

L-130 MP 0 - 0.5, L-195-1 MP 0 - 0.125, L-200A-3 MP 1.05 - 1.13
REPLACE 10" & 12" PIPE
RIO VISTA, SOLANO COUNTY



SCHEDULE OF SHEETS

SHEET 1	-- TITLE & INDEX
SHEET 2	-- CONSTRUCTION NOTES
SHEET 3	-- LEGEND & STAMPS
SHEETS 4-7	-- PLAN & PROFILE, REPLACE
SHEET 8	-- HDD DETAILS
SHEETS 9-12	-- PLAN & PROFILE, DECOMMISSION
SHEETS 13-18	-- DETAILS
SHEET 19	-- BILL OF MATERIALS



REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG APVD
F	11-04-21	ADDED CLSM OPTION FOR LEVEE BACKFILL	74029147	EAR	GDO	D2LM	
E	09-10-21	ADDED CASING REMOVAL	74029147	EAR	GDO	D2LM	
D	07-27-21	REVISED UNDERWATER EXCAVATION AREA	74029147	EAR	GDO	D2LM	
C	07-22-21	ISSUED FOR PERMIT - NOT FOR CONSTRUCTION	74029147	EAR	GDO	D2LM	
B	04-05-21	60% DESIGN	74029147	DLP	GDO	D2LM	
A	01-13-21	PRELIMINARY - 30% DESIGN	74029147	DLP	GDO	D2LM	

PIPELINE - TITLE & INDEX
R-1402, L-130, MP 0.0 - MP 0.5
REPLACE 10" PIPE, SACRAMENTO RIVER CROSSING
RIO VISTA, SOLANO COUNTY
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA



BILL OF MATL	SHEET 19
JOB ID	R-1402
SHEET NO.	1 OF 19 SHEETS
74029147	F

SUMMARY OF PROPOSED WORK:

1. INSTALL APPROX. 3,887' OF 16" (P) L-130 STEEL PIPE (HDD & TIE-IN).
2. INSTALL BLOW-DOWN SYSTEM TO (E) L-200A-3 AT LOCATION E.
3. REMOVE (E) 4" TAP VALVE V-52 OF L-195-1 AT LOCATION F.
4. REMOVE (E) L-130 VALVES V-48 & V-137 WITH VALVE PITS AND CUT PIPE SECTIONS TO INSTALL TEMPORARY FLANGED PIPE RISERS.
5. ATTACH PIG LAUNCHERS, PIG AND FLUSH 10" (E) L-130 PIPELINE.
6. REMOVE APPROX. 2,606 FEET OF 10" (E) L-130 STEEL PIPE.
7. ABANDON IN PLACE 535 FEET OF 16"(E) L-195-1 STEEL PIPE.
8. REMOVE APPROX. 257 FEET OF 16" (E) L-195-1 STEEL PIPE.
9. ABANDON IN PLACE APPROX. 446 FEET OF 12" (E) L-200A-1 STEEL PIPE.
10. BACKFILL EXCAVATION AREAS WITH NATIVE MATERIAL.

SEQUENCE OF OPERATIONS:

1. INSTALL 16" (P) L-130 PIPE PER HDD DRAWING DETAILS AND NOTES.
2. HYDROTEST (SPIKE TEST) OF ASSEMBLED PIPE PRIOR TO PULL-IN.
3. EXCAVATE TIE-IN LOCATIONS AT LOCATIONS A & B (SHEET 13).
4. INSTALL APPROXIMATELY 124 FEET OF 16" PIPE FROM (P) L-130 STATION 1-25.87 HDD ENTRANCE TO (E) L-200A-3 STATION 0-00 AT MP 1.05.
5. INSTALL APPROXIMATELY 60 FEET OF 16" PIPE FROM (P) L-130 STATION 38-11.29 HDD EXIT TO (E) L-195-1 STATION 38-75.32 AT MP 0.125.
6. FABRICATE TIE-IN PER DETAILS AT LOCATIONS A & B.
7. HYDROTEST NEW PIPE AND INSPECT.
8. PRIOR TO TAKING PIPELINE CLEARANCE, THE FOLLOWING MUST BE PERFORMED:
 - A. PG&E GPOM TO CHECK ANY DRIPS IN SHUT-IN SEGMENT FOR PRESENCE OF PIPELINE LIQUIDS.
 - B. REMOVE PIPE WRAP FROM CUT OUT SECTIONS EXTENDING 1' BEYOND EACH END OF THE CUT-OUT AND SANDBLAST TO NEAR WHITE.
 - C. COMPLETE A-FORMS IN ALL EXPOSED PIPE AND INCLUDE IN AS-BUILT PACKAGE. IF UT WT MEASUREMENTS DO NOT MATCH EXISTING PIPE SPECIFICATIONS AS SHOWN ON DRAWINGS, IMMEDIATELY NOTIFY PROJECT ENGINEER (PED).
 - D. INSTALL SAVE-A VALVES FOR OIL TESTING AND SNIFF HOLES WHERE DESIGNATED. CONFIRM LOCATION AND NUMBER OF SAVE-A VALVES AND ENSURE WELD PROCEDURE CALCULATIONS ARE PROVIDED BY ENGINEERING PRIOR TO WELDING SAVE-A VALVES ON PIPELINE.
 - E. STRENGTH TEST, DEWATER, AND DRY TIE-IN PIECES PER *UTILITY PROCEDURE TD-4137S*.
9. FOLLOW *GENERAL REQUIREMENT #13 COATING REMOVAL* WHEN EXPOSING STEEL PIPE PRIOR TO CUT AND SURFACE PREPARATION.
10. CUT SECTION OF (E) L-200A-3 AT MP 1.05 AND INSTALL 16" TO 12" REDUCER & 16" ELBOW TO CONNECT (P) L-130 PER LOCATIONS A & B DETAILS.
11. INSTALL BLOW-DOWN PIPING SYSTEM PER LOCATION E DETAILS.
12. REPLACE (E) L-195-1 VALVE PER LOCATION F DETAILS.
13. TEST NEW PIPE TIE-IN AND INSPECT TO VALIDATE READY FOR SERVICE.
14. FOLLOW *DEACTIVATION PROCEDURE TD-9500P-16* FOR DECOMMISSIONING PIPE.
15. FOLLOW *GENERAL REQUIREMENT #13 COATING REMOVAL* WHEN EXPOSING STEEL PIPE END GIRTHS THAT WILL HAVE SLIP-ON FLANGES WELDED, THEN CUT AND STEEL PLATE CAPPED.
16. ATTACH TEMPORARY FLANGES TO 10" (E) L-130, 12" L-200A-3, AND 16" L-195-1 EXPOSED PIPE ENDS PER DETAIL 4.
17. ATTACH PIG LAUNCHERS AND RECEIVERS ON EXPOSED PIPE ENDS.
 - A. FOLLOW *RETIREMENT PROCEDURES FOR EXISTING PIPE* STEP 2. IF CONTAMINATES ARE DETECTED ABOVE ALLOWABLE, THEN CONTINUE FLUSHING UNTIL ACCEPTABLE AND HANDLE WASTE ACCORDINGLY.
 - B. PIG & FLUSH (E) L-130 TO BE REMOVED, THE PORTION OF L-195-1 TO BE REMOVED, AS WELL AS L-195-1 & L-200A-E PIPELINE SEGMENTS TO BE RETIRED, DISPOSING OF FLUSH WATER IN ACCORDANCE WITH PERMIT REQUIREMENTS.
19. REMOVE (E) L-130 VALVE PITTS AND ALL OF PIPELINE BETWEEN, UTILIZING CRANE BARGE AND DIVERS.
20. ATTACH TEMPORARY BLANK FLANGES WITH PORTS TO (E) 16" L-195-1 EXPOSED PIPE ENDS AT EXCAVATIONS F & H.
21. FILL (E) 16" L-195-1 EXCAVATION WITH CEMENT SLURRY TO BE ABANDONED IN PLACE BETWEEN PIPELINES F & H.
22. ATTACH TEMPORARY BLANK FLANGES WITH PORTS TO (E) 12" L-200A-3 EXPOSED PIPE ENDS AT EXCAVATIONS A & C.
23. FILL (E) 12" L-200A-3 PIPELINE WITH CEMENT SLURRY TO BE ABANDONED IN PLACE BETWEEN EXCAVATIONS A & C.
24. WELD STEEL PLATES ON PIPE SEGMENTS TO BE ABANDONED IN PLACE, AFTER CUTTING OFF SLIP-ON FLANGE, SEE DETAIL 5.
25. INSTALL ELECTRONIC TEST STATIONS PER DRAWING DETAILS.
26. BACKFILL EXCAVATION AREAS PER SHEET 17 TYPICAL DETAILS AND ENCROACHMENT PERMIT REQUIREMENTS.
27. REMOVE OLD PIPELINE MARKERS AND INSTALL NEW PIPELINE MARKERS.
28. RESTORE PROJECT SITES TO ORIGINAL CONDITION.

DESIGN CHANGE PROCEDURE

MAINTENANCE AND CONSTRUCTION PERSONNEL MUST OBTAIN APPROVAL FROM THE PROJECT ENGINEER (PED) BEFORE MAKING ANY DESIGN CHANGE TO GAS FACILITIES PER TD-4014P-01.

CONSTRUCTION NOTES:

GENERAL REQUIREMENTS:

1. UNDERGROUND SERVICE ALERT:
CALL 811 (1-800-227-2600) A MINIMUM OF 2 BUSINESS DAYS (NOT INCLUDING INITIAL DAY OF CONTACT) IN ADVANCE FOR THE MARKING OF UNDERGROUND UTILITIES, INCLUDING ALL NON-UTILITIES BEFORE YOU DIG, GRADE, OR EXCAVATE.
2. UTILITY NOTES:
 - A. DIMENSIONS SHOWN ON THESE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION FROM SEVERAL SOURCES, AND SHALL BE VERIFIED IN THE FIELD BY CONSTRUCTION PERSONNEL PRIOR TO FABRICATION.
 - B. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES, PROPERTY LINES, AND OTHER SUBSTRUCTURES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE, UNLESS OTHERWISE NOTED. CONSTRUCTION PERSONNEL ARE RESPONSIBLE FOR MAKING ALL DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AND OTHER SUBSTRUCTURES AS NECESSARY TO AVOID DAMAGE OR ENCROACHMENTS.
 - C. PROSPECTING IS REQUIRED AHEAD OF WORK. ALL OFFSETS OR ROPING WILL NEED TO BE APPROVED BY THE PG&E PROJECT ENGINEER (PED), AND REDLINED DETAILS SHOWN ON PROFILE AND CONSTRUCTION DETAIL SHEETS OF EACH ADDITIONAL SUBSTRUCTURE.
 - D. ALL EXCAVATIONS WITHIN EXISTING STATIONS SHALL BE HAND DUG OR EXCAVATED USING SOFT DIG METHODS (e.g. VACUUM EXCAVATIONS OR SIMILAR).
3. ELBOWS AND FIELD BENDS:
 - A. ALL BENDS ARE SMOOTH FIELD BENDS, EXCEPT WHERE ELBOWS ARE SHOWN. FIELD BENDS SHALL BE MADE IN ACCORDANCE WITH A-36, SECTION 4D. FIELD BENDS MAY BE USED IN LIEU OF ELBOWS WHEN PREAPPROVED BY THE PG&E PROJECT ENGINEER (PED).
 - B. IN ORDER TO AVOID EXCESSIVE STRAIN ON THE PIPELINE, THERE SHALL BE A MINIMUM SEPARATION OF 5 FEET BETWEEN A ROPED SECTION OF PIPELINE AND ANY ELBOWS OR FIELD BENDS.
 - C. ALL ANGLES SHOWN IN THE PLAN AND PROFILE ARE APPROXIMATE AND SHALL BE CUT TO SUIT FIELD CONDITIONS.
4. SEPARATION FROM OTHER STRUCTURES:
 - A. CROSSING UNDERGROUND FACILITIES: PG&E PIPELINE MUST BE INSTALLED WITH AT LEAST 24 INCHES OF CLEARANCE FROM ANY OTHER SUBSTRUCTURE/UTILITY NOT ASSOCIATED WITH THE PIPELINE UNLESS NOTED ON THE DRAWINGS.
 - B. PARALLELING UNDERGROUND FACILITIES: THIS PIPELINE MUST BE INSTALLED WITH AT LEAST 5 FEET OF CLEARANCE FROM ANY OTHER UNDERGROUND STRUCTURE/UTILITY NOT ASSOCIATED WITH THE PIPELINE UNLESS NOTED ON THE DRAWINGS.
5. RESTORATION AND CLEAN UP:
 - A. RESTORATION OF PUBLIC STREETS, SIDEWALKS, CURBS, ETC. ABOVE PIPE BEDDING SHALL BE IN ACCORDANCE WITH THE LATEST CITY, COUNTY, OR AGENCY STANDARDS.
 - B. WHERE EVER THERE ARE ROW CROPS, THE TOPSOIL SHALL BE REMOVED TO A DEPTH OF 12" AND STORED ON SITE. UPON COMPLETION OF CONSTRUCTION, THE TOPSOIL SHALL BE RESTORED. TAKE CARE TO PREVENT MIXING OF TOPSOIL AND SUBSOIL.
6. DESIGN NOTES:

THIS DRAWING HAS BEEN CREATED BY REVIEW OF THE AS-BUILT DRAWINGS & RECORDS. ACCURACY IS DEPENDENT UPON THE SOURCE DOCUMENT LISTED ON THE REFERENCE DRAWINGS.
7. WELDING REQUIREMENTS:
 - A. ALL ARC WELDING IS TO BE PERFORMED IN ACCORDANCE WITH THE GAS WELDING CONTROL MANUAL TD-4160M. ALL CANS OR SPOOLS SHALL BE A MINIMUM LENGTH OF ONE PIPE DIAMETER, WHENEVER POSSIBLE.
 - B. INSTALL TEST STATIONS WITH THERMITE WELD CONNECTION IN ACCORDANCE WITH GAS T & D CORROSION CONTROL MANUAL O-10, O-10.1 AND O-10.2.
8. WELDING:

WHEN INTERNAL MISALIGNMENT EXCEEDS 0.094", BACKWELD ANY GIRTH WELD WHERE THERE IS ACCESS TO THE INSIDE OF THE WELD. WHERE THERE IS NO ACCESS TO THE INSIDE OF THE WELD, MACHINE BORING OR GRINDING IS REQUIRED. BACKWELDING, GRINDING, OR BORING MUST BE DONE IN ACCORDANCE WITH THE APPROPRIATE UTILITY PROCEDURE IN THE GAS WELDING CONTROL MANUAL TD-4160M.
9. STRENGTH TEST REQUIREMENTS
 - A. STRENGTH TESTING SHALL MEET PRESSURE AND DURATION REQUIREMENTS OF GAS STANDARD A-34 AND SHALL BE CONDUCTED IN ACCORDANCE WITH UTILITY PROCEDURE TD-4137S.
 - B. ALL WELDS THAT HAVE NOT BEEN STRENGTH TESTED AND ALL FITTINGS SHALL BE SOAP TESTED AT 100 PSI AND AT OPERATING PRESSURE BEFORE COATING CAN OCCUR.
10. COATING REQUIREMENTS:
 - A. ALL EXPOSED PIPE AND FITTINGS ARE TO BE COATED IN ACCORDANCE WITH GAS STANDARD E-30. ALL COATING ON BURIED PIPE AND FITTINGS ARE TO BE APPLIED IN ACCORDANCE WITH GAS STANDARD E-35.
 - B. FOR COATING SELECTIONS ON BURIED PIPE, SEE DIRECT BURIAL COATING SELECTIONS TABLE.
 - C. CONTACT THE PROJECT ENGINEER (PED) TO REQUEST VARIANCE FROM THE APPROVED COATING PRODUCTS.
11. INSPECTION OF EXISTING PIPELINE:
 - A. WHENEVER EXISTING BURIED GAS FACILITIES ARE EXCAVATED DURING ENGINEERING OR DURING CONSTRUCTION, FOLLOW TD-5100P-01 TO DOCUMENT PIPE INSPECTION. THIS APPLIES TO EXISTING AND TO BE RETIRED FACILITIES.
 - B. EXISTING GIRTH WELDS, AT TIE-IN LOCATIONS, SHALL BE IDENTIFIED AND REMOVED IF PRACTICAL.
 - C. PRIOR TO TIE-IN, INSPECT COATING AND PIPE FOR DEFECTS. IF DEFECTS ARE FOUND, CONTACT PROJECT ENGINEER (PED) FOR GUIDANCE.
12. TIE-IN AND CLEARANCE PROCEDURE TO BE PREPARED AND PERFORMED IN ACCORDANCE WITH THE FOLLOWING WORK PROCEDURES:
 - A. TD-4100P-01, HOT AND COLD WORK METHODS FOR NATURAL GAS TRANSMISSION PIPELINE SHUTDOWN AND TIE-IN.
 - B. TD-4441S, GAS CLEARANCE PROCEDURES FOR FACILITIES OPERATING OVER 60 PSIG.

13. COATING REMOVAL:

- A. PERFORM THE FOLLOWING STEPS, IN ACCORDANCE WITH TD-4711P-01, BEFORE REMOVING ASPHALTIC PIPE WRAP ON PIPELINES INSTALLED PRIOR TO 1972 (BASED ON PG&E ANALYSIS, PIPE INSTALLED IN 1972 OR LATER DOES NOT HAVE PIPE WRAP THAT CONTAINS ASBESTOS):

1. WHEN A PIPE WRAP SAMPLE IS REQUIRED TO BE ANALYZED FOR ASBESTOS:
 - a. COLLECT SAMPLE PER TD-4711P-01 AND COMPLETE CHAIN OF CUSTODY FORM TD-4711P-01-F01.
 - b. FILE PINK COPY OF THE CHAIN OF CUSTODY FORM AND FINAL LABORATORY RESULTS WITH THE AS-BUILTS.
2. WHEN REMOVING PIPE WRAP THAT CONTAINS ASBESTOS, OR FOR EMERGENCY WORK, FOLLOW TD-4711P-01 "PIPE WRAP REMOVAL, HANDLING AND DISPOSAL".

CATHODIC PROTECTION NOTES:

1. FOLLOW TD-5100P-01 TO DOCUMENT INTERNAL CORROSION AND EXTERNAL CORROSION INSPECTION OF THE PIPELINE.
2. UPON COMPLETION OF BORINGS, CONTACT THE CORROSION SUPERVISOR FOR THE LOCAL AREA/DIVISION TO PERFORM CURRENT DRAIN TESTS ON THE PIPELINE SEGMENT THAT WAS INSTALLED IN THE BORE. THE CURRENT DRAIN TEST MUST BE PERFORMED PRIOR TO WELDING PIPE ON EITHER SIDE OF THE BORE.
3. FOR THE INSTALLATION OF THE WATCHDOG RECTIFIER REMOTE MONITOR, CONTACT THE CORROSION SUPERVISOR FOR THE LOCAL AREA/DIVISION.
4. BONDING CABLES TO BE INSTALLED ACROSS PIPELINE CUT-OUTS AT ALL LOCATIONS THE PIPELINE IS SEVERED PRIOR TO REMOVAL. CHAIN CLAMPS, MAGNETIC CLAMPS, OR OTHER CONSTRUCTION MANAGEMENT APPROVED CLAMPS AND #6 (MIN) STRANDED CABLE SHALL BE UTILIZED. CLAMPS TO REMAIN IN PLACE UNTIL PIPELINE IS TIED IN.

RETIREMENT PROCEDURE FOR EXISTING PIPE:

1. GT&D UTILITY WORK PROCEDURE TD 9500P-16, "DEACTIVATION AND/OR RETIREMENT OF UNDERGROUND GAS FACILITIES," SHALL BE FOLLOWED.
2. THE EXISTING PIPE SECTIONS SHALL HAVE FREE LIQUIDS REMOVED AND BE 100% PURGED PER GAS DESIGN STANDARD A-38, "PROCEDURES FOR PURGING GAS FACILITIES."
3. THE PIPE SHALL BE SECTIONALIZED AT INTERVALS AS SPECIFIED IN THE RETIREMENT PLAN. THE LOCATIONS CALLED OUT ARE APPROXIMATE AND ARE SUBJECT TO FIELD VERIFICATION TO IDENTIFY THE MOST OPTIMUM LOCATION IN THAT VICINITY. ACCURATE SURVEY DATA MAY NOT BE AVAILABLE FOR THESE LOCATIONS SO USE CAUTION DURING EXCAVATION AND WHEN IDENTIFYING THE PIPELINE TO BE RETIRED. OTHER ACTIVE PIPELINES MAY BE IN THE AREA.
4. AT EACH SUCH LOCATION NOTED ABOVE, A PIECE OF PIPE AT LEAST 24" LONG SHALL BE REMOVED. INSTALL A 1" HIGH PRESSURE SAVE-A-VALVE (H-17491, M022287) TO CHECK FOR PRODUCT AND PRESSURE PRIOR TO CUTTING INTO THE PIPELINE. THE OPEN ENDS OF THE RETIRED PIPE SHALL BE SEALED BY THE MOST APPROPRIATE METHOD OUTLINED IN GT&D UTILITY WORK PROCEDURE TD 9500P-16. BACKFILL MUST BE THOROUGHLY COMPACTED IN PLACE OF THE REMOVED SECTION OF PIPE.

HORIZONTAL DIRECTIONAL DRILLING (HDD) NOTES:

1. WHEN BALLAST WATER IS REQUIRED DURING PRODUCT PIPE PULLBACK, CONTRACTOR TO FURNISH TWO (2) TREMMIE PIPES DURING FILL (ONE FOR FILL OPERATIONS, ONE AS REDUNDANT BACKUP). TREMMIE PIPE TO BE CONSTRUCTED OF NEW MATERIAL.
2. DOWN-HOLE PRESSURE SUBASSEMBLIES WILL BE REQUIRED ON ALL HOD PROJECTS. CONTRACTOR MUST KEEP LOG OF MUD PRESSURE AND SUBMIT TO PG&E PROJECT ENGINEER DAILY DURING PILOT DRILLING.
3. CONTRACTOR IS RESPONSIBLE FOR MITIGATING INTERFERENCE OF TRACKING EQUIPMENT AND FURNISHING STEERING TOOLS AND SURFACE COILS CAPABLE OF PROVIDING ACCURATE STEERING INFORMATION.
 - A. IF INTERFERENCE IS ENCOUNTERED, CONTRACTOR TO COMMUNICATE ISSUE TO PG&E PROJECT ENGINEER WITHIN 24 BUSINESS HOURS.
4. CONTRACTOR MUST PROVIDE PG&E PROJECT ENGINEER PILOT BORE STEERING AND TRACKING DATA DAILY UNTIL BORE COMPLETION. CONTRACTOR MUST FURNISH BOTH RAW AND PLUGGED AZIMUTH DATA WITH A WRITTEN EXPLANATION FOR ANY LUGGED DATA. REAMING MAY NOT PROCEED UNTIL PG&E ACCEPTS PILOT BORE DATA.
5. IF PLANNED DRILLING PROFILE DEVIATES FROM DESIGN, CONTRACTOR TO PROVIDE PROPOSED DRILLING PROFILE AT LEAST 5 BUSINESS DAYS PRIOR TO BEGINNING PILOT DRILLING FOR PG&E PROJECT ENGINEER REVIEW AND APPROVAL.
6. ANY INADVERTENT RETURN EVENTS WILL BE COMMUNICATED TO PG&E PROJECT ENGINEER, CONSTRUCTION MANAGER/FIELD ENGINEER, AND ENVIRONMENTAL FIELD SPECIALIST IMMEDIATELY. CONTRACTOR TO COMPLETE MUD RELEASE FORM AND SUBMIT TO UNIFIER WITHIN 24 BUSINESS HOURS. MUD RELEASE FORM WILL BE SUPPLIED BY PROJECT ENGINEER.
7. CONTRACTOR TO SUBMIT PICK PLAN TO PG&E PROJECT ENGINEER AT LEAST ONE(1) WEEK PRIOR TO PULLBACK. PULLBACK MAY NOT PROCEED UNTIL ACCEPTED BY PG&E PROJECT ENGINEER.
 - A. PICK PLAN TO INCLUDE, AT A MINIMUM, SPACING BETWEEN PIPE ROLLERS AND PICK POINTS, HEIGHT OF PIPE AT EACH PICK LOCATION AND MINIMUM COMPOUND RADIUS OF PIPE.
8. BORE PIPE TO BE PRE-TESTED PER PROVIDED STPR.
9. MONITORING: THE RIGHT AND LEFT LEVEE EMBANKMENTS CROSSING THE BOREHOLE PATH MUST BE MONITORED BY A LICENSED PROFESSIONAL ENGINEER, P.E. OR PROFESSIONAL GEOLOGIST, P.G. DURING THE HOD PIPELINE INSTALLATION FOR VERTICAL AND/OR HORIZONTAL DISPLACEMENTS AT BOTH THE EMBANKMENT CROWN AND TOES.
10. SEAL BOREHOLE ENTRY/EXIT BY DISPLACING THE DRILLING FLUID WITH A CEMENTITIOUS GROUT ALONG THE ANNULUS OF THE BOREHOLE PATH OVER A VERTICAL DISTANCE OF 10 FEET AS MEASURED FROM THE GROUND SURFACE INTO THE SUBSURFACE.

11. SETTLEMENT MONITORING POINTS SHALL BE MEASURED DAILY DURING DRILLING OPERATIONS. AT LEAST TWO INITIAL SURVEY MEASUREMENTS SHALL BE OBTAINED PRIOR TO ANY EXCAVATION. ADDITIONALLY, ALL MONITORING POINTS SHALL BE SURVEYED AT LEAST ONCE PER DAY DURING HDD OPERATIONS. ONCE THESE OPERATIONS ARE COMPLETE, ALL SETTLEMENT DEVICES SHALL BE SURVEYED ONCE PER DAY FOR THE FIRST SEVEN DAYS, ONCE AT 14 DAYS, AND ONCE AT 30 DAYS AFTER COMPLETION OF TRENCHLESS WORK, OR UNTIL NO MOVEMENT IS DETECTED BETWEEN THREE CONSECUTIVE READINGS. IF AFTER 30 DAYS MOVEMENT CONTINUES TO BE DETECTED BETWEEN READINGS, SURVEY ALL SETTLEMENT MONITORING POINTS ONCE EVERY SEVEN DAYS UNTIL THREE CONSECUTIVE READINGS DO NOT DETECT MOVEMENT.

CONTACT INFORMATION:

PROJECT MANAGER	----	JESSICA LAM	415-407-0533
PROJECT ENGINEER (PED)	----	DANNY LEE	925-951-3428
PIPELINE ENGINEER (PLE)	----	STEPHEN JONES	916-298-9758
ESTIMATOR / DESIGNER	----	GARETH OWENS	805-428-8082
FIELD ENGINEER / CM	----	JIM WINNE	916-698-7544
LAND PLANNER	----	SEAN POIRIER	925-786-2655
CULTURAL MONITOR	----	PADRE ASSOC.	805-701-1581
ENVIRONMENTAL	----	BILL FROELICH	925-549-5691
BIOLOGIST	----	CHRISSIE KLINKOWSKI	925-200-8852
CORROSION ENGINEER	----		
DISTRIBUTION PLANNER	----		
TRANSMISSION PLANNER	----		
LOCAL MAINTENANCE SUPR.	----		
LOCAL CORROSION MECHANIC	----		

REFERENCE DRAWINGS:

PG&E DRAWING, RIO VISTA L-130, LOCATION "E" ---382156
SACRAMENTO RIVER CROSSING

PG&E DRAWING, LOCATION AND ARRANGEMENT OF ---382157
VALVE PITS AND FITTINGS
EAST RIO VISTA - WEST RIO VISTA LINE

PG&E DRAWING, RIO VISTA MAIN 130, VALVE PITS ---383449
SACRAMENTO RIVER CROSSING

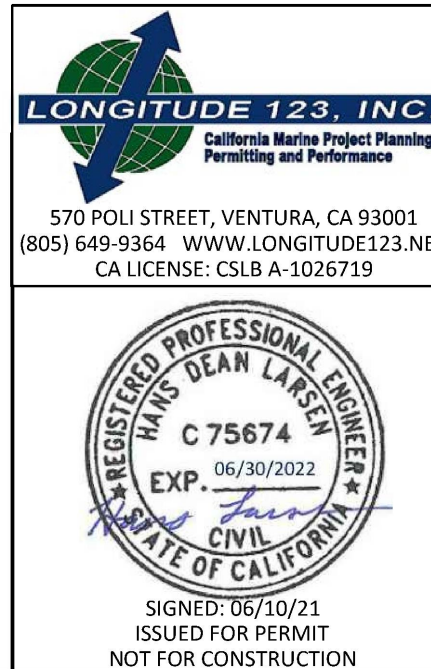
BASIS OF COORDINATES & BEARINGS

THE COORDINATES AND BEARINGS SHOWN HEREON ARE BASED ON GLOBAL POSITIONING SYSTEM OBSERVATIONS (GPS) BASED ON THE CALIFORNIA COORDINATE SYSTEM OF 1983 (CCS83) ZONE 2, BEING ON THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND WERE DERIVED FROM OBSERVATIONS OF THE CALIFORNIA SURVEYING & DRAFTING SUPPLY (CSDS) REAL-TIME NETWORK (RTN).

BENCHMARK

THE ELEVATIONS SHOWN HEREON ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM NAVD88 AND WERE DERIVED FROM OBSERVATIONS OF THE CALIFORNIA SURVEYING & DRAFTING SUPPLY (CSDS) REAL-TIME NETWORK (RTN).

SURVEY CONTROL TABLE				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
JS4672	1810937.44	6651917.21	18.80	NGS BENCH MARK
JS1926	1822595.83	6643380.85	133.77	NGS BENCH MARK



PIPELINE - CONSTRUCTION NOTES
R-1402, L-130, MP 0.0 - MP 0.5
REPLACE 10" PIPE, SACRAMENTO RIVER CROSSING
RIO VISTA, SOLANO COUNTY

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

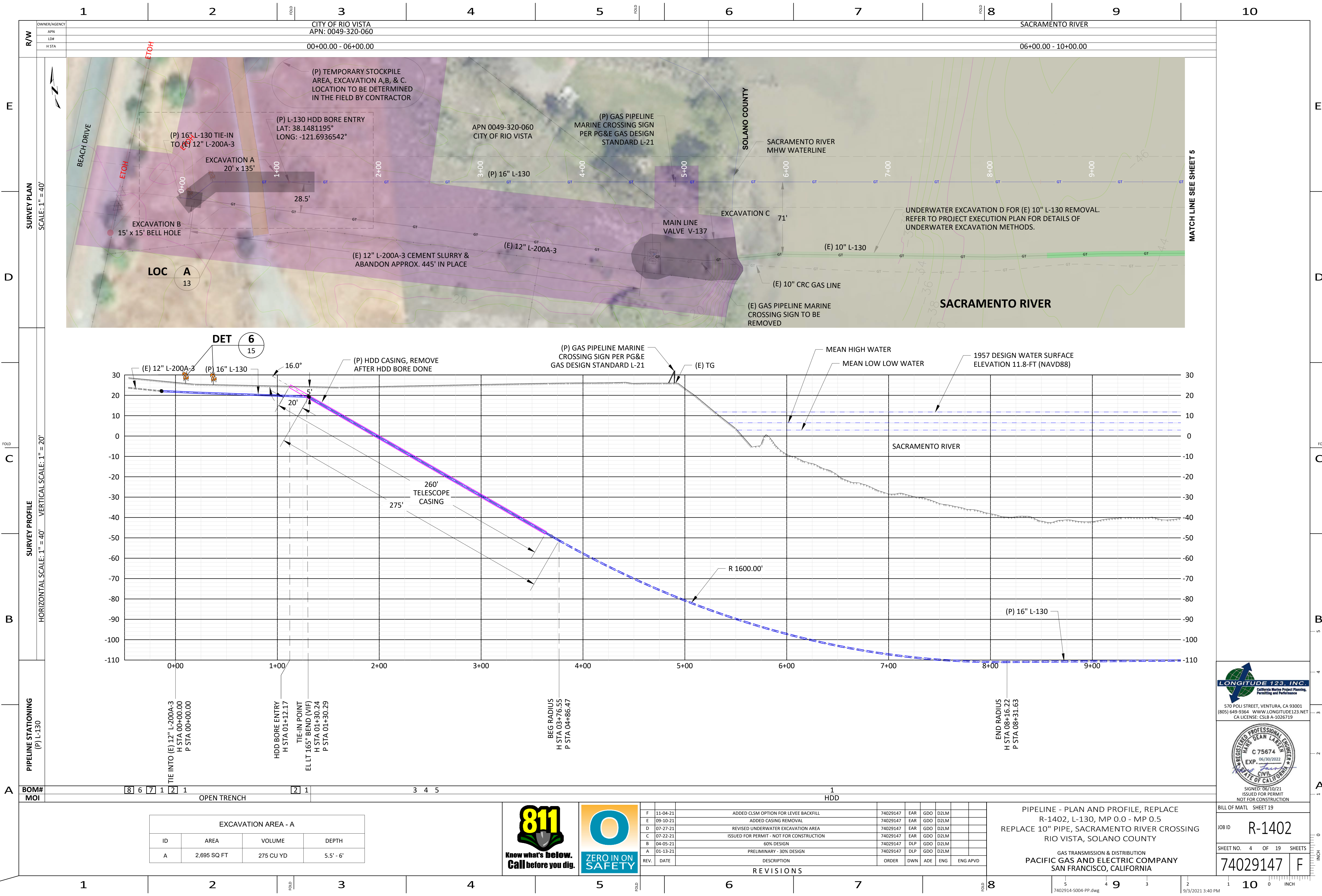
BILL OF MATL SHEET 19

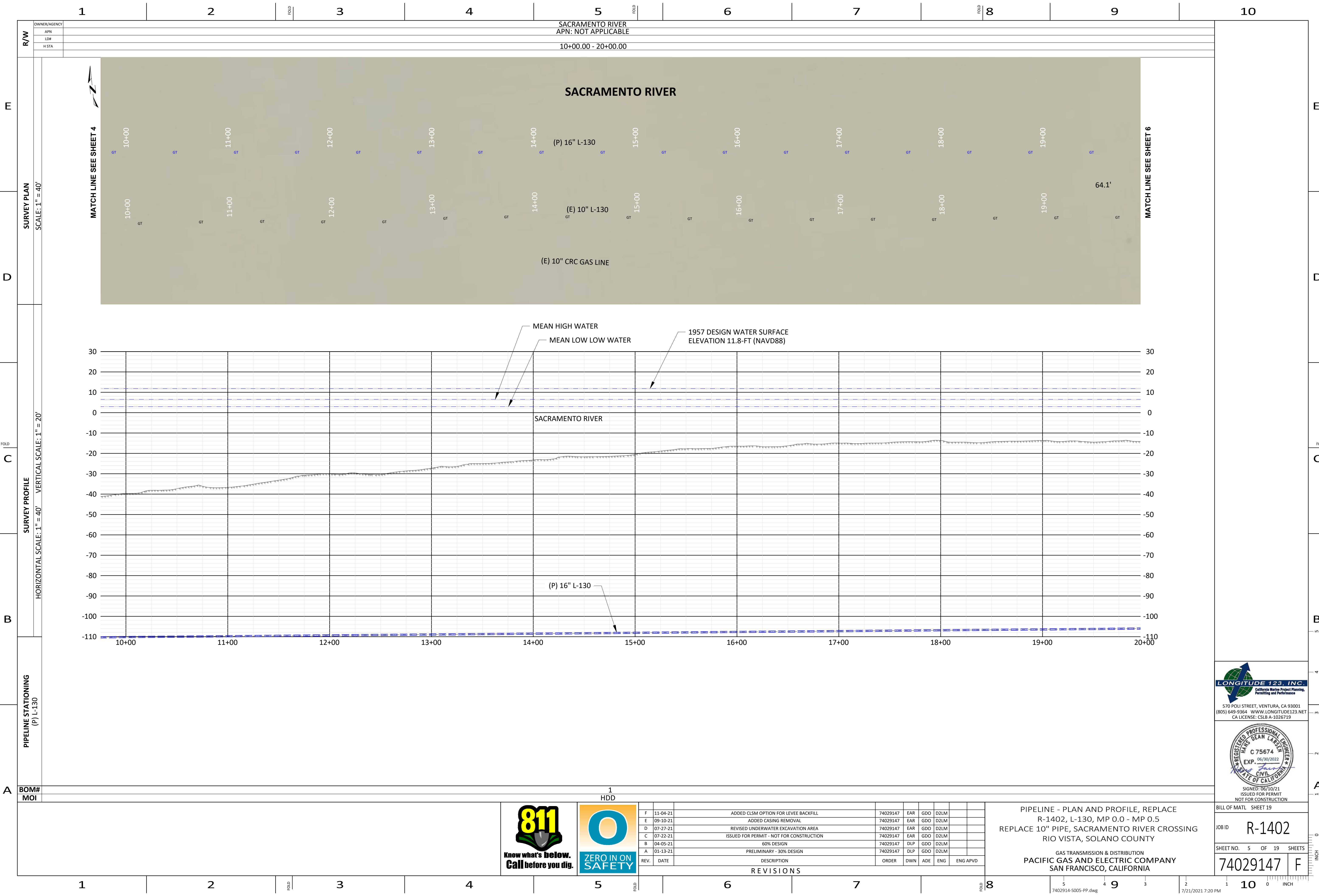
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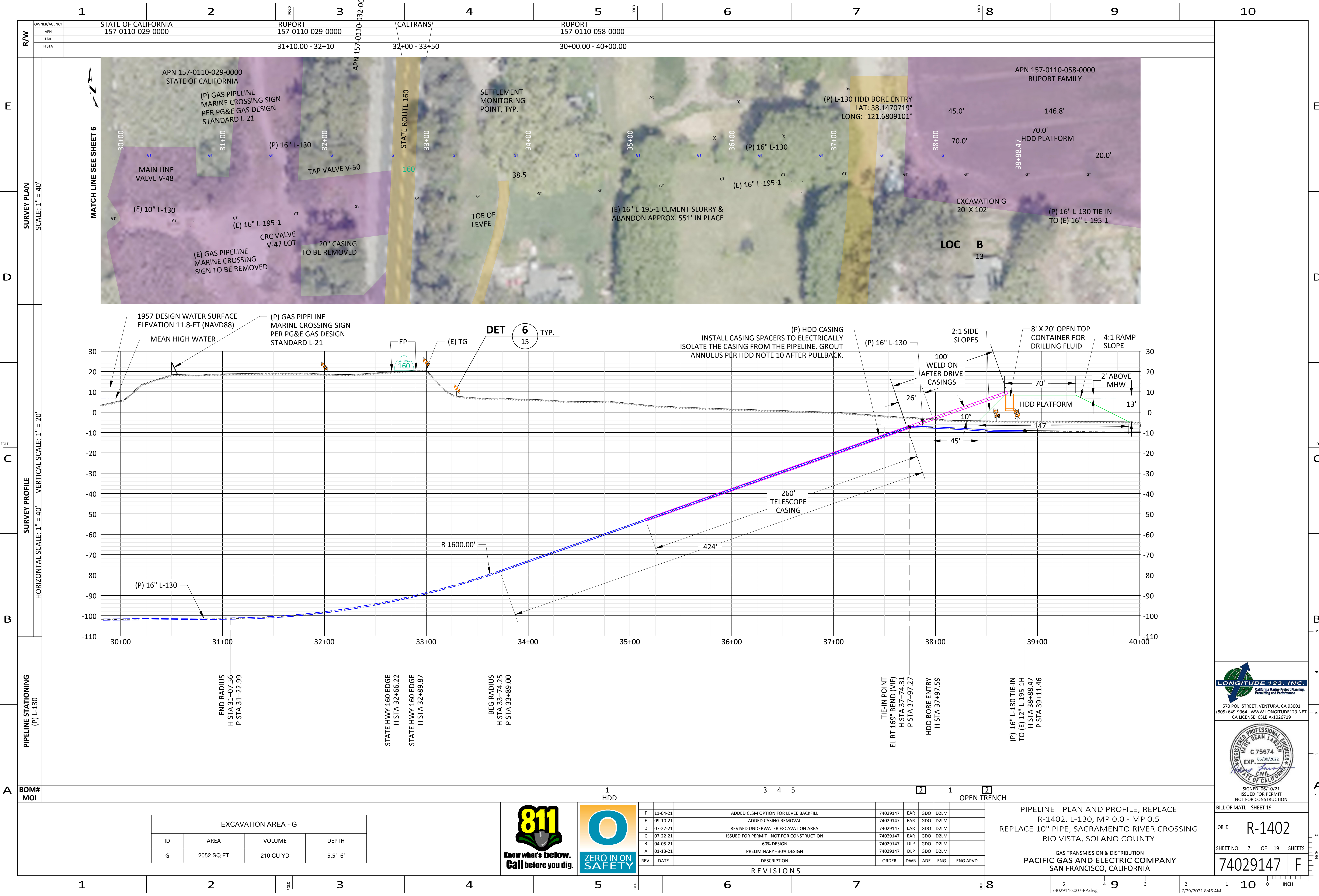
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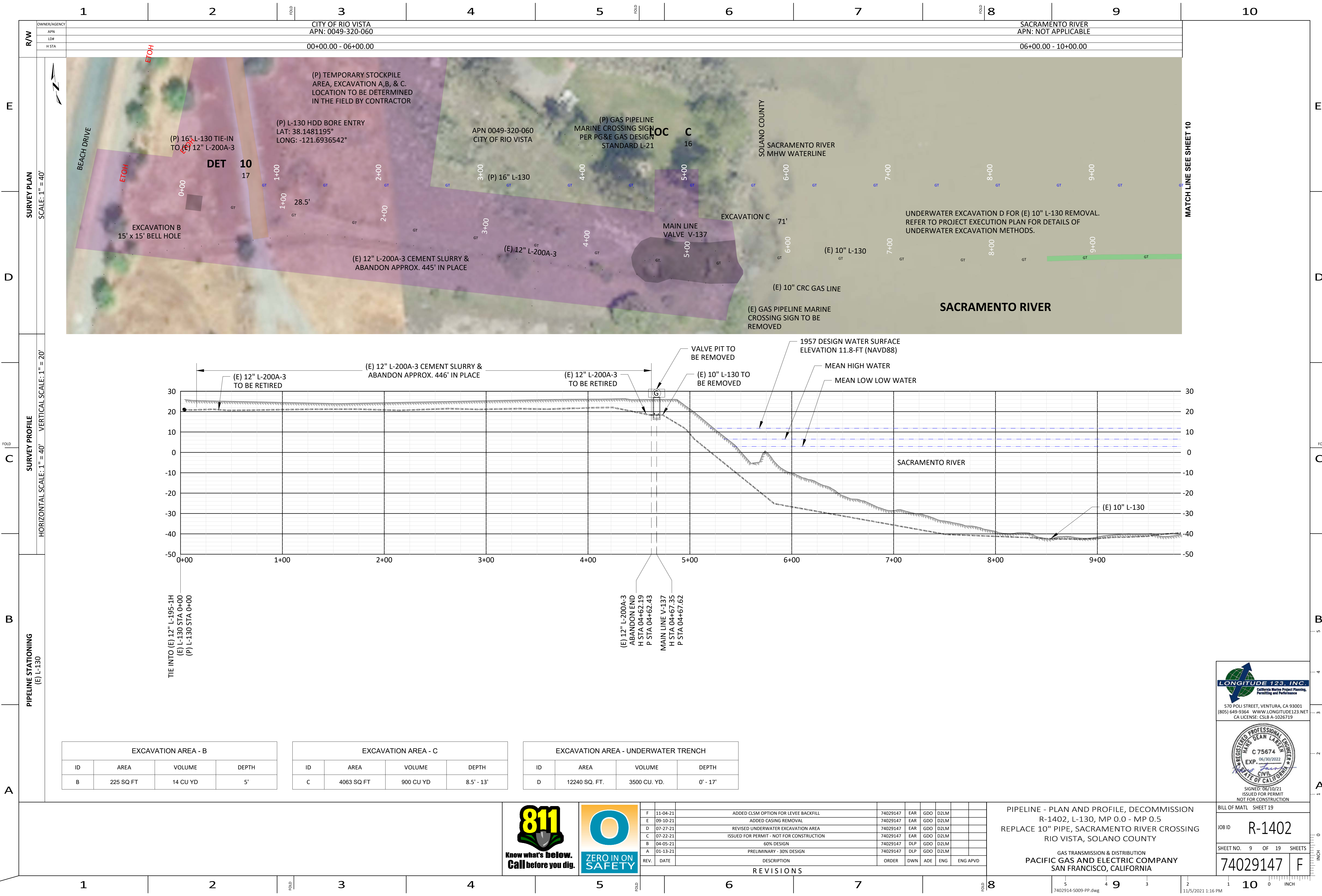
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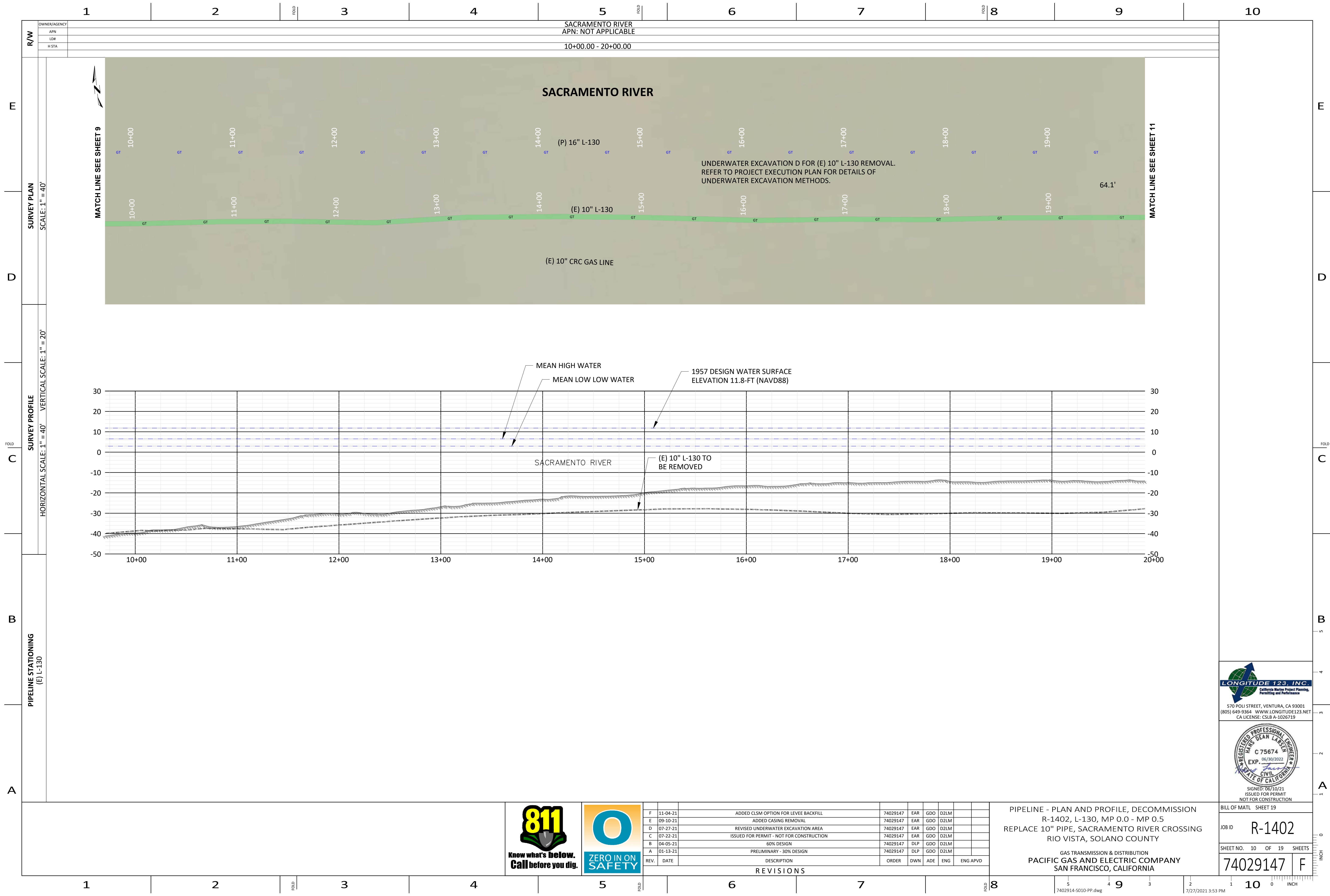
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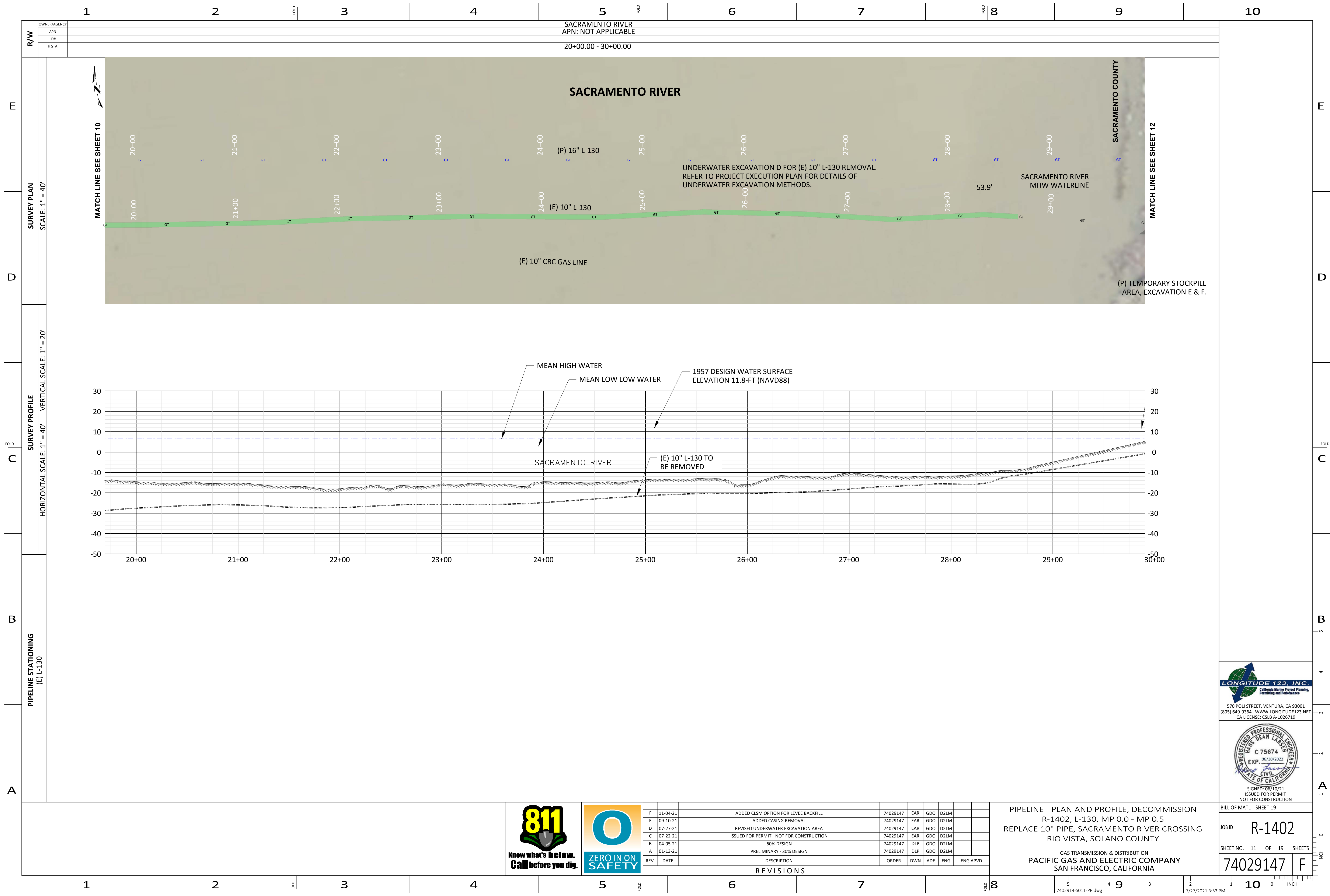








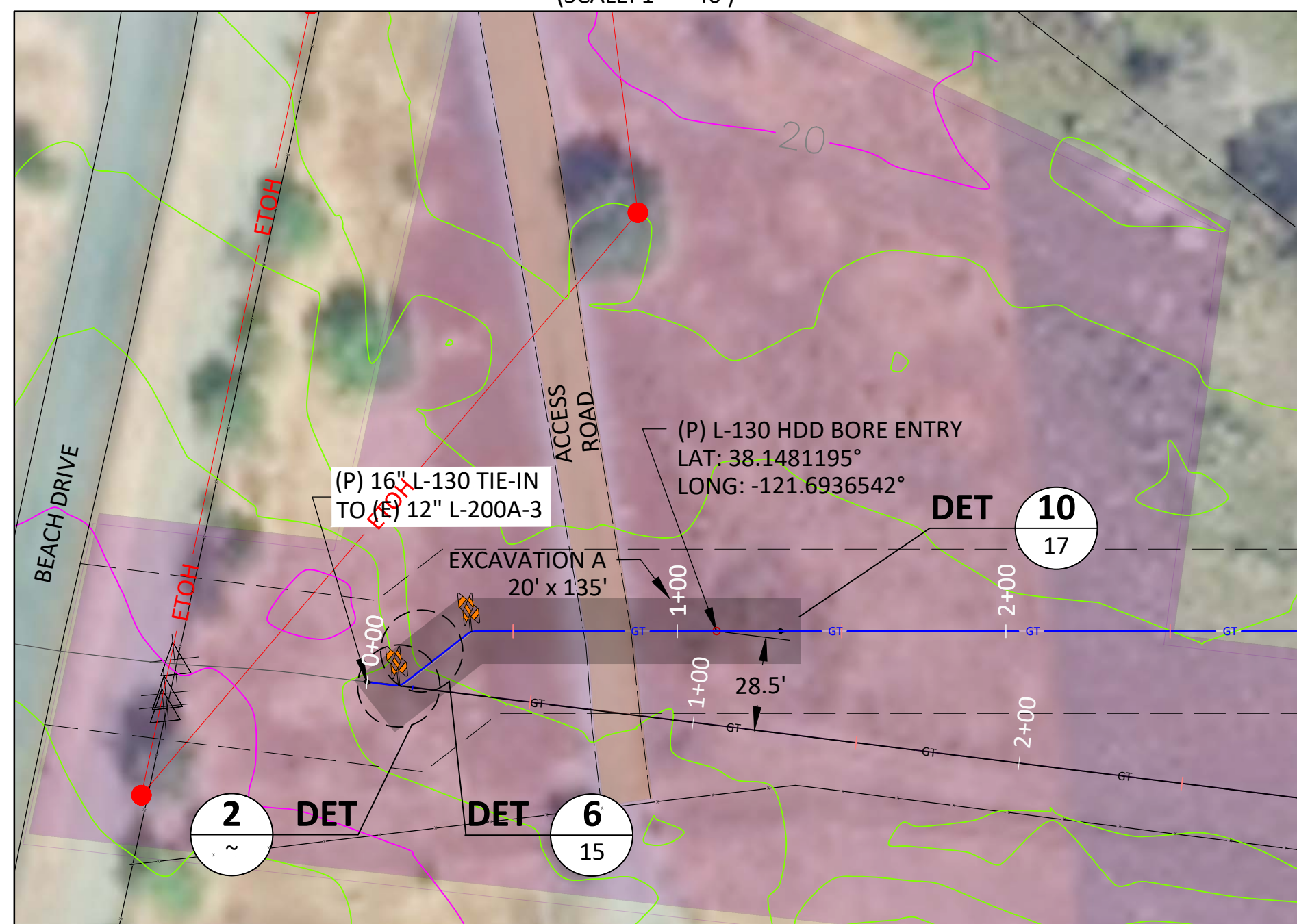






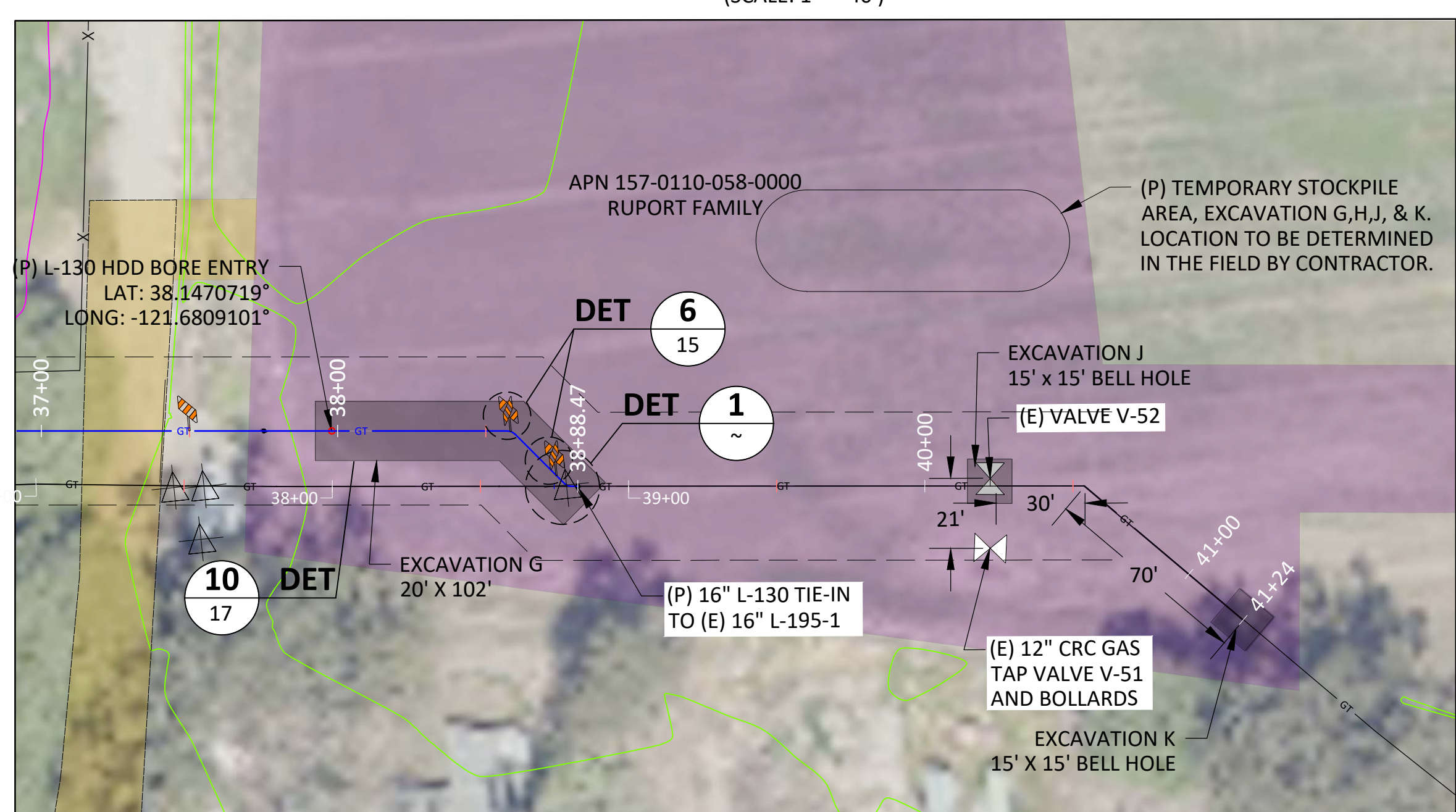
LOCATION A

WALL MAP - 2851; PLAT - G3; L-200A-3; MP 1.05
(SCALE: 1" = 40')



LOCATION B

WALL MAP - N/A; PLAT - N/A; L-195-1; MP 0.125
(SCALE: 1" = 40')



WELDING INSPECTED PER PG&E
WELDING MANUAL TD-4160M

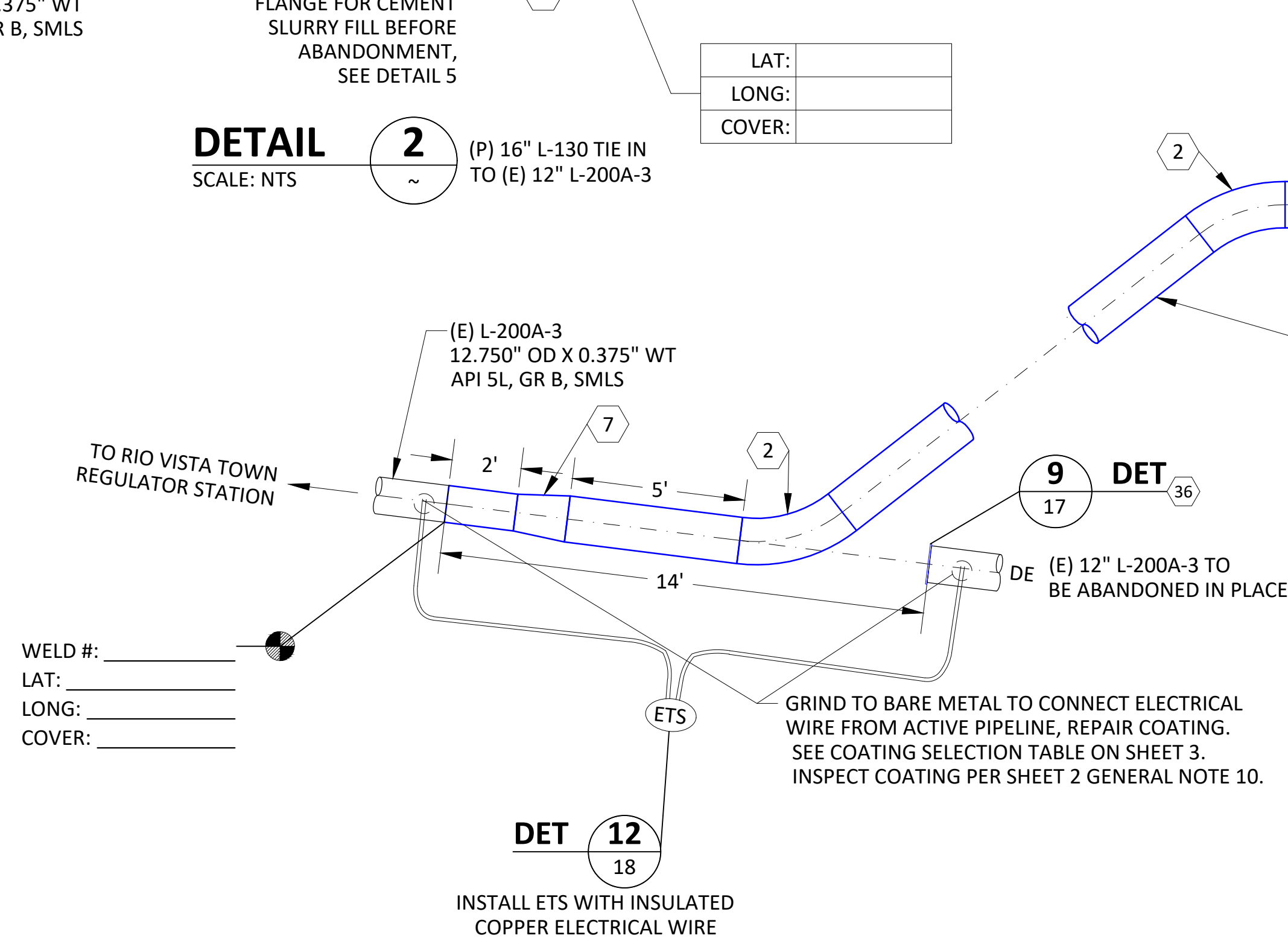
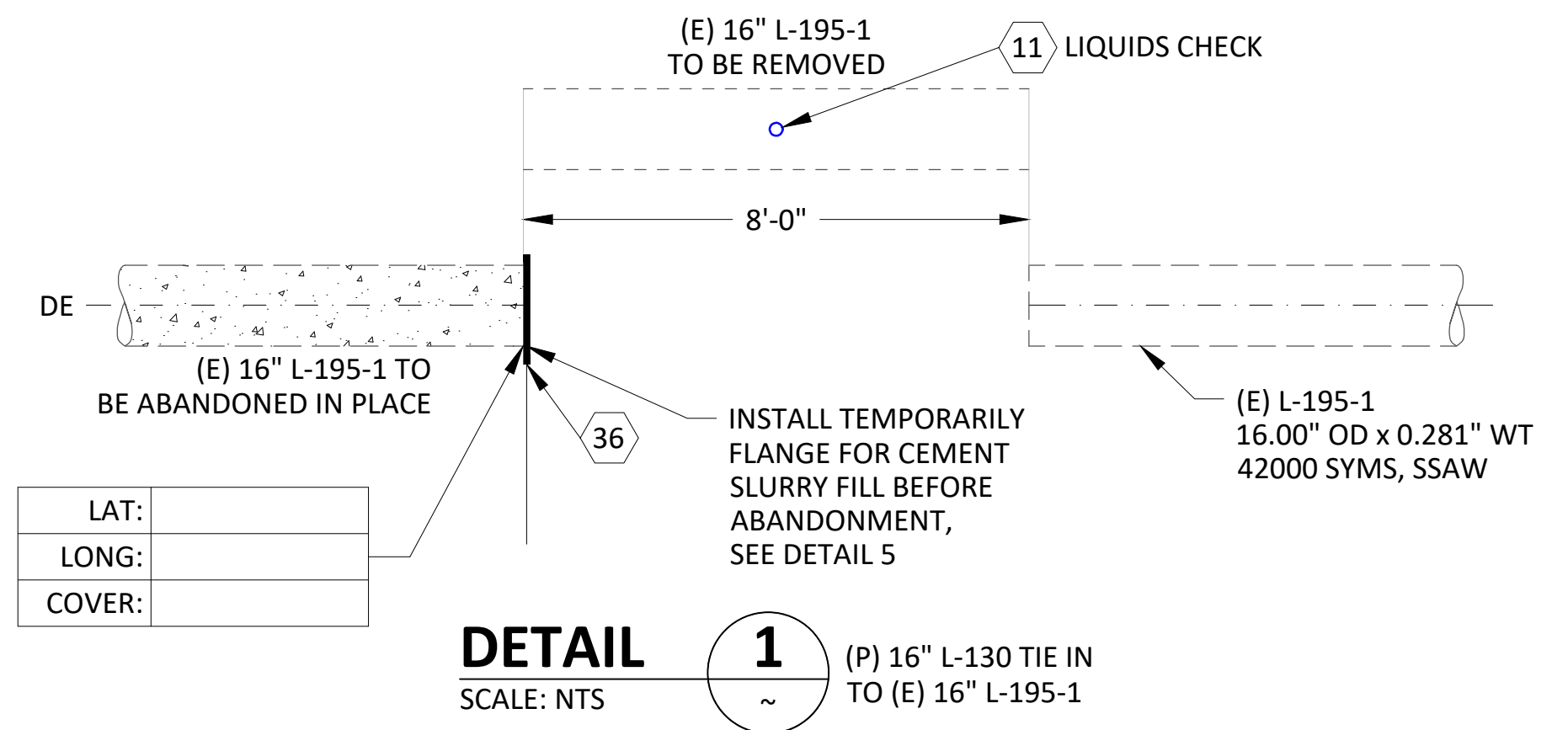
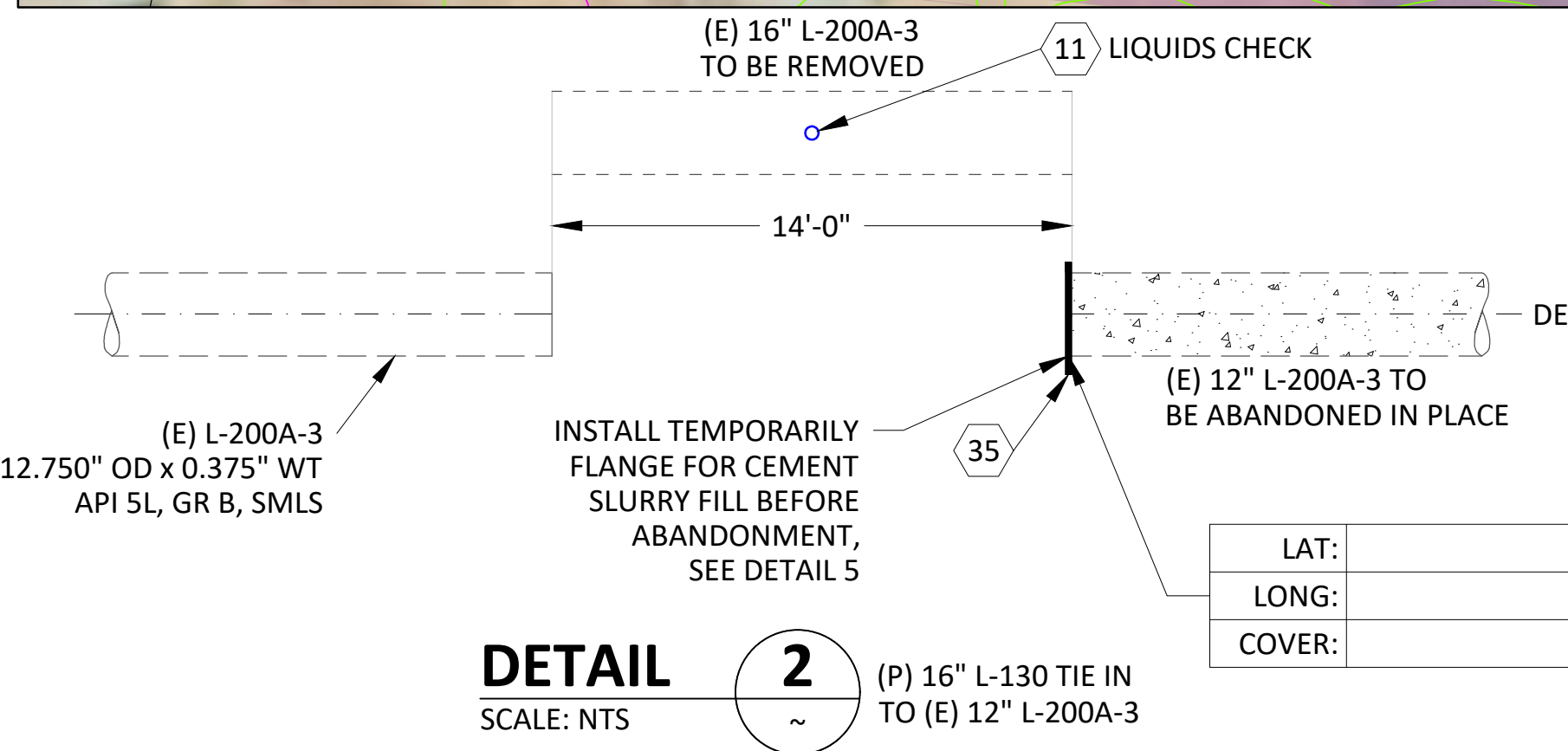
VISUAL _____ ☐

RADIOGRAPHIC _____ ☐

MAGNETIC PARTICLE _____ ☐

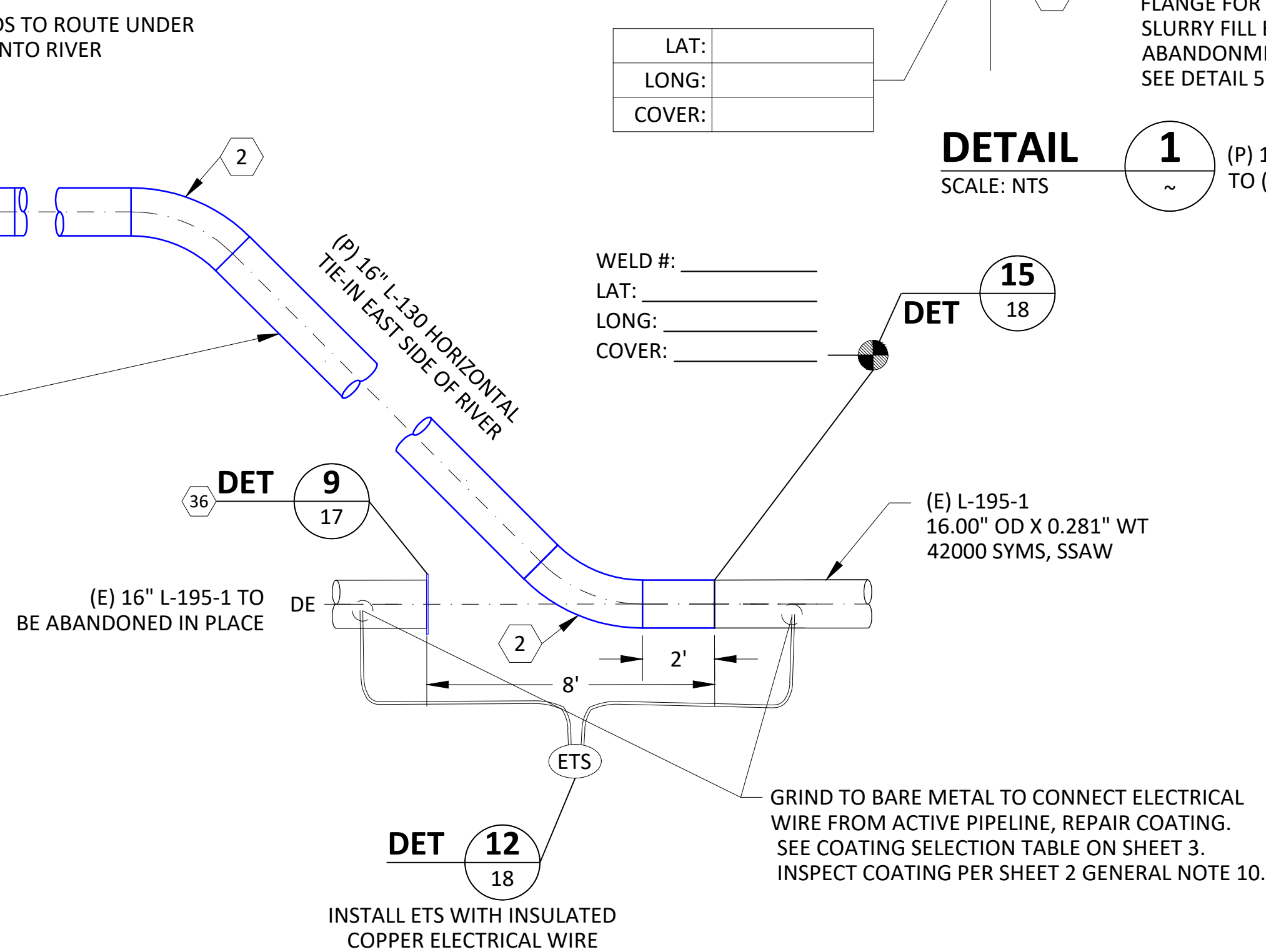
INSPECTOR _____

DATE _____



PLAN

SCALE: 1"=40'



**Know what's below.
Call before you dig**



F	11-04-21	ADDED CLSM OPTION FOR LEVEE BACKFILL	74029147	EAR	GDO	D2LM			
E	09-10-21	ADDED CASING REMOVAL	74029147	EAR	GDO	D2LM			
D	07-27-21	REVISED UNDERWATER EXCAVATION AREA	74029147	EAR	GDO	D2LM			
C	07-22-21	ISSUED FOR PERMIT - NOT FOR CONSTRUCTION	74029147	EAR	GDO	D2LM			
B	04-05-21	60% DESIGN	74029147	DLP	GDO	D2LM			
A	01-13-21	PRELIMINARY - 30% DESIGN	74029147	DLP	GDO	D2LM			
REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG	APVD	
REVISIONS									

PIPELINE - DETAILS
R-1402, L-130, MP 0.0 - MP 0.5
REPLACE 10" PIPE, SACRAMENTO RIVER CROSSING
RIO VISTA, SOLANO COUNTY

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



LONGITUDE 123, INC.
California Marine Project Planning,
Permitting and Performance

570 POLI STREET, VENTURA, CA 93001
(805) 649-9364 WWW.LONGITUDE123.NET
CA LICENSE: CSLB A-1026719

SIGNED: 06/10/21
 ISSUED FOR PERMIT
 NOT FOR CONSTRUCTION

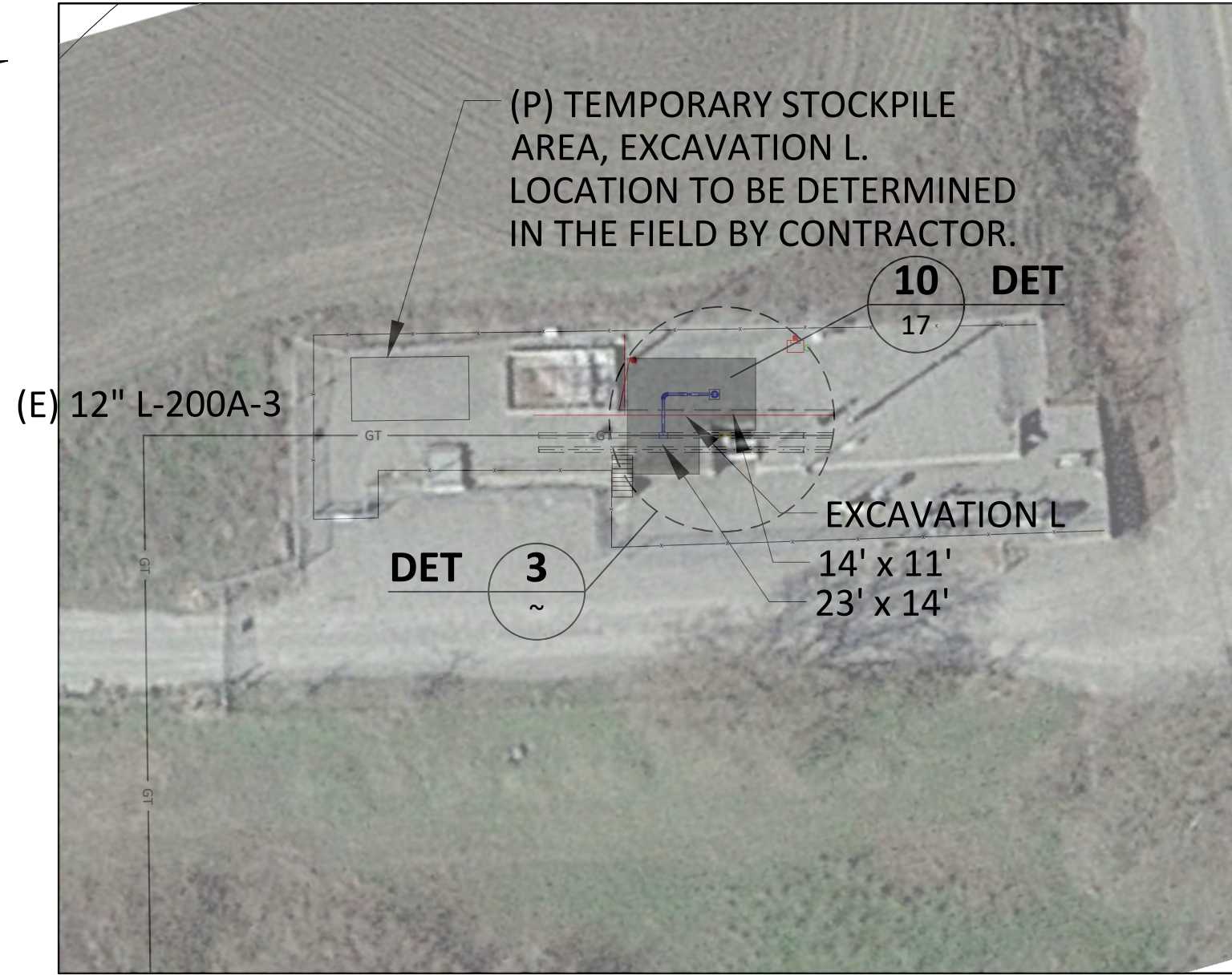
BILL OF MATL SHEET 19

JOB ID R-1402

SHEET NO. 13 OF 19 SHEETS

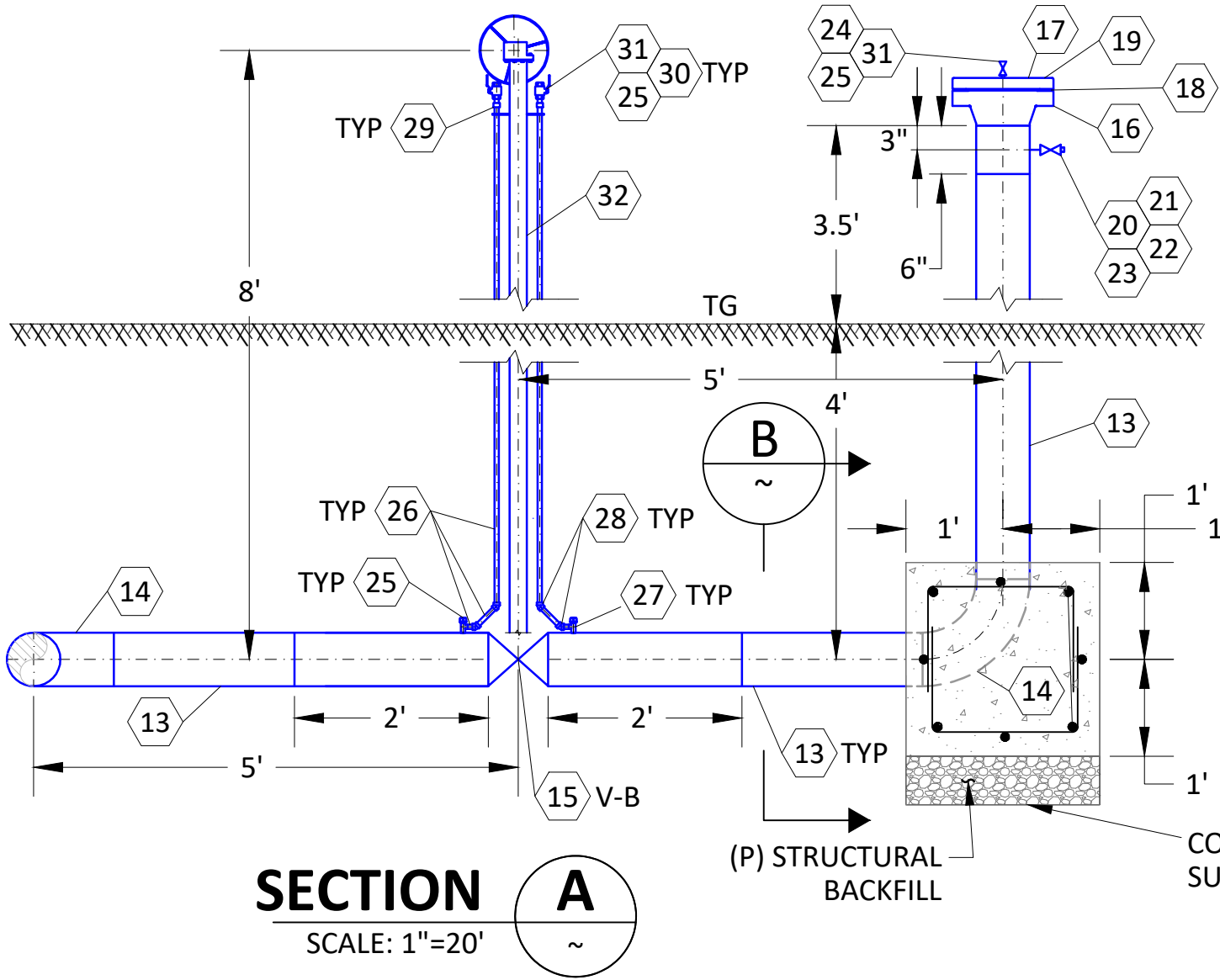
74029147	F
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LOCATION F
RIO VISTA TOWN REGULATOR STATION
WALL MAP - 2851; PLAT - F2; L-200A-3; MP 0.8
(SCALE: 1" = 30')

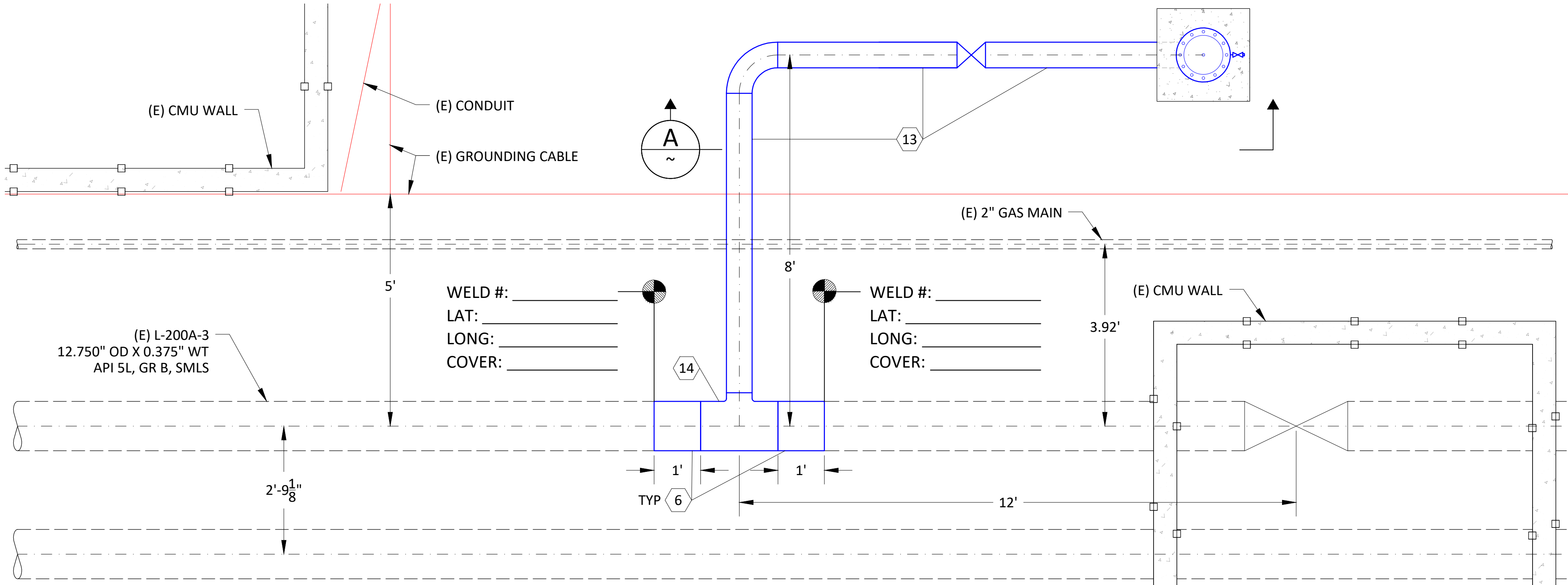
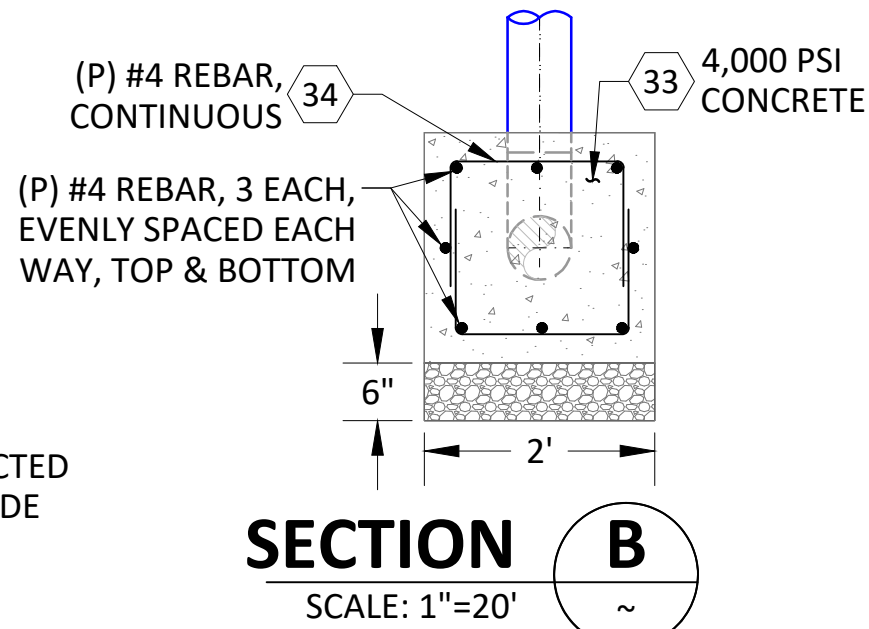


EXCAVATION AREA, INSTALL L-200A-3 BD			
ID	AREA	VOLUME	DEPTH
L	470 SQ FT	30 CU YD	4' - 4.5'

VALVE DATA STAMP	
BOM#	15 VALVE SIZE 6"
TECH ID (VALVE #)	V-A
VALVE TYPE	BALL, ANSI 600, WELD END
MANUFACTURER	
MODEL/FIGURE #	
SERIAL#	
CRITICAL VALVE	☒ YES ☐ NO
CRITICAL VALVES ARE TO BE COMMISSIONED PER TD-4520P-01	
COMMISSIONING	
VALVE TO BE COMMISSIONED BY GAS PIPELINE OPERATION & MAINTENANCE (GPO&M) AND DIVISION OR DISTRICT PERSONNEL PRIOR TO PLACING VALVE IN SERVICE.	
COMMISSIONED BY:	
LAN ID	
DATE	
NUMBER OF TURNS OF HANDWHEEL (IF APPROPRIATE)	



THRUST BLOCK NOTE:
FOR ALL CONCRETE RELATED WORK,
"PG&E GENERAL GUIDELINES FOR
CONCRETE WORK" SHALL BE FOLLOWED.



WELDING INSPECTED PER PG&E WELDING MANUAL TD-4160M	
VISUAL	☐
RADIOGRAPHIC	☐
MAGNETIC PARTICLE	☐
INSPECTOR	
DATE	



REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG APVD
F	11-04-21	ADDED CLSM OPTION FOR LEVEE BACKFILL	74029147	EAR	GDO	D2LM	
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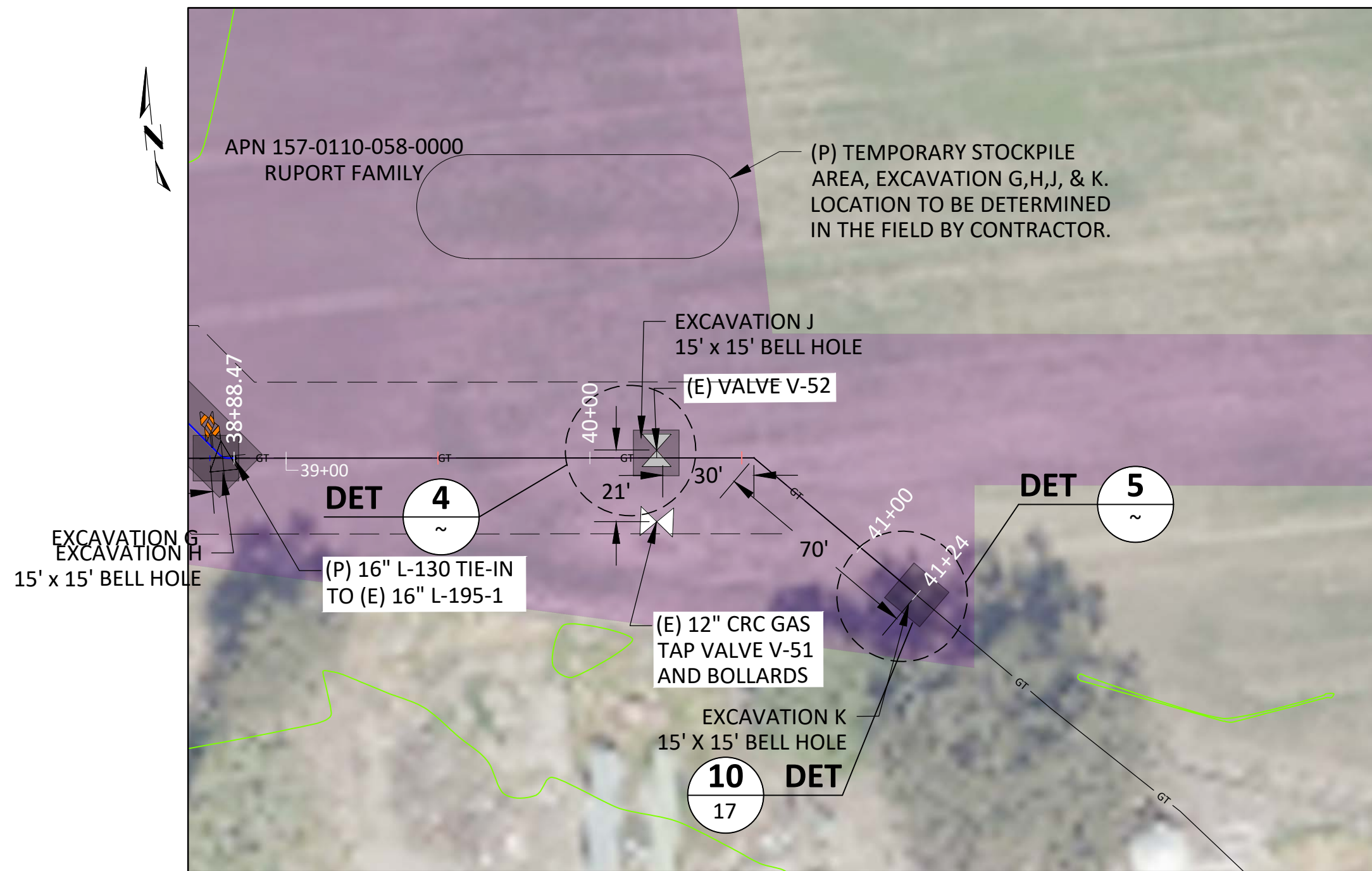
PIPELINE - DETAILS
R-1402, L-130, MP 0.0 - MP 0.5
REPLACE 10" PIPE, SACRAMENTO RIVER CROSSING
RIO VISTA, SOLANO COUNTY
GAS TRANSMISSION & DISTRIBUTION
PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA



BILL OF MATL	SHEET 19
JOB ID	R-1402
SHEET NO.	14 OF 19 SHEETS
74029147	F

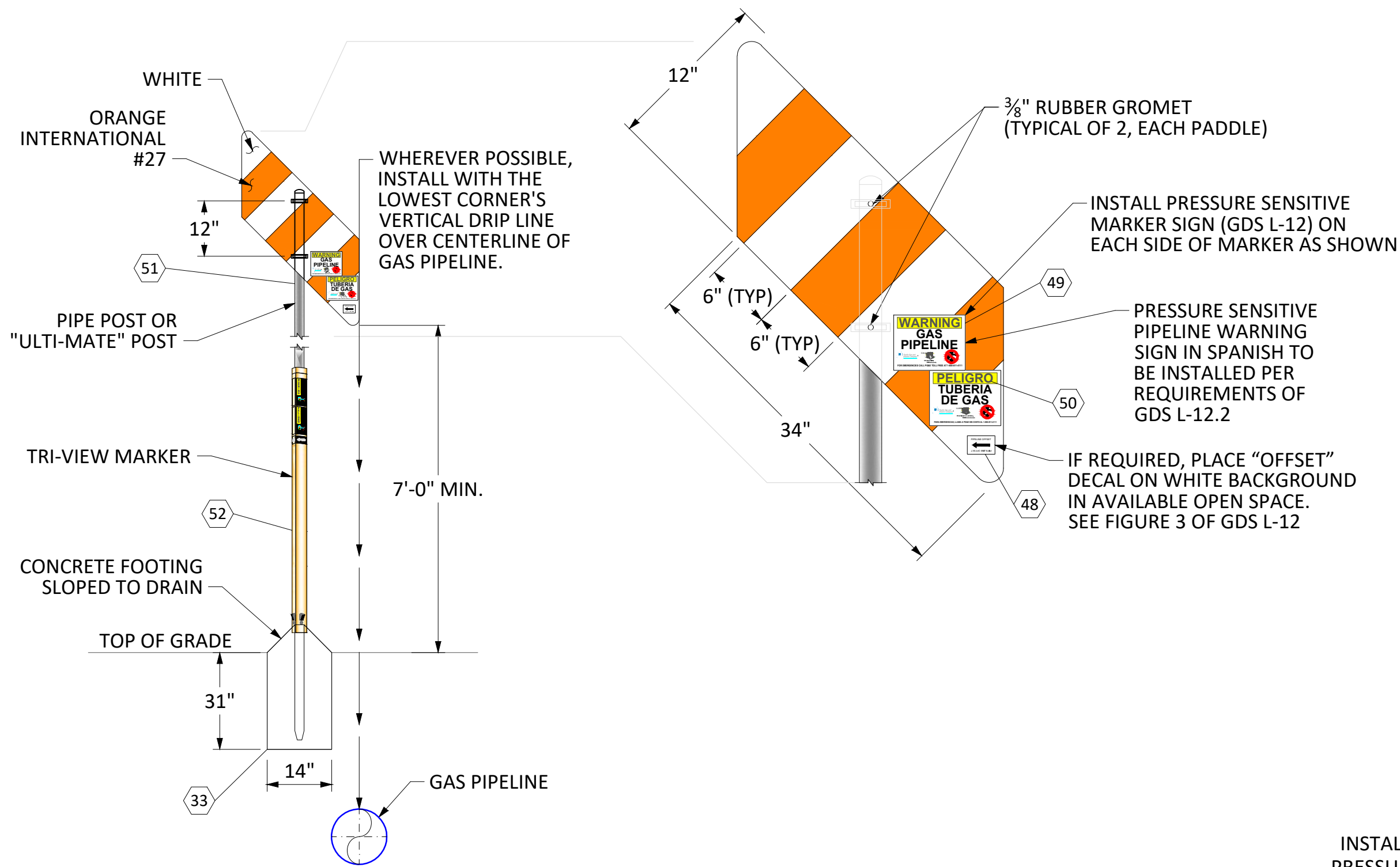
LOCATION E

WALL MAP - N/A; PLAT - N/A; L-195-1; MP 0.175
(SCALE: 1" = 40')

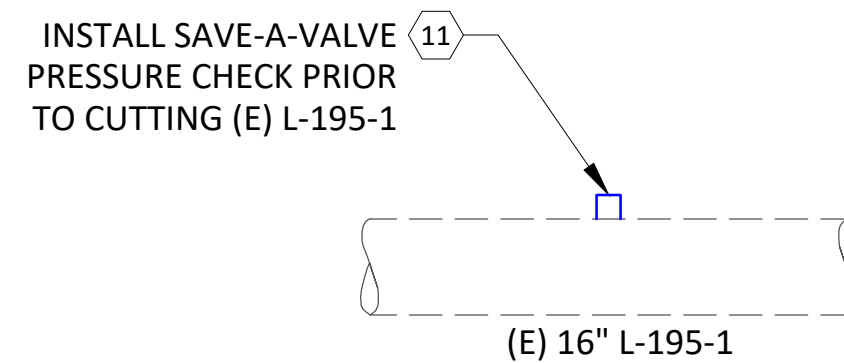


EXCAVATION AREA, 4" TAP V-52 REMOVE			
ID	AREA	VOLUME	DEPTH
J	225 SQ FT	14 CU YD	5'

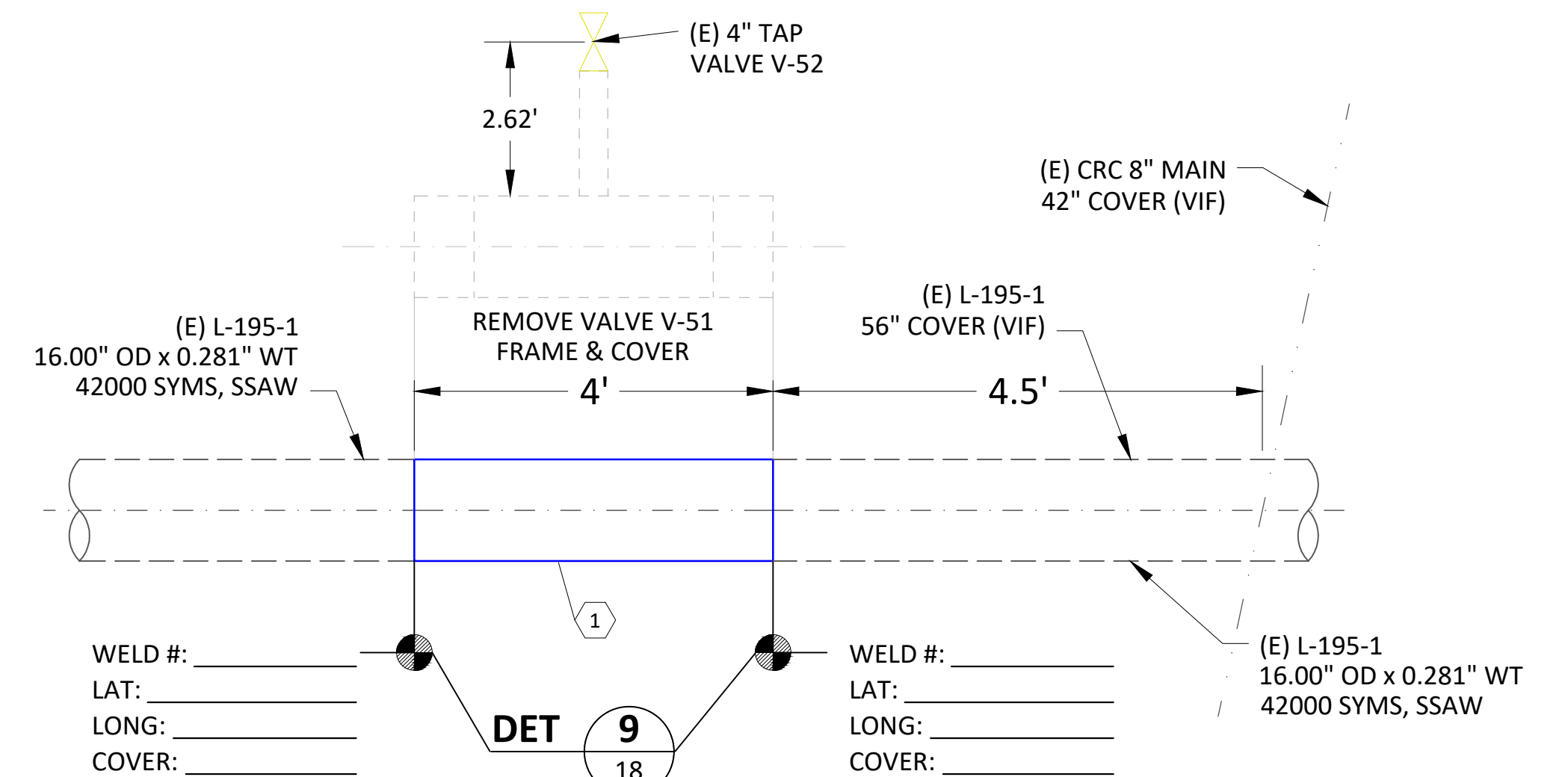
EXCAVATION AREA, SNIFF INSTALL			
ID	AREA	VOLUME	DEPTH
K	225 SQ FT	14 CU YD	5'



DETAIL **6** PIPELINE PADDLE MARKER
SCALE: NTS 4,7 INSTALL PER GDS L-11.1
AND TD-4412P-09



DETAIL **5** SNIFF CHECK
SCALE: NTS ~



DETAIL **4** (E) TAP VALVE V-52
SCALE: NTS ~ REMOVAL

WELDING INSPECTED PER PG&E
WELDING MANUAL TD-4160M

VISUAL _____ ☐

RADIOGRAPHIC _____ ☐

MAGNETIC PARTICLE _____ ☐

INSPECTOR _____

DATE _____



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REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG	APVD
REVISIONS								

PIPELINE - DETAILS
R-1402, L-130, MP 0.0 - MP 0.5
REPLACE 10" PIPE, SACRAMENTO RIVER CROSSING
RIO VISTA, SOLANO COUNTY

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



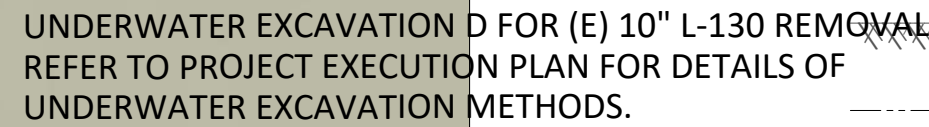
BILL OF MATL SHEET 19

OB ID R-1402

SHEET NO. 15 OF 19 SHEETS

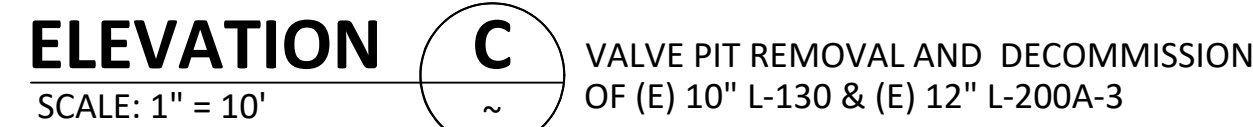
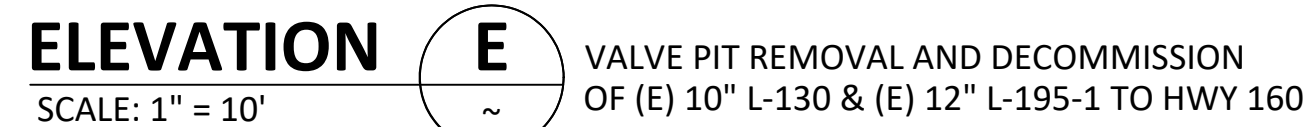
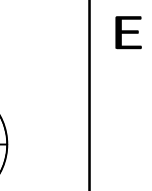
74029147	F
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WALL MAP - 2851; PLAT - G3; L-200A-3; MP 1.05
(SCALE: 1" = NTS)

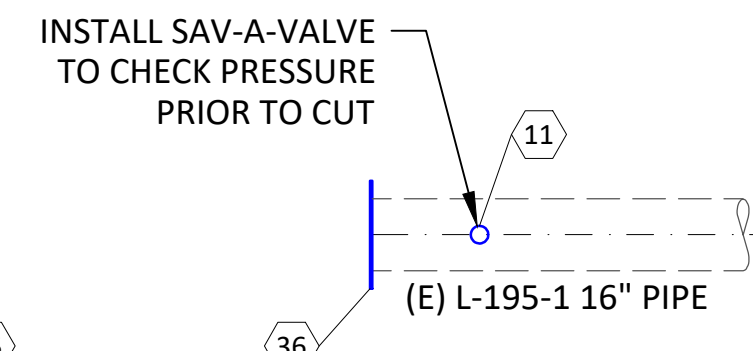


	PROPOSED GAS TRANSMISSION LINE
	EXISTING GAS TRANSMISSION LINE
	ORIGINAL GROUND
	LEEVE DESIGN PROFILE
	WATER LEVEL
	BILL OF MATERIALS ASSET
	INGRESS / EGRESS ROAD
	EXCAVATION / BELL HOLE

WALL MAP - N/A; PLAT - N/A; L-195-1; MP 0.125
(SCALE: 1" = NTS)



1. GT&D UTILITY WORK PROCEDURE TD 9500P-16, "DEACTIVATION AND/OR RETIREMENT OF UNDERGROUND GAS FACILITIES," SHALL BE FOLLOWED.
2. THE EXISTING PIPE SECTIONS SHALL HAVE FREE LIQUIDS REMOVED AND BE 100% PURGED PER GAS DESIGN STANDARD A-38, "PROCEDURES FOR PURGING GAS FACILITIES."
3. THE PIPE SHALL BE SECTIONALIZED AT INTERVALS AS SPECIFIED IN THE RETIREMENT PLAN. THE LOCATIONS CALLED OUT ARE APPROXIMATE AND ARE SUBJECT TO FIELD VERIFICATION TO IDENTIFY THE MOST OPTIMUM LOCATION IN THAT VICINITY. ACCURATE SURVEY DATA MAY NOT BE AVAILABLE FOR THESE LOCATIONS SO USE CAUTION DURING EXCAVATION AND WHEN IDENTIFYING THE PIPELINE TO BE RETIRED. OTHER ACTIVE PIPELINES MAY BE IN THE AREA.
4. AT EACH SUCH LOCATION NOTED ABOVE, A PIECE OF PIPE AT LEAST 24" LONG SHALL BE REMOVED. INSTALL A 1" HIGH PRESSURE SAVE-A-VALVE (H-17491, M022287) TO CHECK FOR PRODUCT AND PRESSURE PRIOR TO CUTTING INTO THE PIPELINE. THE OPEN ENDS OF THE RETIRED PIPE SHALL BE SEALED BY THE MOST APPROPRIATE METHOD OUTLINED IN GT&D UTILITY WORK PROCEDURE TD-9500P-16. BACKFILL MUST BE THOROUGHLY COMPACTED IN PLACE OF THE REMOVED SECTION OF PIPE.

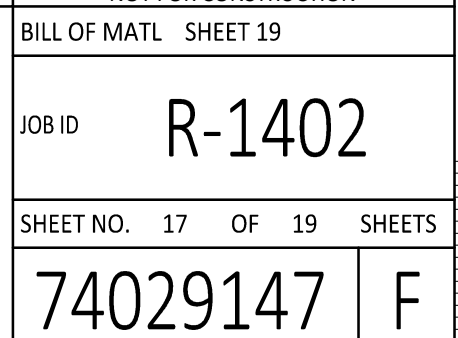
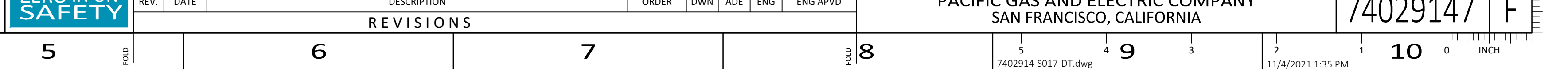
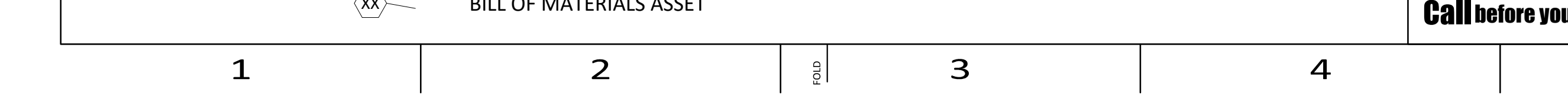


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REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG	APVD
REVISIONS								

PIPELINE - DETAILS
R-1402, L-130, MP 0.0 - MP 0.5
REPLACE 10" PIPE, SACRAMENTO RIVER CROSSING
RIO VISTA, SOLANO COUNTY

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

BILL OF MATL SHEET 19	
JOB ID	R-1402
SHEET NO. 16	OF 19 SHEETS
74029147	F



F	11-04-21	ADDED CLSM OPTION FOR LEVEE BACKFILL	74029147	EAR	GOO	D2LM		
E	09-10-21	ADDED CASING REMOVAL	74029147	EAR	GOO	D2LM		
D	07-27-21	REVISED UNDERWATER EXCAVATION AREA	74029147	EAR	GOO	D2LM		
C	07-22-21	ISSUED FOR PERMIT - NOT FOR CONSTRUCTION	74029147	EAR	GOO	D2LM		
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REV.	DATE	DESCRIPTION	ORDER	DWN	ADE	ENG	ENG	APVD
REVISIONS								

PIPELINE - DETAILS
R-1402, L-130, MP 0.0 - MP 0.5
REPLACE 10" PIPE, SACRAMENTO RIVER CROSSING
RIO VISTA, SOLANO COUNTY

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

BILL OF MATL SHEET 19	
JOB ID	R-1402
SHEET NO. 17	OF 19 SHEETS
74029147	F

1		2		FOLD	3		4		FOLD	5		FOLD	6		7		FOLD	8		9		10											
BILL OF MATERIALS (CAPITAL ORDER # 74029147)																																	
E	BOM #	MATERIAL DESCRIPTION				MATERIAL CODE #	QTY	UNIT	STANDARD	NOTES																							
	1	PIPE, STEEL, 16", 0.375" WT, API 5L, GRADE B, SEAMLESS, FBE + ARC				M010855	4,000	FT	GS&S A-15	(P) L-130 HDD																							
	2	ELBOW, 16", 45 DEG, 0.375" WT, LR, BUTT WELD, CARBON STEEL, SCH 40, ASTM A234, GRADE B				M022148	4	EA	GS&S B-20	(P) L-130 HDD																							
	3	PIPE, CASING, (TBD BY HDD CONTRACTOR)					300	FT		HDD CASING OUTER																							
	4	PIPE, CASING, (TBD BY HDD CONTRACTOR)					525	FT		HDD CASING INNER																							
	5	PIPE-CASING CP INSULATOR IN ANNULUS, (TBD BY HDD CONTRACTOR)					TDB	EA		HDD, FPVC PIPE OR SPACERS																							
	6	PIPE, STEEL, 12", 0.375" WT, API 5L, GRADE X42, SEAMLESS, FBE				M010037	10	FT	GS&S A-15	L-200A-3 BD & V-52 REPLACE																							
	7	REDUCER, CONCENTRIC BELL, 16.000" X 12.750" OD, 0.375" X 0.375" WT, Y-52, 14" LONG				M025133	1	EA	GS&S B-20	L-200A-3 TIE-IN																							
	8	ELBOW, 12", 45 DEG, 0.375" WT, LR, BUTT WELD, CARBON STEEL, SCH 40, ASTM A-234, GRADE B				M022009	2	EA	GS&S B-20	L-200A-3 TIE-IN																							
	9	CAP, CARBON STEEL, 16", BUTT WELD, 0.375" WT, ASTM A-234, GRADE B				M023795	6	EA	GS&S B-20	FOR HYDROTEST																							
	10	CAP, CARBON STEEL, 12", BUTT WELD, 0.375" WT, ASTM A-234, GRADE B				M022081	2	EA	GS&S B-20	FOR HYDROTEST																							
D	11	SAVE-A-VALVE, 1", WELD, MUELLER # H-17491, STEEL CAP, DRILLING 1200 PSI MAX, 1440 PSI MAX				M022287	2	EA	GS&S C-14	INSTALL FOR PRESSURE CHECK																							
	12	TEE, REDUCING, 12.750" X 6.625" OD, 0.375" X 0.280" WT, GR-B, BARRED				M022397	1	EA	GS&S B-20.3	L-200A-3 BD																							
	13	PIPE, STEEL, 6", 0.280" WT, API 5L, GRADE B, SEAMLESS, FBE				M010014	22	FT	GS&S A-15	L-200A-3 BD																							
	14	ELBOW, 6", 90 DEG, 0.280" WT, GR B, LONG RADIUS, BUTT WELD, CARBON STEEL, ASTM A234				M022091	2	EA	GS&S B-20	L-200A-3 BD																							
	15	VALVE, BALL, 6", ANSI 600, WELD END, 2' PUPS, 0.280" WT, X-42, FIGURE 1, A = 96"				M031042	1	EA	GS&S F-21.1	L-200A-3 BD																							
	16	FLANGE, WELD NECK, 6", ANSI CLASS 600, FORGED STEEL, 1/4" RAISED FACE, ID TO BE SPECIFIED				M025298	1	EA	GS&S B-43	L-200A-3 BD																							
	17	FLANGE, BLIND, 6", ANSI CLASS 600, FORGED STEEL, 1/4" RAISED FACE, TAP FOR 1/2" NPT				M020885	1	EA	GS&S B-43.2	L-200A-3 BD																							
	18	GASKET, PYROX, ANSI CLASS 600, 6", PSI LINEBACKER, TYPE F, NITRILE SEALING ELEMENT				M016671	2	EA	GS&S B-45.1	L-200A-3 BD																							
	19	BOLT, STUD, STEEL, ALL THREAD, 1" x 6-3/4", WITH 2 NUTS, ASTM A193-B7 HEX NUTS, A194-2H				M192700	12	EA	GS&S B-46	L-200A-3 BD																							
	20	VALVE, BALL, 1-1/2", CARBON STEEL, WKM # B136-CS-03-CS, 2500 PSI, DELRIN OR HYDRIN SEAT, FPT, WITH LOCKING DEVICE				M034456	EA	1	GS&S F-20	L-200A-3 BD																							
	21	THREDOLET, 1-1/2", BONNEY FORGE, USE ON 8" - 12" PIPE, 3000 PSI, CARBON STEEL, ASTM A10S				M014813	EA	1	GS&S B-23	L-200A-3 BD																							
C	22	NIPPLE, 1-1/2" X 6", THREADED, BLACK STEEL, SEAMLESS, EXTRA HEAVY				M020718	EA	2	GS&S B-13.1	L-200A-3 BD																							
	23	PLUG, 1-1/2", HEX HEAD, VOGT# 2580 OR EQUAL, THREADED, FORGED STEEL, 6000 PSI				M021265	EA	1	GS&S B-10.1	L-200A-3 BD																							
	24	NIPPLE, 1/2" X 4", THREADED, BLACK STEEL, SEAMLESS, EXTRA HEAVY				M020681	2	EA	GS&S B-13.1	L-200A-3 BD																							
	25	PLUG, 1/2", HEX HEAD, VOGT # 2580 OR EQUAL, THREADED, FORGED STEEL, 6000 PSI				M021249	5	EA	GS&S B-10.1	L-200A-3 BD																							
	26	PIPE, STEEL, 3/4", 0.154" WT, API 5L, GRADE B, SEAMLESS, PLAIN ENDS, BARE				M011951	20	FT	GS&SA-15	L-200A-3 BD																							
	27	VALVE TEE, WELDING INLET, 1", MUELLER# H-17656, 1440 PSI				M022445	2	EA	GS&S C-11	L-200A-3 BD																							
	28	ELBOW, SOCKET WELD, VOGT# SW-2000 OR EQUAL, FORGED STEEL, 3/4", 45 DEG, 3000 PSI				M022587	4	EA	GS&S B-21	L-200A-3 BD																							
	29	COUPLING, FORGED STEEL, SOCKET WELD, VOGT# SW-2324 OR EQUAL, 3/4", 3000 PSI				M022553	2	EA	GS&S B-21	L-200A-3 BD																							
	30	NIPPLE, CONCENTRIC, 3/4" X 1/2", BUTT WELD X THREAD, EXTRA HEAVY, BLACK, FORGED STEEL, 2160 PSI, ASTM A234, GRADE WPB				M022616	4	EA	GS&S B-13.3	L-200A-3 BD																							
	31	VALVE, BALL, 1/2", CARBON STEEL, APOLLO# 72-103-19P, 1000 PSI, TEFLON SEAL/SEAT, FPT ENDS, WITH LOCKING DEVICE				M034638	3	EA	GS&S F-20	L-200A-3 BD																							
	32	POST PIPE, GALV. STEEL, 4" x 80" WITH 5" x 3' GALV. SLEEVE, WITH CAP 15-5120, ES 051122 TBL					1	EA		L-200A-3 BD																							
B	33	CONCRETE, 4000 PSIG				N/A	1.1	CU-YD	5.72	L-200A-3 BD THRUST BLOCK																							
	34	REBAR, #4				N/A	34	FT		L-200A-3 BD THRUST BLOCK																							
	35	PLATE, 1/2" x 14" x 14", MILD STEEL				N/A	2	EA	ASTM A-36	ABANDON PIPE CAP																							
	36	PLATE, 1/2" x 18" x 18", MILD STEEL				N/A	2	EA	ASTM A-36	ABANDON PIPE CAP																							
	38	PIPELINE MILE POINT DECAL				N/A	4	EA		CONTRACTOR SUPPLIED																							
	39	TAPE, WARNING, PIPELINE, GAS UNDERGROUND, REEF INDUSTRIES# 42-0084, YELLOW WITH BLACK WRITING, "CAUTION GAS LINE BURIED BELOW", 8 MILS THICK, 6" WIDE X 1000' LONG				M379947	1	EA	GS&S L-16	USED FOR HDD HORIZONTAL TIE-IN																							
	40	STATION, TEST COUPON, CC TECHNOLOGIES #CS3100, SMALL PLASTIC CONDUIT AND TERMINAL TEST HEAD CONSTRUCTION, 3" OD x 10' LONG				M560691	2	EA	CCVO-10.2	ETS, PLACE AT (P) L-130 TIE-IN LOCATIONS TO L-195-1 & L-																							
	41	WIRE ELECTRICAL, INSULATED, COPPER, 10 AWG, 600 V, 47MIL PVC, SOLID 1 CONDUCTOR, PINK					100	FT	CCV 0-10	ETS COMPONENT																							
	42	SLEEVE, COPPER SPACING, #14 TO #10 CADWELD # CAB-133-1H, THERMOWELD # A-200				M303755	4	EA	CCV 0-10	ETS COMPONENT																							
	43	CARTRIDGE, BRAZING, CADWELD # CA-15, THERMOWELD # 15P				M159260	4	EA	CCV 0-10	ETS COMPONENT																							
	44	TAPE, HANDY CAP, 4" x 4", ROYSTON W/ INTEGRATED PRIMER				M294991	4	EA	CCV 0-10	ETS COMPONENT																							
A	45	DECAL, "PG&E ETS", SELF-ADHESIVE					2	EA	GS&S L-12	ETS DECAL																							
	46	PIPE, PVC, 3" IPS, 0.300" WT, SCH 80				M016071	10	FT		MARKER, PLACE AT (P) L-130 HDD																							
	47	PIPE, PVC, 3"					1	EA		MARKER POLE CAP																							