INFORMATION HANDOUT

For Contract No. «11»-«406504»

At «San Diego County about 5 miles North of Escondido from 0.2 Mile North of Deer Springs Road Overcrossing to Gopher Canyon Road Undercrossing»

Identified by

Project ID «1100020324»

MATERIALS INFORMATION

GEOTECHNICAL DESIGN REPORT: HIGH TENSION CABLE BARRIER ON INTERSTATE 15 FROM DEER SPRINGS ROAD OVERCROSSING TO OLD CASTLE ROAD UNDERCROSSING.

CALIFORNIA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL DESIGN REPORT

HIGH TENSION CABLE BARRIER ON INTERSTATE 15 FROM DEER SPRINGS ROAD OVERCROSSING TO OLD CASTLE ROAD UNDERCROSSING

11-SD-15-PM 36.8 / 40.8

EA: 11-40650
EFIS: 1100020324

May 13, 2013

Prepared By:

OFFICE OF GEOTECHNICAL DESIGN-SOUTH 2
7177 OPPORTUNITY ROAD
SAN DIEGO, CA 92111

State of California | Business, Transportation and Housing Agency

Memorandum

To: Mr. Barzan Aran
District 11
TE – Traffic Project Development

Date: May 13, 2013
File: 11-SD-11-(PM) 36.8/40.8.0
EA: 11-40650
EFIS: 1100020048

From: **DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design – South 2

Subject: Geotechnical Design Report for a High Tension Cable Barrier, on Interstate 15 (I-15) from Deer Springs Road Overcrossing to Old Castle Road/ Undercrossing.

Pursuant to your request, the Office of Geotechnical Design-South 2 (OGDS2) has prepared this Geotechnical Design Report for the proposed High Tension Cable Barrier along the I-15 corridor, between Mountain Meadow Road/Deer Springs Road Overcrossing and Old Castle Road/Gopher Canyon Road Undercrossing. This report presents the geotechnical conditions as evaluated from field and laboratory test data, research of archives, and engineering analysis. The report provides recommendations and specifications for project design and construction.

OGDS2 staff will be available for further assistance. Should you have any questions or comments regarding this report, please contact Jeff Tesar at (858) 467-2716.

J. Tesar.

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1.0 INTRODUCTION

This report has been prepared by the Office of Geotechnical Design – South 2 (OGDS2) to address the geotechnical considerations for the proposed high tension cable barrier to be constructed along I-15, between Mountain Meadow Road Overcrossing and Old Castle Road Undercrossing, in San Diego County, California, hereafter referred to as the project. To improve traffic safety along this interval of I-15, three sections of the barrier are proposed. A project location layout is presented in Figure 1.

The geotechnical investigation for the project included: site reconnaissance, research of archived resources, subsurface exploration, laboratory testing, and data analysis. Caltrans Drilling Services and OGDS2 staff performed the field exploration and soil sampling. A Caltrans Engineering Geologist supervised the investigation.

The purpose of this report is to document subsurface geotechnical conditions and provide foundation recommendations. This report also establishes a geotechnical baseline to be used in assessing the existence and scope of changed site conditions.

This report is intended for the use by the project design engineer, construction personnel, bidders, and contractors.

2.0 EXISTING FACILITIES AND PROPOSED IMPROVEMENT

The existing I-15 corridor is a four-lane freeway constructed in the early 1980's utilizing significant cut and fill grading. The project alignment extends from Mountain Meadow Road/Deer Spring Road Overcrossing (approximately Station 1978+00) to Old Castle Road/Gopher Canyon Road Undercrossing (approximately Station 2191+00). The existing freeway is paved with Portland cement concrete with asphalt concrete shoulders.

Along the project interval, the freeway facilities include bridges, separations, overcrossings, undercrossings, culverts, and ramps.

In order to improve traffic safety along the project alignment a high tension cable barrier is proposed. The barrier will consist of high tension cables, cable-supporting posts, and cable anchors.

3.0 PERTINENT REPORTS AND INVESTIGATIONS

Pertinent reports and investigations utilized in the preparation of this GDR include:

Caltrans Project Study Report/Project Report, *In San Diego County on I-15 form Country Club Lane UC to 0.1 km North of the Deer Springs Road OC and from Gopher Canyon Road UC to0.4 km South of Escondido Highway OC",* August 1998, by Joe Egan, 11-SD-15, KP R54.1/R59.4 R65.8/R69.2 R74.8/R87.4, EA 11233 07250K.

Caltrans Memorandum, *Springs Issuing from Fill Embankment,* March 1995, by Joe Egan, 11-SD-15, PM 38.6, EA 11-5C9000.

Caltrans Memorandum, *Construct Median Barrier",* October 1998, by Joe Egan, 11-SD-15, KP R54.1/R59.4 R65.8/R69.2 R74.8/R87.4, EA 11233 0725U1.

Caltrans As Built Plans: *Logs of Test Borings in the project area,* 1981.

California Seismic Hazard Map, 1996, by L. Mualchin.

Geologic Map of California, 1977, by C. W. Jennings

Standard Plan, State of California Department of Transportation. May 210.

4.0 PHYSICAL SETTING

The following section describes the physical setting of the project including: the climate; topography and drainage; man-made and natural features of engineering and construction significance; regional geology and seismicity.

4.1 Climate

The project site lies just north from the city of Escondido that has a Mediterranean to semi-arid climate characterized by warm, dry summers and mild winters with moderate precipitation. Escondido has mild, mostly dry weather with approximately 266 sunny days. The extended summer and dry period lasts from mid April to late October. Temperatures are mild to warm in the summer. The average high and low temperatures during the summer are seventy to seventy-eight-degrees Fahrenheit (70-78°F) and fifty-five to sixty-six-degrees Fahrenheit (55–66°F), respectively. Temperatures exceed ninety-degrees Fahrenheit (90°F) approximately fourteen days a year. Winter is the rainy period and lasts from November to April. Winter temperatures are mild. The average high and low temperatures during the winter are sixty-six to seventy-degrees Fahrenheit (66–70°F) and forty to fifty-six-degrees Fahrenheit (40–56°F) respectively. On average there is approximately 16 inches of rainfall in Escondido annually. The number of days with any measurable precipitation is 44 per year.

4.2 Topography & Drainage

The project area is located along the South Fork Moosa Canyon and along the eastern base of the Merriam Mountains (San Marcos Quadrangle Topographic Map, 1968.) The South Fork of Moosa Canyon trends approximately south to north, and a creek flows northward at its bottom. The project area is mountainous, with relatively high ridges incised by narrow steep canyons and arroyos bounding the freeway to the west and east. Mountain peaks to the west of the project location reach an elevation of 1752 feet above mean sea level (MLS). Mountain peaks of the Oat Hills located to the east of the project reach an elevation 1800 feet above MLS.

Current roadway elevations range from a low of approximately 517.0 feet above MSL at about Station 2190+30 to a high of approximately 985.00 feet above MSL at about Station 1981+79. Existing roadway cut slopes are inclined at 2:1 horizontal to vertical (H:V) and 1.5:1 (H;V) and are as high as 200 feet. Existing roadway fill slopes are inclined 2:1 (H:V) or flatter and their maximum height is about 150 feet. A topographic map depicting the project site is presented in Figure 2.

Onsite rainfall and runoff water is collected by the system of existing drainage facilities including gutters, drainage inlets overside drains, cross culverts, and collection basins. Water collected by these drainage features is conveyed eastward to the creek that parallels the freeway. The creek flows northward eventually joining the San Luis Rey River.

4.3 Man-made and Natural Features of Engineering and Construction Significance

No man-made or natural features that present an unusual geotechnical engineering or construction challenge were identified during the course of this study.

4.4 Regional Geology and Seismicity

The project lies within the Peninsular Ranges Geomorphic Province of California. The province is characterized by Mesozoic age crystalline (typically granitic) basement rock, mountainous terrain, and sediment filled basins. The province is transected by numerous northwest trending ridges and valleys, and similar trending strike-slip and dip-slip faults.

San Diego County sits upon the eastern margin of the Pacific Tectonic Plate. The region is seismically active as a result of relative movement between the Pacific and North American Plates. Relative to the North American Plate the Pacific Plate moves northwestward at an annual rate of about one inch per year. Tectonic stresses and strains associated with this plate movement have created a complex system of active, northwest trending faults typical to the region.

Major fault systems occurring near the project include the San Andreas, San Jacinto, Whittier-Elsinore, Newport-Inglewood –Rose Canyon, and a complex system of offshore faults including the Coronado Banks. All of these faults, as well as faults more distant from the project, are potential seismic sources that could cause minimal to moderate shaking at the project site.

5.0 EXPLORATION

To determine subsurface soil conditions, a subsurface investigation program was conducted. The program consisted of drilling and sampling utilizing a truck-mounted auger drill rig. In addition, dynamic cone penetration soundings were performed utilizing a truck mounted dynamic cone penetrometer rig.

5.1 Drilling, Sounding, and Sampling

The subsurface drilling program was conducted in December, 2012 and January 2013. Drilling consisted of advancing several borings utilizing the mechanized auger drilling method. A Mobile B-80 drill rig was used with a 6-inch diameter bit. A total of 15 borings were drilled for the project. Borings were drilled to a maximum depth of 25.5 feet below the ground surface. The Logs of Test Borings (LOTB) for all borings drilled are presented in Appendix B. The boring locations are presented in Figure 5.

The subsurface sounding program was conducted in January 2013. The program consisted of performing several soundings utilizing a percussion drill method. A truck mounted Dynamic Cone Penetrometer rig was used for this operation. A total of 82 subsurface soundings were advanced to a maximum depth of 10.0 feet below the ground surface. The results of the Dynamic Cone Penetrometer soundings are presented in Table 1.

At each boring one representative bag sample was collected to be tested for corrosivity potential. A total of 15 bag samples were collected for this project.

5.2 Geologic Mapping

Geologic mapping was not conducted for the preparation of this report. A geologic map derived from a published resource is presented in Figure 3.

5.3 Geophysical Studies

No geophysical studies were conducted for the preparation of this report.

6.0 GEOTECHNICAL TESTING

During the drilling program, Standard Penetration Tests (SPT) were performed at selected depth intervals. The SPT tests were performed by dropping a 140-lb hammer from a height of 30 inches on a split-spoon sampler. The 1.41-inch inside diameter sampler was driven a maximum of 18-inches into the soils and the number of blows recorded for each 6-inch consecutive interval was recorded. The value of blows per 12-inches interval recorded in the boring logs represents the accumulated number of blows that were required to drive the sampler through the last 12-inch interval into the soils. Based on a correlation relating SPT blow counts to the apparent density of cohesionless soils the appropriate descriptions of apparent density are indicated on LOTB included in this report.

A total of 15 bag samples were collected for this project. These samples were laboratory tested for corrosive potential in accordance to the following California Test Methods: CTM 643 for Minimum Resistivity and pH, CTM 422 for Chloride Content, and CTM 417 for Sulfate Content. The results of the corrosivity tests are presented in a Corrosion Test Summary Report in Appendix A of this report.

Utilizing a mobile Dynamic Cone Penetrometer rig at each sounding location a 2.0 inch in diameter drill rod equipped with a 2.2 inch in diameter cone-shaped tip was pushed into the soils at a constant tip pressure of 700 psi. The embedment of each consecutive 6-inch interval was timed and the time was recorded. The recorded time was utilized to determine the subsurface soil conditions at the location of the soundings, to detect the location of the fill and bedrock interface, and to verify the presence of rocks within fill materials. The Dynamic Cone Penetrometer data is presented in Table 1.

7.0 GEOTECHNICAL CONDITIONS

The following subsections describe the geotechnical conditions at the project site.

7.1 Site Geology

The freeway traverses steep mountainous terrain on a series of cuts and fills. The bedrock cuts expose Mesozoic metavolcanic and granitic rocks. These rocks are often highly weathered and decomposed into residual soils. The fills are composed of disaggregated material derived from the nearby cuts. The proposed barrier will be placed within both bedrock and fill.

7.1.1 Lithology

Artificial Fill (Qf): Fills created from the activities of man and likely derived from local materials and placed consistent with current engineering practices. Fill consists of sands with gravels and cobbles.

Alluvium and Slope Wash Undifferentiated (Qal and Qsw): Poorly consolidated stream and slope raveling deposits of sand as well as bedrock-derived gravels and cobbles.

Jura – Trias Metavolcanic Rocks: Very intensely metamorphosed andesite and rhyolite flow rocks, greenstone, volcanic breccia and other pyroclastic rocks. These rocks are moderately to slightly weathered and hard to very hard.

Granite and Adamellite: Intrusive granitic rocks of massive structure and medium grain size. They are composed of quartz, poatssic feldspar, plagioclase, hornblende, mica and biotite. These rocks range from moderately weathered to decomposed. In additon, they range from moderately soft to moderately hard to very hard. In a weathered "residual soil" condition these materials comprise sands and gravels often with the remnant parent rock texture present.

7.1.2 Stability of Existing Slopes

The current I-15 roadway alignment was achieved by cut and fill grading. The majority of slopes on the western side of the freeway are cut slopes inclined at 2:1 (H:V). However, some cut slopes are inclined at 1.5:1 (V:H). The majority of slopes on eastern side of the freeway are fill slopes inclined at 2:1 (H:V) and flatter. All slopes at the project location generally appear to be in good condition and are performing well.

7.2 Subsurface Conditions

The following sections describe the geotechnically relevant conditions that impact project design and excavations. All structural members of the proposed High Tension Cable Barrier will be embedded in either fill materials or native residual soils. Harder bedrock will occasionally be encountered at depths of about five feet below the ground surface.

7.2.1 Soils

The alignment of the proposed barrier is underlain by fill materials consisting of poorly-graded sands with gravels and cobbles. The apparent density of this fill varies from medium dense to very dense. However, frequently the about one and a half thick surficial layer was found to be loose. The thickness of this fill layer is variable. This fill is then underlain by very dense native residual soils comprising poorly-graded sands with little gravel. The residual soils are in turn underlain by intensely weathered to decomposed granitic bedrock.

7.2.2 Groundwater

No groundwater was encountered in borings or observed as seepage on slopes during the exploration program for this project. Sporadic occurrence of perched groundwater could be encountered during the construction phase of this project. However, it is anticipated that the occurrence of perched groundwater will have no significant impact on project design and construction.

7.3 Surface Water

Permanent surface water bodies do not exist at the location of this project.

7.3.1 Scour

A scour evaluation is not applicable to this project.

7.3.2 Erosion

Field observations indicate that native cut slopes and fill slopes along the proposed project alignment are largely resistant to the forces of erosion. This is likely due to the dense to very dense condition of the rocks that host the slopes and/or proper compaction of fill materials that were utilized for fill slopes.

7.4 Project Site Seismicity

Due to the proximity of active fault zones, the project site will experience seismic shaking. This section provides a seismic evaluation of the project site.

7.4.1 Ground Motions

Although no active faults lay within the project limits, the project is located in proximity to two active fault zones. Ground motion caused by nearby and distant seismic events should be anticipated during the design life of the project features. The closest active fault zone is the Newport-Inglewood-Rose Canyon Fault Zone, trending in a northwesterly direction, and laying about 18.0 miles west of the project site. This fault is believed to be capable of producing an earthquake with a Maximum Credible Magnitude of 7.0 on the Richter scale. The active Whittier-Elsinore Fault, trending in a northwesterly direction is located about 19.0 miles east of the project site. This fault is considered capable of producing and earthquake with a Maximum Credible Magnitude of 7.5 on a Richter scale. Both faults are believed to be capable of generating a Peak Ground Acceleration of about 0.4 g (where 'g' represents the acceleration due to gravity) at the project site. This value was obtained from the data presented on Caltrans California Seismic Hazard Map depicted in Figure 4 (by Lalliana Mualchin.)

7.4.2 Ground Rupture

The project is located outside of any State of California Alquist Priolo Special Study Zone. No known active fault trace crosses the project alignment. Ground surface rupture caused by active faulting is considered unlikely.

8.0 GEOTECHNICAL ANALYSIS AND DESIGN

The following section describes the geotechnical analyses, parameters, and design criteria that should be utilized by project designers in the continued development of proposed project features.

8.1 Dynamic Analysis

This section describes the seismic parameters selected and dynamic analysis developed for the project.

8.1.1 Parameter Selection

The proximity of the project area to the Newport-Inglewood-Rose Canyon and Whittier-Elsinore Faults establishes the potential for the area to be impacted by a significant seismic event. The Maximum Credible Earthquake on these faults has been estimated to be of magnitude 7.0 and 7.5 respectively. The Peak Bedrock Acceleration at the project site could range up to 0.4g and have duration of 15 to 20 seconds (from the California Seismic Hazard Map 1996, by Lilliana Mualchin and DMG OFR92-1).

The effective seismic horizontal coefficient, k_h, used in pseudo-static slope stability analysis is specified in Caltrans Guidelines for Foundation Investigation and Reports (Version 1.2) as 1/3 of the peak ground acceleration. Therefore, $k_h = 0.13$ should be used for the pseudo-static slope stability analyses.

8.2 Cuts and Excavations

This section presents the analyses used to determine the stability, rippability, and grading factors of materials encountered in proposed foundation excavations.

8.2.1 Stability

It is anticipated that the excavations for the proposed barrier foundations will be stable during construction, provided that the excavations are left open for a limited duration and not exposed to excessive saturation or concentrated storm runoff.

8.2.2 Rippability

Generally, fill materials within this project limits may be excavated or drilled by conventional equipment. It is expected that gravels, cobbles, and boulder size rocks will be encountered in excavations impacting the rate of progress of excavating or/and drilling. Weathered granitic bedrock within the project area may be excavated or drilled utilizing heavy duty equipment. At some locations relatively fresh granitic rocks will be encountered. Their occurrence could significantly affect the rate of progress of excavating or/and drilling. The quantity of rocks can be estimated based on Table 1.

8.2.3 Grading Factors

The volume of material to be excavated for the foundations of the proposed barrier walls is expected to be minimal. Therefore, the grading factor for this project is not provided.

8.3 Embankments

No embankments are proposed as part of this project.

8.4 Sound Walls

No sound walls are proposed as part of this project

8.5 Earth Retaining Systems

No earth retaining structures are proposed as part of this project.

8.6 Culvert Foundations

No culvert foundations are proposed as part of this project.

8.7 Minor Structure Foundations

No minor structure foundations are proposed as part of this project.

9.0 MATERIAL SOURCES

No material is planned to be imported for this project.

10.0 MATERIAL DISPOSAL

Material generated during construction should be placed in suitable locations as engineered fill within the projects limits or properly disposed off site. Material disposal should follow Standard Specifications 2010. No locations that would be adversely impacted by the placement of excess material were identified.

11.0 CONSTRUCTION CONSIDERATIONS

This section describes the construction considerations including: advisories; considerations that influence design and/or specifications; and monitoring and instrumentation.

- The excavations/shafts for the embedment of the structural members of the barrier (posts and anchors) may be excavated with the use of standard and/or heavy duty foundation drilling equipment.

- Within the surficial layer of fill, mild to strong caving or sloughing conditions may be encountered during excavation/drilling.

- Oversized material, including boulder-size rocks will be encountered in excavations especially near the interface between fill and underlying weathered granitic bedrock. In addition, oversized material (cobbles and boulders) will be encountered within fill granular materials. Table 1 provides detailed data regarding oversized rocks.

12.0 CONCLUSIONS

The soils that underlay the project are well suited for the embedment of the structural members of the high tension cable barrier. In addition, based on the attached Corrosion Test Summary Report the soils that will host the barrier are non corrosive.

13.0 ACTUAL VS. REPORTED SITE CONDITIONS

Characterization of the geotechnical conditions presented in this report are based on site reconnaissance, subsurface investigation, laboratory testing, as-built plans, topographic and geologic maps, geologic literature, archival reports, and engineering analysis. The evaluations and recommendations contained in this report are based on the information discovered. If site conditions are encountered during project construction that appear to differ from the conditions conveyed in this report, or if construction difficulties related to subsurface soil conditions are encountered, a representative from OGDS2 Branch D should be consulted to assist with the assessment of the prevailing geotechnical conditions and to assist in formulating appropriate strategies to facilitate project completion.

APPENDICES

Appendix A: Corrosion Test Summary Report

Appendix A: Logs of Test Borings

Table 1

DYNAMIC CONE PENETROMETER DATA

Sounding No.	Location (Station & Offset)	Reference Line	Elevation (ft)	Penetration (sec/ft) Depth (ft)										Remarks
				1	2	3	4	5	6	7	8	9	10	
A-12-001	1987+67.7, 82.6 Rt	SD-15-R	975.1	21	120/6"									at 1': Rocks.
D-13-001	1991+62.9, 72.8 Rt	SD-15-R	968.2	18	64	36	18	60	61	60	15			
D-13-002	1995+68.4, 70.0 Rt	SD-15-R	958.9	10	28	17	27	27	23	22				
D-13-003	1999+25.6, 69.3 Rt	SD-15-R	949.8	8	15	15	15	50	120/5"					
D-13-004	2002+83.7, 69.1 Rt	SD-15-R	939.9	8	12	14	34	120/3"						
D-13-005	2006+89.2, 68.0 Rt	SD-15-R	926.8	32	26	30	120/8"							at 3': Rocks.
D-13-006	2012+38.4, 69.6 Rt	SD-15-R	907.7	5	7	12	11	6	8	6	10			
D-13-007	2016+83.8, 69.2 Rt	SD-15-R	891.5	20	120/4"									at 2': Rocks.
D-13-008	2019+87.6, 70.4 Rt	SD-15-R	880.4	10	13	120/8"								at 2.5': Bedrock.
D-13-009	2023+90.0, 69.3 Rt	SD-15-R	866.4	9	30	15	120/10"							at 3'10": Bedrock.
A-12-002	2029+35.4,76.7 Rt	SD-15-R	846.8	9	100/1"									at 1': Rocks.
D-13-010	2034+31.4, 67.3 Rt	SD-15-R	828.1	6	6	2	12	19	24	60	53	17	9	at 5'2": Rocks. Fill.
D-13-011	2041+34.4, 70.8 Rt	SD-15-R	802.7	6	8	56	98	87	60	41	26	72	30	Fill.
D-13-012	2048+41.2, 68.6 Rt	SD-15-R	776.3	6	16	10	7	4	3	6	29			Fill.
D-13-013	2055+37.6, 71.8 Rt	SD-15-R	747.8	7	12	13	22	32	30	49	12			at 5': Rocks. Fill.
D-13-014	2062+47.3, 70.6 Rt	SD-15-R	716.7	6	9	130								at 2': Rocks.
D-13-015	2069+44.4 70.9 Rt	SD-15-R	685.1	4	18	14	15	40	90	60	30			
D-13-016	2076+48.4,74.1 Rt	SD-15-R	653.5	3	13	18	52	53	46	27	70			Fill.
D-13-017	2083+62.8,72.7 Rt	SD-15-R	623.9	5	15	8	4	4	12	8	30			Fill.
D-13-018	2088+39.4, 73.5 Rt	SD-15-R	609.5	4	17	8	26	17	68	42	120/11"			at 7'10": Rocks.
D-13-019	2097+41.8, 70.2 Rt	SD-15-R	591.4	5	36	150/8"								at 2.5': Rocks (Bedrock?).
D-13-09A	2100+95.8, 68.8 Rt	SD-15-R	588.1	12	40	120/1"								at 2': Bedrock.
D-13-020	2107+89.7, 68.8 Rt	SD-15-R	583.6	11	27	12	32	180	120/6"					at 5': Bedrock.
A-12-003	2110+44.7, 76.0 Rt	SD-15-R	582.8	7	7	27	21	72	74	120/10"				at 4': Rocks.
A-12-004	2113+59.6,70.5 Rt	SD-15-R	580.3	3	7	8	33	14	14	34				at 3': Rocks.

Notes: Tip: Cone, 2.2" diameter
Tip Pressure: 700 PSF
RPM: 1700

D-13-021	2120+54.2, 70.5 Rt	SD-15-R	575.8	3	3	11	30	20	15	27	16			Fill.
D-13-022	2127+46.8, 70.9 Rt	SD-15-R	571.7	10	13	120/1"								at 2': Rocks/bedrock; moved sounding 10'N, refusal at 1.5'
D-13-023	2131+98.6, 71.0 Rt	SD-15-R	568.6	15	14	18	23	100	35	10	30			at 4': Rocks.
D-13-024	2139+74.0, 72.8 Rt	SD-15-R	563.6	5	27	120/8"								moved 8' N: Refusal @ 2': Rocks/Bedrock.
D-13-025	2146+84.9, 70.4 Rt	SD-15-R	558.9	2	6	11	12	12	20	38	24	38	32	Fill.
D-13-026	2155+41.4, 70.9 Rt	SD-15-R	553.5	5	16	27	32	24	120*	19	15	16	41	at 5': Rocks.
D-13-027	2163+10.6, 69.1 Rt	SD-15-R	546.7	7	10	15	32	63	120*	120/8"				at 5' Rocks/Bedrock.
D-13-028	2168+39.4, 68.7 Rt	SD-15-R	540.6	2	8	53	40	13	8	22	18	120/11"		at 9': Rocks/Bedrock.
A-12-005	2175+47.4, 123.5 Rt	SD-15-R	529.1	4	9	7	2	2	3	80/4"				at 6': Bedrock.
A-13-006	2190+30.1, 19.9 Rt	SD-15-R	517.6	18	27	30	20	20	12	23				
D-13-029	2184+71.2, 17.8 Rt	SD-15-R	531	3	120/11"	100	120/5"							moved sounding 8' S; the same rate of penetration; at 2': Rocks/bedrock.
D-13-030	2176+15.4, 17.7 Rt	SD-15-R	548.3	2	2	6	7	17	13	12	10	11	8	Fill.
D-13-031	2168+78.6, 18.4 Rt	SD-15-R	560.2	2	4	2	3	7	10	12	120/6"			at 8': Bedrock.
D-13-032	2152+67.1, 18.8 Rt	SD-15-R	575.3	4	9	120								bedrock; moved 10' S; refusal @ 2'.
D-13-033	2142+10.1, 16.9 Rt	SD-15-R	582.1	3	22	25	30	120/3"						at 4': Rocks/Bedrock.
D-13-034	2132+78.9, 16.1 Rt	SD-15-R	588.1	3	7	15	24	16	7	30	120*			at 8': Rocks/Bedrock.
D-13-035	2123+75.7, 17.4 Rt	SD-15-R	593.9	1	6	16	17	14	120/8"					at 5': Rocks/Bedrock.
A-13-007	2115+79.3, 21.2 Rt	SD-15-R	598.9	3	10	50	37	38	82	32				
A-13-008	2111+31.2, 19.9 Rt	SD-15-R	602.3	5	15	23	22	20	15	16				Fill.
D-13-036	2104+14.9, 19.4 Rt	SD-15-R	606.2	6	5	28	45	50	34	14	20	33	23	at 3': Rocks/Bedrock(?).
D-13-037	2091+.19.9, 19.8 Rt	SD-15-R	622.8	7	37	73	66	28	21	41				at 2': Rocks.
D-13-038	2082+22.9, 19.8 Rt	SD-15-R	649.5	5	5	11	30	36	120					at 5': Rocks/Bedrock.
D-13-039	2065+48.3, 20.0 Rt	SD-15-R	723.8	5	50	150	180/8"							at 2': Rocks/Bedrock.
D-13-040	2055+64.4, 19.8 Rt	SD-15-R	767.2	2	4	13	180/3"							at 3': Rbedrock.
A-13-009	2046+70.9, 22.5 Rt	SD-15-R	804.2	2	26	27	9	4	3	8				at 1': Rocks.
D-13-041	2029+45.8, 22.4 Rt	SD-15-R	866.8	2	7	7	9	14	8	8	10	13	11	at 11': Bedrock.
D-13-042	2020+97.9, 22.5 Rt	SD-15-R	897.8	2	4	22	15	27	27	120/1"				at 7': Bedrock.
D-13-043	2010+63.4, 22.3 Rt	SD-15-R	933.1	2	35	120/2"								at 2': Bedrock.
A-13-010	1981+78.8, 26.4 Rt	SD-15-R	985.3	4	53	20	14	120/4"						at 1': Rocks; at 4': Bedrocks.
A-13-011	2175+35.0, 90.9 Lt	SD-15-L	550.3	3	12	23	59/4"							at 2': Rocks.

Notes: Tip: Cone, 2.2" diameter
Tip Pressure: 700 PSF
RPM: 1700

D-13-044	2173+00.0, 84.6 Lt	SD-15-L	554.3	8	14	26	7	120/8"						at 2': Rocks; at 4.5': Bedrock.
D-13-045	2165+62.7, 75.1 Lt	SD-15-L	564.5	2	5	120/10"								at 2.5': Bedrock.
D-13-046	2157+98.3, 77.7 Lt	SD-15-L	571.5	2	5	8	15	14	48	26				Fill.
D-13-047	2151+86.0, 73.8 Lt	SD-15-L	574.9	2	5	18	20	25	9	11	120/2"			at 3': Rocks; at 7': Bedrock
D-13-048	2145+47.7, 79.7 Lt	SD-15-L	579.7	2	8	12	20	15	26	44				Fill.
D-13-049	2140+33.4, 75.9 Lt	SD-15-L	582.7	2	10	120/2"								at 2': Bedrock.
D-13-050	2132+69.3, 76.7 Lt	SD-15-L	588.2	5	5	6	17	18						at 3': Rocks/Bedrock.
D-13-051	2124+32.9, 77.9 Lt	SD-15-L	592.9	6	14	14	15	13	120/6"					at 6': Rocks/Bedrock.
D-13-052	2117+58.8, 73.8 Lt	SD-15-L	597	6	9	14	46	120						at 3': Rocks.
A-13-012	2115+93.1, 70.9 Lt	SD-15-L	598.1	1	4	9	16	80/5"						at 4': Rocks.
A-13-013	2111+25.2, 69.7 Lt	SD-15-L	600.7	1	3	10	8	8	13	60/2'				at 6': Rocks/Bedrock.
D-13-053	2110+64.3, 71.1 Lt	SD-15-L	601.3	4	9	11	16	20	22	14				Fill.
D-13-054	2104+92.7, 74.3 Lt	SD-15-L	605.6	3	13	27	120/8"							at 2': Rocks/Bedrock.
D-13-055	2097+87.7, 74.1 Lt	SD-15-L	610.3	7	20	120/7"								at 2': Bedrock.
D-13-056	2091+28.4, 74.2 Lt	SD-15-L	621.5	5	6	10	11	11	12	12	100/10"			
D-13-057	2082+37.5, 74.0 Lt	SD-15-L	648.1	4	11	75								
D-13-058	2075+08.7, 77.3 Lt	SD-15-L	678.5	4	6	7	5	80	32	80/7"				at 4': Rocks.
D-13-059	2065+40.2, 74.8 Lt	SD-15-L	722.3	3	10	60/3"								at 2': Rocks/Bedrock.
A-13-014	2059+67.5, 70.2 Lt	SD-15-L	747.5	3	9	11	11	14	10	7	5	4	4	
D-13-060	2055+59.9, 73.8 Lt	SD-15-L	766.5	2	5	6	2	29	120/4"					at 5': Bedrock.
D-13-061	2044+35.2, 75.9 Lt	SD-15-L	811.8	3	7	31	56	17	8/3"					at 2': Rocks.
D-13-062	2029+40.2, 76.9 Lt	SD-15-L	866.6	2	28	9	3	2	2	3	10	30	60/2"	at 1': Rocks; at 9": Bedrock.
D-13-063	2020+96.9, 73.4 Lt	SD-15-L	896.8	6	20	120/7"								at 2': Bedrock.
D-13-064	2013+00.0, 72.4 Lt	SD-15-L	924.7	7	60	100/1"								at 1': Bedrock.
D-13-065	2006+43.9, 75.1 Lt	SD-15-L	943.8	20	120/3"									at 1': Bedrock.
D-13-066	1999+33.7, 76.8 Lt	SD-15-L	960.7	4	28	30	40	18	18	18				Fill with rocks.
A-12-015	1986+17.0, 74.9 Lt	SD-15-L	979.9	2	7	19	80/10"							at 3': Rocks/Bedrock.

Notes: Tip: Cone, 2.2" diameter
Tip Pressure: 700 PSF
RPM: 1700

INDEX OF PLANS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY

IN SAN DIEGO COUNTY
ABOUT 5 MILES NORTH OF ESCONDIDO
FROM 0.2 MILE NORTH OF
DEER SPRINGS ROAD OVERCROSSING
TO GOPHER CANYON UNDERCROSSING

TO BE SUPPLEMENTED BY STANDARD PLANS DATED MAY 2010

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
11	SD	15	R36.8/R40.8		

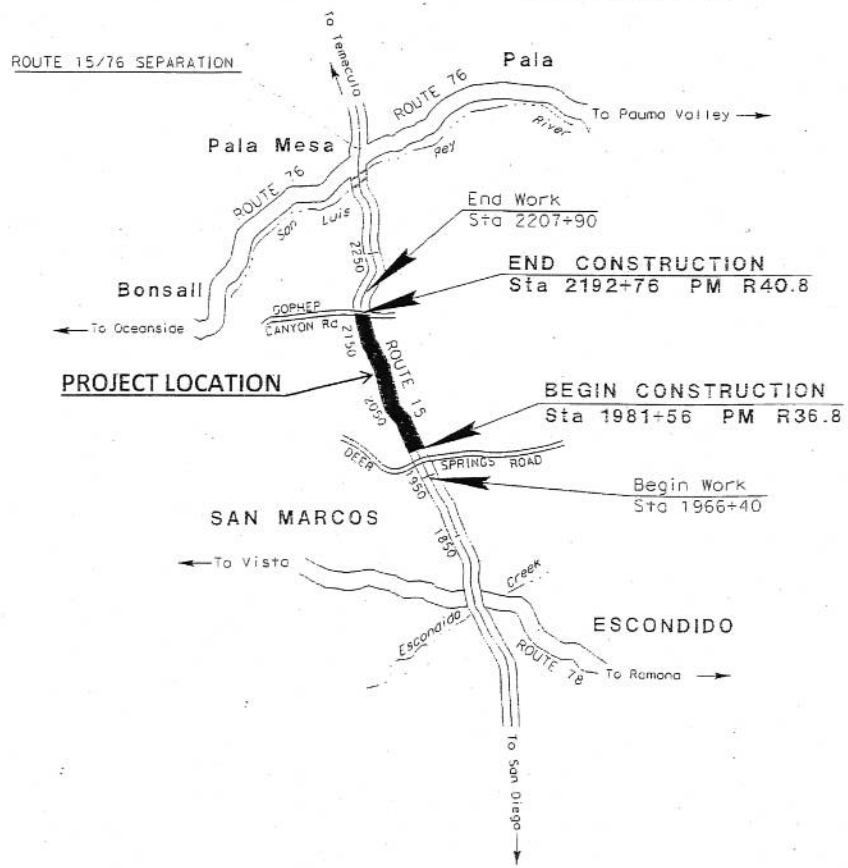

FIGURE 1
PROJECT LOCATION
I-15 HIGH TENSION CABLE BARRIER

EA: 11-40650 2013

THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE TO BIDDERS."

PROJECT MANAGER

DESIGN ENGINEER

BORDER LAST REVISED 1/2/2010 | CALTRANS WEB SITE IS: HTTP://WWW.DOT.CA.GOV

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

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DGN FILE => $PEQUEST

UNIT 2771 PROJECT NUMBER & PHASE 1100020324

DATE PLOTTED => $DATE
TIME PLOTTED => $TIME
03-12-12

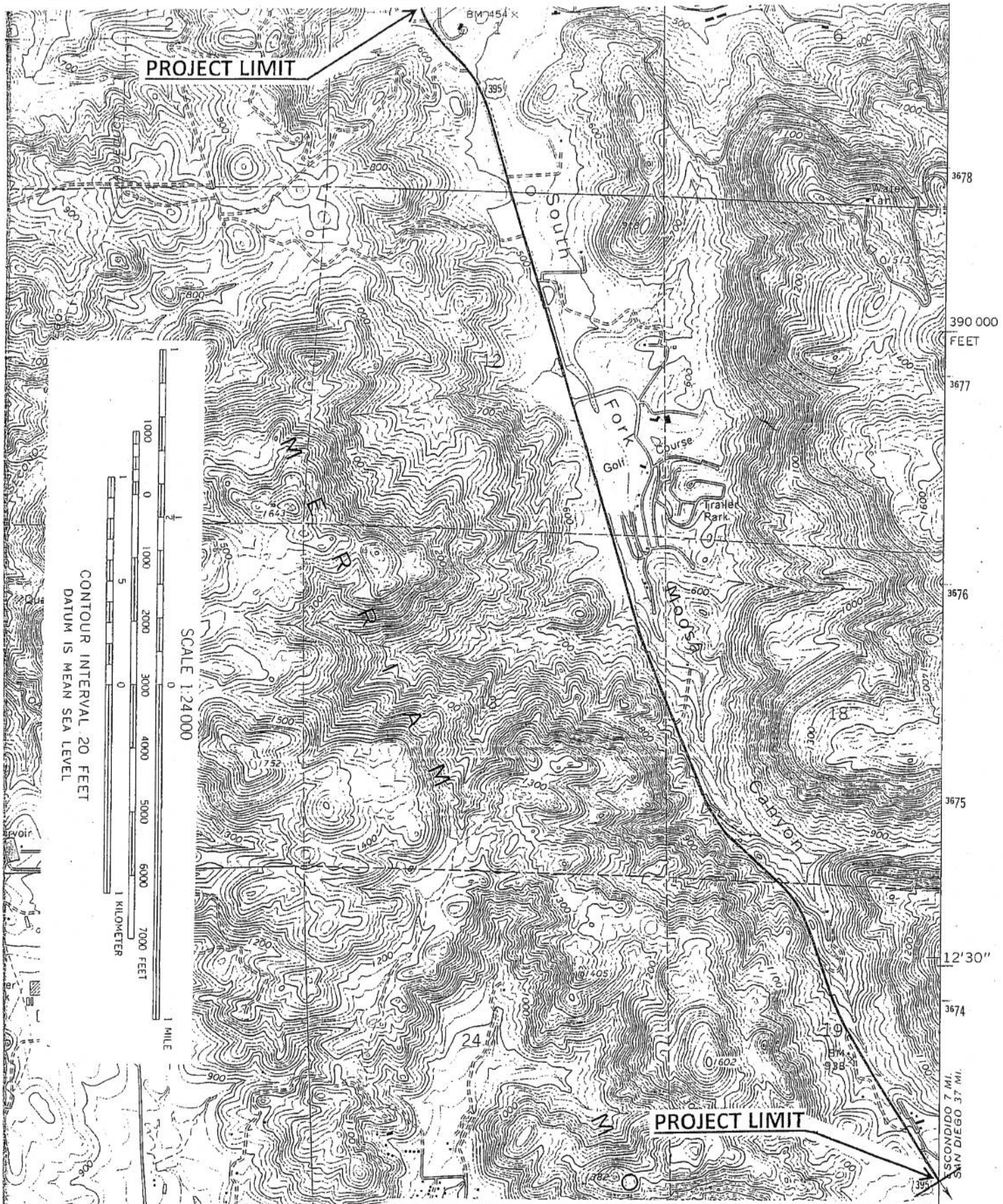


FIGURE 2

TOPOGRAPHIC MAP

I-15 HIGH TENSION CABLE BARRIER

EA: 11-40650

2013

Contact
Dashed where approximately located, gradational or inferred

Fault

Scale 1:250,000

5 0 5 10 15 20 Statute Miles

5 0 5 10 15 20 25 30 Kilometers

CONTOUR INTERVAL 200 FEET

WITH SUPPLEMENTARY CONTOURS AT 100 FOOT INTERVALS

GEOLOGIC MAP OF CALIFORNIA

OLAF P. JENKINS EDITION

CENOZOIC

Paleocene

- Paleocene nonmarine
- Paleocene marine

Undivided

- Cenozoic nonmarine
- Tertiary nonmarine
- Tertiary lake deposits
- Tertiary marine
- Cenozoic volcanic: QT_v^r—rhyolite; QT_v^a—andesite; QT_v^b—basalt; QT_v^p—pyroclastic rocks
- Tertiary granitic rocks
- Tertiary intrusive (hypabyssal) rocks: T_i^r—rhyolite; T_i^a—andesite; T_i^b—basalt
- Tertiary volcanic: T_v^r—rhyolite; T_v^a—andesite; T_v^b—basalt; T_v^p—pyroclastic rocks

MESOZOIC

CRETACEOUS

- Undivided Cretaceous marine
- Upper Cretaceous marine
- Lower Cretaceous marine

JURASSIC

- Knoxville Formation
- Upper Jurassic marine
- Middle and/or Lower Jurassic marine

TRIASSIC

- Triassic marine

Franciscan Formation

- Franciscan volcanic and metavolcanic rocks
- Mesozoic granitic rocks: gr^g-granite and adamellite; gr^d-granodiorite; gr^t-tonalite and diorite
- Mesozoic basic intrusive rocks
- Mesozoic ultrabasic intrusive rocks
- Jura-Trias metavolcanic rocks

PALEOZOIC

UNDIVIDED

- Pre-Cretaceous metamorphic rocks (ls = limestone or dolomite)
- Pre-Cretaceous metasedimentary rocks
- Paleozoic marine (ls = limestone or dolomite
- Pre-Cretaceous metavolcanic rocks
- Pre-Cenozoic granitic and metamorphic rocks
- Paleozoic metavolcanic rocks

PERMIAN

- Permian marine
- Permian metavolcanic rocks

CARBONIFEROUS

- Undivided Carboniferous marine
- Pennsylvanian marine
- Mississippian marine
- Carboniferous metavolcanic rocks

DEVONIAN

- Devonian marine
- Devonian metavolcanic rocks

SILURIAN

- Silurian marine

ORDOVICIAN

- Devonian and pre-Devonian? metavolcanic rocks

CAMBRIAN

- Pre-Silurian metasedimentary rocks
- Pre-Silurian metamorphic rocks
- Pre-Silurian metavolcanic rocks

AMBRIAN

FIGURE 3

GEOLOGIC MAP

I-15 HIGH TENSION CABLE BARRIER

EA: 11-40650 2013

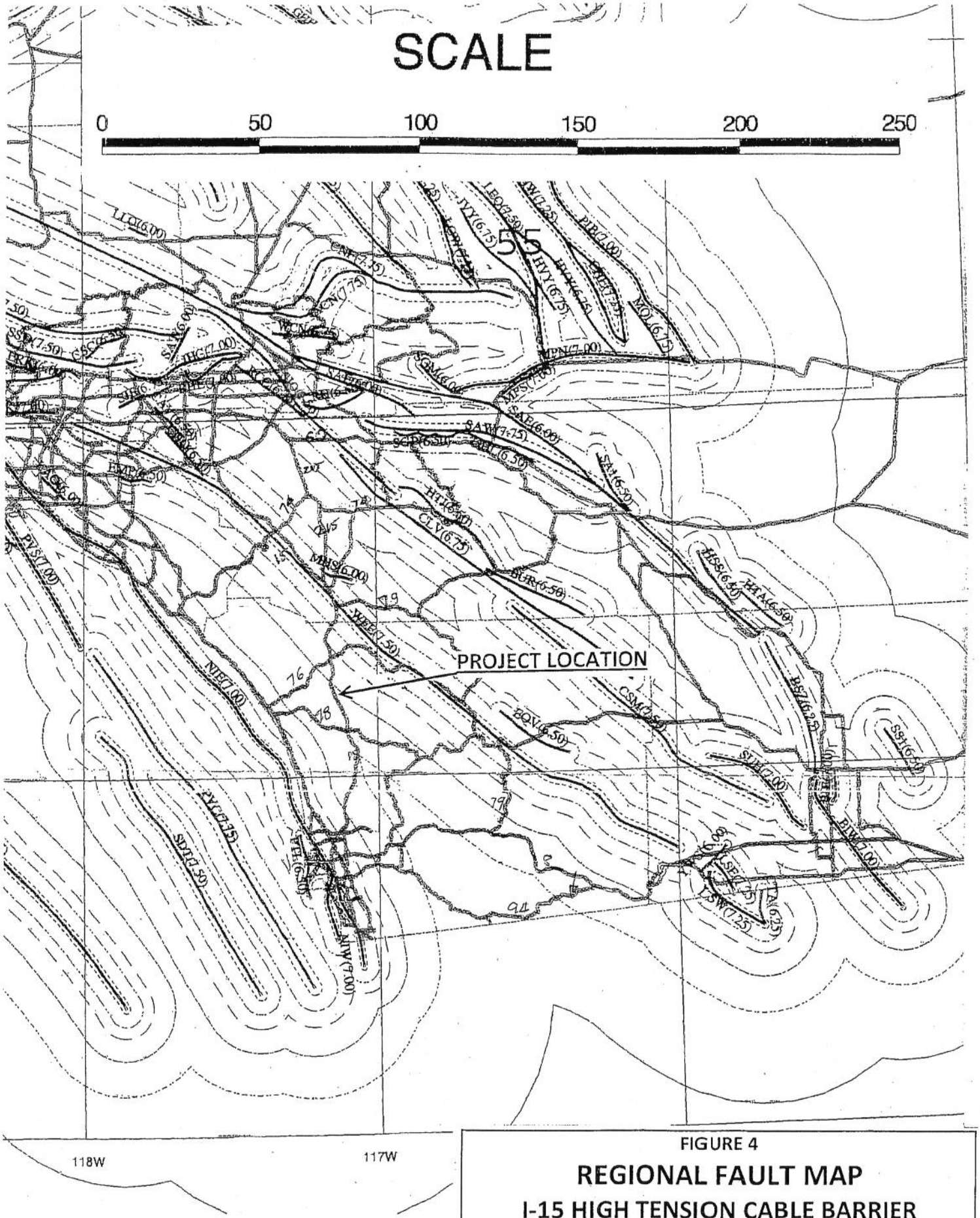


FIGURE 4

REGIONAL FAULT MAP

I-15 HIGH TENSION CABLE BARRIER

EA: 11-40650

2013

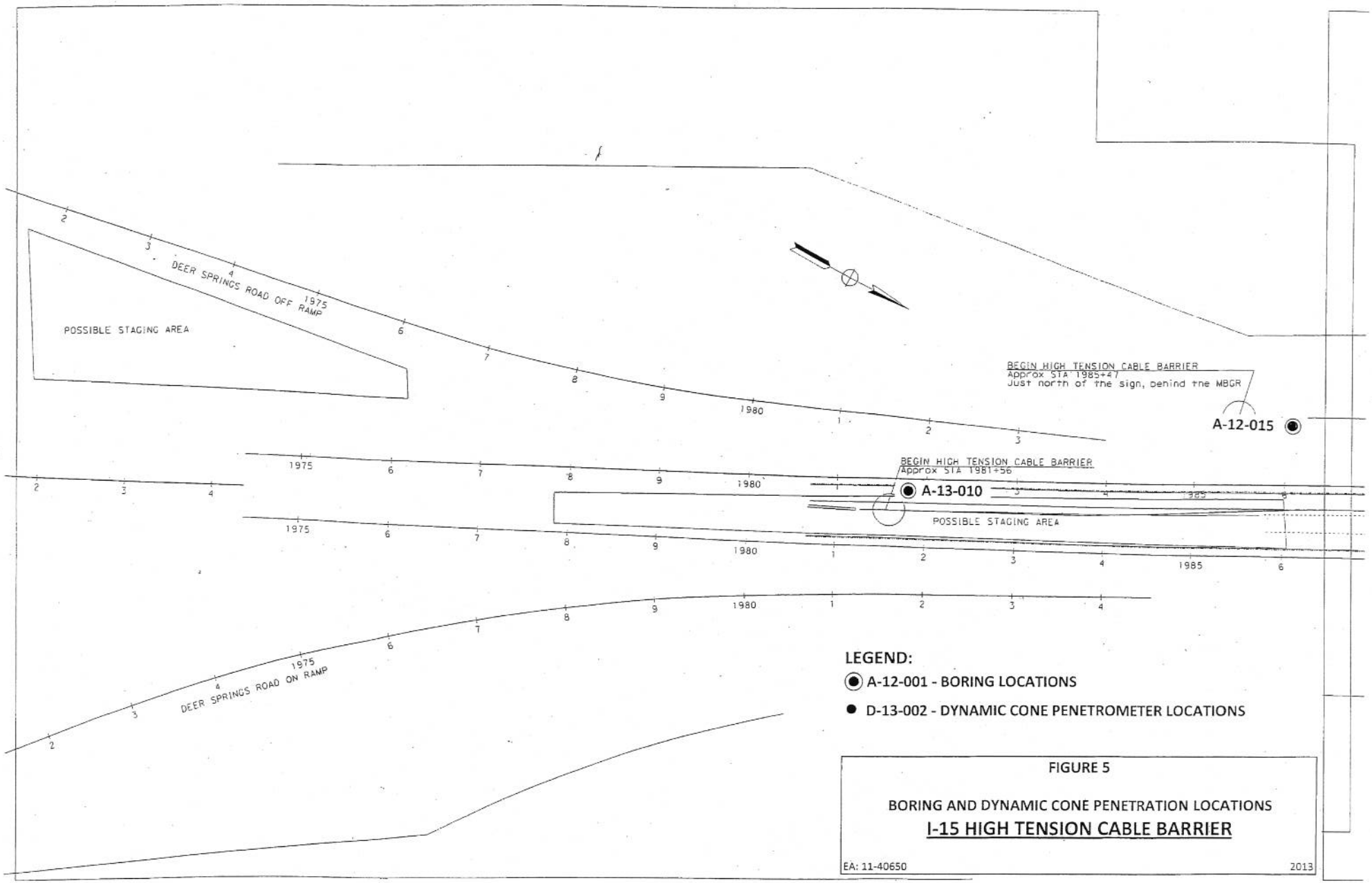


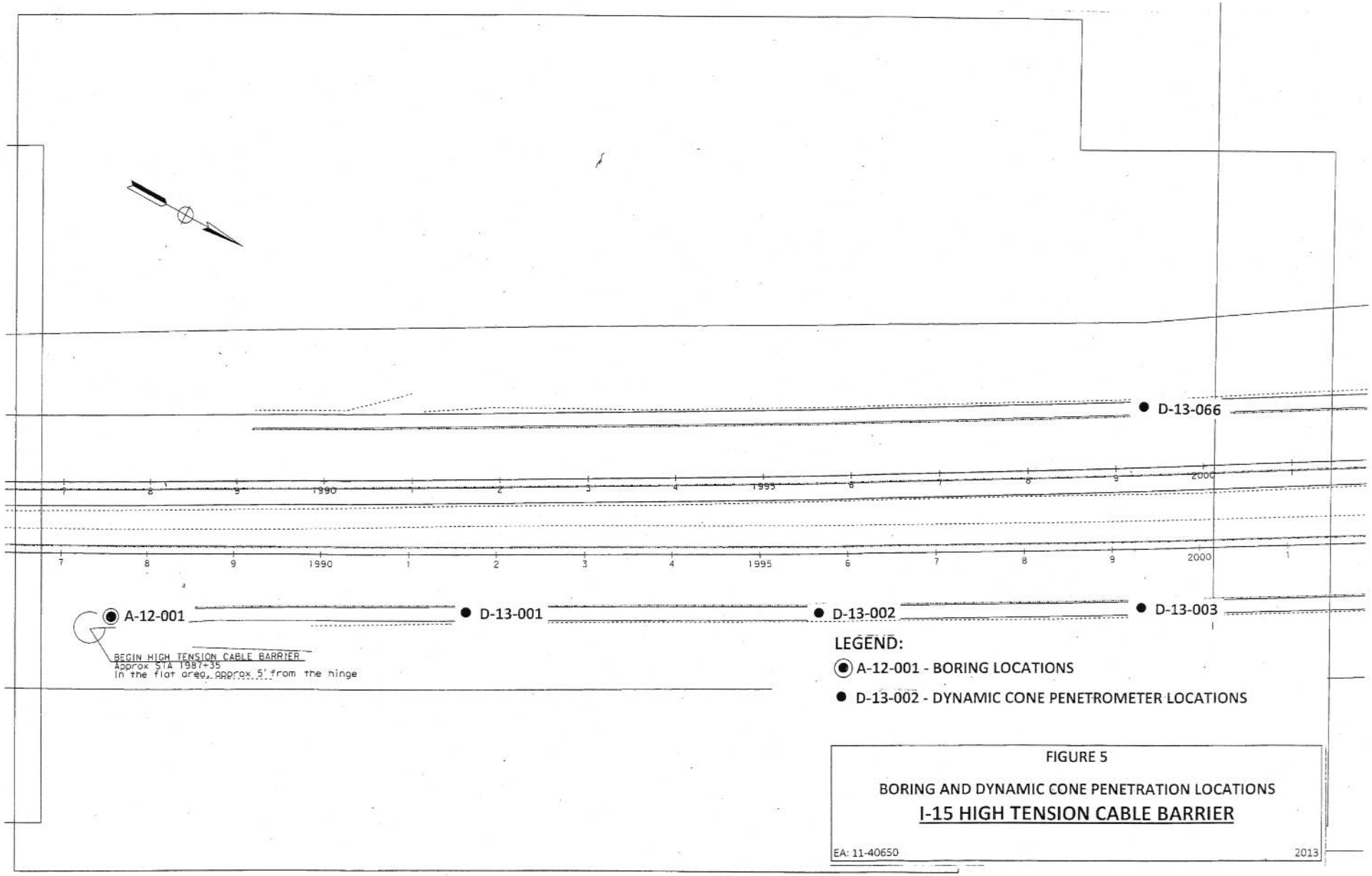
FIGURE 5

BORING AND DYNAMIC CONE PENETRATION LOCATIONS

I-15 HIGH TENSION CABLE BARRIER

EA: 11-40650

2013



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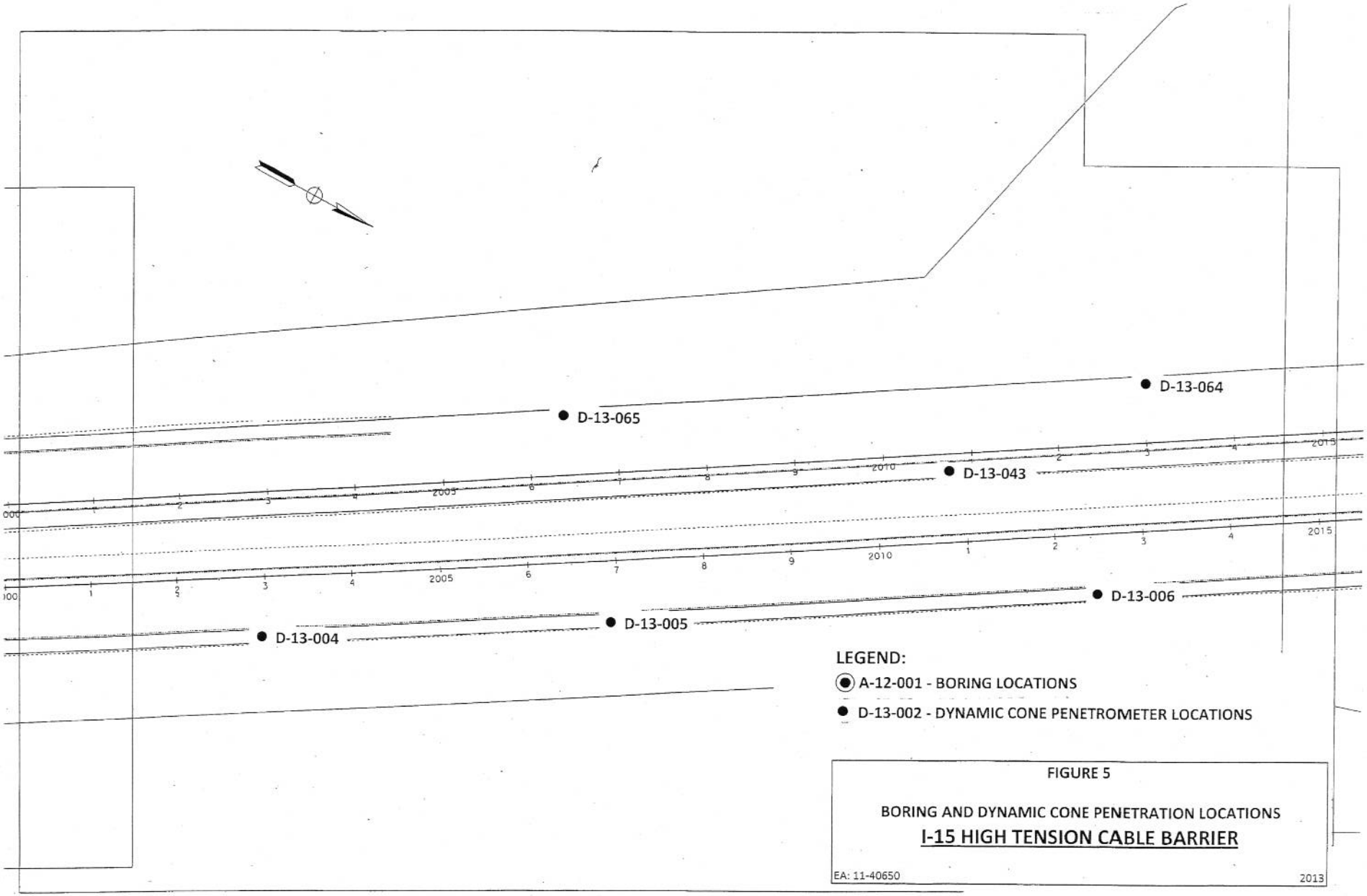

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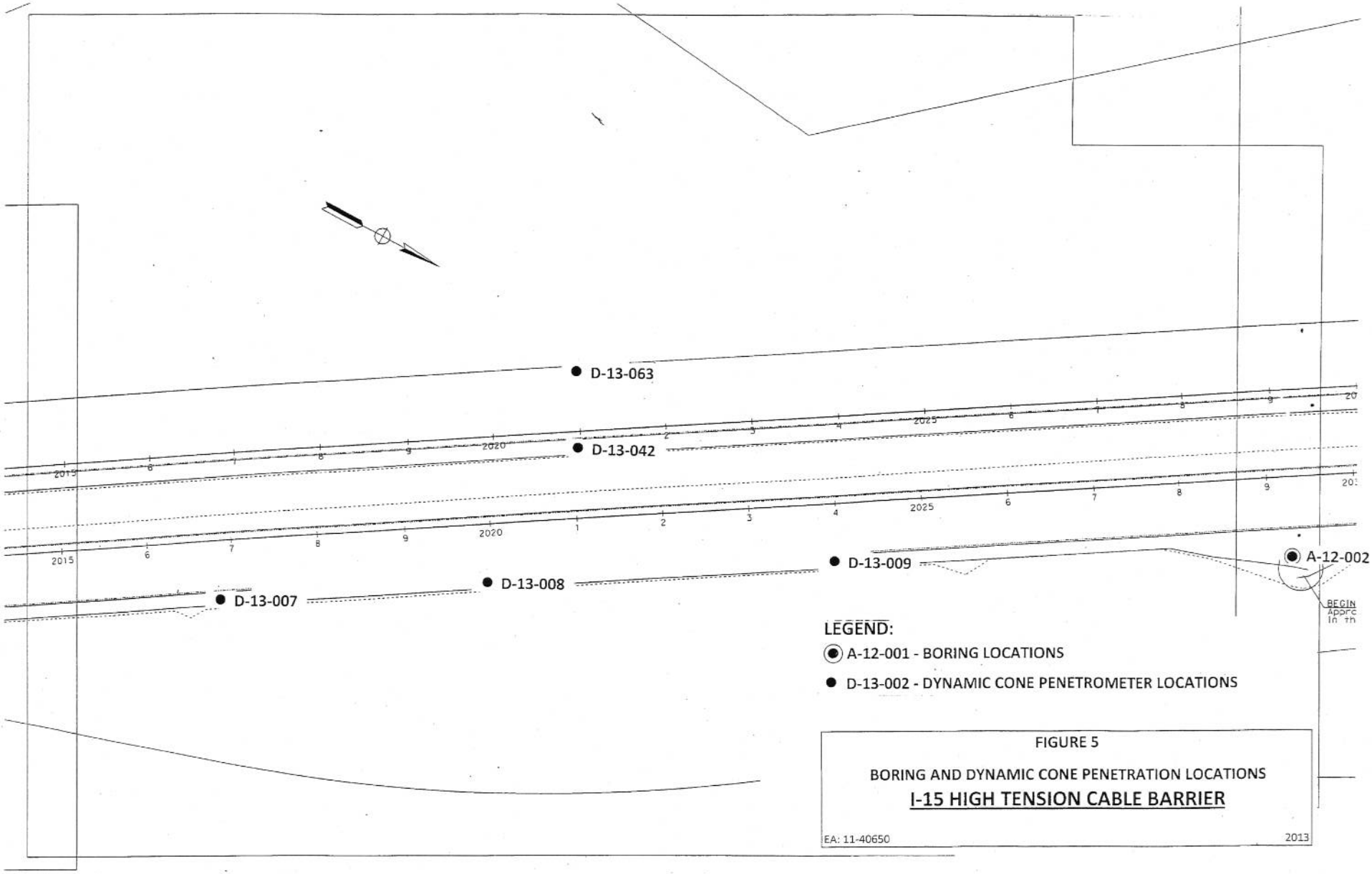

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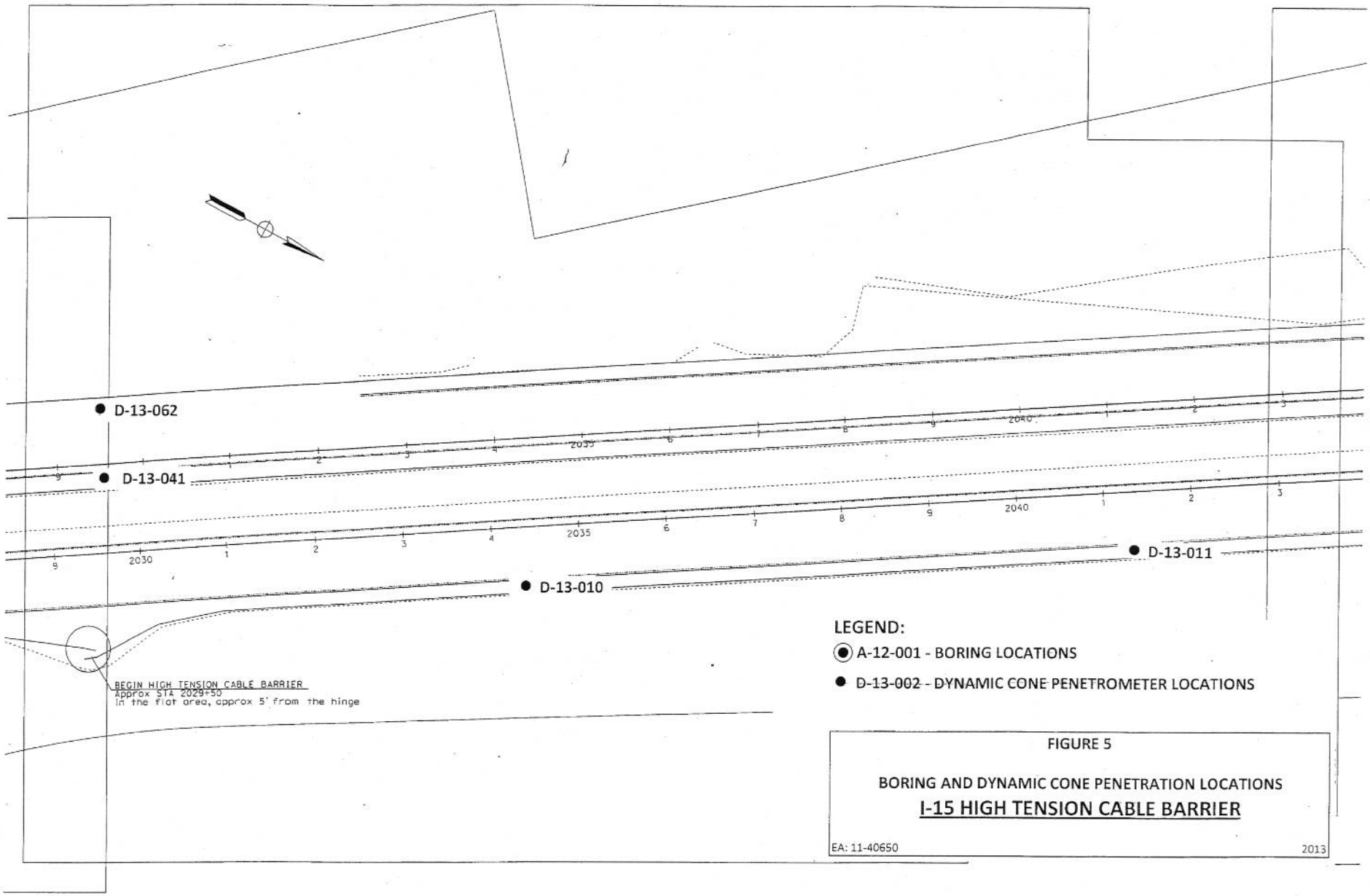

LEGEND:

- A-12-001 - BORING LOCATIONS
- D-13-002 - DYNAMIC CONE PENETROMETER LOCATIONS

FIGURE 5

BORING AND DYNAMIC CONE PENETRATION LOCATIONS

I-15 HIGH TENSION CABLE BARRIER

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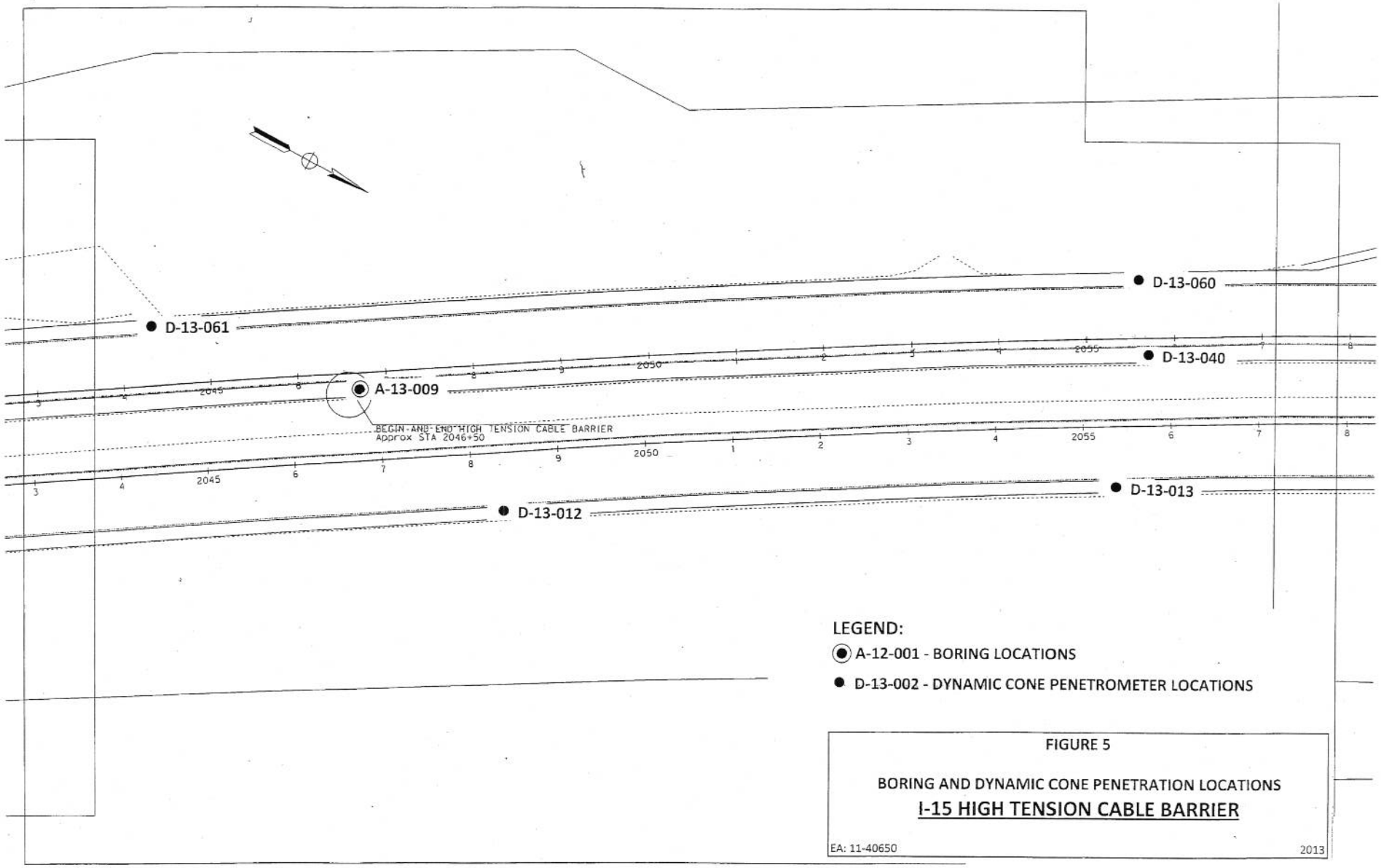

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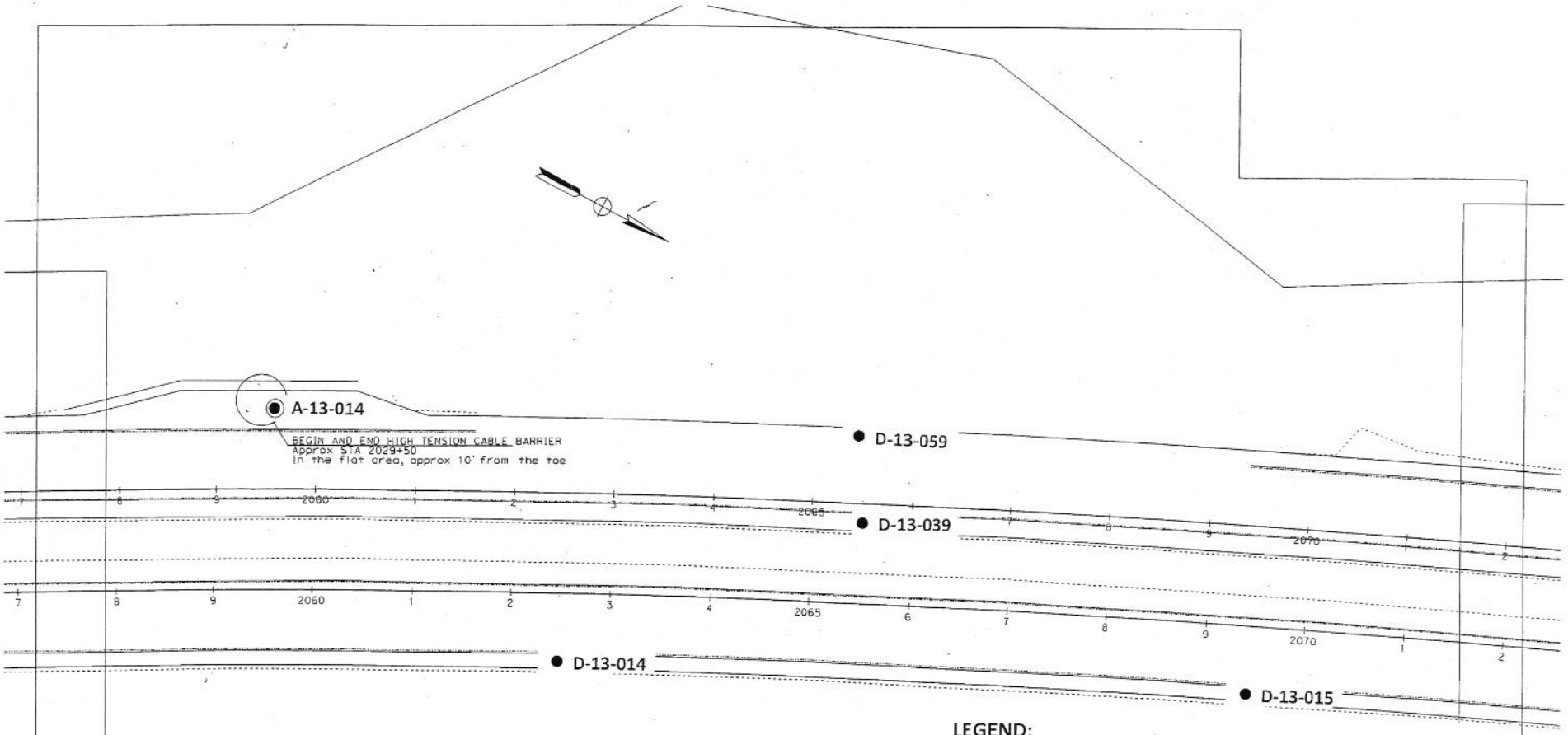

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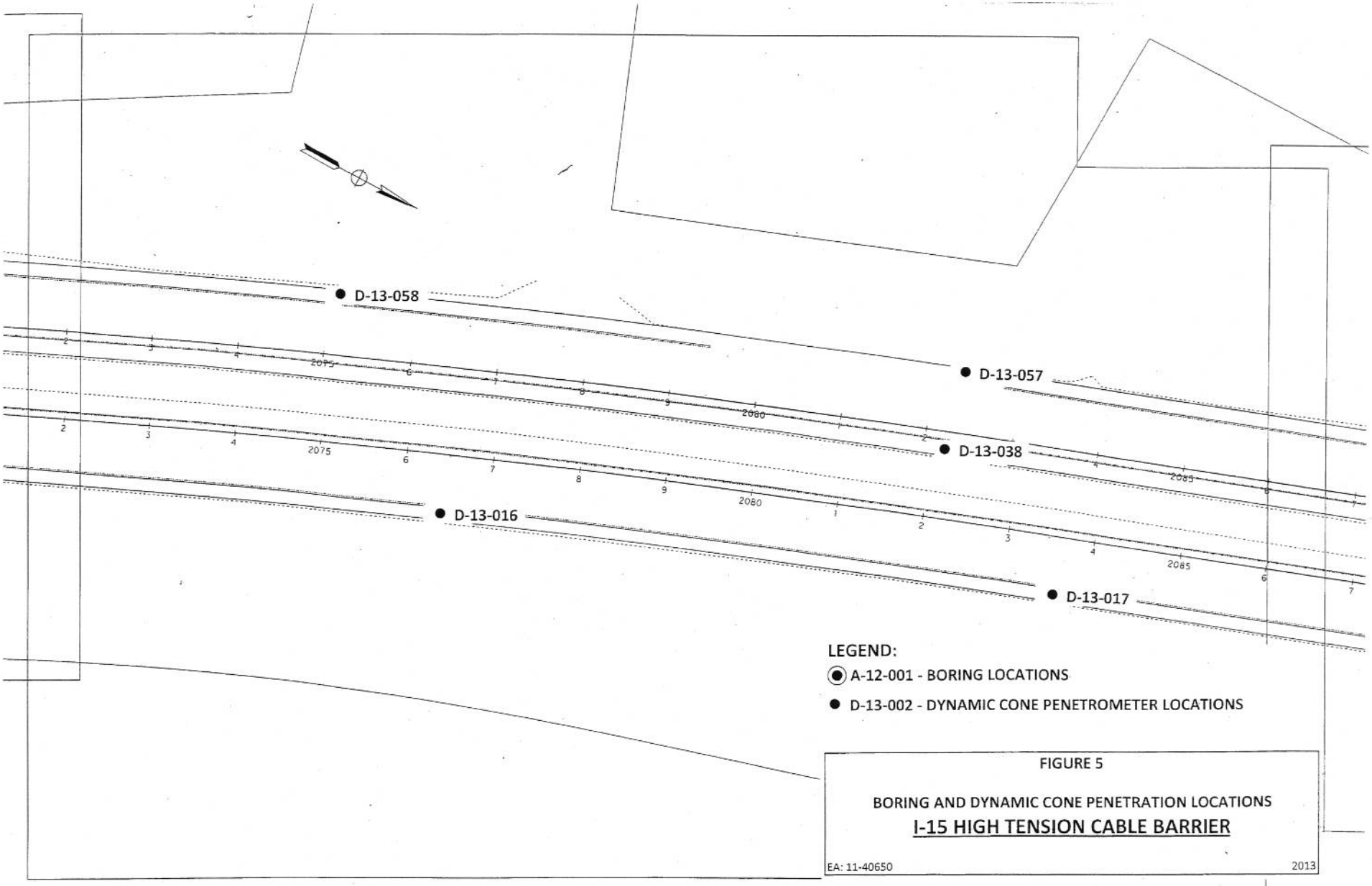

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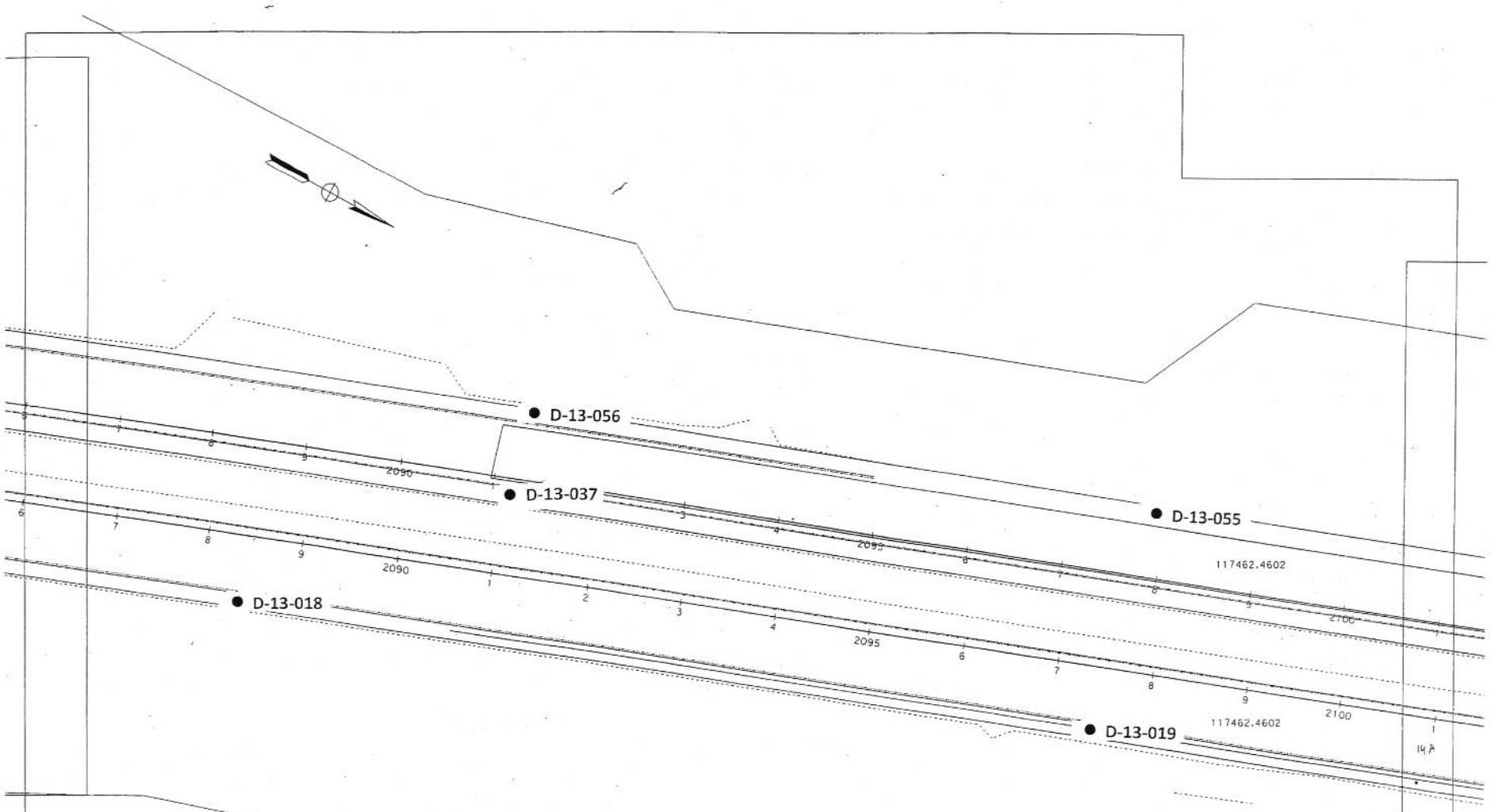

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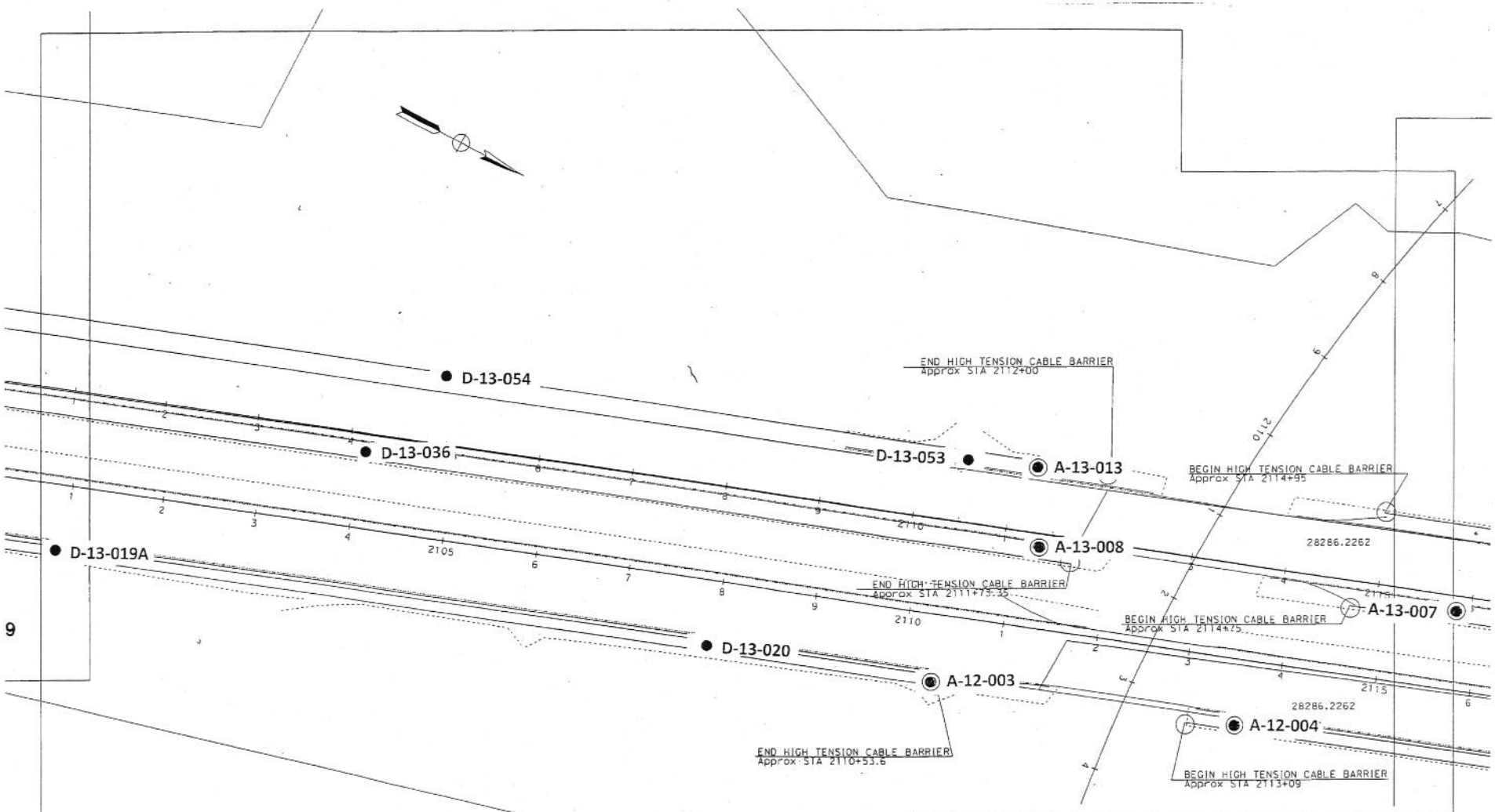

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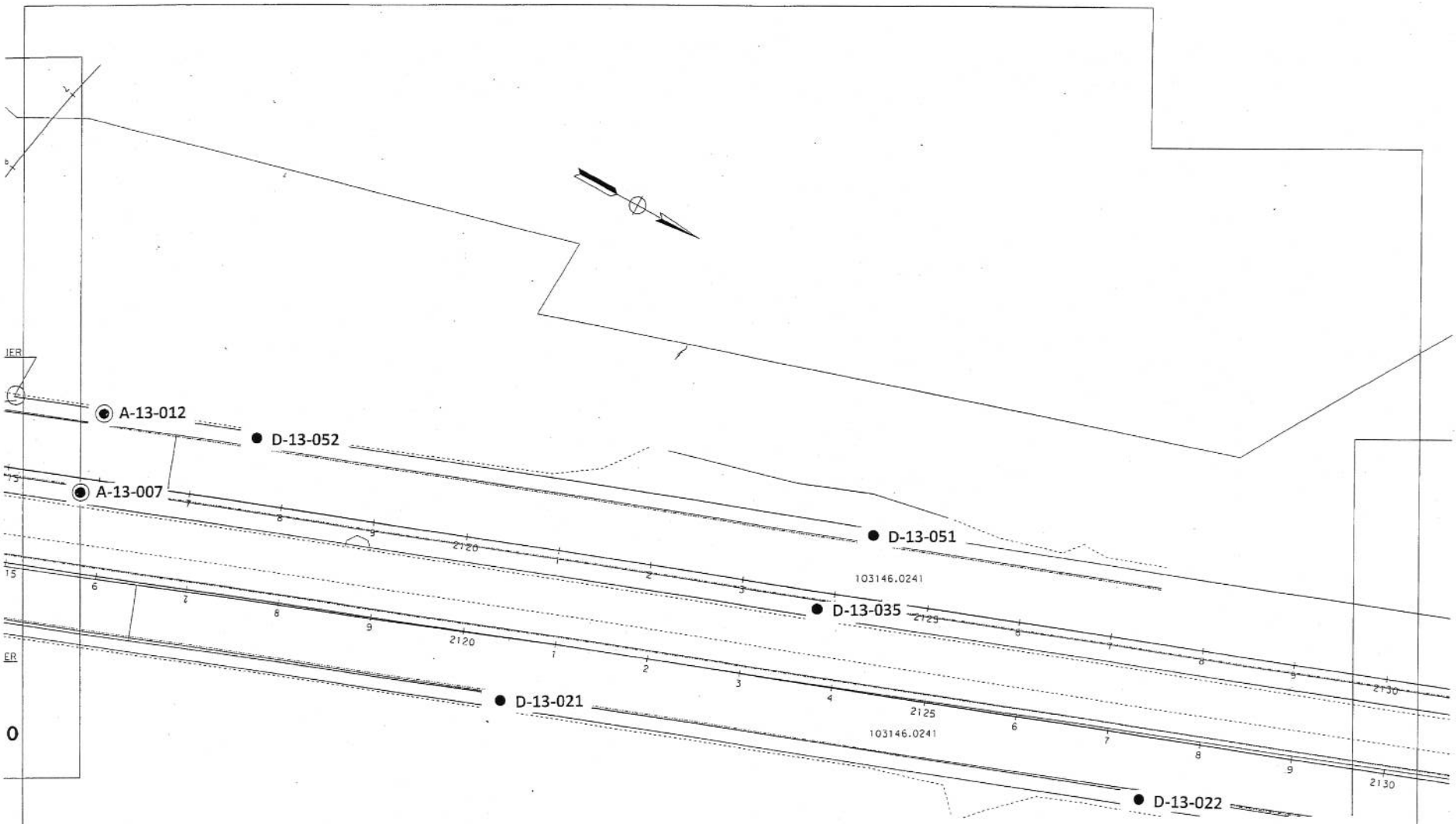

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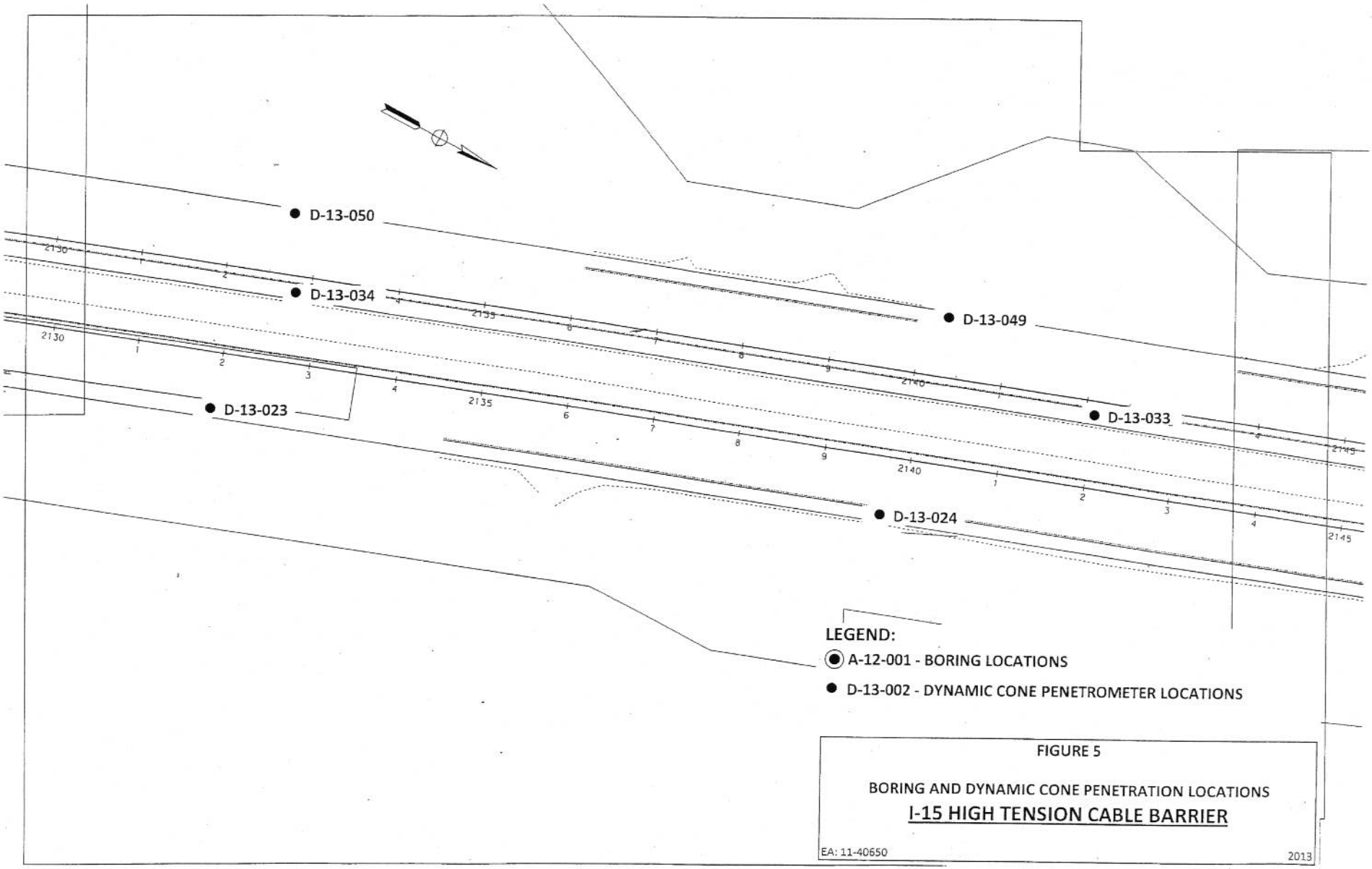

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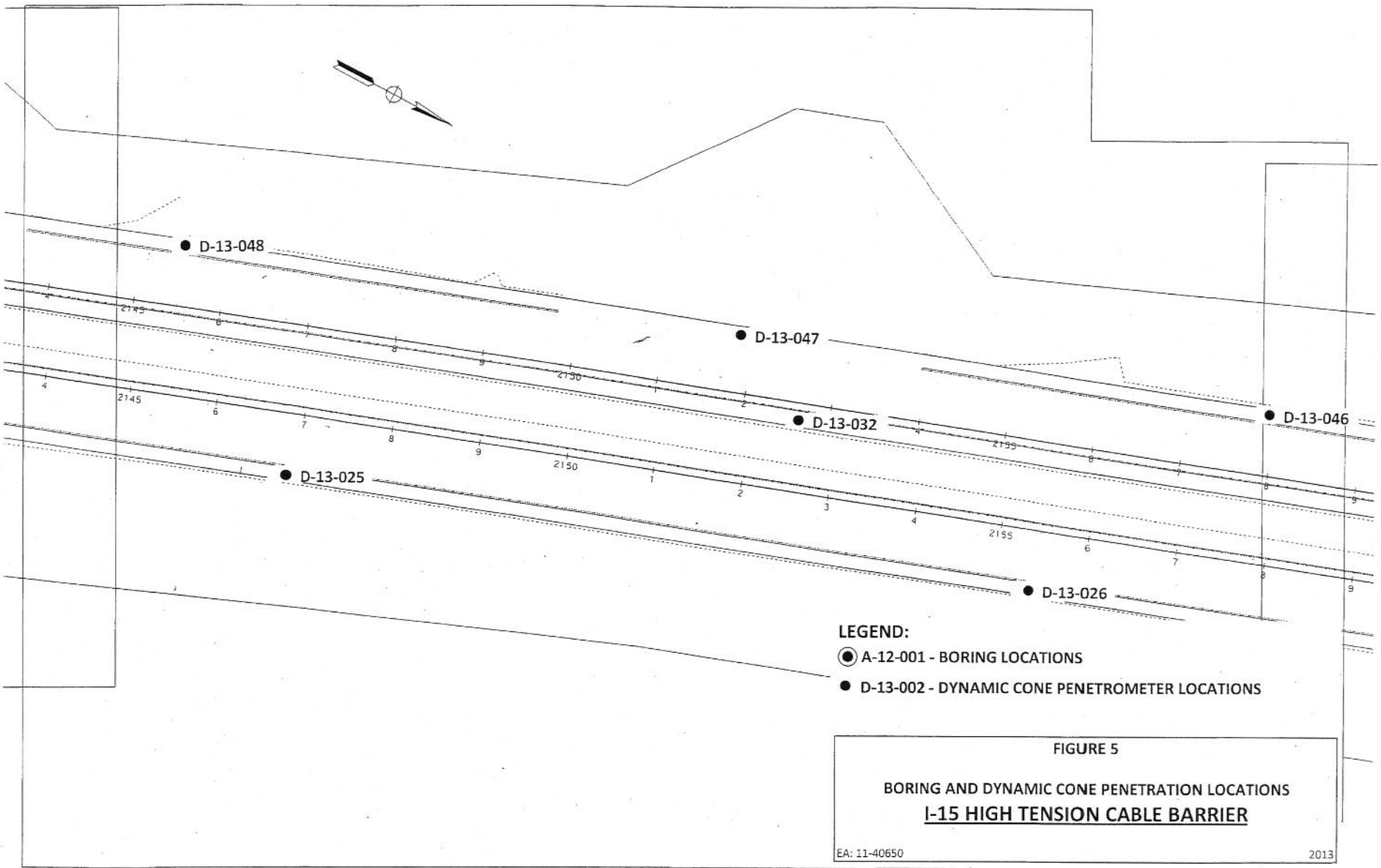

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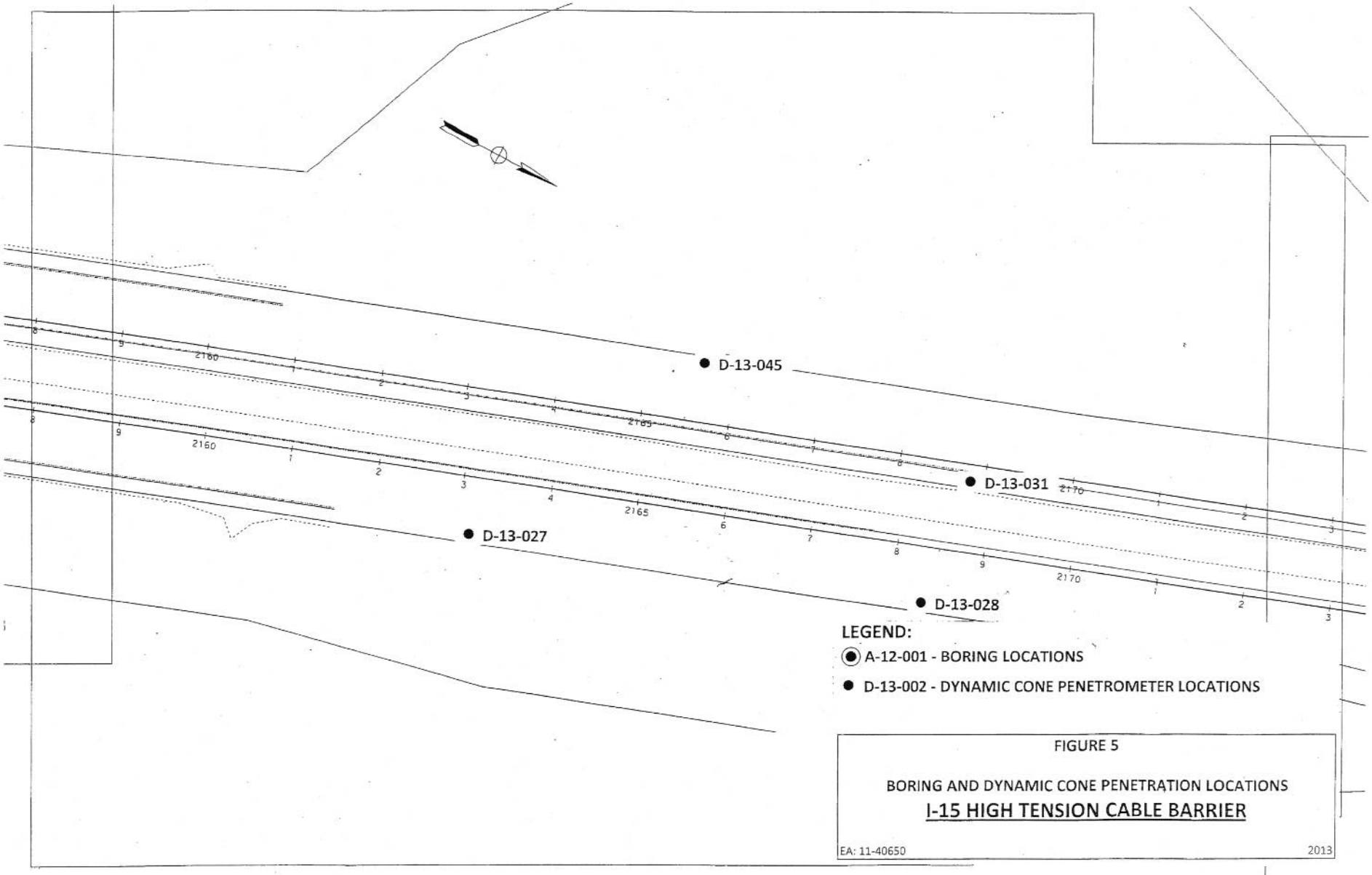

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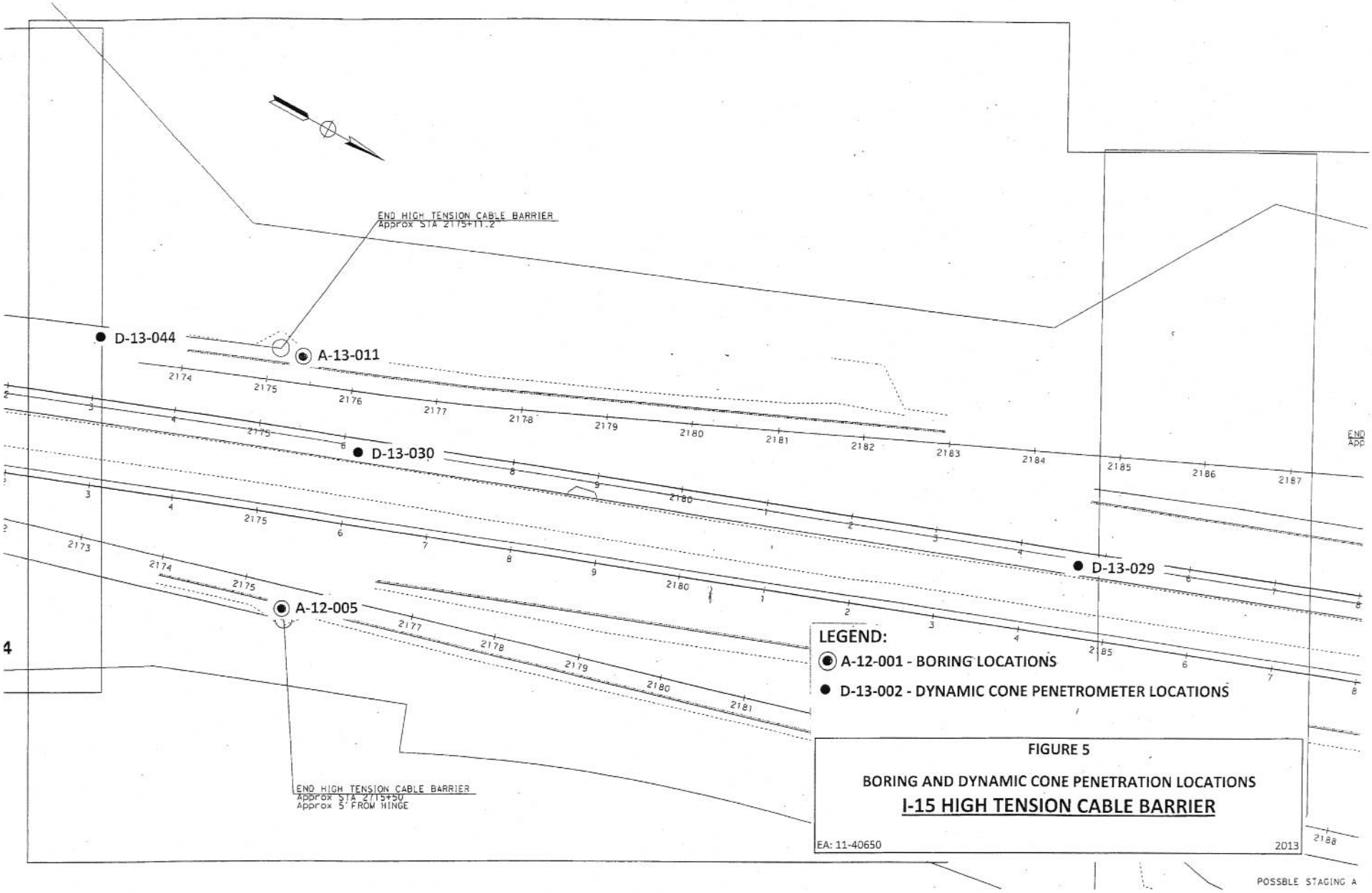

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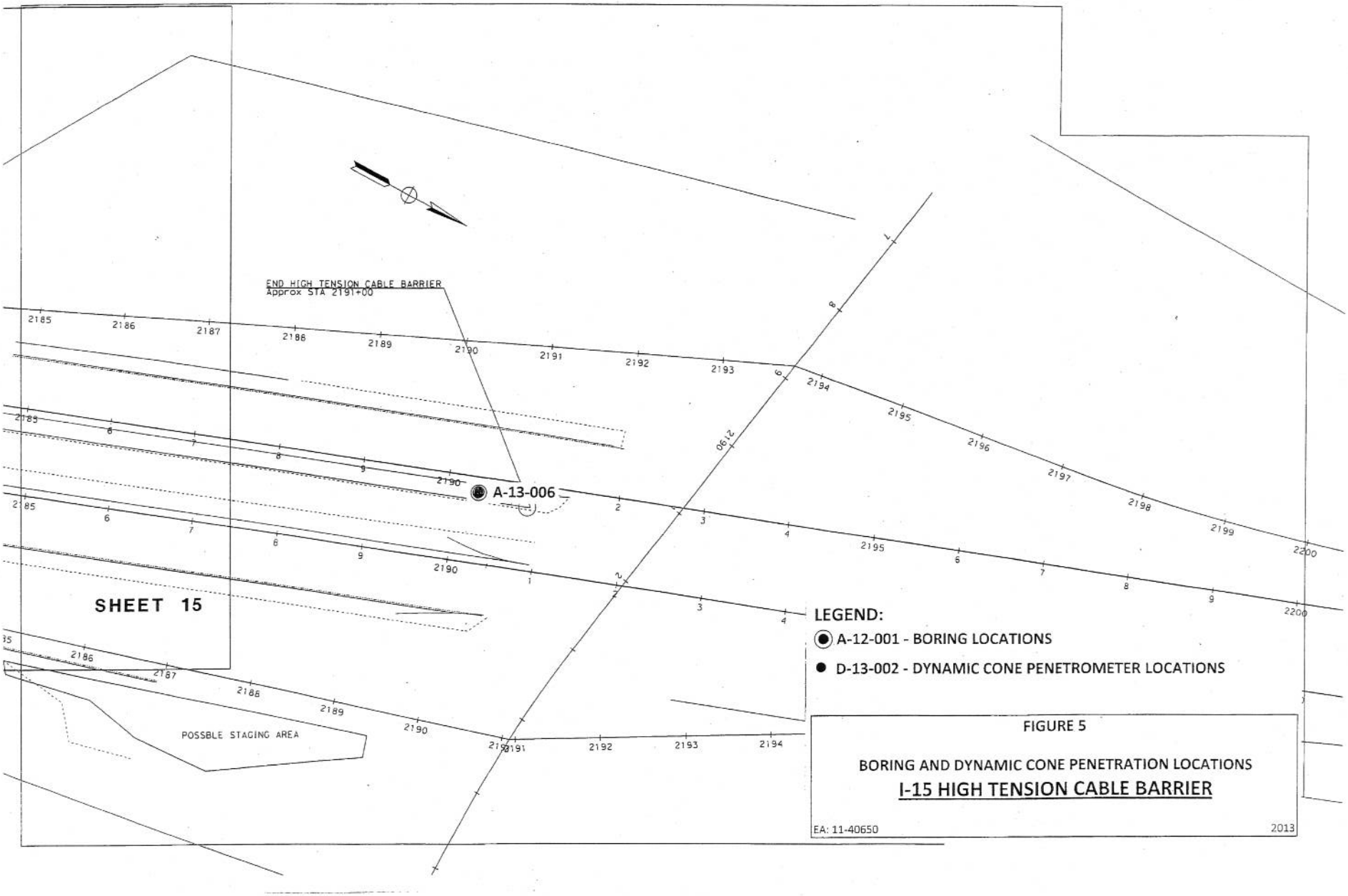

FIGURE 5

BORING AND DYNAMIC CONE PENETRATION LOCATIONS

I-15 HIGH TENSION CABLE BARRIER

EA: 11-40650 2013

Results sent to: JEFF TESAR

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 2/8/2013

Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EA

EFIS: **1100020324**

Dist/Co/Rte/PM **11 / SD /015/ / 36.4-40.6 PM**

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT) START	DEPTH (FT) END	MINIMUM RESISTIVITY[1] (ohm-cm)	pH[1]	CHLORIDE CONTENT[2] (ppm)	SULFATE CONTENT[3] (ppm)	IS SAMPLE CORROSIVE?
SOIL SAMPLE FROM: DEER SPRING RD/GOPHER CANYON									
CR20130024	C130115	A-12-001	5	10	6170	7.91			NO
CR20130025	C130116	A-12-002	5	10	4902	8.1			NO
CR20130026	C130117	A-12-003	5	10	8814	8.73			NO
CR20130027	C130118	A-12-004	5	10	13560	8.12			NO
CR20130028	C130119	A-12-005	5	10	20565	8.28			NO
CR20130029	C130120	A-13-006	5	10	13680	7.37			NO
CR20130030	C130121	A-13-007	5	10	15890	8.61			NO
CR20130031	C130122	A-13-008	5	10	6540	8.7			NO
CR20130032	C130123	A-13-009	5	10	11500	7.56			NO
CR20130033	C130124	A-13-010	5	10	5370	7.94			NO
CR20130034	C130125	A-13-011	5	10	13860	8.08			NO

Note: For structural elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

[1]CT 643, [2]CT 422, [3]CT 417

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT) START	DEPTH (FT) END	MINIMUM RESISTIVITY[1] (ohm-cm)	pH[1]	CHLORIDE CONTENT[2] (ppm)	SULFATE CONTENT[3] (ppm)	IS SAMPLE CORROSIVE?
CR20130035	C130126	A-13-012	5	10	13920	8.58			NO
CR20130036	C130127	A-13-013	5	10	17363	8.25			NO
CR20130037	C130128	A-13-014	5	10	12705	8.05			NO

This site is not corrosive to foundation elements (see note below).

Note: For structural elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

[1]CT 643, [2]CT 422, [3]CT 417

Results sent to: JEFF TESAR

Division of Engineering Services
Materials Engineering and Testing Services
Corrosion and Structural Concrete Field Investigation Branch

Report Date: 2/11/2013

Reported by Michael Mifkovic

CORROSION TEST SUMMARY REPORT - SOIL

EA

EFIS: **1100020324**

Dist/Co/Rte/PM **11 / SD /015/ / 36.4-40.6 PM**

CORROSION LAB #	TL101 #	BORE #	DEPTH (FT) START	DEPTH (FT) END	MINIMUM RESISTIVITY[1] (ohm-cm)	pH[1]	CHLORIDE CONTENT[2] (ppm)	SULFATE CONTENT[3] (ppm)	IS SAMPLE CORROSIVE?
SOIL SAMPLE FROM:	DEER SPRING RD/GOPHER CANYON								
CR20130038	C130129	A-13-015	5	10	346	7.86	19	32	NO

This site is not corrosive to foundation elements (see note below).

Note: For structural elements, the Department considers a site corrosive if one or more of the following conditions exist: pH is 5.5 or less, chloride concentration is 500 ppm or greater, sulfate concentration is 2000 ppm or greater. MSE backfill shall conform to the requirements of section 47-2.02C Structure Backfill in the 2010 Standard Specifications.

[1]CT 643, [2]CT 422, [3]CT 417

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
11	SD	15			

CERTIFIED ENGINEERING GEOLOGIST 4-30-13

PLANS APPROVAL DATE

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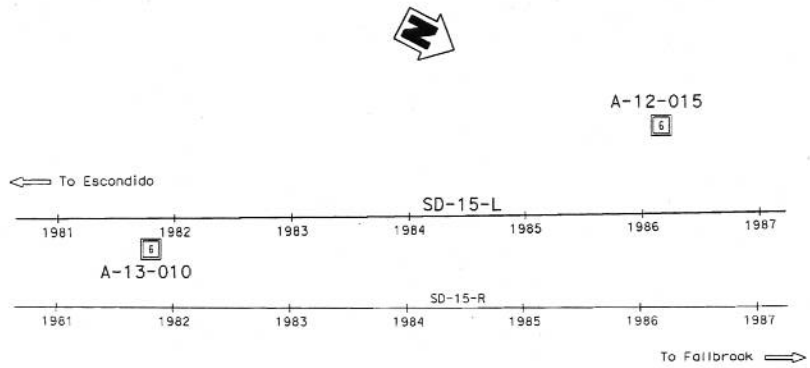
PROFESSIONAL GEOLOGIST Jeff Tesar No. 2137 Exp. 1-31-15 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

This LOTB sheet was prepared in accordance with the Caltrans Soil & Rock Logging, Classification, & Presentation Manual (2010 Edition).

See 2010 Standard Plans A10F and A10G for Soil Legend, and A10H for Rock Legend.

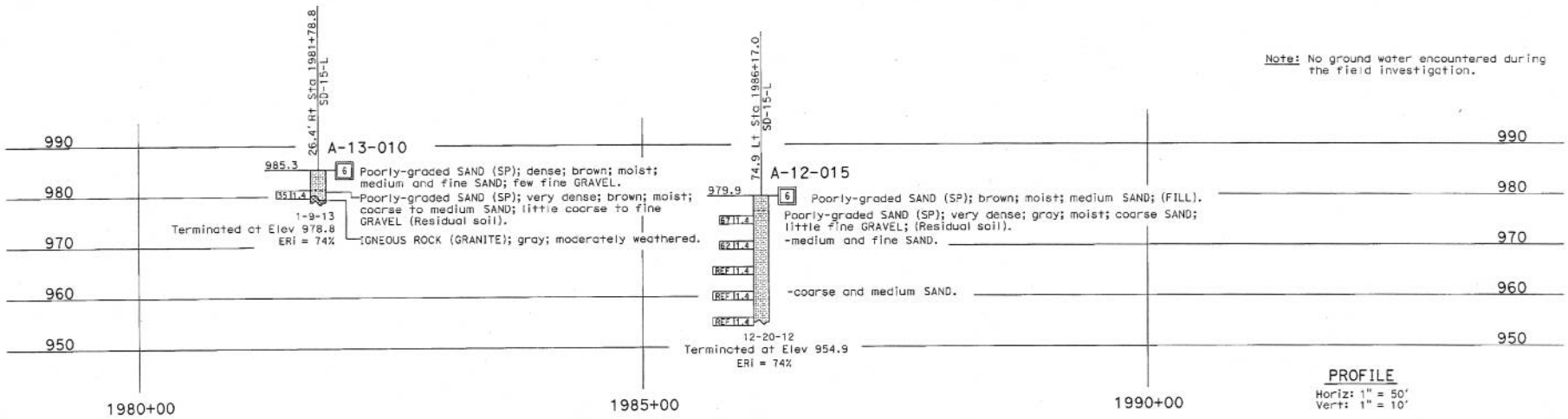
BENCH MARK

15-39.7, 1998
2¼" CADT Disk
Elev 567.82'
N 2,031,096.84
E 6,286,865.19 NAD83 (1991.35)
NAVD88 US Survey Foot Info.



PLAN
1" = 50'

Note: No ground water encountered during the field investigation.



PROFILE
Horiz: 1" = 50'
Vert: 1" = 10'

ENGINEERING SERVICES	MATERIALS AND GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH X	BRIDGE NO. / POST MILE 36.4-40.6	11-SD-15 HIGH TENSION CABLE BARRIER LOG OF TEST BORINGS 1 OF 8
FUNCTIONAL SUPERVISOR	DRAWN BY: W. Tang 02/13	FIELD INVESTIGATION BY: J. Tesar			
NAME: S. Wei	CHECKED BY: Z. Yazdani				

005 CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3643
PROJECT NUMBER & PHASE: 11000203241 CONTRACT NO.: 11-406501
FILE => 11sd15-barrier1.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 04-24-13

REVISION DATES				SHEET	OF
04-24-13				X	X

USERNAME => s128644 DATE PLOTTED => 01-MAY-2013 TIME PLOTTED => 11:15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
11	SD	15			

CERTIFIED ENGINEERING GEOLOGIST 4-30-13

PLANS APPROVAL DATE

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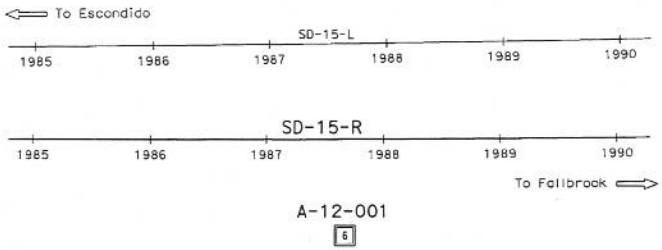
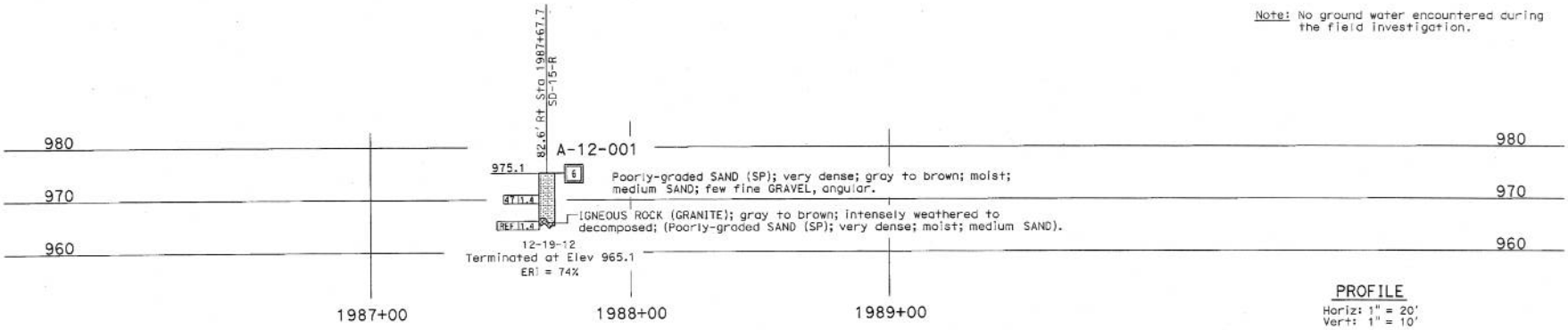
BENCH MARK

15-39.7, 1998
2¼" CADT Disk
Elev 567.82'
N 2,031,096.84
E 6,286,865.19 NAD83 (1991.35)
NAVD88 US Survey Foot Info.



PLAN
1" = 50'

Note: No ground water encountered during the field investigation.



PROFILE
Horiz: 1" = 20'
Vert: 1" = 10'

ENGINEERING SERVICES	MATERIALS AND GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN	BRIDGE NO.	11-SD-15 HIGH TENSION CABLE BARRIER
FUNCTIONAL SUPERVISOR	DRAWN BY: W. Tang 02/13		DESIGN BRANCH X	POST MILE 36.4-40.6	LOG OF TEST BORINGS 2 OF 8
NAME: S. Wei	CHECKED BY: Z. Yazdani	FIELD INVESTIGATION BY: J. Tesar			

CDS CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3643
PROJECT NUMBER & PHASE: 11000203241 CONTRACT NO.: 11-406501
FILE => 11sd15-barrier2.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 04-29-12

REVISION DATES			SHEET	OF
			X	X

USERNAME => s128444 DATE PLOTTED => 01-MAY-2013 TIME PLOTTED => 11:11:15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
11	SD	15			

CERTIFIED ENGINEERING GEOLOGIST 4-30-13

PLANS APPROVAL DATE

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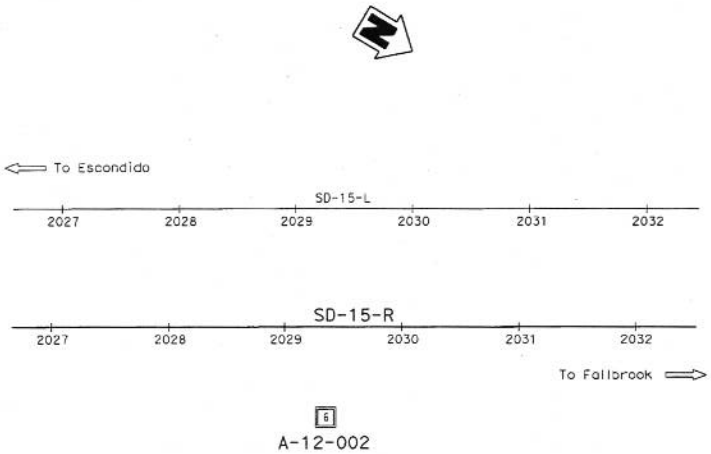
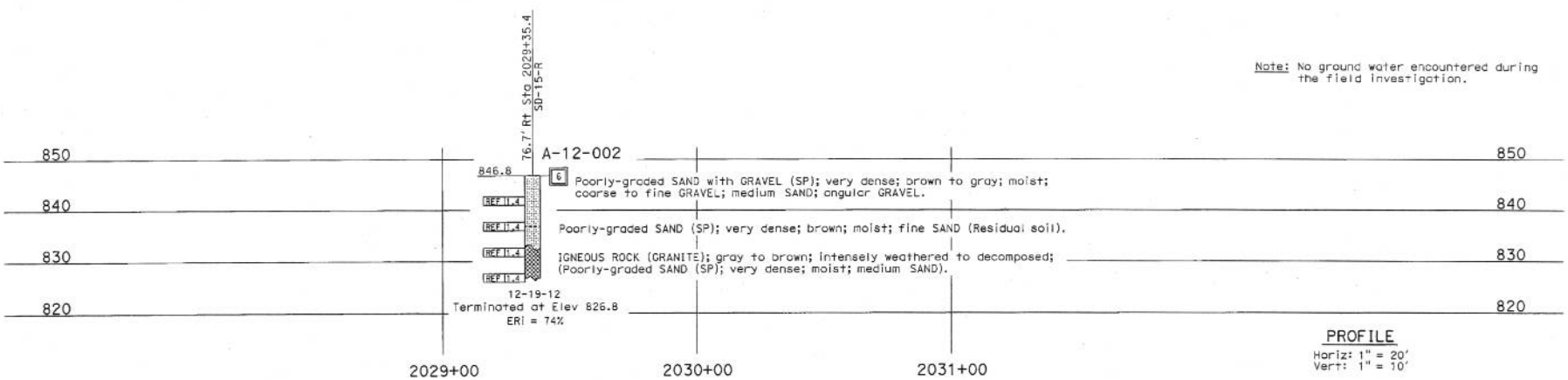
BENCH MARK

15-39.7, 1998
2¼" CADT Disk
Elev 567.82'
N 2,031,096.84
E 6,286,865.19 NAD83 (1991.35)
NAVD88 US Survey Foot Info.



PLAN
1" = 50'

Note: No ground water encountered during the field investigation.



PROFILE
Horiz: 1" = 20'
Vert: 1" = 10'

ENGINEERING SERVICES	MATERIALS AND GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH X	BRIDGE NO. / POST MILE 36.4-40.6	11-SD-15 HIGH TENSION CABLE BARRIER LOG OF TEST BORINGS 3 OF 8
FUNCTIONAL SUPERVISOR NAME: S. Wei	DRAWN BY: W. Tang 02/13 CHECKED BY: Z. Yazdani	FIELD INVESTIGATION BY: J. Tesar			
OGS CIVIL LOG OF TEST BORINGS SHEET	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3		UNIT: 3643 PROJECT NUMBER & PHASE: 11000203241 CONTRACT NO.: 11-406501	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES 11-29-13 SHEET X OF X

FILE => 11sd15-barrier3.dgn

USERNAME => s128444 DATE PLOTTED => 01-MAY-2013 TIME PLOTTED => 11:15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
11	SD	15			

CERTIFIED ENGINEERING GEOLOGIST 4-30-13

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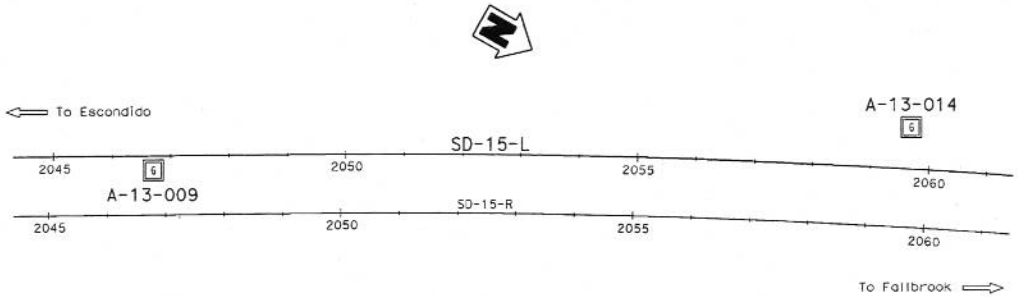
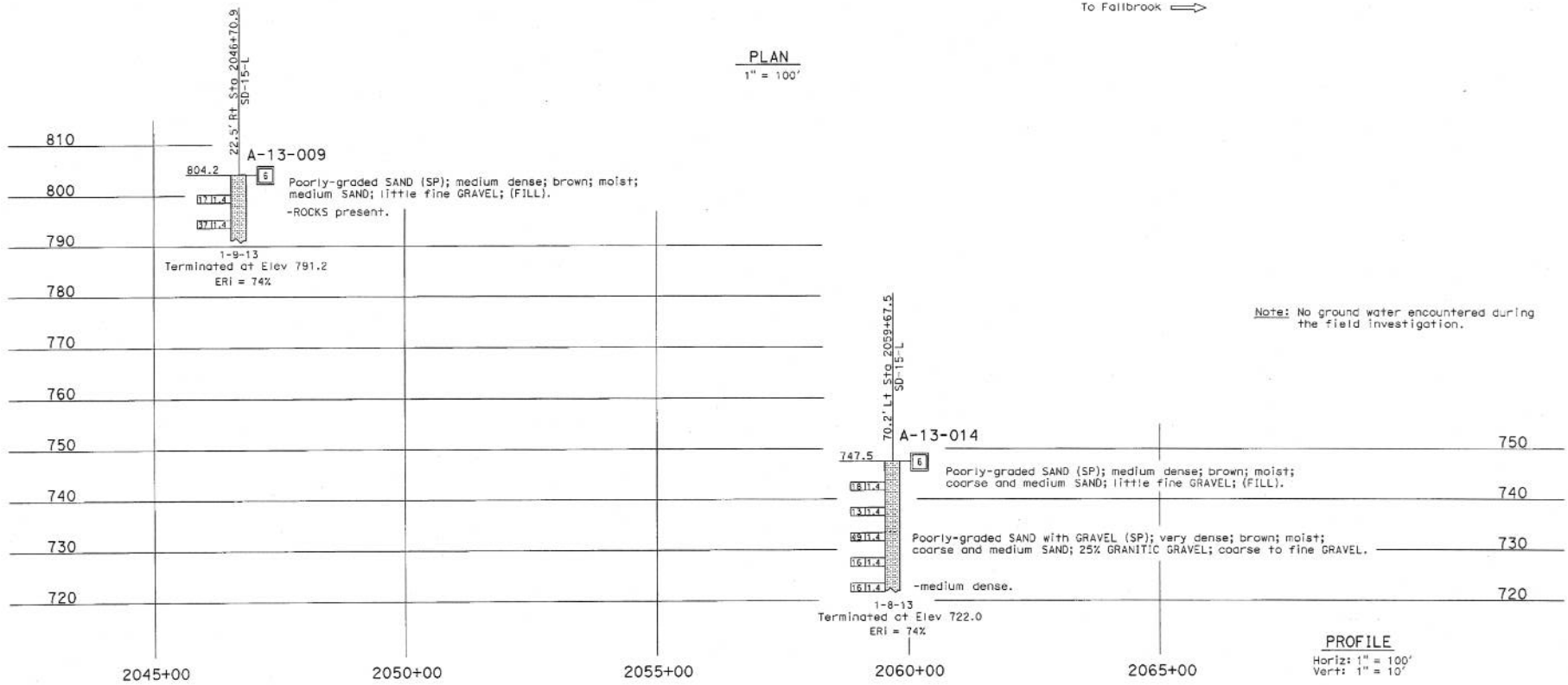
BENCH MARK

15-39.7, 1998
2¼" CADT Disk
Elev 567.82'
N 2,031,096.84
E 6,286,865.19 NAD83 (1991.35)
NAVD88 US Survey Foot Info.



PLAN
1" = 100'



Note: No ground water encountered during the field investigation.

PROFILE
Horiz: 1" = 100'
Vert: 1" = 10'

ENGINEERING SERVICES	MATERIALS AND GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH X	BRIDGE NO. / POST MILE 36.4-40.6	11-SD-15 HIGH TENSION CABLE BARRIER LOG OF TEST BORINGS 4 OF 8
FUNCTIONAL SUPERVISOR NAME: S. Wei	DRAWN BY: W. Tang 02/13 CHECKED BY: Z. Yazdani	FIELD INVESTIGATION BY: J. Tesar			
OGS CIVIL LOG OF TEST BORINGS SHEET	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3		UNIT: 3643 PROJECT NUMBER & PHASE: 11000203241 CONTRACT NO.: 11-406501 FILE => 11sd15-barrier4.dgn	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES 04-24-13 SHEET X OF X

USERNAME => g128444 DATE PLOTTED => 01-MAY-2013 TIME PLOTTED => 11:15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
11	SD	15			

CERTIFIED ENGINEERING GEOLOGIST 4-30-13

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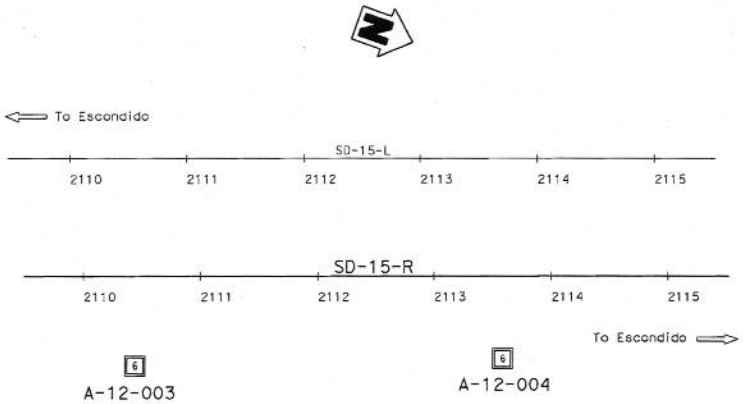
BENCH MARK

15-39.7, 1998
2¼" CADT Disk
Elev 567.82'
N 2,031,096.84
E 6,286,865.19 NAD83 (1991.35)
NAVD88 US Survey Foot Info.



PLAN
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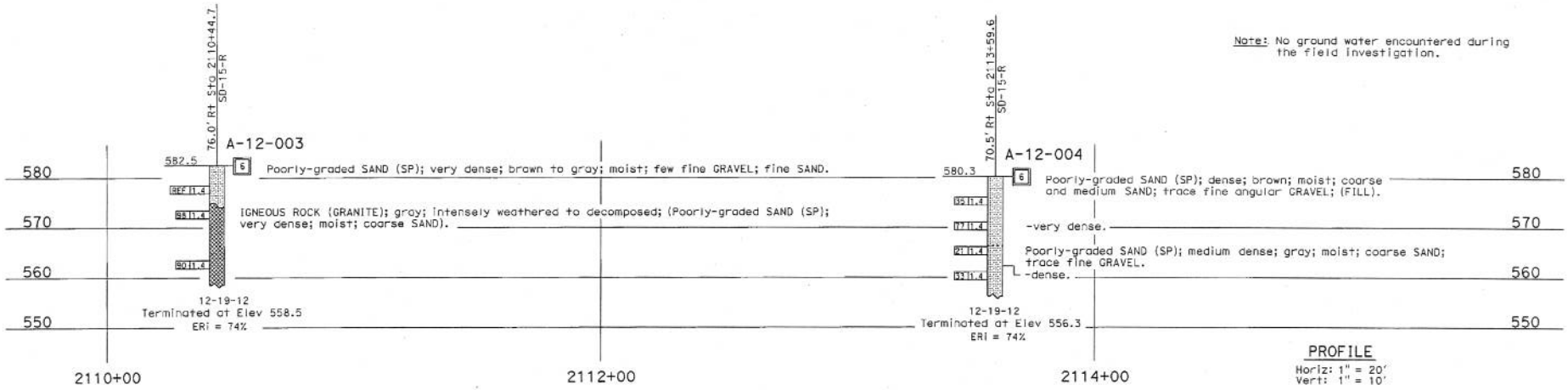

Note: No ground water encountered during the field investigation.

PROFILE
Horiz: 1" = 20'
Vert: 1" = 10'

ENGINEERING SERVICES	MATERIALS AND GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH X	BRIDGE NO. / POST MILE 36.4-40.6	11-SD-15 HIGH TENSION CABLE BARRIER LOG OF TEST BORINGS 5 OF 8
FUNCTIONAL SUPERVISOR NAME: S. Wei	DRAWN BY: W. Tang 02/13 CHECKED BY: Z. Yazdani	FIELD INVESTIGATION BY: J. Tesar			

DOS CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3643
PROJECT NUMBER & PHASE: 11000203241 CONTRACT NO.: 11-406501
FILE => 11sd15-barrier5.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 04-24-13

REVISION DATES | SHEET X | OF X

USERNAME => s128644 DATE PLOTTED => 01-MAY-2013 TIME PLOTTED => 11:15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
11	SD	15			

CERTIFIED ENGINEERING GEOLOGIST 4-30-13

PROFESSIONAL GEOLOGIST Jeff Tesar No. 2137 Exp. 1-31-15 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

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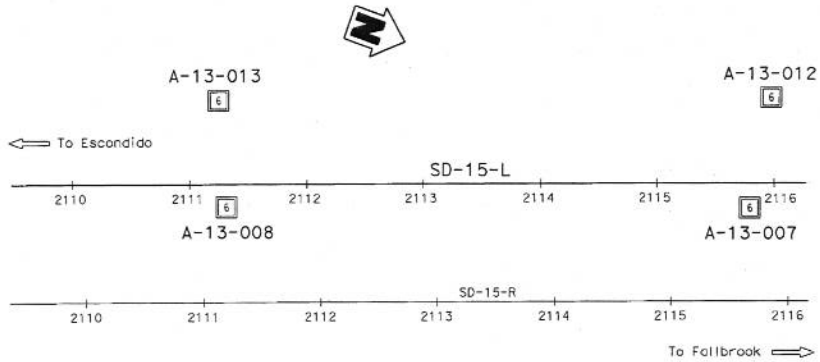
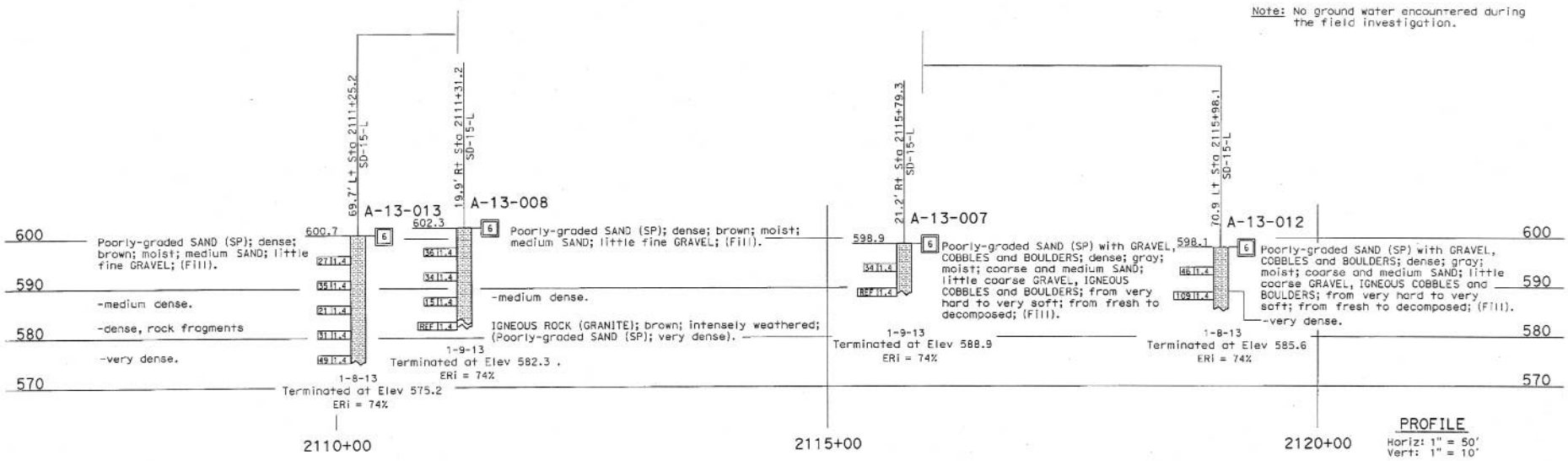
BENCH MARK

15-39.7, 1998
2¼" CADT Disk
Elev 567.82'
N 2,031,096.84
E 6,286,865.19 NAD83 (1991.35)
NAVD88 US Survey Foot Info.



PLAN
1" = 50'

Note: No ground water encountered during the field investigation.



PROFILE
Horiz: 1" = 50'
Vert: 1" = 10'

ENGINEERING SERVICES	MATERIALS AND GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH X	BRIDGE NO. / POST MILE 36.4-40.6	11-SD-15 HIGH TENSION CABLE BARRIER LOG OF TEST BORINGS 6 OF 8
FUNCTIONAL SUPERVISOR NAME: S. Wei	DRAWN BY: W. Tang 02/13 CHECKED BY: Z. Yazdani	FIELD INVESTIGATION BY: J. Tesar			
OGS CIVIL LOG OF TEST BORINGS SHEET	ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3		UNIT: 3643 PROJECT NUMBER & PHASE: 11000203241 CONTRACT NO.: 11-406501	DISREGARD PRINTS BEARING EARLIER REVISION DATES	REVISION DATES 04-30-13 SHEET X OF X

FILE => 11sd15-barrier6.dgn

USERNAME => s128444 DATE PLOTTED => 01-MAY-2013 TIME PLOTTED => 11:15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
11	SD	15			

CERTIFIED ENGINEERING GEOLOGIST 4-30-13

PLANS APPROVAL DATE

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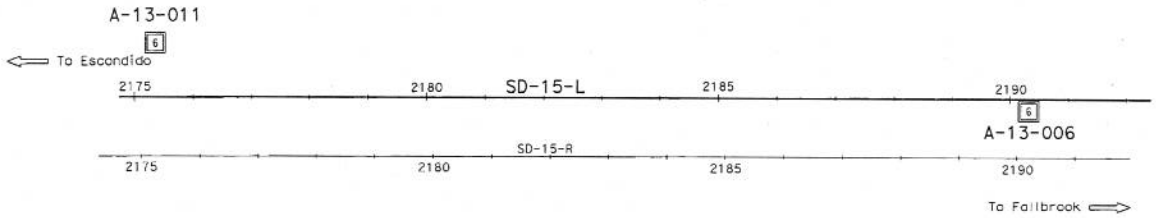
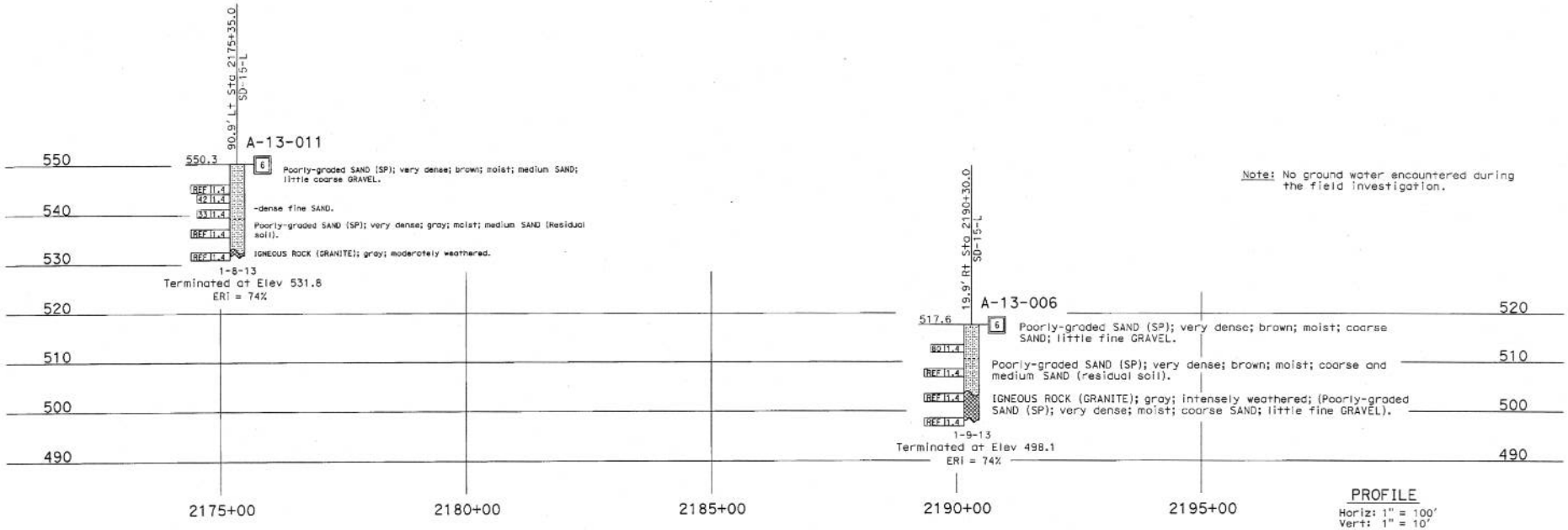
BENCH MARK

15-39.7, 1998
2¼" CADT Disk
Elev 567.82'
N 2,031,096.84
E 6,286,865.19 NAD83 (1991.35)
NAVD88 US Survey Foot Info.



PLAN
1" = 100'



Note: No ground water encountered during the field investigation.

PROFILE
Horiz: 1" = 100'
Vert: 1" = 10'

ENGINEERING SERVICES	MATERIALS AND GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN	BRIDGE NO.	11-SD-15 HIGH TENSION CABLE BARRIER
FUNCTIONAL SUPERVISOR	DRAWN BY: W. Tang 02/13	FIELD INVESTIGATION BY:	DESIGN BRANCH X	POST MILE 36.4-40.6	LOG OF TEST BORINGS 7 OF 8
NAME: S. Wei	CHECKED BY: Z. Yazdani	J. Tesar			

OGS CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3643
PROJECT NUMBER & PHASE: 11000203241
CONTRACT NO.: 11-406501
FILE => 11sd15-barrier7.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 06-24-13

REVISION DATES | SHEET X | OF X

USERNAME => s125414 DATE PLOTTED => 01-MAY-2013 TIME PLOTTED => 11:15

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No	TOTAL SHEETS
11	SD	15			

CERTIFIED ENGINEERING GEOLOGIST 4-30-13

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PROFESSIONAL GEOLOGIST — Jeff Tesar — No. 2137 — Exp. 1-31-15 — CERTIFIED ENGINEERING GEOLOGIST — STATE OF CALIFORNIA

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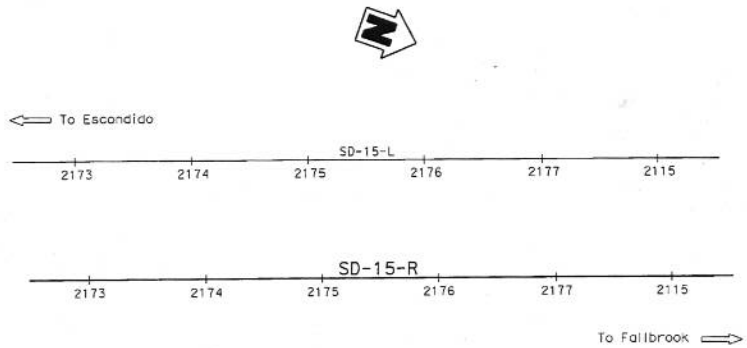
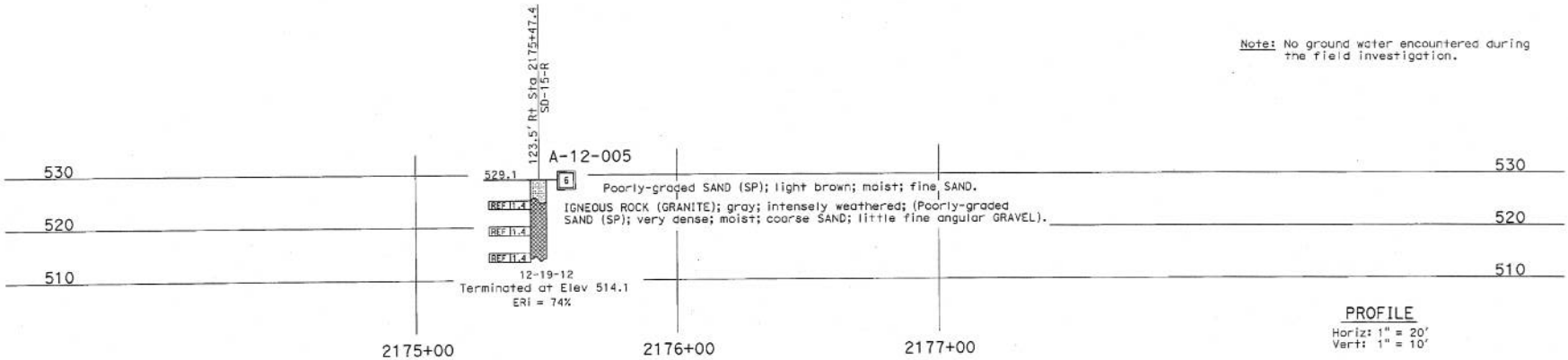
BENCH MARK

15-39.7, 1998
2¼" CADT Disk
Elev 567.82'
N 2,031,096.84
E 6,286,865.19 NAD83 (1991.35)
NAVD88 US Survey Foot Info.



PLAN
1" = 50'

Note: No ground water encountered during the field investigation.



PROFILE
Horiz: 1" = 20'
Vert: 1" = 10'

ENGINEERING SERVICES	MATERIALS AND GEOTECHNICAL SERVICES	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF ENGINEERING SERVICES STRUCTURE DESIGN DESIGN BRANCH X	BRIDGE NO. / POST MILE 36.4-40.6	11-SD-15 HIGH TENSION CABLE BARRIER LOG OF TEST BORINGS 8 OF 8
FUNCTIONAL SUPERVISOR NAME: S. Wei	DRAWN BY: W. Tang 02/13 CHECKED BY: Z. Yazdani	FIELD INVESTIGATION BY: J. Tesar			

DGS CIVIL LOG OF TEST BORINGS SHEET

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

UNIT: 3643
PROJECT NUMBER & PHASE: 11000203241
CONTRACT NO.: 11-406501
FILE => 11sd15-barrier8.dgn

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES				SHEET	OF
04-24-12				X	X

USERNAME => S128444 DATE PLOTTED => 01-MAY-2013 TIME PLOTTED => 11:15