

Work Variance Request Form

Groundwater Remedy Phase 2 Construction, PG&E Topock Compressor Station, Needles, California

PG&E TOPOCK GROUNDWATER REMEDIATION PROJECT

Work Variance Request #17 – Relocate Phase 2 Remedy Produced Water Conditioning Facilities to Transwestern Bench

Request Prepared By: PG&E

Request Approval From: DTSC and DOI

Date Submitted: 11/19/25

Date Approval Required: TBD

Variance Request No.: 17

Map Area: N/A

Location: Inside Topock Compressor Station

Landowner/Land Manager: PG&E

Landowner Parcel No: 650-161-08

Current Vegetative Cover/Land Use: None

Existing Sensitive Resource? No Yes, Specify:

Variance From: Mitigation Measure Work Plan/Procedure Response to Comments

Drawing Permit Condition Other

Detailed Description of Variance and Justification (Attach additional information if necessary):

Attachments: Photo Design Drawings Aerial Photo Mark-Up Correspondence Other

Potential Impacts of Variance:

- | | | |
|--|--|--|
| <input type="checkbox"/> Air Quality | <input checked="" type="checkbox"/> Haz Materials – Work in AOC 12 | <input checked="" type="checkbox"/> Aesthetic – Reduce impacts |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Noise | <input type="checkbox"/> Water Resources |
| <input checked="" type="checkbox"/> Soils – Reduce disturbance | <input type="checkbox"/> Paleo Resources | |
| <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Hydrology and Water Quality | |

Description and Justification:

The groundwater Remedy Produced Water Conditioning (RPWC) system is installed in two phases. As approved in Work Variance Request (WVR) #5, Phase 1 RPWC facilities were installed to process remedy-produced wastewater from the maintenance of the Phase 1 In-situ Remediation Zone (IRZ) wells and piping along National Trails Highway (NTH), purge water from sampling of monitoring wells, equipment decontamination wastewater, and rainfall that collects in remedy facility secondary containment. Phase 1 RPWC facilities are located within the Topock Compressor Station (TCS) and the MW-20 Bench.

In Phase 2, RPWC facilities will include infrastructure necessary to process produced water from the additional wells built during Phase 2. In this WVR, PG&E proposes to install these facilities at the Transwestern Bench (TWB) instead of inside the TCS. The processes and function of the remaining RPWC components will remain the same, but location at the TWB provides several benefits, including less visual impact on the landscape, easier access for construction and operations, improved safety relative to TCS, and less time needed to build and begin to operate the full RPWC system. To accommodate the new build at the TWB, PG&E proposes to demolish or move some existing features at the TWB including the decon pad, concrete pad, barrier wall, stormwater features, and piping/conduits. A new retaining wall and a new secondary containment pad will be built at the TWB.

All new build on the TWB will be on PG&E property. This WVR includes no request for additional footprint or new pipeline alignment, outside of the TWB or new access road. There is no change to the functionality of the RPWC system in this request; for example, the system will still be fully capable of removing solids, adjusting pH, and other needs, as designed. There is no change to the contingent freshwater pre-injection treatment system approved in the 2015 BOD, and space within TCS will be reserved for this contingent component as per the approved BOD.

Work Variance Request Form

Groundwater Remedy Phase 2 Construction, PG&E Topock Compressor Station, Needles, California

PG&E TOPOCK GROUNDWATER REMEDIATION PROJECT

Work Variance Request #17 – Relocate Phase 2 Remedy Produced Water Conditioning Facilities to TWB

Description and Justification (continued):

Four key reasons for this request are:

1. **Shorten construction duration of Phase 2 RPWC** – based on Phase 1 experience, construction outside of the TCS will be faster. PG&E anticipates a reduction of about 40% in construction duration due to improved soil conditions, ease of access, avoiding TCS operations, and avoiding construction on top of PG&E’s high pressure gas line 300A.
2. **Reduce ground disturbance** due to shallower foundations and avoid bedrock excavation. The relocated components of RPWC will be more feasible to build with less time and disturbance at TWB compared to the very tight working conditions and bedrock in the way at the TCS location.
3. **Gain efficiency and flexibility** in long-term operation and maintenance of the RPWC due to reduced interactions with TCS operations and avoidance of gas operation encumbrances on remedy operation.
4. **Reduce visual impact from several key vantage points**, including the Topock Maze, Chemehuevi Mountains, and I-40. Based on the 2015 BOD, keeping these components at TCS requires addition of a two-story building, new tanks, and other high-profile equipment on the south side of TCS that would be readily visible from most directions. Moving these features to TWB will avoid adding those long-term visual impacts, especially from the vantage point of the Maze. Specifically, as shown in the annotated attachments, new impacts will be avoided from SEIR Viewpoint 9 (looking from the Maze) and Viewpoint 10 (recreational view from Chemehuevi Mountains), and impacts reduced from Viewpoint 2 (vehicular view from I-40).

From the vantage point of approaching TCS via the entrance road, the view will be very similar to the existing industrial character of TWB, with the current office trailers replaced by water tanks and other relatively low-profile components. See attached visualizations that compare the TWB in the 2015 BOD to the TWB as proposed in this WVR #17.

In sum, PG&E estimates the following schedule and physical reductions associated with this request:

- Construction duration: 40% reduction
- Linear footage of trenches: 759 linear feet reduction
- Linear footage of liquid conveyance piping: 1,077 linear feet reduction
- Linear footage of electrical conduits/communication lines: 1,994 linear feet reduction
- Ground disturbance: 1,391 cubic yard reduction
- Visual impact: avoid further disturbance within key views.

A detailed description and justification is provided at the end of this request.

Approval Signatures:



2/5/2026

PG&E Project Manager

Date



2/5/2026

Approving Agency

Date

VERONICA DICKERSON

Digitally signed by VERONICA DICKERSON
Date: 2026.02.05 14:12:30 -05'00'

Approving Agency

Date

Detailed Justification and Background Information for WVR #17

The final groundwater remedy is reliant on several dozen wells used for the IRZ, freshwater injection, carbon-amended injection, and groundwater extraction. For all wells, especially for the injection and IRZ wells, regular maintenance such as backwashing and rehabilitation is vital to maintain efficient and effective operations during the 30-year projected life of the remedy. Other types of produced water with smaller volumes will also need to be managed, such as monitoring well sampling and development purge water, equipment decontamination wastewater, and rainfall that collects in remedy facility secondary containment. Collectively, these types of water are called remedy-produced water. Exhibit 3.4-3 of the Final (100%) Basis of Design Report (Final BOD) lists the remedy-produced water by source (activities that generate the wastewater), estimated volume of wastewater, and how the wastewater is intended to be managed in order of preference.

The final remedy has a goal of near-zero consumptive use of water. In order to minimize consumptive use, it is necessary to return as much of the remedy-produced water to the aquifer as possible. The Remedy Produced Water Conditioning (RPWC) system was designed to condition the remedy-produced water to a degree where it would not adversely impact the aquifer or contribute to the fouling of the injection wells or disruption of the natural geochemistry in the aquifer near the injection wells.

The full RPWC system is constructed in phases. Phase 1 construction involved infrastructure necessary to process wastewater generated from a) maintenance of IRZ wells installed during Phase 1 construction along National Trails Highway (backwash wastewater and well rehabilitation wastewater), b) IRZ clean-in-place (CIP) events, and c) purge and decontamination water, and rainwater collected in containment. Phase 2 construction will involve infrastructure necessary to process the additional remedy components built during Phase 2.

Estimated Volume and Frequency of Generation for Remedy-Produced Water

As shown in Exhibit 3.4-3 of the Final BOD, the volume of wastewater anticipated to be processed through Phase 1 of the RPWC system is 5.32 million gallons per year (MG/year). Of the 5.32 MG/year, approximately 2.35 MG/year is from well backwash and IRZ CIP, 2.57 MG/year is from well rehabilitation, and 0.4 MG/year is from purge and decontamination water, and rainwater collected in containment.

IRZ well backwash is anticipated to occur weekly for 30 minutes per well when the IRZ is online (IRZ operates for 6 months out of every 24 months). When offline, the IRZ wells will be backwashed weekly if receiving remedy produced water for re-injection, or monthly if not. Approximately 1,000 gallon of wastewater is generated per 30-minute backwash event per well (see Table F-1, Appendix F of the Final BOD), for a total of 24,000 gallons per week or 3,400 gallons per day for all 24 IRZ injection wells (maximum case).

Rehabilitation of each IRZ injection well is anticipated to occur once per 2-year cycle when the IRZ is offline (nominal case) or also once while the IRZ is online (maximum case). Rehabilitation of each IRZ extraction well is anticipated to occur once every 5 years. Approximately 48,000 gallons of wastewater is generated per rehabilitation event per well (see Table F-1, Appendix F of the Final BOD).

IRZ CIP events will be scheduled to coincide with the IRZ being offline; the frequency of the CIP events will depend on the level of fouling and may be as infrequent as once every five years. Approximately 10,000 to 40,000 gallons of wastewater is generated per event (see Exhibit 3.2-4 of the Final BOD).

The above estimates are based on experience with IRZ wells at Hinkley and IM-3 injection wells at Topock. Actual well maintenance regimen for the IRZ wells and CIP events at Topock will not be known until the entire remedy system is constructed and actual operation and maintenance begin.

Remedy Produced Water Conditioning (RPWC) System Design Criteria and Configuration in the 2015 BOD

Exhibit 3.4-5 of the Final BOD presents the design criteria for the RPWC system. Of note is that the system is designed to process the largest projected daily production of water of 50,000 gallons per day (during rehabilitation of largest injection well). The designed equalization volume is provided by 4 frac tanks.

To allow for operational flexibility to segregate/manage various produced water streams and to optimize processes in the future, the RPWC system will be configured with two parallel trains: 1) A-side Remedy and 2) B-side Freshwater. Both trains will be equipped initially with identical processes/units, see Figure F-2 of Appendix F or the illustration on page 3-56 of the Final BOD.

Per Exhibit 3.4-3 of the Final BOD, the A-side of the RPWC system will process wastewater generated from the

Detailed Justification and Background Information for WVR #17 (Continued)

maintenance of IRZ wells, IRZ clean-in-place (CIP), and purge and decontamination water. Therefore, Phase 1 construction of the RPWC system will be the A-side.

As described in the Final BOD, backwash water generated during the maintenance of IRZ wells and from the IRZ pipeline CIP process may be transferred to the MW-20 Bench Backwash Tank (prior to being transferred to the RPWC Influent Tanks) or transferred directly to the RPWC Influent Tanks.

RPWC System Configuration (A-side Only) Built in Phase 1

Per BOD Design Drawing #G-12-01, the RPWC system consists of four key components – an influent tank farm (i.e., four frac tanks and associated valves and pumps in a secondary containment), a remedy building, a conditioned water tank farm associated with A-side (i.e., two frac tanks in a secondary containment), and a conditioned water tank associated with B-side. The remedy building is designed to contain filtration units, phase separators, chemical containers, and associated pumps for both A-side and B-side of the RPWC system.

During Phase 1 construction and for the A-side of the RPWC system, PG&E installed two frac tanks for influent wastewater, one frac tank for conditioned wastewater, four cartridge filter units, one phase separator, chemical containers, and associated valves, pumps, piping, and instrumentation within the influent tank farm footprint. With two frac tanks for influent wastewater, there are approximately 10 days of storage capacity at the RPWC Tank Farm for backwash operations when the IRZ is online.

During well rehabilitation and CIP events, PG&E plans to utilize up to two of the three frac tanks at the MW-20 Bench for additional storage of influent wastewater (if needed). This would provide the equalization volume of four frac tanks stated in Exhibit 3.4-5 of the Final BOD.

Proposed RPWC System Configuration for Phase 2

- a) **RPWC Facilities at Transwestern Bench (TWB)** - PG&E proposes to install the remaining of the RPWC system including four frac tanks for influent water, four frac tanks for effluent water, two phase separators, and associated valves and pumps in a new secondary containment to be located at the TWB. The filtration units, chemical containers, and associated pumps for both A-side and B-side of the RPWC system will also be installed in the same new secondary containment at the TWB. New piping and conduits will be installed in new trenches to connect the TWB facilities to existing Pipelines E and F, and Electrical Node 1. All new trenches outside of the TWB will be in the immediate vicinity of the TWB compound and along the existing pipeline alignment approved in the 2015 BOD and subsequent WVRs.

To accommodate the RPWC system at the TWB, PG&E proposes to demolish various existing features at the TWB including the decon pad, concrete pad, barrier wall, stormwater features, and piping/conduits (see Drawing C-08-01, Transwestern Bench Site Demolition Plan). A new retaining wall and a new secondary containment pad will be built at the TWB. To retain the functionality of a decon pad at the TWB, a new concrete apron (approx. dimension of 138 ft long by 15 ft wide) will be built adjoining the north side of the new secondary containment (see Drawing S-08-03).

- b) **RPWC Facilities at TCS** – PG&E proposes to eliminate the remedy building at the TCS as its entire BOD content is proposed to be relocated to the TWB. In addition, during Phase 2 construction, PG&E will install the 10,000-gallon remedy freshwater storage tank, approved in WVR #5, in the Influent Tank Farm.

Besides the Influent Tank Farm, the remaining RPWC facilities at the TCS will be the contingent Freshwater Pre-Injection Treatment System (for arsenic treatment) and associated pumps, storage tanks, and an outdoor chemical storage area. Space within TCS will be reserved for this contingent system as shown in the 2015 BOD. See Drawing C-10-01.

- c) **RPWC Facilities at MW-20 Bench** – As described in the approved WVR #5, PG&E plans to utilize two of the three frac tanks at the MW-20 Bench for additional storage of influent wastewater (if needed). No changes to the MW-20 Bench is proposed in this WVR.

Detailed Justification and Background Information for WVR #17 (Continued)

Justifications for Proposed Phase 2 RPWC Configuration

The justifications for this WVR are:

1. Shorten construction duration of Phase 2 RPWC – based on Phase 1 experience, construction outside of the TCS will be faster. PG&E anticipates a reduction of about 40% in construction duration due to improved soil conditions and avoiding TCS operations, as well as avoiding construction on top of PG&E high pressure gas line 300A.
2. Reduce ground disturbance due to shallower foundations and avoid bedrock excavation.
3. Gain efficiency and flexibility in operation and maintenance of the RPWC due to reduced interactions with TCS operation and avoid gas operation encumbrances on remedy operation.

Below are PG&E’s estimates of reduction in schedule, disturbance, and infrastructure associated with this request:

- Construction duration: 40% reduction
- Linear footage of trenches: 759 linear feet reduction
- Linear footage of liquid conveyance piping: 1,077 linear feet reduction
- Linear footage of electrical conduits/communication lines: 1,994 linear feet
- Ground disturbance: 1,391 cubic yard reduction

	Measured Area (Square Feet)	Specified Depth (Feet)	Estimated Soil Volume Displaced	
			Square Feet	Cubic Yard
2015 BOD				
TCS Area				
Remedy Produced Water Conditioning Plant (RPWCP)	2,329	12	27,945	1,035
Conditioned Water Tank Farm (CWTF)	1,870	9	16,830	623
Conditioned Water Storage Tank	594	4	2,079	77
General Grading Area around RPWCP and CWTF	16,649	2	33,298	1,233
TWB Area				
Operations Building	2,810	1.5	4,216	156
Existing Decon Pad Replacement	3,561	2	7,122	264
			Total:	3,388
WVR #17				
TWB Area				
Containment Structure including apron for decon	11,154	5	50,193	1,859
West Retaining Wall Only	403	5	1,813	67
Operations Job Trailer	640	1	640	24
Additional Trenching	315	4	1,259	47
			Total:	1,997

			Estimated Reduction in Soil Volume:	1,391
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Existing View from Interstate 40 eastbound at Bat Cave Wash looking southeast (VP 2)

Refer to Figure 4.1-3 for photograph viewpoint locations

SOURCE: ENVIRONMENTAL VISION

View Point 2 - Vehicular View from I-40

Topock Final Groundwater Remediation Project . 120112

Figure 4.1-5A

Existing View from Viewpoint 2

121516

Source: Final SEIR



Eliminate 2-story building

Relocate conditioned water tank farm to TWB

Visual Simulation of the proposed Project (VP 2)

Refer to Figure 4.1-3 for photograph viewpoint locations

SOURCE: ENVIRONMENTAL VISION

Topock Final Groundwater Remediation Project . 120112

Figure 4.1-5B

View Point 2 - Vehicular View from I-40

Visual Simulation of the Project from Viewpoint 2

121516

Source: Final SEIR



Existing View looking southeast toward Topock Compressor Station (VP 9)

Refer to Figure 4.1-3 for photograph viewpoint locations

SOURCE: ENVIRONMENTAL VISION

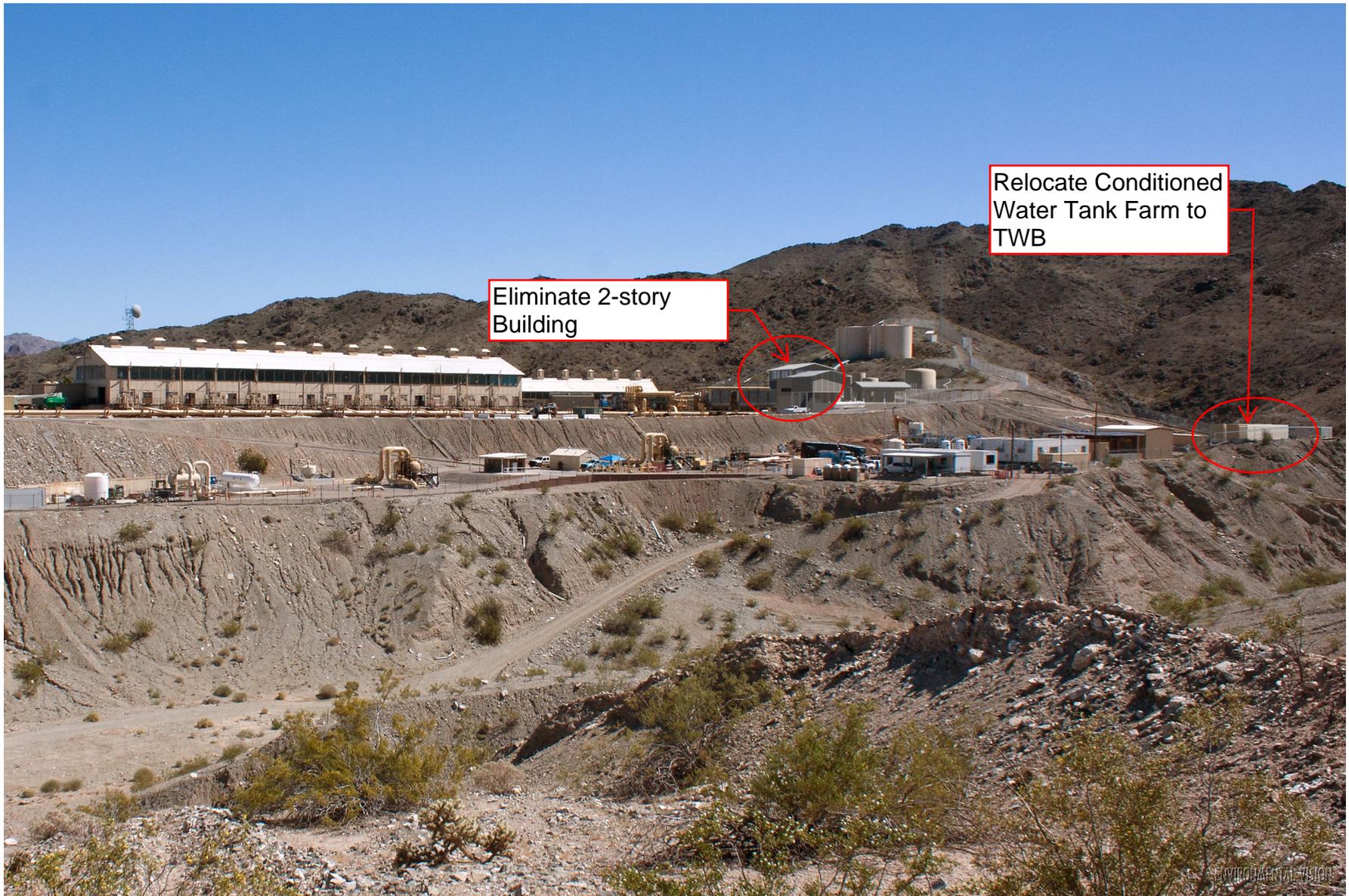
Topock Final Groundwater Remediation Project . 120112

121516

Source: Final SEIR

View Point 9 - Pedestrian View
from near Topock Maze

Figure 4.1-9A
Existing View from Viewpoint 9



Visual Simulation of the proposed Project (VP 9)

Refer to Figure 4.1-3 for photograph viewpoint locations

SOURCE: ENVIRONMENTAL VISION

Topock Final Groundwater Remediation Project . 120112

Figure 4.1-9B

View Point 9 - Pedestrian View
from near Topock Maze

Visual Simulation of the Project from Viewpoint 9

121516

Source: Final SEIR



Existing View from Ridge on Chemehuevi Mountains looking north toward Topock Compressor Station and Colorado River (VP 10)

Refer to Figure 4.1-3 for photograph viewpoint locations

SOURCE: ENVIRONMENTAL VISION

Topock Final Groundwater Remediation Project . 120112

View Point 10 - Recreational View from Chemehuevi Mountains

Figure 4.1-10A
Existing View from Viewpoint 10

121516

Source: Final SEIR



Visual Simulation of the proposed Project (VP 10)

Refer to Figure 4.1-3 for photograph viewpoint locations

SOURCE: ENVIRONMENTAL VISION

View Point 10 - Recreational View from Chemehuevi Mountains

121516

Topock Final Groundwater Remediation Project . 120112

Figure 4.1-10B

Visual Simulation of the Project from Viewpoint 10

Source: Final SEIR

WORK VARIANCE REQUEST #17

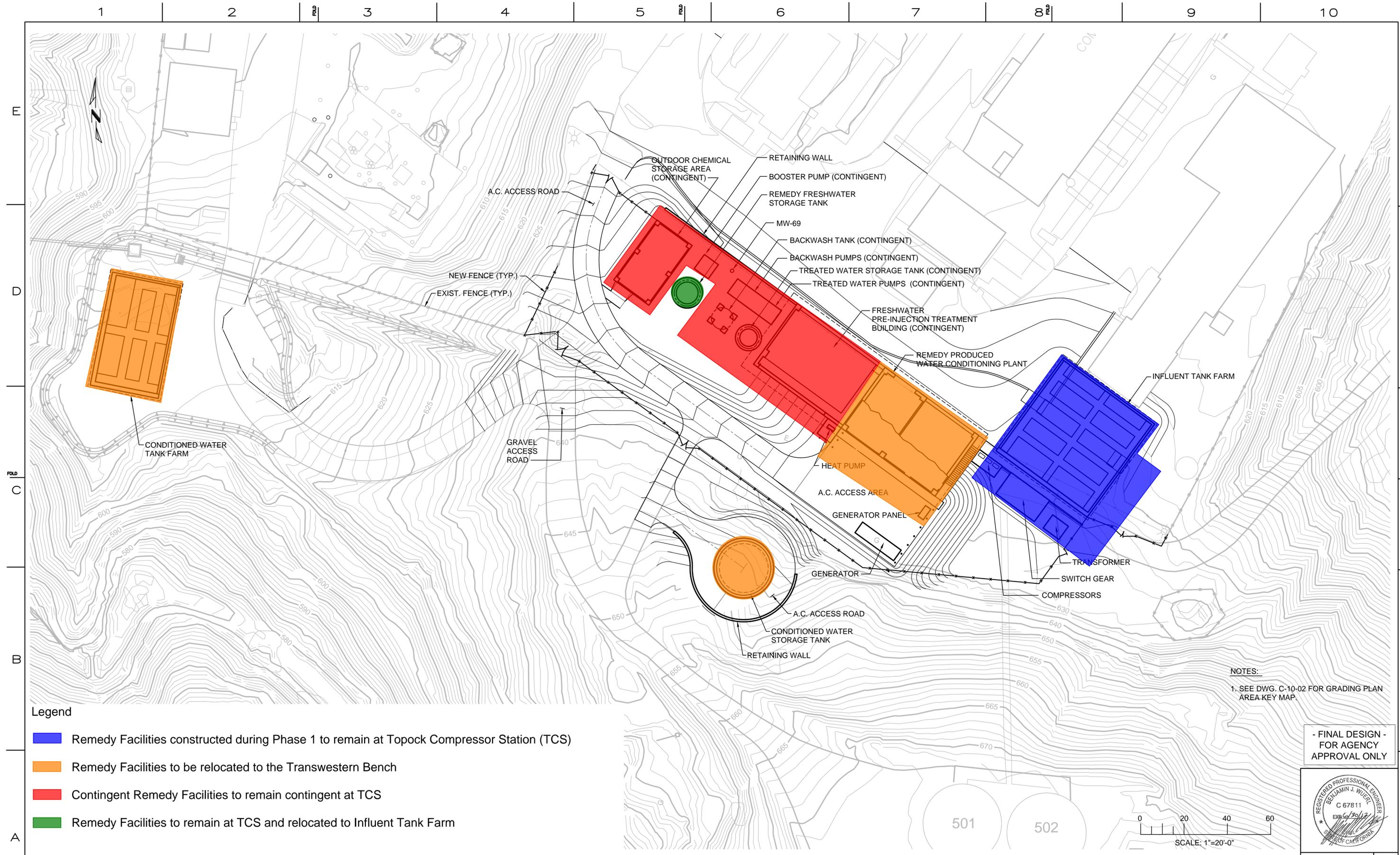




Note: The trailers depicted in this photo simulation are intended for use by PG&E and/or its contractors during construction and/or O&M of the groundwater remedy, not for station use. The need for, the numbers, or types of trailers for remedy use may vary over time.

FIGURE ES-7
PHOTO SIMULATION OF NEW REMEDY BUILDING AND STRUCTURES AT THE TRANSWESTERN BENCH
GROUNDWATER REMEDY BASIS OF DESIGN REPORT
FINAL (100%) DESIGN
PG&E TOPOCK COMPRESSOR STATION,
NEEDLES, CALIFORNIA

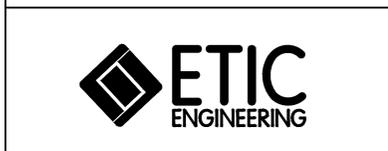
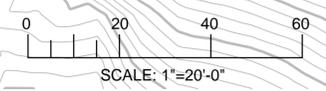
Source: IDC Architects 2014.



- Legend**
- Remedy Facilities constructed during Phase 1 to remain at Topock Compressor Station (TCS)
 - Remedy Facilities to be relocated to the Transwestern Bench
 - Contingent Remedy Facilities to remain contingent at TCS
 - Remedy Facilities to remain at TCS and relocated to Influent Tank Farm

NOTES:
 1. SEE DWG. C-10-02 FOR GRADING PLAN AREA KEY MAP.

- FINAL DESIGN -
FOR AGENCY
APPROVAL ONLY



NO.		DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	REVISIONS			
2		11/18/15	FINAL DESIGN						AJW	WLM	BW	RAO
1		9/8/14	PRE-FINAL (90%) DESIGN						WTH	VMB	VMB	VMB
0		4/5/13	INTERMEDIATE (60%) DESIGN						WTH	VMB	VMB	VMB

APPROVED BY	SO
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	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
TCS AREA GENERAL SITE PLAN
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

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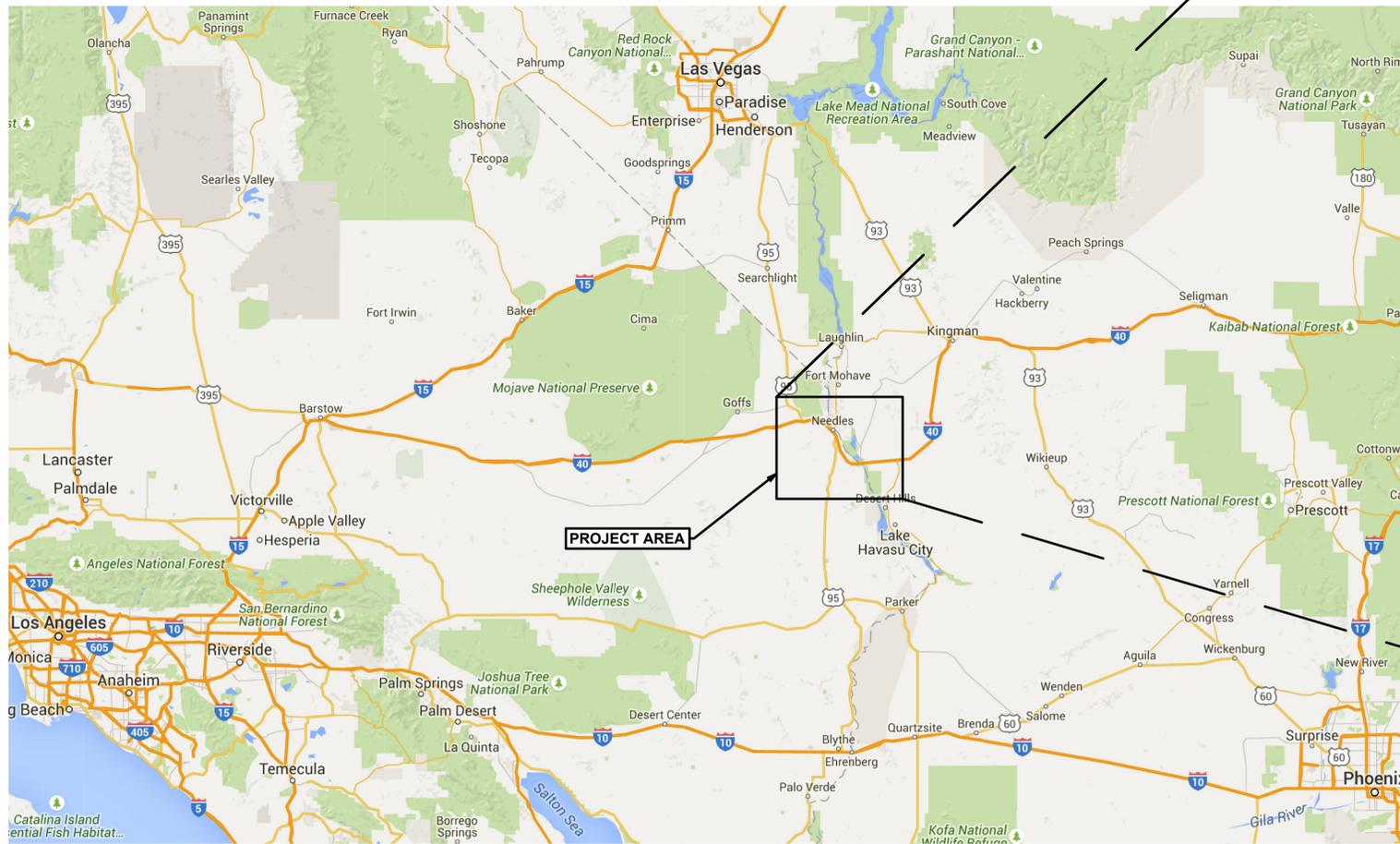
TOPOCK GROUNDWATER REMEDIATION PROJECT

PG&E TOPOCK COMPRESSOR STATION

NEEDLES, CALIFORNIA

PRE-FINAL (90%) PHASE 2B DESIGN

OCTOBER 2025



NOTE:
ALL WORK WITHIN CALTRANS RIGHT-OF-WAY SHALL COMPLY WITH 2018 CALTRANS STANDARD PLANS AND SPECIFICATIONS.
TRENCHING, BACKFILLING, AND PAVING OPERATIONS SHALL BE PER ENCROACHMENT PERMIT TRENCH DETAIL TR-0153.

PRE-FINAL
DESIGN FOR
AGENCY REVIEW
ONLY - NOT FOR
CONSTRUCTION



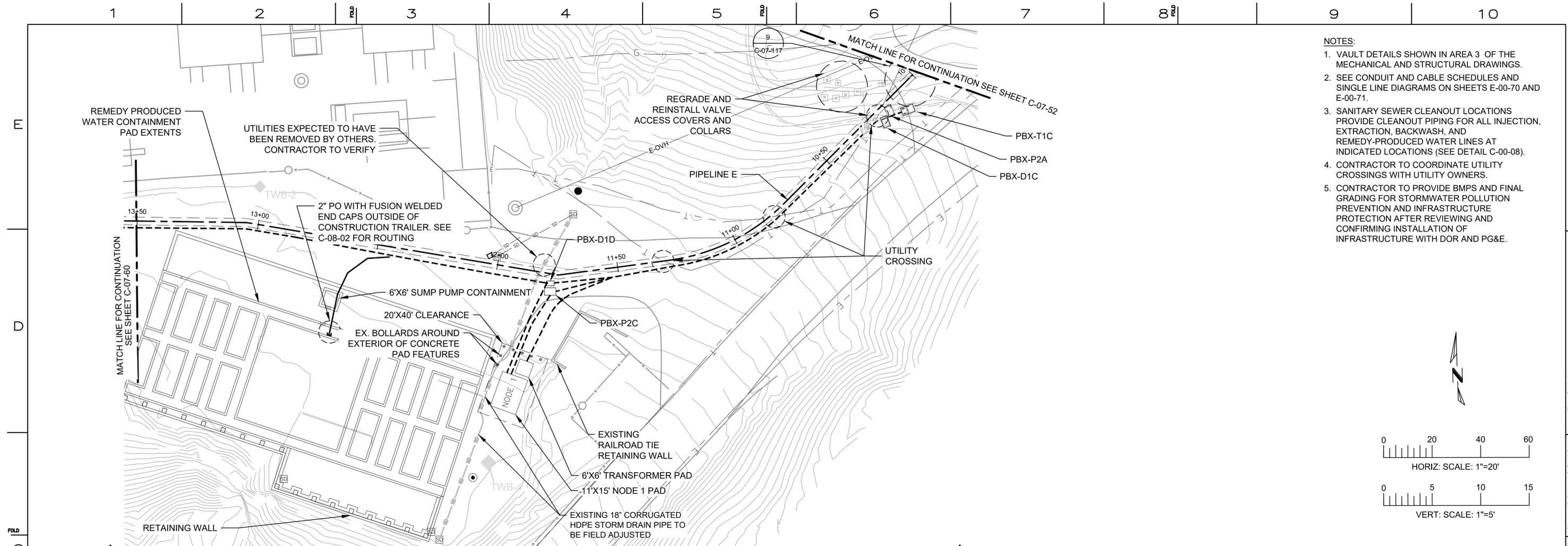
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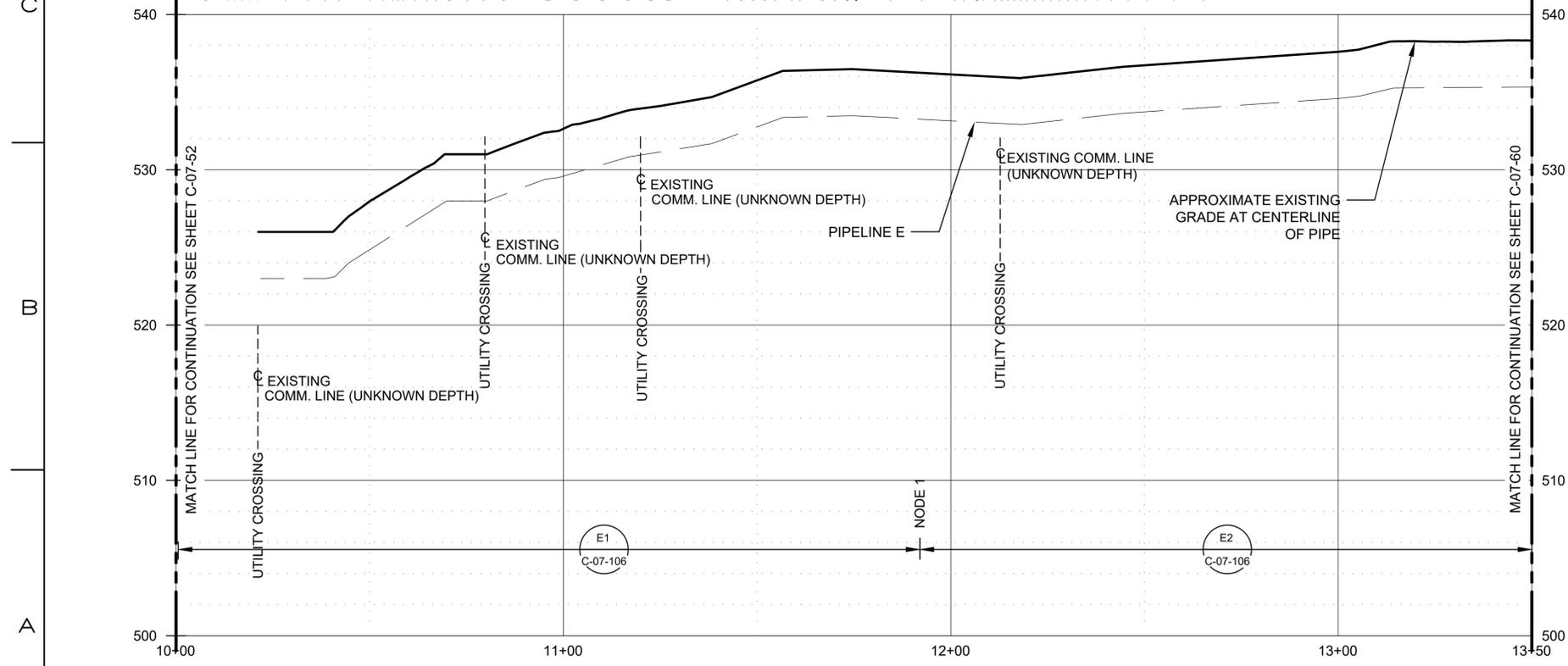
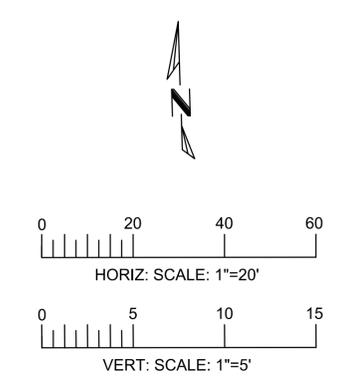
TOPOCK GROUNDWATER REMEDIATION PROJECT
**TITLE SHEET, VICINITY MAP,
AND LOCATION MAP**
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

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- NOTES:**
1. VAULT DETAILS SHOWN IN AREA 3 OF THE MECHANICAL AND STRUCTURAL DRAWINGS.
 2. SEE CONDUIT AND CABLE SCHEDULES AND SINGLE LINE DIAGRAMS ON SHEETS E-00-70 AND E-00-71.
 3. SANITARY SEWER CLEANOUT LOCATIONS PROVIDE CLEANOUT PIPING FOR ALL INJECTION, EXTRACTION, BACKWASH, AND REMEDY-PRODUCED WATER LINES AT INDICATED LOCATIONS (SEE DETAIL C-00-08).
 4. CONTRACTOR TO COORDINATE UTILITY CROSSINGS WITH UTILITY OWNERS.
 5. CONTRACTOR TO PROVIDE BMPS AND FINAL GRADING FOR STORMWATER POLLUTION PREVENTION AND INFRASTRUCTURE PROTECTION AFTER REVIEWING AND CONFIRMING INSTALLATION OF INFRASTRUCTURE WITH DOR AND PG&E.



PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION

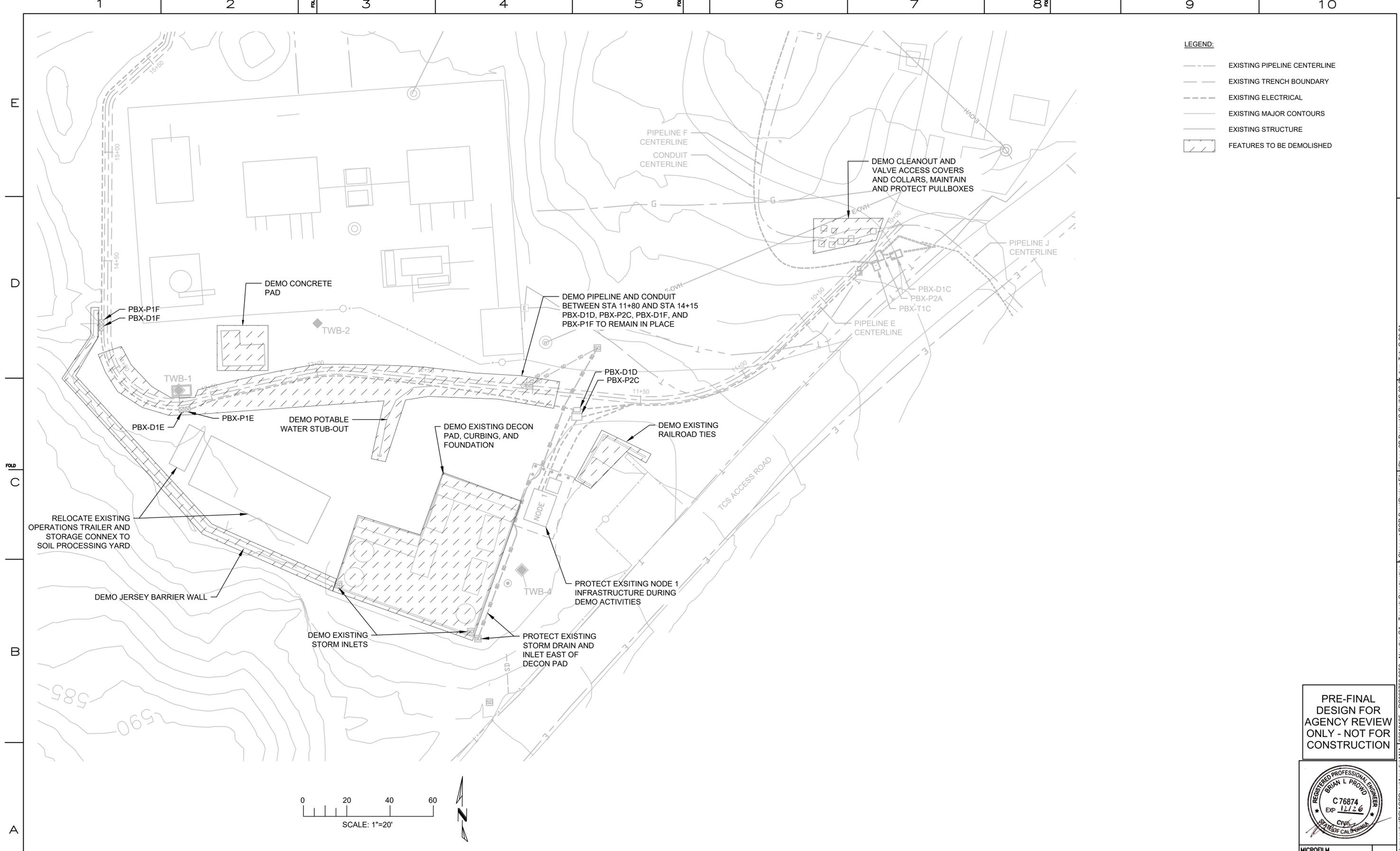


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9	08/29/25	INTERMEDIATE (60%) DESIGN						4	01/10/22	PHASE 2A DESIGN IFC - FINAL					
8	3/09/23	PHASE 2A NODE 1 POWER PACKAGE						3	10/29/21	PHASE 2A DESIGN IFC					
7	10/25/22	TWB-3 AND PIPELINE E MODIFICATIONS						2	6/16/17	ISSUED FOR BID					
6	8/30/22	PRE-FINAL (90%) DESIGN						1	11/18/15	FINAL DESIGN					

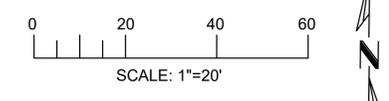
TOPOCK GROUNDWATER REMEDIATION PROJECT
PLAN AND PROFILE
PIPELINE "E"
 STA 10+00 TO STA 13+50
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

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- LEGEND:**
- EXISTING PIPELINE CENTERLINE
 - EXISTING TRENCH BOUNDARY
 - EXISTING ELECTRICAL
 - EXISTING MAJOR CONTOURS
 - EXISTING STRUCTURE
 - ▨ FEATURES TO BE DEMOLISHED



PRE-FINAL
DESIGN FOR
AGENCY REVIEW
ONLY - NOT FOR
CONSTRUCTION



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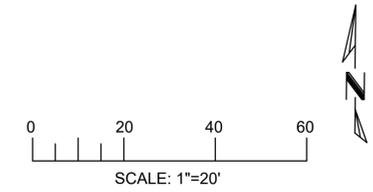
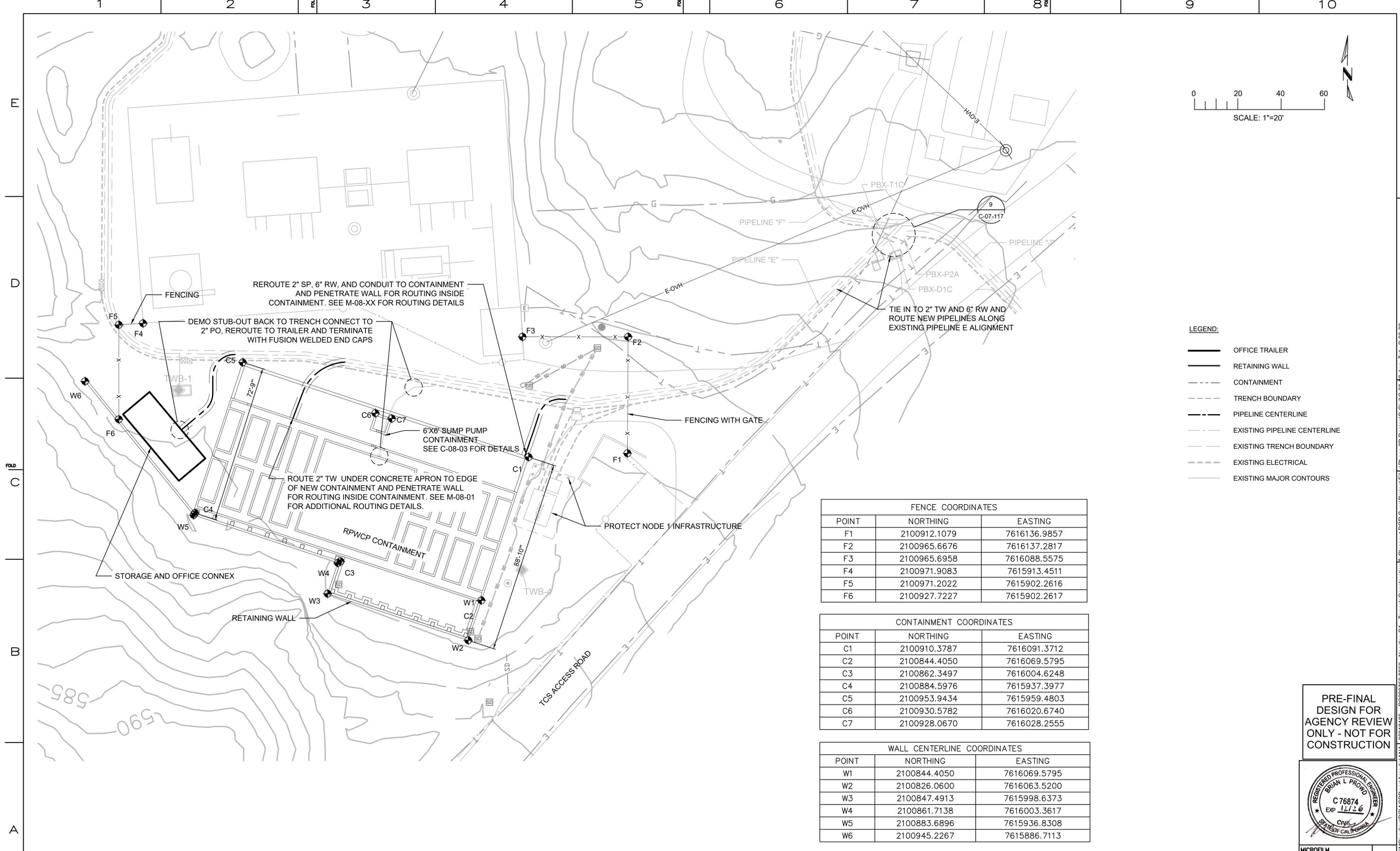
TOPOCK GROUNDWATER REMEDIATION PROJECT
**TRANSWESTERN BENCH
SITE DEMOLITION PLAN**
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA



NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
3	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													
2	8/29/25	INTERMEDIATE (60%) DESIGN													
1	11/18/15	FINAL DESIGN													
0	8/5/15	90% RTC RESOLUTION													

APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

09/30/2025 16:17: C:\Users\vmorasko\OneDrive\Documents\Arcadis\ANA_130119125 - RC000753.0050 - Needles CA - Topock Construction & Closeout DOR Svcs\Project Files\Phase 2B Design\Civil\C-08-01.dwg, Tab: C-08-01



- LEGEND:**
- OFFICE TRAILER
 - RETAINING WALL
 - - - CONTAINMENT
 - - - TRENCH BOUNDARY
 - - - PIPELINE CENTERLINE
 - - - EXISTING PIPELINE CENTERLINE
 - - - EXISTING TRENCH BOUNDARY
 - - - EXISTING ELECTRICAL
 - - - EXISTING MAJOR CONTOURS

FENCE COORDINATES		
POINT	NORTHING	EASTING
F1	2100912.1079	7616136.9857
F2	2100965.6676	7616137.2817
F3	2100965.6958	7616088.5575
F4	2100971.9083	7615913.4511
F5	2100971.2022	7615902.2616
F6	2100927.7227	7615902.2617

CONTAINMENT COORDINATES		
POINT	NORTHING	EASTING
C1	2100910.3787	7616091.3712
C2	2100844.4050	7616069.5795
C3	2100862.3497	7616004.6248
C4	2100884.5976	7615937.3977
C5	2100953.9434	7615959.4803
C6	2100930.5782	7616020.6740
C7	2100928.0670	7616028.2555

WALL CENTERLINE COORDINATES		
POINT	NORTHING	EASTING
W1	2100844.4050	7616069.5795
W2	2100826.0600	7616063.5200
W3	2100847.4913	7615998.6373
W4	2100861.7138	7616003.3617
W5	2100883.6896	7615936.8308
W6	2100945.2267	7615886.7113

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
3	11/11/25	PRE-FINAL (90%) PHASE 2B DESIGN					
2	8/29/25	INTERMEDIATE (60%) DESIGN					
1	11/18/15	FINAL DESIGN					
0	8/5/15	90% RTC RESOLUTION					

APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALE

TOPOCK GROUNDWATER REMEDIATION PROJECT
TRANSWESTERN BENCH SITE PLAN
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
C-08-02	3

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UNISTRUT WITH SINGLE POINT LEVEL SWITCH (ON) APPROXIMATELY AT GRATE BOTTOM WITH ENOUGH SPACE FOR ELECTRICAL CONNECTION.

RAIL SYSTEM FOR SUMP PUMP MAINTENANCE (STAINLESS STEEL)

2" PUMP DISCHARGE

2-4" HDPE DRAIN PIPES

DUPLEX SUMP PUMP SYSTEM EACH 1 HP RATED FOR 30 GPM AT 25FT

LEGEND

-  CONCRETE
-  NATIVE EARTHFILL
-  STEEL GRATE

2 PLAN VIEW
N.T.S

NOTES:

1. PROVIDE PIPE SUPPORT AS NEEDED.
2. THE CABLES TO THE PUMPS AND LEVEL SWITCHES SHALL BE PROTECTED AND SUPPORTED.
3. RAIL SYSTEMS MAY VARY BASED ON SUBMITTED MANUFACTURER. CONTRACTOR TO ADJUST THE LOCATION OF RAILS AND SWITCH ASSEMBLIES ACCORDINGLY.
4. CONDUIT SHALL NOT BE INSTALLED IN THE SUMP PIT OR ON THE LID.
5. CONDUIT SUPPORT LOCATIONS SHALL BE DETERMINED IN THE FIELD DURING CONSTRUCTION.

72"x72" PEDESTRIAN STEEL GRATE
UNISTRUT WITH SINGLE POINT LEVEL SWITCH (ON) APPROXIMATELY AT GRADE.

TOP OF SLAB ELEV. 538.0'

BOTTOM OF SLAB ELEV. 537.0'

2" PUMP DISCHARGE
2-4" HDPE DRAIN PIPES

CONTAINMENT GRATING

CONTAINMENT FOUNDATION

ELEV. 536.25' (EST.)

FLEXIBLE DISCHARGE HOSE

PUMP POWER CONNECTION

6' X 6' PRE-CAST CATCH BASIN
8" THICK

1' LAYER OF CRUSHED ROCK

1 SECTION VIEW
N.T.S

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



REVISIONS		REVISIONS													
NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
0	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													

APPROVED BY	SO
JPB	SUPV
	DSCN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
TRANSWESTERN BENCH SUMP PUMP
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
C-08-03	0

E

D

FOLD

C

B

A

Stream #		1	2	3	4	5	6	7	8	9	10	11	12
Waste Stream	Total Influent to Tanks	Influent Tank Farm, Influent	To Remedy A Side Filters	To Freshwater B Side Filters	TLS Evaporation Ponds	To TCS Truck Fill Station	To *T720 tank (IRZ Wells)	To Cooling Tower Basin (Note 1)	Liquid Phase Separator, Influent	Liquid Phase Separator, Liquid Return	25% Caustic to Influent Tank Farm	Coagulant to Influent Tank Farm	Acid (19% HCl) to Influent Tank Farm
Design Flow (MG/Year)	7.6	7.6	3.9	2.9	0.78	0.0	6.8	0.0	0.08	0.076	0.001443	3.000061	0.001443
Design Flow (ac-ft/Year)	23.4				2.4		20.7						
TSS (mg/L)		40.6	60	10	60				2286	233			
Solids (lbs/year)		2580	973	123	389				1483	148			
Solids (lbs/day)		7.1	2.7	0.3	4.4				4	0.4			
Nominal Flow (MG/Year)	5.5	5.5	2.9	1.8	0.78	0.0	4.6	0.0	0.06	0.057	0.001443	0.000046	0.001443
Design Flow (ac-ft/Year)	16.8				2.4		14.2						
TSS (mg/L)		43.4	60	10	60				2466	247			
Solids (lbs/year)		1976	719	76	389				1182	118			
Solids (lbs/day)		5.4	2.0	0.2	1.1				3	0.3			
pH		2.01-7.4	7-7.4	7-7.4	2.01-7.4				7-7.4	7-7.4	14	3.5	1
Notes	1. The use of conditioned water as cooling tower makeup water is a future option.												

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DESIGN FOR
AGENCY REVIEW
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CONSTRUCTION



TOPOCK GROUNDWATER REMEDIATION PROJECT
REMEDY PRODUCED WATER MASS BALANCE
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO. of SHEETS	G-08-03 of 0
REV	0

NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
0	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													

APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

GENERAL STRUCTURAL NOTES

GENERAL

GOVERNING CODES

CALIFORNIA BUILDING CODE (CBC, 2025 EDITION) AS AMENDED BY SAN BERNARDINO COUNTY, ASCE 7-22 MINIMUM DESIGN LOADS FOR BUILDING AND OTHER STRUCTURES.

INTENT OF GENERAL STRUCTURAL NOTES

THE INTENT OF THESE GENERAL STRUCTURAL NOTES IS TO DEFINE DESIGN PARAMETERS (LOADS AND ALLOWABLE STRESSES) FOR ALL STRUCTURES AND MATERIALS USED. PROJECT MATERIALS AND INSTALLATION REQUIREMENT ARE A PART OF THIS JOB AND ARE CONTAINED IN PROJECT SPECIFICATION MANUAL.

DESIGN

THE STRUCTURES ARE DESIGNED TO BE STABLE AND SELF-SUPPORTING WHEN ERECTED AND FULLY COMPLETED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE ERECTION PROCEDURE, INCLUDING SEQUENCE OF CONSTRUCTION, AND TO INSURE THE SAFETY OF THE STRUCTURES DURING THE CONSTRUCTION PHASE, INCLUDING THE DESIGN AND SAFETY OF ANY TEMPORARY BRACING OR OTHER MEASURES WHICH MAY BE NECESSARY TO FACILITATE AND COMPLETE CONSTRUCTION.

LIVE LOADS

DESIGN LIVE LOADS FOR THE STRUCTURES ARE AS FOLLOWS:

CONCRETE FLOOR ON GRADE = 500 PSF UNIFORM OR HS-20 TRUCK TRAFFIC

GRATING = 500 PSF UNIFORM OR HS-20 TRUCK TRAFFIC

WIND LOADS

DESIGN HORIZONTAL WIND LOADS ON VERTICAL SURFACES:

20 PSF (MINIMUM)
BASIC WIND SPEED: 105 MPH

SEISMIC LOADS

CBC, 2025 SITE CLASS: D
SEISMIC DESIGN CATEGORY:
S_s = 0.280
S₁ = 0.120
S_{DS} = 0.293
S_{DI} = 0.227

IMPORTANCE FACTOR: 1.25

FOUNDATION

DESIGN SHALL BE BASED ON: GEOTECHNICAL INVESTIGATION REPORT, TOPOCK COMPRESSOR STATION BY CH2M HILL, 2004
FINAL WORKPLAN FOR TIME CRITICAL REMOVAL ACTION AT AOC4 DEBRIS RAVINE, PG&E TOPOCK COMPRESSOR STATION, NEEDLES, CA BY CH2M HILL DEC. 18, 2009

A) MAT FOUNDATION AND SPREAD FOUNDATIONS:
ALLOWABLE SOIL BEARING PRESSURE = 2000 PSF-(EVERYWHERE UNLESS OTHERWISE NOTED)

GROUND WATER ELEVATION

STRUCTURES ARE DESIGNED FOR A HIGH GROUND WATER LEVEL AT EL. 465.30.

COORDINATION OF WORK

MECHANICAL FRAMING, OPENINGS AND SUPPORTS FOR EQUIPMENT OR OTHER PROCESS ITEMS ARE SHOWN FOR BIDDING PURPOSES ONLY. THE EXACT SIZE AND LOCATION OF SUCH ITEMS SHALL BE VERIFIED FROM MANUFACTURER'S APPROVED SHOP DRAWINGS AND BY COORDINATION OF SUCH WORK WITH THE PERTINENT TRADE.

MISCELLANEOUS

FOR LOCATIONS AND DETAIL OF PIPES, CONDUITS, DUCTS, AND OTHER OPENINGS IN SLABS AND WALLS, SEE SITEWORK, MECHANICAL, PLUMBING, HVAC, AND ELECTRICAL DRAWINGS.

CONCRETE

(SPEC. SEC. DIV 3)

CONCRETE DESIGN DATA

CODE - ACI 318-19 AND 350/350R-20 BUILDING CODES FOR REINFORCED CONCRETE.

STRENGTH - F_c = 5,000 PSI UNLESS OTHERWISE INDICATED IN SPEC. SECTION 03 30 00.

REINFORCING - ASTM A615, GRADE 60

WELDED STEEL WIRE FABRIC - ASTM A185 OR ASTM 497

DESIGN - STRENGTH DESIGN METHOD OR ALTERNATE DESIGN METHOD

DETAILING - ACI SP-66(04) ACI DETAILING MANUAL

UNLESS OTHERWISE SHOWN OR NOTED, ALL 90-, 135- AND 180- DEGREE HOOKS FOR REINFORCING SHALL BE IN ACCORDANCE WITH THE STANDARD HOOK DETAILS SHOWN IN ACI SP-66(04).

REINFORCING BAR DEVELOPMENT

UNLESS OTHERWISE INDICATED ON THE DRAWINGS, REINFORCING BARS SHALL BE DEVELOPED AND/OR SPLICED IN ACCORDANCE WITH THE FOLLOWING TABLE:

BAR SIZE	Ld DEVELOPMENT LENGTH	TENSION LAP SLICES	
		*TOP BARS	OTHER BARS
4	2'-1"	2'-5"	2'-1"
5	2'-7"	3'-4"	2'-7"
6	3'-1"	4'-0"	3'-1"
7	4'-6"	5'-10"	4'-6"
8	5'-2"	6'-8"	5'-2"
9	5'-10"	7'-7"	5'-10"
10	6'-6"	8'-6"	6'-6"

*HORIZONTAL BARS SO PLACED THAT MORE THAN 12 IN. OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.

CONCRETE PROTECTION FOR REINFORCEMENT

UNLESS NOTED OTHERWISE, THE CONCRETE COVER FOR REINFORCING BARS PLACED IN SURFACES EXPOSED TO WATER SHALL BE 2 INCHES AND CONCRETE CAST AGAINST EARTH SHALL BE 3 INCHES. ALL OTHER MINIMUM COVER REQUIREMENTS SHALL BE AS PER ACI 318-19.

REINFORCEMENT PLACEMENT:

PLACE, SUPPORT AND SECURE REINFORCEMENT AGAINST DISPLACEMENT. DO NOT DEVIATE FOR REQUIRED POSITION.

CONCRETE ACCESSORIES

ELASTOMERIC SEALANT FOR JOINTS SHALL BE SIKAFLEX-2C SL OR EQUAL.

PREFORMED PLASTIC ADHESIVE WATERSTOP (PPAWS - JP SPECIALTIES, INC.)

CHEMICAL RESISTANT STRIP WATERSTOPS: EARTH SHIELD TYPE 125CR; STRIPS COMPOSED OF NITRILE RUBBER AND MASTIC; 1-1/4 INCH BY 1/2 INCH.

CONCRETE COATING SYSTEM

FOR COATING SYSTEM REQUIREMENTS SEE SPECIFICATION SECTION 09 96 35B.CONCRETE COATING SYSTEM TO BE APPLIED TO CONCRETE TOP SLAB SURFACES, INSIDE FACE OF TRENCH WALLS, INSIDE FACES OF CURBS, AND TOP OF CONCRETE FILL IN TRENCHES.

UTILITY VAULTS

UTILITY VAULTS WILL BE PRECAST CONCRETE SECTIONS CONFORMING TO PG&E STANDARD K-35.

EARTHWORK

SUBGRADE COMPACTION (PER SPEC 31 23 13)

UNDER EARTHFILL

COMPACT UPPER 6 INCHES TO MINIMUM OF 90 PERCENT RELATIVE COMPACTION AS DETERMINED IN ACCORDANCE WITH ASTM D 1557.

UNDER PAVEMENT STRUCTURE

COMPACT UPPER 6 INCHES TO MINIMUM OF 95 PERCENT RELATIVE COMPACTION AS DETERMINED IN ACCORDANCE WITH ASTM D 1557.

UNDER FLOOR SLAB ON GRADE, FOOTINGS, OR GRANULAR FILL UNDER STRUCTURE

COMPACT UPPER 12 INCHES TO MINIMUM OF 95 PERCENT RELATIVE COMPACTION AS DETERMINED IN ACCORDANCE WITH ASTM D 1557.

ENGINEERED FILLS

WHEN ENGINEERED FILL IS REQUIRED BY GEOTECHNICAL ENGINEER, IT SHALL BE TESTED AND INSPECTED BY GEOTECHNICAL ENGINEER.

EXPANSIVE SOILS

IF THE BUILDING OFFICAL OR GEOTECHNICAL ENGINEER DETERMINES THAT THE EXPANSIVE SOILS OR OTHER GEOLOGIC ISSUES OF CONCERN MAY BE PRESENT, THEN HE/SHE MAY REQUIRE THAT SPECIAL PROVISIONS MADE TO THE FOUNDATION DESIGN TO SAFEGUARD AGAINST DAMAGE DUE TO THE EXPANSIVENESS OR OTHER GEOLOGIC ISSUES. IF THIS BECOMES THE SITUATION THAN ALL FOUNDATION CONSTRUCTION MUST BE HALTED AND THE GEOTECHNICAL ENGINEER SHALL PROVIDE A GEOTECHNICAL REPORT WITH RECOMMENDATIONS IN CONSIDERATION OF THE CONDITIONS.

STRUCTURAL STEEL

(SPEC. SECT. 05 12 00)

DESIGN DATA

SPECIFICATIONS - AISC MANUAL OF STEEL CONSTRUCTION, ALLOWABLE STRESS DESIGN, 15th EDITION

DESIGN

- AISC TYPE *2 SIMPLE

FRAMING CONSTRUCTION

WIDE FLANGE SHAPES - ASTM A992 (fy = 50KSI)

CHANNELS, PLATES & ANGLES - ASTM A36 (fy=36 KSI)

STRUCTURAL PIPES - ASTM A53, GRADE B

STRUCTURAL TUBES - ASTM A500, GRADE B (46 KSI)

WELDING - AWS E70 ELECTRODES

HIGH STRENGTH BOLTS - ASTM A325-SC CLASS A, 3/4 INCH DIAMETER UNLESS OTHERWISE NOTED. SUFFIX SC FOLLOWING ASTM DESIGNATION DENOTES A SLIP-CRITICAL CONNECTION

COMMON BOLTS - ASTM A307, UNLESS OTHERWISE INDICATED

ANCHOR BOLTS - ASTM F 1554 GRADE 36 THREADED RODS WITH HEAVY HEX NUTS AND WASHERS UNLESS OTHERWISE INDICATED

ADHESIVE ANCHORS - SPEC 05 50 00

EXPANSION ANCHORS - SPEC 05 50 00

STAINLESS STEEL

DESIGN DATA

SPECIFICATION - ALLOY TYPES CONFORM TO ASTM A-167 & ASTM A-276

PLATES & SHAPES - TYPE 316 UNLESS OTHERWISE NOTED

BOLTS, NUTS, & WASHERS - TYPE 316

ALUMINIUM

SPECIFICATION - ASTM-6061-T6 ALLOY, UNLESS OTHERWISE NOTED

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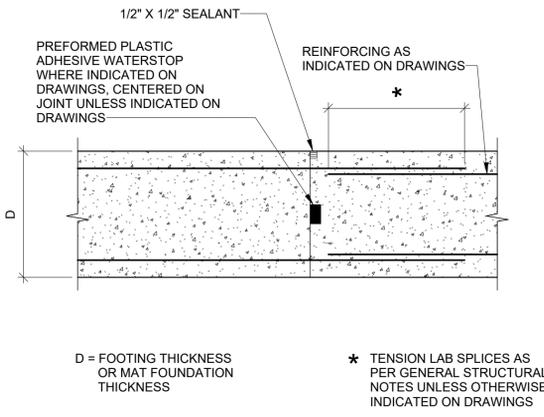


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0	08/26/25	INTERMEDIATE (60%) DESIGN													

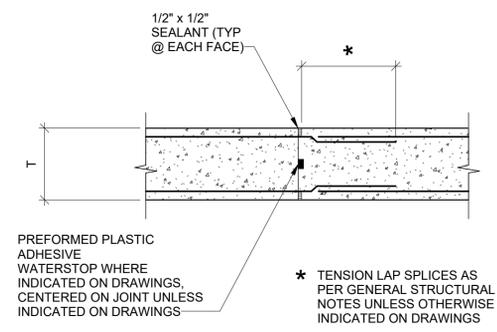
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	SUPV
	DSGN
	DWN
	CHKD
	OK
DATE	
SCALES	
AS SHOWN	

TOPOCK GROUNDWATER REMEDIATION PROJECT
GENERAL STRUCTURAL NOTES
(SHEET 1 OF 3)
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

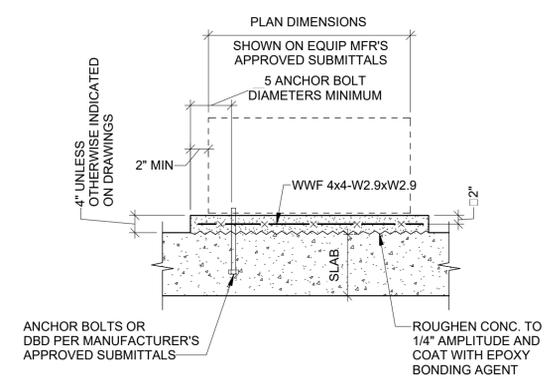
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BILL OF MATL	
DWG LIST	
SUPSDS	
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SHEET NO.	of SHEETS
S-08-20	REV 1



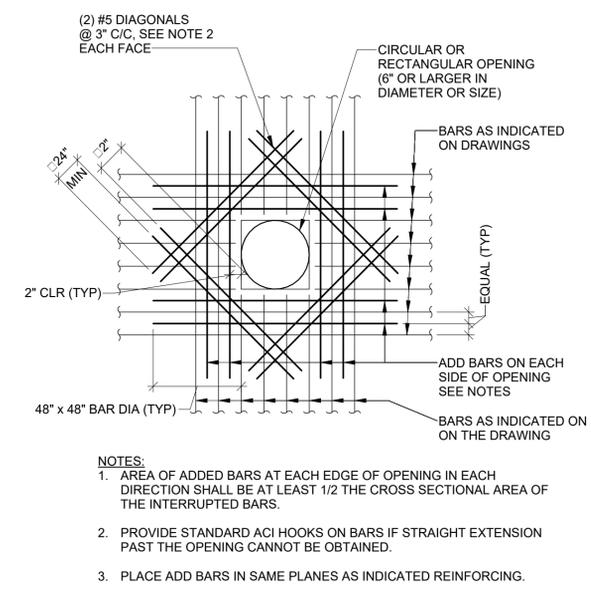
1 SLAB, FOOTING AND THICKENED SLAB EDGE
BASE SLAB CONSTRUCTION JOINT
NTS



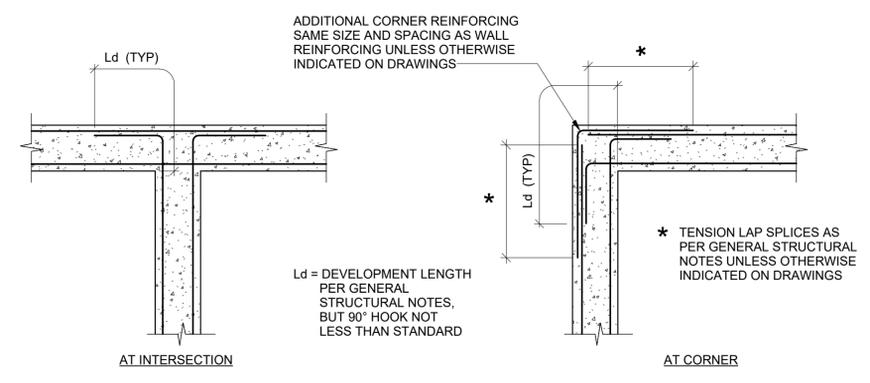
2 WALL VERTICAL CONSTRUCTION JOINT
NTS



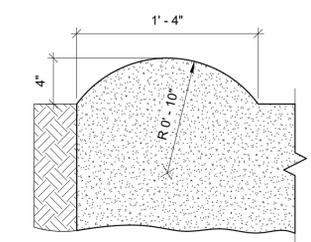
3 EQUIPMENT PAD DETAIL
NTS



4 OPENING REINFORCEMENT DETAIL
NTS



5 DOUBLE REINFORCING WALL DETAIL
NTS



6 ROLLED CURB DETAIL
NTS

PRE-FINAL
DESIGN FOR
AGENCY REVIEW
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CONSTRUCTION



REVISIONS				REVISIONS											
No.	Date	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	No.	Date	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
1	11/12/25	PRE-FINAL (90%) PHASE 2B DESIGN													
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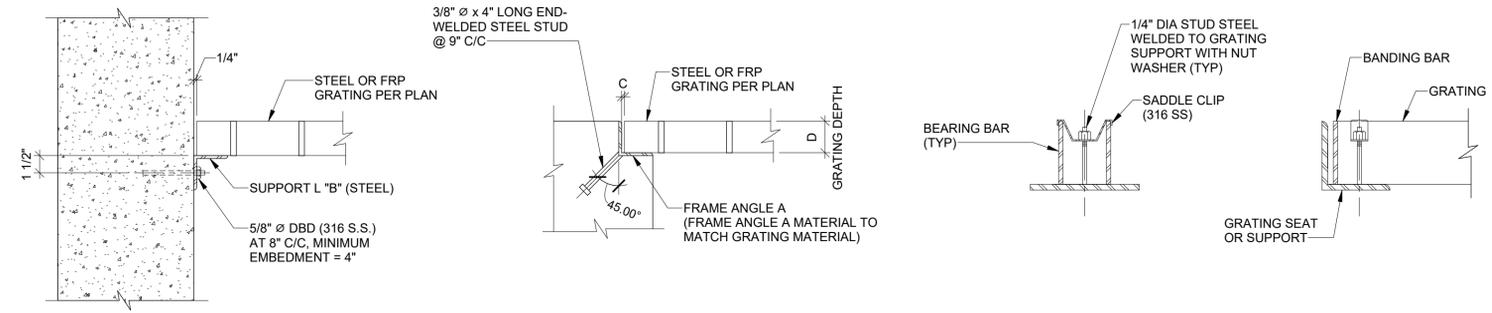
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	CHKD
	OK
DATE	
SCALES	
AS SHOWN	

TOPOCK GROUNDWATER REMEDIATION PROJECT
GENERAL STRUCTURAL DETAILS
(SHEET 2 OF 3)
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
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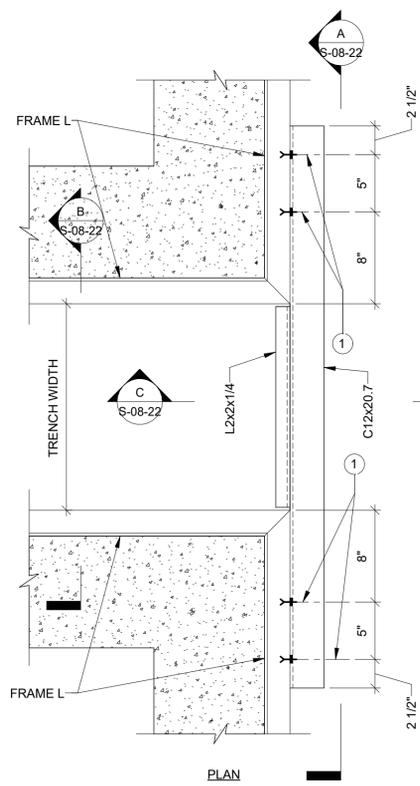
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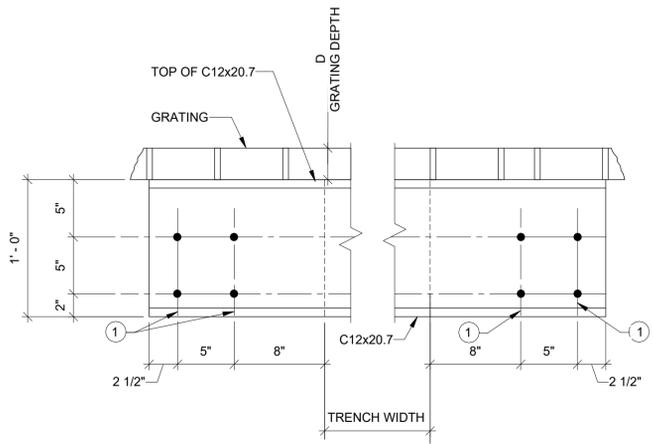
NOTES:
1. PROVIDE 4 CLIPS PER GRATING PANEL APPROXIMATELY 4 INCHES FROM PANEL CORNERS. MAXIMUM CLIP SPACINGS = 36 INCHES OC.

GRATING DEPTH = D IN	FRAME L "A"	SUPPORT L "B"	DIM "C"
3"	L 3 1/2 x 3 1/2" x 1/2"	L 3 x 3 x 1/2"	3/8"

1 GRATING SUPPORT DETAIL
NTS

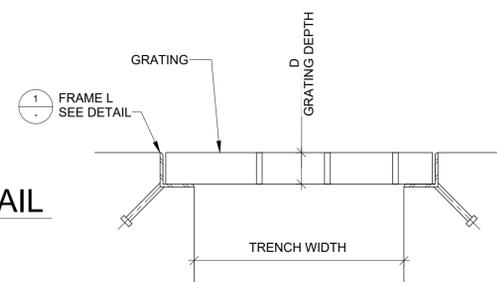


2 GRATING SUPPORT CHANNEL DETAIL
NTS

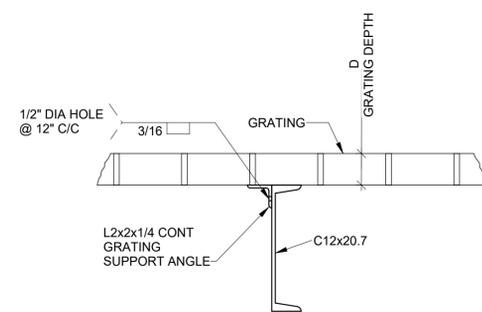


KEY NOTES
1. USE (4) - 3/4" DIA (316 SS) ADHESIVE ANCHORS W/ 7" EMBEDMENT EACH END OF C12.
2. ALL GRATING SUPPORT MEMBERS (ANGLES, CHANNELS, HARDWARE, ETC.) TO BE HOT-DIPPED GALVANIZED TO ASTM A123.

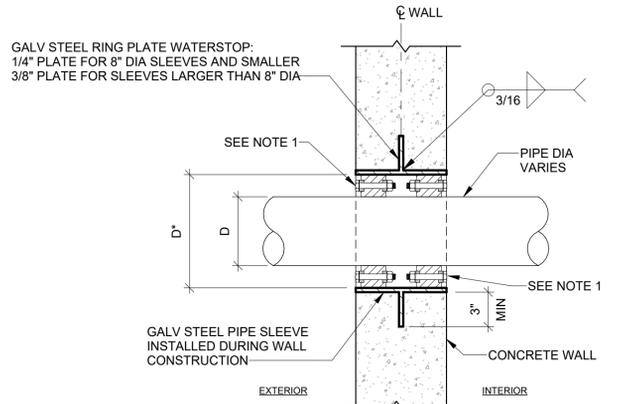
A SECTION
S-08-22 NTS



B SECTION
S-08-22 NTS

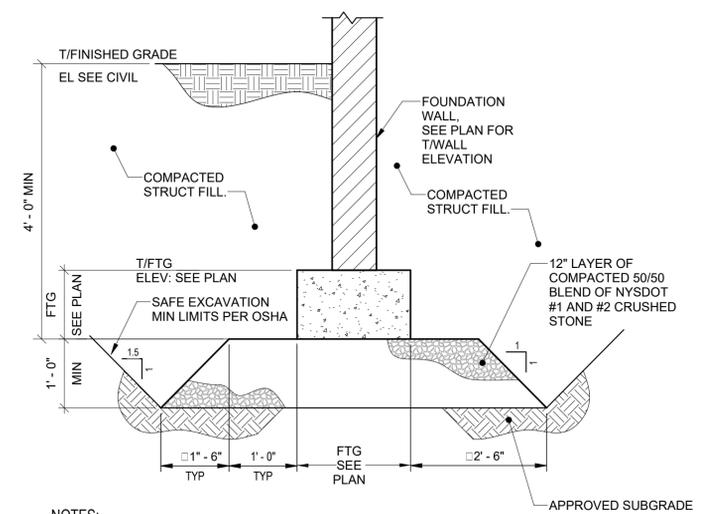


C SECTION
S-08-22 NTS



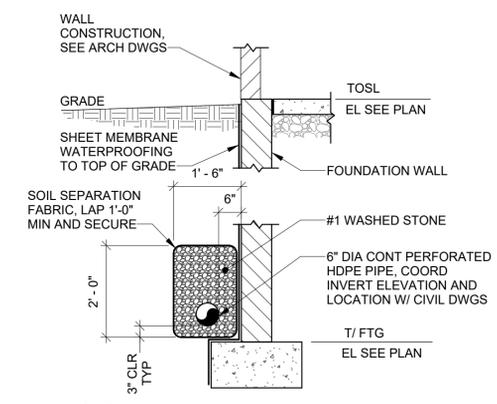
NOTES:
1. SEAL GAP BETWEEN PIPE AND PIPE SLEEVE WATER TIGHT WITH "LINK - SEAL" OR EQUAL.
2. INSTALL SECOND "LINK - SEAL" OR EQUAL IF WALL DEPTH PERMITS.
3. D = NOMINAL PIPE SIZE DIAMETER
4. D* = D + 2x "LINK - SEAL" ANNULAR SPACE.
5. REFERENCE OTHER DISCIPLINE DRAWINGS FOR QUANTITIES AND LOCATIONS.

3 TYPICAL LINK SEAL AND PIPE SLEEVE THRU FOUNDATION WALL
NTS



NOTES:
1. SUBGRADE SHALL BE INSPECTED AND APPROVED BY GEOTECHNICAL ENGINEER PRIOR TO PLACING COMPACTED FILL

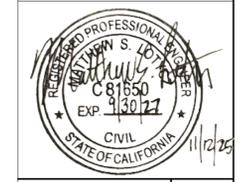
4 TYPICAL FOUNDATION EXCAVATION / BACKFILL REQUIREMENTS
NTS



NOTES:
1. SEE PLAN AND RELATED DETAILS FOR FOUNDATION AND SLAB REINFORCING REQUIREMENTS

5 TYPICAL FOUNDATION WATERPROOFING / DRAIN DETAIL
NTS

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



11/12/2025 2:19:04 PM Autodesk Docs/ANNA - 3019125 - RCO0763.050 - Needles CA - Topock Construction & Closeout DOR Svcs-S-3D-TPK_R24.rvt



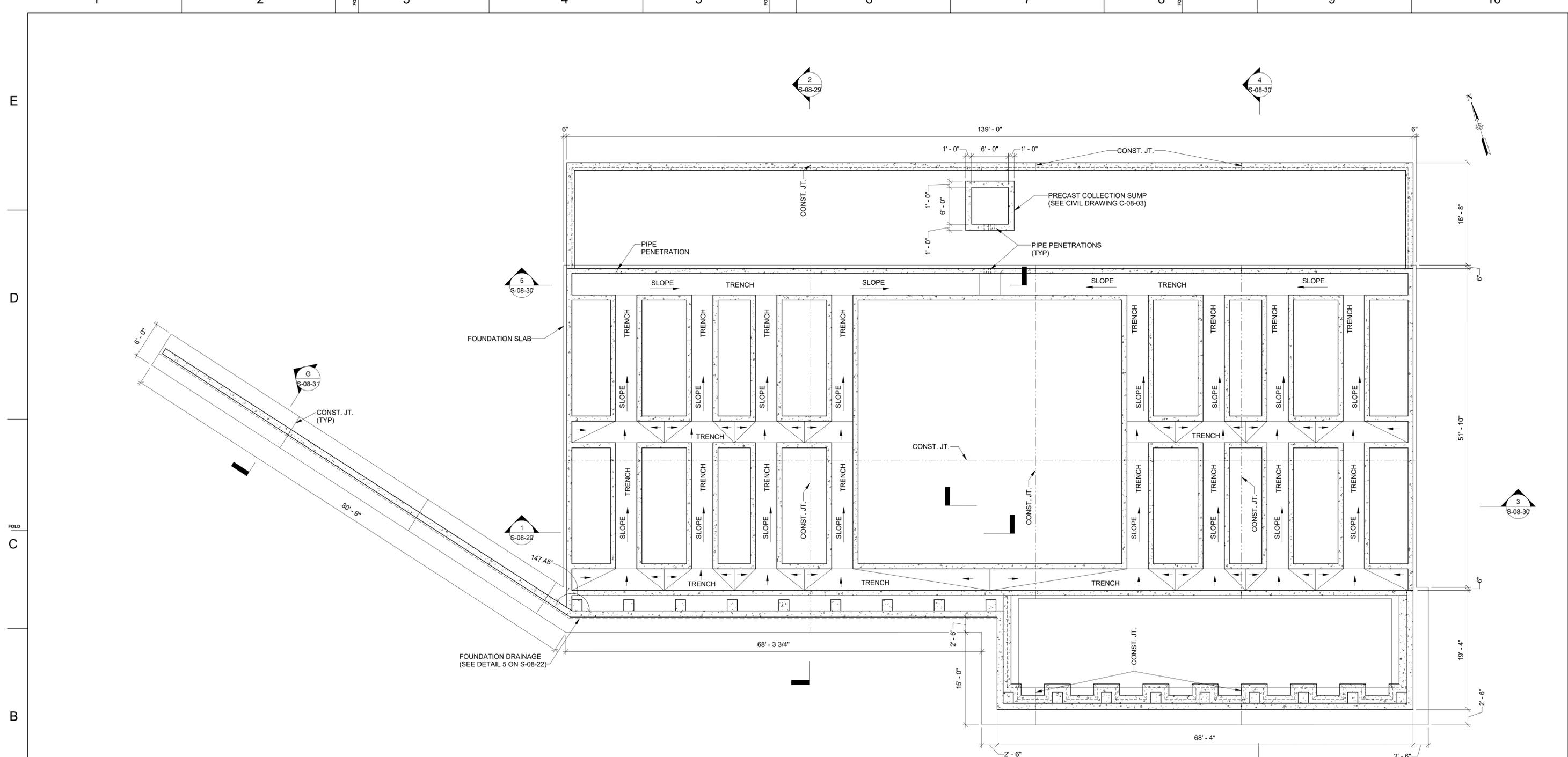
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0	08/26/25	INTERMEDIATE (60%) DESIGN													

APPROVED BY	SO
	SUPV
	DSGN
	DWN
	CHKD
	OK
DATE	
SCALE	
AS SHOWN	

TOPOCK GROUNDWATER REMEDIATION PROJECT
GENERAL STRUCTURAL DETAILS
(SHEET 3 OF 3)
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

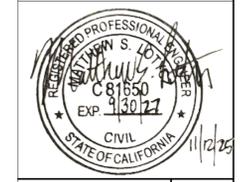
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BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-22	1

11/12/2025 2:19:05 PM
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1 OVERALL FOUNDATION PLAN
 SCALE: 1/8" = 1'-0"
 0' 4' 8' 16'

PRE-FINAL
 DESIGN FOR
 AGENCY REVIEW
 ONLY - NOT FOR
 CONSTRUCTION



No.	Date	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	No.	Date	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
1	11/12/25	PRE-FINAL (90%) PHASE 2B DESIGN													
0	08/26/25	INTERMEDIATE (60%) DESIGN													

APPROVED BY	SO
	SUPV
	DSGN
	DWN
	CHKD
	OK
DATE	
SCALES	AS SHOWN

TOPOCK GROUNDWATER REMEDIATION PROJECT
OVERALL FOUNDATION PLAN
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-23	REV 1

KEY NOTES:

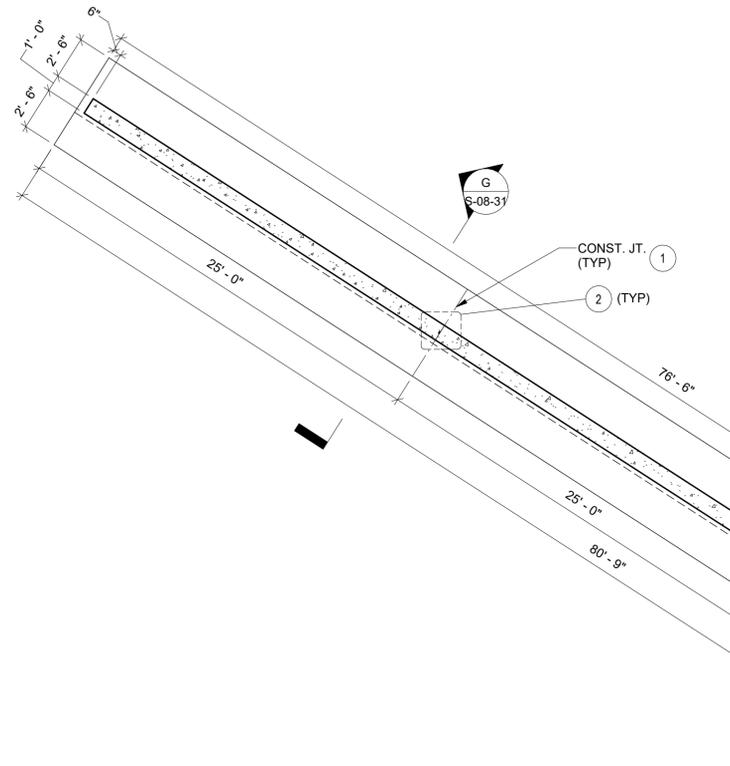
- ① BASE SLAB, FOOTING AND THICKENED SLAB CONSTRUCTION JOINT WITH PREFORMED PLASTIC ADHESIVE WATERSTOP. SEE DETAIL 1 ON S-08-21.
- ② WALL VERTICAL CONSTRUCTION JOINT WITH PREFORMED PLASTIC ADHESIVE WATERSTOP. SEE DETAIL 2 ON S-08-21.
- ③ FILL SPACE BETWEEN TOP OF 1'-3" THICK BASE SLAB (TOP OF BASE SLAB @ EL 535.42) AND BELOW SLAB-ON-GRADE WITH CONTROLLED DENSITY FILL (CDF). SEE SPECIFICATION SECTION 31 23 23.
- ④ DOUBLE REINFORCING WALL DETAIL, SEE DETAIL 5 ON S-08-21.
- ⑤ ELASTO DECK WATERPROOFING TO BE APPLIED ON EXTERIOR VERTICAL FACES OF CONCRETE AT 90 MILS.

→ SLOPE DIRECTION

NOTES:

- 1. FOR GENERAL NOTES, SEE DWG. S-08-20.
- 2. COORDINATE PIPE PENETRATION SIZE AND LOCATIONS WITH MECHANICAL DRAWINGS.

E
D
C
B
A



(1) 2" HDPE PIPE PENETRATION (SEE MECHANICAL DRAWINGS AND DETAIL 3 ON S-08-22). PIPE INVERT EL 535.97

(2) 4" HDPE PIPE PENETRATIONS (SEE MECHANICAL DRAWINGS AND DETAIL 3 ON S-08-22). PIPE INVERT EL 535.67.

(1) 2" HDPE PIPE PENETRATION (SEE MECHANICAL DRAWINGS AND DETAIL 3 ON S-08-22). PIPE INVERT EL 535.67.

FOUNDATION DRAINAGE (SEE DETAIL 5 ON S-08-22)

1'-8"x1'-10" CONCRETE PIER UNDER CANOPY COLUMNS (TYP @ CANOPY COLUMNS ALONG RETAINING WALL)

1 FOUNDATION PLAN - WEST HALF

SCALE: 3/16" = 1'-0"



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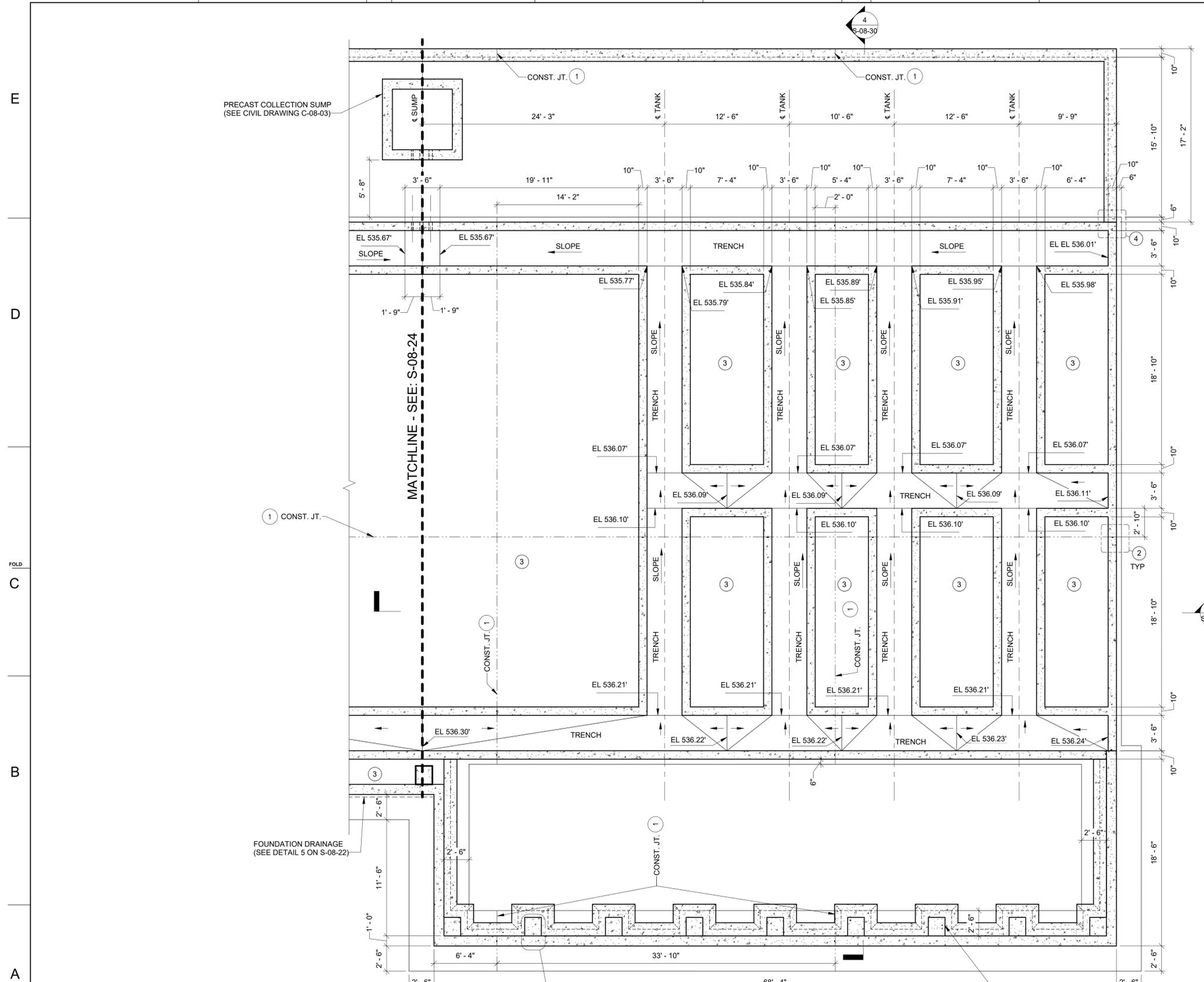
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APPROVED BY	SO
	SUPV
	DSGN
	DWN
	CHKD
	OK
	OK
DATE	
SCALE	AS SHOWN

TOPOCK GROUNDWATER REMEDIATION PROJECT
FOUNDATION PLAN - WEST HALF
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-24	REV 1

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- KEY NOTES:**
1. BASE SLAB, FOOTING AND THICKENED SLAB CONSTRUCTION JOINT WITH PREFORMED PLASTIC ADHESIVE WATERSTOP. SEE DETAIL 1 ON S-08-21.
 2. WALL VERTICAL CONSTRUCTION JOINT WITH PREFORMED PLASTIC ADHESIVE WATERSTOP. SEE DETAIL 2 ON S-08-21.
 3. FILL SPACE BETWEEN TOP OF 1'-3" THICK BASE SLAB (TOP OF BASE SLAB @ EL 535.42) AND BELOW SLAB-ON-GRADE WITH CONTROLLED DENSITY FILL (CDF). SEE SPECIFICATION SECTION 31 23 23.
 4. DOUBLE REINFORCING WALL DETAIL, SEE DETAIL 5 ON S-08-21.
 5. ELASTO DECK WATERPROOFING TO BE APPLIED ON EXTERIOR VERTICAL FACES OF CONCRETE AT 90 MILS.
- SLOPE DIRECTION

- NOTES:**
1. FOR GENERAL NOTES, SEE DWG. S-08-20.
 2. COORDINATE PIPE PENETRATION SIZE AND LOCATIONS WITH MECHANICAL DRAWINGS.

1 FOUNDATION PLAN - EAST HALF
SCALE: 3/16" = 1'-0"

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



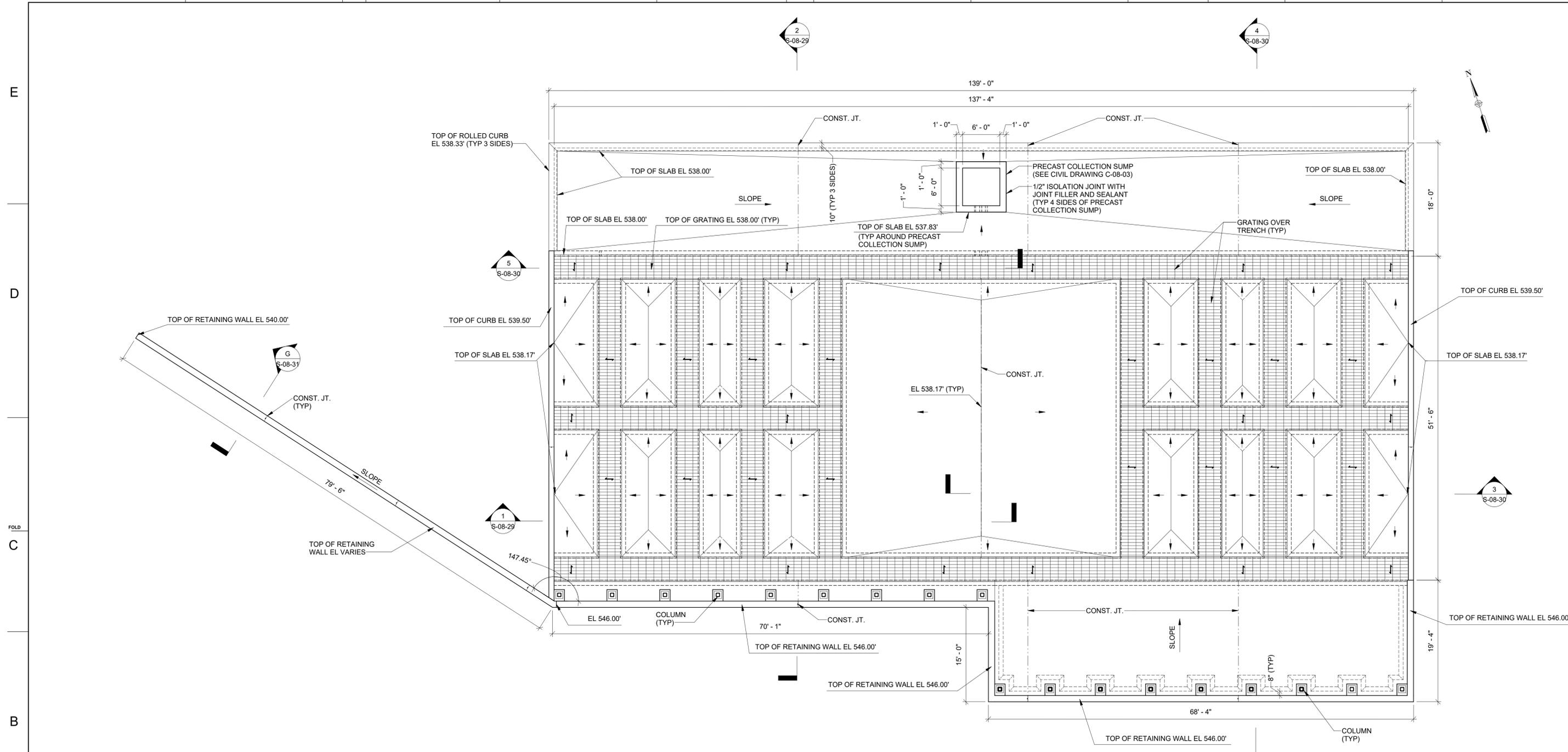
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APPROVED BY	SO
	SUPV
	DSGN
	DWN
	CHKD
	OK
DATE	
SCALES	
AS SHOWN	

TOPOCK GROUNDWATER REMEDIATION PROJECT
FOUNDATION PLAN - EAST HALF
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

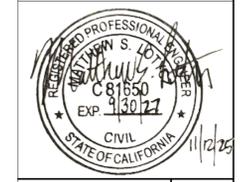
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SUPSDS	
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SHEET NO.	of SHEETS
S-08-25	REV 1

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

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



No.	Date	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	No.	Date	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
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APPROVED BY	SO
	SUPV
	DSGN
	DWN
	CHKD
	OK
DATE	
SCALES	
AS SHOWN	

TOPOCK GROUNDWATER REMEDIATION PROJECT
OVERALL FLOOR PLAN
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

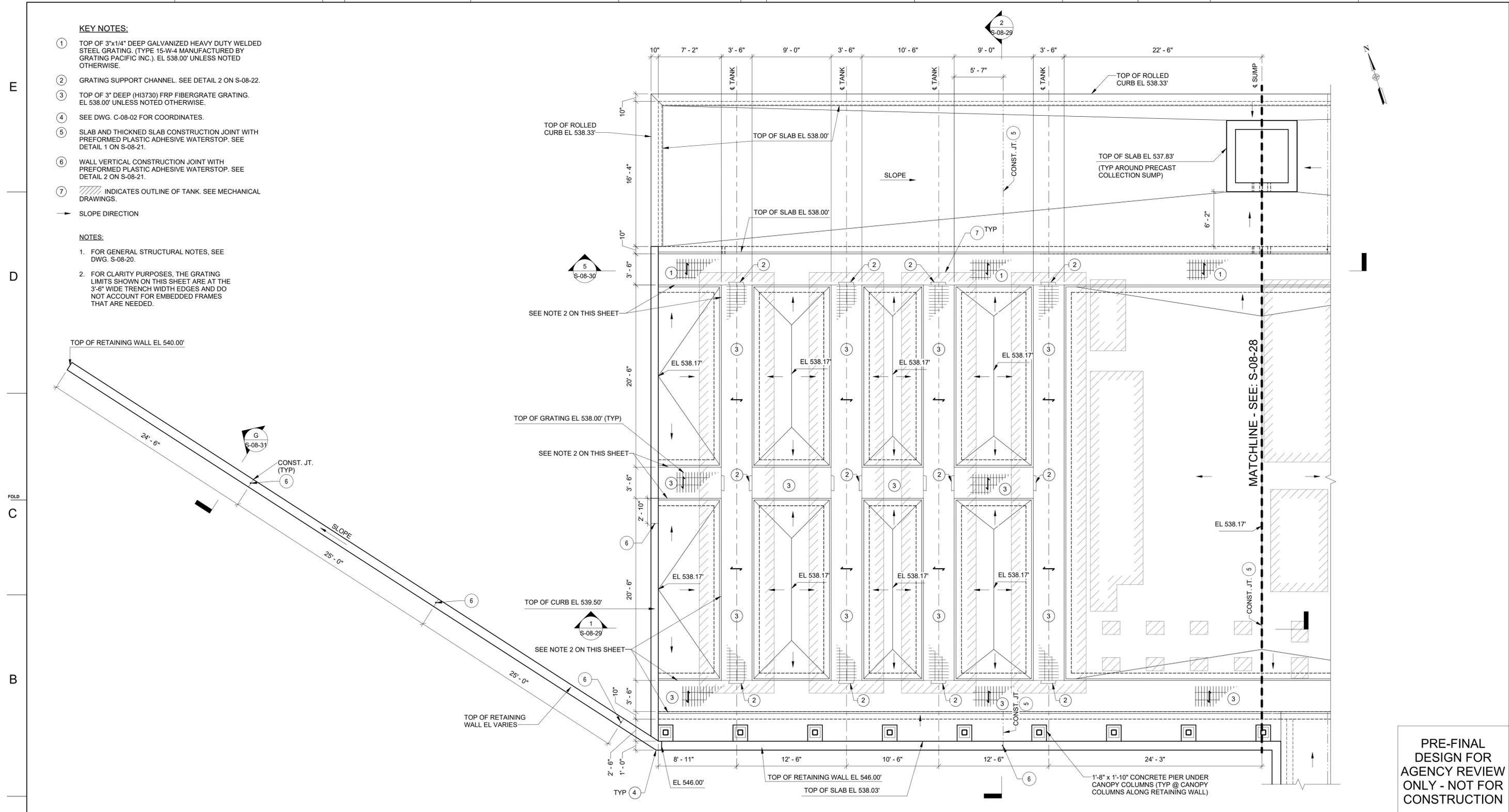
MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-26	REV 1

KEY NOTES:

- ① TOP OF 3"x1/4" DEEP GALVANIZED HEAVY DUTY WELDED STEEL GRATING. (TYPE 15-W-4 MANUFACTURED BY GRATING PACIFIC INC.). EL 538.00' UNLESS NOTED OTHERWISE.
 - ② GRATING SUPPORT CHANNEL. SEE DETAIL 2 ON S-08-22.
 - ③ TOP OF 3" DEEP (H13730) FRP FIBERGRATE GRATING. EL 538.00' UNLESS NOTED OTHERWISE.
 - ④ SEE DWG. C-08-02 FOR COORDINATES.
 - ⑤ SLAB AND THICKED SLAB CONSTRUCTION JOINT WITH PREFORMED PLASTIC ADHESIVE WATERSTOP. SEE DETAIL 1 ON S-08-21.
 - ⑥ WALL VERTICAL CONSTRUCTION JOINT WITH PREFORMED PLASTIC ADHESIVE WATERSTOP. SEE DETAIL 2 ON S-08-21.
 - ⑦ INDICATES OUTLINE OF TANK. SEE MECHANICAL DRAWINGS.
- SLOPE DIRECTION

NOTES:

- 1. FOR GENERAL STRUCTURAL NOTES, SEE DWG. S-08-20.
- 2. FOR CLARITY PURPOSES, THE GRATING LIMITS SHOWN ON THIS SHEET ARE AT THE 3'-6" WIDE TRENCH WIDTH EDGES AND DO NOT ACCOUNT FOR EMBEDDED FRAMES THAT ARE NEEDED.



1 FLOOR PLAN - WEST HALF
 SCALE: 3/16" = 1'-0"

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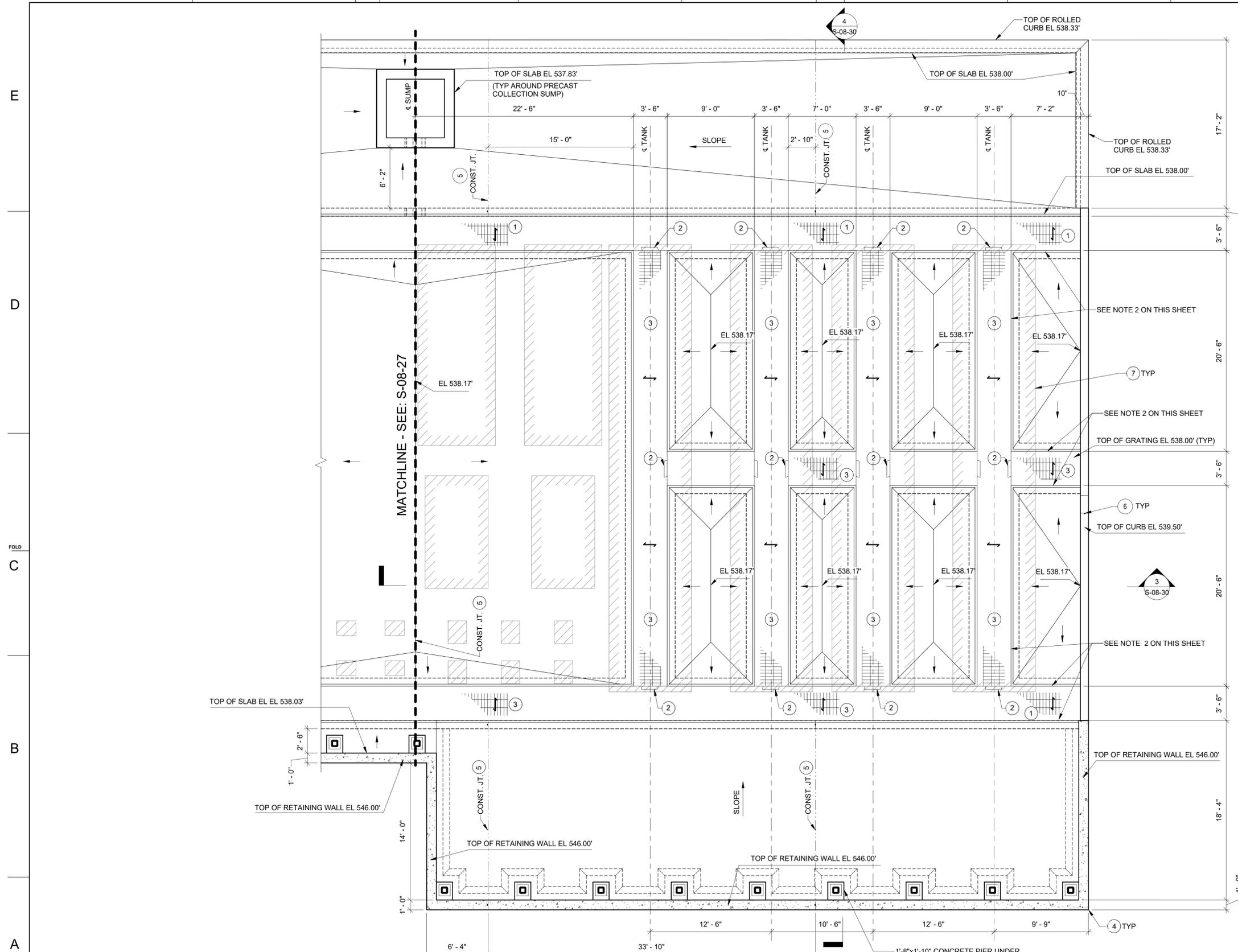
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0	08/26/25	INTERMEDIATE (60%) DESIGN													

APPROVED BY	SO
	SUPV
	DSGN
	DWN
	CHKD
	OK
DATE	
SCALES	AS SHOWN

TOPOCK GROUNDWATER REMEDIATION PROJECT
FLOOR PLAN - WEST HALF
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-27	REV 1

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- KEY NOTES:**
- ① TOP OF 3"x1/4" DEEP GALVANIZED HEAVY DUTY WELDED STEEL GRATING. (TYPE 15-W-4 MANUFACTURED BY GRATING PACIFIC INC.) EL 538.00' UNLESS NOTED OTHERWISE.
 - ② GRATING SUPPORT CHANNEL. SEE DETAIL 2 ON S-08-22.
 - ③ TOP OF 3" DEEP (H13730) FRP FIBERGRATE GRATING. EL 538.00' UNLESS NOTED OTHERWISE.
 - ④ SEE DWG. C-08-02 FOR COORDINATES.
 - ⑤ SLAB AND THICKENED SLAB CONSTRUCTION JOINT WITH PREFORMED PLASTIC ADHESIVE WATERSTOP. SEE DETAIL 1 ON S-08-21.
 - ⑥ WALL VERTICAL CONSTRUCTION JOINT WITH PREFORMED PLASTIC ADHESIVE WATERSTOP. SEE DETAIL 2 ON S-08-21.
 - ⑦ INDICATES OUTLINE OF TANK. SEE MECHANICAL DRAWINGS.
- SLOPE DIRECTION

- NOTES:**
- 1. FOR GENERAL STRUCTURAL NOTES, SEE DWG. S-08-20.
 - 2. FOR CLARITY PURPOSES, THE GRATING LIMITS SHOWN ON THIS SHEET ARE AT THE 3'-6" WIDE TRENCH WIDTH EDGES AND DO NOT ACCOUNT FOR EMBEDDED FRAMES THAT ARE NEEDED.

1 FLOOR PLAN - EAST HALF
SCALE: 3/16" = 1'-0"

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION

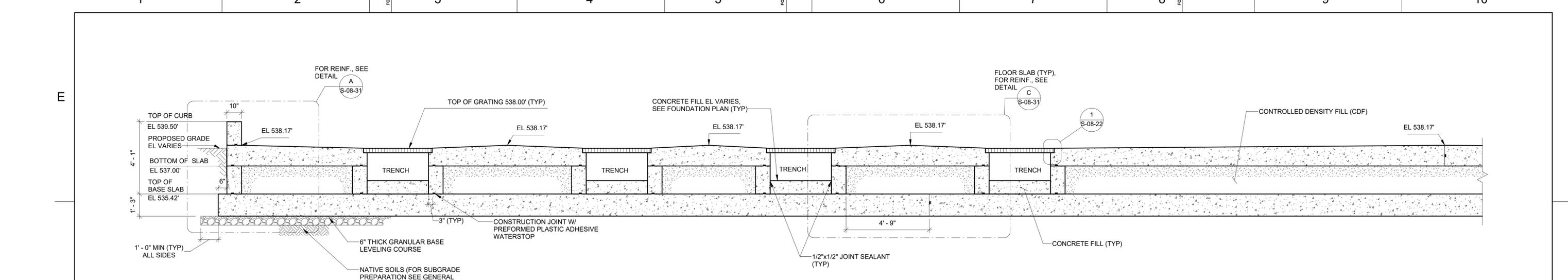


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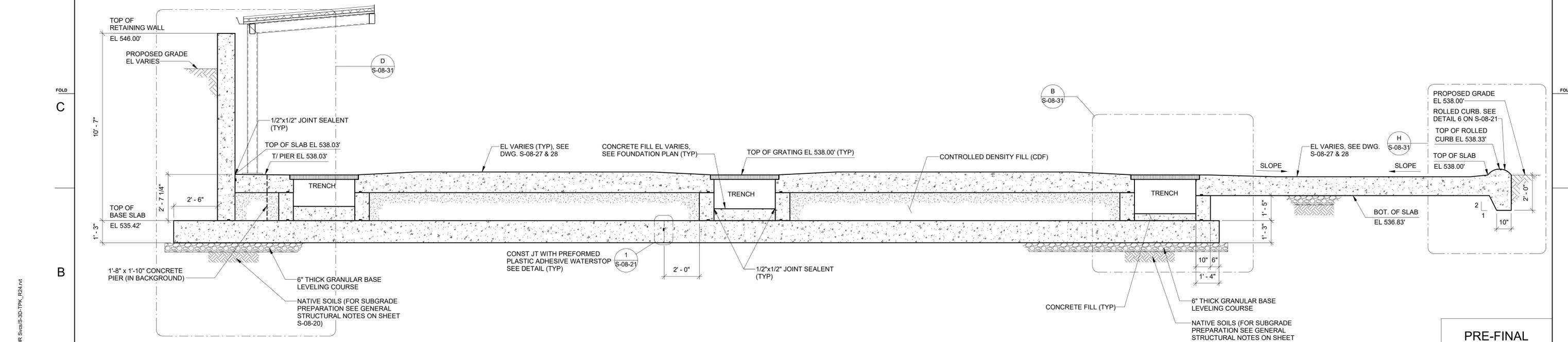
APPROVED BY	SO
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	DSGN
	DWN
	CHKD
	OK
DATE	
SCALES	
AS SHOWN	

TOPOCK GROUNDWATER REMEDIATION PROJECT
FLOOR PLAN - EAST HALF
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-28	1



1 SECTION
 S-08-23 SCALE: 3/8" = 1'-0"
 S-08-24
 S-08-26
 S-08-27



2 SECTION
 S-08-23 SCALE: 3/8" = 1'-0"
 S-08-24
 S-08-26
 S-08-27

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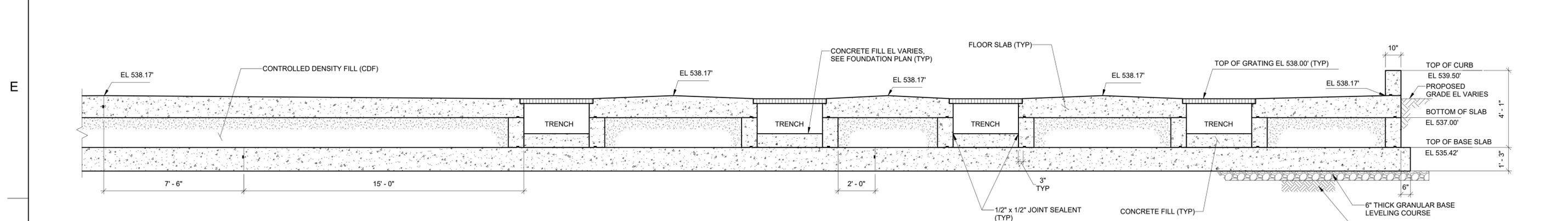


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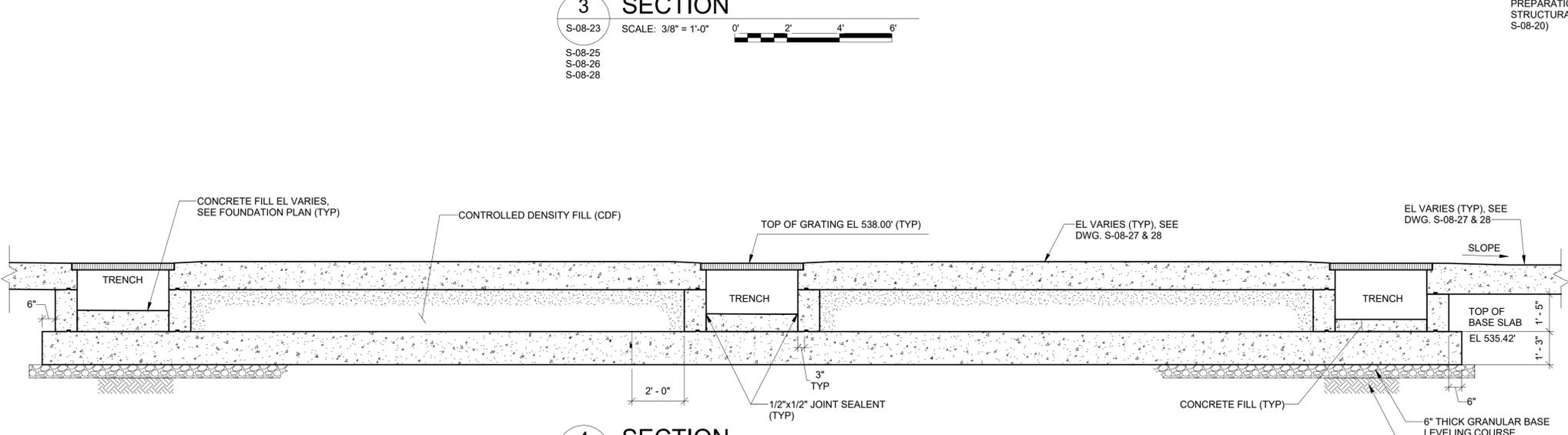
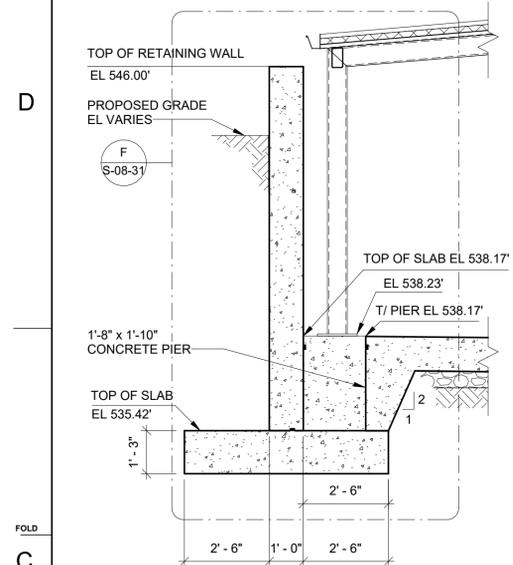
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	SUPV
	DSGN
	DWN
	CHKD
	OK
DATE	
SCALES	
AS SHOWN	

TOPOCK GROUNDWATER REMEDIATION PROJECT
OVERALL SECTIONS SHEET 1 OF 2
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

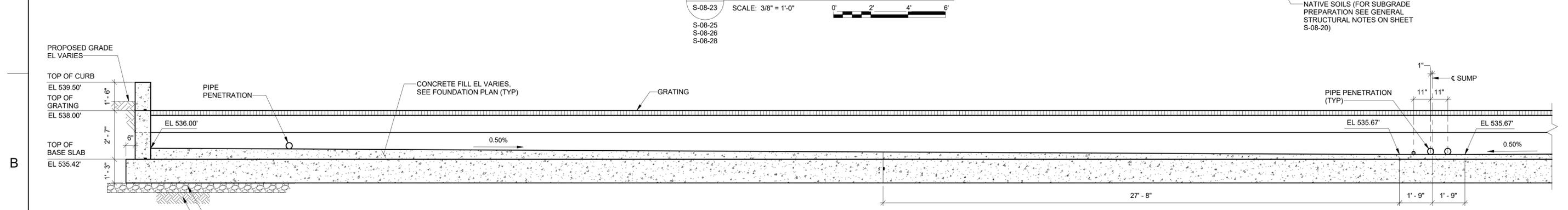
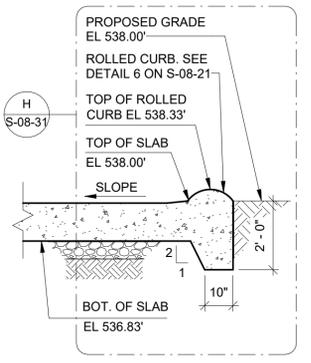
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BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-29	1



3 SECTION
 S-08-23 SCALE: 3/8" = 1'-0"
 S-08-25
 S-08-26
 S-08-28



4 SECTION
 S-08-23 SCALE: 3/8" = 1'-0"
 S-08-25
 S-08-26
 S-08-28



5 SECTION
 S-08-23 SCALE: 3/8" = 1'-0"
 S-08-24
 S-08-26
 S-08-27

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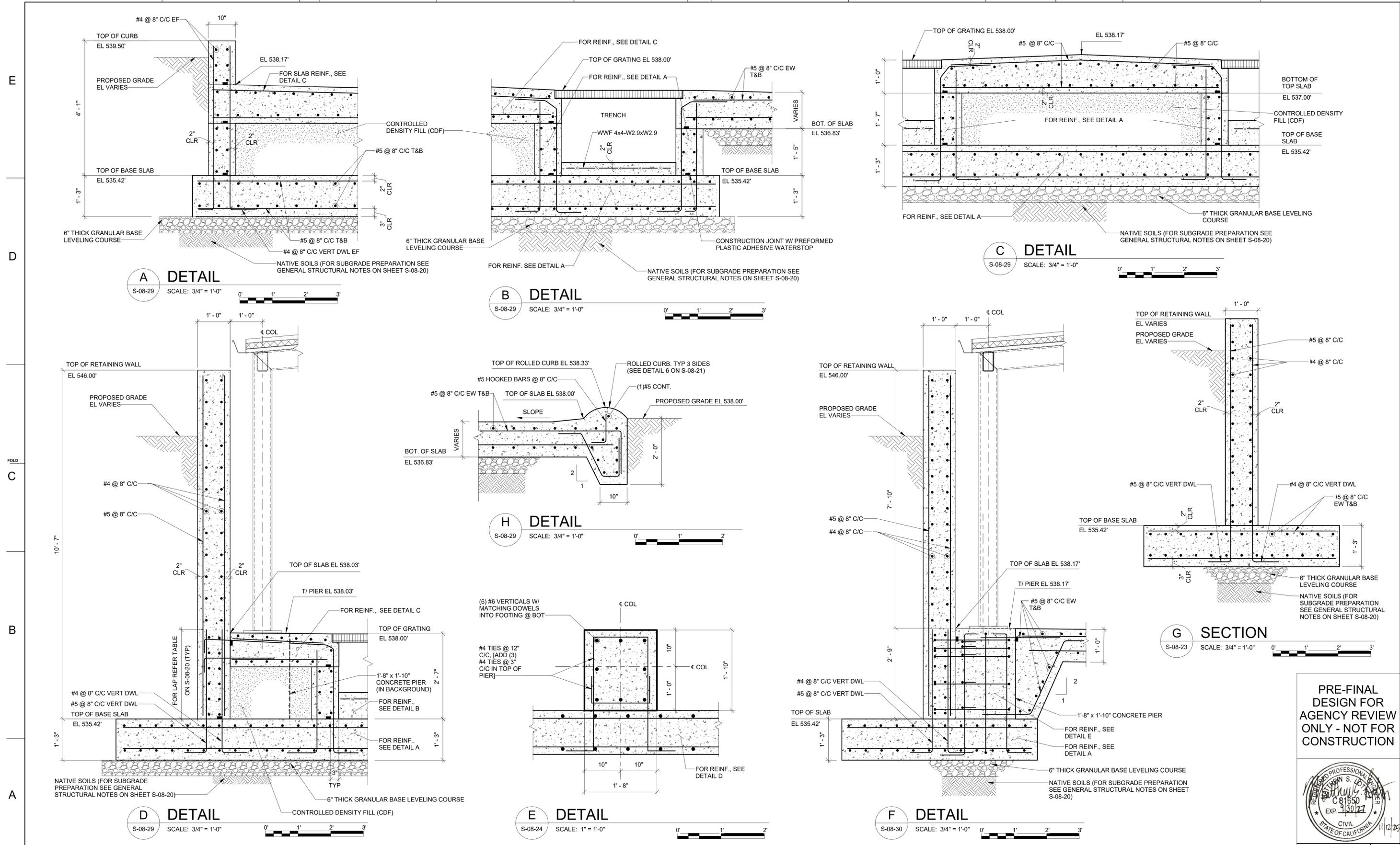
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APPROVED BY	SO
	SUPV
	DSGN
	DWN
	CHKD
	OK
DATE	
SCALES	
AS SHOWN	

TOPOCK GROUNDWATER REMEDIATION PROJECT
OVERALL SECTIONS SHEET 2 OF 2
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-30	REV 1

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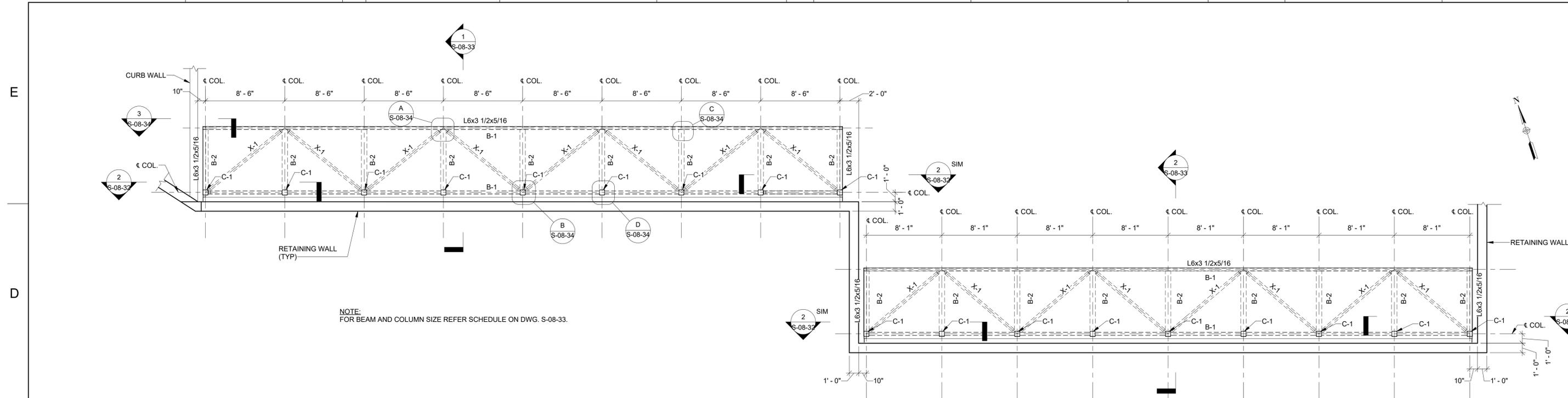
REGISTERED PROFESSIONAL ENGINEER
 State of California
 CIVIL
 No. 81550
 Exp. 1/30/27
 11/12/25



No.	Date	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	No.	Date	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
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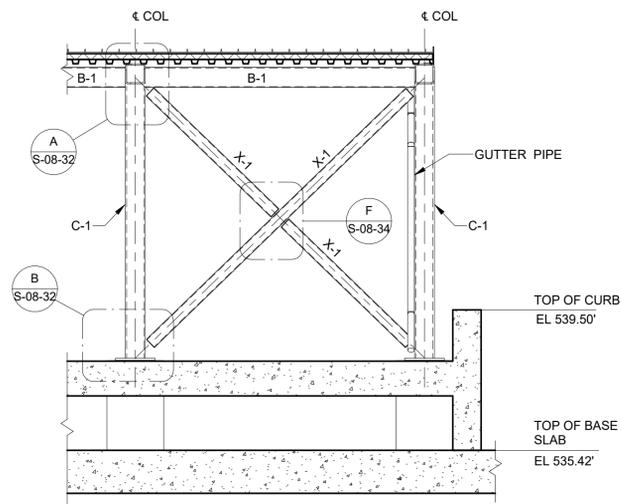
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	CHKD	
	OK	
DATE		
SCALES		
AS SHOWN		

BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-31	1

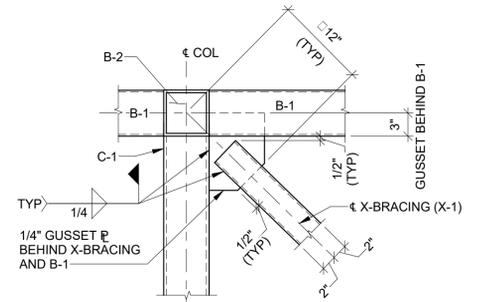


NOTE:
FOR BEAM AND COLUMN SIZE REFER SCHEDULE ON DWG. S-08-33.

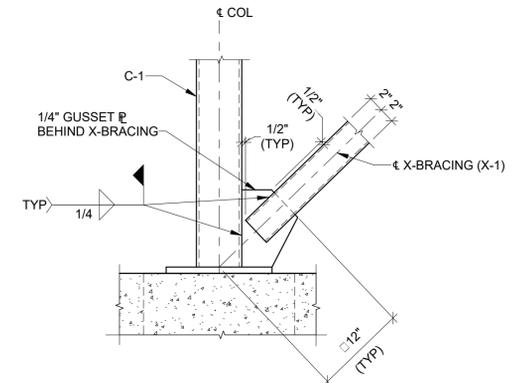
1 CANOPY PLAN
SCALE: 3/16" = 1'-0"
0' 4' 8' 16'



2 SECTION
SCALE: 3/8" = 1'-0"
0' 2' 4' 6'



A DETAIL
SCALE: 1" = 1'-0"
0' 1' 2'



B DETAIL
SCALE: 1" = 1'-0"
0' 1' 2'

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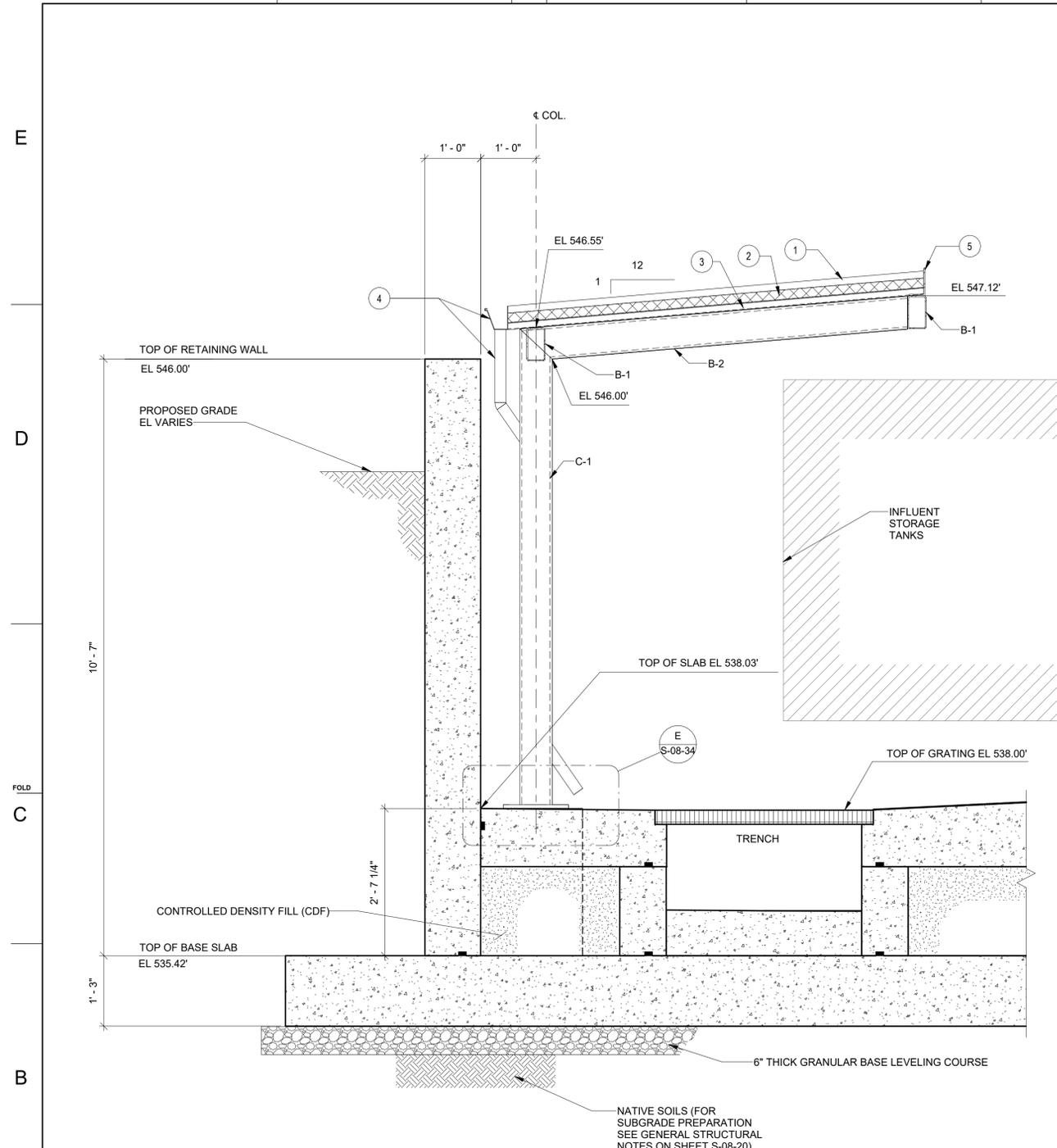
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	CHKD
	OK
DATE	
SCALE	AS SHOWN

TOPOCK GROUNDWATER REMEDIATION PROJECT
CANOPY PLAN AND SECTION
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

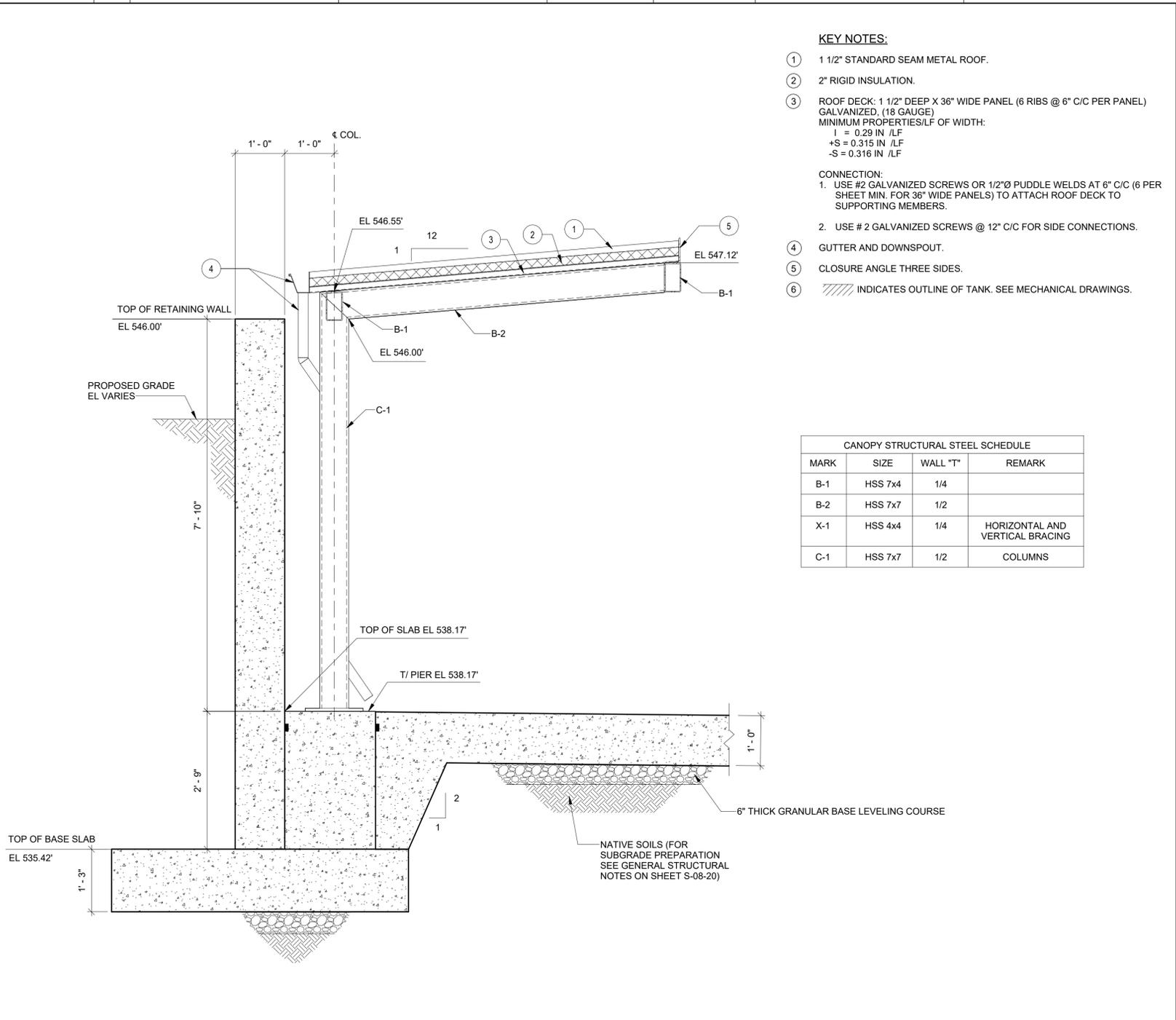
MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-32	1

- KEY NOTES:**
- ① 1 1/2" STANDARD SEAM METAL ROOF.
 - ② 2" RIGID INSULATION.
 - ③ ROOF DECK: 1 1/2" DEEP X 36" WIDE PANEL (6 RIBS @ 6" C/C PER PANEL) GALVANIZED (18 GAUGE) MINIMUM PROPERTIES/LF OF WIDTH:
I = 0.29 IN /LF
+S = 0.315 IN /LF
-S = 0.316 IN /LF
 - CONNECTION:
1. USE #2 GALVANIZED SCREWS OR 1/2"Ø PUDDLE WELDS AT 6" C/C (6 PER SHEET MIN. FOR 36" WIDE PANELS) TO ATTACH ROOF DECK TO SUPPORTING MEMBERS.
2. USE #2 GALVANIZED SCREWS @ 12" C/C FOR SIDE CONNECTIONS.
 - ④ GUTTER AND DOWNSPOUT.
 - ⑤ CLOSURE ANGLE THREE SIDES.
 - ⑥ INDICATES OUTLINE OF TANK. SEE MECHANICAL DRAWINGS.

CANOPY STRUCTURAL STEEL SCHEDULE			
MARK	SIZE	WALL "T"	REMARK
B-1	HSS 7x4	1/4	
B-2	HSS 7x7	1/2	
X-1	HSS 4x4	1/4	HORIZONTAL AND VERTICAL BRACING
C-1	HSS 7x7	1/2	COLUMNS

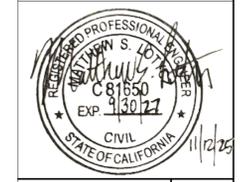


1 SECTION
S-08-32 SCALE: 3/4" = 1'-0"



2 SECTION
S-08-32 SCALE: 3/4" = 1'-0"

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION

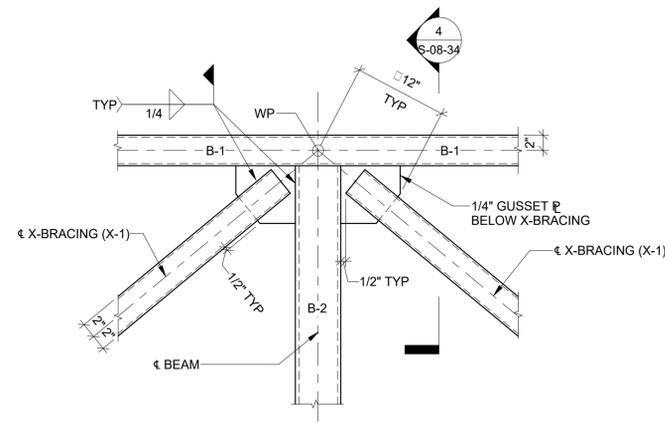


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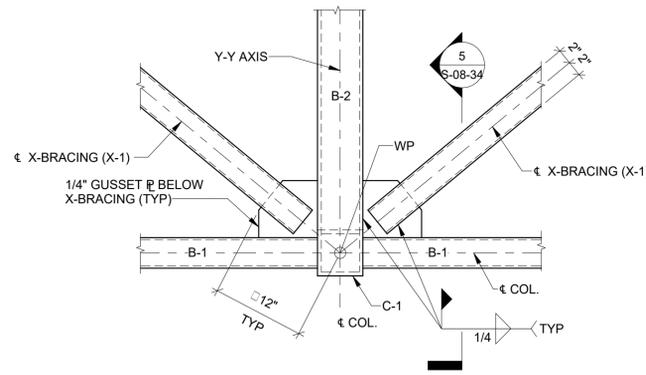
APPROVED BY	SO
	SUPV
	DSGN
	DWN
	CHKD
	OK
DATE	
SCALES	
AS SHOWN	

TOPOCK GROUNDWATER REMEDIATION PROJECT
CANOPY SECTION AND DETAILS
SHEET 1 OF 2
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

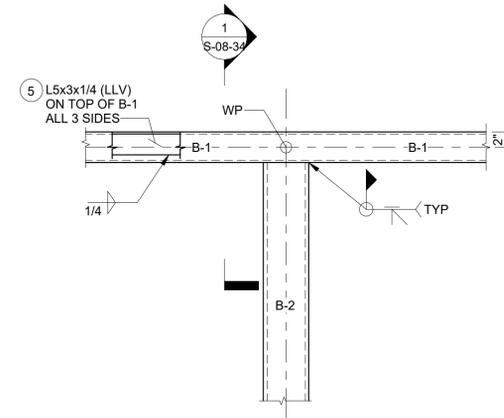
MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-33	1



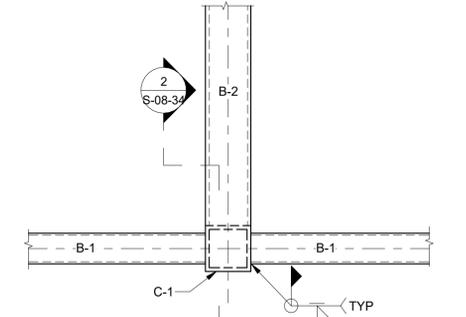
A DETAIL
S-08-32 SCALE: 1" = 1'-0"



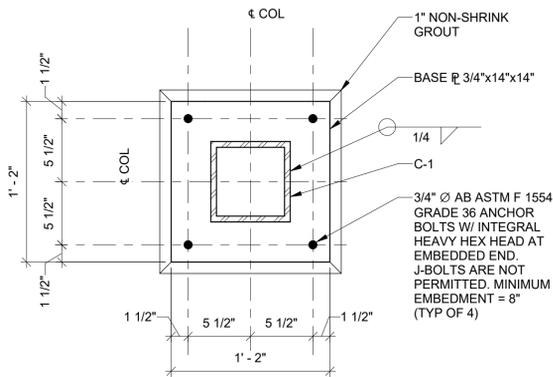
B DETAIL
S-08-32 SCALE: 1" = 1'-0"



C DETAIL
S-08-32 SCALE: 1" = 1'-0"

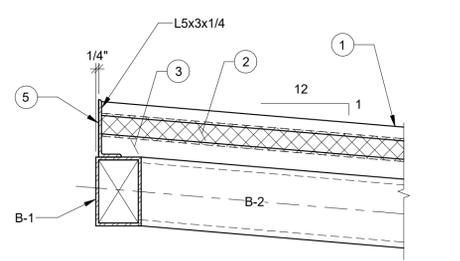


D DETAIL
S-08-32 SCALE: 1" = 1'-0"

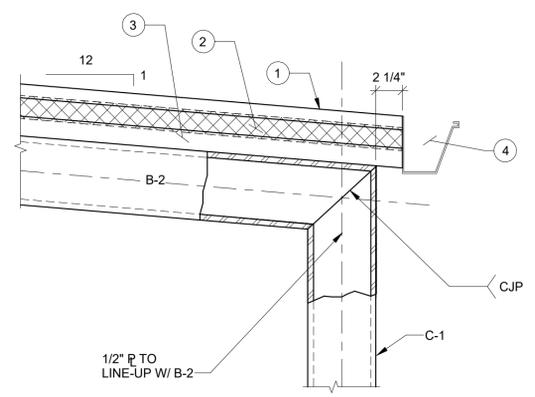


PLAN

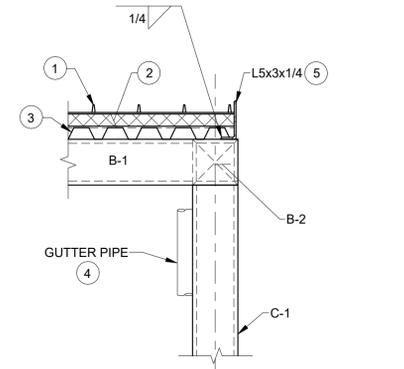
E BASE PLATE DETAIL
S-08-33 SCALE: 1 1/2" = 1'-0"



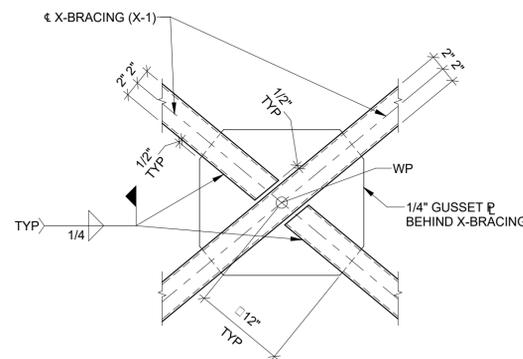
1 SECTION
S-08-34 SCALE: 1 1/2" = 1'-0"



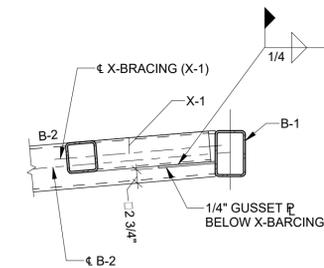
2 SECTION
S-08-34 SCALE: 1 1/2" = 1'-0"



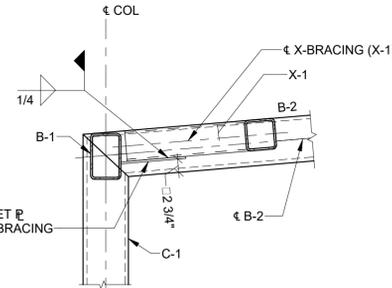
3 SECTION
S-08-32 SCALE: 1" = 1'-0"



F DETAIL
S-08-32 SCALE: 1" = 1'-0"



4 SECTION
S-08-34 SCALE: 1" = 1'-0"
(ROOF NOT SHOWN FOR CLARITY)



5 SECTION
S-08-34 SCALE: 1" = 1'-0"
(ROOF NOT SHOWN FOR CLARITY)

CANOPY STRUCTURAL STEEL SCHEDULE			
MARK	SIZE	WALL "T"	REMARK
B-1	HSS 7x4	1/4	
B-2	HSS 7x7	1/2	
X-1	HSS 4x4	1/4	HORIZONTAL AND VERTICAL BRACING
C-1	HSS 7x7	1/2	COLUMNS

- KEY NOTES:**
- 1 1/2" STANDARD SEAM METAL ROOF.
 - 2" RIGID INSULATION.
 - ROOF DECK: 1 1/2" DEEP X 36" WIDE PANEL (6 RIBS @ 6" C/C PER PANEL) GALVANIZED, (18 GAUGE) MINIMUM PROPERTIES/LF OF WIDTH:
+S = 0.29 IN /LF
-S = 0.315 IN /LF
-S = 0.316 IN /LF
- CONNECTION:**
- USE #2 GALVANIZED SCREWS OR 1/2"Ø PUDDLE WELDS AT 6" C/C (6 PER SHEET MIN. FOR 36" WIDE PANELS) TO ATTACH ROOF DECK TO SUPPORTING MEMBERS.
 - USE #2 GALVANIZED SCREWS @ 12" C/C FOR SIDE CONNECTIONS.
 - GUTTER AND DOWNSPOUT.
 - CLOSURE ANGLE THREE SIDES.

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION

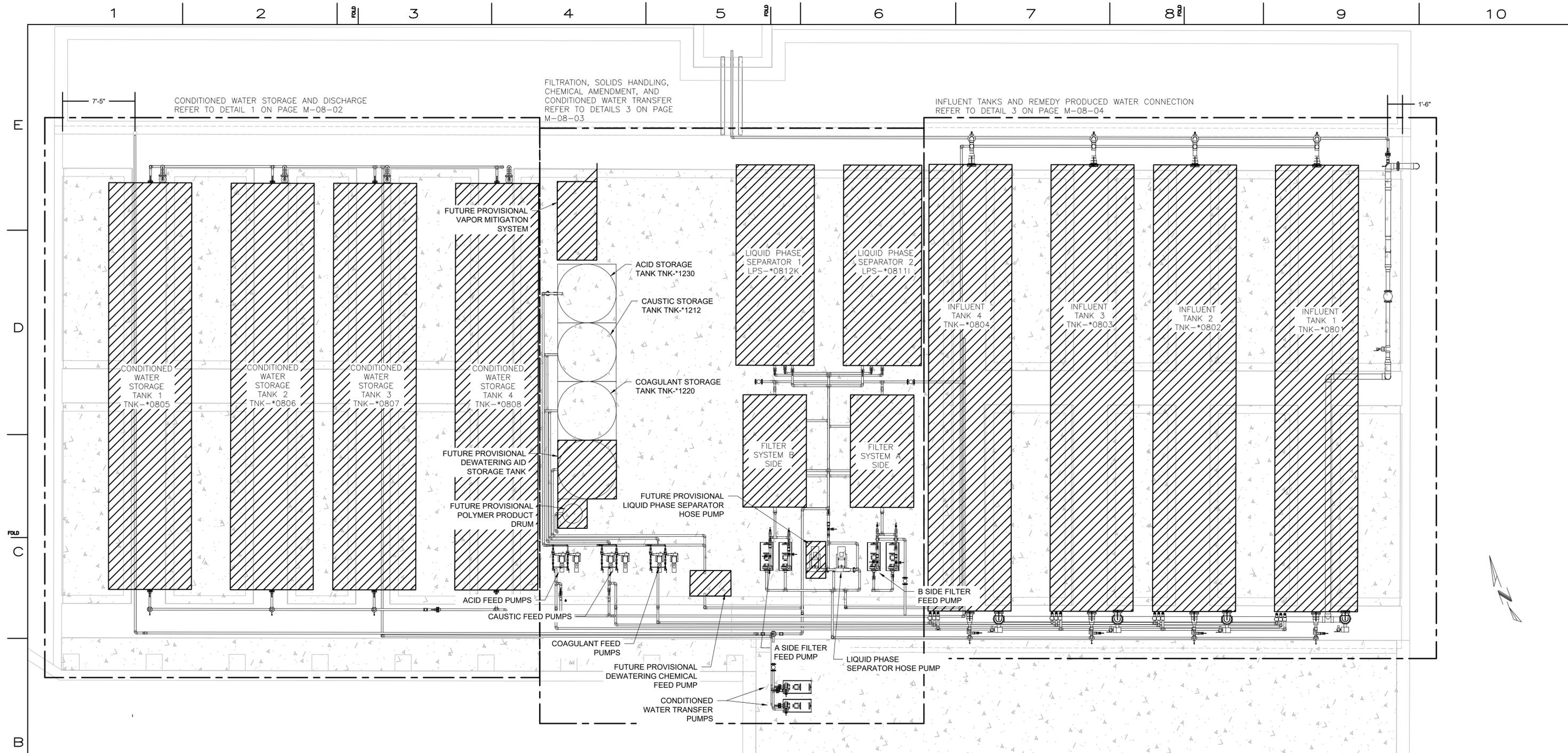


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0	08/26/25	INTERMEDIATE (60%) DESIGN													

APPROVED BY	SO
	SUPV
	DSGN
	DWN
	CHKD
	OK
DATE	
SCALES	
AS SHOWN	

TOPOCK GROUNDWATER REMEDIATION PROJECT
CANOPY SECTION AND DETAILS
SHEET 2 OF 2
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
S-08-34	1



- NOTES:
- SEE DRAWINGS S-08-20 THRU S-08-34, C-07-68, C-07-10, C-07-117, C-08-01 THRU C-08-03 FOR MORE DETAIL.
 - PIPE SUPPORTS NOT SHOWN CONTRACTOR TO SUPPORT PIPES IN ACCORDANCE WITH SPEC 40 05 15
 - FOR PIPE ID AND ABBREVIATION SCHEDULE, SEE C-00-12
 - FINAL NOZZLE AND OTHER EQUIPMENT CONNECTION LOCATIONS MAY VARY FROM DESIGN. REFER TO INSTRUMENTATION DRAWINGS I-08-01 THRU I-08-10.

RPWCP - PLAN VIEW
1"=5'-0"



REVISIONS										REVISIONS									
NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY				
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN																	
0	00/00/00	60% INTERMEDIATE DESIGN																	

APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
**REMEDY PRODUCED WATER
 CONDITIONING PLANT PLAN VIEW**
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

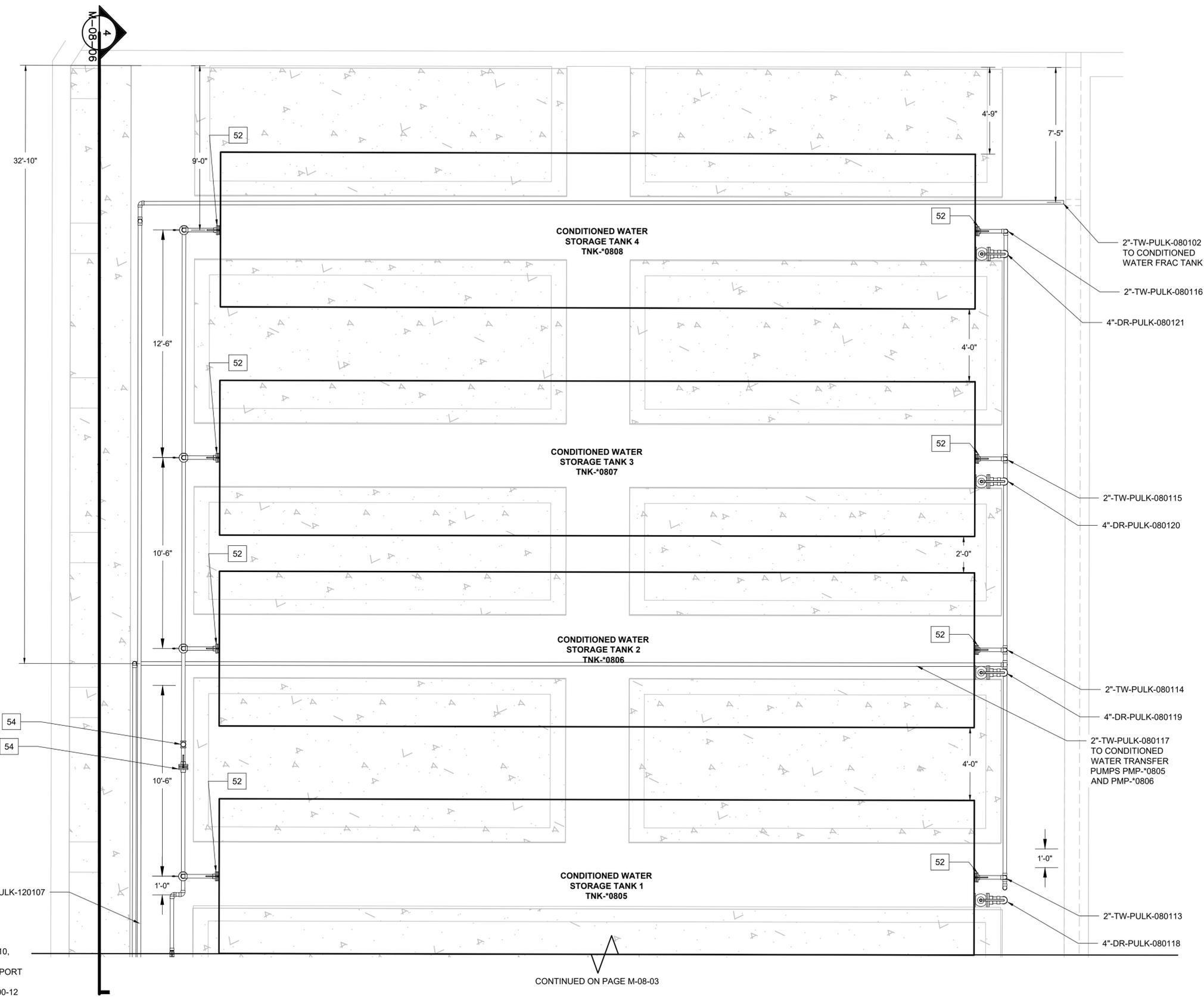
PRE-FINAL
 DESIGN FOR
 AGENCY REVIEW
 ONLY - NOT FOR
 CONSTRUCTION



MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
M-08-01	1

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- NOTES:
- SEE DRAWINGS S-08-20 THRU S-08-34, C-07-68, C-07-10, C-07-117, C-08-01 THRU C-08-03 FOR MORE DETAIL.
 - PIPE SUPPORTS NOT SHOWN CONTRACTOR TO SUPPORT PIPES IN ACCORDANCE WITH SPEC 40 05 15
 - FOR PIPE ID AND ABBREVIATION SCHEDULE, SEE C-00-12
 - FINAL NOZZLE AND OTHER EQUIPMENT CONNECTION LOCATIONS MAY VARY FROM DESIGN. REFER TO INSTRUMENTATION DRAWINGS I-08-01 THRU I-08-10.



RPWCP - PLAN DETAIL 1 OF 3
1" = 5'-0"

CONTINUED ON PAGE M-08-03

- LEGEND
- 1 EQUIPMENT TAG
REFER TO SCHEDULE ON DRAWING M-08-08

- NOTES:
- SEE DRAWINGS S-08-20 THRU S-08-34, C-07-68, C-07-10, C-07-117, C-08-01 THRU C-08-03 FOR MORE DETAIL.
 - PIPE SUPPORTS NOT SHOWN CONTRACTOR TO SUPPORT PIPES IN ACCORDANCE WITH SPEC 40 05 15
 - FOR PIPE ID AND ABBREVIATION SCHEDULE, SEE C-00-12
 - FINAL NOZZLE AND OTHER EQUIPMENT CONNECTION LOCATIONS MAY VARY FROM DESIGN. REFER TO INSTRUMENTATION DRAWINGS I-08-01 THRU I-08-10.

**PRE-FINAL
DESIGN FOR
AGENCY REVIEW
ONLY - NOT FOR
CONSTRUCTION**



NO.		DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.		DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
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		0	00/00/00	60% INTERMEDIATE DESIGN					XXX	XXX	XXX	JPB					

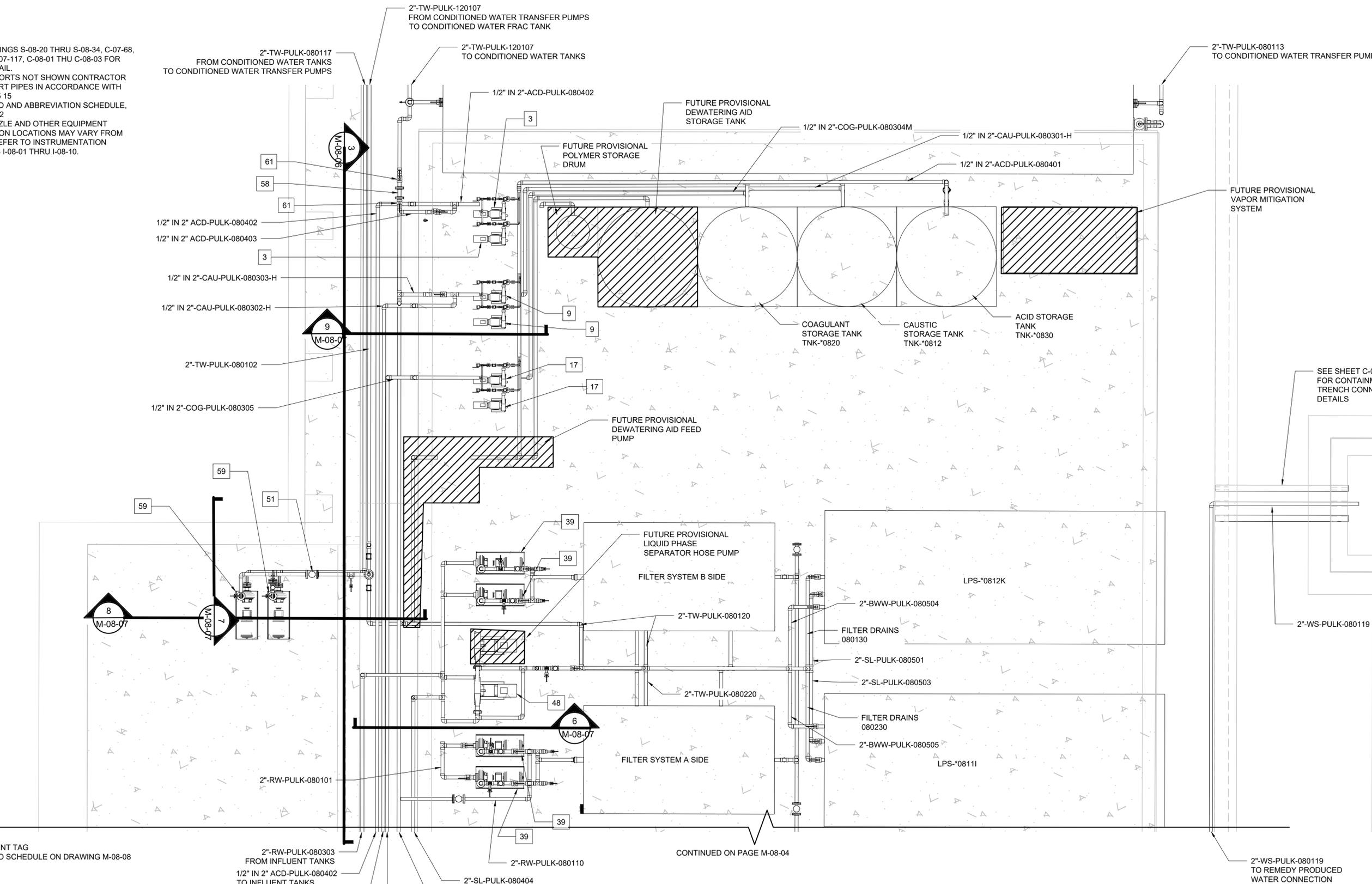
APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
**REMEDY PRODUCED CONDITIONING
PLANT PLAN DETAIL 1 OF 3**
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
M-08-02	1

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- NOTES:
- SEE DRAWINGS S-08-20 THRU S-08-34, C-07-68, C-07-10, C-07-117, C-08-01 THRU C-08-03 FOR MORE DETAIL.
 - PIPE SUPPORTS NOT SHOWN CONTRACTOR TO SUPPORT PIPES IN ACCORDANCE WITH SPEC 40 05 15
 - FOR PIPE ID AND ABBREVIATION SCHEDULE, SEE C-00-12
 - FINAL NOZZLE AND OTHER EQUIPMENT CONNECTION LOCATIONS MAY VARY FROM DESIGN. REFER TO INSTRUMENTATION DRAWINGS I-08-01 THRU I-08-10.



LEGEND

1 EQUIPMENT TAG REFER TO SCHEDULE ON DRAWING M-08-08

- NOTES:
- SEE DRAWINGS S-08-20 THRU S-08-34, C-07-68, C-07-10, C-07-117, C-08-01 THRU C-08-03 FOR MORE DETAIL.
 - PIPE SUPPORTS NOT SHOWN CONTRACTOR TO SUPPORT PIPES IN ACCORDANCE WITH SPEC 40 05 15
 - FOR PIPE ID AND ABBREVIATION SCHEDULE, SEE C-00-12
 - FINAL NOZZLE AND OTHER EQUIPMENT CONNECTION LOCATIONS MAY VARY FROM DESIGN. REFER TO INSTRUMENTATION DRAWINGS I-08-01 THRU I-08-10.

RPWCP - PLAN DETAIL 2 OF 3
1" = 5'-0"

PRE-FINAL DESIGN REVIEW ONLY - NOT FOR CONSTRUCTION



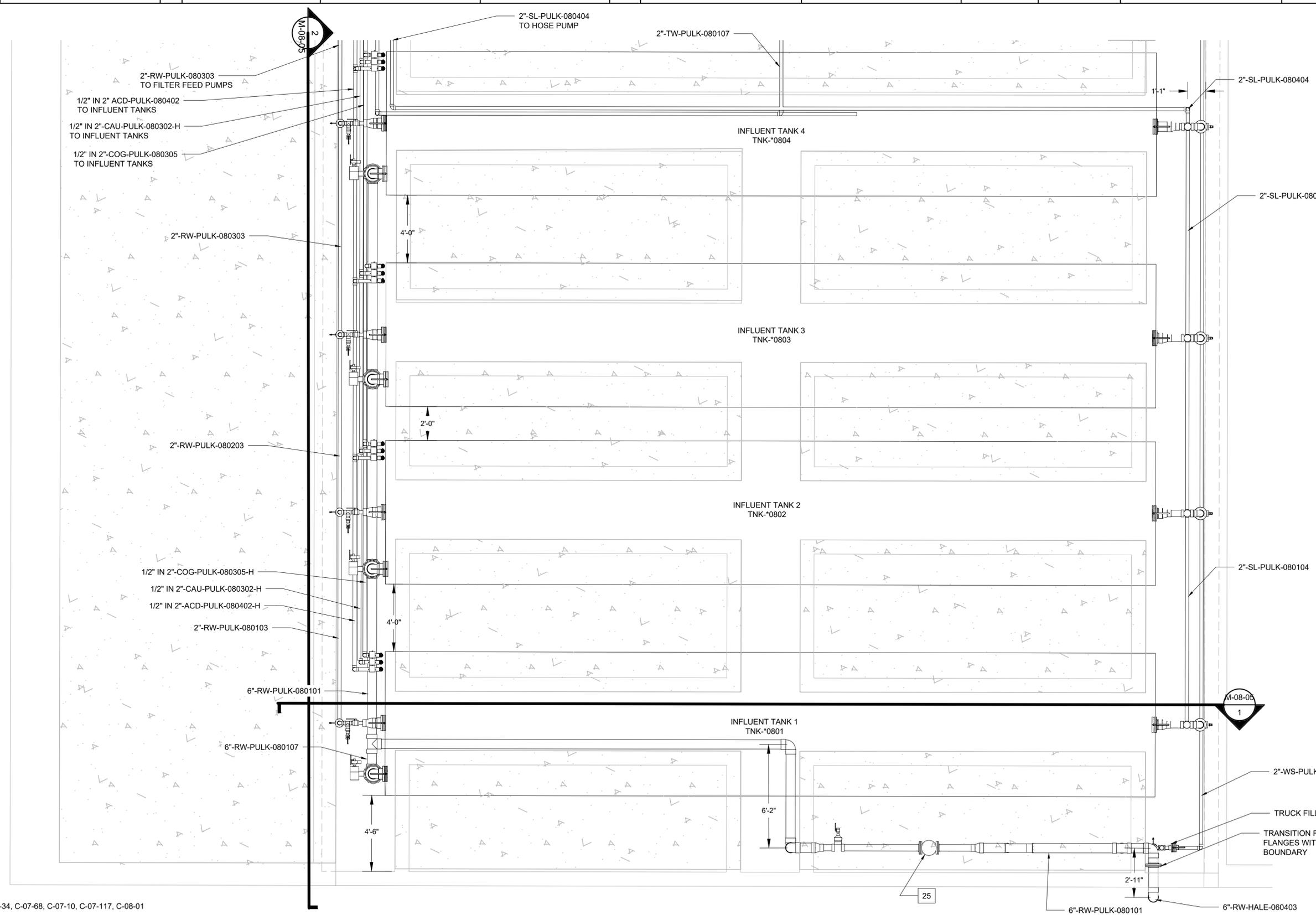
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0	00/00/00	60% INTERMEDIATE DESIGN													

APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
REMEDY PRODUCED WATER
CONDITIONING PLANT PLAN DETAIL
2 OF 3
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	BILL OF MATL
	DWG LIST
	SUPSDS
	SUPSD BY
SHEET NO.	of SHEETS
M-08-03	1

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PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION

LEGEND
 1 EQUIPMENT TAG REFER TO SCHEDULE ON DRAWING M-08-08

NOTES:
 1. SEE DRAWINGS S-08-20 THRU S-08-34, C-07-68, C-07-10, C-07-117, C-08-01 THRU C-08-03 FOR MORE DETAIL.
 2. PIPE SUPPORTS NOT SHOWN CONTRACTOR TO SUPPORT PIPES IN ACCORDANCE WITH SPEC 40 05 15
 3. FOR PIPE ID AND ABBREVIATION SCHEDULE, SEE C-00-12
 4. FINAL NOZZLE AND OTHER EQUIPMENT CONNECTION LOCATIONS MAY VARY FROM DESIGN. REFER TO INSTRUMENTATION DRAWINGS I-08-01 THRU I-08-10.

RPWCP - PLAN DETAIL 3 OF 3
 1" = 5'-0"

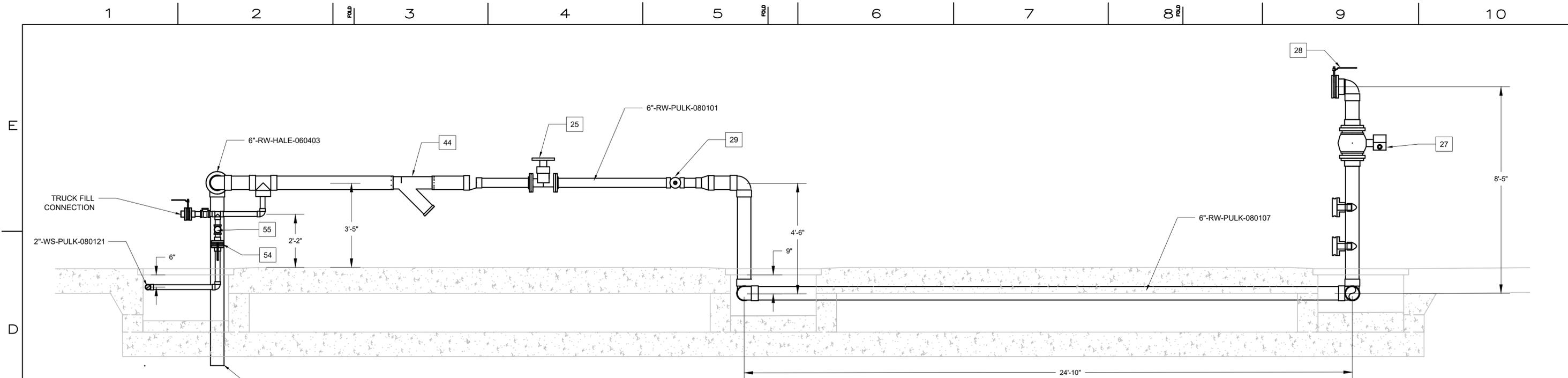


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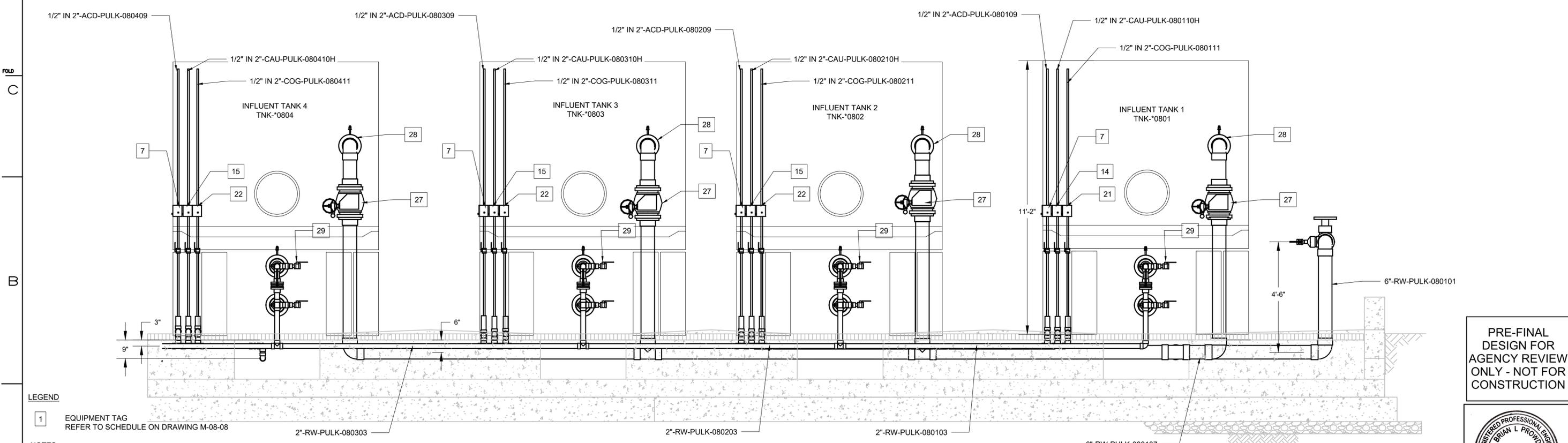
APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
 REMEDY PRODUCED WATER
 CONDITIONING PLANT PLAN DETAIL
 3 OF 3
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
M-08-04	1



1 REMEDY WATER LINE SECTION
 1/2" = 1'-0"
 M-08-04



2 INFLUENT TANK REAR SECTION
 1/2" = 1'-0"
 M-08-04

LEGEND
 1 EQUIPMENT TAG REFER TO SCHEDULE ON DRAWING M-08-08

- NOTES:**
- PIPE SUPPORTS NOT SHOWN CONTRACTOR TO SUPPORT PIPES IN ACCORDANCE WITH SPEC 40 05 15
 - FOR PIPE ID AND ABBREVIATION SCHEDULE, SEE C-00-12
 - FINAL NOZZLE AND OTHER EQUIPMENT CONNECTION LOCATIONS MAY VARY FROM DESIGN. REFER TO INSTRUMENTATION DRAWINGS I-08-01 THRU I-08-10.

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



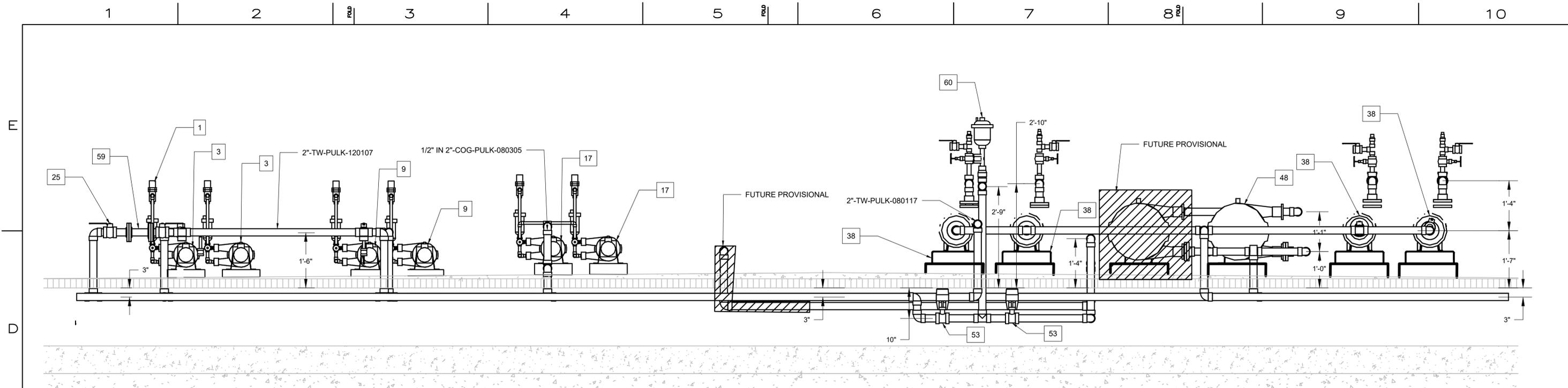
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JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

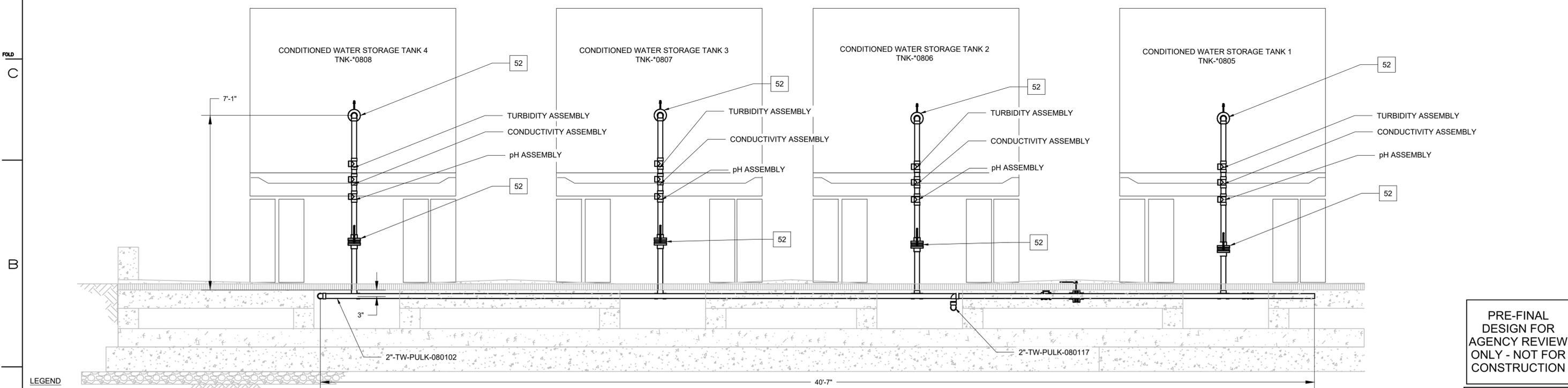
TOPOCK GROUNDWATER REMEDIATION PROJECT
 REMEDY PRODUCED WATER
 CONDITIONING PLANT SECTIONS 1
 OF 3
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	BILL OF MATL
	DWG LIST
	SUPSDS
	SUPSD BY
SHEET NO.	of SHEETS
M-08-05	REV 0

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3 **CONDITIONING EQUIPMENT SECTION**
 3/4" = 1'-0"
 M-08-03



4 **CONDITIONED WATER REAR SECTION**
 1/2" = 1'-0"
 M-08-02

LEGEND
 1 EQUIPMENT TAG
 REFER TO SCHEDULE ON DRAWING M-08-08

- NOTES:**
- PIPE SUPPORTS NOT SHOWN CONTRACTOR TO SUPPORT PIPES IN ACCORDANCE WITH SPEC 40 05 15
 - FOR PIPE ID AND ABBREVIATION SCHEDULE, SEE C-00-12
 - FINAL NOZZLE AND OTHER EQUIPMENT CONNECTION LOCATIONS MAY VARY FROM DESIGN. REFER TO INSTRUMENTATION DRAWINGS I-08-01 THRU I-08-10.

PRE-FINAL
 DESIGN FOR
 AGENCY REVIEW
 ONLY - NOT FOR
 CONSTRUCTION



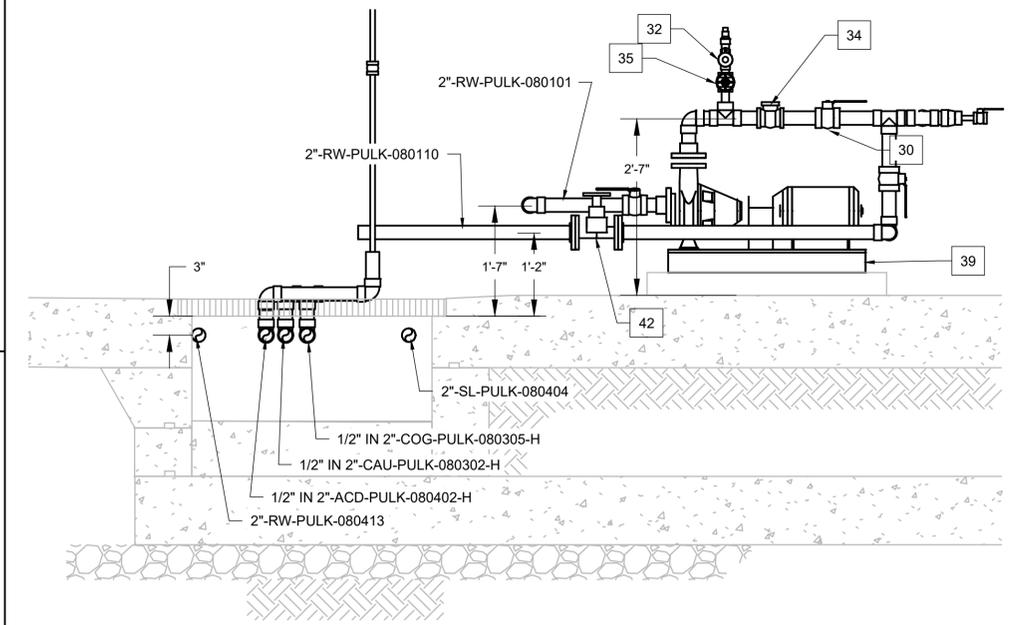
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0	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													

APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

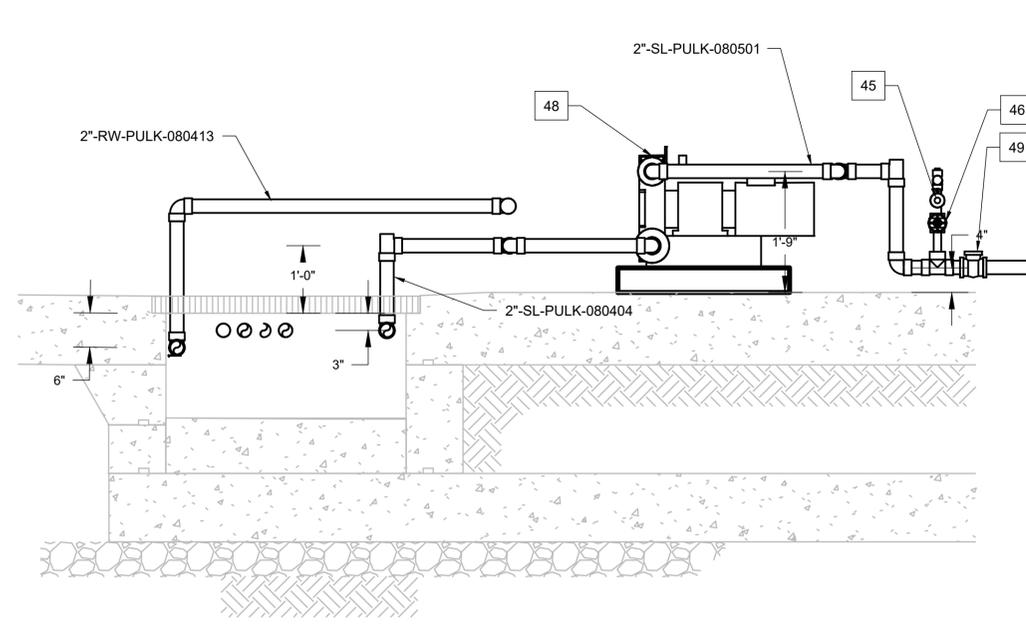
TOPOCK GROUNDWATER REMEDIATION PROJECT
 REMEDY PRODUCED WATER
 CONDITIONING PLANT SECTIONS 2
 OF 3
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	BILL OF MATL
	DWG LIST
	SUPSDS
	SUPSD BY
SHEET NO.	of SHEETS
M-08-06	REV 0

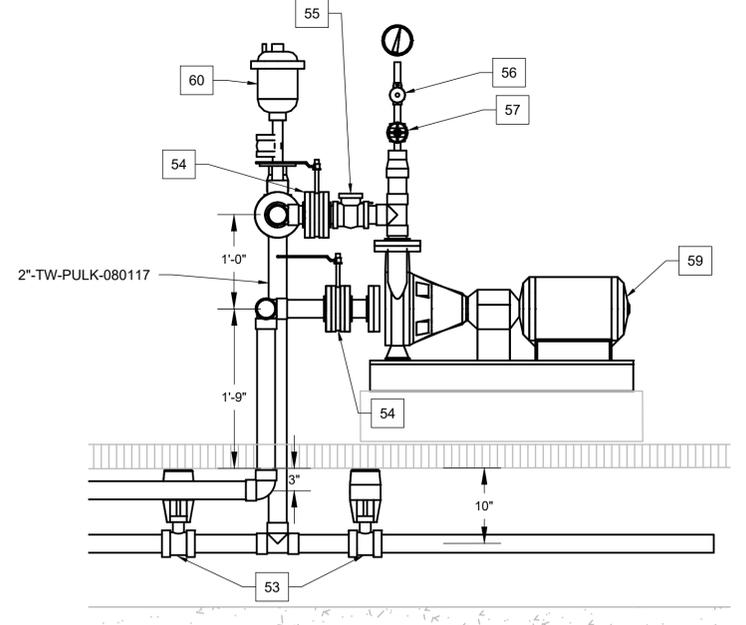
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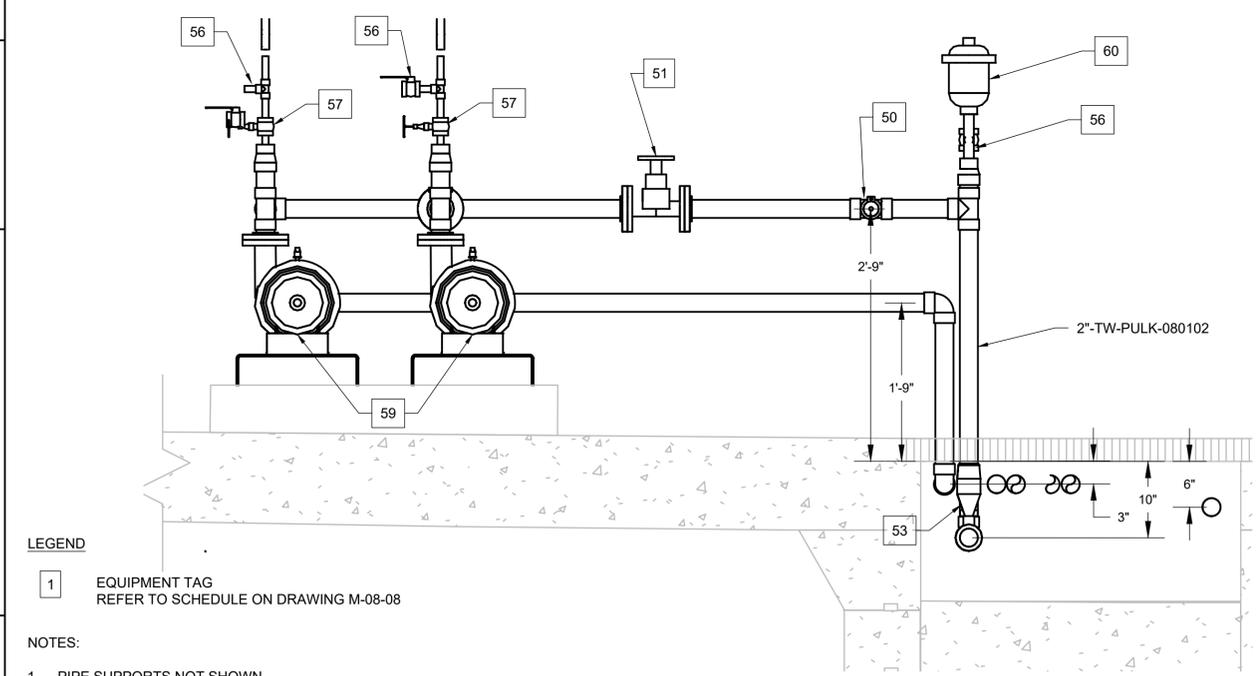
5 FILTER FEED PUMP SECTION - A SIDE
3/4" = 1'-0"
M-08-03



6 LPS FEED PUMP SECTION
3/4" = 1'-0"
M-08-03



7 CONDITIONED WATER TRANSFER PUMP SECTION
1" = 1'-0"
M-08-03

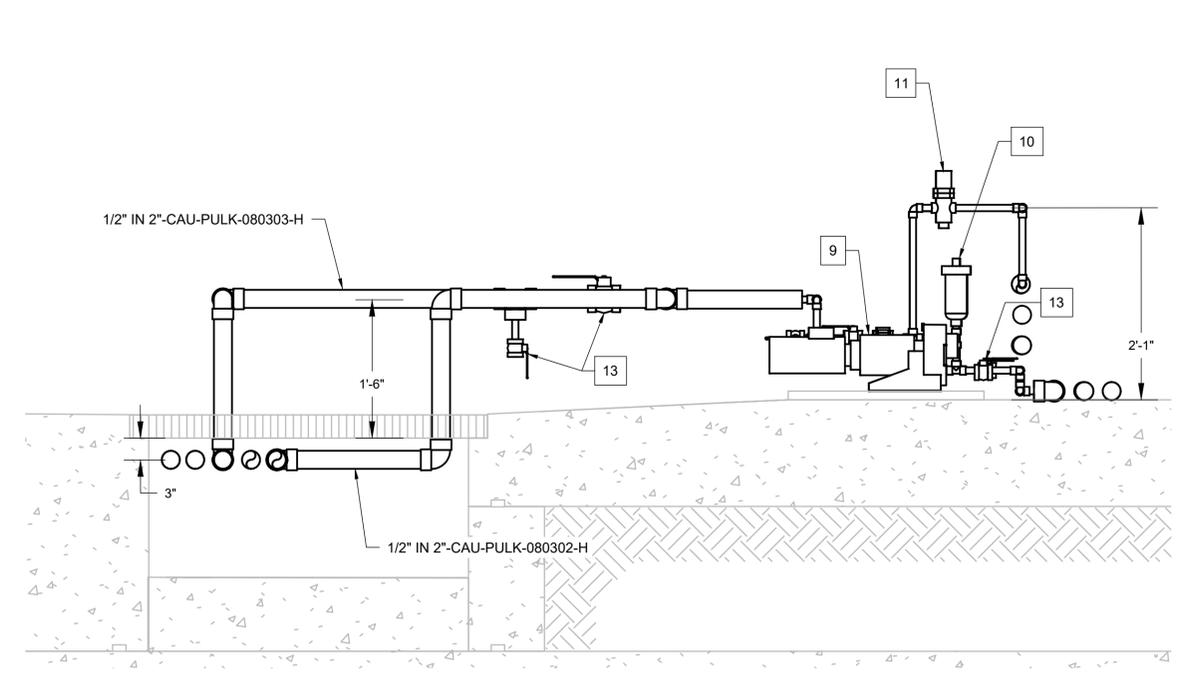


8 CONDITIONED WATER CONNECTION SECTION
1" = 1'-0"
M-08-03

LEGEND
1 EQUIPMENT TAG REFER TO SCHEDULE ON DRAWING M-08-08

NOTES:

- PIPE SUPPORTS NOT SHOWN CONTRACTOR TO SUPPORT PIPES IN ACCORDANCE WITH SPEC 40 05 15
- FOR PIPE ID AND ABBREVIATION SCHEDULE, SEE C-00-12
- FINAL NOZZLE AND OTHER EQUIPMENT CONNECTION LOCATIONS MAY VARY FROM DESIGN. REFER TO INSTRUMENTATION DRAWINGS I-08-01 THRU I-08-10.



9 CAUSTIC DOSING PUMP SECTION
1" = 1'-0"
M-08-03

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
0	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													

APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
REMEDY PRODUCED WATER
CONDITIONING PLANT SECTIONS 3
OF 3
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	BILL OF MATL
	DWG LIST
	SUPSDS
	SUPSD BY
SHEET NO.	of SHEETS
M-08-07	REV 0

TWB RPWCP MECHANICAL SCHEDULE						
ITEM	PIPE SIZE	MATERIAL TYPE	PROCESS FLOW	PIPE ID	DESCRIPTION	ID TAG
1	1/2"	CPVC CLASS 150	19% HCl or 93% H2SO4		PRESSURE REDUCING VALVE	V-0832C, V-0831C,
2	1/2"	CPVC CLASS 150	19% HCl or 93% H2SO4		BLEED VALVE	V-0872, V-0865C
3	1/2"	N/A	19% HCl or 93% H2SO4		ACID FEED PUMP	PMP-0831, PMP-0832
4	1/2"	CPVC CLASS 150	19% HCl or 93% H2SO4		CHECK VALVE	V-0831E, V-0832E
5	1/2"	CPVC CLASS 150	19% HCl or 93% H2SO4		BALL VALVE	V-0814A, V-0824A, V-0834A, V-0844A, V-0832A, V-0832D, V-0832F, V-0831A, V-0831D, V-0831F, V-0831G, V-0808C, V-0808D,
6	2"	CPVC CLASS 150	19% HCl or 93% H2SO4		BALL VALVE	V-0830D, V-0830E, V-0830F,
7	1/2"	CPVC CLASS 150	19% HCl or 93% H2SO4		ELECTRICALLY ACTUATED BALL VALVE	FV-0814, FV-0824, FV-0834, FV-0844,
8	1/2"	CPVC CLASS 150	25% CAUSTIC		CHECK VALVE	V-0811E, V-0812H
9	1/2"	CPVC CLASS 150	25% CAUSTIC		CAUSTIC FEED PUMP	PMP-0811, PMP-0812
10	1/2"	CPVC CLASS 150	25% CAUSTIC		PRESSURE RELIEF VALVE	V-0811B, V-0812E
11	1/2"	CPVC CLASS 150	25% CAUSTIC		PRESSURE CONTROL VALVE	V-0811C, V-0812F
12	1/2"	CPVC CLASS 150	25% CAUSTIC		BLEED VALVE	V-0867, V-0869
13	1/2"	CPVC CLASS 150	25% CAUSTIC		BALL VALVE	V-0813A, V-0823A, V-0833A, V-0843A, V-0812D, V-0811A, V-0812G, V-0811D, V-0811E, V-0812I, V-0811F, V-0811G, V-0808E, V-0808F
14	2"	CPVC CLASS 150	25% CAUSTIC		BALL VALVE	V-0812A, V-0812B, V-0812C,
15	1/2"	CPVC CLASS 150	25% CAUSTIC		ELECTRICALLY ACTUATED BALL VALVE	FV-0813, FV-0823, FV-0833, FV-0843
16	2"	CPVC CLASS 150	BACKWASH WASTE		BALL VALVE	V-0811J, V-0812L
17	1/2"	CPVC CLASS 150	COAGULANT		COAGULANT FEED PUMP	PMP-0821, PMP-0822
18	1/2"	CPVC CLASS 150	COAGULANT		BLEED VALVE	V-0871A
19	1/2"	CPVC CLASS 150	COAGULANT		PRESSURE REDUCING VALVE	V-0822C, V-0821C
20	1/2"	CPVC CLASS 150	COAGULANT		BALL VALVE	V-0815A, V-0825A, V-0835A, V-0845A
21	2"	CPVC CLASS 150	COAGULANT		BALL VALVE	V-0822A, V-0821A, V-0821E, V-0821D, V-0822E, V-0822D,
22	1/2"	CPVC CLASS 150	COAGULANT		ELECTRICALLY ACTUATED BALL VALVE	V-0820D, V-0820F,
23	4"	CPVC CLASS 150	DRAIN		BALL VALVE	FV-0815, FV-0825, FV-0835, FV-0845
24	2"	HDPE, SDR 11	FRESH WATER		BALL VALVE	V-0801M, V-0802M, V-0803M, V-0804M, V-0801C, V-0802C, V-0803C, V-0804C
25	4"	CPVC CLASS 150	REMEDY PRODUCED WATER		ELECTROMAGNETIC FLOWMETER	V-0801S
26	2"	CPVC CLASS 150	TREATED WATER		BALL VALVE	FM-0871
27	6"	CPVC CLASS 150	REMEDY PRODUCED WATER		ELECTRICALLY ACTUATED BALL VALVE	V-0808A, V-0808B
28	6"	CPVC CLASS 150	REMEDY PRODUCED WATER		BUTTERFLY VALVE	FV-0817, FV-0827, FV-0837, FV-0847
29	1/2"	CPVC CLASS 150	REMEDY PRODUCED WATER		SAMPLE PORT BALL VALVE	V-0801A, V-0802A, V-0803A, V-0804A
30	2"	CPVC CLASS 150	REMEDY PRODUCED WATER		BALL VALVE	SP-0871A, SP-0801H, SP-0801J, SP-0801L, SP-0802H, SP-0802J, SP-0802L, SP-0803H, SP-0803J, SP-0803L, SP-0804H, SP-0804J, SP-0804L, SP-0820D, SP-0810D, SP-0811C, SP-0821C, SP-0871A, SP-830D, SP-0840D, SP-0831C, SP-0841C, SP-0872A
31	3/4"	CPVC CLASS 150	REMEDY PRODUCED WATER		BALL VALVE	V-0801G, V-0801I, V-0801K, V-0802G, V-0802I, V-0802K, V-0803G, V-0803I, V-0803K, V-0804G, V-0804I, V-0804K, V-0889A, V-0810A, V-0820A, V-0810E, V-0820E, V-0830A, V-0840A, V-0830C, V-0840C,
32	1/2"	CPVC CLASS 150	REMEDY PRODUCED WATER		BALL VALVE	V-0813, V-0814, V-0823, V-0824
33	2"	CPVC CLASS 150	REMEDY PRODUCED WATER		ELECTRICALLY ACTUATED BUTTERFLY VALVE	V-0861B, V-0862B, V-0863D, V-0864D
34	2"	CPVC CLASS 150	REMEDY PRODUCED WATER		SWING CHECK VALVE	FV-0811, FV-0821, FV-0831, FV-0841, FV-0812C, FV-0822C, FV-0832C, FV-0842C
35	1/2"	CPVC CLASS 150	REMEDY PRODUCED WATER		GLOBE VALVE	V-0810B, V-0820B, V-0830B, V-0840B
36	3"	CPVC CLASS 150	REMEDY PRODUCED WATER		ELECTRICALLY ACTUATED BALL VALVE	V-0861A, V-0862A, V-0863C, V-0864C
37	3/4"	CPVC CLASS 150	REMEDY PRODUCED WATER		ELECTRICALLY ACTUATED BALL VALVE	FV-0811A, FV-0821A, FV-0812A, FV-0822A, FV-0811C, FV-0821C, FV-0811D, FV-0821D, FV-0811E, FV-0821E, FV-0831A, FV-0831C, FV-0832A, FV-0831D, FV-0811E, FV-0841A, FV-0841C, FV-0842A, FV-0841D, FV-0841E
38	1"	CPVC CLASS 150	REMEDY PRODUCED WATER		DIFFERENTIAL PRESSURE GAUGE	FV-0813F, FV-0821F, FV-0814F, FV-0824F, FV-0833F, FV-0843F, FV-0834F, FV-0844F
39	1-1/2"	FIBERGLASS	REMEDY PRODUCED WATER		FILTER FEED PUMP	PDIT-0861, PDIT-0862, PDIT-0863, PDIT-0864, PDIT-0865, PDIT-0866, PDIT-0867, PDIT-0868

TWB RPWCP MECHANICAL SCHEDULE						
ITEM	PIPE SIZE	MATERIAL TYPE	PROCESS FLOW	PIPE ID	DESCRIPTION	ID TAG
40	1"	CPVC CLASS 151	REMEDY PRODUCED WATER		BALL VALVE	V-0861C, V-0861D, V-0862C, V-0862D, V-0863A, V-0863B, V-0864A, V-0864B, V-0865A, V-0865B, V-0866A, V-0866B, V-0867A, V-0867B, V-0868A, V-0868B
41	3"	CPVC CLASS 150	REMEDY PRODUCED WATER		BALL VALVE	V-0811, V-0831
42	3"	CPVC CLASS 150	REMEDY PRODUCED WATER		ELECTROMAGNETIC FLOW METER	FM-0872
43	6"	HDPE, SDR 11	REMEDY PRODUCED WATER		SWING CHECK VALVE	V-0805
44	4"	316 STAINLESS	REMEDY PRODUCED WATER		BASKET STRAINER	F-0801
45	1/2"	CPVC CLASS 150	SLURRY/SOLIDS		BALL VALVE	V-0854B
46	1/2"	CPVC CLASS 150	SLURRY/SOLIDS		GLOBE VALVE	V-0854A
47	2"	CPVC CLASS 150	SLURRY/SOLIDS		BALL VALVE	V-0809B, V-0812M, V-0811L, V-0812J
48	2"	CPVC CLASS 150	SLURRY/SOLIDS		HOSE PUMP	PMP-0801
49	2"	CPVC CLASS 150	SLURRY/SOLIDS		SWING CHECK VALVE	V-0809A
50	1/2"	CPVC CLASS 150	TREATED WATER		SAMPLE PORT BALL VALVE	SP-0805A
51	2"	CPVC CLASS 150	TREATED WATER		ELECTROMAGNETIC FLOW METER	FM-0873, FM-0873A, FM-0873B
52	2"	CPVC CLASS 150	TREATED WATER		ELECTRICALLY ACTUATED BUTTERFLY VALVE	FV-0805, FV-0812, FV-0813, FV-0814
53	2"	CPVC CLASS 150	TREATED WATER		ELECTRICALLY ACTUATED BALL VALVE	FV-0816, FV-0818
54	2"	CPVC CLASS 150	TREATED WATER		BUTTERFLY VALVE	V-0805C, V-0802A, V-0805D, V-0801A, V-0801D, V-0801B, V-0802B, V-0810C, V-0810A, V-0804B, V-0803A, V-0803D, V-0803B, V-0805E, V-0805C, V-0806B, V-0805E,
55	2"	CPVC CLASS 150	TREATED WATER		SWING CHECK VALVE	V-0805B, V-0810B, V-0805F, V-0806A, V-0803B
56	1/2"	CPVC CLASS 150	TREATED WATER		BALL VALVE	V-0861B, V-0862E, V-0809A
57	1/2"	CPVC CLASS 150	TREATED WATER		GLOBE VALVE	V-0861E, V-0862E
58	2"	CPVC CLASS 150	TREATED WATER		INLINE MIXER	MXR-0808
59	2"	FIBERGLASS	TREATED WATER		TRANSFER PUMP	PMP-0805, PMP-0806
60	1/2"	CPVC CLASS 150	TREATED WATER		PRESSURE SAFETY VALVE	PSV-0809
61	2"	CPVC CLASS 150	TREATED WATER		BALL VALVE	V-0808A, V-0808B
62	2"	CPVC CLASS 150	WASTE STREAM		SWING CHECK VALVE	V-0801N, V-0807C
63	2"	CPVC CLASS 150	WASTE STREAM		BUTTERFLY VALVE	V-0805B
64	2"	CPVC CLASS 150	WASTE STREAM		BALL VALVE	V-0807D, V-0807B
65	1/2"	CPVC CLASS 150	WASTE STREAM		SAMPLE PORT BALL VALVE	V-0865B
66	1/2"	CPVC CLASS 150	WASTE STREAM		GLOBE VALVE	V-0865A
67	2"	316 STAINLESS	WASTE STREAM		ELECTROMAGNETIC FLOW METER	FM-0807

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NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
0	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN					MJS VJM BLP JPB

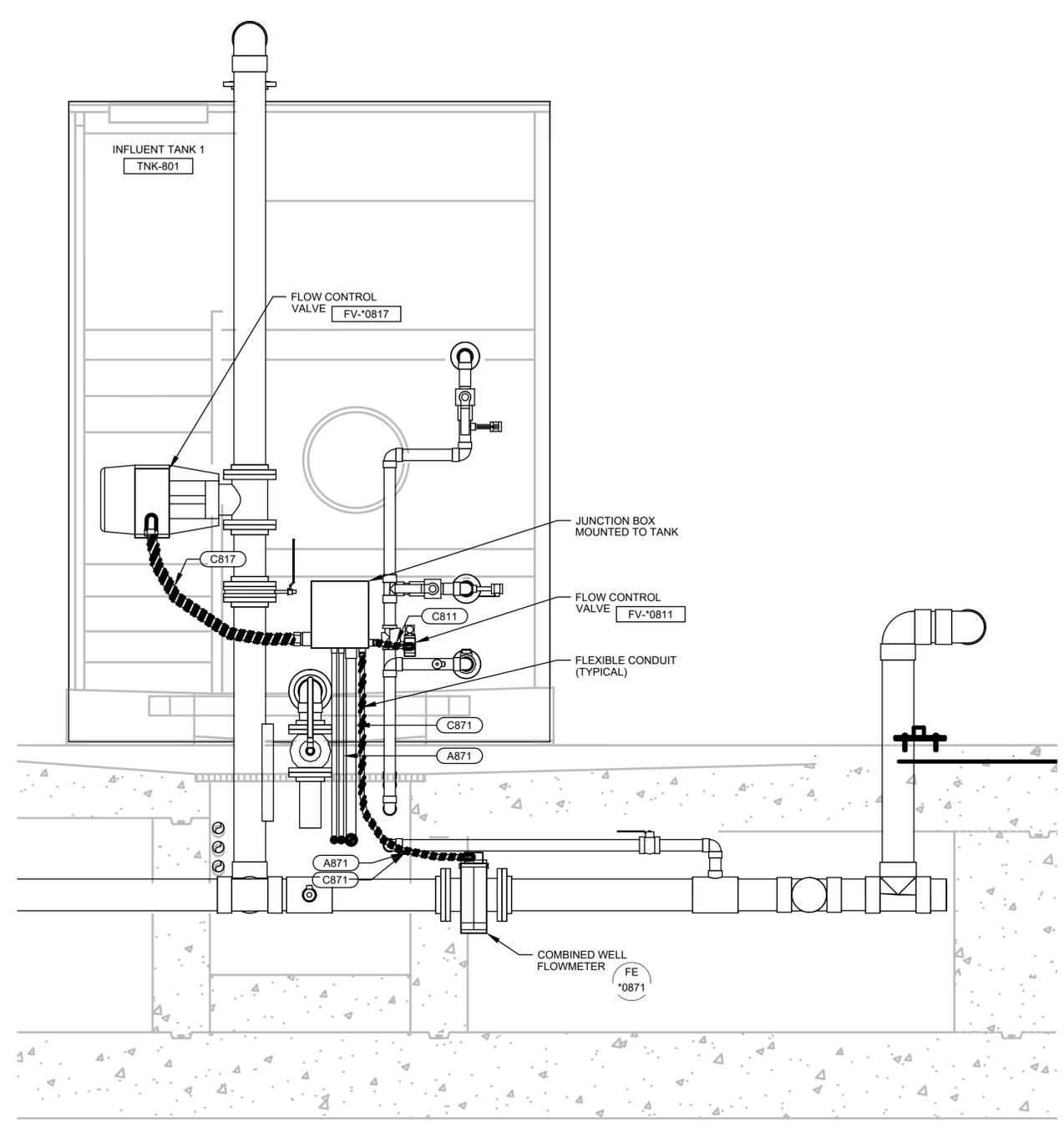
APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
TWB RPWCP MECHANICAL SCHEDULE
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
M-08-08	REV 0

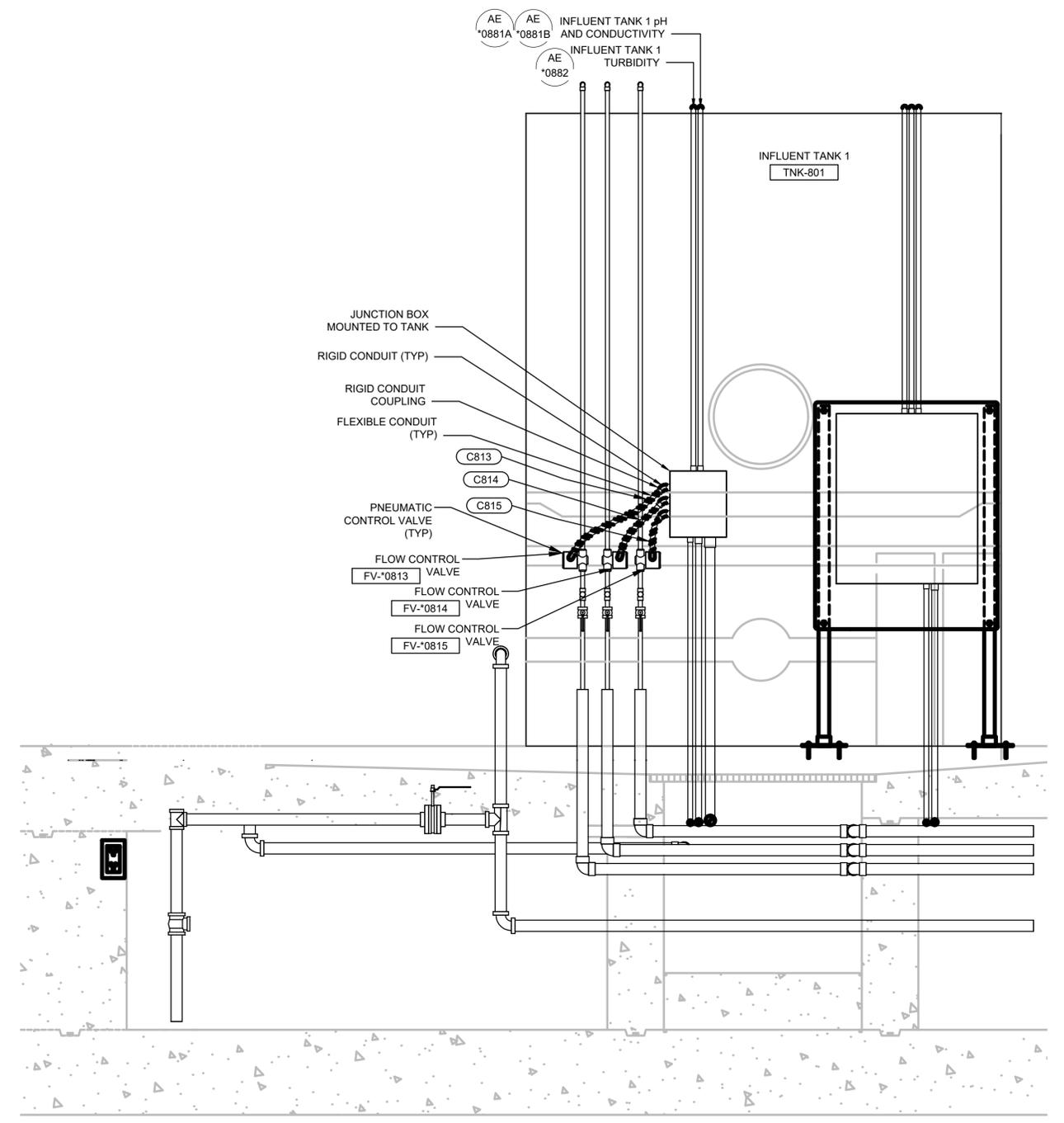


INFLUENT TANK 1 NORTH END SECTION

SCALE: 3/4" = 1'
(SIMILAR FOR ALL INFLUENT TANKS)

DRAWING REFERENCED NOTES:

NOTES: ① 14"W X 12"H X 6"D, NEMA 4X STAINLESS STEEL JUNCTION/SPLICE BOX. JUNCTION BOX SHALL BE HOFFMAN CHNFSS OR EQUAL. USE ALL STAINLESS STEEL MOUNTING HARDWARE.



INFLUENT TANK 1 SOUTH END SECTION

SCALE: 3/4" = 1'
(SIMILAR FOR ALL INFLUENT TANKS)

DRAWING REFERENCED NOTES:

NOTES: ① 14"W X 12"H X 6"D, NEMA 4X STAINLESS STEEL JUNCTION/SPLICE BOX. JUNCTION BOX SHALL BE HOFFMAN CHNFSS OR EQUAL. USE ALL STAINLESS STEEL MOUNTING HARDWARE.

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION

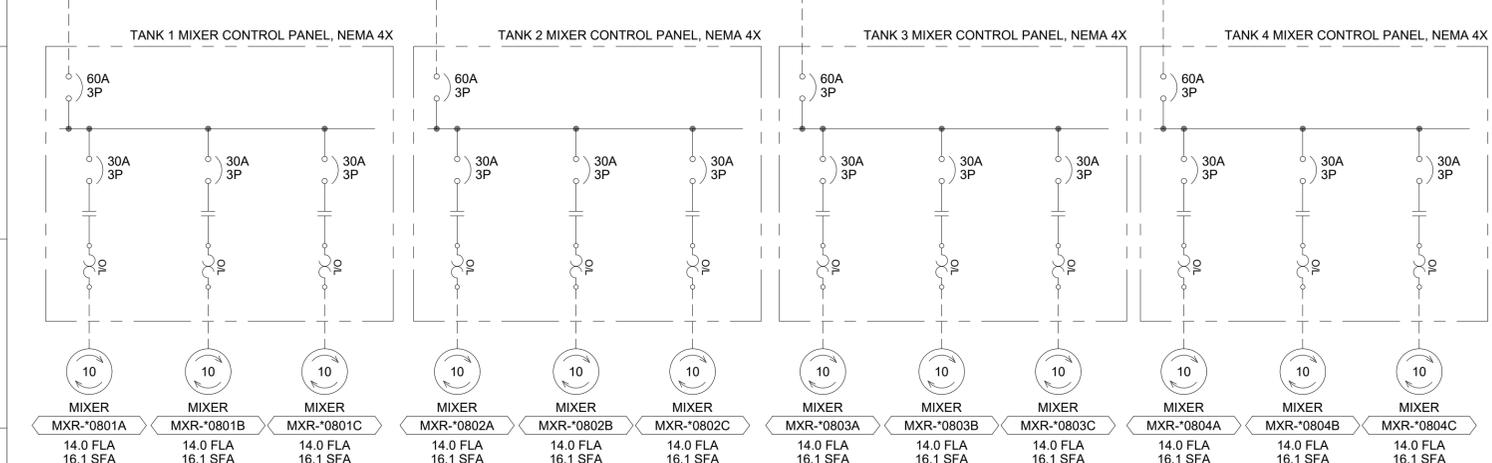
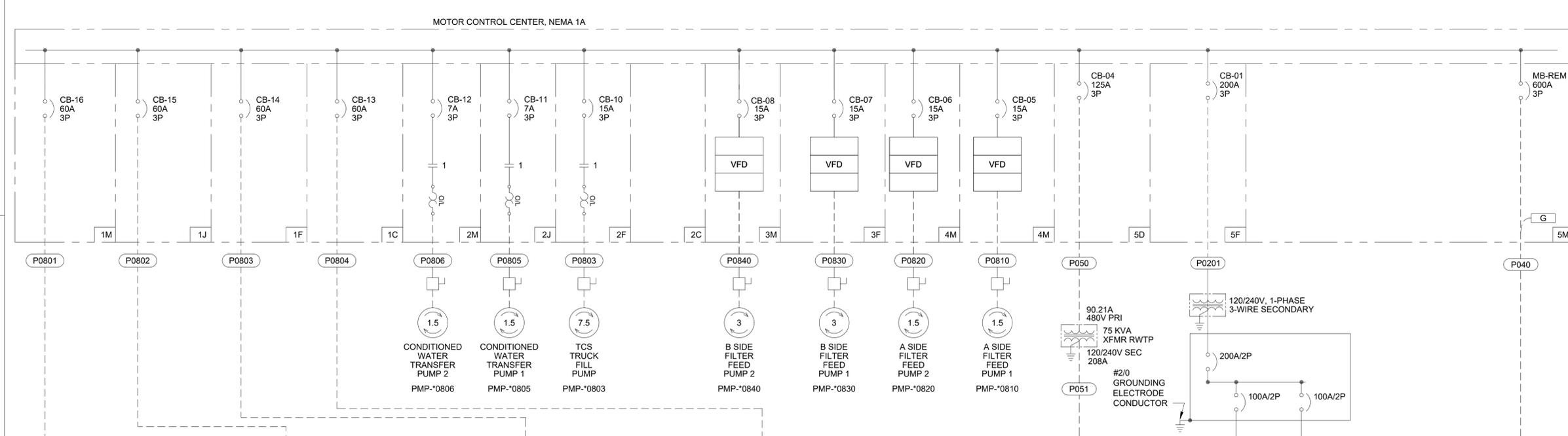


NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN					M.J.Y. J.W. J.M.S. J.P.B.	0		INTERMEDIATE (60%) DESIGN					

APPROVED BY	SO
J.P.B.	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
INFLUENT TANK 1 SECTIONS ELECTRICAL PLAN
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

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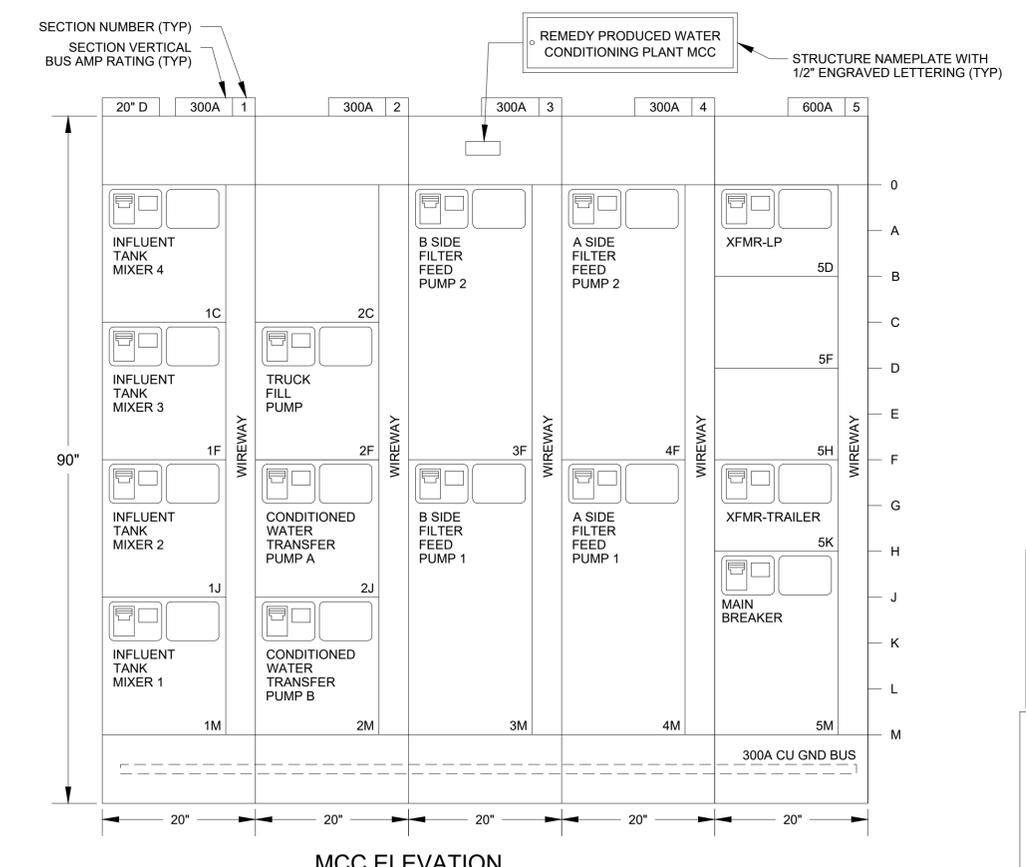
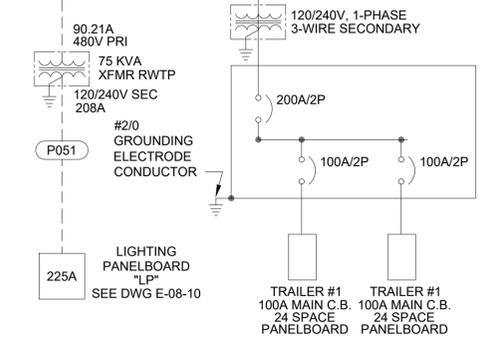
MOTOR CONTROL CENTER ONE-LINE

GENERAL NOTES:

- ALL DIMENSIONS ARE APPROXIMATE. ACTUAL DIMENSIONS SHALL BE PER MANUFACTURER APPROVED IN SUBMITTAL.

NOTES REFERENCED IN DRAWING:

- PROVIDE NEMA 1 ENCLOSURE FOR MCC.
- PROVIDE MINIMUM CUBICLE SIZING AS SHOWN.
- PROVIDE 12" BREAKER OPERATING CHAIN FOR BREAKERS LOCATED AT THE TOP OF EACH SECTION.
- PROVIDE NAMEPLATES PER MCC ELEVATION.
- SEE LOAD CALCULATIONS ON E-00-35.
- MOTOR CONTROL EQUIPMENT SIZED FOR MAXIMUM HORSEPOWER. MCP BREAKER SIZED FOR CONNECTED LOAD SHOWN. SEE LOAD CALCULATIONS ON E-00-34 FOR MAXIMUM HORSEPOWER.



NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN						MJY	JW	JMS	JPB				
0		INTERMEDIATE (80%) DESIGN													

APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

**TOPOCK GROUNDWATER REMEDIATION PROJECT
REMEDY PRODUCED WATER
CONDITIONING PLANT
MCC ONE-LINE & ELEVATION**
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

**PRE-FINAL
DESIGN REVIEW
ONLY - NOT FOR
CONSTRUCTION**

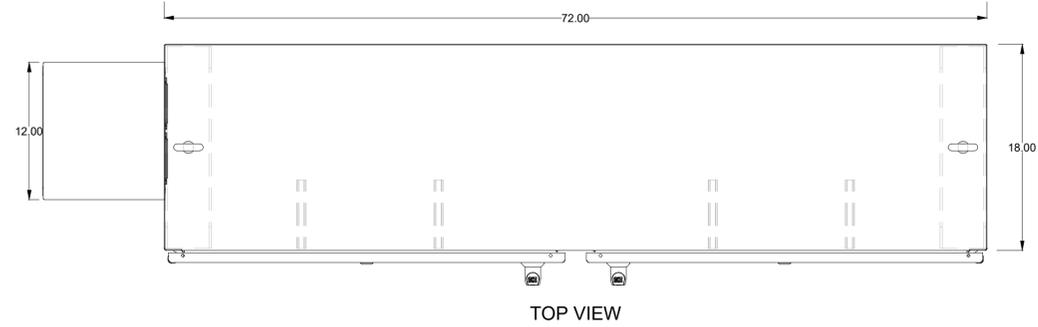


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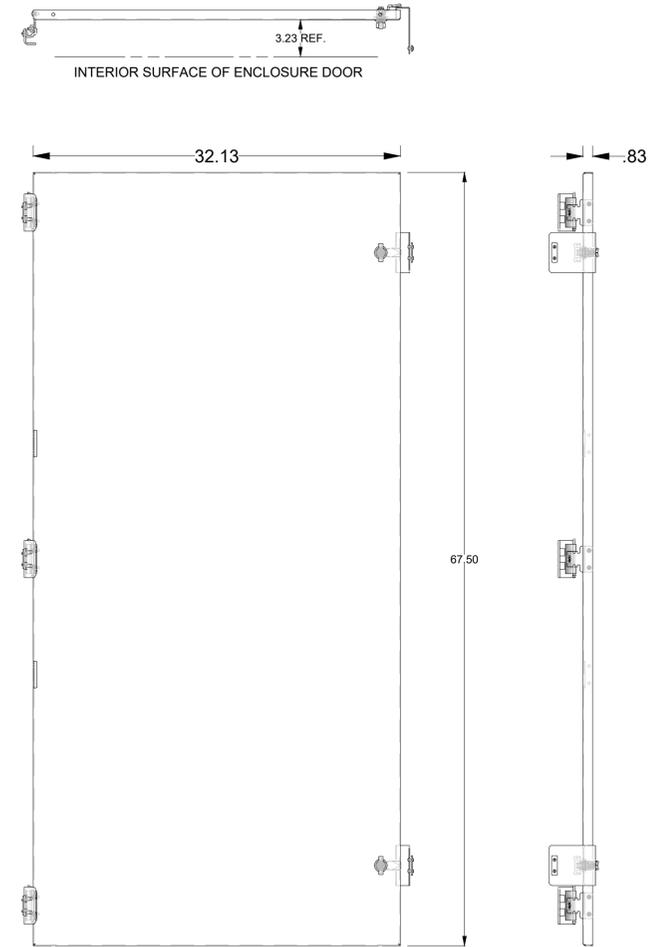
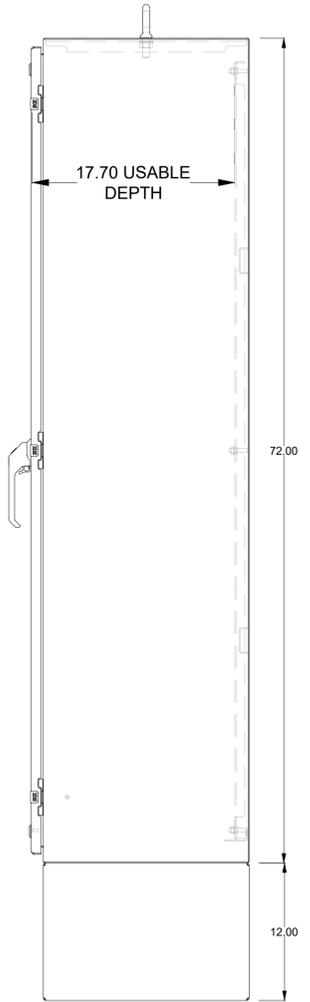
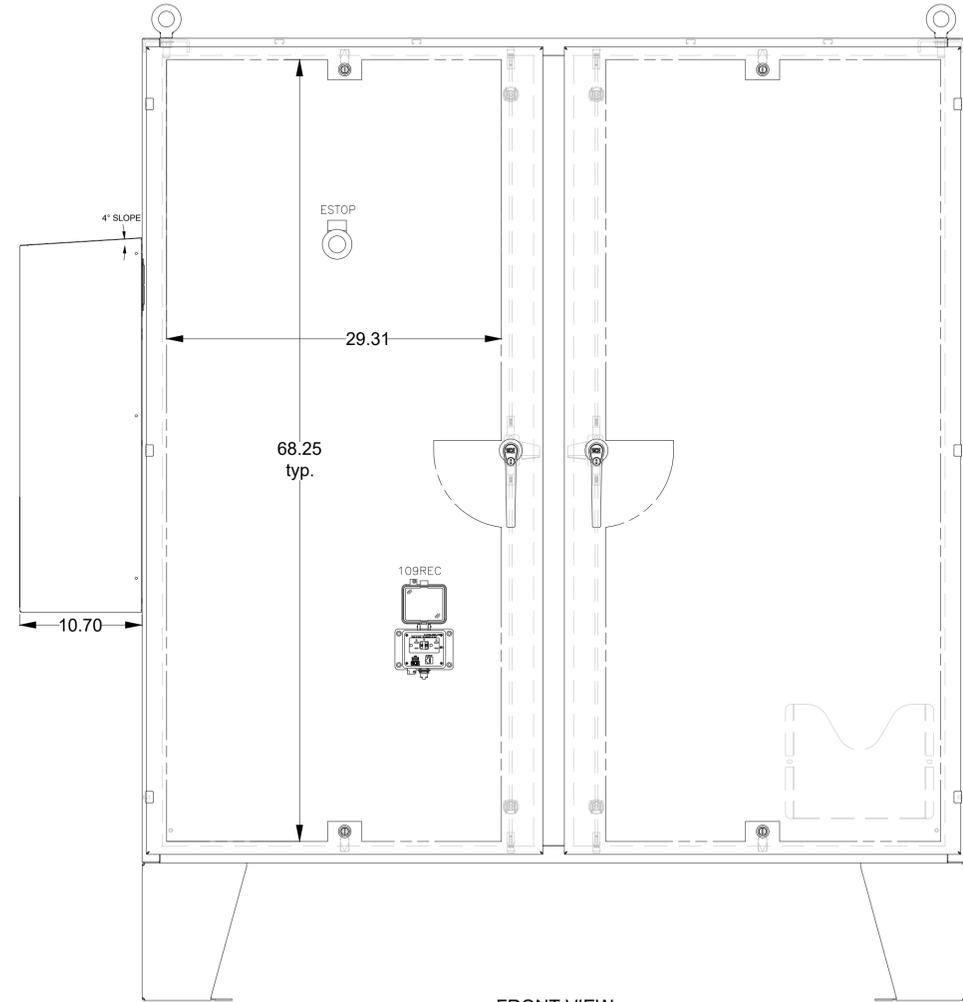
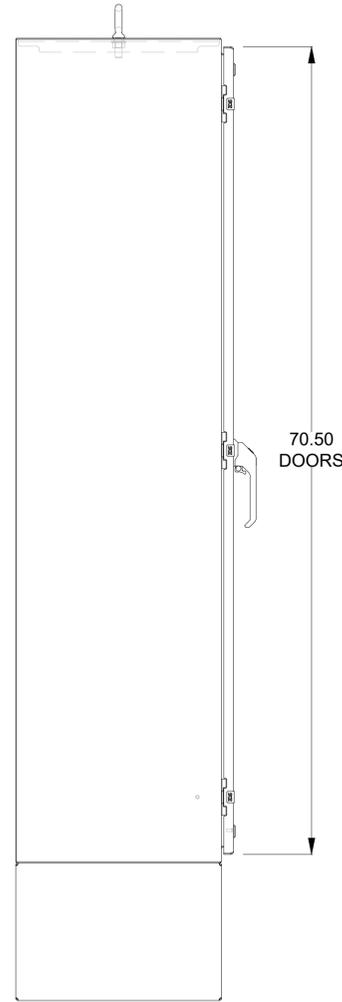
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1 2 3 4 5 6 7 8 9 10



SAGINAW CONTROL & ENGINEERING
SCE-72EL7218LPPL



LEFT SIDE VIEW

FRONT VIEW

RIGHT SIDE VIEW

DEAD FRONT PANEL FRONT VIEW
(INSTALL ON RIGHT SIDE)

PRE-FINAL
DESIGN FOR
AGENCY REVIEW
ONLY - NOT FOR
CONSTRUCTION



NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													
0		INTERMEDIATE (60%) DESIGN													

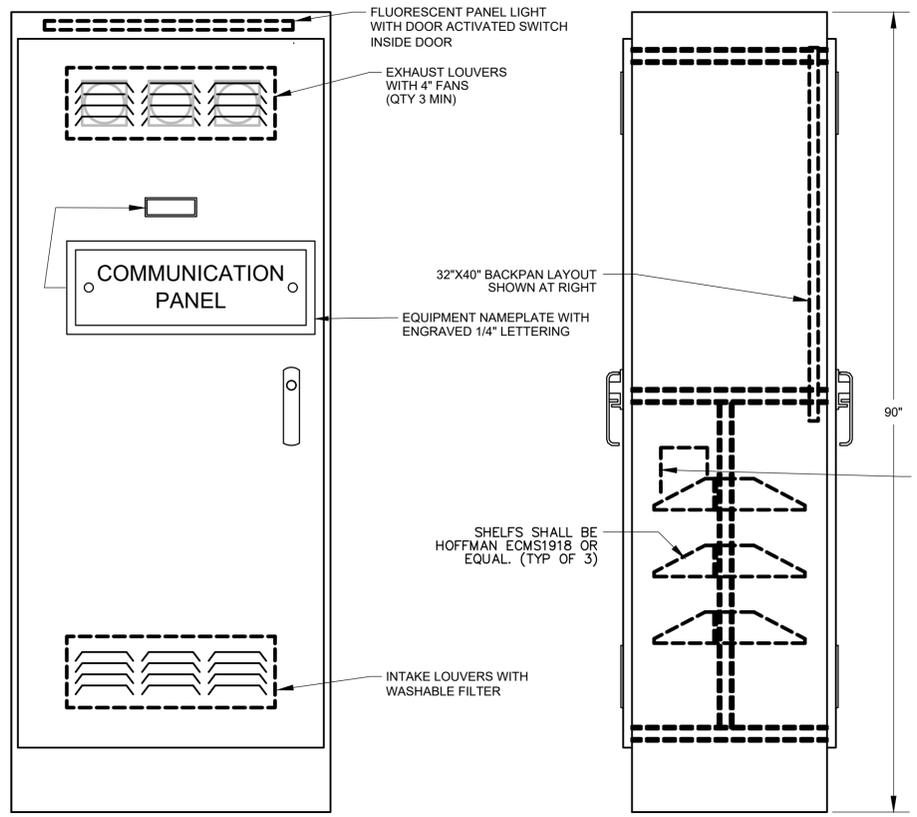
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JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
REMEDY PRODUCED WATER
CONDITIONING PLANT
MCC ONE-LINE & ELEVATION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	
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SHEET NO. of SHEETS	
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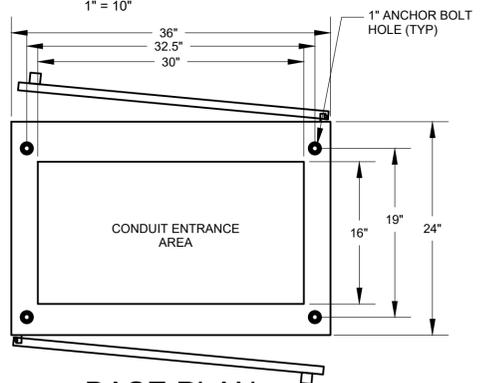
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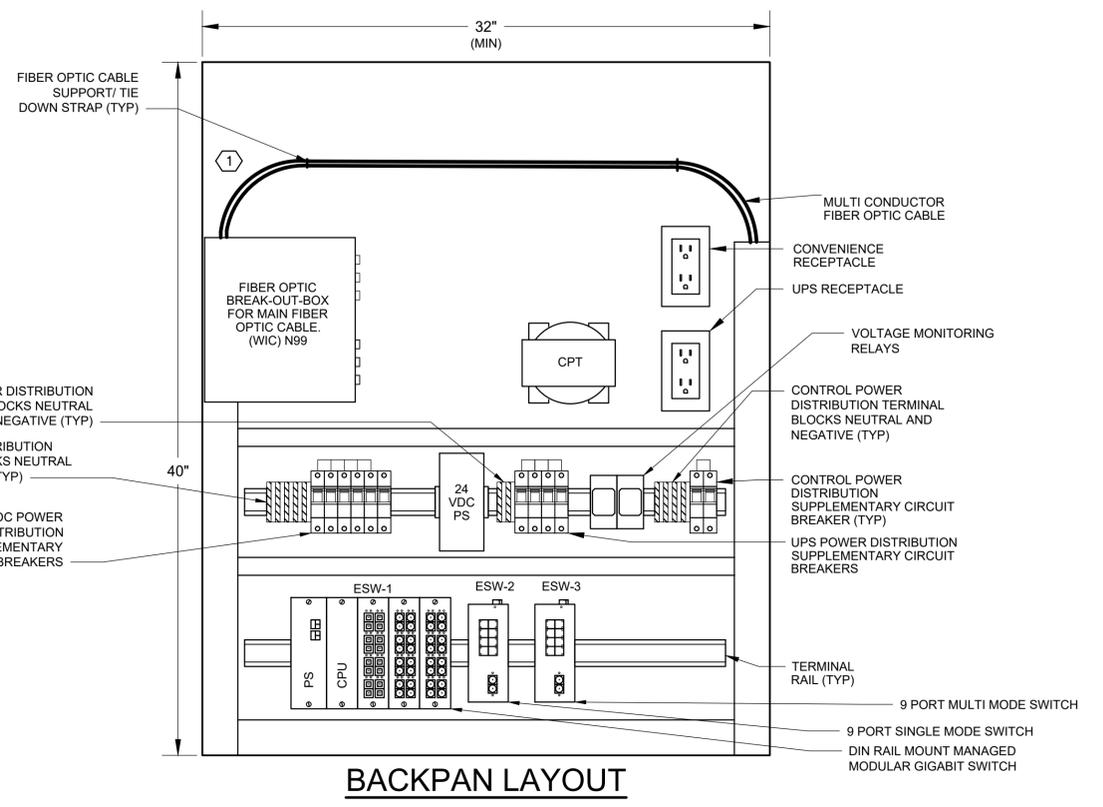
FRONT ELEVATION
ELEVATION
1" = 10"

SIDE ELEVATION



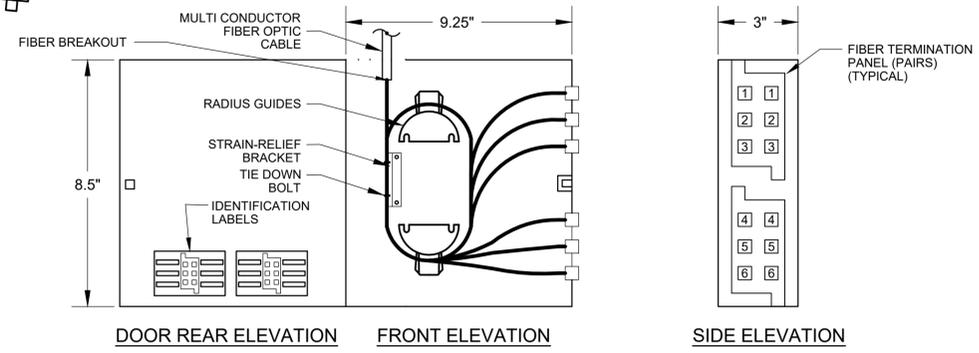
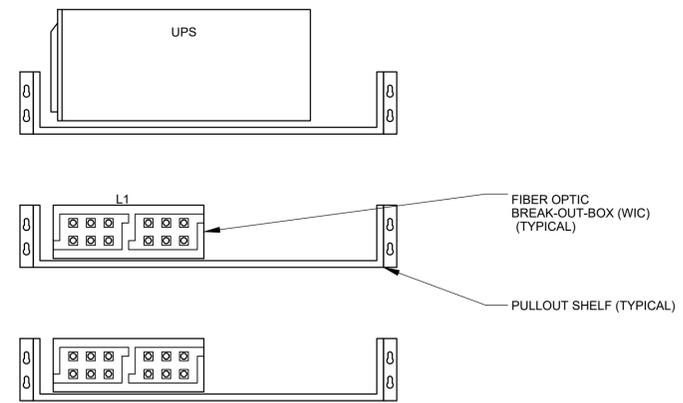
PANEL FABRICATION METHODS

- NEMA 3R, DUAL ACCESS.
- OUTER DOOR SEALED WITH RUBBERIZED FOAM GASKET.
- PANEL SHALL BE FABRICATED FROM PAINT BOND GALVANEAL SHEET STEEL.
- 12 GAUGE EXTERIOR AND 14 GAUGE INTERIOR.
- ALL SEAMS SHALL HAVE CONTINUOUS WELD GROUND SMOOTH.
- DOOR TO BE PADLOCKABLE WITH HEAVY DUTY 3 POINT LATCH.
- DOOR HINGES AND PINS SHALL BE CONTINUOUS, HEAVY DUTY.
- NO SCREWS, RIVETS, OR BOLTS SHALL PROTRUDE EXTERNALLY.
- INTERNAL SCREWS, RIVETS, BOLTS, AND NUTS SHALL BE MACHINE THREAD INTO TAPPED BACKPAN.
- EXTERIOR PANEL COLOR: ANSI 61 GRAY.
- MOUNTING PAN AND INTERIOR DOOR COLOR: WHITE.
- FABRICATION AND WIRING SHALL CONFORM TO U.L. AND NEMA STANDARDS.
- ALL WIRING SHALL BE PERMANENTLY LABELED WITH WIRE MARKERS ON BOTH ENDS.
- WIRING DIAGRAMS SHALL BE PLACED IN A PLASTIC DRAWING HOLDER PERMANENTLY ATTACHED TO THE INSIDE OF THE FRONT DOOR.
- AS - BUILT WIRING DIAGRAMS SHALL BE SHIPPED WITH EQUIPMENT.
- HOFFMAN A903624FSDA FREE-STANDING, DUAL ACCESS OR EQUAL.



DRAWING REFERENCED NOTES:

- 1 OBSERVE FIBER OPTIC CABLE MINIMUM BEND RADIUS.



FIBER OPTIC BREAK-OUT-BOX (WIC) ELEVATION

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													
0		INTERMEDIATE (60%) DESIGN													

APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
REMEDY PRODUCED WATER
COMMUNICATION PANEL
ELEVATION AND LAYOUT
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
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SHEET NO.	of SHEETS
E-08-08	REV 1

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PANEL "LP"

LOCATION: TWB RPWCP
ENCLOSURE: SURFACE
AIC RATING: 10 KAIC

120 / 208 VOLTS, 3 PHASE, 4 WIRE
225 AMP BUS
225 AMP MAIN BREAKER

BKR NO.	DESCRIPTION	LOAD VA	PHASE AMPS			AMPS/POLE	BKR NO.	BKR NO.	AMPS/POLE	PHASE AMPS			LOAD VA	DESCRIPTION	BKR NO.
			A	B	C				A	B	C				
1	SPARE	0	0.0			20/1	1	2	20/1	7.5		900	CONTROL PANEL	2	
3	SPARE	0		0.0		20/1	3	4	20/1		0.0	0	SPARE	4	
5	SPARE	0			0.0	20/1	5	6	20/1			3.3	400	DISPOSAL	6
7	SPARE	0	0.0			20/1	7	8	20/1	0.0		0	SPARE	8	
9	EXTERIOR LIGHTS	800		6.7		20/1	9	10	20/1		0.0	0	SPARE	10	
11	RECEPTACLES	600			5.0	20/1	11	12	20/1			0.0	0	SPARE	12
13	RECEPTACLES	800	6.7			20/1	13	14	20/1	0.0		0	SPARE	14	
15	RECEPTACLES	600			5.0	20/1	15	16	20/1		0.0	0	SPARE	16	
17	RECEPTACLES	800			6.7	20/1	17	18	20/1			0.0	0	SPARE	18
19	RECEPTACLES	800	6.7			20/1	19	20	20/1	0.0		0	SPARE	20	
21	RECEPTACLES	400			3.3	20/1	21	22	20/1		0.0	0	SPARE	22	
23	RECEPTACLES	800			6.7	20/1	23	24	20/1			0.0	0	SPARE	24
25	RECEPTACLES	200	1.7			20/1	25	26	20/1	0.0		0	SPARE	26	
27	GENERATOR CONNECTION PANEL AUX	350			2.9	20/1	27	28	20/2		9.4	1125	SUMP PUMP	28	
29	SPARE	0			0.0	20/1	29	30				9.4	1125		30
31	SPARE	0	0.0			20/1	31	32	20/1	0.0		0	SPARE	32	
33	SPARE	0			0.0	20/1	33	34	20/1		12.5	1500	FILTER PACKAGE 1	34	
35	SPARE	0			0.0	20/1	35	36	20/1			12.5	1500	FILTER PACKAGE 2	36
37	SPARE	0	0.0			20/1	37	38	225/3	0.0		0.0	MAIN	38	
39	CONDITIONED WATER STORAGE TANK CATHODIC	300			2.5	20/1	39	40				0.0		40	
41	CONDITIONED WATER STORAGE TANK ANALYZER	100			0.8	20/1	41	42				0.0		0.0	42

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="4">PHASE</th></tr> <tr><td>LEFT SIDE AMPS</td><td>15.1</td><td>20.4</td><td>19.2</td></tr> <tr><td>LEFT SIDE KVA</td><td>1.81</td><td>2.45</td><td>2.30</td></tr> <tr><td colspan="4">TOTAL PHASE KVA</td></tr> <tr><td></td><td>2.71</td><td>5.08</td><td>5.32</td></tr> <tr><td colspan="4">TOTAL PHASE AMPS</td></tr> <tr><td></td><td>22.6</td><td>42.3</td><td>44.4</td></tr> <tr><td colspan="4">% OF AVERAGE</td></tr> <tr><td></td><td>62</td><td>116</td><td>122</td></tr> </table>	PHASE				LEFT SIDE AMPS	15.1	20.4	19.2	LEFT SIDE KVA	1.81	2.45	2.30	TOTAL PHASE KVA					2.71	5.08	5.32	TOTAL PHASE AMPS					22.6	42.3	44.4	% OF AVERAGE					62	116	122	<p>NEUTRAL</p> <p>GROUND</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="4">PHASE</th></tr> <tr><td>RIGHT SIDE AMPS</td><td>7.5</td><td>21.9</td><td>25.2</td></tr> <tr><td>RIGHT SIDE KVA</td><td>0.90</td><td>2.63</td><td>3.02</td></tr> <tr><td colspan="4">TOTAL KVA</td></tr> <tr><td></td><td>13.11</td><td></td><td></td></tr> <tr><td colspan="4">TOTAL AMPS @ 480V, 3P</td></tr> <tr><td></td><td>36.43</td><td></td><td></td></tr> <tr><td colspan="4">DEMAND FACTOR</td></tr> <tr><td></td><td>0.80</td><td></td><td></td></tr> <tr><td colspan="4">LOAD KVA</td></tr> <tr><td></td><td>10.49</td><td></td><td></td></tr> </table>	PHASE				RIGHT SIDE AMPS	7.5	21.9	25.2	RIGHT SIDE KVA	0.90	2.63	3.02	TOTAL KVA					13.11			TOTAL AMPS @ 480V, 3P					36.43			DEMAND FACTOR					0.80			LOAD KVA					10.49		
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- NOTES: 1 MEANS OF WIRE COLOR CODING SHALL BE POSTED ON PANELBOARD PER NEC 210 (4)
 2 ASTERISK (*) DENOTES GFI BREAKER REQUIRED WITH 5 MA SENSITIVITY
 3 TILDA (~) DENOTES GFI BREAKER REQUIRED WITH 30 MA SENSITIVITY

**PRE-FINAL
DESIGN FOR
AGENCY REVIEW
ONLY - NOT FOR
CONSTRUCTION**



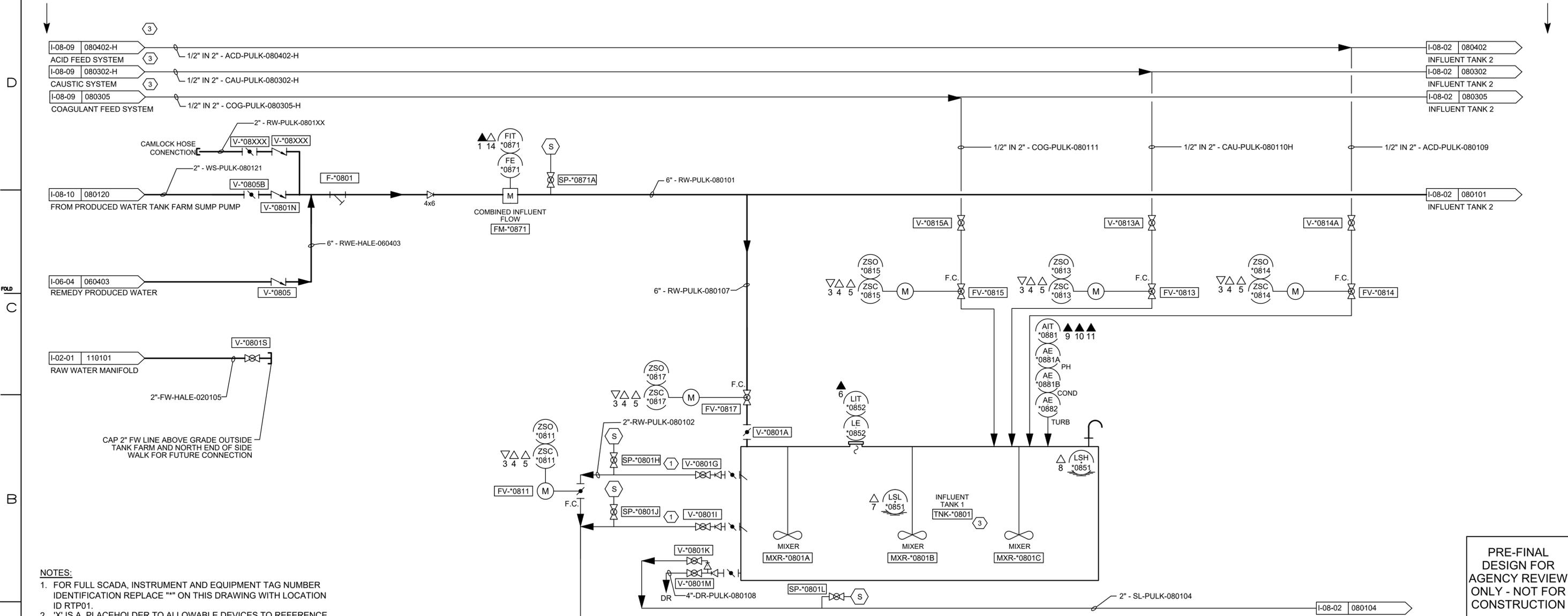
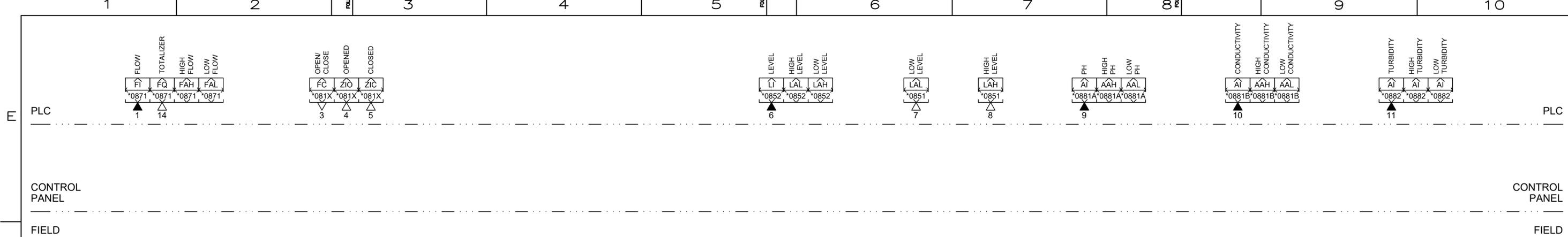
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1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN					MJY JW JMS JPB
0		INTERMEDIATE (60%) DESIGN					

APPROVED BY	SO
JPB	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

**TOPOCK GROUNDWATER REMEDIATION PROJECT
REMEDY PRODUCED WATER
CONDITIONING PLANT
PANELBOARD SCHEDULES**

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO. of SHEETS	E-08-10 of 1



NOTES:

- FOR FULL SCADA, INSTRUMENT AND EQUIPMENT TAG NUMBER IDENTIFICATION REPLACE "*" ON THIS DRAWING WITH LOCATION ID RTP01.
- "X" IS A PLACEHOLDER TO ALLOWABLE DEVICES TO REFERENCE THE SAME I/O SYMBOL.

NOTES REFERENCED IN DRAWING:

- DOWN HILL ANGLE EXTENSION TO PREVENT SETTLING IN TANK PIPE. TAPS APPROXIMATELY 2' AND 6' FROM TANK BOTTOM.
- EDUCTORS LOCATED NEAR BOTTOM OF TANK ON 8' LENGTH OF TANK. SEE DWG M-11-02.
- DOUBLE CONTAINED PIPE. 1/2" INSIDE 2".
- SEE SPECIFICATION SECTION 33 16 13.14 AND DRAWING M-11-02.

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													
0		INTERMEDIATE (60%) DESIGN													

APPROVED BY	SO
MJS	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

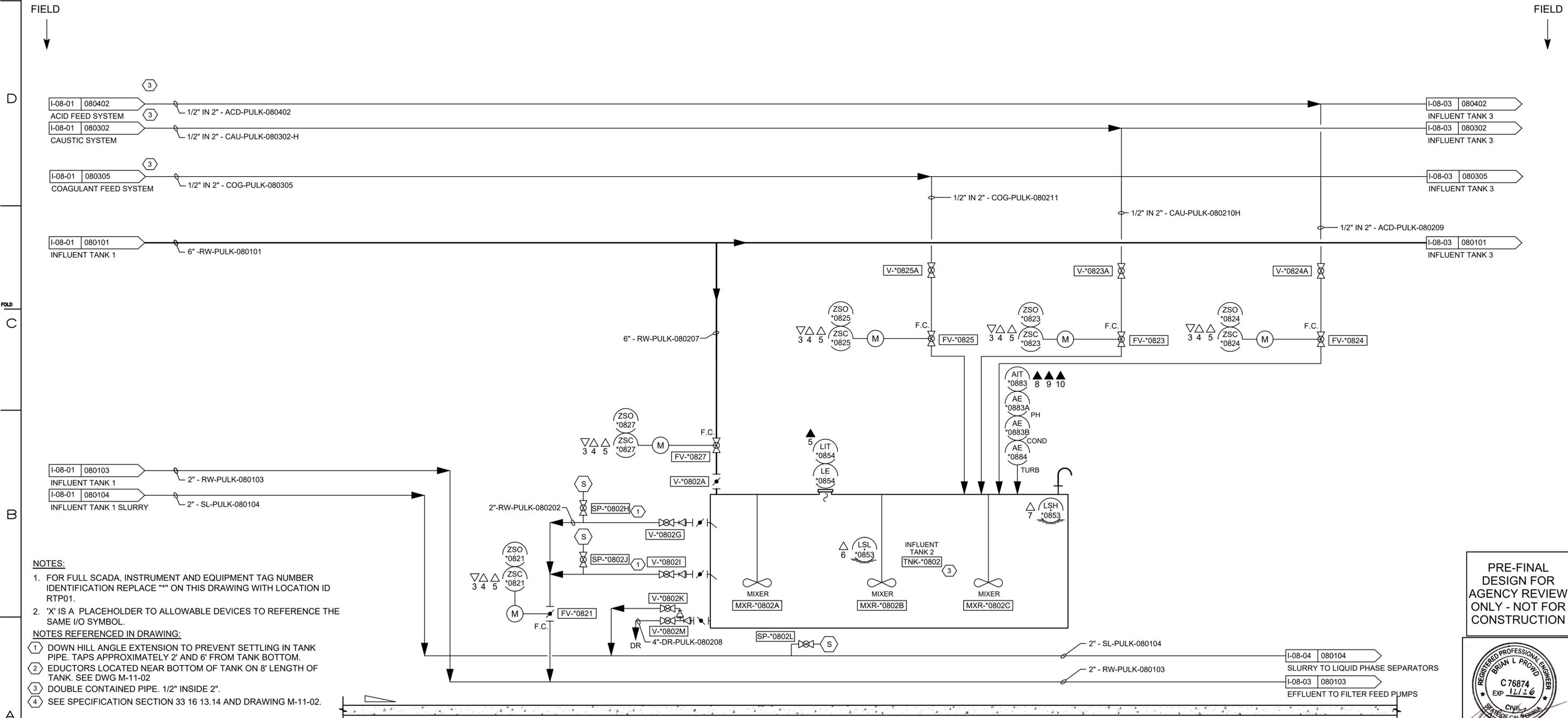
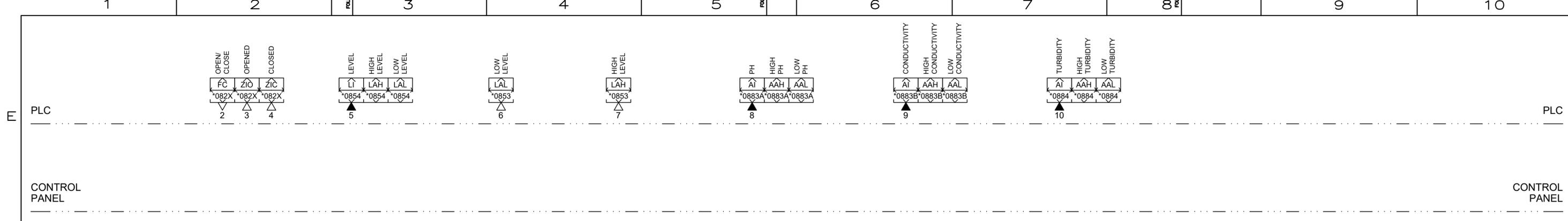
TOPOCK GROUNDWATER REMEDIATION PROJECT

P&ID INFLUENT TANK 1

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
I-08-01	REV 1

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- NOTES:**
- FOR FULL SCADA, INSTRUMENT AND EQUIPMENT TAG NUMBER IDENTIFICATION REPLACE *** ON THIS DRAWING WITH LOCATION ID RTP01.
 - 'X' IS A PLACEHOLDER TO ALLOWABLE DEVICES TO REFERENCE THE SAME I/O SYMBOL.
- NOTES REFERENCED IN DRAWING:**
- DOWN HILL ANGLE EXTENSION TO PREVENT SETTLING IN TANK PIPE. TAPS APPROXIMATELY 2' AND 6' FROM TANK BOTTOM.
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 - SEE SPECIFICATION SECTION 33 16 13.14 AND DRAWING M-11-02.

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



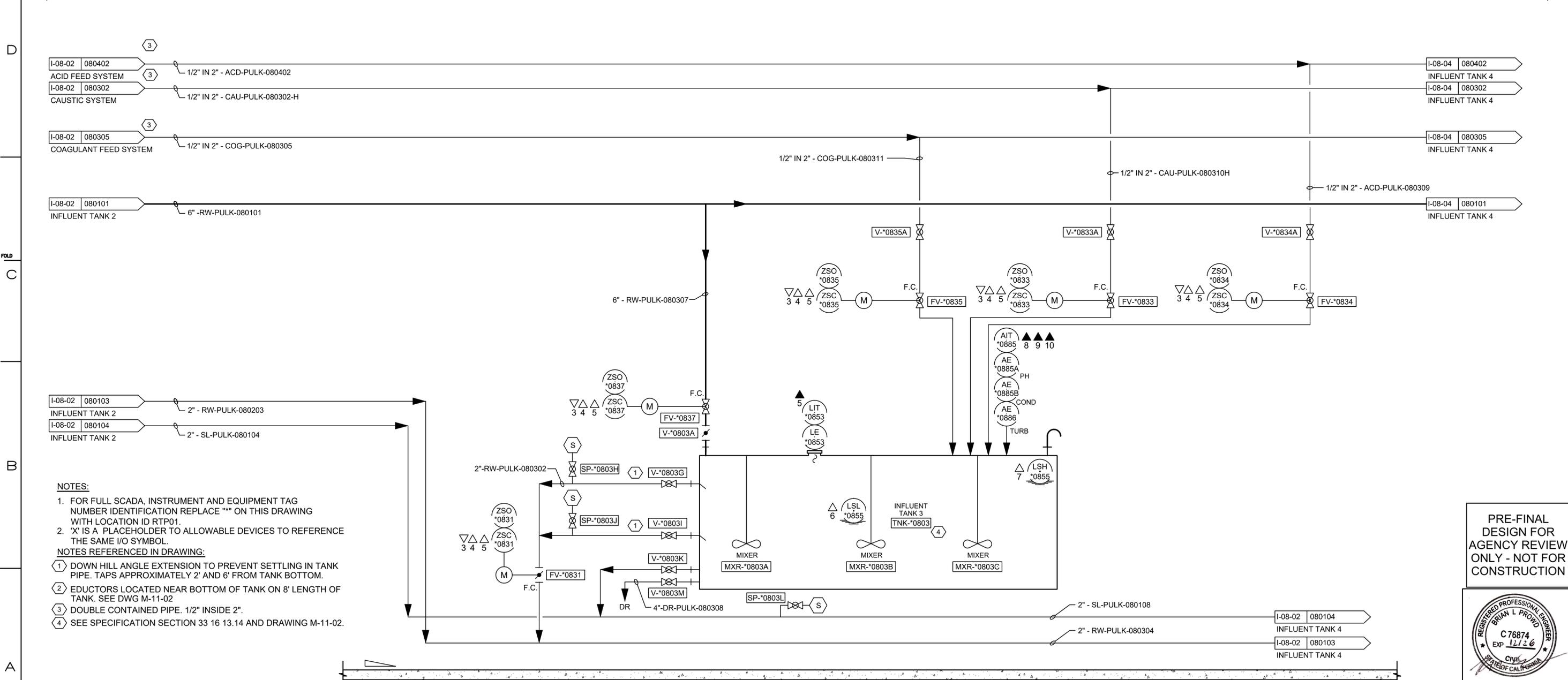
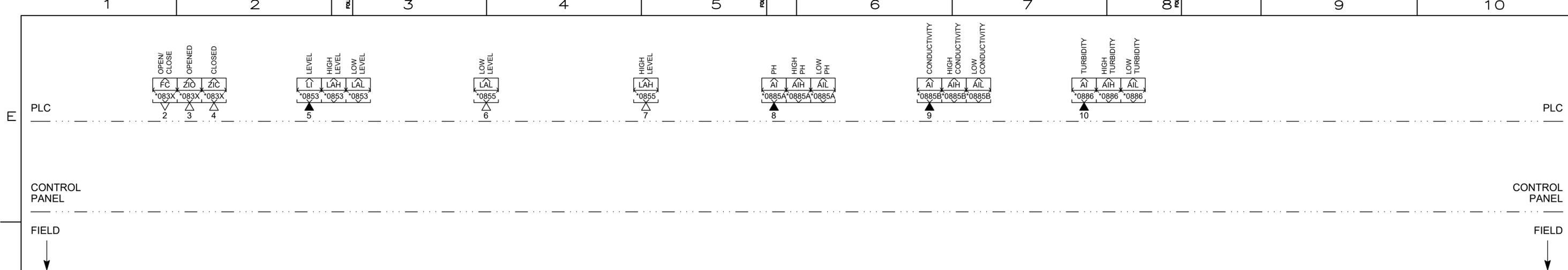
NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													
0		INTERMEDIATE (60%) DESIGN													

APPROVED BY	SO
MJS	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
P&ID INFLUENT TANK 2
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO. of SHEETS	I-08-02 of 1
REV	1

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- NOTES:**
- FOR FULL SCADA, INSTRUMENT AND EQUIPMENT TAG NUMBER IDENTIFICATION REPLACE "" ON THIS DRAWING WITH LOCATION ID RTP01.
 - 'X' IS A PLACEHOLDER TO ALLOWABLE DEVICES TO REFERENCE THE SAME I/O SYMBOL.
- NOTES REFERENCED IN DRAWING:**
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 - SEE SPECIFICATION SECTION 33 16 13.14 AND DRAWING M-11-02.

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



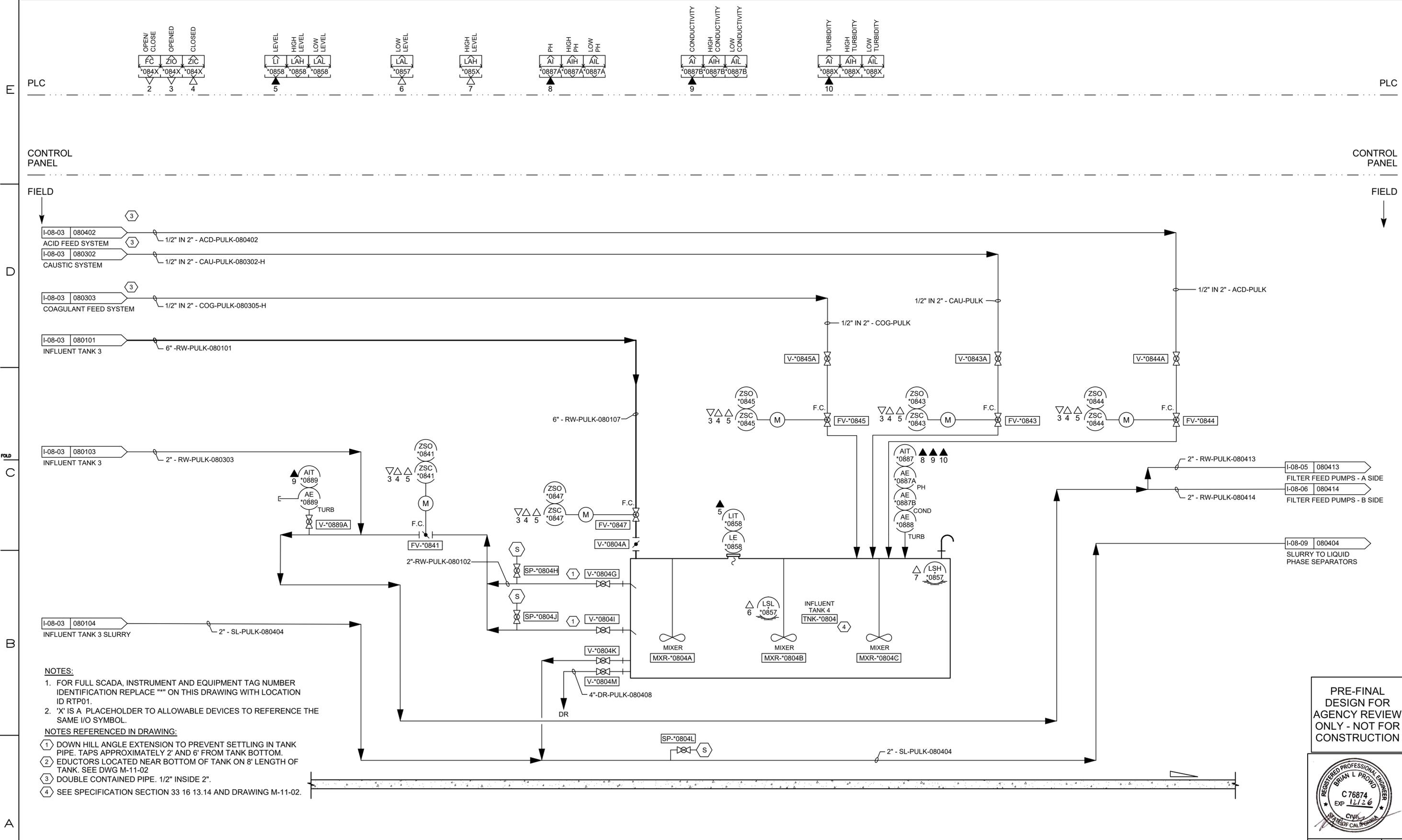
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1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													
0		INTERMEDIATE (60%) DESIGN													

APPROVED BY	SO
MJS	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
P&ID INFLUENT TANK 3
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO. of SHEETS	I-08-03 REV 1

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- NOTES:**
- FOR FULL SCADA, INSTRUMENT AND EQUIPMENT TAG NUMBER IDENTIFICATION REPLACE "" ON THIS DRAWING WITH LOCATION ID RTP01.
 - 'X' IS A PLACEHOLDER TO ALLOWABLE DEVICES TO REFERENCE THE SAME I/O SYMBOL.
- NOTES REFERENCED IN DRAWING:**
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 - DOUBLE CONTAINED PIPE. 1/2" INSIDE 2".
 - SEE SPECIFICATION SECTION 33 16 13.14 AND DRAWING M-11-02.

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



NO.		DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	REVISIONS			
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN							VC	VJM	BLP	JPB
0		DATE	INTERMEDIATE (60%) DESIGN						XXX			XXX

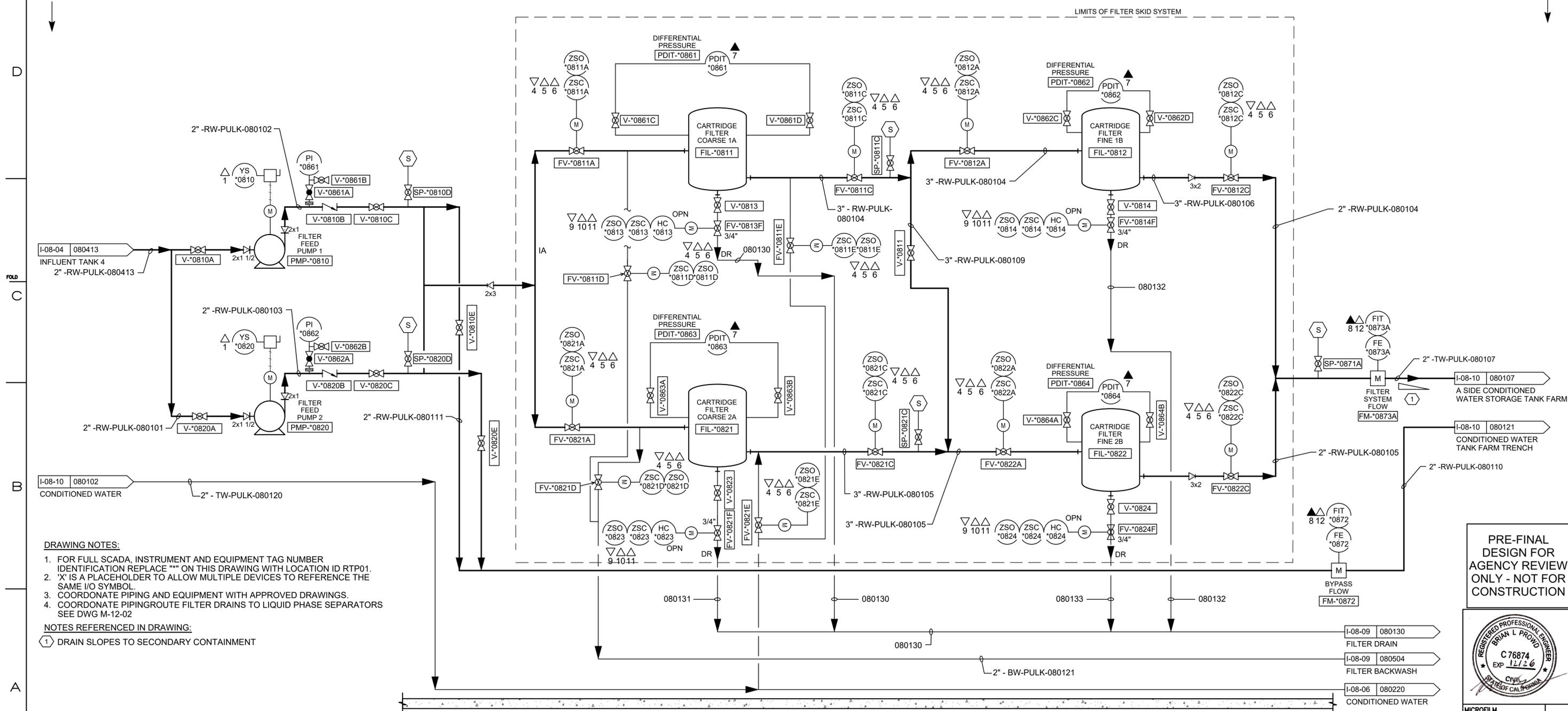
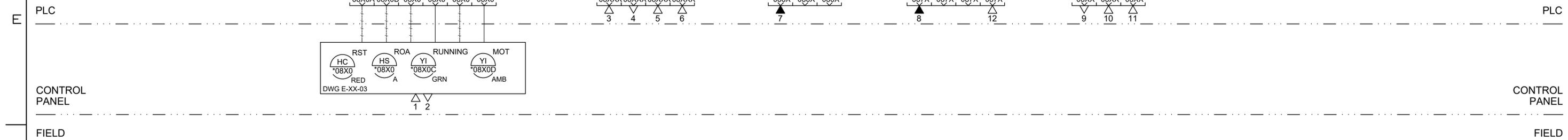
APPROVED BY	SO
MJS	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT

P&ID
INFLUENT TANK 4

GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
I-08-04	REV 1



DRAWING NOTES:

- FOR FULL SCADA, INSTRUMENT AND EQUIPMENT TAG NUMBER IDENTIFICATION REPLACE "" ON THIS DRAWING WITH LOCATION ID RTP01.
- 'X' IS A PLACEHOLDER TO ALLOW MULTIPLE DEVICES TO REFERENCE THE SAME I/O SYMBOL.
- COORDONATE PIPING AND EQUIPMENT WITH APPROVED DRAWINGS.
- COORDONATE PIPINGROUTE FILTER DRAINS TO LIQUID PHASE SEPARATORS SEE DWG M-12-02

NOTES REFERENCED IN DRAWING:

① DRAIN SLOPES TO SECONDARY CONTAINMENT

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													
0		INTERMEDIATE (60%) DESIGN													

APPROVED BY	SO
MJS	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT

P&ID

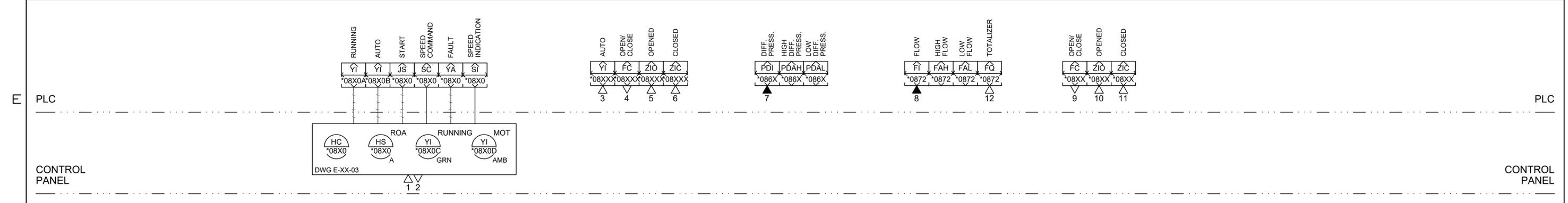
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GAS TRANSMISSION & DISTRIBUTION

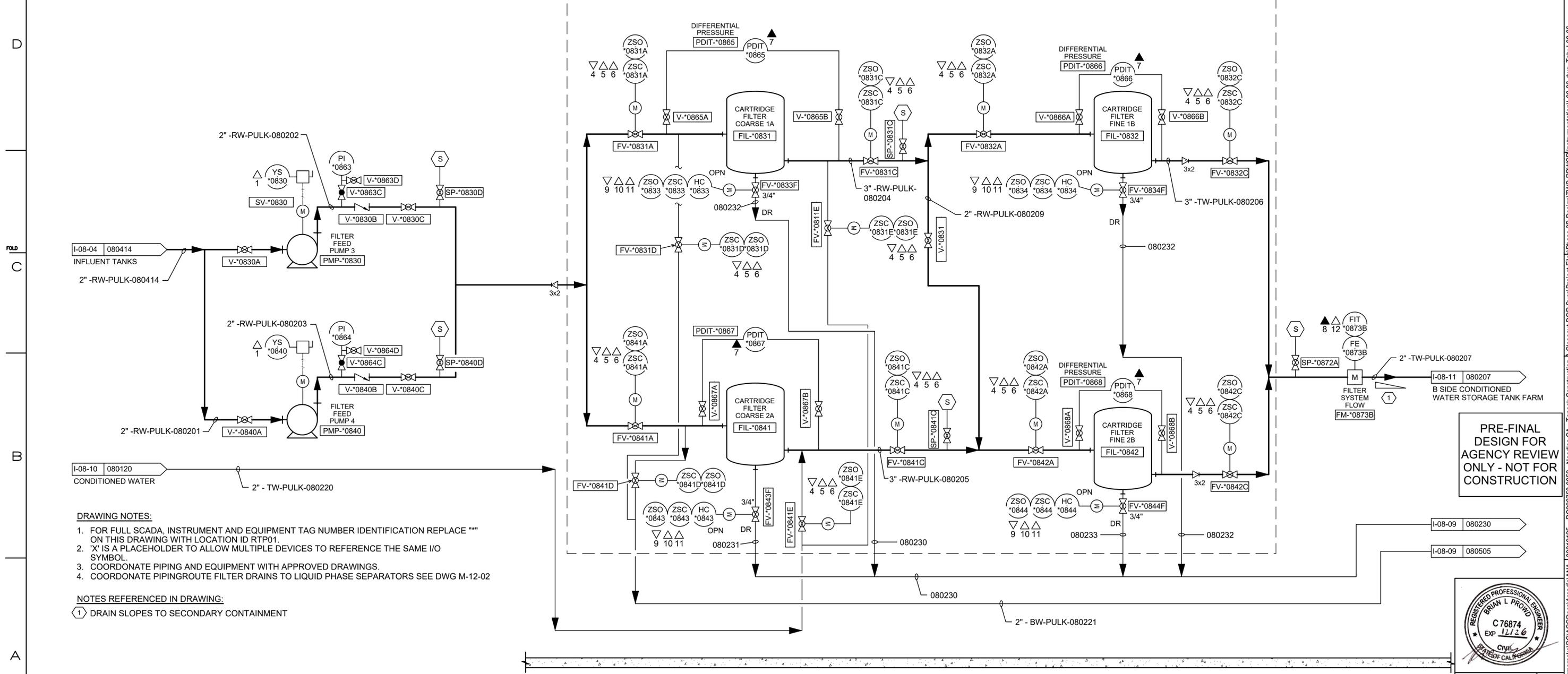
PACIFIC GAS AND ELECTRIC COMPANY

SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
I-08-05	REV 1



FIELD



DRAWING NOTES:

- FOR FULL SCADA, INSTRUMENT AND EQUIPMENT TAG NUMBER IDENTIFICATION REPLACE "" ON THIS DRAWING WITH LOCATION ID RTP01.
- "X" IS A PLACEHOLDER TO ALLOW MULTIPLE DEVICES TO REFERENCE THE SAME I/O SYMBOL.
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- COORDONATE PIPINGROUTE FILTER DRAINS TO LIQUID PHASE SEPARATORS SEE DWG M-12-02

NOTES REFERENCED IN DRAWING:

① DRAIN SLOPES TO SECONDARY CONTAINMENT

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



NO.		DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	REVISIONS			
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN							VC	VJM	BLP	JPB
0		DATE	INTERMEDIATE (60%) DESIGN						xxx	xxx	xxx	xxx

APPROVED BY	SO
MJS	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT

P&ID

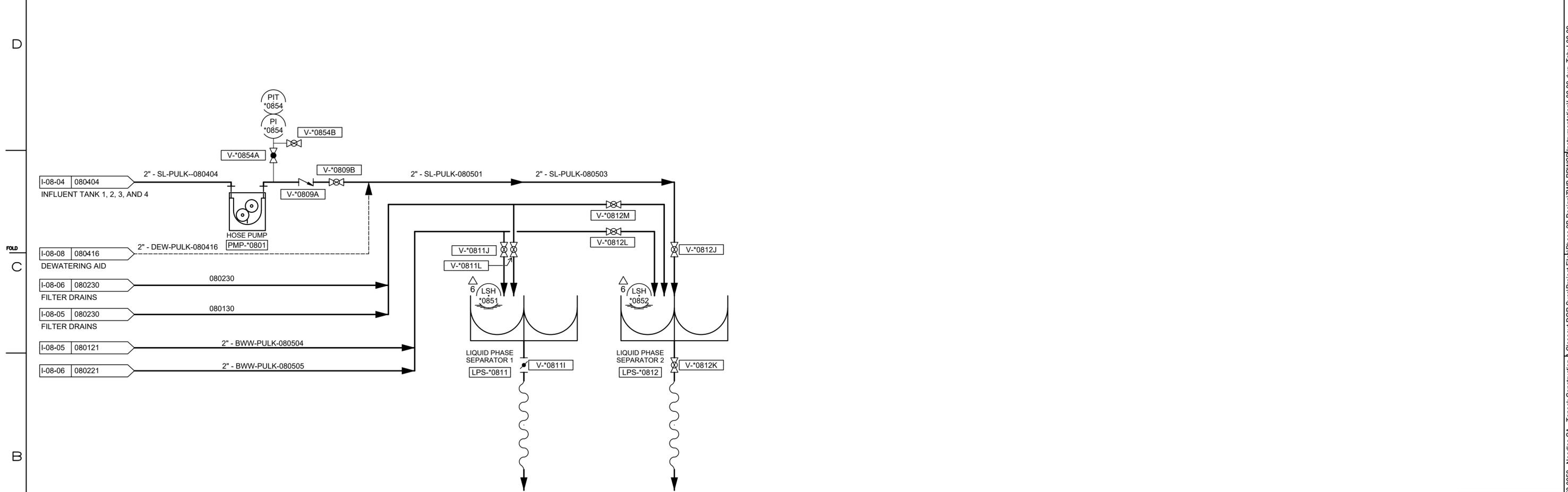
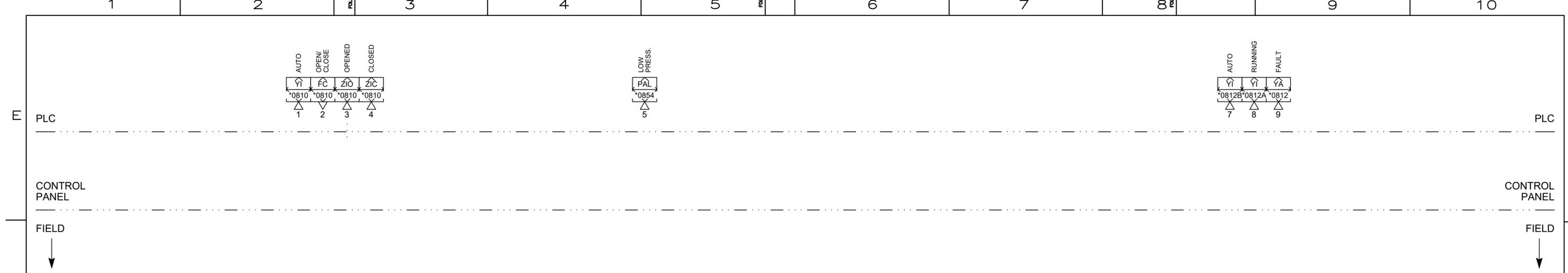
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GAS TRANSMISSION & DISTRIBUTION

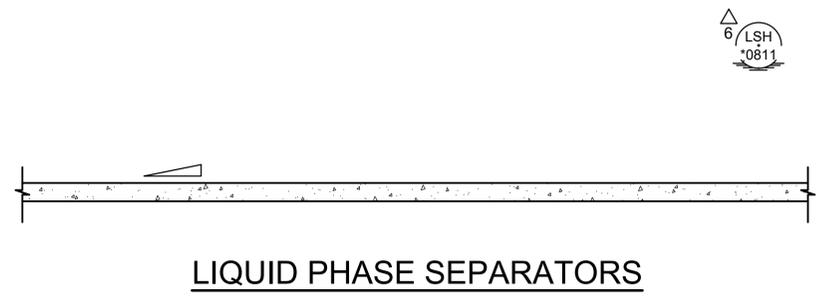
PACIFIC GAS AND ELECTRIC COMPANY

SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
I-08-06	REV 1



- NOTES:**
- FOR FULL SCADA, INSTRUMENT AND EQUIPMENT TAG NUMBER IDENTIFICATION REPLACE "" ON THIS DRAWING WITH LOCATION ID RTP01.
 - LIQUID PHASE SEPARATORS SUPPLIED BY OWNER. COORDINATE PIPING HOSES AND FITTINGS WITH EQUIPMENT.



LIQUID PHASE SEPARATORS

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION

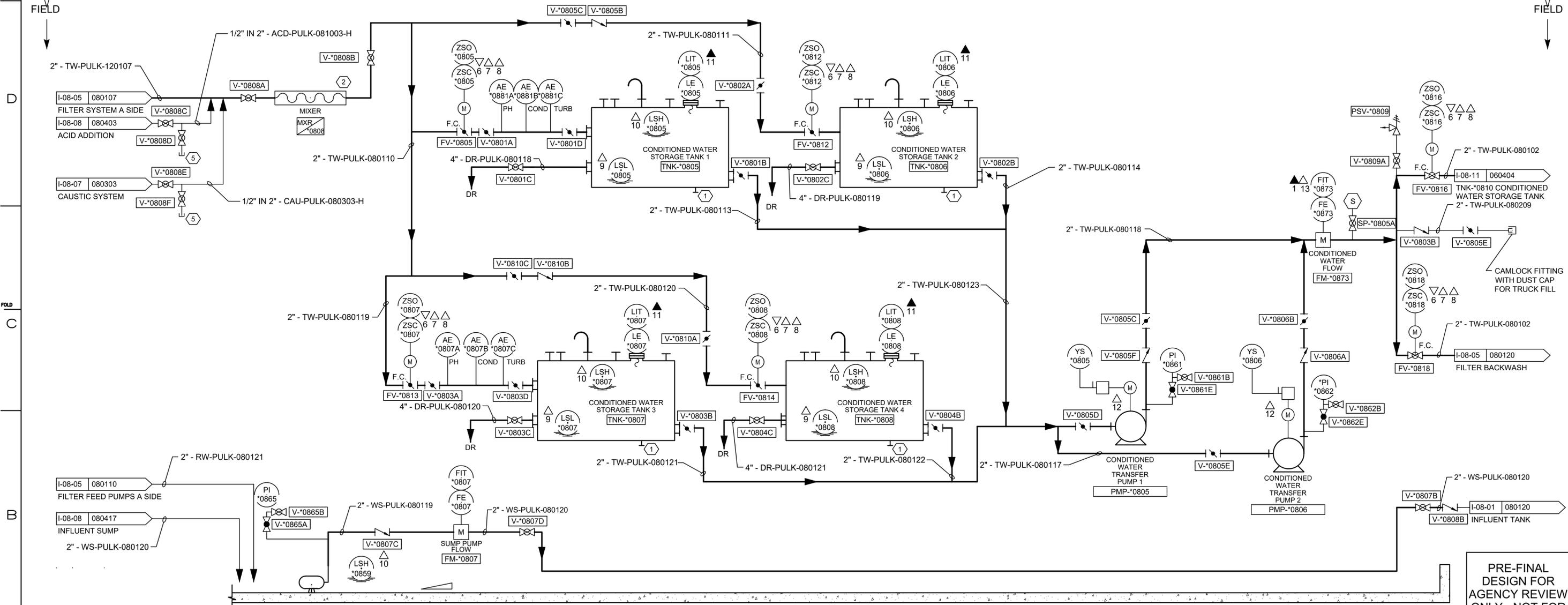
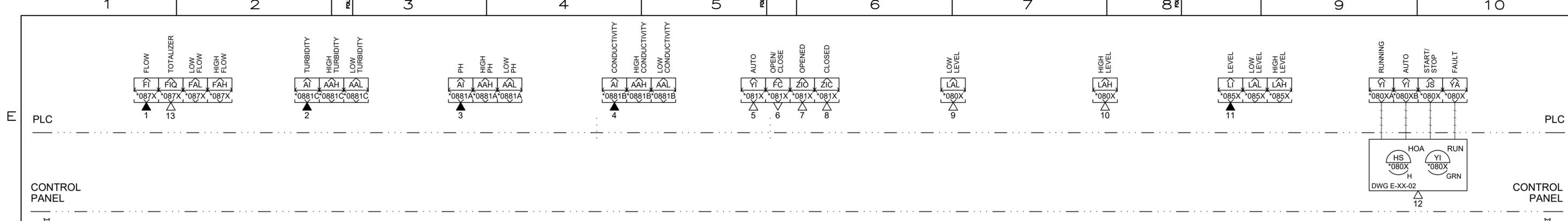


TOPOCK GROUNDWATER REMEDIATION PROJECT
P&ID
LIQUID PHASE SEPARATORS
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

REVISIONS										REVISIONS									
NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY				
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN						VC	VJM	BLP	JPB								
0		INTERMEDIATE (60%) DESIGN						XXX											

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO. of SHEETS	I-08-09 of 1
REV	1

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- NOTES:**
- FOR FULL SCADA, INSTRUMENT AND EQUIPMENT TAG NUMBER IDENTIFICATION REPLACE *** ON THIS DRAWING WITH LOCATION ID RTP01.
 - 'X' IS A PLACEHOLDER TO ALLOW MULTIPLE DEVICES TO REFERENCE THE SAME I/O SYMBOL.

- NOTES REFERENCED IN DRAWING:**
- NOZZLES PROVIDED FOR FUTURE RECIRCULATION PUMP AND EDUCATORS, PH, CONDUCTIVITY AND TURBIDITY ANALYZERS AND CHEMICAL FEED TO TANKS.
 - MINIMUM DISTANCE TO BE DETERMINED.
 - BLOWDOWN LINE CONNECTS TO TCS WASTEWATER TANK AND IS PUMPED FROM THERE TO EVAPORATION PONDS.
 - INSTALL DRY BREAK QUICK CONNECT.

PRE-FINAL DESIGN FOR AGENCY REVIEW ONLY - NOT FOR CONSTRUCTION



NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY
1	10/01/25	PRE-FINAL (90%) PHASE 2B DESIGN													
0		INTERMEDIATE (60%) DESIGN													

APPROVED BY	SO
MJS	SUPV
	DSGN
	DWN
	CHKD
	OK
	DATE
	SCALES

TOPOCK GROUNDWATER REMEDIATION PROJECT
P&ID
CONDITIONED WATER STORAGE TANK FARM A SIDE
 GAS TRANSMISSION & DISTRIBUTION
 PACIFIC GAS AND ELECTRIC COMPANY
 SAN FRANCISCO, CALIFORNIA

MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
I-08-10	REV 1

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Future Activity Allowance Determination Matrix for Work Variance Request (WVR)

Work Variance Request No. 17 Date: 11/9/2025

Future Activity Allowance is an activity that is not considered in the remedy design but necessary to support the project objectives. Future Activity Allowance is a Material Deviation which is defined in the final groundwater remedy design as: Material Deviation means a change or correction required to prevent a condition that would (1) render the approved design non-compliant with codes, regulations, and /or engineering standard of practices, (2) render planned well locations and/or constructions fail to meet the project objectives, (3) cause significant schedule delay, and/or (4) cause a significant increase in costs. (CH2M Hill, 2015)

According to the SEIR Project Description, "The inclusion of the Future Activity Allowance is not intended to account for minor adjustments (work variances) of the remedy design during construction resulting from field conditions. DTSC's objective for the inclusion of the Future Activity Allowance is to consider the potential impacts of needing to take additional but previously unforeseen activities that were not contemplated as part of the Final Remedy Design but are activities that would improve the performance of the remedy, or are necessary to gather additional information on the remedy performance, and/or aid in the transition of the active remedy to monitored natural attenuation." (ESA, 2017)

1. Are all components of the WVR in the approved final design as reviewed in the SEIR?
 Yes No

2. Are all components of the WVR staying within an infrastructure alignment in the approved final design?
 Yes No

If answers to both 1 and 2 are Yes, STOP – action is not Future Activity Allowance

3. For components not in approved final design, will the WVR require new access not identified for use in the final design and create new ground disturbance beyond those anticipated in final design?
 Yes No **NOT APPLICABLE**

If answer is No, STOP – action is not Future Activity Allowance. If Yes, proceed...

4. For components not in approved final design and require new access or new ground disturbance, will the ground disturbing activity be outside the 2018 SEIR project boundary?
 Yes No

If answer is Yes, STOP – action is subject to additional CEQA evaluation. WVR approval will be considered after DTSC completes CEQA determination.

5. For WVR requiring new access and/or new ground disturbance, but project components are in approved final design and within the 2018 SEIR project boundary, is the variance necessitated by field conditions which are outside the control of the operator (e.g., refusal during drilling, unstable ground, existing design jeopardizes health and safety, modification to avoid archaeological resource, existing design does not conform to engineering standards, etc.)?
 Yes No

Future Activity Allowance Determination Matrix

WVR No. 17

If answer is No or otherwise explained in Section 7 below, action is Future Activity Allowance, follow Communication Protocol for Future Activities Allowance, Exhibit 3 to the Statement of Decision and Resolution of Approval. If the answer is Yes, action is Future Activity Allowance, and DTSC will work with Tribes to meet the time sensitivity of the WVR. Regardless of response, because of new access and/or new ground disturbance, WVR action may be subject to Federal Consultation. Inquire with BLM to determine whether there is a need to follow Consultation during Construction protocol.

6. Does the addition of WVR cause an exceedance from infrastructure limits specified in the 2018 certified Final SEIR (Table 3-1 for well boreholes; Table 3-2 for pipeline trenches, electrical/communication conduit, roadway improvements, or sizes of buildings and structures; Table 3-4 for volume of soil disturbance and Table 3-5 for water usage)?

Yes No

If answer is Yes, STOP – action is subject to additional CEQA evaluation. WVR approval will be considered after DTSC completes a CEQA checklist to determine if there are new or substantially more significant environmental impacts than disclosed in the 2018 SEIR.

7. Other extenuating circumstances or information for FAA considerations: No

Yes – provide information and/or justification

Conclusion: WVR No. 17

is not a FAA is a FAA

Signature of DTSC reviewer: Christopher Ioan

Date: 2/5/2026

Note:

Work Variance 17 was emailed out to all Agencies, Stakeholders, and Tribes on 12/9/2025 where comment period would end 12/23/2025. No comments were provided by Agencies, Stakeholders, and Tribes.



Department of Toxic Substances Control

Yana Garcia
Secretary for
Environmental Protection

Katherine M. Butler, MPH, Director
5796 Corporate Avenue
Cypress, California 90630

Gavin Newsom
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February 5, 2026

John Glass
Project Manager
Pacific Gas and Electric Company
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FINAL REVIEW OF WORK VARIANCE REQUEST #17-RELOCATE PHASE 2
REMEDY PRODUCED WATER CONDITIONING FACILITIES TO TRANSWESTERN
BENCH, PACIFIC GAS AND ELECTRIC COMPANY (PG&E) TOPOCK
COMPRESSOR STATION, NEEDLES CALIFORNIA (EPA ID CAT080011729)

Dear Mr. Glass,

The Department of Toxic Substance Control has reviewed PG&E's work variance titled *Work Variance #17-Relocate Phase 2 Remedy Produced Water Conditioning Facilities to Transwestern Bench, PG&E Topock Compressor Station, Needles, California*, (WVR #17) dated November 19, 2025.

This WVR #17 outlines relocation of the water conditioning facilities that are part of the approved design. These facilities will be constructed in the Transwestern Bench as opposed to Topock Compressor Station, as originally stated. Additional details are in the attached WVR #17 packet.

Engineering Services and Special Projects Office (ESPO) provided comments on the first draft of WVR #17 to PG&E on January 7, 2026. PG&E submitted a response to comment letter titled *Submittal of response to comments on the Work Variance #17-Relocate Phase 2 Remedy Produced Water Conditioning Facilities to Transwestern Bench, dated November 19, 2025, PG&E Topock Compressor Station, Needles, California* on January 22, 2026, for review.

Mr. John Glass
February 5, 2026
Page 2

Upon ESPO's final review all information provided by PG&E related to WVR #17 is adequate and has no further comments.

If you have any questions regarding this approval, please feel free to contact the Project Manager, Mr. Christopher Ioan via e-mail at: christopher.ioan@dtsc.ca.gov or at (714) 484-5365.

Sincerely,



Christopher Ioan
Hazardous Substance Engineer
Department of Toxic Substances Control

Attached:

- Response to Comments on the Work Variance Request #17, January 22, 2025, by Arcadis
- Review of Work Variance Request #17-Relocate Phase 2 Remedy Produced Water Conditioning Facilities to Transwestern Bench, Pacific Gas and Electric Company (PG&E) Topock Compressor Station, Needles California (EPA ID CAT080011729)

cc: Nicholas Ta
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Mr. John Glass
February 5, 2026
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PG&E Topock Consultative Work Group Members

PG&E Topock Geo/Hydro Workgroup Members

Tribal Representatives in PG&E Project Contact List

SUBJECT: RESPONSE TO COMMENTS ON THE WORK VARIANCE REQUEST
#17, JANUARY 22, 2025, BY ARCADIS

TECHNICAL REVIEWER: FARRUKH AHMAD, PHD, PE
SENIOR HAZARDOUS SUBSTANCES ENGINEER

PEER REVIEWER: PERRY MYERS, PE
UNIT CHIEF, ENGINEERING SERVICES, NORTH

PROJECT: CHRISTOPHER IOAN
HAZARDOUS SUBSTANCES ENGINEER & PROJECT MANAGER
PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA 92363
(SITE: 540015-54; ACTIVITY: 66094; MPC: DES-PI; #WR20132109)

DOCUMENT REVIEWED:

ESPO reviewed the *Response to Comments on the Work Variance Request #17 – Relocate Phase 2 Remedy Produced Water Conditioning (RPWC) Facilities to Transwestern Bench (TWB), PG&E Topock Compressor Station (TCS), Needles, California 92363* (“Site”), dated January 22, 2025 (RTCs), by Arcadis. If you have any questions, please contact me at Farrukh.Ahmad@dtsc.ca.gov or 916-255-6670.

COMMENTS:

The ESPO review was based on the information supplied at the time the review was performed and does not constitute a guarantee of the completeness of the information or accuracy of the assumptions used by the responsible party. The professional engineer’s stamp and/or signature exclusively certify the comments included in the ESPO section.

Below is a summary of the responses provided by Arcadis for each original ESPO comment (dated January 6, 2026), followed by ESPO’s decision on the adequacy of each response. Please provide an additional round of RTCs to address any remaining items. The explanations needed are not urgent and can be provided as Phase 2 construction approaches completion.

ESPO Comment 1:

A general description of transfer activities is provided, including flow outages.

While ESPO finds this information adequate to address the comment, we expect an anticipated schedule of transfer activities as Phase 2 RPWC nears completion.

ESPO Comment 2:

The response explains that the Phase 2 design adheres to the same capacities as the ones used for Phase 1, which are detailed in the 2015 100% Basis of Design (BoD) document, albeit in a different layout/ land footprint. Additionally, TCS evaporation ponds will remain available as a contingency for the Phase 2 design.

ESPO finds this information adequate to address the comment. No additional information is needed to address this comment.

ESPO Comment 3:

Section 3.4 of the 2015 100% BoD is cited as the treatment trains for both Phase 1 and Phase 2 are similar. Additionally, the response states that the implementation timeline of the “future provisional” components of the treatment is currently unknown and will depend on actual operations and observations.

ESPO finds the cited information adequate to address the first part of the comment. For the second part, ESPO would like to see a general decision rationale (text or figure) requiring the implementation of any “future provisional” components.

ESPO Comment 4:

The minimum and maximum flowrates are provided for the treatment train feed pumps. The nominal flowrate (for the batch-fed process), as well as the approximate head loss, which will be less than the 2015 100% BoD owing to reduced pipe-lengths and the elimination of elevation variations in the layout on the TWB, are also provided. Finally, hydraulic calculations for the filter feed pumps are provided in attachment A.

ESPO reviewed the submitted materials provided and finds the information submitted to be adequate to address the comment. No additional information is needed to address this comment.

ESPO Comment 5:

A detailed process control narrative is provided to address this comment. The document is a revision of the process control narrative for Phase 1 provided as part of the 2015 100% BoD.

Please review this material for its consistency with future plans for Phase 2, and revise as needed. For example, the document still references the carbon amendment building (CAB) and other equipment at the MW-20 Bench (Section 2.1) at Node 3 in the Supervisory Control and Data Acquisition (SCADA) system control architecture. As per December 3, 2025, meeting slides, only the conditioned water storage tank/storage tank farm is to be retained at the MW-20 Bench.



Department of Toxic Substances Control

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January 7, 2026

John Glass
Project Manager
Pacific Gas and Electric Company
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REVIEW OF WORK VARIANCE REQUEST #17-RELOCATE PHASE 2 REMEDY
PRODUCED WATER CONDITIONING FACILITIES TO TRANSWESTERN BENCH,
PACIFIC GAS AND ELECTRIC COMPANY (PG&E) TOPOCK COMPRESSOR
STATION, NEEDLES CALIFORNIA (EPA ID CAT080011729)

Dear Mr. Glass,

The Department of Toxic Substance Control has reviewed PG&E's work variance titled *Work Variance #17-Relocate Phase 2 Remedy Produced Water Conditioning Facilities to Transwestern Bench, PG&E Topock Compressor Station, Needles, California*, dated November 19, 2025

The Engineering Services and Special Projects Office (ESPO) have several comments that are outlined in the memorandum attached. Please provide responses to the comments section of the ESPO memo.

If you have any questions regarding this approval, please feel free to contact the Project Manager, Mr. Christopher Ioan via e-mail at: christopher.ioan@dtsc.ca.gov or at (714) 484-5365.

Mr. John Glass
January 7, 2026
Page 2

Sincerely,

Christopher Ioan

Christopher Ioan
Hazardous Substance Engineer
Department of Toxic Substances Control

Attached: Engineering Services and Special Projects Office (ESPO) Memo

cc: Nicholas Ta
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Mr. John Glass
January 7, 2026
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PG&E Topock Consultative Work Group Members

PG&E Topock Geo/Hydro Workgroup Members

Tribal Representatives in PG&E Project Contact List

SUBJECT: WORK VARIANCE REQUEST #17, SUBMITTAL DATE OF NOVEMBER 19, 2025, BY ARCADIS

TECHNICAL REVIEWER: FARRUKH AHMAD, PHD, PE
SENIOR HAZARDOUS SUBSTANCES ENGINEER

PEER REVIEWER: AMIT PATHAK, PE
UNIT CHIEF, ENGINEERING SERVICES, SOUTH

PROJECT: CHRISTOPHER IOAN
HAZARDOUS SUBSTANCES ENGINEER & PROJECT MANAGER
PG&E TOPOCK COMPRESSOR STATION
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(SITE: 540015-54; ACTIVITY: 66094; MPC: DES-PI; #WR20130012)

DOCUMENT REVIEWED:

ESPO reviewed the *Work Variance Request #17 – Relocate Phase 2 Remedy Produced Water Conditioning (RPWC) Facilities to Transwestern Bench (TWB), PG&E Topock Compressor Station (TCS), Needles, California 92363* (“Site”), submittal date of November 19, 2025 (WVR17), and related materials. If you have any questions, please contact me at Farrukh.Ahmad@dtsc.ca.gov or 916-255-6670.

COMMENTS:

ESPO has the following comments that can be addressed in response-to-comments (RTCs) and revisions to the WVR17 application where necessary:

1. The proposed RPWC system configuration for Phase 2 (WVR17, page 4) includes the elimination of the existing RPWC (Phase 1) facilities at TCS. Are the Phase 1 RPWC facilities at TCS currently in use? If so, please provide a timeline of activities involving diverting flow to the Phase 2 system and the subsequent decommissioning of Phase 1.
2. Does the Phase 2 RPWC design incorporate changes/updates in the estimated peak design flow and its various components since the submittal 2015 100% Basis of Design (BoD) document was submitted? For example, the tabulated summary on sheet G-08-03 of the design drawings still includes the 0.78 MG/year contribution from the evaporation ponds for which a “future provisional status” or deferment was sought. Please provide an explanation of assumptions behind each value tabulated on sheet

G-08-03, and describe how it was employed in process and equipment sizing calculations. Specify any safety factors employed.

3. Please include a brief explanation of each unit operation shown in the plan view drawing of the RPWC (sheet M-08-01) such as the type of coagulant to be used, types of liquid phase separators, and filtration media. Additionally, provide an estimated timeline and conditions for implementation of the “future provisional” unit operations (i.e., sludge dewatering/storage, polymer product drum, and vapor mitigation system).
4. Specify the minimum and maximum flow constraints for each of the parallel A-side and B-side treatment trains (WVR17, pages 3 and 4). Also, specify any minimum flow requirements for each treatment train (e.g., to avoid pump cavitation, or to maintain saturated conditions in filter beds). Additionally, provide a summary of head loss calculations along the treatment train used for pump sizing.
5. Provide a control logic diagram forming the basis of the process & instrumentation diagrams (P&IDs) included towards the end of the engineering drawings.

DISCLAIMER

The ESPO review was based on the information in the above-mentioned document and that supplied by the responsible party at the time the review was performed and does not constitute a guarantee of the completeness of the information or accuracy of the assumptions used by the project proponent.