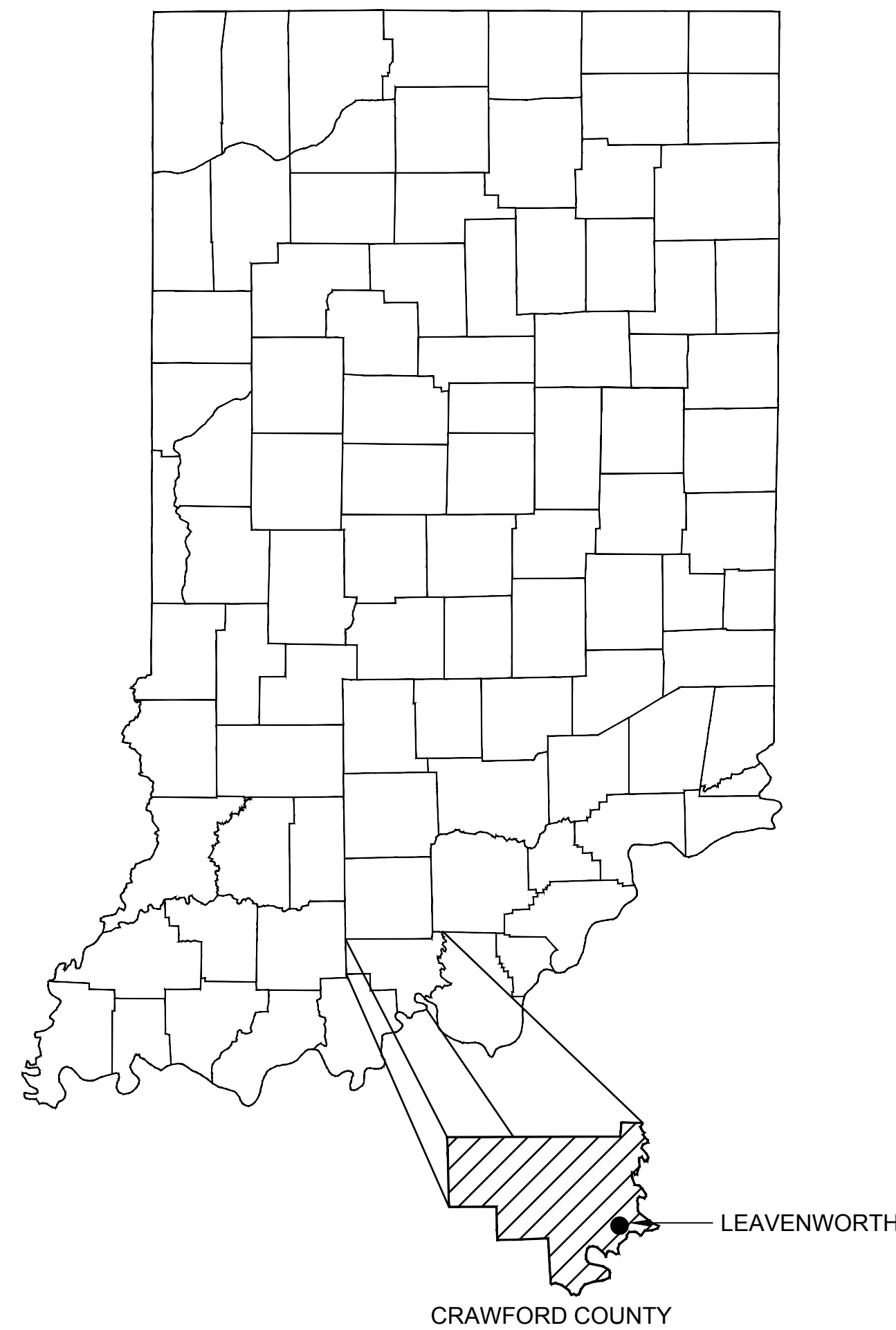


# DEPARTMENT OF NATURAL RESOURCES WYANDOTTE CAVE (LARGE)

CITY OF LEAVENWORTH, INDIANA



engineering | architecture | geospatial

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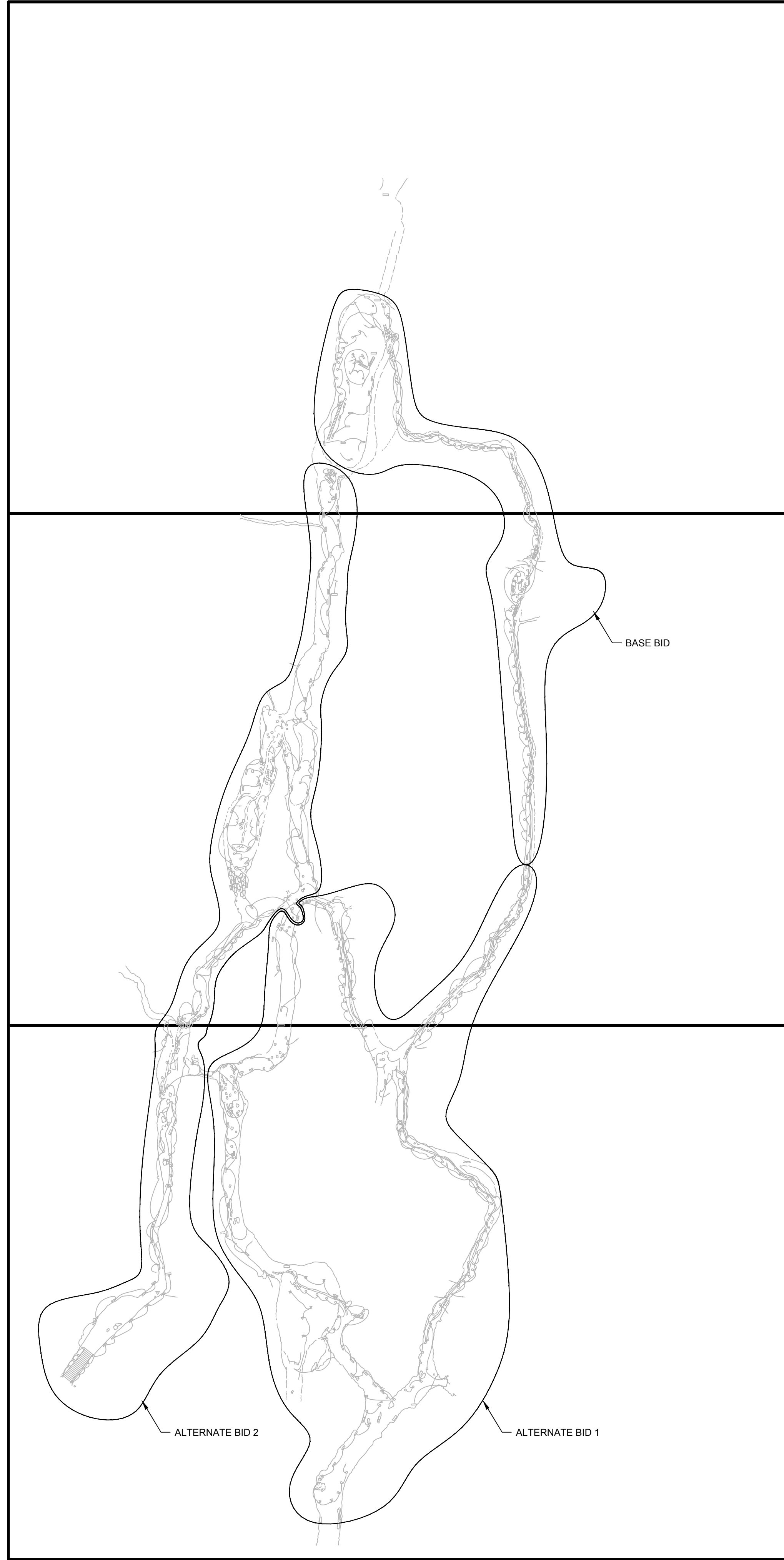
75% DESIGN

AUGUST, 2018

GRW PROJECT NO. 4495-25

**GENERAL NOTES:**

1. THE PARK STAFF HAVE SPENT A LOT OF TIME AND MONEY TO MAKE ARTIFICIAL SHROUDS, COVERS, GROUTING, STACKING ROCKS AND OTHER EFFORTS TO CONCEAL THE ELECTRICAL WORK AND HAVE THE CAVE APPEAR IN ITS NATURAL STATE AS MUCH AS POSSIBLE. THE WORK OF THIS CONTRACT SHALL PRESERVE AS MUCH OF THEIR EFFORTS AS POSSIBLE. PARK STAFF SHALL RECONCEAL THE ELECTRICAL WORK AFTER MODIFICATIONS ARE COMPLETED, AS LONG AS THE CONTRACTOR IS MAKING EFFORTS TO MINIMIZE THE DAMAGE TO EXISTING CONDITIONS.



**WYANDOTTE CAVE**

SCALE: 1"=60'-0" 0 60 120'

GRW PROJECT NO. 4485-25

CLIENT PROJECT NO. XXXX

ALL RIGHTS RESERVED. NO PART OF THIS DRAWING SHALL BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF GRW ENGINEERS, P.C. AND SHALL NOT BE USED FOR ANY OTHER PROJECT OTHER THAN THIS SPECIFIC PROJECT WITHOUT WRITTEN PERMISSION.



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**WYANDOTTE CAVE -  
OVERALL KEY PLAN  
WYANDOTTE CAVE (LARGE)  
LEAVENWORTH, INDIANA**

DESIGNED	DRC
DRAWN	RHR
REVIEWED	WLM
APPROVED	WLM

NO.	REVISIONS DESCRIPTION	DATE	BY

SCALE CHECK: \_\_\_\_\_ THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DATE: AUGUST 2018

SCALE: 1"=60'

SHEET NO.

**E-101**

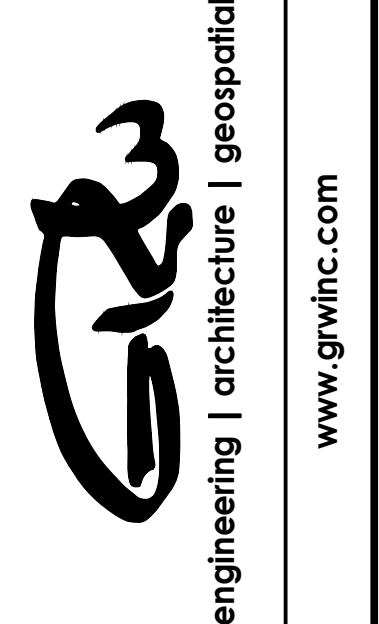


- SYMBOLS:**
- ▬ EXISTING STRIP
  - A FLUORESCENT FIXTURE
  - B EXISTING FLOOD LIGHT
  - △ C EXISTING AIMABLE FLOOD LIGHT
  - D LED STEP LIGHT
  - EXISTING LIGHT SWITCH
  - EXISTING LIGHTING CONTROL PANEL
  - RUN OF 12-2 W GROUND COPPER GRAY JACKETED NM CABLE (TYPICAL)

- GENERAL NOTE:**
1. ALL A, B, C, AND D DESIGNATED EXISTING LIGHT FIXTURES ON THIS DRAWING SHALL BE REMOVED AND REPLACED.
  2. ALL EXISTING ELECTRICAL LIGHTING WIRING SHALL BE REMOVED AND REPLACED.
  3. ALL EXISTING TELEPHONES SHALL BE REMOVED.
  4. ALL ELECTRICAL PANELS SHALL BE REPLACED WITH NEW NEMA 4X ENCLOSURES.
  5. ALL NM CABLE SHALL BE REMOVED THROUGHOUT THE CAVE.

**WYANDOTTE CAVE**  
 SCALE: 1"=20'-0"  
 0 20' 40'

GRW PROJECT NO. 4495-25  
 CLIENT PROJECT NO. XXXX  
 ALL RIGHTS RESERVED. NO PART OF THIS DRAWING SHALL BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF GRW ENGINEERS, P.C. AND SHALL NOT BE USED FOR ANY OTHER PROJECT OTHER THAN THIS SPECIFIC PROJECT WITHOUT WRITTEN PERMISSION.



**WYANDOTTE CAVE -  
 ENTRANCE OF CAVE DEMOLITION  
 WYANDOTTE CAVE (LARGE)  
 LEAVENWORTH, INDIANA**

DESIGNED	DRC
DRAWN	RHR
REVIEWED	WLM
APPROVED	WLM

NO.	REVISIONS DESCRIPTION	DATE	BY

SCALE CHECK: \_\_\_\_\_ THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DATE: AUGUST 2018  
 SCALE: 1"=20'  
 SHEET NO.

**E-401**

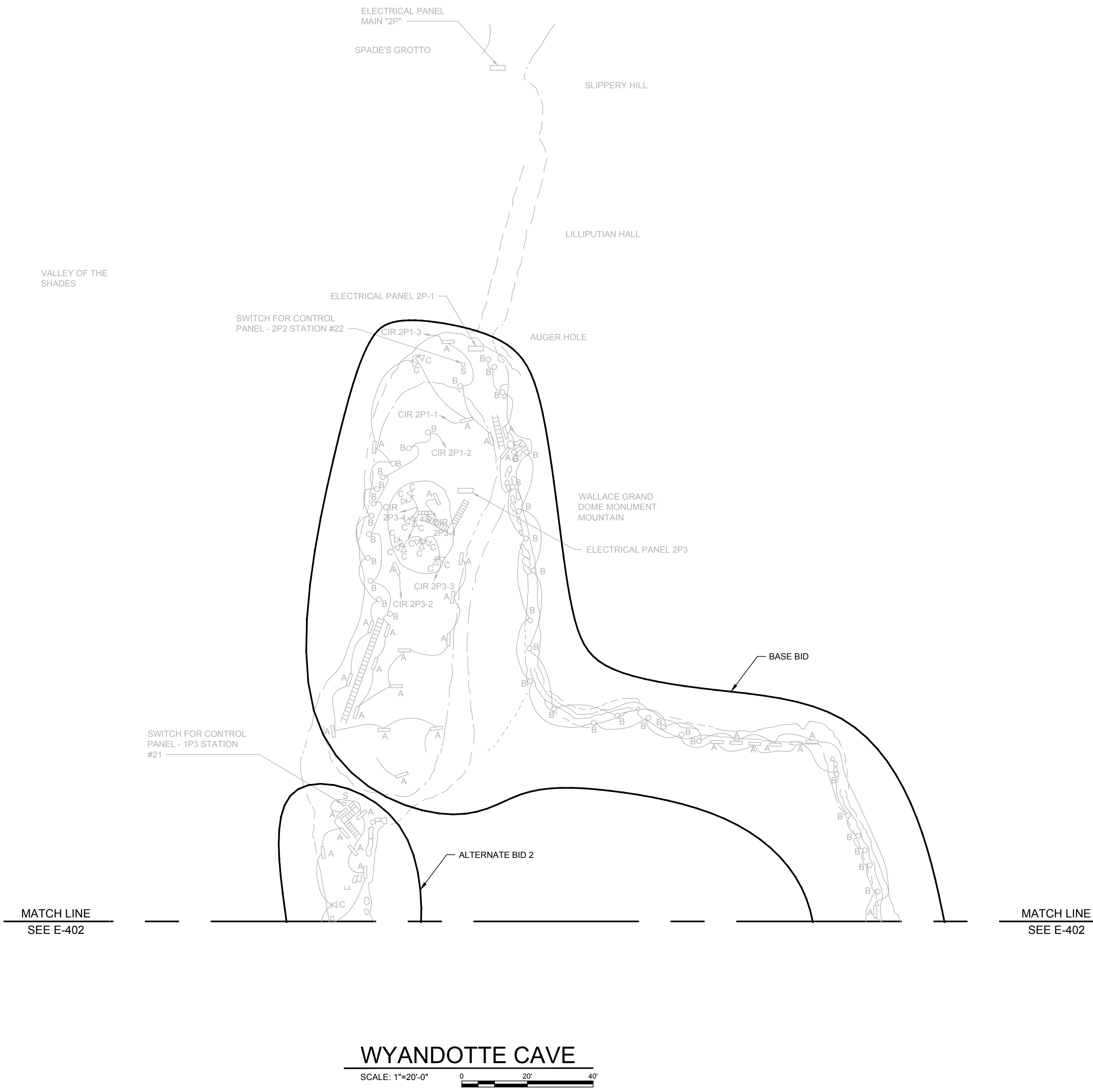


**SYMBOLS:**

- STRIP FLUORESCENT FIXTURE
- FLOOD LIGHT
- △ AIMABLE FLOOD LIGHT
- LED STEP LIGHT
- LIGHT SWITCH
- LIGHTING CONTROL PANEL
- RUN OF 12-2 W/ GROUND COPPER GRAY JACKETED NM CABLE (TYPICAL)

**GENERAL NOTE:**

1. ALL A, B, C, AND D DESIGNATED EXISTING LIGHT FIXTURES ON THIS DRAWING SHALL BE REMOVED AND REPLACED.
2. ALL EXISTING ELECTRICAL LIGHTING WIRING SHALL BE REMOVED AND REPLACED.
3. ALL ELECTRICAL PANELS SHALL BE REPLACED WITH NEW NEMA 4X ENCLOSURES.
4. ALL NM CABLE SHALL BE REMOVED THROUGHOUT THE CAVE.



**WYANDOTTE CAVE**

SCALE: 1"=20'-0" 0 20' 40'

GRW PROJECT NO. 4485-25  
 CLIENT PROJECT NO. XXXX  
 ALL RIGHTS RESERVED. NO PART OF THIS DRAWING SHALL BE REPRODUCED IN WHOLE OR IN PART WITHOUT THE WRITTEN PERMISSION OF GRW ENGINEERS, INC. AND SHALL NOT BE USED FOR ANY OTHER PROJECT OTHER THAN THIS SPECIFIC PROJECT WITHOUT WRITTEN PERMISSION.



**WYANDOTTE CAVE -  
 LAST OF CAVE DEMOLITION**  
**WYANDOTTE CAVE (LARGE)**  
**LEAVENWORTH, INDIANA**

DESIGNED BY	DRC
DRAWN BY	RHR
REVIEWED BY	WLM
APPROVED BY	WLM

NO.	REVISIONS DESCRIPTION	DATE	BY

SCALE CHECK: \_\_\_\_\_ THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DATE: AUGUST 2018  
 SCALE: 1"=20'  
 SHEET NO.

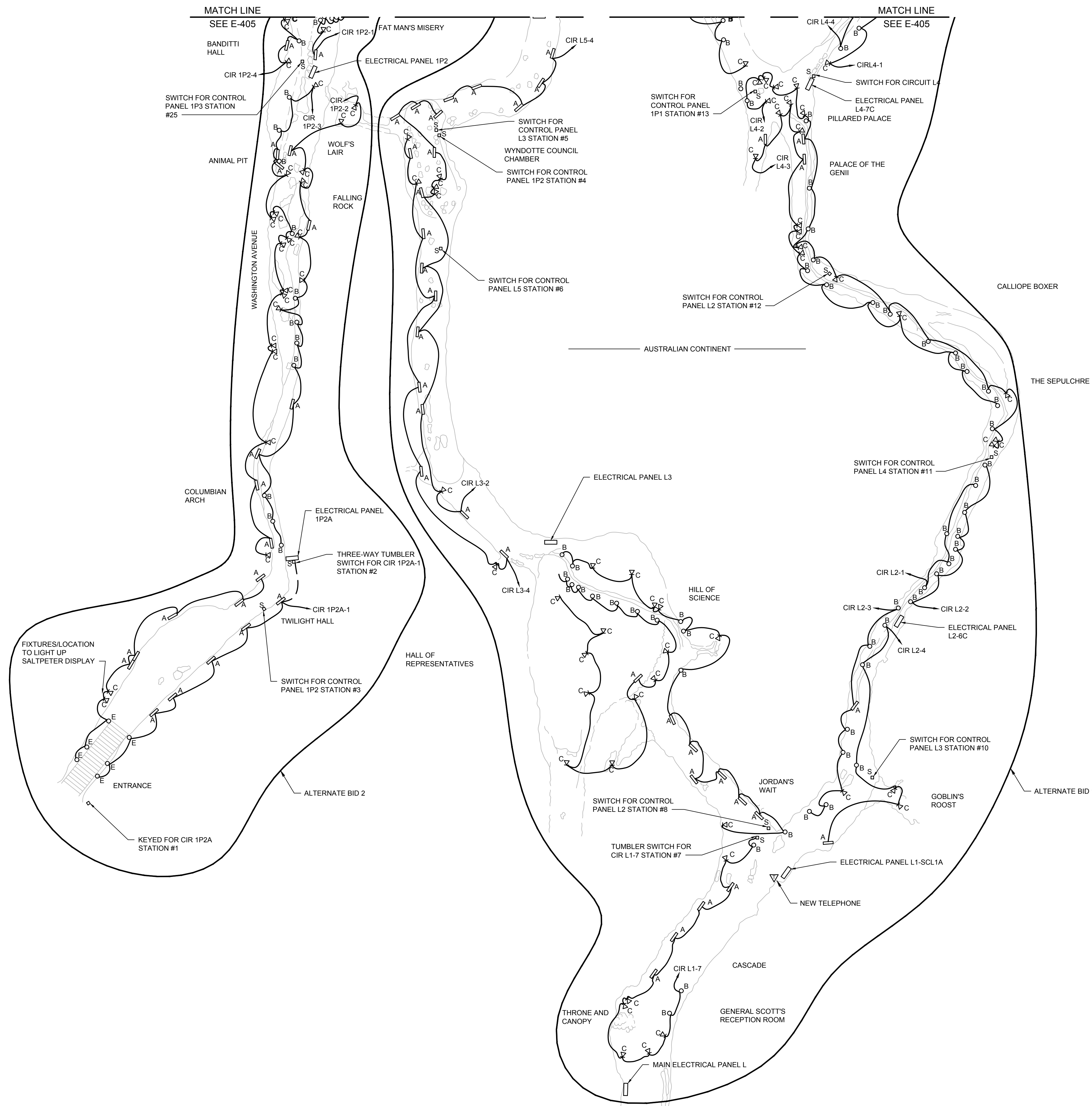
**E-403**



PLOTTED BY: bramsey

PRINTED: 8/15/2018 @ 4:08PM

FILE NAME: G:\485\IDNR-Bat Cave\Working Drawings\AutoCAD\Large Cave\4495-E-404.dwg



**SYMBOLS:**

- 1x8 LED LIGHT
- LED FLOOD LIGHT
- LED AIMABLE FLOOD LIGHT
- LED POLE LIGHT
- LIGHT SWITCH
- LIGHTING CONTROL PANEL
- RUN OF 12-2 W/ GROUND COPPER GRAY JACKETED UF CABLE (TYPICAL)

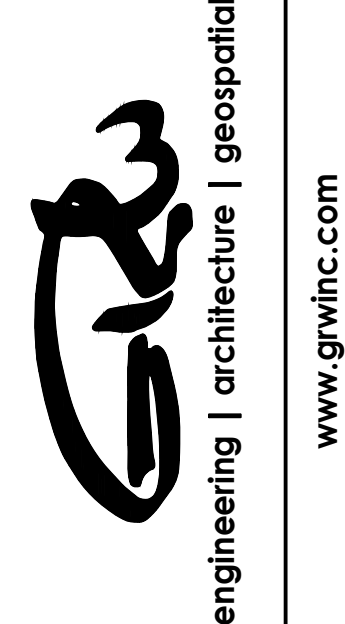
**GENERAL NOTE:**

1. ALL A, B, C, AND E DESIGNATED LIGHT FIXTURES ON THIS DRAWING ARE NEW TO BE INSTALLED THIS CONTRACT.
2. ALL NEW ELECTRICAL LIGHTING WIRING SHALL BE #12, #14 GND JACKETED UF CABLE.
3. ALL NEW TELEPHONES SHALL BE GAI-TRONICS IN NEMA 4X ENCLOSURES. ALL TELEPHONES SHALL BE MOUNTED TO UNISTRUT AT LOCATIONS SHOWN IN THE SHEETS.
4. ALL ELECTRICAL PANELS SHALL BE NEW NEMA 4X ENCLOSURE.
5. FEEDERS BETWEEN PANELS NOT SHOWN. SEE ONE LINE DIAGRAMS.

**WYANDOTTE CAVE**

SCALE: 1"=20'-0" 0 20' 40'

GRW PROJECT NO. 4495-25  
 CLIENT PROJECT NO. XXXX  
 ALL RIGHTS RESERVED. THIS DRAWING IS THE PROPERTY OF GRW ENGINEERS, INC. AND SHALL NOT BE REPRODUCED IN WHOLE OR IN PART WITHOUT WRITTEN PERMISSION.



**WYANDOTTE CAVE -  
 ENTRANCE OF CAVE NEW WORK  
 WYANDOTTE CAVE (LARGE)  
 LEAVENWORTH, INDIANA**

DESIGNED	DRC	DRAWN	RHR	REVIEWED	WLM	APPROVED	WLM
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NO.	REVISIONS	DATE	BY

DATE: AUGUST 2018  
 SCALE: 1"=20'  
 SHEET NO.

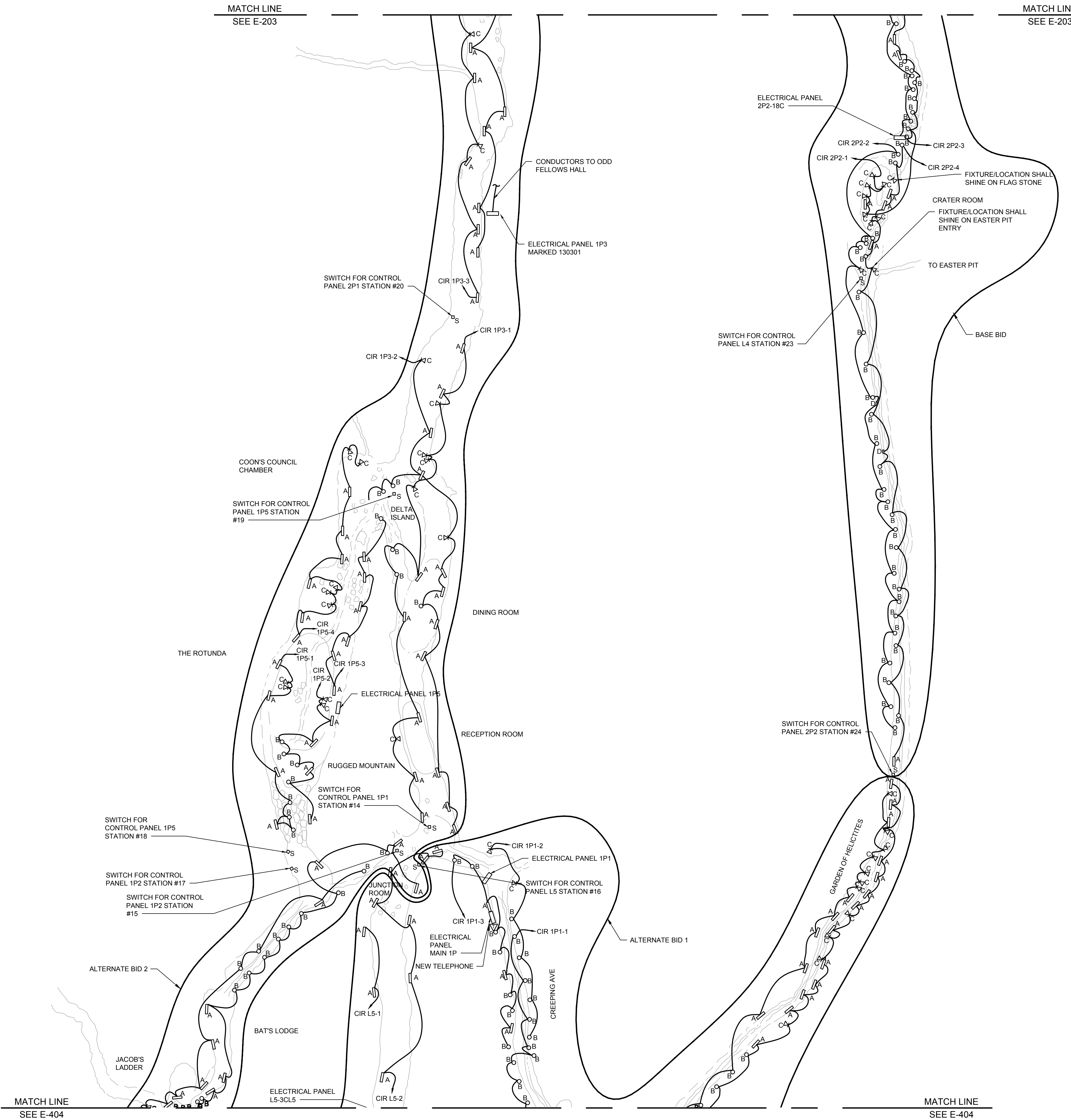
**E-404**

75% DESIGN

PLOTTED BY: bramsey

PRINTED: 8/15/2018 @ 4:08PM

FILE NAME: G:\4495\INR-Bat Cave\Working Drawings\AutoCAD\Large Cave\4495-E-405.dwg



**SYMBOLS:**

- 1x8 LED LIGHT
- A LED FLOOD LIGHT
- △ LED AIMABLE FLOOD LIGHT
- B LED STEP LIGHT
- LIGHT SWITCH
- LIGHTING CONTROL PANEL
- RUN OF 12-2 W/ GROUND
- COPPER GRAY JACKETED UF CABLE (TYPICAL)

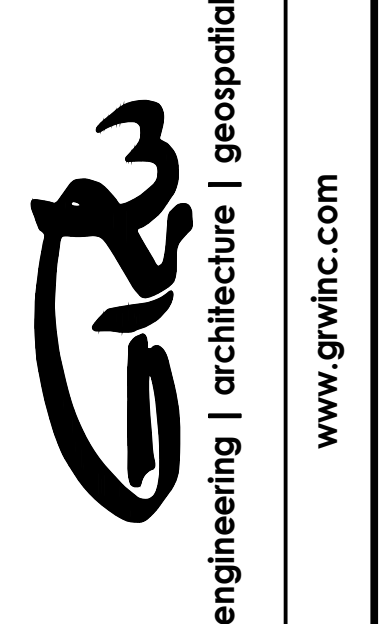
**GENERAL NOTE:**

1. ALL A, B, C, AND D DESIGNATED LIGHT FIXTURES ON THIS DRAWING ARE NEW TO BE INSTALLED THIS CONTRACT.
2. ALL NEW ELECTRICAL LIGHTING WIRING SHALL BE #12, 1#12 GND JACKETED UF CABLE.
3. ALL NEW TELEPHONES SHALL BE GAI-TRONICS IN NEMA 4X ENCLOSURES. ALL TELEPHONES SHALL BE MOUNTED TO UNISTRUT AT LOCATIONS SHOWN IN THE SHEETS.
4. ALL ELECTRICAL PANELS SHALL BE NEW NEMA 4X ENCLOSURE.
5. FEEDERS BETWEEN PANELS NOT SHOWN. SEE ONE LINE DIAGRAMS.

**WYANDOTTE CAVE**

SCALE: 1"=20'-0" 0 20' 40'

GRW PROJECT NO. 4495-25  
 CLIENT PROJECT NO. XXXX  
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**WYANDOTTE CAVE -  
 MIDDLE OF CAVE NEW WORK  
 WYANDOTTE CAVE (LARGE)  
 LEAVENWORTH, INDIANA**

DESIGNED	DRC
DRAWN	RHR
REVIEWED	WLM
APPROVED	WLM

NO.	REVISIONS	DATE	BY
	DESCRIPTION		

DATE: AUGUST 2018  
 SCALE: 1"=20'  
 SHEET NO.

**E-405**

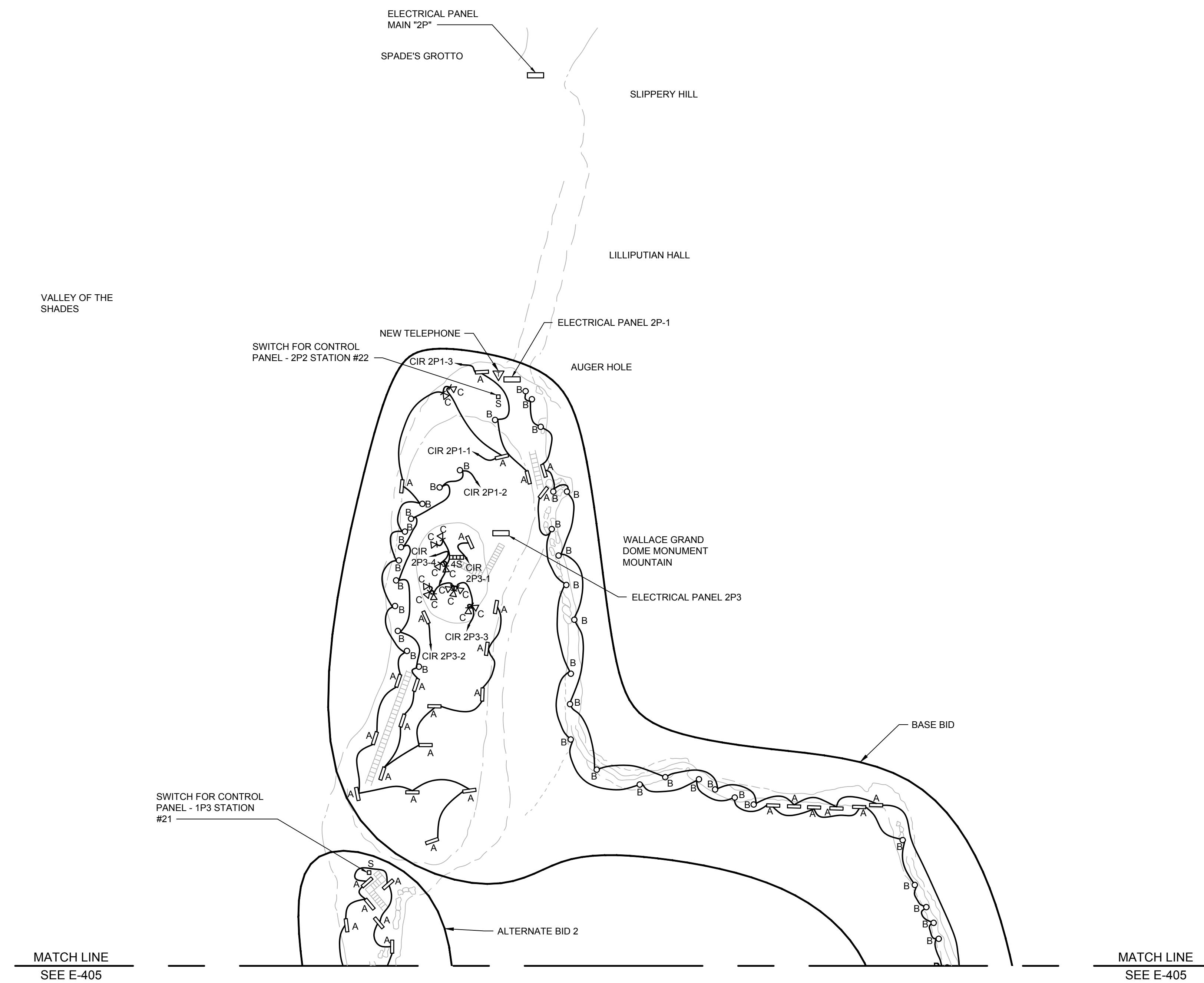
75% DESIGN

**SYMBOLS:**

- ▭ STRIP FLUORESCENT FIXTURE
- FLOOD LIGHT
- △ AIMABLE FLOOD LIGHT
- LIGHT SWITCH
- ▭ LIGHTING CONTROL PANEL L-1, L-2, OR L-3
- RUN OF 12-2 W/ GROUND COPPER GRAY JACKETED UF CABLE (TYPICAL)
- ⊙ PICTURE NUMBER REFERENCE TO DRAWING E-102

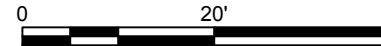
**GENERAL NOTE:**

1. ALL A, B, AND C DESIGNATED LIGHT FIXTURES ON THIS DRAWING ARE NEW TO BE INSTALLED THIS CONTRACT.
2. ALL NEW ELECTRICAL LIGHTING WIRING SHALL BE #12, 1#12 GND JACKETED UF CABLE.
3. ALL NEW TELEPHONES SHALL BE GAL-TRONICS IN NEMA 4X ENCLOSURES. ALL TELEPHONES SHALL BE MOUNTED TO UNISTRUT AT LOCATIONS SHOWN IN THE SHEETS.
4. ALL ELECTRICAL PANELS SHALL BE NEW NEMA 4X ENCLOSURE.
5. FEEDERS BETWEEN PANELS NOT SHOWN. SEE ONE LINE DIAGRAMS.

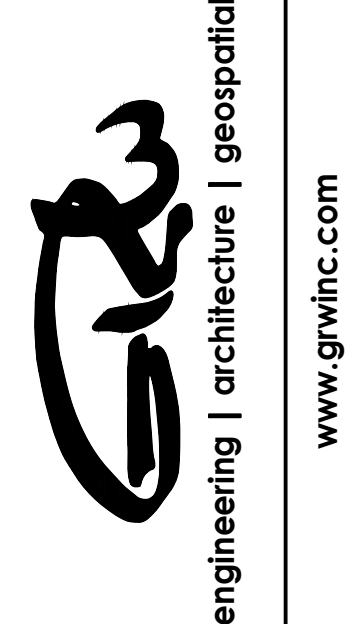


**WYANDOTTE CAVE**

SCALE: 1"=20'-0"



GRW PROJECT NO. 4495-25  
 CLIENT PROJECT NO. XXXX  
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**WYANDOTTE CAVE  
 END OF CAV NEW WORK  
 WYANDOTTE CAVE (LARGE)  
 LEAVENWORTH, INDIANA**

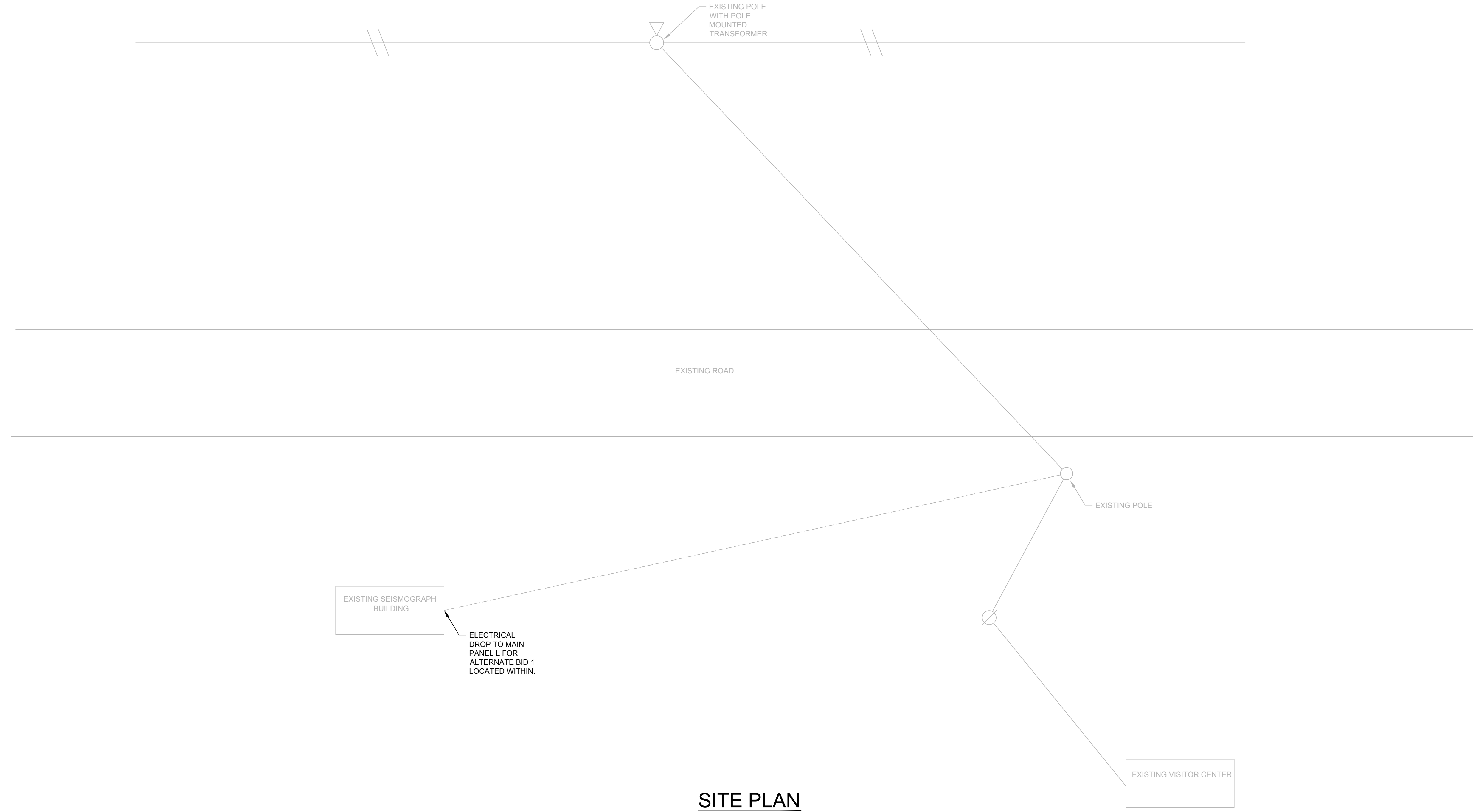
DESIGNED:	DRC
DRAWN:	RHR
REVIEWED:	WLM
APPROVED:	WLM

NO.	REVISIONS	DATE	BY
	DESCRIPTION		

DATE: AUGUST 2018  
 SCALE: 1"=20'  
 SHEET NO.

**E-406**

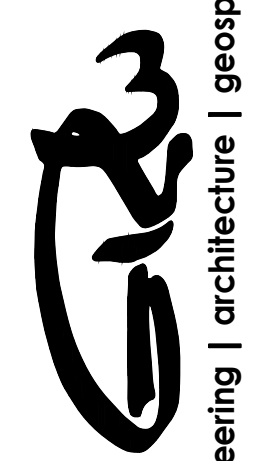




**SITE PLAN**  
SCALE 1"=150'-0"

GRW PROJECT NO. 4495-25

CLIENT PROJECT NO. XXXX



**WYANDOTTE CAVE  
VISITOR CENTER**  
WYANDOTTE CAVE (LARGE)  
LEAVENWORTH, INDIANA

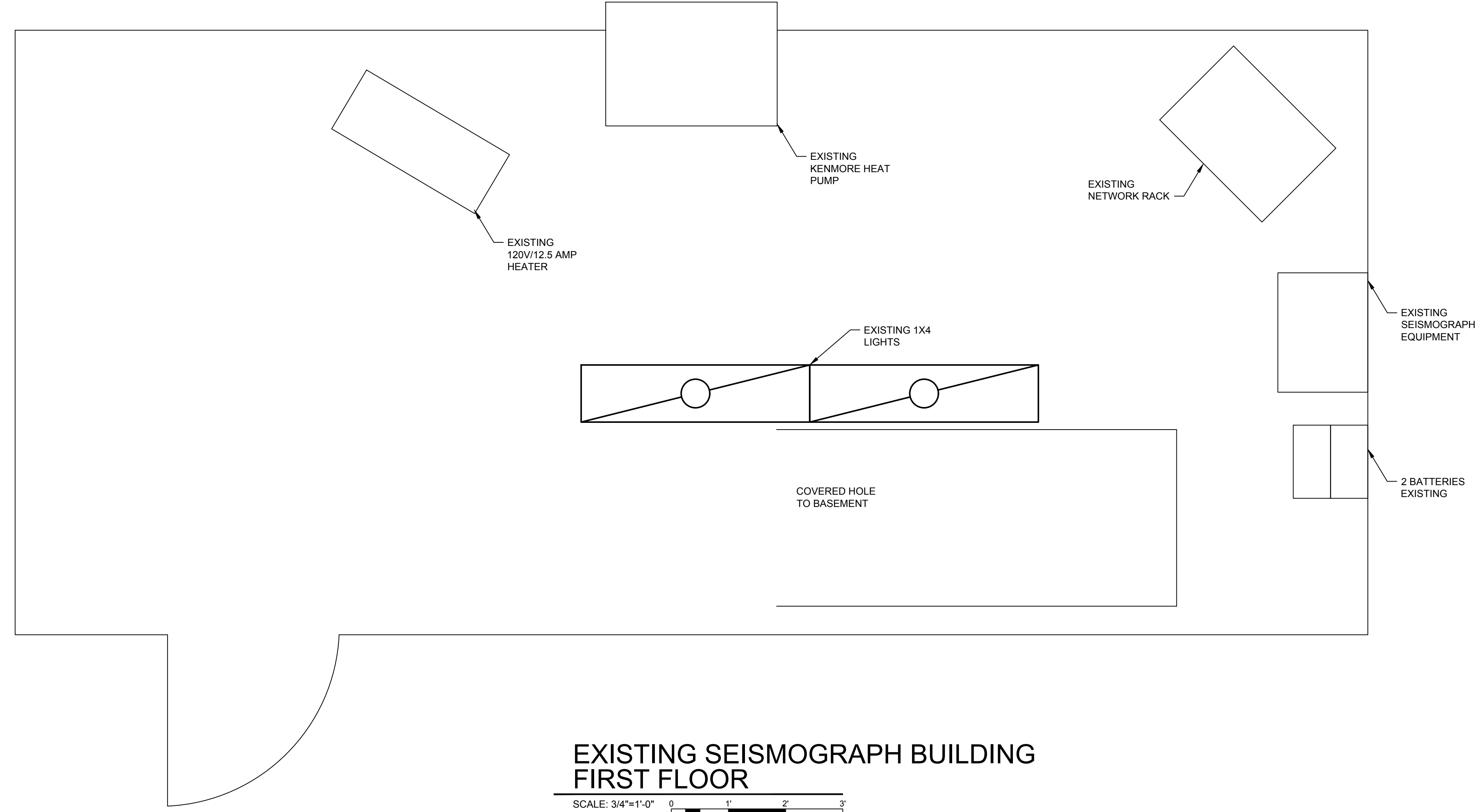
DESIGNED	DRC
DRAWN	RHR
REVIEWED	WLM
APPROVED	WLM

NO.	REVISIONS	DATE	BY
	DESCRIPTION		

SCALE CHECK: \_\_\_\_\_ THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

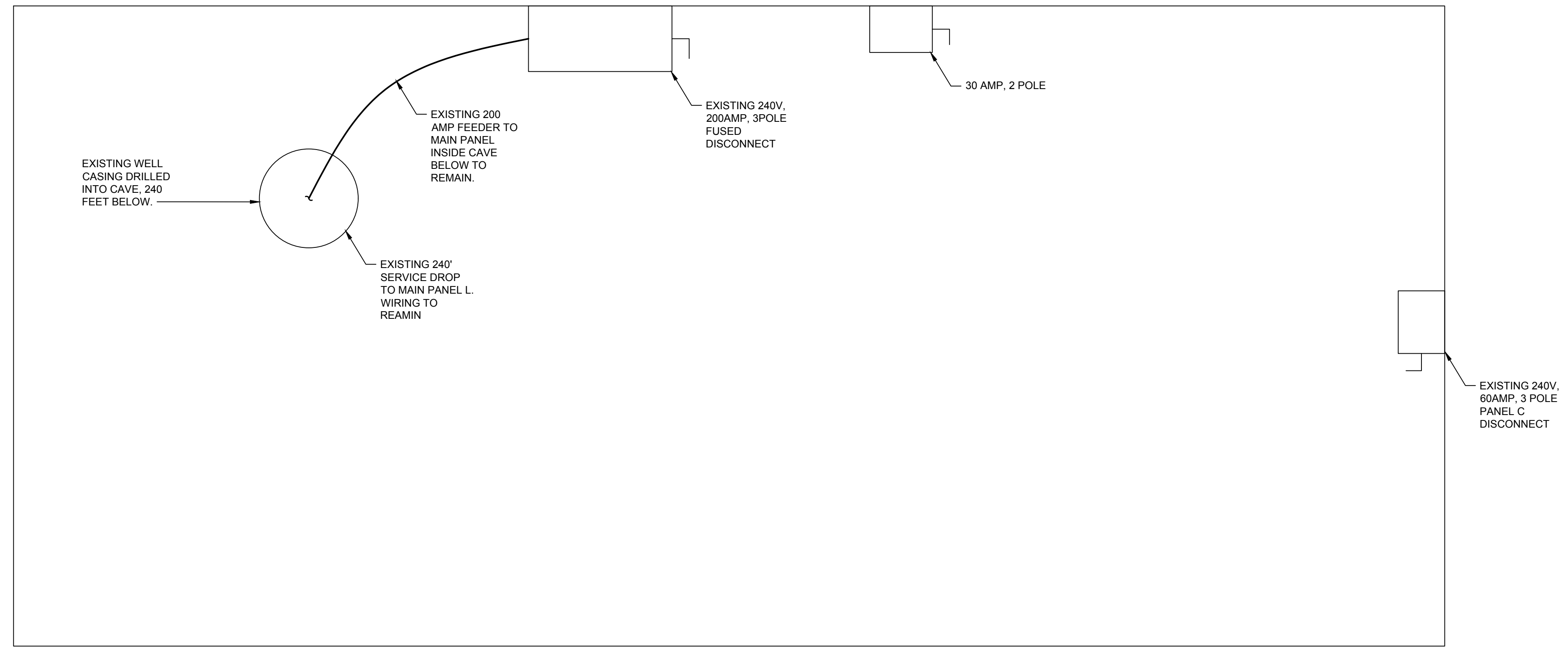
DATE: **AUGUST 2018**  
SCALE: **NOT TO SCALE**  
SHEET NO.

**E-407**



EXISTING SEISMOGRAPH BUILDING  
FIRST FLOOR

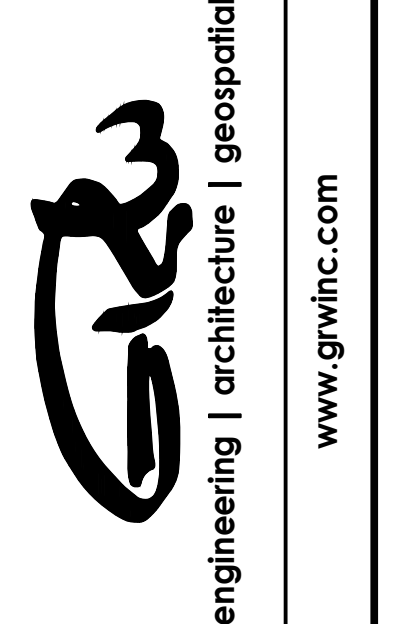
SCALE: 3/4"=1'-0" 0 1' 2' 3'



EXISTING SEISMOGRAPH BUILDING  
BASEMENT

SCALE: 3/4"=1'-0" 0 1' 2' 3'

GRW PROJECT NO. 4495-25  
 CLIENT PROJECT NO. XXXX  
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WYANDOTTE CAVE -  
 SEISMOGRAPH BUILDING  
 WYANDOTTE CAVE (LARGE)  
 LEAVENWORTH, INDIANA

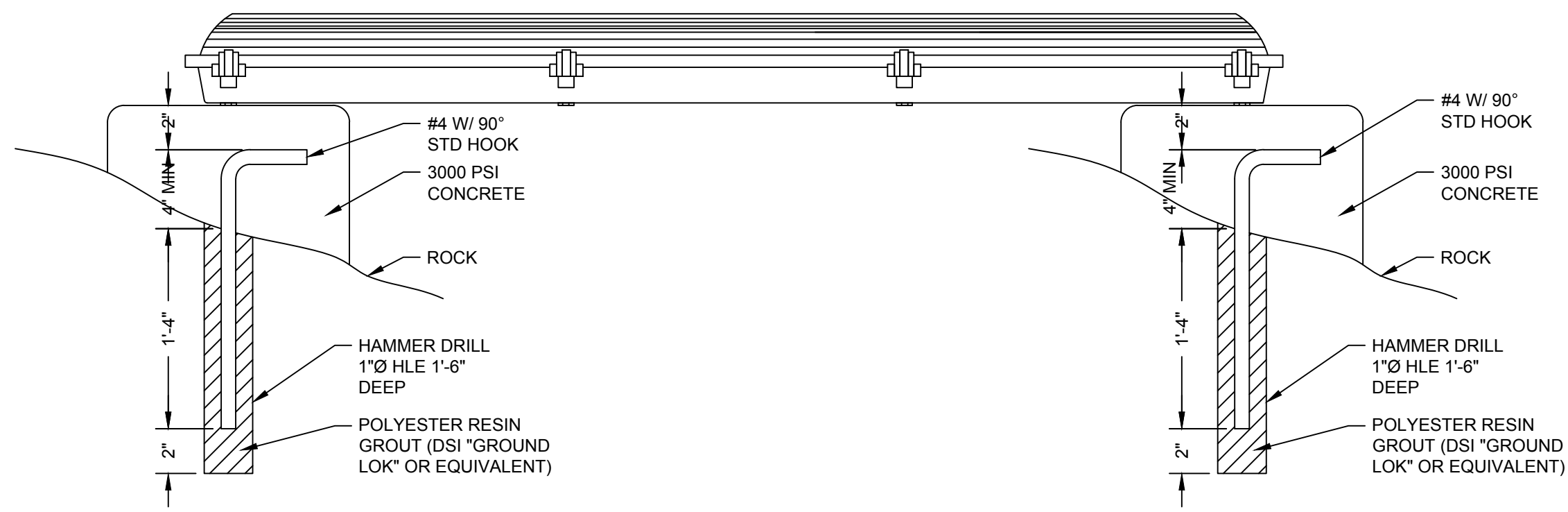
DESIGNED	DRC
DRAWN	RHR
REVIEWED	WLM
APPROVED	WLM

NO.	REVISIONS	DATE	BY
	DESCRIPTION		

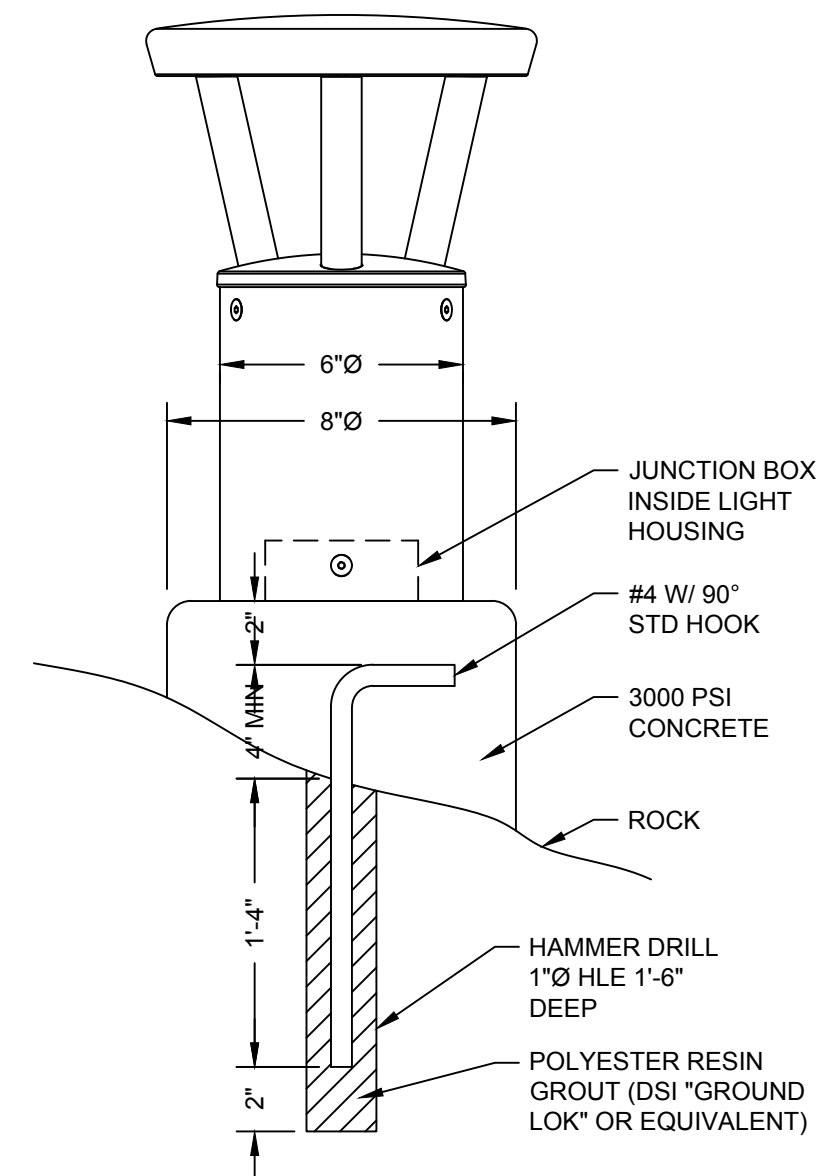
SCALE CHECK: \_\_\_\_\_ THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DATE: AUGUST 2018  
 SCALE: NOT TO SCALE  
 SHEET NO.

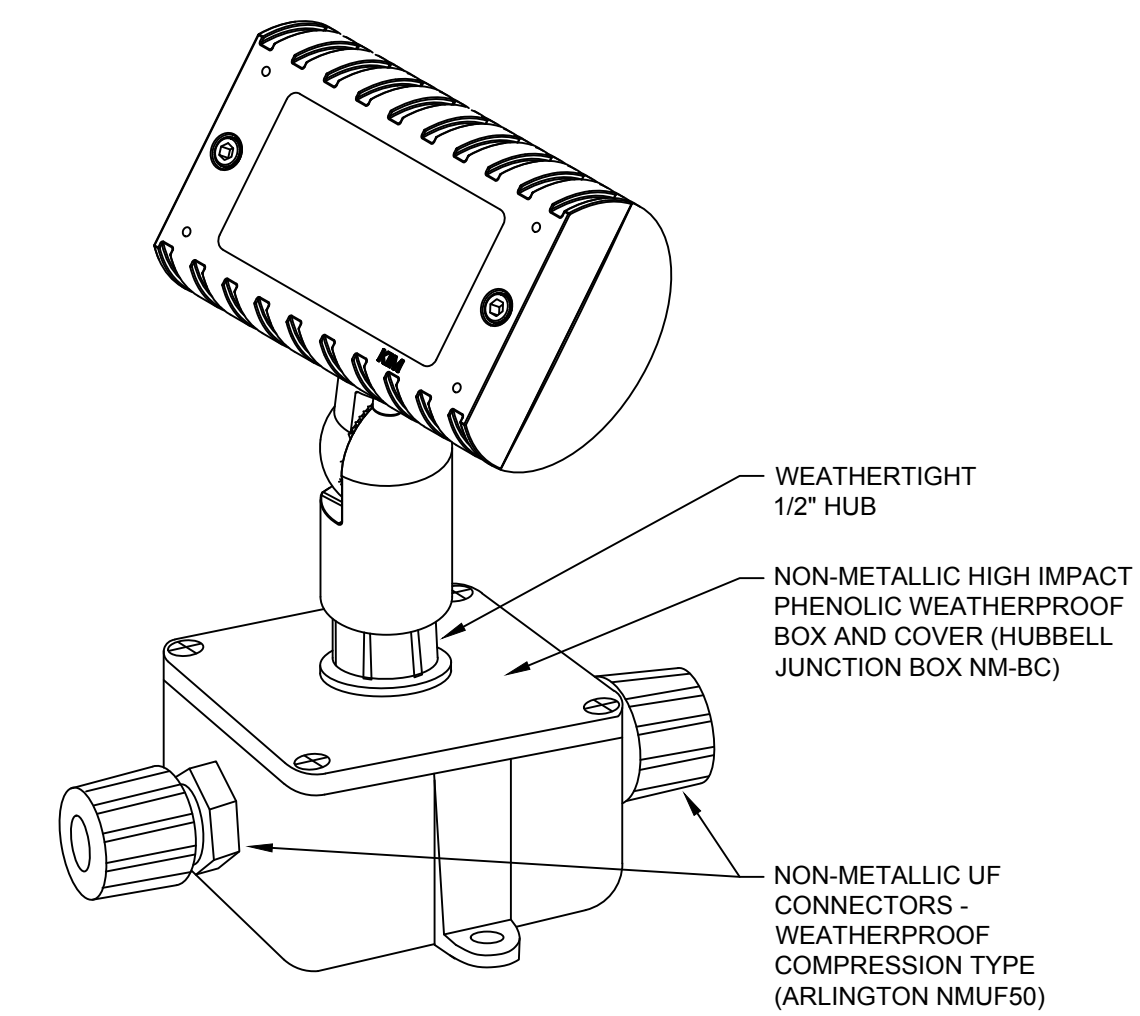
E-302



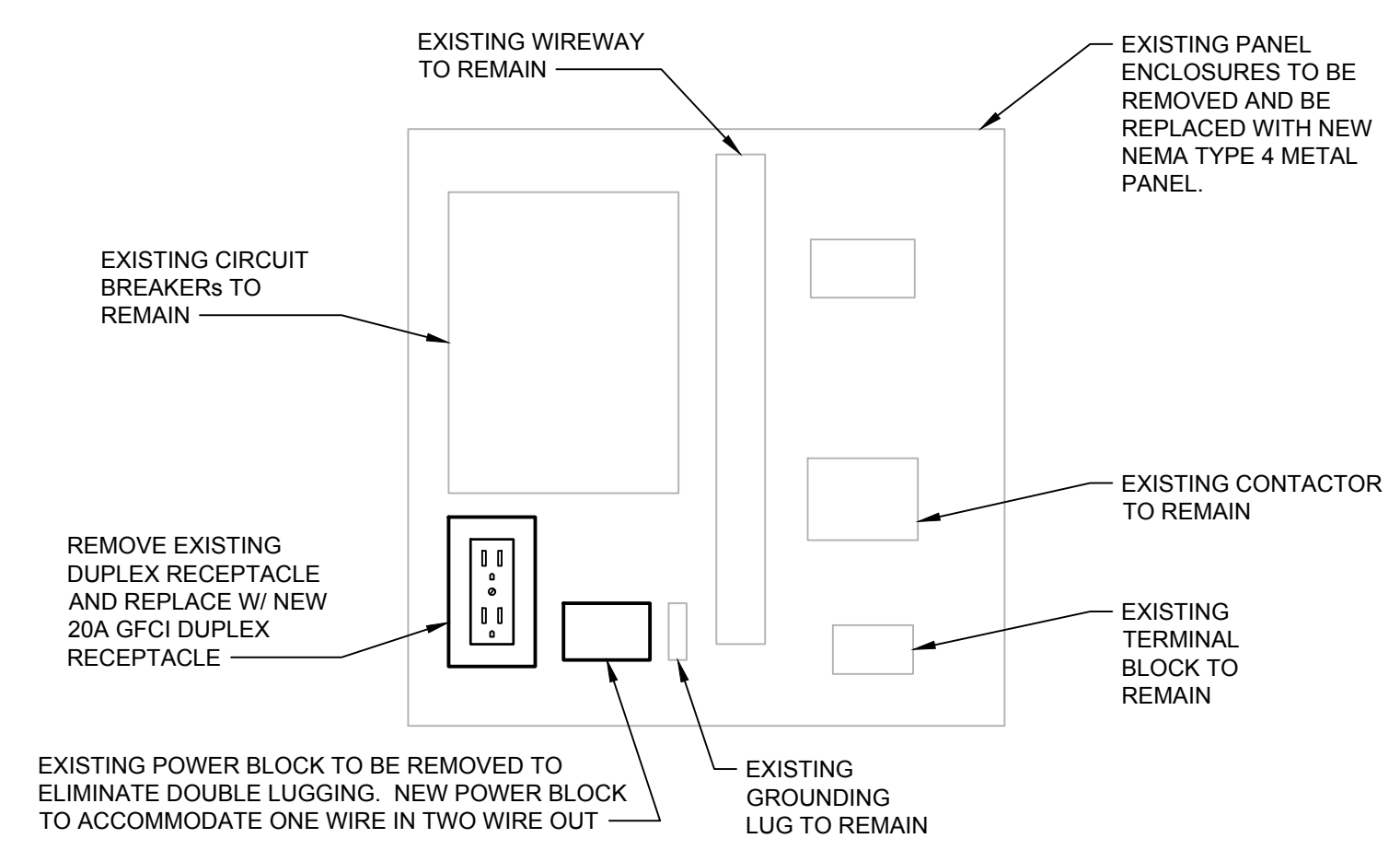
**1** NEW LIGHT FIXTURE TYPE "A" MOUNTING DETAIL  
NOT TO SCALE



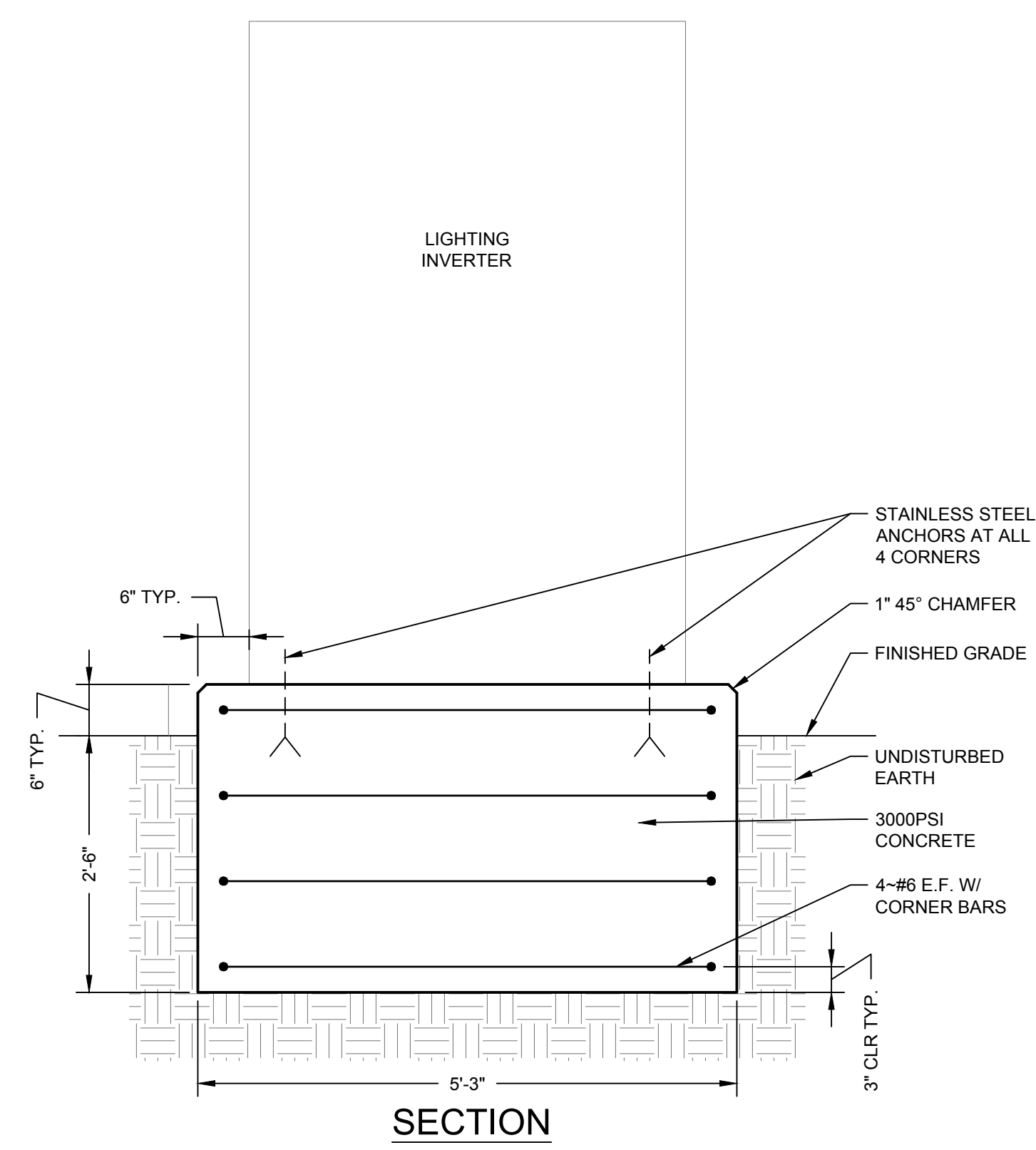
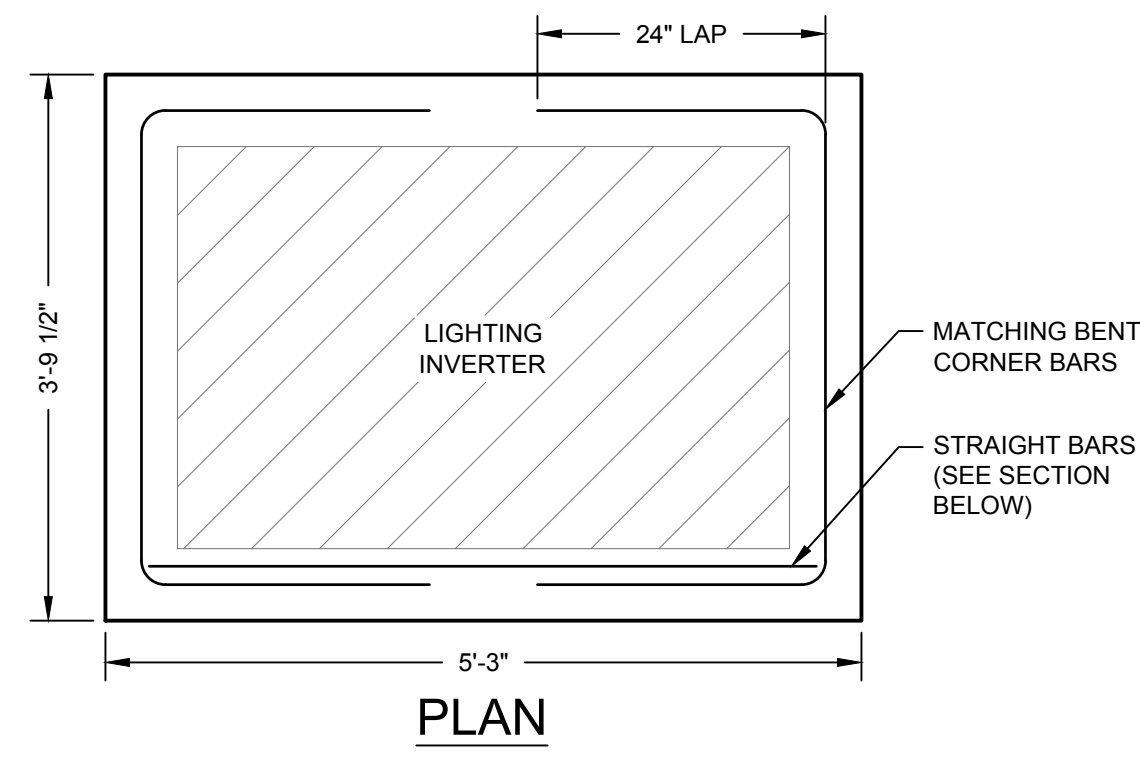
**2** NEW LIGHT FIXTURE TYPE "B" MOUNTING DETAIL  
NOT TO SCALE



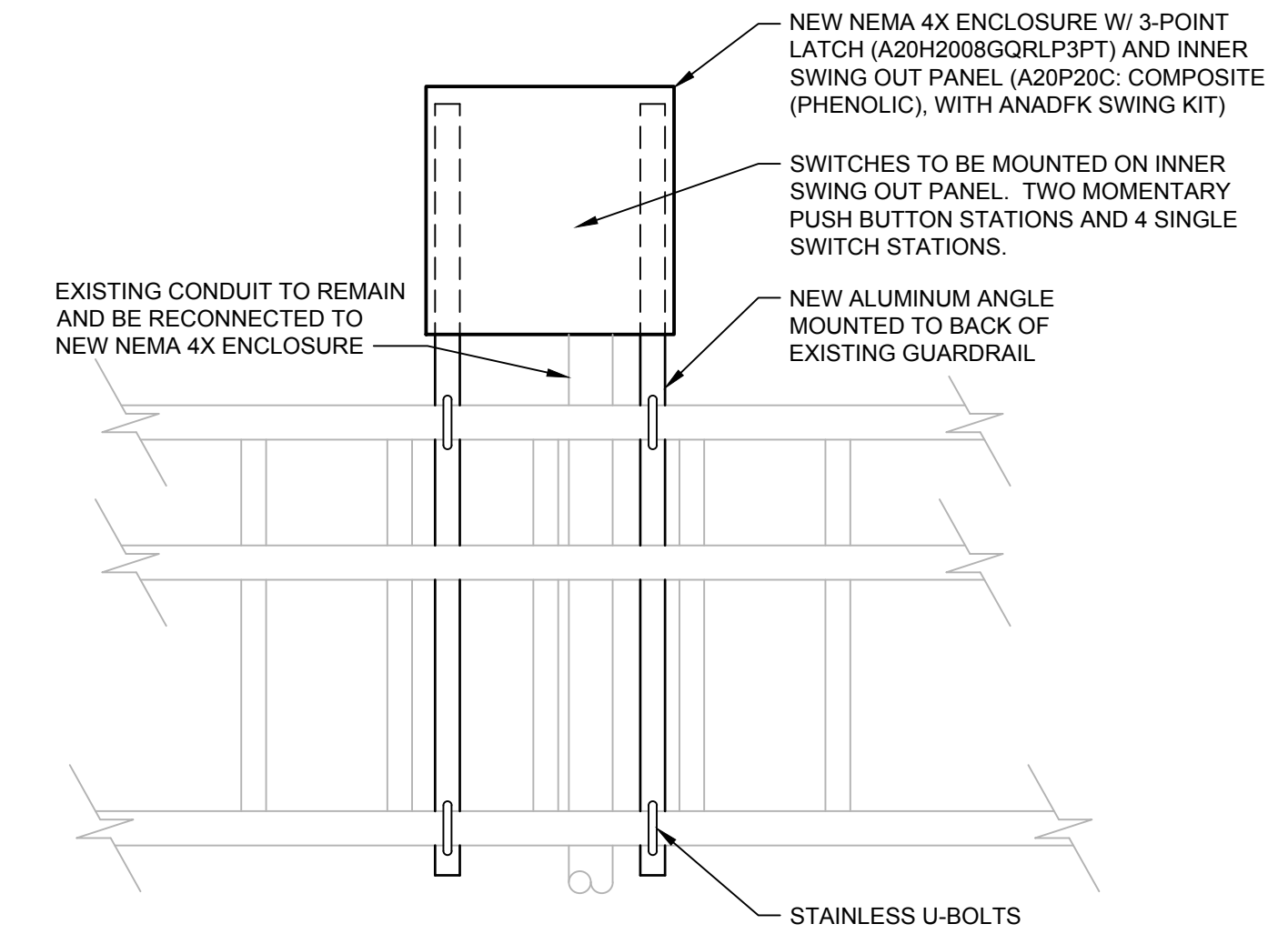
**3** NEW LIGHT FIXTURE TYPE "C" MOUNTING DETAIL  
NOT TO SCALE



**4** TYPICAL PANEL MODIFICATIONS  
NOT TO SCALE



**5** NEW CENTRAL LIGHTING INVERTER FOUNDATION DETAIL  
NOT TO SCALE



**6** TYPICAL NEW SWITCH STATION  
NOT TO SCALE  
NOTE: MODEL NUMBERS ARE HOFFMANPENTAIR.

GRW PROJECT NO. 4495-25  
CLIENT PROJECT NO. XXXX  
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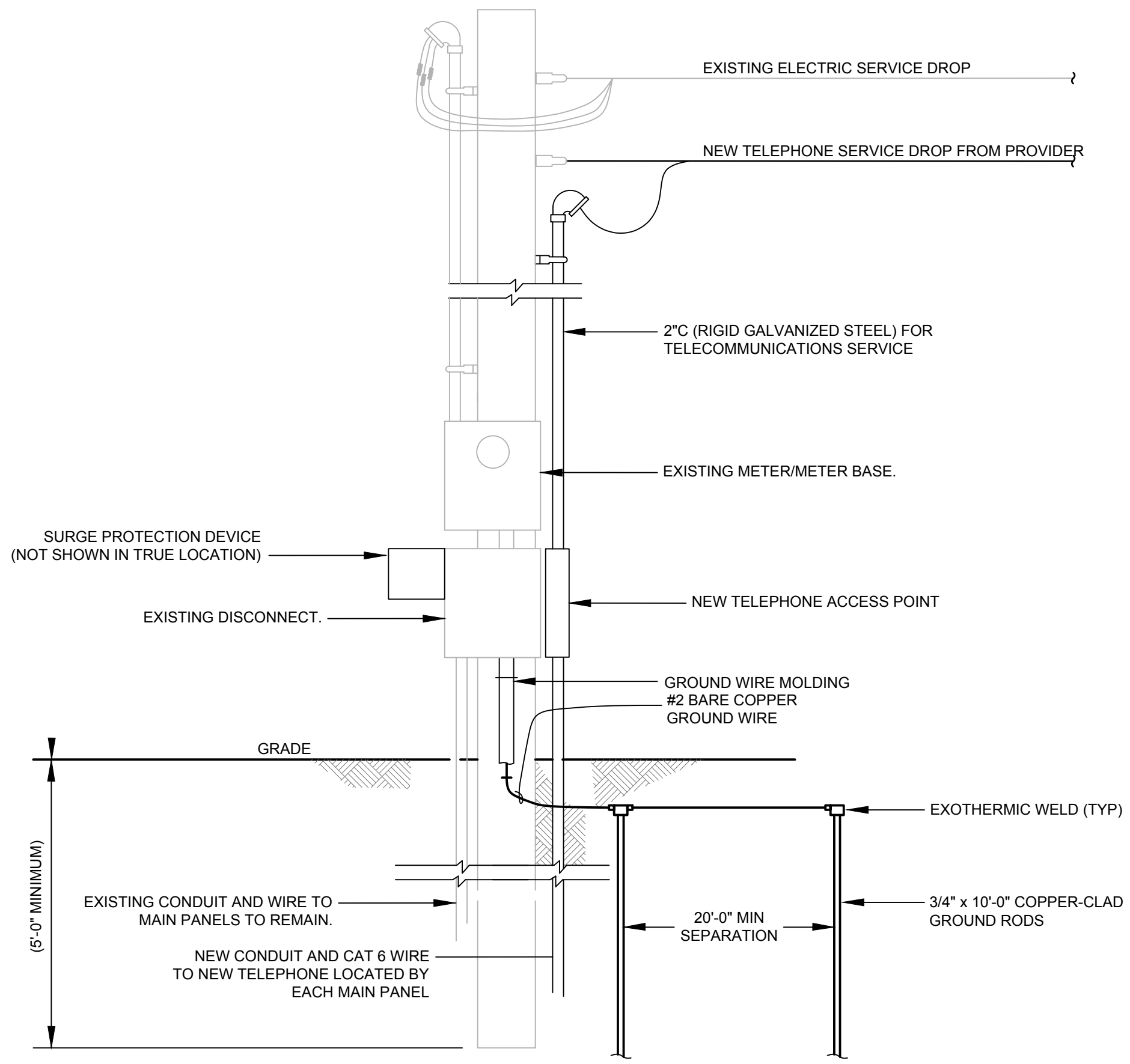
**ELECTRICAL DETAILS**  
WYANDOTTE CAVE (LARGE)  
LEAVENWORTH, INDIANA

DESIGNED	DRC
DRAWN	RHR
REVIEWED	WLM
APPROVED	WLM

NO.	REVISIONS	DATE	BY

SCALE CHECK: \_\_\_\_\_ THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

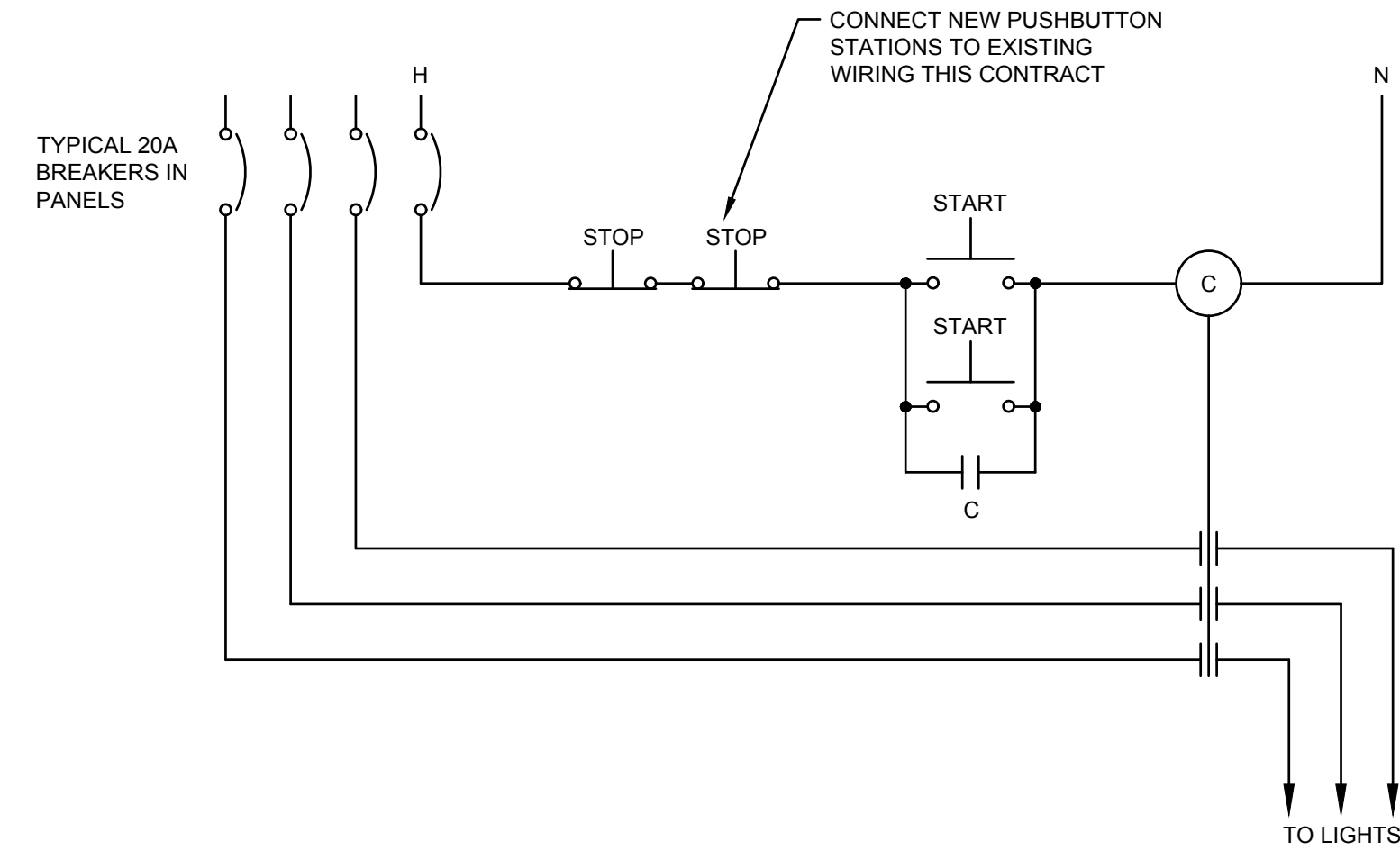
DATE: AUGUST 2018  
SCALE: NOT TO SCALE  
SHEET NO.



**1 BASE BID AND ALT. 2 SERVICE DROP**  
NOT TO SCALE

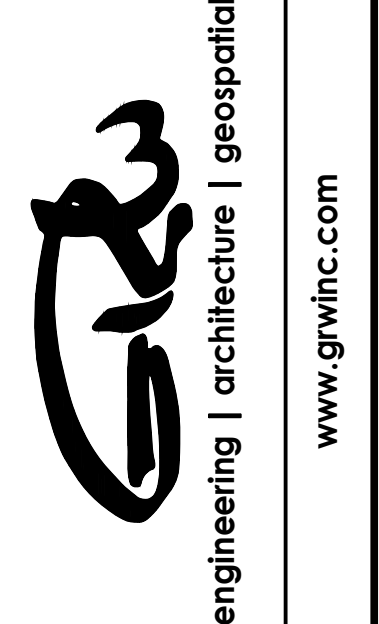
**GENERAL NOTES:**

1. UNDERGROUND CONDUIT FROM THE SERVICE RISER POLE TO THE CAVE SHALL BE SCHEDULE 40 PVC.
2. MOUNT SPD TO SERVICE POLE.



**TYPICAL WIRING FOR PUSHBUTTON LIGHTING CONTROL STATIONS**  
NOT TO SCALE

GRW PROJECT NO. 4495-25  
CLIENT PROJECT NO. XXXX



**ELECTRICAL DETAILS**  
WYANDOTTE CAVE (LARGE)  
LEAVENWORTH, INDIANA

DESIGNED	DRC
DRAWN	RHR
REVIEWED	WLM
APPROVED	WLM

NO.	REVISIONS DESCRIPTION	DATE	BY

SCALE CHECK: \_\_\_\_\_ THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DATE: AUGUST 2018  
SCALE: NOT TO SCALE  
SHEET NO.

**E-502**



PLOTTED BY: bramsey

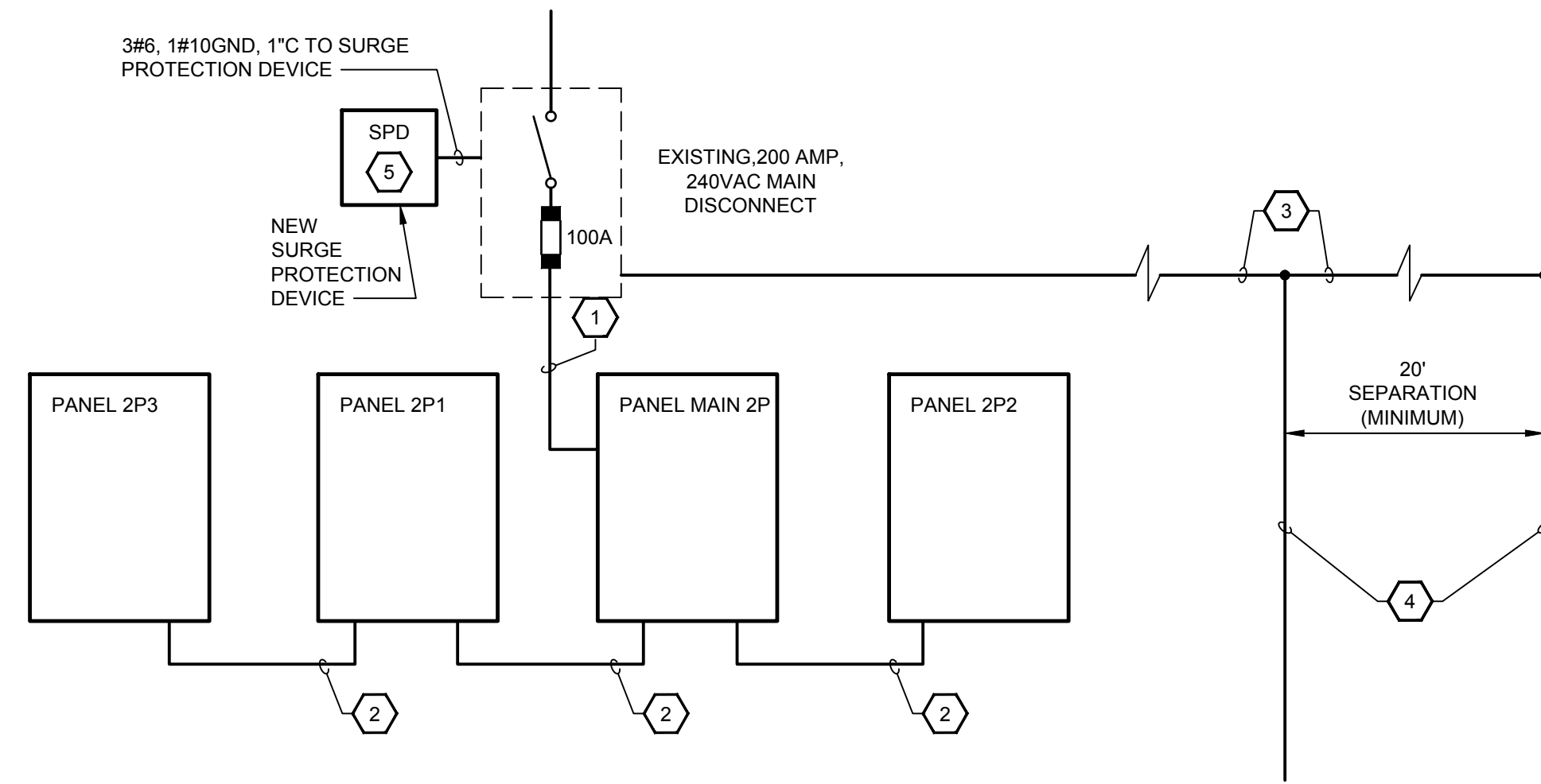
PRINTED: 8/15/2018 @ 4:08PM

FILE NAME: G:\485-IDNR-Bat Cave\Working Drawings\AutoCAD\Large Cave\4495-E-601.dwg

BASE BID NEW LIGHT FIXTURE SCHEDULE											
FIXTURE TYPE	DESCRIPTION	LUMEN SOURCE			VOLTS	MOUNTING		QUANTITY	MANUFACTURER	MODEL NUMBER	
		COLOR TEMP	TYPE	LUMENS		WATTS	TYPE				HEIGHT
A	1X8 LED LXEM	3000K	LED	8,095	66.6	120	GROUND	N/A	34	COLUMBIA LIGHTING	LXEM8-30LW-RFA-EU-DWH-XEDPM
B	14" BOLLARD LED FIXTURE	3000K	LED	950	10	120	GROUND	N/A	77	FIRST LIGHT TECHNOLOGIES	PLB-AC-BZ-FT-30K-UV7
C	DIRECTIONAL FLOOD LED FIXTURE	3000K	LED	4,320	38	120	GROUND	N/A	24	KIM LIGHTING	EL218-W-3-8L-3K-UV-DB
D	LED STEP LIGHT	3000K	LED	167	11.5	120	WALL INSERT	12"	2	KIM LIGHTING	EL807/9L3KUV

ALT. 2 NEW LIGHT FIXTURE SCHEDULE											
FIXTURE TYPE	DESCRIPTION	LUMEN SOURCE			VOLTS	MOUNTING		QUANTITY	MANUFACTURER	MODEL NUMBER	
		COLOR TEMP	TYPE	LUMENS		WATTS	TYPE				HEIGHT
A	1X8 LED LXEM	3000K	LED	8,095	66.6	120	GROUND	N/A	80	COLUMBIA LIGHTING	LXEM8-30LW-RFA-EU-DWH-XEDPM
B	14" BOLLARD LED FIXTURE	3000K	LED	950	10	120	GROUND	N/A	31	FIRST LIGHT TECHNOLOGIES	PLB-AC-BZ-FT-30K-UV7
C	DIRECTIONAL FLOOD LED FIXTURE	3000K	LED	4,320	38	120	GROUND	N/A	23	KIM LIGHTING	EL218-W-3-8L-3K-UV-DB
E	12' LED POLE LIGHT	3000K	LED	7792	74.8	120	POLE	12'	6	STRUCTURA	EVO-12-A-12-LIN-16-LIN-P1/S-MOD

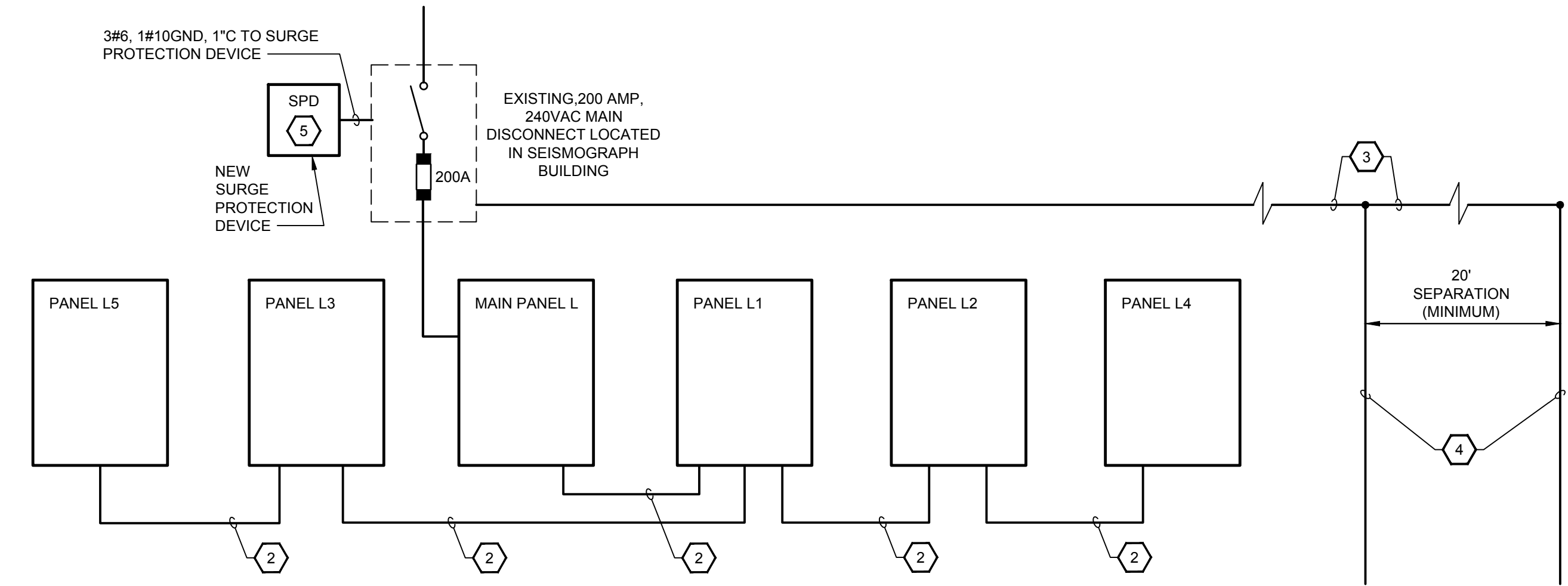
ALT. 1 NEW LIGHT FIXTURE SCHEDULE											
FIXTURE TYPE	DESCRIPTION	LUMEN SOURCE			VOLTS	MOUNTING		QUANTITY	MANUFACTURER	MODEL NUMBER	
		COLOR TEMP	TYPE	LUMENS		WATTS	TYPE				HEIGHT
A	1X8 LED LXEM	3000K	LED	8,095	66.6	120	GROUND	N/A	65	COLUMBIA LIGHTING	LXEM8-30LW-RFA-EU-DWH-XEDPM
B	14" BOLLARD LED FIXTURE	3000K	LED	950	10	120	GROUND	N/A	83	FIRST LIGHT TECHNOLOGIES	PLB-AC-BZ-FT-30K-UV7
C	DIRECTIONAL FLOOD LED FIXTURE	3000K	LED	4,320	38	120	GROUND	N/A	70	KIM LIGHTING	EL218-W-3-8L-3K-UV-DB



**1** BASE BID ONE LINE  
NOT TO SCALE

**KEYNOTES TO ONE LINE DIAGRAMS:**

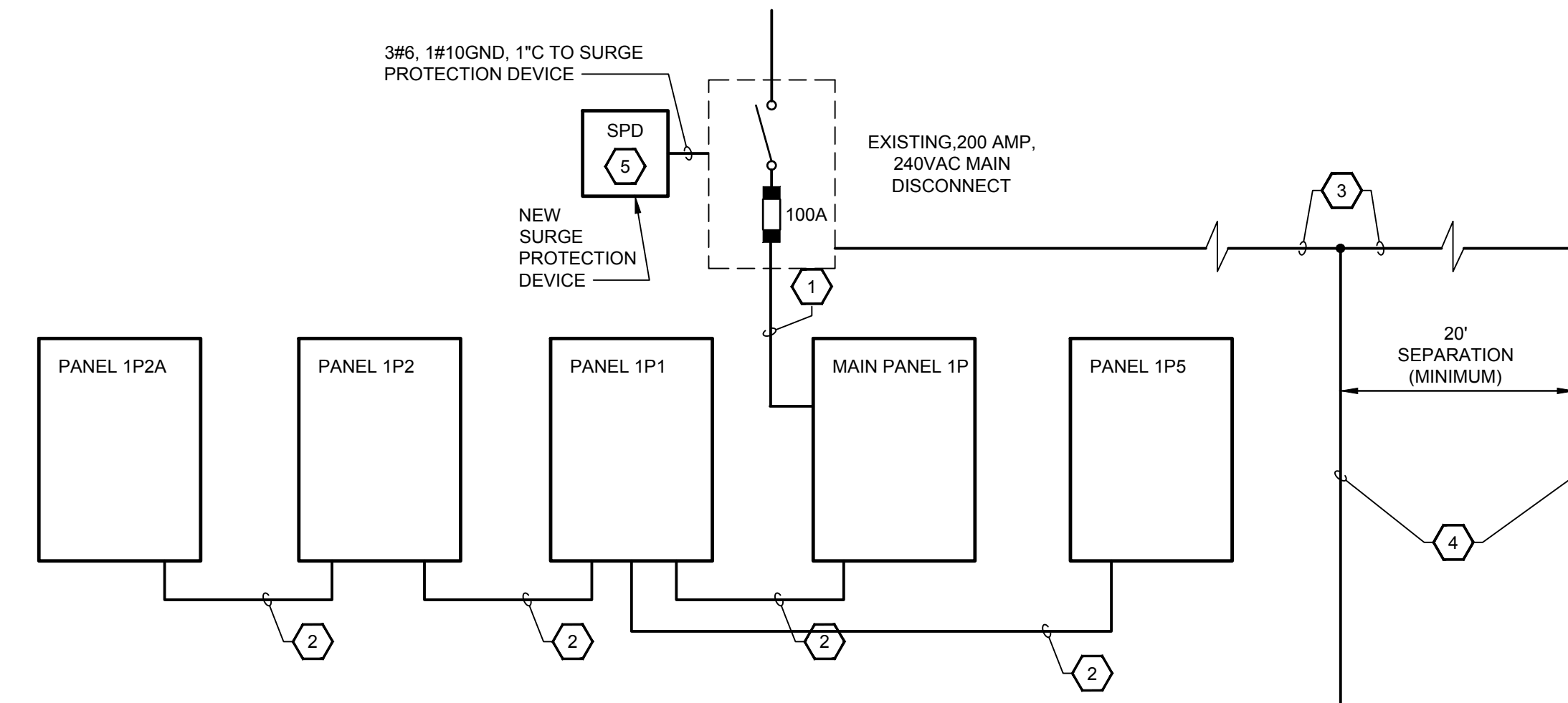
- EXISTING WIRE AND CONDUIT TO REMAIN.
- 3#4, 1#6GND UF CABLE
- NEW BARE #2 COPPER BURIED 30".
- DRIVE ALL RODS TO 30" BELOW GRADE (INCLUDING EXISTING ROD).
- FURNISH AND INSTALL A NEW TYPE 2 SPD THIS CONTRACT.



**2** ALT. 1 ONE LINE  
NOT TO SCALE

**KEYNOTES TO ONE LINE DIAGRAMS:**

- EXISTING WIRE AND CONDUIT TO REMAIN.
- 3#4, 1#6GND UF CABLE
- NEW BARE #2 COPPER BURIED 30".
- DRIVE ALL RODS TO 30" BELOW GRADE (INCLUDING EXISTING ROD).
- FURNISH AND INSTALL A NEW TYPE 2 SPD THIS CONTRACT.



**3** ALT. 2 ONE LINE  
NOT TO SCALE

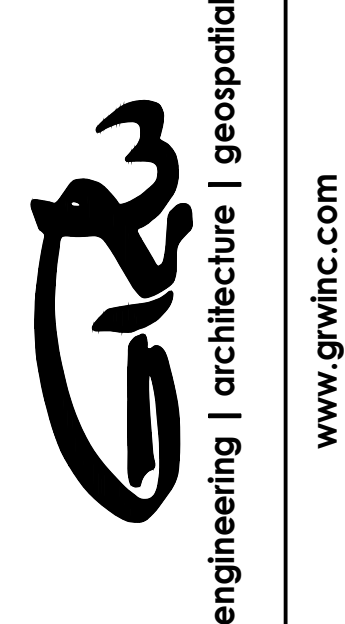
**KEYNOTES TO ONE LINE DIAGRAMS:**

- EXISTING WIRE AND CONDUIT TO REMAIN.
- 3#4, 1#6GND UF CABLE
- NEW BARE #2 COPPER BURIED 30".
- DRIVE ALL RODS TO 30" BELOW GRADE (INCLUDING EXISTING ROD).
- FURNISH AND INSTALL A NEW TYPE 2 SPD THIS CONTRACT.

GRW PROJECT NO. 4495-25

CLIENT PROJECT NO. XXXX

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**ELECTRICAL ONE LINES AND SCHEDULES**  
WYANDOTTE CAVE (LARGE)  
LEAVENWORTH, INDIANA

DESIGNED BY	DRC
DRAWN BY	RHR
REVIEWED BY	WLM
APPROVED BY	WLM

NO.	DATE	DESCRIPTION

SCALE CHECK: THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DATE: AUGUST 2018  
SCALE: 1"=20'  
SHEET NO.

E-601

75% DESIGN