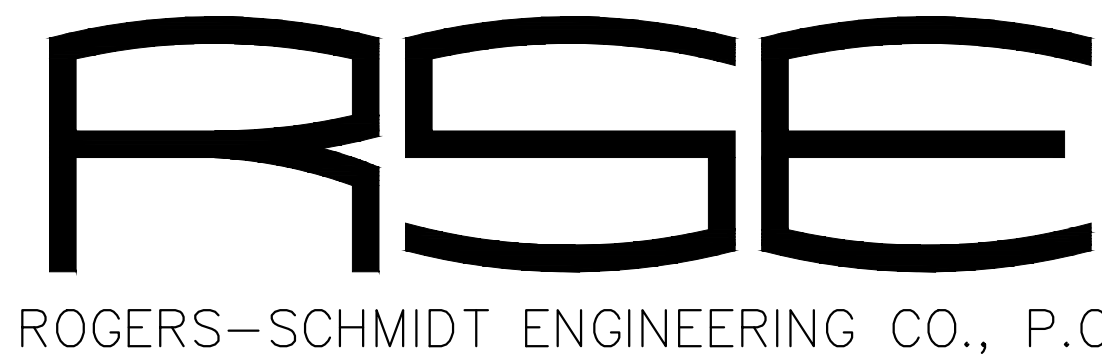


UPGRADE CAVE ELECTRIC ONONDAGA CAVE STATE PARK LEASBURG, MISSOURI



CONSULTING ENGINEERS
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

BID ISSUE

OWNER: STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF STATE PARKS

PROJECT
MANAGEMENT: OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

DESIGNER: ROGERS-SCHMIDT ENGINEERING CO., PC.
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551

PROJECT NUMBER: X2212-01

SITE NUMBER: 5215
ASSET NUMBER: 7815215013

SHEET NUMBER:

G-001

01 OF 50 SHEETS
JUNE 23, 2023



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

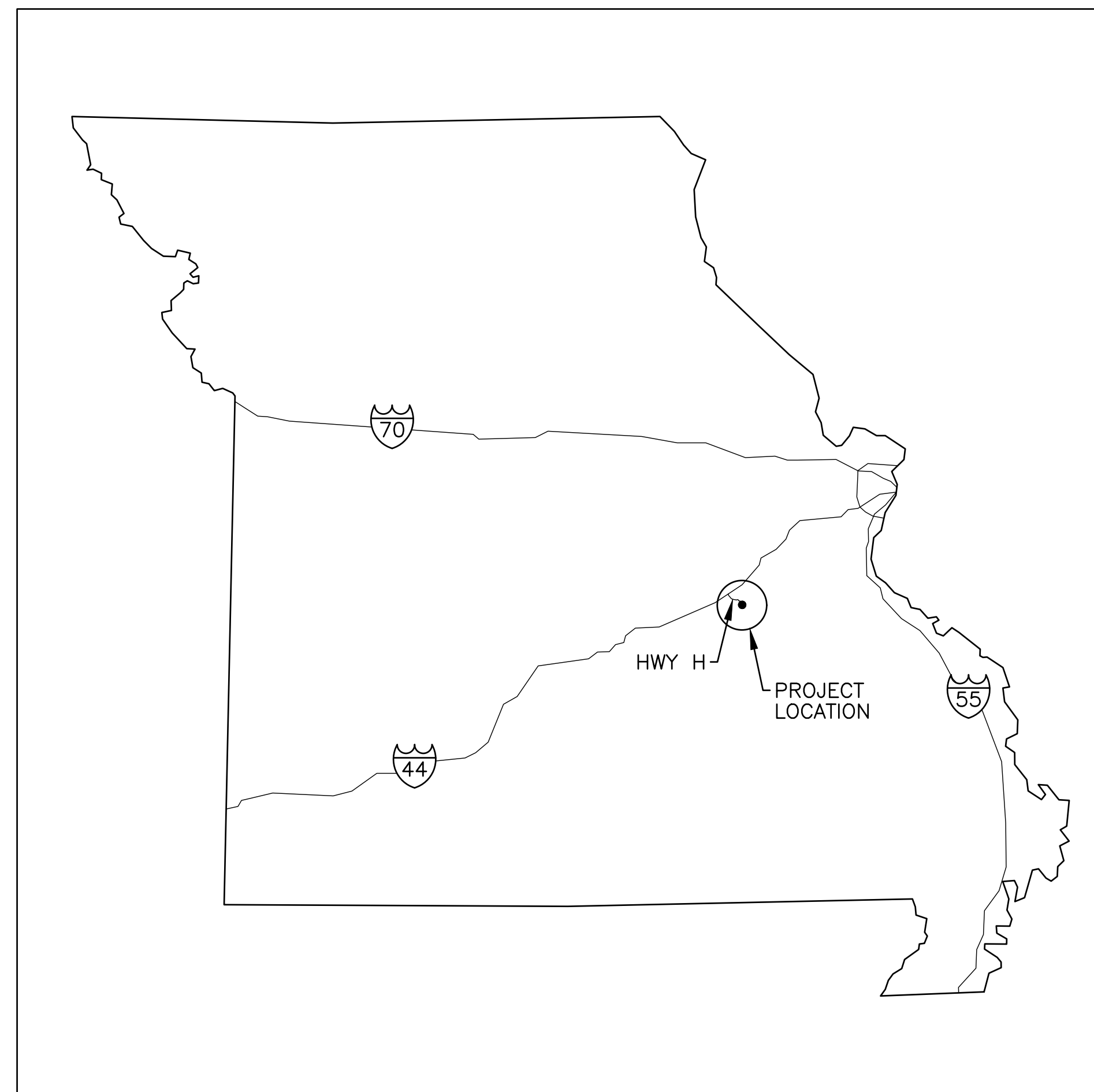
ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-G-002.DWG
DRAWN BY: K E T / M N S
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**SITE MAPS AND
DRAWING INDEX**

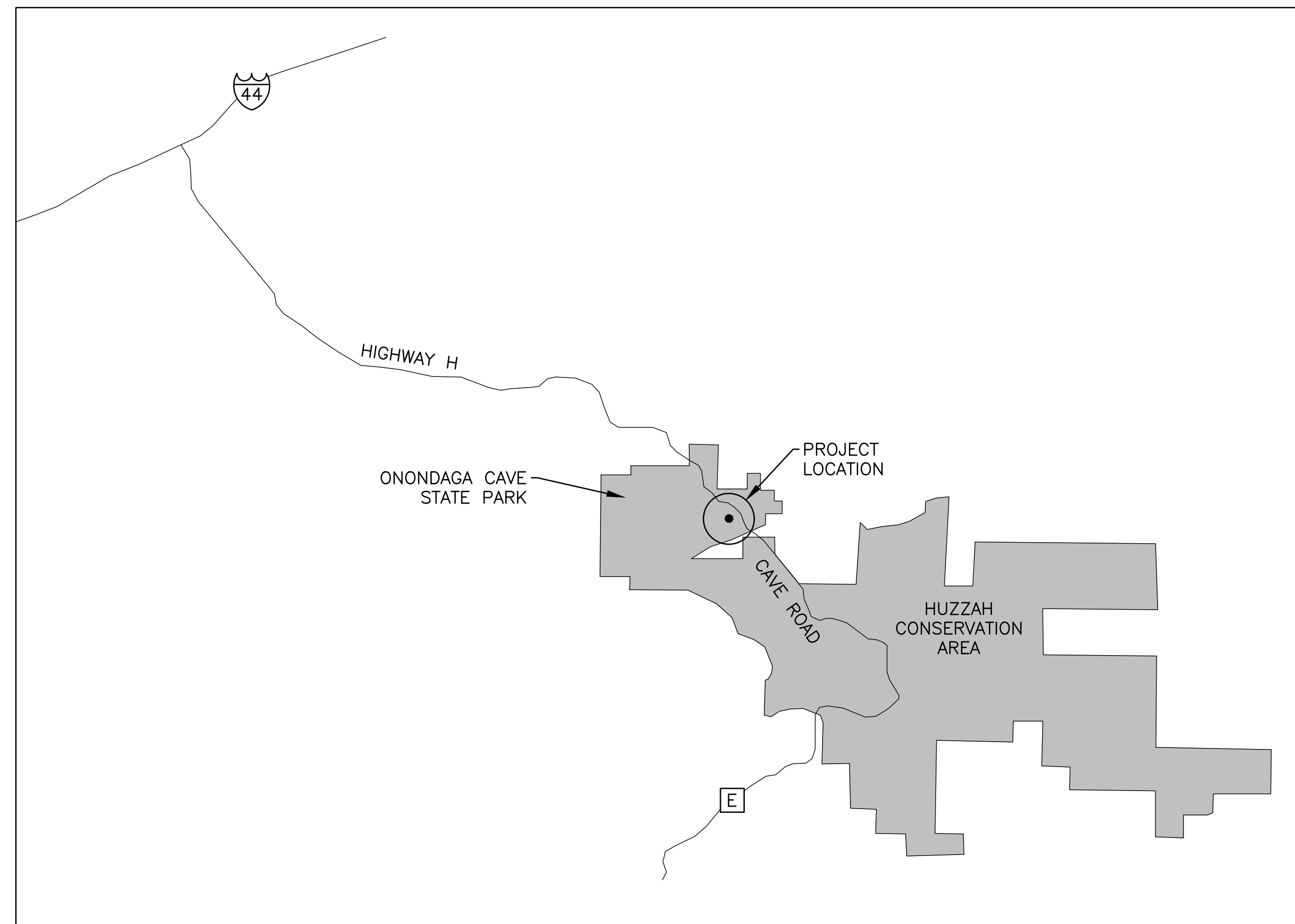
SHEET NUMBER:

G-002

02 OF 50 SHEETS
JUNE 23, 2023



LOCATION MAP
NO SCALE
NORTH



SITE MAP
NO SCALE
NORTH

D R A W I N G I N D E X

SHEET	DRAWING NUMBER	DRAWING TITLE	SHEET	DRAWING NUMBER	DRAWING TITLE	SHEET	DRAWING NUMBER	DRAWING TITLE
01 OF 50	G-001	COVER SHEET	23 OF 50	ED-601	ONE-LINE DIAGRAMS (EXIST CONDITION)	47 OF 50	E-606	NEW LIGHTING POWER SUPPLY UNIT (PSU) SCHEDULE
02 OF 50	G-002	SITE MAPS AND DRAWING INDEX	24 OF 50	ED-602	ONE-LINE AIRLOCK SERVICE (EXIST CONDITION)	48 OF 50	E-607	NEW LIGHTING POWER SUPPLY UNIT (PSU) SCHEDULE
03 OF 50	C-101	CIVIL SITE PLAN	25 OF 50	ED-603	ONE-LINE MO CAVERNS SERVICE (EXIST CONDITION)	49 OF 50	E-608	NEW LIGHTING CONTROL STATION CONFIGURATIONS
04 OF 50	C-501	CIVIL DETAILS	26 OF 50	ED-604	ONE-LINE SUBMARINE ROOM SERVICE (EXIST CONDITION)	50 OF 50	T-601	ONE-LINE DIAGRAM - CAVE EMERGENCY TELEPHONES
05 OF 50	E-001	ELECTRICAL SYMBOLS, ABBREVIATIONS & GENERAL NOTES	27 OF 50	E-101	CAVE ELECTRICAL PLAN - SECTION A			
06 OF 50	ES-101	ABOVE GROUND SITE PLAN	28 OF 50	E-102	CAVE ELECTRICAL PLAN - SECTION B			
07 OF 50	ES-102	CAVE SITE PLAN	29 OF 50	E-103	CAVE ELECTRICAL PLAN - SECTION C			
08 OF 50	ES-401	ENLARGED SITE PLAN - DEMOLITION	30 OF 50	E-104	CAVE ELECTRICAL PLAN - SECTION D			
09 OF 50	ES-402	ENLARGED SITE PLAN - NEW WORK	31 OF 50	E-105	CAVE ELECTRICAL PLAN - SECTION E			
10 OF 50	ED-101	CAVE ELECTRICAL DEMOLITION PLAN - SECTION A	32 OF 50	E-106	CAVE ELECTRICAL PLAN - SECTION F			
11 OF 50	ED-102	CAVE ELECTRICAL DEMOLITION PLAN - SECTION B	33 OF 50	E-107	CAVE ELECTRICAL PLAN - SECTION G			
12 OF 50	ED-103	CAVE ELECTRICAL DEMOLITION PLAN - SECTION C	34 OF 50	E-108	CAVE ELECTRICAL PLAN - SECTION H			
13 OF 50	ED-104	CAVE ELECTRICAL DEMOLITION PLAN - SECTION D	35 OF 50	E-109	CAVE ELECTRICAL PLAN - SECTION I			
14 OF 50	ED-105	CAVE ELECTRICAL DEMOLITION PLAN - SECTION E	36 OF 50	E-110	CAVE ELECTRICAL PLAN - SECTION J			
15 OF 50	ED-106	CAVE ELECTRICAL DEMOLITION PLAN - SECTION F	37 OF 50	E-111	CAVE ELECTRICAL PLAN - SECTION K			
16 OF 50	ED-107	CAVE ELECTRICAL DEMOLITION PLAN - SECTION G	38 OF 50	E-112	CAVE ELECTRICAL PLAN - SECTION L			
17 OF 50	ED-108	CAVE ELECTRICAL DEMOLITION PLAN - SECTION H	39 OF 50	E-113	CAVE ELECTRICAL PLAN - SECTION M			
18 OF 50	ED-109	CAVE ELECTRICAL DEMOLITION PLAN - SECTION I	40 OF 50	E-501	ELECTRICAL DETAILS			
19 OF 50	ED-110	CAVE ELECTRICAL DEMOLITION PLAN - SECTION J	41 OF 50	E-502	ELECTRICAL DETAILS			
20 OF 50	ED-111	CAVE ELECTRICAL DEMOLITION PLAN - SECTION K	42 OF 50	E-601	ONE-LINE DIAGRAM			
21 OF 50	ED-112	CAVE ELECTRICAL DEMOLITION PLAN - SECTION L	43 OF 50	E-602	ONE-LINE AIRLOCK FEEDER			
22 OF 50	ED-113	CAVE ELECTRICAL DEMOLITION PLAN - SECTION M	44 OF 50	E-603	ONE-LINE SUBMARINE ROOM FEEDER			
			45 OF 50	E-604	NEW PANELBOARD SCHEDULES			
			46 OF 50	E-605	NEW LIGHTING FIXTURE SCHEDULE			



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

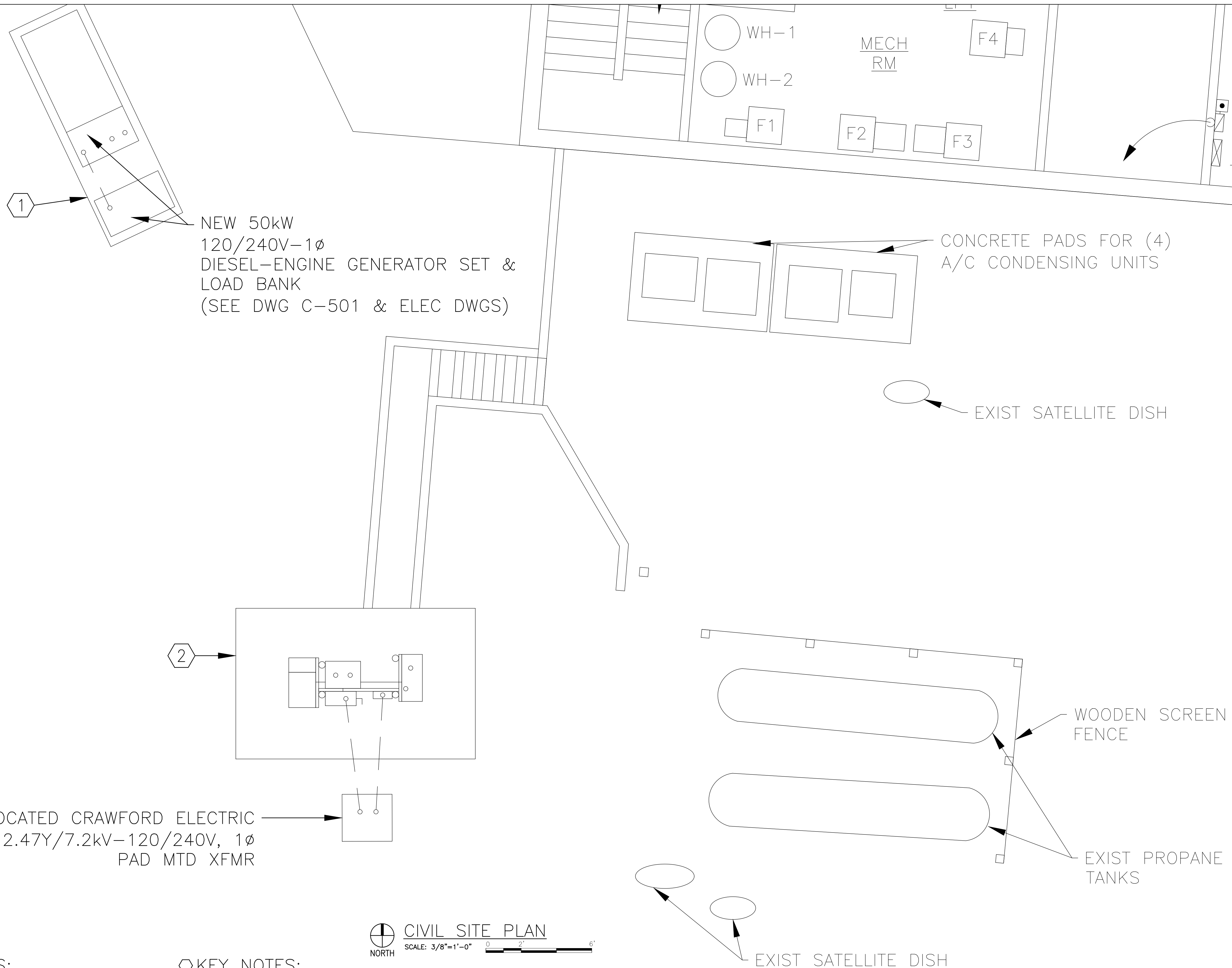
CAD DWG FILE: X2212-01-5215-
7815215013-C-101.DWG
DRAWN BY: MNS/KET
CHECKED BY: BDF
DESIGNED BY: BDF

SHEET TITLE:
CIVIL SITE PLAN

SHEET NUMBER:

C-101

03 OF 50 SHEETS
JUNE 23, 2023



GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO PROCEEDING.
- B. FIELD VERIFY ALL DIMENSIONS.
- C. ALL UG UTILITIES ARE PRIVATELY (STATE) OWNED. FIELD LOCATE ALL UTILITIES PRIOR TO ANY EXCAVATING.

KEY NOTES:

- 1. PROVIDE GENERATOR FOUNDATION PER DETAIL 101 ON DWG C-501.
- 2. PROVIDE ELECT EQUIP PAD PER DETAIL 102 ON DWG C-501.

CIVIL SITE PLAN
SCALE: 3/8"=1'-0" 0 2' 6'



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-C-501.DWG
DRAWN BY: MNS/KET
CHECKED BY: BDF
DESIGNED BY: BDF

SHEET TITLE:
CIVIL DETAILS

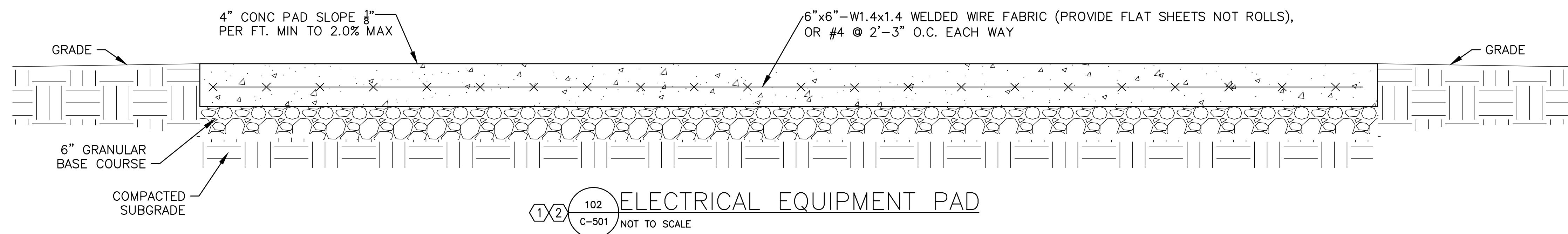
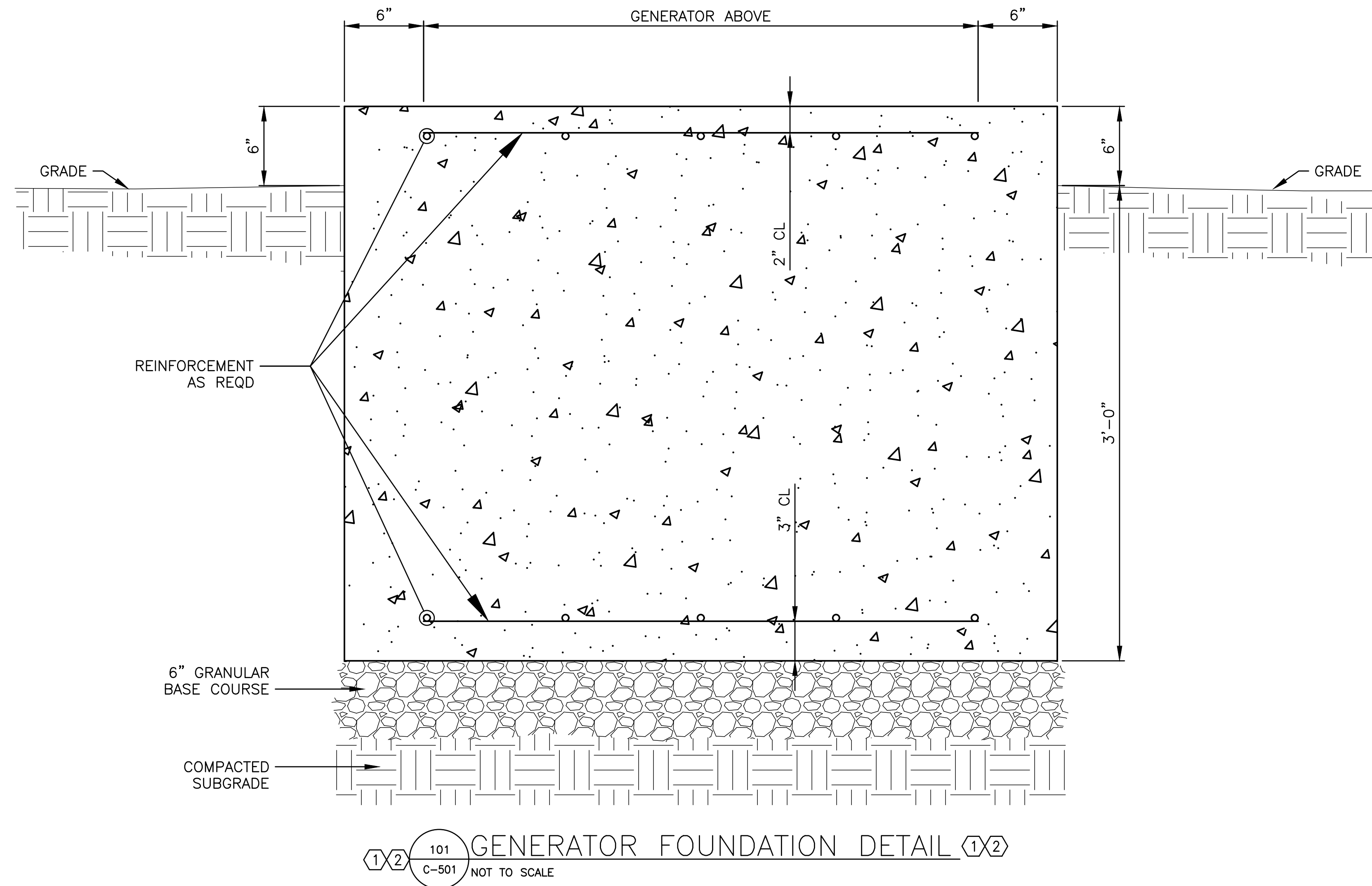
SHEET NUMBER:

C-501

04 OF 50 SHEETS
JUNE 23, 2023

KEY NOTES:

1. DELEGATED DESIGN: CONTRACTOR'S GEOTECHNICAL ENGINEER SHALL PROVIDE SOIL BORING(S) AND SUBSURFACE EXPLORATION REPORT FOR NEW FOUNDATION & ELECT EQUIP PAD DESIGNS PRIOR TO PROCEEDING. REPORT SHALL BE SEALED BY MISSOURI PROFESSIONAL ENGINEER.
2. DELEGATED DESIGN: GENERATOR FOUNDATION AND ELECT EQUIP PAD, INCLUDING ANCHORAGE AND REGRADING OF SLOPE, SHALL BE DESIGNED AND SEALED BY CONTRACTOR'S MISSOURI PROFESSIONAL ENGINEER AND PROVIDED AS A SHOP DWG SUBMITTAL. FOUNDATION AND ANCHORAGE DESIGN SHALL BE FULLY COORDINATED WITH DIESEL-ENGINE-DRIVEN GENERATOR SET MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR SEISMICALLY CERTIFIED EQUIPMENT PROVIDED.



CAVE MAP SYMBOLS

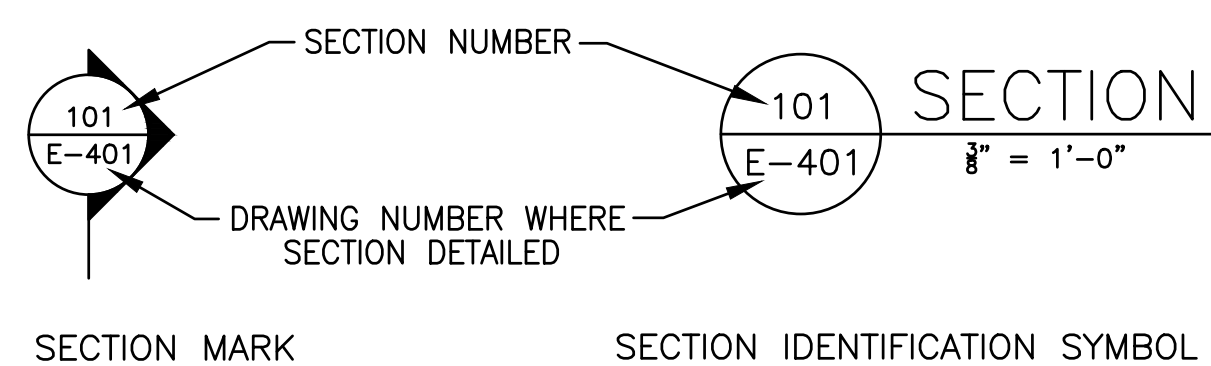
	TOUR TRAIL		WATER
	ELEVATED WALKWAY (BRIDGE OR CATWALK)		ROCK
	CEILING DOME		LOWER LEVEL OR UNSKETCHED PASSAGE
	FLOOR LEDGE		SLOPE (OPENS IN DIRECTION OF SLOPE)

ELECTRICAL SYMBOLS

	KEYNOTE; SPECIFICALLY REFERENCED TO AN ITEM ON THE FIELD OF THE DRAWING. DIGITS IDENTIFY NOTE NUMBER.		HOME RUN TO PANEL - SHORT STROKES INDICATE PHASE OR SWITCHED WIRES, LONG STROKE DENOTES NEUTRAL, LONG STROKE WITH DOT DENOTES GROUND. #12 AWG WIRES IN 3/4" GRC UNLESS NOTED OTHERWISE.		AUTOMATIC TRANSFER SWITCH (ATS)
	EXISTING LANTERN LTG FIXTURE "x" INDICATES CIRCUIT		CONDUIT EXPOSED		CIRCUIT BREAKER
	EXISTING FEATURE LTG FIXTURE "x" INDICATES CIRCUIT		CONDUIT OR CABLE TURNED DOWN		FUSIBLE DISCONNECT SWITCH
	EXISTING WALKWAY LTG FIXTURE "x" INDICATES CIRCUIT		CONDUIT OR CABLE TURNED UP		NON-FUSIBLE DISCONNECT SWITCH
	EXISTING LED ROPE LIGHT		CONDUIT BELOW GRADE		ELECTRIC REVENUE METER
	SURFACE MTD STRIP LIGHT		FLEXIBLE CONDUIT OR CABLE		TOGGLE SWITCH
	NEW DIRECTIONAL FEATURE LTG FIXTURE		WIRING CROSSING, CONNECTION		FUSED DISCONNECT SWITCH
	NEW FEATURE LTG FIXTURE (AIMED VERTICALLY UPWARD)		WIRING CROSSING, NO CONNECTION		FUSE
	NEW TRAIL HANDRAIL STRIP LIGHT		EQUIPMENT CONNECTION		OFF PUSHBUTTON
	MOTION SENSOR		EXISTING CONTROL PANEL		ON PUSHBUTTON
	SINGLE POLE SWITCH		NEW CONTROL PANEL		NORMALLY CLOSED CONTACT
	LTG CNTRL STATION "#" INDICATES STATION NUMBER		EXISTING PANELBOARD		NORMALLY OPEN CONTACT
	EXIST BATTERY OPERATED EMERGENCY LIGHT		NEW PANELBOARD		TRANSFORMER
	EXIST EMERGENCY LIGHT REMOTE HEADS		DISCONNECT SWITCH F = FUSIBLE N = NON-FUSIBLE		CURRENT TRANSFORMER (SHOWN WITH POLARITY MARKS, RATIO & QUANTITY)
	EXIT SIGN - SINGLE FACE WALL MTD		JUNCTION BOX		CONTROL POWER TRANSFORMER
	120V GFCI DUPLEX RECEPTACLE W/ WEATHERPROOF COVER		GROUNDING ROD		EARTH GROUNDING CONNECTION
	EXIST EMERGENCY TELEPHONE		CHASSIS GROUNDING CONNECTION		
	NEW EMERGENCY TELEPHONE				

GENERAL ELECTRICAL NOTES:

- THE CONTRACTOR SHALL PROVIDE ALL HOLES IN BLDG WALLS AS REQUIRED FOR CONDUIT ROUTING. SEAL PENETRATIONS IN ACCORDANCE WITH THE SPECIFICATIONS.
- COORDINATE EXACT LOCATIONS OF CONDUIT RUNS WITH EXISTING CONDITIONS AND WITH THE CONSTRUCTION REPRESENTATIVE. INDICATE FINAL ROUTING OF ALL CONDUITS ON "AS BUILT" DRAWINGS.
- ALL INFORMATION CONTAINED ON THIS DRAWING APPLIES TO ES, ED, E AND T SERIES DRAWINGS.
- THERE MAY BE SYMBOLS AND/OR ABBREVIATIONS SHOWN ON THIS SHEET THAT ARE NOT APPLICABLE TO THIS PROJECT.
- ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE 2020 NATIONAL ELECTRICAL CODE (NEC).
- CONTRACTOR SHALL REFERENCE SPECIFICATIONS FOR CONSTRUCTION MATERIALS AND INSTALLATION PROCEDURES. SPECIFICATIONS ARE A PART OF THE CONSTRUCTION DOCUMENTS. SHOULD ANY CONFLICT ARISE BETWEEN THE DRAWINGS AND SPECIFICATIONS, SUCH CONFLICT SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION REPRESENTATIVE FOR RESOLUTION.
- THESE DRAWINGS ARE DIAGRAMMATIC IN CHARACTER AND DO NOT NECESSARILY SHOW MATERIALS FOR A COMPLETE INSTALLATION. PLANS DO NOT INDICATE VERTICAL GRADE CHANGES.
- LOCATIONS AND INFORMATION FOR EXISTING ELECTRICAL DEVICES AND EQUIPMENT SHOWN ON THESE PLANS ARE APPROXIMATE. THIS INFORMATION IS DERIVED FROM FIELD OBSERVATIONS AND LIMITED DRAWINGS THAT WERE AVAILABLE AT THE TIME THESE DRAWINGS WERE ISSUED FOR BIDDING. THE CONTRACTOR IS TO VERIFY ACTUAL FIELD CONDITIONS PRIOR TO STARTING WORK.
- UP-TO-DATE AS-BUILT ELECTRICAL PLANS ARE NOT AVAILABLE FOR THIS SITE. INFORMATION FOR EXISTING CIRCUITRY IS BASED ON EXISTING PANEL DIRECTORIES, LIMITED AVAILABLE DRAWINGS, AND ASSUMPTIONS. IF SIGNIFICANT DISCREPANCIES ARE FOUND THAT CANNOT BE EASILY DEALT WITH, CONTACT THE DESIGNER.
- COORDINATE WITH CAVE NATURALIST FOR BEST MEANS OF ACCESS FOR DIFFICULT TO REACH LIGHTING FIXTURES.



ELECTRICAL ABBREVIATIONS

A	AMPERES	KVA	KILOVOLT-AMPERE(S)
ABAND	ABANDONED	KW	KILOWATT(S)
AC	ALTERNATING CURRENT	KWh	KILOWATT-HOUR(S)
ADJ	ADJUST	LA	LIGHTNING ARRESTER
AF	AMP FUSE OR AMP FRAME	LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT
AFF	ABOVE FINISHED FLOOR	LP	LIGHTNING PROTECTION OR LIGHTING PANELBOARD
AG	ABOVE GRADE	LSI	LONG TIME, SHORT TIME, INSTANTANEOUS
AIC	AMPERE INTERRUPTING CAPACITY (RMS SYMMETRICAL)	LTG	LIGHTING
AL	ALUMINUM	M	METER
APPROX	APPROXIMATELY OR APPROXIMATE	mA	MILLIAMPERE(S)
ASSOC	ASSOCIATED	MCB	MAIN CIRCUIT BREAKER
AT	AMP TRIP	MCS	MOLDED CASE SWITCH
AUTO	AUTOMATIC	MDP	MAIN DISTRIBUTION PANEL
AWG	AMERICAN WIRE GAUGE	MLO	MAIN LUG ONLY
BG	BELOW GRADE	MTD	MOUNTED
BKR	BREAKER	N.C.	NORMALLY CLOSED
BLDG	BUILDING	N.O.	NORMALLY OPENED
BSMT	BASEMENT	N/A	NOT APPLICABLE
BYP	BYPASS	NEC	NATIONAL ELECTRICAL CODE
C	CONDUIT	NOM	NOMINAL
CB	CIRCUIT BREAKER	NF	NON-FUSED
CKT	CIRCUIT	NL	NIGHT LIGHT
CLG	CEILING	NTS	NOT TO SCALE OR NON-AUTOMATIC TRANSFER SWITCH
CMU	CONCRETE MASONRY UNIT	P	POLE(S)
CNTRL	CONTROL	PNL	PANEL
COMB	COMBINATION	PNLBD	PANELBOARD
CONC	CONCRETE	PP	POWER PANELBOARD
CP	CONTROL PANEL	PSU	POWER SUPPLY UNIT
CPT	CONTROL POWER TRANSFORMER	PTT	PUSH-TO-TEST
CT	CURRENT TRANSFORMER	PVC	SCHEDULE 40 POLYVINYLCHLORIDE CONDUIT
CTR	CENTER	RAC	RIGID ALUMINUM CONDUIT
CU	COPPER	RECPT	RECEPTACLE
DC	DIRECT CURRENT	REQD	REQUIRED
DISC	DISCONNECT	REQMTS	REQUIREMENTS
DN	DOWN	RM	ROOM
DP	DEEP OR DISTRIBUTION PANEL	RMC	RIGID METAL CONDUIT
DS	DISCONNECT SWITCH	RMS	ROOT MEAN SQUARE
DWG	DRAWING	RSSC	RIGID STAINLESS STEEL CONDUIT
EL	ELEVATION	SCH	SCHEDULE
ELEC	ELECTRIC OR ELECTRICAL	SHLD	SHIELD OR SHIELDED
EMER	EMERGENCY	SPD	SURGE PROTECTIVE DEVICE
EMT	ELECTRICAL METALLIC TUBING	SS	SELECTOR SWITCH OR STAINLESS STEEL
ENCL	ENCLOSURE	ST	SHUNT TRIP
EPO	EMERGENCY POWER OFF	STA	STATION
EXH	EXHAUST	STL	STEEL
EXIST	EXISTING	STRD	STRANDED
F	FUSE OR FUSIBLE	SW	SWITCH
FDR	FEEDER	SYM	SYMMETRICAL
FL	FLOOR	TB	TERMINAL BLOCK
FO	FIBER OPTIC	TC	TOP OF CONCRETE
FOR	FORWARD	TELE	TELEPHONE
FVNR	FULL VOLTAGE NON REVERSING	TEMP	TEMPORARY
GALV	GALVANIZED	TCMB	THERMAL MAGNETIC CIRCUIT BREAKER
GCP	GENERATOR CONTROL PANEL	TS	TIME SWITCH
GFCI	GROUND FAULT CIRCUIT INTERRUPTER (6mA)	TYP	TYPICAL
GRAP	GENERATOR REMOTE ANNUNCIATOR PANEL	UE OR UGE	UNDERGROUND ELECTRIC
GRC	GALVANIZED RIGID STEEL CONDUIT	UG	UNDERGROUND
GRD	GROUND	V	VOLT(S)
HH	HANDHOLE	VA	VOLT-AMPERE(S)
HPDE	HIGH DENSITY POLYETHYLENE CONDUIT	W	WATT(S)
HP	HORSEPOWER	W/	WITH
HTR	HEATER	W/O	WITHOUT
HZ	FREQUENCY IN CYCLES PER SECOND	WP	WEATHERPROOF
INCL	INCLUDING	XFMR	TRANSFORMER
INS	INSULATED	Z	IMPEDANCE
INSTR	INSTRUMENT OR INSTRUMENTATION	&	AND
J, JB, J-BOX	JUNCTION BOX	Δ	DELTA
KA	KILOAMPERE(S)	#	NUMBER
KAIC	KILOAMPERE INTERRUPTING CAPACITY (RMS SYMMETRICAL)	%	PERCENT
KCM	THOUSAND CIRCULAR MIL(S)	∅	PHASE
KV	KILOVOLT(S)		



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-E-001.DWG
DRAWN BY: K E T / M N S
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**ELECTRICAL
SYMBOLS,
ABBREVIATIONS &
GENERAL NOTES**

SHEET NUMBER:
E-001



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-ES-101.DWG
DRAWN BY: K E T / M N S
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**ABOVE GROUND
SITE PLAN**

SHEET NUMBER:

ES-101

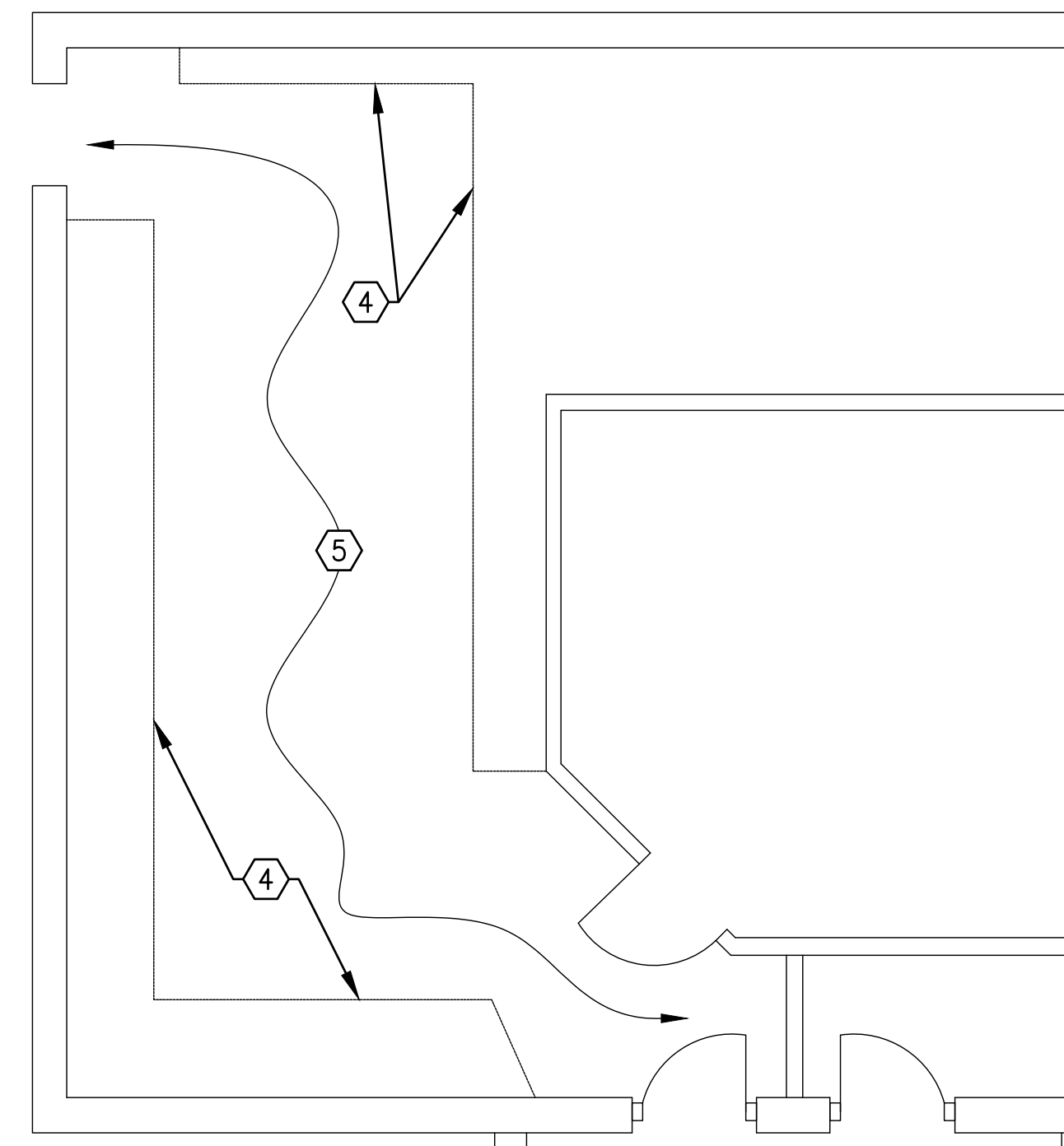
06 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTE:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.

KEY NOTES:

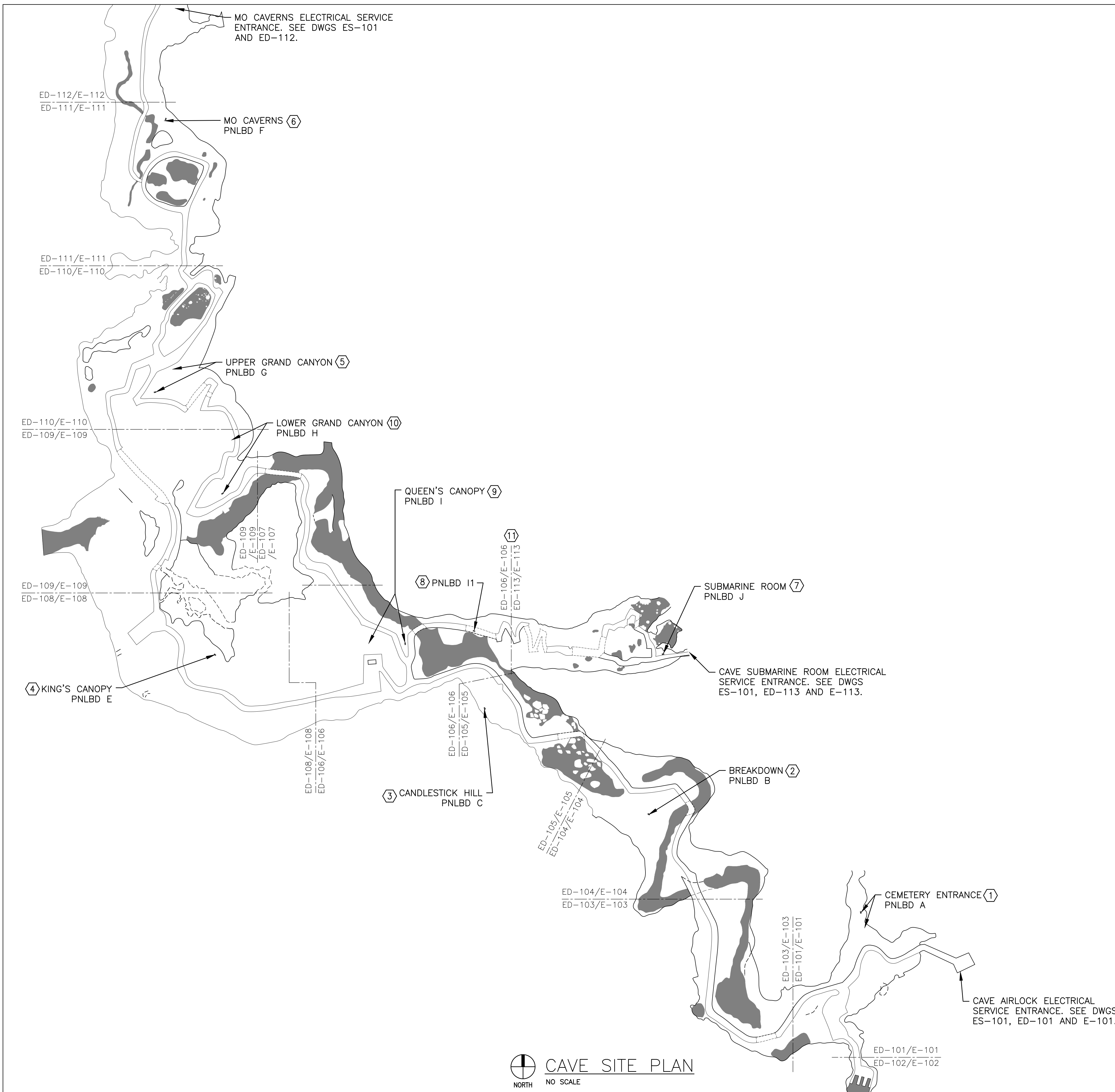
- 3"GRC-3/0 AL TRIPLEX & (1) 3PR CABLE. REMOVE 3/0 AL TRIPLEX FROM SE DISC SW ON POLE TO DISC SW INSIDE CAVE. 3PR TELEPHONE CABLE TO REMAIN. SEE DWG ED-112.
- REPLACE EXIST CONDUCTORS WITH NEW 3#2/0 & 1#2 GRD IN EXIST 2" PVC CONDUIT.
- CONTRACTOR SHALL PUMP WATER OUT OF SUBMARINE RM, WHEN TEMP OUTSIDE CAVE IS $\geq 40^{\circ}\text{F}$, TO ALLOW ACCESS FOR REMOVAL OF EXIST CONDUCTORS AND INSTALLATION OF NEW TYPE MC CABLE. SEE DWGS ED-113 & E-113.
- PROVIDE 8' HIGH TEMP PLYWOOD WALLS TO PROTECT BLDG WALLS AND DISPLAY CASES.
- PROVIDE PLYWOOD ON FLOOR TO PROTECT FLOOR TILES.



CONTRACTOR ENTRANCE
NORTH NO SCALE



ABOVE GROUND SITE PLAN
NORTH NO SCALE



CAVE SITE PLAN
NORTH NO SCALE

PROJECT GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. PROVIDE A PLAN INDICATING PHASING OF WORK FOR REVIEW AND APPROVAL OF CONSTRUCTION REPRESENTATIVE PRIOR TO COMMENCING WITH ANY WORK.
- C. ALL CABLE ROUTING AND CONNECTIONS MADE TO SURFACES IN THE CAVE SHALL BE COORDINATED WITH AND APPROVED BY THE PARK NATURALIST & CONSTRUCTION REPRESENTATIVE PRIOR TO ROUGH-IN.
- D. ALL METAL DEVICES IN THE CAVE INCLUDING, BUT NOT LIMITED TO, HINGES, LATCHES, SCREWS, MOUNTING PLATES, MOUNTING FRAMES, ETC., SHALL BE TYPE 304 OR 316 STAINLESS STEEL UNLESS OTHERWISE NOTED.
- E. DIMENSIONS INDICATED ARE APPROXIMATE. FIELD VERIFY EXACT DIMENSIONS AND DISTANCES WITH SLOPE OF CAVE AND CAVE FEATURES PRIOR TO INSTALLATION. SCALES INDICATED ON PLAN SHEETS ARE FOR GENERAL INFORMATION ONLY. ACTUAL DISTANCES IN CAVE WILL VARY DUE TO GRADE CHANGES, RESOURCE LAYOUT, AND LIMITATIONS OF CAVE MAP.
- F. PROVIDE NEW TRAIL CABLE CROSSINGS, PER DETAIL 204/E-502, IN ADDITION TO THOSE SHOWN ON DWGS E-101 THRU E-113, IF/AS REQUIRED. COORDINATE EXACT LOCATION OF ALL NEW TRAIL CROSSINGS WITH PARK NATURALIST & CONSTRUCTION REPRESENTATIVE PRIOR TO ROUGH-IN.
- G. BOND ALL METAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO, TRANSFORMERS, PANELBOARDS, MOUNTING SUPPORTS, HANDRAILS, ETC. TO THE ELECTRICAL GROUNDING SYSTEM WITH #6 CU WIRE MINIMUM.
- H. "ABOVE GROUND" SHALL REFER TO INSTALLATIONS OR EQUIPMENT ABOVE THE SURFACE GROUND LEVEL OR IN THE OPEN AIR OF THE CAVE.
- I. PROVIDE COMPRESSION TYPE PIN ADAPTERS TO ACCOMMODATE LARGER WIRE SIZES FOR CONNECTION TO EQUIPMENT WHERE REQUIRED PER SPECIFICATION SECTION 260583.
- J. PROVIDE CABLE IDENTIFICATION FOR ALL CABLE TYPES AT BOTH SIDES OF ALL TRAIL CROSSINGS. CABLE IDENTIFICATION SHALL BE 304 STAINLESS STEEL LABEL CONNECTED WITH 304 STAINLESS STEEL CABLE TIE. PANDUIT MARKER TABS AND CABLE TIES OR APPROVED EQUAL. THE CABLE DESCRIPTION SHALL BE ENGRAVED ON THE LABEL. COORDINATE SIZE OF LABEL WITH PROVIDING MINIMUM OF 24 POINT TEXT HEIGHT.
- K. ALL PWR AND CNTRL CABLES INSTALLED INSIDE THE CAVE SHALL BE PVC COATED TYPE MC CABLE PER SPECIFICATION SECTION 260519.
- L. NEW WIRING SHALL NOT BE RUN IN WATER EXCEPT CABLES FOR LIGHTING FIXTURES LOCATED IN POOLS.
- M. ALL EQUIP, LTG FIXTURE AND PSU LOCATIONS SHALL BE APPROVED BY CAVE NATURALIST & CONSTRUCTION REPRESENTATIVE PRIOR TO ROUGH-IN.
- N. DEMOLITION WORK MAY BE COMPLETED AFTER NEW WORK IN EACH AREA IS COMPLETED OR AFTER ALL WORK IS COMPLETED. WHICHEVER IS MOST EFFICIENT. SEE SPECIFICATION SECTION 011000.

KEY NOTES:

- 1. EXIST PNLBD A TO BE REPLACED WITH NEW PNLBD A IN NEW LOCATION. SEE DWGS ED-101 & E-101.
- 2. EXIST PNLBD B TO BE REMOVED. SEE DWG ED-104.
- 3. EXIST PNLBD C TO BE REPLACE WITH NEW PNLBD B IN EXIST LOCATION. SEE DWGS ED-105 & E-105.
- 4. EXIST PNLBD E TO BE REPLACED WITH NEW PNLBD C IN EXIST LOCATION. SEE DWGS ED-108 & E-108.
- 5. EXIST PNLBD G TO BE REPLACED WITH NEW PNLBD D IN NEW LOCATION. SEE DWGS ED-110 & E-110.
- 6. EXIST PNLBD F TO BE REPLACED WITH NEW PNLBD E IN EXIST LOCATION. SEE DWGS ED-111 & E-111.
- 7. EXIST PNLBD J TO BE REPLACED WITH NEW PNLBD F IN EXIST LOCATION. SEE DWGS ED-113 & E-113.
- 8. EXIST PNLBD I1 TO BE REMOVED. SEE DWG ED-106.
- 9. EXIST PNLBD I TO BE REPLACED WITH NEW PNLBD G IN NEW LOCATION. SEE DWGS ED-106 & E-106.
- 10. EXIST PNLBD H TO BE REPLACED WITH NEW PNLBD H IN NEW LOCATION. SEE DWGS ED-109 & E-109.
- 11. WORK ON DWGS ED-113 & E-113 SHALL BE COMPLETED LAST DUE TO WEATHER ISSUES WITH SUBMARINE ROOM. PROVIDE TEMP POWER CONNECTION FOR NEW PNLBD's G & H FROM NEW PNLBD C.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

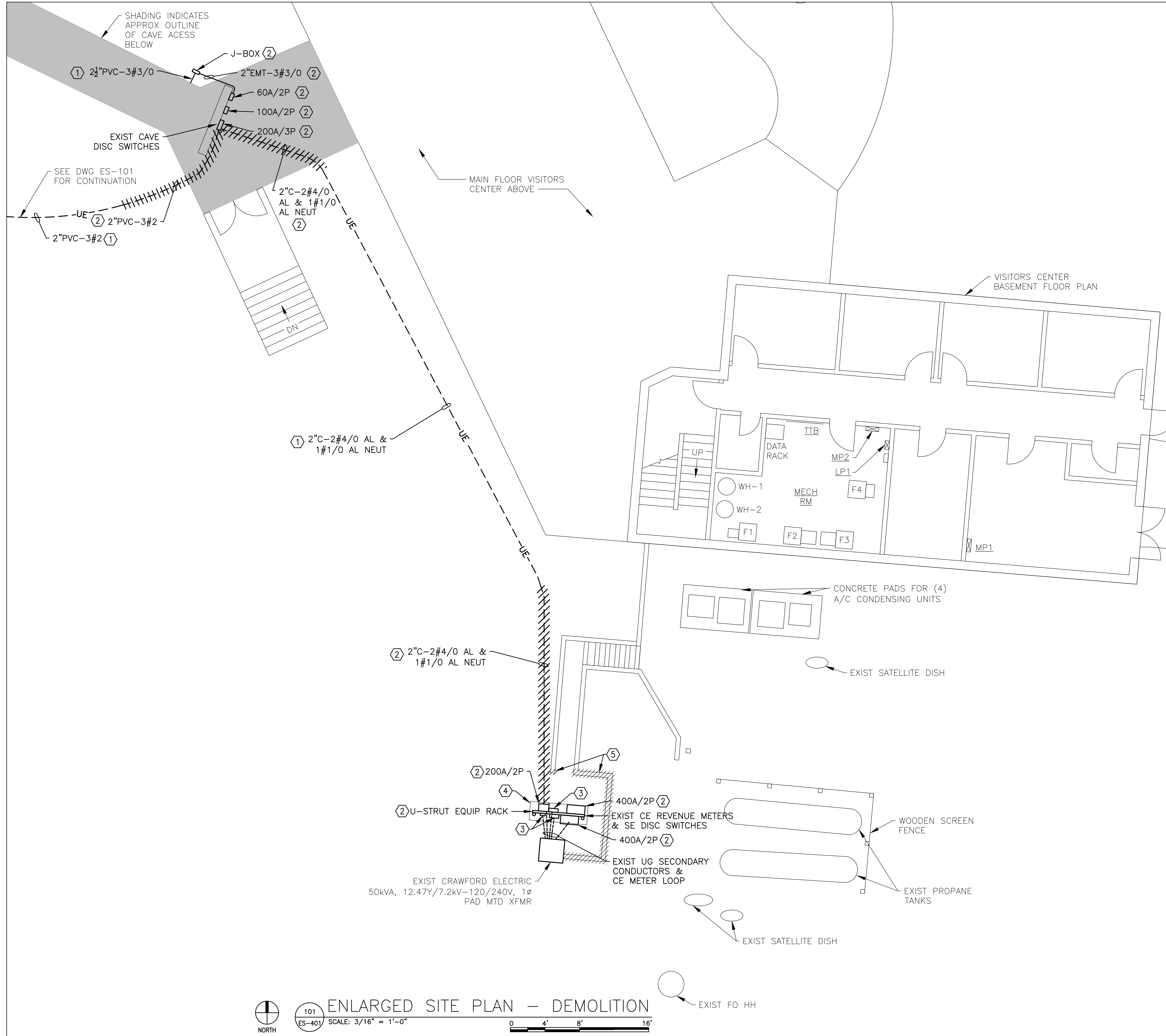
PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-ES-102.DWG
DRAWN BY: KET/MNS
CHECKED BY: BDF
DESIGNED BY: BDF

SHEET TITLE:
CAVE SITE PLAN

SHEET NUMBER:
ES-102
07 OF 50 SHEETS
JUNE 23, 2023



GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. PROVIDE TEMPORARY POWER TO VISITORS CENTER DURING SERVICE EQUIPMENT REPLACEMENT.
- C. CONTACT KURTIS REED, ENGINEERING MGR AT CRAWFORD ELECTRIC, AT 573-732-4415 X160 FOR DISCONNECTION OF EXIST ELECTRIC SERVICE TO THE VISITORS CENTER AND CAVE.

KEY NOTES:

- 1. REMOVE CONDUCTORS FROM EXIST CONDUIT. CONDUIT TO REMAIN.
- 2. EXIST ITEM(S) TO BE REMOVED.
- 3. REMOVE METER BASE/SOCKET AFTER CRAWFORD ELECTRIC REMOVES THEIR REVENUE METER(S).
- 4. REMOVE EXIST CONC PAD.
- 5. REMOVE EXIST PRESSURE TREATED 6X6'S.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-ES-401.DWG
DRAWN BY: K E T / M N S
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**ENLARGED SITE
PLAN -
DEMOLITION**

SHEET NUMBER:

ES-401

08 OF 50 SHEETS
JUNE 23, 2023



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-ED-101.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION A

SHEET NUMBER:

ED-101

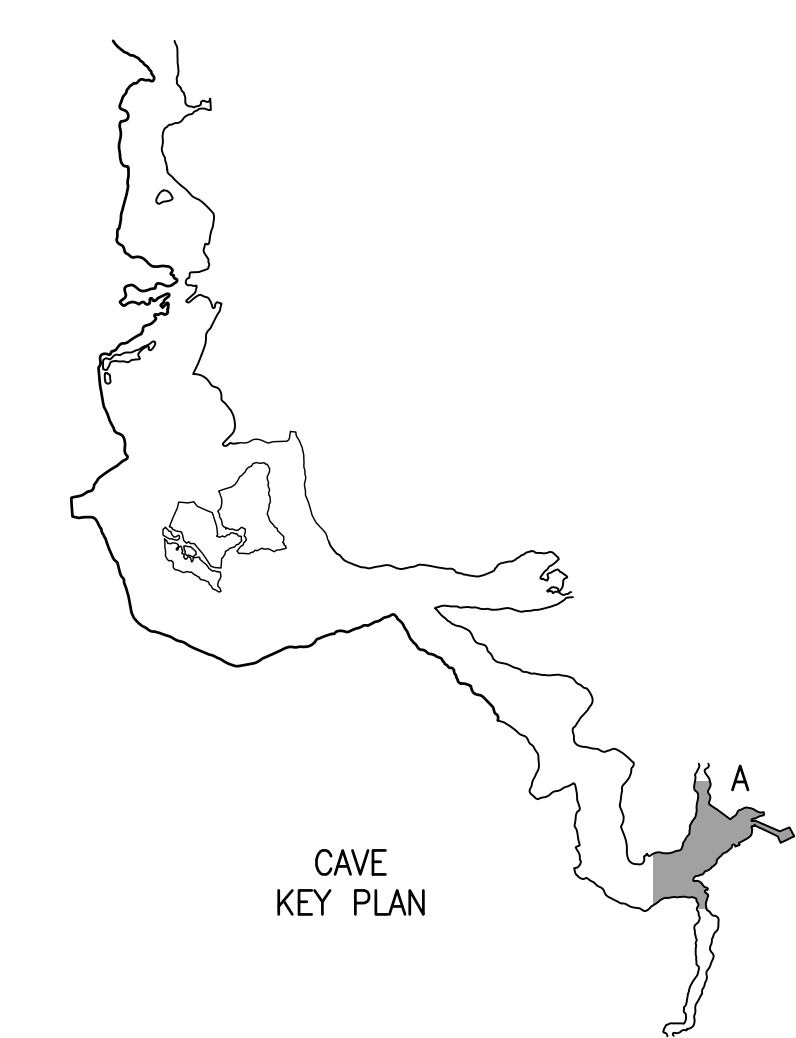
10 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-101 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

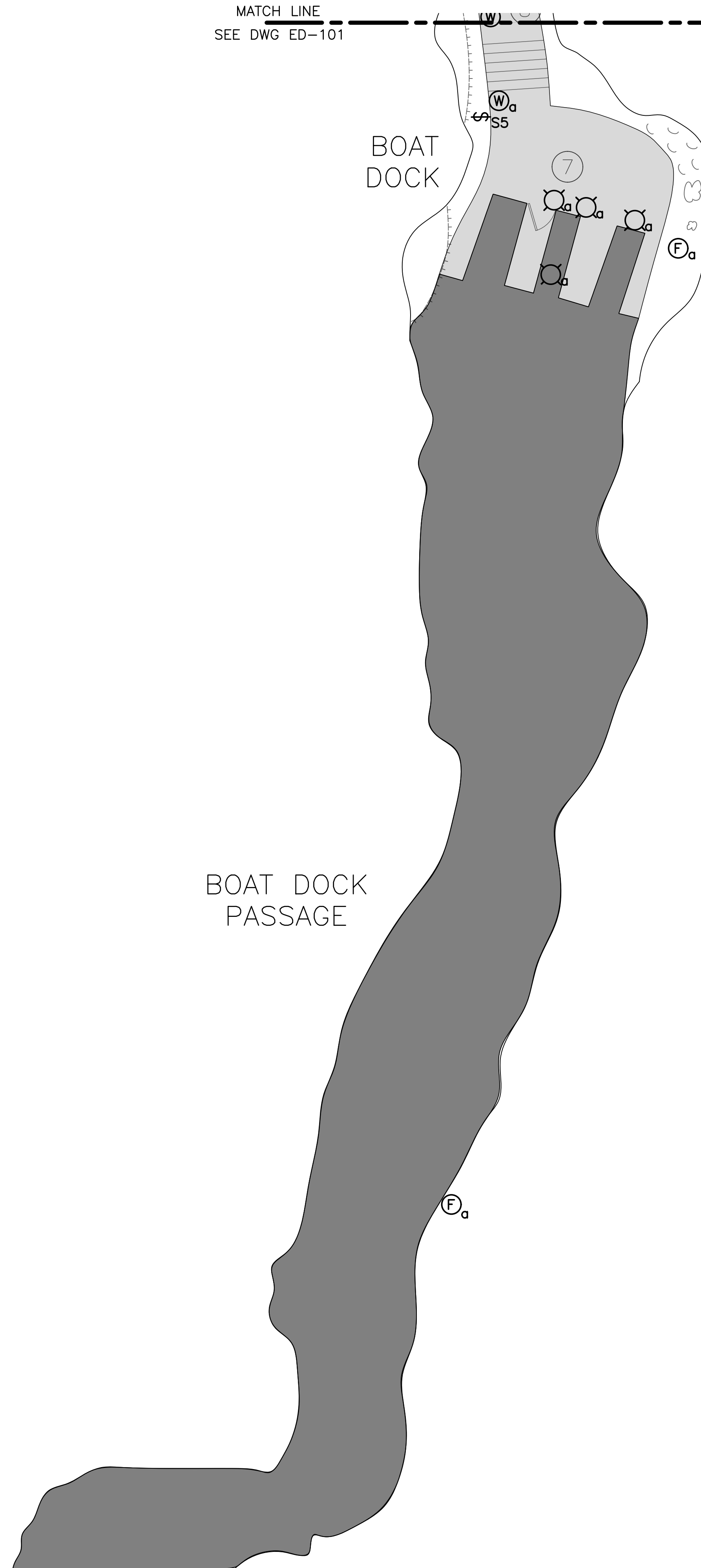
KEY NOTES:

- 1. SERVED FROM AIRLOCK ELECTRICAL SERVICE. SEE DWG ES-101.
- 2. REMOVE EXIST PNLBD, RELAY PNL AND ALL ASSOC PWR, BRANCH CKT AND CNTRL CONDUITS AND CONDUCTORS. SEE DWG E-101 FOR NEW PNLBD LOCATION.
- 3. REMOVE EXIST BATTERY POWERED EMER LTG UNIT, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.
- 4. EXIST ITEM(S) TO BE REMOVED.



ROGERS-SCHMIDT ENGINEERING CO., P.C. © 2023

MATCH LINE
SEE DWG ED-101



GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-102 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____

ISSUE DATE: 06-23-2023

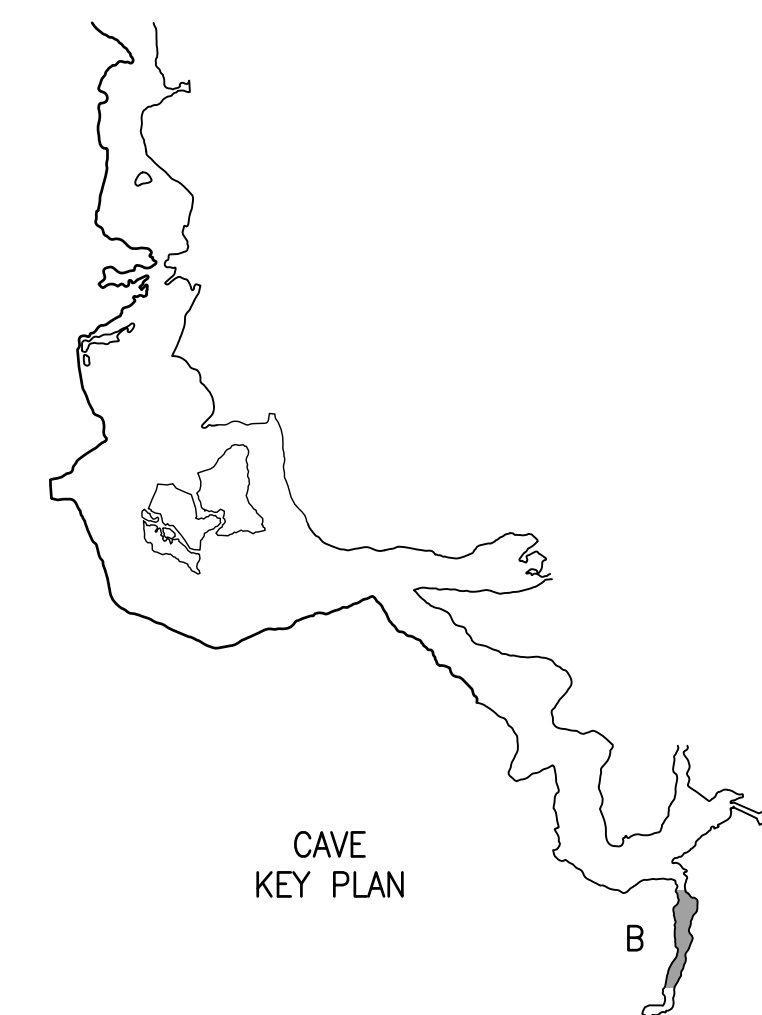
CAD DWG FILE:	X2212-01-5215-7815215013-ED-102.DWG
DRAWN BY:	K E T
CHECKED BY:	B D F
DESIGNED BY:	B D F

SHEET TITLE:
**CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION B**

SHEET NUMBER:

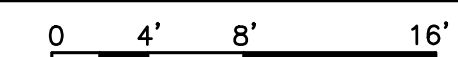
ED-102

11 OF 50 SHEETS
JUNE 23, 2023

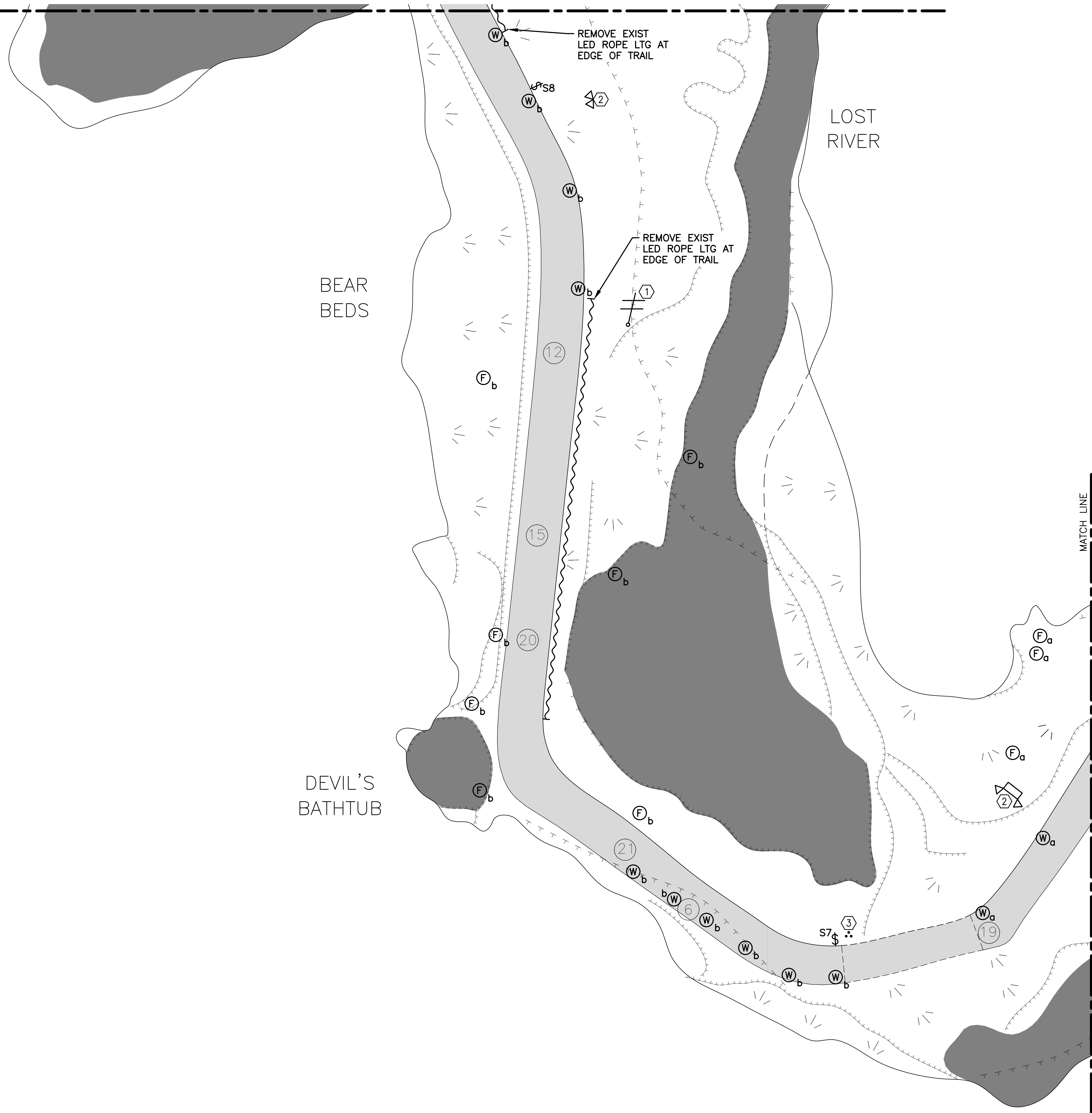


CAVE ELECTRICAL DEMOLITION PLAN - SECTION B

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



MATCH LINE
SEE DWG ED-104



GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-103 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

KEY NOTES:

- 1. EXIST RADIO REPEATERS/ANTENNAS AND ASSOC COAX CABLES TO SOURCE/DESTINATION ARE TO REMAIN.
- 2. REMOVE EXIST BATTERY POWERED EMER LTG UNIT REMOTE HEADS, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.
- 3. REMOVE ABAND RADIO ANTENNA TRIPOD.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-ED-103.DWG
DRAWN BY: KET/MNS
CHECKED BY: BDF
DESIGNED BY: BDF

SHEET TITLE:
CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION C

SHEET NUMBER:

ED-103

12 OF 50 SHEETS
JUNE 23, 2023



CAVE ELECTRICAL DEMOLITION PLAN - SECTION C

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





BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-ED-104.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION D

SHEET NUMBER:

ED-104

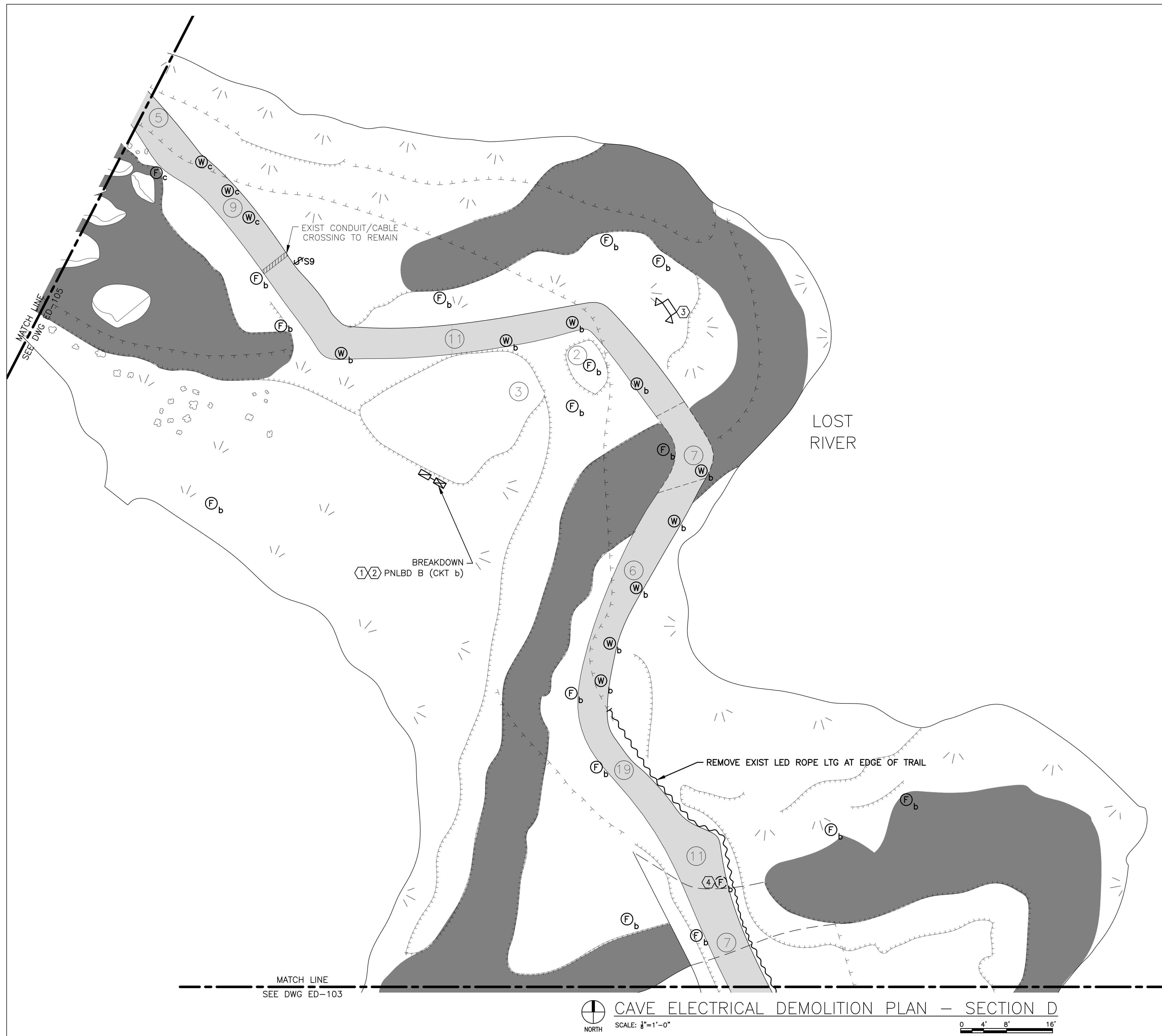
13 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-104 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

KEY NOTES:

- 1. SERVED FROM AIRLOCK ELECTRICAL SERVICE. SEE DWG ES-101.
- 2. REMOVE EXIST PNLBD, RELAY PNL AND ALL ASSOC PWR, BRANCH CKT AND CNTRL CONDUITS AND CONDUCTORS.
- 3. REMOVE EXIST BATTERY POWERED EMER LTG UNIT, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.
- 4. LOCATED UNDER BRIDGE.





BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION
DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-
7815215013-ED-105.DWG
DRAWN BY: KET/MNS
CHECKED BY: BDF
DESIGNED BY: BDF

SHEET TITLE:
**CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION E**

SHEET NUMBER:

ED-105

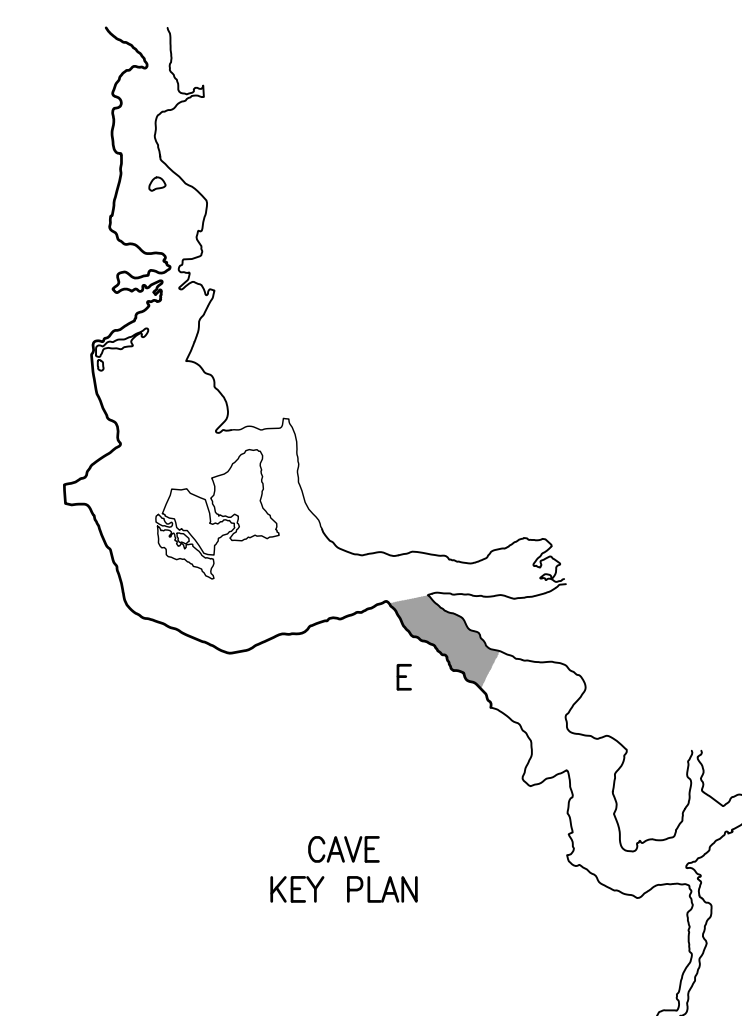
14 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTES:

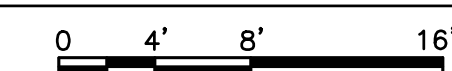
- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-105 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

KEY NOTES:

- 1. SERVED FROM AIRLOCK ELECTRICAL SERVICE. SEE DWG ES-101.
- 2. REMOVE EXIST PNLBD, RELAY PNL AND ALL ASSOC PWR, BRANCH CKT AND CNTRL CONDUITS AND CONDUCTORS. SEE DWG E-105 FOR NEW PNLBD LOCATION.
- 3. REMOVE EXIST BATTERY POWERED EMER LTG UNIT, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.
- 4. LOCATED UNDER BRIDGE.
- 5. REMOVE EXIST RADIO REPEATER/ANTENNA AND ASSOC COAX CABLE TO SOURCE/DESTINATION.
- 6. EXIST 2-WAY RADIO, 12VDC BATTERY AND ALL ASSOC CABLES TO SOURCE/DESTINATION ARE TO REMAIN.



CAVE ELECTRICAL DEMOLITION PLAN - SECTION E
SCALE: 1/8"=1'-0"
NORTH





BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-ED-106.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION F**

SHEET NUMBER:

ED-106

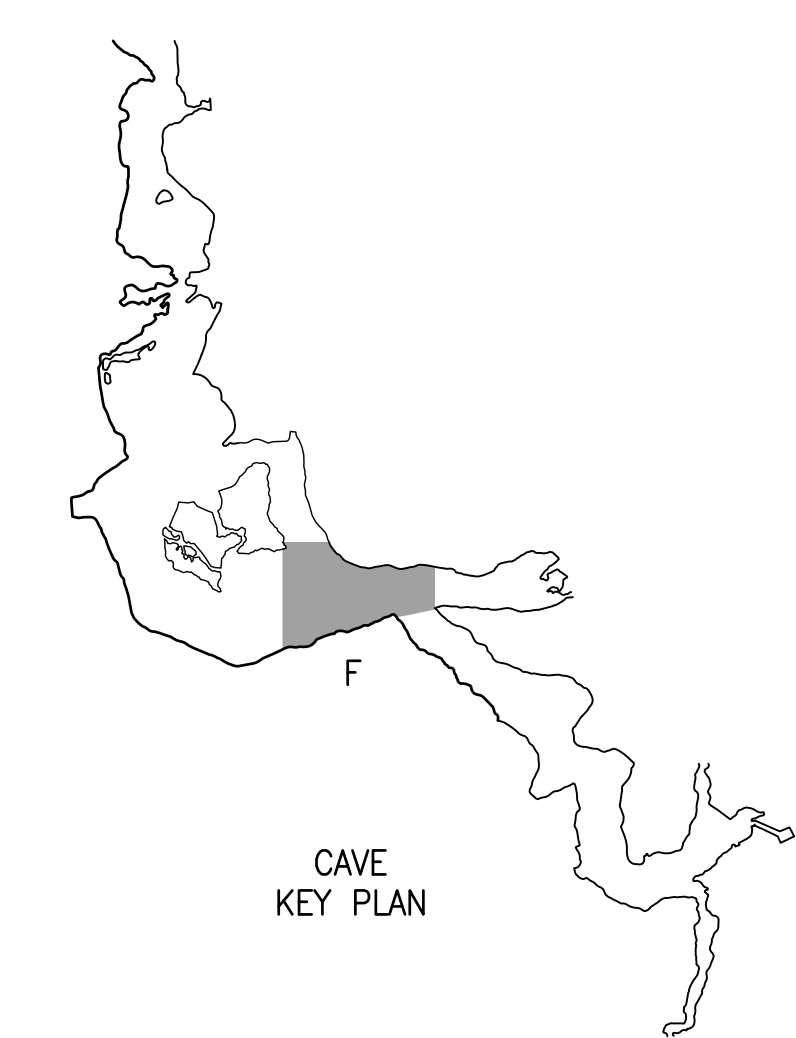
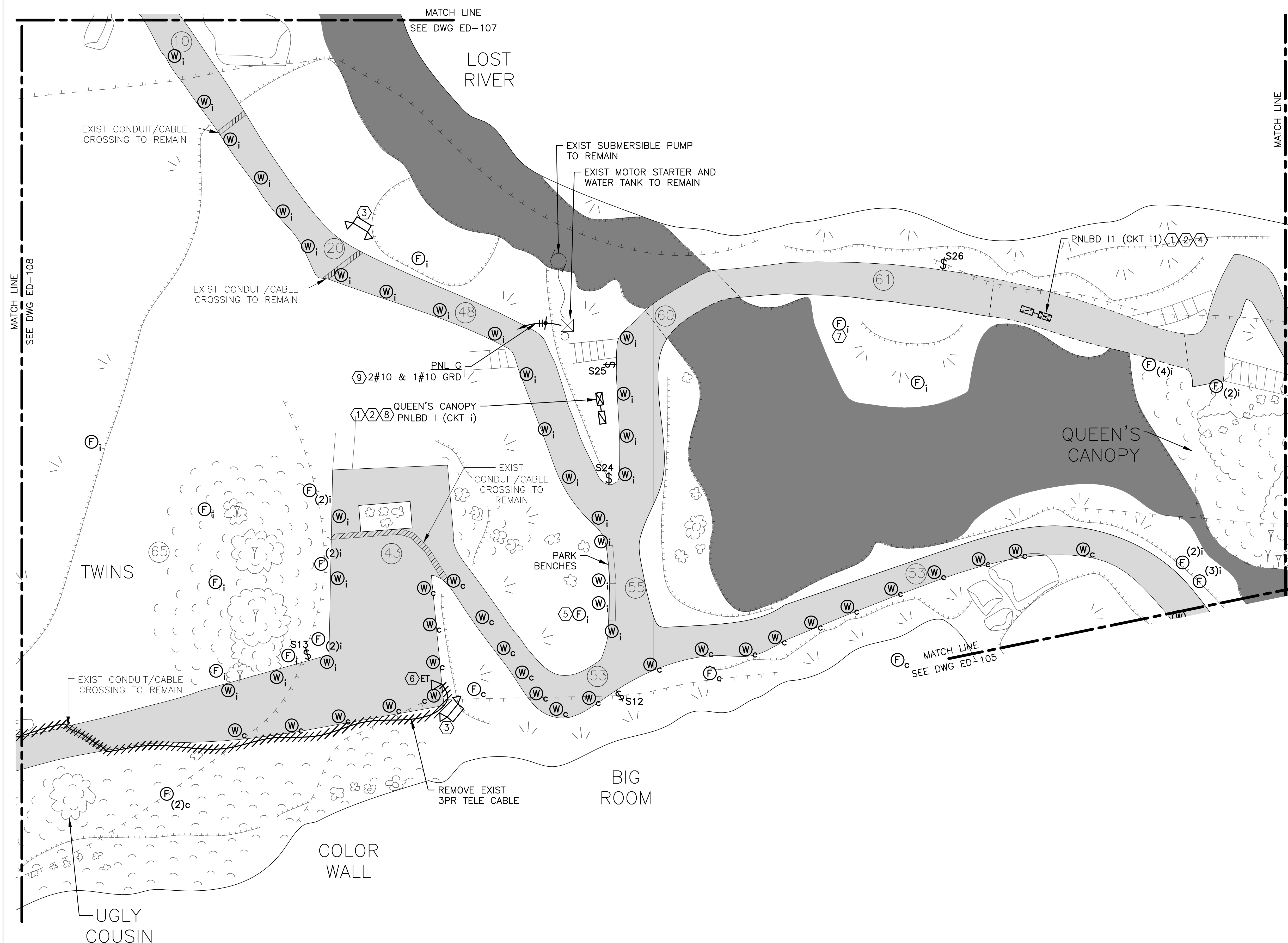
15 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTES:

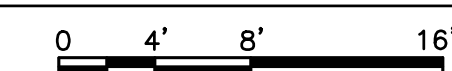
- FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-106 FOR NEW LTG FIXTURES.
- REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

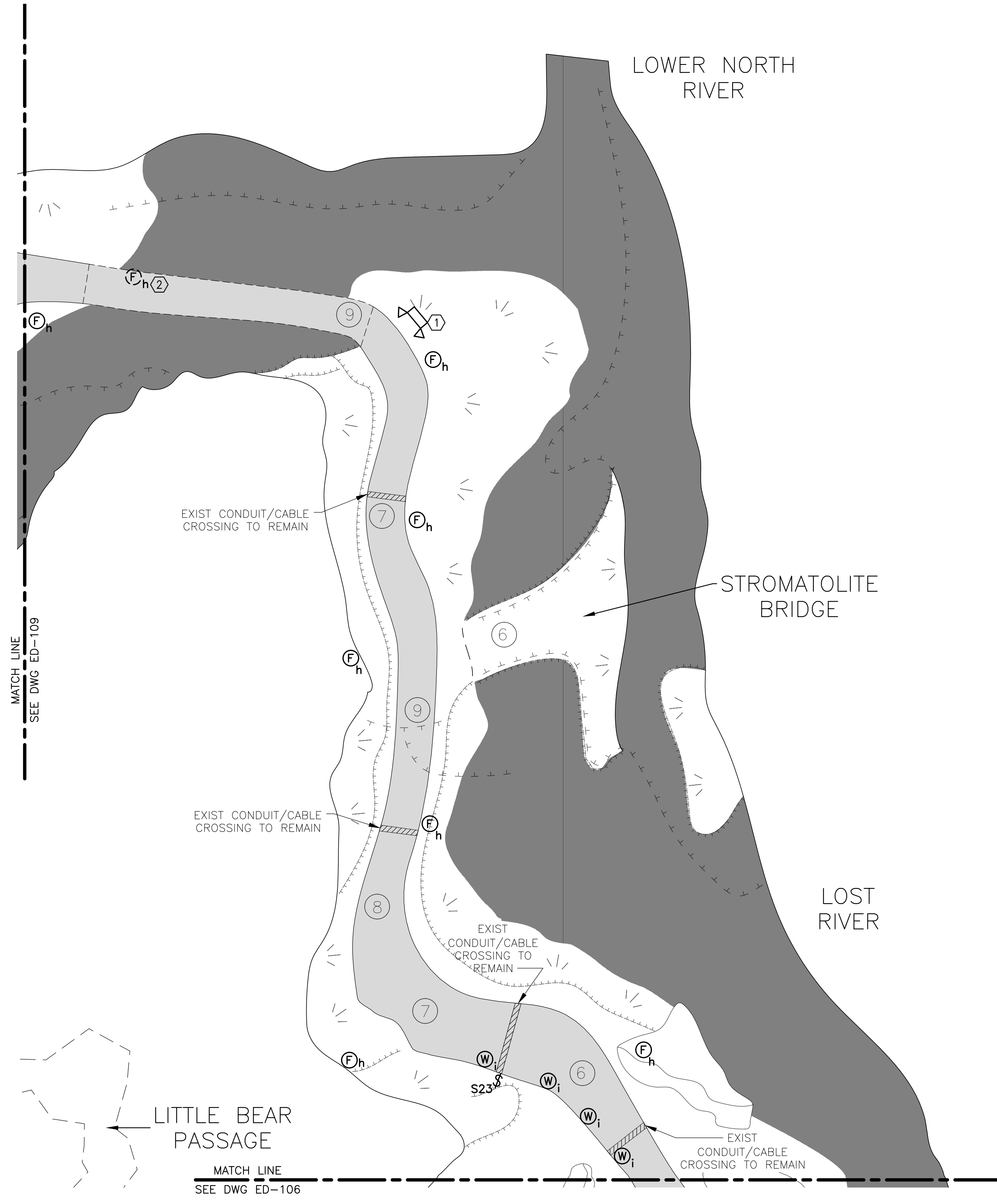
KEY NOTES:

- SERVED FROM SUBMARINE ROOM ELECTRICAL SERVICE. SEE DWG ES-101.
- REMOVE EXIST PNLBD, RELAY PNL AND ALL ASSOC PWR, BRANCH CKT AND CNTRL CONDUITS AND CONDUCTORS.
- REMOVE EXIST BATTERY POWERED EMER LTG UNIT, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.
- LOCATED UNDER BRIDGE.
- REMOVE POST LIGHT AND ASSOC BRANCH CKT BACK TO SOURCE PNLBD.
- REMOVE EXIST EMERGENCY TELEPHONE, INCL SUPPORT POST.
- EXIST CONCRETE BASE TO BE REMOVED AS PART OF LIGHT SHIELD DEMOLITION.
- SEE DWG E-106 FOR NEW PNLBD LOCATION.
- EXIST TO BE REMOVED.



CAVE ELECTRICAL DEMOLITION PLAN - SECTION F
SCALE: 1/8"=1'-0"
NORTH





GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-107 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

KEY NOTES:

- 1. REMOVE EXIST BATTERY POWERED EMER LTG UNIT, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.
- 2. LOCATED UNDER BRIDGE.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

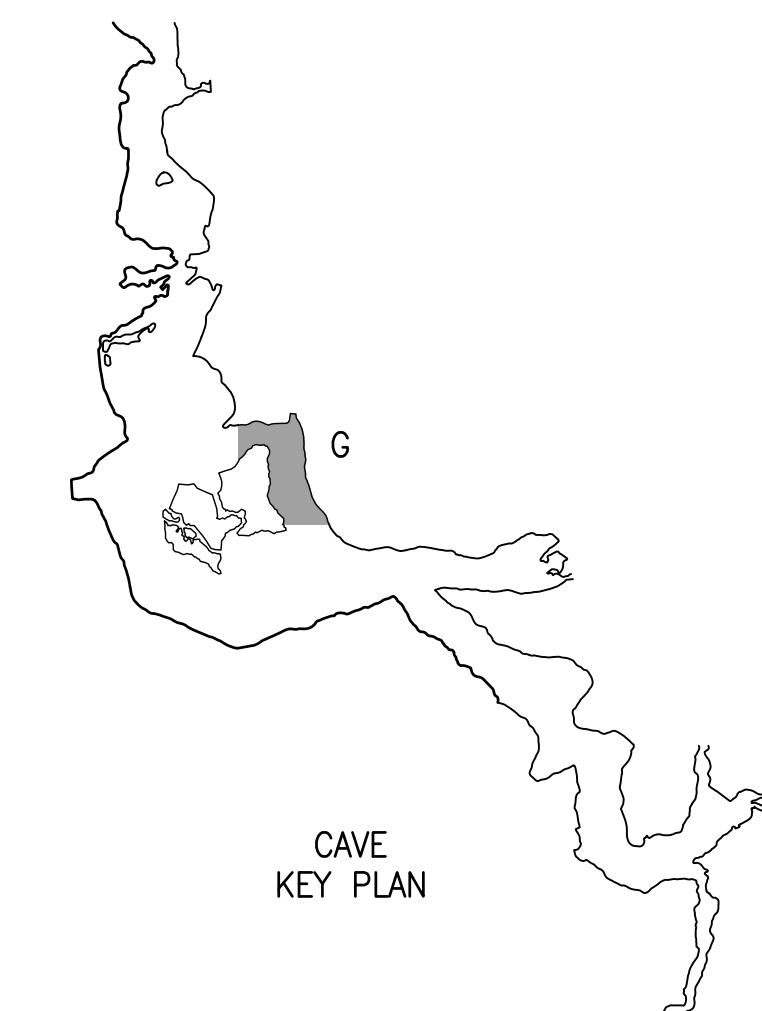
CAD DWG FILE: X2212-01-5215-7815215013-ED-107.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION G

SHEET NUMBER:

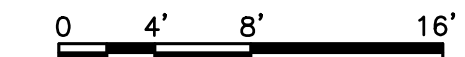
ED-107

16 OF 50 SHEETS
JUNE 23, 2023



CAVE ELECTRICAL DEMOLITION PLAN - SECTION G

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



MATCH LINE
SEE DWG ED-109

REMOVE EXIST
3PR TELE CABLE

BIG BEAR
PASSAGE

LITTLE BEAR
PASSAGE

LOWER KING'S
CANOPY
OVERLOOK

BIG
ROOM

FORMATION
LEDGE

KING'S CANOPY
PNLBD E (CKT e) 1X2

TRAIL FOR MAINT USE ONLY

EXIST CONDUIT/CABLE
CROSSING TO REMAIN

REMOVE EXIST
3PR TELE CABLE

OLD MO
CAVERNS ROCK
WALL BOUNDARY

MATCH LINE
SEE DWG ED-106

GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-108 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

KEY NOTES:

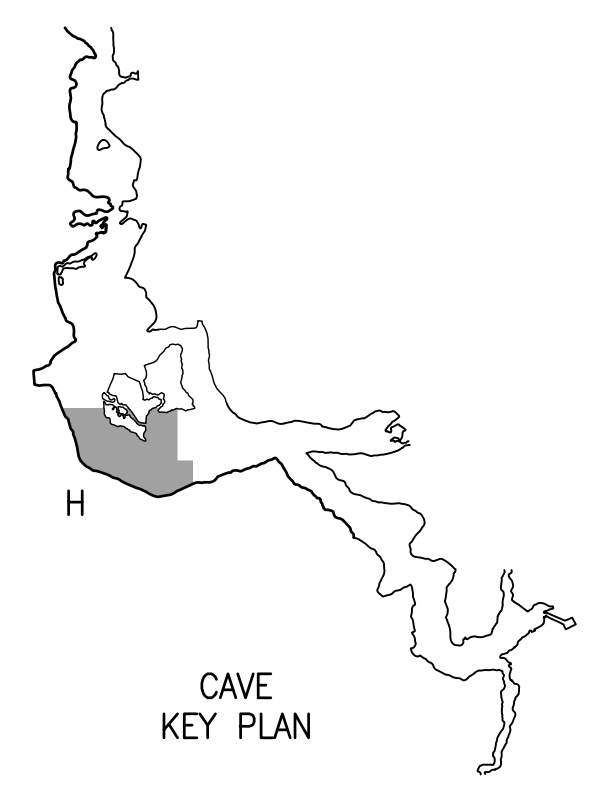
- 1. SERVED FROM MISSOURI CAVERNS ELECTRICAL SERVICE. SEE DWG ES-101.
- 2. REMOVE EXIST PNLBD, RELAY PNL AND ALL ASSOC PWR, BRANCH CKT AND CNTRL CONDUITS AND CONDUCTORS. SEE DWG E-108 FOR NEW PNLBD LOCATION.
- 3. REMOVE EXIST BATTERY POWERED EMER LTG UNIT, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.



CAVE ELECTRICAL DEMOLITION PLAN - SECTION H

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

0 4' 8' 16'



STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-7815215013-ED-108.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION H**

SHEET NUMBER:
ED-108

17 OF 50 SHEETS
JUNE 23, 2023

MATCH LINE
SEE DWG ED-110

FORMATION
BALCONY

DEVIL'S
SHOWER

UPPER KING'S
CANOPY OVERLOOK

KING'S
CANOPY

LOST
RIVER

DAWN
CANYON

SLUMP PIT
(aka GRAND
CANYON)

CARROT
GALLERY

BIG BEAR
PASSAGE

LITTLE BEAR
DOME

LITTLE BEAR
PASSAGE

GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-109 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

KEY NOTES:

- 1. SERVED FROM MISSOURI CAVERNS ELECTRICAL SERVICE. SEE DWG ES-101.
- 2. REMOVE EXIST PNLBD, RELAY PNL AND ALL ASSOC PWR, BRANCH CKT AND CNTRL CONDUITS AND CONDUCTORS. SEE DWG E-109 FOR NEW PNLBD LOCATION.
- 3. REMOVE EXIST BATTERY POWERED EMER LTG UNIT/REMOTE HEADS, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.
- 4. COORDINATE WITH PARK NATURALIST FOR ACCESS TO THIS LTG FIXTURE.

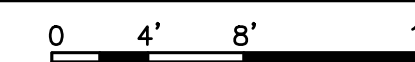
MATCH LINE
SEE DWG ED-107

MATCH LINE
SEE DWG ED-108



CAVE ELECTRICAL DEMOLITION PLAN - SECTION I

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



STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

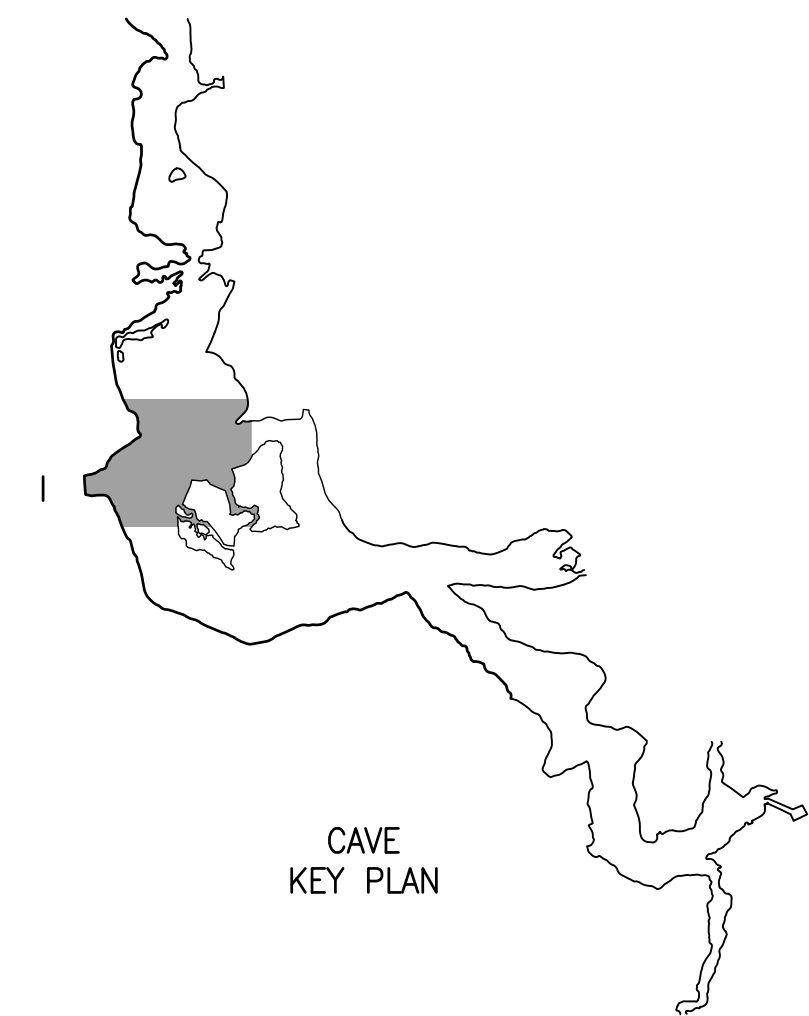
ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-ED-109.DWG
DRAWN BY: KET
CHECKED BY: BDF
DESIGNED BY: BDF

SHEET TITLE:
CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION I

SHEET NUMBER:

ED-109

18 OF 50 SHEETS
JUNE 23, 2023



MATCH LINE
SEE DWG ED-111

GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-110 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS, UNLESS NOTED OTHERWISE, AND SUBJECT TO APPROVAL BY PARK NATURALIST.

KEY NOTES:

- 1. SERVED FROM MISSOURI CAVERNS ELECTRICAL SERVICE. SEE DWG ES-101.
- 2. REMOVE EXIST PNLBD, RELAY PNL AND ALL ASSOC PWR, BRANCH CKT AND CNTRL CONDUITS AND CONDUCTORS. SEE DWG E-110 FOR NEW PNLBD LOCATION.
- 3. REMOVE EXIST BATTERY POWERED EMER LTG UNIT/REMOTE HEADS, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.
- 4. REMOVE EXIST EMERGENCY TELEPHONE, INCL SUPPORT POST.
- 5. THIS LTG FIXTURE AND METAL SHLD TO BE RETURNED TO OWNER. DO NOT DISTURB DEPOSITS ON TOP OF SHLD.
- 6. REMOVE EXIST CONC PEDESTALS TO 6" BG. ONE IS APPROX 12"x6"x24"AG & ONE IS APPROX 8"x6"x12"AG.
- 7. RETURN WALKWAY LTG FIXTURE TO OWNER.
- 8. EXIST ROCK LIGHT SHIELD TO REMAIN.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION
DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

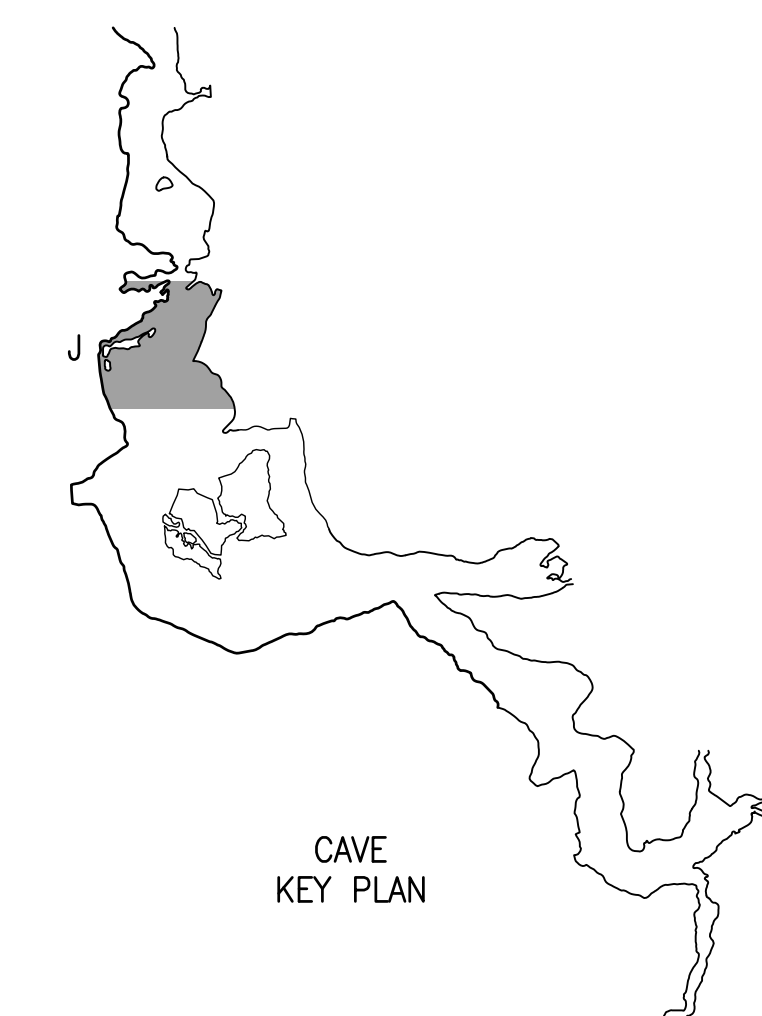
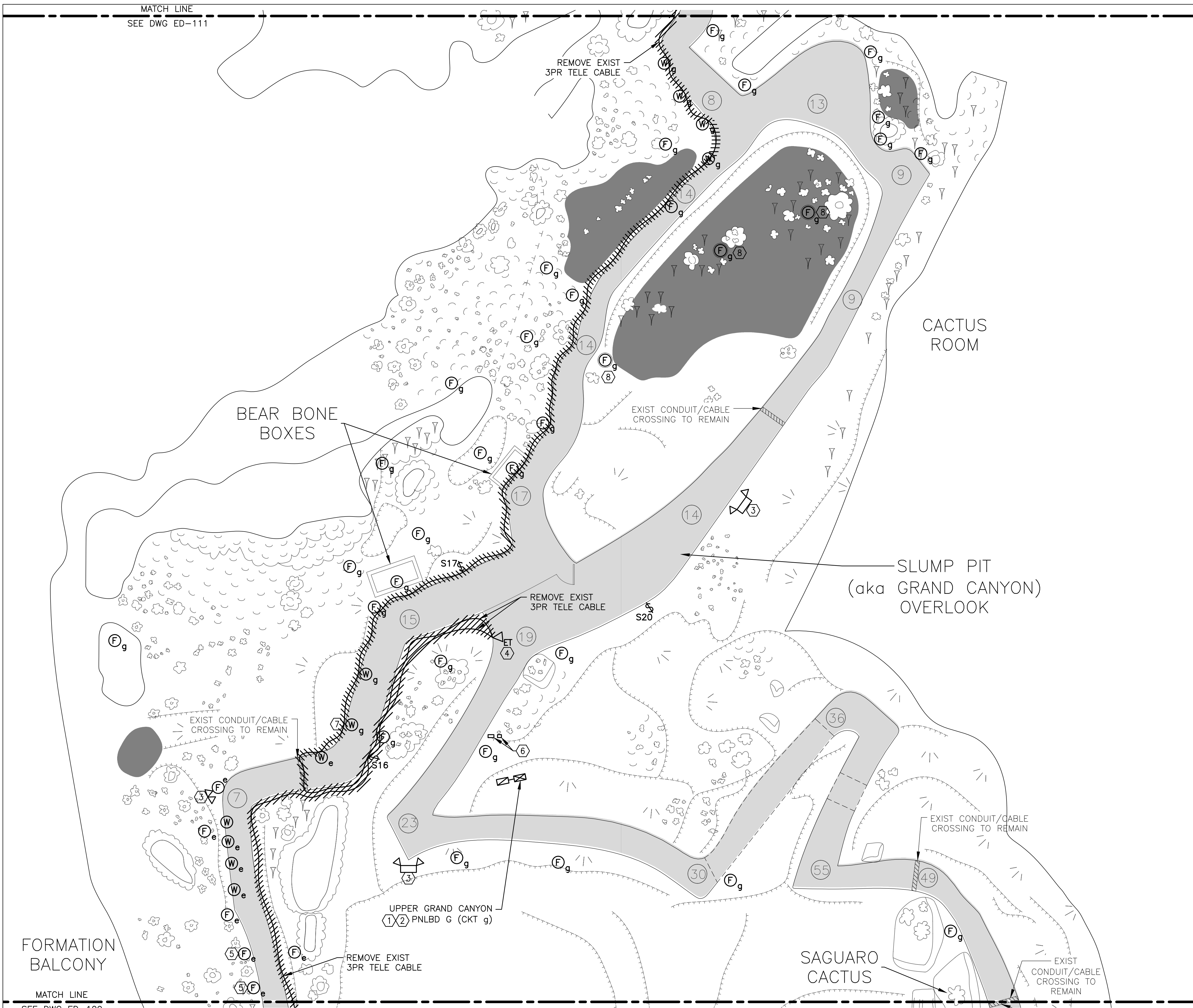
ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-ED-110.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION J**

SHEET NUMBER:

ED-110

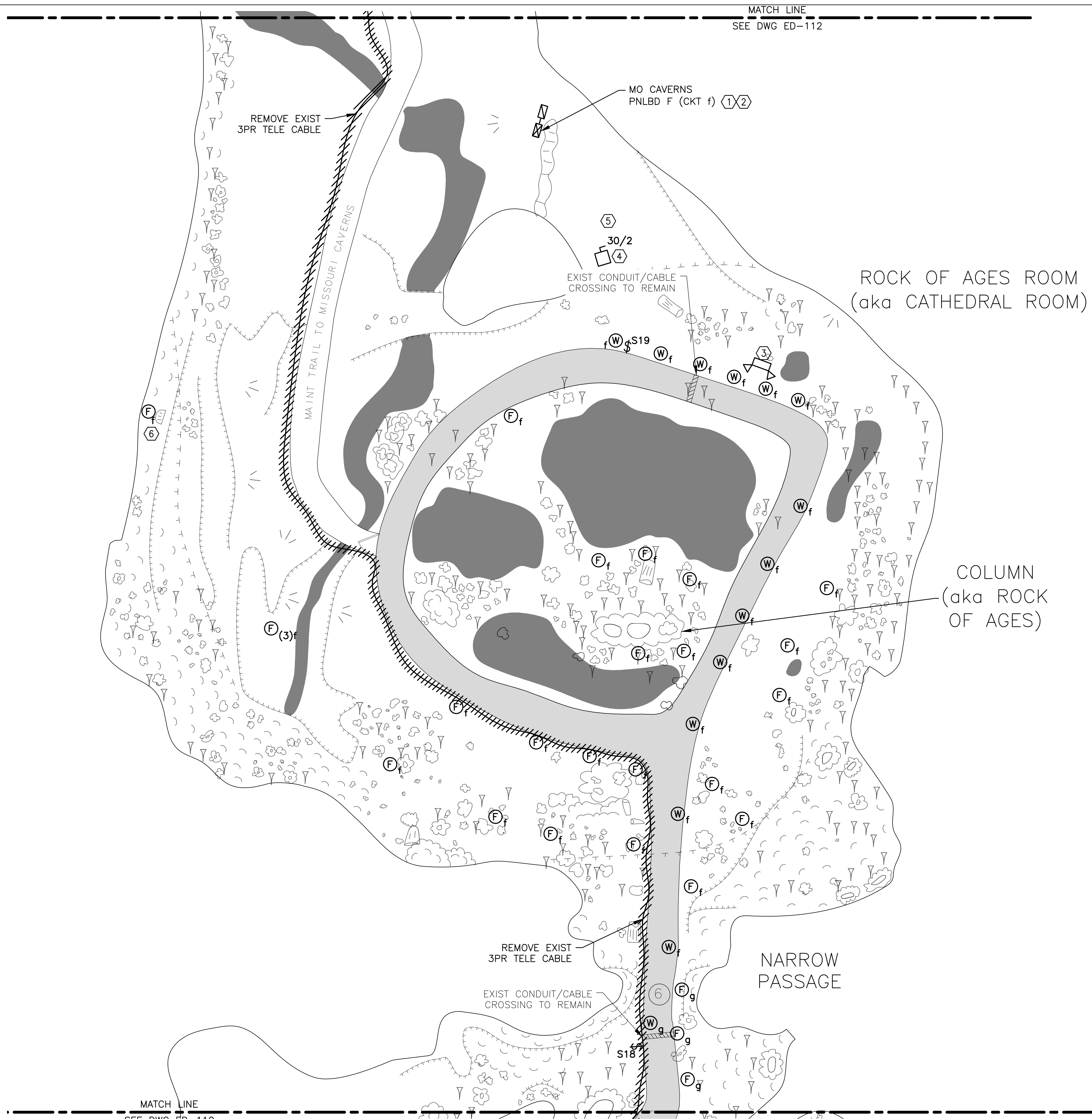
19 OF 50 SHEETS
JUNE 23, 2023



CAVE ELECTRICAL DEMOLITION PLAN - SECTION J
NORTH SCALE: 1/8"=1'-0"
0 4' 8' 16'

ROGERS-SCHMIDT ENGINEERING CO., P.C. © 2023

MATCH LINE
SEE DWG ED-109



GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-111 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

KEY NOTES:

1. SERVED FROM MISSOURI CAVERNS ELECTRICAL SERVICE. SEE DWG ES-101.
2. REMOVE EXIST PNLBD, RELAY PNL AND ALL ASSOC PWR, BRANCH CKT AND CNTRL CONDUITS AND CONDUCTORS. SEE DWG E-111 FOR NEW PNLBD LOCATION.
3. REMOVE EXIST BATTERY POWERED EMER LTG UNIT, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.
4. REMOVE EXIST DISC SW AND ASSOC CONC PEDESTAL.
5. REMOVE EXIST POTHEAD FITTING AND RETURN TO OWNER.
6. EXIST LIGHT SHIELD TO REMAIN.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

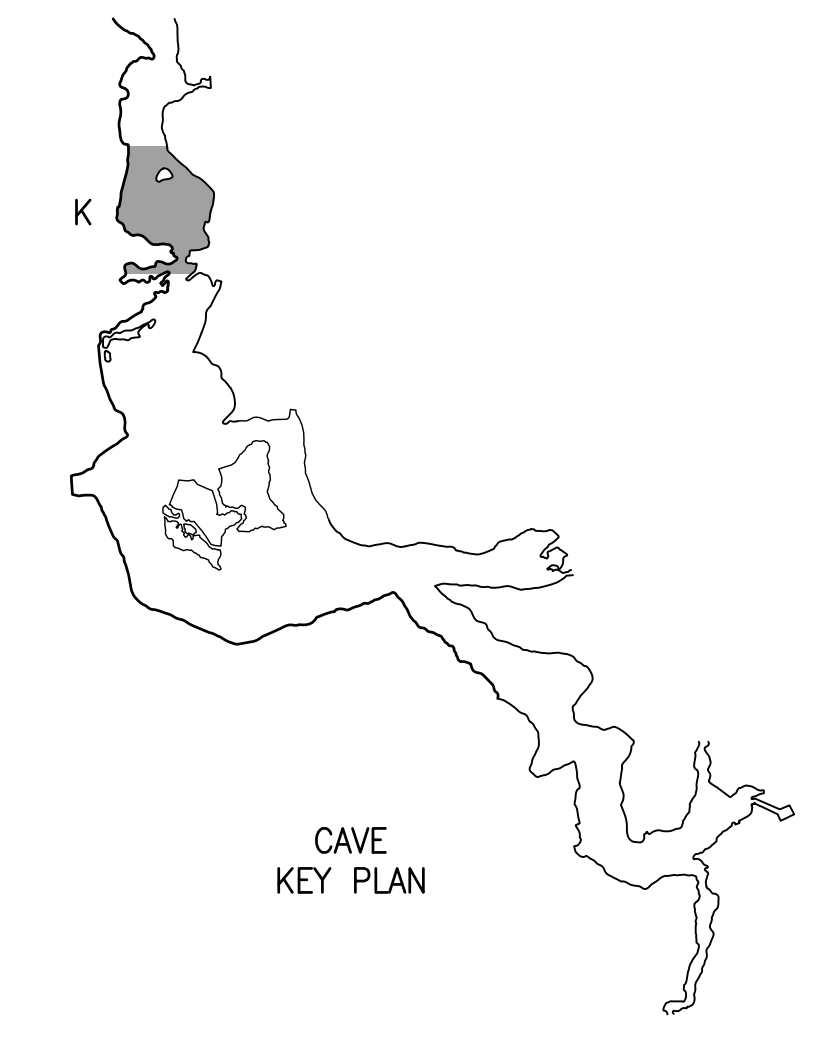
REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-ED-111.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION K**

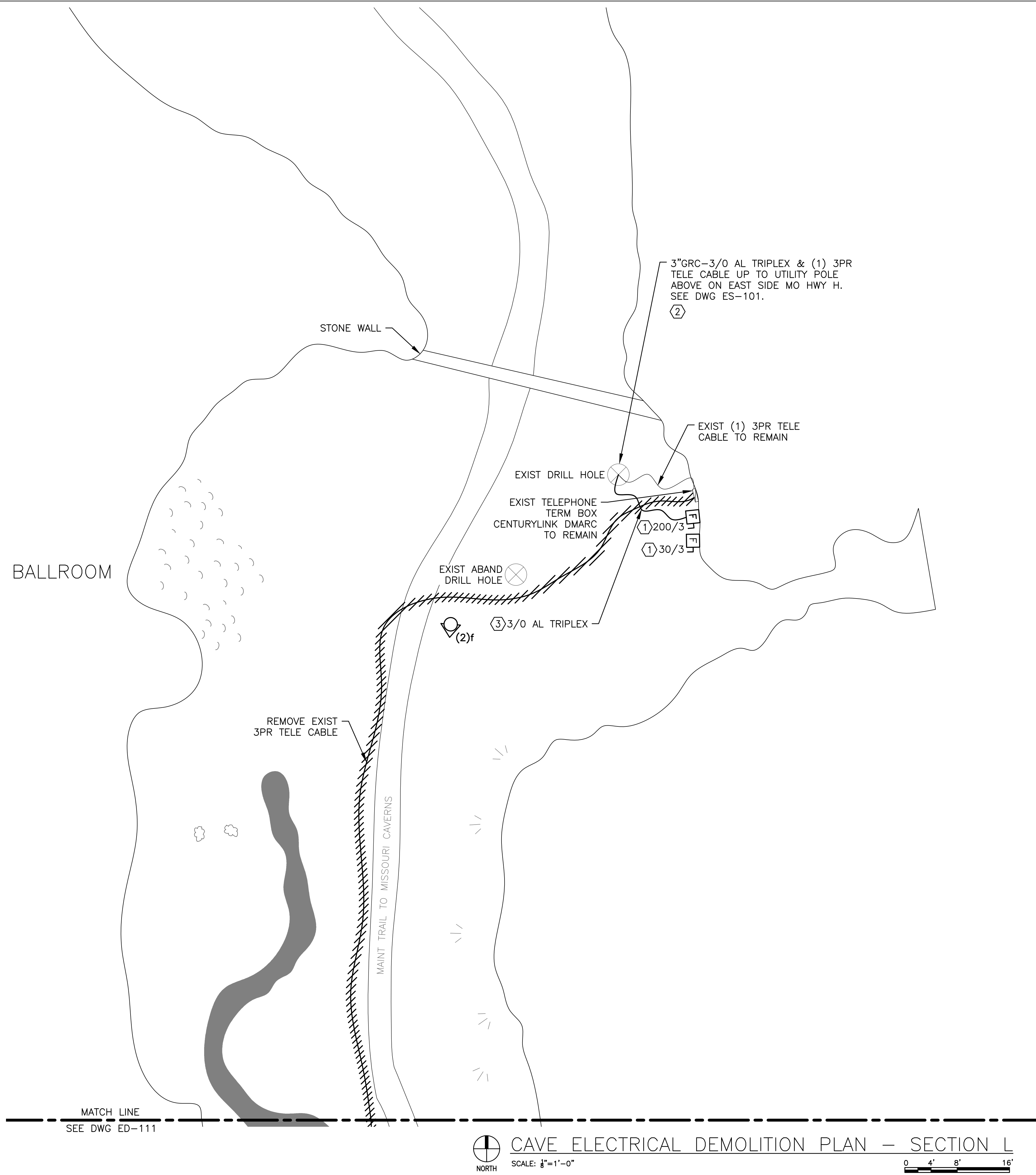
SHEET NUMBER:
ED-111

20 OF 50 SHEETS
JUNE 23, 2023



MATCH LINE
SEE DWG ED-110

MATCH LINE
SEE DWG ED-112



GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-112 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS SUBJECT TO APPROVAL BY PARK NATURALIST.

KEY NOTES:

- 1. REMOVE ABAND DISC SW AND CONC PEDESTAL.
- 2. REMOVE 3/0 AL TRIPLEX UP TO SE DISC SW ON POLE ABOVE. (1) 3PR TELEPHONE CABLE TO REMAIN.
- 3. EXIST ITEM(S) TO BE REMOVED.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-ED-112.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION L**

SHEET NUMBER:
ED-112

21 OF 50 SHEETS
JUNE 23, 2023



ROGERS-SCHMIDT ENGINEERING CO., P.C. © 2023

MATCH LINE
SEE DWG ED-111

CAVE ELECTRICAL DEMOLITION PLAN - SECTION L
NORTH SCALE: 1/8"=1'-0"
0 4' 8' 16'



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. REMOVE ALL EXIST LTG FIXTURES, INCL ALL ASSOC WIRING & LTG SW STATIONS, UNLESS NOTED OTHERWISE. SEE DWG E-113 FOR NEW LTG FIXTURES.
- C. REMOVE ALL EXPOSED CONDUCTORS & CABLES FROM WITHIN THE CAVE INCLUDING THOSE LYING IN POOLS OF WATER AND THE LOST RIVER. BURIED WIRING SHALL BE CUT OFF 6" BG AND ABANDONED IN PLACE.
- D. REMOVE ALL EXIST LIGHT SHIELDS, UNLESS OTHERWISE NOTED, AND SUBJECT TO APPROVAL BY PARK NATURALIST.

KEY NOTES:

- 1. #2 THW CONDUCTORS SPliced TO 1/0 TYPE RHH-RHW TO PANEL J AND CONTINUING ON TO PANEL I1 ON DWG ED-106. SEE DWG ES-101.
- 2. REMOVE EXIST PNLBD, RELAY PNL AND ALL ASSOC PWR, BRANCH CKT AND CNTRL CONDUITS AND CONDUCTORS. SEE DWG E-113 FOR NEW PNLBD LOCATION.
- 3. REMOVE EXIST BATTERY POWERED EMER LTG UNIT/REMOTE HEADS, INCL ASSOC SUPPORT POST, CONDUIT, WIRING AND FUSED DISC SW AT SOURCE PNLBD.
- 4. REMOVE 12"x6"x30"L LOOSE CONC BLOCK FROM UNDER ELEVATED WALKWAY.
- 5. CONTRACTOR SHALL PUMP WATER OUT OF SUBMARINE RM, WHEN TEMP OUTSIDE CAVE IS ≥40°F, TO ALLOW ACCESS TO EXIST CONDUCTORS FOR REMOVAL.
- 6. EXIST LIGHT SHIELD TO REMAIN.
- 7. COORDINATE WITH PARK NATURALIST FOR ACCESS TO THIS LTG FIXTURE.

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

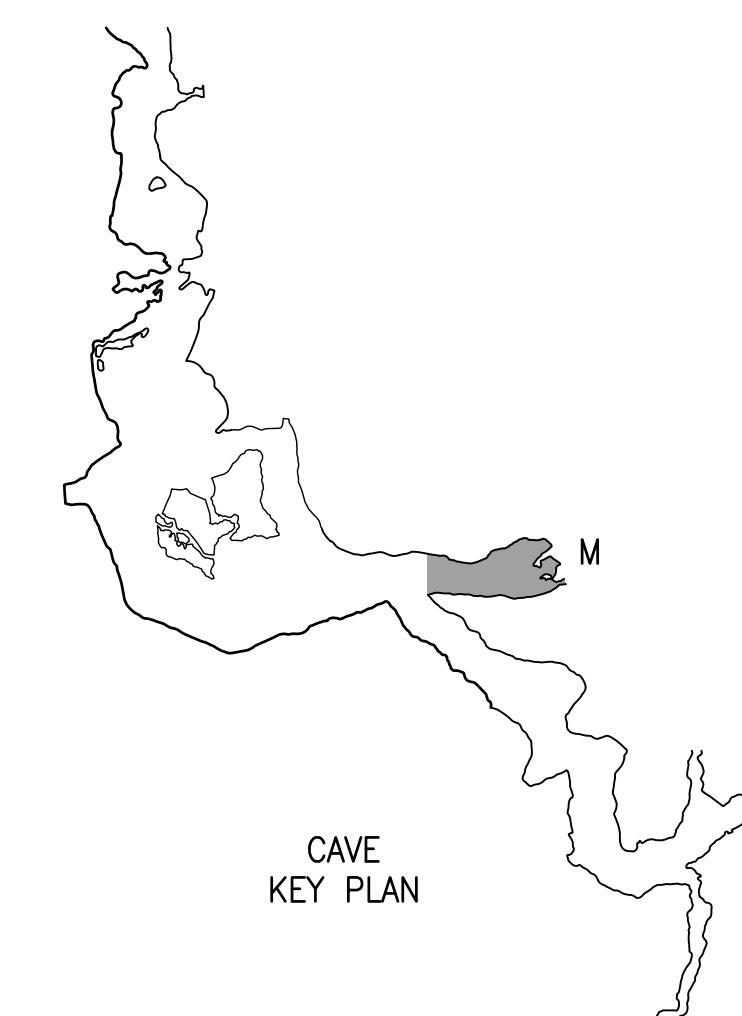
ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-ED-113.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
CAVE ELECTRICAL
DEMOLITION PLAN
- SECTION M

SHEET NUMBER:

ED-113

22 OF 50 SHEETS
JUNE 23, 2023



CAVE ELECTRICAL DEMOLITION PLAN - SECTION M
SCALE: 1/8"=1'-0"
NORTH



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-ED-601.DWG
DRAWN BY: K E T / M N S
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**ONE-LINE
DIAGRAMS (EXIST
CONDITION)**

SHEET NUMBER:

ED-601

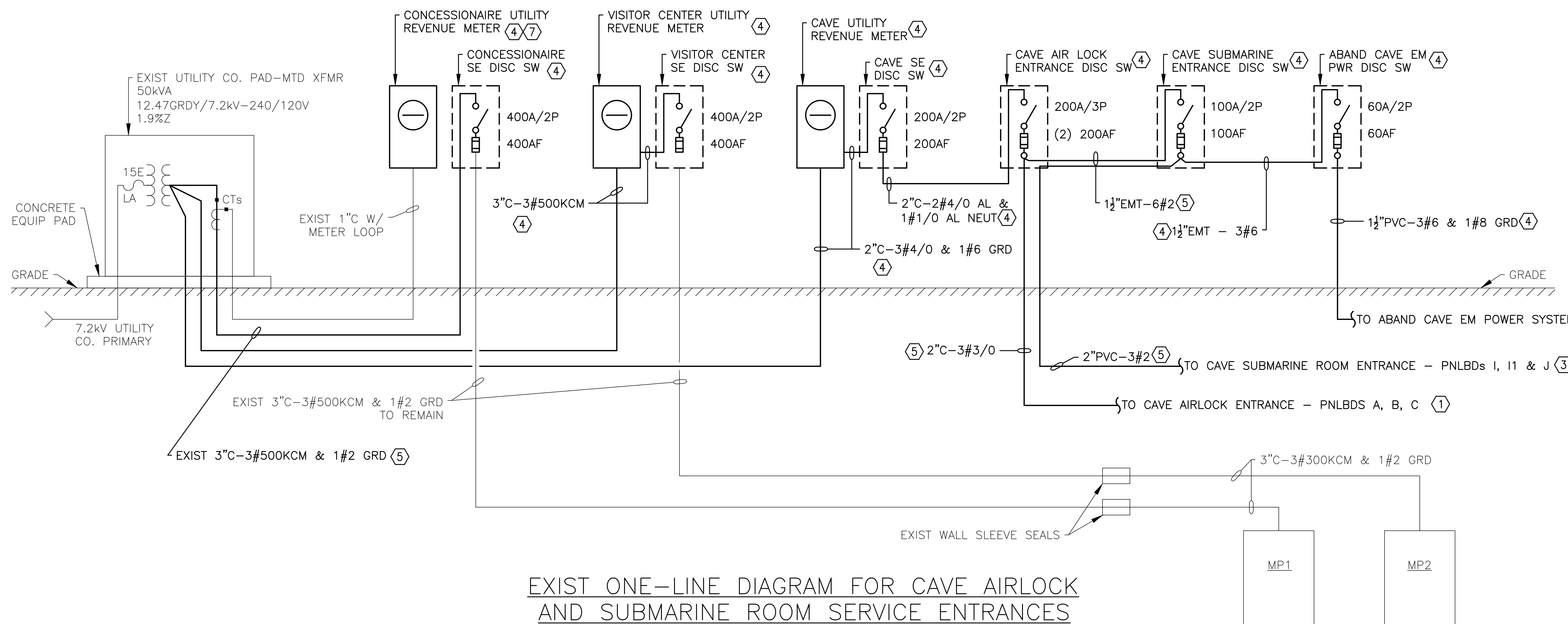
23 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTE:

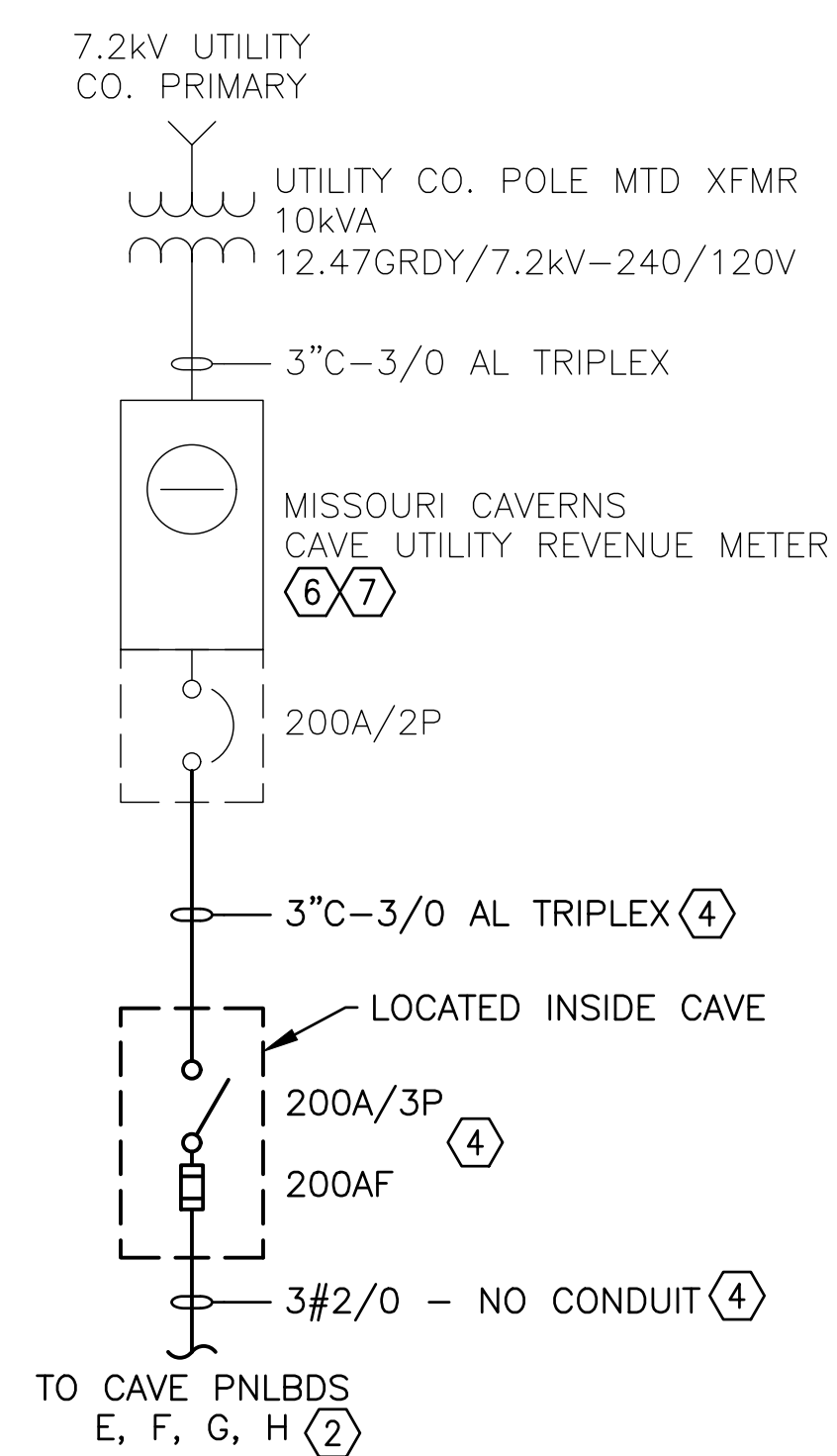
A. ALL CONDUCTORS ARE STRD CU
UNLESS NOTED OTHERWISE.

KEY NOTES:

1. SEE DWG ED-602 FOR CONTINUATION.
2. SEE DWG ED-603 FOR CONTINUATION.
3. SEE DWG ED-604 FOR CONTINUATION.
4. EXIST ITEM(S) TO BE REMOVED.
5. REMOVE EXIST CONDUCTORS. CONDUIT TO REMAIN.
6. CRAWFORD ELECTRIC TO DISC SERVICE ON POLE, REMOVE METER AND INSTALL BLANK OFF AT METER OPENING.
7. COORDINATE THIS WORK WITH KURTIS REED, CRAWFORD ELECTRIC ENGINEERING MGR, AT 573-732-4415 x160.



EXIST ONE-LINE DIAGRAM FOR CAVE AIRLOCK
AND SUBMARINE ROOM SERVICE ENTRANCES



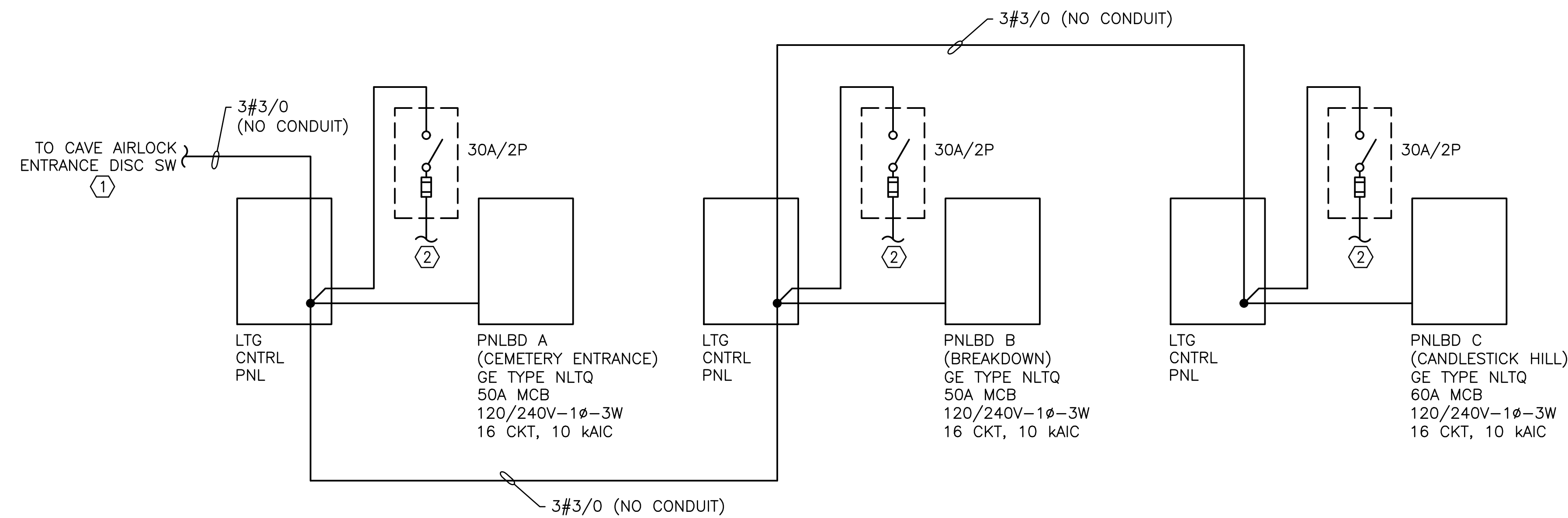
EXIST ONE-LINE DIAGRAM FOR MISSOURI
CAVERNS CAVE SERVICE ENTRANCE

GENERAL NOTES:

- A. ALL CONDUCTORS ARE CU UNLESS NOTED OTHERWISE.
- B. ALL ITEMS SHOWN ON THIS DWG ARE TO BE REMOVED UNLESS NOTED OTHERWISE.

KEY NOTES:

- 1. SEE DWG ED-601 FOR CONTINUATION.
- 2. 2#10 TO EMERG LTG FIXTURES.



EXIST ONE-LINE DIAGRAM FOR CAVE AIRLOCK SERVICE



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-ED-602.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**ONE-LINE
AIRLOCK SERVICE
(EXIST
CONDITION)**

SHEET NUMBER:

ED-602

24 OF 50 SHEETS
JUNE 23, 2023



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-ED-603.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
ONE-LINE MO
CAVERNS
SERVICE (EXIST
CONDITION)

SHEET NUMBER:

ED-603

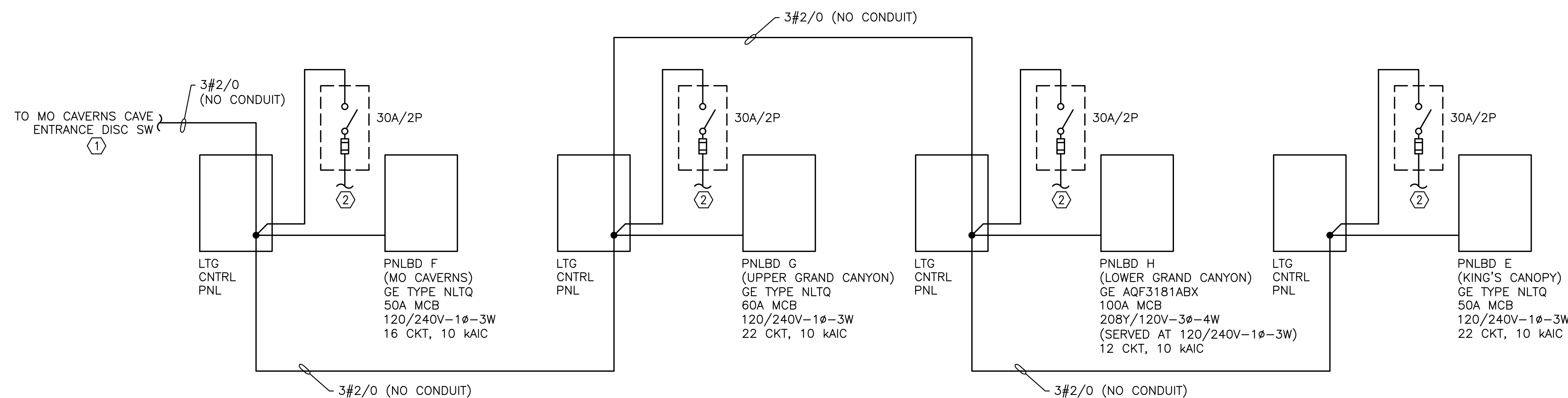
25 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTES:

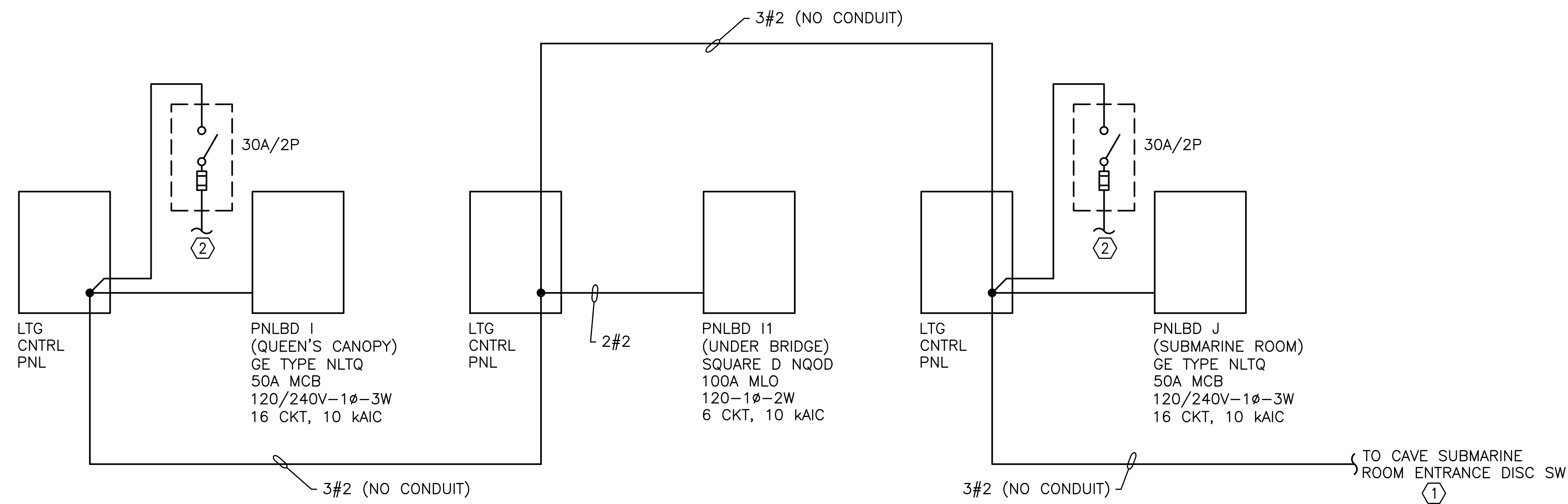
- A. ALL CONDUCTORS ARE CU UNLESS NOTED OTHERWISE.
- B. ALL ITEMS SHOWN ON THIS DWG ARE TO BE REMOVED UNLESS NOTED OTHERWISE.

KEY NOTES:

- 1. SEE DWG ED-601 FOR CONTINUATION.
- 2. 2#10 TO EMERG LTG FIXTURES.



EXIST ONE-LINE DIAGRAM FOR MISSOURI CAVERNS SERVICE



EXIST ONE-LINE DIAGRAM FOR SUBMARINE ROOM SERVICE

GENERAL NOTES:

- A. ALL CONDUCTORS ARE CU UNLESS NOTED OTHERWISE.
- B. ALL ITEMS SHOWN ON THIS DWG ARE TO BE REMOVED UNLESS NOTED OTHERWISE.

KEY NOTES:

- 1. SEE DWG ED-601 FOR CONTINUATION.
- 2. 2#10 TO EMERG LTG FIXTURES.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-ED-604.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

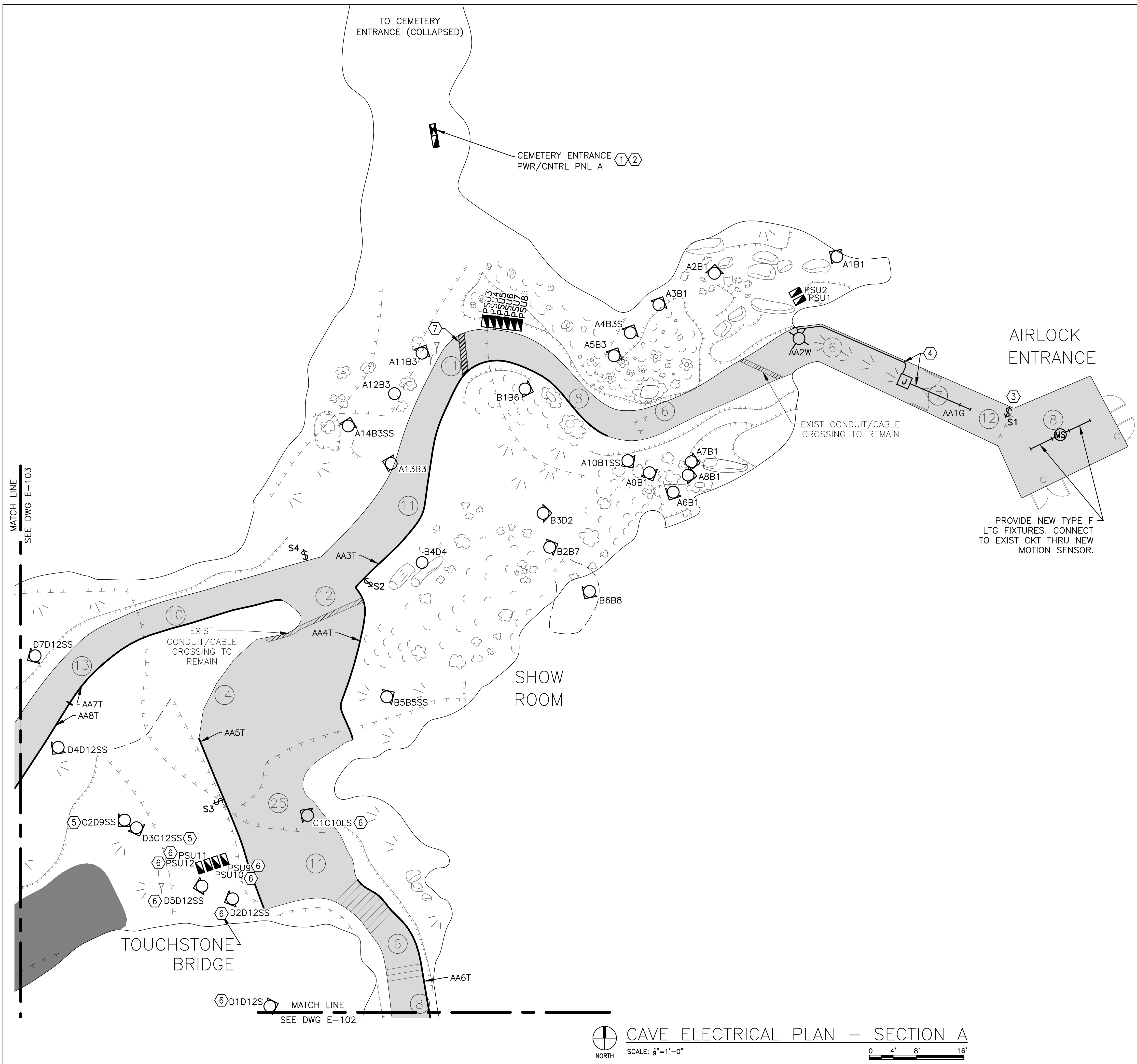
SHEET TITLE:
ONE-LINE
SUBMARINE
ROOM SERVICE
(EXIST CONDITION)

SHEET NUMBER:

ED-604

26 OF 50 SHEETS
JUNE 23, 2023

ROGERS-SCHMIDT ENGINEERING CO., P.C. © 2023



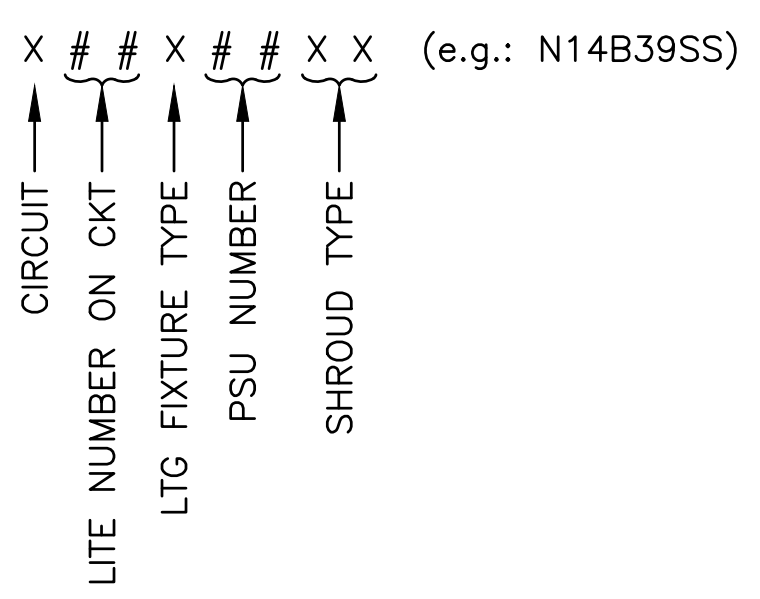
GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. PROVIDE NEW LTG FIXTURES PER THE NEW LIGHTING FIXTURE SCHEDULE ON DWG E-605 AND SPECIFICATION SECTIONS 265113 & 265613.
- C. PROVIDE NEW PSU'S PER THE SCHEDULE ON DWGS E-606 & E-607 AND SPECIFICATION SECTION 265613.
- D. PROVIDE NEW LTG CNTRL STATIONS PER DETAIL 101/E-501, DWG E-608 AND SPECIFICATION SECTION 260943.23.
- E. PLACE PSU'S AND LTG FIXTURES AS SHOWN BUT DO NOT REMOVE ANY EXCESS CABLE FROM LTG FIXTURES. CAVE LTG DESIGNER SHALL ESTABLISH FINAL PLACEMENTS AND FIXTURE AIMING PRIOR TO SUBSTANTIAL COMPLETION. ONCE FINAL LOCATION(S) HAVE BEEN APPROVED, ROUTE CABLES FROM FIXTURES TO PSU'S IN AS CONCEALABLE A PATH AS POSSIBLE. COIL EXCESS CABLE IN AN INCONSPICUOUS LOCATION. DO NOT CUT FACTORY CABLE ON LTG FIXTURES.

KEY NOTES:

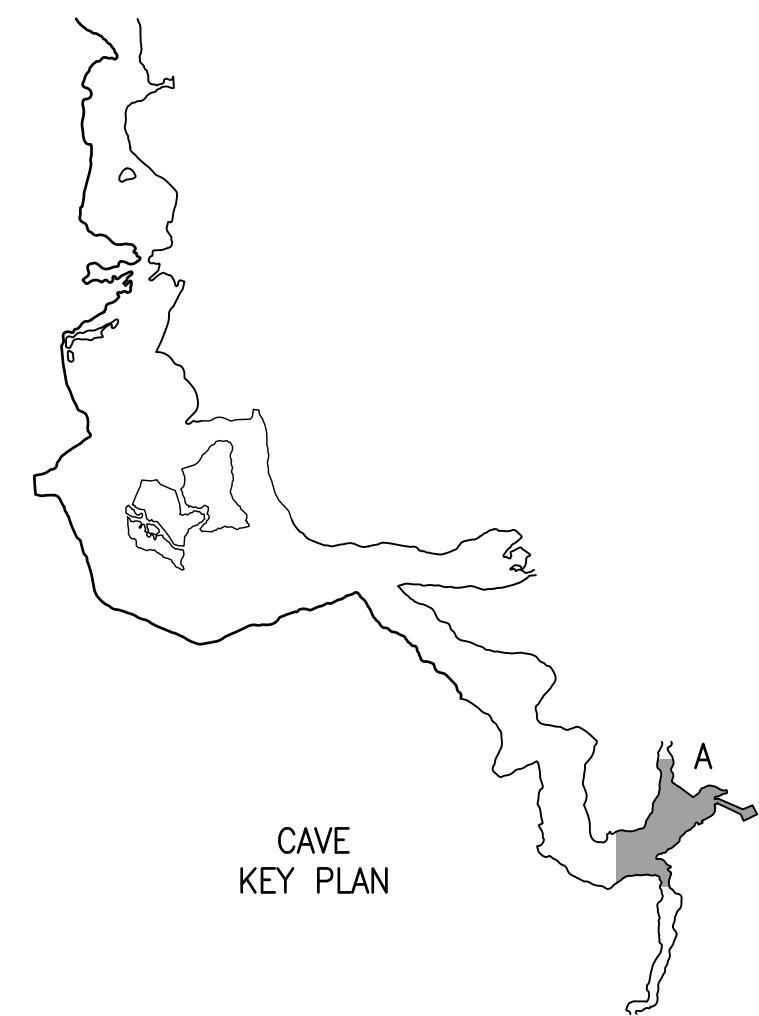
- 1. SERVED FROM AIRLOCK FEEDER. SEE DWGS ES-402 & E-602.
- 2. PROVIDE NEW PNLBD PER SPECIFICATION SECTION 262416 IN COMMON SS ENCL W/ LTG CNTRLS.
- 3. MOUNT TO WALL AT 3'-0" AFF.
- 4. 3/4" PVC-2#12 & 1#12 GRD
- 5. MOUNT LTG FIXTURE TO CONC PAVER PER DETAIL 105/E-501.
- 6. INSTALL ON UPPER LEVEL OF THE CAVE.
- 7. INSTALL NEW CABLE SLEEVE PER DETAIL 204/E-502.

LTG FIXTURE NAMING:



SHROUD TYPES:

S = SNOOT
 SS = SHORT SHROUD
 LS = LONG SHROUD



CAVE ELECTRICAL PLAN - SECTION A
 SCALE: 1/8"=1'-0"
 NORTH

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR



BARRY D. FREINER
 Registered Professional Engineer
 MO # E-24220
 Expires 12-31-2024
ROGERS-SCHMIDT
ENGINEERING CO., P.C.
 CONSULTING ENGINEERS
 1736 WEST PARK CENTER DR.
 SUITE 204
 ST. LOUIS, MO 63026
 PHONE: 636-600-1551
 MISSOURI STATE CERTIFICATE
 OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
 DIVISION OF FACILITIES
 MANAGEMENT,
 DESIGN AND CONSTRUCTION

DEPARTMENT OF
 NATURAL RESOURCES
 DIVISION OF STATE PARKS
 UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
 STATE PARK
 7556 HWY H
 LEASBURG, MO 65535

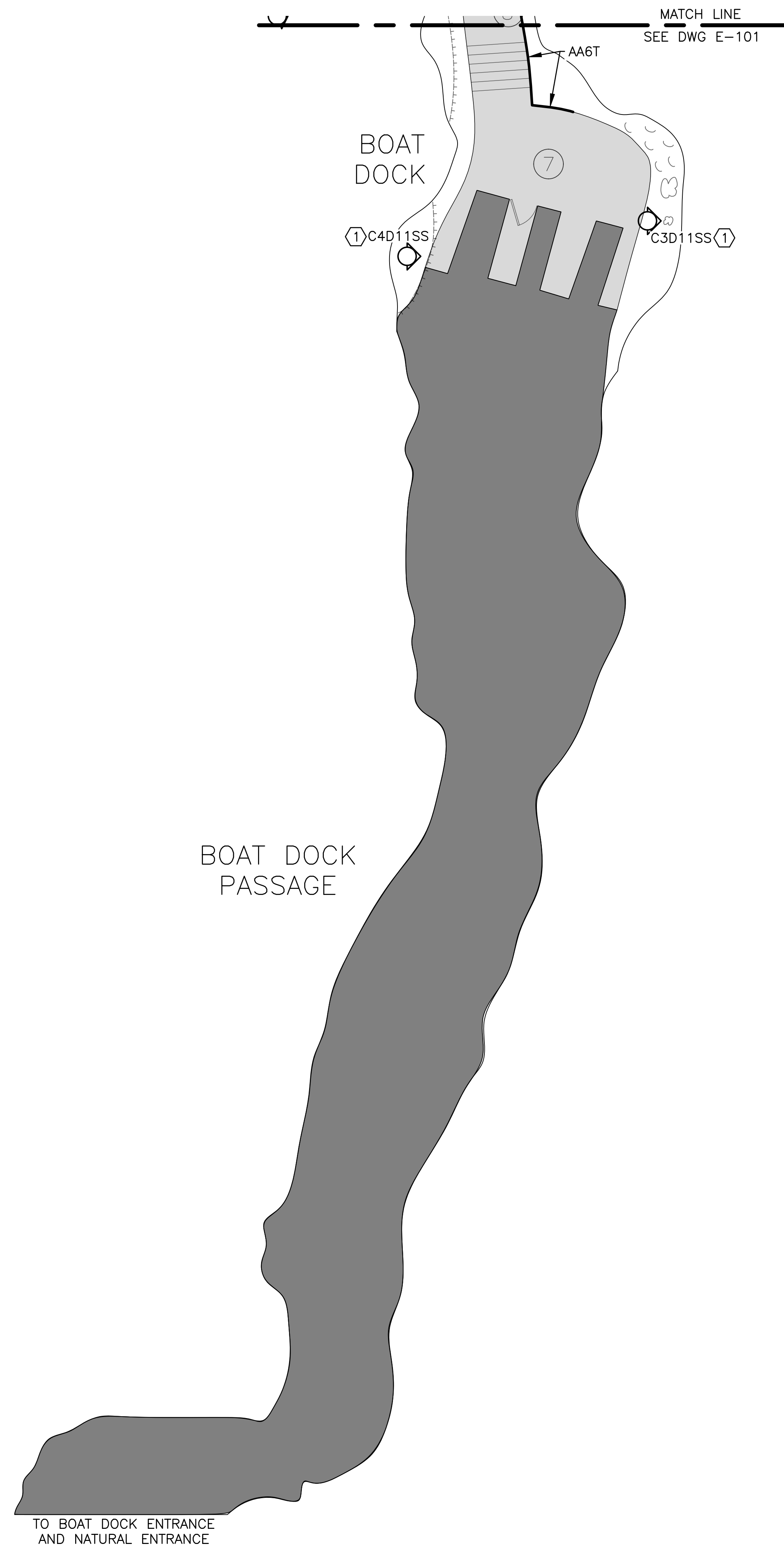
PROJECT # X2212-01
 SITE # 5215
 ASSET # 7815215013

REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____

ISSUE DATE: 06-23-2023
 CAD DWG FILE: X2212-01-5215-7815215013-E-101.DWG
 DRAWN BY: KET
 CHECKED BY: BDF
 DESIGNED BY: BDF

SHEET TITLE:
**CAVE ELECTRICAL
 PLAN - SECTION A**

SHEET NUMBER:
E-101
 27 OF 50 SHEETS
 JUNE 23, 2023



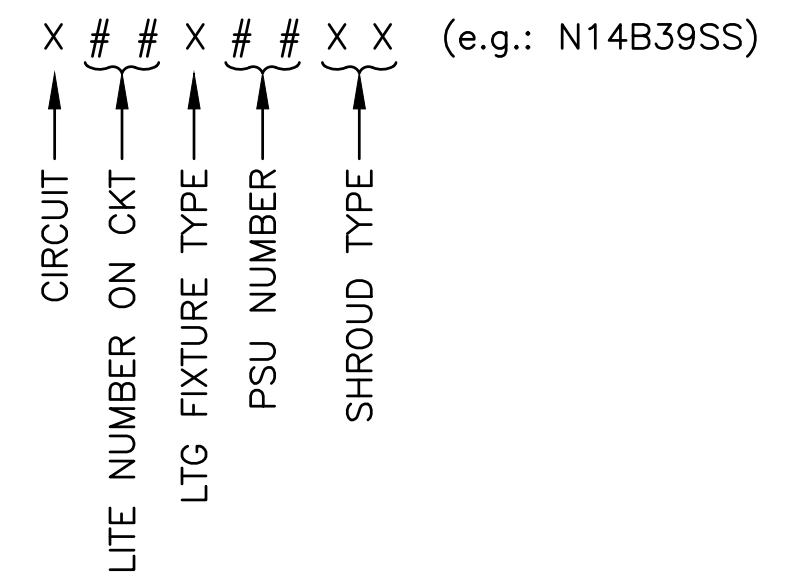
GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. PROVIDE NEW LTG FIXTURES PER THE NEW LIGHTING FIXTURE SCHEDULE ON DWG E-605 AND SPECIFICATION SECTION 265613.
- C. PLACE PSU'S AND LTG FIXTURES AS SHOWN BUT DO NOT REMOVE ANY EXCESS CABLE FROM LTG FIXTURES. CAVE LTG DESIGNER SHALL ESTABLISH FINAL PLACEMENTS AND FIXTURE AIMING PRIOR TO SUBSTANTIAL COMPLETION. ONCE FINAL LOCATION(S) HAVE BEEN APPROVED, ROUTE CABLES FROM FIXTURES TO PSU'S IN AS CONCEALABLE A PATH AS POSSIBLE. COIL EXCESS CABLE IN AN INCONSPICUOUS LOCATION. DO NOT CUT FACTORY CABLE ON LTG FIXTURES.

KEY NOTE:

- 1. MOUNT LTG FIXTURE TO CONC PAVER PER DETAIL 105/E-501.

LTG FIXTURE NAMING:



SHROUD TYPES:

- S = SNOOT
- SS = SHORT SHROUD
- LS = LONG SHROUD



BARRY D. FREINER
 Registered Professional Engineer
 MO # E-24220
 Expires 12-31-2024
ROGERS-SCHMIDT
ENGINEERING CO., P.C.
 CONSULTING ENGINEERS
 1736 WEST PARK CENTER DR.
 SUITE 204
 ST. LOUIS, MO 63026
 PHONE: 636-600-1551
 MISSOURI STATE CERTIFICATE
 OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
 DIVISION OF FACILITIES
 MANAGEMENT,
 DESIGN AND CONSTRUCTION

DEPARTMENT OF
 NATURAL RESOURCES
 DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
 STATE PARK
 7556 HWY H
 LEASBURG, MO 65535

PROJECT # X2212-01
 SITE # 5215
 ASSET # 7815215013

REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____

ISSUE DATE: 06-23-2023
 CAD DWG FILE: X2212-01-5215-7815215013-E-102.DWG
 DRAWN BY: K E T
 CHECKED BY: B D F
 DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
 PLAN - SECTION B**

SHEET NUMBER:
E-102
 28 OF 50 SHEETS
 JUNE 23, 2023

MATCH LINE
SEE DWG E-104



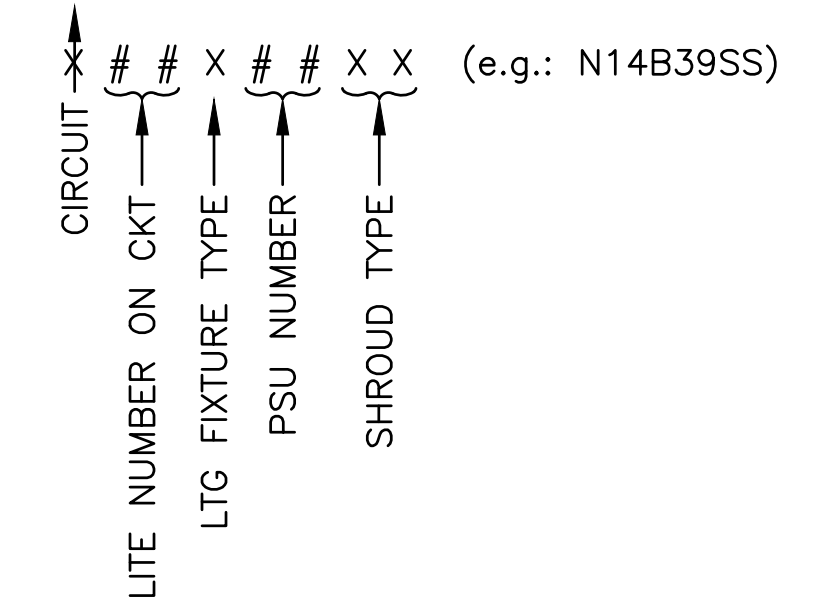
GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. PROVIDE NEW LTG FIXTURES PER THE NEW LIGHTING FIXTURE SCHEDULE ON DWG E-605 AND SPECIFICATION SECTION 265613.
- C. PROVIDE NEW PSU'S PER THE SCHEDULE ON DWGS E-606 & E-607 AND SPECIFICATION SECTION 265613.
- D. PLACE PSU'S AND LTG FIXTURES AS SHOWN BUT DO NOT REMOVE ANY EXCESS CABLE FROM LTG FIXTURES. CAVE LTG DESIGNER SHALL ESTABLISH FINAL PLACEMENTS AND FIXTURE AIMING PRIOR TO SUBSTANTIAL COMPLETION. ONCE FINAL LOCATION(S) HAVE BEEN APPROVED, ROUTE CABLES FROM FIXTURES TO PSU'S IN AS CONCEALABLE A PATH AS POSSIBLE. COIL EXCESS CABLE IN AN INCONSPICUOUS LOCATION. DO NOT CUT FACTORY CABLE ON LTG FIXTURES.

KEY NOTES:

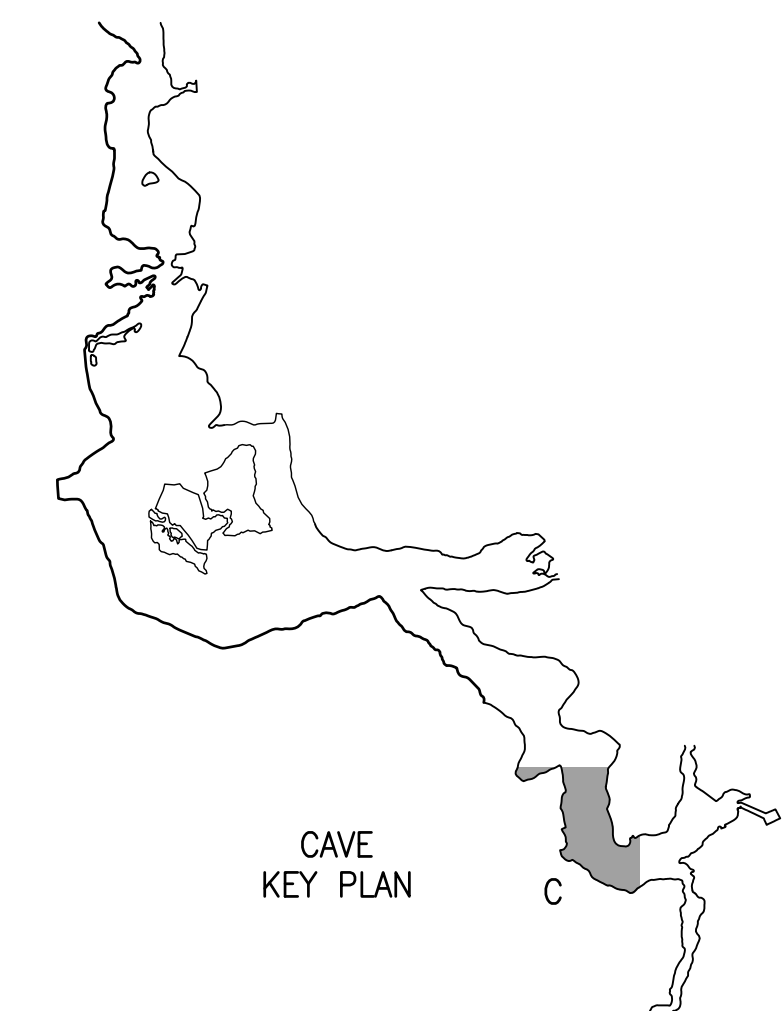
- 1. MOUNT LTG FIXTURE TO CONC PAVER PER DETAIL 105/E-501.
- 2. SEE EMER TELEPHONE ONE-LINE DIAGRAM ON DWG T-601.
- 3. MOUNT PSU TO CONC WALL NEXT TO WALKWAY BRIDGE.
- 4. PROVIDE POLYCARBONATE OR FIBERGLASS 4"x4"x4" IP68 SPLICE BOX W/ 5/C#12 CABLE TO EXTEND FACTORY LTG CABLE TO PSU.

LTG FIXTURE NAMING:

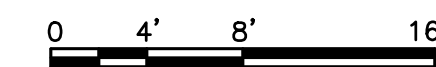


SHROUD TYPES:

- S = SNOOT
- SS = SHORT SHROUD
- LS = LONG SHROUD



CAVE ELECTRICAL PLAN - SECTION C
SCALE: 1/8"=1'-0"
NORTH



STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-E-103.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
PLAN - SECTION C**

SHEET NUMBER:

E-103

29 OF 50 SHEETS
JUNE 23, 2023



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

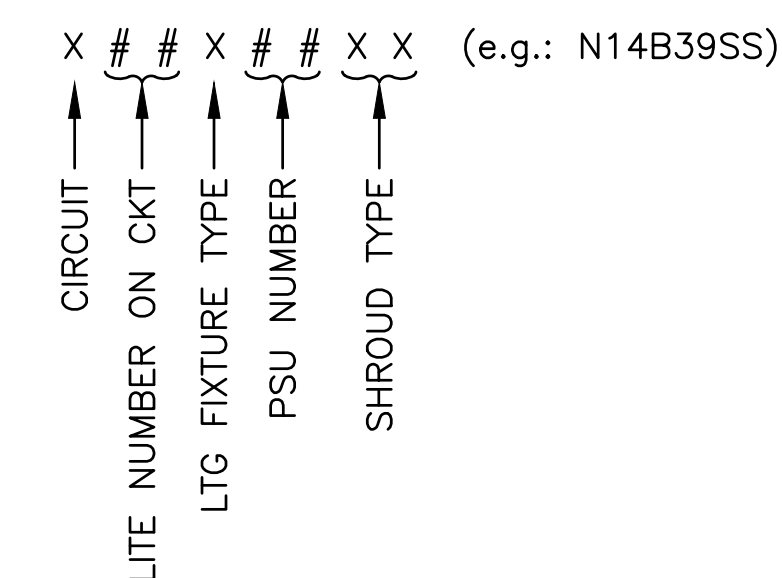
GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. PROVIDE NEW LTG FIXTURES PER THE NEW LIGHTING FIXTURE SCHEDULE ON DWG E-605 AND SPECIFICATION SECTION 265613.
- C. PROVIDE NEW PSU'S PER THE SCHEDULE ON DWGS E-606 & E-607 AND SPECIFICATION SECTION 265613.
- D. PLACE PSU'S AND LTG FIXTURES AS SHOWN BUT DO NOT REMOVE ANY EXCESS CABLE FROM LTG FIXTURES. CAVE LTG DESIGNER SHALL ESTABLISH FINAL PLACEMENTS AND FIXTURE AIMING PRIOR TO SUBSTANTIAL COMPLETION. ONCE FINAL LOCATION(S) HAVE BEEN APPROVED, ROUTE CABLES FROM FIXTURES TO PSU'S IN AS CONCEALABLE A PATH AS POSSIBLE. COIL EXCESS CABLE IN AN INCONSPICUOUS LOCATION. DO NOT CUT FACTORY CABLE ON LTG FIXTURES.

KEY NOTES:

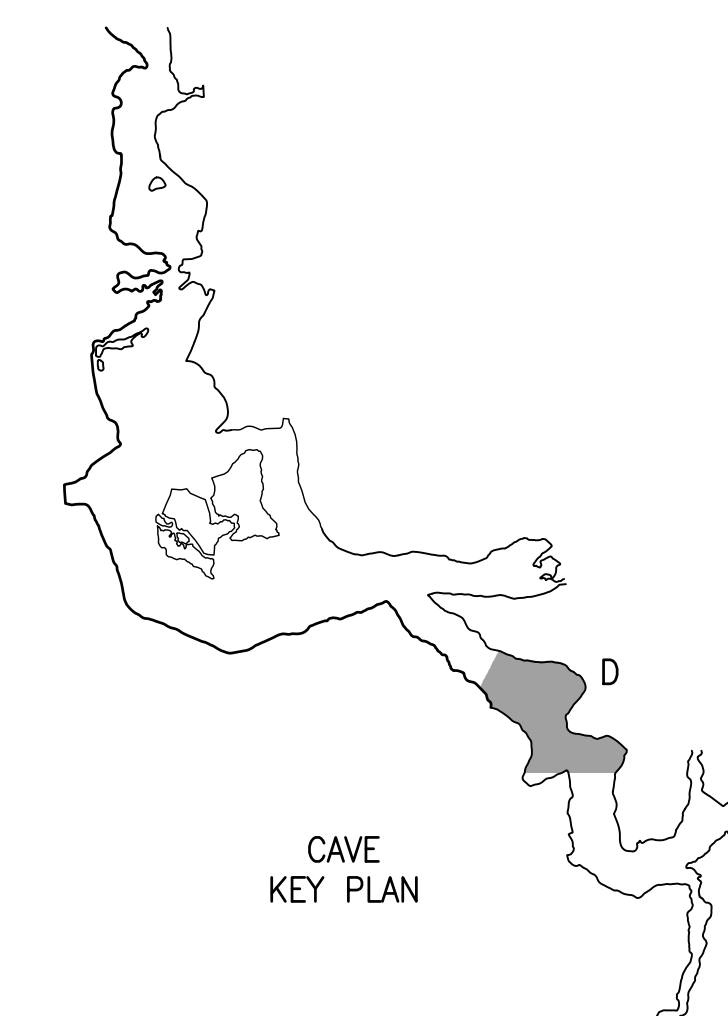
- 1. MOUNT LTG FIXTURE TO CONC PAVER PER DETAIL 105/E-501.
- 2. SEE EMER TELEPHONE ONE-LINE DIAGRAM ON DWG T-601.
- 3. SECURE TELEPHONE CABLE TO UNDERSIDE OF ELEVATED WALKWAY WITH SS BRIDLE RINGS.
- 4. MOUNT LTG FIXTURE ON LEDGE, NOT IN WATER.
- 5. PROVIDE POLYCARBONATE OR FIBERGLASS 4"x4"x4" IP68 SPLICE BOX W/ 5/C#12 CABLE TO EXTEND FACTORY LTG CABLE TO PSU.

LTG FIXTURE NAMING:



SHROUD TYPES:

S = SNOOT
SS = SHORT SHROUD
LS = LONG SHROUD



CAVE ELECTRICAL PLAN - SECTION D
SCALE: 1/8"=1'-0"
NORTH

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-E-104.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
PLAN - SECTION D**

SHEET NUMBER:

E-104

30 OF 50 SHEETS
JUNE 23, 2023



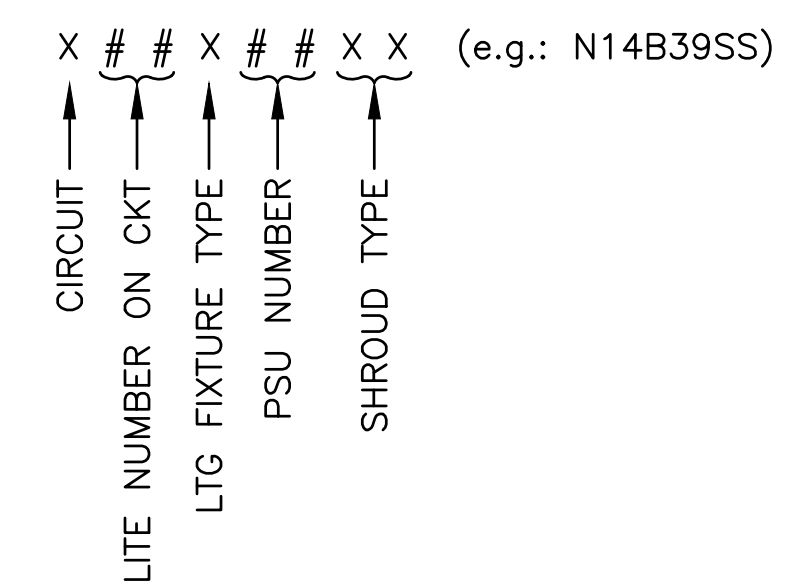
GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. PROVIDE NEW LTG FIXTURES PER THE NEW LIGHTING FIXTURE SCHEDULE ON DWG E-605 AND SPECIFICATION SECTION 265613.
- C. PROVIDE NEW PSU'S PER THE SCHEDULE ON DWGS E-606 & E-607 AND SPECIFICATION SECTION 265613.
- D. PLACE PSU'S AND LTG FIXTURES AS SHOWN BUT DO NOT REMOVE ANY EXCESS CABLE FROM LTG FIXTURES. CAVE LTG DESIGNER SHALL ESTABLISH FINAL PLACEMENTS AND FIXTURE AIMING PRIOR TO SUBSTANTIAL COMPLETION. ONCE FINAL LOCATION(S) HAVE BEEN APPROVED, ROUTE CABLES FROM FIXTURES TO PSU'S IN AS CONCEALABLE A PATH AS POSSIBLE. COIL EXCESS CABLE IN AN INCONSPICUOUS LOCATION. DO NOT CUT FACTORY CABLE ON LTG FIXTURES.

KEY NOTES:

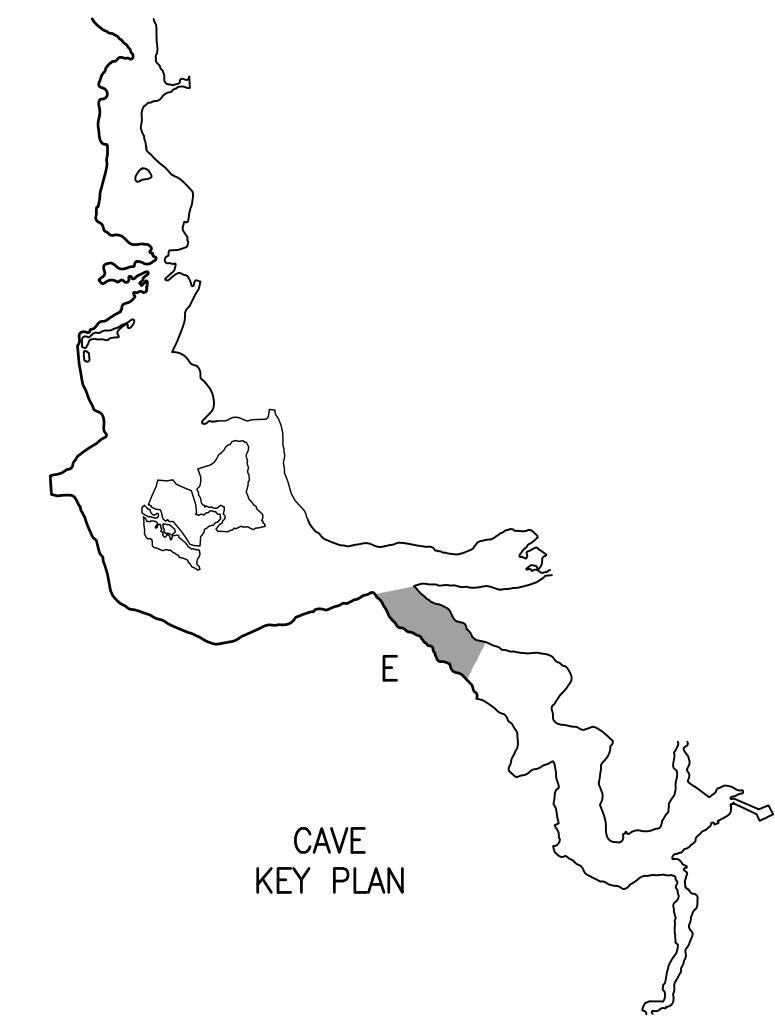
- 1. SERVED FROM AIRLOCK FEEDER. SEE DWGS ES-402 & E-602.
- 2. PROVIDE NEW PNLBD PER SPECIFICATION SECTION 262416 IN COMMON SS ENCL W/ LTG CNTRLS.
- 3. SEE EMER TELEPHONE ONE-LINE DIAGRAM ON DWG T-601.
- 4. HIGH WATER MARK DURING FLOODING IS 5'-6" ABOVE TRAIL AT HEAD KNOCKER ROCK. CONTRACTOR SHALL PLACE ALL PSU'S THROUGHOUT CAVE ABOVE FLOOD LEVEL, UNLESS OTHERWISE NOTED, AND SHALL CONFIRM THAT ALL LTG FIXTURES BELOW FLOOD LEVEL ARE MTD PER DETAIL 105/E-501, UNLESS OTHERWISE NOTED.
- 5. MOUNT LTG FIXTURE TO CONC PAVER PER DETAIL 105/E-501.
- 6. SECURE TELEPHONE CABLE TO UNDERSIDE OF ELEVATED WALKWAY WITH SS BRIDLE RINGS.
- 7. INSTALL NEW CABLE SLEEVE PER DETAIL 204/E-502.
- 8. PROVIDE POLYCARBONATE OR FIBERGLASS 4"x4"x4" IP68 SPLICE BOX W/ 5/C#12 CABLE TO EXTEND FACTORY LTG CABLE TO PSU.

LTG FIXTURE NAMING:



SHROUD TYPES:

- S = SNOOT
- SS = SHORT SHROUD
- LS = LONG SHROUD



BARRY D. FREINER
 Registered Professional Engineer
 MO # E-24220
 Expires 12-31-2024

**ROGERS-SCHMIDT
 ENGINEERING CO., P.C.**
 CONSULTING ENGINEERS
 1736 WEST PARK CENTER DR.
 SUITE 204
 ST. LOUIS, MO 63026
 PHONE: 636-600-1551
 MISSOURI STATE CERTIFICATE
 OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
 DIVISION OF FACILITIES
 MANAGEMENT,
 DESIGN AND CONSTRUCTION

DEPARTMENT OF
 NATURAL RESOURCES
 DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
 STATE PARK
 7556 HWY H
 LEASBURG, MO 65535

PROJECT # X2212-01
 SITE # 5215
 ASSET # 7815215013

REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____

ISSUE DATE: 06-23-2023
 CAD DWG FILE: X2212-01-5215-7815215013-E-105.DWG
 DRAWN BY: K E T
 CHECKED BY: B D F
 DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
 PLAN - SECTION E**

SHEET NUMBER:

E-105

31 OF 50 SHEETS
 JUNE 23, 2023



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION
DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-E-107.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
PLAN - SECTION G**

SHEET NUMBER:

E-107

33 OF 50 SHEETS
JUNE 23, 2023

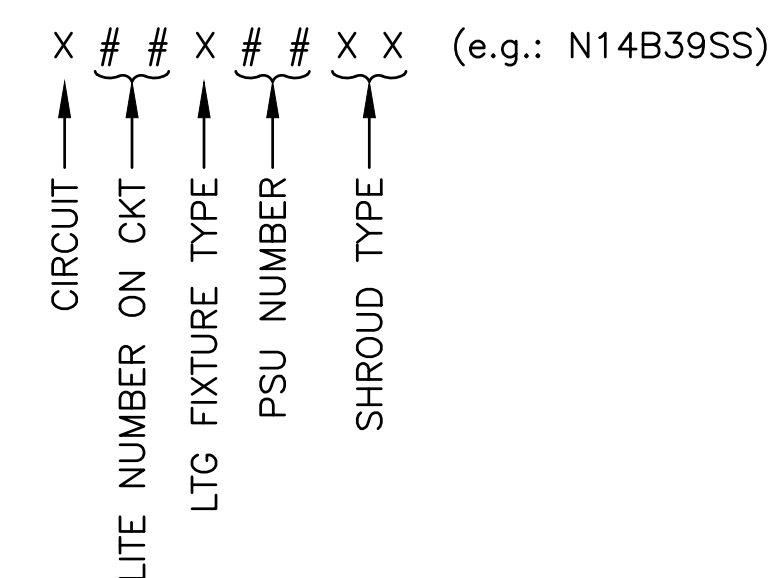
GENERAL NOTES:

- FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- PROVIDE NEW LTG FIXTURES PER THE NEW LIGHTING FIXTURE SCHEDULE ON DWG E-605 AND SPECIFICATION SECTION 265313.
- PROVIDE NEW PSU'S PER THE SCHEDULE ON DWGS E-606 & E-607 AND SPECIFICATION SECTION 265613.
- PLACE PSU'S AND LTG FIXTURES AS SHOWN BUT DO NOT REMOVE ANY EXCESS CABLE FROM LTG FIXTURES. CAVE LTG DESIGNER SHALL ESTABLISH FINAL PLACEMENTS AND FIXTURE AIMING PRIOR TO SUBSTANTIAL COMPLETION. ONCE FINAL LOCATION(S) HAVE BEEN APPROVED, ROUTE CABLES FROM FIXTURES TO PSU'S IN AS CONCEALABLE A PATH AS POSSIBLE. COIL EXCESS CABLE IN AN INCONSPICUOUS LOCATION. DO NOT CUT FACTORY CABLE ON LTG FIXTURES.

KEY NOTES:

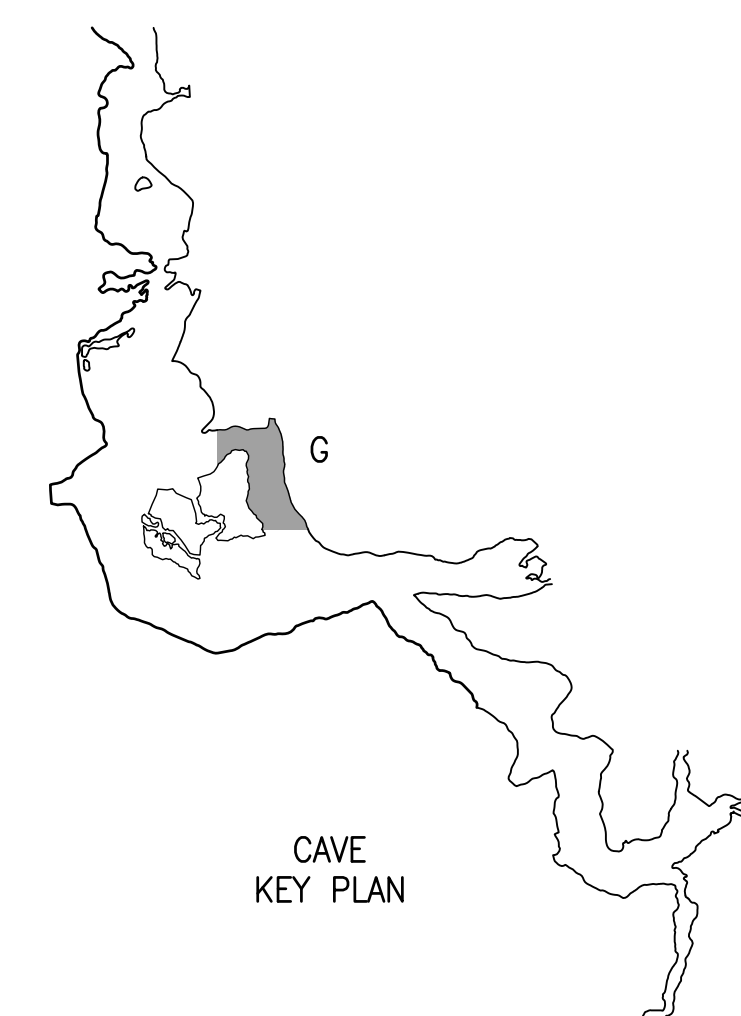
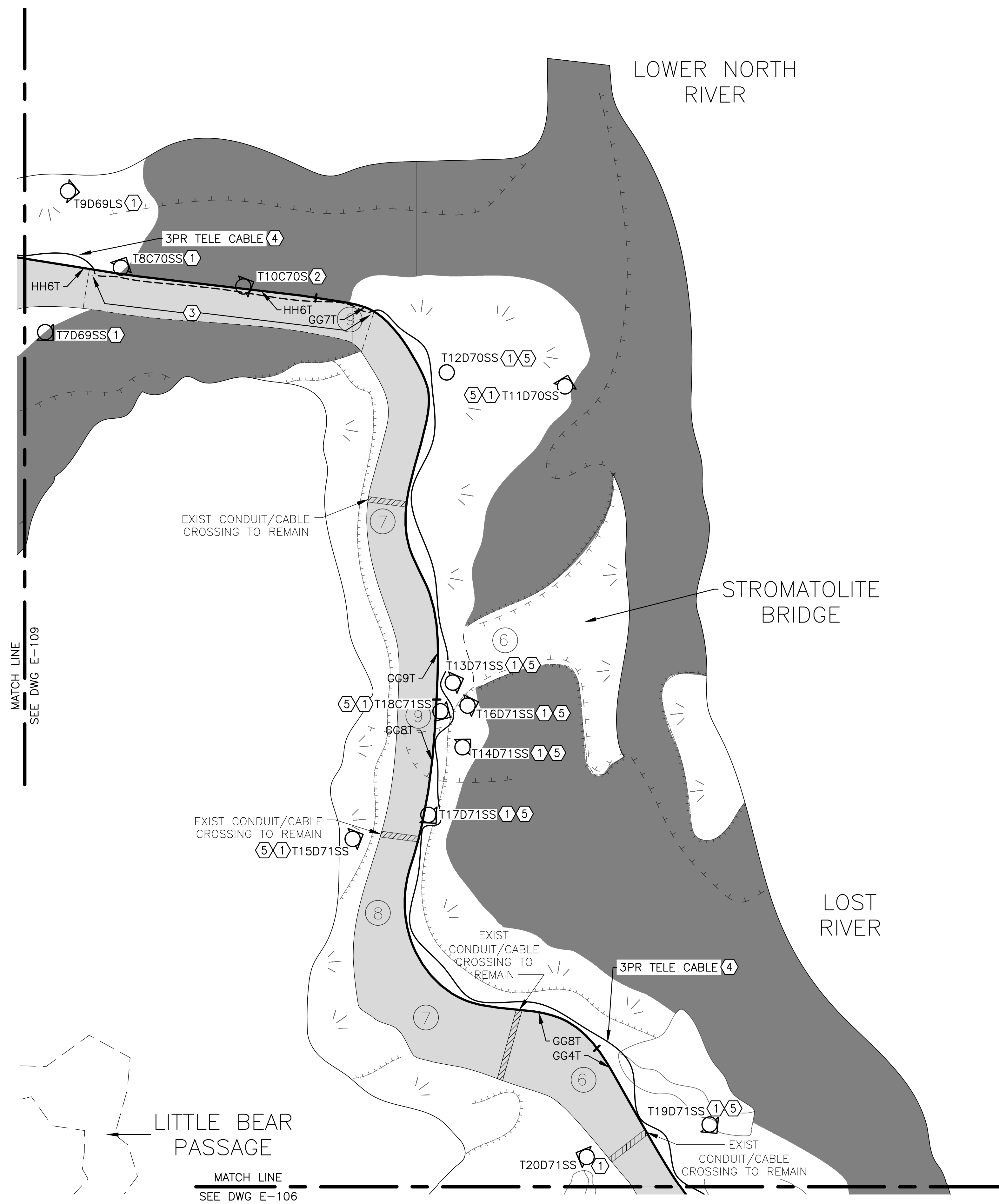
- MOUNT LTG FIXTURE TO CONC PAVER PER DETAIL 105/E-501.
- MOUNT LTG FIXTURE TO BRIDGE USING LUMINAIRE INSULATOR PER SPECIFICATION SECTION 265613.
- SECURE TELEPHONE CABLE TO UNDERSIDE OF ELEVATED WALKWAY WITH SS BRIDLE RINGS.
- SEE EMER TELEPHONE ONE-LINE DIAGRAM ON DWG T-601.
- PROVIDE POLYCARBONATE OR FIBERGLASS 4"x4"x4" IP68 SPLICE BOX W/ 5/C#12 CABLE TO EXTEND FACTORY LTG CABLE TO PSU.

LTG FIXTURE NAMING:

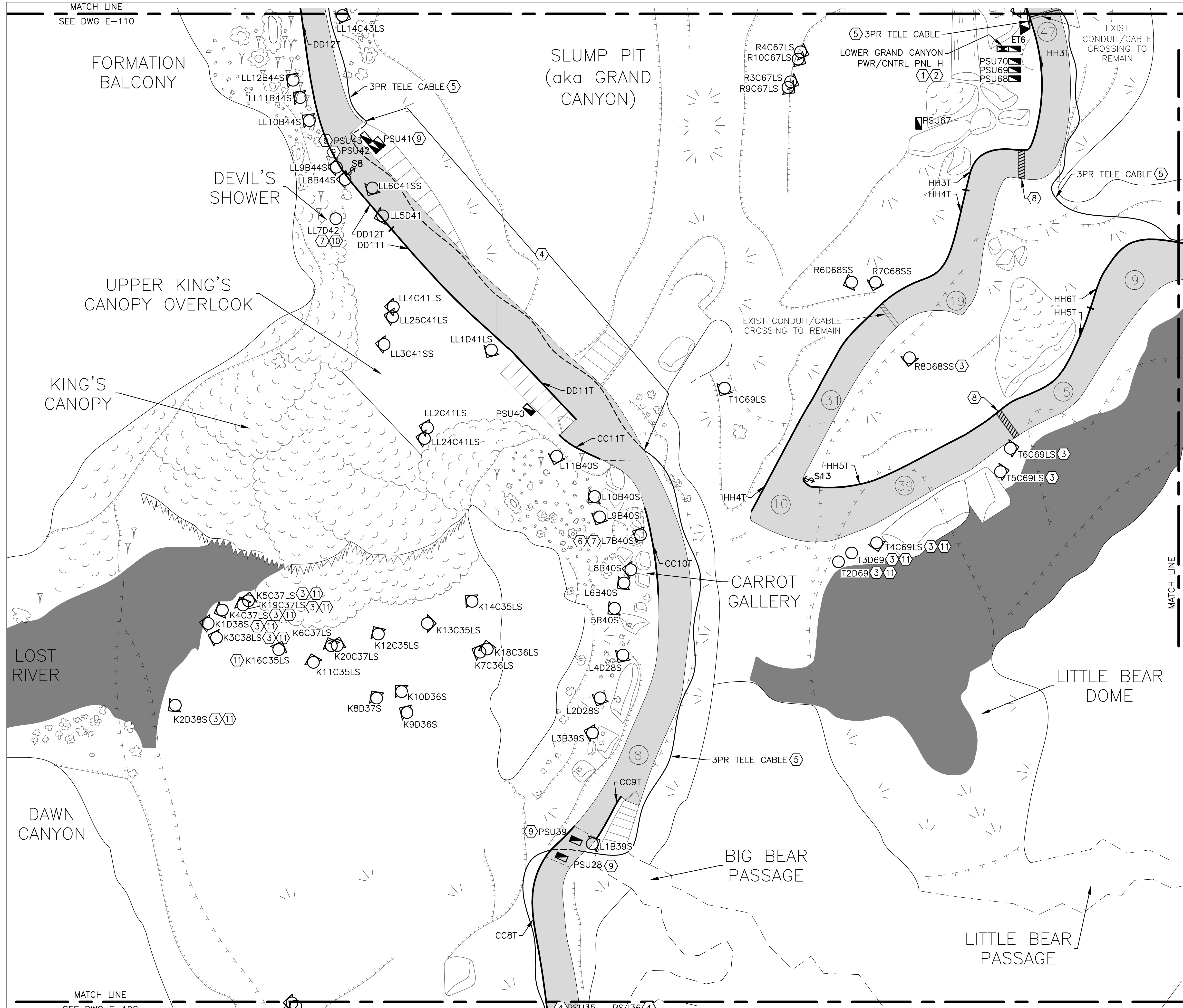


SHROUD TYPES:

S = SNOOT
SS = SHORT SHROUD
LS = LONG SHROUD



CAVE ELECTRICAL PLAN - SECTION G
SCALE: 1/8"=1'-0"
NORTH



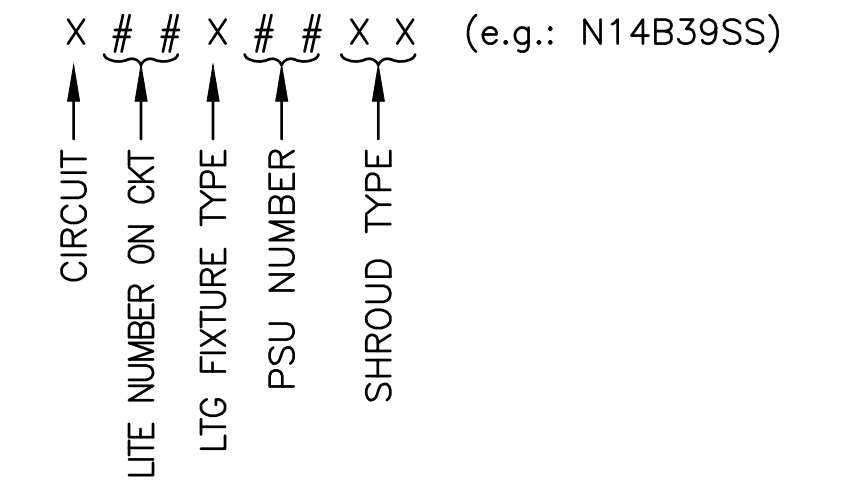
GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. PROVIDE NEW LTG FIXTURES PER THE NEW LIGHTING FIXTURE SCHEDULE ON DWG E-605 AND SPECIFICATION SECTION 265613.
- C. PROVIDE NEW PSU'S PER THE SCHEDULE ON DWGS E-606 & E-607 AND SPECIFICATION SECTION 265613.
- D. PROVIDE NEW LTG CNTRL STATIONS PER DETAIL 101/E-501, DWG E-608 AND SPECIFICATION SECTION 260943.23.
- E. PLACE PSU'S AND LTG FIXTURES AS SHOWN BUT DO NOT REMOVE ANY EXCESS CABLE FROM LTG FIXTURES. CAVE LTG DESIGNER SHALL ESTABLISH FINAL PLACEMENTS AND FIXTURE AIMING PRIOR TO SUBSTANTIAL COMPLETION. ONCE FINAL LOCATION(S) HAVE BEEN APPROVED, ROUTE CABLES FROM FIXTURES TO PSU'S IN AS CONCEALABLE A PATH AS POSSIBLE. COIL EXCESS CABLE IN AN INCONSPICUOUS LOCATION. DO NOT CUT FACTORY CABLE ON LTG FIXTURES.

KEY NOTES:

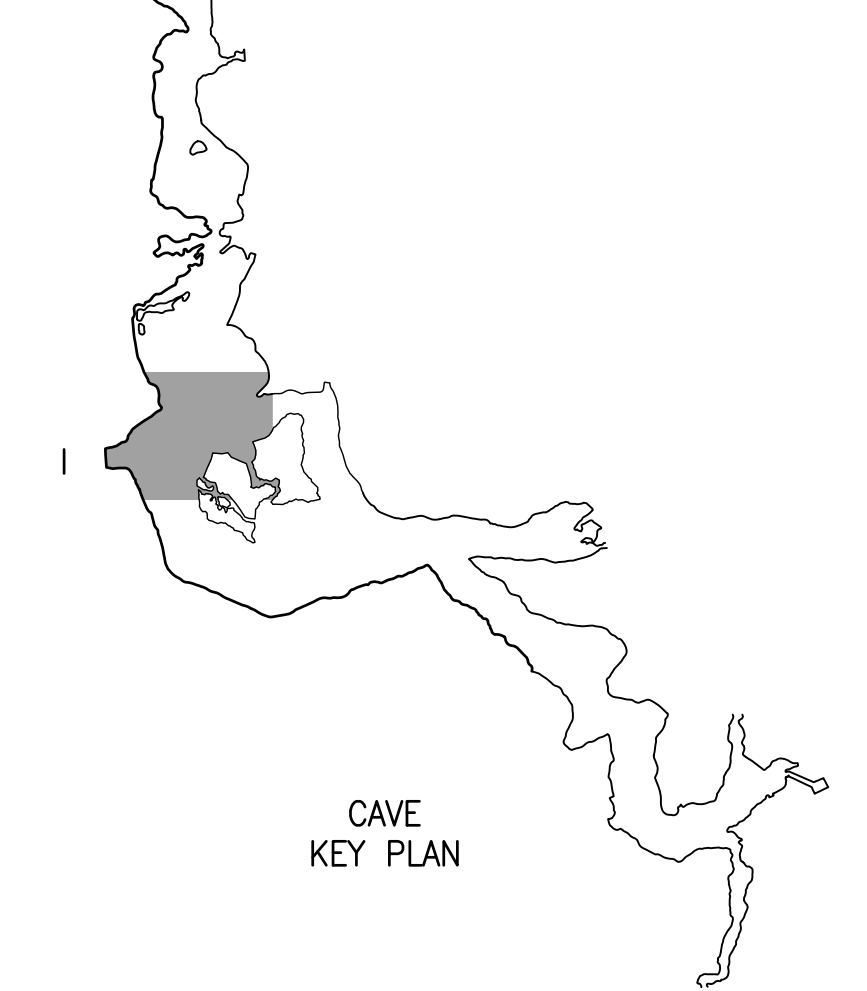
- 1. SERVED FROM SUBMARINE ROOM FEEDER. SEE DWGS ES-402 & E-603.
- 2. PROVIDE NEW PNLBD PER SPECIFICATION SECTION 262416 IN COMMON SS ENCL W/ LTG CNTRLS.
- 3. MOUNT LTG FIXTURE TO CONC PAVER PER DETAIL 105/E-501.
- 4. SECURE TELEPHONE CABLE TO UNDERSIDE OF ELEVATED WALKWAY WITH SS BRIDLE RINGS.
- 5. SEE EMER TELEPHONE ONE-LINE DIAGRAM ON DWG T-601.
- 6. LTG FIXTURE TO BE INSTALLED AT THE BOTTOM OF THE "RABBIT HOLE" IN THE CARROT GALLERY.
- 7. COORDINATE WITH PARK NATURALIST FOR ACCESS TO THIS LIGHTING FIXTURE.
- 8. INSTALL NEW CABLE SLEEVE PER DETAIL 204/E-502.
- 9. PSU(S) TO BE INSTALLED ON CAVE FLOOR BELOW EXISTING CATWALK.
- 10. LTG FIXTURE TO BE INSTALLED AT THE BOTTOM OF "DEVIL'S SHOWER."
- 11. PROVIDE POLYCARBONATE OR FIBERGLASS 4"x4"x4" IP68 SPLICE BOX W/ 5/C#12 CABLE TO EXTEND FACTORY LTG CABLE TO PSU.

LTG FIXTURE NAMING:



SHROUD TYPES:

- S = SNOOT
- SS = SHORT SHROUD
- LS = LONG SHROUD



CAVE ELECTRICAL PLAN - SECTION I
 SCALE: 1/8"=1'-0"
 NORTH

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR



BARRY D. FREINER
 Registered Professional Engineer
 MO # E-24220
 Expires 12-31-2024
ROGERS-SCHMIDT
ENGINEERING CO., P.C.
 CONSULTING ENGINEERS
 1736 WEST PARK CENTER DR.
 SUITE 204
 ST. LOUIS, MO 63026
 PHONE: 636-600-1551
 MISSOURI STATE CERTIFICATE
 OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
 DIVISION OF FACILITIES
 MANAGEMENT,
 DESIGN AND CONSTRUCTION

DEPARTMENT OF
 NATURAL RESOURCES
 DIVISION OF STATE PARKS
 UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
 STATE PARK
 7556 HWY H
 LEASBURG, MO 65535

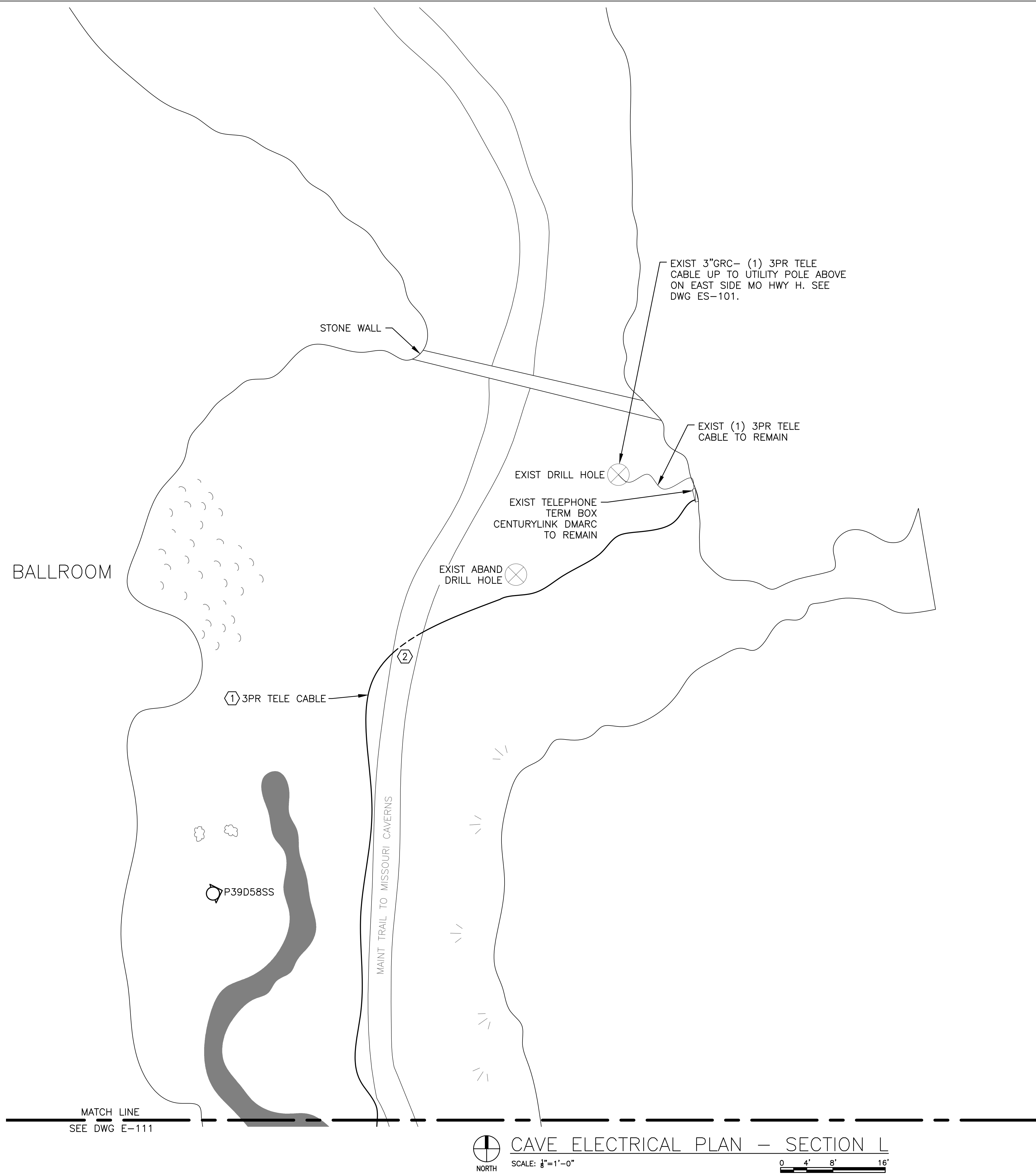
PROJECT # X2212-01
 SITE # 5215
 ASSET # 7815215013

REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____

ISSUE DATE: 06-23-2023
 CAD DWG FILE: X2212-01-5215-7815215013-E-109.DWG
 DRAWN BY: KET
 CHECKED BY: BDF
 DESIGNED BY: BDF

SHEET TITLE:
**CAVE ELECTRICAL
 PLAN - SECTION I**

SHEET NUMBER:
E-109
 35 OF 50 SHEETS
 JUNE 23, 2023



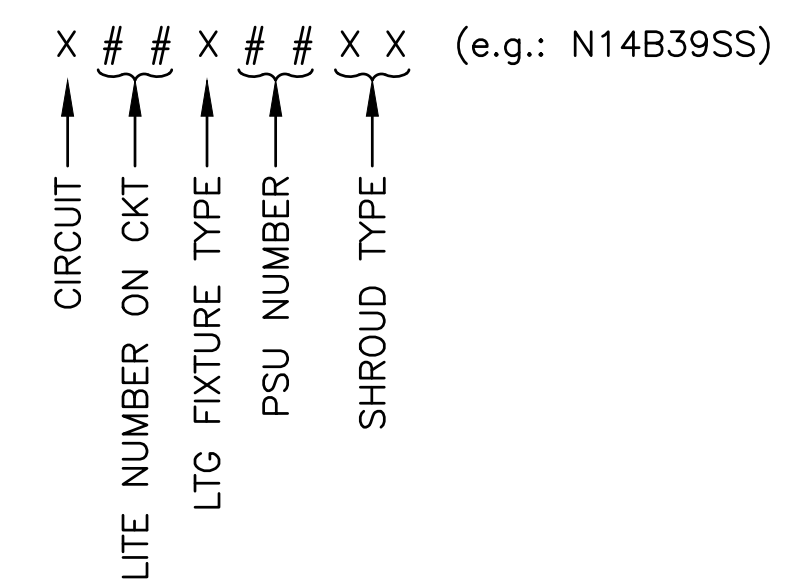
GENERAL NOTES:

- A. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- B. PROVIDE NEW LTG FIXTURES PER THE NEW LIGHTING FIXTURE SCHEDULE ON DWG E-605 AND SPECIFICATION SECTION 265613.
- C. PLACE PSU'S AND LTG FIXTURES AS SHOWN BUT DO NOT REMOVE ANY EXCESS CABLE FROM LTG FIXTURES. CAVE LTG DESIGNER SHALL ESTABLISH FINAL PLACEMENTS AND FIXTURE AIMING PRIOR TO SUBSTANTIAL COMPLETION. ONCE FINAL LOCATION(S) HAVE BEEN APPROVED, ROUTE CABLES FROM FIXTURES TO PSU'S IN AS CONCEALABLE A PATH AS POSSIBLE. COIL EXCESS CABLE IN AN INCONSPICUOUS LOCATION. DO NOT CUT FACTORY CABLE ON LTG FIXTURES.

KEY NOTES:

- 1. SEE EMER TELEPHONE ONE-LINE DIAGRAM ON DWG T-601.
- 2. BURY CABLE 6" BG AT TRAIL CROSSING.

LTG FIXTURE NAMING:



SHROUD TYPES:

- S = SNOOT
- SS = SHORT SHROUD
- LS = LONG SHROUD



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-E-112.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
CAVE ELECTRICAL
PLAN - SECTION L

SHEET NUMBER:

E-112

38 OF 50 SHEETS
JUNE 23, 2023



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

GENERAL NOTES:

- FIELD VERIFY EXISTING CONDITIONS PRIOR TO BID.
- PROVIDE NEW LTG FIXTURES PER THE NEW LIGHTING FIXTURE SCHEDULE ON DWG E-605 AND SPECIFICATION SECTION 265613.
- PROVIDE NEW PSU'S PER THE SCHEDULE ON DWGS E-606 & E-607 AND SPECIFICATION SECTION 265613.
- PROVIDE NEW LTG CNTRL STATIONS PER DETAIL 101/E-501, DWG E-608 AND SPECIFICATION SECTION 260943.23.
- PLACE PSU'S AND LTG FIXTURES AS SHOWN BUT DO NOT REMOVE ANY EXCESS CABLE FROM LTG FIXTURES. CAVE LTG DESIGNER SHALL ESTABLISH FINAL PLACEMENTS AND FIXTURE AIMING PRIOR TO SUBSTANTIAL COMPLETION. ONCE FINAL LOCATION(S) HAVE BEEN APPROVED, ROUTE CABLES FROM FIXTURES TO PSU'S IN AS CONCEALABLE A PATH AS POSSIBLE. COIL EXCESS CABLE IN AN INCONSPICUOUS LOCATION. DO NOT CUT FACTORY CABLE ON LTG FIXTURES.

KEY NOTES:

- SERVED FROM SUBMARINE ROOM FEEDER. SEE DWGS ES-101 & E-603.
- PROVIDE NEW PNLBD PER SPECIFICATION SECTION 262416 IN COMMON SS ENCL W/ LTG CNTRLS.
- INSTALL NEW LTG FIXTURE INSIDE EXIST LIGHT SHIELD.
- SECURE TELEPHONE CABLE TO UNDERSIDE OF ELEVATED WALKWAY WITH SS BRIDLE RINGS.
- CONTRACTOR SHALL PUMP WATER OUT OF SUBMARINE RM, WHEN TEMP OUTSIDE CAVE IS $\geq 40^\circ$, TO ALLOW ACCESS TO EXIST CONDUCTORS FOR REMOVAL.
- SEE EMER TELEPHONE ONE-LINE DIAGRAM ON DWG T-601.
- MOUNT LTG FIXTURE SUBMERGED IN THE POOL OF WATER PER DETAIL 107/E-501.
- MOUNT LTG FIXTURE TO CONC PAVER PER DETAIL 104/E-501.
- MOUNT LTG FIXTURE TO CATWALK USING LUMINAIRE INSULATOR(S) PER SPECIFICATION SECTION 265613.
- PSU TO BE INSTALLED ON CAVE FLOOR BELOW EXISTING CATWALK.
- INSTALL NEW CABLE SLEEVE PER DETAIL 204/E-502.
- COORDINATE WITH PARK NATURALIST FOR PLACEMENT OF THESE LTG FIXTURES.

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

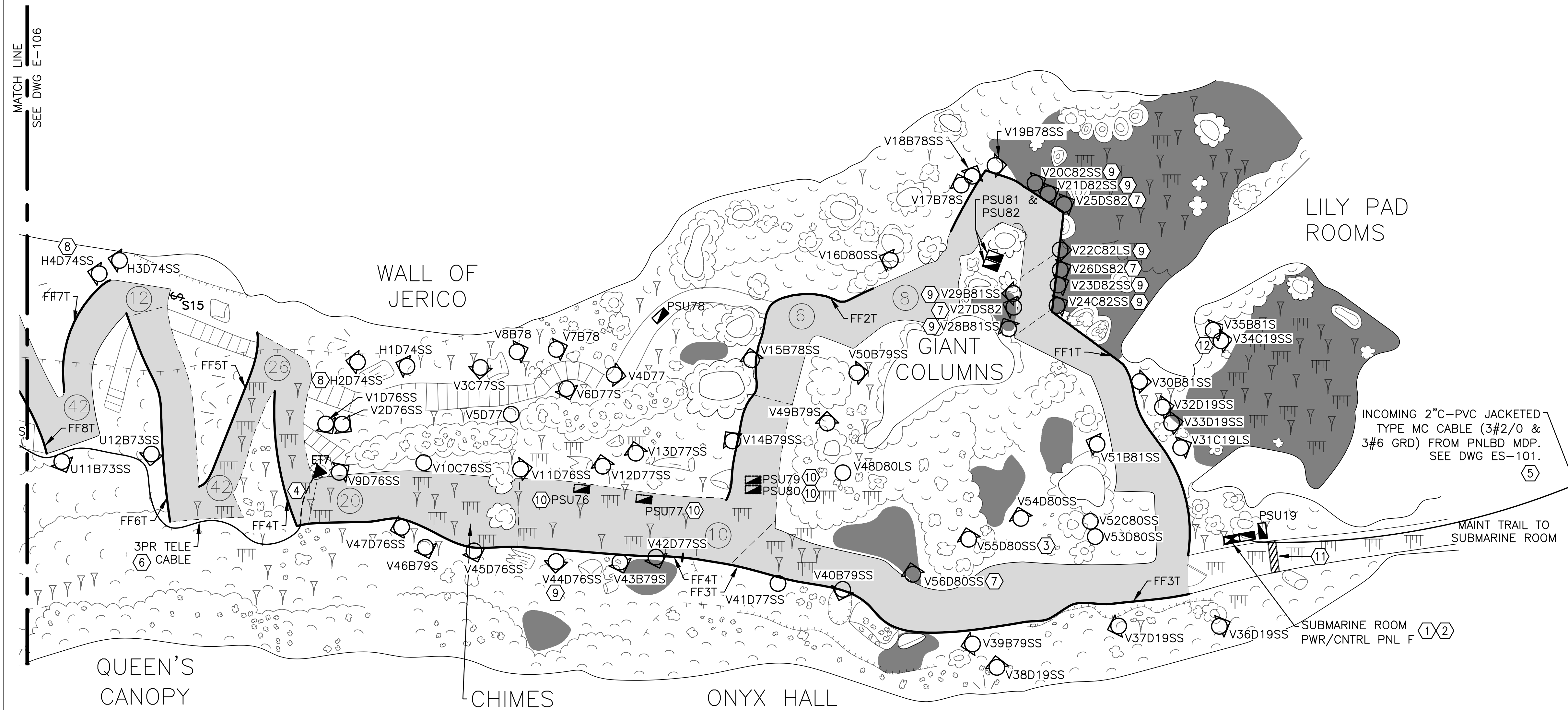
ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-E-113.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**CAVE ELECTRICAL
PLAN - SECTION M**

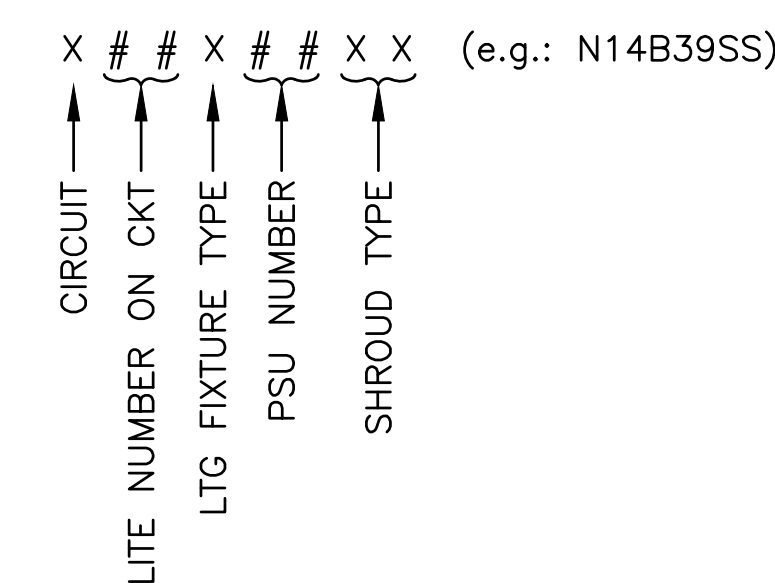
SHEET NUMBER:

E-113

39 OF 50 SHEETS
JUNE 23, 2023



LTG FIXTURE NAMING:

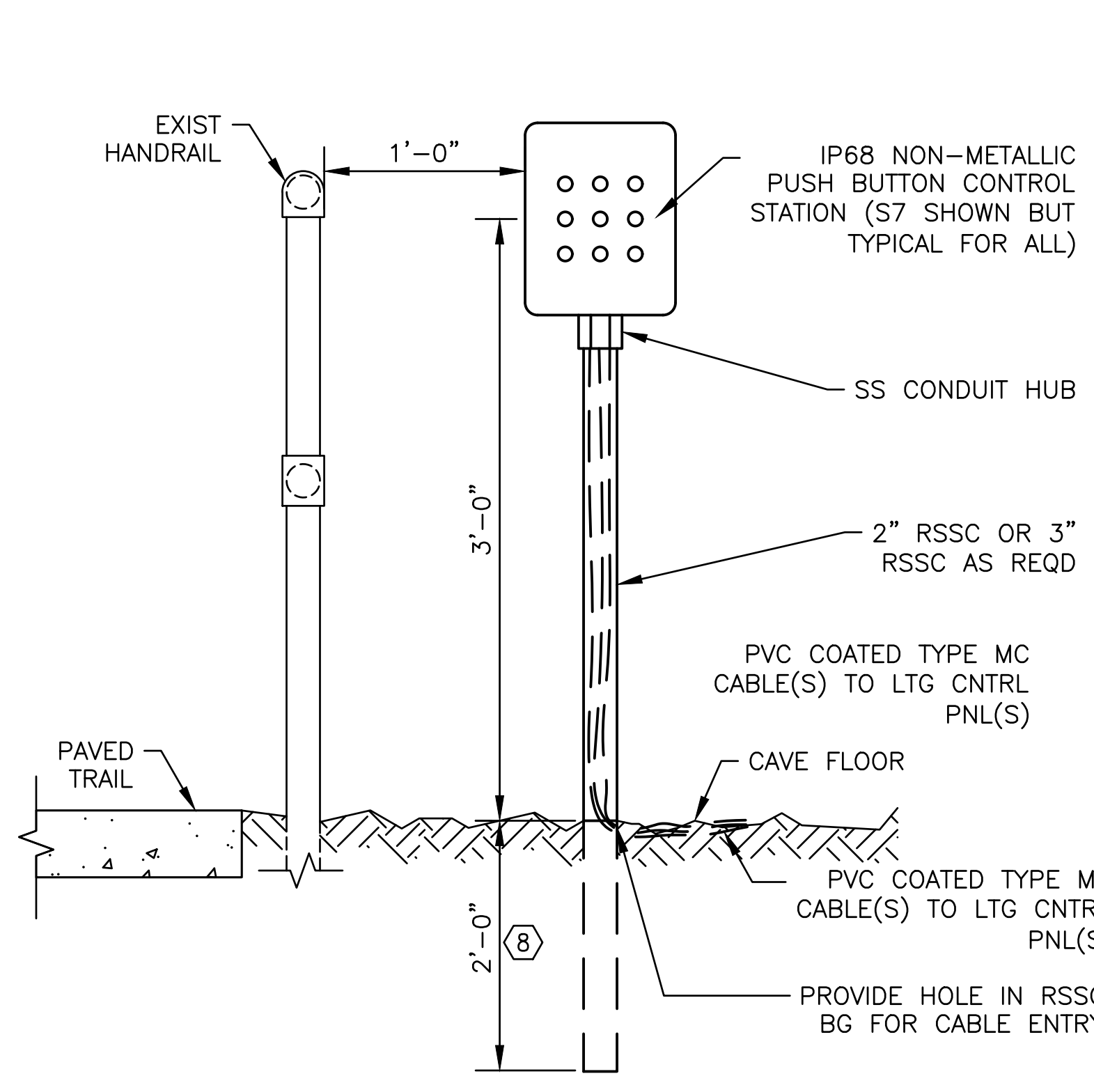


SHROUD TYPES:

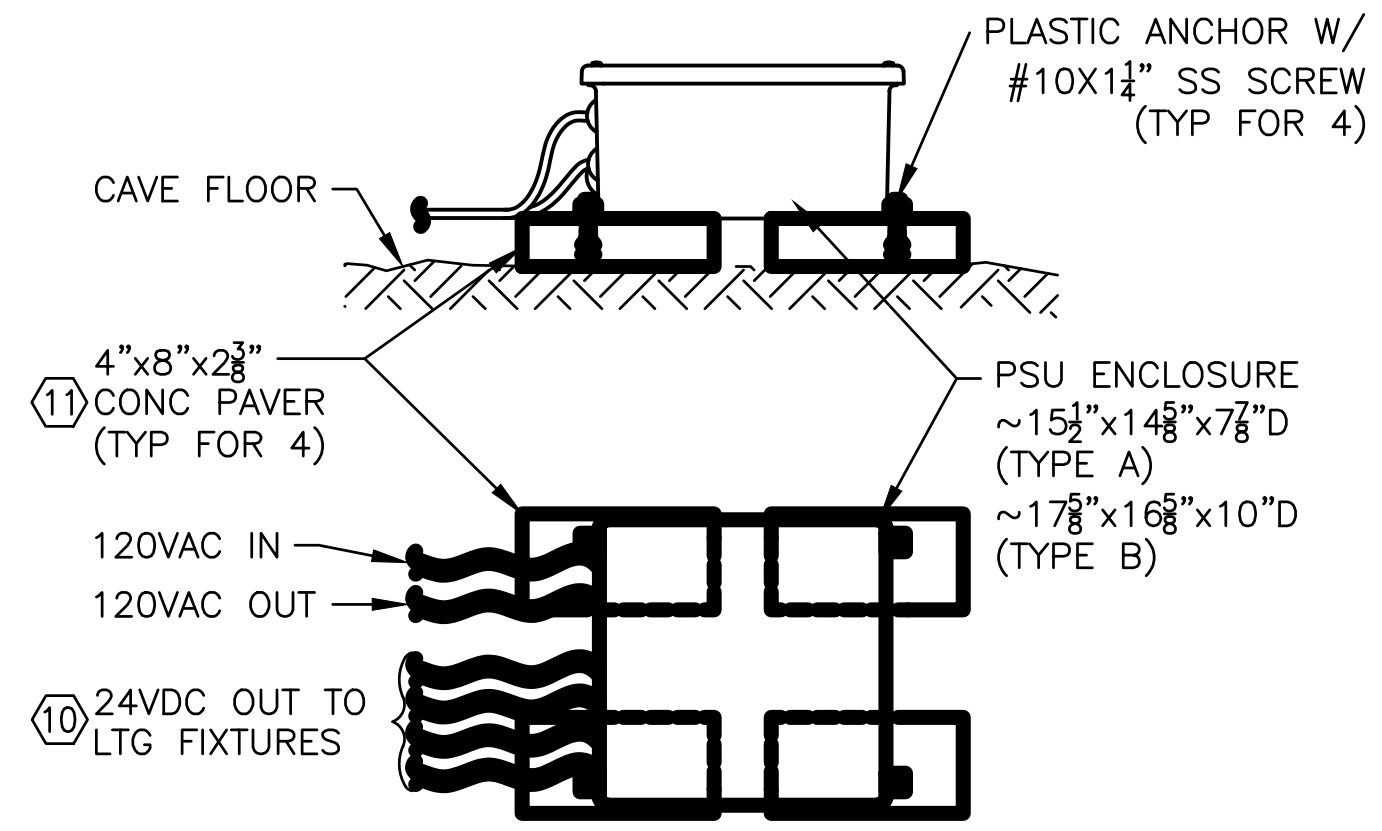
- S = SNOOT
- SS = SHORT SHROUD
- LS = LONG SHROUD



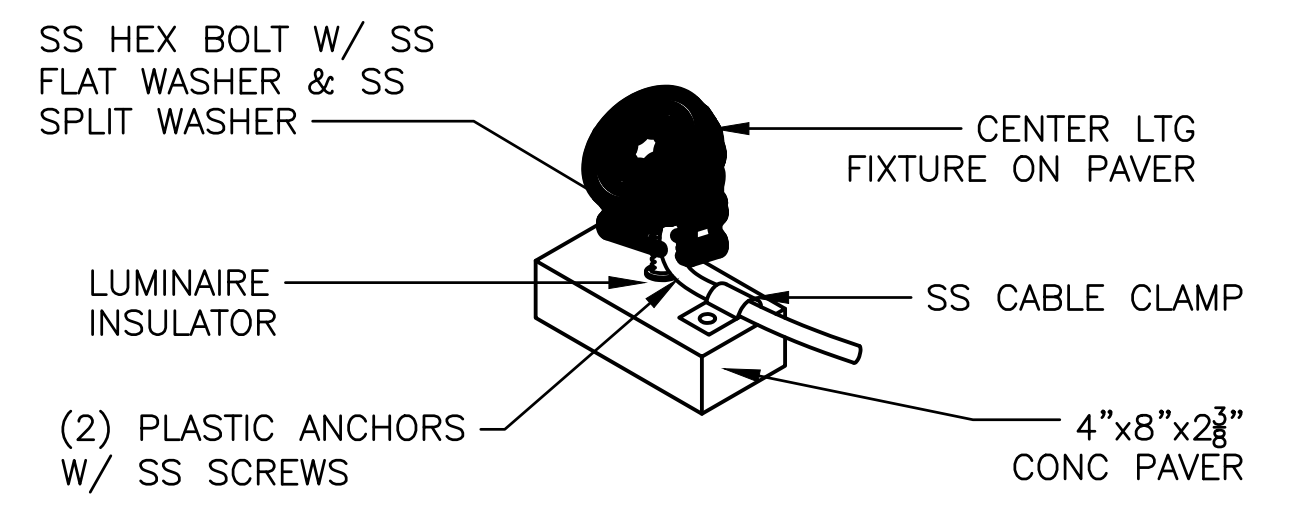
CAVE ELECTRICAL PLAN - SECTION M
SCALE: 1/8"=1'-0"
0 4' 8' 16'



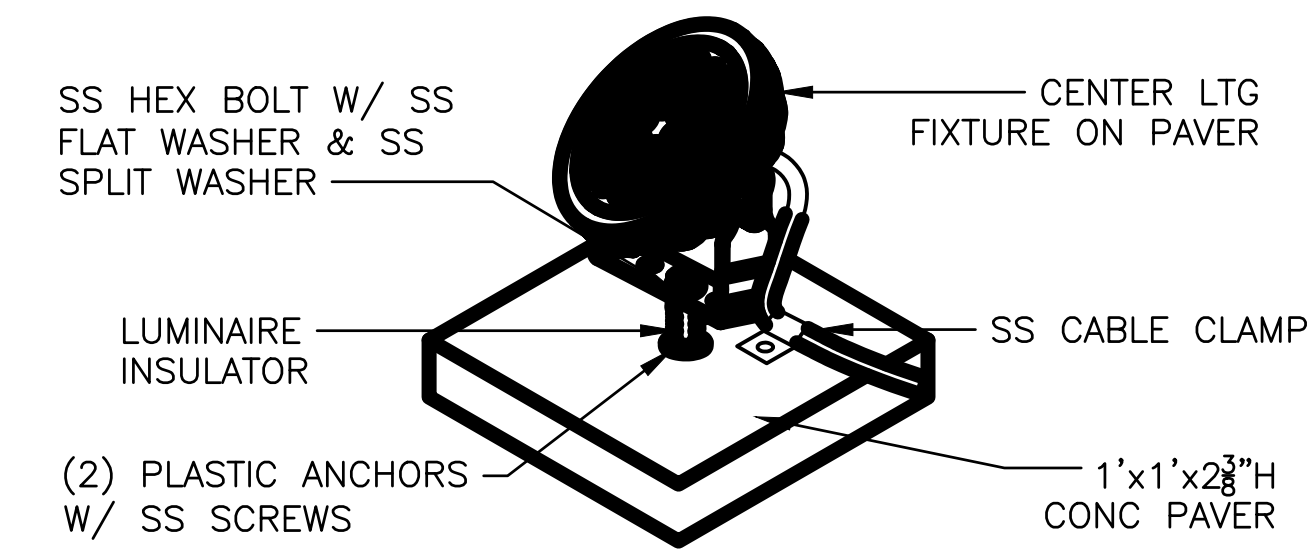
101 E-501 LTG CNTRL STATION MTG DETAIL
NO SCALE



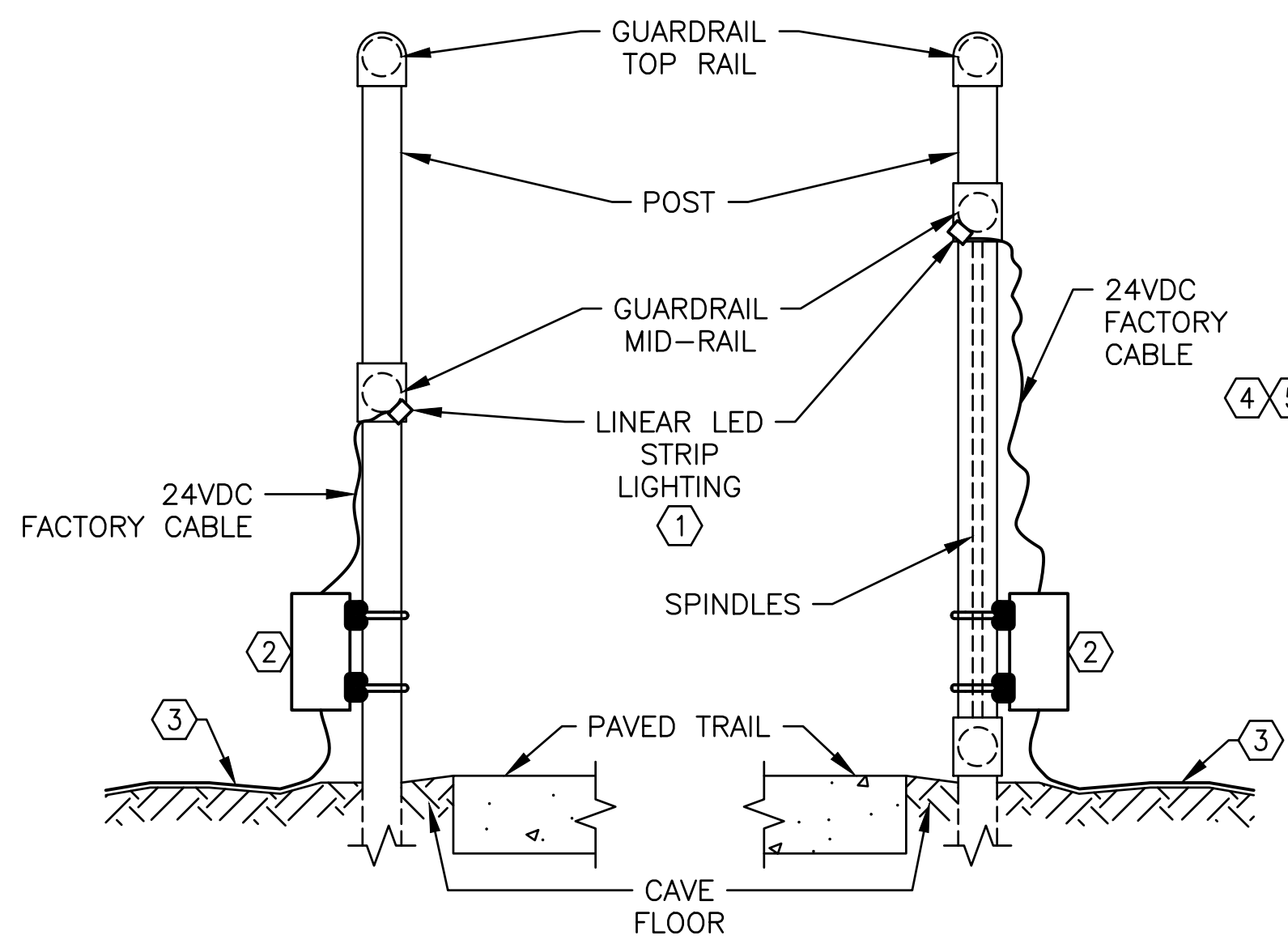
103 E-501 PSU PAVER MTG DETAIL
NO SCALE



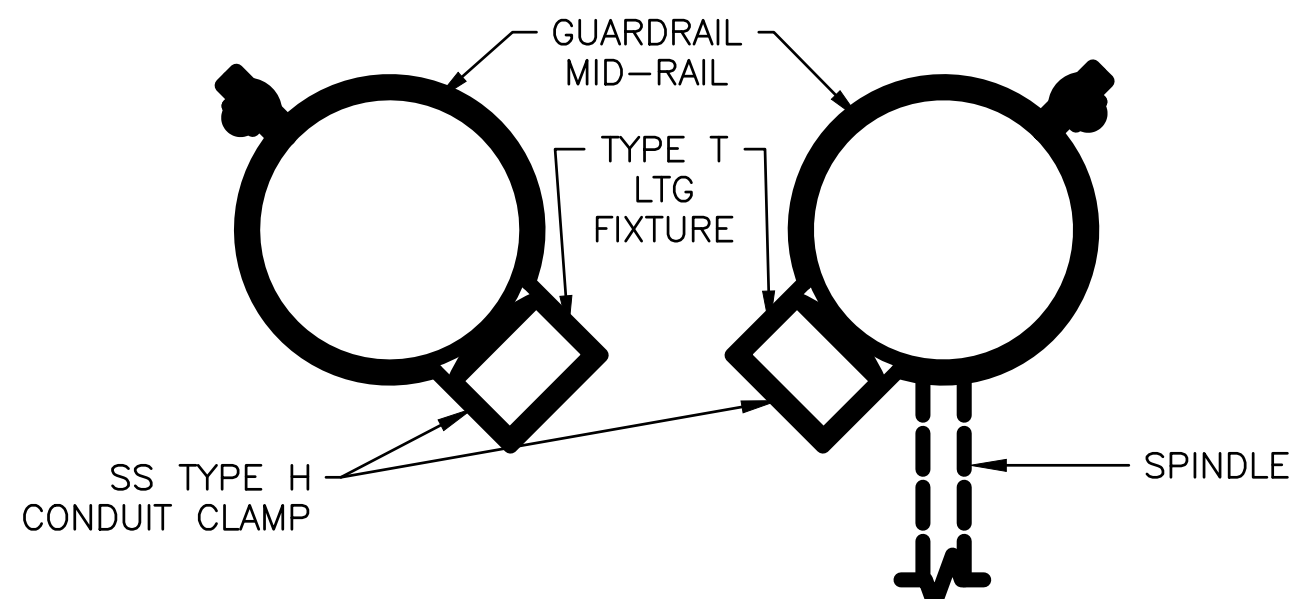
104 E-501 TYPE B LTG FIXTURE MTG DETAIL - UNSTABLE SURFACE W/ LIMITED SPACE (SHOWN W/O SNOOT OR SHROUD INSTALLED)
NO SCALE



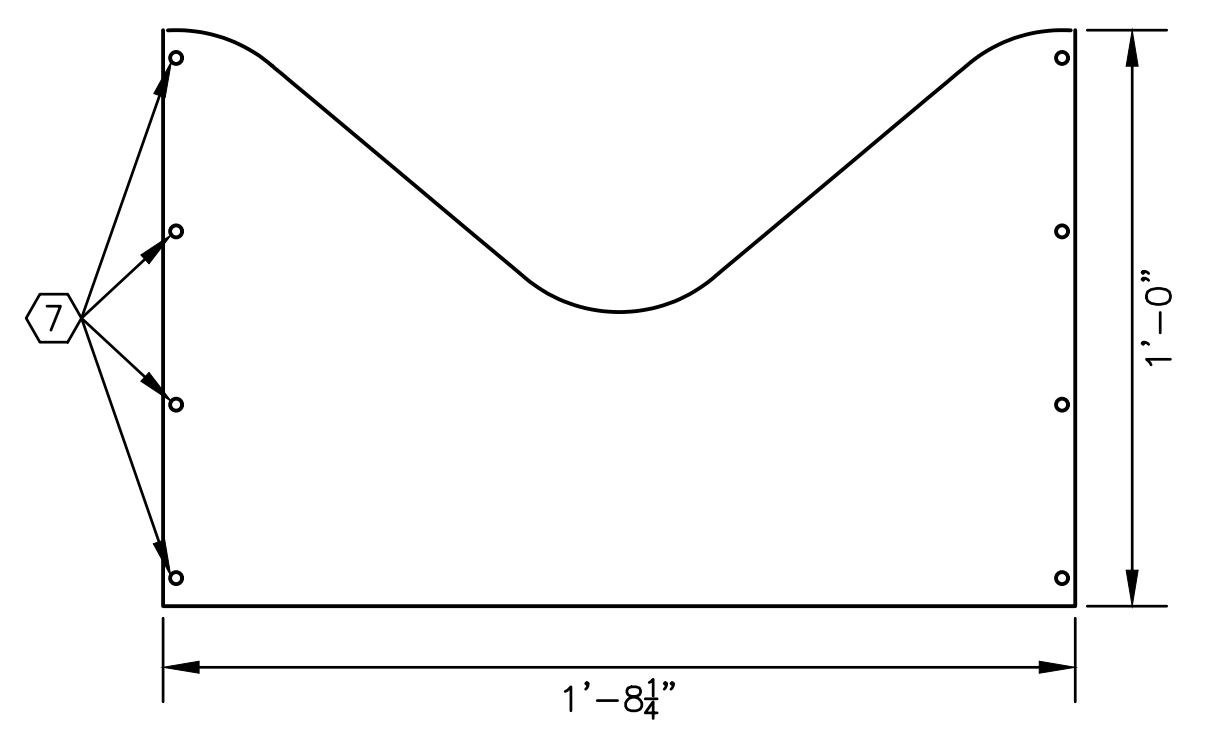
105 E-501 TYPE C & D LTG FIXTURE MTG DETAIL (SHOWN W/O SNOOT OR SHROUD INSTALLED)
NO SCALE



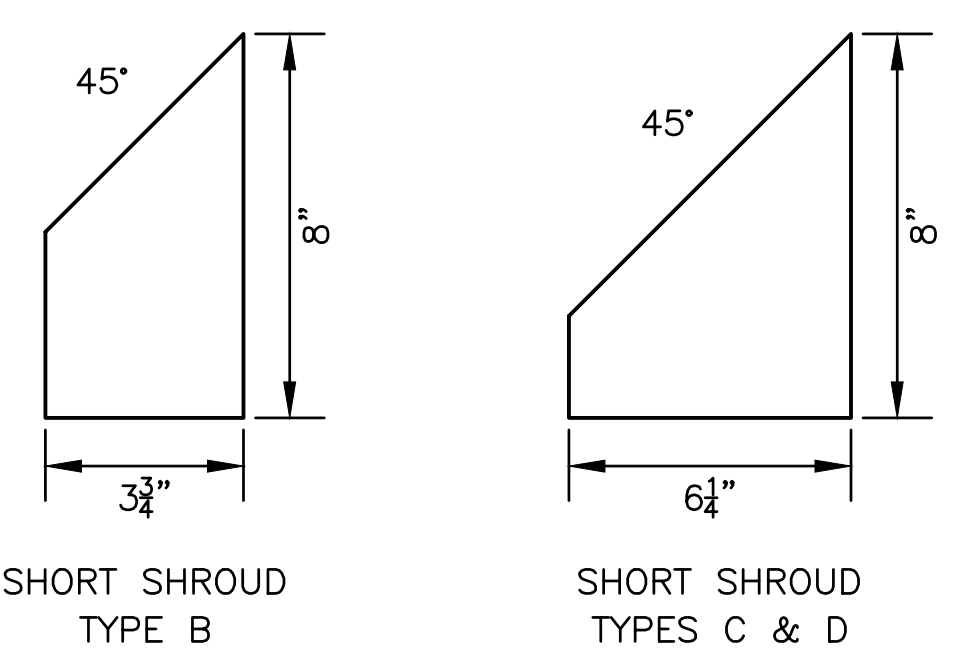
102 E-501 CAVE TRAIL TYPE T STRIP LTG FIXTURE MTG DETAILS
NO SCALE



106 E-501 CAVE TRAIL TYPE T STRIP LTG FIXTURE MTG DETAILS
NO SCALE



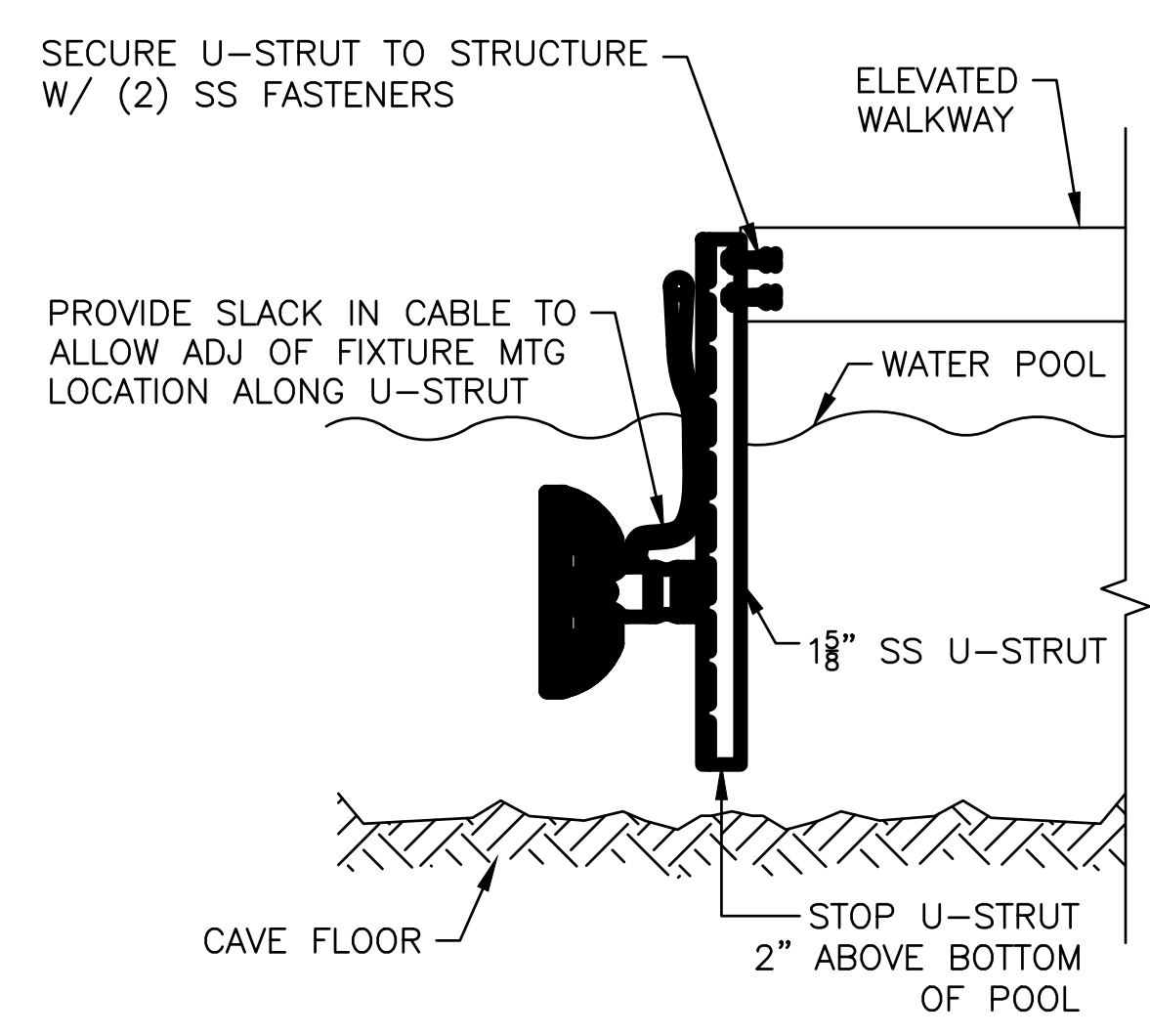
107 E-501 LIGHT SHROUD DETAIL
SCALE: 3"=1'-0"



108 E-501 TYPE DS LTG FIXTURE MTG DETAIL
NO SCALE

KEY NOTES:

- INSTALL FIXTURES IN MANUFACTURER FURNISHED MTG CHANNEL, AIM LTG FIXTURES TO ILLUMINATE CENTER OF TRAIL AND CLAMP ASSEMBLY TO HORIZONTAL GUARDRAIL TUBE USING MANUFACTURER FURNISHED CLAMPS.
- CONSTANT VOLTAGE DRIVER IN NEMA 6P/IP68 NON-METALLIC BOX. CLAMP DRIVER BOX EXTERNAL MTG FEET TO HANDRAIL POST USING 1/8" SS U-STRUT, SS U-BOLTS & SS MTG HARDWARE. DO NOT DRILL MTG HOLES IN BOX OR GUARDRAIL.
- 120VAC, 12/2 WG PVC JACKETED TYPE MC CABLE.
- USE FACTORY PROVIDED TRIPOD MOUNTS UNLESS DWGS SPECIFICALLY REFERENCE A MTD DETAIL ON THIS SHEET.
- SS MTG HARDWARE TO BE SIZED AS REQD.
- MATERIAL FOR LIGHT SHROUDS SHALL BE ABS16 OR KYDEX, 1/16" THICK. SHROUDS MOUNT INSIDE FACTORY PROVIDED SNOOT.
- HOLES FOR BLACK PLASTIC POP RIVETS.
- DRILL INTO ROCK & GROUT IN PLACE SO LTG CNTRL STATION CONDUIT IS PLUMB AND SOLID.
- THIS DETAIL APPLIES UNLESS PSU IS SHOWN TO BE MTD OTHERWISE ON THE ELEC PLANS.
- 1 TO 4 CABLES FOR TYPE A PSU. 5 TO 8 CABLES FOR TYPE B PSU.
- A SINGLE PAVER THAT IS LARGE ENOUGH FOR MTG THE PSU IS ALSO ACCEPTABLE.



108 E-501 TYPE DS LTG FIXTURE MTG DETAIL
NO SCALE



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 06-23-2023

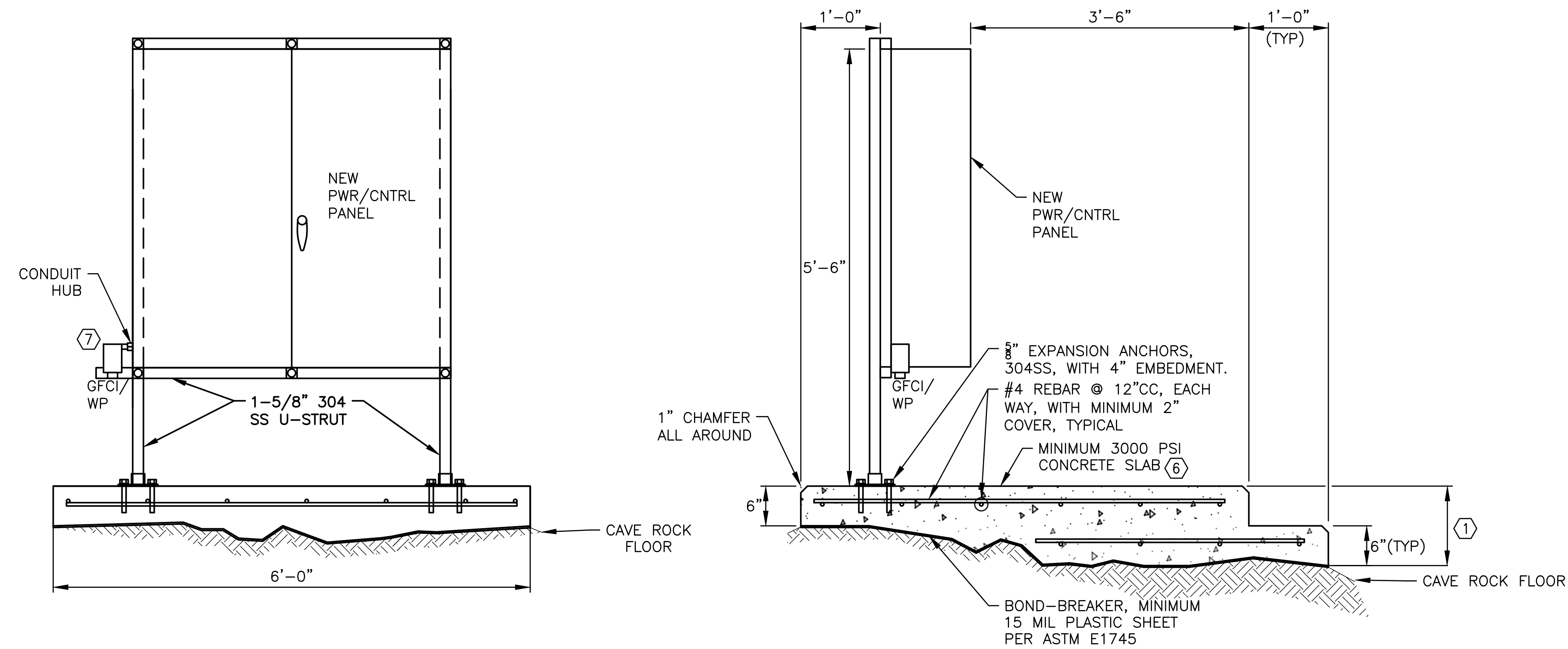
CAD DWG FILE: X2212-01-5215-7815215013-E-501.DWG
DRAWN BY: KET/MNS
CHECKED BY: BDF
DESIGNED BY: BDF

SHEET TITLE:
ELECTRICAL
DETAILS

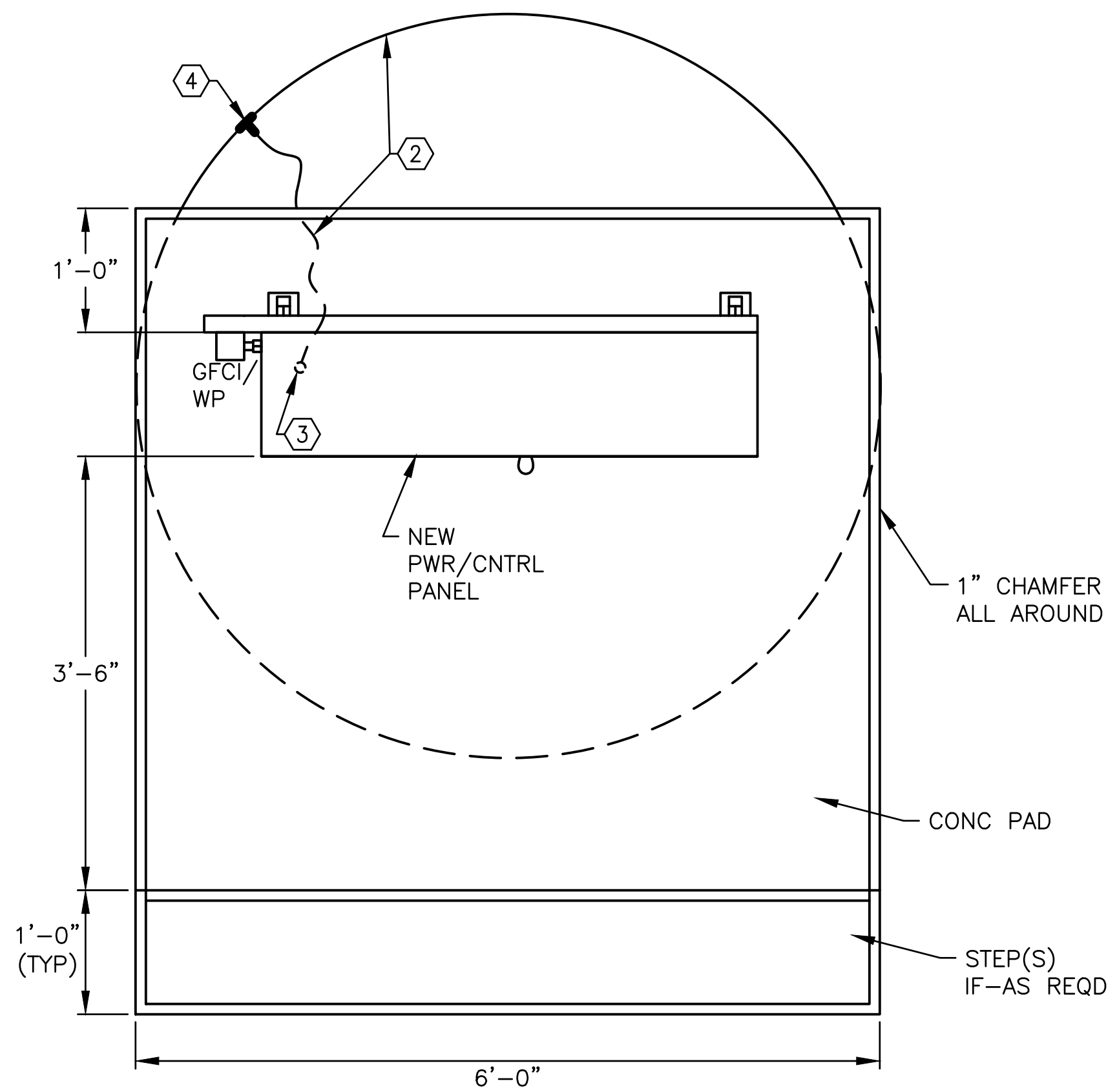
SHEET NUMBER:

E-501

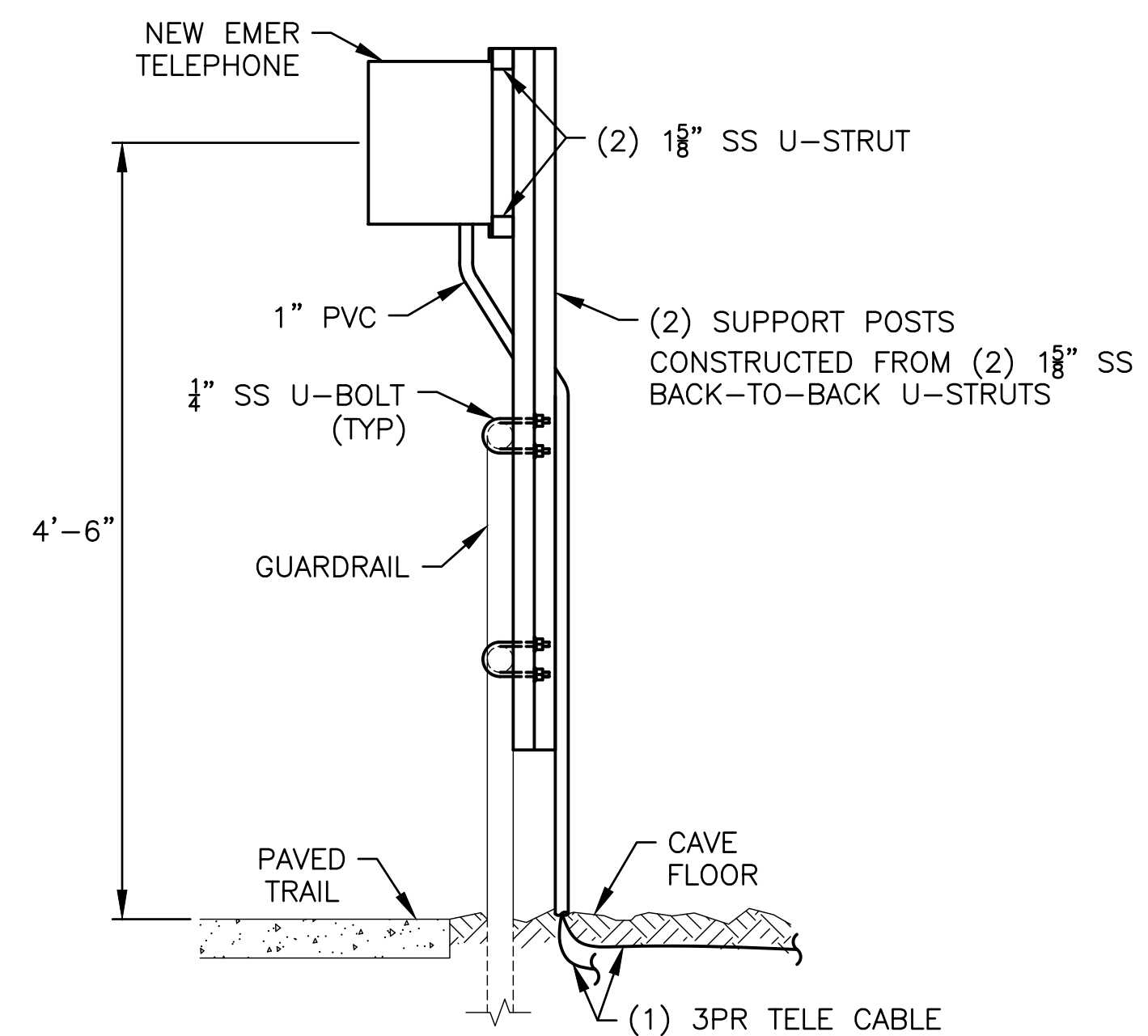
40 OF 50 SHEETS
JUNE 23, 2023



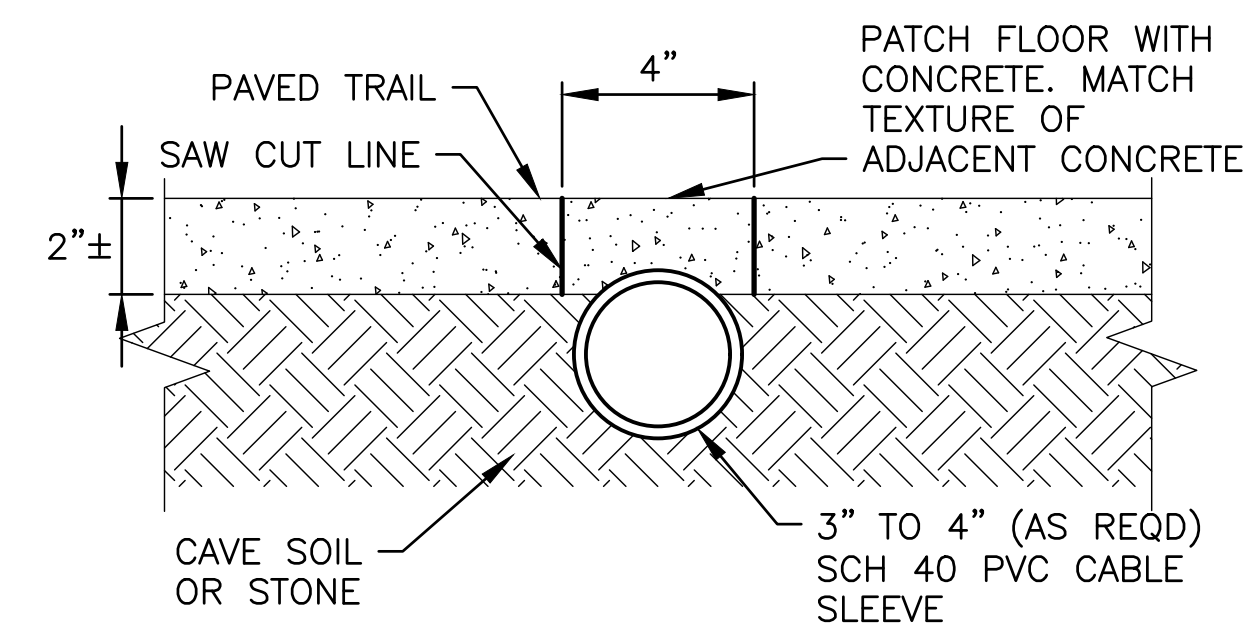
201 CAVE POWER/CONTROL PANEL MTG DETAIL
E-502 NO SCALE



202 CAVE PANELBOARD GROUNDING DETAIL
E-502 NO SCALE



203 EMER TELEPHONE MTG DETAIL
E-502 NO SCALE



204 CABLE SLEEVE DETAIL
E-502 NO SCALE

KEY NOTES:

1. IF OVER 7", PROVIDE STEP(S) FOR ACCESS.
2. 4/0 BARE STRD CU GROUNDING CABLE IN 6" DIAMETER CIRCLE, 6" BG. WHERE BELOW CONC PAD, INSTALL UNDER THE BOND BREAKER SHEET.
3. TERMINATE GRD CABLE ON EQUIP GRD BUS INSIDE PNLBD. DO NOT BOND NEUT BUS TO GRD.
4. EXOTHERMICALLY WELDED CONNECTION.
5. OBTAIN APPROVAL OF PARK NATURALIST BEFORE ADDING ANY SLEEVES ACROSS TRAIL.
6. PROVIDE COLOR ADDITIVE PER SPECIFICATION SECTION 033000. BROOM FINISH WITH 1/8" SLOPE TO DRAIN.
7. PROVIDE GFCI DUPLEX RECPT IN SINGLE-GANG TYPE FDL CAST BOX WITH WHILE-IN-USE WEATHERPROOF COVER.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

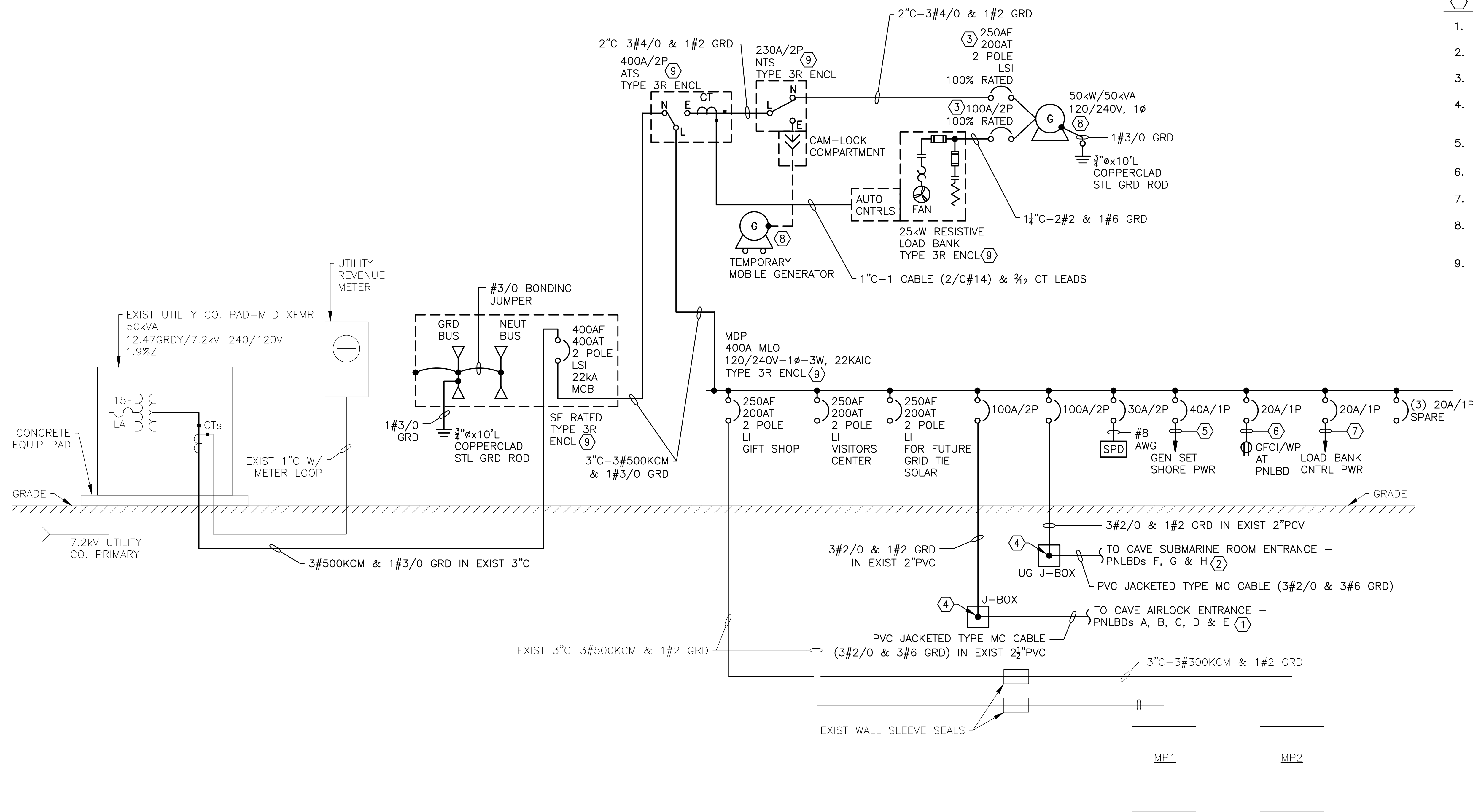
CAD DWG FILE: X2212-01-5215-
7815215013-E-502.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
ELECTRICAL
DETAILS

SHEET NUMBER:

E-502

41 OF 50 SHEETS
JUNE 23, 2023



ONE-LINE DIAGRAM

GENERAL NOTE:

A. ALL CONDUCTORS ARE STRD CU UNLESS NOTED OTHERWISE.

KEY NOTES:

1. SEE DWG E-602 FOR CONTINUATION.
2. SEE DWG E-603 FOR CONTINUATION.
3. FACTORY MTD ON GENERATOR SET.
4. SPLICE XHHW-2 SINGLE CONDUCTORS TO TYPE MC CABLE.
5. 1"C-2#8 & 1#10 GRD
6. 3/4"C-2#12 & 1#12 GRD
7. 1"C-2#12 & 1#12 GRD
8. DO NOT BOND NEUT TO GRD AT THE GENERATOR.
9. ALT BID NO.1: PROVIDE NEMA TYPE 4X SS ENCL.



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
**ROGERS-SCHMIDT
ENGINEERING CO., P.C.**
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____
REVISION:	_____
DATE:	_____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-E-601.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**ONE-LINE
ELECTRICAL
DIAGRAM**

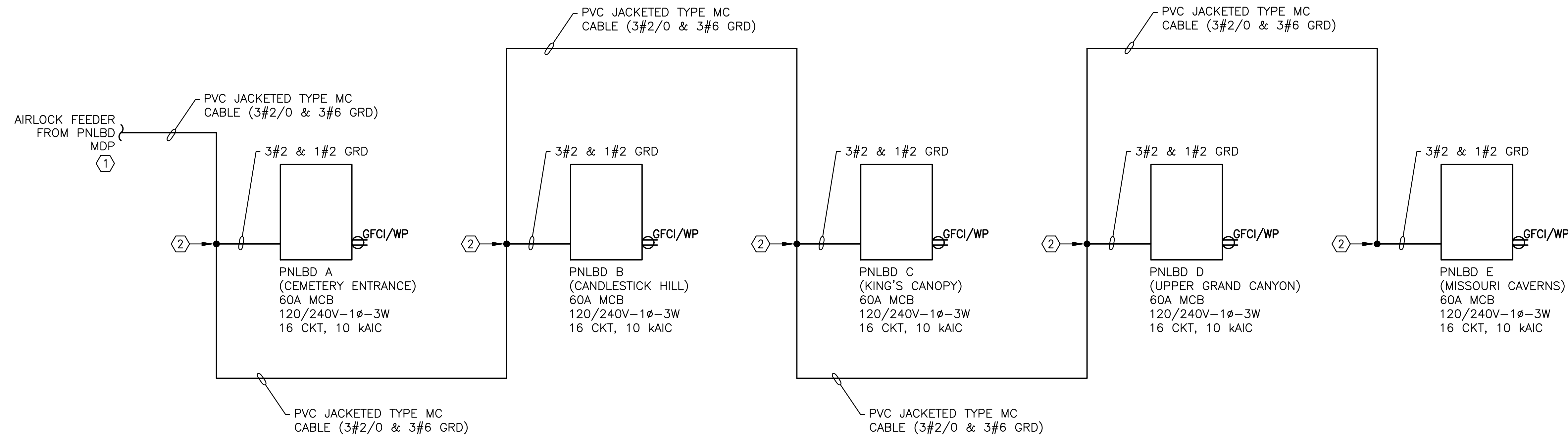
SHEET NUMBER:
E-601
42 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTE:

A. ALL CONDUCTORS ARE CU UNLESS NOTED OTHERWISE.

KEY NOTES:

1. SEE DWG E-601 FOR CONTINUATION.
2. SPLICE INSIDE PWR/CNTRL CABINET.



ONE-LINE DIAGRAM FOR CAVE AIRLOCK FEEDER

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-E-602.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**ONE-LINE
AIRLOCK FEEDER**

SHEET NUMBER:

E-602

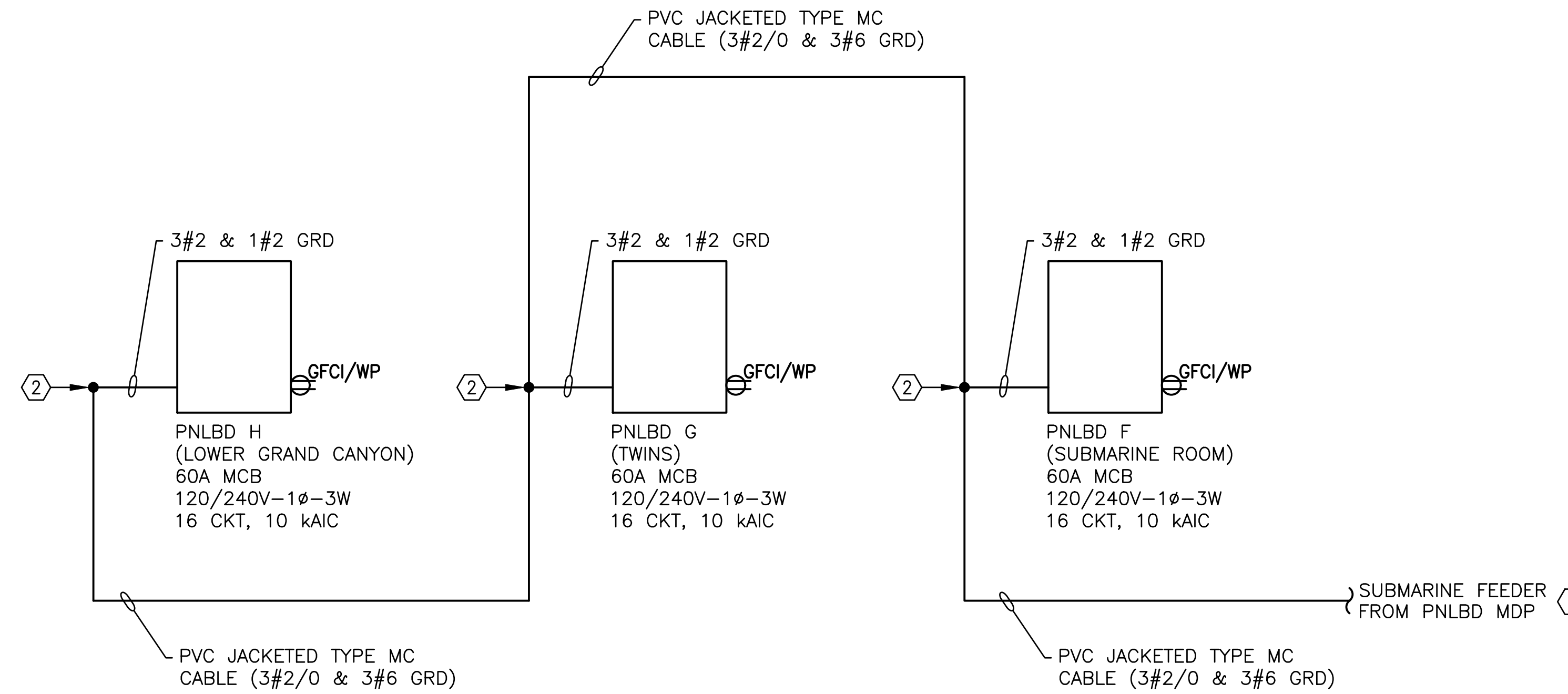
43 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTE:

A. ALL CONDUCTORS ARE CU UNLESS NOTED OTHERWISE.

KEY NOTES:

1. SEE DWG E-601 FOR CONTINUATION.
2. SPLICE INSIDE PWR/CNTRL CABINET.



ONE-LINE DIAGRAM FOR SUBMARINE ROOM FEEDER

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-E-603.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**ONE-LINE
SUBMARINE
ROOM FEEDER**

SHEET NUMBER:

E-603

44 OF 50 SHEETS
JUNE 23, 2023

NEW PANELBOARD A (CEMETERY ENTRANCE)

CKT NO	AMPS	POLES	LOAD	VOLT-AMPERES		VOLT-AMPERES		LOAD	POLES	AMPS	CKT NO
				ØA	ØB	ØA	ØB				
1	20	1	PSU 1, 2, 3, 4	158		650		TRAIL LIGHTS - AIR LOCK TO LOST RIVER	1	20	2
3	15	1	PSU 5, 6, 7		388		293	PSU 8, 9	1	15	4
5	20	1	SPARE	-	-	-	-	SPARE	1	20	6
7	20	1	SPARE	-	-	-	-	SPARE	1	20	8
9	20	1	SPARE	-	-	-	-	SPARE	1	20	10
11	20	1	SPARE	-	-	-	-	SPARE	1	20	12
13	20	1	ENCLOSURE MTD GFCl RECPT	180		-		SPARE	1	20	14
15	15	1	ENCLOSURE SPACE HEATER		120		120	CONTROL PANEL A	1	15	16
				-	-	-	-	MAIN BREAKER	2	60	
				338	508	650	413	TOTAL VOLT AMPERES =		1909	

60 AMP MCB, 120/240V-1Ø-3W 16 CKT, 1ØKAIC
 W/ INTEGRAL, BUS MTD 16ØKA SPD IN TYPE 1 ENCL
 SERVED FROM AIR LOCK SERVICE ENTRANCE

NEW PANELBOARD B (CANDLESTICK HILL)

CKT NO	AMPS	POLES	LOAD	VOLT-AMPERES		VOLT-AMPERES		LOAD	POLES	AMPS	CKT NO
				ØA	ØB	ØA	ØB				
1	20	1	PSU 10, 11, 12	414		665		TRAIL LIGHTS - LOST RIVER TO BIG RM SWITCHBACKS	1	20	2
3	15	1	PSU 13, 59		292		-	SPARE	1	20	4
5	15	1	PSU 16, 18, 19	340		-	-	SPARE	1	20	6
7	20	1	SPARE	-	-	-	-	SPARE	1	20	8
9	20	1	SPARE	-	-	-	-	SPARE	1	20	10
11	20	1	SPARE	-	-	-	-	SPARE	1	20	12
13	20	1	ENCLOSURE MTD GFCl RECPT	180		-		SPARE	1	20	14
15	15	1	ENCLOSURE SPACE HEATER		120		120	CONTROL PANEL B	1	15	16
				-	-	-	-	MAIN BREAKER	2	60	
				934	412	665	120	TOTAL VOLT AMPERES =		2131	

60 AMP MCB, 120/240V-1Ø-3W 16 CKT, 1ØKAIC
 W/ INTEGRAL, BUS MTD 16ØKA SPD IN TYPE 1 ENCL
 SERVED FROM AIR LOCK SERVICE ENTRANCE

NEW PANELBOARD C (KING'S CANOPY)

CKT NO	AMPS	POLES	LOAD	VOLT-AMPERES		VOLT-AMPERES		LOAD	POLES	AMPS	CKT NO
				ØA	ØB	ØA	ØB				
1	15	1	PSU 22, 57, 58	388		630		TRAIL LIGHTS - BENCH JUNCTION TO UPPER KINGS CANOPY OVERLOOK	1	20	2
3	15	1	PSU 17, 23, 24		328		467	PSU 25, 26, 27, 28	1	20	4
5	20	1	SPARE	-	-	-	-	SPARE	1	20	6
7	20	1	SPARE	-	-	-	-	SPARE	1	20	8
9	20	1	SPARE	-	-	-	-	SPARE	1	20	10
11	20	1	SPARE	-	-	-	-	SPARE	1	20	12
13	20	1	ENCLOSURE MTD GFCl RECPT	180		-		SPARE	1	20	14
15	15	1	ENCLOSURE SPACE HEATER		120		120	CONTROL PANEL C	1	15	16
				-	-	-	-	MAIN BREAKER	2	60	
				568	448	630	587	TOTAL VOLT AMPERES =		2233	

60 AMP MCB, 120/240V-1Ø-3W 16 CKT, 1ØKAIC
 W/ INTEGRAL, BUS MTD 16ØKA SPD IN TYPE 1 ENCL
 SERVED FROM AIR LOCK SERVICE ENTRANCE

NEW PANELBOARD D (UPPER GRAND CANYON)

CKT NO	AMPS	POLES	LOAD	VOLT-AMPERES		VOLT-AMPERES		LOAD	POLES	AMPS	CKT NO
				ØA	ØB	ØA	ØB				
1	20	1	PSU 35, 36, 37, 41	334		285		TRAIL LIGHTS - CACTUS ROOM TO LOWER GRAND CANYON	1	20	2
3	20	1	PSU 38, 39, 40, 42		212		-	SPARE	1	20	4
5	20	1	SPARE	-	-	-	-	SPARE	1	20	6
7	20	1	SPARE	-	-	-	-	SPARE	1	20	8
9	20	1	SPARE	-	-	-	-	SPARE	1	20	10
11	20	1	SPARE	-	-	-	-	SPARE	1	20	12
13	20	1	ENCLOSURE MTD GFCl RECPT	180		-		SPARE	1	20	14
15	15	1	ENCLOSURE SPACE HEATER		120		120	CONTROL PANEL D	1	15	16
				-	-	-	-	MAIN BREAKER	2	60	
				514	332	285	120	TOTAL VOLT AMPERES =		1251	

60 AMP MCB, 120/240V-1Ø-3W 16 CKT, 1ØKAIC
 W/ INTEGRAL, BUS MTD 16ØKA SPD IN TYPE 1 ENCL
 SERVED FROM AIR LOCK SERVICE ENTRANCE

NEW PANELBOARD E (MISSOURI CAVERNS)

CKT NO	AMPS	POLES	LOAD	VOLT-AMPERES		VOLT-AMPERES		LOAD	POLES	AMPS	CKT NO
				ØA	ØB	ØA	ØB				
1	15	1	PSU 43, 44	194		675		TRAIL LIGHTS - CATHEDRAL ROOM LOOP TO UPPER KINGS CANOPY OVERLOOK	1	20	2
3	20	1	PSU 45, 46, 47, 48		290		320	PSU 49, 50, 51, 52	1	20	4
5	20	1	SPARE	-	-	-	-	SPARE	1	20	6
7	20	1	SPARE	-	-	-	-	SPARE	1	20	8
9	20	1	SPARE	-	-	-	-	SPARE	1	20	10
11	20	1	SPARE	-	-	-	-	SPARE	1	20	12
13	20	1	ENCLOSURE MTD GFCl RECPT	180		-		SPARE	1	20	14
15	15	1	ENCLOSURE SPACE HEATER		120		120	CONTROL PANEL E	1	15	16
				-	-	-	-	MAIN BREAKER	2	60	
				374	410	675	440	TOTAL VOLT AMPERES =		1899	

60 AMP MCB, 120/240V-1Ø-3W 16 CKT, 1ØKAIC
 W/ INTEGRAL, BUS MTD 16ØKA SPD IN TYPE 1 ENCL
 SERVED FROM AIR LOCK SERVICE ENTRANCE

NEW PANELBOARD F (SUBMARINE ENTRANCE)

CKT NO	AMPS	POLES	LOAD	VOLT-AMPERES		VOLT-AMPERES		LOAD	POLES	AMPS	CKT NO
				ØA	ØB	ØA	ØB				
1	20	1	PSU 65, 66, 67, 68	432		425		TRAIL LIGHTS - LILY PAD LOOP TO BIG RM SWITCHBACKS	1	20	2
3	20	1	PSU 63, 69, 70, 71		383		-	SPARE	1	20	4
5	20	1	SPARE	-	-	-	-	SPARE	1	20	6
7	20	1	SPARE	-	-	-	-	SPARE	1	20	8
9	20	1	SPARE	-	-	-	-	SPARE	1	20	10
11	20	1	SPARE	-	-	-	-	SPARE	1	20	12
13	20	1	ENCLOSURE MTD GFCl RECPT	180		-		SPARE	1	20	14
15	15	1	ENCLOSURE SPACE HEATER		120		120	CONTROL PANEL F	1	15	16
				-	-	-	-	MAIN BREAKER	2	60	
				612	503	425	120	TOTAL VOLT AMPERES =		1660	

60 AMP MCB, 120/240V-1Ø-3W 16 CKT, 1ØKAIC
 W/ INTEGRAL, BUS MTD 16ØKA SPD IN TYPE 1 ENCL
 SERVED FROM SUBMARINE ROOM SERVICE ENTRANCE

NEW PANELBOARD G (TWINS)

CKT NO	AMPS	POLES	LOAD	VOLT-AMPERES		VOLT-AMPERES		LOAD	POLES	AMPS	CKT NO
				ØA	ØB	ØA	ØB				
1	15	1	PSU 14, 15, 21	287		460		TRAIL LIGHTS - BENCH JUNCTION TO LOWER NORTH RIVER	1	20	2
3	15	1	PSU 20, 60, 61		236		-	SPARE	1	20	4
5	15	1	PSU 62, 64	218		-		SPARE	1	20	6
7	20	1	SPARE	-	-	-	-	SPARE	1	20	8
9	20	1	SPARE	-	-	-	-	SPARE	1	20	10
11	20	1	SPARE	-	-	-	120	CONTROL PANEL G	1	15	12
13	20	1	ENCLOSURE MTD GFCl RECPT	180		1000		WATER PUMP	2	30	14
15	15	1	ENCLOSURE SPACE HEATER		120		1000		1	15	16
				-	-	-	-	MAIN BREAKER	2	60	
				685	356	1460	1120	TOTAL VOLT AMPERES =		3621	

60 AMP MCB, 120/240V-1Ø-3W 16 CKT, 1ØKAIC
 W/ INTEGRAL, BUS MTD 16ØKA SPD IN TYPE 1 ENCL
 SERVED FROM SUBMARINE ROOM SERVICE ENTRANCE

NEW PANELBOARD H (LOWER GRAND CANYON)

CKT NO	AMPS	POLES	LOAD	VOLT-AMPERES		VOLT-AMPERES		LOAD	POLES	AMPS	CKT NO
				ØA	ØB	ØA	ØB				
1	20	1	PSU 29, 30, 31, 32, 33	410		340		TRAIL LIGHTS - LOWER NORTH RIVER TO LOWER GRAND CANYON	1	20	2
3	15	1	PSU 34, 53, 54		366		291	PSU 55, 56, 72	1	15	4
5	20	1	SPARE	-	-	-	-	SPARE	1	20	6
7	20	1	SPARE	-	-	-	-	SPARE	1	20	8
9	20	1	SPARE	-	-	-	-	SPARE	1	20	10
11	20	1	SPARE	-	-	-	-	SPARE	1	20	12
13	20	1	ENCLOSURE MTD GFCl RECPT	180		-		SPARE	1	20	14
15	15	1	ENCLOSURE SPACE HEATER		120		120	CONTROL PANEL H	1	15	16
				-	-	-	-	MAIN BREAKER	2	60	
				590	486	340	411	TOTAL VOLT AMPERES =		1827	

60 AMP MCB, 120/240V-1Ø-3W 16 CKT, 1ØKAIC
 W/ INTEGRAL, BUS MTD 16ØKA SPD IN TYPE 1 ENCL
 SERVED FROM SUBMARINE ROOM SERVICE ENTRANCE

GENERAL NOTE:

A. PROVIDE PNLBD's PER SPECIFICATION SECTION 262416.

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR



BARRY D. FREINER
 Registered Professional Engineer
 MO # E-24220
 Expires 12-31-2024

ROGERS-SCHMIDT
 ENGINEERING CO., P.C.
 CONSULTING ENGINEERS
 1736 WEST PARK CENTER DR.
 SUITE 204
 ST. LOUIS, MO 63026
 PHONE: 636-600-1551
 MISSOURI STATE CERTIFICATE
 OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
 DIVISION OF FACILITIES
 MANAGEMENT,
 DESIGN AND CONSTRUCTION

DEPARTMENT OF
 NATURAL RESOURCES
 DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
 STATE PARK
 7556 HWY H
 LEASBURG, MO 65535

PROJECT # X2212-01

SITE # 5215

ASSET # 7815215013

REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-7815215013-E-604.DWG
 DRAWN BY: K E T
 CHECKED BY: B D F
 DESIGNED BY: B D F

SHEET TITLE:
 NEW PANELBOARD
 SCHEDULES

SHEET NUMBER:

E-604

45 OF 50 SHEETS
 JUNE 23, 2023

GENERAL NOTE:

A. PROVIDE LTG FIXTURES PER SPECIFICATION SECTIONS 265113 & 265613.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

NEW LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER CATALOG NUMBER	LAMP DATA				VOLTAGE	FIXTURE WATTAGE	MOUNTING	FINISH	REMARKS
			TYPE	NO.	WATTS	SPECIFICATIONS					
T	TRAIL GUARDRAIL LINEAR LIGHTING	DIODE LED DI-SO-24V-3D-AT-20-30-LENGTH(IN.) W/ SPCHSS OR MITCHSLVPVC-MTG CHANNEL NO APPROVED EQUAL	LED	-	0.5 W/FT	20 LUMENS/FT, 3000K CCT, 90+ CRI 40 LM/W EFFICACY	24VDC	VARIES BASED ON LENGTH	GUARDRAIL HORIZONTAL TUBE	STAINLESS STEEL OR SILVER	IP69 CONTINUOUSLY SUBMERSIBLE PROVIDE W/ SS SPINE TYPE OR SILVER PVC MOUNTING CHANNEL AND W/ 24VDC CONSTANT VOLTAGE VLM DRIVER. FIXTURE LENGTHS AS REQD FOR EXIST GUARDRAIL CONFIGURATIONS.
B	SMALL FLOOD LIGHT 40" X 40" BEAM SPREAD	ACCLAIM AQP-211-AHCN NO APPROVED EQUAL	LED	8	1	3000K CCT, ≥ 80CRI	24VDC	8	YOKE ON ELECTRICALLY ISOLATED TRIPOD OR BOLTED TO PAVER	BLACK	IP68 CONTINUOUSLY SUBMERSIBLE TO 20 FEET PROVIDE W/ YOKE, TRIPOD & 3" SNOOT. PROVIDE W/ SHORT SHROUD WHERE INDICATED ON DWGS. ALL FIXTURE ACCESSORIES TO BE BLACK.
C	LARGE SPOT LIGHT 10" X 10" BEAM SPREAD	ACCLAIM AQP-211-CCCN NO APPROVED EQUAL	LED	36	1	3000K CCT, ≥ 80CRI	24VDC	36	YOKE ON ELECTRICALLY ISOLATED TRIPOD OR BOLTED TO PAVER	BLACK	IP68 CONTINUOUSLY SUBMERSIBLE TO 20 FEET PROVIDE W/ YOKE, TRIPOD & 3" SNOOT. PROVIDE W/ SHORT SHROUD WHERE INDICATED ON DWGS. ALL FIXTURE ACCESSORIES TO BE BLACK.
D	LARGE FLOOD LIGHT 40" X 40" BEAM SPREAD	ACCLAIM AQP-211-CHCN NO APPROVED EQUAL	LED	36	1	3000K CCT, ≥ 80CRI	24VDC	36	YOKE ON ELECTRICALLY ISOLATED TRIPOD OR BOLTED TO PAVER	BLACK	IP68 CONTINUOUSLY SUBMERSIBLE TO 20 FEET PROVIDE W/ YOKE, TRIPOD & 3" SNOOT. PROVIDE W/ SHORT SHROUD WHERE INDICATED ON DWGS. ALL FIXTURE ACCESSORIES TO BE BLACK.
DS	SUBMERGED LARGE FLOOD LIGHT 40" X 40" BEAM SPREAD	ACCLAIM AQP-211-CHCN NO APPROVED EQUAL	LED	36	1	3000K CCT, ≥ 80CRI	24VDC	36	YOKE BOLTED TO U-STRUT SUBMERGED IN WATER	BLACK	IP68 CONTINUOUSLY SUBMERSIBLE TO 20 FEET PROVIDE W/ YOKE, TRIPOD & 3" SNOOT. PROVIDE W/ SHORT SHROUD WHERE INDICATED ON DWGS. ALL FIXTURE ACCESSORIES TO BE BLACK. FIXTURE TO BE MOUNTED SUBMERGED IN A WATER FEATURE.
F	ENCLOSED & GASKETED LED	LITHONIA FEM L48 3000LM IMAFL MD 120 GZ10 30K 80CRI SF STSL WITH WLFEND OR WLFEND2 AND WITH FEMSMB OR APPROVED EQUAL BY HE WILLIAMS OR COOPER	LED	1	--	2689 LUMENS, 3000K CCT, 80 CRI	120VAC	18	SURFACE CEILING	WHITE	FIBERGLASS HOUSING & ACRYLIC LINEAL FROSTED LENS WITH GLR FUSING, SS LATCHES, (1) OR (2) 1/2" FACTORY WATERTIGHT HUBS, AND FEMSMB SS MTG BRACKETS
G	WET LOCATION CEILING MOUNT	AMERICAN SCIENTIFIC LIGHTING DREC W9 ND 30K W5 BBX OR APPROVED EQUAL	LED	1	--	1007 LUMENS, 3000K CCT, 80+ CRI	120VAC	9	SURFACE CEILING	BLACK	PROVIDE WITH OPAL WHITE LENS, BLACK BACK BOX WITH ONE 3/4" CONDUIT OPENING ON BOTH ENDS, GLR FUSING, AND SURGE PROTECTION
W	WET LOCATION WALL MOUNT	NEWPORT COASTAL 7974-01B OR APPROVED EQUAL BY FEISS OR PROGRESS LIGHTING	LED	1	4.5	EIKO - L4.5WA19/830GC/D/E26 3000K, E26, A19, 450 LUMENS, 80+ CRI	120VAC	4.5	SURFACE WALL	BLACK	PLASTIC HOUSING

LAMP TYPES: LED = LIGHT EMITTING DIODE

NOTES:

1. CONFIGURATION CODE FOR FEATURE LIGHTING FIXTURES ON DRAWINGS: CIRCUIT NUMBER, NUMBER OF THE FIXTURE ON THE CIRCUIT, FIXTURE TYPE (B, C, D OR DS), PSU NUMBER FIXTURE IS CONNECTED TO, SNOOT/SHROUD SPEC (S=SNOOT, SS=SHORT SHROUD, LS=LONG SHROUD); E.G., A4B1S.
2. FIXTURE TYPES B, C, D & DS SHALL BE POWERED FROM ACCLAIM ADR157 OR ADR400 REMOTE DMX ADDRESSABLE POWER SUPPLY UNIT (PSU) MOUNTED IN A NON-METALLIC IP68 ENCLOSURE BY CONTRACTOR.
3. SHROUDS FOR FEATURE LIGHTING FIXTURES ARE TO BE FABRICATED PER THE DETAILS ON DWG E-501. ALL OTHER ITEMS ARE TO BE STANDARD ACCESSORIES PROVIDED BY THE LIGHTING FIXTURE MANUFACTURER.
4. ALL FEATURE LIGHTING FIXTURES CALLED OUT TO HAVE EITHER A SHORT OR LONG SHROUD SHALL ALSO BE PROVIDED WITH A FACTORY 3" SNOOT.
5. FIXTURE TYPES B, C, D & DS SHALL BE PROVIDED WITH A 98.5' FACTORY CABLE. LEAVE THE FACTORY CABLE FULL LENGTH ON ALL FIXTURES. DO NOT CUT THE FACTORY CABLES.
6. FIXTURE TYPE T SHALL BE POWERED FROM DIOELED TYPE VLM CONSTANT VOLTAGE (NON-DIMMABLE) DRIVER MOUNTED IN A NON-METALLIC IP68 ENCLOSURE BY THE FIXTURE MANUFACTURER.

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01

SITE # 5215

ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-E-605.DWG
DRAWN BY: KET/MNS
CHECKED BY: BDF
DESIGNED BY: BDF

SHEET TITLE:
NEW LIGHTING
FIXTURE
SCHEDULE

SHEET NUMBER:

E-605

46 OF 50 SHEETS
JUNE 23, 2023

POWER SUPPLY UNIT SCHEDULE FOR ALL CAVE LIGHTING EXCEPT TRAIL LIGHTS

PSU #	LTG CKT	# OF LTG FIXTURES	LTG FIXTURE NUMBER AND TYPE										LITE SWITCH #	TOTAL CONNECTED LOAD (WATTS)	LOCATION
1	A	8	A 1 B	A 2 B	A 3 B	A 6 B	A 7 B	A 8 B	A 9 B	A 10 B		S1.1, S1.4, S2.1, S4.3	64	TUCKED BACK INTO THE ALCOVE JUST AFTER EXITING ENTRANCE TUNNEL ON THE RIGHT-HAND SIDE OF THE TRAIL	
2	B	1	B 3 D									S2.5, S4.1	36		
3	A	6	A 4 B	A 5 B	A 11 B	A 12 B	A 13 B	A 14 B				S1.1, S1.4, S2.1, S4.3	48		
4	B	1	B 4 D									S2.2, S4.1	36		
5	B	1	B 5 B									S2.3, S4.1	8	ON RIGHT-HAND SIDE OF THE TRAIL TUCKED UP AGAINST THE DROP-OFF AT THE TRAIL EDGE	
6	B	1	B 1 B									S2.4, S4.1	8		
7	B	1	B 2 B									S2.5, S4.1	8		
8	B	1	B 6 B									S2.6, S4.1	8		
9	C	1	C 2 D									S3.1, S4.1	36		
10	C	1	C 1 C									S3.2, S4.1	36	LOCATED ON TOP OF THE TOUCHSTONE BRIDGE	
11	C	2	C 3 D	C 4 D								S3.3, S4.1	72		
12	D	8	D 1 D	D 2 D	D 3 C	D 4 D	D 5 D	D 6 D	D 7 D	D 47 D		S4.2, S4.4, S5.1, S5.2	288		
13	D	7	D 8 D	D 9 D	D 10 D	D 11 D	D 12 D	D 13 D	D 18 C			S4.2, S4.4, S5.1, S5.2	252	LOCATED NEXT TO THE BRIDGE OVER THE LOST RIVER AT TRAIL BEND BEFORE THE DEVIL'S BATHTUB. LOCATE AS HIGH AS POSSIBLE TO REDUCE FLOOD DEPTH.	
14	D	8	D 14 D	D 15 D	D 16 C	D 17 D	D 19 C	D 20 D	D 21 D	D 25 D		S4.2, S4.4, S5.1, S5.2	288	LOCATED BEHIND THE NEW EMERGENCY TELEPHONE IN SLOT IN THE FLOOR LEDGE 30' FROM THE RIGHT-HAND EDGE OF THE TRAIL	
15	D	8	D 22 D	D 23 D	D 24 C	D 26 D	D 27 D	D 28 C	D 29 D	D 30 D		S4.2, S4.4, S5.1, S5.2	288	LOCATED BETWEEN THE BOULDER-SHAPED LEDGES TO THE LEFT OF THE TRAIL, BEFORE THE WOODEN BRIDGE	
16	D	8	D 31 D	D 32 D	D 33 D	D 34 D	D 35 C	D 36 D	D 37 C	D 38 D		S4.2, S4.4, S5.1, S5.2	288	LOCATED TO THE LEFT OF THE TRAIL AT THE CONDUIT CROSSING SOUTH OF THE BREAKDOWN ROOM	
17	D	8	D 39 C	D 40 D	D 41 D	D 42 D	D 43 D	D 44 D	D 45 D	D 46 D		S4.2, S4.4, S5.1, S5.2	288	LOCATED BEHIND THE HEAD KNOCKER ROCK NEXT TO THE "CANDLESTICK HILL" PWR/CNTRL PNL B, NEXT TO PSU 20	
18	P	1	P 17 B									S11.5, S11.7, S11.8	8	LOCATED ALONG THE TRAIL TO MISSOURI CAVERNS ON THE RIGHT-HAND SIDE OF THE TRAIL AT THE TOP OF A CLAY BANK, NEXT TO PSU 58	
19	V	7	V 31 C	V 32 D	V 33 D	V 34 C	V 36 D	V 37 D	V 38 D			S15.3, S15.4	252	LOCATED NEXT TO THE "SUBMARINE ROOM" PWR/CNTRL PNL F IN AN ALCOVE OFF OF THE SUBMARINE PASSAGE	
20	U	7	U 1 C	U 2 D	U 3 C	U 4 C	U 5 C	U 6 C	U 15 C			S14.2, S14.4, S15.4	252	LOCATED BEHIND THE HEAD KNOCKER ROCK NEXT TO THE "CANDLESTICK HILL" PWR/CNTRL PNL B, NEXT TO PSU 17	
21	E	2	E 1 B	E 3 B								S6.1, S7.1	16		
22	E	7	E 2 C	E 4 D	E 5 D	E 6 D	E 7 D	E 8 C	E 9 C			S6.1, S7.1	252		
23	E	1	E 11 B									S6.3, S7.1	8	LOCATED ON NORTH EDGE OF THE PLATFORM AT THE TWINS SOUTH OF THE "TWINS" PWR/CNTRL PNL G	
24	E	1	E 10 C									S6.2, S7.1	36		
25	H	4	H 6 D	H 7 D	H 8 D	H 13 D						S6.7, S7.1, S14.3, S14.5, S15.1	144		
26	H	4	H 9 D	H 10 D	H 11 D	H 12 D						S6.7, S7.1, S14.3, S14.5, S15.1	144	LOCATED AT THE ENTRANCE TO LITTLE BEAR PASSAGE, NEXT TO PSU 71	
27	Q	1	Q 5 C									S11.2, S11.7, S11.8	36	LOCATED ALONG THE LEFT-HAND WALL IN THE LOW SIDE PASSAGE OFF OF THE ROCK OF AGES ROOM, NEXT TO PSUs 53 THRU 57	
28	L	2	L 2 D	L 4 D								S7.7, S8.5	72	LOCATED UNDER THE CATWALK AT THE ENTRANCE TO THE CARROT GALLERY, NEAR PSU 39	
29	J	2	J 3 B	J 4 B								S7.2, S7.3	16	LOCATED BETWEEN THE ROCKS AT THE END OF THE KING'S CANOPY OVERLOOK AND THE FORMATION LEDGE, NEXT TO PSU 34	
30	F	8	F 1 D	F 2 D	F 3 C	F 4 D	F 5 D	F 6 D	F 7 D	F 8 C		S6.4, S7.1	288	LOCATED AT THE CORNER OF THE TWINS PLATFORM AGAINST THE WALL NEXT TO THE EMERGENCY TELEPHONE.	
31	G	8	G 1 D	G 2 D	G 3 C	G 4 C	G 5 D	G 11 D	G 12 D	G 13 C		S6.5, S7.1	288	LOCATED IN THE SHALLOW PIT NEXT TO THE NEW FOSSIL PASSAGE ON THE LEFT-HAND SIDE OF THE TRAIL	
32	G	5	G 6 D	G 7 D	G 8 D	G 9 D	G 10 C					S6.5, S7.1	180	LOCATED ON THE FLOOR UNDER THE CEILING LEDGE 10' BELOW THE LEFT SIDE OF THE TRAIL	
33	I	5	I 1 C	I 2 D	I 3 D	I 4 D	I 5 D					S6.6, S7.1	180	LOCATED BY THE MAINTENANCE TRAIL NEXT TO THE NEW "KING'S CANOPY" PWR/CNTRL PNL C	
34	J	3	J 1 C	J 2 D	J 5 C							S7.2, S7.3	108	LOCATED BETWEEN THE ROCKS AT THE END OF THE KING'S CANOPY OVERLOOK AND THE FORMATION LEDGE, NEXT TO PSU 30	
35	K	7	K 11 C	K 12 C	K 13 C	K 14 C	K 15 C	K 16 C	K 17 C			S7.6, S8.5	252		
36	K	4	K 7 C	K 9 D	K 10 D	K 18 C						S7.5, S8.5	144	LOCATED ON THE RIGHT-HAND SIDE OF THE TRAIL JUST NORTH OF THE KING'S CANOPY OVERLOOK VIEWING PLATFORM	
37	K	6	K 4 C	K 5 C	K 6 C	K 8 D	K 19 C	K 20 C				S7.5, S8.5	216		
38	K	3	K 1 D	K 2 D	K 3 C							S7.4, S8.5	108		
39	L	2	L 1 B	L 3 B								S7.7, S8.5	16	LOCATED UNDER THE CATWALK AT THE ENTRANCE TO THE CARROT GALLERY, NEAR PSU 28	
40	L	7	L 5 B	L 6 B	L 7 B	L 8 B	L 9 B	L 10 B	L 11 B			S7.7, S8.5	56	LOCATED AT THE BASE OF THE STAIRS AT THE EXIT OF THE CARROT GALLERY GOING DOWN TO THE KING'S CANOPY LANDING	
41	LL	8	LL 1 D	LL 2 C	LL 3 C	LL 4 C	LL 5 D	LL 6 C	LL 24 C	LL 25 C		S8.4, S9.1	288		
42	LL	1	LL 7 D									S8.1, S9.1	36	LOCATED UNDER THE STAIRS AT THE ENTRANCE OF THE FORMATION BALCONY GOING DOWN TO THE KING'S CANOPY LANDING	
43	LL	2	LL 14 C	LL 15 D								S8.4, S9.1	72		
44	LL	7	LL 8 B	LL 9 B	LL 10 B	LL 11 B	LL 12 B	LL 13 B	LL 23 B			S8.4, S9.1	252	LOCATED IN THE CORNER OF THE TRAIL SOUTH OF BEAR BONE BOXES ON THE LEFT-HAND SIDE OF THE TRAIL NEXT TO A FLOOR LEDGE	
45	LL	7	LL 16 D	LL 17 D	LL 18 D	LL 19 D	LL 20 D	LL 21 D	LL 22 D			S8.4, S19.1	252		

NOTE:
1. MOUNT PSUs AS INDICATED IN THE DETAIL ON THE DWGS IN THE LOCATIONS INDICATED IN THIS SCHEDULE. THE DESIGN INTENT IS THAT THE PSUs BE ACCESSIBLE FOR MAINTENANCE BUT OUT OF SIGHT FROM THE TRAIL TO THE GREATEST EXTENT POSSIBLE.

GENERAL NOTE:

A. PROVIDE PSU's PER SPECIFICATION SECTION 265613.

STATE OF MISSOURI
MICHAEL L. PARSON,
GOVERNOR



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-7815215013-E-606.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
NEW LIGHTING
POWER SUPPLY
UNIT (PSU)
SCHEDULE

SHEET NUMBER:

E-606

47 OF 50 SHEETS
JUNE 23, 2023

POWER SUPPLY UNIT SCHEDULE FOR ALL CAVE LIGHTING EXCEPT TRAIL LIGHTS (CONTINUED)

PSU #	LTG CKT	# OF LTG FIXTURES	LTG FIXTURE NUMBER AND TYPE										LITE SWITCH #	TOTAL CONNECTED LOAD (WATTS)	LOCATION
46	N	8	N 1 B	N 2 B	N 4 B	N 6 B	N 8 B	N 9 B	N 10 B	N 12 B	S9.3, S11.7, S11.8, S11.9, S12.1	64	LOCATED BEHIND THE COLUMN TO THE LEFT OF THE TRAIL BEFORE THE ENTRANCE TO THE ROCK OF AGES ROOM		
47	N	5	N 3 D	N 5 C	N 7 D	N 11 D	N 16 D				S9.3, S11.7, S11.8, S11.9, S12.1	180			
48	N	8	N 13 B	N 14 B	N 15 B	N 17 B	N 18 B	N 19 B	N 20 B	N 21 B	S9.3, S11.7, S11.8, S11.9, S12.1	64			
49	O	2	O 3 B	O 5 B							S10.2, S11.7, S11.8, S11.9, S12.1	16	LOCATED 4' TO THE LEFT OF THE TRAIL ON THE EAST SIDE OF THE CACTUS ROOM ON THE FLOOR, NEXT TO THE EXISTING CONDUIT CROSSING		
50	O	3	O 1 D	O 2 D	O 4 D						S10.2, S11.7, S11.8, S11.9, S12.1	108	LOCATED 4' TO THE LEFT OF THE TRAIL ON THE EAST SIDE OF THE CACTUS ROOM ON THE FLOOR, NEXT TO THE EXISTING CONDUIT CROSSING		
51	P	8	P 1 B	P 3 B	P 5 B	P 8 B	P 9 B	P 10 B	P 37 B	P 38 B	S10.3, S11.7, S11.8, S11.9, S12.1	64	LOCATED NEXT TO THE RIGHT-HAND SIDE OF THE TRAIL JUST AS YOU ENTER THE ROCK OF AGES ROOM		
52	P	8	P 2 D	P 4 D	P 6 D	P 7 D	P 11 C	P 12 C	P 13 D	P 36 D	S10.3, S11.7, S11.8, S11.9, S12.1	288			
53	Q	5	Q 9 C	Q 10 C	Q 11 C	Q 13 C	Q 14 C				S11.4, S11.7, S11.8	180	LOCATED ALONG THE LEFT-HAND WALL IN THE LOW SIDE PASSAGE OFF OF THE ROCK OF AGES ROOM, NEXT TO PSU 27		
54	Q	1	Q 12 B								S11.4, S11.7, S11.8	8			
55	Q	1	Q 4 B								S11.2, S11.7, S11.8	8			
56	Q	3	Q 6 C	Q 7 D	Q 8 C						S11.3, S11.7, S11.8	108			
57	Q	3	Q 1 C	Q 2 C	Q 3 C						S11.1, S11.7, S11.8	108			
58	P	5	P 18 C	P 19 C	P 39 D	P 40 C	P 41 C				S11.5, S11.7, S11.8	180	LOCATED ALONG THE TRAIL TO MISSOURI CAVERNS ON THE RIGHT-HAND SIDE OF THE TRAIL AT THE TOP OF A CLAY BANK, NEXT TO PSU 18		
59	P	1	P 20 B								S11.6, S11.7, S11.8	8	LOCATED IN A SMALL DEPRESSION, SO IT CAN'T BE SEEN FROM THE TRAIL, 16' FROM THE RIGHT-HAND SIDE OF THE TRAIL AND THE GATE FOR THE MISSOURI CAVERNS TRAIL		
60	P	8	P 14 D	P 16 D	P 21 C	P 22 C	P 23 C	P 25 D	P 42 C	P 43 C	S10.3, S11.7, S11.8, S11.9, S12.1	288	LOCATED IN A SMALL DEPRESSION 14' FROM THE RIGHT-HAND SIDE OF THE TRAIL, JUST ABOVE THE MISSOURI CAVERNS STREAM, NEXT TO PSU 75		
61	P	6	P 15 B	P 26 B	P 27 B	P 28 B	P 30 B	P 31 B			S10.3, S11.7, S11.8, S11.9, S12.1	48			
62	P	2	P 24 D	P 29 D							S10.3, S11.7, S11.8, S11.9, S12.1	72			
63	M	8	M 1 C	M 2 C	M 3 C	M 4 D	M 5 D	M 8 C	M 9 D	M 10 D	S8.2, S8.3, S12.2, S13.1	288	LOCATED UNDER THE WALKWAY BRIDGE AT THE 2ND PLATFORM IN THE SLUMP PIT		
64	M	4	M 6 D	M 7 C	M 11 D	M 12 C					S8.2, S8.3, S12.2, S13.1	144			
65	S	2	S 1 D	S 2 D							S12.3, S13.1	72			
66	S	4	S 3 B	S 4 B	S 5 B	S 6 B					S12.3, S13.1	32	LOCATED BEHIND THE BREAKDOWN BLOCK WITH THE SAGUARO STALAGMITE 11' FROM THE RIGHT-HAND SIDE OF THE TRAIL		
67	R	7	R 1 D	R 2 D	R 3 C	R 4 C	R 5 D	R 9 C	R 10 C		S12.4, S13.1	252			
68	R	3	R 6 D	R 7 C	R 8 D						S12.4, S13.1	108	LOCATED NEXT TO THE NEW "LOWER GRAND CANYON" PWR/CNTRL PNL H		
69	T	8	T 1 C	T 2 D	T 3 D	T 4 C	T 5 C	T 6 C	T 7 D	T 9 D	S13.2, S14.1	288			
70	T	4	T 8 C	T 10 C	T 11 D	T 12 D					S13.2, S14.1	144			
71	T	8	T 13 D	T 14 D	T 15 D	T 16 D	T 17 D	T 18 D	T 19 D	T 20 D	S13.2, S14.1	288	LOCATED AT THE ENTRANCE TO LITTLE BEAR PASSAGE, NEXT TO PSU 26		
72	U	5	U 7 D	U 9 D	U 10 D	U 13 C	U 14 D				S14.2, S14.4, S15.2	180	LOCATED NEAR THE 2ND PLATFORM ON THE QUEENS CANOPY RAMP		
73	U	3	U 8 B	U 11 B	U 12 B						S14.2, S14.4, S15.2	24			
74	H	5	H 1 D	H 2 D	H 3 D	H 4 D	H 5 D				S6.7, S7.1, S14.3, S14.5, S15.1	180			
75	P	4	P 32 B	P 33 B	P 34 B	P 35 B					S10.3, S11.7, S11.8, S11.9, S12.1	32	LOCATED IN A SMALL DEPRESSION 14' FROM THE RIGHT-HAND SIDE OF THE TRAIL, JUST ABOVE THE MISSOURI CAVERNS STREAM, NEXT TO PSUs 60 THRU 62		
76	V	8	V 1 D	V 2 D	V 9 D	V 10 C	V 11 D	V 44 D	V 45 D	V 47 D	S15.3, S15.4	288	LOCATED UNDER THE CATWALK BEFORE THE LILY PAD LOOP TRAIL		
77	V	8	V 3 C	V 4 D	V 5 D	V 6 D	V 12 D	V 13 D	V 41 D	V 42 D	S15.3, S15.4	288	LOCATED UNDER THE CATWALK BEFORE THE LILY PAD LOOP TRAIL		
78	V	6	V 7 B	V 8 B	V 15 B	V 17 B	V 18 B	V 19 B			S15.3, S15.4	48	LOCATED AT THE END OF THE OLD TRAIL BEHIND THE CONE-SHAPED STALAGMITE		
79	V	7	V 14 B	V 39 B	V 40 B	V 43 B	V 46 B	V 49 B	V 50 B		S15.3, S15.4	56	LOCATED UNDER THE CATWALK BRIDGE AT THE BEGINNING OF THE LILY PAD LOOP TRAIL		
80	V	7	V 16 D	V 48 D	V 52 C	V 53 D	V 54 D	V 55 D	V 56 D		S15.3, S15.4	180			
81	V	5	V 28 B	V 29 B	V 30 B	V 35 B	V 51 B				S15.3, S15.4	40	LOCATED IN A ALCOVE BETWEEN THE COLUMN ON THE RIGHT-HAND SIDE OF THE TRAIL		
82	V	8	V 20 C	V 21 D	V 22 C	V 23 D	V 24 C	V 25 D	V 26 D	V 27 D	S15.3, S15.4	288			

NOTE:
 1. MOUNT PSUs AS INDICATED IN THE DETAIL ON THE DWGS IN THE LOCATIONS INDICATED IN THIS SCHEDULE. THE DESIGN INTENT IS THAT THE PSUs BE ACCESSIBLE FOR MAINTENANCE BUT OUT OF SIGHT FROM THE TRAIL TO THE GREATEST EXTENT POSSIBLE.

GENERAL NOTE:

A. PROVIDE PSU's PER SPECIFICATION SECTION 265613.

STATE OF MISSOURI
 MICHAEL L. PARSON,
 GOVERNOR



BARRY D. FREINER
 Registered Professional Engineer
 MO # E-24220
 Expires 12-31-2024

ROGERS-SCHMIDT
 ENGINEERING CO., P.C.
 CONSULTING ENGINEERS
 1736 WEST PARK CENTER DR.
 SUITE 204
 ST. LOUIS, MO 63026
 PHONE: 636-600-1551
 MISSOURI STATE CERTIFICATE
 OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
 DIVISION OF FACILITIES
 MANAGEMENT,
 DESIGN AND CONSTRUCTION

DEPARTMENT OF
 NATURAL RESOURCES
 DIVISION OF STATE PARKS
 UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
 STATE PARK
 7556 HWY H
 LEASBURG, MO 65535

PROJECT # X2212-01
 SITE # 5215
 ASSET # 7815215013

REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____
 REVISION: _____
 DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-7815215013-E-607.DWG
 DRAWN BY: K E T
 CHECKED BY: B D F
 DESIGNED BY: B D F

SHEET TITLE:
 NEW LIGHTING
 POWER SUPPLY
 UNIT (PSU)
 SCHEDULE

SHEET NUMBER:

E-607

48 OF 50 SHEETS
 JUNE 23, 2023



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024

ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS

UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023

CAD DWG FILE: X2212-01-5215-
7815215013-E-608.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
NEW LIGHTING
CONTROL STATION
CONFIGURATIONS

SHEET NUMBER:

E-608

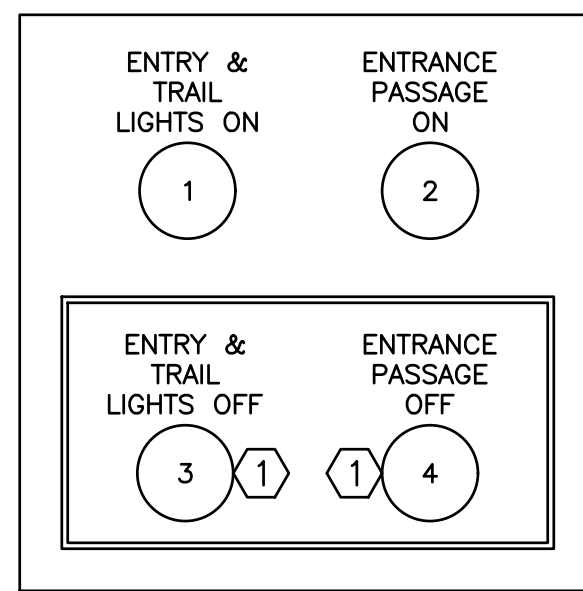
49 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTES:

- A. PROVIDE LTG CNTRL PER SPECIFICATION SECTION 260943.23.
- B. PROVIDE LTG CNTRL STATION LABELS PER SPECIFICATION SECTION 260553.
- C. LTG CNTRL STATIONS ARE GENERICALLY SHOWN ALL THE SAME SIZE. PROVIDE NEMA TYPE 6P OR IP68 CNTRL STATION BOXES SIZED AS REQD FOR THE NUMBER OF PUSH BUTTONS CONTAINED WITHIN.
- D. COLOR OF ALL PUSH BUTTONS SHALL BE BLACK UNLESS OTHERWISE NOTED.

KEY NOTES:

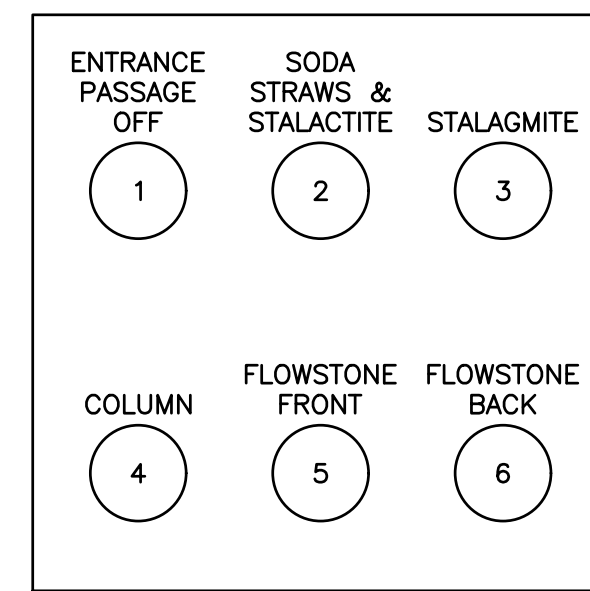
- 1. YELLOW PUSH BUTTON
- 2. RED PUSH BUTTON.



STATION S1

LOCATED ON NORTH WALL OF AIRLOCK ENTRANCE TUNNEL

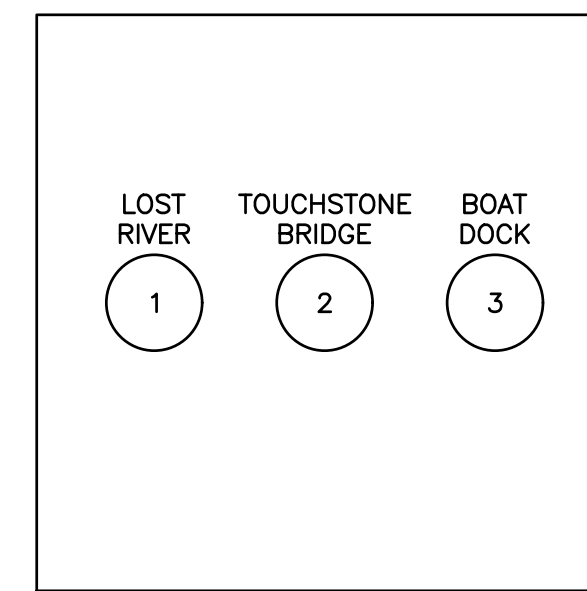
- S1.1: ALL TRAIL LIGHTS AND ENTRY LIGHTS AA1G, AA2T, AA3T, AA4W ON
- S1.2: PSUs 1, 3 ON
- S1.3: ALL TRAIL LIGHTS AND ENTRY LIGHTS AA1G, AA2T, AA3T, AA4W OFF
- S1.4: PSUs 1, 3 OFF



STATION S2

LOCATED AT NE CORNER OF THE SHOW ROOM PLATFORM

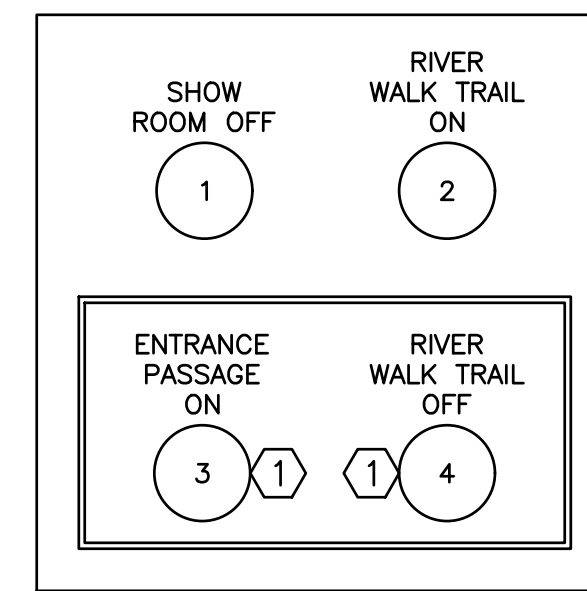
- S2.1: PSUs 1, 3 OFF
- S2.2: PSU 4 ON
- S2.3: PSU 5 ON
- S2.4: PSU 6 ON
- S2.5: PSUs 2, 7 ON
- S2.6: PSU 8 ON



STATION S3

LOCATED AT WEST SIDE OF SHOW ROOM PLATFORM UNDER TOUCHSTONE BRIDGE

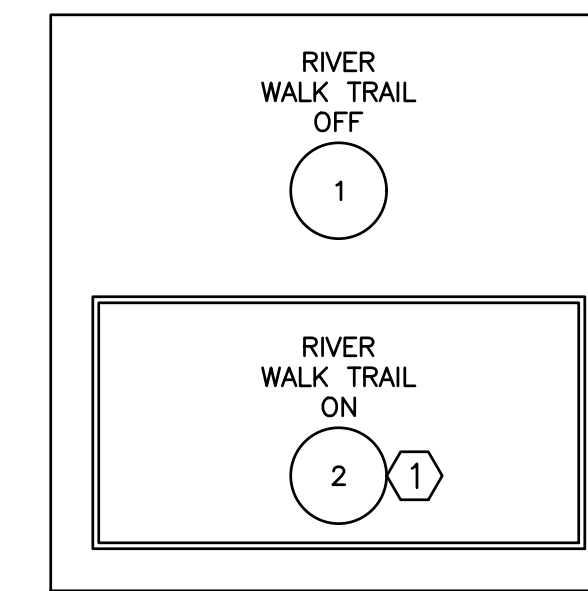
- S3.1: PSU 9 ON
- S3.2: PSU 10 ON
- S3.3: PSU 11 ON



STATION S4

LOCATED AT NORTH SIDE OF TRAIL LEAVING SHOW ROOM

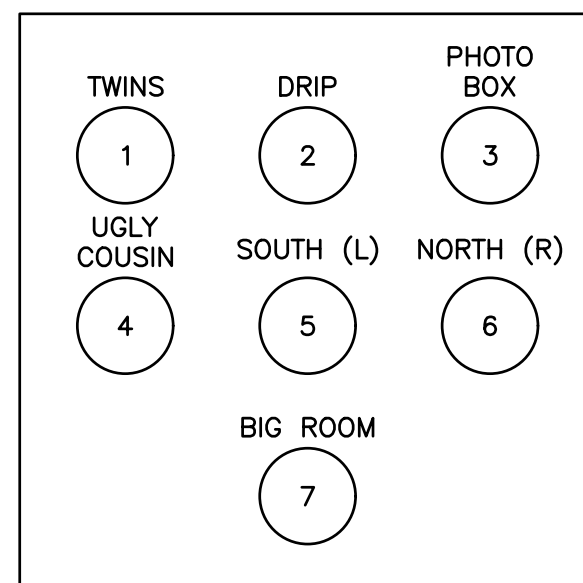
- S4.1: PSUs 2, 4 - 11 OFF
- S4.2: PSUs 12 - 17 ON
- S4.3: PSUs 1, 3 ON
- S4.4: PSUs 12 - 17 OFF



STATION S5

LOCATED ON THE TRAIL SOUTH OF QUEEN'S CANOPY

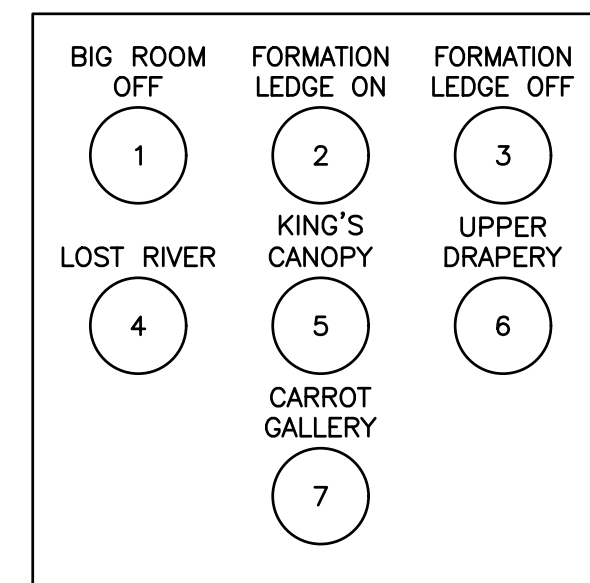
- S5.1: PSUs 12 - 17 OFF
- S5.2: PSUs 12 - 17 ON



STATION S6

LOCATED AT SE CORNER OF THE TWINS PLATFORM

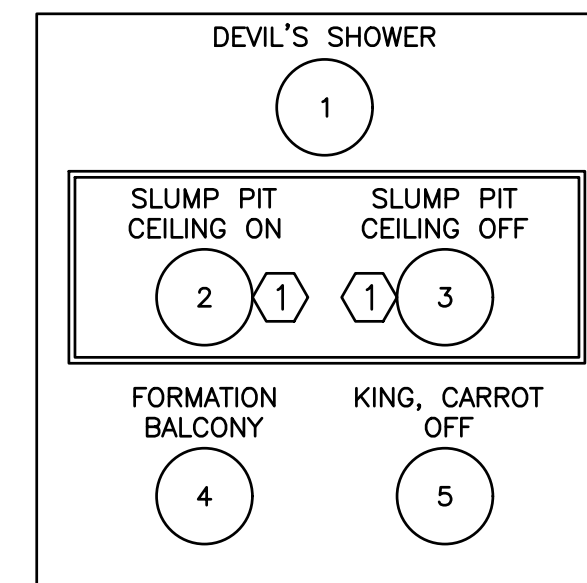
- S6.1: PSUs 21, 22 ON
- S6.2: PSU 24 ON
- S6.3: PSU 23 ON
- S6.4: PSU 30 ON
- S6.5: PSUs 31, 32 ON
- S6.6: PSU 33 ON
- S6.7: PSUs 25, 26, 74 ON



STATION S7

LOCATED AT SW CORNER OF LOWER KING'S CANOPY OVERLOOK PLATFORM

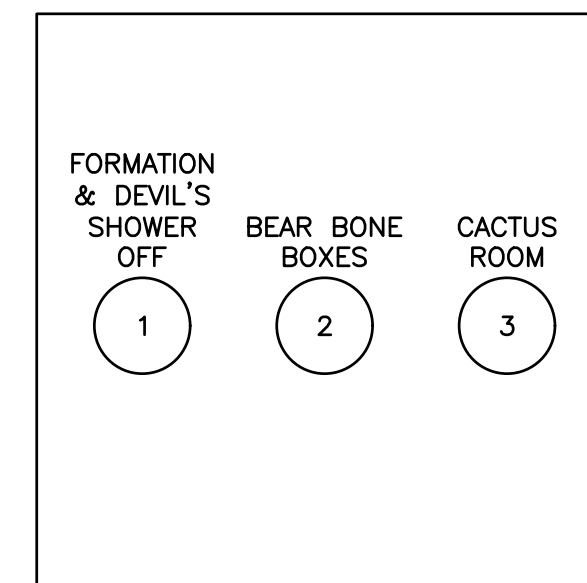
- S7.1: PSUs 21 - 26, 30 - 33, 74 OFF
- S7.2: PSUs 29, 34 ON
- S7.3: PSUs 29, 34 ON
- S7.4: PSU 38 ON
- S7.5: PSUs 36, 37 ON
- S7.6: PSU 35 ON
- S7.7: PSUs 28, 39, 40 ON



STATION S8

LOCATED NEXT TO THE DEVIL'S SHOWER ON THE UPPER KING'S CANOPY CATWALK

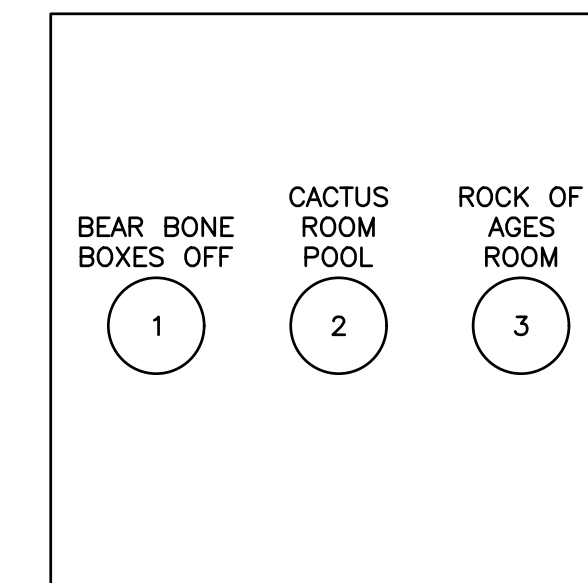
- S8.1: PSU 42 ON
- S8.2: PSUs 63, 64 ON
- S8.3: PSUs 63, 64 OFF
- P8.4: PSUs 41, 43 - 45 ON
- S8.5: PSUs 28, 35 - 40 OFF



STATION S9

LOCATED BETWEEN THE TWO BEAR BONE BOXES

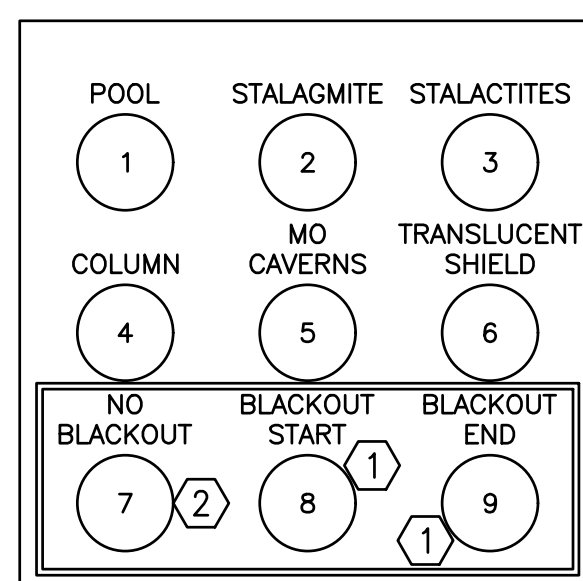
- S9.1: PSUs 41 - 45 OFF
- S9.2: LIGHTS EE4T & EE5T ON
- S9.3: PSUs 46 - 48 ON



STATION S10

LOCATED AT THE NW CORNER OF THE CACTUS ROOM

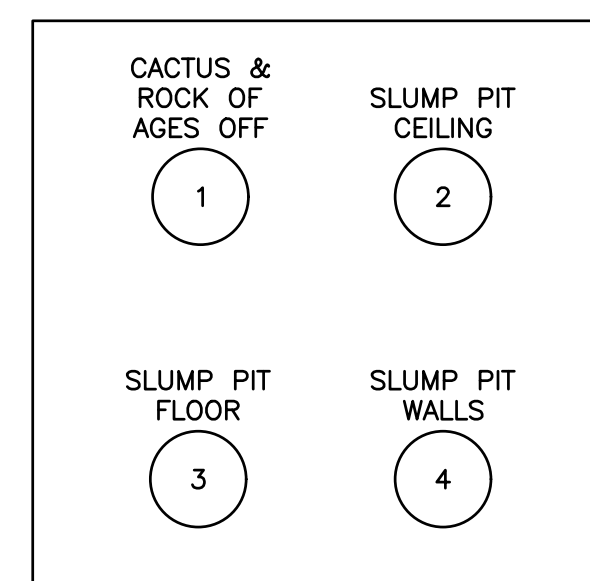
- S10.1: LIGHTS EE4T & EE5T OFF
- S10.2: PSUs 49, 50 ON
- S10.3: PSUs 51, 52, 60 - 62, 75 ON



STATION S11

LOCATED ON THE NORTH SIDE OF THE ROCK OF AGES ROOM

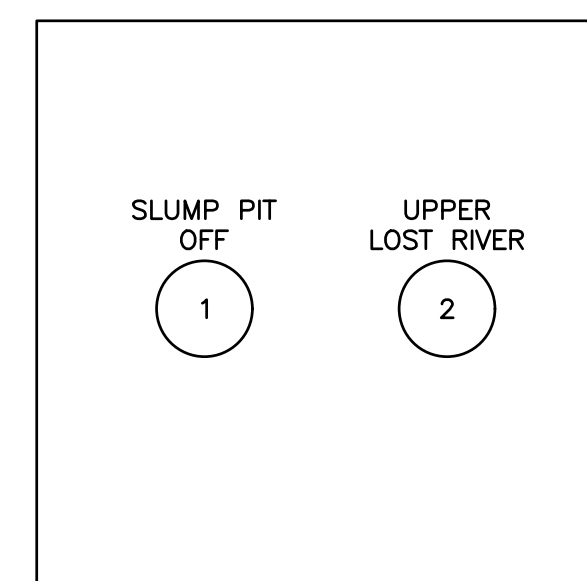
- S11.1: PSU 57 ON
- S11.2: PSUs 27, 55 ON
- S11.3: PSU 56 ON
- S11.4: PSUs 53, 54 ON
- S11.5: PSUs 18, 58 ON
- S11.6: PSU 59 ON
- S11.7: PSUs 18, 27, 53 - 59 OFF
- S11.8: PSUs 18, 27, 46 - 62, 75 & TRAIL LIGHTS EE1T, EE2T, DD1T, DD2T OFF
- S11.9: PSUs 46 - 52, 60 - 62, 75 & TRAIL LIGHTS EE1T, EE2T, DD1T, DD2T ON



STATION S12

LOCATED AT THE SE CORNER OF THE CACTUS ROOM

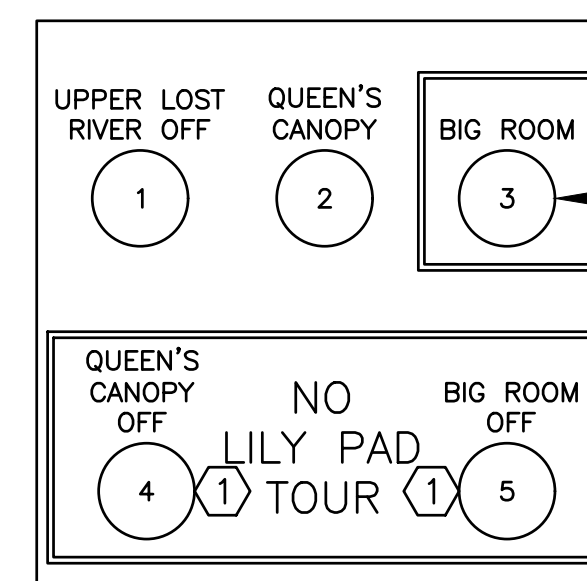
- S12.1: PSUs 46 - 52, 60 - 62, 75 OFF
- S12.2: PSUs 63, 64 ON
- S12.3: PSUs 65, 66 ON
- S12.4: PSUs 67, 68 ON



STATION S13

LOCATED AT THE SWITCHBACK SOUTH OF THE SLUMP PIT

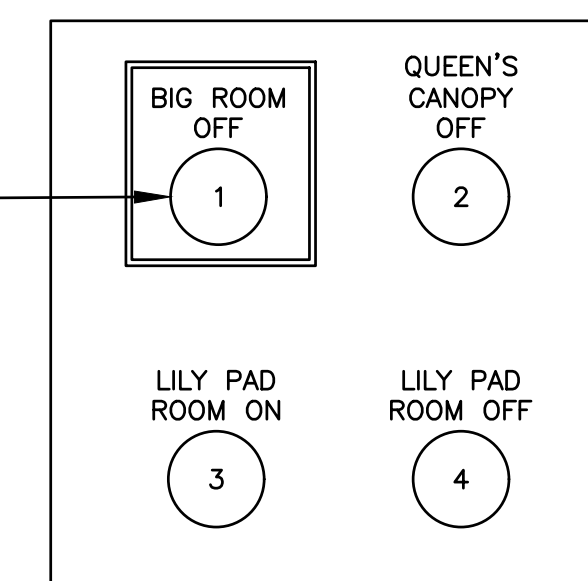
- S13.1: PSUs 63 - 68 OFF
- S13.2: PSUs 69 - 71 ON



STATION S14

LOCATED NEXT TO THE WATER PUMP IN THE BIG ROOM

- S14.1: PSUs 69 - 71 ON
- S14.2: PSUs 20, 72, 73 ON
- S14.3: PSUs 25, 26, 74 ON
- S14.4: PSUs 20, 72, 73 OFF
- S14.5: PSUs 25, 26, 74 OFF



STATION S15

LOCATED ON THE SWITCHBACK TRAIL NORTH OF QUEEN'S CANOPY

- S15.1: PSUs 25, 26, 74 OFF
- S15.2: PSUs 20, 72, 73 OFF
- P15.3: PSUs 19, 76 - 82 ON
- S15.3: PSUs 19, 76 - 82 OFF



BARRY D. FREINER
Registered Professional Engineer
MO # E-24220
Expires 12-31-2024
ROGERS-SCHMIDT
ENGINEERING CO., P.C.
CONSULTING ENGINEERS
1736 WEST PARK CENTER DR.
SUITE 204
ST. LOUIS, MO 63026
PHONE: 636-600-1551
MISSOURI STATE CERTIFICATE
OF AUTHORITY #000408

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION
DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE PARKS
UPGRADE CAVE ELECTRIC

ONONDAGA CAVE
STATE PARK
7556 HWY H
LEASBURG, MO 65535

PROJECT # X2212-01
SITE # 5215
ASSET # 7815215013

REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____

ISSUE DATE: 06-23-2023
CAD DWG FILE: X2212-01-5215-7815215013-T-601.DWG
DRAWN BY: K E T
CHECKED BY: B D F
DESIGNED BY: B D F

SHEET TITLE:
**ONE-LINE
DIAGRAM - CAVE
EMERGENCY
TELEPHONES**

SHEET NUMBER:

T-601

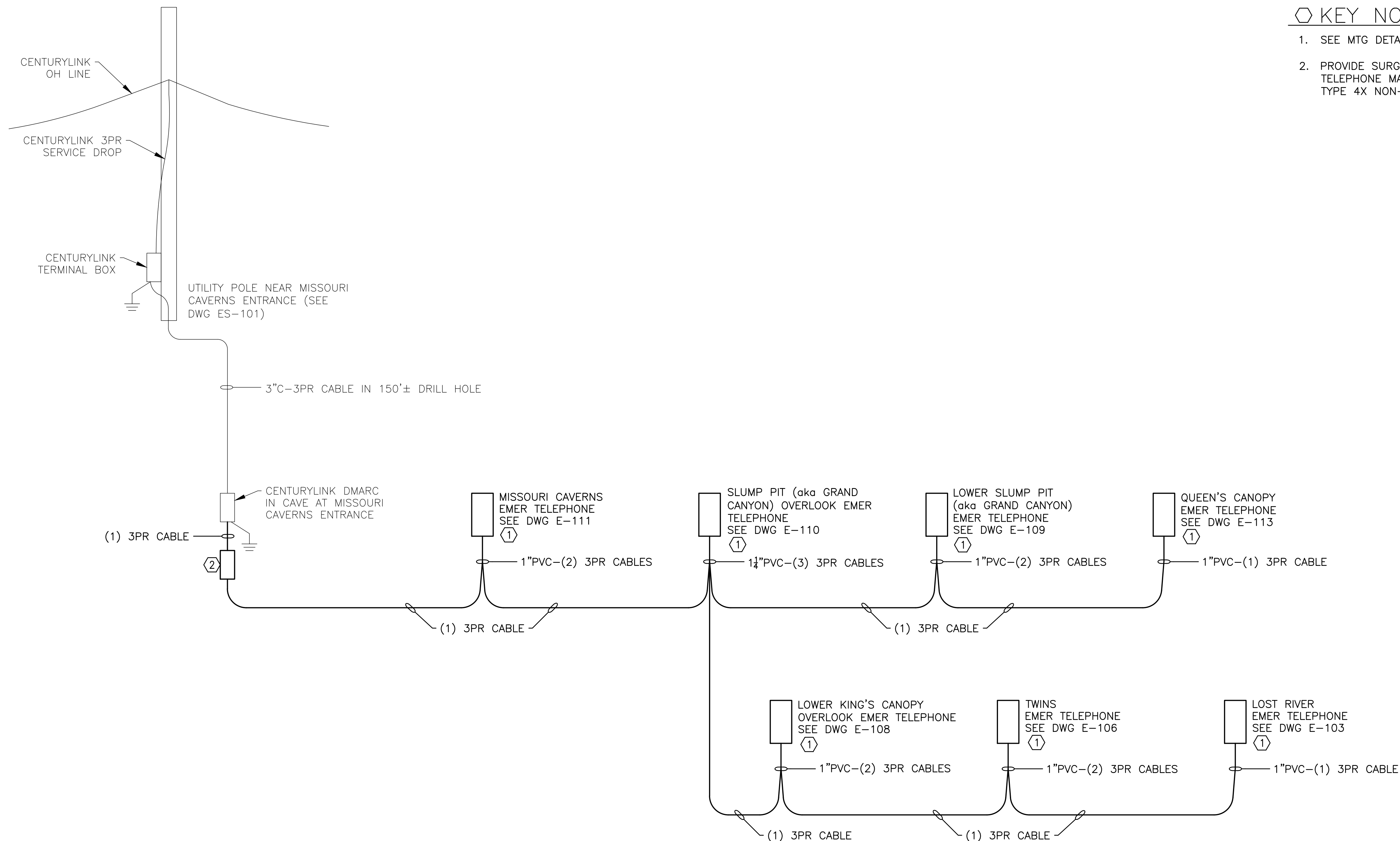
50 OF 50 SHEETS
JUNE 23, 2023

GENERAL NOTE:

- A. SEE CAVE ELECTRICAL PLANS FOR EMER TELEPHONE LOCATIONS.

KEY NOTES:

- 1. SEE MTG DETAIL ON DWG E-502.
- 2. PROVIDE SURGE SUPPRESSOR PER EMER TELEPHONE MANUFACTURER'S REQMTS IN TYPE 4X NON-METALLIC ENCLOSURE.



CAVE EMERGENCY TELEPHONE ONE-LINE DIAGRAM