



SAN BERNARDINO COUNTY

DEPARTMENT OF FLEET MANAGEMENT / DEPARTMENT OF TRANSPORTATION & FLOOD CONTROL

FUEL TANK INFRASTRUCTURE – PHASE IV

80311 TRONA ROAD
TRONA, CALIFORNIA

PROJECT # 10.10.1195

COUNTY APPROVED PLANS FOR 101 PAGES
WALL-2023-00129-ONLY



--- REVIEWED ---
This review is intended only to verify conformity to the 2022 edition of the California Building Standards. It does not relieve Contractor and Applicant of responsibility for requirements of Project drawings and specifications. No responsibility is assumed for fabrication of construction techniques, correctness of quantities or dimensions, or coordination of work with other trades. Omissions & Errors in documents shall not be valid and all codes and laws must be complied with.

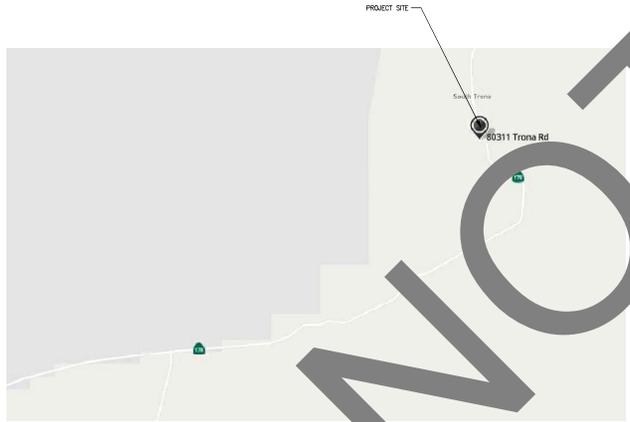
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SAN BERNARDINO COUNTY
DEPARTMENT OF FLEET
MANAGEMENT /
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL
80311 TRONA ROAD
TRONA, CALIFORNIA
Project Name: Fuel Tank Infrastructure
Phase IV
PROJECT NUMBER: 10.10.1195
CIP NUMBER: 20.008
BUILDING (CAMA) NUMBER: N/A
APN: 08464002
PROJECT AND FACILITIES MANAGEMENT
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STATE SEAL:
CONSULTANT:
COUNTY PERMIT

VICINITY MAP



PROJECT LOCATION



NOTICE TO CONTRACTOR FOR COUNTY PERMITS

- COUNTY PERMIT
- AN ENCROACHMENT PERMIT FROM THE COUNTY OF SAN BERNARDINO WILL BE REQUIRED FOR WORK IN COUNTY RIGHT-OF-WAY.
 - CONTRACTOR SHALL PAY ANY FEES.
 - COUNTY SHALL BE LISTED AS CO-APPLICANT. CONTRACTOR SHALL SUBMIT PROOF OF INSURANCE AND PAYMENT OF PERMIT FEE.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ENCROACHMENT PERMIT IN FORCE, TRACKING EXPIRATION DATES, AND APPLYING FOR PERMIT RENEWALS AND EXTENSIONS AS NEEDED.
- STATE OF SAN BERNARDINO FIRE DEPARTMENT PERMIT
- A PERMIT FROM COUNTY OF SAN BERNARDINO FIRE DEPARTMENT WILL BE REQUIRED FOR WORK RELATED TO THE INSTALLATION OF FUEL TANKS.
 - CONTRACTOR SHALL PAY ANY FEES.
 - COUNTY SHALL BE LISTED CO-APPLICANT. CONTRACTOR SHALL SUBMIT PROOF OF INSURANCE, AND PAYMENT OF PERMIT FEE.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING PERMIT IN FORCE, TRACKING EXPIRATION DATES, AND APPLYING FOR PERMIT RENEWALS AND EXTENSIONS AS NEEDED.

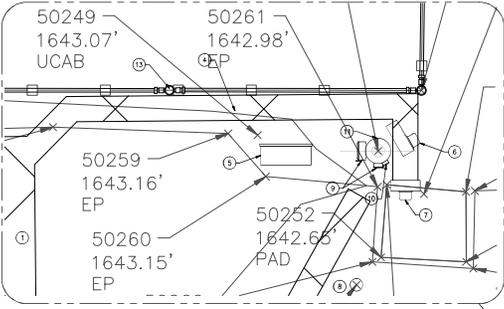
STATE SEAL:
REVISIONS Δ PRINTS ISSUED
NO. DATE DESCRIPTION
Δ 01 11/14/23 PC CORRECTIONS
Δ 02 12/05/23 PC CORRECTIONS

SCOPE OF WORK

- CONSTRUCT A NEW 100 FT. x 100 FT. FUELING STATION ON TWO (2) 6 INCHES LIFTS OF NATIVE SOIL COMPLETED TO 50% RELATIVE DENSITY IN COMPLIANCE WITH ASTM D1557 AND CALIFORNIA TEST METHOD #16 AND CONCRETE CURBS AROUND THE FUELING STATION TO PROVIDE PROPER STORM WATER DRAINAGE AND FLOODING PREVENTION.
- CONSTRUCT NEW CLASS 2 ROAD BASE AND ASPHALT CONCRETE DRIVEWAY FROM EXISTING COUNTY ROAD.
- CONSTRUCT NEW CLASS 2 ROAD BASE, ASPHALT CONCRETE DRIVEWAY, CONCRETE CONTAINMENT WALL WITH 2% SLOPE, PERIMETER CURB, AND TWO (2) BALL-VALVED DRAINAGE OUTLETS AT THE DIAGONALLY OPPOSITE CORNER POINTS WITHIN THE NEW 100 FT. x 100 FT. FENCED AREA (TOPOGRAPHY AND LEVEL).
- CONSTRUCT A CONCRETE GEOLAND PAD AT THE FUELING/OPERATING AREA ADJACENT TO TWO (2) 16,000 GALLON FUEL TANKS WITH GALVANIZED STEEL BULK HEADERS, SAFETY CURBS, PLATFORMS, AND RAILINGS.
- CONSTRUCT CONCRETE CURBS AND 10 FT. HIGH CHAIN-LINK FENCE TOPPED WITH 3 FT. HIGH BARRIER AROUND THE FUELING STATION.
- INSTALL A NEW 16 FT. H x 30 FT. W MOTORIZED GATE, SECURITY KEYPAD, LOOP DETECTORS, AND WIRING FOR GATE ACCESS, SAFETY, AND SECURITY.
- INSTALL A 10 FT. HIGH x 16 FT. WIDE MANUAL DOUBLE-SWING GATE WITH LOCK HARDWARE AT THE REAR PORTION OF THE FENCED AREA.
- INSTALL A 10 FT. HIGH x 16 FT. WIDE PERSON GATE WITH LOCKABLE LATCH IN THE EXISTING CHAIN-LINK FENCE FOR PERSONNEL ACCESS FROM THE TRANSPORTATION YARD INTO THE FUELING STATION.
- INSTALL A NEW ABOVE GENERATOR IN ACoustic ENCLOSURE WITH DUAL 200A CIRCUIT BREAKERS, AUTOMATIC TRANSFER SWITCHES, DISCONNECT SWITCHES, CONDUITS, AND WIRING NEAR EXISTING SCE POWER POLE AND METER PANELS.
- INSTALL UNDERGROUND CONDUITS FROM EXISTING METER PANEL TO NEW UNDERGROUND PULL BOX AND FUELING STATION PANEL AND FROM THE PULL BOX TO ALL PANELS, DEVICES, MEDIUM, AND ELECTRICAL UNITS, ETC. INSIDE NEW FENCED AREA. COORDINATE WITH MANUFACTURERS FOR REQUIREMENTS.
- INSTALL ILLUMINATED "COUNTY FUEL SITE" SIGN, LED POLE LIGHTS, LIGHTING CONTROLS, AND WIRING.
- INSTALL FUEL, FILLING, PUMPING, DISPENSING, AND MANAGEMENT SYSTEMS, FUEL LEAK AND LEVEL MONITORING SYSTEM, SECURITY ACCESS CONTROL, SNAKE SYSTEM, AND WIRING. COORDINATE WITH SAN BERNARDINO COUNTY AND MANUFACTURERS FOR REQUIREMENTS.
- INSTALL NEW BOLLARDS AROUND THE FUEL TANK CONCRETE CONTAINMENT AREA AND GENERATOR AREA.
- CONSTRUCT A 65 FT. x 35 FT. x 3 FT. DEEP GEO-TEXTILE FABRIC LINED RETENTION BASIN.
- CONSTRUCTION AND INSTALLATION SHALL COMPLY WITH COUNTY, CALIFORNIA, AND FEDERAL REGULATIONS AND SHALL BE PERMITTED, INSPECTED, AND CERTIFIED BY AUTHORITIES-HAVING-JURISDICTION (AHJ).

SHEET TITLE:
TITLE SHEET, DRAWING INDEX, SCOPE OF WORK, PROJECT LOCATION AND VICINITY MAP

BROWN BY: TWP DATE: 12/05/23
CHECKED BY: DV DATE: 12/05/23
PROJECT NO.: 1-22-9
DRAWING NUMBER:
T001



SAN BERNARDINO COUNTY
DEPARTMENT OF FLEET
MANAGEMENT /
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL

80311 TRONA ROAD
TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure - Phase IV

PROJECT NUMBER: 10 00 1195
 CIP NUMBER: 20 000
 BUILDING (CAPAS) NUMBER: N/A
 APN: 06400022

PROJECT AND FACILITIES MANAGEMENT DEPARTMENT
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CONSULTANT:

STATE SEAL:

REVISIONS	DATE	DESCRIPTION
1	11/14/23	PC CORRECTIONS
2	12/05/23	PC CORRECTIONS

SHEET TITLE:
DEMOLITION, EXCAVATION, TRENCHING, COMPACTION, AND GRADING PLAN

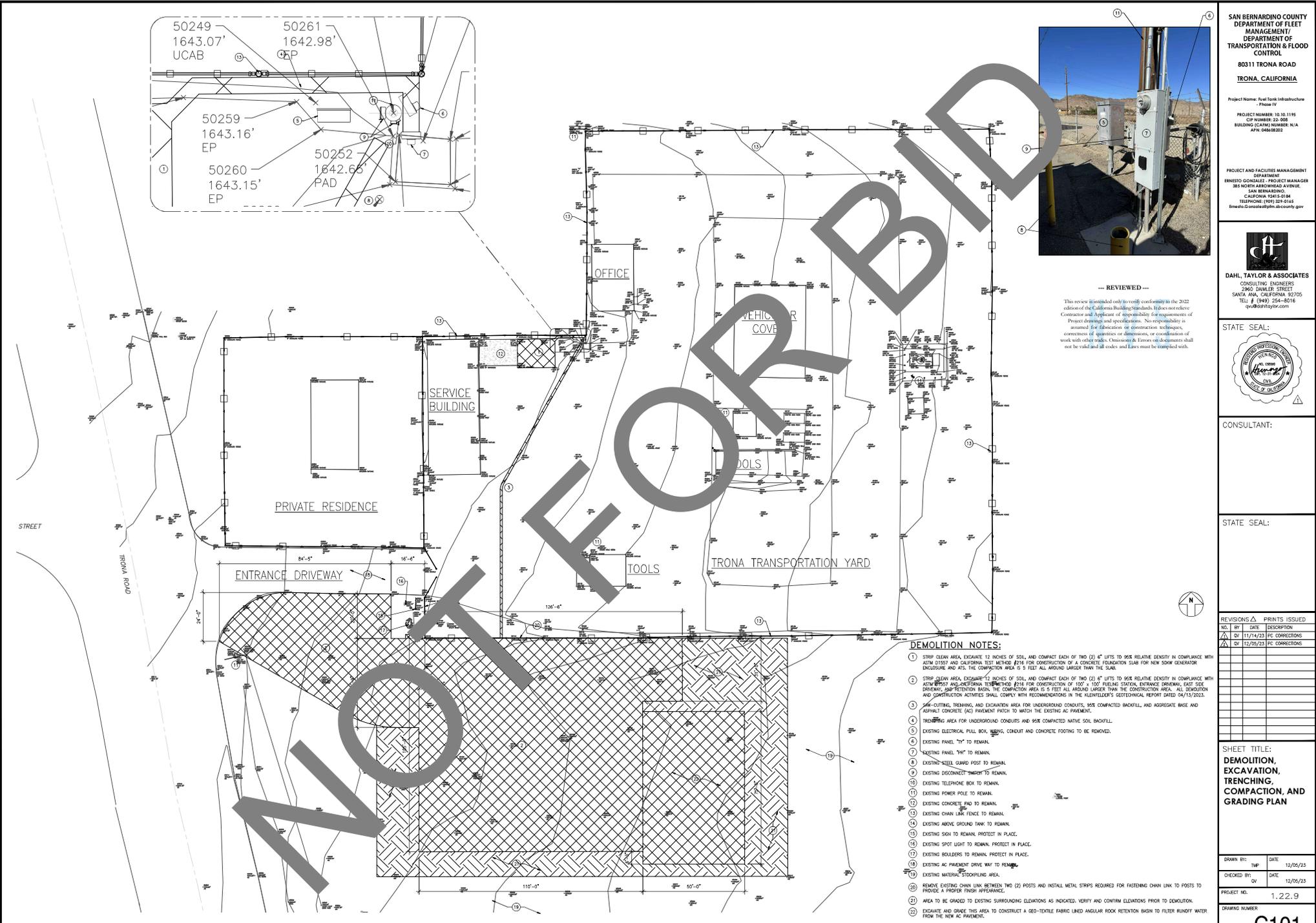
DRAWN BY: THF DATE: 12/05/23
 CHECKED BY: JLV DATE: 12/05/23

PROJECT NO: 1.22.9
 DRAWING NUMBER:

C101

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

DEMOLITION, EXCAVATION, TRENCHING, COMPACTION, AND GRADING PLAN



--- REVIEWED ---

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DEMOLITION NOTES:

- 1 STRIP CLEAN AREA, EXCAVATE 12 INCHES OF SOIL, AND COMPACT EACH OF TWO (2) 4" LOTS TO 95% RELATIVE DENSITY IN COMPLIANCE WITH ASTM D1557 AND CALIFORNIA TEST METHOD #216 FOR CONSTRUCTION OF A CONCRETE FOUNDATION SLAB FOR NEW SOIL GENERATOR ENCLOSURE AND FITS THE CONSTRUCTION AREA TO 5 FEET ALL AROUND LARGER THAN THE SLAB.
- 2 STRIP CLEAN AREA, EXCAVATE 12 INCHES OF SOIL, AND COMPACT EACH OF TWO (2) 4" LOTS TO 95% RELATIVE DENSITY IN COMPLIANCE WITH ASTM D1557 AND CALIFORNIA TEST METHOD #216 FOR CONSTRUCTION OF 100' X 100' PAVING STATION, ENTRANCE DRIVEWAY, EAST SIDE DRIVEWAY, AND INTERSECTION FROM THE CONSTRUCTION AREA TO 5 FEET ALL AROUND LARGER THAN THE CONSTRUCTION AREA. ALL DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL COMPLY WITH RECOMMENDATIONS IN THE CLIENT'S GEOTECHNICAL REPORT DATED 04/13/2023.
- 3 SAW-CUTTING, TRENCHING, AND EXCAVATION AREA FOR UNDERGROUND CONDUITS, 90% COMPACTED BACKFILL, AND AGGREGATE BASE AND ASPHALT CONCRETE (AC) PAVEMENT PATCH TO MATCH THE EXISTING AC PAVEMENT.
- 4 TRENCHING AREA FOR UNDERGROUND CONDUITS AND 95% COMPACTED NATIVE SOIL BACKFILL.
- 5 EXISTING ELECTRICAL PULL BOX, CONDUIT AND CONCRETE FOOTING TO BE REMOVED.
- 6 EXISTING PANEL "TY" TO REMAIN.
- 7 EXISTING PANEL "TH" TO REMAIN.
- 8 EXISTING STEEL GUARD POST TO REMAIN.
- 9 EXISTING DISCONNECT SWITCH TO REMAIN.
- 10 EXISTING TELEPHONE BOX TO REMAIN.
- 11 EXISTING POWER POLE TO REMAIN.
- 12 EXISTING CONCRETE PAD TO REMAIN.
- 13 EXISTING CHAIN LINK FENCE TO REMAIN.
- 14 EXISTING ABOVE GROUND TANK TO REMAIN.
- 15 EXISTING SIGN TO REMAIN, PROTECT IN PLACE.
- 16 EXISTING SPOT LIGHT TO REMAIN, PROTECT IN PLACE.
- 17 EXISTING BOLLARDS TO REMAIN, PROTECT IN PLACE.
- 18 EXISTING MATERIAL STOCKPILING AREA.
- 19 REMOVE EXISTING CHAIN LINK BETWEEN TWO (2) POSTS AND INSTALL METAL STRIPS REQUIRED FOR FASTENING CHAIN LINK TO POSTS TO PROVIDE A PROPER FINISH APPEARANCE.
- 20 AREA TO BE GRADED TO EXISTING SURROUNDING ELEVATIONS AS INDICATED, VERIFY AND CONFIRM ELEVATIONS PRIOR TO DEMOLITION.
- 21 EXCAVATE AND GRADE THIS AREA TO CONSTRUCT A GEO-TEXTILE FABRIC LINED ANGULAR ROCK RETENTION BENCH TO FILTER RUNOFF WATER FROM THE NEW AC PAVEMENT.



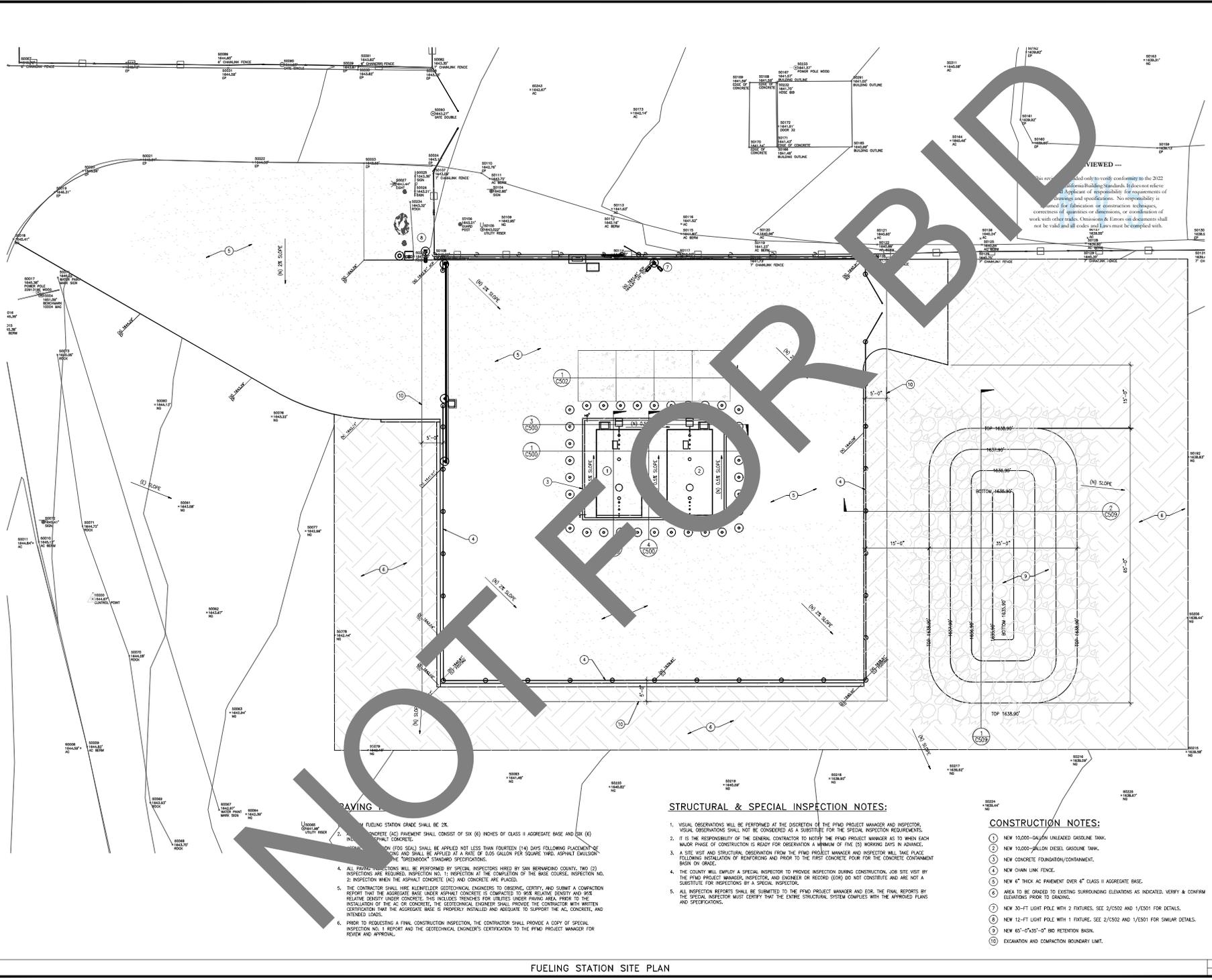
CONSULTANT:

STATE SEAL:

REVISONS	DATE	DESCRIPTION	PRINTS ISSUED
1	11/14/23	PC CORRECTIONS	
2	12/05/23	PC CORRECTIONS	

SHEET TITLE:
**FUELING STATION
 SITE PLAN**

DRAWN BY:	TWP	DATE:	12/05/23
CHECKED BY:	DN	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	C102		



STRUCTURAL & SPECIAL INSPECTION NOTES:

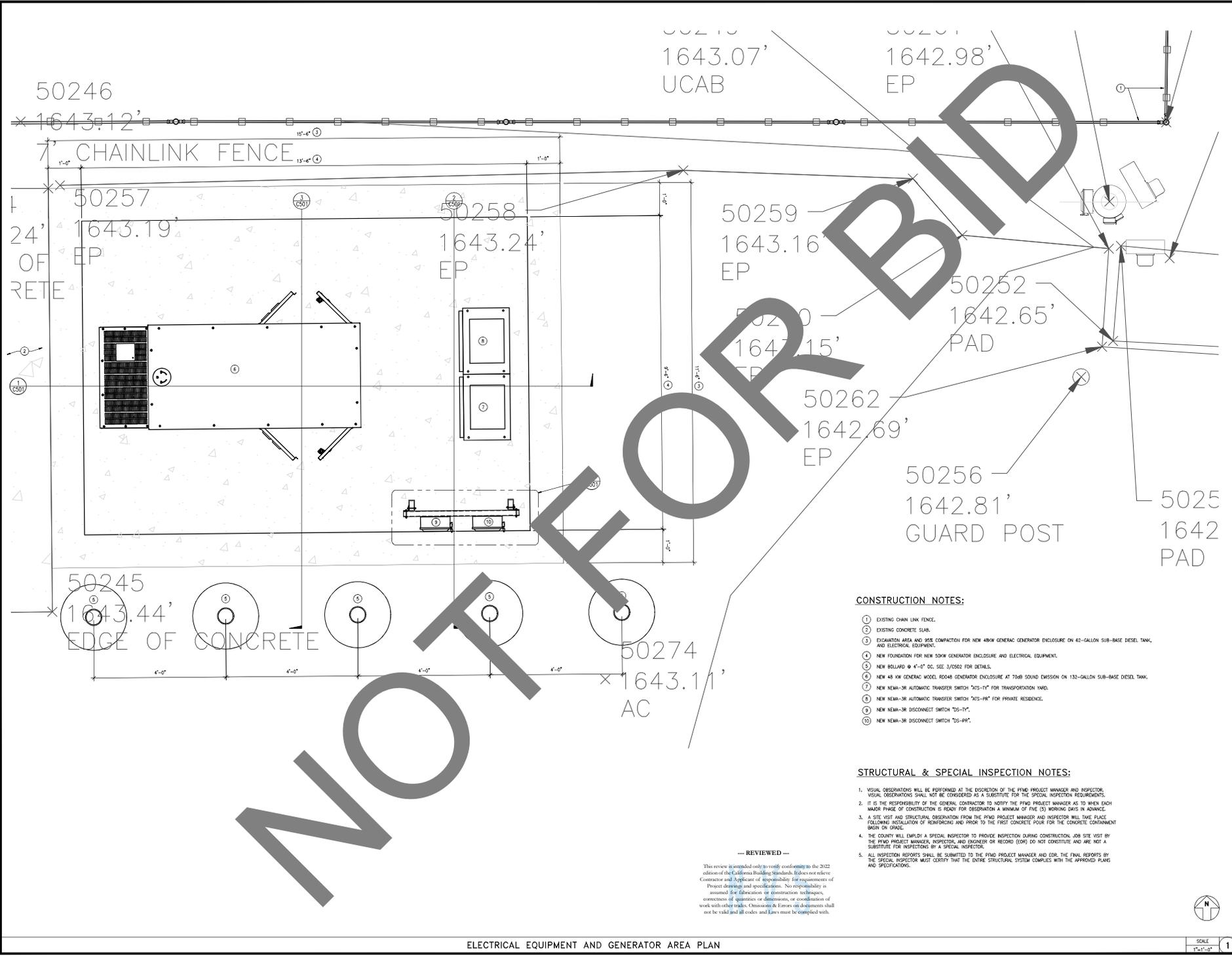
1. VISUAL OBSERVATIONS WILL BE PERFORMED AT THE DISCRETION OF THE FPMO PROJECT MANAGER AND INSPECTOR. VISUAL OBSERVATIONS SHALL NOT BE CONSIDERED AS A SUBSTITUTE FOR THE SPECIAL INSPECTION REQUIREMENTS.
2. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY THE FPMO PROJECT MANAGER AS TO WHEN EACH MAJOR PHASE OF CONSTRUCTION IS READY FOR OBSERVATION A MINIMUM OF FIVE (5) WORKING DAYS IN ADVANCE.
3. A SITE TEST AND STRUCTURE OBSERVATION FROM THE FPMO PROJECT MANAGER AND INSPECTOR WILL TAKE PLACE FOLLOWING INSTALLATION OF REINFORCING AND PRIOR TO THE FIRST CONCRETE POUR FOR THE CONCRETE CONTAINMENT BASKIN ON GRADE.
4. THE COUNTY WILL EMPLOY A SPECIAL INSPECTOR TO PROVIDE INSPECTION DURING CONSTRUCTION, JOB SITE VISIT BY THE FPMO PROJECT MANAGER, INSPECTOR, AND ENGINEER OR RECORD (EOR) DO NOT CONSTITUTE AND ARE NOT A SUBSTITUTE FOR INSPECTIONS BY A SPECIAL INSPECTOR.
5. ALL INSPECTION REPORTS SHALL BE SUBMITTED TO THE FPMO PROJECT MANAGER AND EOR. THE FINAL REPORTS BY THE SPECIAL INSPECTOR MUST CERTIFY THAT THE ENTIRE STRUCTURAL SYSTEM COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS.

CONSTRUCTION NOTES:

1. NEW 10,000-GALLON UNLINED GASOLINE TANK.
2. NEW 10,000-GALLON DIESEL GASOLINE TANK.
3. NEW CONCRETE FOUNDATION/CONTAINMENT.
4. NEW CHAIN LINK FENCE.
5. NEW 6" THICK AC PAVEMENT OVER 4" CLASS II AGGREGATE BASE.
6. AREA TO BE GRADED TO EXISTING SURROUNDING ELEVATIONS AS INDICATED. VERIFY & CORRECT ELEVATIONS PRIOR TO GRADING.
7. NEW 30'-FT LIGHT POLE WITH 2 FIXTURES. SEE 2/C502 AND 1/E501 FOR DETAILS.
8. NEW 60'-0"X35'-0" 800 RETENTION BASIN.
9. NEW 60'-0"X35'-0" 800 RETENTION BASIN.
10. EXCAVATION AND COMPACTION BOUNDARY LIMIT.

1. FUELING STATION GRADE SHALL BE 2%.
2. CONCRETE (AC) PAVEMENT SHALL CONSIST OF SIX (6) INCHES OF CLASS II AGGREGATE BASE AND SIX (6) INCHES OF CLASS II AGGREGATE CONCRETE.
3. ASPHALT EMULSION (FOG SEAL) SHALL BE APPLIED NOT LESS THAN FOURTEEN (14) DAYS FOLLOWING PLACEMENT OF PAVEMENT AND SHALL BE APPLIED AT A RATE OF 500 GALLON PER SQUARE YARD. ASPHALT EMULSION SHALL MEET THE "GREENBOOK" STANDARD SPECIFICATIONS.
4. ALL PAVING OPERATIONS WILL BE PERFORMED BY SPECIAL INSPECTORS HIRED BY SAN BERNARDINO COUNTY. TWO (2) INSPECTIONS ARE REQUIRED. INSPECTION NO. 1: INSPECTION AT THE COMPLETION OF THE BASE COURSE. INSPECTION NO. 2: INSPECTION WHEN THE ASPHALT CONCRETE (AC) AND CONCRETE ARE PLACED.
5. THE CONTRACTOR SHALL HIRE KEMPELDER GEOTECHNICAL ENGINEERS TO OBSERVE, CERTIFY, AND SUBMIT A COMPARISON REPORT THAT THE AGGREGATE BASE UNDER ASPHALT CONCRETE IS COMPACTED TO 98% RELATIVE DENSITY AND 98% RELATIVE DENSITY UNDER CONCRETE. THIS INCLUDES TRENCHES FOR UTILITIES UNDER PAVING AREA. PRIOR TO THE INSTALLATION OF THE AC OR CONCRETE, THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CONTRACTOR WITH WRITTEN CERTIFICATION THAT THE AGGREGATE BASE IS PROPERLY INSTALLED AND ADEQUATE TO SUPPORT THE AC, CONCRETE, AND INTERNEED LOADS.
6. PRIOR TO REQUESTING A FINAL CONSTRUCTION INSPECTION, THE CONTRACTOR SHALL PROVIDE A COPY OF SPECIAL INSPECTION NO. 1 REPORT AND THE GEOTECHNICAL ENGINEER'S CERTIFICATION TO THE FPMO PROJECT MANAGER FOR REVIEW AND APPROVAL.

FUELING STATION SITE PLAN



SAN BERNARDINO COUNTY
DEPARTMENT OF FLEET
MANAGEMENT/
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL
80311 TRONA ROAD
TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure
Phase IV
PROJECT NUMBER: 16 00 1195
CITY NUMBER: 20 000
BUILDING (CPM) NUMBER: N/A
APP: 08/16/2022

PROJECT AND FACILITIES MANAGEMENT
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CONSULTANT:

STATE SEAL:

REV.	BY	DATE	DESCRIPTION
1	ZV	11/14/23	PC CORRECTIONS
2	ZV	12/05/23	PC CORRECTIONS

SHEET TITLE:
**ELECTRICAL
EQUIPMENT AND
GENERATOR AREA
PLAN**

DRAWN BY: TWP DATE: 12/05/23
CHECKED BY: ZV DATE: 12/05/23
PROJECT NO: 1.22.9
DRAWING NUMBER: C103

CONSTRUCTION NOTES:

- ① EXISTING CHAIN LINK FENCE.
- ② EXISTING CONCRETE SLAB.
- ③ EXCAVATION AREA AND SOIL COMPACTION FOR NEW 480V GENERAC GENERATOR ENCLOSURE ON 60-GALLON SUB-BASE DIESEL TANK, AND ELECTRICAL EQUIPMENT.
- ④ NEW FOUNDATION FOR NEW 500K GENERATOR ENCLOSURE AND ELECTRICAL EQUIPMENT.
- ⑤ NEW REINOLD @ 4"-0" O.C. SEE 2/563 FOR DETAILS.
- ⑥ NEW 48 IN GENRAC MODEL 8004R GENERATOR ENCLOSURE AT 70db SOUND EMISSION ON 132-GALLON SUB-BASE DIESEL TANK.
- ⑦ NEW NEMA-3R AUTOMATIC TRANSFER SWITCH "ATS-IT" FOR TRANSPORTATION PAD.
- ⑧ NEW NEMA-3R AUTOMATIC TRANSFER SWITCH "ATS-PR" FOR PRIVATE RESIDENCES.
- ⑨ NEW NEMA-3R DISCONNECT SWITCH "DS-IT".
- ⑩ NEW NEMA-3R DISCONNECT SWITCH "DS-PR".

STRUCTURAL & SPECIAL INSPECTION NOTES:

1. VISUAL OBSERVATIONS WILL BE PERFORMED AT THE DISCRETION OF THE FPMO PROJECT MANAGER AND INSPECTOR. VISUAL OBSERVATIONS SHALL NOT BE CONSIDERED AS A SUBSTITUTE FOR THE SPECIAL INSPECTION REQUIREMENTS.
2. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY THE FPMO PROJECT MANAGER AS TO WHEN EACH MAJOR PHASE OF CONSTRUCTION IS READY FOR OBSERVATION A MINIMUM OF FIVE (5) WORKING DAYS IN ADVANCE.
3. A SITE VISIT AND STRUCTURAL OBSERVATION FROM THE FPMO PROJECT MANAGER AND INSPECTOR WILL TAKE PLACE FOLLOWING INSTALLATION OF REINFORCING AND PRIOR TO THE FIRST CONCRETE POUR FOR THE CONCRETE CONTAINMENT BASIN ON GRADE.
4. THE COUNTY WILL EMPLOY A SPECIAL INSPECTOR TO PROVIDE INSPECTION DURING CONSTRUCTION. JOB SITE VISIT BY THE FPMO PROJECT MANAGER, INSPECTOR, AND ENGINEER OR RECORDS (EOR) DO NOT CONSTITUTE AND ARE NOT A SUBSTITUTE FOR INSPECTIONS BY A SPECIAL INSPECTOR.
5. ALL INSPECTION REPORTS SHALL BE SUBMITTED TO THE FPMO PROJECT MANAGER AND EOR. THE FINAL REPORTS BY THE SPECIAL INSPECTOR MUST CERTIFY THAT THE ENTIRE STRUCTURAL SYSTEM COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS.

--- REVIEWED ---
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ELECTRICAL EQUIPMENT AND GENERATOR AREA PLAN



CONSULTANT:

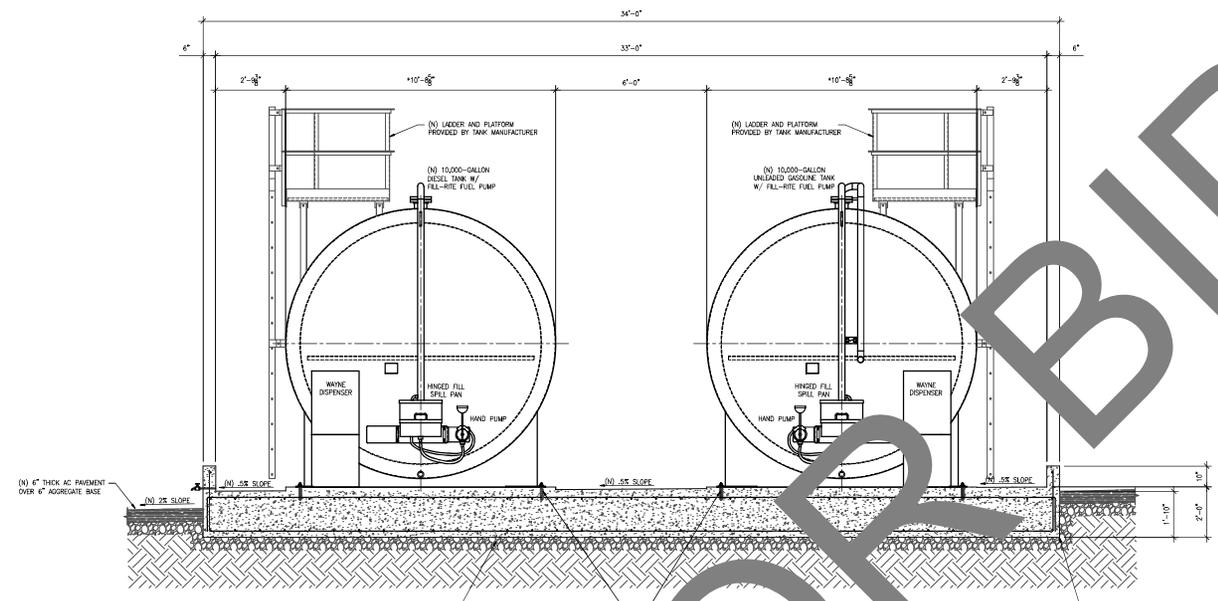
STATE SEAL:

NO.	DATE	DESCRIPTION
1	11/14/23	PC CORRECTIONS
2	12/05/23	PC CORRECTIONS

SHEET TITLE:
SECTIONS OF NEW
TANKS AND
CONCRETE
FOUNDATION

DRAWN BY:	DATE:
TMP	12/05/23
CHECKED BY:	DATE:
DN	12/05/23
PROJECT NO.:	1.22.9
DRAWING NUMBER:	

C500

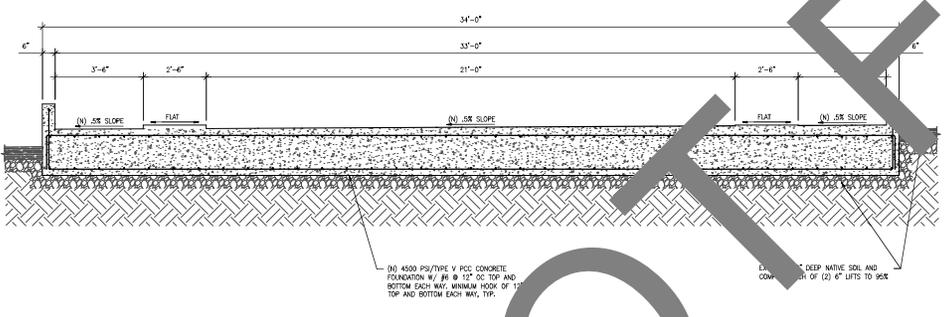


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* CONTRACTOR SHALL COORDINATE WITH MANUFACTURER FOR EXACT TANK DIMENSIONS.

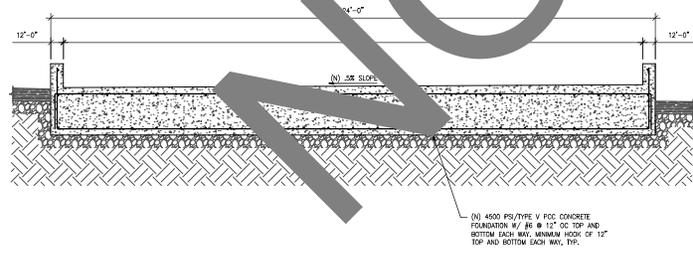
SECTION OF NEW TANKS AND CONCRETE FOUNDATION

SCALE 1/2"=1'-0" 1



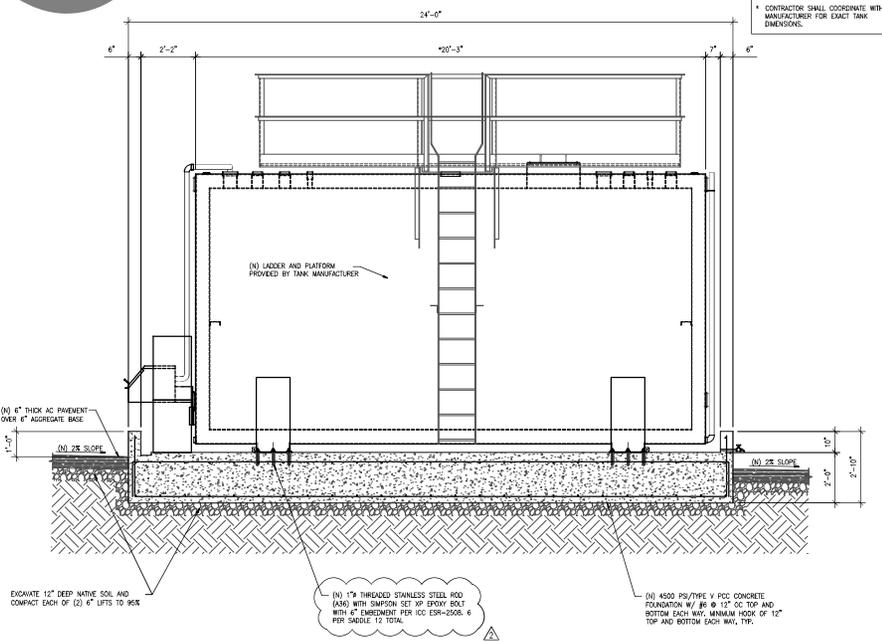
SECTION

SCALE 1/2"=1'-0" 3



SECTION

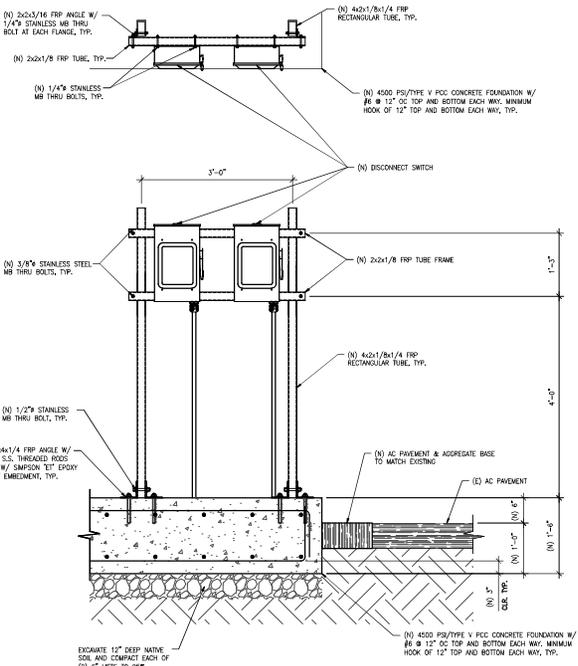
SCALE 1/2"=1'-0" 4



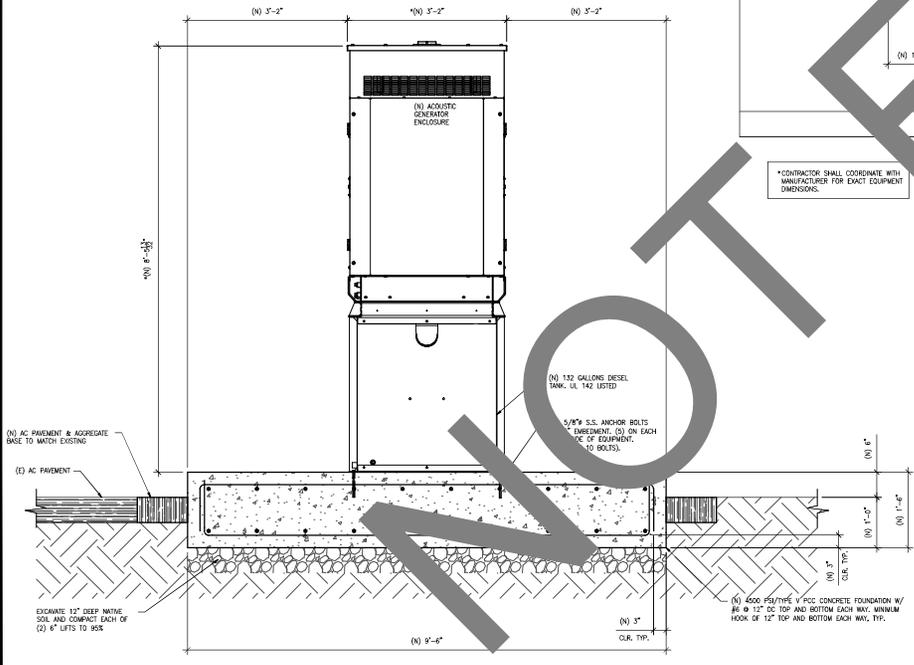
SECTION OF NEW TANKS AND CONCRETE FOUNDATION

SCALE 1/2"=1'-0" 2

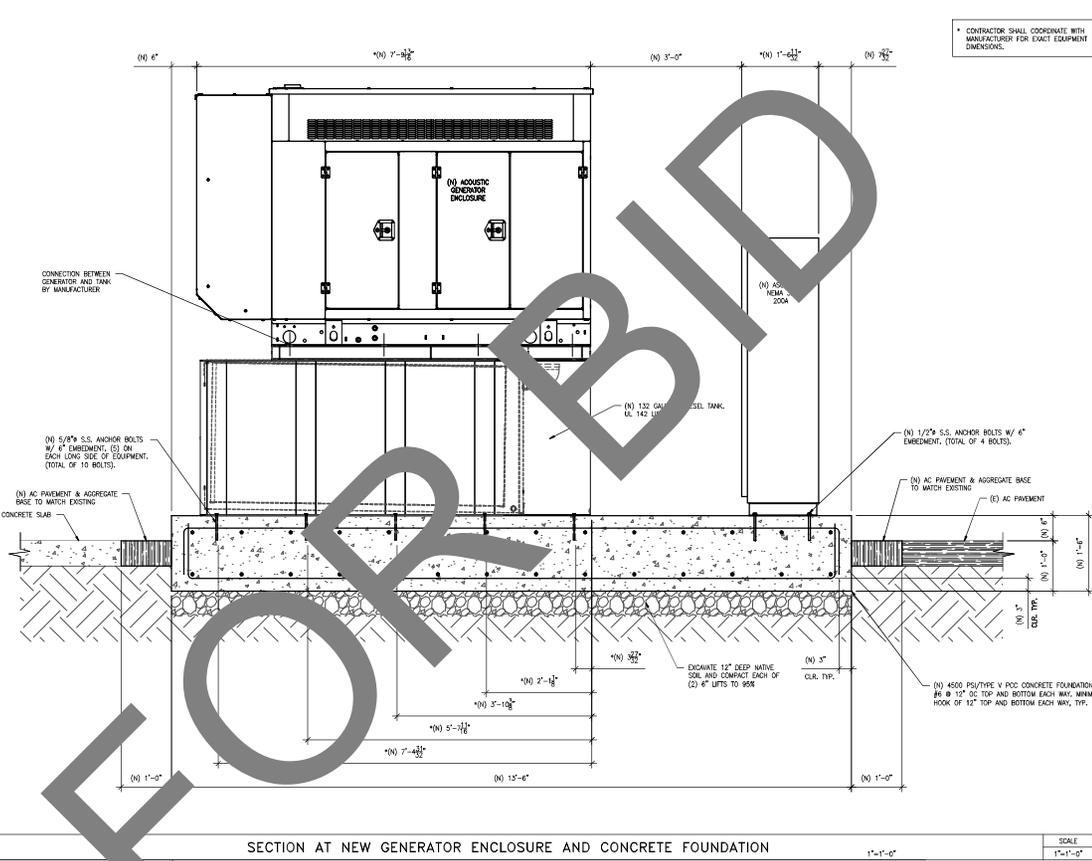
NOT FOR BIDDING



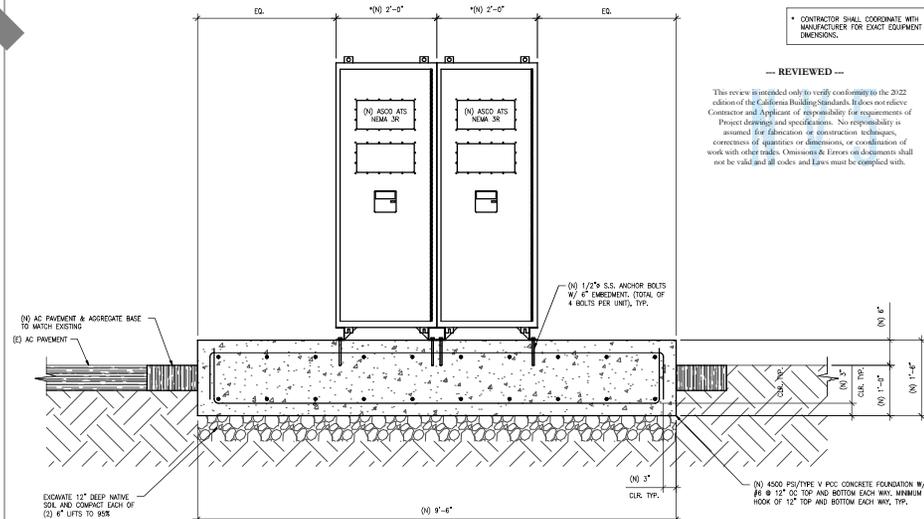
DISCONNECT SWITCH MOUNTING DETAIL SCALE 1"=1'-0" 4



SECTION AT NEW GENERATOR ENCLOSURE AND CONCRETE FOUNDATION SCALE 1"=1'-0" 3



SECTION AT NEW GENERATOR ENCLOSURE AND CONCRETE FOUNDATION SCALE 1"=1'-0" 1



SECTION AT NEW ATS AND CONCRETE FOUNDATION SCALE 1"=1'-0" 2

* CONTRACTOR SHALL COORDINATE WITH MANUFACTURER FOR EXACT EQUIPMENT DIMENSIONS.

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SAN BERNARDINO COUNTY
MANAGEMENT /
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL
80311 TRONA ROAD
TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure
Phase IV
PROJECT NUMBER: 16 00 1195
CIP NUMBER: 25 008
BUILDING (CAPM) NUMBER: N/A
APN: 064-000-002

PROJECT AND FACILITIES MANAGEMENT
DEPARTMENT
ERNESTO GONZALEZ - PROJECT MANAGER
385 NORTH ARROWHEAD AVENUE
SANTA ANA, CALIFORNIA 92705
CALIFORNIA 92415-0144
TELEPHONE: (949) 254-4346
Ernesto.Gonzalez@pdm.acounty.gov



DAHL, TAYLOR & ASSOCIATES
CONSULTING ENGINEERS
2960 DANLIER STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
info@dalhtaylor.com

STATE SEAL:



CONSULTANT:

STATE SEAL:

NO.	REV.	DATE	DESCRIPTION
1	01	11/14/23	PC CORRECTIONS
2	01	12/05/23	PC CORRECTIONS

SHEET TITLE:
DETAILS AND
SECTIONS

BROWN BY:	DATE:
TYP	12/05/23
CHECKED BY:	DATE:
DV	12/05/23

PROJECT NO. 1.22.9
DRAWING NUMBER

C501



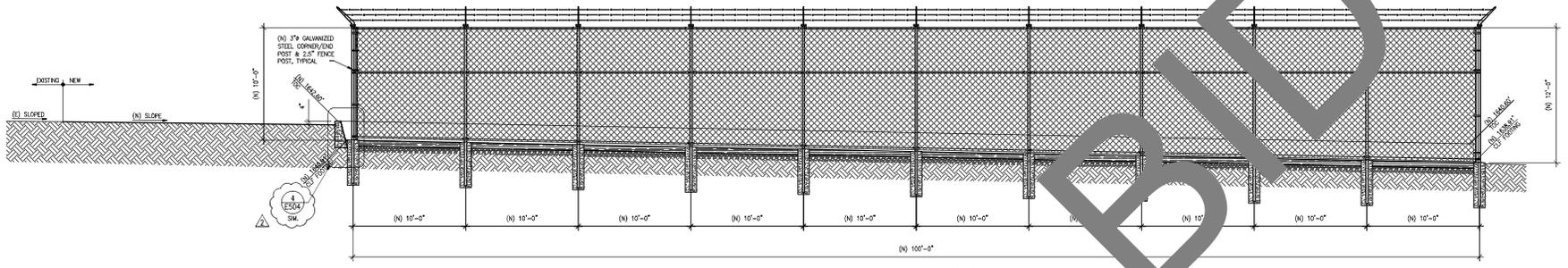
CONSULTANT:

STATE SEAL:

NO.	BY	DATE	DESCRIPTION
1	ZV	11/14/23	PE CORRECTIONS
2	ZV	12/05/23	PE CORRECTIONS

SHEET TITLE:
 DETAILS AND
 SECTIONS

DRAWN BY:	TMF	DATE:	12/05/23
CHECKED BY:	ZV	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	C503		

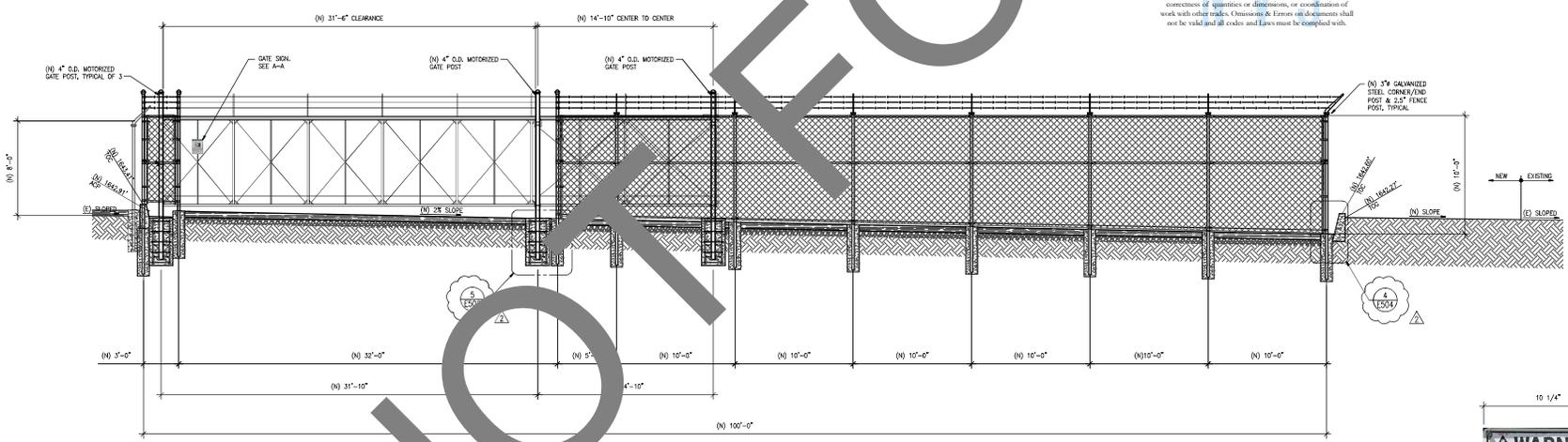


CHAIN LINK FENCE ELEVATION

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

--- REVIEWED ---

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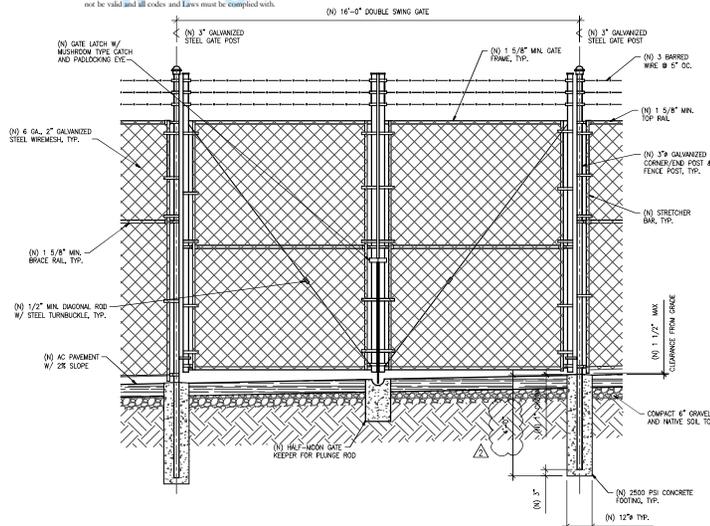
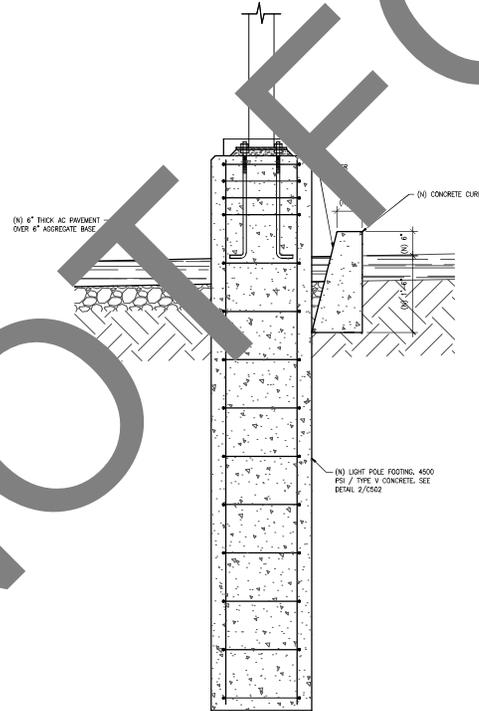
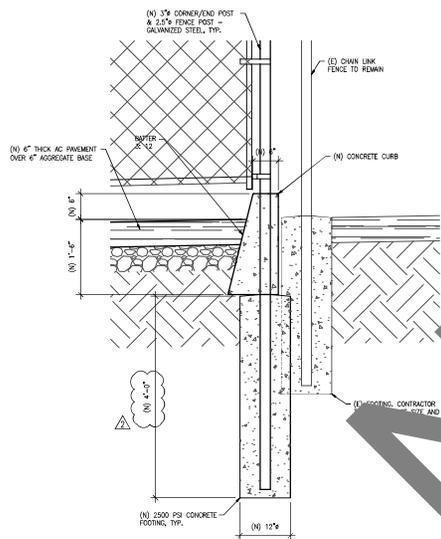
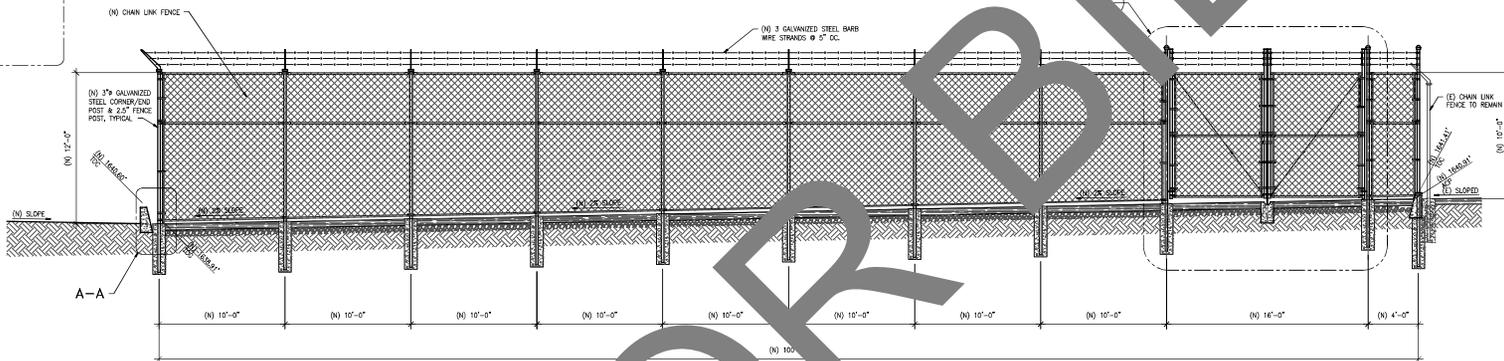
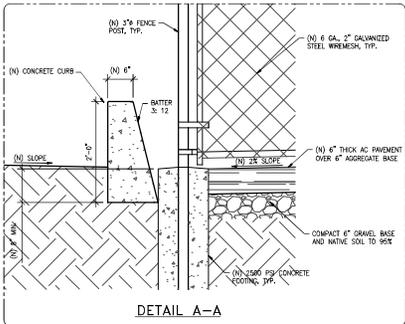
CHAIN LINK FENCE ELEVATION - WEST

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



DETAIL A-A

NOT FOR BID



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SAN BERNARDINO COUNTY
 DEPARTMENT OF FLEET
 MANAGEMENT /
 DEPARTMENT OF
 TRANSPORTATION & FLOOD
 CONTROL
 80311 TRONA ROAD
 TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure
 - Phase IV
 PROJECT NUMBER: 16 00 1195
 CIP NUMBER: 20 000
 BUILDING (CAPAS) NUMBER: N/A
 APN: 06460002

PROJECT AND FACILITIES MANAGEMENT
 DEPARTMENT
 ERNESTO GONZALEZ - PROJECT MANAGER
 385 NORTH ARROWHEAD AVENUE
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 CALIFORNIA 92415-0156
 TELEPHONE: (909) 324-6162
 Ernesto.Gonzalez@pdm.sbcounty.gov



STATE SEAL:

 Ernest A. Dahl
 State of California
 Professional Engineer
 No. 10000

CONSULTANT:

SCALE 1/4"=1'-0" 1

STATE SEAL:

NO.	BY	DATE	DESCRIPTION
1	ZV	11/14/23	PE CORRECTIONS
2	ZV	12/05/23	PE CORRECTIONS

SHEET TITLE:
 DETAILS AND SECTIONS

DRAWN BY:	TMP	DATE:	12/05/23
CHECKED BY:	ZV	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	C504		

SCALE 1/2"=1'-0" 2



DAHL, TAYLOR & ASSOCIATES
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2960 DANLON STREET
SANTA ANA, CALIFORNIA 92705
TEL: # (949) 254-8016
qv@dtaylor.com



CONSULTANT:

STATE SEAL:

REVISIONS Δ PRINTS ISSUED

NO.	BY	DATE	DESCRIPTION
Δ 1	QV	11/14/23	PC CORRECTIONS
Δ 2	QV	12/05/23	PC CORRECTIONS

SHEET TITLE:
CHAIN LINK FENCE WITH MOTORIZED GATE DETAILS

DRAWN BY: TYP DATE: 12/05/23
CHECKED BY: QV DATE: 12/05/23

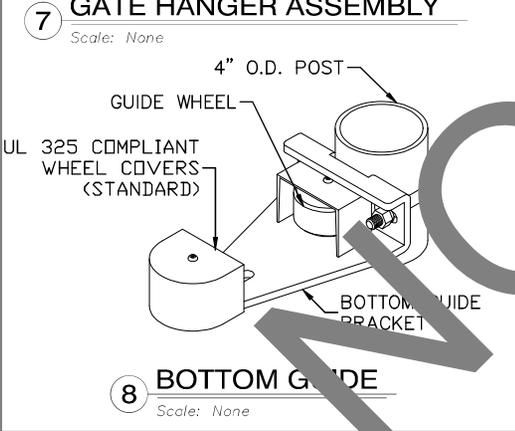
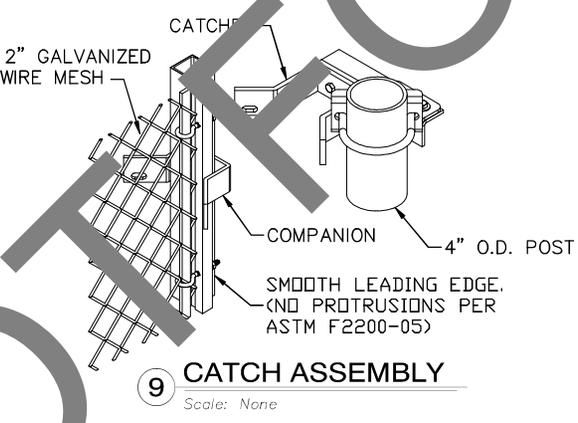
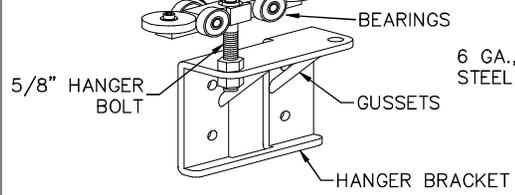
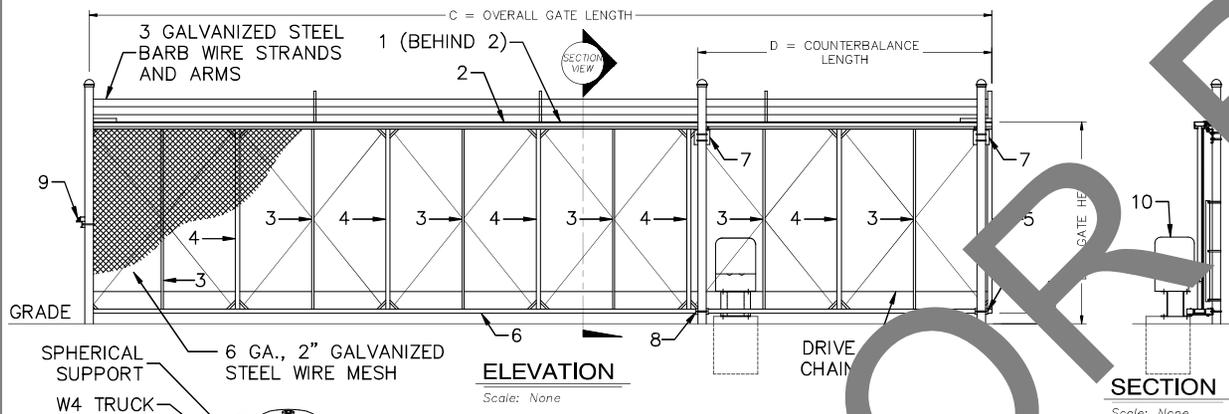
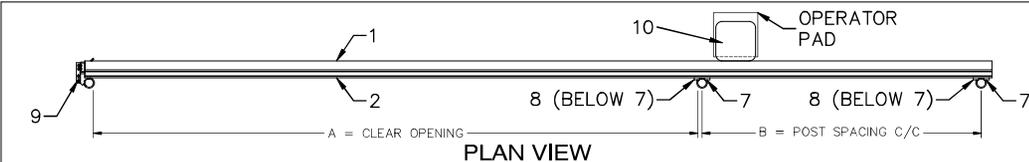
PROJECT NO.: 1.22.9

DRAWING NUMBER

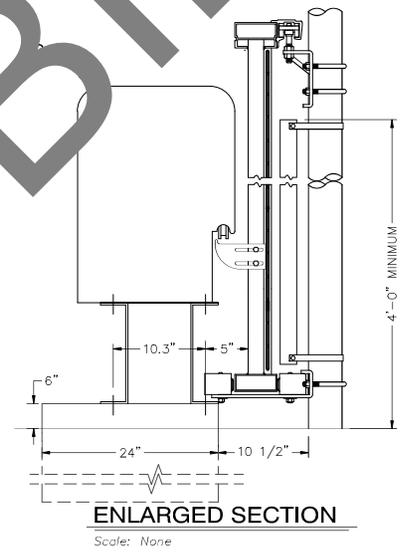
C506

CRITICAL DIMENSION CHART

MARK	DESCRIPTION	FORMULA	DIM.
A	CLEAR OPENING	A	-
B	COUNTERBALANCE POST SPACING C/C	(A/2)-11"	-
C	OVERALL GATE LENGTH	A x 1.5	-
D	COUNTERBALANCE LENGTH	A x 0.5	-
E	NOMINAL GATE HEIGHT	E	-
F	POST HEIGHT TO BARB ARM	E + 1'-6"	-
G	FABRIC HEIGHT	E - 1'-0"	-



NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. CONTRACTORS NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info REFERENCE NUMBER 1483-023.



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TYM-1000 SECURITY GATE SYSTEM (WITH HEAVY DUTY GATE)

BILL OF MATERIALS		
MARK	DESCRIPTION	NOTES
1	TOP PRIMARY MEMBER	3.06
2	STANDARD TRACK	2.91
3	STANDARD PRIMARY	1.69
4	2" X 2" ALUM. TUBE	1.13
5	1" X 2" ALUM. TUBE	TYP. AT ENDS OF GATE FRAME
6	2" X 5" ALUM. TUBE	2.03
7	2" X 5" ALUM. TUBE	2.03
8	2" X 5" ALUM. TUBE	2.03
9	2" X 5" ALUM. TUBE	2.03
10	LIFT MASTER SL3000101UL OPERATOR, 1 HP, 3PHCONV	
11	2" X 5" ALUM. TUBE	2.03
12	2" X 5" ALUM. TUBE	2.03

SECURITY GATE SYSTEM (WITH HEAVY DUTY GATE)

Model 927/928/735DC Series

Application

The Morrison 927 dry disconnect adaptor is installed at the fill point in the fill line of a fuel storage tank system. The internal spring loaded poppet assembly remains closed providing a liquid-tight seal when not connected to a dry disconnect coupler.

The Morrison 928 dry disconnect coupler is installed on the end of delivery vehicle hose. When coupled, the 927 and 928 provide a liquid-tight connection enabling a dry connection and a dry disconnection.

The 735DC dust cap serves as a protective cover for the 927 adaptor when not in use.

927 models mate with PT Maxi-Dry® and OPW Kamvalok® couplers.

Code Compliance

735DC models meet California EVR-VR-02; some 927 and 928 models meet CARB Phase 1 EVR VR-02

Item Number	Size	Description	A	B	C	D	E	Cap Size	Weight (lbs)
927-0150 1A	1 1/2"	Dry disconnect adaptor	1N	2"	A	F	N	2"	1.53
927-0200AAEVR	2"	Dry disconnect adaptor	2N	2 1/2"	A	F	Y	2 1/2"	1.98
927-0300AAEVR	3"	Dry disconnect adaptor	3N	4"	A	F	Y	4"	3.50
927-0400AAEVR	4"	Dry disconnect adaptor	4N	4"	A	F	Y	4"	3.50
500SA3201AAEVR	4" x 2"	Dry disconnect adaptor	4N	2 1/2"	A	F	Y	2 1/2"	2.50
927S-0150 1A	1 1/2"	Dry disconnect adaptor	1N	2"	SS	F	N	2"	3.80
927S-0200 1A	2"	Dry disconnect adaptor	2N	2 1/2"	SS	F	N	2 1/2"	5.90
927S-0300 1A	3"	Dry disconnect adaptor	3N	4"	SS	F	N	4"	18.25
928-0150 1C	1 1/2"	Dry disconnect coupler	1N	2"	A	F	N	N/A	4.40
928-0150CAEVR	1 1/2"	Dry disconnect coupler	1N	2"	A	F	Y	N/A	4.40
928-0200 1C	2"	Dry disconnect coupler	2N	2 1/2"	A	F	N	N/A	6.0
928-0200CAEVR	2"	Dry disconnect coupler	2N	2 1/2"	A	F	Y	N/A	6.0
928-0300 1C	3"	Dry disconnect coupler	3N	4"	A	F	N	N/A	12.60
928-0300CAEVR	3"	Dry disconnect coupler	3N	4"	A	F	Y	N/A	12.60
928S-0150 1C	1 1/2"	Dry disconnect coupler	1N	2"	SS	F	N	N/A	-
928S-0200 1C	2"	Dry disconnect coupler	2N	2 1/2"	SS	F	N	N/A	-
928S-0300 1C	3"	Dry disconnect coupler	3N	4"	SS	F	N	N/A	-
735DC-2000CAEVR	2"	Dust cap, use w/ 1 1/2" 927 adaptors	N/A	N/A	A	B	Y	N/A	1.0
735DC-3000CAEVR	2"	Dust cap, use w/ 1 1/2" 927 adaptors	N/A	N/A	AA	B	Y	N/A	1.0
735DC-2000CAEVR	2 1/2"	Dust cap, use w/ 2" 927 adaptors	N/A	N/A	A	B	Y	N/A	1.25
735DC-CA2000CAEVR	2 1/2"	Dust cap, use w/ 2" 927 adaptors	N/A	N/A	AA	B	Y	N/A	1.25
735DC-3000CAEVR	3"	Dust cap, use w/ 3" adaptors	N/A	N/A	A	B	Y	N/A	1.50
735DC-CA3000CAEVR	3"	Dust cap, use w/ 3" adaptors	N/A	N/A	AA	B	Y	N/A	1.50
735DC-4000CAEVR	4"	Dust cap, use w/ 3" & 4" 927 adaptors	N/A	N/A	A	B	Y	N/A	2.50
735DC-CA4000CAEVR	4"	Dust cap, use w/ 3" & 4" 927 adaptors	N/A	N/A	AA	B	Y	N/A	2.50

SPECIFICATION SHEET



927 (2")



928 (2")



735DC (4")

SPECIFICATION OPTIONS:

- A**—Female threads: 1 1/2" NPT (1N); 2" NPT (2N); 2 1/2" NPT (2 1/2N); 3" NPT (3N); 4" NPT (4N)
- B**—Coupler size
- C**—Body: Heli-coated aluminum (AA); Anodized aluminum (AA); Stainless steel (SS)
- D**—Seals: FKM (F); Buna-N (B)
- E**—EVR: Yes (Y); No (N)
- Cap size**—Inches
- Weight**—Shipping weight

570 E. 7th Street, P.O. Box 238 | Dubuque, IA 52004-0238
t. 563-583-5701 | 800.533.4840 | f. 563-583-5028
www.morrisonbros.com

February 2022

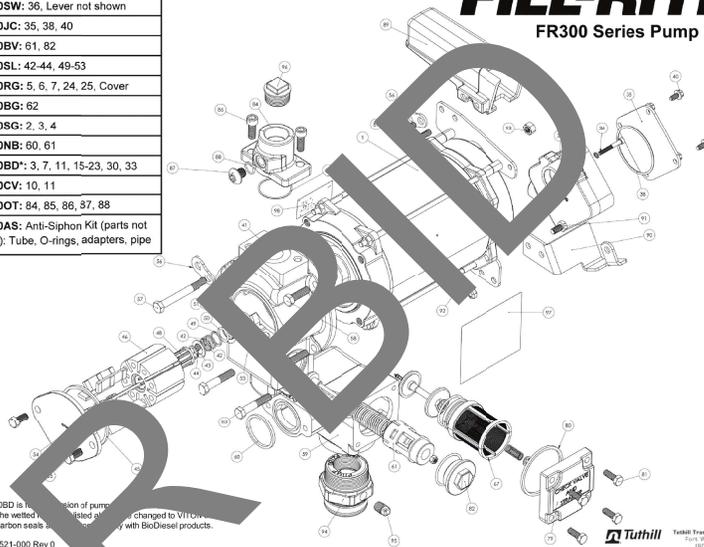
MORRISON BROS. CO.

February 2022

Repair Kits (kit # / parts included)

KIT300SW:	36, Lever not shown
KIT300JC:	35, 38, 40
KIT300BV:	61, 82
KIT700SL:	42-44, 49-53
KIT300RG:	5, 6, 7, 24, 25, Cover
KIT300BG:	62
KIT300SG:	2, 3, 4
KIT120NB:	60, 61
KIT300BD:	3, 7, 11, 15-23, 30, 33
KIT300CV:	10, 11
KIT300OT:	84, 85, 86, 87, 88
KIT300AS:	Anti-Siphon Kit (parts not shown): Tube, O-rings, adapters, pipe

FILL-RITE® FR300 Series Pump Kits



*KIT300BD is the combination of pump and hose. This kit has the welded Fluorocarbon seals replaced with Viton® Fluorocarbon seals for use with BioDiesel products.
DC600521-000 Rev 0

Tuthill Transfer Systems
Fort Wayne, Indiana 46702-024-0000
www.tuthill.com

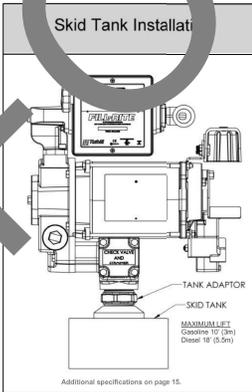
Materials:

- 1-1/4" pvc cut to a length that will terminate at least 3" from the bottom of the tank when installed into the tank adapter with the tank flange (see SKID TANK INSTALLATION details).
- Threaded pipe sealant appropriate for application.

Installation Procedure

- Thread the 1-1/4" pvc into the tank adapter. Seal the liquid tight with appropriate thread sealant.
- Install the tank adapter into the tank flange; seal threads liquid tight with appropriate thread sealant.
- Mount the pump on the adapter; seal threads liquid tight with appropriate thread sealant.
- Fill-Rite recommends installation of an Anti-Siphon Device (see page 15 for detailed information).

Skid Tank Installation



Additional specifications on page 15.

FILL-RITE® FR313V Technical Specifications

The Most Trusted Name in Pumps and Meters

Motor	115/230 VOLT
Power -AC	115, 230, 115/230
HZ	50, 60, 50/60
Power -DC	12, 24, 12/24
None	
HP (horsepower) rating	3/4
Power cord length	None
Power cord gauge	N/A
Power cord DC battery connectors	N/A
Amps (FLA)	9.84 @ 115/230 V
RPM	1725/1425
Duty cycle	30 min.
Thermal protection switch	Y
Circuit protection fuse	NONE
Certification	UL, CUL



FR313V

Pump	Rotary Vane
Type: rotary, diaphragm, peristaltic	
GPM in supplied configuration	25.3
GPM open flow - no hose or nozzle	34.3
By-pass pressure rating (psi) - max	26
Dry vac. (in Hg)	14
Head- Max	60.068
Anti-siphon valve	Anti-Siphon Ready
Inlet - Size / Thread	1 1/2"
Outlet - Size / Thread	NPT
Mount	Bung (NPT)
Materials of construction - pump housing	Cast Iron
Materials of construction - wetted material	Buna
Rotor materials of construction	80% Iron/20% Copper
Rotor vane material of construction	Carbon
Compatible fluids	Diesel, Gasoline, Bio-Diesel up to B20, E15, Kerosene
Strainer mesh size	40 x 40 x .006"
Warranty (yr)	2 Years

Accessories	None
Suction pipe material	None
Suction pipe length - extended/not extended	None
Nozzle - size	None
Nozzle - manual / automatic	None
Hose liquid materials compatibility	None
Hose diameter	None
Hose length	None
Hose static wire (Y/N)	None
Logistics	
UPC	0-89404-07657-6
Length	19
Width	18
Height	18

--- REVIEWED ---

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DEPARTMENT OF FLEET
MANAGEMENT /
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TRANSPORTATION & FLOOD
CONTROL
80311 TRONA ROAD
TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure
- Phase IV
PROJECT NUMBER: 16 03 1195
CIP NUMBER: 22 008
BUILDING (CAPM) NUMBER: N/A
APN: 084-0022

PROJECT AND FACILITIES MANAGEMENT
DEPARTMENT
ERNESTO GONZALEZ - PROJECT MANAGER
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STATE SEAL:



CONSULTANT:

STATE SEAL:

REVISIONS & PRINTS ISSUED

NO.	BY	DATE	DESCRIPTION
1	DN	11/14/23	PC CORRECTIONS
2	DN	12/25/23	PC CORRECTIONS

SHEET TITLE: FUEL TANK DETAILS

DRAWN BY: TWP DATE: 12/05/23
CHECKED BY: DN DATE: 12/05/23

PROJECT NO: 1-22-9

DRAWING NUMBER: C508

MORRISON 927-0200AA 2" VALVE

SCALE: NONE 2

FILL-RITE 300 SERIES PUMP

SCALE: NONE 1

PLAN CHECK RESUBMISSION

Project Name: Fuel Tank Infrastructure
 - Phase IV

PROJECT NUMBER: 10 00 0195
 CIP NUMBER: 20 000
 BUILDING (CAPA) NUMBER: N/A
 APN: 08460022

PROJECT AND FACILITIES MANAGEMENT
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STATE SEAL:



CONSULTANT:

STATE SEAL:

REVISIONS Δ PRINTS ISSUED

NO.	BY	DATE	DESCRIPTION
Δ 1	SV	11/14/23	PC CORRECTIONS
Δ 2	SV	12/05/23	PC CORRECTIONS

SHEET TITLE:
**DETAILS AND
 SECTIONS**

DRAWN BY: TWP DATE: 12/05/23

CHECKED BY: SV DATE: 12/05/23

PROJECT NO. 1.22.9

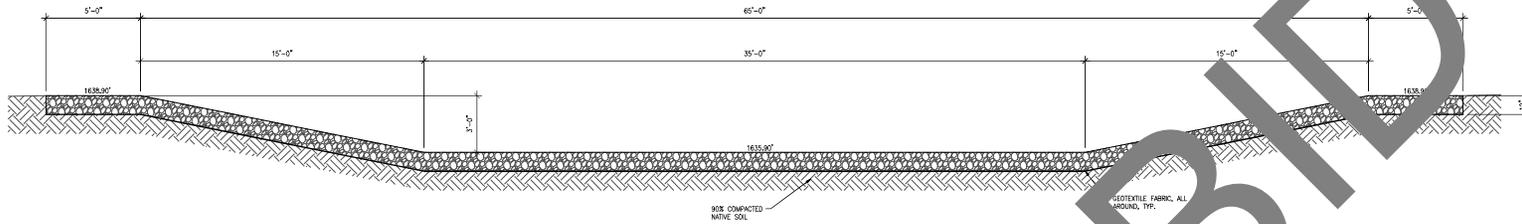
DRAWING NUMBER

C509

SCALE
 3/8"=1'-0"

2

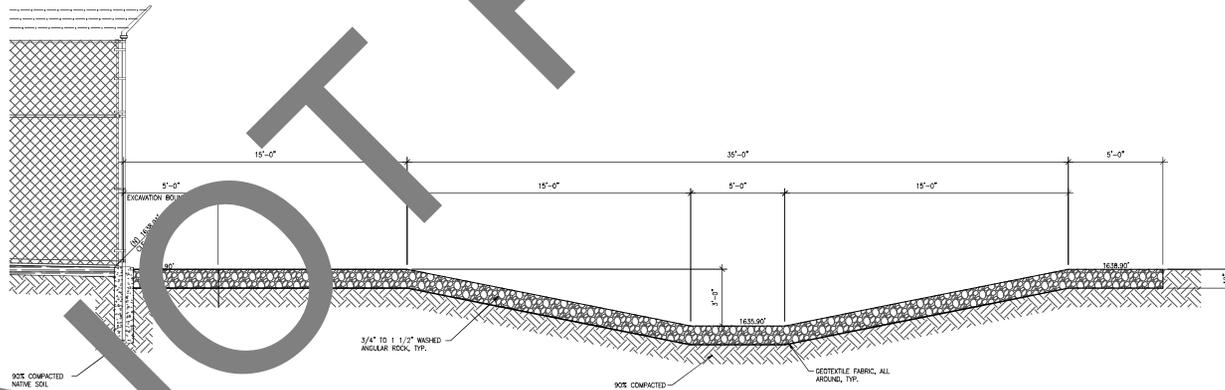
PLAN CHECK RESUBMISSION



RETENTION BASIN SECTION

SCALE
 3/8"=1'-0"

1



RETENTION BASIN SECTION

SCALE
 3/8"=1'-0"

2

NOT FOR BID



STATE SEAL:



CONSULTANT:

STATE SEAL:

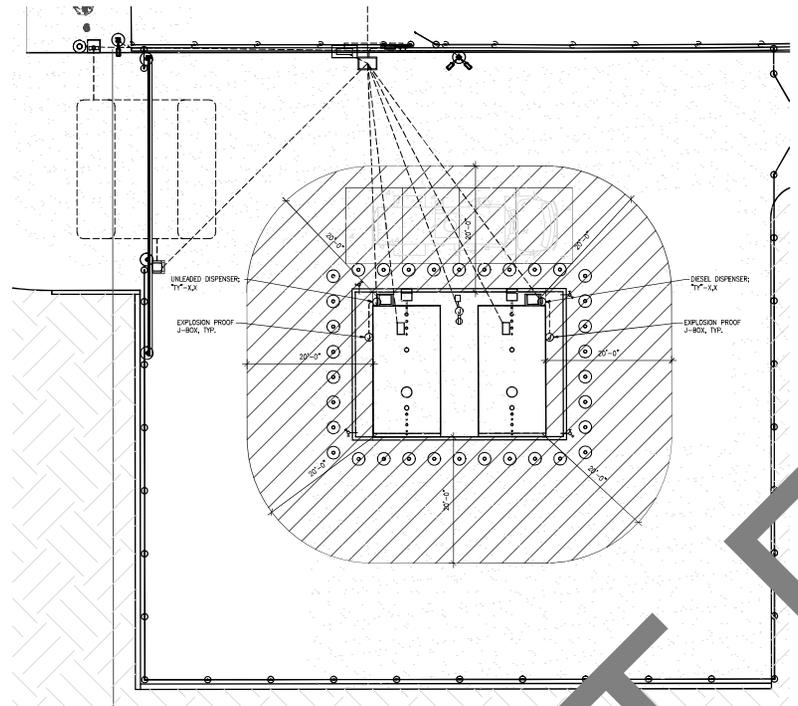
NO.	BY	DATE	DESCRIPTION
1	AV	11/14/23	PC CORRECTIONS
2	AV	12/05/23	PC CORRECTIONS

SHEET TITLE:
FUELING STATION PLANS

BROWN BY:	TWP	DATE:	12/05/23
CHECKED BY:	AV	DATE:	12/05/23

PROJECT NO. 1.22.9
DRAWING NUMBER

E101

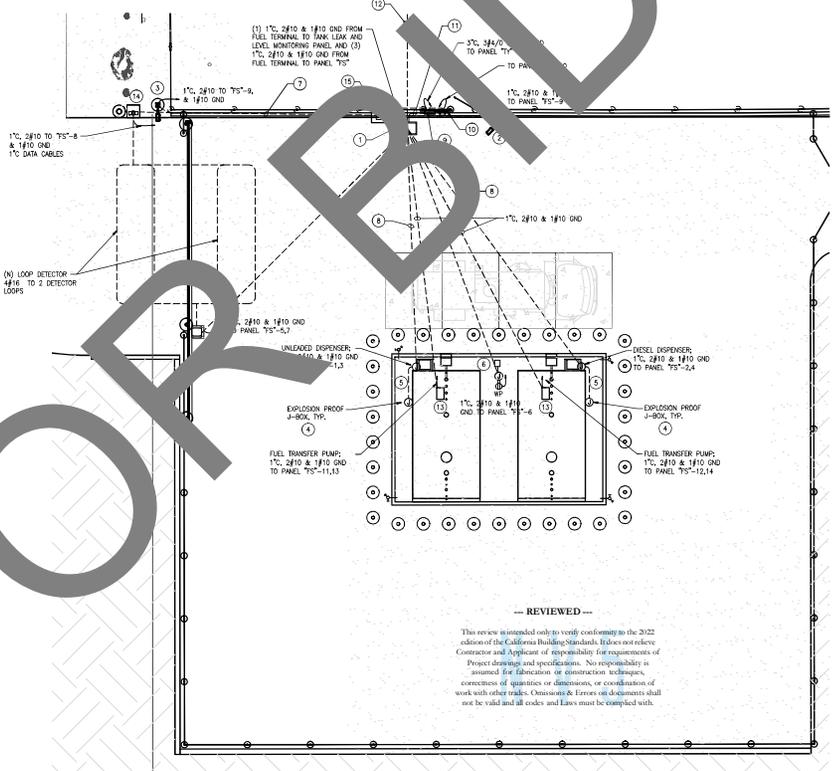


CONSTRUCTION NOTES:
SHOED AREA INDICATES CLASS 1 DIVISION 2 HAZARDOUS AREA. ELECTRICAL WORK SHALL COMPLY WITH CEC REQUIREMENTS OF ARTICLE 501.
ALL ELECTRICAL EQUIPMENT SHALL BE MOUNTED OUTSIDE CLASSIFIED AREA.
EXPLOSION PROOF JUNCTION BOXES, CONDUIT FITTINGS, LIGHT FIXTURES, ELECTRICAL EQUIPMENT/DEVICES SHALL BE EXPLOSION PROOF PER CODE REQUIREMENT.
SEE E101 TANK LEAK AND LEVEL MONITORING DIAGRAM #4 AND FUEL CONDUIT DIAGRAM #5 FOR CONDUIT ROUTES AND SIZES.



DISPENSER FUEL TANK AREA (CLASS 1 DIVISION 2)

SCALE 1/8"=1'-0" 2



--- REVIEWED ---
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CONSTRUCTION NOTES:

SEE E101, FUEL CONDUIT DIAGRAM #5 AND TANK LEAK MONITORING & ALARM DIAGRAM #4 FOR NUMBER, ROUTING AND SIZE OF CONDUITS AND WIRES. MEET REQUIREMENTS BY EQUIPMENT MANUFACTURERS.

- NEW 3/4"x3/8"x36" FULL BOX WITH H=20 TRAFFIC COVER, JENSEN PRO436 WITH COVER MARK "ELECTRIC". SEE 1/5000 FOR DETAILS.
- NEW 30-FT LIGHT POLE WITH 2 FIXTURES. SEE 1/5001 FOR DETAILS.
- NEW 12-FT LIGHT POLE WITH 1 FIXTURE. SEE 1/5001 FOR SIMILAR DETAILS.
- ALL JUNCTION BOXES WITH DISPENSER FUEL TANK AREA SHALL BE EXPLOSION PROOF.
- FUEL DISPENSER POWER POINT OF CONNECTION. COORDINATE WITH MANUFACTURER FOR EXACT LOCATION AND REQUIREMENT.
- FURNISH AND INSTALL 2" CONDUIT AND UNDERGROUND 12"x18" PULLBOX WITH GATE CABLE FROM FLEET MANAGEMENT BUILDING TO EL EDWARDS TERMINAL. COORDINATE WITH COUNTY OF SAN BERNARDINO FOR EXACT LOCATION OF PULLBOX.
- TWO (3) 1" SCHEDULE 80 PVC CONDUITS ENCASED IN 12"x18" 2000 PSI RED CONCRETE AT 36" BELOW GRADE. 1" 2410 & 1810 GROUND & 1" FOR DATA CABLES FOR CARD READER AND 1" 2410 & 1810 GROUND FOR LIGHT POLE.
- 1" SCHEDULE 80 PVC CONDUIT ENCASED IN 12"x18" 2000 PSI RED CONCRETE AT 36" BELOW GRADE WITH 120V CONTROL WIRING PER MANUFACTURER REQUIREMENT WITH #10 GROUND WIRES.
- NEW NEMA 3R PANEL 75". SEE MOUNTING DETAIL 1/C505 & E300 SINGLE LINE DIAGRAM ROUTE CONDUIT TO UNDERGROUND FUEL BOX.
- NEW NEMA 3R LISTING CONTROL FUSE CARRIER, "EPO" SWITCH, "E30" PANEL, AND NEMA 3R TANK MONITOR PANEL. SEE DETAIL 1/C505.
- TWO (2) NEW 3" SCHEDULE 80 PVC CONDUITS.
- THREE (3) NEW 3" SCHEDULE 80 PVC CONDUITS (COMM/DATA, POWER, & SPARE) AT 36" BELOW GRADE IN 24" x 12" x 2,000 PSI CONCRETE ENCASMENT.
- NEW FILL-RITE FUEL TRANSFER PUMP, 3/4HP, 200V, SINGLE PHASE.
- NEW KENTAD FOR GATE ACCESS FURNISHED BY SBC AND INSTALLED BY CONTRACTOR. SEE E101 DETAIL #1 AND FUEL CONDUIT DIAGRAM #5.
- NEW FUEL TERMINAL FURNISHED BY SBC AND INSTALLED BY CONTRACTOR. SEE E101 TANK LEAK AND LEVEL MONITORING DIAGRAM #4 AND FUEL CONDUIT DIAGRAM #5.



FUELING STATION PLAN

SCALE 1/8"=1'-0" 1



STATE SEAL:



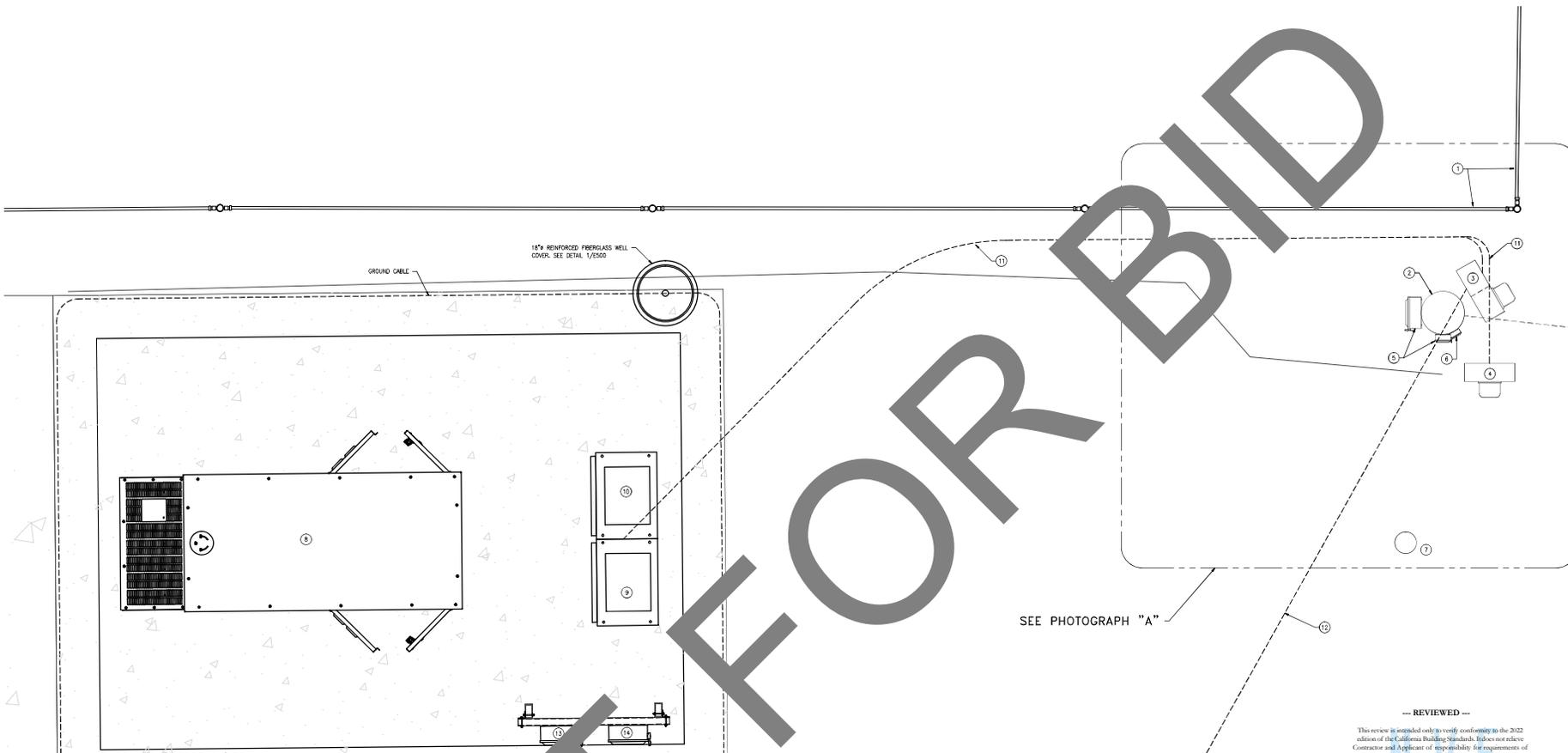
CONSULTANT:

STATE SEAL:

REVISONS	DATE	DESCRIPTION
1	11/14/23	PC CORRECTIONS
2	12/05/23	PC CORRECTIONS

SHEET TITLE:
ELECTRICAL EQUIPMENT AND GENERATOR AREA PLAN

DRAWN BY:	TMP	DATE:	12/05/23
CHECKED BY:	DW	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	E102		



SEE PHOTOGRAPH "A"

--- REVIEWED ---

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CONSTRUCTION NOTES:

- 1 EXISTING CHAIN LINK FENCE.
- 2 EXISTING POWER POLE. SEE PHOTOGRAPH "A".
- 3 EXISTING 200A, 120/240V, 1P, 3W ELECTRICAL PANEL "TY" WITH METER SERVING THE TRANSPORTATION WARE. SEE 10/ES00 FOR DETAILS.
- 4 EXISTING 200A, 120/240V, 1P, 3W ELECTRICAL PANEL "TR" WITH METER SERVING THE PRIVATE RESIDENCE. SEE 9/ES00 FOR DETAILS.
- 5 EXISTING DISCONNECT SWITCH.
- 6 EXISTING TELEPHONE BOX.
- 7 EXISTING STEEL GUARD POST.
- 8 NEW 48 KW, 200A, 120/240V, 1P, 3W EMERGENCY POWER GENERATOR WITH TWO (2) 200A, 240V CIRCUIT BREAKERS - KENNEDY MODEL FROM "ONE" BRAND EMERSON.
- 9 NEW NEMA-3R 200A, 120/240V, SINGLE PHASE AUTOMATIC TRANSFER SWITCH "ATS-TY".
- 10 NEW NEMA-3R 200A, 120/240V, SINGLE PHASE AUTOMATIC TRANSFER SWITCH "ATS-TR".
- 11 NEW UNDERGROUND CONDUITS. CONTRACTOR SHALL RESTORE AC PAVEMENT AND GRAVEL AREA AFFECTED AND DAMAGED BY CONSTRUCTION TO MATCH EXISTING.
- 12 THREE (3) NEW 3" UNDERGROUND SCHEDULE 80 PVC CONDUITS AT 36" BELOW GRADE. CONTRACTOR SHALL RESTORE AC PAVEMENT AFFECTED AND DAMAGED BY CONSTRUCTION TO MATCH EXISTING.
- 13 NEW NEMA-3R 200A, 120/240V, 1P DISCONNECT SWITCH "DS-TY".
- 14 NEW NEMA-3R 200A, 120/240V, 1P DISCONNECT SWITCH "DS-TR".



PHOTOGRAPH "A"



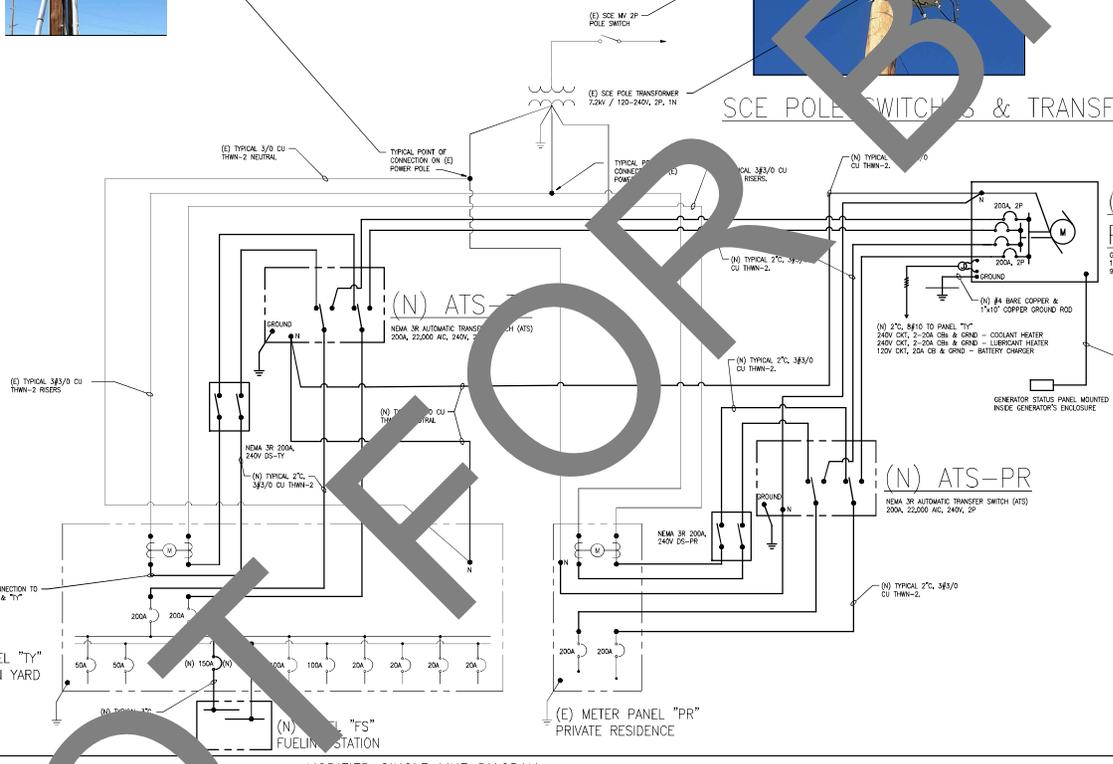
REVISONS	DATE	DESCRIPTION	PRINTS	ISSUED
1	11/14/23	PC CONNECTIONS		
2	12/25/23	PC CONNECTIONS		



(E) POLE & METER PANELS

SCE POLE SWITCHES & TRANSFORMER

(N) 48KW STANDBY POWER GENERATOR



MODIFIED SINGLE LINE DIAGRAM

PANELBOARD NAME	PANEL	MOUNTING	POLE	OVERSIZED NEUTRAL BUS		SPECIAL ENCLOSURE		DESCRIPTION
				150/240 VOLTS, 2-Ph, 3-W	AMPERE 200A	22 INCH TOP OR BOTTOM FEED: TOP	NEUMA 3R	
DESCRIPTION	A	B	C	D	E	F	G	H
LINEAR DISPENSER								
UNLEADED DISPENSER								
ENHANCED GATE MOTOR THP, LF MOTOR								
FUEL TANKS								
FILTRITE FUEL PUMP								
FUEL TANK								
NEW PANEL 'TY'								
NEW PANEL 'PR'								
PARALLEL TOTAL								
TOTAL CONNECTED VA								
TOTAL CONNECTED W = TOTAL VA ÷ COS φ CONT. VA								

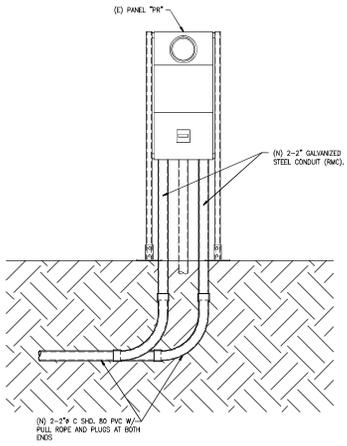
MODIFIED PANEL "TY" SCHEDULE

SCALE NONE 3

PANELBOARD NAME	PANEL	MOUNTING	OUTDOOR	OVERSIZED NEUTRAL BUS		SPECIAL ENCLOSURE		DESCRIPTION
				150/240 VOLTS, 1-Ph, 3-W	AMPERE 200	22 INCH TOP OR BOTTOM FEED: BOTTOM	NEUMA 3R	
DESCRIPTION	A	B	C	D	E	F	G	H
UNLEADED DISPENSER								
UNLEADED DISPENSER								
ENHANCED GATE MOTOR THP, LF MOTOR								
FUEL TANKS								
FILTRITE FUEL PUMP								
FUEL TANK								
NEW PANEL 'FS'								
PARALLEL TOTAL								
TOTAL CONNECTED VA								
TOTAL CONNECTED W = TOTAL VA ÷ COS φ CONT. VA								

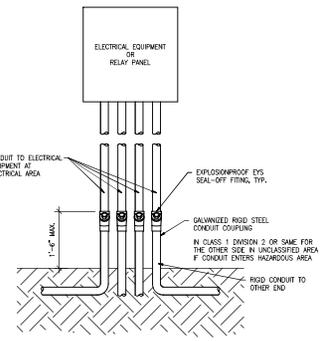
NEW PANEL "FS" SCHEDULE

SCALE NONE 2



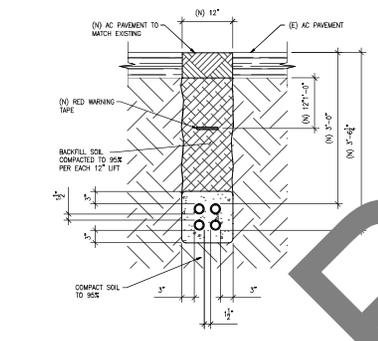
PANEL "PR" DETAIL

SCALE NONE 9



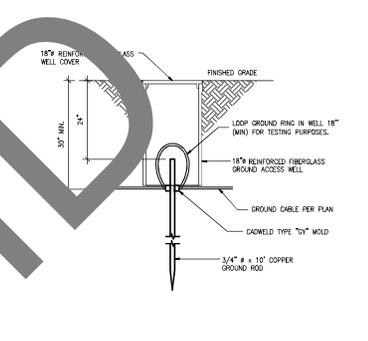
EXPLOSION-PROOF SEAL-OFF STUB-UP

SCALE NONE 6



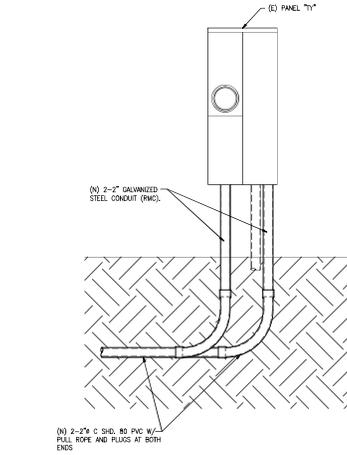
CONCRETE ENCASED CONDUIT CROSS SECTION

SCALE 1"=1'-0" 3



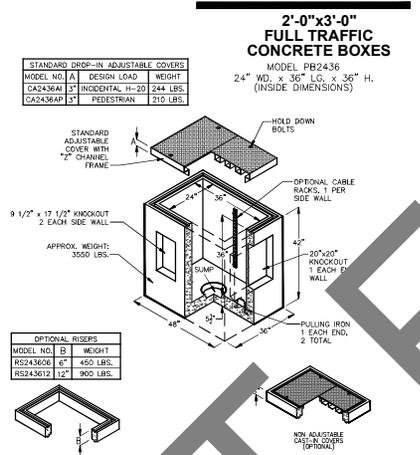
GROUND TEST WELL DETAIL

SCALE NONE 1



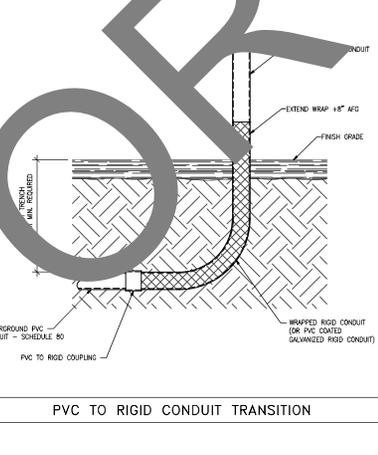
PANEL "TY" DETAIL

SCALE NONE 10



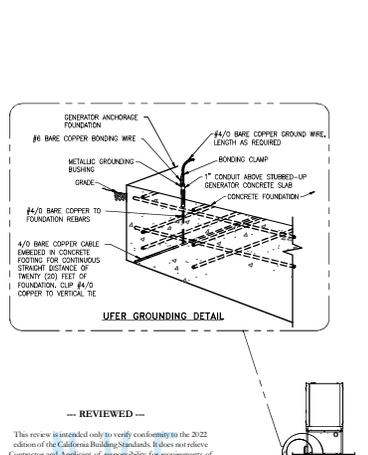
PULL BOX DETAIL

SCALE NONE 7



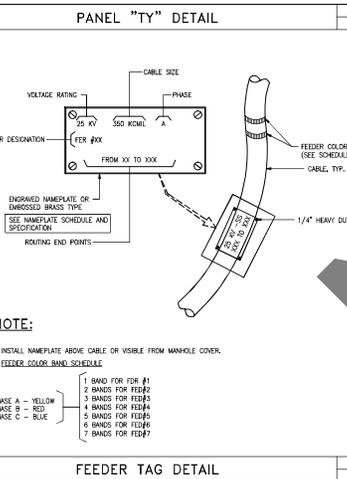
PVC TO RIGID CONDUIT TRANSITION

SCALE NONE 4



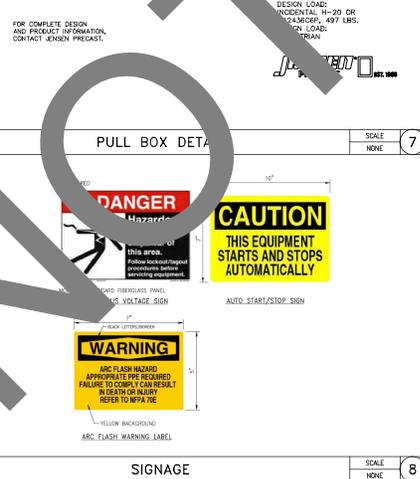
GROUNDING CONNECTION TO EQUIPMENT DETAIL

SCALE NONE 2



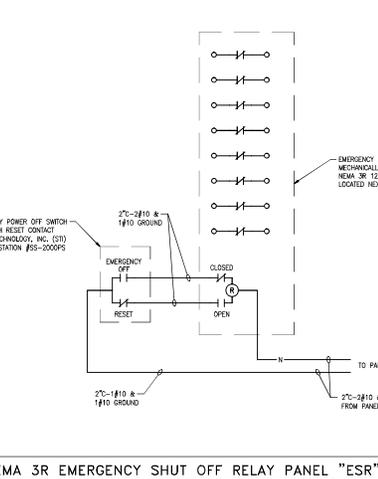
FEEDER TAG DETAIL

SCALE NONE 11



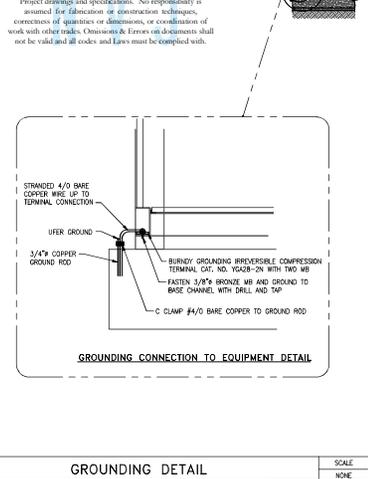
SIGNAGE

SCALE NONE 8



NEMA 3R EMERGENCY SHUT OFF RELAY PANEL "ESR"

SCALE NONE 4



GROUNDING DETAIL

SCALE NONE 2

SAN BERNARDINO COUNTY
DEPARTMENT OF FLEET
MANAGEMENT /
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL

80311 TRONA ROAD
TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure - Phase IV
 PROJECT NUMBER: 10-001195
 CIP NUMBER: 20-008
 BUILDING (CAPM) NUMBER: N/A
 APN: 06849022

PROJECT AND FACILITIES MANAGEMENT DEPARTMENT
 ERNESTO GONZALEZ - PROJECT MANAGER
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STATE SEAL:

CONSULTANT:

STATE SEAL:

REVISIONS / PRINTS ISSUED

NO.	DATE	DESCRIPTION
1	11/14/23	PC CORRECTIONS
2	12/05/23	PC CORRECTIONS

SHEET TITLE:
DETAILS, SECTIONS, AND DIAGRAMS

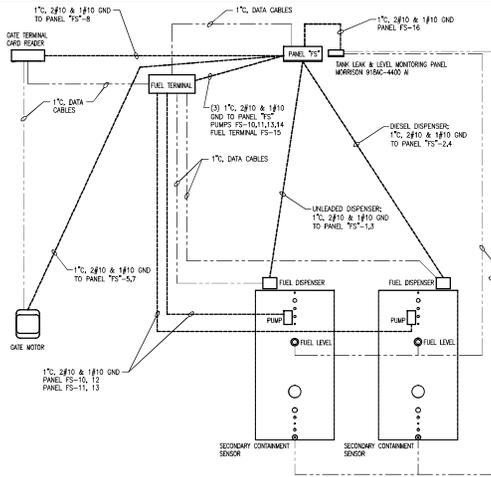
BROWN BY:	DATE:
TWP	12/05/23

CHECKED BY:	DATE:
SN	12/05/23

PROJECT NO: 1.22.9

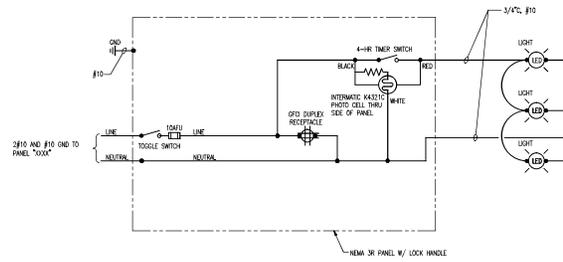
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PLAN CHECK RESUBMISSION



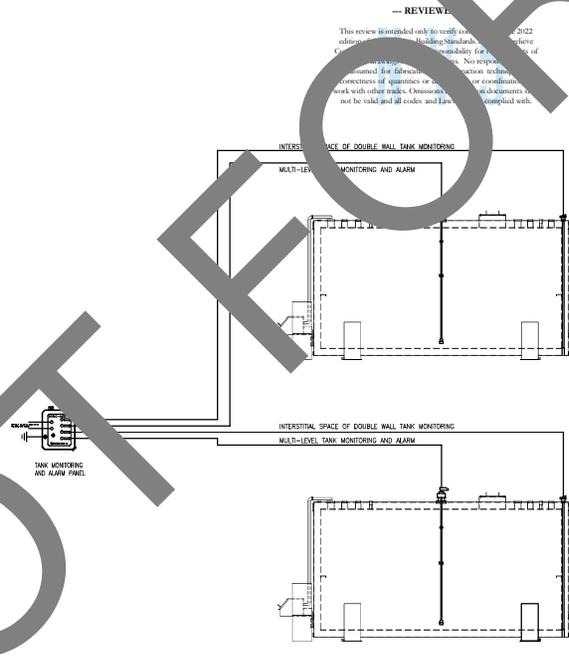
FUEL CONDUIT DIAGRAM

SCALE NONE 5



LIGHTING CONTROL WIRING DIAGRAM

SCALE NONE 3

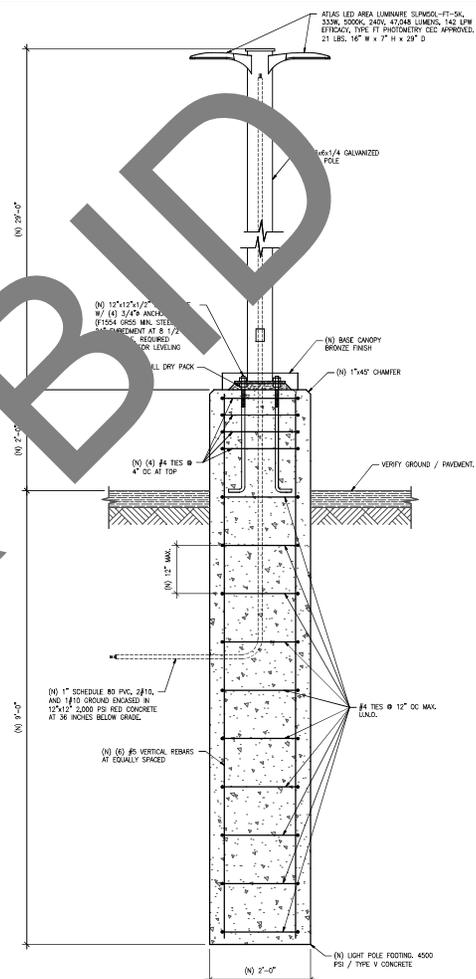


CONSTRUCTION NOTES:

1. INSTALL MORRISON #1840-4400 ALI OVERWALL AND LEAK ALARM SYSTEM INTERFACE INCLUDING HIGH-HIGH, HIGH, LOW LEVEL, AND LEAK DETECTION ALARM PER MANUFACTURER'S RECOMMENDATIONS.
2. UL / IUL 913 LISTING FOR ORDINARY LOCATION WITH HAZARDOUS LOCATION INTRINSICALLY SAFE INPUT CIRCUITS FOR CLASS I, DIVISION 1, GROUP D.

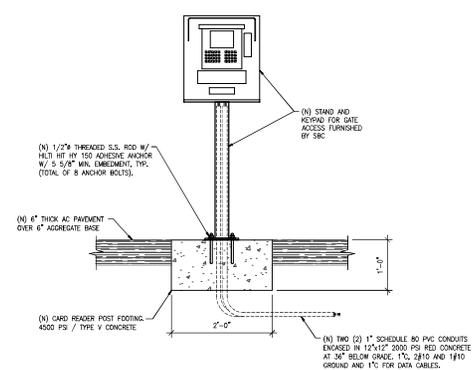
FUEL TANK LEAK AND LEVEL MONITORING SYSTEM DIAGRAM

SCALE NONE 4



LIGHT POLE DETAIL

SCALE 1\"/>



CARD READER DETAIL

SCALE 1\"/>

SAN BERNARDINO COUNTY
DEPARTMENT OF FLEET
MANAGEMENT /
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL
80311 TRONA ROAD
TRONA, CALIFORNIA

PROJECT Name: Fuel Tank Infrastructure
Phase IV
PROJECT NUMBER: 10 00 0195
CIP NUMBER: 20 000
BUILDING (CAPM) NUMBER: N/A
APN: 06460002

PROJECT AND FACILITIES MANAGEMENT
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STATE SEAL:



CONSULTANT:

STATE SEAL:

REVISIONS	PRINTS ISSUED
NO. 1	DATE 12/05/23
NO. 2	DATE 11/14/23
NO. 3	DATE 12/05/23

SHEET TITLE:
DETAILS AND
SECTIONS

BROWN BY:	DATE
TMF	12/05/23
CHECKED BY:	DATE
DN	12/05/23
PROJECT NO.	1-22.9
DRAWING NUMBER	

E501



SAN BERNARDINO COUNTY

DEPARTMENT OF TRANSPORTATION & FLOOD CONTROL FUEL TANK INFRASTRUCTURE - PHASE IV

80311 TRONA ROAD
TRONA, CALIFORNIA

PROJECT # 10.10.1195

DRAWING INDEX	
SHEET	DESCRIPTION
T001	TITLE SHEET, DRAWING INDEX, SCOPE OF WORK, PROJECT LOCATION AND VICINITY MAP
0001	GENERAL NOTES, ABBREVIATIONS, SYMBOLS AND LEGEND
0002	GENERAL SITE PLAN
C100	GENERAL NOTES, ABBREVIATIONS, SYMBOLS AND LEGEND
C101	DETAILS AND SECTIONS
C102	DETAILS AND SECTIONS
C103	DETAILS AND SECTIONS
C104	DETAILS AND SECTIONS
C105	DETAILS AND SECTIONS
C106	DETAILS AND SECTIONS
C107	DETAILS AND SECTIONS
C108	DETAILS AND SECTIONS
C109	DETAILS AND SECTIONS
E001	ELECTRICAL GENERAL NOTES, SYMBOLS AND LEGEND
E100	SITE PLAN
E101	FUELING STATION PLANS
E102	ELECTRICAL EQUIPMENT AND GENERATOR AREA PLAN
E300	MODIFIED SINGLE LINE DIAGRAM AND PANEL SCHEDULES
E301	EXISTING SINGLE LINE DIAGRAM AND PANEL SCHEDULE
E500	DETAILS, SECTIONS, AND DIAGRAMS
E501	DETAILS AND SECTIONS

SAN BERNARDINO COUNTY
DEPARTMENT OF FLEET
MANAGEMENT /
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL

80311 TRONA ROAD
TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure
Phase IV

PROJECT NUMBER: 10.10.1195
CIP NUMBER: 20.008

BUILDING (CAPAS) NUMBER: N/A
APN: 06404002

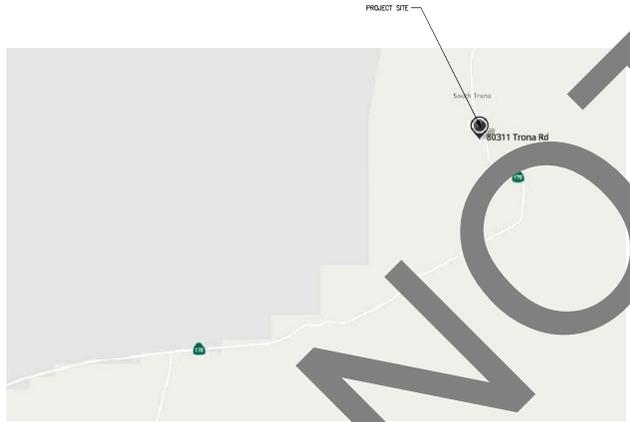
PROJECT AND FACILITIES MANAGEMENT
SUPERVISOR:
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385 NORTH ARROWHEAD AVENUE
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CONSULTANT:

VICINITY MAP



PROJECT LOCATION



NOTICE TO CONTRACTOR FOR COUNTY PERMITS

COUNTY PERMIT

A. AN ENCROACHMENT PERMIT FROM THE COUNTY OF SAN BERNARDINO WILL BE REQUIRED FOR WORK IN COUNTY RIGHT-OF-WAY.

B. CONTRACTOR SHALL PAY ANY FEES.

C. COUNTY SHALL BE LISTED AS CO-APPLICANT. CONTRACTOR SHALL SUBMIT PROOF OF INSURANCE AND PAYMENT OF PERMIT FEE.

D. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ENCROACHMENT PERMIT IN FORCE, TRACKING EXPIRATION DATES, AND APPLYING FOR PERMIT RENEWALS AND EXTENSIONS AS NEEDED.

COUNTY OF SAN BERNARDINO FIRE DEPARTMENT PERMIT

A. A PERMIT FROM COUNTY OF SAN BERNARDINO FIRE DEPARTMENT WILL BE REQUIRED FOR WORK RELATED TO THE INSTALLATION OF FUEL TANKS.

B. CONTRACTOR SHALL PAY ANY FEES.

C. COUNTY SHALL BE LISTED CO-APPLICANT. CONTRACTOR SHALL SUBMIT PROOF OF INSURANCE, AND PAYMENT OF PERMIT FEE.

D. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING PERMIT IN FORCE, TRACKING EXPIRATION DATES, AND APPLYING FOR PERMIT RENEWALS AND EXTENSIONS AS NEEDED.

STATE SEAL:

SCOPE OF WORK

- CONSTRUCT A NEW 100 FT. x 100 FT. FUELING STATION ON TWO (2) 6 INCHES LIFTS OF NATIVE SOIL COMPLETED TO SHOW RELATIVE ELEVATION IN COMPLIANCE WITH ASTM D1557 AND CALIFORNIA TEST METHOD #116 AND CONCRETE CURBS AROUND THE FUELING STATION TO PROVIDE PROPER STORM WATER DRAINAGE AND FLOODING PREVENTION.
- CONSTRUCT NEW CLASS 2 ROAD BASE AND ASPHALT CONCRETE DRIVEWAY FROM EXISTING COUNTY ROAD.
- CONSTRUCT NEW CLASS 2 ROAD BASE, KERALITE CONCRETE PAVEMENT, CONCRETE CONTAINMENT AREA WITH 2% SLOPE, PERIMETER CURB, AND TWO (2) BALL-VALVED DRAINAGE OUTLETS AT THE DIAGONALLY OPPOSITE CORNER POINTS WITHIN THE NEW 100 FT. x 100 FT. FENCED AREA (TOPOGRAPHY AND LEVEL).
- CONSTRUCT A CONCRETE GROUND PAD AT THE FUELING/GENERATOR AREA ADJACENT TO TWO (2) 15,000 GALLON FUEL TANKS WITH GALVANIZED STEEL RANG, LIFTERS, SAFETY CAGES, PLATFORMS, AND RAILINGS.
- CONSTRUCT CONCRETE CURB AND 10 FT. HIGH CHAIN-LINK FENCE TOPPED WITH 3 FT. HIGH BARBWERE AROUND THE FUELING STATION.
- INSTALL A NEW 10 FT. x 30 FT. x 30 FT. MOTORIZED GATE, SECURITY KEYPAD, LOOP DETECTORS, AND WIRING FOR GATE ACCESS, SAFETY, AND SECURITY.
- INSTALL A 10 FT. HIGH x 16 FT. WIDE MANUAL DOUBLE-SWING GATE WITH LOCK HARDWARE AT THE REAR PORTION OF THE FENCED AREA.
- INSTALL A 10 FT. HIGH x 4 FT. WIDE PERSON GATE WITH LOCKABLE LATCH IN THE EXISTING CHAIN-LINK FENCE FOR PERSONNEL ACCESS FROM THE TRANSPORTATION YARD INTO THE FUELING STATION.
- INSTALL A NEW ABBOW GENERATOR IN ACOUSTIC ENCLOSURE WITH DUAL 200A CIRCUIT BREAKERS, AUTOMATIC TRANSFER SWITCHES, DISCONNECT SWITCHES, CONDUITS, AND WIRING NEAR EXISTING SIZE POWER POLE AND METER PANELS.
- INSTALL UNDERGROUND CONDUITS FROM EXISTING METER PANEL TO NEW UNDERGROUND FULL BOX AND FUELING STATION PANEL AND FROM THE FULL BOX TO ALL PANELS, DEVICES, MECHANICAL AND ELECTRICAL UNITS, ETC. INSIDE NEW FENCED AREA. COORDINATE WITH MANUFACTURERS FOR REQUIREMENTS.
- INSTALL ILLUMINATED "COUNTY FUEL SITE" SIGN, LED POLE LIGHTS, LIGHTING CONTROLS, AND WIRING.
- INSTALL FUEL, FILLING, PUMPING, DISPENSING, AND MANAGEMENT SYSTEMS, FUEL LEAK AND LEVEL MONITORING SYSTEM, SECURITY ACCESS CONTROL, SIREN, AND WIRING. COORDINATE WITH SAN BERNARDINO COUNTY AND MANUFACTURERS FOR REQUIREMENTS.
- INSTALL NEW BOLLARDS AROUND THE FUEL TANK CONCRETE CONTAINMENT AREA AND GENERATOR AREA.
- CONSTRUCT A 65 FT. x 35 FT. x 3 FT. DEEP GEO-TEXTILE FABRIC LINED RETENTION BASIN.
- CONSTRUCTION AND INSTALLATION SHALL COMPLY WITH COUNTY, CALIFORNIA, AND FEDERAL REGULATIONS AND SHALL BE PERMITTED, INSPECTED, AND CERTIFIED BY AUTHORITIES-HAVING-JURISDICTION (AHHJ).

NO.	DATE	DESCRIPTION
Δ 01	11/14/23	PC CORRECTIONS
Δ 02	12/05/23	PC CORRECTIONS

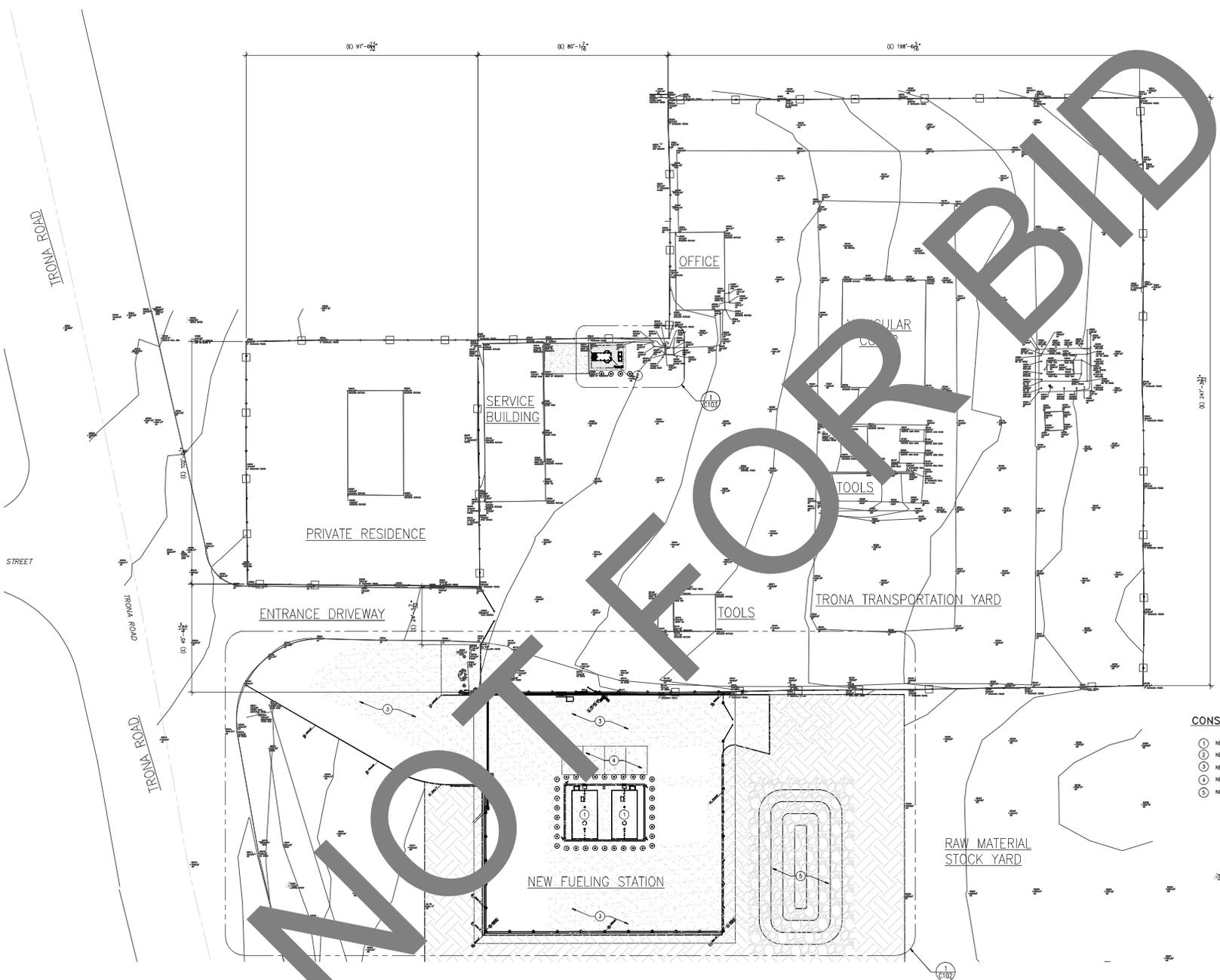
SHEET TITLE:
TITLE SHEET, DRAWING INDEX, SCOPE OF WORK, PROJECT LOCATION AND VICINITY MAP

BROWN BY: TWP DATE: 12/05/23

CHECKED BY: DV DATE: 12/05/23

PROJECT NO. 1-22-9

DRAWING NUMBER: **T001**



SAN BERNARDINO COUNTY
 DEPARTMENT OF FLEET
 MANAGEMENT /
 DEPARTMENT OF
 TRANSPORTATION & FLOOD
 CONTROL
 80311 TRONA ROAD
 TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure
 - Phase IV

PROJECT NUMBER: 10 00 1195
 CIP NUMBER: 20 000
 BUILDING (CAPA) NUMBER: N/A
 APN: 094-000-002

PROJECT AND FACILITIES MANAGEMENT
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 2960 DANLIER STREET
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 TEL: # (949) 254-8016
 dt@san.taylor.com



CONSULTANT:

STATE SEAL:

REVISIONS / PRINTS ISSUED

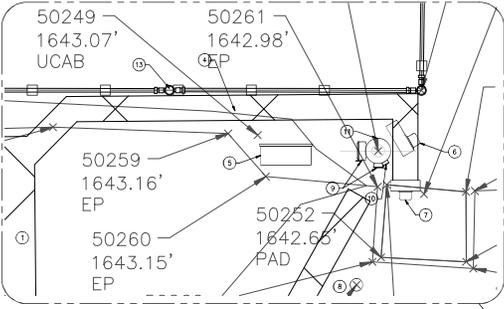
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1	ZV	11/14/23	PC CORRECTIONS
2	ZV	12/05/23	PC CORRECTIONS

SHEET TITLE:
SITE PLAN

DRAWN BY:	TWP	DATE:	12/05/23
CHECKED BY:	ZV	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	C100		

- CONSTRUCTION NOTES:**
- 1 NEW UNLEADED GASOLINE AND DIESEL TANKS.
 - 2 NEW 48KW GENERIC GENERATOR.
 - 3 NEW ASPHALT CONCRETE (AC) PAVEMENT.
 - 4 NEW 4,000 PSI CONCRETE PAVEMENT.
 - 5 NEW 60" x 30" RETENTION BASIN

SITE PLAN



SAN BERNARDINO COUNTY
DEPARTMENT OF FLEET
MANAGEMENT /
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL
80311 TRONA ROAD
TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure - Phase IV

PROJECT NUMBER: 10 00 0195
 CIP NUMBER: 20 000
 BUILDING (CAPAS) NUMBER: N/A
 AFR: 00480022

PROJECT AND FACILITIES MANAGEMENT DEPARTMENT
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CONSULTANT:

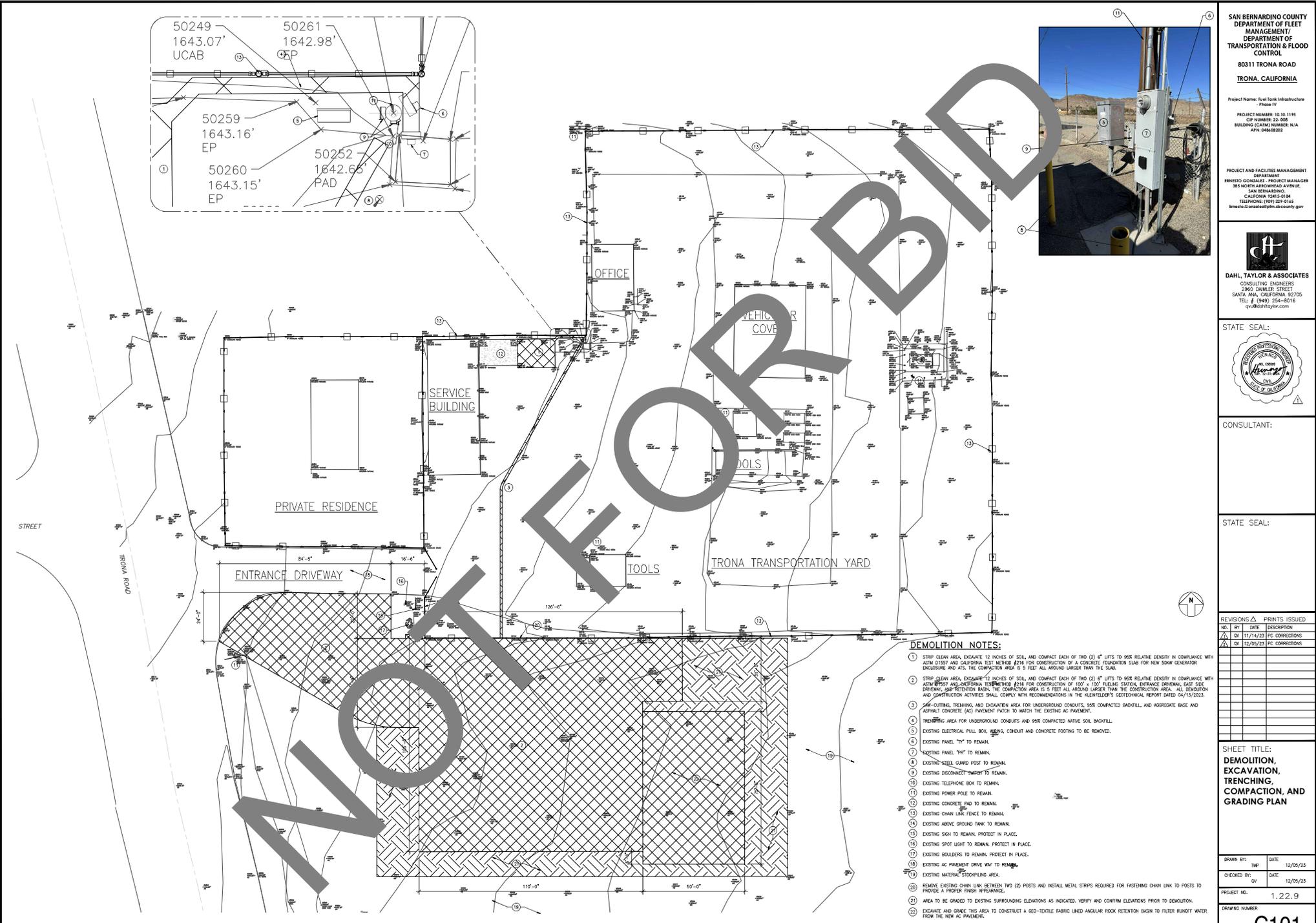
STATE SEAL:

NO.	REV.	DATE	DESCRIPTION
1	01	11/14/23	PC CORRECTIONS
2	01	12/05/23	PC CORRECTIONS

SHEET TITLE:
DEMOLITION,
EXCAVATION,
TRENCHING,
COMPACTION,
AND
GRADING PLAN

DRAWN BY: TYP DATE: 12/05/23
 CHECKED BY: JN DATE: 12/05/23
 PROJECT NO: 1.22.9
 DRAWING NUMBER:

C101



- DEMOLITION NOTES:**
- STRIP CLEAN AREA, EXCAVATE 12 INCHES OF SOIL, AND COMPACT EACH OF TWO (2) 4" LITS TO 95% RELATIVE DENSITY IN COMPLIANCE WITH ASTM D1557 AND CALIFORNIA TEST METHOD #216 FOR CONSTRUCTION OF A CONCRETE FOUNDATION SLAB FOR NEW 50KW GENERATOR ENCLOSURE AND SET THE CONSTRUCTION AREA TO 5 FEET ALL AROUND LARGER THAN THE SLAB.
 - STRIP CLEAN AREA, EXCAVATE 12 INCHES OF SOIL, AND COMPACT EACH OF TWO (2) 4" LITS TO 95% RELATIVE DENSITY IN COMPLIANCE WITH ASTM D1557 AND CALIFORNIA TEST METHOD #216 FOR CONSTRUCTION OF 100' X 100' PAVING STATION, ENTRANCE DRIVEWAY, EAST SIDE DRIVEWAY, AND COMPACTION FROM THE CONSTRUCTION AREA IS 5 FEET ALL AROUND LARGER THAN THE CONSTRUCTION AREA. ALL DEMOLITION AND CONSTRUCTION ACTIVITIES SHALL COMPLY WITH RECOMMENDATIONS IN THE KLEINFELDER'S GEOTECHNICAL REPORT DATED 04/13/2023.
 - SAW-CUTTING, TRENCHING, AND EXCAVATION AREA FOR UNDERGROUND CONDUITS, 90% COMPACTED BACKFILL AND AGGREGATE BASE AND ASPHALT CONCRETE (AC) PAVEMENT PATCH TO MATCH THE EXISTING AC PAVEMENT.
 - TRENCHING AREA FOR UNDERGROUND CONDUITS AND 95% COMPACTED NATIVE SOIL BACKFILL.
 - EXISTING ELECTRICAL PULL BOX, CONDUIT AND CONCRETE FOOTING TO BE REMOVED.
 - EXISTING PANEL "TY" TO REMAIN.
 - EXISTING STEEL GUARD POST TO REMAIN.
 - EXISTING DISCONNECT SWITCH TO REMAIN.
 - EXISTING TELEPHONE BOX TO REMAIN.
 - EXISTING POWER POLE TO REMAIN.
 - EXISTING CONCRETE PAD TO REMAIN.
 - EXISTING CHAIN LINK FENCE TO REMAIN.
 - EXISTING ABOVE GROUND TANK TO REMAIN.
 - EXISTING SIGN TO REMAIN, PROTECT IN PLACE.
 - EXISTING SPOT LIGHT TO REMAIN, PROTECT IN PLACE.
 - EXISTING BOLLARDERS TO REMAIN, PROTECT IN PLACE.
 - EXISTING MATERIAL STOCKPILING AREA.
 - REMOVE EXISTING CHAIN LINK BETWEEN TWO (2) POSTS AND INSTALL METAL STRIPS REQUIRED FOR FASTENING CHAIN LINK TO POSTS TO PROVIDE A PROPER FINISH APPEARANCE.
 - AREA TO BE GRADED TO EXISTING SURROUNDING ELEVATIONS AS INDICATED, VERIFY AND CONFIRM ELEVATIONS PRIOR TO DEMOLITION.
 - EXCAVATE AND GRADE THIS AREA TO CONSTRUCT A GEO-TEXTILE FABRIC LINED ANGULAR ROCK RETENTION BASH TO FILTER RUNOFF WATER FROM THE NEW AC PAVEMENT.

DEMOLITION, EXCAVATION, TRENCHING, COMPACTION, AND GRADING PLAN

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



CONSULTANT:

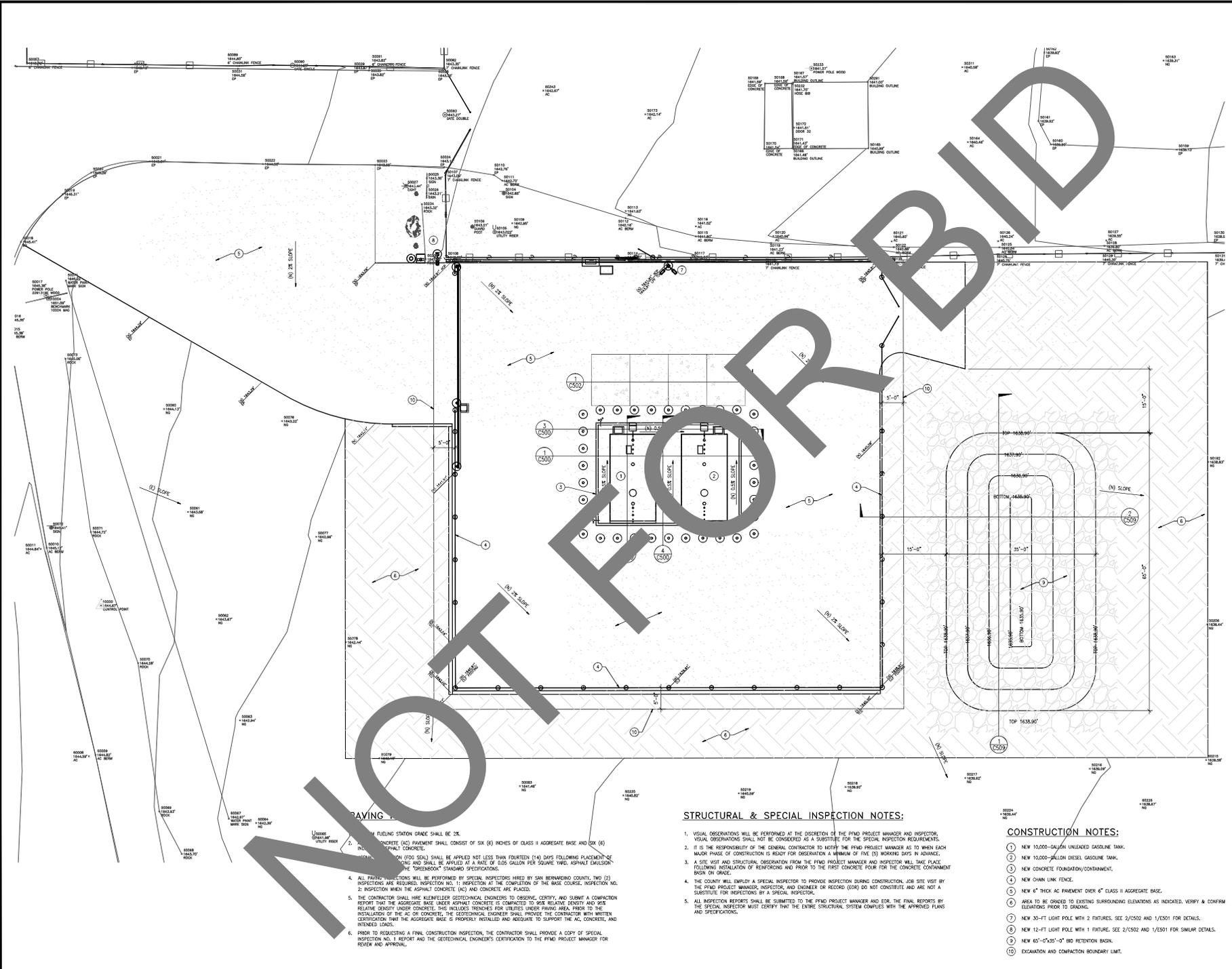
STATE SEAL:

REVISONS	DATE	DESCRIPTION	PRINTS ISSUED
1	11/14/23	PC CORRECTIONS	
2	12/05/23	PC CORRECTIONS	

SHEET TITLE:
**FUELING STATION
SITE PLAN**

DRAWN BY:	DATE:
CHKD BY:	DATE:
PROJECT NO.:	1.22.9
DRAWING NUMBER:	

C102



STRUCTURAL & SPECIAL INSPECTION NOTES:

1. VISUAL OBSERVATIONS WILL BE PERFORMED AT THE DISCRETION OF THE FPMO PROJECT MANAGER AND INSPECTOR. VISUAL OBSERVATIONS SHALL NOT BE CONSIDERED AS A SUBSTITUTE FOR THE SPECIAL INSPECTION REQUIREMENTS.
2. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY THE FPMO PROJECT MANAGER AS TO WHEN EACH MAJOR PHASE OF CONSTRUCTION IS READY FOR OBSERVATION A MINIMUM OF FIVE (5) WORKING DAYS IN ADVANCE.
3. A SITE TEST AND STRUCTURE OBSERVATION FROM THE FPMO PROJECT MANAGER AND INSPECTOR WILL TAKE PLACE FOLLOWING INSTALLATION OF REINFORCING AND PRIOR TO THE FIRST CONCRETE POUR FOR THE CONCRETE CONTAINMENT BASKIN OR CRACK.
4. THE COUNTY WILL EMPLOY A SPECIAL INSPECTOR TO PROVIDE INSPECTION DURING CONSTRUCTION, JOB SITE VISIT BY THE FPMO PROJECT MANAGER, INSPECTOR, AND ENGINEER OR RECORD (EOR) DO NOT CONSTITUTE AND ARE NOT A SUBSTITUTE FOR INSPECTIONS BY A SPECIAL INSPECTOR.
5. ALL INSPECTION REPORTS SHALL BE SUBMITTED TO THE FPMO PROJECT MANAGER AND EOR. THE FINAL REPORTS BY THE SPECIAL INSPECTOR MUST CERTIFY THAT THE ENTIRE STRUCTURAL SYSTEM COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS.

CONSTRUCTION NOTES:

1. NEW 10,000-GALLON UNLINED GASOLINE TANK.
2. NEW 10,000-GALLON DIESEL GASOLINE TANK.
3. NEW CONCRETE FOUNDATION/CONTAINMENT.
4. NEW CHAIN LINK FENCE.
5. NEW 6" THICK AC PAVEMENT OVER 4" CLASS II AGGREGATE BASE.
6. AREA TO BE GRADED TO EXISTING SURROUNDING ELEVATIONS AS INDICATED. VERIFY & CORRECT ELEVATIONS PRIOR TO GRADING.
7. NEW 30'-FT LIGHT POLE WITH 2 FIXTURES. SEE 2/C502 AND 1/E501 FOR DETAILS.
8. NEW 60'-0"X35'-0" RD RETENTION BASIN.
9. NEW 60'-0"X35'-0" RD RETENTION BASIN.
10. EXCAVATION AND COMPACTION BOUNDARY LIMIT.

PAVING & FUELING STATION GRACE SHALL BE 2%.

1. CONCRETE (AC) PAVEMENT SHALL CONSIST OF SIX (6) INCHES OF CLASS II AGGREGATE BASE AND SIX (6) INCHES OF CLASS II AGGREGATE CONCRETE.
2. A CURB AND GUTTER FINISH SHALL BE APPLIED AT A RATE OF 500 GALLON PER SQUARE YARD, ASPHALT EMULSION TYPE "S" (SEMI-SOLID) SHALL BE APPLIED NOT LESS THAN FOURTEEN (14) DAYS FOLLOWING PLACEMENT OF CONCRETE.
3. ALL PAVING OPERATIONS WILL BE PERFORMED BY SPECIAL INSPECTORS HIRED BY SAN BERNARDINO COUNTY. TWO (2) INSPECTIONS ARE REQUIRED. INSPECTION NO. 1: INSPECTION AT THE COMPLETION OF THE BASE COURSE. INSPECTION NO. 2: INSPECTION WHEN THE ASPHALT CONCRETE (AC) AND CONCRETE ARE PLACED.
4. THE CONTRACTOR SHALL HIRE KEMPELDER GEOTECHNICAL ENGINEERS TO OBSERVE, CERTIFY, AND SUBMIT A COMPARISON REPORT THAT THE AGGREGATE BASE UNDER ASPHALT CONCRETE IS COMPACTED TO 98% RELATIVE DENSITY AND 98% RELATIVE DENSITY UNDER CONCRETE. THIS INCLUDES TRENCHES FOR UTILITIES UNDER PAVING AREA. PRIOR TO THE INSTALLATION OF THE AC OR CONCRETE, THE GEOTECHNICAL ENGINEER SHALL PROVIDE THE CONTRACTOR WITH WRITTEN CERTIFICATION THAT THE AGGREGATE BASE IS PROPERLY INSTALLED AND ADEQUATE TO SUPPORT THE AC, CONCRETE, AND INTERNEED LOADS.
5. PRIOR TO REQUESTING A FINAL CONSTRUCTION INSPECTION, THE CONTRACTOR SHALL PROVIDE A COPY OF SPECIAL INSPECTION NO. 1 REPORT AND THE GEOTECHNICAL ENGINEER'S CERTIFICATION TO THE FPMO PROJECT MANAGER FOR REVIEW AND APPROVAL.

FUELING STATION SITE PLAN



STATE SEAL:



CONSULTANT:

STATE SEAL:

REVISIONS Δ PRINTS ISSUED

NO.	DATE	DESCRIPTION	BY	CHKD.
Δ 1	11/14/23	PC CORRECTIONS	SV	
Δ 2	12/05/23	PC CORRECTIONS	SV	

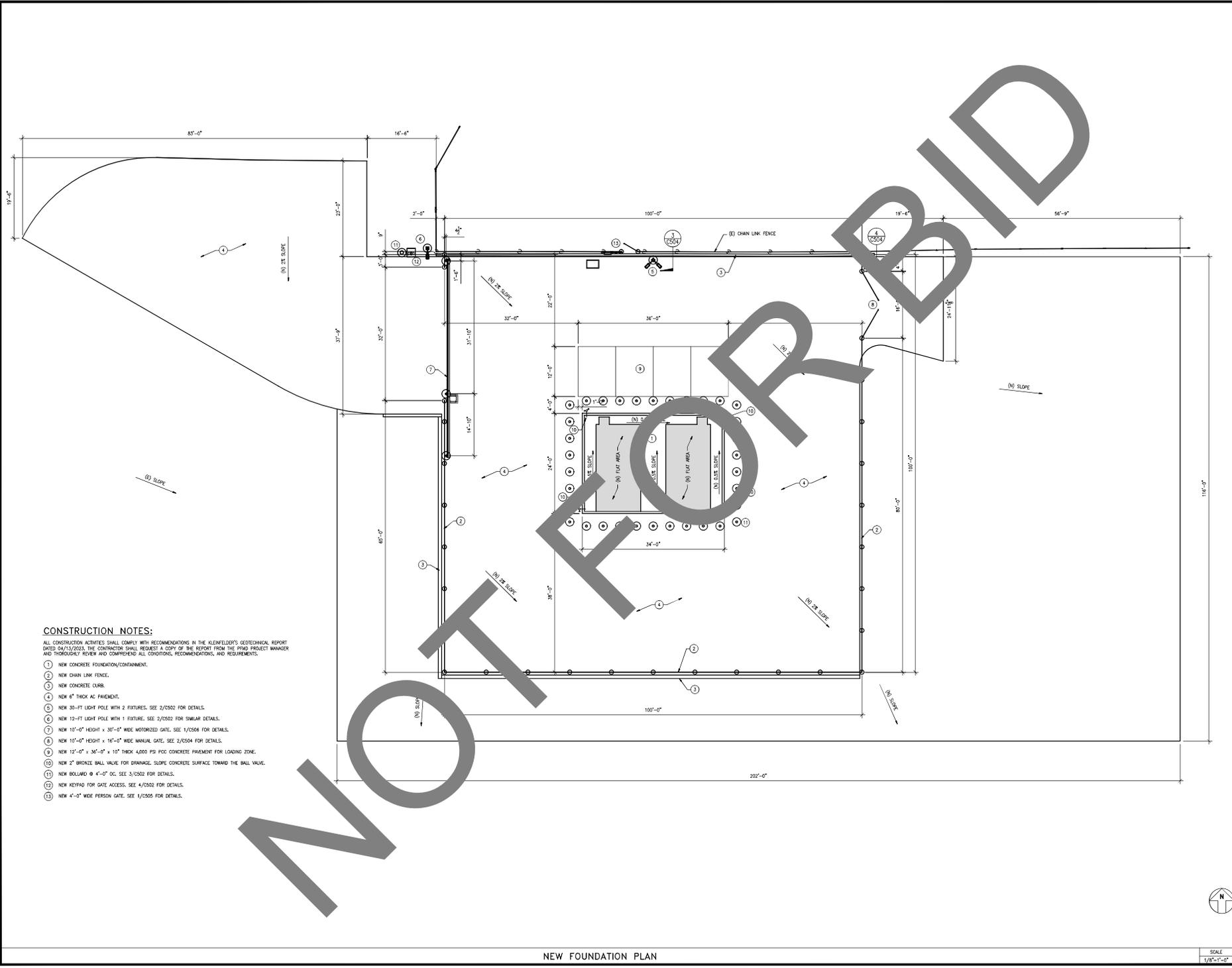
SHEET TITLE:
**NEW FOUNDATION
 PLAN**

BROWN BY:	TWP	DATE:	12/05/23
CHECKED BY:	SV	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	C104		



SCALE: 1/8"=1'-0" **1**

PLAN CHECK RESUBMISSION



CONSTRUCTION NOTES:

- ALL CONSTRUCTION ACTIVITIES SHALL COMPLY WITH RECOMMENDATIONS IN THE CLIENT'S GEOTECHNICAL REPORT DATED 04/13/2023. THE CONTRACTOR SHALL REQUEST A COPY OF THE REPORT FROM THE PMO PROJECT MANAGER AND THOROUGHLY REVIEW AND COMPREHEND ALL CONDITIONS, RECOMMENDATIONS, AND REQUIREMENTS.
- NEW CONCRETE FOUNDATION/CONTAINMENT.
 - NEW CHAIN LINK FENCE.
 - NEW CONCRETE CURB.
 - NEW 6" THICK AC PAVEMENT.
 - NEW 30-FT LIGHT POLE WITH 2 FIXTURES. SEE 2/C502 FOR DETAILS.
 - NEW 12-FT LIGHT POLE WITH 1 FIXTURE. SEE 2/C502 FOR SIMILAR DETAILS.
 - NEW 10'-0" HEIGHT x 30'-0" WIDE MOTORIZED GATE. SEE 1/C506 FOR DETAILS.
 - NEW 10'-0" HEIGHT x 16'-0" WIDE MANUAL GATE. SEE 2/C504 FOR DETAILS.
 - NEW 12'-0" x 36'-0" x 10" THICK 4,000 PSI PCC CONCRETE PAVEMENT FOR LOADING ZONE.
 - NEW 2" BRONZE BALL VALVE FOR DRAINAGE. SLOPE CONCRETE SURFACE TOWARD THE BALL VALVE.
 - NEW BOLLARD Ø 4'-0" OC. SEE 3/C502 FOR DETAILS.
 - NEW KEYPAD FOR GATE ACCESS. SEE 4/C502 FOR DETAILS.
 - NEW 4'-0" WIDE PERSON GATE. SEE 1/C505 FOR DETAILS.

NEW FOUNDATION PLAN



CONSULTANT:

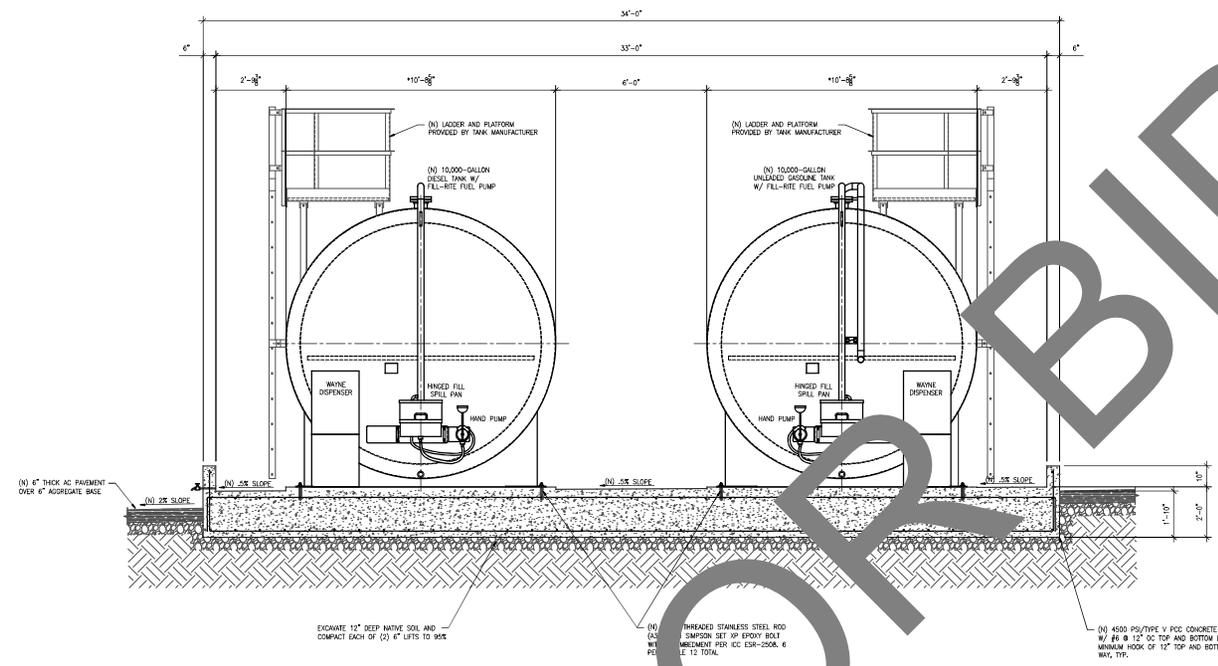
STATE SEAL:

REVISIONS	DATE	DESCRIPTION	PRINTS ISSUED
1	11/14/23	PC CORRECTIONS	
2	12/05/23	PC CORRECTIONS	

SHEET TITLE:
**SECTIONS OF NEW
TANKS AND
CONCRETE
FOUNDATION**

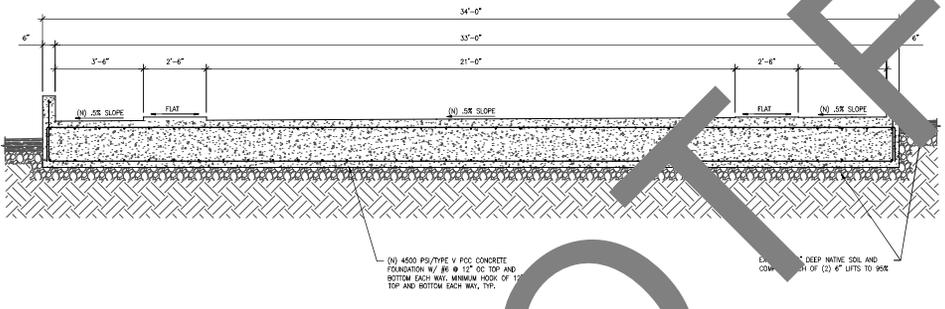
DRAWN BY:	TYP	DATE:	12/05/23
CHECKED BY:	DN	DATE:	12/05/23
PROJECT NO.:	1-22.9		
DRAWING NUMBER:	C500		

C500



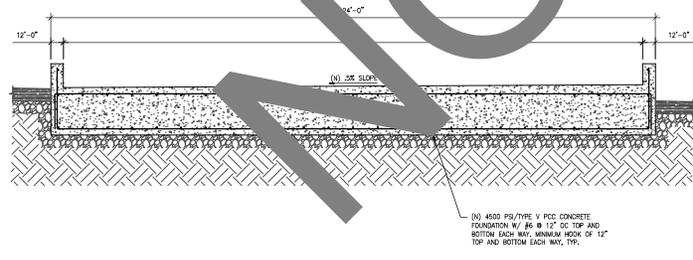
SECTION OF NEW TANKS AND CONCRETE FOUNDATION

SCALE: 1/2"=1'-0" 1



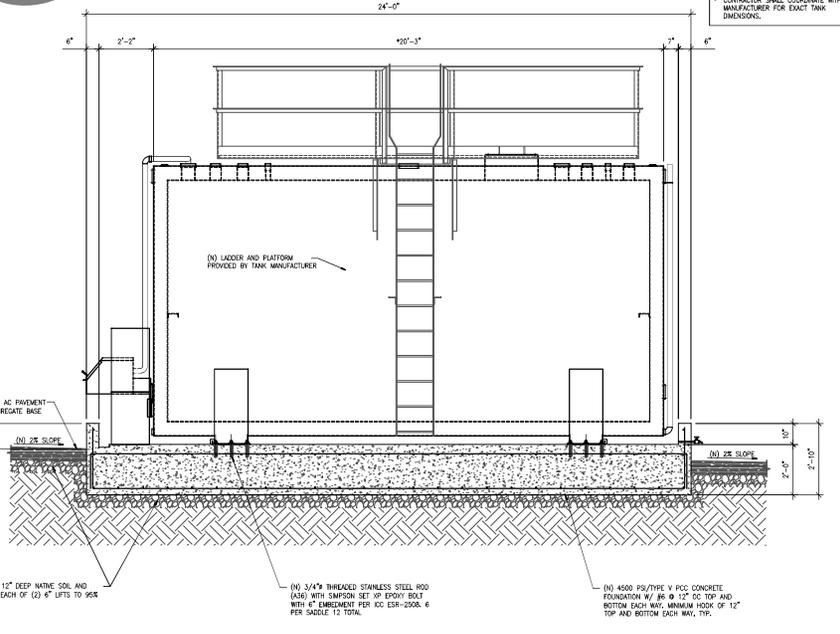
SECTION

SCALE: 1/2"=1'-0" 3



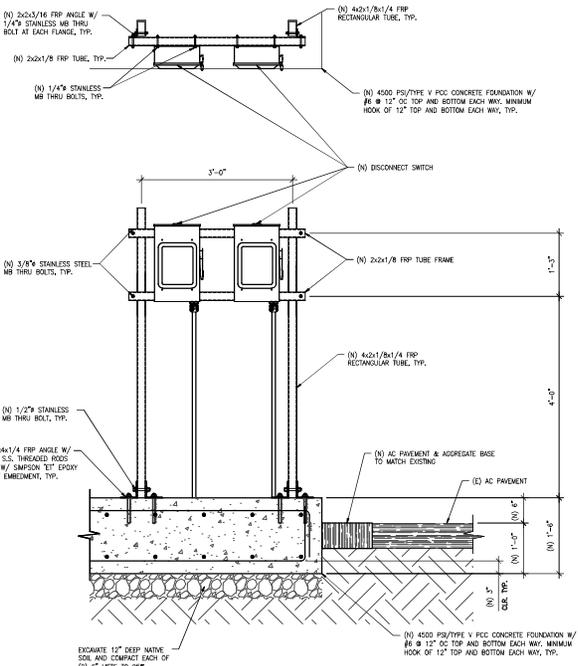
SECTION

SCALE: 1/2"=1'-0" 4

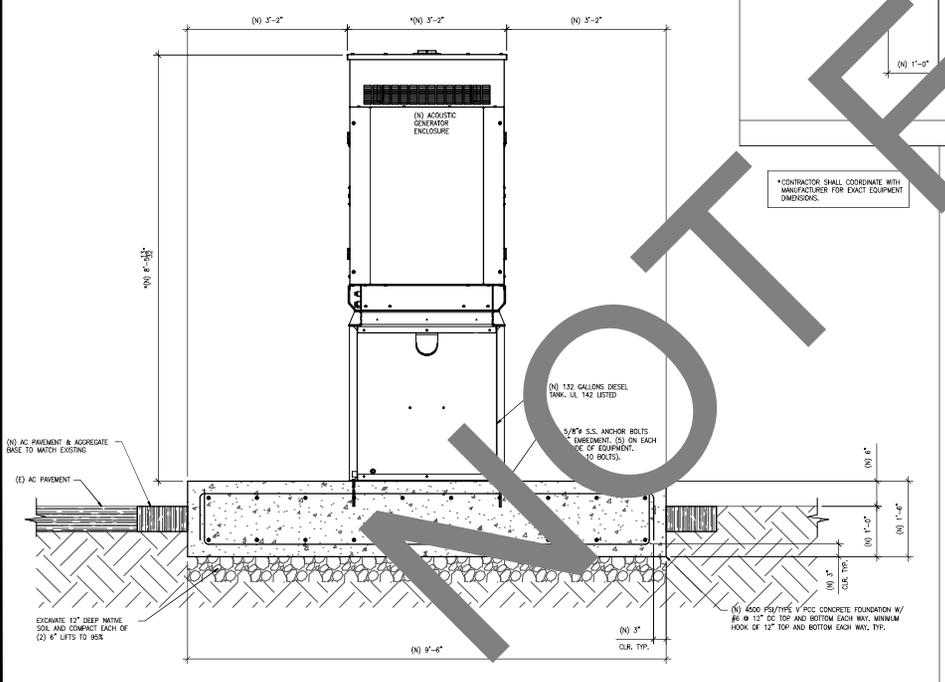


SECTION OF NEW TANKS AND CONCRETE FOUNDATION

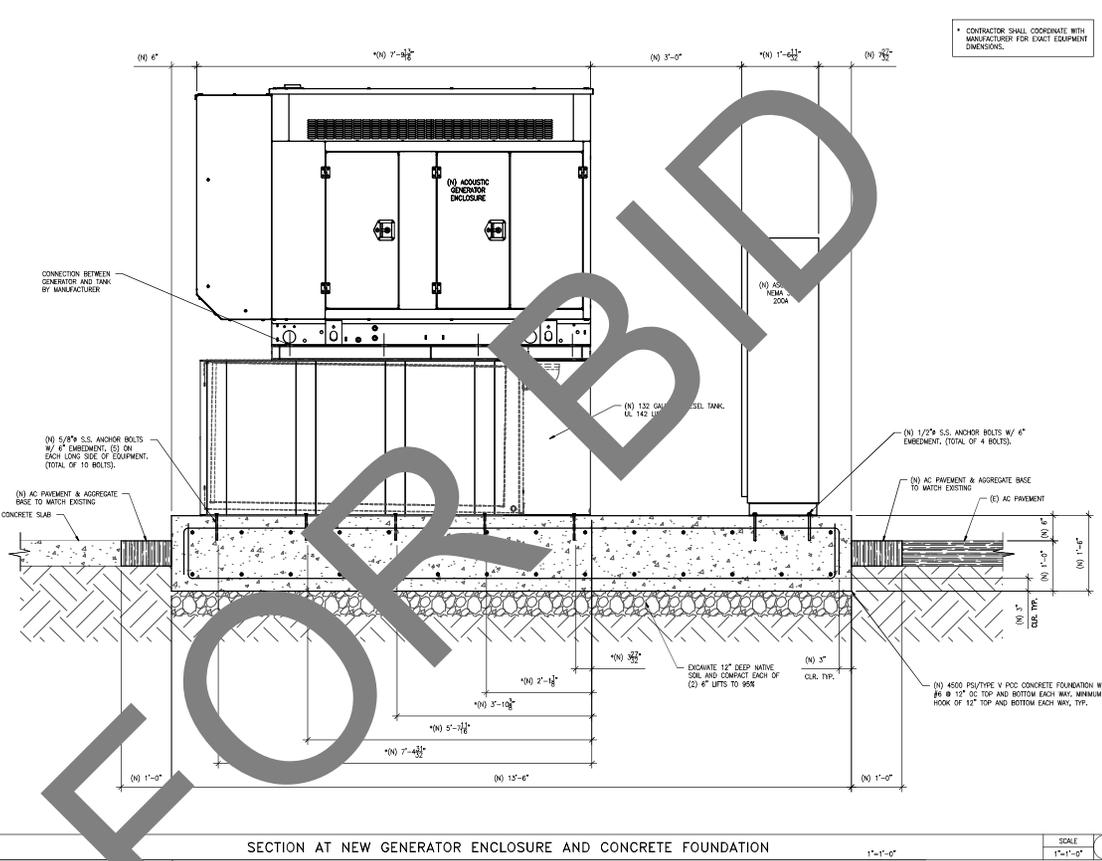
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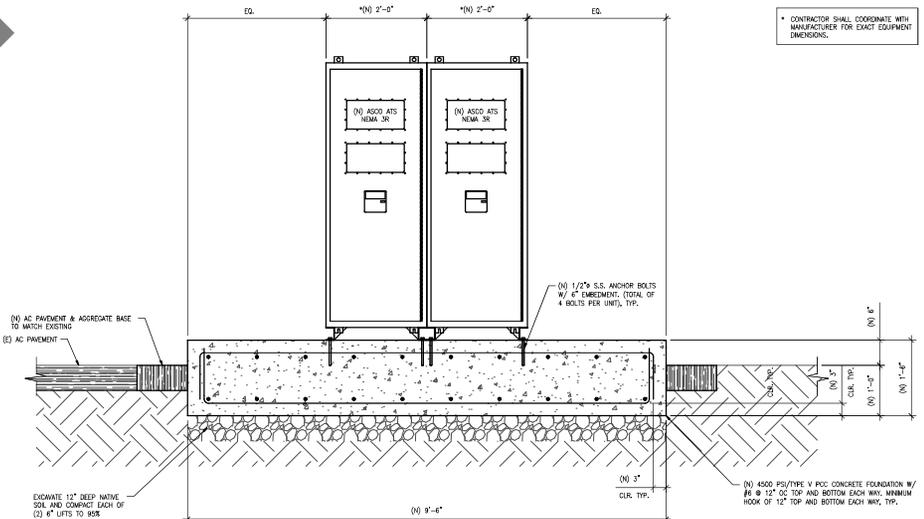
DISCONNECT SWITCH MOUNTING DETAIL



SECTION AT NEW GENERATOR ENCLOSURE AND CONCRETE FOUNDATION



SECTION AT NEW GENERATOR ENCLOSURE AND CONCRETE FOUNDATION



SECTION AT NEW ATS AND CONCRETE FOUNDATION

* CONTRACTOR SHALL COORDINATE WITH MANUFACTURER FOR EXACT EQUIPMENT DIMENSIONS.

* CONTRACTOR SHALL COORDINATE WITH MANUFACTURER FOR EXACT EQUIPMENT DIMENSIONS.

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SAN BERNARDINO COUNTY
DEPARTMENT OF FLEET
MANAGEMENT /
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL
80311 TRONA ROAD
TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure
- Phase IV
PROJECT NUMBER: 10 00 0195
CIP NUMBER: 20 000
BUILDING (CAPAS) NUMBER: N/A
APN: 06460022

PROJECT AND FACILITIES MANAGEMENT
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STATE SEAL:



CONSULTANT:

STATE SEAL:

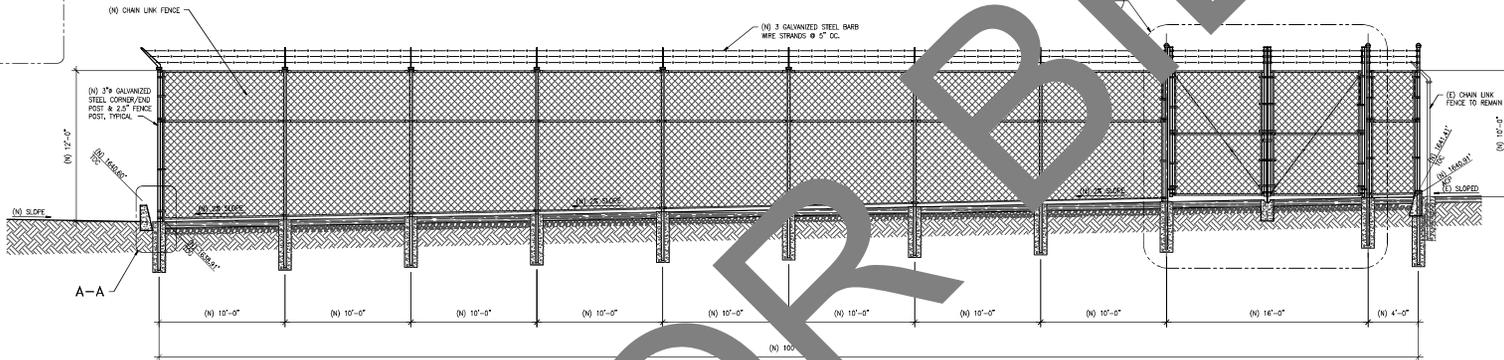
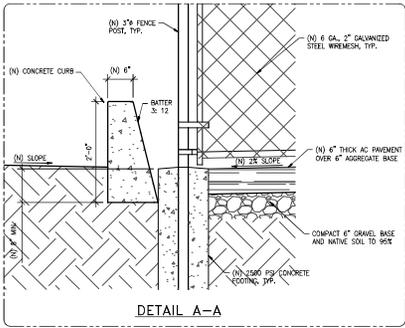
REV.	BY	DATE	DESCRIPTION
1	CV	11/14/23	PC CORRECTIONS
2	DV	12/05/23	PC CORRECTIONS

SHEET TITLE:
DETAILS AND SECTIONS

BROWN BY:	TYP	DATE:	12/05/23
CHECKED BY:	DV	DATE:	12/05/23

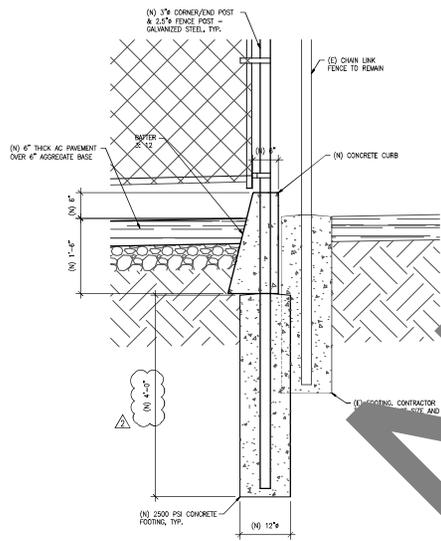
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DRAWING NUMBER

C501



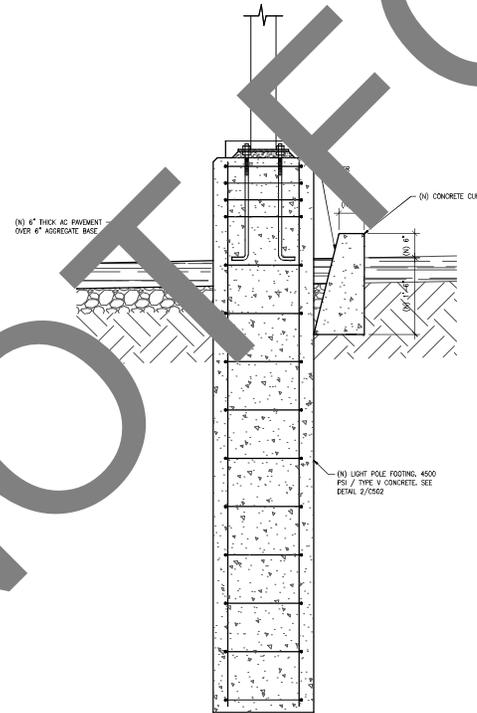
CHAIN LINK FENCE ELEVATION - EAST

SCALE 1/4"=1'-0" 1



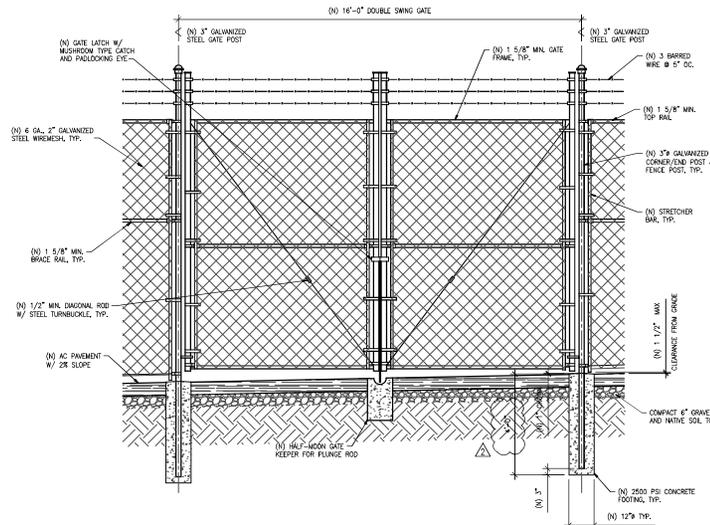
SECTION

SCALE 1/4"=1'-0" 4



SECTION

SCALE 1/4"=1'-0" 3



CHAIN LINK FENCE AT DOUBLE SWING ACCESS GATE DETAIL

SCALE 1/2"=1'-0" 2

SAN BERNARDINO COUNTY
DEPARTMENT OF FLEET
MANAGEMENT/
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL
80311 TRONA ROAD
TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure
Phase IV
PROJECT NUMBER: 16 00 1195
CIP NUMBER: 20 000
BUILDING (CAPAS) NUMBER: N/A
APN: 08460002

PROJECT AND FACILITIES MANAGEMENT
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STATE SEAL:



CONSULTANT:

STATE SEAL:

REVISIONS & PRINTS ISSUED

NO.	BY	DATE	DESCRIPTION
1	ZV	11/14/23	PC CORRECTIONS
2	ZV	12/05/23	PC CORRECTIONS

SHEET TITLE:
DETAILS AND SECTIONS

DRAWN BY:	TMP	DATE:	12/05/23
CHECKED BY:	ZV	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	C504		

C504



CONSULTANT:

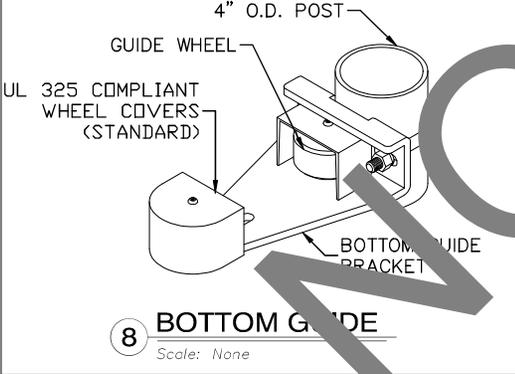
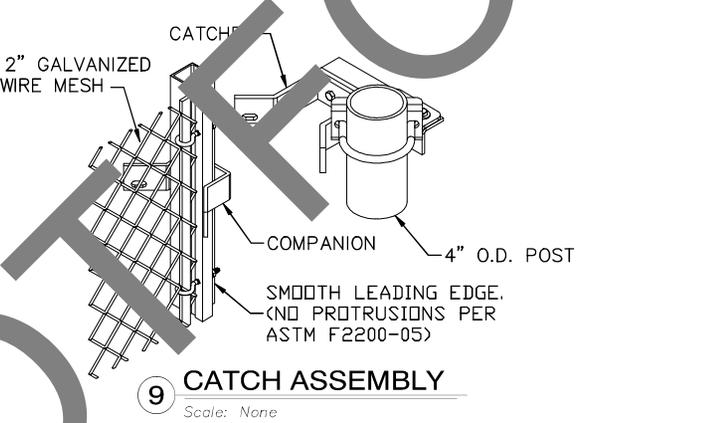
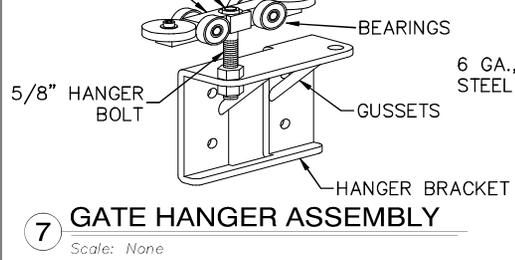
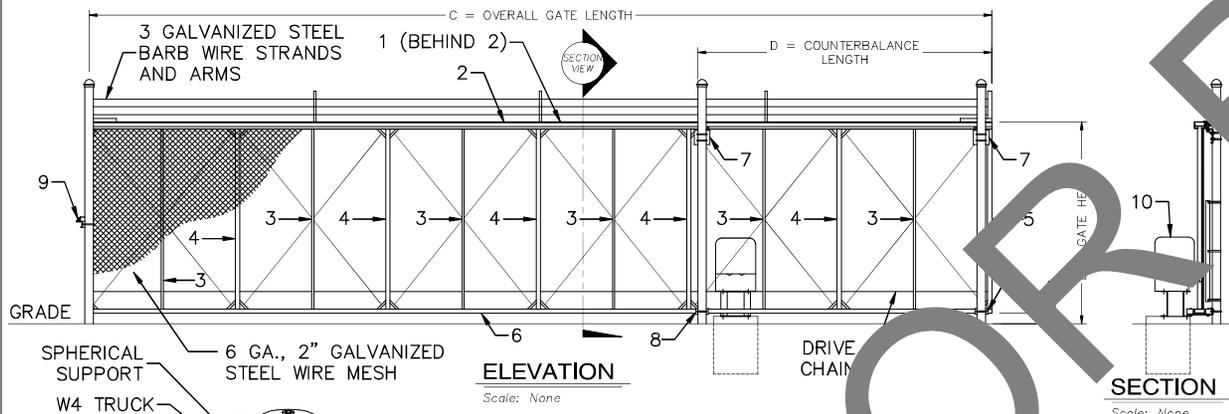
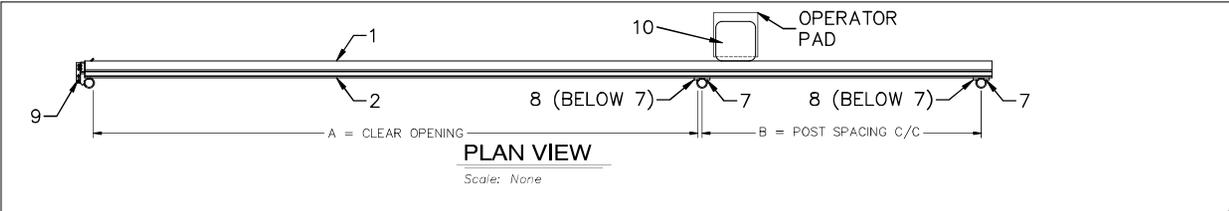
STATE SEAL:

NO.	REV.	DATE	DESCRIPTION	PRINTS ISSUED
1	01	11/14/23	PC CORRECTIONS	
2	01	12/05/23	PC CORRECTIONS	

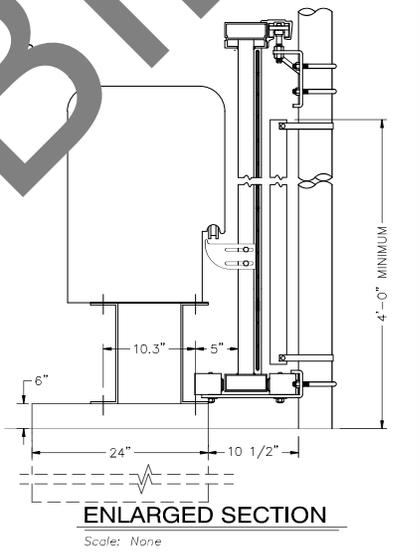
SHEET TITLE:
CHAIN LINK FENCE WITH MOTORIZED GATE DETAILS

DRAWN BY:	TYP	DATE:	12/05/23
CHECKED BY:	QV	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	C506		

MARK	DESCRIPTION	FORMULA	DIM.
A	CLEAR OPENING	A	-
B	COUNTERBALANCE POST SPACING C/C	(A/2)-11"	-
C	OVERALL GATE LENGTH	A x 1.5	-
D	COUNTERBALANCE LENGTH	A x 0.5	-
E	NOMINAL GATE HEIGHT	E	-
F	POST HEIGHT TO BARB ARM	E + 1'-6"	-
G	FABRIC HEIGHT	E - 1'-0"	-



NOTES:
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.
3. CONTRACTORS NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info REFERENCE NUMBER 1483-023.



TYM-1000 SECURITY GATE SYSTEM (WITH HEAVY DUTY GATE)		
BILL OF MATERIALS		
MARK	DESCRIPTION	NOTES
1	TOP PRIMARY MEMBER	3.06
2	STANDARD TRACK	2.91
3	STANDARD PRIMARY	1.69
4	2" X 2" ALUM. TUBE	1.13
5	1" X 2" ALUM. TUBE	TYP. AT ENDS OF GATE FRAME
6	2" X 5" ALUM. TUBE	2.03
7	2" X 5" ALUM. TUBE	2.03
8	2" X 5" ALUM. TUBE	2.03
9	2" X 5" ALUM. TUBE	2.03
10	LIFT MASTER SL3000101UL OPERATOR, 1 HP, 3PHCONV	
11	2" X 5" ALUM. TUBE	2.03
12	2" X 5" ALUM. TUBE	2.03

SECURITY GATE SYSTEM (WITH HEAVY DUTY GATE)



SELECT S1 COMPACT REMOTE DISPENSER SPECIFICATIONS

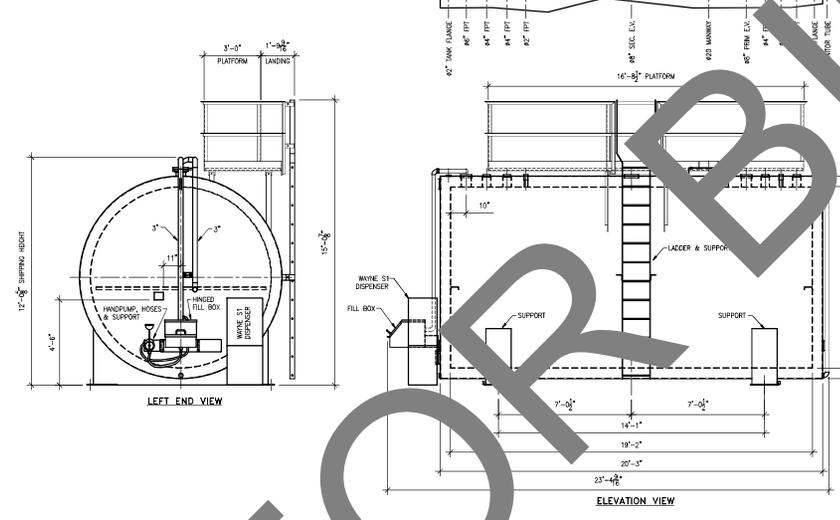
Models:
 All models are single-sided front display with line-oriented nozzle except one DEF model as noted.
Std. Pallet: 3/G7107D/29GKRU (EC - up to 20 gpm) / 3/G7127D/29GKRU (98 - up to 30 gpm)
ESS: E3XG7107D/29GKRU
DEF: D03G7107D/R with hoses for 12" / D23G7107D/R, stainless steel nozzle.
Model No. Format: 3/G7107D/29GKRU (EC) / 3/G7127D/29GKRU (98) / 2
Options: Option software are not available in 1" / 4" / 5" indicates a valve option. (R) = single-sided / (Y) = flow rate and max. fuel rate at no discharge.
Compatibility: For dispensing low viscosity petroleum fuels - diesel - located up to 100' gasoline up to 500' kerosene, Aviation, and jet fuel. DEF model: 55 & 60 gals. DEF model: Diesel volume fuel only (complies with 49 CFR 22.921-3).
Options:
 LCD Display: Backlit 1.5" seven-digit volume display and 10" four-character status display. Configurable 0-4 digits to right of decimal. Programmable gallons or liters. If power loss, displays remain visible for approximately 15 minutes.
 Totalizer: 7-digit electromechanical non-resettable totalizer. Electronic nonresettable & resettable 7-digit totalizers show on LCD using keypad control.
 POS or Fleet System Interface: Wayne serial protocol. See pulse output option.
 Meter: Wayne Meter™ 3/8" 2-position positive displacement fuel meter with integral intelligent output. Electronic calculation. E85 model - Wayne X60™ fuel meter (X) DEF model: separate treated meter. SHC uses (2) manifolded meters (higher flow).
 Flow Control Valve: Regulator (R) (2.2 cm). Allows setting max. flow rate. SHC uses (2) valves.
 Inlet Connection: 1 1/2" (3.8 cm) fem. NPT. No rear flow. (R) 1/2" thru-flow (R) 1/2" male adapter. 400 series filter on meter (M). DEF model: includes strainer and cap (see DEF filter options).
 Dispenser: 1" Female NPT w/ 1" adapter. DEF w/ 1" Male BSPP adapter.
 Nozzle Boot: Lift-to-start activation.
 Hose Hanger (H): Keeps hose off ground when idle.



DOVER FUELING SOLUTIONS
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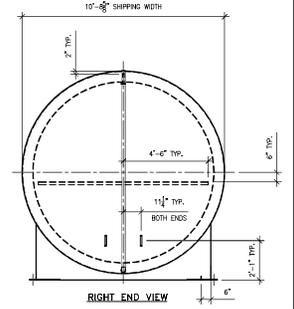
FUEL TANK PARTS

133-400-1000	10000 GALLON CYLINDRICAL STEEL VALET
1606V1005	2" HORIZON AUTOMATIC SHUTOFF VALVE EVR
1606V1007S	HINGED GROUND LEVEL FILL SPILL PAN WITH HAND PUMP, HOSES, & ACCESSORIES
1606V1003	MHC 3" 25 OHM-CARB GROUND LEVEL FILL SYSTEM
1606V2003	MHC 3" 25 OHM-CARB GROUND LEVEL FILL SYSTEM
3060R100	GASOLINE PUMP & II DISPENSING PACKAGE WITH SUCTION TUBE, PUMP, VALVES, STRAINERS, 2" PIPING, & WAYNE SELECT S1 20" WITH PRESTON-MOUNTED DISPENSER RUNG LADDER AND 14" X 18" PLATFORM W/STANDARD - GALVANIZED SECONDARY ALARM & SENSORS
L4P1000	
1A-732A	



CUSTOMER SIGNATURE: _____
DATE: _____
SHOP ORDER NO.: _____
EST. STEEL TANK WEIGHT: _____
VENTING CAPACITY: PRIMARY: 372,600 SCFH
 SECONDARY: 410,800 SCFH

CONNECTION #	PRIMARY TANK	SECONDARY TANK
40" TPT	42 3/16"	2 7/8"
42" TANK FLANGE	42 3/16"	42 3/16"
44" TPT	45 5/8"	45 3/16"
46" TPT	46 11/16"	46 1/2"
8" SEC. E.L.	---	42 3/16"
8" PRIM. E.L.	8 3/4"	9 3/4"
20" MANWAY	25 9/16"	25 9/16"



SHOP NOTES

- COVER ALL OPENINGS BEFORE SHIPPING.
- STRADE CENTER LINES OF ALL FLANGES UNLESS OTHERWISE SPECIFIED.
- GRADE & CLEARANCE ALL ISSUES.
- MARK GRADING AND ELEVATION BEFORE PAINTING.

MODERN CUSTOM FABRICATION
 Fresno California
 P.O. Box 11925 • 4301 E. California Ave. • Fresno, California 93702
 PH: (559) 486-0000 • FAX: (559) 486-0001

MODEL NO. MHC-D5-10000

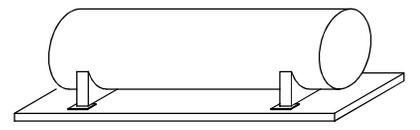
SUBVAULT-IMP-PROTECTED ABOVE GROUND STORAGE TANK

SCALE: 1" = 1' or 1"

TANK DETAIL



STANDARD TANK TOP PLATFORM AND LADDER



TANK SUPPORT

- TANK ACCESSORIES**
- STAINLESS STEEL ANCHOR BOLTS
 - RELIEF VALVES AND BAYLETS
 - CUSTOM NAME AND TECHNICAL DATA PLATES
 - EXHAUST PIPING
 - EQUIPMENT PACKAGES
 - GAUGE AND PUMP SHELVES
 - GROUND LEVEL LOAD (REMOTE FILL)
 - SIZE MOUNT LADDER / PLATFORM
 - PAINTED GALVANIZED FUMP PLATFORM 24" x 36"
 - REINFORCING FRAMES
 - SHORT TUBES
 - SPILL BOX
 - WEAR PLATES

NOTE: PROVIDE GROUND LEVEL FILLING TO TOP OF TANK WITH VENT. SADDLE CONNECTION FOR LADDER AND PLATFORM ASSEMBLY TO BE CONNECTED WITH 1-INCH STAINLESS STEEL THREADED BOLTS AND 4 STAINLESS STEEL ANCHOR BOLTS PER SADDLE.

RUNG LADDER AND PLATFORM THAT EXTEND TO BOTH ENDS OF EACH TANK - GALVANIZED

TANK ACCESSORIES

WAYNE SELECT S1 DISPENSERS ON MODEL NUMBER: 3/G7107D/29GKRUR/H/Dx/V6/S/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100/101/102/103/104/105/106/107/108/109/110/111/112/113/114/115/116/117/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000/1001/1002/1003/1004/1005/1006/1007/1008/1009/1010/1011/1012/1013/1014/1015/1016/1017/1018/1019/1020/1021/1022/1023/1024/1025/1026/1027/1028/1029/1030/1031/1032/1033/1034/1035/1036/1037/1038/1039/1040/1041/1042/1043/1044/1045/1046/1047/1048/1049/1050/1051/1052/1053/1054/1055/1056/1057/1058/1059/1060/1061/1062/1063/1064/1065/1066/1067/1068/1069/1070/1071/1072/1073/1074/1075/1076/1077/1078/1079/1080/1081/1082/1083/1084/1085/1086/1087/1088/1089/1090/1091/1092/1093/1094/1095/1096/1097/1098/1099/1100/1101/1102/1103/1104/1105/1106/1107/1108/1109/1110/1111/1112/1113/1114/1115/1116/1117/1118/1119/1120/1121/1122/1123/1124/1125/1126/1127/1128/1129/1130/1131/1132/1133/1134/1135/1136/1137/1138/1139/1140/1141/1142/1143/1144/1145/1146/1147/1148/1149/1150/1151/1152/1153/1154/1155/1156/1157/1158/1159/1160/1161/1162/1163/1164/1165/1166/1167/1168/1169/1170/1171/1172/1173/1174/1175/1176/1177/1178/1179/1180/1181/1182/1183/1184/1185/1186/1187/1188/1189/1190/1191/1192/1193/1194/1195/1196/1197/1198/1199/1200/1201/1202/1203/1204/1205/1206/1207/1208/1209/1210/1211/1212/1213/1214/1215/1216/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Model 927/928/735DC Series

Application

The Morrison 927 dry disconnect adaptor is installed at the fill point in the fill line of a fuel storage tank system. The internal spring loaded poppet assembly remains closed providing a liquid-tight seal when not connected to a dry disconnect coupler.

The Morrison 928 dry disconnect coupler is installed on the end of delivery vehicle hose. When coupled, the 927 and 928 provide a liquid-tight connection enabling a dry connection and a dry disconnection.

The 735DC dust cap serves as a protective cover for the 927 adaptor when not in use.

927 models mate with PT Maxi-Dry® and OPW Kamvalok® couplers.

Code Compliance

735DC models meet California EVR-VR-02; some 927 and 928 models meet CARB Phase 1 EVR VR-02

Item Number	Size	Description	A	B	C	D	E	Cap Size	Weight (lbs)
927-0150 1A	1 1/2"	Dry disconnect adaptor	1N	2"	A	F	N	2"	1.53
927-0200AAEVR	2"	Dry disconnect adaptor	2N	2 1/2"	A	F	Y	2 1/2"	1.98
927-0300AAEVR	3"	Dry disconnect adaptor	3N	4"	A	F	Y	4"	3.50
927-0400AAEVR	4"	Dry disconnect adaptor	4N	4"	A	F	Y	4"	3.50
500SA3201AAEVR	4" x 2"	Dry disconnect adaptor	4N	2 1/2"	A	F	Y	2 1/2"	2.50
927S-0150 1A	1 1/2"	Dry disconnect adaptor	1N	2"	SS	F	N	2"	3.80
927S-0200 1A	2"	Dry disconnect adaptor	2N	2 1/2"	SS	F	N	2 1/2"	5.90
927S-0300 1A	3"	Dry disconnect adaptor	3N	4"	SS	F	N	4"	18.25
928-0150 1C	1 1/2"	Dry disconnect coupler	1N	2"	A	F	N	N/A	4.40
928-0150AAEVR	1 1/2"	Dry disconnect coupler	1N	2"	A	F	Y	N/A	4.40
928-0200 1C	2"	Dry disconnect coupler	2N	2 1/2"	A	F	N	N/A	6.0
928-0200AAEVR	2"	Dry disconnect coupler	2N	2 1/2"	A	F	Y	N/A	6.0
928-0300 1C	3"	Dry disconnect coupler	3N	4"	A	F	N	N/A	12.60
928-0300AAEVR	3"	Dry disconnect coupler	3N	4"	A	F	Y	N/A	12.60
928S-0150 1C	1 1/2"	Dry disconnect coupler	1N	2"	SS	F	N	N/A	-
928S-0200 1C	2"	Dry disconnect coupler	2N	2 1/2"	SS	F	N	N/A	-
928S-0300 1C	3"	Dry disconnect coupler	3N	4"	SS	F	N	N/A	-
735DC-2000ACEVR	2"	Dust cap, use w/ 1 1/2" 927 adaptors	N/A	N/A	A	B	Y	N/A	1.0
735DC-3000ACEVR	2"	Dust cap, use w/ 1 1/2" 927 adaptors	N/A	N/A	AA	B	Y	N/A	1.0
735DC-2000ACEVR	2 1/2"	Dust cap, use w/ 2" 927 adaptors	N/A	N/A	A	B	Y	N/A	1.25
735DC-CA2000ACEVR	2 1/2"	Dust cap, use w/ 2" 927 adaptors	N/A	N/A	AA	B	Y	N/A	1.25
735DC-3000ACEVR	3"	Dust cap, use w/ 3" 927 adaptors	N/A	N/A	A	B	Y	N/A	1.50
735DC-CA3000ACEVR	3"	Dust cap, use w/ 3" 927 adaptors	N/A	N/A	AA	B	Y	N/A	1.50
735DC-4000ACEVR	4"	Dust cap, use w/ 3" & 4" 927 adaptors	N/A	N/A	A	B	Y	N/A	2.50
735DC-CA4000ACEVR	4"	Dust cap, use w/ 3" & 4" 927 adaptors	N/A	N/A	AA	B	Y	N/A	2.50

SPECIFICATION SHEET



927 (2")



928 (2")



735DC (4")

SPECIFICATION OPTIONS:

- A**—Female threads: 1 1/2" NPT (1N); 2" NPT (2N); 2 1/2" NPT (2 1/2N); 3" NPT (3N); 4" NPT (4N)
- B**—Coupler size
- C**—Body: Herculon® coated aluminum (AA); Anodized aluminum (AA); Stainless steel (SS)
- D**—Seals: FKM (F); Buna-N (B)
- E**—EVR: Yes (Y); No (N)
- Cap size**—Inches
- Weight**—Shipping weight

570 E. 7th Street, P.O. Box 238 | Dubuque, IA 52004-0238
t. 563-583-5701 | 800.533.4840 | f. 563-583-5028
www.morrisonbros.com

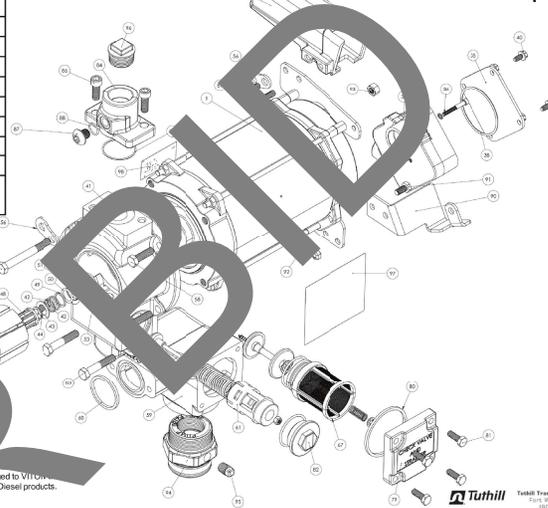
February 2022

MORRISON BROS. CO.

Repair Kits (kit # / parts included)

KIT300SW:	36, Lever not shown
KIT300JC:	35, 38, 40
KIT300BV:	61, 82
KIT700SL:	42-44, 49-53
KIT300RG:	5, 6, 7, 24, 25, Cover
KIT300BG:	62
KIT300SG:	2, 3, 4
KIT120NB:	60, 61
KIT300BD:	3, 7, 11, 15-23, 30, 33
KIT300CV:	10, 11
KIT300OT:	84, 85, 86, 87, 88
KIT300AS:	Anti-Siphon Kit (parts not shown): Tube, O-rings, adapters, pipe

FILL-RITE® FR300 Series Pump Kits



*KIT300BD is the combination of pump housing and rotor. This kit includes the welded Fluorocarbon seals. *Seals are not changed to Viton® with BioDiesel products.
DC900521-000 Rev 0

Tuthill Transfer Systems
Fort Wayne, Indiana 46702-024-0000
www.tuthill.com

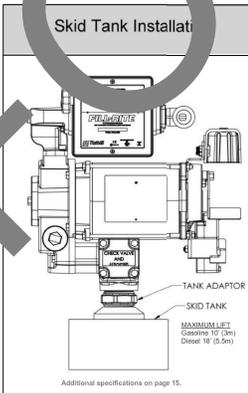
Materials:

- 1-1/4" pvc cut to a length that will terminate at least 3" from the bottom of the tank when installed into the tank adapter with the tank flange (see SKID TANK INSTALLATION details).
- Threaded pipe sealant appropriate for application.

Installation Procedure:

- Thread the 1-1/4" pvc into the tank adapter. Seal the liquid tight with appropriate thread sealant.
- Install the tank adapter into the tank flange; seal threads liquid tight with appropriate thread sealant.
- Mount the pump on the adapter; seal threads liquid tight with appropriate thread sealant.
- Tuthill recommends installation of an Anti-Siphon Device (see page 18 for detailed information).

Skid Tank Installation



Additional specifications on page 15.

FILL-RITE® FR313V Technical Specifications

The Most Trusted Name in Pumps and Meters

Motor	115/230 VOLT
Power - AC	115, 230, 115/230
HZ	50, 60, 50/60
Power - DC	12, 24, 12/24
HP (horsepower) rating	3/4
Power cord length	None
Power cord gauge	N/A
Power cord DC battery connectors	N/A
Amps (FLA)	9.84 @ 115/230 V
RPM	1725/1425
Duty cycle	30 min.
Thermal protection switch	Y
Circuit protection fuse	NONE
Certification	UL, cUL



FR313V

Pump	Rotary Vane
Type: rotary, diaphragm, peristaltic	Rotary Vane
GPM in supported configuration	26.3
GPM open flow - no hose or nozzle	34.3
By-pass pressure rating (psi) - Max	26
Dry vac. (in Hg)	14
Head - Max	60.06
Anti-siphon valve	Anti-Siphon Ready
Inlet - Size / Thread	1 1/2"
Outlet - Size / Thread	NPT
Mount	Bung (NPT)
Materials of construction - pump housing	Cast Iron
Materials of construction - wetted material	Buna
Rotor materials of construction	80% Iron/20% Copper
Rotor vane material of construction	Carbon
Compatible fluids	Diesel, Gasoline, Bio-Diesel up to B20, E15, Kerosene
Strainer mesh size	40 x 40 x .006"
Warranty (yr)	2 Years

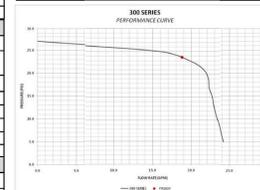
Accessories

Suction pipe material	None
Suction pipe length - extended/not extended	None
Nozzle - size	None
Nozzle - manual / automatic	None
Hose liquid materials compatibility	None
Hose diameter	None
Hose length	None
Hose static wire (Y/N)	None

Logistics

UPC	0-89404-07657-6
Length	19
Width	18
Height	18

Sku/Kit #	Small Parts Kits	Consists of
KIT300BD	Bio-Coupler	Special Shaft Seal Assembly, Gasket, Nut Gasket, Biggen O-ring
KIT300BV	Biting	Project, Biting, O-ring, Cap
KIT300JC	JumpOn Bio	JumpOn Bio Cover, O-ring, Hardware
KIT300NB	Nozzle Boot	Nozzle Boot, Attaching Hardware
KIT300NR	Nozzle Retainer	Lockable Nozzle Retainer, Hardware
KIT300OT	Outlet	Outlet Flange, O-Ring Seal, hardware
KIT300RG	Rotor	Rotor, 8 Vanes, Rotor Key, Gasket, Rotor Cover, 4 Screws
KIT300SG	Switch Lever	Switch Lever, Nut
KIT300AS	Anti-Siphon	Anti-Siphon Hose and Hardware
KIT300BG	Inlet	Inlet Adapter
KIT700SL	Shut-Off	Shut-Off Assembly



Tuthill
Tuthill Transfer Systems
8825 Aviation Drive
Fort Wayne, IN 46899
(800) 634-2895
www.tuthill.com

SAN BERNARDINO COUNTY
DEPARTMENT OF FLEET
MANAGEMENT /
DEPARTMENT OF
TRANSPORTATION & FLOOD
CONTROL
80311 TRONA ROAD
TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure
- Phase IV
PROJECT NUMBER: 16 03 1195
CIP NUMBER: 25 008
BUILDING (CAPM) NUMBER: N/A
APN: 084-0022

PROJECT AND FACILITIES MANAGEMENT
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CONSULTING ENGINEERS
5940 DANLOR STREET
SANTA ANA, CALIFORNIA 92705
TEL: F (949) 254-8016
info@dahl-taylor.com

STATE SEAL:



CONSULTANT:

STATE SEAL:

REVISIONS Δ PRINTS ISSUED

NO.	BY	DATE	DESCRIPTION
Δ 1	ZV	11/14/23	PC CORRECTIONS
Δ 2	ZV	12/25/23	PC CORRECTIONS

SHEET TITLE:
FUEL TANK DETAILS

DRAWN BY: TWP DATE: 12/05/23
CHECKED BY: ZV DATE: 12/06/23
PROJECT NO.: 1-22-9
DRAWING NUMBER:

C508

MORRISON 927-0200AA 2" VALVE

SCALE: NONE 2

FILL-RITE 300 SERIES PUMP

SCALE: NONE 1

PLAN CHECK RESUBMISSION

SAN BERNARDINO COUNTY
 DEPARTMENT OF FLEET
 MANAGEMENT /
 DEPARTMENT OF
 TRANSPORTATION & FLOOD
 CONTROL
 80311 TRONA ROAD
 TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure
 - Phase IV
 PROJECT NUMBER: 10 00 1195
 CIP NUMBER: 20 000
 BUILDING (CAPAS) NUMBER: N/A
 APN: 084-004-002

PROJECT AND FACILITIES MANAGEMENT
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 TEL: F (949) 254-8016
 qt@dalntaylor.com



CONSULTANT:

SCALE 1
 3/8"=1'-0"

STATE SEAL:

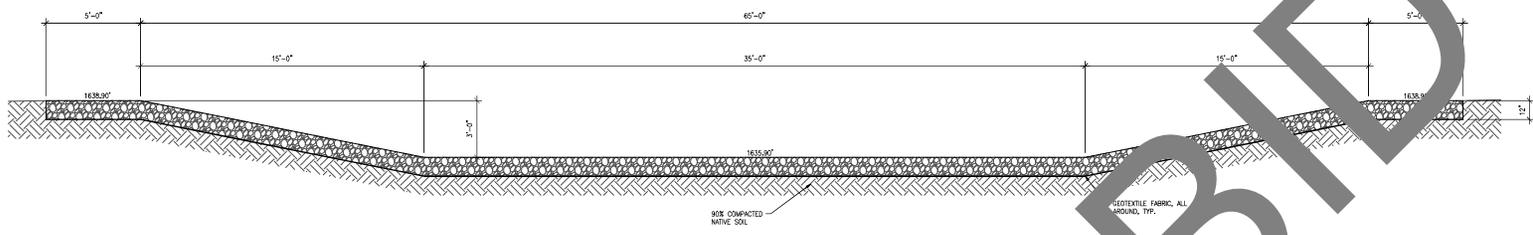
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1	SV	11/14/23	PC CORRECTIONS
2	SV	12/05/23	PC CORRECTIONS

SHEET TITLE:
DETAILS AND SECTIONS

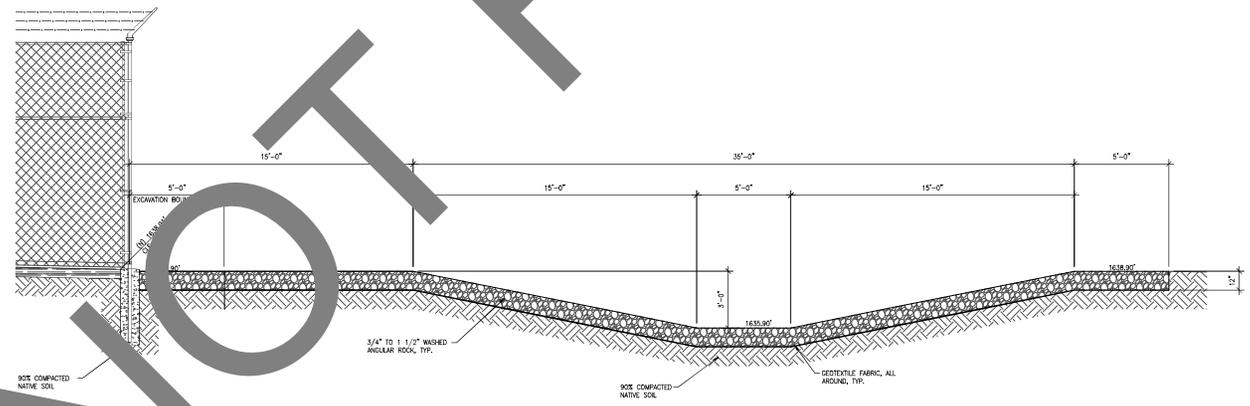
DRAWN BY:	TMP	DATE:	12/05/23
CHECKED BY:	SV	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	C509		

SCALE 2
 3/8"=1'-0"

PLAN CHECK RESUBMISSION



RETENTION BASIN SECTION 1



RETENTION BASIN SECTION 2

NOT FOR BID

GENERAL NOTES	ABBREVIATIONS	PHOTOGRAPHIC CONSTRUCTION RECORDS	SYMBOLS LEGEND	<p>SAN BERNARDINO COUNTY DEPARTMENT OF FLEET MANAGEMENT / DEPARTMENT OF TRANSPORTATION & FLOOD CONTROL</p> <p>80311 TRONA ROAD TRONA, CALIFORNIA</p> <p>Project Name: Fuel Tank Infrastructure Phase IV</p> <p>Project Number: 10-10-1195 CIP NUMBER: 20-000 BUILDING (CAPA) NUMBER: N/A APP: 08/04/2022</p> <p>PROJECT AND FACILITIES MANAGEMENT DEPARTMENT ERNESTO GONZALEZ - PROJECT MANAGER 385 NORTH ARDENWOOD AVENUE SAN BERNARDINO, CALIFORNIA 92415-0184 TELEPHONE: (909) 384-0166 Ernesto.Gonzalez@pdm.sbcounty.gov</p> <p>DAHL, TAYLOR & ASSOCIATES CONSULTING ENGINEERS 3940 DANLIER STREET SANTA ANA, CALIFORNIA 92705 TEL: (949) 224-8016 info@dalhtaylor.com</p> <p>STATE SEAL:</p>  <p>CONSULTANT:</p> <p>STATE SEAL:</p> <p>REVISIONS & PRINTS ISSUED</p> <table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td>1</td> <td>11/14/23</td> <td>PC CORRECTIONS</td> </tr> <tr> <td>2</td> <td>12/05/23</td> <td>PC CORRECTIONS</td> </tr> </table> <p>SHEET TITLE: ELECTRICAL GENERAL NOTES, SYMBOLS AND LEGEND</p> <p>BROWN BY: TWP DATE: 12/05/23 CHECKED BY: JVN DATE: 12/05/23 PROJECT NO. 1-22-9 DRAWING NUMBER E001</p> <p>PLAN CHECK RESUBMISSION</p>	NO.	DATE	DESCRIPTION	1	11/14/23	PC CORRECTIONS	2	12/05/23	PC CORRECTIONS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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<p>1. THE ELECTRICAL DRAWINGS, SPECIFICATIONS AND GENERAL NOTES DESCRIBE THE SCOPE OF WORK, CONSTRUCTION DOCUMENTS ARE TO BE USED FOR THE PURPOSE OF BIDDING, BUILDING, DEPARTMENT REVIEW AND TO SECURE THE NECESSARY CONSTRUCTION PERMITS. ALL EQUIPMENT SHOWN IS NEW, CONTRACTOR FURNISHED AND INSTALLED, UNLESS NOTED OTHERWISE (U.L.C.).</p> <p>2. THE CONTRACTOR SHALL VERIFY THE INPUT VOLTAGE AND IMPERFECT (HOPSPOWER) RATING OF ALL EQUIPMENT PRIOR TO INSTALLATION, AND NOTIFY THE ENGINEER FOR DIRECTION PRIOR TO PROCEEDING.</p> <p>3. PROVIDE AN ADDITIONAL JUNCTION BOX (SIZE AS REQUIRED) WHERE THE NUMBER OF CONDUCTORS EXCEEDS THE MAXIMUM ALLOWED FOR A GIVEN JUNCTION POINT OR OUTLET.</p> <p>4. ELECTRICAL CONTRACTOR SHALL PROVIDE CONSTRUCTION AND SHOP DRAWINGS FOR APPROVAL BY THE OWNER BASED ON THESE DRAWINGS, SPECIFICATIONS AND ADDITIONAL DESIGN CRITERIA FURNISHED BY OWNER.</p> <p>5. CONTRACTOR'S BID SHALL INCLUDE ALL PREMIUM OVERTIME COSTS, UTILITY CHARGES, COST FOR TEMPORARY UTILITIES, MISCELLANEOUS CONTINGENCY COSTS, ETC.</p> <p>6. CONTRACTOR REQUIREMENT TO SUBMIT FOR REVIEW: CONTRACTOR SHALL SUBMIT A REQUEST FOR CONCENTRATION TO THE OWNER AND ENGINEER IN WRITING PRIOR TO COMMENCEMENT OF WORK. THE REQUEST SHALL BE FOR REVIEW AND APPROVAL. SUCH REVIEW SHALL NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE AT HIS OWN RISK FOR ANY CHANGES RESULTING FROM HIS PROPOSED SUBSTITUTIONS WHICH AFFECT OTHER PARTS OF HIS OWN WORK OR THE WORK OF OTHER CONTRACTORS.</p> <p>7. THE ELECTRICAL DRAWINGS ARE DIAGNOSTIC ONLY. DO NOT SCALE THE ELECTRICAL DRAWINGS TO DETERMINE THE LOCATION OF EQUIPMENT OR OUTLETS. COMPLY WITH ALL CLEARANCES AND MOUNTING HEIGHT REQUIREMENTS. ROUTE CONDUITS FOR FIELD CONDITIONS, PROVIDING CONFLICTS WITH STRUCTURAL ELEMENTS AND EXISTING EQUIPMENT AND UTILITIES. COMPLY WITH THE NATIONAL ELECTRICAL CODE.</p> <p>8. ALL FINAL CONNECTIONS TO FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR UNLESS OTHERWISE NOTED. VERIFY ELECTRICAL CHARACTERISTICS AND ULL LISTING PRIOR TO CONNECTION.</p> <p>9. SEAL ALL PENETRATIONS THROUGH FRIE RATED WALLS, CEILING, FLOORS, ETC. TO MAINTAIN THE EXISTING FIRE RATING. FURNISH AND INSTALL FRIE RATED ENCLOSURE FOR ALL EQUIPMENT PENETRATING INTO FRIE RATED DEVELOPS, SPACES, ETC. PER NEC 300-21.</p> <p>10. ELECTRICAL OUTLETS ON OPPOSITE SIDES OF FRIE RATED WALLS AND PARTITIONS MUST BE SEPARATED BY A DISTANCE OF 24 INCHES HORIZONTAL. OPENINGS IN FRIE RATED WALLS MUST BE FIRE STOPPED.</p> <p>11. CONTRACTORS SHALL BE COPPER THRU/THRU FOR INDOOR AND 3/8X1/2 FOR OUTDOOR WITH 600 VOLT INSULATION UNLESS NOTES USE PROPER TEMPERATURE RATING OF COPPER BASED ON THE AMBIENT AIR TEMPERATURE. WIRE CONDUCTORS ARE LOCATED. HOURBY AMPLACITY CONDITIONS AND SAFETY MEASURES SHALL BE PROVIDED AS REQUIRED TO MEET THE AMPLACITY CORRECTION FACTORS AS INDICATED IN NEC TABLE 310 AND DISCUSS HEREIN IN CODE.</p> <p>12. THE SEISMIC BRACING AND ANCHORAGE OF ELECTRICAL CONDUITS, BUS DUCTS, WIREWAYS AND CABLE TRAYS SHALL BE IN ACCORDANCE WITH THE "GUIDELINE FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PIPING SYSTEMS" PUBLISHED BY SMACNA LATEST VERSION.</p> <p>13. WIRE BRACING AND ANCHORAGE DETAILS ARE NOT SHOWN ON THE DRAWINGS OR IN THE SPECIFICATIONS. THE FIELD INSTALLATION SHALL BE SUBJECT TO THE APPROVAL OF THE PROJECT ENGINEER. ALL EQUIPMENT ANCHORINGS SHALL BE DESIGNED PER 2022 CBC & ASCE 7-16 FORMULA 13.3-1, 13.3-2, AND 13.3-3.</p> <p>14. PRIOR TO COMMENCEMENT OF WORK CONTRACTOR SHALL SURVEY THE ENTIRE PROJECT SITE AND BECOME THOROUGHLY FAMILIAR WITH ACTUAL EXISTING CONDITIONS. THE INTENT OF THE WORK IS SHOWN ON THE DRAWINGS AND DESCRIBED HEREIN. THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH A STUDY AND EXAMINATION AND TO ACCEPT ALL CONDITIONS PRESENT AT THE SITE. NO REQUEST FOR ADDITIONAL PAYMENT SHALL BE CONSIDERED. SHALL DUE TO CONTRACTOR FAILURE TO ALLOW IN COST ESTIMATE FOR CONDITIONS WHICH MAY EXIST.</p> <p>15. EXISTING CONDITIONS SHOWN ARE FROM AVAILABLE RECORD DRAWINGS AND VISUAL FIELD SURVEYS AND SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY ACTUAL EXISTING CONDITIONS AT SITE PRIOR TO STARTING WORK.</p> <p>16. ALL ELECTRICAL WORK SHALL BE PERFORMED PER NEC, UTILIZING THE CODE ISSUED IN FORCE AT THE LOCATION OF THE CONSTRUCTION SITE. ELECTRICAL WORK SHALL COMPLY WITH ALL APPLICABLE CURRENT BASE CODES AND REGULATIONS.</p> <p>17. ALL ELECTRICAL EQUIPMENT UTILIZED AT THIS PROJECT SHALL BE ULL LABELED OR ULL LISTED.</p> <p>18. INSTALL ALL WIRING IN CONDUITS, EMT FOR ABOVEGROUND INDOOR, RMC FOR ABOVEGROUND OUTDOOR, AND PVC SCHEDULE 80 FOR UNDERGROUND.</p> <p>19. ALL ELECTRICAL PANEL BOARDS SHALL BE COPPER.</p> <p>20. ALL ELECTRICAL DEVICES AND EQUIPMENT MOUNTED ON THE EXTERIOR OF THE BUILDING OR EXPOSED TO WEATHER SHALL BE NEMA 3R WEATHERPROOF TYPE.</p> <p>21. CONSTRUCTION WORK SHALL BE DONE IN A MANNER WHICH WILL NOT CAUSE INCONVENIENCE OR DANGER TO USERS OF THE PREMISES AND ADJACENT AREAS AND NOT INTERFERE WITH THEIR WORK. ANY CONSTRUCTION WORK TO BE PERFORMED MUST BE PLANNED IN ADVANCE. SCHEDULING SHALL BE DONE IN COOPERATION WITH AUTHORIZED PROJECT MANAGERS, WHO WILL BE AVAILABLE BEFORE AND DURING THE PERFORMANCE OF THE WORK. INCLUDE ALL PREMIUM THE CHARGES IN BID TO COVER THE AFTER-HOURS AND WEEKEND WORK.</p> <p>22. DO ALL DRILLING, CUTTING, CHANNELING AND PATCHING REQUIRED TO INSTALL ELECTRICAL WORK AS INDICATED OR HEREIN SPECIFIED. ALL CUTS, HOLES, PENETRATIONS, ETC. IN FLOORS, CEILING AND WALLS SHALL BE PATCHED AND FINISHED UNLESS OTHERWISE NOTED. FINISH ALL NEW EXPOSED ELECTRICAL RACKWAYS, CABINETS, ENCLOSURES, AND FITTINGS TO MATCH THE COLOR OF ADJACENT SURFACES IN FINISHED AREAS.</p>	<table border="0"> <tr> <td>A</td><td>AMPERE</td> <td>IA</td><td>LIGHTING ARRESTOR</td> </tr> <tr> <td>AC</td><td>AIR CONDITIONING</td> <td>LCL</td><td>LONG CONTINUOUS LOAD</td> </tr> <tr> <td>AF</td><td>AMPERE FUSE OR AMP FRAME</td> <td>LLO</td><td>LUXES ONLY</td> </tr> <tr> <td>AF</td><td>AVAILABLE FAULT CURRENT</td> <td>L</td><td>LIGHTING</td> </tr> <tr> <td>AF</td><td>AMPERE FINISHED GRADE</td> <td>MCH</td><td>MAIN CIRCUIT BREAKER</td> </tr> <tr> <td>AF</td><td>AMPERE INTERRUPTING CAPACITY</td> <td>MCH</td><td>MISCELLANEOUS (CONDUIT INCLUDES)</td> </tr> <tr> <td>AF</td><td>AMPERE</td> <td>MCH</td><td>MISCELLANEOUS OR MOUNTING HEIGHT</td> </tr> <tr> <td>AF</td><td>AMPERE</td> <td>MCH</td><td>NEUTRAL OR METAL HALIDE</td> </tr> <tr> <td>AF</td><td>AMPERE</td> <td>MCH</td><td>MAN LUXES ONLY</td> </tr> <tr> <td>AF</td><td>AUTOMATIC TRANSFER 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CENTER	AMT	CALIFORNIA ELECTRICAL CODE	N	OUTSIDE DIAMETER	AMT	CURRENT LIMITING DEVICES	N	OVER LOAD	AMT	CIRCUIT	N	ON CENTER	AMT	CLOCK	N	OUTSIDE DIAMETER	AMT	CLOCK ONLY	N	OVER LOAD	AMT	COMMUNICATION	N	ON CENTER	AMT	CONTINUATION	N	OUTSIDE DIAMETER	AMT	CURRENT TRANSFORMER	N	OVER LOAD	AMT	CIRCUIT COMMUNICATION TERMINAL CABINET	N	ON CENTER	AMT	CONTROL	N	OUTSIDE DIAMETER	AMT	COPPER	N	OVER LOAD	AMT	COLD WATER	N	ON CENTER	AMT	DB	DECEMBER	N	OUTSIDE DIAMETER	AMT	DEC	DECEMBER	N	OVER LOAD	AMT	DEF	DUAL ELEMENT	N	ON CENTER	AMT	DISC	DISCONNECT SWITCH	N	OUTSIDE DIAMETER	AMT	DN	DOWN	N	OVER LOAD	AMT	DP	DEPTH	N	ON CENTER	AMT	DPP	DISTRIBUTION POWER PANEL	N	OUTSIDE DIAMETER	AMT	DRAWING	N	OVER LOAD	AMT	EA	EXISTING	N	ON CENTER	AMT	EAC	EACH	N	OUTSIDE DIAMETER	AMT	EAC	EMPTY CONDUIT	N	OVER LOAD	AMT	EAC	EXHAUST FAN	N	ON CENTER	AMT	EAC	ELECTRON	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE DIAMETER	AMT	EAC	ELECTRIC	N	OVER LOAD	AMT	EAC	ELECTRIC	N	ON CENTER	AMT	EAC	ELECTRIC	N	OUTSIDE 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STATE SEAL:



CONSULTANT:

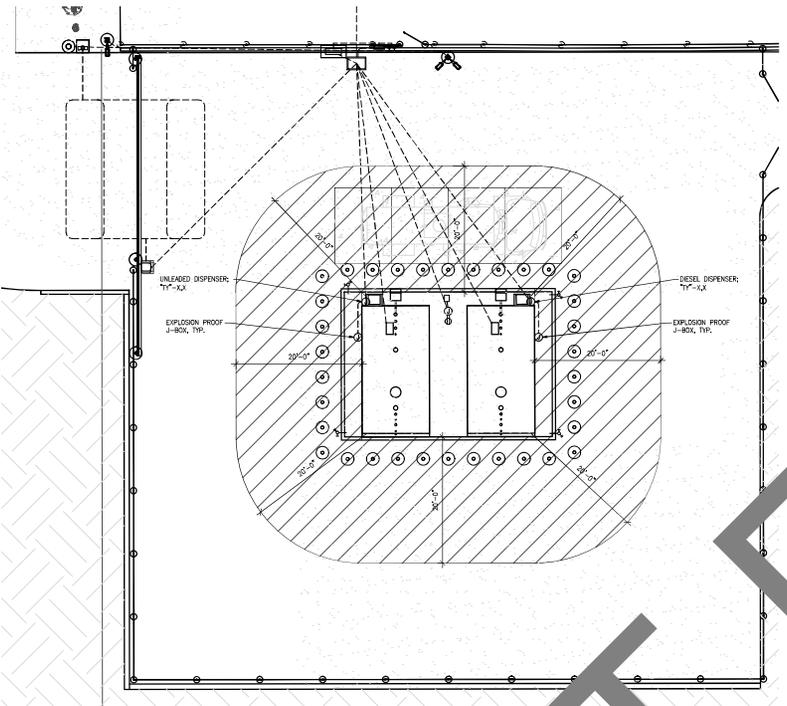
STATE SEAL:

REVISIONS	DATE	DESCRIPTION	PRINTS ISSUED
NO. 1	07/11/23	PC CORRECTIONS	0
NO. 2	11/14/23	PC CORRECTIONS	0
NO. 3	12/05/23	PC CORRECTIONS	0

SHEET TITLE:
FUELING STATION PLANS

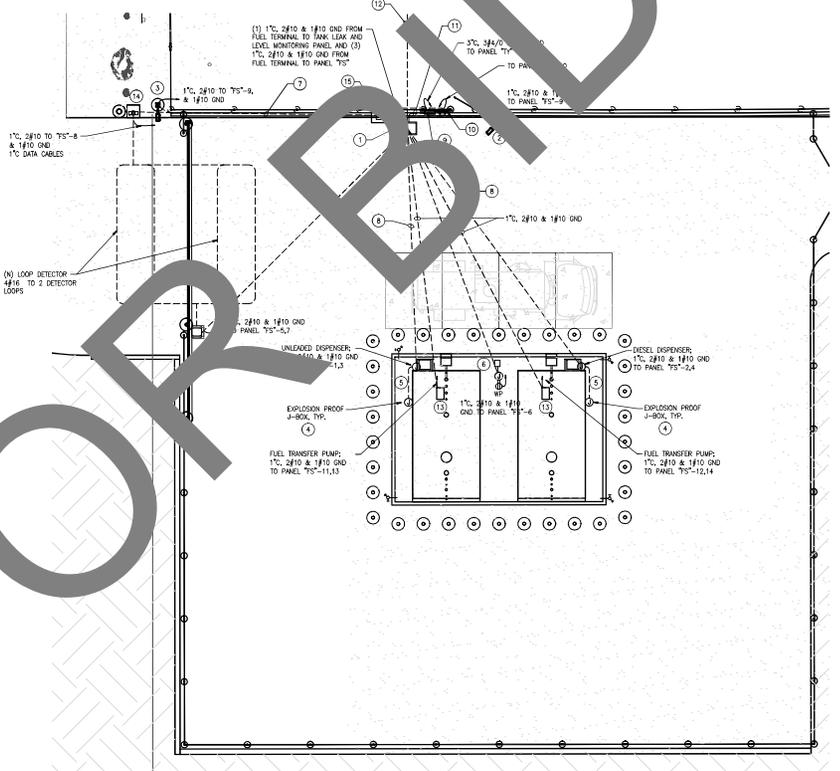
DRAWN BY:	THP	DATE:	12/05/23
CHECKED BY:	2V	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	E101		

NOT FOR CONSTRUCTION



DISPENSER FUEL TANK AREA (CLASS 1 DIVISION 2)

SCALE: 1/8"=1'-0" 2



FUELING STATION PLAN

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

CONSTRUCTION NOTES:

- SEE E101, FUEL CONDUIT DIAGRAM #5 AND TANK LEAK MONITORING & ALARM DIAGRAM #4 FOR NUMBER, ROUTING, AND SIZE OF CONDUITS AND WIRES. MEET REQUIREMENTS BY EQUIPMENT MANUFACTURERS.
- NEW 3/4"x3/4"x36" FILL BOX WITH #1-20 TRAFFIC COVER, JENSEN PRO436 WITH COVER MARK "ELECTRIC". SEE 1/5000 FOR DETAILS.
- NEW 30-FT LIGHT POLE WITH 2 FIXTURES. SEE 1/5001 FOR DETAILS.
- NEW 12-FT LIGHT POLE WITH 1 FIXTURE. SEE 1/5001 FOR SIMILAR DETAILS.
- ALL JUNCTION BOXES WITHIN DISPENSER FUEL TANK AREA SHALL BE EXPLOSION PROOF.
- FUEL DISPENSER POWER POINT OF CONNECTION. COORDINATE WITH MANUFACTURER FOR EXACT LOCATION AND REQUIREMENT.
- FURNISH AND INSTALL 2" CONDUIT AND UNDERGROUND 12"x18" RULLBOX WITH GATE CABLE FROM FLEET MANAGEMENT BUILDING TO EL EDWARDS TERMINAL. COORDINATE WITH COUNTY OF SAN BERNARDINO FOR EXACT LOCATION OF PULLBOX.
- TWO (3) 1" SCHEDULE 80 PVC CONDUITS ENCASED IN 12"x18" 2000 PSI RED CONCRETE AT 36" BELOW GRADE. 1" 2#10 AND 1#10 GROUND & 1" FOR DATA CABLES FOR CARD READER AND 1" 2#10 & 1#10 GROUND FOR LIGHT POLE.
- 1" SCHEDULE 80 PVC CONDUIT ENCASED IN 12"x18" 2000 PSI RED CONCRETE AT 36" BELOW GRADE WITH 120V CONTROL WIRING PER MANUFACTURER REQUIREMENT WITH #10 GROUND WIRES.
- NEW NEMA 3R PANEL 75". SEE MOUNTING DETAIL 1/C505 & E300 SINGLE LINE DIAGRAM ROUTE CONDUIT TO UNDERGROUND FUEL BOX.
- NEW NEMA 3R LISTING CONTROL FUSE CARRIER, "EPO" SWITCH, "E30" PANEL, AND NEMA 3R TANK MONITOR PANEL. SEE DETAIL 1/C505.
- TWO (2) NEW 3" SCHEDULE 80 PVC CONDUITS.
- THREE (3) NEW 3" UNDERGROUND SCHEDULE 80 PVC CONDUITS (COMA/DATA, POWER, & SPARE) AT 36" BELOW GRADE IN 24" x 12" x 2,000 PSI CONCRETE ENCASMENT.
- NEW FILL-RITE FUEL TRANSFER PUMP, 3/4HP, 200V, SINGLE PHASE.
- NEW KENTAD FOR GATE ACCESS FURNISHED BY SBC AND INSTALLED BY CONTRACTOR. SEE E101 DETAIL #7 AND FUEL CONDUIT DIAGRAM #5.
- NEW FUEL TERMINAL FURNISHED BY SBC AND INSTALLED BY CONTRACTOR. SEE E101 TANK LEAK AND LEVEL MONITORING DIAGRAM #4 AND FUEL CONDUIT DIAGRAM #5.

CONSTRUCTION NOTES:
SHOED AREA INDICATES CLASS 1 DIVISION 2 HAZARDOUS AREA. ELECTRICAL WORK SHALL COMPLY WITH CEC REQUIREMENTS OF ARTICLE 501.
ALL ELECTRICAL EQUIPMENT SHALL BE MOUNTED OUTSIDE CLASSIFIED AREA.
EXPLOSION PROOF JUNCTION BOXES, CONDUIT FITTINGS, LIGHT FIXTURES, ELECTRICAL EQUIPMENT/DEVICES SHALL BE EXPLOSION PROOF PER CODE REQUIREMENT.
SEE E101 TANK LEAK AND LEVEL MONITORING DIAGRAM #4 AND FUEL CONDUIT DIAGRAM #5 FOR CONDUIT ROUTES AND SIZES.



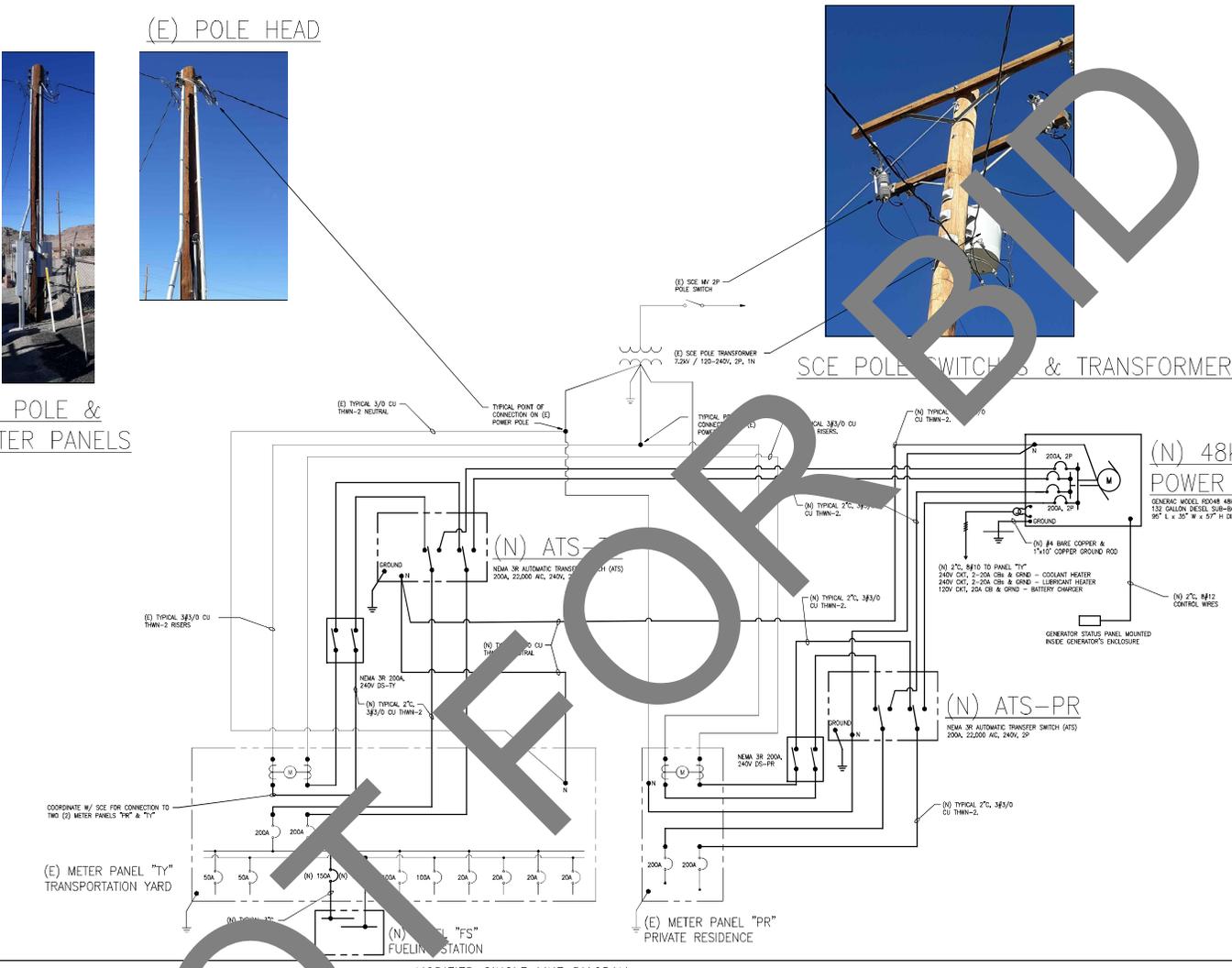
CONSULTANT:

STATE SEAL:

REV.	DATE	DESCRIPTION	PRINTS ISSUED
1	11/14/23	PE CONNECTIONS	
2	12/05/23	PE CONNECTIONS	

SHEET TITLE:
**MODIFIED SINGLE
LINE DIAGRAM AND
PANEL SCHEDULES**

DRAWN BY:	THP	DATE:	12/05/23
CHECKED BY:	DV	DATE:	12/05/23
PROJECT NO.:	1.22.9		
DRAWING NUMBER:	E300		



PANELBOARD NAME:	PANEL:	MOUNTING:	POLE:	OVERSIZED NEUTRAL BUS:	SPECIAL ENCLOSURE:
BUS 200 A	200	INDOOR	150/240 VOLTS, 2-Ph, 3-W	AMPS: 200A	NEUMA 3R
DESCRIPTION	A	B	C	D	E
LINEAR DISPENSER	120	120	120	120	120
UNLEADED DISPENSER	120	120	120	120	120
ENHANCED GATE MOTOR THP, LF WATER	720	720	720	720	720
FUEL TANKS	600	600	600	600	600
FUEL TANK PUMP	400	400	400	400	400
FUEL TANK	400	400	400	400	400
PARALLEL TOTAL	2,100	1,840	1,840	1,840	1,840
TOTAL CONNECTED WATTAGE	3,300	3,040	3,040	3,040	3,040
TOTAL CONNECTED VA = TOTAL WA + CONT. VA					
AVERAGE AMPS/PH					

MODIFIED PANEL "TY" SCHEDULE

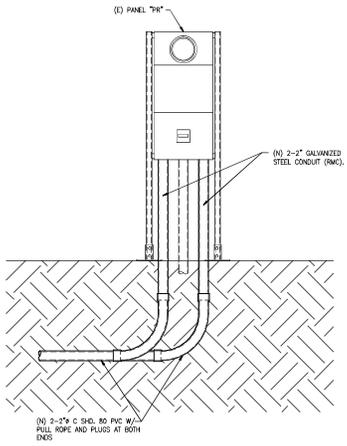
SCALE: NONE 3

PANELBOARD NAME:	PANEL:	MOUNTING:	POLE:	OVERSIZED NEUTRAL BUS:	SPECIAL ENCLOSURE:
BUS 225 A	200	INDOOR	150/208 VOLTS, 1-Ph, 3-W	AMPS: 200A	NEUMA 3R
DESCRIPTION	A	B	C	D	E
UNLEADED DISPENSER	120	120	120	120	120
UNLEADED DISPENSER	120	120	120	120	120
ENHANCED GATE MOTOR THP, LF WATER	720	720	720	720	720
FUEL TANKS	600	600	600	600	600
FUEL TANK PUMP	400	400	400	400	400
FUEL TANK	400	400	400	400	400
PARALLEL TOTAL	2,100	1,840	1,840	1,840	1,840
TOTAL CONNECTED WATTAGE	3,300	3,040	3,040	3,040	3,040
TOTAL CONNECTED VA = TOTAL WA + CONT. VA					
AVERAGE AMPS/PH					

NEW PANEL "FS" SCHEDULE

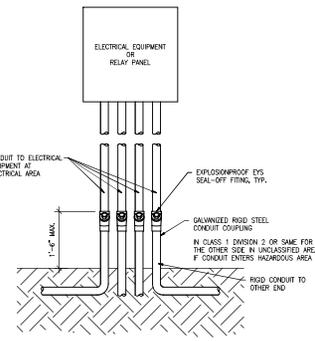
NEW PANEL "FS" SCHEDULE

SCALE: NONE 2



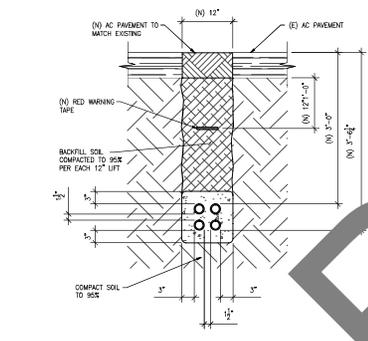
PANEL "PR" DETAIL

SCALE NONE 9



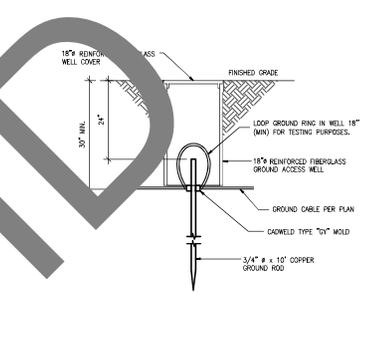
EXPLOSION-PROOF SEAL-OFF STUB-UP

SCALE NONE 6



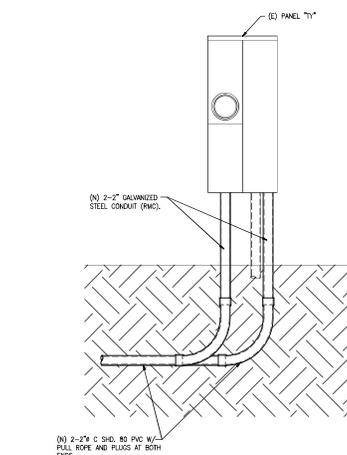
CONCRETE ENCASED CONDUIT CROSS SECTION

SCALE 1"=1'-0" 3



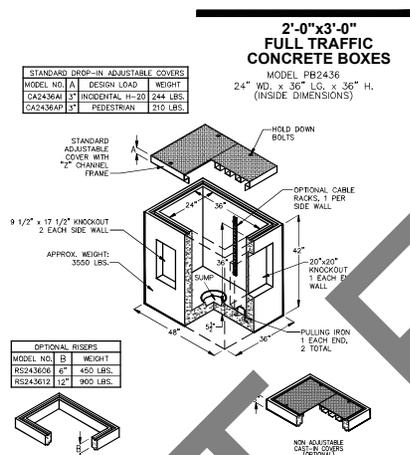
GROUND TEST WELL DETAIL

SCALE NONE 1



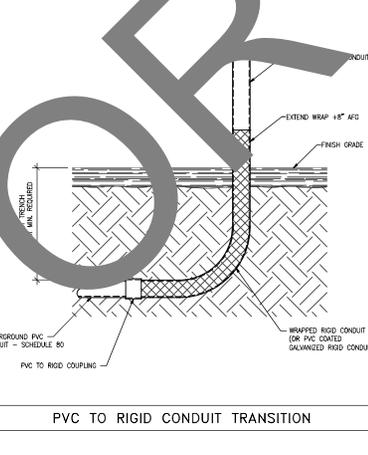
PANEL "TY" DETAIL

SCALE NONE 10



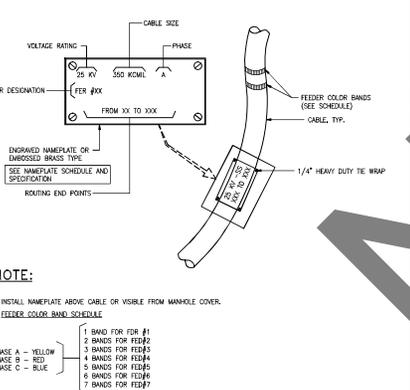
PULL BOX DETAIL

SCALE NONE 7



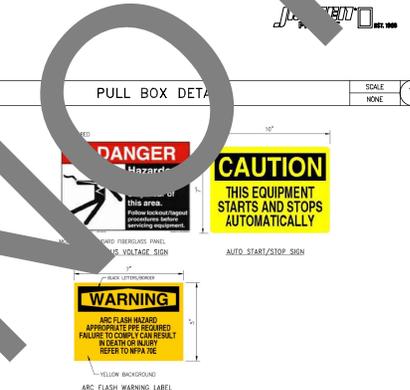
PVC TO RIGID CONDUIT TRANSITION

SCALE NONE 4



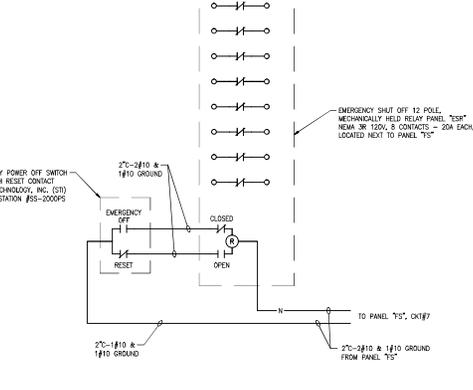
FEEDER TAG DETAIL

SCALE NONE 11



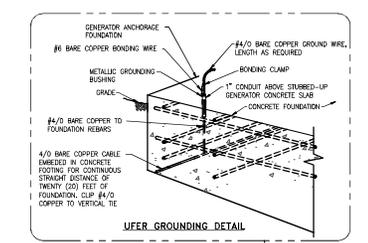
SIGNAGE

SCALE NONE 8



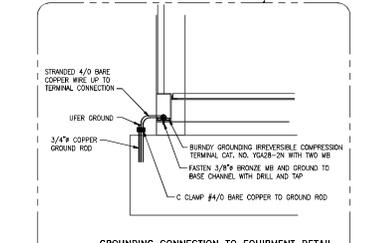
NEMA 3R EMERGENCY SHUT OFF RELAY PANEL "ESR"

SCALE NONE 4



GROUNDING CONNECTION TO EQUIPMENT DETAIL

SCALE NONE 2



GROUNDING CONNECTION TO EQUIPMENT DETAIL

SCALE NONE 2

SAN BERNARDINO COUNTY DEPARTMENT OF FLEET MANAGEMENT / DEPARTMENT OF TRANSPORTATION & FLOOD CONTROL
80311 TRONA ROAD TRONA, CALIFORNIA

Project Name: Fuel Tank Infrastructure - Phase IV
 PROJECT NUMBER: 10 00 0195
 CIP NUMBER: 20 000
 BUILDING (CAPM) NUMBER: N/A
 APN: 06460022

PROJECT AND FACILITIES MANAGEMENT DEPARTMENT
 ERNESTO GONZALEZ - PROJECT MANAGER
 385 NORTH ARROWHEAD AVENUE, SAN BERNARDINO, CALIFORNIA 92415-0146
 TELEPHONE: (909) 384-4346
 Ernesto.Gonzalez@pdm.sbcounty.gov

DAHL, TAYLOR & ASSOCIATES
 CONSULTING ENGINEERS
 2960 DANLIER STREET, SANTA ANA, CALIFORNIA 92705
 TEL: # (949) 254-8016
 info@dtaylor.com

STATE SEAL:

CONSULTANT:

STATE SEAL:

REVISIONS / PRINTS ISSUED

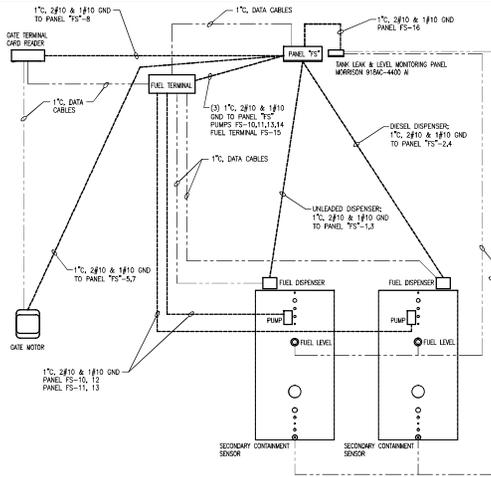
NO.	BY	DATE	DESCRIPTION
01	SV	11/14/23	PC CORRECTIONS
02	SV	12/05/23	PC CORRECTIONS

SHEET TITLE:
DETAILS, SECTIONS, AND DIAGRAMS

BROWN BY: TWP DATE: 12/05/23
 CHECKED BY: SV DATE: 12/05/23

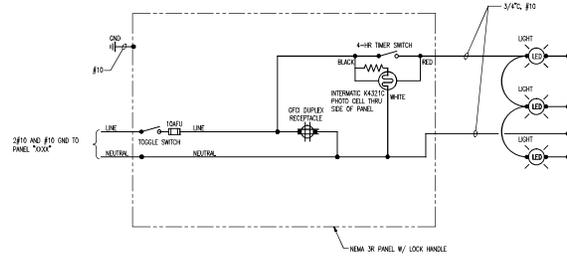
PROJECT NO: 1.22.9
 DRAWING NUMBER: **E500**

PLAN CHECK RESUBMISSION



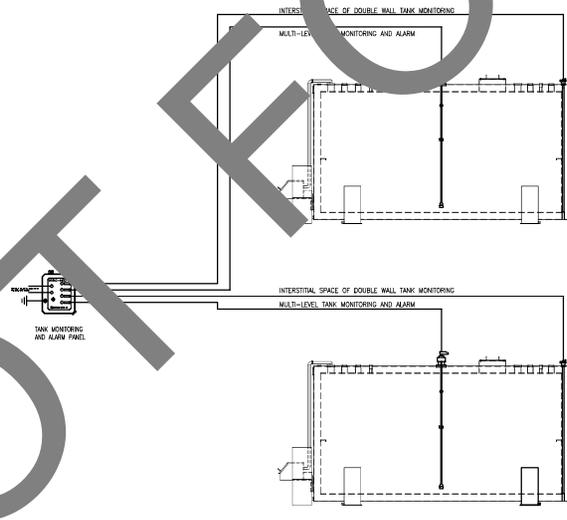
FUEL CONDUIT DIAGRAM

SCALE NONE 5



LIGHTING CONTROL WIRING DIAGRAM

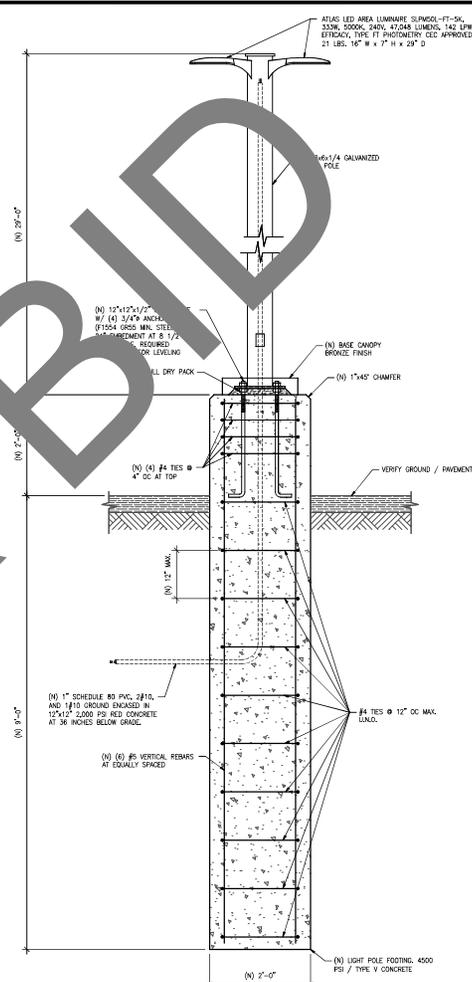
SCALE NONE 3



- CONSTRUCTION NOTES:**
1. INSTALL MORRISON #18AC-4400 ALI OVERWALL AND LEAK ALARM SYSTEM INTERFACE INCLUDING HIGH-HIGH, HIGH, LOW LEVEL, AND LEAK DETECTION ALARM PER MANUFACTURER'S RECOMMENDATIONS.
 2. UL / IUL 913 LISTING FOR ORDINARY LOCATION WITH HAZARDOUS LOCATION INTRINSICALLY SAFE INPUT CIRCUITS FOR CLASS I, DIVISION 1, GROUP D.

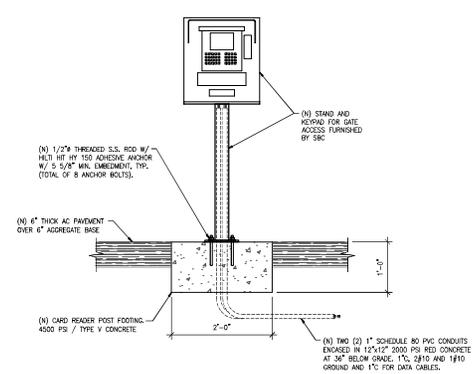
FUEL TANK LEAK AND LEVEL MONITORING SYSTEM DIAGRAM

SCALE NONE 4



LIGHT POLE DETAIL

SCALE 1\"/>



CARD READER DETAIL

SCALE 1\"/>

SAN BERNARDINO COUNTY DEPARTMENT OF FLEET MANAGEMENT / DEPARTMENT OF TRANSPORTATION & FLOOD CONTROL
80311 TRONA ROAD
TRONA, CALIFORNIA

PROJECT Name: Fuel Tank Infrastructure - Phase IV
 PROJECT NUMBER: 10 00 0195
 CIP NUMBER: 25 008
 BUILDING (CAPM) NUMBER: N/A
 APN: 06460022

PROJECT AND FACILITIES MANAGEMENT SUPERVISOR:
 ERNESTO GONZALEZ - PROJECT MANAGER
 385 NORTH ARROWHEAD AVENUE
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 TELEPHONE: 909 384-4346
 Ernesto.Gonzalez@pdm.sbcounty.gov

DAHL, TAYLOR & ASSOCIATES
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 2960 DANLIER STREET
 SANTA ANA, CALIFORNIA 92705
 TEL: # (949) 254-8016
 dt@dalntaylor.com



REVISIONS & PRINTS ISSUED

NO.	DATE	DESCRIPTION
1	11/14/23	PC CORRECTIONS
2	12/05/23	PC CORRECTIONS

SHEET TITLE: DETAILS AND SECTIONS

BROWN BY:	DATE:
TMP	12/05/23
CHECKED BY:	DATE:
DN	12/05/23

PROJECT NO. 1-22.9
 DRAWING NUMBER

E501



Dahl, Taylor & Associates, Inc.
 2960 Daimler Street
 Santa Ana, CA 92705
 Telephone: (949) 254-8016
 qvu@dahl-taylor.com

FOUNDATION & ANCHORAGE CALCULATIONS

For

PROJECT: **SBC Trona Fuel Tanks & Generator Phase IV**
2-10,000 Gal. Tanks, 50KW Generator, & Light Pole

PROJECT NO: **1.22.9**

PROJECT ADDRESS: **80341 Trona Road**
Trona, California 92562

CLIENT: **SBC P&FMD**
385 N. Arrowhead Avenue, 3rd Floor
San Bernardino, California 92415



COUNTY APPROVED PLANS FOR 101
 PARTS

DATE: **12/05/2023**

WALL-2023-00129-ONLY

--- REVIEWED ---



This review is intended only to verify conformity to the 2022 edition of the California Building Standards. It does not relieve Contractor and Applicant of responsibility for requirements of Project drawings and specifications. No responsibility is assumed for fabrication or construction techniques, correctness of quantities or dimensions, or coordination of work with other trades. Omissions & Errors on documents shall not be valid and all codes and Laws must be complied with.



DAHL, TAYLOR & ASSOCIATES, INC.
CONSULTING ENGINEERS

10.10.1195
FUEL TANK INFRASTRUCTURE – PHASE IV
80311 Trona Road, Trona – California

STRUCTURAL ENGINEERING CALCULATIONS

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10.2	Gate Post Foundation Design.....	1



Dahl, Taylor & Associates, Inc.

2960 Daimler Street
Santa Ana, CA 92705
Telephone: (949) 254-8016
qvu@dahl-taylor.com

Date: **11/13/2023**

Job No.: **1.22.9**

By: H. Ngo, P.E.

Q. Vu, P.E.

Sheet No.: **1.1**

Project: Trona Fuel Tanks & Generator

DESIGN CRITERIA:

Based on Building Code: 2022 CBC and ASCE/SEI 7-16

Wind Load

Per ASCE 7-16

Based on Exposure Category C

Horizontal wind on other structures on roof

$$F_h = q_z(GC_r)(A_r)$$

Per Equation 29.5-1

Where: q_z (velocity pressure) = $(0.00256)(K_z)(K_{zt})(K_d)(K_e)(V^2)$ Per Eq. (26.10-1)

K_d (Wind directionality factor) = **1** Per Table 26.6-1

K_e (Ground elevation factor) = **1** Per Table 26.9-1

K_z (Velocity exposure coefficient) = **0.85** Table 26.10-1

Z (Height above ground level) = **15** ft

K_{zt} (Topographic factor) = $(1 + K_1 K_2 K_3)$ = **1** Per Equation 26.8-1

V (Basic wind speed) = **85** mph Per Figure 26.5-1A

q_z (velocity pressure) = **15.722** psf at Height Z

$G C_r$ = **1**

Wind contact area = A_r

$F_h = q_z(GC_r)(A_r)$ = **15.722** *(A_r)

UIC 0.6 F_h = **10** psf for Interior wind load

SE **18.7** psf outdoor equipment

Seismic Design Force (Nonstructural Components)

Per ASCE 7-16, 15.4.8

Based on Class E, Table 15.4-1 Seismic Coefficients for Nonbuilding Structures

$S_{Ms} = (F_v)(S_1)$ = **1.394** F_v = **2.412**

Ω = **2** R = **3**

I_e (Importance Factor) = **1** C_d = **2.5**

S_1 = **0.397** **10**

Fuel Tank empty wt= W_{pe} (empty)

Fuel Tank operating wt= W_{po} (operating)

$C_s = [(0.5)(S_1)] / (R/I_e)$ = **0.07** Per Equation 15.4-4

API 650/AWWA D100 tank $C_s = 0.044(S_{Ds})I_e$ = **0.01** Per Equation 15.4-3



Dahl, Taylor & Associates, Inc.

2960 Daimler Street
Santa Ana, CA 92705
Telephone: (949) 254-8016
qvu@dahl-taylor.com

Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 2.1

Project: Trona Fuel Tanks & Generator

SCOPE OF WORK:

- (1). Fuel Tank support foundation design
- (2). Fuel Tank seismic anchorage design
- (3). Generator foundation & seismic anchorage design
- (4). Light Pole foundation & seismic anchorage design

MATERIALS:

Concrete 4500 psi @ 28 days typical U.N.O.

Steel Reinforcing 60,000 psi for Grade 60; #4 and larger
60,000 psi for Grade 40; #5 and smaller

Light gauge studs ASTM A33 fy=33 ksi

Structural Steels ASTM A36 (Fy=36 ksi) typical
A-500 for tube columns

Soil Information **1000 psf** soil bearing (recommended by Kleinfelder Soil Report)
175 psf passive pressure
0.50 Friction Coefficient
Ss= **1.07**
S1= **1.162**
S1= **0.397**
Seismic design Category E
Site Class E, Stiff Soil

Fuel Tank Information

Tank OD (dia)= **135.0** in

Tank ID (ht)= **122** in

Tank ID (width)= **129** in

Tank ID (width)= **116** in

Top of Tank= **135.0** in above support

Tank anchor CTC= **120.0** in

Empty weight= **45,000** lbs

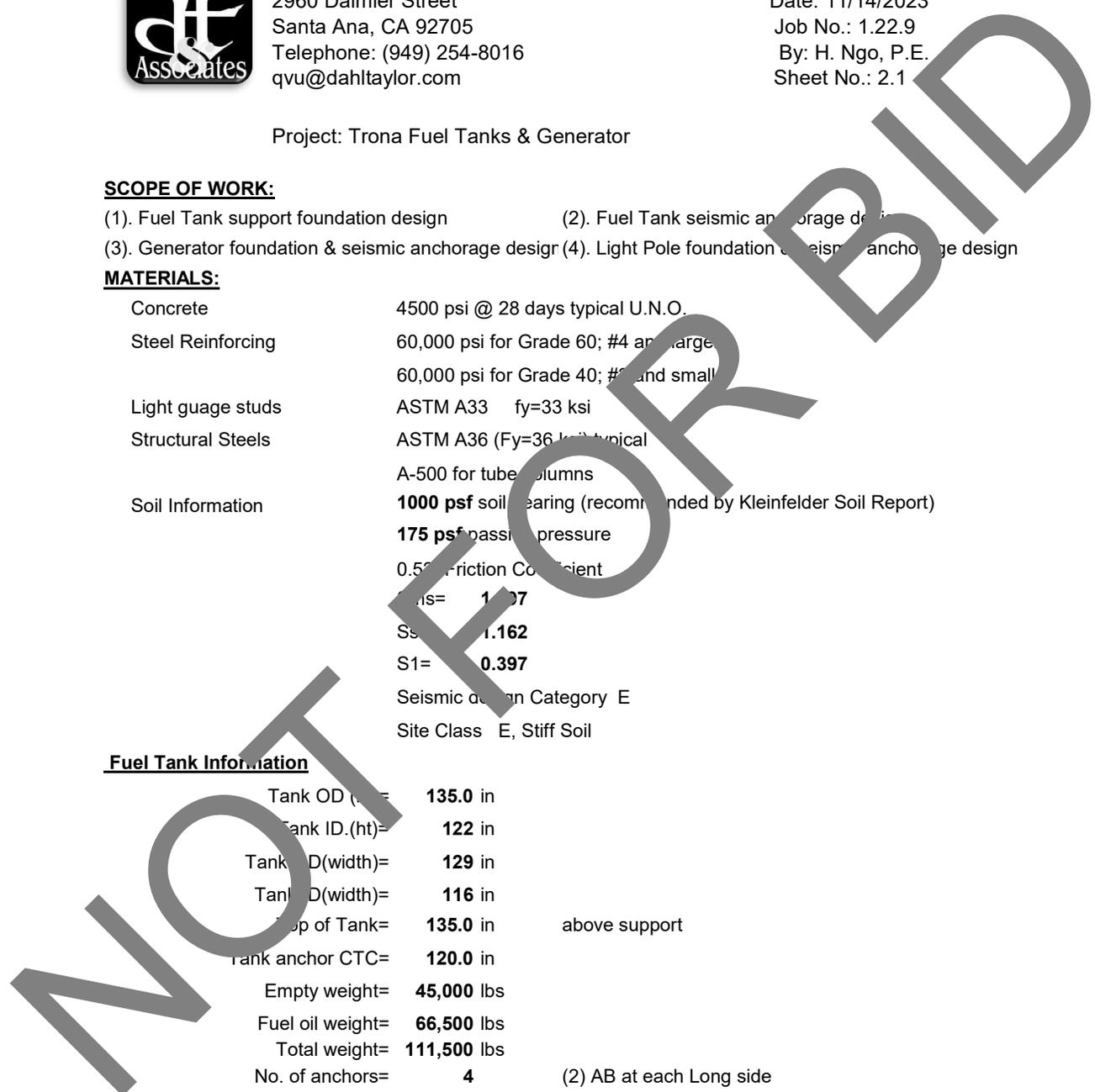
Fuel oil weight= **66,500** lbs

Total weight= **111,500** lbs

No. of anchors= **4** (2) AB at each Long side

Tank OD (length)= **243** in

Tank ID (length)= **230** in



4. GEOLOGIC CONDITIONS

4.1 REGIONAL GEOLOGY

The project site and its vicinity are in an area traditionally characterized by relatively moderate seismic activity. Faulting and seismic ground shaking is usually associated with known fault systems. The site is not located in an Alquist-Priolo Earthquake Fault Zone as established by the Alquist-Priolo Fault Zone Act (Section 2622 of Chapter 7.5, Division 2 of the California Public Resources Code).

Based on a review of published data and a current understanding of the geologic framework and tectonic setting of the proposed facility, there are no known faults which traverse through the local soils in or near the site. The primary source of seismic shaking is anticipated to be the Garlock Fault, which is located about 13 miles south of the project site.

4.2 SEISMIC DESIGN CRITERIA

The 2022 California Building Code (CBC) references the ASCE/SEI 7-16 as applicable standard for the seismic design. In developing seismic design criteria, the characteristics of the soils underlying the site are an important input to evaluate the site response. Based on information obtained from the investigation, published geologic literature and maps, and on our interpretation of the 2022 CBC criteria, it is our opinion that the project site may be classified as Site Class E, Stiff Soil, according to Section 1613.3.2 of 2022 CBC and Table 20.3-1 of ASCE/SEI 7-16. Site Class E is defined as a soil profile consisting of stiff soil profile with a shear wave velocity less than 600 feet per second, standard penetration test (SPT) blow counts (N-value) less than 15 blows per foot, or undrained shear strength less than 1,000 pounds per square foot in the top 10 feet or any profile with more than 10 feet of soil with Plasticity Index $PI > 10$, Moisture Content $w > 40\%$, and Undrained Shear Strength $S_u < 500$ psf.

Approximate coordinates for the site are noted below.

- Latitude: 35.711905°N
- Longitude: -117.397736°W

Seismic design parameters were developed in consistent with the requirements of the 2022 CBC, ASCE/SEI 7-16, and Supplements 1 through 3 of that standard. We note that in accordance with Section 11.4.8 of ASCE/SEI 7-16 Supplement 3, a site-specific ground motion hazard analysis is required for Class E sites with a mapped S_s greater than or equal to 1.0g or S_1 greater than or equal to 0.2g unless exceptions are taken by the project structural engineer. Based on the Site Class E designation, the exception of Section 11.4.8 of ASCE 7-16 Supplement 3 states that a ground motion hazard analysis is not required for non-building structures when the value of S_{ai} is determined by Eq. (15.7-7) for all values of T_i and the value of S_{D1} is increased by 50 percent in Eq. (15.7-10) and Eq. (15.7-11). Per Table 11.4-2 of ASCE 7-16 Supplement 3, an F_v value of 2.412 may be used in conjunction with code-based S_s value for purposes of calculating the T_s value, determination of the Seismic Design Category, and when taking the exceptions of Section 11.4.8 of ASCE 7-16 Supplement 3 for calculation of the S_{D1} value. As such, code-based seismic design parameters provided in Table 4.2-1 for the spectral response acceleration at a period of 1.0 second include the 50 percent increase assuming that the exception of Section 11.4.8 of ASCE 7-16 Supplement 3 will be taken. The parameters listed in the Table 4.2-1 are estimated using the Seismic Design Maps website maintained by SAC/OSHPD (<https://seismicmaps.org>) and the requirements of the 2022 CBC/ASCE 7-16.

**TABLE 4.2-1
Ground Motion Parameters Based on 2022 CBC**

Parameter	Value	ASCE 7-16 Reference
S_s	1.162 g	Fig 22-1
S_1	0.397 g	Fig 22-2
Site Class	E	Table 20.3-1
F_a	1.2	Table 11.4-1
F_v	2.412*	See Section 11.4.8, Supplement 3
S_{MS}	1.394g	Eq. 11.4-1
S_0	0.958*	See Section 11.4.8, Supplement 3
S_{DS}	0.930g	Eq. 11.4-3
S_{D1}	0.958*	See Section 11.4.8, Supplement 3
PGA	0.497g	Fig 22-9
F_{PGA}	1.207	Table 11.8-1
F_{PM}	0.599g	Eq. 11.8-1
C_R	0.915	Fig 22-18A
C_{R1}	0.904	Fig 22-19A
T_L	8 seconds	See Section 11.4.6

Note: Section 11.4.8 of ASCE/SEI 7-16 Supplement 3 requires a site-specific ground motion hazard analysis be performed for Class E sites with S_s greater than or equal to 1.0g or S_1 greater than or equal to 0.2g unless an exception is taken in which for non-building structures the value of S_{ai} is determined by Eq. (15.7-7) for all values of T_i and the value of S_{D1} is increased by 50 percent in Eq. (15.7-10) and Eq. (15.7-11). The value of S_{D1} provided in the table includes this 50 percent increase assuming the exception will be taken. The value of F_v shall only be used for calculation of T_s , determination of Seismic Design Category, linear interpolation for intermediate values of S_1 , and when taking the exceptions under Items 1 and 2 of Section 11.4.8 for the calculation of S_{D1} .



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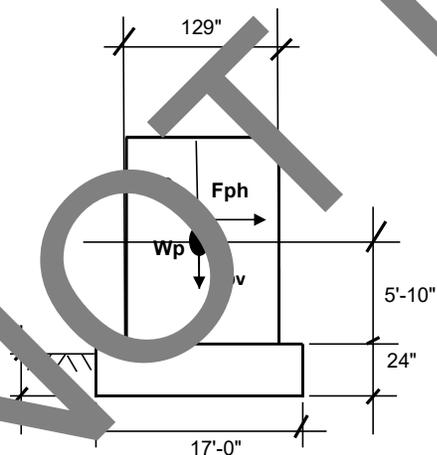
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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 5.1

Project: Trona Fuel Tanks & Generator

TANK FOUNDATION DESIGN

Tank length=	243	in
Tank OD (ht)=	135	in
Tank ID.(ht)=	122	in
Tank OD(width)=	129	in
Tank ID(width)=	116	in
Top of Tank=	135	in support
Tank anchor CTC=	12	in
Empty weight=	45,000	lbs
Fuel oil weight=	700	lbs
Total weight=	111,500	lbs
No. of anchors	4	<u>(2) AB at each Long side</u>
Tank OD(length)=	243	in
$F_{ph} = 0.04 * W_p =$	27910	lbs
$F_{pv} = 0.2 * W_p =$	22300.0	lbs



CHECK SOIL BEARING

Foundation size	17'-0" W x 23'-6" L x 24" Thick
Concrete Weight (Wc) =	150 pcf
Length (L1) =	23.50 ft
Wide (B1) =	17.00 ft
Thickness (T1) =	2.0 ft
CG Height (H2) =	6.0 ft
Total Vert. Load = $W_p + F_{pv} + (L1 \times B1 \times T1)(W_c) =$	231350 lbs



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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 5.2

Project: Trona Fuel Tanks & Generator

$$M(O/T) = Fph \cdot H_2 = \mathbf{227,460} \text{ lbs-ft}$$

$$e = M/P = \mathbf{0.98} \text{ ft}$$

$$A = (L_1)(B_1) = \mathbf{399.5} \text{ sq ft}$$

< L/

TRANSVERSE DIRECTION:

$$\text{Soil Bearing} = (P/A) \left(1 + \frac{6e}{L}\right) = \mathbf{780} \text{ psf}$$

< 100 psf

CHECK OVERTURNING

$$\frac{P \times L_1 \times 0.5}{M} = \mathbf{8.6} \geq 1.5 \quad \text{OK}$$

CHECK SLIDING

Coefficient of Friction (F_p) = $\mathbf{0.25}$

Passive Pressure (T_2) = $\mathbf{175}$ psf per ft

$T_2 = \mathbf{0.83}$ ft

$$\text{Safety factor} = \frac{(P \times e) + [Pp \times T_2 \times B_1]}{F_p} = \mathbf{1.6} \geq 1.5 \quad \text{OK}$$

DETERMINE CONC. REINFORCEMENT

Concrete Foundation: 17'(wide) x 23.5'(long) x 2'(deep)

Foundation width of 24'

Moment due to seismic load (M_e) = $\mathbf{13.38}$ (kips-ft)/ft

Soil press. due to dead load (q) = $P/A = \mathbf{579.1}$ psf

Moment due to load dead load (M_d) = $\mathbf{20.92}$ (kips-ft)/ft

$M_u = 1.2 \cdot M_d + 1.0 \cdot M_e = \mathbf{36.98}$ (kips-ft)/ft

Max soil press due to D & E (q_m) = $\mathbf{780.1}$ psf

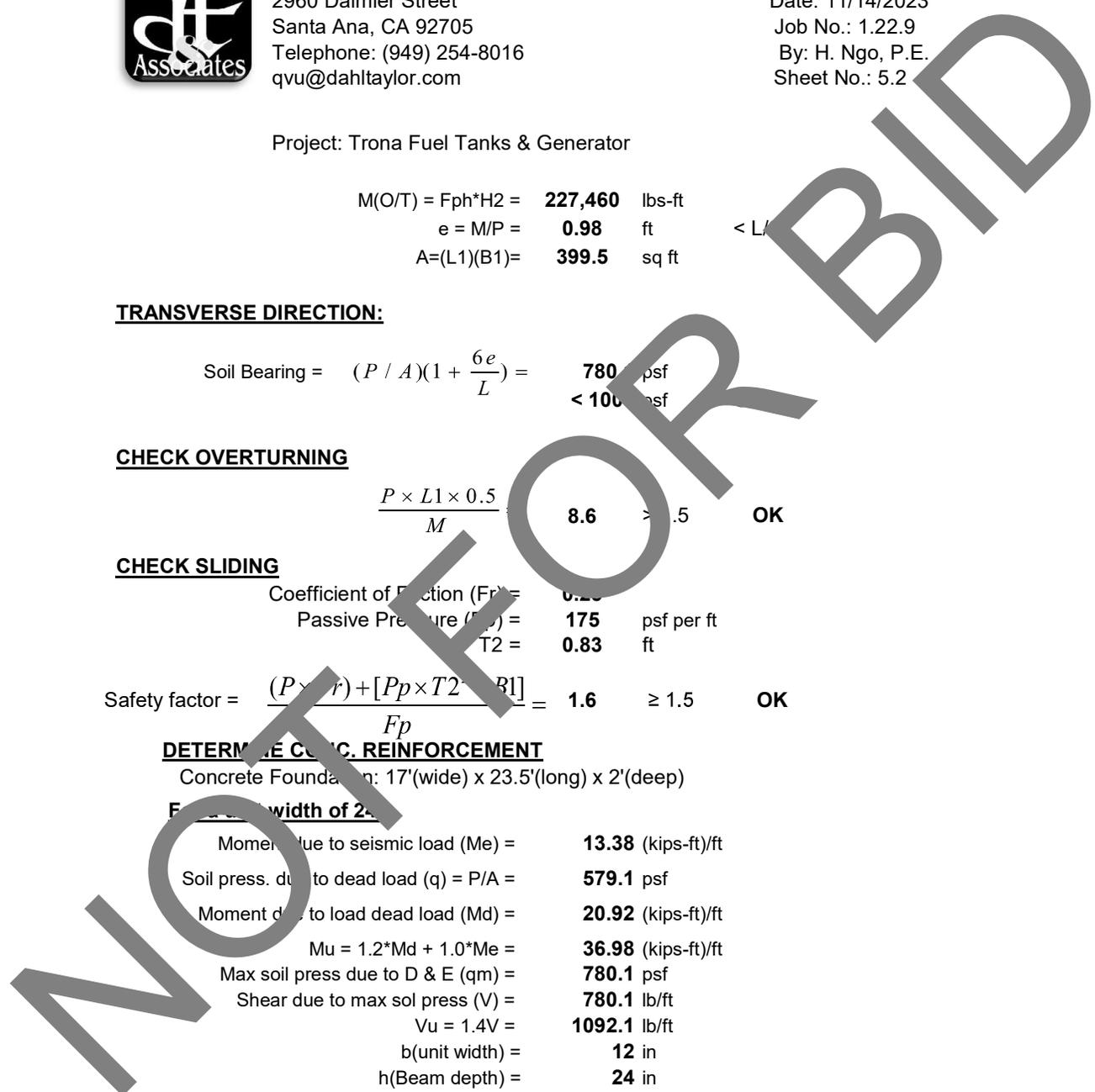
Shear due to max soil press (V) = $\mathbf{780.1}$ lb/ft

$V_u = 1.4V = \mathbf{1092.1}$ lb/ft

$b(\text{unit width}) = \mathbf{12}$ in

$h(\text{Beam depth}) = \mathbf{24}$ in

$d = \mathbf{20.5}$ in





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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 5

Try #6 @ 12" OC Top & Bottom Each Way

$f'_c = 4,500$ psi
 $f_y = 60,000$ psi

CHECK BENDING

$A_s = 0.44$ in²

$a = \frac{A_s f_y}{0.85 f'_c b} = 0.58$ in

$\frac{a}{2} = 0.29$ in

$d - \frac{a}{2} = 20.21$ in

$\phi = 0.9$

$M_n = \phi A_s f_y \left(d - \frac{a}{2} \right) = 40,021$ (lb-ft)/ft

$M_n = 40.02$ (kips-ft)/ft $> M_u$
36.98

OK
Kips-ft

CHECK SHEAR

$\phi = 0.75$

$\phi V_c = \phi (2 \sqrt{f'_c} b d) = 24753$ lb/ft

$V_u = 1092.1$ lb/ft

$\phi V_c > V_u$ **OK**

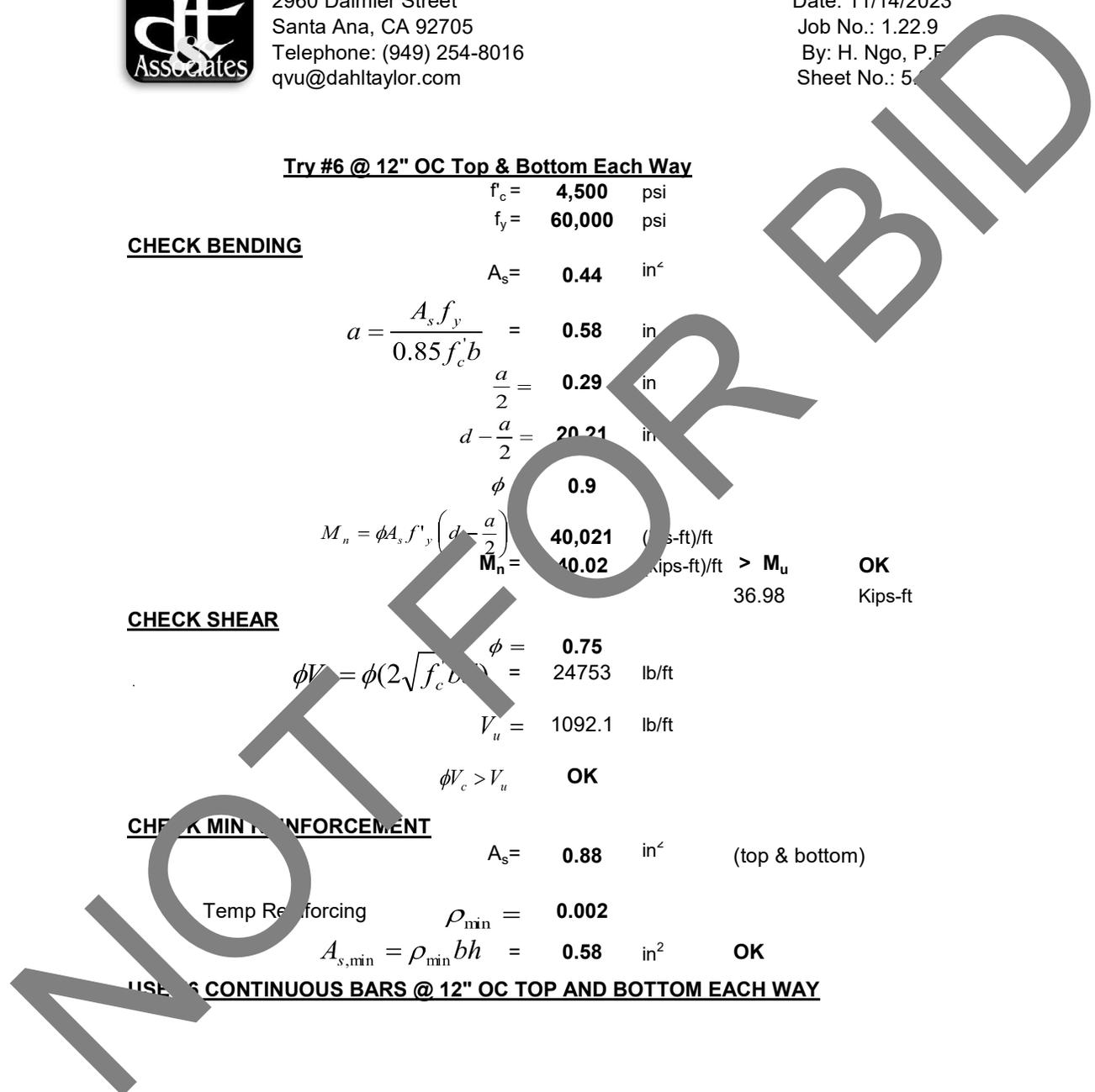
CHECK MIN REINFORCEMENT

$A_s = 0.88$ in² (top & bottom)

Temp Reinforcing $\rho_{min} = 0.002$

$A_{s,min} = \rho_{min} b h = 0.58$ in² **OK**

USE #6 CONTINUOUS BARS @ 12" OC TOP AND BOTTOM EACH WAY





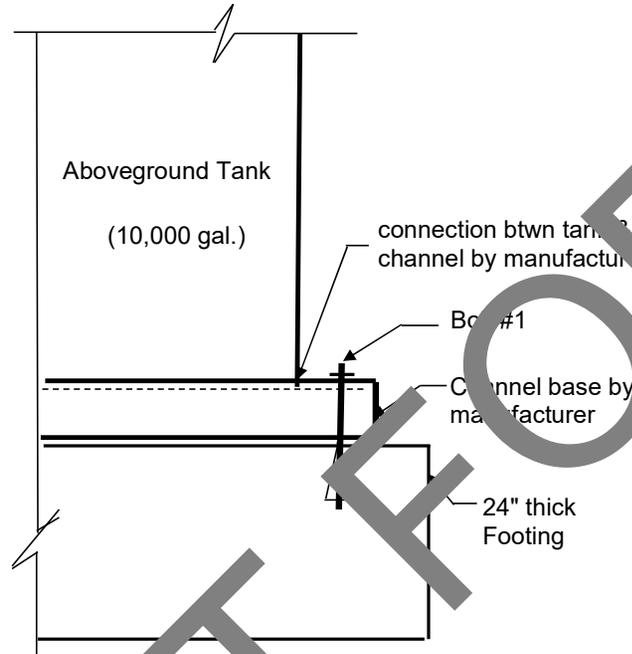
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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 5.4

PROJECT: **SBC Trona - 10,000 Gallons Aboveground Fuel Tank**

CHECK TANK ANCHOR DESIGN



Design Load

Tank weight(op.) =	111,500 lbs
Horizontal seismic Fph =	37910 lbs
Fpv=	22300 lbs
(C) Curb height =	0.167 ft
H(O/T height+C) =	3.167 ft
moment arm (B) =	5.5 ft
Horizontal shear Fh=	37910 lbs
Downward load(PD)=	111500 lbs
Upward load(UL) =	22300 lbs

See sheet 5.1
See sheet 5.1
channel ht
See sheet 5.1

NOT FOR BID



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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 5.5

Project: Trona Fuel Tanks & Generator

Bolt #1:

(2) base supporting provided by tank manufacturer & pre-welded to bottom of tank

Total # of channel (N1) =	2	Resisting overturning due to Fph
Total # of base anchor(N2) =	2	Resisting overturning due to Fph
Total # of anchors (B1) =	4	Resisting shear Fph
Bolt distance for moment arm =	10	ft

$$\text{Shear} = \frac{Fh}{B1} = \mathbf{947} \text{ lbs per anchor bolt\#1}$$

$$\text{Tension1(due to O/T)} = \frac{Fh \cdot e}{(B)B_1} = \mathbf{1015} \text{ lbs per anchor bolt\#1}$$

$$\text{Tension2(due to upward)} = \frac{Fpv}{B1} = \mathbf{5575} \text{ lbs per anchor bolt\#1}$$

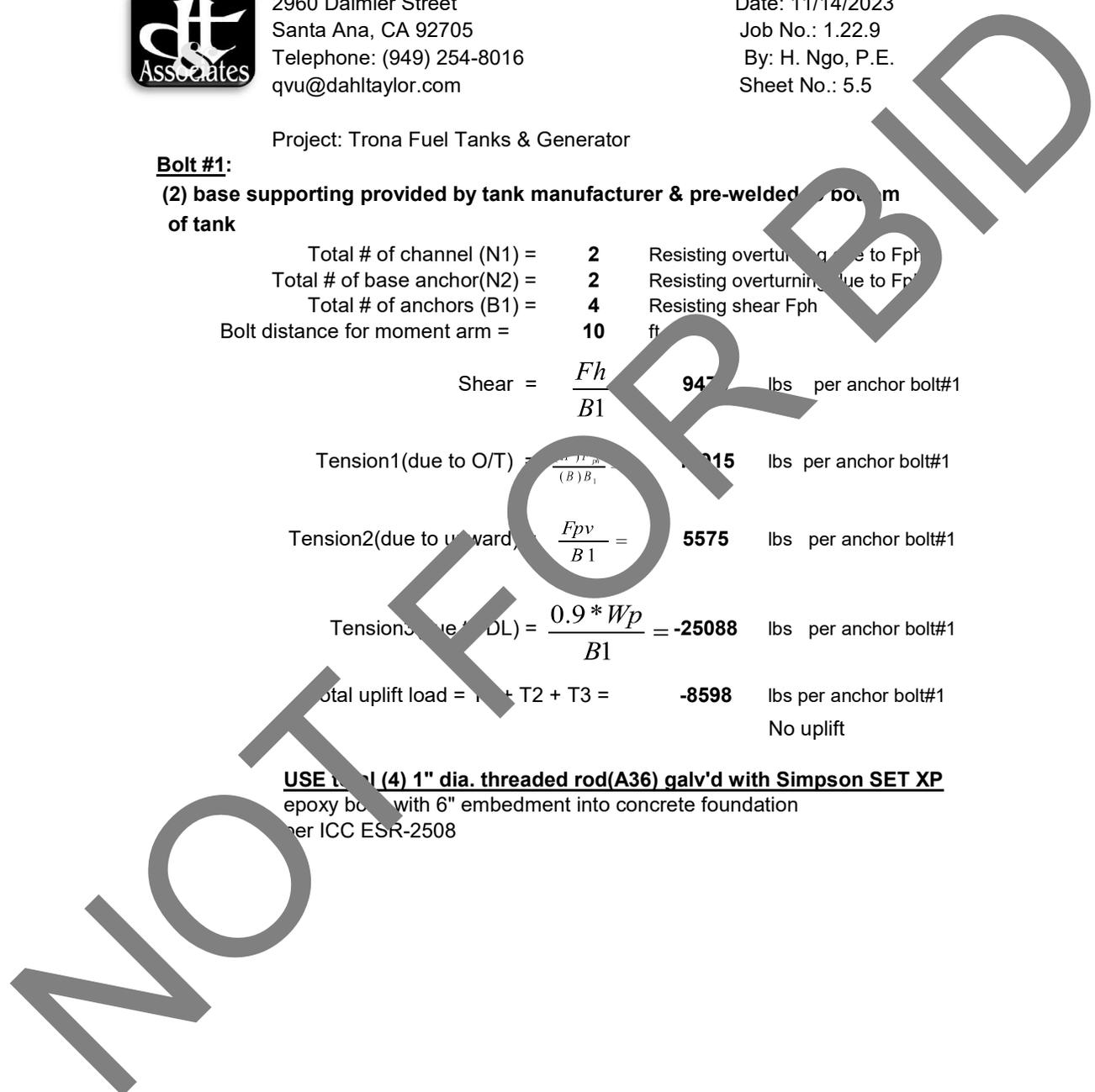
$$\text{Tension3(due to DL)} = \frac{0.9 * Wp}{B1} = \mathbf{-25088} \text{ lbs per anchor bolt\#1}$$

$$\text{Total uplift load} = T1 + T2 + T3 = \mathbf{-8598} \text{ lbs per anchor bolt\#1}$$

No uplift

USE (4) 1" dia. threaded rod(A36) galv'd with Simpson SET XP

epoxy bolt with 6" embedment into concrete foundation
per ICC ESR-2508





Dahl, Taylor & Associates, Inc.

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Tel: (949) 254-8016

Date: 12/5/2023

Job No.: 1.22.9

By: H. Ngo, P.E. &
Q. Vu, P.E.

Sheet No.: 6.1

Project: **SBC Trona - 50 KW Generator, Alum. Enclosure & Tank**
80311 Trona Road, Trona, CA 93562

Generator Foundation
DESIGN CRITERIA

NOTE: $Sds = (2/3)(Fa)(Ss) = 0.930$

$Fa = 1.2$

$Ss = 1.162$

$ap = 1$

$Wp1 = 2,820$

$Wp2 = 1,000$

$Wp3 = 5,145$

$Rp = 2.5$

$Ip = 1.5$

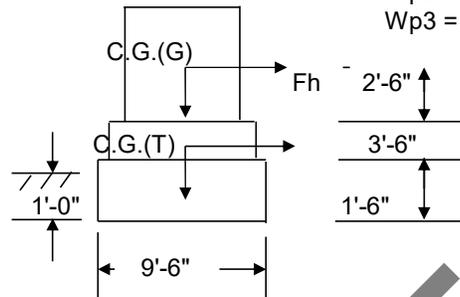
$z = 0$

$h = 5$

lbs (Genset only)

lbs (Exh+Alu. Enclosure)

lbs (Tank & Diesel)



Equip. wt = **8,965 lbs**

$$Fp(Gen.Set) = \frac{(0.4)(ap)(Sds)(Wp1)}{Rp / Ip} [1 + 2(z / h)] = \mathbf{629 \text{ lbs}}$$

$$Fp(Max.)(Gen.Set) = (1.6)(Sds)(Ip)(Wp1) = \mathbf{6,294 \text{ lbs}}$$

$$Fp(Min.)(Gen.Set) = (0.3)(Sds)(Ip)(Wp1) = \mathbf{1,180 \text{ lbs}}$$

$$Fp(Tank) = \frac{(0.4)(ap)(Sds)(Wp3)}{Rp / Ip} [1 + 2(z / h)] = \mathbf{1,148 \text{ lbs}}$$

$$Fp(Max.)(Tank) = (1.6)(Sds)(Ip)(Wp3) = \mathbf{11,485 \text{ lbs}}$$

$$Fp(Min.)(Tank) = (0.3)(Sds)(Ip)(Wp3) = \mathbf{2,153 \text{ lbs}}$$

GENERATOR FOUNDATION DESIGN

Check Soil Bearing

Concrete Weight = **150 lbs-cf**

Length (L1) = **13.5 ft**

Base (B1) = **9.5 ft**

Thickness (T1) = **1.5 ft**

Generator+Sound Enclosure Dimension:

Length (L2) = **6.333 ft**

Width (W2) = **3 ft**

Height (H2) = **5.2 ft**



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Date: 12/5/2023

Job No.: 1.22.9

By: H. Ngo, P.E. &
Q. Vu, P.E.

Sheet No.: 6.2

Project: **SBC Trona - 50 KW Generator, Alum. Enclosure & Tank**
80311 Trona Road, Trona, CA 93562

Tank Demension:

Length (L3) = **7.75** ft
Width (W3) = **3.0** ft
Height (H3) = **3.4** ft

Vert. Load (P) = $(Wp1 + Wp2 + Wp3) + [(L1)(B1)(T1)](Conc.Wt) =$ **37,822** lbs

Ma (Gen. Set) = $Fp(Gen.Set) \times H2 =$ **3,273** lbs-ft
Mb (Tank) = $Fp(Tank) \times H3 =$ **3,876** lbs-ft
Mt = $Ma + Mb =$ **7,149** lbs-ft

$e = Mt / P =$ **0.19** ft

TRANSVERSE DIRECTION:

Soil Bearing = $\frac{P \times 4}{L1 \times [(B1 \times 3) - (e \times 3)]} =$ **409.5** psf

Soil Bearing = **409.5** psf < 890x9.5 + 1,790x1 = 10,245 psf allowable bearing **OK**
Kleinfelder Soil Report - Allowable Bearing Cap. (psf) = 890B(footing width) + 1,790D(depth)

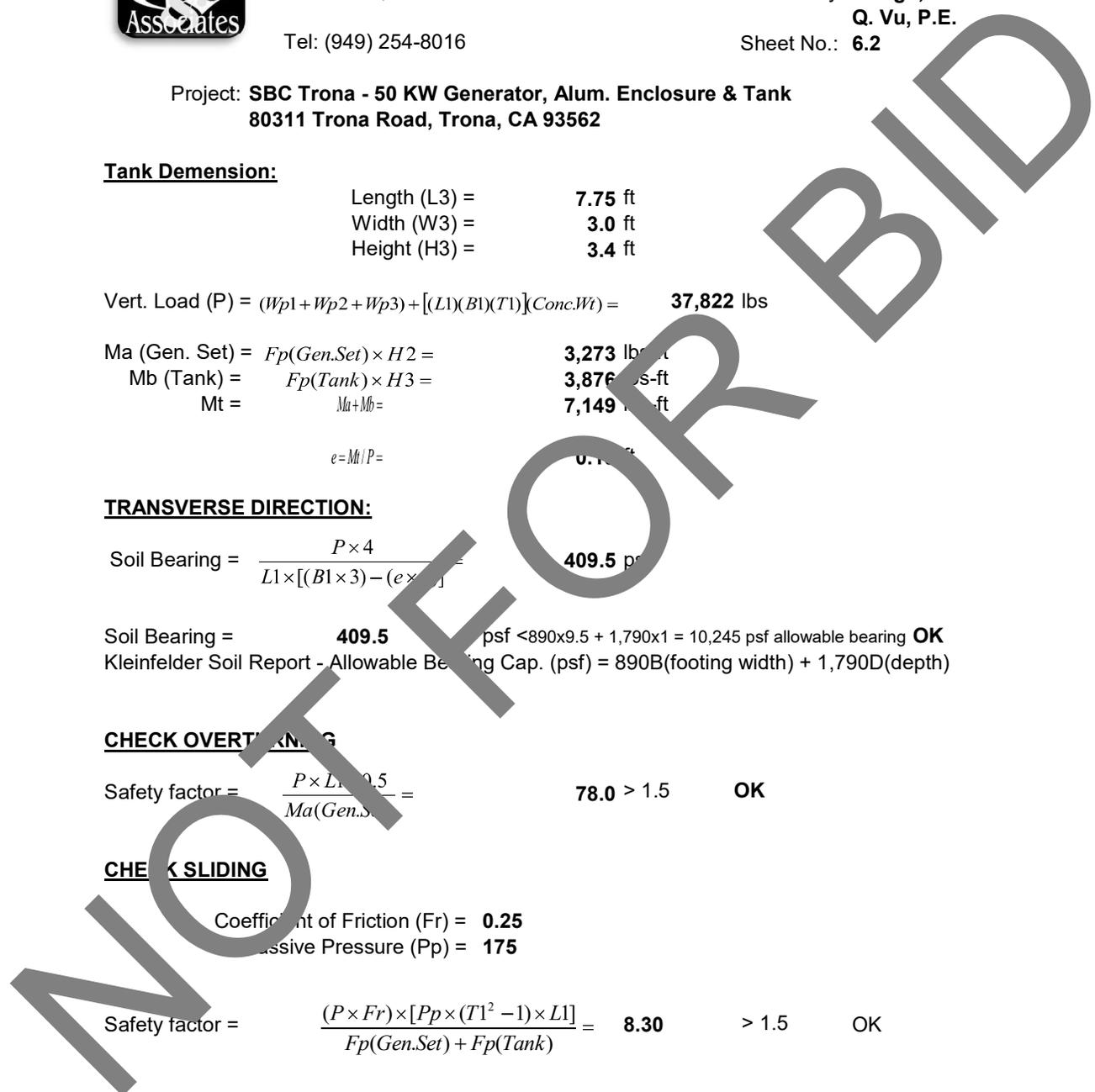
CHECK OVERTURNING

Safety factor = $\frac{P \times L1 \times 0.5}{Ma(Gen.Set)} =$ **78.0** > 1.5 **OK**

CHECK SLIDING

Coefficient of Friction (Fr) = **0.25**
Passive Pressure (Pp) = **175**

Safety factor = $\frac{(P \times Fr) \times [Pp \times (T1^2 - 1) \times L1]}{Fp(Gen.Set) + Fp(Tank)} =$ **8.30** > 1.5 **OK**



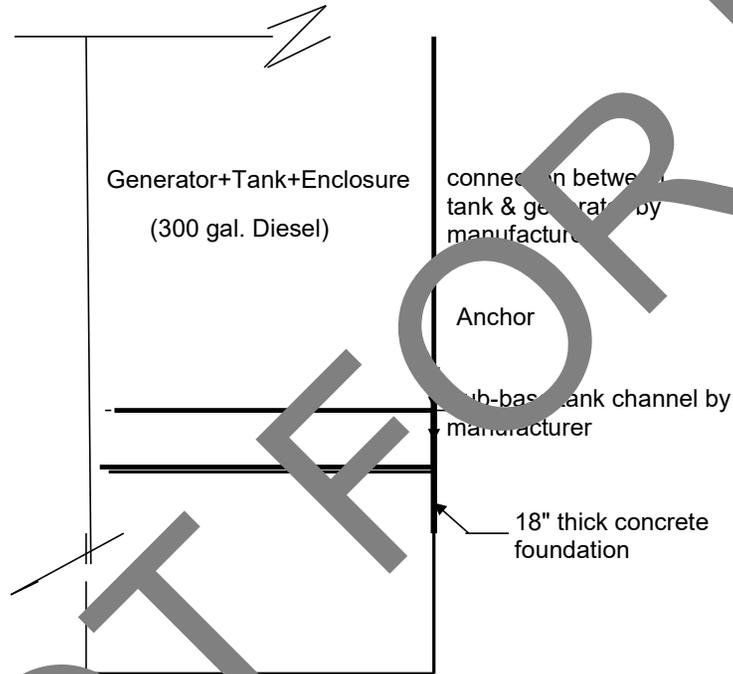


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Date: **12/5/23**
 Job No.: **1.22.9**
 By: **H. Ngo, P.E. & Q. Vu, P.E.**
 Sheet No.: **7.1**

Project: **SBC Trona - 50 KW Generator, Alum. Enclosure & Tank**
80311 Trona Road, Trona, CA 93562

CHECK GENERATOR + ENCLOSURE + TANK ANCHOR DESIGN



Design Load

Encl.+Gen+Tank WT.(op.) =	8965 lbs
Horizontal seismic Fph =	3048 lbs
Fpv=	1793 lbs
(C) Curb height =	0 ft
H(O/T height+C) =	6.400 ft
Moment Arm (B) =	3.416667 ft

See sheet 6.1
 See sheet 6.1
 Channel Ht.
 See sheet 6.2

Horizontal shear Fh=	3048 lbs
Downward load(PD)=	8965 lbs
Upward load(UL) =	1793 lbs



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Date: 12/5/23

Job No.: 1.22.9

By: H. Ngo, P.E. & Q.
Vu, P.E.

Sheet No.: 7.2

Project: **SBC Trona - 50 KW Generator, Alum. Enclosure & Tank**
80311 Trona Road, Trona, CA 93562

Anchor:

Five (5) bolt holes on each bottom flange of the diesel sub-base tank for anchorage to concrete foundation provided by generator manufacturer.

Total # of channel (N1) =	2	Resisting overturning due to F _{h1}
Total # of base anchor(N2) =	5	Resisting overturning due to F _{ph}
Total # of anchors (B1) =	10	Resisting shear F _{ph}
Bolt distance for moment arm =	2	ft

$$\text{Shear} = \frac{Fh}{B1} = \underline{\underline{305}} \text{ lbs per anchor}$$

$$\text{Tension1(due to O/T)} = \frac{(H)F_{ph}}{(B)B_1} = \underline{\underline{1142}} \text{ lbs per anchor}$$

$$\text{Tension2(due to upward)} = \frac{F_{pv}}{B1} = \underline{\underline{179}} \text{ lbs per anchor}$$

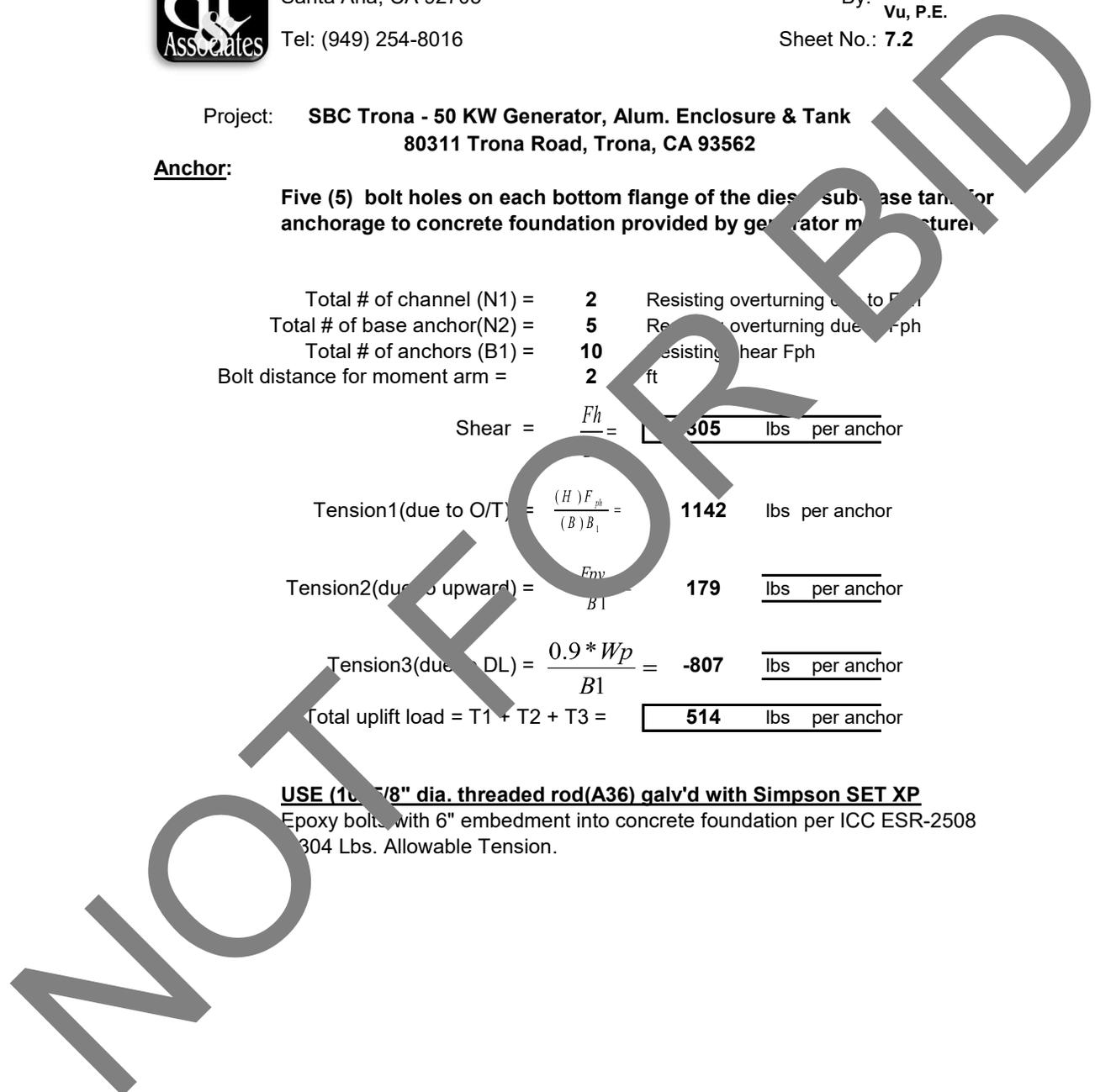
$$\text{Tension3(due to DL)} = \frac{0.9 * W_p}{B1} = \underline{\underline{-807}} \text{ lbs per anchor}$$

$$\text{Total uplift load} = T1 + T2 + T3 = \underline{\underline{514}} \text{ lbs per anchor}$$

USE (10 #8" dia. threaded rod(A36) galv'd with Simpson SET XP

Epoxy bolts with 6" embedment into concrete foundation per ICC ESR-2508

304 Lbs. Allowable Tension.



Anchorage Adhesives

SET-3G™ High-Strength Epoxy Adhesive

SET-3G is the latest innovation in epoxy anchoring adhesives from Simpson Strong-Tie. Formulated to provide superior performance in cracked and uncracked concrete at elevated temperatures, SET-3G installs and performs in a variety of environmental conditions and temperature extremes. The exceptional bond strength of SET-3G results in high design strengths at shallow embedment depths. Code listed per ICC-ES-ESR-4057 in accordance with ICC-ES AC308, ACI 355.4 and IBC 2018 requirements for cracked and uncracked concrete in static and seismic conditions, SET 3G anchoring adhesive can be installed when concrete substrate temperature is as high as 100°F (38°C).



SET-3G Adhesive

AT-XP® Fast-Curing Anchoring Adhesives

AT-XP anchoring adhesive from Simpson Strong-Tie has been formulated for high-strength anchorage of threaded rod and rebar into concrete under a wide range of conditions, such as cold weather installations. Code listed per IAPMO UES EF-263 in accordance with ICC-ES AC308, ACI 355.4 and IBC 2018 requirements for cracked and uncracked concrete in static or seismic conditions, AT-XP anchoring adhesive has demonstrated superior performance in reduced-temperature testing (can be installed in concrete substrate temperatures as low as 14°F (-10°C)).



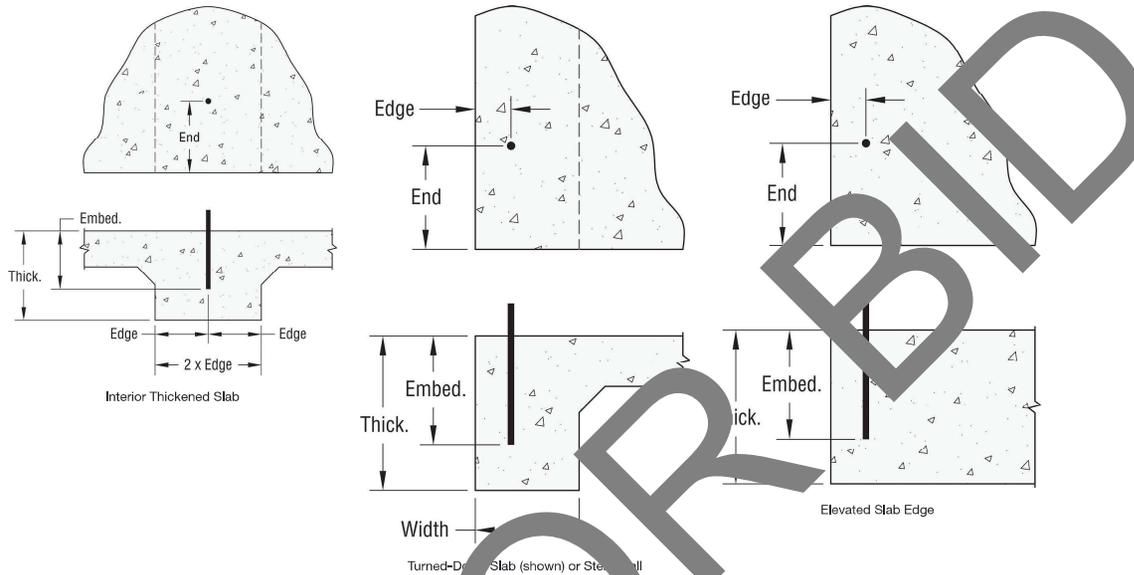
AT-XP Adhesive

Allowable (ASD) Tension Loads for Post-Installed Anchors into Uncracked Concrete for Wind Loads

Product	Size	Interior Thickened Slab				Stem Wall or Turned-Down Slab				Elevated Slab							
		Geometry (in.)				Geometry (in.)				Allowable Tension (lb.)		Geometry (in.)			Allowable Tension (lb.)		
		Embed.	Edge	End	Thick.	Embed.	End	Thick.	Width	1 1/4" Edge Distance	2 3/4" Edge Distance	Embed.	End	Thick.	1 1/4" Edge Distance	2 3/4" Edge Distance	
SET-3G™ adhesive with threaded rod	3/8" diameter rod	3	4	8	1,570	3	4	8	8	1,165	1,450	2 1/2	6	8	1,055	1,365	
		4	4	6	10	1,775	6	12	8	1,385	1,595	3 1/4	6	8	1,325	1,640	
	1/2" diameter rod	3	4	6	10	2,265	6	8	16	10	1,670	2,040	3 1/2	6	10	1,385	1,695
		4	4	6	8	1,425	3	6	8	8	1,370	1,450	3	6	8	1,380	1,730
	3/4" diameter rod	4	6	10	3,395	5	8	12	8	1,945	2,045	5	8	8	1,585	1,865	
		4 1/2	8	12	4,115	7	8	18	10	2,065	2,430	4 1/4	8	10	1,870	2,225	
	1" diameter rod	4	4	8	1,940	4	6	10	8	1,905	2,025	3 1/4	6	8	1,505	1,865	
		4	6	8	10	3,745	6	10	16	8	2,210	2,310	6 1/2	10	8	2,055	2,325
	1 1/4" diameter rod	4	6	10	12	6,090	8	12	20	10	2,955	3,055	8 1/2	12	10	2,445	2,800
		4	4	6	8	1,910	4	8	10	8	1,905	2,050	4	6	8	1,770	2,125
3/4" diameter rod	5	6	8	10	3,495	6	10	14	8	2,305	2,405	6 1/4	10	8	2,150	2,445	
	7	10	10	18	8,015	10	16	24	10	3,360	3,450	8 1/4	12	10	2,810	3,105	
AT-XP adhesive with threaded rod	3/8" diameter rod	3	6	8	5	1,265	3	6	8	8	870	1,105	3	6	8	870	1,105
		6	8	8	1,775	7	12	9	8	1,725	1,820	6	8	10	1,475	1,875	
	1/2" diameter rod	4 1/2	7	8	10	2,265	7 1/2	12	10	10	1,845	2,265	7	12	12	1,725	2,185
		3	6	6	6	2,430	4	6	10	8	1,585	1,740	3	6	8	1,255	1,505
	5/8" diameter rod	5	6	8	7 1/2	2,675	8 1/2	12	11	8	1,860	1,920	6	8	10	1,635	1,965
		7	8	10	16	3,875	10	16	14	10	2,570	2,640	7	12	12	1,910	2,290
	3/4" diameter rod	3 1/2	6	6	8	2,460	5	8	10	8	1,775	1,870	4	6	8	1,645	1,975
		6	6	8	10	2,725	9 1/2	12	14	8	1,860	1,920	6	8	10	1,790	2,075
	1" diameter rod	8	8	10	20	5,355	12	18	16	10	2,790	2,855	8	12	12	2,385	2,770
		6	6	8	10	2,290	6	8	10	8	1,665	1,745	4	6	8	1,770	2,125
3/4" diameter rod	8	6	8	12	2,835	10 1/2	12	15	8	1,860	1,920	6	8	10	2,215	2,530	
	10	8	16	24	6,290	14	22	18	10	3,000	3,055	8	12	12	2,640	2,995	

1. Allowable tension loads are based on the Strength Design provisions of ACI 308.14 and have been converted to Allowable Stress Design (ASD) loads by applying a 0.6 factor.

- c. Dry concrete
 - d. Periodic special inspection
 - e. Maximum short-term temperature = 150°F
 - f. Maximum long-term temperature = 110°F
3. Tabulated values apply to design tension loads consisting of 100% wind loads.



Technical Data

SD Adhesive Anchor Tension Capacities for Wind

Anchor Diam. (in.)	Center of Interior Thickened Slab					Edge of Turned Down Slab or Stem Wall								Edge of Elevated Slab					
	Embed. Depth (in.)	Min. End Dist. (in.)	Min. Concrete Thick. (in.)	SET-XP	AT-XP	Embed. Depth (in.)	Min. Concrete Thick. (in.)	Min. End Dist. (in.)	SET-XP		AT-XP		Embed. Depth (in.)	Min. Concrete Thick. (in.)	Min. End Dist. (in.)	SET-XP		AT-XP	
									1% Edge Dist.	2% Edge Dist.	1% Edge Dist.	2% Edge Dist.				1% Edge Dist.	2% Edge Dist.	1% Edge Dist.	2% Edge Dist.
3/8	3	8	4.875	2,006	2,109	7	4.875	8	2,605	2,733	2,605	2,733	6	10	8	2,359	3,002	2,461	3,122
	5	8	6.875	2,299	3,394	7	6.875	12	2,871	3,035	2,871	3,035	7	12	12	2,753	3,502	2,871	3,642
1/2	4	8	6.500	2,617	3,568	8.5	11.000	8	2,605	2,605	2,605	2,733	6	10	8	2,250	2,660	2,727	3,273
	5	8	8.000	2,271	4,460	8.5	11.000	12	3,099	3,204	3,099	3,204	7	12	12	2,625	3,103	3,181	3,819
5/8	5	8	8.125	2,378	3,786	9.5	12.625	8	2,605	2,733	2,605	2,733	6	10	8	2,270	2,622	2,982	3,460
	6	8	9.125	3,304	5,544	9.5	12.625	12	3,099	3,204	3,099	3,204	8	12	12	3,042	3,514	3,976	4,613
3/4	8	8	8.500	2,807	5,317	10.5	14.250	8	2,605	2,733	2,605	2,733	6	10	8	2,183	2,482	3,039	3,448
	8	8	11.000	3,743	4,721	10.5	14.250	12	3,099	3,102	3,099	3,204	8	12	12	3,127	3,556	4,403	4,994

Allowable Adhesive Anchor Tension Loads for Wind

Anchor Diam. (in.)	Center of Interior Thickened Slab					Edge of Turned Down Slab or Stem Wall								Edge of Elevated Slab					
	Embed. Depth (in.)	Min. End Dist. (in.)	Min. Concrete Thick. (in.)	SET-XP	AT-XP	Embed. Depth (in.)	Min. Concrete Thick. (in.)	Min. End Dist. (in.)	SET-XP		AT-XP		Embed. Depth (in.)	Min. Concrete Thick. (in.)	Min. End Dist. (in.)	SET-XP		AT-XP	
									1% Edge Dist.	2% Edge Dist.	1% Edge Dist.	2% Edge Dist.				1% Edge Dist.	2% Edge Dist.	1% Edge Dist.	2% Edge Dist.
3/8	3	8	4 7/8	1,979	1,265	7	8 7/8	8	1,565	1,640	1,565	1,640	6	10	8	1,415	1,800	1,475	1,875
	5	8	6 7/8	3,299	2,035	7	8 7/8	12	1,725	1,820	1,725	1,820	7	12	12	1,650	2,100	1,725	2,185
1/2	4	8	6 1/2	1,570	2,140	8 1/2	11	8	1,565	1,565	1,565	1,640	6	10	8	1,350	1,595	1,635	1,965
	5	8	7 1/2	1,965	2,675	8 1/2	11	12	1,860	1,920	1,860	1,920	7	12	12	1,575	1,860	1,910	2,290
5/8	5	8	8 1/8	1,650	2,270	9 1/2	12 5/8	8	1,565	1,640	1,565	1,640	6	10	8	1,360	1,575	1,790	2,075
	6	8	9 1/8	2,275	3,275	9 1/2	12 5/8	12	1,860	1,920	1,860	1,920	8	12	12	1,625	1,920	2,000	2,375

	8	8	11 3/4	2,245	2,835	10 1/2	14 1/4	12	1,860	1,860	1,860	1,920	8	12	12	1,875	2,135	2,640	2,995
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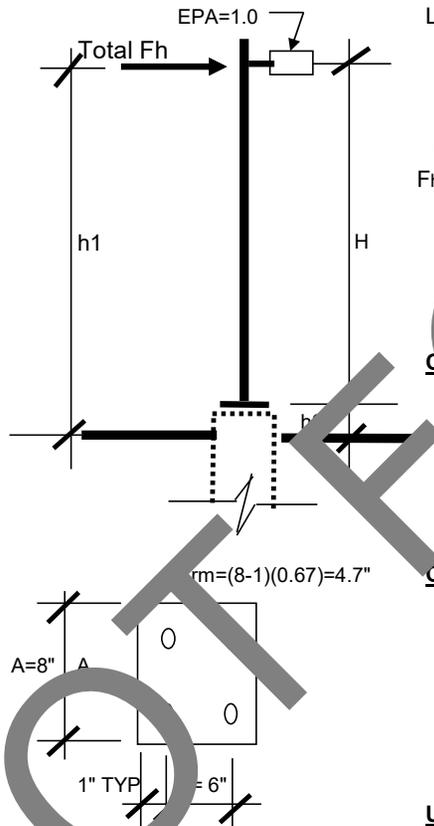


Dahl Taylor & Associates, Inc.
 2960 Daimler Street
 Santa Ana, CA 92705
 Tel: (949) 254-8016 Fax: (949) 502-0777

Date: 11/14/2023
 Job No.: 1.22.9
 By: H.Ngo
 Sheet No.: 8.1

Project: **Light Pole & Pole Foundation Design**
 SBC Trona Fueling Station

Light Pole Design



Lighting Fixture EPA=	1.0	ft	
H(Pole high) =	29	ft	$h_1 = 1$ ft
Fh(wind) =	28	psf	100 mph
Fh(loads) Seism		wind	arm (ft)
$F_{h1}(\text{pole}) =$	20.7	24	14.5
$F_{h2c}(\text{Light}) =$	20	42	29
Sum =	20.7	821.24	23,682
Total Fh =	821.24	lbs	
Total M =	23,682	lbs-ft	
$h_2 =$	10	ft	
$x(\text{arm}) =$	24	ft	

Check pole size 6" sq tube x 1/4" thickness

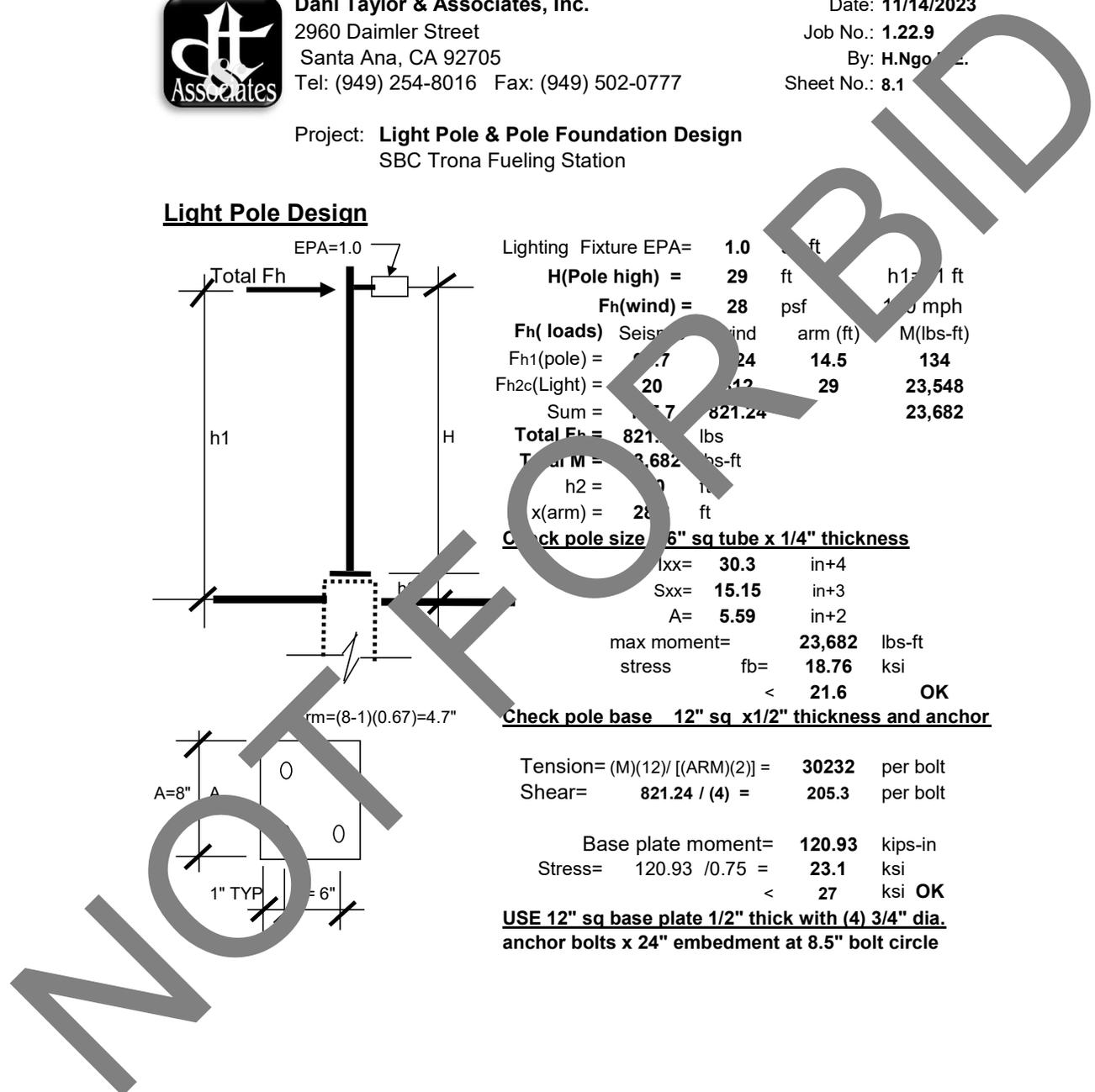
$I_{xx} =$	30.3	in+4
$S_{xx} =$	15.15	in+3
$A =$	5.59	in+2
max moment =	23,682	lbs-ft
stress fb =	18.76	ksi
	< 21.6	OK

Check pole base 12" sq x 1/2" thickness and anchor

Tension = $(M)(12) / [(ARM)(2)] =$	30232	per bolt
Shear = $821.24 / (4) =$	205.3	per bolt

Base plate moment =	120.93	kips-in
Stress = $120.93 / 0.75 =$	23.1	ksi
	< 27	ksi OK

USE 12" sq base plate 1/2" thick with (4) 3/4" dia. anchor bolts x 24" embedment at 8.5" bolt circle



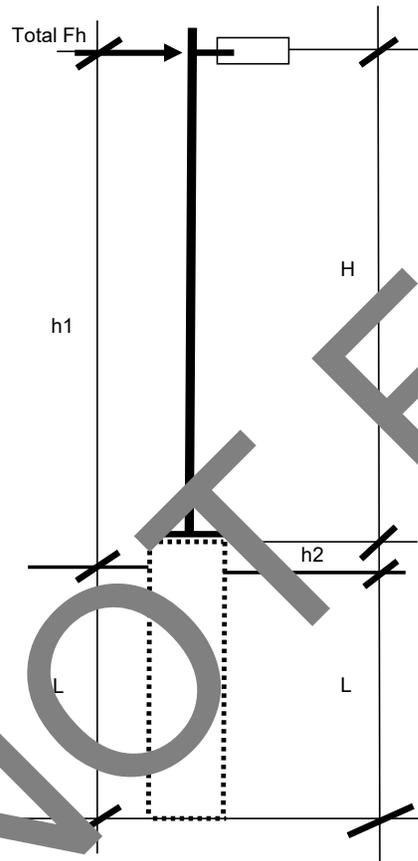


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Date: 11/14/2020
 Job No.: 1.22.9
 By: H.Ng P.E.
 Sheet No.: 3.2

Project: **Light Pole & Pole Foundation Design**
 SBC Trona Fueling Station

TYPE 1 Light Pole Foundation Design - 29 Feet High Pole

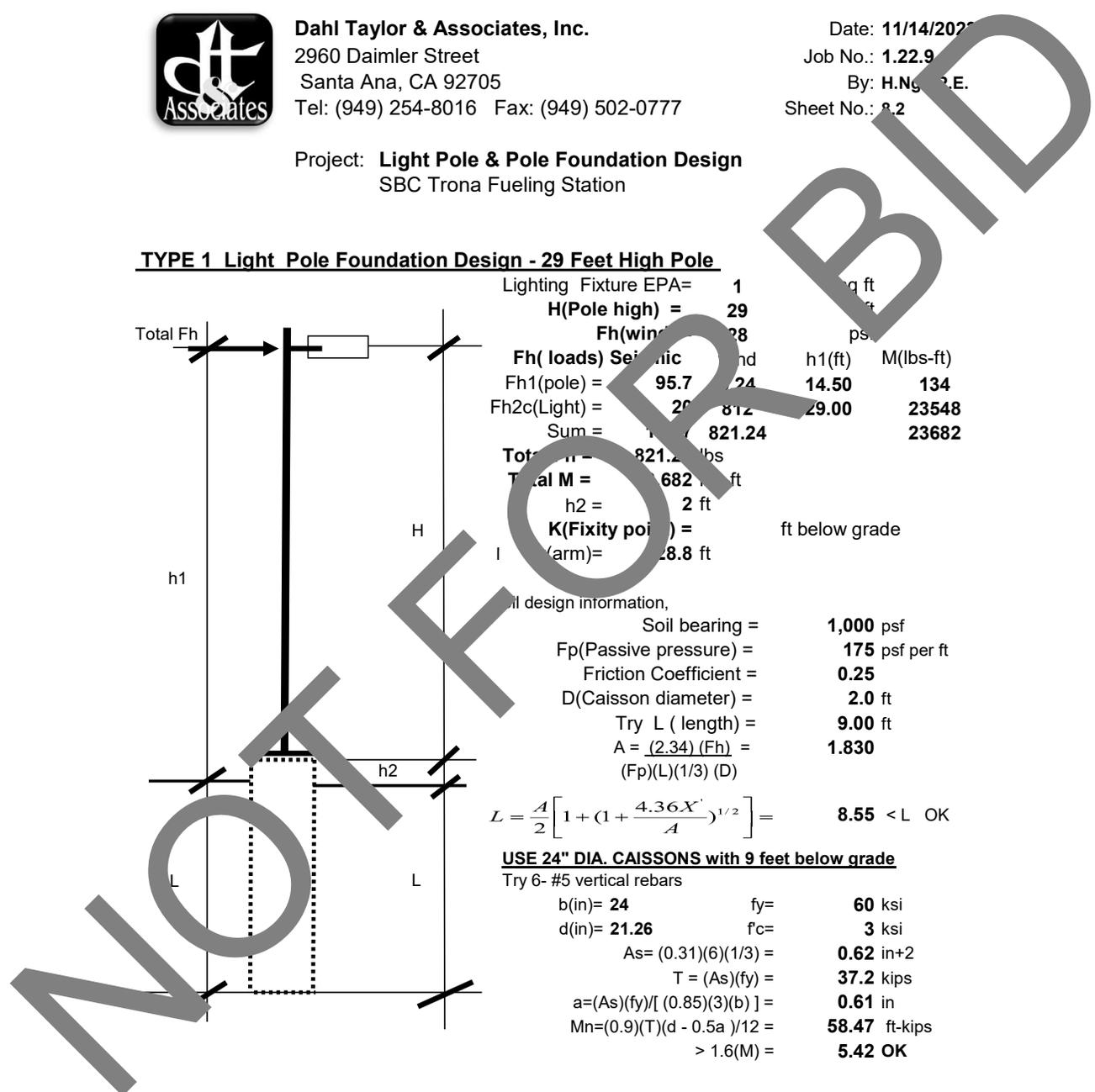


Lighting Fixture EPA=	1	sq ft
H(Pole high) =	29	ft
Fh(wind) =	28	psf
Fh(loads) Seismic		hd h1(ft) M(lbs-ft)
Fh1(pole) =	95.7	24 14.50 134
Fh2c(Light) =	20	812 29.00 23548
Sum =	115.7	821.24 23682
Total Fh =	821.24	lbs
Total M =	682	ft
h2 =	2	ft
K(Fixity point) =		ft below grade
L (arm) =	28.8	ft

Soil design information,
 Soil bearing = 1,000 psf
 Fp(Passive pressure) = 175 psf per ft
 Friction Coefficient = 0.25
 D(Caisson diameter) = 2.0 ft
 Try L (length) = 9.00 ft
 A = (2.34) (Fh) = 1.830
 (Fp)(L)(1/3) (D)

$$L = \frac{A}{2} \left[1 + \left(1 + \frac{4.36 X'}{A} \right)^{1/2} \right] = 8.55 < L \text{ OK}$$

USE 24" DIA. CAISSONS with 9 feet below grade
 Try 6- #5 vertical rebars
 b(in)= 24 fy= 60 ksi
 d(in)= 21.26 fc= 3 ksi
 As= (0.31)(6)(1/3) = 0.62 in+2
 T = (As)(fy) = 37.2 kips
 a=(As)(fy)/[(0.85)(3)(b)] = 0.61 in
 Mn=(0.9)(T)(d - 0.5a)/12 = 58.47 ft-kips
 > 1.6(M) = 5.42 OK



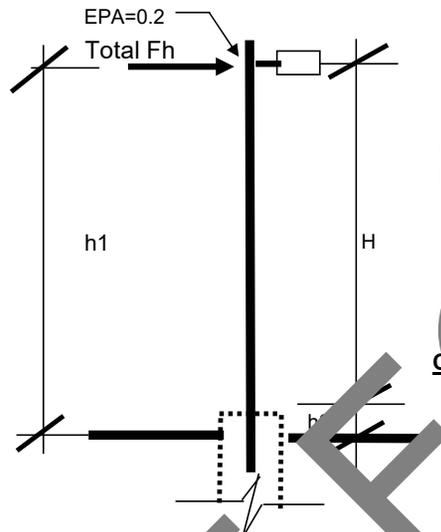


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Date: **11/29/2023**
 Job No.: **1.22.9**
 By: **H.Ngo**
 Sheet No.: **9.1**

Project: **Fence Post & Post Foundation Design**
 SBC Trona Fueling Station

Fence Post Design



xxx EPA=	0.2	ft	
H(Post high) =	12	ft	h1=12 ft
Fh(wind) =	28	psf	100 mph
Fh(loads)	Seism	Wind	arm (ft)
Fh1(post) =	1.6	48	12
Fh2c(XXX) =	20	7.2	12
Sum =	1.6	69.048	829
Total Fh =	69.0	lbs	
Total M =	829	lbs-ft	
h2 =	12	ft	
x(arm) =	12	ft	

Check post size 2" round tube x 1/8" thickness

Ixx=	30.3	in+4	
Sxx=	15.15	in+3	
A=	5.59	in+2	
max moment=	829	lbs-ft	
stress fb=	0.66	ksi	
	<	21.6	OK

NOT FOR BIDDING

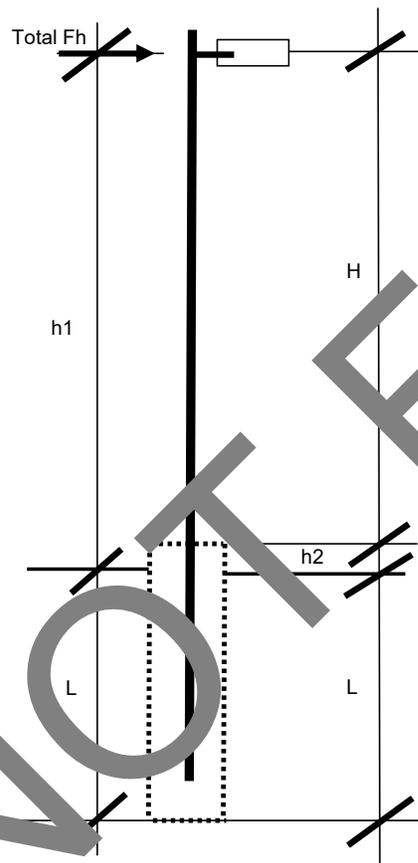


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Date: 11/29/2020
 Job No.: 1.22.9
 By: H. Nguyen, P.E.
 Sheet No.: 1.2

Project: **Fence Post & Post Foundation Design**
 SBC Trona Fueling Station

TYPE 1 Fence Post Foundation Design - 12 Feet High Post

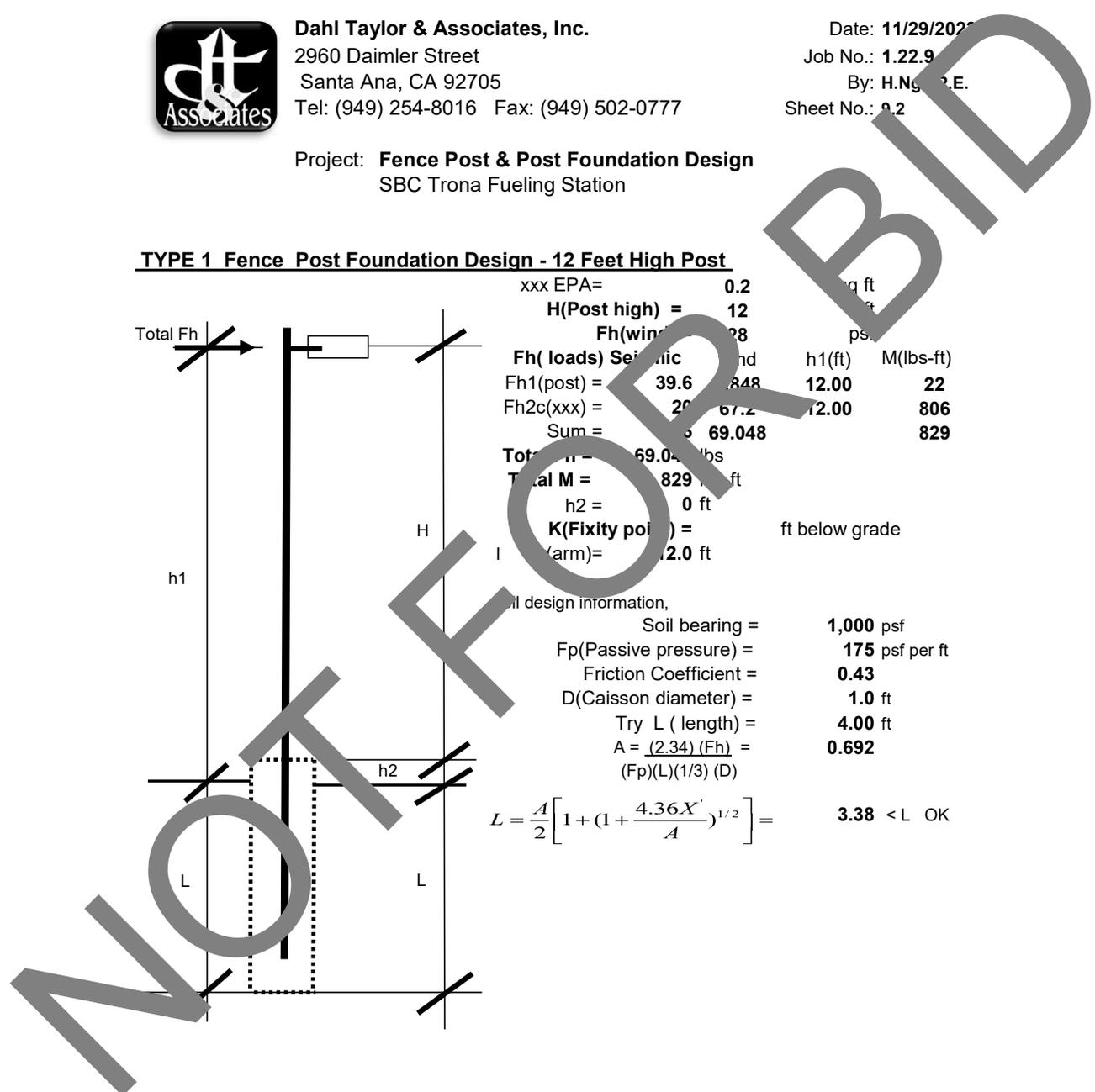


xxx EPA =	0.2	g ft
H(Post high) =	12	ft
Fh(wind) =	28	psf
Fh(loads) Seismic		hd h1(ft) M(lbs-ft)
Fh1(post) =	39.6	848 12.00 22
Fh2c(xxx) =	20	67.2 12.00 806
Sum =	5	69.048 829

Total M = 69.048 lbs
 Total M = 829 ft
 h2 = 0 ft
K(Fixity point) = ft below grade
 l (arm) = 2.0 ft

Soil design information,
 Soil bearing = 1,000 psf
 Fp(Passive pressure) = 175 psf per ft
 Friction Coefficient = 0.43
 D(Caisson diameter) = 1.0 ft
 Try L (length) = 4.00 ft
 A = (2.34) (Fh) = 0.692
 (Fp)(L)(1/3) (D)

$$L = \frac{A}{2} \left[1 + \left(1 + \frac{4.36 X'}{A} \right)^{1/2} \right] = 3.38 < L \text{ OK}$$



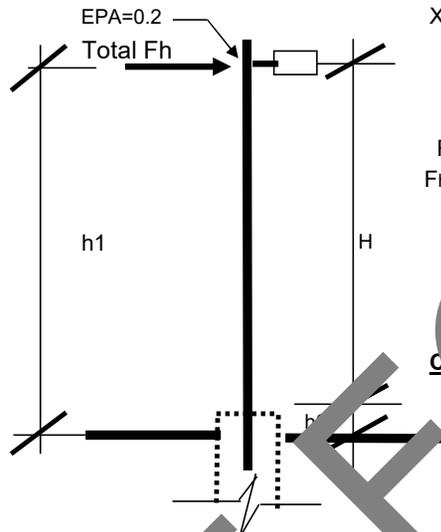


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Date: **11/29/2023**
 Job No.: **1.22.9**
 By: **H.Ngo**
 Sheet No.: **10.1**

Project: **Gate Post & Post Foundation Design**
 SBC Trona Fueling Station

Gate Post Design



XXX EPA=	0.2	ft	
H(Post high) =	12	ft	h1=12 ft
Fh(wind) =	28	psf	100 mph
Fh(loads)	Seism	wind	arm (ft)
Fh1(post) =	48	12	22
Fh2c(XXX) =	20	7.2	806
Sum =	68	69.048	829
Total Fh =	69.0	lbs	
Total M =	829	lbs-ft	
h2 =	7.2	ft	
x(arm) =	12	ft	

Check post size pipe, Sched 40 x 0.237" thickness

ixx=	7.23	in+4	
Sxx=	3.21	in+3	
A=	3.17	in+2	
max moment=	829	lbs-ft	
stress fb=	3.10	ksi	
	<	21.6	OK

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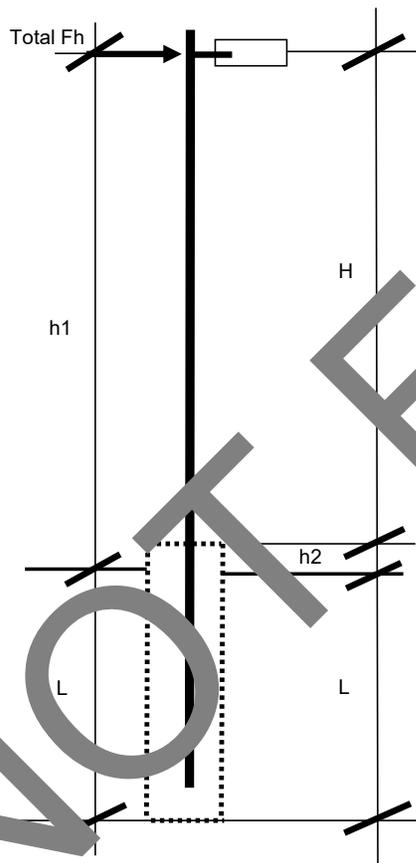


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Date: 11/29/2020
 Job No.: 1.22.9
 By: H.Ng P.E.
 Sheet No.: 10.2

Project: **Gate Post & Post Foundation Design**
 SBC Trona Fueling Station

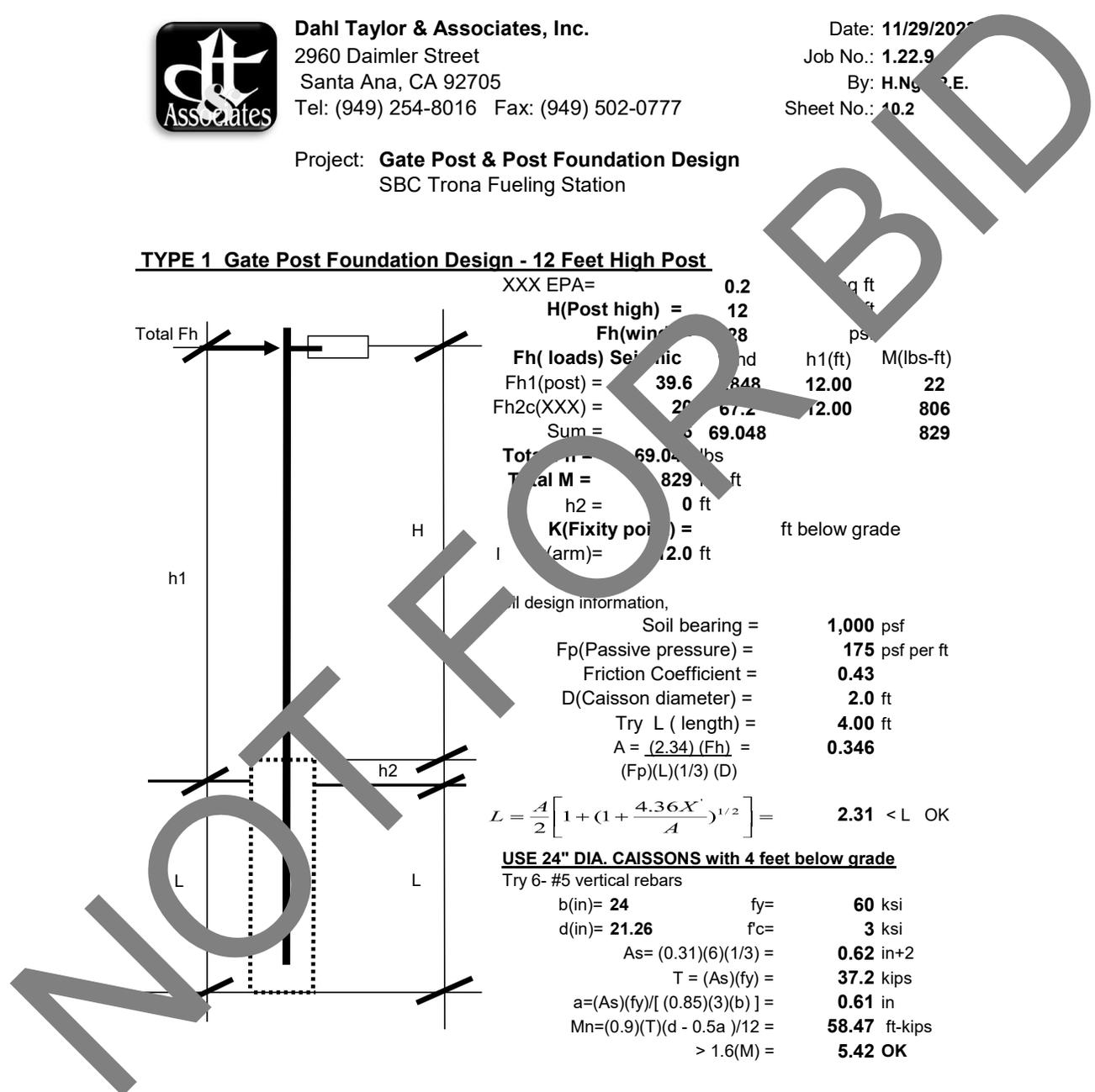
TYPE 1 Gate Post Foundation Design - 12 Feet High Post



XXX EPA=	0.2	g ft
H(Post high) =	12	ft
Fh(wind) =	28	psf
Fh (loads) Seismic		hd h1(ft) M(lbs-ft)
Fh1(post) =	39.6	848 12.00 22
Fh2c(XXX) =	20	67.2 12.00 806
Sum =	5	69.048 829
Total Fh =	69.048	lbs
Total M =	829	ft
h2 =	0	ft
K(Fixity point) =		ft below grade
L (arm) =	2.0	ft

Soil design information,
 Soil bearing = 1,000 psf
 Fp(Passive pressure) = 175 psf per ft
 Friction Coefficient = 0.43
 D(Caisson diameter) = 2.0 ft
 Try L (length) = 4.00 ft
 $A = (2.34) (Fh) = 0.346$
 $(Fp)(L)(1/3) (D)$
 $L = \frac{A}{2} \left[1 + (1 + \frac{4.36X'}{A})^{1/2} \right] = 2.31 < L \text{ OK}$

USE 24" DIA. CAISSONS with 4 feet below grade
 Try 6- #5 vertical rebars
 b(in)= 24 fy= 60 ksi
 d(in)= 21.26 fc= 3 ksi
 $As = (0.31)(6)(1/3) = 0.62 \text{ in}^2$
 $T = (As)(fy) = 37.2 \text{ kips}$
 $a = (As)(fy) / [(0.85)(3)(b)] = 0.61 \text{ in}$
 $Mn = (0.9)(T)(d - 0.5a) / 12 = 58.47 \text{ ft-kips}$
 $> 1.6(M) = 5.42 \text{ OK}$





RESPONSES TO PLAN CHECK CORRECTIONS

Project # 1.22.9 Document # PCR-3
Project Name: 10.10.1195 Trona Fuel Tank Infrastructure Phase IV
Prepared By: Stephen Vu – Dahl, Taylor & Associates, Inc. (DTA)
Submission Date: Tuesday 12/05/2024
Plan Check Agency: SBC Land Use Services Department – Building & Safety Division
Site Address: 80311 Trona Road, Trona, CA 93562

CONSTRUCTION / STRUCTURAL REQUIREMENTS

1. Provide structural calculations for the fence.

CORRECTION: Please see the attached structural calculations #9.1 & 9.2 for fence post & post foundation and #10.1 & 10.2 for the post & post foundation. Please also see revisions on Sheet C502, Authorized Gate Post Footing Detail #5 and Sheet C504, Section 10.1.

2. Sheet C001 – Coordinate the seismic information under the lateral load design criteria between the plans and the geotechnical engineering report and structural calculations.

CORRECTION: Please see the attached set of drawings dated 12/05/2023 with revisions on Sheet C001.

END OF DOCUMENT.



Dahl, Taylor & Associates, Inc.

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qvu@dahl-taylor.com

FOUNDATION & ANCHORAGE CALCULATIONS

For

PROJECT: **SBC Trona Fuel Tanks & Generator Phase IV**
2-10,000 Gal. Tanks, 50KW Generator, & Light Pole

PROJECT NO: **1.22.9**

PROJECT ADDRESS: **80341 Trona Road**
Trona, California 92562

CLIENT: **SBC P&FMD**
385 N. Arrowhead Avenue, 3rd Floor
San Bernardino, California 92415

DATE: **12/05/2023**



NOT FOR BID



DAHL, TAYLOR & ASSOCIATES, INC.
CONSULTING ENGINEERS

10.10.1195
FUEL TANK INFRASTRUCTURE – PHASE IV
80311 Trona Road, Trona – California

STRUCTURAL ENGINEERING CALCULATIONS

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Dahl, Taylor & Associates, Inc.

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Telephone: (949) 254-8016
qvu@dahl-taylor.com

Date: **11/13/2023**

Job No.: **1.22.9**
By: H. Ngo, P.E.
Q. Vu, P.E.
Sheet No.: **1.1**

Project: Trona Fuel Tanks & Generator

DESIGN CRITERIA:

Based on Building Code: 2022 CBC and ASCE/SEI 7-16

Wind Load

Per ASCE 7-16 Based on Exposure Category C

Horizontal wind on other structures on roof

$F_h = q_z(GC_r)(A_r)$ Per Equation 29.4-1

Where: q_z (velocity pressure) = $(0.00256)(K_z)(K_{zt})(K_d)(K_e)(V^2)$ Eq. (26.10-1)

K_d (Wind directionality factor) = **1** Per Table 26.6-1

K_e (Ground elevation factor) = **1** Per Table 26.9-1

K_z (Velocity exposure coefficient) = **0.85** Table 26.10-1

Z (Height above ground level) = **15** ft

K_{zt} (Topographic factor) = $(1 + K_1 K_2 K_3)$ = **1** Per Equation 26.8-1

V (Basic wind speed) = **85** mph Per Figure 26.5-1A

q_z (velocity pressure) = **15.722** psf at Height Z

$G C_r$ = **1**

Wind contact area = A_r

$F_h = q_z(GC_r)(A_r) = 15.722 * (A_r)$

USE $0.6 F_h = 10$ psf for Interior wind load

USE 18.7 psf outdoor equipment

Seismic Design Force (Nonstructural Components)

Per ASCE 7-16, 15.4.8

Based on Class E, Table 15.4-1 Seismic Coefficients for Nonbuilding Structures

$S_{Ms} = (F_v)(S_1) = 1.394$ $F_v = 2.412$

$\Omega = 2$ $R = 3$

I_e (Importance Factor) = **1** $C_d = 2.5$

$S_1 = 0.397$ 10

Fuel Tank empty wt= W_{pe} (empty)

Fuel Tank operating wt= W_{po} (operating)

$C_s = [(0.5)(S_1)] / (R/I_e) = 0.07$ Per Equation 15.4-4

API 650/AWWA D100 tank $C_s = 0.044(S_{Ds})I_e = 0.01$ Per Equation 15.4-3



Dahl, Taylor & Associates, Inc.

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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 2.1

Project: Trona Fuel Tanks & Generator

SCOPE OF WORK:

- (1). Fuel Tank support foundation design
- (2). Fuel Tank seismic anchorage design
- (3). Generator foundation & seismic anchorage design
- (4). Light Pole foundation & seismic anchorage design

MATERIALS:

Concrete 4500 psi @ 28 days typical U.N.O.

Steel Reinforcing 60,000 psi for Grade 60; #4 and larger
60,000 psi for Grade 40; #5 and smaller

Light gauge studs ASTM A33 fy=33 ksi

Structural Steels ASTM A36 (Fy=36 ksi) typical
A-500 for tube columns

Soil Information **1000 psf** soil bearing (recommended by Kleinfelder Soil Report)
175 psf passive pressure
0.50 Friction Coefficient
S₁= **1.07**
S₂= **1.162**
S₁= **0.397**
Seismic design Category E
Site Class E, Stiff Soil

Fuel Tank Information

Tank OD (dia)= **135.0** in

Tank ID (ht)= **122** in

Tank ID (width)= **129** in

Tank ID (width)= **116** in

Top of Tank= **135.0** in above support

Tank anchor CTC= **120.0** in

Empty weight= **45,000** lbs

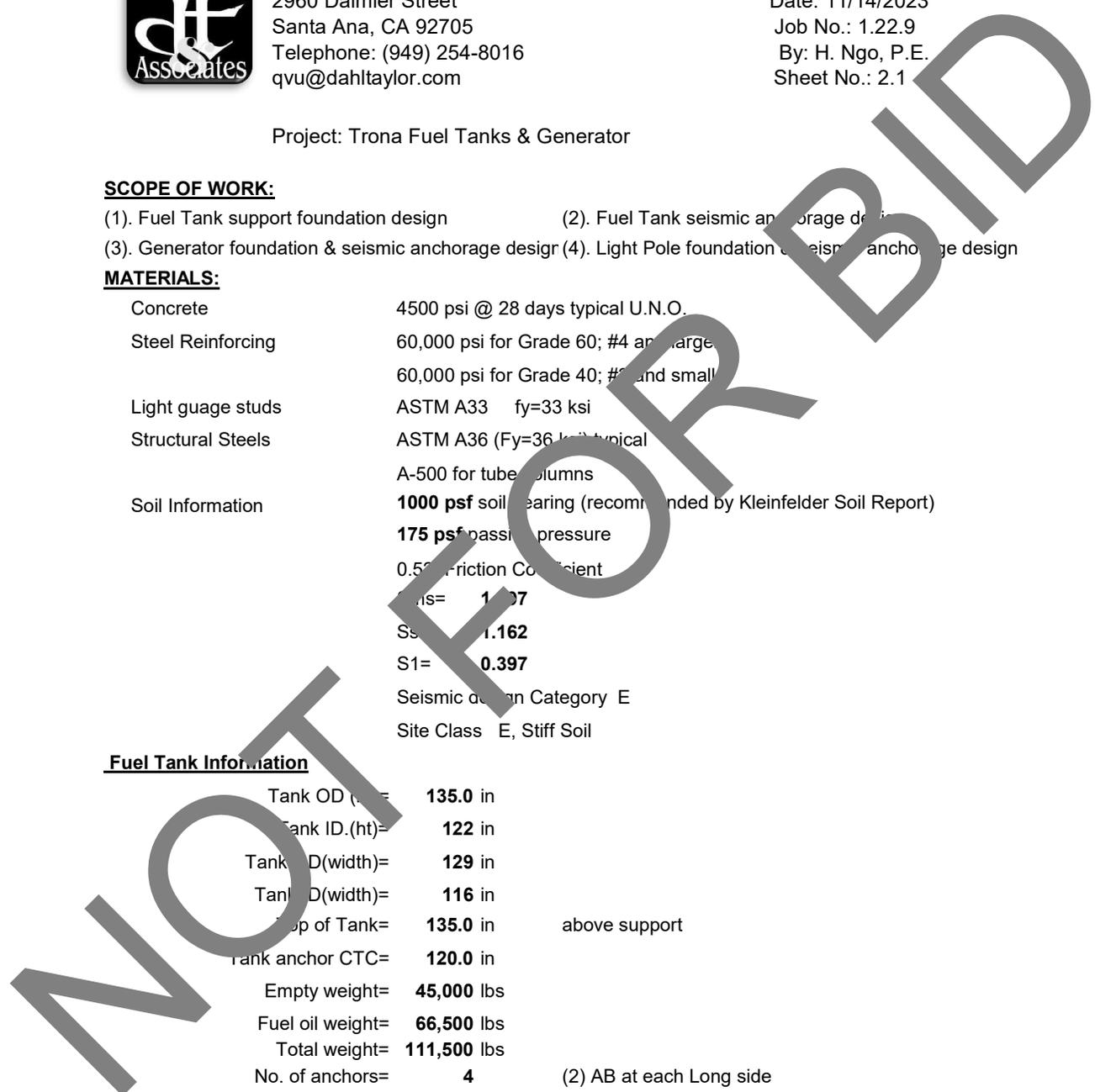
Fuel oil weight= **66,500** lbs

Total weight= **111,500** lbs

No. of anchors= **4** (2) AB at each Long side

Tank OD (length)= **243** in

Tank ID (length)= **230** in



4. GEOLOGIC CONDITIONS

4.1 REGIONAL GEOLOGY

The project site and its vicinity are in an area traditionally characterized by relatively moderate seismic activity. Faulting and seismic ground shaking is usually associated with known fault systems. The site is not located in an Alquist-Priolo Earthquake Fault Zone as established by the Alquist-Priolo Fault Zone Act (Section 2622 of Chapter 7.5, Division 2 of the California Public Resources Code).

Based on a review of published data and a current understanding of the geologic framework and tectonic setting of the proposed facility, there are no known faults which traverse through the local soils in or near the site. The primary source of seismic shaking is anticipated to be the Garlock Fault, which is located about 13 miles south of the project site.

4.2 SEISMIC DESIGN CRITERIA

The 2022 California Building Code (CBC) references the ASCE/SEI 7-16 as applicable standard for the seismic design. In developing seismic design criteria, the characteristics of the soils underlying the site are an important input to evaluate the site response. Based on information obtained from the investigation, published geologic literature and maps, and on our interpretation of the 2022 CBC criteria, it is our opinion that the project site may be classified as Site Class E, Stiff Soil, according to Section 1613.3.2 of 2022 CBC and Table 20.3-1 of ASCE/SEI 7-16. Site Class E is defined as a soil profile consisting of stiff soil profile with a shear wave velocity less than 600 feet per second, standard penetration test (SPT) blow counts (N-value) less than 15 blows per foot, or undrained shear strength less than 1,000 pounds per square foot in the top 10 feet or any profile with more than 10 feet of soil with Plasticity Index $PI > 10$, Moisture Content $w > 40\%$, and Undrained Shear Strength $S_u < 500$ psf.

Approximate coordinates for the site are noted below.

- Latitude: 35.711905°N
- Longitude: -117.397736°W

Seismic design parameters were developed in consistent with the requirements of the 2022 CBC, ASCE/SEI 7-16, and Supplements 1 through 3 of that standard. We note that in accordance with Section 11.4.8 of ASCE/SEI 7-16 Supplement 3, a site-specific ground motion hazard analysis is required for Class E sites with a mapped S_s greater than or equal to 1.0g or S_1 greater than or equal to 0.2g unless exceptions are taken by the project structural engineer. Based on the Site Class E designation, the exception of Section 11.4.8 of ASCE 7-16 Supplement 3 states that a ground motion hazard analysis is not required for non-building structures when the value of S_{ai} is determined by Eq. (15.7-7) for all values of T_i and the value of S_{D1} is increased by 50 percent in Eq. (15.7-10) and Eq. (15.7-11). Per Table 11.4-2 of ASCE 7-16 Supplement 3, an F_v value of 2.412 may be used in conjunction with code-based S_s value for purposes of calculating the T_s value, determination of the Seismic Design Category, and when taking the exceptions of Section 11.4.8 of ASCE 7-16 Supplement 3 for calculation of the S_{D1} value. As such, code-based seismic design parameters provided in Table 4.2-1 for the spectral response acceleration at a period of 1.0 second include the 50 percent increase assuming that the exception of Section 11.4.8 of ASCE 7-16 Supplement 3 will be taken. The parameters listed in the Table 4.2-1 are estimated using the Seismic Design Maps website maintained by SAC/OSHPD (<https://seismicmaps.org>) and the requirements of the 2022 CBC/ASCE 7-16.

**TABLE 4.2-1
Ground Motion Parameters Based on 2022 CBC**

Parameter	Value	ASCE 7-16 Reference
S_s	1.162 g	Fig 22-1
S_1	0.397 g	Fig 22-2
Site Class	E	Table 20.3-1
F_a	1.2	Table 11.4-1
F_v	2.412*	See Section 11.4.8, Supplement 3
S_{MS}	1.394g	Eq. 11.4-1
S_0	0.958*	See Section 11.4.8, Supplement 3
S_{DS}	0.930g	Eq. 11.4-3
S_{D1}	0.958*	See Section 11.4.8, Supplement 3
PGA	0.497g	Fig 22-9
F_{PGA}	1.207	Table 11.8-1
F_{PM}	0.599g	Eq. 11.8-1
C_R	0.915	Fig 22-18A
C_{R1}	0.904	Fig 22-19A
T_L	8 seconds	See Section 11.4.6

Note: Section 11.4.8 of ASCE/SEI 7-16 Supplement 3 requires a site-specific ground motion hazard analysis be performed for Class E sites with S_s greater than or equal to 1.0g or S_1 greater than or equal to 0.2g unless an exception is taken in which for non-building structures the value of S_{ai} is determined by Eq. (15.7-7) for all values of T_i and the value of S_{D1} is increased by 50 percent in Eq. (15.7-10) and Eq. (15.7-11). The value of S_{D1} provided in the table includes this 50 percent increase assuming the exception will be taken. The value of F_v shall only be used for calculation of T_s , determination of Seismic Design Category, linear interpolation for intermediate values of S_1 , and when taking the exceptions under Items 1 and 2 of Section 11.4.8 for the calculation of S_{D1} .



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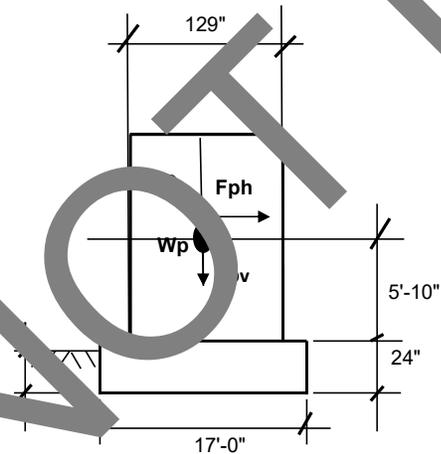
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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 5.1

Project: Trona Fuel Tanks & Generator

TANK FOUNDATION DESIGN

Tank length=	243	in
Tank OD (ht)=	135	in
Tank ID.(ht)=	122	in
Tank OD(width)=	129	in
Tank ID(width)=	116	in
Top of Tank=	135	in support
Tank anchor CTC=	12	in
Empty weight=	45,000	lbs
Fuel oil weight=	700	lbs
Total weight=	111,500	lbs
No. of anchors	4	<u>(2) AB at each Long side</u>
Tank OD(length)=	243	in
$F_{ph} = 0.04 * W_p =$	27910	lbs
$F_{pv} = 0.2 * W_p =$	22300.0	lbs



CHECK SOIL BEARING

Foundation size	17'-0" W x 23'-6" L x 24" Thick
Concrete Weight (Wc) =	150 pcf
Length (L1) =	23.50 ft
Wide (B1) =	17.00 ft
Thickness (T1) =	2.0 ft
CG Height (H2) =	6.0 ft
Total Vert. Load = $W_p + F_{pv} + (L1 \times B1 \times T1)(W_c) =$	231350 lbs



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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 5.2

Project: Trona Fuel Tanks & Generator

$$M(O/T) = Fph \cdot H_2 = \mathbf{227,460} \text{ lbs-ft}$$

$$e = M/P = \mathbf{0.98} \text{ ft}$$

$$A = (L_1)(B_1) = \mathbf{399.5} \text{ sq ft}$$

< L/

TRANSVERSE DIRECTION:

$$\text{Soil Bearing} = (P/A) \left(1 + \frac{6e}{L}\right) = \mathbf{780} \text{ psf}$$

< 1000 psf

CHECK OVERTURNING

$$\frac{P \times L_1 \times 0.5}{M} = \mathbf{8.6} \geq 1.5 \quad \text{OK}$$

CHECK SLIDING

Coefficient of Friction (F_p) = **0.25**

Passive Pressure (P_p) = **175** psf per ft

T₂ = **0.83** ft

$$\text{Safety factor} = \frac{(P \times e) + [P_p \times T_2 \times B_1]}{F_p} = \mathbf{1.6} \geq 1.5 \quad \text{OK}$$

DETERMINE CONC. REINFORCEMENT

Concrete Foundation: 17'(wide) x 23.5'(long) x 2'(deep)

Foundation width of 24'

Moment due to seismic load (M_e) = **13.38** (kips-ft)/ft

Soil press. due to dead load (q) = P/A = **579.1** psf

Moment due to load dead load (M_d) = **20.92** (kips-ft)/ft

Mu = 1.2*M_d + 1.0*M_e = **36.98** (kips-ft)/ft

Max soil press due to D & E (q_m) = **780.1** psf

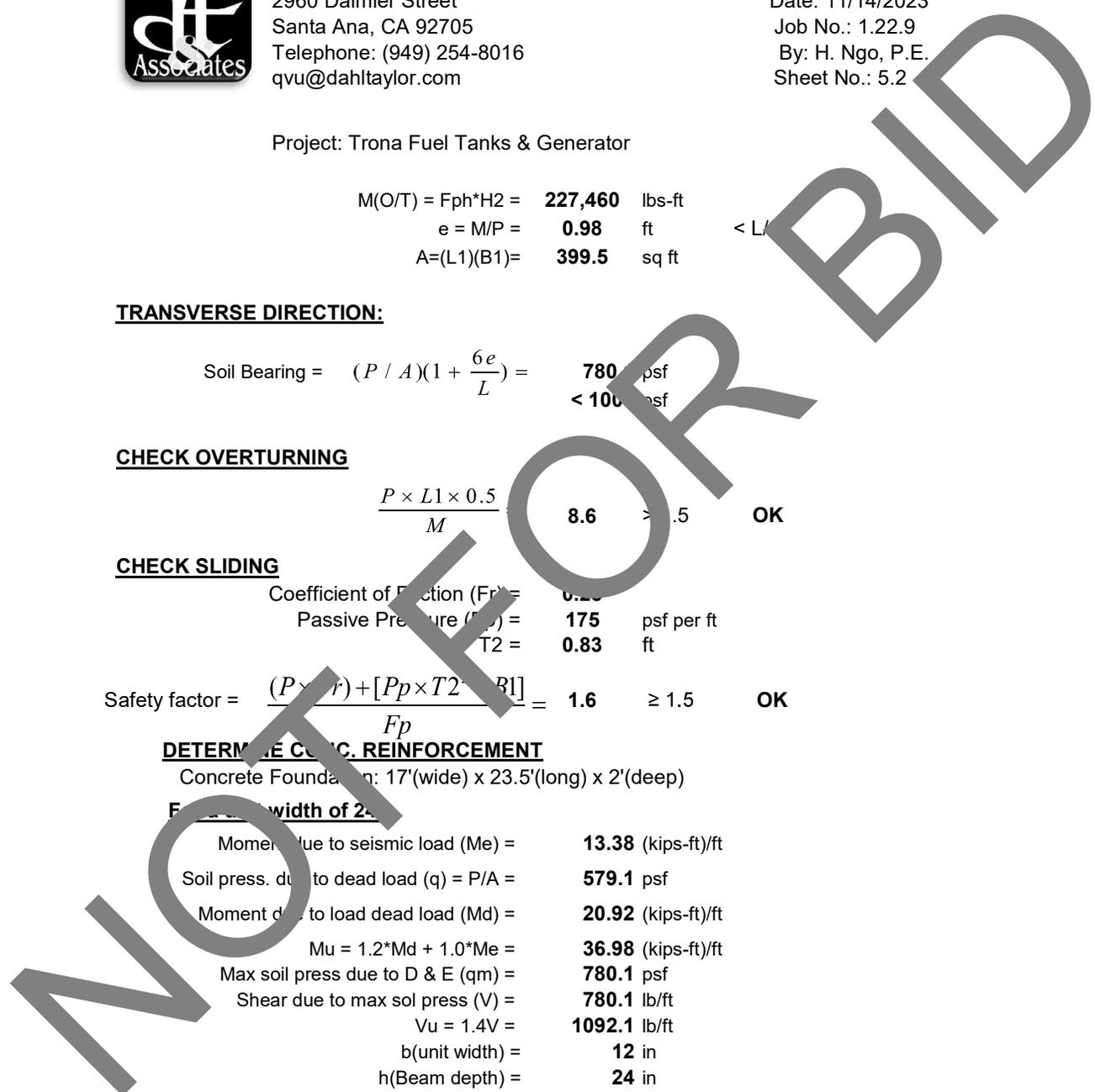
Shear due to max sol press (V) = **780.1** lb/ft

Vu = 1.4V = **1092.1** lb/ft

b(unit width) = **12** in

h(Beam depth) = **24** in

d = **20.5** in





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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 5

Try #6 @ 12" OC Top & Bottom Each Way

$f'_c = 4,500$ psi
 $f_y = 60,000$ psi

CHECK BENDING

$A_s = 0.44$ in²

$a = \frac{A_s f_y}{0.85 f'_c b} = 0.58$ in

$\frac{a}{2} = 0.29$ in

$d - \frac{a}{2} = 20.21$ in

$\phi = 0.9$

$M_n = \phi A_s f_y \left(d - \frac{a}{2} \right) = 40,021$ (lb-ft)/ft
 $M_n = 40.02$ (kips-ft)/ft $> M_u$ **OK**
36.98 Kips-ft

CHECK SHEAR

$\phi = 0.75$
 $\phi V_c = \phi (2 \sqrt{f'_c} b d) = 24753$ lb/ft

$V_u = 1092.1$ lb/ft

$\phi V_c > V_u$ **OK**

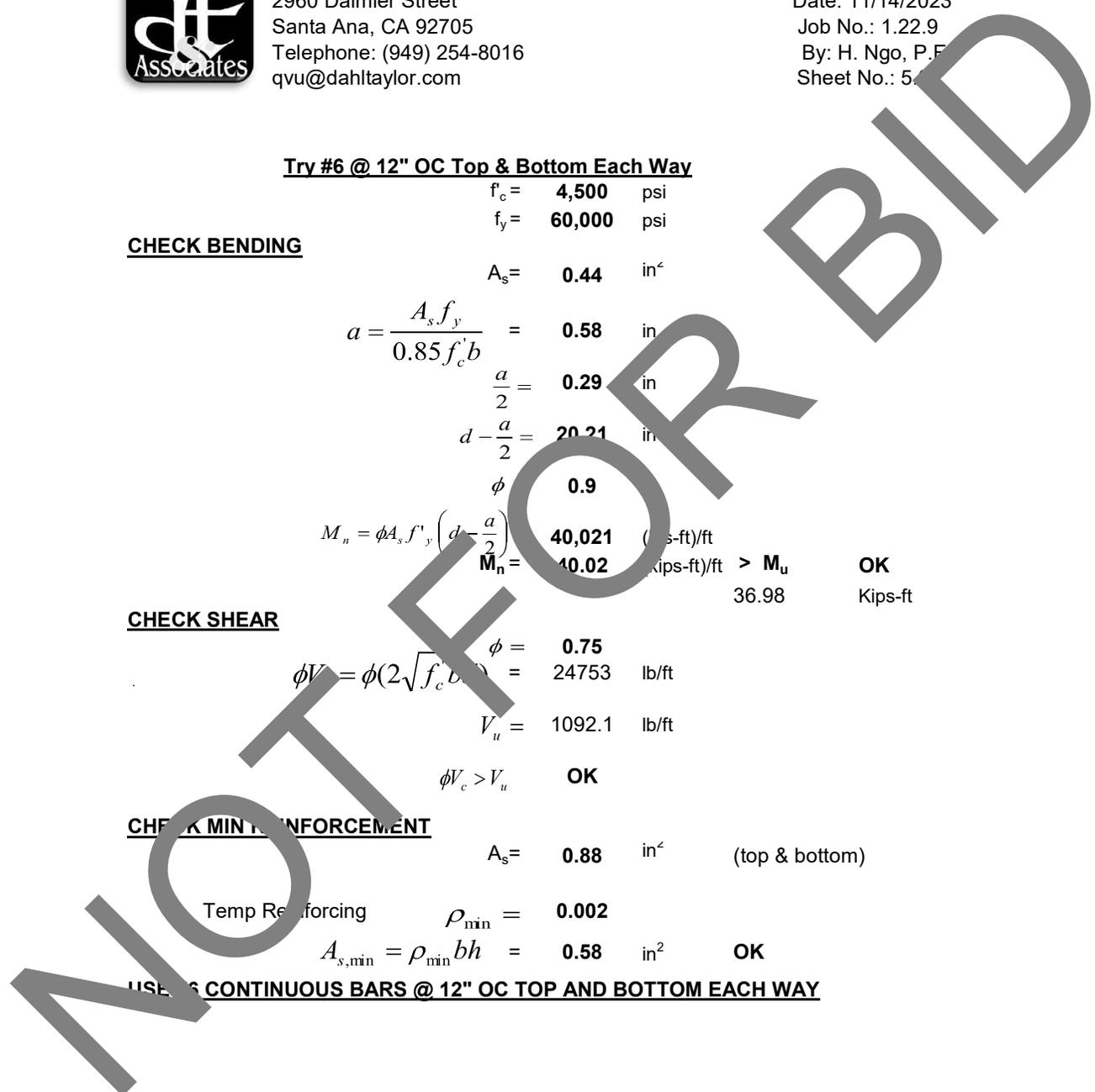
CHECK MIN REINFORCEMENT

$A_s = 0.88$ in² (top & bottom)

Temp Reinforcing $\rho_{min} = 0.002$

$A_{s,min} = \rho_{min} b h = 0.58$ in² **OK**

USE #6 CONTINUOUS BARS @ 12" OC TOP AND BOTTOM EACH WAY





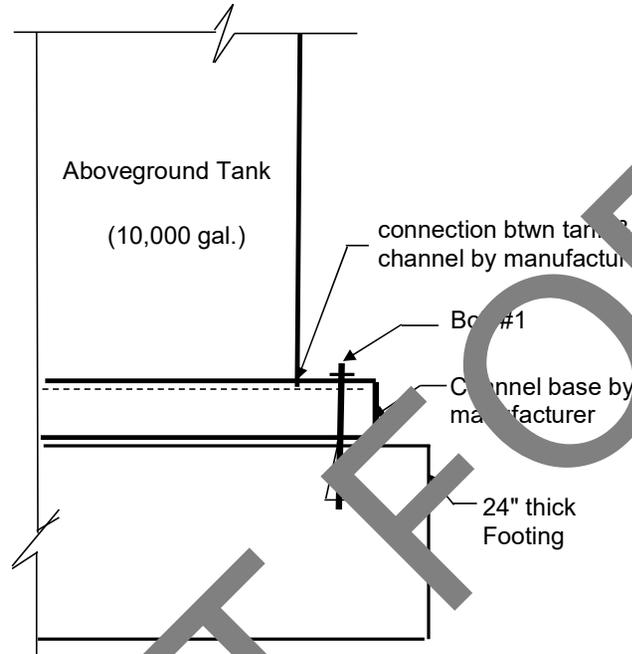
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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 5.4

PROJECT: **SBC Trona - 10,000 Gallons Aboveground Fuel Tank**

CHECK TANK ANCHOR DESIGN



Design Load

Tank weight(op.) = **111,500** lbs
 Horizontal seismic Fph = **37910** lbs
 Fpv = **22300** lbs
 (C) Curb height = **0.167** ft
 H(O/T height+C) = **3.167** ft
 moment arm (B) = **5.5** ft

 Horizontal shear Fh = **37910** lbs
 Downward load(PD) = **111500** lbs
 Upward load(UL) = **22300** lbs

See sheet 5.1
 See sheet 5.1
 channel ht
 See sheet 5.1

NOT FOR BID



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Date: 11/14/2023
Job No.: 1.22.9
By: H. Ngo, P.E.
Sheet No.: 5.5

Project: Trona Fuel Tanks & Generator

Bolt #1:

(2) base supporting provided by tank manufacturer & pre-welded to bottom of tank

Total # of channel (N1) = 2 Resisting overturning due to Fph
Total # of base anchor(N2) = 2 Resisting overturning due to Fph
Total # of anchors (B1) = 4 Resisting shear Fph
Bolt distance for moment arm = 10 ft

$$\text{Shear} = \frac{Fh}{B1} = 947 \text{ lbs per anchor bolt\#1}$$

$$\text{Tension1(due to O/T)} = \frac{Fh \cdot e}{(B)B1} = 1015 \text{ lbs per anchor bolt\#1}$$

$$\text{Tension2(due to upward)} = \frac{Fpv}{B1} = 5575 \text{ lbs per anchor bolt\#1}$$

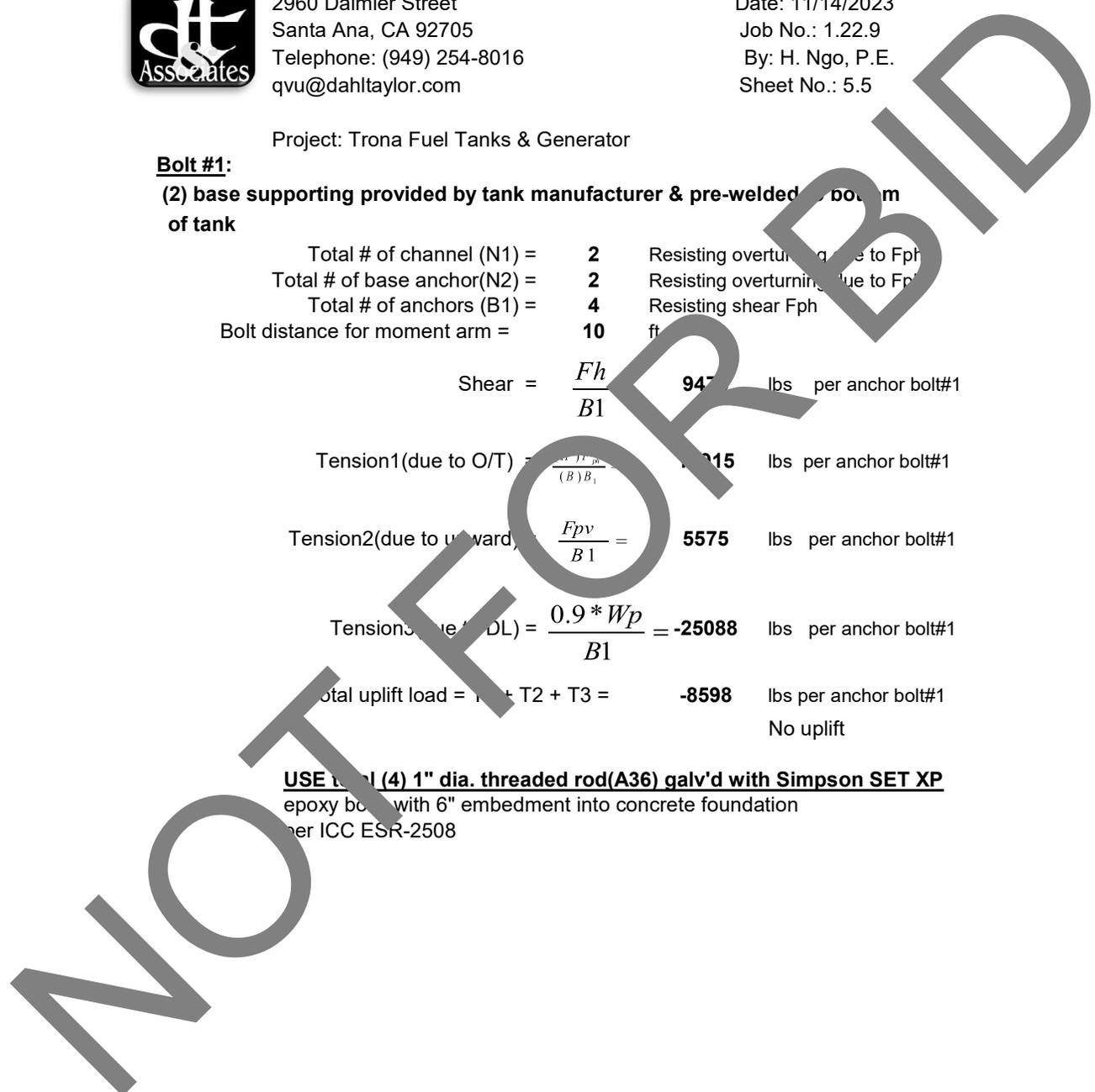
$$\text{Tension3(due to DL)} = \frac{0.9 * Wp}{B1} = -25088 \text{ lbs per anchor bolt\#1}$$

$$\text{Total uplift load} = T1 + T2 + T3 = -8598 \text{ lbs per anchor bolt\#1}$$

No uplift

USE (4) 1" dia. threaded rod(A36) galv'd with Simpson SET XP

epoxy bolt with 6" embedment into concrete foundation
per ICC ESR-2508





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Tel: (949) 254-8016

Date: 11/7/2023

Job No.: 1.22.9

By: H. Ngo, P.E. &
Q. Vu, P.E.

Sheet No.: 6.1

Project: **SBC Trona - 50 KW Generator, Alum. Enclosure & Tank**
80311 Trona Road, Trona, CA 93562

Generator Foundation
DESIGN CRITERIA

NOTE: $Sds = (2/3)(Fa)(Ss) = 0.930$

$Fa = 1.2$

$Ss = 1.162$

$ap = 1$

$Wp1 = 2,820$

$Wp2 = 1,000$

$Wp3 = 5,145$

$Rp = 2.5$

$Ip = 1.5$

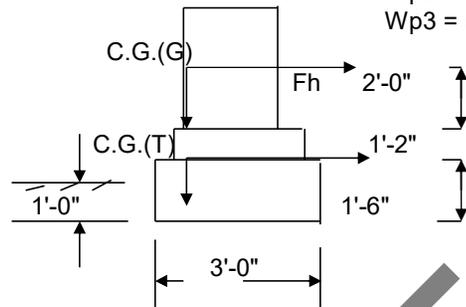
$z = 0$

$h = 5$

lbs (Genset only)

lbs (Exh+Alu. Enclosure)

lbs (Tank & Diesel)



Equip. wt = **8,965 lbs**

$$Fp(GenSet) = \frac{(0.4)(ap)(Sds)(Wp1)}{Rp} [1 + 2(z/h)] = \mathbf{629 \text{ lbs}}$$

$$Fp(Max.)(GenSet) = (1.6)(Sds)(Ip)(Wp1) = \mathbf{6,294 \text{ lbs}}$$

$$Fp(Min.)(GenSet) = (0.3)(Sds)(Ip)(Wp1) = \mathbf{1,180 \text{ lbs}}$$

$$Fp(Tank) = \frac{(0.4)(ap)(Sds)(Wp3)}{Rp / Ip} [1 + 2(z/h)] = \mathbf{1,148 \text{ lbs}}$$

$$Fp(Max.)(Tank) = (1.6)(Sds)(Ip)(Wp3) = \mathbf{11,485 \text{ lbs}}$$

$$Fp(Min.)(Tank) = (0.3)(Sds)(Ip)(Wp3) = \mathbf{2,153 \text{ lbs}}$$

GENERATOR FOUNDATION DESIGN

Check Soil Bearing

Concrete Weight = **150 lbs-cf**

Length (L1) = **13.5 ft**

Base (B1) = **9.5 ft**

Thickness (T1) = **1.5 ft**

Generator+Sound Enclosure Dimension:

Length (L2) = **8 ft**

Width (W2) = **3 ft**

Height (H2) = **8.5 ft**



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Date: 11/7/2023

Job No.: 1.22.9

By: H. Ngo, P.E. &
Q. Vu, P.E.

Sheet No.: 6.2

Project: **SBC Trona - 50 KW Generator, Alum. Enclosure & Tank**
80311 Trona Road, Trona, CA 93562

Tank Demension:

Length (L3) = 8 ft
Width (W3) = 3.0 ft
Height (H3) = 4.0 ft

Vert. Load (P) = $(Wp1 + Wp2 + Wp3) + [(L1)(B1)(T1)](Conc.Wt) = 37,822$ lbs

Ma (Gen. Set) = $Fp(Gen.Set) \times H2 = 5,350$ lbs-ft

Mb (Tank) = $Fp(Tank) \times H3 = 4,594$ lbs-ft

Mt = $Ma + Mb = 9,944$ lbs-ft

$e = Mt / P = 0.26$ ft

TRANSVERSE DIRECTION:

Soil Bearing = $\frac{P \times 4}{L1 \times [(B1 \times 3) - (e \times 6)]} = 416.2$ psf

Soil Bearing = **416.2** psf < 890x9.5 + 1,790x1 = 10,245 psf allowable bearing **OK**
Kleinfelder Soil Report - Allowable Bearing Cap. (psf) = 890B(footing width) + 1,790D(depth)

CHECK OVERTURNING

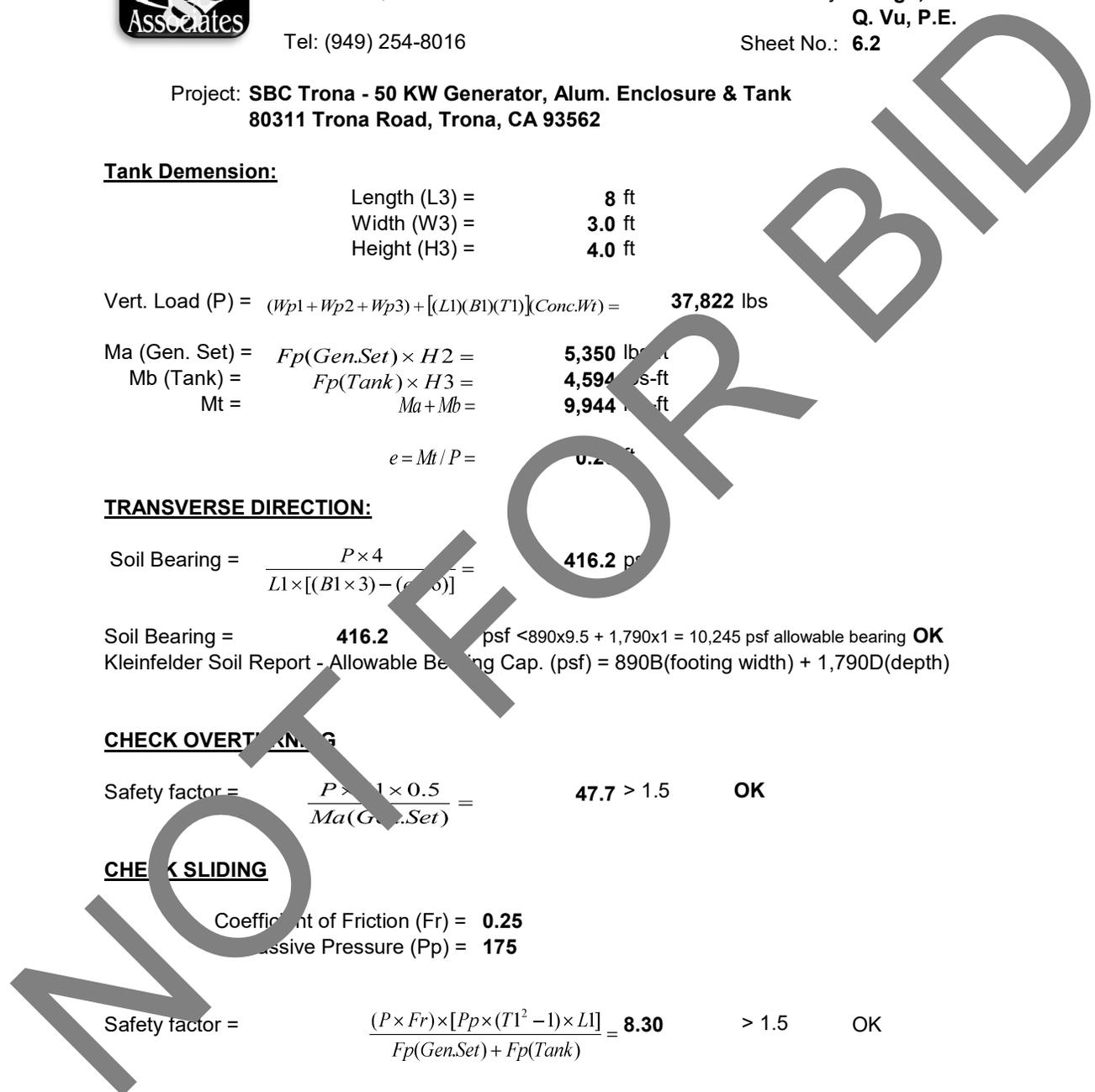
Safety factor = $\frac{P \times 1 \times 0.5}{Ma(Gen.Set)} = 47.7 > 1.5$ **OK**

CHECK SLIDING

Coefficient of Friction (Fr) = **0.25**

Passive Pressure (Pp) = **175**

Safety factor = $\frac{(P \times Fr) \times [Pp \times (T1^2 - 1) \times L1]}{Fp(Gen.Set) + Fp(Tank)} = 8.30 > 1.5$ **OK**





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Date: 11/7/23

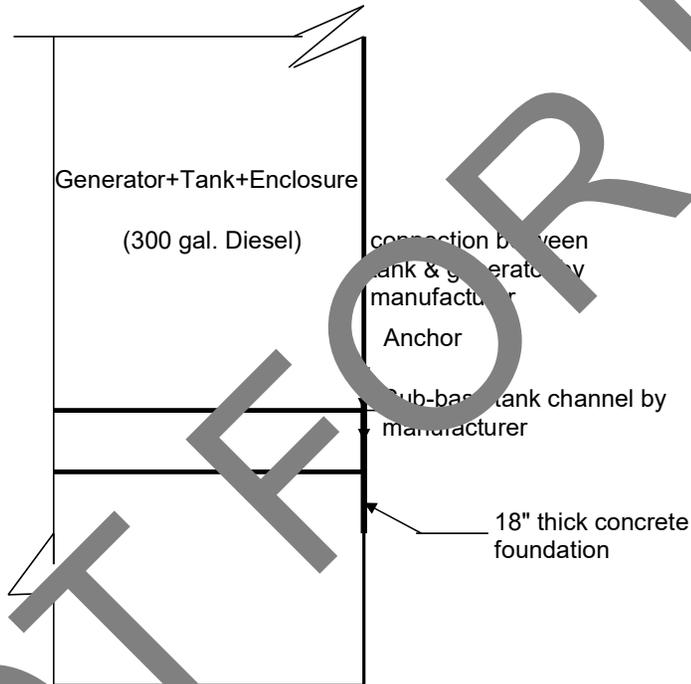
Job No.: 1.22.9

By: H. Ngo, P.E. &
Q. Vu, P.E.

Sheet No.: 7.1

Project: **SBC Trona - 50 KW Generator, Alum. Enclosure & Tank**
80311 Trona Road, Trona, CA 93562

CHECK GENERATOR + ENCLOSURE + TANK ANCHOR DESIGN



Design Load

Encl.+Gen+Tank WT.(op.) =	8965 lbs
Horizontal seismic Fph =	3048 lbs
Fpv=	1793 lbs
(C) Curb height =	0.75 ft
H(O/T height+C) =	12.500 ft
Moment Arm (B) =	3.416667 ft

See sheet 3-1
See sheet 3-1
channel ht
See sheet 3-1

Horizontal shear Fh=	3048 lbs
Downward load(PD)=	8965 lbs
Upward load(UL) =	1793 lbs



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Date: 11/7/23

Job No.: 1.22.9

By: H. Ngo, P.E. & Q.
Vu, P.E.

Sheet No.: 7.2

Project: **SBC Trona - 50 KW Generator, Alum. Enclosure & Tank**
80311 Trona Road, Trona, CA 93562

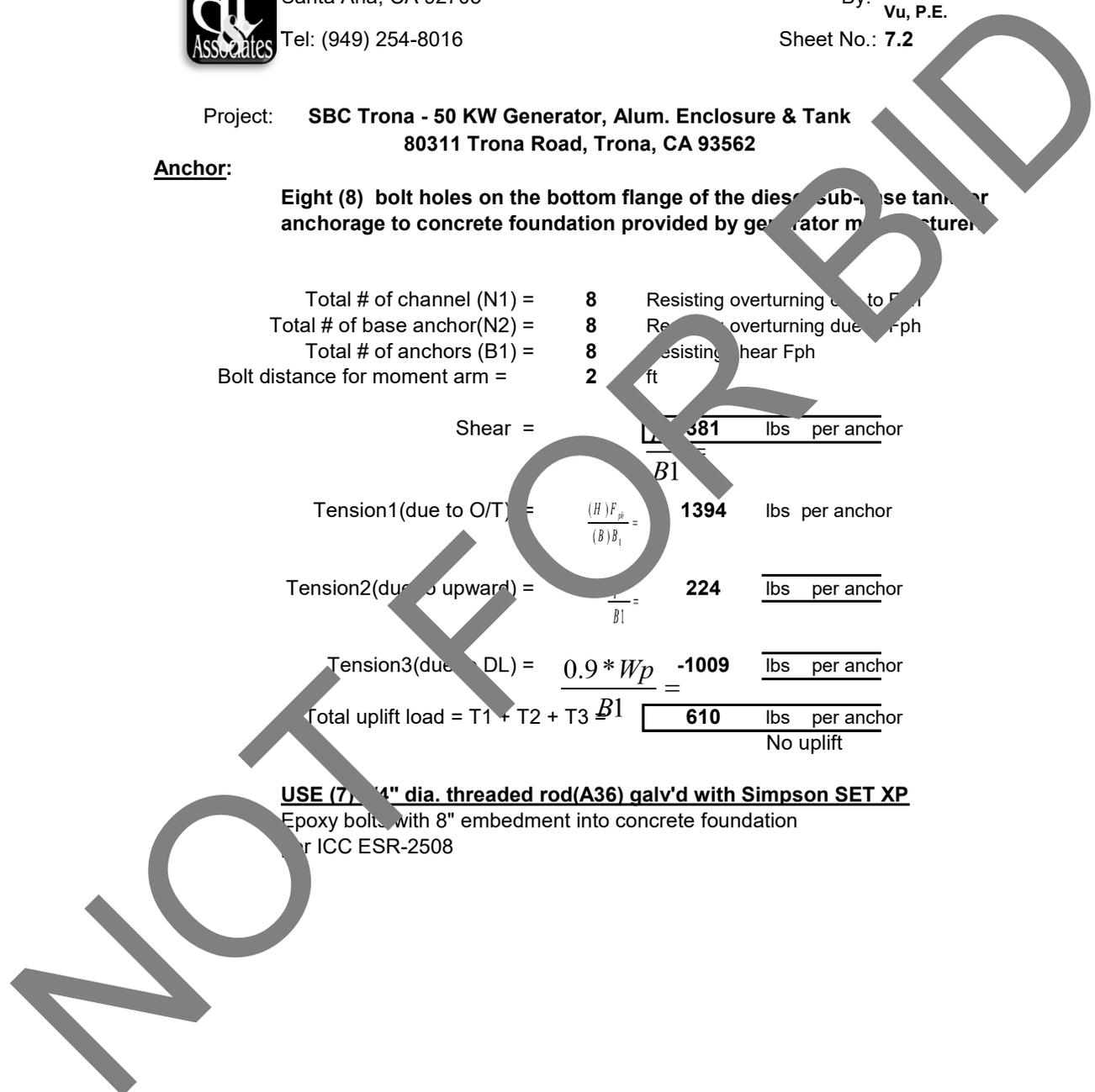
Anchor:

Eight (8) bolt holes on the bottom flange of the diesel sub-base tank for anchorage to concrete foundation provided by generator manufacturer.

Total # of channel (N1) =	8	Resisting overturning due to F ₁
Total # of base anchor(N2) =	8	Resisting overturning due to F _{ph}
Total # of anchors (B1) =	8	Resisting shear F _{ph}
Bolt distance for moment arm =	2	ft
Shear =	$\frac{F_{ph}}{B1}$	381 lbs per anchor
Tension1(due to O/T) =	$\frac{(H)F_{O/T}}{(B)B_1}$	1394 lbs per anchor
Tension2(due to upward) =	$\frac{1}{B1}$	224 lbs per anchor
Tension3(due to DL) =	$\frac{0.9 * W_p}{B1}$	-1009 lbs per anchor
Total uplift load = T1 + T2 + T3 =	$\frac{610}{B1}$	610 lbs per anchor No uplift

USE (7) 1/4" dia. threaded rod(A36) galv'd with Simpson SET XP

Epoxy bolts with 8" embedment into concrete foundation
per ICC ESR-2508



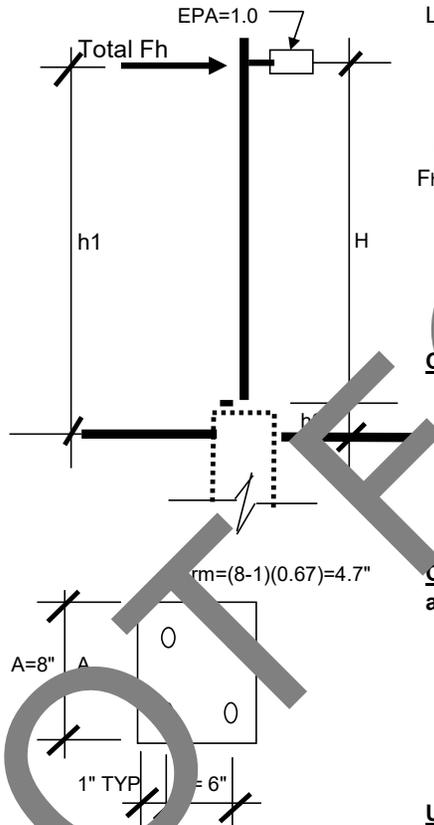


Dahl Taylor & Associates, Inc.
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Date: 11/14/2023
 Job No.: 1.22.9
 By: H.Ngo
 Sheet No.: 8.1

Project: **Light Pole & Pole Foundation Design**
 SBC Trona Fueling Station

Light Pole Design



Lighting Fixture EPA=	1.0	ft	
H(Pole high) =	29	ft	h1= 21 ft
Fh(wind) =	28	psf	100 mph
Fh(loads) Seism		wind	arm (ft)
Fh1(pole) =	5.7	24	14.5
Fh2c(Light) =	20	12	29
Sum =	5.7	821.24	23,682
Total Fh =	821.24	lbs	
Total M =	23,682	lbs-ft	
h2 =	10	ft	
x(arm) =	28	ft	

Check pole size 6" sq tube x 1/4" thickness

Ixx=	30.3	in+4
Sxx=	15.15	in+3
A=	5.59	in+2
max moment=	23,682	lbs-ft
stress fb=	18.76	ksi
	<	21.6

OK

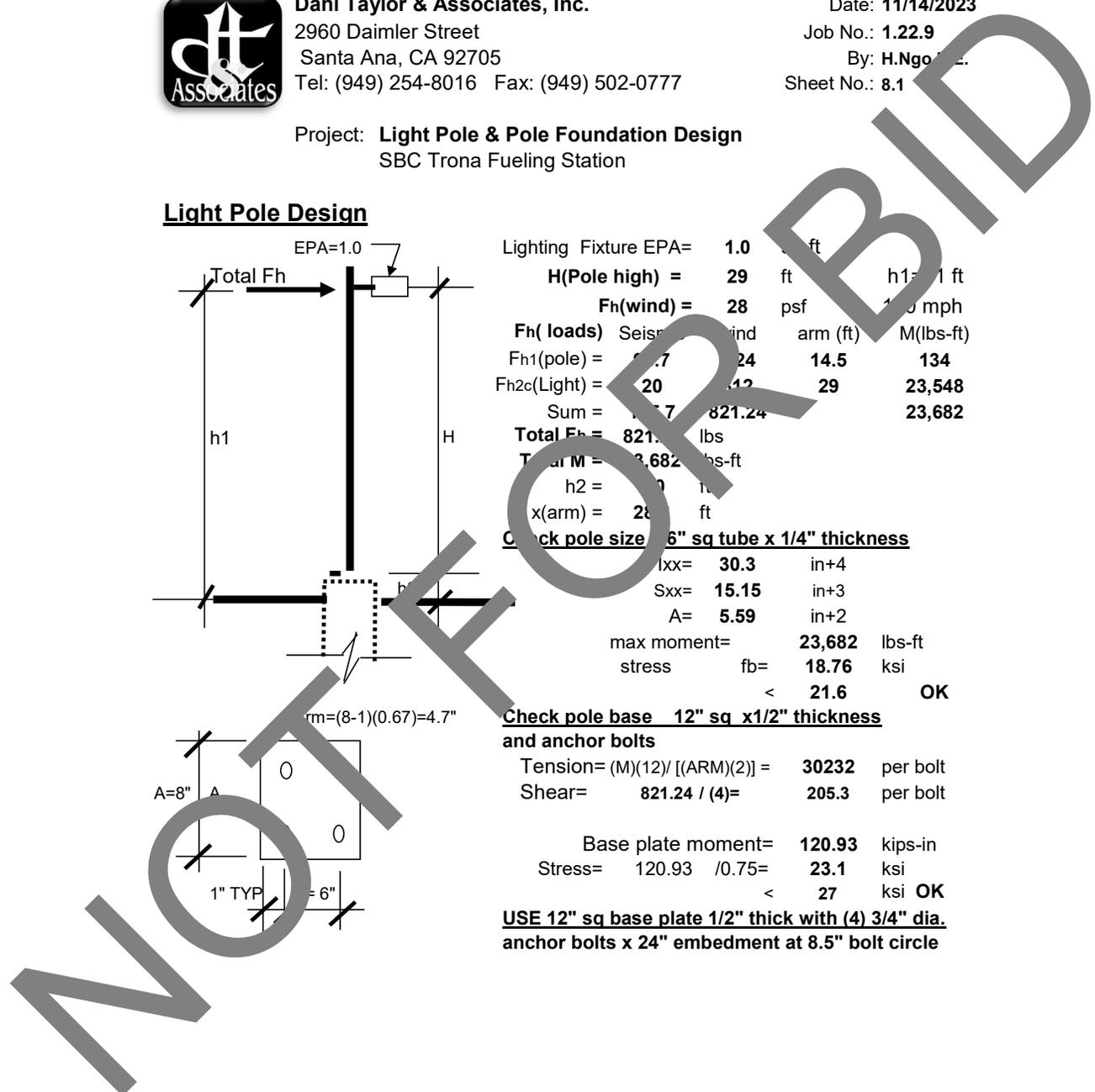
Check pole base 12" sq x 1/2" thickness and anchor bolts

Tension= (M)(12)/ [(ARM)(2)] =	30232	per bolt
Shear= 821.24 / (4)=	205.3	per bolt

Base plate moment=	120.93	kips-in
Stress= 120.93 / 0.75=	23.1	ksi
	<	27

OK

USE 12" sq base plate 1/2" thick with (4) 3/4" dia. anchor bolts x 24" embedment at 8.5" bolt circle



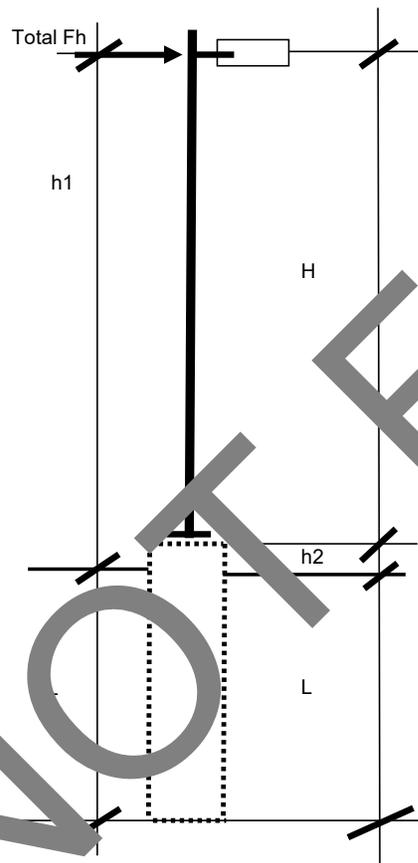


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Date: 11/14/2020
 Job No.: 1.22.9
 By: H.Ng P.E.
 Sheet No.: 3.2

Project: **Light Pole & Pole Foundation Design**
 SBC Trona Fueling Station

TYPE 1 Light Pole Foundation Design - 29 Feet High Pole

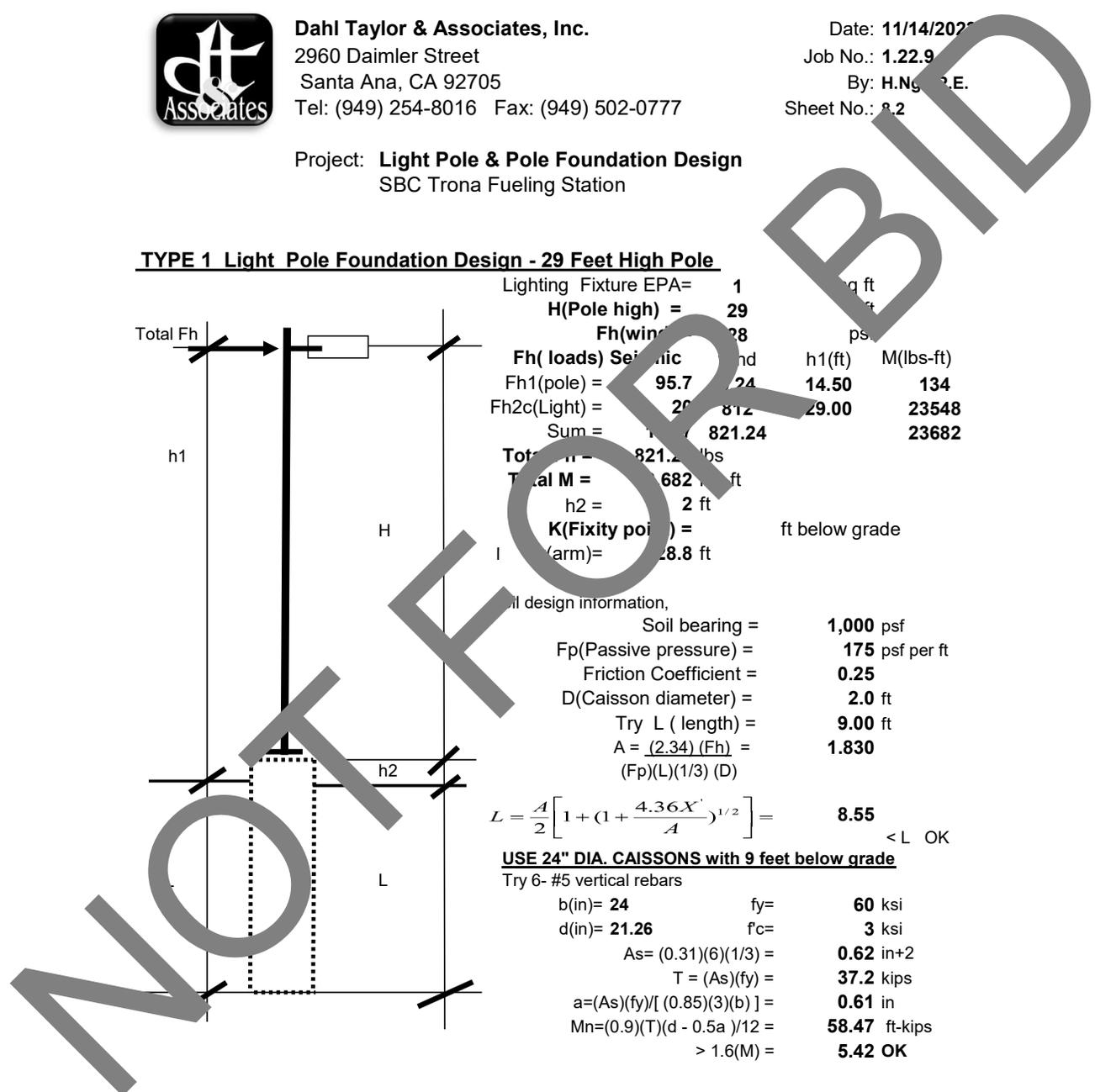


Lighting Fixture EPA=	1	sq ft
H(Pole high) =	29	ft
Fh(wind) =	28	psf
Fh(loads) Seismic		hd h1(ft) M(lbs-ft)
Fh1(pole) =	95.7	24 14.50 134
Fh2c(Light) =	20	812 29.00 23548
Sum =		821.24 23682
Total Fh =	821.24	lbs
Total M =	682	ft
h2 =	2	ft
K(Fixity point) =		ft below grade
L (arm) =	28.8	ft

Soil design information,
 Soil bearing = 1,000 psf
 Fp(Passive pressure) = 175 psf per ft
 Friction Coefficient = 0.25
 D(Caisson diameter) = 2.0 ft
 Try L (length) = 9.00 ft
 A = (2.34) (Fh) = 1.830
 (Fp)L(1/3) (D)

$$L = \frac{A}{2} \left[1 + \left(1 + \frac{4.36X'}{A} \right)^{1/2} \right] = 8.55 < L \text{ OK}$$

USE 24" DIA. CAISSONS with 9 feet below grade
 Try 6- #5 vertical rebars
 b(in)= 24 fy= 60 ksi
 d(in)= 21.26 fc= 3 ksi
 As= (0.31)(6)(1/3) = 0.62 in+2
 T = (As)(fy) = 37.2 kips
 a=(As)(fy)/[(0.85)(3)(b)] = 0.61 in
 Mn=(0.9)(T)(d - 0.5a)/12 = 58.47 ft-kips
 > 1.6(M) = 5.42 OK



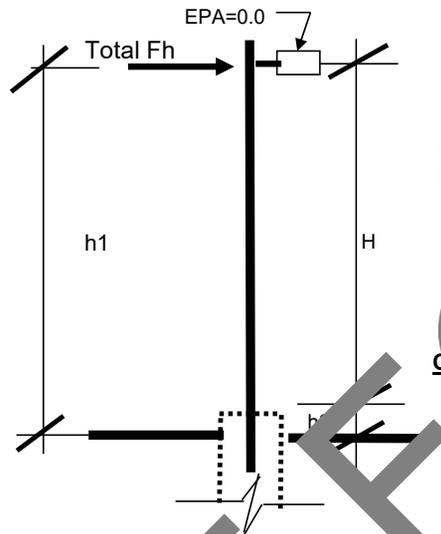


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Date: **11/29/2023**
 Job No.: **1.22.9**
 By: **H.Ngo**
 Sheet No.: **9.1**

Project: **Fence Post & Post Foundation Design**
 SBC Trona Fueling Station

Fence Post Design



xxx EPA=	0.2	ft	
H(Post high) =	12	ft	h1=12 ft
Fh(wind) =	28	psf	100 mph
Fh (loads)	Seism	wind	arm (ft)
Fh1(post) =	0.6	48	12
Fh2c(xxx) =	20	7.2	12
Sum =	0.6	69.048	829
Total Fh =	69.0	lbs	
Total M =	829	lbs-ft	
h2 =	10	ft	
x(arm) =	12	ft	

Check post size 2" round tube x 1/8" thickness

ixx=	30.3	in+4
Sxx=	15.15	in+3
A=	5.59	in+2
max moment=	829	lbs-ft
stress fb=	0.66	ksi
	<	21.6

OK

NOT FOR BIDDING

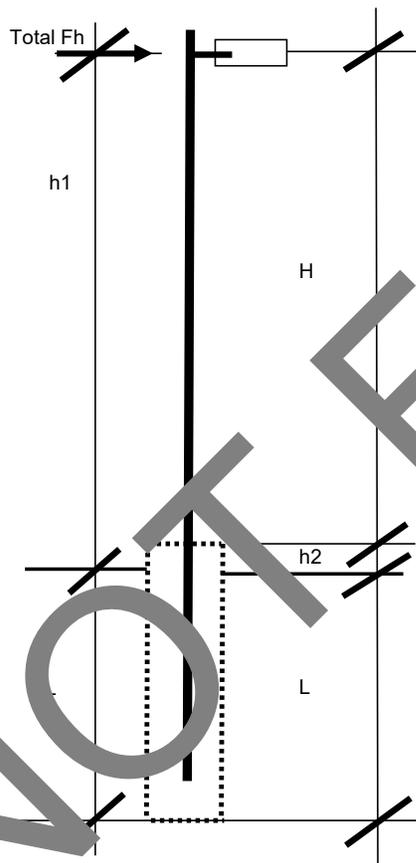


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Date: 11/29/2020
 Job No.: 1.22.9
 By: H. Nguyen, P.E.
 Sheet No.: 1.2

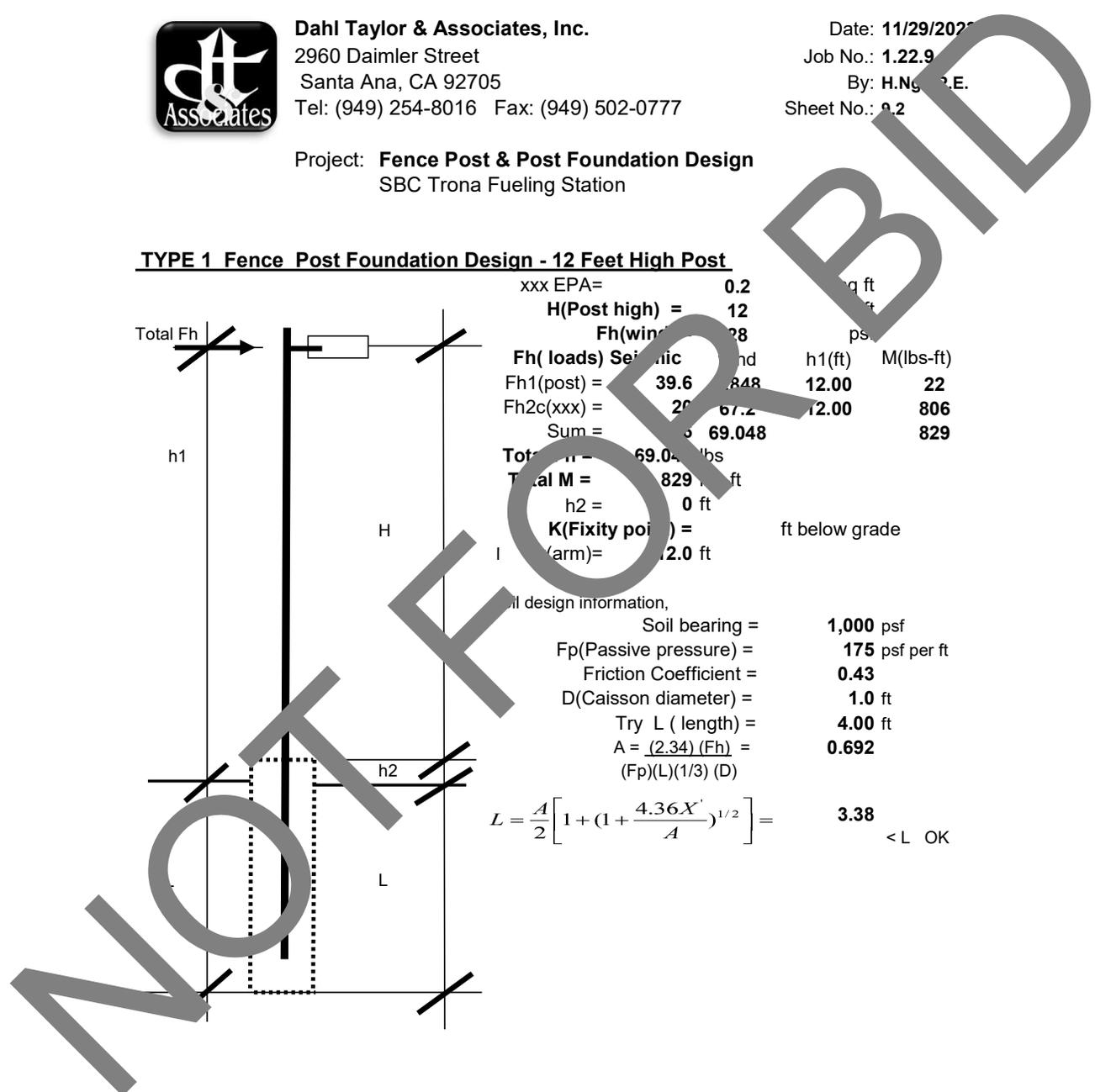
Project: **Fence Post & Post Foundation Design**
 SBC Trona Fueling Station

TYPE 1 Fence Post Foundation Design - 12 Feet High Post



xxx EPA =	0.2	g ft
H(Post high) =	12	ft
Fh(wind) =	28	psf
Fh(loads) Seismic		hd h1(ft) M(lbs-ft)
Fh1(post) =	39.6	848 12.00 22
Fh2c(XXX) =	20	67.2 12.00 806
Sum =	5	69.048 829
Total M =	829	lbs ft
h2 =	0	ft
K(Fixity point) =		ft below grade
l (arm) =	2.0	ft

Soil design information,
 Soil bearing = **1,000** psf
 Fp(Passive pressure) = **175** psf per ft
 Friction Coefficient = **0.43**
 D(Caisson diameter) = **1.0** ft
 Try L (length) = **4.00** ft
 $A = (2.34) (Fh) =$ **0.692**
 $(Fp)(L)(1/3) (D)$
 $L = \frac{A}{2} \left[1 + \left(1 + \frac{4.36 X'}{A} \right)^{1/2} \right] =$ **3.38** < L OK



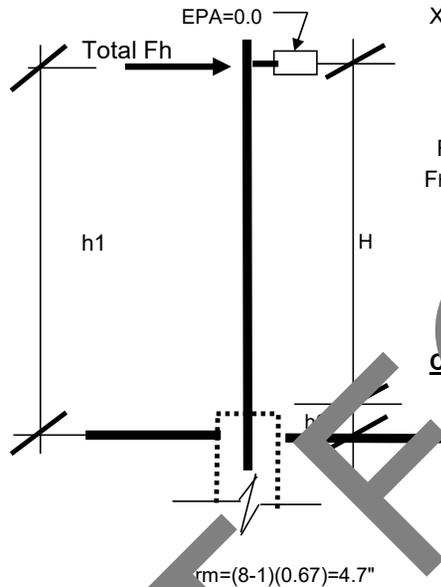


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Date: **11/29/2023**
 Job No.: **1.22.9**
 By: **H.Ngo**
 Sheet No.: **10.1**

Project: **Gate Post & Post Foundation Design**
 SBC Trona Fueling Station

Gate Post Design



XXX EPA=	0.2	ft	
H(Post high) =	12	ft	h1=12 ft
Fh(wind) =	28	psf	100 mph
Fh (loads)	Seism	wind	arm (ft)
Fh1(post) =	5.6	48	12
Fh2c(XXX) =	20	7.2	12
Sum =	25.6	69.048	829
Total Fh =	69.0	lbs	
Total M =	829	lbs-ft	
h2 =	7	ft	
x(arm) =	12	ft	

Check post size pipe, Sched 40 x 0.237" thickness

Ixx=	7.23	in+4	
Sxx=	3.21	in+3	
A=	3.17	in+2	
max moment=	829	lbs-ft	
stress fb=	3.10	ksi	
	<	21.6	OK

NOT FOR BIDDING

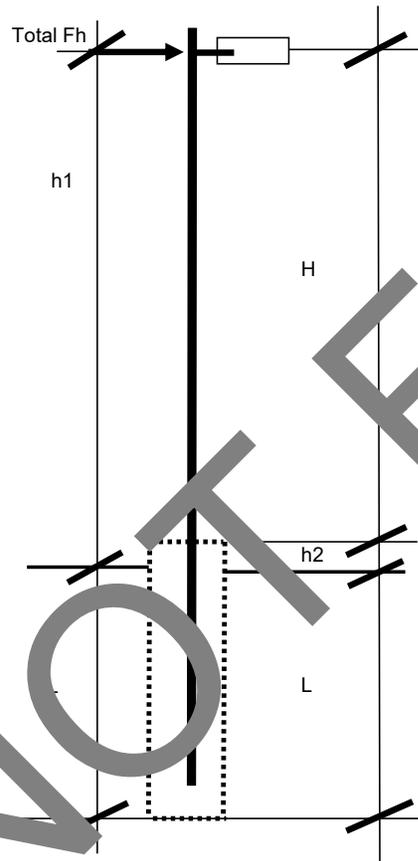


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Date: 11/29/2020
 Job No.: 1.22.9
 By: H.Ng P.E.
 Sheet No.: 10.2

Project: **Gate Post & Post Foundation Design**
 SBC Trona Fueling Station

TYPE 1 Gate Post Foundation Design - 12 Feet High Post



XXX EPA=	0.2	g ft
H(Post high) =	12	ft
Fh(wind) =	28	psf
Fh (loads) Seismic		hd h1(ft) M(lbs-ft)
Fh1(post) =	39.6	848 12.00 22
Fh2c(XXX) =	20	67.2 12.00 806
Sum =	5	69.048 829
Total Fh =	69.048	lbs
Total M =	829	ft
h2 =	0	ft
K(Fixity point) =		ft below grade
L (arm) =	2.0	ft

Soil design information,	
Soil bearing =	1,000 psf
Fp(Passive pressure) =	175 psf per ft
Friction Coefficient =	0.43
D(Caisson diameter) =	2.0 ft
Try L (length) =	4.00 ft
A = (2.34) (Fh) =	0.346
(Fp)L(1/3) (D)	
$L = \frac{A}{2} \left[1 + \left(1 + \frac{4.36X'}{A} \right)^{1/2} \right] =$	2.31
	< L OK

USE 24" DIA. CAISSONS with 4 feet below grade

Try 6- #5 vertical rebars

b(in)= 24	fy=	60 ksi
d(in)= 21.26	fc=	3 ksi
As= (0.31)(6)(1/3) =		0.62 in+2
T = (As)(fy) =		37.2 kips
a=(As)(fy)/[(0.85)(3)(b)] =		0.61 in
Mn=(0.9)(T)(d - 0.5a)/12 =		58.47 ft-kips
> 1.6(M) =		5.42 OK