

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 #18 – Incorporation of FW-02B as a freshwater injection well into the groundwater remedy

Request Prepared By: PG&E

Date Submitted: 5/5/26

Variance Request No.: 18

Location: Upland

Request Approval From: DTSC and DOI

Date Approval Required: TBD

Map Area: N/A

Land Manager: Havasu National Wildlife Refuge

Land Owner Parcel No: 650-161-09

Current Vegetative Cover/Land Use: Floodplain

Existing Sensitive Resource? ☐ No ☒ Yes, Specify: This location is below in proximity of sensitive cultural resources

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

☐ Drawing ☐ Permit Condition ☒ Other (Basis of Design Report)

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

Attachments: ☐ Photo ☐ Construction Drawing ☐ Aerial Photo Mark-Up ☒ Correspondence ☒ Other

Potential Impacts of Variance:

- | | | |
|---|--|--|
| ☐ Air Quality | ☐ Hazardous Materials | ☐ X Aesthetic |
| ☐ Biological Resources | ☐ Noise | ☐ Water Resources |
| ☐ Soils | ☐ Paleo Resources | |
| ☐ Cultural Resources | ☐ Hydrology and Water Quality | |

Description and Justification:

On January 6, 2026, PG&E submitted to DTSC a report titled *Final Review of Submittal of Preliminary Surface Footprint for Installation of a Monitoring Well West of FW-02B, PG&E Topock Compressor Station, Needles, California*. For reference, the report is attached to this Work Variance Request (WVR).

After review of the report, DTSC and DOI sent a direction letter to PG&E on March 17, 2026. In this letter, the Agencies directed PG&E to move forward with infrastructure construction and future operation of well FW-02B for the final groundwater remedy. This WVR addresses the Agencies' direction.

FW-02B is installed to replace the original FW-2 freshwater injection well in the 2015 BOD, since the original well location failed to meet the project objectives. Key permanent infrastructure associated with well FW-02B as an injection well for the final groundwater remedy includes:

- Well/valve vaults and pull boxes associated with FW-02B.
- Two arsenic monitoring wells MW-HH and MW-II and associated well vaults.
- An extension of Pipeline I (including liquid conveyance pipes and conduits) from Bat Cave Wash access road to FW-02B.
- A new access road to FW-02B from the Bat Cave Wash access road, for use during construction and future operation and maintenance (O&M).
- Erosion control measures to protect constructed infrastructure and minimize disturbance associated with future O&M.

Attached are the proposed design drawings for the above infrastructure. To minimize the total disturbance (construction and future O&M), the drilling team (geologists/driller) and construction team conducted extensive field evaluation and propose to implement the following minimization measures:

- Install MW-HH and MW-II, with a limited access sonic rig, on existing access roads to minimize overall drilling footprint, as well as disturbance associated with future O&M. Supporting areas (for soil logging, sampling, soil bins staging, etc.) are necessary for drilling. After drilling, these areas will be restored to pre-construction conditions to the extent practicable.

- No well pad is needed for MW-II. A small pad may be required to create a level surface for drilling of MW-HH. The pad, if built, will be removed after construction is complete.
- Reduce the existing pad at FW-02B by approximately 50% (in size) and restore the disturbed area to pre-construction conditions to the extent practicable.
- No permanent expansion of the current footprint of the access road from Bat Cave Wash access road to FW-02B.

Below are PG&E's estimates of net change in infrastructure and soil disturbance associated with this WVR:

Items	Unit	2015 BOD FW-02Alt as FW injection well	WVR #18 FW-02B as FW injection well	Net Change
Trench length	Linear feet	210	225	+15
Pipe length	Linear feet	840	900*	+60
Electrical conduit length	Linear feet	630	900*	+270
Net Soil Disturbance - Trench, vaults, and pull boxes	Cubic Yard	190 (Cut)	111 (Cut)	-79
Net Soil Disturbance – FW-02 well pad	Cubic Yard	0	4.8 (Cut)	+4.8
New access road	Linear feet	0	150	+150
FW – Freshwater * Includes additional spare conduits and pipes added to Pipeline I trench to allow for future potential uses in BCW. These additional conduits/pipes did not change the size of the trench and fit into the existing trench.				

In addition, there are no proposed changes to the O&M procedures outlined in the O&M Manual (part of the 2015 BOD), as a result of incorporating FW-02B into the groundwater remedy.

Approval Signatures:



7/16/2026

PG&E Project Manager Date

Christopher Ioan

7/16/2026

Approving Agency DTSC

Date

VERONICA DICKERSON

Digitally signed by VERONICA
DICKERSON
Date: 2026.07.16 14:58:05 -04'00'

Approving Agency

Date

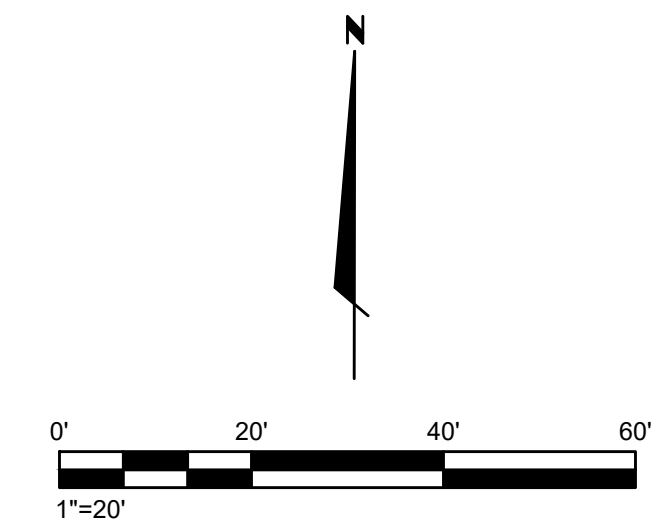
Note: No comments were received by the DTSC and DOI regarding Work Variance 18 by July 15, 2026.

CITY: Re: d DIV/GROUP: Re: d DB: Re: d LD: Opt PIC: Opt PM: Re: d TM: Opt LVR: Opt ONE OFF= REF
C:\Users\MSilverling\Documents\Arcadis\ANA - 30019125 - RC000753.0050 - Needles CA - Topock Construction & Closeout DOR Svcs\Project Files\Phase 2B Design\Drill Pads\MW-HH MW-II 20260223.dwg LAYOUT: II' LAYOUT SAVED: 4/29/2026 3:06 PM ACADVER: 24.2S LMS TECH: PAGES: 10 PAGES: 10
PLOTSTYLETABLE: TOPOCK-FULL.BW.CTB PLOTTED: 4/29/2026 3:07 PM BY: SIVERLING, MICHAEL



LEGEND

- DESIGNATED WORK/STAGING AREA
- EQUIPMENT
- WELL LOCATION
- EXISTING CONTOUR



PACIFIC GAS AND ELECTRIC COMPANY
FINAL GROUNDWATER REMEDY
NEEDLES, CALIFORNIA

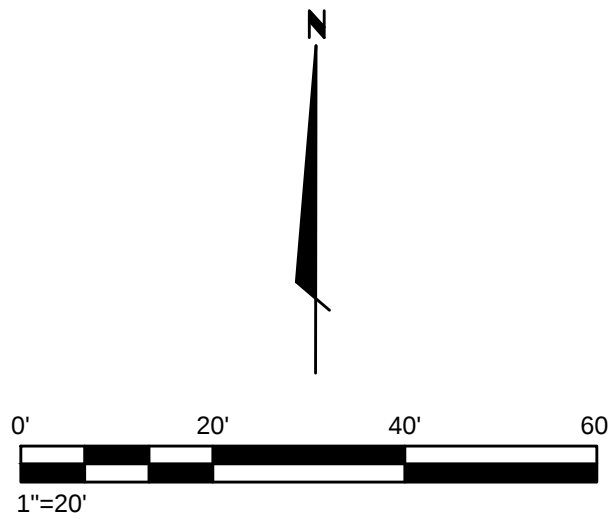
MONITORING WELL II'
DRILLING LAYOUT





LEGEND

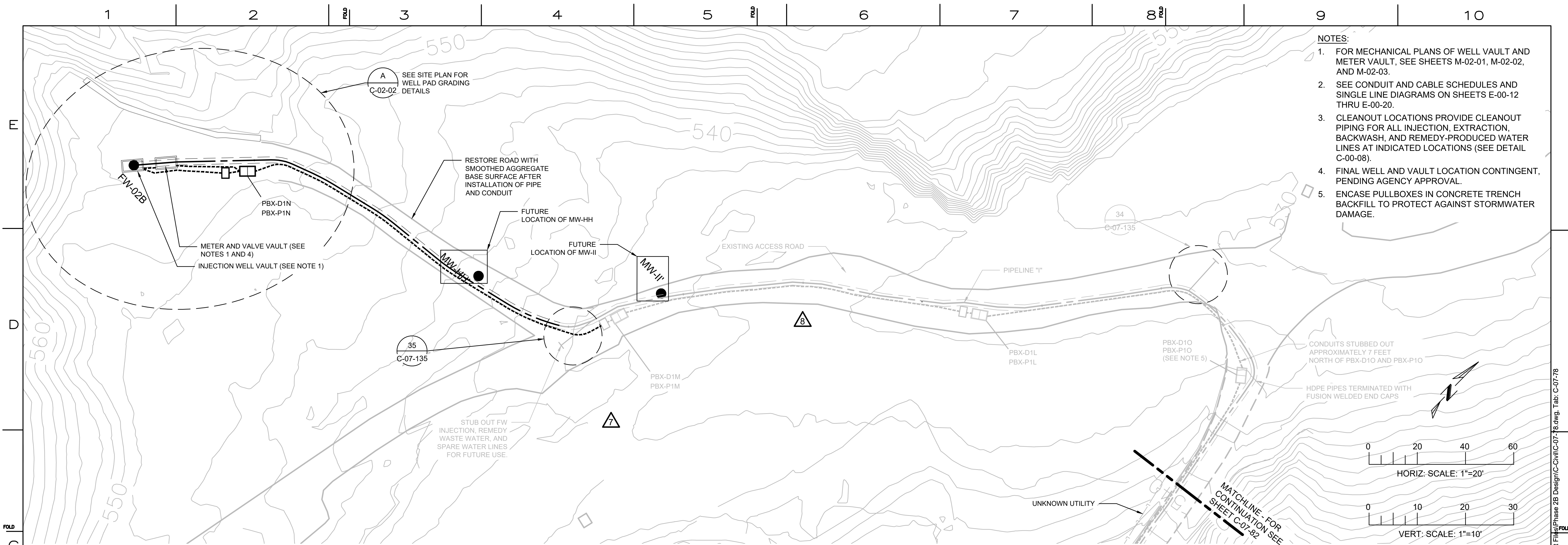
- DESIGNATED WORK/STAGING AREA
- EQUIPMENT
- WELL LOCATION
- EXISTING CONTOUR



PACIFIC GAS AND ELECTRIC COMPANY
FINAL GROUNDWATER REMEDY
NEEDLES, CALIFORNIA

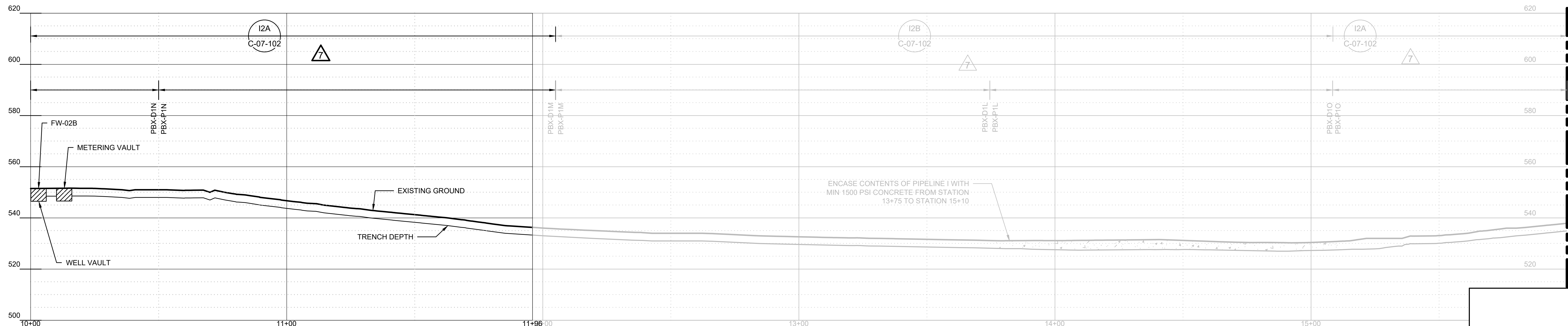
MONITORING WELL HH'
DRILLING LAYOUT





PIPELINE "I" - PLAN

(SCALE: 1" = 20')



PIPELINE "I" - PROFILE

(SCALE: 1" = 20' H; 1" = 10' V)



REVISIONS										REVISIONS									
NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC
9	7/22/26	PHASE 2B DESIGN IFC						5	6/10/22	WCD#001 PIPELINE I2 REVISION									
8	1/5/26	PIPELINE I ALIGNMENT UPDATE						4	4/29/22	PHASE 2A DESIGN IFC									
7	10/24/25	PHASE 2B DESIGN UPDATE						3	1/10/22	PHASE 2A DESIGN IFB - FINAL									
6	7/8/25	FW-02B WVR PACKAGE						2	10/19/21	PHASE 2A DESIGN IFB									
								1	11/18/15	FINAL DESIGN									
								0	8/5/15	90% RTC RESOLUTION									

APPROVED BY		SO	
JPB		SUPV	
		DSGN	
		DWN	
		CHKD	
		OK	
		DATE	
		SCALES	

TOPOCK GROUNDWATER REMEDIATION PROJECT
BATCAVE WASH-
PLAN AND PROFILE - PIPELINE
"I" STA 10+00 TO STA 16+00
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-07-78	9

E

D

FOLD

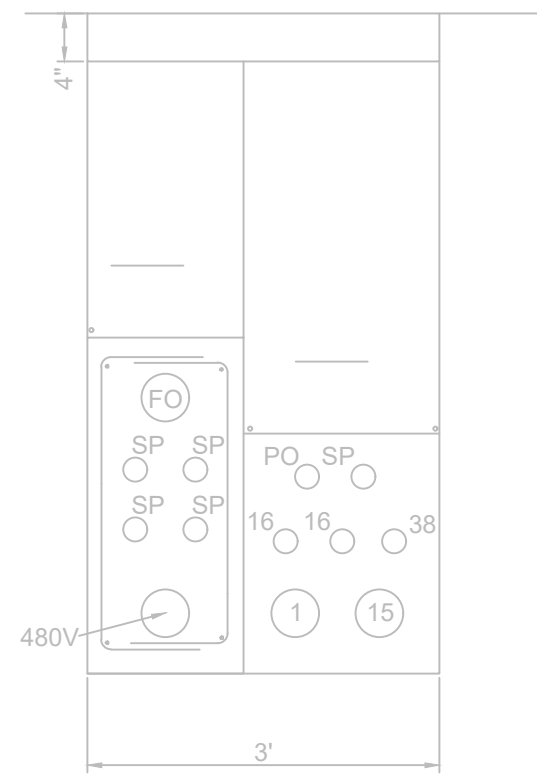
C

B

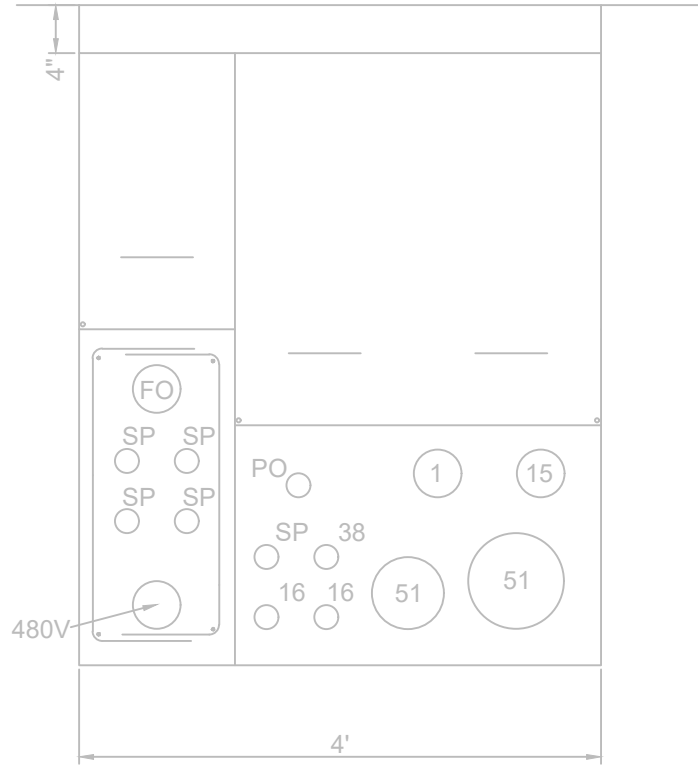
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LEGEND:

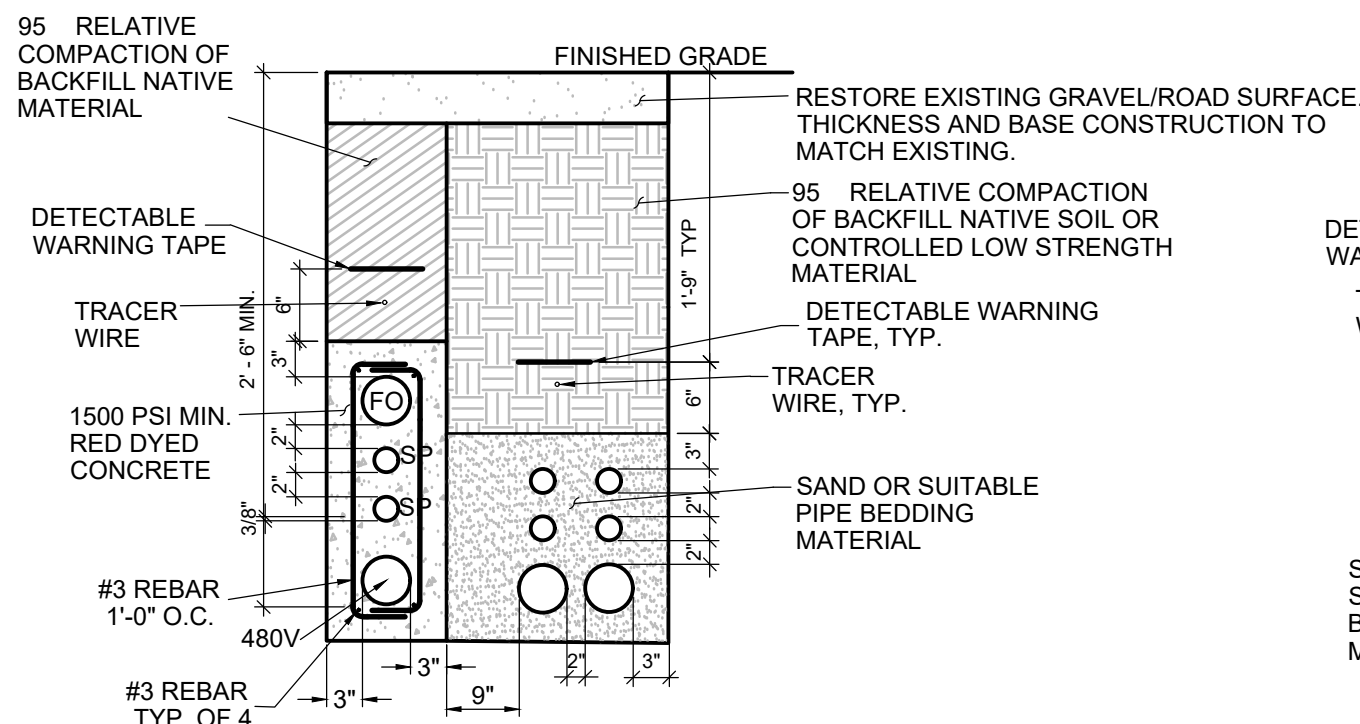
TO BE COMPLETED DURING FUTURE PHASE OF WORK.



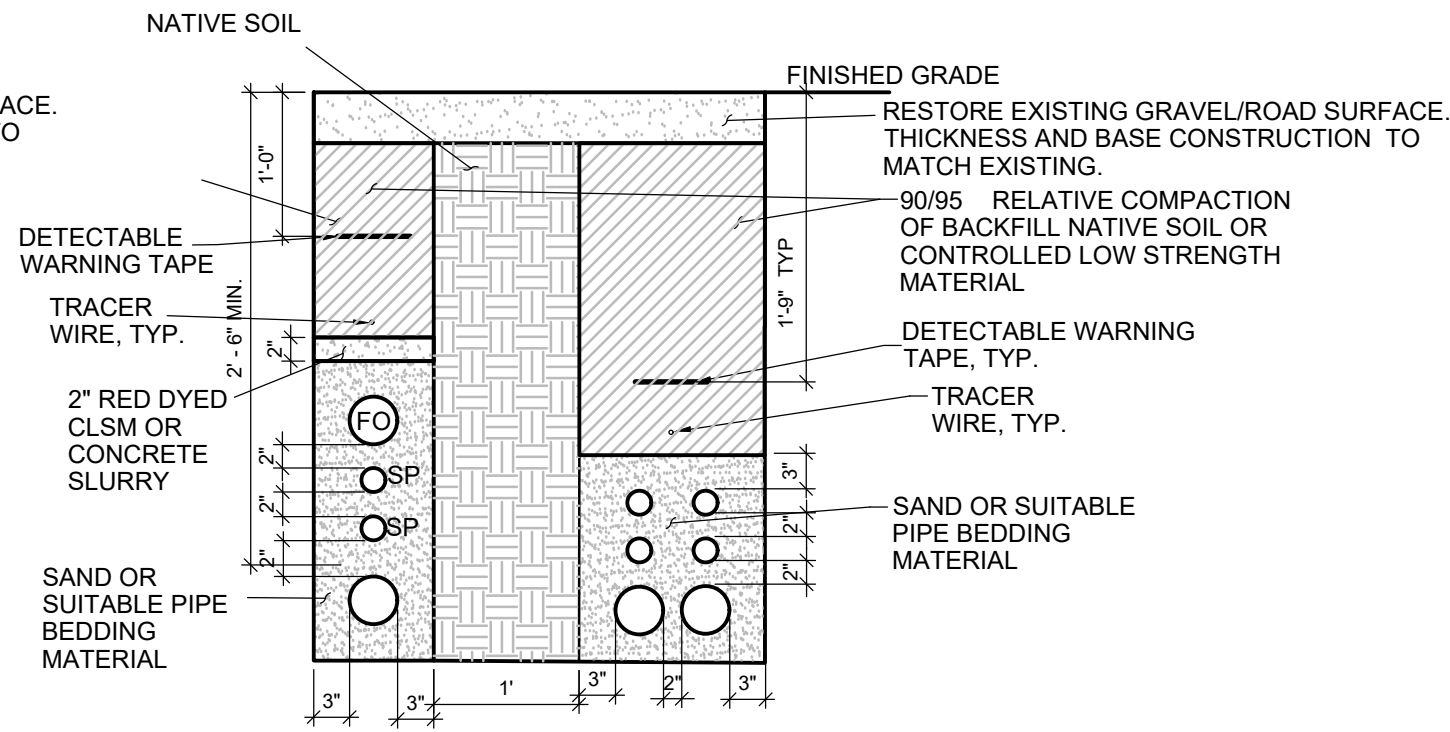
PIPELINE L
SECTION
L3
NTS
C-07-74



PIPELINE K
SECTION
K1
1"=1'-0"
C-07-73

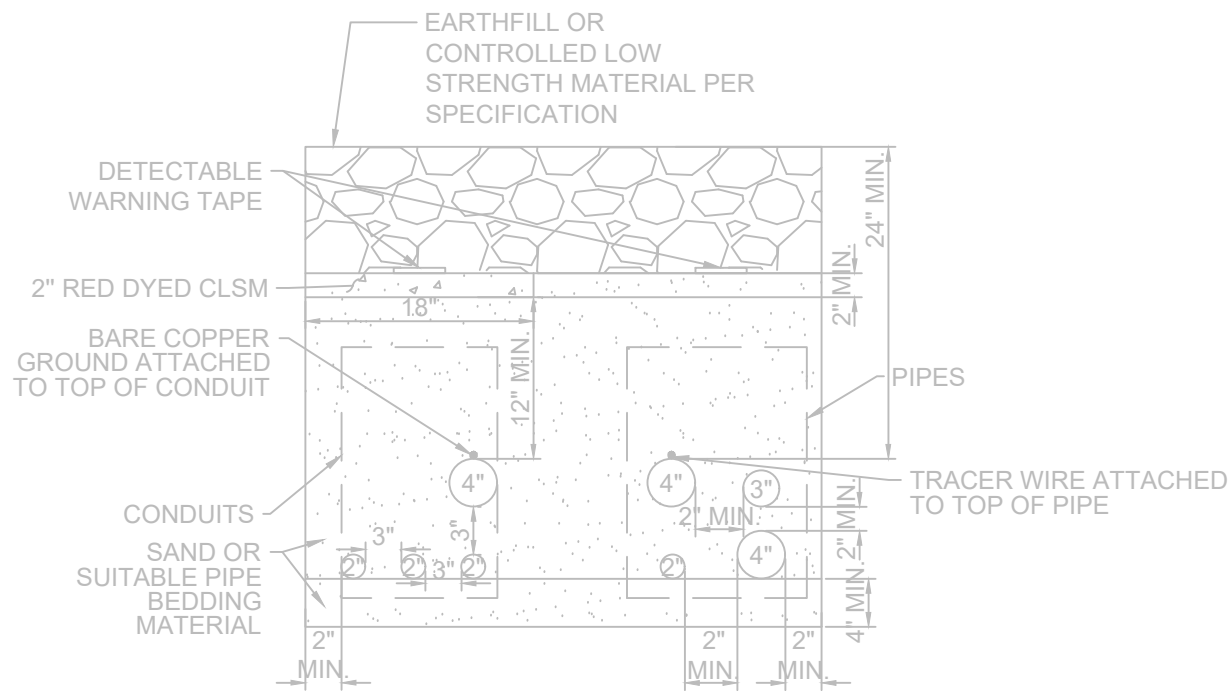


INSIDE TCS

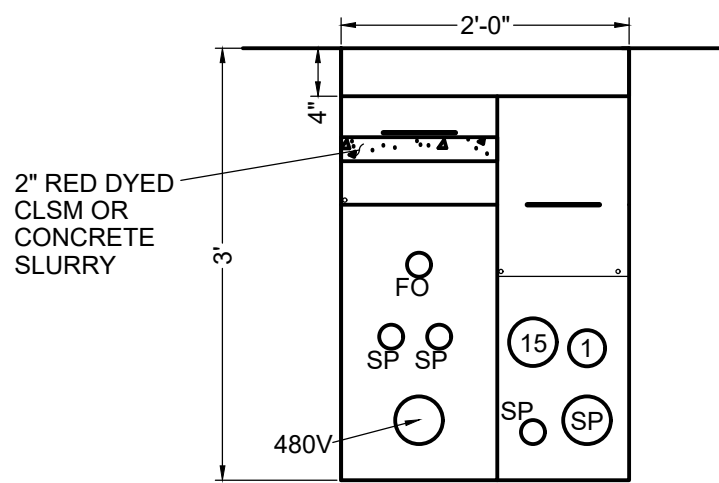


OUTSIDE TCS

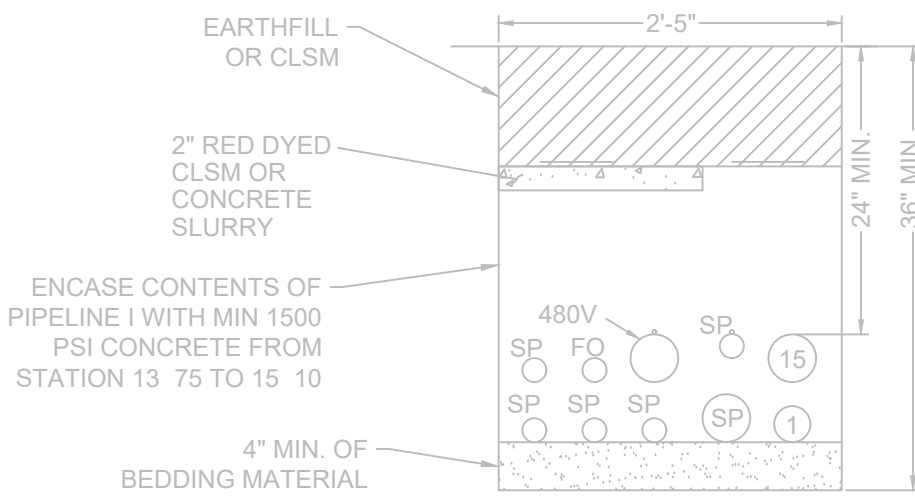
1
TYPICAL BURIED TRENCH
CONSTRUCTION DETAIL
3/4" = 1'-0"



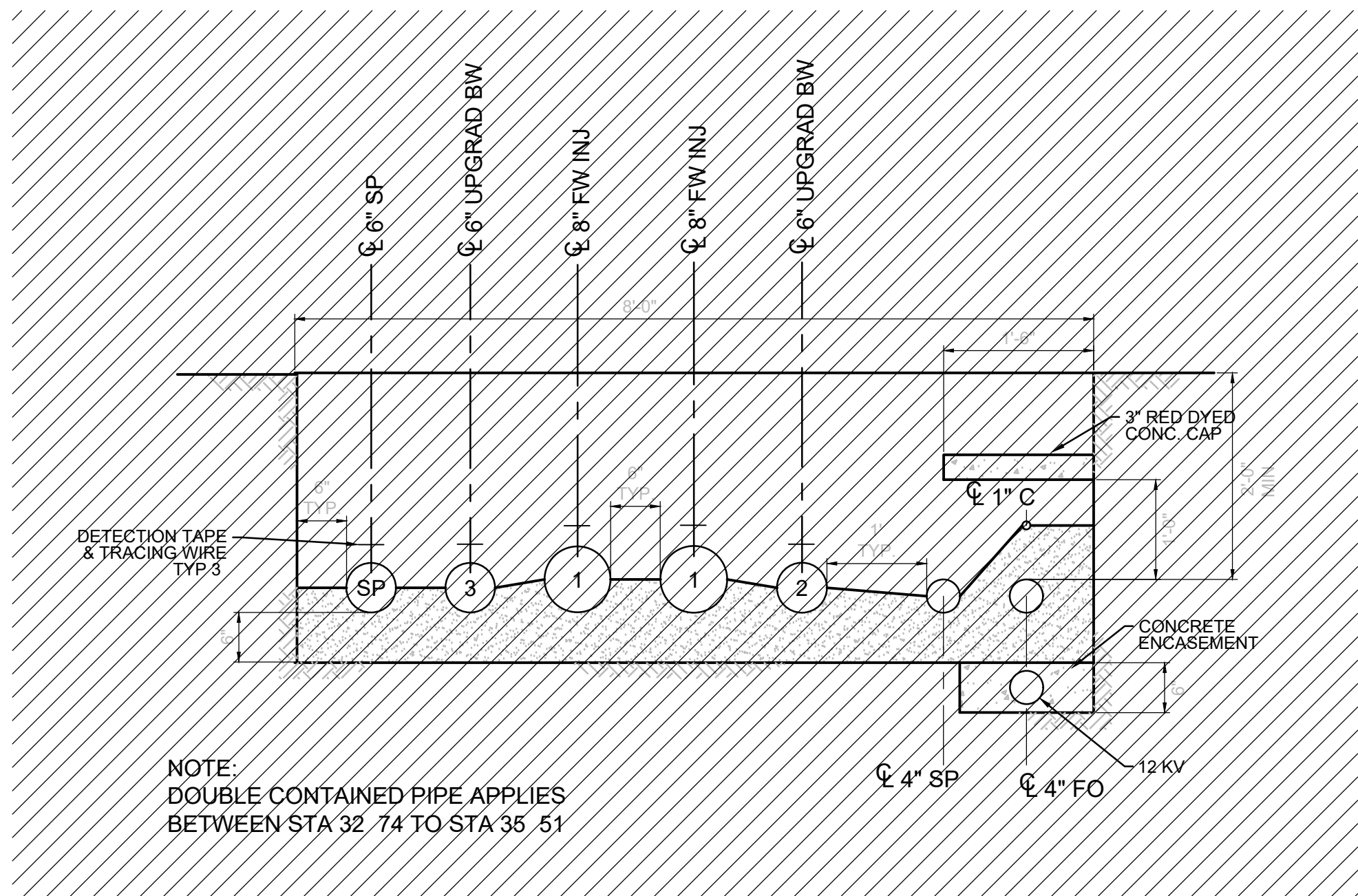
PIPELINE SECTION I1
SECTION
I1
3/4" = 1'-0"
C-07-82



PIPELINE SECTION I2A
SECTION
I2A
3/4" = 1'-0"
C-07-78, -82



PIPELINE SECTION I2B
SECTION
I2B
3/4" = 1'-0"
C-07-78



PIPELINE SECTION A10
SECTION
A10
3/4" = 1'-0"
C-07-22,-23

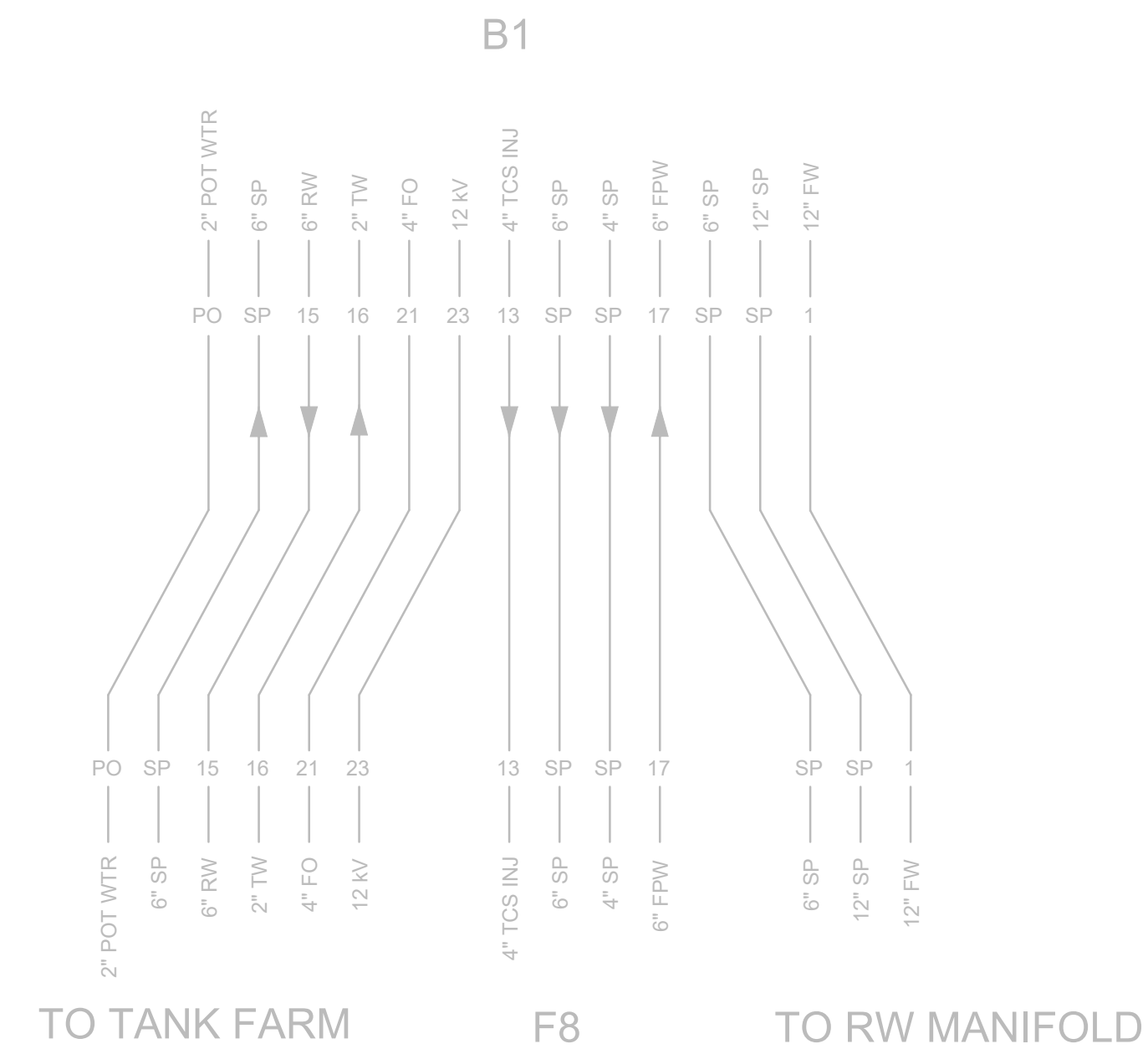
NOTE:
CLEARANCE AND SPACING RE UIREMENTS ARE
TYPICAL, UNLESS OTHERWISE NOTED ON SECTIONS,
DETAILS, OR SPECIFICATIONS.



13	5/1/26	PHASE 2B DESIGN IFC			MJS	VJM	BLP	JPB		7	10/29/21	PHASE 2A DESIGN IFB			CDB	JPB	BLP	RAO		APPROVED BY	SO
12	1/5/25	PIPELINE I ALIGNMENT UPDATE			MJY	VJM	BLP	JPB		6	12/7/18	ISSUED FOR CONSTRUCTION			NAK	JPB	MAG	RAO		SUPV	
11	10/24/25	PHASE 2B DESIGN UPDATE			TLC	VJM	BLP	JPB		5	6/16/17	ISSUED FOR BID			AJW	JPB	BW	RAO		DSGN	
10	7/8/25	FW-02B WVR PACKAGE			MJS	VJM	BLP	RAO		4	11/18/15	FINAL DESIGN			AJW	WLM	BW	RAO		DWN	
9	4/29/22	PHASE 2A DESIGN IFC			TW	JPB	BLP	RAO		3	8/5/15	90 RTC RESOLUTION			AJW	KLD	WLM	BJW		CHKD	
8	1/10/22	PHASE 2A DESIGN IFC			TW	JPB	BLP	RAO		2	12/30/14	SUPPLEMENTAL PRE-FINAL 90 DESIGN			MD	PT	VMB	VMB		OK	
NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	DATE	SCALES				
R E V I S I O N S										R E V I S I O N S											

TOPOCK GROUNDWATER REMEDIATION PROJECT	
PIPELINE SECTIONS	
GAS TRANSMISSION & DISTRIBUTION PACIFIC GAS AND ELECTRIC COMPANY SAN FRANCISCO, CALIFORNIA	

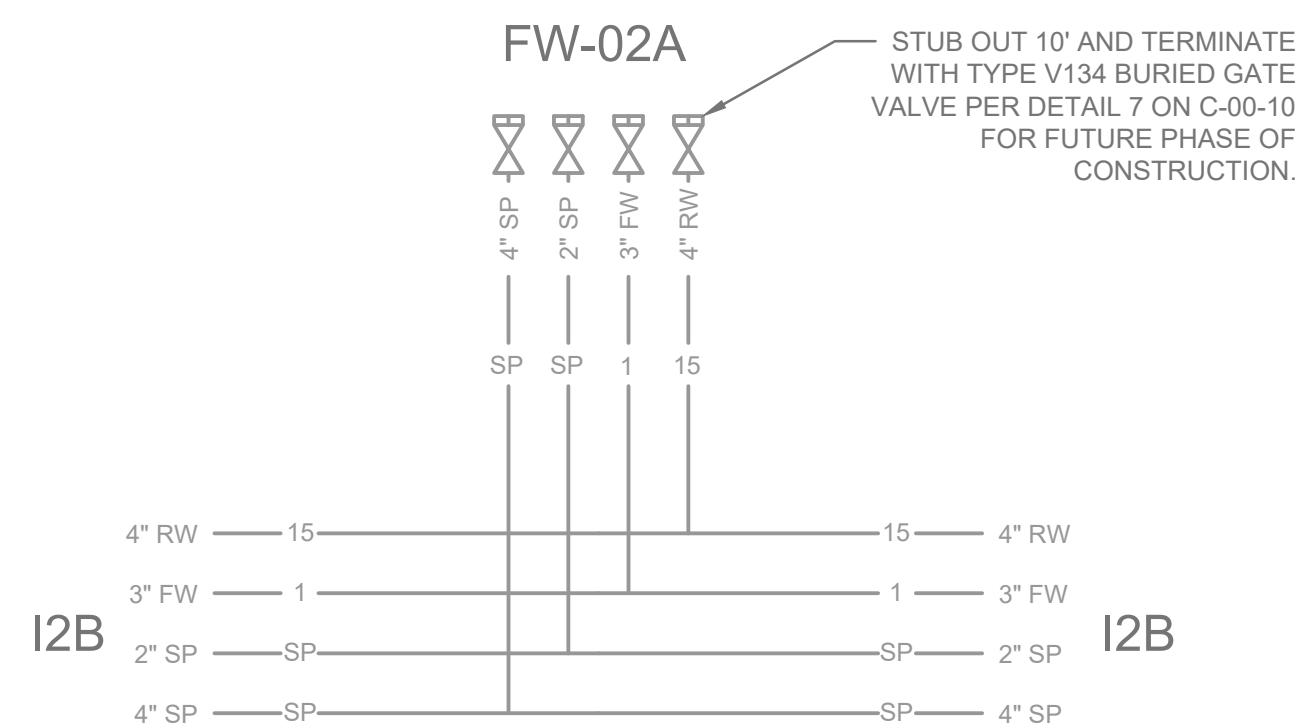
MICROFILM	
BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO.	of SHEETS
C-07-102	REV 13



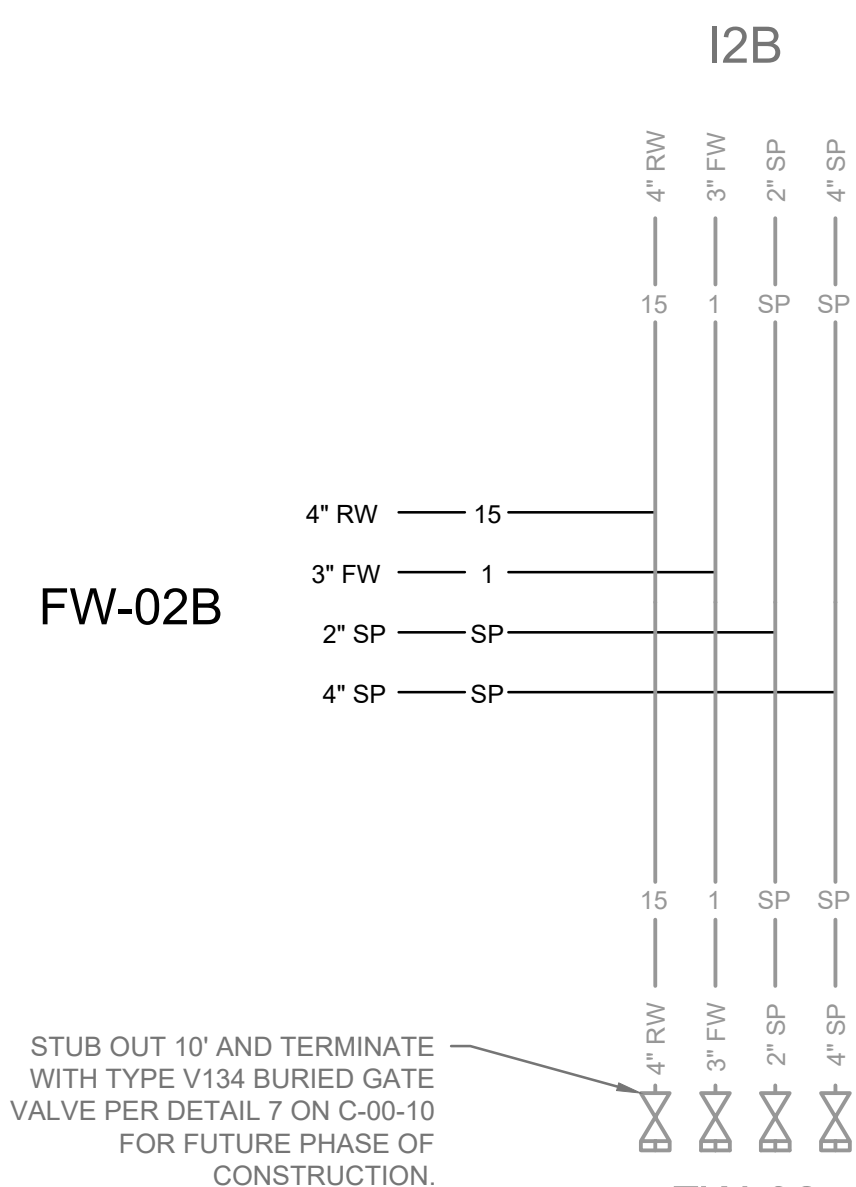
NOTES:

1. PIPE SUPPORTS AND CLEANOUTS NOT SHOWN FOR CLARITY.
2. CASING SPACERS NOT SHOWN FOR CLARITY.
3. INTERSECTION DETAILS ARE SCHEMATIC. SEE TRENCH SECTIONS FOR ACTUAL PIPING ARRANGEMENT.
4. ORDER AND CONFIGURATION OF PIPING MAY BE ADJUSTED, AS NECESSARY, TO FACILITATE CONSTRUCTION. CONFIRM ROUTING AND LAYOUT OF INTERSECTION WITH ENGINEER PRIOR TO INSTALLATION.

32 **DETAIL**
NTS
C-07-72



34 DETAIL
NTS
C-07-78



35 DETAIL
NTS
C-07-78

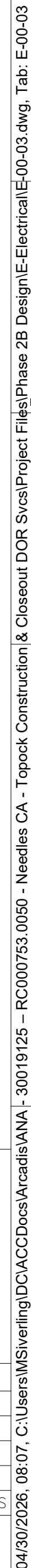
										5	1/10/22	PHASE 2A DESIGN IFB - FINAL		JPF	JPB	BLP	RAO		APPROVED BY JPB	SO SUPV DSGN DWN CHKD OK			
										4	10/29/21	PHASE 2A DESIGN IFB		TW	JPB	BLP	RAO						
										3	5/11/20	TCS FACILITIES ISSUED FOR CONSTRUCTION		VJM	JPB	BLP	RAO						
7	5/1/26	PHASE 2B DESIGN IFC			MJS	VJM	BLP	JPB		2	12/11/18	ISSUED FOR CONSTRUCTION		NAK	JPB	MAG	RAO						
6	4/29/22	PHASE 2A DESIGN IFC			TW	JPB	BLP	RAO		1	6/16/17	ISSUED FOR BID		AJW	WLM	BW	RAO						
										0	11/18/15	FINAL DESIGN		AJW	WLM	BW	RAO						
NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY	NO.	DATE	DESCRIPTION	GM/SPEC	DWN	CHKD	SUPV	APVD BY				DATE	SCALES			
R E V I S I O N S										R E V I S I O N S													

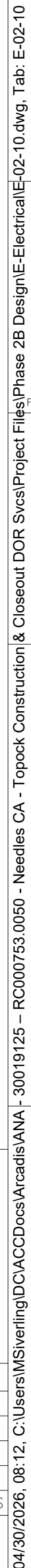
TOPOCK GROUNDWATER REMEDIATION PROJECT

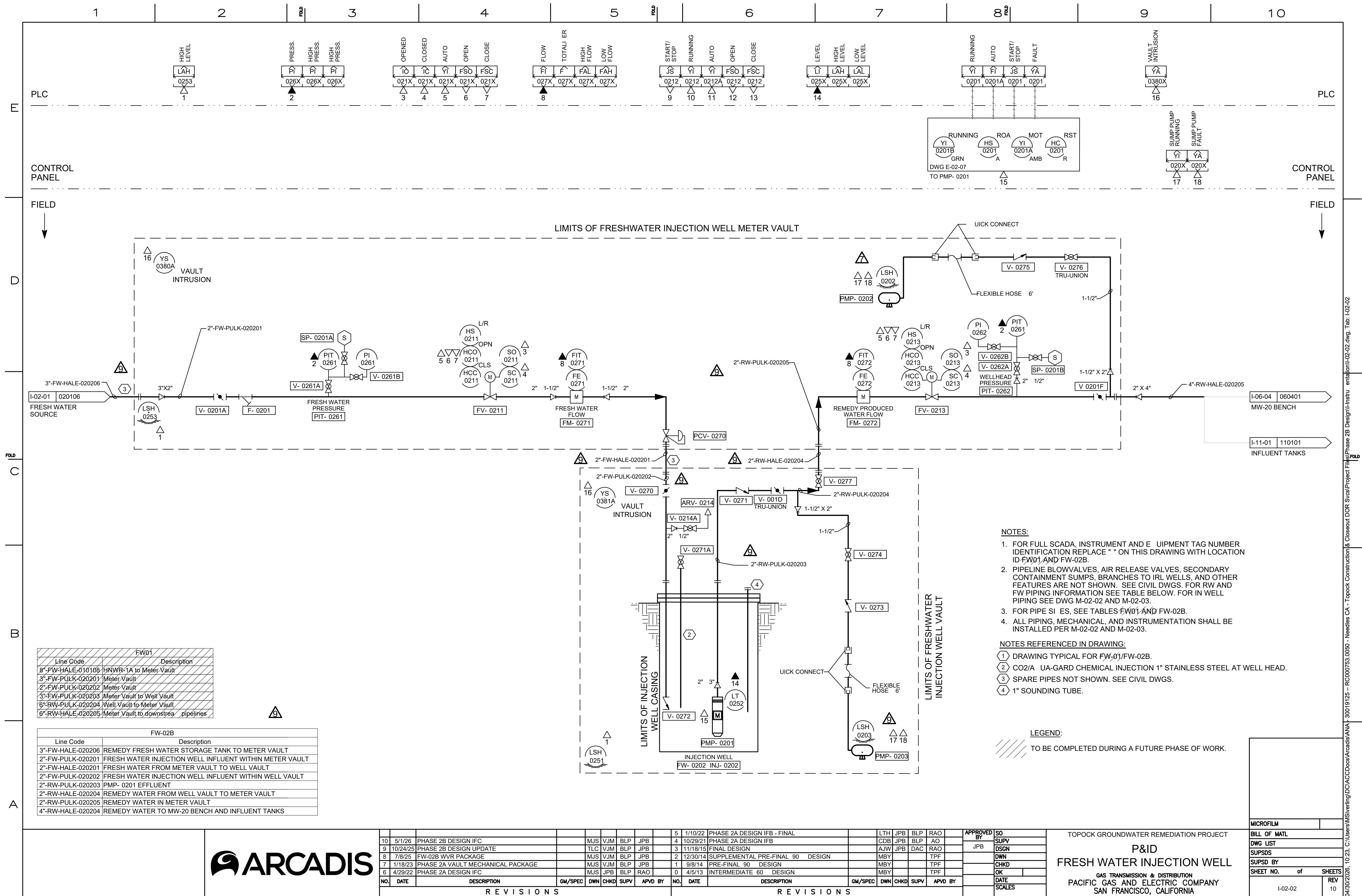
INTERSECTION DETAILS

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-07-135		REV 7







EXTRACTION WELLS

RIVERBANK																														
WELL LOCATION	WELL NUMBER	PILOT BORING REQUIRED	WELL DIAMETER	BOREHOLE DIAMETER	WELL DEPTH	WELL SCREEN INTERVAL	WELL SCREEN LENGTH	X COORDINATE	Y COORDINATE	GROUND SURFACE ELEVATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
RB-1	RB-1	-	8"		367	1	189	7615784	2103618	474	0	19	24	27	32	192	197	200	214	217	209	212	362	367	-	-	-	-	-	-
						2	158																							
RB-2	RB-2	-	8"		253	1	70	7616012	2103398	490	0	25	28	26	33	103	108	111	125	128	120	123	248	253	-	-	-	-	-	-
						2	125																							
RB-3	RB-3	-	6"		216	1	70	7616211	2103173	498	0	13	33	16	21	91	86	69	113	116	106	111	211	216	-	-	-	-	-	-
						2	100																							
RB-4	RB-4	-	5"		193	1	60	7616338	2102908	486	0	11	20	23	28	86	83	66	110	113	105	108	186	183	-	-	-	-	-	-
						2	60																							
RB-5	RB-5	-	8"		87	1	15	7616398	2102424	485	0	8	9	10	12	22	20	40	43	44	44	51	51	52	60	60	85	91	95	56
						2	25																							

TRANSWESTERN BENCH																				
WELL LOCATION	WELL NUMBER	PILOT BORING REQUIRED	WELL DIAMETER	BOREHOLE DIAMETER	WELL DEPTH	WELL SCREEN INTERVAL	WELL SCREEN LENGTH	X COORDINATE	Y COORDINATE	GROUND SURFACE ELEVATION	A	B	C	D	E	F	G	H	I	J
TWB-1	TWB-1	-	6"		140	2	19 19	7615603	2100962	536	0	80	109	112	109	110	129	134	85	106
TWB-2	TWB-2	-	6"		122	1	15' 19	7615694	2100972	537	0	81	94	97	96	102	117	122	-	-
TWB-3	TWB-3	-	10"		78	1	20	7615745	2101173	506	0	44	41	44	55	56	76	81	-	-

EAST RAVINE																		
WELL LOCATION	WELL NUMBER	PILOT BORING REQUIRED	WELL DIAMETER	BORHOLE DIAMETER	WELL DEPTH	WELL SCREEN INTERVAL	WELL SCREEN LENGTH	X COORDINATE	Y COORDINATE	GROUND SURFACE ELEVATION	A	B	C	D	E	F	G	H
ER-1	ER-1	-	6"		136	1	90	7616511	2101090	505	0	41	33	37	84	46	136	141
ER-2	ER-2	-	6"		138	1	90	7616643	2101099	507	0	47	38	43	90	48	138	143
ER-3	ER-3	-	6"		155	1	90	7616955	2100785	518	0	62	52	85	97	60	150	155
ER-4	ER-4	-	6"		159	1	90	7616955	2100781	520	0	63	56	86	91	64	154	159
ER-6	ER-6	-	6"		159	1	90	7615833	2100513	539	0	N/A	N/A	77	175	N/A	N/A	224

INJECTION WELLS

[illegible]

TCS AREA																								
WELL LOCATION	WELL NUMBER	PILOT BORING REQUIRED	WELL DIAMETER	WELL DEPTH	WELL DEPTH	WELL SCREEN INTERVAL	WELL SCREEN LENGTH	X COORDINATE	Y COORDINATE	GROUND SURFACE ELEVATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
TCS-1	TCS-1	-	10"	262	262	170-190	20	7615168	2101171	623	0	154	157	159	170	190	190	181	201	202	214	268	211	273
						214-268	54																	
TCS-2	TCS-2	-	10"	240	240	132-159	27	7615149	2100900	585	0	97	119	127	132	159	158	151	166	167	179	223	174	228
						179-223	44																	

NOTES:

1. ALL COORDINATES BASED ON NAD 83, CA ONE 5.
2. COORDINATES AND ELEVATIONS ARE APPROXIMATE AND WILL BE VERIFIED DURING CONSTRUCTION.

LEGEND:

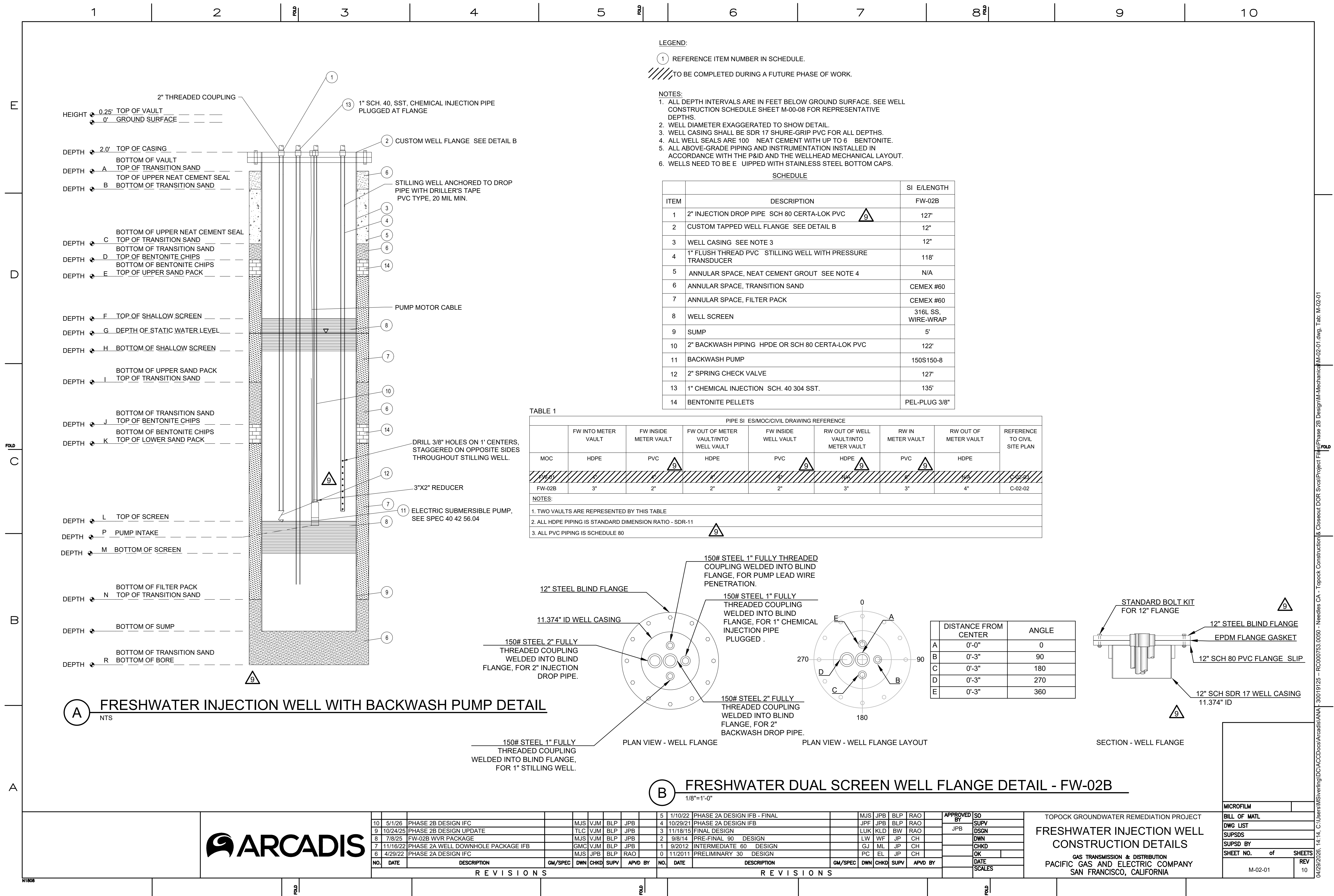
TO BE CONSTRUCTED DURING A FUTURE PHASE OF WORK.

[illegible]

APPROVED BY	SO	
JPB	SUPV	
	DSGN	
	DWN	
	CHKD	
	OK	
	DATE	
	SCALES	

TOPOCK GROUNDWATER REMEDIATION PROJECT
**PHASE 2A WELL
 CONSTRUCTION SCHEDULE**
 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-00-08		REV 3



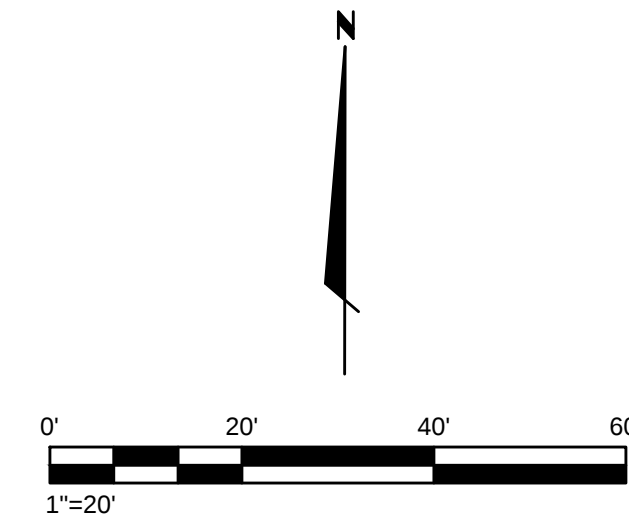
1 REFERENCE ITEM # INJECTION WELL VAULT SCHEDULE ON SHEET M-02-02



N1808

N1808

N1808



	EQUIPMENT
	WELL LOCATION
	EXISTING CONTOUR
	PROPOSED CONTOUR
	CENTERLINE ALIGNMENT
	EXISTING GRADE PROFILE
	PROPOSED GRADE PROFILE

1"=20'

1"=20'

1"=20'

1"=20'

	2D AREA (SQ. FT.)	CUT (CU. YD.)	FILL (CU. YD.)	NET (CU. YD.)
TOTAL EXCAVATION	4,229	7.9	18.7	10.8 <FILL>

3

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

Work Variance Request No. 18 Date: 7/16/2026

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 (The pipeline alignment for FW-02B was not in the original design.)

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 (BLM was in attendance on June 23, 2026, site walk regarding the new access area and there was no feedback. BLM did review with Tribal Representative that day the new

Future Activity Allowance Determination Matrix

WVR No. 18

access area was avoiding cultural resources, there is no new infrastructure west of FW-02B and is outside the “viewshed” of the Maze.)

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 FW-02 ALT could not fulfill project goals at location. FW-02B was the alternative location that was able to fulfill project goals.

Conclusion: WVR No. 18

☐ is not a FAA ☒ is a FAA

Signature of DTSC reviewer: Christopher Ivan

Date: 7/16/2026