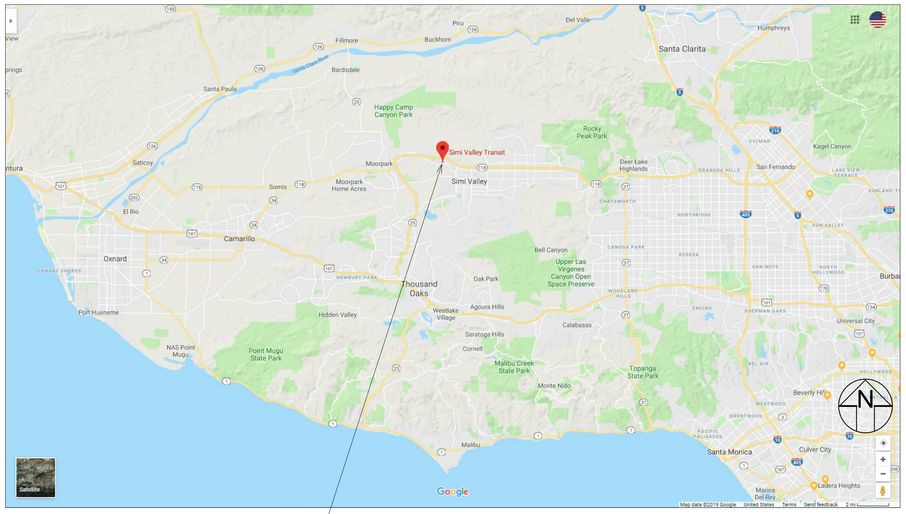
Simi Valley Transit

CNG FUELING SYSTEM UPGRADE

TRANSIT MAINTENANCE

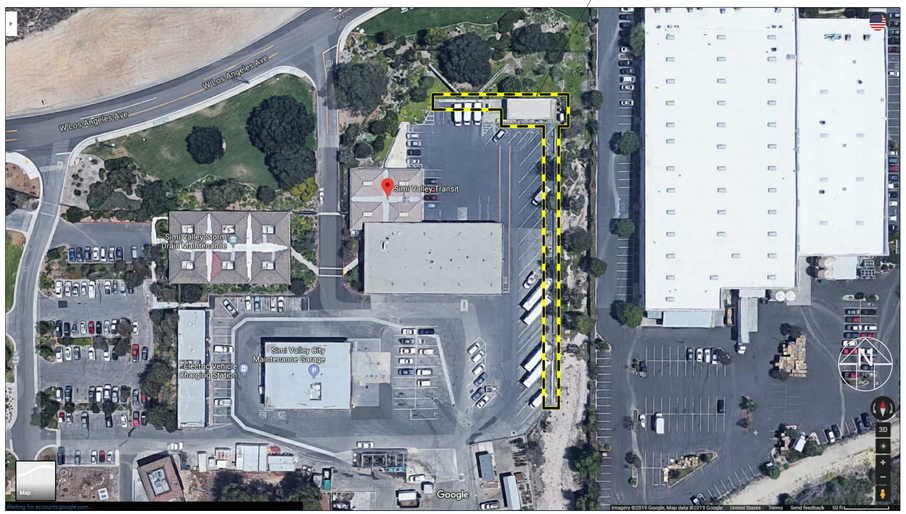
490 WEST LOS ANGELES AVENUE, SIMI VALLEY, CA 93065

PROJECT # SV 20-13



PROJECT LOCATION

PROJECT AREA



SCOPE OF WORK SUMMARY

THE CONTRACTOR SHALL PROVIDE AND INSTALL A COMPLETE CNG FUELING SYSTEM UPGRADE AT THE EXISTING CITY OF SIMI VALLEY CNG FUELING FACILITY. THE CNG FUELING SYSTEM UPGRADE SHALL BE FULLY FUNCTIONAL, SAFE AND CODE COMPLIANT. THE FUELING SYSTEM UPGRADE SHALL INCLUDE THE FOLLOWING PRIMARY WORK ELEMENTS, COMPONENTS AND CAPABILITIES:

1. DECOMMISSIONING AND REMOVAL OF: GAS DRYER, (1) CNG-COMPRESSOR SKID AND ASSOCIATED MCC, AND MAIN SWITCH BOARD.
2. (1) SUCTION-SIDE GAS DRYER WITH (1) DESICCANT TOWER AND ON-BOARD REGENERATION..
3. (1) CNG-COMPRESSOR SKID WITH 100 HP MOTOR DRIVE AND MINIMUM 260 SCFM CAPACITY, DISCHARGING AT 4500 PSIG BASED ON THE GAS-SUPPLY DESIGN CONDITION.
4. (N) MOTOR-STARTER SYSTEM FOR DRIVING (N) AND (E) COMPRESSOR SKIDS AND ACCESSORY LOADS.
5. PLC CONTROLLER FOR CONTROL OF (N) COMPRESSOR SYSTEM, INCLUDING LEAD-LAG START CONTROL OF (N) AND (E) COMPRESSOR SKIDS.
6. (3) BASE CNG STORAGE VESSELS AND APPURTENANCES, EACH WITH A MINIMUM OF 11,500 SCF OF CNG AT 4500 PSIG AND MAWP OF 5500 PSIG.
7. (3) ALTERNATE CNG STORAGE VESSELS MATCHING THE ABOVE, EACH VESSEL AND ITS APPURTENANCES TO BID AS (3) INDEPENDENT ADDITIVE ALTERNATES. INCLUDE FOUNDATION EXTENSIONS WITH ANY ALTERNATE.
8. (1) PRIORITY VALVE PANEL FOR FAST FILL AND TIME FILL, IN A NEMA 3R ENCLOSURE.
9. (1) 2-HOSE FAST-FILL DISPENSER WITH 3-BANK SEQUENCING AND TEMPERATURE COMPENSATION.
10. (1) FUEL MANAGEMENT TERMINAL
11. REPLACEMENT MAIN SWITCH BOARD AND SERVICE ENTRANCE WITH NEW PRIMARY WIRES, INCLUDING RECONNECTING (N) AND (E) LOADS AS REQUIRED.
12. LOAD BANK FOR AUTOMATIC EXERCISING AND LOADING OF (E) BACKUP GENERATOR.
13. SURVEILLANCE CAMERA WITH DIVISION-2 CLASSIFIED AREA RATING AND IP CONNECTIVITY.
14. CHAIN LINK FENCE WITH LOCKABLE GATES AS SHOWN ON THE PLANS.
15. ASSOCIATED LOW-VOLTAGE AND IP COMMUNICATION CONNECTIONS TO CITY NETWORK FOR FUEL MANAGEMENT TERMINAL AND SITE MONITORING CONSOLE.
16. PIPING, TUBING, AND ELECTRICAL CONDUITS AS REQUIRED.
17. PIPING TEE AND CAPPED BALL VALVE AT GAS-SUPPLY LINE TO FACILITATE FUTURE CONNECTIN OF REMOTE RNG GAS SUPPLY.
18. (2) WIND-DRIVEN VENTILATORS AT (E) CANOPY ROOF.
19. ASSOCIATED PADS, TRENCHING, CONDUITS, WIRES, MECHANICAL CONNECTIONS, ELECTRICAL/ELECTRONIC CONNECTIONS, PIPING, TUBING, VALVES, PATCHES, SUPPORTS AND APPURTENANCES AS INDICATED IN THE DRAWINGS, AND AS OTHERWISE REQUIRED TO PROVIDE A COMPLETE, SAFE, CODE COMPLIANT, AND FUNCTIONAL CNG-SYSTEM UPGRADE.
20. UPGRADES TO LIGHTING AT THE CNG-EQUIPMENT CANOPY AND ADJACENT BUS PARKING AREAS, AS SHOWN ON LIGHTING PLAN AND RELATED DRAWINGS. INCLUDES UPGRADING EXISTING FIXTURES AND INSTALLING NEW FIXTURES AS REQUIRED.

LEGAL DESCRIPTION

PARCEL: LD-S-396
BEING A SUBDIVISION OF THE PORTION OF SECTION 6,T.2N., R.18W., RANCHO SIMI, 3MR2, SHOWN AS PARCEL 8 ON 8PM 67/69, IN THE CITY OF SIMI VALLEY, COUNTY OF VENTURA
GROSS AREA: 7.74 ACRES

PROPERTY OWNER
CITY OF SIMI VALLEY
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065
805-583-6809
ATTN: MICHAEL KANG, P.E.

PROJECT CONSULTANTS

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CULVER CITY, CA 90230
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ATTN: REB GUTHRIE, FAYE FARAHMAND, P.E.

ELECTRICAL ENGINEERING
SUTTON ENTERPRISES, INC.
6728 HOMAN ST., CHINO, CA 91710
562-619-5710
ATTN: CASH SUTTON, P.E.

STRUCTURAL ENGINEERING
RSE ASSOCIATES , INC.
700 S. FLOWER STREET, SUITE 2320
LOS ANGELES, CA 90017
213-623-3881
ATTN: TIN CHU WONG, S.E.

SHEET LIST

SHEET	TITLE
G-001	COVER SHEET
G-002	PROJECT GENERAL NOTES
G-101	SITE PLAN
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M-100	FUELING DEMO PLAN
M-101	FUELING EQUIPMENT PLAN
M-102	FUELING PIPING PLAN
M-103	SAFETY SIGNAGE PLAN
M-501	FUELING EQUIPMENT SCHEDULE
M-511	FUELING EQUIPMENT DETAILS 1
M-512	SAFETY SIGN DETAILS
M-601	PROCESS FLOW DIAGRAM
M-701	BLOCK WIRING DIAGRAM
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E-001	ELECTRICAL GENERAL NOTES
E-002	ELECTRICAL TITLE 24 - SHEET 1
E-003	ELECTRICAL TITLE 24 - SHEET 2
E-101	ELECTRICAL GROUNDING PLAN AND DETAILS
E-102	ELECTRICAL CLASSIFIED AREAS AND DEMO
E-103	ELECTRICAL LIGHTING MODIFICATION AND PHOTOMETRICS
E-201	COMPRESSOR CONTROL PANEL DETAIL
E-601	ELECTRICAL SINGLE LINE DIAGRAM, CALCULATIONS AND DETAILS
E-602	ELECTRICAL CONDUIT SCHEDULE AND BLOCK DIAGRAM
E-603	ELECTRICAL CONTROLS BLOCK DIAGRAM
...	...
S-101	GENERAL NOTES, KEY PLAN, AND STRUCTURAL PLAN
S-201	STRUCTURAL DETAILS

No	Revision Description	Date
2	ISSUED FOR BID	08/19/20
1	PLAN CHECK SUBMITTAL #1	02/24/20

Client: Simi Valley Transit — CNG FUELING SYSTEM UPGRADE, TRANSIT MAINTENANCE, 490 WEST LOS ANGELES AVENUE, SIMI VALLEY, CA 93065

Sub Consultants

Seal: REGISTERED PROFESSIONAL ENGINEER, FARAHMAND, FAYE YEH; 8/25/2020; No. M-32351; EXP. 06/30/2021; MECHANICAL; STATE OF CALIFORNIA

Sheet Title: COVER SHEET

Designer / Designed	RK
Drawn	
Checker / Checked	FF
Approved	
Issue Date	04/09/19
Project No	FS-0978
Scale	
Sheet No	G-001
Project Status	2020-0683

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ABBREVIATIONS

#	POUND, NUMBER OR CLASS	(N)	NEW
A/C	ASPHALT CONCRETE OR AIR CONDITIONING	N/A	NOT APPLICABLE
AFF	ABOVE FINISHED FLOOR / GRADE	NC	NORMALLY CLOSED
A/G	ABOVE GRADE OR ABOVE GROUND	NEC	NATIONAL ELECTRICAL CODE
AHJ	AUTHORITY HAVING JURISDICTION	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
B20	DIESEL FUEL BLENDED W/ 20% BIODIESEL	NGV	NATURAL GAS VEHICLE
BLDG	BUILDING	NIC	NOT IN CONTRACT
BTWN	BETWEEN	NO	NORMALLY OPEN or NUMBER
BV	BALL VALVE	NPS	NATIONAL PIPE STANDARD
CA	COMPRESSED AIR	NPT	NATIONAL PIPE THREAD
CAC	CALIFORNIA ADMINISTRATIVE CODE	NTS	NOT TO SCALE
CL	CENTER LINE	NV	NEEDLE VALVE
CLF	CHAIN LINK FENCE	OC	ON CENTER
CLR	CLEARANCE	OH	OVERHEAD
CMU	CONCRETE MASONRY UNIT	PB	PUSH BUTTON
CNG	COMPRESSED NATURAL GAS	PBE	PLAIN BOTH ENDS
COMP	COMPRESSOR	PE	POLYETHYLENE
CONC	CONCRETE	PL	PROPERTY LINE
CONN	CONNECTION	PLC	PROGRAMMABLE LOGIC CONTROLLER
CONT	CONTINUOUS OR CONTINUATION	P/N	PART NUMBER
CP	CATHODIC PROTECTION	POC	POINT OF CONNECTION
CPLG	COUPLING	PR	PRESSURE REGULATOR
CS	CARBON STEEL	PRV	PRESSURE RELIEF VALVE
CU FT	CUBIC FEET	PSI	POUNDS PER SQUARE INCH
CV	CHECK VALVE	PSIG	POUNDS PER SQUARE INCH GRADIENT
DEPT	DEPARTMENT	PV	PLUG VALVE
DIA OR ∅	DIAMETER	PVC	POLYVINYLCHLORIDE
DISCH	DISCHARGE	RCP	REINFORCED CONCRETE PIPE
DISP'R	DISPENSER	RED	REDUCER
DSL	DIESEL	REF	REFERENCE
DWG	DRAWING	REINF	REINFORCEMENT
(E)	EXISTING	RF	RAISED FACE
E85	GASOLINE BLENDED W/ 85% ETHANOL	RFF	RAISED FACE FLANGE
EA	EACH	RFWN	RAISED FACE WELD NECK
ELEV	ELEVATION	RTJ	RING TYPE JOINT
EO	EDGE OF	SCF	STANDARD CUBIC FEET
ESD	EMERGENCY SHUTDOWN DEVISE	SCFH	STANDARD CUBIC FEET PER HOUR
ENCL	ENCLOSURE	SCH	SCHEDULE
FC	FAIL CLOSED	SCG	SoCalGas
FH	FIRE HYDRANT	SD	SEWER DRAIN
FIG	FIGURE	SEC	SECTION
FLG	FLANGE	SIM	SIMILAR
FMT	FUEL MANAGEMENT TERMINAL	SPKLR	SPRINKLER
FNPT	FEMALE NATIONAL PIPE THREAD	SQ	SQUARE
FOM	FACE OF MASONRY	SQ FT / SF	SQUARE FOOT
FRP	FIBERGLASS REINFORCED PLASTIC	SS	STAINLESS STEEL
FT	FOOT	STD	STANDARD
FX	FIRE EXTINGUISHER	SW	SOCKET WELD
GALV	GALVANIZED	THK	THICK
GND	GROUND	THD/THDD	THREAD / THREADED
H	HIGH	THRU	THROUGH
HEX	HEAT EXCHANGER	TOS	TOP OF SLAB
HT	HEIGHT	TYP	TYPICAL
HC	HANDICAP	U/G	UNDERGROUND
HORIZ	HORIZONTAL	ULR	UNLEADED REGULAR
HP	HIGH PRESSURE	UNO	UNLESS NOTED OTHERWISE
IBC	INTERNATIONAL BUILDING CODE	VERT	VERTICAL
ICBO	INTN'L CONFERENCE OF BLDG OFFICIALS	VIF	VERIFY IN FIELD
ID	INSIDE DIAMETER	VTA	VENT TO ATMOSPHERE
IFC	INTERNATIONAL FIRE CODE	W	WIDE or WIDTH
IP	INTERNATIONAL PLUMBING CODE	W/	WITH
IPC	INTERNET PROTOCOL	WWM	WELDED WIRE MESH
KVA	KILOVOLT AMPS	XFMR	TRANSFORMER
LAV	LAVATORY	XXS	EXTRA EXTRA STRONG / DBL EXTRA STRONG
LB	POUND		
LC	LOCKED CLOSED		
LF	LINEAR FOOT		
LG	LONG		
LKG	LOOKING		
LO	LOCKED OPEN		
LS	LANDSCAPING		
MAWP	MAX ALLOWABLE WORKING PRESSURE		
MAX	MAXIMUM		
MB	MACHINE BOLT		
MBV	MANUAL BALL VALVE		
MO	MASONRY OPENING		
MU	MAKE UP		
MGMT	MANAGEMENT		
MIL	MILITARY STANDARD		
MIN	MINIMUM		
MSA	METER SET ASS'Y		
MTR	MOTOR		

GENERAL PROJECT NOTES

1. ALL WORK DETAILED ON THESE PLANS SHALL BE CONSTRUCTED TO THE SATISFACTION OF THE CITY ENGINEER IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (LATEST EDITION) INCLUDING ALL AMENDMENTS ADOPTED THERETO PRIOR TO THE DATE OF APPROVAL OF THESE PLANS AND IN ACCORDANCE WITH THE STANDARD DRAWINGS OF THE CITY OF SIMI VALLEY UNLESS OTHERWISE SPECIFIED.
2. ANY MECHANICALLY, ELECTRICALLY OR STRUCTURALLY SIGNIFICANT DEVIATION FROM THESE PLANS MADE BY THE CONTRACTOR SHALL BE DOCUMENTED BY THE CONTRACTOR AND APPROVED BY THE OWNER AND THE BUILDING DEPARTMENT PRIOR TO IMPLEMENTATION.
3. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO ALLOW SAFE OPERATIONS AND CIRCULATION OF VEHICLES IN THE AREA OF WORK, AND SHALL MAKE EVERY EFFORT TO MINIMIZE DISRUPTIONS OF NORMAL VEHICLE CIRCULATION. CONTRACTOR SHALL COORDINATE ANY RESTRICTIONS IN VEHICLE CIRCULATION RELATED TO THE PROJECT WITH THE OWNER AT LEAST 48 HOURS BEFORE IMPLEMENTATION OF THE RESTRICTION.
4. ANY REDUCTION IN EXISTING VEHICLE FUELING CAPABILITY SHALL BE COORDINATED AND SCHEDULED WITH THE OWNER AT LEAST 48 HOURS BEFORE IMPLEMENTATION OF THE REDUCTION.
5. SEE ADDITIONAL NOTES AND PROJECT REQUIREMENTS IN THE DRAWINGS AND SPECIFICATIONS.
6. CONTRACTOR SHALL VERIFY EXISTING SITE CONDITIONS, DIMENSIONS AND INFRASTRUCTURE OF EQUIPMENT, PIPING AND POINTS OF CONNECTION FOR CONSISTENCY WITH EQUIPMENT PRIOR TO COMMENCING ANY WORK AND ORDERING EQUIPMENT. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER OF ANY DISCREPANCY OR LACK OF CONSTRUCTABILITY.
7. INSTALLATION AND START-UP OF ALL EQUIPMENT AND COMPONENTS SHALL BE IN ACCORDANCE WITH THE RESPECTIVE MANUFACTURERS WRITTEN RECOMMENDATIONS, INSTRUCTIONS AND SPECIFICATIONS.
8. IN THE EVENT OF AN INCONSISTENCY BETWEEN DRAWINGS, WRITTEN SPECIFICATIONS, AND/OR REFERENCED STANDARDS, THE MOST STRINGENT ONE SHALL GOVERN.
9. PROVIDE 12-MONTH COMPREHENSIVE PARTS AND LABOR WARRANTY ON ALL EQUIPMENT, MATERIALS AND SYSTEMS INSTALLED, EXCLUSIVE OF CONSUMABLES SUCH AS LUBE OIL AND OTHER WEAR PARTS PER MANUFACTURER'S PUBLISHED DATA.
10. PROVIDE 3 SETS OF BOUND AND INDEXED OWNER'S MANUALS FOR ENTIRE SYSTEM AS INSTALLED.
11. PROVIDE RED-LINED FIELD DRAWINGS AND AS-BUILT DRAWINGS IN PDF FORMATS SHOWING CLOUDED CHANGES MADE FOLLOWING APPROVAL OF THE ORIGINAL CONSTRUCTION DRAWINGS.
12. IN THE EVENT OF A CONFLICT BETWEEN DRAWINGS, WRITTEN SPECIFICATIONS, AND/OR REFERENCED STANDARDS, THE MOST STRINGENT SHALL GOVERN

CODES AND STANDARDS

ALL INSTALLATION SHALL CONFORM TO THE FOLLOWING CODES AND STANDARDS, AS ADOPTED BY THE STATE OF CALIFORNIA AND CITY OF SIMI VALLEY:

- CALIFORNIA BUILDING CODE (CBC) 2019
- CALIFORNIA PLUMBING CODE (CPC) 2019
- CALIFORNIA MECHANICAL CODE (CMC) 2019
- CALIFORNIA FUEL GAS CODE (CGC) 2019
- CALIFORNIA ELECTRIC CODE (CEC) 2019
- CALIFORNIA FIRE CODE (CFC) 2019
- NFPA 30A 2015 MOTOR FUEL DISPENSING FACILITIES AND REPAIR GARAGES
- NFPA 52 2015 VEHICULAR GASEOUS FUEL SYSTEMS
- ANSI/ASME B31.3
- OTHER REQUIREMENTS SET FORTH IN THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS.

No	Revision Description	Date
3	ISSUED FOR BID	08/19/20
2	CITY PLAN CHECK REVISION	06/05/20
1	PLAN CHECK SUBMITTAL #1	02/24/20

Client: Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

Sub Consultants

Seal: REGISTERED PROFESSIONAL ENGINEER FAYETTEH FARAHBAKHSH 8/25/2020 No. M-32351 EXP. 06/30/2021 MECHANICAL STATE OF CALIFORNIA

Sheet Title: PROJECT GENERAL NOTES

Project No: FS-0978
Scale:
Sheet No: G-002
2020-0684
Project Status:

Designer: RK
Drawn:
Checker: Checked
Approver: Approved
10/16/19 Issue Date

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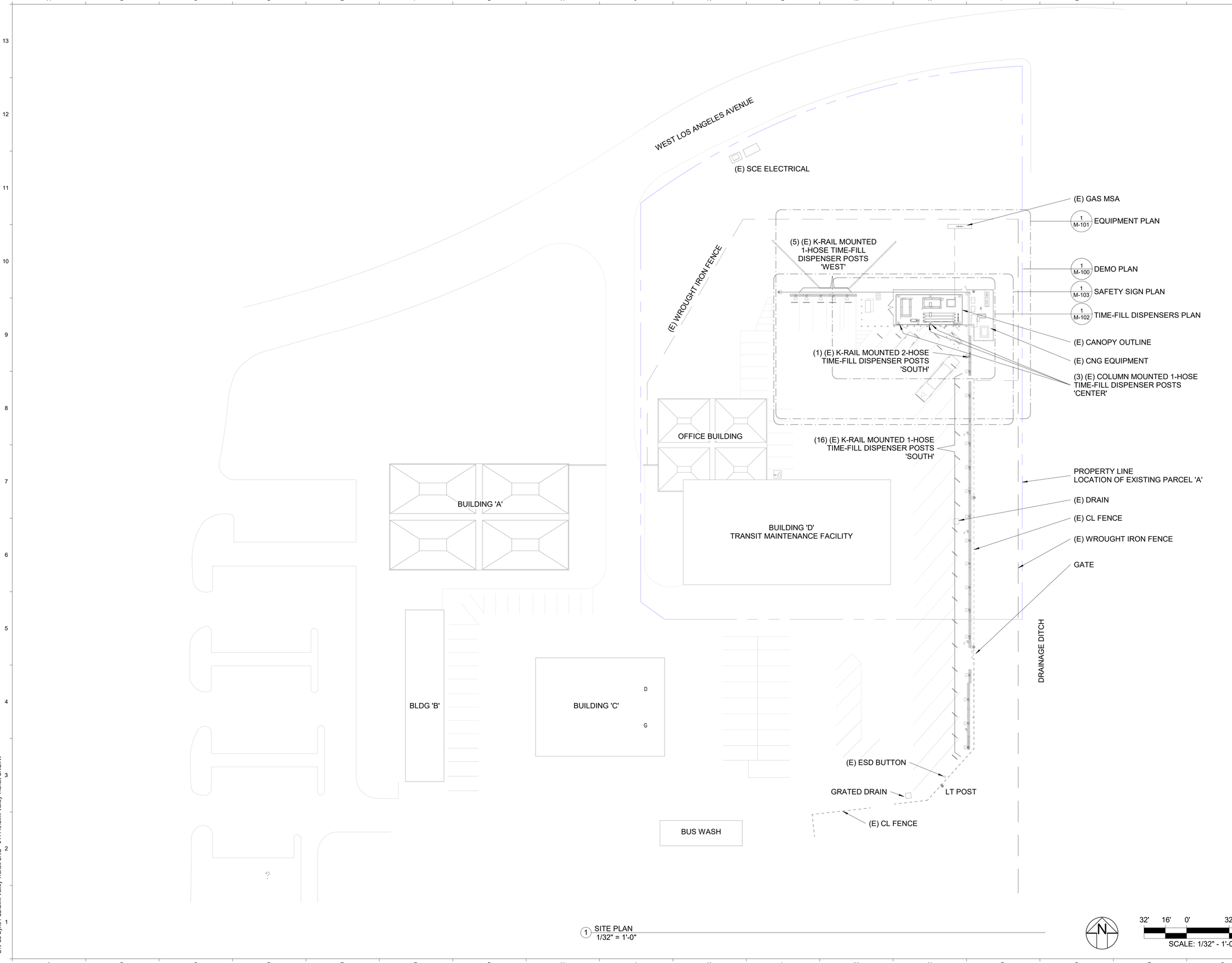

1 SITE PLAN
1/32" = 1'-0"

No	Revision Description	Date
2	ISSUED FOR BID	08/19/20
1	PLAN CHECK SUBMITTAL #1	02/24/20

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Sub Consultants

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REGISTERED PROFESSIONAL ENGINEER
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8/25/2020
No. M-32351
EXP. 06/30/2021
MECHANICAL
STATE OF CALIFORNIA

Sheet Title
SITE PLAN

Designer / Designed	RK	Project No	FS-0978
Drawn		Scale	1/32" = 1'-0"
Checker / Checked		Sheet No	G-101
Approver / Approved			2020-0685
04/09/19 / Issue Date		Project Status	

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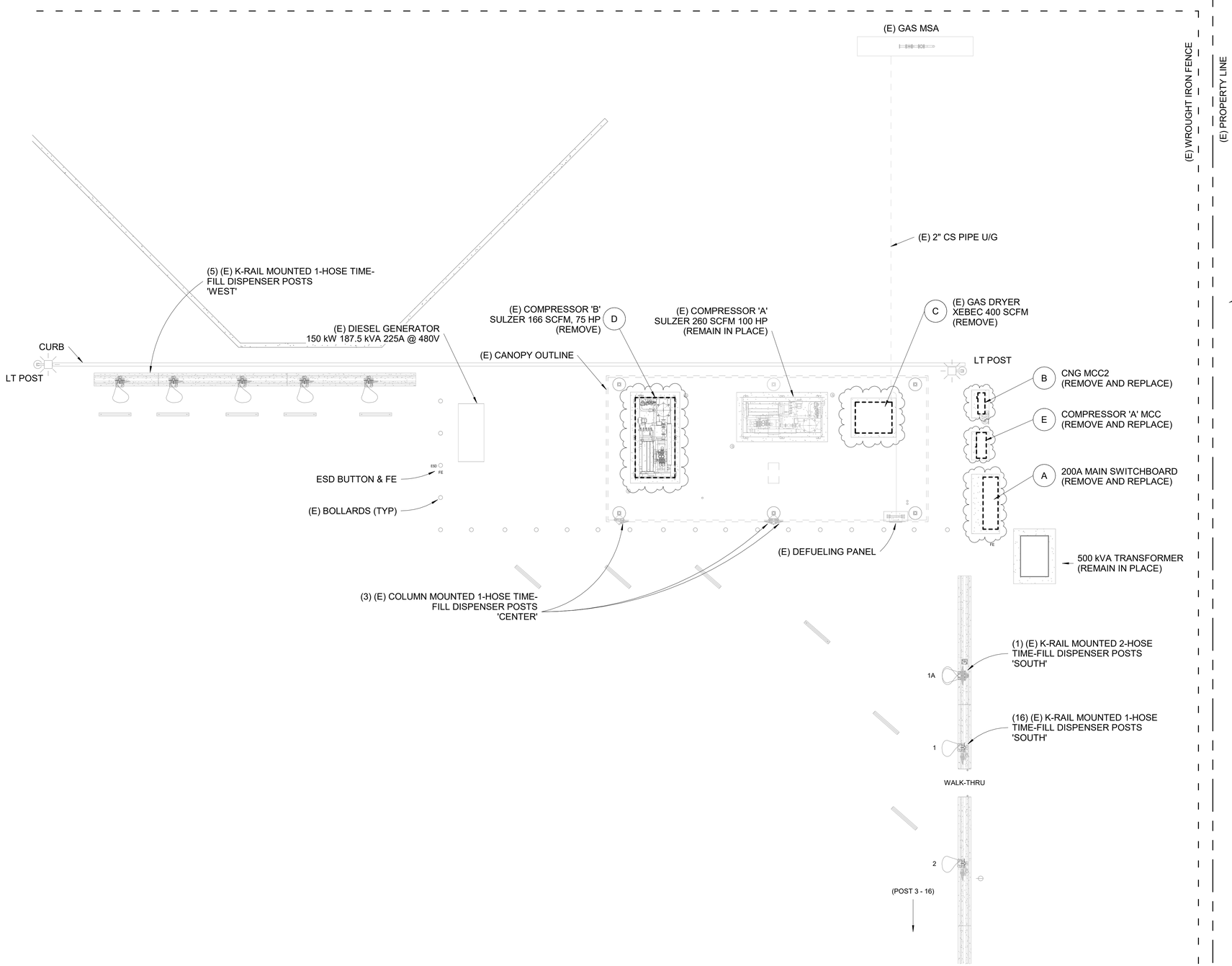

1 FUELING DEMO PLAN
1/8" = 1'-0"

8' 4' 0' 8' 16'
SCALE: 1/8" = 1'-0"

KEYED NOTES

A. DE-ENERGIZE PRIMARY POWER TO MSB. DISCONNECT AND AND REMOVE MSB. COORDINATE TIMING AND SEQUENCE FOR INSTALLATION OF REPLACEMENT UNIT PER ELECTRICAL DRAWINGS. COORDINATE WORK WITH SOCAL EDISON AS REQUIRED.

B. DE-ENERGIZE POWER SUPPLY TO STARTER PANEL FOR 75 HP COMPRESSOR SKID 'B'. DISCONNECT AND REMOVE MOTOR-STARTER PANEL

C. ISOLATE GAS SUPPLY AND ELECTRICAL POWER TO GAS DRYER. SAFELY BLOW DOWN GAS DRYER, DISCONNECT AND REMOVE DRYER. COORDINATE TIMING AND SEQUENCE FOR INSTALLATION OF REPLACEMENT UNIT PER MECHANICAL DRAWINGS.

D. DE-ENERGIZE AND ISOLATE SUCTION AND DISCHARGE LINES FOR COMPRESSOR SKID 'B'. DISCONNECT AND REMOVE COMPRESSOR SKID.

E. DE-ENERGIZE AND REMOVE MOTOR STARTER FOR REMAINING SKID A. DE-ENERGIZE ONLY AFTER REPLACEMENT SKID B IS CONNECTED AND OPERATIONAL AS APPROVED BY THE OWNER.

GENERAL DRAWING NOTES

1. REMOVE AND HAUL OFF ALL EQUIPMENT. DISPOSE OF INDUSTRIAL WASTE PRODUCTS AND MATERIALS AS REQUIRED BY LOCAL, STATE AND FEDERAL REQUIREMENTS.

2. REPAIR HOLES IN CANOPY ROOF RESULTING FROM REMOVAL OF ALL VENT RISER PIPES AS REQUIRED.

3. COORDINATE AND SCHEDULE ALL SHUT DOWNS AND INTERRUPTIONS IN CNG OPERATION WITH OWNER AT LEAST TWO WORK DAYS IN ADVANCE.

4. PRESERVE (E) LINES, CONDUITS AND WIRES WHERE FEASIBLE AS NEEDED FOR REINSTALLATION OF (N) REPLACEMENT EQUIPMENT.

5. ALL CUTS SHALL BE NEAT AND CLEAN, AS NEEDED TO REMAKE CONNECTIONS WHERE APPLICABLE.

6. REMOVE AND REPLACE ALL SAFETY SIGNS AT CNG FUELING EQUIPMENT AND FUELING AREA.

7. AT LEAST ONE CNG COMPRESSOR SKID AND ENTIRE TIME-FILL DISTRIBUTION SYSTEM SHALL BE OPERATIONAL EVERY DAY BETWEEN 6PM AND 6AM, UNLESS APPROVED OTHERWISE BY THE OWNER.

No	Revision Description	Date
2	ISSUED FOR BID	08/19/20
1	PLAN CHECK SUBMITTAL #1	02/24/20

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SIMI VALLEY, CA 93065

Sub Consultants

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8/25/2020
No. M-32351
EXP. 06/30/2021
MECHANICAL
STATE OF CALIFORNIA

Sheet Title
FUELING DEMO PLAN

Designer Designed	RK	Project No	FS-0978
Drawn		Scale	1/8" = 1'-0"
Checker Checked	FF	Sheet No	M-100
Approved			2020-0686
05/22/19 Issue Date		Project Status	

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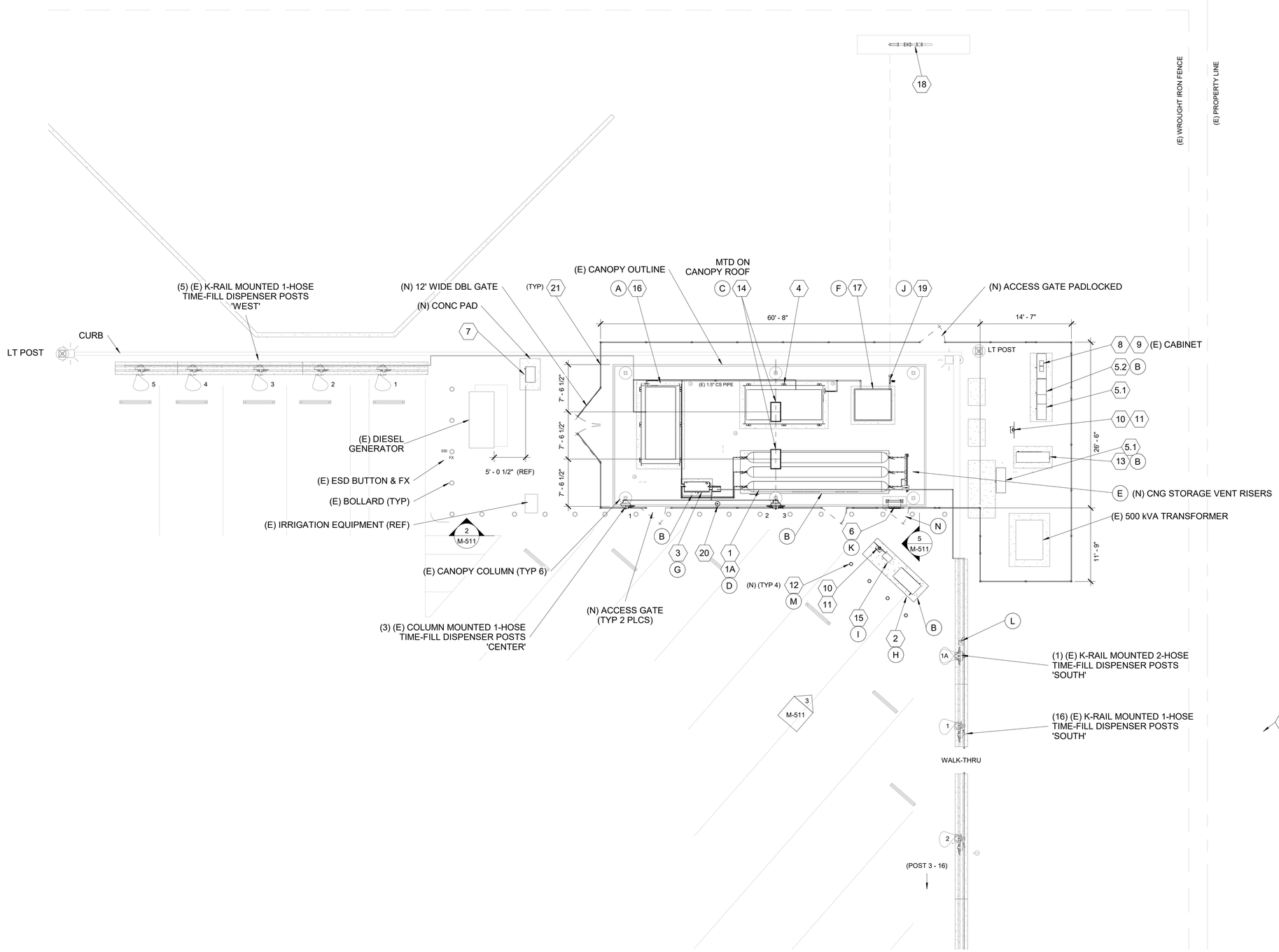

1 FUELING EQUIPMENT PLAN
1/8" = 1'-0"

KEYED NOTES

A. INSTALL (N) COMPRESSOR SKID ON (E) CONCRETE PAD. REROUTE (E) GAS SUPPLY PIPE AS REQUIRED TO CONNECT TO (N) SKID. ROUTE (N) 1/2" SS TUBING FROM SKID TO VALVE PANEL.

B. SEE STRUCTURAL DWGS FOR DETAILS OF (N) EQUIPMENT CONCRETE PADS.

C. INSTALL STATIONARY GRAVITY VENTILATORS AT RIDGE OF CANOPY ROOF. PROVIDE FLASHING AND ROOF MASTIC AS REQUIRED AT EACH OPENING TO MAKE RAIN TIGHT. VERIFY CONSTRUCTABILITY BETWEEN RIDGE FRAMING PRIOR TO ORDERING VENTILATORS. INFORM OWNER IMMEDIATELY IN CASE OF ANY CONSTRUCTABILITY ISSUE.

D. PROVIDE (3) VESSELS ARRANGED (3) VESSELS WIDE X (1) VESSEL TALL AS PART OF BASE SCOPE. PROVIDE 1, 2 OR 3 ADDITIONAL VESSELS AS ADDITIVE ALTERNATES. BASE SCOPE SHALL INCLUDE CAPPED TEE'S AT LOW AND MID BANKS. ANCHOR VESSELS TO (E) CONCRETE FOOTERS.

E. ROUTE RISERS FROM PRV OUTLETS ON ALL (N) EQUIPMENT UP THROUGH CANOPY ROOF. PROVIDE FLASHING AND ROOF MASTIC AS REQUIRED AT EACH OPENING TO MAKE RAIN TIGHT. RISER OPENINGS SHALL BE TOPPED WITH PIPING/TUBING TEE FITTED WITH 6" ARMS AND DOWN-FACING BEVEL-CUT ENDS. ANCHOR RISERS TO SLAB AND CANOPY FRAMING WHERE FEASIBLE USING UNISTRUT SUPPORTS AND PIPE CLAMPS. ALL RISERS SHALL BE FABRICATED FROM 1" SCH80 CS PIPE AND MATCHING THREADED TEE'S, UNO. PROVIDE (1) 2" VENT RISER FOR EACH SET OF (3) CNG STORAGE VESSELS.

F. INSTALL (N) GAS DRYER ON (E) CONCRETE PAD. REROUTE SUPPLY AND DISCHARGE PIPES TO CONNECT TO NEW DRYER AS REQUIRED. ANCHOR PIPE TO PAD AT MAX SPACING OF 7' O.C. USING UNISTRUT SUPPORTS AND PIPE CLAMPS.

G. INSTALL (N) PRIORITY-VALVE PANEL ON (N) CONCRETE PAD. ROUTE 1/2" SS TUBING FROM EACH COMPRESSOR DISCHARGE TO VALVE PANEL INLET. ROUTE 3/4" SS TUBING FROM EACH STORAGE BANK TO VALVE-PANEL. ROUTE (3) 3/4" SS TUBING FROM VALVE PANEL IN UNDERGROUND P.E. SLEEVES TO FAST-FILL DISPENSER. ROUTE 1/2" SS TUBING FROM TIME-FILL PORT ON VALVE PANEL TO (E) TIME-FILL DISTRIBUTION MANIFOLDS. USE TUBING TEE'S AS REQ'D.

H. INSTALL (1) NEW 2-HOSE FAST-FILL DISPENSER ON MATCHING BELOW-GRADE PIT. ROUTE (3) 3/4" SS LINES FROM VALVE PANEL AND CONNECT WITH REDUCING FITTINGS AS NEEDED.

I. INSTALL (N) FUEL MANAGEMENT TERMINAL ONTO NEW CONCRETE PEDESTAL. CONNECT POWER, LOW-VOLTAGE, HOOK-SWITCH AND COMMUNICATION LINES PER MFR'S INSTRUCTIONS.

J. INSTALL 2" CS PIPE TEE WITH BALL VALVE, P.I. AND BLIND FLANGE ON GAS-SUPPLY PIPE IMMEDIATELY UPSTREAM OF INLET TO GAS DRYER.

K. ISOLATE AND SAFELY DEPRESSURIZE DEFUELING PANEL. INSTALL HANGING HARDWARE HOSE ASSEMBLY AT DEFUELER. INSTALL PRESSURE GAUGES ON INLET AND OUTLET OF DEFUELING PANEL.

L. PRESERVE IN PLACE (E) TRANSMITTER AND (E) CNG METER AT TIME-FILL POST.

M. PAINT BOTH SIDES OF ALL (E) K-RAILS, (E) BOLLARDS AND (E) ABOVE GROUND CS PIPING. COORDINATE COLOR WITH THE OWNER. (TYPICAL)

N. PROVIDE 3' SWING GATE AT CHAIN LINK FENCE IN FRONT OF DE-FUELING PANEL. LOCATE TO ACCOMMODATE (E) BOLLARDS.

CNG EQUIP SCHEDULE

KEY	DESCRIPTION	QTY
1	CNG STORAGE VESSELS (BASE)	3
1A	CNG STORAGE VESSELS (ADDITIVE ALTERNATE)	3
2	2-HOSE CNG FAST-FILL DISPENSER	1
3	PRIORITY VALVE PANEL	1
4	CNG COMPRESSOR SKID 'A' (E) REMAIN	1
5.1	(E) MCC FOR SKID A	2
5.2	MOTOR-STARTER PANEL	1
6	(N) HANGING HARDWARE FOR (E) DEFUELING PANEL	1
7	GENERATOR LOAD BANK	1
8	MASTER CONTROL PANEL	1
9	REMOTE COMMUNICATION PANEL	1
10	ESD BUTTON	2
11	FIRE EXTINGUISHER IN CABINET	2
12	BOLLARD (TYPICAL)	4
13	ELECTRICAL SWITCHBOARD AND SERVICE	1
14	ROOF VENTILATOR	2
15	FUEL MANAGEMENT TERMINAL	1
16	CNG COMPRESSOR SKID 'B' (N)	1
17	GAS DRYER	1
18	GAS UTILITY MSA	1
19	SITE SUPPLY ESD VALVE	1
20	CCTV SECURITY CAMERA	1
21	CHAIN LINK FENCE (TYPICAL)	201 FT

SEE SHEET M-501 FOR DETAILED EQUIPMENT SCHEDULE.

No	Revision Description	Date
2	ISSUED FOR BID	08/19/20
1	PLAN CHECK SUBMITTAL #1	02/24/20

Client: Simi Valley Transit
Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

Sub Consultants

Seal: REGISTERED PROFESSIONAL ENGINEER, FELIX FARAON, 8/25/2020, No. M-32351, EXP. 06/30/2021, MECHANICAL, STATE OF CALIFORNIA

Sheet Title: FUELING EQUIPMENT PLAN

Project No: FS-0978
Scale: 1/8" = 1'-0"
Sheet No: M-101
2020-0697
Project Status

Designer: RK
Designed
Drawn: RK
Checker: FF
Checked
Approved: FF
04/09/19
Issue Date

FUEL SOLUTIONS
5755 Uplander Way, Suite A
Culver City, CA 90230
310-207-8548

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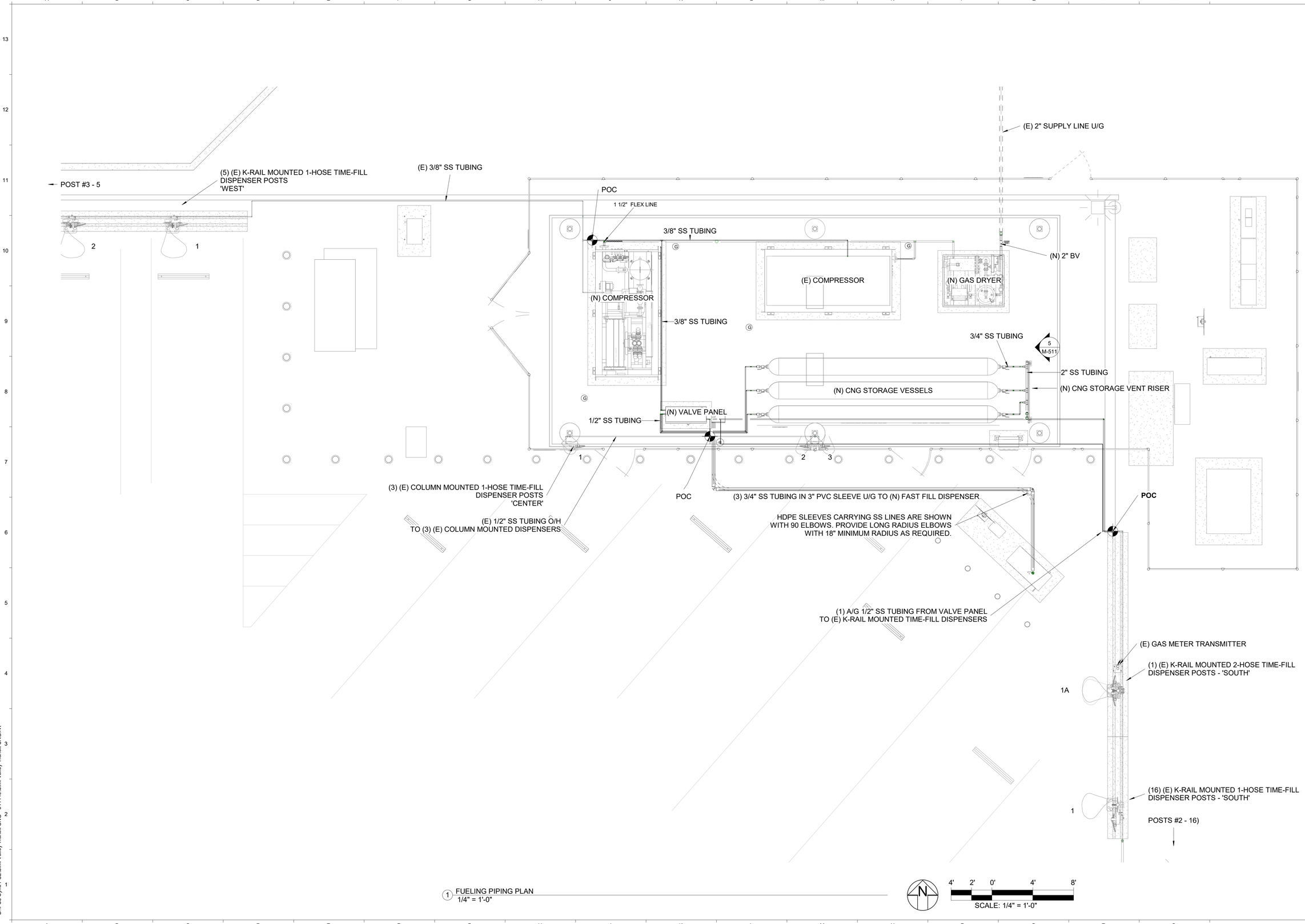

1 FUELING PIPING PLAN
1/4" = 1'-0"

No	Revision Description	Date
2	ISSUED FOR BID	08/19/20
1	PLAN CHECK SUBMITTAL #1	02/24/20

Client: Simi Valley Transit
Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
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SIMI VALLEY, CA 93065

Sub Consultants

Seal: REGISTERED PROFESSIONAL ENGINEER, RICHARD KIM, 8/25/2020, No. M-32351, EXP. 06/30/2021, MECHANICAL, STATE OF CALIFORNIA

Sheet Title: FUELING PIPING PLAN

Designer Designed	RK
Drafter Drawn	
Checker Checked	
Approver Approved	
Issue Date	04/09/19
Project No.	FS-0978
Scale	1/4" = 1'-0"
Sheet No.	M-102
Project Status	2020-0688

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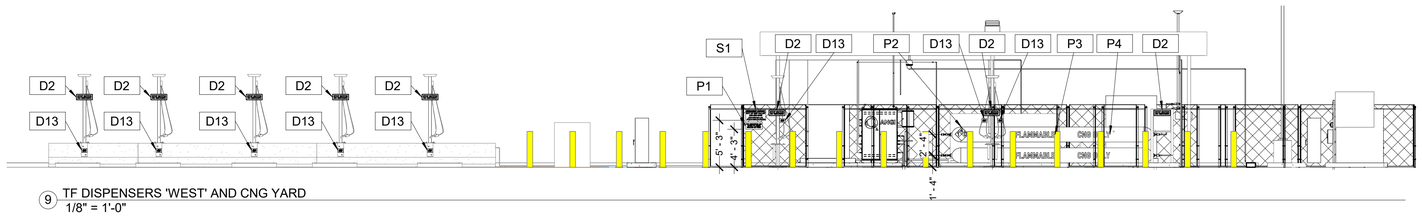
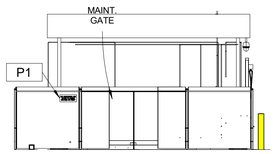
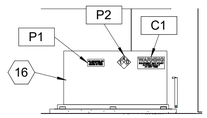


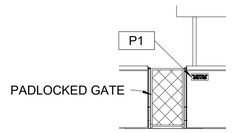
9 TF DISPENSERS 'WEST' AND CNG YARD
1/8" = 1'-0"



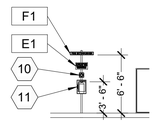
3 CNG YARD MAIN GATE
1/8" = 1'-0"



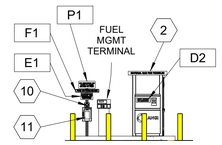
4 (N) COMPRESSOR 'B'
1/8" = 1'-0"



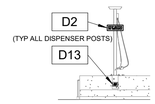
5 CNG YARD REAR GATE
1/8" = 1'-0"



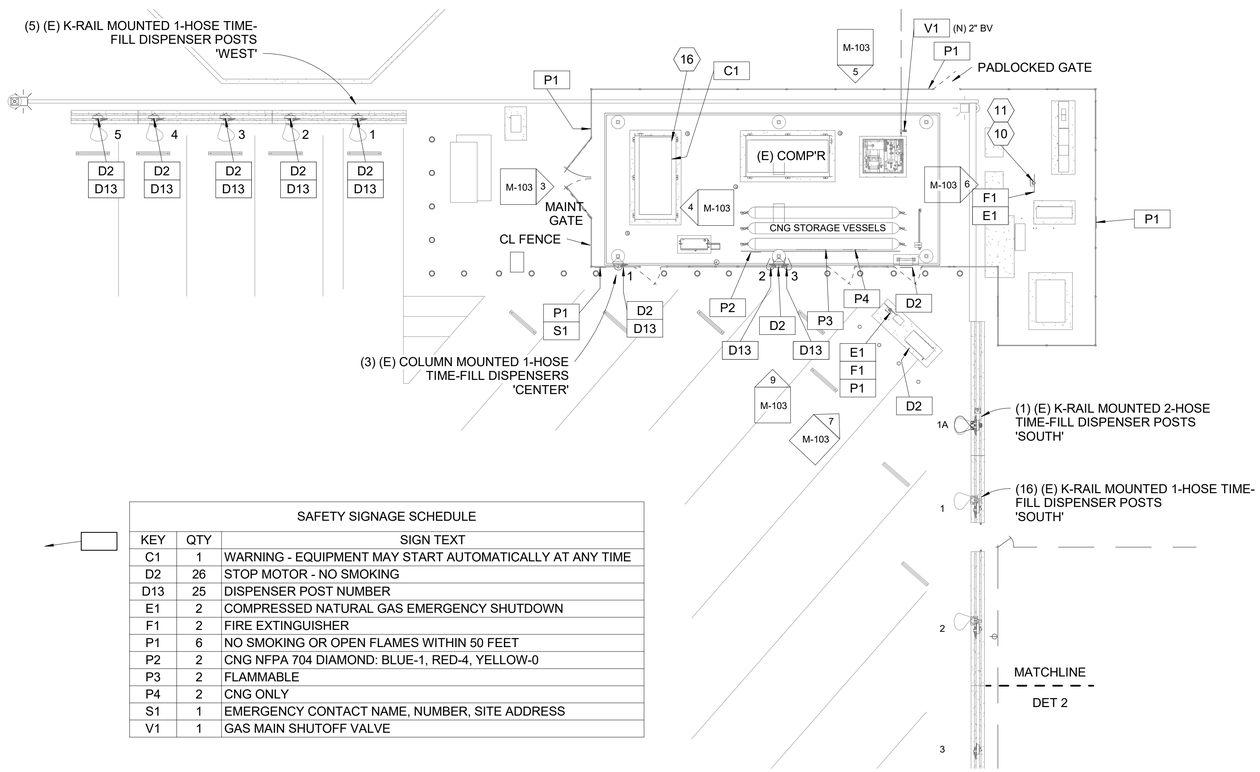
6 CNG YARD ESD & FX
1/8" = 1'-0"



7 FAST-FILL DISPENSER
1/8" = 1'-0"

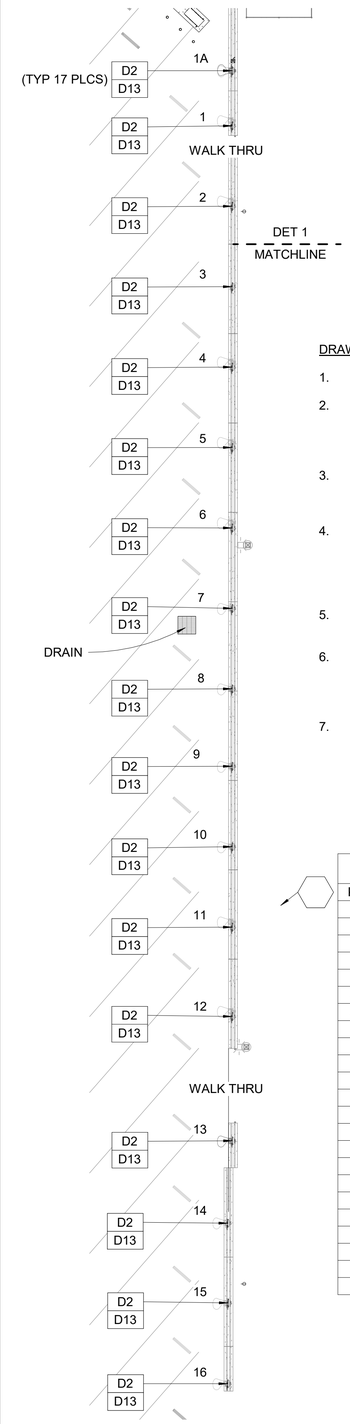


8 TYP TIME-FILL DISPENSER
1/8" = 1'-0"



SAFETY SIGNAGE SCHEDULE		
KEY	QTY	SIGN TEXT
C1	1	WARNING - EQUIPMENT MAY START AUTOMATICALLY AT ANY TIME
D2	26	STOP MOTOR - NO SMOKING
D13	25	DISPENSER POST NUMBER
E1	2	COMPRESSED NATURAL GAS EMERGENCY SHUTDOWN
F1	2	FIRE EXTINGUISHER
P1	6	NO SMOKING OR OPEN FLAMES WITHIN 50 FEET
P2	2	CNG NFPA 704 DIAMOND: BLUE-1, RED-4, YELLOW-0
P3	2	FLAMMABLE
P4	2	CNG ONLY
S1	1	EMERGENCY CONTACT NAME, NUMBER, SITE ADDRESS
V1	1	GAS MAIN SHUTOFF VALVE

1 SAFETY SIGN PLAN, CNG YARD
3/32" = 1'-0"



2 TIME-FILL DISPENSERS 'SOUTH'
1/16" = 1'-0"

16' 8' 0' 16' 32'
SCALE: 1/16" = 1'-0"

DRAWING NOTES

1. SEE SHEET M-512 FOR SAFETY SIGN DETAILS.
2. DEPICTION OF EQUIPMENT AND COMPONENTS SHOWN ON THIS DRAWING ARE FOR SCHEMATIC PURPOSES ONLY AND MAY DIFFER FROM THE ACTUAL COMPONENTS THEY REPRESENT.
3. ALL SIGNS AND LETTERING SHALL BE CONSTRUCTED OF METAL WITH EXTERIOR GRADE UV RESISTANT SURFACES AND FINISHES.
4. SIGNS SHALL BE VISIBLE AND CONSPICUOUS SO THAT IT IMMEDIATELY COMES INTO VIEW TO PERSONNEL APPROACHING THE EQUIPMENT AND THAT THE MESSAGE IS APPARENT FROM ANY VANTAGE POINT WITHIN THE SURROUNDING AREA.
5. SIGNS TO BE MOUNTED ON SIDE FACING APPROACHING PERSONNEL, 3'-0" MIN, FROM GRADE.
6. PROVIDE ID TAGS FOR ALL INLET AND OUTLET VALVES FOR LINES BETWEEN PACKAGED EQUIPMENT, INCLUDING MANUAL, AUTOMATIC AND RELIEF VALVES, AND SUPPLY VALVES FOR TIME-FILL AND FAST-FILL SYSTEMS.
7. CONTRACTOR SHALL INSTALL (1) 20A:I20 BC FIRE EXTINGUISHER MOUNTED 4' ABOVE GRADE AT LOCATION MARKED F1 .

CNG EQUIP SCHEDULE		
KEY	DESCRIPTION	QTY
1	CNG STORAGE VESSELS (BASE)	3
1A	CNG STORAGE VESSELS (ADDITIVE ALTERNATE)	3
2	2-HOSE CNG FAST-FILL DISPENSER	1
3	PRIORITY VALVE PANEL	1
4	CNG COMPRESSOR SKID 'A' (E) REMAIN	1
5.1	(E) MCC FOR SKID A	2
5.2	MOTOR-STARTER PANEL	1
6	(N) HANGING HARDWARE FOR (E) DEFUELING PANEL	1
7	GENERATOR LOAD BANK	1
8	MASTER CONTROL PANEL	1
9	REMOTE COMMUNICATION PANEL	1
10	ESD BUTTON	2
11	FIRE EXTINGUISHER IN CABINET	2
12	BOLLARD (TYPICAL)	4
13	ELECTRICAL SWITCHBOARD AND SERVICE	1
14	ROOF VENTILATOR	2
15	FUEL MANAGEMENT TERMINAL	1
16	CNG COMPRESSOR SKID 'B' (N)	1
17	GAS DRYER	1
18	GAS UTILITY MSA	1
19	SITE SUPPLY ESD VALVE	1
20	CCTV SECURITY CAMERA	1
21	CHAIN LINK FENCE (TYPICAL)	1

SEE SHEET M-501 FOR DETAILED EQUIPMENT SCHEDULE.

No	Revision Description	Date
2	ISSUED FOR BID	08/19/20
1	PLAN CHECK SUBMITTAL #1	02/24/20

Client
Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
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Sub Consultants

Seal
REGISTERED PROFESSIONAL ENGINEER
ALI FITEH FARHAD
8/25/2020
No. M-32351
EXP. 06/30/2021
MECHANICAL
STATE OF CALIFORNIA

Sheet Title
SAFETY SIGNAGE PLAN

Designer Designed	RK	Project No.	FS-0978
Drawn		Scale	As indicated
Checker Checked		Sheet No.	M-103 2020-0689
Approver Approved		Project Status	
Issue Date	04/09/19		

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CNG EQUIPMENT SCHEDULE

KEY	DESCRIPTION	QTY	SPECIFICATIONS	MFR / VENDOR	MODEL	STATUS
1	CNG STORAGE VESSELS (BASE)	3	CNG STORAGE VESSELS, 20" ID X 23' L, APPROX. 11,500 SCF CAPACITY AT 4500 PSIG, 5500 PSIG MAWP. PROVIDE EACH WITH 3/4" SERVICE VALVE, 1" PRV SET AT 5500 PSI W/ 3/4" ISOLATION BALL VALVE (LO) + BLEED VALVE, AND 1/2" NEEDLE-DRAIN VALVE AT LOW POINT. INCLUDE APPROPRIATE SEISMIC BRACING. PROVIDE (3) WIDE X (1) TALL.	CP INDUSTRIES, OR FIBA INDUSTRIES	20-23-5500	(N) (BASE BID)
1A	CNG STORAGE VESSELS (ADDITIVE ALTERNATE)	3	CNG STORAGE VESSELS, 20" ID X 23' L, APPROX. 11,500 SCF CAPACITY AT 4500 PSIG, 5500 PSIG MAWP. PROVIDE EACH WITH 3/4" SERVICE VALVE, 1" PRV SET AT 5500 PSI W/ 3/4" ISOLATION BALL VALVE (LO) + BLEED VALVE, AND 1/2" NEEDLE-DRAIN VALVE AT LOW POINT. INCLUDE APPROPRIATE SEISMIC BRACING. PROVIDE (3) WIDE X (1) TALL. PROVIDE STRUCTURAL-FOOTER EXTENSIONS WITH FIRST ALTERNATE VESSEL.	CP INDUSTRIES, OR FIBA INDUSTRIES	20-23-5500	(N) ADDITIVE ALTERNATE FOR EACH OF (3) VESSELS
2	2-HOSE CNG FAST-FILL DISPENSER	1	2-HOSE DISPENSER WITH 1/2" PROCESS, 3-BANK SEQUENCING AND GAS-ACTUATED BALL VALVES WITH REGULATOR (OR W/ HIGH-FLOW SOLENOID VALVES). PROVIDE W/ ONE MM CNG-050 METER, AND (3) PARKER J4 COALESCING FILTERS. HOSES SHALL BE 14' X 1/2" SUPPLY X 3/8" VENT WITH ILB-1 AND ILB-1 BREAKAWAYS, AND TYPE 2 NOZZLES. PROVIDE TEMPERATURE COMPENSATED FILLS TO 3600 PSIG @ 70ºF.	ANGI ENERGY SYSTEMS, OR EQUAL BY KRAUS INDUSTRIES OR TULSA GAS TECHNOLOGIES	SERIES II	(N)
3	PRIORITY VALVE PANEL	1	VALVES AND CONTROLS FOR 3-BANK PRIORITY FILL OF STORAGE VESSELS, TIME FILL AND EMERGENCY SHUT DOWN. FURNISH WITH 1/2" PROCESS TUBING AND NEMA 3R ENCLOSURE. INCLUDE FAIL-CLOSED ESD VALVES THAT AUTOMATICALLY ISOLATE ALL DISPENSERS WHEN ESD SYSTEM IS ACTIVATED. PROVIDE BYPASS FOR DIRECT FILL TO FAST-FILL DISPENSER IF HIGH BANK IS LESS THAN 3400 PSI. PROVIDE WITH ISOLATION BALL VALVES AND 6000 PSI PRESSURE GAUGES FOR ALL INLET AND OUTLET CONNECTIONS TO PANEL. PROVIDE TEMPERATURE-COMPENSATED TIME-FILL SUPPLY W/ 1/2" SS TUBING CONNECTION AND ISOLATION BALL VALVE.	ANGI ENERGY SYSTEMS		(N)
4	CNG COMPRESSOR SKID 'A' (E) REMAIN	1	(E) NATURAL GAS COMPRESSOR RATED AT 260 SCFM AT 105 PSI SUCTION DRIVEN BY A 100 HP MOTOR. ADD I/O AS NEEDED FOR CONNECTION TO NEW CONTROLLER. CONFIGURE TO BE CONNECTED TO NEW MCC.	SULZER	C3U209-100	(E) PRESERVE IN PLACE WITH CONTROL MODIFICATION
5.1	(E) MCC FOR SKID A	2	DRIVERS AND POWER DISTRIBUTION TO ALL 3-PHASE AND 1-PHASE ELECTRICAL LOADS FOR (E) COMPRESSOR SKID OPERATION. PROVIDE WITH ELECTRONIC SOFT STARTER FOR 100 HP COMPRESSOR MOTOR, 10 HP STARTERS FOR COOLER FAN MOTORS, 0.75 HP LUBE OIL AS NEEDED. WIRE FOR LEAD-LAG CONTROL UNDER (N) PLC CONTROLLER. HOUSE IN A NEMA 3R CABINET. PANEL SHALL BE APPROVED AND PACKAGED BY THE NEW COMPRESSOR-SKID PACKAGER.	SULZER/GREENFIELD	SIMPLEX MCP	(E)
5.2	MOTOR-STARTER PANEL	1	DRIVERS AND POWER DISTRIBUTION TO ALL 3-PHASE AND 1-PHASE ELECTRICAL LOADS FOR OPERATION OF (N) CNG-COMPRESSOR SKID. PROVIDE WITH ELECTRONIC SOFT STARTER FOR 100 HP COMPRESSOR MOTOR, 10 HP STARTER FOR COOLER-FAN MOTOR, 1 HP LUBE OIL PUMP MOTOR, AND 480/120 1-PHASE TRANSFORMER FOR 120V CONTROL LOADS. HOUSE IN A NEMA 3R CABINET. PANEL SHALL BE APPROVED AND PACKAGED BY THE NEW COMPRESSOR-SKID PACKAGER.	ANGI ENERGY SYSTEMS, OR EQUAL FROM JW POWER OR IMW/CE	SQUARE-D, ABB OR EQUAL	(N)
6	(N) HANGING HARDWARE FOR (E) DEFUELING PANEL	1	PROVIDE HANGING HARDWARE TO (E) DEFUELING PANEL, INCLUDING 3/8" X 12' HOSE, INLINE BREAKAWAY, AND OPW 'BDN' NOZZLE. INSTALL NOZZLE REST AT (E) DEFUELING PANEL. INSTALL 3" 6000-PSI PRESSURE GAUGES AT PANEL INLET AND 3" 200 PSI PRESSURE GAUGE AT PANEL OUTLET.	OPW	12F-BDN	(N)
7	GENERATOR LOAD BANK	1	50KW DIGITAL AC LOAD BANK WITH SOFTWARE. USER SPECIFIED LOAD VOLTAGE, FREQUENCY, AND POWER SUPPLY. PROVIDE WITH BUILT IN 3-LINE DIGITAL METERING TO ALLOW HIGH PRECISION DATA COLLECTION DIRECTLY FROM UNIT. INCLUDE DATA-MANAGEMENT SOFTWARE FOR DATA ANALYSIS. SOFTWARE SHALL ALLOW MANUAL LOAD TESTING OR AUTOMATIC LOAD TESTING. (SEE SCHEDULE NOTE 5)	ASCO	4100	(N)
8	MASTER CONTROL PANEL	1	INCLUDES INTEGRATED PLC FOR MONITORING AND CONTROL OF ALL (N) AND (E) COMPRESSORS, IP COMMUNICATION CAPABILITY, AND I/O CAPABILITY FOR COMMUNICATION VIA WEB BASED INTERFACE FOR STATUS, FAULT HISTORY AND PARAMETER MODIFICATIONS. PANEL SHALL BE APPROVED AND PACKAGED BY THE COMPRESSOR-SKID PACKAGER.	ANGI ENERGY SYSTEMS, OR EQUAL FROM JW POWER OR IMW/CE	ALLEN BRADLEY CONTROLOGIX OR COMPACTLOGIX, PACKAGED BY SKID MFR	(N)
9	REMOTE COMMUNICATION PANEL	1	DATA CONNECTION TO MASTER CONTROL PANEL PER SKID PACKAGER'S COORDINATION DRAWINGS. PANEL SHALL PROVIDE AUTOMATIC NOTIFICATION VIA SMS AND EMAIL IN CASE OF ANY SHUTDOWN FAULT OR START FAILURE OF EITHER COMPRESSOR, AND SHALL ALLOW REMOTE MONITORING OF SYSTEM STATUS, FAULT HISTORY, AND RUN STATE OF BOTH COMPRESSOR SKIDS. WIRE ETHERNET CONNECTION TO IP SWITCH IN PORTABLE OFFICE BUILDING.	ANGI ENERGY SYSTEMS, OR EQUAL FROM JW POWER OR IMW/CE	CP-400	(N)
10	ESD BUTTON	2	120V, NORMALLY CLOSED, SIGNAL OPEN, PULL RESET IN NEMA 3R OR NEMA 4 ENCLOSURE. DEVICE SHALL BE LISTED FOR CLASS 1 DIVISION 2 SERVICE. INSTALL ON FUEL MANAGEMENT TERMINAL OR ON DISPENSER CABINET AND WIRE TO ESD CIRCUIT.	APPLETON OR EQUAL	APPLETON OR EQUAL	(N)
11	FIRE EXTINGUISHER IN CABINET	2	20B:C DRY-CHEMICAL FIRE EXTINGUISHER. 10 LB CAPACITY IN STEEL CONTAINER WITH 195 PSI CHARGE, MIN 11 SECOND DISCHARGE CAPACITY, DIRECTIONAL NOZZLE, AND PRESSURE GAUGE. PROVIDE IN FIBERGLASS OR ALUMINUM HOUSING W/ CLEAR FRONT PANEL, RATED FOR OUTDOOR INSTALLATION.	BADGER OR EQUAL KIDDE	20JK27	(N)
12	BOLLARD (TYPICAL)	4	6" DIA X 6' LG SCH40 CS PIPE. SET 3' B/G IN 18" DIA X 3' DEEP CONCRETE FOOTER. FILL PIPE W/ CONCRETE. PIPE BOLLARDS SHALL BE SET TRUE AND STRAIGHT (USE STRING OR EQUAL TO SET). PAINT SAFETY YELLOW.	VARIOUS	VARIOUS	
13	ELECTRICAL SWITCHBOARD AND SERVICE	1	REPLACE MAIN SWITCH BOARD WITH POWER UPGRADE W/ 400A 480V MAIN. NEW MSB SHALL INCLUDE METER SOCKET PER SCE REQUIREMENTS, AND ALLOW 2 COMPRESSOR SKIDS WITH 100 HP MOTORS EACH, AND ALL OTHER RELATED EQUIPMENT RUN SIMULTANEOUSLY. CONNECT TO (E) GENSET. CONFIGURE W/ BREAKERS, 1-PHASE XFMR AND APPURTENANCES AS REQUIRED IN 'E' DRAWINGS. (SEE SCHEDULE NOTE 5)	ANGI ENERGY SYSTEMS, OR EQUAL FROM JW POWER OR IMW/CE	SQUARE-D, ABB OR EQUAL	(N)
14	ROOF VENTILATOR	2	GRAVITY VENTILATOR LOREN COOK TRE 18X36X3 TIER, NON-DUCTED, CONSTRUCTED OF HIGH QUALITY EXTRUDED ALUMINUM, WITH THROAT DIMENSIONS OF 18"X36", AND ROOF CURB MADE FOR EXISTING CANOPY PITCH. CONTRACTOR SHALL VERIFY STRUCTURE OF CANOPY FOR INSTALLATION CONFIGURATION PRIOR TO ORDERING THE VENTILATORS AND ROOF CURBS.	COOK	TRE-18X36X3TIER	(N)
15	FUEL MANAGEMENT TERMINAL	1	TERMINAL FOR AUTHORIZING, RECORDING AND MANAGING FUELING TRANSACTIONS FOR FAST FILL DISPENSER. ALLOW AUTHORIZATION VIA KEY PAD, PROXY READER AND CREDIT/FLEET CARD. CONFIGURE TO CONTROL ONE HOSE VIA COMPATIBLE PULSE READER. EQUIP WITH INTEGRATED ETHERNET COMMUNICATION FOR CONNECTION TO IP SWITCH IN OFFICE BUILDING. PROVIDE REMOTE-HOST SOFTWARE OR CLOUD-BASED TRANSACTION MANAGEMENT, INCLUDING SUPPORT AND SERVICE FOR 24 MONTHS FOLLOWING STARTUP AND COMMISSIONING. SOFTWARE AND REPORT OUTPUT SHALL BE COMPATIBLE WITH 'MUNIS' SITE-MANAGEMENT PLATFORM, INCLUDING CONFIGURATION OF FUEL-REPORT OUTPUT TO COMMUNICATE WITH MUNIS. TERMINAL SHALL BE RATED CLASS-1 DIVISION 2 THROUGHOUT.	FUELMASTER OR EQUAL	FMU-2500	(N)
16	CNG COMPRESSOR SKID 'B' (N)	1	SKID EQUIPPED WITH COMPRESSOR RATED AT MINIMUM 260 SCFM AT COMPRESSOR SUCTION OF 95 PSIG OR LESS, DRIVEN BY 100 HP NEMA PREMIUM EFFICIENCY TEFC MOTOR. FURNISH WITH INTERSTAGE COOLER, GAS-ACTUATED BALL VALVES AND REGULATOR FOR GAS ACTUATION, RECEIVERS FOR CAPTURED BLOWDOWN, AND COMMUNICATION WITH REMOTE-MASTER PLC. PROVIDE WITHOUT SKID ENCLOSURE. PROVIDE SUCTION REGULATOR AS REQUIRED. SET UPSTREAM REGULATOR FOR SUCTION PRESSURE PER COMPRESSOR MANUFACTURER INSTRUCTION.	ANGI ENERGY SYSTEMS, OR EQUAL FROM JW POWER OR IMW/CE	NG300E-100	REPLACE (E) 75HP COMPRESSOR SKID WITH (N)
17	GAS DRYER	1	SINGLE-VESSEL DESICCANT DRYER, 520 SCFM MINIMUM CAPACITY AT 112 PSIG, NPS 2" CLASS 150# ASME B16.5 RF FLANGE CONNECTIONS, 150 PSIG MAWP, INTEGRAL MANUALLY-CONTROLLED REGENERATION SYSTEM, BYPASS VALVES, HYGROMETER W/ 2-LEVEL ALARM, INLET-COALESCING AND OUTLET-PARTICULATE FILTERS; TOTAL PRESSURE DROP ≤ 5 PSI AT DESIGN CONDITIONS. REGEN AT LESS THAN 280 HOURS.	XEBEC ADSORPTION USA OR EQUAL PSB, SPX OR ANGI ENERGY SYSTEMS	STR24NGX-2S-150A-480	REPLACE (E) GAS DRYER WITH (N) GAS DRYER
18	GAS UTILITY MSA	1	90-150 PSI OUTPUT, UNREGULATED	SOCAL GAS	SOCAL GAS	(E) PRESERVE IN PLACE
19	SITE SUPPLY ESD VALVE	1	2" GAS-ACTUATED, NORMALLY-CLOSED FULL-PORT BALL VALVE WITH SS BALL TRIM AND BODY, FIRE-RATED PER API 607-5, CLASS 150 RF-FLANGED VALVE SHALL BE CONTROLLED TO OPEN ONLY WHEN AT LEAST ONE COMPRESSOR IS RUNNING.	DURACHOICE OR EQUAL	VBC2KF-200	(N)
20	CCTV SECURITY CAMERA	1	HD RESOLUTION SURVEILLANCE CAMERA, IP ADDRESSABLE OVER ETHERNET, SS 24VAC, CLASS 1 DIVISION 2 LISTED.	IVCCO	AMZ-3041-2	(N)
21	CHAIN LINK FENCE (TYPICAL)	201 FT	7' HIGH CL FENCE WITH PRIVACY SLATS	~	~	(N)

SCHEDULE NOTES

1. SEE SHEETS M-111 AND M-112 FOR LOCATION OF HEX-KEYED EQUIPMENT.
2. THE LIST OF EQUIPMENT IS PARTIAL. CONTRACTOR SHALL FURNISH ALL EQUIPMENT, LABOR, CONDUIT, WIRE, PIPING, MATERIAL AND TESTING SERVICES AS REQUIRED TO DELIVER A COMPLETE AND FUNCTIONAL CNG-SYSTEM UPGRADE, AS REQUIRED BY THE PLANS, DRAWINGS, AND SPECIFICATIONS, AND AS APPROVED BY THE OWNER. REFER TO THE DRAWINGS FOR ADDED REQUIREMENTS.
3. SEE ADDITIONAL SYSTEM REQUIREMENTS ON SHEET M-601 AND OTHER M-SERIES DRAWINGS, AND REFER TO THE SPECIFICATION SECTIONS 43 01 05.
4. ALL EQUIPMENT AND MATERIALS USED FOR CNG SERVICE SHALL BE RATED FOR MINIMUM OF 5000 PSIG, UNO.
5. FOR ITEMS 5.1, 5.2, 7, 13 AND 20, SEE ELECTRICAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.

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No	Revision Description	Date
2	ISSUED FOR BID	08/19/20
1	PLAN CHECK SUBMITTAL #1	02/24/20

Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

Client

Sub Consultants

REGISTERED PROFESSIONAL ENGINEER
FARIFTEH FARAHMAND
8/25/2020
No. M–32351
EXP. 06/30/2021
MECHANICAL
STATE OF CALIFORNIA

Seal

FUELING EQUIPMENT SCHEDULE

Sheet Title

Project No FS-0978
Scale
M-501
Sheet No 2020-0690
Project Status

Designer Designed
RK Drawn
Checker Checked
Approver Approved
04/09/19 Issue Date

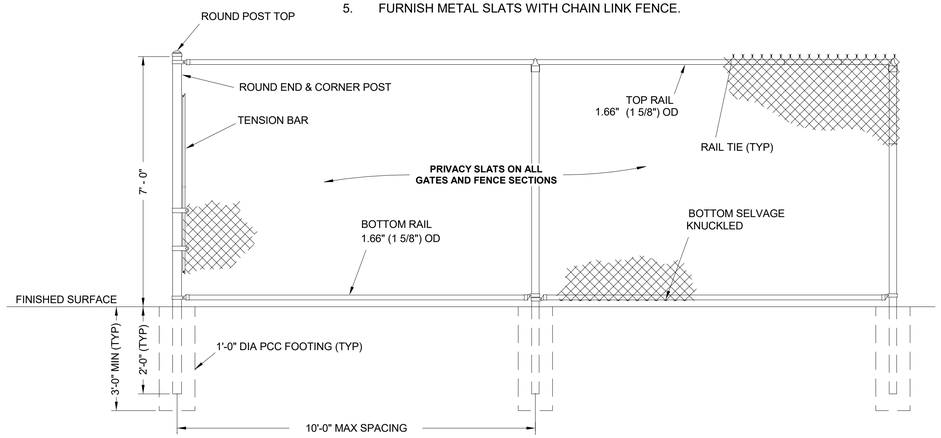
FUEL SOLUTIONS
5755 Uplander Way, Suite A
Culver City, CA 90230
310-207-8548

CL FENCE NOTES

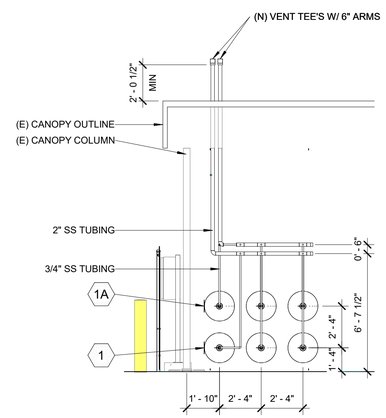
1. MATERIAL: 2" GALVANIZED STEEL FABRIC FABRICATED FROM MIN 12.5 AWG WITH TWISTED TOP SELVAGE (TYP ALL GATES AND FENCE PANELS).
2. CORE DRILL THROUGH PAVEMENT FOR POST FOOTERS WITH NEAT SAWCUTS THROUGH PAVEMENT.
3. PLACE CONCRETE FOR FOOTERS AGAINST UNDISTRUBED SOIL.
4. REPAIR PAVEMENT AT FOOTERS AS NEEDED.
5. FURNISH METAL SLATS WITH CHAIN LINK FENCE.

DETAIL NOTES

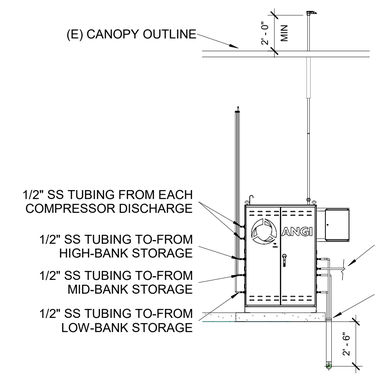
1. HDPE SLEEVES CARRYING SS LINES ARE SHOWN WITH 90 ELBOWS. PROVIDE LONG RADIUS ELBOWS WITH 18" MINIMUM RADIUS AS REQUIRED.
2. PROVIDE HARDENING SILICONE SEALANT AT ALL SLEEVE OPENINGS TO PREVENT ENTRY OF PRECIPITATION AND DIRT.



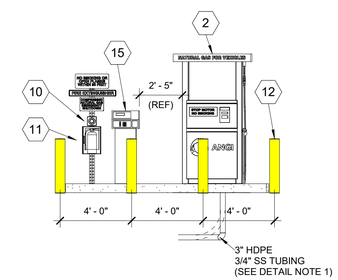
4 CL FENCE DETAILS
1/2" = 1'-0"



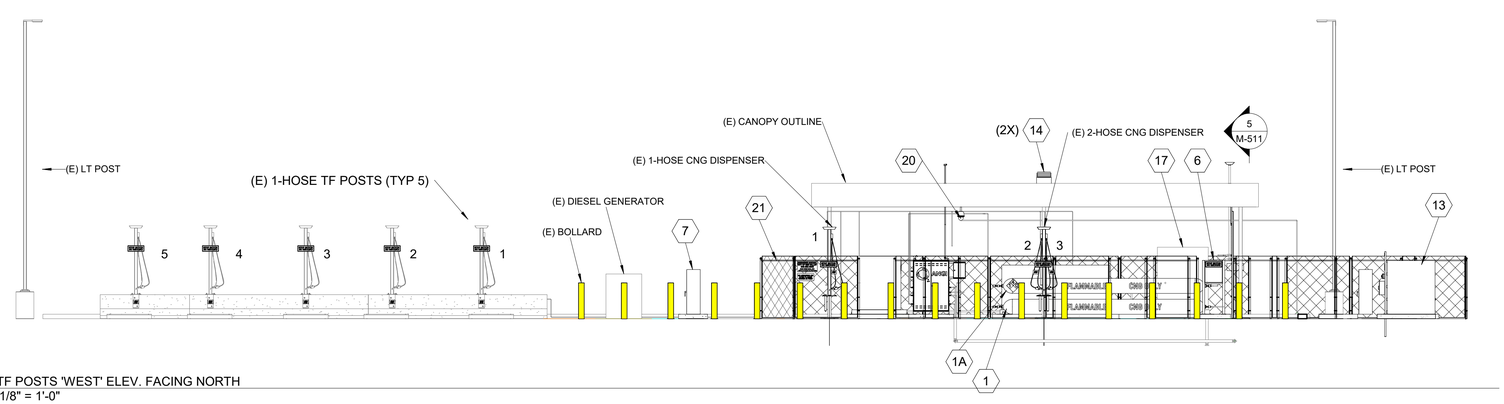
5 CNG STORAGE VENT PIPE RISER
1/4" = 1'-0"



7 VALVE PANEL ELEVATION
1/4" = 1'-0"



3 FAST-FILL DISPENSER ELEVATION
1/4" = 1'-0"



2 TF POSTS 'WEST' ELEV. FACING NORTH
1/8" = 1'-0"

CNG EQUIP SCHEDULE		
KEY	DESCRIPTION	QTY
1	CNG STORAGE VESSELS (BASE)	3
1A	CNG STORAGE VESSELS (ADDITIVE ALTERNATE)	3
2	2-HOSE CNG FAST-FILL DISPENSER	1
3	PRIORITY VALVE PANEL	1
4	CNG COMPRESSOR SKID 'A' (E) REMAIN	1
5.1	(E) MCC FOR SKID A	2
5.2	MOTOR-STARTER PANEL	1
6	(N) HANGING HARDWARE FOR (E) DEFUELING PANEL	1
7	GENERATOR LOAD BANK	1
8	MASTER CONTROL PANEL	1
9	REMOTE COMMUNICATION PANEL	1
10	ESD BUTTON	2
11	FIRE EXTINGUISHER IN CABINET	2
12	BOLLARD (TYPICAL)	4
13	ELECTRICAL SWITCHBOARD AND SERVICE	1
14	ROOF VENTILATOR	2
15	FUEL MANAGEMENT TERMINAL	1
16	CNG COMPRESSOR SKID 'B' (N)	1
17	GAS DRYER	1
18	GAS UTILITY MSA	1
19	SITE SUPPLY ESD VALVE	1
20	CCTV SECURITY CAMERA	1
21	CHAIN LINK FENCE (TYPICAL)	201 FT

No	Revision Description	Date
2	ISSUED FOR BID	08/19/20
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Sub Consultants

Seal: REGISTERED PROFESSIONAL ENGINEER FAROKH FARAMARZI 8/25/2020 No. M-32351 EXP. 06/30/2021 MECHANICAL STATE OF CALIFORNIA

Sheet Title: FUELING EQUIPMENT DETAILS 1

Project Status: Issue Date 04/09/19
Designer Designed: RK
Drawn: RK
Checker Checked:
Approver Approved:
Project No: FS-0978
Scale: As indicated
Sheet No: M-511 2020-0691

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8/20/2020 12:18:49 AM
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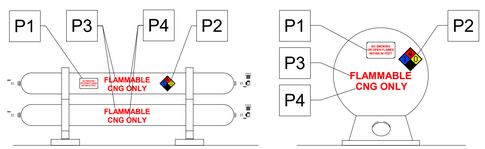
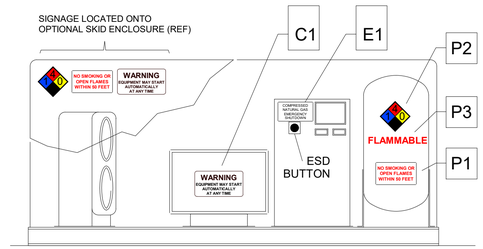
LOCATIONS



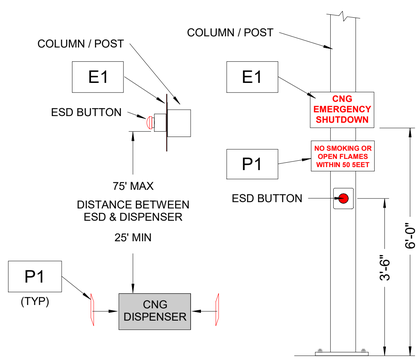
CYLINDER

SPHERE

CNG STORAGE VESSEL



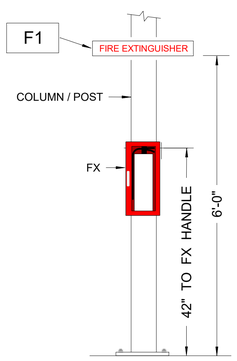
COMPRESSOR SKID



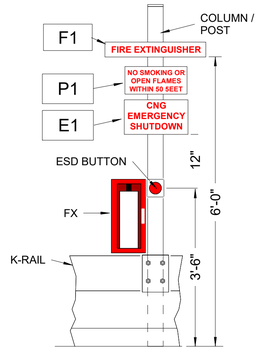
PLAN VIEW

ELEVATION

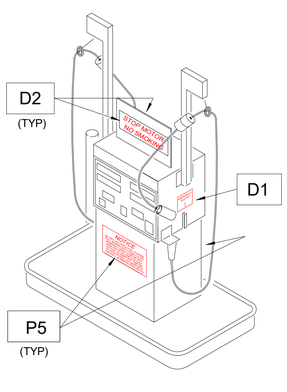
ESD BUTTON
COLUMN / POST MOUNTED



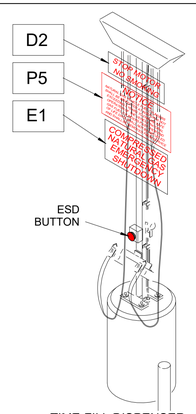
FIRE EXTINGUISHER
COLUMN / POST MOUNTED



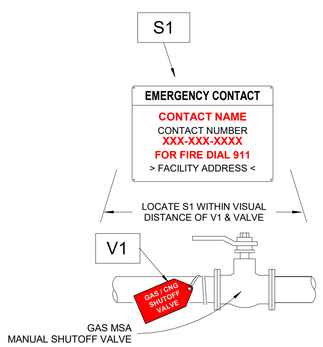
ESD BUTTON + FIRE EXTINGUISHER
COLUMN / POST / K-RAIL MOUNTED



FAST-FILL DISPENSER



TIME-FILL DISPENSER



EMERGENCY CONTACT AND
NG / CNG SHUTOFF VALVE

KEY	SIGN	SPECIFICATIONS
C1	WARNING EQUIPMENT MAY START AUTOMATICALLY AT ANY TIME	**SIGN TEXT**: WARNING EQUIPMENT MAY START AUTOMATICALLY AT ANY TIME **MATERIAL**: 12" x 8" x .08" THK ALUMINUM, ROUNDED CORNERS W/ 3" & 1-1/2" BLACK LETTERING ON YELLOW BKGND & FASTENED W/ SCREWS OR STRAPS **LOCATION**: MOUNTED ON COMPRESSOR SKIDS, SIDE FACING APPROACHING PERSONNEL, 3' MIN. FROM GRADE.
D2	STOP MOTOR NO SMOKING	**SIGN TEXT**: STOP MOTOR, NO SMOKING (TYP BOTH SIDES). **MATERIAL**: 20" x 10" .08" THK ALUMINUM, ROUNDED CORNERS W/ 3" RED/WHITE LETTERING ON RED/WHITE BKGND AND FASTENED WITH SCREWS OR STRAPS. **LOCATION**: AT DISPENSER POSTS AND DEFUELING POST
D13	09 OR 9 ## (SHOWN AS)	**SIGN TEXT:** DISPENSER POST NUMBER **MATERIAL:** 5" x 7" .08" THK ALUMINUM, ROUNDED CORNERS W/ 3" BLACK LETTERING ON YELLOW BKGND AND FASTENED WITH SCREWS OR STRAPS. **LOCATION** ON DISPENSER POST
E1	COMPRESSED NATURAL GAS EMERGENCY SHUTDOWN	**SIGN TEXT**: COMPRESSED NATURAL GAS EMERGENCY SHUTDOWN **MATERIAL**: 20" x 12" x .08" THK ALUMINUM, ROUNDED CORNERS WITH 2-1/2" RED/WHITE LETTERING ON RED/WHITE BKGND AND FASTENED WITH SCREWS OR STRAPS. **LOCATION**: MOUNTED ON EMERGENCY SHUTDOWN BUTTONS (ESD)
F1	FIRE EXTINGUISHER FIRE EXTINGUISHER	**SIGN TEXT**: FIRE EXTINGUISHER **MATERIAL**: 20" x 3" x .08" THK ALUMINUM SHEET, ROUNDED CORNERS W/ 1-5/8" RED/WHITE LETTERING ON RED/WHITE BKGND AND FASTENED WITH SCREWS OR STRAPS. **LOCATION**: MOUNTED ON FIRE EXTINGUISHERS. **NOTE:** USE IF FIRE EXTINGUISHER IS NOT IMMEDIATELY VISIBLE
P1	NO SMOKING OR OPEN FLAMES WITHIN 50 FEET	**SIGN TEXT**: NO SMOKING OR OPEN FLAMES WITHIN 50 FEET **MATERIAL**: 20" x 12" x .08" THK ALUMINUM, ROUNDED CORNERS W/ -1/2" RED/WHITE LETTERING ON RED/WHITE BKGND AND FASTENED W/ SCREWS OR STRAPS. **LOCATION**: AT PRESSURE VESSELS.
P2	1 4 0	NFPA 704 DIAMOND: BLUE-1, RED-4, YELLOW-0 **MATERIAL:** 15" X 15" X .08" THK ALUMINUM SHEET W/ 3" HIGH NUMERALS AND FASTENED WITH SCREWS OR STRAPS. **LOCATION**: ALONG SIDE OF CNG PRESSURE VESSEL, AND COMPRESSOR. NOTE: DO NOT PENETRATE VESSEL. AFFIX SIGN TO MFR SUPPLIED BRACKET OR POST IMMEDIATELY ADJACENT TO VESSEL AS REQUIRED.
P3	FLAMMABLE	**SIGN TEXT**: FLAMMABLE **MATERIAL**: 4" HIGH RED LETTERS, PAINTED OR STENCILED. **LOCATION**: ON SURFACE OF PRESSURE VESSELS.
P4	CNG ONLY	**SIGN TEXT**: CNG ONLY **MATERIAL**: 4" HIGH RED LETTERS, PAINTED OR STENCILED. **LOCATION**: ALONG SIDE OF PRESSURE VESSELS.
S1	EMERGENCY CONTACT CONTACT NAME CONTACT NUMBER XXX-XXX-XXXX FOR FIRE DIAL 911 > FACILITY ADDRESS <	**SIGN TEXT**: EMERGENCY CONTACT (NAME/NUMBER PER LOCAL UTIL) **MATERIAL**: 24" x 18" x .08" THK ALUMINUM SHEET, ROUNDED CORNERS, FASTENED W/ SCREWS OR STRAPS W/ 2" & 1-1/2" RED LETTERS ON WHITE BKGND. **LOCATION**: OUTSIDE ALL CNG EQUIPMENT AREA ACCESS DOORS
V1	GAS / CNG SHUTOFF VALVE	**SIGN TEXT**: CNG GAS SHUTOFF VALVE **MATERIAL**: METAL TAG, 1" WHITE LETTERING ON RED BKND, FASTENED WITH STAINLESS STEEL BINDING WIRE **LOCATION**: TIED TO BODY OF BLOCK VALVE IMMEDIATELY DOWNSTREAM OF METER SET ASSEMBLY (MSA).

SIGN QTY'S

KEY	QTY
C1	1
D2	26
D13	25
E1	2
F1	2
P1	6
P2	2
P3	2
P4	2
S1	1
V1	1

DRAWING NOTES

1. SEE SHEET M-103 FOR SAFETY SIGN LOCATIONS.
2. DEPICTION OF EQUIPMENT AND COMPONENTS SHOWN ON THIS DRAWING ARE FOR SCHEMATIC PURPOSES ONLY AND MAY DIFFER FROM THE ACTUAL COMPONENTS THEY REPRESENT.
3. ALL SIGNS AND LETTERING SHALL BE CONSTRUCTED OF METAL WITH EXTERIOR GRADE UV RESISTANT SURFACES AND FINISHES.
4. SIGNS SHALL BE VISIBLE AND CONSPICUOUS SO THAT IT IMMEDIATELY COMES INTO VIEW TO PERSONNEL APPROACHING THE EQUIPMENT AND THAT THE MESSAGE IS APPARENT FROM ANY VANTAGE POINT WITHIN THE SURROUNDING AREA.
5. SIGNS TO BE MOUNTED ON SIDE FACING APPROACHING PERSONNEL, 3'-0" MIN, FROM GRADE.
6. PROVIDE ID TAGS FOR ALL INLET AND OUTLET VALVES FOR LINES BETWEEN PACKAGED EQUIPMENT, INCLUDING MANUAL, AUTOMATIC AND RELIEF VALVES, AND SUPPLY VALVES FOR TIME-FILL AND FAST-FILL SYSTEMS.
7. CONTRACTOR SHALL INSTALL 20A:I20 BC FIRE EXTINGUISHERS MOUNTED 4' ABOVE GRADE AT LOCATIONS MARKED F1 .

No	Revision Description	Date
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1	PLAN CHECK SUBMITTAL #1	02/24/20

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SIMI VALLEY, CA 93065

Sub Consultants

Seal: REGISTERED PROFESSIONAL ENGINEER FARAMARZ FATTEH, 8/25/2020, No. M-32351, EXP. 06/30/2021, MECHANICAL, STATE OF CALIFORNIA

Sheet Title: SAFETY SIGN DETAILS

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Drawn:
Checker / Checked:
Approver / Approved:
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Sheet No: M-512
2020-0692
Project Status:

FUEL SOLUTIONS
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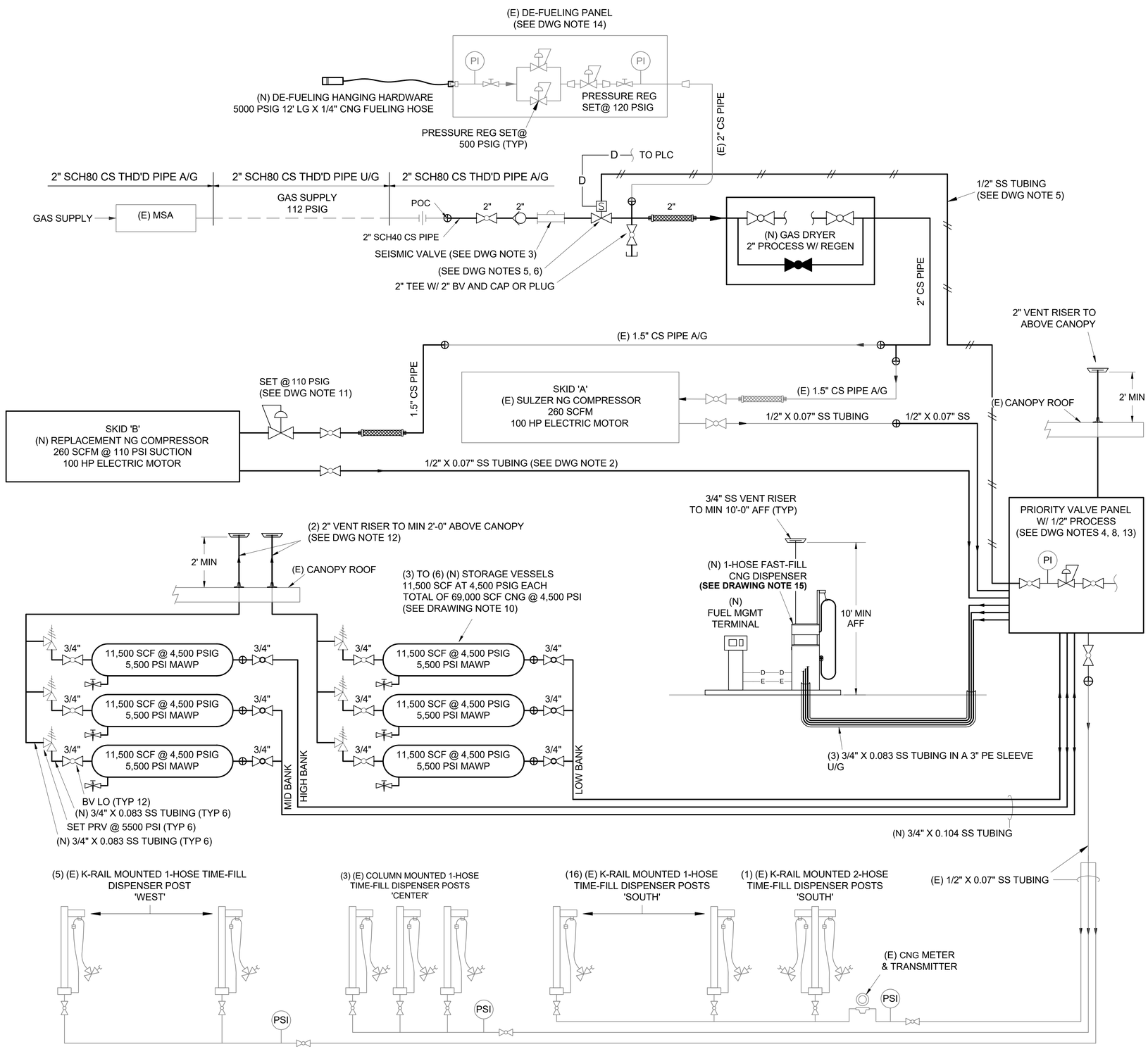

LEGEND

SYMBOL	DESCRIPTION	SYMBOL	
	GATE VALVE		RELIEF VALVE
	GATE VALVE (NORMALLY CLOSED)		FLEXIBLE HOSE
	BALL VALVE		CAP
	BALL VALVE (NORMALLY CLOSED)		PLUG
	2" C.S. PIPE (BOLD LINE)		UNION
	SST TUBING		LOCAL INSTRUMENT OR GAUGE
	CHECK VALVE		PANEL MOUNTED INSTRUMENT OR GAUGE
	NEEDLE VALVE		POINT OF CONNECTION
	NEEDLE VALVE (NORMALLY CLOSED)		HOSE COUPLING
	PLUG VALVE	PSI	PRESSURE INDICATOR
	PLUG VALVE (NORMALLY CLOSED)		SEISMIC VALVE
	3-WAY VALVE		
	PRESSURE REGULATOR		
	GAS ACTIVATED VALVE		
S	SOLENOID VALVE		
S	SOLENOID VALVE (3-WAY)		
	REDUCER		

LINE TYPES

- —E—E— 120V AUTHORIZE SIGNAL
- —D—D— IP OR LOW-VOLTAGE DATA LINE W/ CONDUIT
- —#—#— 100 PSIG COMPRESSED AIR OR GAS
- —P—P— POWER LINE W/ CONDUIT
- (N) NEW (BLK)
- (E) EXISTING (GRY)

DRAWING NOTES

1. ALL HIGH PRESSURE CNG PIPING AND TUBING SHALL HAVE A MAWP OF 5000 PSIG OR GREATER.
2. ALL GAS SHUTOFF VALVES SHALL HAVE A SAFETY FACTOR OF 3X NORMAL WORKING PRESSURE.
3. PROVIDE A 3" SEISMIC VALVE MADE BY PACIFIC SEISMIC.
4. PROVIDE ADJUSTABLE REGULATOR IN VALVE PANEL FOR CONTROL GAS. SET AT 100 PSIG. PROVIDE PRESSURE GAUGE AT DOWNSTREAM SCALED TO 200 PSIG. SOURCE OF CONTROL GAS SHALL BE LOW-BANK STORAGE.
5. PROVIDE A SOLENOID VALVE FOR CONTROL OF ESD SITE SUPPLY VALVE. RUN 1/2" SS TUBING CONTROL GAS FROM SOLENOID VALVE TO ACTUATOR OF SITE SUPPLY ESD VALVE. RUN SOLENOID-CONTROL WIRE TO CONTROL PANEL.
6. 2" ESD VALVE SHALL BE F.C. AND SHALL OPEN ONLY WHEN A MINIMUM OF ONE COMPRESSOR IS RUNNING.
7. ALL PRESSURE RELIEF VALVES, INCLUDING THOSE CONTAINED IN PREPACKAGED EQUIPMENT, SHALL BE CERTIFIED WITHIN 3 MONTHS FROM TIME OF COMMISSIONING.
8. PROVIDE A MECHANICAL PRESSURE GAUGE AT ALL CNG CONNECTIONS TO THE VALVE PANEL. CNG GAUGES SHALL BE SCALED TO 6000 PSIG.
9. PROVIDE MASTER PLC INCLUDING PROGRAMMING AND SCADA TO CONTROL CNG SYSTEM. WIRE PLC PANEL TO IP NETWORK. PROVIDE ALL WIRING AND CONDUITS AS NEEDED FOR CONTROL SYSTEM.
10. PROVIDE (3) VESSELS IN BASE SCOPE. PROVIDE MATCHING VESSELS 4, 5, 6 AS ADDITIVE ALTERNATES FOR EACH VESSEL.ADD ALTERNATE VESSELS TO LOW AND MID BANKS AS AVAILABLE.
11. PRESSURE INDICATED ON DRAWING IS PRELIMINARY. PROVIDE 2" SUCTION REGULATOR AND SET AS REQUIRED PER COMPRESSOR SKID MANUFACTURER.
12. PROVIDE A VENT RISER FOR EACH SET OF THREE VESSELS. TERMINATE VENT RISER ABOVE EXISTING CANOPY WITH TEE AT TOP WITH BEVELED ENDS TO PREVENT RAINWATER. PROVIDE WEEP HOLE AT BOTTOM. PROVIDE FOOTING AND PIPE SUPPORT FOR VENT RISER.
13. PROVIDE W/ 1/2" BALL VALVES THROUGHOUT. PROVIDE F.C. VALVES ON STORAGE LINES. PROVIDE MANUAL VALVE IMMEDIATELY OUTSIDE OF PANEL FOR ALL INLET AND OUTLET CONNECTIONS.
14. FLOW DIAGRAM OF (E) DE-FUELING PANEL IS FOR REFERENCE ONLY. VERIFY EXACT CONFIGURATION IN FIELD.
15. AS AN ADDITIVE ALTERNATE PROVIDE ADDITIONAL COST FOR PROVIDING 2-HOSE INSTEAD OF 1-HOSE DISPENSER.

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Sub Consultants

Seal: REGISTERED PROFESSIONAL ENGINEER FUELTECH, INC. 8/25/2020 No. M-32351 EXP. 06/30/2021 MECHANICAL STATE OF CALIFORNIA

Sheet Title: PROCESS FLOW DIAGRAM

Designer Designed	Project No FS-0978		
RK Drawn	Scale		
Checker Checked	M-601	Sheet No 2020-0693	
Approver Approved			Project Status
10/15/19 Issue Date			

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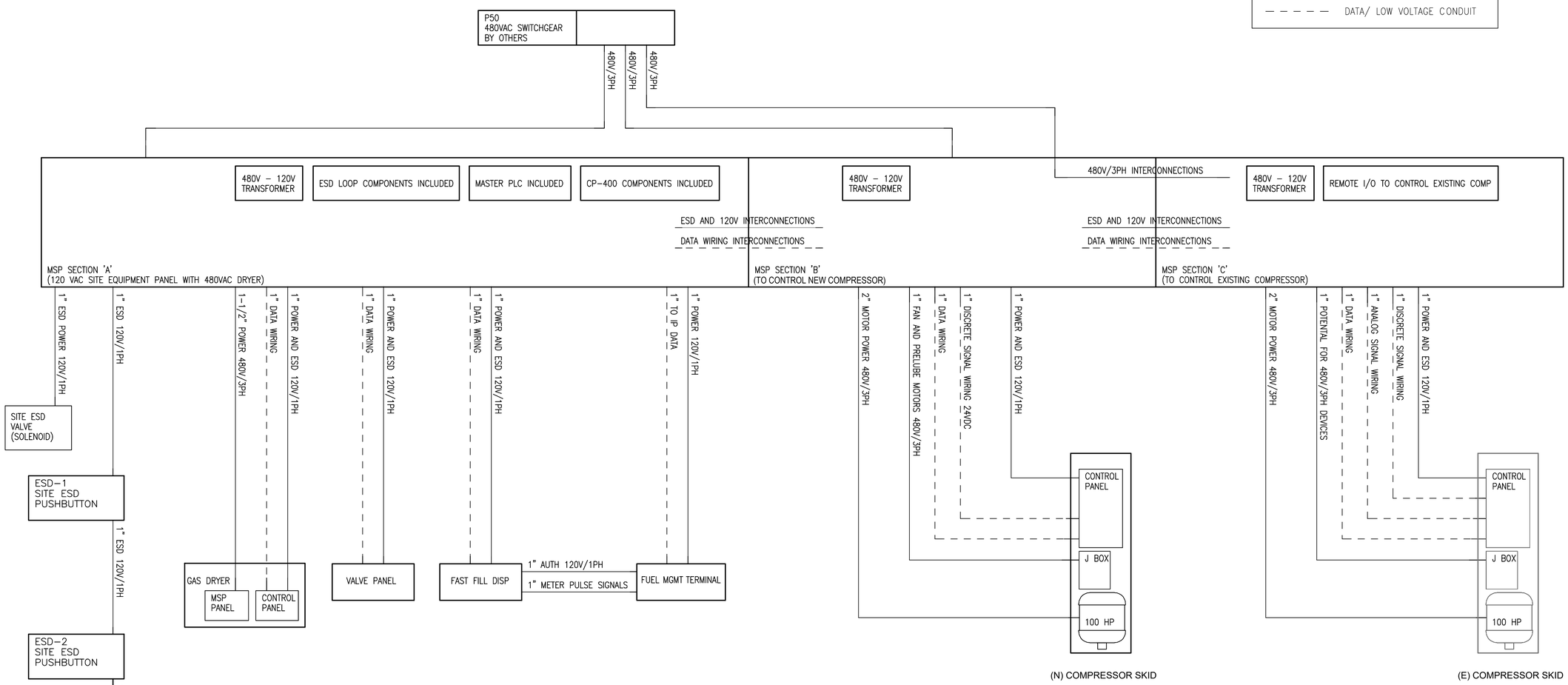

NOTES

1. WIRING SHOWN ON THIS DIAGRAM IS PROVIDED TO SHOW INTENT, IS NOT FINAL, AND MAY VARY BASED ON ACTUAL EQUIPMENT THAT IS PROVIDED BY THE CONTRACTOR. PROVIDE AND COORDINATE FINAL CONDUIT AND WIRING REQUIREMENTS PER THE WRITTEN INSTRUCTION OF THE RESPECTIVE EQUIPMENT MANUFACTURERS.
2. PREPARE PLAN FOR LOW-VOLTAGE CONDUITS & WIRING REQUIRED BY THIS DIAGRAM AND SUBMIT TO THE OWNER FOR APPROVAL.
3. ALL LINE-VOLTAGE AND LOW-VOLTAGE EQUIPMENT SHALL BE WIRED PER THE WRITTEN INSTRUCTIONS OF THE RESPECTIVE EQUIPMENT MANUFACTURES.
4. CONDUITS CONTAINING LOW VOLTAGE WIRES SHALL NOT CONTAIN LINE VOLTAGE WIRES.
5. FINAL TERMINATIONS AND INITIALIZATION OF THE FUEL MANAGEMENT TERMINAL AND CONNECTION TO EXISTING PC-HOST SOFTWARE SHALL BE PROVIDED BY A FACTORY AUTHORIZED TECHNICIAN.
6. MINIMUM CONDUIT SIZE IS 3/4", UNO, AND AS REQUIRED BY THE NEC.
7. ALL CONDUITS THAT ARE ROUTED THROUGH OR TERMINATE IN A CLASSIFIED AREA SHALL HAVE CONDUIT SEALS AT BOTH ENDS.
8. ESD LOOP SHALL BE WIRED AS 120V 'NORMALLY CLOSED / FAIL OPEN' AND SHALL CONNECT TO ESD BUTTONS SHOWN AT FAST-FILL ISLAND AND AT TIME-FILL POSTS.
9. ALL WIRING SHALL BE NEW, UNLESS OTHERWISE APPROVED IN WRITING BY THE OWNER. EXISTING CONDUITS MAY BE REUSED, IF THEY ARE OF ADEQUATE SIZE AND ARE VERIFIED TO BE SERVICEABLE.
10. NEW OR ALTERED EQUIPMENT AND APPURTENANCES ARE SHOWN IN BLACK. EXISTING EQUIPMENT AND APPURTENANCES ARE SHOWN IN GREY.
11. DATA/ LOW VOLTAGE WIRING SHALL BE SHIELDED AND ISOLATED FROM 480 V WIRING PASSING BETWEEN MSP CABINET MODULES.

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REGISTERED PROFESSIONAL ENGINEER
FARAYTEH FARAMARZI
8/25/2020
No. M-32351
EXP. 06/30/2021
MECHANICAL
STATE OF CALIFORNIA

Sheet Title
BLOCK WIRING DIAGRAM

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Drawn:
Checker / Checked:
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Scale: 1/4" = 1'-0"
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1.0 ELECTRICAL

1.1 GENERAL

1.1.1 SCOPE. THIS SECTION DESCRIBES THE MATERIALS, TOOLS, TRANSPORTATION, EQUIPMENT, PERMITS AND PERFORMANCE OF ALL WORK REQUIRED AS INDICATED ON THE DRAWINGS FOR THE COMPLETE INSTALLATION AND TESTING OF ALL ELECTRICAL SYSTEMS FOR THE NATURAL GAS VEHICLES (NGV) FUELING STATION. THIS INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING TASKS:
- INSTALLATION OF ELECTRICAL POWER FROM EXISTING UTILITY TRANSFORMER TO NEW 400 AMP SWITCHBOARD.
- INSTALLATION OF NEW COMPRESSOR MCC.
- INSTALLATION OF ELECTRICAL POWER FROM NEW MCC TO COMPRESSORS AND DRYER.
- INSTALLATION OF NEW ESD PUSHBUTTONS, CONDUIT & WIRING.
- INSTALLATION OF INSTRUMENTATION AND CONTROLS CONDUIT AND WIRE AS REQUIRED.
- INSTALLATION OF NEW EQUIPMENT & FENCE GROUNDING SYSTEM AS SHOWN ON DRAWINGS.
- TESTING OF ALL GROUNDS WITH MEGOHM METER FOR 25 OHMS OR LESS. REPAIR AS REQUIRED.

1.1.2 CODES
- MATERIALS, EQUIPMENT AND INSTALLATION PROVIDED AND PERFORMED UNDER THIS SECTION SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE FOLLOWING CODES:

  - 2017 NATIONAL ELECTRIC CODE
  - SUBCHAPTER 5, ELECTRICAL SAFETY ORDERS
  - NATIONAL FIRE PROTECTION ASSOCIATION NO. 70, NEC
  - NATIONAL ELECTRICAL TESTING ASSOCIATION (NETA)

- IN CASE OF DIFFERENCE BETWEEN BUILDING CODES, SPECIFICATIONS, STATE LAWS AND FEDERAL LAWS, LOCAL ORDINANCES, INDUSTRY STANDARDS AND UTILITY CITY REGULATIONS AND THE CONTRACT DEPARTMENTS, THE MOST STRINGENT SHALL GOVERN. CONTRACTOR SHALL PROMPTLY NOTIFY THE CITY IN WRITING OF ANY SUCH DIFFERENCE.
- SHOULD ANY CHANGES TO WORK INDICATED ON THE DRAWINGS OR DESCRIBED IN SPECIFICATIONS BE NECESSARY IN ORDER TO COMPLY WITH ABOVE REQUIREMENTS, CONTRACTOR SHALL NOTIFY CITY REPRESENTATIVE IMMEDIATELY <u>IN WRITING</u> FOR APPROVAL OF REQUIRED MODIFICATIONS.

1.2 MATERIALS

1.2.1 GENERAL
- ALL MATERIALS SHOWN ON DETAILS AND PLAN DRAWINGS ARE THE PRIMARY ITEMS OF CONSTRUCTION AND ARE NOT TO BE CONSTRUED AS ALL INCLUSIVE. CONTRACTOR SHALL COMPLETE ALL ELECTRICAL INSTALLATIONS IN A NEAT, PROFESSIONAL AND WORKMAN-LIKE MANNER.
- DESIGN DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW OFFSETS, BENDS, ELBOWS OR OTHER SPECIFIC ELEMENTS WHICH MAY BE REQUIRED FOR PROPER INSTALLATION. EXCEPT WHERE SHOWN IN DIMENSIONAL DETAIL, THE LOCATIONS OF SWITCHES, RECEPTACLES, LIGHTS, MOTORS, OUTLETS AND OTHER EQUIPMENT SHOWN ON PLANS ARE APPROXIMATE. SUCH ITEMS SHALL BE PLACED SO AS TO ELIMINATE INTERFERENCE WITH DUCTS, PIPING AND EQUIPMENT. THE EXACT LOCATION SHALL BE DETERMINED IN THE FIELD.
- EQUIPMENT SIZES SHOWN ON THE DRAWINGS ARE MINIMUM UNLESS OTHERWISE INDICATED. BEFORE INSTALLING ANY WIRE OR CONDUIT, CONTRACTOR SHALL OBTAIN THE EXACT EQUIPMENT REQUIREMENTS AND SHALL INSTALL WIRE, CONDUIT, DISCONNECT SWITCHES, CIRCUIT BREAKERS AND OTHER ITEMS OF THE CORRECT SIZE FOR THE EQUIPMENT ACTUALLY INSTALLED. HOWEVER, WIRE AND CONDUIT SIZES SHOWN ON THE DRAWINGS SHALL BE TAKEN AS A MINIMUM AND SHALL NOT BE REDUCED WITHOUT WRITTEN APPROVAL.
- THE ELECTRICAL WORK SHALL BE COORDINATED WITH THE WORK OF ALL OTHER TRADES. COORDINATION SHALL INCLUDE ADEQUATE CLEARANCES FOR THE INSTALLATION AND MAINTENANCE OF EQUIPMENT AND PHYSICAL AND ELECTRICAL REQUIREMENTS OF ITEMS OR EQUIPMENT REQUIRING CONNECTIONS PROVIDE ELECTRIC SERVICE, EXTEND CONDUITS AND MAKE ALL NECESSARY CONNECTIONS AS REQUIRED TO MINIMIZE INTERRUPTION OF SERVICES.

1.2.2 CABLE AND WIRE
- CABLE AND WIRE FOR SERVICE AT 600 VOLTS AND BELOW SHALL BE 600 VOLT STRANDED COPPER, TYPE THHN/THWN SIZE #12 AWG THROUGH #8 AWG AND TYPE XHHW SIZE #6 AWG AND LARGER.
- GROUND WIRE SHALL BE MEDIUM DRAWN BARE COPPER STRANDED. ALL CONNECTIONS AND FITTINGS SHALL BE CAST COPPER ALLOY BODY.
- INSTRUMENT WIRING SHALL BE AS CALLED FOR ON DRAWINGS.

1.2.3 GROUNDING. GROUND RODS SHALL BE ¾-INCH DIAMETER BY 10-FOOT LONG COPPER CLAD STEEL. CONNECTIONS TO GROUND RODS AND THE MAIN GROUND GRID SHALL BE MADE WITH EXOTHERMIC WELDS OR TELEDYNE-PENNUNION SERIES GGCP COMPRESSION CONNECTORS. CONNECTIONS TO EQUIPMENT SHALL BE MADE WITH COPPER OR BRONZE SPLIT BOLT CONNECTORS, SPLIT BOLT CONNECTORS SHALL BE ATTACHED TO EQUIPMENT STRUCTURE THAT HAS BEEN STEEL BRUSHED TO BRIGHTNESS AND LUBRICATED WITH AN ELECTRICALLY CONDUCTING COMPOUND MADE FOR THAT PURPOSE. WIRE SIZE WILL BE AS CALLED FOR ON PLANS.

1.2.4 MATERIAL
- ELECTRICAL AND INSTRUMENTATION MATERIALS AND EQUIPMENT SHALL CONFORM TO THE REQUIREMENTS OF UNDERWRITERS LABORATORIES (UL) AND BE LISTED AND LABELED FOR THE INTENDED APPLICATION.
- MATERIALS AND EQUIPMENT FURNISHED BY THE CONTRACTOR SHALL BE NEW, AND BE IN COMPLIANCE WITH THE SPECIFICATION REQUIREMENTS. MATERIALS AND EQUIPMENT SHALL DUPLICATE ITEMS THAT HAVE BEEN IN SATISFACTORY COMMERCIAL OR INDUSTRIAL USE AT LEAST TWO YEARS PRIOR TO AWARD OF CONTRACT.
- ALL CONDUIT, CONDUIT FITTINGS AND ENCLOSURES SHALL BE PROPERLY PROTECTED FROM ANY MOISTURE EXPOSURE DURING STORAGE. THE CONTRACTOR SHALL ENSURE THAT AT THE TIME OF USE, THE MATERIALS ARE CLEAN, DRY AND SUITABLE FOR ITS INTENDED USE.

1.2.5 CONDUIT
- CONDUIT FOR PERMANENTLY INSTALLED NON-FLEXING SERVICE SHALL BE RIGID GALVANIZED STEEL OR PVC.
- CONDUIT INSTALLED UNDERGROUND SHALL BE PVC SCHEDULE 40 UNLESS OTHERWISE NOTED OR REQUIRED TO MEET UTILITY CITY REQUIREMENTS.
- FLEXIBLE CONDUIT SHALL BE STEEL LIQUID-TIGHT WITH A PVC JACKET SUITABLE FOR THE AREA CLASSIFICATION IN WHICH IT IS TO BE INSTALLED.

1.2.1 CONDUIT FITTINGS

- CONDUIT FITTINGS SHALL BE PVC COATED AND MADE OF NON-CORRODING FERROUS ALLOY. STANDARD FITTINGS WITH COVERS SHALL HAVE GASKETS AND NON-CORRODING ATTACHING SCREWS.
- CONDUIT BRUSHINGS ON RISERS INTO SWITCHGEAR SHALL BE INSULATING TYPE WITH GROUNDING TERMINAL. BRUSHINGS IN PANELS AND EQUIPMENT SHALL BE INSULATING TYPE.

1.2.2 CONCRETE FOR DUCT BANKS (AS REQUIRED BY LOCAL AGENCIES OR UTILITY COMPANIES)

- CONCRETE FOR ENCASING CONDUITS SHALL BE MINIMUM 3000 PSI COLORED A DISTINCTIVE BRIGHT RED. RED COLORING SHALL BE A RED OXIDE AND SHALL BE MINIMUM 11 POUNDS PER CUBIC YARD OF CONCRETE.
- AGGREGATE FOR ENCASING CONCRETE (CAN BE SAN GABRIEL VALLEY TYPE) SHALL BE NO LARGER THAN ½". DUCT BANKS SHALL BE ENCASED WITH A MINIMUM COVER OF 3-INCHES ON TOP, BOTTOM AND SIDES. TWO OR MORE CONDUITS SHALL BE ENCASED IN A LIKE MANNER WITH A MINIMUM SPACING OF 2-INCHES BETWEEN CONDUITS, UNLESS AUTHORIZED OTHERWISE.
- PROVIDE CONDUIT DUCT SPACERS FOR TWO OR MORE CONDUIT DUCTS THAT ARE RUN IN PARALLEL. THE CONDUIT DUCTS SPACERS SHALL BE NON-METALLIC.

1.2.3 CABLE AND WIRE TERMINATIONS

- ALL POWER CABLE SHALL BE TERMINATED IN PRESSURE LUGS.
- CONTROL ALARM AND SIGNAL WIRE SHALL BE TERMINATED WITH PRESSURE APPLIED SPADE OR RING LUGS ON SCREW TERMINALS. SOLDER CONNECTIONS ARE NOT ALLOWED.

1.2.4 ENCLOSURES

- ENCLOSURES FOR EQUIPMENT AND DEVICES SHALL BE UL LISTED MINIMUM NEMA 4X (DUST AND WATER-TIGHT) IN NON-HAZARDOUS EXTERIOR AREAS, AND NEMA 7 IN CLASS 1, GROUP "D" EXTERIOR AREAS.
- ENCLOSURES IN EXTERIOR NON-HAZARDOUS AREAS SHALL BE PROVIDED WITH WATER-TIGHT CONDUIT HUBS ON TOP AND VERTICAL SURFACES. GASKET AND "O" RINGS SHALL BE INSTALLED AS INSTRUCTED BY MANUFACTURER TO MAINTAIN WEATHER TIGHTNESS.
- PULL BOXES OR JUNCTION BOXES SHALL BE UL LISTED FOR NEMA 4X (DUST AND WATER-TIGHT) IN NON-HAZARDOUS EXTERIOR AREAS, AND NEMA 7 ON CLASS 1, GROUP "D" EXTERIOR AREAS.

1.2.5 EQUIPMENT MOUNTING

EQUIPMENT SHALL BE SECURED WITH CORROSION-PROOF BOLTS, STRAPS, HANGERS AND SUCH OTHER HARDWARE AND DEVICES AS ARE NECESSARY OR APPROPRIATE.

1.3 INSTALLATION REQUIREMENTS

1.3.1 CONNECTIONS AND CONTROLS

- CONTRACTOR SHALL WIRE ALL CONTROL DEVICES FURNISHED BY OTHERS IN ACCORDANCE WITH SCHEMATIC AND WIRING DIAGRAMS FURNISHED WITH THE EQUIPMENT, THIS SPECIFICATION AND CONSTRUCTION DRAWINGS.
- CONTROL AND INSTRUMENTATION WIRING SHALL BE CONTINUOUS FROM POINT TO POINT. IN-LINE SPLICES SHALL NOT BE ALLOWED.
- THE MAXIMUM NUMBER OF CONTROL WIRES TERMINATING AT ONE TERMINAL CONNECTOR SHALL BE TWO. IN CASES WHERE ADDITIONAL TERMINATING POINTS ARE REQUIRED, THE TERMINAL DIRECTLY ADJACENT IS TO BE USED WITH THE OPPOSITE SIDE BRIDGED IF IT IS NOT USED.
- WIRE AND CABLE SHALL BE PULLED INTO CONDUIT USING A TYPE OF LUBRICATING COMPOUND RECOMMENDED BY THE WIRE AND CABLE MANUFACTURER. HAND ASSIST WIRE INTO CONDUITS. MAXIMUM TENSION SHALL NOT EXCEED MANUFACTURER'S RECOMMENDATIONS.
- ALL WIRE IN EQUIPMENT SHALL BE NEATLY LAID IN AND BE HARNESSED WITH NYLON STRAPS.

1.3.2 IDENTIFICATION AND LABELING

- INSTALL NON-CORRODING METAL-STRIP CONDUIT TAGS WITH EMBOSSED CONDUIT NUMBERS AT END POINTS OF ALL CONDUITS AND AT PENETRATIONS INTO SLABS, GROUND AND THE EQUIPMENT, ATTACHED WITH DOUBLE METAL BANDS.
- CONTROL WIRES SHALL BE IDENTIFIED WITH IMPRINTED SLIP-ON HEAT SHRINK SLEEVES.
- ALL SPARE CONDUCTORS SHALL BE TAPED AT EACH END AND IDENTIFIED AS SPARE.
- THE INSULATION OF A SINGLE-CONDUCTOR WIRE WILL BE COLORED AS FOLLOWS:

<u>120/208 VOLT CIRCUITS</u>	
NEUTRAL	WHITE
PHASE A	BLACK
PHASE B	RED
PHASE C	BLUE

<u>277/480 VOLT CIRCUITS</u>	
NEUTRAL	WHITE
PHASE A	BROWN
PHASE B	ORANGE
PHASE C	YELLOW

1.3.3 TESTING

- CONTRACTOR SHALL PROVIDE EQUIPMENT, MATERIAL AND LABOR REQUIRED TO PERFORM THE OPERATIONS AND TESTS HEREIN DESCRIBED.
- ALL EQUIPMENT USED FOR TESTING SHALL BE SUITABLE FOR THE INTENDED USE. ALL METERS USED IN TESTS SHALL BE CALIBRATED PRIOR TO USE AND A RECORD OF THE CALIBRATION ATTACHED TO THE RESPECTIVE TEST MEMORANDUM. THE CONTRACTOR SHALL PERFORM SUCH TESTS AS DESCRIBED BELOW TO DEMONSTRATE TO THE CITY DESIGNATED INSPECTOR THAT THE ELECTRICAL COMPONENTS AND SYSTEMS ARE COMPLETE, INSTALLED PROPERLY, TO THE CITY INSPECTOR'S SATISFACTION, AND ARE FUNCTIONING PROPERLY. WHEN DEFICIENCIES ARE FOUND, THE DEFICIENCY SHALL BE CORRECTED AND THE TEST RERUN. THIS PROCEDURE SHALL BE REPEATED UNTIL THE DEFICIENCY IS CLEARED. TESTS SHALL BE PERFORMED BY QUALIFIED AND EXPERIENCED PERSONS AND WITNESSED BY THE CITY INSPECTOR.

1.3.3 TESTING (CONTINUED)

a) ALL INSTALLATIONS AND WIRING SHALL BE THOROUGHLY TESTED TO DETERMINE PROPER POLARITY, PHASING, FREEDOM FROM GROUNDS AND SHORT CIRCUITS, AND FOR CONTINUITY AND OPERATION OF EQUIPMENT, METERS, RELAYS, INSTRUMENTS, ETC.

b) COMPLETE TEST AND INSPECTION RECORDS SHALL BE MADE BY THE CONTRACTOR AND INCORPORATED INTO A REPORT WHICH SHALL BE GIVEN TO THE CITY INSPECTOR. ALL READINGS TAKEN SHALL BE RECORDED. THE CONTRACTOR SHALL GIVE THE CITY INSPECTOR SUFFICIENT NOTICE OF ALL TESTS SO THAT THE CITY REPRESENTATIVE MAY BE PRESENT (MINIMUM OF 48 HOURS).

c) ALL TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE CITY INSPECTOR UNLESS INSTRUCTED OTHERWISE.

d) ALL TESTING SHALL BE SCHEDULED BY THE CONTRACTOR AND COORDINATED WITH THE CITY INSPECTOR. NO TESTING SHALL BE DONE WITHOUT THE CITY'S APPROVAL.

e) AUTHORIZATION MUST BE OBTAINED FROM THE CITY INSPECTOR BEFORE ANY WORK IS DONE ON AN ENERGIZED CIRCUIT. THERE SHALL BE NO INTERRUPTION OF ENERGIZED CIRCUITS WITHOUT PREVIOUS ARRANGEMENTS WITH THE CITY INSPECTOR.

f) ALL CABLES AND EQUIPMENT, INCLUDING MOTORS AND TRANSFORMERS, SHALL BE TESTED FOR GROUND AND SHORTS BY MEANS OF A MEGGER INSULATION TESTING INSTRUMENT, WHICH SHALL IMPRESS A VOLTAGE OF NOT LESS THAN 500 VOLTS DC UPON THE CIRCUIT UNDER TEST.

g) INSULATION RESISTANCE TEST ON 480 VOLT CIRCUITS SHALL BE MADE TO 1 ½ TIMES THE CIRCUIT VOLTAGE RATING.

h) WHERE TESTS INDICATE THAT INSULATION WAS DAMAGED BY HANDLING OR DURING INSTALLATION, NEW CABLE SHALL BE INSTALLED AT CONTRACTOR'S EXPENSE.

- AFTER THE GROUNDING SYSTEM HAS BEEN INSTALLED, CONTRACTOR SHALL PERFORM THE FOLLOWING:

a) MEASURE GROUND RESISTANCE OF THE GROUNDING SYSTEM WITH A MEGGER (TWO TEST PROBES TYPE) GROUND TESTER. TEST SHALL BE MADE IN THREE (3) WIDELY SEPARATED LOCATIONS AS SPECIFIED BY THE CITY INSPECTOR AND SHALL SHOW A RESISTANCE OF TWENTY-FIVE (25) OHMS OR LESS. ALL GROUNDS SHOULD BE THROUGH SLAB, HIDDEN WHERE POSSIBLE AND PROTECTED BY 1" PVC CONDUIT.

b) TESTS MUST BE COMPLETED AND THE GROUNDING SYSTEM APPROVED BEFORE GROUND RODS ARE COVERED.

c) ALL ABOVE GRADE CONNECTIONS SHALL BE ACCESSIBLE FOR INSPECTION AND TESTING.

- INTERLOCKING CONTROL AND INSTRUMENTATION WIRING FOR EACH SYSTEM AND/OR PART OF A SYSTEM SHALL BE CAREFULLY CHECKED TO ASCERTAIN THAT THE SYSTEM WILL FUNCTION PROPERLY AS INDICATED BY WIRING DIAGRAMS, SCHEMATIC DIAGRAMS, DESCRIPTION OF OPERATION, ETC.
- CONTRACTOR SHALL SET CIRCUIT BREAKERS AND RELAYS SO THAT EQUIPMENT WILL BE IN PROPER OPERATING CONDITION BEFORE BEING PLACED IN SERVICE.
- UPON COMPLETION OR PRELIMINARY CHECKS, ALL EQUIPMENT SHALL BE TESTED FOR SATISFACTORY OPERATION. CONTRACTOR SHALL START EQUIPMENT AS DIRECTED BY THE CITY INSPECTOR.
- CITY INSPECTOR SHALL MAKE VISUAL INSPECTION OF ALL ELECTRICAL SYSTEMS TO ENSURE THAT EQUIPMENT IS CLEAN; STRUCTURAL ELEMENTS ARE COMPLETE AND TIGHT; COVERS AND PLATES AND TRIM ARE IN PLACE; ELECTRICAL CONNECTIONS ARE TIGHT; WIRE AND CABLE ARE PROPERLY HARNESSED, SECURED AND IDENTIFIED; CONDUITS ARE BUSHED, TAGGED AND SUPPORTED; SEALS ARE IN PLACE; GROUND WIRES ARE PROVIDED AND CONNECTED; AND TAGS, LABEL PLATES AND INSTRUCTION PLATES ARE ATTACHED AND SECURE.

1.3.4 ENCLOSURES
- CONTRACTOR SHALL OPERATE ALL CIRCUIT BREAKERS, HAND SWITCHES AND PUSH-BUTTONS BY HAND TO DEMONSTRATE PROPER MECHANICAL FUNCTIONING.
- FIXTURES SHALL BE ENERGIZED TO CHECK FOR PROPER WORKING ABILITY, FAILURE OF BALLAST'S AND CIRCUITING WHERE APPLICABLE.
- UPON COMPLETION OF THE WORK AND PRIOR TO ACCEPTANCE BY CITY INSPECTOR, CONTRACTOR SHALL INSTALL A COMPLETE SET OF LAMPS AND TUBES OF THE SIZE REQUIRED FOR THE FIXTURES SPECIFIED ON THE DRAWINGS.

1.3.5 ENCLOSURES AND SUPPORTS
- SUPPORTS AND ENCLOSURES SHALL BE PROVIDED FOR ALL EQUIPMENT.
- BOLT ELECTRICAL EQUIPMENT TO RACKS, TO PLATES WELDED TO RACKS, TO PLATES WELDED OR BOLTED TO OTHER STRUCTURES, TO BUILDINGS, OR WHERE PERMITTED TO EQUIPMENT. DO NOT WELD ELECTRICAL EQUIPMENT. PROVIDE BACKING PLATES WHERE EQUIPMENT IS ATTACHED IS ATTACHED TO METAL THAT IS LESS THAN 1/8-INCH THICK. CONDUIT BOXES UP TO 6-INCHES SQUARE MAY BE SUPPORTED IN CONDUIT RUNS WITHOUT ADDITIONAL SUPPORT. REFER TO DRAWING DETAILS.
- SUPPLEMENTARY SUPPORTS, CLIPS AND BRACKETS SHALL BE CONSTRUCTED FROM STANDARD ROLLED STEEL SHAPES HOT DIPPED GALVANIZED AFTER FABRICATION. ANGLES, PLATES, CHANNELS, UNI-STRUT, POWER STRUT OR RODS MAY BE USED FOR THIS PURPOSE. WELDING TO A GALVANIZED STRUCTURE SHALL NOT BE PERMITTED. USE CORROSION-PROOF BOLTS, STRAPS, ETC.
- RACKS SHALL BE STRUCTURAL SHAPES WELDED OR BOLTED TOGETHER AND SUPPORTED FROM OTHER STRUCTURE OR INDEPENDENTLY SUPPORTED BY CONCRETE FOUNDATIONS. REFER TO DRAWING DETAILS.

1.3.6 UNDERGROUND CONDUITS
- ALL SINGLE AND MULTIPLE UNDERGROUND CONDUIT RUNS SHALL BE A MINIMUM OF 24-INCHES BELOW FINISH GRADE TO TOP OF FIRST CONDUIT. ALL UNDERGROUND CONDUIT RUNS MUST BE CLEAR OF CROSSING PIPES OR STRUCTURES BY AT LEAST 6-INCHES; THUS, MINIMUM DEPTHS MAY BE REQUIRED THAT ARE GREATER THAN 24-INCHES PREVIOUSLY DESCRIBED.
- CONDUITS PLACED UNDERGROUND SHALL BE RUN AS SHOWN ON DRAWINGS AND SUPPORTED A MINIMUM OF EVERY 10-FEET TO PREVENT SAGGING WHILE WAITING FOR ENCASEMENT OR BACKFILL. CONDUITS RUN IN MULTIPLE SHALL BE SEPARATED AT LEAST 2-INCHES CLEAR. THEY SHALL BE SEPARATED EVENLY THROUGHOUT THE RUN, EXCEPT WHERE IT IS NECESSARY TO FAN OUT AT RISERS AND TRANSITIONS. CHANGE OF HORIZONTAL DIRECTIONS OF CONDUIT RUNS SHALL BE MADE IN LONG, GENTLE SWEEPS. INSTALL SPARE CONDUITS AS SHOWN ON DRAWINGS. BACKFILL AND TRENCHING SHALL BE CONSISTENT WITH THE PROVISIONS OF SPECIFICATIONS.
- WHERE MULTIPLE CONDUITS COME TO THE SURFACE, THROUGH SLABS OR PADS, CONCRETE ENCASEMENT SHALL CONTINUE TO 6-INCHES ABOVE THE SURFACE. THE CONCRETE CROSS SECTION ABOVE THE SURFACE SHALL BE ROUND OR RECTANGULAR AS APPROPRIATE, TRAWLED SMOOTH, WITH 45 DEGREE BEVELED CORNERS.
- WHERE A SINGLE CONDUIT COMES TO THE SURFACE THROUGH SLABS OR PADS, CONCRETE ENCASEMENT SHALL TERMINATE AT THE SLAB OR PAD SURFACE. IF RISING INTO SLAB-MOUNTED OR PAD MOUNTED SWITCHBOARDS, MOTOR CONTROL CENTERS AND SIMILAR EQUIPMENT, EXTEND THE CONDUIT UP 3-INCHES AND BUSH WITH AN INSULATED GROUNDING BUSHING.
- ALL PVC CONDUIT RUNS COMING UP TO A CONCRETE SLAB, PAD OR ABOVE GRADE CONDUIT RUN SHALL BE TERMINATED WITH A RIGID STEEL CONDUIT RISER AND THE APPROPRIATE ADAPTER FOR THIS TRANSITION OR AS NOTED ON THE PLANS.
- ARRANGEMENT AND GROUPING OF DUCTS SHALL BE AS SHOWN ON THE DRAWINGS FROM PLACE-TO-PLACE AND SHALL BE INSTALLED AT ELEVATIONS AND COORDINATES SHOWN.

1.3.7 ABOVE GRADE CONDUIT

- SUPPORT EXPOSED CONDUIT ON MAXIMUM SIX (6) FOOT CENTERS AND WITHIN TWO (2) FEET OF ANY CONNECTION POINT. CONDUIT AND FITTING MAY BE SUPPORTED FROM MACHINERY SUPPORTING STRUCTURES ADEQUATE FOR ADDITIONAL WEIGHT. CONDUIT AND FITTINGS CAN NOT BE CLAMPED OR WELDED OR BOLTED TO VESSELS FOR MACHINERY EXCEPT AS SPECIFICALLY PERMITTED BY CITY OR AS SHOWN ON THE DRAWINGS.
- FACTORY 90 DEGREE CONDUIT BENDS SHALL BE USED FOR CONDUIT SIZES 1 ½-INCHES AND ABOVE. RADIUS OF FIELD BENDS SHALL NOT BE LESS THAN 10 TIMES DIAMETER OF CONDUIT. CONDUIT BENDS AND OFFSETS SHALL BE AVOIDED WHERE POSSIBLE. CONDUIT FLATTENED OR WRINKLED DURING BENDING SHALL NOT BE USED.
- ENDS OF ALL CONDUITS TERMINATING IN OTHER THAN WIRING DEVICE BOXES SHALL BE PROVIDED WITH INSULATED BUSHINGS. INSULATED GROUNDING BUSHINGS WITH THROUGH-TERMINALS FOR NO. 6 AWG WIRE SHALL BE PROVIDED ON ALL CONDUITS RISING INTO MOTOR CONTROL CENTERS AND SWITCHBOARDS.
- INSTALL FLEXIBLE LIQUID-TIGHT STEEL CONDUIT BETWEEN RIGID CONDUIT AND ALL MOTORS, VIBRATING EQUIPMENT, MOVABLE EQUIPMENT, AND INSTRUMENTS MINIMUM 1-FOOT AND MAXIMUM 3-FEET IN LENGTH.
- INSTALL CONDUIT SEALS WHERE REQUIRED. POUR SEALS WITH THE SEAL MANUFACTURER'S SPECIFIED COMPOUND AFTER SYSTEMS ARE FUNCTIONAL AND HAVE BEEN ACCEPTED BY CITY. SEAL FITTING PLUGS SHALL NOT BE INSTALLED FOR 24 HOURS AFTER POURING SEALING COMPOUND.
- OPEN ENDS OF CONDUIT SHALL BE CAREFULLY PLUGGED DURING CONSTRUCTION TO PREVENT THE ENTRANCE OF FOREIGN MATERIALS. AFTER CONDUITS ARE INSTALLED, PULL A MANDREL THROUGH EACH CONDUIT TO CLEAR THE CONDUIT OF DEBRIS. FOLLOW THE MANDREL WITH WIRE BRUSHES AND SWABS TO COMPLETELY CLEAN THE CONDUIT. IMMEDIATELY AFTER A CONDUIT IS CLEANED, PLUG OR CAP THE RUN. INSTALL PULL STRINGS IN ALL SPARE CONDUITS.
- COVER OPENINGS ON CONDUIT FITTINGS SHALL NOT BE BLOCKED BY STRUCTURAL STEEL OR PIPE WHICH WOULD CAUSE THE NECESSITY OF DISASSEMBLY OF PIPE OR OTHER EXTREME MEASURES FOR ACCESS TO THE INTERIOR OF FITTINGS FOR FUTURE WIRE REPLACEMENT AND PULLING.
- ON MASONRY AND CONCRETE STRUCTURES, CONDUITS SHALL BE ATTACHED WITH ONE-HOLE PIPE STRAPS AND CLAMP-BACKS USING SCREW ANCHORS OR EXPANSION BOLTS.
- EXPOSED CONDUIT SHALL BE INSTALLED PARALLEL TO STRUCTURAL MEMBERS AND SURFACES.
- TWO OR MORE CONDUITS IN THE SAME GENERAL ROUTING SHALL BE PARALLEL WITH SYMMETRICAL BENDS.
- CONDUITS SHALL BE AT LEAST 6-INCHES FROM HIGH TEMPERATURE PIPING, DUCTS AND FLUES.
- CONDUIT CONNECTIONS TO SHEET METAL ENCLOSURES SHALL BE SECURELY FASTENED BY LOCKNUTS INSIDE AND OUTSIDE.
- CONDUITS SHALL BE INSTALLED BETWEEN THE REINFORCING STEEL WALLS OR SLABS WHICH HAVE REINFORCEMENT IN BOTH FACES. IN SLABS WHICH HAVE ONLY A SINGLE LAYER OF REINFORCING STEEL, CONDUITS SHALL BE PLACED UNDER THE REINFORCEMENT.

1.3.8 GROUNDING

- INSTALL THE NEW GROUND GRID AS SHOWN ON THE DRAWINGS.
- DEPTH OF GROUND LOOPS SHALL BE 18-INCHES MINIMUM BELOW FINISH GRADE IN ALL AREAS UNLESS NOTED OTHERWISE.
- BELOW GRADE GROUND CABLE SHALL BE BARE STRANDED COPPER UNLESS NOTED OTHERWISE.
- ALL CONTACT SURFACES SHALL BE THOROUGHLY CLEANED AND BRIGHT BEFORE CONNECTIONS ARE MADE TO ENSURE MAKING GOOD ELECTRICAL CONTACT.
- RESISTANCE OF THE ELECTRODE AND GRID SYSTEM TO GROUND SHALL NOT EXCEED 25 OHMS UNLESS SPECIFIED OR APPROVED OTHERWISE; IF THE RESISTANCE EXCEEDS 25 OHMS, ADDITIONAL ELECTRODES SHALL BE DRIVEN AND CONNECTED IN PARALLEL, AS REQUIRED.
- ALL BELOW GRADE CABLE CONNECTIONS SHALL BE MADE BY THE "CADWELD" PROCESS.
- GROUND CABLES SHALL BE CAREFULLY PLACED AS NEARLY AS PRACTICABLE IN THE POSITION AND CONFIGURATION SHOWN ON THE DRAWINGS IN SUCH A MANNER AS NOT TO BE DISLODGED OR DISPLACED BY BACKFILLING OR OTHER CONSTRUCTION.

2.0 PAINTING

2.1 GENERAL

2.1.1 ALL METAL SURFACES TO BE PAINTED SHALL BE PREPARED TO RECEIVE THE PROPER APPLICATIONS OF PRIMER AND PAINT IN ACCORDANCE WITH THE CITY'S SPECIFICATION . SURFACES SHALL BE MASKED AND CLEAN OF DUST, DIRT AND DEBRIS. FLOOR AND GROUND SURFACES SHALL BE PREPARED FOR ACCIDENTAL SPILLS OF PAINT. ALL SURFACES SHALL BE PRIMED PRIOR TO FINAL PAINT APPLICATION.

2.1.2 DO NOT PAINT ELECTRICAL EQUIPMENT. FIELD CONTROL STATIONS AND CONNECTION BOXES SHALL BE PAINTED TO MATCH EXISTING EQUIPMENT. MASK LABEL PLATES, NAMEPLATES AND OPERATORS PRIOR TO PAINTING AND REMOVE AFTER COMPLETION.

2.1.3 ALL NEW CONDUITS AND FITTINGS ATTACHED TO AN EXISTING BUILDING SHALL BE PAINTED TO MATCH EXISTING BUILDING COLOR.

2.1.4 ALL EXPOSED PIPE FITTINGS ABOVEGROUND SHALL BE PRIMED AND PAINTED "BLACK" OR A COLOR MATCHING THE EXISTING. THIS WILL INCLUDE NEW PIPING PROVIDED BY CONTRACTOR SUPPLIED PIPE (I.E., ASME VESSEL VENTS SHALL BE PAINTED "WHITE" TO MATCH EXISTING). SWAGE FITTINGS AND PIPE ABOVE THE GROUND SHALL BE WRAPPED AND/OR PAINTED "BLACK."

2.1.5 ALL NEWLY INSTALLED METAL PLATES, COVERS AND BARRIERS SHALL BE PRIMED AND PAINTED TO MATCH ITS SURROUNDINGS.

No	Revision Description	Date
2	ISSUED FOR BID	8/19/20
1	ISSUED FOR PLAN CHECK #1	2/24/20

Client: Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

.\50% Review\SimiValleyTransitCNG-SimiValleyTransitlogo-399497[2].png

Sub Consultants: SE SUTTON ENTERPRISES
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Sheet Title: ELECTRICAL GENERAL NOTES

Designed	Drawn	Checked	Approved	Issue Date
CS	CS	CS	CS	2/24/20

Project No 2019-23
Scale
Sheet No E-001 2020-0695
Project Status 100% PC

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STATE OF CALIFORNIA

Outdoor Lighting

NRCC-LTO-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTO-E
Project Name:	Outdoor Lighting	**Report Page:**	**(Page 1 of 8)**
Project Address:	490 W. Los Angeles Ave.	**Date Prepared:**	2/21/2020

A. GENERAL INFORMATION

01	Project Location (city)	Simi Valley	04	Total Illuminated Hardscape Area (ft^2)	0
02	Climate Zone	9			
03	Outdoor Lighting Zone per Title 24 Part 1 §10.114 or as designated by Authority Having Jurisdiction (AHJ):				
☐	LZ-0: Very Low - Undeveloped Parkland	☐ LZ-2: Moderate - Rural Areas	☐	LZ-4: High - Must be reviewed by CA Energy Commission for Approval	
☐	LZ-1: Low - Developed Parkland	☒ LZ-3: Moderately High - Urban Areas			

B. PROJECT SCOPE

This table includes outdoor lighting systems that are within the scope of the permit application and are demonstrating compliance using the prescriptive path outlined in §140.7 or §141.0(b)2L for alterations.

My Project Consists of:

01			02	
☒ New Lighting System			Must Comply with Allowances from §140.7	
☐ Altered Lighting System			Is your alteration increasing the connected lighting load (Watts)? ○ Yes ○ No	
03			04	05
% of Existing Luminaires Being Altered[1]			Sum Total of Luminaires Being Added or Altered	Calculation Method
☐ < 10%	☐ >= 10% and < 50%	☐ >= 50%		

Please proceed to Table F. Outdoor Lighting Fixture Schedule to define the project's luminaires.

[1] FOOTNOTES: % of Existing Luminaires Being Altered = (Sum Total of Luminaires Being Added or Altered / Existing Luminaires within the Scope of the Permit Application) x 100.

Registration Number: Registration Date/Time: Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.0.001 Schema Version: rev 20190401 Report Generated: 2020-02-21 08:22:10

STATE OF CALIFORNIA

Outdoor Lighting

NRCC-LTO-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTO-E
Project Name:	Outdoor Lighting	**Report Page:**	**(Page 2 of 10)**
Project Address:	490 W. Los Angeles Ave.	**Date Prepared:**	2/22/2020

C. COMPLIANCE RESULTS

Results in this table are automatically calculated from data input and calculations in Tables F through I. Note: If any cell on this table says "COMPLIES with Exceptional Conditions" refer to Table D. Exceptional Conditions for guidance or see applicable Table referenced below.

Calculations of Total Allowed Lighting Power (Watts) §140.7 or §141.0(b)2L												**Compliance Results**			
01		02		03		04		05		06		07		08	09
General Hardscape Allowance §140.7(d)1 (See Table I)	+	Per Application §140.7(d)2 (See Table J)	+	Sales Frontage §140.7(d)2 (See Table K)	+	Ornamental §140.7(d)2 (See Table L)	+	Per Specific Area §140.7(d)2 (See Table M)	OR	Existing Power Allowance §141.0(b)2L (See Table N)	=	**Total Allowed** (Watts)	≥	**Total Actual** (Watts)	**07 must be >= 08**
399.8	+	486	+	---	+	---	+	1,197	OR	---	=	2,082.8	≥	2,025	COMPLIES
Cutoff Compliance (See Table G for Details)															COMPLIES
Controls Compliance (See Table H for Details)															COMPLIES

D. EXCEPTIONAL CONDITIONS

This table is auto-filled with uneditable comments because of selections made or data entered in tables throughout the form.

E. ADDITIONAL REMARKS

This table includes remarks made by the permit applicant to the Authority Having Jurisdiction.

Registration Number: Registration Date/Time: Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.0.001 Schema Version: rev 20190401 Report Generated: 2020-02-22 10:00:59

STATE OF CALIFORNIA

Outdoor Lighting

NRCC-LTO-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTO-E
Project Name:	Outdoor Lighting	**Report Page:**	**(Page 3 of 10)**
Project Address:	490 W. Los Angeles Ave.	**Date Prepared:**	2/22/2020

F. OUTDOOR LIGHTING FIXTURE SCHEDULE

For new or altered lighting systems demonstrating compliance with §140.7 all new luminaires being installed and any existing luminaires remaining or being moved within the spaces covered by the permit application are included in the Table below. For altered lighting systems using the Existing Power method per §141.0(b)2L only new luminaires being installed and replacement luminaires being installed as part of the project scope are included (ie, existing luminaires remaining or existing luminaires being moved are not included).

Designed Wattage:

01	02		03	04	05	06	07	08	09	10	
Name or Item Tag	Complete Luminaire Description		Watts per luminaire[1, 2]	How is Wattage determined	Total number luminaires [2]	Luminaire Status[3]	Excluded per §140.7(a)	Design Watts	Cutoff Req. > 6,200 initial lumen output §130.2(b) [4]	Field Inspector Pass	Field Inspector Fail
A	207 watt LED	☐ Linear	207	CEC Default	3	Existing Alteration	☐	621	Yes	☐	☐
B	414 watt 2 lamp LED	☐ Linear	414	CEC Default	3	New	☐	1,242	Yes	☐	☐
C	54 watt LED	☐ Linear	54	CEC Default	3	Existing Alteration	☐	162	Yes	☐	☐
							Total Design Watts:	2025			

* NOTES: Selections with a * require a note in the space below explaining how compliance is achieved.
EX: Luminaire is lighting a statue; EXCEPTION 2 to §130.2(b)

[1] FOOTNOTES: Authority Having Jurisdiction may ask for Luminaire cut sheets to confirm wattage used for compliance per §130.0(c)

[2] For linear luminaires, wattage should be indicated as W/lf instead of Watts/luminaire. Total linear feet should be indicated in column 05 instead of number of luminaires.

[3] Select "New" for new luminaires in a new outdoor lighting project, or for added luminaires in an alteration. Select "Altered" for replacement luminaires in an alteration. Select "Existing to Remain" for existing luminaires within the project scope that are not being altered and are remaining. Select "Existing Reinstalled" for existing luminaires which are being removed and reinstalled as part of the project scope.

[4] Compliance with mandatory cutoff requirements is required for luminaires with initial lumen output >= 6,200 unless exempted by §130.2(b)

Registration Number: Registration Date/Time: Registration Provider: Energysoft

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Outdoor Lighting

NRCC-LTO-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTO-E
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G. CUTOFF REQUIREMENTS (BUG)

This table includes fixtures of >=6,200 initial lumens indicated on Table F as needing to comply with Cutoff Requirements. Maximum lumens can be found in Title 24, Part 11, Section 5.106.8.

true	02	03	04	05	06	07	08	09	10	11	12	
Name or Item Tag	Complete Luminaire Description	Backlight Rating[2]			Uplight Rating[2]			Glare Rating (Lumens)[2]			Field Inspector	
		Mounting Height[1]	Max Allowable Backlight Rating[3]	Backlight Rating Per Design	Lighting type	Max Allowable Uplight Rating[3]	Uplight Rating Per Design	Mounting Height[1]	Max Allowable Glare Rating[3]	Glare Rating Per Design	Pass	Fail
A	207 watt LED	2 MH from property line	No Limit	B3	Area Lighting	U0	U0	2 MH from property line	G3	G0	☐	☐
B	414 watt 2 lamp LED	2 MH from property line	No Limit	B3	Area Lighting	U0	U0	2 MH from property line	G3	G0	☐	☐
A	207 watt LED	2 MH from property line	No Limit	B3	Area Lighting	U0	U0	2 MH from property line	G3	G0	☐	☐
A	207 watt LED	2 MH from property line	No Limit	B3	Area Lighting	U0	U0	2 MH from property line	G3	G0	☐	☐
B	414 watt 2 lamp LED	2 MH from property line	No Limit	B3	Area Lighting	U0	U0	2 MH from property line	G3	G0	☐	☐
C	54 watt LED	2 MH from property line	No Limit	B3	Area Lighting	U0	U0	2 MH from property line	G3	G0	☐	☐
B	414 watt 2 lamp LED	2 MH from property line	No Limit	B3	Area Lighting	U0	U0	2 MH from property line	G3	G0	☐	☐
C	54 watt LED	2 MH from property line	No Limit	B3	Area Lighting	U0	U0	2 MH from property line	G3	G0	☐	☐

[1] FOOTNOTES: Mounting Height is labeled MH in this table.

[2] Authority Having Jurisdiction may ask for Luminaire cut sheets or other documentation to confirm luminaire type, uplight ratings and glare ratings used for compliance per §130.2(b)

[3] BUG ratings with a lower number than the 'Max Allowable' are compliant. Ex. If Max Allowable is Bug Rating B4, then B0, B1, B2 and B3 are all compliant.

Registration Number: Registration Date/Time: Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.0.001 Schema Version: rev 20190401 Report Generated: 2020-02-22 10:00:59

STATE OF CALIFORNIA

Outdoor Lighting

NRCC-LTO-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTO-E
Project Name:	Outdoor Lighting	**Report Page:**	**(Page 5 of 10)**
Project Address:	490 W. Los Angeles Ave.	**Date Prepared:**	2/22/2020

H. OUTDOOR LIGHTING CONTROLS

This table demonstrates compliance with controls requirements for all new or altered luminaires installed as part of the permit application. For alteration projects, luminaires which are existing to remain (ie untouched) and luminaires which are removed and reinstalled (wiring only) do not need to be included in this table even if they are within the spaces covered by the permit application.
*When an option having a * is selected, the notes section of this table must be completed. The lighting controls section of the Compliance Summary Table on the first page will show "DOES NOT COMPLY" if the notes are left blank.*

Mandatory Controls

01	02	03	04	05	
Area Description	Shut-Off §130.2(c)1	Auto-Schedule §130.2(c)2	Motion Sensor §130.2(c)3	Field Inspector Pass	Field Inspector Fail
Parking Lot Lights	Photocontrol	Yes	Yes	☐	☐

** NOTES: Controls with a * require a note in the space below explaining how compliance is achieved.*
EX: Not permitted by health & safety to be turned off; EXCEPTION 1 to §130.2(c)

Registration Number: Registration Date/Time: Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance Report Version: 2019.0.001 Schema Version: rev 20190401 Report Generated: 2020-02-22 10:00:59

No	Revision Description	Date
2	ISSUE FOR BID	8/19/20
1	ISSUE FOR PLAN CHECK #1	2/24/20

Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

..\50% Review\SimiValleyTransitCNG--SimiValleyTransitlogo--399497[2].png

Client

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SUTTON ENTERPRISES
Electrical Engineering Design & Review
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Chino, CA 91710, (562) 619-5710
Email:suttoncash@gmail.com

Sub Consultants

REGISTERED PROFESSIONAL ENGINEER
CASH SUTTON III
No. E 15831
EXP. 12/31/20
ELECTRICAL
STATE OF CALIFORNIA

Seal

ELECTRICAL
TITLE 24
SHEET 1

Sheet Title

Project No 2019-23

Scale

E-002 2020-0696

Sheet No

Project Status 100% PC

CS	CS	CS	CS	2/24/20
Designed	Drawn	Checked	Approved	Issue Date

FUEL SOLUTIONS
5755 Uplander Way, Suite A
Culver City, CA 90230
310-207-8548

STATE OF CALIFORNIA

Outdoor Lighting

NRCC-LTO-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTO-E
Project Name:	Outdoor Lighting	**Report Page:**	**(Page 6 of 10)**
Project Address:	490 W. Los Angeles Ave.	**Date Prepared:**	2/22/2020

I. LIGHTING POWER ALLOWANCE (per §140.7)

	01				
This table includes areas using allowance calculations per §140.7. General Hardscape Allowance is per Table 140.7-A while "Use it or lose it" Allowances are per Table 140.7-B . Indicate which allowances are being used to expand sections for user input. Luminaires that qualify for one of the "Use it or lose it" allowances shall not qualify for another "Use it or lose it" allowance.	☒ General Hardscape Allowance Table I (below)	"Use it or lose it" Allowance (select all that apply) (select all that apply)			
		☒ Per Application Table J	☐ Sales Frontage Table K	☐ Ornamental Table L	☒ Per Specific Area Table M

Calculated General Hardscape Lighting Power Allowance per Table 140.7-A (LZ 0, 1 & 4)

This section does not apply to this project.

Calculated General Hardscape Lighting Power Allowance per Table 140.7-A (LZ 2 & 3)

02	03	04	05	06	07	08	9	10
Area Description	Surface Type	Area Wattage Allowance (AWA)			Area Wattage Allowance (AWA)			Total General AWA + LWA (Watts)
		Illuminated Area (ft^2)	Allowed Density (W/ft^2)	Area Allowance (Watts)	Perimeter Length (lf)	Allowed Density (W/lf)	Linear Allowance (Watts)	
Electrical Equipment Area	Asphalt	832	0.03	20.8	116	0.4	29	49.8
							Initial Wattage Allowance for Entire Site (Watts):	350
							Total General Hardscape Allowance (Watts):	399.8

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

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STATE OF CALIFORNIA

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CERTIFICATE OF COMPLIANCE			NRCC-LTO-E
Project Name:	Outdoor Lighting	**Report Page:**	**(Page 7 of 10)**
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J. LIGHTING ALLOWANCE: PER APPLICATION

This table includes areas using the wattage allowance per application from Table 140.7-B .

01	02	03	04	05	06	07	08	09	10
Area Description	Application per Table 140.7-B[1]	CALCULATED ALLOWANCE (Watts)			DESIGN WATTS				Additional Allowance (Watts)
		# of Locations	Allowance per Location[2]	Extra Allowance (Watts)	Luminaire Name or Item Tag	Watts per Luminaire	# of Luminaires	Design Watts	
CNG Fueling Area 1	Uncovered Fuel Dispenser	6	81	486	B	414	1	414	486
					A	207	1	207	
							Total Design Watts for this Area:	621	
								Total Allowance (Watts) All Areas:	486

[1] *FOOTNOTES: Primary entrance applications are only available for senior care facilities, healthcare facilities, police stations, hospitals, fire stations, and emergency vehicle facilities.*

[2] *The Allowance per Location for ATMs is 100W for the first ATM and 35W for each additional per Table 140.7-B .*

[3] *For luminaires indicated in Table F as linear, wattage in column 07 is W/lf instead of Watts/luminaire. Total linear feet should be indicated in column 08 instead of number of luminaires.*

K. LIGHTING ALLOWANCE: SALES FRONTAGE

This section does not apply to this project.

L. LIGHTING ALLOWANCE: ORNAMENTAL

This section does not apply to this project.

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

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M. LIGHTING ALLOWANCE: PER SPECIFIC AREA

This table includes areas using the wattage allowance per specific area from Table 140.7-B . More than one specific area allowance may be taken in a single project, if applicable. However, multiple specific area allowances may not be taken for the exact same area on the site.

01	02	03	04	05	06	07	08	09	10
Area Description	Specific Area Type per Table 140.7-B	CALCULATED ALLOWANCE (Watts)			DESIGN WATTS				Additional Allowance (Watts)
		Specific Area (ft^2)[1]	Allowed Density (W/ft^2)	Extra Allowance (Watts)	Luminaire Name or Item Tag	Watts per Luminaire	# of Luminaires	Design Watts	
CNG Fueling Area 2	ServiceStationHardscape	9396	0.138	1296.648	A	207	1	207	675
					B	414	1	414	
					C	54	1	54	
							Total Design Watts for this Area:	675	
CNG Fueling Area 3	ServiceStationHardscape	9610	0.138	1326.18	B	414	1	414	522
					C	54	2	108	
							Total Design Watts for this Area:	522	
								Total Allowance (Watts) All Areas:	1197

[1] *FOOTNOTES: See Table 140.7-B for rules for calculating the specific areas (ft^2 for these additional lighting allowances.*

[2] *For luminaires indicated in Table F as linear, wattage in column 07 is W/lf instead of Watts/luminaire. Total linear feet should be indicated in column 08 instead of number of luminaires.*

N. EXISTING CONDITIONS POWER ALLOWANCE (alterations only)

This section does not apply to this project.

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

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STATE OF CALIFORNIA

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CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTO-E
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Project Address:	490 W. Los Angeles Ave.	**Date Prepared:**	2/22/2020

O. DECLARATION OF REQUIRED CERTIFICATES OF INSTALLATION

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and can be found online at https://www.energy.ca.gov/title24/2019standards/2019_compliance_documents/Nonresidential_Documents/NRCI/

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
●	○	NRCI-LTO-01-E - Must be submitted for all buildings	☐	☐
●	○	NRCI-LTO-02-E- Must be submitted for a lighting control system, or for an Energy Management Control System (EMCS), to be recognized for compliance.	☐	☐

P. DECLARATION OF REQUIRED CERTIFICATES OF ACCEPTANCE

Selections have been made based on information provided in this document. If any selection have been changed by permit applicant, an explanation should be included in Table E. Additional Remarks. These documents must be provided to the building inspector during construction and must be completed through an Acceptance Test Technician Certification Provider (ATTCP). For more information visit: http://www.energy.ca.gov/title24/attcp/providers.html

Yes	No	Form/Title	Field Inspector	
			Pass	Fail
●	○	NRCA-LTO-02-A - Must be submitted for all outdoor lighting controls except for alterations where controls are added to <= 20 luminaires.	☐	☐

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance | Report Version: 2019.0.001 Schema Version: rev 20190401 | Report Generated: 2020-02-22 10:00:59

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Outdoor Lighting

NRCC-LTO-E

CALIFORNIA ENERGY COMMISSION

CERTIFICATE OF COMPLIANCE			NRCC-LTO-E
Project Name:	Outdoor Lighting	**Report Page:**	**(Page 10 of 10)**
Project Address:	490 W. Los Angeles Ave.	**Date Prepared:**	2/22/2020

DOCUMENTATION AUTHOR'S DECLARATION STATEMENT

I certify that this Certificate of Compliance documentation is accurate and complete.

Documentation Author Name: Cash Sutton III	Documentation Author Signature: [signature]
Company: Sutton Enterprises	Signature Date: 2/22/20
Address: 6728 Homan Street	CEA/ HERS Certification Identification (if applicable): E 15831
City/State/Zip: Chino CA 91710	Phone: 562-619-5710

RESPONSIBLE PERSON'S DECLARATION STATEMENT

I certify the following under penalty of perjury, under the laws of the State of California:

1. The information provided on this Certificate of Compliance is true and correct.
2. I am eligible under Division 3 of the Business and Professions Code to accept responsibility for the building design or system design identified on this Certificate of Compliance (responsible designer)
3. The energy features and performance specifications, materials, components, and manufactured devices for the building design or system design identified on this Certificate of Compliance conform to the requirements of Title 24, Part 1 and Part 6 of the California Code of Regulations.
4. The building design features or system design features identified on this Certificate of Compliance are consistent with the information provided on other applicable compliance documents, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.
5. I will ensure that a completed signed copy of this Certificate of Compliance shall be made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a completed signed copy of this Certificate of Compliance is required to be included with the documentation the builder provides to the building owner at occupancy.

Responsible Designer Name: Cash Sutton III	Responsible Designer Signature: [signature]
Company: Sutton Enterprises	Date Signed: 2020-02-22
Address: 6728 Homan Street	License: E 15831
City/State/Zip: Chino CA 91710	Phone: 562-619-5710

Registration Number: | Registration Date/Time: | Registration Provider: Energysoft

CA Building Energy Efficiency Standards - 2019 Nonresidential Compliance | Report Version: 2019.0.001 Schema Version: rev 20190401 | Report Generated: 2020-02-22 10:00:59

No	Revision Description	Date
2	ISSUE FOR BID	8/19/20
1	ISSUE FOR PLAN CHECK #1	2/24/20

Simi Valley Transit

CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

.\50% Review\SimiValleyTransitCNG-SimiValleyTransitlogo-399497[2].png

Client

SE
SUTTON ENTERPRISES
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Chino, CA 91710, (562) 619-5710
Email:suttoncash@gmail.com

Sub Consultants

REGISTERED PROFESSIONAL ENGINEER
CASH SUTTON III
No. E 15831
EXP. 12/31/20
ELECTRICAL
STATE OF CALIFORNIA

Seal

ELECTRICAL
TITLE 24
SHEET 2

Sheet Title

Project No 2019-23

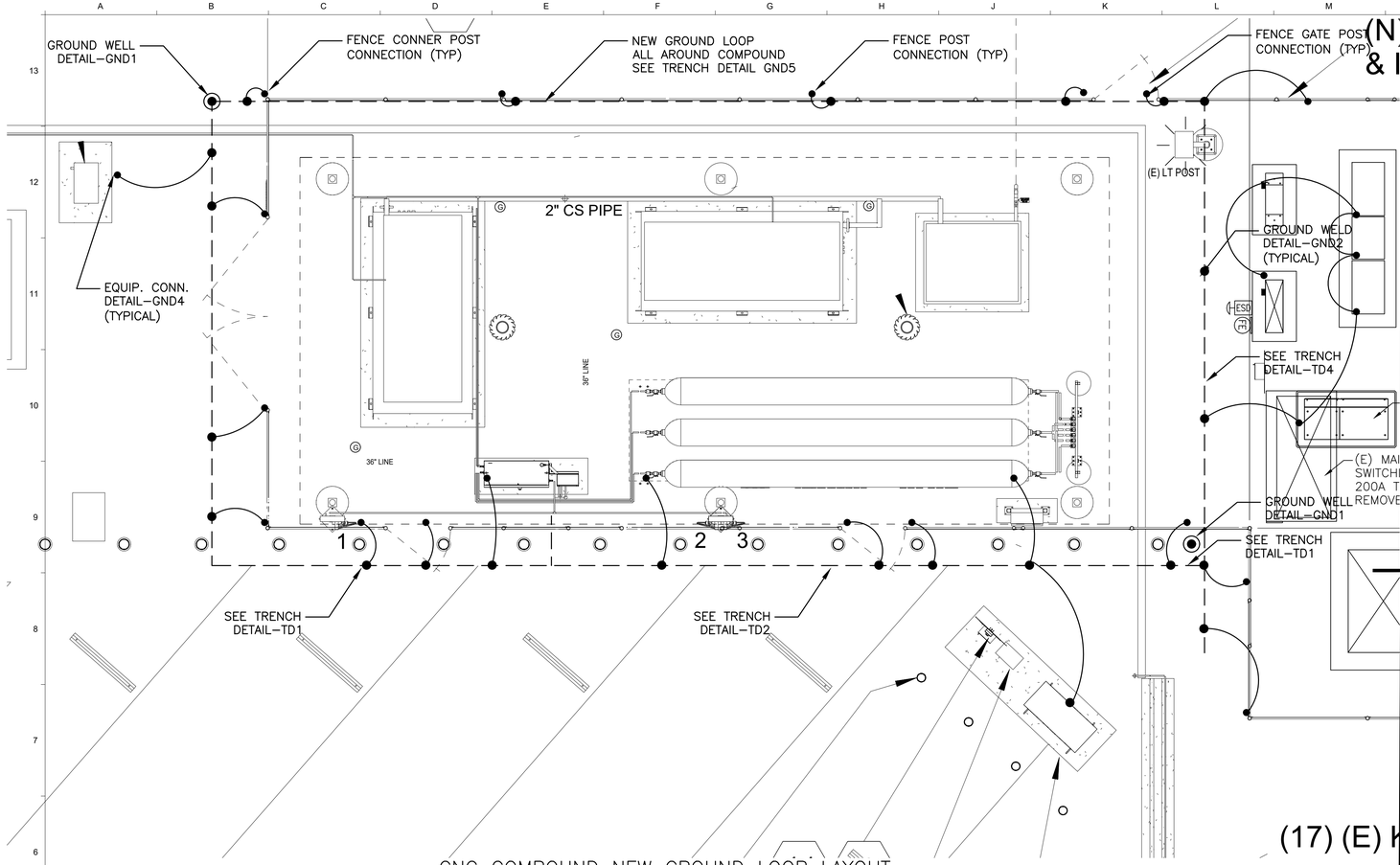
Scale

E-003
2020-0697
Sheet No

Project Status 100% PC

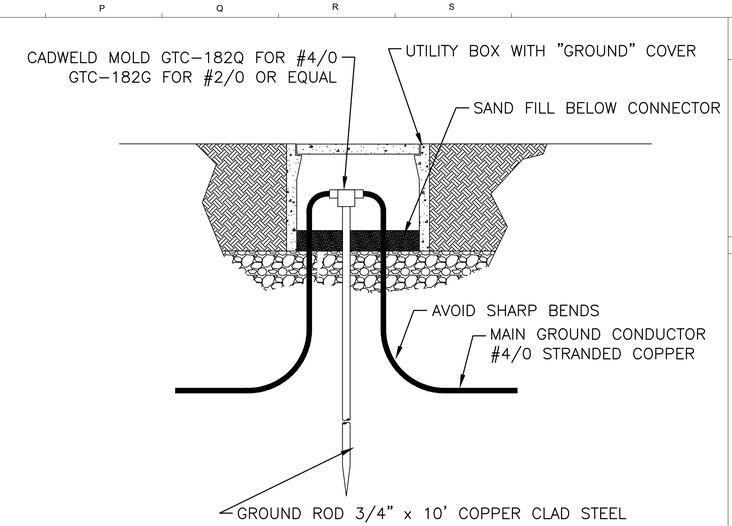
CS Designed | CS Drawn | CS Checked | CS Approved | 2/24/20 Issue Date

FUEL SOLUTIONS
5755 Uplander Way, Suite A
Culver City, CA 90230
310-207-8548



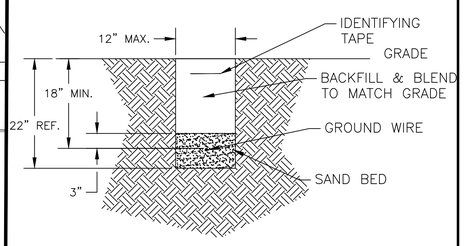
CNG COMPOUND NEW GROUND LOOP LAYOUT

SCALE: 1/4"=1'



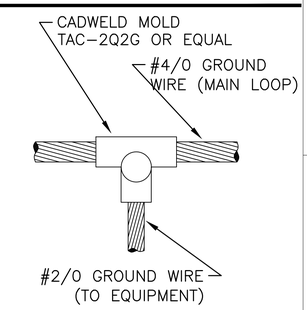
GROUND ROD DETAIL–GND1

(2 PLACES) NTS



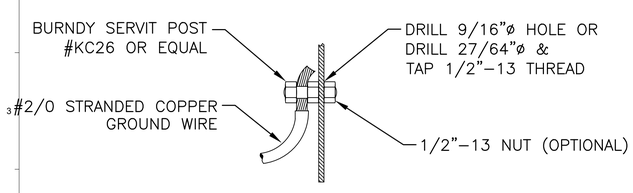
GROUND TRENCH DETAIL–GND5

SCALE: NTS



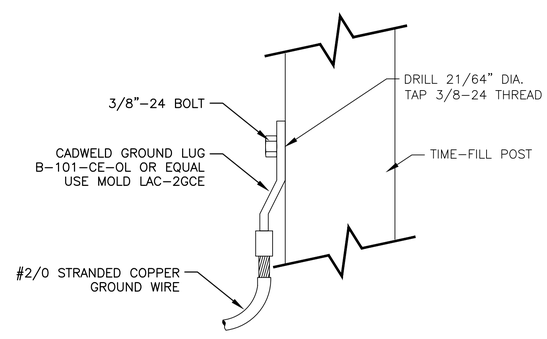
GROUND WELD DETAIL–GND2

SCALE: NTS



EQUIPMENT GROUND CONNECTION DETAIL–GND4

SCALE: NTS



TIME–FILL POST GROUND CONNECTION DETAIL GND3

SCALE: NTS

EQUIPMENT GROUND NOTES:

1. ALL EQUIPMENT MUST BE GROUNDED INCLUDING THE FENCE. SEE SHEET M–4 FOR FENCE GROUNDING DETAILS.
2. INSTALL 360' CONTINUOUS (NO SPLICES) GROUND LOOP ALL AROUND COMPOUND PERIMETER AS SHOWN. INSTALL (2) GROUND RODS AT OPPOSITE ENDS OF THE LOOP, SEE DETAIL GND1 AND LAYOUT.
3. GROUND CABLE ROUTING IS SHOWN DIAGRAMMATICALLY. THE ELECTRICAL CONTRACTOR SHALL DETERMINE THE BEST GROUND CABLE ROUTING TO AVOID ANY INTERFERENCE WITH EXISTING UNDERGROUND UTILITIES, ABOVE GROUND STRUCTURES AND EQUIPMENT.
4. GROUND CONDUCTORS TO MAIN GROUND LOOP SHALL BE MADE USING EXOTHERMIC "CADWELD" CONNECTIONS OR APPROVED EQUAL.
5. TIME–FILL AND FAST–FILL GROUND RUNS TO BE CONTINUOUS (NO SPLICES) FROM MAIN LOOP.
6. GROUND CABLE TO BE INSTALLED WITHOUT SHARP BENDS OR KINKS. WHERE BENDS ARE REQUIRED THEY SHALL BE MADE WITH THE LARGEST RADIUS.
7. UNDERGROUND GROUND WIRE TO BE A MINIMUM OF 18" BELOW FINISHED GRADE.
8. GROUND WIRES THROUGH CONCRETE SHALL HAVE A SLEEVE THAT EXTENDS 4" ABOVE GRADE. THE SLEEVES SHALL BE SCHEDULE 40 PVC PIPE FILLED WITH RTV SILICONE RUBBER AFTER GROUND WIRE HAS BEEN INSTALLED.
9. AVOID GROUND ROD MUSHROOMING USING COUPLING AND DRIVING STUD TO SINK GROUND ROD.
10. THE GROUND SYSTEM, EXISTING AND NEW SHALL BE TESTED AND DOCUMENTED USING A GROUND RESISTANCE TESTER FOR RESISTANCE TO GROUND OF NO MORE THAN 5 OHMS. REPAIR AS REQUIRED.
11. COMPONENTS OF THE EXISTING GROUND SYSTEM MAY BE USED IF INTACT. EXISTING GROND RODS MUST BE A MINIMUM OF 6' FROM NEW DRIVEN RODS. THERE ARE GROUND CONDUIT STUB–UPS AT THE STORAGE VESSEL FOUNDATIONS. THESE MAY BE USED IF A CONNECTION TO A GOOD GROUND LOOP MAY BE MADE.

No.	Revision Description	Date
2	ISSUED FOR BID	8/19/20
1	ISSUED FOR PLAN CHECK #1	2/24/20

Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

Client

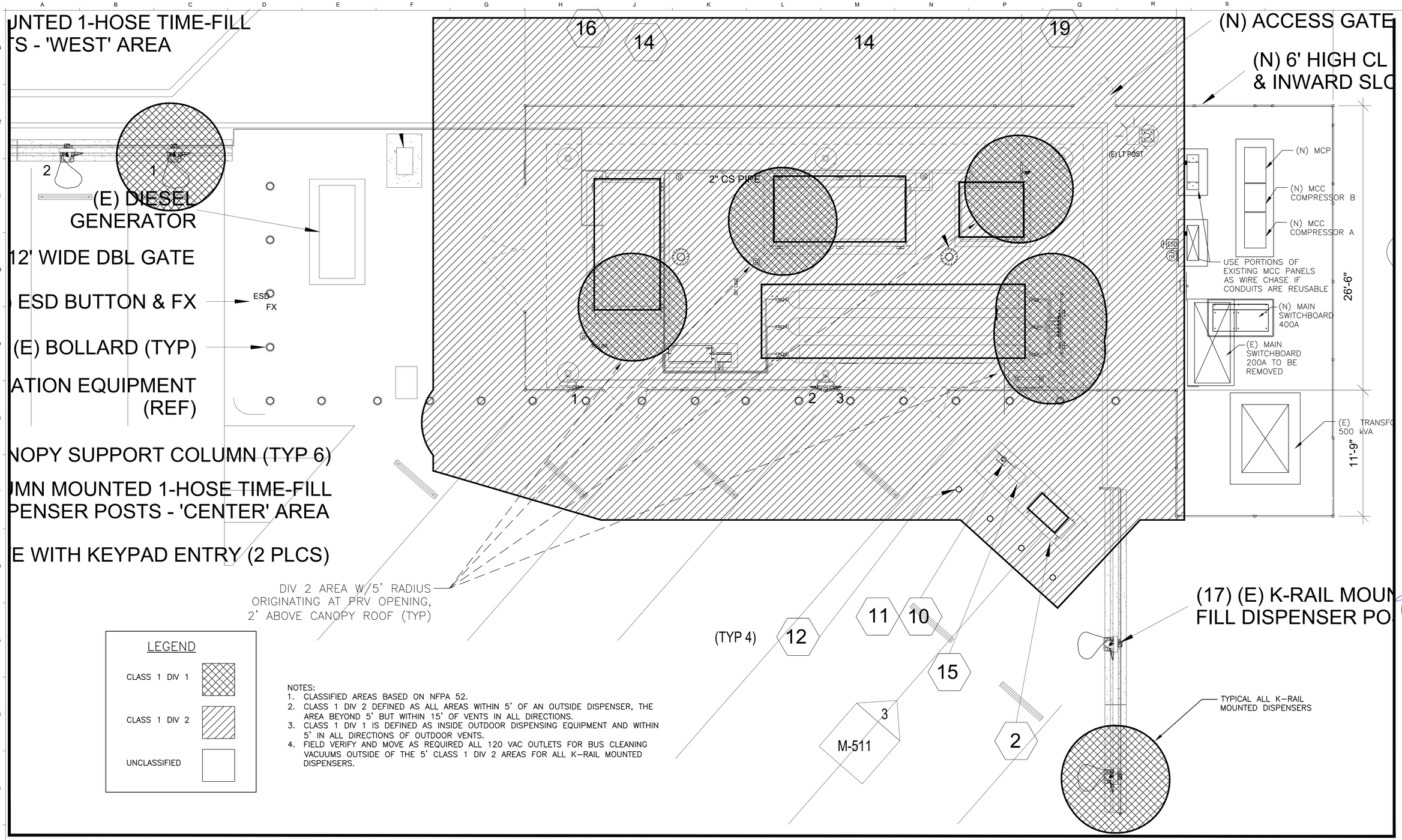
SUTTON ENTERPRISES
Electrical Engineering Design & Review
Sub Consultants

REGISTERED PROFESSIONAL ENGINEER
CASEY SUTTON
No. E 15831
EXP. 12/31/20
ELECTRICAL
STATE OF CALIFORNIA
Seal

ELECTRICAL GROUNDING AND ELECTRICAL PLAN
Sheet Title

Project No	2019-23
Scale	
Sheet No	E-101
	2020-0698
Project Status	100% PC
Issue Date	2/24/20
Designed	CS
Drawn	CS
Checked	CS
Approved	CS

FUEL SOLUTIONS
5755 Uplander Way, Suite A
Culver City, CA 90230
310-207-8548



NOTES:
1. CLASSIFIED AREAS BASED ON NFPA 52.
2. CLASS 1 DIV 2 DEFINED AS ALL AREAS WITHIN 5' OF AN OUTSIDE DISPENSER, THE AREA BEYOND 5' BUT WITHIN 15' OF VENTS IN ALL DIRECTIONS.
3. CLASS 1 DIV 1 IS DEFINED AS INSIDE OUTDOOR DISPENSING EQUIPMENT AND WITHIN 5' IN ALL DIRECTIONS OF OUTDOOR VENTS.
4. FIELD VERIFY AND MOVE AS REQUIRED ALL 120 VAC OUTLETS FOR BUS CLEANING VACUUMS OUTSIDE OF THE 5' CLASS 1 DIV 2 AREAS FOR ALL K-RAIL MOUNTED DISPENSERS.

CNG COMPOUND AND ELECTRICAL PLAN

SCALE: 1/4"=1'

NOTES:
1. PRIOR TO ANY ELECTICAL DEMO, ISOLATE COMPRESSOR 'A' AND WIRE GENERATOR TO SUPPLY COMPRESSOR 'A' ONLY. 200 AMP MAIN SWITCHBOARD AND BOTH COMPRESSOR MCC'S TO BE REPLACED WITH NEW.
2. SEE EQUIPMENT SCHEDULE ON SHEET M-501 FOR HEX-KEYED NOTES.

No	Revision Description	Date
2	ISSUED FOR BID	8/19/20
1	ISSUED FOR PLAN CHECK #1	2/24/20

Client: Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

Sub Consultants: SUTTON ENTERPRISES, Electrical Engineering Design & Review

Seal: REGISTERED PROFESSIONAL ENGINEER, CASEY SUTTON, No. E 15831, EXP. 12/31/20, ELECTRICAL, STATE OF CALIFORNIA

Sheet Title: ELECTRICAL CLASSIFIED AREAS AND ELECTRICAL PLAN WITH DEMOLITION

Project No: 2019-23
Scale:
Sheet No: E-102 (2020-0699)
Project Status: 100% PC
Issue Date: 2/24/20

Designed	Drawn	Checked	Approved
CS	CS	CS	CS

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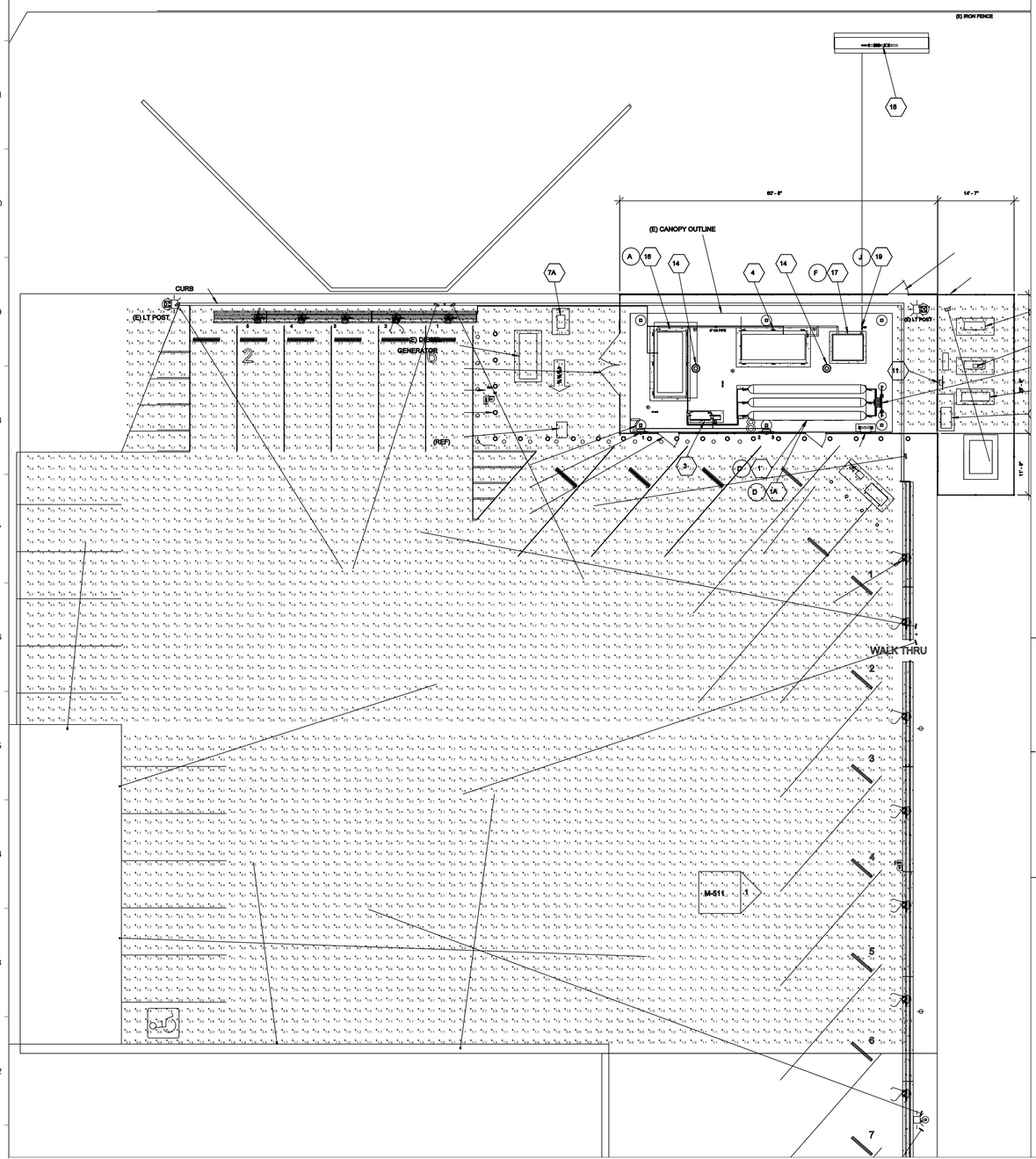
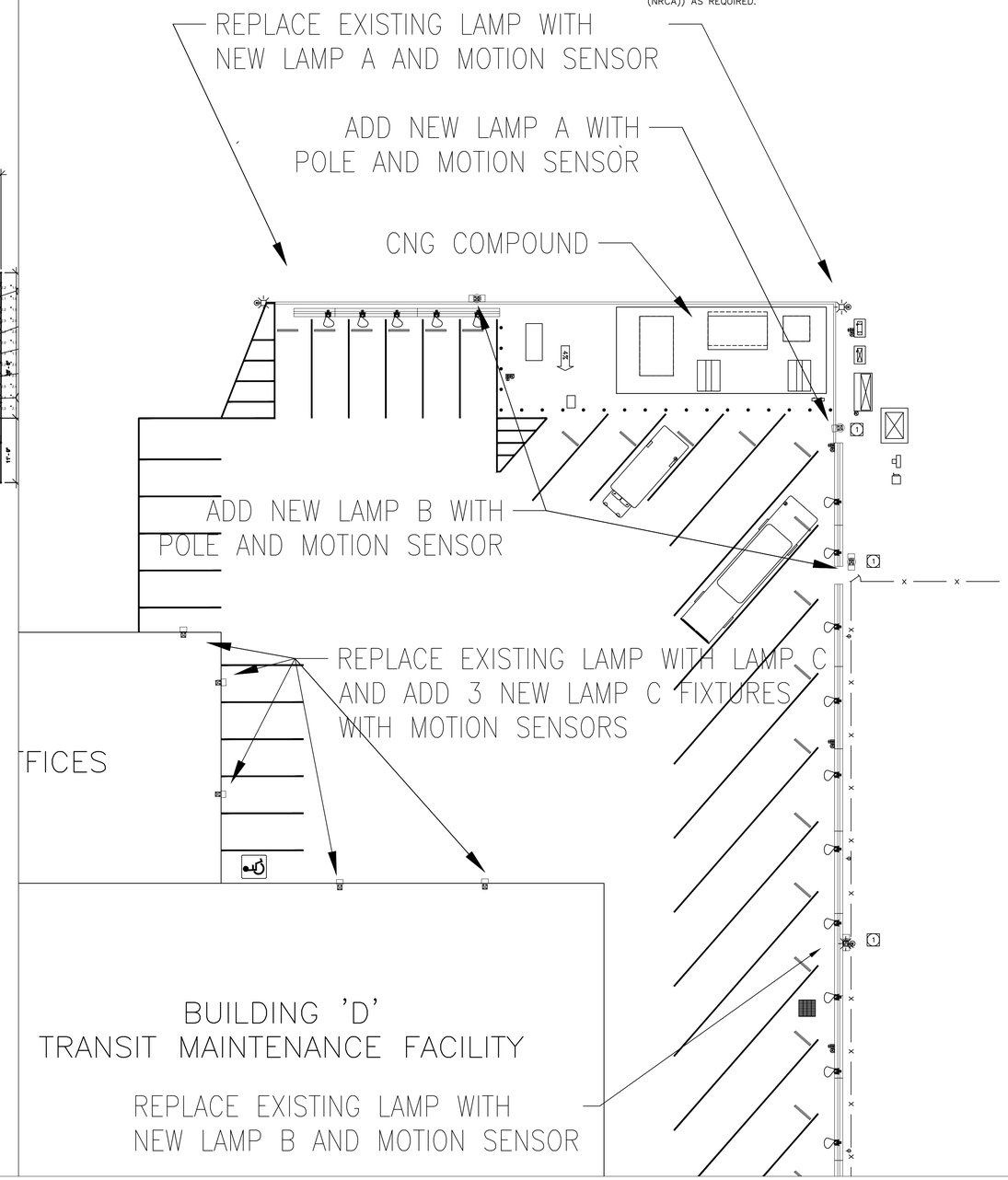
LIGHT FIXTURE SCHEDULE					
Label	Catalog Number	Description	Lamp	Watts	SENSOR
A	DSX1 LED P8 40K T3S MVOLT	DSX1 LED P8 40K T3S MVOLT	LED	207	Sensor Switch # SBOR 6 ODP WH 5V
B	DSX1 LED P8 40K T3S MVOLT	DSX1 LED P8 40K T3S MVOLT	LED	414	Sensor Switch # SBOR 6 ODP WH 5V
C	DSXF2 LED P1 40K WFL	DSXF2 LED P1 40K WFL		54	

NOTES:

1. INSTALL NEW POLE AND EXTEND CIRCUIT FROM ADJACENT POLE MATCHING CONDUCTOR SIZE. POLE AND BASE TO MATCH EXISTING.
2. RELOCATE EXISTING AND INSTALL NEW FIXTURES EXTENDING EXISTING CIRCUIT.
3. ELECTRICAL CONTRACTOR SHALL INCLUDE IN HIS BASE BID AND CONTRACT THE INSTALLATION AND COMMISSIONING OF ALL LIGHTING CONTROLS INCLUDING BUT NOT LIMITED TO OCCUPANCY SENSORS, LIGHTING CONTROLS ARE ADJUSTED, PROGRAMMED AND FUNCTIONING IN ACCORDANCE WITH THE DESIGN AND MANUFACTURE'S INSTALLATION INSTRUCTIONS. THE CONTRACTOR IS ALSO RESPONSIBLE FOR SUBMITTING DOCUMENTATION (INSTALLATION FORMS (NRCI)) CERTIFYING THAT THE LIGHTING SYSTEMS ARE IN COMPLIANCE WITH OR EXCEEDED THE PERFORMANCE REQUIREMENTS FOR PROJECTS 10,000 SQFT OR OVER, CONTRACTOR SHALL ALSO FURNISH CEC TITLE 24 REQUIRED FUNCTIONAL PERFORMANCE TESTING BY A CERTIFIED LIGHTING CONTROLS TEST TECHNICIAN (CALCATT) AND SUBMIT DOCUMENTATION (ACCEPTANCE FORMS (NRCA)) AS REQUIRED.



PARTIAL PHOTOMETRIC PLAN
NTS



PARTIAL LIGHTING PLAN
1/16"=1'-0"

No.	Revision Description	Date
2	ISSUE FOR BID	8/19/20
1	ISSUE FOR PLAN CHECK #1	2/24/20

Client: Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
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Seal: REGISTERED PROFESSIONAL ENGINEER CASH SUTTON No. E 15831 EXP. 12/31/20 ELECTRICAL STATE OF CALIFORNIA

Sheet Title: ELECTRICAL LIGHTING MODIFICATIONS WITH PHOTOMETRICS

Project No: 2019-23
Scale:
Sheet No: E-103
2020-0700
Project Status: 100% PC

CS Designed	
CS Drawn	
CS Checked	
CS Approved	
2/24/20 Issue Date	

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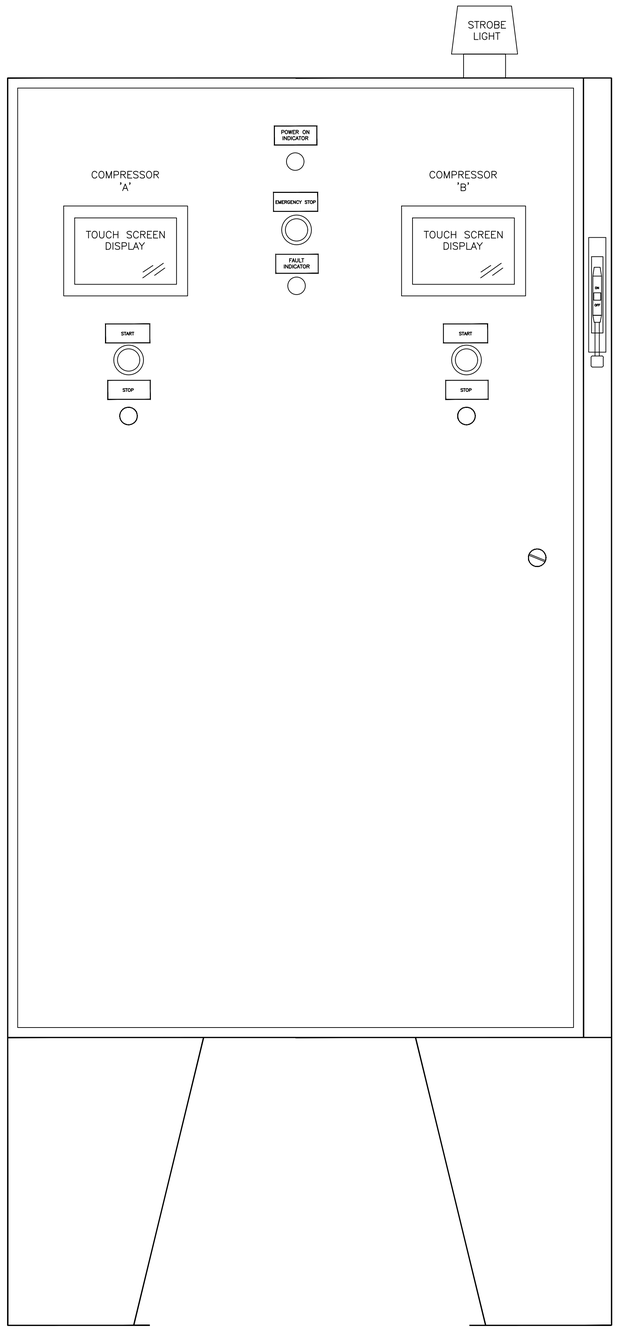

NEW CONTROL PANEL

SCALE: NTS

NOTE:
PANEL LAYOUT IS SHOWN FOR REFERENCE AND MAY VARY. MOTOR-STARTERS AND CONTROLS MAY BE PROVIDED IN COMMON OR SEPARATE ENCLOSURES, PROVIDED THAT THEY MEET THE FUNCTIONAL REQUIREMENTS OF THE PROJECT.

No.	Revision Description	Date
2	ISSUED FOR BID	8/19/20
1	ISSUED FOR PLAN CHECK #1	2/24/20

Client

Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

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Sub Consultants

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Seal

REGISTERED PROFESSIONAL ENGINEER
CASH SUTTON
No. E 15831
EXP. 12/31/20
ELECTRICAL
STATE OF CALIFORNIA

Sheet Title: COMPRESSOR CONTROL PANEL

Project No: 2019-23
Scale:
Sheet No: E-201
Project Status: 100% PC
2020-0701

Designed	CS
Drawn	CS
Checked	CS
Approved	CS
Issue Date	2/24/20

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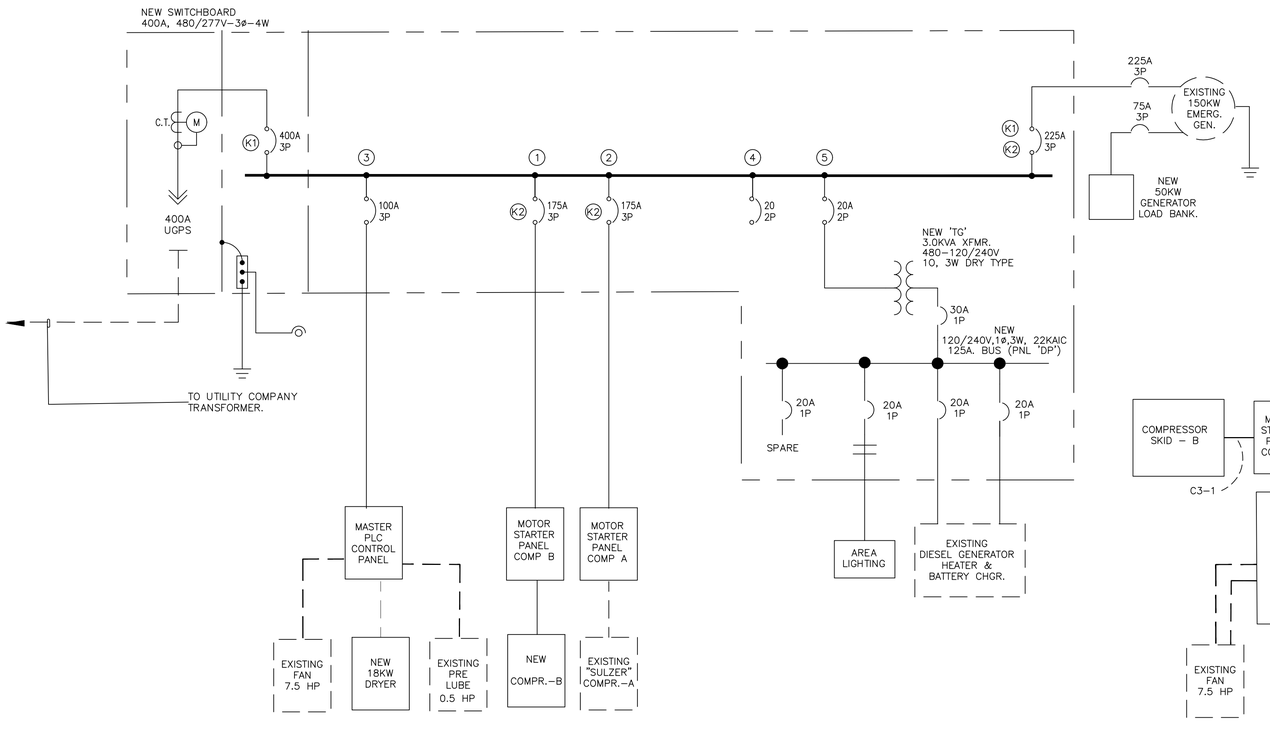
KEY INTERLOCK SYSTEM CONNECTION PROCEDURE

THERE IS ONLY ONE KEY K1 IN THE SYSTEM. THERE ARE TWO KEYS K2 IN THE SYSTEM.

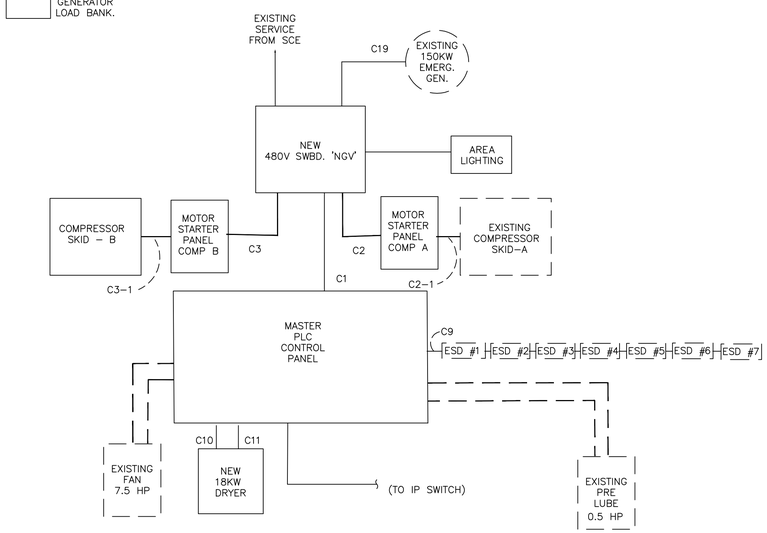
NORMAL POSITION IS FOR KEY K1 TO BE RETAINED IN THE MAIN BREAKER LOCK WITH THE LOCK WITHDRAWN, ALLOWING THE MAIN BREAKER TO BE CLOSED. THE TWO K2 KEYS ARE EACH IN THE COMPRESSOR BREAKER LOCKS WITH THE LOCK WITHDRAWN TO ALLOW BOTH BREAKERS TO BE CLOSED. THE GENERATOR BREAKER IS OFF AND HAS NO KEYS IN THE LOCK – LOCK IS EXTENDED TO BLOCK SOMEONE FROM CLOSING THE CB.

TO SWITCH TO GENERATOR SOURCE, THE GENERATOR LOCK WILL REQUIRE BOTH ONE KEY K1 AND ONE KEY K2 BEFORE THE LOCK CAN BE WITHDRAWN TO CLOSE THE GENERATOR BREAKER. THE OPERATOR WOULD OPEN THE MAIN BREAKER, EXTEND THE LOCK AND THIS RELEASES KEY K1 TO BE MOVED TO THE GENERATOR BREAKER LOCK. THE OPERATOR WOULD CHOOSE ONE OF THE TWO COMPRESSOR LOCKS TO TURN OFF A COMPRESSOR BREAKER, EXTEND THE LOCK AND WITHDRAW KEY K2. ONCE THE OPERATOR HAS BOTH KEY K1 AND KEY K2 INSERTED IN THE GENERATOR LOCK, HE CAN TURN BOTH KEYS TO WITHDRAW THE LOCK AND CLOSE THE GENERATOR BREAKER.



SINGLE–LINE DIAGRAM

N.T.S.



EQUIPMENT BLOCK DIAGRAM

FOR CONDUIT & CABLE SCHEDULE
SEE DWG. E–602

LEGEND:

SINGLE LINE DIAGRAM SYMBOLS

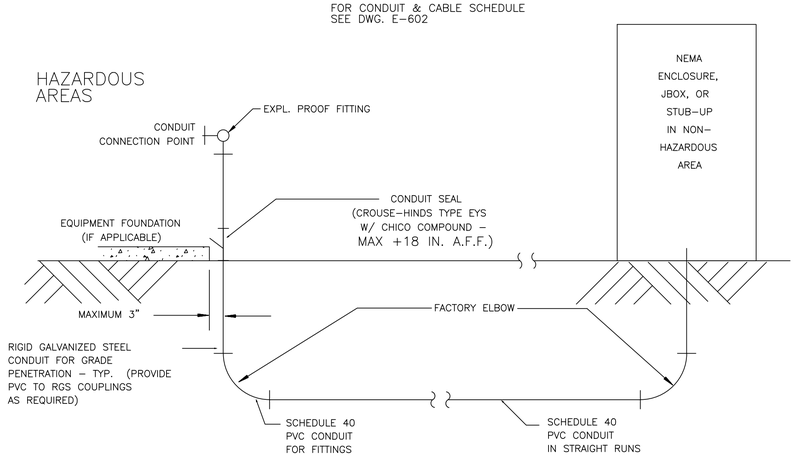
- BUS, AS CALLED FOR
- POWER CONDUCTOR(S), AS INDICATED
- EXISTING , AS INDICATED
- CIRCUIT BREAKER, LOW VOLTAGE, AF = AMPERE FRAME, AT = AMPERE TRIP, 3P = THREE POLE
- P/T 3 — POTENTIAL TRANSFORMER, 3 REQUIRED
- C/T 3 — CURRENT TRANSFORMER, 3 REQUIRED
- KWH — UTILITY CO. KILOWATT HOUR METER
- 10 — ELECTRICAL MOTOR, HORSEPOWER SHOWN
- M — LOCAL KILOWATT HOUR METER
- OVERLOAD RELAY
- FUSE, AMPERAGE AS SHOWN
- STARTER/PHOTOCELL
- A.T.S. — AUTOMATIC TRANSFER SWITCH

LOAD CALCULATIONS FOR PROPOSED CNG UPGRADE

CITY OF SIMI VALLEY
SIMI VALLEY, CALIFORNIA
Monday, November 11, 2019

Peak Demand Year Ending June 2019	*		86000 WATTS		107500 VA
Peak Demand x 25%					26875 VA
NEW PANEL LOAD					
100 HP COMPRESSOR MOTOR	1 @	103044 VA	103044 VA		
AIR DRYER	1 @	18000 VA	18000 VA		
AUXILIARY XFMR	1 @	250 VA	250 VA		
AUXILIARY XFMR	1 @	5000 VA	5000 VA		
AUXILIARY XFMR	1 @	3000 VA	3000 VA		
5 UNITS @ 100% DEMAND	TOTAL		129294 VA	=	129294 VA
TOTAL ELECTRICAL LOAD				=	263669 VA
NET LOAD AT 277/480V 3 PHASE 4 WIRE				=	317 AMPS
317 AMPS + 25% LCL				=	320 AMPS
Switchboard Rated 277/480V 3 PHASE 4 WIRE				=	**400 AMPS**

EXISTING SERVICE REVIEWED BY ANDREW LEE OF SCE AND CONFIRMED ADEQUATE FOR THE ADDITIONAL LOAD 10/24/2019. MR. LEE CAN BE CONTACTED AT (805) 612-6668.



TYPICAL RISER SECTION

3 / E–1

N.T.S.

No	Revision Description	Date
2	ISSUED FOR BID	8/19/20
1	ISSUED FOR PLAN CHECK #1	2/24/20

Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

Client

SUTTON ENTERPRISES
Electrical Engineering Design & Review
Sub Consultants

REGISTERED PROFESSIONAL ENGINEER
CHAS. SUTTON III
No. E 15831
EXP. 12/31/20
ELECTRICAL
STATE OF CALIFORNIA
Seal

ELECTRICAL SINGLE LINE, LOAD CALCULATION, EQUIPMENT BLOCK DIAGRAM AND TYPICAL RISER DIAGRAM
Sheet Title

Designed CS	Project No. 2019-23		
Drawn CS	Scale	E-601	2020-0702
Checked CS		Sheet No	
Approved CS	Project Status 100% PC		
2/24/20	Issue Date		

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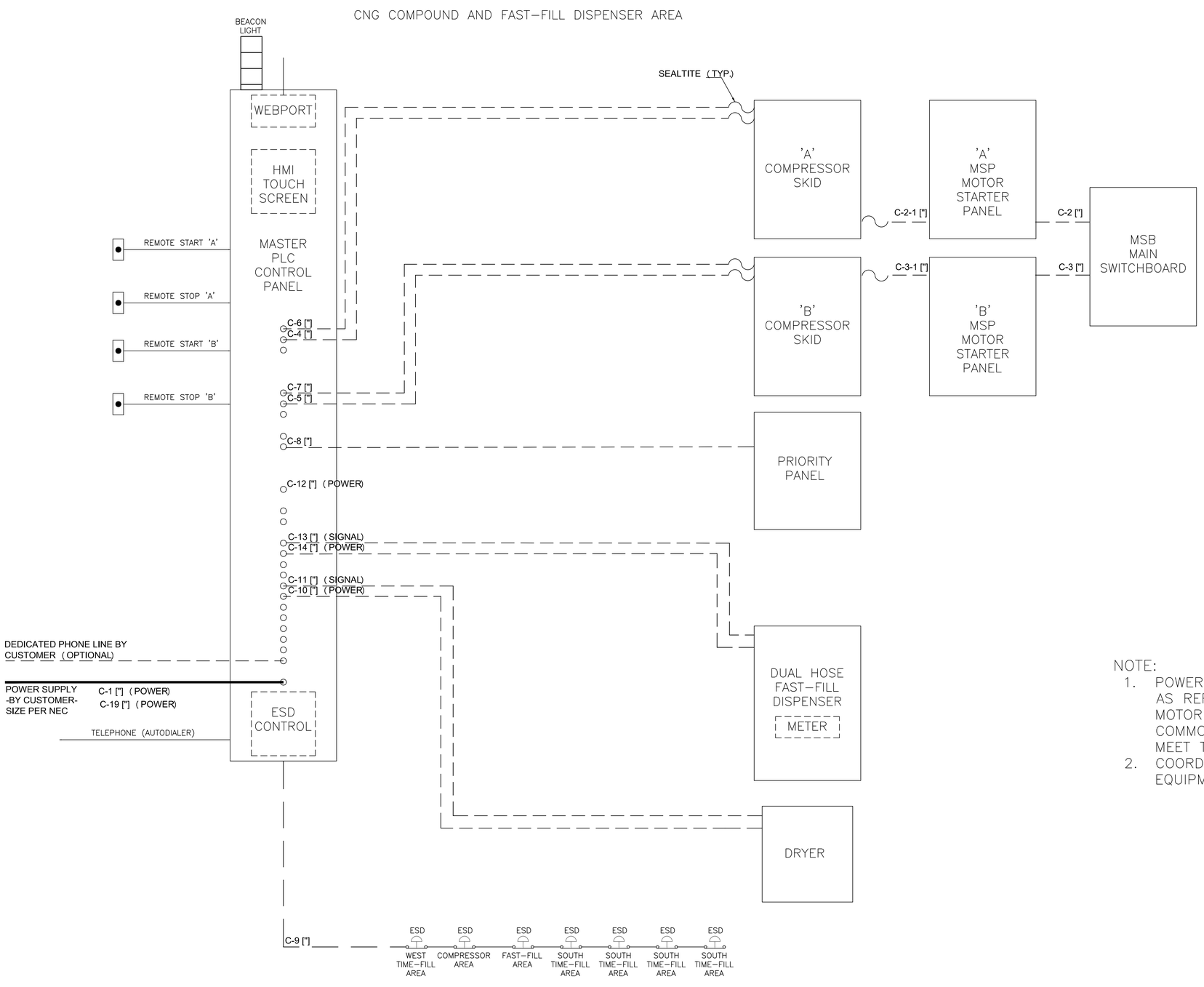

NEW CONTROL PANEL & MCC

SCALE: NTS

CONDUIT & CABLE SCHEDULE

COND #	COND SIZE	CONDU SIZE	# COND	GND COND	EXIST. COND
C1	2	#4/0	3	#6	X
C2	2	#4/0	3	#6	X
C3	2	#4/0	3	#6	X
C4	1-1/2	#14	10	#14	X
C5	1-1/2	#14	10	#14	X
C6	1-1/2				
C7	1-1/2				
C8	2				
C9	3/4	#16	4	#14	X
C10	1-1/2	#10	5	#14	X
C11	3/4	#14	4	#14	X
C12	3/4	#14	6	#14	
C13	3/4	#14	5	#14	
C14	3/4	#14	5	#14	
C15	3/4	#14	5	#14	
C16	3/4	#14	5	#14	
C17	3/4	#14	5	#14	
C18	3/4	8	2	#12	
C19	2	#4/0	3	#6	X

NOTE:

1. POWER AND CONTROL CONDUITS AND CABLE ARE PROVIDED AS REFERENCE BASED ON GENERAL REQUIREMENTS. MOTOR–STARTERS AND CONTROLS MAY BE PROVIDED IN COMMON OR SEPARATE ENCLOSURES, PROVIDED THAT THEY MEET THE FUNCTIONAL REQUIREMENTS OF THE PROJECT.
2. COORDINATE ACTUAL CONDUIT A CABLE BASED ON EQUIPMENT OF SELECTED SUPPLIERS.

No	Revision Description	Date
2	ISSUED FOR BID	8/19/20
1	ISSUED FOR PLAN CHECK #1	2/24/20

Client: Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

Sub Consultants: SE SUTTON ENTERPRISES
Electrical Engineering Design & Review
Mailing Address: 4100 Bonita Road, Suite 110, Bonita, CA 91902
Office Address: 1010 Second Avenue, Suite 2010, San Diego, CA 92101
Email: suttonenterprises@gmail.com

Seal: REGISTERED PROFESSIONAL ENGINEER CASH SUTTON III No. E 15831 EXP. 12/31/20 ELECTRICAL STATE OF CALIFORNIA

Sheet Title: ELECTRICAL CONDUIT SCHEDULE

CS Designed	Project No 2019-23		
CS Drawn	Scale		
CS Checked	E-602		
CS Approved	Sheet No 2020-07/03		
2/24/20 Issue Date	Project Status 100% SD		

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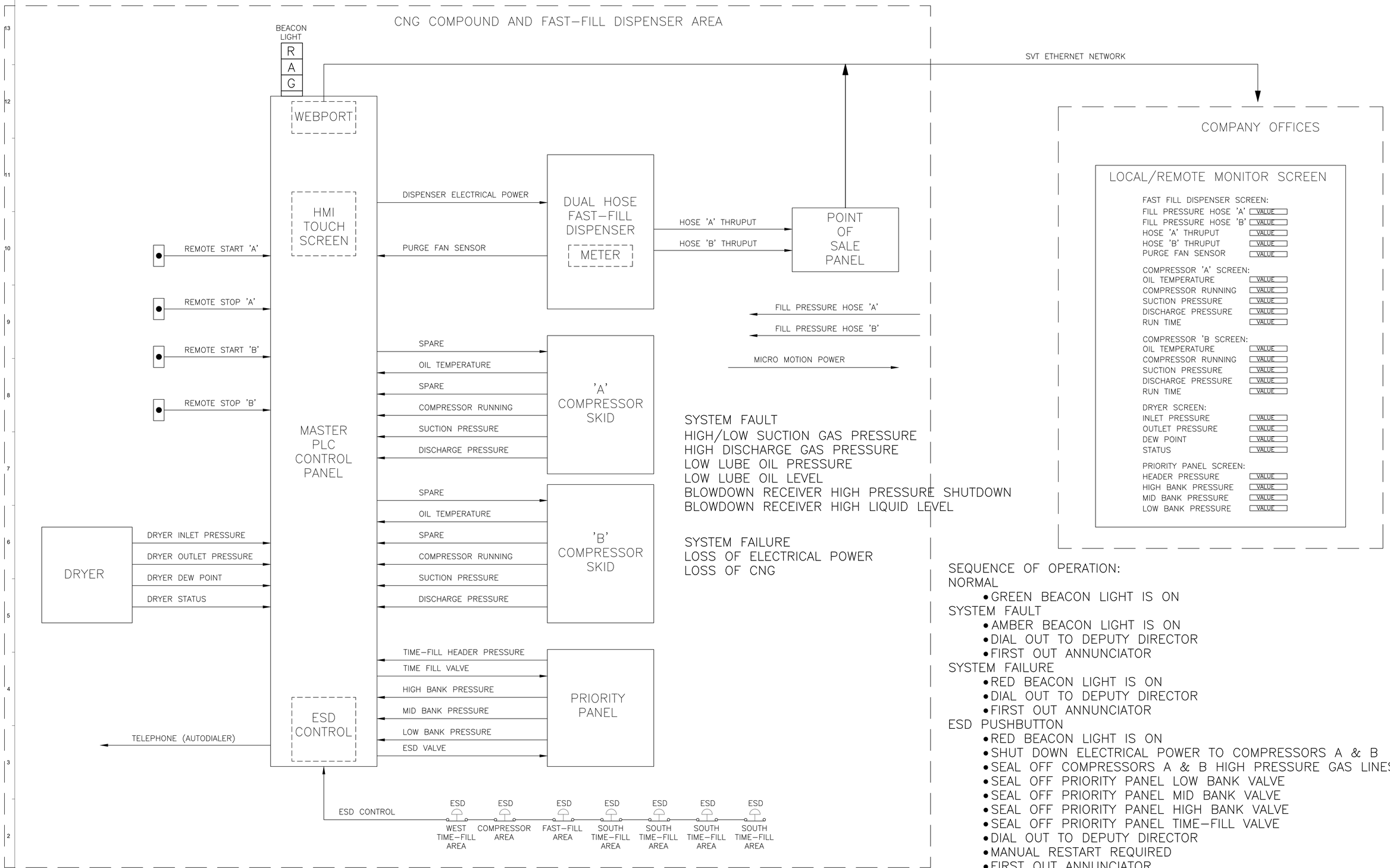

SEQUENCE OF OPERATION:

NORMAL
- GREEN BEACON LIGHT IS ON

SYSTEM FAULT
- AMBER BEACON LIGHT IS ON
- DIAL OUT TO DEPUTY DIRECTOR
- FIRST OUT ANNUNCIATOR

SYSTEM FAILURE
- RED BEACON LIGHT IS ON
- DIAL OUT TO DEPUTY DIRECTOR
- FIRST OUT ANNUNCIATOR

ESD PUSHBUTTON
- RED BEACON LIGHT IS ON
- SHUT DOWN ELECTRICAL POWER TO COMPRESSORS A & B
- SEAL OFF COMPRESSORS A & B HIGH PRESSURE GAS LINES
- SEAL OFF PRIORITY PANEL LOW BANK VALVE
- SEAL OFF PRIORITY PANEL MID BANK VALVE
- SEAL OFF PRIORITY PANEL HIGH BANK VALVE
- SEAL OFF PRIORITY PANEL TIME-FILL VALVE
- DIAL OUT TO DEPUTY DIRECTOR
- MANUAL RESTART REQUIRED
- FIRST OUT ANNUNCIATOR

ELECTRICAL CONTROLS BLOCK DIAGRAM

No	Revision Description	Date
2	ISSUED FOR BID	8/19/20
1	ISSUED FOR PLAN CHECK #1	2/24/20

Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

Client

SUTTON ENTERPRISES
Electrical Engineering Design & Review

Sub Consultants

REGISTERED PROFESSIONAL ENGINEER
CASEY SUTTON
No. E 15831
EXP. 12/31/20
ELECTRICAL
STATE OF CALIFORNIA

Seal

ELECTRICAL CONTROLS BLOCK DIAGRAM

Sheet Title

Designed	CS
Drawn	CS
Checked	CS
Approved	CS
Issue Date	2/24/20
Project No	2019-23
Scale	
Sheet No	E-603
	2020-07/04
Project Status	100% SD

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SL

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH 2016 CALIFORNIA BUILDING CODE AND ALL GOVERNING CODES.
2. ALL WORK TO BE CARRIED OUT IN ACCORDANCE WITH SPECIFICATIONS. SEE SITE PLAN FOR INFORMATION NOT SHOWN.
3. DRAWING SCALES NOTED ON STRUCTURAL DRAWINGS ARE FOR REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY DIMENSIONS NOT NOTED WITH THE ENGINEER PRIOR TO PROCEEDING WITH WORK.
4. THE GENERAL CONTRACTOR SHALL VERIFY THE DIMENSIONS SHOWN ON STRUCTURAL DRAWINGS AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH WORK.
5. SEISMIC ANALYSIS FOR BUILDING:
   I= 1.25
   Ss=2.314
   S1=0.805
   SDS=1.543
   SD1=0.805
   OCCUPANCY CATEGORY=III
   SEISMIC DESIGN CATEGORY=E
   SITE CLASS D
6. VERIFY NUMBER & LOCATION OF EQUIPMENT ANCHOR BOLTS WITH EQUIPMENT SUPPLIER PRIOR TO CONSTRUCTION OF FOUNDATION.
7. FLATNESS CRITERIA FOR ALL FOUNDATION:
   a. ⅛" IN 10'-0"
   b. LEVELNESS-1⅞-⅛⅞ IN 1'-0"
8. CONTRACTOR SHALL PROVIDE CONCRETE HOUSEKEEPING PADS THAT EXTEND AT LEAST 18" IN FRONT OF ALL ELECTRONICAL PANELS, BUT NOT INCLUDING COMPRESSOR SKIDS OR GAS DRYER.
9. ALL ELECTRONICAL PANELS SHALL BE INSTALLED AT LEAST 15'-0" AWAY FROM GAS DRYER, COMPRESSOR, AND CNG STORAGE VESSEL.

FOUNDATION NOTES

1. FOUNDATION DESIGN IS BASED ON THE FOLLOWING INFORMATION:
   A. ALLOWABLE BEARING PRESSURE = 1500 PSF.
   B. LATERAL BEARING OF 250 PSF PER FOOT OF DEPTH FOR FOOTINGS PLACED ON COMPACTED FILL
2. SOIL TYPE D

CONCRETE

1. SCHEDULE OF STRUCTURAL CONCRETE 28-DAY COMPRESSIVE STRENGTH AND TYPES:

LOCATION IN STRUCTURE	28-DAY COMPRESSIVE STRENGTH	DENSITY
CONC MIX FOR BACKFILL	2000 PSI	145 PCF
SLAN-ON-GRADE	4000 PSI	145 PCF
FOOTINGS -SEE NOTE 12	4500 PSI	145 PCF
ALL CONCRETE U.N.O.	4000 PSI	145 PCF
LIWT CONC OVER MTL DECK	4000 PSI	110 PCF

2. ALL CONSTRUCTION JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TYPICAL CONSTRUCTION JOINT DETAILS SHOWN ON THE STRUCTURAL AND ARCHITECTURAL DRAWINGS.
3. CLEAN AND ROUGHEN TO 1/4" AMPLITUDE ALL CONCRETE CONSTRUCTION JOINT SURFACES AGAINST WHICH CONCRETE IS TO BE PLACED. ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER SHALL BE REMOVED IMMEDIATELY BEFORE NEW CONCRETE IS PLACED.
4. PROVIDE SLEEVES FOR PLUMBING AND ELECTRICAL OPENINGS IN CONCRETE BEFORE POURING CONCRETE. DO NOT CUT ANY REINFORCING WHICH MAY CONFLICT. CORING IN CONCRETE IS NOT PERMITTED UNLESS APPROVED BY THE STRUCTURAL ENGINEER AND ARCHITECT NOTIFY THE OWNER'S REPRESENTATIVE IN ADVANCE OF CONSTRUCTION OF CONDITIONS NOT SHOWN ON DRAWINGS.
5. CLEAR COVERAGE OF CONCRETE OVER OUTER REINFORCING SHALL BE AS FOLLOWS:

LOCATION IN STRUCTURE		CLEAR COVER
FOOTING	TOP BARS	2"
	BOTTOM AND SIDE BARS EXPOSED TO EARTH	3"
WALL	EXTERIOR AGAINST EARTH OR EXPOSED TO WEATHER	2"
	INTERIOR FACE	3/4"
SLAB	EXTERIOR AGAINST EARTH OR EXPOSED TO WEATHER	2"
	INTERIOR FACE	1-1/4"
BEAMS/COLUMNS	EXTERIOR AGAINST EARTH OR EXPOSED TO WEATHER	2"
	INTERIOR FACE	1-1/2"

6. ALL REINFORCEMENT INCLUDING WWF SHALL BE CHAIRED UP.
7. COORDINATE EXPOSED COLD JOINTS WITH ARCHITECTURAL DRAWINGS.
8. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS AND SIZE OF CURBS, CHAMFERS, GROOVES, INSERTS (STUD BOLTS, ANCHORS, PLATES, ...) ETC.
9. CONCRETE FOR TOPPING SLABS SHALL NOT BE PLACED UNTIL CONCRETE SLAB BELOW HAS REACHED FULL 28 DAY COMPRESSIVE STRENGTH.
10. ALL CONCRETE ELEMENTS SHALL BE REINFORCED NO PLAIN CONCRETE IS PERMITTED. ALL CONCRETE ELEMENTS SHALL BE REINFORCED WITH A MINIMUM STEEL AREA OF 0.0018 TIMES THE CROSS-SECTIONAL AREA OF CONCRETE ELEMENT CONTINUOUS IN EACH DIRECTION, TYPICAL UNLESS NOTED OTHERWISE.
11. ALL TRANSIT-MIXED CONCRETE SHALL BE PROVIDED BY A CONCRETE PLANT WHICH COMPLIES FULLY WITH THE REQUIREMENTS OF CBC STANDARDS AND HAS BEEN CERTIFIED BY AN AGENCY ACCEPTABLE TO GOVERNING JURISDICTION SO THAT BATCH PLANT INSPECTION MAY BE WAVED.
12. USE TYPE V CEMENT, W/C RATIO = 0.45 MAX.

SPECIAL INSPECTIONS

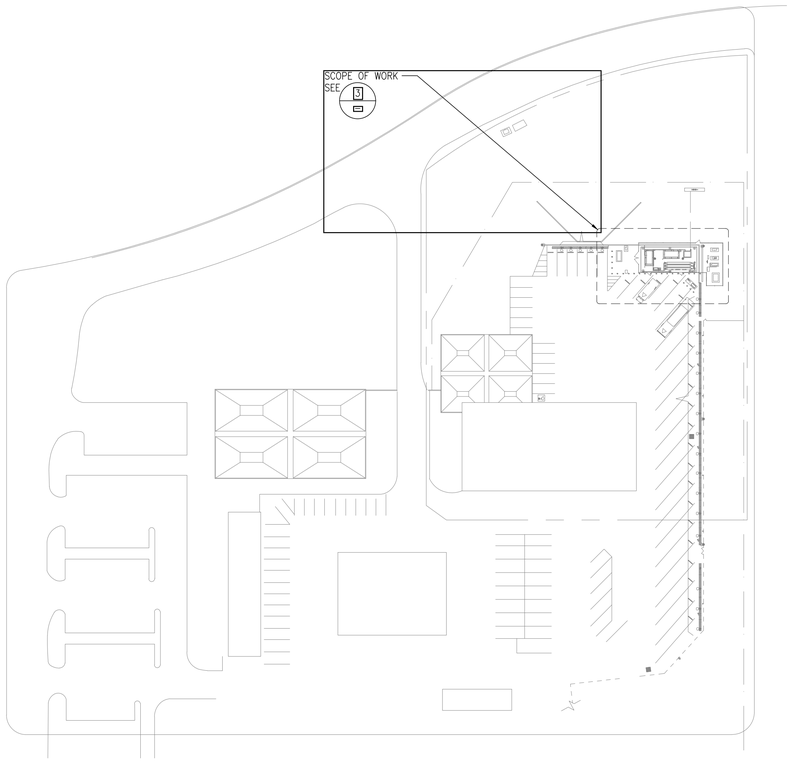
CONTRACTOR TO PROVIDE THE FOLLOWING SPECIAL INSPECTION:

- CERTIFICATION IS REQ'D FOR STRUCTURAL STEEL, REINF. STEEL, CONCRETE MIXES, GROUTS AND ALL OTHER MATERIALS AND FABRICATIONS.
- CONTINUOUS SPECIAL INSPECTION AS DEFINED BY CBC 13 [1702]. REFER TO FOLLOWING TABLES FOR VERIFICATION & INSPECTION REQUIREMENTS FOR DIFFERENT CONSTRUCTION TYPES:

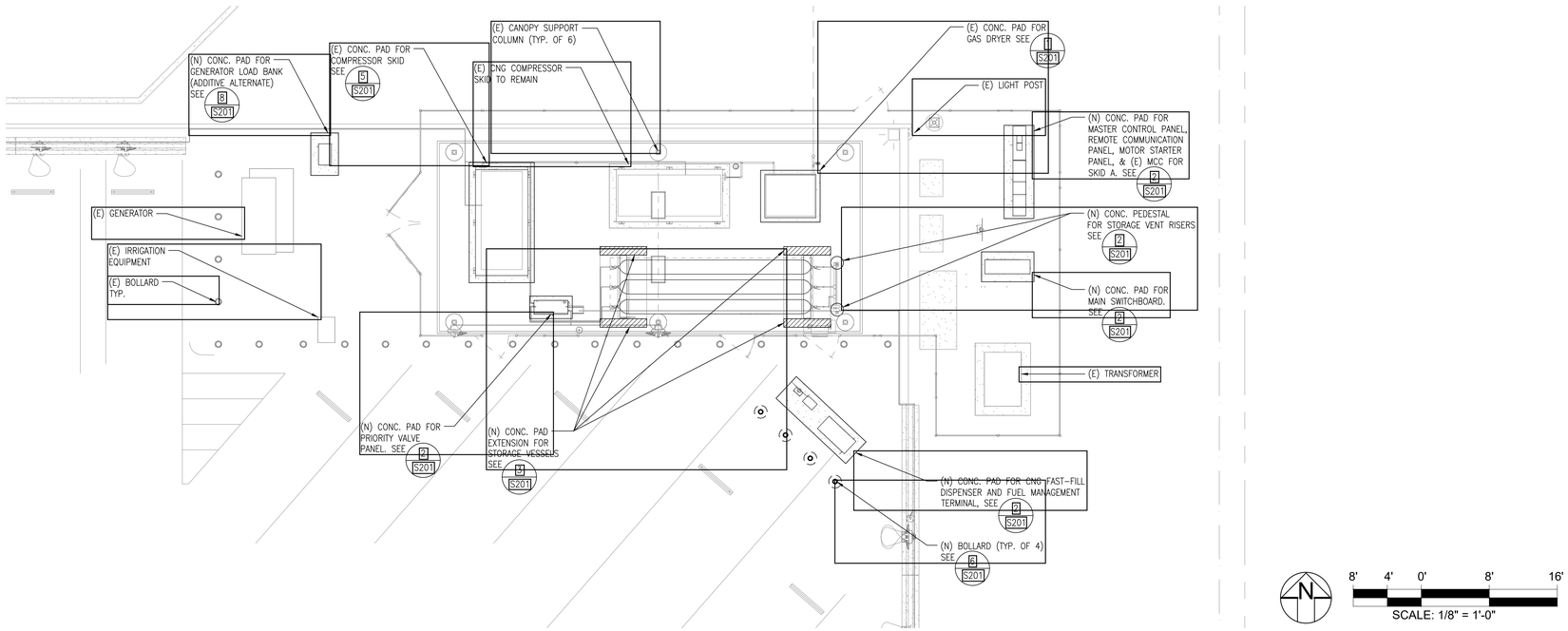
VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION

VERIFICATION & INSPECTION	CONTINOUS	PERIODIC	REFERENCE STANDARD	IBC REFERENCE
1. INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT	—	X	ACI 318: 3.5, 7.1-7.7	1910.4
2. INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1705.2.2, ITEM 2B	—	—	AWS D1.4 ACI 318: 3.5.2	—
3. INSPECTION OF BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED	X	—	ACI 318: 8.1.3, 21.2.8	1911.5,1912.1
4. INSPECTION OF ANCHORS INSTALLED IN HARDENED CONCRETE	—	X	ACI 318: 3.8.6, 8.1.3, 21.2.8	1909.1
5. VERIFYING USE OF REQUIRED DESIGN MIX	—	X	ACI 318: CH. 4, 5.2-5.4	1904.2.2, 1913.2, 1913.3
6. AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMINS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X	—	ASTM C 172 ASTM C 31 ACI 318:5.6,5.8	1913.10
7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	—	ACI 318: 5.9,5.10	1913.6, 1913.7, 1913.8
8. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	—	X	ACI 318: 5.11-5.13	1913.9
9. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED	—	X	ACI 318: 6.1.1	—
10. EPOXY BOLT INSTALLATION	X	—	4.3 ESR 2322	1704.4,1704.15

1 GENERAL NOTES



2 KEY PLAN
SCALE: 1/64"=1'-0"



3 CNG EQUIPMENT PLAN
SCALE: ⅛"=1'-0"

No	Revision Description	Date
2	ISSUED FOR BID	08/19/20
1	ISSUED FOR PLAN CHECK #1	02/24/20

Simi Valley Transit
CNG FUELING SYSTEM UPGRADE
TRANSIT MAINTENANCE
490 WEST LOS ANGELES AVENUE
SIMI VALLEY, CA 93065

Client: Simi Valley Transit

Sub Consultants: RSE ASSOCIATES INC.
RSE ASSOCIATES, INC.
700 S. FLOWER STREET
LOS ANGELES, CA 90017
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Seal: REGISTERED PROFESSIONAL ENGINEER, CIVIL, STRUCTURAL, STATE OF CALIFORNIA

Sheet Title: GENERAL NOTES, KEY PLAN, & STRUCTURAL PLAN

Designer: RK
Drawn: RK
Checker: Checked
Approver: Approved
Issue Date: 04/09/19
Project No: FS-0978
Scale: AS NOTED
Sheet No: S-101
Project Status: 2020-0705

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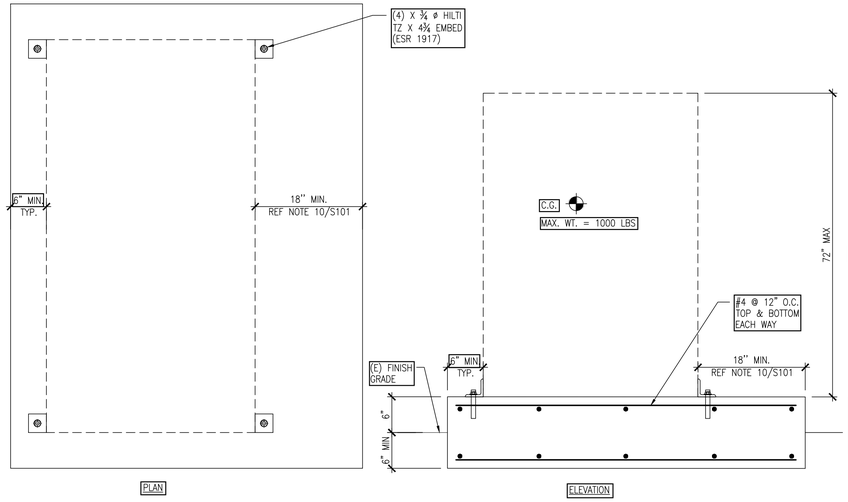
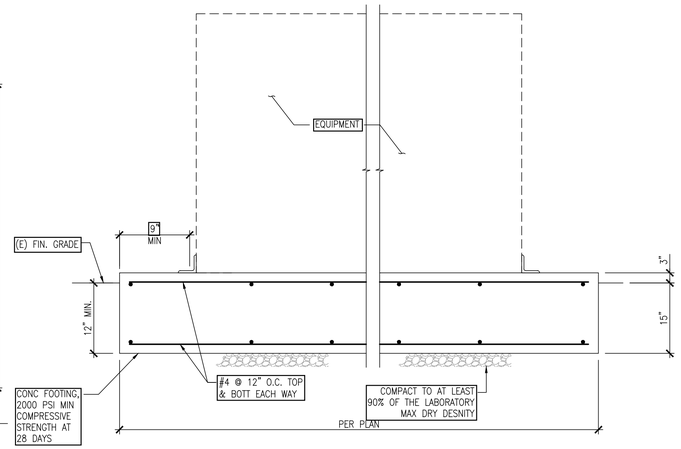
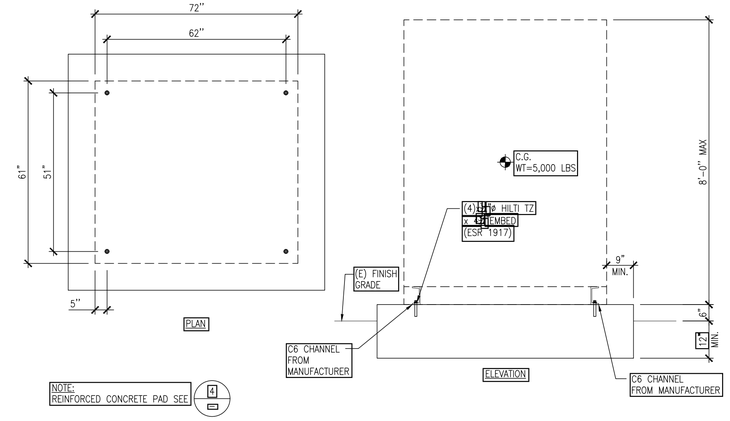


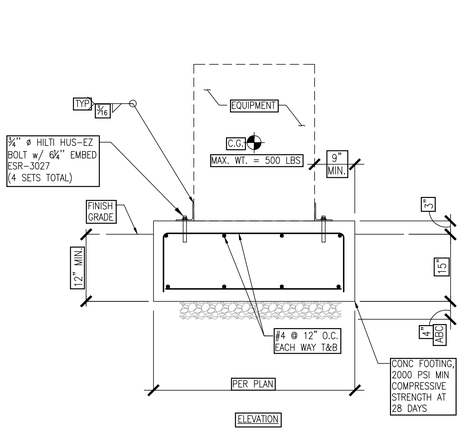
7 CONCRETE PAD FOR ELECTRONICAL PANEL & CNG DEFUELING STATION

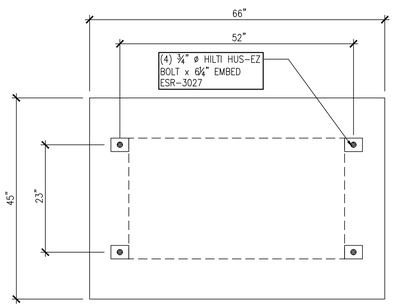


4 FOUNDATION SECTION



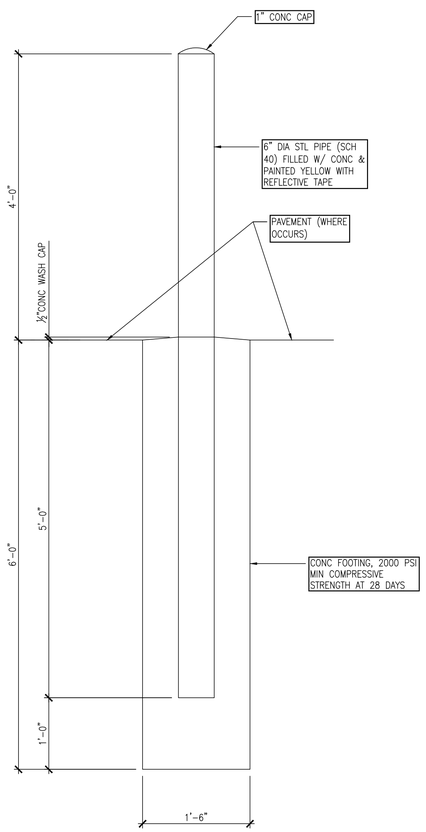
1 NATURAL GAS DRYER ANCHORAGE DETAIL



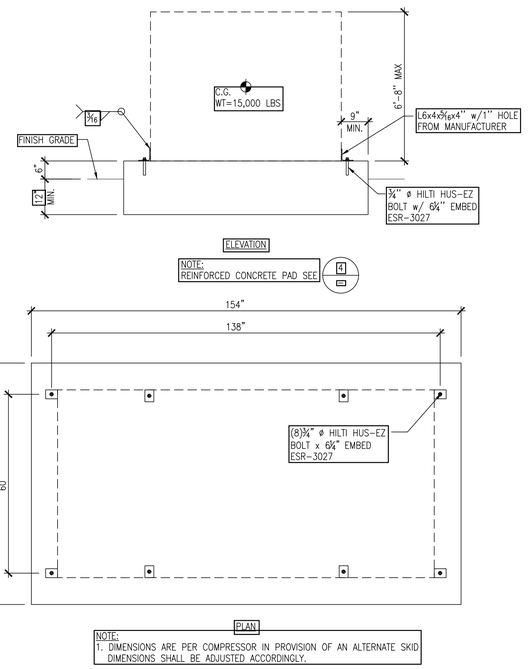


NOTE:
1. DIMENSIONS ARE PER ASCO POWER TECHNOLOGIES PERMANENT LOAD BANK MODEL 4100 IN PROVISION OF AN ALTERNATE EQUIPMENT DIMENSIONS SHALL BE ADJUSTED ACCORDINGLY.

8 GENERATOR LOAD BANK ANCHORAGE DETAIL

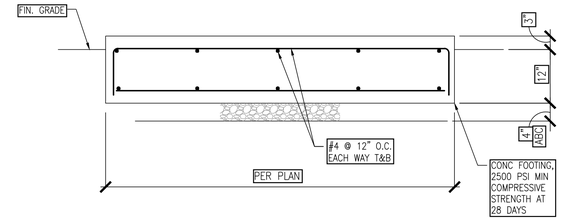


6 6" DIA BOLLARD

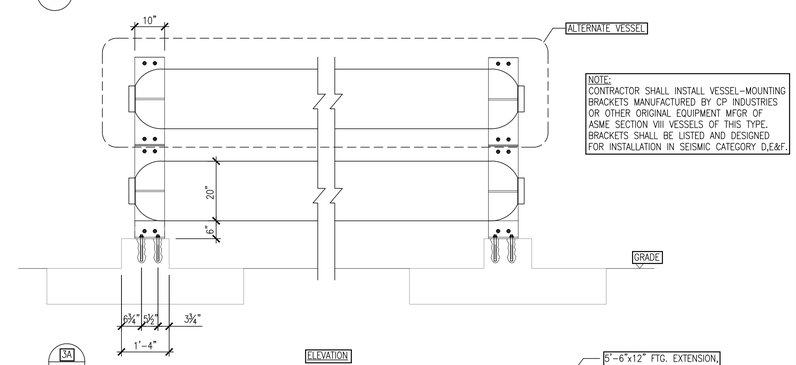


NOTE:
1. DIMENSIONS ARE PER COMPRESSOR IN PROVISION OF AN ALTERNATE SKID DIMENSIONS SHALL BE ADJUSTED ACCORDINGLY.

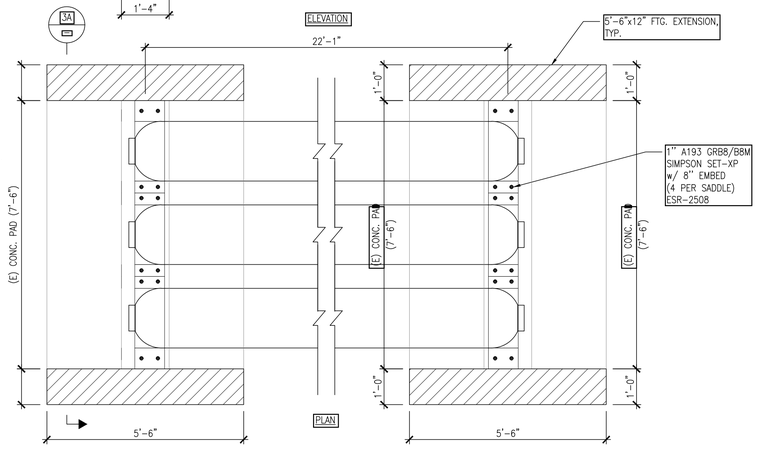
5 (E) COMPRESSOR SKIDS ANCHORAGE DETAIL



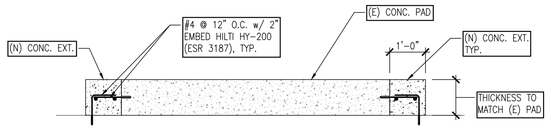
2 CONCRETE PAD



NOTE:
CONTRACTOR SHALL INSTALL VESSEL-MOUNTING BRACKETS MANUFACTURED BY CP INDUSTRIES OR OTHER ORIGINAL EQUIPMENT MFGR OF ASME SECTION VIII VESSELS OF THIS TYPE. BRACKETS SHALL BE LISTED AND DESIGNED FOR INSTALLATION IN SEISMIC CATEGORY D,E&F.



3 STORAGE VESSEL ANCHORAGE DETAIL



3A STORAGE VESSEL ANCHORAGE DETAIL

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Sub Consultants: RSE ASSOCIATES, INC.
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Seal

Sheet Title: STRUCTURAL DETAILS

Designer Designed	RK	Project No	FS-0978
Drawn		Scale	AS NOTED
Checker Checked		Sheet No	S201
Approver Approved			2020-0706
Issue Date	04/09/19	Project Status	

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