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BID DOCUMENTS

SEPTEMBER, 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. HERE EVERY EFFORT WILL BE MADE TO CONCEAL OR DISGUISE EFFORTS TO MINIMIZE THE DAMAGE TO EXISTING CONDITIONS.
SYMBOLS:

1. ALTERNATE BO #2
2. ELECTRICAL PANEL
3. SWITCH FOR CONTROL PANEL & STATION
4. MATCH LINE
5. FALLEN PICKAX
6. CALL BOX READER
7. AUSTRALIAN CONTINENT

GENERAL NOTE:

1. A 1" = 20' grid is used throughout the drawing. Facilities, distances, and elevations are shown at grid intersections.
2. All electrical wiring shown is assumed to be 12/3 NM wire (direct burial or conduit).
3. All switch and control locations shown are shown true to grade.
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50. All switch and control locations shown are shown true to grade.
MATCH LINE
MATCH LINE
SEE E-402

AIMABLE FLOOD LIGHT
STRIP FLUORESCENT FIXTURE
LIGHT SWITCH
LIGHTING CONTROL PANEL

SYMBOLS:

C

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 WIRE IN CONDUIT BETWEEN FEEDERS TO REMAIN.
4. ALL EXISTING TELEPHONES SHALL BE REMOVED.
5. ALL NM CABLE SHALL BE REMOVED THROUGHOUT THE CAVE.
6. ALL EXISTING PANELS SHALL REMAIN UNLESS OTHERWISE NOTED.
7. ALL EXISTING SWITCHES AND PUSHBUTTON CONTROLS TO BE REPLACED IN KIND.
GENERAL NOTE:

1. All new wiring for switches/bushbuttons shall match existing wiring using new UF cable (typical).
2. Run of 12-2 w/ ground.
3. Copper gray jacketed.
4. Tumbler switch for CIR L2-1.
5. Tumblerswitch for CIR L3-7.

SYMBOLS:

- Rankest Light
- Station #1
- Station #2
- Station #3
- Station #4
- Station #5
- Station #6
- Station #7
- Station #8
- Station #9
- Station #10
- Station #11
- Station #12

- Electrical panel 1P2
- Electrical panel L1
- Electrical panel L2
- Electrical panel L3
- Electrical panel L4

- Match line
- Power line
- Control panel
- Switch for control panel
- Switch for control panel L1

- Entrance of cave
- New lighting

- Feeder between panels shown on sheet E-407.
- Mounted to unistrut at locations shown in Nema 4X enclosures.

- All new telephones shall be Gaia-Tronics in E-404.
- All new electrical lighting wiring shall be in CIR L1-7.
- All A, B, C, and E designated light fixtures on A.
- Plan for electrical panel 1P2 station #3.
- Plan for electrical panel L2 station #12.
- Plan for electrical panel L3 station #8.
- Plan for electrical panel L5 station #6.

WYANDOTTE CAVE (LARGE)

SCALE: 1"=20'-0"
GENERAL NOTE:
E-408.
FEEDERS BETWEEN PANELS SHOWN ON SHEET MOUNTED TO UNISTRUT AT LOCATIONS SHOWN IN NEMA 4X ENCLOSURES. ALL TELEPHONES SHALL BE CABLE.

CONTRACT.
SHALL MATCH EXISTING WIRING USING NEW UF THIS DRAWING ARE NEW TO BE INSTALLED THIS
ALL ELECTRICAL PANELS ARE EXISTING.
ALL NEW WIRING FOR SWITCHES/BUTTONS
ALL NEW TELEPHONES SHALL BE GAI-TRONICS IN
ALL NEW ELECTRICAL LIGHTING WIRING SHALL BE
ALL A, B, C, AND D DESIGNATED LIGHT FIXTURES ON

THE ROTUNDA
CREEPING AVE
GARDEN OF HELICTITES
RECEPTION ROOM
DINING ROOM

MATCH LINE
SEE E-307
MATCH LINE
SEE E-307
MATCH LINE
SEE E-307
MATCH LINE
SEE E-307

SWITCH FOR CONTROL PANEL L4 STATION #23
SWITCH FOR CONTROL PANEL 2P2 STATION #24
SWITCH FOR CONTROL PANEL L5 STATION #21
SWITCH FOR CONTROL PANEL 1P5 STATION #19
SWITCH FOR CONTROL PANEL 1P4 STATION #18
SWITCH FOR CONTROL PANEL 1P3 STATION #16
SWITCH FOR CONTROL PANEL 1P2 STATION #17
SWITCH FOR CONTROL PANEL 1P1 STATION #14
SWITCH FOR CONTROL PANEL 1P3-3 CIRL5-1
SWITCH FOR CONTROL PANEL 1P3-4 CIRL5-2
SWITCH FOR CONTROL PANEL 1P5-4 CIRL5-4

ELECTRICAL PANEL 1P5-1 CIR 1P5-1
ELECTRICAL PANEL 1P5-2 CIR 1P5-2
ELECTRICAL PANEL 1P5-3 CIR 1P5-3
ELECTRICAL PANEL 1P5-4 CIR 1P5-4
ELECTRICAL PANEL 1P3-1 CIR 1P3-1
ELECTRICAL PANEL 1P3-2 CIR 1P3-2
ELECTRICAL PANEL 1P3-3 CIR 1P3-3
ELECTRICAL PANEL 1P1-1 CIR 1P1-1
ELECTRICAL PANEL 1P1-2 CIR 1P1-2
ELECTRICAL PANEL 1P1-3 CIR 1P1-3

LED STEP LIGHT
LED FLOOD LIGHT
LED AIMABLE FLOOD
COPPER GRAY JACKETED UF CABLE (TYPICAL)
RUN OF 12-2 W/ GROUND PANEL LIGHTING CONTROL LIGHT SWITCH PANEL 1P5 STATION 1P5-1
LIGHT SWITCHE PANEL 1P5 STATION 1P5-2
LIGHT SWITCHE PANEL 1P5 STATION 1P5-3
LIGHT SWITCHE PANEL 1P5 STATION 1P5-4

CIR 1P1-1 ROOM JUNCTION A
CIR 1P3-1 S
CIR 1P3-2 C
CIR 1P3-3 S
CIR 1P1-2 S
CIR 1P1-3 B
CIR 2P2-1 C
CIR 2P2-2 C
CIR 2P2-3 B
CIR 2P2-4 B

MATCH LINE
SEE E-452
MATCH LINE
SEE E-452
MATCH LINE
SEE E-452
MATCH LINE
SEE E-452

WYANDOTTE CAVE - MIDDLE OF CAVE NEW LIGHTING.

DATE: SEPTEMBER 2018
SCALE CHECK: 1"=20' THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED

DRAWN: BRAMSEY
PLOTTED BY: BRAMSEY
PRINTED: 9/26/2018 @ 8:59AM

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

SYMBOLS:

1. See Ill. 1 & 2 for number and location of light switches and control switches to areas identified.
2. All new electrical, light and interior systems to be installed new, replace old or existing.
3. All new electrical, light and interior systems to be installed new, replace old or existing.
4. All electrical, light and interior systems to be installed new, replace old or existing.
5. All new electrical, light and interior systems to be installed new, replace old or existing.
6. All new electrical, light and interior systems to be installed new, replace old or existing.
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8. All new electrical, light and interior systems to be installed new, replace old or existing.
9. All new electrical, light and interior systems to be installed new, replace old or existing.
10. All new electrical, light and interior systems to be installed new, replace old or existing.

ALL RIGHTS RESERVED: THIS DOCUMENT IS THE PROPERTY OF GRW ENGINEERS, INC. AND SHALL NOT OR USED FOR CONSTRUCTION OF CLIENT PROJECT NO. XXXX WITHOUT WRITTEN PERMISSION.
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 2#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. Feeders between panels shown on sheet E-409.
5. All new wiring for switches/bushbuttons shall match existing wiring using new UF cable.
6. All electrical panels are existing.

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 2#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. Feeders between panels shown on sheet E-409.
5. All new wiring for switches/bushbuttons shall match existing wiring using new UF cable.
6. All electrical panels are existing.
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 2#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.

SHEET KEYNOTES:
1. EXISTING 3#6, 1#10 GND, 1" PVC.
2. EXISTING 3#3/0, 1#6 GND, 2" PVC.
3. EXISTING 3#1, 1#10 GND, 1 1/2" PVC.
4. EXISTING 3#6, 1#10 GND, 1" PVC.
5. EXISTING 3#4, 1#10 GND, 1" PVC.
6. NEW CAT 6 INTERLOCK ARMORED CABLE TO NEW GAL-TRONICS NEMA 4X RUGGED TELEPHONE FROM NEW TELEPHONE ACCESS POINT LOCATED IN SEISMOGRAPH BUILDING.
7. TO SERVICE DROP LOCATED IN THE SEISMOGRAPH BUILDING.
MATCH LINE SEE E-407

MATCH LINE SEE E-409

SEE E-407

SEE E-409

LED AIMABLE FLOOD LIGHT

1X8 LED LIGHT

LIGHT SWITCH

LIGHTING CONTROL PANEL

SYMBOLS:

C
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 2#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.

Sheet Keynotes:

1. NEW CAT 6 INTERLOCK ARMORED CABLE TO NEW GAI-TRONICS NEMA 4X RUGGED TELEPHONE FROM NEW TELEPHONE ACCESS POINT LOCATED AT ALTERNATE 2 SERVICE DROP.

2. 3#4, 1#6 GND, 1 1/4" SCHEDULE 80 PVC

3. 3#1, 1#10 GND, 1 1/2" SCHEDULE 80 PVC

Scale: 1"=20'-0"
AIMABLE FLOOD LIGHT
STRIP FLUORESCENT FIXTURE
LIGHT SWITCH
LIGHTING CONTROL PANEL L-1, L-2, OR L-3

SYMBOLS:
- C: RUN OF 12-2 W/ GROUND
- COPPER GRAY JACKETED UF CABLE (TYPICAL)

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 2#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.

NEW TELEPHONE

AUGER HOLE

WALLACE GRAND DOME MONUMENT
MOUNTAIN

SWITCH FOR CONTROL PANEL - 2P2 STATION #22
SWITCH FOR CONTROL PANEL - 1P3 STATION #21

SWITCH FOR CONTROL PANEL - 2P3 STATION 4
SWITCH FOR CONTROL PANEL - 2P3 STATION 1
SWITCH FOR CONTROL PANEL - 2P3 STATION 3
SWITCH FOR CONTROL PANEL - 2P3 STATION 2

MATCH LINE
MATCH LINE

SHEET KEYNOTES:
1. 3#6, 1#10 1" SCHEDULE 80 PVC
2. 3#10, 1#10 GND 3/4" SCHEDULE 80 PVC
3. NEW CAT 6 INTERLOCK ARMORED CABLE TO NEW GAI-TRONICS NEMA 4X RUGGED TELEPHONE FROM NEW TELEPHONE ACCESS POINT LOCATED AT BASE 300 SERVICE DROP
EXISTING WELL CASING DRILLED INTO CAVE, 240 FEET BELOW TO REMAIN.

EXISTING 200 AMP FEEDER TO MAIN PANEL INSIDE CAVE BELOW TO REMAIN.
(RECONNECT TO NEW CBI)

EXISTING WIRING TO BE REMOVED.

EXISTING SEISMOGRAPH BUILDING FIRST FLOOR

EXISTING SEISMOGRAPH BUILDING BASEMENT
EXISTING WELL CASING DRILLED INTO CAVE, 240 FEET BELOW.

EXISTING 200 AMPERE FEEDER TO MAIN PANEL INSIDE CAVE BELOW TO REMAIN.

WIRE TO NEW CBI

NEW 240/120V, 200 AMPERE, 2 POLE MAIN SEISMOGRAPH PANEL

EXISTING 240V, 60 AMPERE, 2 POLE PANEL C DISCONNECT

30 AMPERE, 2 POLE DISCONNECT

EXISTING 240' SERVICE DROP TO MAIN PANEL L.

WIRING TO REMAIN

EXISTING 120V/12.5 AMP HEATER

EXISTING KENMORE HEAT PUMP

EXISTING NETWORK RACK

EXISTING SEISMOGRAPH EQUIPMENT

2 BATTERIES

EXISTING COVERED HOLE TO BASEMENT

EXISTING 1X4 LIGHTS

NEW 2#6, 1#10 GND, 3/4" C FROM NEW 60 AMPERE 2 POLE BREAKER TO EXISTING 60 AMPERE 2 POLE DISCONNECT

NEW 2#10, 1#10 GND, 3/4" C FROM NEW 30 AMPERE 2 POLE BREAKER IN SEISMOGRAPH PANEL TO EXISTING 30 AMPERE 2 POLE DISCONNECT

NEW 120/240V, 15 KW CENTRAL BATTERY INVERTER IN NEMA 1 ENCLOSURE

NEW 3#4, 1#8, 1"C FROM NEW 80 AMPERE 2 POLE BREAKER TO NEW 120/240 15 KW CBI

NEW JUNCTION BOX

NEW 3#4, 1#8, 1"C FROM NEW 80 AMPERE 2 POLE BREAKER TO NEW 120/240 15 KW CBI

SHEET KEYNOTES:

1. ANCHOR CABINET TO CONCRETE FLOOR SLAB.
NEW LIGHT Fixture

1. TYPE "A" MOUNTING DETAIL
   - Side View of Fixture Mount
   - Dimensions: W: 1'-0", H: 1'-2", L: 1'-3"

2. TYPE "B" MOUNTING DETAIL
   - Side View of Fixture Mount
   - Dimensions: W: 9", H: 1'

TYPICAL PANEL MODIFICATIONS

- Remove existing duplex receptacle and replace with new 20A GFCI duplex receptacle
- Replace existing circuit breaker with new 20A GFCI circuit breaker
- Replace existing panel covers with new non-metallic panel covers
- New UF cable in 1" PVC conduit stub out

TYPICAL NEW SWITCH STATION

- New pole base foundation detail
  - Foundation dimensions: W: 34", H: 18", D: 12"
  - Foundation anchor bolts: M: 3/4"-10 x 2" SS
  - Foundation template (to facilitate installation)

NEW POLE BASE FOUNDATION DETAIL

- Section A
- Foundation dimensions: W: 34", H: 18", D: 12"
- Foundation anchor bolts: M: 3/4"-10 x 2" SS
- Foundation template (to facilitate installation)
EXISTING ELECTRIC SERVICE DROP

GRADE (5'-0" MINIMUM)

#2 BARE COPPER GROUND WIRE

EXOTHERMIC WELD (TYP)

20'-0" MIN SEPARATION

2°C (RIGID GALVANIZED STEEL) FOR TELECOMMUNICATION SERVICE

NEW TELEPHONE SERVICE DROP FROM PROVIDER

3/4" x 10'-0" COPPER-CLAD GROUND RODS

GENERAL NOTES:
1. UNDERGROUND CONDUIT FROM THE SERVICE RISER POLE TO THE CAVE WELL CASING IS EXISTING.
2. MOUNT SPD TO SERVICE POLE.

EXISTING METER/METER BASE.

EXISTING DISCONNECT.

NEW TELEPHONE ACCESS POINT

EXISTING CONDUIT AND WIRE TO MAIN PANELS TO REMAIN.

NEW CONDUIT AND CAT 6 CABLE TO NEW TELEPHONE LOCATED BY EACH MAIN SERVICE (RUN IN WELL CASING)

SURGE PROTECTION DEVICE

GROUND WIRE MOLDING

BASE BID AND ALT. 2 EXISTING SERVICE POLE MODIFICATIONS

TYPICAL WIRING FOR PUSHBUTTON LIGHTING CONTROL STATIONS

GENERAL NOTES:
- FOR GENERAL REFERENCE ONLY. ALL CONTROL WIRING SHALL MATCH EXISTING USING NEW UF CABLE SUPPORTED EVERY 4' IN ACCORDANCE TO THE NEC.
- GENERAL NOTES:
  1. UNDERGROUND CONDUIT FROM THE SERVICE RISER POLE TO THE CAVE WELL CASING IS EXISTING
  2. MOUNT SPD TO SERVICE POLE.
**BASE BID NEW LIGHT FIXTURE SCHEDULE**

<table>
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<th>TYPE</th>
<th>DESCRIPTION</th>
<th>COLOR TEMP.</th>
<th>TYPE</th>
<th>LUMENS</th>
<th>VOLTS</th>
<th>WATTS</th>
<th>MOUNTING</th>
<th>MANUFACTURER</th>
<th>MODEL NUMBER</th>
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<td>1 FC</td>
<td>1000 LUMES</td>
<td>3000</td>
<td>LDL</td>
<td>1000</td>
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<td>100</td>
<td>WALL MOUNTED</td>
<td>COBRA LIGHTING</td>
<td>PL1000W-LE20</td>
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<tr>
<td>2 FC</td>
<td>1000 LUMES</td>
<td>3000</td>
<td>LDL</td>
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<td>PL1000W-LE20</td>
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**ALT. 1 NEW LIGHT FIXTURE SCHEDULE**

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<td>PL1000W-LE20</td>
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**ALT. 2 NEW LIGHT FIXTURE SCHEDULE**

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<th>MOUNTING</th>
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<td>100</td>
<td>WALL MOUNTED</td>
<td>COBRA LIGHTING</td>
<td>PL1000W-LE20</td>
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</tbody>
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**KEYNOTES TO ONE LINE DIAGRAMS:**

1. **EXISTING WIRE AND CONDUIT TO REMAIN.**
2. **EXISTING 3#6, 1#10 GND, 1" PVC TO REMAIN.**
3. **EXISTING 3#1, 1#10 GND, 1 1/2" PVC TO REMAIN.**
4. **NEW BARE #2 COPPER BURIED 30".**
5. **DRIVE ALL RODS TO 30" BELOW GRADE (INCLUDING EXISTING ROD).**
6. **FURNISH AND INSTALL A NEW TYPE 2 SPD THIS CONTRACT.**
7. **EXISTING PANEL 2P, 120/240V, 100 AMPS.**
8. **EXISTING PANEL 1P2, 120/240V, 100 AMPS.**
9. **EXISTING PANEL 1P1, 120/240V, 100 AMPS.**
10. **EXISTING MAIN PANEL L, 120/240V, 200 AMPS WITH NEW NEMA 4X ENCLOSURE.**
11. **EXISTING PANEL L4, 120/240V, 100 AMPS.**
12. **EXISTING PANEL L3, 120/240V, 100 AMPS.**
13. **EXISTING PANEL L5, 120/240V, 100 AMPS.**

**NEW 200 AMP 120/240V MAIN PANEL LOCATED IN SEISMOGRAPH BUILDING.**

**NEW 120/240, 15 KW CENTRAL BATTERY INVERTER IN NEMA 1 ENCLOSURE.**

**NEW 2#10, 1#10 GND, 3/4" C.**

**NEW 2#6, 1#10 GND, 3/4" C.**
**PANEL BOARD SCHEDULE**

<table>
<thead>
<tr>
<th>BREAKER</th>
<th>POLE/AMPS</th>
<th>TOTAL AMPS</th>
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**CONTACTOR/RECEPT**

<table>
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<th>POLE/AMPS</th>
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**HEATER**

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<tr>
<th>POLE/AMPS</th>
<th>TOTAL AMPS</th>
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**NEW GFCI RECEPTACLE**

<table>
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**GENERAL NOTES:**

1. All panel receptacles are getting replaced with new GFCI receptacles.