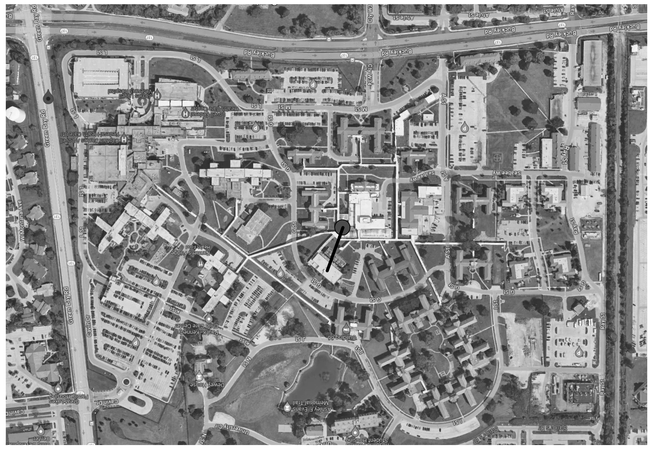
Captain James A. Lovell Federal Health Care Center (FHCC)

REPLACE CHILLER 2

3001 N GREEN BAY RD,
NORTH CHICAGO, IL 60064

VA CONTRACT #: 36C252-23-D-0061
TASK ORDER #: 36C25224N0254



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SHEET LIST - GENERAL	
Sheet Number	Sheet Name
G000	COVER SHEET
Grand total: 1	

SHEET LIST - MECHANICAL	
Sheet Number	Sheet Name
M000	MECHANICAL SYMBOLS AND ABBREVIATIONS
MD101	BASEMENT LEVEL FLOOR PLAN - OVERALL - MECHANICAL - DEMO
MD102	FIRST LEVEL FLOOR PLAN - OVERALL - MECHANICAL - DEMO
MD400	FLOOR PLANS - ENLARGED - MECHANICAL - DEMOLITION
M001	FIRST LEVEL FLOOR PLAN - EQUIPMENT ACCESS
M101	BASEMENT LEVEL FLOOR PLAN - OVERALL - MECHANICAL
M102	FIRST LEVEL FLOOR PLAN - OVERALL - MECHANICAL
M400	FLOOR PLANS - ENLARGED - MECHANICAL
M500	DETAILS AND SECTIONS
M501	CONTROL SCHEMATICS
M600	MECHANICAL SCHEDULES
Grand total: 11	

SHEET LIST - ELECTRICAL	
Sheet Number	Sheet Name
E000	ELECTRICAL SYMBOLS AND ABBREVIATIONS
ED101	BASEMENT LEVEL FLOOR PLAN - OVERALL - ELECTRICAL - DEMO
ED102	FIRST LEVEL FLOOR PLAN - OVERALL - ELECTRICAL - DEMO
ED400	FLOOR PLANS - ENLARGED - ELECTRICAL - DEMOLITION
E101	BASEMENT LEVEL FLOOR PLAN - OVERALL - ELECTRICAL
E102	FIRST LEVEL FLOOR PLAN - OVERALL - ELECTRICAL
E400	FLOOR PLANS - ENLARGED - ELECTRICAL
E500	ONE-LINE DIAGRAM
E700	ELECTRICAL SCHEDULES
Grand total: 9	

Base Bid: Period services at Captain James A. Lovell FHCC, North Chicago, IL, to enable complete and compliant demolition and replacement of an existing 1000-ton York centrifugal chiller and associated system, including a new 1000-ton water-cooled centrifugal magnetic drive chiller, chilled water pump, condenser water pump, VFD's, local piping, valves, chemical feed system, electrical power, and controls, integrating it with the existing chiller plant necessary to reestablish long-term reliability.

Revisions:	Date:
100% Construction Documents	11/11/2024
100%R Construction Documents	11/26/2024

CONSULTANT

DESIGNER OF RECORD

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: COVER SHEET	Phase: 100%R CONSTRUCTION DOCUMENTS
Approved:	FULLY SPRINKLERED

Project Title: REPLACE CHILLER 2		Project Number: 556-24-106
		Building Number: B188
Location: NORTH CHICAGO, IL 60064 - 3048		Drawing Number: G000
Issue Date: 11/26/2024	Checked: AEA	Drawn: SSK

GENERAL MECHANICAL SYMBOLS

SYMBOL	DESCRIPTION	ADDITIONAL REMARKS
	SHEET NOTE	DENOTES SPECIFIC REQUIREMENT FOR THE SHEET ON WHICH THE NOTE APPEARS AND IS USED TO DESCRIBE WORK THAT IS TOO LENGTHY TO PLACE ON PLAN.
	PIPING - SOLID LINE INDICATES SYSTEM SUPPLY – DASHED LINE INDICATES SYSTEM RETURN	NUMBER INDICATES NOMINAL DIAMETER IN INCHES. LETTER(S) INDICATES SYSTEM. REFER TO ABBREVIATIONS FOR SYSTEM TYPE.
	DIAMETER	
	DENOTES CONNECTION OF NEW WORK TO EXISTING SYSTEMOR DISCONNECT POINT ON DEMO PLANS	PROTECT EXISTING SYSTEM FROM ENTRANCE OF FOREIGN DEBRIS DURING WORK.
	ARROW INDICATES DIRECTION OF FLOW IN PIPING	
	ARROW INDICATES DOWNWARD PIPE SLOPE ## INDICATES SLOPE IN INCHES PER FOOT	WHERE PIPING IS NOT MARKED, REFER TO SPECIFICATIONS FOR REQUIREMENTS
	ISOLATION VALVE	REFER TO SPECIFICATIONS FOR TYPE BASED ON SIZE AND SYSTEM
	CHECK VALVE ARROW INDICATES DIRECTION OF NORMAL FLOW	REFER TO SPECIFICATIONS FOR TYPE BASED ON SIZE AND SYSTEM
	PIPE IN SLEEVE	REFER TO SPECIFICATIONS FOR TYPE BASED ON SIZE AND SYSTEM
	AUTOMATIC FLOW CONTROL VALVE # INDICATES FLOW TO BE BALANCED IN GPM	CIRCUIT SETTER, AUTOFLOW, ETC. REFER TO SPECIFICATIONS FOR TYPE BASED ON SIZE AND SYSTEM
	ELBOW UP ELBOW DOWN	
	TEE UP TEE DOWN TEE HORIZONTAL	
	PIPE REDUCER	INDICATES POINT WHERE PIPING CHANGES FROM ONE SIZE TO ANOTHER. SMALL POINT OF ARROW INDICATES SMALLER SIZE SIDE OF TRANSITION.
	UNION	
	Y STRAINER WITH BLOWDOWN	REFER TO SPECIFICATIONS FOR TYPE AND ACCESSORIES
	Y STRAINER	
	PRESSURE GAUGE	REFER TO SPECIFICATIONS FOR TYPE AND ACCESSORIES
	PRESSURE GAUGE STEAM	REFER TO SPECIFICATIONS FOR TYPE AND ACCESSORIES
	THERMOMETER - HORIZONTAL PIPE	REFER TO SPECIFICATIONS FOR TYPE AND ACCESSORIES
	THERMOMETER - VERTICAL PIPE	REFER TO SPECIFICATIONS FOR TYPE AND ACCESSORIES
	REQUIRED SERVICE CLEARANCE FOR EQUIPMENT	
	CONTINUATION	FIRST SYMBOL APPLIES TO ROUND DUCT AND PIPING. SECOND SYMBOL APPLIES TO RECTANGULAR AND OVAL DUCT.
	AIR VENT	
	BACKFLOW PREVENTER	
	CALIBRATED BALANCING VALVE	
	VALVE - THROTTLING SERVICE	
	VALVE - SHUTOFF SERVICE	
	P/T PORT	
	PIPE CAP	
	PIPE CONTINUATION	
	PRESSURE REDUCING VALVE	
	PUMP	
	RELIEF VALVE	
S	SENSOR	
	SUCTION DIFFUSER	
	VACUUM BREAKER	
	STEAM TRAP	

GENERAL ABBREVIATIONS

NOT ALL ABBREVIATIONS APPLY TO THIS SET OF DOCUMENTS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
AD	ACCESS DOOR/PANEL	LF	LINEAR FEET
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
AMB	AMBIENT	MC	MECHANICAL CONTRACTOR
BOB	BOTTOM OF BEAM	MFR	MANUFACTURER
CC	CONTROLS CONTRACTOR	MIN	MINIMUM
DIA	DIAMETER	NIC	NOT IN CONTRACT
DN	DOWN	NTS	NOT TO SCALE
E	EXISTING	PC	PLUMBING CONTRACTOR
EC	ELECTRICAL CONTRACTOR	PSIG	POUNDS PER SQUARE INCH GAUGE
EFF	EFFICIENCY	RPM	REVOLUTIONS PER MINUTE
FPM	FEET PER MINUTE	SHT	SHEET
FPS	FEET PER SECOND	TOB	TOP OF BEAM
GC	GENERAL CONTRACTOR	TOS	TOP OF STEEL
GPM	GALLONS PER MINUTE	VEL	VELOCITY
L	LENGTH	VFD	VARIABLE FREQUENCY DRIVE

PLUMBING ABBREVIATIONS

NOT ALL ABBREVIATIONS APPLY TO THIS SET OF DOCUMENTS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
BF	BOTTLE/GLASS FILLER	HB	HOSE BIB
BFP	BACK FLOW PREVENTER	HD	HUB DRAIN
BT	BATH TUB	HP	HORSEPOWER
CA	COMPRESSED AIR (NON-MEDICAL)	L	LAVATORY
CD	CONDENSATE DRAIN	LPG	PROPANE
CO	CLEANOUT	LWT	LEAVING WATER TEMPERATURE
CP	CONDENSATE PUMP	MBH	BTU (1000'S)
CS	CLINICAL SINK	MS	MOP SINK
CV	CHEMICAL VENT	NC	NORMALLY CLOSED
CW	CHEMICAL WASTE	NO	NORMALLY OPEN
DCW	DOMESTIC COLD WATER	NPW	NON-POTABLE WATER
DF	DRINKING FOUNTAIN	PIV	POST INDICATOR VALVE
DGCO	DOUBLE GRADE CLEANOUT	PRV	PRESSURE REDUCING VALVE
DHW	DOMESTIC HOT WATER	RD	ROOF DRAIN
DHWC	DOMESTIC HOT WATER CIRCULATION	RO	REVERSE OSMOSIS WATER
DI	DEIONIZED WATER	RPZ	REDUCED PRESSURE ZONE (BACK FLOW PREVENTER)
DIC	DEIONIZED WATER CIRCULATING	S	SINK
DIH	DEIONIZED HOT WATER	SAN	SANITARY SEWER
DIHC	DEIONIZED HOT WATER CIRCULATING	SCW	DOMESTIC SOFT COLD WATER
DIS	DISTILLED WATER	SHW	DOMESTIC SOFT HOT WATER
DISC	DISTILLED WATER CIRCULATING	SHWC	DOMESTIC SOFT HOT WATER CIRCULATING
DR	DIALYSIS WATER RETURN	SE	SEWAGE EJECTOR
DS	DIALYSIS WATER SUPPLY	SH	SHOWER
DSN	DOWN SPOUT NOZZLE	SO	STORM OVERFLOW
DT	DRAIN TILE	SP	SUMP PUMP
EEW	EMERGENCY EYE WASH	SS	SERVICE SINK
ES	EMERGENCY SHOWER	ST	STORM SEWER
ESEW	EMERGENCY SHOWER AND EYE WASH COMBO	TEMP	TEMPERATURE
ET	EXPANSION TANK	UR	URINAL
EWC	ELECTRIC WATER COOLER	V	VENT
EWT	ENTERING WATER TEMPERATURE	VTR	VENT THROUGH ROOF
F	FILTER	WB	WALL BOX
FCO	FLOOR CLEANOUT	WC	WATER CLOSET
FD	FLOOR DRAIN	WCO	WALL CLEANOUT
FS	FLOOR SINK	WH	WATER HEATER
G	NATURAL GAS	WS	WATER SOFTENER
GCO	GRADE CLEANOUT	WPD	WATER PRESSURE DROP
GV	GREASE VENT	YCO	YARD CLEANOUT
GW	GREASE WASTE		

HVAC SYMBOLS

SYMBOL	DESCRIPTION	ADDITIONAL REMARKS
W x H	RECTANGULAR DUCTWORK W = DIMENSION IN VIEW (INCHES) H = DIMENSION PERPENDICULAR TO VIEW (INCHES)	REFER TO DUCT CONSTRUCTION SCHEDULE AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
D"Ø	ROUND DUCTWORK D = DUCT DIAMETER	REFER TO DUCT CONSTRUCTION SCHEDULE AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
W/H#	FLAT OVAL DUCTWORK W = DIMENSION IN VIEW (INCHES) H = DIMENSION PERPENDICULAR TO VIEW (INCHES)	REFER TO DUCT CONSTRUCTION SCHEDULE AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
	TURNING VANES	REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
	DUCT CROSS SECTION - SUPPLY DUCT CROSS SECTION - RETURN DUCT CROSS SECTION - EXHAUST	CROSS SECTION INDICATES DUCT EXTENDING PERPENDICULAR TO THE PAGE. IN PLAN VIEW THIS INDICATES A DUCT RISE OR DROP TO ANOTHER LEVEL. SOLID INTERIOR LINE INDICATES EXTENSION UP. DASHED INTERIOR LINE INDICATES EXTENSION DOWN.
	MANUAL BALANCE DAMPER	REFER TO SPECIFICATIONS FOR TYPE. LOCATE MANUAL BALANCE DAMPERS IN AN ACCESSIBLE LOCATION AND AS CLOSE TO THE MAIN DUCT AS POSSIBLE.
	CONTROL DAMPER	DAMPER SHALL BE SAME SIZE AS DUCT UNLESS NOTED OTHERWISE. REFER TO SEQUENCES, SCHEMATICS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
	FIRE DAMPER	REFER TO SPECIFICATIONS FOR TYPE. LOCATE DAMPERS IN AN ACCESSIBLE LOCATION AND PROVIDE ACCESS DOORS/PANELS IN DUCT AND CEILING/WALL.
	SMOKE DAMPER	REFER TO SPECIFICATIONS FOR TYPE. LOCATE DAMPERS IN AN ACCESSIBLE LOCATION AND PROVIDE ACCESS DOORS/PANELS IN DUCT AND CEILING/WALL.
	FIRE/SMOKE DAMPER	REFER TO SPECIFICATIONS FOR TYPE. LOCATE DAMPERS IN AN ACCESSIBLE LOCATION AND PROVIDE ACCESS DOORS/PANELS IN DUCT AND CEILING/WALL.
	DIFFUSER	
	DIFFUSER BLANK OFF	SHADED AREA INDICATES QUADRANT OF DIFFUSER TO BE PROVIDED WITH BLANK OFF PANEL.
	RETURN GRILLE	
	EXHAUST GRILLE	
	WALL REGISTER / GRILLE	
	DUCT MOUNTED REGISTER / GRILLE	
	LINEAR SLOT	
	FLOW ARROW	ARROW INDICATES DIRECTION OF AIRFLOW FROM DIFFUSERS WITH ADJUSTABLE THROWS.
D# / ###	DIFFUSER TAG D = TYPE # = TYPE NUMBER ### = AIRFLOW IN CFM	REFER TO DIFFUSER SCHEDULE FOR TYPE DESCRIPTIONS AND SIZING. BALANCE TO AIRFLOW LISTED. WHEN TYPE IS NOT GIVEN AND ONLY CFM IS DESIGNATED, PROVIDE D1 FOR SUPPLY OR G1 FOR RETURN/EXHAUST.
	FLEXIBLE DUCT	REFER TO SPECIFICATIONS FOR TYPE. REFER TO DETAILS FOR INSTALLATION REQUIREMENTS. MAXIMUM LENGTH SHALL BE 48 INCHES UNLESS NOTED OTHERWISE ON THE PLANS OR IN THE SPECIFICATIONS.
	FLEXIBLE PIPING	REFER TO SPECIFICATIONS FOR TYPE.
	VARIABLE AIR VOLUME BOX - NO COIL	REFER TO SCHEDULE, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND INSTALLATION REQUIREMENTS.
	VARIABLE AIR VOLUME BOX - HOT WATER COIL	REFER TO SCHEDULE, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND INSTALLATION REQUIREMENTS.
	VARIABLE AIR VOLUME BOX - ELECTRIC COIL	REFER TO SCHEDULE, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND INSTALLATION REQUIREMENTS.
	VARIABLE AIR VOLUME BOX - DUAL DUCT	REFER TO SCHEDULE, DETAILS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION AND INSTALLATION REQUIREMENTS.
VB-# / ### CFM	VAV BOX TAG # = REFERENCE NUMBER IN SCHEDULE ### = AIRFLOW IN CFM	REFER TO VARIABLE VOLUME BOX SCHEDULE FOR TYPES AND SIZING. AIRFLOW LISTED IS NOMINAL DESIGN CFM AND GPM. FINAL VALUES ARE TO BE DETERMINED BY TESTING AND BALANCING CONTRACTOR AND PROGRAMMED BY CONTROLS CONTRACTOR.
VB-# / # # GPM	VAV BOX TAG # = REFERENCE NUMBER IN SCHEDULE ## = WATER FLOW RATE IN GPM	REFER TO VARIABLE VOLUME BOX SCHEDULE FOR TYPES AND SIZING. AIRFLOW LISTED IS NOMINAL DESIGN CFM AND GPM. FINAL VALUES ARE TO BE DETERMINED BY TESTING AND BALANCING CONTRACTOR AND PROGRAMMED BY CONTROLS CONTRACTOR.

HVAC ABBREVIATIONS

NOT ALL ABBREVIATIONS APPLY TO THIS SET OF DOCUMENTS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
AB	AIR BLENDER	HP	HORSEPOWER
AC	AIR CONDITIONING UNIT (SPLIT SYSTEM INDOOR UNIT)	HPC	HIGH PRESSURE STEAM CONDENSATE
AHU	AIR HANDLING UNIT	HPS	HIGH PRESSURE STEAM SUPPLY (86 PSIG AND ABOVE)
BFU	BOILER FEED UNIT	HRC	HEAT RECOVERY CHILLER
BLR	BOILER	HUM	HUMIDIFIER
CAV	CONSTANT AIR VOLUME BOX	HWR	HEATING HOT WATER RETURN
CC	COOLING COIL	HWS	HEATING HOT WATER SUPPLY
CD	CONDENSATE DRAIN	LPC	LOW PRESSURE STEAM CONDENSATE
CFM	CUBIC FEET PER MINUTE	LPS	LOW PRESSURE STEAM SUPPLY (0-12 PSIG)
CH	CHILLER	LV	LOUVER
CP	CONDENSATE PUMP	LWT	LEAVING WATER TEMPERATURE
CR	CONDENSER WATER RETURN	MBH	BTU (1000'S)
CS	CONDENSER WATER SUPPLY	MD	MANUAL DAMPER
CT	COOLING TOWER	MOD	MOTOR OPERATED DAMPER
CU	CONDENSING UNIT	MPC	MEDIUM PRESSURE STEAM CONDENSATE
CUH	CABINET UNIT HEATER	MPS	MEDIUM PRESSURE STEAM SUPPLY (13-85 PSIG)
CWR	CHILLED WATER RETURN	NC	NORMALLY CLOSED, NOISE CRITERIA
CWS	CHILLED WATER SUPPLY	NO	NORMALLY OPEN, NUMBER
D	DIFFUSER	OA	OUTDOOR AIR
DD	DUAL DUCT	P	PUMP
DX	DIRECT EXPANSION	PC	PUMPED CONDENSATE
EA	EXHAUST AIR	PRV	PRESSURE REDUCING VALVE
EAT	ENTERING AIR TEMPERATURE	PSC	PUMPED STEAM CONDENSATE
EF	EXHAUST FAN	R	REGISTER
EFF	EFFICIENCY	RA	RETURN AIR
ERC	ENERGY RECOVERY COIL	REA	RELIEF AIR
ERW	ENERGY RECOVERY WHEEL	REFL	REFRIGERANT DX LIQUID
ET	EXPANSION TANK	REFS	REFRIGERANT DX SUCTION GAS
EWT	ENTERING WATER TEMPERATURE	RF	RETURN FAN
FB	FILTER BANK (CONSISTING OF ONE OR MORE FILTERS)	RH	RELATIVE HUMIDITY
FCU	FAN COIL UNIT	RTU	ROOF TOP UNIT
FMS	FLOW MEASURING STATION	SA	SUPPLY AIR
FOR	FUEL OIL RETURN	SD	SMOKE DAMPER
FOS	FUEL OIL SUPPLY	SF	SUPPLY FAN
FOV	FUEL OIL VENT	SP	STATIC PRESSURE
FRD	FIRE DAMPER	STM	STEAM
FSD	FIRE SMOKE DAMPER	TEMP	TEMPERATURE
FTR	FINNED TUBE RADIATOR	TR	TRANSFER
G	GRILLE	UH	UNIT HEATER
GCWR	GLYCOL CHILLED WATER RETURN	VAV	VARIABLE AIR VOLUME BOX
GCWS	GLYCOL CHILLED WATER SUPPLY	VTR	VENT THROUGH ROOF
GE	GRAVITY EXHAUST	WB	WET BULB TEMPERATURE
GHWR	GLYCOL HEATING HOT WATER RETURN	WC	WATER COLUMN
GHWS	GLYCOL HEATING HOT WATER SUPPLY	WPD	WATER PRESSURE DROP
GI	GRAVITY INTAKE	WSHPR	WATER SOURCE HEAT PUMP RETURN
HC	HEATING COIL	WSHPS	WATER SOURCE HEAT PUMP SUPPLY

MECHANICAL GENERAL NOTES:

A. THESE NOTES APPLY TO ALL SHEETS CONTAINING HVAC, PIPING, PLUMBING, TEMPERATURE CONTROLS WORK. REFER TO PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. WHERE A DISCREPANCY EXISTS BETWEEN THESE PLANS AND THE PROJECT SPECIFICATIONS, THE SPECIFICATION REQUIREMENTS SHALL TAKE PRECEDENCE OVER THE DRAWINGS.

B. VERIFY THE EXISTING CONDITIONS AT THE PROJECT SITE BEFORE SUBMITTING COST PROPOSAL. BE ADVISED THAT LOCATIONS SHOWN ARE APPROXIMATE. AN ATTEMPT HAS BEEN MADE TO SHOW ALL PIPING, FIXTURES, DUCTWORK, AND OUTLETS. CONTRACTOR SHALL VISIT THE SITE TO VERIFY COMPONENTS, LOCATIONS AND SIZES SHOWN OR NOT SHOWN. ALL COMPONENTS NEED TO BE REMOVED IN THE DEMOLITION AREA UNLESS NOTED ON THE DRAWINGS. IF DEVIATION BETWEEN EXISTING CONDITIONS AND NEW WORK IS FOUND, CONTRACTOR SHALL NOTIFY ENGINEER.

C. IT IS MANDATORY THAT THE EXISTING BUILDING REMAIN IN CONTINUOUS AND NON-INTERRUPTED OPERATION DURING THE CONSTRUCTION OF THE ADDITIONS AND REMODELING/ALTERATION OF THE EXISTING BUILDING. SERVICES TO THE EXISTING BUILDING SHALL BE KEPT ON CONTINUOUS OPERATION EXCEPT DURING SCHEDULED SHUTDOWNS FOR EXTENSION OR MODIFICATION. PLAN TO COMPLETE SHUTDOWNS DURING OFF HOURS TO MINIMIZE IMPACT TO THE OWNER. COORDINATE SHUTDOWNS WITH THE OWNER A MINIMUM OF 14 WORKING DAYS PRIOR TO WORK. PROVIDE TEMPORARY SERVICES WHERE NECESSARY TO ACCOMPLISH ANY SHUTDOWN. THIS INCLUDES BUT IS NOT LIMITED TO STAFFING AND EQUIPMENT FOR FIRE WATCHES, PROVISIONS FOR BOTTLED WATER, AND TEMPORARY HEATING OR COOLING EQUIPMENT. TEMPORARY MEASURES SHALL NOT BE REMOVED UNTIL THE PERMANENT SYSTEMS ARE OPERATIONAL AND HAVE PASSED ALL REQUIRED TESTING.

D. CONTRACTOR SHALL BE RESPONSIBLE FOR THEIR OWN DEMOLITION, REMOVAL, CAPPING, STORING, ABANDONING, DISCONNECTING, RELOCATING AND RECONNECTION OF EXISTING EQUIPMENT AND MATERIAL. ALL CUTTING, PATCHING, REPAIRING, REPLACEMENT AND REFINISHING SHALL MATCH THE EXISTING CONSTRUCTION AS NEARLY AS POSSIBLE.

E. EXCEPT WHERE OTHERWISE SHOWN OR NOTED ON THE DRAWINGS AS "TO BE RETAINED, RELOCATED", ALL EXISTING EQUIPMENT AND MATERIAL IN AREAS TO BE REMODELED/ALTERED SHALL BE REMOVED WHERE THEY INTERFERE WITH PROPOSED NEW CONSTRUCTION AND/OR WITH PROPOSED USAGE OF SPACE BY OWNER AS FOLLOWS:
   a. REMOVE ANY PIPING PROTRUDING ABOVE FINISHED FLOOR OR THROUGH WALL AND CAP WITHIN 3 PIPE DIAMETERS OF NEAREST ACTIVE MAIN WITH MATERIAL TO MATCH EXISTING.
   b. IN REMODELED/ALTERED AREAS, ANY PIPING OR DUCTWORK PASSING THROUGH THE REMODELED AREAS TO SERVE (OR BEING SERVED FROM EXISTING ADJACENT, REMOTE, OR SURROUNDING AREAS THAT ARE TO REMAIN) SHALL BE RETAINED AND KEPT OPERATIONAL AND SHALL BE REROUTED IN ALL CASES WHERE THEY INTERFERE WITH ANY NEW WORK OR USAGE TO BE ACCOMPLISHED IN THE REMODELED AREA.
   c. REMOVE UNUSED OR ABANDONED HANGERS AND PATCH ABANDONED PENETRATIONS TO MATCH EXISTING.
   d. PENETRATIONS THROUGH EXISTING WALLS AND FLOORS FORMERLY OCCUPIED BY REMOVED PIPING OR DUCTWORK SHALL BE PATCHED TO MATCH EXISTING CONSTRUCTION.
   e. RE-SUPPORT ANY PIPING AND DUCTWORK THAT WAS SUPPORTED FROM BUILDING ELEMENTS REMOVED AS PART OF THE WORK.
   f. MAINTAIN CONTROL WIRING OR PNEUMATIC TUBING REQUIRED FOR THE CONTINUED PROPER OPERATION OF THE BUILDING AUTOMATION SYSTEM.

F. ALL EXISTING EQUIPMENT BEING REMOVED WILL BE HANDED OVER TO OWNER FOR FIRST RIGHT OF SALVAGE. IF OWNER REFUSES SALVAGE ITEMS, REMOVING CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL.

G. CONTRACTOR SHALL REFER TO THE DRAWINGS OF ALL TRADES TO FAMILIARIZE THEMSELVES WITH EXTENT OF WORK INCLUDING BUT NOT LIMITED TO WHERE NEW PARTITIONING IS BEING INSTALLED, WHERE EXISTING PARTITIONING IS BEING REMOVED, WHERE CEILINGS ARE BEING REMOVED AND/OR REPLACED, ETC.

H. THESE DRAWINGS ARE NECESSARILY DIAGRAMMATIC IN NATURE. NOT ALL FITTINGS, OFFSETS, VENTS OR DRAINS ARE SHOWN. THE CONTRACTOR SHALL INCLUDE ALL FITTINGS, OFFSETS, VENTS, DRAINS, AND DEVICES REQUIRED TO PROVIDE A COMPLETE AND FUNCTIONING SYSTEM.

I. PROVIDE ACCESS DOORS IN DUCTWORK AND/OR ARCHITECTURAL ELEMENTS WHERE REQUIRED TO ACCESS ALL EQUIPMENT REQUIRING MAINTENANCE AND ADJUSTMENT. THIS EQUIPMENT INCLUDES BUT IS NOT LIMITED TO SENSORS, DAMPERS, ACTUATORS, CONTROL DEVICES, VALVES, ETC. ACCESS DOORS SHALL BE SIZED TO PROVIDE APPROPRIATE ACCESS BASED ON HEIGHT OF ACCESS REQUIRED AND ACTIVITY. INSTALL SUCH THAT ACCESS DOOR IS FULLY OPERABLE WITHOUT THE REMOVAL OF ARCHITECTURAL ELEMENTS SUCH AS CEILING RUNNERS, SUPPORTS, ETC. INSTALL IN A LOCATION SUCH THAT STEPPING OR LEANING OVER PERMANENT EQUIPMENT OR FURNITURE IS NOT REQUIRED. WHERE ACCESS DOORS ARE REQUIRED IN ARCHITECTURAL ELEMENTS THAT PROVIDE A FIRE AND/OR SMOKE RATING, ACCESS DOOR SHALL MAINTAIN THE REQUIRED RATING.

J. SEAL ALL WALL PENETRATIONS (DUCTWORK, PIPING, CONTROLS, CONDUITS, ETC.) WITH NON-COMBUSTIBLE MATERIAL. SEAL PENETRATIONS INTO ROOMS THAT REQUIRE PRESSURE CONTROL OR SOUND ISOLATION. WITH NON-COMBUSTIBLE MATERIAL AND CAULK.

K. PIPING AND DUCTWORK SHALL NOT BE ROUTED OVER ELECTRICAL AND TELECOM ROOMS. WHERE ROUTING OVER SUCH ROOMS IS UNAVOIDABLE, CONTRACTOR SHALL COORDINATE WITH OWNER, DESIGN TEAM, AHJ, AND OTHER TRADES REGARDING LOCATION OF PANELS AND UTILITY ROUTING AND SHALL PROVIDE DRIP PANS UNDER ALL UTILITIES WITH MOISTURE SENSORS OR DRAIN PIPING AS REQUIRED BY THE SPECIFICATIONS.

L. REMOVAL AND REINSTALLATION OF CEILINGS REQUIRED FOR THE COMPLETION OF WORK IS THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR OR REPLACE ALL DAMAGED CEILING COMPONENTS TO MATCH EXISTING. WHERE AN IDENTICAL MATCH IS NO LONGER AVAILABLE, CONTRACTOR SHALL PROVIDE A SIMILAR REPLACEMENT UPON APPROVAL FROM THE OWNER.

M. LOCATE PIPING AND DUCTWORK IN EXTERIOR BUILDING WALLS ON THE WARM SIDE OF THE BUILDING AND VAPOR BARRIER. COORDINATE INSTALLATION OF BUILDING INSULATION TO RUN CONTINUOUS BETWEEN PIPING AND BUILDING WALL.

N. SUPPORT ALL DUCTWORK, PIPING AND EQUIPMENT FROM BUILDING STRUCTURE MEMBERS. DO NOT USE WIRE OR PERFORATED METAL TO SUPPORT PIPING. DO NOT SUPPORT PIPING FROM OTHER PIPING, DUCTWORK, AND/OR ELECTRICAL CONDUITS. SUPPORT FROM BOTTOM CHORD OF BAR JOISTS ONLY AT PANEL POINTS. ALL COMPONENTS REQUIRING MAINTENANCE SHALL BE SUPPORTED IN SUCH A MANNER AS TO BE READILY ACCESSIBLE WITHOUT REMOVAL OF THE CEILING SYSTEM AND TO ALLOW FOR REMOVAL FROM THE SYSTEM WHEN SUCH REMOVAL IS REQUIRED FOR MAINTENANCE.

O. PROVIDE CONSTRUCTION FILTERS ON AIR MOVING EQUIPMENT SERVING THE CONSTRUCTION AREA AS WELL AS ALL RETURN/EXHAUST DUCT PENETRATIONS COMING FROM THE CONSTRUCTION AREA. AT THE COMPLETION OF WORK, REMOVE ALL TEMPORARY AND CONSTRUCTION FILTERS AND PROVIDE NEW FILTERS FOR ALL AIR MOVING EQUIPMENT.

P. PROTECT ALL DUCTWORK AND PIPING DURING CONSTRUCTION. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. AT A MINIMUM, DUCTWORK AND PIPING ENDS SHALL BE COVERED AND SEALED TO PREVENT THE COLLECTION OF DUST AND DEBRIS. CLEAN ALL INTERIOR SURFACES PRIOR TO INSTALLATION AND PROTECT ONCE INSTALLED. MEDICAL GAS PIPING SHALL BE PROTECTED IN ACCORDANCE WITH NFPA 99 REQUIREMENTS.

Q. AT THE COMPLETION OF WORK, CLEAN ALL STRAINERS PROVIDED AS A PART OF THE WORK AS WELL AS PRIMARY SYSTEM STRAINERS LOCATED AT PUMPS WHERE SYSTEMS WERE EXTENDED. ON EXISTING EQUIPMENT, COORDINATE WORK WITH OWNER.

R. UNLESS NOTED OTHERWISE, DETAILS SHOWN WITHIN THESE DOCUMENTS ARE APPLICABLE FOR ALL PIPING, EQUIPMENT AND DUCTWORK INSTALLATIONS WHETHER OR NOT SPECIFICALLY NOTED.

S. REFER TO SCHEDULES FOR SIZES OF FINAL RUNOUTS TO EQUIPMENT, FIXTURES, DIFFUSERS, GRILLES, AND TERMINAL DEVICES. FINAL RUNOUT SIZES LISTED SHALL BE USED TO WITHIN 10 EQUIVALENT DIAMETERS OF FINAL CONNECTION POINT. FINAL PIPING CONNECTION TO EQUIPMENT SHALL MATCH EQUIPMENT CONNECTION SIZE, PROVIDE TRANSITIONS AS REQUIRED. REFER TO DETAILS, DIAGRAMS AND SCHEMATICS FOR ADDITIONAL

T. FOR ALL PIPING, CONDUIT, AND OTHER ITEMS PENETRATING A FIRE RATED WALL, PROVIDE U.L. LISTED THROUGH PENETRATION FIRE STOPPING SYSTEM THAT IS SPECIFIC TO THE WALL CONSTRUCTION ASSEMBLY AND COMPLIANT WITH ASTM E814. INSTALL SYSTEM IN STRICT COMPLIANCE WITH THE FIRE STOPPING MANUFACTURER'S U.L. APPROVED DETAIL. WHERE EXISTING WALLS ARE BEING UPGRADED TO FIRE RATED WALLS OR THE FIRE RATING IS BEING MODIFIED, PROVIDE U.L. LISTED THROUGH PENETRATION FIRE STOPPING SYSTEM FOR ALL NEW AND EXISTING PENETRATIONS. REFER TO THE ARCHITECTURAL LIFE SAFETY PLANS FOR LOCATIONS OF FIRE RATED WALLS.

U. REFER TO SPECIFICATIONS FOR EQUIPMENT LABELING REQUIREMENTS.

V. PROVIDE PIPE LABELS AND FLOW DIRECTION ARROWS. LABELS SHALL BE PRECOILED, SEMIRIGID PLASTIC FORMED TO COVER FULL CIRCUMFERENCE OF PIPE AND TO ATTACH TO PIPE WITHOUT FASTENERS OR ADHESIVE, APPLIED WITH ADHESIVE DIRECTIONAL TAPE. INCLUDE IDENTIFICATION OF PIPING SERVICE USING FULL NAME DESIGNATIONS PER DRAWINGS AND AN ARROW INDICATING FLOW DIRECTION. LETTERING SIZE PER ASME/ANSI 13.1

TEMPERATURE CONTROL SYMBOLS

SYMBOL	DESCRIPTION	ADDITIONAL REMARKS
	WALL MOUNTED CONTROL DEVICE # INDICATES TYPE	REFER TO MOUNTING HEIGHTS DETAIL FOR MOUNTING ELEVATION. T = THERMOSTAT H = HUMIDISTAT S = SENSOR (CARBON MONOXIDE, ETC.)
	OCCUPANCY SENSOR	REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION. WHEN SENSOR IS NOT SHOWN ON ELECTRICAL DRAWINGS IT SHALL BE PROVIDED AND INSTALLED BY THE TEMPERATURE CONTROLS CONTRACTOR.
	DUCT, PIPE, OR CEILING MOUNTED CONTROL SENSOR	REFER TO SPECIFICATIONS FOR TYPE. REFER TO SEQUENCES AND SCHEMATICS FOR ADDITIONAL INFORMATION AND REQUIREMENTS. T = THERMOSTAT H = HUMIDISTAT S = SENSOR (CARBON DIOXIDE, ETC.)
	CONTROL VALVE (3-WAY)	REFER TO SPECIFICATIONS FOR TYPE. REFER TO SEQUENCES AND SCHEMATICS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
	CONTROL VALVE (2-WAY)	REFER TO SPECIFICATIONS FOR TYPE. REFER TO SEQUENCES AND SCHEMATICS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
	PRESSURE/TEMPERATURE TEST PORT	
	FLOW MEASURING STATION	REFER TO SPECIFICATIONS FOR TYPE. REFER TO SEQUENCES AND SCHEMATICS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
F	FLOW SWITCH	

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ANDREW K. ENLOE REGISTERED No. 11200650 STATE OF INDIANA 11/11/2024 PROFESSIONAL ENGINEER

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: MECHANICAL SYMBOLS AND ABBREVIATIONS

Phase: 100%R CONSTRUCTION DOCUMENTS

Project Title: REPLACE CHILLER 2

Project Number: 556-24-106

Building Number: B188

Approved:

FULLY SPRINKLERED

Location: NORTH CHICAGO, IL 60064 - 3048

Issue Date: 11/26/2024

Checked: AKE

Drawn: DAB

Drawing Number: M000

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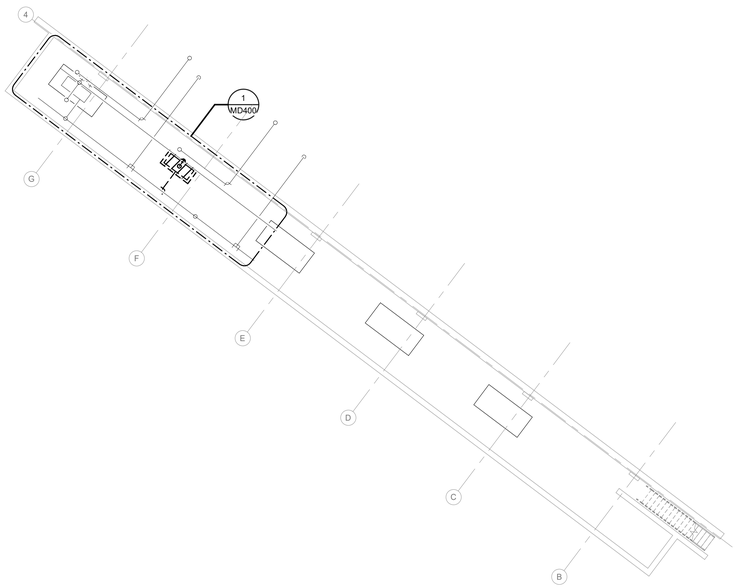
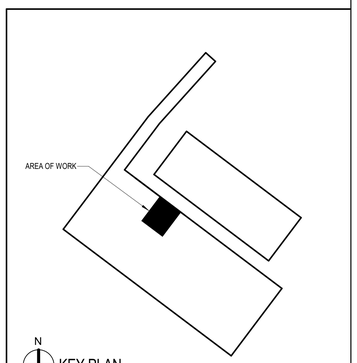


N

1 BASEMENT LEVEL FLOOR PLAN - OVERALL - MECHANICAL - DEMOLITION
3/32" = 1'-0"

3/32" = 1'-0" 5 0 5 10 15 20 25 30
SCALE FEET



KEY PLAN

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VA U.S. Department of Veterans Affairs

Drawing Title: BASEMENT LEVEL FLOOR PLAN - OVERALL - MECHANICAL - DEMO

Phase: 100%R CONSTRUCTION DOCUMENTS

Approved:

FULLY SPRINKLERED

Project Title: REPLACE CHILLER 2

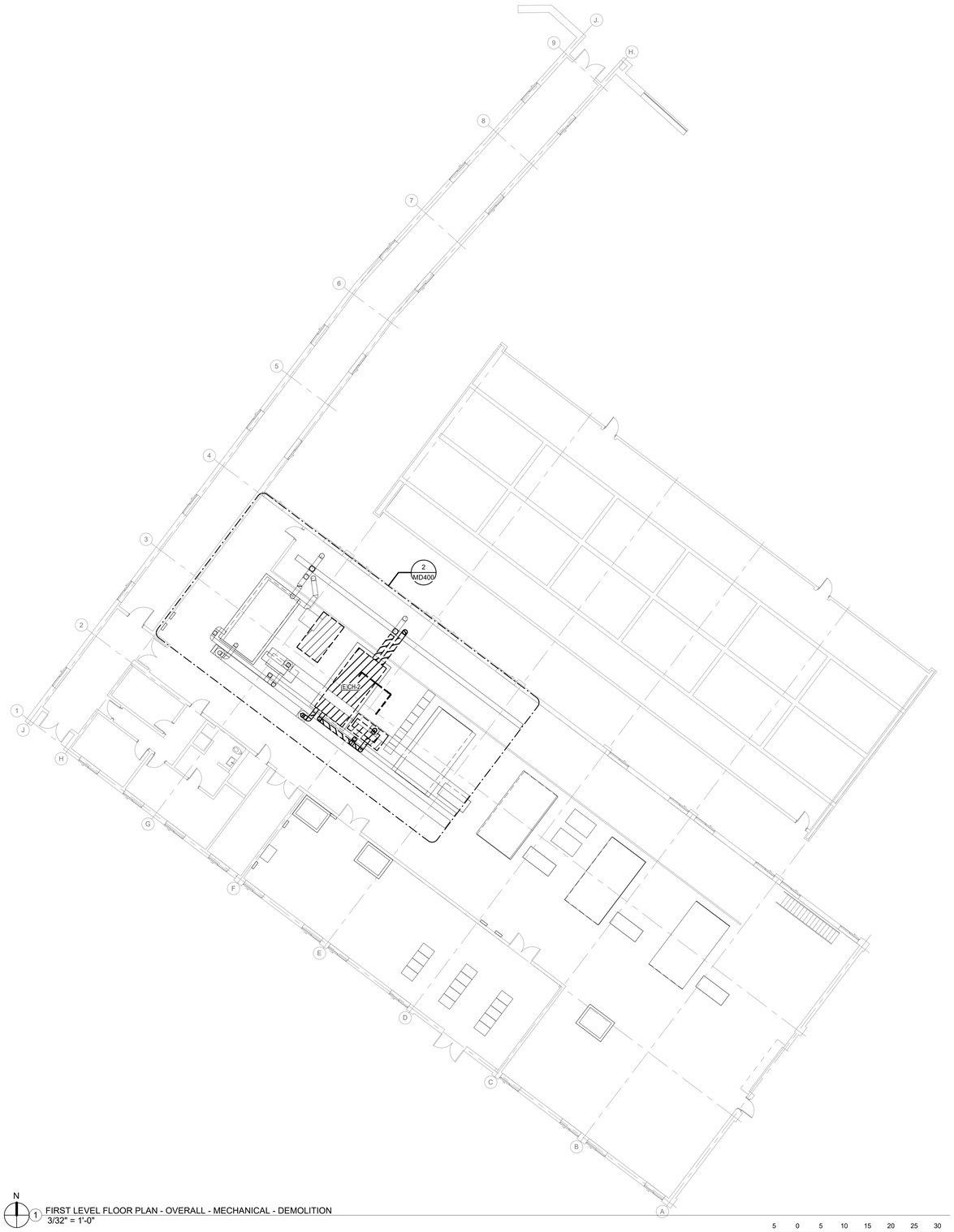
Project Number: 556-24-106

Building Number: B188

Location: NORTH CHICAGO, IL 60064 - 3048

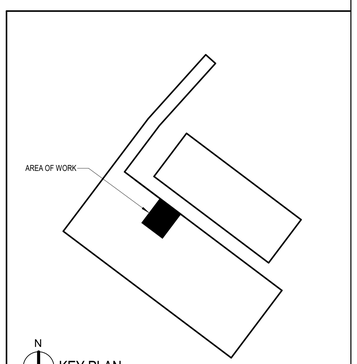
Drawing Number: MD101

Issue Date	Checked	Drawn
11/26/2024	AKE	DAB



1 FIRST LEVEL FLOOR PLAN - OVERALL - MECHANICAL - DEMOLITION
3/32" = 1'-0"

3/32" = 1'-0" SCALE 5 0 5 10 15 20 25 30 FEET



KEY PLAN

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VA U.S. Department of Veterans Affairs

Drawing Title: FIRST LEVEL FLOOR PLAN - OVERALL - MECHANICAL - DEMO

Approved:

Phase: 100%R CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title: REPLACE CHILLER 2

Location: NORTH CHICAGO, IL 60064 - 3048

Issue Date: 11/26/2024 | Checked: AKE | Drawn: DAB

Project Number: 556-24-106

Building Number: B188

Drawing Number: MD102

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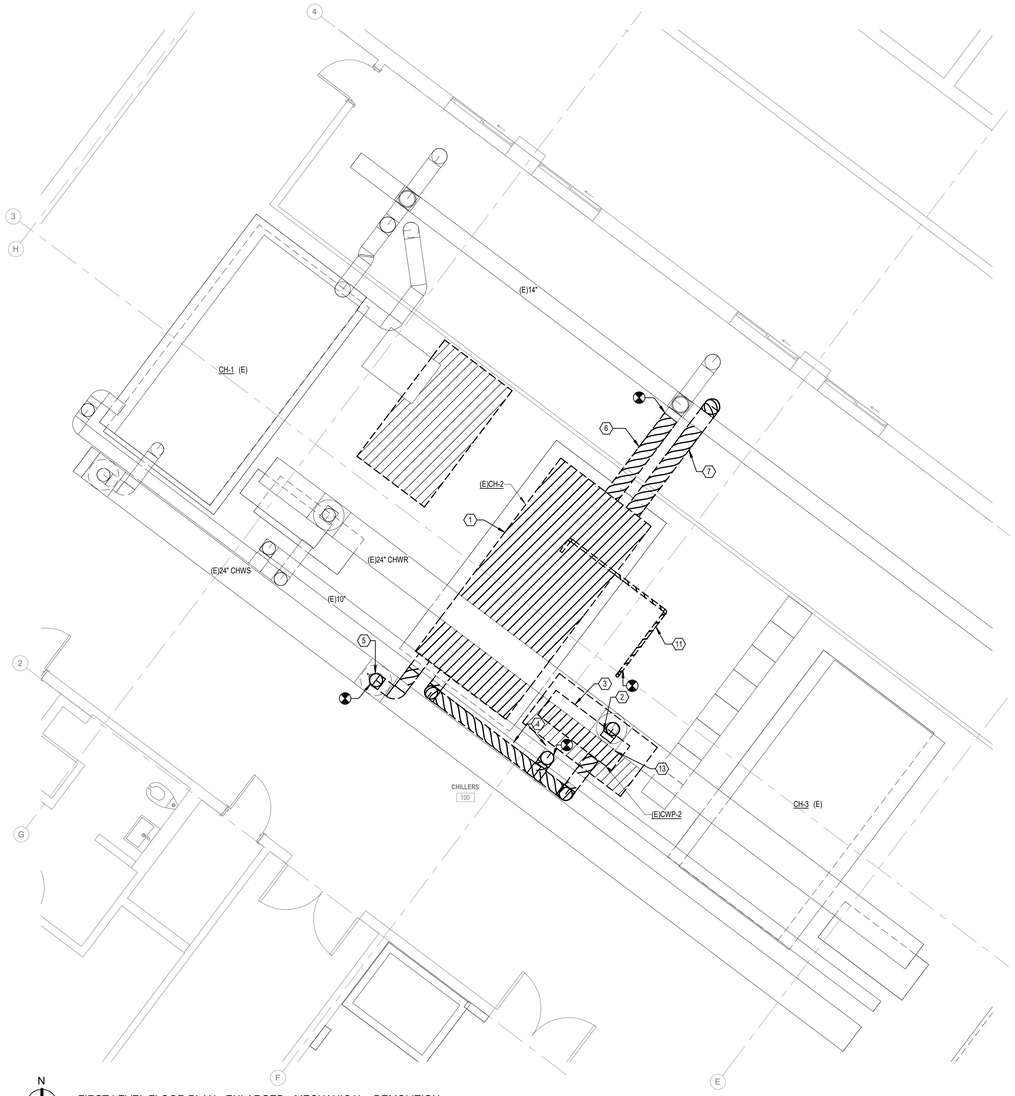

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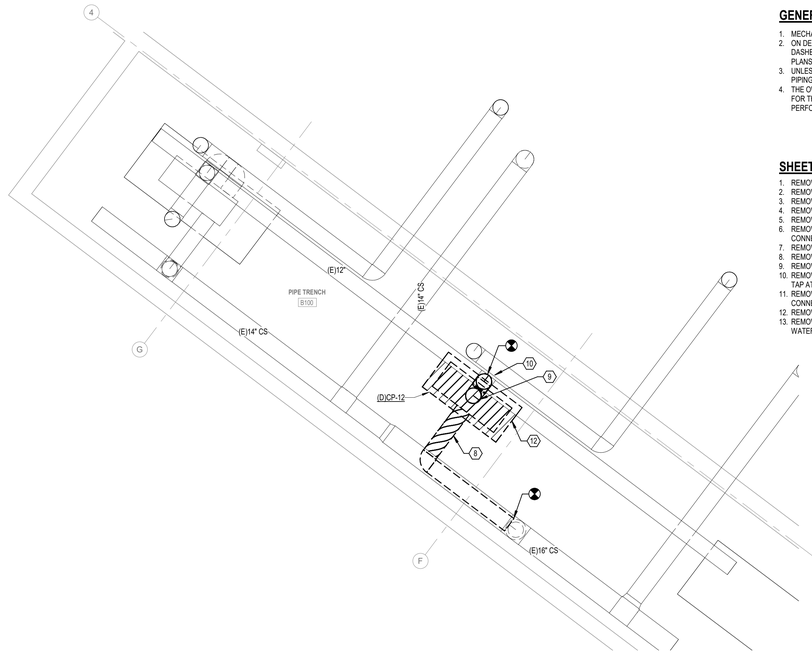
2 FIRST LEVEL FLOOR PLAN - ENLARGED - MECHANICAL - DEMOLITION
1/4" = 1'-0"

2 0 2 4 6 8 10
1/4" = 1'-0" SCALE FEET



N

1 BASEMENT LEVEL FLOOR PLAN - ENLARGED - MECHANICAL - DEMOLITION
1/4" = 1'-0"

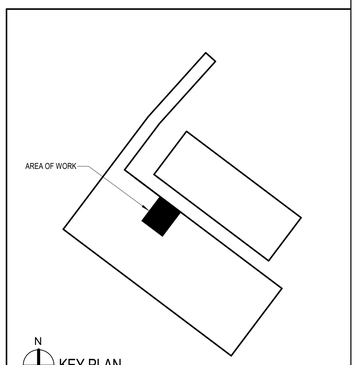
2 0 2 4 6 8 10
1/4" = 1'-0" SCALE FEET

GENERAL NOTES:

1. MECHANICAL SYMBOLS AND ABBREVIATIONS SHEET GENERAL NOTES APPLY TO ALL SHEETS.
2. ON DEMOLITION PLANS; EXISTING MECHANICAL SYSTEMS TO BE REMOVED ARE SHOWN HATCHED AND/OR DASHED; EXISTING MECHANICAL SYSTEMS TO REMAIN ARE SHOWN LIGHT LINE WEIGHT. ON ALL OTHER PLANS, NEW MECHANICAL SYSTEMS ARE INDICATED WITH HEAVY LINE WEIGHTS.
3. UNLESS NOTED OTHERWISE, DETAILS SHOWN WITHIN THESE DOCUMENTS ARE APPLICABLE FOR ALL PIPING, EQUIPMENT AND DUCTWORK INSTALLATIONS WHETHER OR NOT SPECIFICALLY NOTED.
4. THE OWNER AND ENGINEER ARE NOT RESPONSIBLE FOR THE CONTRACTOR'S SAFETY PRECAUTIONS OR FOR THE MEANS, METHODS, TECHNIQUES, CONSTRUCTION SEQUENCES, OR PROCEDURES REQUIRED TO PERFORM THIS WORK.

SHEET NOTES:

1. REMOVE EXISTING WATER COOLED CHILLER.
2. REMOVE CHILLED WATER RETURN PIPING FROM MAIN BACK TO PUMP
3. REMOVE EXISTING CHILLED WATER PUMP AND RELATED CONTROLS.
4. REMOVE EXISTING CHILLED WATER RETURN PIPING AND BYPASS FROM PUMP TO CHILLER.
5. REMOVE CHILLED WATER SUPPLY FROM CHILLER TO EXISTING SHUTOFF VALVE.
6. REMOVE CONDENSER WATER SUPPLY FROM CHILLER TO POINT INDICATED. PREPARE PIPE FOR CONNECTION TO NEW.
7. REMOVE EXISTING CONDENSER WATER RETURN FROM CHILLER DOWN TO BASEMENT.
8. REMOVE CONDENSER WATER SUPPLY PIPING FROM PUMP BACK TO POINT INDICATED.
9. REMOVE CONDENSER WATER SUPPLY FROM PUMP UP TO CHILLER.
10. REMOVE CONDENSER WATER SUPPLY FROM PUMP UP TO POINT SHOWN AT BYPASS HEADER. PREPARE TAP AT BYPASS HEADER FOR CONNECTION TO NEW PIPE.
11. REMOVE REFRIGERANT SAFETY VENT FROM CHILLER TO VERTICAL RISER. PREPARE RISER FOR CONNECTION TO NEW.
12. REMOVE CONDENSER WATER PUMP, PAD AND RELATED CONTROLS.
13. REMOVE AND SALVAGE EXISTING 4" SIDESTREAM FILTER FOR RE-INSTALLATION AT THE NEW CHILLED WATER PUMP.



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11/26/2024

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: FLOOR PLANS - ENLARGED - MECHANICAL- DEMOLITION

Approved:

Phase: 100%R CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title: REPLACE CHILLER 2

Location: NORTH CHICAGO, IL 60064 - 3048

Issue Date: 11/26/2024

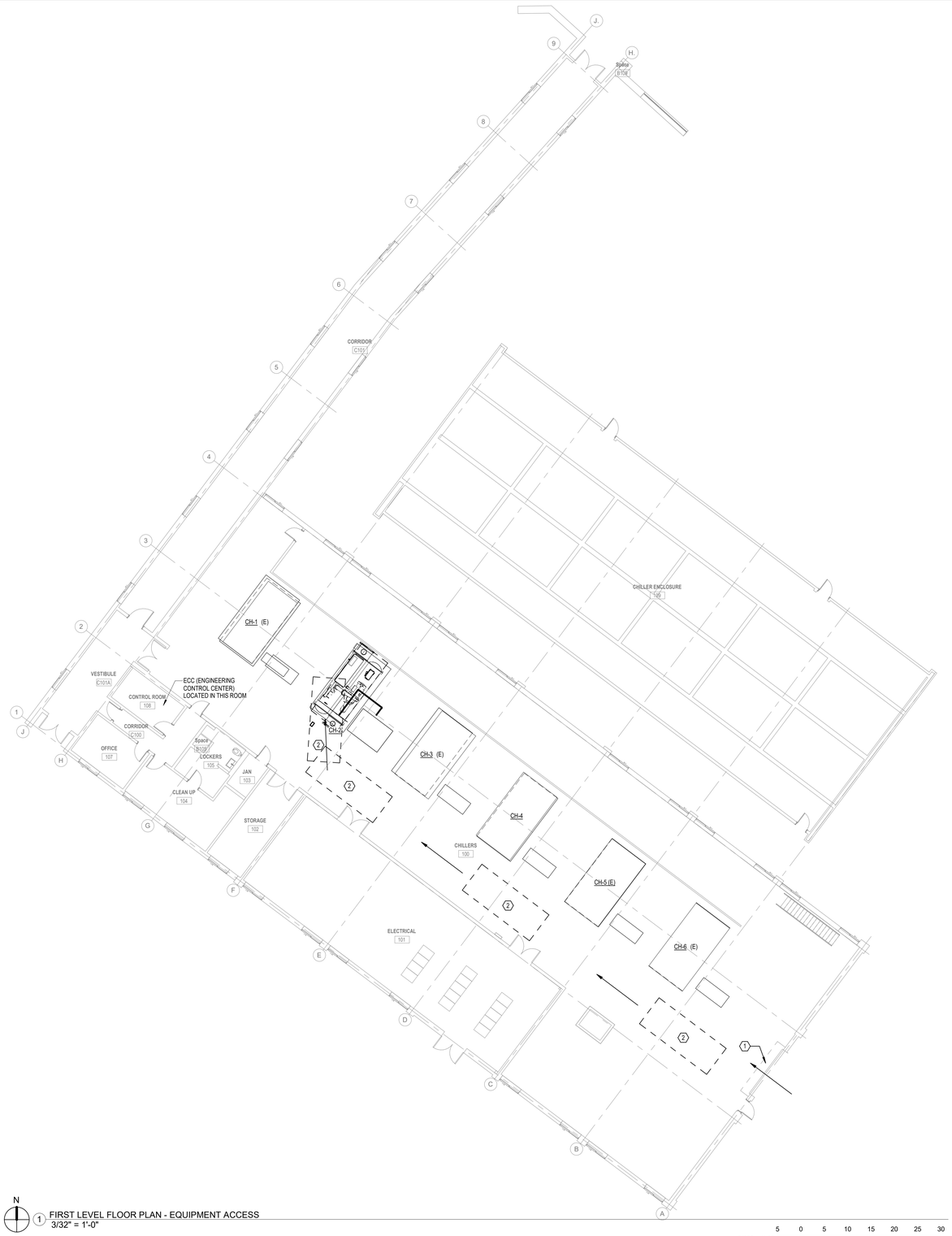
Checked: AKE

Drawn: DAB

Project Number: 556-24-106

Building Number: B188

Drawing Number: MD400



N

1 FIRST LEVEL FLOOR PLAN - EQUIPMENT ACCESS
3/32" = 1'-0"

3/32" = 1'-0" SCALE 5 0 5 10 15 20 25 30 FEET

GENERAL NOTES:

1. MECHANICAL SYMBOLS AND ABBREVIATIONS SHEET GENERAL NOTES APPLY TO ALL SHEETS.
2. ON DEMOLITION PLANS, EXISTING MECHANICAL SYSTEMS TO BE REMOVED ARE SHOWN HATCHED AND/OR DASHED. EXISTING MECHANICAL SYSTEMS TO REMAIN ARE SHOWN LIGHT LINE WEIGHT. ON ALL OTHER PLANS, NEW MECHANICAL SYSTEMS ARE INDICATED WITH HEAVY LINE WEIGHTS.
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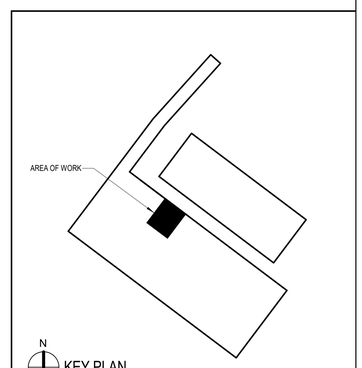
SHEET NOTES:⬡

1. EXISTING OVERHEAD DOOR
2. OUTLINE OF NEW CHILLER FOOTPRINT. ACCESS PATH THROUGH THE MECHANICAL ROOM IS SHOWN. MINIMUM HORIZONTAL CLEARANCE MEASURED IS 8'-0". CONTRACTOR SHALL VERIFY DIMENSIONS AVAILABLE AND REQUIRED PRIOR TO BIDDING.



KEY PLAN

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Drawing Title FIRST LEVEL FLOOR PLAN - EQUIPMENT ACCESS	**Phase** 100%R CONSTRUCTION DOCUMENTS	**Project Title** REPLACE CHILLER 2	**Project Number** 556-24-106
			Building Number B188
Approved:	FULLY SPRINKLERED	**Location** NORTH CHICAGO, IL 60064 - 3048	**Drawing Number** M001
		Issue Date 11/26/2024 / **Checked** AKE / **Drawn** DAB	

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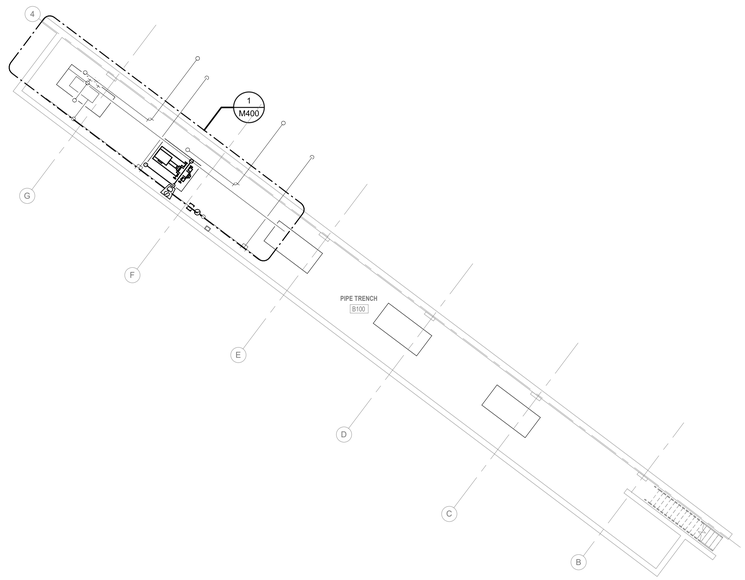
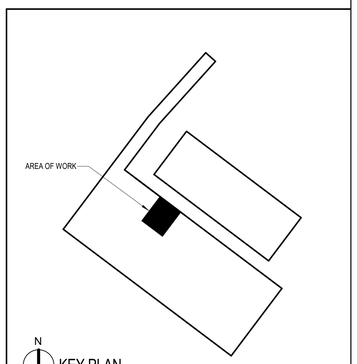


N

1 BASEMENT LEVEL FLOOR PLAN - OVERALL - MECHANICAL
3/32" = 1'-0"

5 0 5 10 15 20 25 30
3/32" = 1'-0"
SCALE FEET



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Drawing Title: BASEMENT LEVEL FLOOR PLAN - OVERALL - MECHANICAL

Phase: 100%R CONSTRUCTION DOCUMENTS

Approved:

FULLY SPRINKLERED

Project Title: REPLACE CHILLER 2

Project Number: 556-24-106

Building Number: B188

Location: NORTH CHICAGO, IL 60064 - 3048

Issue Date: 11/26/2024

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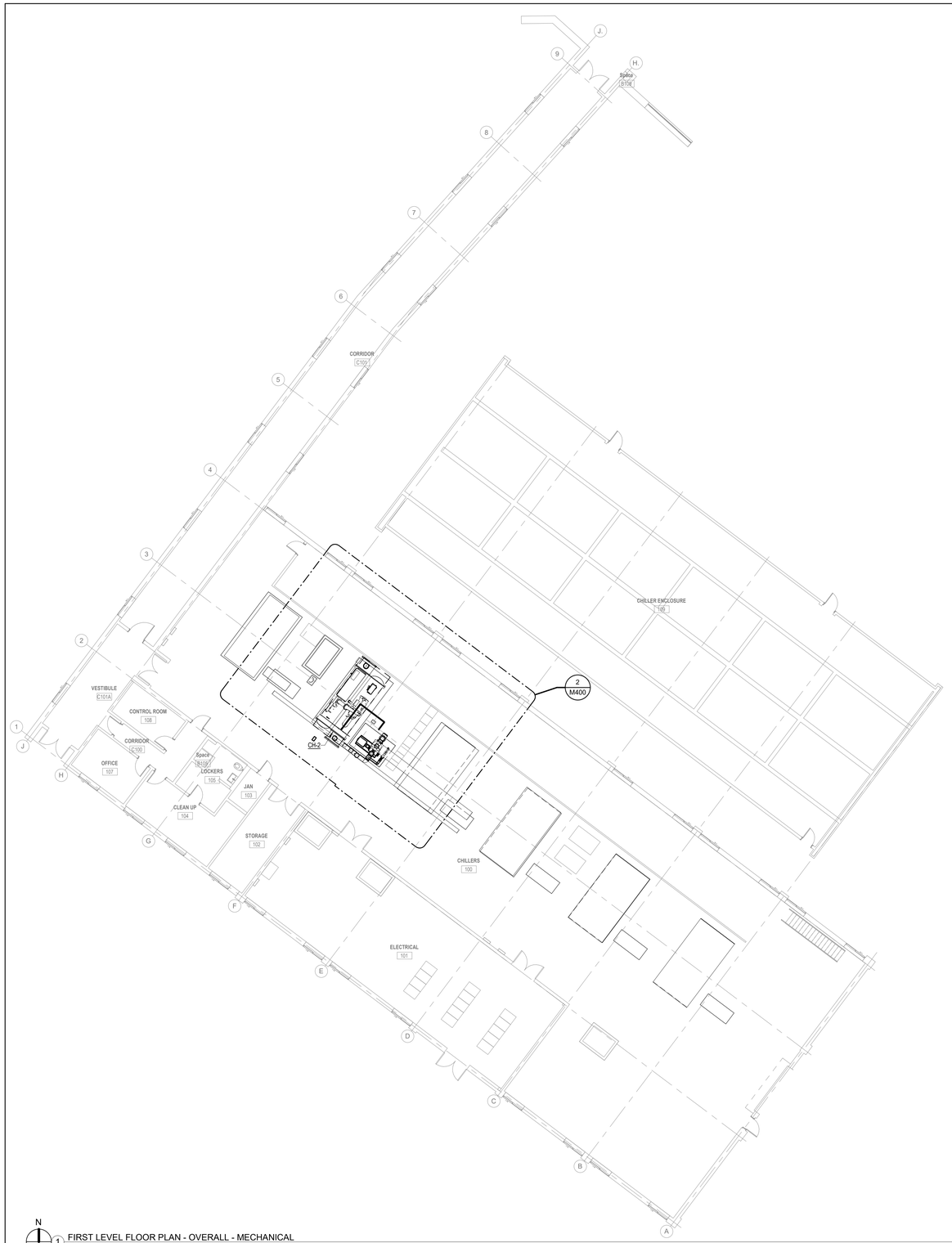
Drawn: DAB

Drawing Number: M101



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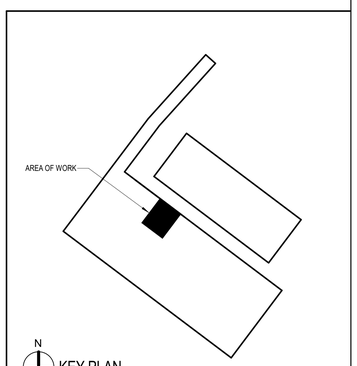
3/32" = 1'-0"

3/32" = 1'-0" SCALE 5 0 5 10 15 20 25 30 FEET



KEY PLAN

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Drawing Title: FIRST LEVEL FLOOR PLAN - OVERALL - MECHANICAL

Approved:

Phase: 100%R CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title: REPLACE CHILLER 2

Location: NORTH CHICAGO, IL 60064 - 3048

Issue Date: 11/26/2024

Checked: AKE

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Project Number: 556-24-106

Building Number: B188

Drawing Number: M102

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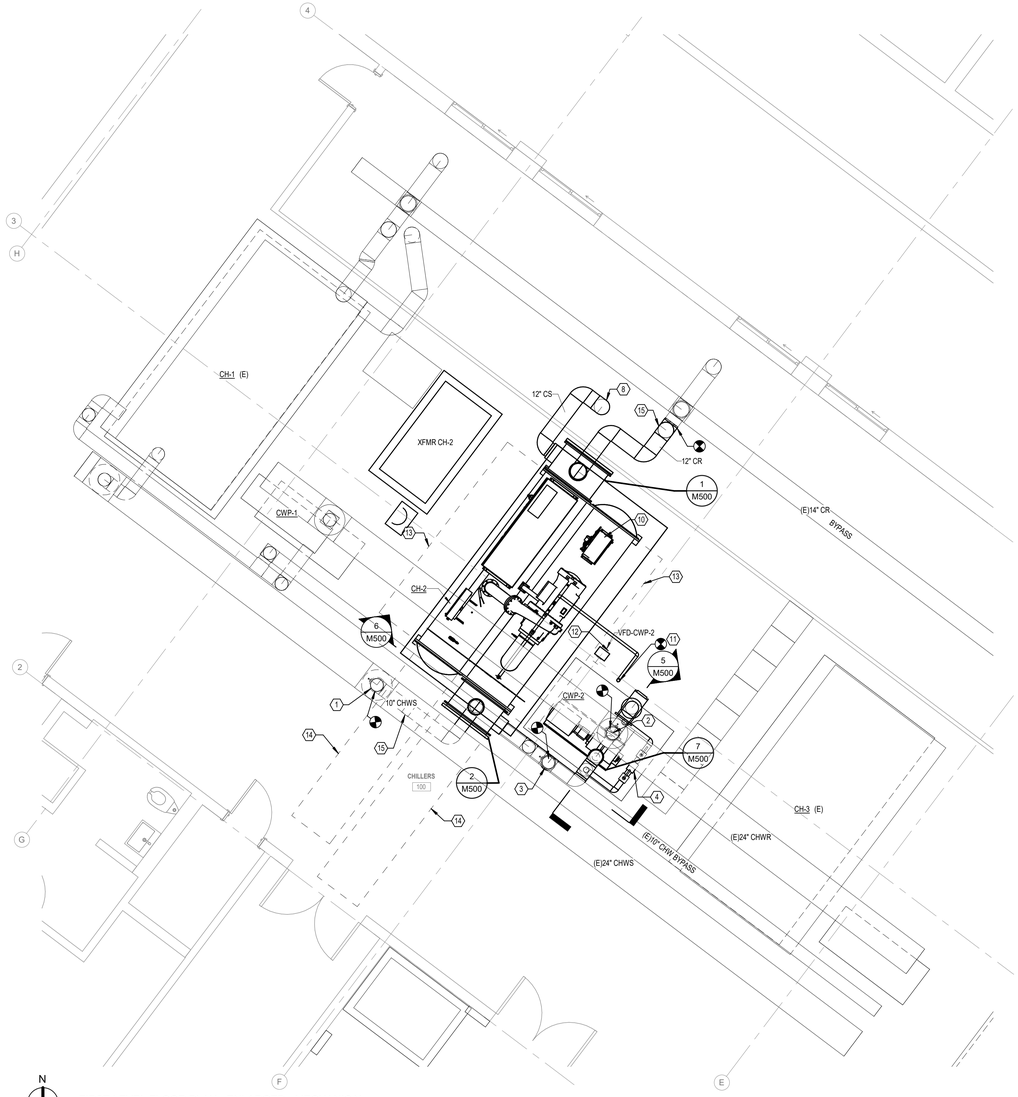
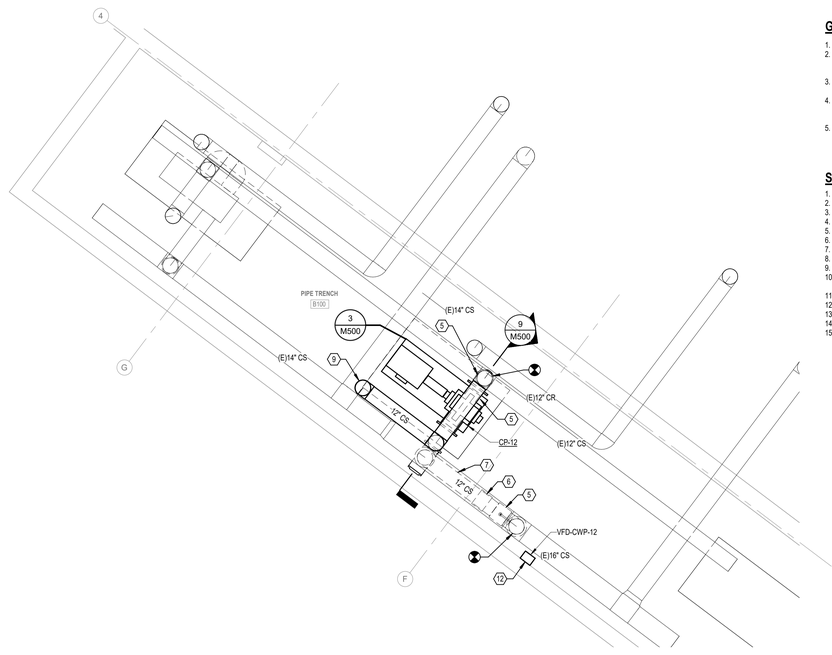


N

2 FIRST LEVEL FLOOR PLAN - ENLARGED - MECHANICAL
1/4" = 1'-0"

1/4" = 1'-0" SCALE 2 0 2 4 6 8 10 FEET



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1 BASEMENT LEVEL FLOOR PLAN - ENLARGED - MECHANICAL
1/4" = 1'-0"

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GENERAL NOTES:

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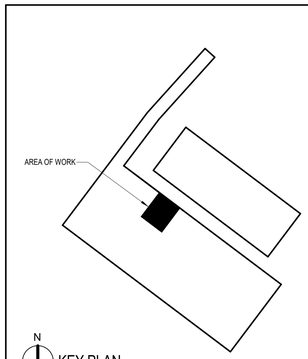
5. PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH SPECIFICATION REQUIREMENTS

SHEET NOTES:

1. CONNECT 10" CHWS TO EXISTING VALVE AT THE MAIN.
2. PROVIDE NEW SHUTOFF VALVE IN EXISTING 10" CHWR TO THE PUMP. EXTEND 10" CHWR TO THE PUMP.
3. PROVIDE NEW SHUTOFF VALVUE IN 10" CHWR BYPASS LINE. CONNECT 10" CHWR TO EX. 10" CHWR.
4. RE-INSTALL EXISTING 4" SIDESTEAM FILTER.
5. PROVIDE SHUT OFF VALVE.
6. PROVIDE BASKET STRAINER.
7. PROVIDE FLEXIBLE CONNECTOR.
8. 12" CWS DOWN TO PIT.
9. 12" CWS UP.
10. REFRIGERANT RELIEF PIPING CONNECTED TO THE UNIT. PROVIDE FLEXIBLE CONNECTION. INSTALLATION AND SIZE PER MANUFACTURER'S RECOMMENDATION.
11. CONNECT REFRIGERANT RELIEF PIPING TO EXISTING.
12. VFD SHALL BE INSTALLED ON EXISTING COLUMN. INSTALL AT MAXIMUM 5'-6" ABOVE FLOOR TO TOP OF VFD.
13. PROVIDE MANUFACTURER REQUIRED SERVICE CLEARANCE AS SHOWN BY DASHED LINE.
14. PROVIDE TUBE PULL CLEARANCE AS RECOMMENDED BY THE BOILER MANUFACTURER.
15. FURNISH AND INSTALL FLOW METER IN STRAIGHT RUN OF PIPE, PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE A MINIMUM CLEARANCE OF 3 PIPE DIAMETER UPSTREAM AND 2 PIPE DIAMETER DOWNSTREAM OF FLOW METER. FLOR METER SHALL BE ONICON SERIES F-3200 OR EQUAL.



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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: FLOOR PLANS - ENLARGED - MECHANICAL

Approved:

Phase: 100%R CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title: REPLACE CHILLER 2

Location: NORTH CHICAGO, IL 60064 - 3048

Issue Date: 11/26/2024

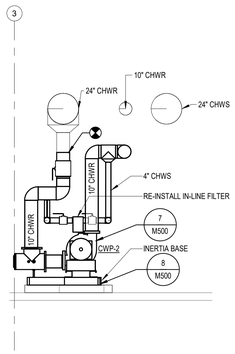
Checked: AKE

Drawn: DAB

Project Number: 556-24-106

Building Number: B188

Drawing Number: M400



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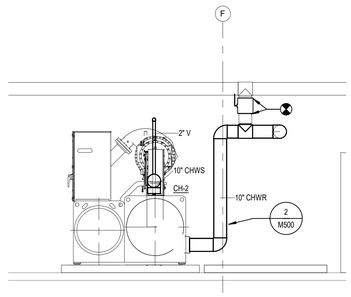
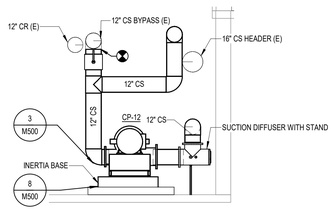
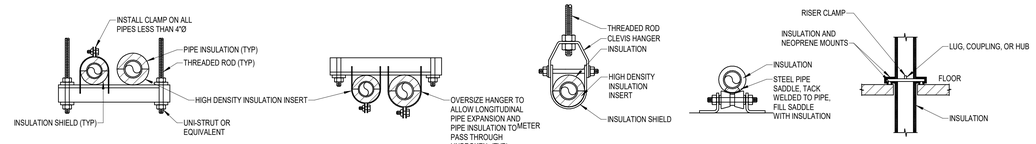
1/4" = 1'-0"



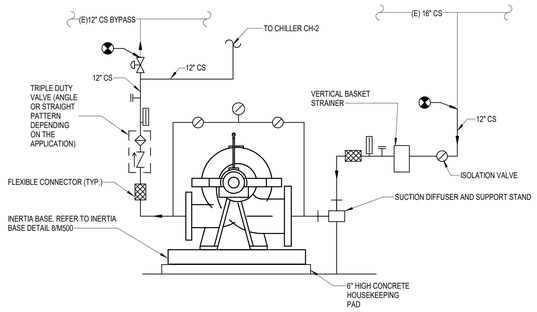
6 M500 CH-2
1/4" = 1'-0"



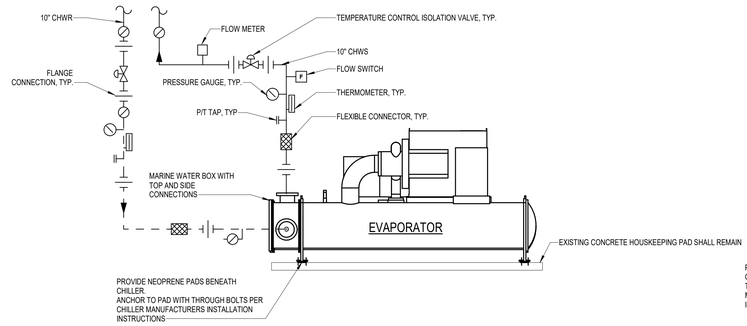
9 M500 CP-12
1/4" = 1'-0"



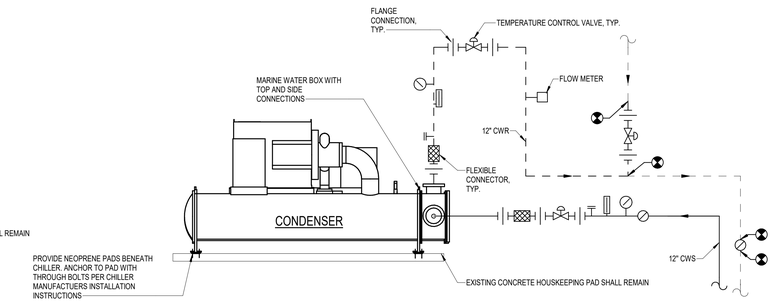
4 M500 HYD - PIPE SUPPORT - TYPICAL FOR ALL PIPING
NO SCALE



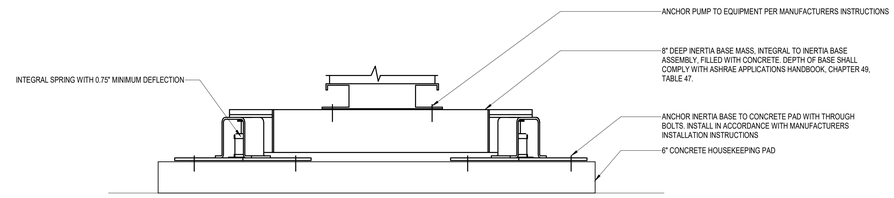
3 M500 CONDENSER WATER PUMP
NO SCALE



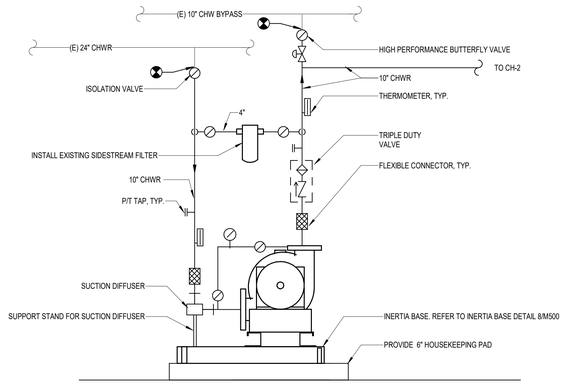
2 M500 CHILLER EVAPORATOR CHILLED WATER CONNECTION
NO SCALE



1 M500 CHILLER CONDENSER WATER CONNECTION
NO SCALE



8 M500 INERTIA BASE DETAIL
NO SCALE



7 M500 CHILLED WATER PUMP
NO SCALE

Revisions:	Date:
100% Construction Documents	11/11/2024
100%R Construction Documents	11/26/2024

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ANDREW K. ENLOE REGISTERED No. 11200650 STATE OF INDIANA PROFESSIONAL ENGINEER 11/11/2024

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: DETAILS AND SECTIONS

Phase: 100%R CONSTRUCTION DOCUMENTS

Project Title: REPLACE CHILLER 2

Project Number: 556-24-106

Building Number: B188

Approved:

FULLY SPRINKLERED

Location: NORTH CHICAGO, IL 60064 - 3048

Issue Date: 11/26/2024

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Drawn: DAB

Drawing Number: M500

Autodesk Docs://23022.010 - VA Lovell Replace Chiller 23556-106 B188 ME.rvt
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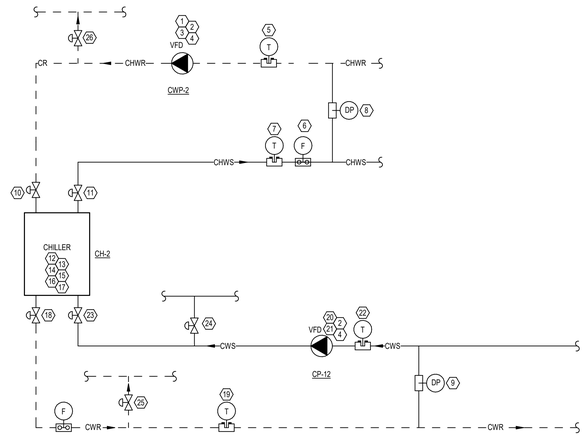

SEQUENCE OF OPERATION

CHILLER, PUMP AND VALVE CONTROL SHALL BE AN EXTENSION OF THE EXISTING CAMPUS/BUILDING SYSTEM.

CHILLER CONTROL:
- THE BMS SHALL ENABLE THE CHILLER. EXISTING BMS ALGORITHM AND SEQUENCING FOR ENABLING CHILLER 2 SHALL REMAIN AS CURRENTLY PROGRAMMED.
- WHEN A CHILLER IS ENABLED REMOTELY OR MANUALLY, ITS ASSOCIATED EVAPORATOR AND CONDENSER CONTROL VALVES SHALL BE OPEN. WHEN A CHILLER IS DISABLED, ITS ASSOCIATED EVAPORATOR AND CONDENSER CONTROL VALVES SHALL BE CLOSED. EACH CONTROL VALVE SHALL BE A LINE SIZE TWO POSITION ACTUATOR WITH END SWITCHES. CONTROL VALVE END SWITCHES SHALL BE DIRECTLY INTERLOCKED WITH ITS CORRESPONDING CHILLER CONTROL PANEL AS DICTATED BY THE CHILLER MANUFACTURER.
  1. UPON CHILLER SHUTDOWN, ISOLATION VALVES SHALL STAY OPEN FOR TWO MINUTES AFTER THE CHILLER SHUTS DOWN.
- CHILLER SHALL NOT BE ALLOWED TO START UNTIL FLOW IS PROVEN THROUGH THE EVAPORATOR AND CONDENSER AS SENSED BY THE FLOW SWITCH FURNISHED BY THE CHILLER MANUFACTURER. FLOW SWITCH SHALL BE WIRED DIRECTLY TO THE CHILLER CONTROL PANEL INDEPENDENT OF THE BMS AS DICTATED BY THE CHILLER MANUFACTURER.
- THE CHILLED WATER TEMPERATURE SETPOINT SHALL BE AN INPUT SIGNAL FROM THE EXISTING BMS SYSTEM.
- BMS SHALL MONITOR THE FLOW RATE MEASURED BY THE FLOW METER THROUGH THE CHILLER AND EVAPORATOR.

CHILLED WATER PUMP CONTROL:
- THE DDC SYSTEM SHALL START THE PUMP VIA THE VFD AND SHALL RUN CONTINUOUSLY WHEN THE CHILLER IS ENABLED.
  1. PROVIDE A USER ADJUSTABLE TIME DELAY FOR STARTING AND STOPPING THE PUMPS TO ALLOW FOR AN ORDERLY CHILLED WATER SYSTEM START-UP, SHUT DOWN, AND SEQUENCING.
- IN CASE OF VFD FAULT DETECTION, THE DDC SYSTEM SHALL WAIT 30 SECONDS (ADJUSTABLE.) AND THEN CALL THE VFD TO START. IF THE VFD DOES NOT START, THE DDC SYSTEM SHALL CALL A SECOND TIME. IF THE VFD STILL HAS NOT STARTED, AN ALARM SHALL BE SENT TO THE OPERATOR INTERFACE.
- INSTALL A CURRENT STATUS SWITCH TO PROVE PUMP OPERATION. LOCATE SWITCHES SO THEY SENSE PUMP STATUS WHEN OPERATED BY THE VFD OR IN BYPASS MODE. IF THE LEAD OR LAG PUMP CURRENT STATUS SWITCH DOES NOT PROVE OPERATION, AN ALARM SHALL BE SENT TO THE OPERATOR INTERFACE AND THE DDC SYSTEM SHALL START THE STANDBY PUMP VIA THE VFD. IF THE STANDBY PUMP CURRENT STATUS SWITCH DOES NOT PROVE OPERATION, A SECOND ALARM SHALL BE SENT TO THE OPERATOR INTERFACE. THE SEQUENCE SHALL BE REPEATED TWICE.
- THE DDC SYSTEM SHALL CONTROL THE OPERATING PUMP VFD(S) FROM THE DIFFERENTIAL PRESSURE ACROSS THE CHILLER. INITIAL SETPOINT SHALL BE 10 PSIG (ADJUSTABLE). FINAL SETPOINT SHALL BE OPTIMIZED BY THE BALANCING CONTRACTOR AND SHALL EQUAL THE DIFFERENTIAL PRESSURE REQUIRED TO MAINTAIN SCHEDULED CHILLER WATERFLOW.
  1. BALANCING CONTRACTOR SHALL ALSO DETERMINE THE MINIMUM DIFFERENTIAL REQUIRED TO MAINTAIN THE CHILLERS MINIMUM FLOW AND VERIFY THE PUMP SPEED DOES NOT DROP BELOW THIS SETTING.
- BMS SHALL MONITOR THE FLOW RATE MEASURED BY THE FLOW METER THROUGH THE CHILLER AND EVAPORATOR

BYPASS VALVE CONTROL:
- THE CHILLED WATER BYPASS VALVES SHALL BE MANUAL ON/OFF VIA A BMS COMMAND POINT
- THE CHILLED WATER BYPASS VALVES SHALL NOT BE ALLOWED TO OPEN IF THE CHILLER ISOLATION VALVE IS OPEN.
- THE CONDENSER WATER BYPASS VALVES SHALL BE INTEGRATED IN TO THE EXISTING BMS CONDENSER WATER RETURN TEMPERATURE CONTROL ALGORITHM.

CONDENSER WATER PUMP CONTROL:
- THE DDC SYSTEM SHALL START THE PUMP VIA THE VFD AND SHALL RUN CONTINUOUSLY WHEN THE CHILLER IS ENABLED.
  1. PROVIDE A USER ADJUSTABLE TIME DELAY FOR STARTING AND STOPPING THE PUMPS TO ALLOW FOR AN ORDERLY CHILLED WATER SYSTEM START-UP, SHUT DOWN, AND SEQUENCING.
- IN CASE OF VFD FAULT DETECTION, THE DDC SYSTEM SHALL WAIT 30 SECONDS (ADJUSTABLE.) AND THEN CALL THE VFD TO START. IF THE VFD DOES NOT START, THE DDC SYSTEM SHALL CALL A SECOND TIME. IF THE VFD STILL HAS NOT STARTED, AN ALARM SHALL BE SENT TO THE OPERATOR INTERFACE.
- INSTALL A CURRENT STATUS SWITCH TO PROVE PUMP OPERATION. LOCATE SWITCHES SO THEY SENSE PUMP STATUS WHEN OPERATED BY THE VFD OR IN BYPASS MODE. IF THE LEAD OR LAG PUMP CURRENT STATUS SWITCH DOES NOT PROVE OPERATION, AN ALARM SHALL BE SENT TO THE OPERATOR INTERFACE AND THE DDC SYSTEM SHALL START THE STANDBY PUMP VIA THE VFD. IF THE STANDBY PUMP CURRENT STATUS SWITCH DOES NOT PROVE OPERATION, A SECOND ALARM SHALL BE SENT TO THE OPERATOR INTERFACE. THE SEQUENCE SHALL BE REPEATED TWICE.
- THE DDC SYSTEM SHALL CONTROL THE OPERATING PUMP VFD(S) FROM THE DIFFERENTIAL PRESSURE. INITIAL SETPOINT SHALL BE 10 PSIG (ADJUSTABLE). FINAL SETPOINT SHALL BE OPTIMIZED BY THE BALANCING CONTRACTOR AND SHALL EQUAL THE DIFFERENTIAL PRESSURE REQUIRED TO MAINTAIN SCHEDULED CHILLER WATERFLOW.
  1. BALANCING CONTRACTOR SHALL ALSO DETERMINE THE MINIMUM DIFFERENTIAL REQUIRED TO MAINTAIN THE CHILLERS MINIMUM FLOW AND VERIFY THE PUMP SPEED DOES NOT DROP BELOW THIS SETTING.
- BMS SHALL MONITOR THE FLOW RATE MEASURED BY THE FLOW METER THROUGH THE CHILLER AND EVAPORATOR

MISCELLANEOUS:
- INSTALL FLOW METERS AS INDICATED ON PLANS.
- IN ADDITION TO BYPASS CONTROL VALVE CONTROL, FLOW METER SHALL BE USED TO MONITOR FLOW RATE, CALCULATE PEAK OPERATING TONNAGE, AND TOTALIZE BUILDING TON-HOURS.
- MONITOR MAKEUP WATER CONSUMPTION TO COOLING TOWERS THROUGH WATER METER.

GENERAL NOTES

1. SERVICE DISCONNECT PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR SHALL BE LOCATED WITHIN 6 FEET OF CONTROLLER.
2. CONTROLLER SHALL HAVE A MINIMUM SERVICE CLEARANCE OF 36 INCHES.
3. WIRE ALL SENSORS AND CONTROL DEVICES BACK TO CONTROLLER.
4. ALL SENSORS SHALL BE INSTALLED IN TEES OR THREAD-O-LETS. PIT PLUGS ARE NOT ACCEPTABLE.
5. DIFFERENTIAL PRESSURE SENSOR SHALL BE LOCATED IN THE SUPPLY AND RETURN PIPING NEAR THE DEVICE WITH THE HIGHEST PRESSURE DROP (VERIFY LOCATION WITH ENGINEER PRIOR TO INSTALLATION).
6. FLOW METER SHOWN SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. THIS FLOW METER IS SEPARATE FROM THE CHILLER FLOW METER FURNISHED BY THE CHILLER MANUFACTURER AND WIRED TO THE CHILLER CONTROL PANEL.
7. CONTROLS CONTRACTOR SHALL INCLUDE BAS INTEGRATION OF CHILLER #2 INTO EXISTING BAS, UPDATING THE GRAPHICS AND TRAINING OF MAINTENANCE STAFF.

DIRECT DIGITAL CONTROL POINTS LIST - CHILLED WATER LOOP CONTROL - WATER-COOLED CHILLERS

POINT ID	POINT DESCRIPTION	SOURCE (1)	TYPE (2)	I/O (3)	UNITS
1	CHILLED WATER PUMP VFD STATUS	E	D	I	ENABLED / DISABLED
2	CHILLED WATER PUMP VFD START/STOP	E	D	O	-
3	CHILLED WATER PUMP VFD SPEED CONTROL	E	A	O	-
4	CHILLED WATER PUMP CURRENT STATUS SWITCH	E	D	I	ON / OFF
5	CHILLED WATER RETURN TEMPERATURE	E	A	I	DEGREES F
6	CHILLED WATER FLOW METER	E	A	I	GPM
7	CHILLED WATER SUPPLY TEMPERATURE	E	A	I	DEGREES F
8	DIFFERENTIAL PRESSURE SENSOR - CONDENSER BARREL	E	A	I	PSI
9	DIFFERENTIAL PRESSURE SENSOR - CHILLER BARREL	E	A	I	PSI
10	EVAPORATOR CONTROL VALVE	E	B	O	-
11	EVAPORATOR CONTROL VALVE	E	B	O	-
12	CHILLER START/STOP	E	D	O	-
13	CHILLER CONDENSER FLOW SWITCH	O	D	I	PASS / FAIL
14	CHILLER HEAD PRESSURE CONTROL	O	A	I	PSI
15	CHILLER EVAPORATOR FLOW SWITCH	O	D	I	PASS / FAIL
16	CHILLED WATER SUPPLY TEMPERATURE	E	A	I	DEGREES F
17	CHILLER STATUS	E	D	I	ON / OFF
18	CONDENSER CONTROL VALVE	E	A	O	-
19	CONDENSER RETURN TEMPERATURE	E	A	I	DEGREES F
20	CHILLED WATER CONDENSOR PUMP VFD STATUS	E	D	I	ENABLED / DISABLED
21	CHILLED WATER CONDENSOR PUMP VFD SPEED CONTROL	E	A	O	-
22	CONDENSER SUPPLY TEMPERATURE	E	B	I	DEGREES F
23	CONDENSER CONTROL VALVE	E	B	O	-
24	CONDENSER WATER SUPPLY BYPASS VALVE	E	B	O	-
25	CONDENSER WATER RETURN BYPASS VALVE	E	B	O	-
26	CHILLED WATER RETURN BYPASS VALVE	E	B	O	-

REMARKS:
1. E = ELECTRIC P = PNEUMATIC BO = BY OTHERS S = REFERENCED POINT FROM HARDWIRE ELSEWHERE ON DDC NETWORK
2. A = ANALOG B = BINARY
3. I = INPUT O = OUTPUT
4. G = GENERAL C = CRITICAL H = HIGH LIMIT L = LOW LIMIT F = FAILURE
5. T = TRENDING EH = EVENT HISTORY AR = ARCHIVE TT = TOTALIZATION GP = GRAPHICAL POINT

Revisions:	Date:
100% Construction Documents	11/11/2024
100%R Construction Documents	11/26/2024

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: CONTROL SCHEMATICS
Phase: 100%R CONSTRUCTION DOCUMENTS
Project Title: REPLACE CHILLER 2
Project Number: 556-24-106
Building Number: B188
Approved:
FULLY SPRINKLERED
Location: NORTH CHICAGO, IL 60064 - 3048
Issue Date: 11/26/2024
Checked: AKE
Drawn: DAB
Drawing Number: M501

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COORDINATION OF WORK SCHEDULE

ITEM	SUPPLIER	INSTALLER	POWER	CONTROL (4)
MOTORS	MC	MC (3)	EC	CC
MOTOR CONTROL CENTER	EC	EC	EC	CC
EQUIPMENT MOUNTED ELECTRICAL COMPONENTS	MC	MC	EC	CC
LOOSE MOUNTED ELECTRICAL COMPONENTS	EC	EC	EC	CC
CONTROL RELAYS, TRANSFORMERS, POWER	MC	EC	EC (4)	CC
120V THERMOSTATS	MC	MC	MC	CC (1)
TEMPERATURE CONTROL SENSORS	MC	MC	CC	CC
TEMPERATURE CONTROL PANELS	MC	CC	EC (4)	CC
VARIABLE SPEED DRIVES	MC	MC	EC	CC
PE/EP SWITCHES, SOLENOID VALVES, ACTUATORS	CC	CC	EC (4)	CC
PUSHBUTTON STATIONS	EC	EC	EC (4)	EC
FLOW METERS	MC	MC	CC	CC

REMARKS:
1. IF NO CC IN CONTRACT, MC TO WIRE CONTROLS AND EC TO PIPE CONDUIT.
2. ALL LOW VOLTAGE WIRING OF PANELS TO BE COVERED IN MC BID. WIRING CONTRACTOR TO BE SUBCONTRACTOR TO MC.
3. INSTALLING CONTRACTOR IS RESPONSIBLE FOR FIELD ALIGNMENT SERVICES WHEN REQUIRED BY COMMON MOTOR REQUIREMENTS SPECIFICATION OR BY INDIVIDUAL EQUIPMENT SPECIFICATIONS.
4. ALL HARDWARE, SOFTWARE, EQUIPMENT, ACCESSORIES, WIRING (POWER AND SENSOR), PIPING, RELAYS, SENSORS, POWER SUPPLIES, TRANSFORMERS, AND INSTRUMENTATION REQUIRED FOR A COMPLETE AND OPERATIONAL DDC SYSTEM, BUT NOT SHOWN ON THE ELECTRICAL DRAWINGS, ARE THE RESPONSIBILITY OF THE CC.

HVAC EQUIPMENT INSULATION SCHEDULE

Equipment	INSULATION TYPE	INSULATION THICKNESS	MICA PLATE NUMBER (1)
EVAPORATOR HEAT EXCHANGERS OF CHILLERS (TWO LAYERS)	E	1-1/2	4-200, 8-210
COLD WATER PUMP CASINGS	E	1	4-210 OR 8-400

ABBREVIATIONS: PT= PIPE AND TANK INSULATION, MF= MINERAL FIBER(FIBERGLASS), CS= CALCIUM SILICATE, E= ELASTOMERIC.

NOTE:
(1) PLATE NUMBER REFERENCED ARE PROVIDED TO CLARIFY THE SCOPE OF INSTALLATION. INSTALL INSULATION AND ACCESSORY COMPONENTS PER APPLICABLE MICA AND MANUFACTURERS RECOMMENDATIONS.

HVAC PIPING INSULATION SCHEDULE

PIPING SYSTEM FLUID	TEMP. RANGE DEG. F.	THICKNESS IN INCHES FOR PIPE SIZES THROUGH SIZE LISTED <1	1 - 1.25	1.5 - 3	4 - 6	>/= 8	TYPE	JACKET TYPE	MICA PLATE NUMBER (1)	REMARKS
INDOOR COLD WATER	40 - 60	0.5	0.5	1	1	1	MF, E	ASJ-SSL	1-100, 1-200	(2)
INDOOR CONDENSATE AND EQUIPMENT DRAINS	BELOW 60	0.5	0.5	0.5	0.5	0.5	MF, E	ASJ-SSL	1-100, 1-200	(2)(3)

ABBREVIATIONS: MF = MINERAL FIBER/FIBERGLASS, E = ELASTOMERIC, CG = CELLULAR GLASS

REMARKS:
1. PLATE NUMBER REFERENCED ARE PROVIDED TO CLARIFY THE SCOPE OF INSTALLATION. INSTALL INSULATION AND ACCESSORY COMPONENTS PER APPLICABLE MICA AND MANUFACTURERS RECOMMENDATIONS.
2. MICA REFERENCE PLATES FOR PIPING ARE 1-100 FOR FIBERGLASS AND CELLULAR GLASS PIPE INSULATION, 1-200 FOR ELASTOMERIC AND 1-900 FIBERGLASS WITH HEAT TRACE.
3. INCLUDES AIR CONDITIONING CONDENSATE, P-TRAPS FOR FLOOR DRAINS/SINKS RECEIVING AIR CONDITIONING CONDENSATE OR ICE MAKER DRAIN PIPING, AND SANITARY DRAINAGE PIPING FROM ELECTRIC WATER COOLERS TO MAIN.

PUMP SCHEDULE

MARK	SERVICE	FLOW [GPM]	TOTAL HEAD [FT]	SHUT-OFF HEAD [FT]	MIN EFFICIENCY [%]	NPSH (AVAILABLE)	NPSH (REQUIRED)	TYPE OF FLUID	RPM	SUCTION / DISCHARGE SIZE [IN]	MAX IMPELLER DIAMETER [IN]	ELECTRICAL DATA HP	VOLTAGE	PHASE	DISCONNECT BY	MIN SCCR	MANUFACTURER	MODEL	REMARKS
CP-12	CONDENSER WATER	2828	80	98.5	85.1	38.2	10.9	WATER	1180	12"/10"	14.25	75	460 V	3	VFD	25	BELL & GOSSETT	e-HSC-10X12X14.5	1,2,3,4,5
CWP-2	CHILLED WATER	1708	50	71.9	72	-	-	WATER	1780	8"/6"	8.125	40	460 V	3	VFD	25	BELL & GOSSETT	VSX-VSCS-6X8X10.5A	1,2,3,4,5

REMARKS:
1. PERFORMANCE BASED ON FLUID AND CONDITIONS INDICATED IN THIS SCHEDULE.
2. PROVIDE WITH THE FOLLOWING ACCESSORIES: DISCONNECT, SUCTION DIFFUSER, TRIPLE DUTY DISCHARGE VALVE (CHECK, BALANCING, ISOLATION), FLEXIBLE CONNECTORS, FLANGES, AND TEMPERATURE AND PRESSURE GAUGES ON EACH CONNECTION.
3. PROVIDE HOUSEKEEPING PAD AND INERTIA BASE.
4. "SCCR" - VALUE INDICATED IS AVAILABLE SHORT CIRCUIT CURRENT (SCC) IN KILOAMPS AT THE EQUIPMENT BASED ON PRELIMINARY DESIGN PHASE CALCULATIONS. EQUIPMENT SCCR SHALL BE MINIMUM 120% OF THE AVAILABLE SCC. RATING SHALL BE ADJUSTED IF REQUIRED BASED ON FINAL SCC CALCULATION. EQUIPMENT INDICATED WITH 5 KA MAY BE PROVIDED WITH 5 KA SCCR. REVIEW EQUIPMENT.
5. INTEGRATE VFD BACNET INTERFACE INTO BAS

WATER COOLED CHILLER SCHEDULE

MARK	REFRIGERANT	MAX SOUND PRESSURE [dBA]	CAPACITY/PERFORMANCE NOMINAL / NET [TONS]	NUMBER OF STAGES	UNIT EFFICIENCY AT AHRI CONDITIONS FULL LOAD	UNIT EFFICIENCY AT AHRI CONDITIONS IPLV	REQUIRED EFFICIENCY AT AHRI CONDITIONS FULL LOAD	REQUIRED EFFICIENCY AT AHRI CONDITIONS IPLV	EVAPORATOR PERFORMANCE EWT [°F]	LWT [°F]	FLOW [GPM]	MAX PRESSURE DROP [FT]	FOULING FACTOR	FLUID	CONDENSER PERFORMANCE EWT [°F]	LWT [°F]	FLOW [GPM]	MAX PRESSURE DROP [FT]	FOULING FACTOR	FLUID	ELECTRICAL DATA KW	FLA	VOLTAGE	PHASE	MCA	MOCP	DISCONNECT TYPE	MIN SCCR	MANUFACTURER	MODEL	REMARKS
CH-2	R-513A	84.5	1000	VARIABLE SPEED	.5627	.3092	.585	.325	56	42	1709	13.6	.0001	WATER	85	95	2828	24.8	.00025	WATER	616	824	460 V	3	1030	1600	INTEGRAL	100	YORK	YMC2-S3517BBS	1,2,3,4,5,6

REMARKS:
1. CHILLER PERFORMANCE BASED ON FLUID AND CONDITIONS INDICATED IN THIS SCHEDULE.
2. UTILIZE EXISTING STRUCTURAL CONCRETE PAD. ANCHOR CHILLER TO PAD.
3. PROVIDE THE FOLLOWING ACCESSORIES: SINGLE POINT POWER CONNECTION, INTEGRAL DISCONNECT, BACNET INTERFACE.
4. EQUIPMENT SHALL BE SEISMICALLY RATED. REFER TO SPECIFICATIONS
5. "SCCR" - VALUE INDICATED IS AVAILABLE SHORT CIRCUIT CURRENT (SCC) IN KILOAMPS AT THE EQUIPMENT BASED ON PRELIMINARY DESIGN PHASE CALCULATIONS. EQUIPMENT SCCR SHALL BE MINIMUM 120% OF THE AVAILABLE SCC. RATING SHALL BE ADJUSTED IF REQUIRED BASED ON FINAL SCC CALCULATION. EQUIPMENT INDICATED WITH 5 KA MAY BE PROVIDED WITH 5 KA SCCR. REVIEW SCCR WITH ELECTRICAL CONTRACTOR PRIOR TO ORDERING EQUIPMENT.
6. EFFICIENCY SHALL COMPLY WITH FEMP EFFICIENCY REQUIREMENTS AT AHRI RATING CONDITIONS. UNIT EFFICIENCIES ARE SCHEDULED AT AHRI CONDITIONS

100% Construction Documents	11/11/2024
100%R Construction Documents	11/26/2024
Revisions:	**Date:**

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title MECHANICAL SCHEDULES

Approved:

Phase 100%R CONSTRUCTION DOCUMENTS

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Project Title REPLACE CHILLER 2

Location NORTH CHICAGO, IL 60064 - 3048

Issue Date 11/26/2024 | **Checked** AKE | **Drawn** DAB

Project Number 556-24-106

Building Number B188

Drawing Number M600

ELECTRICAL MISC SYMBOLS

PLAN SYMBOL	NAME
	BRANCH CIRCUIT CONCEALED IN CEILING OR WALL
	BRANCH CIRCUIT CONCEALED IN FLOOR OR BELOW GRADE
	CLEARANCE SPACE
	CONDUIT BREAK
	CONDUIT DOWN
	CONDUIT STUB-OUT
	CONDUIT UP
	HOMERUN TO PANEL G = GFCI CIRCUIT (PART) = PARTIAL CIRCUIT
	SWITCHED RECEPTACLE

ELECTRICAL EQUIPMENT SYMBOLS

PLAN SYMBOL	NAME
	AUTOMATIC TRANSFER SWITCH
	ENCLOSED CIRCUIT BREAKER - SURFACE
	ENCLOSED DISCONNECT SWITCH - NON-FUSED
	PANELBOARD - SURFACE
	SWITCHBOARD
	TRANSFORMER - DRY TYPE
	TRANSFORMER - OIL FILLED
	VARIABLE FREQUENCY DRIVE

ELECTRICAL MISC SYMBOL LEGEND

PLAN SYMBOL	NAME	DESCRIPTION
12"x4" 12" LADDER	CABLE TRAY	PROVIDE CABLE TRAY AT LOCATIONS INDICATED ON PLANS. REFER TO FLOOR PLANS FOR TYPE DESIGNATION. COORDINATE MOUNTING WITH OTHER TRADES AND REQUIREMENTS IN SPECIFICATION. TYPE 'WIDTH x DEPTH', WIRE BASKET CABLE TRAY: PROVIDE CABLE TRAY IN DIMENSION INDICATED ON FLOOR PLANS. TYPE 'WIDTH LADDER', LADDER CABLE TRAY: PROVIDE CABLE TRAY IN DIMENSION INDICATED ON FLOOR PLANS.
XXX	LIGHTING CONTROL TAG	REFER TO LIGHTING CONTROL SCHEDULE FOR ADDITIONAL INFORMATION.

ELECTRICAL FIXTURE SYMBOL LEGEND

PLAN SYMBOL	NAME	DESCRIPTION
	JUNCTION BOX - CEILING	GENERAL: PROVIDE JUNCTION BOX AS DESCRIBED IN THESE GENERAL NOTES AND NOTES BELOW FOR EACH JUNCTION BOX TYPE. REFER TO FLOOR PLANS FOR JUNCTION BOX DESIGNATION. PROVIDE ONE (1) 4" SQUARE, 2-1/8" DEEP JUNCTION BOX WITH SINGLE GANG TRIM RING AND BLANK WALL PLATE WITH ONE (1) 1" CONDUIT TO ABOVE ACCESSIBLE CEILING WHERE NOT INSTALLED IN ACCESSIBLE CEILING. WHERE SHOWN ADJACENT TO CEILING RECEPTACLES ON FLOOR PLANS, PROVIDE MAXIMUM 8' BETWEEN BACK BOXES. WHERE SHOWN AS PART OF BRANCH CIRCUIT, PROVIDE CONDUCTORS WITHIN CONDUIT TO SOURCE. REFER TO FLOOR PLANS FOR BRANCH CIRCUIT DESIGNATION. TYPE 'LIGHT', CEILING PROCEDURE LIGHT: PROVIDE 20A 120V BRANCH CIRCUIT TO OWNER FURNISHED CEILING PROCEDURE LIGHT AT APPROXIMATE LOCATION INDICATED. COORDINATE FINAL CONNECTION WITH FINAL EQUIPMENT SELECTION. TYPE 'SHADE', MOTORIZED SHADE: PROVIDE 20A 120V BRANCH CIRCUIT TO JUNCTION BOX, MOUNTED IN ACCESSIBLE LOCATION ABOVE CEILING WITHIN 5'0" OF MOTORIZED SHADE MOTOR LOCATION. PROVIDE CONNECTION TO MANUFACTURER FURNISHED JUNCTION BOX LEADS AND MOTOR LEADS. PROVIDE ONE (1) 1" CONDUIT FROM MOTOR LOCATION TO ACCESSIBLE CEILING LOCATION FOR LOW VOLTAGE CONNECTION TO MOTORIZED SHADE CONTROLLER AND ANY APPLICABLE SPLITTERS. MOUNT SPLITTERS IN LOCATION PER MANUFACTURER REQUIREMENTS. COORDINATE WITH FINAL EQUIPMENT SELECTION. TYPE 'EWC-1', ELECTRIC WATER COOLER, REMOTE CHILLER: PROVIDE 20A 120V BRANCH CIRCUIT TO REMOTE CHILLER, MOUNTED ABOVE FINISHED CEILING. PROVIDE WITH TOGGLE SWITCH DISCONNECTING MEANS. COORDINATE WITH FINAL EQUIPMENT SELECTION.

COMMUNICATION SYMBOL LEGEND

PLAN SYMBOL	NAME	DESCRIPTION
	4 POST COMMUNICATIONS RACK	PROVIDE [7'-0" TALL 45U] [8'-0" TALL 52U], 4 POST TELECOMMUNICATIONS RACK AT APPROXIMATE LOCATIONS INDICATED ON FLOOR PLANS. PROVIDE [PANDUIT MODEL R4P36] [COOPER B-LINE MODEL SB837] (OR PRIOR APPROVED EQUIVALENT). PROVIDE RACK MOUNTED POWER STRIPS PER SPECIFICATIONS AT EACH RACK.] REFER TO FLOOR PLANS FOR DATA SWITCH ELECTRICAL SOURCE AND REQUIREMENTS. PROVIDE TELECOMMUNICATIONS RACK AND ALL ACCESSORIES PER SPECIFICATION SECTION 271200. PROVIDE ALL ACCESSORIES FOR A COMPLETE INSTALLATION, INCLUDING BUT NOT LIMITED TO: BRACKETS, MOUNTING FRAMES, HORIZONTAL AND VERTICAL WIRE MANAGEMENT, AND GROUNDING CONNECTIONS. COORDINATE EXACT FINAL LOCATION WITH OWNER'S IT REPRESENTATIVE PRIOR TO INSTALLATION. PROVIDE ALL POWER CONNECTIONS INDICATED ON FLOOR PLANS AT FINAL RACK LOCATION. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

LIGHTING FIXTURE SYMBOLS

PLAN SYMBOL	NAME
	EMERGENCY HATCH

ONE LINE SYMBOL

PLAN SYMBOL	NAME
	CONTINUATION
	ENCLOSED CIRCUIT BREAKER
	GROUND BAR
	GROUNDING ELECTRODE
M	MOTOR STARTER
	SWITCHBOARD/SWITCHGEAR - DOUBLE TUB
	TRANSFORMER
	TWO-WAY MOTOR-OPERATED CONTROL VAVLE

ELECTRICAL FIXTURE SYMBOLS

PLAN SYMBOL	NAME
	RECEPTACLE - DOUBLE DUPLEX - CONV
	RECEPTACLE - DUPLEX - CONV

FHCC CONDUIT COLOR SCHEME

Red- Fire Alarm
Blue- Controls, HVAC, BAS
Orange- Fiber optic, communications
Green- Normal power
Yellow- Emergency Power, Critical Power
Black- Security
Purple- Medical Systems, Nurse Call

ELECTRICAL GENERAL NOTES:

(GENERAL NOTES SHALL APPLY TO ALL SHEETS)

A. BRANCH CIRCUITS WITH A TOTAL LENGTH LONGER THAN 75' SHALL UTILIZE #10 AWG CONDUCTORS. RECEPTACLE BRANCH CIRCUITS WITH A TOTAL LENGTH LONGER THAN 150' SHALL UTILIZE #8 AWG CONDUCTORS.
B. FOR ALL CONDUIT AND OTHER ITEMS PENETRATING A FIRE RATED WALL, PROVIDE UL LISTED THROUGH PENETRATION FIRE STOPPING SYSTEM THAT IS SPECIFIC TO THE WALL CONSTRUCTION ASSEMBLY AND COMPLIANT WITH ASTM E814. INSTALL SYSTEM IN STRICT COMPLIANCE WITH THE FIRE STOPPING MANUFACTURER'S U.L. APPROVED DETAIL. WHERE EXISTING WALLS ARE BEING UPGRADED TO FIRE RATED WALLS OR THE FIRE RATING IS BEING MODIFIED, PROVIDE U.L. LISTED THROUGH PENETRATION FIRE STOPPING SYSTEM FOR ALL NEW AND EXISTING PENETRATIONS. REFER TO THE ARCHITECTURAL LIFE SAFETY PLANS FOR LOCATIONS OF FIRE RATED WALLS.
C. ANY ITEMS DAMAGED BY THE CONTRACTOR SHALL BE REPLACED BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE OWNER.
D. NEW WIRING DEVICES AND ASSOCIATED COVERPLATES SHALL MATCH EXISTING FINISH OF SIMILAR INSTALLED DEVICES.
E. THE SELECTED EQUIPMENT AIC RATINGS ARE BASED ON THE IMPEDANCES FOR CONDUCTORS AND TRANSFORMERS USED IN THE CALCULATIONS. IF DIFFERENT EQUIPMENT OR DIFFERENT CONFIGURATIONS ARE SELECTED FOR INSTALLATION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATELY RATED EQUIPMENT THAT MEETS APPLICABLE SELECTIVE COORDINATION GOALS AND PROVIDES SIMILAR INCIDENT ENERGY RISK OF ARC FLASH HAZARDS.
F. PROVIDE ADDITIONAL SUPPORTS AS REQUIRED TO INDEPENDENTLY SUPPORT ALL EXISTING TO REMAIN CABLING.
G. INSTALL GREEN INSULATED GROUND WIRE WITH LIGHTING, RECEPTACLE AND EQUIPMENT BRANCH CIRCUITS.
H. INSTALL INDIVIDUAL (DEDICATED) NEUTRAL CONDUCTORS FOR EACH 120V OR 277V PHASE CONDUCTOR SERVED FROM A SINGLE POLE CIRCUIT BREAKER.

ELECTRICAL ABBREVIATIONS

ABBREVIATION	DESCRIPTION
##	MOUNTING HEIGHT TO CENTERLINE (ABOVE FINISHED FLOOR)
A	AMPERE
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AL	ALUMINUM
AT	AMPERE TRIP
C	CEILING
CB	CIRCUIT BREAKER
CCT	CORRELATED COLOR TEMPERATURE
CU	COPPER
D	DATA (WHEN APPLIED TO COMMUNICATIONS OUTLET)
D	DEMO (WHEN APPLIED TO EXISTING/DEMO ITEMS)
E	EXISTING
EO	ELECTRICALLY OPERATED
ERMS	ENERGY REDUCING MAINTENANCE SWITCH
F	FUSE
FLA	FULL LOAD AMPS
G, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFA	GROUND FAULT ALARM
GFP	GROUND FAULT PROTECTION
HP	HORSEPOWER
KAIC	KILOAMPERE INTERRUPTING CAPACITY
KVA	KILOVOLT AMPERE
KW	KILOWATT
MAX	MAXIMUM
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MO	MANUALLY OPERATED
NC	NORMALLY CLOSED
NF	NON-FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
P	POLES
PART	PARTIAL
R	RELOCATE
SCCR	SHORT CIRCUIT CURRENT RATING
SPD	SURGE PROTECTIVE DEVICE
ST	SHUNT TRIP
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V	VOICE
W	WALL PHONE
W	WIRE
WR	WEATHER RESISTANT
XFMR	TRANSFORMER
ZSI	ZONE SELECTIVE INTERLOCKING

REFER TO OTHER SCHEDULES AND NOTES FOR ADDITIONAL ABBREVIATIONS.

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	ELECTRICAL SYMBOLS AND ABBREVIATIONS
Approved:	
Phase	100%R CONSTRUCTION DOCUMENTS
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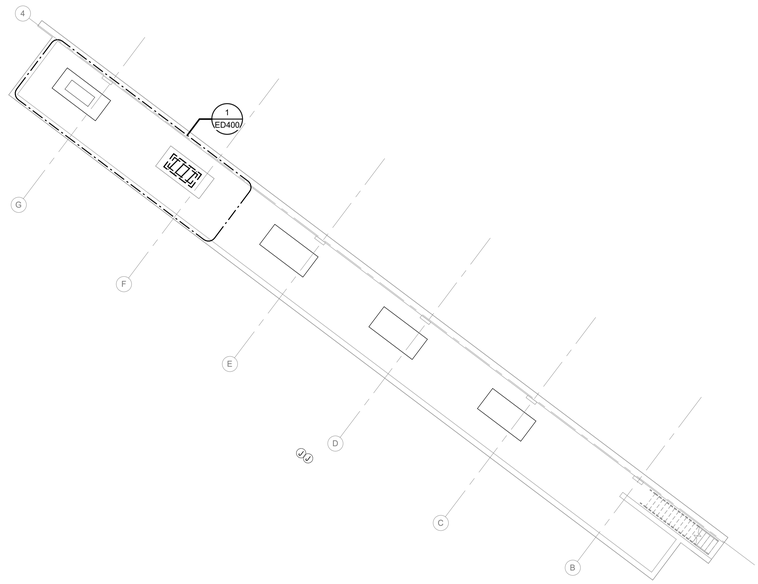
Issue Date	11/26/2024
Checked	NMT
Drawn	MEA
Project Number	556-24-106
Building Number	B188
Drawing Number	E000



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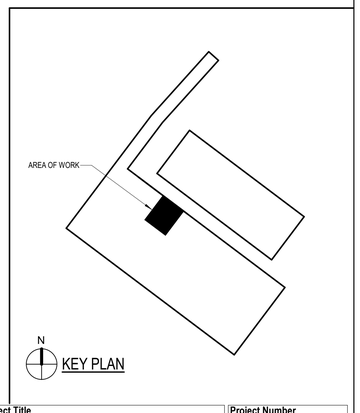
1 BASEMENT LEVEL FLOOR PLAN - OVERALL - ELECTRICAL - DEMOLITION
3/32" = 1'-0"

5 0 5 10 15 20 25 30
3/32" = 1'-0"
SCALE FEET



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Drawing Title: BASEMENT LEVEL FLOOR PLAN - OVERALL - ELECTRICAL - DEMO

Phase: 100%R CONSTRUCTION DOCUMENTS

Project Title: REPLACE CHILLER 2

Project Number: 556-24-106

Building Number: B188

Location: NORTH CHICAGO, IL 60064 - 3048

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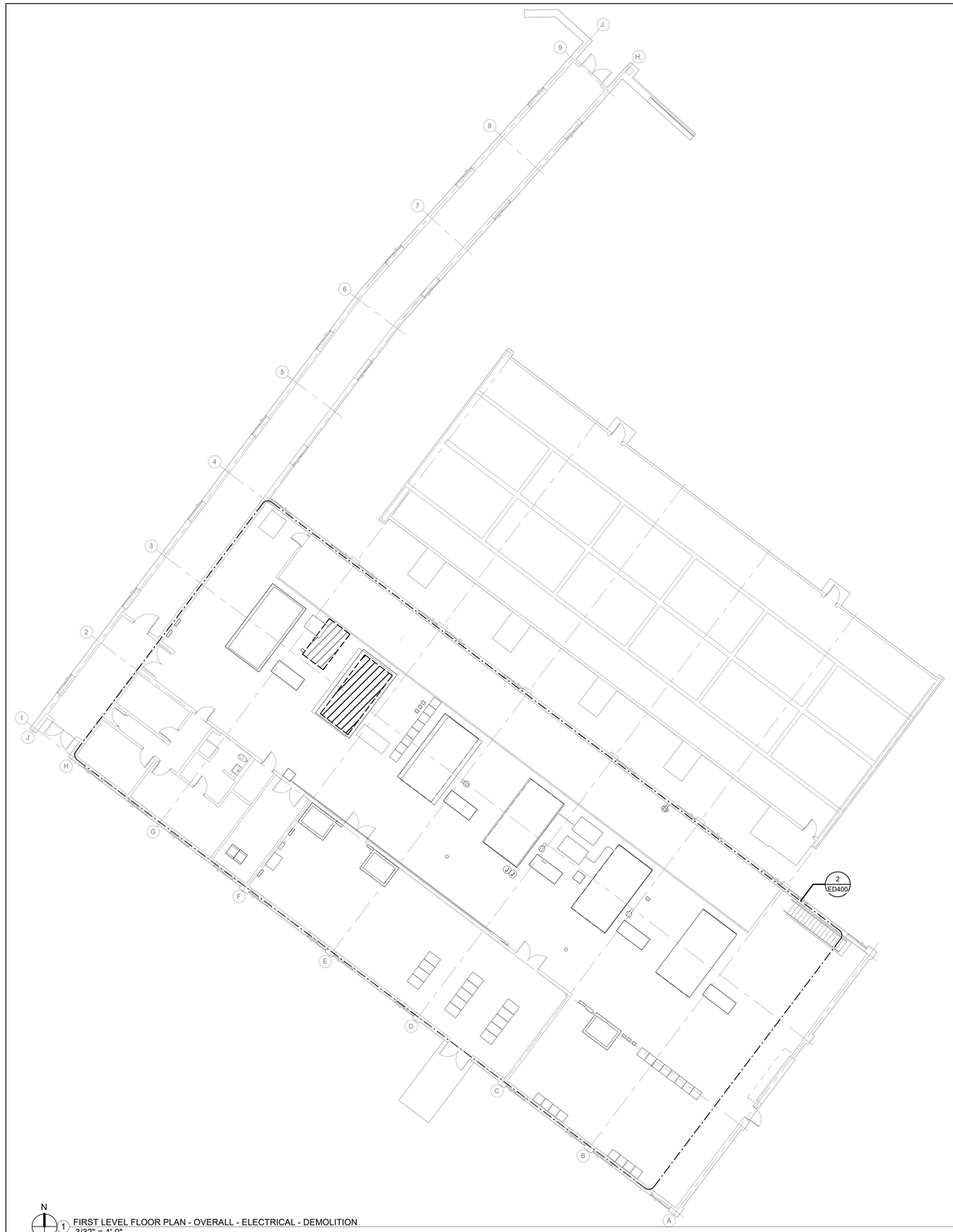

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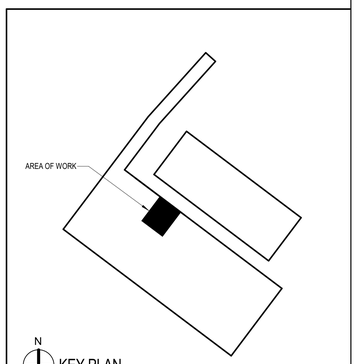
3/32" = 1'-0" SCALE 5 0 5 10 15 20 25 30 FEET



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VA U.S. Department of Veterans Affairs

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Phase: 100%R CONSTRUCTION DOCUMENTS

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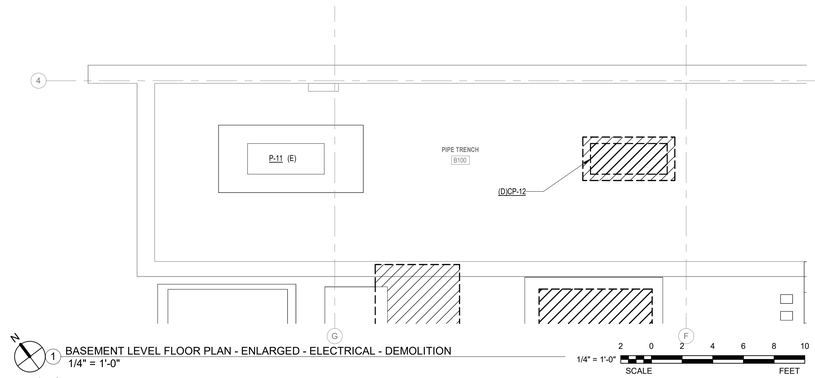
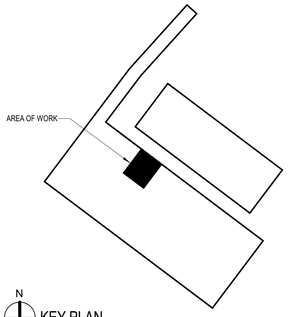


1 BASEMENT LEVEL FLOOR PLAN - ENLARGED - ELECTRICAL - DEMOLITION
1/4" = 1'-0"

1/4" = 1'-0" SCALE 2 0 2 4 6 8 10 FEET

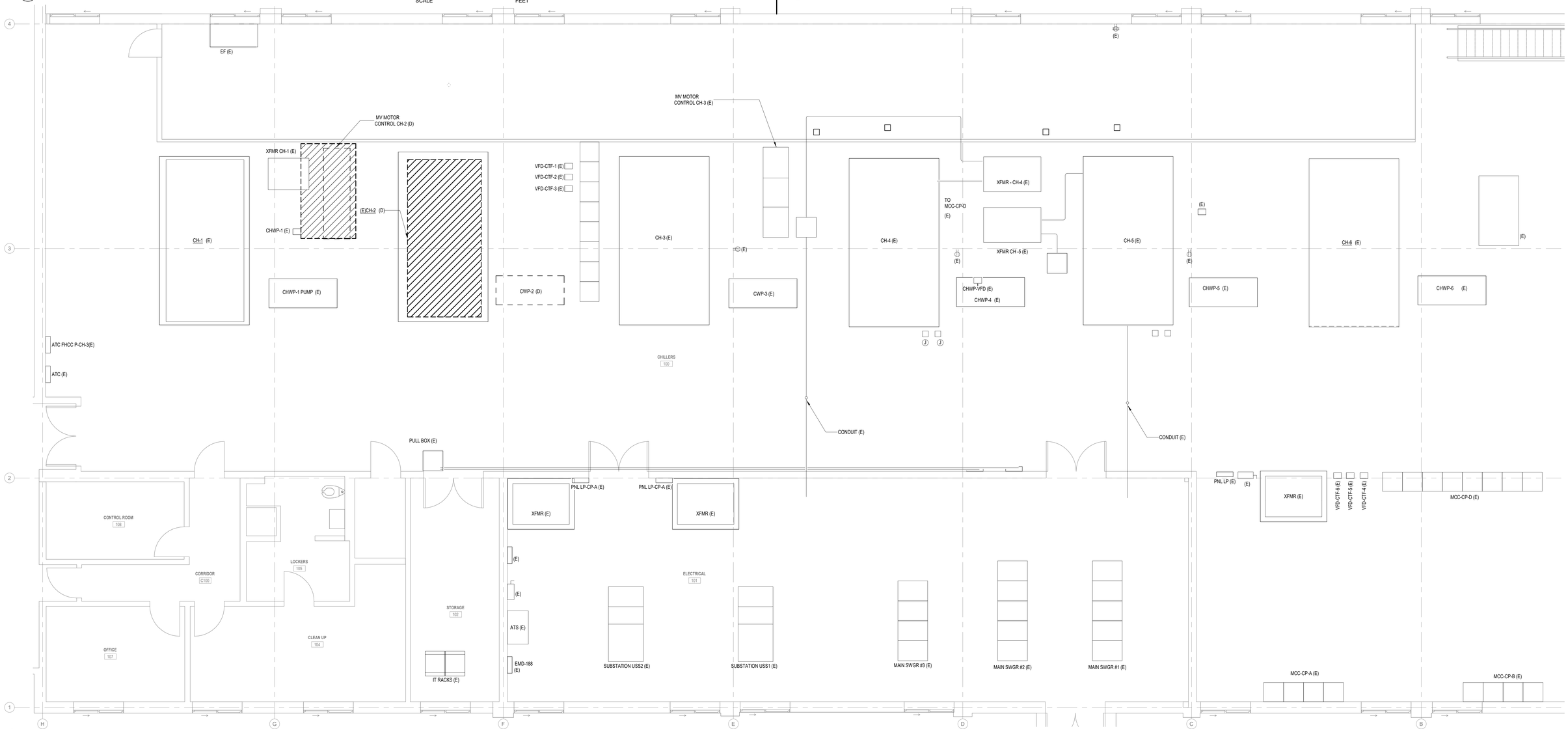


KEY PLAN

ELECTRICAL DEMOLITION GENERAL NOTES:

(ELECTRICAL DEMOLITION NOTES APPLY TO ALL ELECTRICAL DEMOLITION PLANS AND ALL ELECTRICAL DEMOLITION WORK)

A. THE INTENT OF THE DEMOLITION DRAWINGS IS TO DEFINE THE SCOPE OF ELECTRICAL DEMOLITION WORK. PROVIDE DEMOLITION FOR ITEMS AS SHOWN.
B. ITEMS INDICATED WITH A SUBSCRIPT 'E' SHALL BE EXISTING TO REMAIN (E-EXISTING). ITEMS INDICATED WITH A SUBSCRIPT 'D' OR SHOWN DASHED SHALL BE REMOVED (D-DEMOLITION). ITEMS INDICATED WITH A SUBSCRIPT 'R' SHALL BE REMOVED, STORED, AND REINSTALLED PER NEW WORK (R-RELOCATION).
C. THESE DRAWINGS DO NOT IDENTIFY EACH INDIVIDUAL ITEM TO BE REMOVED. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING ITEMS WHICH MUST BE REMOVED TO FACILITATE NEW CONSTRUCTION. SEE ARCHITECTURAL PLANS FOR EXACT LIMITS OF DEMOLITION AND CONSTRUCTION. THESE PLANS ARE BASED ON PAST PROJECT DRAWINGS AND SITE OBSERVATIONS. THE DRAWINGS ARE PROVIDED TO THE CONTRACTOR AS AN AID IN DETERMINING THE EXTENT OF WORK REQUIRED FOR DEMOLITION AND TO PROVIDE GENERAL INFORMATION ABOUT EXISTING SYSTEMS. THESE DRAWINGS MAY NOT BE ACCURATE IN ALL AREAS. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING CONDITIONS AND IS ENCOURAGED TO REVIEW FACILITY DRAWINGS PRIOR TO THE BID DATE.
D. THE OWNER SHALL HAVE FIRST SALVAGE RIGHTS TO ALL ITEMS REMOVED. IF OWNER REFUSES SALVAGE, CONTRACTOR IS RESPONSIBLE FOR DISPOSAL.
E. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL ELECTRICAL DEMOLITION ITEMS. DISCONNECT AND REMOVE ELECTRICAL DEVICES, EQUIPMENT AND ASSOCIATED WIRING AS REQUIRED TO ACCOMMODATE NEW WORK. IF THE CONTRACTOR IS UNCLEAR REGARDING A SPECIFIC ITEM TO REMAIN OR BE REMOVED, THE CONTRACTOR SHALL SEEK CLARIFICATION FROM THE ARCHITECT.
F. SYSTEMS SERVING ADJACENT AREAS AND ITEMS THAT REMAIN SHALL BE MAINTAINED AT ALL TIMES. MODIFY SYSTEMS AS REQUIRED THROUGHOUT CONSTRUCTION TO MAINTAIN CONTINUITY OF SERVICE. DO NOT INTERRUPT SERVICE WITHOUT OWNER'S PRIOR WRITTEN APPROVAL. LIMIT DURATION OF INTERRUPTION ONLY TO THE TIME NECESSARY FOR DISCONNECTION AND IMMEDIATE RECONNECTION. INTERRUPTION TO SERVICE DEEMED BY OWNER AS ESSENTIAL MAY REQUIRE PREMIUM TIME AND SHALL BE INCLUDED WITH THE BID. EXTREME CARE SHALL BE TAKEN BY THE CONTRACTOR TO IDENTIFY EXISTING SYSTEM COMPONENTS ASSOCIATED WITH THESE SERVICES. APPROPRIATE METHODS OF MARKING THESE SHALL OCCUR TO ELIMINATE THE POSSIBILITY OF ACCIDENTAL INTERRUPTION. FOR CONDUIT AND CABLING THAT CAN REMAIN, PROVIDE SUPPORT AS REQUIRED. RELOCATE EXISTING JUNCTION BOXES THAT BECOME INACCESSIBLE DUE TO NEW WORK.
G. COORDINATE DEMOLITION WITH THE WORK OF OTHER TRADES. PROVIDE TEMPORARY POWER AND LIGHTING AS REQUIRED TO ALLOW THE WORK OF OTHER TRADES TO PROCEED.
H. PROTECT EXISTING ELECTRICAL EQUIPMENT THAT REMAINS. IF DAMAGED OR DISTURBED IN THE COURSE OF THE WORK, REMOVE DAMAGED PORTIONS AND INSTALL NEW PRODUCTS OF EQUAL CAPACITY, QUALITY, AND FUNCTIONALITY.
I. PATCH AND REPAIR OPENINGS IN EXISTING WALLS AND FLOORS RESULTANT FROM SPECIFIED ELECTRICAL DEMOLITION. PATCH SHALL MATCH EXISTING CONSTRUCTION, FIRE RATING, AND FINISH. SEE ARCHITECTURAL SPECIFICATIONS FOR MEANS AND METHODS.
J. THIS PROJECT WILL BE PHASED. SEE PROJECT MANUAL AND ARCHITECTURAL PLANS FOR DETAILS. SYSTEM SERVICES TO AREAS NOT IN THE CURRENT PHASE OF CONSTRUCTION SHALL BE MAINTAINED AT ALL TIMES.
K. WHERE DEMOLITION OF EQUIPMENT INVOLVES REMOVAL OF EQUIPMENT LOCATED ON CONCRETE HOUSEKEEPING PADS, PADS SHALL ALSO BE REMOVED AND FLOOR/GRADE SHALL BE FINISHED TO MATCH ADJACENT SURFACE.
L. ALL UNLABELED ELECTRICAL DEVICES THAT EXIST IN ALL ROOMS WHERE THERE IS WORK WITHIN SCOPE SHALL BE CIRCUIT TRACED AS NEEDED WITH A LABEL PROVIDED.



2 FIRST LEVEL FLOOR PLAN - ENLARGED - ELECTRICAL - DEMOLITION
1/4" = 1'-0"

1/4" = 1'-0" SCALE 2 0 2 4 6 8 10 FEET

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VA U.S. Department of Veterans Affairs

Drawing Title: FLOOR PLANS - ENLARGED - ELECTRICAL - DEMOLITION

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Phase: 100%R CONSTRUCTION DOCUMENTS

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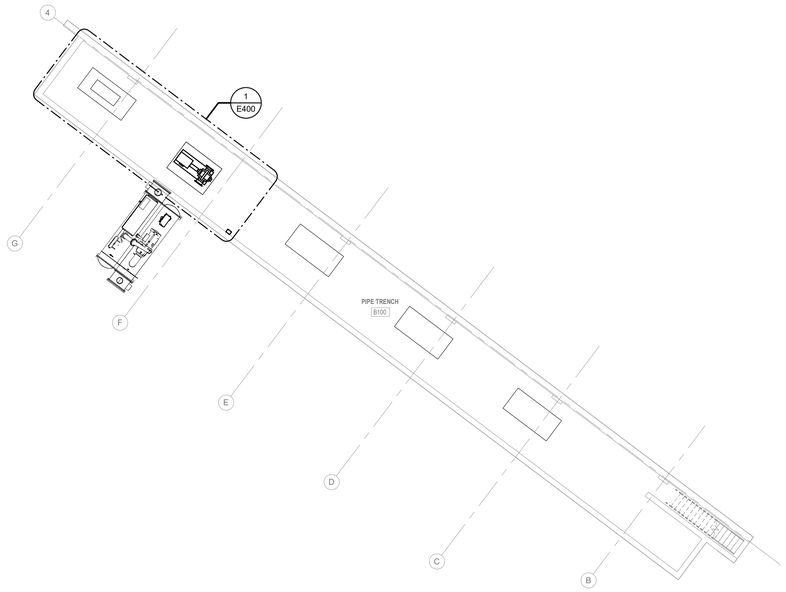

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1 BASEMENT LEVEL FLOOR PLAN - OVERALL - ELECTRICAL
3/32" = 1'-0"

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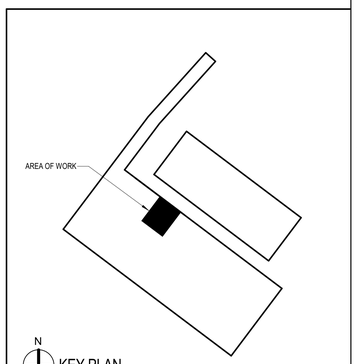
SCALE FEET



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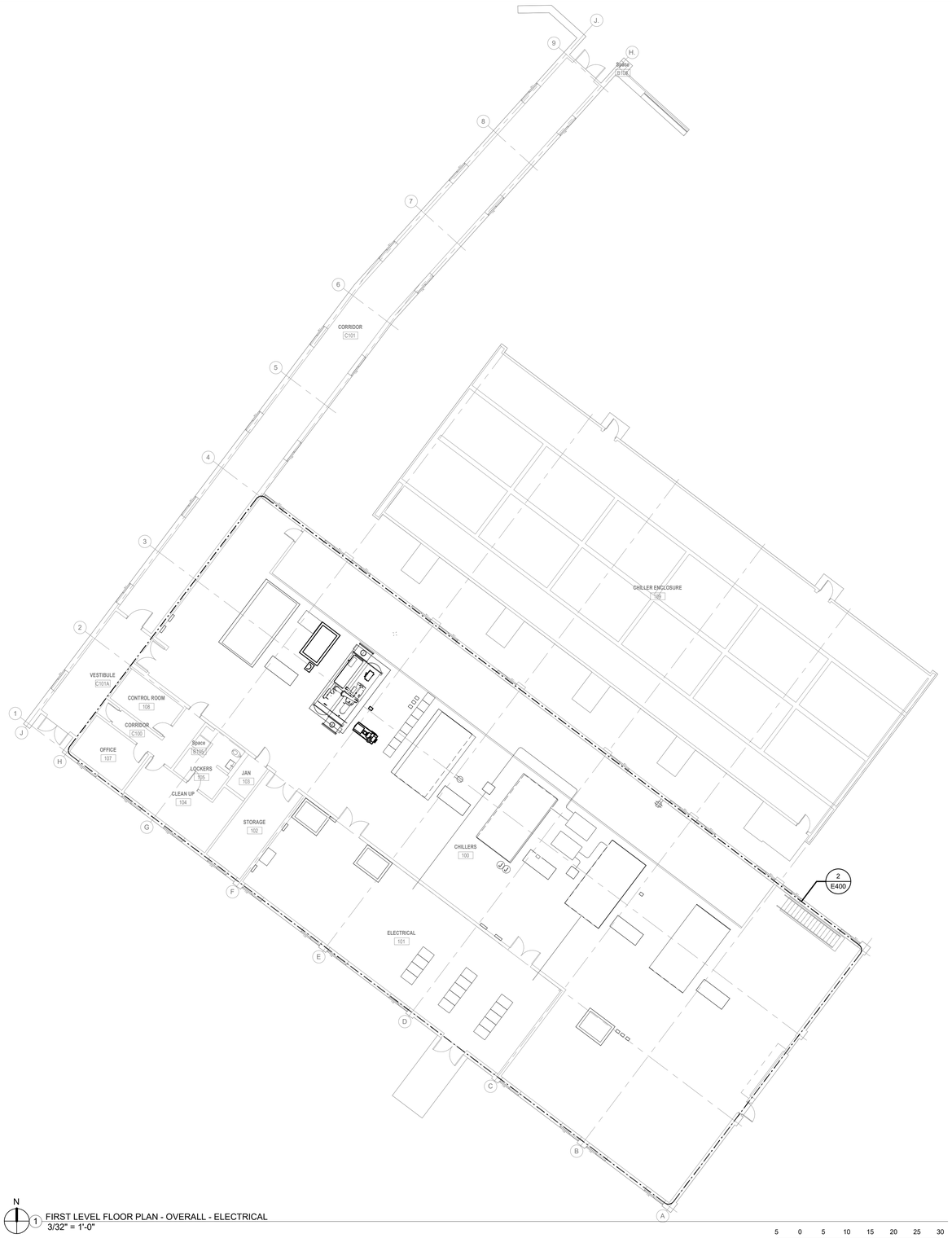
Drawing Number: E101



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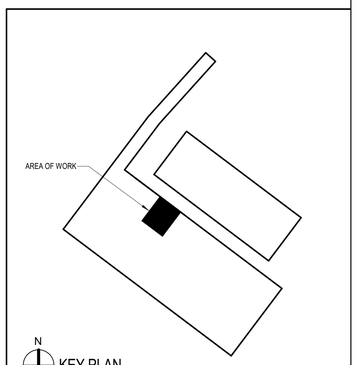

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Drawing Title: FIRST LEVEL FLOOR PLAN - OVERALL - ELECTRICAL

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Location: NORTH CHICAGO, IL 60064 - 3048

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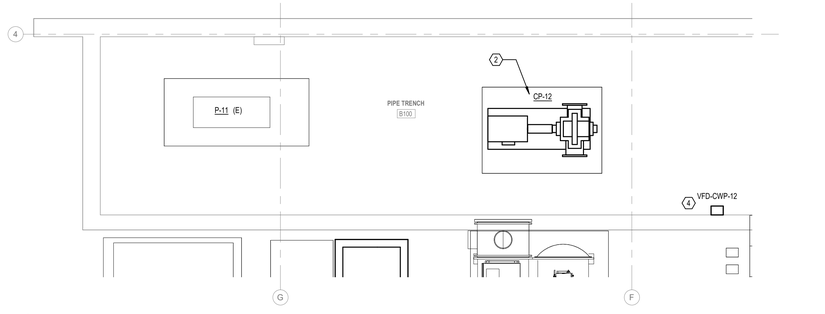
Building Number: B188

Drawing Number: E102



1 BASEMENT LEVEL FLOOR PLAN - ENLARGED - ELECTRICAL
1/4" = 1'-0"

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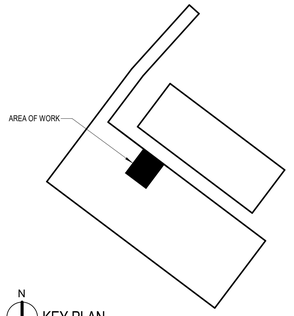


N KEY PLAN

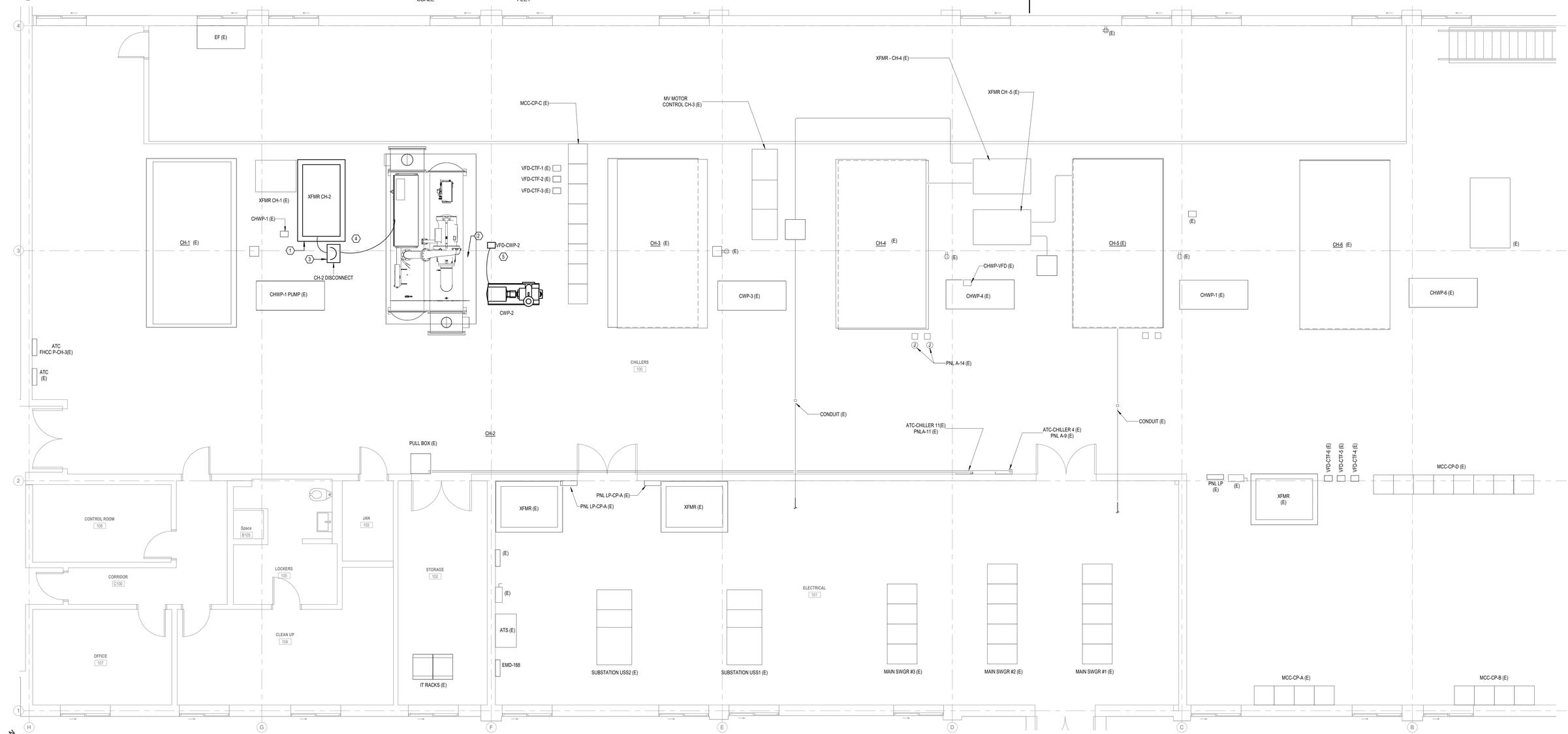
POWER GENERAL NOTES:

(POWER GENERAL NOTES SHALL APPLY TO ALL SHEETS)

A. ELECTRICAL DEVICE MOUNTING HEIGHTS ARE NOT INDICATED ON ELECTRICAL FLOOR PLANS. CONTRACTOR SHALL COORDINATE EXACT DEVICE LOCATIONS AND MOUNTING HEIGHTS.
B. ROUTE ALL ELECTRICAL BRANCH CIRCUITS AND CONDUITS SPECIFIED. TO COORDINATE WITH OTHER TRADES AND TO ALLOW FOR SERVICE AND MAINTENANCE AND TO MINIMIZE THE USE OF ACCESS PANELS. WHERE ACCESS PANELS CANNOT BE AVOIDED, ARRANGE WORK TO INSTALL PANELS IN LOCATIONS ACCEPTABLE TO ARCHITECT.
C. REFER TO DETAILS, SCHEDULES, AND SYMBOL LEGENDS FOR ADDITIONAL REQUIREMENTS.

SHEET NOTES:

1. MODIFY EXISTING HOUSEKEEPING PAD TO NEW TRANSFORMER DIMENSIONS. CONTRACTOR IS RESPONSIBLE FOR ENSURING TRANSFORMER IS INSTALLED CORRECTLY TO MEET ALL CLEARANCE REQUIREMENTS.
2. PROVIDE POWER TO NEW PUMP. REFER TO EQUIPMENT SCHEDULE.
3. CIRCUIT BREAKER DISCONNECT SHALL BE STRUT MOUNTED.
4. LIQUID-TIGHT FLEXIBLE METAL CONDUIT SHALL BE USED FOR FINAL CONNECTIONS ACROSS THE VIBRATION BOUNDARY OF THE INERTIA PAD. HARD CONDUIT SHALL STUB-UP ADJACENT TO THE PAD AND TRANSITION TO FLEXIBLE CONDUIT PRIOR TO TERMINATING AT THE EQUIPMENT CONNECTION.
5. VFD SHALL BE STRUT MOUNTED.



2 FIRST FLOOR PLAN - ELECTRICAL
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SES Project : 23022.010

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LICENSED PROFESSIONAL ENGINEER
CHARLES GREGORY HALL
062067324
11/11/2024
STATE OF ILLINOIS

Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title	FLOOR PLANS - ENLARGED - ELECTRICAL
Phase	100%R CONSTRUCTION DOCUMENTS
Project Title	REPLACE CHILLER 2
Project Number	556-24-106
Building Number	B188
Approved:	
	FULLY SPRINKLERED
Location	NORTH CHICAGO, IL 60064 - 3048
Drawing Number	E400
Issue Date	11/26/2024
Checked	NMT
Drawn	MEA

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FEEDER SCHEDULE - COPPER		
FEEDER	NOMINAL SIZE	WIRE AND CONDUIT
22MV	150 A	3-#1/0 CU, #6 CU GND - 2-1/2" C.
750T	1600 A	4-600 KCMIL CU, 600 KCMIL CU GND - 4"C. (4 SETS)
MEC	--	REFER TO EQUIPMENT CONNECTION SCHEDULE

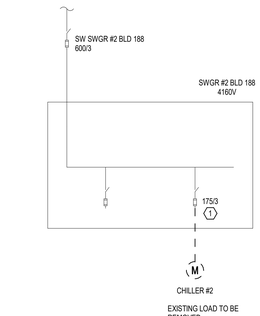
ONE-LINE GENERAL NOTES:

(GENERAL NOTES SHALL APPLY TO ALL ONE-LINE SHEETS)

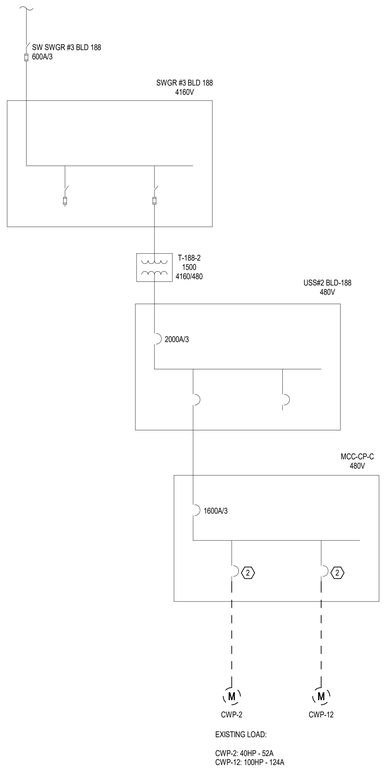
A. MECHANICAL EQUIPMENT NOT SHOWN ON ONE-LINE. REFER TO PANEL SCHEDULES FOR COMPLETE LIST OF CIRCUIT BREAKER SIZES AND QUANTITIES REQUIRED.
B. CONTRACTOR SHALL REQUEST CURRENT POWER SYSTEMS STUDY PROJECT DRAWINGS TO OBTAIN THE MOST RECENT AIC RATINGS FROM THE COR.

SHEET NOTES:

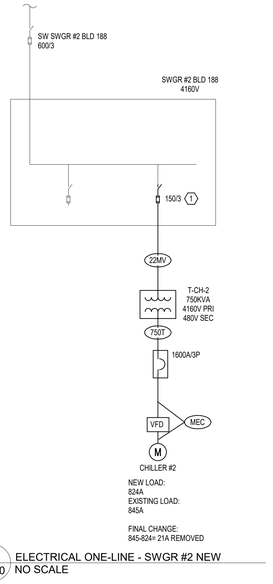
1. REMOVE EXISTING FUSE AND REPLACE PER NEW WORK.
2. REMOVE EXISTING BREAKER AND PROVIDE NEW PER NEW WORK.



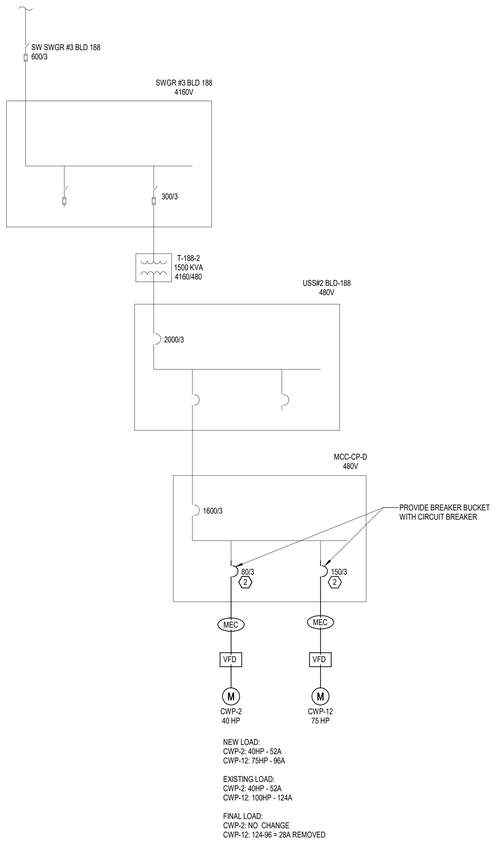
1 E500 ELECTRICAL ONE-LINE - SWGR #2 DEMO
NO SCALE



2 E500 ELECTRICAL ONE-LINE - SWGR #3 DEMO
NO SCALE



3 E500 ELECTRICAL ONE-LINE - SWGR #2 NEW
NO SCALE



4 E500 ELECTRICAL ONE-LINE - SWGR #3 NEW
NO SCALE

Revisions:	Date:
100% Construction Documents	11/11/2024
100%R Construction Documents	11/26/2024

CONSULTANT

DESIGNER OF RECORD

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Office of Construction and Facilities Management

VA U.S. Department of Veterans Affairs

Drawing Title: ONE-LINE DIAGRAM

Approved:

Phase: 100%R CONSTRUCTION DOCUMENTS

FULLY SPRINKLERED

Project Title: REPLACE CHILLER 2

Location: NORTH CHICAGO, IL 60064 - 3048

Issue Date: 11/26/2024

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EQUIPMENT CONNECTION SCHEDULE

MARK	DESCRIPTION	ROOM NAME	ROOM #	HP	KW	FLA	MCA	MOCP	VOLTS	PHASE	POLES	LOAD [VA]	CONTROL TYPE	DISCONNECT BY	DISCONNECT TYPE	FEEDER	PANEL	CIRCUIT NUMBER	SCCR	GEN	REMARKS
CH-2	WATER COOLED CHILLER	CHILLERS	100		616	824	1030	1600	480	3	3	616000	DDC	ELEC	CB	(160) (1600A) 3-600 KCMIL CU, #4/0 CU GND - 3-1/2"C. (4 SETS)	XFMR	2	100	No	
CP-12	CHILLED WATER PUMP	PIPE TRENCH	B100	75		96	120	150	480	3	3	79950	DDC	MECH	VFD	(75M4) (75 HP 480V) 3-#1/0 CU, #4 CU GND - 1-1/2"C.	MCC-CP-C	3	25	No	1
CWP-2	CHILLED WATER PUMP			40		52	65	70	480	3	3	43300	DDC	MECH	VFD	(40M4) (40 HP 480V) 3-#4 CU, #6 CU GND - 1-1/4"C.	MCC-CP-C	16	25	No	1

REMARKS:
1. PUMP SHALL BE FED FROM MOTOR CONTROL CENTER IN SAME AS WHERE THE CURRENT IS FED.

GENERAL NOTES: (EQUIPMENT CONNECTION SCHEDULE)

A. EQUIPMENT LISTED MAY NOT BE UNIQUE, VERIFY QUANTITY WITH FLOOR PLANS. WHERE LOCATIONS ARE NOT INDICATED ON ELECTRICAL FLOOR PLANS, REFER TO MECHANICAL SHEETS. REFER TO DEFINITIONS BELOW FOR CLARIFICATIONS OF CONNECTION REQUIREMENTS.

B. ITEMS NOTED AS "NA" ARE NOT APPLICABLE TO THE CONNECTION.

C. "CONTROL TYPE" - PROVIDE CONTROL AND CONNECTIONS:
- "INT" = CONTROLS ARE MANUFACTURED INTEGRAL TO THE EQUIPMENT (SELF-CONTAINED).
- "CONT" = EQUIPMENT OPERATES CONTINUOUSLY (NO CONTROLS). FOR MOTORS WITHOUT INTERNAL OVERLOAD PROTECTION, PROVIDE SEPARATE OVERLOAD PROTECTION. OVERLOAD PROTECTION MAY BE PROVIDED AS PART OF A MANUAL MOTOR STARTER.
- "DDC" = CONTROL SIGNAL FROM TEMPERATURE CONTROL SYSTEM PROVIDED BY MECHANICAL CONTRACTOR OR TEMPERATURE CONTROLS CONTRACTOR.

D. "DISCONNECT BY" -
- "MECHANICAL" = DISCONNECT IS FURNISHED BY MECHANICAL CONTRACTOR OR PROVIDED WITH MECHANICAL EQUIPMENT.
  - ELECTRICAL CONTRACTOR SHALL PROVIDE MOUNTING AND ADDITIONAL CONNECTIONS REQUIRED FOR LOOSE DISCONNECTS FURNISHED BY THE MECHANICAL CONTRACTOR.
- "ELECTRICAL" = DISCONNECT IS FURNISHED BY ELECTRICAL CONTRACTOR. COORDINATE EXACT REQUIREMENTS WITH EQUIPMENT FURNISHED BY MECHANICAL CONTRACTOR.
- "MANUFACTURER" = DISCONNECT IS FURNISHED BY EQUIPMENT MANUFACTURER. ELECTRICAL CONTRACTOR SHALL PROVIDE MOUNTING AND ADDITIONAL CONNECTIONS REQUIRED FOR LOOSE DISCONNECTS FURNISHED BY EQUIPMENT MANUFACTURER.

E. "DISCONNECT TYPE" - PROVIDE DISCONNECT/RECEPTACLE AT EQUIPMENT LOCATION AND ASSOCIATED CONNECTION TO EQUIPMENT AND BRANCH CIRCUIT:
- "NEMA-___" = DUPLEX (TYP) RECEPTACLE TO ACCOMMODATE CORD AND PLUG CONNECTION (CORD AND PLUG FURNISHED WITH EQUIPMENT UNLESS NOTED OTHERWISE)
- "REC/SW" = PROVIDE 20A 120V RECEPTACLE OR 20A TOGGLE SWITCH DISCONNECT.
  - COORDINATE REQUIRED SELECTION WITH EQUIPMENT.
- "NF" = NON-FUSED DISCONNECT. SIZE AND POLE QUANTITY AS INDICATED. 20/1 AND SMALLER SHALL BE TOGGLE SWITCH DISCONNECT.
- "F" = FUSED DISCONNECT. SIZE AND POLE QUANTITY AS INDICATED.
  - FUSE PER MANUFACTURER'S RECOMMENDATIONS.
- "VFD" = VARIABLE FREQUENCY DRIVE CONTROLLER. LOCATE VARIABLE FREQUENCY DRIVE CONTROL TO SERVE AS THE MOTOR DISCONNECT.
- "INT" = DISCONNECT IS MANUFACTURED INTEGRAL TO THE EQUIPMENT.
- "HW" = HARDWIRE. DISCONNECT NOT REQUIRED.
- "CB" = CIRCUIT BREAKER DISCONNECT. SIZED AND POLE QUANTITY AS INDICATED.
- LOCATE DISCONNECT ADJACENT TO EQUIPMENT PER NEC - PROVIDE WITH STRUT MOUNTING AS REQUIRED.
- LOCATE RECEPTACLE OR JUNCTION BOX TO DIRECTLY SERVE EQUIPMENT.
  - COORDINATE EXACT LOCATION WITH ARCHITECT, ARCHITECTURAL DETAILS, AND EQUIPMENT MANUFACTURER'S REQUIREMENTS.
- WHERE DISCONNECT SERVES OUTDOOR EQUIPMENT, PROVIDE AS NEMA-3R.
- PROVIDE DISCONNECT WITH EQUIPMENT GROUND KIT.
- WHERE FEEDER INDICATED UTILIZES A NEUTRAL, PROVIDE DISCONNECT WITH SOLID NEUTRAL KIT.
- WHERE FEEDER INDICATED UTILIZES AN ISOLATED GROUND, PROVIDE DISCONNECT WITH ADDITIONAL INSULATED GROUND KIT.
- DISCONNECTS NOT SHOWN AS "F" OR "NF" SHALL BE NON-FUSED.
- DISCONNECTS OF MOTORS SERVED FROM A VFD SHALL CONTAIN AUXILIARY CONTACTS CONNECTED TO THE VFD TO DISABLE VFD UPON DISCONNECTION.
- WHERE STARTERS OR VFD'S CONTAIN INTEGRAL DISCONNECTS AND ARE LOCATED PER NEC TO SATISFY AS THE EQUIPMENT DISCONNECT, AN ADDITIONAL EQUIPMENT DISCONNECT IS NOT REQUIRED.

F. "GEN" - EQUIPMENT IS SERVED FROM A SOURCE PANEL PROVIDED WITH GENERATOR BACK-UP.

G. "SCCR" - VALUE INDICATED IS AVAILABLE SHORT CIRCUIT CURRENT (SCC) IN KILOAMPS AT THE EQUIPMENT BASED ON PRELIMINARY DESIGN PHASE CALCULATIONS. EQUIPMENT SCCR SHALL BE MINIMUM 120% OF THE AVAILABLE SCC. RATING SHALL BE ADJUSTED IF REQUIRED BASED ON FINAL SCC CALCULATION. EQUIPMENT INDICATED WITH 5 KA MAY BE PROVIDED WITH 5 KA SCCR.

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Drawing Title: ELECTRICAL SCHEDULES

Phase: 100%R CONSTRUCTION DOCUMENTS

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