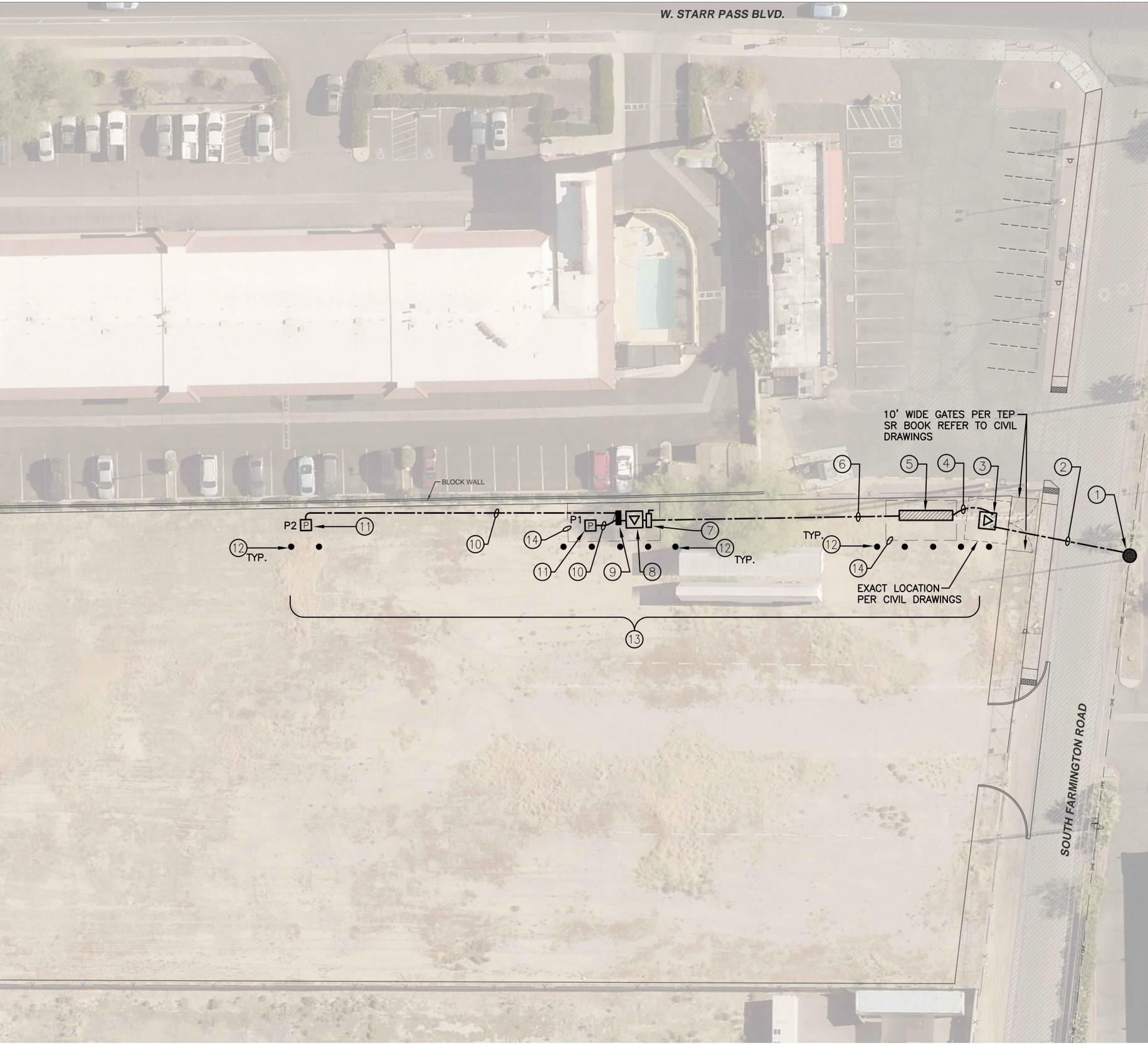


2 TYPICAL TRENCH DETAIL

N.T.S.
 * NOTE: REFER TO ELECTRICAL SITE PLAN THIS SHEET FOR SIZE AND QUANTITY OF CONDUITS.



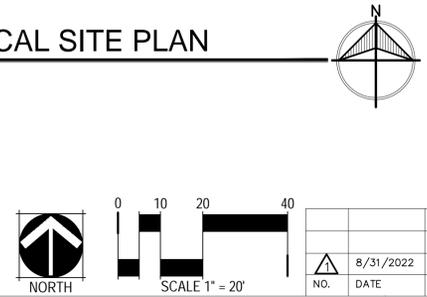
ELECTRICAL KEYNOTES (THIS SHEET ONLY)

1. PROVIDE NEW 4" C. RISER AT EXISTING T.E.P. POWER POLE.
2. UNDERGROUND 4" C. PRIMARY SERVICE IN 10' WIDE EASEMENT PER T.E.P. REQUIREMENTS.
3. T.E.P. TRANSFORMER, PROVIDE CONCRETE HOUSEKEEPING PAD, 15'x15' EASEMENT, AND WORKING CLEARANCE PER T.E.P. REQUIREMENTS. EXACT LOCATION TO BE STAKED IN FIELD.
4. SERVICE CONDUCTORS PER ONE LINE DIAGRAM ON SHEET E1.
5. NEW 1200A, 277/480V-3Ø-4W SERVICE ENTRANCE EQUIPMENT PER ONE LINE DIAGRAM.
6. UNDERGROUND FEEDER PER ONE LINE DIAGRAM, AND TRENCH DETAIL 2 THIS SHEET.
7. PROVIDE HEAVY DUTY, NEMA 3R, 200A/3P NON-FUSED DISCONNECT SWITCH PER ONE LINE DIAGRAM.
8. NEMA 3R, 150KVA DRY TYPE TRANSFORMER PER ONE LINE DIAGRAM.
9. NEMA 3R, 400A., 120/208V-3Ø-4W. RVP PANEL PER PANEL SCHEDULE.
10. PEDESTAL FEEDER PER ONE LINE DIAGRAM AND TRENCH DETAIL 2 THIS SHEET.
11. NEW POWER PEDESTAL 200A, 120/208V-3Ø-4W PER ONE LINE DIAGRAM AND PANEL SCHEDULE.
12. PROVIDE EQUIPMENT BARRIER PER T.E.P. SR-230. LOCATE AS DIRECTED PER OWNER AND FINAL T.E.P. SERVICE DRAWINGS.
13. ALL EQUIPMENT LOCATIONS AND CONDUIT ROUTINGS SHOWN ARE DIAGRAMMATIC, PLACE ALL EQUIPMENT AS CLOSE TO NORTH PROPERTY LINE AS POSSIBLE AND AS DIRECTED BY OWNER. REFER TO CIVIL DRAWINGS.
14. CHAIN LINK FENCE AROUND EQUIPMENT AND COVER TOP OF FENCE WITH CHAIN LINK PER CIVIL DRAWINGS.

ELECTRICAL SITE NOTES

- A. LOCATE AND PROTECT UNDERGROUND UTILITIES PRIOR TO START OF WORK. REPAIR OF DAMAGED UTILITIES SHALL BE AT CONTRACTOR EXPENSE.
- B. CUT, PATCH, AND RESTORE ALL FINISHES DISTURBED BY NEW WORK. WHERE TRENCHING OCCURS, RESTORE ALL SURFACES TO MATCH THOSE EXISTING PRIOR TO TRENCHING ACTIVITIES.
- C. ALL WORK SHALL COMPLY WITH FINAL T.E.P. SERVICE DRAWINGS.
- D. REFER TO SITE CIVIL PLANS FOR OTHER UNDERGROUND UTILITIES AND COORDINATE WORK TO AVOID CONFLICTS.

1 ELECTRICAL SITE PLAN



LOCKOUT - TAGOUT - TESTOUT
MONRAD ENGINEERING, INC.
 CONSULTING ELECTRICAL ENGINEERS
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 Tucson, Arizona 85719-2391
 (520) 884-0045 M21080

PERRY ENGINEERING
 501 W. WETMORE RD.
 TUCSON, AZ 85705
 CONTACT:
 KEN PERRY, P.E.
 520-620-9870
 PERRYENGINEERING.NET

CITY OF TUCSON DEVELOPMENT PACKAGE PSDS APPROVAL	
<input type="checkbox"/> Site/Dev Plan	<input type="checkbox"/> SCZ
<input type="checkbox"/> Tentative Plat	<input type="checkbox"/> FRZ
<input type="checkbox"/> Grading	<input type="checkbox"/> HDZ
<input type="checkbox"/> SWPPP	<input type="checkbox"/> WASH
<input type="checkbox"/> FUP	<input type="checkbox"/> Other
DVPKG MGR _____	Date _____
Zoning _____	Date _____
Engineering _____	Date _____
H/C Site _____	Date _____
Fire _____	Date _____
Landscape _____	Date _____
PLUME _____	Date _____
Revision # _____	<input type="checkbox"/> per letter in SIRE

DEVELOPMENT PACKAGE FOR FARMINGTON ROAD OFF-SITE PARKING LOT TO SERVE 22nd STREET EXPO

ELECTRICAL SITE PLAN

PROJECT ADDRESS
 1114 S. FARMINGTON RD.
 1124 S. FARMINGTON RD.
 TUCSON ARIZONA, 85713

P.E.# 19065 ES1 of 3

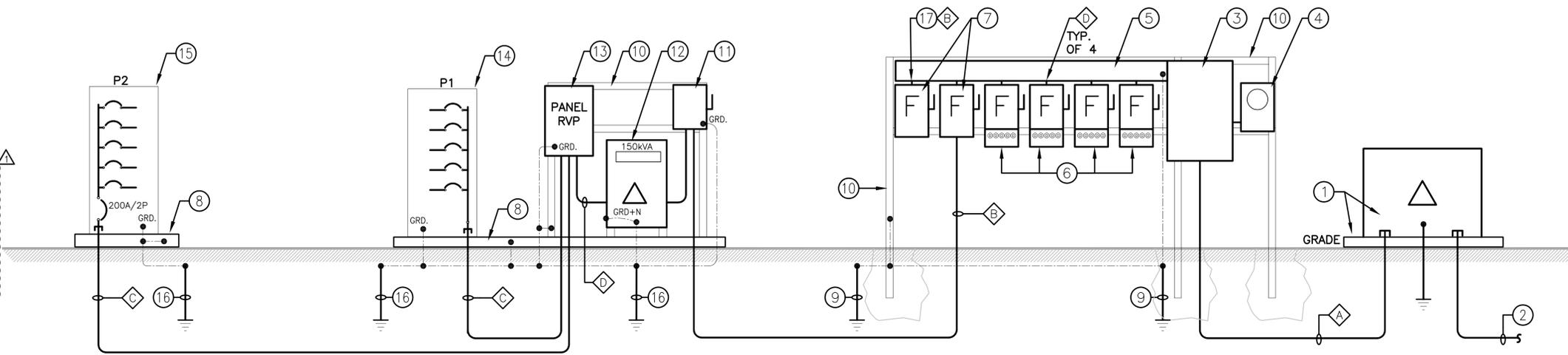
EXPIRES 3-31-23

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USE OF THIS INFORMATION CONTAINED HEREIN IS FOR THE SPECIFIC PURPOSE FOR WHICH IT WAS PREPARED AND FOR OTHER THAN THE CLIENT FOR WHOM IT WAS PREPARED IS FORBIDDEN UNLESS EXPRESSLY PERMITTED IN WRITING IN ADVANCE BY PERRY ENGINEERING, LLC. PERRY ENGINEERING, LLC SHALL HAVE NO LIABILITY TO ANY USER OF THIS INFORMATION WITHOUT THEIR WRITTEN CONSENT.

ELECTRICAL KEYNOTES THIS SHEET ONLY

- T.E.P. TRANSFORMER, PROVIDE 15'x15' EASEMENT AND CONCRETE HOUSEKEEPING PAD PER T.E.P. REQUIREMENTS.
- 4"C. IN 10' WIDE EASEMENT TO T.E.P. POLE PER SHEET ES1.
- NEMA 3R, 1200A-3Ø-4W CT CABINET PER TEP REQUIREMENTS. PROVIDE LOAD SIDE LUG PADS TO DIRECTLY SERVE EACH SAFETY SWITCH PER FEEDER SCHEDULE.
- 13 TERMINAL METER BASE PER TEP REQUIREMENTS.
- NEMA 3R, 8"x8" MINIMUM WIREWAY WITH ALL CONDUCTORS PULLED THROUGH SPLICE-FREE.
- 400/3P+SOLID NEUTRAL, NEMA 3R, HEAVY DUTY, SINGLE THROW, 480V, FUSED DISCONNECT SWITCH WITH CAM-LOK RECEPTACLES WIRED TO LOAD SIDE FOR CONNECTIONS OF TEMPORARY LOADS. BOND NEUTRAL TO GROUND AT EACH SERVICE DISCONNECT. PROVIDE LPS-400A CLASS R CURRENT LIMITING FUSES.
- 200A/3P+SOLID NEUTRAL, NEMA 3R, HEAVY DUTY, 480V, FUSED DISCONNECT SWITCH. BOND NEUTRAL TO GROUND AT EACH SERVICE DISCONNECT. PROVIDE LPS-200A CLASS R CURRENT LIMITING FUSES.
- 3000 PSI CONCRETE PAD WITH STEEL MESH REINFORCEMENT, 4" ABOVE GRADE, 4" BELOW GRADE, 6" APRRON ALL AROUND WITH CHAMFERED EDGES.
- PROVIDE (2) 3/4"x10FT COPPERCLAD STEEL GROUND RODS AT EACH PAD ENDS. PROVIDE #4/0 CU BOND TO EACH ROD, GRD. GUTTER BUS LUG, CONCRETE PAD REBAR, AND METALLIC RACK. PROVIDE EXOTHERMIC WELD CONNECTIONS FOR UNDERGROUND CONNECTIONS. PROVIDE RMC WITH BONDING BUSHINGS TO PROTECT ALL ABOVE EXPOSED GROUND WIRE/CABLE.
- GALVANIZED UNISTRUT RACK WITH 24" DIA. x 36" DEEP CONCRETE FOOTINGS.
- NEMA 3R, HEAVY DUTY, 480V, 200A/3P+SOLID NEUTRAL, NON-FUSED DISCONNECT SWITCH. NEUTRAL IS SPARE.
- 150kVA, 480-120/208V-3Ø, DRY TYPE TRANSFORMER, AL. WINDINGS, WITH WEATHER SHIELD.
- 400A, 120/208V-3Ø-4W PANEL PER PANEL SCHEDULE.
- 200 AMP MAIN LUGS, 120/208V-3Ø-4W POWER PEDESTAL, FABRICATED FROM CORROSION RESISTANT ZINC COATED STEEL WITH HOODED DOOR, SPRING LOADED COVER, (3) 50A-208V-1Ø RECEPTACLES, (3) 30A-208V-1Ø RECEPTACLES AND (2) 20A-120V GFCI RECEPTACLES AT EACH PEDESTAL. MYERS OR APPROVED EQUAL. REFER TO DETAIL 3 THIS SHEET.
- 200 AMP MAIN CB, 120/208V-3Ø-4W POWER PEDESTAL, FABRICATED FROM CORROSION RESISTANT ZINC COATED STEEL WITH HOODED DOOR, SPRING LOADED COVER, (3) 50A-208V-1Ø RECEPTACLES, (3) 30A-208V-1Ø RECEPTACLES AND (2) 20A-120V GFCI RECEPTACLES AT EACH PEDESTAL. MYERS OR APPROVED EQUAL. REFER TO DETAIL 3 THIS SHEET..
- PROVIDE (2) 3/4"x10FT COPPERCLAD STEEL GROUND RODS AT EACH PAD ENDS. PROVIDE #4/0 CU BOND TO EACH ROD, GRD. PEDESTAL LUG, CONCRETE PAD REBAR, AND METALLIC RACK. PROVIDE EXOTHERMIC WELD CONNECTIONS FOR UNDERGROUND CONNECTIONS. PROVIDE RMC TO ALL ABOVE EXPOSED GROUND WIRE/CABLE..
- WIRE SPARE SWITCH TO LINE SIDE ONLY. DO NOT INSTALL FUSES.



1 ONE LINE DIAGRAM
N.T.S.

SHORT CIRCUIT CALCULATIONS:

POINT OF CALC		I _{AFC} (A)	LENGTH (FT) ²	E (V _{L-L})	CONDUCTOR SIZE ³	NO. OF SETS ³	"C" VALUE ⁴	RACEWAY MATL.	"f" VALUE ^{6,6}	"M" VALUE ⁷	I _{SS} (A) ⁸	ID #
TEP XFMR	NEW			480							32,600	1
SES	NEW	32,600	60	480	500 KCMIL AL	4	21,391	NONMAG	0.0825	0.9238	30,116	2
												3
XFMR	NEW	150kVA, I _{r1} =416A %Z = 3.5%, V = 208V, 3 PHASE									11,895	4
PANEL RVP	NEW	11,895	30	208	250 KCMIL AL	2	12,862	NONMAG	0.1155	0.8964	10,663	5
												6
PANEL P1	NEW	10,663	70	208	250 KCMIL AL	1	12,862	NONMAG	0.4833	0.6742	7,189	7
PANEL P2	NEW	10,663	200	208	250 KCMIL AL	1	12,862	NONMAG	1.3807	0.4200	4,479	8
												9
												10

NOTES:

- PER TEP EXISTING SERVICE REQUIREMENTS 1200A-277/480V, 3P, 4W. SERVICE WILL HAVE A MAXIMUM AVAILABLE FAULT CURRENT OF 32,600A (SYMMETRICAL).
- DISTANCE ESTIMATES ARE OBTAINED FROM SCALE PROJECT DRAWINGS. REASONABLE ALLOWANCES ARE MADE FOR RACEWAY VERTICAL TRANSITIONS IN AND OUT OF DISTRIBUTION EQUIPMENT.
- NOT USED
- "C" VALUES ARE TAKEN FROM COOPER BUSSMAN'S "SPD ELECTRICAL PROTECTION HANDBOOK", PAGE 34.
- THE VALUE OF "f", FOR A 3 PHASE SYSTEM IS GIVEN BY: $f = (1.732 \times L \times I_{AFC}) / (\text{No. Sets } X \text{ C } X \text{ E})$
- THE VALUE OF "r", FOR A 1 PHASE SYSTEM IS GIVEN BY: $f = (2 \times L \times I_{AFC}) / (\text{No. Sets } X \text{ C } X \text{ E})$
- THE VALUE OF "M" IS GIVEN BY: $M = 1/(1+f)$
- THE AVAILABLE FAULT CURRENT (I_{SS}) IS GIVEN BY: $I_{SS} = M \times I_{AFC}$

FEEDER SCHEDULE

KEY	SETS	PHASES	NEUTRAL	GRD. EACH CONDUIT.	CONDUIT	AMPACITY	NOTES
A	4	(3) 500 KCMIL AL	(1) 500 KCMIL AL	-	4"	1,240	
B	1	(3) 250 KCMIL AL	(1) 1/0 AL	(1) #6 CU.	3"	205	THROUGH SAFETY SWITCH TO LOAD SIDE OF CT CABINET
C	1	(3) 250 KCMIL AL	(1) 1/0 AL	(1) #6 CU.	3"	205	THROUGH SAFETY SWITCH TO LOAD SIDE OF CT CABINET
D	2	(3) 250 KCMIL AL	(1) 250 KCMIL AL	(1) #2 CU.	3"	410	THROUGH SAFETY SWITCH TO LOAD SIDE OF CT CABINET

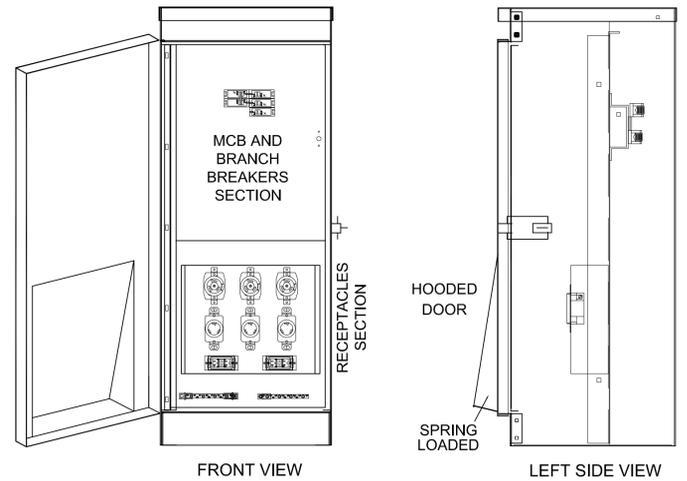
LOAD CONSIDERATIONS:

CAM-LOK CONNECTION 1	166 KVA
CAM-LOK CONNECTION 2	166 KVA
CAM-LOK CONNECTION 3	166 KVA
CAM-LOK CONNECTION 4	166 KVA
PANEL RVP VIA XFMR	83 KVA

TOTAL = 747 KVA

747 KVA OR 900AMPS @ 277/480V-3Ø-4W

PROPOSED 1200AMP SERVICE ENTRANCE SECTION IS ADEQUATE FOR THIS LOAD



3 POWER PEDESTAL DETAIL
N.T.S.

PROVIDE APPROVED ARC-FLASH HAZARD WARNING ON ALL REQUIRED ELECTRICAL EQUIPMENT PER NEC 110.16

WARNING

Electric Arc Flash Hazard
Will cause severe injury or death

Wear proper protective equipment before opening or performing diagnostic measurements while energized. (See NFPA 70E)

LOCKOUT - TAGOUT - TESTOUT

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520-620-9870
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CITY OF TUCSON DEVELOPMENT PACKAGE PSDS APPROVAL

Site/Dev Plan SCZ
 Tentative Plat FRZ
 Grading HDZ
 SWPPP WASH
 FUP Other

DVPKG MGR _____ Date _____
Zoning _____ Date _____
Engineering _____ Date _____
H/C Site _____ Date _____
Fire _____ Date _____
Landscape _____ Date _____
PL/ME _____ Date _____
Revision # _____ per letter in SIRE

DP14-XXXX

DEVELOPMENT PACKAGE FOR
FARMINTON ROAD OFF-SITE PARKING LOT
TO SERVE 22nd STREET EXPO

MAIN ELECTRICAL SERVICE

PROJECT ADDRESS
1114 S. FARMINGTON RD.
1124 S. FARMINGTON RD.
TUCSON ARIZONA, 85713

37386 CHRISTIAN K. MONRAD
REGISTERED PROFESSIONAL ENGINEER
EXPIRES 3-31-23

P.E.# 19065 E1 of 3

NO.	DATE	REVISION	BY	CH	APPR
1	8/31/2022	PLAN CHECK COMMENTS	CM	CM	CM



USE OF THE INFORMATION CONTAINED WITHIN THIS INSTRUMENT FOR OTHER THAN THE SPECIFIC PURPOSE FOR WHICH IT WAS INTENDED AND FOR OTHER THAN THE CLIENT FOR WHOM IT WAS PREPARED IS FORBIDDEN UNLESS EXPRESSLY PERMITTED IN WRITING IN ADVANCE BY PERRY ENGINEERING, LLC. PERRY ENGINEERING, LLC SHALL HAVE NO LIABILITY TO ANY USER OF THIS INFORMATION WITHOUT THEIR WRITTEN CONSENT.

PANEL NAME: P1		120/208 VOLTS,		3 PHASE,		4 WIRE									
TYPE: MYERS		10,000 MINIMUM A.I.C. RATING													
200 A BUS 200 A. LUGS ONLY		MOUNTING FLUSH		<input type="checkbox"/>											
LOCATION: 30FT MAX. OF SES		SURFACE		<input checked="" type="checkbox"/>											
ENCLOSURE: NEMA 3R															
LOAD (IN KVA)															
SERVES	AMP	POLE	WIRE	COND	A	B	C	COND	WIRE	POLE	AMP	SERVES			
1	50A RV REC.	50	2	8	1"	4.0	2.5					RV RECEPTACLE	2		
3	-	-	-	8	-	4.0	2.5					-	4		
5	50A RV REC.	50	2	8	1"			4.0	2.5	3/4"	10	2	30	RV RECEPTACLE	6
7	-	-	-	8	-	4.0	2.5					-	8		
9	50A RV REC.	50	2	8	1"			4.0	2.5	3/4"	10	2	30	RV RECEPTACLE	10
11	-	-	-	8	-			4.0	2.5			-	12		
13	120V WP GFCI REC.	20	1	12	1/2"	1.2					1	20	SPACE	14	
15	120V WP GFCI REC.	20	1	12	1/2"		1.2				1	20	SPACE	16	
17	SPARE	20	1								1	20	SPACE	18	
19	SPARE	20	1								1	20	SPACE	20	
21	SPARE	20	1								1	20	SPACE	22	
23	SPARE	20	1								1	20	SPACE	24	
*** CONTINUOUS LOAD X 1.25					0.0	0.0	0.0	REMARKS:							
NON-CONTINUOUS LOAD X 1.0					14.2	14.2	13.0								
DEMAND KVA/PHASE					14.2	14.2	13.0	CONNECTED LOAD:		41.4 KVA					
DEMAND AMPS/PHASE					118	118	108	DEMAND LOAD:		41.4 KVA					

PANEL NAME: P2		120/208 VOLTS,		3 PHASE,		4 WIRE									
TYPE: MYERS		10,000 MINIMUM A.I.C. RATING													
200 A BUS 200 A. MAIN BREAKER		MOUNTING FLUSH		<input type="checkbox"/>											
LOCATION:		SURFACE		<input checked="" type="checkbox"/>											
ENCLOSURE: NEMA 3R															
LOAD (IN KVA)															
SERVES	AMP	POLE	WIRE	COND	A	B	C	COND	WIRE	POLE	AMP	SERVES			
1	50A RV REC.	50	2	8	1"	4.0	2.5					RV RECEPTACLE	2		
3	-	-	-	8	-	4.0	2.5					-	4		
5	50A RV REC.	50	2	8	1"			4.0	2.5	3/4"	10	2	30	RV RECEPTACLE	6
7	-	-	-	8	-	4.0	2.5					-	8		
9	50A RV REC.	50	2	8	1"			4.0	2.5	3/4"	10	2	30	RV RECEPTACLE	10
11	-	-	-	8	-			4.0	2.5			-	12		
13	120V WP GFCI REC.	20	1	12	1/2"	1.2					1	20	SPACE	14	
15	120V WP GFCI REC.	20	1	12	1/2"		1.2				1	20	SPACE	16	
17	SPARE	20	1								1	20	SPACE	18	
19	SPARE	20	1								1	20	SPACE	20	
21	SPARE	20	1								1	20	SPACE	22	
23	SPARE	20	1								1	20	SPACE	24	
*** CONTINUOUS LOAD X 1.25					0.0	0.0	0.0	REMARKS:							
NON-CONTINUOUS LOAD X 1.0					14.2	14.2	13.0								
DEMAND KVA/PHASE					14.2	14.2	13.0	CONNECTED LOAD:		41.4 KVA					
DEMAND AMPS/PHASE					118	118	108	DEMAND LOAD:		41.4 KVA					

PANEL NAME: RVP		120/208 VOLTS,		3 PHASE,		4 WIRE								
TYPE: NEMA 3R		22,000 MINIMUM A.I.C. RATING												
400 A BUS 400 A. MAIN BREAKER		MOUNTING FLUSH		<input type="checkbox"/>										
LOCATION: RACK		SURFACE		<input checked="" type="checkbox"/>										
ENCLOSURE: NEMA 3R														
LOAD (IN KVA)														
SERVES	AMP	POLE	WIRE	COND	A	B	C	COND	WIRE	POLE	AMP	SERVES		
1	RV PEDESTAL 1	200	3	250AL	3"	14.2					1	20	SPACE	2
3	-	-	-	250AL	-		14.2				1	20	SPACE	4
5	-	-	-	250AL	-			13.0			1	20	SPACE	6
7	RV PEDESTAL 2	200	3	250AL	3"	13.0					1	20	SPACE	8
9	-	-	-	250AL	-		14.2				1	20	SPACE	10
11	-	-	-	250AL	-			14.2			1	20	SPACE	12
13	SPACE	200	2								1	20	SPACE	14
15	-	-	-								1	20	SPACE	16
17	SPACE	20	1								1	20	SPACE	18
19	SPACE	20	1								3	30	120KA SPD	20
21	SPACE	20	1								-	-	-	22
23	SPACE	20	1								-	-	-	24
*** CONTINUOUS LOAD X 1.25					0.0	0.0	0.0	REMARKS:						
NON-CONTINUOUS LOAD X 1.0					27.2	28.4	27.2							
DEMAND KVA/PHASE					27.2	28.4	27.2	CONNECTED LOAD:		82.8 KVA				
DEMAND AMPS/PHASE					227	237	227	DEMAND LOAD:		82.8 KVA				

ELECTRICAL NOTES:

- THE WORK COVERED ON THESE DRAWINGS SHALL INCLUDE THE FURNISHING OF ALL LABOR, MATERIALS, TRANSPORTATION, TOOLS, APPLIANCES, FEES, AND PERMITS REQUIRED FOR THE INSTALLATION OF A COMPLETE AND OPERATING ELECTRICAL SYSTEM. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO SHOW EVERY DETAIL. THE CONTRACTOR SHALL PROVIDE BOXES, ACCESS PANELS, ETC. AS REQUIRED BY CODE AND INDUSTRY PRACTICE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THIS PHASE OF THE WORK WITH ALL EXISTING CONDITIONS AND WITH OTHER TRADES.
- ALL WORK SHALL COMPLY WITH THE APPLICABLE RULES OF THE NATIONAL ELECTRICAL CODE (N.E.C.), LOCAL ELECTRICAL CODES AND ORDINANCES.
- ALL MATERIALS SHALL BE NEW AND BEAR THE U.L. SEAL. MATERIALS SHALL CONFORM TO REQUIREMENTS OF THE 2017 N.E.C., WHERE APPLICABLE.
- ALL ELECTRICAL CONDUCTORS SHALL BE INSTALLED IN RIGID GALVANIZED METALLIC STEEL CONDUIT, EXCEPT PVC MAY USED UNDERGROUND ONLY.
- ALL CONDUCTORS SHALL BE STRANDED SOFT-DRAWN ANNEALED COPPER OR ALUMINUM WITH XHHW OR THHN INSULATION. MINIMUM WIRE SIZE SHALL BE #12 UNLESS OTHERWISE NOTED.
- THE COMPLETE ELECTRICAL SYSTEM SHALL BE GROUNDED IN ACCORDANCE WITH N.E.C. ART. 250. PROVIDE GROUNDING WIRE IN ALL CONDUITS.
- CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS PRIOR TO SUBMITTAL OF BID. VERIFY ALL EXISTING CIRCUITS TO BE REUSED PRIOR TO CONNECTIONS.
- THE ELECTRICAL CONTRACTOR SHALL GUARANTEE AGAINST DEFECTS IN MATERIALS, EQUIPMENT, OR WORKMANSHIP FOR A PERIOD OF TWO (2) YEARS UPON OWNER'S FINAL ACCEPTANCE. CONTRACTOR SHALL REPAIR OR REPLACE ANY DEFECTS TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST.

SYMBOL LEGEND

- RACEWAY CONCEALED IN WALL OR CEILING, (2) #12, (1) #12 GRD. IN 3/4" C. U.N.O.
- RACEWAY CONCEALED IN FLOOR, UNDER FLOOR, OR UNDERGROUND. 2# 12, 1 #12 GRD. IN 3/4" C. U.N.O.
- HOMERUN TO PANEL "HA", CIRCUITS 1 AND 3. NUMBER OF HASH MARKS INDICATE NUMBER OF CONDUCTORS, NOT INCLUDING GROUND CONDUCTOR, IN RACEWAY. REFER TO PANEL SCHEDULES FOR RACEWAY AND CONDUCTOR SIZES.
- GROUND, SIZED ACCORDING TO CODE, U.N.O.
- CONDUIT STUBBED OUT, CAPPED, AND MARKED WITH METALLIC LOCATOR. DIMENSION LOCATION ON AS-BUILT DRAWINGS.
- TRANSFORMER, AS NOTED.
- PANELBOARD, REFER TO PANEL SCHEDULE.
- ELECTRICAL SERVICE ENTRANCE EQUIPMENT, REFER TO SINGLE LINE DIAGRAM.
- METER SOCKET.
- WEATHER PROOF GFCI DUPLEX CONVENIENCE RECEPTACLE
- SPECIAL RECEPTACLE
- POWER PEDESTAL PER ONE LINE DIAGRAM AND PANEL SCHEDULE
- BREAKER

ABBREVIATIONS

- A.F.F. ABOVE FINISHED FLOOR
- A.F.G. ABOVE FINISHED GRADE
- AL ALUMINUM
- C.I.P. COMPLETE IN PLACE
- CU. COPPER
- GFCI GROUND FAULT CIRCUIT INTERRUPTER PROTECTED
- GRD GROUND
- HPF HIGH POWER FACTOR
- LTFSCL LIQUID TIGHT FLEXIBLE STEEL CONDUIT
- NEC NATIONAL ELECTRICAL CODE
- N.I.C. NOT IN CONTRACT
- OFCI OWNER FURNISHED, CONTRACTOR INSTALLED
- OFOI OWNER FURNISHED, OWNER INSTALLED
- OPCI OWNER PROVIDED, CONTRACTOR INSTALLED
- REC. RECEPTACLE
- SPD SURGE PROTECTION DEVICE
- TYP. TYPICAL
- U.N.O. UNLESS NOTED OTHERWISE
- WP WEATHERPROOF
- XFMR TRANSFORMER

DP14-XXXX

NO.	DATE	REVISION	BY	CH	APPR
	8/31/2022	PLAN CHECK COMMENTS	CM	CM	CM

PERRY ENGINEERING
 501 W. WETMORE RD.
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LOCKOUT - TAGOUT - TESTOUT
MONRAD ENGINEERING INC
 CONSULTING ELECTRICAL ENGINEERS
 1926 East Fl. Lowell Road, Suite 200
 Tucson, Arizona 85719-2391
 (520) 884-0045 M21080

CITY OF TUCSON DEVELOPMENT PACKAGE PSDS APPROVAL

Site/Dev Plan SCZ
 Tentative Plat FRZ
 Grading HDZ
 SWPPP WASH
 FUP Other

DVPPKG MGR _____ Date _____
 Zoning _____ Date _____
 Engineering _____ Date _____
 H/C Site _____ Date _____
 Fire _____ Date _____
 Landscape _____ Date _____
 PL/ME _____ Date _____
 Revision # _____ per letter in SIRE

DEVELOPMENT PACKAGE FOR FARMINGTON ROAD OFF-SITE PARKING LOT TO SERVE 22nd STREET EXPO

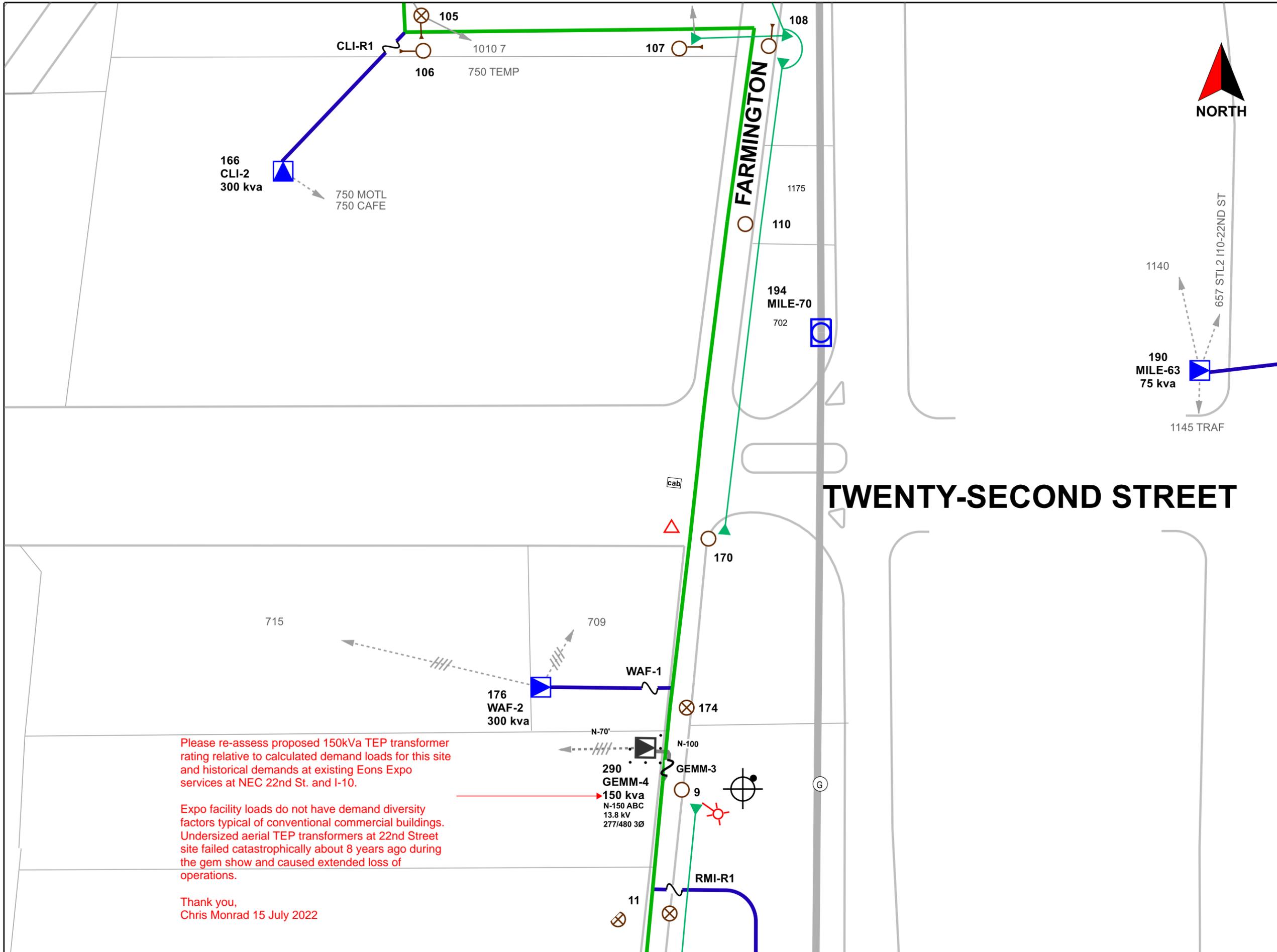
PANEL SCHEDULES

PROJECT ADDRESS
 1114 S. FARMINGTON RD.
 1124 S. FARMINGTON RD.
 TUCSON ARIZONA, 85713

P.E.# 19065 E2 of 3

EXPIRES 3-31-23

USE OF THIS INFORMATION CONTAINED WITHIN THIS INSTRUMENT FOR OTHER THAN THE SPECIFIC PURPOSE FOR WHICH IT WAS INTENDED AND FOR OTHER THAN THE CLIENT FOR WHOM IT WAS PREPARED IS FORBIDDEN UNLESS EXPRESSLY PERMITTED IN WRITING BY PERRY ENGINEERING, LLC. PERRY ENGINEERING, LLC SHALL HAVE NO LIABILITY TO ANY USER OF THIS INFORMATION WITHOUT THEIR WRITTEN CONSENT.



Please re-assess proposed 150kVa TEP transformer rating relative to calculated demand loads for this site and historical demands at existing Eons Expo services at NEC 22nd St. and I-10.

Expo facility loads do not have demand diversity factors typical of conventional commercial buildings. Undersized aerial TEP transformers at 22nd Street site failed catastrophically about 8 years ago during the gem show and caused extended loss of operations.

Thank you,
Chris Monrad 15 July 2022

Customer to Furnish and Install

Electric Service Requirements @
<https://www.tep.com/Customer/Construction/ESR>

COMMON REQUIREMENTS

Two working days before you dig, call Arizona 811 (formerly Arizona Blue Stake, Inc.)

Dial - 811

The Customer or Contractor for the customer is required to adhere to all Federal, State, and Local codes pertaining to the construction required by this drawing. A permit is required for trenching within public right-of-way. Please submit a permit number to TEP prior to any excavation. No inspections within public right-of-way will be performed by TEP without the permit number. TEP's Electrical facilities will not be installed until all land rights are secured, inspections passed, contracts are executed, and monies have been paid (if applicable). Call 918-8300 to schedule inspections, for access to TEP equipment, or if you have questions on the status of your project.

3-PHASE REQUIREMENTS

4" Conduit per SR-205
 Concrete per SR-205
 Trench backfill per SR-207
 Site prep for equipment per SR-208
 Trench per SR-215
 4" Riser per SR-220
 Equipment barriers per SR-230
 3-Phase Transformer pad, fig. 2 per SR-233

3-Phase underground service per:

SR-405, SR-422, SR-430, SR-432,
 SR-435, SR-437, SR-438, SR-439, SR-600

For 3-Phase underground service, it is the customer's responsibility to furnish and install the service conductors from the customer's switchgear to the TEP equipment. TEP does not furnish these conductors. Maximum wire size and quantity allowed per TEP specs

- 1) Up to 600 kcmil underground service conductor
- 2) Limited to 16 conductors per phase.

Drawing legend per Legend

Installation of Conduit Sweeps with Stubs into existing equipment are to be Schedule 40 electrical pvc and require an Access appointment. Call 918-8300. TEP reserves the right to change transformer size.

AIC = 32,600 Amps per SR-510

EASEMENT REQUIREMENTS

Customer to provide a legal description and sketch for the electrical easement. TEP will prepare the easement for recordation.

Easement General Requirements per SR-108
 Conduit & Stubs: 10' wide strip
 Three Phase Transformers: 15' x 15' easement
 Customer to provide survey stakes for easement locations prior to TEP civil inspections.

REQUIRED BILLABLE COSTS TO CUSTOMER

Extension of Underground Distribution Facilities @ \$57.00/Foot

All items and conditions depicted on this drawing(s) are accurate as of the date indicated in the title block. Changes may occur in the future and therefore TEP cannot guarantee the drawing(s) and / or cost estimate on an indefinite basis.

Changes requested by the Customer after Approving the Preliminary Construction Drawing are Billable (Re-designing and processing).

Approved for construction. Electrical facilities will not be installed until all contingencies have been met.

BY: *Natalie K. Nara*

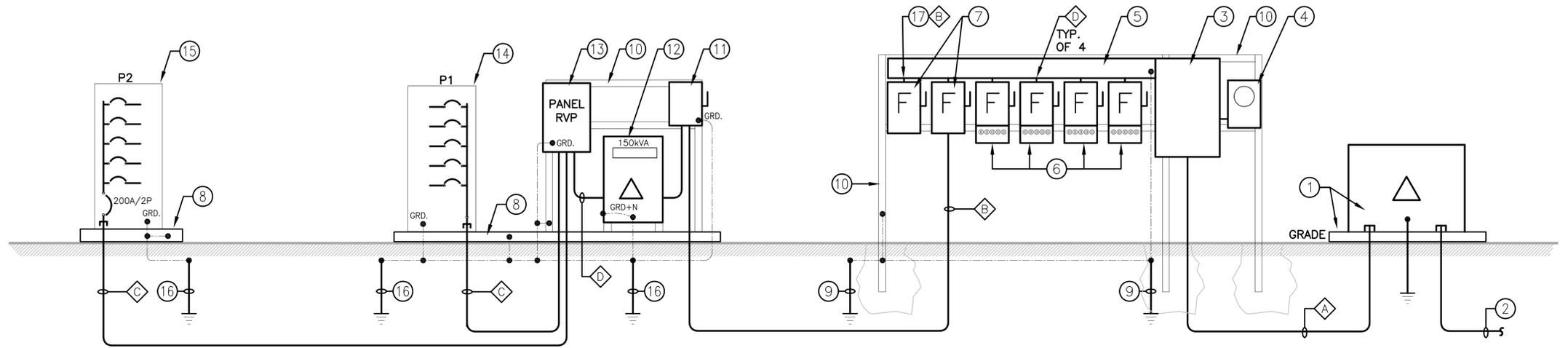
TEP Electric Service Requirements
 Tucson Electric Power
 Tucson, Arizona



Drawing Type: Construction Drawing	
Project Name: Farmington xfmr install	
Job Address: 1114 S FARMINGTON RD	
Designer: QUINTERO F	Project No: 2022-1-T38936
Work Order No: T36394	TRSQ: 1413231
Date Plotted: 06/30/2022 11:00 AM	Scale: Not To Scale
Drawing No: 2022-06-26	Revision: 00 Size: 2 Sheet 1 of 1

ELECTRICAL KEYNOTES THIS SHEET ONLY

- T.E.P. TRANSFORMER, PROVIDE 15'x15' EASEMENT AND CONCRETE HOUSEKEEPING PAD PER T.E.P. REQUIREMENTS.
- 4" C. IN 10' WIDE EASEMENT TO T.E.P. POLE PER SHEET ES1.
- NEMA 3R, 1200A-3Ø-4W CT CABINET PER TEP REQUIREMENTS. PROVIDE LOAD SIDE LUG PADS TO DIRECTLY SERVE EACH SAFETY SWITCH PER FEEDER SCHEDULE.
- 13 TERMINAL METER BASE PER TEP REQUIREMENTS.
- NEMA 3R, 8"X8" MINIMUM WIREWAY WITH ALL CONDUCTORS PULLED THROUGH SPLICE-FREE.
- 400/3P+SOLID NEUTRAL, NEMA 3R, HEAVY DUTY, SINGLE THROW, 480V, FUSED DISCONNECT SWITCH WITH CAM-LOK RECEPTACLES WIRED TO LOAD SIDE FOR CONNECTIONS OF TEMPORARY LOADS. BOND NEUTRAL TO GROUND AT EACH SERVICE DISCONNECT.
- 200A/3P+SOLID NEUTRAL, NEMA 3R, HEAVY DUTY, 480V, FUSED DISCONNECT SWITCH. BOND NEUTRAL TO GROUND AT EACH SERVICE DISCONNECT.
- 3000 PSI CONCRETE PAD WITH STEEL MESH REINFORCEMENT, 4" ABOVE GRADE, 4" BELOW GRADE, 6" APRRON ALL AROUND WITH CHAMFERED EDGES.
- PROVIDE (2) 3/4"X10FT COPPERCLAD STEEL GROUND RODS AT EACH PAD ENDS. PROVIDE #4/0 CU BOND TO EACH ROD, GRD. GUTTER BUS LUG, CONCRETE PAD REBAR, AND METALLIC RACK. PROVIDE EXOTHERMIC WELD CONNECTIONS FOR U.G. CONNECTIONS. PROVIDE RMC WITH BONDING BUSHINGS TO PROTECT ALL ABOVE EXPOSED GROUND WIRE/CABLE.
- GALVANIZED UNISTRUT RACK WITH 24" DIA. x 36" DEEP CONCRETE FOOTINGS.
- NEMA 3R, HEAVY DUTY, 480V, 200A/3P+SOLID NEUTRAL, NON-FUSED DISCONNECT SWITCH. NEUTRAL IS SPARE.
- 150kVA, 480-120/208V-3Ø, DRY TYPE TRANSFORMER, AL WINDINGS, WITH WEATHER SHIELD.
- 200A, 120/208V-3Ø-4W PANEL PER PANEL SCHEDULE.
- 200AMP MAIN LUGS, 120/208V-3Ø-4W POWER PEDESTAL, FABRICATED FROM CORROSION RESISTANT ZINC COATED STEEL WITH HOODED DOOR, SPRING LOADED COVER, (3) 50A-208V-1Ø RECEPTACLES, (3) 30A-208V-1Ø RECEPTACLES AND (2) 20A-120V GFCI RECEPTACLES AT EACH PEDESTAL. MYERS OR APPROVED EQUAL. REFER TO DETAIL 3 THIS SHEET.
- 200AMP MAIN CB, 120/208V-3Ø-4W POWER PEDESTAL, FABRICATED FROM CORROSION RESISTANT ZINC COATED STEEL WITH HOODED DOOR, SPRING LOADED COVER, (3) 50A-208V-1Ø RECEPTACLES, (3) 30A-208V-1Ø RECEPTACLES AND (2) 20A-120V GFCI RECEPTACLES AT EACH PEDESTAL. MYERS OR APPROVED EQUAL. REFER TO DETAIL 3 THIS SHEET..
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- WIRE SPARE SWITCH TO LINE SIDE ONLY. DO NOT INSTALL FUSES.



1 ONE LINE DIAGRAM
N.T.S.

SHORT CIRCUIT CALCULATIONS:

POINT OF CALC		I _{AF} (A)	LENGTH (FT) ²	E (V _{L-L})	CONDUCTOR SIZE ³	NO. OF SETS ¹	"C" VALUE ⁴	RACEWAY MATL.	"f" VALUE ^{5,6}	"M" VALUE ⁷	I _{SS} (A) ⁸	ID#
TEP XFMR	NEW			480							32,600	1
SES	NEW	32,600	60	480	500 KCMIL AL	4	21,391	NONMAG	0.0825	0.9238	30,116	2
												3
XFMR	NEW	150kVA, I _{L1} =416A %Z = 3.5% V = 208V, 3 PHASE									11,895	4
PANEL RVP	NEW	11,895	30	208	250 KCMIL AL	2	12,862	NONMAG	0.1155	0.8964	10,663	5
												6
PANEL P1	NEW	10,663	70	208	250 KCMIL AL	1	12,862	NONMAG	0.4833	0.6742	7,189	7
PANEL P2	NEW	10,663	200	208	250 KCMIL AL	1	12,862	NONMAG	1.3807	0.4200	4,479	8
												9
												10

NOTES:

- PER TEP EXISTING SERVICE REQUIREMENTS 1200A-277/480V, 3P, 4W. SERVICE WILL HAVE A MAXIMUM AVAILABLE FAULT CURRENT OF 32,600A (SYMMETRICAL).
- DISTANCE ESTIMATES ARE OBTAINED FROM SCALE PROJECT DRAWINGS. REASONABLE ALLOWANCES ARE MADE FOR RACEWAY VERTICAL TRANSITIONS IN AND OUT OF DISTRIBUTION EQUIPMENT.
- NOT USED
- "C" VALUES ARE TAKEN FROM COOPER BUSSMAN'S "SPD ELECTRICAL PROTECTION HANDBOOK", PAGE 34.
- THE VALUE OF "f", FOR A 3 PHASE SYSTEM IS GIVEN BY: $f = (1.732 \times L \times I_{AF}) / (\text{No. Sets} \times C \times E)$
- THE VALUE OF "r", FOR A 1 PHASE SYSTEM IS GIVEN BY: $f = (2 \times L \times I_{AF}) / (\text{No. Sets} \times C \times E)$
- THE VALUE OF "M" IS GIVEN BY: $M = 1/(1+f)$
- THE AVAILABLE FAULT CURRENT (I_{SS}) IS GIVEN BY: $I_{SS} = M \times I_{AF}$

FEEDER SCHEDULE

KEY	SETS	PHASES	NEUTRAL	GRD. EACH CONDUIT.	CONDUIT	AMPACITY	NOTES
A	4	(3) 500 KCMIL AL	(1) 500 KCMIL AL	-	4"	1,240	
B	1	(3) 250 KCMIL AL	(1) 1/0 AL	(1) #6 CU.	3"	205	THROUGH SAFETY SWITCH TO LOAD SIDE OF CT CABINET
C	1	(3) 250 KCMIL AL	(1) 1/0 AL	(1) #6 CU.	3"	205	THROUGH SAFETY SWITCH TO LOAD SIDE OF CT CABINET
D	2	(3) 250 KCMIL AL	(1) 250 KCMIL AL	(1) #2 CU.	3"	410	THROUGH SAFETY SWITCH TO LOAD SIDE OF CT CABINET

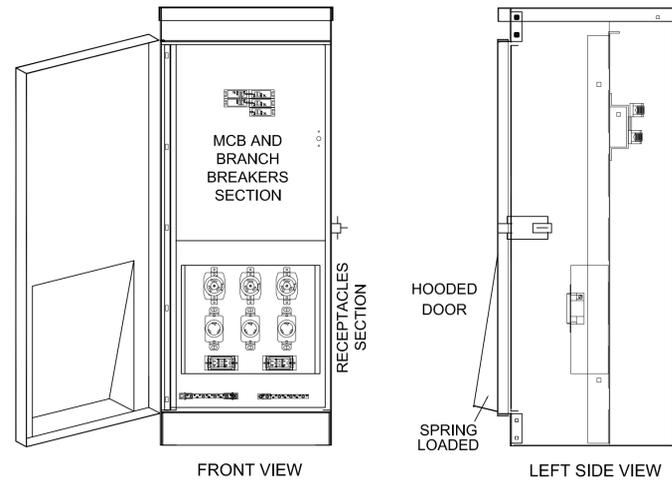
LOAD CONSIDERATIONS:

CAM-LOK CONNECTION 1	166 KVA
CAM-LOK CONNECTION 2	166 KVA
CAM-LOK CONNECTION 3	166 KVA
CAM-LOK CONNECTION 4	166 KVA
PANEL RVP VIA XFMR	83 KVA

TOTAL = 747 KVA

747 KVA OR 900AMPS @ 277/480V-3Ø-4W

PROPOSED 1200AMP SERVICE ENTRANCE SECTION IS ADEQUATE FOR THIS LOAD



3 POWER PEDESTAL DETAIL
N.T.S.

PROVIDE APPROVED ARC-FLASH HAZARD WARNING ON ALL REQUIRED ELECTRICAL EQUIPMENT PER NEC 110.16

WARNING

Electric Arc Flash Hazard

Will cause severe injury or death

Wear proper protective equipment before opening or performing diagnostic measurements while energized. (See NFPA 70E)

NO.	DATE	REVISION	BY	CH	APPR

PERRY ENGINEERING
501 W WETMORE RD.
TUCSON, AZ 85705
CONTACT:
KEN PERRY, P.E.
520-620-9870
PERRYENGINEERING.NET

LOCKOUT - TAGOUT - TESTOUT
MONRAD ENGINEERING INC
CONSULTING ELECTRICAL ENGINEERS
1926 East Ft. Lowell Road, Suite 200
Tucson, Arizona 85719-2391
(520) 884-0045 M21080



CITY OF TUCSON DEVELOPMENT PACKAGE PSDS APPROVAL

<input type="checkbox"/> Site/Dev Plan	<input type="checkbox"/> SCZ
<input type="checkbox"/> Tentative Plat	<input type="checkbox"/> FRZ
<input type="checkbox"/> Grading	<input type="checkbox"/> HDZ
<input type="checkbox"/> SWPPP	<input type="checkbox"/> WASH
<input type="checkbox"/> FUP	<input type="checkbox"/> Other

DVPKG MGR _____ Date _____
Zoning _____ Date _____
Engineering _____ Date _____
H/C Site _____ Date _____
Fire _____ Date _____
Landscape _____ Date _____
PL/ME _____ Date _____
Revision # _____ per letter in SIRE

DEVELOPMENT PACKAGE FOR FARMINTON ROAD OFF-SITE PARKING LOT TO SERVE 22nd STREET EXPO

MAIN ELECTRICAL SERVICE

PROJECT ADDRESS
1114 S. FARMINGTON RD.
1124 S. FARMINGTON RD.
TUCSON ARIZONA, 85713

P.E.# 19065 E1 of 3

EXPIRES 3-31-23

R:\projects\211080_1114_S_Farmington_GEM-Show\21080_Farmington_EI.dwg - Jul 15, 2022 - 9:41am - Monrad_svelasco

USE OF THE INFORMATION CONTAINED WITHIN THIS INSTRUMENT FOR OTHER THAN THE SPECIFIC PURPOSE FOR WHICH IT WAS INTENDED AND FOR OTHER THAN THE CLIENT FOR WHOM IT WAS PREPARED IS FORBIDDEN UNLESS EXPRESSLY PERMITTED IN WRITING IN ADVANCE BY PERRY ENGINEERING, LLC. PERRY ENGINEERING, LLC SHALL HAVE NO LIABILITY TO ANY USER OF THIS INFORMATION WITHOUT THEIR WRITTEN CONSENT.



A UniSource Energy Company

Time Line Agreement Letter

Work Request # T36394

Date: 7/15/2022

Job Title/PCN: 1114 S FARMINGTON RD / 2022-1-T38936

Below is the proposed schedule for this work request, including steps that both Tucson Electric Power (TEP) and you (the customer) must complete. Failure to complete your requirements by the designated date will delay the entire schedule from that point and ultimately delay the completion of this work request to the next available date. TEP shall not be liable to the customer for any acts of the elements or other Force Majeure.

Date to be Completed	Task Description
7/15/2022	Construction Drawing Completed by TEP
7/22/2022	Contracts and/or Payments Complete
8/19/2022	All Civil Inspections Complete
8/12/2022	Civil Work and Inspections Complete
8/19/2022	Mandrel Inspection Complete (All contingencies must be met prior to requesting) *Allow 5 days for inspection after requesting through Inspection Desk (520) 918-8300 *Access into existing equipment may take up to 2 weeks
	Other Easements/Permits Complete (If necessary)
9/17/2022	Line Construction Complete by TEP *An 'Application for Service' is required prior to meter set. Call (520) 918-8300
9/23/2022	Metering Inspections Complete TEP Inspection is requested and passed Governmental Clearance is granted
9/30/2022	Meter Set Complete by TEP

To discuss the above timeline, please contact Project Manager: Jeremy Erlacher 520-392-4419

If this timeline is acceptable please **sign, date and return** this form to the following address:

Please re-assess proposed 150kVa TEP transformer rating relative to calculated demand loads for this site and historical demands at existing Eons Expo services at NEC 22nd St. and I-10. Expo facility loads do not have demand diversity factors typical of conventional commercial buildings. Undersized aerial TEP transformers at 22nd Street site failed catastrophically about 8 years ago during the gem show and caused loss of operations.

Tucson Electric Power
Attn: Jeremy Erlacher
Mail Stop DB101
PO Box 711
Tucson, AZ 85702

15 July 2022

JErlacher@tep.com

Name

Date