

ELECTRICAL ABBREVIATIONS LIST

1P	1 POLE (2P, 3P, 4P, ETC.)	DET	DETAIL	HTR	HEATER	NEC	NATIONAL ELECTRICAL CODE	SYM	SYMMETRICAL
A	AMPERE	DIA	DIAMETER	HV	HIGH VOLTAGE	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION	SYM SYS	SYSTEM
AC	ABOVE COUNTER OR AIR CONDITIONER	DISC	DISCONNECT	HWP	HYDRONIC WATER PUMP	NFDS	NON-FUSED SAFETY DISCONNECT SWITCH	TEL	TELEPHONE
ACLG	ABOVE CEILING	DIST	DISTRIBUTION	IC	INTERRUPTING CAPACITY	NFDS	NON-FUSED SAFETY DISCONNECT SWITCH	TEL/DATA	TELEPHONE/DATA
ADO	AUTOMATIC DOOR OPENER	DN	DOWN	IDSCP	INTRUSION DETECTION SYSTEM CONTROL PANEL	NIC	NOT IN CONTRACT	TERM	TERMINAL
AF	ABOVE FINISHED FLOOR	DPR	DAMPER	IG	ISOLATED GROUND	NL	NIGHT LIGHT	TL	TWIST LOCK
AFG	ABOVE FINISHED GRADE	DS	SAFETY DISCONNECT SWITCH	IMC	INTERMEDIATE METAL CONDUIT	N.O.	NORMALLY OPEN	TR	TAMPER RESISTANT
AFI	ARC FAULT CIRCUIT INTERRUPTER	DT	DOUBLE THROW	INCAND	INCANDESCENT	NPF	NORMAL POWER FACTOR	T-STAT	THERMOSTAT
AHU	AIR HANDLING UNIT	DWG	DRAWING	IR	INFRARED	NTS	NOT TO SCALE	TTC	TELEPHONE TERMINAL CABINET
AL	ALUMINUM	EC	ELECTRICAL CONTRACTOR	IW	INTERLOCK WITH	OH	OVERHEAD	TV	TELEVISION
AMP	AMPERE	ELEC	ELECTRIC, ELECTRICAL	J-BOX	JUNCTION BOX	OL	OVERLOADS	TVTC	TELEVISION TERMINAL CABINET TYPICAL
AMPL	AMPLIFIER	ELEV	ELEVATOR	KV	KILOVOLT	PA	PUBLIC ADDRESS	UC	UNDER COUNTER
ANNUN	ANNUNCIATOR	EM	EMERGENCY	KVA	KILOVOLT-AMPERE	PB	PULL BOX OR PUSHBUTTON	UE	UNDERGROUND ELECTRICAL
APPROX	APPROXIMATELY	EMS	ENERGY MANAGEMENT SYSTEM	KVAR	KILOVOLT-AMPERE REACTIVE	PE	PNEUMATIC ELECTRIC	UG	UNDERGROUND
AQ-STAT	AQUASTAT	EMT	ELECTRICAL METALLIC TUBING	KW	KILOWATT	PED	PEDESTAL	UH	UNIT HEATER
ARCH	ARCHITECT ARCHITECTURAL	EP	ELECTRIC PNEUMATIC EQUIPMENT	KWH	KILOWATT HOUR	PH	PHASE	UV	UNDERGROUND TELEPHONE UNIT VENTILATOR OR ULTRAVIOLET
ATS	AUTOMATIC TRANSFER SWITCH	EQIP	EQUIPMENT	LOC	LOCATE OR LOCATION	PNL	PANEL	V	VOLT
AUTO	AUTOMATIC	EWC	ELECTRIC WATER COOLER	LT	LIGHT	PP	POWER POLE	VA	VOLT-AMPERES
AUX	AUXILIARY	EXIST	EXISTING	LTG	LIGHTING	PR	PAIR	VDT	VIDEO DISPLAY TERMINAL
AV	AUDIO VISUAL	EXH	EXHAUST	LTNG	LIGHTNING	PRI	PRIMARY	VERT	VERTICAL
AWG	AMERICAN WIRE GAUGE	EXP	EXPLOSION PROOF	LV	LOW VOLTAGE	PROJ	PROJECTION	VFD	VARIABLE FREQUENCY DRIVE
BATT	BATTERY	FA	FIRE ALARM	MAX	MAXIMUM	PRV	POWER ROOF VENTILATOR	VOL	VOLUME
BD	BOARD	FACP	FIRE ALARM CONTROL PANEL	MAG.S	MAGNETIC STARTER	PT	POTENTIAL TRANSFORMER	W	WATT
BLDG	BUILDING	FCU	FAN COIL UNIT	M/C	MOMENTARY CONTACT	PVC	POLYVINYL CHLORIDE (CONDUIT)	W/	WITH
BMS	BUILDING MANAGEMENT SYSTEM	FIXT	FIXTURE	MC	MECHANICAL CONTRACTOR	PWR	POWER	WG	WIRE GUARD
C	CONDUIT	FLR	FLOOR	MCB	MAIN CIRCUIT BREAKER	QUAN	QUANTITY	WH	WATER HEATER
CAB	CABINET	FLUOR	FLUORESCENT	MCC	MOTOR CONTROL CENTER	RCPT	RECEPTACLE	W/O	WITHOUT
CATV	CABLE TELEVISION	FU	FUSE	MDC	MAIN DISTRIBUTION CENTER	REQD	REQUIRED	WP	WEATHERPROOF
CB	CIRCUIT BREAKER	FUDS	FUSED SAFETY DISCONNECT SWITCH	MDP	MAIN DISTRIBUTION PANEL	RSC	RIGID STEEL CONDUIT	XFMR	TRANSFORMER
CCTV	CLOSED CIRCUIT TELEVISION	GA	GAUGE	MFR	MANUFACTURER	RTU	ROOF TOP UNIT	XFR	TRANSFER
CKT	CIRCUIT	GAL	GALLON	MFS	MAIN FUSED DISCONNECT SWITCH	SC	SURFACE CONDUIT	/	ANGLE
CLG	CEILING	GALV	GALVANIZED	MH	MANHOLE	SEC	SECONDARY	@	AT
COMB	COMBINATION	GC	GENERAL CONTRACTOR	MIC	MICROPHONE	SHT	SHEET	Δ	DELTA
CMPR	COMPRESSOR	GEN	GENERATOR	MIN	MINIMUM	SIM	SIMILAR	'	FEET
CONN	CONNECTION	GFI	GROUND FAULT CIRCUIT INTERRUPTER	MISC	MISCELLANEOUS	S/N	SOLID NEUTRAL	"	INCHES
CONST	CONSTRUCTION	GFP	GROUND FAULT PROTECTOR	MLO	MAIN LUGS ONLY	SPEC	SPECIFICATION	#	NUMBER
CONT	CONTINUATION OR CONTINUOUS	GND	GROUND	MMS	MANUAL MOTOR STARTER	SPKR	SPEAKER	Ø	PHASE
CONTR	CONTRACTOR	GRS	GALVANIZED RIGID STEEL (CONDUIT)	MOA	MULTIOUTLET ASSEMBLY	SP	SPARE	∅	CENTER LINE
CONV	CONVECTOR	GYP BD	GYP SUM BOARD	MSP	MOTOR STARTER PANELBOARD	SR	SURFACE RACEWAY	∅	PLATE
CP	CIRCULATING PUMP	HOA	HANDS-OFF-AUTOMATIC SWITCH	MSBD	MAIN SWITCHBOARD	SS	STAINLESS STEEL	∅	PHOTOVOLTAIC
CRT	CATHODE-RAY TUBE	HORIZ	HORIZONTAL	MT	MOUNT	SSW	SELECTOR SWITCH	∅	WIRELESS TOUCH PANEL
CT	CURRENT TRANSFORMER	HP	HORSEPOWER	MT.C	EMPTY CONDUIT	S/S	STOP/START PUSHBUTTONS	PV	WALL TOUCH SCREEN
CTR	CENTER	HPF	HIGH POWER FACTOR	MTS	MANUAL TRANSFER SWITCH	STA	STATION	LCP	LIGHTING CONTROL PANEL
CU	COPPER	HT	HEIGHT	MTR	MOTOR, MOTORIZED	STD	STANDARD	MDF	MAIN DISTRIBUTION FRAME
DGP	DOMESTIC WATER CIRCULATING PUMP	HTG	HEATING	NACPS	NOTIFICATION APPLIANCE CIRCUIT POWER SUPPLY	SURF	SURFACE MOUNTED SWITCH	MV	MEDIUM VOLTAGE
DEPT	DEPARTMENT	N.C.	NORMALLY CLOSED			SW	SWITCH		
						SWBD	SWITCHBOARD		

GENERAL ELECTRICAL NOTES

- A. ALL CONDUCTORS OPERATING AT 50 VOLTS OR GREATER SHALL BE IN RACEWAY. ALL RACEWAY WITHIN THE STRUCTURE ABOVE THE FLOOR SLAB SHALL BE METAL. RACEWAY BELOW THE FLOOR SLAB AND UNDERGROUND RACEWAY OUTSIDE THE STRUCTURE SHALL BE PVC.
- B. ALL LOW VOLTAGE CABLES OR CONDUCTORS OPERATING AT LESS THAN 50 VOLTS SHALL BE IN METAL RACEWAY WHERE INSTALLED WITHIN WALLS OR INACCESSIBLE SPACES. LOW VOLTAGE CABLES MAY BE RUN IN CABLE TRAY WHERE NOTED.
- C. COORDINATE LOCATIONS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND DETAILS. ARCHITECTURAL ELEVATIONS AND DETAILS TAKE PRECEDENCE OVER LOCATIONS SHOWN ON ELECTRICAL DRAWINGS.
- D. ALL RECESSED LIGHTING FIXTURES IN LAY-IN CEILINGS SHALL BE INSTALLED WITH 6' LONG FLEXIBLE METAL CONDUIT.
- E. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
- F. CONTRACTOR SHALL BE RESPONSIBLE FOR WIRING ALL ELECTRICAL ITEMS SHOWN ON THE DRAWINGS, UNLESS SPECIFICALLY NOTED OTHERWISE.
- G. ALL CONDUIT INSTALLED BELOW FLOOR SHALL BE INSTALLED BELOW FLOOR SLAB. INSTALLATION WITHIN HEATED FLOOR SLAB IS NOT PERMITTED.

SPECIFIC CODE NOTES

- FIRE PROTECTION REQUIREMENTS**
- A. PENETRATIONS IN WALLS REQUIRING PROTECTED OPENINGS MUST BE FIRESTOPPED WITH AN APPROVED MATERIAL.
 - CONDUITS MAY PENETRATE WALLS OR PARTITIONS, PROVIDED THEY ARE FIRE-STOPPED.
 - OPENINGS FOR STEEL ELECTRICAL BOXES NOT EXCEEDING 16 SQUARE INCHES ARE PERMITTED PROVIDED OPENINGS DO NOT AGGREGATE MORE THAN 100 SQUARE INCHES FOR ANY 100 SQUARE FEET OF WALL OR PARTITION.
 - OUTLET BOXES ON OPPOSITE SIDES OF WALLS OR PARTITIONS MUST BE SEPARATED BY A HORIZONTAL DISTANCE OF 24 INCHES.
 - B. LIGHT FIXTURES AND OTHER APPARATUS SUPPORTED BY THE ACOUSTICAL CEILING GRID MUST MEET THE REQUIREMENTS OF NEC SECTION 410.16, MEANS OF SUPPORT.
 - C. RECESSED LIGHTING FIXTURES INSTALLED IN FIRE RATED CEILING ASSEMBLIES SHALL BE FIRE RATED FIXTURES BEARING THE UL FIRE RATED LABEL. FIXTURES SHALL BE INSTALLED IN ACCORDANCE WITH THE UL FIRE RESISTANCE DIRECTORY, AND SHALL INCLUDE A FIRE RATED ENCLOSURE INSTALLED OVER THE FIXTURE THAT MEETS THE REQUIREMENTS OF THE UL FIRE RESISTANCE DIRECTORY.

ELECTRICAL DRAWINGS

- E1 ELECTRICAL NOTES AND ABBREVIATIONS
- E2 ELECTRICAL SYMBOL LEGEND
- E3 ELECTRICAL SITE PLAN
- E4 ELECTRICAL LIGHTING PLANS
- E5 ELECTRICAL POWER AND SYSTEMS PLANS
- E6 ELECTRICAL DETAILS
- E7 ELECTRICAL SCHEDULES
- E8 ELECTRICAL SCHEDULES AND DIAGRAMS

ELECTRICAL SYMBOL NOTES

A2 THE LIGHTING FIXTURE TYPE IS INDICATED BY AN UPPER CASE LETTER. THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER. THE SWITCH DESIGNATION IS INDICATED BY A LOWER CASE LETTER. EXAMPLE 1: LIGHTING FIXTURE TYPE "A" IS CONNECTED TO CIRCUIT 12 AND CONTROLLED BY SWITCH "b".

P2 EXAMPLE 2: THE LIGHTING FIXTURE TYPE IS INDICATED BY AN UPPER CASE LETTER WITH NUMERICAL SUBTYPE. THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER, THE CONTROL DESIGNATION IS INDICATED BY A LETTER AND NUMBER THAT CORRESPONDS TO THE CHANNEL CONNECTION AT THE LIGHTING CONTROL PANEL.

14E EXIT LIGHTS. STEM INDICATES WALL MOUNTING. NO STEM INDICATES CEILING MOUNTING. SHADED AREA INDICATES ILLUMINATED FACE(S). ARROW INDICATES DIRECTIONAL ARROW ON ILLUMINATED FACE(S). THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER. EXAMPLE: THE WALL MOUNTED EXIT LIGHT TYPE "E" WITH SINGLE FACE AND DIRECTIONAL ARROW IS CONNECTED TO CIRCUIT 14.

16c DEVICES. THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER. THE SWITCH DESIGNATION IS INDICATED BY A LOWER CASE LETTER. EXAMPLE: SPLIT DUPLEX RECEPTACLE IS CONNECTED TO CIRCUIT 16 AND ONE RECEPTACLE OUTLET IS CONTROLLED BY SWITCH "c".

d THE CONTROL DEVICE DESIGNATION IS INDICATED BY A LOWER CASE LETTER. EXAMPLE: SINGLE POLE SWITCH "d" TO CONTROL LIGHTING FIXTURES INDICATED BY "d".

D600 WALL BOX DIMMER WITH SIZE AS INDICATED AT DEVICE. EXAMPLE: 600 WATT WALL BOX DIMMER TO CONTROL LIGHTING FIXTURES INDICATED BY "e". SEE SPECIFICATIONS FOR WATTAGE IF NOT INDICATED.

1,3,5 SPECIAL CONNECTIONS. THE EQUIPMENT IS INDICATED BY A NUMBER IN A CIRCLE. SEE THE MOTOR AND EQUIPMENT SCHEDULE FOR THE LOAD DESCRIPTION AND TYPE OF CONNECTION. THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER(S) ADJACENT TO THE SYMBOL. EXAMPLE: EQUIPMENT NO. 1; 3 PHASE CONNECTION TO CIRCUITS 1, 3, 5.

SF-1 MOTOR CONNECTIONS. THE MOTOR IS INDICATED BY A NUMBER WITHIN OR CHARACTERS ADJACENT TO THE MOTOR SYMBOL. SEE THE MOTOR AND EQUIPMENT SCHEDULE FOR THE MOTOR DESCRIPTION AND ELECTRICAL REQUIREMENTS. THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER(S) ADJACENT TO THE SYMBOL. EXAMPLE: MOTOR SF-1; 3 PHASE CONNECTION TO CIRCUITS 2, 4, 6.

7,9 ELECTRIC HEATER CONNECTIONS. THE HEATER TYPE IS INDICATED BY A NUMBER FOLLOWING THE UPPER CASE LETTER "H". SEE THE HEATER SCHEDULE FOR ELECTRICAL REQUIREMENTS. THE CIRCUIT DESIGNATION IS INDICATED BY A NUMBER(S) ADJACENT TO THE HEATER. EXAMPLE: ELECTRIC BASEBOARD HEATER TYPE "H1" CONNECTED TO CIRCUITS 7, 9.

T1 TRANSFORMERS. THE TRANSFORMER TYPE IS INDICATED BY A NUMBER FOLLOWING THE UPPER CASE LETTER "T". SEE THE TRANSFORMER SCHEDULE OR THE SINGLE LINE DIAGRAM FOR THE TRANSFORMER DESCRIPTION AND REQUIREMENTS. EXAMPLE: TRANSFORMER TYPE "T1".

LPN-102 PANELBOARDS. PANELBOARD DOORS MAY BE SHOWN TO INDICATE OPENING SIDE OF RECESSED PANELBOARDS. SEE PANELBOARD IDENTIFICATION FOR DESIGNATION CODES.

1 SPECIAL NOTE. SEE THE SPECIAL NOTES ON THAT SHEET FOR THE NOTE NUMBER INDICATED IN THE HEXAGON.

1 CONDUIT SHOWN WITHOUT SLASH MARKS SHALL CONTAIN 2 # 12 CONDUCTORS IN 3/4" CONDUIT UNLESS SPECIFIC EQUIPMENT REQUIRES A DIFFERENT SIZE.

LPN-102 HOME RUN TO BRANCH CIRCUIT PANELBOARD. THE PANELBOARD DESIGNATION IS SHOWN ADJACENT TO THE HOME RUN ARROW AS A NUMERATOR AND THE CIRCUIT DESIGNATION IS SHOWN AS THE DENOMINATOR. CIRCUIT BREAKER SIZES (AMPS/NUMBER OF POLES) ARE SHOWN IN THE PANELBOARD SCHEDULE WITH THE CORRESPONDING PANELBOARD AND CIRCUIT DESIGNATION. EXAMPLE: HOME RUN TO PANELBOARD LPN-102; CIRCUITS 1, 3, 5.

SYMBOL NOTATIONS: UPPER CASE LETTERS ADJACENT TO SYMBOLS INDICATE A UNIT TYPE. SEE APPROPRIATE SCHEDULE OR SPECIFICATIONS.

PANELBOARD IDENTIFICATION

LOW VOLTAGE 3Ø4W, 208Y/120 SYSTEMS DESIGNATION	CODE
LIGHTING	L
MOTORS	M
GENERAL POWER	P



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E1

REVISION	DATE	DESCRIPTION	BY
DETROIT LAKES WETLAND MANAGEMENT DISTRICT			
BECKER COUNTY		MINNESOTA	
MAINTENANCE BUILDING			
ELECTRICAL NOTES AND ABBREVIATIONS			
PROJECT NUMBER		15-RF3-003	
DESIGNED	MSB	DRAWN: MSB/AMJ	DATE: 06/16
CADD: DLW031E1.DWG		CHECKED: MAS	
DRAWING NO: 3R-MN-620-031		SHEET 031 OF 038	

ELECTRICAL SYMBOL LEGEND

HT AFF	SYMBOL	DESCRIPTION	HT AFF	SYMBOL	DESCRIPTION	HT AFF	SYMBOL	DESCRIPTION	HT AFF	SYMBOL	DESCRIPTION
AS NOTED		SURFACE INCANDESCENT LIGHT (TYPE DENOTED)	18"		MULTIOUTLET ASSEMBLY (TYPE DENOTED)			CONDUIT CONCEALED IN WALL OR OVERHEAD	96" **		FIRE ALARM HORN
AS NOTED		SURFACE LIGHT (TYPE DENOTED)	18"		MULTIOUTLET ASSEMBLY (TYPE DENOTED)			CONDUIT CONCEALED BELOW FLOOR	96" **		FIRE ALARM HORN W/STROBE (CANDELAS)
AS NOTED		WALL MOUNTED FLOODLIGHT (TYPE DENOTED)	84"		CLOCK (TYPE DENOTED)			CONDUIT EXPOSED	96" **		FIRE ALARM BELL
PER SCHED		RECESSED LIGHT (TYPE DENOTED)			POWER POLE (OPEN OFFICE STYLE)			SURFACE RACEWAY	96" **		FIRE ALARM BELL W/STROBE (CANDELAS)
PER SCHED		POLE MOUNTED LIGHT (TYPE DENOTED)			SURGERY SERVICE COLUMN			CONDUIT TRANSITION UP	96" **		FIRE ALARM CHIME
PER SCHED		POLE MOUNTED FLOODLIGHT (TYPE DENOTED)			STATIC GROUND RECEPTACLE (TYPE DENOTED)			CONDUIT TRANSITION DOWN	96" **		FIRE ALARM CHIME W/STROBE (CANDELAS)
		SURFACE LIGHT (TYPE DENOTED)			LIGHTNING PROTECTION AIR TERMINAL			CONDUIT STUBBED OUT	96" **		FIRE ALARM STROBE (CANDELAS)
		SUSPENDED OR PENDANT LIGHT (TYPE DENOTED)			LIGHTNING PROTECTION CONDUCTOR SPLICE			LOW VOLTAGE POWER WIRING	96" **		FIRE ALARM SPEAKER W/STROBE (CANDELAS)
		RECESSED LIGHT (TYPE DENOTED)			GROUND ROD (PLAN VIEW)			EXISTING CONDUIT	72" **		FIRE ALARM REMOTE ANNUNCIATOR
		STRIP LIGHT (TYPE DENOTED)			GROUND CONNECTION TO STEEL OR STRUCTURE			UNDERGROUND LOW VOLTAGE ELECTRICAL	8" ****		SMOKE DETECTOR (TYPE DENOTED)
AS NOTED		TRACK AND TRACK LIGHT (TYPES DENOTED)			GROUND CONNECTION - EXOTHERMIC WELD			UNDERGROUND MEDIUM VOLTAGE ELECTRICAL			BEAM SMOKE DETECTOR
108"		EMERGENCY BATTERY LIGHT (TYPE DENOTED)			UTILITY SERVICE POWER POLE (SITE)			UNDERGROUND HIGH VOLTAGE ELECTRICAL			HEAT DETECTOR (TYPE & TEMP DENOTED)
12" *		EXIT SIGN (TYPE DENOTED)			SPECIAL RECEPT. OR CONN. (SEE SHEET KEY NOTE)			UNDERGROUND TELEPHONE			LINEAR HEAT DETECTOR
AS NOTED		LIGHT FIXTURE WITH EMERGENCY BALLAST	AS NOTED		SPECIAL CONNECTION (SEE SCHEDULE)			UNDERGROUND COMMUNICATIONS			DUCT SMOKE DETECTOR (TYPE DENOTED)
		LIGHT ON CORD REEL (TYPE DENOTED)	AS NOTED		JUNCTION BOX			UNDERGROUND CABLE TELEVISION (CATV OR CCTV)	48"		REMOTE TEST/STATUS STATION
AS NOTED		LIGHTING CHANNEL WIRE (TYPE DENOTED)	AS NOTED		PULL BOX			UNDERGROUND FIBER OPTIC			FLAME DETECTOR (TYPE DENOTED)
48"		SINGLE POLE SW.	72" **		CIRCUIT BREAKER PANEL			OVERHEAD ELECTRIC	48" ***		GAS DETECTOR (TYPE DENOTED)
48"		2 POLE SINGLE THROW SW.	72" **		POWER OR DISTRIBUTION PANEL			OVERHEAD TELEPHONE			F.A. PULLSTATION
48"		3-WAY SW.	72" **		SPECIAL CABINET (TYPE DENOTED)			BRANCH CIRCUIT HOME RUN			F.A. ZONE ADDRESSABLE MODULE
48"		4-WAY SW.			TRANSFORMER (TYPE DENOTED)			FLEXIBLE CONDUIT OR FIXTURE WHIP			F.A. INDIVIDUAL ADDRESSABLE MODULE
48"		KEYED SW.			GENERATOR (KVA DENOTED)			UNDERFLOOR RACEWAY SYSTEM			F.A. DOOR HOLDER
48"		SW. W/PILOT			MOTOR (SEE SCHEDULE)			CABLE TRAY (TYPE DENOTED)			F.A. DOOR CLOSER
48"		SEPARATE PILOT LIGHT			DAMPER MOTOR			CONDUIT SLEEVE (SIZE DENOTED)			FIRE ALARM SHUT DOWN RELAY
48"		DIMMER SWITCH	48"		MANUAL MTR. STR. (W/OVERLOADS)			TELEPHONE OUTLET (TYPE DENOTED)			SPRINKLER FLOW SWITCH
48"		OCCUPANCY SENSOR SWITCH	72" **		MAG. MOTOR STARTER OR CONTACTOR			WALL TELEPHONE OUTLET (TYPE DENOTED)	48" ****		SPRINKLER VALVE TAMPER SWITCH
48"		MOMENTARY CONTACT SWITCH	72" **		COMB. MOTOR STARTER (NON-FUSED)			INFORMATION OUTLET (TYPE DENOTED)	18"		SPRINKLER LEVEL SWITCH
48"		TIMER SWITCH	72" **		COMB. MOTOR STARTER (FUSED)			INTERCOM OUTLET LOCATION	48"		SPRINKLER PRESSURE SWITCH
48"		TIME DELAY SWITCH	72" **		SAFETY DISC. SW. (NON-FUSED)			TELEVISION OUTLET	18"		SPRINKLER TEMPERATURE SWITCH
48"		FAN SPEED CONTROL	72" **		SAFETY DISC. SW. (FUSED)			MULTIPLE SERVICE OUTLET (TYPE DENOTED)	18"		END OF LINE RESISTOR
48"		MOTOR HORSEPOWER RATED SWITCH	AS NOTED		BUS DUCT WITH PLUG ON DISCONNECT (FUSED)			OUTLET IN FLOOR (MICROPHONE SHOWN)			ELECTRIC STRIKE
48"		PUSH BUTTON			VARIABLE FREQUENCY DRIVE			MULTIPLE SERVICE FLR OUTLET (TYPE DENOTED)			MAGNETIC SWITCH
18"		SINGLE RECEPT.	72" **		RELAY			DICTIONATION OUTLET LOCATION			COMBINATION LOCK
18"		DUPLEX RECEPT.	72" **		ENCLOSED CIRCUIT BREAKER			WALL DICTIONATION OUTLET LOCATION			DOOR CONTACTS
18"		SPLIT DUPLEX RECEPT.			PRESSURE SWITCH			EQUIPOTENTIAL GROUND OUTLET			UNDERCOUNTER DURESS PUSHBUTTON
18"		COMPUTER GRADE DUPLEX RECEPTACLE			FLOAT SWITCH			BELL	48" ****		CARD READER
18"		COMPUTER GRADE FOURPLEX RECEPTACLE			OCCUPANCY SENSOR - TYPE DENOTED			BUZZER	48" ****		KEYPAD
18"		RECEPT ON EMERGENCY CKT (DUPLEX SHOWN)			LIGHT LEVEL SENSOR - TYPE DENOTED			CHIME	90" ****		MOTION DETECTOR (TYPE DENOTED)
18"		FOURPLEX RECEPT.	AS NOTED		PHOTOCELL			DOOR SIGNAL - APT. UNIT			OVERHEAD PROJECTOR
18"		FOURPLEX RECEPTACLE ON EMERGENCY CIRCUIT	48"		TIME CONTROL SWITCH (TIME SWITCH)			SPEAKER (WALL OR CEILING MT.)	54" **		WIRELESS TOUCH PANEL
18"		240 VOLT RECEPT.	48"		HUMIDISTAT			HORN TYPE SPEAKER			MUSHROOM SWITCH
		FLOOR RECEPT. (DUPLEX SHOWN)	48"		THERMOSTAT			SURFACE MT SPEAKER SUSPENDED FROM CEILING			START/STOP PUCHBUTTON
AS NOTED		RECEPT ON DROP CORD (DUPLEX SHOWN)	PER SCHED		BASEBOARD HEATER (TYPE DENOTED)			VOLUME CONTROL			
		RECEPT ON CORD REEL (DUPLEX SHOWN)	PER SCHED		WALL HEATER (TYPE DENOTED)			MICROPHONE OUTLET			
		EQUIPMENT PLUG	PER SCHED		HAND OR HAIR DRYER (TYPE DENOTED)			PROJECTOR CONTROL OUTLET			
					SOLENOID VALVE			ANTENNA			
					HALFTONE SYMBOL INDICATES EXISTING			WEATHERHEAD			
					DASHED SYMBOL INDICATES REMOVED			KEYED NOTE (SEE SCHEDULE)			

ALL DISTANCES ARE TO CENTER OF DEVICE OR EQUIPMENT UNLESS OTHERWISE NOTED. DEVICES INDICATED AT 48" MAY NOT BE INSTALLED WITH ANY OPERABLE PART HIGHER THAN 48". DEVICES MAY BE INSTALLED IN CONCRETE MASONRY UNITS WITH THE TOP OF THE DEVICE AT 48".

MOUNT DEVICES AT HEIGHTS INDICATED, UNLESS OTHERWISE INDICATED ON THE DRAWINGS. MOUNTING HIGHTS SHOWN ON DRAWINGS TAKE PRECEDENT OVER MOUNTING HEIGHTS INDICATED ON ELECTRICAL SYMBOL LEGEND.

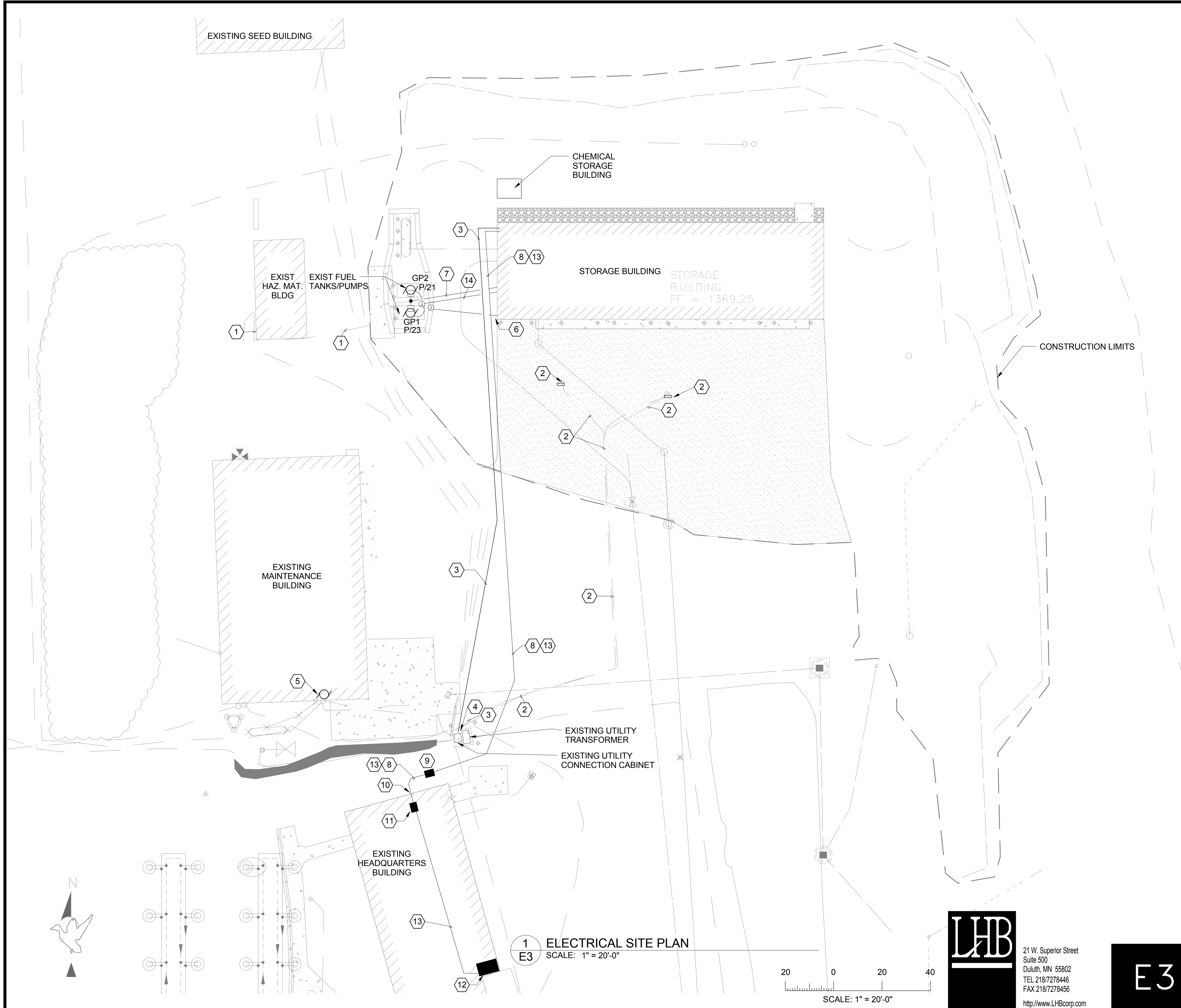
* DISTANCE ABOVE TOP OF DOOR FRAME ** DISTANCE TO TOP OF EQUIPMENT OR DEVICE *** DISTANCE TO HIGHEST OPERABLE PART OF EQUIPMENT **** DISTANCE BELOW CEILING ***** DISTANCE TO BOTTOM OF DEVICE

REVISION	DATE	DESCRIPTION	BY
DETROIT LAKES WETLAND MANAGEMENT DISTRICT			
BECKER COUNTY		MINNESOTA	
MAINTENANCE BUILDING			
ELECTRICAL SYMBOL LEGEND			
PROJECT NUMBER		15-RF3-003	
DESIGNED	MSB	DRAWN: MSB/AML	DATE: 06/16
CADD: DLW032E2.DWG	DRAWING NO: 3R-MN-620-032	CHECKED: MAS	
		SHEET 032 OF 038	

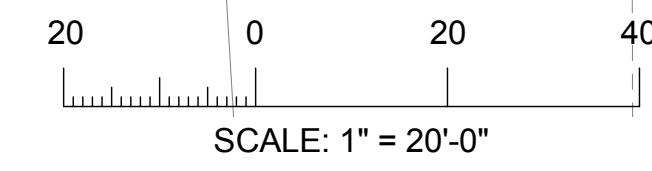


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E2



1
E3
 ELECTRICAL SITE PLAN
 SCALE: 1" = 20'-0"

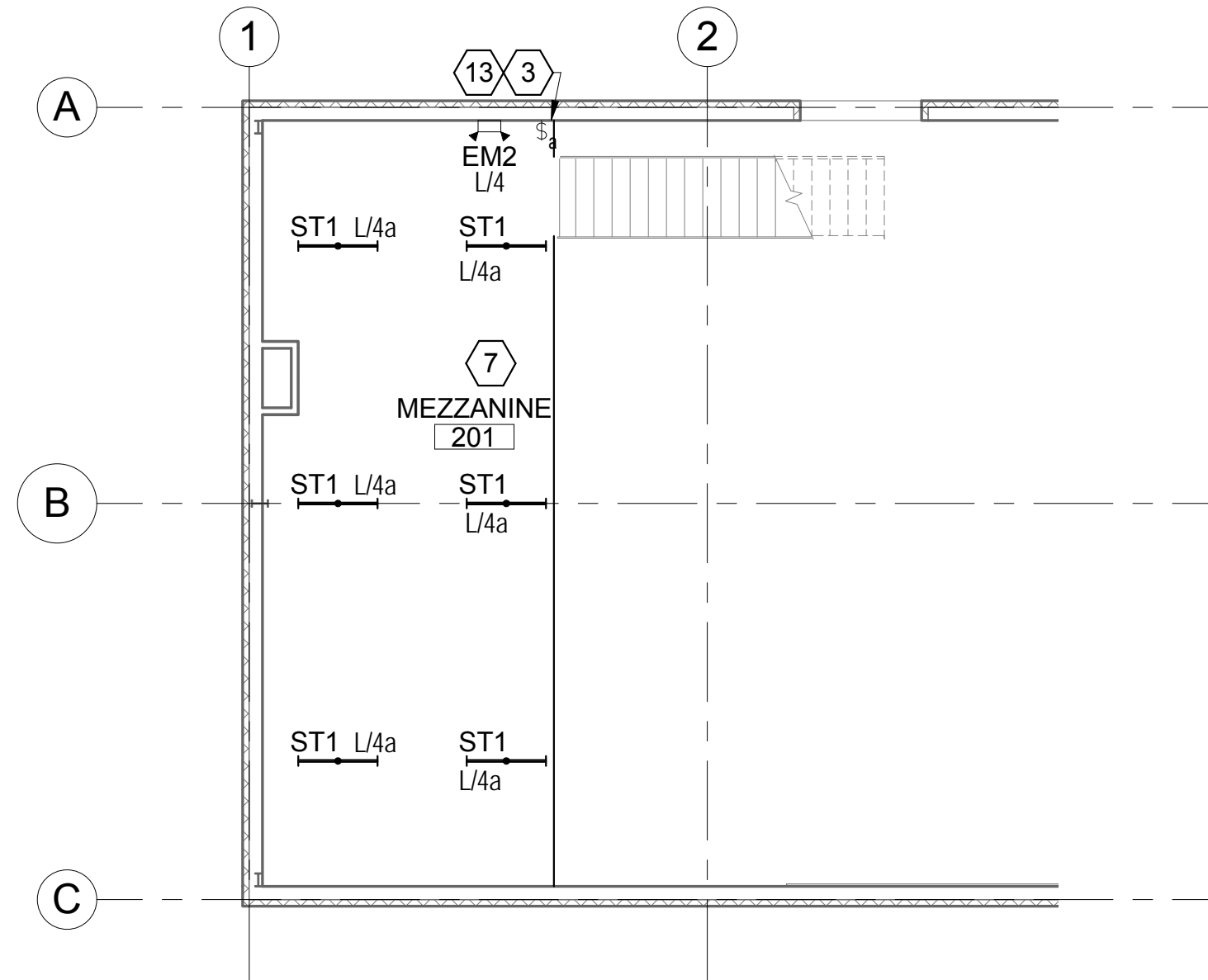


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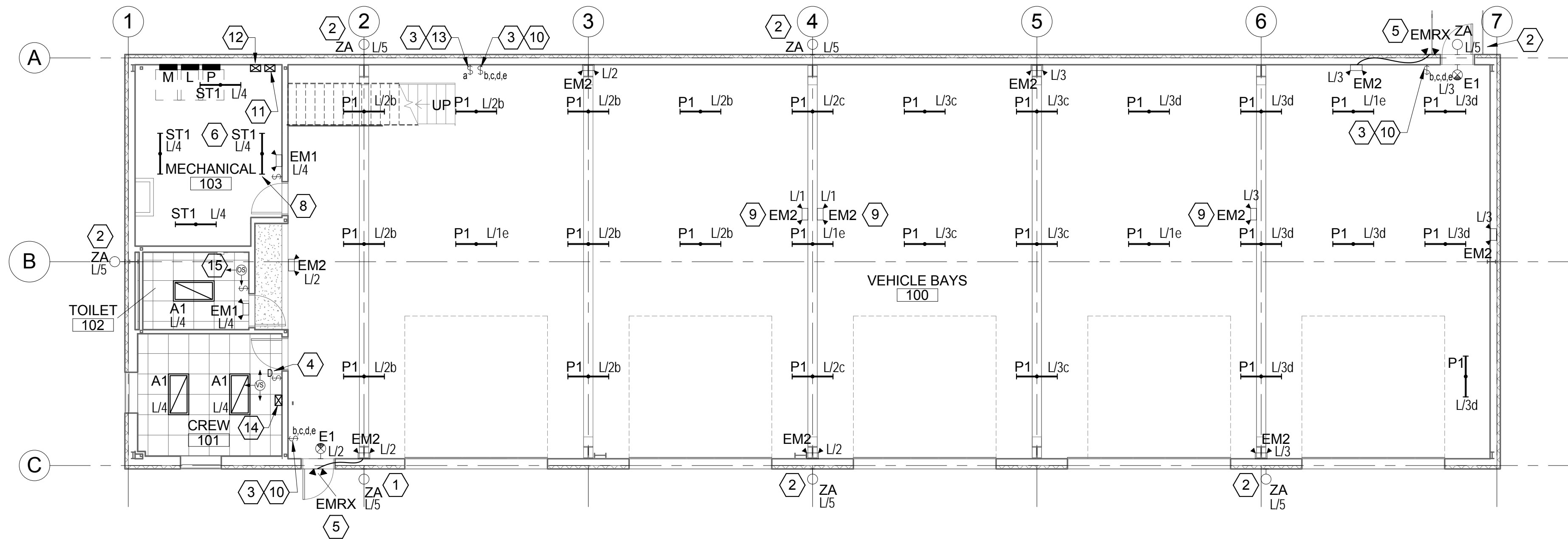
E3

- KEYED SHEET NOTES**
- DISCONNECT AND REMOVE ELECTRICAL ASSOCIATED WITH FUEL PUMPS, INCLUDING ASSOCIATED LIGHTING AND EMERGENCY POWER SHUTOFF AFTER NEW EXTENSION TO NEW ELECTRICAL SERVICE IS ESTABLISHED AND OPERATIONAL (MAXIMUM ALLOWED DOWN TIME OF THE FUEL PUMPS SHALL BE 7 CALENDAR DAYS). NOTIFY STATION MANAGER AT LEAST 7 DAYS PRIOR TO SHUT DOWN.
 - DISCONNECT AND REMOVE ELECTRICAL ASSOCIATED WITH TEMPORARY CONSTRUCTION TRAILER POWER PANELBOARDS AND ELECTRIC SERVICE.
 - PROVIDE NEW 208/120V, 3 PH., 4W ELECTRIC SERVICE. REFER TO POWER RISER, SHEET E8.
 - PROVIDE 400A SELF-CONTAINED METER SOCKET AND CONNECTION AT METERING/CONNECTION CABINET. COORDINATE WITH UTILITY.
 - DISCONNECT AND REMOVE ELECTRICAL ASSOCIATED WITH EXISTING 5 HP, 208V, 1 PH. AIR COMPRESSOR. DISCONNECT AND REMOVE CONDUIT AND WIRING TO EXISTING PANELBOARD 30A-1P CIRCUIT BREAKER IN THIS ROOM. LABEL EXISTING BREAKER AS "SPARE". SEE SHEET E5, RM. 100, FOR RELOCATED EXISTING COMPRESSOR AND FOR NEW ELECTRICAL REQUIRED.
 - FUEL EMERGENCY SHUTOFF. SEE POWER PLAN.
 - PROVIDE 1"C, 2#12, #12G TO EXISTING POLE-MOUNT LIGHTS. CONNECT TO PANELBOARD L/6.
 - PROVIDE 2-INCH SCHEDULE 80 PVC CONDUIT WITH (1) 3-CELL TEXTILE INNERDUCT (MAXCELL OR EQUAL) 30" MIN. BELOW GRADE FOR FIBER OPTIC COMMUNICATIONS CABLING.
 - PROVIDE 2'X3'X3' CONCRETE HANDHOLE FOR COMMUNICATION CABLING.
 - PROVIDE TRENCHING/CORE DRILLING TO ACCOMMODATE ROUTING OF COMMUNICATION CABLING INTO BASEMENT LEVEL CEILING SPACE.
 - PROVIDE CEILING PULLBOX AND 2" EMT IN CEILING SPACE FOR ROUTING OF COMMUNICATION CABLING TO IT ROOM.
 - EXISTING IT EQUIPMENT ROOM. PROVIDE FIBER PATCHING ON EXISTING RACK MOUNTED PATCH PANEL.
 - PROVIDE THE FOLLOWING BACKBONE CABLING BETWEEN EXISTING IT ROOM AND NEW BUILDING WALL MOUNTED CABINET:
 A. (1) 12 STRAND SINGLE MODE FIBER OPTIC CABLE (OS1)
 B. (1) 12 STRAND MULTIMODE FIBER OPTIC CABLE (OM3)
 C. (1) 25-PAIR CATEGORY 5e CABLE
 - PROVIDE 1" SCHEDULE 80 PVC WITH 4#12, #12G. CONNECT EACH CIRCUIT TO RESPECTIVE FUEL PUMP. EACH CIRCUIT SHALL CONNECT TO SHUNT TRIP CIRCUIT BREAKER IN PANELBOARD. SEE POWER PLAN FOR EPO SWITCH (NEAR GRIDLINE C/1 INTERSECTION) AND CONDUIT SEAL-OFF LOCATIONS (NEAR GRIDLINE B/1 INTERSECTION).

REVISION	DATE	DESCRIPTION	BY
DETROIT LAKES WETLAND MANAGEMENT DISTRICT			
BECKER COUNTY		MINNESOTA	
MAINTENANCE BUILDING			
ELECTRICAL SITE PLAN			
PROJECT NUMBER 15-RF3-003			
DESIGNED MSB	DRAWN: MSB/AM	DATE: 06/16	CHECKED: MAS
CADD: DLW033E3.DWG	DRAWING NO: 3R-MN-620-033	SHEET 033 OF 038	



2 ELECTRICAL LIGHTING PLAN - MEZZANINE
E4 SCALE: 1/8" = 1'-0"



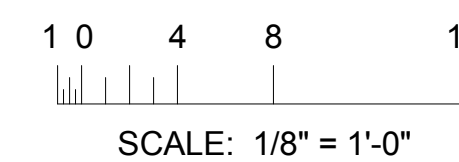
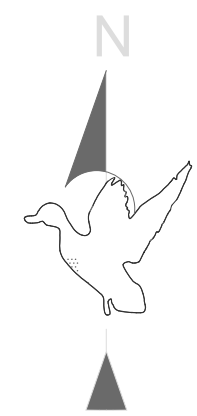
1 ELECTRICAL LIGHTING PLAN - LEVEL 1
E4 SCALE: 1/8" = 1'-0"

GENERAL SHEET NOTES

- A. ALL RECESSED LIGHTING FIXTURES IN LAY-IN CEILINGS SHALL BE INSTALLED WITH 6' LONG FLEXIBLE METAL CONDUIT.
- B. ALL MOUNTING HEIGHTS FOR LIGHTING FIXTURES ARE TO THE BOTTOM OF THE FIXTURES UNLESS INDICATED OTHERWISE.
- C. SEE ARCHITECTURAL EXTERIOR ELEVATIONS FOR MOUNTING HEIGHTS OF EXTERIOR LIGHTING FIXTURES.
- D. REFER TO SECTION 26 0519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
- E. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
- F. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
- G. CIRCUIT NUMBERS AT DEVICES CORRESPOND TO PANELBOARD BREAKERS (SEE PANELBOARD SCHEDULE). BRANCH CIRCUITS SHALL BE SIZED ACCORDING TO THE CIRCUIT BREAKER RATING, UNLESS INDICATED OTHERWISE ON THE ELECTRICAL EQUIPMENT SCHEDULE.

KEYED SHEET NOTES

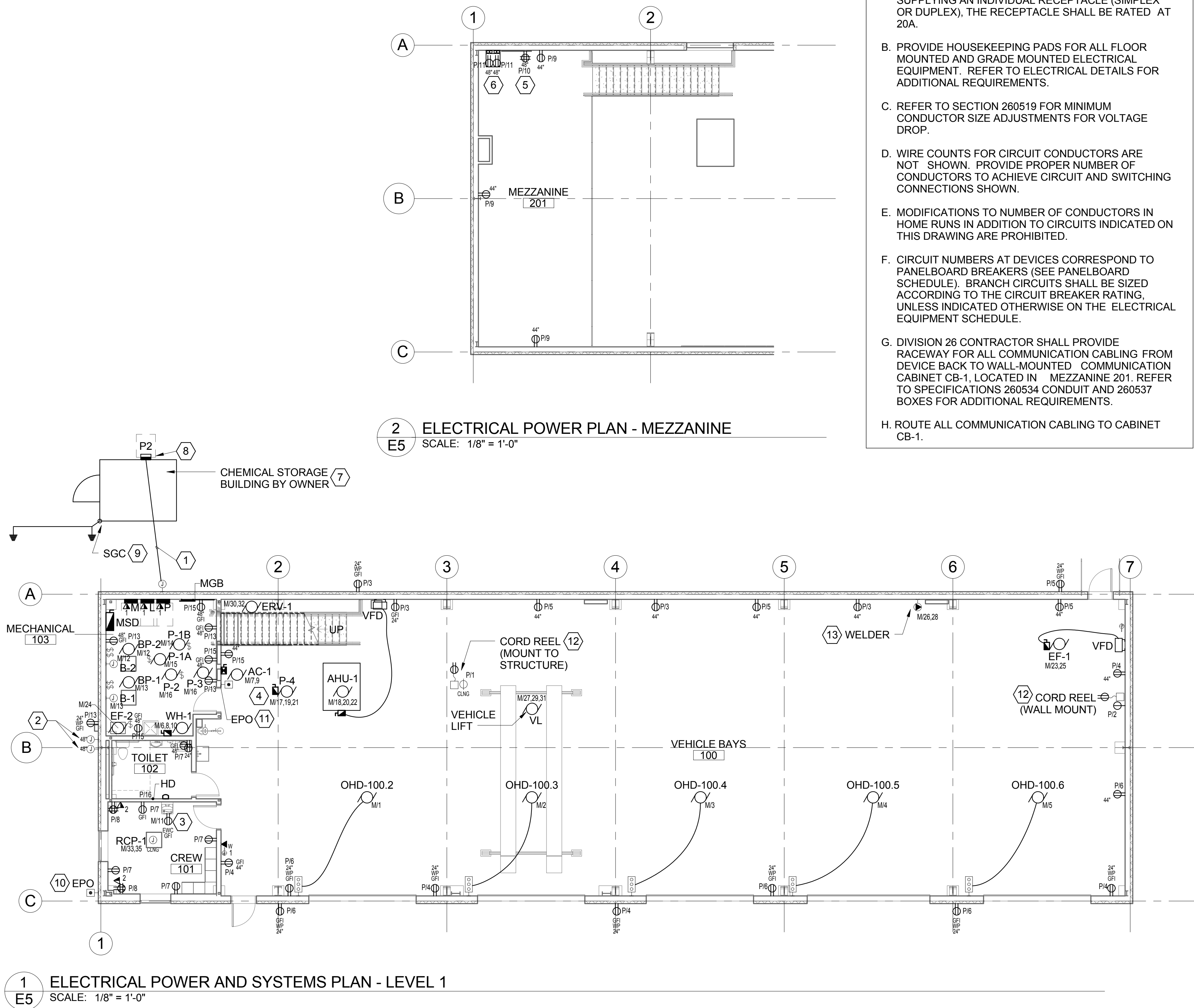
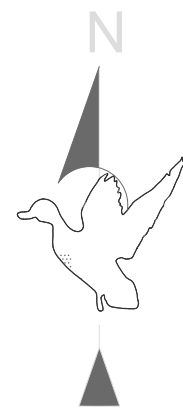
1. FIXTURE TO OPERATE FROM DUSK-DAWN THROUGH WALL-MOUNTED PHOTOCELL.
2. FIXTURE TO OPERATE FROM DUSK-DAWN WHEN MOTION IS SENSED FROM WALL-MOUNTED MOTION DETECTOR/PHOTOCELL.
3. FIXTURES IN ROOMS 100 AND 201 TO BE ON/OFF CONTROL VIA LOW VOLTAGE SWITCH.
4. ROOM LIGHTING CONTROL: VACANCY MODE (MANUAL ON, AUTOMATIC OFF) WITH A 30 MINUTE NON- MOTION TIME OUT, WITH DIMMER SWITCH.
5. CONNECT EMERGENCY REMOTE TO OUTPUT OF EMERGENCY BATTERY LIGHTING UNIT.
6. SUSPEND LIGHTS AT 8'-6" AFF.
7. SUSPEND LIGHTS IN MEZZANINE AT 8'-0" ABOVE FLOOR.
8. SUSPEND LIGHT AT 8'-2" A.F.F. - COORDINATE WITH MECHANICAL TO AVOID INTERFERENCE WITH LIGHTS IN THIS ROOM.
9. MOUNT TO SIDE OF TRUSS.
10. PROVIDE LOW-VOLTAGE DIGITAL MULTIBUTTON LIGHTING CONTROL SWITCH WITH PUSH BUTTON SWITCHES FOR LIGHTS WITH SWITCHLEGS "b", "c", "d" AND "e." ROUTE CAT 5 CABLE IN CONDUIT TO ROOM CONTROLLERS "A" AND "B."
11. PROVIDE TWO-RELAY ROOM CONTROLLER. CONTROLLER "A" CONTROLS RM 100 LIGHTS WITH SWITCHLEGS "b" AND "c" AND CONTROLLER "B" CONTROLS LIGHTS WITH SWITCHES "d" AND "e."
12. PROVIDE ONE-RELAY ROOM CONTROLLER "C." CONTROLLER "C" CONTROLS RM 201 LIGHTS, SWITCHLEG "a."
13. PROVIDE LOW-VOLTAGE 1-BUTTON LIGHTING CONTROL SWITCH. SWITCH "a" CONTROLS MEZZANINE 201 LIGHTS.
14. PROVIDE 1-RELAY ROOM CONTROLLER "D." CONTROLLER "D" CONTROLS RM 101 LIGHTS IN CONNECTION WITH VACANCY SENSOR AND DIMMER.
15. PROVIDE LINE-VOLTAGE OCCUPANCY SENSOR WITH LINE-VOLTAGE ON-OFF WALL SWITCH.



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E4

REVISION	DATE	DESCRIPTION	BY
DETROIT LAKES WETLAND MANAGEMENT DISTRICT			
BECKER COUNTY		MINNESOTA	
MAINTENANCE BUILDING			
ELECTRICAL LIGHTING PLANS			
PROJECT NUMBER 15-RF3-003			
DESIGNED MSB	DRAWN: MSB/AM	DATE: 06/16	CHECKED: MAS
CADD: DLW034E4.DWG	DRAWING NO: 3R-MN-620-034	SHEET 034 OF 038	

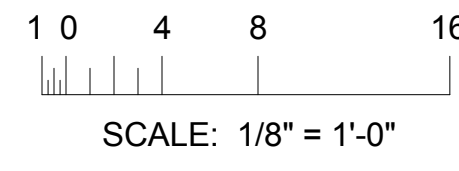


1 ELECTRICAL POWER AND SYSTEMS PLAN - LEVEL 1
E5 SCALE: 1/8" = 1'-0"

2 ELECTRICAL POWER PLAN - MEZZANINE
E5 SCALE: 1/8" = 1'-0"

- GENERAL SHEET NOTES**
- A. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.
 - B. PROVIDE HOUSEKEEPING PADS FOR ALL FLOOR MOUNTED AND GRADE MOUNTED ELECTRICAL EQUIPMENT. REFER TO ELECTRICAL DETAILS FOR ADDITIONAL REQUIREMENTS.
 - C. REFER TO SECTION 260519 FOR MINIMUM CONDUCTOR SIZE ADJUSTMENTS FOR VOLTAGE DROP.
 - D. WIRE COUNTS FOR CIRCUIT CONDUCTORS ARE NOT SHOWN. PROVIDE PROPER NUMBER OF CONDUCTORS TO ACHIEVE CIRCUIT AND SWITCHING CONNECTIONS SHOWN.
 - E. MODIFICATIONS TO NUMBER OF CONDUCTORS IN HOME RUNS IN ADDITION TO CIRCUITS INDICATED ON THIS DRAWING ARE PROHIBITED.
 - F. CIRCUIT NUMBERS AT DEVICES CORRESPOND TO PANELBOARD BREAKERS (SEE PANELBOARD SCHEDULE). BRANCH CIRCUITS SHALL BE SIZED ACCORDING TO THE CIRCUIT BREAKER RATING, UNLESS INDICATED OTHERWISE ON THE ELECTRICAL EQUIPMENT SCHEDULE.
 - G. DIVISION 26 CONTRACTOR SHALL PROVIDE RACEWAY FOR ALL COMMUNICATION CABLING FROM DEVICE BACK TO WALL-MOUNTED COMMUNICATION CABINET CB-1, LOCATED IN MEZZANINE 201. REFER TO SPECIFICATIONS 260534 CONDUIT AND 260537 BOXES FOR ADDITIONAL REQUIREMENTS.
 - H. ROUTE ALL COMMUNICATION CABLING TO CABINET CB-1.

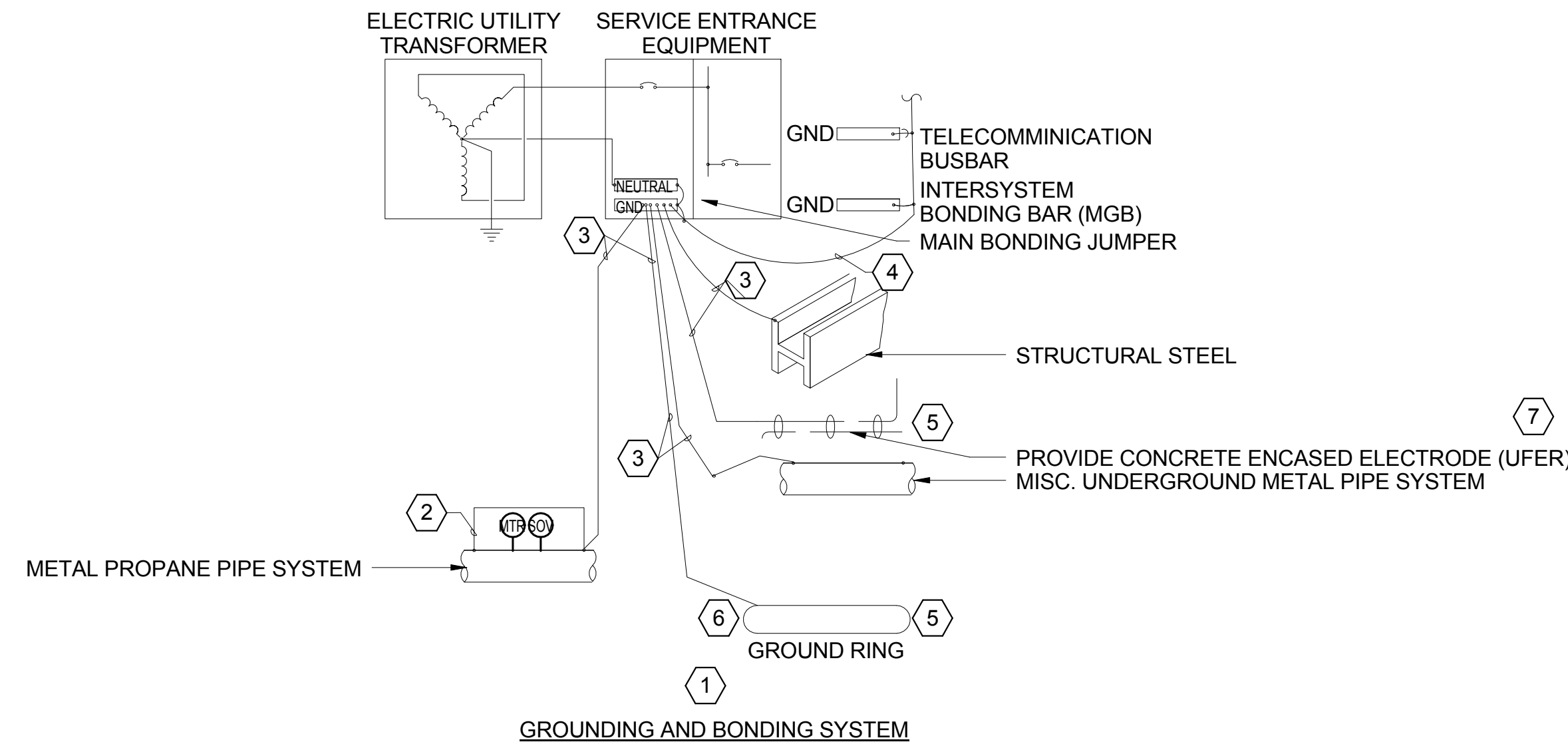
- KEYED SHEET NOTES**
- 1. PROVIDE 1" RGS CONDUIT, 2 #10, #10G. ROUTE FROM CHEMICAL STORAGE BUILDING LOADCENTER TO PANELBOARD "P" 30A-2P CIRCUIT BREAKER.
 - 2. PROVIDE EXTERIOR CONDUIT SEALS FOR LIGHTING AND PUMP POWER 120V CIRCUITS. SEE ALSO KEYED NOTE #10 FOR EMERGENCY SHUTOFF SWITCH AND SITE PLAN FOR PUMP LOCATIONS/CIRCUITING.
 - 3. PROVIDE CONNECTION FOR ELECTRIC WATER COOLER. CONNECT TO GFCI CIRCUIT BREAKER IN PANELBOARD.
 - 4. RELOCATED AIR COMPRESSOR, 5HP, 208V, 1 PH. PROVIDE COMBINATION STARTER/DISCONNECT. PROVIDE FUSED CONTROL CIRCUIT AND CONNECT THROUGH PRESSURE TANK TO CONTROL COMPRESSOR.
 - 5. PROVIDE PLYWOOD BOARD AND ACCOMMODATIONS FOR WALL MOUNTED OWNER COMMUNICATIONS EQUIPMENT.
 - 6. PROVIDE WALL MOUNTED CABINET "CB-1" FOR OWNER COMMUNICATION EQUIPMENT AND PROVIDE THE FOLLOWING (REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS):
 - A. FIBER PATCH PANEL
 - B. UTP PATCH PANEL(S)
 - C. SURGE PROTECTION PATCH PANEL
 - D. UPS
 - E. PDU
 - 7. REFER TO BUILDING SHOP DRAWINGS FOR ELECTRICAL REQUIREMENTS. BUILDING ELECTRICAL CONSISTS OF A SINGLE-POINT CONNECTION TO STORAGE BUILDING EXTERIOR 240V, 1 PH. LOADCENTER AND STATIC GROUNDING CONNECTION. BUILDING ELECTRICAL INCLUDES EXTERIOR LIGHT WITH PHOTOCELL, LIGHT SWITCH, EXPLOSION-PROOF 12,000 BTU 3 KW) ELECTRIC HEATER, INTERIOR LIGHT, AND WEATHERPROOF GFCI CONVENIENCE RECEPTACLE.
 - 8. LOADCENTER "P2" FURNISHED WITH STORAGE BUILDING. CONNECT FEEDER FROM CIRCUIT INDICATED IN PANELBOARD P.
 - 9. PROVIDE (2) 10-FOOT LONG GROUND RODS. TOP OF RODS AT 6" BELOW GRADE. PROVIDE #2 BARE COPPER CONDUCTOR BELOW GRADE BETWEEN GROUND RODS AND BETWEEN GROUND ROD AND STATIC GROUND CONNECTOR (SGC). EXOTHERMICALLY-WELD #2 CONDUCTOR TO GROUND RODS AND SGC.
 - 10. PROVIDE EMERGENCY POWER-OFF (EPO) SWITCH AT 48" AFF. CONNECT TO SHUT OFF ELECTRICAL TO BOTH FUEL PUMPS SHOWN ON ELECTRICAL SITE PLAN. CONNECT THROUGH EACH OF TWO SHUNT TRIP CIRCUIT BREAKERS FOR FUEL PUMPS. OBTAIN SHUNT TRIP 120V FROM CIRCUIT BREAKER INDICATED.
 - 11. PROVIDE EPO SWITCH AT 48" AFF FOR EMERGENCY SHUTDOWN OF ELECTRICAL TO BOILERS B-1 & B-2. OBTAIN SHUNT TRIP 120V FROM CIRCUIT BREAKER INDICATED. CONNECT EACH BOILER TO SHUNT TRIP CIRCUIT BREAKER INDICATED. CONFIGURE CONTROL SUCH THAT PRESSING EPO SWITCH BUTTON SHUTS DOWN 120V TO BOTH BOILERS AND RE-SETTING EPO SWITCH AND RESETTING CIRCUIT BREAKER ENABLES 120V TO EACH BOILER.
 - 12. PROVIDE SINGLE RECEPTACLE ADJACENT TO CORD REEL.
 - 13. PROVIDE WELDING RECEPTACLE. WELDER IS GOVERNMENT-FURNISHED MILLERMATIC 250. PROVIDE NEMA 6-50R RECEPTACLE. VERIFY WITH COR BEFORE ROUGH-IN.
 - 14. PROVIDE GFCI RECEPTACLE AT 48" ON EAST WALL. PROVIDE RECEPTACLE ON NORTH WALL AT 24" FOR PLUG-IN FAUCET SENSOR TRANSFORMER. COORDINATE LOCATION OF NORTH WALL RECEPTACLE TO AVOID INTERFERENCE WITH LAVATORY SHROUD.



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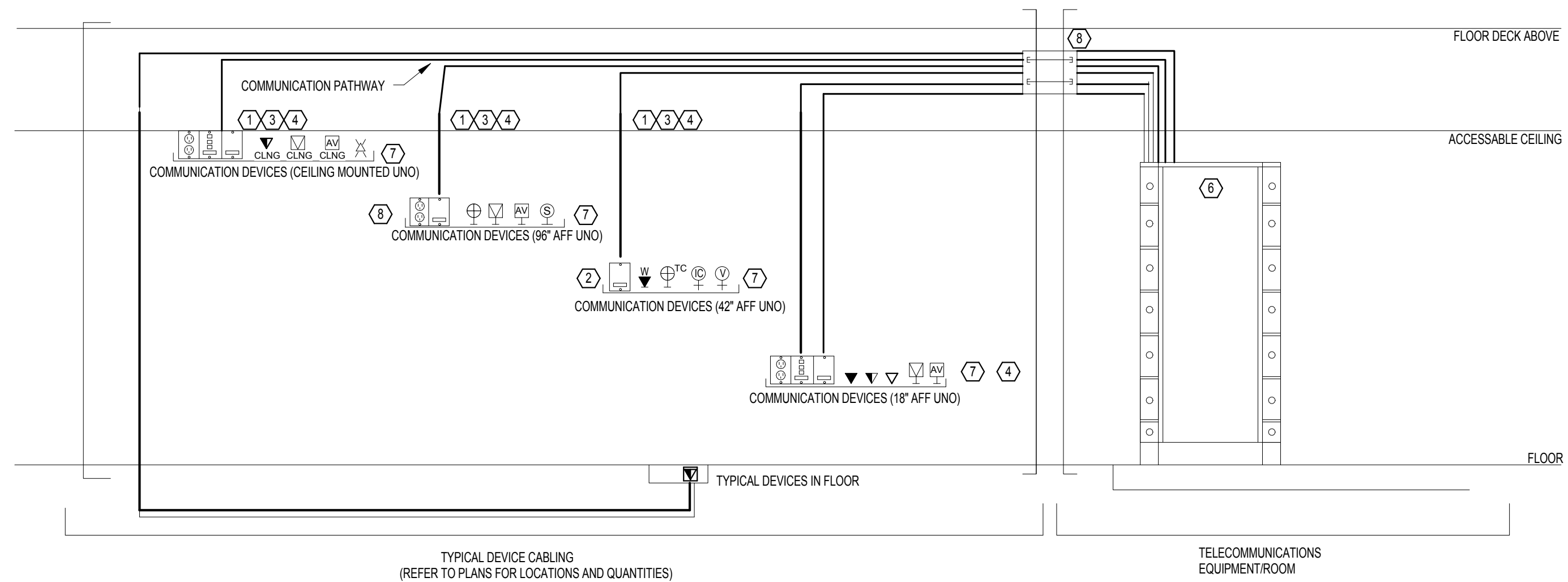
E5

REVISION	DATE	DESCRIPTION	BY
DETROIT LAKES WETLAND MANAGEMENT DISTRICT BECKER COUNTY MINNESOTA			
MAINTENANCE BUILDING ELECTRICAL POWER AND SYSTEMS PLANS			
PROJECT NUMBER 15-RF3-003			
DESIGNED MSB	DRAWN: MSB/AML	DATE: 06/16	CHECKED: MAS
CADD: DLW035E5.DWG	DRAWING NO: 3R-MN-620-035	SHEET 035 OF 038	



- KEY NOTES**
1. ALL GROUNDING SHALL COMPLY WITH REQUIREMENTS OF THE NEC, WITH SPECIFIC REFERENCE TO ARTICLE 250.
 2. PROVIDE BONDING JUMPER TO CROSS METERS/VALVES.
 3. GROUNDING ELECTRODE CONDUCTOR
 4. PROVIDE GROUNDING FOR OTHER SYSTEMS (INTERSYSTEM BONDING TERMINATIONS) PER NEC ARTICLES 250 AND 830.
 5. REFER TO NEC 250 FOR ADDITIONAL ALLOWED ELECTRODES IF THOSE SHOWN ARE UNAVAILABLE.
 6. PROVIDE THREE GROUND BARS, SPACED 10' MINIMUM APART. INTERCONNECT WITH #2 BARE COPPER CONDUCTOR. EXOTHERMICALLY-WELDED CONDUCTOR TO GROUND RODS.
 7. PROVIDE 20' MINIMUM #2 AWG BARE COPPER WIRE ENCASED IN CONCRETE.

1 GROUNDING RISER
NO SCALE



2 COMMUNICATION DEVICES AND EQUIPMENT ROOM RISER DIAGRAM
Not to Scale

- KEYED SHEET NOTES**
1. PROVIDE QUANTITY OF 4-PAIR UTP PLENUM RATED CABLES AS INDICATED ON PLAN DRAWINGS, ROUTED FROM COMMUNICATIONS OUTLET TO NEAREST COMMUNICATION CLOSET, UNLESS NOTED OTHERWISE.
 2. PROVIDE QUANTITY OF 4-PAIR UTP CABLES AS INDICATED ON PLAN DRAWINGS, ROUTED FROM COMMUNICATIONS OUTLET TO NEAREST COMMUNICATIONS CLOSET, UNLESS NOTED OTHERWISE.
 3. PROVIDE QUANTITY OF PLENUM RATED CABLES REQUIRED FOR DEDICATED SYSTEMS AS INDICATED ON PLANS AND IN SPECIFICATIONS.
 4. VIDEO AND AUDIO VISUAL DEVICE LOCATIONS, PROVIDE MINIMUM (1) 4-PAIR UTP PLENUM RATED CABLE AND (1) RG-6 PLENUM RATED COAXIAL CABLE UNLESS NOTED OTHERWISE. REFER TO PLAN DRAWINGS FOR ADDITIONAL QUANTITIES.
 5. COMMUNICATION PATHWAYS SHALL BE PROVIDED BY THE DIVISION 26 CONTRACTOR.
 6. ALL COMMUNICATION EQUIPMENT RACKS/CABINETS AND CABLE MANAGEMENT TO BE PROVIDED BY THE DIVISION 27 CONTRACTOR.
 7. ALL COMMUNICATION DEVICES SHALL HAVE ASSOCIATED POWER RECEPTACLES. DIVISION 27 CONTRACTOR SHALL COORDINATE EXACT HEIGHTS AND LOCATIONS WITH DIVISION 26 CONTRACTOR PRIOR TO ROUGH-IN.
 8. SLEEVE THROUGH WALLS AS REQUIRED FOR ROUTING. REFER TO SPECIFICATIONS FOR REQUIREMENTS.

REVISION	DATE	DESCRIPTION	BY
DETROIT LAKES WETLAND MANAGEMENT DISTRICT BECKER COUNTY MINNESOTA			
MAINTENANCE BUILDING ELECTRICAL DETAILS			
PROJECT NUMBER		15-RF3-003	
DESIGNED	MSB	DRAWN:	MSB/AML DATE: 06/16 CHECKED: MAS
CADD:	DLW036E6.DWG	DRAWING NO:	3R-MN-620-036 SHEET 036 OF 038

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E6

ELECTRICAL EQUIPMENT SCHEDULE												
NO.	DESCRIPTION	ROOM	LOAD			VOLT	PHASE	CONDUIT & WIRE SIZE	STARTER COMPONENT	CONTROL DEVICE COMPONENT	DISCONNECT COMPONENT	NOTES
			HP	A	W							
AC-1	AIR COMPRESSOR (EXISTING - RELOCATED)	100	5			208 V	1	21(3/4")C 2#8, #8 GND	COMB STARTER FUSED DISCONNECT	PRESS SW	W/STARTER	
AHU-1	AIR HANDLING UNIT	100		10.6 A		208 V	3	16(1/2")C 3#12, #12 GND	VFD	DIGITAL CONTROL	W/VFD	
B-1	BOILER	103		8 A		120 V	1	16(1/2")C 3#12, #12 GND	W/UNIT	W/UNIT	MOTOR SNAP SW W/OVERLOADS	3, 6
B-2	BOILER	103		8 A		120 V	1	16(1/2")C 3#12, #12 GND	W/UNIT	W/UNIT	MOTOR SNAP SW W/OVERLOADS	3, 6
BP-1	BOILER PUMP	103	1/8			120 V	1	16(1/2")C 3#12, #12 GND	W/UNIT	BOILER CONTROL	MOTOR SNAP SW W/OVERLOADS	2
BP-2	BOILER PUMP	103	1/8			120 V	1	16(1/2")C 3#12, #12 GND	W/UNIT	BOILER CONTROL	MOTOR SNAP SW W/OVERLOADS	2
EF-1	EXHAUST FAN	100	2			208 V	1	16(1/2")C 3#12, #12 GND	VFD	DIGITAL CONTROL	W/FAN	
EF-2	EXHAUST FAN	103	1/4			120 V	1	16(1/2")C 3#12, #12 GND	COMB STARTER FUSED DISCONNECT	DIGITAL CONTROL	W/STARTER	
ERV-1	ENERGY RECOVERY VENTILATOR	100		10.1 A		208 V	1	16(1/2")C 2#12, #12 GND	CONTROLLER W/UNIT	DIGITAL CONTROL	FUSED W/UNIT	5
GP1	FUEL PUMP	EXTER.	1/6			120 V	1	27(1")C 2#10, #10G	EXIST W/UNIT	EXIST CONTROLLER	EXIST	4
GP2	FUEL PUMP	EXTER.	1/6			120 V	1	27(1")C 2#10, #10G	EXIST W/UNIT	EXIST CONTROLLER	EXIST	4
HD	ELECTRIC HAND DRYER	102		8.3 A		120 V	1	16(1/2")C 2#12, #12 GND	W/UNIT	---	PANELBOARD CB	
OHD-100.2	OVERHEAD DOOR	100		9.8 A		120 V	1	16(1/2")C 3#12, #12 GND	W/UNIT	DIGITAL CONTROL	30A-1P NF DISCONNECT	1
OHD-100.3	OVERHEAD DOOR	100		9.8 A		120 V	1	16(1/2")C 3#12, #12 GND	W/UNIT	DIGITAL CONTROL	30A-1P NF DISCONNECT	1
OHD-100.4	OVERHEAD DOOR	100		9.8 A		120 V	1	16(1/2")C 3#12, #12 GND	W/UNIT	DIGITAL CONTROL	30A-1P NF DISCONNECT	1
OHD-100.5	OVERHEAD DOOR	100		9.8 A		120 V	1	16(1/2")C 3#12, #12 GND	W/UNIT	DIGITAL CONTROL	30A-1P NF DISCONNECT	1
OHD-100.6	OVERHEAD DOOR	100		9.8 A		120 V	1	16(1/2")C 3#12, #12 GND	W/UNIT	DIGITAL CONTROL	30A-1P NF DISCONNECT	1
P-1A	HEATING PUMP	103	2/5			120 V	1	16(1/2")C 3#12, #12 GND	COMB STARTER FUSED DISCONNECT	DIGITAL CONTROL	W/STARTER	
P-1B	HEATING PUMP	103	2/5			120 V	1	16(1/2")C 3#12, #12 GND	COMB STARTER FUSED DISCONNECT	DIGITAL CONTROL	W/STARTER	
P-2	MANIFOLD PUMP	103	1/12			120 V	1	16(1/2")C 3#12, #12 GND	COMB STARTER FUSED DISCONNECT	DIGITAL CONTROL	W/STARTER	
P-3	PUMP - MANIFOLD MF-4	103		2 A		120 V	1	16(1/2")C 3#12, #12 GND	COMB STARTER FUSED DISCONNECT	DIGITAL CONTROL	W/STARTER	
P-4	PUMP FOR AHU-1	100	1/2			208 V	3	16(1/2")C 3#12, #12 GND	COMB STARTER FUSED DISCONNECT	DIGITAL CONTROL	W/STARTER	
VL	VEHICLE LIFT (GOVERNMENT FURNISHED)	100	4			208 V	1	16(1/2")C 3#12, #12 GND	W/UNIT	DIGITAL CONTROL	30A -2P FUSED	
WELDER	WELDER (GOVERNMENT FURNISHED)	100		48 A		208 V	1	27(1")C 2#6, #6G	---	---	60A/240V RECEPTACLE	
WH-1	WATER HEATER	103		25 A		208 V	3	21(3/4")C 2#8, #8 GND	---	DIGITAL CONTROL	60A-3P NF	

NOTES:

1. INCLUDE CONNECTION TO DOOR SAFETY FEATURES.
2. FEED FROM ASSOCIATED BOILER.
3. FEED ASSOCIATED BOILER PUMP FROM BOILER 120V.
4. PROVIDE EMERGENCY SHUTOFF FOR POWER TO PUMPS. MOUNT SHUTOFF TO BUILDING.
5. ERV-1 INCLUDES TWO 3/4 HP (4.5 F.L.A.) E.C.M. MOTORS, CONTROL PANEL, MOTOR SNAP SWITCHES, AND INTEGRAL FUSED CONTROL PANEL DISCONNECT. REVIEW INSTALLATION DIAGRAMS PRIOR TO ROUGH-IN. SPECIFIED ERV-1 IS 10.1 MIN. CIRCUIT AMPACITY (M.C.A.).
6. PROVIDE 30-2P ELECTRICALLY-HELD CONTACTOR (120V COIL VOLTAGE) AND ELECTRICAL POWER OFF (EPO) SWITCH. ROUTE 120V FOR EACH BOILER (B1 AND B2) THROUGH CONTACTOR AND CONFIGURE EPO SWITCH TO SHUT OFF POWER TO BOILERS WHEN EPO SWITCH IS PRESSED.

LIGHTING FIXTURE SCHEDULE											
TYPE	DESCRIPTION	LENS-LOUVER	MOUNTING	LAMP	BALLAST/ DRIVER	VOLT	WATT	MFR	CATALOG SERIES	NOTE	
A1	2'X4' RECESSED LED TROFFER	FROSTED ACRYLIC	LAY-IN	LED 3,500K 3,000lm 50,000HR	LED DRIVER	120 V	29 W	H.E. WILLIAMS OR SIMILAR	LT-24-L30-AF-DI M-120V		
E1	CONTEMPORARY LED SINGLE FACED EXIT SIGN WITH BLACK POWDER PAINT ALUMINUM HOUSING, BRUSHED ALUMINUM FACE, RED LETTERS, AND CHEVRON ARROWS AS SHOWN ON PLANS.	---	WALL	LED 50000 HR	---	120 V	1 W	LITHONIA COOPER LIGHTING OR SIMILAR	LES 1 R 120/ 277 EL N SD CX71WHSR		
EM1	EMERGENCY BATTERY-POWER LIGHTING FIXTURE, 2 HEADS, NI-CAD BATTERY, SELF-DIAGNOSTICS OPTION		WALL	---	---	120 V	21 W	COOPER LIGHTING OR SIMILAR	SEL25SD		
EM2	EMERGENCY BATTERY-POWER LIGHTING FIXTURE, 50W CAPACITY 2 HEADS, NI-CAD BATTERY, SELF-DIAGNOSTICS OPTION, REMOTE HEAD CAPABILITY		WALL	(2) 9W HEADS	---	120 V	18 W	COOPER LIGHTING OR SIMILAR	XR21-SD1-BRW		
EMRX	WEATHERPROOF EMERGENCY TWO-HEAD REMOTE WITH WIRE GUARD		EXTERIOR WALL	---	---	12 V	8 W	SURE-LITES OR SIMILAR	SRP60DWH-WG9		
P1	1220mm (4') LONG LED ENCLOSED AND GASKETED FIXTURE WITH FROSTED LENS, FIBERGLASS HOUSING. CABLE SUSPENSION, 0-10V DIMMING, 45 DEG. C. MAX. AMBIENT TEMP, 5 YEAR WARRANTY.	FROSTED LINEAL LENS	AIRCRAFT CABLE SUSPENSION AT 14'-0" AFF.	LED 4,000K 6,500lm 50,000HR	LED DRIVER 0-10V DIMMING TO 5%	120 V	60 W	KRYPTON LIGHTING OR SIMILAR	KL-TC4-L-60-4K -UNV-FL-WHT-QMB OR SIMILAR		
ST1	1220mm (4') LONG LED ENCLOSED AND GASKETED FIXTURE WITH FROSTED LENS, FIBERGLASS HOUSING. CABLE SUSPENSION, 0-10V DIMMING, 45 DEG. C. MAX. AMBIENT TEMP, 5 YEAR WARRANTY.	FROSTED LINEAL LENS	AIRCRAFT CABLE SUSPENSION	LED 4,000K 4,000lm 50,000HR	LED DRIVER 0-10V DIMMING TO 5%	120 V	40 W	KRYPTON LIGHTING OR SIMILAR	KL-TC4-L-40-4K -UNV-FL-WHT-QMB OR SIMILAR		
ZA	EXTERIOR LED FULL-CUTOFF WALL PACK, 6-5/8"W X 8"H X 4" DEEP EXTRUDED ALUMINUM HOUSING, CARBON BRONZE FINISH.	POLYCARBONATE	EXTERIOR WALL	LED 4393lm 4000K 100,000HR	LED DRIVER	120 V	28 W	COOPER LIGHTING RAB LIGHTING OR SIMILAR	WKP2ALED2FC BZ15 XTOR3A-N	1	

GENERAL NOTES:

- A. CONTRACTOR SHALL REFER TO SPECIFICATIONS REGARDING PROVIDING ADDITIONAL SPARE LAMPS, LENSES, AND GLOBES.

SCHEDULE NOTES:

1. PROVIDE OUTDOOR MOTION SENSOR/PHOTOCELL, 200 DEG. COVERAGE, ADJUSTABLE LIGHT LEVEL SENSOR, ADJUSTABLE MOTION SENSOR SENSITIVITY. MOUNT TO SEPARATE FLUSH-MOUNT WEATHERPROOF BOX ABOVE LIGHT FIXTURE. DISABLE MOTION SENSING FOR SOUTH ENTRY DOOR LOCATION.

REVISION	DATE	DESCRIPTION	BY
DETROIT LAKES WETLAND MANAGEMENT DISTRICT BECKER COUNTY MINNESOTA MAINTENANCE BUILDING ELECTRICAL SCHEDULES			
PROJECT NUMBER		15-RF3-003	
DESIGNED MSB	DRAWN: MSB/AM	DATE: 06/16	CHECKED: MAS
CADD: DLW037E7.DWG	DRAWING NO: 3R-MN-620-037	SHEET 037 OF 038	



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