

THIS SHEET IS FULL SIZE AT 34"x22"

7/17/2020 12:10:36 PM P:\E20\E20-3354 AKRR Whittier Signal Hut & Heater\050 DWG\E20-3354_EShr21_AKRRWhittierSignalHut&Heater.rvt qc07/17/2020 12:10:28 :fc.1 :>20lschd : lvsOnShr : 0,0,0,0,0,0

ELECTRICAL SPECIFICATIONS

"X" = PROVIDE SUBMITTAL
 26 00 00 - GENERAL REQUIREMENTS: ALL ELECTRICAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH ALL REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE (NEC), STATE, MUNICIPAL, FEDERAL LAWS, AND AMENDMENTS GOVERNING THE PROJECT. ALL WORK SHALL BE PERFORMED UNDER THE SUPERVISION OF A CERTIFIED ADMINISTRATOR JOURNEYMAN ELECTRICIAN. ALL ELECTRICAL EQUIPMENT SHALL BE NEW COMMERCIAL GRADE AND INCLUDE THE SEAL OF A NATIONALLY RECOGNIZED TESTING LABORATORY FOR THE PURPOSE FOR WHICH IT IS INSTALLED. CONTRACTOR SHALL SUBMIT REQUEST FOR SUBSTITUTION IN WRITING TO THE ENGINEER. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED CONSTRUCTION PERMITS AND PAY ALL ASSOCIATED FEES.

26 00 00.1 - WORKING CLEARANCES: THE CONTRACTOR IS REQUIRED TO COORDINATE THE MINIMUM WORKING CLEARANCES AND DEDICATED EQUIPMENT REQUIRED BY THE NEC 110.26. THE CONTRACTOR IS REQUIRED TO COORDINATE WITH ALL SUBCONTRACTORS SO THAT ENCROACHMENTS INTO THE RESTRICTED SPACE ARE PREVENTED.

26 00 00.2 - PLENUM RATING: ALL CABLING, RACEWAYS, CABLE TIES AND COMPONENTS LOCATED IN CEILING SPACES THAT ARE PLENUMS SHALL BE PLENUM RATED.

26 00 00.3 - FIRE RATING: ALL ELECTRICAL PENETRATIONS THROUGH FIRE RATED BARRIERS SHALL BE SEALED IN ACCORDANCE WITH NEC ARTICLE 300.21. PROVIDE FIRE PUTTY AT ALL BOXES IN FIRE RATED WALLS. CONTRACTOR TO PROVIDE SUBMITTAL OF ALL FIRE RATING SYSTEMS TO BE USED. VAPOR BARRIERS: SEAL ALL VAPOR BARRIER PENETRATIONS TO MAINTAIN SYSTEM INTEGRITY.

26 00 00.4 - ACCESS PANELS: PROVIDE ACCESS PANELS FOR ALL LOCATIONS NECESSARY TO ACCESS ELECTRICAL EQUIPMENT AND JUNCTION BOXES. ACCESS PANELS SHALL BE FIRE RATED EQUAL TO OR EXCEEDING THE ADJACENT WALL OR CEILING CONSTRUCTION AND PAINTED TO MATCH.

26 00 00.5 - REMODEL: EXISTING/REMODEL WORK THAT CANNOT BE CONCEALED DUE TO EXISTING SOLID CORE OR CONCRETE CONSTRUCTION SHALL BE INSTALLED USING WIREMOLD SURFACE MOUNTED RACEWAY AND BOXES IN FINISHED AREAS AND EXPOSED CONDUIT IN NON-FINISHED AREAS. PROVIDE TEMPORARY POWER AND LIGHTING FOR ALL AREAS OF THE BUILDING DURING THE RENOVATION. DEMOLISH ALL ABANDONED SPECIAL SYSTEM CABLES AND POWER WIRING BACK TO SOURCE. UPDATE ALL PANEL SCHEDULES TO REFLECT CURRENT CIRCUIT DESCRIPTIONS.

26 01 10 - SUBMITTALS: PROVIDE MATERIAL AND EQUIPMENT SUBMITTAL FOR EACH SPECIFICATION SECTION DENOTED AS REQUIRED AT MINIMUM. SUBMITTALS SHALL BE SUBMITTED ELECTRONICALLY IN PDF FORMAT (UNLESS HARD COPY IS REQUIRED BY OTHER CONTRACT APPLYING TO THE ENTIRE PROJECT). SUBMIT ALL REQUIRED SECTIONS IN A SINGLE SUBMITTAL OR BROKEN INTO NO MORE THAN THE FOLLOWING SEPARATE SECTIONS: "LIGHTING", "EQUIPMENT", "WIRING/DEVICES", AND "SPECIAL SYSTEMS". ORGANIZE SUBMITTAL AND/OR EACH SECTION BY SPECIFICATION NUMBER FOLLOWED BY ANY MAJOR EQUIPMENT REFERENCE ON THE DRAWINGS WITH ALL OPTIONS AND SELECTIONS HIGHLIGHTED TO DENOTE THE SPECIFIC EQUIPMENT PROPOSED. SUBMITTAL REVIEW IS FOR GENERAL DESIGN AND CONFIGURATION AND DOES NOT RELIEVE THE CONTRACTOR FROM PROVIDING A COMPLETE OPERATIONAL SYSTEM COMPLIANT WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

26 01 21 - RECORD DRAWINGS: MARK UP A SET OF DRAWINGS (REDLINES) SHOWING ALL ELECTRICAL WORK. SHOW DIAGRAMMATIC ROUTING, SIZING AND CIRCUIT REVISIONS TO THE CONTRACT PLANS. RECORD DRAWINGS SHALL BE KEPT ON SITE AVAILABLE FOR REVIEW DURING THE ENTIRE CONSTRUCTION PERIOD. SUBMIT FINAL REDLINE SET FOR APPROVAL PRIOR TO FINAL INSPECTION.

26 01 22 - WARRANTY: THE CONTRACTOR SHALL GUARANTEE ALL WORK EXECUTED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM SUBSTANTIAL COMPLETION. ANY FAULTY MATERIALS OR WORKMANSHIP SHALL BE REPAIRED DURING THE GUARANTEE PERIOD AT NO ADDITIONAL COST TO THE OWNER.

26 05 15 - POWER CONDUCTORS: ALL POWER CONDUCTORS SHALL BE THHN 90 DEGREE C INSULATED COPPER UNLESS NOTED OTHERWISE. CONDUCTORS INSTALLED WHILE AMBIENT TEMPERATURE IS LESS THAN -7C (20F) OR LOCATED IN UN-HEATED SPACES SHALL BE XHHW 90 DEGREE C INSULATED COPPER UNLESS NOTED OTHERWISE. INSTALL ALL CONDUCTORS AND CABLES IN ACCORDANCE WITH NEC REQUIREMENTS FOR AMBIENT TEMPERATURE DERATING, CONDUIT FILL DERATING, AND BOX FILL. PROVIDE UNSHARED DEDICATED NEUTRAL FOR EACH CIRCUIT.

480V/277V CONDUCTORS: COLOR CODE CONDUCTORS BROWN, ORANGE, YELLOW, GRAY AND GREEN WITH YELLOW STRIPE. MINIMUM SIZE CONDUCTORS FOR 15 AND 20 AMP BRANCH CIRCUITS MEASURED FROM THE PANELBOARD TO THE FURTHEST DEVICE ON THE CIRCUIT UNLESS OTHERWISE NOTED ON THE DRAWINGS: 12 AWG UP TO 120 FT, 10 AWG 120 FT TO 200 FT, 8 AWG GREATER THAN 200 FT.

240V/120V CONDUCTORS: COLOR CODE CONDUCTORS BLACK, RED, WHITE, AND GREEN. MINIMUM SIZE CONDUCTORS FOR 15 AND 20 AMP BRANCH CIRCUITS MEASURED FROM THE PANELBOARD TO THE FURTHEST DEVICE ON THE CIRCUIT UNLESS OTHERWISE NOTED ON THE DRAWINGS: 12 AWG UP TO 75 FT, 10 AWG 75 FT TO 120 FT, 8 AWG GREATER THAN 120 FT.

26 05 19 - COMMERCIAL CABLES: METALCLAD (MC) CABLE WITH STEEL OUTER SHEATH (WHERE ROUTED CONCEALED AND PROTECTED).

26 05 29 - HANGARS AND SUPPORTS FOR ELECTRICAL SYSTEMS: SUPPORT ALL ELECTRICAL EQUIPMENT INCLUDING, BUT NOT LIMITED TO, LIGHT FIXTURES, PANELBOARDS, BOXES, CONDUIT, ETC. PER NEC AND IBC SEISMIC REQUIREMENTS. PROVIDE SEISMIC SUPPORT AND DESIGN SEALED BY A LICENSED STRUCTURAL ENGINEER AS A DEFERRED SUBMITTAL TO THE AHJ FOR ALL EQUIPMENT OVER 400 LBS AND, EQUIPMENT OVER 20 LBS MOUNTED GREATER THAN 4FT AFF, CONDUIT 2.5°C OR GREATER AND ALL TRAPEZE SUPPORTED RACEWAY 10 LBS/LF OR GREATER.

26 05 30 - RACEWAY: ALL CLASS 1 CIRCUITS SHALL BE INSTALLED IN CONCEALED METALLIC RACEWAY EXCEPT WHERE SPECIFICALLY INDICATED ELSEWHERE IN THE SPECIFICATIONS OR SHOWN ON THE DRAWINGS. ELECTRICAL EQUIPMENT AND WIRING CAN BE EXPOSED IN MECHANICAL ROOMS, TELECOMMUNICATION ROOMS OR WHERE SPECIFICALLY NOTED. DO NOT ROUTE RACEWAYS ON THE EXTERIOR SURFACE OF THE BUILDING OR THE ROOF UNLESS SPECIFICALLY NOTED OTHERWISE.

26 05 31 - POLYVINYL CHLORIDE CONDUIT (PVC): UL 651, SCHEDULE 40 AND SCHEDULE 80. FITTINGS: UL 514C AND UL 514D. USES: SCHEDULE 40 - BELOW GRADE OR SLAB ON GRADE. SCHEDULE 80 - BELOW GRADE, SLAB ON GRADE, OR CORROSIVE ENVIRONMENT. DO NOT INSTALL WHEN AMBIENT TEMPERATURES ARE LESS THAN -7C (20F).

ELECTRICAL SPECIFICATIONS

"X" = PROVIDE SUBMITTAL
 26 05 33 - RIGID METAL CONDUIT (RMC): ANSI C80.1, UL 6. WITH BUSHINGS AT ALL TERMINATIONS. FITTINGS: GALVANIZED MALLEABLE IRON WITH THREADED HUBS FOR ALL CONDUIT ENTRIES AND COUPLINGS. SET SCREW OR RUNNING THREAD FITTINGS ARE NOT PERMITTED. USES: BELOW GRADE, IN CONCRETE, STUB UPS, CONCEALED, EXPOSED, WHERE EXPOSED TO PHYSICAL DAMAGE, ROUTED ON BUILDING ROOF, SERVICE RISERS, OR WITHIN 10FT OF RACEWAY ROUTED INTO FIXED FOUNDATIONS SUCH AS LIGHT POLE BASE OR STRUCTURE.

26 05 34 - ELECTRICAL METALLIC TUBING (EMT): ANSI C80.3, UL 797; GALVANIZED STEEL TUBING. FITTINGS: NEMA FB 1; GALVANIZED STEEL OR MALLEABLE IRON SET SCREW OR COMPRESSION. DIE CAST OR PRESSURE CAST FITTINGS OR LOCKNUTS ARE NOT PERMITTED. USES: CONCEALED OR EXPOSED WHERE NOT SUBJECT TO PHYSICAL DAMAGE.

26 05 35 - FLEXIBLE METAL CONDUIT (FMC): GALVANIZED OR ZINC COATED FLEXIBLE STEEL CONSTRUCTION. FMC FITTINGS: GALVANIZED MALLEABLE IRON OR STEEL WITH INSULATED THROATS. USES: CONNECTIONS TO MOTORS, TRANSFORMERS, AND OTHER MOVABLE OR VIBRATING EQUIPMENT.

26 05 36 - WET RATED: LIQUIDTIGHT FLEXIBLE CONDUIT (LTMC), RMC OR IMC. FITTINGS: GASKETED AND WET RATED BOXES. EMT WET RATED GLAND COMPRESSION CONNECTORS AND COUPLINGS. USES: EXTERIOR, WET, EQUIPMENT IN ELEVATOR PITS.

X 26 22 00 - TRANSFORMERS: CONFORM TO 2016 DOE ENERGY STANDARDS. CLASS 220 INSULATION SYSTEM NEMA ST 20, TYPE 1 VENTILATED. PROVIDE NEMA 3R SHIELDS FOR EXTERIOR LOCATIONS. MOUNT ON VIBRATION ISOLATION PADS. VOLTAGE, KVA, PHASE PER DRAWINGS.

X 26 28 03 - FUSES: PROVIDE RK-5, RK-1, J OR SIMILAR CURRENT LIMITING FUSES FOR EACH FUSED DISCONNECT. PROVIDE DISCONNECT CONFIGURED TO REJECT NON-CURRENT LIMITING STYLE FUSES WHERE THE FUSE IS USED AS PART OF A SERIES RATED SYSTEM FOR DOWNSTREAM EQUIPMENT OR IS PART OF AN ENGINEERED SERIES RATED SYSTEM DENOTED ON THE PLANS. WHERE CURRENT LIMITING FUSES ARE INSTALLED AS PART OF A SERIES RATING, CURRENT LIMITING MITIGATION SYSTEM, OR ENGINEERED SERIES RATED SYSTEM; PROVIDE WARNING PLACARD ON DISCONNECT WHERE FUSES ARE LOCATED.

X 26 28 04 - FAULT CURRENT MITIGATION: WHERE EQUIPMENT IS LISTED IN A FAULT CURRENT MITIGATION SCHEDULE ON THE PLANS, PROVIDE SPECIFIC CURRENT LIMITING FAST ACTING FUSES THAT LIMIT THE LET-THROUGH CURRENT TO LESS THAN THE SCRR OF THE EQUIPMENT. WHERE THE SPECIFIC EQUIPMENT RATING IS NOT KNOWN, PROVIDE CURRENT LIMITING TO 5,000 AMPS OR LESS.

X 26 28 16 - DISCONNECT SWITCHES: PROVIDE DISCONNECTS FOR EQUIPMENT AS REQUIRED BY NEC. HORSEPOWER RATED FOR MOTORS, DEFEATABLE DOOR INTERLOCK TO PREVENT DOOR OPENING WHEN IN THE ON POSITION, GROUND BUS, AND PAD LOCKABLE IN THE OFF POSITION. PROVIDE SOLID NEUTRAL KIT WHERE NEUTRAL IS REQUIRED. FRACTIONAL HORSEPOWER MOTORS CAN USE MOTOR RATED SNAP SWITCHES.

ABBREVIATIONS	
INDUSTRY STANDARD ABBREVIATIONS SHALL ALSO BE APPLICABLE.	
(#)	DENOTES TYPICAL IN LIGHT FIXTURE TYPES
(D)	DEMOLISH
(E)	EXISTING
(R)	RELOCATED
AFCI	ARC FAULT CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINUM
BJ	BONDING JUMPER
CB	CIRCUIT BREAKER
CO, C.O.	CONDUIT ONLY
CT	CURRENT TRANSFORMER
CU	COPPER
DFACU	DEDICATED FIRE ALARM CONTROL UNIT
EGC	EQUIPMENT GROUNDING CONDUCTOR
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FACU	FIRE ALARM CONTROL UNIT
FHP	FRACTIONAL HORSEPOWER
FLA	FULL LOAD AMPS
FSD	FIRE SMOKE DAMPER
G, GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GEC	GROUNDING ELECTRODE CONDUCTOR
GES	GROUNDING ELECTRODE SYSTEM
GFEP	GROUND FAULT EQUIPMENT PROTECTION
MCA	MINIMUM CIRCUIT AMPACITY
MFS	MAXIMUM FUSE SIZE
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT (NOT IN SCOPE)
NO	NORMALLY OPEN
P	POLES
PC	PHOTO CELL
PH, Ø	PHASE
PNL	PANEL
RIB	RELAY IN A BOX (MOTOR RATED)
SCCR	SHORT CIRCUIT CURRENT RATING
SE	SERVICE ENTRANCE RATED
SSBJ	SUPPLY SIDE BONDING JUMPER
SSEBJ	SUPPLY SIDE EQUIPMENT BONDING JUMPER
TGB	TELECOMMUNICATION GROUNDING BUSBAR
TMGB	TELECOMMUNICATION MAIN GROUNDING BUSBAR
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS OR WIRE
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

MOUNTING HEIGHT SCHEDULE	
EQUIPMENT	HEIGHT
PANELBOARDS (TOP)	72"
SPECIAL SYSTEM PANELS (TOP)	72"
POWER METER BASE (CENTER LINE OF SOCKET)	PER UTILITY
CONTACTORS, MOTOR STARTERS, DISCONNECT (TOP)	66"
REC IN OFFICE AREAS	18"
REC LOCATED IN HAZARDOUS OR S-2 OCCUPANCIES	24" MINIMUM
REC IN NON-FINISHED AND MECHANICAL SPACES	46"
WALL MOUNTED SWITCHES	46"
TELECOMMUNICATION OUTLETS	18"
INDICATING DEVICES (BOTTOM)	80"
PULL STATIONS, PUSH BUTTONS	46"

ELECTRICAL SHEET LIST	
NUM	SHEET TITLE
E001	LEGEND
E101	ELECTRICAL SITE PLAN
E201	ONE-LINE DIAGRAMS, DETAILS, AND SCHEDULES
TOTAL SHEETS: 3	

ELECTRICAL LEGEND

- METERING DEVICE
- POWER PANELBOARD
- TRANSFORMER: APPROX. PHYSICAL SIZE AS SCALED
- CONTROL PANEL - TYPE AS NOTED (SURFACE; RECESSED)
- DENOTES AVAILABLE FAULT CURRENT
- LINETYPE/LINEWEIGHT DENOTING FUTURE WORK
- LINETYPE/LINEWEIGHT DENOTING EXISTING WORK TO REMAIN
- LINETYPE/LINEWEIGHT DENOTING NEW WORK
- LINETYPE/LINEWEIGHT DENOTING DEMO WORK
- LINETYPE/LINEWEIGHT DENOTING BELOW GRADE CONDUIT
- LINETYPE/LINEWEIGHT DENOTING CONTROL WIRING

EQUIPMENT TAG LEGEND

- LUMINAIRES
 - A3(#)
 - 2H-15a
 - LUMINAIRE TYPE (UNDERLINED) (#) DENOTES TYPICAL
 - CIRCUIT AND SWITCH LEG PANEL
- CONTROL SWITCHES
 - a
 - LOWER CASE LETTER DENOTES SWITCH LEG FOR CORRESPONDING LUMINAIRE CONTROL
 - UPPERCASE LETTER OR NUMBER DENOTES SWITCH CONFIGURATION
- EQUIPMENT CONNECTIONS
 - AHU-1
 - 4
 - A-1,3,5
 - EQUIPMENT ID (UNDERLINED)
 - TYPICAL EQUIPMENT
 - CIRCUIT NUMBER(S) PANEL
- RECEPTACLES
 - 48"
 - 2L-1,3
 - LS-20R
 - MOUNTING HEIGHT (SEE NOTE 1) PANEL
 - CIRCUIT NUMBER(S)
 - NEMA CONFIGURATION FOR SPECIAL RECEPTACLES
- TRIANGLE. SEE NOTE 1.

NOTE 1: DIMENSIONS (WHEN GIVEN ARE AFF). 'C' OR TRIANGLE DENOTES 4" ABOVE COUNTER/BACKSPASH OR ADJACENT COUNTER/SINK (COORDINATE WITH ARCHITECTURE). THIS APPLIES TO ALL ELECTRICAL DEVICES.



EIC ENGINEERS, INC.
 ELECTRICAL ENGINEERS
 CORPORATION LICENSE: AEC01105
 6927 OLD SEWARD HWY., STE 200
 ANCHORAGE, AK 99518
 907.349.9712
 WWW.EICEING.COM
 EIC JOB NO. E20-3354

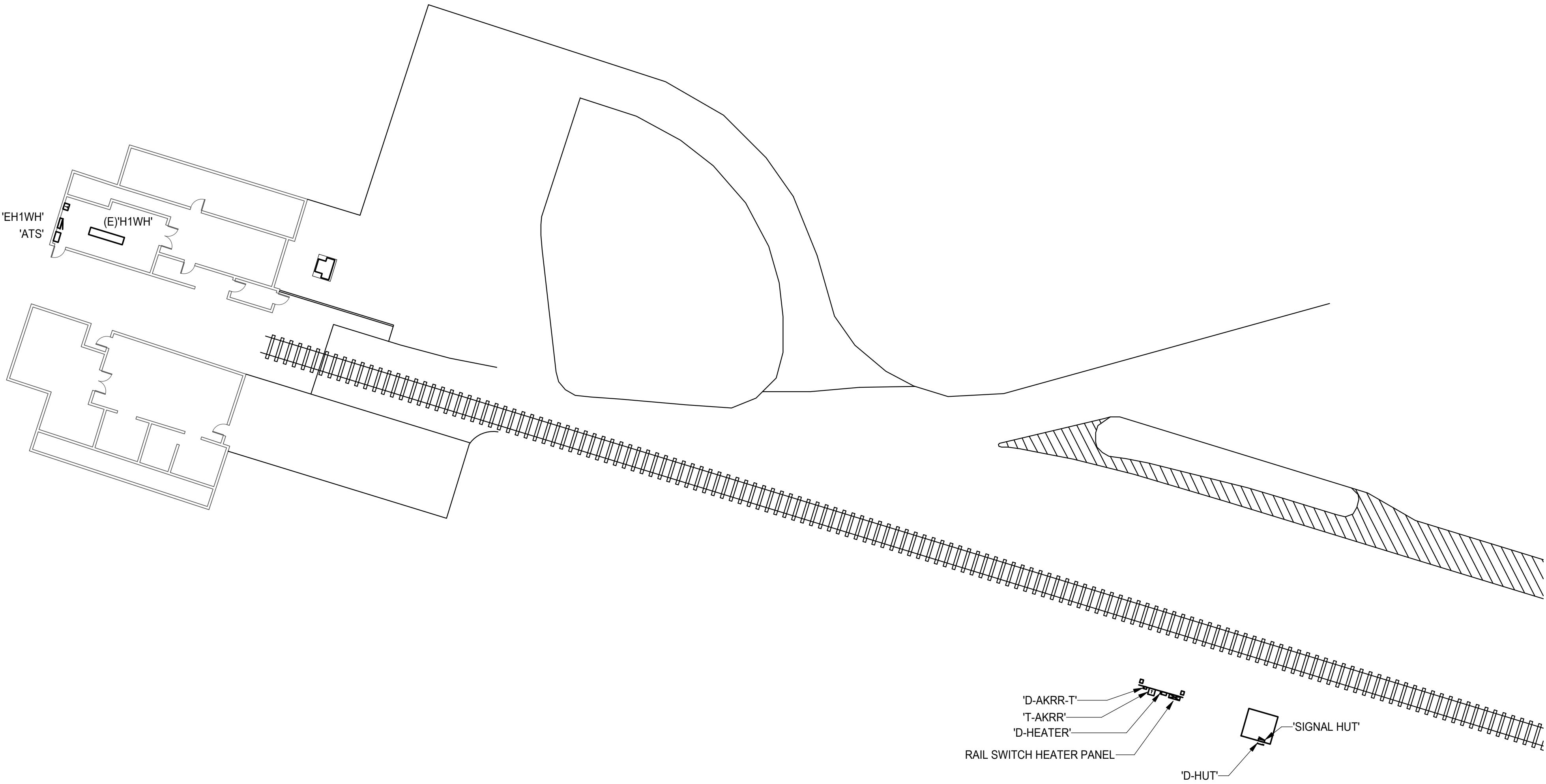
AK RAILROAD - WHITTIER SIGNAL HUT & RAIL HEATER

REVISIONS	
NUM	DESCRIPTION

JOB NO.	E20-3354
DATE	07/17/2020
DRAWN	KMM
REVIEWED	EDC

LEGEND

SHEET NO.
E001



1 ELECTRICAL SITE PLAN
 E101 SCALE: 1" = 20'-0"



EIC ENGINEERS, INC.
 ELECTRICAL ENGINEERS
 CORPORATION LICENSE: AECCT105
 6927 OLD SEWARD HWY., STE 200
 ANCHORAGE, AK 99518
 907.349.9712
 WWW.EICENG.COM
 EIC JOB NO. E20-3354

**AK RAILROAD - WHITTIER
 SIGNAL HUT & RAIL HEATER**

REVISIONS	
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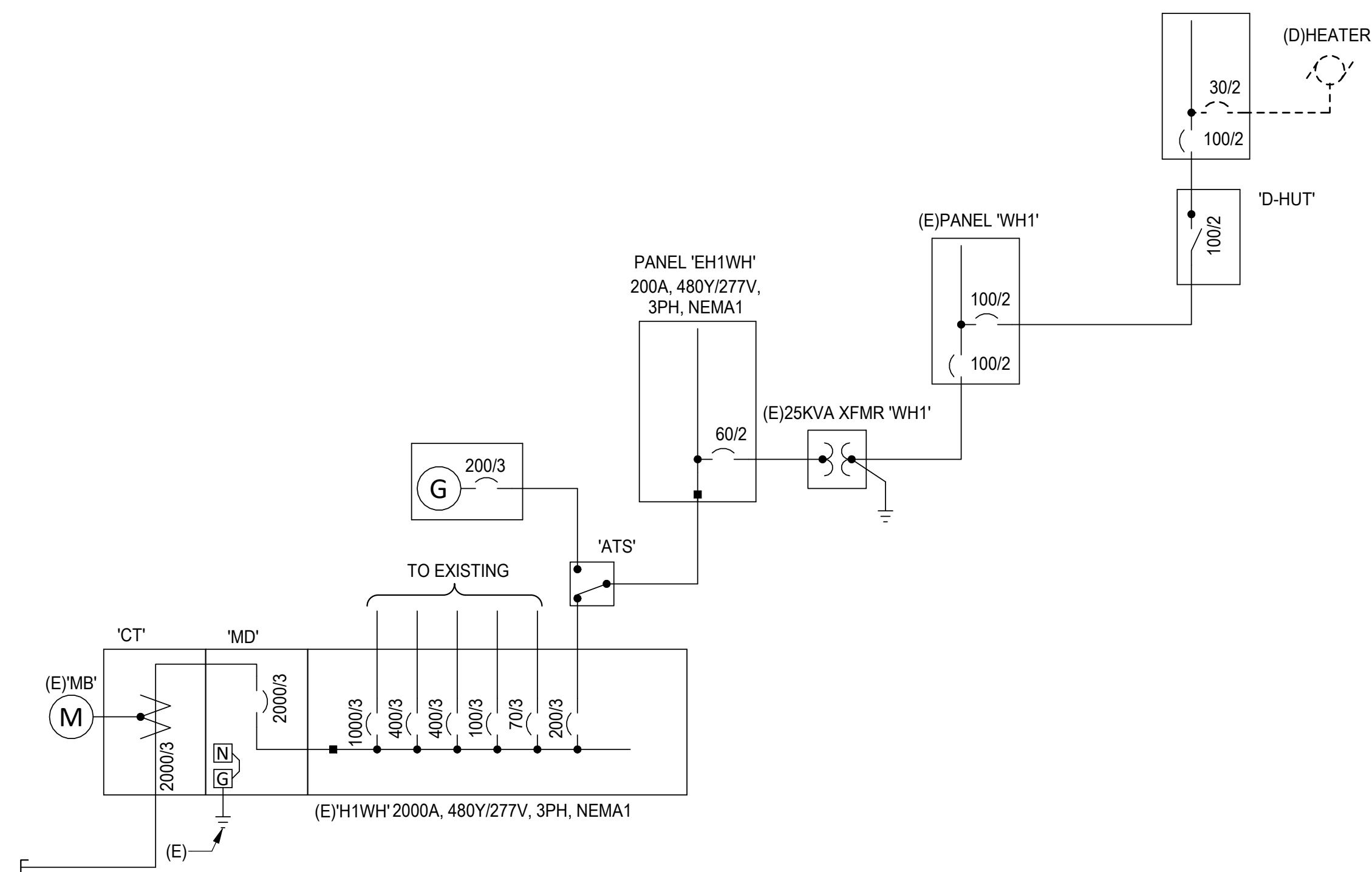


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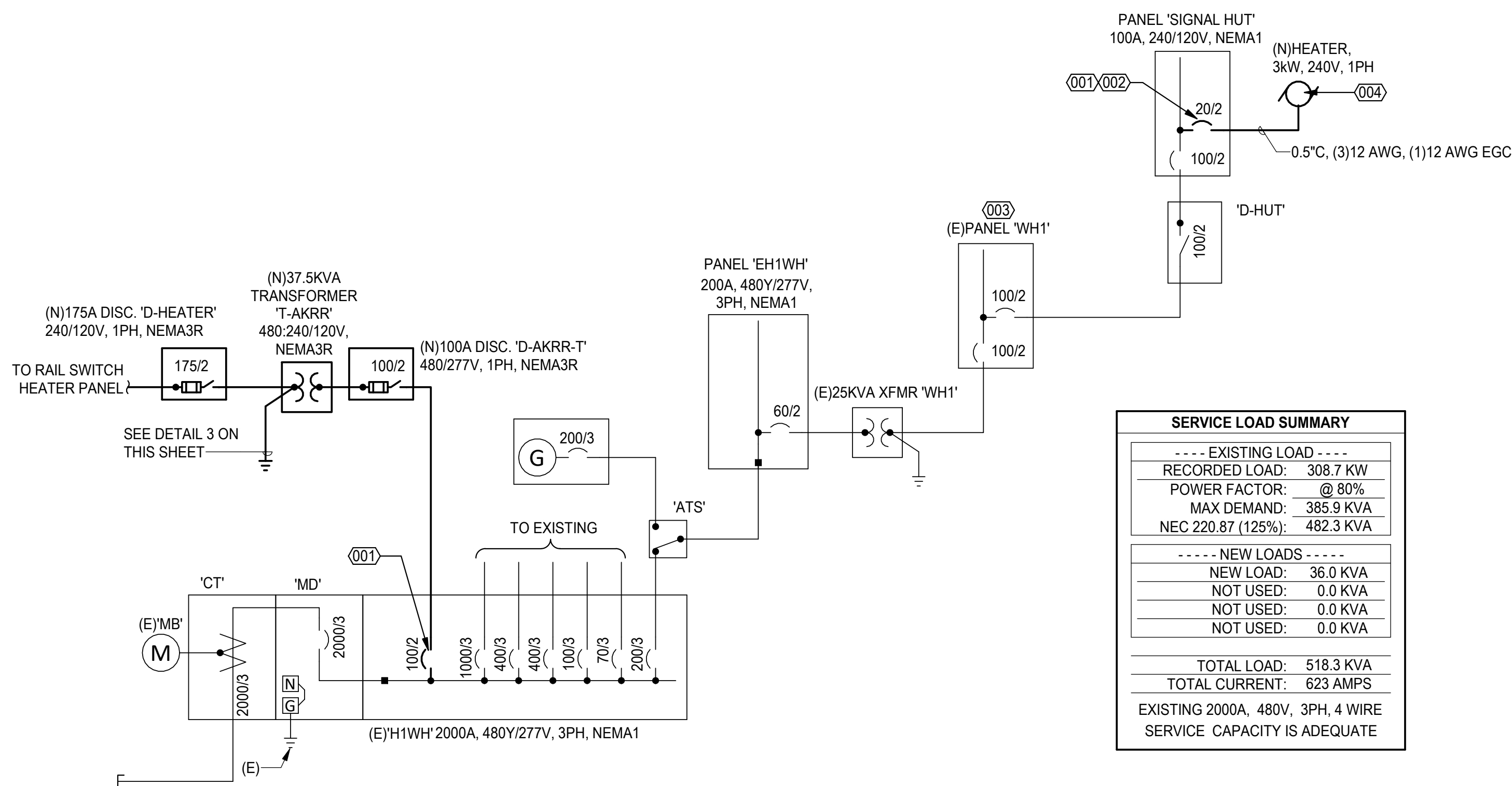
**ELECTRICAL SITE
 PLAN**

SHEET NO.
E101

FEEDER SCHEDULE		
ID	AMPERAGE	FEEDER (MINIMUM) CU UON
D-AKRR-T	100	1.25"C, (2)1 AWG, (1)4 AWG EGC
T-AKRR	100	1"C, (2)2 AWG, (1)6 AWG EGC
D-HEATER	175	2"C, (3)2/0 AWG, (1)6 AWG BJ
RAIL SWITCH HEATER PANEL	175	2"C, (3)2/0 AWG, (1)6 AWG EGC



1 DEMOLITION POWER ONE-LINE DIAGRAM
E201 SCALE: NONE



SERVICE LOAD SUMMARY	
---- EXISTING LOAD ----	
RECORDED LOAD:	308.7 KW
POWER FACTOR:	@ 80%
MAX DEMAND:	385.9 KVA
NEC 220.87 (125%):	482.3 KVA
---- NEW LOADS ----	
NEW LOAD:	36.0 KVA
NOT USED:	0.0 KVA
NOT USED:	0.0 KVA
NOT USED:	0.0 KVA
TOTAL LOAD: 518.3 KVA	
TOTAL CURRENT: 623 AMPS	
EXISTING 2000A, 480V, 3PH, 4 WIRE SERVICE CAPACITY IS ADEQUATE	

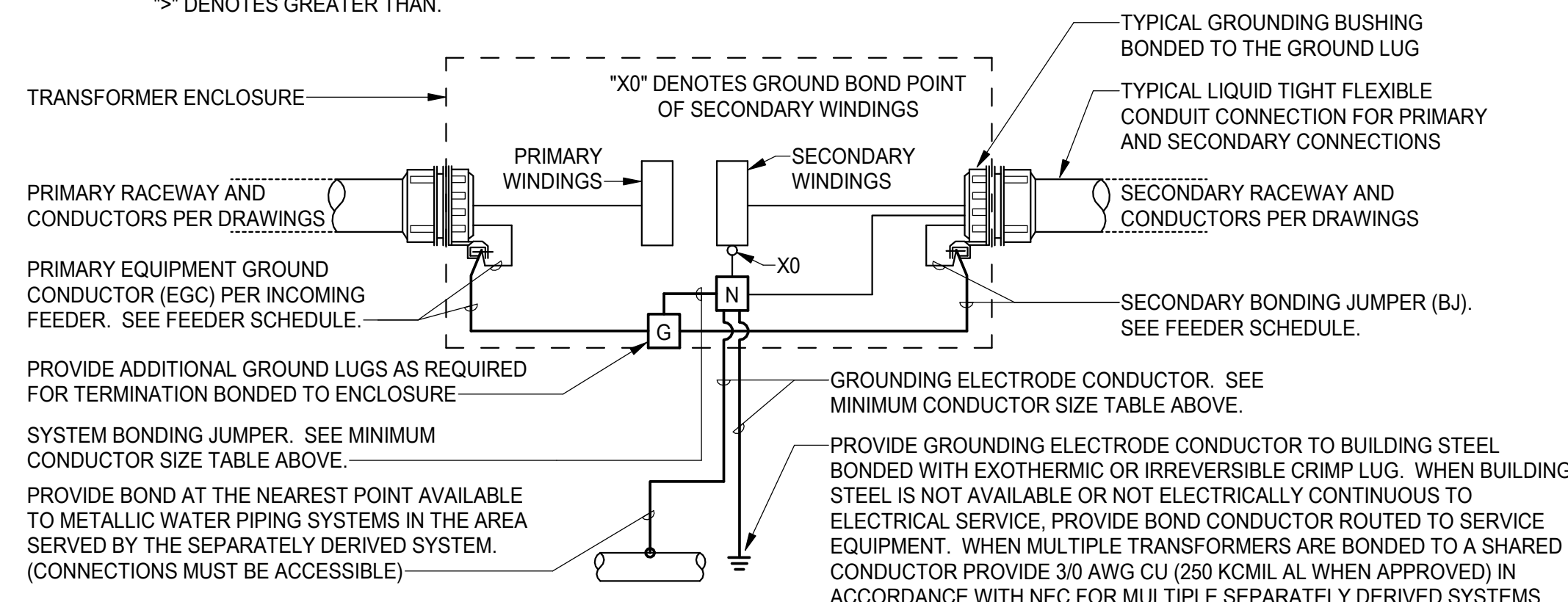
2 PROPOSED POWER ONE-LINE DIAGRAM
E201 SCALE: NONE

EQUIPMENT SCCR SCHEDULE				
ALL EQUIPMENT TO HAVE SCCR EXCEEDING THE AVAILABLE SCA AT THE CALCULATED X/R RATIO. WHERE X/R RATIO IS GREATER THAN THE INDUSTRY STANDARD TEST X/R RATIOS THE APPROPRIATE MULTIPLICATION FACTOR SHALL BE APPLIED TO PROPERLY RATE THE EQUIPMENT. DOWNSTREAM EQUIPMENT AND ASSOCIATED CIRCUIT BREAKER RATINGS MAY BE SATISFIED BY USING FULLY RATED EQUIPMENT OR MANUFACTURER TESTED COMBINATIONS FOR BRANCH CIRCUITS RATED 100 AMPS OR LESS PER NEC 240.86(B) TO SERIES RATE FOR THE AVAILABLE SCA AT EQUIPMENT. ALL SERIES RATED EQUIPMENT TO BE CLEARLY LABELED & IDENTIFIED PER NEC 110.22(C). SERIES RATED EQUIPMENT MOTOR LOADS CANNOT EXCEED 1% OF AIC RATING PER NEC 240.86(C).				
CONTRACTOR TO VERIFY ACTUAL EQUIPMENT TO BE PROVIDED WITH SERVING UTILITY PRIOR TO EQUIPMENT PROCUREMENT. ANY DECREASE OF TRANSFORMER %Z, CONDUCTOR LENGTHS, OR INCREASE IN TRANSFORMER KVA OR CABLE SIZES TO BE REPORTED TO CONTRACT OFFICER FOR RECALCULATION OF AVAILBLE FAULT CURRENT PRIOR TO PROCUREMENT OF EQUIPMENT. PROVIDE WARNING PLACARD INSTALLED ON SERVICE DISCONNECT PER NEC 110.24 DENOTING ALL PROJECT PARAMETERS REQUIRED BY NEC.				
ASSUMED UTILITY SYSTEM CONFIGURATION (BASIS FOR CALCULATION)				
SERVICE TRANSFORMER				
KVA	%Z	X/R	SCA (PRI.)	SCA (SEC.)
500	1.50	3.50	1,000,000	40,033
SERVICE AMPS - FOR FAULT CURRENT CALCULATION ONLY -				
AMPS	SERVICE LATERAL			FT
2000	6EA: (4)400 KCMIL			53
EQUIPMENT ID		SCAmps	X/R	
H1WH		37,802	3.18	
D-AKRR-T		5,421	0.40	
D-HEATER		4,698	0.92	
SIGNAL HUT		2,921	0.69	

REQUIRED MINIMUM CONDUCTOR SIZE COPPER CONDUCTORS	
XFMR SECONDARY	JUMPER OR ELECTRODE
2 AWG OR SMALLER	8 AWG
1 AWG - 1/0 AWG	6 AWG
2/0 AWG - 3/0 AWG	4 AWG
> 3/0 AWG - 350 KCMIL	2 AWG
> 350 KCMIL - 600 KCMIL	1/0 AWG
> 600 KCMIL - 1100 KCMIL	2/0 AWG
> 1100 KCMIL	12.5% * XFMR SECONDARY

REQUIRED MINIMUM CONDUCTOR SIZE ALUMINUM OR COPPER-CLAD CONDUCTORS	
XFMR SECONDARY	JUMPER OR ELECTRODE
1/0 AWG OR SMALLER	6 AWG
2/0 AWG - 3/0 AWG	4 AWG
> 3/0 AWG - 250 KCMIL	2 AWG
> 250 KCMIL - 500 KCMIL	1/0 AWG
> 500 KCMIL - 900 KCMIL	3/0 AWG
> 900 KCMIL - 1750 KCMIL	4/0 AWG
> 1750 KCMIL	12.5% * XFMR SECONDARY

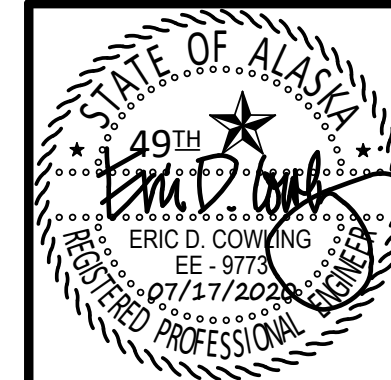
XFMR SECONDARY DENOTES THE AREA OF THE LARGEST UNGROUNDED SECONDARY CONDUCTOR OR EQUIVALENT AREA FOR PARALLEL SECONDARY CONDUCTORS.
-> DENOTES GREATER THAN.



3 TYPICAL TRANSFORMER GROUNDING ONE-LINE DIAGRAM
E201 SCALE: NONE

REFERENCED SHEET NOTES

REF	NOTE
001	CONTRACTOR TO PROVIDE NEW CIRCUIT BREAKER.
002	CONTRACTOR TO PROVIDE BREAKER WITH OEM LOCK OFF DEVICE.
003	PANEL 'WH1' USED EXCLUSIVELY FOR AKRR.
004	HEATER IN SIGNAL HUT TO BE REPLACED IN KIND, NO LOAD CHANGE.



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**AK RAILROAD - WHITTIER
SIGNAL HUT & RAIL HEATER**

REVISIONS	
NUM	DESCRIPTION

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ONE-LINE
DIAGRAMS, DETAILS,
AND SCHEDULES

SHEET NO.
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