SAN DIEGO GAS & ELECTRIC COMPANY

EAST COUNTY SUBSTATION PROJECT
HORIZONTAL DIRECTIONAL DRILL CONTINGENCY PLAN

PREPARED

DECEMBER 23, 2013

PREPARED BY:

BETA

PREPARED FOR:

SDGE

A Sempra Energy utility℠

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LIST OF ATTACHMENTS

1 – INTRODUCTION

This Horizontal Directional Drill Contingency Plan (Plan) discusses how San Diego Gas and Electric Company (SDG&E) and its contractors will implement procedures to minimize impacts from an inadvertent release during horizontal directional drilling (HDD) or horizontal boring (jack-and-bore) during construction of the East County (ECO) Substation Project (Project). The Project involves the construction of a new 500/230/138 kilovolt (kV) ECO Substation, rebuild of the Boulevard Substation in a new location, and construction of an approximately 14-mile-long 138 kV transmission line, consisting of overhead and underground segments in southeastern San Diego County.

The underground circuit consists of two (East and West) sections that will span a total of 6.8 miles. It is anticipated that portions of the underground 138 kV transmission line may require the use of HDD or jack-and-bore construction techniques to avoid impacts to sensitive resources.

This Plan was prepared in accordance with Mitigation Measure (MM) HYD-5 and HYD-6 of the Mitigation Monitoring, Compliance, and Reporting Program (MMCRP) for the Project to illustrate compliance with the requirements stipulated by the California Public Utilities Commission (CPUC) in the MMCRP and the California Department of Fish and Wildlife (CDFW) Section 1602 Streambed Alteration Agreement (SAA).

2 – OBJECTIVES

This Plan has been prepared to provide methods and procedures that will minimize the impacts associated with the HDD activities and describe how conformance with the required MMs, permits and plans will be achieved. The HDD practices and construction methods presented in this Plan are intended to accomplish the following objectives:

- To avoid direct impacts to creek crossings during the rainy season using HDD and/or jack-and-bore techniques and in a manner that does not result in sediment-laden discharge or hazardous materials release into waters.

- To address procedures for containing an inadvertent release of drilling fluid (frac-out) during HDD activities.

- To coordinate HDD activities with the CDFW in accordance with the Section 1602 SAA, Measure 2.16.

3 – MITIGATION MEASURE

3.0 MMCRP MEASURES

MM-HYD-5 and MM-HYD-6, as stated in the Final Environmental Impact Report/Environmental Impact Statement, read as follows:

HYD-5: Implementation of creek-crossing procedures. Where creek crossings can be completed during dry season, with no flows present in the creek, seasonally timed restorative open trenching will be completed. This procedure will use minimum trench widths. Trench cut material will not be placed outside of the creek bed and outside of 100-year inundated areas. Trench fill will be compacted and replaced to existing conditions, including matching existing creek bed gradations, and restoring vegetation. Open trenching restoration will be completed prior to any wet season flows, and will include anti-erosion action plans for any unplanned rainfall during construction. The applicant shall obtain all required permits prior to completing open trenching through drainages. In any case, flows will be isolated from open trenching by best management practices mandated by the General Construction Permit. Areas of trenching would be restored and/or vegetated at completion of work. Where creek crossing cannot be completed during the dry season creek crossing shall use jack-and-bore procedures to avoid direct impacts and shall be conducted in a manner that does not result in sediment-laden discharge or hazardous materials release to the water body. The following measures shall be implemented during horizontal boring (jack-and-bore) operations:

(1) Site preparation shall begin no more than 10 days prior to initiating horizontal bores to reduce the time soils are exposed adjacent to creeks and drainages.

(2) Trench and/or bore pit spoil shall be stored a minimum of 25 feet from the top of the bank or wetland/riparian boundary. Spoils shall be stored behind a sediment barrier and covered with plastic or otherwise stabilized (i.e., tackifiers, mulch, or detention).

(3) Portable pumps and stationary equipment located within 100 feet of a water resource (i.e., wetland/riparian boundary, creeks, and drainages) shall be placed within secondary containment with adequate capacity to contain a spill (i.e., a pump with 10-gallon fuel or oil capacity should be placed in secondary containment capable of holding 15 gallons). A spill kit shall be maintained on site at all times.

(4) Immediately following backfill of the bore pits, disturbed soils shall be seeded and stabilized to prevent erosion, and temporary sediment barriers shall be left in place until restoration is deemed successful.

(The applicant shall obtain the required permits prior to conducting creek crossing work. Required permits may include ACOE CWA Section 404, Regional Water Quality Control Board Clean Water Act 401, and CDFG Streambed Alteration Agreement 1602. The applicant shall implement all pre- and post-construction

conditions identified in the permits issued. The plan shall be submitted to the CPUC, County of San Diego, and ACOE 60 days prior to construction.

HYD-6: Horizontal Directional Drill Contingency Plan. If horizontal directional drilling is to be used during construction SDG&E shall prepare a Horizontal Directional Drill Contingency Plan to address procedures for containing an inadvertent release of drilling fluid (frac-out). The plan shall contain specific measures for monitoring frac-outs, for containing drilling mud, and for notifying agency personnel. The plan shall also discuss spoil stockpile management, hazardous materials storage and spill cleanup, site-specific erosion and sediment control, and housekeeping procedures, as described in the SWPPP. The plan shall be submitted to the CPUC, BLM, and ACOE 60 days prior to construction.

SDG&E shall obtain the required permits prior to conducting work associated with horizontal directional drilling activities. Required permits may include U.S. Army Corps of Engineers Clean Water Act Section 404, Regional Water Quality Control Board Clean Water Act 401, and CDFG Streambed Alteration Agreement Section 1602. SDG&E shall implement all pre- and post-construction conditions identified in the permits issued for the horizontal directional drilling.

3.1 STREAMBED ALTERATION AGREEMENT MEASURES

Measure 2.16 - Horizontal Directional Drilling, Jack and Bore, Micro Tunneling, as stated in the CDFW Section 1602 SAA, reads as follows:

2.16.1. All horizontal directional drilling activities within jurisdictional streams shall be coordinated, in writing, with DFG a minimum of 60 days prior to initiation of drilling. Permittee shall receive a written response from DFG prior to initiation of drilling. At the time of coordination, Permittee shall submit a boring plan, frac-out prevention and cleanup plan, and a containment and cleanup plan as applicable. Additional conditions may be required by DFG at the time of horizontal drilling, jack and bore or micro tunneling coordination.

2.16.2. A boring plan shall, at a minimum, include: 1) a sketch of the construction site, including equipment staging areas, approximate location of drill entry and exit points and the approximate location of access roads in relation to the surrounding area; 2) proposed depth of bore and statement of streambed condition (subsurface strata and percent of gravel and cobble) that support the depth of the bore; 3) approximate length of bores (50-foot increments); 4) type and size of boring equipment to be used (categorized as mini, mid or maxi); 5) estimated time to complete bore; 6) list of lubricants and HDD additives to be used; 7) name of Permittee's agents and cell phone numbers.

2.16.3. A frac-out prevention plan shall, at a minimum, include: 1) name(s) and phone numbers of biological monitor(s), third-party monitors, and crew supervisor(s); 2) site-specific resources of concern (if applicable, include factors such as possible

presence of sensitive species); 3) specific qualifications for monitors; 4) monitoring protocols (include biological monitoring and frac-out monitoring).

2.16.4. A containment and clean-up plan shall, at a minimum, include: 1) staging location of vacuum trucks and equipment, equipment list, necessary hose lengths, special measures needed for steep topography, etc. at each location; 2) demonstration that Permittee will have full access from the ROW to the stream through all applicable controlled-access gates.

2.16.5. The Permittee shall ensure that the necessary emergency response equipment and materials, as outlined in the contaminant and cleanup plan are readily available at the entry and exit pits or off-site location during drilling operations.

2.16.6. In the event of a drilling fluid leak, the Permittee shall immediately notify DFG, evaluate and control the discharge, contain the drilling fluid with the emergency response materials on or off site, promptly clean up the drilling fluid, and document any occurrence.

4 – PLAN IMPLEMENTATION

The HDD and jack-and-bore methodology will be utilized on this Project to bore at different locations along the underground transmission line. Bore pits will be located on each side of the proposed bore segment. Boring depths will vary depending on the location and should not exceed 40 feet below grade.

This document includes descriptions of construction methods and drilling procedures, spill prevention measures, notification, documentation, and corrective action procedures. While avoiding impacts to sensitive resources, HDD has the potential to inadvertently release drilling fluids, but properly managed released material can be contained, removed and disposed of safely.

At least 60 days prior to each HDD or boring activity, a site-specific plan will be developed for that location and provided to the CPUC and CDFW. The site-specific plans are included in this Plan as Attachment A: Site-Specific Plans. Each site-specific plan includes the following:

- Sketch of the construction site, including equipment staging areas, and distance of portable pumps and stationary equipment to nearest water resource
- Approximate location of the drill entry and exit points, and approximate location of access roads in relation to the surrounding area
- Proposed depth and length of the bore
- Description of the streambed condition (subsurface strata and percent of gravel and cobble) at depth
- Estimated construction schedule

All HDD or boring activities within jurisdictional streams will be coordinated in writing with the CDFW at least 60 days prior to initiation of work at that location. This Plan, including Attachment A: Site-Specific Plans, will be submitted to the CDFW and will satisfy Measure 2.16

of the Section 1602 SAA, which requires submittal of a boring plan, frac-out prevention and cleanup plan, and a containment and cleanup plan, as applicable.

Evidence of coordination with the CDFW will be provided to the CPUC at least 48 hours prior to initiation of HDD or boring activities within jurisdictional streams.

4.0 DRILLING PROCEDURES

4.0.1 General

HDD and jack-and-bore are technically advanced procedures that involve trenchless drilling to minimize impacts to sensitive habitats and waterways. The HDD process uses a combination of water and bentonite slurry (naturally occurring clay) for drilling fluids. The non-hazardous mixture consists of a combination of active clay, inert solids and water. The fluid is prepared in a mixing tank and is pumped through the center of the drill pipe to the cutters. The fluid is pumped at rates of 100 gallons per minute (gpm) to1,000 gpm. The fluid used during this process acts as a coolant and a lubricant during the drilling process and removes the cuttings and stabilizes the borehole. The cuttings are returned to the entry pit where it is pumped to processing equipment. The fluid is cleaned and recycled while the cuttings are disposed of at an approved disposal facility.

The jack-and-bore process consists of using a rotating cutting head to bore through the soil horizontally. The internal auger turns to remove soils while the hydraulics simultaneously advances a steel casing. Typically, an entrance and exit pit will be excavated to accommodate the boring equipment. The depth of the pits is dependent on the ultimate depth requirement of the intended horizontal position of the conduit. The installation of 2-41” HOBAS Pipe Casings with 7-6” polyvinyl chloride conduits will occur inside of the casing at each jack-and-bore location. Upon completion of installing the conduits inside the casing, the annular space will be filled with sand/cement slurry. A hydraulically powered clamshell bucket will be used on a crane to remove the spoil from the pit. It is not anticipated that lubricant will be required; however if needed to reduce the friction factor, then a bentonite slurry (clay based) drilling fluid would be used. The bentonite slurry would be injected at approximately three gallons per foot of casing advance. Due to the minimal amount of bentonite used during this boring application, there is very little potential for an inadvertent release.

4.0.2 Inadvertent Release

The process of HDD can cause drilling fluid to be released during installation, which can occur when pressure in the drill hole is not maintained and a loss of circulation of drilling fluids occurs. Drilling fluid loss is typical in small amounts when layers of soil, gravel, and rocks are encountered and the drilling fluid fills voids in the materials; however, there is a potential for the inadvertent release of drilling fluid. Drilling fluid release is usually caused by the drill hole pressure going beyond the containment capacity due to fractures in bedrock or other significant voids in geologic strata that allows fluids to surface. A good indicator that a significant amount of loss has occurred is when the returning drilling fluid volume is significantly lower than the pumping fluid volume.

The following provides the steps that will be taken in an effort to avoid an inadvertent release of HDD fluid.

4.0.2.1 Prior to Construction

All sediment and erosion control measures will be installed by the contractor. The measures include the following:

- Storm drain inlets will be protected.
- Large diameter fiber rolls (straw wattles) will be placed around proposed work areas.
- Silt fencing will be placed as needed.
- A site entrance and exit will be established to avoid track out.
- The site will be evaluated for areas that have potential for inadvertent release of fluids (dry and cracked soils) and an inventory of proper drilling fluids and equipment will be on site to deal with the potential problem areas.
- Containment areas will be set up for equipment, drilling fluids, and cuttings storage. Containment areas consist of some type of plastic sheathing formed with straw waddles to form a pit like area.
- Spill kits and cleanup materials, as described in Section 4.0.2.4 Spill Kit Equipment, will be available on site prior to any construction activities.
- The BMPs, emergency spill kit, and the Frac-Out kit will be staged nearby for immediate spill response.

4.0.2.2 During Construction

- All equipment within 100 feet from any drainage or other water resource will be placed in a double containment area.
- Drilling fluid and any waste will be contained in containment areas and stored in storage tanks.
- Spoil stockpiles will be stored behind a sediment barrier and covered with a plastic sheathing. Spoils will be stored at least 25 feet from any water bodies.
- Monitoring of fluid pressure, bore paths, and water bodies will continue during the duration of the construction activities by the Qualified Drilling Monitor (see Section 4.1 Notifications, Monitoring, and Documentation Procedures for monitoring and documentation procedures).
- A vacuum truck with sufficient hoses to reach all areas along the bore alignment will be staged on site prior to and during all drilling operations for emergency response. If work

space does not permit a vacuum truck to be staged on site, the truck will be readily available at a nearby work location or staging area via on-call procedures.

- An interim pump will be on site to reach low areas and assist the vacuum truck.

- Good housekeeping procedures will be maintained during construction at all times. Tailboard meetings will be held before work each day to discuss housekeeping and safety along with other topics. An environmental monitor will be present during tailboard meetings at locations where HDD and jack-and-bore activities are being performed.

4.0.2.3 Post Construction

- Following completion of trenchless excavation activities for the Project, all cuttings and other spoils will be hauled off site to an approved facility.

- All drilling fluids will be removed and hauled off site to an approved facility throughout construction; however, all drilling fluids, cuttings, and spoil piles associated with trenchless excavation activities for the Project will be removed upon completion of those activities. The facilities that receive the cuttings will be determined following an analysis of the material to identify how it should be disposed of in accordance with the Hazardous Materials and Waste Management Plan.

- All pre-construction sediment and erosion control measures described previously will continue to remain in place and will be monitored until the site has been stabilized and the spoils have been removed.

- As per CDFW request, a post-drill reporting of estimated volume of drilling fluid used for each reaming pass of the HDD will be submitted.

4.0.2.4 Spill Kit Equipment[1]

The materials provided in the Emergency Spill Kit may include the following items:

- Three (3) absorbent socks
- Six (6) disposal bags and ties
- Two (2) pair of safety glasses
- Two (2) pair of rubber gloves
- One (1) sorbent drip pillow
- Twelve (12) sorbent pads
- One (1) Emergency Response Guide Book
- Two (2) sorbent spill pillows
- Four (4) hazardous labels
- One (1) bag Lite-Dri Absorbent
- One (1) shovel & 1 broom

[1] A vacuum truck, an intermediate pump, sufficient hose lengths, and a Brady barrel will be available at all times.

- Absorbent skipper booms
- One (1) 55-gallon storage barrel

The materials provided in the Frac-Out Kit may include the following items:

- One hundred (100) sand bags
- Vacuum truck with sufficient length of vacuum hose
- Intermediate pump
- Hundred (100) feet of fiber rolls
- Twenty (20) straw bales
- Two (2) shovels
- Lumber
- One (1) 3,000-gallon tank for storage of released material

4.1 NOTIFICATIONS, MONITORING, AND DOCUMENTATION PROCEDURES

As identified in the MMs, Project plans, and the Project's federal, state and local permits, HDD and jack-and-bore locations will be monitored, as described in Section 4.1.0 Monitoring Procedures of this Plan, until the sites are stabilized and the spoils have been removed.

4.1.0 Monitoring Procedures

During drilling operations, the drilling contractor will have a Qualified Drilling Monitor present on site, who will perform the following activities:

- Visually inspect the bore path at the completion of each joint and inspect 100 feet upstream and downstream along bore alignment.

- Examine drilling mud pressures and return flows. Shut down drilling operations immediately if more than 2% of the total fluid volume in circulation is lost during the drilling of one (1) joint (30 feet max).

- Visually inspect the bore alignment and a 100-foot radius around the HDD operation.

- If drilling fluids begin to decline, two (2) crew members will continue to monitor until drilling fluid returns are stabilized.

- Communicate regularly regarding the drilling conditions during the course of the drilling activities.

- Inspect all stream crossings with flowing water.

- Monitoring for frac-outs shall continue 48 hours after all the drilling and reaming is completed.

- Contain all drilling fluids and cuttings for proper disposal at an approved facility.

A daily inspection form with hourly inspection intervals is included in Attachment B: Inspection Forms.

Prior to the commencement of drilling operations, the environmental monitor will identify any sensitive environmental resources located in the area of potential frac-out. The location of these resources will be communicated to the drilling contractor verbally and/or identified in a mapbook. If appropriate, the environmental monitor will flag environmentally sensitive areas located within 250 feet of the HDD centerline.

An environmental monitor will be present at all times when HDD and jack-and-bore activities are being performed. As discussed in Section 4.1.3 Corrective Actions, in the event of an inadvertent release outside of the approved work area, the construction contractor will conduct cleanup and inspections of the area via foot when feasible and, if it is safe to do so, will be accompanied by the appropriate environmental, archeological, and biological monitor(s).

4.1.1 Notification

In the event that an inadvertent release is discovered, the required notifications will be made according to the Project's MMs, permits and plans, including Section 4.2.1 of the Hazardous Material and Waste Management Plan. Specifically, as required by the Project's Section 404, 401, and 1602 permits, the United States Army Corps of Engineers, Regional Water Quality Control Board, CDFW, and CPUC will be notified of any inadvertent release impacting jurisdictional waters. Notifications to the Bureau of Land Management (BLM) and CPUC will also be made in the event that a release impacts cultural or archaeological resources. The notification(s) will be made as soon as an impact to a resource has been identified and sufficient data has been gathered to release the report. SDG&E will endeavor to make the required notifications by phone or in writing within 24 hours following discovery of the release, if feasible.

Moreover, if an inadvertent release results in impacts to cultural or archaeological resources, SDG&E will consult with the BLM and CPUC regarding cleanup activities in order to avoid further damage to the resource and will maintain verbal or written communication during the cleanup process regarding the status of the cleanup and the steps being taken to avoid further damage. The BLM will also be notified if a release from the jack-and-bore under the Carrizo Wash bridge, which is located on BLM-administered land, impacts a sensitive species.

4.1.2 Documentation

In the event that an inadvertent release is discovered, the following information will be documented:

- Name and telephone number of person reporting release
- Date and time of release
- Location of release
- Nature of the release (type, quantity, size, etc.)
- How the release occurred
- Type of activity occurring around area

- Description of sensitive areas and their location in relation to the release
- Any identified impacts to biological, cultural, or paleontological resources
- Corrective actions taken
- Information regarding the potential threat to public health and safety (if any)

After the information detailed previously has been gathered, SDG&E will provide the appropriate information in writing within 48 hours to the requisite agencies, as discussed in Section 4.1.1 Notification. However, in the event that the information cannot be gathered and/or cleanup activities are not completed within 48 hours, a final report documenting the information discussed in Section 4.1.1 Notification will be submitted to the requisite agencies as soon as practicable.[2] A sample of the release documentation form is included in Attachment B: Inspection Forms.

4.1.3 Corrective Actions

In the event that an inadvertent release/frac-out is discovered, the following corrective actions will take place:

- Drilling operations will stop immediately.

- Notification procedures will be implemented.

- The material will be removed and/or contained to minimize the affected area. Environmental monitors will be on site at all times while HDD and jack-and-bore activities are performed to ensure environmental requirements are met for removals in sensitive areas.

- The spill kit equipment will be kept on a trailer to facilitate rapid response to the site of the inadvertent release.

- The least damaging equipment and techniques will be used to clean up the spill. In the event that cleanup of an unanticipated release is necessary outside of the approved Project area and procedures beyond the use of foot traffic are required, the equipment and access route to be utilized for cleanup activities will be approved by the BLM and CPUC prior to the completion of these activities, if feasible. However, the primary objective of the contractor in the event of a release will be to secure the site to prevent harm to human health and the environment.

- Impacted soils and any other materials associated with spill containment will be removed as soon as practical to an approved disposal facility.

[2] Upon request from the CDFW after the first notification, SDG&E will send daily emails to the CDFW regarding the cleanup process until the final report is prepared.

4.2 CONTACT INFORMATION

The following table lists the individuals responsible for implementation of this Plan during construction.

Company/Organization	Name/Title	Telephone Number
SDG&E	Brian Telesmanic, Project Manager	(XXX) XXX-XXXX
SDG&E	Kirstie Reynolds, Environmental Compliance Lead	(XXX) XXX-XXXX
Insignia Environmental	Steve Diaz, Lead Environmental Monitor	(XXX) XXX-XXXX
Beta Engineering	Dane Anderson, Environmental Compliance Manager	(XXX) XXX-XXXX

5 – REFERENCES

CDFW. 2012. Final Lake or Streambed Alteration Agreement for the East County Substation Project, Notification Number 1600-2011-0328-R5.

CPUC. 2012. East County Substation/Tule Wind/Energia Sierra Juarez Gen-Tie Projects Final Environmental Impact Report/Environmental Impact Statement. Online. http://www.cpuc.ca.gov/environment/info/dudek/ECOSUB/ECO_Final_EIR-EIS.htm.

ATTACHMENT A: SITE-SPECIFIC PLANS

HDD SITE SPECIFIC PLAN

OCTOBER 2013

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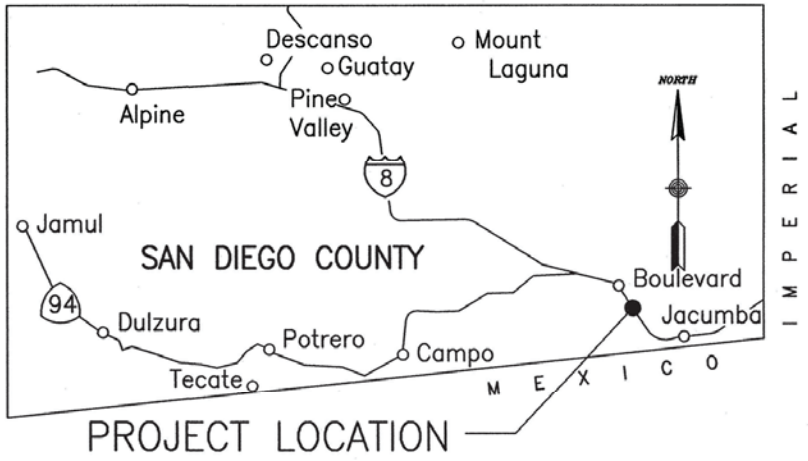
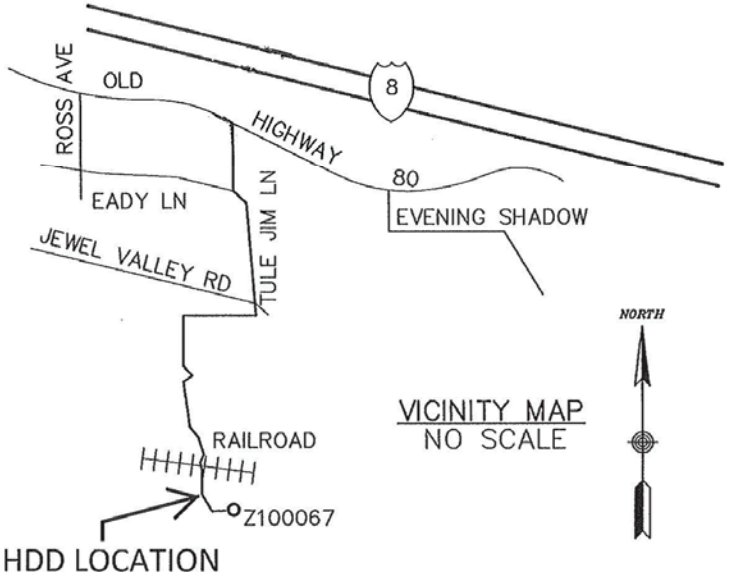
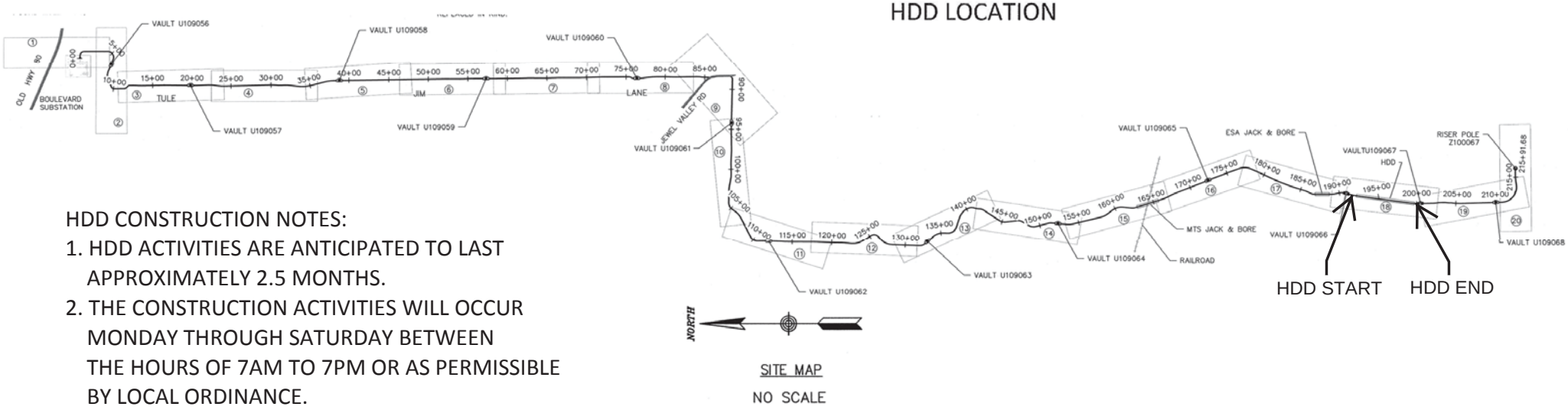
FIGURE 1A







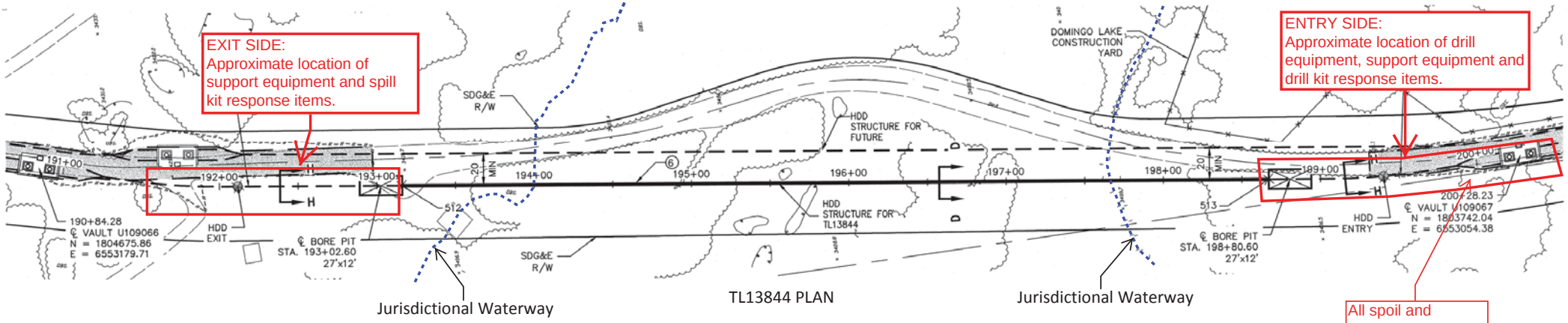
HDD CONSTRUCTION NOTES:

1. HDD ACTIVITIES ARE ANTICIPATED TO LAST APPROXIMATELY 2.5 MONTHS.
2. THE CONSTRUCTION ACTIVITIES WILL OCCUR MONDAY THROUGH SATURDAY BETWEEN THE HOURS OF 7AM TO 7PM OR AS PERMISSIBLE BY LOCAL ORDINANCE.

FIGURE 1B

PROJECT LOCATION AERIAL VIEW

FIGURE 2

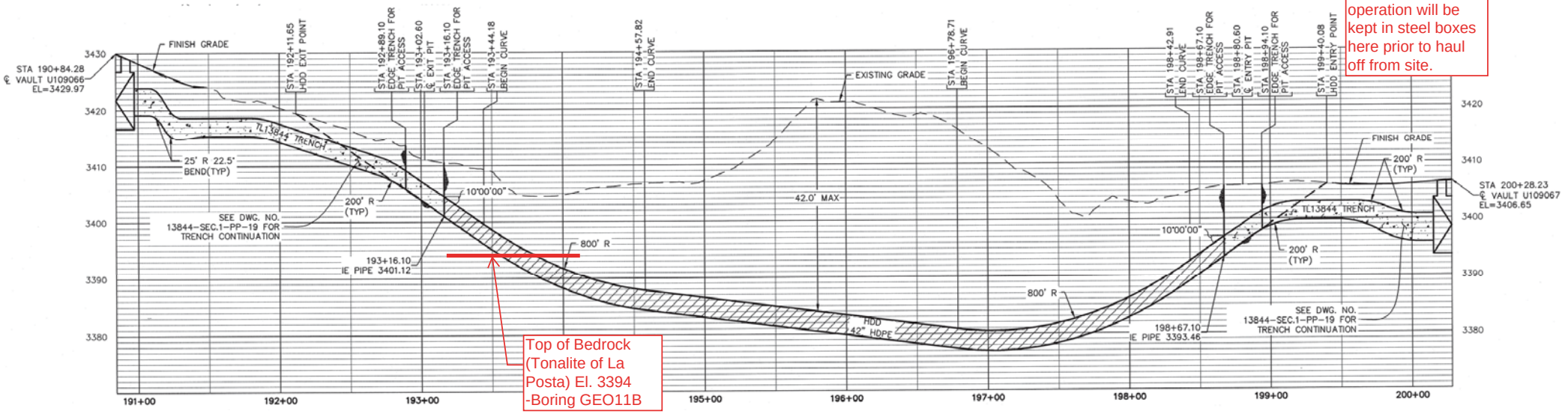


Jurisdictional Waterway

TL13844 PLAN

Jurisdictional Waterway

All spoil and cuttings from HDD operation will be kept in steel boxes here prior to haul off from site.



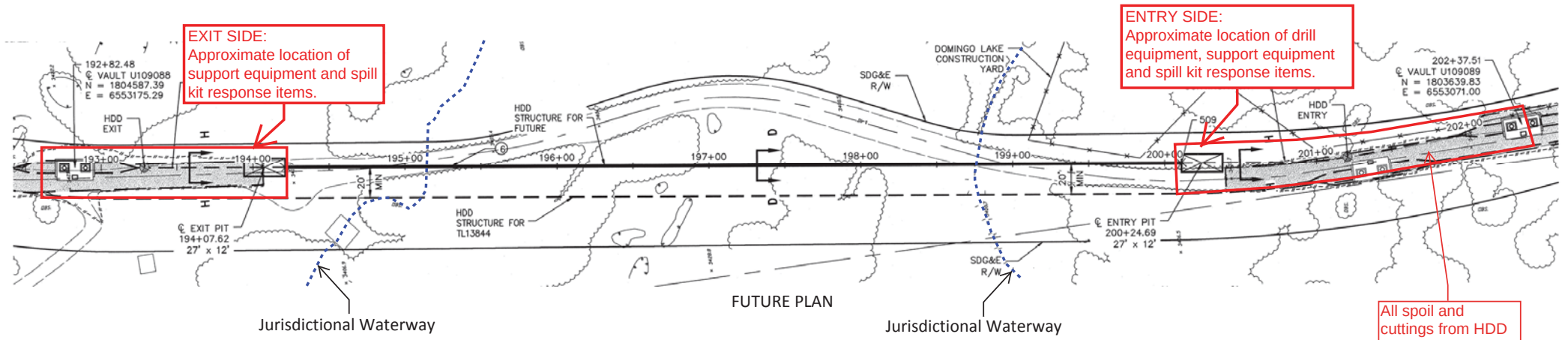
Top of Bedrock (Tonalite of La Posta) El. 3394 -Boring GEO11B

TL13844 PROFILE

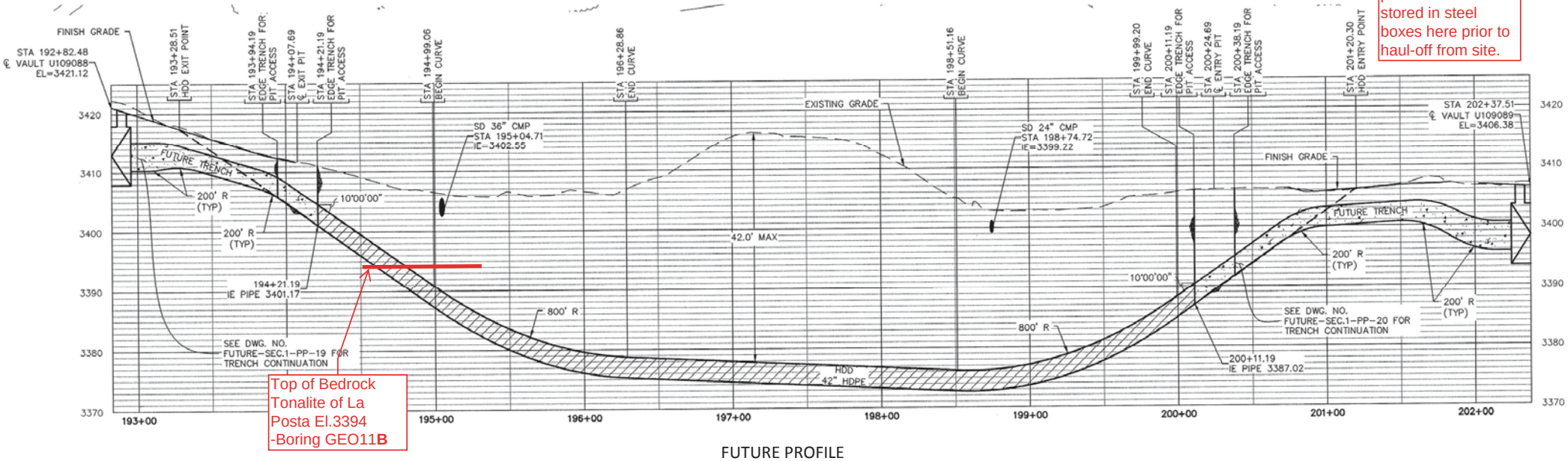
NOTES:

1. ALL EQUIPMENT STAGING LOCATIONS WILL BE LOCATED WITHIN THE PROJECT APPROVED WORK AREAS.
2. TRAFFIC WILL BE MAINTAINED THROUGHOUT HDD CONSTRUCTION.

FIGURE 2



FUTURE PLAN



FUTURE PROFILE

NOTES:

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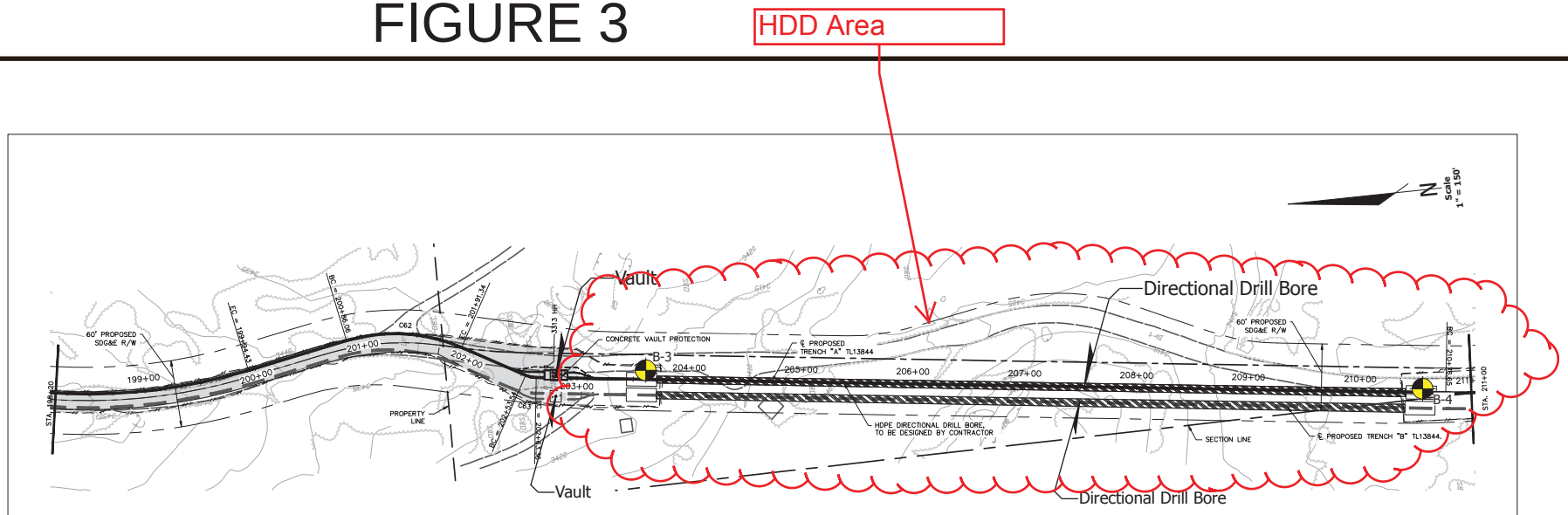
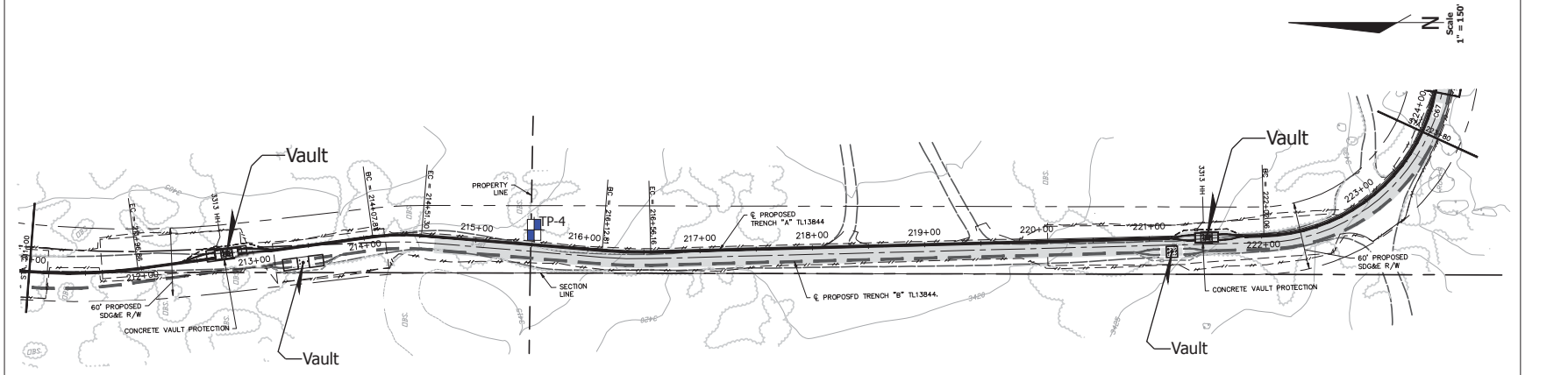
2. TRAFFIC WILL BE MAINTAINED THROUGHOUT HDD CONSTRUCTION.

FIGURE 3



References: TL 13844 Underground Conversion Boulevard Substation-SP38, Boulevard, CA, Sheet 17, prepared by Nolte Vertical Five, dated 9/28/11.



References: TL 13844 Underground Conversion Boulevard Substation-SP38, Boulevard, CA, Sheet 18, prepared by Nolte Vertical Five, dated 9/28/11.

VO Engineering, Inc.
13230 Evening Creek Drive, Suite 207
San Diego, CA 92128

Phone: 858.391.8530

Field Exploration Legend

- TP-1 - Test Pits (typ.)
- B-1 - Borings (typ.)

Plot Plan 3

TL 13844 Underground Conversion Boulevard-Old Highway 80

Project No.: V-0174-G | **Figure No.: 5**

FIGURE 3

Boring No. 3

Date Drilled: 8-24-2011 | **Exploratory Equipment:** Marl M5

Driving Weight: 140 lbs / 30 inch fall | **Surface Elevation:** 3420 ft MSL

Depth in Feet	Driven Sample	(Blows / Foot)	Material Description	USCS	Color	Moisture	Consistency	Dry Density	Moisture Content (% Dry Weight) 10 20	Penetration Time (minute/foot) 1 2 3 4 5
			Bedrock - Tonalite of La Posta (Klp) Granite, fine to coarse grained, highly to moderately weathered, quartz, orthoclase, muscovite, micaceous.		Off-White	Dry	Very Dense			
		24 50 4"						120.0		
5		33 50 3"	Becomes moderately to slightly weathered.							
10		50 6"								
15		50 .5"	No recovery.							
20			Slow drilling, becomes slightly weathered.							
25			End of Boring at 25 feet. No groundwater encountered.							

VO Engineering

VO Engineering, Inc.
13230 Evening Creek Drive, Suite 207
San Diego, CA 92128

Phone: 858.391.8530

Boring Log B-3

TL 13844 Underground Conversion
Boulevard-Old Highway 80

Project No.: V-0174-G | **Figure No.: A-5**

FIGURE 3

Boring No. 4

Date Drilled: 8-24-2011 | **Exploratory Equipment:** Marl M5

Driving Weight: 140 lbs / 30 inch fall | **Surface Elevation:** 3410 ft MSL

Depth in Feet	Driven Sample	(Blows / Foot)	Material Description	USCS	Color	Moisture	Consistency	Dry Density	Moisture Content (% Dry Weight)	Penetration Time (minute/foot)
			Alluvium - Silty Sand, fine to coarse grained, slightly micaceous.	SM	Light Brown	Damp	Medium Dense			
		21						113.0		
5		6					Loose			
10		6	Becomes fine to medium grained.			Slightly Moist				
15		15	Fine to coarse grained.			Very Moist				
			Static Groundwater encountered at 17'.			▽				
20										
			Bedrock - Tonalite of La Posta (Klp) Granite, fine to coarse grained, slightly weathered.		Off-White	Dry	Very Dense			
25										

Moisture Content (% Dry Weight): 10, 20

Penetration Time (minute/foot): 1, 2, 3, 4, 5

End of Boring at 25 feet. Groundwater encountered at 17 feet.

VO Engineering

VO Engineering, Inc.
13230 Evening Creek Drive, Suite 207
San Diego, CA 92128

Phone: 858.391.8530

Boring Log B-4

TL 13844 Underground Conversion
Boulevard-Old Highway 80

Project No.: V-0174-G | **Figure No.: A-6**

LOG OF EXPLORATORY BORING NUMBER GEO 11B

Date Excavated:	03/14/13	Logged by:	BV
Equipment:	Hollow Stem Auger, CME 75	Project Manager:	GF
Surface Elevation (ft):	~~3,409~~ MSL 3406	Depth to Water (ft):	N/A

DEPTH (ft)	USCS	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: UNDISTURBED	SAMPLES: BULK	PENETRATION (blows/ ft. of drive)	MOISTURE (%)	DRY UNIT WT. (pcf)	LABORATORY TESTS
0	SM	**FILL**- Dark brown, moist, loose, silty SAND.						
2	SM	**ALLUVIUM**- Dark brown, moist, loose, silty SAND.						
4		... becomes dark brown.						
6			SPT	☒	9			
8		3397 ▽ Perched groundwater encountered at 9 feet.						
10	SP	Light olive gray, saturated, medium dense, poorly graded SAND	SPT	☒	15			
12		3394 **TONALITE OF LA POSTA (Klp)**- Light brown, moderately to intensely weathered,(Breaks down to a SILTY SAND (SM); with moderate hand pressure).	SPT	☒	50/4"			
14								
16		**AUGER REFUSAL AT 15½ FEET.**	SPT	☒	50/3"			
18								
20								

SOUTHERN CALIFORNIA SOIL & TESTING, INC.	ECO SUBSTATION THERMAL RESISTIVITY TESTING		
	By: BV	Date:	March, 2013
	Job Number: 1211145-1	Figure:	I-16

JACK & BORE AT ESA

SITE SPECIFIC PLAN

OCTOBER 2013

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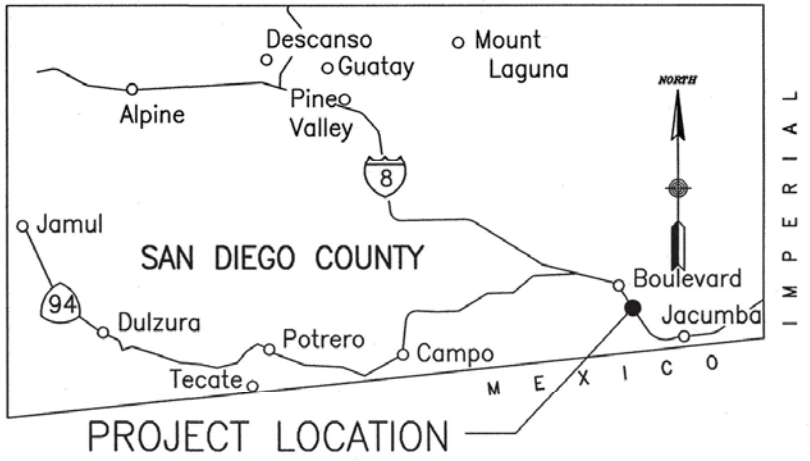
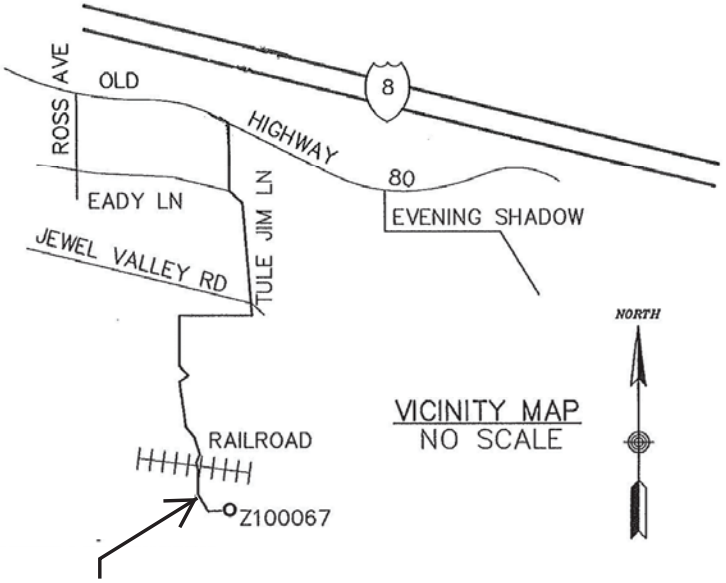
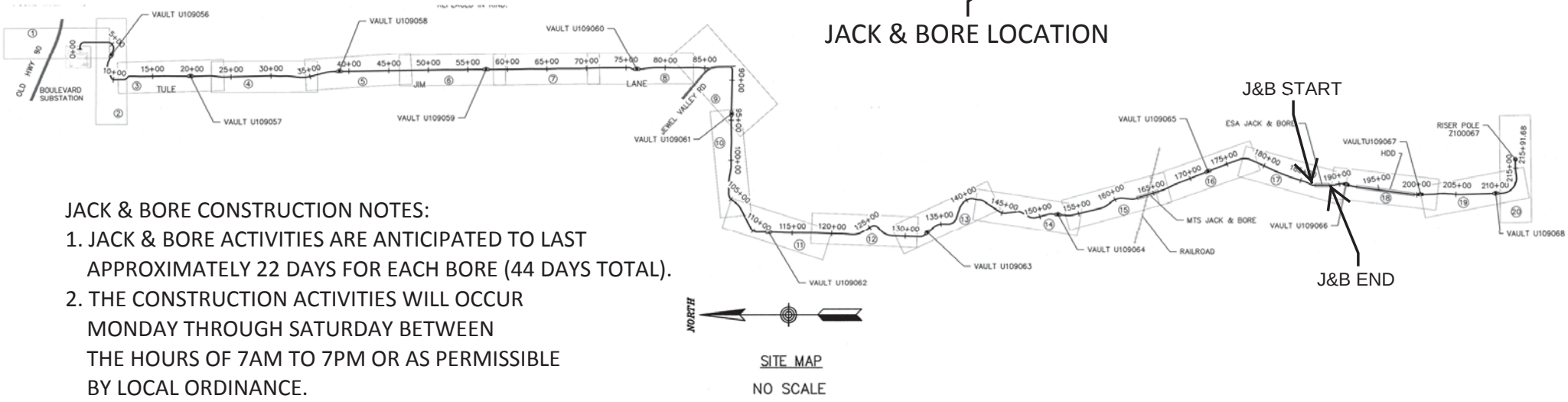
FIGURE 1



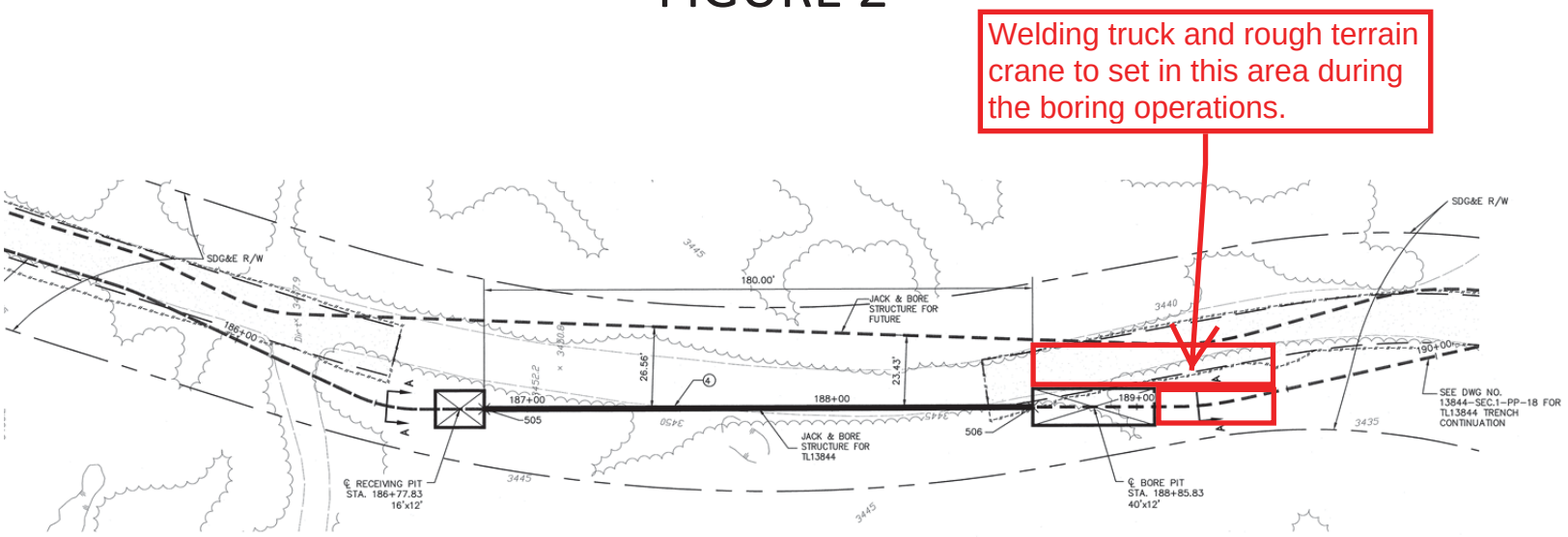




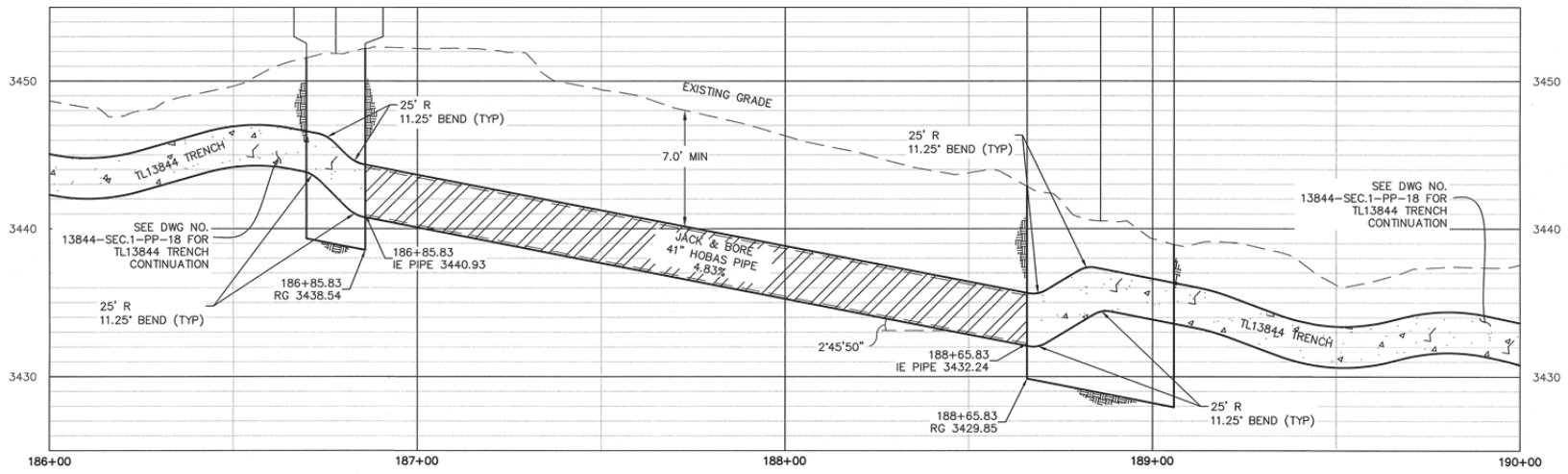
JACK & BORE CONSTRUCTION NOTES:

1. JACK & BORE ACTIVITIES ARE ANTICIPATED TO LAST APPROXIMATELY 22 DAYS FOR EACH BORE (44 DAYS TOTAL).
2. THE CONSTRUCTION ACTIVITIES WILL OCCUR MONDAY THROUGH SATURDAY BETWEEN THE HOURS OF 7AM TO 7PM OR AS PERMISSIBLE BY LOCAL ORDINANCE.

FIGURE 2



TL13844 PLAN VIEW

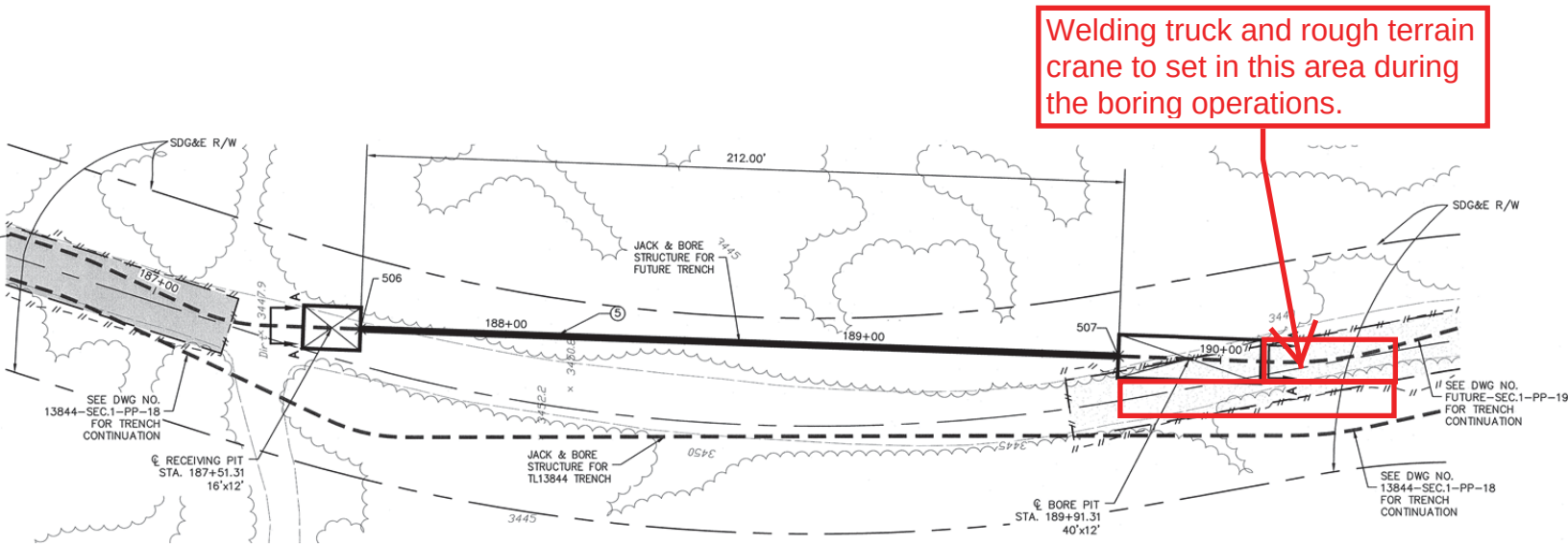


TL13844 PROFILE

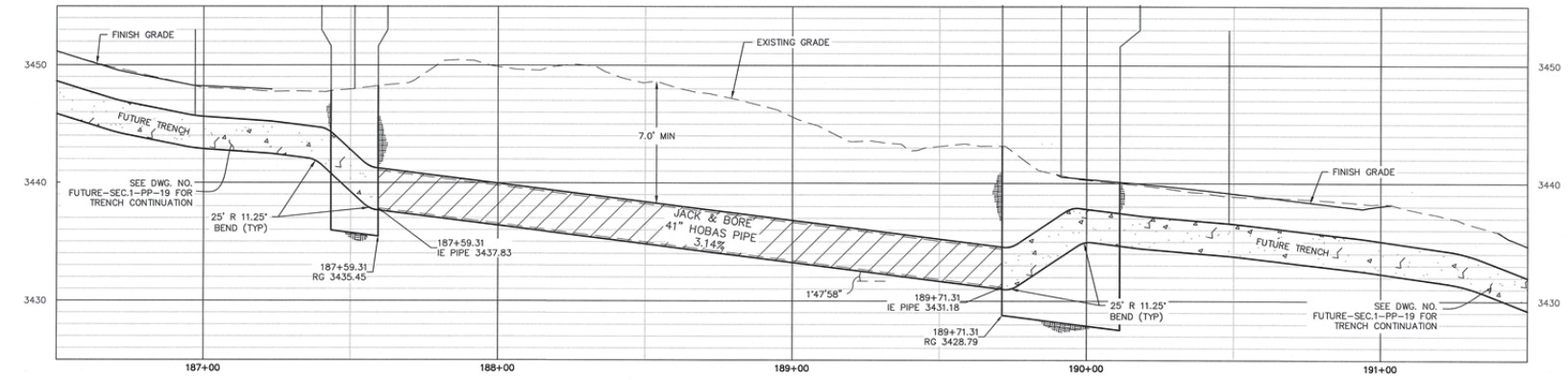
NOTES:

1. ALL EQUIPMENT STAGING LOCATIONS WILL BE LOCATED WITHIN THE PROJECT APPROVED WORK AREAS.
2. TRAFFIC WILL BE MAINTAINED THROUGHOUT JACK & BORE CONSTRUCTION.

FIGURE 2



FUTURE PLAN VIEW

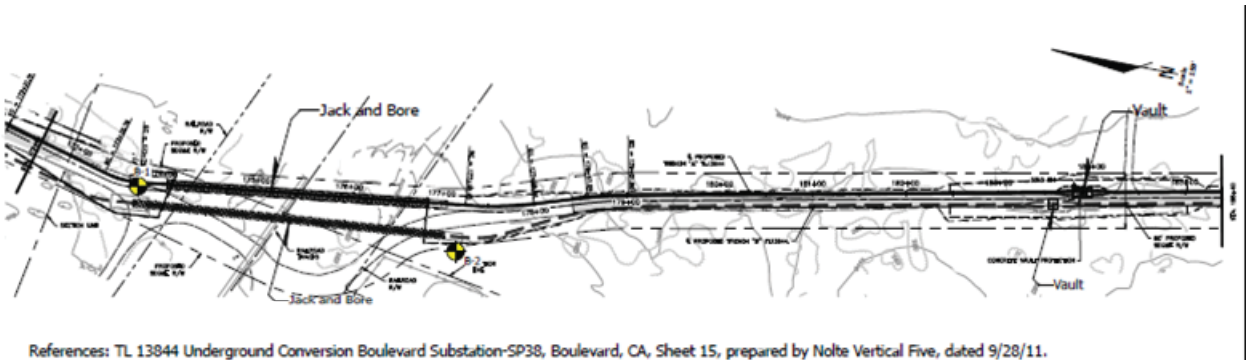


FUTURE PROFILE

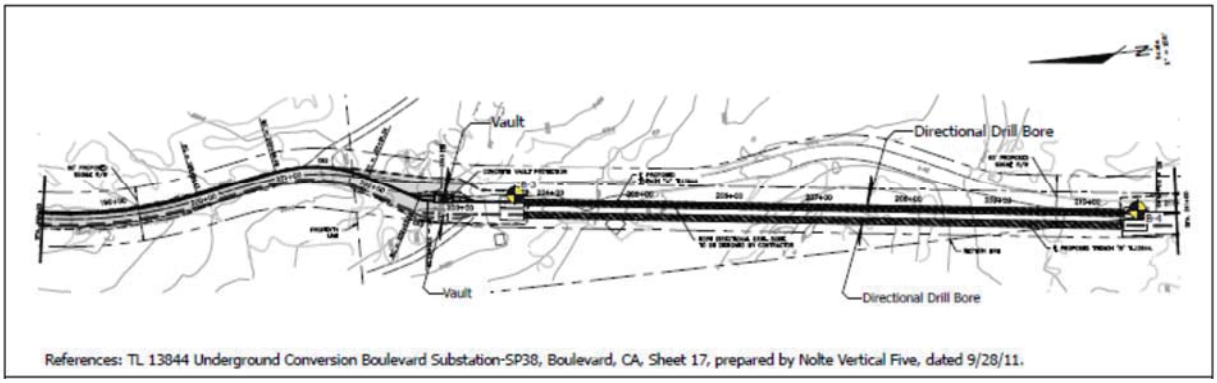
NOTES:

1. ALL EQUIPMENT STAGING LOCATIONS WILL BE LOCATED WITHIN THE PROJECT APPROVED WORK AREAS.
2. TRAFFIC WILL BE MAINTAINED THROUGHOUT JACK & BORE CONSTRUCTION.

FIGURE 3



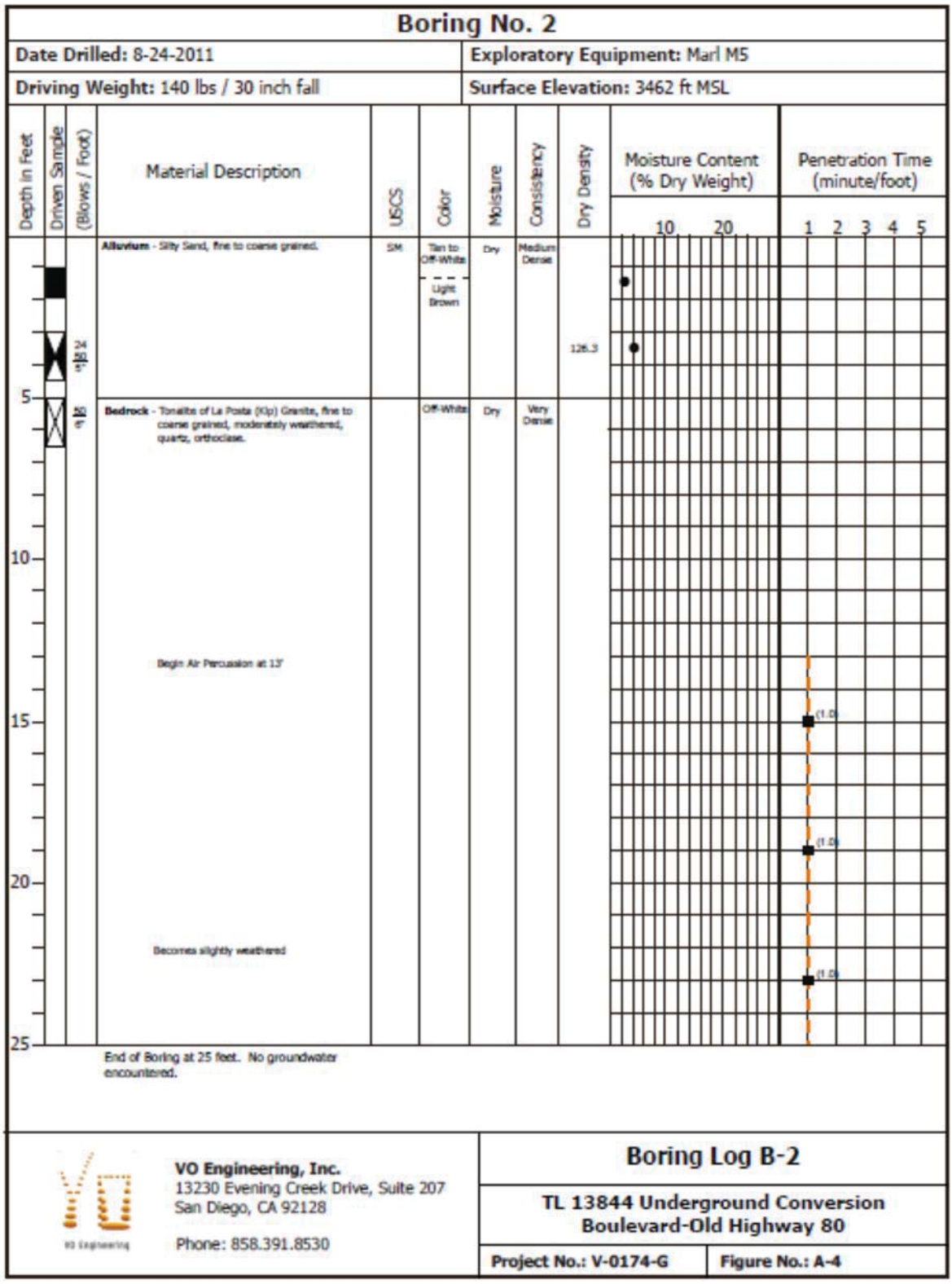
References: TL 13844 Underground Conversion Boulevard Substation-SP38, Boulevard, CA, Sheet 15, prepared by Nolte Vertical Five, dated 9/28/11.



References: TL 13844 Underground Conversion Boulevard Substation-SP38, Boulevard, CA, Sheet 17, prepared by Nolte Vertical Five, dated 9/28/11.

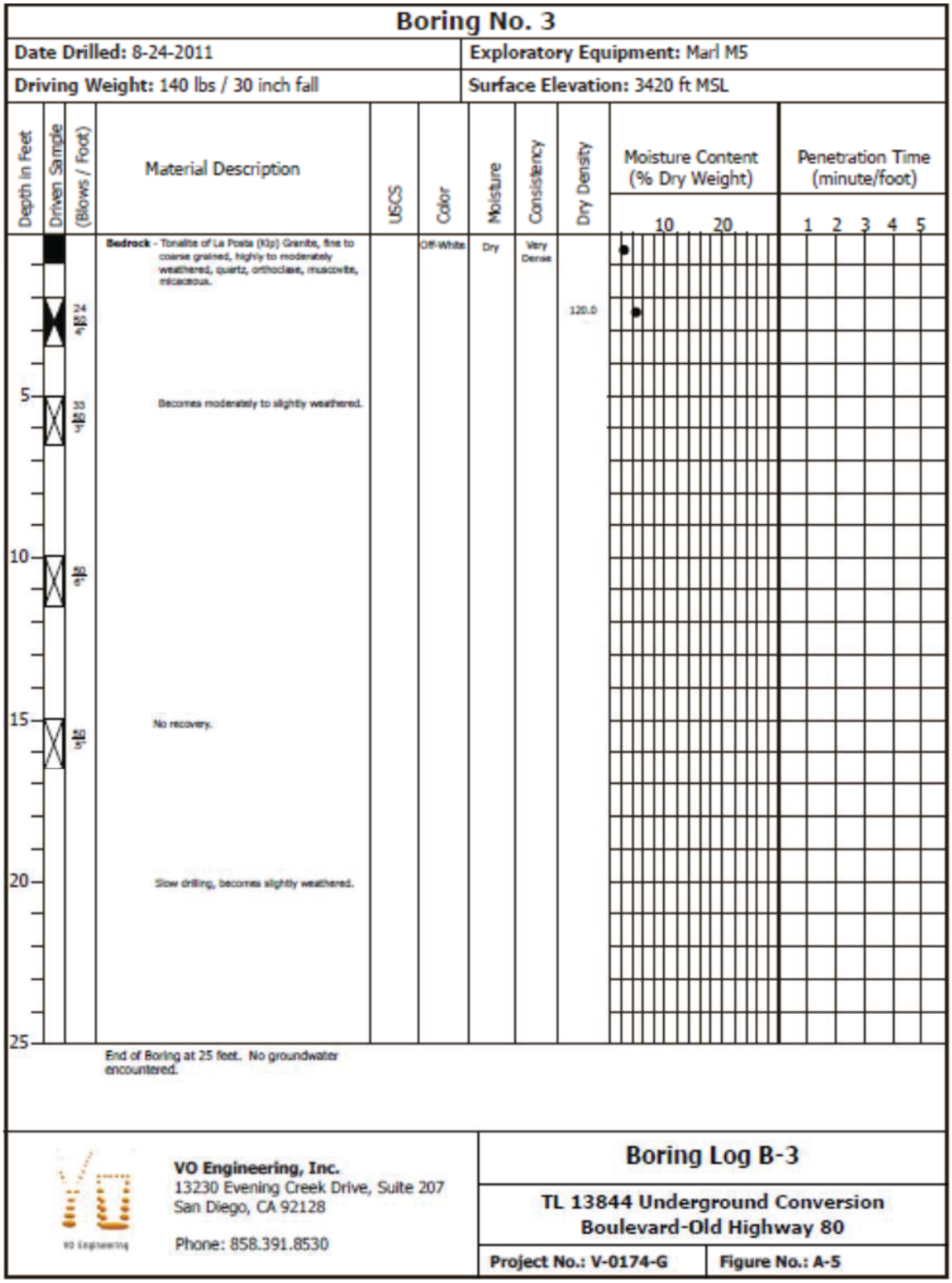
Figure 3
Location of Exploratory Borings

FIGURE 3



Boring Log B-2 (north of ESA bores)

FIGURE 3



Boring Log B-3 (south of ESA bores)

JACK & BORE AT BRIDGE

SITE SPECIFIC PLAN

OCTOBER 2013

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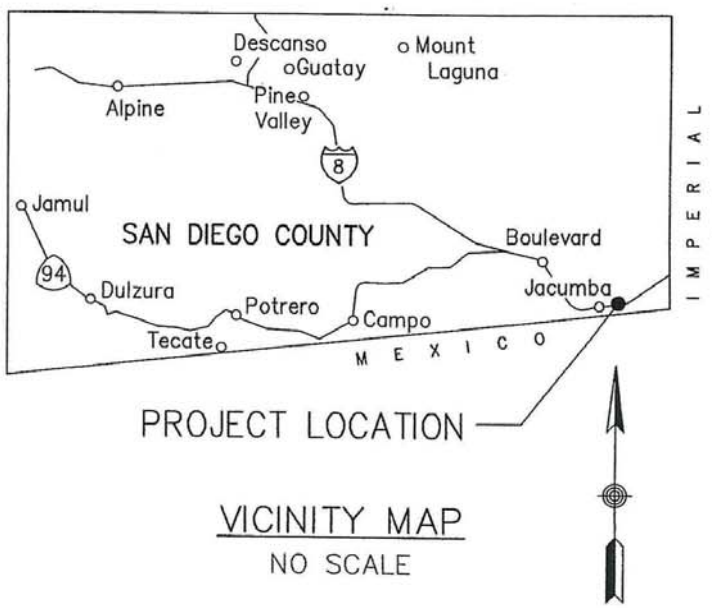
FIGURE 1



VICINITY MAP
NO SCALE

JACK & BORE CONSTRUCTION NOTES:

1. JACK & BORE ACTIVITIES ARE ANTICIPATED TO LAST APPROXIMATELY 11 DAYS FOR EACH BORE (22 DAYS TOTAL).
2. THE CONSTRUCTION ACTIVITIES WILL OCCUR MONDAY THROUGH SATURDAY BETWEEN THE HOURS OF 7AM TO 7PM OR AS PERMISSIBLE BY LOCAL ORDINANCE.

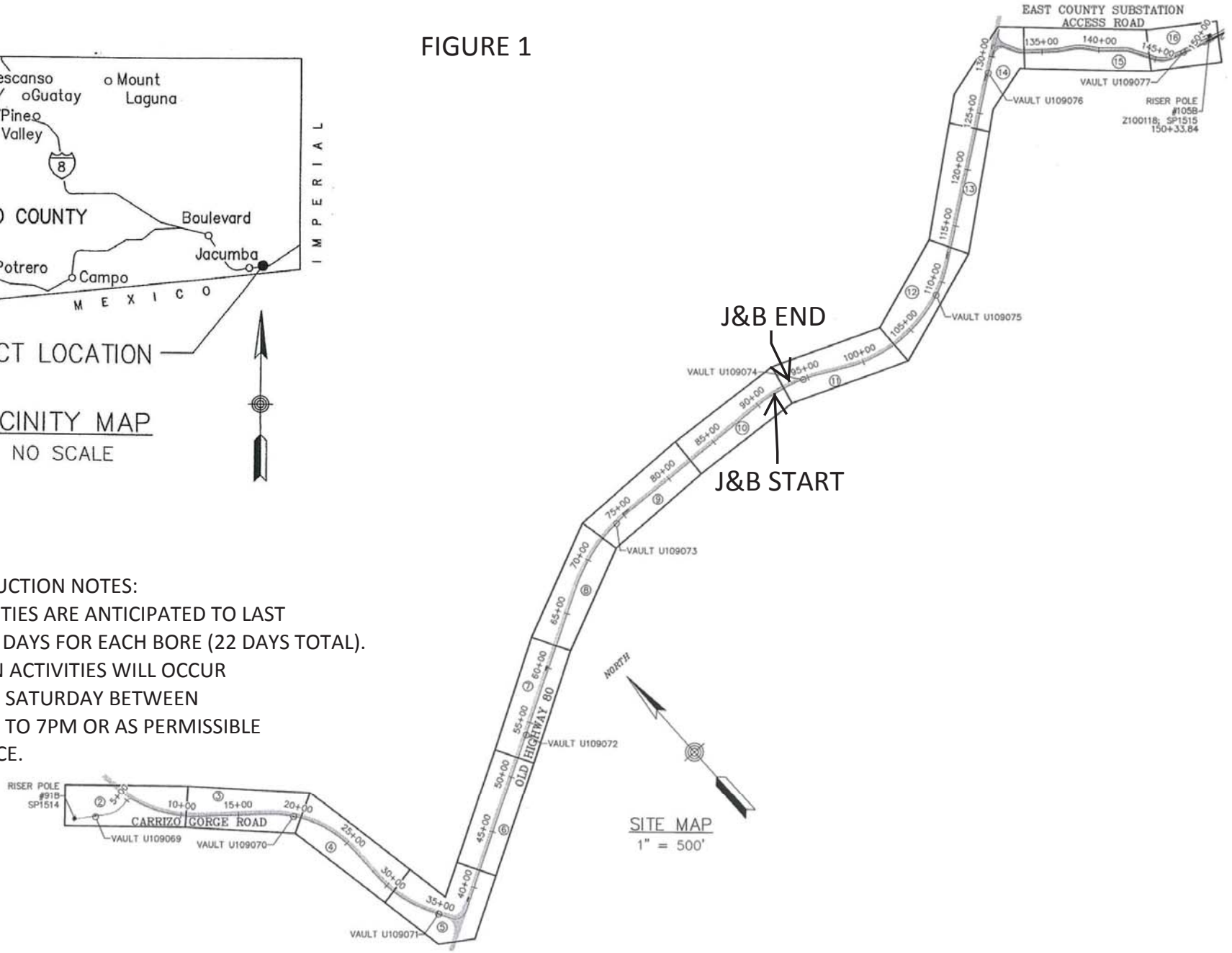
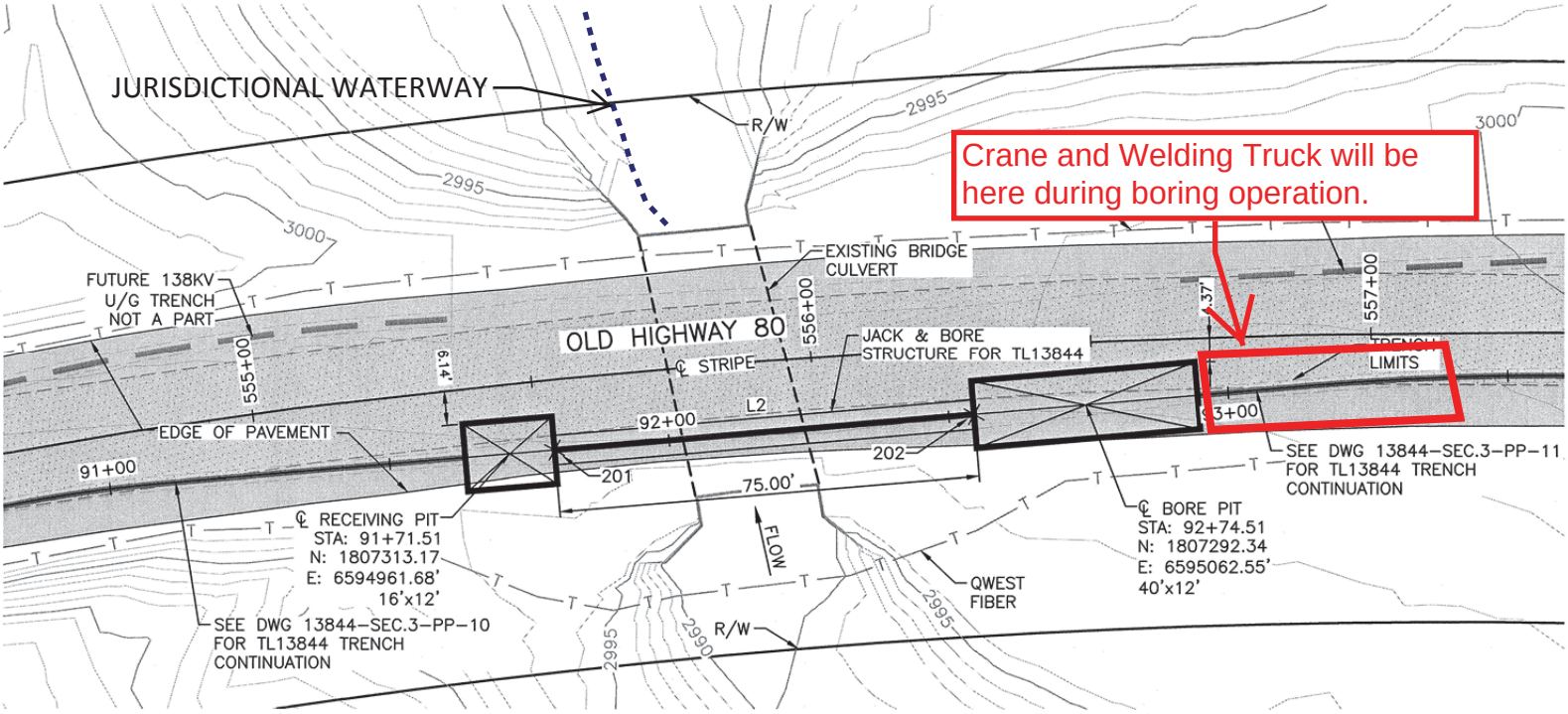
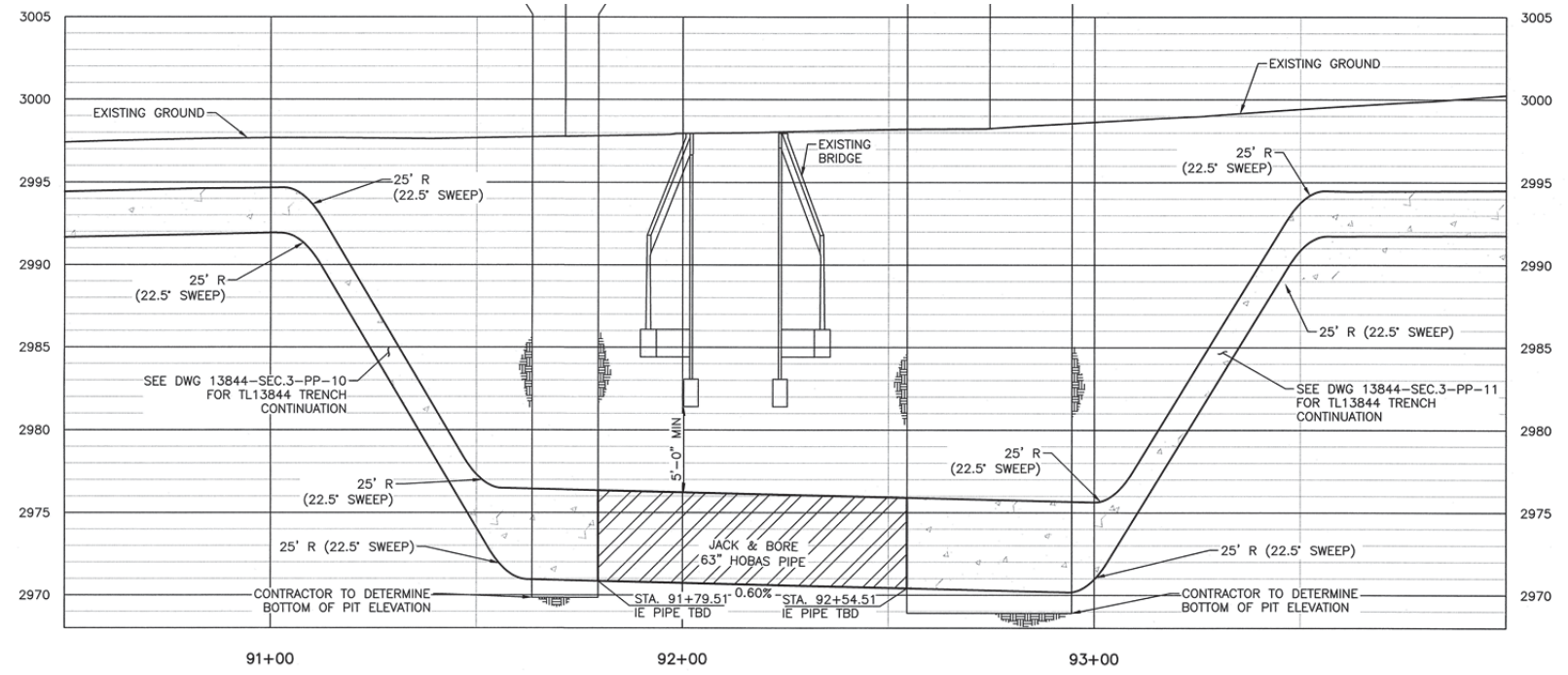


FIGURE 2



TL13844 PLAN VIEW

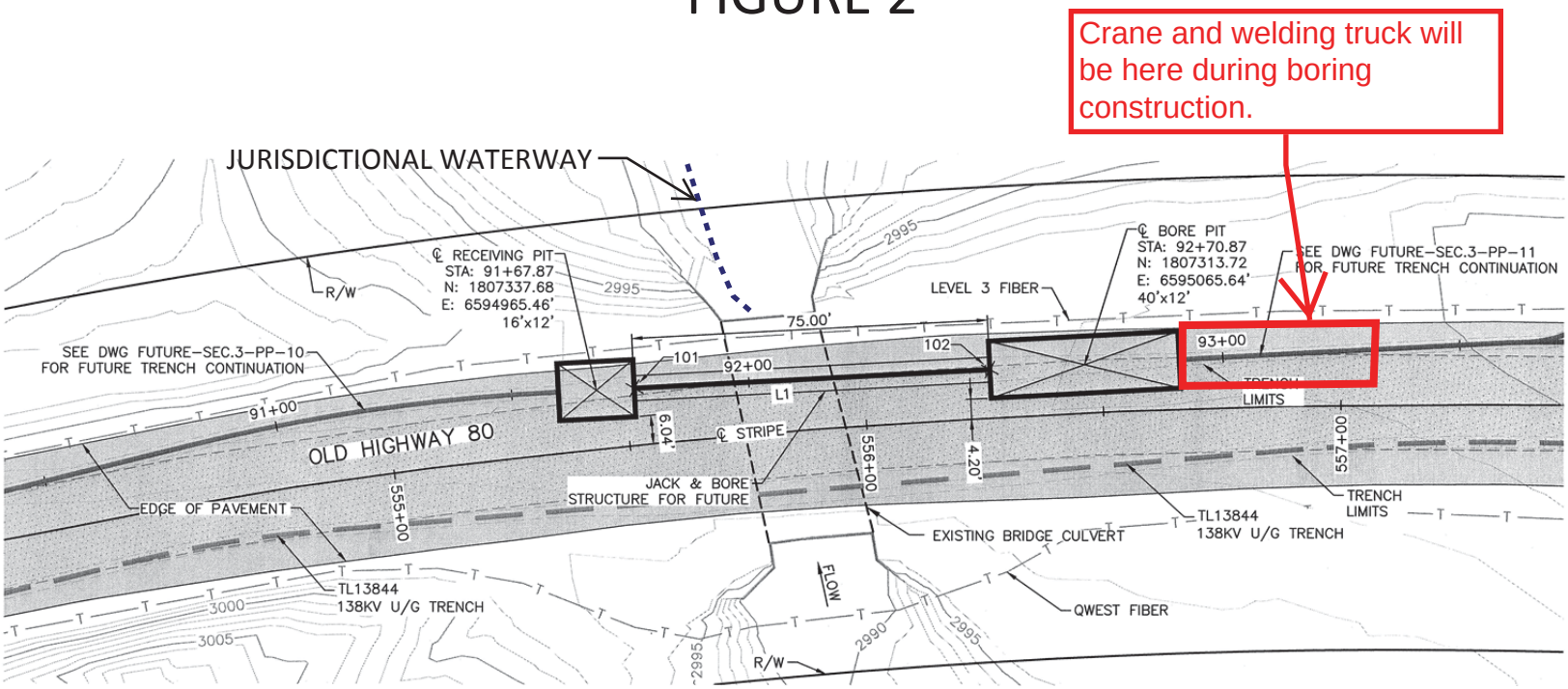


TL13844 PROFILE

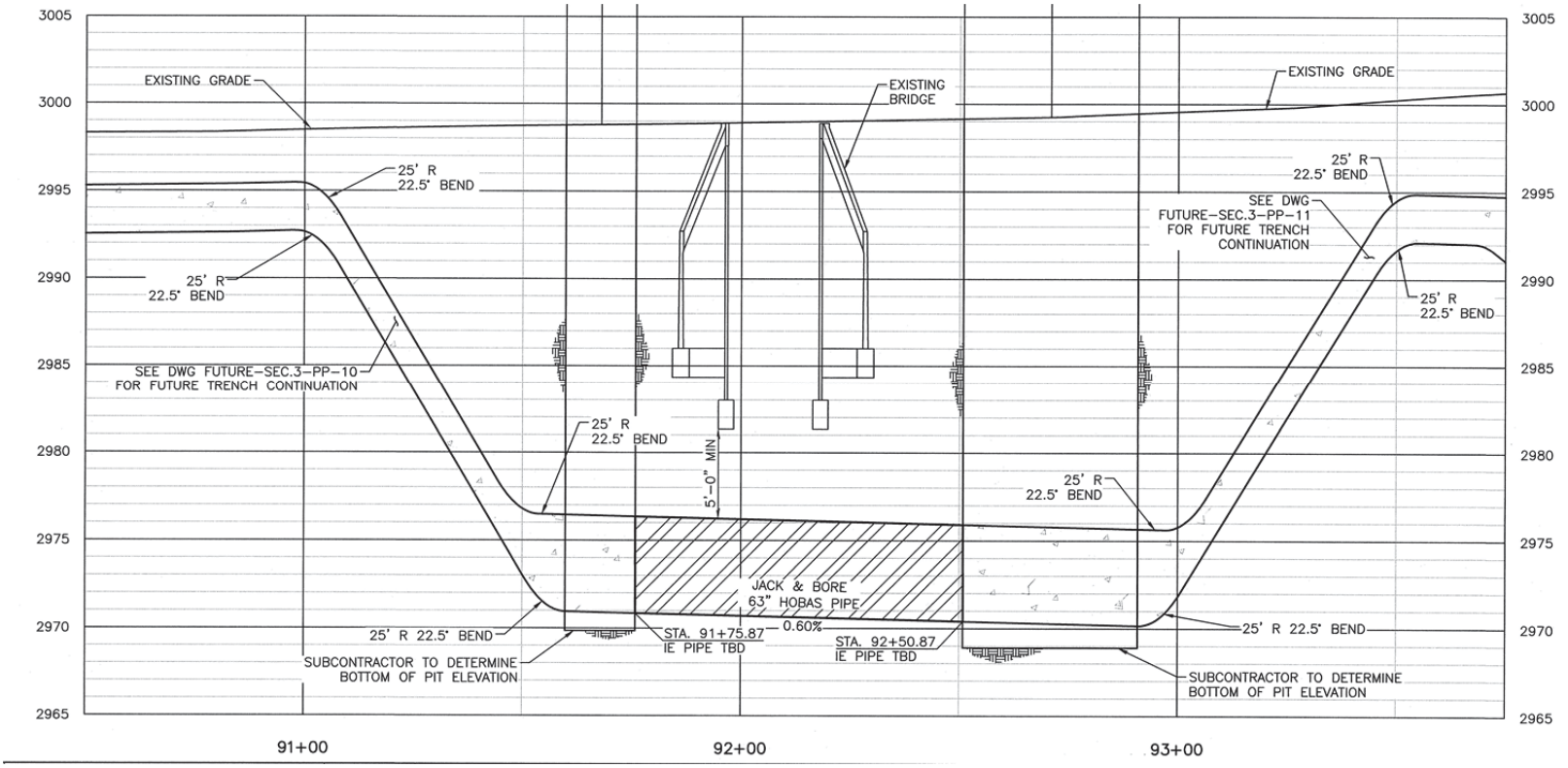
NOTES:

1. ALL EQUIPMENT STAGING LOCATIONS WILL BE LOCATED WITHIN THE PROJECT APPROVED WORK AREAS.
2. TRAFFIC WILL BE MAINTAINED THROUGHOUT JACK & BORE CONSTRUCTION.

FIGURE 2



FUTURE PLAN VIEW



FUTURE PROFILE

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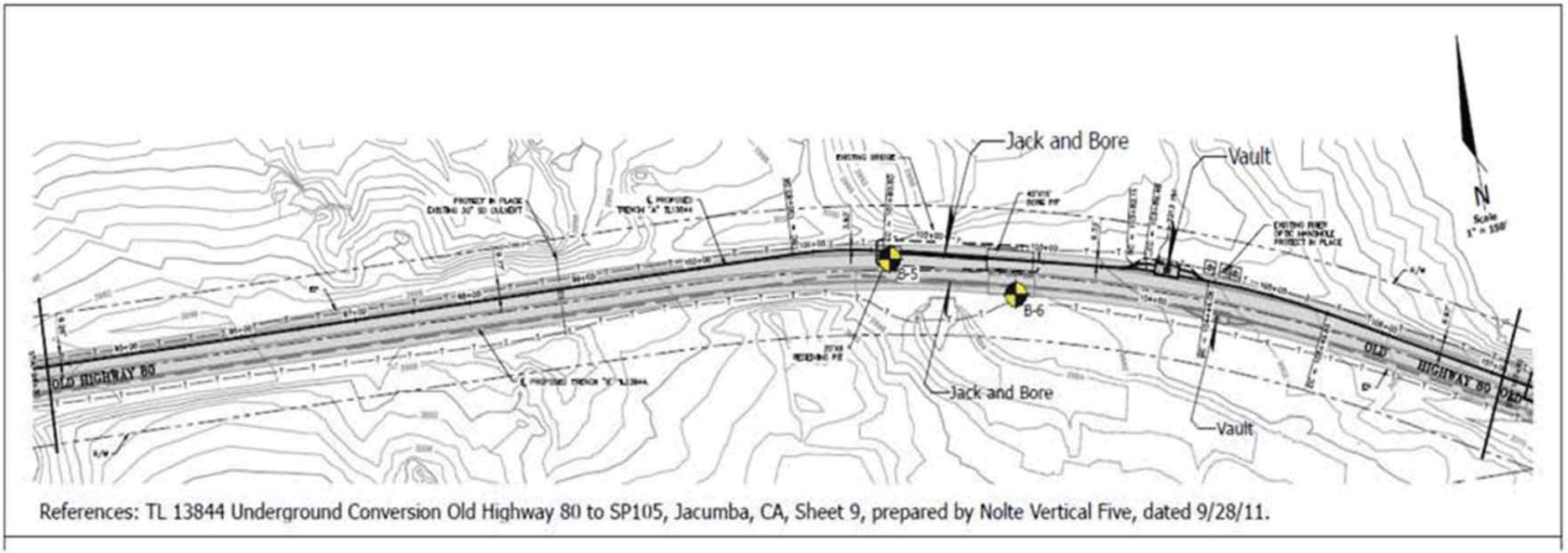
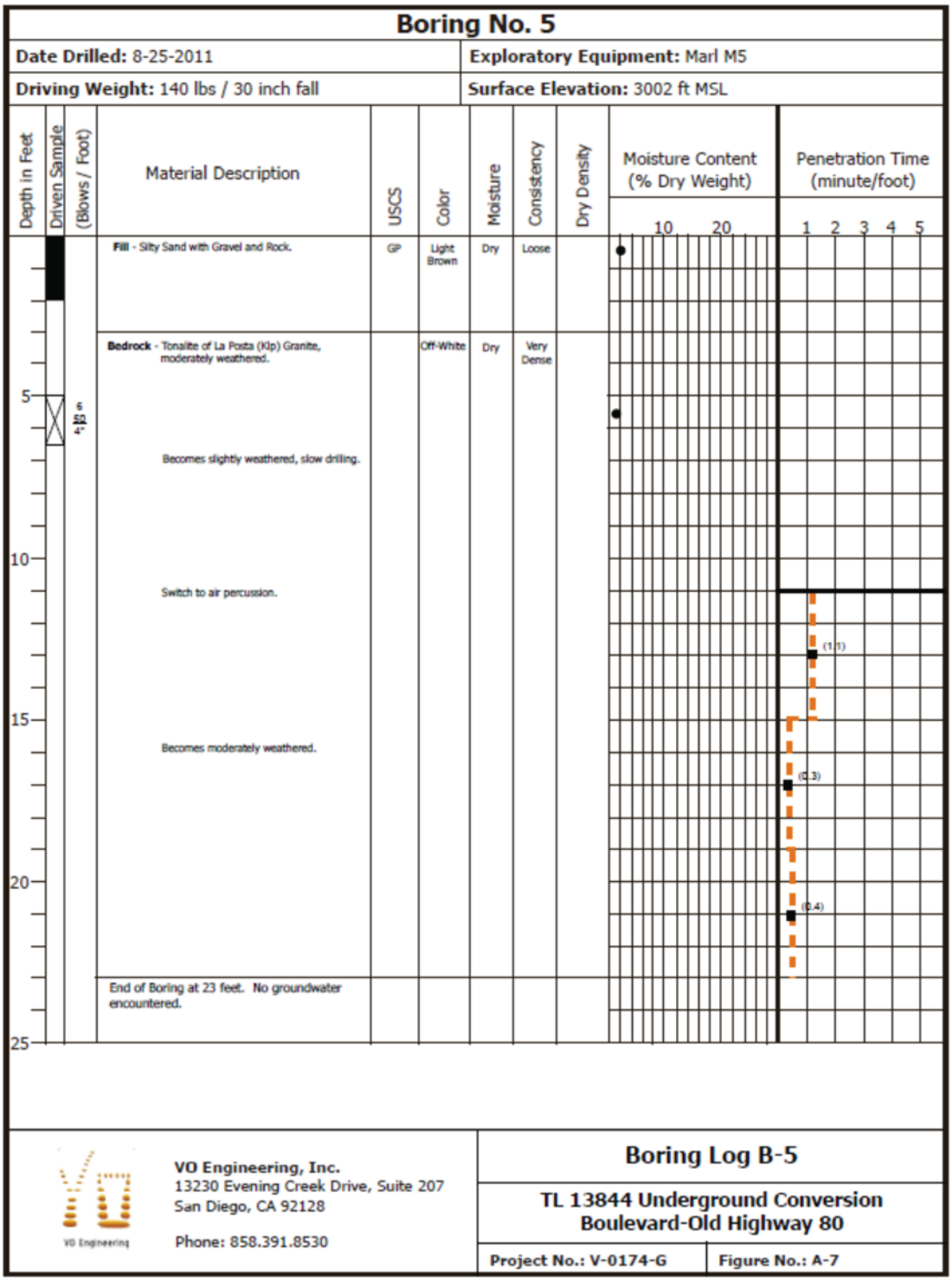
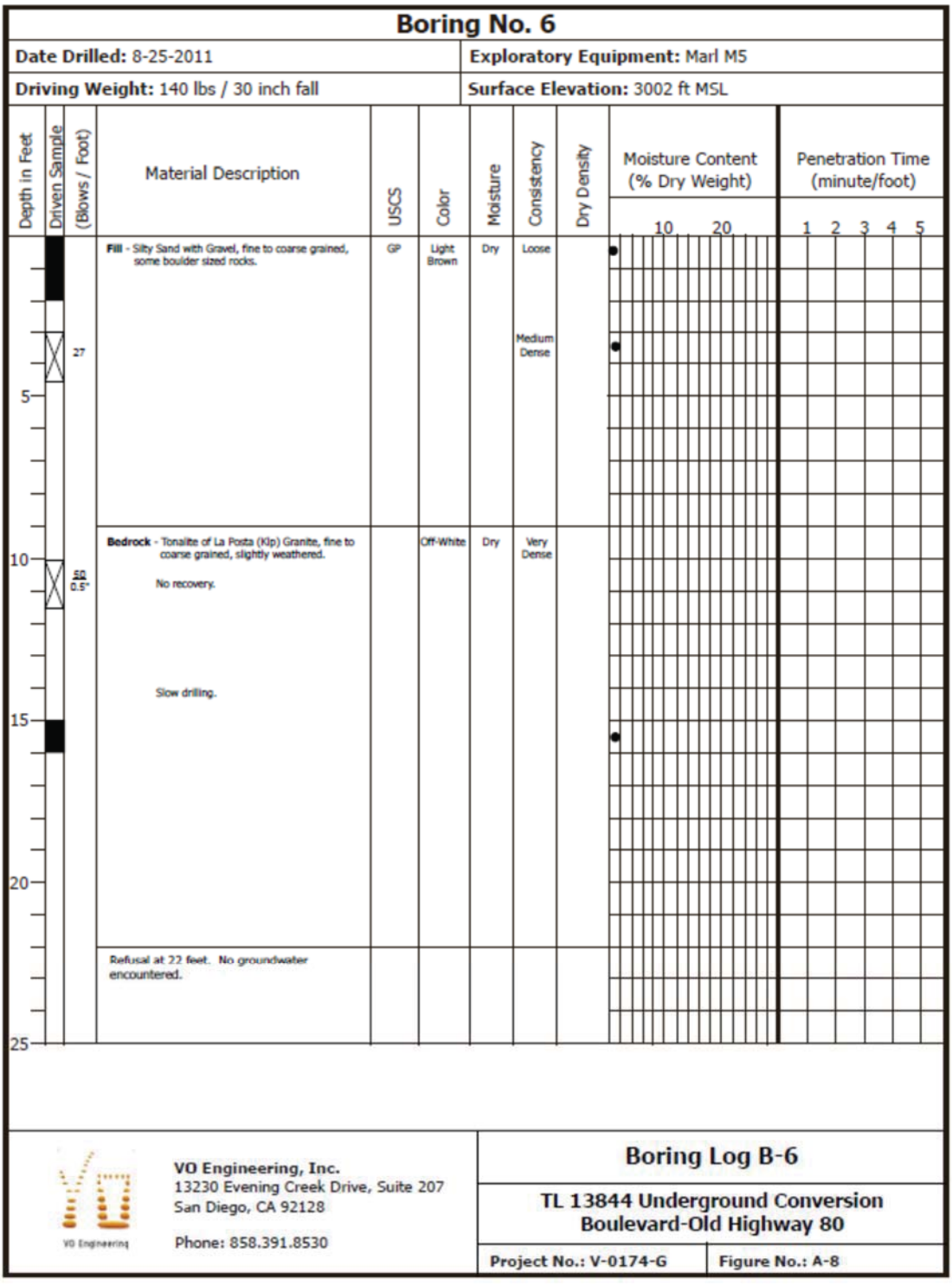


References: TL 13844 Underground Conversion Old Highway 80 to SP105, Jacumba, CA, Sheet 9, prepared by Nolte Vertical Five, dated 9/28/11.

Location of Exploratory Borings



Boring Log B-5



Boring Log B-6

JACK & BORE AT RAILROAD

SITE SPECIFIC PLAN

OCTOBER 2013

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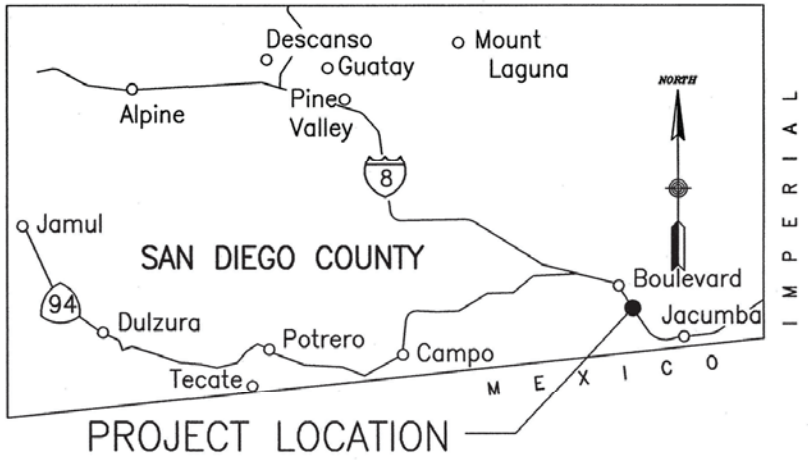
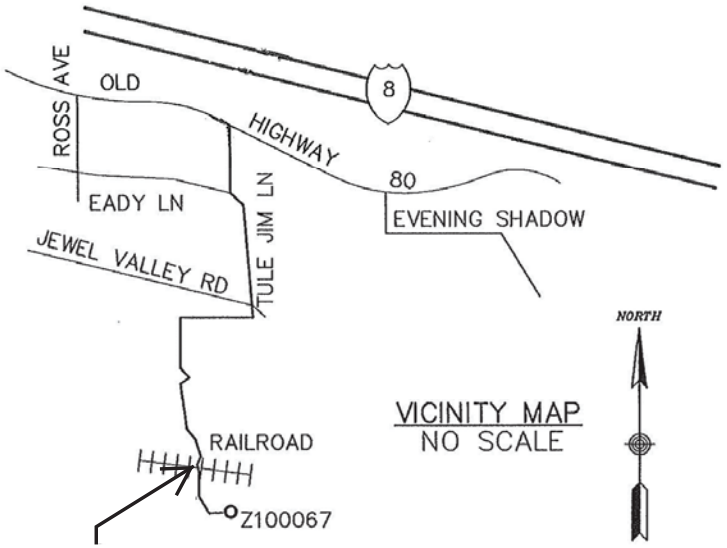
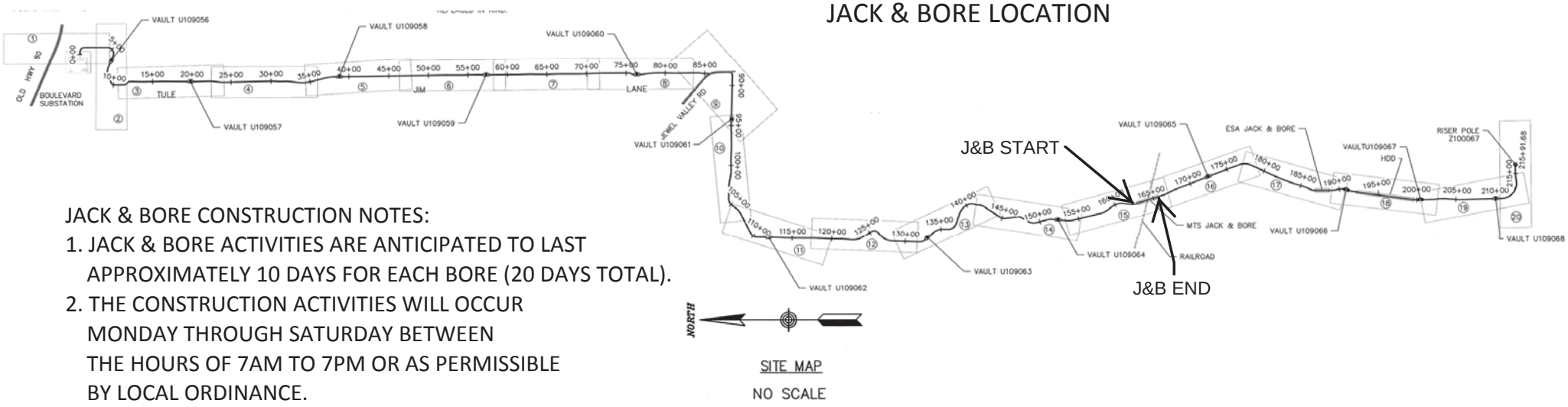
FIGURE 1





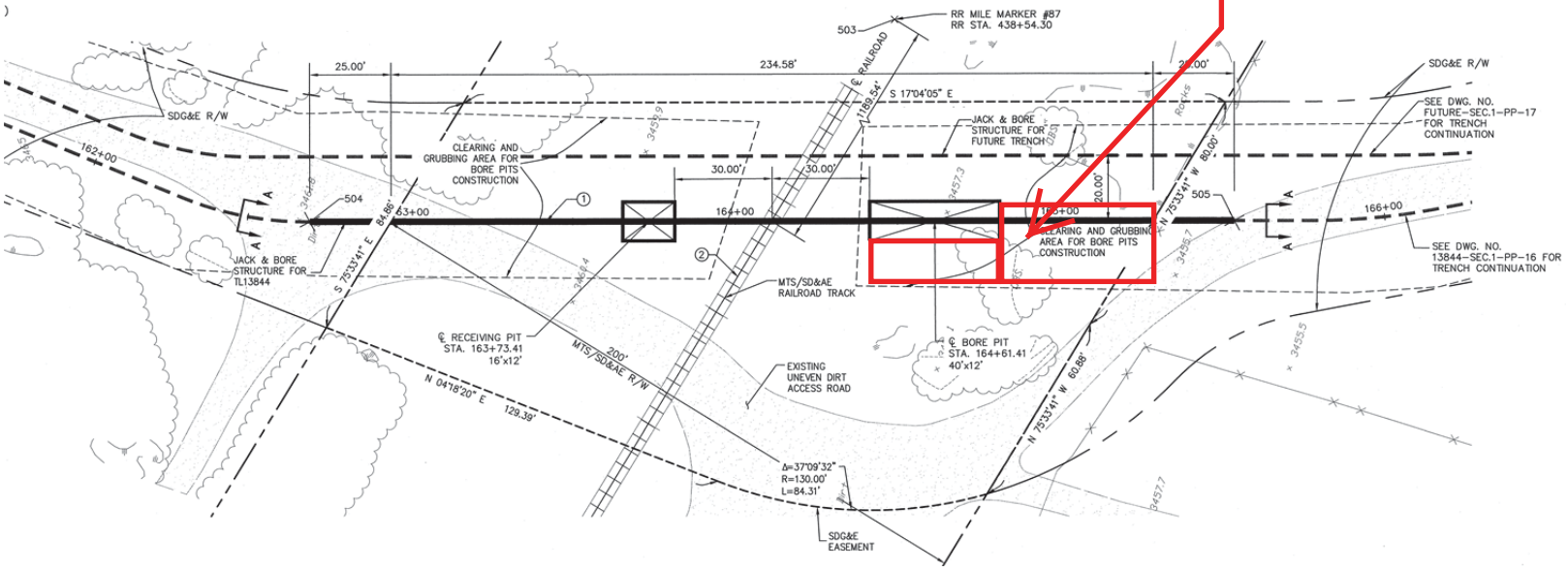


JACK & BORE CONSTRUCTION NOTES:

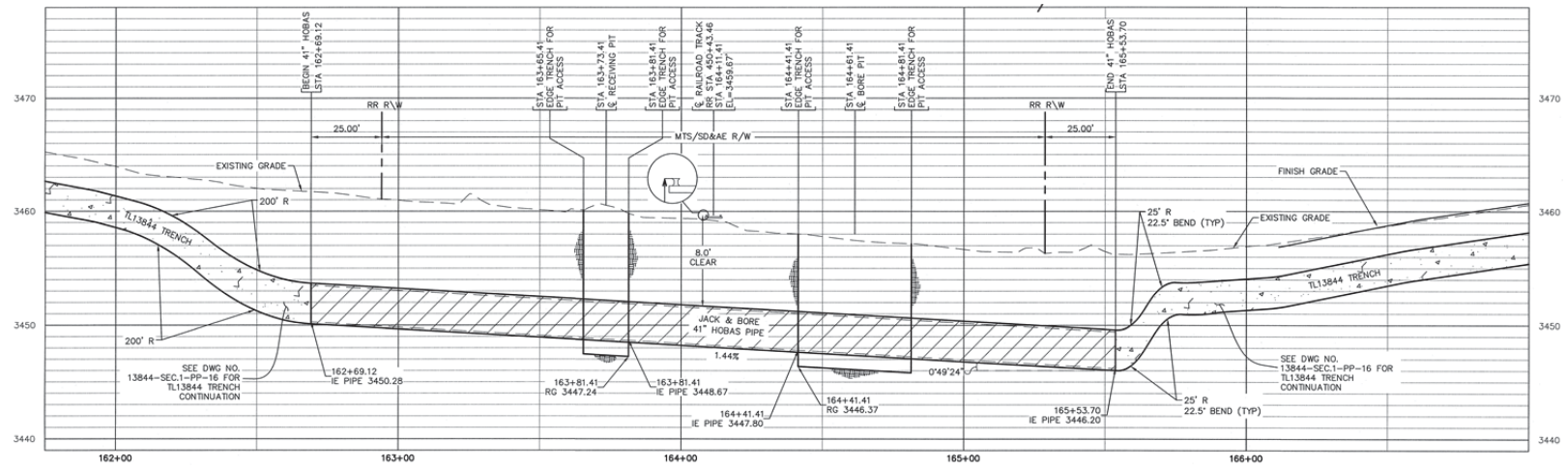
1. JACK & BORE ACTIVITIES ARE ANTICIPATED TO LAST APPROXIMATELY 10 DAYS FOR EACH BORE (20 DAYS TOTAL).
2. THE CONSTRUCTION ACTIVITIES WILL OCCUR MONDAY THROUGH SATURDAY BETWEEN THE HOURS OF 7AM TO 7PM OR AS PERMISSIBLE BY LOCAL ORDINANCE.

FIGURE 2

Welding truck and rough terrain crane to be placed in this area while boring operation is taking place.



TL13844 PLAN VIEW



TL13844 PROFILE

NOTES:

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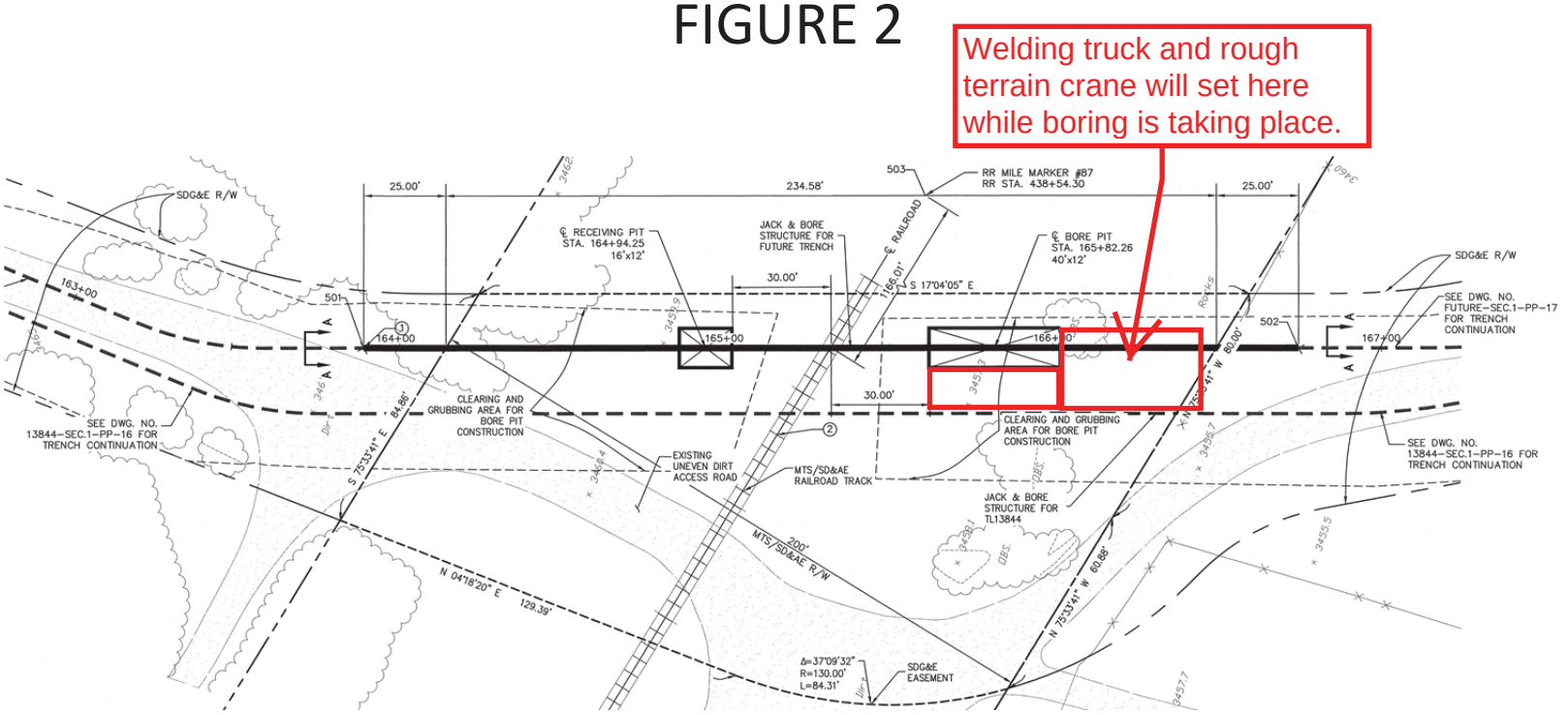
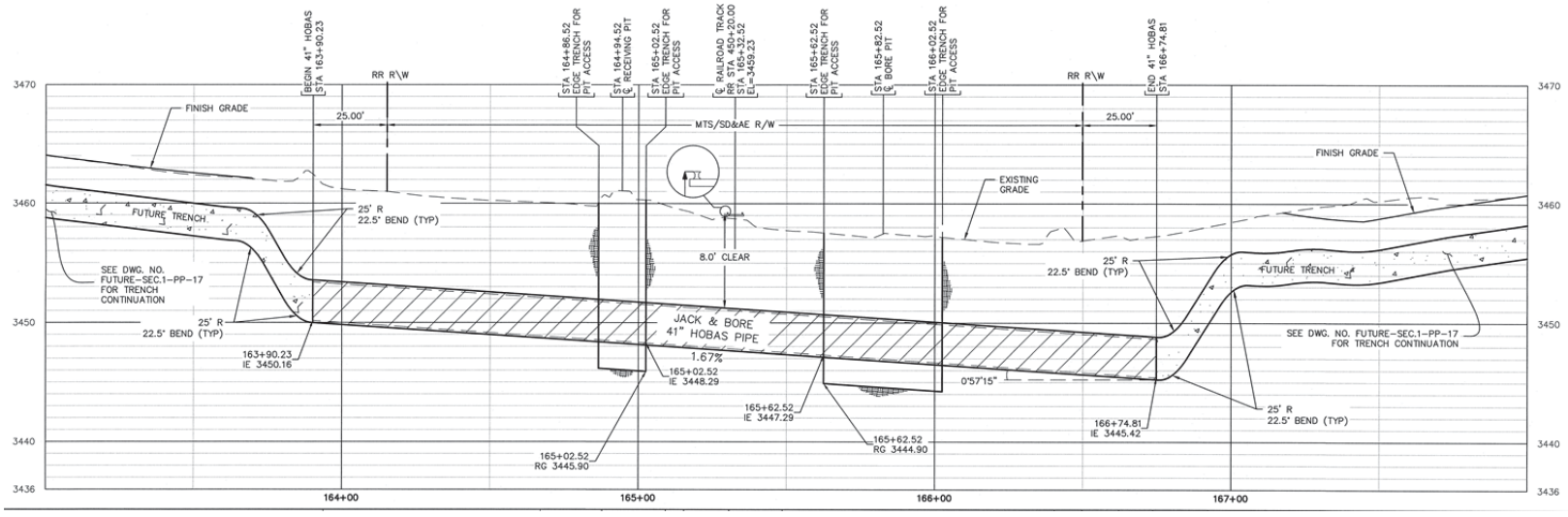
FIGURE 2



FUTURE PLAN VIEW



FUTURE PROFILE

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FIGURE 3

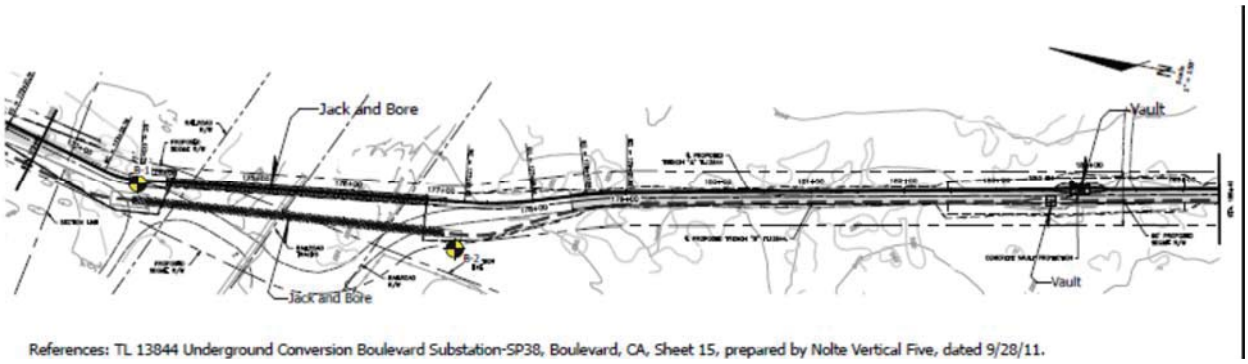


Figure 3
Location of Exploratory Borings

FIGURE 3

Boring Log B-1

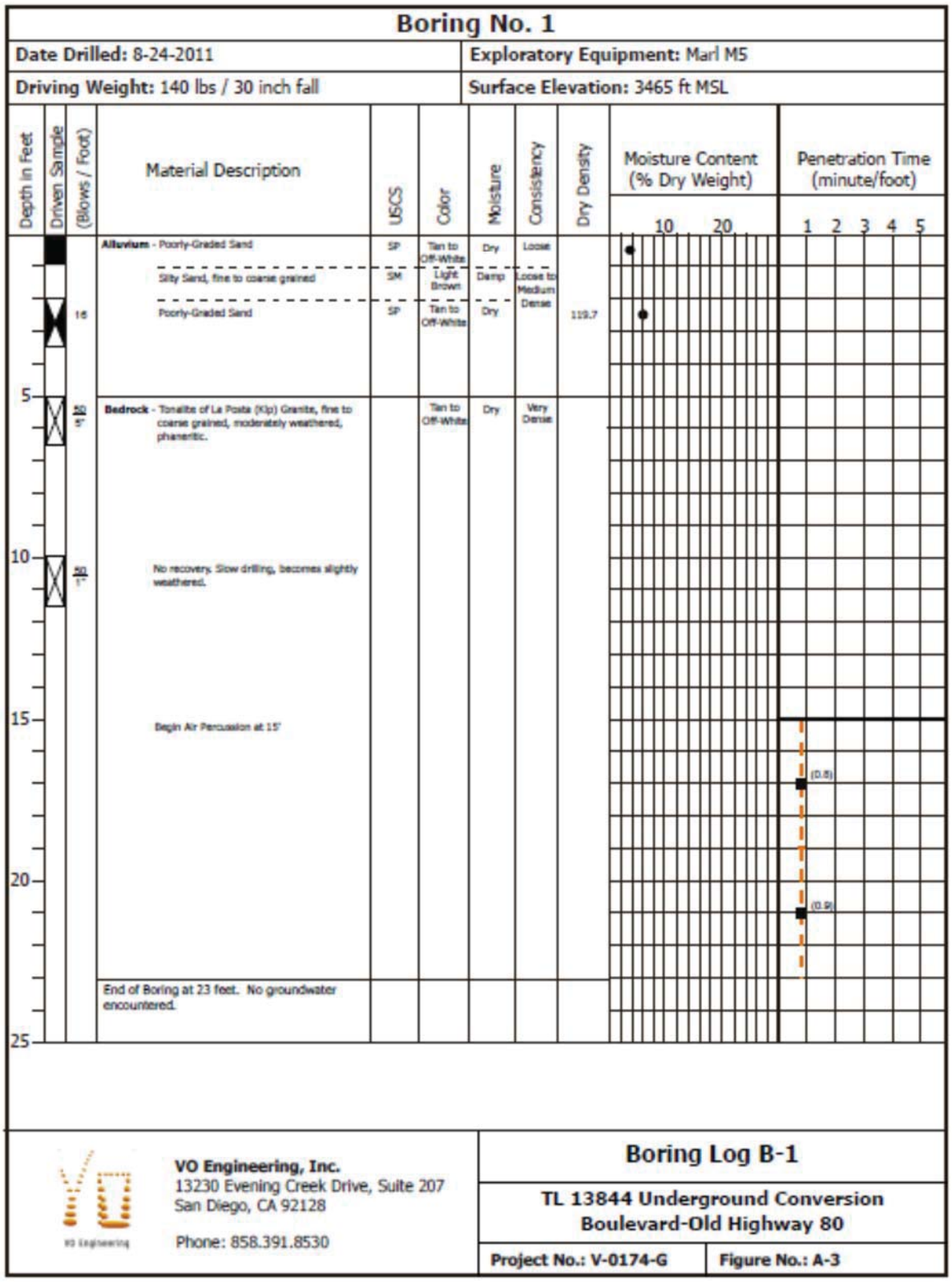
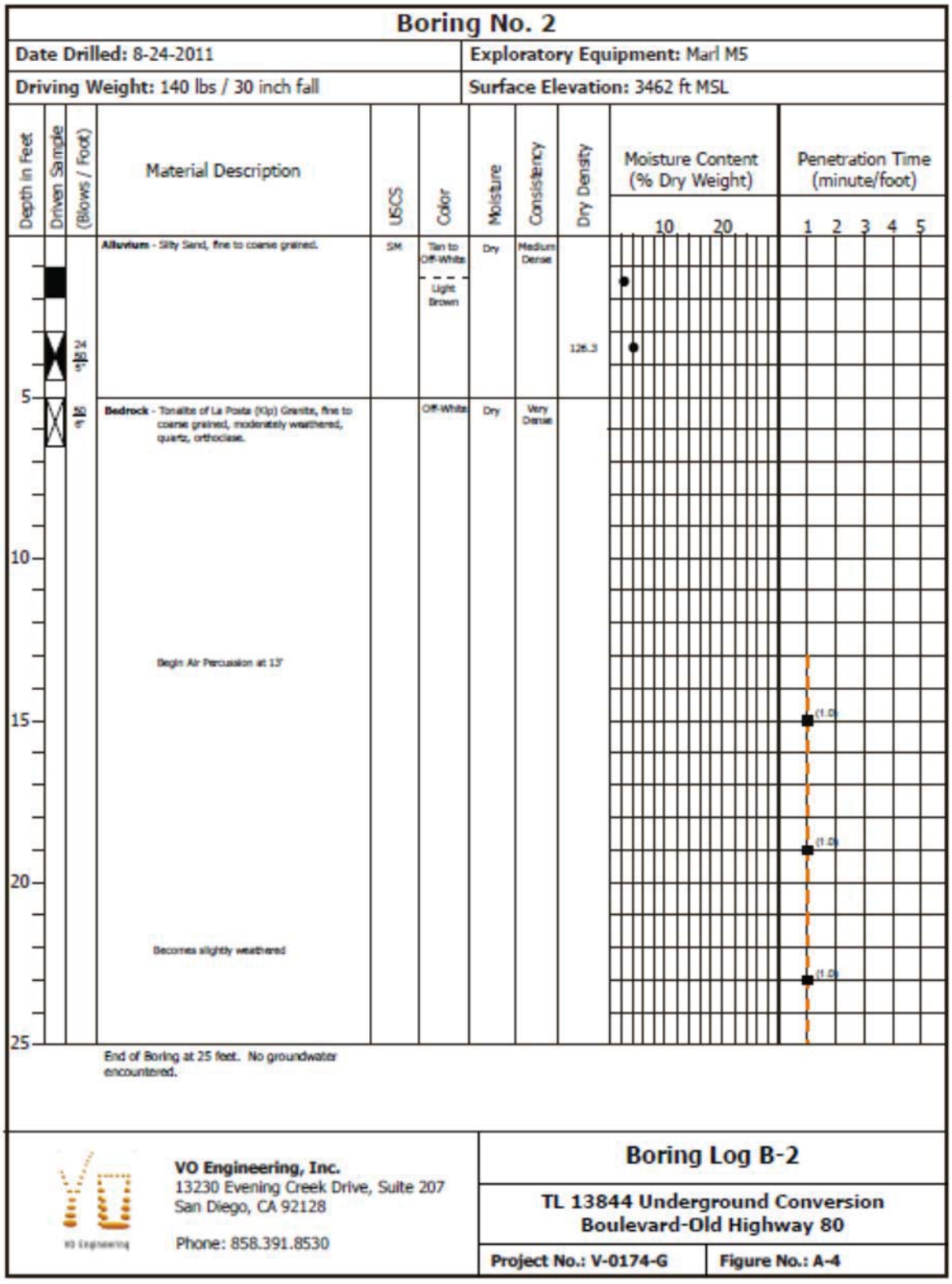


FIGURE 3

Boring Log B-2



ATTACHMENT B: INSPECTION FORMS

PROJECT NAME: _____ **DAILY INSPECTION LOG**

Date	Time	Inspection Location	Notes (status of boring, any noticeable changes, etc)	INSPECTOR NAME (LEGIBLE)
	7:00 AM			
	8:00 AM			
	9:00 AM			
	10:00 AM			
	11:00 AM			
	12:00 PM			
	1:00 PM			
	2:00 PM			
	3:00 PM			
	4:00 PM			
	5:00 PM			
	6:00 PM			
	7:00 PM			
	7:00 AM			
	8:00 AM			
	9:00 AM			
	10:00 AM			
	11:00 AM			
	12:00 PM			
	1:00 PM			
	2:00 PM			
	3:00 PM			
	4:00 PM			
	5:00 PM			
	6:00 PM			
	7:00 PM			

MUST HAVE ENTRY FOR EACH HOUR OF EACH DAY DURING HDD ACTIVITIES
Inspection must be conducted by trained personnel

Release Inspection and Documentation Form

Name/title: _____

Date (Day/month/year): _____

Location of release: _____

Approximate amount of boring activities completed (feet): _____

Nature of release: _____

_____

_____

How release occurred: _____

_____

_____

Description of sensitive area: _____

_____

_____

Corrective action taken: _____

_____

_____

Attach photo here

Signature: _____

Contact number: _____

ATTACHMENT C: T&D ORGANIZATION AND STAFFING CHART

Due to its confidential nature, Attachment C: T&D Organization and Staffing Chart has been removed.