

State of Alaska  
Department of Community and Economic Development



AIDEA/AEA  
Rural Energy Group  
813 West Northern Lights Blvd.  
Anchorage, Alaska 99503



# KONGIGANAK, ALASKA

## RURAL POWER SYSTEM UPGRADE ISSUED FOR CONSTRUCTION JANUARY 2016

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Project Number (Consultant) 30404.10(AEA)

AEA Project Manager TIMOTHY SANDSTROM

Construction Manager X

Final Design (Date) X

Fire Marshal Approval (Date) \_\_\_\_\_

Construction Period (From) \_\_\_\_\_ (To) \_\_\_\_\_

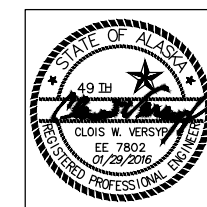
As-Builts (Date) \_\_\_\_\_



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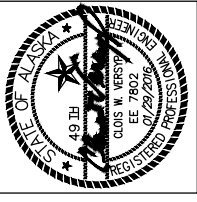
P.O. 111405, Anchorage, AK 99511 (907)349-0100



PILE LOCATION SCHEDULE (1 of 2)			
POLE #	NORTHING	EASTING	NOTES
1			
2			
3			
3B			
4			
4B			
5			
6			
7			
7-1			
8			
9			
10			
11			
12			
15A			
1A			
1B			
1B-1			
1C			
1C-1A			
1C-1B			
1C-1C			
1D			
1D-1			
1D-1A			
1D-1B			
1E			
1E-1A			
1E-1B			
1F			
1F-1			
1F-2			
1G			
1G-1			
1G-1A			
1G-2			

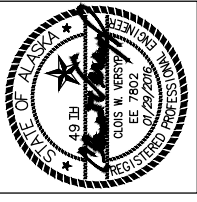
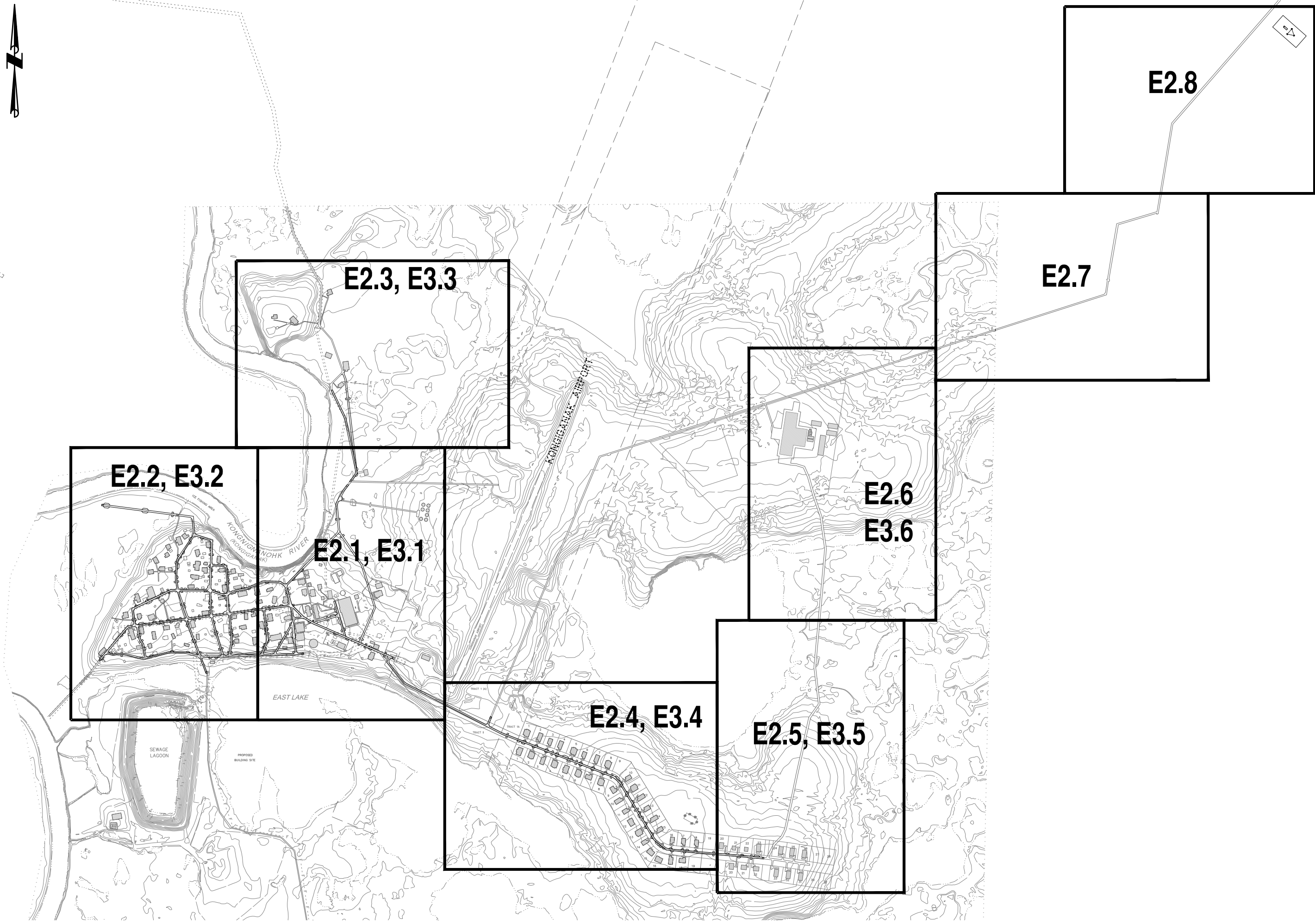
PILE LOCATION SCHEDULE (2 of 2)			
POLE #	NORTHING	EASTING	NOTES
1G-3			
1H			
1H-1			
1H-2			
1H-2A			
1H-3			
1H-3A			
1H-4			
1H-4A			
1H-4B			
1H-A			
1I			
1J			
1J-1			
1J-2			
1J-3			
1K			
2A			
2B			
2B-1			
2B-2			
2B-2A			
2B-2B-1			
2C			
2D			
2E			
2E-1			
2E-2			
2F			
2G			
2H			
2H-1			
2I			
2J			
2K			
2K-1A			
2K-1B			

**NOTE TO BIDDER:**  
**PILE LOCATION SURVEY TO BE PERFORMED BY ENGINEER IN SUMMER OF 2016. PILE LOCATION INFORMATION WILL BE PROVIDED TO SUCCESSFUL BIDDER IN FALL OF 2016.**



**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
 POLE COORDINATES SCHEDULE

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016



**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
**OVERALL PLAN**

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV

File: J:\Jobsdata\30404.10 Kongiganak Rpsu\00 CADD\01 Working Set\03 Electrical\KONG RPSU.dwg

### GENERAL NOTES

- ALL CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE STAKING SHEETS, NOTES TO STAKING SHEETS, SPECIFICATIONS, AND THE CONSTRUCTION DRAWINGS.
- THE 2007 EDITION OF ANSI C2 – NATIONAL ELECTRICAL SAFETY CODE (NEC), RUS BULLETIN 1728F-804, SPECIFICATIONS AND DRAWINGS FOR 12.47/7.2 kV LINE CONSTRUCTION, AND RUS BULLETIN 1728F-806, SPECIFICATIONS AND DRAWINGS FOR UNDERGROUND ELECTRICAL DISTRIBUTION, UNLESS MODIFIED BY THESE DRAWINGS OR SPECIFICATIONS, SHALL BE FOLLOWED, INCLUDING ANY STATE OF ALASKA AMENDMENTS. OBTAIN COPIES OF THE RUS BULLETINS AND MAINTAIN COPIES ON THE JOB SITE. ADDITIONALLY, CONSTRUCTION SPECIFICATIONS ARE INCLUDED IN DIVISION 16 OF THE CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL BE THOROUGHLY FAMILIAR WITH THE CONTRACT DOCUMENTS, RUS CONSTRUCTION UNITS, AND ANSI C2.
- THE EXISTING ELECTRICAL DISTRIBUTION SYSTEM CURRENTLY SERVES CUSTOMERS. SERVICE SHALL BE MAINTAINED AT ALL TIMES TO THE CUSTOMERS EXCEPT WHEN OUTAGES ARE REQUIRED FOR SERVICE CONVERSION OR OTHER CONSTRUCTION RELATED ACTIVITIES. ALL OUTAGES SHALL BE COORDINATED IN ADVANCE WITH THE PUVURNAQ POWER COMPANY. PRIOR TO COMMENCING WORK ON THE UPGRADE, MEET WITH THE PUVURNAQ POWER COMPANY TO DEVELOP AN OUTAGE SCHEDULE THAT WILL KEEP DISRUPTIONS OF POWER TO THE CUSTOMERS TO A MINIMUM. PUVURNAQ POWER COMPANY SHALL HAVE FINAL AUTHORITY ON WHEN OUTAGES CAN OCCUR.
- THE EXISTING ELECTRICAL DISTRIBUTION SYSTEM POLES ARE SHARED WITH THE TELEPHONE SYSTEM, UNITED UTILITY, INC. CONTRACTOR SHALL NOT DISRUPT THE EXISTING TELEPHONE SYSTEM WITHOUT THE CONSENT OF THE TELEPHONE COMPANY. ANY PART OF THE EXISTING TELEPHONE SYSTEM DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE TELEPHONE COMPANY.
- UNLESS OTHERWISE INDICATED, THE EXISTING PRIMARY AND SECONDARY DISTRIBUTION SYSTEM, INCLUDING HARDWARE, CONDUCTORS (BOTH PRIMARY AND SECONDARY), TRANSFORMERS, CROSSARMS, INSULATORS, LIGHTS, ANCHOR RODS, GUYS, AND ALL OTHER MATERIAL DIRECTLY RELATED TO THE EXISTING ELECTRICAL DISTRIBUTION SYSTEM SHALL BE REMOVED AFTER COMPLETION OF THE INSTALLATION, ENERGIZATION, AND SERVICE CONVERSIONS TO THE NEW ELECTRICAL DISTRIBUTION SYSTEM. POLES THAT HAVE TELEPHONE SYSTEM CONDUCTORS OR EQUIPMENT ATTACHED SHALL NOT BE REMOVED.
- EXISTING H-PILES SHALL BE CUT OFF 6" BELOW GROUND LEVEL, UNLESS OTHERWISE INDICATED. ALL EXISTING ANCHORS RODS SHALL BE REMOVED TO A POINT BELOW EXISTING GRADE.
- ALL EXISTING UTILITIES MAY NOT BE SHOWN. CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES PRIOR TO DRIVING ANY PILES OR DRILLING ANY ANCHORS. COORDINATE WITH THE VILLAGE OF KONGIGANAK AND PUVURNAQ POWER COMPANY TO LOCATE UNDERGROUND UTILITIES.
- THE DRAWINGS ARE DIAGRAMMATIC AND DO NOT NECESSARILY SHOW ALL FEATURES OF THE REQUIRED WORK. PROVIDE ALL EQUIPMENT AND MATERIALS REQUIRED FOR A COMPLETE SYSTEM. VERIFY EXISTING FIELD CONDITIONS PRIOR TO STARTING CONSTRUCTION. IMMEDIATELY CONTACT THE ENGINEER FOR CLARIFICATION OF QUESTIONABLE ITEMS OR APPARENT CONFLICTS.
- ENSURE THAT APPROPRIATE SAFETY MEASURES ARE IMPLEMENTED AND THAT ALL WORKERS ARE AWARE OF THE POTENTIAL HAZARDS FROM ELECTRICAL SHOCK ASSOCIATED WITH WORKING ON OR NEAR AN ENERGIZED MEDIUM VOLTAGE DISTRIBUTION SYSTEM.
- THE SITE DRAWINGS USED WERE DEVELOPED USING A COMBINATION OF AERIAL PHOTOGRAPHY AND SURVEY DATA PROVIDED BY OTHERS. ANY VARIATIONS BETWEEN WHAT IS SHOWN AND THE ACTUAL FIELD CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.
- SEE CONSTRUCTION SPECIFICATIONS FOR ADDITIONAL INFORMATION.

### SCOPE OF WORK

- THE PURPOSE OF THIS PROJECT IS TO REPLACE THE THE MAJORITY OF THE EXISTING ELECTRICAL DISTRIBUTION SYSTEM IN KONGIGANAK, ALASKA.
- THE LIMIT OF CONSTRUCTION FOR THE NEW ELECTRICAL DISTRIBUTION SYSTEM IS THE CONNECTION TO THE EXISTING SERVICE MASTS AT THE VARIOUS SERVICES. THE CONTRACTOR SHALL REMOVE THE EXISTING SECONDARY SERVICE DROP CONDUCTORS, UNLESS OTHERWISE INDICATED ON THE DRAWINGS, AND INSTALL NEW SERVICE CONDUCTORS TO EACH SERVICE. THE EXISTING METER BASE OR SERVICE MAST WILL NOT BE THE RESPONSIBILITY OF THE CONTRACTOR EXCEPT FOR PROVIDING DEADEND ASSEMBLIES AND MAKING THE CONNECTION TO THE EXISTING SERVICE ENTRANCE CONDUCTORS AT THE SERVICE MAST. IF THE EXISTING SERVICE MAST IS NOT IN SATISFACTORY CONDITION TO SUPPORT THE NEW SERVICE, THE CONTRACTOR SHALL NOTIFY PUVURNAQ POWER COMPANY FOR RESOLUTION. THE CONTRACTOR SHALL NOTIFY PUVURNAQ POWER COMPANY FAR ENOUGH IN ADVANCE TO ALLOW PUVURNAQ POWER COMPANY TIME TO REPAIR OR REPLACE THE SERVICE MAST.

### COORDINATION BETWEEN NEW AND EXISTING DISTRIBUTION SYSTEMS

- THE NEW ELECTRICAL DISTRIBUTION SYSTEM WILL CROSS THE EXISTING ELECTRICAL DISTRIBUTION SYSTEM AT MULTIPLE LOCATIONS AS INDICATED ON THE DRAWINGS, BUT NOT LIMITED TO THE LOCATIONS SHOWN. AT ALL CROSSINGS THE CONTRACTOR SHALL MAKE PROVISIONS IN THE EXISTING AND/OR NEW ELECTRICAL DISTRIBUTION SYSTEMS TO MAINTAIN POWER TO THE CUSTOMERS DURING THE CONSTRUCTION OF THE NEW SYSTEM. AS INDICATED, ALL OUTAGES SHALL BE COORDINATED WITH AND APPROVED BY THE PUVURNAQ POWER COMPANY. ACCEPTABLE METHODS WILL BE AS FOLLOWS:
  - WHERE THE NEW OVERHEAD DISTRIBUTION SYSTEM IS HIGHER THAN THE EXISTING SYSTEM, CONTRACTOR MAY LOWER THE NEUTRAL OF THE NEW SYSTEM SUCH THAT THE PRIMARY CONDUCTORS OF THE NEW SYSTEM CROSS OVER THE EXISTING SYSTEM AND THE NEUTRAL CROSSES UNDER.
  - CONTRACTOR MAY INSTALL TEMPORARY INSULATED MEDIUM VOLTAGE CONDUCTORS AND ROUTE THE CONDUCTORS ON THE GROUND. IF THIS METHOD IS CHOSEN, THE AT-GRADE CONDUCTORS SHALL BE PROTECTED FROM VANDALISM AND DAMAGE AND PROVISIONS SHALL BE MADE FOR THE SUPPORT OF THE EXISTING POLES DURING THE INSTALLATION OF THE NEW SYSTEM.
  - OTHER METHODS MAY BE PROPOSED BY THE CONTRACTOR AS APPLICABLE TO ALLOW INSTALLATION OF THE NEW SYSTEM WHILE THE EXISTING SYSTEM REMAINS IN SERVICE.
- IN ALL CASES, THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE BEST METHOD OF CROSSING THE EXISTING DISTRIBUTION SYSTEM. THE CONTRACTOR SHALL PROVIDE ALL MATERIAL REQUIRED TO ACCOMPLISH ALL CROSSINGS.
- AT ALL TIMES AND IN ALL LOCATIONS, TEMPORARY INSTALLATIONS SHALL MEET THE NESC SAFETY REQUIREMENTS. ANY TEMPORARY INSTALLATION THAT IS ROUTED ON THE GROUND SHALL BE CLEARLY IDENTIFIED AND, IF REQUIRED, PROVISIONS SHALL BE INSTALLED FOR PERSONNEL AND VEHICLE CROSSING.

### ELECTRICAL EQUIPMENT SCHEDULE

ITEM NO.	DESCRIPTION	MANUFACTURER
1	STREET LIGHT, LED TYPE, POLE MOUNTED WITH ARM AND ATTACHMENTS. TYPE II LIGHT DISTRIBUTION. 4000K CCT, GRAY. PROVIDE 2-1/2' LONG GALVANIZED, 2" PIPE TENON CANTILEVER ARM SUITABLE FOR WOOD POLES. 120 VOLTS. PHOTO ELECTRIC CONTROL.	AMERICAN ELECTRIC LIGHTING CAT. No. ATB0 20ALEDE53 MVOLT R2 PCSS LITHONIA SMAWT2OUS2-5 TENON ARM
2	STREET LIGHT, LED TYPE, POLE MOUNTED WITH ARM AND ATTACHMENTS. TYPE II LIGHT DISTRIBUTION. 4000K CCT, GRAY. PROVIDE 2-1/2' LONG GALVANIZED, 2" PIPE TENON CANTILEVER ARM SUITABLE FOR WOOD POLES. 120 VOLTS. PHOTO ELECTRIC CONTROL.	AMERICAN ELECTRIC LIGHTING CAT. No. ATB0 80BLEDE70 MVOLT R4 PCSS LITHONIA SMAWT2OUS2-5 TENON ARM
3	NEMA 4X STAINLESS STEEL 200 AMP, 120/240 VOLT FUSED DISCONNECT SWITCH.	SQUARE D, OR EQUAL
4	LED FLOOD LIGHT, POLE MOUNTED WITH ARM AND ATTACHMENTS. PROVIDE 2-1/2' LONG GALVANIZED, 2" PIPE TENON CANTILEVER ARM SUITABLE FOR WOOD POLE. 120V, 4000K, PHOTO ELECTRIC CONTROL.	LITHONIA DSXFLED6 PS40KFLMVOLT

### LEGEND

-----	EXISTING SINGLE PHASE OVERHEAD PRIMARY	-----	NEW SINGLE PHASE OVERHEAD PRIMARY
- - - - -	EXISTING 3-PHASE OVERHEAD PRIMARY	- - - - -	NEW 3-PHASE OVERHEAD PRIMARY
-----	EXISTING UNDERGROUND	-----	NEW UNDERGROUND
-----	EXISTING SECONDARY*	-----	NEW SECONDARY*
●	EXISTING ELECTRICAL POLE	●	NEW ELECTRICAL POLE
●	EXISTING STUB POLE	●	NEW STUB POLE
—XX	EXISTING TRANSFORMER XX=SIZE	—XX	NEW TRANSFORMER XX=SIZE
—)	EXISTING GUY	—)	NEW GUY
☀	EXISTING LIGHT	☀	NEW LIGHT
-----	EXISTING EASEMENT (BOARDWALK OR UTILITY)		

\*SINGLE PHASE UNLESS NOTED ON THE DRAWINGS



**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
LEGEND & ABBREVIATIONS  
SPECIFICATIONS & BILL OF MATERIAL

NO.	REVISION	ISSUED FOR CONSTRUCTION	BY	DATE
0			TRK	1/2016

Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV

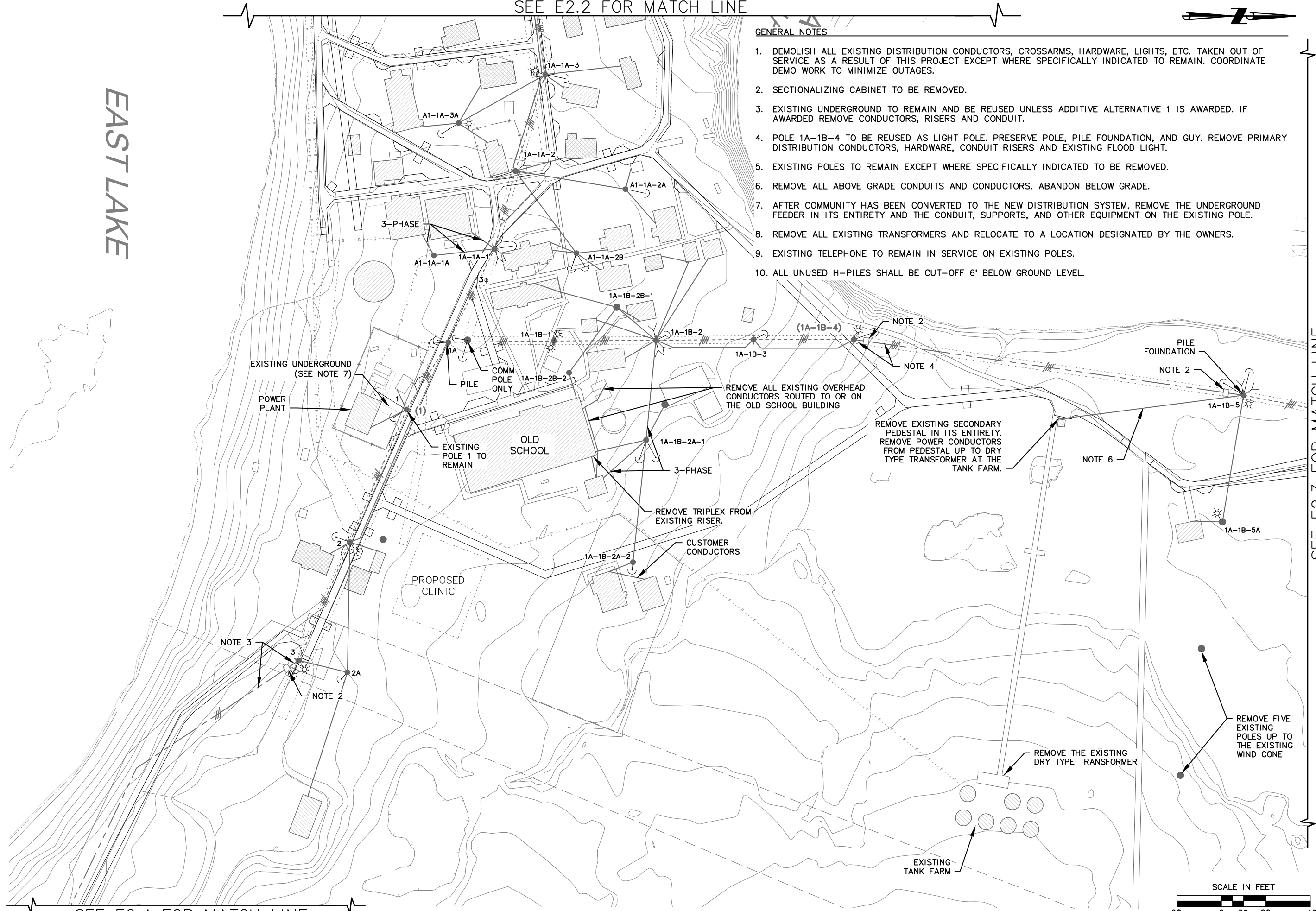
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EAST LAKE

SEE E2.2 FOR MATCH LINE

GENERAL NOTES

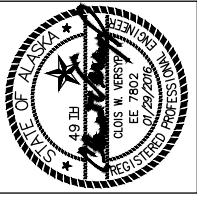
1. DEMOLISH ALL EXISTING DISTRIBUTION CONDUCTORS, CROSSARMS, HARDWARE, LIGHTS, ETC. TAKEN OUT OF SERVICE AS A RESULT OF THIS PROJECT EXCEPT WHERE SPECIFICALLY INDICATED TO REMAIN. COORDINATE DEMO WORK TO MINIMIZE OUTAGES.
2. SECTIONALIZING CABINET TO BE REMOVED.
3. EXISTING UNDERGROUND TO REMAIN AND BE REUSED UNLESS ADDITIVE ALTERNATIVE 1 IS AWARDED. IF AWARDED REMOVE CONDUCTORS, RISERS AND CONDUIT.
4. POLE 1A-1B-4 TO BE REUSED AS LIGHT POLE. PRESERVE POLE, PILE FOUNDATION, AND GUY. REMOVE PRIMARY DISTRIBUTION CONDUCTORS, HARDWARE, CONDUIT RISERS AND EXISTING FLOOD LIGHT.
5. EXISTING POLES TO REMAIN EXCEPT WHERE SPECIFICALLY INDICATED TO BE REMOVED.
6. REMOVE ALL ABOVE GRADE CONDUITS AND CONDUCTORS. ABANDON BELOW GRADE.
7. AFTER COMMUNITY HAS BEEN CONVERTED TO THE NEW DISTRIBUTION SYSTEM, REMOVE THE UNDERGROUND FEEDER IN ITS ENTIRETY AND THE CONDUIT, SUPPORTS, AND OTHER EQUIPMENT ON THE EXISTING POLE.
8. REMOVE ALL EXISTING TRANSFORMERS AND RELOCATE TO A LOCATION DESIGNATED BY THE OWNERS.
9. EXISTING TELEPHONE TO REMAIN IN SERVICE ON EXISTING POLES.
10. ALL UNUSED H-PILES SHALL BE CUT-OFF 6' BELOW GROUND LEVEL.



SEE E2.4 FOR MATCH LINE

SEE E2.3 FOR MATCH LINE

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PHONE: (907) 562-3352  
FAX: (907) 561-2273

KONGIGANAK, ALASKA  
RURAL POWER SYSTEM UPGRADES  
EXISTING DISTRIBUTION PLAN  
(1 of 8)

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV

Sheet No. E2.1

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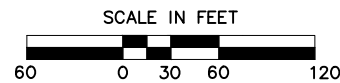
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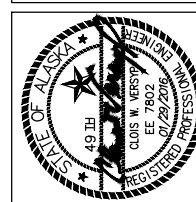
SEE E2.1 FOR MATCH LINE

**GENERAL NOTES**

1. DEMOLISH ALL EXISTING DISTRIBUTION CONDUCTORS, CROSSARMS, HARDWARE, LIGHTS, ETC. TAKEN OUT OF SERVICE AS A RESULT OF THIS PROJECT EXCEPT WHERE SPECIFICALLY INDICATED TO REMAIN. COORDINATE DEMO WORK TO MINIMIZE OUTAGES.
2. EXISTING POLES TO REMAIN EXCEPT WHERE SPECIFICALLY INDICATED TO BE REMOVED.
3. ALL UNUSED H-PILES SHALL BE CUT-OFF 6" BELOW GROUND LEVEL.
4. REMOVE ALL EXISTING EXISTING TRANSFORMERS AND RELOCATE TO A LOCATION DESIGNATED BY THE OWNER.
5. EXISTING TELEPHONE TO REMAIN IN SERVICE ON EXISTING POLES.



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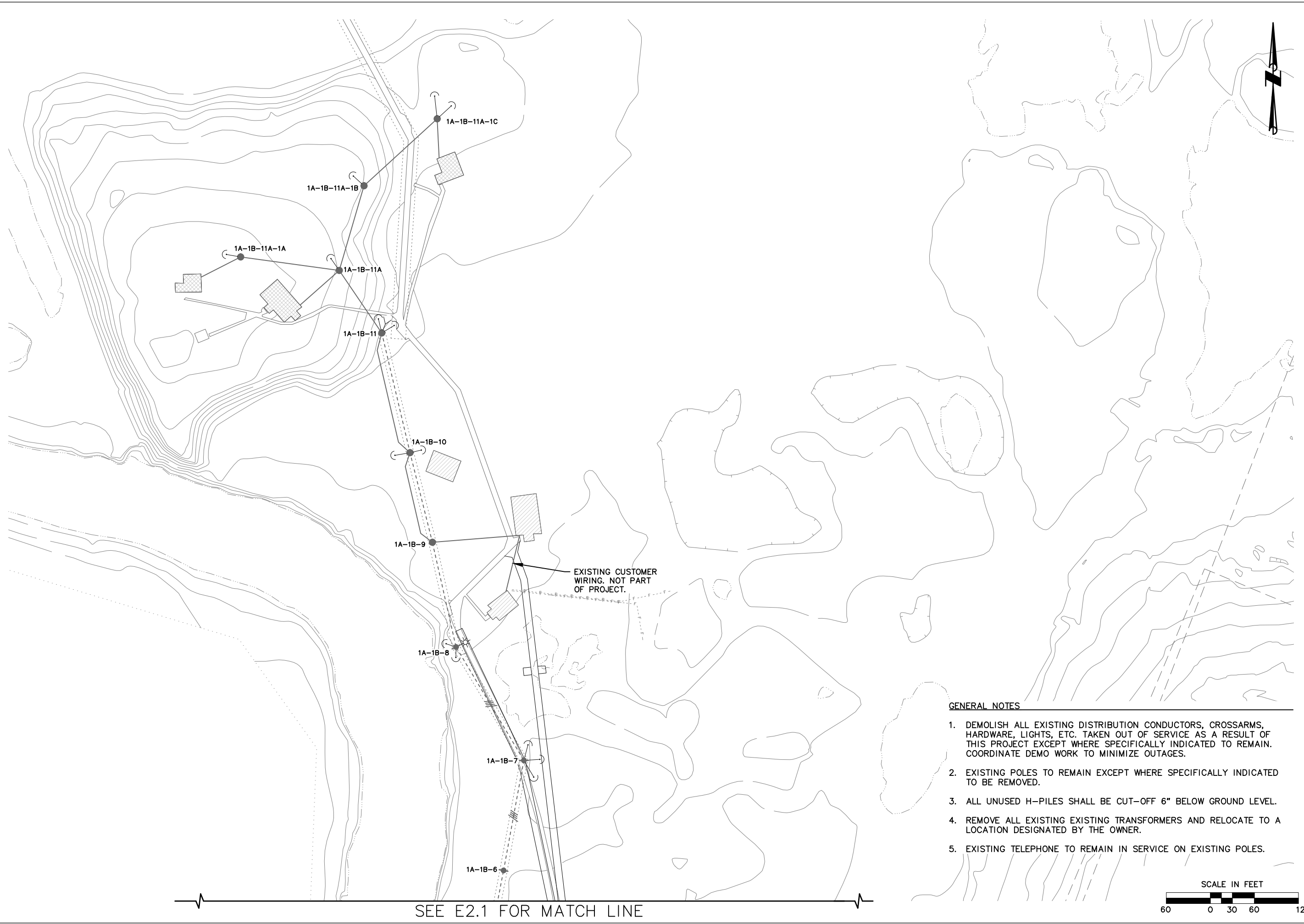
**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
EXISTING DISTRIBUTION PLAN  
(2 of 8)

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

Plot Date: 1/29/16  
Designed: CWV  
Drawn: TRK  
Approved: CWV

Sheet No. E2.2

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EXISTING CUSTOMER WIRING. NOT PART OF PROJECT.

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2. EXISTING POLES TO REMAIN EXCEPT WHERE SPECIFICALLY INDICATED TO BE REMOVED.
3. ALL UNUSED H-PILES SHALL BE CUT-OFF 6" BELOW GROUND LEVEL.
4. REMOVE ALL EXISTING EXISTING TRANSFORMERS AND RELOCATE TO A LOCATION DESIGNATED BY THE OWNER.
5. EXISTING TELEPHONE TO REMAIN IN SERVICE ON EXISTING POLES.

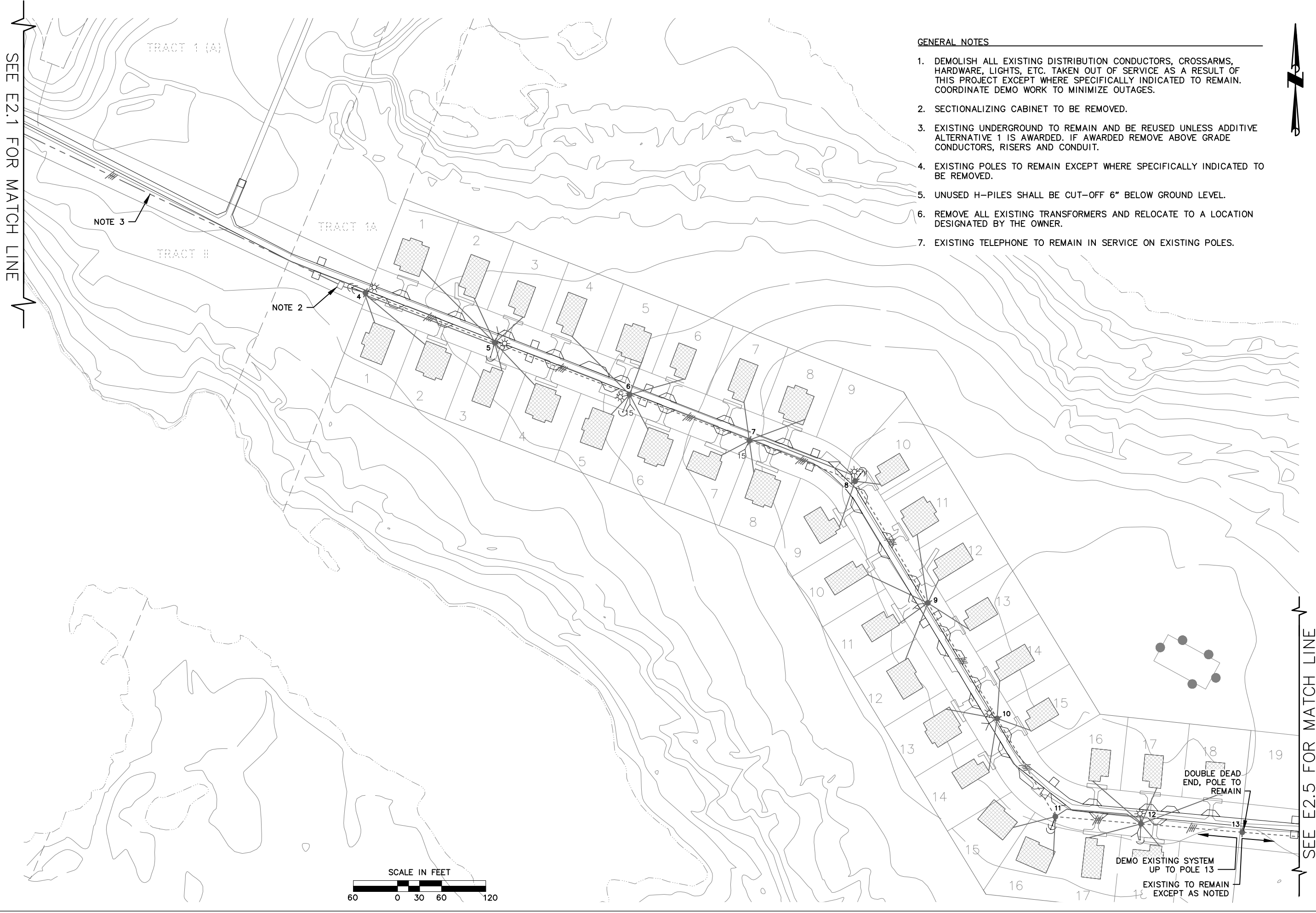
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**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
EXISTING DISTRIBUTION PLAN  
(3 of 8)

NO.	REVISION	BY	DATE
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Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV



**GENERAL NOTES**

1. DEMOLISH ALL EXISTING DISTRIBUTION CONDUCTORS, CROSSARMS, HARDWARE, LIGHTS, ETC. TAKEN OUT OF SERVICE AS A RESULT OF THIS PROJECT EXCEPT WHERE SPECIFICALLY INDICATED TO REMAIN. COORDINATE DEMO WORK TO MINIMIZE OUTAGES.
2. SECTIONALIZING CABINET TO BE REMOVED.
3. EXISTING UNDERGROUND TO REMAIN AND BE REUSED UNLESS ADDITIVE ALTERNATIVE 1 IS AWARDED. IF AWARDED REMOVE ABOVE GRADE CONDUCTORS, RISERS AND CONDUIT.
4. EXISTING POLES TO REMAIN EXCEPT WHERE SPECIFICALLY INDICATED TO BE REMOVED.
5. UNUSED H-PILES SHALL BE CUT-OFF 6" BELOW GROUND LEVEL.
6. REMOVE ALL EXISTING TRANSFORMERS AND RELOCATE TO A LOCATION DESIGNATED BY THE OWNER.
7. EXISTING TELEPHONE TO REMAIN IN SERVICE ON EXISTING POLES.



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**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
EXISTING DISTRIBUTION PLAN  
(4 of 8)

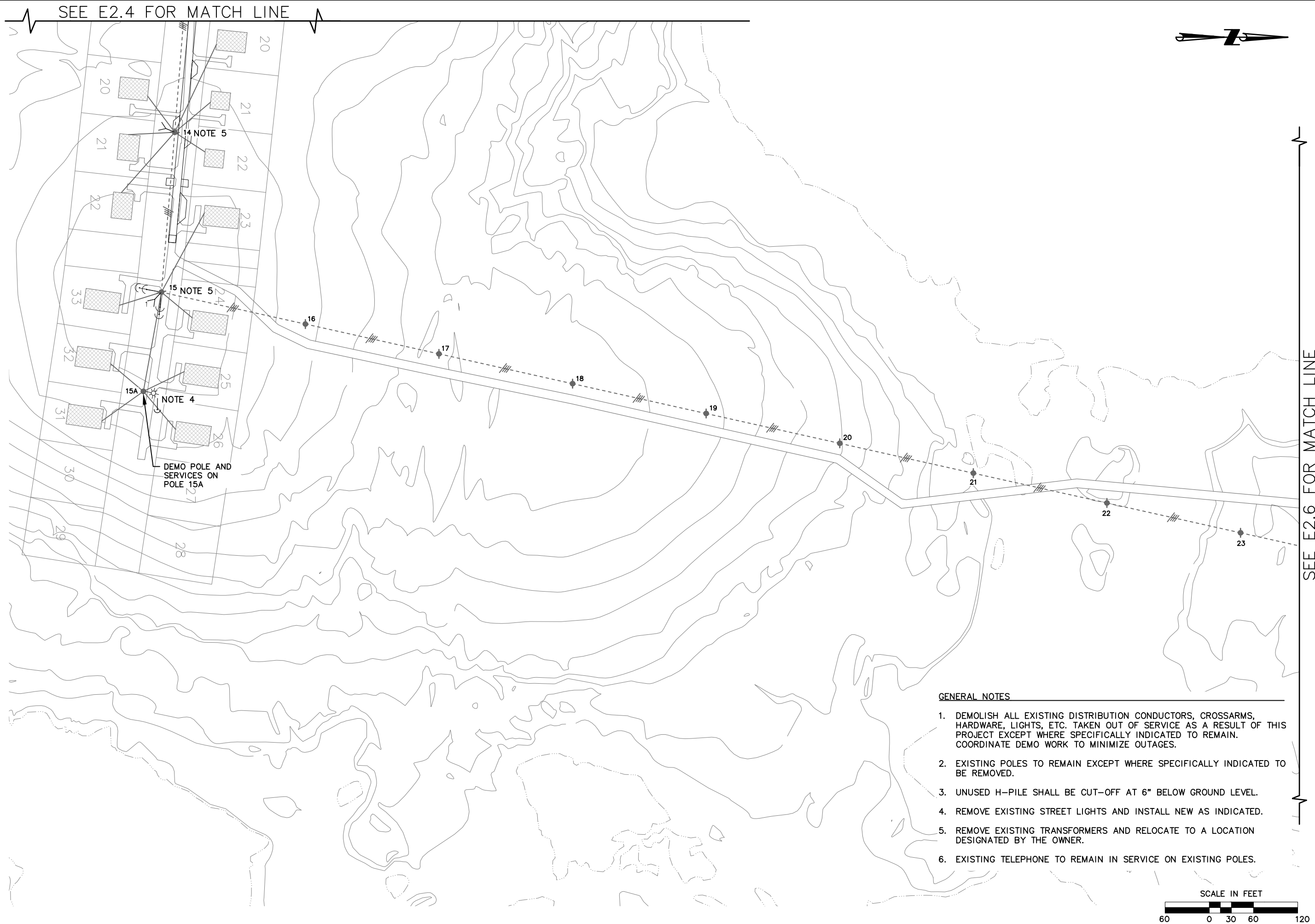
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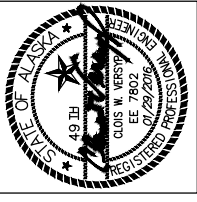
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2. EXISTING POLES TO REMAIN EXCEPT WHERE SPECIFICALLY INDICATED TO BE REMOVED.
3. UNUSED H-PILE SHALL BE CUT-OFF AT 6" BELOW GROUND LEVEL.
4. REMOVE EXISTING STREET LIGHTS AND INSTALL NEW AS INDICATED.
5. REMOVE EXISTING TRANSFORMERS AND RELOCATE TO A LOCATION DESIGNATED BY THE OWNER.
6. EXISTING TELEPHONE TO REMAIN IN SERVICE ON EXISTING POLES.



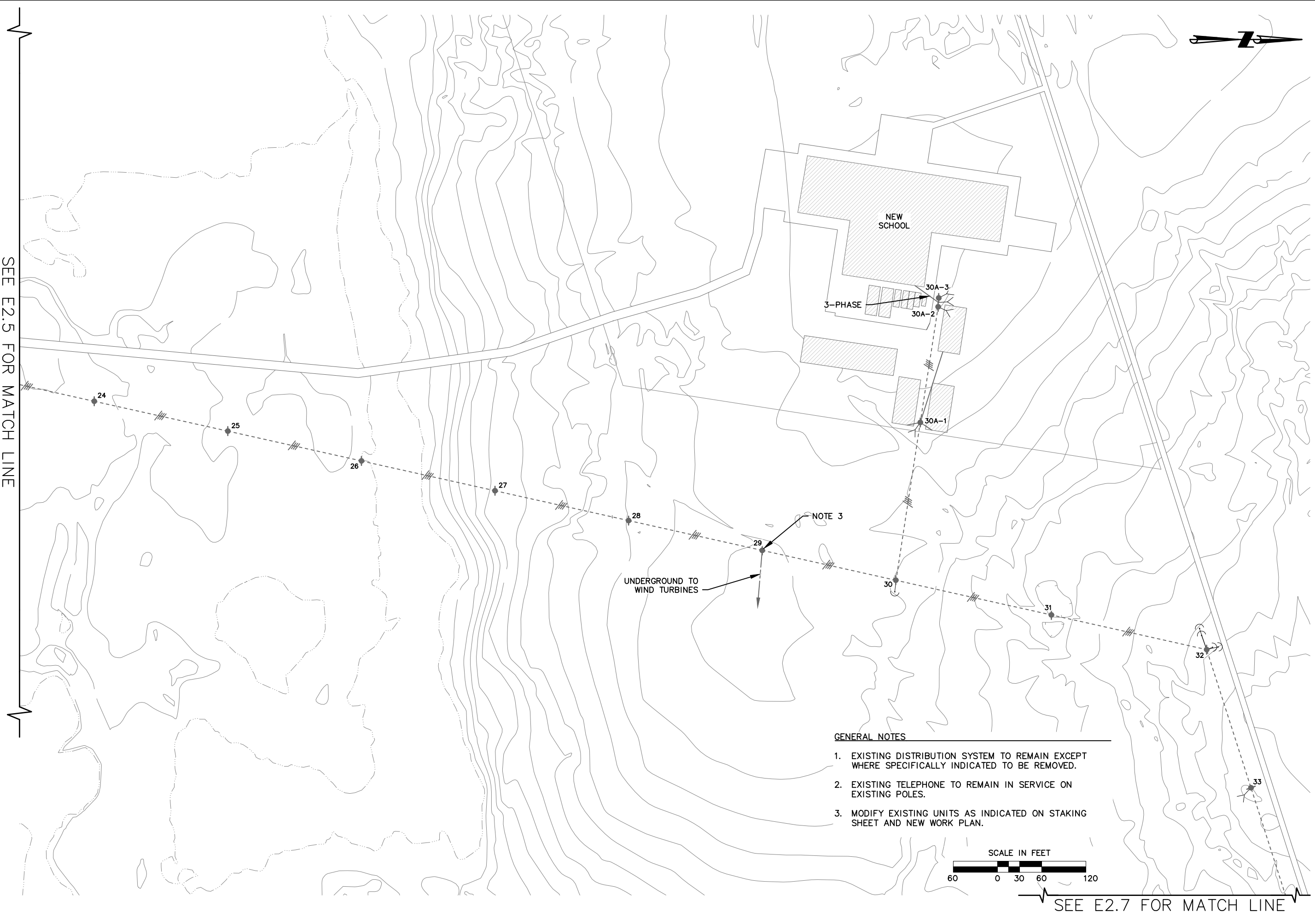
**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
 EXISTING DISTRIBUTION PLAN  
 (5 of 8)

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Approved	CWV

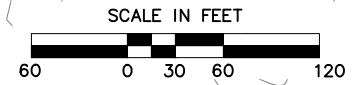
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SEE E2.5 FOR MATCH LINE



**GENERAL NOTES**

1. EXISTING DISTRIBUTION SYSTEM TO REMAIN EXCEPT WHERE SPECIFICALLY INDICATED TO BE REMOVED.
2. EXISTING TELEPHONE TO REMAIN IN SERVICE ON EXISTING POLES.
3. MODIFY EXISTING UNITS AS INDICATED ON STAKING SHEET AND NEW WORK PLAN.



SEE E2.7 FOR MATCH LINE

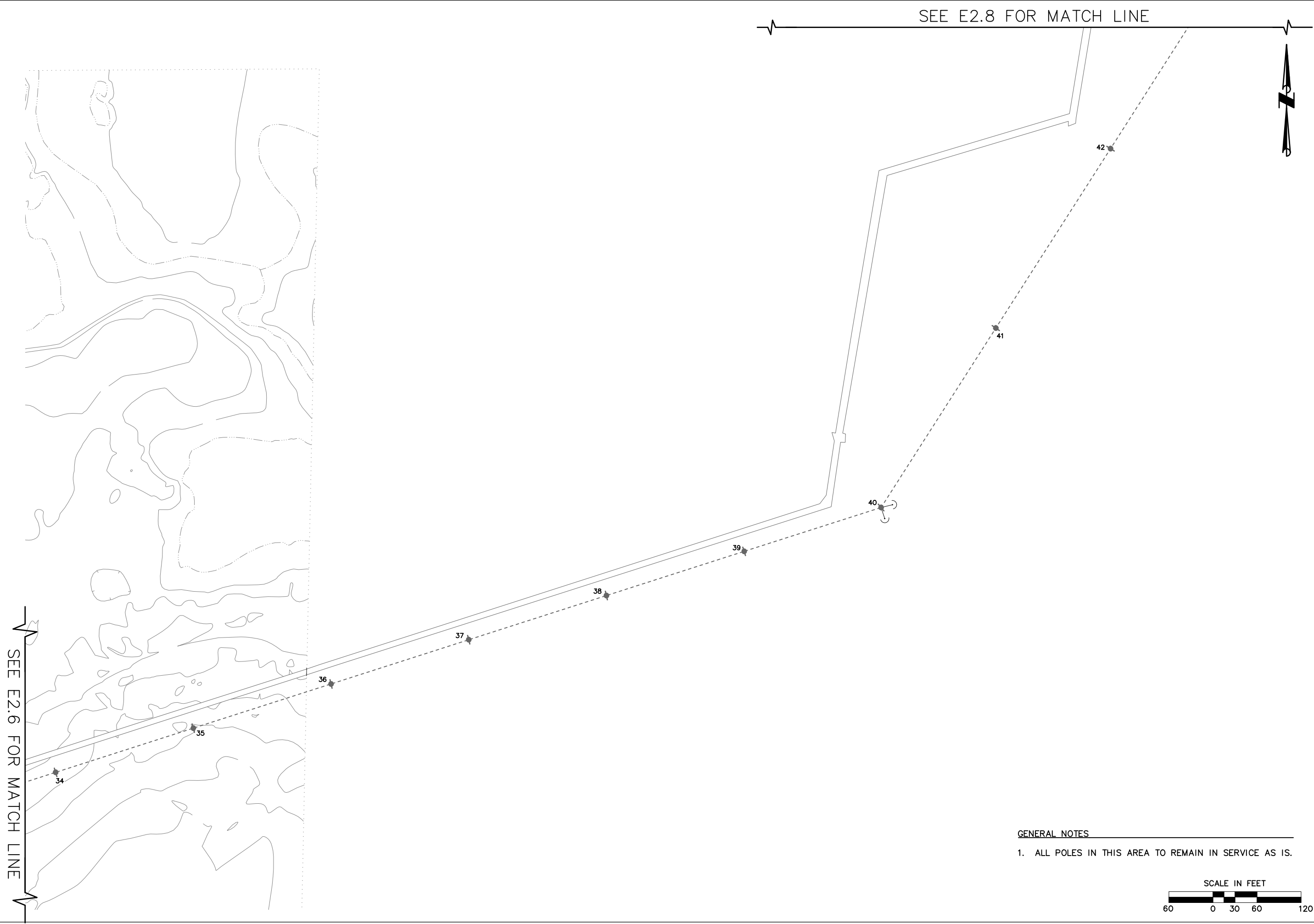
State of Alaska  
Department of Community  
and Economic Development  
**AIDEA/AEA**  
Rural Energy Group  
813 West Northern Lights Blvd.  
Anchorage, Alaska 99503

**CRW**  
ENGINEERING GROUP LLC  
3940 ARCTIC BLVD, SUITE 300  
ANCHORAGE, ALASKA 99503  
PHONE: (907) 562-3352  
FAX: (907) 562-2273

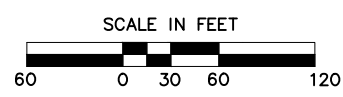
**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
EXISTING DISTRIBUTION PLAN  
(6 of 8)

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV



**GENERAL NOTES**  
 1. ALL POLES IN THIS AREA TO REMAIN IN SERVICE AS IS.



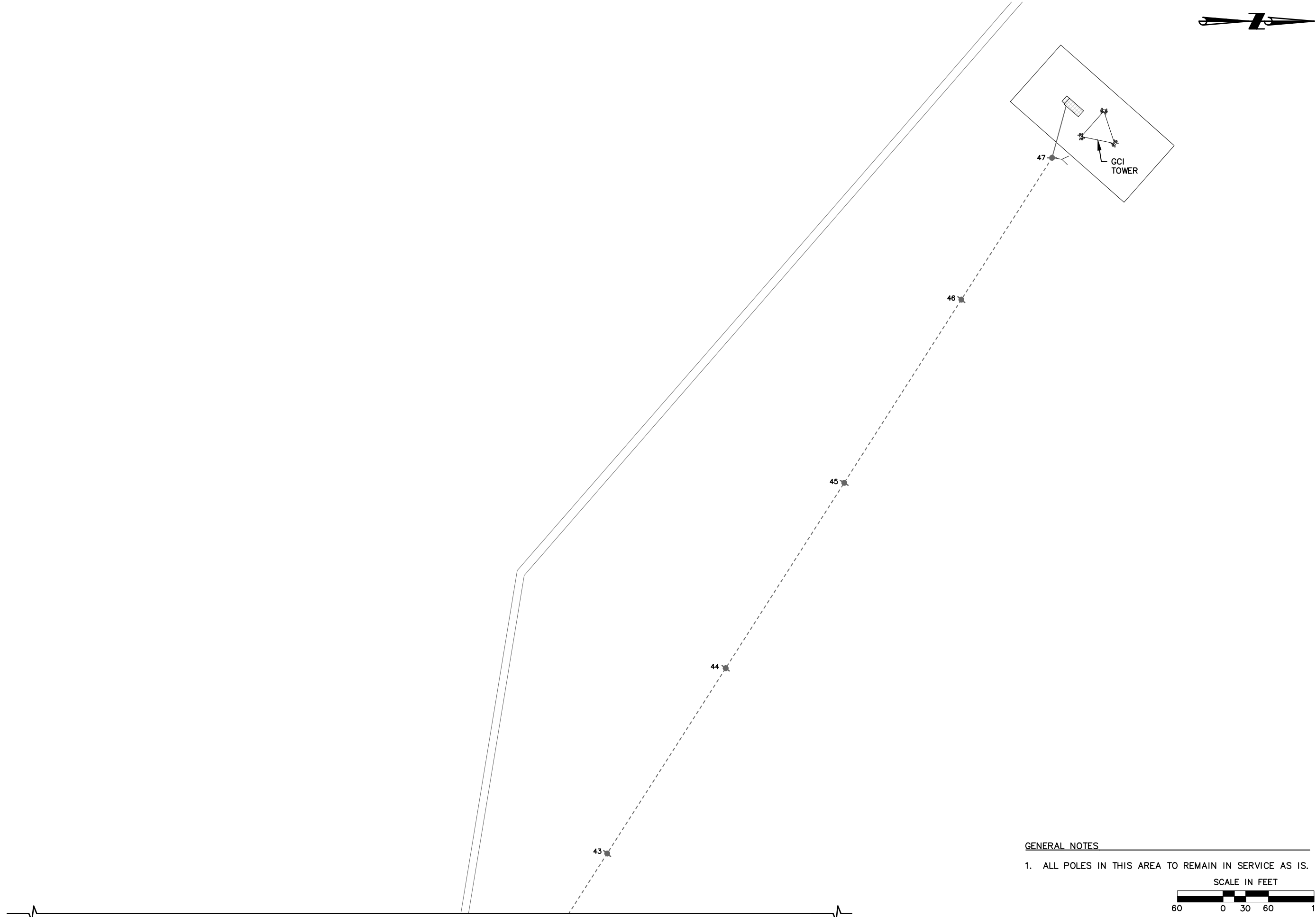
State of Alaska  
 Department of Community  
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 813 West Northern Lights Blvd.  
 Anchorage, Alaska 99503

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**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
 EXISTING DISTRIBUTION PLAN  
 (7 of 8)

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

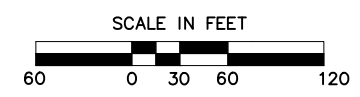
Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV



SEE E2.7 FOR MATCH LINE

**GENERAL NOTES**

1. ALL POLES IN THIS AREA TO REMAIN IN SERVICE AS IS.



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**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
EXISTING DISTRIBUTION PLAN  
(8 of 8)

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV

File: J:\Jobsdata\30404.10 Kongiganak Rpsu\00 CADD\01 Working Set\03 Electrical\KONG RPSU.dwg

SEE E3.2 FOR MATCH LINE

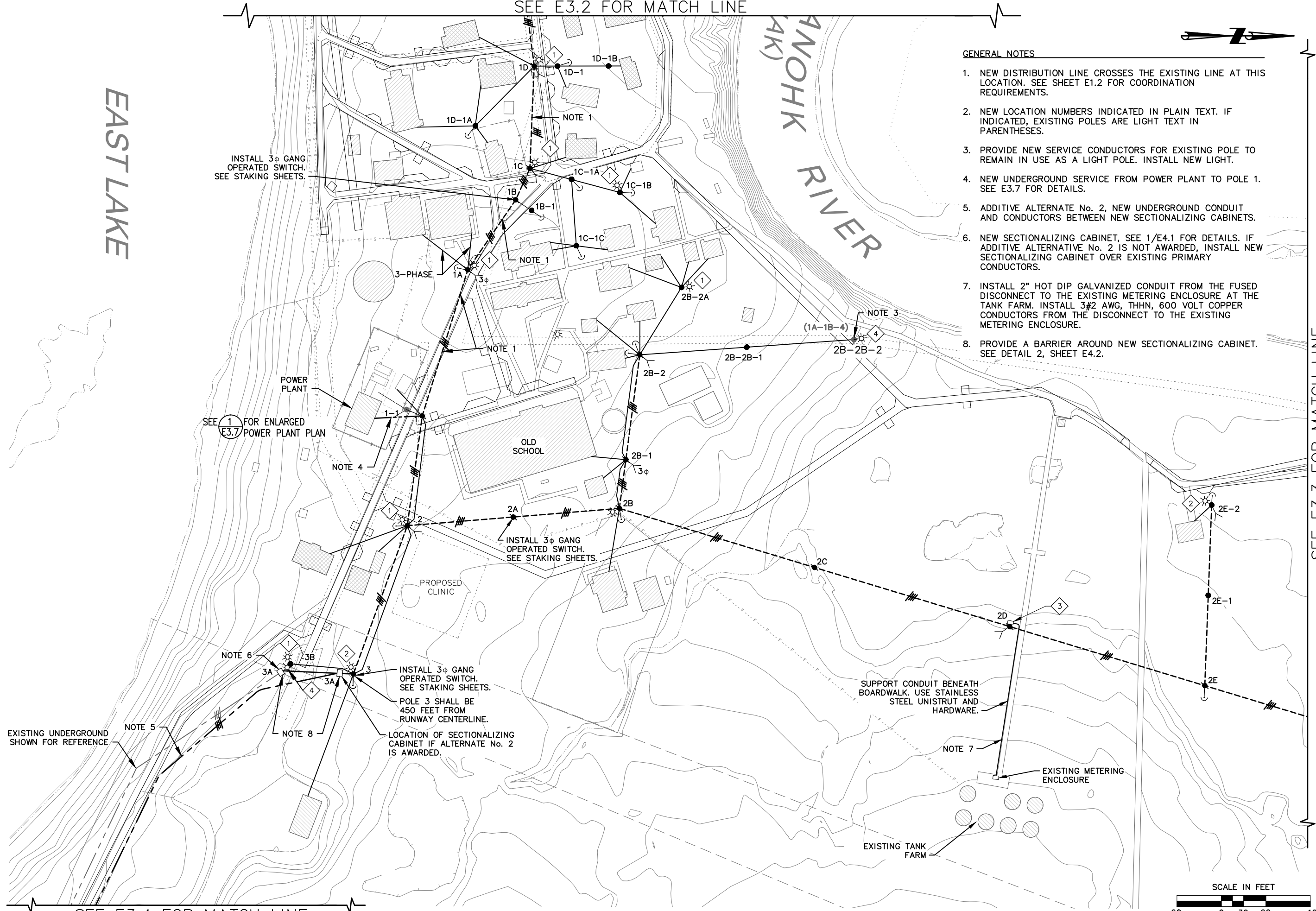
EAST LAKE

ANOHK RIVER

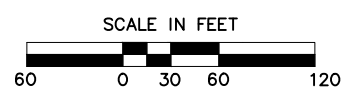


**GENERAL NOTES**

1. NEW DISTRIBUTION LINE CROSSES THE EXISTING LINE AT THIS LOCATION. SEE SHEET E1.2 FOR COORDINATION REQUIREMENTS.
2. NEW LOCATION NUMBERS INDICATED IN PLAIN TEXT. IF INDICATED, EXISTING POLES ARE LIGHT TEXT IN PARENTHESES.
3. PROVIDE NEW SERVICE CONDUCTORS FOR EXISTING POLE TO REMAIN IN USE AS A LIGHT POLE. INSTALL NEW LIGHT.
4. NEW UNDERGROUND SERVICE FROM POWER PLANT TO POLE 1. SEE E3.7 FOR DETAILS.
5. ADDITIVE ALTERNATE No. 2, NEW UNDERGROUND CONDUIT AND CONDUCTORS BETWEEN NEW SECTIONALIZING CABINETS.
6. NEW SECTIONALIZING CABINET, SEE 1/E4.1 FOR DETAILS. IF ADDITIVE ALTERNATIVE No. 2 IS NOT AWARDED, INSTALL NEW SECTIONALIZING CABINET OVER EXISTING PRIMARY CONDUCTORS.
7. INSTALL 2" HOT DIP GALVANIZED CONDUIT FROM THE FUSED DISCONNECT TO THE EXISTING METERING ENCLOSURE AT THE TANK FARM. INSTALL 3#2 AWG, THHN, 600 VOLT COPPER CONDUCTORS FROM THE DISCONNECT TO THE EXISTING METERING ENCLOSURE.
8. PROVIDE A BARRIER AROUND NEW SECTIONALIZING CABINET. SEE DETAIL 2, SHEET E4.2.



SEE E3.4 FOR MATCH LINE



SEE E3.3 FOR MATCH LINE

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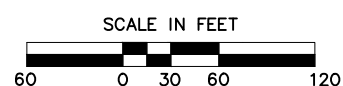
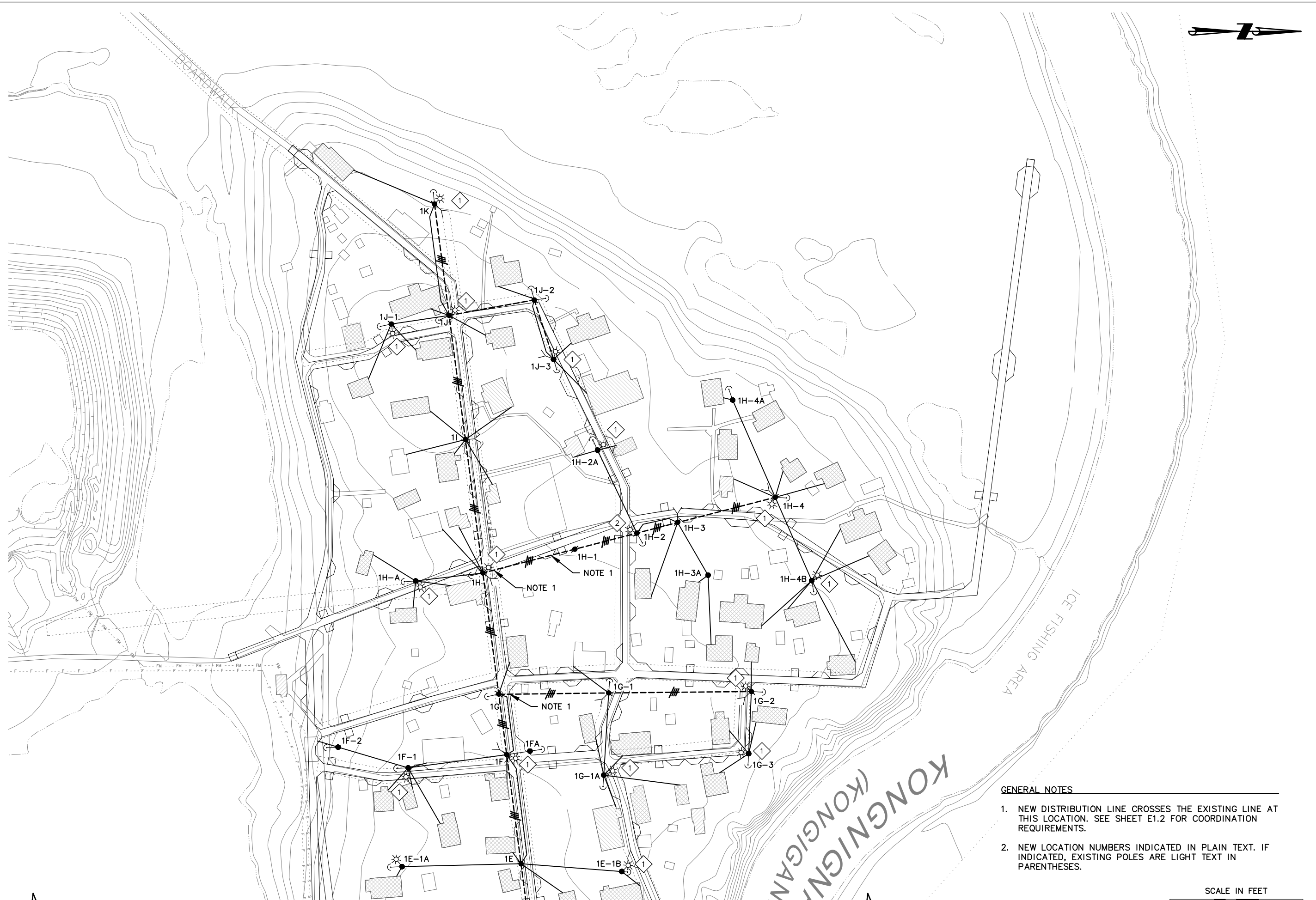
**CRW ENGINEERING GROUP LLC**  
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PHONE: (907) 562-3352  
FAX: (907) 561-2275

**KONGIGANAK, ALASKA**  
RURAL POWER SYSTEM UPGRADES  
NEW DISTRIBUTION PLAN  
(1 of 6)

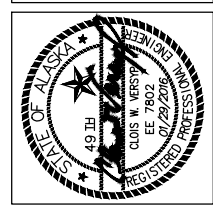
NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV

File: J:\Jobsdata\30404.10 Kongiganak Rpsu\00 CADD\01 Working Set\03 Electrical\KONG RPSU.dwg



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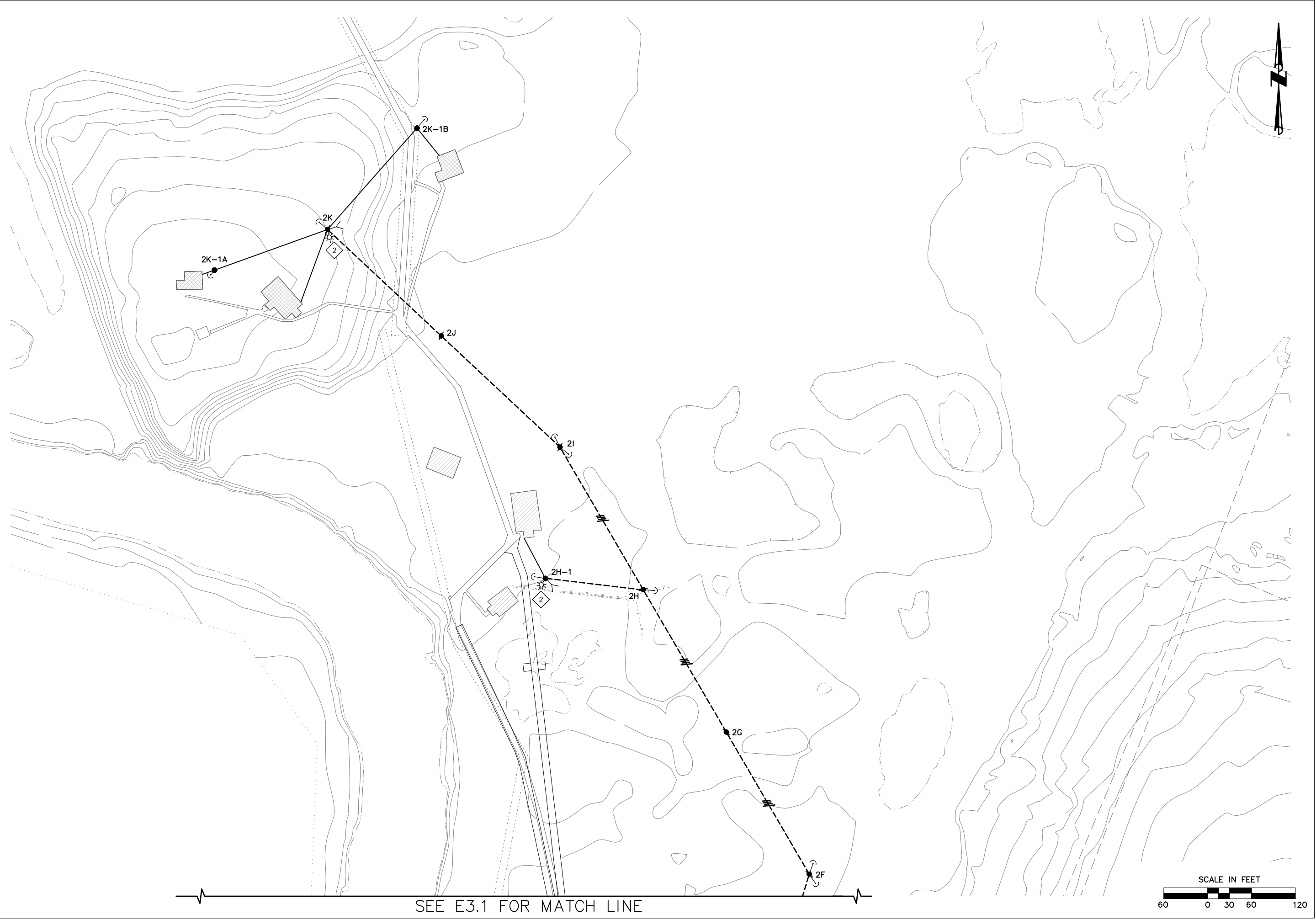
**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
NEW DISTRIBUTION PLAN  
(2 of 6)

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

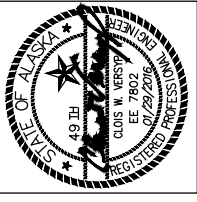
Plot Date: 1/29/16  
Designed: CWV  
Drawn: TRK  
Approved: CWV

Sheet No. **E3.2**

File: J:\Jobsdata\30404.10 Kongiganak Rpsu\00 CADD\01 Working Set\03 Electrical\KONG RPSU.dwg



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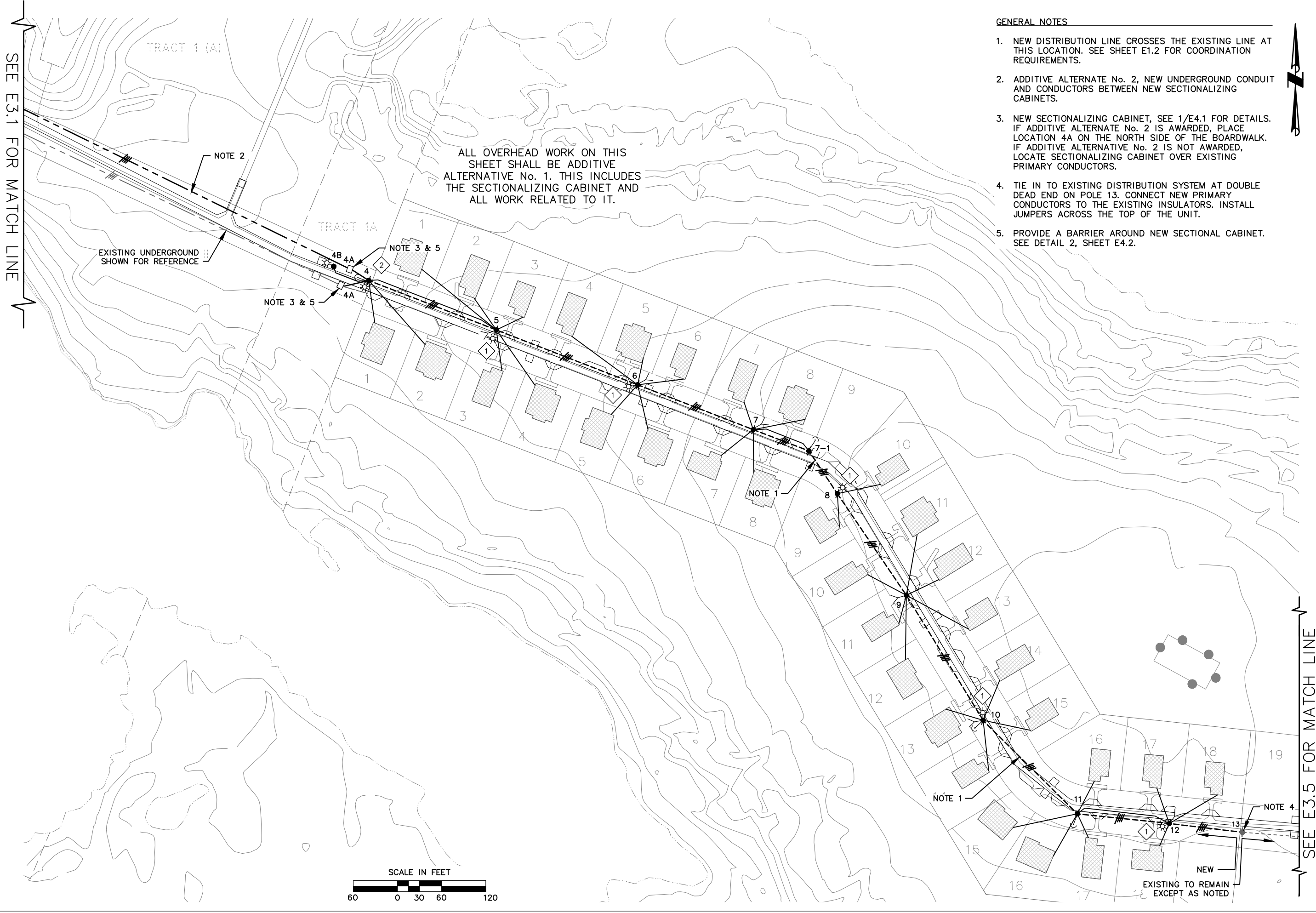
**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
NEW DISTRIBUTION PLAN  
(3 of 6)

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

Plot Date: 1/29/16  
Designed: CWV  
Drawn: TRK  
Approved: CWV

Sheet No. E3.3

File: J:\Jobsdata\30404.10 Kongiganak Rpsu\00 CADD\01 Working Set\03 Electrical\KONG RPSU.dwg



ALL OVERHEAD WORK ON THIS SHEET SHALL BE ADDITIVE ALTERNATIVE No. 1. THIS INCLUDES THE SECTIONALIZING CABINET AND ALL WORK RELATED TO IT.

**GENERAL NOTES**

1. NEW DISTRIBUTION LINE CROSSES THE EXISTING LINE AT THIS LOCATION. SEE SHEET E1.2 FOR COORDINATION REQUIREMENTS.
2. ADDITIVE ALTERNATE No. 2, NEW UNDERGROUND CONDUIT AND CONDUCTORS BETWEEN NEW SECTIONALIZING CABINETS.
3. NEW SECTIONALIZING CABINET, SEE 1/E4.1 FOR DETAILS. IF ADDITIVE ALTERNATE No. 2 IS AWARDED, PLACE LOCATION 4A ON THE NORTH SIDE OF THE BOARDWALK. IF ADDITIVE ALTERNATE No. 2 IS NOT AWARDED, LOCATE SECTIONALIZING CABINET OVER EXISTING PRIMARY CONDUCTORS.
4. TIE IN TO EXISTING DISTRIBUTION SYSTEM AT DOUBLE DEAD END ON POLE 13. CONNECT NEW PRIMARY CONDUCTORS TO THE EXISTING INSULATORS. INSTALL JUMPERS ACROSS THE TOP OF THE UNIT.
5. PROVIDE A BARRIER AROUND NEW SECTIONAL CABINET. SEE DETAIL 2, SHEET E4.2.

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**KONGIGANAK, ALASKA**  
RURAL POWER SYSTEM UPGRADES  
NEW DISTRIBUTION PLAN  
(4 of 6)

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV

Sheet No. **E3.4**



SEE E3.4 FOR MATCH LINE



ALL WORK ON THIS SHEET SHALL BE ADDITIVE ALTERNATIVE No. 1.

INSTALL 3 $\phi$  GANG OPERATED SWITCH. SEE STAKING SHEETS.

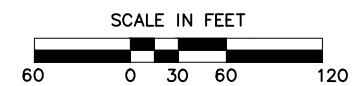
14 NOTE 3

15 NOTE 3

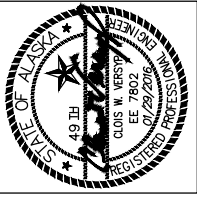
NOTE 1

GENERAL NOTES

1. NEW POLE TO REPLACE EXISTING DIRECT BURIED POLE. INSTALL NEW SERVICE CONNECTIONS.
2. UNLESS OTHERWISE NOTED UTILIZE THE EXISTING POLES AND CONDUCTORS THIS AREA.
3. RECONNECT NEW TRANSFORMERS TO EXISTING SECONDARY CONDUCTORS.



File: J:\Jobsdata\30404.10 Kongiganak Rpsu\00 CADD\01 Working Set\03 Electrical\KONG RPSU.dwg



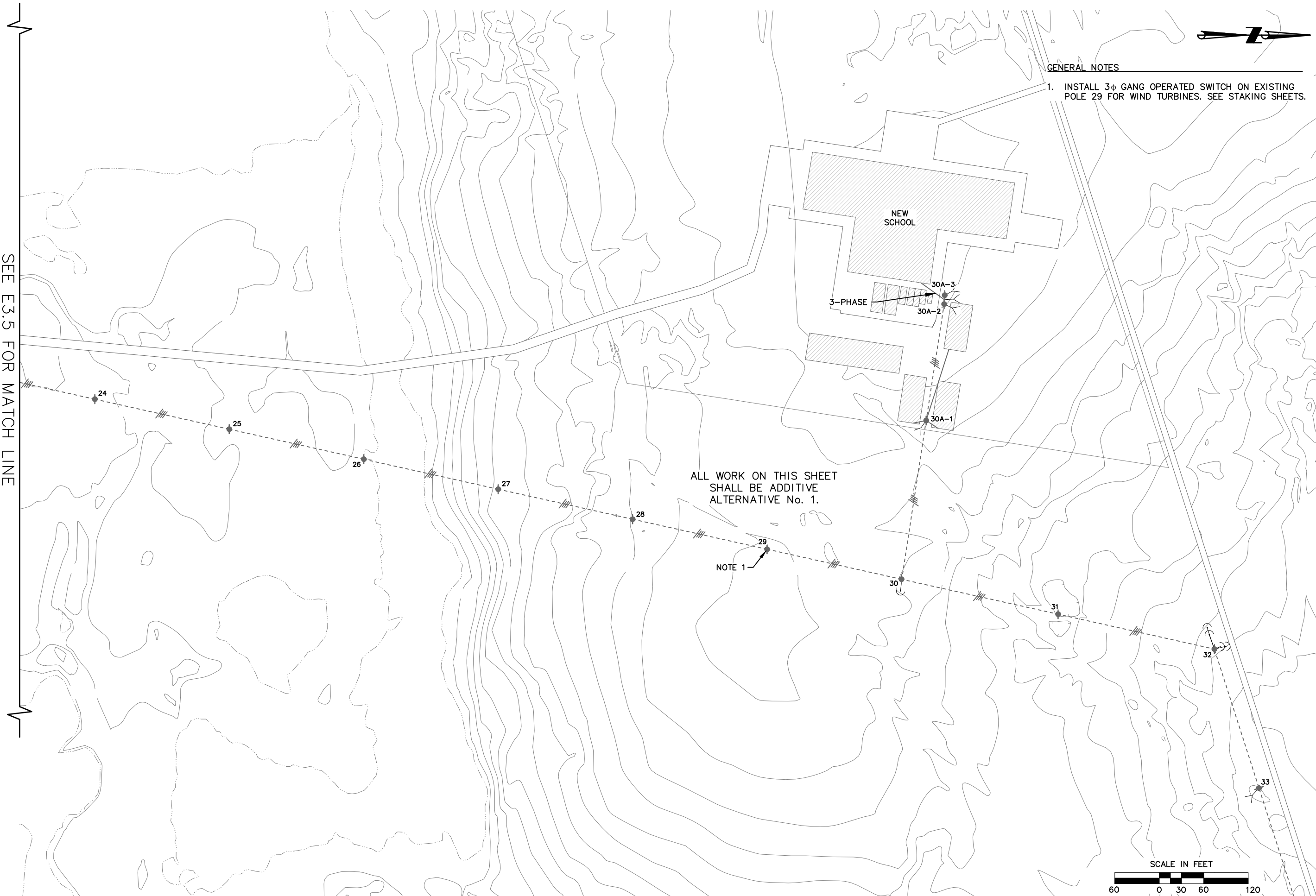
**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
**NEW DISTRIBUTION PLAN**  
**(5 of 6)**

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV

Sheet No. **E3.5**

SEE E3.5 FOR MATCH LINE

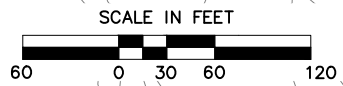


ALL WORK ON THIS SHEET SHALL BE ADDITIVE ALTERNATIVE No. 1.

NOTE 1

GENERAL NOTES

1. INSTALL 3 $\phi$  GANG OPERATED SWITCH ON EXISTING POLE 29 FOR WIND TURBINES. SEE STAKING SHEETS.



**PRELIMINARY DRAFT**

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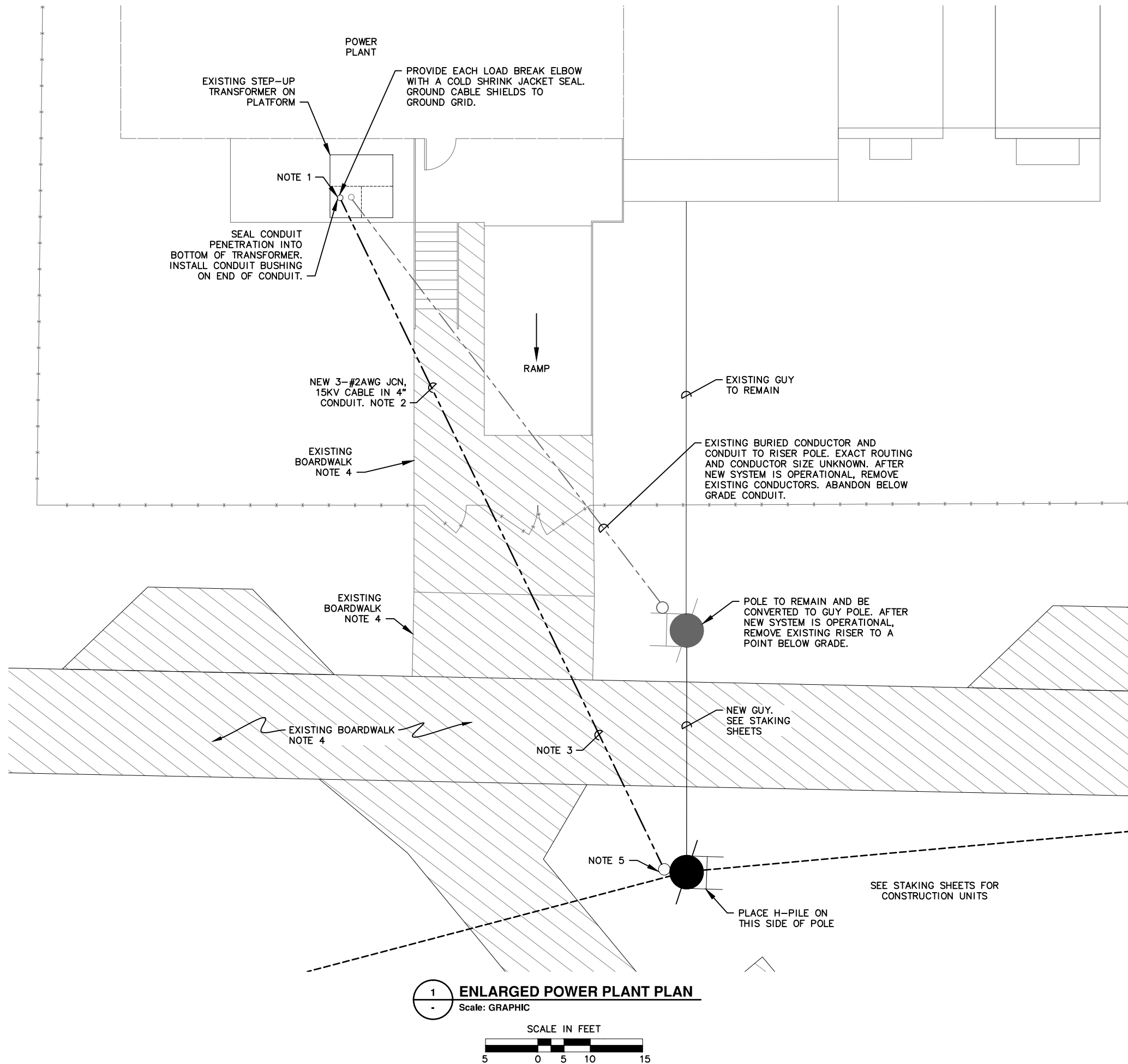
**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
NEW DISTRIBUTION PLAN  
(6 of 6)

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

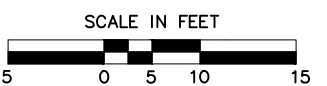
Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV

Sheet No. **E3.6**

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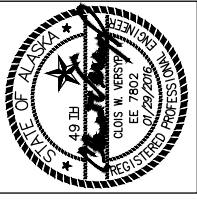


1 ENLARGED POWER PLANT PLAN  
Scale: GRAPHIC



GENERAL NOTES

1. INSTALL COOPER POWER SYSTEMS ROTATABLE FEED THRU INSERT KID IN EXISTING BUSHING WELL, CATALOG No. LF1215. CONNECT THE EXISTING AND NEW LOAD BREAK ELBOWS TO THE INSERTS.
2. PROVIDE SCHEDULE 80 PVC FOR BELOW GRADE AND UP TO THE TRANSFORMER, GRC AT THE POLE.
3. BURY CONDUIT MINIMUM 3'-0".
4. REMOVE EXISTING BOARDWALK AS REQUIRED TO INSTALL NEW CABLE AND CONDUIT. RETURN BOARDWALK TO EXISTING CONDITION AFTER CONDUIT HAS BEEN INSTALLED.
5. TRANSITION TO PVC FOR BELOW GRADE. SEE UNIT UC2a.

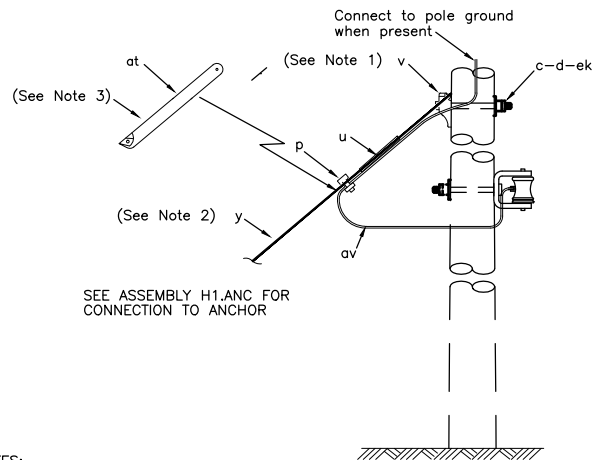


KONGIGANAK, ALASKA  
RURAL POWER SYSTEM UPGRADES  
ENLARGED POWER PLANT PLAN

NO.	REVISION	BY	DATE
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Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV

Sheet No. E3.7



NOTES:

- PROVIDE PRE-FORMED GUY DEADEND (u). OTHER DEADEND MATERIAL SHALL NOT BE SUBSTITUTED.
- Pole eye plate guy attachment and anchor shackle (item "bo") may be used.
- INSTALL RED STRIPED REFLECTIVE TAPE ON BOTH SIDES OF GUY GUARD. INSTALL TAPE IN WARM ENVIRONMENT, ABOVE MANUFACTURE RECOMMENDED TEMPERATURE.
- 2-5/8 machine bolts and 2-3 square curved washers may be used to install guy attachment.
- Specify guy wire size, type and required length.

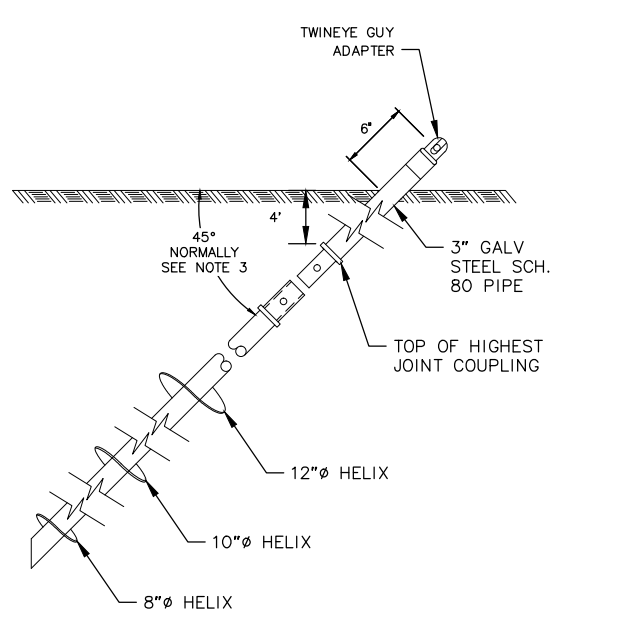
ITEM	QTY	MATERIAL
c	1	Bolt, machine, 3/4" x req'd length
d	1	Washer, square, 4", curved
p		Connectors, guy bond and as req'd
j	1	Screw, lag, 1/2" x 4"
u	2	Deadend for guy strand, heavy duty
v	1	Guy attachment, guy hook type
y		Guy wire, as req'd (See Note 4)
at	1	Guy marker, Yellow
av		Jumpers, as req'd
ck	1	Clamp, anchor bonding
ek	1	Locknuts

DESIGN PARAMETERS:

PERMITTED LOAD IS LEAST OF:  
8,500 lbs (in any direction)  
OR 90% OF RATED BREAKING STRENGTH OF GUY WIRE

SINGLE DOWN GUY  
(THROUGH BOLT TYPE)

JANUARY 2014	E1.1La
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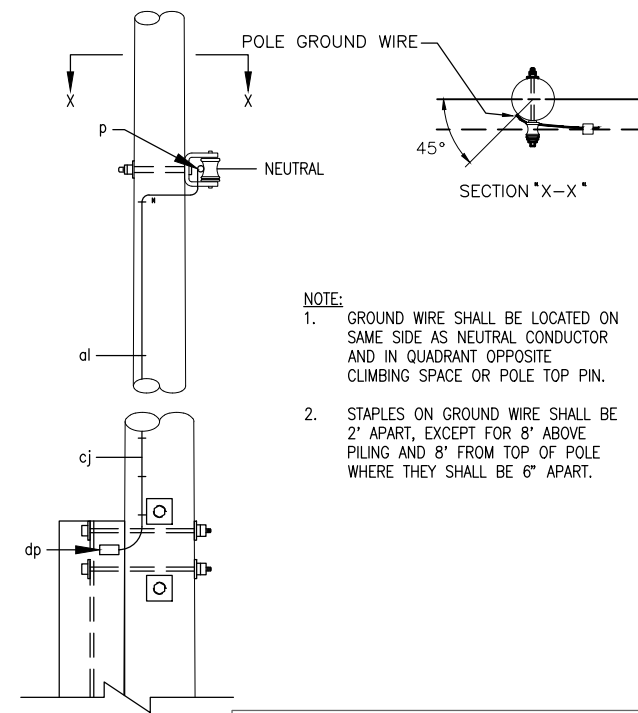


NOTES:

- USE PILOT DRILL TO PROVIDE MAX 4" DIAMETER HOLE WHEN INSTALLING HELICAL PILES IN PERMAFROST.
- ADVANCE HELICAL ANCHOR UNTIL THE AVERAGE INSTALLATION TORQUE EXCEEDS THE MINIMUM INSTALLATION TORQUE OF 2,000 FEET-POUNDS OVER THE FINAL THREE FEET OF HELICAL PILE EMBEDMENT OR THE PILES ARE EMBEDDED A MINIMUM OF 9 FEET TO THE UPPER HELIX, WHICHEVER IS DEEPER.
- UNDER NO CIRCUMSTANCES SHALL THE ROD AND GUY STRAND JOIN AT AN ANGLE OF DEPARTURE EXCEEDING +/- 5 DEGREES.

HELICAL PILE ANCHORS  
(POWER INSTALLED)

JANUARY 2014	F7.0
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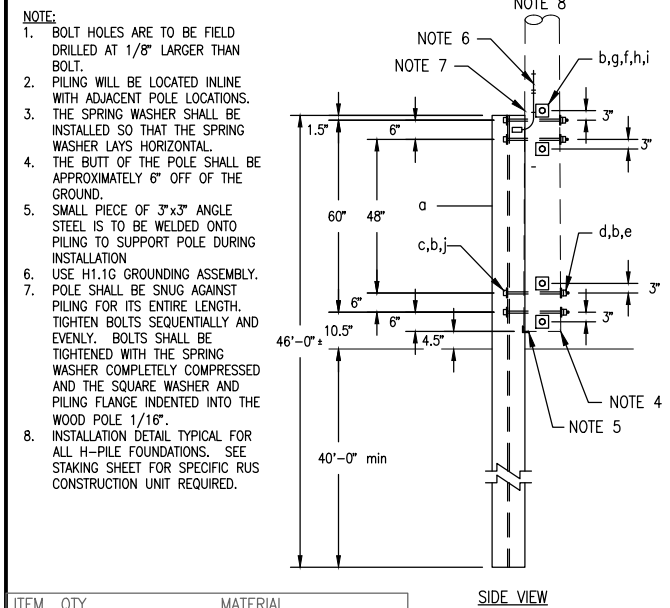


NOTE:

- GROUND WIRE SHALL BE LOCATED ON SAME SIDE AS NEUTRAL CONDUCTOR AND IN QUADRANT OPPOSITE CLIMBING SPACE OR POLE TOP PIN.
- STAPLES ON GROUND WIRE SHALL BE 2' APART, EXCEPT FOR 8' ABOVE PILING AND 8' FROM TOP OF POLE WHERE THEY SHALL BE 6" APART.

GROUNDING DETAIL  
H-PILE

JANUARY 2014	H1.1G
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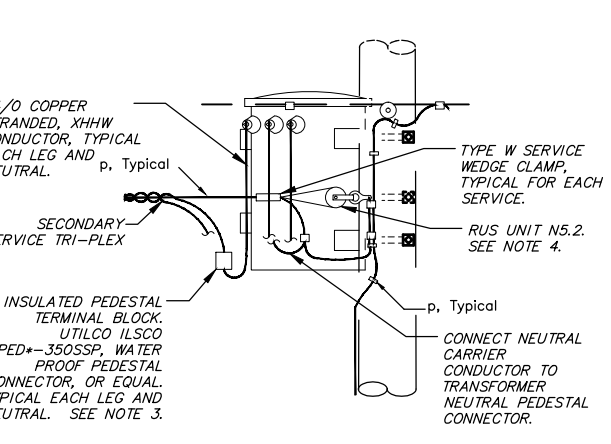


NOTE:

- BOLT HOLES ARE TO BE FIELD DRILLED AT 1/8" LARGER THAN BOLT.
- PILING WILL BE LOCATED INLINE WITH ADJACENT POLE LOCATIONS. THE SPRING WASHER SHALL BE INSTALLED SO THAT THE SPRING WASHER LAYS HORIZONTAL.
- THE BUTT OF THE POLE SHALL BE APPROXIMATELY 6" OFF OF THE GROUND.
- SMALL PIECE OF 3"x3" ANGLE STEEL IS TO BE WELDED ONTO PILING TO SUPPORT POLE DURING INSTALLATION.
- USE H1.1G GROUNDING ASSEMBLY. POLE SHALL BE SNUG AGAINST PILING FOR ITS ENTIRE LENGTH. TIGHTEN BOLTS SEQUENTIALLY AND EVENLY. BOLTS SHALL BE TIGHTENED WITH THE SPRING WASHER COMPLETELY COMPRESSED AND THE SQUARE WASHER AND PILING FLANGE INDENTED INTO THE WOOD POLE 1/16".
- INSTALLATION DETAIL TYPICAL FOR ALL H-PILE FOUNDATIONS. SEE STAKING SHEET FOR SPECIFIC RUS CONSTRUCTION UNIT REQUIRED.

POLE FOUNDATION  
H-PILE INSTALLATION

JANUARY 2014	H1-PILE
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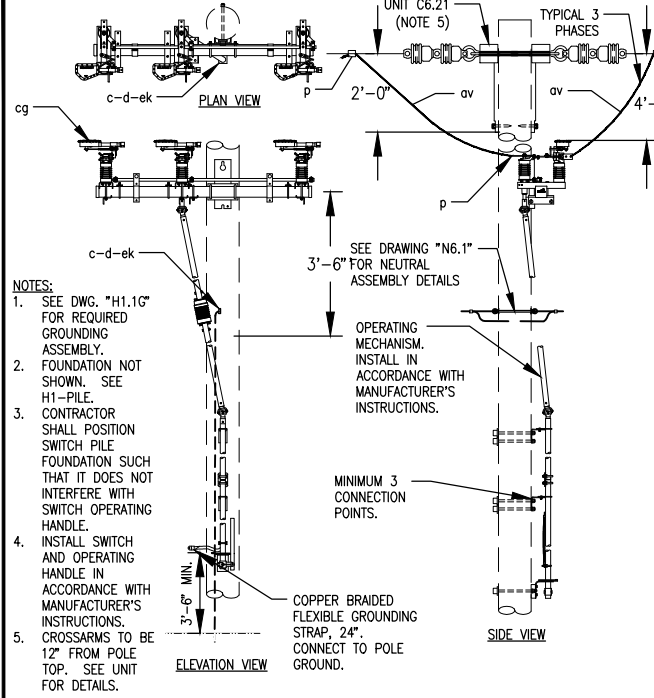
NOTES:

- THIS CONSTRUCTION UNIT APPLIES ONLY TO SINGLE-PHASE SECONDARY CONNECTIONS AT SINGLE-PHASE TRANSFORMERS. FOR CONNECTIONS THREE-PHASE TRANSFORMERS SEE APPROPRIATE RUS CONSTRUCTION UNIT.
- FOR POLE GROUNDING, NEUTRAL CONNECTIONS, ETC. SEE THE APPROPRIATE RUS CONSTRUCTION UNIT.
- FOR 4 OUTLET CONNECTOR USE PED4-350SSP AND FOR 6 OUTLET CONNECTOR USE PED6-350SSP. INSTALL WITH OUTLET FACING DOWN AND SCREW OPENINGS AWAY FROM TRANSFORMER. CONNECT #4/0 CONDUCTOR NEAR CENTER OF PEDESTAL CONNECTOR.
- FOR SERVICES ON OPPOSITE SIDES OF POLE PROVIDE TWO UNITS. AN EYE NUT MAY BE USED FOR THE SECOND UNIT IF DESIRED BY THE CONTRACTOR.

ITEM	QTY	MATERIAL
p		Connectors, as req'd
av		Jumpers, as req'd

SINGLE-PHASE SECONDARY SERVICE ASSEMBLY

JANUARY 2014	N7.4, N7.6
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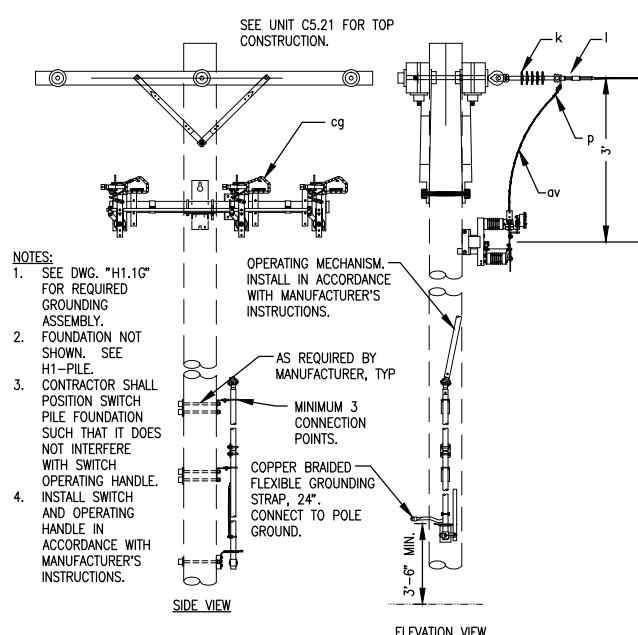


NOTES:

- SEE DWG. "H1.1G" FOR REQUIRED GROUNDING ASSEMBLY. FOUNDATION NOT SHOWN. SEE H1-PILE.
- CONTRACTOR SHALL POSITION SWITCH PILE FOUNDATION SUCH THAT IT DOES NOT INTERFERE WITH SWITCH OPERATING HANDLE.
- INSTALL SWITCH AND OPERATING HANDLE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- CROSSARMS TO BE 12" FROM POLE TOP. SEE UNIT FOR DETAILS.

GANG OPERATED LOADBREAK SWITCH  
(THREE-PHASE) HORIZONTAL

JANUARY 2014	12.47/7.2 kV	S2.32a
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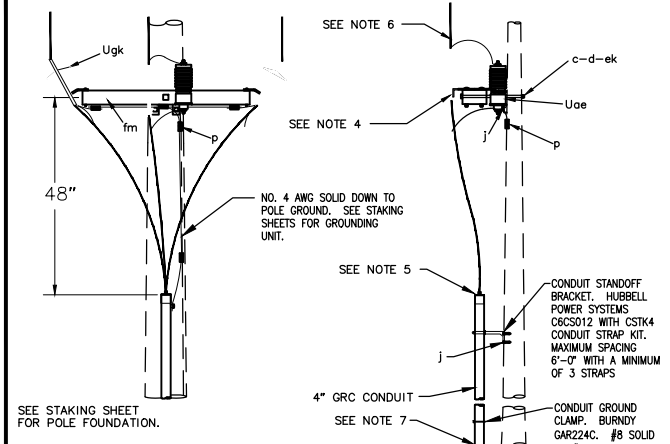


NOTES:

- SEE DWG. "H1.1G" FOR REQUIRED GROUNDING ASSEMBLY. FOUNDATION NOT SHOWN. SEE H1-PILE.
- CONTRACTOR SHALL POSITION SWITCH PILE FOUNDATION SUCH THAT IT DOES NOT INTERFERE WITH SWITCH OPERATING HANDLE.
- INSTALL SWITCH AND OPERATING HANDLE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

GANG OPERATED LOADBREAK SWITCH  
(THREE-PHASE) VERTICAL

DEC 2015	12.47/7.2 kV	S2.32b
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NOTES:

- TOTAL ARRESTER LEAD LENGTH SHALL BE UNDER 3 FEET.
- NO BENDS PERMITTED WITHIN 6 INCHES OF CABLE TERMINAL BASE.
- ALLOW MINIMUM CABLE SLACK OF 24 INCHES AT BOTTOM OF RISER.
- PROVIDE HUBBELL NEMA 4 MOUNTING BRACKET, NO. C2060127, AND ALUMA-FORM CABLE POSITIONER, MODEL CCS-820. AFTER INSTALLATION OF CABLE WRAP, INSTALL HEAT SHRINK JACKET OVER WRAP.
- INSTALL 3-CONDUCTOR, 15 KV, HEAT SHRINK CABLE BREAKOUT BOOT ON THE END OF THE CONDUIT. SELECT THE BREAKOUT BOOT FOR THE CONDUIT SIZE AND THE CONDUCTOR DIAMETER. RAYCHEM, 3M, OR APPROVED EQUAL.
- INSTALL NO. 2 AWG ACSR UP TO GANG OPERATED SWITCH.
- TRANSITION FROM GRC CONDUIT TO PVC CONDUIT WHERE GRC CONDUIT ENTERS THE GROUND. ALL GRC CONDUIT THAT COMES IN CONTACT WITH EARTH SHALL BE TAPE WRAPPED WITH 3M COMPANY 0.020 INCH THICK NO. 51 "SCOTCHRAIP" VINYL PLASTIC TAPE, HALF LAPPED TO GIVE DOUBLE THICKNESS WRAP. REMOVE ALL OIL, GREASE AND DIRT FROM CONDUIT WITH A SUITABLE SOLVENT, AND CLEAN AND DRY CONDUIT BEFORE WRAPPING.

ITEM	QTY	MATERIAL
bo	1	ANCHOR, SHACKLE
c	As Req'd	BOLT, MACHINE, 5/8" X REQ'D LENGTH
d	As Req'd	WASHER, ROUND, 1-3/8"
e	As Req'd	WASHER, SQUARE 2 1/4"
ek	As Req'd	LOCKNUTS
fm	1	THREE-PHASE MOUNTING BRACKET, ALUMA-FORM TB-EMB-1-6PA-35, PRODUCT 51064 OR APPROVED EQUAL.
j	As Req'd	SCREW, LAG 1/2"x4", AS REQUIRED.

THREE PHASE CABLE TERMINAL RISER DETAIL

JAN 2016	12.47/7.2 kV	UC2a
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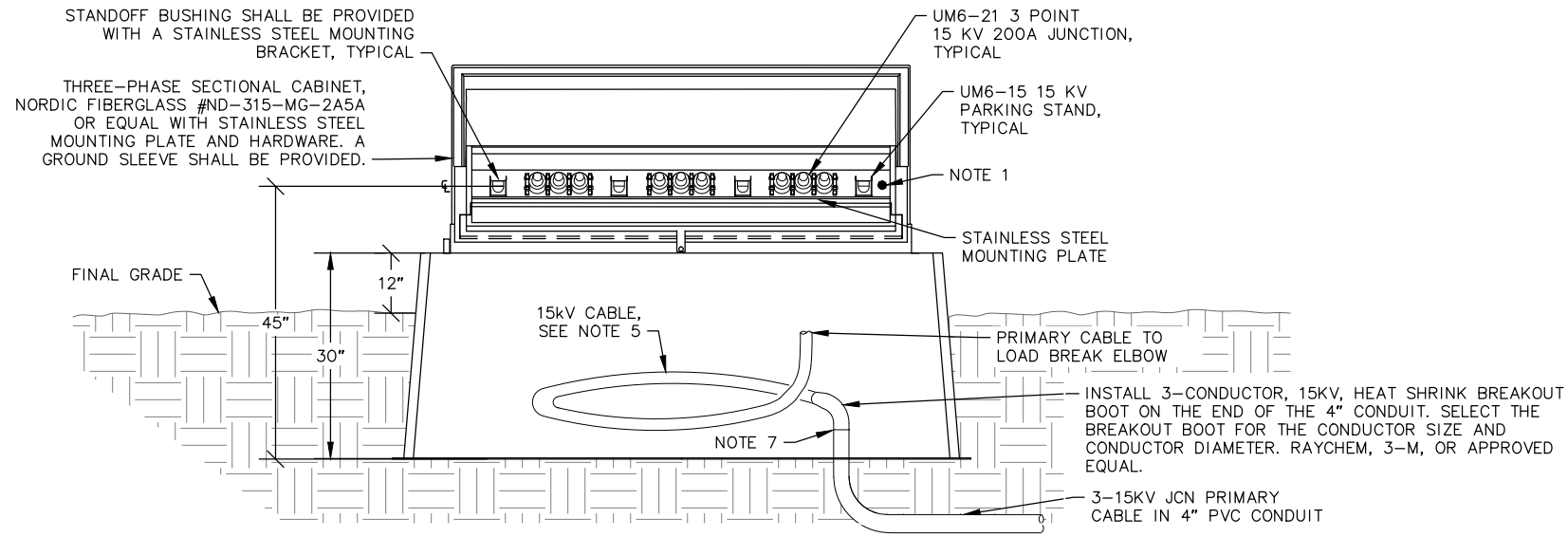
File: J:\Jobsdata\30404.10 Kongiganak Rpsu\00 CADD\01 Working Set\03 Electrical\KONG RPSU.dwg

NO.	REVISION	DATE	BY	TRK
0	ISSUED FOR CONSTRUCTION	1/2016		

Plot Date	1/29/16	Designed	CWV	Drawn	TRK	Approved	CWV
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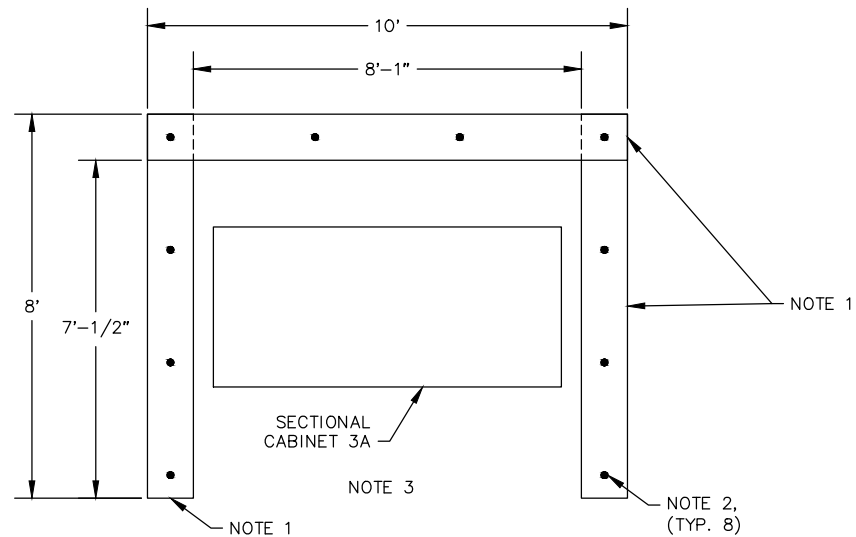
Sheet No. E4.1



**NOTES**

1. INSTALL GROUNDING LUG, HUBBELL/FARGO CC-207P ON MOUNTING BOARD AND CONNECT TO GROUND.
2. SEE UM33 FOR ADDITIONAL GROUNDING NOTES.
3. INSTALL DRAIN WIRE ON EACH UM6-10.
4. ENSURE THAT ALL METAL COMPONENTS ARE GROUNDED.
5. PROVIDE SLACK IN THE CABLE TO THE MAXIMUM EXTENT PRACTICAL. IF POSSIBLE, PROVIDE ONE FULL LOOP AROUND THE BASE OF THE GROUND SLEEVE OR SECTIONALIZING CABINET FOR EACH CABLE.
6. PROVIDE EACH LOAD BREAK ELBOW WITH A COLD SHRINK JACKET SEAL.
7. EXTEND 4" CONDUIT NO HIGHER THAT 12" ABOVE BOTTOM OF SECTIONALIZING CABINET.
8. THIS DETAIL SUPPLEMENTS RUS CONSTRUCTION UNIT UM33.

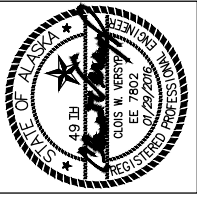
**1 RUS UNIT UM33a - THREE-PHASE SECTIONALIZING CABINET SPECIFIC REQUIREMENTS**  
Scale: NTS



**NOTES:**

1. 3-12x12 TREATED TIMBERS, STACKED WITH LENGTHS AS SHOWN.
2. PIN THE TIMBERS TOGETHER WITH #8 REBAR.
3. POSITION OPENING FACING POLE.

**2 THREE-PHASE SECTIONALIZING CABINET BARRIER DETAIL**  
Scale: NTS



**KONGIGANAK, ALASKA**  
**RURAL POWER SYSTEM UPGRADES**  
DETAILS  
(2 of 2)

NO.	REVISION	BY	DATE
0	ISSUED FOR CONSTRUCTION	TRK	1/2016

Plot Date	1/29/16
Designed	CWV
Drawn	TRK
Approved	CWV

Sheet No. E4.2