

PORT OF TACOMA

WUT CRANE POWER PROJECT
PROJECT NO. 201110.01
CONTRACT NO. 071417

PORT COMMISSIONERS:

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JOHN MCCARTHY
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DEANNA KELLER

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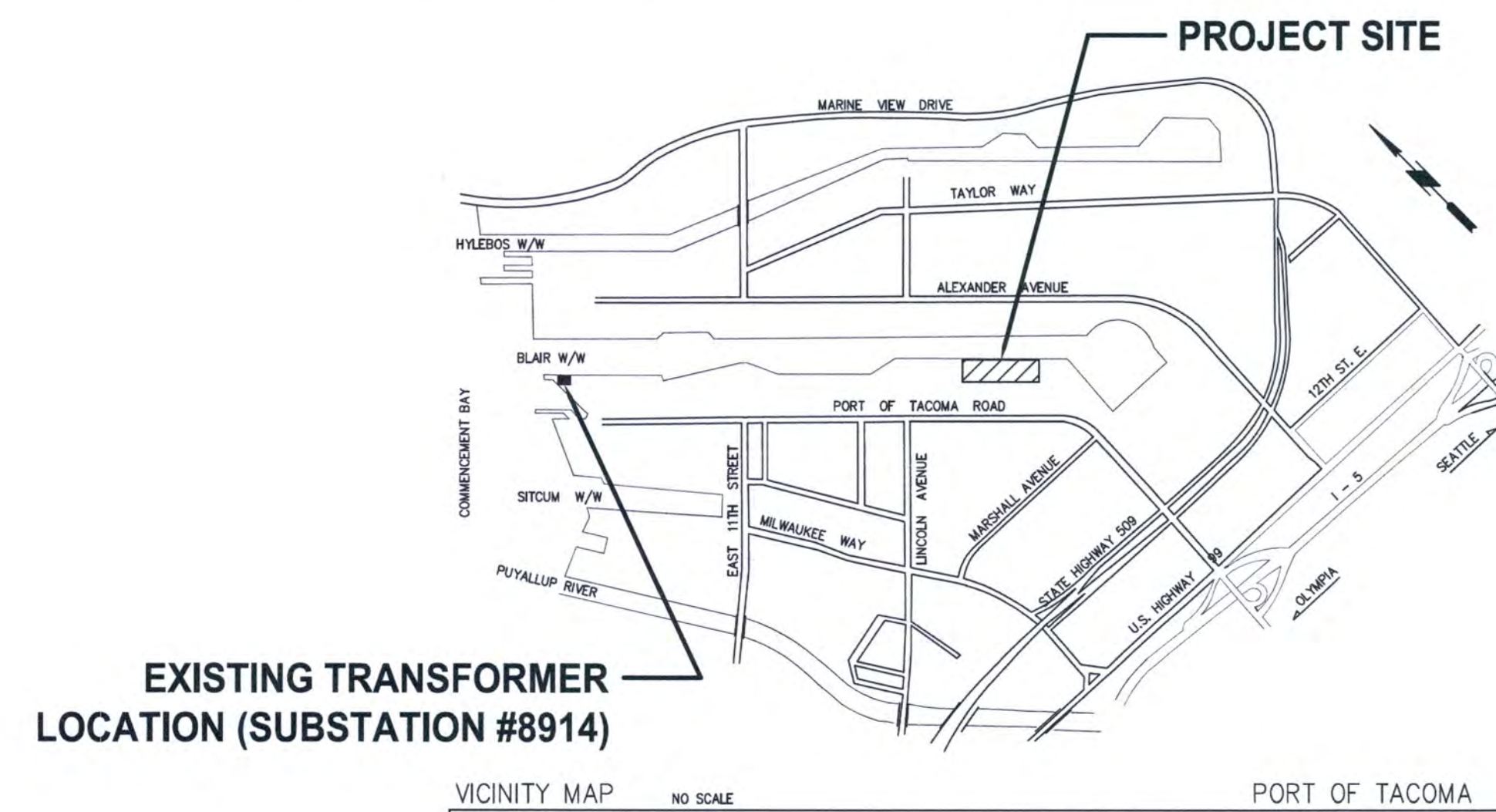
ERIC JOHNSON
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DRAWING LIST			
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6654 GO 1 OF 13	WUT CRANE POWER PROJECT COVER SHEET GENERAL NOTES AND DRAWING INDEX				APPROVED: <i>[Signature]</i>		MQA 03/25/21			 HARRIS GROUP Big Capabilities • Dedicated People 2601 4th Avenue, Suite 400 (206) 461-3612 harrisgroup.com	Project No: 12646.03	P.O. BOX 1837 TACOMA, WA 98401 (253)383-5641
	TOWNSHIP: 21 N DAT-HRZ: NAD 83-01 PARCEL: 25	RANGE: 3 E SECTION: SE 1/4 35 TIDAL (MLLW = 0.0) DRAWING SCALE: 1" = 40'	DIRECTOR ENG. DATE PRINTED BY: hester, nate PORT ADDRESS: 1815 PORT OF TACOMA RD TACOMA, WA 98401-1837	MWD 03/25/21 PROJ. ENGR DATE 4/24/21	CHECKED BY DATE DATE	MARK: REVISION: BY:	APPR: DATE:					

CIVIL AND STRUCTURAL NOTES

ORDER OF PRECEDENCE

IN CASE OF DISCREPANCIES IN CONSTRUCTION DOCUMENTS, THE SPECIFICATIONS SHALL CONTROL OVER THE DRAWINGS AND ANY OTHER WRITTEN NOTES.

A. DESIGN CODES

- 1) 2018 INTERNATIONAL BUILDING CODE (IBC) AS ADOPTED BY THE STATE OF WASHINGTON.

B. DESIGN CRITERIA

- 1) LATERAL LOADS
 - a) RISK CATEGORY II
 - b) SEISMIC
 - 1) SEISMIC IMPORTANCE FACTOR, I_e = 1.0
 - 2) SEISMIC IMPORTANCE FACTOR, I_p = 1.0
 - 3) MAPPED ACCELERATION PARAMETERS:
 - S_s = 1.341
 - S₁ = 0.462
 - 4) SITE CLASS: D
 - 5) DESIGN SPECTRAL ACCELERATION PARAMETERS:
 - S_{DS} = 0.894
 - S_{D1} = NOT USED FOR RIGID STRUCTURES
 - 6) SEISMIC DESIGN CATEGORY: D
- c) WIND
 - 1) BASIC WIND SPEED (3-SECOND GUST) = 97 MPH
 - 2) EXPOSURE D
- 2) ALLOWABLE SOIL BEARING CAPACITY = 1500 PSF (ASSUMED)

GENERAL REQUIREMENTS

- A. WORK REQUIRING SPECIAL INSPECTION – ALL INSPECTION TO BE CONTINUOUS UNLESS NOTED.
 - 1) CONCRETE CONSTRUCTION
 - a) INSPECTION OF REINFORCING STEEL AND PLACEMENT, PERIODIC.
 - b) INSPECTION OF BOLTS AND OTHER EMBEDDED ITEMS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE.
 - c) VERIFYING USE OF REQUIRED DESIGN MIX, PERIODIC.
 - b) AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TEST AND DETERMINE THE TEMPERATURE OF THE CONCRETE.
 - c) INSPECTION OF CONCRETE PLACEMENT FOR PROPER INSTALLATION TECHNIQUES.
 - d) INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES, PERIODIC.
 - 2) SOILS
 - a) VERIFY MATERIALS BELOW PAVEMENT ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY, PERIODIC.
 - b) VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL, PERIODIC.
 - c) PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS, PERIODIC.
 - d) VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.
 - e) PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY, PERIODIC.
 - 3) SPECIAL CASES
 - a) EXPANSION ANCHORS INSTALLATION, PER ICC-ES EVALUATION REPORT, PERIODIC.
 - b) CHEMICAL ADHESIVE ANCHORS INSTALLATION, PER ICC-ES EVALUATION REPORT, PERIODIC.

B. CONTRACTOR RESPONSIBILITIES AND COORDINATION

- 1) CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES, STRUCTURES, OR OTHER PROPERTY, KNOWN OR UNKNOWN, ENCOUNTERED DURING EXCAVATION OR OTHER WORK.
- 2) COORDINATE WORK IN SUCH A MANNER AS TO MINIMIZE IMPACT ON WASHINGTON UNITED TERMINAL OPERATIONS.
- 3) COORDINATE WORK OF OTHER CRAFTS HAVING INTERDEPENDENT RESPONSIBILITIES FOR INSTALLING, CONNECTING TO, AND PLACING IN SERVICE MATERIALS AND EQUIPMENT.
- 4) FIELD VERIFY ALL EXISTING ELEVATIONS AND DIMENSIONS SHOWN ON THE DRAWINGS BEFORE PROCEEDING WITH THE WORK. IMMEDIATELY REPORT ANY DEVIATIONS TO THE ENGINEER.
- 5) SITE DEMOLITION SEE SPECIFICATION 02 41 00.
- 6) TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) PER SPECIFICATIONS 01 57 13.

SITE WORK

A. SITE CONDITIONS

- 1) THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE SITE CONDITIONS.

B. EXCAVATION AND BACKFILL

- 1) EARTHWORK – SEE SPECIFICATION 31 00 00.
- 2) VERIFY THAT SURVEY BENCHMARKS AND INTENDED ELEVATIONS FOR WORK ARE AS INDICATED.
- 3) PRIOR TO COMMENCEMENT OF PAVEMENT REMOVAL AND EXCAVATION ALL UNDERGROUND UTILITIES SHALL BE IDENTIFIED AND LOCATED. CARE SHALL BE TAKEN TO AVOID DAMAGE TO UNDERGROUND UTILITIES AND STRUCTURES DURING CONSTRUCTION.
- 4) OVER-EXCAVATE AREAS NOT CAPABLE OF IN SITU COMPACTION.
- 5) NOTIFY ENGINEER OF ANY UNUSUAL CONDITIONS ENCOUNTERED IN EXCAVATION.
- 6) CLEAN ALL AREAS OF LOOSE MATERIAL BY HAND. REMOVE ALL WET, SOFT SOIL FROM EXCAVATIONS PRIOR TO PLACING NEW FILL.
- 7) PAVEMENT BASE COURSE – SEE SPECIFICATION SECTION 32 12 16.

C. ASPHALTIC CONCRETE PAVING

- 1) SEE SPECIFICATION SECTIONS 32 12 16.

CONCRETE

A. REFERENCES

- 1) ACI 301 – STANDARD SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS
- 2) ACI 302 – GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION
- 3) ACI 304 – GUIDE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE
- 4) ACI 318 – BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
- 5) CRSI MSP-1 – MANUAL OF STANDARD PRACTICE

B. CAST-IN-PLACE CONCRETE

- 1) SEE SPECIFICATION SECTIONS 03 10 00, 03 20 00 AND 03 30 00.

C. BONDING AGENT

- 1) VOC COMPLIANT, NON-SOLVENT BASED EPOXY ADHESIVE.

D. POST INSTALLED CONCRETE FASTENERS

- 1) EXPANSION ANCHORS: ZINC PLATED MECHANICAL EXPANSION TYPE: ICC-ESR APPROVED FOR USE IN CRACKED OR UNCRACKED CONCRETE FOR THE RESISTANCE OF WIND AND SEISMIC LOADS. PROVIDE MINIMUM EDGE DISTANCE AND SPACING AS INDICATED IN THE MANUFACTURERS SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- 2) CHEMICAL ADHESIVE ANCHORS: CHEMICAL ANCHOR TYPE: ICC-ESR APPROVED FOR USE IN CRACKED OR UNCRACKED CONCRETE FOR THE RESISTANCE OF WIND AND SEISMIC LOADS. PROVIDE MINIMUM EDGE DISTANCE AND SPACING AS INDICATED IN THE MANUFACTURERS SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE DRAWINGS. THREADED RODS TO BE F1554 GRD36 (GALVANIZED).

E. FINISHING

- 1) ALL FINISHING SHALL BE IN ACCORDANCE WITH ACI 301 SECTION 5.
- 2) FORMED CONCRETE SURFACES NOT EXPOSED TO VIEW MAY HAVE A ROUGH FORM FINISH AND FORMED CONCRETE SURFACES EXPOSED TO VIEW SHALL HAVE A SMOOTH FORM FINISH.
- 3) HORIZONTAL UNFORMED CONCRETE SURFACES SHALL BE SCREED AND FLOATED.
- 4) SURFACES RECEIVING GROUT OR BONDED CONCRETE TOPPING SHALL BE A SCRATCHED FINISH TO 1/4 INCH AMPLITUDE.
- 5) INTERIOR SLABS FINISH SHALL BE A TROWELED FINISHED.
- 6) EXTERIOR SLAB FINISH SHALL BE A BROOMED FINISHED IN THE DIRECTION OF THE FLOOR SLOPE.
- 7) EXPOSED NON-CHAMFERED SLAB EDGES SHALL BE EDGED TO A 1/4 INCH RADIUS AFTER FINISHING. EDGING SHALL NOT FORM RIDGES ON THE SLAB SURFACE.
- 8) EXPOSED EDGES SHALL BE FORMED USING 3/4 INCH CHAMFER UNLESS OTHERWISE NOTED.
- 9) VERIFY FINISHING REQUIREMENTS OF SURFACES SCHEDULED TO RECEIVE PROTECTIVE COATINGS WITH PRODUCT MANUFACTURER.

F. TESTING AND INSPECTION

- 1) PROVIDE IN ACCORDANCE WITH THE SPECIFICATIONS, THE BUILDING CODE AND LOCAL AUTHORITY REQUIREMENTS.

F. GROUT

- 1) ASTM C1107, ICC-ES APPROVED, NON-SHRINK, NON-METALLIC, MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI AT 7 DAYS.
- 2) EQUIPMENT BASES AND BOLLARD BASE PLATES SHALL BE GROUTED IN STRICT ACCORDANCE WITH THE MANUFACTURERS WRITTEN INSTRUCTIONS.

G. WASH OUT

- 1) THERE WILL BE NO ON-SITE WASH OUT AREA IN THE SITE.

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C1.0

2 OF 13

CONTRACT/CONS: 071417

M. ID: 201110.01

PHASE: BID SET

WUT CRANE POWER PROJECT

GENERAL CIVIL AND STRUCTURAL NOTES

APPROVED:

DIRECTOR

ENG. DATE

PRINTED BY: hester, nate

Mar 31, 2021

PORT ADDRESS: 1815 PORT OF TACOMA RD

TACOMA, WA 98401-1837

MOA

03/25/21

CHECKED BY

DATE

AMW

03/25/21

PROJ. ENGR

DATE

Project No: 12646.03

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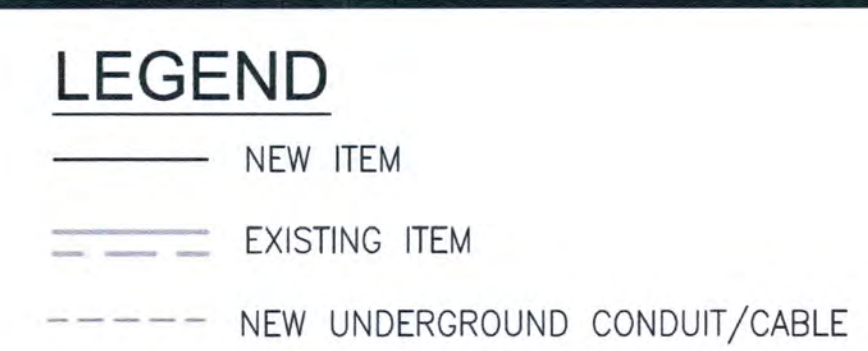
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1. SEE SHEET C1.0 FOR GENERAL CIVIL AND STRUCTURAL NOTES.
2. CONTRACTOR SHALL LOCATE ALL BELOW GROUND UTILITIES PRIOR TO EXCAVATION AND DEMOLITION.
3. THE TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES PROVIDED BY THE ENGINEER ARE A MINIMUM REQUIREMENT. IT IS THE CONTRACTORS RESPONSIBILITY TO LIMIT EROSION AND SETTLEMENT AROUND THE WORK SITE AND AT SOIL STOCK PILE SITE. CONTRACTOR SHALL COORDINATE LOCATION OF SOIL STOCK PILE SITE WITH CLIENT PRIOR TO CONSTRUCTION.
4. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE GROUND GRID.

- 1 CONTRACTOR SHALL PROVIDE FIELD LOCATE, INCLUDING ELEVATION, OF EXISTING CONDUIT PRIOR TO DEMOLITION OR EXCAVATION. FIELD LOCATE MAY INCREASE AREA OF EXCAVATION.
- 2 CONTRACTOR SHALL TAKE CARE NOT TO DISTURB OR UNDERMINE EXISTING BOLLARDS.
- 3 SEE ELECTRICAL DRAWINGS FOR MORE INFORMATION.
- 4 FINAL STUB UP LOCATION SHALL BE FIELD DETERMINED BY CONTRACTOR.
- 5 (3) 36"Ø FOUNDATION AT REMOVABLE BOLLARD, SEE TYPICAL REMOVABLE BOLLARD DETAIL C/C2.1
- 6 CONTRACTOR SHALL PROVIDE FILTER SOCK AROUND WORK SITE FOR TEMPORARY EROSION AND SEDIMENT CONTROL. LIMITS OF FILTER SOCK SHALL BE DETERMINED BY CONTRACTOR.
- 7 CONTRACTOR SHALL PROVIDE CATCH BASIN FILTER INSERT PRIOR TO DEMOLITION AND EXCAVATION. INSERT SHALL REMAIN IN PLACE DURING CONSTRUCTION.
- 8 REPLACED ASPHALT SHALL MATCH DEPTH AND CONSTRUCTION OF EXISTING ASPHALT. EXISTING ASPHALT IS ASSUMED TO BE 12" THICK.
- 9 CONTRACTOR SHALL DETERMINE FINAL TRENCHING AND CONDUIT ROUTING.
- 10 CONTRACTOR SHALL EXCAVATE BELOW EXISTING ELECTRICAL EQUIPMENT. CARE SHALL BE TAKEN TO NOT UNDERMINE EXISTING WOOD POST SUPPORT.



SYMBOLS LEGEND:

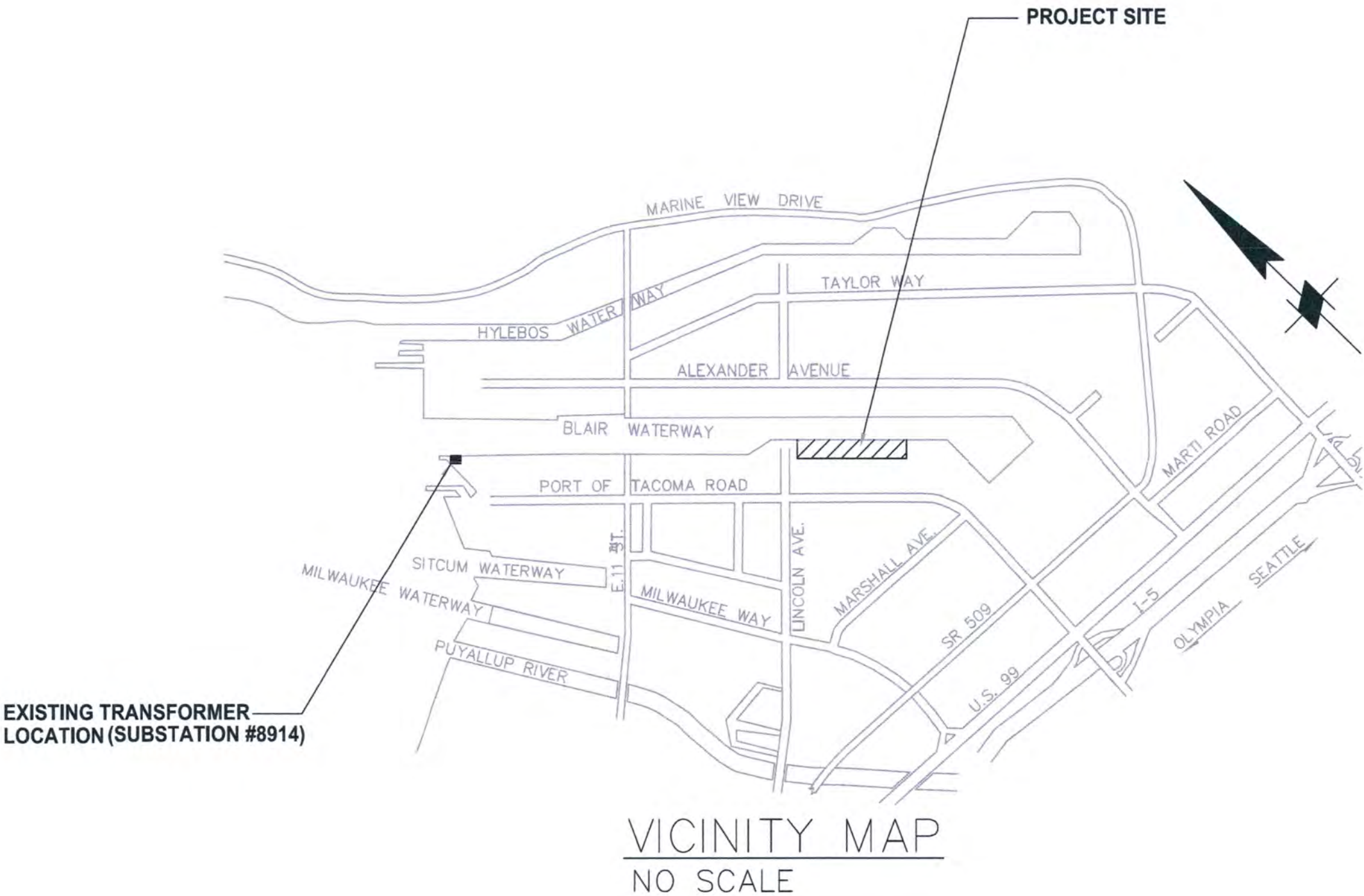
xxx	XXX- POWER/COMMUNICATIONS VAULT IDENTIFICATION.
	ELECTRICAL POWER PANEL.
	DUPLEX 120V, 20A. WP = GFI RECEPTACLE IN NEMA 3R CAST BOX WITH "IN USE" NEMA 3R COVER.
	ELECTRICAL CONTACTOR, IN NEMA 3R, 316 STAINLESS STEEL ENCLOSURE.
	GROUND PER NEC
	EQUIPMENT CONNECTION. PROVIDE PER NEC AND MANUFACTURER'S REQUIREMENTS AND/OR RECOMMENDATIONS.
	KIRK KEY INTERLOCK.
	15KV TRANSFORMER PT=POTENTIAL TRANSFORMER, CT= CURRENT TRANSFORMER
xxxx	CONDUIT IDENTIFICATION. SEE CONDUIT AND CONDUCTOR SCHEDULE SHEET E5.0.
	EXISTING WOOD POLE
xxx	AVAILABLE FAULT CURRENT
	DRAW OUT CIRCUIT BREAKER
	PAD MOUNTED TRANSFORMER
	MV FUSED LOAD BREAK SWITCH
	MV CABLE TERMINATION/POTHEAD
	GROUND PIGTAIL FOR FUTURE CONNECTION

PARTIAL ABBREVIATION LEGEND:

A	=	AMPS
AFG	=	ABOVE FINISHED GRADE
AIC	=	AMPERE INTERRUPTING CAPACITY
C	=	COMMUNICATIONS
CDF	=	CONTROLLED DENSITY FILL
CKT	=	CIRCUIT
CONN	=	CONNECTION
CP	=	CRANE POWER
CSB	=	CRANE SERVICE VAULT
CV	=	COMMUNICATIONS VAULT
E	=	EXISTING
FT	=	FEET
FRO	=	FOR REFERENCE ONLY
GRD	=	GROUND
GRS	=	GALVANIZED RIGID STEEL
HPV	=	HYUNDAI (WUT) POWER VAULT
HSV	=	HYUNDAI (WUT) SIGNAL VAULT
ID	=	IDENTIFICATION
MPV	=	MOORING DOLPHIN POWER VAULT
MV	=	MEDIUM VOLTAGE
N	=	NEW
NEC	=	NATIONAL ELECTRICAL CODE
NEMA	=	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
PB	=	PULLBOX
PCV	=	CRANE POWER VAULT
POT	=	PORT OF TACOMA
PV	=	POWER VAULT
SCCR	=	SHORT CIRCUIT CURRENT RATING
SD	=	SECONDARY 600V DISTRIBUTION
SDBC	=	SOFT DRAWN BARE COPPER
SP	=	SPARE CONDUIT
SSB	=	SHORE SHIP CONNECTION VAULT
SSP	=	SHORE SHIP POWER
SSPV	=	SHORE SHIP POWER VAULT
SWBD	=	SWITCHBOARD
TPU	=	TACOMA POWER UTILITIES
TPUV	=	TACOMA PUBLIC UTILITIES VAULT
TPUM	=	TACOMA PUBLIC UTILITIES MANHOLE
WAC	=	WASHINGTON ADMINISTRATIVE CODE
WP	=	WEATHERPROOF
WUT	=	WASHINGTON UNITED TERMINAL
XFMR	=	TRANSFORMER

GENERAL NOTES:

1. NOT ALL EXISTING CONDUITS ARE SHOWN. ONLY CONDUITS WITHIN CONTRACTOR SCOPE OF WORK ARE SHOWN FOR PURPOSES OF CLARITY.
2. DO NOT SCALE ELECTRICAL DRAWINGS. REFER TO CIVIL DRAWINGS TO COORDINATE THE EXACT LOCATION OF ALL ELECTRICAL EQUIPMENT, STRUCTURES, VAULTS, CONDUITS, ETC. NOTIFY ENGINEER IN THE EVENT OF A CONFLICT.
3. SEE DRAWING E5.0 FOR CONDUIT AND CONDUCTOR SCHEDULE. SEE SITE PLANS, DETAILS AND SUBSTATION PLANS FOR ADDITIONAL CONDUIT AND CONDUCTOR REQUIREMENTS. COUPLINGS AND JOINTS OF CONDUITS EMBEDDED IN CONCRETE, CDF OR ASPHALT SHALL BE TAPED OR OTHERWISE MADE WATERTIGHT TO PREVENT INTRUSION OF MORTAR, WATER OR OTHER MATERIALS. TEST CONDUIT FOR ABSENCE OF ANY BLOCKAGE PRIOR TO AND WITHIN 24 HOURS OF COMPLETING A CONCRETE OR CDF POUR OR ASPHALT PAVING.
4. PROVIDE PULL STRINGS WITH DISTANCE INCREMENTS (FEET) IN ALL CONDUITS. CONTRACTOR SHALL PROVIDE CONDUIT LABELS FOR ALL CONDUITS ENTERING AND LEAVING VAULTS. PROVIDE PHENOLIC LABEL ATTACHED TO VAULT WALL WITH TWO (2) PLASTIC INSERTS AND STAINLESS STEEL SCREWS ADJACENT TO EACH CONDUIT. PHENOLIC LABEL SHALL HAVE CONDUIT ID ENGRAVED AS INDICATED ON CONDUIT AND CONDUCTOR SCHEDULE.
5. CONTRACTOR SHALL INCLUDE IN THE BID ALL COSTS TO HAVE A DEPARTMENT OF LABOR AND INDUSTRIES'S APPROVED FIRM TO FIELD EVALUATE THE INSTALLATION, SAFETY, AND COMPLIANCE REQUIRED PER TACOMA POWER ELECTRICAL INSPECTION AND/OR PER W.A.C. 296-46B-901 FOR ANY EQUIPMENT SPECIFIED OR FURNISHED THAT IS NOT UL LABELED.
6. FOR ALL TRENCHING IN EXISTING ASPHALT AREAS, CONTRACTOR SHALL SAWCUT AND PATCH EXISTING ASPHALT PER CIVIL REQUIREMENTS IN SPECIFICATION 32 12 16. SEE CIVIL DRAWINGS FOR ASPHALT AREAS.
7. CONTRACTOR IS REQUIRED TO FIELD WALK THE WORK AREA TO LOCATE AND ASSESS FIELD CONDITIONS OF EQUIPMENT INCLUDED IN THIS PROJECT. REFER TO ELECTRICAL DRAWINGS.
8. REFER TO DIVISION 26 ELECTRICAL SPECIFICATION FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
9. ALL EXPOSED RIGID GALVANIZED STEEL CONDUIT SHALL BE PVC COATED FOR CORROSION PROTECTION.
10. FOR ACCESS TO SITE, SEE SECTIONS 01 55 00 VEHICULAR ACCESS AND PARKING, AND 01 14 00 WORK RESTRICTIONS.



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5 OF 13

CONTR/CONS: 071417
M. ID: 201110.01
PHASE: BID SET

WUT CRANE POWER PROJECT

ELECTRICAL GENERAL NOTES & SYMBOLS

APPROVED:

MOA

CHECKED BY: DATE

03/25/21

WMD

PROJ. ENGR. DATE

03/25/21

PRINTED BY: hester, nate

DATE

Mar 31, 2021

PORT ADDRESS:1815

PORT OF TACOMA RD

TACOMA, WA 98401-1837

TOWNSHIP: 21 N

RANGE: 3 E

SECTION: SE 1/4 35

NOS TIDAL (MLW = 0.0)

DRAWING SCALE: NO SCALE

PARCEL: 25

PROJECT No: 12646.03

BY:

DATE:

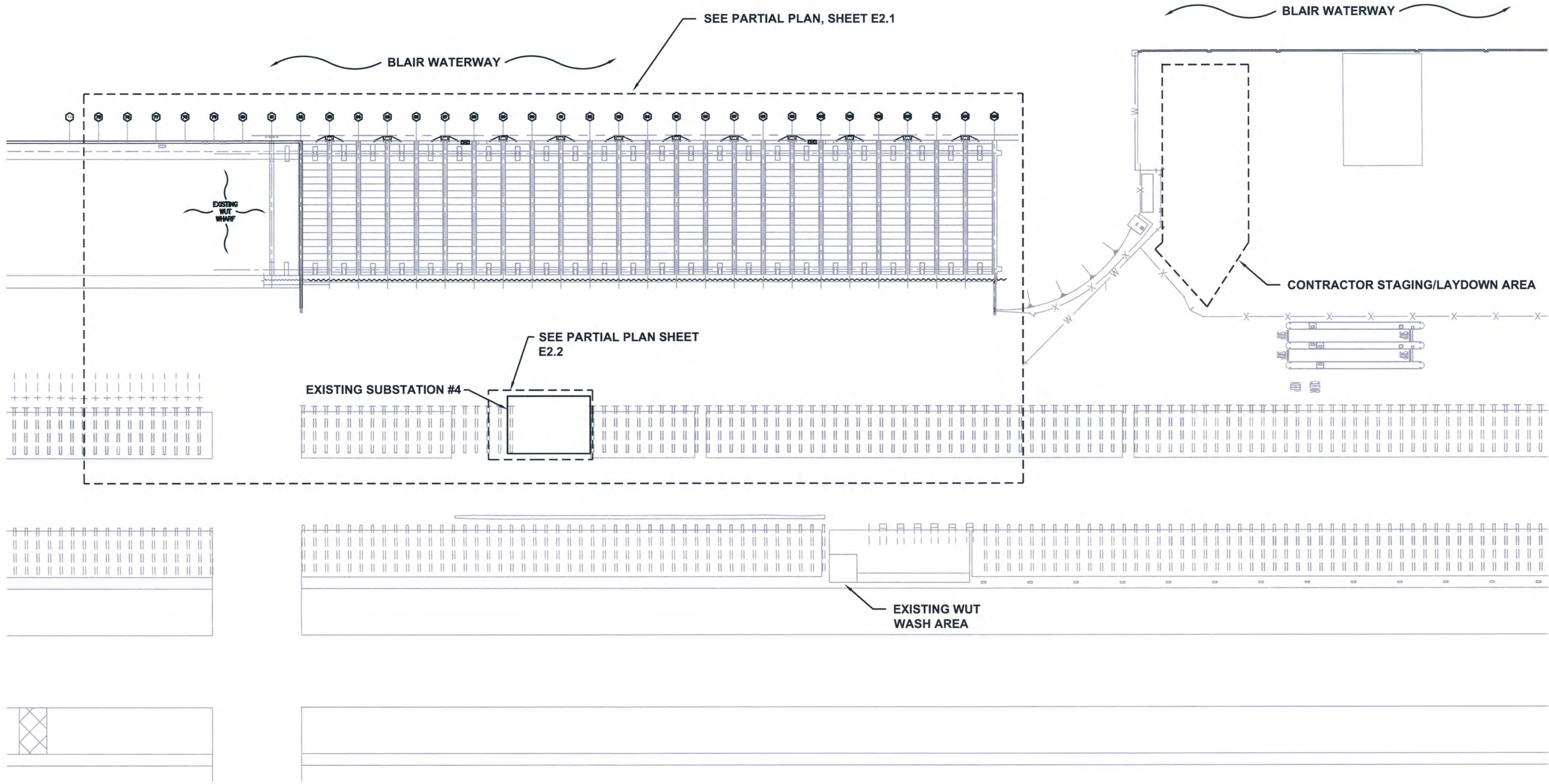
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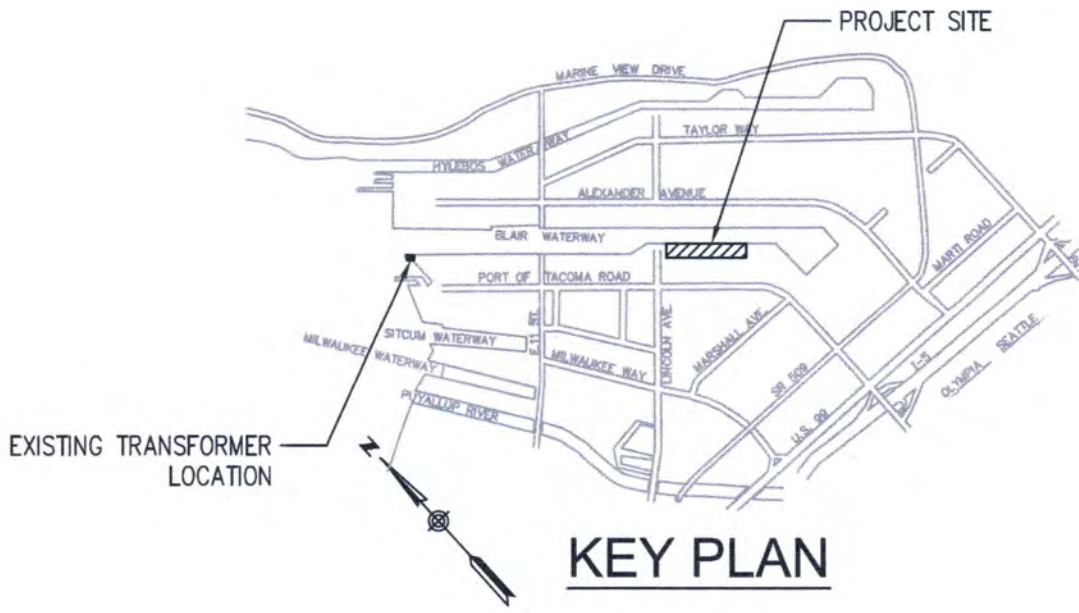
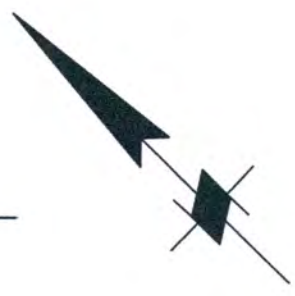
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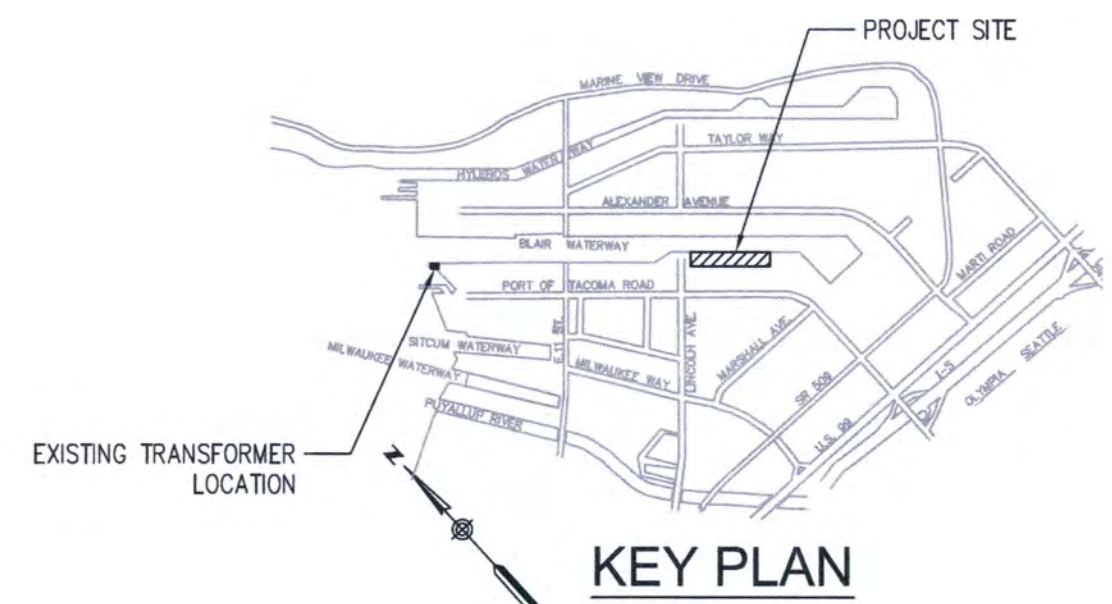


ELECTRICAL SITE PLAN
SCALE: 1"=60'-0"



6654 E2.0 6 OF 13	WUT CRANE POWER PROJECT ELECTRICAL SITE PLAN		APPROVED:	MOA	03/25/21	DATE
				CHECKED BY		
CONT/CONS: 071417	TOWNSHIP: 21 N	RANGE: 3 E	SECTION: SE 1/4 35	DIRECTOR ENG./DATE	03/25/21	DATE
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PHASE: BID SET	PARCEL: 25	DRAWING SCALE: 1" = 60'-0"	PORT ADDRESS: 1815 PORT OF TACOMA RD	TACOMA, WA 98401-1837		
			MARK:	REVISION:	BY:	DATE:
			APPR:			
			PROJECT No: 12646.03			
			HARRIS GROUP Big Capabilities - Dedicated People 2801 4th Avenue, Suite 400 Tacoma, Washington 98421 (206) 444-9400 harrisgroup.com			
			Port of Tacoma P.O. BOX 1837 TACOMA, WA 98401 (206) 385-5841			



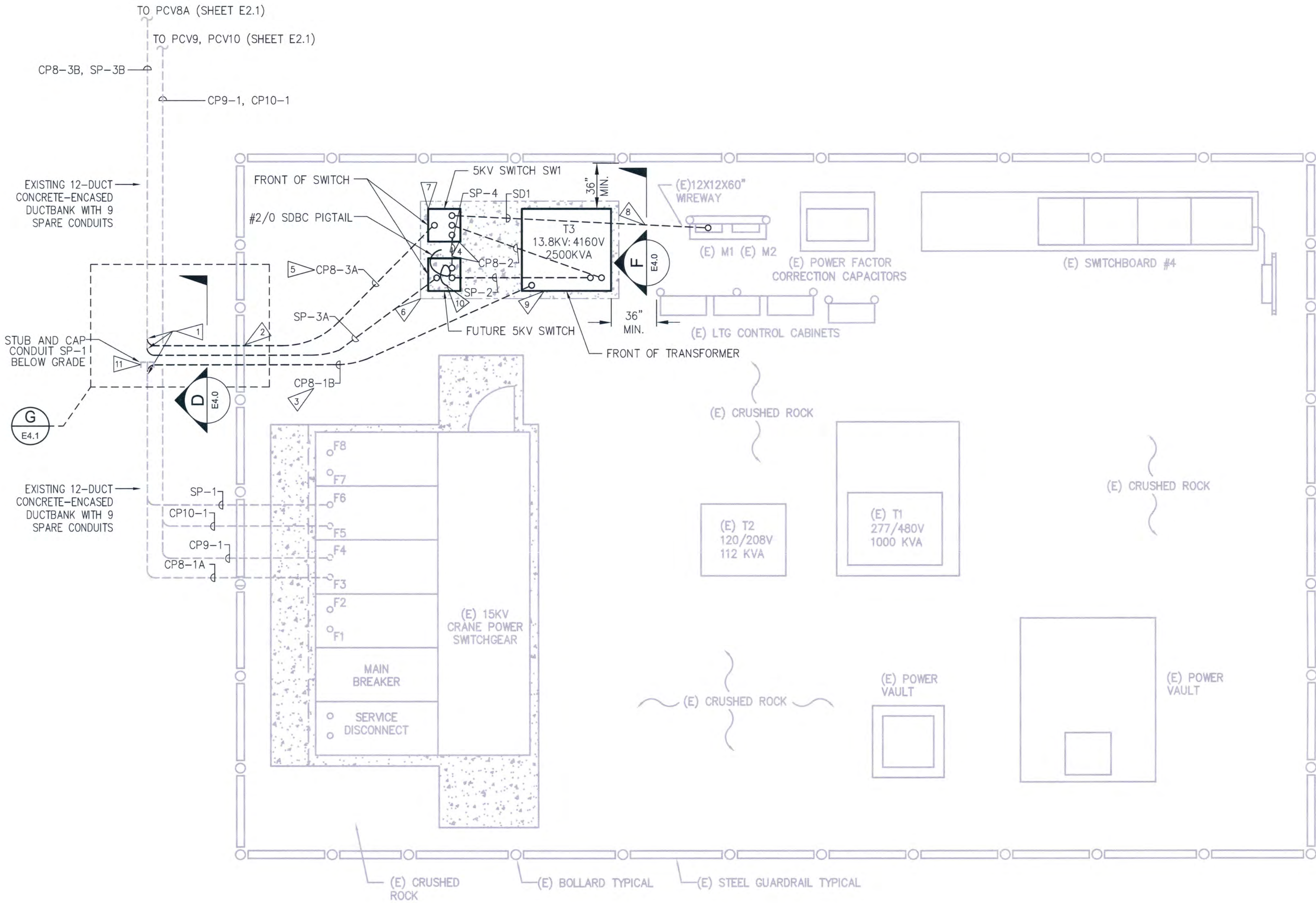


— — — UNDERGROUND CONDUIT/CABLE

1. ALL CONDUIT SHOWN IS EXISTING. REFER TO SHEET E5.0 CONDUIT AND CONDUCTOR SCHEDULE INFORMATION.

1 ▷ CONTRACTOR SHALL PROVIDE (3) 2-WAY 15KV
LOAD BREAK JUNCTIONS ON EXISTING CSB8, CSB9,
AND CSB10 VAULT WALLS. REFER TO SHEET E4.0
FOR MORE INFORMATION.

6654 E2.1 7 OF 13										WUT CRANE POWER PROJECT ELECTRICAL PARTIAL PLAN										APPROVED:		MQA 03/25/21		 HARRIS GROUP Big Capabilities • Dedicated People 2501 4th Avenue, Suite 400 Seattle, WA 98121 (206) 494-9400 harrisgroup.com		Project No: 12646.03		 P.O. BOX 1837 TACOMA, WA 98401 (253)383-9841																							
M. ID:		201110.01		TOWNSHIP:		21 N		RANGE:		3 E 1/4 35		SECTION:		NOS TIDAL (MLW = 0.0)		PORT ADDRESS:		1815 PORT OF TACOMA RD		PRINTED BY:		hester, note Mar 31, 2021		PROJ. ENGR		DATE		MWD 03/25/21		CHECKED BY		DATE		 MARK A. DIBENEDETTO WASHINGTON STATE OF WASHINGTON PROFESSIONAL ENGINEER 61289		REVISION:		BY:		DATE:											
PHASE:		BID SET		DRAWING SCALE:		1" = 30'-0"		PARCEL:		25		NOS TIDAL (MLW = 0.0)		SECTION:		3 E 1/4 35		TOWNSHIP:		21 N		DAT-HRZ:		NAD 83-07VERT:		PORT ADDRESS:		1815 PORT OF TACOMA RD		PRINTED BY:		hester, note Mar 31, 2021		PROJ. ENGR		DATE		MWD 03/25/21		CHECKED BY		DATE		 MARK A. DIBENEDETTO WASHINGTON STATE OF WASHINGTON PROFESSIONAL ENGINEER 61289		REVISION:		BY:		DATE:	



SUBSTATION #4 LAYOUT PARTIAL PLAN
SCALE: 1/4"=1'-0"

LEGEND:

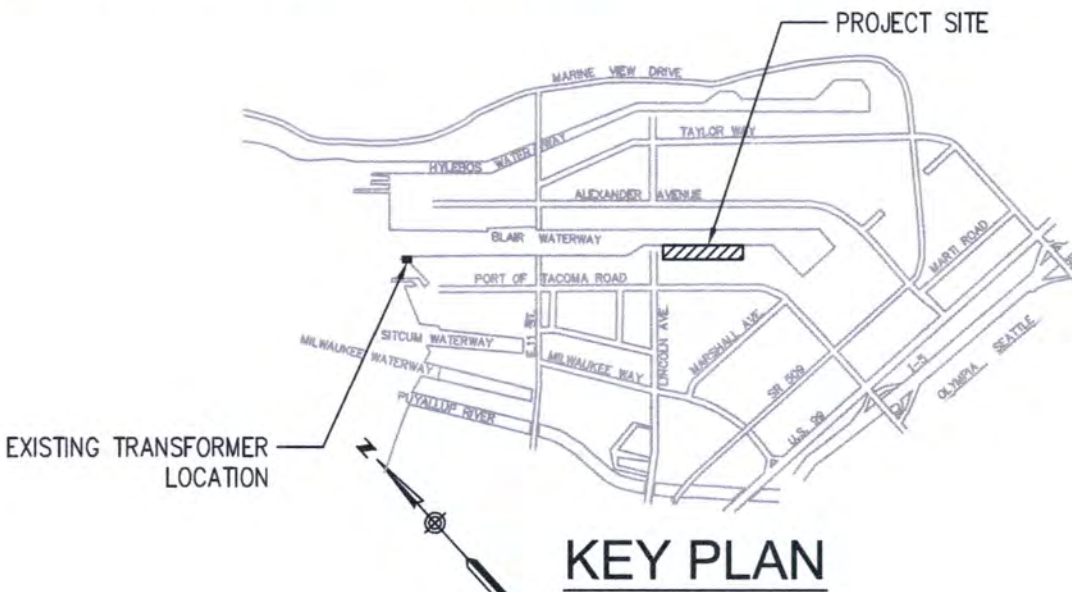
- NEW UNDERGROUND CONDUIT/CABLE
- EXISTING UNDERGROUND CONDUIT WITH NEW CABLE
- NEW ITEMS
- EXISTING ITEMS
- NEW FOUNDATION

GENERAL NOTES:

- REFERENCE SHEET E1.0 FOR ELECTRICAL NOTES AND SYMBOLS.
- NOT ALL EXISTING CONDUITS ARE SHOWN. ONLY CONDUITS WITHIN CONTRACTOR SCOPE OF WORK ARE SHOWN FOR PURPOSES OF CLARITY.

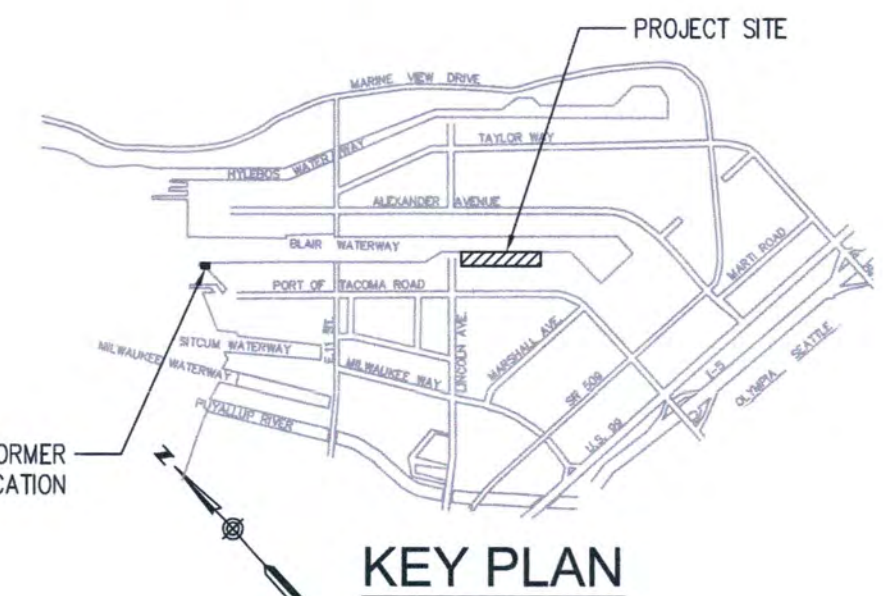
ELECTRICAL NOTES:

- CONTRACTOR SHALL LOCATE EXISTING CONCRETE-ENCASED DUCTBANK AND INTERCEPT TWO (2) EXISTING SPARE 4" PVC SCHEDULE 80 CONDUITS: (CP8-1A/CP8-3B) BETWEEN FEEDER BREAKER F3 AND VAULT PCV8A AND (SP-1/SP-3B) BETWEEN FEEDER BREAKER F6 AND VAULT PCV8A. REFER TO DETAIL G ON SHEET E4.1 FOR NEW CONDUIT INSTALLATION.
- ROUTE CONDUIT CENTERED BETWEEN EXISTING BOLLARDS.
- PROVIDE CONDUIT (CP8-1B) FROM EXISTING CONDUIT END OF SWITCH F3 TO PRIMARY SIDE OF TRANSFORMER T3.
- PROVIDE TWO (2) CONDUITS (CP8-2, SP-2) FROM SECONDARY SIDE OF TRANSFORMER T3 TO 5KV SWITCH SW1 AND TO FUTURE 5KV SWITCH LOCATION.
- PROVIDE CONDUIT (CP8-3A) FROM 5KV SWITCH SW1 TO EXISTING CONDUIT END OF VAULT PCV8A.
- REFER TO CIVIL SHEET C2.0 FOR TRANSFORMER T3 AND 5KV SWITCH SW1 HOUSEKEEPING PAD DIMENSIONS AND LOCATION.
- PROVIDE PCI 200A, 5KV, 20KA SCR, 60KV BIL FUSED DISCONNECT SWITCH IN NEMA 3R ENCLOSURE, PCI CATALOG NO. PCI0502 OR APPROVED EQUAL. PROTECT WITH 200E, 5KV SINGLE BARREL, CURRENT LIMITING FUSES, CATALOG NO. A055F1D0R0-200E OR APPROVED EQUAL. IF NOT USING PCI, ENSURE EQUIPMENT FITS IN SAME FOOTPRINT. COORDINATE WITH CONCRETE CONTRACTOR.
- PROVIDE CONDUIT (SD1) FROM EXISTING 120/208V PANEL M1 THROUGH EXISTING WIREWAY TO 5KV SWITCH SW1 FOR STRIP HEATER. PROVIDE SPARE CONDUIT (SP-4) FROM 5KV SWITCH SW1 TO FUTURE 5KV SWITCH LOCATION.
- INSTALL ABB 2500KVA TRANSFORMER AS SHOWN. CONTACT ENGINEER TO IDENTIFY AND COORDINATE TRANSFER OF SPARE UNIT FROM PORT OF TACOMA SUBSTATION NO. 8419, LOCATED APPROXIMATELY 2.25 MILES AWAY. CONTRACTOR RESPONSIBLE FOR LOADING, MOVING, UNLOADING, INSTALLING, AND COMMISSIONING OF TRANSFORMER. UNIT IS DE-ENERGIZED AND DISCONNECTED. REFER TO SHEETS 069458-G6.0, 069458-E1.0 AND D2.3 FOR EXISTING TRANSFORMER LOCATION.
- SUBSTATION #4 HAS 48" X 48" GROUND GRID OF #2/0 STRANDED SOFT DRAWN BARE COPPER DOWN 18". BOND EQUIPMENT GROUNDS OF 5KV SWITCH SW1 AND TRANSFORMER T3 GROUND PADS ON HV/LV SIDES WITH #2/0 COPPER TO EXISTING GROUND GRID USING EXOTHERMIC WELDS BELOW GRADE AND HYPRESS LUGS ABOVE GRADE. RESTORE ANY GROUND GRID OR STANCHION BONDS DAMAGED DURING CONSTRUCTION. TRENCHING IN SUBSTATION #4 WILL REQUIRE CUTTING AND SPLICING OF GROUND GRID. PROVIDE CONDUIT AND 6' PIGTAIL FOR FUTURE 5KV SWITCH AS SHOWN.
- STUB AND CAP EXISTING SPARE CONDUIT SP-1 BELOW GRADE.

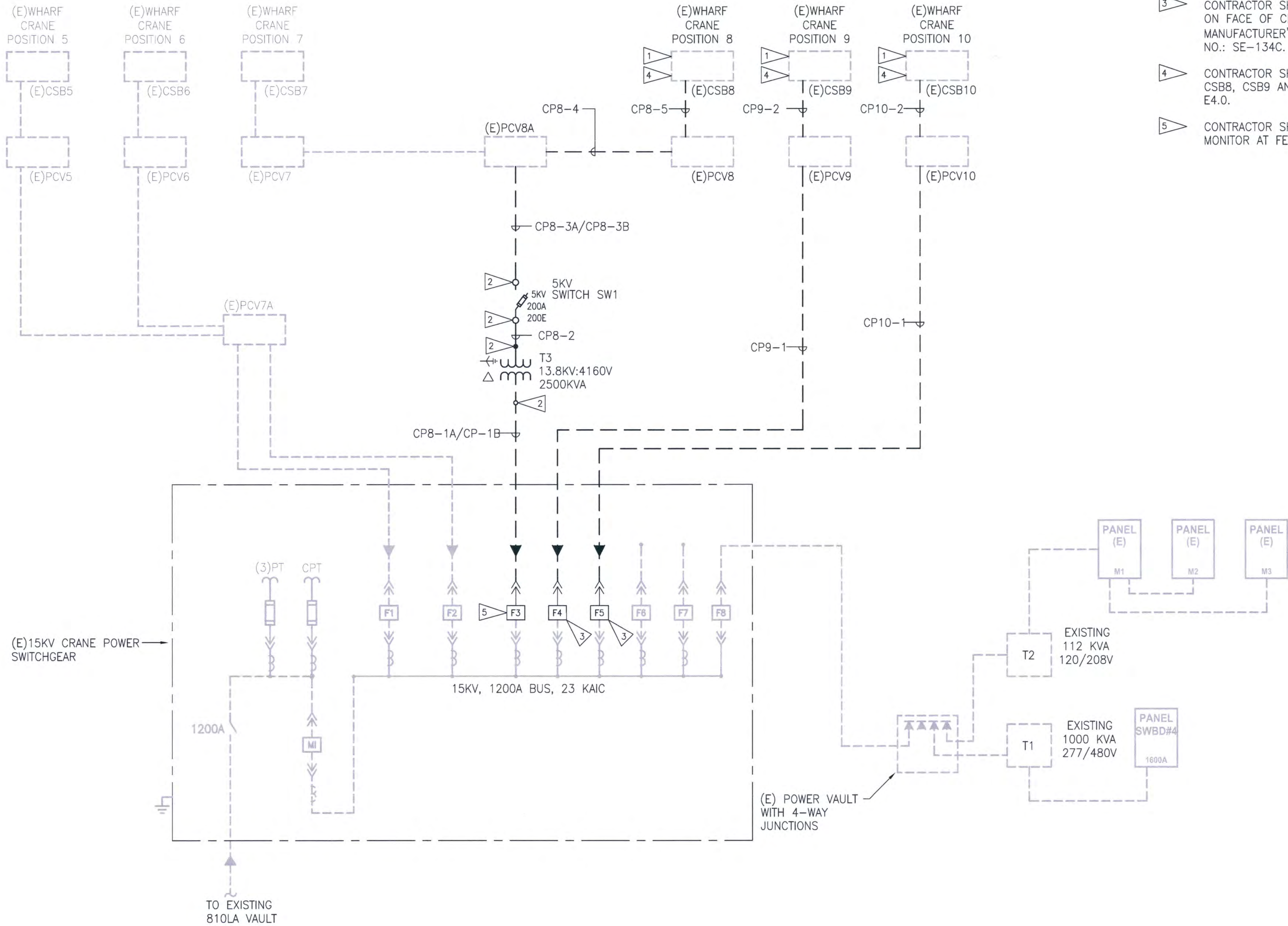


6654 E2.2 8 OF 13	WUT CRANE POWER PROJECT SUBSTATION #4 PARTIAL PLAN					
	APPROVED: <i>W. J. Harris</i> DIRECTOR ENG. DATE: 03/25/21					
	CHECKED BY: DATE: 03/25/21					
	QA: 03/25/21					
CONT/CONS: 071417	TOWNSHIP: 21 N	RANGE: 3 E	SECTION: SE 1/4 35	DATE: 03/25/21	PRINTED BY: hester, nate Mar 31, 2021	PROJECT NO: 12646.03
M. ID: 201110.01	DAT-HRZ: NAD 83-07	VERT: NOS TIDAL (MLLW = 0.0)	PARCEL: 25	DRAWING SCALE: 1/4" = 1'-0"	PORT ADDRESS: 1815 PORT OF TACOMA RD TACOMA, WA 98401-1837	DATE: 03/25/21
PHASE: BID SET						MARK: REVISION: BY: APPR: DATE:

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KEY PLAN



SUBSTATION #4 15KV POWER RISER DIAGRAM
NO SCALE

LEGEND:

- NEW UNDERGROUND CABLE
- EXISTING UNDERGROUND CABLE

ELECTRICAL NOTES:

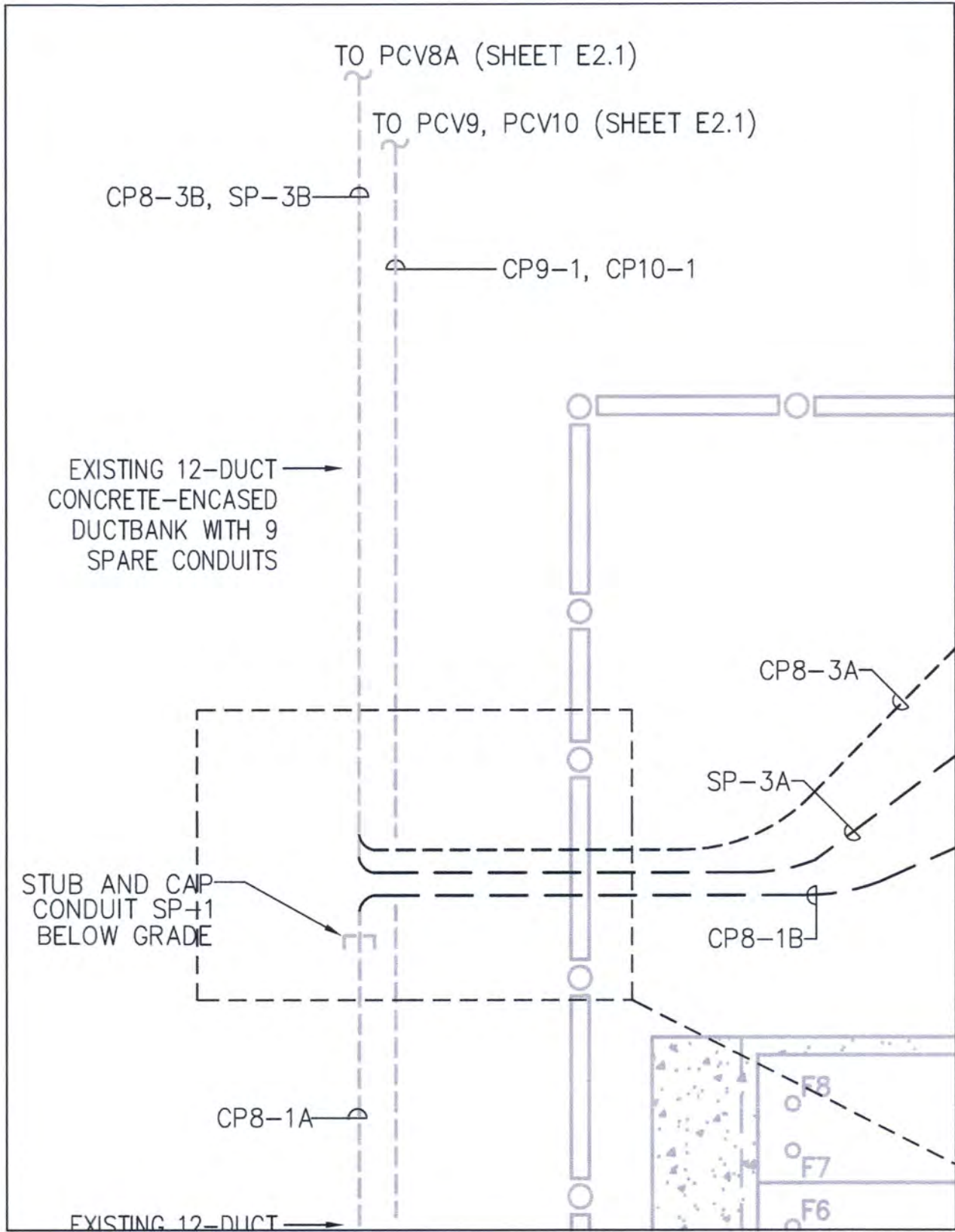
- CONTRACTOR SHALL PROVIDE (3) 2-WAY 15KV LOAD BREAK JUNCTIONS ON EXISTING CSB8, CSB9, AND CSB10 VAULT WALLS. REFER TO SHEET E4.0 FOR MORE INFORMATION.
- CONTRACTOR SHALL PROVIDE 200A, 15KV LOAD BREAK ELBOW TERMINATIONS FOR FEEDER CABLES.
- CONTRACTOR SHALL PROVIDE GROUND CONTINUITY MONITOR ON FACE OF CIRCUIT BREAKER ENCLOSURE. CONNECT PER MANUFACTURER'S RECOMMENDATIONS. LITTELFUSE CATALOG NO.: SE-134C.
- CONTRACTOR SHALL PROVIDE GROUND BAR FOR VAULTS CSB8, CSB9 AND CSB10 AS SHOWN IN DETAIL E ON SHEET E4.0.
- CONTRACTOR SHALL USE EXISTING GROUND CONTINUITY MONITOR AT FEEDER BREAKER F3.

6654 E3.0 10 OF 13	WUT CRANE POWER PROJECT				APPROVED:		MQA		03/25/21		 03/31/2021	 HARRIS GROUP 2601 4th Avenue, Suite 400 Seattle, Washington 98121 P.O. BOX 1887 TACOMA, WA 98401 (253)385-9641	 Port of Tacoma		
	SUBSTATION #4 15KV POWER RISER DIAGRAM				WUT CRANE POWER PROJECT		03/25/21		03/25/21						
CONT/CONS: 071417		TOWNSHIP: 21 N		RANGE: 3 E		SECTION: SE 1/4 35		DATE: 03/25/21		DATE: 03/25/21		BY: [Signature]		DATE: [Signature]	
M. ID: 201110.01		DAT-HRZ: NAD 83-07		VERT: NOS TIDAL (MLW = 0.0)		PRINTED BY: hester, nate		DATE: Mar 31, 2021		DATE: Mar 31, 2021		REVISION: [Signature]		DATE: [Signature]	
PHASE: BID SET		PARCEL: 25		DRAWING SCALE: NO SCALE		PORT ADDRESS: 1815 PORT OF TACOMA RD		TACOMA, WA 98401-1837		TACOMA, WA 98401-1837		MARK: [Signature]		DATE: [Signature]	

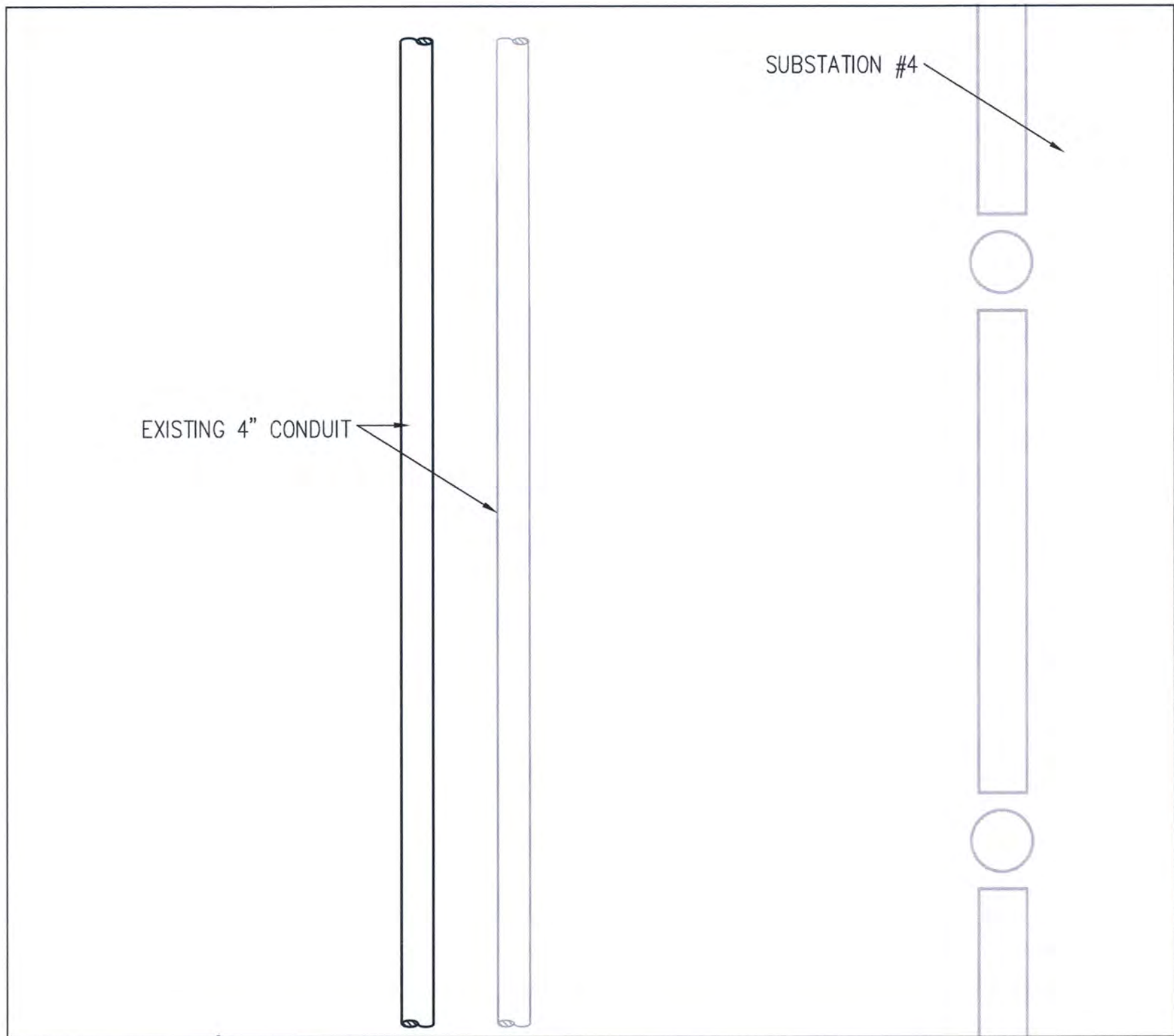
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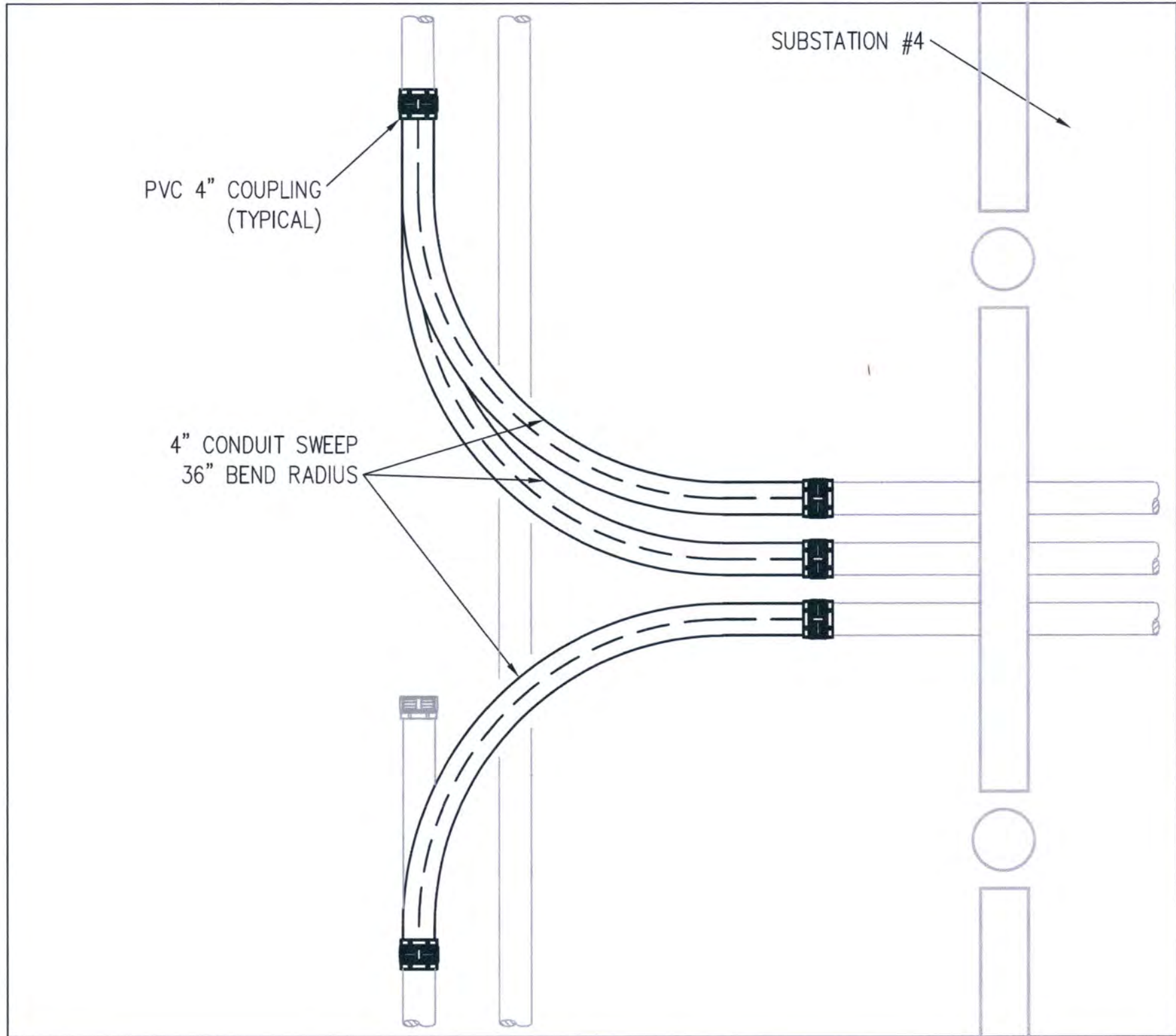
1. CONTRACTOR SHALL PROVIDE GROUND BAR FOR VAULTS CSB8, CSB9 AND CSB10 AS SHOWN IN DETAIL E. CONTRACTOR SHALL PROVIDE #4 BARE COPPER GROUND WIRE BETWEEN GROUND BAR(S) AND TO ALL METAL PARTS (CABLE DRAWN, FUNNEL BOTTOM, LIDS, FRAMES, LOAD BREAK JUNCTIONS, GROUND STUDS, ETC.) IN VAULT. CADWELD GROUND WIRE(S) TO ALL METAL PARTS WHERE GROUND STUDS OR HOLES FOR BOLTING GROUND WIRE(S) IS NOT AVAILABLE. ATTACH GROUND WIRE(S) ROUTED IN VAULT TO VAULT CABLE RACKS WITH PLASTIC TIE WRAPS.
2. CONTRACTOR SHALL PROVIDE (3) 2-WAY 15KV LOAD BREAK JUNCTIONS ON EXISTING CSB8, CSB9, AND CSB10 VAULT WALLS.



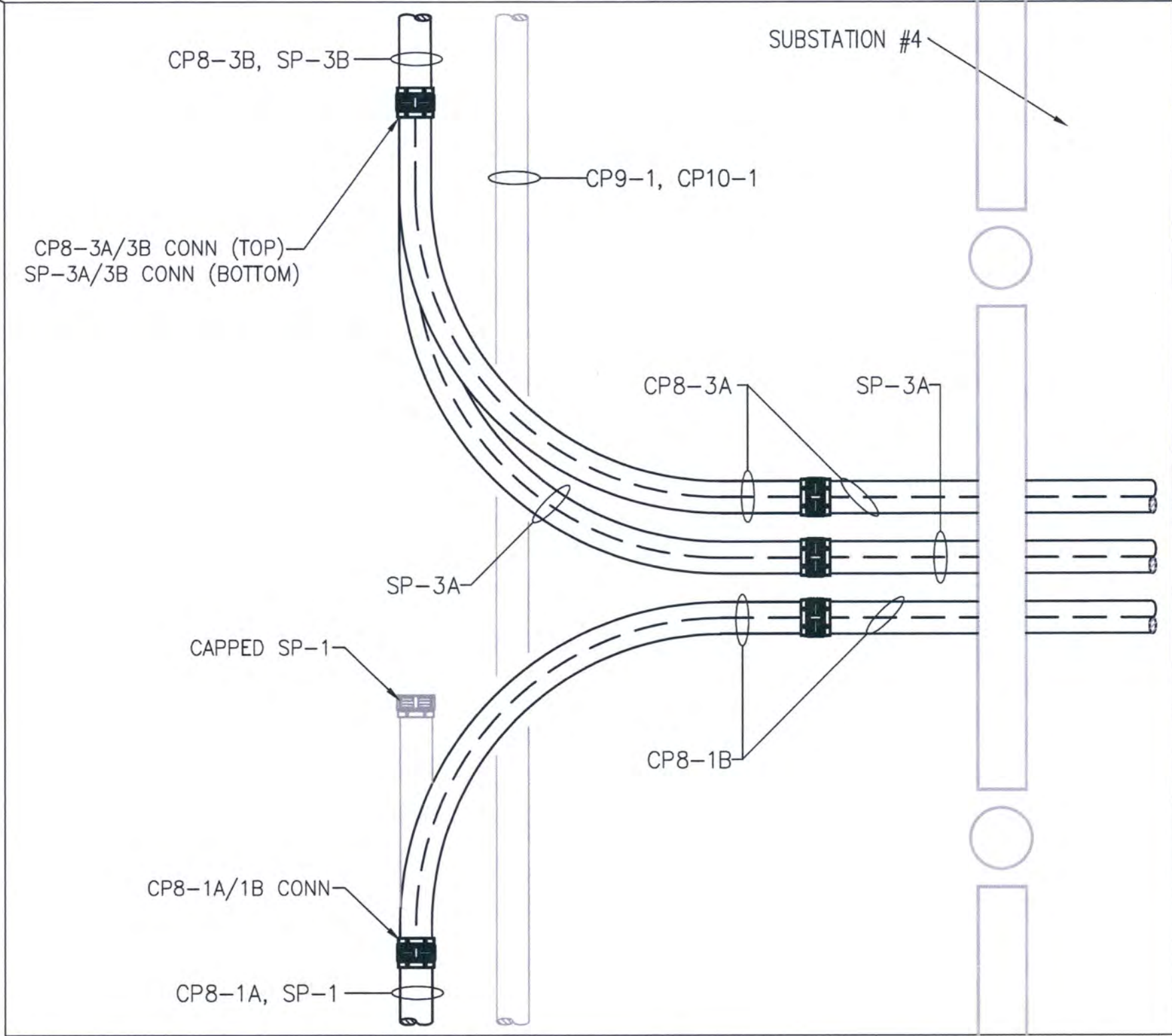
SUBSTATION #4 LAYOUT PARTIAL PLAN
SCALE: 1/4"=1'-0"



CURRENT LAYOUT DETAIL
SCALE: 3/4"=1'-0"

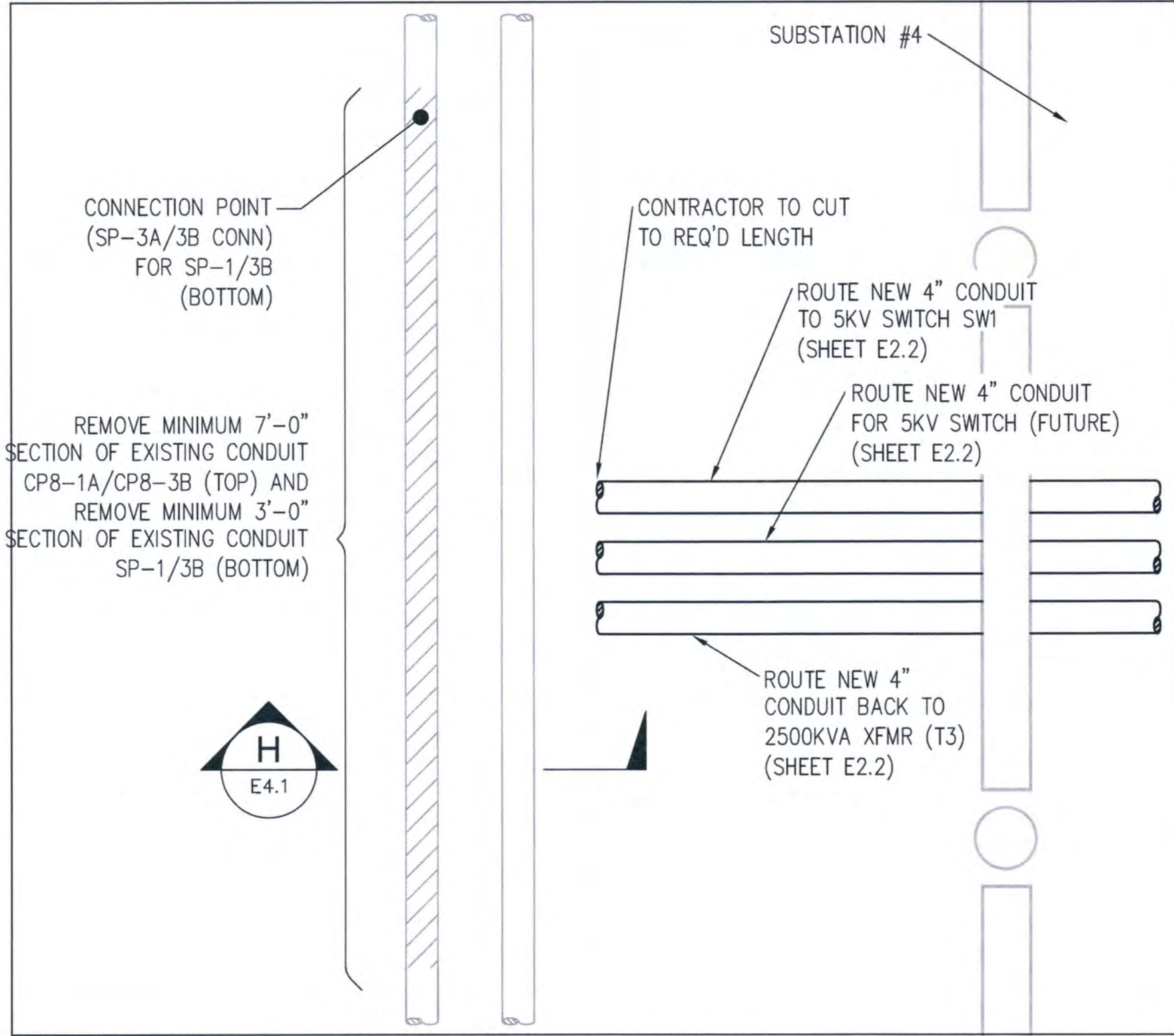


PHASE 2 DETAIL
SCALE: 3/4"=1'-0"

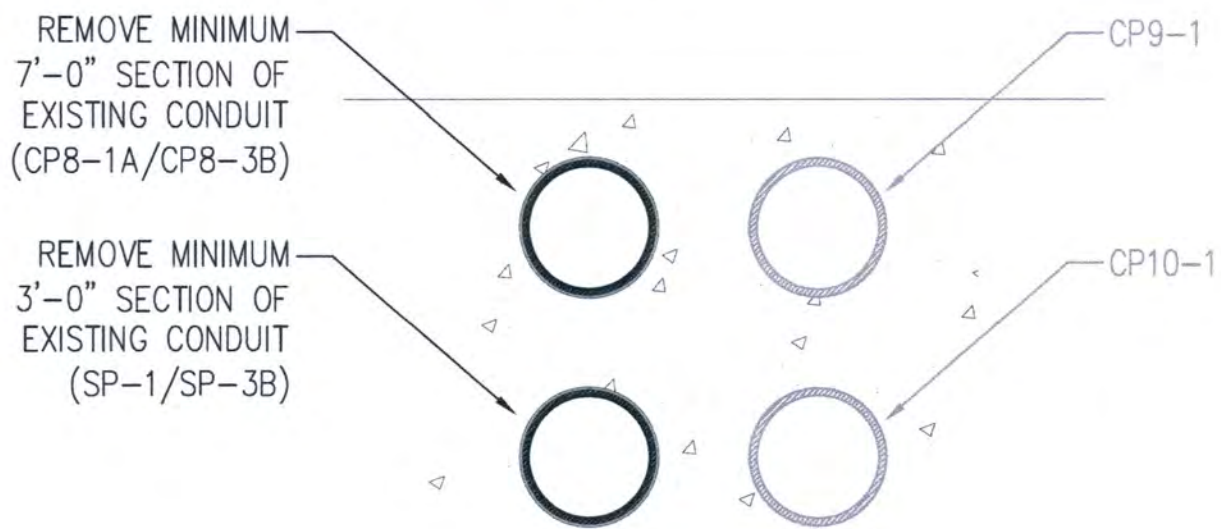


FINISHED LAYOUT DETAIL
SCALE: 3/4"=1'-0"

G
E2.2
CONDUIT INSTALLATION DETAIL
SCALE: AS SHOWN



PHASE 1 DETAIL
SCALE: 3/4"=1'-0"



NOTE: CONTRACTOR TO VERIFY FIELD LAYOUT AND LOCATION OF CONDUITS WITHIN DUCTBANK.

H
E4.1
EXISTING PARTIAL DUCTBANK SECTION
SCALE: NOT TO SCALE

6654 E4.1 12 OF 13	WUT CRANE POWER PROJECT CONDUIT INSTALLATION DETAIL				APPROVED: <i>[Signature]</i> DIRECTOR ENG. DATE PRINTED BY: hester, note Mar 31, 2021 PORT ADDRESS: 1815 PORT OF TACOMA RD TACOMA, WA 98401-1837	MOA 03/25/21 CHECKED BY DATE MWD 03/25/21 PROJ. ENGR DATE PRINTED BY: hester, note Mar 31, 2021 PORT ADDRESS: 1815 PORT OF TACOMA RD TACOMA, WA 98401-1837		 Port of Tacoma P.O. BOX 1837 TACOMA, WA 98401 (203)383-5484
	REVISION:							
	BY:							
	DATE:							

CONDUIT AND CONDUCTOR SCHEDULE									
CIRCUIT NUMBER	CONDUIT			CONDUCTORS		FROM	TO	LENGTH (FT)	REMARKS
	NO.	SIZE	NOTES	SIZE	TYPE				
CP8-1A	1	(E)4"	①②	(3)#1/0, (1)#6G AWG CU	15KV MV-105/600V	(E)FEEDER BKR F3 ④	CP8-1A/1B CONN ③	30	CRANE 104
CP8-1B	1	4"	①②	(3)#1/0, (1)#6G AWG CU	15KV MV-105/600V	CP8-1A/1B CONN ③	TRANSFORMER T3 ④	40	CRANE 104
CP8-2	1	4"	②	(3)#4/0, (1)#4G AWG CU	5KV MV-90/600V	TRANSFORMER T3 ④	5KV SWITCH SW1 ④	20	CRANE 104
CP8-3A	1	4"	①②	(3)#4/0, (1)#4G AWG CU	5KV MV-90/600V	5KV SWITCH SW1 ④	CP8-3A/3B CONN ③	30	CRANE 104
CP8-3B	1	(E)4"	①②	(3)#4/0, (1)#4G AWG CU	5KV MV-90/600V	CP8-3A/3B CONN ③	(E)PCV8A	55	CRANE 104
CP8-4	1	(E)5"	①②	(3)#4/0, (1)#4G AWG CU	5KV MV-90/600V	(E)PCV8A	(E)PCV8	85	CRANE 104
CP8-5	1	(E)5"	①②	(3)#4/0, (1)#4G AWG CU	5KV MV-90/600V	(E)PCV8	(E)CSB8 ④	190	CRANE 104
CP9-1	1	(E)4"	①②	(3)#1/0, (1)#6G AWG CU	15KV MV-105/600V	(E)FEEDER BKR F4 ④	(E)PCV9	195	CRANE 107
CP9-2	1	(E)5"	①②	(3)#1/0, (1)#6G AWG CU	15KV MV-105/600V	(E)PCV9	(E)CSB9 ④	190	CRANE 107
CP10-1	1	(E)4"	①②	(3)#1/0, (1)#6G AWG CU	15KV MV-105/600V	(E)FEEDER BKR F5 ④	(E)PCV10	230	CRANE 108
CP10-2	1	(E)5"	①②	(3)#1/0, (1)#6G AWG CU	15KV MV-105/600V	(E)PCV10	(E)CSB10 ④	190	CRANE 108
SD1	1	1"	②	(2)#12, (1)#12G AWG CU	600V	(E)PANEL M1	5KV SWITCH SW1	20	SW1 STRIP HEATER
SP-1	1	(E)4"	①③			(E)FDR BRKR F6	CAPPED SP-1	30	SPARE
SP-2	1	4"	②			TRANSFORMER T3	FUTURE 5KV SWITCH	20	SPARE
SP-3A	1	4"	①②			FUTURE 5KV SWITCH	SP-3A/3B CONN ③	30	SPARE
SP-3B	1	(E)4"	①②			SP-3A/3B CONN ③	(E) PCV8A	55	SPARE
SP-4	1	1"	②			5KV SWITCH SW1	FUTURE 5KV SWITCH	10	SPARE

EXISTING, NEMA 3R, SHOWN ON E3.0

SURFACE MOUNTING 22,000 AIC				PANEL SCHEDULE			
NO. M1		LOCATION: (E)SUBSTATION #4		120/208 VOLTS 3PHASE 4WIRE			
		SERVING: SITE		200 AMPS WITH 200 MAIN BREAKER			
CKT NO.	LOAD DESCRIPTION	KVA	TRIP AMPS	TRIP AMPS	KVA	LOAD DESCRIPTION	CKT NO.
1	SUBSTATION RECEPT.	.18	20	20	.18	LP32 RECEPT.	2
3	LP25 RECEPT.	.18			.18	LP32 RECEPT.	4
5	LP25 RECEPT.	.18			.18	LP33 RECEPT.	6
7	LP26 RECEPT.	.18			.18	LP33 RECEPT.	8
9	LP26 RECEPT.	.18			.18	LP34 RECEPT.	10
11	LP27 RECEPT.	.18			.18	LP34 RECEPT.	12
13	LP27 RECEPT.	.18			.18	LP35 RECEPT.	14
15	LP28 RECEPT.	.18			.18	LP35 RECEPT.	16
17	LP28 RECEPT.	.18			.18	LP36 RECEPT.	18
19	LP29 RECEPT.	.18			.18	LP36 RECEPT.	20
21	LP29 RECEPT.	.18			.18	LP37 RECEPT.	22
23	LP30 RECEPT.	.18			.18	LP37 RECEPT.	24
25	LP30 RECEPT.	.18			.18	LP38 RECEPT.	26
27	LP31 RECEPT.	.18			.18	LP38 RECEPT.	28
29	LP31 RECEPT.	.18			.18	LP39 RECEPT.	30
31	SUMP PUMP - TCLPV15	.19			.18	LP39 RECEPT.	32
33	SWITCHBOARD HEATER	1.00	20		.18	LP40 RECEPT.	34
35	PANEL M3	3.03	100	20	.18	LP40 RECEPT.	36
37				20		TVSS	38
39			3				40
41	SW1 STRIP HEATER	.25	20	3			42
REMARKS: FEED THRU LUGS TO PANEL M2				CONNECTED LOAD: 15.5 KVA 43 AMPS DEMAND LOAD: 15.5 KVA 43 AMPS			

* EXISTING CIRCUIT BREAKER WITH NEW LOAD

PANEL M1 LOAD CALCULATIONS

SERVICE	KVA LOAD	FACTOR	NEC REF.	DEMAND LOAD
LIGHTING	-	X	1.25	220-14f
RECEPTS TO 10KW	6.30	X	1.00	220-44
RECEPTS OVER 10KW	-	X	0.50	220-44
MOTORS (LARGEST)	.19	X	1.25	430-24
MOTORS	-	X	1.00	430-24
KITCHEN EQUIP.	-	X	1.00	220-56
WELDERS	-	X	1.00	630-11b (FPN)
AIR CONDITIONING	-	X	1.00	220-50
ELECTRIC HEAT	.25	X	1.00	220-51
MISCELLANEOUS	8.73	X	1.00	

TOTAL CONNECTED 15.5 KVA (43 AMPS) TOTAL DEMAND 15.5 KVA (43 AMPS)

PANEL M1 SCHEDULE

NOT TO SCALE

SCHEDULE ABBREVIATION LEGEND:

BKR = BREAKER	PCV = CRANE POWER VAULT
C = COMMUNICATIONS	SD = SECONDARY 600V DISTRIBUTION
CONN = CONNECTION	SP = SPARE CONDUIT
CP = CRANE POWER	SSB = SHORE SHIP CONNECTION VAULT
CSB = CRANE SERVICE VAULT	SSP = SHORE SHIP POWER
CV = COMMUNICATIONS VAULT	SSPV = SHORE SHIP POWER VAULT
MPV = MOORING DOLPHIN POWER VAULT	WC = WHARF COMMUNICATIONS
PB = PULLBOX	WG = WHARF GROUNDING
PV = POWER VAULT	WPV = WHARF POWER VAULT
PCV = CRANE POWER VAULT	WS = WHARF SECONDARY 600V DISTRIBUTION

PROVIDE LABELING PER SPECIFICATION SECTION 26 05 53

CABLE TIE HOLES, TYPICAL OF FOUR (4)

- SOURCE POINT (I.E. SWITCH #, PANEL/CIRCUIT #, LIGHTING CONTROL CIRCUIT, ETC.)
- END POINT (I.E. LIGHT POLE #, WOOD POLE #, CRANE #, UNIT SUB, ETC.)

CONDUCTOR IDENTIFICATION LABEL

NOT TO SCALE

GENERAL NOTES:

- SEE SPECIFICATION SECTION 26 05 53 FOR LABELING REQUIREMENTS.
- NOT ALL CONDUIT AND CONDUCTORS ARE INDICATED ON THE SCHEDULES. SEE SITE PLANS, DETAILS AND SUBSTATION PLAN FOR ADDITIONAL CONDUIT AND CONDUCTOR REQUIREMENTS.
- NEW CABLE MUST MEET NEC REQUIREMENTS FOR CONDUIT FILL.
- INSTALL PULL LINES PER 26 05 00.
- CONTRACTOR SHALL PROVIDE A COMPLETE LOOP OF CABLES AROUND ALL FOUR WALLS OF VAULT PRIOR TO CABLE EXITING VAULT.

SCHEDULE NOTES:

- RED CDF CONCRETE ENCASED.
- PVC SCHEDULE 80.
- REFER TO SHEET E2.2 AND E4.1 FOR EXISTING AND NEW CONDUIT TERMINATION POINTS IN DUCTBANK.
- PROVIDE 200A, 15KV LOAD BREAK ELBOW TERMINATIONS.

6654

E5.0

13 OF 13

CONT/CONS: 071417

M. ID: 201110.01

PHASE: BID SET

WUT CRANE POWER PROJECT

CONDUIT AND CONDUCTOR SCHEDULE

TOWNSHIP: 21 N

RANGE: 3 E

DAT-HRZ: NAD 83-01

PARCEL: 25

SECTION: SE 1/4 35

NOS TIDAL (MLLW = 0.0)

DRAWING SCALE: NO SCALE

APPROVED:

MOA

03/25/21

CHECKED BY

DATE

WMD

03/25/21

PROJ. ENGR

DATE

PRINTED BY: hester, nate

Mar 31, 2021

PORT ADDRESS:1815

PORT OF TACOMA RD

TACOMA, WA 98401-1837

Port of Tacoma

P.O. BOX 1837 TACOMA, WA 98401 (203)883-5484

HARRIS GROUP

2801 4th Avenue, Suite 400

Seattle, Washington 98121

Project No: 12646.03

MARK:

REVISION:

BY:

DATE:

STATE OF WASHINGTON

REGISTERED PROFESSIONAL

03/31/2021

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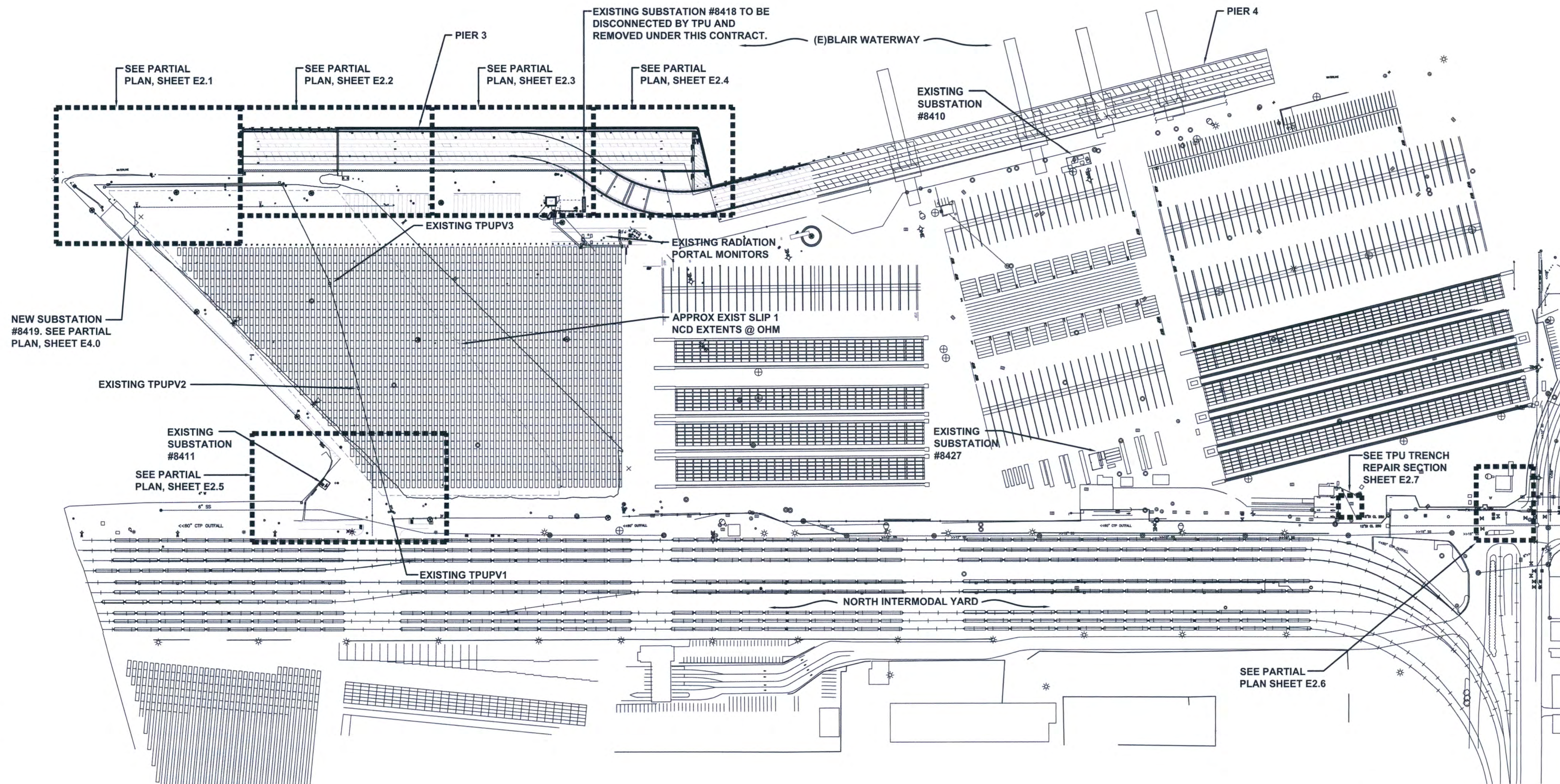
1" = 150'

150 0 150 300

scale feet

6502 G6.0 SHEET 6 OF 129										PIER 3 UPGRADE																																							
TOWNSHIP: 21 N RANGE: 3 E SECTION: 27 DAT-HRZ: NAD 83-07 VERT: NOS TIDAL (MLW = 0.0)										DC DIR OF ENG PRINTED BY: JASON.MENDENHALL PORT ADDRESS: ONE SITCUM WAY TACOMA, WA 98421-2300																																							
PHASE: RECORD DRAWINGS PARCEL: 27 DRAWING SCALE: AS SHOWN										CHECKED BY DATE 7/17/13 JRG DATE 7/17/13																																							
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SCALE: 1"=150'-0"



FOR REFERENCE ONLY

FACILITY DESIGN BY HG DATE 03.25.21

6502

E1.0
SHEET 98 OF 128

SHEET 98 OF 128

CONT/CONS: 06945

MASTER ID NO: 09293

PHASE: RECORD DRAW

PIER 3 UPGRADE

OVERALL ELECTRICAL SITE PLAN

CONTRACT/CONS:	0690458	TOWNSHIP: 21 N	RANGE: 3 E	SECTION: 27
MASTER ID NO:	092935	DAT-HRZ: NAD 83-07		
PHASE:	RECORD DRAWINGS	PARCEL:	27	DRAWING SCALE: AS SHOWN

APPROVED:

DC	7/17/13	GLW	7/17/13
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TACOMA, WA 98421-2300

APPROVED:	GLW/SLH 7/17/13
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DC	7/17/13	GLW	7/17/13
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 PORT ADDRESS: **ONE SITCUM WAY**
TACOMA, WA 98421-2300



P.O. BOX 1837 TACOMA, WA 98401 (253)353-5841

CROSS ENGINEERS, INC.
6509 6th Avenue
Tacoma, WA 98406
Phone: (253) 799-0118
Fax: (253) 799-0119
Job Number: 11-071.1
info@crossengineers.com

MARK:	REVISION:	BY:	APPR:	DATE:
	RECORD DRAWINGS	SJK	GLW	2-13-15

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