A IS APPLICABLE FOR UP TO 20% AREA OBSTRUCTION WITH ROUND SHAPED MEMBER AND 10% WITH FLAT PROFILE. Y IS THE DISTANCE FROM DUCT CENTER.

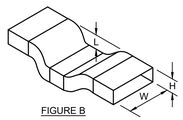


FIGURE B

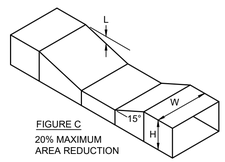


FIGURE C
20% MAXIMUM AREA REDUCTION

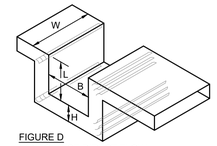
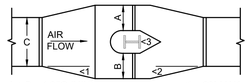


FIGURE D
VANES MUST DIRECT FLOW PARALLEL TO DUCT WALL



A + B = 1.25C (MIN)
AT CONSTANT DEPTH

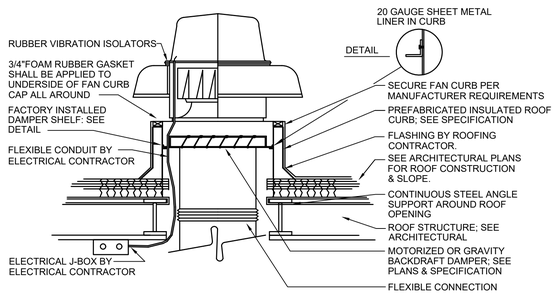
<1 = 20° MAX
<2 = 30° MAX
<3 = 60° MAX

FIGURE F

USED WHEN OBSTRUCTION EXCEEDS 20% OF SECTION AREA AND OFFSETS AROUND ARE NOT POSSIBLE

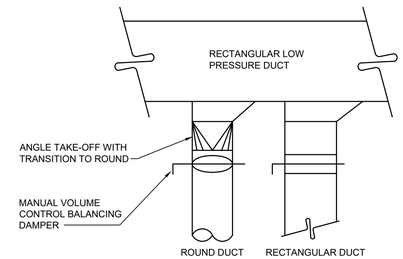
DUCT OBSTRUCTIONS

NOT TO SCALE



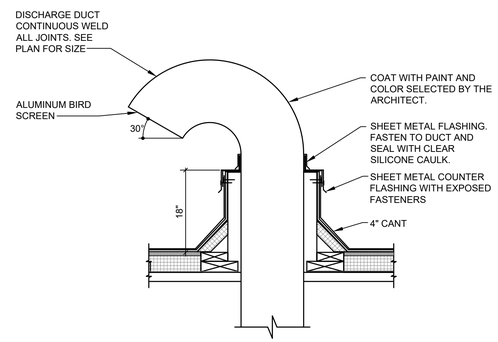
ROOF EXHAUST FAN DETAIL

NOT TO SCALE



LOW PRESSURE BRANCH TAKE OFF DETAIL

NOT TO SCALE



GOOSENECK DETAIL

NOT TO SCALE

233723

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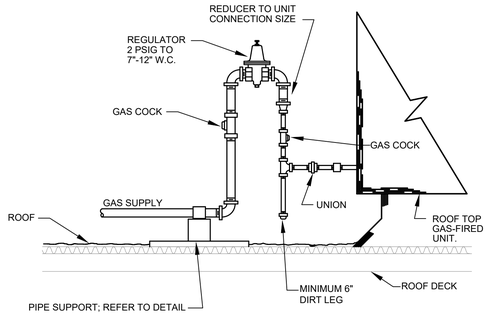
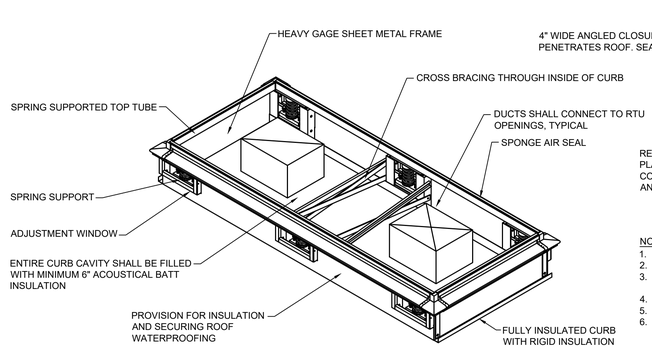
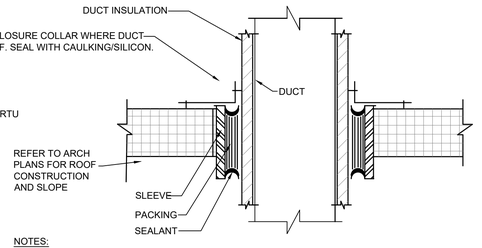


ROOFTOP UNIT GAS PIPING CONNECTION DETAIL

NOT TO SCALE



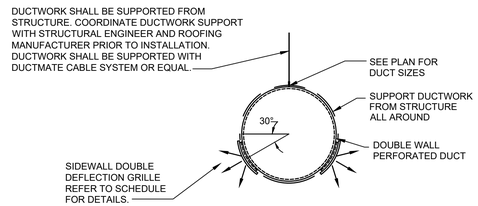


NOTES:

1. REFER TO ROOF TOP UNIT SCHEDULE FOR MORE DETAILS.
2. CURB TO BE AT LEAST 24" TALL ABOVE ROOF SURFACE.
3. DUCT PENETRATIONS SHALL BE CAULKED TO PROVIDE A COMPLETE SEAL BETWEEN THE INSULATION AND CLOSURE COLLAR.
4. RUN SUPPLY/RETURN DUCTS UP BETWEEN JOISTS.
5. REFER TO FLOOR PLANS FOR DUCT ROUTING.
6. COORDINATE UNIT LOCATION AND DUCT PENETRATIONS WITH ROOF STRUCTURE. REFER TO STRUCTURAL DRAWINGS FOR MORE DETAILS. COORDINATE ALL ROOF WORK WITH GENERAL TRADES CONTRACTOR.
7. ROOF CURB TO BE PROVIDED WITH ROOF TOP UNIT.

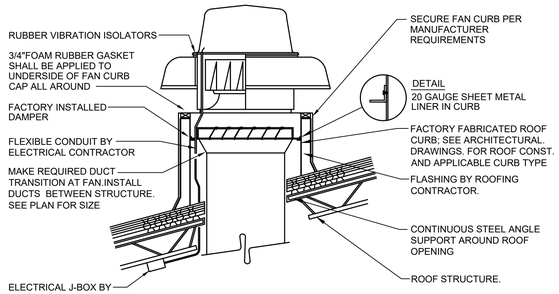
ROOFTOP UNIT VIBRATION ISOLATION CURB DETAIL

NOT TO SCALE



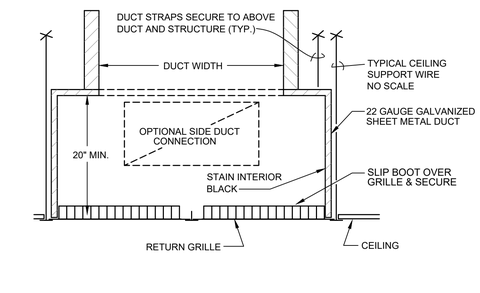
DOUBLE WALL DUCT INSTALLATION DETAIL

NOT TO SCALE 233113



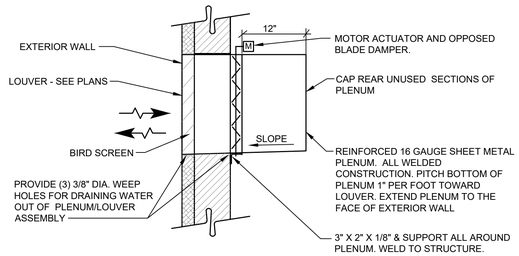
EXHAUST FAN DETAIL (SLOPED ROOF)

NOT TO SCALE 233723



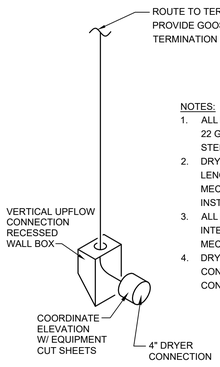
LAY-IN RETURN AIR PLENUM DETAIL

NOT TO SCALE 233113



LOUVER WITH MOTORIZED DAMPER DETAIL

NOT TO SCALE 233713



NOTES:

1. ALL DRYER VENT DUCT THROUGHOUT THE BUILDING SHALL BE A 22 GAUGE (MINIMUM THICKNESS) ALUMINUM OR GALVANIZED STEEL.
2. DRYER VENT LENGTH SHALL NOT EXCEED 35'-0" EQUIVALENT LENGTH AS DETERMINED BY THE 2012 INTERNATIONAL MECHANICAL CODE. DETERMINE COMPLIANCE PRIOR TO INSTALLATION.
3. ALL DRYER EXHAUST MATERIAL SHALL BE METAL WITH SMOOTH INTERIOR FINISH THROUGHOUT PER 2012 INTERNATIONAL MECHANICAL CODE.
4. DRYER VENT CONNECTION SHALL BE A VERTICAL UPFLOW CONNECTION WITH RECESSED BOX. A 90-DEGREE HORIZONTAL CONNECTION SHALL NOT BE ACCEPTABLE.

DRYER VENT DETAIL

NOT TO SCALE 233113

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PACKAGED ROOFTOP ENERGY RECOVERY UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	EER	WEIGHT (LBS)	UNIT: SUPPLY FAN AIRFLOW (CFM)	SUPPLY FAN TSP (inH2O)	SUPPLY FAN MOTOR SIZE (HP)	RETURN/EXHAUST FAN AIRFLO W (CFM)	RETURN/EXHAUST FAN TSP (inH2O)	RETURN/EXHAUST FAN MOTOR SIZE (HP)	COOLING: LAT LDB (F)	LAT LWB(F)	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	COMPRESSOR STAGES	COMPRESSOR QTY	COMPRESSOR REFRIGERANT	HEAT PUMP HEATING: TOTAL CAPACITY (MBH)	O/A TEMP (°F)	EAT (°F)	LAT (°F)	HOT GAS REHEAT: TOTAL CAPACITY (MBH)	LAT DB (°F)	LAT WB (°F)	AUXILIARY GAS HEATING: GAS TYPE	INPUT (MBH)	OUTPUT (MBH)	TURNDOWN	ENERGY RECOVERY: RECOVERED CAPACITY COOLING (MBH)	RECOVERED CAPACITY HEATING (MBH)	MIXED AIR LAT COOLING (°F)	MIXED AIR LAT HEATING (°F)	APD (inH2O)	EFFECTIVENESS TOTAL COOLING	EFFECTIVENESS SENSIBLE COOLING	EFFECTIVENESS TOTAL HEATING	EFFECTIVENESS SENSIBLE HEATING	ELECTRICAL V/Ø/Hz	ELECTRICAL MCA	ELECTRICAL MOCP	REMARKS
ERU-01	DAIKIN	DPS016A	11.1	4239	3100	2.9	5	3100	1.05	4	50.8	50.8	169	103	VARIABLE	1	R410A	164	47	46.1	94.3	57.6	68	57.6	NAT. GAS	300	240	12:1	112	195	81.2	46.1	0.69	0.64	0.67	0.66	0.67	460/3/60	45.1	60	ALL
ERU-02	DAIKIN	DPS016A	11.1	4239	3900	3.3	5	3900	1.07	4	55.2	55.1	181	117	VARIABLE	1	R410A	166	47	45.6	84.5	54.3	68	59.9	NAT. GAS	300	240	12:1	128	197	82.5	45.6	0.86	0.59	0.61	0.59	0.60	460/3/60	45.1	60	ALL

REMARKS:
1. COOLING DESIGN CONDITIONS: EAT 75F DB / 62F WB AND 95F DB / 78F WB AMBIENT. HEATING AMBIENT DESIGN CONDITIONS BASED ON 5F DB / 4F WB
2. AIR SOURCE HEAT PUMP
3. PROVIDE ROOF TOP UNIT WITH ROOF VIBRATION ISOLATION CURB PER DETAIL
4. WITH AUXILIARY GAS HEAT
5. SINGLE POINT POWER CONNECTION WITH FACTORY INSTALLED 65 kAIC FUSED POWER BLOCK AND UNIT POWERED 115V GFI CONVENIENCE OUTLET. DISCONNECT BY ELECTRICAL CONTRACTOR
6. ENERGY RECOVERY WHEEL
7. VFD'S ON SUPPLY AND RETURN FANS
8. HIGH AND LOW PRESSURE SWITCH
9. COMPRESSOR SHORT CYCLE TIMER
10. PROVIDE WITH HAIL GUARD
11. FACTORY MOUNTED DDC CONTROLLERS WITH BACNET INTERFACE
12. SEE SPECIFICATIONS FOR MORE INFORMATION
13. MODULATING HOT GAS REHEAT
14. PROVIDE WITH PHASE PROTECTION
15. PROVIDE WITH SMOKE DETECTOR SHUT DOWN
16. PROVIDE UNIT WITH 2", 30% EFFICIENCY PRIMARY FILTERS

OTHER ACCEPTABLE MANUFACTURERS INCLUDE: GREENHECK, ADDISON, TRANE, VALENT. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

ELECTRIC HEATER SCHEDULE

MARK	MANUFACTURER	MODEL	TYPE	CFM	BTUH	ELECTRICAL V/Ø/Hz	ELECTRICAL KW	ELECTRICAL MCA	ELECTRICAL MOCP	REMARKS
EH-01	MARKEL	E3322TD-RP	RECESSED WALL-MOUNTED	175	3,413	120/1/60	1	10.375	15	1-5
EH-02	MARKEL	E3322TD-RP	RECESSED WALL-MOUNTED	175	3,413	120/1/60	1	10.375	15	1-5
EH-03	MARKEL	E3322TD-RP	RECESSED WALL-MOUNTED	175	3,413	120/1/60	1	10.375	15	1-5
EH-04	MARKEL	E3322TD-RP	RECESSED WALL-MOUNTED	175	3,413	120/1/60	1	10.375	15	1-5
EH-05	MARKEL	E3322TD-RP	RECESSED WALL-MOUNTED	175	3,413	120/1/60	1	10.375	15	1-5
EH-06	MARKEL	E3322TD-RP	RECESSED WALL-MOUNTED	175	3,413	120/1/60	1	10.375	15	1-5
EUH-01	MARKEL	HF1B5103N	UNIT HEATER	400	11,200	240/1/60	3.3	13.7	20	1,2,4,5,6
EUH-02	MARKEL	HF1B5103N	UNIT HEATER	400	11,200	240/1/60	3.3	13.7	20	1,2,4,5,6
EUH-03	MARKEL	HF1B5103N	UNIT HEATER	400	11,200	240/1/60	3.3	13.7	20	1,2,4,5,6

REMARKS:
1. INTEGRAL THERMOSTAT AND DISCONNECT
2. PROVIDE WITH APPROPRIATE FRAME/BRACKET FOR MOUNTING AS REQUIRED
3. RECESSED WALL UNIT. BOTTOM OF UNIT SHALL BE AT 12" AFF
4. AUTOMATIC THERMAL RESET LIMIT
5. UNIT-MOUNTED THERMOSTAT TO BE SET AT 60 DEG F.
6. WITH ADJUSTABLE WALL BRACKET.

OTHER ACCEPTABLE MANUFACTURERS INCLUDE: Q-MARK, REDDI. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

GAS-FIRED UNIT HEATER SCHEDULE

MARK	MANUFACTURER	MODEL	CFM	GAS INFORMATION INPUT (MBH)	GAS INFORMATION OUTPUT (MBH)	FAN MOTOR ELECTRICAL HP	FAN MOTOR ELECTRICAL RPM	FAN MOTOR ELECTRICAL AMPS	THROW (FT)	MOUNTING HEIGHT (FT)	FLUE SIZE	ELECTRICAL V/ø/Hz	ELECTRICAL MCA	ELECTRICAL MOCP	REMARKS
GUH-01	STERLING	GG075	920	75	61.5	1/12	1050	2.6	40.0	8.0	4"ø	115/1/60	4.8	15	ALL

REMARKS:
1. LOW-PROFILE TUBULAR PROPELLER UNIT HEATER
2. HORIZONTAL LOUVERS
3. WITH WALL-MOUNTING BRACKET
4. WITH WALL-MOUNTED ADJUSTABLE THERMOSTAT
5. WITH COMBUSTION AIR INLET KIT
6. WITH TWO-STAGE GAS CONTROL

OTHER ACCEPTABLE MANUFACTURERS INCLUDE: MODINE, REZNOR

LOUVER SCHEDULE

MARK	MANUFACTURER	MODEL	INTAKE / EXHAUST	SIZE WIDTH	SIZE HEIGHT	SIZE DEPTH	CFM	PRESSURE DROP (IN)	FREE AREA (SQ FT)	VELOCITY (FPM)	REMARKS
L-01	GREENHECK	ECD-401	INTAKE	28	24	4	750	0.03	1.8	417	ALL
L-02	GREENHECK	ECD-401	INTAKE	16	16	4	250	0.03	0.6	417	ALL

REMARKS:
1. LOUVER COLOR SELECTED BY ARCHITECT
2. COORDINATE ALL LOUVER LOCATIONS WITH ARCHITECT AND ENGINEER PRIOR TO INSTALLATION
3. ALUMINUM CONSTRUCTION
4. DRAINABLE BLADES
5. COMBINATION LOUVER DAMPER
6. MAXIMUM NC LEVEL OF 25
7. PROVIDE WITH 24V FACTORY MOUNTED DAMPER ACTUATOR. CONTROLS CONTRACTOR SHALL PROVIDE REQUIRED POWER TO ACTUATOR.
8. PROVIDE BIRD SCREEN AS PERMITTED BY CURRENT INTERNATIONAL MECHANICAL CODE (IMC).

OTHER ACCEPTABLE MANUFACTURERS INCLUDE: RUSKIN, UNITED ENERTECH. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

AIR DEVICE SCHEDULE

MARK	MANUFACTURER	MODEL	MAX CFM	MODULE	AIR PATTERN	NECK	MAX NC	REMARKS
S-1	KRUEGER	5SHR-4	100	24x24	4-WAY	6"ø	20	1,5,8,11
S-2	KRUEGER	5DMGDR	400	18x10	DBL DEF	16x8	20	4,6,11,12,14
S-3	KRUEGER	5SHR-4	100	24x24	4-WAY	6"ø	20	2,5,8,11
R-1	KRUEGER	S580	-	24x24	-	22x22	20	1,5,8,9,10,11,15
R-2	KRUEGER	S580	-	24x24	-	22x22	20	2,5,8,9,10,11,15
R-3	KRUEGER	S580	-	18x10	-	16x8	20	3,7,10,11,13
R-4	KRUEGER	S580	-	42x26	-	40x24	20	3,7,10,11,13
E-1	KRUEGER	S580	-	24x24	-	22x22	20	2,5,8,9,10,11,15

REMARKS:
1. INSTALL AIR DEVICE IN HARD CEILING, PROVIDE WITH APPROPRIATE MOUNTING FRAME
2. LAY-IN TYPE
3. SIDEWALL MOUNTED
4. DUCT MOUNTED
5. PROVIDE WITH WHITE FINISH
6. PRIMERED TO ACCEPT FIELD PAINTING TO MATCH DUCT
7. PRIMERED TO ACCEPT FIELD PAINTING TO MATCH WALL
8. COORDINATE AIR DEVICE LOCATIONS WITH REFLECTED CEILING PLANS PRIOR TO INSTALLATION. LIGHTING HAS PRIORITY OVER HVAC
9. PROVIDE SQUARE TO ROUND ADAPTER AS REQUIRED
10. PROVIDE INSULATED PLENUM, REFER TO DETAIL
11. AIR DEVICE SHALL BE ALUMINUM CONSTRUCTION
12. INSTALL AIR DEVICE AT 30 DEGREES BELOW HORIZONTAL
13. HORIZONTAL FRONT BLADES
14. DOUBLE DEFLECTION GRILLE
15. PROVIDE MINIMUM 14" DEEP ACOUSTICALLY LINED PLENUM STAINED BLACK ON THE INTERIOR

OTHER ACCEPTABLE MANUFACTURERS INCLUDE: PRICE, TITUS. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

EXHAUST FAN SCHEDULE

MARK	MANUFACTURER	MODEL	CFM	ESP (IN H20)	SONES	DRIVE TYPE	RPM	ELECTRICAL V/Ø/Hz	ELECTRICAL HP	ELECTRICAL MCA	ELECTRICAL MOCP	REMARKS
EF-01	GREENHECK	CUE-140-VG	750	0.1	2.0	DIRECT	527	115/1/60	FRAC.	4.8	15	1,2,3,4,5
EF-02	GREENHECK	CUE-095-VG	250	0.1	1.0	DIRECT	680	115/1/60	FRAC.	3.5	15	1,2,3,4,5
EF-03	GREENHECK	CUE-095-VG	250	0.1	1.0	DIRECT	680	115/1/60	FRAC.	3.5	15	1,2,3,4,6
EF-04	GREENHECK	CUE-095-VG	350	0.1	1.6	DIRECT	770	115/1/60	FRAC.	3.5	15	1,2,3,4,6

REMARKS:
1. PROVIDE WITH UNIT MOUNTED DISCONNECT
2. PROVIDE WITH UNIT MOUNTED SPEED CONTROL
3. PROVIDE WITH APPROPRIATE BACKDRAFT DAMPER
4. ROOF MOUNTED, UPBLAST, PROVIDE WITH APPROPRIATE ROOF CURB (MIN. 12"). ROOF SLOPE SHALL BE CONFIRMED PRIOR TO ORDERING ROOF CURB
5. INTERLOCK EXHAUST FAN TO THERMOSTAT AS INDICATED ON DRAWING M1.1. EXHAUST FAN SHALL ACTIVATE WHEN TEMPERATURE IS ABOVE 80 F (ADJ)
6. EXHAUST FAN TO OPERATE BASED ON 7-DAY PROGRAMMABLE TIME CLOCK.

OTHER ACCEPTABLE MANUFACTURERS INCLUDE: CARNES, COOK. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

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