New Dawn State School
Replace Rooftop Units
Sikeston, Missouri

Bernhard TME Engineering

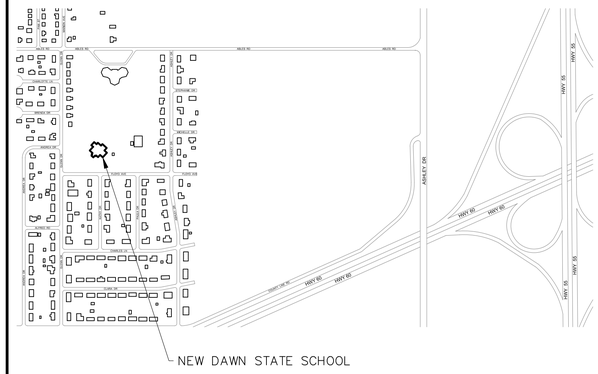
OWNER:	STATE OF MISSOURI MICHAEL L. PARSON, GOVERNOR	DESIGNER:	Bernhard TME
		PROJECT NUMBER:	E1905-01
PROJECT MANAGEMENT:	OFFICE OF ADMINISTRATION DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION	SITE NUMBER: FACILITY NUMBER:	2043 5012043003

G-001

1 OF 16 SHEETS
08/19/2022

CITY LOCATION PLAN

BUILDING LOCATION PLAN



INDEX OF DRAWINGS

MECHANICAL SYMBOLS AND ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL
BOT	BOTTOM
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
D	DAMPER
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROLS
DG	DOOR GRILLE
DIA	DIAMETER
DWG	DRAWING
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
ELEC	ELECTRIC
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EXH	EXHAUST
°F	DEGREE FAHRENHEIT
FC	FLEXIBLE CONNECTION
FLR	FLOOR
FRD	FIRE RATED DAMPER
HP	HORSE POWER
HTG	HEATING
HVAC	HEATING VENTILATION & AIR CONDITIONING
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MC	MECHANICAL CONTRACTOR
MECH	MECHANICAL
MIN	MINIMUM
MXA	MIXED AIR
NTS	NOT TO SCALE
OA	OUTSIDE AIR
QTY	QUANTITY
RA	RETURN AIR
REQ'D	REQUIRED
RF	RETURN FAN
RLA	RELIEF AIR
RLF	RELIEF FAN
RM	ROOM
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SD	SMOKE DAMPER
SF	SUPPLY FAN
SP	STATIC PRESSURE
SPEC	SPECIFICATIONS
T	THERMOSTAT
VFD	VARIABLE FREQUENCY DRIVE
VERT	VERTICAL
VOL	VOLUME
w/	WITH
w/o	WITHOUT
WB	WET BULB
WP	WEATHERPROOF

EXISTING EQUIPMENT, DUCTWORK OR PIPING

EXISTING EQUIPMENT, OR PIPING TO BE REMOVED

NEW EQUIPMENT, DUCTWORK OR PIPING

OCCUPANCY SENSOR

THERMOSTAT

24"x12" — RECTANGULAR DUCT DIMENSION (IN PLAN WIDTH x HEIGHT - SHEET METAL SIZE)

12"ø — ROUND DUCT DIMENSION

SUPPLY AIR DUCT, DOWN

SUPPLY AIR DUCT, UP

RETURN, OUTSIDE, RELIEF OR EXH DUCT DN

RETURN, OUTSIDE, RELIEF OR EXH DUCT UP

SPECIALIZED DUCTWORK ILLUSTRATION (1" DUCT LINER REQUIRED WERE ILLUSTRATED)

DROP IN DIRECTION OF ARROW

D — VOLUME DAMPER

FIRE RATED DAMPER

M — AUTOMATIC CONTROL DAMPER

D, AIR FLOW — FLEXIBLE DUCT BOOT CONNECTION WITH DAMPER (SEE DETAIL)

FLEXIBLE DUCTWORK

EQUIPMENT TYPE

EQUIPMENT DESIGNATION

EQUIPMENT NUMBER

CONNECT TO THE EXISTING EQUIPMENT DESIGNATION (CONTRACTOR SHALL FIELD VERIFY SIZE INDICATED)

1 — KEYED NOTE DESIGNATION

7 — DEMOLITION KEYED NOTE DESIGNATION

LAY-IN CEILING SLOT DIFFUSER WITH FLEX DUCT, SIZED PER DIFFUSER SCHEDULE

SQUARE LAY-IN CEILING DIFFUSER WITH FLEX DUCT, SIZED PER DIFFUSER SCHEDULE

HARD DUCTED CEILING DIFFUSER FOR DRYWALL CEILING INSTALLATION (SEE DIFFUSER SCHEDULE FOR SIZE)

HARD DUCTED SIDEWALL DIFFUSER (SEE DIFFUSER SCHEDULE FOR SIZE)

DIFFUSER TAG (ALPHABETICAL)

DIFFUSER DESIGNATION

DIFFUSER CFM

EXISTING DIFFUSER TAG DESIGNATION

EX-S	EXISTING SUPPLY AIR DEVICE
EX-R	EXISTING RETURN AIR DEVICE
EX-E	EXISTING EXHAUST AIR DEVICE

GENERAL DEMOLITION AND NEW WORK NOTES:

GENERAL DEMOLITION AND NEW WORK NOTES:

1. INSTALL STAINLESS STEEL COVER PLATE OVER HOLES LEFT BY DEMOLISHED THERMOSTATS. REMOVE EXISTING WIRING.
2. EQUIPMENT SHALL BE INSTALLED, AND ADEQUATE CLEARANCES FOR MAINTENANCE AND REPLACEMENT SHALL BE PROVIDED, IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS.
3. CONTRACTOR SHALL PROTECT ALL EXISTING FLOOR, WALL, ROOF, AND CEILING SURFACES IN AREAS OF WORK AND EQUIPMENT AND PERSONNEL ACCESS. CONTRACTOR SHALL PROVIDE PLASTIC FLOOR PROTECTION FILM FOR FINISHED FLOOR IN AREAS OF WORK AND ACCESS INCLUDING CORRIDORS AND TOILETS. ROOF HAS AN EXISTING WARRANTY, CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE WARRANTY INCLUDING CONTACTING AND APPROVAL BY ORIGINAL MANUFACTURER PRIOR TO STARTING WORK. CONTRACTOR SHALL PROTECT TPO ROOFING WITH TEMPORARY WALKWAYS, PLYWOOD SHEATHING, MONITORING AND CLEANING CONSTRUCTION DEBRIS, AND OTHER METHODS AS REQUIRED BY THE ROOF WARRANTY. CONTRACTOR SHALL REPAIR OR REPLACE DAMAGED FLOOR, WALL, ROOF, AND CEILING SURFACES AND BUILDING COMPONENTS.
4. PROVIDE THERMOSTAT FOR EACH CONTROL ZONE. AT LOCATIONS WHERE EXISTING THERMOSTAT LOCATION MATCHES NEW LOCATION, CONTRACTOR SHALL REUSE EXISTING BOX AND WIREWAY. IF NEW THERMOSTAT DOES NOT FULLY COVER EXISTING HOLE THEN PROVIDE OVERSIZE WALL BACK PLATE AT LOCATIONS WHERE NEW THERMOSTATS ARE PROVIDED, FIELD VERIFY PROPOSED LOCATION. IF AN ALTERNATE LOCATION IS PREFERRED CONTACT OWNER'S REPRESENTATIVE FOR APPROVAL. WIRE-MOLD SHALL NOT BE USED FOR NEW THERMOSTATS. WIRING SHALL BE CONCEALED.
5. INSTALL TURNING VANES IN ALL 90° ELBOWS.

ELECTRICAL SYMBOLS AND ABBREVIATIONS

LIGHTING PANELBOARD

DISTRIBUTION PANEL

OP — FACTORY WIRED CONTROL PANEL

VFD — VARIABLE FREQUENCY DRIVE

DISCONNECT SWITCH

MAGNETIC STARTER 1 PHASE

MAGNETIC STARTER 3 PHASE

COMBINATION MAGNETIC STARTER/ DISCONNECT SWITCH 1 PHASE

COMBINATION MAGNETIC STARTER/ DISCONNECT SWITCH 3 PHASE

208V, 3 PHASE MOTOR

480V, 3 PHASE MOTOR

120V, 1 PHASE MOTOR

208V, 1 PHASE MOTOR

FUSED SWITCH

EDM — ELECTRIC DUCT HEATER

EXISTING

DEMOLITION WORK

NEW WORK

AL	ALUMINUM
ARC	ALUMINUM RIGID CONDUIT
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
C	CONDUIT
CKT	CIRCUIT
CB	CIRCUIT BREAKER
EC	ELECTRICAL CONTRACTOR
EMT	ELECTRICAL METALLIC TUBING
GRC	GALVANIZED RIGID CONDUIT
GRD	GROUND
MLO	MAIN LUG ONLY
MCB	MAIN CIRCUIT BREAKER
NF	NON-FUSED
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
NTS	NOT TO SCALE
PWCP	PRE-WIRED CONTROL PANEL
UNO	UNLESS NOTED OTHERWISE

TRANSFORMER

#12 AWG CONDUCTORS IN 1/2" CONDUIT

HOT/SWITCHED — 1,3,5 'A'

CIRCUIT NUMBERS TO SINGLE POLE 20 AMP CB UNLESS OTHERWISE NOTED

PANEL DESIGNATION

NEUTRAL

GROUND

NOTE:
HASH MARKS INDICATE #12 AWG CONDUCTORS ONLY SEE FLOOR PLANS FOR OTHER FEEDER CONDUCTORS AND CONDUIT SIZES

DISCONNECT SWITCH

WP	WEATHER PROOF
3P	# OF POLES
60A	AMPERAGE RATING
45AF	FUSE SIZE (NF-NON FUSIBLE)

MOTOR STARTER — COMBINATION MAGNETIC STARTER/DISCONNECT SWITCH

'1'	STARTER SIZE
45AF	FUSE SIZE (NF-NON FUSIBLE)

FUSED SWITCH

3P	# OF POLES
60A	AMPERAGE RATING
45AF	FUSE SIZE (NF-NON FUSIBLE)

FIRE ALARM SYMBOLS

SD — SMOKE DETECTOR FA

DD — SMOKE DETECTOR DUCT MOUNTED FA

CM — FIRE ALARM CONTROL MODULE FA

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI — DREW E FLANAKIN NUMBER PE-2016017619 — 2022-08-19 — PROFESSIONAL ENGINEER

DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering

622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
MO Certificate of Authority No. 2009021478

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION

NEW DAWN STATE SCHOOL
REPLACE ROOFTOP UNITS

NEW DAWN STATE SCHOOL
710 GLENN DRIVE
SIKESTON, MO 63801

PROJECT # E1905-01
SITE # 2043
FACILITY # 5012043003

REVISION:
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GENERAL NOTES, DRAWING INDEX, AND SITE MAP

SHEET NUMBER:

G-002

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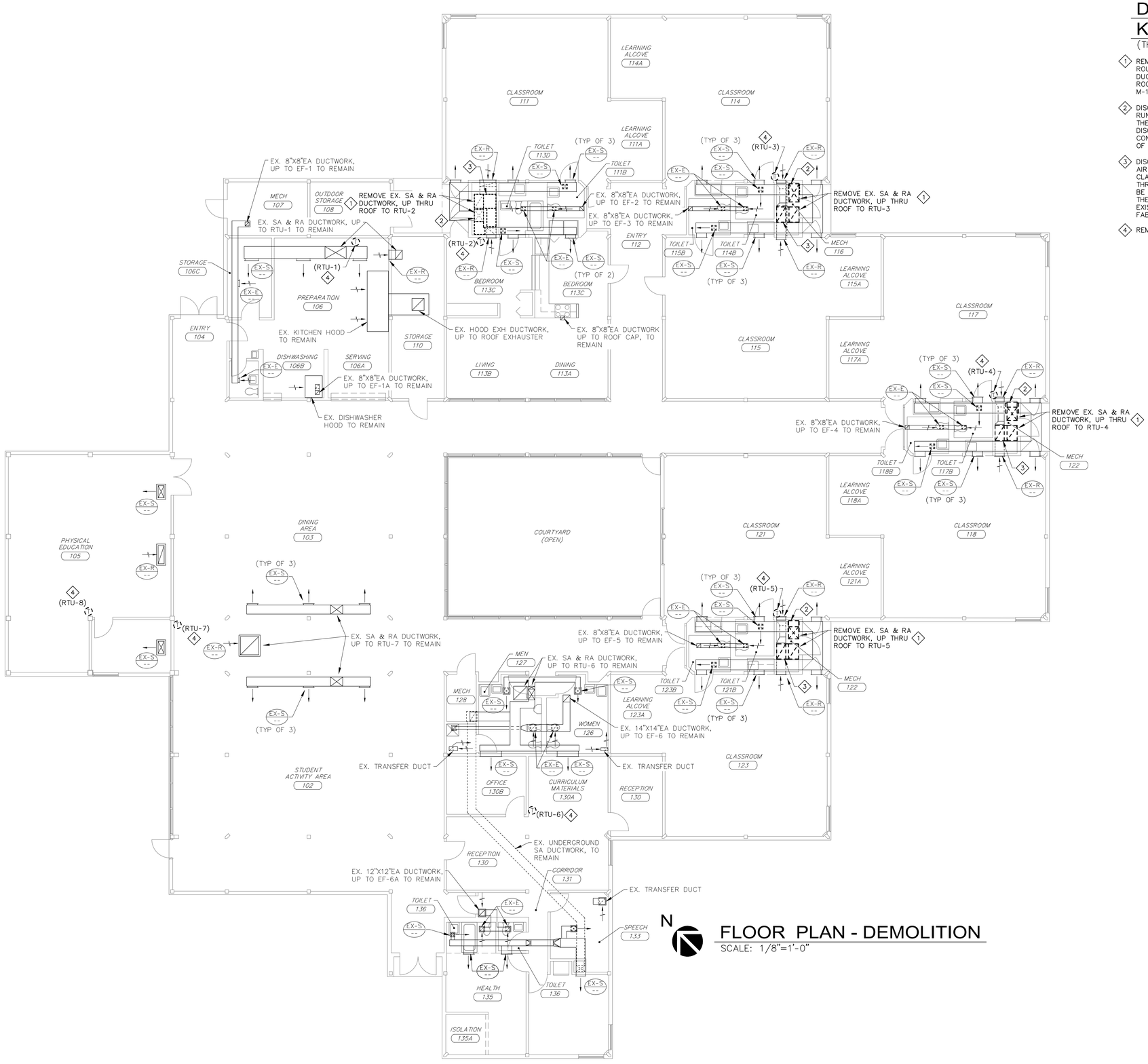
08/19/2022



FLOOR PLAN - DEMOLITION

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

DEMOLITION KEYED NOTES:

(THIS SHEET ONLY)

1. REMOVE THE EXISTING SUPPLY AND RETURN AIR DUCTWORK ROUTED UP THROUGH THE ROOF, INCLUDING THE EXTERIOR DUCTWORK ROUTED ACROSS THE ROOF TO THE DEMOLISHED ROOFTOP UNIT, SEE DEMOLITION ROOF PLAN ON SHEET M-102.
2. DISCONNECT THE EXISTING 20"x10" SUPPLY AIR DUCT RUNOUTS FROM THE DUCT RISER FEEDING UP THROUGH THE ROOF TO ACCOMMODATE THE NEW ROOFTOP UNIT DISCHARGE DUCT, SEE NEW WORK PLANS. VERIFY EXISTING CONDITIONS AND DUCT SIZES PRIOR TO THE FABRICATION OF ANY REPLACEMENT DUCTWORK.
3. DISCONNECT AND REMOVE THE EXISTING 30"x18" RETURN AIR DUCT FROM THE TEE THAT RUNS OUT TO EACH CLASSROOM RETURN AIR GRILLE TO THE RISER FEEDING UP THRU THE ROOF. A NEW RETURN AIR DUCT ROUTING SHALL BE CUT THRU THE WOOD ROOF DECK TO ACCOMMODATE THE NEW ROOFTOP UNIT, SEE NEW WORK PLANS. VERIFY EXISTING CONDITIONS AND DUCT SIZES PRIOR TO THE FABRICATION OF ANY REPLACEMENT DUCTWORK.
4. REMOVE EXISTING THERMOSTAT.

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
DREW E. FLANAKIN
NUMBER PE-2016017619
2022-08-19
PROFESSIONAL ENGINEER

DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering

622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
MO Certificate of Authority No. 2009021478

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

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SHEET TITLE:
FLOOR PLAN DEMOLITION

SHEET NUMBER:
M-101

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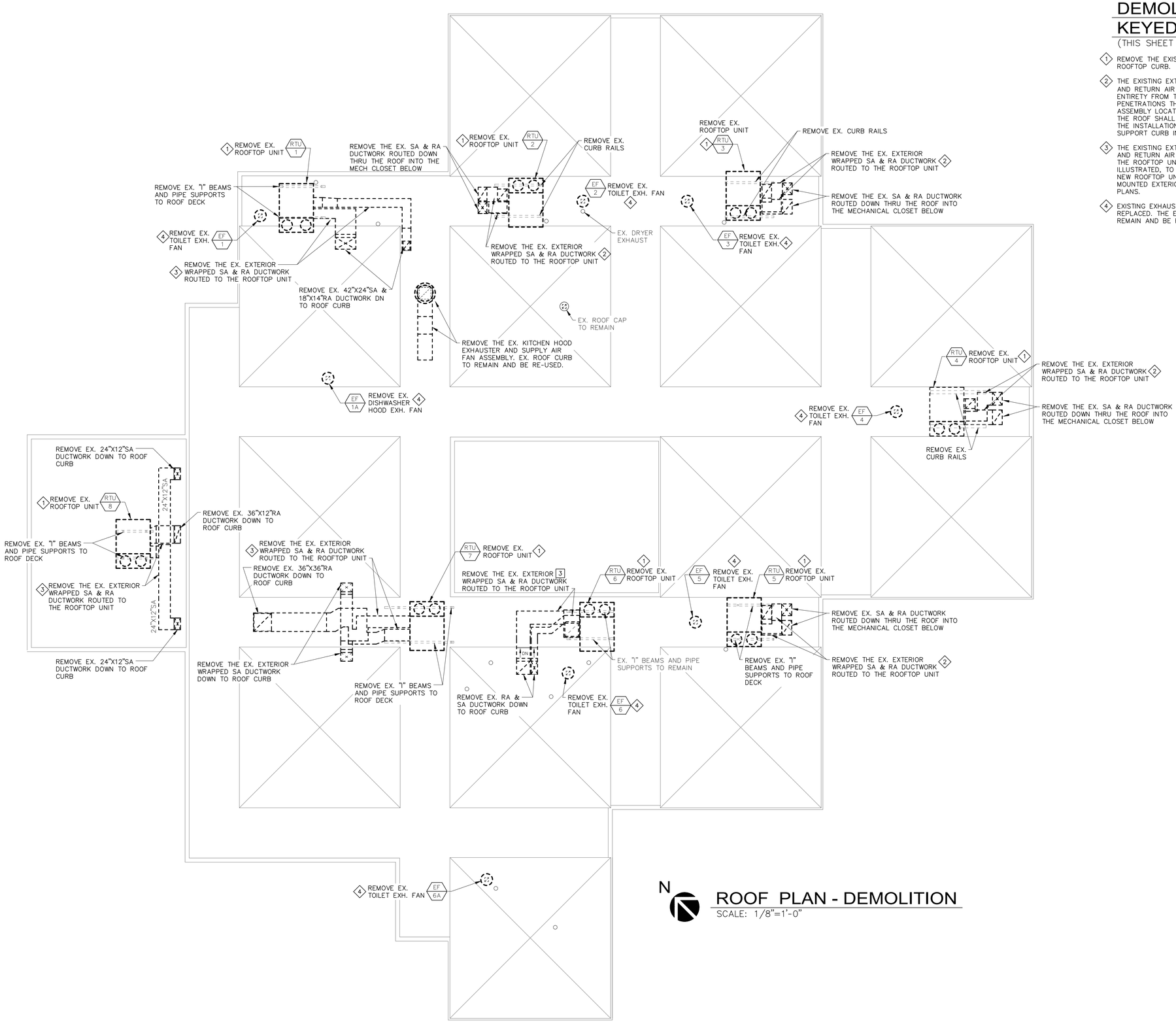
08/19/2022



ROOF PLAN - DEMOLITION

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

DEMOLITION KEYED NOTES:

(THIS SHEET ONLY)

1. REMOVE THE EXISTING DX ROOFTOP UNIT AND ASSOCIATED ROOFTOP CURB.
2. THE EXISTING EXTERIOR WEATHER WRAPPED SUPPLY AIR AND RETURN AIR DUCTWORK SHALL BE REMOVED IN IT'S ENTIRETY FROM THE ROOFTOP UNIT TO THE EXISTING DUCT PENETRATIONS THRU THE ROOF. THE EXISTING ROOF CURB ASSEMBLY LOCATED AT THE DUCT PENETRATIONS THRU THE ROOF SHALL ALSO BE REMOVED TO ACCOMMODATE THE INSTALLATION OF THE NEW ROOFTOP UNIT AND SUPPORT CURB IN THIS LOCATION, SEE NEW WORK PLANS.
3. THE EXISTING EXTERIOR WEATHER WRAPPED SUPPLY AIR AND RETURN AIR DUCTWORK SHALL BE REMOVED FROM THE ROOFTOP UNIT TO THE APPROXIMATE LOCATION ILLUSTRATED, TO ACCOMMODATE THE INSTALLATION OF THE NEW ROOFTOP UNIT AND THE RECONNECTION OF THE ROOF MOUNTED EXTERIOR DUCTWORK REQUIRED, SEE NEW WORK PLANS.
4. EXISTING EXHAUST FAN SHALL BE REMOVED AND REPLACED. THE EXISTING EXHAUST FAN ROOF CURB SHALL REMAIN AND BE RE-USED.

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SHEET TITLE:

ROOF PLAN DEMOLITION

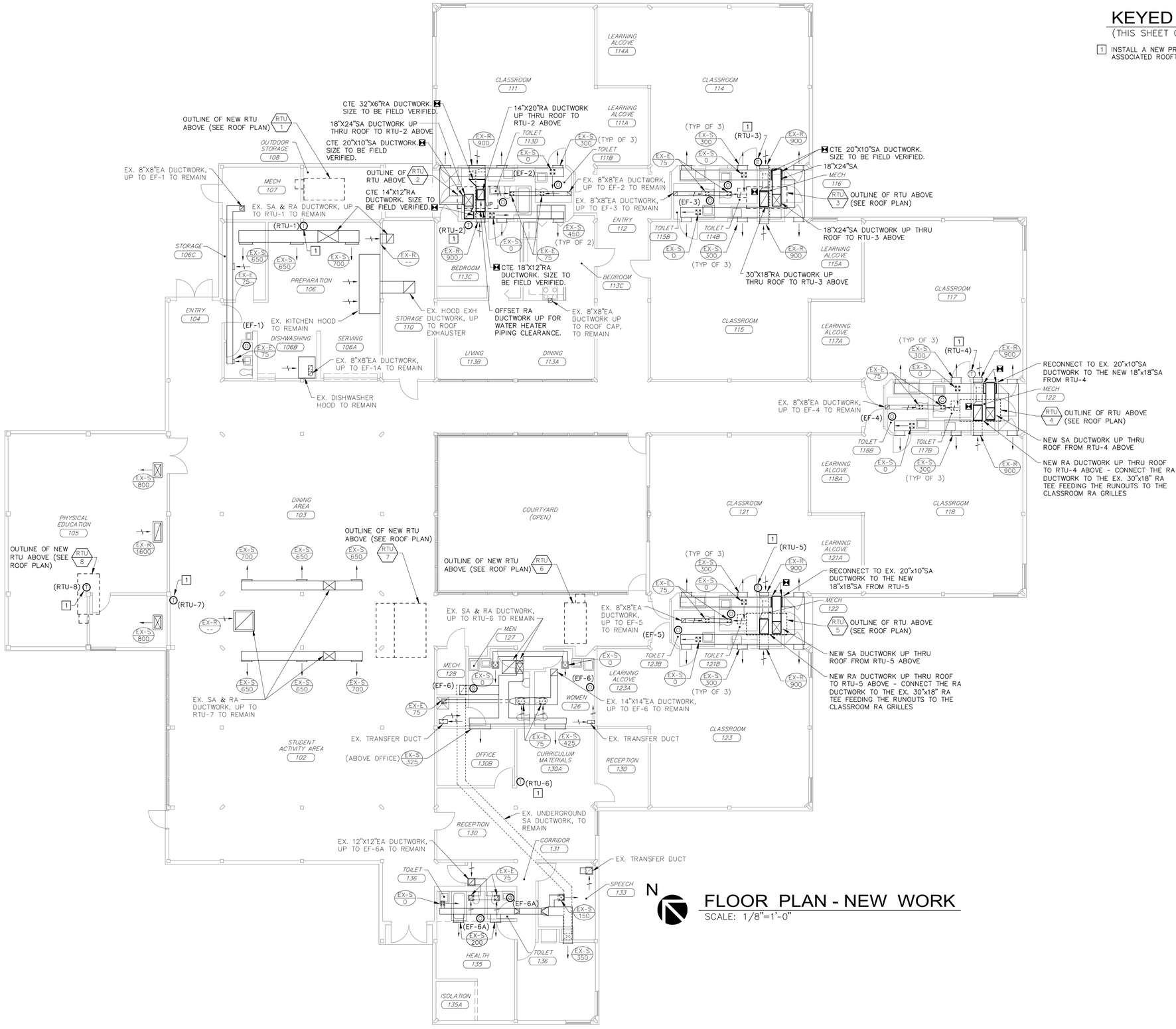
SHEET NUMBER:

M-102

4 OF 16 SHEETS
08/19/2022

KEYED NOTES:
(THIS SHEET ONLY)

1 INSTALL A NEW PROGRAMMABLE THERMOSTAT FOR THE ASSOCIATED ROOFTOP UNIT.



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NUMBER PE-2016017619
2022-08-19
PROFESSIONAL ENGINEER

DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering

622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
MO Certificate of Authority No. 2009021478

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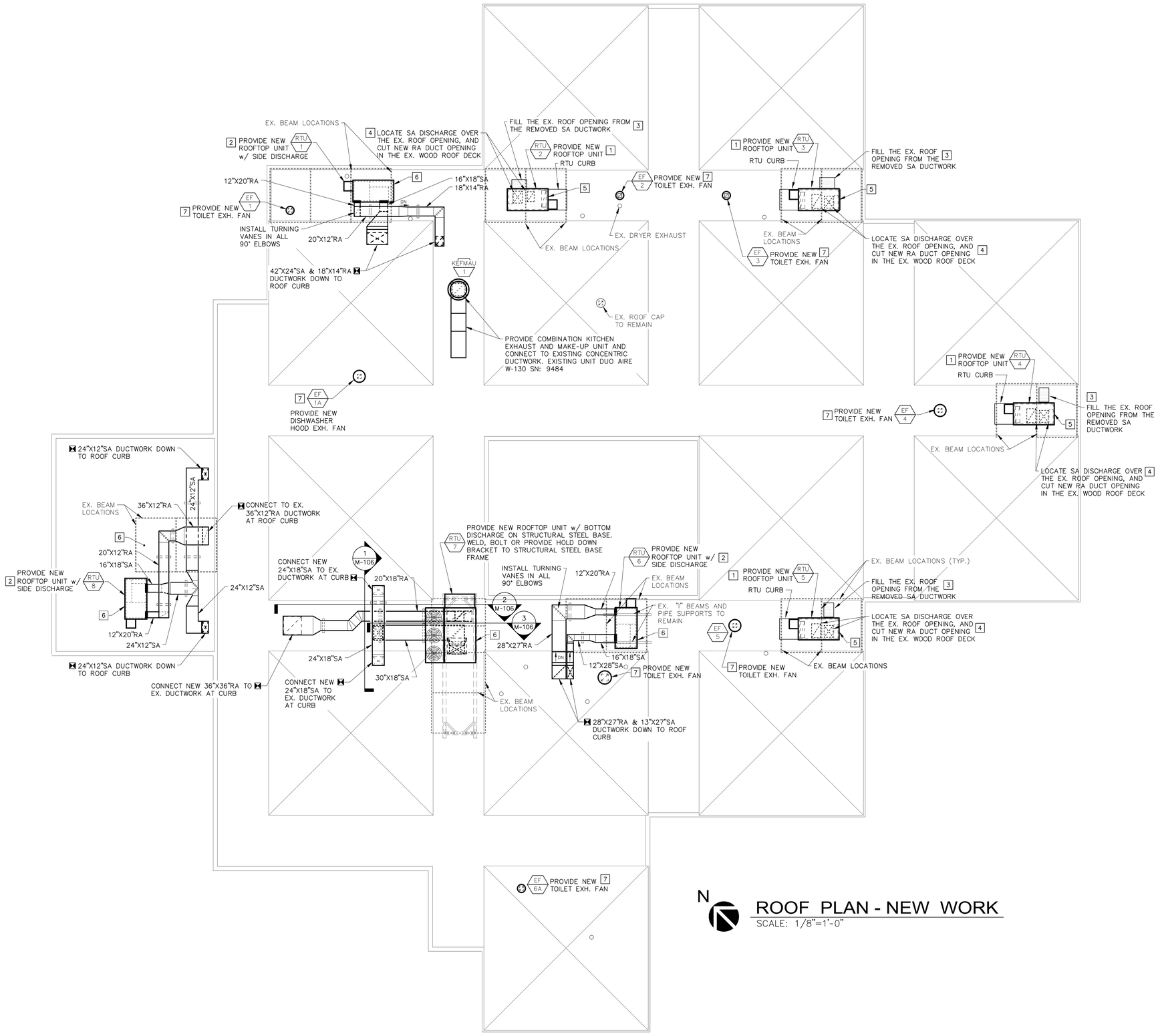
SHEET TITLE:
FLOOR PLAN
NEW WORK

SHEET NUMBER:
M-103

5 OF 16 SHEETS
08/19/2022



ROOF PLAN - NEW WORK

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

KEYED NOTES:

(THIS SHEET ONLY)

1. PROVIDE NEW BOTTOM DISCHARGE ROOFTOP UNIT ON A SUPPORT CURB. THE ROOFTOP UNIT AND CURB SHALL BE LOCATED TO ENCAPSULATE A PORTION OF THE EXISTING SUPPLY AND RETURN AIR DUCT OPENINGS WITHIN THE CURB. LOCATE THE ROOFTOP UNIT SUPPLY AIR DISCHARGE DUCT OVER THE EXISTING SUPPLY AIR OPENING TO FACILITATE THE TIE-IN CONNECTION. CUT A NEW RETURN AIR DUCT OPENING IN THE EXISTING WOOD ROOF DECK, ADJACENT TO THE GLULAM BEAM, ABOVE THE MECHANICAL ROOM CLOSET, FIELD VERIFY EXISTING CONDITIONS. PROVIDE SUPPLY AND RETURN DUCTWORK TO CONNECT ROOFTOP UNIT TO EXISTING DUCTWORK. SEE NEW WORK FLOOR PLAN ON SHEET M-103. WELD, BOLT OR PROVIDE HOLD DOWN BRACKET FOR RTU AND CURB TO STRUCTURAL STEEL BASE FRAME
2. PROVIDE NEW SIDE DISCHARGE ROOFTOP UNIT ON A SUPPORT CURB. WELD, BOLT OR PROVIDE HOLD DOWN BRACKET FOR RTU AND CURB TO STRUCTURAL STEEL BASE FRAME
3. THE EXISTING ROOF OPENING SHALL BE FILLED TO ACCOMMODATE NEW ROOFING MATERIAL. THE OPENING FILL SHALL MATCH THE EXISTING DECK ELEVATION AND BE CAPABLE OF SUPPORTING SERVICE PERSONNEL. FIELD VERIFY THE EXISTING CONDITIONS, AND SUBMIT AN OPENING FILL SUPPORT DETAIL FOR REVIEW.
4. THE NEW RETURN AIR DUCT OPENING CUT IN THE EXISTING WOOD ROOF DECK SHALL RECEIVE A SUPPORT FRAMING ASSEMBLY, WHERE ROOF BLANKS WERE CUT. THE NEW ROOFTOP UNIT CURB SHALL BE UTILIZED AS A RETURN AIR PATH.
5. PROVIDE NEW ROOFING MATERIAL IN THIS AREA AS REQUIRED TO ACCOMMODATE THE ROOFING REPAIRS NECESSARY FROM THE REMOVED ROOFTOP UNIT CURB AND EXTERIOR DUCTWORK ASSEMBLY. RE-ROOFING IN THIS AREA SHALL ALSO EXTEND COMPLETELY AROUND THE NEW ROOFTOP UNIT CURB ASSEMBLY PROVIDING A WATERTIGHT INSTALLATION.
6. PROVIDE NEW ROOFING MATERIAL IN THIS AREA AS REQUIRED TO ACCOMMODATE THE ROOFING REPAIRS NECESSARY FROM THE REMOVED ROOFTOP UNIT CURB AND THE ROOF MOUNTED DUCT ROUTING. RE-ROOFING IN THIS AREA SHALL BE COORDINATED WITH THE NEW ROOF MOUNTED DUCT CURB SUPPORTS, AND SHALL ALSO EXTEND COMPLETELY AROUND THE NEW ROOFTOP UNIT CURB ASSEMBLY PROVIDING A WATERTIGHT INSTALLATION.
7. PROVIDE EXHAUST FAN ONTO THE EXISTING CURB FROM THE REMOVED ROOF EXHAUSTER. THE CONTRACTOR SHALL VERIFY CURB SIZE PRIOR TO PROVIDING THE REPLACEMENT FAN SUBMITTAL, AND INFORM THE ENGINEER OF ANY POTENTIAL CONFLICTS, PRIOR TO PURCHASING.

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ROOF PLAN
NEW WORK

SHEET NUMBER:
M-104

6 OF 16 SHEETS
08/19/2022

GENERAL NOTES

THIS SHEET ONLY

1. MANUFACTURER AND MODEL NUMBER LISTED IS THE BASIS OF DESIGN. PROVIDE THE PRODUCT INDICATED OR COMPARABLE PRODUCT BY ONE OF THE LISTED MANUFACTURES IN THE SPECIFICATIONS.

HEAT PUMP ROOFTOP UNIT SCHEDULE

(BASIS OF DESIGN - AAON MANUFACTURING. SEE SPECS FOR ALTERNATIVES)

UNIT DESIGNATION	SERVICE	MANUFACTURER MODEL NUMBER	MINIMUM OUTSIDE AIR (CFM)	SUPPLY FAN AIRFLOW (CFM)	SUPPLY FAN EXTERNAL STATIC PRESSURE (INCHES)	SUPPLY FAN (VFD)	EXHAUST FAN AIRFLOW (CFM)	EXHAUST FAN EXTERNAL STATIC PRESSURE (INCHES)	EXHAUST FAN (VFD)	SINGLE POINT POWER CONNECTION				REMARKS
										MCA	MOP	DISCONNECT TYPE	VOLTS/PH	
RTU-1	KITCHEN AREA	AAON RQ	-	2000	1.0	YES	-	-	-	62	70	FUSED	208/3	1,4,5
RTU-2	HOME CARE CLASSROOMS	AAON RQ	-	1800	1.0	YES	-	-	-	65	70	FUSED	208/3	1,4,5
RTU-3	CLASSROOMS	AAON RQ	-	1800	1.0	YES	-	-	-	62	70	FUSED	208/3	1,4,5
RTU-4	CLASSROOMS	AAON RQ	-	1800	1.0	YES	-	-	-	62	70	FUSED	208/3	1,4,5
RTU-5	CLASSROOMS	AAON RQ	-	1800	1.0	YES	-	-	-	62	70	FUSED	208/3	1,4,5
RTU-6	ADMINISTRATION AREA	AAON RQ	-	1800	1.0	YES	-	-	-	62	70	FUSED	208/3	1,4,5
RTU-7	CAFETERIA AREA	AAON RN	2770	4000	1.2	YES	-	-	-	233	300	FUSED	208/3	1,3,5,6
RTU-8	GYMNASIUM AREA	AAON RQ	-	1600	1.0	YES	-	-	-	62	70	FUSED	208/3	1,4,5

ROOFTOP UNIT HEATING COIL DATA SCHEDULE

UNIT DESIGNATION	SERVICE	AIRFLOW (CFM)	TYPE	ELECTRIC AUXILIARY COIL (KW)	ENTERING AIR TEMPERATURE (°F DB)	LEAVING AIR TEMPERATURE (°F DB)	STAGING AND CONTROL	MAXIMUM AIR PRESSURE DROP (INCHES)	REMARKS
RTU-1	KITCHEN AREA	2000	ELECTRIC	15	72	87	SCR	0.1	2
RTU-2	HOME CARE CLASSROOMS	1800	ELECTRIC	15	72	87	SCR	0.2	2
RTU-3	CLASSROOMS	1800	ELECTRIC	15	72	87	SCR	0.2	2
RTU-4	CLASSROOMS	1800	ELECTRIC	15	72	87	SCR	0.2	2
RTU-5	CLASSROOMS	1800	ELECTRIC	15	72	87	SCR	0.2	2
RTU-6	ADMINISTRATION AREA	1800	ELECTRIC	15	72	87	SCR	0.2	2
RTU-7	CAFETERIA AREA	4000	ELECTRIC	75	29.1	87	SCR	0.1	2
RTU-7	CAFETERIA AREA	4000	HOT GAS	-	54.5	87	MODULATING	0.1	2
RTU-8	GYMNASIUM AREA	1600	ELECTRIC	15	72	90	SCR	0.2	2

ROOFTOP UNIT COOLING COIL DATA SCHEDULE

UNIT DESIGNATION	SERVICE	AIRFLOW (CFM)	MINIMUM ROWS	MAXIMUM FINS PER INCH	ENTERING AIR TEMPERATURE (°F DB/°F WB)	LEAVING AIR TEMPERATURE (°F DB)	OUTSIDE AMBIENT TEMPERATURE AT RATED COOLING COIL (°F DB)	REFRIGERANT TYPE	COMPLIES WITH ASHRAE STANDARD 90.1-2007	REMARKS
RTU-1	KITCHEN AREA	2000	3	14	76/64.2	53	95	R-410A	YES	-
RTU-2	HOME CARE CLASSROOMS	1800	3	14	74/62.6	54	95	R-410A	YES	-
RTU-3	CLASSROOMS	1800	3	14	74/62.6	53.7	95	R-410A	YES	-
RTU-4	CLASSROOMS	1800	3	14	74/62.6	53.7	95	R-410A	YES	-
RTU-5	CLASSROOMS	1800	3	14	74/62.6	53.7	95	R-410A	YES	-
RTU-6	ADMINISTRATION AREA	1800	3	14	74/62.6	53.7	95	R-410A	YES	-
RTU-7	CAFETERIA AREA	4000	3	14	87.85/72.9	53.2	95	R-410A	YES	-
RTU-8	GYMNASIUM AREA	1600	3	14	74/62.6	52.8	95	R-410A	YES	-

NOTES:
1. THE DIRECT EXPANSION HEAT PUMP COIL CAPACITY IS SELECTED AT THE COOLING CONDITION.
2. PROVIDE AUXILIARY OR SUPPLEMENTAL ELECTRIC HEAT IN ADDITION TO THE PRIMARY HEAT PUMP COIL.
3. UNIT SHALL HAVE REFRIGERANT ONLY CONTROLS; PROVIDE SUPERVISORY CONTROLLER TO ACCEPT BAS ANALOGUE INPUTS AND PROVIDE REFRIGERANT SYSTEMS SAFETIES.
4. UNIT SHALL HAVE MANUFACTURER SINGLE ZONE VARIABLE AIR VOLUME CONTROL SEQUENCE.
5. UNIT SHALL HAVE THE FOLLOWING OPTIONS AND ACCESSORIES: SINGLE POINT POWER, FACTORY WIRED 15A 115V GFI CONVENIENCE OUTLET, SMOKE DETECTORS, STAINLESS STEEL DRAIN PAN.
6. PROVIDE UV REFRIGERANT COIL DISINFECTION SYSTEM WITH DOOR INTERLOCK

COMBINATION KITCHEN EXHAUST FAN AND MAKE-UP AIR UNIT

UNIT DESIGNATION	SERVICE	MANUFACTURER MODEL NUMBER	SUPPLY AIR					EXHAUST AIR		SINGLE POINT POWER CONNECTION				REMARKS
			AIRFLOW (CFM)	ENTERING AIR TEMPERATURE (°F DB)	LEAVING AIR TEMPERATURE (°F DB)	ELECTRIC HEATING COIL (kW)	EXTERNAL STATIC PRESSURE (IN)	AIRFLOW (CFM)	EXTERNAL STATIC PRESSURE (IN)	MCA	MOP	DISCONNECT TYPE	VOLTS/PH	
KEFMAU-1	KITCHEN EXHAUST HOOD	DUA-AIRE V2-HOEL	2323	10.1	75	48	1.1"	2640	1.1"	185	200	NON-FUSED	208/3	1

NOTES:
1. PROVIDE COMBINATION KITCHEN MAKE-UP AIR UNIT AND EXHAUST FAN TO MAINTAIN THE EXISTING KITCHEN EXHAUST HOOD UL LISTING INCLUDING CONCENTRIC DUCTWORK OPERATION. UNIT SHALL HAVE SINGLE POINT POWER CONNECTION. PROVIDE RELAY OUTPUTS FOR BAS MONITORING.

FAN SCHEDULE

FAN DESIGNATION	SERVICE	MANUFACTURER MODEL NUMBER	AIRFLOW (CFM)	FAN TYPE	WHEEL TYPE	WHEEL DIAMETER (INCHES)	FAN STATIC PRESSURE (INCHES)	RPM	BHP	CLASS	MOTOR DATA				REMARKS
											HP	RPM	VOLTS/PH	VFD	
EF-1	KITCHEN STORAGE/TOILET	GREENHECK G 80-D	200	DOWNBLAST	BI	10.875	.375	1437	0.04	-	1/20	1550	120/1	NO	1
EF-1A	DISHWASHER	GREENHECK CUE 99-VG	500	UPBLAST	BI	11.188	.375	1209	.07	-	1/4	1725	120/1	NO	1,2,3
EF-2	HOME CARE TOILET ROOMS	GREENHECK G 80-G	150	DOWNBLAST	BI	10.875	.25	1155	.02	-	1/30	1300	120/1	NO	1
EF-3	CLASSROOM TOILET ROOMS	GREENHECK G 80-G	150	DOWNBLAST	BI	10.875	.25	1155	.02	-	1/30	1300	120/1	NO	1
EF-4	CLASSROOM TOILET ROOMS	GREENHECK G 80-G	150	DOWNBLAST	BI	10.875	.25	1155	.02	-	1/30	1300	120/1	NO	1
EF-5	CLASSROOM TOILET ROOMS	GREENHECK G 80-G	150	DOWNBLAST	BI	10.875	.25	1155	.02	-	1/30	1300	120/1	NO	1
EF-6	ADMIN PUBLIC TOILET ROOMS	GREENHECK CUE 90-VG	525	UPBLAST	BI	10.876	.375	1648	.1	-	1/6	1725	120/1	NO	1,2
EF-6A	ADMIN TOILET ROOMS	GREENHECK G 80-D	200	DOWNBLAST	BI	10.875	.375	1437	0.04	-	1/20	1550	120/1	NO	1

NOTES:
1. PROVIDE BACKDRAFT DAMPER AND EXTERNAL STATIC PRESSURE AS SHOWN ON THE SCHEDULE
2. PROVIDE ELECTRICALLY COMMUNICATED MOTOR AND MANUAL SPEED CONTROL
3. AIRSTREAM TEMPERATURE 180°F

STATE OF MISSOURI
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2022-08-19
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DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering
622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
MO Certificate of Authority No. 2009021478

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NEW DAWN STATE SCHOOL
REPLACE ROOFTOP UNITS

NEW DAWN STATE SCHOOL
710 GLENN DRIVE
SIKESTON, MO 63801

PROJECT # E1905-01
SITE # 2043
FACILITY # 5012043003

REVISION:
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DATE:

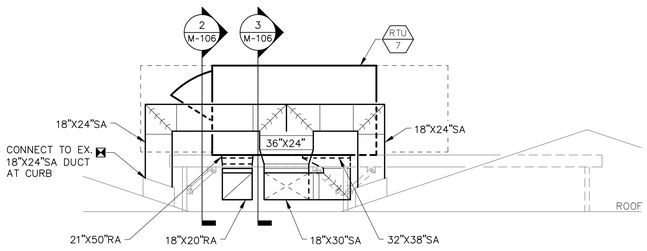
ISSUE DATE: 08/19/2022

CAD DWG FILE: E1905-01-2449-30049-M-105.dwg
DRAWN BY: LRH
CHECKED BY: DEF
DESIGNED BY: DEF

SHEET TITLE:
MECHANICAL SCHEDULES

SHEET NUMBER:
M-105

7 OF 16 SHEETS
08/19/2022



1 M-106 ROOFTOP UNIT SECTION - RTU-7

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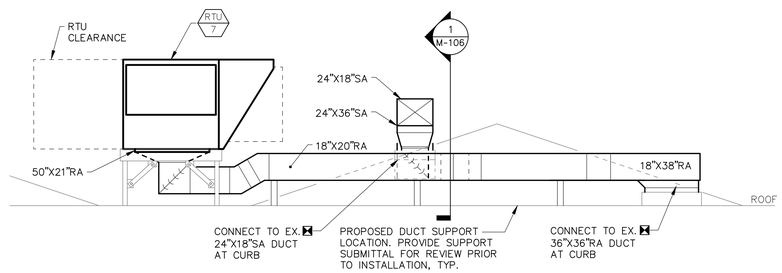

2 M-106 ROOFTOP UNIT SECTION - RTU-7

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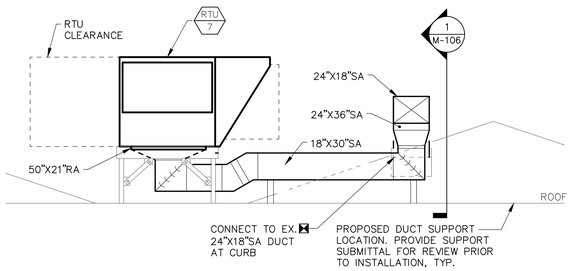

3 M-106 ROOFTOP UNIT SECTION - RTU-7

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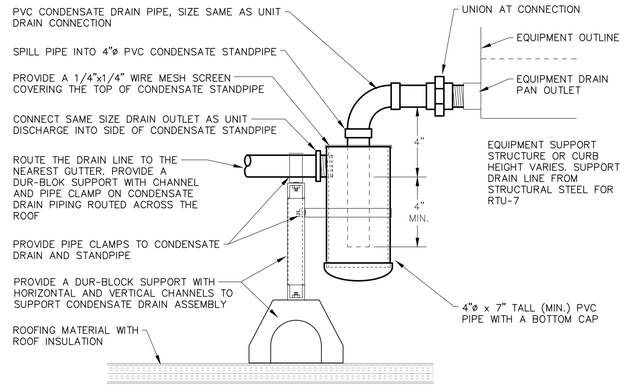
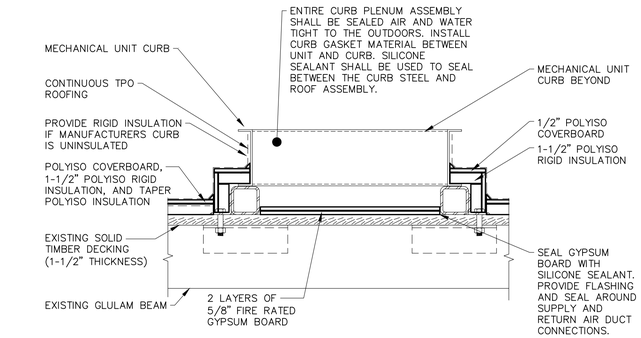


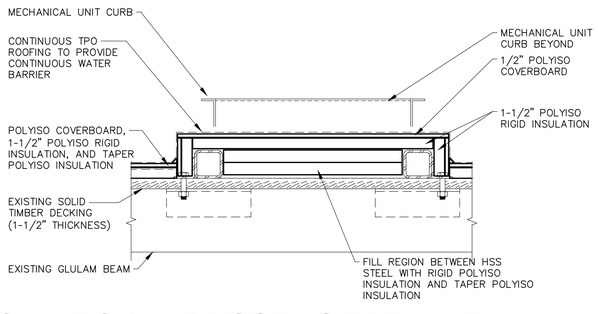
ROOFTOP UNIT CONDENSATE DRAIN DETAIL

NO SCALE (FOR DRAW-THRU AIR HANDLING UNIT)



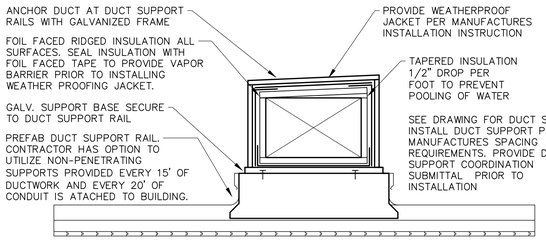
INSULATION AND ROOFING DETAIL AT ROOF CURB

SCALE: NONE



INSULATION AND ROOFING DETAIL AT HSS 4X4X3/8 EXTENSION FROM ROOF CURB

SCALE: NONE



DUCT INSULATION AND WEATHERPROOF JACKET DETAIL

SCALE: 1/2" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

STATE OF MISSOURI
DREW E.
FLANAKIN
NUMBER
PE-2016017619
2022-08-19
PROFESSIONAL ENGINEER

DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering

622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
MO Certificate of Authority No. 2009021478

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FACILITY # 5012043003

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CAD DWG FILE: E1905-01-2449-30049-M-106.dwg
DRAWN BY: LRH
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MECHANICAL SECTIONS AND DETAILS

SHEET NUMBER:

M-106

8 OF 16 SHEETS
08/19/2022

RTU-1, 2, 3, 4, 5, 6 & 8 TEMPERATURE CONTROL POINTS LIST

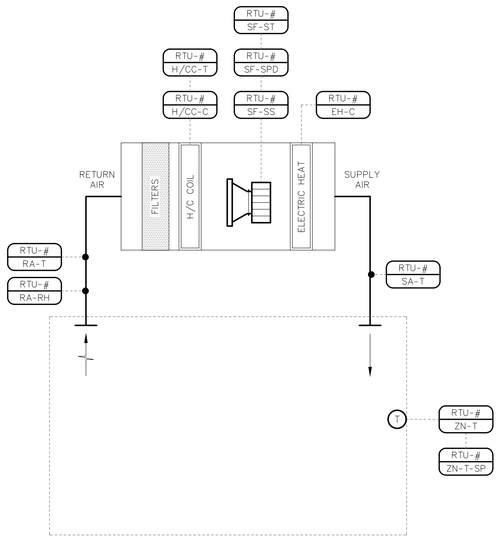
TYPE	CONTROLLER NAME	NAME	DESCRIPTION	TYPE	SET-POINT	UNITS	MONITOR	ADJUST	ALARM		TREND			FIELD DEVICE DESCRIPTION			NOTES
									NOTIFY	THRESHOLD	TREND	FREQ	ARCHIVE	INSTRUMENT TYPE	SIGNAL	RANGE	
AI	RTU-#	H/CC-T	HEATING/COOLING COIL TEMPERATURE	TEMPERATURE	–	DEGREES F	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	FLEXIBLE AVERAGING SENSOR	OHMS	-30 TO 250 F	
DO	RTU-#	COMPX-SS	COMPRESSOR X START/STOP COMMAND	START/STOP	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	PILOT OPERATED RELAY	CONTACT	ON/OFF	1
AO	RTU-#	COMPX-C	COMPRESSOR X COMMAND	COMMAND	–	% ON	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	HEATPUMP COMPRESSOR	4-20 MA	0 TO 100%	1
DI	RTU-#	COMPX-ST	COMPRESSOR X STATUS	STATUS	–	ON/OFF	X	OVERRIDE	X	SS < > ST	X	COS	1 WEEK	CURRENT SENSING SWITCH	CONTACT	OPEN/CLOSED	1
AI	RTU-#	RA-T	RETURN AIR TEMPERATURE	TEMPERATURE	–	DEGREES F	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	RIGID TEMPERATURE SENSOR	OHMS	-30 TO 250 F	
AI	RTU-#	RA-RH	RETURN AIR RELATIVE HUMIDITY	HUMIDITY	–	% RH	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	DUCT HUMIDITY SENSOR	OHMS	-30 TO 250 F	
AI	RTU-#	SA-T	SUPPLY AIR TEMPERATURE	TEMPERATURE	–	DEGREES F	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	RIGID TEMPERATURE SENSOR	OHMS	-30 TO 250 F	
DI	RTU-#	SF-ST	SUPPLY FAN STATUS	STATUS	–	ON/OFF	X	OVERRIDE	X	SS < > ST	X	COS	1 WEEK	CURRENT SENSING SWITCH	CONTACT	OPEN/CLOSED	
AO	RTU-#	SF-SPD	SUPPLY FAN SPEED	COMMAND	–	% SPEED	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	DIRECT CONNECTION TO VFD	4-20 MA	0 TO 100%	
DO	RTU-#	SF-SS	SUPPLY FAN START/STOP COMMAND	START/STOP	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	PILOT OPERATED RELAY	CONTACT	ON/OFF	
AO	RTU-#	EH-C	ELECTRIC HEAT COMMAND	COMMAND	–	% ON	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	ELECTRIC HEAT CONTROLER	4-20 MA	0 TO 100%	
NET	RTU-#	ZN-T	ZONE AIR TEMPERATURE	TEMPERATURE	–	DEGREES F	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	DIGITAL TEMPERATURE SENSOR WITH DISPLAY SETPOINT ADJUST AND OCCUPANCY OVERRIDE BUTTON	NET	-30 TO 250 F	
NET	RTU-#	ZN-T-SP	ZONE AIR TEMPERATURE SET POINT	TEMPERATURE	–	DEGREES F	X	OVERRIDE	–	–	X	15 MIN	1 WEEK		NET	68-76 F	

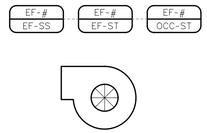
NOTES:

BUILDING AUTOMATION SYSTEM SHALL BE CAPABLE OF MONITORING AND OVERRIDING ALL TEMPERATURE CONTROL POINTS THROUGH THE UNIT BACNET CONNECTION
1. PROVIDE POINT FOR EACH COMPRESSOR.

POINTS LIST SYMBOLS AND ABBREVIATIONS

DI	DIGITAL INPUT TO BAS	NET	NETWORKED POINTS
DO	DIGITAL OUTPUT FROM BAS	HW	HARD-WIRED INTERLOCK/SAFETY
AI	ANALOG INPUT TO BAS	COS	CHANGE OF STATE
AO	ANALOG OUTPUT FROM BAS		





EXHAUST FAN TEMPERATURE CONTROL POINTS LIST

TYPE	CONTROLLER NAME	NAME	DESCRIPTION	TYPE	SET-POINT	UNITS	MONITOR	ADJUST	ALARM		TREND			FIELD DEVICE DESCRIPTION			NOTES
									NOTIFY	THRESHOLD	TREND	FREQ	ARCHIVE	INSTRUMENT TYPE	SIGNAL	RANGE	
EF-2, 3, 4, 5 CONTROLS AND MONITORING																	
DI	EF-#	SF-ST	EXHAUST FAN STATUS	STATUS	–	ON/OFF	X	OVERRIDE	X	SS < > ST	X	COS	1 WEEK	CURRENT SENSING SWITCH	CONTACT	OPEN/CLOSED	2
DO	EF-#	SF-SS	EXHAUST FAN START/STOP COMMAND	START/STOP	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	PILOT OPERATED RELAY	CONTACT	ON/OFF	2
AI	EF-#	OCC-ST	OCCUPANCY SENSOR STATUS	STATUS	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	OCCUPANCY SENSOR	CONTACT	OPEN/CLOSED	1,2,3
EF-1, 6, 6A CONTROLS AND MONITORING																	
DI	EF-#	SF-ST	EXHAUST FAN STATUS	STATUS	–	ON/OFF	X	OVERRIDE	X	SS < > ST	X	COS	1 WEEK	CURRENT SENSING SWITCH	CONTACT	OPEN/CLOSED	2
DO	EF-#	SF-SS	EXHAUST FAN START/STOP COMMAND	START/STOP	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	PILOT OPERATED RELAY	CONTACT	ON/OFF	4
AI	EF-#	OCC-ST	OCCUPANCY SENSOR STATUS	STATUS	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	OCCUPANCY SENSOR	CONTACT	OPEN/CLOSED	1,2,3
EF-1A MONITORING																	
DI	EF-#	SF-ST	EXHAUST FAN STATUS	STATUS	–	ON/OFF	X	OVERRIDE	X	SS < > ST	X	COS	1 WEEK	CURRENT SENSING SWITCH	CONTACT	OPEN/CLOSED	5
DO	EF-#	SF-SS	EXHAUST FAN START/STOP COMMAND	STATUS	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	PILOT OPERATED RELAY	CONTACT	ON/OFF	5

NOTES:
1. BASE BID INCLUDES STANDALONE OCCUPANCY SENSOR SYSTEM FOR EXHAUST FAN START/STOP CONTROL.
2. ALTERNATE 1: BUILDING AUTOMATION CONTROL OF THE EXHAUST FAN INCLUDING OCCUPANCY SENSOR INPUT TO THE BAS SYSTEM.
3. SEE PLANS FOR LOCATIONS AND QUANTIES OF OCCUPANCY SENSORS.
4. BASE BIN INCLUDES A STANDALONE 7 DAY TIME CLOCK FOR EXHAUST FAN START/STOP CONTROL
5. ALTERNATE 1: BUILDING AUTOMATION MONITORING OF THE EXISTING DISHWASHER STANDALONE CONTROLS

POINTS LIST SYMBOLS AND ABBREVIATIONS

DI	DIGITAL INPUT TO BAS	NET	NETWORKED POINTS
DO	DIGITAL OUTPUT FROM BAS	HW	HARD-WIRED INTERLOCK/SAFETY
AI	ANALOG INPUT TO BAS	COS	CHANGE OF STATE
AO	ANALOG OUTPUT FROM BAS		

STATE OF MISSOURI
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PROFESSIONAL ENGINEER

DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering

622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
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SHEET TITLE:
AIR FLOW DIAGRAM AND TEMP. CONTROL POINTS LIST

SHEET NUMBER:
M-107

9 OF 16 SHEETS
08/19/2022

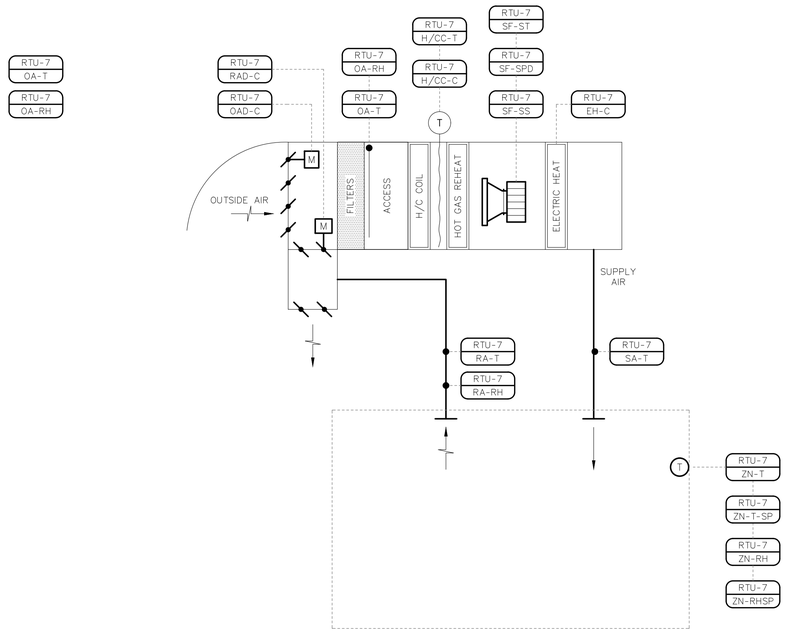
RTU-7 TEMPERATURE CONTROL POINTS LIST

POINT DESCRIPTION									ALARM		TREND			FIELD DEVICE DESCRIPTION			
TYPE	CONTROLLER NAME	NAME	DESCRIPTION	TYPE	SET–POINT	UNITS	MONITOR	ADJUST	NOTIFY	THRESHOLD	TREND	FREQ	ARCHIVE	INSTRUMENT TYPE	SIGNAL	RANGE	NOTES
DO	RTU–7	OAD–C	OUTSIDE AIR DAMPER COMMAND	DAMPER	–	% OPEN	X	OVERRIDE	–	–	X	COS	1 WEEK	CONTROL DAMPER WITH ELECTRONIC ACTUATOR	4–20 MA	0 TO 100%	
AI	RTU–7	OA–RH	OUTSIDE AIR RELATIVE HUMIDITY	TEMPERATURE	–	DEGREES F	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	RIGID TEMPERATURE SENSOR	OHMS	–30 TO 250 F	
AI	RTU–7	OA–T	OUTDOOR AIR TEMPERATURE	TEMPERATURE	–	DEGREES F	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	FLEXIBLE AVERAGING SENSOR	OHMS	–30 TO 250 F	
AI	RTU–7	H/CC–T	HEATING/COOLING COIL TEMPERATURE	TEMPERATURE		DEGREES F	X	OVERRIDE			X	15 MIN	1 WEEK	FLEXIBLE AVERAGING SENSOR	OHMS	–30 TO 250 F	
DO	RTU–7	COMPX–SS	COMPRESSOR X START/STOP COMMAND	START/STOP	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	PILOT OPERATED RELAY	CONTACT	ON/OFF	1
AO	RTU–7	COMPX–C	COMPRESSOR X COMMAND	COMMAND	–	% ON	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	HEATPUMP COMPRESSOR	4–20 MA	0 TO 100%	1
DI	RTU–7	COMPX–ST	COMPRESSOR X STATUS	STATUS	–	ON/OFF	X	OVERRIDE	X	SS < > ST	X	COS	1 WEEK	CURRENT SENSING SWITCH	CONTACT	OPEN/CLOSED	1
AI	RTU–7	SA–T	SUPPLY AIR TEMPERATURE	TEMPERATURE	–	DEGREES F	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	RIGID TEMPERATURE SENSOR	OHMS	–30 TO 250 F	
DI	RTU–7	SF–ST	SUPPLY FAN STATUS	STATUS	–	ON/OFF	X	OVERRIDE	X	SS < > ST	X	COS	1 WEEK	CURRENT SENSING SWITCH	CONTACT	OPEN/CLOSED	
AO	RTU–7	SF–SPD	SUPPLY FAN SPEED	COMMAND	–	% SPEED	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	DIRECT CONNECTION TO VFD	4–20 MA	0 TO 100%	
DO	RTU–7	SF–SS	SUPPLY FAN START/STOP COMMAND	START/STOP	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	PILOT OPERATED RELAY	CONTACT	ON/OFF	
AI	RTU–7	RA–RH	RETURN AIR RELATIVE HUMIDITY	HUMIDITY	–	% RH	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	DUCT HUMIDITY SENSOR	OHMS	–30 TO 250 F	
AO	RTU–7	RAD–C	RETURN AIR DAMPER COMMAND	DAMPER	–	% OPEN	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	CONTROL DAMPER WITH ELECTRONIC ACTUATOR	4–20 MA	0 TO 100%	
AO	RTU–7	EH–C	ELECTRIC HEAT COMMAND	COMMAND	–	% ON	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	CONTROL DAMPER WITH ELECTRONIC ACTUATOR	4–20 MA	0 TO 100%	
NET	RTU–7	ZN–T	ZONE AIR TEMPERATURE	TEMPERATURE	–	DEGREES F	X	OVERRIDE	–	–	X	15 MIN	1 WEEK		NET	–30 TO 250 F	
NET	RTU–7	ZN–T–SP	ZONE AIR TEMPERATURE SET POINT	TEMPERATURE	–	DEGREES F	X	OVERRIDE	–	–	X	15 MIN	1 WEEK	DIGITAL TEMPERATURE AND HUMIDITY SENSOR WITH DISPLAY SETPOINT ADJUST AND OCCUPANCY OVERRIDE BUTTON	NET	68–76	
AI	RTU–7	ZN–RH	ZONE RELATIVE HUMIDITY	HUMIDITY	–	% RH	X	OVERRIDE	–	–	X	15 MIN	1 WEEK		NET	0 – 100%	
AI	RTU–7	ZN–RHSP	ZONE RELATIVE HUMIDITY SET POINT	HUMIDITY	–	% RH	X	OVERRIDE	–	–	X	15 MIN	1 WEEK		NET	20 – 65%	

NOTES:
1. PROVIDE POINT FOR EACH COMPRESSOR.

POINTS LIST SYMBOLS AND ABBREVIATIONS

DI	DIGITAL INPUT TO BAS	NET	NETWORKED POINTS
DO	DIGITAL OUTPUT FROM BAS	HW	HARD–WIRED INTERLOCK/SAFETY
AI	ANALOG INPUT TO BAS	COS	CHANGE OF STATE
AO	ANALOG OUTPUT FROM BAS		



COMBINATION KITCHEN MAKE-UP AND EXHAUST TEMPERATURE CONTROL POINTS LIST

POINT DESCRIPTION									ALARM		TREND			FIELD DEVICE DESCRIPTION			
TYPE	CONTROLLER NAME	NAME	DESCRIPTION	TYPE	SET–POINT	UNITS	MONITOR	ADJUST	NOTIFY	THRESHOLD	TREND	FREQ	ARCHIVE	INSTRUMENT TYPE	SIGNAL	RANGE	NOTES
	CMU	SF–ST	EXHAUST FAN STATUS	STATUS	–	ON/OFF	X	OVERRIDE	X	SS < > ST	X	COS	1 WEEK	CURRENT SENSING SWITCH	CONTACT	OPEN/CLOSED	1
DO	CMU	SF–SS	EXHAUST FAN START/STOP COMMAND	STATUS	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	PILOT OPERATED RELAY	CONTACT	ON/OFF	1
DI	CMU	SF–ST	SUPPLY FAN STATUS	STATUS	–	ON/OFF	X	OVERRIDE	X	SS < > ST	X	COS	1 WEEK	CURRENT SENSING SWITCH	CONTACT	OPEN/CLOSED	1
DO	CMU	SF–SS	SUPPLY FAN START/STOP COMMAND	STATUS	–	ON/OFF	X	OVERRIDE	–	–	X	COS	1 WEEK	PILOT OPERATED RELAY	CONTACT	ON/OFF	1

NOTES:
1. ALTERNATE 1: BUILDING AUTOMATION MONITORING OF THE STANDALONE EQUIPMENT CONTROLS. COORDINATE WITH UNIT MANUFACTURE

POINTS LIST SYMBOLS AND ABBREVIATIONS

DI	DIGITAL INPUT TO BAS	NET	NETWORKED POINTS
DO	DIGITAL OUTPUT FROM BAS	HW	HARD–WIRED INTERLOCK/SAFETY
AI	ANALOG INPUT TO BAS	COS	CHANGE OF STATE
AO	ANALOG OUTPUT FROM BAS		

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
DREW E FLANAKIN
NUMBER PE-2016017619
2022-08-19
PROFESSIONAL ENGINEER

DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering

622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
MO Certificate of Authority No. 2009021478

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF ELEMENTARY AND SECONDARY EDUCATION

NEW DAWN STATE SCHOOL
REPLACE ROOFTOP UNITS

NEW DAWN STATE SCHOOL
710 GLENN DRIVE
SIKESTON, MO 63801

PROJECT # E1905-01
SITE # 2043
FACILITY # 5012043003

REVISION:
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DATE:

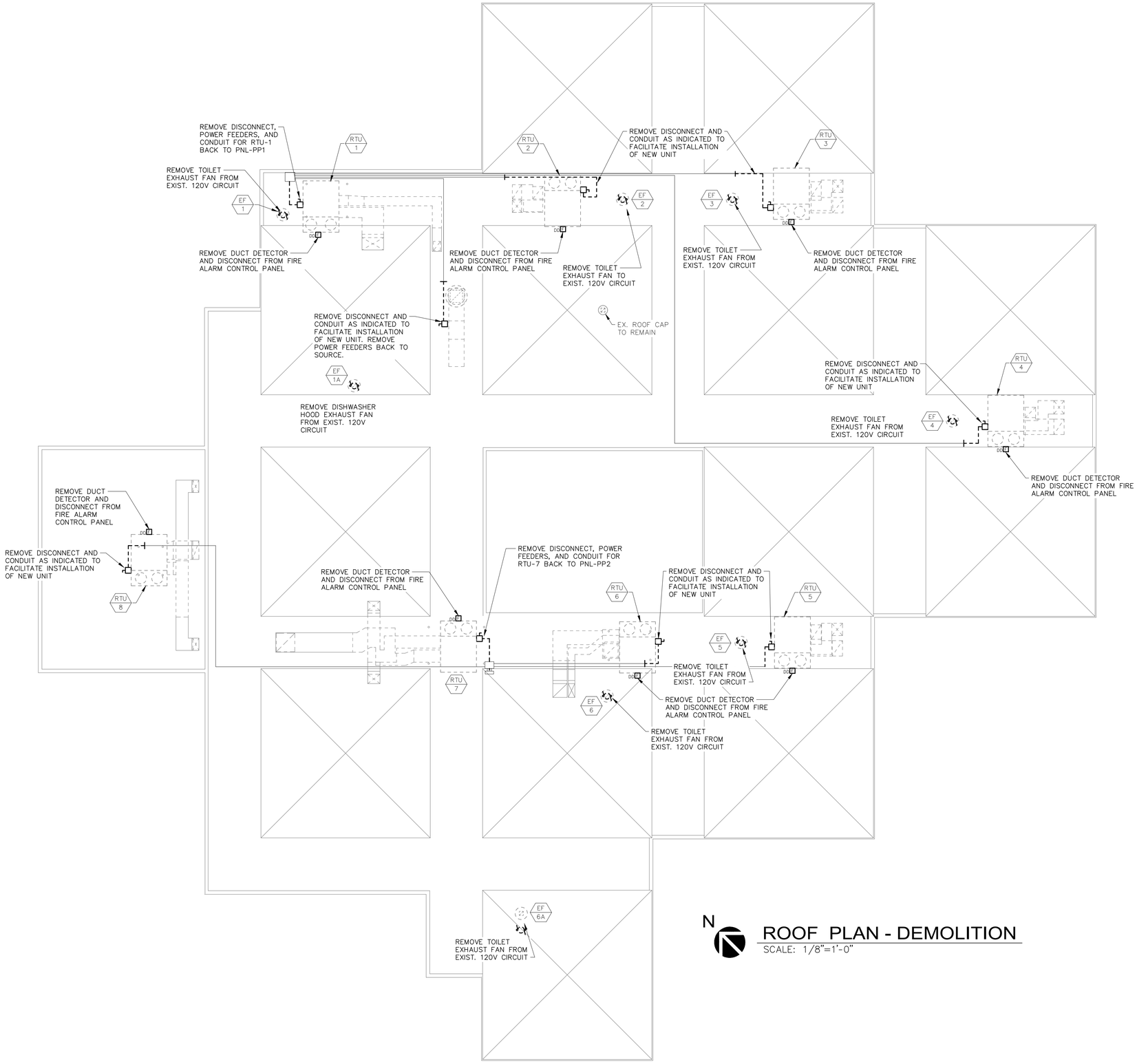
ISSUE DATE: 08/19/2022

CAD DWG FILE: E1905-01-2449-30049-M-108.dwg
DRAWN BY: LRH
CHECKED BY: DEF
DESIGNED BY: DEF

SHEET TITLE:
AIR FLOW DIAGRAM AND TEMP. CONTROL POINTS LIST

SHEET NUMBER:
M-108

10 OF 16 SHEETS
08/19/2022



ROOF PLAN - DEMOLITION

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

STATE OF MISSOURI
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DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering

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St. Louis, MO 63141 • 314-727-8760
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CAD DWG FILE: E1905-01-2449-30049-E-101.dwg
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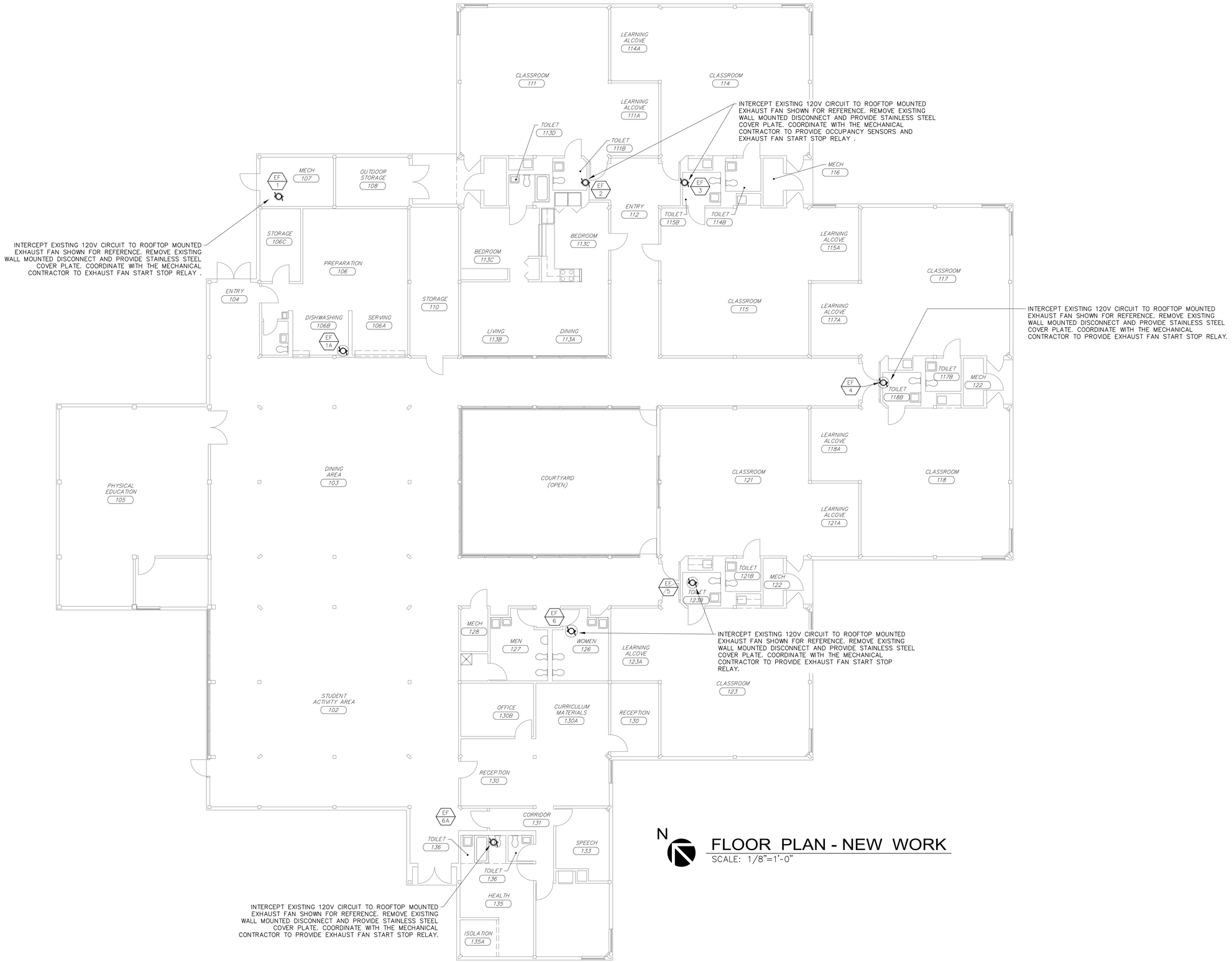
SHEET TITLE:

ROOF PLAN DEMOLITION

SHEET NUMBER:

E-101

11 OF 16 SHEETS
08/19/2022



FLOOR PLAN - NEW WORK

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

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
DREW E. FLANAKIN
NUMBER PE-2016017619
2022-08-19
PROFESSIONAL ENGINEER

DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering

622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
MO Certificate of Authority No. 2009021478

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710 GLENN DRIVE
SIKESTON, MO 63801

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FACILITY # 5012043003

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E1905-01-2449-
CAD DWG FILE: 30049-E-102dwg
DRAWN BY: LRH
CHECKED BY: DEF
DESIGNED BY: DEF

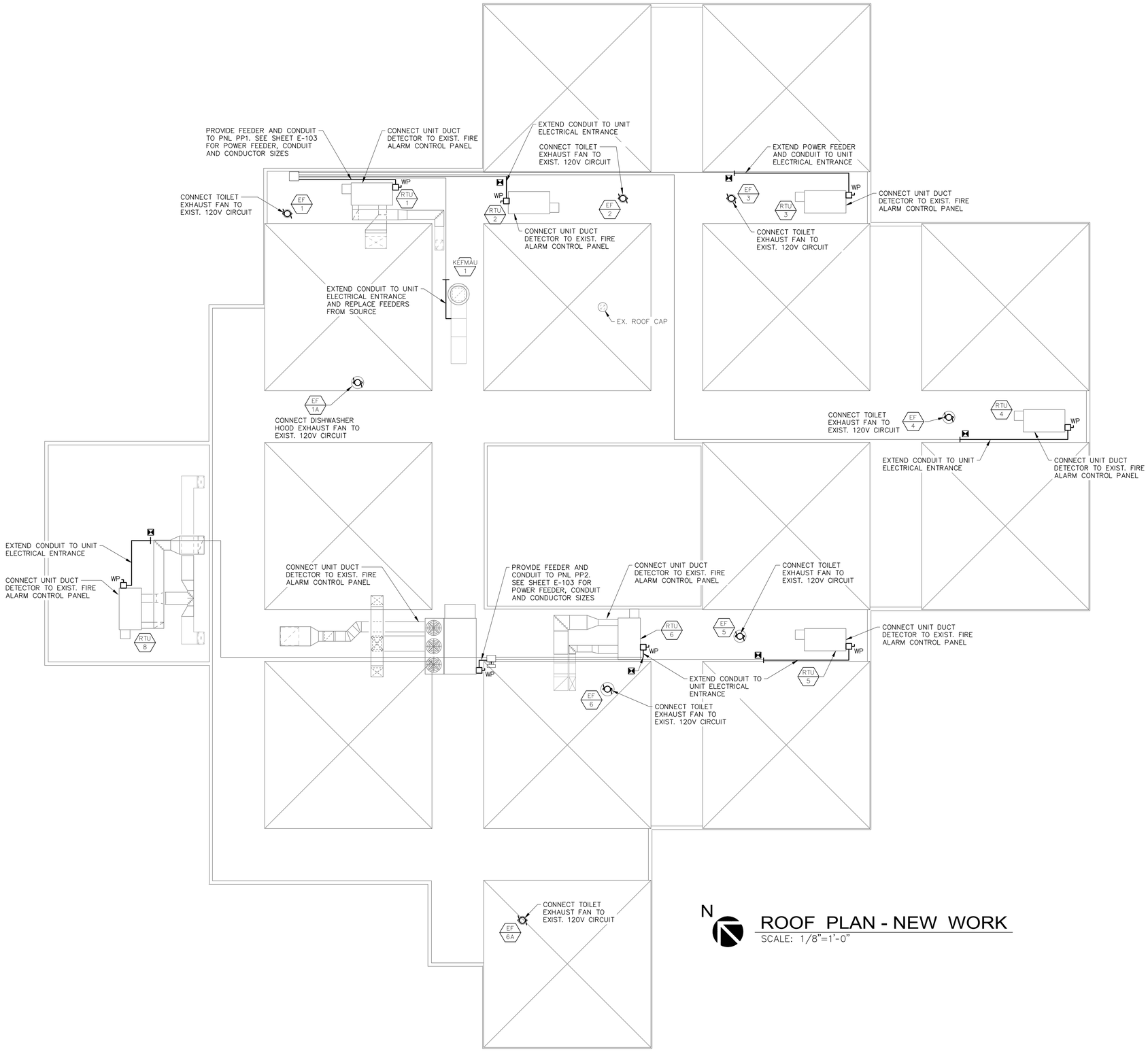
SHEET TITLE:

FLOOR PLAN
NEW WORK

SHEET NUMBER:

E-102

12 OF 16 SHEETS
08/19/2022



STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI
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2022-08-19
PROFESSIONAL ENGINEER

DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering

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St. Louis, MO 63141 • 314-727-8760
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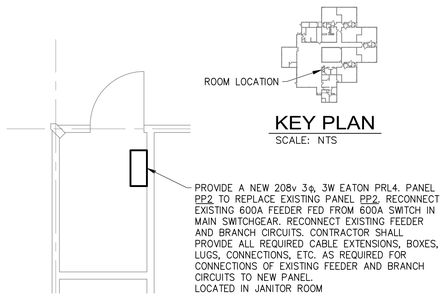
DRAWN BY: LRH
CHECKED BY: DEF
DESIGNED BY: DEF

SHEET TITLE:
ROOF PLAN
NEW WORK

SHEET NUMBER:
E-103

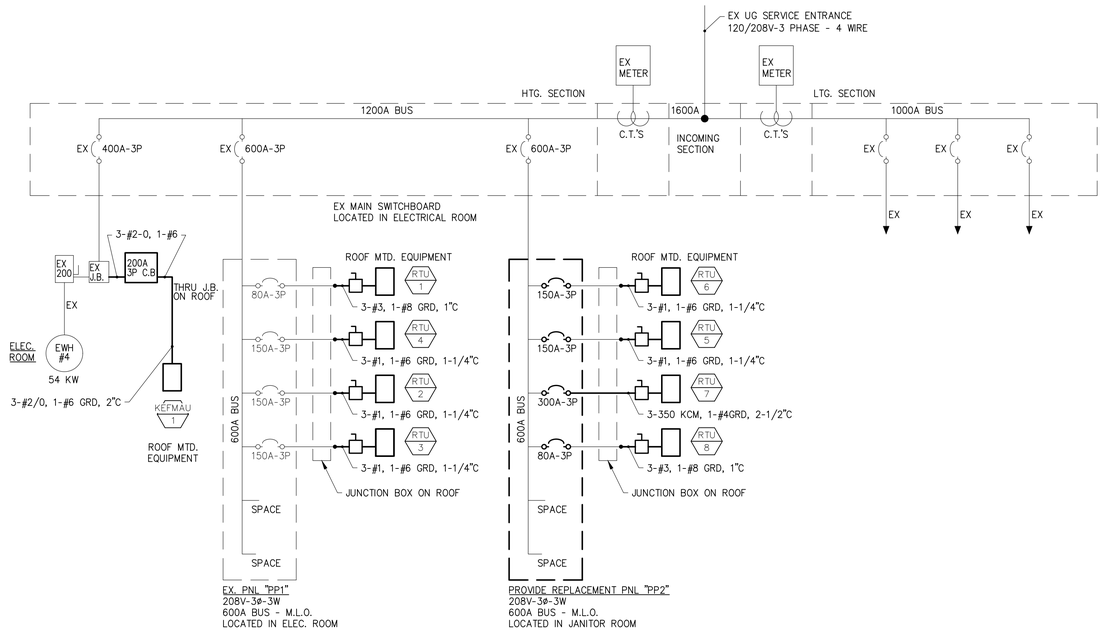
13 OF 16 SHEETS
08/19/2022



KEY PLAN
SCALE: NTS

N

JANITOR ROOM PLAN
SCALE: 1/4" = 1'-0"



ONE-LINE RISER DIAGRAM
N.T.S.

TAG	MOTOR DATA					MOTOR STARTER			DISCONNECT SWITCH			REMARKS
	DESCRIPTION	HORSEPOWER	VOLTAGE	PHASE	FLA	SIZE	POLES	TYPE	SIZE	LOCATION	BREAKER/FUSE AMPS	
RTU-1	KITCHEN AREA RTU	–	208	3	49	–	3	PWCP	100/3	AT UNIT	70	–
RTU-2	HOME CARE CLASSROOMS RTU	–	208	3	53	–	3	PWCP	100/3	AT UNIT	70	–
RTU-3	CLASSROOM RTU	–	208	3	49	–	3	PWCP	100/3	AT UNIT	70	–
RTU-4	CLASSROOM RTU	–	208	3	49	–	3	PWCP	100/3	AT UNIT	70	–
RTU-5	CLASSROOM RTU	–	208	3	49	–	3	PWCP	100/3	AT UNIT	70	–
RTU-6	ADMINISTRATION AREA RTU	–	208	3	49	–	3	PWCP	100/3	AT UNIT	70	–
RTU-7	CAFETERIA AREA VENT UNIT	–	208	3	219	–	3	PWCP	400/3	AT UNIT	300	–
RTU-8	GYMNASIUM AREA RTU	–	208	3	49	–	3	PWCP	100/3	AT UNIT	70	–
KEFMAU-1	KITCHEN EXHAUST & MAU	–	208	3	150	–	3	PWCP	FURNISHED W/UNIT		–	–

NOTES:
COORDINATE EQUIPMENT MCA, FLA, AND MOP WITH ACTUAL PURCHASED EQUIPMENT

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

DREW E. FLANAKIN NUMBER PE-2016017619 2022-08-19

DREW FLANAKIN - PROFESSIONAL ENGINEER
MO# PE-2016017619

Bernhard TME Engineering

622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
MO Certificate of Authority No. 2009021478

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CAD DWG FILE: E1905-01-2449-30049-E-104dwg
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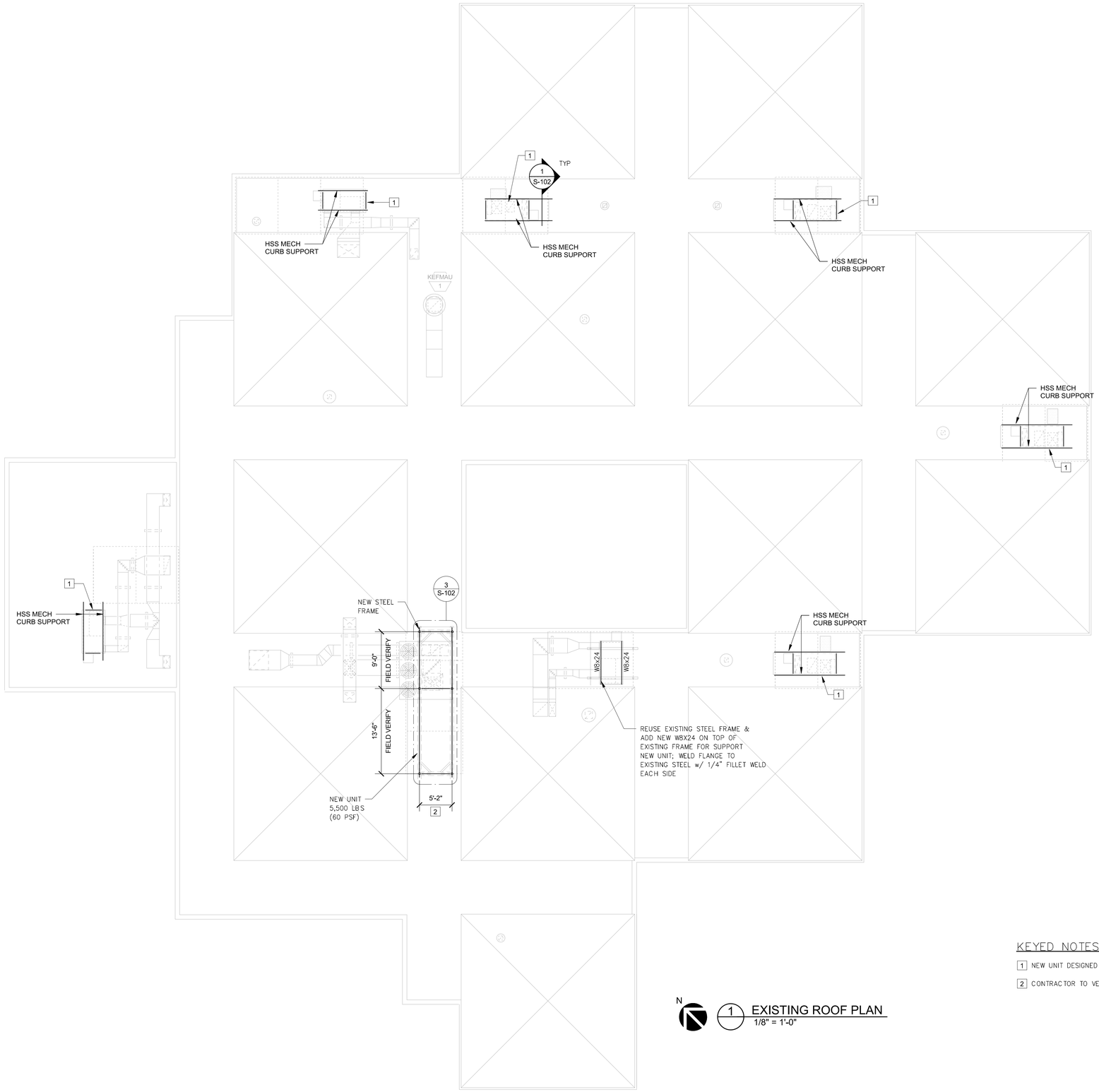
DESIGNED BY: DEF

SHEET TITLE:
ONE-LINE RISER DIAGRAM

SHEET NUMBER:
E-104

14 OF 16 SHEETS
08/19/2022



KEYED NOTES:

1 NEW UNIT DESIGNED FOR 1,400 LBS (80 PSF), U.N.O.

2 CONTRACTOR TO VERIFY DIMENSIONS WITH MECHANICAL SUPPLIER

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

STATE OF MISSOURI
KYLE
BRIDGES
NUMBER
2013033600
REGISTERED PROFESSIONAL ENGINEER
8/19/22

Bernhard TME Engineering

622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
MO Certificate of Authority No. 2009021478

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E1905-01-2449-
CAD DWG FILE: 30049-S-101.dwg
DRAWN BY: DKB
CHECKED BY: CAW
DESIGNED BY: DKB

SHEET TITLE:

STRUCTURAL ROOF PLAN

SHEET NUMBER:

S-101

15 OF 16 SHEETS
08/19/2022

TRUCTURAL DESIGN CRITERIA

R INTERNATIONAL BUILDING CODE (IBC 2012)

ROOF LOADS:
DEAD LOAD:
2X6 SOLID TIMBER DECKING: 2.5 PSF
MECH/ELEC: 4 PSF

LIVE LOAD:
ROOF: 20 PSF (UNREDUCIBLE)
UNIT: VARIES SEE PLAN

XISTING CONSTRUCTION

. BEFORE FABRICATION AND ERECTION OF ANY MATERIALS, FIELD VERIFY ALL EXISTING ELEVATIONS, DIMENSIONS, AND CONDITIONS AS SHOWN ON THE DRAWINGS AND REPORT ANY DISCREPANICIES TO THE ARCHITECT & ENGINEER OF RECORD AT ONCE.

ENERAL INFORMATION

. PERMANENT STABILITY OF THE BUILDING AND COMPONENTS IS NOT PROVIDED UNTIL THE ERECTION IS COMPLETED AS SHOWN ON THE CONTRACT DRAWINGS. PER SECT 7.10.3 OF AISC CODE OF STANDARD PRACTICE FOR BUILDINGS AND BRIDGES MARCH 18, 2005, "TEMPORARY SUPPORTS, SUCH AS TEMPORARY GUYS, BRACES, FALSEWORK, CRIBBING OR OTHER ELEMENTS REQUIRED FOR THE ERECTION OPERATION WILL BE DETERMINED, FURNISHED AND INSTALLED BY THE ERECTOR."

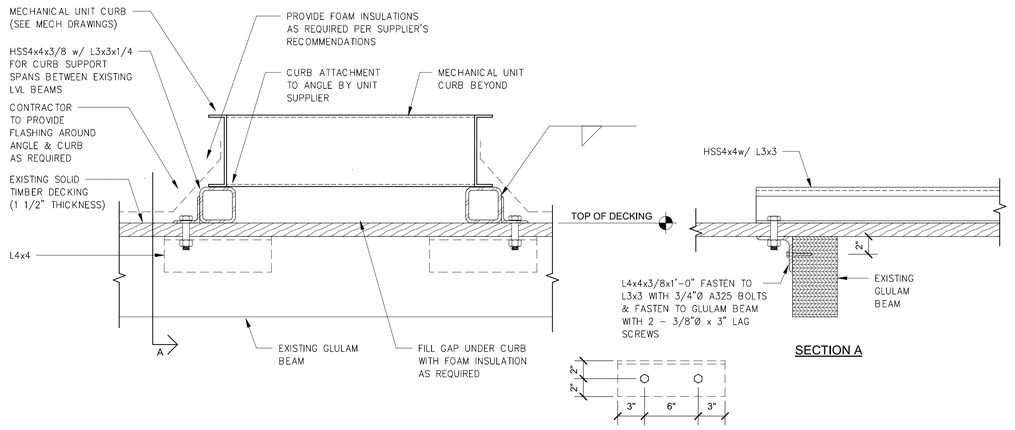
. THE CONTRACTOR SHALL INSURE THAT NO CONSTRUCTION LOAD EXCEEDS THE DESIGN LIVE LOADS INDICATED ON THE STRUCTURAL DRAWINGS AND THAT THESE LOADS ARE NOT PLACED ON THE STRUCTURAL MEMBERS PRIOR TO THE TIME THAT ALL FRAMING MEMBERS AND THEIR CONNECTIONS ARE IN PLACE.

. PRIOR TO FABRICATION AND/OR ERECTION OF ANY MATERIALS, THE CONTRACTOR SHALL FIELD VERIFY ALL PERTINENT EXISTING DIMENSIONS, ELEVATIONS, AND CONDITIONS AND SHALL REPORT ANY DISCREPANCIES TO THE STRUCTURAL ENGINEER OF RECORD OR THE ARCHITECT IMMEDIATELY UPON DISCOVERY.

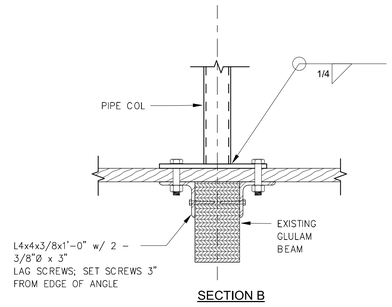
. REFERENCE TO STANDARD SPECIFICATIONS OF ANY TECHNICAL SOCIETY, ORGANIZATION OR ASSOCIATION OR TO CODES OF LOCAL OR STATE AUTHORITIES SHALL MEAN THE LATEST STANDARD, CODE,SPECIFICATION OR TENTATIVE SPECIFICATION ADOPTED AND PUBLISHED AT THE DATE OF TAKING BIDS UNLESS SPECIFICALLY STATED OTHERWISE.

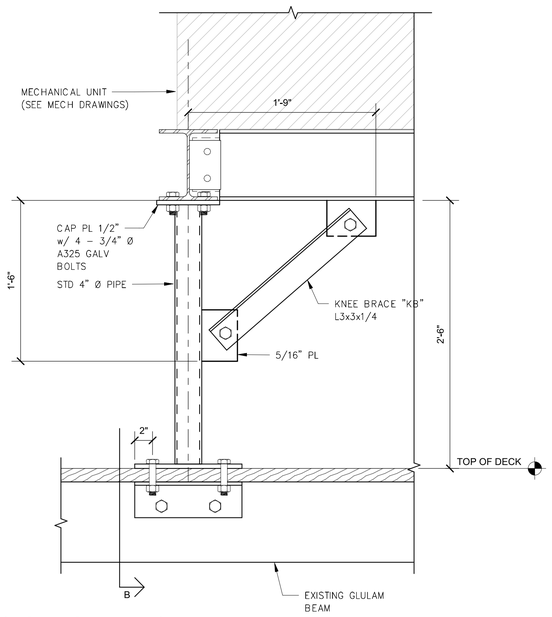
STEEL FRAMING NOTES

1. UNLESS SPECIFICALLY NOTED OTHERWISE, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH AISC SPECIFICATIONS, LATEST EDITION.
2. ALL STRUCTURAL STEEL HSS SQUARE/RECT SECTIONS SHALL BE ASTM A500, GRADE B (Fy=46 ksi). ALL STRUCTURAL STEEL WIDE FLANGE SHALL BE ASTM A992 GRADE 50. CHANNEL SHAPES AND ALL OTHER MISCELLANEOUS STEEL SHALL BE ASTM A36 OR A572. ALL STRUCTURAL STEEL HSS ROUND SHALL BE ASTM A500, GRADE B (Fy=42 ksi). ALL BASE PLATES SHALL BE ASTM A572-50.
3. ALL STRUCTURAL BOLTS CONNECTING STRUCTURAL STEEL SHALL BE ASTM A325 TYPE 1 WITH THREADS ALLOWED IN THE SHEAR PLANE, EXCEPT ANCHOR BOLTS SHALL BE ASTM F1554 GR55, MUST MEET S1 WELDABILITY REQUIREMENT OR GR36 AS NOTED.
4. WELD ELECTRODES SHALL BE E70XX.
5. DO NOT WELD BOTTOM FLANGE BRACES UNTIL ALL ROOF DEAD LOADS ARE IN PLACE.
6. AT HSS BEAM CONNECTION TO WIDE FLANGE OR HSS COLUMNS, WELD ALL AROUND WITH A COMBINATION OF 3/16" FILLET & FLARE BEVEL GROOVE WELDS (UNLESS NOTED OTHERWISE.)
7. UNLESS DETAILED OTHERWISE OR REACTIONS ARE INDICATED, BEAM CONNECTIONS SHALL BE SELECTED TO SUPPORT 70% THE TOTAL UNIFORM LOAD CAPICITY SHOWN IN THE "ALLOWABLE UNIFORM LOAD TABLES" IN PART 2 OF THE AISC STEEL CONSTRUCTION MANUAL, LATEST EDITION, FOR THE GIVEN BEAM SIZE, SPAN, AND STEEL SPECIFICATION OR FOR THE BEAM REACTION SHOWN ON THE DRAWINGS, WHICHEVER IS GREATER. THE MINIMUM BEAM CONNECTION SHALL NOT BE SMALLER THAN THOSE LISTED IN TABLES 10-1 & 10-2 OF THE AISC STEEL CONSTRUCTION MANUAL, LATEST EDITION FOR THE GIVEN BEAM DEPTH, BOLT DIAMETER, AND WELD SEPCIFICATION.
8. UNLESS OTHERWISE INDICATED, BEAM REACTIONS SHOWN ON THE PLANS ARE DESIGN SERVICE LEVEL (ASD) GRAVITY (DEAD LOAD PLUS LIVE LOAD) SHEAR LOADS. ANY AXIAL OR OTHER LOADS REQUIRED MUST BE CONSIDERED IN ADDITION TO THE VERTICAL REACTIONS SHOWN.
9. THE MINIMUM DESIGN LOAD FOR ANY CONNECTION SHALL BE SIX (6) KIPS (ASD) OR TEN (10) KIPS (LRFD) REGARDLESS OF THE BEAMS REACTION(S) SHOWN ON THE PLANS.
10. UNLESS DETAILED OTHERWISE, ALL SHOP CONNECTIONS SHALL BE WELDED. UNLESS DETAILED OTHERWISE, ALL FIELD CONNECTIONS SHALL BE MADE USING 3/4"Ø, AND 1"Ø WHERE INDICATED, ASTM A325-N (OR ASTM F1852) HIGH STRENGTH BOLTS ("N" INDICATES BEARING TYPE WITH THREADS INCLUDED IN SHEAR PLANE). WASHERS SHALL BE INSTALLED UNDER NUTS WHEN REQUIRED BY THE SPECIFICATIONS OF STRUCTURAL JOINTS.
11. WHERE FIELD AND SHOP WELDS ARE INDICATED ON THE DRAWINGS, THEY SHALL BE THE SIZE AND TYPE NOTED. ALL WELDING OF STRUCTURAL STEEL SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF AWS D1.1 CORRESPONDING TO THE AISC SPECIFICATION USED AND ALL WELDS INCLUDING FIELD WELDS SHALL BE MADE BY CERTIFIED WELDERS USING E70XX ELECTRODES.
12. HIGH STRENGTH BOLTS (3/4"Ø, AND 1"Ø, ASTM A325-N (OR ASTM F1852) SHALL BE TIGHTENED TO PROVIDE, WHEN ALL BOLTS IN THE JOINT ARE TIGHT, A MINIMUM BOLT TENSION OF 28(k)FOR 3/4"Ø BOLTS & 51(k) FOR 1"Ø BOLTS. ONE OF THE FOLLOW METHODS SHALL BE USED:
    A. POWER WRENCHES ADJUSTED TO STALL OR CUT-OUT AT THE CORRECT TENSION.
    B. MANUAL TORQUE WRENCHES WITH TORQUE INDICATION SET TO GIVE THE CORRECT TENSION.
    C. MANUAL WRENCHES USING THE "TURN-OF-NUT" METHOD OF ASSURING THE CORRECT BOLT TENSION.
    D. DIRECT-TENSION INDICATORS
    UNLESS SPECIFICALLY NOTED OTHERWISE, ALL HIGH-STRENGTH BOLTS (A325, F1852, AND A490) AND TWIST OFF BOLTS SHALL BE PRE-TENSIONED TO MEET SLIP-CRITICAL REQUIREMENTS EVEN IF THE JOINT IS DESIGNED AS A "SNUG-TIGHT" BEARING CONNECTION. ALL JOINTS SHALL BE DESIGNED TO BE BEARING TYPE CONNECTIONS UNLESS NOTED OTHERWISE.
13. ALL STEEL MEMBERS EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALV. (INCLUDING MASONRY SUPPORT LINTELS). GALVANIZED OR PAINTED WITH TNEMEC EPOXY SYSTEM OR SIMILAR SYSTEM MEETING THE REQUIREMENTS FOR PAINTING STRUCTURAL STEEL IN THE PROJECT SPECIFICATIONS. ALL OTHER STEEL MEMBERS SHALL BE FURNISHED WITH A SHOP COAT OF TNEMEC RED OR GRAY OXIDE PRIMER OR SIMILAR SYSTEM MEETING THE REQUIREMENTS FOR PAINTING STRUCTURAL STEEL IN THE PROJECT SPECIFICATIONS. ALL PRIMERS SHALL BE COMPATIBLE WITH TOP COATINGS SPECIFIED.
14. BEARING ENDS OF ALL COLUMNS SHALL BE SQUARE CUT.
15. FIELD CUTTING, DRILLING, OR OTHER MODIFICATION OF STRUCTURAL STEEL COMPONENTS IS NOT PERMITTED WITHOUT WRITTEN APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD. WHERE BEAM PENETRATIONS CANNOT BE AVOIDED OR WHERE CUTTING IS REQUIRED, THE CONTRACTOR SHALL SUBMIT, TO THE STRUCTURAL ENGINEER OF RECORD, ALL PERTINENT INFORMATION INCLUDING PENETRATION SHAPE, SIZE, LOCATION, AND METHOD OF CUTTING THE OPENINGS.
16. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCLUDING THE COSTS FOR ALL MISCELLANEOUS STEEL IN THEIR BID REGARDLESS OF WHETHER OR NOT THOSE ITEMS ARE INDICATED ON THE STRUCTURAL DRAWINGS. THESE COSTS SHALL INCLUDE, BUT ARE NOT LIMITED TO, MISCELLANEOUS STEEL ITEMS SHOWN ON ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS.
17. SUBMIT STEEL SHOP DRAWINGS FOR APPROVAL.

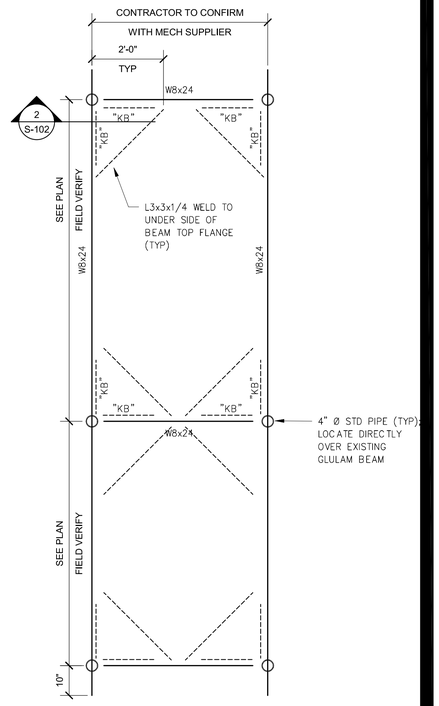


1 ROOF CURB SUPPORT DETAIL
1 1/2" = 1'-0"





2 UNIT SUPPORT DETAIL
1 1/2" = 1'-0"



3 STEEL FRAME SUPPORT PLAN
1/2" = 1'-0"

STATE OF MISSOURI
MICHAEL L. PARSON, GOVERNOR

STATE OF MISSOURI KYLE BRIDGES NUMBER PE-2013033600 REGISTERED PROFESSIONAL ENGINEER 8/19/22

Bernhard TME Engineering

622 Emerson Road, Suite 250
St. Louis, MO 63141 • 314-727-8760
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STRUCTURAL NOTES & DETAILS

SHEET NUMBER:

S-102

16 OF 16 SHEETS
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