			DUCT	WORK A	PPLICATION S	CHEDULE					
		DUCTWORK LOCATION	SYSTEM TYPE	MAX PRESSURE		T	DUCT SHAPE	INSUL	ATION APPLICA	TION	
		(ALL DUCT CONCEALED UNLESS	(CONSTANT VOLUME	CLASS		SINGLE OR	RECT /	THICKNESS		LINER OR	
AIR HANDLING SYSTEM	AIRSTREAM	NOTED OTHERWISE)	OR VAV OR BOTH)	(IN. W.C.)	DUCTWORK MATERIAL	DOUBLE WALL	ROUND	(IN.)	TYPE	WRAP	NOTES
	SUPPLY AIR	OUTDOOR EXPOSED	вотн	CLASS B	GALVANIZED SHEET METAL	DOUBLE WITH PERFORATED INNER LINER	RECT / ROUND	2"	С	LINER	A,B,C,F
	SUPPLY AIR	FAN TO TERMINAL AIR BOX	VARIABLE AIR VOLUME	CLASS B	GALVANIZED SHEET METAL	SINGLE	RECT /	1"	C OR D	LINER	A,B,C
	0011 2174110	TAIN TO TERMINALAM BOX	VALUE AUTO VOLONIE	OL 100 B	CALVANIZED STILLT WETAL	CINGLE	ROUND	1-1/2"	Α	WRAP	A,B,C
AIR HANDLING UNITS ROOFTOP UNITS	SUPPLY AIR	INDOOR EXPOSED	вотн	CLASS B	GALVANIZED SHEET METAL	SINGLE	RECT / ROUND	1"	C OR D	LINER	A,B,C,D
	SUPPLY AIR	FAN TO AIR OUTLET	CONSTANT VOLUME	CLASS B	GALVANIZED SHEET METAL	SINGLE	RECT /	1"	C OR D	LINER	A,B,C
	00112174110	1744 107411 001221	OOMO I / WY VOLONIE	OL 100 B	CALLAN MILLER STILL I WILLIAM	CINGLE	ROUND	1-1/2"	Α	WRAP	A,B,C
	SUPPLY AIR	TERMINAL AIR BOX TO OUTLET	VARIABLE AIR VOLUME	CLASS B	GALVANIZED SHEET METAL	SINGLE	RECT /	1"	C OR D	LINER	A,B,C
							ROUND	1-1/2"	Α	WRAP	A,B,C
	RETURN AIR	AIR INLET TO RTU	вотн	CLASS B	GALVANIZED SHEET METAL	SINGLE	RECT /	1"	C OR D	LINER	A,B,C
							ROUND	1-1/2"	Α	WRAP	A,B,C
AIR HANDLING UNITS ROOFTOP UNITS	RETURN AIR	INDOOR EXPOSED	вотн	CLASS B	GALVANIZED SHEET METAL	SINGLE	RECT / ROUND	1"	C OR D	LINER	A,B,C,D
	RETURN AIR	OUTDOOR EXPOSED	вотн	CLASS B	GALVANIZED SHEET METAL	DOUBLE WITH PERFORATED INNER LINER	RECT / ROUND	2"	С	LINER	A,B,C,F
MAKE-UP AIR UNITS	SUPPLY AIR	OUTDOOR EXPOSED	вотн	CLASS B	GALVANIZED SHEET METAL	DOUBLE WITH PERFORATED INNER LINER	RECT / ROUND	2"	С	LINER	A,B,C,F
MAKE-UP AIR UNITS	SUPPLY AIR	FAN TO AIR OUTLET	CONSTANT VOLUME	CLASS B	GALVANIZED SHEET METAL	SINGLE	RECT / ROUND	1-1/2"	А	WRAP	A,B,C
MAKE-UP AIR UNITS	RETURN AIR	INDOOOR EXPOSED	вотн	CLASS B	GALVANIZED SHEET METAL	SINGLE	RECT / ROUND	1"	C OR D	LINER	A,B,C,D
GENERAL EXHAUST	EXHAUST AIR	INLET TO EXHAUST FAN	CONSTANT VOLUME	CLASS C	GALVANIZED SHEET METAL	SINGLE	RECT / ROUND	-	-	-	A,B,C
GENERAL EXHAUST	EXHAUST AIR	FIRST 10'-0" UPSTREAM OF EXHAUST FAN	CONSTANT VOLUME	CLASS C	GALVANIZED SHEET METAL	SINGLE	RECT	1"	С	LINER	A,B,C
KITCHEN GREASE TYPE I	EXHAUST AIR	EXHAUST AIR	KITCHEN EXHAUST	_	STAINLESS STEEL / BLACK IRON	SINGLE	RECT / ROUND	2"	F	WRAP	A,B,C,E,G
HOODS	LAHAOOT AIN	EXTAGGI AIIX	HOODS	-	OTAMILEOU OTELE/ BEACK INCIV	DOUBLE	ROUND	2"	F	LINER	A,B,C,E,G
TYPE II HOODS (DISHWASHER)	EXHAUST AIR	DISHWASHER / CONDENSATE HOOD / INLET TO EXHAUST FAN	CONSTANT VOLUME	CLASS B	ALUMINUM / STAINLESS STEEL	SINGLE	RECT / ROUND	NONE	-	-	A,B,C
TYPE II HOODS (EXCEPT DISHWASHER)	EXHAUST AIR	TYPE II HOODS / INLET TO EXHAUST FAN	CONSTANT VOLUME	CLASS C	STAINLESS STEEL / BLACK IRON / ALUMINUM	SINGLE	RECT / ROUND	NONE	-	-	A,B,C

**INSULATION TYPES:** 

TYPE A: FLEXIBLE FIBERGLASS - OUTSIDE WRAP

TYPE B: SEMI-RIGID FIBERGLASS BOARD WRAP

TYPE D: PREFORATED RIGID FIBERGLASS ACCOUSTICAL LINER (ROUND DUCT)

TYPE C: FLEXIBLE FIBERGLASS LINER

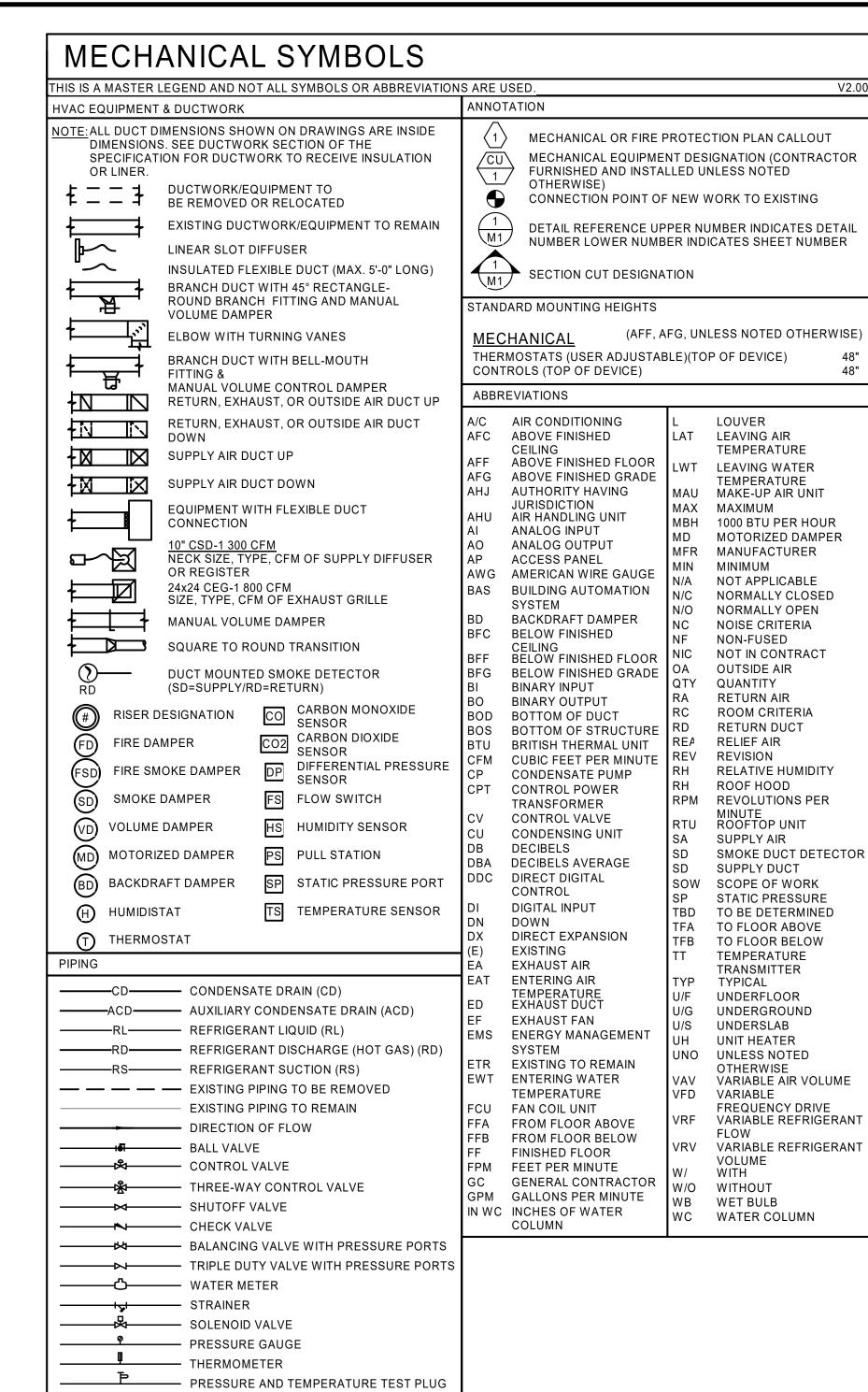
TYPE E: FIBERGLASS WITH TEDLAR LINER

TYPE F: FLEXIBLE MINERAL FIBER DUCT WRAP

- A. DUCT DIMENSIONS SHOWN ON PLAN ARE CLEAR INSIDE DIMENSIONS AND DO NOT INCLUDE INSULATION. B. ALL EXPOSED DUCTWORK SHALL BE PAINT GRIP, COLOR SHALL BE SELECTED BY ARCHITECT.
- C. DUCT SEAL CLASS SHALL BE BASED ON PRESSURE CLASS AS NOTED BELOW:
- CLASS A: +10" W.C. THRU -4" W.C. CLASS B: -3" W.C.
- CLASS C: -2" W.C. THRU +2" W.C
- CLASS B: +3" W.C. CLASS A: +4" W.C. THRU -10" W.C.
- D. LINER ONLY REQUIRED IN EXPOSED DUCT INSTALLED IN BACK OF HOUSE, CASUAL DINING, AND MARKET
- GRILLE UNLESS OTHERWISE NOTED ON PLAN. E. GREASE DUCT INSULATION SHALL MEET ASTM E2336.
- F. OUTDOOR DUCTWORK INSULATION SHALL HAVE A MINIMUM R-VALUE OF R-8.
- G. GREASE EXHAUST DUCT SHALL BE FULLY WELDED.

#### **MECHANICAL GENERAL NOTES:**

- 1 PRIOR TO SUBMITTING BID, VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH THE EXISTING CONDITIONS OF THE PROJECT. REVIEW THE GENERAL NOTES, SPECIFICATIONS AND OTHER DRAWINGS FOR ADDITIONAL REQUIREMENTS WHICH MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS. NOTIFY ARCHITECT, ENGINEER AND/OR OWNER OF CONFLICTS OR DISCREPANCIES PRIOR TO SUBMISSION OF BID.
- COORDINATE THE INSTALLATION OF THE MECHANICAL SYSTEMS WITH OTHER TRADES TO ENSURE A NEAT AND ORDERLY INSTALLATION. INSTALL DUCTWORK AND PIPING AS TIGHT TO STRUCTURE AS POSSIBLE. COORDINATE WITH OTHER TRADES TO AVOID CONFLICTS. COORDINATE INSTALLATION OF DUCTWORK AND PIPING TO AVOID CONFLICTS WITH ELECTRICAL PANELS, LIGHTING FIXTURES, ETC. ANY MODIFICATIONS REQUIRED DUE TO LACK OF COORDINATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AT NO EXTRA COST TO THE OWNER.
- 3. DURING INSTALLATION OF NEW WORK, AVOID DAMAGING EXISTING SURFACES AND EQUIPMENT TO REMAIN. REPAIR DAMAGE CAUSED DURING CONSTRUCTION AT NO EXTRA COST TO THE OWNER.
- 4. ALL MECHANICAL EQUIPMENT SHOWN ON THE MECHANICAL PLANS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR UNLESS OTHERWISE NOTED.
- 5. NEW MECHANICAL EQUIPMENT, DUCTWORK AND PIPING ARE SHOWN AT APPROXIMATE LOCATIONS. FIELD MEASURE FINAL DUCTWORK AND PIPING LOCATIONS PRIOR TO FABRICATION AND MAKE ADJUSTMENTS AS REQUIRED TO FIT THE DUCTWORK AND PIPING WITHIN THE AVAILABLE SPACE. VERIFY THAT FINAL EQUIPMENT LOCATIONS MEET MANUFACTURER'S RECOMMENDATIONS REGARDING SERVICE CLEARANCE AND PROPER AIRFLOW CLEARANCE AROUND EQUIPMENT.
- 6. REFER TO ARCHITECTURAL DRAWINGS FOR RELATED CONSTRUCTION DETAILS AS APPLICABLE TO THE HVAC SYSTEM. VERIFY CHASES AND PENETRATIONS SHOWN ON ARCHITECTURAL DRAWINGS THAT ARE INTENDED FOR DUCTWORK AND PIPING MEET REQUIREMENTS.
- 7. COORDINATE LOCATION OF ROOF MOUNTED HVAC EQUIPMENT AND ROOF PENETRATIONS WITH THE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
- 8. INDOOR AIR QUALITY MEASURES: PROTECT INSIDE OF (INSTALLED AND DELIVERED) DUCTWORK AND HVAC UNITS FROM EXPOSURE TO DUST, DIRT, PAINT AND MOISTURE. REPLACE INSULATION THAT HAS GOTTEN WET AT ANY TIME DURING CONSTRUCTION. DRYING THE INSULATION IS NOT ACCEPTABLE. SEAL ANY TEARS OR JOINTS OF INTERNAL FIBERGLASS INSULATION. REMOVE DEBRIS FROM CEILING/RETURN AIR PLENUM INCLUDING DUST. AN INDEPENDENT, PROFESSIONAL DUCT CLEANING COMPANY SHALL VACUUM CLEAN ANY DUCTWORK CONNECTED TO HVAC UNITS THAT WERE OPERATED DURING THE CONSTRUCTION PERIOD AFTER NEW FILTERS ARE INSTALLED AND PRIOR TO TURNING SYSTEM OVER TO THE OWNER. THE INTERNAL SURFACES AND ASSOCIATED COILS OF ANY HVAC UNITS THAT WERE OPERATED SHALL ALSO BE CLEANED.
- 9. INSTALL DUCTWORK AND PIPING PARALLEL TO BUILDING COLUMN LINES UNLESS OTHERWISE SHOWN
- 10. OVERHEAD HANGERS AND SUPPORTS FOR EQUIPMENT, DUCTWORK AND PIPING SHALL BE FASTENED TO BUILDING JOISTS OR BEAMS. DO NOT ATTACH HANGERS AND SUPPORTS TO THE ABOVE FLOOR SLAB OR ROOF EXCEPT WHERE CONCRETE INSERTS IN CONCRETE SLABS ARE ALLOWED BY THE
- 11. COORDINATE LOCATION OF EQUIPMENT SUPPORTS WITH LOCATION OF EQUIPMENT ACCESS PANELS/DOORS TO ENABLE SERVICE OF EQUIPMENT AND/OR FILTER REPLACEMENT.
- 12. SEAL PENETRATIONS THROUGH THE BUILDING COMPONENTS IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS. FIREPROOF PENETRATIONS THROUGH FIRE RATED COMPONENTS IN ACCORDANCE WITH U.L. REQUIREMENTS.
- 13. COORDINATE THE EXACT MOUNTING SIZE AND FRAME TYPE OF DIFFUSERS, REGISTERS AND GRILLES WITH THE SUPPLIER TO MEET THE CEILING, WALL AND DUCT INSTALLATION REQUIREMENTS.
- 14. ADJUST LOCATION OF CEILING DIFFUSERS, REGISTERS AND GRILLES AS REQUIRED TO ACCOMMODATE FINAL CEILING GRID AND LIGHTING LOCATIONS.
- 15. LOCATE AND SET THERMOSTATS AND HUMIDISTATS AT LOCATIONS SHOWN ON PLANS. VERIFY EXACT LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION, PROVIDE INSULATED BACKING FOR THERMOSTATS MOUNTED ON EXTERIOR BUILDING WALLS. INSTALL WIRING IN CONDUIT PROVIDED BY DIVISION 26. AT A MINIMUM, PROVIDE CONDUIT IN THE WALL FROM THE JUNCTION BOX TO 6" ABOVE
- 16. COORDINATE THE LOCATION AND ELEVATION OF WALL-MOUNTED DEVICES WITH PRESENTATION BOARDS, DISPLAY CABINETS, SHELVES OR OTHER COMPONENTS SHOWN ON THE ARCHITECTURAL DRAWINGS THAT ARE TO BE INSTALLED UNDER OTHER DIVISIONS. CONTRACTOR WILL NOT BE REIMBURSED FOR RELOCATION OF WALL-MOUNTED DEVICES CAUSED BY A LACK OF COORDINATION.
- 17. PROVIDE A MANUAL BALANCING DAMPER IN EACH BRANCH DUCT TAKEOFF FROM MAIN SUPPLY, RETURN, OUTDOOR AND EXHAUST AIR DUCTS.
- 18. PROVIDE A PREFABRICATED 45 DEGREE, HIGH EFFICIENCY, RECTANGULAR/ROUND BRANCH DUCT TAKEOFF FITTING WITH MANUAL BALANCING DAMPER AND LOCKING QUADRANT FOR BRANCH DUCT CONNECTIONS AND TAKE-OFFS TO INDIVIDUAL DIFFUSERS, REGISTERS AND GRILLES.
- 19. BRANCH DUCTWORK TO AIR OUTLETS SHALL BE SAME SIZE AS OUTLET NECK SIZE UNLESS OTHERWISE NOTED.
- 20. REFER TO SPECIFICATIONS FOR DUCTWORK AND PIPING INSULATION REQUIREMENTS. DUCT SIZES ON MECHANICAL PLANS INDICATE CLEAR INSIDE AIRFLOW DIMENSIONS, INCREASE SHEET METAL SIZES ACCORDINGLY TO ACCOUNT FOR THICKNESS OF DUCT LINER.
- 21. FLEXIBLE DUCTWORK SHALL NOT EXCEED 5'-0" IN LENGTH AND SHALL BE INSTALLED AND SUPPORTED TO AVOID SHARP BENDS AND SAGGING. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- 22. PROVIDE EQUIPMENT VENTS AND FLUES PER EQUIPMENT MANUFACTURERS RECOMMENDATIONS AND EQUIPMENT SPECIFICATIONS. KEEP PENETRATIONS THROUGH ROOF A MINIMUM OF 10'-0" FROM HVAC EQUIPMENT FRESH AIR INLETS AND 2'-0" FROM ROOF PARAPETS.
- 23. PROVIDE A NEW SET OF AIR FILTERS IN UNITS PRIOR TO TESTING. ADJUSTING AND BALANCING AND BEFORE TURNING SYSTEM(S) OVER TO OWNER.
- 24. TEST & BALANCE SCOPE IS UNDER A SEPARATE CONTRACT.

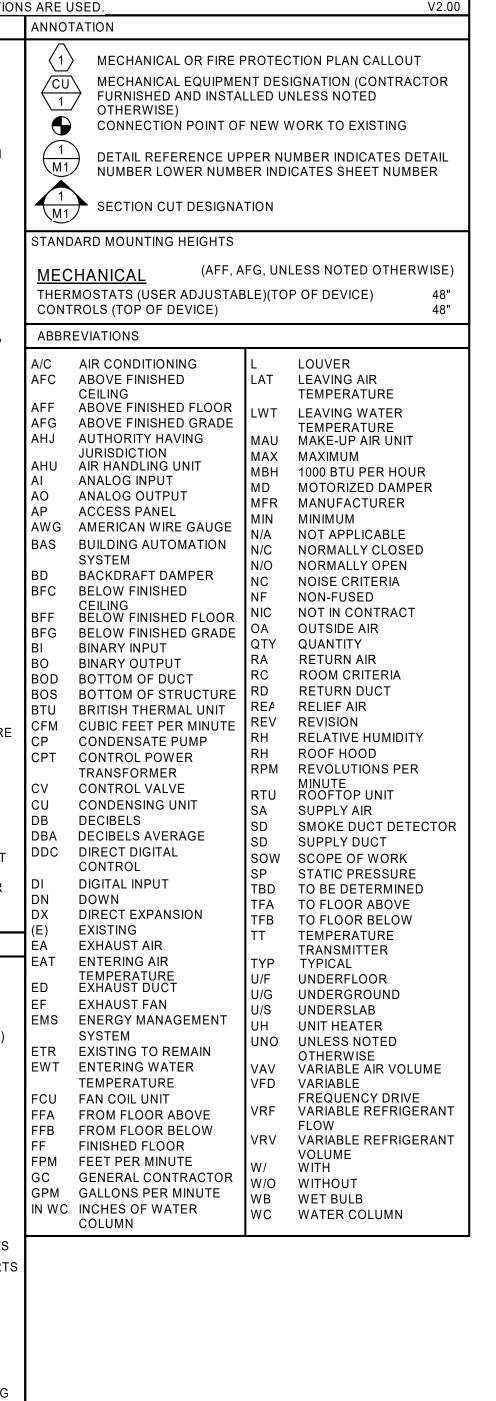


——— UNION

TEE DOWN ───────── REDUCER

──────── FLANGE CONNECTION

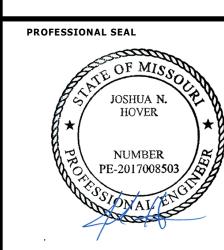
ELBOW UP **ELBOW DOWN** 





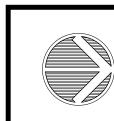
RELEASE FOR CONSTRUCTION

REVISES NUMMIT, MISS



Oct 23 2020
JOSHUA N. HOVER
ICENSE # PF 66 LICENSE # PE-2017008503







**HVAC NOTES AND** SYMBOLS

- 1 TRANSITION VERTICAL DUCTWORK AS REQUIRED TO MATCH RTU
- CONNECTION SIZES.
- TRANSITION VERTICAL DUCTWORK AS REQUIRED TO MATCH EXHAUST FAN CONNECTION SIZES.
  - 3. ROUTE EXPOSED DUCTWORK TIGHT TO STRUCTURE EXCEPT WHERE NOTED ON PLAN. COORDINATE INSTALLATION HEIGHT WITH ARCHITECT
  - PRIOR TO INSTALLATION.

    4. COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION
  - OF ANY WORK.

    5. INSTALLED LINED RETURN AIR BOOT ON TRANSFER AIR GRILLES

6. NO DUCTWORK MAY BE SUPPORTED FROM THE ROOF DECK. REFER TO

- LOCATED IN PUBLIC VIEW. BOOT SHALL BE FULL SIZE OF GRILLE OPENING.
- SPECIFICATIONS FOR HANGER REQUIREMENTS.

  7. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES AND
- ELEVATIONS.
- 8. REFER TO H4.0 FOR ALL DETAILS.

#### MECHANICAL PLAN NOTES

- 1 PROVIDE NEW DIFFUSER COORDINATED IN NEW CEILING GRID. CONNECT DIFFUSER TO EXISTING DUCTWORK
- 2 PROVIDE FULL SIZE RETURN DUCT DOWN AND ELBOW 36"
  HORIZONTAL FROM UNIT TIGHT TO STRUCTURE WITH DUCT
  LINER FOR SOUND ATTENUATION AND 3/4" WIRE MESH SCREEN
  ON INLET.
- 3 ROUTE DUCT LEVEL AND TIGHT TO STRUCTURE.
- BALANCE EXISTING REGISTER TO NEW CFM SHOWN.
  ROUTE DUCT DOWN TIGHT TO CEILING BELOW.
- 6 PROVIDE 3" STAINLESS STEEL STEAM VENT, DISCHARGE UNDER HOOD.
- EXHAUST FLUE FROM UNIT UP THROUGH ROOF AND TERMINATE WITH SAME MANUFACTURER'S TERMINATION KIT IN COMPLIANCE WITH LOCAL CODE AND MINIMUM 10'-0" SEPARATION FROM ALL AIR INTAKES. REFER TO SPECIFICATIONS AND MFR. REQUIREMENTS FOR APPROVED FLUE AND INTAKE MATERIALS FOR UNIT OPERATING TEMPERATURE.

PROVIDE COMBINATION CONCENTRIC INTAKE VENT AND

ALL DUCTWORK/DAMPERS/TAPS SHOWN ON SALES FLOOR ARE EXISTING TO REMAIN. REPLACE EXISTING DIFFUSERS IN NEW CEILING GRID. DUCT SIZES SHOWN ARE MINIMUM, CONTRACTOR SHALL FIELD VERIFY SIZES AND NOTIFY ENGINEER IF INSUFFICIENT.

HENDERSON
ENGINEERS

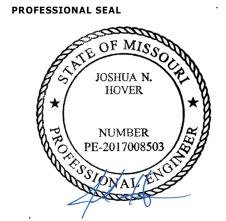
8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001

WWW.HENDERSONENGINEERS.COM

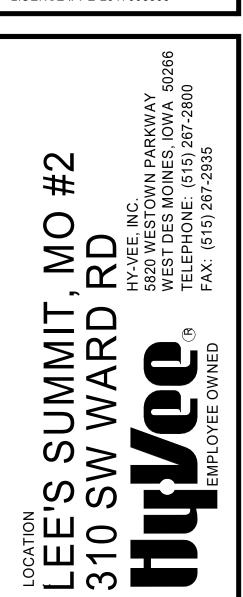
1950003081
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2020

RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW

REVISES NUMBER NISS



Oct 23 2020 JOSHUA N. HOVER LICENSE # PE-2017008503





NORTH PLAN NORTH

HVAC FLOOR
PLAN - PART A

PROJECT MANAGER
SL
Checker
DRAWN BY:
MLJ
SCALE:
JOB NUMBER:
AS NOTED
CHECKED BY:
CHECKED BY:
CHECKED BY:
CHECKED BY:
DATE:
JOB NUMBER:
62930547

H1.0A

PRIOR TO INSTALLATION.

- 1 TRANSITION VERTICAL DUCTWORK AS REQUIRED TO MATCH RTU CONNECTION SIZES.
- 2. TRANSITION VERTICAL DUCTWORK AS REQUIRED TO MATCH EXHAUST FAN CONNECTION SIZES.
- 3. ROUTE EXPOSED DUCTWORK TIGHT TO STRUCTURE EXCEPT WHERE NOTED ON PLAN. COORDINATE INSTALLATION HEIGHT WITH ARCHITECT
- 4. COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION OF ANY WORK.
- INSTALLED LINED RETURN AIR BOOT ON TRANSFER AIR GRILLES LOCATED IN PUBLIC VIEW. BOOT SHALL BE FULL SIZE OF GRILLE OPENING.
- 6. NO DUCTWORK MAY BE SUPPORTED FROM THE ROOF DECK. REFER TO SPECIFICATIONS FOR HANGER REQUIREMENTS.
- REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES AND ELEVATIONS.
- 8. REFER TO H4.0 FOR ALL DETAILS.

#### MECHANICAL PLAN NOTES

- 1 PROVIDE NEW DIFFUSER COORDINATED IN NEW CEILING GRID. CONNECT DIFFUSER TO EXISTING DUCTWORK
- 2 PROVIDE INSULATION BACKING ON THERMOSTAT MOUNTED ON EXTERIOR WALL.

3 CAP/INFILL EXISTING LOUVERS WEATHER TIGHT.

NOTE:
ALL DUCTWORK/DAMPERS/TAPS SHOWN ON SALES FLOOR ARE EXISTING TO REMAIN. REPLACE EXISTING DIFFUSERS IN NEW CEILING

GRID. DUCT SIZES SHOWN ARE MINIMUM, CONTRACTOR SHALL FIELD

VERIFY SIZES AND NOTIFY ENGINEER IF INSUFFICIENT.

HENDERSON
ENGINEERS

8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001

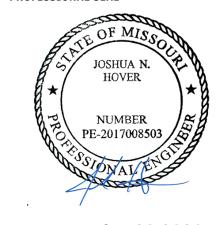
WWW.HENDERSONENGINEERS.COM

1950003081
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2020

RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW

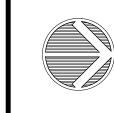
REVISES NUMBER NISS

PROFESSIONAL SEAL



Oct 23 2020 JOSHUA N. HOVER LICENSE # PE-2017008503

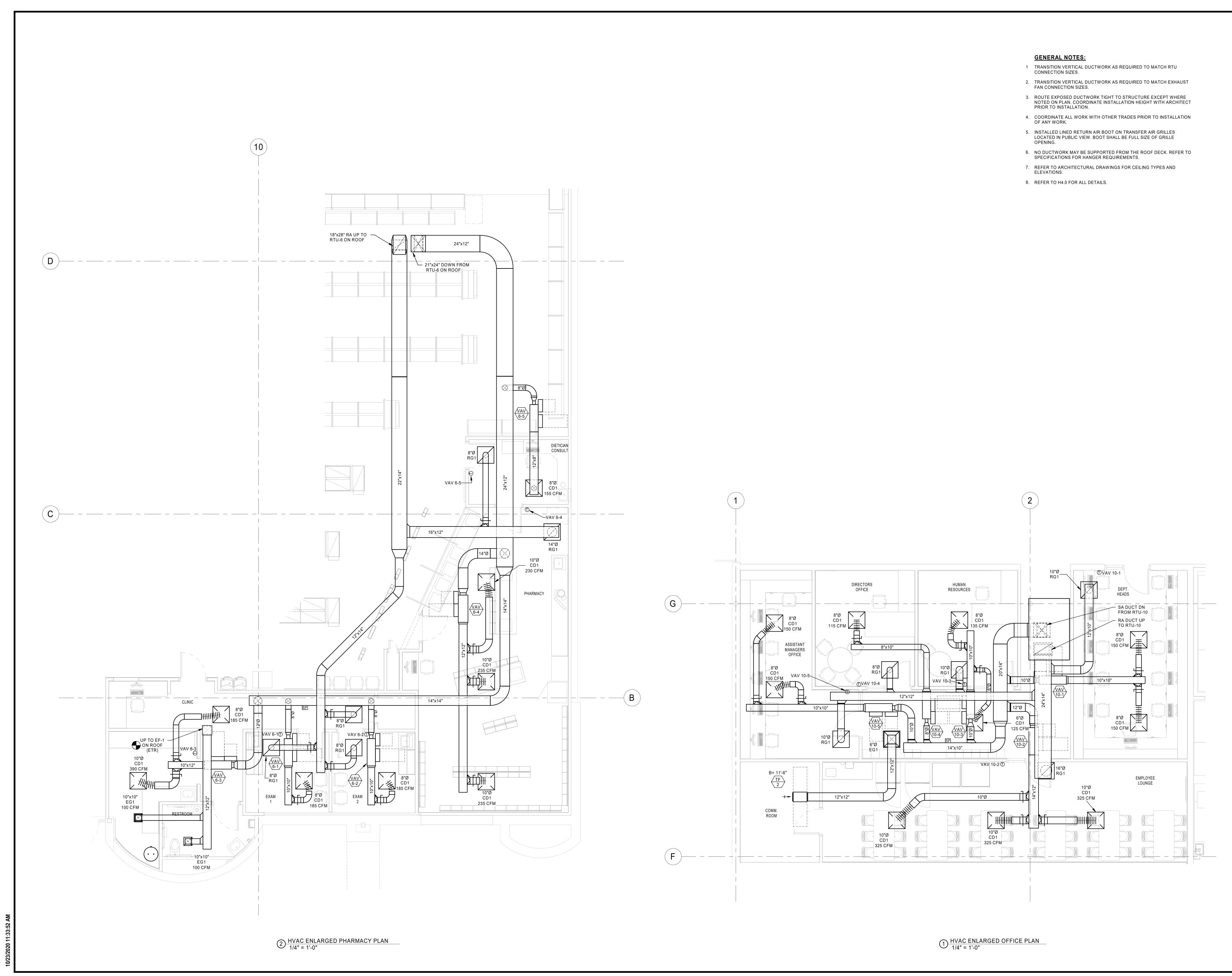






HVAC FLOOR PLAN - PART B

H1.0B



RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
REVISED AUMMIT, MISSOBRI
12/29/2020

HENDERSON
ENGINEERS

8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM

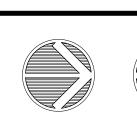
1950003081
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2020



Oct 23 2020 JOSHUA N. HOVER LICENSE # PE-2017008503

SWWARD RD

HY-VEE, INC.
5820 WESTOWN PARKWAY
WEST DES MOINES, IOWA 50266
TELEPHONE: (515) 267-2800
FAX: (515) 267-2935





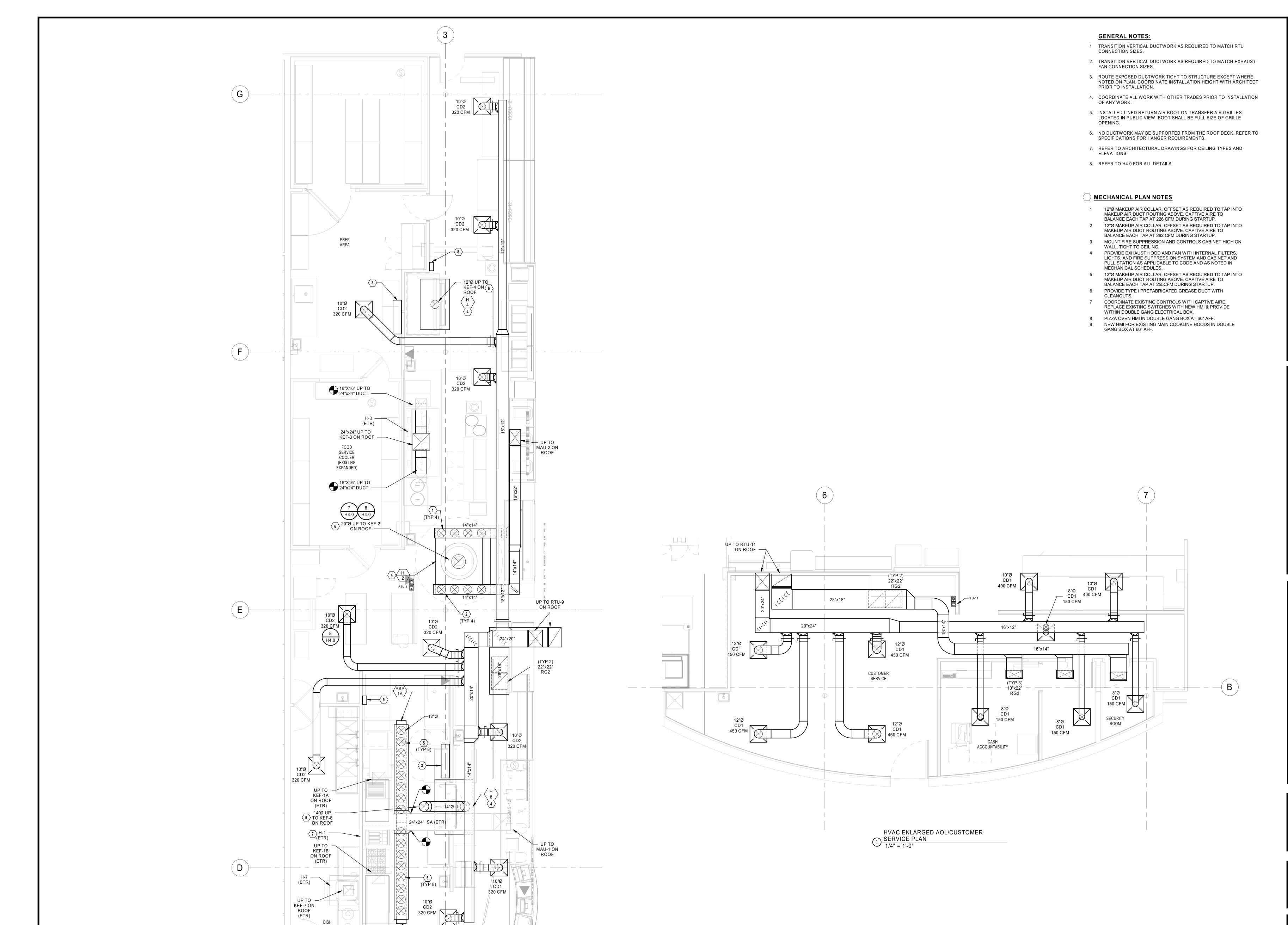
HVAC ENLARGED PLANS

PROJECT MANAGER
SL
Checker

DRAWN BY:
DATE:
Author
10/19/2020
SCALE:
JOB NUMBER:
AS NOTED
62930547

SHEET:

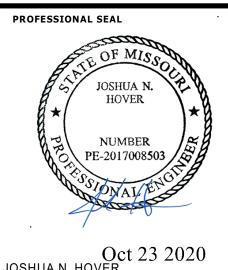
H1.1



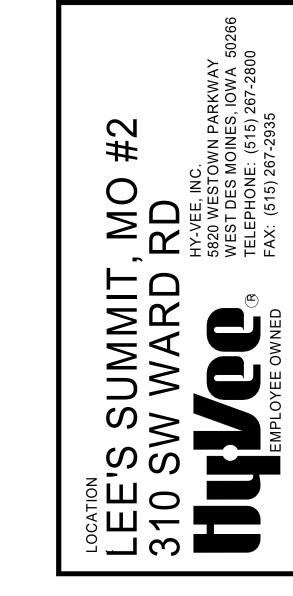
2 HVAC ENLARGED KITCHEN PLAN 1/4" = 1'-0" RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
REVISES NUMMIT, MISSOURI
12/29/2020

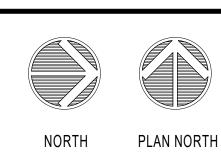
HENDERSON
ENGINEERS

8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM
1950003081
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2020



Oct 23 2020 JOSHUA N. HOVER LICENSE # PE-2017008503





HVAC ENLARGED PLANS

PROJECT MANAGER	CHECKED BY:
SL	Checker
DRAWN BY:	DATE:
Author	10/19/2020
SCALE:	JOB NUMBER:
AS NOTED	62930547
SHEET:	

- 1 ALL SERVICEABLE EQUIPMENT SHALL BE INSTALLED A MINIMUM OF 10'-0" FROM THE ROOF EDGE IN LOCATIONS WHERE THE PARAPET WALL IS LESS THAN 42" TALL.
- 2. COORDINATE EQUIPMENT CURB PLACEMENT WITH EXISTING STRUCTURE.

#### MECHANICAL PLAN NOTES

- 1 ALL EXHAUST TERMINATIONS SHALL BE INSTALLED A MINIMUM OF 10'-0" FROM ALL OUTSIDE AIR INTAKES.
- 2 PENETRATE NEW DUCTWORK THRU ROOF AND CONNECT NEW SUPPLY
- DUCT TO EXISTING DUCTWORK ON ROOF.

  3 PROVIDE NEW EQUIPMENT ON EXISTING CURB, COORDINATE ADAPTOR AS REQUIRED. CONNECT TO EXISTING DUCTWORK.
- 4 PROVIDE COMBINATION CONCENTRIC INTAKE VENT AND EXHAUST FLUE FROM UNIT UP THROUGH ROOF AND TERMINATE WITH SAME MANUFACTURER'S TERMINATION KIT IN COMPLIANCE WITH LOCAL CODE AND MINIMUM 10'-0" SEPARATION FROM ALL AIR INTAKES. REFER TO SPECIFICATIONS AND MFR. REQUIREMENTS FOR APPROVED FLUE AND INTAKE MATERIALS FOR UNIT OPERATING TEMPERATURE.

HENDERSON
ENGINEERS

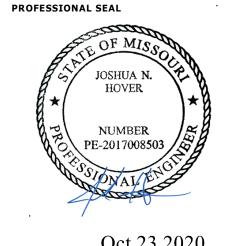
8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001

WWW.HENDERSONENGINEERS.COM

1950003081
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2020

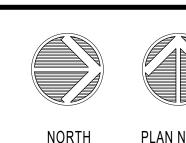
RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW

REVISES NUMBER



Oct 23 2020 JOSHUA N. HOVER LICENSE # PE-2017008503

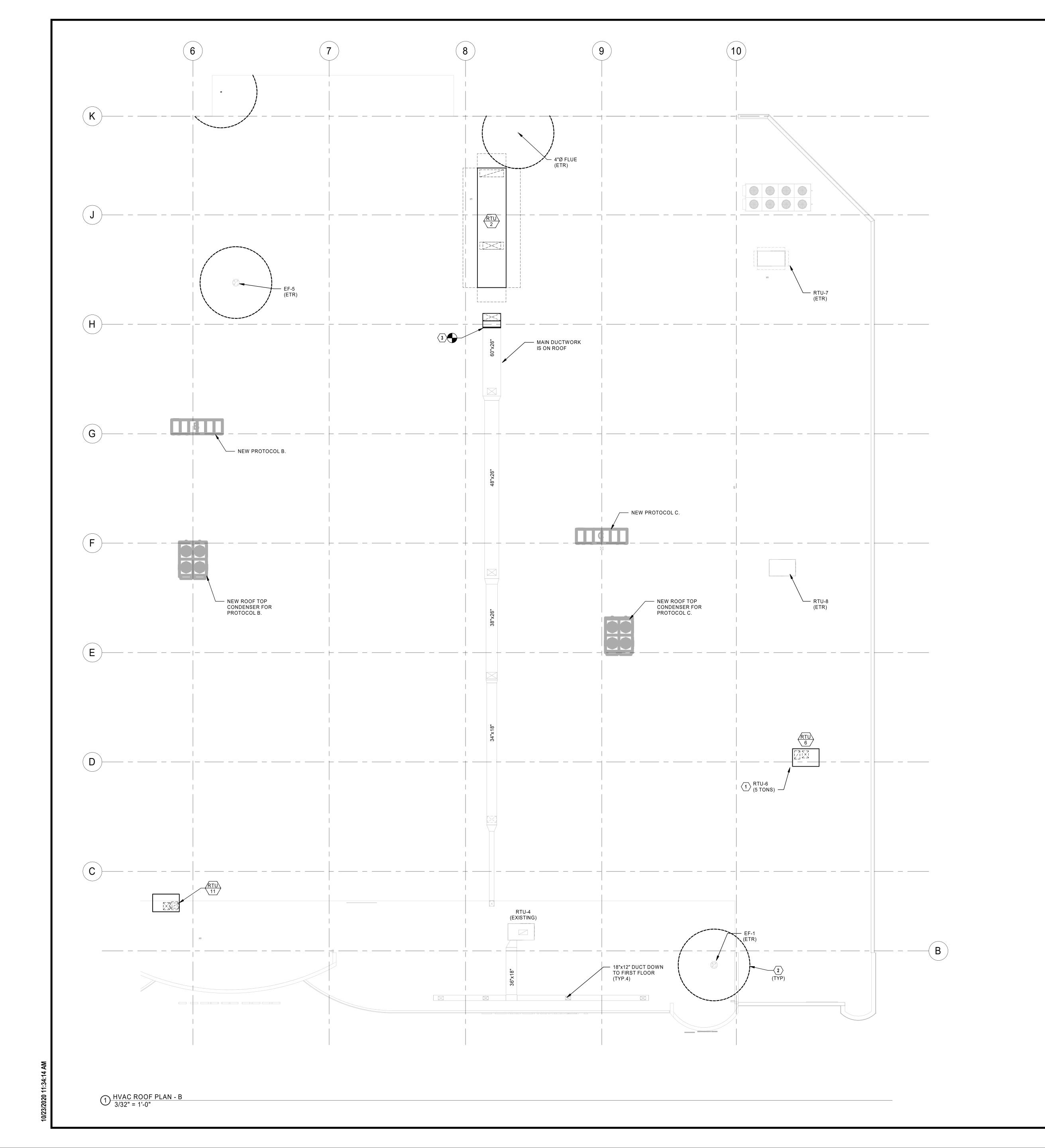




HVAC ROOF PLAN - PART A

PROJECT MANAGER	CHECKED BY:
SL	Checker
DRAWN BY:	DATE:
MLJ	10/19/2020
SCALE:	JOB NUMBER:
AS NOTED	62930547
SHEET:	

H3.0A



- 1 ALL SERVICEABLE EQUIPMENT SHALL BE INSTALLED A MINIMUM OF 10'-0" FROM THE ROOF EDGE IN LOCATIONS WHERE THE PARAPET WALL IS LESS THAN 42" TALL.
- COORDINATE EQUIPMENT CURB PLACEMENT WITH EXISTING STRUCTURE.

#### MECHANICAL PLAN NOTES

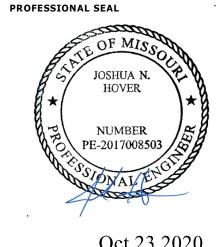
- 1 PROVIDE NEW EQUIPMENT ON EXISTING CURB, COORDINATE ADAPTOR AS REQUIRED. CONNECT TO EXISTING DUCTWORK.
- AS REQUIRED. CONNECT TO EXISTING DUCTWORK.

  2 ALL EXHAUST TERMINATIONS SHALL BE INSTALLED A MINIMUM OF 10'-0"
  FROM ALL OUTSIDE AIR INTAKES.
- 3 PENETRATE NEW DUCTWORK THRU ROOF AND CONNECT NEW SUPPLY DUCT TO EXISTING DUCTWORK ON ROOF.

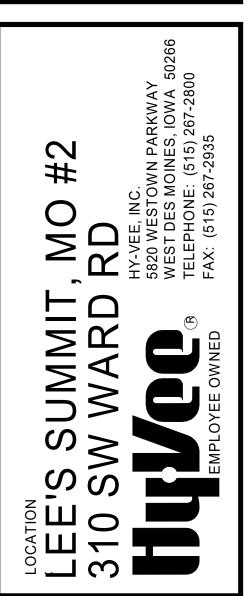
HENDERSON ENGINEERS 8345 LENEXA DRIVE, SUITE 300 LENEXA, KS 66214 TEL 913.742.5000 FAX 913.742.5001 WWW.HENDERSONENGINEERS.COM 1950003081 MO. CORPORATE NO: E-556D EXPIRES 12/31/2020

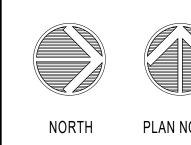
RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW

REVISES NUMBER , MISS



Oct 23 2020 JOSHUA N. HOVER LICENSE # PE-2017008503

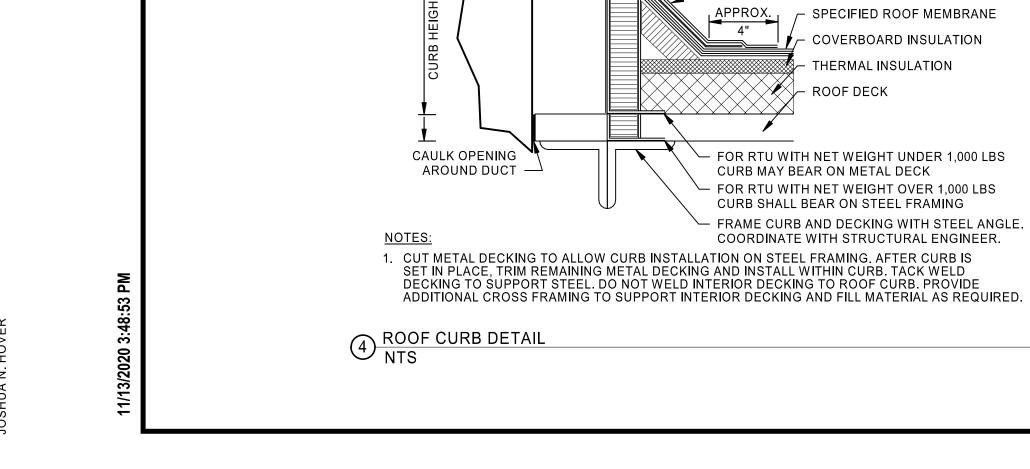




HVAC ROOF PLAN - PART B

PROJECT MANAGER	CHECKED BY:
SL	Checker
DRAWN BY:	DATE:
Author	10/19/2020
SCALE:	JOB NUMBER:
AS NOTED	62930547
SHEET:	

H3.0B



COVERBOARD INSULATION THERMAL INSULATION ROOF DECK - FOR RTU WITH NET WEIGHT UNDER 1,000 LBS CURB MAY BEAR ON METAL DECK - FOR RTU WITH NET WEIGHT OVER 1,000 LBS CURB SHALL BEAR ON STEEL FRAMING FRAME CURB AND DECKING WITH STEEL ANGLE. COORDINATE WITH STRUCTURAL ENGINEER. 1. CUT METAL DECKING TO ALLOW CURB INSTALLATION ON STEEL FRAMING. AFTER CURB IS SET IN PLACE, TRIM REMAINING METAL DECKING AND INSTALL WITHIN CURB. TACK WELD DECKING TO SUPPORT STEEL. DO NOT WELD INTERIOR DECKING TO ROOF CURB. PROVIDE

RETURN OPENINGS. INSTALLATION.

PROVIDE SLOPED ROOF CURB TO INSTALL ROOFTOP UNIT LEVEL TO ENSURE PROPER DRAINAGE. COORDINATE ROOF SLOPE WITH ARCHITECTURAL. FLASH AND COUNTER FLASH ROOF PENETRATIONS, ETC. TO ENSURE WEATHER TIGHT

RE: ROOF CURB

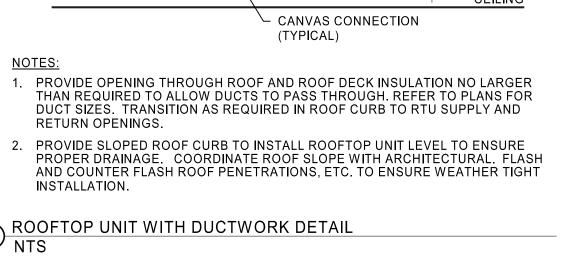
DETAIL THIS

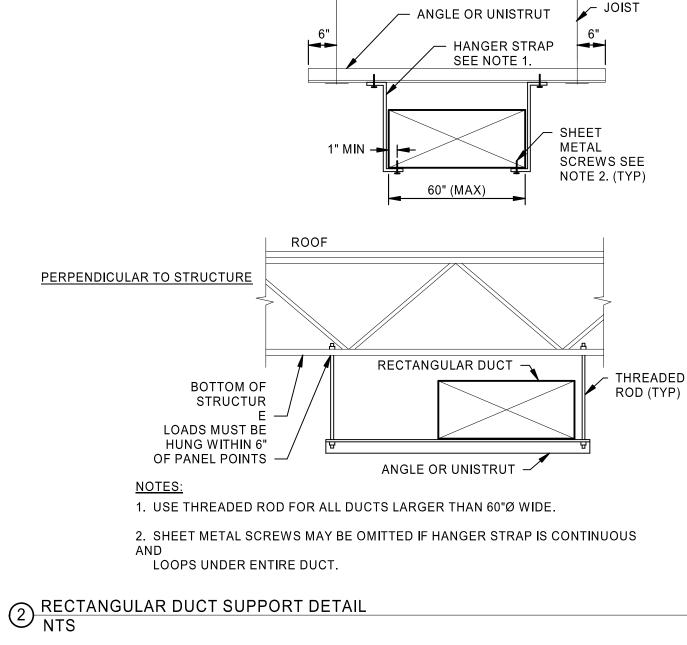
SHEET

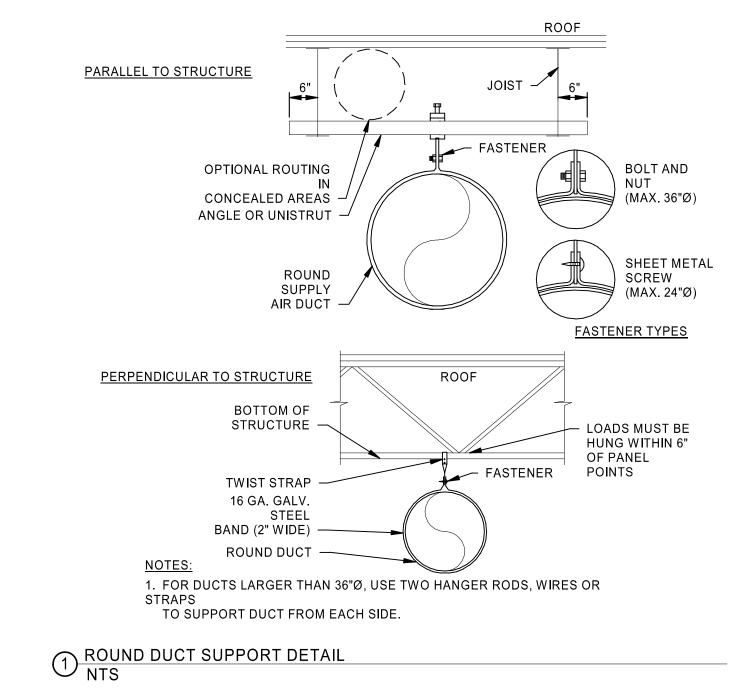
SUPPLY

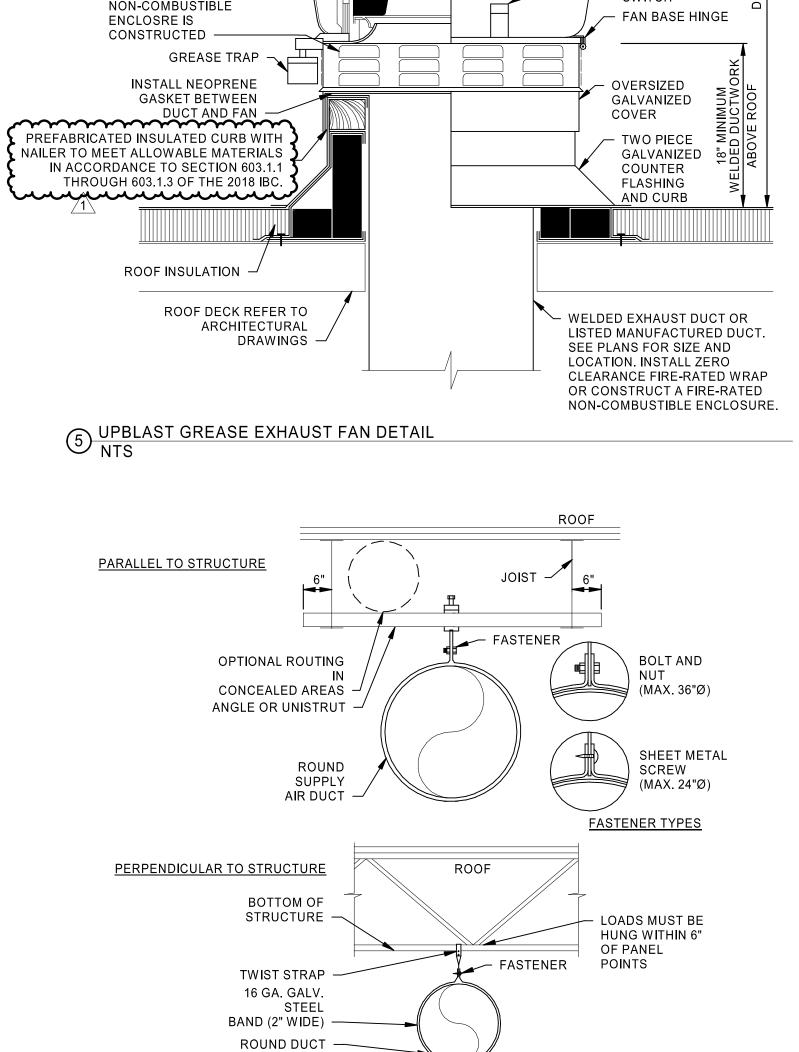
AIR DUCT

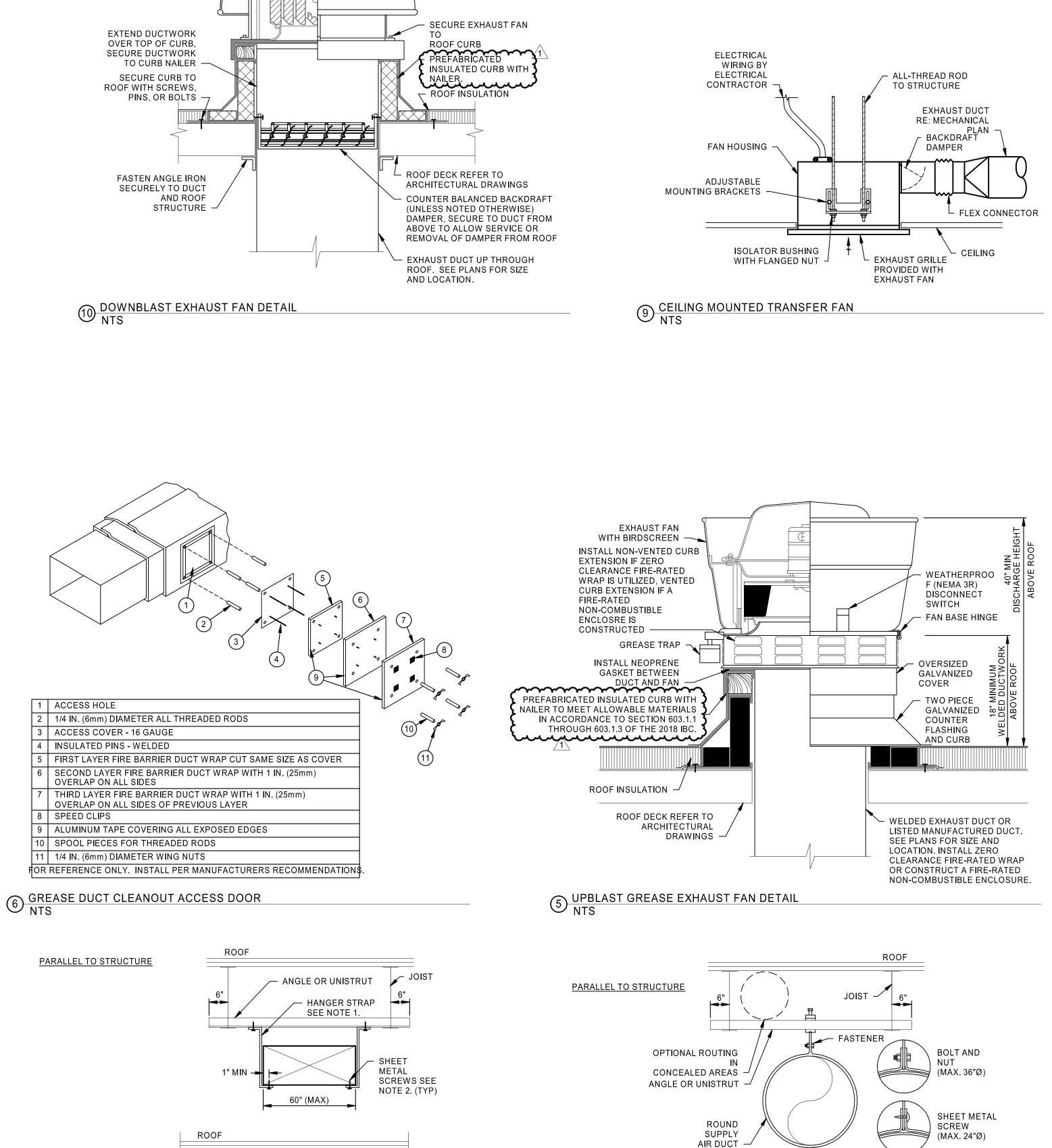
3 ROOFTOP UNIT WITH DUCTWORK DETAIL NTS



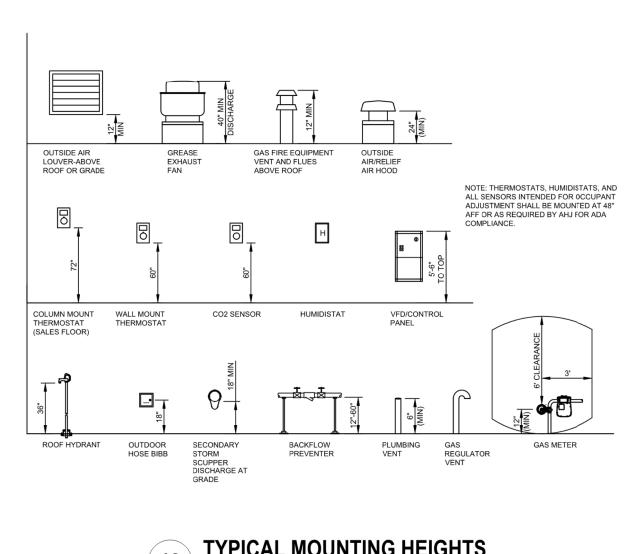








EXHAUST FAN WITH BIRDSCREEN





METALLIC OR NON-METALLIC BAND OVER INSULATION (TYPICAL) -

INSULATION

SEE NOTE 1 -

PRE-INSULATED FLEXIBLE

SEALED AND SUPPORTED

METALLIC OR NON-METALLIC

DAMPER, FIRE DAMPER OR COMBINATION VOLUME/FIRE

DAMPER AS SCHEDULED

CEILING DIFFUSER WITH VOLUME

8 LAY-IN CEILING DIFFUSER DETAIL NTS

DUCT AS REQUIRED, INSTALL PERMANENTLY

TO PREVENT KINKING

AND SHARP TURNS

BAND (TYPICAL)

JOINT-

DUCT WITHIN 5'-0" LENGTH LIMITATION.

ROOFTOP UNIT

HIGH EFFICIENCY TAKEOFF EXTERNALLY INSULATED, WITH VOLUME DAMPER AND

DAMPER LOCK WITH EXTENSION

1. EXTEND RIGID METAL DUCT SO THAT MAXIMUM FLEXIBLE DUCT LENGTH DOES NOT

EXCEED 5'-0". PROVIDE RIGID 90° ELBOW WHERE REQUIRED TO KEEP FLEXIBLE



INSULATED DUCT -

PROVIDE 1" THICK, R-6 FIBERGLASS INSULATION TO

COMPLETELY COVER DIFFUSER CONE WHERE

SCHEDULED OF SPECIFIED

— SEALING MATERIAL

- SHEET METAL FLASHING RECEIVER

- HIGH-DOMED, CAPPED, GASKETED

FASTENERS (APPROX. 18" O.C. AND

- SHEET METAL COUNTERFLASHING

ROOFTOP UNIT BASE RAIL

MINIMUM TWO FASTENERS PER SIDE)

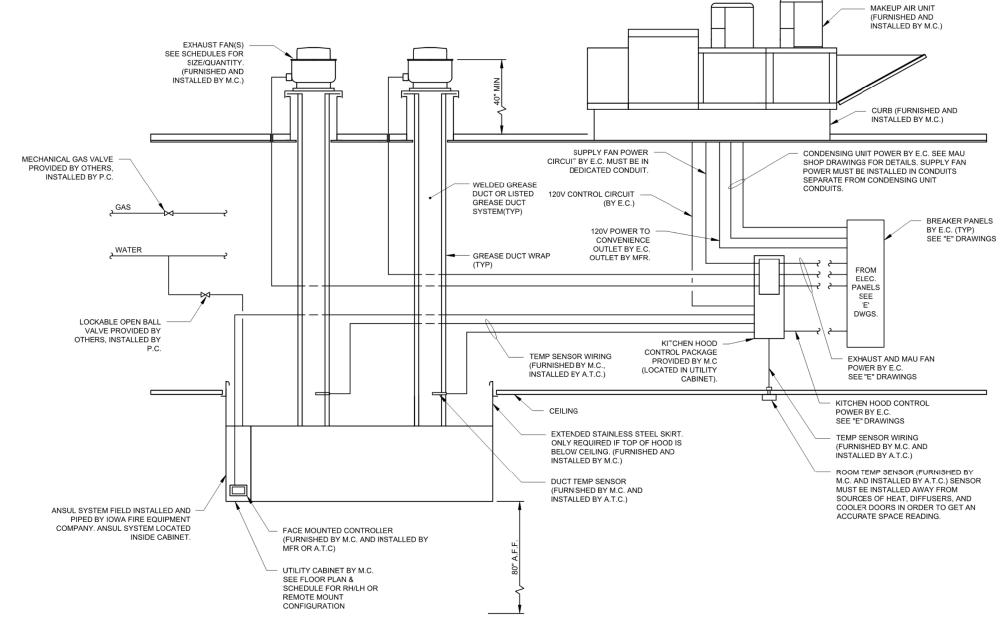
EXTENSION OF FIELD PLIES ABOVE HEAD

OF CANT (NOT SHOWN FOR CLARITY)

- SPECIFIED MEMBRANE BASE FLASHING

NAILER TO MEET ALLOWABLE MATERIALS

IN ACCORDANCE TO SECTION 603.1.1
THROUGH 603.1.3 OF THE 2018 IBC.





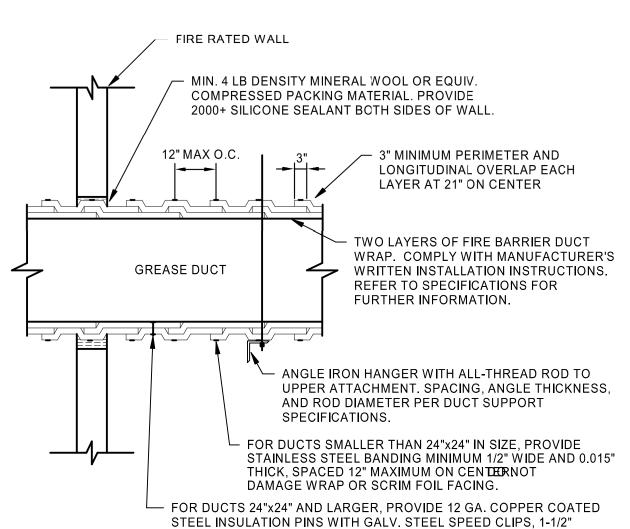
THIS DETAIL IS SCHEMATIC IN NATURE AND INTENDED TO DEFINE SCOPE. CONSULT HOOD AND MAU MANUFACTURER FOR ADDITIONAL REQUIREMENTS.

2. SEE MECHANICAL SCHEDULES AND DRAWINGS FOR ADDITIONAL EQUIPMENT AND ACCESSORY INFORMATION.

HOOD FIRE SUPPRESSION FURNISHED AND INSTALLED BY IOWA FIRE EQUIPMENT COMPANY.

4. CHECK HOOD SCHEDULE TO CONFIRM LOCATION OF HOOD CONTROL PANEL.

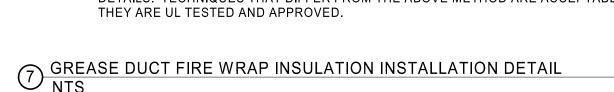
FIRE RATED WALL



VERTICAL RISERS. SPACE PINS 12" MAXIMUM ON CENTER BOTH DIRECTIONS. INSTALL GREASE EXHAUST AND FIRE RATED DUCT WRAP IN ACCORDANCE WITH THE MANUFACTURER'S APPROVED INSTRUCTIONS AND UL LISTED INSTALLATION DETAILS. TECHNIQUES THAT DIFFER FROM THE ABOVE METHOD ARE ACCEPTABLE IF

DIAMETER, ON BOTTOM OF HORIZONTAL DUCTS AND SIDES OF

THEY ARE UL TESTED AND APPROVED.

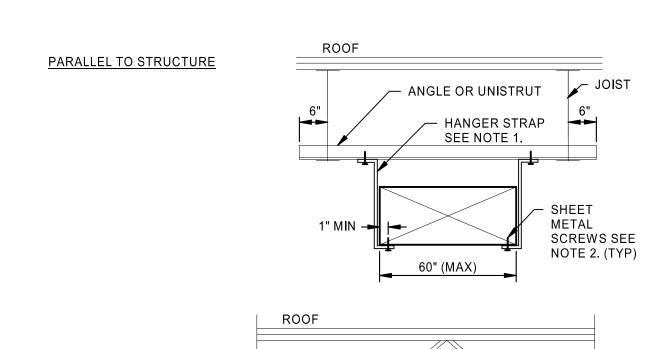


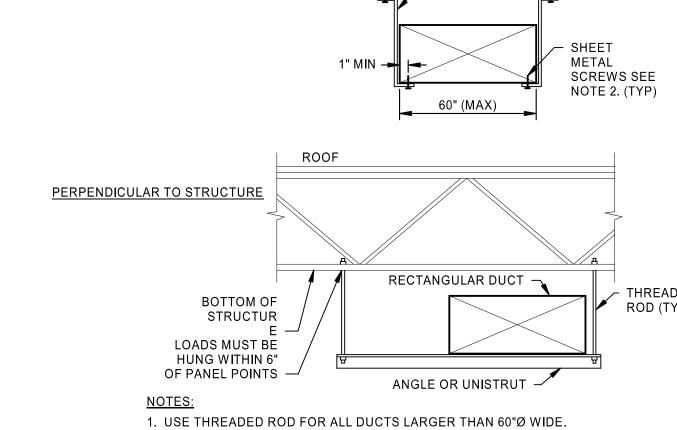
ROOFTOP

HVAC UNIT

RETURN

AIR DUCT ──►





PLAN NORTH

HENDERSON ENGINEERS

8345 LENEXA DRIVE, SUITE 300

LENEXA, KS 66214 TEL 913.742.5000 FAX 913.742.5001

WWW.HENDERSONENGINEERS.COM

MO. CORPORATE NO: E-556D EXPIRES 12/31/2020

JOSHUA N.

HOVER

PE-2017008503

Nov 13 2020

PROFESSIONAL SEAL

JOSHUA N. HOVER

LICENSE # PE-2017008503

**RELEASE FOR** CONSTRUCTION

REVISES NUMBER NISS

ASI#1

HVAC DETAILS DRAWN BY: DATE:

JSG

SCALE:

AS NOTED 62930547

10/19/2020

JOB NUMBER:

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

CONTRACTOR TO DETERMINE PROPER BORDER STYLE TO MATCH CEILING/WALL TYPE. COORDINATE WITH ARCHITECTURAL RELECTED CEILING/WALL PLAN.

BRANCH DUCT TO DIFFUSERS SHALL BE AT THE SAME SIZE AS THE DIFFUSER NECK, UNLESS SHOWN OTHERWISE. . DIFFUSERS IN THE MARKET GRILLE AND CASUAL DINING ARE TO BE COLOR MATCHED TO THE CEILING ELEMENT.

. PROVIDE DIFFUSERS, REGISTERS, AND GRILLES WITH NO EXPOSED MOUNTING SCREWS.

GRAINGER

CONTRACTOR SHALL PROVIDE REMOTE CABLE OPERATING VOLUME DAMPER WHERE HARD CEILING RESTRICTS ACCESS TO DAMPER.

PROVIDE LINEAR DIFFUSER WITH (2) 1" SLOTS, 5" TOTAL WIDTH, AND 4'-0" TOTAL LENGTH. PROVIDE WITH INSULATED PLENUM TO MATCH.

ROOFTOP UNIT SCHEDULE (DX COOLING, NATURAL GAS HEAT)

										-								_								
MARK	MANUFACTURER	MODEL	SERVICE	NOMINAL	SUI	PPLY FAN					COOLI	NG COIL					HEAT EXCH	ANGER		MIN		ELEC	TRICAL		WEIGHT	NOTES
				TONS	CFM	ESP	NOM	TH	SH	E	AT	L	AT .	REFR	MIN EFF	MIN OUT	NOM INPUT	EAT	LAT	O/A	V/PH	MCA	MOCP	DISC	(LBS)	
						(IN)	HP	(MBH)	(MBH)	(°F DB)	(°F WB)	(°F DB)	(°F WB)	TYPE	(EER)	(MBH)	(MBH)	(°F DB)	(°F DB)	CFM				TYPE		
RTU-1	SEASONS 4	VA065 / 1HJI33-0676-TN1017HG	SALES SOUTH	65	17,000	1.0	15	813.93	407.208	78.9	67.6	56.9	51.9	410A	10.7	800	1000	48.5	90	6000	208/3	354	400	MFR	12100	A-N
RTU-2	SEASONS 4	VA065 / 1HJI33-0676-TN1017HG	SALES NORTH	65	17,000	1.0	15	813.93	407.208	78.9	67.6	56.9	51.9	410A	10.7	800	1000	48.5	90	6000	208/3	354	400	MFR	12100	A-N, P
RTU-6	YORK	ZJ078S12E2B6HCD2E2	PHARMACY	6.5	1,800	0.6	1.5	68.8	45.5	80.0	67.0	56.6	54.6	410A	13.9	96	120	62.7	101	250	208/3	44.6	50	MFR	1225	A-M, Q, R, S
RTU-9	YORK	ZJ120S18P2A6HCA2E1	KITCHEN	10	3,200	0.6	2	114.3	80.2	80.0	67.0	56.8	55.6	410A	12.7	144	180	70	111.5	0	208/3	58.9	70	MFR	1305	A-J, L-M, Q, S
RTU-10	YORK	ZJ078S12E2B6HCD2E2	OFFICES	6.5	1,950	0.6	1.5	70.5	47.8	80.0	67.0	57.3	55.4	410A	13.9	96	120	60.9	102.3	200	208/3	44.6	50	MFR	1225	A-M, Q, R, S
RTU-11	YORK	ZR120S18P2A6HCA2E1	AOL/CUSTOMER SERVICE	10	3,200	0.6	2	102.5	75.5	75.4	63.3	54.0	52.3	410A	12.7	144	180	67.6	109.1	125	208/3	44.6	50	MFR	1225	A-M, O-Q, S
RTU-12	YORK	ZR120S18P2A6HCA2E1	WINF & SPIRIT	10	3.200	0.6	2	114.3	80.2	80.0	67.0	56.8	55.6	410A	12.7	144	180	70	111.5	0	208/3	58.9	70	MFR	1305	A-J. L-M. O. P. S

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

PROVIDE WITH UNIT MOUNTED CONTROLLER WITH BACNET INTERFACE. SUPPLY AIR EXTERNAL PRESSURE INCLUDES AN ALLOWANCE FOR DIRTY FILTERS.

EQUIPMENT SIZED AT 100F AMBIENT TEMPERATURE.

PROVIDE DOWNFLOW DISCHARGE UNIT. PROVIDE GUARDS TO PROTECT CONDENSER COIL FROM HAIL OR OTHER DAMAGE.

PROVIDE UNIT WITH FACTORY MOUNTED RETURN AIR SMOKE DETECTOR.

PROVIDE FACTORY MOUNTED DISCONNECT INSTALLED ON SERVICE SIDE OF UNIT. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.

PROVIDE UNIT WITH POWERED CONVENIENCE OUTLET. PROVIED MOTOR OPERATED OUTSIDE AIR DAMPER.

PROVIDE STAINLESS STEEL DRAIN PAN WITH UNIT.

PROVIDE STAINLESS STEEL HEAT EXCHANGER WITH UNIT. PROVIDE UNIT WITH MODULATING NATURAL GAS FURNACE.

PROVIDE HOT GAS REHEAT WITH UNIT. PROVIDE UNIT WITH SINGLE ENTHALPY ECONOMIZER AND BARAMETRIC RELIEF WITH UNIT.

UNIT SHALL HAVE VAV CONTROLLER WITH VFD. PROVIDE UNIT WITH S CLIPS FOR TIE-DOWN.

#### **ELECTRIC CEILING HEATER SCHEDULE** SERVICE MODEL (CFM) (L" x W") VOLTS PH MANUFACTURER

300 23.75" x 23.75"

4000

ECH-1

A. PROVIDE WITH WALL MOUNTED LINE VOLTAGE THERMOSTAT AND LOCKABLE COVER. 3. PROVIDE NECESSARY MOUNTING BRACKET AND ACCESSORIES AND INSTALL PER MANUFACTURER REQUIREMENTS.

COLOR SHALL BE WHITE.

WINE & SPIRIT

	UNIT HEA	ATER SCHE	EDULE (EX	ISTING T	TO RE	EMAIN	)
				HEATING	ELEC	TRICAL	
				INPUT			NOTES
MARK	MANUFACTURER	MODEL	SERVICE	(MBH)	VOLTS	PHASE	
UH 1	MODINE	PV250A-63	DOCK AREA	250	115	1	Α
UH 2	MODINE	PV125A-30	BACKROOM	125	115	1	Α
UH 3	MODINE	PV125A-30	BACKROOM	125	115	1	Α

A. SCHEDULED EQUIPMENT IS EXISTING TO REMAIN AND SHOWN FOR REFERENCE ONLY.

KITCHEN EXHAUST HOOD SCHEDULE

					HOOD		EXHAUST	RISER				FRONT MA	KE-UP AIR PLENU	М				FILTERS			LIGHTS		UTILITY	WEIGHT	COOKING	OTAINI EQQ OTEEL	NOTES
			HOOD		DIMENSIONS (IN)	QTY	CONNECTION	CFM	APD	QTY	OVERALL LENGTH	WIDTH	CONNECTION	CFM	APD	QTY	HEIGHT	LENGTH	TYPE	QTY	TYPE	FIRE	CABINET	(LBS)	TEMP	STAINLESS STEEL BACKSPLASH	
MARK	MANUFACTURER	MODEL	CLASSIFICATION	SERVICE	(L x W x H)		SIZE		(IN W.C.)		(IN)	(IN)	SIZE (EA.)		(IN W.C.)		(IN)	(IN)				SUPPRESSION	LOCATION		(°F)		
PSP-1A	CAPTIVE AIRE	146 MISC-PSP	SUPPLY PLENUM	KITCHEN	-	-	-	-	-	8	126	14	12" DIA	257	0.084	-	-	-	-	-	-	-	-	90	300	M.C.	J
PSP-1B	CAPTIVE AIRE	146 MISC-PSP	SUPPLY PLENUM	KITCHEN	-	-	-	-	-	8	126	14	12" DIA	256	0.084	-	-	-	-	-	-	-	-	90	300	M.C.	J
H-2	CAPTIVE AIRE	6630 NDI-PSP-FB	TYPE I - GREASE	BBQ	66" x 66" x 30"	1	20" DIA	3025	0.831	8	66"	14	12" DIA	226 / 282	0.066 / 0.1	8	20	16	CAPTRATE SOLO	6	RECESSED	YES	RIGHT	857	400	M.C.	A-H
H-4	CAPTIVE AIRE	4218 SND-2	TYPE I - GREASE	PIZZA	60" x 42" x 18"	1	12" DIA	1050	0.514	-	-	-	-	-	-	4	16	16	CAPTRATE SOLO	2	RECESSED	YES	RIGHT	252	450	M.C.	A-H
H-5	CAPTIVE AIRE	3624 VHB-ND	TYPE II - HEAT	BAKERY DECK OVEN	62" x 36" x 24"	1	10" DIA	600	0.073	-	-	-	-	-	-	-	-	-	CAPTRATE SOLO	2	RECESSED	NO	WALL	217	700	M.C.	С
H-8	CAPTIVE AIRE	5430 ND-2WI	TYPE I - GREASE	ROTISSERIE	66" x 54" x 30"	1	14" DIA	1788	0.843	-	-	-	-	-	-	4	20	16	CAPTRATE SOLO	2	RECESSED	YES	WALL	383	450	M.C.	A-H

UTILITY CABINET SHALL BE BY HOOD MANUFACTURER. SUPPRESSION SYSTEM SHALL BE FURNISHED AND INSTALLED BY IOWA FIRE EQUIPMENT COMPANY.

3. HOOD SUPPLIER SHALL FURNISH HOOD WITH UL LISTED BAFFLE-TYPE GREASE FILTERS, GREASE DRAIN WITH REMOVABLE CUP, AND UL LISTED LED LIGHT FIXTURES. C. HOOD SUPPLIER SHALL FURNISH STAINLESS STEEL ENCLOSURE PANELS FROM TOP OF HOOD TO FINISH CEILING AND 3 INCH STANDOFF FROM WALL AS REQUIRED.

). HOOD SUPPLIER SHALL FACTORY INSTALL THE HOOD CONTROL PACKAGE IN THE HOOD UTILITY CABINET.

PROVIDE INTERLOCK KIT WITH ONE TEMPERATURE SENSOR PER GREASE EXHAUST COLLAR TO MEET IMC REQUIREMENTS. MOUNT BOTTOM OF HOOD AT 6'-8" ABOVE FINISHED FLOOR.

· IOWA FIRE EQUIPMENT COMPANY SHALL FURNISH AUTOMATIC SOLENOID GAS SHUT-OFF VALVE TO BE INSTALLED BY PLUMBING CONTRACTOR.

PROVIDE COMPLETE CAPTIVE AIRE THERMOSTATIC ELECTRICAL PACKAGE TO CONTROL FAN WITH DUCT TEMPERATURE SENSOR. RECESSED HMI, AND ENCLOSURE. HOOD IS EXISTING TO REMAIN. HOOD SUPPLIER IS TO PROVIDE NEW MAKEUP AIR PLENUM FOR FRONT OF EXISTING HOOD.

MAKEUP AIR UNIT SCHEDULE (DX COOLING, NATURAL GAS HEAT
--

MARK	MANUFACTURER	MODEL	SERVICE						DX C	COOLING	COIL				GAS HEAT	EXCHANGER			ELECTRICA	L	WEIGHT	NOTES
				CFM	ESP	NOM	TH	SH	EAT	-	L/	۸T	REFR	MIN OUT	NOM INPUT	MIN EFF	TEMP RISE	V/PH	DISC	STARTER	(LBS)	
					(IN)	HP	(MBH)	(MBH)	(°F DB) (	°F WB)	(°F DB)	(°F WB)	TYPE	(MBH)	(MBH)	(%)	(°F)		BY	BY		
MAU-1	CAPTIVE AIRE	A2-D.500-20D-MPU	MAIN COOKLINE	4080	0.5	5	120	71.2	95	78	77.8	70.4	R-410A	327.4	355.9	92	80	208/3	MFR	MFR	1672	A-H
MAU-2	CAPTIVE AIRE	A2-D.250-20D-MPU	BBQ	2269	0.5	1.5	90	40.7	95	78	77.3	67.5	R-410A	182	197	92	80	208/3	MRF	MRF	1560	A-H

UNIT SHALL INCLUDE PACKAGED CONTROLS.

PROVIDE UNIT WITH VERTICAL SUPPLY AIR DUCT DISCHARGE THRU UNIT CURB.

PROVIDE UNIT WITH GFCI CONVENIENCE OUTLET FOR FIELD WIRING. PROVIDE INLET HOOD WITH CLEANABLE ALUMINUM MESH FILTERS.

PROVIDE UNIT WTH MOTORIZED INTAKE DAMPERS.

PROVIDE FREEZESTAT IN THE SUPPLY AIR DUCT TO SHUT DOWN THE SUPPLY FAN AND CLOSE THE OUTDOOR AIR DAMPER IF TEMPERATURE IN THE SUPPLY DUCT DROPS BELOW 40 DEGREES FAHRENHEIT. PROVIDE WITH DISCHARGE DUCT SENSOR WITH MODULATING OR STAGED COOLING AND HEATING CAPABILITIES AS REQUIRED FOR OPERATION OF CONTROLS.

PROVIDE WITH FULL PERIMETER CURB & TIE DOWN CLIPS.

								F	AN SC	HEDULE	:								
MARK	SERVICE	MANUFACTURER	MODEL	TYPE	CFM	ESP	BHP	NOM	FAN	DRIVE	BACKDRAFT	CURB	CONTROLS			ELECTRICAL		WEIGHT	NOTES
	DESCRIPTION					(IN)		HP	RPM	(BELT/DIRECT)	DAMPER			VOLTS	PH	DISC BY	START BY	(LBS)	
KEF-1A	MAIN COOKLINE	CAPTIVE AIRE	DU180HFA	UPBLAST	2625	1.0	0.7070	2	1144	DIRECT	NO	MFR 24"	BY HOOD MFR	208	3	MFR	MFR	178	B,C
KEF-1B	MAIN COOKLINE	CAPTIVE AIRE	DU180HFA	UPBLAST	1835	1.0	0.4750	1	1017	DIRECT	NO	MFR 24"	BY HOOD MFR	208	3	MFR	MFR	170	B,C
KEF-2	BBQ	CAPTIVE AIRE	DU180HFA	UPBLAST	3025	1.0	0.8940	1.5	1198	DIRECT	NO	MFR 24"	BY HOOD MFR	208	3	MFR	MFR	196	B,C
KEF-3	WOK	CAPTIVE AIRE	DU240HFA	UPBLAST	2850	1.0	0.9770	2.00	715	DIRECT	NO	MFR 24"	BY HOOD MFR	208	3	MFR	MFR	353	B,C
KEF-4	PIZZA	CAPTIVE AIRE	DU50HFA	UPBLAST	1050	0.75	0.276	0.50	1362	DIRECT	NO	MFR 24"	BY HOOD MFR	115	1	MFR	MFR	86	B,C
KEF-5	BAKERY DECK OVEN	CAPTIVE AIRE	DU33HFA	UPBLAST	600	0.375	0.119	0.33	1220	DIRECT	NO	MFR 24"	BY HOOD MFR	115	1	MFR	MFR	67	D,E
KEF-8	ROTISSERIE	CAPTIVE AIRE	DU180HFA	UPBLAST	1788	1.00	0.464	1.00	1011	DIRECT	NO	MFR 24"	BY HOOD MFR	208	3	MFR	MFR	158	B,C
EF-12	REAR RESTROOMS	GREENHECK	G-123-VG	DOWNBLAST	1125	1.00	0.3	0.50	1492	DIRECT	YES	MFR 24"	BREAKER BY EC	115	1	MFR	MFR	46	F,G,H
TF 1	MOTHERS	GREENHECK	SP-B90	CEILING TRANSFER	75	0.25	-	-	700	DIRECT	NO	MFR 12"	BREAKER BY EC	120	1	MFR	MFR	80	F,G,H
TF 2	COMM RM	GREENHECK	BCF-106	INLINE TRANSFER	450	0.3	-	-	1475	BELT	NO	-	THERMOSTAT BY MC	120	1	MFR	MFR	80	F,G,H

0 208/3 ETR ETR A-D

0 208/3 ETR ETR A-D

PROVIDE MOTORIZED BACKDRAFT DAMPER WIRED TO OPEN WHEN FAN OPERATES. FAN SHALL HAVE A SINGLE POWER CONNECTION FOR FAN AND DAMPER.

ROOFTOP UNIT SCHEDULE (EXISTING TO REMAIN)

PROVIDE NEW FILTERS FOR EXISTING AIR HANDLING EQUIPMENT PRIOR TO STARTUP OF EQUIPMENT. NEW FILTERS SHALL BE COMPATIBLE WITH THE EXISTING EQUIPMENT AND EQUAL IN PERFORMANCE TO

CONTRACTOR SHALL FIELD VERIFY THAT THE EXISTING UNIT INCLUDING ITS ACCESSORIES BEING RESUSED IS NOT DAMAGED AND IS IN GOOD WORKING ORDER. REPORT ANY DEFICIENCIES TO THE OWNER

CONTRACTOR SHALL VERIFY EXISTENCE OF SMOKE DETECTORS IN RETURN AIR DUCT. REPAIR OR REPLACE SMOKE DETECTORS IF NOT FUNCTIONAL SUCH THAT UNIT SHUTS DOWN UPON DETECTION OF

OR ARCHITECT. CONTRACTOR SHALL SUBMIT TO THE OWNER AND ARCHITECT A WRITTEN REPORT DESCRIBING TESTS PERFORMED TO VERIFY OPERATION AND RESULTS OF THE TESTS.

ENTRY VESTIBULE

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE ...

REFER TO ROOFTOP UNIT CONTROL MATRIX FOR CONTROL FEATURES, MODULES, AND ACCESSORIES THAT SHALL BE PROVIDED WITH THE EQUIPMENT.

ETR R-410

ETR R-410 ETR

ETR R-410 ETR

 NOMINAL TONS
 SUPPLY FAN
 COOLING COIL
 HEAT EXCHANGER
 MIN OUT
 ELECTRICAL

 TONS
 O/A
 V/PH
 MCA
 MOCP

235

180

PROVIDE HINGED ROOF CURB.

PROVIDE GREASE COLLECTION SYSTEM. PROVIDE GRAVITY BACKDRAFT DAMPER.

LENNOX

FAN SHALL BE CONTROLLED VIA THERMOSTAT LOCATED IN SPACE SERVED.

INSTALL FAN AT SERVICEABLE HEIGHT. SUSPEND FAN USING SPRIGN VIBRATION ISOLATION SUPPORT.

		VARIABLE	<b>AIR VOL</b>	UME 1	ΓERMI	NAL S	SCHE	DULE	(ELEC	TR	IC H	HEA	AT)				
MARK	SERVED	ZONE	MANUFACTURER	MODEL	INLET	PRIMARY	MIN PRIM	MIN HEAT	MAX HEAT				HEATING	COIL			NOTES
	FROM	SERVED			SIZE (IN)	CFM	CFM	CFM	CFM	EAT	LAT	MBH	KW	STEPS	V	PH	
VAV 10-1	RTU-10	Dept Heads	TITUS	DESV	6	300	105	110	N/A	55	98.1	5.1	1.5	1	208	1	A-F
VAV 10-2	RTU-10	Employee Lounge	TITUS	DESV	10	975	245	300	N/A	55	91.9	11.9	3.5	2	208	1	A-F
VAV 10-3	RTU-10	Human Resources / Employee Hall	TITUS	DESV	5	235	155	155	N/A	55	95.8	6.8	2.0	2	208	1	A-F
VAV 10-4	RTU-10	Directors Office	TITUS	DESV	4	115	60	110	N/A	55	98.1	5.1	1.5	1	208	1	A-F
VAV 10-5	RTU-10	Asst Mgrs Office	TITUS	DESV	6	300	75	145	180	55	90.1	6.8	2.0	2	208	1	A-F
VAV 6-1	RTU-6	Exam 1	TITUS	DESV	5	185	60	110	N/A	55	98.1	5.1	1.5	1	208	1	A-F
VAV 6-2	RTU-6	Exam 2	TITUS	DESV	5	185	60	110	N/A	55	98.1	5.1	1.5	1	208	1	A-F
VAV 6-3	RTU-6	Clinic reception / Lab and Hall / RR	TITUS	DESV	8	575	115	190	N/A	55	96.6	8.5	2.5	2	208	1	A-F
VAV 6-4	RTU-6	Pharmacy	TITUS	DESV	9	700	420	420	N/A	55	92.6	17.1	5.0	2	208	1	A-F
VAV 6-5	RTU-6	Dietician	TITUS	DESV	4	155	55	110	N/A	55	98.1	5.1	1.5	1	208	1	A-F

ON AT THE SAME TIME AS KITCHEN.

**BUILDING AIR BALANCE SCHEDULE** 

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

A. CONTROLS SHALL BE FIELD MOUNTED BY ATC.

RADIATED AND DISCHARGE NOISE LEVELS SHALL NOT EXCEED AN NC OF 35 AT A PRESSURE DROP OF 1.0" W.C. PER ARI STANDARD 880. . TOTAL TERMINAL UNIT AIR PRESSURE DROP SHALL NOT EXCEED 0.5" W.C. AT PEAK COOLING AIRFLOW.

). INSTALL FLEXIBLE DUCT CONNECTOR AT INLET CONNECTION.

PROVIDED FACTORY INSTALLED CONTROL POWER (CP) TRANSFORMER.COORDINATE PRIMARY POWER WITH ELECTRICAL DRAWINGS. INLET SIZE SHOWN IS THE MINIMUM ALLOWABLE INLET SIZE. NO SMALLER SIZES SHALL BE ACCEPTED.

MARK	SERVICE	MANUFACTURER	MODEL	CONFIGURATION	NOMINAL	INDOOF	UNIT		E	ELECTRICAL		NOTES
	DESCRIPTION				CAPACITY (MBH)	AIRFLOW (CFM)	TSP (IN W.C.)	MCA	VOLTS	PH	DISCONNECT BY	
CS-1	WINE CELLAR	US CELLAR SYSTEMS	HS-87	HORIZONTAL	12	810	1.00	2.1	120	1	E.C.	A-D

UNIT WILL BE FURNISHED BY OWNER AND INSTALLED BY REFRIGERATION CONTRACTOR. SHEET METAL PROVIDED BY M.C. AND CONTROLS BY T.C. UNIT WILL BE FURNISHED WITH 10" ROUND DUCT COLLARS ON THE INLET AND OUTLET OF UNIT.

> SERVICE **DESCRIPTION** CLINIC RESTROOMS SEAFOOD

DINING RESTROOMS

UNIT WILL BE FURNISHED WITH AUTOMATIC EXPANSION VALVE.

REFRIGERATION CONTRACTOR TO PROVIDE R-448A REFRIGERANT FOR CS-1 CAPACITY.

FAN SCHEDULE (EXISTING TO REMAIN)										
JFACTURER	MOUNTING	MODEL	TYPE	CFM	ESP	NOM	FAN	DRIVE	ELECTRICAL	NOTES
					(IN)	HP	RPM	(BELT/DIRECT)	V/PH	
COOK	ROOF	100ACEH	DOWNBLAST	200	-	0.125	1550	ETR	115/1	A, B
СООК	ROOF	135VCR	UPBLAST	450	0.6	0.333	1725	ETR	115/1	Α
COOK	ROOF	70ACE70C2B	DOWNBLAST	200	0.4	0.167	1725	ETR	115/1	Α

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

SCHEDULED EQUIPMENT IS EXISTING TO REMAIN AND SHOWN FOR REFERENCE ONLY. . SET FAN TO CFM AT LOWEST STABLE CONDITION.

	UNIT HEATER SCHEDULE (NATURAL GAS)												
HEATING ELECTRICAL I						NOTES							
					INPUT	OUTPUT	MIN EFF	GAS PRESSURE			DISCONNECT	STARTER	
	MANUFACTURER	MODEL	SERVICE	CFM	(MBH)	(MBH)	(%)	(IN W.C.)	VOLTS	PHASE	BY	BY	
	MODINE	PDP-175	ELECTRICAL ROOM	2550	175	143.5	82	7-14"	115	1	MFR	N/A	A-C

MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE AND MATERIAL SHALL NOT BE ORDERED BY MANUFACTURER AND MODEL NUMBERS ONLY. REVIEW THE COMPLETE DESCRIPTION, NOTES AND SPECIFICATIONS TO DETERMINE THE EXACT MATERIAL AND ACCESSORIES TO BE ORDERED. THE MANUFACTURERS LISTED ARE THE BASIS FOR THE DESIGN.

MARK

UH-4

A. DDC THERMOSTAT PROVIDED BY ATC.

B. INSTALL THERMOSTAT IN AN ACCESSIBLE LOCATION. C. PROVIDE NECESSARY MOUNTING AND ACCESSORIES AND INSTALL PER MANUFACTURER REQUIREMENTS.

KEF-1A	H-1	MAIN COOKLINE			2625	
KEF-1B	H-1	MAIN COOKLINE			1835	
KEF-2	H-2	BBQ			3025	
KEF-3	H-3	WOK			2850	
KEF-4	H-4	PIZZA			1050	
KEF-5	H-5	BAKERY DECK OVEN*			600	
KEF-6 (ETR)	H-6	DONUT FRYER*			675	
KEF-7 (ETR)	H-7	DISHWASHER			1050	
KEF-8	H-8	ROTISSERIE			1788	
KEF-9 (ETR)		BAKERY RACK OVEN			900	
EF-1 (ETR)		CLINIC RESTROOMS			200	
EF-5 (ETR)		SEAFOOD DEPARTMENT			450	
EF-12		REAR RESTROOMS			1125	
EF-21 (ETR)		DINING RESTROOMS			200	
MAKEUP AIR:	SUPPLY AIR	SERVES	DESIGN OA (CFM)	PERCENT		
	(CFM)			04/04		
MAU-1	` '			OA/SA		
	4080	MAIN COOKLINE	4080	100%		
MAU-2	4080 2269	WOK/BBQ	4080 2269	100% 100%		
MAU-2 RTU-1	4080	WOK/BBQ SALES SOUTH	4080	100% 100% 35%		
MAU-2 RTU-1 RTU-2	4080 2269 17000 17000	WOK/BBQ	4080 2269	100% 100% 35% 35%		
MAU-2 RTU-1 RTU-2 RTU-3 (ETR)	4080 2269 17000 17000 4000	WOK/BBQ SALES SOUTH SALES NORTH DINING	4080 2269 6000	100% 100% 35% 35% 0%		
MAU-2 RTU-1 RTU-2 RTU-3 (ETR) RTU-4 (ETR)	4080 2269 17000 17000 4000 3,500	WOK/BBQ SALES SOUTH SALES NORTH	4080 2269 6000 6000	100% 100% 35% 35% 0% 0%		
MAU-2 RTU-1 RTU-2 RTU-3 (ETR)	4080 2269 17000 17000 4000	WOK/BBQ SALES SOUTH SALES NORTH DINING	4080 2269 6000 6000 0	100% 100% 35% 35% 0%		
MAU-2 RTU-1 RTU-2 RTU-3 (ETR) RTU-4 (ETR) RTU-5 (ETR) RTU-6	4080 2269 17000 17000 4000 3,500	WOK/BBQ SALES SOUTH SALES NORTH DINING EXIT VESTIBULE	4080 2269 6000 6000 0	100% 100% 35% 35% 0% 0% 0% 14%		
MAU-2 RTU-1 RTU-2 RTU-3 (ETR) RTU-4 (ETR) RTU-5 (ETR)	4080 2269 17000 17000 4000 3,500 3,500	WOK/BBQ SALES SOUTH SALES NORTH DINING EXIT VESTIBULE ENTRY VESTIBULE	4080 2269 6000 6000 0 0	100% 100% 35% 35% 0% 0% 0% 14%		
MAU-2 RTU-1 RTU-2 RTU-3 (ETR) RTU-4 (ETR) RTU-5 (ETR) RTU-6	4080 2269 17000 17000 4000 3,500 3,500 1,800	WOK/BBQ SALES SOUTH SALES NORTH DINING EXIT VESTIBULE ENTRY VESTIBULE PHARMACY	4080 2269 6000 6000 0 0 0 250	100% 100% 35% 35% 0% 0% 0% 14% 0%		
MAU-2 RTU-1 RTU-2 RTU-3 (ETR) RTU-4 (ETR) RTU-5 (ETR) RTU-6 RTU-7 (ETR) RTU-8 (ETR) RTU-9	4080 2269 17000 17000 4000 3,500 3,500 1,800 2,640	WOK/BBQ SALES SOUTH SALES NORTH DINING EXIT VESTIBULE ENTRY VESTIBULE PHARMACY DAIRY	4080 2269 6000 6000 0 0 0 250	100% 100% 35% 35% 0% 0% 0% 14% 0% 0%		
MAU-2 RTU-1 RTU-2 RTU-3 (ETR) RTU-4 (ETR) RTU-5 (ETR) RTU-6 RTU-7 (ETR) RTU-8 (ETR) RTU-9 RTU-10	4080 2269 17000 17000 4000 3,500 3,500 1,800 2,640 2,400	WOK/BBQ SALES SOUTH SALES NORTH DINING EXIT VESTIBULE ENTRY VESTIBULE PHARMACY DAIRY FROZEN KITCHEN OFFICES	4080 2269 6000 6000 0 0 0 250 0 0 250	100% 100% 35% 35% 0% 0% 0% 14% 0% 0% 0%		
MAU-2 RTU-1 RTU-2 RTU-3 (ETR) RTU-4 (ETR) RTU-5 (ETR) RTU-6 RTU-7 (ETR) RTU-8 (ETR) RTU-9 RTU-10 RTU-11	4080 2269 17000 17000 4000 3,500 3,500 1,800 2,640 2,400 3,200	WOK/BBQ SALES SOUTH SALES NORTH DINING EXIT VESTIBULE ENTRY VESTIBULE PHARMACY DAIRY FROZEN KITCHEN	4080 2269 6000 6000 0 0 0 250 0 0	100% 100% 35% 35% 0% 0% 0% 14% 0% 0% 10% 4%		
MAU-2 RTU-1 RTU-2 RTU-3 (ETR) RTU-4 (ETR) RTU-5 (ETR) RTU-6 RTU-7 (ETR) RTU-8 (ETR) RTU-9 RTU-10	4080 2269 17000 17000 4000 3,500 3,500 1,800 2,640 2,400 3,200 1,950	WOK/BBQ SALES SOUTH SALES NORTH DINING EXIT VESTIBULE ENTRY VESTIBULE PHARMACY DAIRY FROZEN KITCHEN OFFICES	4080 2269 6000 6000 0 0 0 250 0 0 250	100% 100% 35% 35% 0% 0% 0% 14% 0% 0% 0%		

10%

PERCENT POSITIVE AIR FLOW

EXHAUST TOTALS

TOTAL OUTSIDE AIR = DIVERSITY OF EQUIPMENT DURING OCCUPIED HOURS. EQUIPMENT WILL NOT BE TOTAL POSITIVE AIR FLOW

DRAWN BY: 10/19/2020 JOB NUMBER: AS NOTED 62930547

**RELEASE FOR** CONSTRUCTION

REVISES NUMBER NISS

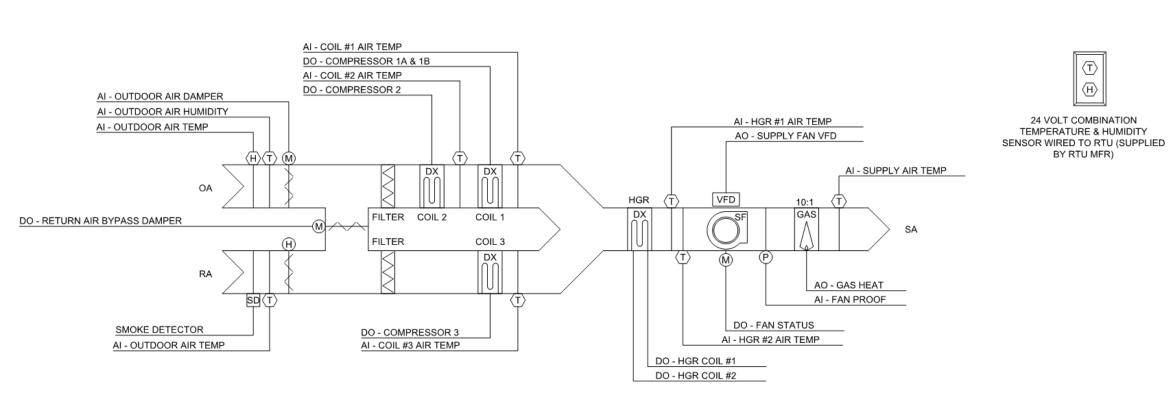
8345 LENEXA DRIVE, SUITE 300 LENEXA, KS 66214 TEL 913.742.5000 FAX 913.742.5001 WWW.HENDERSONENGINEERS.COM

MO. CORPORATE NO: E-556D EXPIRES 12/31/2020

NUMBER

PROFESSIONAL SEAL

LICENSE # PE-2017008503



## DUAL PATH ROOFTOP UNIT CONTROLS (RTU-1 & 2)

RUN CONDITIONS - SCHEDULED

THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME

THE UNIT'S CONTROLLER SHALL PROVIDE THE BAS WITH THE FOLLOWING ALARMS AS DIGITAL OUTPUTS: SUPPLY FAN FAULT ALARM: IF THE SUPPLY FAN COMMAND DOES NOT MATCH STATUS OF AIR FLOW PROOF SWITCH INPUT. COMPRESSOR FAULT ALARM: IF ANY COMPRESSOR COMMAND DOES NOT MATCH ITS CURRENT STATUS SWITCH. SMOKE DETECTOR ALARM DRAIN PAN OVERFLOW ALARM.

SUPPLY FAN: THE SUPPLY FAN SHALL OPERATE CONTINUOUSLY AT 100% OF DESIGN AIRFLOW DURING SCHEDULED OCCUPIED PERIODS. THE SUPPLY FAN SHALL OPERATE AT 50% (ADJ.) DURING UNOCCUPIED TIMES WHILE THERE IS NO CALL FOR COOLING, HEATING, OR DEHUMIDIFICATION.

ONE COOLING SETPOINT: THE OCCUPANT SHALL ADJUST THE ZONE TEMPERATURE COOLING SETPOINT IN THE SPACE ±2 DEGREES (ADJ.) ON A THERMOSTAT PROVIDED BY THE RTU MANUFACTURER. THE ZONE COOLING SETPOINT SHALL BE DISCOVERABLE AND ADJUSTABLE FROM THE BAS. UPON LOSS OF COMMUNICATION, THE UNIT SHALL REVERT TO THE LAST ZONE COOLING SETPOINT BEFORE COMMUNICATION WAS LOST. ZONE HEATING SETPOINT: THE UNIT'S CONTROLLER SHALL USE A 2 DEGREE

(ADJ.) OFFSET TO DETERMINE THE ZONE HEATING SETPOINT. THE OFFSET SHALL BE DISCOVERABLE AND ADJUSTABLE BY THE BAS.

 $\underline{\sf ZONE}$  DEWPOINT SETPOINT: THE DEW POINT SETPOINT SHALL BE 50 DEGREES (ADJ.) AND DISCOVERABLE AND ADJUSTABLE BY THE BAS. TEMPERATURE CONTROL (DRY BULB CONTROL):

UPON A CALL FOR HEATING, THE UNIT'S CONTROLLER SHALL MODULATE THE FURNACE TO HOLD A 95 DEGREE (ADJ.) SUPPLY AIR TEMPERATURE WHILE ENERGIZED ON. THE HEATING SHALL BE ENABLED WHENEVER:

THE ZONE TEMPERATURE IS BELOW THE ZONE TEMPERATURE HEATING SET POINT THE SUPPLY FAN STATUS IS ON THE UNIT IS NOT IN DEHUMIDIFICATION MODE

UPON A CALL FOR COOLING, THE UNIT'S CONTROLLER SHALL STAGE COOLING CIRCUITS 1 & 2 IN FIVE MINUTE INTERVALS TO MAINTAIN A COIL LEAVING TEMPERATURE OF 48 DEGREES. IF THE SPACE COOLING DEMAND CAN NOT BE MET AFTER A TIME DELAY OF 5 MINUTES (ADJ.), THE CONTROLLER SHALL STAGE ON COOLING CIRCUIT 3 TO MEET ZONE SET POINT.

THE COOLING SHALL BE ENABLED WHENEVER: THE ZONE TEMPERATURE IS ABOVE THE ZONE TEMPERATURE COOLING SETPOINT THE SUPPLY FAN STATUS IS ON THE UNIT IS NOT IN DEHUMIDIFICATION MODE THE OUTDOOR AIR DAMPER STATUS IS GREATER THAN 20% OR THE

NIGHT SET BACK DAMPER (RETURN AIR BYPASS DAMPER STATUS) IS GREATER THAN 90% HUMIDITY CONTROL:
THE BAS SHALL MAKE THE ZONE DEW POINT SETPOINT AVAILABLE TO THE UNIT'S

CONTROLLER. THE UNIT'S CONTROLLER SHALL ENABLE DEHUMIDIFICATION MODE WHEN EITHER OF THE FOLLOWING IS TRUE: 1. ZONE DEWPOINT EXCEEDS ZONE DEWPOINT SETPOINT AND THE OUTDOOR AIR DAMPER POSITION EXCEEDS 20% OR THE NIGHT SET BACK DAMPER 2. OUTDOOR AIR DEWPOINT EXCEEDS 51 DEGREES (ADJ.) DEWPOINT AND THE UNIT'S OUTDOOR AIR DAMPER POSITION EXCEEDS 20%.

DEHUMIDIFICATION MODE #1: IF ZONE DEWPOINT EXCEEDS ZONE DEWPOINT SETPOINT, ALL THREE COOLING STAGES SHALL BE AVAILABLE TO OPERATE. COOLING CIRCUITS 1 & 2 SHALL STAGE ON TO MAINTAIN A LEAVING COIL TEMPERATURE OF 48 DEGREES. IF THE ZONE HUMIDITY SET POINT IS NOT MET AFTER 5 MINUTES (ADJ.), COOLING CIRCUIT 3 SHALL STAGE ON.

DEHUMIDIFICATION MODE #2: IF ZONE DEWPOINT IS LESS THAN ZONE DEWPOINT SETPOINT AND THE OUTDOOR AIR DEWPOINT EXCEEDS 51 DEGREES (ADJ.) DEWPOINT, THEN ONLY COOLING CIRCUITS 1 AND 2 WILL BE AVAILABLE TO OPERATE. COOLING CIRCUITS 1 & 2 SHALL STAGE ON TO MAINTAIN A LEAVING COIL TEMPERATURE OF 48 DEGREES. COOLING CIRCUIT 3 SHALL REMAIN DISABLED.

REHEAT MODE: THE HOT GAS REHEAT COILS SHALL BE AVAILABLE TO OPERATE DURING BOTH DEHUMIDIFICATION MODES TO PREVENT OVER-COOLING OF THE SPACE. IF THE ZONE TEMPERATURE IS 2 DEGREES (ADJ.) BELOW THE ZONE TEMPERATURE COOLING SETPOINT, THE HOT GAS REHEAT COILS SHALL BE ACTIVATED. IF THE ZONE TEMPERATURE IS 3 DEGREES (ADJ.) BELOW THE ZONE TEMPERATURE COOLING SETPOINT, THE AUXILIARY HEATER SHALL ENERGIZE ON AND MODULATE TO ACHIEVE A SUPPLY AIR TEMPERATURE SET POINT OF 75 DEGREES (ADJ.) REHEAT SHALL BE DISABLED ONCE ZONE TEMPERATURE IS 1 DEGREE (ADJ.) BELOW ZONE COOLING SETPOINT.

DUCT MOUNTED RETURN AIR SMOKE DETECTORS: THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A RETURN DUCT SMOKE DETECTOR ALARM STATUS.

DRAIN PAN OVERFLOW SENSOR: THE UNIT SHALL SHUT DOWN AND GENERATE AN ALARM UPON RECEIVING A DRAIN PAN OVERFLOW STATUS. WHEN ALARM CLEARS AND 10 MINUTES LAPSE, THE UNIT SHALL RESUME OPERATION.

OUTDOOR AIR DAMPER CONTROLS: OCCUPIED MODE:
THE BAS SHALL PROVIDE THE UNIT'S CONTROLLER WITH A DAMPER POSITION AND THE UNIT'S CONTROLLER SHALL CLOSE THE RETURN AIR BYPASS DAMPER. THE UNIT'S CONTROLLER SHALL HAVE A MINIMUM DAMPER POSITION

UNOCCUPIED MODE:
THE UNIT SHALL CLOSE THE OUTDOOR AIR DAMPER AND OPEN THE RETURN AIR BYPASS DAMPER.

HOFFMAN CONTROLS CONDENSER FAN CONTROL STRATEGY: CONDENSER FAN #1 WILL COME ON IF REFRIGERANT LIQUID TEMPERATURE OF COMPRESSOR #1A/B, #2A/2B, OR #3 IS GREATER

CONDENSER FAN #1 WILL COME ON IF REFRIGERANT LIQUID TEMPERATURE OF COMPRESSOR #1A/B, #2A/2B, OR #3 IS GREATER CONDENSER FAN #1 WILL COME ON IF REFRIGERANT LIQUID TEMPERATURE OF COMPRESSOR #1A/B, #2A/2B, OR #3 IS GREATER CONDENSER FAN #1 WILL COME ON IF REFRIGERANT LIQUID TEMPERATURE OF COMPRESSOR #1A/B, #2A/2B, OR #3 IS GREATER

TEMPERATURE OF COMPRESSOR #1A/B, #2A/2B, OR #3 IS GREATER CONDENSER FAN #1 WILL COME ON IF REFRIGERANT LIQUID TEMPERATURE OF COMPRESSOR #1A/B, #2A/2B, OR #3 IS GREATER

CONDENSER FAN #1 WILL COME ON IF REFRIGERANT LIQUID

THE FOLLOWING POINTS SHALL BE PROVIDED TO THE UNIT'S CONTROLLER BY THE ZONE DEWPOINT SETPOINT

ZONE TEMPERATURE COOLING SETPOINT OUTDOOR AIR DAMPER POSITION OCCUPANCY STATUS

THE FOLLOWING POINTS SHALL BE MADE AVAILABLE TO THE BAS BY THE UNIT'S CONTROLLER:

INPUTS TO UNIT'S CONTROLLER: STORE SPACE TEMPERATURE

STORE TEMPERATURE OFFSET VALUE FROM STORE SENSOR STORE HEATING SETPOINT OUTDOOR AIR HUMIDITY OUTDOOR AIR TEMPERATURE RETURN AIR TEMPERATURE

COIL 1 LEAVING AIR TEMPERATURE COIL 2 LEAVING AIR TEMPERATURE COIL 3 LEAVING AIR TEMPERATURE HGR 1 LEAVING AIR TEMPERATURE HGR 2 LEAVING AIR TEMPERATURE SUPPLY LEAVING AIR TEMPERATURE SUPPLY FAN STATUS SUPPLY AIR PROOF STATUS

GAS FURNACE STATUS COMPRESSOR 1A RUN PROOF COMPRESSOR 18 RUN PROOF COMPRESSOR 2A RUN PROOF COMPRESSOR 2B RUN PROOF COMPRESSOR 3 RUN PROOF

RETURN AIR SMOKE DETECTOR INPUT OUTDOOR AIR DAMPER POSITION FEEDBACK (0-100%) NIGHT SET BACK DAMPER (RETURN AIR BYPASS DAMPER) POSITION FEEDBACK (0-100%) DRAIN PAN FLOAT SWITCH STATUS

DIGITAL OUTPUTS FROM UNIT'S CONTROLLER SUPPLY FAN ON/OFF COMPRESSOR 1A ON/OFF COMPRESSOR 1B ON/OFF COMPRESSOR 2A ON/OFF COMPRESSOR 2B ON/OFF COMPRESSOR 3 ON/OFF

HOT GAS REHEAT COIL/VALVE #1 ON/OFF HOT GAS REHEAT COIL/VALVE #2 ON/OFF AUXILIARY FURNACE ENABLE ON/OFF NIGHT SET BACK (RETURN AIR BYPASS) DAMPER ON/OFF

ANALOG OUTPUTS FROM UNIT'S CONTROLLER: DIGITAL COMPRESSOR 1A PERCENTAGE MODULATING FURNACE PERCENTAGE OUTDOOR AIR DAMPER POSITION PERCENTAGE SUPPLY FAN VFD PERCENTAGE

THE BAS GRAPHICS SHALL DISPLAY VALUES OR STATUS OF POINTS LISTED IN THE PREVIOUS SECTION.

FREEZESTAT (BY JOHNSON CONTROLS A421) COOLING IS DISABLED IF THE COIL LAT DROPS BELOW 36 DEGREES (ADJ.). COOLING WILL REACTIVATE ONCE THE FREEZESTAT DOWNSTREAM OF THE EVAPORATOR COIL IS SATISFIED BY A 10 DEGREE TEMPERATURE RISE COIL LEAVING CONDITION. THERE SHALL BE A FIVE MINUTE ANTI SHORT CYCLE TIME DELAY INITIATED UPON COMPRESSOR SHUT DOWN. FREEZESTAT SHALL ONLY BE INITIATED DURING A CALL FOR COOLING.

SHUT DOWN COMPRESSOR #1A/1B IF COOLING COIL #1 LAT DROPS BELOW 36 DEGREES. SHUT DOWN COMPRESSOR #2A/2B IF COOLING COIL #2 LAT DROPS BELOW 36 DEGREES. SHUT DOWN COMPRESSOR #3 IF COOLING COIL #3 LAT DROPS BELOW 36 DEGREES.

MECHANICAL SEQUENCES HARDWIRED AT FACTORY: EACH COMPRESSOR SHALL BE WIRED TO OPERATE WITH A PUMPDOWN CYCLE. EACH COOLING CIRCUIT SHALL HAVE A LIQUID LINE SOLENOID VALVE THAT IS ENERGIZED TO OPEN ON A CALL FOR COMPRESSOR EACH HGR CIRCUIT SHALL HAVE 3 VALVES. ONE VALVE OPENS TO DIVERT HOT DISCHARGE REFRIGERANT INTO THE HOT GAS REHEAT

COIL, THE SECOND VALVE CLOSES TO DIVERT REFRIGERANT FROM HALF OF THE CONDENSER COIL, AND THE THIRD VALVE OPENS TO ALLOW REFRIGERANT TO BLEED FROM THE DEAD CONDENSER COIL DURING HOT GAS REHEAT MODE. MECHANICAL / HARDWIRED SAFETIES:

PHASE MONITOR - AUTO RESET COMPRESSOR HIGH PRESSURE SWITCHES - MANUAL RESET COMPRESSOR LOW PRESSURE SWITCHES - AUTO RESET COPELAND MOTOR PROTECTOR - AUTO RESET BLOWER MOTOR OVERLOAD - MANUAL RESET RETURN AIR SMOKE DETECTOR - MANUAL RESET ANTI SHORT CYCLE COMPRESSOR TIME DELAYS (5 MINUTES) - AUTO FURNACE HIGH LIMIT - "SOFT RESET" AUTOSET - "HARD RESET REQUIRES POWER ON/OFF CYCLE TANDEM COMPRESSORS HARD WIRED SUCH THAT LAG (E.G. 1B) COMPRESSOR WILL NOT ENERGIZE ON IF THE LEAD (E.G. 1A) COMPRESSOR IS ENERGIZED OFF

SPECIAL INFORMATION: COMPRESSORS LOCKOUT AT 45 DEGREE AMBIENT CONDITIONS TANDEM COMPRESSOR SETS WITH DIGITAL SCROLLS ARE SUBJECT TO A CONTROL STRATEGY THAT LIMITS THE DIGITAL COMPRESSOR'S MINIMUM CAPACITY TO 30% IF BOTH COMPRESSORS ARE OPERATING AND 67% IF ONLY ONE DIGITAL COMPRESSOR IS OPERATION. ALL SETPOINTS, DEAD BANDS, AND TIME DELAYS ARE ADJUSTABLE FOR OPTIMIZING UNIT PERFORMANCE ONCE EQUIPMENT IS INSTALLED.

VALUES LISTED HEREIN ARE FACTORY SETTINGS.

	Allowable Temperature Ranges						
	Landina	Cod	Cooling		Heating		
	Location	Low Temp	High Temp	Low Temp	High Temp	Cooling	Н
HVAC Alarms	Sales Floor	70	75	67	72	-	$\cdot \Box$
	Wine and Spirits	70	75	67	72	-	
•	Market Grille	70	75	67	72	75	
Store Director, HyVee Maintenance, 3rd party service provider	Offices	70	76	66	74	75	:
Store Director, HyVee Maintenance, 3rd party service provider	Backroom					_	
Store Director, HyVee Maintenance, 3rd party service provider	Kitchen / Prep Areas	72	78	65	72	80	十
Store Director, HyVee Maintenance, 3rd party service provider	Vestibules	75	85	55	65	-	$\top$
Store Director, HyVee Maintenance, 3rd party service provider	Pharmacy	70	78	66	74	75	$\top$
Store Director, HyVee Maintenance, 3rd party service provider	Clinic	70	78	66	74	75	ıΤ
	Store Director, HyVee Maintenance, 3rd party service provider  Store Director, HyVee Maintenance, 3rd party service provider  Store Director, HyVee Maintenance, 3rd party service provider	Alarm Recipients  Store Director, HyVee Maintenance, 3rd party service provider  Pharmacy	HVAC Alarms  Alarm Recipients Sales Floor Wine and Spirits 70 Market Grille 70 Store Director, HyVee Maintenance, 3rd party service provider	Location         Cooling           Low Temp High Temp           Sales Floor         70         75           Wine and Spirits         70         75           Wine and Spirits         70         75           Market Grille         70         75           Store Director, HyVee Maintenance, 3rd party service provider         80         85           Store Director, HyVee Maintenance, 3rd party service provider         Kitchen / Prep Areas         72         78           Store Director, HyVee Maintenance, 3rd party service provider         Vestibules         75         85           Store Director, HyVee Maintenance, 3rd party service provider         Pharmacy         70         78	Location         Cooling         Head           Low Temp         Low Temp	Location   Cooling   Heating	Location   Cooling   Heating   Unocooling

Notes: Confirm alarm recipients with owner prior to programming. Parties listed are recommendations.

Matrix of Responsibility						
Item	Provided by	Installed by				
Sensors referenced in the controls documents	ATC	ATC				
Pressure and temperature wells	MC	MC				
Control valves	ATC	MC				
Control dampers	MC	MC				
Damper and valve actuators	ATC	ATC				
Refrigerant leak detection system	ATC	RC				
Temperature control wiring and conduit	EC	EC				
BACNET Interface from packaged equipment controllers to DDC	MFR	MFR or MC				
Variable Speed Drives	ATC	EC				
Tstats for standalone equipment	MC	EC				
Tstats for DDC controlled equipment	ATC	ATC				



**DRAWING** 

SYMBOL

BUILDING AUTOMATION SYSTEM (BAS):

INSTALLED BY HUSSMANN.

IMPLEMENTATION.

DRAWING E4.1A.

CONTROL SEQUENCE:

ROOM AIR CONDITIONS:

THE SYSTEM AT ALL TIMES.

CONSTANT SPEED FAN

CONSTANT SPEED FAN

CONTROL SEQUENCE:

RUN CONDITIONS:

PROVIDED BY CONTROLS CONTRACTOR).

**ZONE TEMP CONDITIONS** 

BUILDING HVAC AND REFRIGERATION CONTROLS ARE TO BE PROVIDED AND

M.C. TO VERIFY CONTROL PROTOCOL WITH HUSSMANN PRIOR TO ORDERING ANY

UNOCCUPIED SCHEDULES. VERIFY STORE SCHEDULING REQUIREMENTS WITH OWNER. IF STORE IS TO BE OPEN FULL TIME, SYSTEM SHALL STILL BE

SMOKE DETECTORS SHALL BE PROVIDED AND INSTALLED BY M.C. WIRING AND

CONTROLLER TYPE AND QUANTITY WITH A+ PRIOR TO ORDERING. REFER TO

**GENERAL CONTROLS REQUIREMENTS** 

THE CONTROLLER SHALL MONITOR THE ROOM AIR TEMPERATURE. THE

DEHUMIDIFICATION CAPABILITIES. THESE VALUES SHALL BE MADE AVAILABLE TO

BO - FAN START/STOP

AO - FAN VFD SPEED

BI - FAN VFD FAULT

BI - FAN STATUS

VARIABLE SPEED FAN

VARIABLE SPEED FAN

TYPICAL FAN CONTROL REQUIREMENTS

**UNIT HEATER CONTROL DIAGRAM (UH-1)** 

UNIT HEATER SHALL BE ENABLED WHEN OUTSIDE AIR TEMPERATURE IS

REFER TO TABLE FOR ALLOWABLE USER SET POINT RANGE.

BELOW 60°F (ADJ), UNIT SHALL RUN TO MAINTAIN SPACE SET POINT, SPACE

TEMPERATURE SHALL BE MADE AVAILABLE TO THE SYSTEM AT ALL TIMES.

CONTROLLER SHALL MONITOR ROOM AIR HUMIDITY IF THE UNIT HAS

Starter BO - FAN START / STOP

BI - FAN STATUS

THE E.C. SHALL PROVIDE ONE 20 AMP CIRCUIT TO HVAC PANEL (PANEL

THE HVAC SYSTEM SHALL BE PROGRAMMED TO UTILIZE OCCUPIED AND

PROGRAMMED WITH THE SCHEDULING FEATURE FOR EASE OF FUTURE

COMMUNICATIONS & SECURITY. COORDINATE SMOKE DETECTOR AND

SYSTEM INTEGRATION WILL BE PROVIDED AND INSTALLED BY A+

DAMPER W/ ENDSWITCH

**CONTROL DIAGRAM (EF-5, 12, 21, TF-1)** 

CONTROL SEQUENCE: RUN CONDITIONS - SCHEDULED: THE FAN SHALL RUN ACCORDING TO A USER DEFINABLE SCHEDULE.

THE FAN SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME. EXHAUST AIR DAMPER:

THE EXHAUST AIR DAMPER SHALL BE PROVIDED WITH THE EXHAUST FAN AND OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE EXHAUST AIR DAMPER END SWITCH S HALL SIGNAL EXHAUST FAN TO



EXHAUST FAN - SWITCH CONTROL (EF-1)

CONTROL SEQUENCE:

RUN CONDITIONS - SCHEDULED: THE FAN SHALL RUN BASED ON A WALL SWITCH. COORDINATE LOCATION OF SWITCH WITH ARCHITECT. EXHAUST AIR DAMPER:

THE EXHAUST AIR DAMPER SHALL BE PROVIDED WITH THE EXHAUST FAN AND OPEN ANYTIME THE UNIT RUNS AND SHALL CLOSE ANYTIME THE UNIT STOPS. THE EXHAUST AIR DAMPER END SWITCH S HALL SIGNAL EXHAUST FAN TO ENABLE/DISABLE.

CONTROL SEQUENCE:

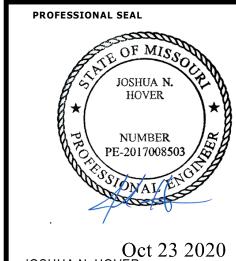
RUN CONDITIONS - SCHEDULED:

THE FAN SHALL RUN BASED ON A SPACE TEMPERATURE COOLING SETPOINT OF 80° F (ADJ.).

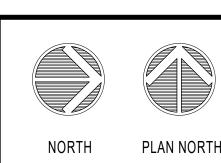
8345 LENEXA DRIVE, SUITE 300 LENEXA, KS 66214 TEL 913.742.5000 FAX 913.742.5001 WWW.HENDERSONENGINEERS.COM 1950003081 MO. CORPORATE NO: E-556D EXPIRES 12/31/2020

RELEASE FOR CONSTRUCTION

REVISES NUMBER OF THE REVISES OF THE



Oct 23 2020
JOSHUA N. HOVER
CENSE # PE 22 LICENSE # PE-2017008503



HVAC CONTROL DIAGRAMS

DRAWN BY: SCALE: JOB NUMBER: AS NOTED 62930547

8345 LENEXA DRIVE, SUITE 300 LENEXA, KS 66214 TEL 913.742.5000 FAX 913.742.5001 WWW.HENDERSONENGINEERS.COM

MO. CORPORATE NO: E-556D EXPIRES 12/31/2020

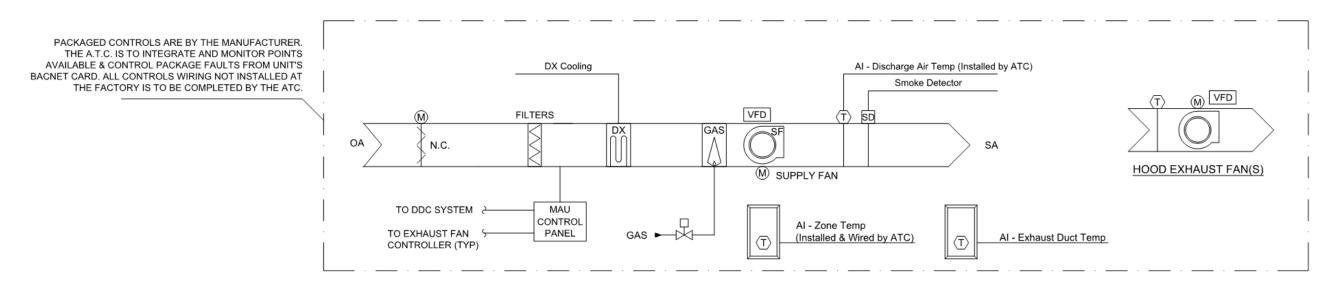
NUMBER

PE-2017008503

Oct 23 2020
JOSHUA N. HOVER
CENSE # PF 00

LICENSE # PE-2017008503

PROFESSIONAL SEAL



## 3 KITCHEN MAKEUP AIR UNIT CONTROLS

CONTROL SEQUENCE: VARIABLE VOLUME UNITS

M.C. TO PROVIDE UNIT WITH PACKAGED CONTROLS TO INTERFACE WITH A CENTRAL BUILDING AUTOMATION SYSTEM (BAS), COORDINATE PROTOCOL WITH ATC PRIOR TO ORDERING MAKEUP AIR UNIT. PACKAGED CONTROLS SHALL CONTROL MAKEUP AIR UNIT AND KITCHEN HOOD EXHAUST FANS ASSOCIATED WITH THE SYSTEM. POINTS LISTED ARE TO BE USED FOR MONITORING AND TROUBLESHOOTING.

RUN CONDITIONS: THE UNIT SHALL RUN BASED UPON A TEMPERATURE DIFFERENTIAL CALCULATED

BETWEEN THE SENSOR LOCATED AT THE KITCHEN CEILING AND THE SENSOR LOCATED IN THE NECK OF THE EXHAUST HOOD DUCTWORK. THE SYSTEM SHALL TURN ON IN PREP MODE AT A DIFFERENTIAL TEMPERATURE OF 7.5°F (ADJ.). THE SYSTEM SHALL TURN ON LOW SPEED AT A DIFFERENTIAL TEMPERATURE OF OF 15°F (ADJ.) AND MODULATE TO MAINTAIN SETTING. UPON FALLING BELOW THE DIFFERENTIAL, THE SYSTEM SHALL SHUT DOWN AUTOMATICALLY.

THE UNIT SHALL STAGE COOLING BASED ON OA TEMPERATURE MAINTAIN DISCHARGE AIR TEMPERATURE IN HEATING MODE. OVERRIDE CONTROL:

A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE AUTOMATIC CONTROLS AND PLACE THE UNIT INTO OPERATION FOR 1 HOUR (ADJ.). AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL REVERT BACK TO THE AUTOMATIC MODE. THE SYSTEM SHALL AUTOMATICALLY SHUT DOWN IF THE SPACE DIFFERENTIAL TEMPERATURE FALLS BELOW THE SETPOINT.

THE SUPPLY FAN SHALL MODULATE BASED ON THE CALCULATED DIFFERENTIAL TEMPERATURE. AS DIFFERENTIAL TEMPERATURE INCREASES, THE SUPPLY FAN SHALL MODULATE OR STAGE OFF BASED ON THE MANUFACTURER'S CONTROL

EXHAUST FAN(S): THE EXHAUST FAN(S) SHALL MODULATE IN UNISON WITH THE MAKEUP AIR UNIT. IF

HOOD IS ENABLED VIA SWITCH, EXHAUST FAN SHALL GO INTO PREP-MODE AND EXHAUST ONLY TRANSFER AIR UNTIL HEAT IS GENERATED AT THE COOKING APPLIANCES. SUPPLY AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE VIA A SENSOR LOCATED IN THE PSP PLENUM.

COOLING STAGES:

AI - ZONE HUMIDITY

BI - Zone Override AI - Zone Temp

AI - Zone Setpoint Adjust

AI - Discharge Air Temp Smoke Detector

THE CONTROLLER SHALL MEASURE THE OUTSIDE AIR TEMPERATURE AND STAGE COOLING TO MAINTAIN ITS COOLING SETPOINT. THE COOLING SHALL BE ENABLED WHENEVER:

STAGE 1 COOLING SHALL BE ENABLED WHEN OUTSIDE AIR TEMPERATURE IS 85°F (ADJ.). STAGE 2 COOLING (IF AVAILABLE) SHALL BE ENABLED WHEN OUTSIDE AIR TEMPERATURE IS 90°F (ADJ.).

AND THE SUPPLY FAN STATUS IS ON. AND THE HEATING IS NOT ACTIVE.

GAS HEATING:

THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND MODULATE THE HEATING TO MAINTAIN ITS HEATING SETPOINT OF 55°F (ADJ.). THE HEATING SHALL BE ENABLED WHENEVER: OUTSIDE AIR TEMPERATURE IS LESS THAN 45°F (ADJ.).

THE FOLLOWING POINTS SHALL APPEAR IN THE CONTROL SYSTEM GRAPHICS FOR SYSTEMS EQUIPPED WITH DEMAND CONTROL VENTILATION:

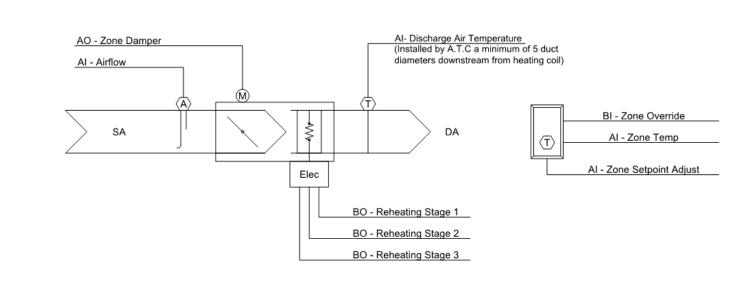
- ROOM TEMPERATURE EXHAUST TEMPERATURE (EACH FAN, QUANTITY VARIES)
- MAU DISCHARGE AIR TEMPERATURE FAN SPEED

AND THE SUPPLY FAN STATUS IS ON.

- FAN AMPERAGE FAN POWER
- FAN FAULTS FAN STATUS
- VFD FAULTS CONTROLLER FAULTS

FILTER CLOG PERCENTAGES

Smoke Detector



# 6 TERMINAL AIR BOX CONTROL DIAGRAM

CONTROL SEQUENCE:

RUN CONDITIONS - SCHEDULED:

THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE.

ZONE SETPOINT ADJUST: THE OCCUPANT SHALL BE ABLE TO ADJUST THE ZONE TEMPERATURE

SCHEDULE.

ZONE UNOCCUPIED OVERRIDE: A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE PERIOD OF TIME. AT THE EXPIRATION OF THIS

TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE

HEATING AND COOLING SETPOINTS AT THE ZONE SENSOR.

REVERSING VARIABLE VOLUME TERMINAL UNIT - FLOW CONTROL:

THE UNIT SHALL MAINTAIN ZONE SETPOINTS BY CONTROLLING THE AIRFLOW THROUGH ONE OF THE FOLLOWING:

- OCCUPIED: WHEN ZONE TEMPERATURE IS GREATER THAN ITS COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM
- OCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED. WHEN THE ZONE TEMPERATURE IS BETWEEN THE COOLING SETPOINT
- AND THE HEATING SETPOINT, THE ZONE DAMPER SHALL MAINTAIN THE MINIMUM REQUIRED ZONE VENTILATION (ADJ.). WHEN ZONE TEMPERATURE IS LESS THAN ITS HEATING SETPOINT, THE

CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT ITS HEATING SETPOINT.

UNOCCUPIED:

WHEN THE ZONE IS UNOCCUPIED THE ZONE DAMPER SHALL CONTROL TO ITS MINIMUM UNOCCUPIED AIRFLOW (ADJ.) WHEN THE ZONE TEMPERATURE IS GREATER THAN ITS UNOCCUPIED COOLING SETPOINT, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM UNOCCUPIED AIRFLOW (ADJ.) AND THE MAXIMUM COOLING AIRFLOW (ADJ.) UNTIL THE ZONE IS SATISFIED.

WHEN ZONE TEMPERATURE IS LESS THAN ITS UNOCCUPIED HEATING SETPOINT, THE CONTROLLER SHALL ENABLE HEATING TO MAINTAIN THE ZONE TEMPERATURE AT THE SETPOINT. ADDITIONALLY, IF WARM AIR IS AVAILABLE FROM THE AHU, THE ZONE DAMPER SHALL MODULATE BETWEEN THE MINIMUM UNOCCUPIED AIRFLOW (ADJ.) AND THE AUXILIARY HEATING AIRFLOW (ADJ.) UNTIL THE ZONE IS

REHEATING COIL:

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE THE REHEATING COIL STAGES IF THE FAN IS RUNNING TO MAINTAIN ITS HEATING SETPOINT. VERIFY NUMBER OF REHEATING STAGES AVAILABLE WITH TERMINAL AIR BOX SCHEDULE.

DISCHARGE AIR TEMPERATURE:

THE CONTROLLER SHALL MONITOR THE DISCHARGE AIR TEMPERATURE. REHEATING - HIGH DISCHARGE AIR TEMPERATURE LIMIT:

THE CONTROLLER SHALL MEASURE THE DISCHARGE AIR TEMPERATURE AND LIMIT REHEATING IF THE DISCHARGE AIR TEMPERATURE IS MORE

THAN 15°F (ADJ.) ABOVE THE ZONE TEMPERATURE.

CONTROL SEQUENCE: CONSTANT VOLUME UNITS

M.C. TO PROVIDE UNIT WITH PACKAGED CONTROLS TO INTERFACE WITH

THE CONTROLS CONTRACTOR.

RUN CONDITIONS - SCHEDULED:

TO DDC SYSTEM

Barometric Damper

AO - Mixed Air Dampers

AI - Outside Air Temp

A CENTRAL BUILDING AUTOMATION SYSTEM (BAS), COORDINATE PROTOCOL WITH ATC PRIOR TO ORDERING ROOFTOP UNITS. ATC SHALL CONNECT TO INTERFACE PROVIDED WITH ROOFTOP UNIT. POINTS SHOWN ABOVE ARE RECOMMENDED POINTS AVAILABLE THROUGH PACKAGED CONTROLLER. IF POINTS ARE UNAVAILABLE THROUGH THE PACKAGED CONTROLLER, POINTS SHALL BE ADDED BY

CONTROL

PANEL

THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:

OCCUPIED MODE: OUTSIDE AIR DAMPER SHALL OPEN TO MINIMUM POSITION UNIT SHALL MAINTAIN SET POINT BASED UPON TEMPERATURE MATRIX

UNOCCUPIED MODE (WHEN APPLICABLE): OUTSIDE AIR DAMPER SHALL SHUT UNIT SHALL MAINTAIN SET POINT BASED UPON TEMPERATURE MATRIX

THE UNIT SHALL SHUT DOWN UPON RECEIVING A RETURN AIR SMOKE DETECTOR STATUS.

RETURN AIR SMOKE DETECTION (BY M.C.):

ZONE UNOCCUPIED OVERRIDE: A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE AMOUNT OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE. OVERRIDE CONTROL NOT REQUIRED ON SALES FLOOR UNITS.

THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS IN OCCUPIED MODE, UNLESS SHUTDOWN ON SAFETIES.

SUPPLY AIR TEMPERATURE:

SUPPLY FAN:

THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE. COOLING STAGES:

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE COOLING TO MAINTAIN ITS COOLING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM

THE COOLING SHALL BE ENABLED WHENEVER: OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.). AND THE ECONOMIZER IS DISABLED. AND THE SUPPLY FAN STATUS IS ON.

AND THE ZONE TEMPERATURE IS ABOVE COOLING SETPOINT.

AND THE HEATING IS NOT ACTIVE.

AO - Gas Valve

Smoke Detector

AO - Hot Gas Re-Heat

ROOFTOP UNIT CONTROLS (SINGLE ZONE)

AO - DX Capacity Control

THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND STAGE/MODULATE THE HEATING TO MAINTAIN ITS HEATING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

THE HEATING SHALL BE ENABLED WHENEVER: OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.). AND THE SPACE TEMPERATURE IS BELOW HEATING SETPOINT. AND THE SUPPLY FAN STATUS IS ON.

ECONOMIZER:

THE CONTROLS CONTRACTOR SHALL CONTACT THE ENGINEER TO CLARIFY WHICH UNITS WILL HAVE THE ECONOMIZER FUNCTION ENABLED. ALL UNITS ARE PROVIDED WITH ECONOMIZING FUNCTIONS, BUT SOME MUST BE DISABLED. THE CONTROLLER SHALL MEASURE THE ZONE TEMPERATURE AND MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2°F (ADJ.) LESS THAN THE ZONE TEMPERATURE SETPOINT.

THE ECONOMIZER SHALL BE ENABLED WHENEVER: OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.). AND THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY. AND THE SUPPLY FAN STATUS IS ON.

THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF.

Barometric Damper AO - DX Capacity Control AO - Mixed Air Dampers AI - Discharge Air Temp (55 Deg. Adj.) Smoke Detector AI - Outside Air Temp LOCATE 3/4 DISTANCE DOWN LONGEST DUCT AI - SUPPLY AIR STATIC PRESSURE AO - Gas Valve CONTROL PANEL GAS ► TO DDC SYSTEM 2

## **ROOFTOP UNIT CONTROLS (VAV BY VFD)**

CONTROL SEQUENCE: VARIABLE VOLUME UNITS

M.C. TO PROVIDE UNIT WITH PACKAGED CONTROLS TO INTERFACE WITH A CENTRAL BUILDING AUTOMATION SYSTEM (BAS), COORDINATE PROTOCOL WITH ATC PRIOR TO ORDERING ROOFTOP UNITS. ATC SHALL CONNECT TO INTERFACE PROVIDED WITH ROOFTOP UNIT. POINTS SHOWN ABOVE ARE RECOMMENDED POINTS AVAILABLE THROUGH PACKAGED CONTROLLER. IF POINTS ARE UNAVAILABLE THROUGH THE PACKAGED

CONTROLLER, POINTS SHALL BE ADDED BY THE CONTROLS CONTRACTOR.

RUN CONDITIONS - SCHEDULED: THE UNIT SHALL RUN ACCORDING TO A USER DEFINABLE TIME SCHEDULE IN THE FOLLOWING MODES:

OCCUPIED MODE: OUTSIDE AIR DAMPER SHALL OPEN TO MINIMUM POSITION UNIT SHALL MAINTAIN SET POINT BASED UPON TEMPERATURE MATRIX ON

UNIT SHALL MAINTAIN SET POINT BASED UPON TEMPERATURE MATRIX ON RETURN AIR SMOKE DETECTION (BY M.C.): THE UNIT SHALL SHUT DOWN UPON RECEIVING A RETURN AIR SMOKE

THE UNIT SHALL AUTOMATICALLY RETURN TO THE SCHEDULE.

UNOCCUPIED MODE (WHEN APPLICABLE):

OUTSIDE AIR DAMPER SHALL SHUT

DETECTOR STATUS.

SUPPLY AIR TEMPERATURE:

ZONE UNOCCUPIED OVERRIDE: A TIMED LOCAL OVERRIDE CONTROL SHALL ALLOW AN OCCUPANT TO OVERRIDE THE SCHEDULE AND PLACE THE UNIT INTO AN OCCUPIED MODE FOR AN ADJUSTABLE AMOUNT OF TIME. AT THE EXPIRATION OF THIS TIME, CONTROL OF

THE SUPPLY FAN SHALL RUN ANYTIME THE UNIT IS IN OCCUPIED MODE, UNLESS SHUTDOWN ON SAFETIES.

SUPPLY AIR DUCT STATIC PRESSURE CONTROL: THE CONTROLLER SHALL MEASURE DUCT STATIC PRESSURE AND MODULATE THE SUPPLY FAN VFD TO MAINTAIN A DUCT STATIC PRESSURE SETPOINT. THE INITIAL DUCT STATIC PRESSURE SETPOINT SHALL BE 1 IN H2O (ADJ.).

AS COOLING DEMAND INCREASES. THE SETPOINT SHALL INCREMENTALLY RESET UP TO A MAXIMUM OF 1.75 IN H2O (ADJ.). THE CONTROL SYSTEM SHALL DETERMINE THE ZONE REQUIRING THE MOST STATIC PRESSURE AND OPEN THAT ZONE DAMPER TO APPROXIMATELY 90%. THE FAN SPEED SHALL ADJUST UNTIL THIS ZONE IS SATISFIED. AS COOLING DEMAND DECREASES, THE SETPOINT SHALL INCREMENTALLY RESET DOWN TO A MINIMUM OF .5 IN H2O (ADJ.).

THE CONTROLLER SHALL MONITOR THE SUPPLY AIR TEMPERATURE.

COOLING STAGES:

THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND STAGE COOLING TO MAINTAIN ITS COOLING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH

STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME. THE COOLING SHALL BE ENABLED WHENEVER: OUTSIDE AIR TEMPERATURE IS GREATER THAN 60°F (ADJ.).

AND THE ECONOMIZER IS DISABLED. AND THE SUPPLY FAN STATUS IS ON. AND THE HEATING IS NOT ACTIVE. AND THE ZONE TEMPERATURE IS ABOVE COOLING SETPOINT.

GAS HEATING:

THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND STAGE/MODULATE THE HEATING TO MAINTAIN ITS HEATING SETPOINT. TO PREVENT SHORT CYCLING, THERE SHALL BE A USER DEFINABLE (ADJ.) DELAY BETWEEN STAGES, AND EACH STAGE SHALL HAVE A USER DEFINABLE (ADJ.) MINIMUM RUNTIME.

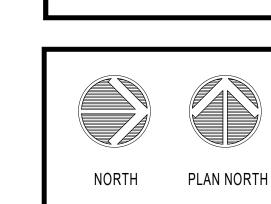
THE HEATING SHALL BE ENABLED WHENEVER: OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.). AND THE SUPPLY AIR TEMPERATURE IS BELOW HEATING SETPOINT. AND THE SUPPLY FAN STATUS IS ON.

ECONOMIZER: THE CONTROLLER SHALL MEASURE THE SUPPLY AIR TEMPERATURE AND

MODULATE THE ECONOMIZER DAMPERS IN SEQUENCE TO MAINTAIN A SETPOINT 2°F (ADJ.) LESS THAN THE SUPPLY AIR TEMPERATURE SETPOINT. THE ECONOMIZER SHALL BE ENABLED WHENEVER:

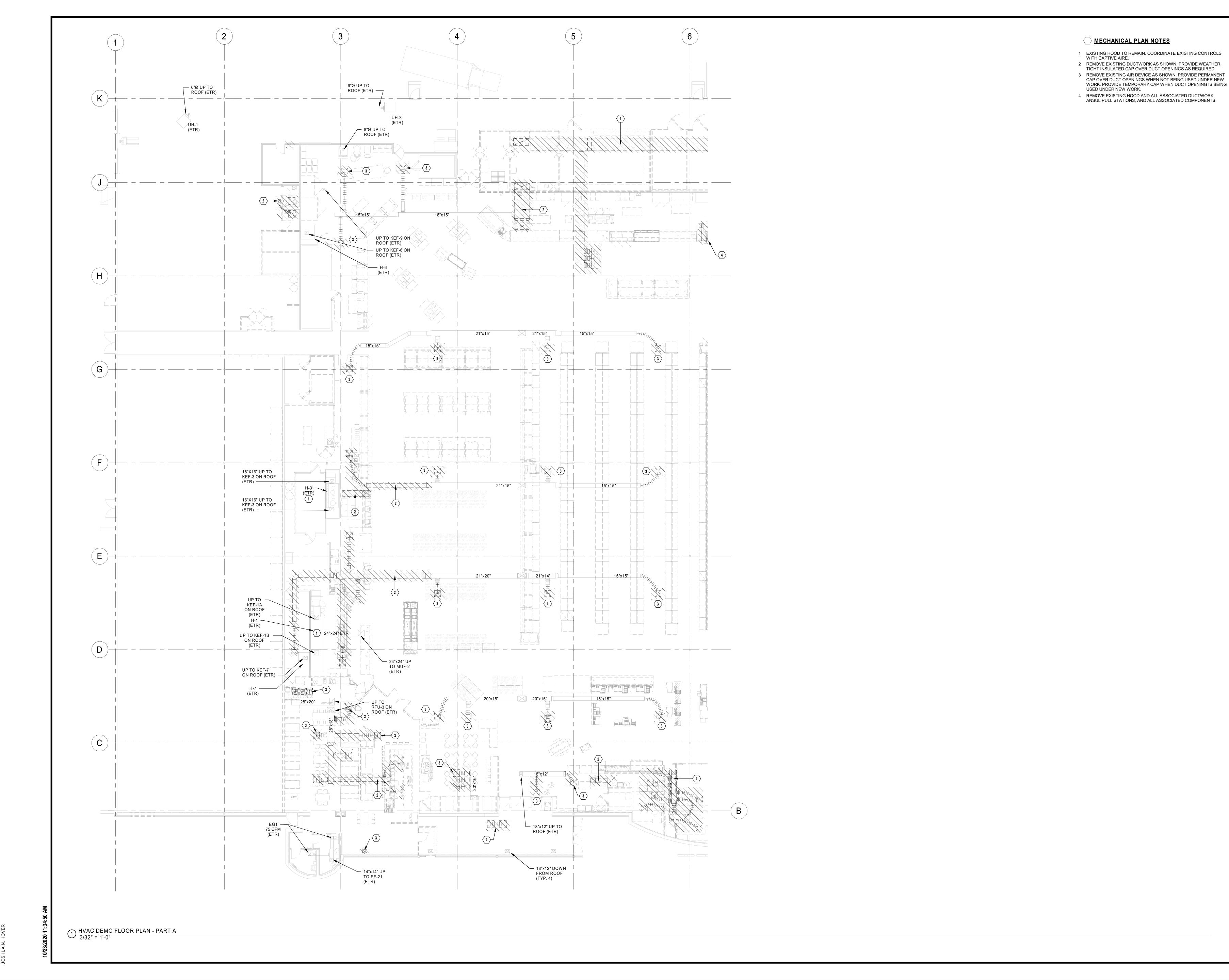
OUTSIDE AIR TEMPERATURE IS LESS THAN 65°F (ADJ.). AND THE OUTSIDE AIR ENTHALPY IS LESS THAN THE RETURN AIR ENTHALPY. AND THE SUPPLY FAN STATUS IS ON.

THE OUTSIDE AND EXHAUST AIR DAMPERS SHALL CLOSE AND THE RETURN AIR DAMPER SHALL OPEN WHEN THE UNIT IS OFF.



HVAC CONTROL DIAGRAMS

DRAWN BY: 10/19/2020 SCALE: JOB NUMBER: AS NOTED 62930547



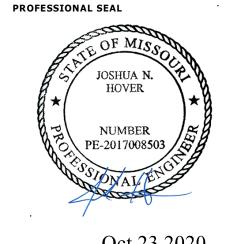
RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW
DEVELOPMENT SERVICES
REVISED NUMBER | 12/29/2020

HENDERSON
ENGINEERS

8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001

1950003081 MO. CORPORATE NO: E-556D EXPIRES 12/31/2020

WWW.HENDERSONENGINEERS.COM



Oct 23 2020 JOSHUA N. HOVER LICENSE # PE-2017008503

EE'S SUMMIT, MO #2
310 SW WARD RD

HY-VEE, INC.
5820 WESTOWN PARKWAY
WEST DES MOINES, IOWA 50266
TELEPHONE: (515) 267-2830
FAX: (515) 267-2935



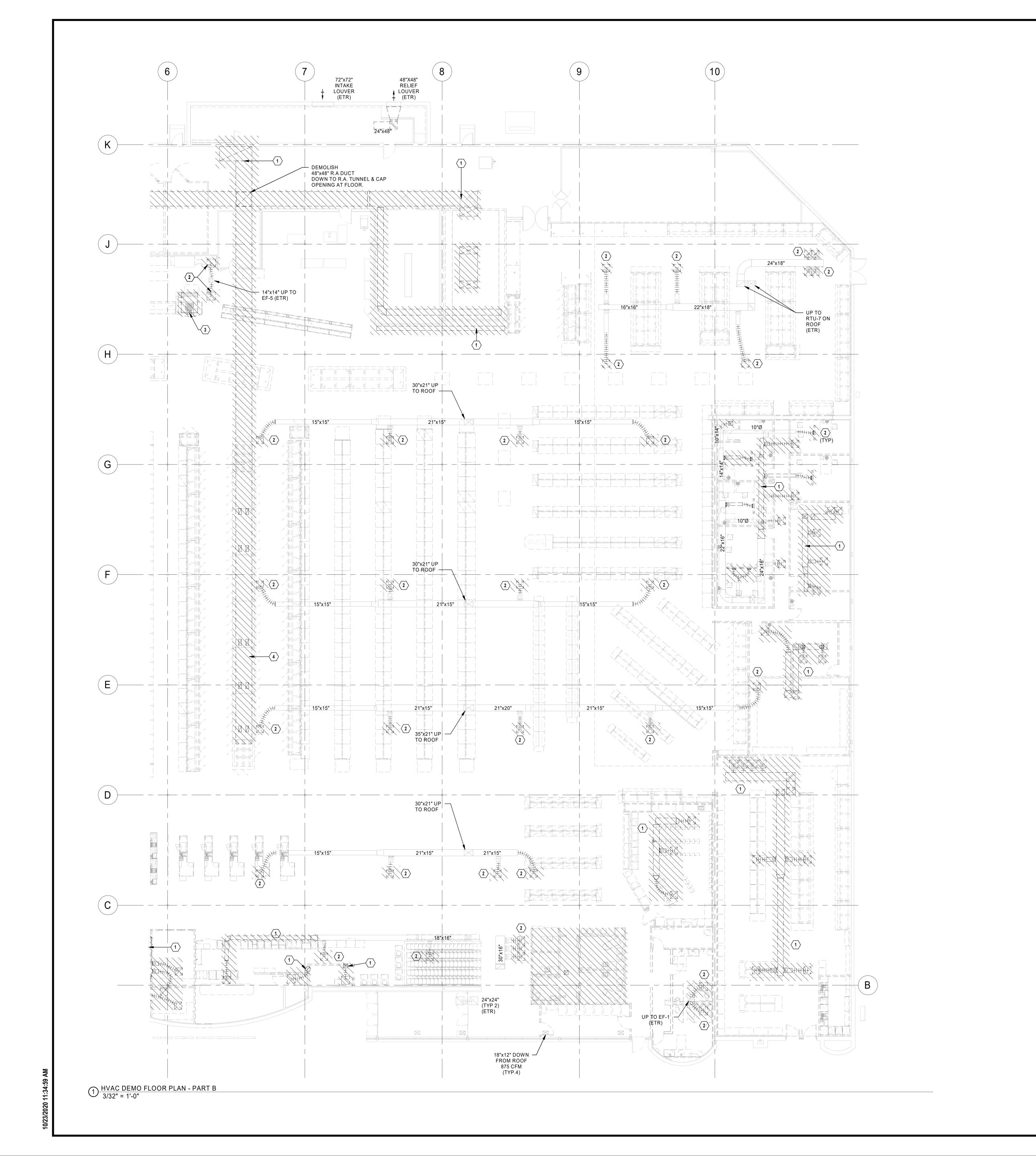


HVAC DEMOLITION FLOOR PLAN -PART A

PROJECT MANAGER
SL
Checker

DRAWN BY:
DATE:
Author
10/19/2020
SCALE:
JOB NUMBER:
AS NOTED
62930547
SHEET:

HD1.0A





- 1 REMOVE EXISTING DUCTWORK AS SHOWN. PROVIDE WEATHER TIGHT
- INSULATED CAP OVER DUCT OPENINGS AS REQUIRED.
   REMOVE EXISTING AIR DEVICE AS SHOWN. PROVIDE PERMANENT CAP OVER DUCT OPENINGS WHEN NOT BEING USED UNDER NEW WORK. PROVIDE TEMPORARY CAP WHEN DUCT OPENING IS BEING USED UNDER
- 3 REMOVE EXISTING HOOD AND ALL ASSOCIATED DUCTWORK, ANSUL PULL STATIONS, AND ALL ASSOCIATED COMPONENTS.
- 4 CAP AND ABANDON UNDERFLOOR DUCTWORK. CAP RETURN OPENINGS IN FLOOR AND SEAL WATER TIGHT.

HENDERSON
ENGINEERS

8345 LENEXA DRIVE, SUITE 300
LENEXA, KS 66214
TEL 913.742.5000 FAX 913.742.5001
WWW.HENDERSONENGINEERS.COM

1950003081
MO. CORPORATE NO: E-556D
EXPIRES 12/31/2020

RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW

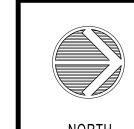
REVISES NUMBER



Oct 23 2020 JOSHUA N. HOVER LICENSE # PE-2017008503

LEE'S SUMMIT, MO #2
310 SW WARD RD

HY-VEE, INC.
5820 WEST DES MOINES, IOWA 50266
TELEPHONE: (515) 267-2800
FAX: (515) 267-2935





HVAC DEMOLITION FLOOR PLAN -PART B

 PROJECT MANAGER
 CHECKED BY:

 SL
 Checker

 DRAWN BY:
 DATE:

 Author
 10/19/2020

 SCALE:
 JOB NUMBER:

 AS NOTED
 62930547

HD1.0B

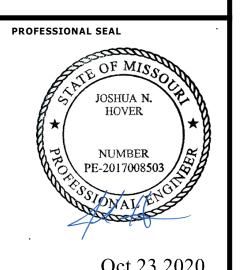
MECHANICAL PLAN NOTES

- 1 REMOVE EXISTING MECHANICAL EQUIPMENT SHOWN CROSSHATCHED AND PROVIDE WEATHER TIGHT
- INSULATED CAP OVER ROOF OPENINGS.
- 2 REMOVE EXISTING ROOFTOP UNIT SHOWN CROSSHATCHED. CAP CURB WATER TIGHT FOR REUSE IN NEW WORK.
- 3 REMOVE EXISTING DUCTWORK AS SHOWN. PROVIDE WEATHER TIGHT INSULATED CAP OVER DUCT OPENINGS AS REQUIRED.

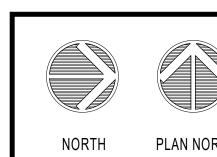
CONSTRUCTION
AS NOTED ON PLANS REVIEW REVISE NUMBER

RELEASE FOR

HENDERSON ENGINEERS 8345 LENEXA DRIVE, SUITE 300 LENEXA, KS 66214 TEL 913.742.5000 FAX 913.742.5001 WWW.HENDERSONENGINEERS.COM 1950003081 MO. CORPORATE NO: E-556D EXPIRES 12/31/2020

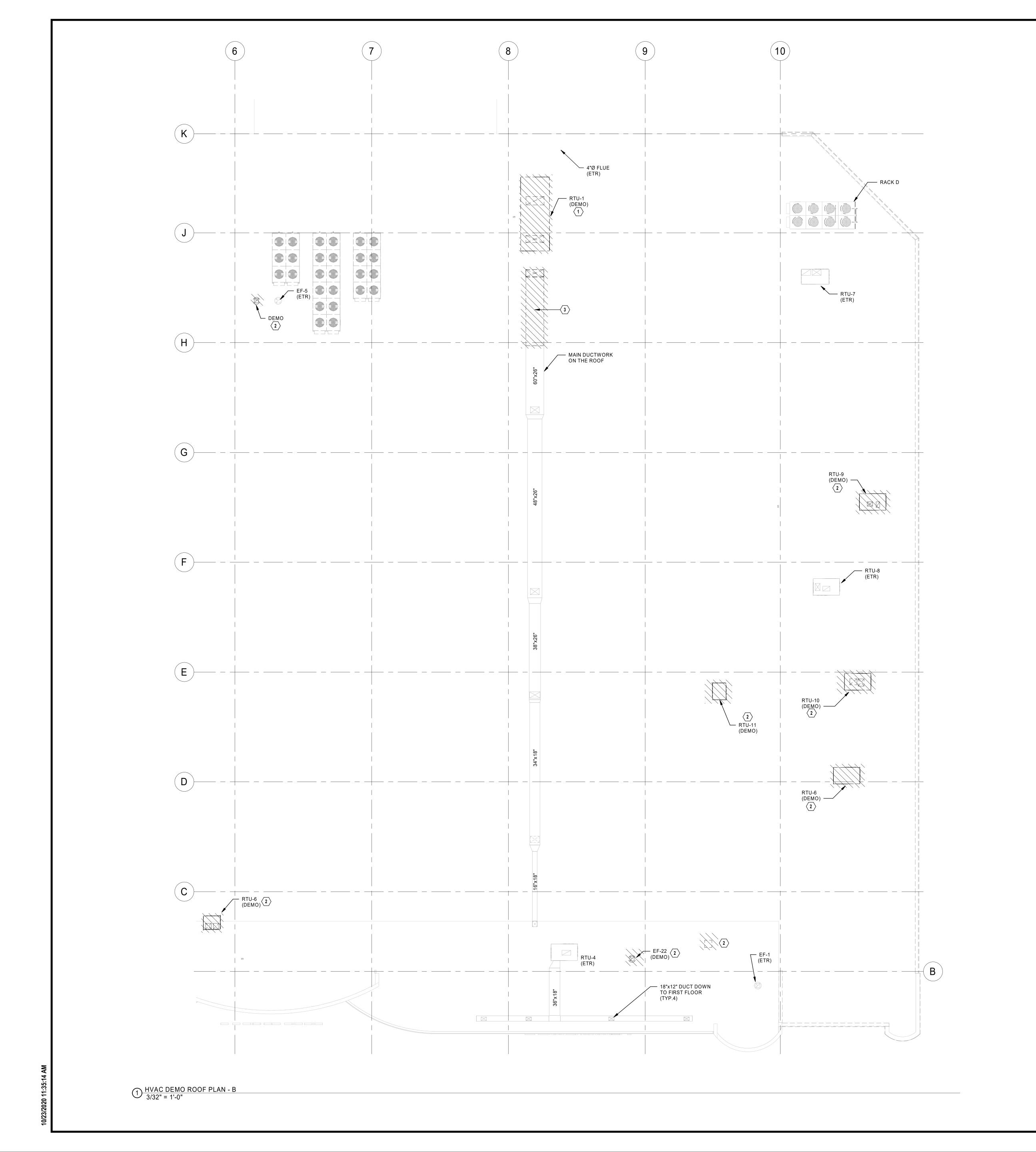


Oct 23 2020 JOSHUA N. HOVER LICENSE # PE-2017008503



HVAC DEMOLITION ROOF PLAN -PART A

PROJECT MANAGER	CHECKED BY:
SL	Checker
DRAWN BY:	DATE:
Author	10/19/2020
SCALE:	JOB NUMBER:
AS NOTED	62930547
SHEET.	





- 1 REMOVE EXISTING ROOFTOP UNIT SHOWN CROSSHATCHED. CAP CURB WATER TIGHT FOR REUSE IN NEW WORK.
- 2 REMOVE EXISTING MECHANICAL EQUIPMENT SHOWN CROSSHATCHED AND PROVIDE WEATHER TIGHT INSULATED CAP OVER ROOF OPENINGS.
- 3 REMOVE EXISTING DUCTWORK AS SHOWN. PROVIDE WEATHER TIGHT INSULATED CAP OVER DUCT OPENINGS AS REQUIRED.

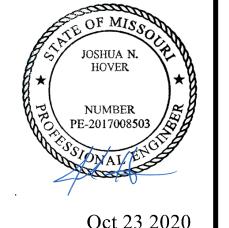
HENDERSON ENGINEERS

RELEASE FOR
CONSTRUCTION
AS NOTED ON PLANS REVIEW

REVISE NUMBER

8345 LENEXA DRIVE, SUITE 300 LENEXA, KS 66214 TEL 913.742.5000 FAX 913.742.5001 WWW.HENDERSONENGINEERS.COM 1950003081 MO. CORPORATE NO: E-556D EXPIRES 12/31/2020

PROFESSIONAL SEAL

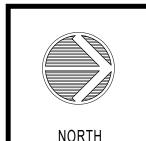


Oct 23 2020 JOSHUA N. HOVER LICENSE # PE-2017008503

SUMMIT, MO #2

W WARD RD

HY-VEE, INC.
5820 WESTOWN PARKWAY
WEST DES MOINES, IOWA 50266
TELEPHONE: (515) 267-2800
FAX: (515) 267-2935





HVAC DEMOLITION
ROOF PLAN PART B

PROJECT MANAGER
SL CHECKED BY:
Checker

PROJECT MANAGER	CHECKED BY:
SL	Checker
DRAWN BY:	DATE:
Author	10/19/2020
SCALE:	JOB NUMBER:
AS NOTED	62930547
SHEET:	

HD3.0B