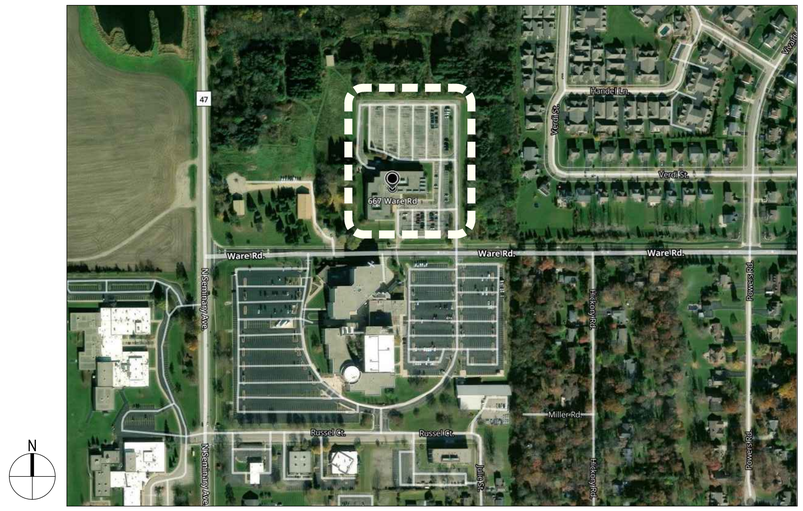
ROOFTOP REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 WARE ROAD
WOODSTOCK, ILLINOIS 60098

PROJECT LOCATION



GENERAL PROJECT NOTES

1. OWNER HAS SPECIFIC REQUIREMENTS REGARDING SITE ACCESS INCLUDING EMPLOYEE BACKGROUND CHECKS. PLEASE REFER TO FRONT END DOCUMENTS FOR ADDITIONAL INFORMATION.
2. NEW 60-TON ROOFTOP UNITS RTU-1 AND RTU-2 WITH ADAPTOR CURBS HAVE BEEN PRE-PURCHASED BY THE OWNER TO FACILITATE DELIVERY TIME AND CONSTRUCTION SCHEDULE. PRE-PURCHASED EQUIPMENT WILL BE ASSIGNED TO THE SUCCESSFUL CONTRACTOR SO THAT ONCE SELECTED, THAT CONTRACTOR BECOMES (1) RESPONSIBLE FOR COORDINATION OF THE INSTALLATION AND (2) THE SINGLE CONSTRUCTION AND WARRANTY PERIOD CONTACT FOR THE PROJECT THEREAFTER. REFER TO PROJECT MANUAL FOR EQUIPMENT DATA, COPIES OF EQUIPMENT SHOP DRAWINGS AND ADDITIONAL INFORMATION. THE ROOFTOP UNITS ESTIMATED SHIP DATE IS MARCH 21, 2025. COORDINATE WITH THERMOSYSTEMS (DAIKIN REPRESENTATIVE) GAYLE SMITH OFFICE: (630) 693-0930 CELL: (636) 253-1300.
3. RIGGING OF THE ROOFTOP UNITS WILL NEED TO TAKE PLACE WHEN THE ADMINISTRATION BUILDING IS UNOCCUPIED, PREFERABLY ON A SATURDAY. STAGING AREA WILL NEED TO BE COORDINATED AND PRE-APPROVED BY OWNER. PLEASE REFER TO FRONT END DOCUMENTS FOR ADDITIONAL INFORMATION.
4. WORK HOURS SHALL BE 6:30 AM - 4:30 PM.
5. THERE WILL BE LIMITED STORAGE AVAILABLE ON SITE IN LOADING DOCK AREA AND IT MUST BE PRE-APPROVED WITH OWNER PRIOR TO USE. CONFIRM AREAS WITH OWNER.
6. OUTDOOR NOISE RELATED CONSTRUCTION SUCH AS HAMMERING, GRINDING, ETC. WILL NEED TO BE COORDINATED WITH OWNER. PLEASE REFER TO FRONT END DOCUMENTS FOR ADDITIONAL INFORMATION.
7. THE MECHANICAL CONTRACTOR SHALL BE THE PRIME CONTRACTOR FOR THE PROJECT. THE MECHANICAL CONTRACTOR SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE WORK OF SUB-CONTRACTORS AND THE COORDINATION AND ADMINISTRATION OF THAT WORK IN THE BID SUBMITTED.
8. TEMPERATURE CONTROLS WORK SHALL BE A SUB-CONTRACT TO THE PRIME CONTRACTOR. ALPHA CONTROLS AND SERVICES SHALL BE THE TEMPERATURE CONTROLS CONTRACTOR. CONTACT PHIL VOIGT AT 815-520-4424.
9. CONTRACTOR SHALL PROVIDE ALL TAPS FOR CONTROLS, ETC. THE PRIME CONTRACTOR SHALL COORDINATE WITH CONTROLS FOR ALL TAPS REQUIRED.
10. RELOCATE ANY DUCT, SPRINKLER, FIRE ALARM DEVICE, LIGHT, CONDUIT, PIPE, SWITCH, VENT, WIRE, ETC. REQUIRED FOR DEMOLITION OR INSTALLATION OF NEW WORK.
11. PROVIDE TESTING, ADJUSTING AND BALANCING OF AIR FLOWS AS SPECIFIED.
12. PROVIDE EQUIPMENT AND SYSTEM STARTUP AND TESTING. EACH VENDOR FOR THE ROOFTOP UNITS, CURBS AND CONTROLS SHALL VISIT THE SITE AND PROVIDE DOCUMENTATION REPORT PER FRONT END DOCUMENTS.
13. PROVIDE WARRANTY, O&M MANUALS, RECORD AS-BUILT DRAWINGS AND ALL OTHER SPECIFIED CLOSEOUT DOCUMENTATION PER FRONT END DOCUMENTS.
14. REMOVE EVERYTHING FROM THE JOB SITE MADE OBSOLETE OR NOT NEEDED BY THIS WORK.
15. PROTECT EXISTING MEMBRANE ROOF FROM DAMAGE THROUGHOUT DEMOLITION AND CONSTRUCTION.

GENERAL DESCRIPTION OF SCOPE OF WORK

1. THE DRAWINGS AND SPECIFICATIONS ARE THE CONTRACT DOCUMENTS AND INCLUDE THE COMPLETE SCOPE OF WORK TO BE PROVIDED. THE FOLLOWING IS A GENERAL DESCRIPTION OF THE SCOPE AND DOES NOT INCLUDE ALL SCOPE ITEMS.
2. ACCEPT ASSIGNMENT OF AND INSTALL PRE-PURCHASED ROOFTOP UNITS AND ADAPTOR ROOF CURBS. PROVIDE MANUFACTURER SUPERVISED INSTALLATION OF ROOFTOP UNIT INCLUDING STARTUP AND STARTUP REPORTS.
4. VERIFY EXISTING ROOFTOP UNIT ROOF CURB DIMENSIONS FOR PRE-PURCHASED ADAPTOR CURB FOR FABRICATION. COORDINATE CURB DELIVERY WITH PRE-PURCHASED ROOFTOP UNITS.
5. DEMOLISH MECHANICAL AND ELECTRICAL AS NOTED. DISPOSE OF REFRIGERANT IN ACCORDANCE WITH AUTHORITY HAVING JURISDICTION. DEMOLISH ROOFTOP UNIT, GAS PIPING, ELECTRICAL, CONTROLS, AND ALL ITEMS MADE OBSOLETE BY THIS WORK. DEMOLISHED EQUIPMENT AND MATERIALS SHALL BE REMOVED FROM THE PROJECT SITE.
6. RIG NEW EQUIPMENT ONTO ROOF. CRANE LIFT ROOFTOP UNITS AND ADAPTOR CURBS.
7. PROVIDE NEW SUPPLY AND RETURN DUCTWORK TRANSITIONS FROM EXISTING ROOFTOP UNIT CONNECTIONS TO NEW ROOFTOP UNIT CONNECTIONS.
8. PROVIDE INSULATION FOR SUPPLY DUCTWORK. INSULATE ALL COLD SURFACES THAT MAY CONDENSE.
9. PROVIDE POWER WIRING FOR THE ROOFTOP UNITS, CONTROLS, GAS PIPING AND PRESSURE REGULATING VALVES, CONDENSATE PIPING ETC.
10. PROVIDE CONTROLS INTEGRATION FOR ROOFTOP UNITS. CONTROLS SHALL BE BY ALPHA CONTROLS. DEMOLISH ALL ITEMS MADE OBSOLETE BY THIS WORK. PROVIDE SENSORS AND DEVICES INTERFACED WITH THE EXISTING SYSTEM AND COLOR GRAPHICS. ALL WIRING SHALL BE IN CONDUIT.
11. PROVIDE NEW RETURN GRILLS AND NEW TRANSFER DUCTWORK LOCATED ON SECOND FLOOR AREA SERVED BY RTU-2.
12. CLEAN THE WORK SITE EACH EVENING.
13. PROTECT EXISTING MEMBRANE ROOF FROM DAMAGE THROUGHOUT DEMOLITION AND CONSTRUCTION. ALL ROOF WORK SHALL BE PERFORMED BY OWNER'S ROOFING CONTRACTOR, E. ARIEL ROOFING. CONTACT STEPHANIE REDISI AT 708-466-4486 OR STEPHANIEREDISI@GMAIL.COM
14. PROVIDE TESTING, ADJUSTING AND BALANCING OF ROOFTOP UNITS AND TESTING/STARTUP OF ALL NEW SYSTEMS AND EQUIPMENT INCLUDING THE ROOFTOP UNITS, CONTROLS.
15. PROVIDE CLOSEOUT DOCUMENTATION INCLUDING TRAINING, EQUIPMENT STARTUP REPORTS, TEST AND BALANCE REPORTS, WARRANTIES, ETC.

DRAWING INDEX

PROJECT CODES

WOODSTOCK ADOPTED BUILDING CODES:

2021 INTERNATIONAL BUILDING CODE (WITH AMENDMENTS)
2021 INTERNATIONAL PROPERTY MAINTENANCE CODE
2021 INTERNATIONAL EXISTING BUILDING CODE
2021 NFPA 101 LIFE SAFETY CODE
2021 INTERNATIONAL MECHANICAL CODE (WITH AMENDMENTS)
2021 INTERNATIONAL FUEL GAS CODE
2020 NATIONAL ELECTRIC CODE (WITH AMENDMENTS)
2021 INTERNATIONAL ENERGY CONSERVATION CODE
2021 INTERNATIONAL FIRE CODE (WITH AMENDMENTS)
2014 ILLINOIS PLUMBING CODE (CURRENT)

SEALS

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847 328.3555 grummanbutkus.com
Illinois Registration # 184-006768

CONSULTANTS

SEAL

COVER SHEET

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR BID/PERMIT	11.01.2024

KEYPLAN

SCALE 0 1 2

DRAWN	CHECKED	APPROVED
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PROJECT NO. P23-0998-01

CS

GENERAL

DESIGNATION	DESCRIPTION
1	DETAIL OR ENLARGED PLAN (SAME DRAWING)
1 / M2.6	DETAIL OR ENLARGED PLAN (DIFFERENT DRAWING)
A	SECTION OR ELEVATION (SAME DRAWING)
A / M3.4	SECTION OR ELEVATION (DIFFERENT DRAWING)
	(HEAVY LINES) - NEW PIPING/DUCTWORK/EQUIPMENT
	(THIN LINES) - EXISTING PIPING/DUCTWORK/ EQUIPMENT TO REMAIN
	(HEAVY DASHED LINES) - EXISTING PIPING/DUCTWORK/ EQUIPMENT TO BE DEMOLISHED
	POINT OF CONNECTION BETWEEN NEW/DEMO WORK AND EXISTING
	MATCH LINE

RISER TAGS

DESIGNATION	DESCRIPTION
DESCRIPTION / CHW / 1 / RISER NUMBER	
CD	CONDENSATE DRAIN
CHW	CHILLED WATER
CR	CONDENSATE (STEAM)
CW	CONDENSER WATER
FO	FUEL OIL
GLY	GLYCOL
HW	HOT WATER
MGV	MEDICAL GAS/VACUUM
PCHW	PRIMARY CHILLED WATER
R	REFRIGERANT
SCHW	SECONDARY CHILLED WATER
STM	STEAM

DUCTWORK SYMBOLS

DESIGNATION	DESCRIPTION
AD 10x10	ACCESS DOOR OR PANEL, VERTICAL OR HORIZONTAL
	ACOUSTICAL LINING; DIMENSIONS SHOWN ARE CLEAR AIR PATH
D	DUCT OFFSET (DOWN) IN DIRECTION OF FLOW
R	DUCT OFFSET (UP) IN DIRECTION OF FLOW
	RECTANGULAR SUPPLY DUCT ELBOW TURNED DOWN
	RECTANGULAR SUPPLY DUCT ELBOW TURNED UP
	RECTANGULAR EXHAUST/RETURN DUCT ELBOW TURNED DOWN
	RECTANGULAR EXHAUST/RETURN DUCT ELBOW TURNED UP
	ROUND DUCT ELBOW TURNED DOWN
	ROUND DUCT ELBOW TURNED UP
	DIRECTION OF FLOW
20x12	DUCT AIR PATH SIZE, FIRST FIGURE IS SIDE SHOWN
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT
36x12	DUCT SECTION, POSITIVE PRESSURE, FIRST FIGURE IS TOP
36x12	DUCT SECTION, NEGATIVE PRESSURE, FIRST FIGURE IS TOP
20x10 / 15x8	TRANSITION WITH DUCT SIZE
	RECTANGULAR ELBOWS WITH TURNING VANES
	RECTANGULAR ELBOWS WITHOUT TURNING VANES
	DUCT PENETRATION THROUGH BEAM
	CAPPED DUCT - RECTANGULAR OR ROUND
	MOTOR OPERATED DAMPER
	CEILING-MOUNTED SUPPLY AIR TERMINAL DEVICE (4-WAY THROW)
	CEILING-MOUNTED SUPPLY AIR TERMINAL DEVICE (3-WAY THROW; SHADED AREA INDICATES BLANKED OFF SIDE)
	CEILING-MOUNTED SUPPLY AIR TERMINAL DEVICE (2-WAY THROW, SHADED AREAS INDICATE BLANKED OFF SIDES)
	CEILING-MOUNTED EXHAUST/RETURN AIR TERMINAL DEVICE
	WALL OR DUCT MOUNTED EXHAUST/RETURN AIR TERMINAL DEVICE
	WALL OR DUCT MOUNTED SUPPLY AIR TERMINAL DEVICE
30x12	TRANSFER AIR DOOR GRILLE
1/2 / 100 CFM / 30x12	UNDERCUT DOOR
	WALL MOUNTED TRANSFER AIR ASSEMBLY INCLUDING SHEETMETAL SLEEVE AND TWO (2) REGISTERS
	LINEAR SUPPLY AIR DIFFUSER
	LINEAR RETURN AIR DIFFUSER
	CENTRIFUGAL FAN
	PROPELLER FAN
	AXIAL FAN
VD	VOLUME DAMPER
SD	SMOKE DAMPER
FD	FIRE DAMPER
CSFD	COMBINATION SMOKE/FIRE DAMPER
H	HUMIDIFIER

EQUIPMENT TAGS

DESIGNATION	DESCRIPTION (B / 1 = DESIGNATION / NUMBER)
AB	AIR BLENDER
AC	AIR COMPRESSOR
ACC	AIR-COOLED CONDENSER
ACCU	AIR-COOLED CONDENSING UNIT
ACU	AIR CONDITIONING UNIT (AIR-COOLED OR WATER-COOLED)
AHU	AIR HANDLING UNIT
AP	MEDICAL GAS/VACUUM AREA ALARM PANEL
B	BOILER
BB	BASEBOARD RADIATION (STEAM, HOT WATER OR ELECTRIC)
CC	CHILLED WATER COOLING COIL
CCHR	CLOSED CIRCUIT HEAT REJECTOR
CH	CHILLER
CT	COOLING TOWER
CV	CONTROL VALVE
DX	DIRECT EXPANSION COOLING COIL
E	EXHAUST FAN
EC	EVAPORATIVE CONDENSER
E/R	EXHAUST/RETURN FAN
FCU	FAN COIL UNIT
FIL	FILTER
HC	HEATING COIL
HP	HEAT PUMP (AIR-SOURCED OR WATER-SOURCED)
HUM	HUMIDIFIER
HX	HEAT EXCHANGER
IO	MEDICAL GAS/VACUUM INLET/OUTLET
IU	INDUCTION UNIT
KE	KITCHEN EXHAUST FAN
MU	GAS-FIRED MAKEUP AIR UNIT
P	PUMP
PH	INTAKE & EXHAUST PENTHOUSE
PRV	PRESSURE REDUCING VALVE
RCP	RADIANT CEILING HEATING/COOLING PANEL
RTU	PACKAGED ROOFTOP UNIT
S	SUPPLY FAN
SA	SOUND ATTENUATOR
SC	SHELL AND TUBE STEAM CONVERTOR
T	TANK
TD	TERMINAL DEVICE
TE	TOILET EXHAUST FAN
TU	TERMINAL UNIT
UH	UNIT HEATER
VFD	UNIT HEATER
VP	VACUUM PUMP
ZVB	MEDICAL GAS/VACUUM ZONE VALVE BOX

PIPING LEGEND

DESIGNATION	DESCRIPTION
BBD	BOILER BLOW DOWN
BF	BOILER FEED
CO_2	CARBON DIOXIDE
CF	CHEMICAL FEED
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
MS-A	MEDICAL-SURGICAL AIR
MS-VAC	MEDICAL-SURGICAL VACUUM
CA	COMPRESSED AIR
CD	CONDENSATE DRAIN ABOVE FLOOR OR GRADE (GRAVITY)
CD	CONDENSATE DRAIN BELOW FLOOR OR DRAIN (GRAVITY)
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DIR	DEIONIZED WATER RETURN
DIS	DEIONIZED WATER SUPPLY
DWR	DISTILLED WATER SUPPLY
DWS	DISTILLED WATER RETURN
DCW	DOMESTIC COLD WATER
D	DRAIN
FOF	FUEL OIL FILL
FOG	FUEL OIL GAUGE
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
GR	GLYCOL RETURN
GS	GLYCOL SUPPLY
HPC	HIGH PRESSURE CONDENSATE
HPS	HIGH PRESSURE STEAM
HTWR	HIGH TEMPERATURE HOT WATER RETURN
HTWS	HIGH TEMPERATURE HOT WATER SUPPLY
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LPS(C)	LOW PRESSURE CLEAN HUMIDIFICATION STEAM
HHWR	LOW TEMPERATURE HEATING HOT WATER RETURN
HHWS	LOW TEMPERATURE HEATING HOT WATER SUPPLY
MU	MAKE-UP WATER
MPR	MEDIUM PRESSURE CONDENSATE
MPS	MEDIUM PRESSURE STEAM
G	NATURAL GAS
N_2	NITROGEN
N_2O	NITROUS OXIDE
O_2	OXYGEN
PCHWR	PRIMARY CHILLED WATER RETURN
PCHWS	PRIMARY CHILLED WATER SUPPLY
PC	PUMPED CONDENSATE
RG	REFRIGERANT HOT GAS
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
RV	REFRIGERANT VENT
ROR	REVERSE OSMOSIS RETURN
RO	REVERSE OSMOSIS SUPPLY
SCHWR	SECONDARY CHILLED WATER RETURN
SCHWS	SECONDARY CHILLED WATER SUPPLY
V	VENT TO ATMOSPHERE
WAGD	WASTE ANESTHESIA GAS DISPOSAL

PIPEWORK FITTINGS

NOTE:
ALL FITTINGS SHOWN BELOW ARE FOR USE IN SCREWED PIPING SYSTEMS UNLESS NOTED OTHERWISE. REFER TO SPECIFICATION FOR SPECIFIC PIPING SYSTEM REQUIREMENTS (SCREWED VS. FLANGED VS. WELDED VS. SOLDERED).

DESIGNATION	DESCRIPTION
	CAP
	CONNECTION, BOTTOM
	CONNECTION, TOP
	ELBOW, 90°
	ELBOW TURNED UP
	ELBOW TURNED DOWN
4 / 2	ELBOW, REDUCING (SHOW SIZES)
LR	ELBOW, LONG RADIUS
	ELBOW, SIDE OUTLET, OUTLET UP
	ELBOW, SIDE OUTLET, OUTLET DOWN
	LATERAL BRANCH
	REDUCER, CONCENTRIC
	INCREASER, CONCENTRIC
	REDUCER, ECCENTRIC STRAIGHT INVERT
	REDUCER, ECCENTRIC STRAIGHT CROWN
	TEE
	TEE, OUTLET UP
	TEE, OUTLET DOWN
6 / 4 / 2	TEE, REDUCING (SHOW SIZES)
	TEE, SIDE OUTLET, OUTLET UP
	TEE, SIDE OUTLET, OUTLET DOWN
	UNION, SCREWED
R	PITCH OF PIPE - RISE (R), DROP (D)

ABBREVIATIONS

DESIGNATION	DESCRIPTION
ABV	ABOVE
ACT	ACOUSTIC CEILING TILE
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
BAS	BUILDING AUTOMATION SYSTEM
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
CONC	CONCRETE
CFSD	COMBINATION FIRE/SMOKE DAMPER
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DIA	DIAMETER
DWG	DRAWING
EL	ELEVATION
ELEC	ELECTRICAL
EQ	EQUIPMENT
EXH	EXHAUST
F OR °F	FAHRENHEIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FPM	FEET PER MINUTE
FT	FEET OR FOOT
GA	GAUGE
GAL	GALLONS
GPM	GALLONS PER MINUTE
GWB	GYPSUM WALL BOARD
HP	HORSEPOWER
HTG	HEATING
HVAC	HEATING VENTILATING AND AIR CONDITIONING
ID	INSIDE DIAMETER
KW	KILOWATT
LCP	LOCAL CONTROL PANEL
LRA	LOCK ROTOR AMPS
MAT	MIXED AIR TEMPERATURE
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MHP	MOTOR HORSEPOWER
MIN	MINIMUM
MOD	MOTOR OPERATED DAMPER
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OA	OUTDOOR AIR
OD	OUTSIDE DIAMETER
PSI(G)	POUNDS PER SQUARE INCH (GAUGE)
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
SD	SMOKE DAMPER
SQ	SQUARE
TP	TOTAL PRESSURE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
WB	WET BULB
W/	WITH
W/O	WITHOUT
WG	WATER GAUGE

PIPEWORK SYMBOLS

DESIGNATION	DESCRIPTION
	PUMP
	GATE VALVE
	GLOBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	THREE WAY VALVE
	ANGLE GATE VALVE
	ANGLE GLOBE VALVE
	PLUG VALVE (GAS SERVICE)
	AUTOMATIC FLOW CONTROL VALVE
	MODULATING 2-WAY CONTROL VALVE
	MODULATING 3-WAY CONTROL VALVE
M	2-WAY CONTROL VALVE (ELECTRIC OR ELECTRONIC ACTUATION)
M	3-WAY CONTROL VALVE (ELECTRIC OR ELECTRONIC ACTUATION)
S	SOLENOID VALVE (ELECTRIC OR ELECTRONIC ACTUATION)
M	2-WAY CONTROL VALVE (PNEUMATIC ACTUATION)
M	3-WAY CONTROL VALVE (PNEUMATIC ACTUATION)
	PRESSURE REDUCING VALVE
	PRESSURE RELIEF OR SAFETY VALVE
	SWING GATE CHECK VALVE
	SPRING CHECK VALVE
	STEAM TRAP (SEE SPECIFICATIONS FOR TYPE)
	HOSE END DRAIN VALVE
	Y-TYPE STRAINER (WITH BLOWOFF VALVE)
	ELECTRIC HEAT TRACE
	FLEXIBLE CONNECTOR
HE	DRAIN WITH BALL VALVE, HOSE END CONNECTION
AV	AIR VENT (AUTOMATIC)
MV	AIR VENT (MANUAL)
	FLOW METER, ORIFICE
	MANUAL BALANCING VALVE WITH BALL SHUT OFF VALVE
	MANUAL BALANCING VALVE WITH BUTTERFLY SHUT OFF VALVE
	THERMOMETER
	HYDRONIC PRESSURE GAUGE & NEEDLE VALVE
	STEAM PRESSURE GAUGE & NEEDLE VALVE
PT	UNIVERSAL PORT FOR PRESSURE GAUGE OR THERMOMETER WELL

MECHANICAL DRAWING LIST

SHEET NO.	DRAWING TITLE	SCALE
M000	MECHANICAL SYMBOLS AND ABBREVIATIONS	NOT TO SCALE
M001	MECHANICAL SCHEDULES (PRE-PURCHASED EQUIPMENT)	NOT TO SCALE
MD103	MECHANICAL ROOF PLAN - DEMOLITION	1/8" = 1'-0"
M101	FIRST FLOOR MECHANICAL VENTILATION PLANS - NEW WORK	1/4" = 1'-0"
M102	SECOND FLOOR MECHANICAL VENTILATION PLAN - NEW WORK	1/4" = 1'-0"
M103	MECHANICAL ROOF PLAN - NEW WORK	1/8" = 1'-0"
M300	MECHANICAL DETAILS	NOT TO SCALE
M500	TEMPERATURE CONTROLS	NOT TO SCALE

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CONSULTANTS

SEAL

MECHANICAL SYMBOLS AND ABBREVIATIONS

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR BID/PERMIT	11.01.2024

KEYPLAN

SCALE: NO SCALE

DRAWN	CHECKED	APPROVED
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PROJECT NO. P23-0998-01

M000

PRE-PURCHASED AIR HANDLING UNITS, SELF-CONTAINED WITH GAS HEAT (1 OF 2)

TAG	SERVICE	LOCATION	MINIMUM OUTSIDE AIR (CFM)	SUPPLY FAN								FILTER					COOLING COIL									COMPRESSOR DATA			
				AIRFLOW (CFM)	TOTAL STATIC PRESSURE (IN WG)	EXTERNAL STATIC PRESSURE (IN WG)	WHEEL DIA (IN)	ABSORBED POWER (BHP)	MOTOR DATA				TYPE	MINIMUM EFFICIENCY REPORTING VALUE	MAXIMUM FACE VELOCITY (FPM)	MINIMUM FACE AREA (SQ IN)	FILTER DEPTH (IN)	MAXIMUM FACE VELOCITY (FPM)	REFRIGERANT TYPE / CHARGE CIRC 1 - CIRC 2 (LB)	SENSIBLE COOLING CAPACITY (MBH)	TOTAL COOLING CAPACITY (MBH)	ENTERING AIR		LEAVING AIR		MAXIMUM AIR PRESSURE DROP (IN WG)	NUMBER OF COMPRESSORS	FULL LOAD CAPACITY (AMPS)	LOCKED ROTOR CAPACITY (AMPS)	OUTPUT (KW)
									RATED POWER (HP)	SPEED (RPM)	V/Ø/Hz	CONNECTED TO VFD? (YES OR NO)										DRY BULB (°F)	WET BULB (°F)	DRY BULB (°F)	WET BULB (°F)					
RTU-1	ADMINISTRATION BUILDING	ADMINISTRATOIN BUILDING ROOF	7,200	24,000	4.54	1.50	17.7	29.14	(6) 5.8	3600	480/3/60	YES	PANEL	MERV 11	470	51.1	2"	492.8	R-32 / 87.65 - 82.95	607.3	770.5	80	67	56.9	56.8	1.09	4	84.7	---	45.1
RTU-2	ADMINISTRATION BUILDING	ADMINISTRATOIN BUILDING ROOF	7,200	24,000	4.54	1.50	17.7	29.14	(6) 5.8	3600	480/3/60	YES	PANEL	MERV 11	470	51.1	2"	492.8	R-32 / 87.65 - 82.95	607.3	770.5	80	67	56.9	56.8	1.09	4	84.7	---	45.1

NOTES:

PRE-PURCHASED AIR HANDLING UNITS, SELF-CONTAINED WITH GAS HEAT (2 OF 2)

TAG	CONTINUED FROM ABOVE	CONDENSER DATA			EXHAUST FAN									GAS HEAT					OVERALL UNIT ELECTRTICAL DATA			OPERATING WEIGHT (LBS)	OVERALL DIMENSIONS W x H x L (IN x IN x IN)	MANUFACTURER	MODEL NUMBER	REMARKS
		AMBIENT AIR TEMP (°F)	NUMBER OF FANS	RATED POWER (HP)	AIRFLOW (CFM)	FAN SPEED (RPM)	EXTERNAL STATIC PRESSURE (IN WG)	WHEEL DIA (IN)	ABSORBED POWER (BHP)	MOTOR DATA				OUTPUT CAPACITY (MBH)	GAS INPUT (MBH)	ENTERING AIR TEMP (°F)	LEAVING AIR TEMP (°F)	MINIMUM REQUIRED GAS PRESSURE (IN WG)	MINIMUM CIRCUIT CAPACITY (AMPS)	MAXIMUM OVERCURRENT PROTECTION	V/Ø/Hz					
										RATED POWER (HP)	SPEED (RPM)	V/Ø/Hz	CONNECTED TO VFD? (YES OR NO)													
RTU-1		25 - 95	6	---	24,000	1534	0.75	24.5	9.41	15	1750	460/3/60	YES	1,125	931	46	82	7	180.2	200	460/3/60	13212	96.5 x 102 x 369	DAIKIN	DPSA606	OWNER PRE-PURCHASED CONTRACTOR TO ACCEPT ASSIGNMENT. PRE-PURCHSE CONTAINS 2 SETS MERV 8 AND MERV 11 FILTERS.
RTU-2		25 - 95	6	---	24,000	1534	0.75	24.5	9.41	15	1750	460/3/60	YES	1,125	931	46	82	7	180.2	200	460/3/60	13212	96.5 x 102 x 369	DAIKIN	DPSA606	OWNER PRE-PURCHASED CONTRACTOR TO ACCEPT ASSIGNMENT. PRE-PURCHSE CONTAINS 2 SETS MERV 8 AND MERV 11 FILTERS.

NOTES:

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CONSULTANTS

SEAL

MECHANICAL SCHEDULES (PRE-PURCHASED EQUIPMENT)

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR BID/PERMIT	11.01.2024

KEYPLAN

SCALE: NO SCALE

DRAWN:	CHECKED	APPROVED
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PROJECT NO.: P23-0998-01

M001

GENERAL NOTES

A. ALL WORK SHALL BE IN ACCORDANCE WITH 2021 INTERNATIONAL CODES, 2020 NATIONAL ELECTRICAL CODE, ILLINOIS PLUMBING CODE AND LOCAL ZONING CODES. WHERE THE CONSTRUCTION DOCUMENTS INDICATE MORE RESTRICTIVE REQUIREMENTS THE CONSTRUCTION DOCUMENTS SHALL GOVERN.

B. PERFORM DEMOLITION AS INDICATED ON DRAWINGS. DEMOLITION WORK IS SELECTIVE AND PHASED AS NEEDED TO ACCOMMODATE INSTALLATION SEQUENCE.

C. SCHEDULE ALL SHUTDOWNS IN ADVANCE WITH OWNER. PROVIDE MINIMUM 72 HOURS ADVANCE NOTICE FOR ALL SHUTDOWNS.

D. PROVIDE NEW HVAC EQUIPMENT AS SCHEDULED AND INDICATED ON DRAWINGS.

E. PROVIDE NEW ROOF CURBS/ADAPTOR CURBS AND ROOF SUPPORT RAILS FOR ROOF MOUNTED EQUIPMENT. PATCH ROOFING TO MATCH EXISTING USING OWNER'S PREFERRED ROOFING CONTRACTOR.

F. PROVIDE FIRE DAMPERS AND/OR FIRE SAFING AT ALL PENETRATIONS THROUGH FIRE RATED WALLS AND FLOORS.

G. RECEIVE AND INSTALL ALL CONTROL COMPONENTS (DAMPERS, AIR FLOW MEASURING STATIONS, ETC.) PROVIDED BY TEMPERATURE CONTROL CONTRACTOR.

H. ALL SHEETMETAL WORK SHALL BE CONSTRUCTED AND INSTALLED PER SMACNA STANDARDS AND SPECIFICATIONS.

I. SUPPORT DUCTWORK AND ACCESSORIES IN ACCORDANCE WITH SMACNA STANDARDS, SPECIFICATIONS, AND BUILDING CODES.

J. PROVIDE PAINTING OF ALL EXPOSED STEEL SUPPORTS UNLESS METAL IS GALVANIZED OR CAD PLATED.

K. PROVIDE PRESSURE TESTING OF NEW DUCTWORK.

L. PROVIDE DUCTWORK INSULATION, JACKETING AND LABELING AS SPECIFIED. PATCH INSULATION OF EXISTING AT CONNECTIONS TO EXISTING WORK.

M. PROVIDE EQUIPMENT TAGS AND LABELS AS SPECIFIED.

N. SEE DETAIL SHEETS FOR ADDITIONAL INFORMATION. DETAILS APPLY TO ALL WORK.

O. PROVIDE NEW AUTOMATIC TEMPERATURE CONTROL SYSTEM AS SPECIFIED.

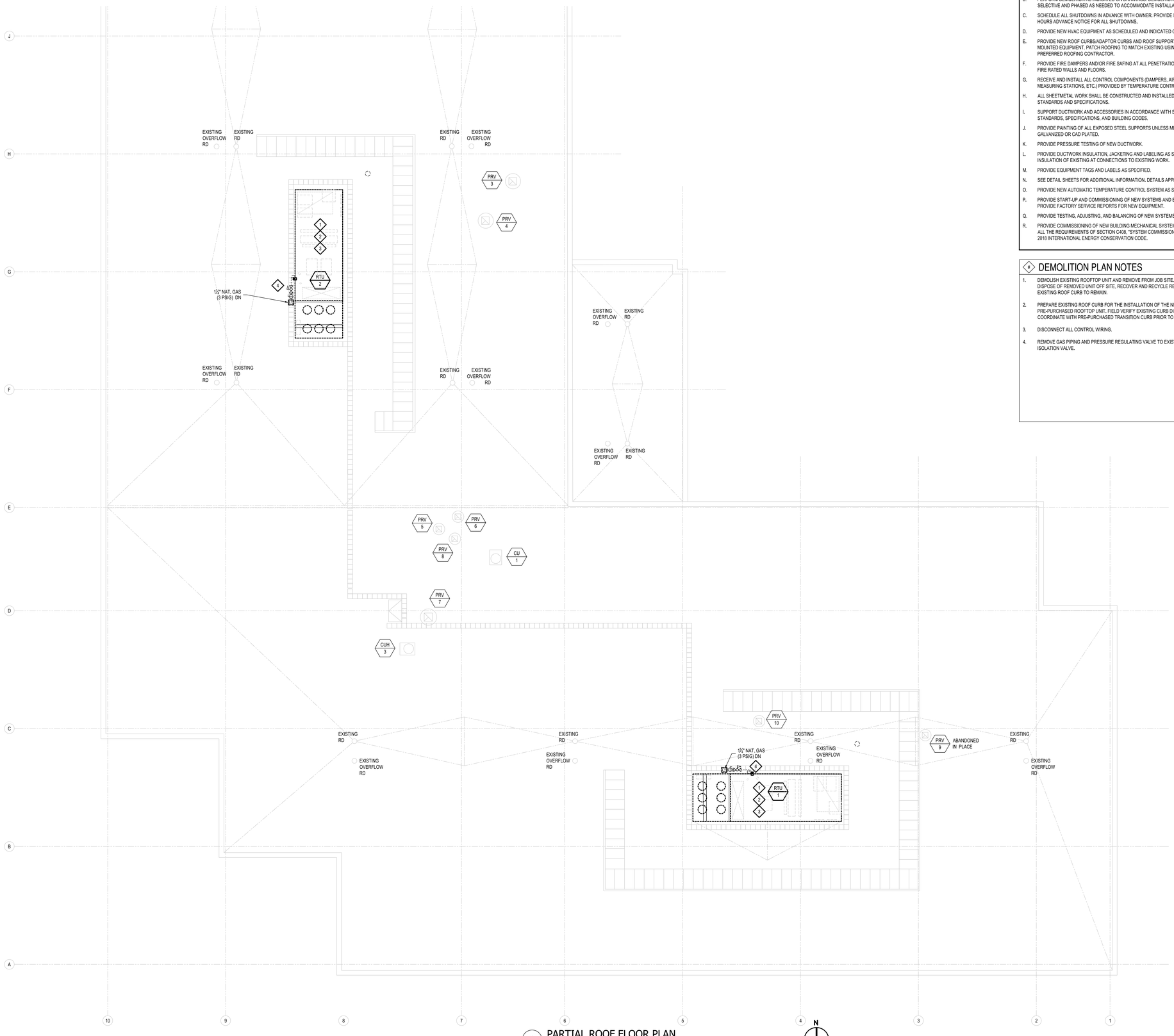
P. PROVIDE START-UP AND COMMISSIONING OF NEW SYSTEMS AND EQUIPMENT. PROVIDE FACTORY SERVICE REPORTS FOR NEW EQUIPMENT.

Q. PROVIDE TESTING, ADJUSTING, AND BALANCING OF NEW SYSTEMS AND EQUIPMENT.

R. PROVIDE COMMISSIONING OF NEW BUILDING MECHANICAL SYSTEMS AND SATISFY ALL THE REQUIREMENTS OF SECTION C408, "SYSTEM COMMISSIONING", WITHIN THE 2018 INTERNATIONAL ENERGY CONSERVATION CODE.

DEMOLITION PLAN NOTES

1. DEMOLISH EXISTING ROOFTOP UNIT AND REMOVE FROM JOB SITE. LEGALLY DISPOSE OF REMOVED UNIT OFF SITE. RECOVER AND RECYCLE REFRIGERANT. EXISTING ROOF CURB TO REMAIN.
2. PREPARE EXISTING ROOF CURB FOR THE INSTALLATION OF THE NEW PRE-PURCHASED ROOFTOP UNIT. FIELD VERIFY EXISTING CURB DIMENSIONS AND COORDINATE WITH PRE-PURCHASED TRANSITION CURB PRIOR TO DEMOLITION.
3. DISCONNECT ALL CONTROL WIRING.
4. REMOVE GAS PIPING AND PRESSURE REGULATING VALVE TO EXISTING GAS ISOLATION VALVE.



1 PARTIAL ROOF FLOOR PLAN

Grumman|Butkus Associates

Energy Efficiency Consultants and Sustainable Design Engineers

820 Davis St, Ste 300
Evanston, Illinois 60201 4446
847 328.3555 grummanbutkus.com

Illinois Registration # 184.006360

CONSULTANTS

SEAL

MECHANICAL ROOF PLAN - DEMOLITION

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS

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KEYPLAN

SCALE
0 2 4 8 16
1/8"=1'-0"

DRAWN	CHECKED	APPROVED
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PROJECT NO.
P23-0998-01

MD103

GENERAL NOTES

A. ALL WORK SHALL BE IN ACCORDANCE WITH 2021 INTERNATIONAL CODES, 2020 NATIONAL ELECTRICAL CODE, ILLINOIS PLUMBING CODE AND LOCAL ZONING CODES. WHERE THE CONSTRUCTION DOCUMENTS INDICATE MORE RESTRICTIVE REQUIREMENTS THE CONSTRUCTION DOCUMENTS SHALL GOVERN.

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D. PROVIDE NEW HVAC EQUIPMENT AS SCHEDULED AND INDICATED ON DRAWINGS.

E. PROVIDE NEW ROOF CURBS/ADAPTOR CURBS AND ROOF SUPPORT RAILS FOR ROOF MOUNTED EQUIPMENT. PATCH ROOFING TO MATCH EXISTING USING OWNER'S PREFERRED ROOFING CONTRACTOR.

F. PROVIDE FIRE DAMPERS AND/OR FIRE SAFING AT ALL PENETRATIONS THROUGH FIRE RATED WALLS AND FLOORS.

G. RECEIVE AND INSTALL ALL CONTROL COMPONENTS (DAMPERS, AIR FLOW MEASURING STATIONS, ETC.) PROVIDED BY TEMPERATURE CONTROL CONTRACTOR.

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K. PROVIDE PRESSURE TESTING OF NEW DUCTWORK.

L. PROVIDE DUCTWORK INSULATION, JACKETING AND LABELING AS SPECIFIED. PATCH INSULATION OF EXISTING AT CONNECTIONS TO EXISTING WORK.

M. PROVIDE EQUIPMENT TAGS AND LABELS AS SPECIFIED.

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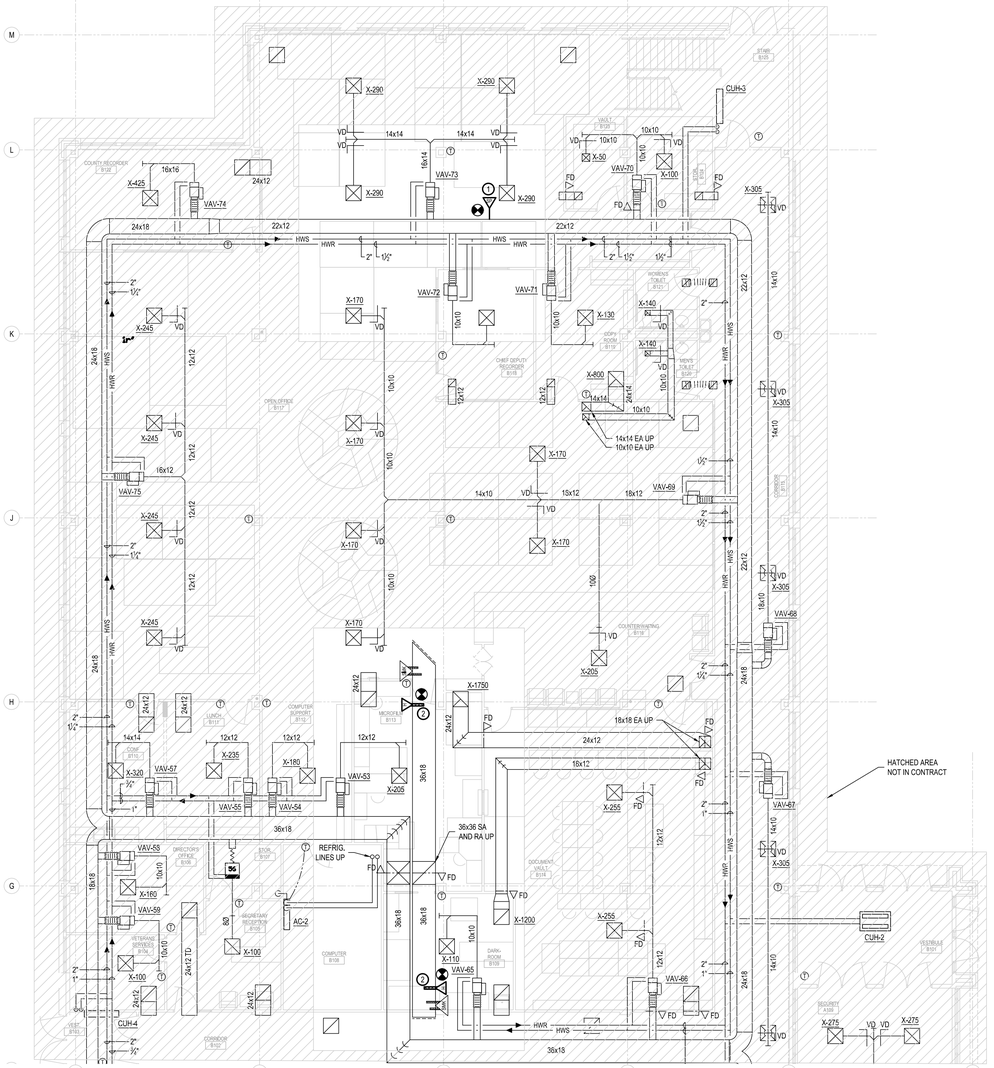
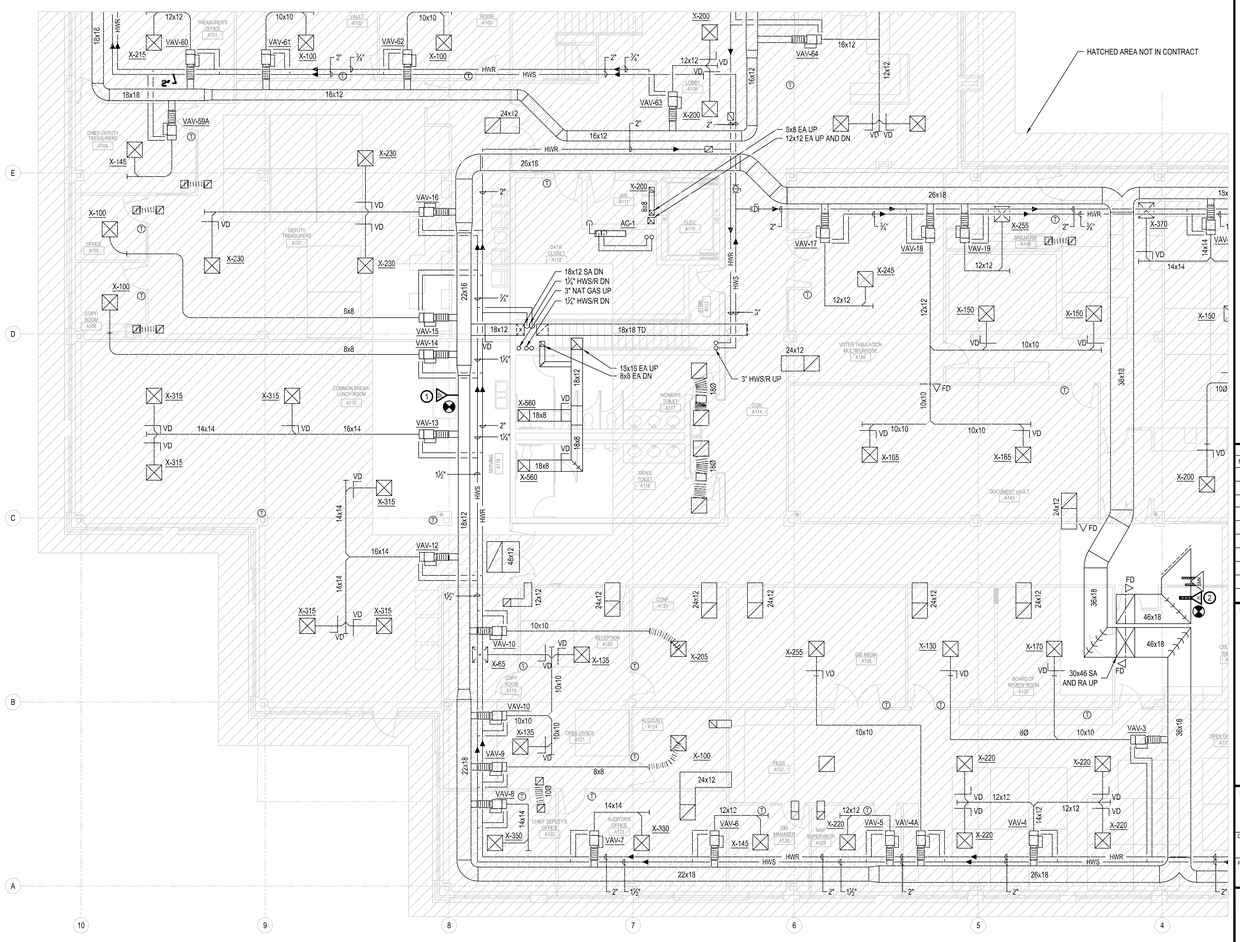
② CONSTRUCTION PLAN NOTES

1. PROVIDE NEW DUCT PRESSURE SENSOR FOR NEW RTU CONTROL.
2. PROVIDE NEW RETURN AIR HUMIDITY SENSOR.



2 PARTIAL FIRST FLOOR PLAN



1 PARTIAL FIRST FLOOR PLAN

Grumman|Butkus Associates

Energy Efficiency Consultants and Sustainable Design Engineers

820 Davis St, Ste 300
Evanston, Illinois 60201 4446
847 328.3555 grummanbutkus.com

Illinois Registration # 184.006392

CONSULTANTS

SEAL

FIRST FLOOR MECHANICAL VENTILATION PLANS - NEW WORK

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS		
NO.	DESCRIPTION	DATE
	ISSUED FOR BID PERMIT	11.01.2024

KEYPLAN

SCALE 0 1 2 4 8
1/4"=1'-0"

DRAWN	CHECKED	APPROVED
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PROJECT NO. P23-0988-00

M101

GENERAL NOTES

A. ALL WORK SHALL BE IN ACCORDANCE WITH 2021 INTERNATIONAL CODES, 2020 NATIONAL ELECTRICAL CODE, ILLINOIS PLUMBING CODE AND LOCAL ZONING CODES. WHERE THE CONSTRUCTION DOCUMENTS INDICATE MORE RESTRICTIVE REQUIREMENTS THE CONSTRUCTION DOCUMENTS SHALL GOVERN.

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② CONSTRUCTION PLAN NOTES

1. PROVIDE NEW 48x12 TRANSFER DUCT.
2. PROVIDE NEW 30x12 TRANSFER DUCT.
3. PROVIDE NEW RETURN AIR HUMIDITY SENSOR.
4. PROVIDE NEW 24x24 RETURN GRILLE WITH LINED ELBOW

HATCHED AREA NOT IN CONTRACT

1 PARTIAL SECOND FLOOR PLAN

Grumman|Butkus Associates

Energy Efficiency Consultants and Sustainable Design Engineers

820 Davis St, Ste 300
Evanston, Illinois 60201 4446
847 328.3555 grummanbutkus.com

Illinois Registration # 184.006362

CONSULTANTS

SEAL

SECOND FLOOR MECHANICAL VENTILATION PLAN - NEW WORK

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR BID/PERMIT	11.01.2024

KEYPLAN

SCALE 0 1 2 4 8
1/4"=1'-0"

DRAWN	CHECKED	APPROVED
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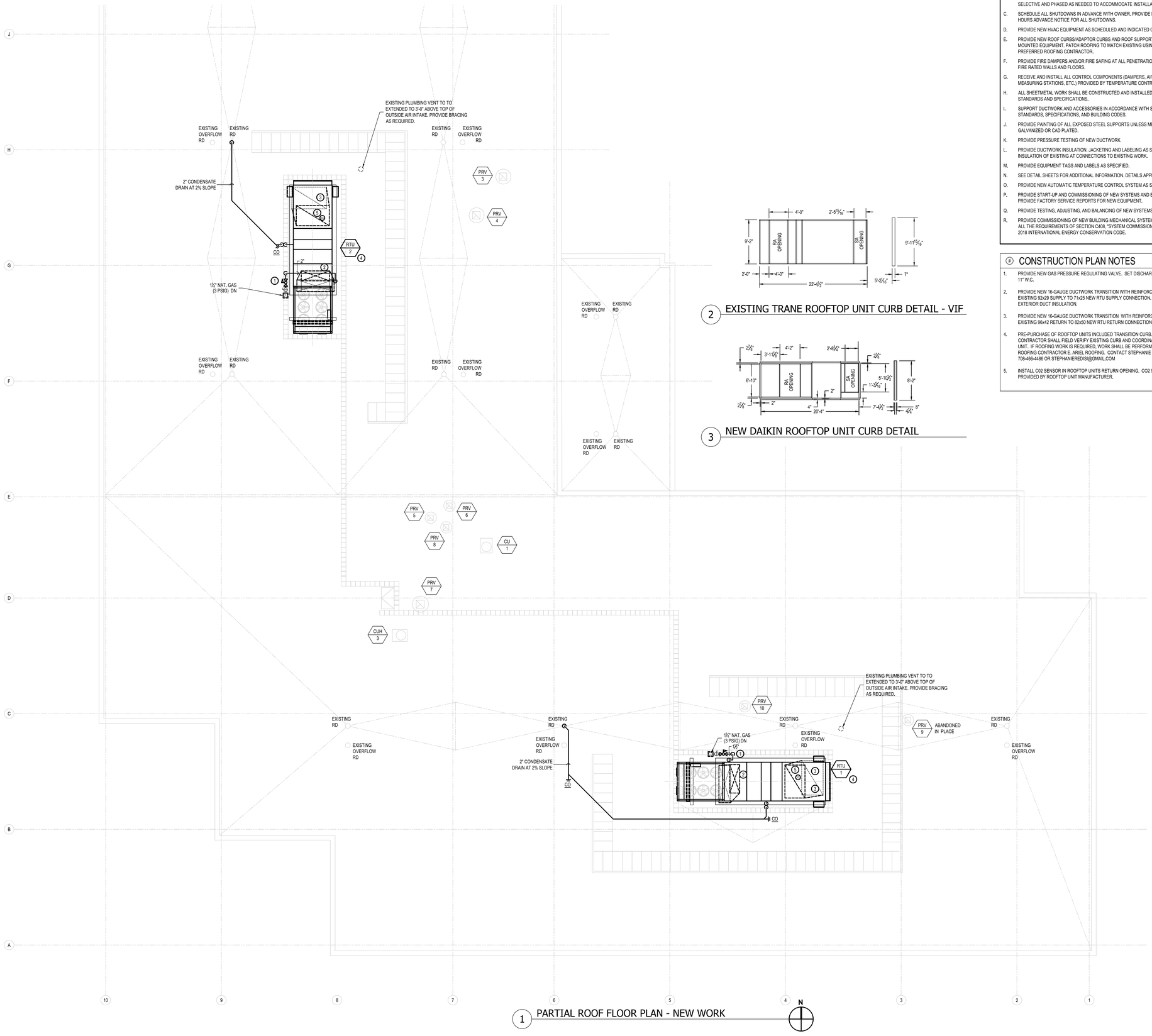
PROJECT NO. P24-0988-00

M102



1 PARTIAL ROOF FLOOR PLAN - NEW WORK

2 EXISTING TRANE ROOFTOP UNIT CURB DETAIL - VIF

3 NEW DAIKIN ROOFTOP UNIT CURB DETAIL

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CONSTRUCTION PLAN NOTES

1. PROVIDE NEW GAS PRESSURE REGULATING VALVE. SET DISCHARGE PRESSURE AT 11" W.C.
2. PROVIDE NEW 16-GAUGE DUCTWORK TRANSITION WITH REINFORCEMENTS FROM EXISTING 92x29 SUPPLY TO 71x25 NEW RTU SUPPLY CONNECTION. PROVIDE EXTERIOR DUCT INSULATION.
3. PROVIDE NEW 16-GAUGE DUCTWORK TRANSITION WITH REINFORCEMENTS FROM EXISTING 96x42 RETURN TO 82x50 NEW RTU RETURN CONNECTION.
4. PRE-PURCHASE OF ROOFTOP UNITS INCLUDED TRANSITION CURB. INSTALLING CONTRACTOR SHALL FIELD VERIFY EXISTING CURB AND COORDINATE WITH NEW UNIT. IF ROOFING WORK IS REQUIRED, WORK SHALL BE PERFORMED BY OWNER'S ROOFING CONTRACTOR E. ARIEL ROOFING. CONTACT STEPHANIE REDISI AT 708-466-4486 OR STEPHANIEREDISI@GMAIL.COM
5. INSTALL CO2 SENSOR IN ROOFTOP UNITS RETURN OPENING. CO2 SENSOR PROVIDED BY ROOFTOP UNIT MANUFACTURER.

Grumman|Butkus Associates
Energy Efficiency Consultants and Sustainable Design Engineers
820 Davis St, Ste 300
Evanston, Illinois 60201 4446
847 328.3555 grummanbutkus.com
Illinois Registration # 184.006364

CONSULTANTS

SEAL

MECHANICAL ROOF PLAN - NEW WORK

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS

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KEYPLAN

SCALE
0 2 4 8 16
1/8"=1'-0"

DRAWN	CHECKED	APPROVED
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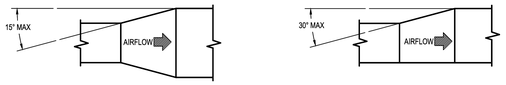
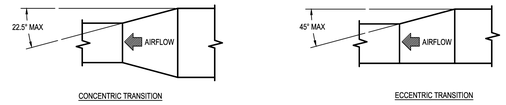
PROJECT NO.
P23-0998-01

M103

EXPANDING TRANSITIONS



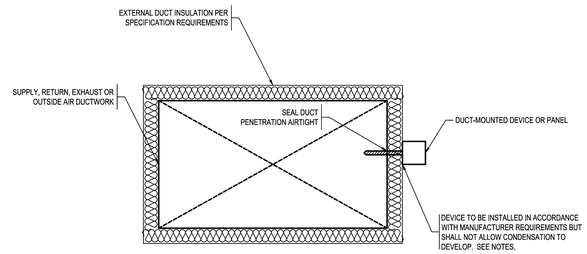
DECREASING TRANSITIONS



OFFSETS

DUCT TRANSITION AND OFFSET DETAILS

NO SCALE



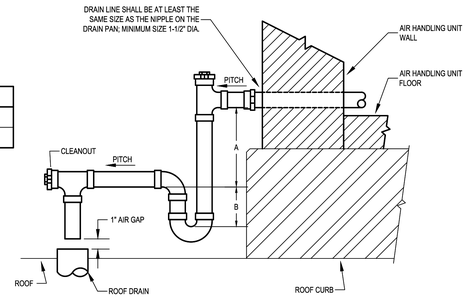
NOTES:
1. DEVICE TO BE INSTALLED ON OUTSIDE OF DUCT INSULATION.
2. SEAL VAPOR BARRIER WHERE DUCT INSULATION IS CUT OR PENETRATED.
3. PROVIDE THERMAL BREAK ON ALL METAL-TO-METAL CONNECTIONS.
4. SOLUTIONS DEEMED ACCEPTABLE DO NOT ALLOW CONDENSATION TO FORM AND ALSO MAINTAIN VAPOR BARRIER.

DUCT-MOUNTED DEVICE DETAIL

NO SCALE

UNIT TYPE	A	B
DRAW THRU	[(SP)/<1][+1"	(0.5)(A)

SP = STATIC PRESSURE IN PAN, "H₂O
(NEGATIVE NUMBER FOR DRAW THRU
POSITIVE NUMBER FOR BLOW THRU)

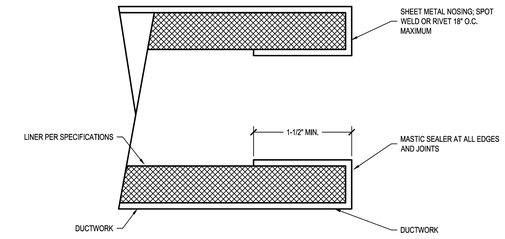


NOTES:
1. COIL MUST BE MOUNTED HIGH ENOUGH TO PERMIT TRAP TO BE INSTALLED.
2. WHERE APPLICABLE, PROVIDE STRUCTURAL STEEL OR CONCRETE PAD AS REQUIRED TO ELEVATE AIR HANDLING UNITS TO OBTAIN REQUIRED TRAP HEIGHT.
3. DRAIN PIPE CONNECTION MUST BE LOCATED AT LOW POINT OF COOLING COIL DRAIN PAN.

COOLING COIL CONDENSATE DRAIN TRAP DETAIL

NO SCALE

LAST REVISED 2019/12/19



DUCT LINER TERMINATION DETAIL

NO SCALE

LAST REVISED 2019/12/20

Grumman|Butkus Associates

Energy Efficiency Consultants and Sustainable Design Engineers

820 Davis St, Ste 300
Evanston, Illinois 60201 4446
847 328.3555 grummanbutkus.com

Illinois Registration # 184.006268

CONSULTANTS

SEAL

MECHANICAL DETAILS

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

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KEYPLAN

SCALE
NO SCALE

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PROJECT NO.
P23-0998-01

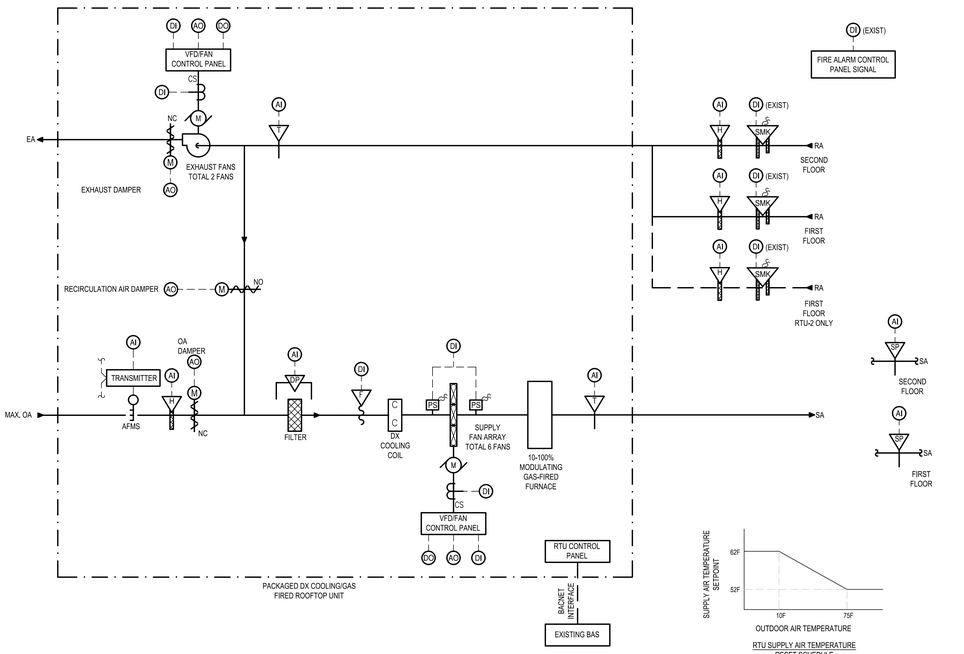
M300

ROOFTOP UNIT - SYSTEM POINTS LIST

CONTROLLER: MicroTech Rebel	POINT TYPE									ALARMS					
SYSTEM POINT DESCRIPTION	PRIMARY GRAPHIC	SECONDARY GRAPHIC	HARDWARE INPUT	HARDWARE OUTPUT	SOFTWARE POINT	HARDWIRE INTERLOCK	WIRELESS	NETWORK	DEFAULT VALUE	HIGH ANALOG LIMIT	LOW ANALOG LIMIT	BINARY	LATCH DIAGNOSTIC	SENSOR FAIL	COMMUNICATION FAIL
BUILDING STATIC PRESSURE		X	AI							X	X			X	
DUCT STATIC PRESSURE 1, 2		X	AI							X	X			X	
DISCHARGE AIR TEMPERATURE	X		AI		X					X	X			X	
OUTDOOR AIR TEMPERATURE	X		AI		X					X	X			X	
RA HUMIDITY LOCAL HUMIDITY (1ST FLR/ 2ND FLR)	X		AI				X								
OUTSIDE AIR CFM	X		AI		X										
RETURN AIR SMOKE DETECTOR	X		DI												
EXHAUST FAN STATUS OPEN (1–2)	X		DI		X										
DIRTY FILTER ALARM OPEN	X		DI		X							X			
SUPPLY FAN STATUS OPEN (1–6)	X		DI		X							X	X		
SUPPLY FAN HIGH AND LOW PRESSURE SWITCH STATUS	X		DI		X							X			
EXHAUST AIR DAMPER COMMAND		X		AO	X										
OUTSIDE AIR DAMPER COMMAND		X		AO	X										
RETURN AIR DAMPER COMMAND		X		AO	X							X			
SUPPLY FAN SPEED COMMAND		X		AO	X										
EXHAUST FAN START STOP COMMAND	X			DO	X										
HEATING OUTPUT 1 COMMAND	X			DO	X										
REFRIGERANT ALARM	X			DO	X					X				X	
REFRIGERANT LFL STATUS		X		DO	X										
REFRIGERANT LFL %		X		DO	X										
REFRIGERANT RESET TIMER		X		DO	X										
COMPRESSOR STATUS (1–4)		X		DO	X										
LOWEST SPACE TEMPERATURE		X	AI				X							X	
LOWEST SPACE TEMPERATURE LOCATION		X	AI				X							X	
HIGHEST SPACE TEMPERATURE		X	AI				X							X	
HIGHEST SPACE TEMPERATURE LOCATION		X	AI				X							X	
OCCUPANCY	X				X										
STATIC PRESSURE SETPOINT	X				X				1.0 WC						
STATIC PRESSURE RESET	X				X										
OCCUPIED COOLING SETPOINT	X				X				75.0 deg. F						
OCCUPIED HEATING SETPOINT	X				X				68.0 deg. F						
UNOCCUPIED COOLING SETPOINT	X				X				80.0 deg. F						
UNOCCUPIED HEATING SETPOINT	X				X				55.0 deg. F						
OUTSIDE AIR DAMPER POSITION	X				X										
HEATING MODE SETPOINT					X										
COOLING MODE SETPOINT					X										
SPACE CO2 LIMIT	X				X				970 PPM						
SETPOINT OFFSET					X										
MINIMUM OUTDOOR AIR RESET		X			X										
COMPRESSOR ENABLE		X			X				AUTO						
HEAT / COOL MODE		X			X				COOL						
FAN MODE COMMAND		X			X				ON						
APPLICATION MODE		X			X				AUTO						
OUTSIDE AIR DAMPER MINIMUM POSITION	X				X				10%						
HEAT OUTPUT		X			X										
COOL OUTPUT		X			X										
MAINTENANCE REQUIRED					X				660 HRS						
BAS COMMUNICATION STATE		X			X										
FILTER RUNTIME HOURS					X										
COMPRESSOR LOCKOUT STATUS					X										
TIMED OVERRIDE STATUS					X										

AIR HANDLING UNIT - (RTU-1 AND RTU-2)

CONTROL DIAGRAM



SEQUENCE OF OPERATION

BUILDING AUTOMATION SYSTEM:

THE BAS SHALL SEND THE INTERNAL RTU CONTROLS COMMAND TO ENABLE/DISABLE RTU, PROVIDE SETPOINTS, MONITOR TEMPERATURE, HUMIDITY STATIC PRESSURE AND RTU STATUS AND GENERAL ALARM WITH RTU BACNET INTERFACE FOR ALARM TYPE. IF A BAS IS NOT PRESENT, OR COMMUNICATION IS LOST WITH THE BAS THE CONTROLLER SHALL OPERATE USING DEFAULT MODES AND SETPOINTS.

ALL SETPOINTS ARE ADJUSTABLE THROUGH THE BAS FRONT END. ALL EXISTING POINTS/EQUIPMENT THAT HAS BEEN MADE OBSOLETE BY RENOVATIONS SHALL BE REMOVED.

OCCUPIED / UNOCCUPIED

OCCUPIED / UNOCCUPIED MODE SHALL BE DETERMINED BY PRE-PROGRAMMED OCCUPANCY SCHEDULE.

HARDWIRE INTERLOCKS:

HARDWIRE INTERLOCKS FROM APPROPRIATE SAFETY DEVICES TO THE SUPPLY OR RETURN FAN SHALL STOP THE SUPPLY AND RETURN FANS (SAFETY SHUT-DOWN) WHENEVER ANY OF THE FOLLOWING OCCUR:

a. SMOKE IS DETECTED AT THE RETURN SMOKE DETECTOR

AFTER A SAFETY SHUT-DOWN, THE OPERATOR WILL MANUALLY RESET APPROPRIATE SAFETY DEVICES AND MANUALLY RESTART THE AIR HANDLING UNIT AT THE FRONT END THROUGH THE GRAPHICAL USER INTERFACE OR BY AN 'AHU RESET' SWITCH NEAR THE UNIT.

STATIC PRESSURE RESET

THE STATIC PRESSURE SETPOINT SHALL BE DETERMINED BY SCANNING THE POSITIONS OF ALL TERMINAL UNIT DAMPERS EVERY 15 MINUTES (ADJ.) AND ADJUSTING THE STATIC PRESSURE SETPOINT ACCORDINGLY:

a. IF ALL TERMINAL UNIT DAMPERS ARE LESS THAN 90% (ADJ.) OPEN, REDUCE THE STATIC PRESSURE SETPOINT BY 0.1 IN. WC., UNTIL ONE TERMINAL UNIT DAMPER IS MORE THAN 90% (ADJ.) OPEN.

b. IF MORE THAN FIVE TERMINAL UNIT DAMPERS ARE 95% (ADJ.) OPEN, INCREASE THE STATIC PRESSURE SETPOINT BY 0.1 IN. WC., UNTIL NO MORE THAN TWO DAMPERS ARE 95% (ADJ.) OPEN.

c. THE MINIMUM STATIC PRESSURE SETPOINT WILL BE 0.5 IN. WC.

d. THE MAXIMUM STATIC PRESSURE SETPOINT WILL BE THE MAXIMUM SETPOINT VALUE AS DETERMINED BY THE TEST AND BALANCE CONTRACTOR WHEN ALL TERMINAL UNIT DAMPERS ARE AT MAXIMUM COOLING AIRFLOW.

e. TO IDENTIFY ANY "ROGUE" AIR TERMINAL UNITS WITH LOCAL DEFICIENCIES, TREND ALL AIR TERMINAL UNIT DATA INCLUDING DUCT STATIC PRESSURE SENSORS FOR ONE WEEK AND SUBMIT A TREND REPORT TO THE DESIGN ENGINEER FOR REVIEW. ALL "ROGUE" AIR TERMINAL UNITS WILL BE EXCLUDED FROM THE DUCT STATIC PRESSURE RESET STRATEGY.

INITIAL SCHEDULES AND SETTINGS

OCCUPANCY SCHEDULE:

MONDAY - FRIDAY: 06:30 A.M. - 05:30 P.PM.

SATURDAY: OFF

SUNDAY: OFF

SETPOINTS:

DISCHARGE AIR TEMPERATURE: REFER TO RESET SCHEDULE

RETURN AIR RELATIVE HUMIDITY LIMIT: 55% RH

SUPPLY DUCT STATIC PRESSURE: 1.0 IN. W.C. (FINAL VALUE FOR EACH SENSOR TO BE DETERMINED BY THE TEST AND BALANCE CONTRACTOR)

MINIMUM OUTSIDE AIRFLOW RATE: 7200 CFM

PRESSURIZATION AIRFLOW: 16,080 CFM (ADJ.) (THE FINAL PRESSURIZATION AIRFLOW RATE TO BE DETERMINED BY TAB AS REQUIRED TO MAINTAIN BUILDING POSITIVE PRESSURIZATION)

OFFSET AIRFLOW RATE: 2,000 CFM (ADJ) TOTAL EXHAUST AIRFLOW PLUS PRESSURIZATION AIRFLOW

ALL SETPOINTS LISTED ABOVE SHALL BE ADJUSTABLE AT THE FRONT END THROUGH GRAPHICAL USER INTERFACE.

PACKAGED CONTROLS PROVIDED BY RTU MANUFACTURER

OCCUPIED MODE:

DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN MINIMUM VENTILATION REQUIREMENTS. THE DX COOLING AND GAS HEAT SHALL STAGE TO MAINTAIN THE OCCUPIED SPACE TEMPERATURE SETPOINT. IF ECONOMIZING IS ENABLED THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN THE OCCUPIED SPACE TEMPERATURE SETPOINT.

UNOCCUPIED MODE:

WHEN THE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT OF 65.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START, THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE GAS HEAT SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 65.0 DEG. F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP AND THE GAS HEAT SHALL BE DISABLED. WHEN THE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 80.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL START, THE OUTSIDE AIR DAMPER SHALL OPEN IF ECONOMIZING IS ENABLED AND REMAIN CLOSED IF ECONOMIZING IS DISABLED AND THE DX COOLING SHALL BE ENABLED. WHEN THE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 80.0 DEG. F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP, THE DX COOLING SHALL BE DISABLED AND IF ECONOMIZING IS ENABLED, THE OUTSIDE AIR DAMPER SHALL CLOSE.

OPTIMAL START:

THE BAS SHALL MONITOR THE SCHEDULED OCCUPIED TIME, OCCUPIED SPACE SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL START OCCURS.

MORNING WARM-UP MODE:

DURING OPTIMAL START, IF THE SPACE TEMPERATURE IS BELOW THE OCCUPIED HEATING SETPOINT A MORNING WARM-UP MODE SHALL BE ACTIVATED. WHEN MORNING WARM-UP IS INITIATED, THE UNIT SHALL ENABLE THE HEATING AND SUPPLY FAN. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED. WHEN THE SPACE TEMPERATURE REACHES THE OCCUPIED HEATING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

PRE-COOL MODE:

DURING OPTIMAL START, IF THE SPACE TEMPERATURE IS ABOVE THE OCCUPIED COOLING SETPOINT, PRE-COOL MODE SHALL BE ACTIVATED. WHEN PRE-COOL IS INITIATED, THE UNIT SHALL ENABLE THE FAN AND COOLING OR ECONOMIZER. THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED. UNLESS ECONOMIZING, WHEN THE SPACE TEMPERATURE REACHES OCCUPIED COOLING SETPOINT (ADJ.), THE UNIT SHALL TRANSITION TO THE OCCUPIED MODE.

OPTIMAL STOP:

THE BAS SHALL MONITOR THE SCHEDULED UNOCCUPIED TIME, OCCUPIED SETPOINTS AND SPACE TEMPERATURE TO CALCULATE WHEN THE OPTIMAL STOP OCCURS. WHEN THE OPTIMAL STOP MODE IS ACTIVE THE UNIT CONTROLLER SHALL MAINTAIN THE SPACE TEMPERATURE TO THE SPACE TEMPERATURE OFFSET SETPOINT.

COOLING MODE:

THE UNIT CONTROLLER SHALL MONITOR SPACE TEMPERATURE AND SPACE TEMPERATURE COOLING SETPOINT TO DETERMINE WHEN TO INITIATE REQUESTS FOR COOLING. WHEN THE SPACE TEMPERATURE RISES ABOVE THE SPACE TEMPERATURE COOLING SETPOINT, THE UNIT CONTROLLER SHALL MODULATE THE ECONOMIZER OR STAGE THE MECHANICAL COOLING ON OR OFF AS REQUIRED TO MAINTAIN THE SPACE TEMPERATURE COOLING SETPOINT. THE FIRST COMPRESSOR SHALL ENERGIZE AFTER ITS MINIMUM 3-MINUTE OFF TIME HAS EXPIRED. THE SUPPLY FAN SHALL MODULATE ABOVE MINIMUM SPEED TO MEET ZONE REQUIREMENTS. IF ADDITIONAL COOLING CAPACITY IS REQUIRED THE NEXT STAGE OF COOLING SHALL BE ENABLED. ONCE THE SPACE TEMPERATURE FALLS BELOW THE SETPOINT THE COMPRESSORS SHALL BE DEACTIVATED AND THE FAN SHALL MODULATE TO MINIMUM SPEED.

HEATING MODE:

THE UNIT CONTROLLER SHALL MONITOR SPACE TEMPERATURE AND SPACE TEMPERATURE HEATING SETPOINT TO DETERMINE WHEN TO INITIATE REQUESTS FOR HEAT. WHEN THE SPACE TEMPERATURE DROPS BELOW THE SPACE TEMPERATURE HEATING SETPOINT, THE CONTROLLER SHALL ENABLE THE FIRST STAGE OF HEAT, IF ADDITIONAL HEATING CAPACITY IS REQUIRED THE SECOND STAGE OF HEAT SHALL BE ENABLED. THE SUPPLY FAN WILL REMAIN AT 100% DURING HEATING OPERATION. ONCE THE SPACE TEMPERATURE RISES ABOVE THE SETPOINT, THE HEATING STAGES SHALL BE DISABLED AND THE SUPPLY FAN SPEED WILL VARY ACCORDING TO VENTILATION AND COOLING MODES.

ECONOMIZER CONTROL / COMPARATIVE ENTHALPY:

WHEN THE REFERENCE TEMPERATURES AND ENTHALPIES ARE IN THE CONTROLLED SPACE (AS MEASURED BY THE OUTSIDE AIR SENSOR AND SENSOR ASSIGNED TO SPACE HUMIDITY SENSING) IS BELOW SETPOINT, ECONOMIZER MODE SHALL BE ENGAGED. COMPRESSORS SHALL BE DE-ENERGIZED.

THE OUTSIDE AIR DAMPER SHALL MODULATE (30%-100%), EXHAUST FAN SHALL OPERATE TO MAINTAIN BUILDING PRESSURIZATION, SUPPLY FAN SHALL MODULATE TO MAINTAIN STATIC PRESSURE SENSORS EXISTING VAV BOXES SHALL MODULATE TO MAINTAIN TEMPERATURE WITHIN INDOOR SPACES.

THE SUPPLY AIR SENSOR SHALL MEASURE THE DRY BULB TEMPERATURE OF THE AIR LEAVING THE EVAPORATOR COIL WHILE ECONOMIZING. WHEN ECONOMIZING IS ENABLED AND THE UNIT IS OPERATING IN THE COOLING MODE, THE ECONOMIZER DAMPER SHALL MODULATE BETWEEN ITS MINIMUM POSITION AND 100% TO MAINTAIN THE SPACE TEMPERATURE SETPOINT. MINIMUM POSITION SHALL BE CALCULATED BASED ON SUPPLY FAN SPEED, IF THE SUPPLY AIR TEMPERATURE STARTS TO FALL BELOW SUPPLY AIR TEMPERATURE SETPOINT OR THE COMPARATIVE ENTHALPY RAISES ABOVE RELATIVE HUMIDITY SETPOINT, THE OUTDOOR DAMPER SHALL BE AT MINIMUM POSITION, COMPRESSORS SHALL BE DELAYED FROM OPERATING UNTIL THE ECONOMIZER HAS OPENED TO 100% FOR 5 MINUTES.

REFERENCE TEMPERATURE AND HUMIDITY (ENTHALPY):

OUTSIDE AIR TEMPERATURE IS COMPARED WITH A REFERENCE DRY BULB POINT. THE ECONOMIZER IS ENABLED WHEN OUTDOOR AIR TEMPERATURE IS LESS THAN REFERENCE DRY BULB POINT AND THE COMPARATIVE ENTHALPY MAINTAINS INDOOR RELATIVE HUMIDITY OF 50% RH. THE ECONOMIZER IS DISABLED WHEN OUTDOOR AIR TEMPERATURE IS GREATER THAN REFERENCE DRY BULB POINT + 2.0 DEG. F (1/2 DAT DEADBAND) OR THE INDOOR HUMIDITY RAISED ABOVE 53% RH.

DEMAND CONTROL VENTILATION (DCV):

AS THE SUPPLY FAN SPEED COMMAND VARIES BETWEEN MINIMUM AND MAXIMUM, THE BUILDING DESIGN AND DCV MINIMUM POSITION TARGETS SHALL BE CALCULATED LINEARLY BETWEEN THE USER SELECTED SETPOINTS BASED ON THE INSTANTANEOUS SUPPLY FAN SPEED. THE BLDG. DESIGN AND DCV MINIMUM POSITION TARGETS WILL BE USED TO CALCULATE THE ACTIVE OA DAMPER MINIMUM POSITION TARGET BASED ON CO2 LEVELS RELATIVE TO THE ACTIVE DESIGN AND DCV CO2 SETPOINTS.

THE DESIGN MINIMUM AND DCV MINIMUM OA DAMPER POSITION SETPOINTS AT MINIMUM FAN SPEED COMMAND AND THE DESIGN MINIMUM OA DAMPER POSITION SETPOINT AT MIDDLE FAN SPEED COMMAND SHALL HAVE A RANGE OF 0-100% WHILE THE DESIGN MINIMUM AND DCV

MINIMUM OA DAMPER POSITION SETPOINTS SHALL HAVE A RANGE OF 0-50%.

BUILDING PRESSURIZATION SHALL SUPERSEDE DCV OPERATION.

SUPPLY FAN OPERATION:

THE SUPPLY FAN SHALL BE ENABLED WHILE IN THE OCCUPIED MODE AND CYCLED ON DURING THE UNOCCUPIED MODE. THE RTU UNIT CONTROLLER SHALL VARY THE SUPPLY FAN SPEED TO OPTIMIZE MINIMUM FAN SPEED IN ALL COOLING MODES. A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FAN. IF THE SWITCH DOES NOT OPEN WITHIN 40 SECONDS AFTER A REQUEST FOR FAN OPERATION A FAN FAILURE ALARM SHALL BE ANNUNCIATED, THE UNIT SHALL STOP, REQUIRING A MANUAL RESET.

FILTER STATUS:

A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTER WHEN THE FAN IS RUNNING. IF THE SWITCH CLOSES FOR 2 MINUTES AFTER A REQUEST FOR FAN OPERATION A DIRTY FILTER ALARM SHALL BE ANNUNCIATED AT THE BAS.

BUILDING PRESSURE CONTROL:

A DIFFERENTIAL PRESSURE TRANSDUCER SHALL ACTIVELY MONITOR THE DIFFERENCE IN PRESSURE BETWEEN THE BUILDING (INDOORS) AND OUTDOORS. IF THE BUILDING PRESSURE INCREASES ABOVE THE DIFFERENTIAL PRESSURE SETPOINT, THE UNIT CONTROLLER SHALL TURN ON THE EXHAUST FAN AND MODULATE THE EXHAUST FAN DAMPER TO CONTROL BUILDING PRESSURE TO THE DIFFERENTIAL PRESSURE SETPOINT. IF THE BUILDING PRESSURE DECREASES BELOW THE DIFFERENTIAL PRESSURE SETPOINT, THE CONTROLLER SHALL DEACTIVATE THE EXHAUST FAN AND CLOSE THE EXHAUST DAMPER.

EXHAUST FAN STATUS:

A DIFFERENTIAL PRESSURE SWITCH SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FAN. IF THE SWITCH IS DETECTED TO BE OPEN FOR 40 CONSECUTIVE SECONDS AFTER A REQUEST FOR EXHAUST FAN OPERATION A FAN FAILURE ALARM SHALL BE ANNUNCIATED AT THE BAS AND THE EXHAUST FAN SHALL STOP. A MANUAL RESET SHALL BE REQUIRED

REFRIGERANT MONITORING STATUS:

A REFRIGERANT MONITOR SENSORS SHALL CONTINUOUSLY MONITOR FOR REFRIGERANT. IF ANY SENSOR DETECTS REFRIGERANT LEVEL ABOVE 15%, ALARM SHALL ANNUNCIATED AT THE BAS SENT, UNIT TO START MITIGATION MODES AND PRE-PROGRAMMED SEQUENCE OF OPERATION. ALARM SHALL BE DEACTIVATE ONCE REFRIGERANT IS BELOW 15% AND 5-MINUTE TIMER HAS ELAPSED.

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CONSULTANTS

SEAL

TEMPERATURE CONTROLS

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR BID PERMIT	11.01.2024

KEYPLAN

SCALE: NO SCALE

DRAWN	CHECKED	APPROVED
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PROJECT NO. P23-0998-01

M500

POWER SYMBOLS

DESIGNATION	DESCRIPTION
WP GFI	DUPLEX RECEPTACLE (WALL MOUNTED) +18" AFF UNO
J	FLOOR MOUNTED JUNCTION BOX
	DISCONNECT SWITCH (NON-FUSED)
X Y	EQUIPMENT TAG SEE EQUIPMENT SCHEDULE
DP-X	POWER DISTRIBUTION PANELBOARD
LP-X	BRANCH CIRCUIT PANELBOARD
T	TRANSFORMER T=KVA
M	MOTOR M=HP
VFD	VARIABLE FREQUENCY DRIVE
DD	DUCT SMOKE DETECTOR
▨	MOTOR CONTROL CENTER

DEMOLITION SYMBOLS

SYMBOL	DESCRIPTION
ER	EXISTING ELECTRICAL EQUIPMENT OR OUTLET TO REMAIN
RL	EXISTING ELECTRICAL EQUIPMENT OR OUTLET TO BE REMOVED RELOCATED AND JUNCTION BOX REMOVED OR CAPPED AS REQUIRED.
NL	EXISTING ELECTRICAL EQUIPMENT OR OUTLET RELOCATED (NEW LOCATION)
RE	EXISTING ELECTRICAL EQUIPMENT OR OUTLET TO BE REMOVED
EC	EXISTING ELECTRICAL EQUIPMENT OR OUTLET TO BE REMOVED AND JUNCTION BOX CAPPED AS REQUIRED
NR	NEW ELECTRICAL EQUIPMENT INSTALLED OVER EXISTING OUTLET
EA	EXISTING ELECTRICAL EQUIPMENT OR OUTLET TO BE ABANDONED
EM	EXISTING ELECTRICAL EQUIPMENT OR OUTLET TO BE MODIFIED

ELECTRICAL ABBREVIATIONS

AC	ALTERNATING CURRENT
AF	AMPERE FRAME, AMPERE FUSE
AFF	ABOVE FINISHED FLOOR
AM	AMP METER
AMP	AMPERE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRING GUAGE
BP	BRANCH CIRCUIT PANEL
BKR	BREAKER
C	CONDUIT
CATV	CABLE ACCESSED TELEVISION
C/B	CIRCUIT BREAKER
CKT	CIRCUIT
CT	CURRENT TRANSFORMER
CU	COPPER
DC	DIRECT CURRENT
DISC	DISCONNECT
DN	DOWN
DWG	DRAWING
EM	EMERGENCY
EMI	ELECTROMAGNETIC INTERFERENCE
EMT	ELECTRIC METALLIC TUBING
EPO	EMERGENCY POWER OFF
E	EXISTING
F	FUSE
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPERES
FLR	FLOOR
FMC	FLEXIBLE METAL CONDUIT
GEN	GENERATOR
GF	GROUND FAULT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
G	GROUND
HID	HIGH INTENSITY DISCHARGE
HOA	HAND OFF AUTO
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HZ	HERTZ (CYCLE)
IC	INTERRUPTING CAPACITY
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT-AMPERE
KW	KILOWATT
LPS	LOW PRESSURE SODIUM
LP	LIGHTING PANEL
LRA	LOCKED ROTOR AMPERES
LRP	LIGHTING RELAY PANEL
LTG	LIGHTING

MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MLO	MAIN LUGS ONLY
MIN	MINIMUM
N/A	NOT APPLICABLE
NATS	NON-AUTOMATIC TRANSFER SWITCH
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NETA	NATIONAL ELECTRICAL TESTING ASSOCIATION
NF	NON-FUSED
NO	NORMALLY OPEN
OC	OVER CURRENT
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
P	POLE
PB	PULL BOX
PDU	POWER DISTRIBUTION UNIT
PE	PROFESSIONAL ENGINEER
PF	POWER FACTOR
PH	PHASE
PM	POWER MONITORING DEVICE
PNL	PANELBOARD
PP	POWER PANEL
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
RFI	RADIO FREQUENCY INTERFERENCE
RGS	RIGID GALVANIZED STEEL CONDUIT
RMC	RIGID METAL CONDUIT
RMS	ROOT MEAN SQUARE
RP	RECEPTACLE PANEL
SCA	SHORT CIRCUIT AMPERES
SW	SWITCH
SWBD	SWITCHBOARD
T	TELEPHONE
THD	TOTAL HARMONIC DISTORTION
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TV	TELEVISION
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTAGE
VA	VOLT-AMPERE
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLT METER
W	WATT
WP	WEATHERPROOF
WM	WATT METER
XFMR	TRANSFORMER

ELECTRICAL GENERAL NOTES

1. CODES

THE WORK SHALL COMPLY WITH ALL APPLICABLE LOCAL, MUNICIPAL, AND NATIONAL CODES. WHERE THE CONSTRUCTION DOCUMENTS INDICATE MORE RESTRICTIVE REQUIREMENTS THE CONSTRUCTION DOCUMENTS SHALL GOVERN. HOWEVER, THE CONSTRUCTION DOCUMENTS SHALL NOT BE INTERPRETED AS AUTHORITY TO VIOLATE ANY CODE OR REGULATION.

WOODSTOCK ADOPTED BUILDING CODE: 2020 NATIONAL ELECTRIC CODE (WITH AMENDMENTS)

2. DRAWINGS AND SPECIFICATIONS

THE CONTRACTOR SHALL BE RESPONSIBLE FOR READING AND COMPLYING WITH BOTH THE DRAWINGS AND SPECIFICATIONS. IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN THE DRAWINGS, NOTES, SPECIFICATIONS, OR CODES, THE REFERENCE WHICH PROVIDES THE MORE COMPLETE OR HIGHER STANDARD SHALL PREVAIL.

3. INTERPRETATION OF THE DOCUMENTS

CAREFULLY COMPARE THE DRAWINGS AND SPECIFICATIONS, CHECKING MEASUREMENTS AND CONDITIONS UNDER WHICH THIS INSTALLATION IS TO BE MADE. FOR CLARIFICATION BETWEEN VARIOUS DRAWINGS, BETWEEN DRAWINGS OR SPECIFICATION, OR BETWEEN SECTIONS OF THE SPECIFICATION, THE MATTER SHALL BE REFERRED TO THE ENGINEER BEFORE ANY WORK IS EXECUTED. THE CONTRACTOR SHALL STATE IN THEIR PROPOSAL ANY EXCEPTIONS NECESSARY TO MAKE THIS A COMPLETE, READY TO USE INSTALLATION. IF NOT STATED IN THE PROPOSAL, IT WILL NOT BE CONSIDERED EXTRA.

4. ELECTRICAL DRAWINGS

THE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL DOORS, WALLS, FURNITURE, EQUIPMENT, ETC. THE LOCATION OF RACEWAY SYSTEM COMPONENTS IS SCHEMATIC. THE EXACT LOCATION OF RACEWAY SYSTEM COMPONENTS SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD. THE CONTRACTOR SHALL CONFIRM THE DIMENSIONS OF THE ACTUAL EQUIPMENT TO BE SUPPLIED FOR THIS PROJECT, AND VERIFY CLEARANCES AND ROUGH-INS PRIOR TO STARTING WORK.

5. SITE EXAMINATION

BEFORE SUBMITTING A BID, THE CONTRACTOR SHALL VISIT THE SITE, EXAMINE THE PREMISES, AND MAKE A THOROUGH SURVEY OF THE EXISTING CONDITIONS. THE SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE. NO CONSIDERATION OR ALLOWANCE WILL BE GRANTED FOR FAILURE TO VISIT THE SITE OR FOR LATER CLAIMS FOR LABOR, EQUIPMENT, MATERIALS REQUIRED, OR FOR DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN SITE EXAMINATION BEEN MADE.

6. COORDINATION WITH OTHER TRADES

THE ELECTRICAL CONTRACTOR SHALL OBTAIN A COMPLETE SET OF ARCHITECTURAL AND ENGINEERING DOCUMENTS AND COORDINATE WITH MECHANICAL, PLUMBING, ARCHITECTURAL, AND OTHER TRADES FOR EXACT DIMENSIONS, CLEARANCES, ROUGH-IN LOCATIONS, AND OTHER ADDITIONAL SCOPES OF WORK THAT MAY NOT BE SHOWN ON THE ELECTRICAL PLANS. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL 120 VOLT (AND HIGHER) AC POWER TO OTHER TRADES EQUIPMENT AND HARDWARE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, CONTROLS, FIRE AND SECURITY SYSTEMS, MOTORIZED DOORS, DAMPERS, LIFTS, AND OTHER SYSTEMS. UNLESS SPECIFICALLY NOTED OTHERWISE ON THE ELECTRICAL PLANS, THE ELECTRICAL CONTRACTOR SHALL FURNISH ALL SAFETY DISCONNECT SWITCHES TO MECHANICAL EQUIPMENT.

7. PERMITS, APPLICATIONS AND RELEASES

THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS INSPECTIONS, APPLICATIONS, RELEASES AND FEES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES FOR THE EXECUTION OF THIS WORK. SCHEDULING OF ALL REQUIRED INSPECTIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

8. FIRE STOPPING

ALL PENETRATIONS IN WALL, FLOOR OR CEILINGS SHALL BE SUITABLY CLOSED UP AND SEALED WITH AN INTUMESCENT FIRE STOPPING COMPOUND LISTED IN THE MOST RECENT FACTORY MUTUAL RESEARCH CORPORATION (FMRC) APPROVAL GUIDE. FIRE STOPPING PRODUCTS SHALL BE MANUFACTURED BY 3M COMPANY OR APPROVED EQUAL.

9. ELECTRICAL SERVICE DISRUPTIONS

ALL WORK WHICH EXPOSES ACTIVE BUS REQUIRES A WRITTEN NOTIFICATION TO THE OWNER WHICH WILL OUTLINE THE METHOD OF PROCEDURE FOR THE WORK. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 5 DAYS NOTICE TO THE OWNER BEFORE WORKING ON ANY ENERGIZED ELECTRICAL SYSTEM. ALL POWER DISRUPTION SHALL OCCUR AT TIMES AND OF DURATIONS ACCEPTABLE TO THE OWNER.

10. EQUIPMENT

ALL MATERIALS AND EQUIPMENT USED IN THIS INSTALLATION SHALL BE NEW, AND HAVE THE APPROPRIATE UL LISTING AND LABEL.

11. MISCELLANEOUS SUPPORTING MEMBERS

ALL ANGLES CHANNELS, AND OTHER MISCELLANEOUS STEEL, BOLTS, RODS, ETC. REQUIRED TO SUPPORT LIGHT FIXTURE, CONDUIT, RACEWAY, LADDER TRAY, OR OTHER ELECTRICAL EQUIPMENT OR DEVICES SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

12. PANELBOARDS

ALL PANELBOARDS SHALL BE PROVIDED WITH TYPEWRITTEN DIRECTORIES. SEE PANEL SCHEDULES ON THE DRAWINGS AND SPECIFICATIONS FOR COMPLETE IDENTIFICATION AND LABELING REQUIREMENTS.

13. SAFETY

THE CONTRACTOR SHALL TAKE ALL STEPS NECESSARY TO ENSURE THE SAFETY OF THE OWNERS EMPLOYEES, BUILDING EMPLOYEES AND GUESTS, AS WELL AS THEIR OWN FORCES, BY ADEQUATELY PROTECTING ANY EXPOSED LIVE CONDUCTORS, OR DEVICES THROUGHOUT THE COURSE OF THIS WORK.

COMPLY WITH NFPA 241 FOR SAFEGUARDING DURING CONSTRUCTION AND ALTERATION OPERATIONS. IN ADDITION, ANY OPENINGS IN FIRE RATED SEPARATIONS BETWEEN OCCUPIED AND UNOCCUPIED (OR OPERATIONAL AND NON-OPERATIONAL) AREAS SHALL BE SEALED AT THE END OF EACH WORK DAY WITH AN APPROPRIATE FIRE RATED ENCLOSURE OR SEALANT. DO NOT COMPROMISE EXISTING SECURITY OR FIRE ALARM SYSTEMS SERVING THE OCCUPIED OR OPERATIONAL AREAS.

14. EQUIPMENT CONNECTIONS

PROVIDE FINAL ELECTRICAL CONNECTIONS TO ALL EQUIPMENT FURNISHED UNDER OTHER TRADES AND FOR ALL OWNER FURNISHED EQUIPMENT. PROVIDE A FLEXIBLE LIQUID TIGHT CONNECTION TO ALL VIBRATION PRODUCING EQUIPMENT.

15. INTERFERENCE WITH OCCUPANCY

THE PRESENT BUILDING IS OCCUPIED AND WILL CONTINUE TO BE DURING THE PROGRESS OF THIS WORK. IT IS IMPERATIVE, THEREFORE, THAT THE WORK COVERED BY THESE DOCUMENTS BE EXECUTED WITH A MINIMUM OF INCONVENIENCE TO THE BUILDING PERSONNEL, AND OTHER TENANTS.

16. TEMPORARY REQUIREMENTS

PROVIDE TEMPORARY LIGHTING, POWER, AND FIRE ALARM COMPONENTS AS REQUIRED IN AREAS UNDERGOING WORK DURING CONSTRUCTION.

FURNISH AND INSTALL AN APPROVED TEMPORARY FIRE ALARM SYSTEM AS REQUIRED BY LOCAL CODES AND AUTHORITY HAVING JURISDICTION.

ALL TEMPORARY ELECTRICAL EQUIPMENT SHALL BE REMOVED BEFORE THE AREA CEILINGS ARE INSTALLED.

17. CABLING

BRANCH CIRCUITS TO RECEPTACLES, LIGHTING AND MISC. SMALL LOADS (15 OR 20 AMP CIRCUITS), UNLESS SPECIFICALLY NOTED OTHERWISE, SHALL BE 2#12, 1#12G. - 3/4" C. SEE NOTE BELOW FOR ADDITIONAL REQUIREMENTS. MINIMUM SIZE WIRE SHALL BE #12 AWG AND MINIMUM SIZE CONDUIT SHALL BE 3/4" TRADE SIZE.

18. CABLING SIZES

BRANCH CIRCUIT CABLE SIZING SHALL BE BASED ON THE VALUES INDICATED BELOW:

A. 120/208V CABLING FROM PANEL TO THE ELECTRICAL LOAD SHALL BE ADJUSTED AS FOLLOWS UNLESS SPECIFICALLY NOTED OTHERWISE:

0' - 100' #12 AWG MINIMUM
100' - 200' #10 AWG MINIMUM
200' - 250' #8 AWG MINIMUM

B. 277/480V CABLING FROM PANEL TO THE ELECTRICAL LOAD SHALL BE ADJUSTED AS FOLLOWS UNLESS SPECIFICALLY NOTED OTHERWISE:

0' - 150' #12 AWG MINIMUM
150' - 250' #10 AWG MINIMUM
250' - 300' #8 AWG MINIMUM

19. SPECIAL LUG REQUIREMENTS

ANY CABLE WHICH TERMINATES DIRECTLY ON TO A BUS BAR SHALL BE 2 BOLT LONG BARREL TYPE WITH INSPECTION HOLES PRODUCED WITH NON FLASHING TYPE DYES AS MANUFACTURED BY THOMAS AND BETTS OR APPROVED EQUAL, MINIMUM 10 TONS OF COMPRESSION, HEX CRIMP. THE USE OF HEAT SHRINK TUBING IS EXPLICITLY FORBIDDEN.

GENERAL NOTES FOR DEMOLITION

1. EXAMINATION

A. THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE AREAS UNDER WHICH THE WORK IS TO BE PERFORMED AND NOTIFY THE OWNER IN WRITING OF ANY CONDITIONS DETRIMENTAL TO THE PROPER AND TIMELY COMPLETION OF THE WORK. CONTRACTOR SHALL NOT PROCEED WITH WORK UNTIL SATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

B. VERIFY FIELD MEASUREMENTS AND CIRCUITING ARRANGEMENTS FOR DEVICES SHOWN ON DRAWINGS.

C. DEMOLITION DRAWINGS ARE BASED ON CASUAL FIELD OBSERVATION AND EXISTING RECORD DRAWINGS. REPORT DISCREPANCIES TO OWNER BEFORE DISTURBING EXISTING INSTALLATION.

D. COMMENCEMENT OF DEMOLITION MEANS ACCEPTANCE OF EXISTING CONDITIONS.

2. PREPARATION

A. DISCONNECT ELECTRICAL SYSTEMS IN WALLS, FLOORS, AND CEILINGS SCHEDULED FOR REMOVAL.

B. COORDINATE UTILITY SERVICE SHUT-DOWN WITH THE UTILITY COMPANY.

C. NOTIFY THE OWNER AT LEAST 48 HOURS BEFORE PARTIALLY OR COMPLETELY DISABLING ANY ELECTRICAL SYSTEM.

D. PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. EXPERIENCED PERSONNEL SHALL BE USED WHEN WORKING ON ENERGIZED EQUIPMENT OR CIRCUITS.

E. EXISTING ELECTRICAL SERVICE: MAINTAIN EXISTING ELECTRICAL SYSTEM IN SERVICE UNTIL NEW SERVICE IS COMPLETE AND READY FOR SERVICE. DISABLE ELECTRICAL SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. MINIMIZE OUTAGE DURATION. MAKE TEMPORARY CONNECTIONS TO MAINTAIN ELECTRICAL SERVICE IN AREAS ADJACENT TO WORK AREA.

F. MAINTAIN EXISTING FIRE ALARM SYSTEM IN SERVICE UNTIL NEW SYSTEM IS ACCEPTED. DISABLE SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. WHERE FIRE ALARM DEVICES MUST BE REMOVED TO ACCOMMODATE THE REMOVAL OF WALLS, NOTIFY THE OWNER AND ENGINEER IN WRITING WITH LOCATIONS OF DEVICES.

3. DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK.

A. REMOVE, RELOCATE, AND EXTEND EXISTING ELECTRICAL WORK AS INDICATED ON THE DRAWINGS AND AS NOTED HEREIN.

B. REMOVE ABANDONED WIRING BACK TO SOURCE OF SUPPLY.

C. WHERE SOURCE OF SUPPLY IS A PANELBOARD, RE-LABEL PROTECTIVE DEVICE AS "SPARE". AFTER DEMOLITION IS COMPLETE, SUBMIT REVISED PANELBOARD SCHEDULES INDICATING "SPARES" TO OWNER AND ENGINEER.

D. REMOVE EXPOSED ABANDONED CONDUIT ABOVE ACCESSIBLE CEILING FINISHES. CUT CONDUIT FLUSH WITH WALLS AND FLOORS, AND PATCH SURFACES.

E. DISCONNECT AND REMOVE ABANDONED OUTLETS AND ASSOCIATED DEVICES.

F. DISCONNECT AND REMOVE ABANDONED PANELBOARDS AND DISTRIBUTION EQUIPMENT.

G. DISCONNECT AND REMOVE ELECTRICAL DEVICES AND EQUIPMENT THAT IS NO LONGER IN USE.

H. DISCONNECT AND REMOVE ABANDONED LUMINARIES. REMOVE BRACKETS, STEMS, HANGERS, AND ALL OTHER ACCESSORIES.

I. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION OF WORK.

4. CLEANING, REPAIR, AND REPLACEMENT

A. GENERAL: CLEAN AND REPAIR EXISTING MATERIALS AND EQUIPMENT THAT WILL REMAIN OR ARE TO BE REUSED.

B. PANELBOARDS: CLEAN EXPOSED SURFACES AND TIGHTEN ALL ELECTRICAL CONNECTIONS. REPLACE DAMAGED CIRCUIT BREAKERS AND PROVIDE CLOSURE PLATES FOR VACANT POSITIONS. PROVIDE TYPED SCHEDULES SHOWING REVISED CIRCUITING INFORMATION.

C. LUMINAIRES: REMOVE EXISTING LUMINAIRES FOR CLEANING. USE MILD DETERGENT TO CLEAN EXTERIOR AND INTERIOR SURFACES, RINSE CLEAN WITH CLEAN WATER AND WIPE DRY. REPLACE EXISTING LAMPS AND BALLASTS WITH NEW.

5. DISPOSAL

A. OWNER SHALL HAVE RIGHT TO RETAIN ANY EQUIPMENT OR MATERIALS THAT HAVE BEEN DEMOLISHED PRIOR TO DISPOSAL OR REMOVAL FROM SITE.

B. ANY EQUIPMENT OR MATERIALS NOT WANTED BY THE OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND REMOVED FROM SITE.

C. CONTRACTOR SHALL COMPLY WITH ENVIRONMENTAL LAWS AND REGULATIONS FOR DISPOSAL OF DEMOLISHED MATERIALS AND EQUIPMENT.

ELECTRICAL SHEET SPECIFICATION - BASIC ELECTRICAL MATERIALS AND METHODS

1.0 GENERAL

1.1 SCOPE: THE WORK SPECIFIED IN THESE NOTES INCLUDES, BUT SHALL NOT BE LIMITED TO, PROVIDING LABOR, MATERIAL, EQUIPMENT, AND SERVICES NECESSARY FOR ELECTRICAL WORK AS SHOWN ON THE DRAWINGS AND AS HEREIN SPECIFIED.

1.2 REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION AND COORDINATION.

1.3 THE CONTRACTOR SHALL BE RESPONSIBLE FOR SHOP DRAWING SUBMITTALS WHICH SHALL INCLUDE, BUT NOT BE LIMITED TO A MINIMUM OF FIVE (5) COPIES OF: PRODUCT DATA AND EQUIPMENT SPECIFICATIONS SHEETS, SCHEMATIC DIAGRAMS, WIRING DIAGRAMS, SIZES, MOUNTING DETAILS (WITH REQUIRED ELEVATIONS), TECHNICAL DESCRIPTIONS OF COMPONENTS, TEST REPORTS, CERTIFICATES, OPERATING AND MAINTENANCE MANUALS, AND PROPER CALCULATIONS TO ENSURE SPECIFIED PERFORMANCE OF THE SYSTEMS. ALL SUBMITTALS SHALL BE SENT IN DIGITAL (PDF) FORMAT. NO EQUIPMENT SHALL BE ORDERED, PURCHASED, OR INSTALLED WITHOUT PRIOR APPROVAL BY THE ENGINEER OF THE SUBMITTALS AND SHOP DRAWINGS.

1.4 ALL WORK SHALL COMPLY WITH THE ELECTRICAL CODE APPROVED BY THE LOCAL AUTHORITY, AND ALL OTHER APPLICABLE FEDERAL, STATE AND LOCAL CODES. WHERE THE CONSTRUCTION DOCUMENTS INDICATE MORE RESTRICTIVE REQUIREMENTS, THE CONSTRUCTION DOCUMENTS SHALL GOVERN BUT THE CONSTRUCTION DOCUMENTS SHALL NOT BE INTERPRETED AS AUTHORITY TO VIOLATE ANY CODE OR REGULATION.

1.5 NOT ALL EXISTING CONVENIENCE RECEPTACLES, WALL SWITCHES, LIGHTS, ETC., AND OTHER ELECTRICAL EQUIPMENT ARE SHOWN ON THE PLANS. A SURVEY OF THE JOB SITE MUST BE MADE TO DETERMINE THE EXTENT OF EXISTING ELECTRICAL EQUIPMENT.

1.6 IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN ITEMS INDICATED ON THE PLANS AND/OR SPECIFICATION NOTES OR WITH CODE REQUIREMENTS, THE NOTE, SPECIFICATION OR CODE WHICH PRESCRIBES AND ESTABLISHES THE MORE COMPLETE JOB OR THE HIGHER STANDARD SHALL PREVAIL.

1.7 OMISSIONS FROM THE DRAWINGS, SPECIFICATION NOTES, OR THE OF DETAILS OF WORK WHICH ARE NECESSARY TO CARRY OUT THE INTENT OF THE DRAWINGS AND SPECIFICATIONS, OR WHICH ARE CUSTOMARILY PERFORMED, SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMING SUCH OMITTED DETAILS OF THE WORK BUT THEY SHALL BE PERFORMED AS IF FULLY AND CORRECTLY SET FORTH AND DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS.

1.8 THE CONTRACTOR SHALL CHECK ALL DRAWINGS FURNISHED IMMEDIATELY UPON RECEIPT AND SHALL PROMPTLY NOTIFY THE OWNER OF ANY DISCREPANCIES. FIGURES MARKED ON DRAWINGS SHALL IN GENERAL BE FOLLOWED IN PREFERENCE TO SCALE MEASUREMENTS. LARGE SCALE DRAWINGS SHALL IN GENERAL GOVERN SMALL SCALE DRAWINGS. THE CONTRACTOR SHALL COMPARE ALL DRAWINGS AND VERIFY THE FIGURES BEFORE LAYING OUT THE WORK AND WILL BE RESPONSIBLE FOR ANY ERRORS WHICH MIGHT HAVE BEEN AVOIDED THEREBY.

1.9 THE CONTRACTOR SHALL FURNISH ALL PERMITS AND PAY ALL FEES.

2.0 PRODUCTS AND MATERIALS

2.1 RACEWAYS

A. CONDUIT AND FITTINGS INSTALLED FOR MOTOR CIRCUITS, FEEDER CIRCUITS, IN CONCRETE SLABS ON GRADE, EXPOSED TO WEATHER, BURIED UNDERGROUND OR EXPOSED WHERE SUBJECT TO MECHANICAL INJURY SHALL BE RIGID GALVANIZED STEEL (RGS) OR INTERMEDIATE METAL CONDUIT (IMC) COMPLYING ANSI C80.1. FITTINGS SHALL BE THREADED.

B. CONDUIT AND FITTINGS INSTALLED FOR CONCEALED INTERIOR WORK FOR LIGHTING/ RECEPTACLES/ BRANCH CIRCUITS, FIRE ALARM, PAGING, SIGNAL, AND LOW VOLTAGE CIRCUITS SHALL BE ELECTRICAL METAL TUBING (EMT) COMPLYING WITH NEMA FB C80.3. EMT FITTINGS SHALL BE ZINC PLATED COMPRESSION TYPE. SET SCREW FITTINGS ARE NOT PERMITTED.

C. FINAL CONNECTIONS TO MOTORS, TRANSFORMERS, AND VIBRATING EQUIPMENT SHALL BE MADE WITH LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC).

D. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH (19 MM) EXCEPT THAT CONTROL, SIGNAL, AND TWO-WIRE LIGHTING SWITCH LEGS MAY BE 1/2 INCH (13 MM).

E. RACEWAYS SHALL BE SECURELY SUPPORTED BY APPROVED METHODS AT FIVE FOOT (5') INTERVALS.

F. PULL BOXES ARE REQUIRED IN RUNS OVER 100 FEET, WHEN MORE THAN THE EQUIVALENT OF THREE (3) 90° BENDS ARE USED, AND AS SHOWN ON DRAWINGS.

2.3 BOXES

A. PULL AND JUNCTION BOXES AND COVERS SHALL BE FABRICATED FROM GALVANIZED NEC GAGE SHEET STEEL. OUTLET BOXES TO BE OF THE HOT-DIPPED GALVANIZED, PRESSED STEEL, KNOCKOUT TYPE. BOXES SHALL GENERALLY BE 4 INCHES SQUARE EXCEPT WHERE NOTED OTHERWISE.

2.4 WIRE AND CABLE

A. UNLESS NOTED OTHERWISE, CONDUCTORS FOR POWER AND LIGHTING SHALL BE COPPER, #12 AWG MINIMUM WITH 600 VOLT INSULATION, TYPE THHN, 90 DEGREE C, CONFORMING TO THE LATEST NEC AND SHALL BEAR UL LABEL.

B. BRANCH CIRCUIT WIRING SHALL BE SOLID COPPER WHEN #10 AWG OR SMALLER, UNLESS OTHERWISE SPECIFIED. WIRE #8 AWG AND LARGER SHALL BE STRANDED COPPER.

C. WIRE FOR SIGNAL AND CONTROL SYSTEMS SHALL BE #14 AWG, UNLESS OTHERWISE NOTED.

2.5 WIRING DEVICES

A. 120/277V WALL SWITCHES SHALL BE MOUNTED IN SUITABLE OUTLET BOXES IN THE WALL OR PARTITIONS. THEY SHALL BE OF THE AC QUIET DESIGN, TOGGLE HANDLE, 20 AMP RATED. THEY SHALL BE SPECIFICATION GRADE.

B. CONVENIENCE OUTLETS SHALL EACH BE SPECIFICATION GRADE, GROUNDING TYPE, THREE WIRE (TWO CIRCUIT WIRES PLUS EQUIPMENT GROUND) SINGLE OR DUPLEX AS INDICATED ON THE DRAWINGS, RATED FOR 125 VOLTS, 20 AMPS, FOR REGULAR OUTLET MOUNTING, AND WITH FACE SLOT CONFIGURATION MATCHING THE NEMA STANDARD FOR THE RATING AND WIRES.

C. SPECIAL PURPOSE NEMA OUTLETS OTHER THAN 20 AMP CONVENIENCE OUTLETS SHALL BE SHOWN ON PLANS.

D. STYLE AND COLOR OF WIRING DEVICES AND COVER PLATES SHALL BE SELECTED BY THE ARCHITECT.

E. ACCEPTABLE MANUFACTURERS: HUBBELL, LEVITON, P&S/LEGRAND, OR EATON.

2.6 ELECTRICAL CONNECTIONS

A. ALL WIRE CONNECTIONS SHALL BE MADE BY MEANS OF SOLDERLESS CONNECTORS.

B. BRANCH CIRCUIT JOINTS OF SPLICES FOR WIRES #10 AND SMALLER SHALL BE MADE WITH 3M BRAND SCOTCHLOK ELECTRICAL SPRING CONNECTORS.

C. SPLICES AND JOINTS FOR CONDUCTORS NO. 8 AND LARGER SHALL BE BY MEANS OF HIGH PRESS, LONG BARREL, CAST COPPER, COMPRESSION CONNECTORS.

D. JOINT AND SPLICES SHALL BE COVERED WITH 3M ELECTRICAL TAPE TO 150% OF INSULATION VALUE.

E. NO SPLICES SHALL BE MADE IN THE CONDUCTOR EXCEPT AT OUTLET BOXES, JUNCTION BOXES, OR IN SPLICE BOXES.

2.7 PANELBOARDS

A. EXISTING PANEL BOARDS TO BE REUSED SHALL BE PROVIDED WITH UPDATED TYPE WRITTEN DIRECTORIES AFTER NEW WORK IS COMPLETED. CONTRACTOR SHALL PROVIDE NEW CIRCUIT BREAKERS TO MATCH EXISTING PANEL BOARDS AS INDICATED ON DRAWINGS.

2.9 DISCONNECT SWITCHES

A. PROVIDE HEAVY DUTY SURFACE-MOUNTED SAFETY SWITCHES FOR MOTORS UNLESS OTHERWISE INDICATED, OF TYPES, SIZES, AND ELECTRICAL CHARACTERISTICS AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS. THE SWITCHES SHALL BE FUSED OR NON-FUSED AS INDICATED ON THE DRAWINGS OR AS REQUIRED AND SHALL BE MANUFACTURED BY SQUARE D, EATON, OR GENERAL ELECTRIC.

B. SWITCHES SHALL HAVE SWITCH BLADES WHICH SHALL BE FULLY VISIBLE IN THE OFF POSITION WHEN THE ENCLOSURE DOOR IS OPEN. CURRENT CARRYING PARTS SHALL BE PLATED COPPER AND SWITCH CONTACTS SHALL BE SILVER-TUNGSTEN. SWITCHES SHALL BE QUICK-MAKE, QUICK-BREAK TYPE. THE OPERATING HANDLE SHALL BE AN INTEGRAL PART OF THE ENCLOSURE BASE AND SHALL BE PADLOCKABLE IN THE OFF POSITION. THE HANDLE POSITION SHALL INDICATE WHETHER THE SWITCH IS ON OR OFF. SWITCHES SHALL BE HORSEPOWER RATED FOR 250 AC OR DC OR 600 VOLTS AC AS REQUIRED.

C. CONTACTS: PROVIDE TWO FORM C AUXILIARY, 10 AMPERE, 300 VOLT RATED CONTACTS. THE CONTACTS SHALL PROVIDE FOR TWO NORMALLY OPEN AND TWO NORMALLY CLOSED CONTACTS FOR SWITCH OPEN OR CLOSED POSITION.

2.14 FIRE ALARM SYSTEM

A. ADD NEW DEVICES TO EXISTING SYSTEM AS INDICATED ON THE PLANS. DEVICES SHALL BE COMPATIBLE WITH EXISTING SYSTEM. INSTALLATION SHALL BE BY A LICENSED FIRE ALARM CONTRACTOR THAT IS FACTORY AUTHORIZED.

B. WIRING SHALL BE SOLID-COPPER CONDUCTORS WITH 600-V RATED, 90 DEG C, COLOR-CODED INSULATION PER NEC 760 FPLP TYPE CABLE INSTALLED IN CONDUIT.

C. PULL STATIONS SHALL BE DOUBLE-ACTION TYPE, FABRICATED OF METAL OR PLASTIC, AND FINISHED IN RED WITH MOLDED, RAISED-LETTER OPERATING INSTRUCTIONS OF CONTRASTING COLOR.

D. AUDIBLE/VISUAL ALARM DEVICES SHALL BE COMBINATION HORN/SPEAKER/STROBE UNITS XENON STROBE LIGHTS WITH CLEAR OR NOMINAL WHITE POLYCARBONATE LENS. MOUNT LENSES ON AN ALUMINUM FACEPLATE. THE WORD "FIRE" IS ENGRAVED IN MINIMUM 1-INCH (25-MM) HIGH LETTERS ON THE LENS. DEVICES HAVE A MINIMUM LIGHT OUTPUT TO BE ADA COMPLIANT. SPEAKERS SHALL BE CAPABLE OF PRODUCING A RANGE OF PROGRAMMABLE TONES AND/OR VOICE ANNUNCIATION AT 15DBA ABOVE AVERAGE AMBIENT SOUND LEVELS, NOT LESS THAN 75DBA AND NOT GREATER THAN 120DBA AT 10 FEET. COMBINATION DEVICES CONSIST OF FACTORY-COMBINED, AUDIBLE AND VISUAL ALARM UNITS IN A SINGLE MOUNTING ASSEMBLY.

E. SMOKE DETECTORS SHALL BE PHOTOELECTRIC OR COMBINATION PHOTOELECTRIC AND IONIZATION, AND MATCH EXISTING SYSTEM.

F. HEAT DETECTORS SHALL BE FIXED OR RATE OF RISE AS INDICATED ON THE DRAWINGS TO MATCH EXISTING SYSTEM.

2.17 GROUNDING

A. THE COMPLETE ELECTRICAL INSTALLATION SHALL BE PERMANENTLY AND EFFECTIVELY GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND LOCAL CODE. EQUIPMENT GROUNDING SYSTEM CABLE SHALL BE COPPER.

B. EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSTALLED IN ALL RACEWAYS AND ENCLOSURES WITHIN THE BUILDING.

C. ACCESSIBLE GROUNDING CONNECTIONS SHALL BE BOLTED OR CLAMP TYPE UNLESS OTHERWISE INDICATED. SOLDERED CONNECTIONS WILL NOT BE PERMITTED IN THE GROUNDING SYSTEM.

D. WHERE CONDUITS TERMINATE AT EQUIPMENT, OR IN THE PULL BOXES OF EQUIPMENT, FOR WHICH A GROUND BUS IS SPECIFIED, PROVIDE THEM WITH BUSHINGS OF THE GROUNDING TYPE HAVING THE MAXIMUM AVAILABLE ACCOMMODATION FOR GROUND WIRES. GROUND EACH BUSHING INDIVIDUALLY TO THE EQUIPMENT GROUND BUS WITH THE CODE REQUIRED SIZE COPPER WIRE.

3.0 EXECUTION

3.1 AS A MINIMUM, ELECTRICAL WORK SHALL COMPLY WITH NECA STANDARDS AND RECOMMENDED PRACTICES FOR ELECTRICAL INSTALLATION AS APPLICABLE TO THIS PROJECT. NECA PHONE 201-215-4504.

3.2 THE CONTRACTOR SHALL MAKE POWER CONNECTIONS TO ALL MOTORS AND EQUIPMENT FURNISHED BY OTHERS. SEE ARCHITECTURAL AND MECHANICAL DRAWINGS, SPECIFICATIONS AND NOTES FOR ADDITIONAL INFORMATION.

3.3 ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING RATING NOT LESS THAN THE MAXIMUM SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED.

3.4 ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BEAR THE UNDERWRITERS' LABEL (UL) AND SHALL BE INSTALLED IN THE MANNER FOR WHICH THEY ARE DESIGNED AND APPROVED.

3.5 ALL DEVICES INSTALLED OUTSIDE OR IN DAMP LOCATIONS SHALL BE APPROVED WEATHERPROOF.

3.6 THE CONTRACTOR SHALL INSTALL ALL CONDUITS AND WIRES WITH A MINIMUM NUMBER OF BENDS AND IN SUCH A MANNER AS TO CONFORM TO THE STRUCTURE, AVOID OBSTRUCTIONS, PRESERVE HEAD ROOM, KEEP OPENINGS AND PASSAGEWAYS CLEAR AND MEET ALL STRUCTURAL CODE REQUIREMENTS.

3.7 THE CONTRACTOR SHALL PROVIDE SUPPORT FOR ALL FIXTURES AND ELECTRICAL EQUIPMENT TO COMPLY WITH THE SEISMIC REQUIREMENTS OF THE UNIFORM BUILDING CODE AND ALL LOCAL ORDINANCES.

3.8 ALL CONDUIT CONNECTIONS TO MACHINES, MOTORS, AND EQUIPMENT SUBJECT TO VIBRATION (INCLUDING TRANSFORMERS) SHALL BE MADE WITH LIQUIDTIGHT FLEX CONDUIT. FLEXIBLE CONNECTION SHALL BE BETWEEN 18 AND 36 INCHES IN LENGTH. ARRANGE CONNECTIONS TO PREVENT THE ENTRANCE OF MOISTURE. PROVIDE CONTINUOUS EQUIPMENT GROUND WIRE THROUGH ALL FLEXIBLE CONDUITS TO ASSURE GROUND CONTINUITY.

3.9 THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.

3.10 THE ENTIRE WIRING SYSTEM SHALL BE TESTED FOR SHORT CIRCUITS, GROUNDS AND INSULATION RESISTANCE BETWEEN CONDUCTORS AND TO GROUND.

3.11 THE CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS, WIRES, BOXES, SWITCHES, LIGHT FIXTURES (WITH LAMPS), RECEPTACLES, SERVICE DEVICES, SWITCHBOARDS AND PANELBOARDS REQUIRED FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM.

3.12 PROVIDE A EXTERNAL MANUAL DISCONNECTING MEANS AT ALL MOTORS OR PACKAGED MECHANICAL EQUIPMENT UNLESS NOTED OTHERWISE.

3.13 PROVIDE AN ENCLOSURE OF EQUAL FIRE RESISTANT RATING AROUND ALL FIXTURES AND EQUIPMENT INSTALLED IN OR PENETRATING THROUGH FIRE RATED SEPARATIONS. THROUGH STOP FIRE SEALING OF CONDUITS SHALL BE MADE WITH 3M CP25WP+ CAULK ACCORDING TO UL APPLICATION.

3.14 LOCATIONS SHOWN ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS TAKE PRECEDENCE OVER THOSE SHOWN ON THE ELECTRICAL DRAWINGS. REFER TO THE MECHANICAL, PLUMBING AND HEAT/VENT/AC DRAWINGS FOR THE EXACT LOCATIONS, RATINGS, TYPE CONNECTIONS, WIRING DIAGRAMS AND AUXILIARY DEVICES.

3.15 THE CONTRACTOR SHALL FURNISH AND INSTALL CONDUIT, WIRE AND CONNECTIONS FOR LINE VOLTAGE LIGHTING CONTROLS AND LOW VOLTAGE LIGHTING CONTROL UNLESS NOTED OTHERWISE ON DRAWINGS. THE CONTRACTOR SHALL MAKE ALL POWER CONNECTIONS ALL TO A/C EQUIPMENT INCLUDING 120 VOLT POWER CONTROL, MONITORING, AND SIGNALING EQUIPMENT FURNISHED BY OTHER DISCIPLINES. COORDINATE WITH OTHER DISCIPLINES FOR REQUIREMENTS.

3.16 THE CONTRACTOR SHALL RECEIVE, STORE AND INSTALL ALL ELECTRICAL ITEMS FURNISHED BY THE OWNER.

3.17 PROVIDE TYPEWRITTEN DIRECTORY CARD IN ALL NEW AND MODIFIED PANELS. IDENTIFY LOAD SERVED BY EACH CIRCUIT BREAKER.

3.18 PROVIDE ENGRAVED NAMEPLATES ON ALL PANEL(S), TRANSFORMERS, DISCONNECT SWITCHES, AND SWITCHBOARDS.

3.19 RECEPTACLES SHALL HAVE PRINTED LABELS WITH THE PANEL AND CIRCUIT NUMBER PLACED ON THE COVER. THE LABEL SHALL BE RED WITH WHITE LETTERS FOR EMERGENCY RECEPTACLES AND BLACK WITH WHITE LETTERS FOR NORMAL RECEPTACLES.

3.20 THE CONTRACTOR SHALL PROVIDE A SET OF AS-BUILT DRAWINGS SHOWING THE LOCATIONS AND DEPTHS OF ALL UNDERGROUND CONDUITS, INDICATE ALL CHANGES MADE DURING CONSTRUCTION, AND ANY DEVIATIONS FROM THE ELECTRICAL DRAWINGS.

3.21 PROVIDE PULL WIRE IN ALL EMPTY CONDUITS.

3.22 FOR PURPOSES OF CLEARNESS AND LEGIBILITY, THE ELECTRICAL DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC. THE SIZE AND LOCATION OF EQUIPMENT IS SHOWN TO SCALE WHEREVER POSSIBLE. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND INFORMATION AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATION SECTIONS WHERE ELECTRICAL WORK INTERFACES WITH OTHER TRADES.

3.23 DISCONNECT AND REMOVE ALL EXISTING INTERIOR AND EXTERIOR ELECTRICAL DEVICES, EQUIPMENT, WIRING, EXPOSED ABANDONED CONDUIT, ETC., NO LONGER REQUIRED UNLESS OTHERWISE NOTED.

3.24 CONTRACTORS SHALL VISIT THE EXISTING BUILDINGS AND GROUNDS AND FAMILIARIZE THEMSELVES WITH EXISTING CONDITIONS. NO ALLOWANCE WILL BE MADE SUBSEQUENTLY, ON THIS CONDITION, 0N BEHALF OF THE CONTRACTORS FOR ANY ERROR OR NEGLIGENCE ON THEIR PART.

3.25 WHERE EXISTING EQUIPMENT OR CONDUIT IS REMOVED OR CHANGED, ALL CONDUIT AND WIRE NO LONGER IN SERVICE SHALL BE REMOVED AS DIRECTED BY THE ARCHITECT. ALL BUILDING SURFACES DAMAGED AND OPENINGS LEFT BY THE REMOVAL OR RELOCATION OF EQUIPMENT, CONDUIT, ETC., SHALL BE REPAIRED BY THIS CONTRACTOR.

3.26 EXISTING CONDUIT AND WIRE SHALL NOT BE REUSED IF MOVED FROM ITS PRESENT LOCATION OR IF IT IS OF INADEQUATE CAPACITY FOR THE NEW LOAD.

3.27 ALL CONDUIT SHALL BE CONCEALED WHEREVER POSSIBLE. THE CONTRACTOR SHALL REVIEW THE PLANS AND SPECIFICATIONS TO DETERMINE WHERE NEW WALLS AND CEILINGS ARE TO BE INSTALLED AND SHALL MAKE USE OF THESE AREAS TO CONCEAL CONDUIT. THE CONTRACTOR SHALL USE SURFACE RACEWAYS SUCH AS WIREMOLD WHERE NECESSARY, OR AS DIRECTED.

ELECTRCAL DRAWING LIST

SHEET NO.	DRAWING TITLE	SCALE
E000	ELECTRICAL SYMBOLS AND ABBREVIATIONS, SPECIFICATIONS AND NOTES	NOT TO SCALE
ED103	ELECTRICAL ROOF DEMOLITION PLAN	1/8" = 1'-0"
E100	ELECTRICAL LOWER LEVEL POWER PLAN - DEMOLITION AND NEW WORK	1/4" = 1'-0"
E103	ELECTRICAL ROOF NEW WORK PLAN	1/8" = 1'-0"
E400	ELECTRICAL PANEL SCHEDULES	NOT TO SCALE

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CONSULTANTS

SEAL

ELECTRICAL SYMBOLS AND ABBREVIATIONS, SPECIFICATIONS, AND NOTES

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR BID/PERMIT	11.01.2024

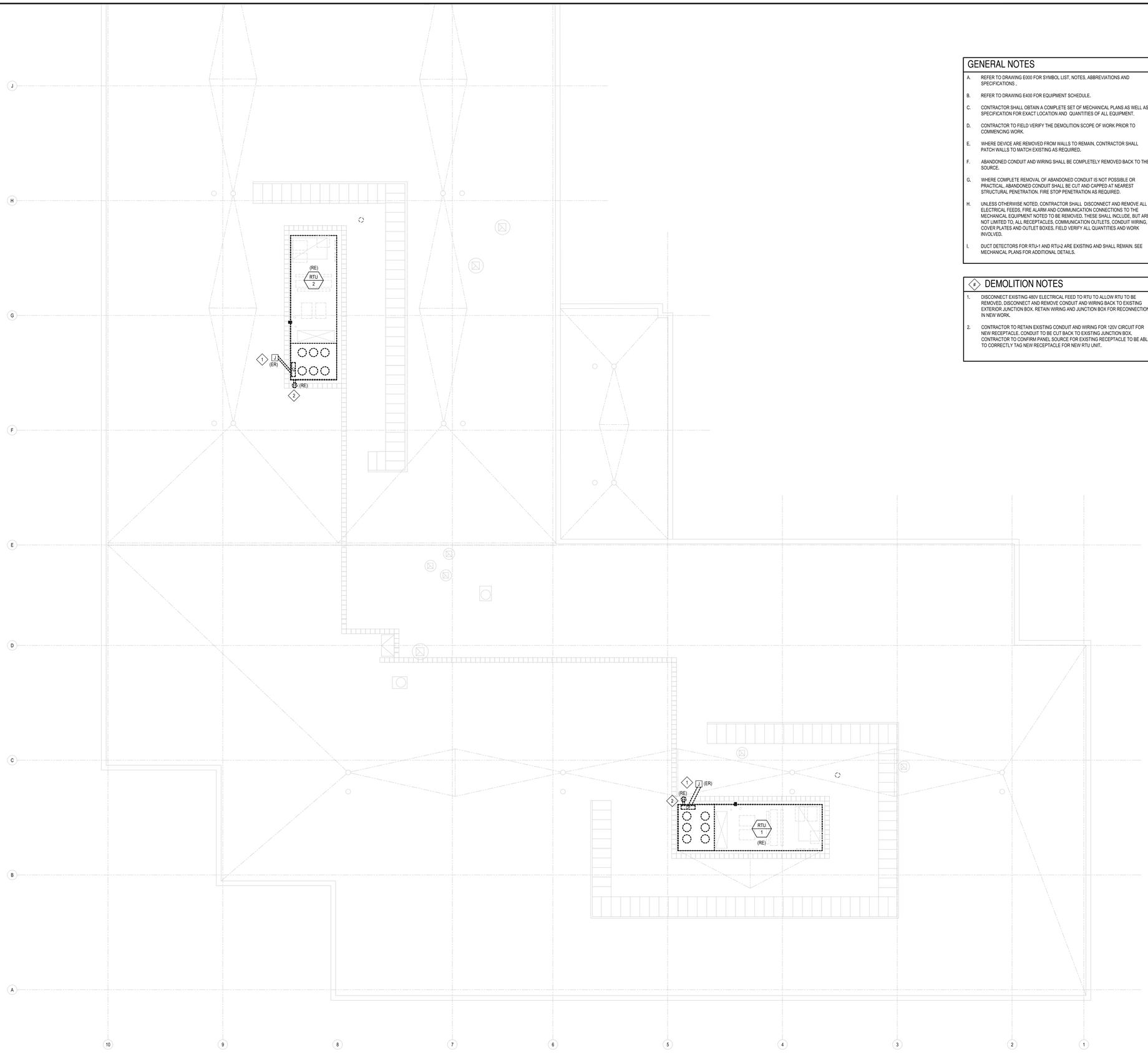
KEYPLAN

SCALE
NO SCALE

DRAWN	CHECKED	APPROVED
SJD	SDG	---

PROJECT NO.
P23-0998-01

E000



1 PARTIAL ROOF FLOOR PLAN - DEMOLITION

N

GENERAL NOTES

A. REFER TO DRAWING E000 FOR SYMBOL LIST, NOTES, ABBREVIATIONS AND SPECIFICATIONS .

B. REFER TO DRAWING E400 FOR EQUIPMENT SCHEDULE.

C. CONTRACTOR SHALL OBTAIN A COMPLETE SET OF MECHANICAL PLANS AS WELL AS SPECIFICATION FOR EXACT LOCATION AND QUANTITIES OF ALL EQUIPMENT.

D. CONTRACTOR TO FIELD VERIFY THE DEMOLITION SCOPE OF WORK PRIOR TO COMMENCING WORK.

E. WHERE DEVICE ARE REMOVED FROM WALLS TO REMAIN, CONTRACTOR SHALL PATCH WALLS TO MATCH EXISTING AS REQUIRED.

F. ABANDONED CONDUIT AND WIRING SHALL BE COMPLETELY REMOVED BACK TO THE SOURCE.

G. WHERE COMPLETE REMOVAL OF ABANDONED CONDUIT IS NOT POSSIBLE OR PRACTICAL, ABANDONED CONDUIT SHALL BE CUT AND CAPPED AT NEAREST STRUCTURAL PENETRATION. FIRE STOP PENETRATION AS REQUIRED.

H. UNLESS OTHERWISE NOTED, CONTRACTOR SHALL DISCONNECT AND REMOVE ALL ELECTRICAL FEEDS, FIRE ALARM AND COMMUNICATION CONNECTIONS TO THE MECHANICAL EQUIPMENT NOTED TO BE REMOVED. THESE SHALL INCLUDE, BUT ARE NOT LIMITED TO, ALL RECEPTACLES, COMMUNICATION OUTLETS, CONDUIT WIRING, COVER PLATES AND OUTLET BOXES. FIELD VERIFY ALL QUANTITIES AND WORK INVOLVED.

I. DUCT DETECTORS FOR RTU-1 AND RTU-2 ARE EXISTING AND SHALL REMAIN. SEE MECHANICAL PLANS FOR ADDITIONAL DETAILS.

DEMOLITION NOTES

1. DISCONNECT EXISTING 480V ELECTRICAL FEED TO RTU TO ALLOW RTU TO BE REMOVED. DISCONNECT AND REMOVE CONDUIT AND WIRING BACK TO EXISTING EXTERIOR JUNCTION BOX. RETAIN WIRING AND JUNCTION BOX FOR RECONNECTION IN NEW WORK.

2. CONTRACTOR TO RETAIN EXISTING CONDUIT AND WIRING FOR 120V CIRCUIT FOR NEW RECEPTACLE. CONDUIT TO BE CUT BACK TO EXISTING JUNCTION BOX. CONTRACTOR TO CONFIRM PANEL SOURCE FOR EXISTING RECEPTACLE TO BE ABLE TO CORRECTLY TAG NEW RECEPTACLE FOR NEW RTU UNIT.

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CONSULTANTS

SEAL

ELECTRICAL ROOF DEMOLITION PLAN

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR BID/PERMIT	11.01.2024

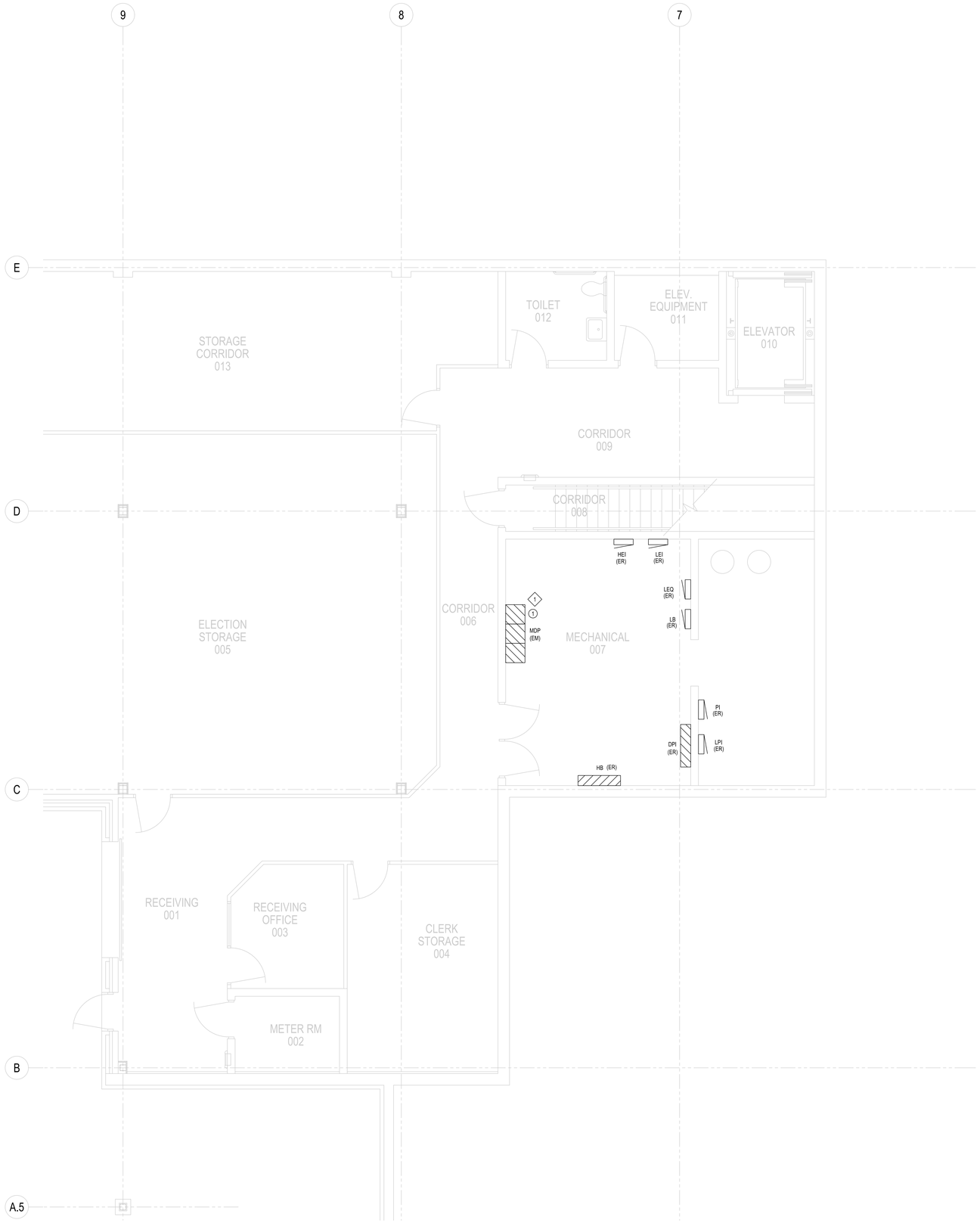
KEYPLAN

SCALE: 0 2 4 8 16
1/8"=1'-0"

DRAWN	CHECKED	APPROVED
SJD	SDG	---

PROJECT NO. P23-0998-01

ED103



1 ELECTRICAL LOWER LEVEL FLOOR PLAN - DEMOLITION AND NEW WORK

GENERAL NOTES

A. REFER TO DRAWING E000 FOR SYMBOL LIST, NOTES, ABBREVIATIONS AND SPECIFICATIONS.

B. REFER TO DRAWING E400 FOR EQUIPMENT SCHEDULE.

C. CONTRACTOR SHALL OBTAIN A COMPLETE SET OF MECHANICAL PLANS AS WELL AS SPECIFICATION FOR EXACT LOCATION AND QUANTITIES OF ALL EQUIPMENT.

(#) DEMOLITION PLAN NOTES

1. CONTRACTOR TO DISCONNECT AND REMOVE EXISTING CIRCUIT BREAKERS FOR RTU-1 AND RTU-2. PREPARE SPACES FOR THE INSTALLATION OF NEW BREAKERS IN NEW WORK.

(#) CONSTRUCTION PLAN NOTES

1. CONTRACTOR TO PROVIDE NEW 200A CIRCUIT BREAKERS IN SWITCHBOARD MDP TO FEED NEW RTU UNITS RTU-1 AND RTU-2. SEE DRAWINGS E400 FOR ADDITIONAL INFORMATION.

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ELECTRICAL LOWER LEVEL POWER PLAN - DEMOLITION AND NEW WORK

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

ISSUES & REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR BID/PERMIT	11.01.2024

KEYPLAN

SCALE
0 1 2 4 8
1/4"=1'-0"

DRAWN	CHECKED	APPROVED
SJD	SDG	---

PROJECT NO.
P23-0998-01

E100

GENERAL NOTES

A. REFER TO DRAWING E000 FOR SYMBOL LIST, NOTES, ABBREVIATIONS AND SPECIFICATIONS.

B. REFER TO DRAWING E400 FOR EQUIPMENT SCHEDULE.

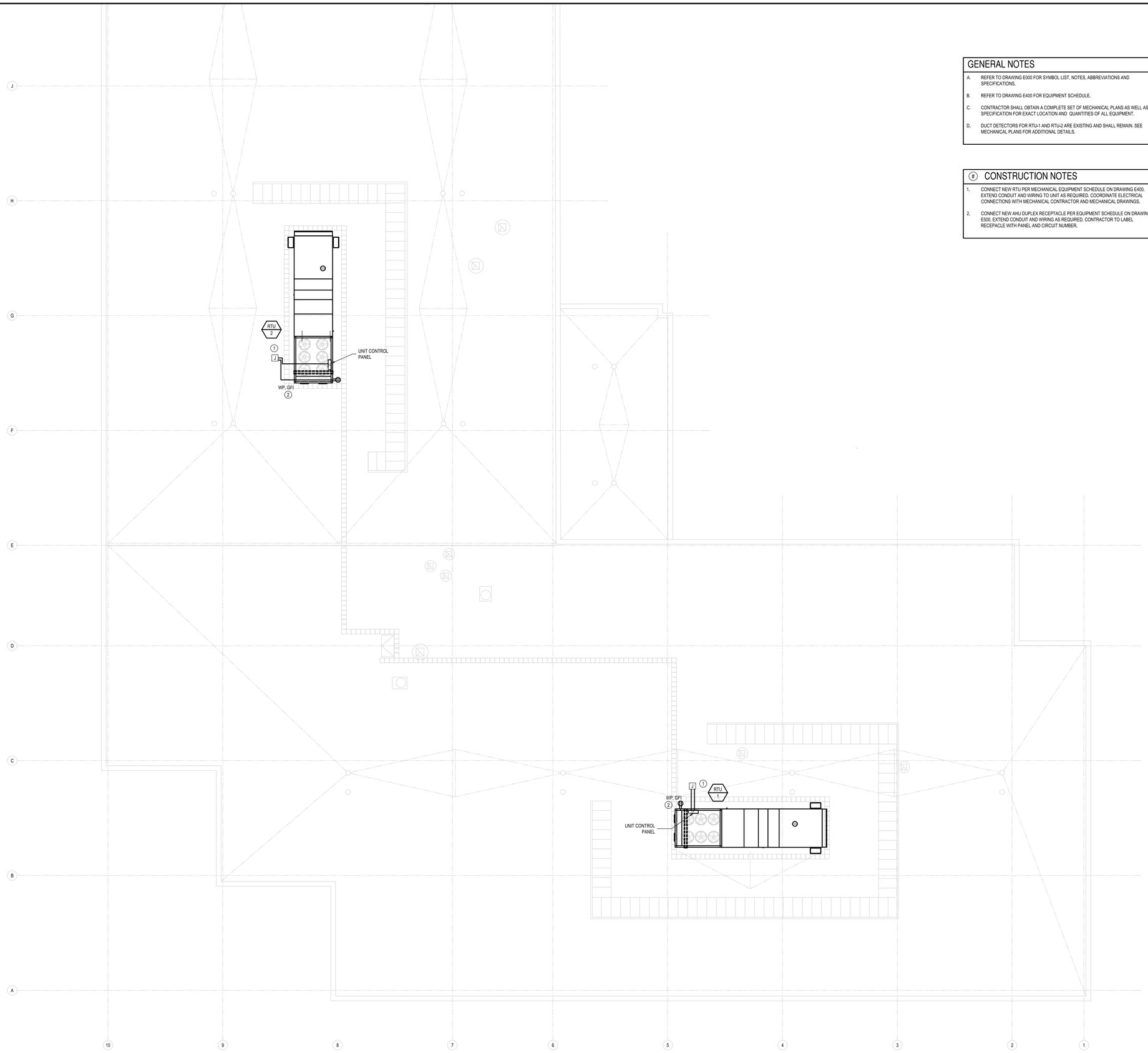
C. CONTRACTOR SHALL OBTAIN A COMPLETE SET OF MECHANICAL PLANS AS WELL AS SPECIFICATION FOR EXACT LOCATION AND QUANTITIES OF ALL EQUIPMENT.

D. DUCT DETECTORS FOR RTU-1 AND RTU-2 ARE EXISTING AND SHALL REMAIN. SEE MECHANICAL PLANS FOR ADDITIONAL DETAILS.

(#) CONSTRUCTION NOTES

1. CONNECT NEW RTU PER MECHANICAL EQUIPMENT SCHEDULE ON DRAWING E400. EXTEND CONDUIT AND WIRING TO UNIT AS REQUIRED. COORDINATE ELECTRICAL CONNECTIONS WITH MECHANICAL CONTRACTOR AND MECHANICAL DRAWINGS.

2. CONNECT NEW AHU DUPLEX RECEPTACLE PER EQUIPMENT SCHEDULE ON DRAWING E500. EXTEND CONDUIT AND WIRING AS REQUIRED. CONTRACTOR TO LABEL RECEPACLE WITH PANEL AND CIRCUIT NUMBER.



1 PARTIAL ROOF FLOOR PLAN - NEW WORK

N

Grumman|Butkus Associates

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Illinois Registration # 184.006368

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ELECTRICAL ROOF NEW WORK PLAN

ROOFTOP UNIT REPLACEMENT DESIGN
McHENRY COUNTY ADMINISTRATION BUILDING
667 Ware Road
Woodstock, IL 60098

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NO.	DESCRIPTION	DATE
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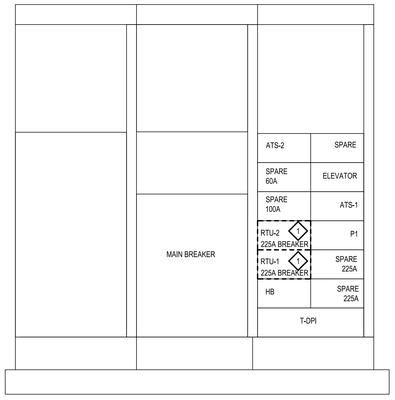
KEYPLAN

SCALE
0 2 4 8 16
1/8"=1'-0"

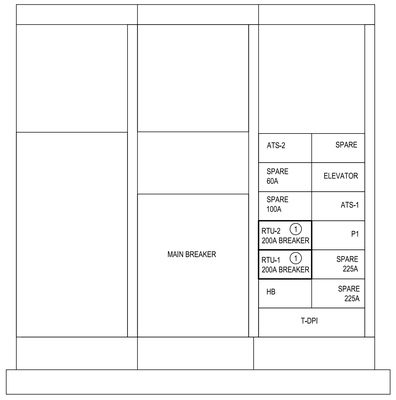
DRAWN	CHECKED	APPROVED
SJD	SDG	---

PROJECT NO.
P23-0998-01

E103



1 ADMIN BUILDING MAIN SWITCHBOARD 'MDP' - DEMOLITION



2 ADMIN BUILDING MAIN SWITCHBOARD 'MDP' - NEW WORK

GENERAL NOTES

A. REFER TO DRAWING E000 FOR SYMBOL LIST, NOTES, ABBREVIATIONS AND SPECIFICATIONS.

B. CONTRACTOR SHALL OBTAIN A COMPLETE SET OF MECHANICAL PLANS AS WELL AS SPECIFICATION FOR EXACT LOCATION AND QUANTITIES OF ALL EQUIPMENT.

◇ DEMOLITION NOTES

1. DISCONNECT AND REMOVE EXISTING 225A CIRCUIT BREAKERS. PREPARE SPACE TO ACCEPT NEW CIRCUIT BREAKERS IN NEW WORK. RETURN SPARE BREAKERS TO OWNER.

(#) CONSTRUCTION PLAN NOTES

1. PROVIDE NEW 200A CIRCUIT BREAKERS FOR NEW RTU-1 AND RTU-2. INSTALL NEW BREAKERS IN SPACE MADE AVAILABLE BY DEMOLITION. BREAKERS SHALL BE EATON BREAKERS TO MATCH THE EXISTING SWITCHBOARD AND BE RATED 65 KAIC.

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

TAG	EQUIPMENT	LOAD				FED FROM				CONDUIT AND CABLE (NOTE 1)	DISCONNECT				STARTER			VFD	REMARKS
		V/Ø/Hz	CAPACITY (kW)	FULL LOAD (AMPS)	MOTOR RATED POWER (HP)	SOURCE NAME	CIRCUIT BREAKER (AMP-POLE)	SWITCH SIZE (AMP-POLE)	FUSE SIZE (AMPS)		SWITCH SIZE (AMP-POLE)	FUSE SIZE (AMP-POLE)	NEMA ENCLOSURE	FURNISHED BY	NEMA SIZE	FUSE SIZE (AMPS)	FURNISHED BY	FURNISHED BY	
RTU-1	PACKAGED ROOFTOP UNIT	480/60/3	*	180.2 (MCA)	*	MAIN SWITCHBOARD	200-3 MOP	*	*	3#4/0, 1#4G IN 2-1/2" C	*	*	*	MANUFACTURER	*	*	*	MANUFACTURER	SINGLE POINT CONNECTION TO CONTROL PANEL.
	PACKAGED UNIT RECEPTACLE.	120/1/60	*	*	*	CONFIRM IN FIELD	15-1 (NOTE 2)	*	*	2#12, 1#12 G, 3/4"C	*	*	*	*	*	*	*	*	PROVIDE ELECTRICAL CONNECTION TO RECEPACLE ELECTRICAL CONNECTION POINT ON UNIT.
RTU-2	PACKAGED ROOFTOP UNIT	480/60/3	*	180.2 (MCA)	*	MAIN SWITCHBOARD	200-3 MOP	*	*	3#4/0, 1#4G IN 2-1/2" C	*	*	*	MANUFACTURER	*	*	*	MANUFACTURER	SINGLE POINT CONNECTION TO CONTROL PANEL.
	PACKAGED UNIT RECEPTACLE.	120/1/60	*	*	*	CONFIRM IN FIELD	15-1 (NOTE 2)	*	*	2#12, 1#12 G, 3/4"C	*	*	*	*	*	*	*	*	PROVIDE ELECTRICAL CONNECTION TO RECEPACLE ELECTRICAL CONNECTION POINT ON UNIT.

NOTES:
(1) CONTRACTOR TO REUSE EXISTING CONDUIT AND WIRING FOR NEW ROOFTOP UNITS AND UNITS' RECEPTACLE.
(2) CONTRACTOR TO REUSE EXISTING CIRCUIT BREAKER FOR NEW ROOFTOP UNIT'S RECEPTACLE.

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ELECTRICAL SCHEDULES

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ISSUES & REVISIONS

NO.	DESCRIPTION	DATE
	ISSUED FOR BID/PERMIT	11.01.2024

KEYPLAN

SCALE: NO SCALE

DRAWN	CHECKED	APPROVED
SJD	SDG	---

PROJECT NO. P23-0998-01

E400