

Date: October 4, 2018

Project: Ketchikan Shipyard Medium Voltage
Loop

Solicitation No.: 19014

Addendum No. One

TO ALL PLANHOLDERS:

The enclosed addendum amends the bid documents for the above referenced Project.

Acknowledgment of this addendum is required on the Proposal Form. Failure to do so may subject the bidder to disqualification.

Sincerely,



Jake Tibbe

Contracting Officer

ADDENDUM TO CONTRACT DOCUMENTS	Page Number 1	No. of Pages 5
Addendum No. ONE	Date Addendum Issued: October 4, 2018	
Issuing Office Jake Tibbe Alaska Industrial Development & Export Authority 813 W Northern Lights Blvd Anchorage, AK 99503 Phone: (907) 771-3990 Fax: (907) 771-3044	Previous Addenda Issued N/A	
Project: Ketchikan Shipyard Medium Voltage Loop Solicitation No.: 19014	Date and Hour Quotes Due: October 19, 2018 at 2:00 p.m., prevailing Anchorage, Alaska time.	

NOTICE TO BIDDERS:

Bidders must acknowledge receipt of this addendum prior to the hour and date set for the bid due date by one of the following methods:

- (a) By acknowledging receipt of this addendum on the proposal form submitted.
- (b) By email or telefacsimile which includes a reference to the project and addendum number.

The bid documents require acknowledgment individually of all addenda to the drawings and/or specifications. This is a mandatory requirement and any bid received without acknowledgment of receipt of addenda may be classified as not being a responsive bid. If, by virtue of this addendum it is desired to modify a bid already submitted, such modification may be made by email or telefacsimile provided such an email or telefacsimile makes reference to this addendum and is received prior to the opening hour and date specified above.

The Bid documents for the above project are amended as follows (All other terms and conditions remain unchanged):

GENERAL – QUESTIONS & ANSWERS

- 1) **Q:** Who will get permits?
A: AIDEA will obtain the City building permits. City covers FP review, so no AK State Fire marshal permit required.
- 2) **Q:** Electrical Specifications - Can NETA substitute for NICET certification for Cable inspections
A: These requirements have been reduced. See Question 40 and 41.
- 3) **Q:** Can more time be added to Bid date as equipment quotes delayed?
A: Yes, a Notice to Bidders was issued October 1st that modified the bid opening date.
- 4) **Q:** 5/E5.0 Can plastic covered steel bollards be used?
A: Plastic covered steel bollard are an acceptable substitution to painted steel bollard
- 5) **Q:** Based on site visit is EMH7 existing?
A: No. See attached revised drawings.
- 6) **Q:** Confirm that note #10 on sheet E0.0 applies to both low and medium voltage conduit.
A: Confirmed.
- 7) **Q:** Are journeyman linemen exempt from the training requirements of 26 05 13 1.6 A?
A: No.
- 8) **Q:** SOW 01 11 13 is back up power required to be on-site if Contractor can perform work to always provide required power to ships and other facility loads at all times?
A: No
- 9) **Q:** 26 05 13 Specification vs Sheet E3.0 - Is 100% or 133% insulation required on 35 kV cables?
A: 100%.

- 10) **Q:** Can 133% insulation 15 kV cable be substituted for the specified 100% insulation cable?
A: 133% insulation is acceptable only where it can be installed without violating NEC maximum allowed conduit fill.
- 11) **Q:** Can #4/0 AWG cable be substituted for the specified #3/0 cable?
A: #4/0 is acceptable only where it can be installed without violating NEC maximum allowed conduit fill.
- 12) **Q:** Is note #3 on sheet E0.0 is applicable to all electrical equipment and materials installed under this contract?
A: It is applicable to all electrical equipment and materials subject to NEC requirements, which includes everything owned by KSY. Refer to ownership demarcation line shown on medium voltage one-line diagrams.
- 13) **Q:** Confirm that note #10 on sheet E0.0 applies to both low and medium voltage conduit.
A: Confirmed.
- 14) **Q:** E3.0 Are switches S-3 and S-4 three-way or four-way?
A: Three-way, minimum. Four-way is also acceptable.
- 15) **Q:** What is the minimum short circuit rating for SB-1?
A: 50 kA, minimum.
- 16) **Q:** Where is the existing main switchboard located?
A: The northwest corner of the existing main switchgear building shown on E2.2.
- 17) **Q:** Where is Rack B fed from?
A: The bussed gutter at Rack A.
- 18) **Q:** Can irreversible crimped connections be substituted for exothermically welded connections in all locations?
A: Yes.
- 19) **Q:** Who is responsible for utility locates?
A: The contractor.
- 20) **Q:** Who proofs conduits and if they fail, what is the plan?
A: The Contractor. Refer to specification section 260500-3.4(B).
- 21) **Q:** E3.0 34.5 is on top of pole. Existing pole will need to be modified for new arrangement. Is this contractor scope or KPU. Current is alley arm and would require tree removal.
A: For bidding purposes Contractor shall assume they will modify pole as required to match detail provided. Assume trees shall be removed by others. Contractor coordination with KPU as required. Assume No impact to 15 kV. KPU has been contacted about possibly a different modification which will be resolved after the bid if required. (Photo attached)
- 22) **Q:** Dewatering in vaults is required?

A: Yes, the Contractor is required to dewater. Typically only rain water and free of oil and debris. Oil sobs and then disposal to storm water should be acceptable.

23) **Q:** Can you provide photos of the vaults?

A: They are attached, description is as follows:

- Photos 3884 and 3885 are the electrical one directly east of the paint/blast booth East of P7.
- Photos 3886 & 3887 (Handhole) electrical on the north east corner of machine shop feed to P6
- Photo 3889 EHM 2, electrical in the roadway NE corner of machine shop
- Photo 3890 EMH 5
- Photo 3891 & 3892 Comm's vault adjacent to EMH 5
- Photo 3894 Conn's vault adjacent to "E" vault at the NE corner against Tongass ave.
- Photos 3896 & 3896 "E" vault at the NE corner against Tongass ave. (Note, this is the vault with power feeder to KPU Maintenance Building)

24) **Q:** Does this project require builders risk insurance?

A: No, that requirement has been removed, please see below.

25) **Q:** Can you provide the pre-bid sign in sheet?

A: It is attached.

26) **Q:** Can you state the DBE requirements?

A: None.

27) **Q:** What percentage General Contractor participation is required?

A: 30%

28) **Q:** Is there a cutoff date for questions from the contractors?

A: Yes; 72 hours before the bid due date.

29) **Q:** Is an independent testing agency required?

A: No; provided that documentation for journeymen lineman with 3 to 5 years of documented experience in Medium voltage (MV) cable and equipment installation and testing would be acceptable. This is also stated in section 00 10 00, Information to Bidders, Bidders Qualifications, A. Minimum Qualifications, 2. Cable testing, a).

30) **Q:** Is there a footage of replacement conduit so all our pricing is the same?

A: Refer to the drawings for replacement lengths.

31) **Q:** Is it the intent that if the existing conduits cannot be proofed, that there would be a change order to the contract?

A: Yes.

32) **Q:** Where did the as-built for the existing sub-grade conduits originate?

A: From previous project plans at this same site

33) **Q:** Is the 811 locate contractor available to locate on AIDEA property?

A: The 811 contractor has not been locating in the shipyard.

34) **Q:** Is there any safety coordination required?

A: A 1-hour safety briefing is required on site for all contractor personnel; follow all Vigor Personal

Protective Equipment requirements. See Section 01 11 13 Summary of Work.

- 35) **Q:** Where is disruption of power addressed?
A: Section 01 11 13, Part 1, 1.07 A, B & C.
- 36) **Q:** Is there a coordination study available?
A: Coffman to coordinate with KPU to answer this question (see 20 above).
- 37) **Q:** Is there a lay down area in the shipyard?
A: Yes; at the NE corner of the site near the new subsection site.
- 38) **Q:** Is the site secure?
A: The perimeter of the shipyards is fenced, and we have a roving security patrol. The contractor is responsible for his own security for materials and equipment until the project is accepted by the owner.
- 39) **Q:** What are the allowed contractor working hours and days?
A: 24/7 and all days of the week.

BIDDING AND CONTRACT REQUIREMENTS

- 40) Reference 00 10 00 – 1. Cable Technician:
Delete a and b in its entirety:
“a) Three to five years experience in cable testing and be a journeyman lineman
- 41) Reference 00 10 00 – 2. Cable Testing:
Delete a-g and 1) in its entirety and replace with the following:
“a) Three to five years experience in cable testing and be a journeyman lineman
- 42) **Addendum 1, Exhibit 1** – A close-up of sheet E2.0 Switchyard that shows the Ketchikan Public Utility 12.47kV service vault. The 4’ Personnel Gate shown on the east side of the switchyard shall be installed on the west side of the switchyard per the note.
- 43) Add the following to Section 00 80 00 Supplementary conditions:
- SC-5.4.2d – Builder’s Risk Insurance:**
At General Condition Article 5.4.2d, delete paragraph “d” in its entirety.

SC-7.2 PERMITS, LICENSES, AND TAXES

In paragraph 7.2.1, delete this paragraph and replace with the following paragraph:

- “7.2.1 The terms, conditions and stipulations in permits obtained either by the AUTHORITY or by the CONTRACTOR are made part of this Contract.
- a. Obtained Permits:
 1. The Authority will initiate and pay the application fees for permits from the Authority Having Jurisdiction
 - b. The Contractor shall procure all other permits and licenses, and amend or otherwise modify

existing permits, as required to complete the project, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the Work.

- c. As a condition of performance of this Contract, the CONTRACTOR shall pay all federal, state and local taxes incurred by the CONTRACTOR, in the performance of this Contract. Proof of payment of these taxes is a condition precedent to final payment by the AUTHORITY under this Contract.”

PLANS/DRAWINGS

- 44) Sheet E0.0: Remove and replace with attached Sheet E0.0
- 45) Sheet E2.2: Remove and replace with attached Sheet E2.2
- 46) Sheet E2.3: Remove and replace with attached Sheet E2.3
- 47) Sheet E3.0: Remove and replace with attached Sheet E3.0
- 48) Sheet E3.0D: Remove and replace with attached Sheet E3.0D
- 49) Sheet E3.1: Remove and replace with attached Sheet E3.1
- 50) Sheet E3.1D: Remove and replace with attached Sheet E3.1D
- 51) Sheet E3.2: Remove and replace with attached Sheet E3.2
- 52) Sheet E3.2D: Remove and replace with attached Sheet E3.2D
- 53) Sheet E3.3: Remove and replace with attached Sheet E3.3
- 54) Sheet E3.3: Remove and replace with attached Sheet E3.3D

END OF ADDENDUM

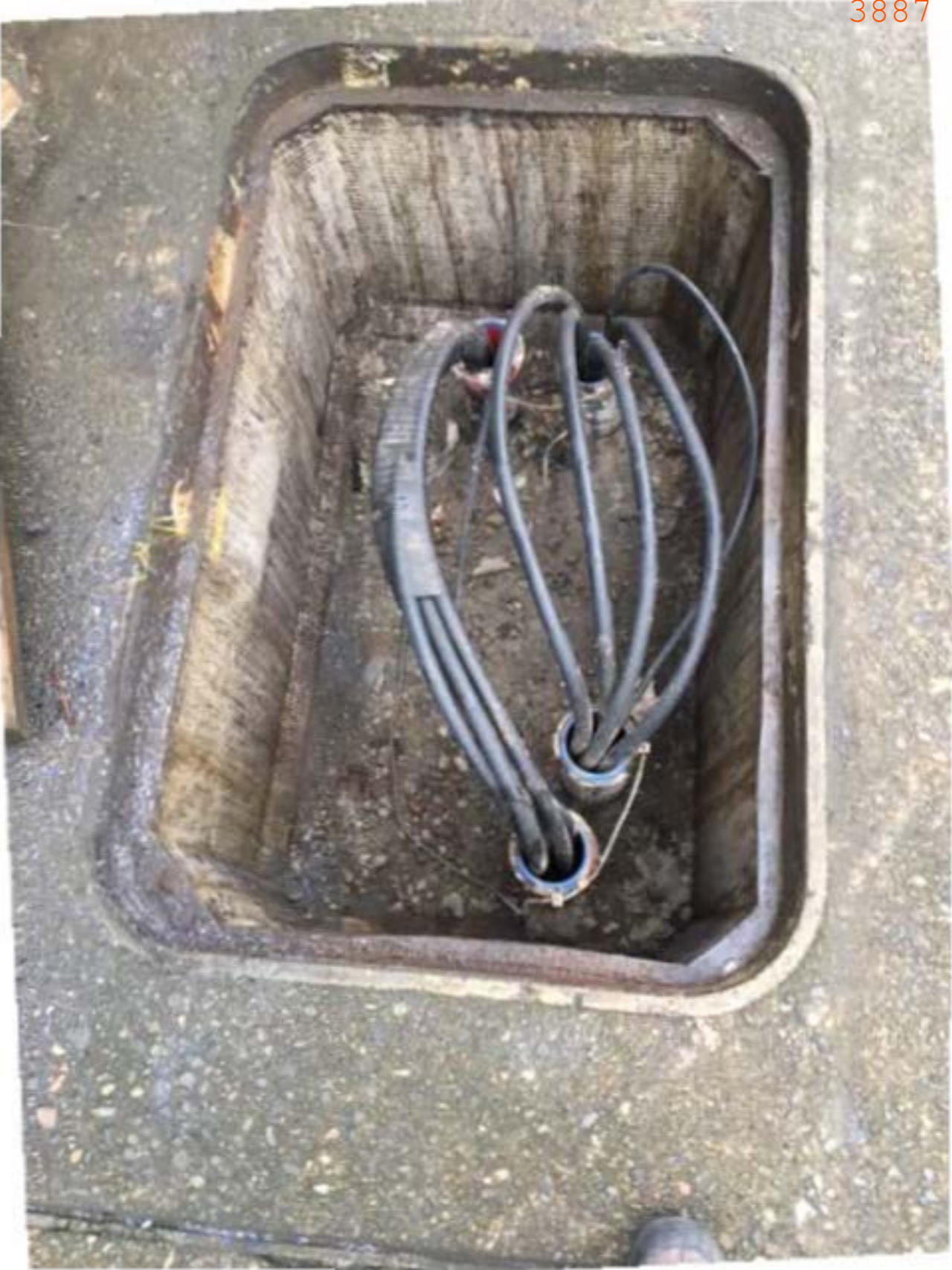
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3886





3889



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3893





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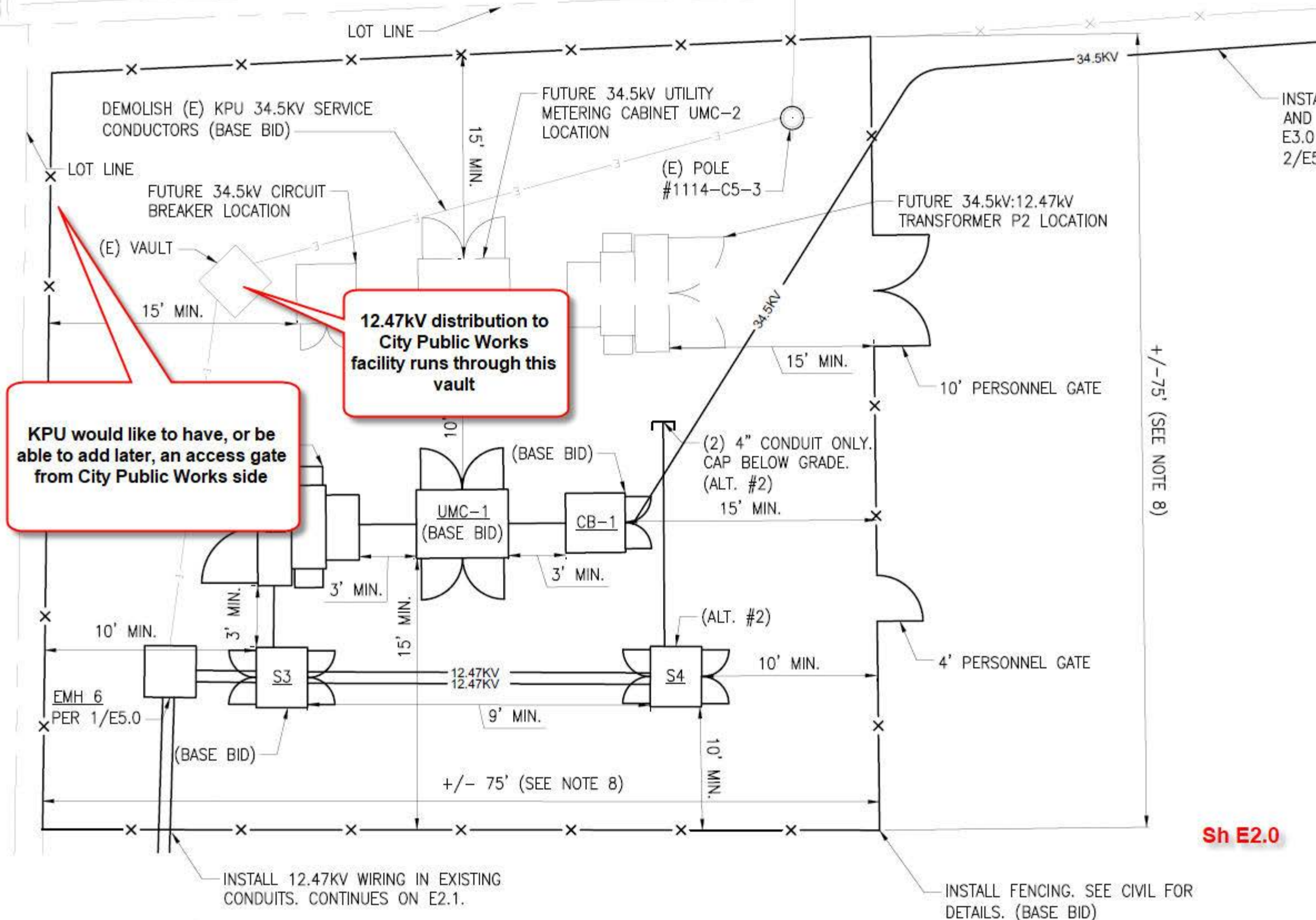
3896



Question 23

Addendum One





KPU would like to have, or be able to add later, an access gate from City Public Works side

12.47kV distribution to City Public Works facility runs through this vault

Sh E2.0

INSTALL 12.47kV WIRING IN EXISTING CONDUITS. CONTINUES ON E2.1.

INSTALL FENCING. SEE CIVIL FOR DETAILS. (BASE BID)

+/- 75' (SEE NOTE 8)

INSTA AND E3.0 2/E5

10' PERSONNEL GATE

4' PERSONNEL GATE

(2) 4" CONDUIT ONLY. CAP BELOW GRADE. (ALT. #2) 15' MIN.

DEMOLISH (E) KPU 34.5kV SERVICE CONDUCTORS (BASE BID)

FUTURE 34.5kV UTILITY METERING CABINET UMC-2 LOCATION

(E) POLE #1114-C5-3

FUTURE 34.5kV:12.47kV TRANSFORMER P2 LOCATION

FUTURE 34.5kV CIRCUIT BREAKER LOCATION

LOT LINE

(E) VAULT

LOT LINE

15' MIN.

15' MIN.

15' MIN.

(BASE BID)

CB-1

UMC-1 (BASE BID)

(ALT. #2)

S4

S3

EMH 6 PER 1/E5.0

(BASE BID)

+/- 75' (SEE NOTE 8)

9' MIN.

15' MIN.

3' MIN.

3' MIN.

10' MIN.

10' MIN.

10' MIN.

3' MIN.

10'

ELECTRICAL ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPERE	MAX	MAXIMUM
AC	ALTERNATING CURRENT	MCB	MAIN CIRCUIT BREAKER
AFF	ABOVE FINISHED FLOOR	MDP	MAIN DISTRIBUTION PANEL
AFG	ABOVE FINISHED GRADE	MECH	MECHANICAL
AHU	AIR HANDLING UNIT	MFR	MANUFACTURER
APS	AUXILIARY POWER SUPPLY	MH	MANHOLE
BATT	BATTERY	MIN	MINIMUM
BAS	BUILDING AUTOMATION SYSTEM	MLO	MAIN LUGS ONLY
BLDG	BUILDING	MM	MULTI MODE
BRKR	BREAKER	MSSB	MAIN SERVICE SWITCHBOARD
C	CABLE, CONDUIT, COIL	MTD	MOUNTED
CAB	CABINET	MTG	MOUNTING
CAT	CATEGORY	MTR	MOTOR
CB	CIRCUIT BREAKER	MTU	MAIN TERMINAL UNIT
CKT	CIRCUIT	MW	MICROWAVE
CLG	CEILING	N	NORTH
CO	CONDUIT ONLY	NC	NORMALLY CLOSED
COMM	COMMUNICATIONS	NIC	NOT IN CONTRACT
CR	CONTROL RELAY	NL	NIGHT LIGHT
CTL	CONTROL	NRTL	NATIONALLY RECOGNIZED
CU	CONDENSING UNIT		TESTING LAB
D	DEEP	NTS	NOT TO SCALE
DDC	DIRECT DIGITAL CONTROLS	OPS	OPERATIONS
DISC	DISCONNECT	PC	PHOTOCELL
DWG	DRAWING	PH	PHASE
E	EAST	PKG	PACKAGE
EA	EACH	PNL	PANEL, PANELBOARD
EF	EXHAUST FAN	PVC	POLYVINYL CHLORIDE CONDUIT
ELEC	ELECTRICAL	RCPT	RECEPTACLE
EMERG EQUIP (E), EXIST	EMERGENCY EQUIPMENT	RM	ROOM
EXT	EXISTING, EXTERIOR	S	SOUTH
FA	FIRE ALARM	SECT	SECTION
FAA	FIRE ALARM ANNUNCIATOR	SHLD	SHIELDED
FACP	FIRE ALARM CONTROL PANEL	SPEC	SPECIFICATIONS
FDR	FEEDER	SPS	SHORE POWER STATION
FIXT	FIXTURE	STBY	STANDBY
FLEX	FLEXIBLE	STD	STANDARD
FM	FACTORY MUTUAL	STL	STEEL
FVNR	FULL VOLTAGE NON REVERSING	SW	SWITCH
FT	FEET, FOOT	SYS	SYSTEM
FUT	FUTURE	TDU	TUBE DISTRIBUTION UNIT
GALV	GALVANIZED	TEMP	TEMPORARY, TEMPERATURE
GFI, G	GROUND FAULT INTERRUPTER	TTB	TELEPHONE TERMINAL BACK BOARD
GND	GROUND	TWPR	TWISTED PAIR
GRS	GALVANIZED RIGID STEEL	TYP	TYPICAL
H	HIGH DIMENSION	UGC	UNDERGROUND COMMUNICATIONS
HDPE	HIGH DENSITY POLYETHYLENE	UGE	UNDERGROUND ELECTRICAL
HH	HANDHOLE	UH	UNIT HEATER
HP	HORSEPOWER	V	VOLT
HZ	HERTZ - CYCLES PER SEC	VFI	VACUUM FAULT INTERRUPTER
IC	INTERRUPTING CAPACITY	W	WATT, WIDE, WEST
ID	INSIDE DIMENSION	WHM	WATT HOUR METER
IN	INCH	WP	WEATHERPROOF-WHILE-IN-USE
JB, J-BOX	JUNCTION BOX	XFMR	TRANSFORMER
kmil	THOUSAND CIRCULAR MILS	Z	IMPEDANCE
KVA	KILOVOLT AMPERES		
KW	KILOWATT		
KWH	KILOWATT HOUR		
KPU	KETCHIKAN PUBLIC UTILITIES		
LFMC	LIQUIDTIGHT FLEXIBLE METAL CONDUIT		

SYMBOLS LEGEND:

	DISCONNECT SWITCH
	WYE
	DELTA
	CURRENT TRANSFORMER
	POTENTIAL TRANSFORMER
	AUTOMATIC TRANSFER SWITCH
	LIGHTNING ARRESTOR
	CIRCUIT BREAKER
	SEPARABLE CONNECTOR
	FUSE WITH RATING
	FUSED CONTACT SWITCH
	FUSED DISCONNECT SWITCH

LINE TYPES:

	E	EXISTING UNDERGROUND ELECTRICAL
	480V	UNDERGROUND ELECTRICAL - 480V
	12.47kV	UNDERGROUND ELECTRICAL - 12470V
	34.5kV	UNDERGROUND ELECTRICAL - 34500V
	OHE	OVERHEAD ELECTRICAL
	SD	STORM DRAIN
	S	SEWER
	W	WATER
	COM	UNDERGROUND COMMUNICATIONS
	A	AIR
	X	FENCE
	X	EXISTING FENCE

GENERAL NOTES:

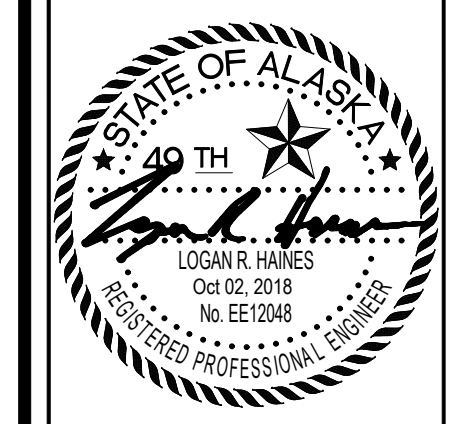
- THE ELECTRICAL INSTALLATION SHALL COMPLY WITH THE 2017 NATIONAL ELECTRIC CODE AND 2017 NATIONAL ELECTRICAL SAFETY CODE AS AMENDED AND ADOPTED BY THE CITY OF KETCHIKAN.
- THE ELECTRICAL INSTALLATION SHALL COMPLY NECA STANDARDS OF INSTALLATION.
- ALL ELECTRICAL EQUIPMENT AND MATERIALS SHALL BE LISTED AND LABELED FOR THEIR INTENDED APPLICATION BY A NATIONALLY RECOGNIZED TESTING LABORATORY ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND STRUCTURES AFFECTING THE WORK. NOTIFY THE PROJECT MANAGER IN WRITING OF ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THOSE SHOWN IN THE CONTRACT DOCUMENTS WHICH ADVERSELY IMPACT THE WORK.
- EXISTING EQUIPMENT INFORMATION SHOWN ON THESE DRAWINGS SHOULD BE FIELD VERIFIED. CONFIRM NEW EQUIPMENT LOCATIONS WITH OWNER AND ADJUST AS REQUIRED.
- CONTRACTOR SHALL MAINTAIN A RED-LINE SET OF CONSTRUCTION DOCUMENTS DURING CONSTRUCTION. RED-LINE DRAWINGS SHALL BE SUBMITTED TO THE OWNER UPON PROJECT COMPLETION.
- ALL CONDUCTORS SHALL BE COPPER.
- ALL LOW VOLTAGE (600V AND BELOW) WIRING SHALL BE TYPE XHHW-2, UNLESS NOTED OTHERWISE.
- ALL MEDIUM VOLTAGE (ABOVE 600V) WIRING SHALL BE TYPE MV-105, UNLESS NOTED OTHERWISE. PULL CABLES INTO EXISTING OR PRE-INSTALLED DUCTS, UNLESS NOTED OTHERWISE. WHERE MULTIPLE DUCTS EXIST, USE BOTTOM DUCTS.
- THE CONTRACTOR SHALL PROVIDE AND INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS OR CABLING.
- OUTAGES OF ELECTRICAL, TELECOMMUNICATIONS, OR OTHER SYSTEMS SHALL BE COORDINATED WITH PROJECT MANAGER IN ACCORDANCE WITH DIVISION 1 SPECIFICATIONS.
- ANY PENETRATION OF THE BUILDING VAPOR BARRIER SYSTEM SHALL BE APPROPRIATELY SEALED TO RETAIN THE INTEGRITY OF THE WALL SYSTEM.
- CUT AND PATCH EXISTING BUILDING SURFACES OR PAVED SURFACES AS REQUIRED TO INSTALL NEW WIRING. ANY PATCHES SHALL BE FINISHED TO MATCH THE EXISTING ADJACENT SURFACES.
- WHERE CONDUITS ENTER MANHOLE, ENCLOSURE OR PAD WITH ROUGH EDGES, PROVIDE BELLED ENDS FOR PVC CONDUIT. WHERE INSTALLATION OF BELLED ENDS IS NOT PRACTICAL, FILE SMOOTH ALL ROUGH EDGES. GRIND SMOOTH ROUGH EDGES OF STEEL CONDUIT AND PROVIDE GROUNDED INSULATING BUSHINGS.
- ALL NEW PAD MOUNTED EQUIPMENT SHALL BE PROPERLY SECURED AND LOCKED.
- DETERMINE AND RECORD THE ROTATION OF ALL THREE-PHASE SERVICES PRIOR TO PERFORMING ANY WORK. PRIOR TO RE-ENERGIZING SERVICE, CONFIRM THAT ROTATION WAS NOT CHANGED.
- THE BASIS OF DESIGN FOR THE PAD MOUNTED EQUIPMENT FOUNDATIONS ARE PRE-CAST EQUIPMENT PADMOUNTS WITH RISERS. SEE S5.2 FOR DETAILS.

MAJOR ELECTRICAL EQUIPMENT - BASIS OF DESIGN

TAG	DESCRIPTION	BID ITEM	LOCATION	PLAN DWG #	ONE-LINE DWG #	RATINGS	MANUFACTURER / SERIES OR APPROVED EQUAL	NOTES
CB-1	PAD MOUNT CIRCUIT BREAKER	BASE BID	ELECTRICAL EQUIPMENT YARD	E2.0	E3.0	35kV, 600A, 3 PHASE	COOPER POWER SYSTEMS / KP S E-VF5-37	DEAD FRONT, STAINLESS STEEL CONSTRUCTION, VACUUM FAULT INTERRUPTER, 3-PHASE GROUP OPERATED, ELECTRONIC TRIP CONTROL. THIS EQUIPMENT IS SUBJECT TO REVIEW AND APPROVAL BY KPU.
P1	PAD MOUNT TRANSFORMER	BASE BID	ELECTRICAL EQUIPMENT YARD	E2.0	E3.0	34.5kV:12.47Y/7.2kV, 5000 kVA	COOPER POWER SYSTEMS / VFI	DEAD FRONT, SECONDARY VFI, KNAN, ANSI C57.12.29
P5	PAD MOUNT TRANSFORMER	BASE BID	PIER 1	E2.4	E3.0	12.47kV:480Y/277V, 2500 kVA	COOPER POWER SYSTEMS / VFI	DEAD FRONT, LOOP FEED, PRIMARY VFI, KNAN, ANSI C57.12.29
P6	PAD MOUNT TRANSFORMER	BASE BID	MACHINE SHOP	E2.4	E3.0	12.47kV:480Y/277V, 500 kVA	COOPER POWER SYSTEMS / COMPARTMENTAL	DEAD FRONT, LOOP FEED, CURRENT LIMITING & BAYONET PRIMARY FUSES, KNAN, ANSI C57.12.29
P7	PAD MOUNT TRANSFORMER	ALTERNATE #2	AIR COMPRESSOR BLDG	E2.3	E3.2	12.47kV:480Y/277V, 750 kVA	COOPER POWER SYSTEMS / COMPARTMENTAL	DEAD FRONT, LOOP FEED, CURRENT LIMITING & BAYONET PRIMARY FUSES, KNAN, ANSI C57.12.29
P8	PAD MOUNT TRANSFORMER	ALTERNATE #1	MACHINE SHOP	E2.3	E3.1	12.47kV:480Y/277V, 500 kVA	COOPER POWER SYSTEMS / COMPARTMENTAL	DEAD FRONT, LOOP FEED, CURRENT LIMITING & BAYONET PRIMARY FUSES, KNAN, ANSI C57.12.29
P9	PAD MOUNT TRANSFORMER	ALTERNATE #3	OPERATIONS BLDG	E2.2	E3.3	12.47kV:480Y/277V, 150 kVA	COOPER POWER SYSTEMS / COMPARTMENTAL	DEAD FRONT, LOOP FEED, CURRENT LIMITING & BAYONET PRIMARY FUSES, KNAN, ANSI C57.12.29
P10	PAD MOUNT TRANSFORMER	ALTERNATE #3	BERTH 1	E2.2	E3.3	12.47kV:480Y/277V, 1500 kVA	COOPER POWER SYSTEMS / VFI	DEAD FRONT, LOOP FEED, PRIMARY VFI, KNAN, ANSI C57.12.29
S2	PAD MOUNT SWITCH	ALTERNATE #2	OPERATIONS BLDG	E2.2	E3.2	14.4kV, 3 PHASE, 600A, 4 WAY	S&C ELECTRIC / PME-10	DEAD FRONT, ANSI C57.12.29, 4 SWITCH WAYS
S3	PAD MOUNT SWITCH	BASE BID	ELECTRICAL EQUIPMENT YARD	E2.0	E3.0	14.4kV, 3 PHASE, 600A, 3 WAY	S&C ELECTRIC / VISTA 321	DEAD FRONT, ANSI C57.12.29, 2 SWITCH WAYS, 1 FAULT INTERRUPTER WAY
S4	PAD MOUNT SWITCH	ALTERNATE #2	ELECTRICAL EQUIPMENT YARD	E2.0	E3.2	14.4kV, 3 PHASE, 600A, 3 WAY	S&C ELECTRIC / VISTA 321	DEAD FRONT, ANSI C57.12.29, 2 SWITCH WAYS, 1 FAULT INTERRUPTER WAY
SB-1	LOW VOLTAGE SWITCHBOARD	BASE BID	PIER 1	E2.4	E4.0	480Y/277V, 3PH, 4W, 3000A, NEMA 1, 65KAIC	SQUARE D / POWER ZONE CENTER	WITH WALK IN WEATHER SHELTER
UMC-1	PAD MOUNT UTILTY METERING CABINET	BASE BID	ELECTRICAL EQUIPMENT YARD	E2.0	E3.0	35kV, 600A, 3 PHASE, RADIAL FEED	FEDERAL PACIFIC PMDF-335-R6-600	DEAD FRONT, STAINLESS STEEL CONSTRUCTION. PROVIDE WITH (3) ABB CLASS 0.15S CT'S AND (3) PT'S. THIS EQUIPMENT IS SBUJECT TO REVIEW AND APPROVAL BY KPU.

Revisions	
ISSUED FOR CONSTRUCTION	0
ADDENDUM #1	1

COFFMAN ENGINEERS
 AECC249
 800 F Street
 Anchorage, Alaska 99501
 907.276.6664 www.coffman.com



KETCHIKAN SHIPYARD MEDIUM VOLTAGE LOOP
 3801 N. TONGASS AVENUE
LEGEND AND NOTES

Date	07/25/2018
Design	AJBV
Drawn	IMA
Job No.	181107
Sheet No.	E0.0
Of	Sheets

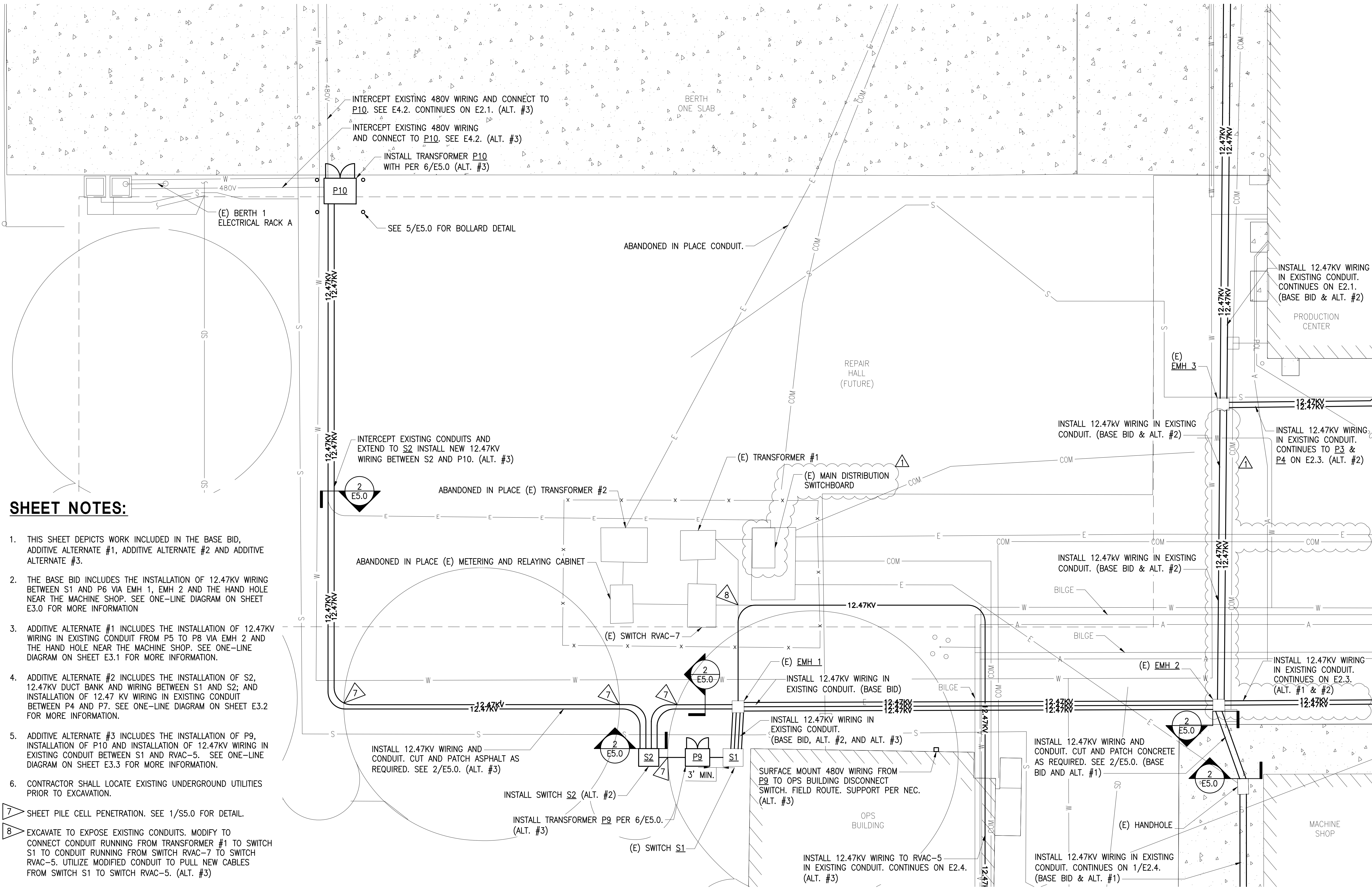
Revisions	
ISSUED FOR CONSTRUCTION	0
ADDENDUM #1	1

COFFMAN ENGINEERS
 AECC249
 800 F Street
 Anchorage, Alaska 99501
 907.276.6664 www.coffman.com



**KETCHIKAN SHIPYARD MEDIUM VOLTAGE LOOP
 3801 N. TONGASS AVENUE
 ENLARGED PLAN - FUTURE REPAIR HALL**

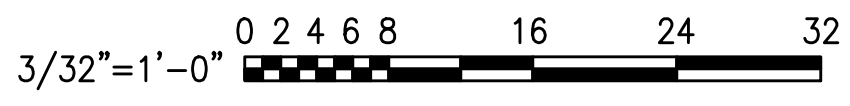
Date	07/25/2018
Design	AJBV
Drawn	IMA
Job No.	181107
Sheet No.	E2.2
Of	Sheets



SHEET NOTES:

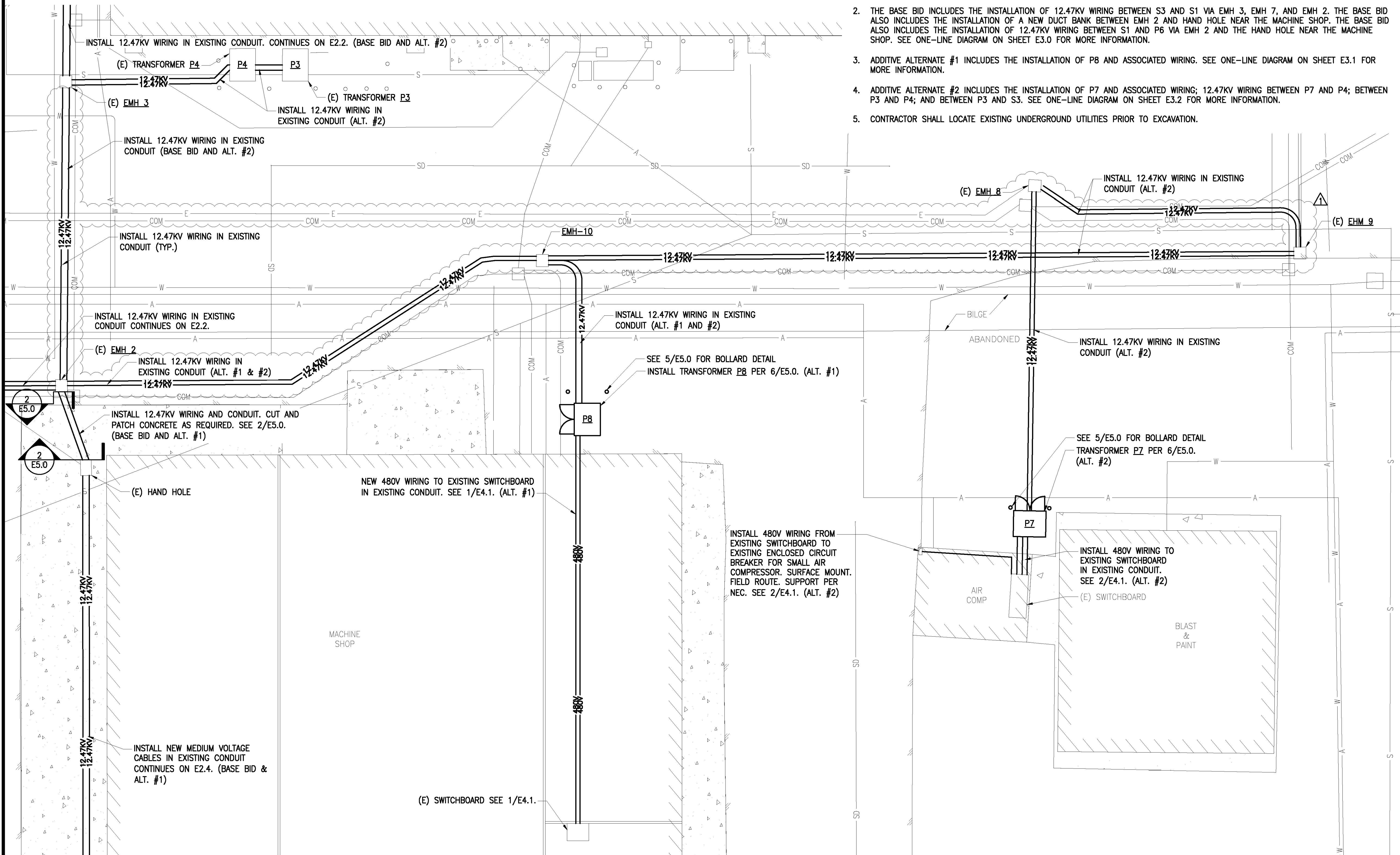
- THIS SHEET DEPICTS WORK INCLUDED IN THE BASE BID, ADDITIVE ALTERNATE #1, ADDITIVE ALTERNATE #2 AND ADDITIVE ALTERNATE #3.
 - THE BASE BID INCLUDES THE INSTALLATION OF 12.47KV WIRING BETWEEN S1 AND P6 VIA EMH 1, EMH 2 AND THE HAND HOLE NEAR THE MACHINE SHOP. SEE ONE-LINE DIAGRAM ON SHEET E3.0 FOR MORE INFORMATION
 - ADDITIVE ALTERNATE #1 INCLUDES THE INSTALLATION OF 12.47KV WIRING IN EXISTING CONDUIT FROM P5 TO P8 VIA EMH 2 AND THE HAND HOLE NEAR THE MACHINE SHOP. SEE ONE-LINE DIAGRAM ON SHEET E3.1 FOR MORE INFORMATION.
 - ADDITIVE ALTERNATE #2 INCLUDES THE INSTALLATION OF S2, 12.47KV DUCT BANK AND WIRING BETWEEN S1 AND S2; AND INSTALLATION OF 12.47 KV WIRING IN EXISTING CONDUIT BETWEEN P4 AND P7. SEE ONE-LINE DIAGRAM ON SHEET E3.2 FOR MORE INFORMATION.
 - ADDITIVE ALTERNATE #3 INCLUDES THE INSTALLATION OF P9, INSTALLATION OF P10 AND INSTALLATION OF 12.47KV WIRING IN EXISTING CONDUIT BETWEEN S1 AND RVAC-5. SEE ONE-LINE DIAGRAM ON SHEET E3.3 FOR MORE INFORMATION.
 - CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
- 7 SHEET PILE CELL PENETRATION. SEE 1/SS.0 FOR DETAIL.
 8 EXCAVATE TO EXPOSE EXISTING CONDUITS. MODIFY TO CONNECT CONDUIT RUNNING FROM TRANSFORMER #1 TO SWITCH S1 TO CONDUIT RUNNING FROM SWITCH RVAC-7 TO SWITCH RVAC-5. UTILIZE MODIFIED CONDUIT TO PULL NEW CABLES FROM SWITCH S1 TO SWITCH RVAC-5. (ALT. #3)

1 ENLARGED PLAN - FUTURE REPAIR HALL
 E2.2 SCALE: 3/32" = 1'-0"
 NORTH



SHEET NOTES:

1. THIS SHEET DEPICTS WORK INCLUDED IN THE BASE BID, ADDITIVE ALTERNATE #1 AND ADDITIVE ALTERNATE #2.
2. THE BASE BID INCLUDES THE INSTALLATION OF 12.47KV WIRING BETWEEN S3 AND S1 VIA EMH 3, EMH 7, AND EMH 2. THE BASE BID ALSO INCLUDES THE INSTALLATION OF A NEW DUCT BANK BETWEEN EMH 2 AND HAND HOLE NEAR THE MACHINE SHOP. THE BASE BID ALSO INCLUDES THE INSTALLATION OF 12.47KV WIRING BETWEEN S1 AND P6 VIA EMH 2 AND THE HAND HOLE NEAR THE MACHINE SHOP. SEE ONE-LINE DIAGRAM ON SHEET E3.0 FOR MORE INFORMATION.
3. ADDITIVE ALTERNATE #1 INCLUDES THE INSTALLATION OF P8 AND ASSOCIATED WIRING. SEE ONE-LINE DIAGRAM ON SHEET E3.1 FOR MORE INFORMATION.
4. ADDITIVE ALTERNATE #2 INCLUDES THE INSTALLATION OF P7 AND ASSOCIATED WIRING; 12.47KV WIRING BETWEEN P7 AND P4; BETWEEN P3 AND P4; AND BETWEEN P3 AND S3. SEE ONE-LINE DIAGRAM ON SHEET E3.2 FOR MORE INFORMATION.
5. CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATION.



Revisions	
ISSUED FOR CONSTRUCTION	0
ADDENDUM #1	1

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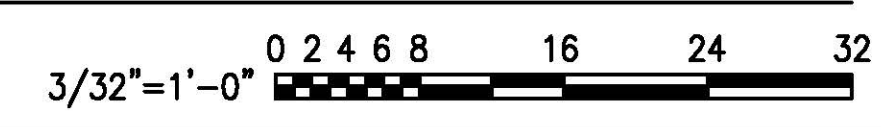
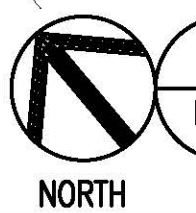


**KETCHIKAN SHIPYARD MEDIUM VOLTAGE LOOP
 3801 N. TONGASS AVENUE
 ENLARGED PLAN - MACHINE SHOP AND AIR
 COMPRESSOR BUILDING**

Date	07/25/2018
Design	AJBV
Drawn	IMA
Job No.	181107
Sheet No.	E2.3

Of **E2.3** Sheets

1 ENLARGED PLAN - MACHINE SHOP & AIR COMPRESSOR BUILDING
 E2.3 SCALE: 3/32" = 1'-0"



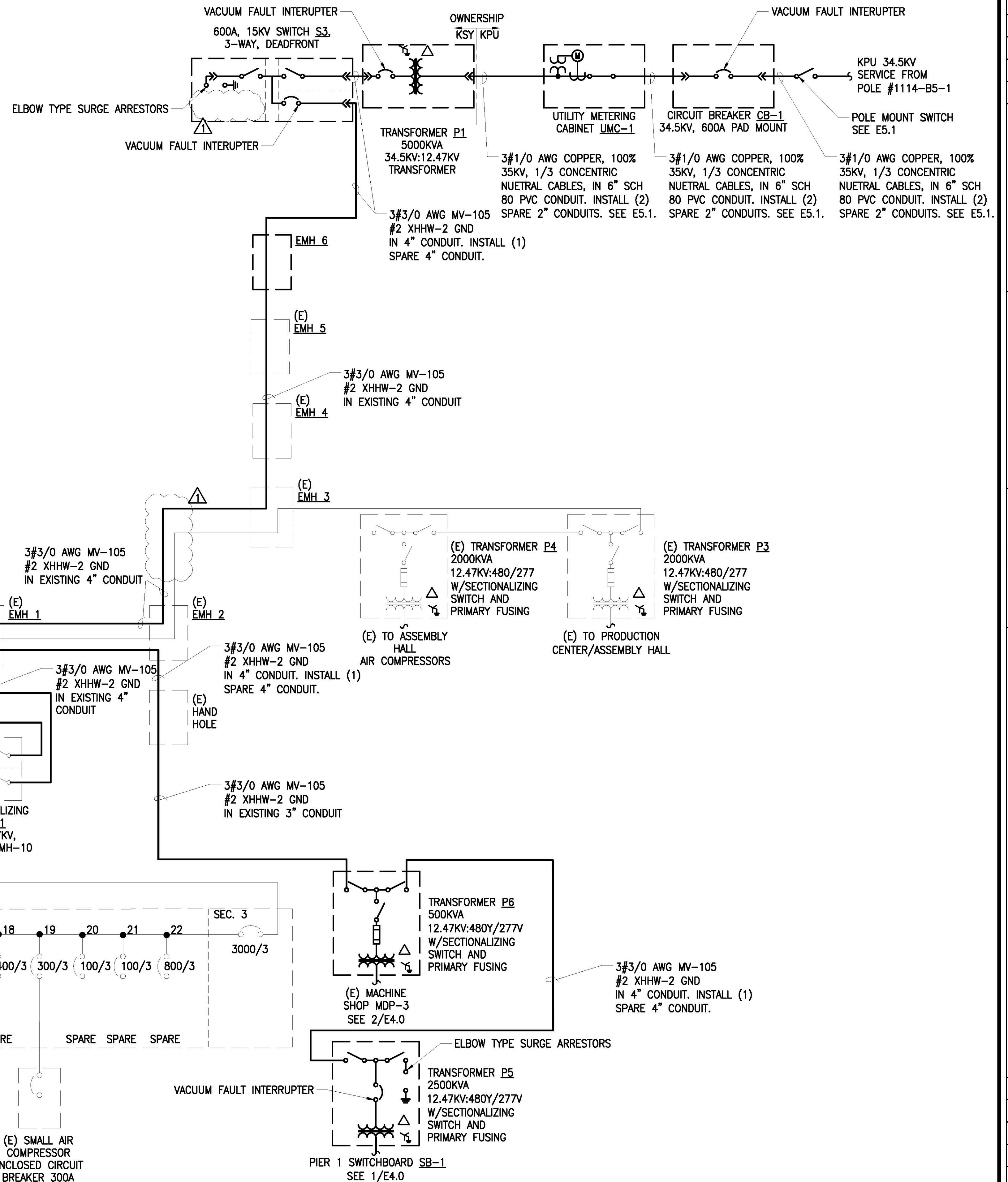
BASIS OF DESIGN OCPD SETTINGS

ITEM/TAG	DESCRIPTION	LOCATION	TYPE	RATING/ SETTING
CB-1	SERVICE DISCONNECT	ELECTRICAL EQUIPMENT YARD	VFI	PHASE OVERCURRENT: CURVE EF, TRIP 90 PHASE HIGH CURRENT: 7X TOC GROUND OVERCURRENT: CURVE EF, TRIP 90 GROUND HIGH CURRENT 7X TOC
P1	PAD MOUNT TRANSFORMER	ELECTRICAL EQUIPMENT YARD	SECONDARY VFI	PHASE OVERCURRENT: CURVE EF, TRIP 230 PHASE HIGH CURRENT: 15X TOC GROUND OVERCURRENT: CURVE EF, TRIP 230 GROUND HIGH CURRENT 15X TOC
S3	PAD MOUNT SWITCH	ELECTRICAL EQUIPMENT YARD	VFI	PHASE OVERCURRENT: CURVE EF, TRIP 200 PHASE HIGH CURRENT: 11X TOC GROUND OVERCURRENT: CURVE EF, TRIP 200 GROUND HIGH CURRENT 11X TOC
P5	PAD MOUNT TRANSFORMER	PIER 1	PRIMARY VFI	PHASE OVERCURRENT: CURVE EF, TRIP 150 PHASE HIGH CURRENT: 7X TOC GROUND OVERCURRENT: CURVE EF, TRIP 150 GROUND HIGH CURRENT 7X TOC
P6	PAD MOUNT TRANSFORMER	MACHINE SHOP	DUAL ELEMENT BAY-O-NET	C12 (50A)
P6	PAD MOUNT TRANSFORMER	MACHINE SHOP	CURRENT LIMITING BACKUP ELS	100A

NOTE: FINAL FUSE SELECTION AND VFI SETTINGS SHALL BE COORDINATED WITH MANUFACTURER'S RECOMMENDATIONS, BASED ON ACTUAL EQUIPMENT INSTALLED.

SHEET NOTES:

- THE BASE BID INCLUDES INSTALLATION OF A 34.5KV KPU SERVICE, CB-1, UMC-1, P1, P5, P6 AND ASSOCIATED WIRING.
- CONDUCTORS, CONDUIT AND EQUIPMENT NOTED AS KPU OWNERSHIP SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. THEY WILL BE TRANSFERRED TO KPU AT CONTRACT CLOSEOUT.



Revisions	
ISSUED FOR CONSTRUCTION	0
ADDENDUM #1	1

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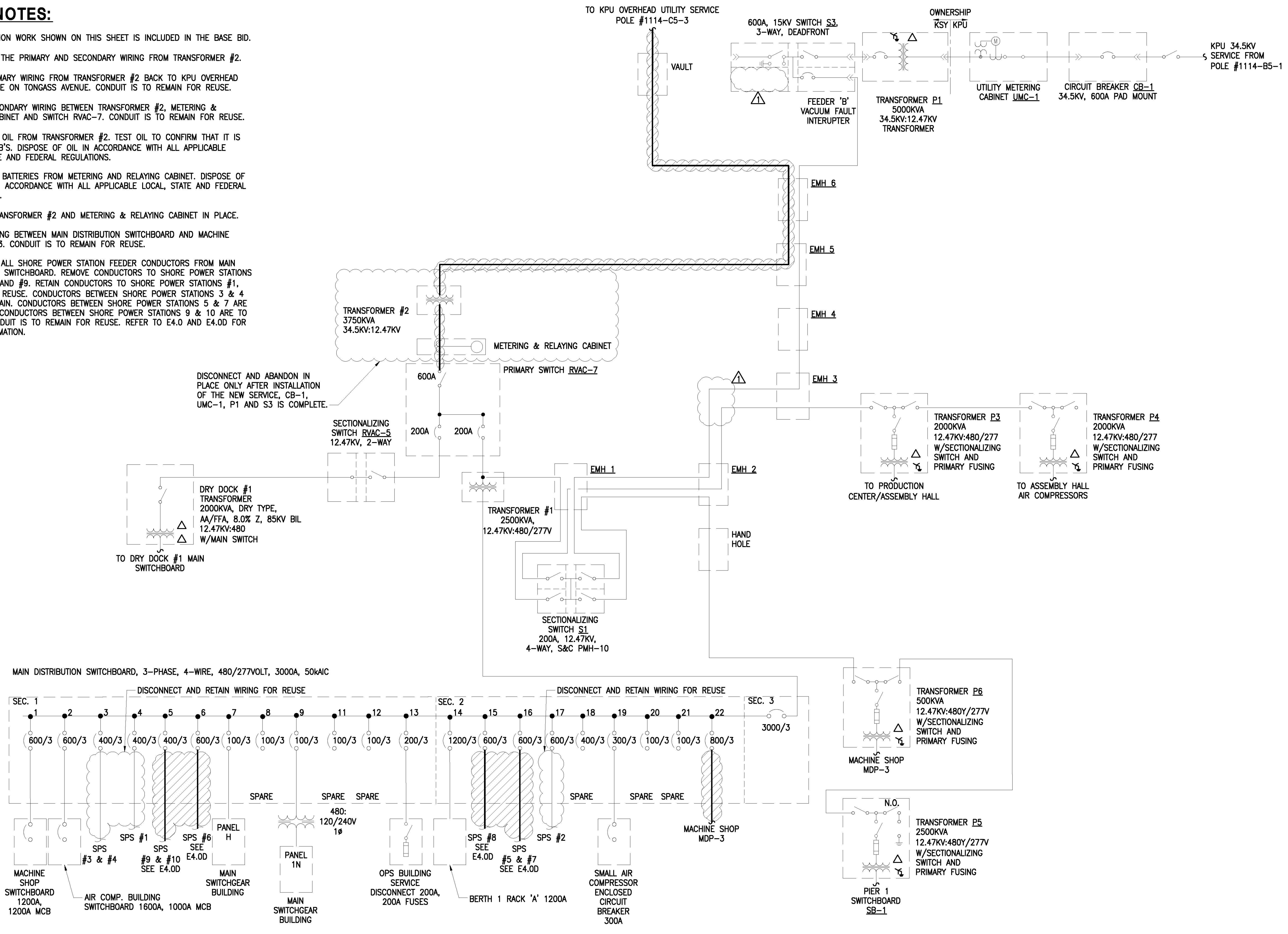
KETCHIKAN SHIPYARD MEDIUM VOLTAGE LOOP
 3801 N. TONGASS AVENUE
ELECTRICAL ONE-LINE DIAGRAM - BASE BID

Date	07/25/2018
Design	AJBV
Drawn	IMA
Job No.	181107
Sheet No.	E3.0
Of	Sheets

SHEET NOTES:

1. ALL DEMOLITION WORK SHOWN ON THIS SHEET IS INCLUDED IN THE BASE BID.
2. DISCONNECT THE PRIMARY AND SECONDARY WIRING FROM TRANSFORMER #2.
3. REMOVE PRIMARY WIRING FROM TRANSFORMER #2 BACK TO KPU OVERHEAD SERVICE POLE ON TONGASS AVENUE. CONDUIT IS TO REMAIN FOR REUSE.
4. REMOVE SECONDARY WIRING BETWEEN TRANSFORMER #2, METERING & RELAYING CABINET AND SWITCH RVAC-7. CONDUIT IS TO REMAIN FOR REUSE.
5. REMOVE ALL OIL FROM TRANSFORMER #2. TEST OIL TO CONFIRM THAT IT IS FREE OF PCB'S. DISPOSE OF OIL IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
6. REMOVE ALL BATTERIES FROM METERING AND RELAYING CABINET. DISPOSE OF BATTERIES IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
7. ABANDON TRANSFORMER #2 AND METERING & RELAYING CABINET IN PLACE.
8. REMOVE WIRING BETWEEN MAIN DISTRIBUTION SWITCHBOARD AND MACHINE SHOP MDP-3. CONDUIT IS TO REMAIN FOR REUSE.
9. DISCONNECT ALL SHORE POWER STATION FEEDER CONDUCTORS FROM MAIN DISTRIBUTION SWITCHBOARD. REMOVE CONDUCTORS TO SHORE POWER STATIONS #5, #6, #8 AND #9. RETAIN CONDUCTORS TO SHORE POWER STATIONS #1, #2, #3 FOR REUSE. CONDUCTORS BETWEEN SHORE POWER STATIONS 3 & 4 ARE TO REMAIN. CONDUCTORS BETWEEN SHORE POWER STATIONS 5 & 7 ARE TO REMAIN. CONDUCTORS BETWEEN SHORE POWER STATIONS 9 & 10 ARE TO REMAIN. CONDUIT IS TO REMAIN FOR REUSE. REFER TO E4.0 AND E4.0D FOR MORE INFORMATION.

DISCONNECT AND ABANDON IN PLACE ONLY AFTER INSTALLATION OF THE NEW SERVICE, CB-1, UMC-1, P1 AND S3 IS COMPLETE.



Revisions	
ISSUED FOR CONSTRUCTION	0
ADDENDUM #1	1

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KETCHIKAN SHIPYARD MEDIUM VOLTAGE LOOP
 3801 N. TONGASS AVENUE
ELECTRICAL ONE-LINE DIAGRAM - BASE BID - DEMO

Date	07/25/2018
Design	AJBV
Drawn	IMA
Job No.	181107
Sheet No.	E3.0D
Of	Sheets

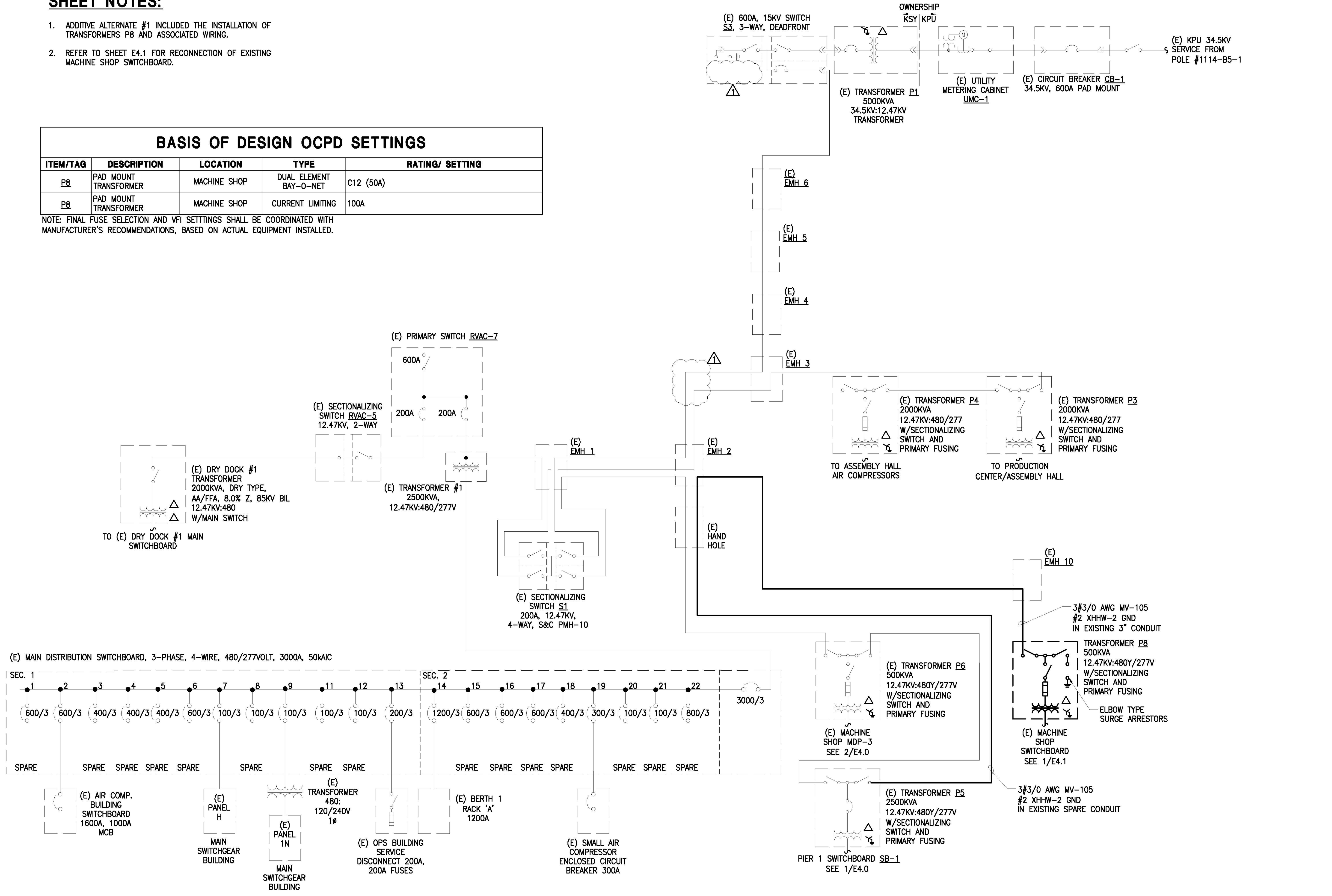
SHEET NOTES:

1. ADDITIVE ALTERNATE #1 INCLUDED THE INSTALLATION OF TRANSFORMERS P8 AND ASSOCIATED WIRING.
2. REFER TO SHEET E4.1 FOR RECONNECTION OF EXISTING MACHINE SHOP SWITCHBOARD.

BASIS OF DESIGN OCPD SETTINGS

ITEM/TAG	DESCRIPTION	LOCATION	TYPE	RATING/ SETTING
P8	PAD MOUNT TRANSFORMER	MACHINE SHOP	DUAL ELEMENT BAY-O-NET	C12 (50A)
P8	PAD MOUNT TRANSFORMER	MACHINE SHOP	CURRENT LIMITING	100A

NOTE: FINAL FUSE SELECTION AND VFI SETTINGS SHALL BE COORDINATED WITH MANUFACTURER'S RECOMMENDATIONS, BASED ON ACTUAL EQUIPMENT INSTALLED.



Revisions	
ISSUED FOR CONSTRUCTION	0
ADDENDUM #1	1

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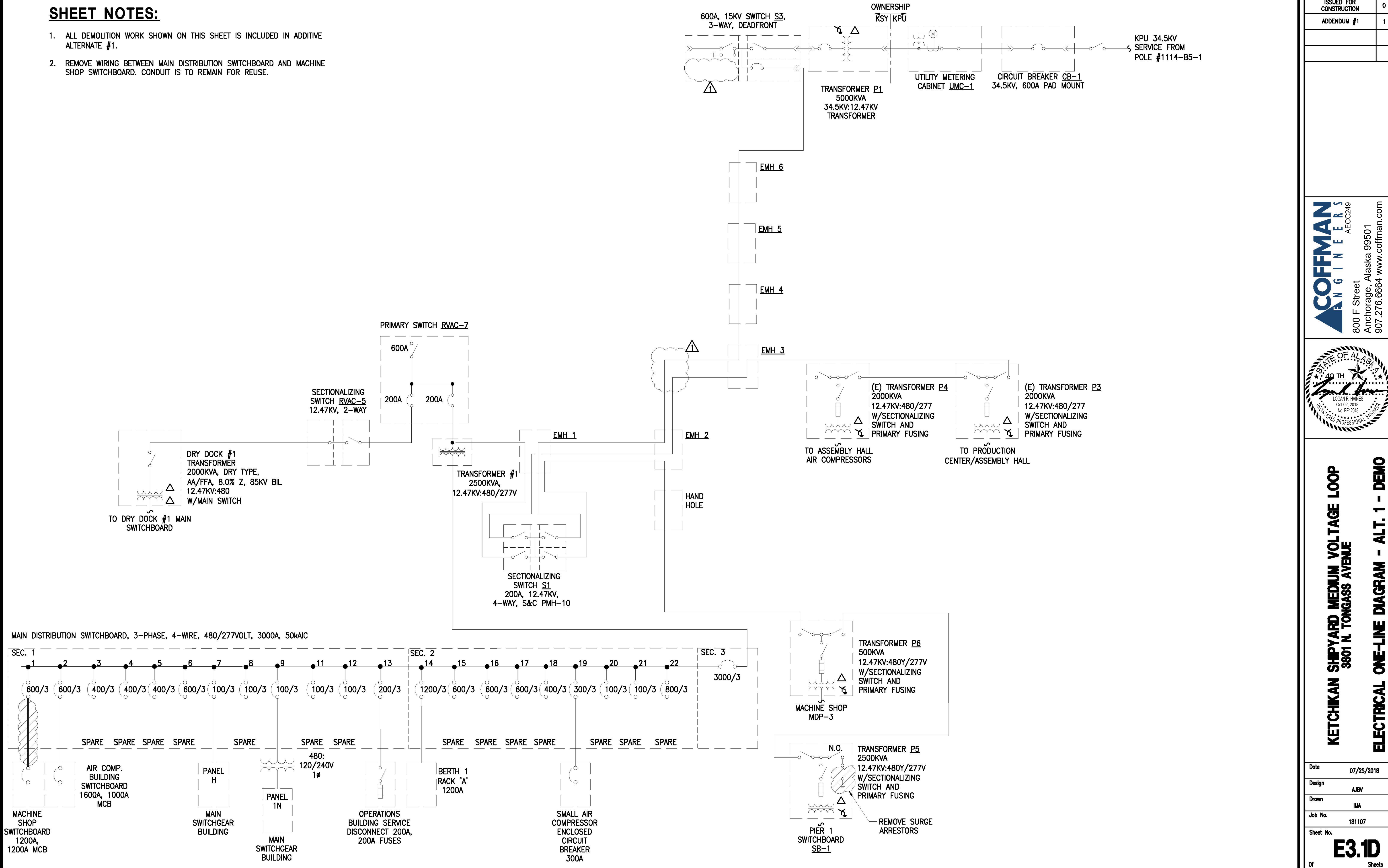


**KETCHIKAN SHIPYARD MEDIUM VOLTAGE LOOP
 3801 N. TONGASS AVENUE
 ELECTRICAL ONE-LINE DIAGRAM - ALT. 1**

Date	07/25/2018
Design	AJBV
Drawn	IMA
Job No.	181107
Sheet No.	E3.1
Of	Sheets

SHEET NOTES:

1. ALL DEMOLITION WORK SHOWN ON THIS SHEET IS INCLUDED IN ADDITIVE ALTERNATE #1.
2. REMOVE WIRING BETWEEN MAIN DISTRIBUTION SWITCHBOARD AND MACHINE SHOP SWITCHBOARD. CONDUIT IS TO REMAIN FOR REUSE.



Revisions	
ISSUED FOR CONSTRUCTION	0
ADDENDUM #1	1

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KETCHIKAN SHIPYARD MEDIUM VOLTAGE LOOP
 3801 N. TONGASS AVENUE

ELECTRICAL ONE-LINE DIAGRAM - ALT. 1 - DEMO

Date	07/25/2018
Design	AJBV
Drawn	IMA
Job No.	181107
Sheet No.	E3.1D
Of	Sheets

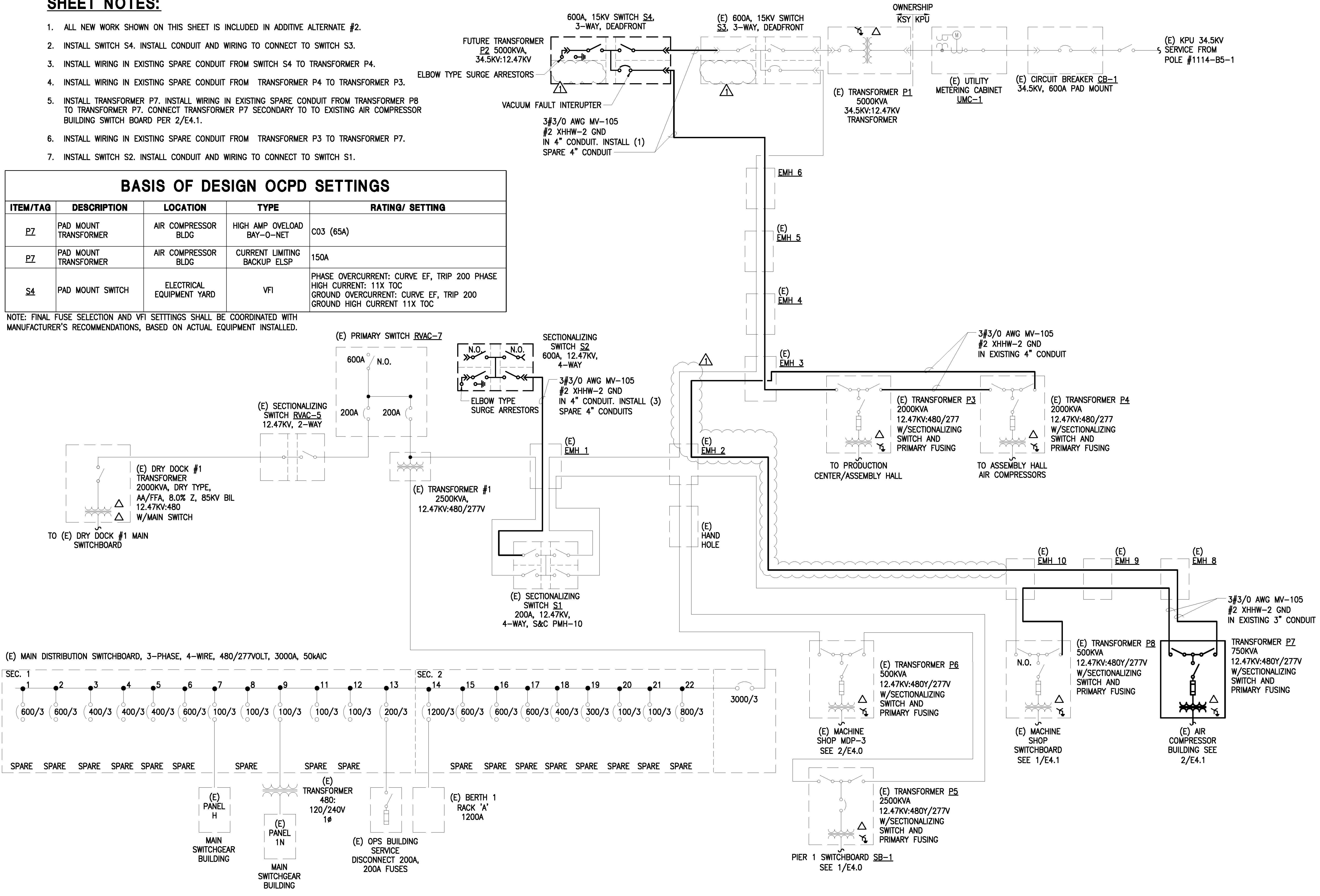
SHEET NOTES:

1. ALL NEW WORK SHOWN ON THIS SHEET IS INCLUDED IN ADDITIVE ALTERNATE #2.
2. INSTALL SWITCH S4. INSTALL CONDUIT AND WIRING TO CONNECT TO SWITCH S3.
3. INSTALL WIRING IN EXISTING SPARE CONDUIT FROM SWITCH S4 TO TRANSFORMER P4.
4. INSTALL WIRING IN EXISTING SPARE CONDUIT FROM TRANSFORMER P4 TO TRANSFORMER P3.
5. INSTALL TRANSFORMER P7. INSTALL WIRING IN EXISTING SPARE CONDUIT FROM TRANSFORMER P8 TO TRANSFORMER P7. CONNECT TRANSFORMER P7 SECONDARY TO TO EXISTING AIR COMPRESSOR BUILDING SWITCH BOARD PER 2/E4.1.
6. INSTALL WIRING IN EXISTING SPARE CONDUIT FROM TRANSFORMER P3 TO TRANSFORMER P7.
7. INSTALL SWITCH S2. INSTALL CONDUIT AND WIRING TO CONNECT TO SWITCH S1.

BASIS OF DESIGN OCPD SETTINGS

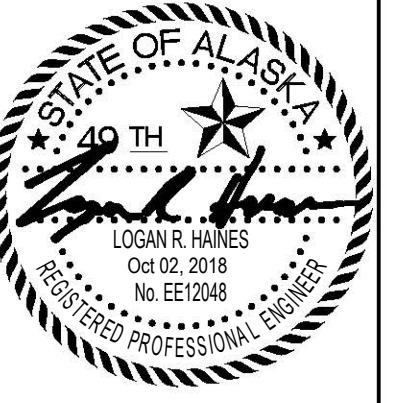
ITEM/TAG	DESCRIPTION	LOCATION	TYPE	RATING/ SETTING
PZ	PAD MOUNT TRANSFORMER	AIR COMPRESSOR BLDG	HIGH AMP OVELOAD BAY-O-NET	C03 (65A)
PZ	PAD MOUNT TRANSFORMER	AIR COMPRESSOR BLDG	CURRENT LIMITING BACKUP ELSP	150A
S4	PAD MOUNT SWITCH	ELECTRICAL EQUIPMENT YARD	VFI	PHASE OVERCURRENT: CURVE EF, TRIP 200 HIGH CURRENT: 11X TOC GROUND OVERCURRENT: CURVE EF, TRIP 200 GROUND HIGH CURRENT 11X TOC

NOTE: FINAL FUSE SELECTION AND VFI SETTINGS SHALL BE COORDINATED WITH MANUFACTURER'S RECOMMENDATIONS, BASED ON ACTUAL EQUIPMENT INSTALLED.



Revisions	
ISSUED FOR CONSTRUCTION	0
ADDENDUM #1	1

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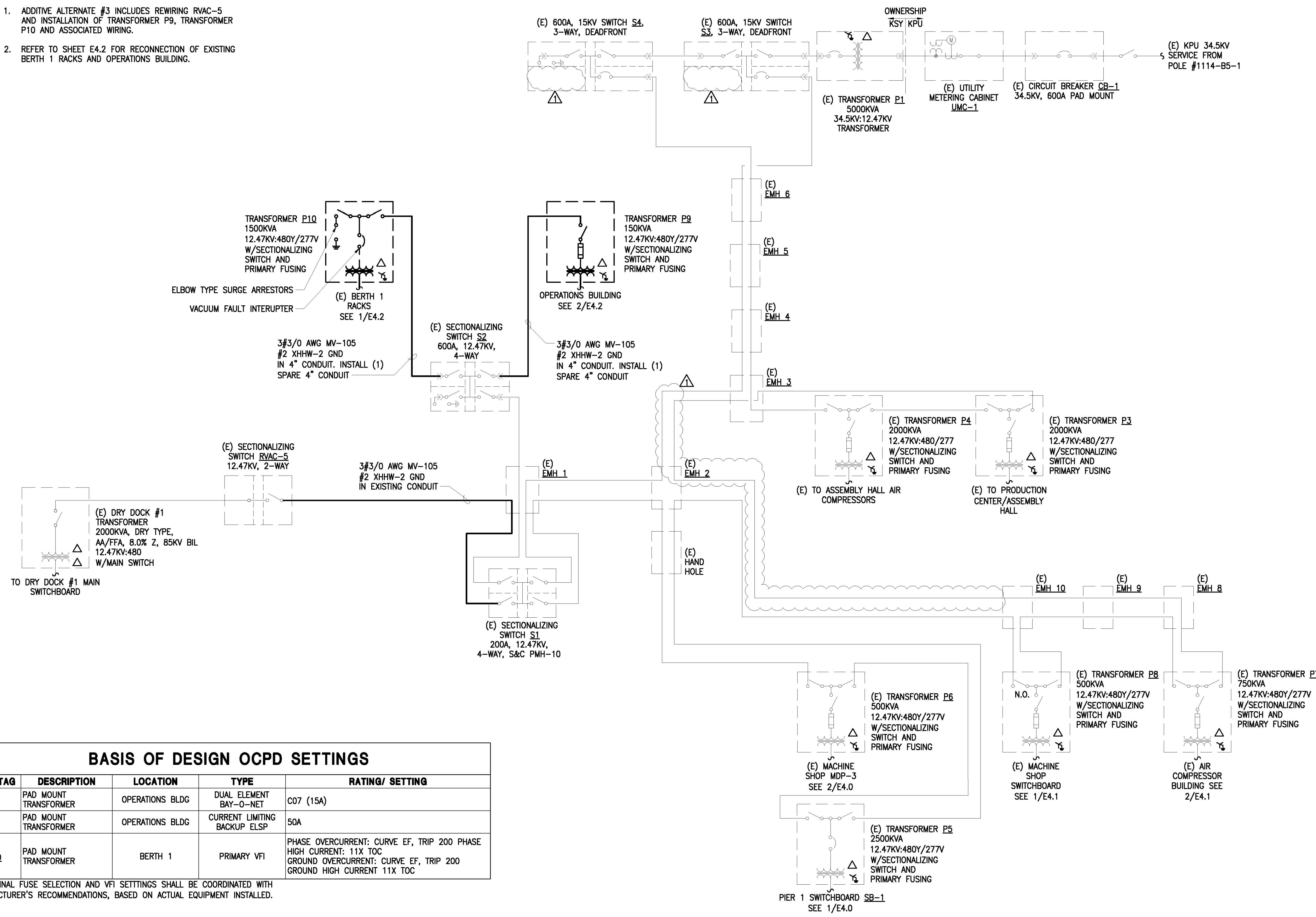
KETCHIKAN SHIPYARD MEDIUM VOLTAGE LOOP
 3801 N. TONGASS AVENUE

ELECTRICAL ONE-LINE DIAGRAM - ALT. 2

Date	07/25/2018
Design	AJBV
Drawn	IMA
Job No.	181107
Sheet No.	E3.2
Of	Sheets

SHEET NOTES:

1. ADDITIVE ALTERNATE #3 INCLUDES REWIRING RVAC-5 AND INSTALLATION OF TRANSFORMER P9, TRANSFORMER P10 AND ASSOCIATED WIRING.
2. REFER TO SHEET E4.2 FOR RECONNECTION OF EXISTING BERTH 1 RACKS AND OPERATIONS BUILDING.



BASIS OF DESIGN OCPD SETTINGS

ITEM/TAG	DESCRIPTION	LOCATION	TYPE	RATING/ SETTING
P9	PAD MOUNT TRANSFORMER	OPERATIONS BLDG	DUAL ELEMENT BAY-O-NET	C07 (15A)
P9	PAD MOUNT TRANSFORMER	OPERATIONS BLDG	CURRENT LIMITING BACKUP ELSP	50A
P10	PAD MOUNT TRANSFORMER	BERTH 1	PRIMARY VFI	PHASE OVERCURRENT: CURVE EF, TRIP 200 PHASE HIGH CURRENT: 11X TOC GROUND OVERCURRENT: CURVE EF, TRIP 200 GROUND HIGH CURRENT 11X TOC

NOTE: FINAL FUSE SELECTION AND VFI SETTINGS SHALL BE COORDINATED WITH MANUFACTURER'S RECOMMENDATIONS, BASED ON ACTUAL EQUIPMENT INSTALLED.

Revisions	
ISSUED FOR CONSTRUCTION	0
ADDENDUM #1	1

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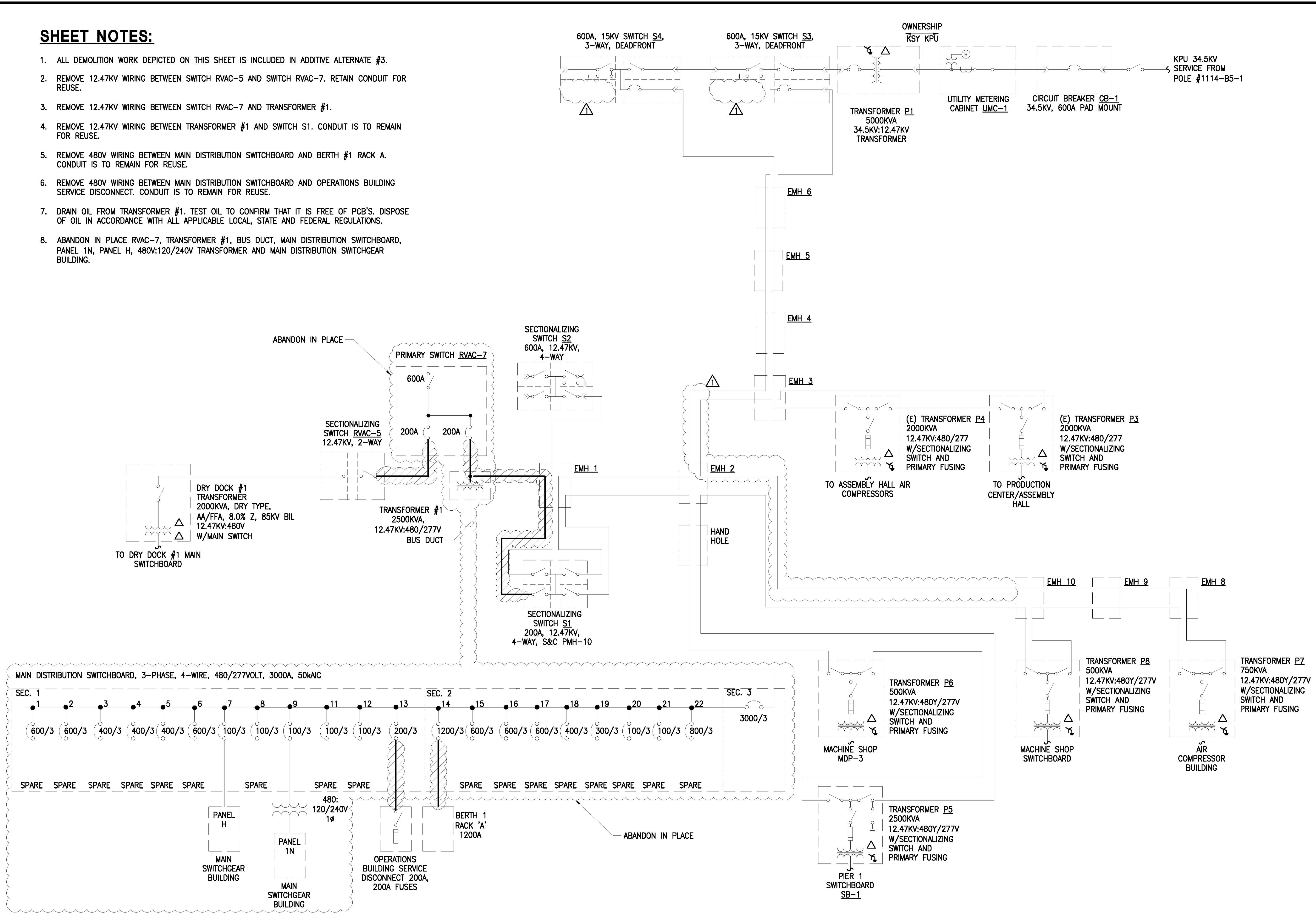


KETCHIKAN SHIPYARD MEDIUM VOLTAGE LOOP
 3801 N. TONGASS AVENUE
ELECTRICAL ONE-LINE DIAGRAM - ALT. 3

Date	07/25/2018
Design	AJBV
Drawn	IMA
Job No.	181107
Sheet No.	E3.3
Of	Sheets

SHEET NOTES:

1. ALL DEMOLITION WORK DEPICTED ON THIS SHEET IS INCLUDED IN ADDITIVE ALTERNATE #3.
2. REMOVE 12.47KV WIRING BETWEEN SWITCH RVAC-5 AND SWITCH RVAC-7. RETAIN CONDUIT FOR REUSE.
3. REMOVE 12.47KV WIRING BETWEEN SWITCH RVAC-7 AND TRANSFORMER #1.
4. REMOVE 12.47KV WIRING BETWEEN TRANSFORMER #1 AND SWITCH S1. CONDUIT IS TO REMAIN FOR REUSE.
5. REMOVE 480V WIRING BETWEEN MAIN DISTRIBUTION SWITCHBOARD AND BERTH #1 RACK A. CONDUIT IS TO REMAIN FOR REUSE.
6. REMOVE 480V WIRING BETWEEN MAIN DISTRIBUTION SWITCHBOARD AND OPERATIONS BUILDING SERVICE DISCONNECT. CONDUIT IS TO REMAIN FOR REUSE.
7. DRAIN OIL FROM TRANSFORMER #1. TEST OIL TO CONFIRM THAT IT IS FREE OF PCB'S. DISPOSE OF OIL IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
8. ABANDON IN PLACE RVAC-7, TRANSFORMER #1, BUS DUCT, MAIN DISTRIBUTION SWITCHBOARD, PANEL 1N, PANEL H, 480V:120/240V TRANSFORMER AND MAIN DISTRIBUTION SWITCHGEAR BUILDING.



Revisions	
ISSUED FOR CONSTRUCTION	0
ADDENDUM #1	1

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 3801 N. TONGASS AVENUE
ELECTRICAL ONE-LINE DIAGRAM - ALT. 3 - DEMO

Date	07/25/2018
Design	AJBV
Drawn	IMA
Job No.	181107
Sheet No.	E3.3D
Of	Sheets