INFORMATION HANDOUT

For Contract No. 11-406704
At 11-SD-5-R58.1/R72.4

Identified by
Project ID 1100020342

MATERIALS INFORMATION

Geotechnical Design Report, dated April 1, 2014

Added per Addendum #5, Dated April 2, 2014

CALIFORNIA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL DESIGN REPORT

SLAB REPLACEMENT AND PAVEMENT REHABILITATION ON INTERSTATE 5 FROM COCKLEBURR OVERCROSSING TO CRISTIANITOS ROAD OVERCROSSING

11-SD-5-PM 58.1 / 72.4

EA: 11-406701
EFIS: 1100020342

April 1, 2014

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. Dulie Malikyar
District 11
Division of Design

Date: April 1, 2014
File: 11-SD-5-(PM) 58.1/72.4
EA: 11-406701
EFIS: 1100020342

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

Subject: Geotechnical Design Report for a Slab Replacement and Pavement Rehabilitation on Interstate 5 From Cockleburr Overcrossing to Cristianitos Road Overcrossing.

Pursuant to your request, the Office of Geotechnical Design-South 2 (OGDS2) has prepared this Geotechnical Design Report for the proposed Slab Replacement and Pavement Rehabilitation on Interstate 5 (I-5) from Cockleburr Overcrossing to Cristianitos Road. This report presents the geotechnical conditions as evaluated from field test data, research of archives, and engineering analysis. Project structural section recommendations are provided by the District 11 Office of Pavement Engineering Section.

OGDS2 staff will be available for further assistance. Should you have any questions or comments regarding this report, please contact Jeff Tesar at (858) 929-3236.

J. Tesar

Jeff Tesar, C.E.G.
Engineering Geologist
Office of Geotechnical Design - South 2

REGISTERED GEOLOGIST
JEFF J. TESAR
No. 2137
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

JT/BH

cc:	District Project Manager:	Bruce Lambert
	District Materials Engineer:	Art Padilla
	Office Chief, OGDS2:	Abbas Abghari
	Branch Chief, OGDS2: BH	Shawn Wei

TABLE OF CONTENTS

Section **Page**

1.0 INTRODUCTION 1

2.0 EXISTING FACILITIES AND PROPOSED IMPROVEMENTS 1

3.0 PERTINENT REPORTS AND INVESTIGATIONS 1

4.0 PHYSICAL SETTING 1
- 4.1 Climate 2
- 4.2 Topography & Drainage 2
- 4.3 Man-Made and Natural Features of Engineering and Construction Significance 2
- 4.4 Regional Geology and Seismicity 2

5.0 EXPLORATION 3
- 5.1 Drilling and Sampling 3
- 5.2 Geologic Mapping 3
- 5.3 Geophysical Studies 3

6.0 GEOTECHNICAL TESTING 4

7.0 GEOTECHNICAL CONDITIONS 4
- 7.1 Site Geology 4
  - 7.1.1 Lithology 4
  - 7.1.2 Stability of Existing Slopes 4
- 7.2 Subsurface Conditions 4
  - 7.2.1 Soils 4
  - 7.2.2 Groundwater 5
- 7.3 Surface Water 5
  - 7.3.1 Scour 5
  - 7.3.2 Erosion 5
- 7.4 Project Site Seismicity 5
  - 7.4.1 Ground Motions 6
  - 7.4.2 Ground Rupture 6

TABLE OF CONTENTS (continued)

Section **Page**

8.0 GEOTECHNICAL ANALYSIS AND DESIGN 6
8.1 Dynamic Analysis 6
8.1.1 Parameter Selection 6
8.2 Cuts and Excavations 6
8.2.1 Stability 6
8.2.2 Rippability 6
8.2.3 Grading Factors 6
8.3 Embankments 7
8.4 Sound Walls 7
8.5 Earth Retaining Systems 7
8.6 Culvert Foundations 7
8.7 Minor Structure Foundations 7
9.0 MATERIAL SOURCES 7
10.0 MATERIAL DISPOSAL 7
11.0 CONCLUSIONS 7
12.0 DESIGN ADVISORIES 7
13.0 ACTUAL VS. REPORTED SITE CONDITONS 7

TABLES

Table 1: Lane #4, Existing Structural Section Data

FIGURES

Figure 1: Project Location Layout
Figure 2: Aerial Layouts
Figure 3: Geologic Map
Figure 4: Regional Fault Map
Figure 5: Cone Penetrometer Test Locations

APPENDICES

APPENDIX A Logs of CPT Testing
APPENDIX B Survey Data

1.0 INTRODUCTION

This report has been prepared by the OGDS2 to investigate five sections of the distressed pavement along I-5, between Cockleburr Overcrossing and Cristianitos Road Overcrossing, in San Diego County, California, hereafter referred to as the project. To improve traffic safety along this interval of I-5, distressed sections of the Lane #4 slab are proposed to be replaced and rehabilitated. A project location layout is presented in Figure 1.

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

The purpose of this report is to document subsurface geotechnical conditions. In addition, 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-5 corridor is a four-lane freeway constructed in 1968 utilizing cut and fill grading. The project alignment extends from Cockleburr Overcrossing (Station 3099+00, "SD-5" Line) to Cristianitos Road Overcrossing (Station 32+85, "OR-5" Line). 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 several sections of the distressed Lane #4 slab are to be replaced and rehabilitated

3.0 PERTINENT REPORTS AND INVESTIGATIONS

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

"Interstate 5 to SR-78 Connector Widening, GDR", 2008, By Tesar and Jandal.

Caltrans As Built Plans For the Construction of State Highway, 1968.

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

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

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

Geologic map of Northwestern Part of San Diego County, Califorinia, 1996, by S.Tan and M. Kennedy.

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 of the City of Oceanside that has a Mediterranean to semi-arid climate characterized by warm, dry summers and mild winters with moderate precipitation. The extended summer and dry period lasts from mid April to late October. Temperatures are mild to warm in the summer. The average low temperature during the summer is sixty degrees Fahrenheit and the average high temperature is seventy one degrees Fahrenheit. In winter the average low temperature is forty five degrees Fahrenheit and the average high temperature is sixty three degrees Fahrenheit. Winter is the rainy period and lasts from mid November to mid April. Costal fog is common. On average there is approximately 12 inches of rainfall in Oceanside annually (County of San Diego, Average Annual Precipitation, 1984.)

4.2 Topography & Drainage

The project area is located along the coastal plain at the southern end of the Santa Ana Mountains within the Peninsular Ranges of southwestern California. To the west and southwest it is bounded by the Pacific coast and to the east and northeast it is bounded by foothills of the Santa Ana Mountains. These foothills have a gently rolling topography that slopes uniformly to the southeast. Mountain peaks to the east of the project location reach an elevation of 3,189 feet above mean sea level (MLS) (Santa Margarita Peak.)

Within the areas where the subsurface investigation was conducted current roadway elevations range from a low of 87.6 feet above MSL at about Station 3726+66 to a high of approximately 174.4 feet above MSL at about Station 3587+92.26. Existing roadway fill slopes are inclined 2:1 (H:V) or flatter and their maximum height is about 20 feet. Aerial layouts depicting the areas where subsurface investigation was conducted are presented in Figure 2.

Onsite rainfall and runoff water is collected by the system of existing drainage facilities including ditches, gutters, drainage inlets side drains, cross culverts, and collection basins. Water collected by these drainage features is conveyed eastward and, through the natural water courses of creeks, channels, and arroyos, it is channeled to the Pacific Ocean.

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 on a coastal plain belonging to the Peninsular Ranges Geomorphic Province of California. This coastal plain is underlain by Holocene to late Pleistocene unconsolidated sedimentary deposits that include alluvium in canyon bottoms and coastal terraces. These deposits are underlain by Eocene and Pliocene-age sedimentary rocks of marine and non-marine origin that in turn are underlain by Cretaceous to Triassic bedrock that include highly consolidated and cemented rocks and plutonic and metamorphic rocks.

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 Palos Verdes Hills-Coronado Banks, Whittier-Elsinore, and Newport-Inglewood –Rose Canyon. All of these faults, especially the Newport-Inglewood--Rose Canyon, are potential seismic sources that could cause moderate to intense shaking at the project site.

5.0 EXPLORATION

To assess subsurface soil conditions, a subsurface investigation program was conducted. The program consisted of performing Cone Penetrometer Tests (CPT) utilizing a truck-mounted Caltrans CPT rig. To assess the condition of the existing pavement structural section at the locations of CPT tests, a coring program was performed by the District 11 Office of Pavement Engineering Section utilizing Caltrans Foremost Coring rig.

5.1 Drilling, Sounding and Sampling

The CPT testing program conducted in February 2014, involved pushing a 1.41-inch diameter 60°-shaped cone mounted on a rod through the subsurface soils at a rate of about 0.5 inch per second. The CPT rig operated electronic friction cone and piezocone penetrometer. These devices continuously logged and produced a computerized log of tip and sleeve resistance (stress), the ratio between the two, induced pore pressure just behind the tip, pore pressure ratio (change in pore pressure divided by measured pressure) and litholgic interpretation of each 0.8 inch interval. This computerized printed log was then analyzed/interpreted utilizing CPT-specific geotechnical software resulting in final printed logs of CPT testing. A total of 52 CPT tests were performed for this project. Tests were performed to a maximum depth of 17 feet below the bottom of the existing cement treated base (approximately 1.25 feet below the pavement surface.) The logs of CPT testing for all tests performed are presented in Appendix A. The tests locations are presented in Figure 5.

CPT testing locations were surveyed by the District 11 Office of Survey. Data obtained during this survey task is attached to this report in Appendix B.

Coring was conducted concurrently with the CPT testing. It consisted of drilling through the existing pavement with the use of a four inch diameter diamond drill bit utilizing a wet method. This drilling produced core samples that were studied. The results of the coring program are presented in Table 1.

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

The CPT testing program is described in Section 5.1 of this report. No other geotechnical testing was conducted for the preparation of this report.

7.0 GEOTECHNICAL CONDITIONS

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

7.1 Site Geology

The freeway along the project alignment is located on a relatively level coastal plane. Soils above grade were cut and placed as fill embankment within zones that were below the grade. Therefore, the freeway along the project alignment is underlain by fill materials derived from nearby cuts or it is underlain by native terrace deposits.

7.1.1 Lithology

(Qf) Artificial Fill: 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.

(Qya) Younger Alluvium: Boulders, gravel, sand, silt and clay beneath alluvial fans and plains.

(Q0a): Older Alluvium"--Arkosic gravel, sand, silt and clay generally weathered and unconsolidated.

7.1.2 Stability of Existing Slopes

The current I-5 roadway alignment was achieved by cut and fill grading. The majority of fill slopes are located on the southwestern side of the freeway and they are inclined 2:1 (H:V) or 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 subsurface soil conditions as determined from CPT testing and its computerized litholgic interpretation.

7.2.1 Existing Pavement Structural Section

At the locations where the CPT-testing program was conducted the existing structural section for the Lane #4 was found to consist of a 0.75 foot thick layer of the portland cement concrete (PCC) underlain by a layer of the cement treated base (CTB). The thickness of the CTB layer ranged from 0.25 to 0.60 foot. In general, the existing pavement structural section it is consistent with the as built plans of 1968.

7.2.2 Soils

At the locations where the CPT testing program was conducted, an approximately one foot thick layer of gravelly materials was detected below the pavement structural section. This layer, per as built plans of 1968, consists of aggregate base (AB) Class 2 and aggregate subbase (AS) Class 4.

This layer was found to be underlain by granular soils consisting of sands, silts, and, at some locations, gravels that were detected to be in the medium dense condition. For all testing locations these soils extended to a minimum depth of about five feet below the bottom of the gravelly layer. No voids or zones of soils in loose condition were detected within this layer and within underlying soils.

7.2.3 Groundwater

Groundwater was not investigated for this report. However, during the reconnaissance and subsurface investigation phases of this project water was observed to pool on sections of theLane #4 # and at the shoulder joint. This water was present during the rain and for a few days after. It was observed that vehicles passing over these distressed and wet sections were inducing subsurface water to squirt up through the cracks and pavement joints. This water was observed to be silty and sandy suggesting that it was flushing out fine particles from the layers of AB and AS.

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 condition of the fill materials that were utilized for fill embankment 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 the Newport--Inglewood--Rose Canyon Fault Zone. Ground motion caused by this and nearby faults seismic events should be anticipated during the design life of the project features. The Newport-Inglewood-Rose Canyon Fault Zone is trending in a northwesterly direction, and laying about 6.3 miles southwest 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 25.4 miles northeast of the project site. This fault is considered capable of producing an earthquake with a Maximum Credible Magnitude of 7.5 on a Richter scale. The Palos Verdes Hills-Coronado Banks Fault trending in northwesterly direction is located about 23.0 miles southwest of the project site. This active fault is considered capable of producing an earthquake with a Maximum Credible Magnitude of 7.75 on a Richter scale. The Newport-Inglewood-Rose Canyon Fault Zone is 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, Whittier-Elsinore , and Palos Verdes Hills-Coronado Banks 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, and 7.75 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

The analyses of cuts and excavations do not apply to this project.

8.2.1 Stability

The stability analyses of excavations do not apply to this project.

8.2.2 Rippability

The rippability analyses of the subsurface soils do not apply to this project.

8.2.3 Grading Factors

No grading will be performed on the project. 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

Within the project limits, no sites were identified that would be adversely impacted by the placement of excess material.

11.0 CONSTRUCTION CONSIDERATIONS

Construction considerations for this project were provided by District 11 Office of Pavement Engineering Section in their memorandum issued on February 18, 2014, and titled "*Structural Section Recommendations – Addendum.*"

12.0 CONCLUSIONS

Along the five section of the project alignment where subsurface investigation by CPT testing was conducted, soils that underlay the structural section of Lane #4 were found to be geotechnically competent. No unsuitable material was detected underlying the existing structural section.

13.0 ACTUAL VS. REPORTED SITE CONDITIONS

Characterization of the geotechnical conditions presented in this report are based on site reconnaissance, subsurface investigation, as-built plans, topographic and geologic maps, geologic literature, archival reports, and engineering analysis. The subsurface soil evaluation contained in this report is 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.

Table 1. Field survey results of the existing structural section for the #4 lane

CORING FOR CPT No.	PORTLAND CEMENT CONCRETE Thickness (ft)	CEMENT TREATED BASE Thickness (ft)
CPT-14-001	0.70	0.50
CPT-14-002	0.75	0.50
CPT-14-003	0.75	0.35
CPT-14-004	0.75	0.40
CPT-14-005	0.75	0.50
CPT-14-006	0.75	0.50
CPT-14-007	0.72	0.40
CPT-14-008	0.75	0.25
CPT-14-009	0.73	0.32
CPT-14-010	0.73	0.28
CPT-14-011	0.75	0.50
CPT-14-012	0.75	0.50
CPT-14-013	0.75	0.65
CPT-14-014	0.75	0.65
CPT-14-015	0.75	0.60
CPT-14-016	0.75	0.55
CPT-14-017	0.75	0.40
CPT-14-018	0.75	0.30
CPT-14-019	0.80	0.30
CPT-14-020	0.65	0.55
CPT-14-021	0.70	0.40
CPT-14-022	0.30 (Asphalt Concrete)	
CPT-14-023	0.75	0.55
CPT-14-024	Not Cored	
CPT-14-025	0.75	0.45
CPT-14-026	0.80	0.40
CPT-14-027	0.75	0.45
CPT-14-028	0.75	0.55
CPT-14-029	0.75	0.55
CPT-14-030	0.75	0.55
CPT-14-031	0.75	0.55
CPT-14-032	0.75	0.45
CPT-14-033	0.75	0.55
CPT-14-034	0.75	0.55
CPT-14-035	0.75	0.50
CPT-14-036	0.75	0.50
CPT-14-037	0.80	0.45
CPT-14-038	1.30	0.00

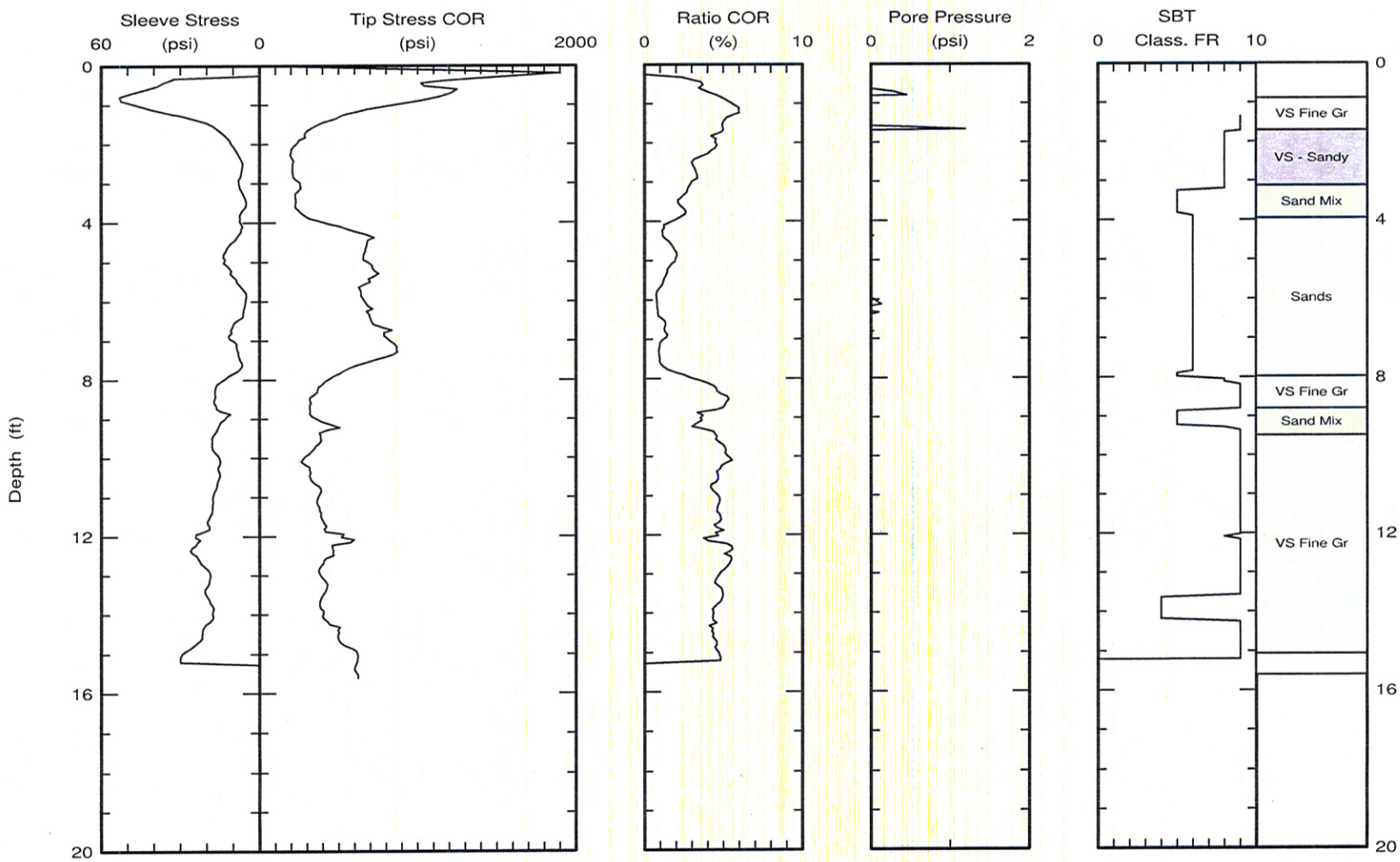
CORING FOR CPT No.	PORTLAND CEMENT CONCRETE Thickness (ft)	CEMENT TREATED BASE Thickness (ft)
CPT-14-039	0.78	0.5
CPT-14-040	0.75	0.55
CPT-14-041	0.75	0.55
CPT-14-042	0.85	0.50
CPT-14-043	0.75	0.55
CPT-14-044	0.75	0.55
CPT-14-045	0.75	0.45
CPT-14-046	0.78	0.45
CPT-14-047	0.75	0.55
CPT-14-048	0.78	0.52
CPT-14-049	0.80	0.40
CPT-14-050	0.75	0.45
CPT-14-051	0.75	0.45
CPT-14-052	0.75	0.60

APPENDICES

Appendix A: Logs of CPT Testing

Appendix B: Survey Data

Applied Research Associates, Inc. South Royalton, VT 05068 802-763-8348 cpt@ned.ara.com www.ara.com	Northing: 3319.5198563 Easting: 117 Easting: 11729.2386150 W Elevation: 43.1024 M	Date: 27/Jan/2014 Test ID: 27J01-B1-1 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-001



Maximum depth: 15.61 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 27J01-B1-1
File: CPT27J1401C.ecp

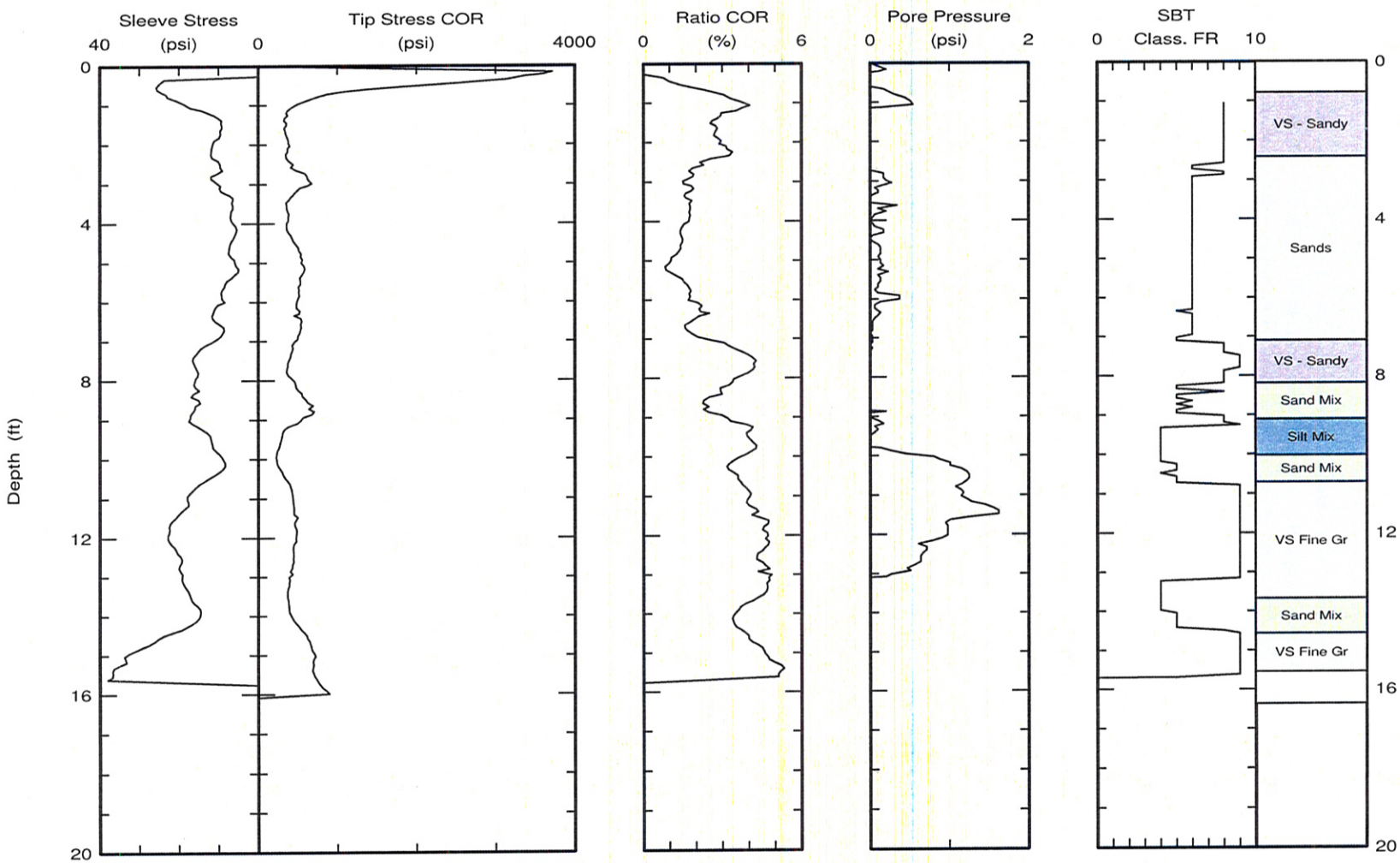
Applied Research Associates, Inc.
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Northing: 3319.5236854 Easting: 117
Easting: 11729.2436531 W
Elevation: 41.9338 M

Date: 27/Jan/2014
Test ID: 27J02-B1-2
Project: 110002034

Customer: JEFF TESAR
Job Site: I-5 PAVEMENT

CPT-14-002



Maximum depth: 16.37 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 27J02-B1-2
File: CPT27J1402C.ecp

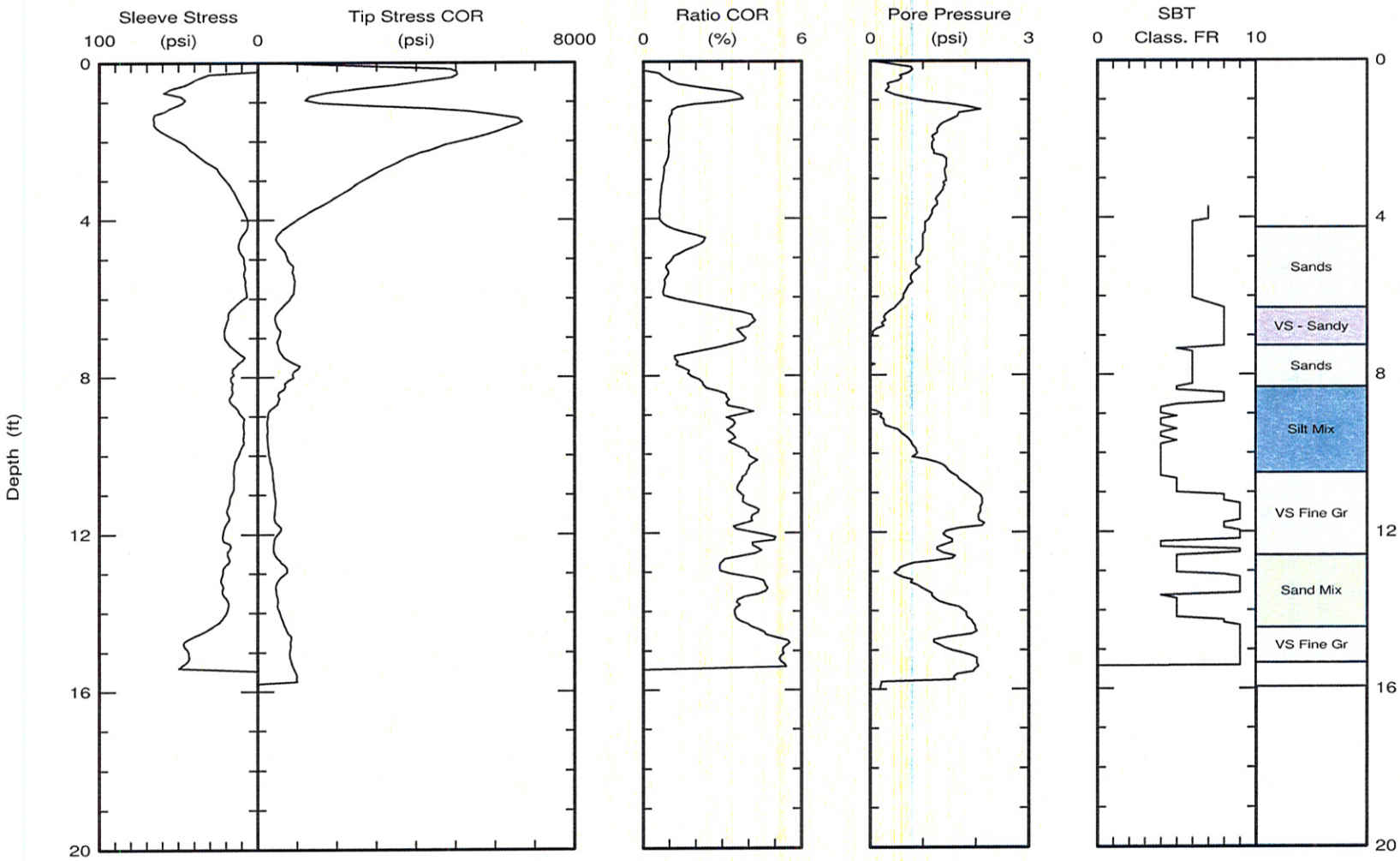
Applied Research Associates, Inc.
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Northing: 3319.5267427 Easting: 117
Easting: 11729.2482783 W
Elevation: 41.1246 M

Date: 27/Jan/2014
Test ID: 27J03-B1-3
Project: 110002034

Customer: JEFF TESAR
Job Site: I-5 PAVEMENT

CPT-14-003



Maximum depth: 15.96 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 27J03-B1-3
File: CPT27J1403C.ecp

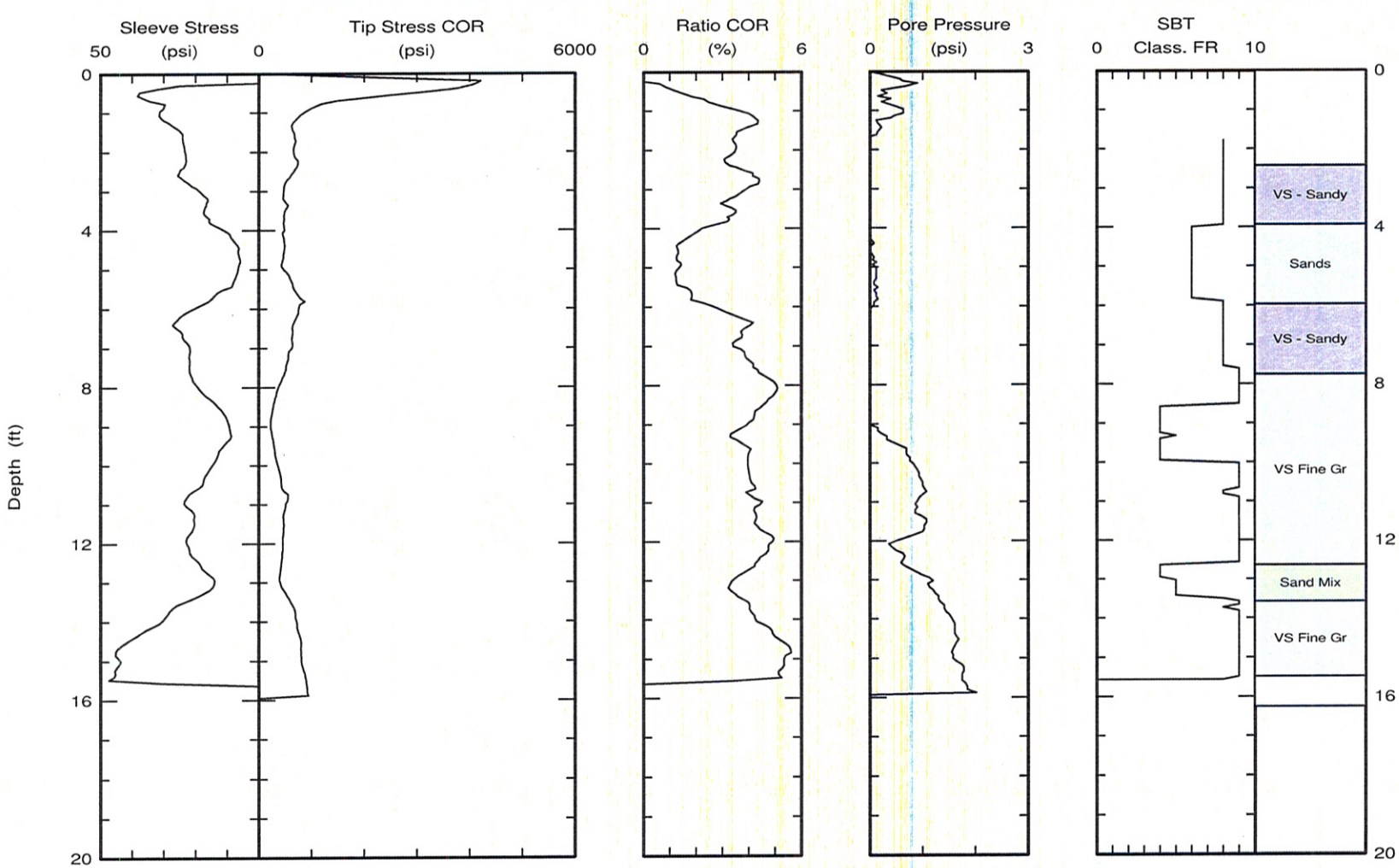
Applied Research Associates, Inc.
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Northing: 3319.5306420 Easting: 117
Easting: 11729.2533446 W
Elevation: 42.2074 M

Date: 27/Jan/2014
Test ID: 27J04-B1-4
Project: 110002034

Customer: JEFF TESAR
Job Site: I-5 PAVEMENT

CPT-14-004



Maximum depth: 16.26 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 27J04-B1-4
File: CPT27J1404C.ecp

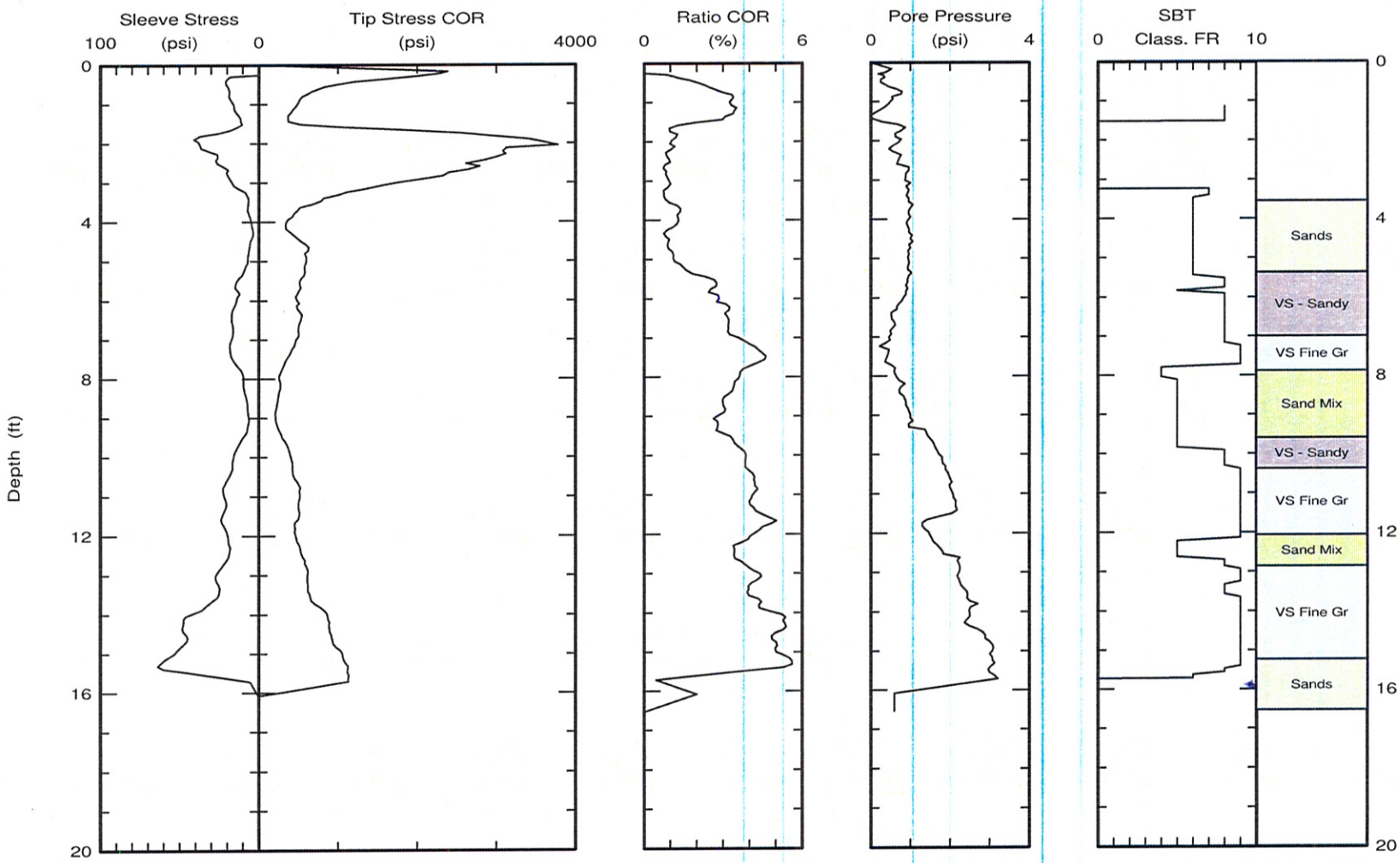
Applied Research Associates, Inc.
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Northing: 3319.5346360 Easting: 117
Easting: 11729.2585591 W
Elevation: 42.6348 M

Date: 27/Jan/2014
Test ID: 27J05-B1-5
Project: 110002034

Customer: JEFF TESAR
Job Site: I-5 PAVEMENT

CPT-14-005

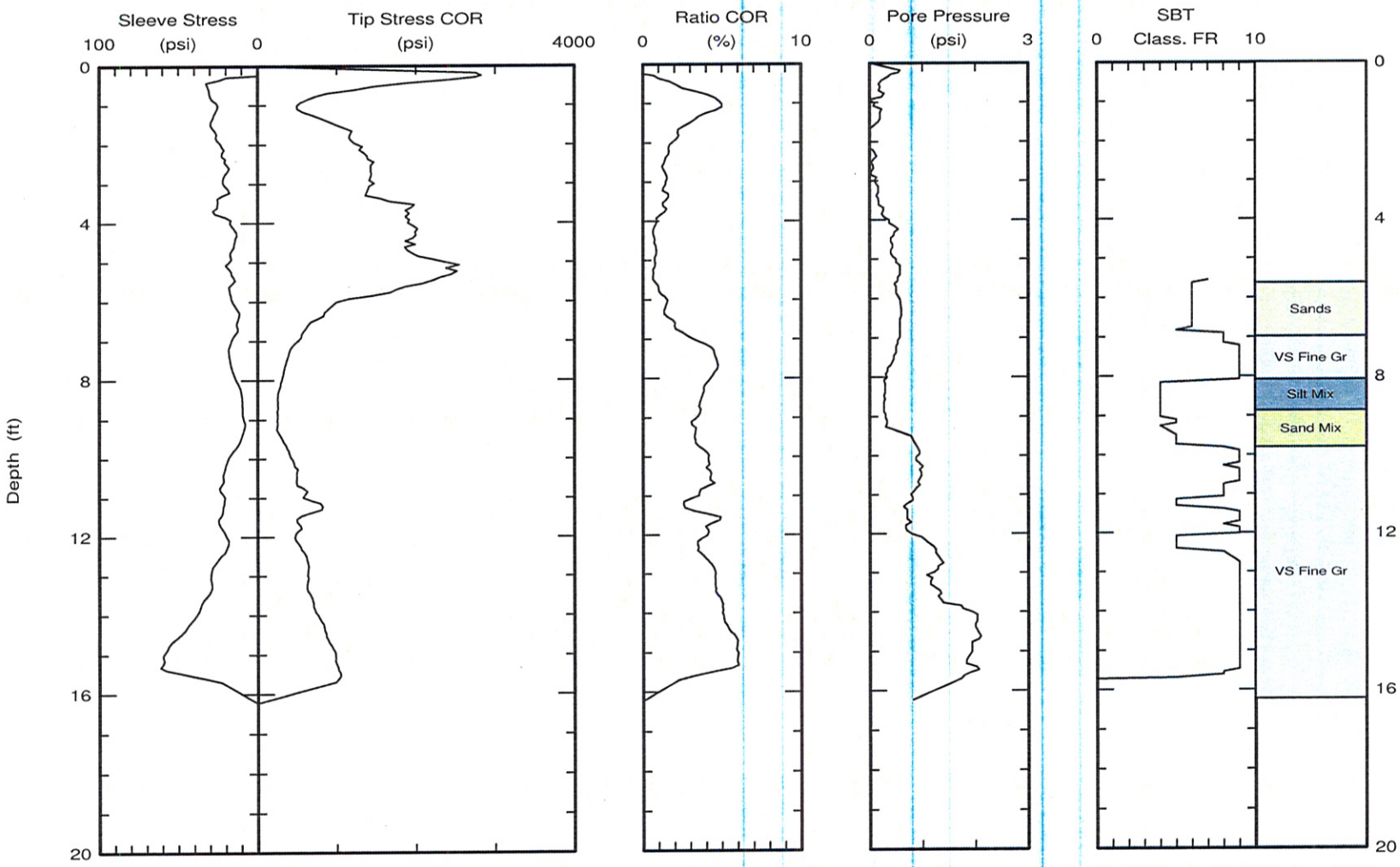


Maximum depth: 16.54 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 27J05-B1-5
File: CPT27J1405C.ecp

Applied Research Associates, Inc. South Royalton, VT 05068 802-763-8348 cpt@ned.ara.com www.ara.com	Northing: 3319.5375105 Easting: 117 Easting: 11729.2627185 W Elevation: 42.4738 M	Date: 27/Jan/2014 Test ID: 27J06-B1-6 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-006

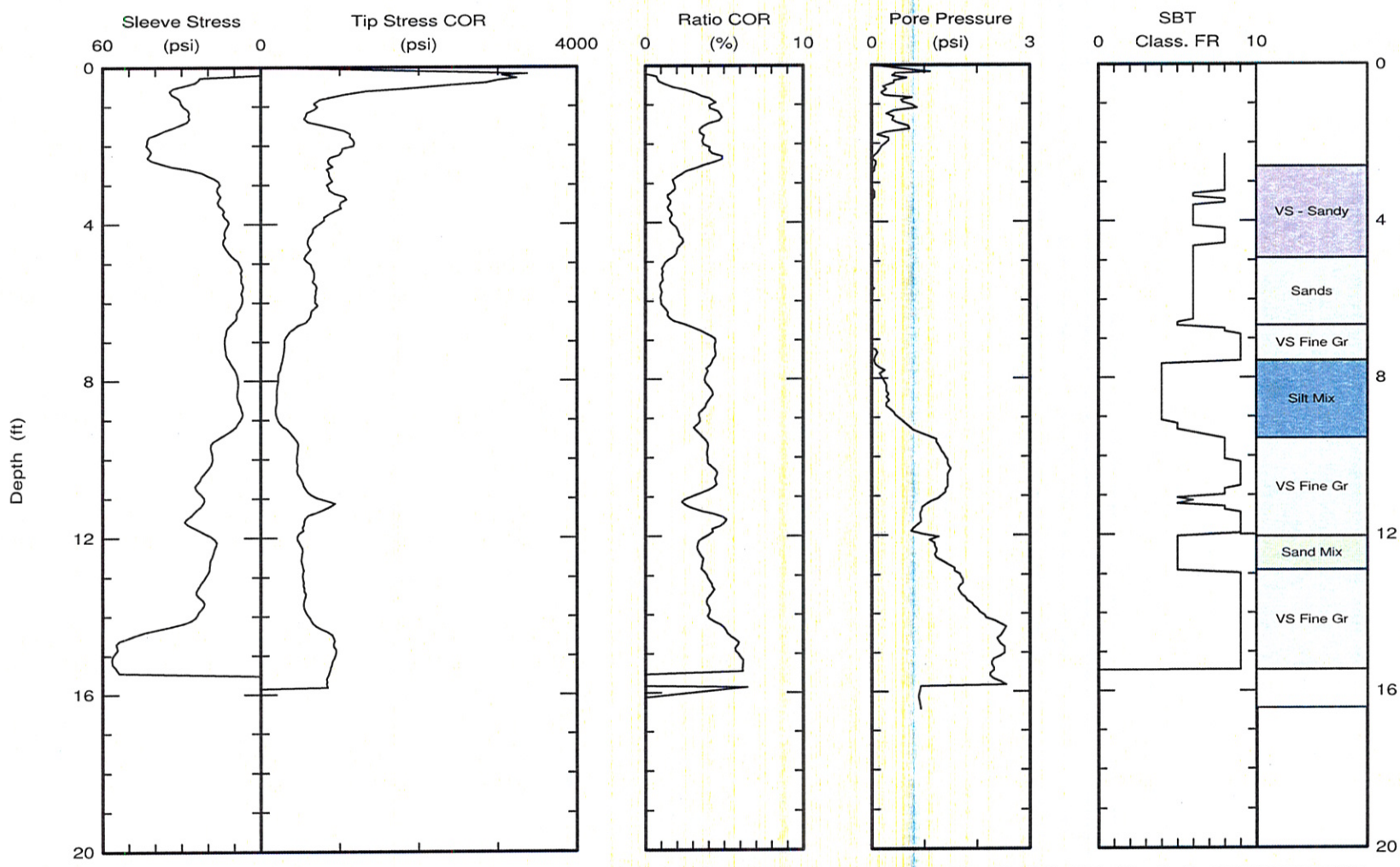


Maximum depth: 16.24 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 27J06-B1-6
File: CPT27J1406C.ecp

Applied Research Associates, Inc. South Royalton, VT 05068 802-763-8348 cpt@ned.ara.com www.ara.com	Northing: 3319.5403247 Easting: 117 Easting: 11729.2659489 W Elevation: 41.2497 M	Date: 27/Jan/2014 Test ID: 27J07-B1-7 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-007



Maximum depth: 16.45 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 27J07-B1-7
File: CPT27J1407C.ecp

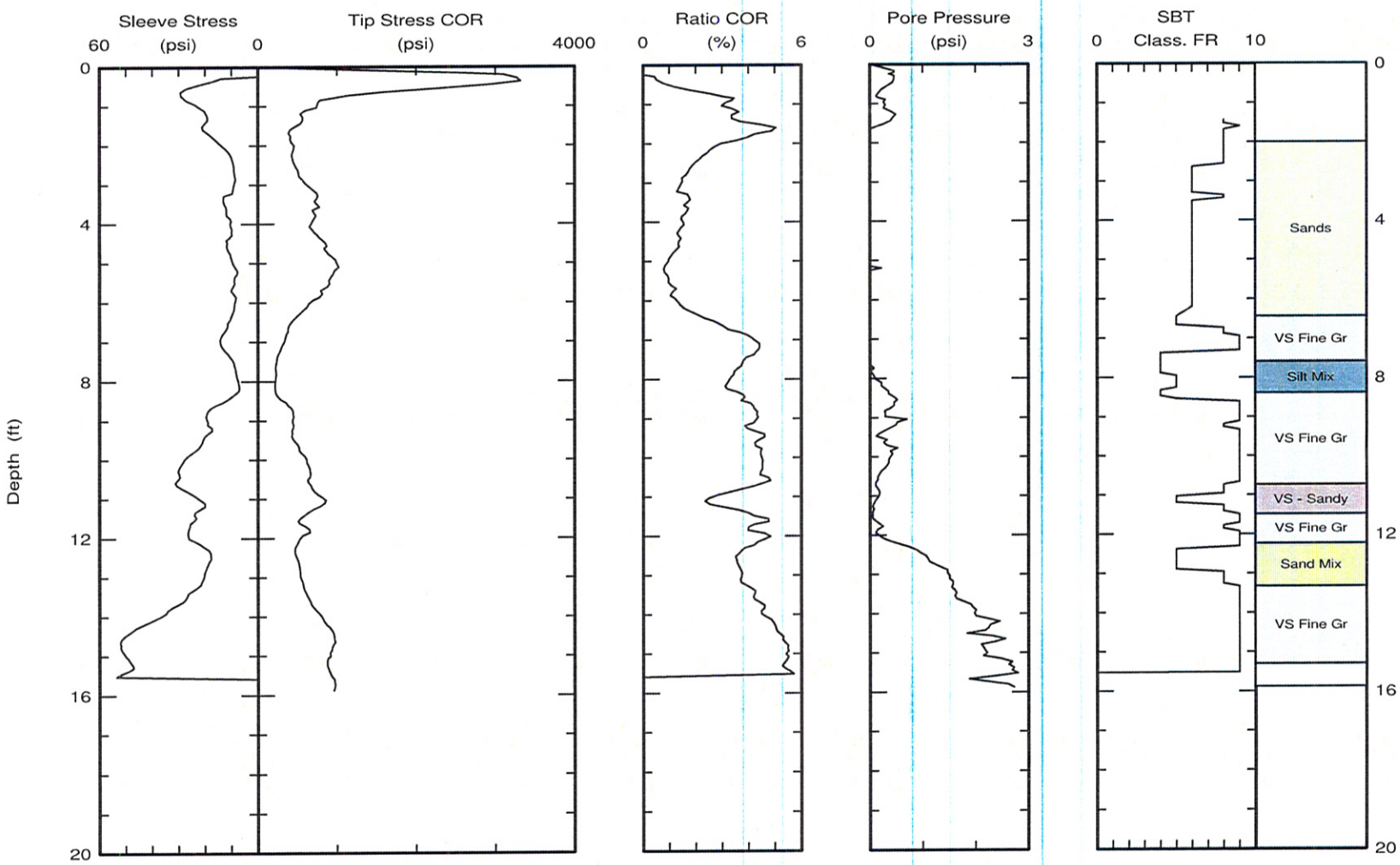
Applied Research Associates, Inc.
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Northing: 3319.5420947 Easting: 117
Easting: 11729.2687638 W
Elevation: 40.6975 M

Date: 27/Jan/2014
Test ID: 27J08-B1-8
Project: 110002034

Customer: JEFF TESAR
Job Site: I-5 PAVEMENT

CPT-14-008



Maximum depth: 15.88 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 27J08-B1-8
File: CPT27J1408C.ecp

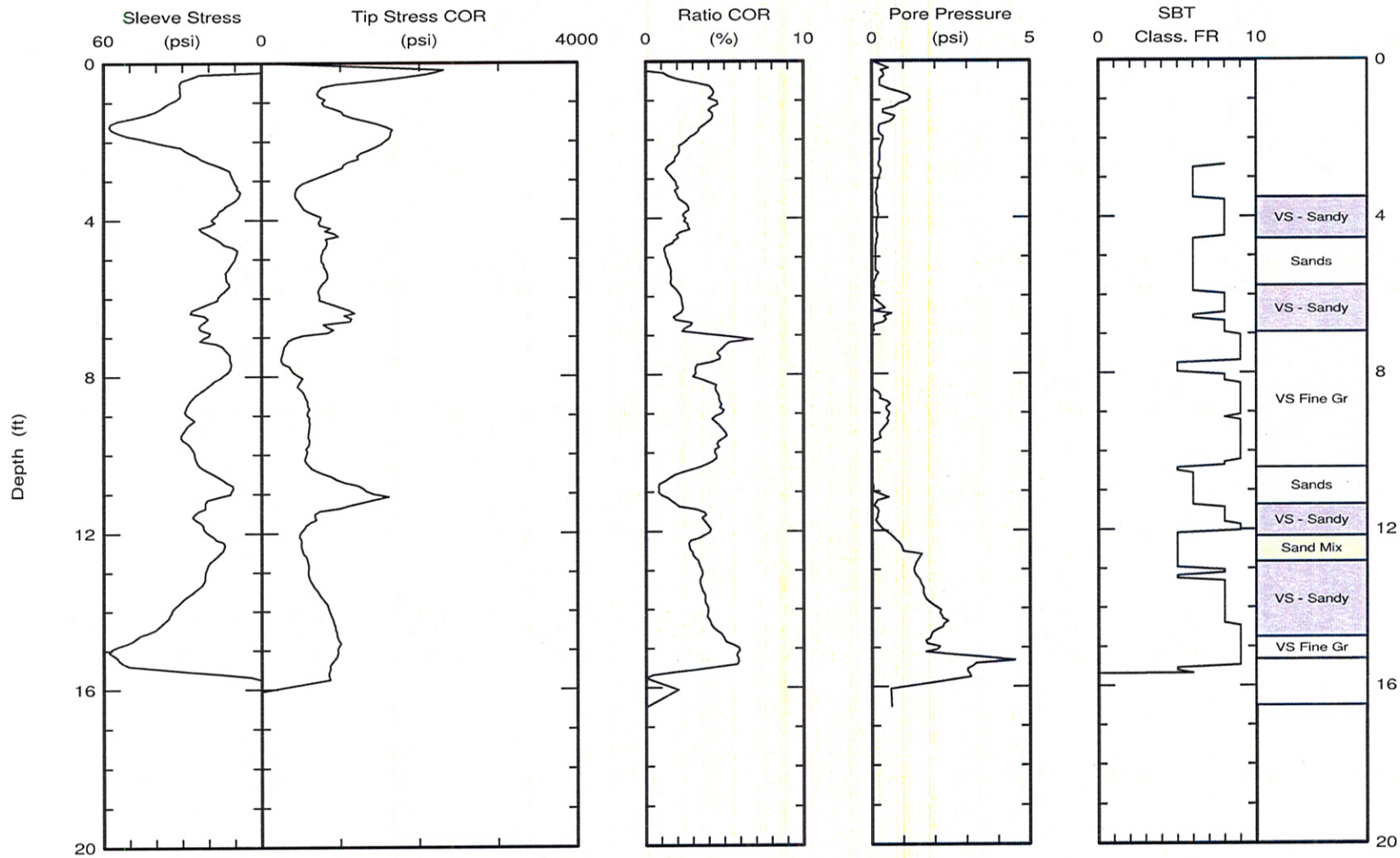
Applied Research Associates, Inc.
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Northing: 3319.5441034 Easting: 117
Easting: 11729.2714245 W
Elevation: 41.9734 M

Date: 27/Jan/2014
Test ID: 27J09-B1-9
Project: 110002034

Customer: JEFF TESAR
Job Site: I-5 PAVEMENT

CPT-14-009



Maximum depth: 16.51 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 27J09-B1-9
File: CPT27J1409C.ecp

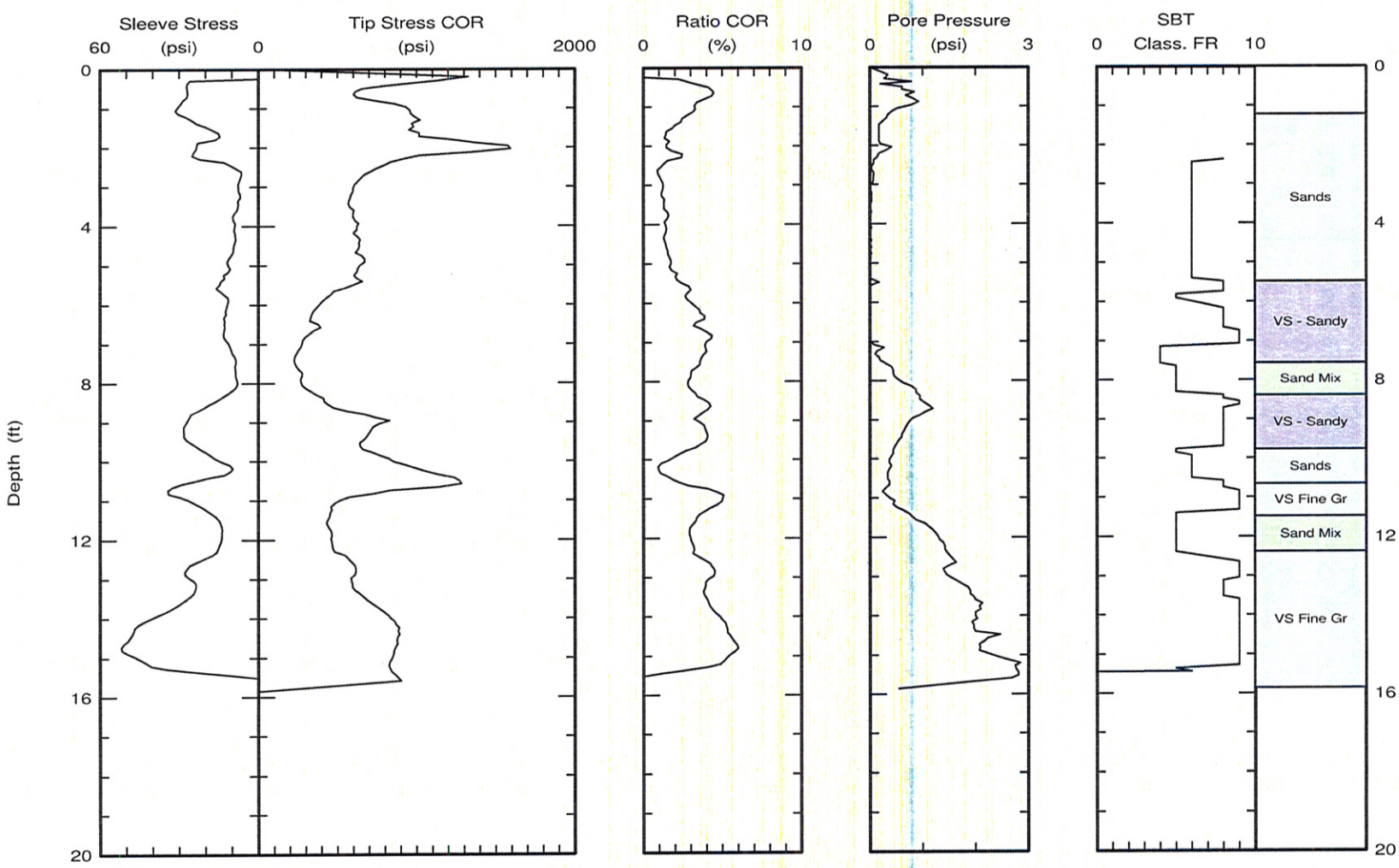
Applied Research Associates, Inc.
South Royalton, VT 05068
802-763-8348
cpt@ned.ara.com
www.ara.com

Northing: 3319.5467537 Easting: 117
Easting: 11729.2753433 W
Elevation: 42.6380 M

Date: 27/Jan/2014
Test ID: 27J010-B1-10
Project: 110002034

Customer: JEFF TESAR
Job Site: I-5 PAVEMENT

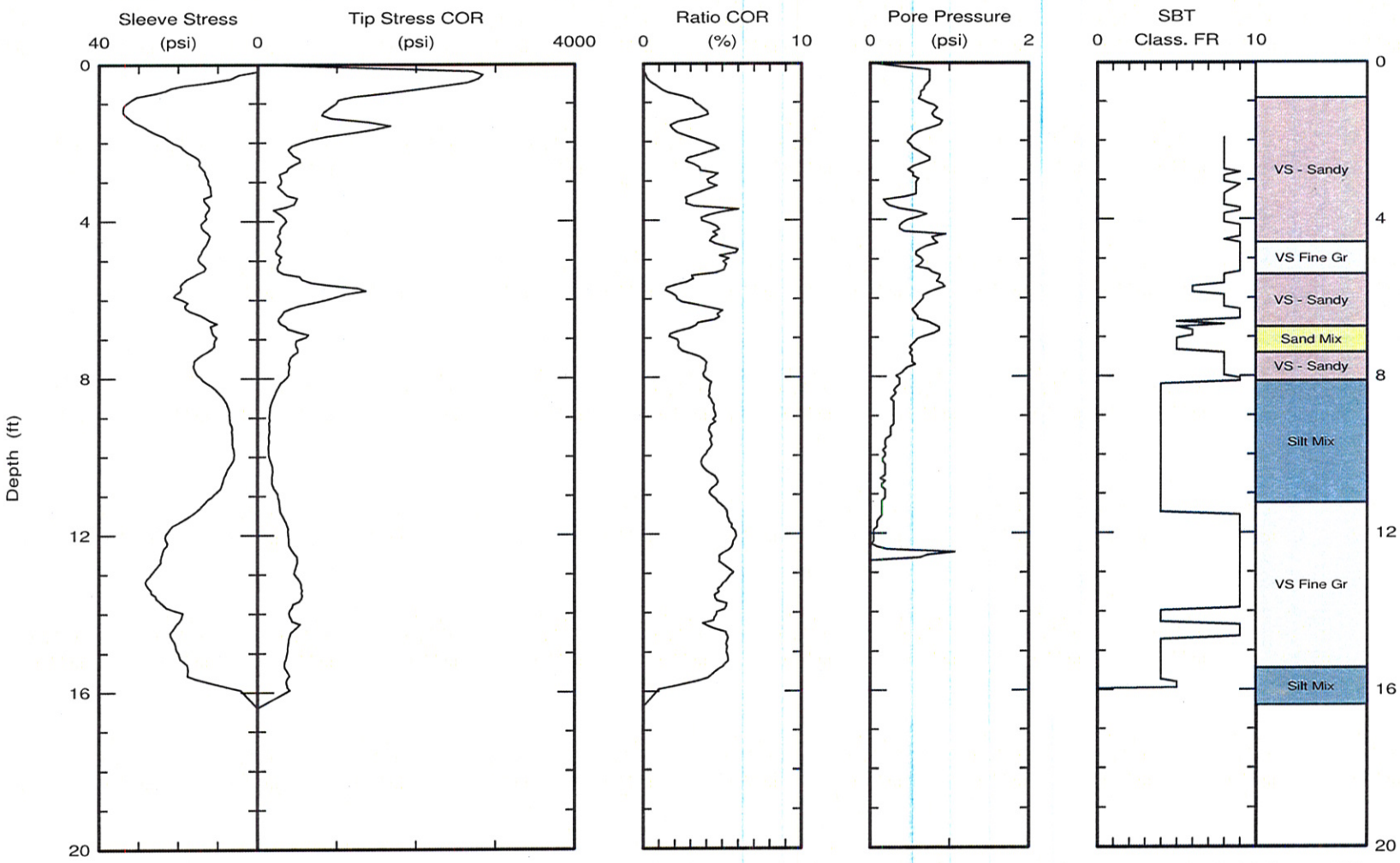
CPT-14-010



Maximum depth: 15.86 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1374680 Easting: 11730.087 E: 11730.0876669 W El: 56.0678 M Client: JEFF TESAR Job Site: I-5 PAVEMENT CPT-14-011	Date: 28/Jan/2014 Test ID: 28J01-B2-1 Project: 110002034

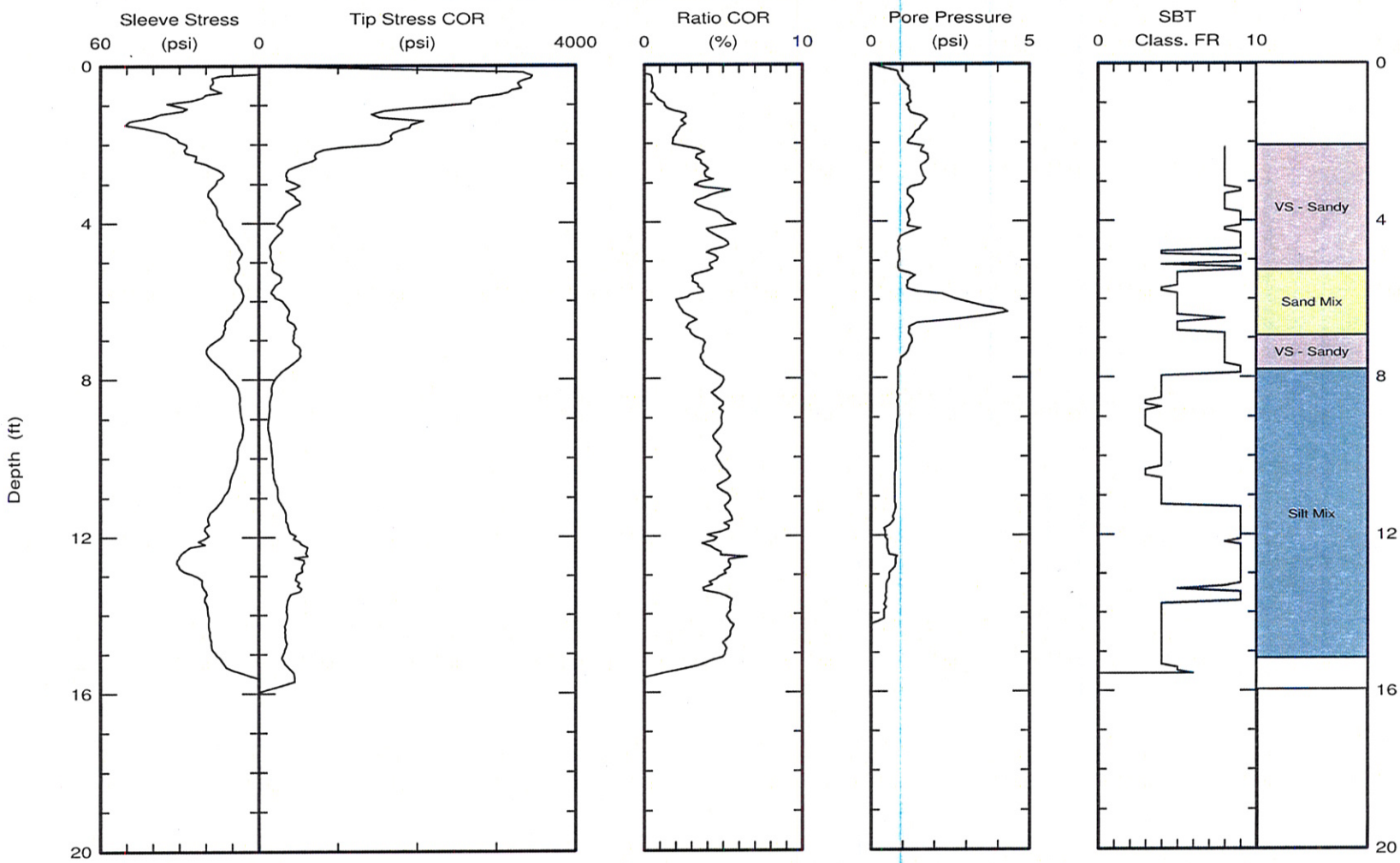


Maximum depth: 16.40 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J01-B2-1
File: CPT28J1401C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1407874 Easting: 11730.092 E: 11730.0925986 W El: 54.9570 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 28/Jan/2014 Test ID: 28J02-B2-2 Project: 110002034 CPT-14-012

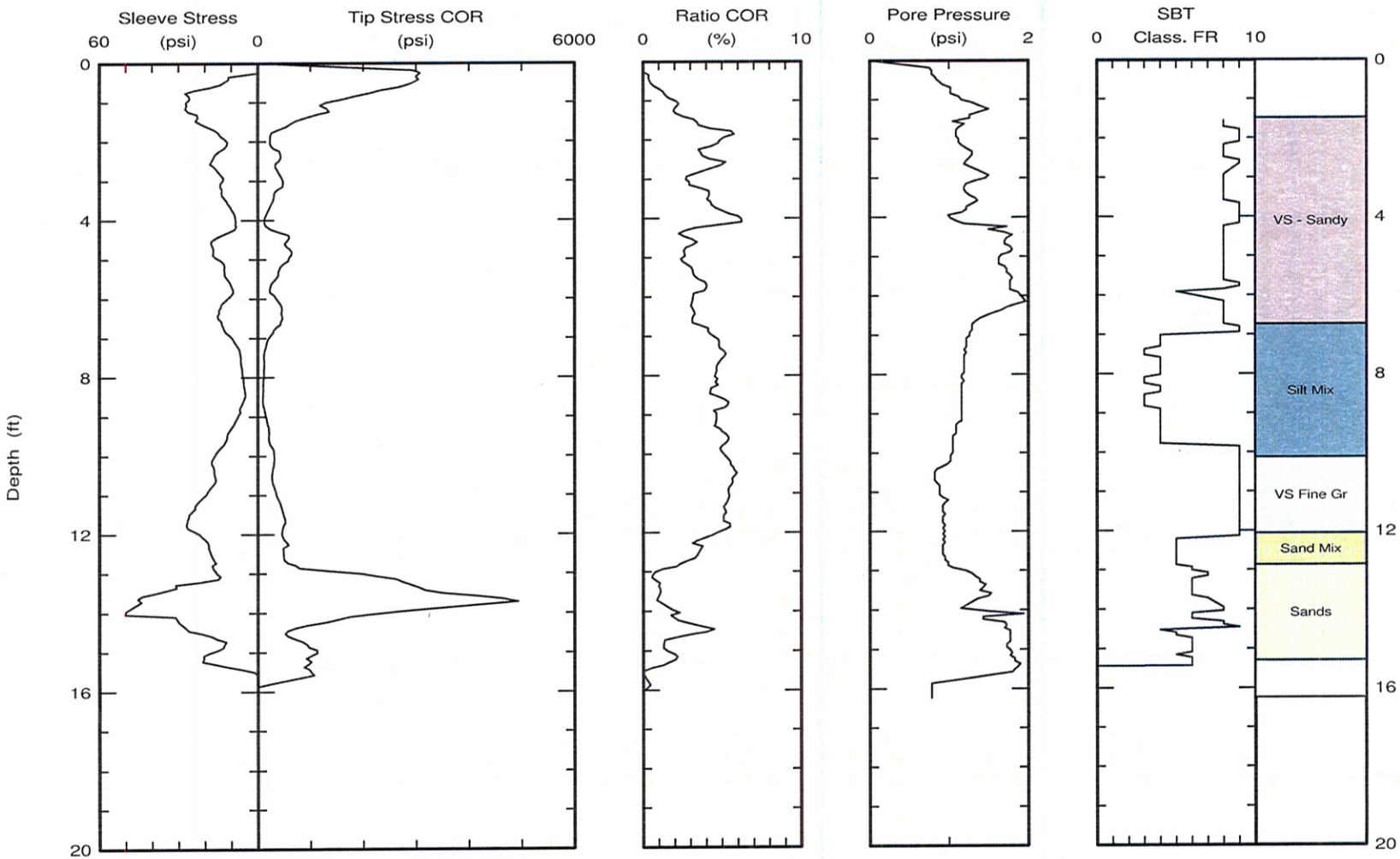


Maximum depth: 15.97 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J02-B2-2
File: CPT28J1402C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1438843 Easting: 11730.096 E: 11730.0966940 W El: 55.8327 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 28/Jan/2014 Test ID: 28J03-B2-3 Project: 110002034 CPT-14-013

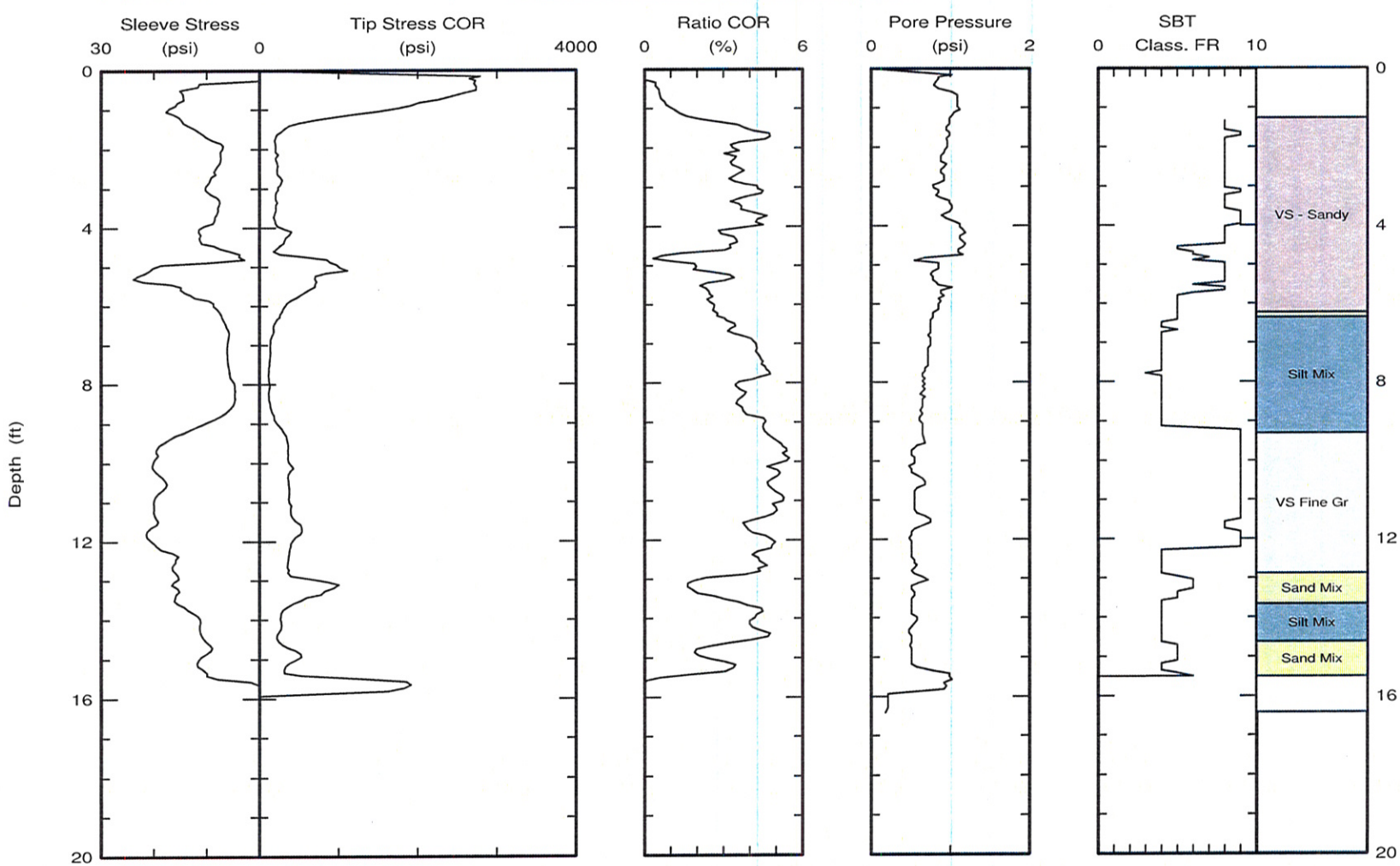


Maximum depth: 16.25 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J03-B2-3
File: CPT28J1403C.ecp

Caltrans	Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1485450 Easting: 11730.102 E: 11730.1025384 W El: 56.0748 M Client: JEFF TESAR Job Site: I-5 PAVEMENT
		Date: 28/Jan/2014 Test ID: 28J04-B2-4 Project: 110002034 CPT-14-014

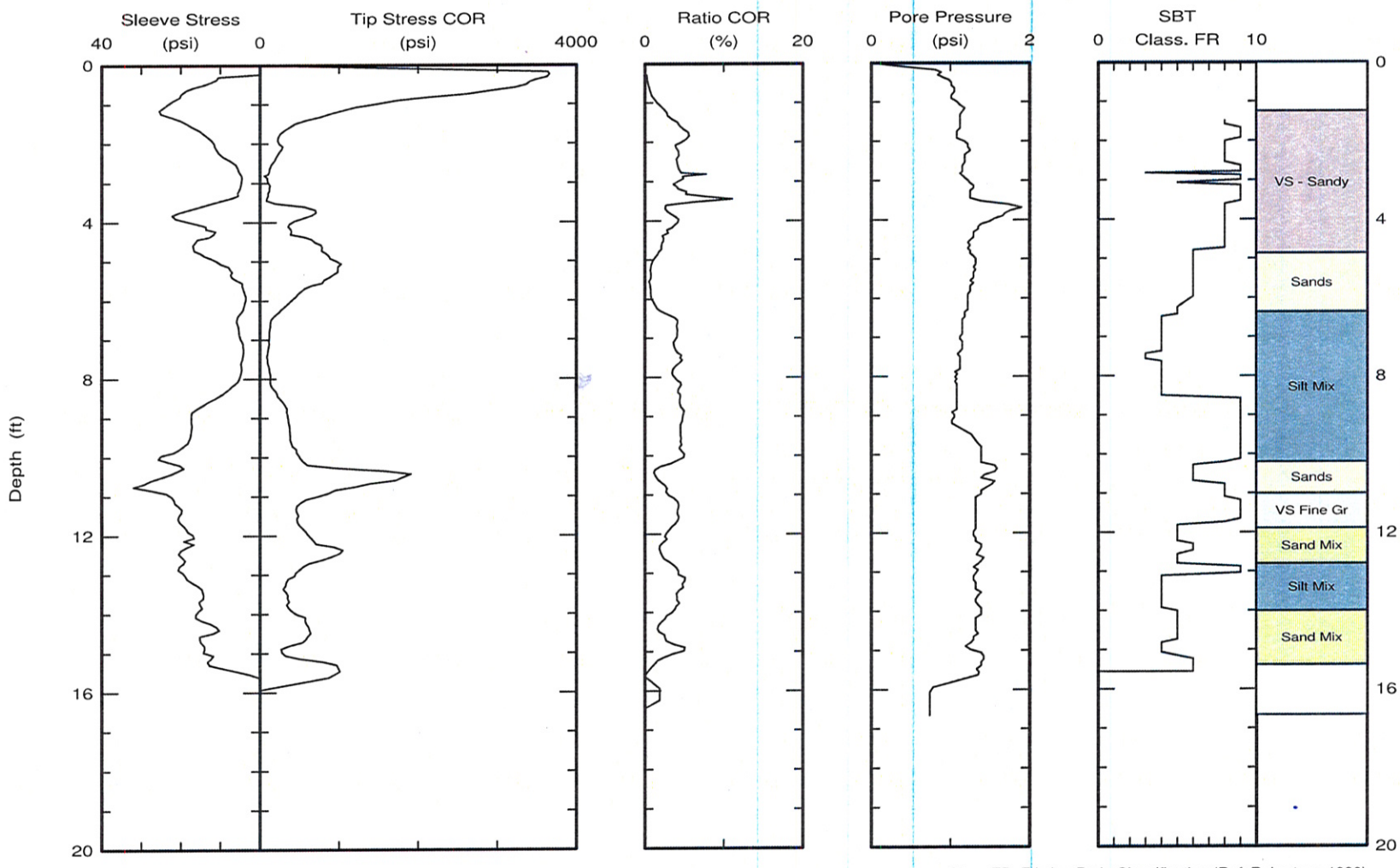


Maximum depth: 16.42 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J04-B2-4
File: CPT28J1404C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1521251 Easting: 11730.106 E: 11730.1069569 W El: 55.4547 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 28/Jan/2014 Test ID: 28J05-B2-5 Project: 110002034 CPT-14-015

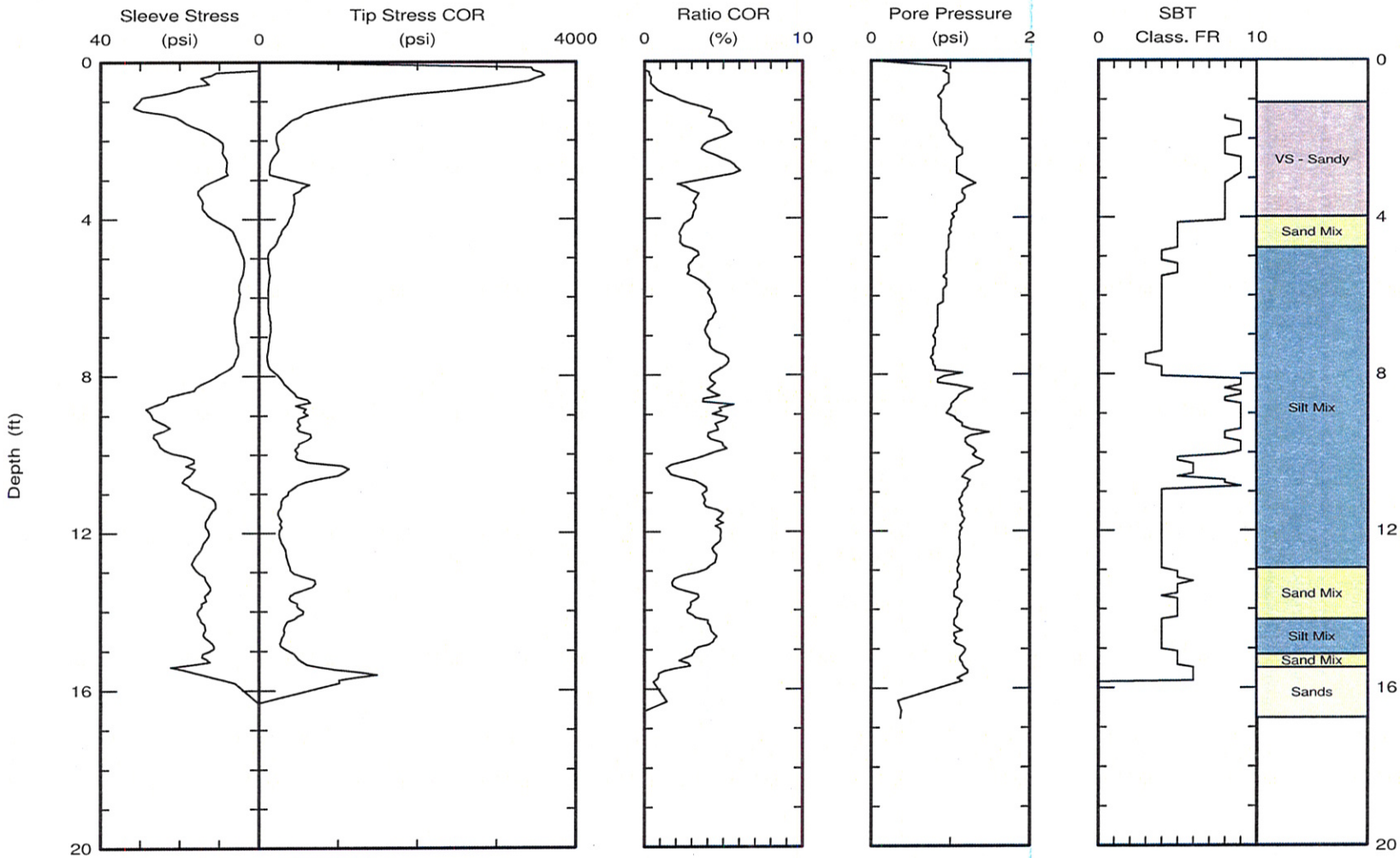


Maximum depth: 16.66 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J05-B2-5
File: CPT28J1405C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1556371 Easting: 11730.11 E: 11730.1118347 W El: 58.2564 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 28/Jan/2014 Test ID: 28J06-B2-6 Project: 110002034 CPT-14-016

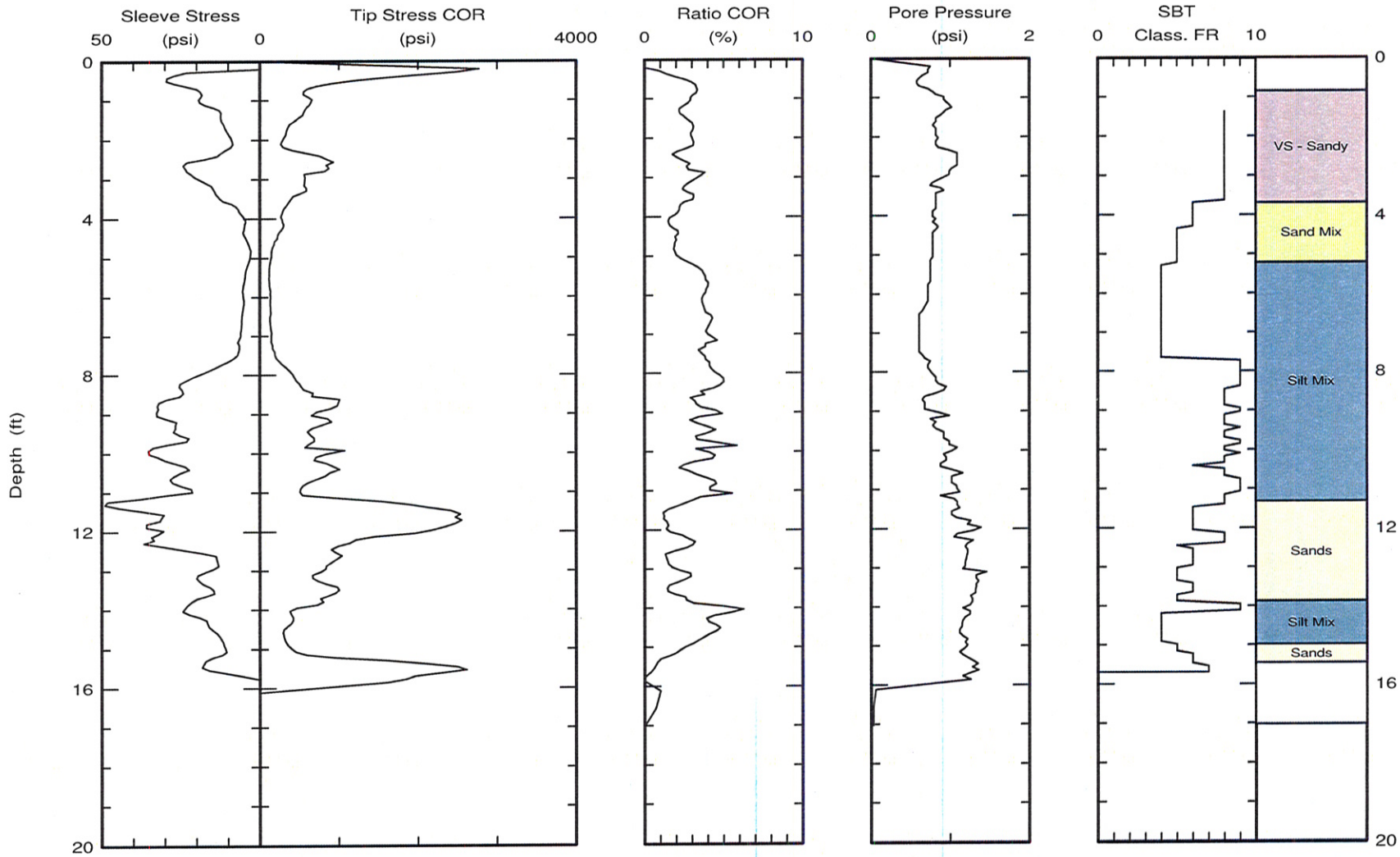


Maximum depth: 16.76 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J06-B2-6
File: CPT28J1406C.ecp

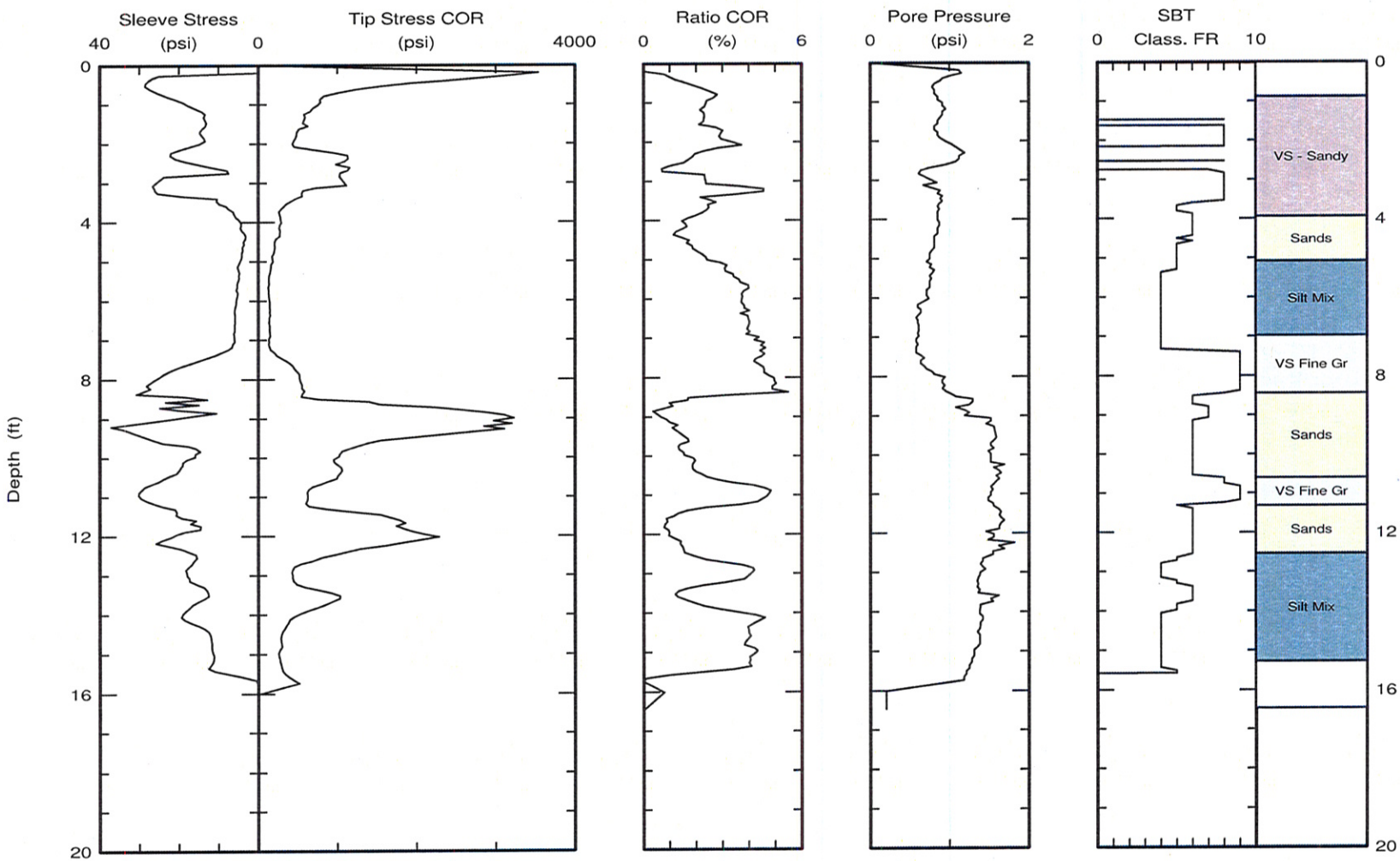
Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1575362 Easting: 11730.114 E: 11730.1148388 W El: 58.6514 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 28/Jan/2014 Test ID: 28J07-B2-7 Project: 110002034 CPT-14-017



Maximum depth: 17.03 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1581793 Easting: 11730.115 E: 11730.1159000 W El: 58.0260 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 28/Jan/2014 Test ID: 28J08-B2-8 Project: 110002034 CPT-14-018

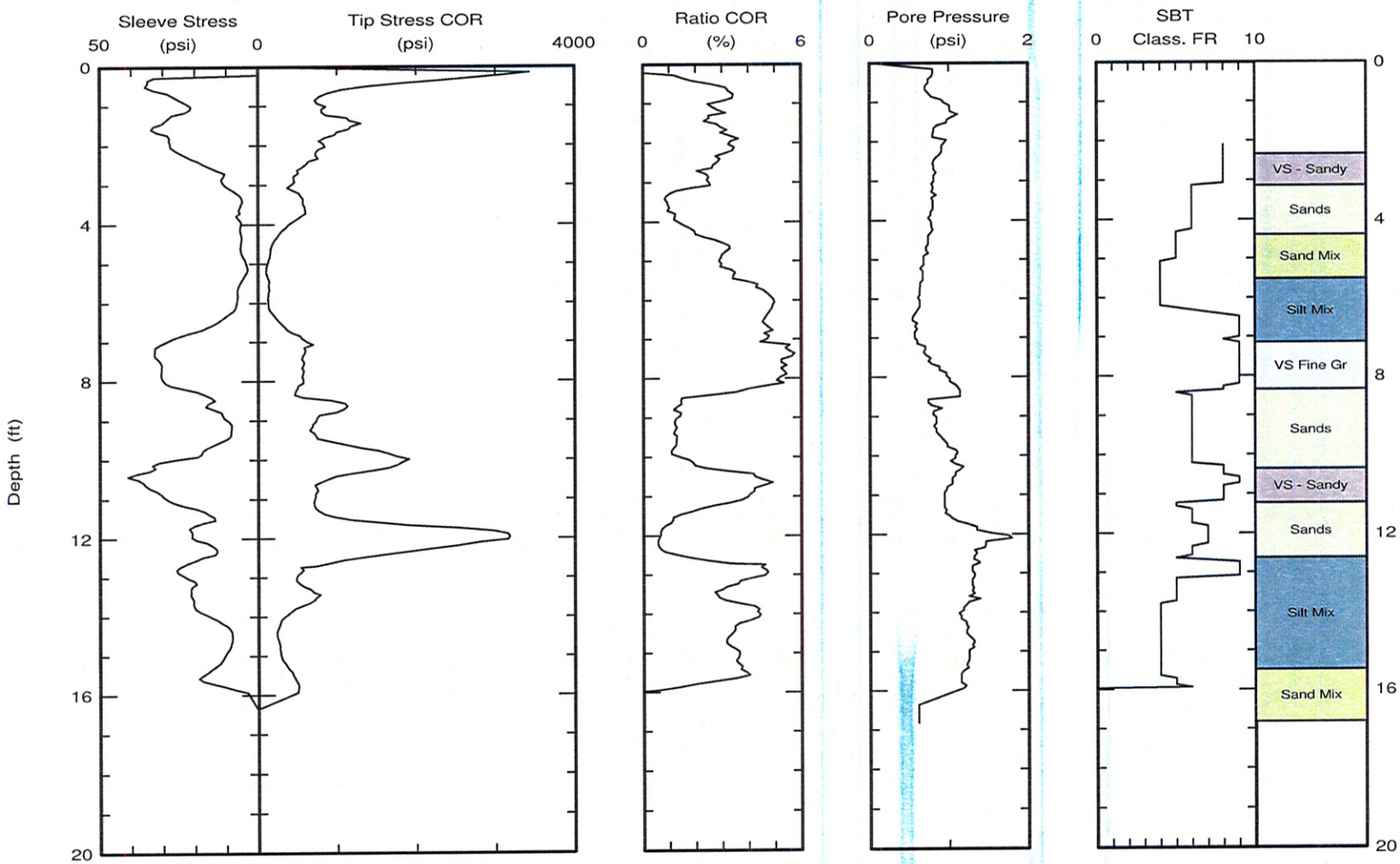


Maximum depth: 16.47 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J08-B2-8
File: CPT28J1408C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1592676 Easting: 11730.117 E: 11730.1175530 W El: 59.5681 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 28/Jan/2014 Test ID: 28J09-B2-9 Project: 110002034 CPT-14-019

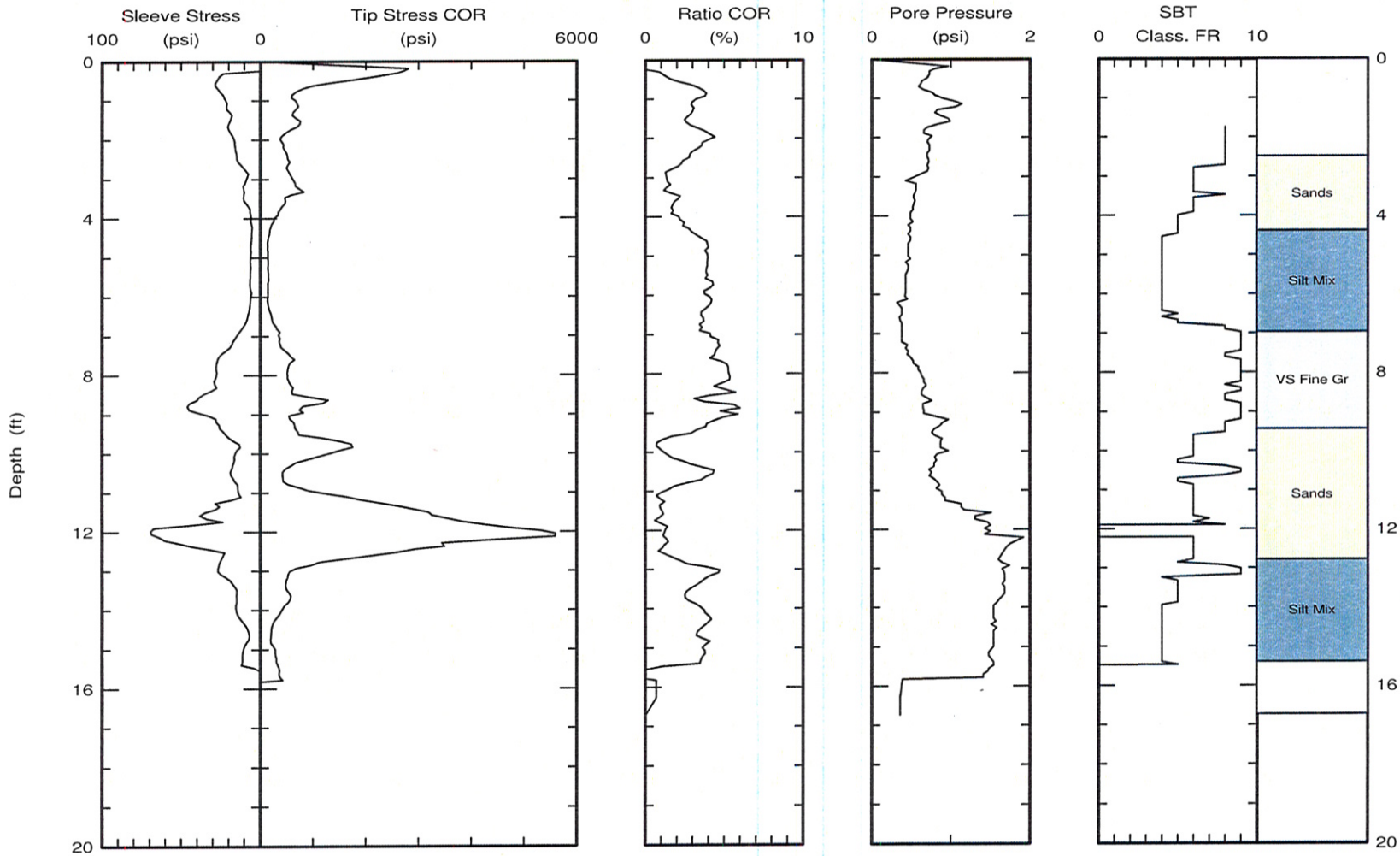


Maximum depth: 16.82 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J09-B2-9
File: CPT28J1409C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1603739 Easting: 11730.118 E: 11730.1187041 W El: 59.2167 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 28/Jan/2014 Test ID: 28J010-B2-10 Project: 110002034 CPT-14-020

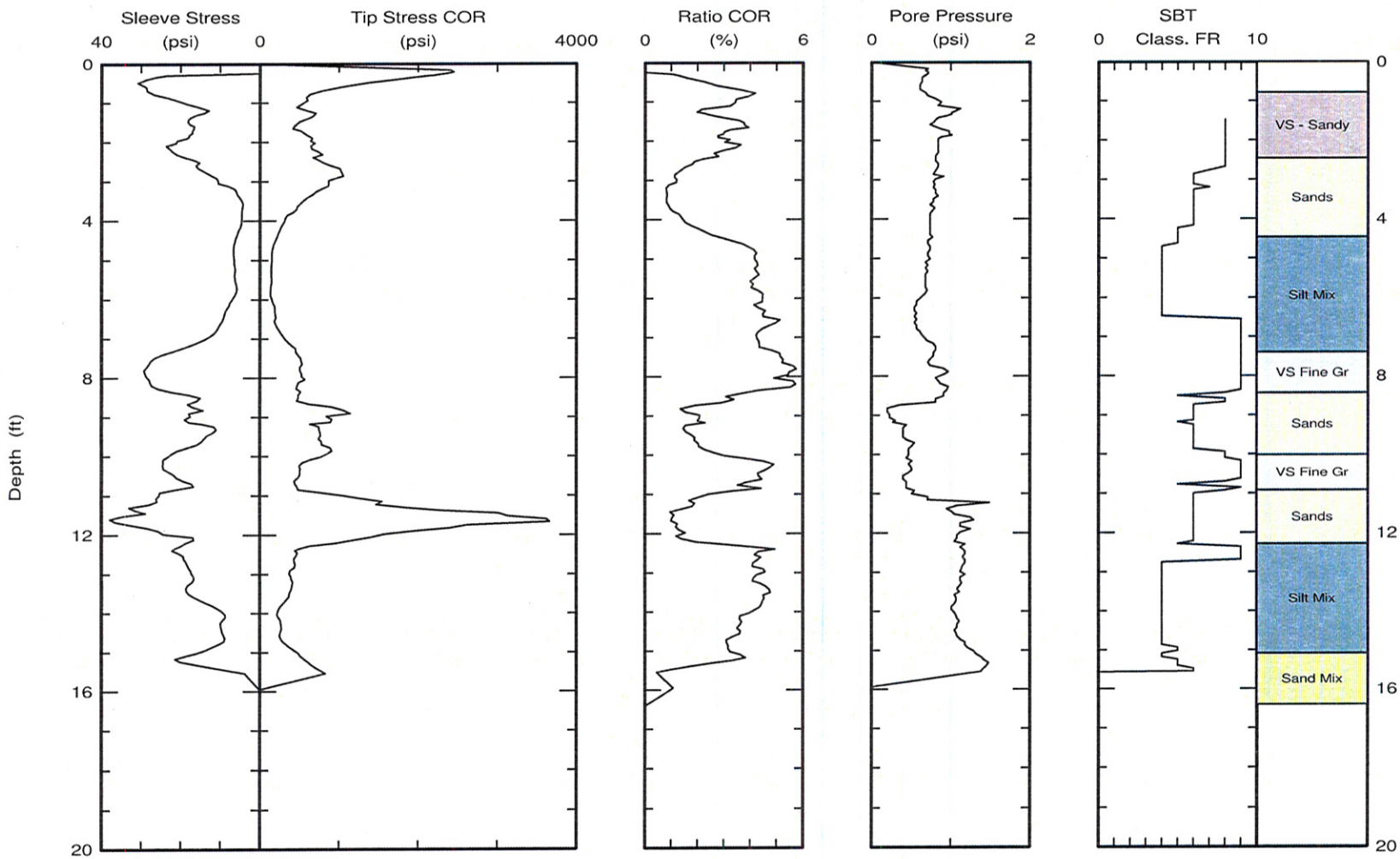


Maximum depth: 16.73 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J010-B2-10
File: CPT28J1410C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1623403 Easting: 11730.120 E: 11730.1207125 W El: 60.0030 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 28/Jan/2014 Test ID: 28J011-B2-11A Project: 110002034 CPT-14-021

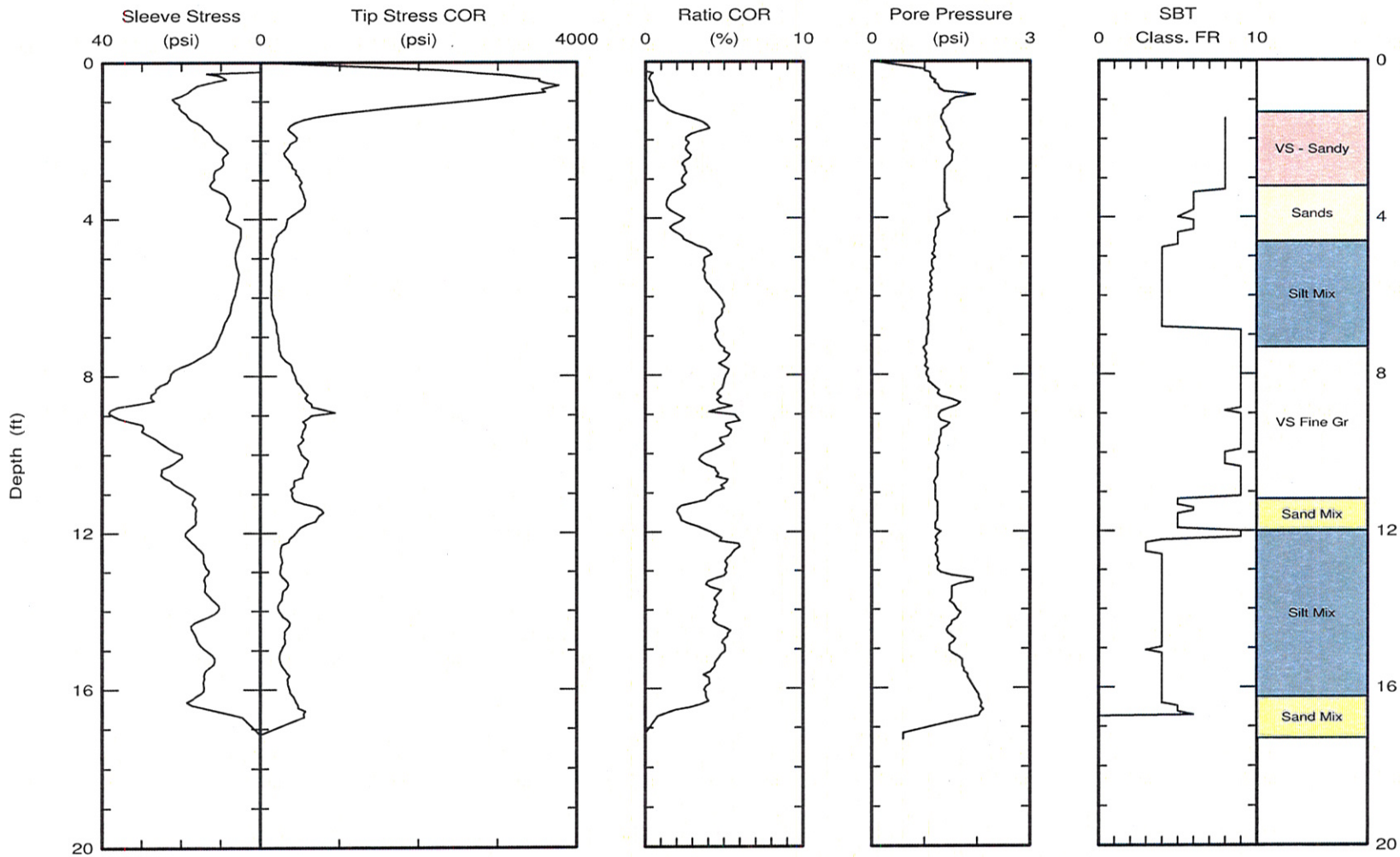


Maximum depth: 16.41 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J011-B2-11A
File: CPT28J1411C.ecp

Caltrans	Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3320.1635707 Easting: 11730.120 E: 11730.1207986 W El: 59.3795 M Client: JEFF TESAR Job Site: I-5 PAVEMENT
		Date: 28/Jan/2014 Test ID: 28J012-B2-11B Project: 110002034 CPT-14-022

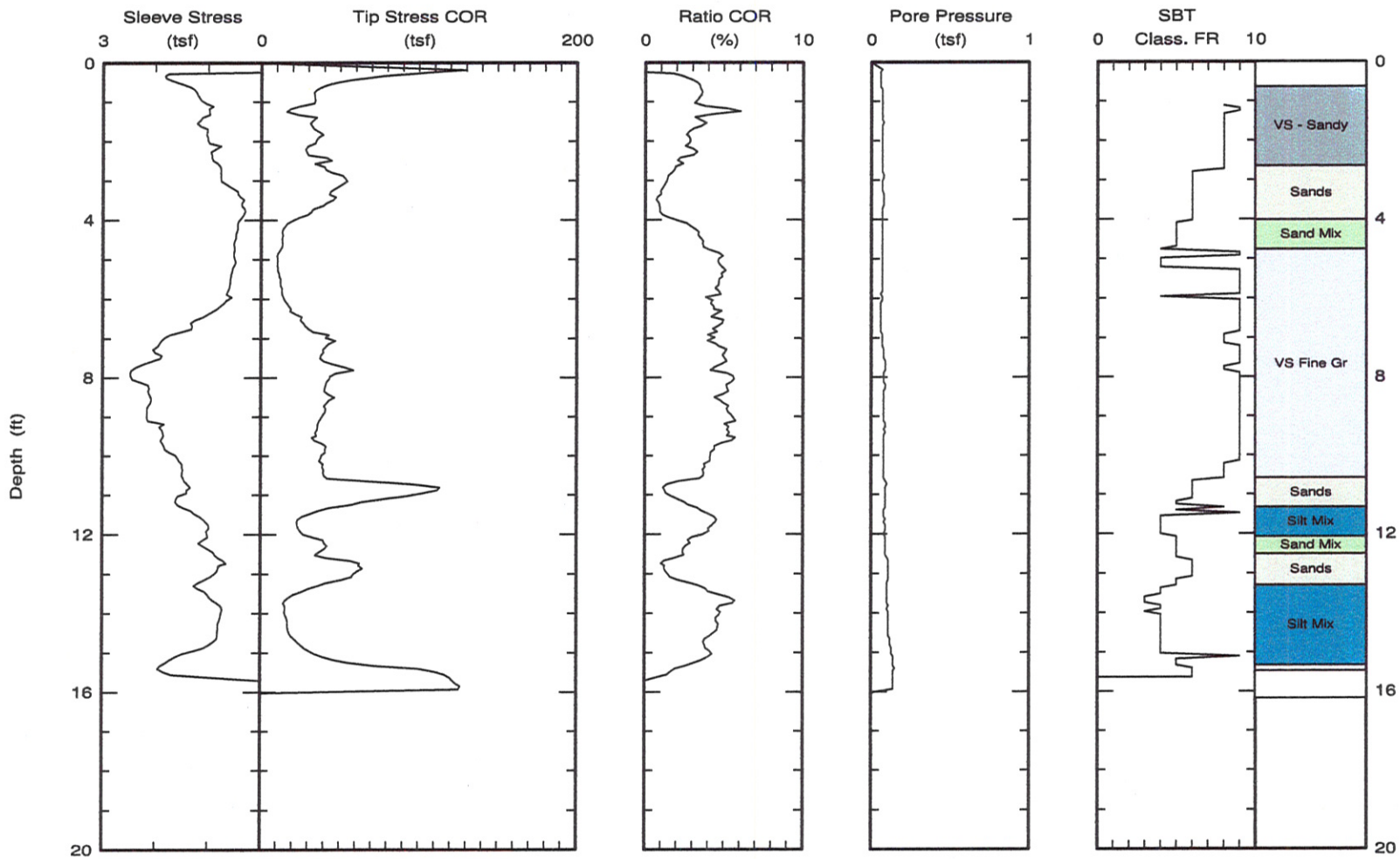


Maximum depth: 17.30 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J012-B2-11B
File: CPT28J1412C.ecp

Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 28/Jan/2014 Test ID: 28J013-B2-12 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-023

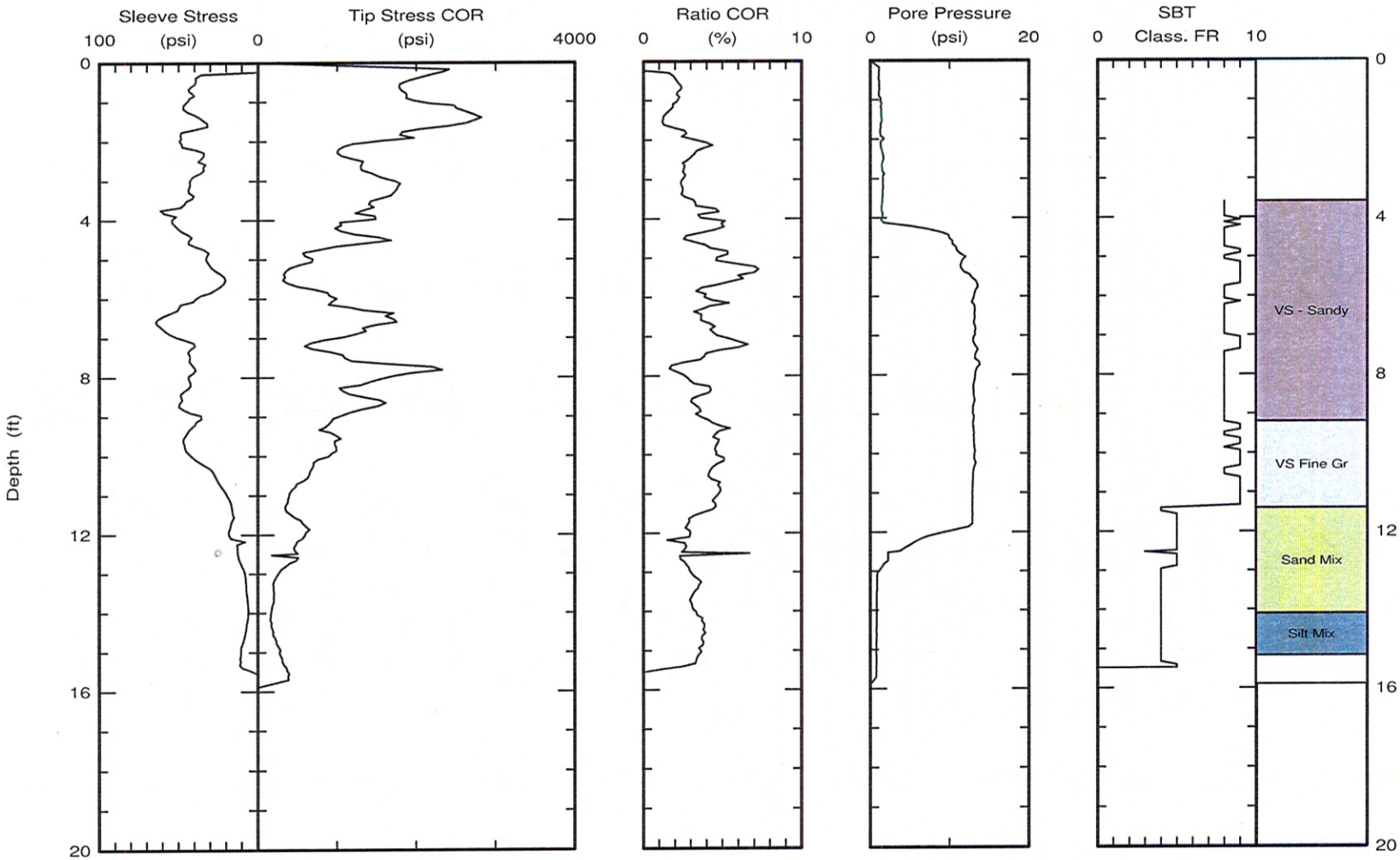


Maximum depth: 16.18 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 28J013-B2-12
File: CPT28J1413C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3321.1572623 Easting: 11731.554 E: 11731.5546736 W El: 54.2411 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 31/Jan/2014 Test ID: 31J06-B4-01 Project: 110002034 CPT-14-025

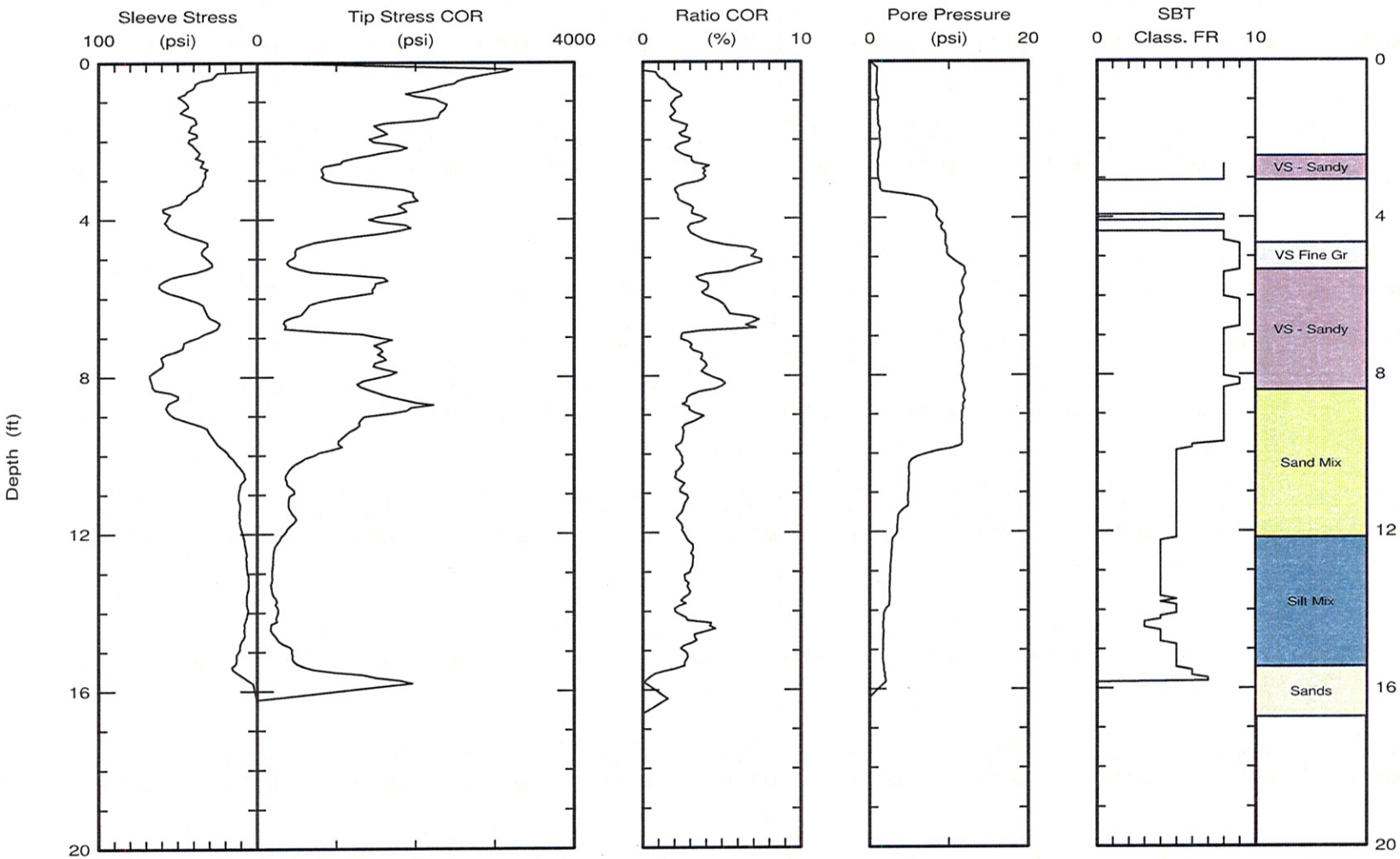


Maximum depth: 15.90 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 31J06-B4-01
File: CPT31J1406C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3321.1599155 Easting: 11731.557 E: 11731.5577280 W El: 53.3962 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 31/Jan/2014 Test ID: 31J05-B4-02 Project: 110002034 CPT-14-026

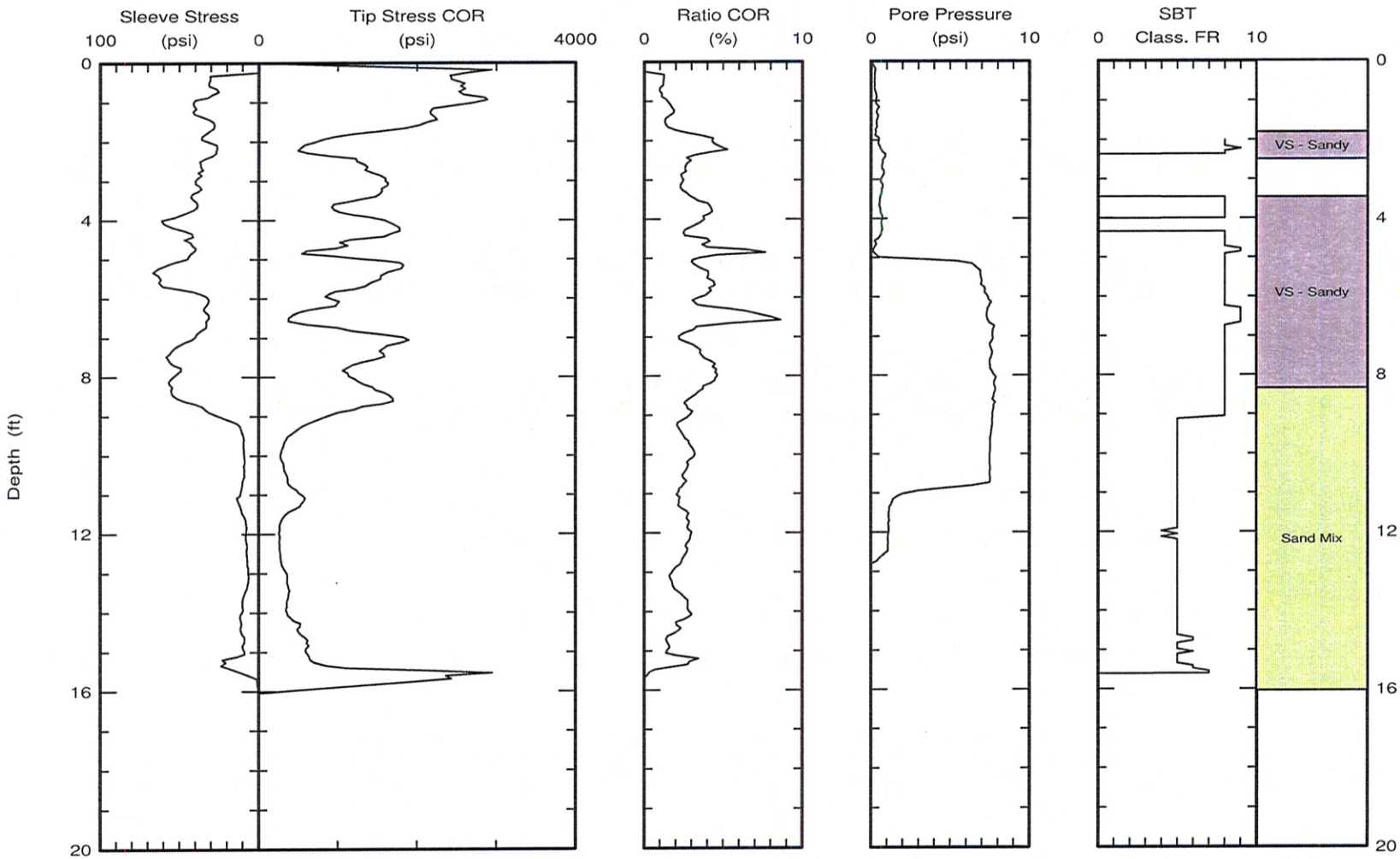


Maximum depth: 16.75 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 31J05-B4-02
File: CPT31J1405C.ecp

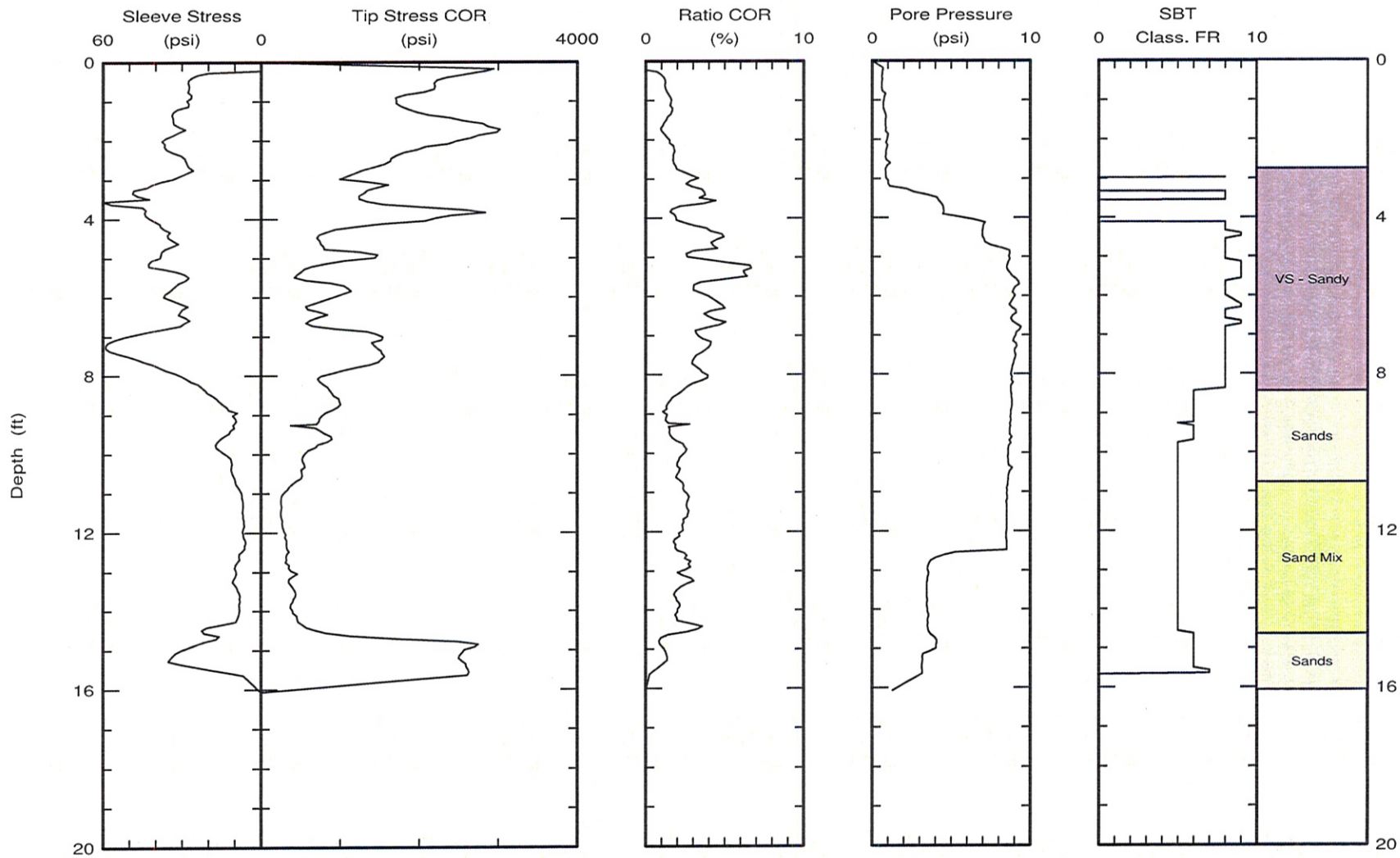
Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3321.1616980 Easting: 11731.560 E: 11731.5603981 W El: 52.9838 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 31/Jan/2014 Test ID: 31J04-B4-03 Project: 110002034 CPT-14-027



Maximum depth: 16.04 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

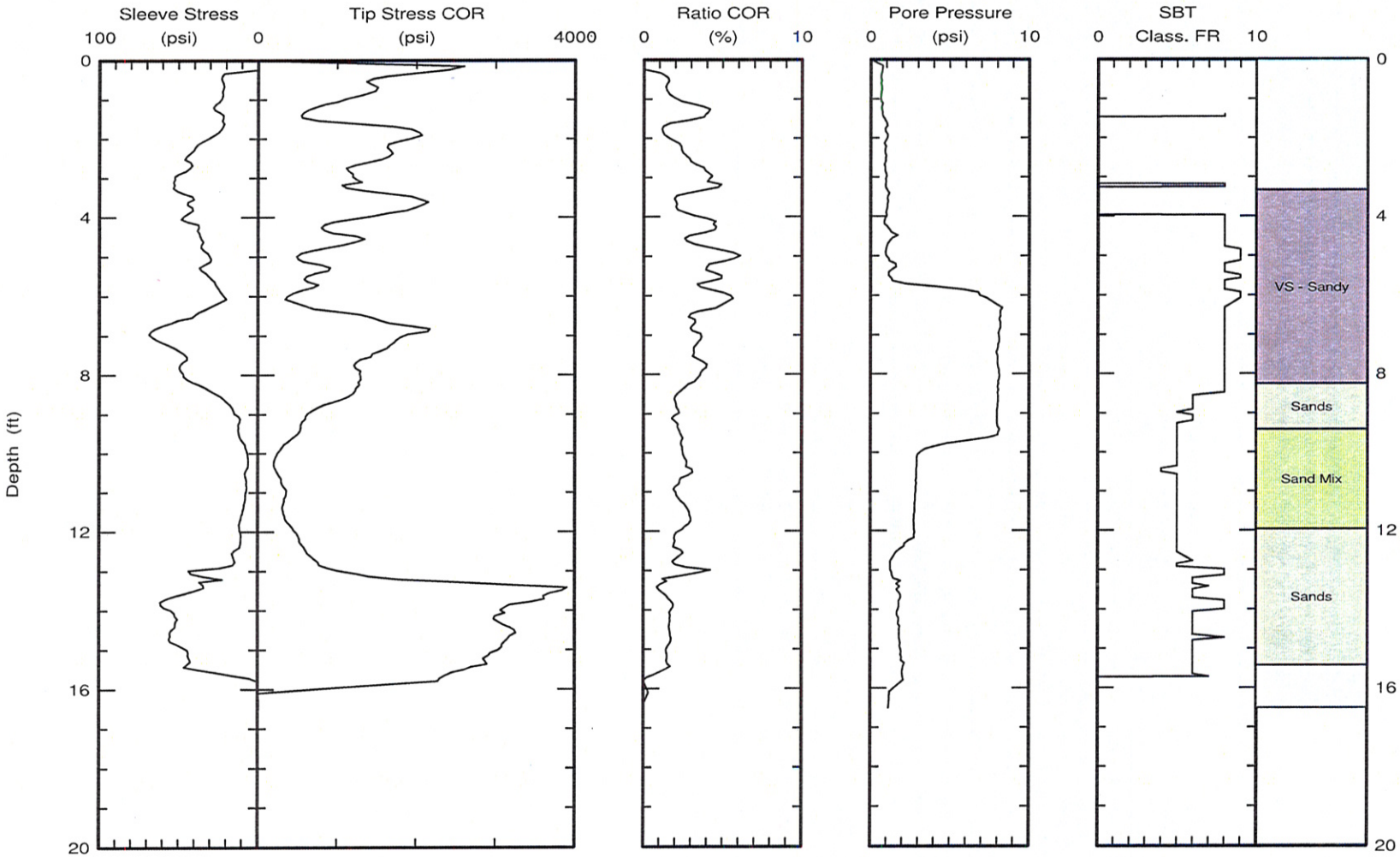
Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3321.1639715 Easting: 11731.564 E: 11731.5641374 W El: 53.5456 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 31/Jan/2014 Test ID: 31J03-B4-04 Project: 110002034 CPT-14-028



Maximum depth: 16.07 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft8	N: 3321.1659303 Easting: 11731.567 E: 11731.5676864 W El: 52.7226 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 31/Jan/2014 Test ID: 31J02-B4-05 Project: 110002034 CPT-14-029

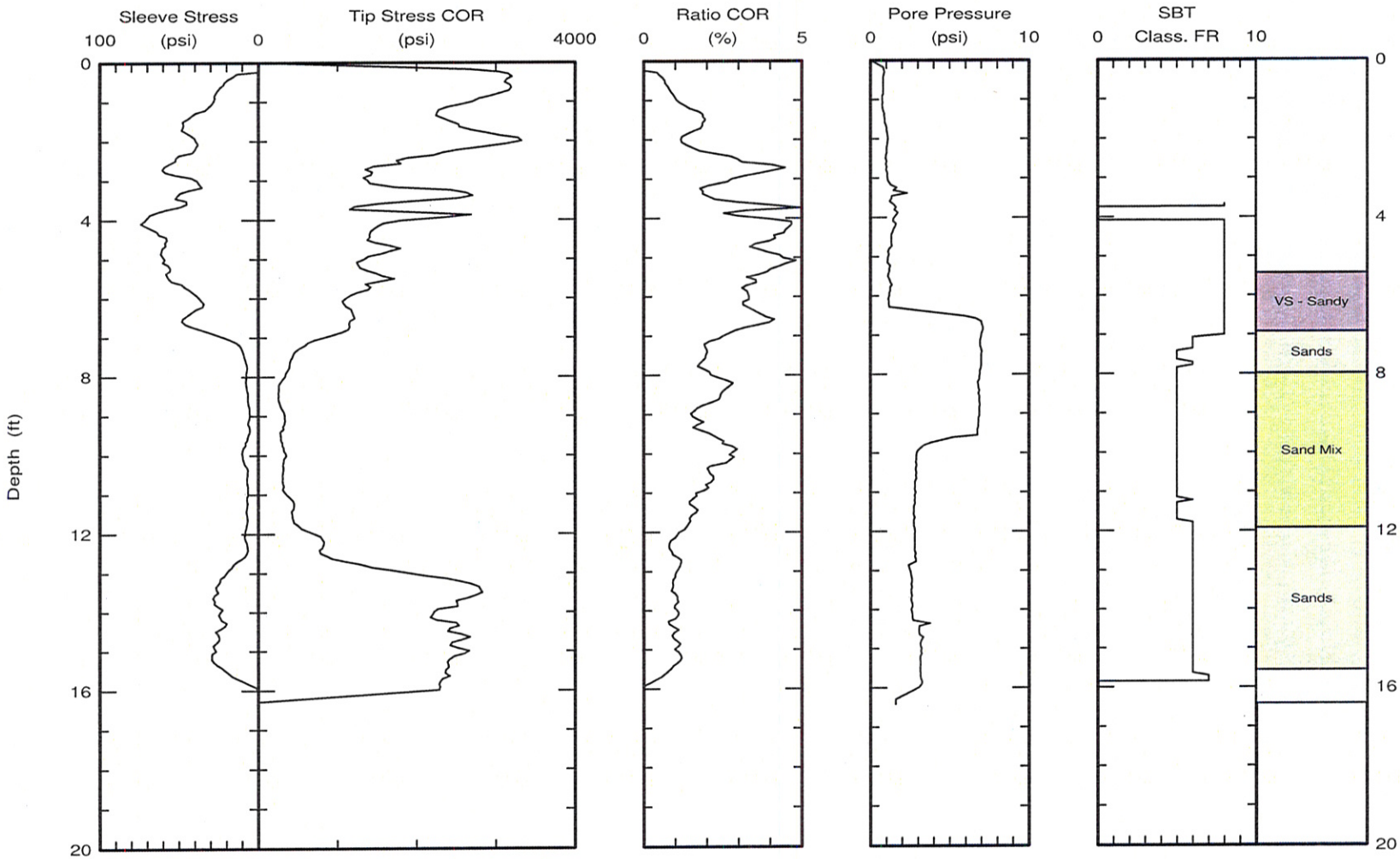


Maximum depth: 16.51 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 31J02-B4-05
File: CPT31J1402C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3321.1700418 Easting: 11731.573 E: 11731.5736019 W El: 52.9622 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 31/Jan/2014 Test ID: 31J01-B4-06 Project: 110002034 CPT-14-030

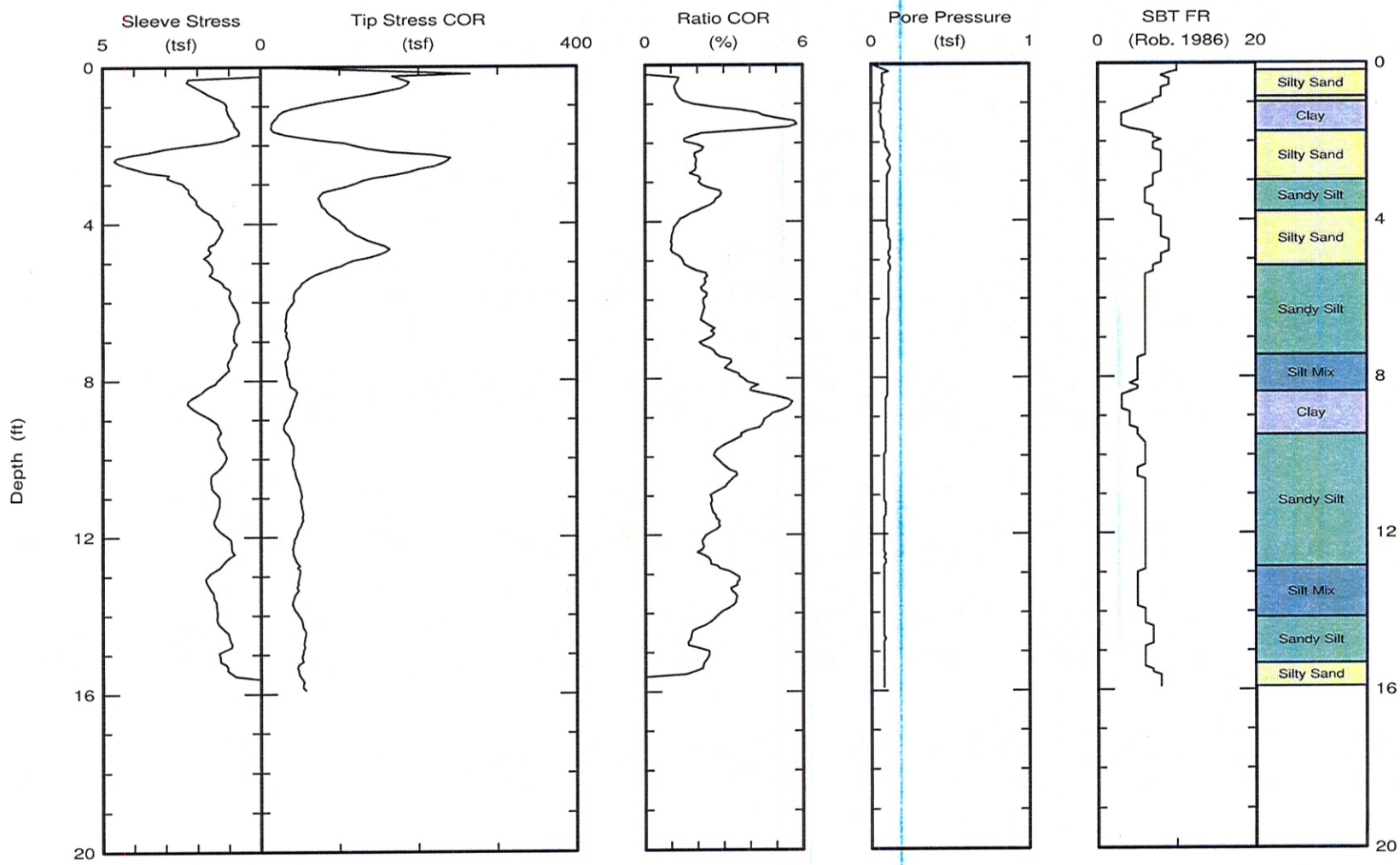


Maximum depth: 16.42 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 31J01-B4-06
File: CPT31J1401C.ecp

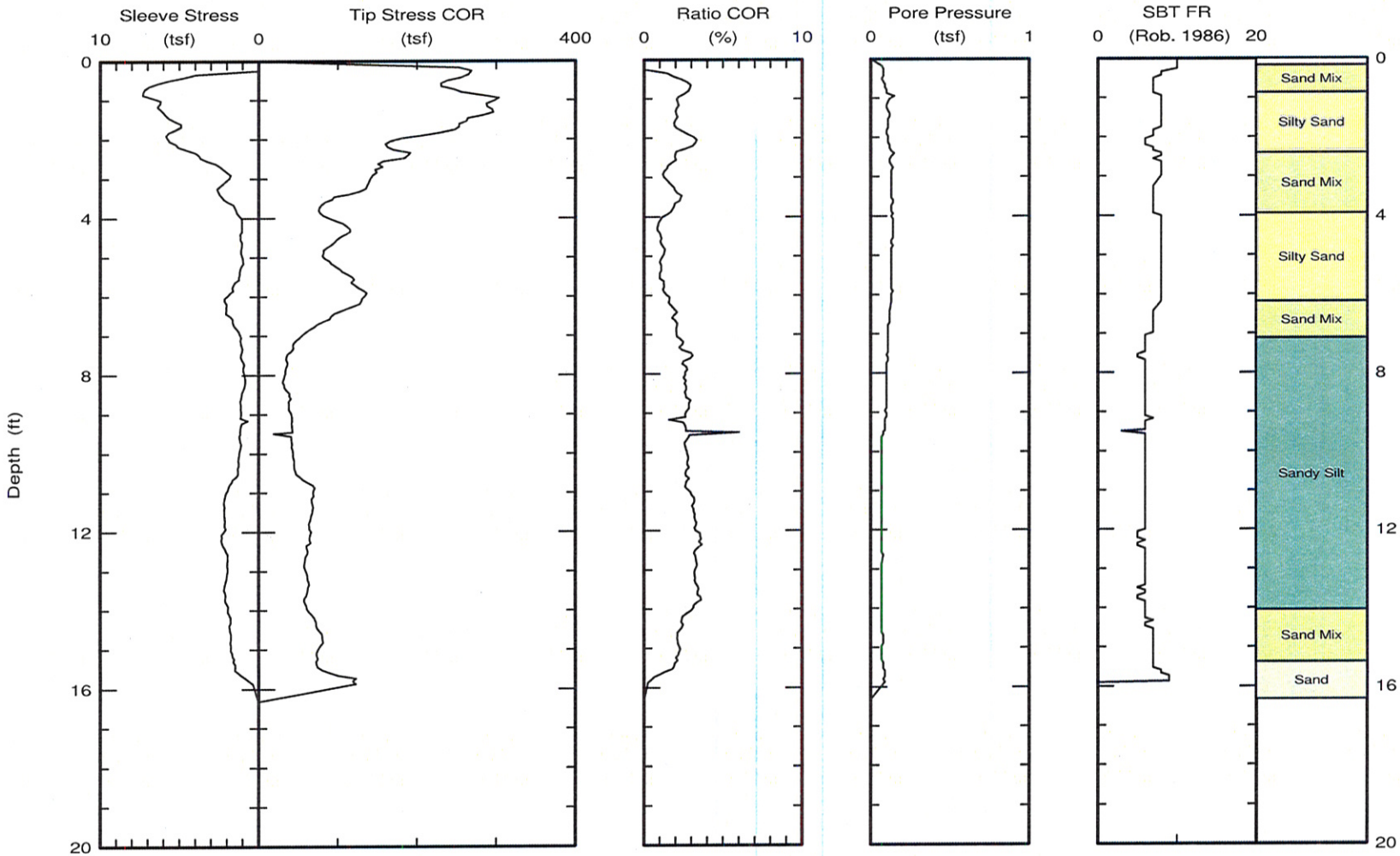
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F15-B5-1 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-031



Maximum depth: 15.92 (ft)

Test ID: 04F15-B5-1
File: CPT04F1415C.ecp

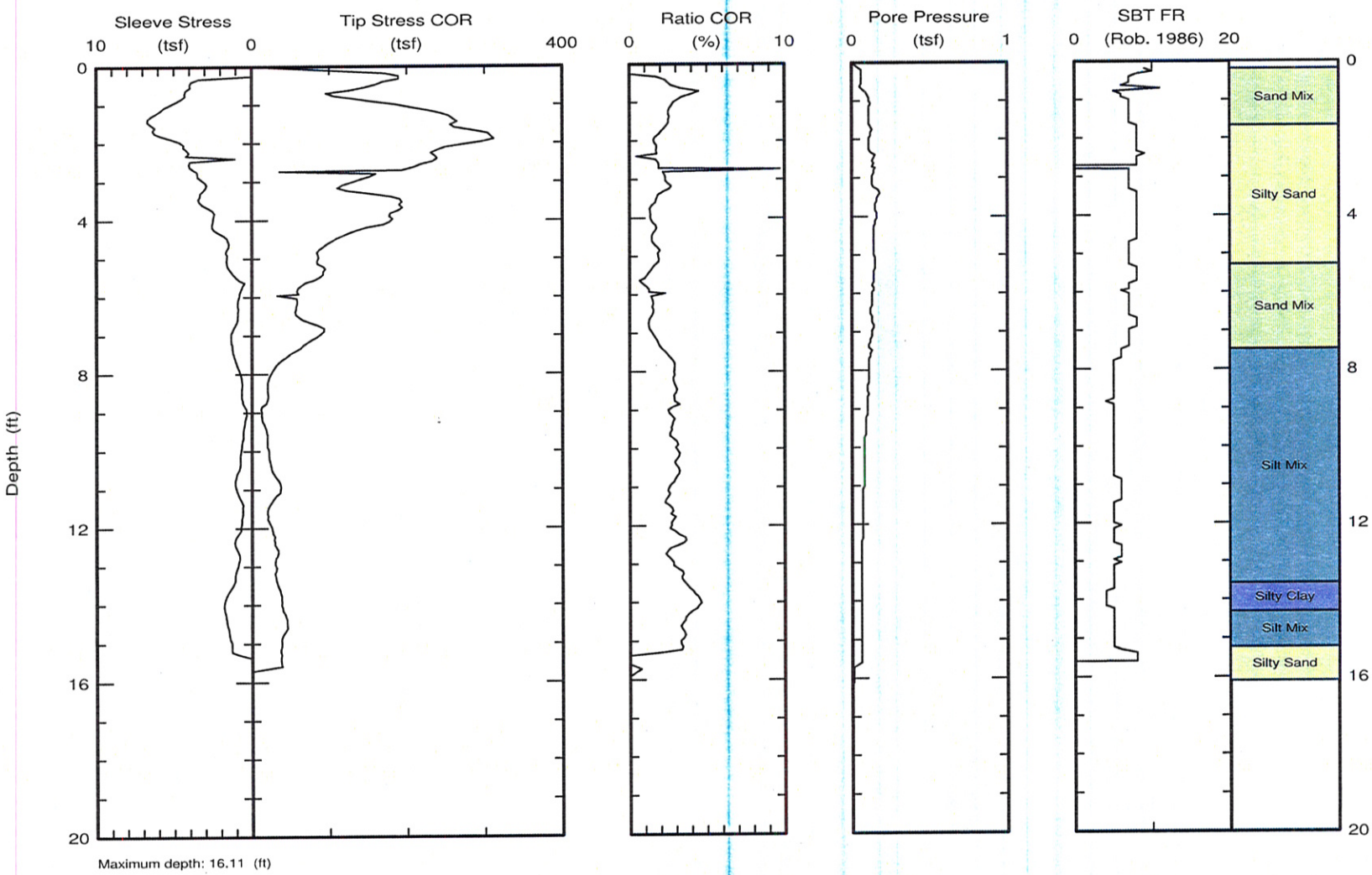
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F14-B5-2 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-032



Maximum depth: 16.33 (ft)

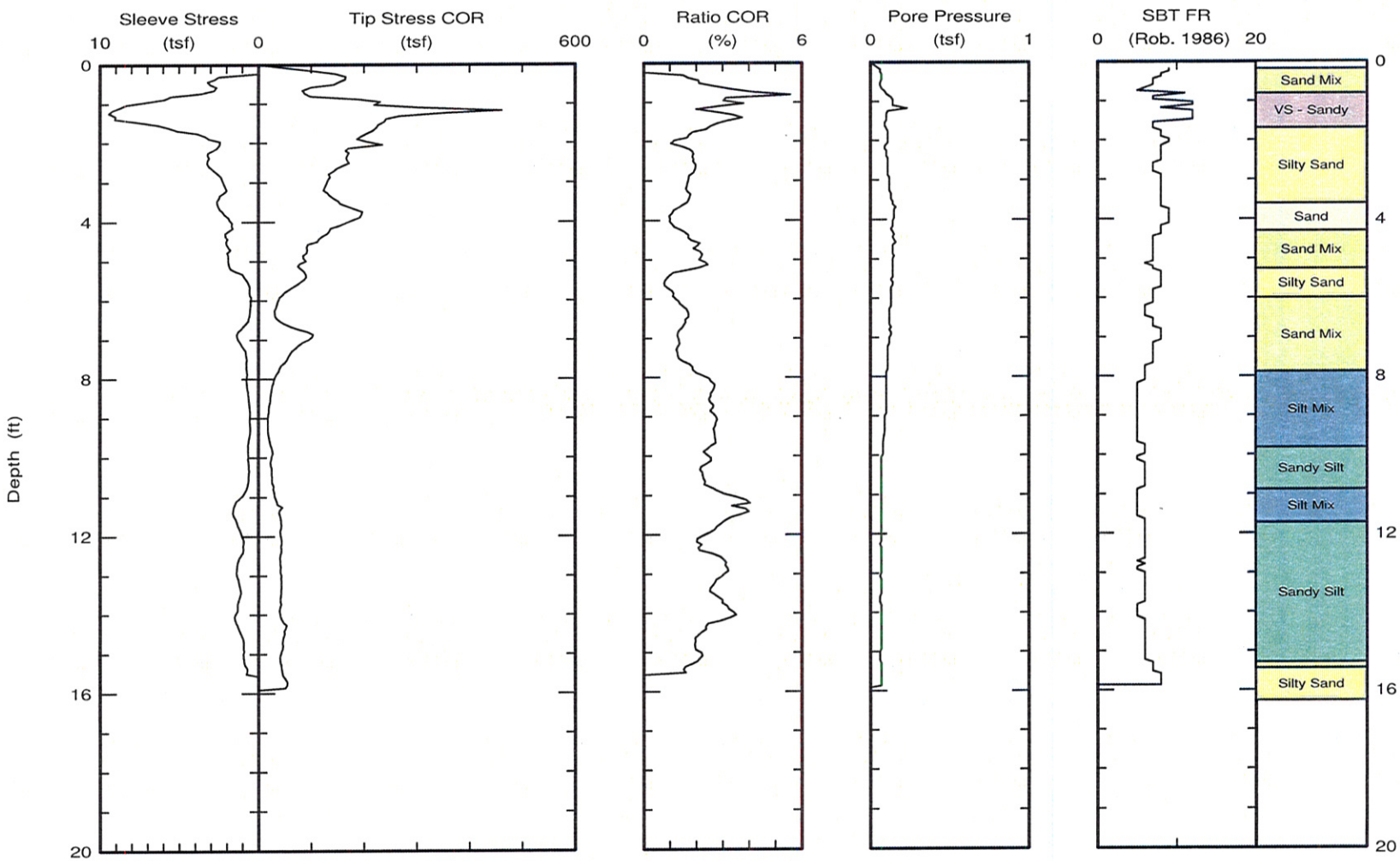
Test ID: 04F14-B5-2
File: CPT04F1414C.ecp

Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F13-B5-3 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-033



Test ID: 04F13-B5-3
File: CPT04F1413C.ecp

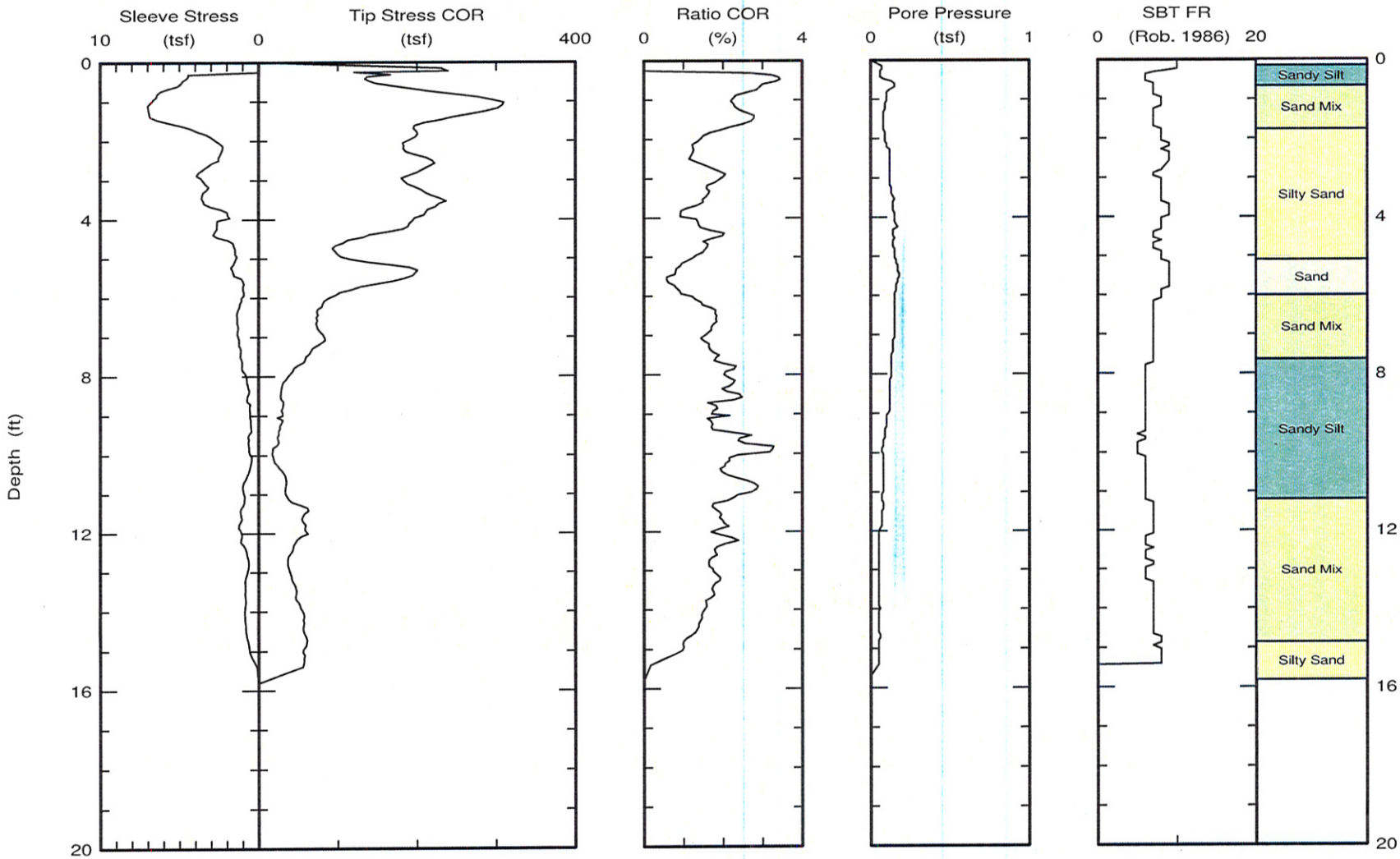
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F12-B5-4 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-034



Maximum depth: 16.27 (ft)

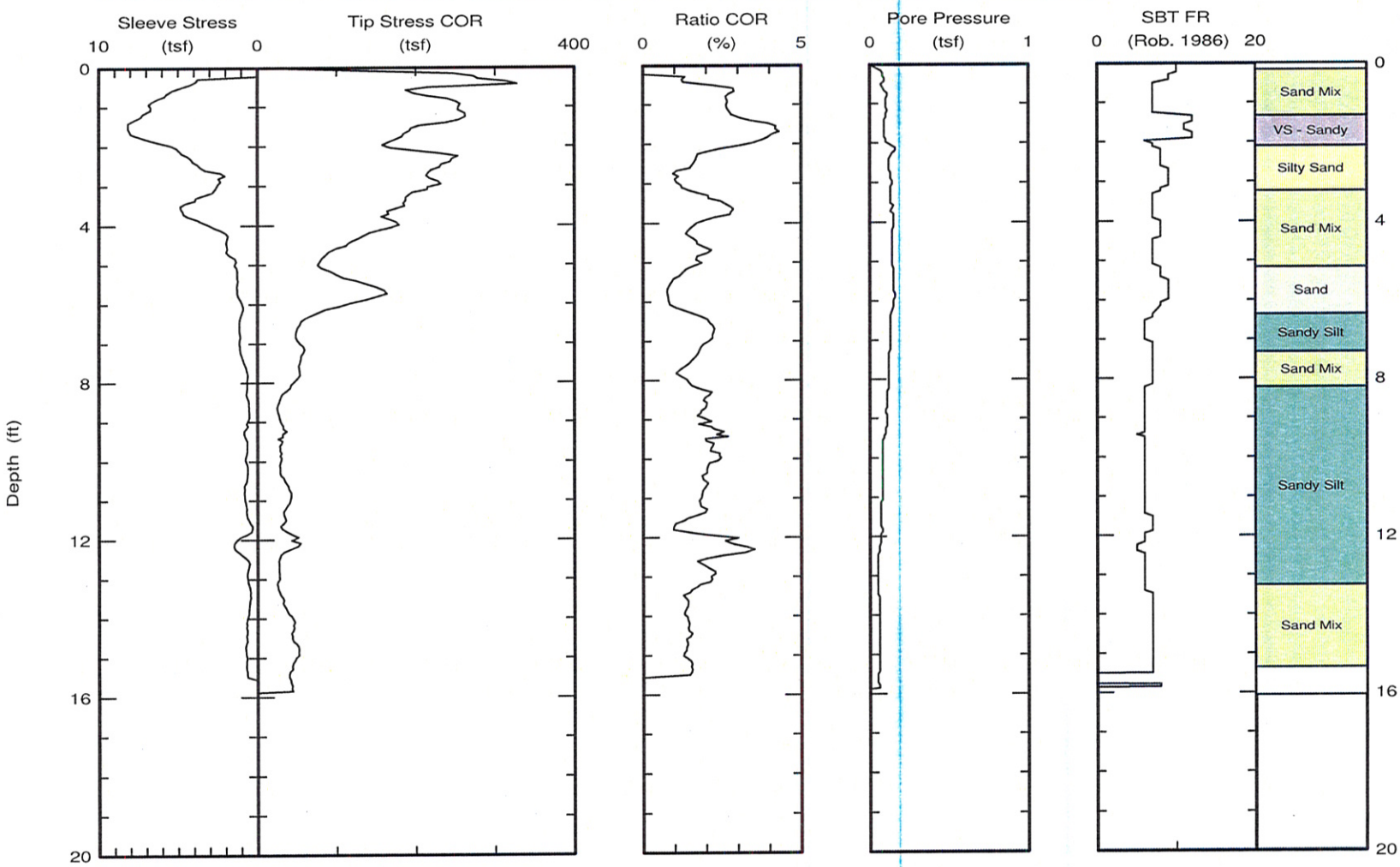
Test ID: 04F12-B5-4
File: CPT04F1412C.ecp

Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F11-B5-5 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-035



Maximum depth: 15.82 (ft)

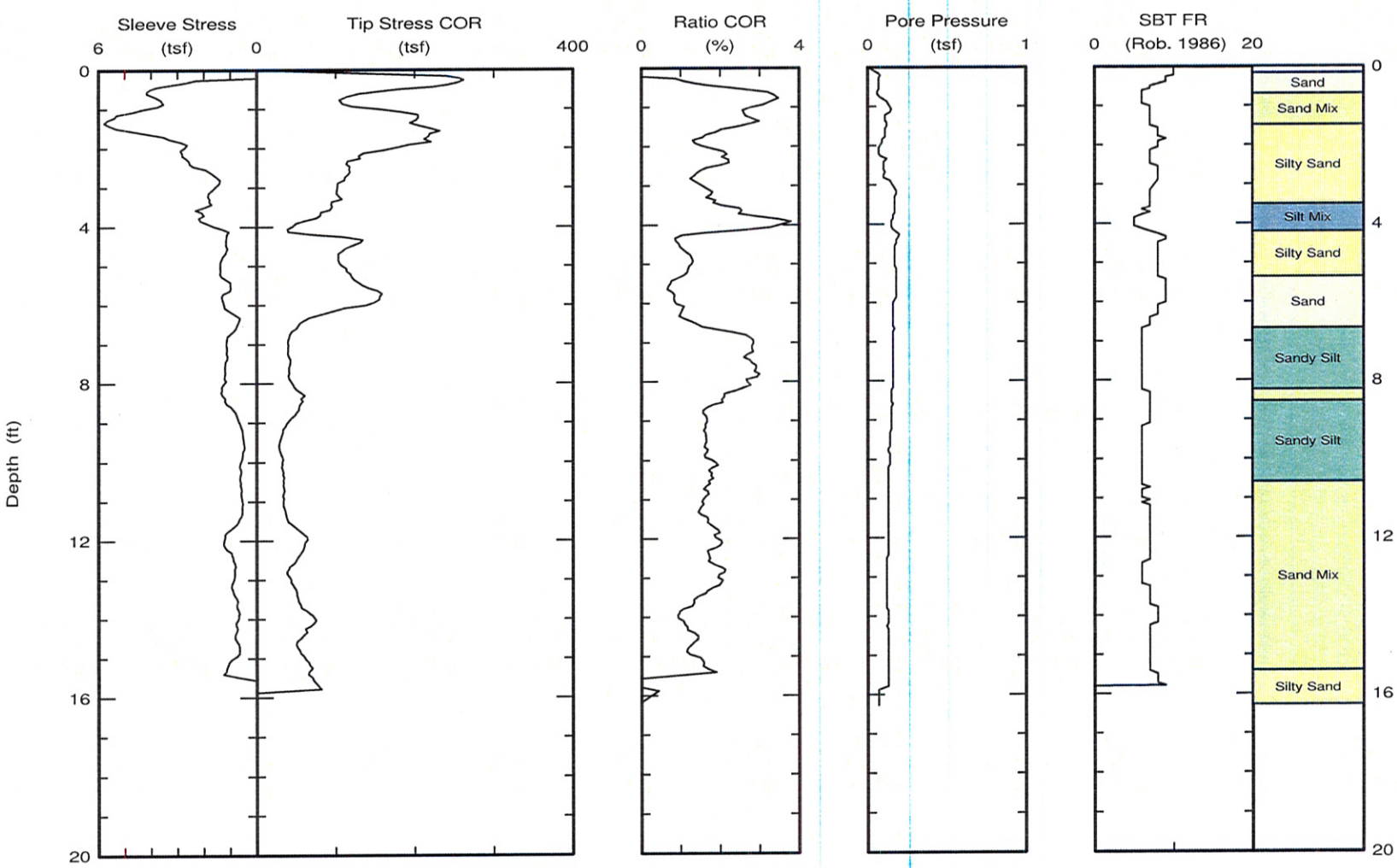
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F10-B5-6 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-036



Maximum depth: 16.07 (ft)

Test ID: 04F10-B5-6
File: CPT04F1410C.ecp

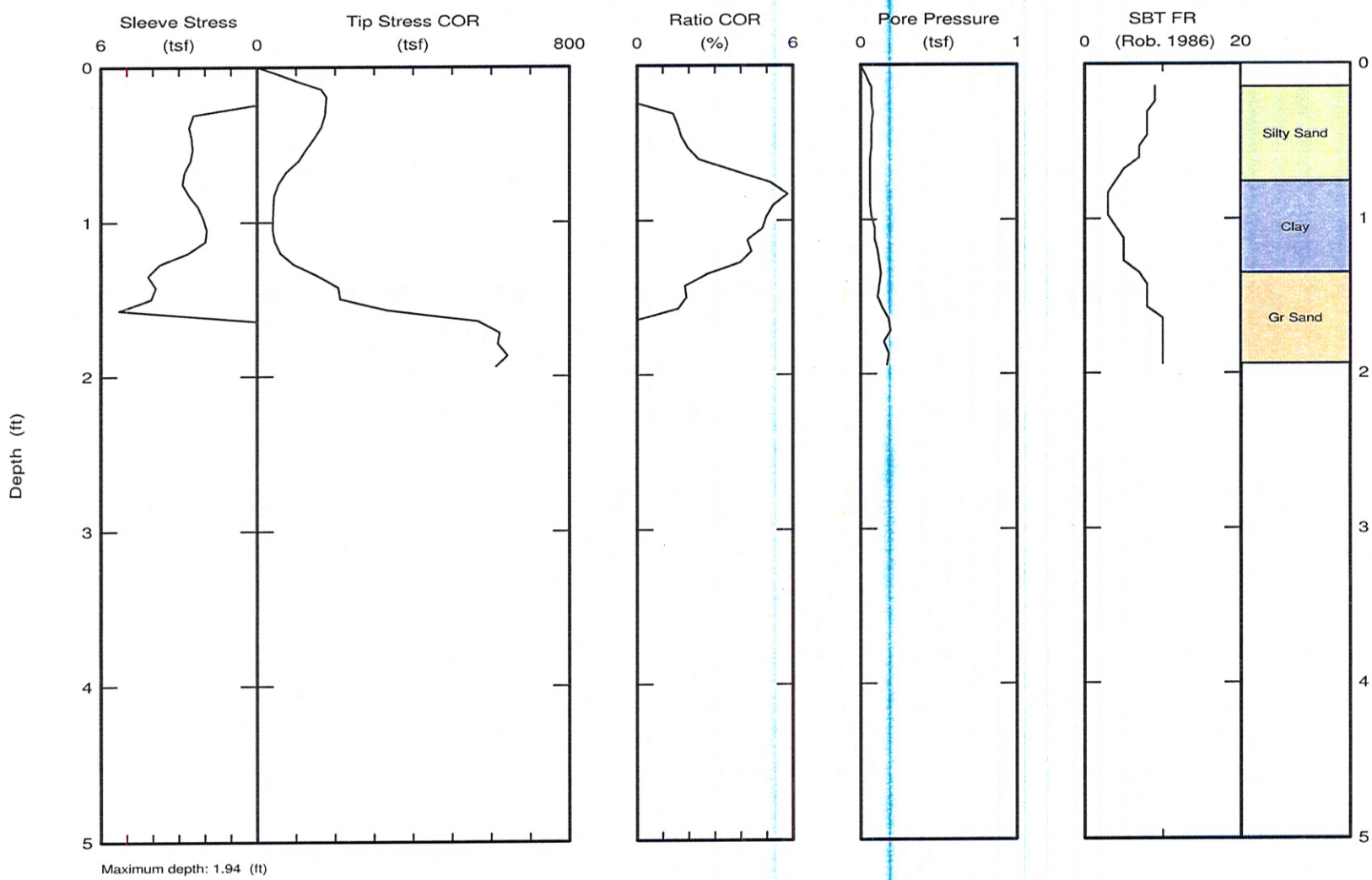
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F09-B5-7 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-037



Maximum depth: 16.28 (ft)

Test ID: 04F09-B5-7
File: CPT04F1409C.ecp

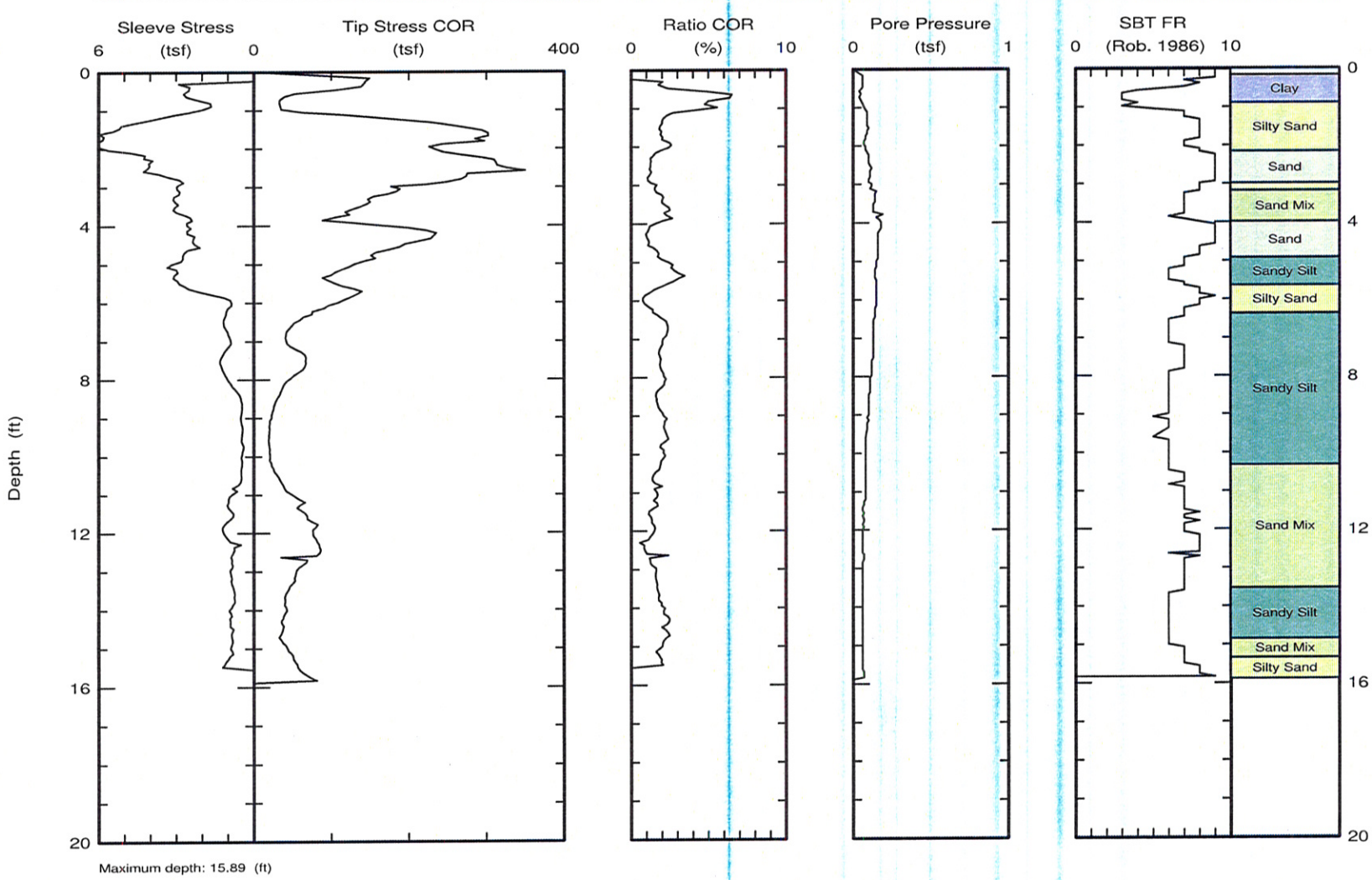
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F08-B5-8 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-038



Maximum depth: 1.94 (ft)

Test ID: 04F08-B5-8
File: CPT04F1408C.ecp

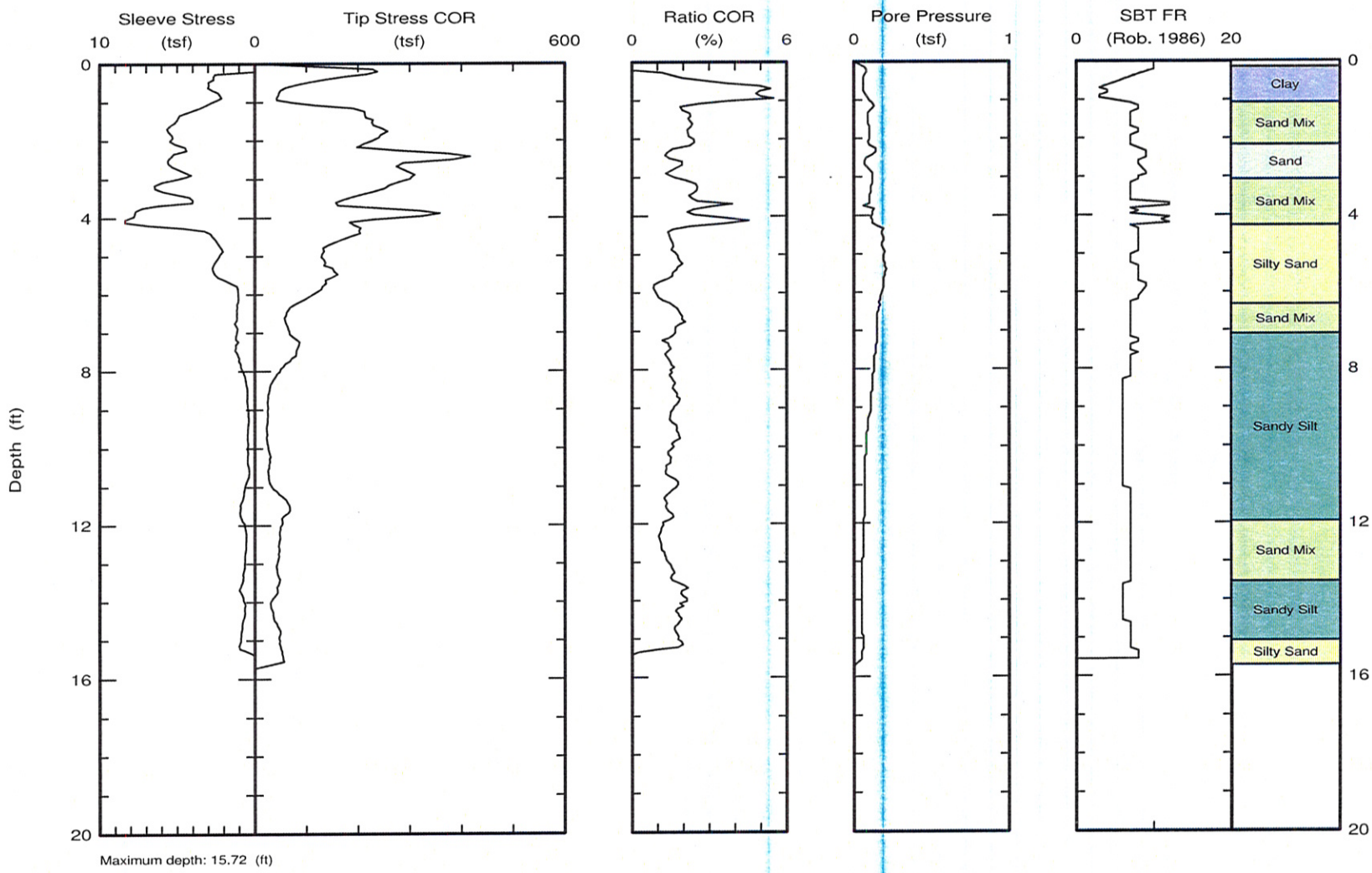
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F07-B5-9 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-039



Maximum depth: 15.89 (ft)

Test ID: 04F07-B5-9
File: CPT04F1407C.ecp

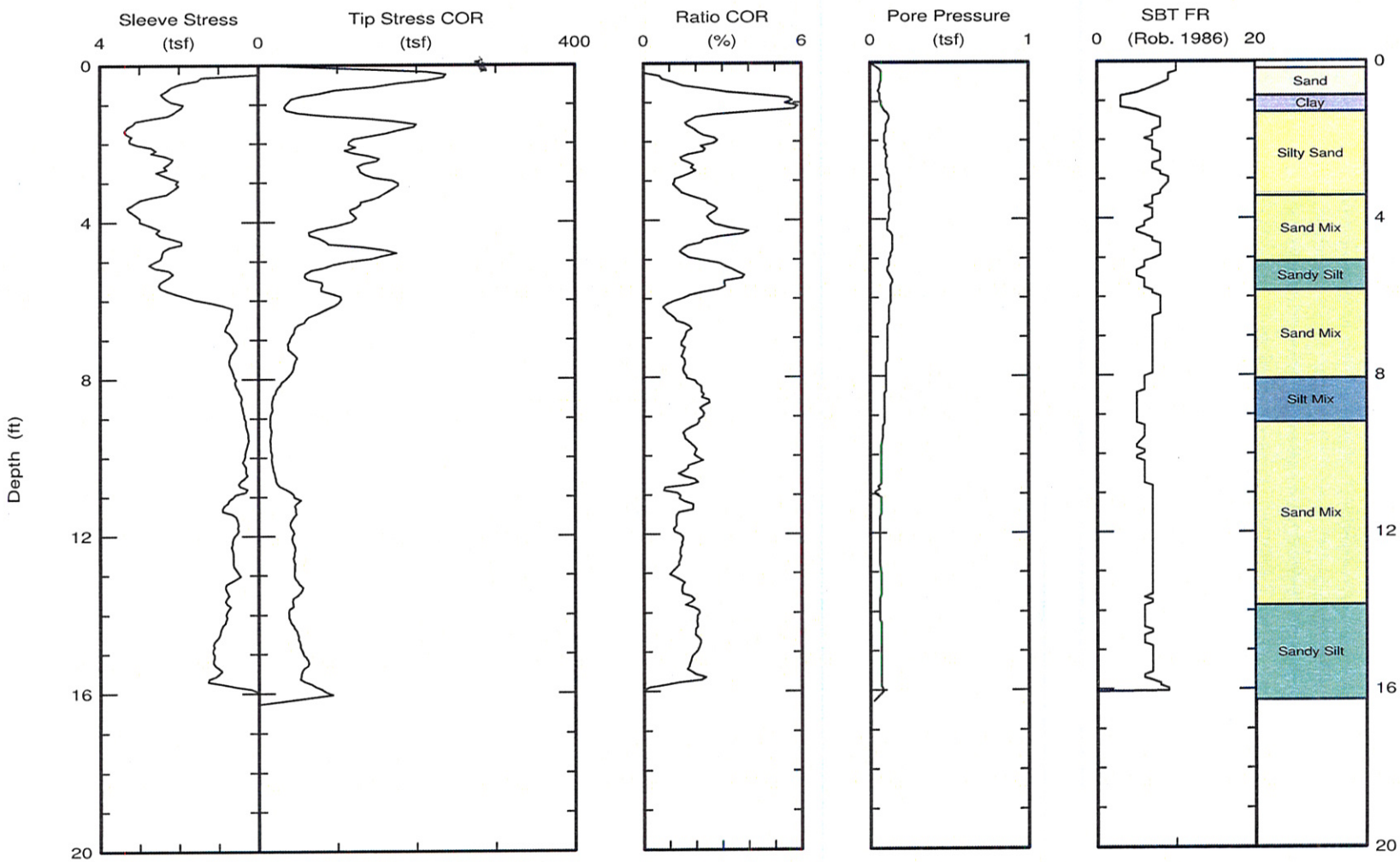
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F06-B5-10 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-040



Maximum depth: 15.72 (ft)

Test ID: 04F06-B5-10
File: CPT04F1406C.ecp

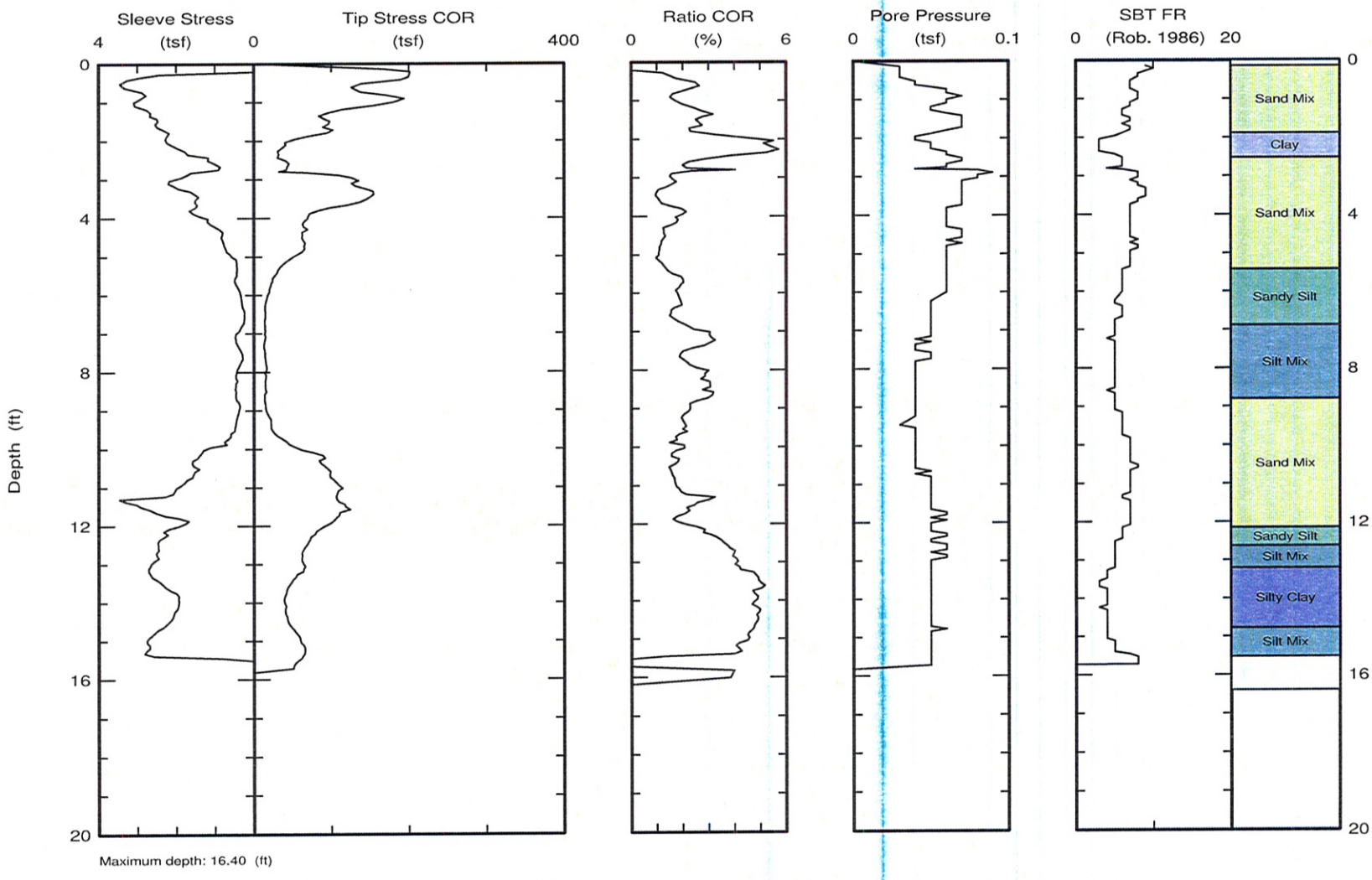
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F05-B5-11 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-041



Maximum depth: 16.28 (ft)

Test ID: 04F05-B5-11
File: CPT04F1405C.ecp

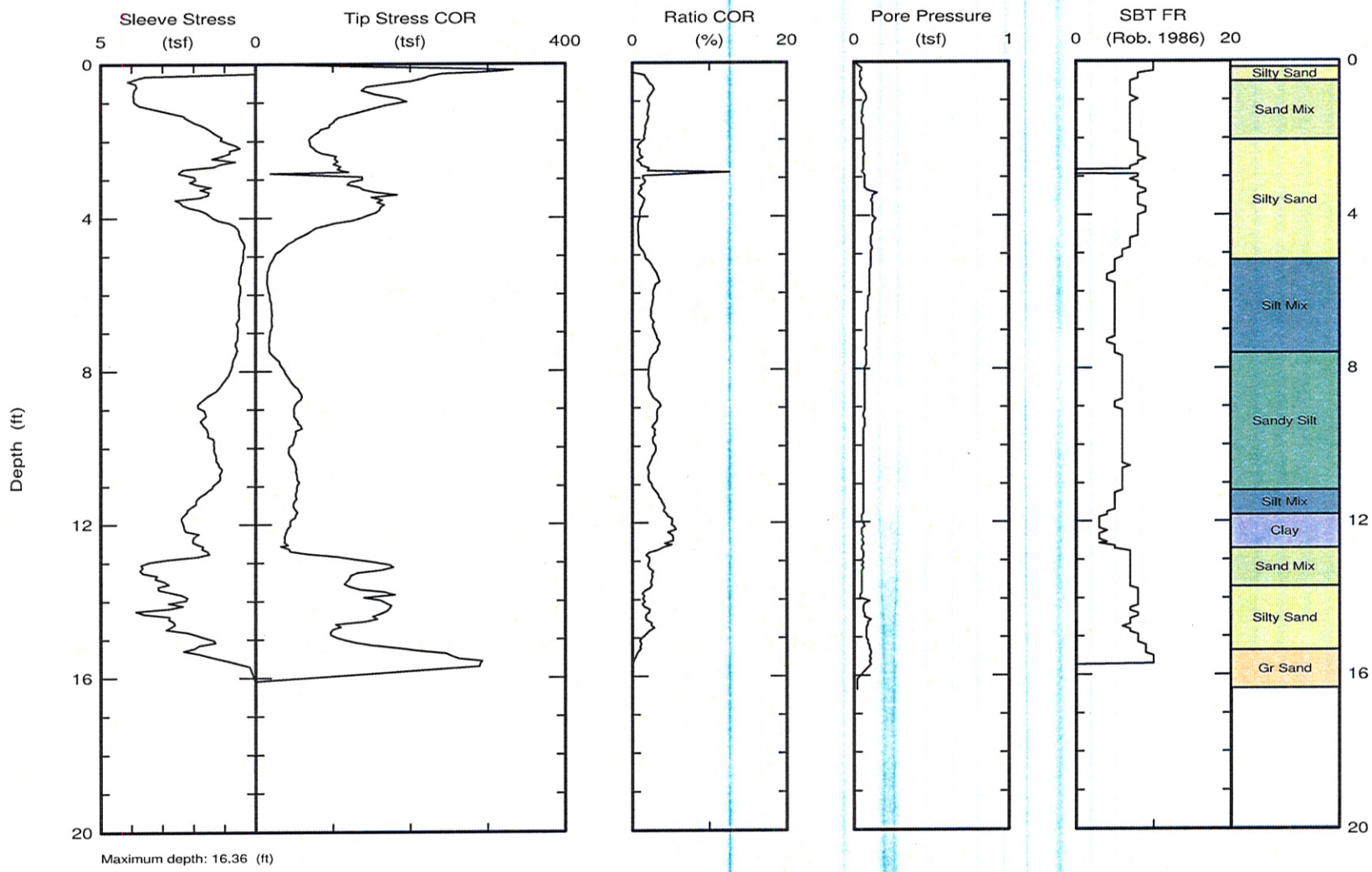
Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F04-B5-12 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-042



Maximum depth: 16.40 (ft)

Test ID: 04F04-B5-12
File: CPT04F1404C.ecp

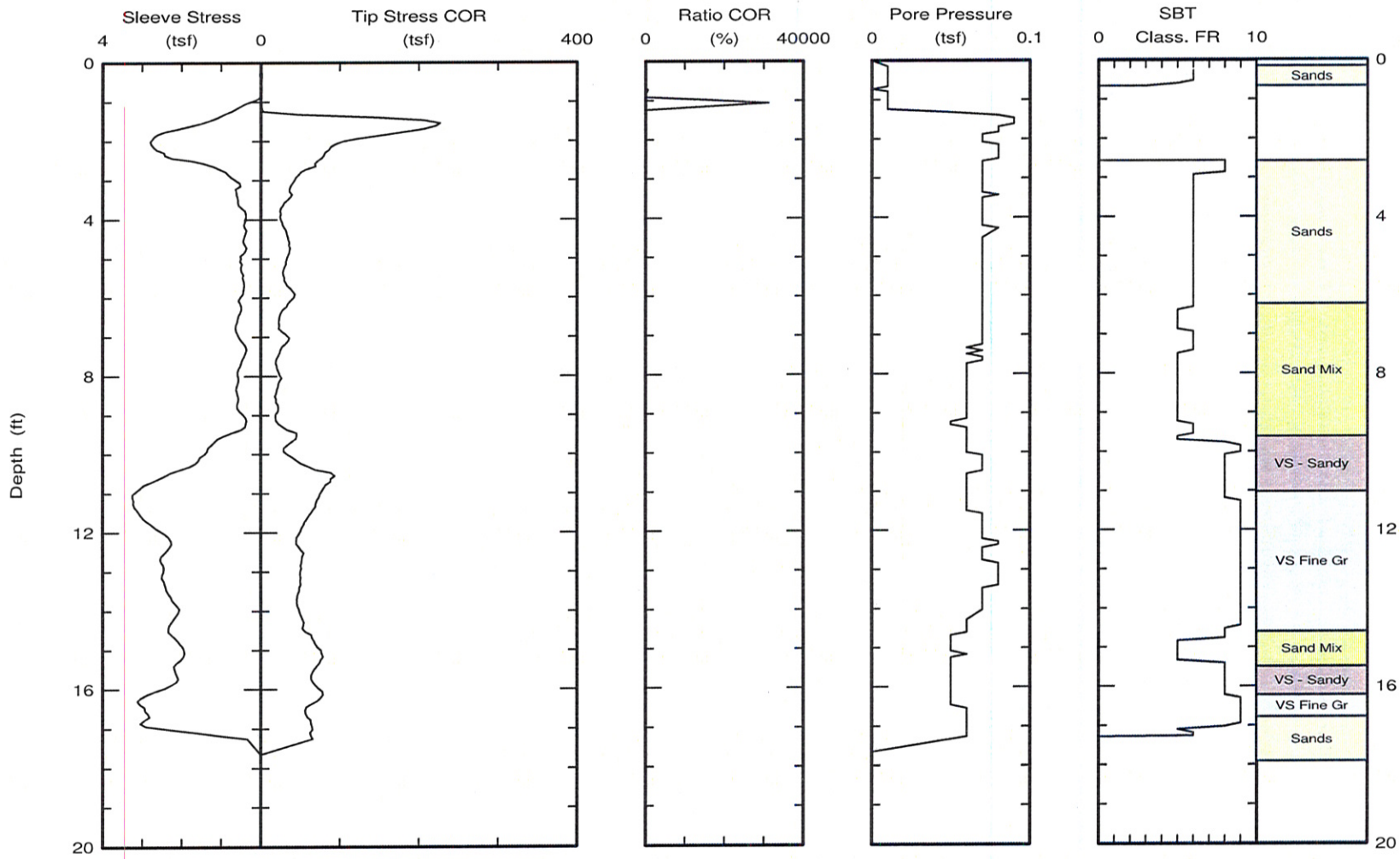
Caltrans Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation: Customer: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 04/Feb/2014 Test ID: 04F03-B5-13 Project: 110002034 CPT-14-043



Maximum depth: 16.36 (ft)

Test ID: 04F03-B5-13
File: CPT04F1403C.ecp

Division of Engineer Service Geotechnical Service 5900 Folsom Blvd. Sac., CA 95819 www.dot.ca.gov	Northing: Easting: Elevation:	Date: 04/Feb/2014 Test ID: 04F02-B5-14 Project: 110002034
	Customer: JEFF TESAR Job Site: I-5 PAVEMENT	CPT-14-044

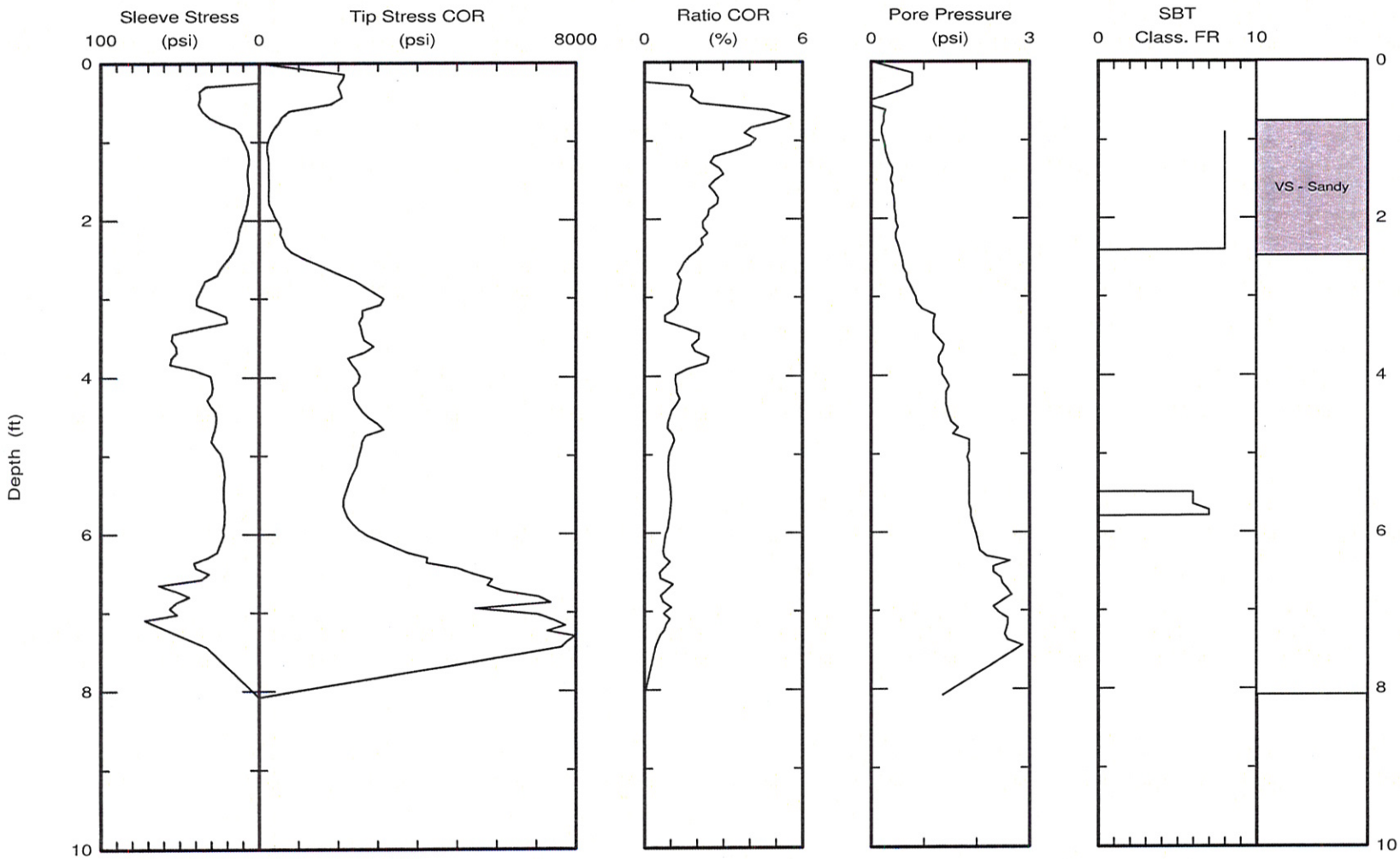


Maximum depth: 17.92 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 04F02-B5-14
File: CPT04F1402C.ecp

Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3322.5490736 Easting: 11733.709 E: 11733.7099188 W El: 27.7450 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 30/Jan/2014 Test ID: 30J01-B3-1 Project: 110002034 CPT-14-045

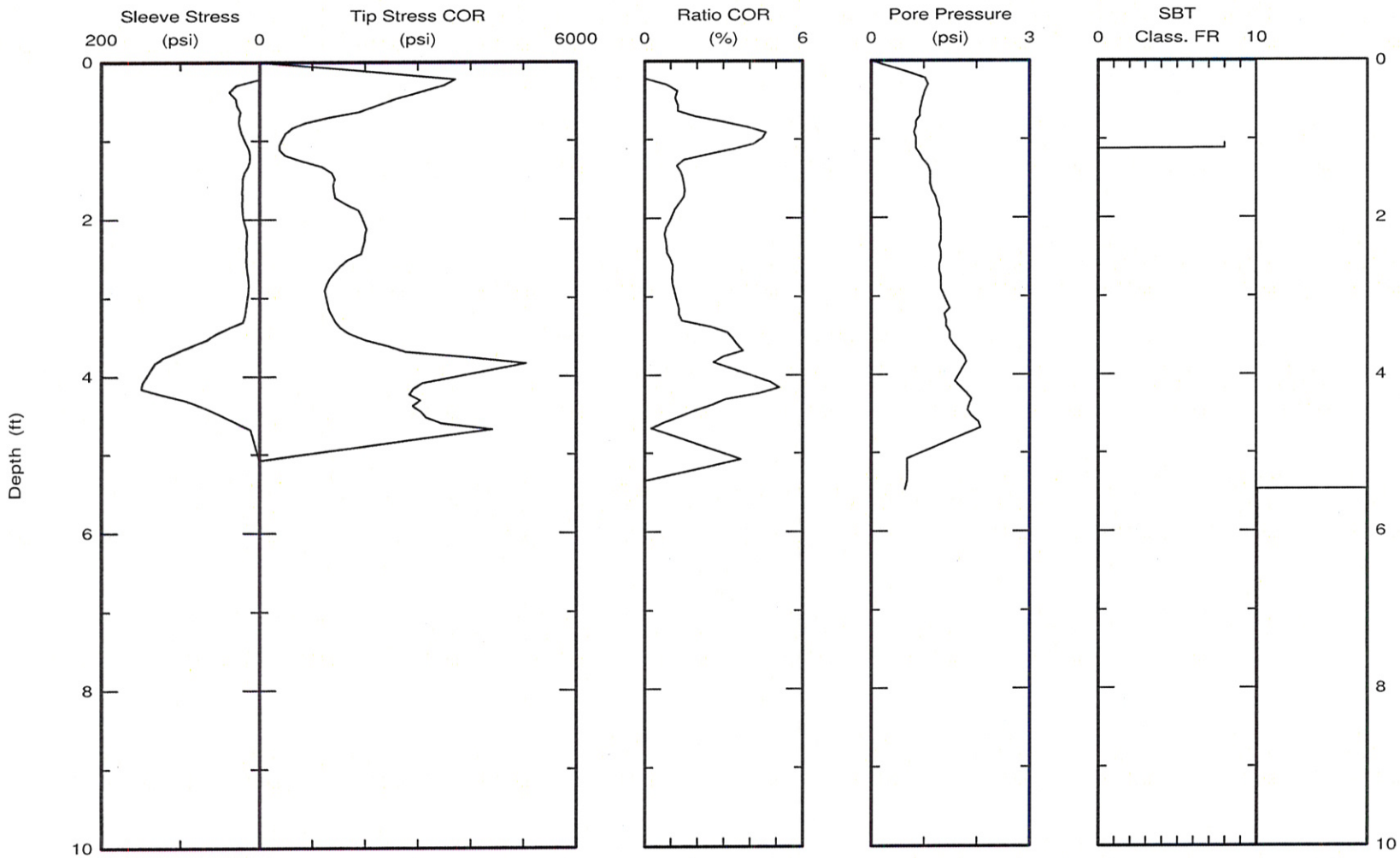


Maximum depth: 8.08 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 30J01-B3-1
File: CPT30J1401C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3322.5560190 Easting: 11733.718 E: 11733.7189319 W El: 27.9012 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 30/Jan/2014 Test ID: 30J02-B3-2 Project: 110002034 CPT-14-046

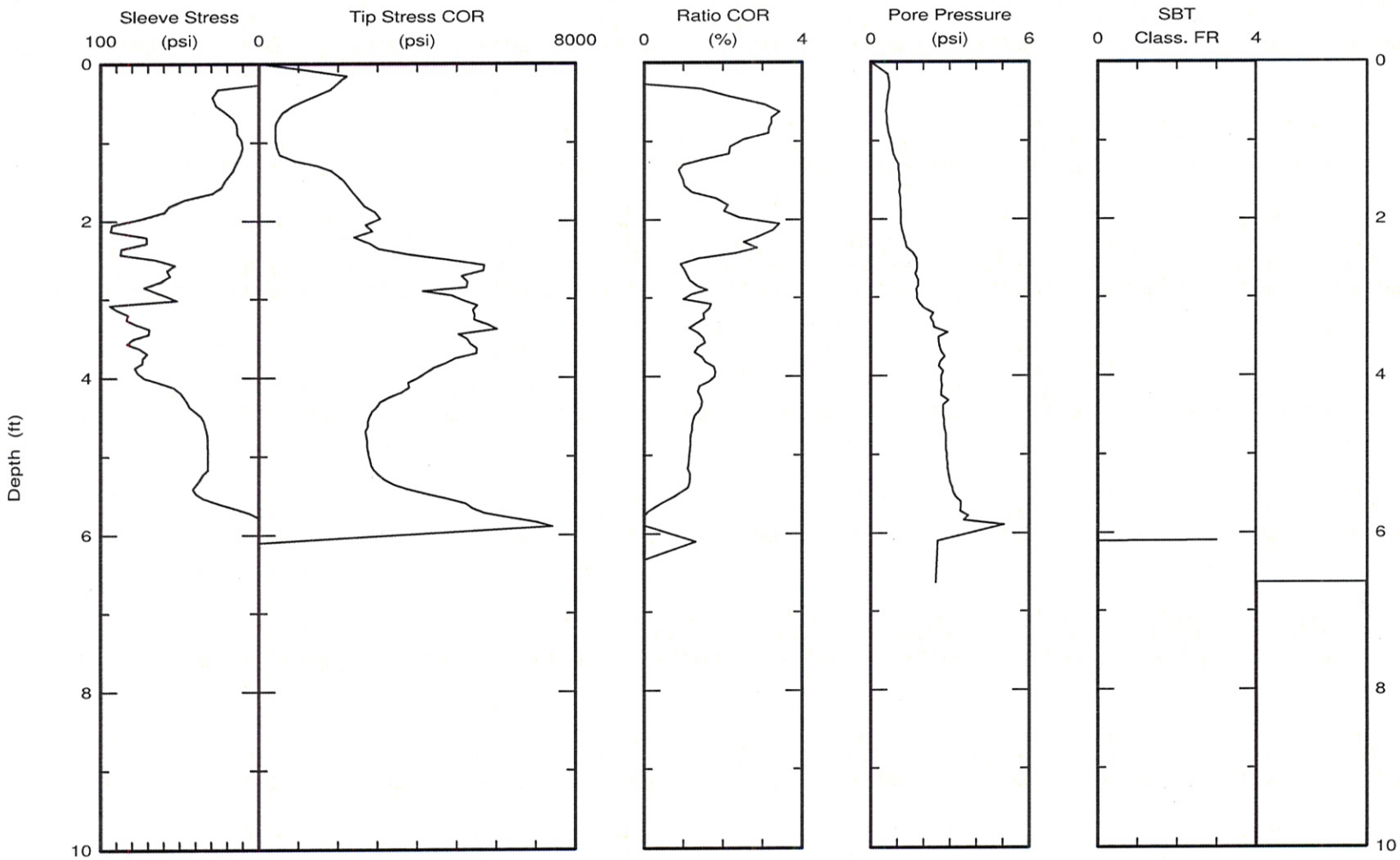


Maximum depth: 5.47 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 30J02-B3-2
File: CPT30J1402C.ecp

Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3322.5574219 Easting: 11733.72 E: 11733.7210858 W El: 27.1649 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 30/Jan/2014 Test ID: 30J03-B3-3 Project: 110002034 CPT-14-047

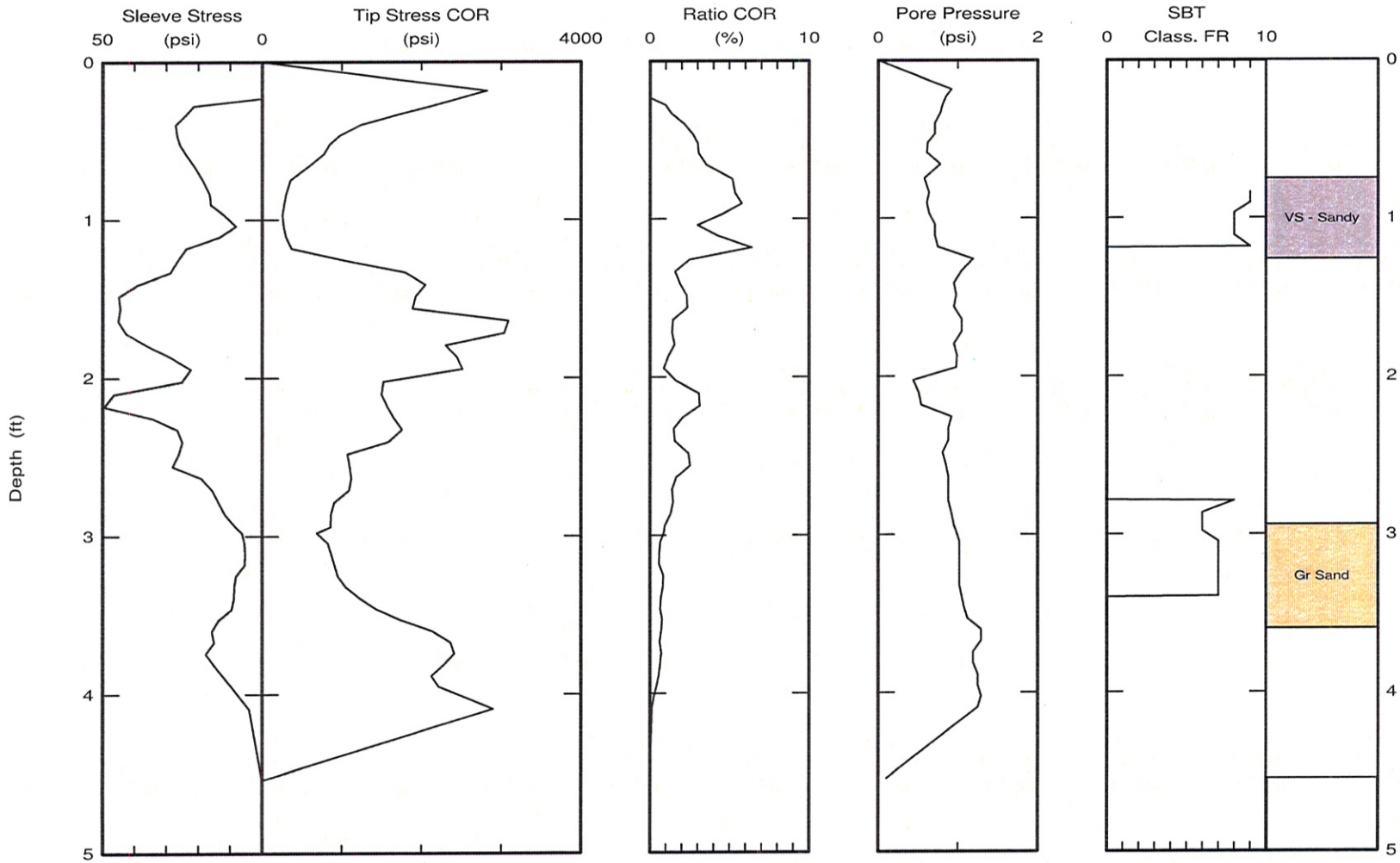


Maximum depth: 6.64 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 30J03-B3-3
File: CPT30J1403C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3322.5635117 Easting: 11733.728 E: 11733.7288249 W El: 26.5141 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 30/Jan/2014 Test ID: 30J04-B3-4 Project: 110002034 CPT-14-048

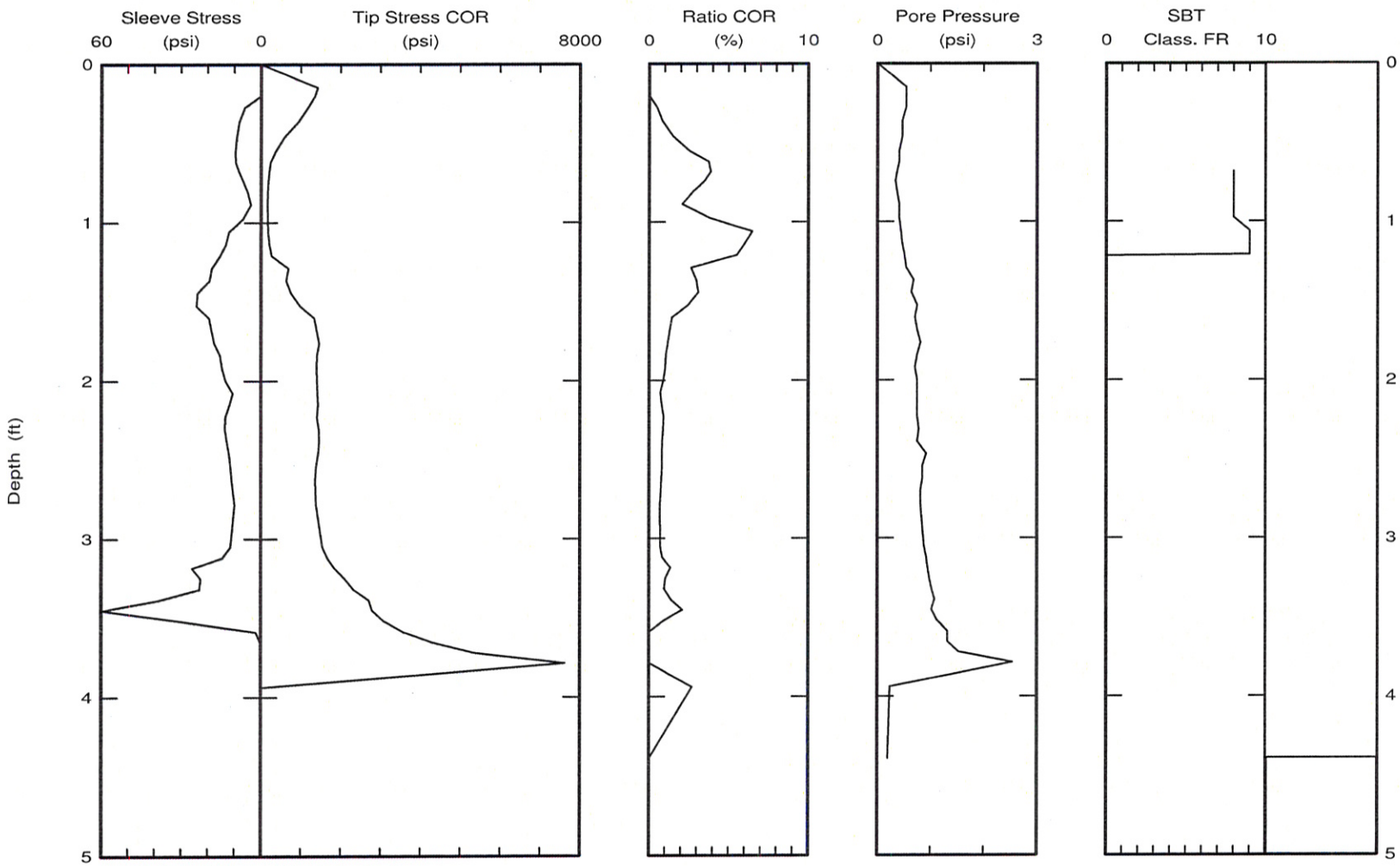


Maximum depth: 4.54 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 30J04-B3-4
File: CPT30J1404C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3322.5659189 Easting: 11733.731 E: 11733.7318372 W El: 26.3384 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 30/Jan/2014 Test ID: 30J05-B3-5 Project: 110002034 CPT-14-049

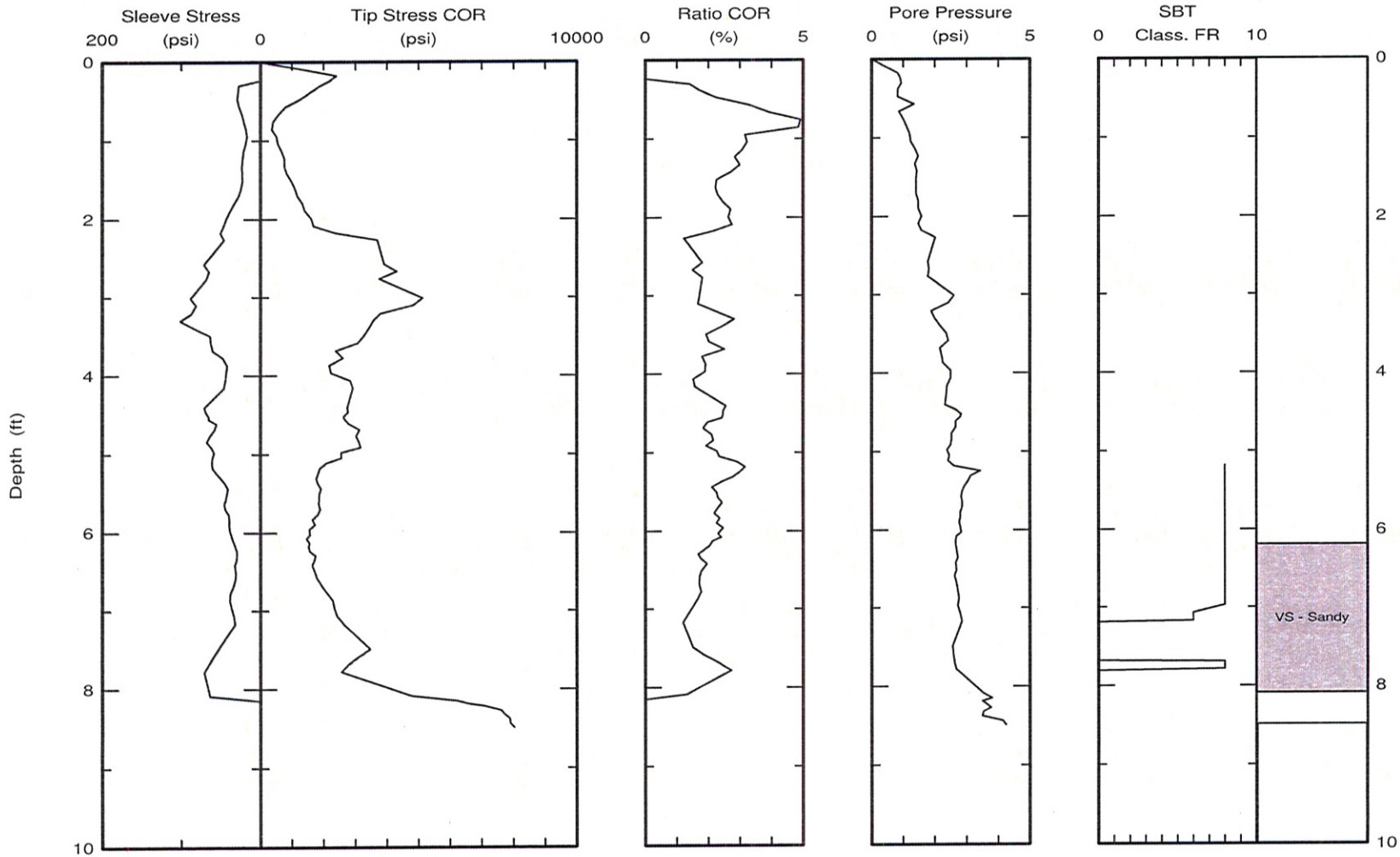


Maximum depth: 4.39 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 30J05-B3-5
File: CPT30J1405C.ecp

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3322.5714735 Easting: 11733.738 E: 11733.7380697 W El: 26.6484 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 30/Jan/2014 Test ID: 30J06-B3-6 Project: 110002034 CPT-14-050

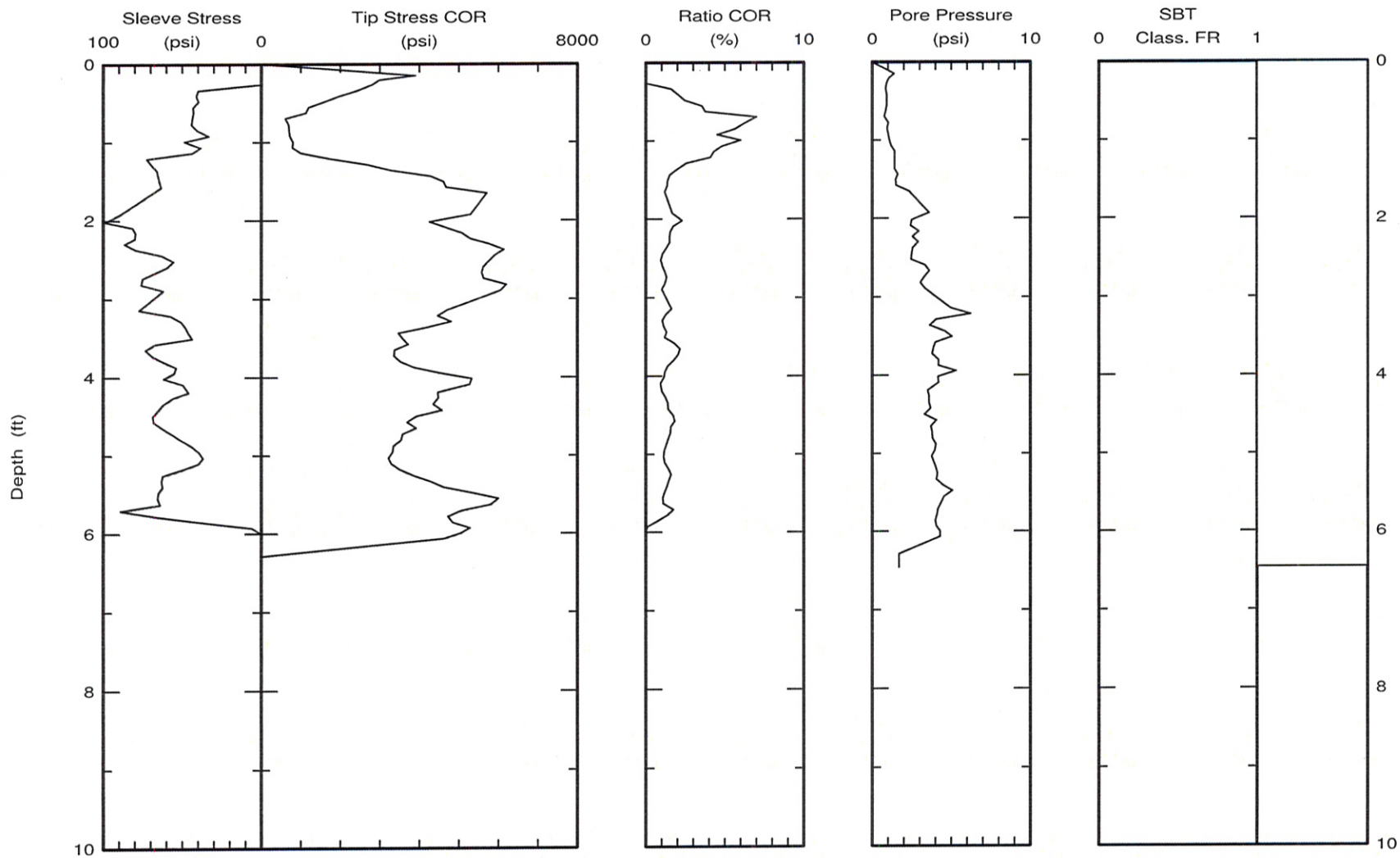


Maximum depth: 8.49 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 30J06-B3-6
File: CPT30J1406C.ecp

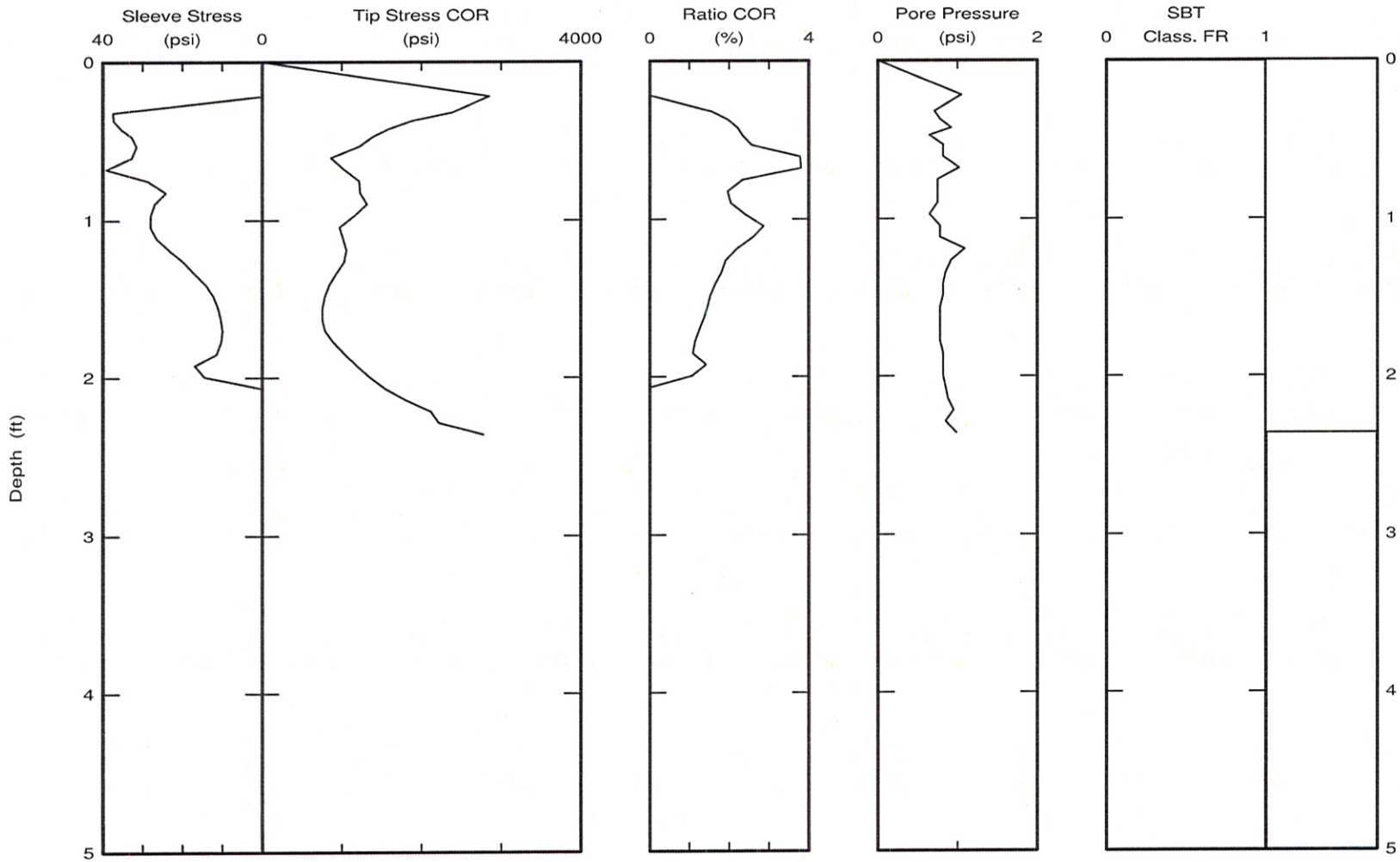
Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3322.5761033 Easting: 11733.743 E: 11733.7435220 W El: 27.8406 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 30/Jan/2014 Test ID: 30J07-B3-7 Project: 110002034 CPT-14-051



Maximum depth: 6.46 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Caltrans Geotechnical Instrumentation Branch 5900 Folsom blvd Sacramento, CA. 9 916-227-1080 gem-yu_ma@ www.dot.ca.gov/hq/esc/geotech/gi/ft&	N: 3322.5793595 Easting: 11733.746 E: 11733.7467112 W El: 26.2650 M Client: JEFF TESAR Job Site: I-5 PAVEMENT	Date: 30/Jan/2014 Test ID: 30J08-B3-8 Project: 110002034 CPT-14-052



Maximum depth: 2.36 (ft)

Class FR: Friction Ratio Classification (Ref: Robertson 1990)

Test ID: 30J08-B3-8
File: CPT30J1408C.ecp

CAiCE STATION & OFFSET REPORT FROM CHAIN **"VSD2"**

Location 1

3432+48.02 68.23 ' Rt EL 141.140 N 2064240.179 E 6183734.822
DESCRIPTION: B1-1, Test bore hole REFR401 - CPT-14-001

3432+82.43 68.26 ' Rt EL 141.170 N 2064263.059 E 6183709.122
DESCRIPTION: B1-2, Test bore hole REFR402 - CPT-14-002

3433+13.50 68.29 ' Rt EL 140.960 N 2064283.719 E 6183685.912
DESCRIPTION: B1-3, Test bore hole REFR403 - CPT-14-003

3433+48.81 68.27 ' Rt EL 141.070 N 2064307.159 E 6183659.502
DESCRIPTION: B1-4, Test bore hole REFR404 - CPT-14-004

3433+85.12 68.29 ' Rt EL 141.180 N 2064331.279 E 6183632.372
DESCRIPTION: B1-5, Test bore hole REFR405 - CPT-14-005

3434+12.59 67.99 ' Rt EL 141.360 N 2064349.309 E 6183611.642
DESCRIPTION: B1-6, Test bore hole REFR406 - CPT-14-006

3434+35.10 67.66 ' Rt EL 141.490 N 2064364.009 E 6183594.592
DESCRIPTION: B1-7, Test bore hole REFR407 - CPT-14-007

3434+53.94 67.79 ' Rt EL 141.670 N 2064376.619 E 6183580.592
DESCRIPTION: B1-8, Test bore hole REFR408 - CPT-14-008

3434+72.46 68.83 ' Rt EL 141.690 N 2064389.699 E 6183567.442
DESCRIPTION: B1-9, Test bore hole REFR409 - CPT-14-009

3434+97.96 68.74 ' Rt EL 142.000 N 2064406.569 E 6183548.312
DESCRIPTION: B1-10, Test bore hole REFR410 - CPT-14-010

CAiCE STATION & OFFSET REPORT FROM CHAIN **"VSD2"**

Location 2

3489+68.40 68.34 ' Rt EL 173.230 N 2068039.735 E 6179458.594
DESCRIPTION: B2-1, Test bore hole REFR411 - CPT-14-011

3490+02.32 68.31 ' Rt EL 173.270 N 2068062.245 E 6179433.214
DESCRIPTION: B2-2, Test bore hole REFR412 - CPT-14-012

3490+31.90 68.82 ' Rt EL 173.230 N 2068082.265 E 6179411.444
DESCRIPTION: B2-3, Test bore hole REFR413 - CPT-14-013

3490+69.97 68.48 ' Rt EL 173.210 N 2068107.305 E 6179382.754
DESCRIPTION: B2-4, Test bore hole REFR414 - CPT-14-014

3490+99.39 68.76 ' Rt EL 173.190 N 2068127.055 E 6179360.954
DESCRIPTION: B2-5, Test bore hole REFR415 - CPT-14-015

3491+31.91 69.03 ' Rt EL 173.160 N 2068148.855 E 6179336.824
DESCRIPTION: B2-6, Test bore hole REFR416 - CPT-14-016

3491+53.33 69.05 ' Rt EL 173.100 N 2068163.095 E 6179320.824
DESCRIPTION: B2-7, Test bore hole REFR417 - CPT-14-017

3491+61.66 69.30 ' Rt EL 173.160 N 2068168.815 E 6179314.754
DESCRIPTION: B2-8, Test bore hole REFR418 - CPT-14-018

3491+74.12 69.73 ' Rt EL 173.140 N 2068177.415 E 6179305.734
DESCRIPTION: B2-9, Test bore hole REFR419 - CPT-14-019

3491+82.30 69.45 ' Rt EL 173.180 N 2068182.635 E 6179299.424
DESCRIPTION: B2-10, Test bore hole REFR420 - CPT-14-020

3491+97.10 69.40 ' Rt EL 173.140 N 2068192.425 E 6179288.334
DESCRIPTION: B2-11A, Test bore hole REFR421 - CPT-14-021

3492+01.10 73.32 ' Rt EL 173.200 N 2068198.020 E 6179287.950
DESCRIPTION: B2-11B, Test bore hole REFR422 - CPT-14-022

3492+12.83 69.40 ' Rt EL 173.230 N 2068202.875 E 6179276.574
DESCRIPTION: B2-12, Test bore hole REFR423 - CPT-14-023

3492+47.54 67.98 ' Rt EL 173.350 N 2068224.875 E 6179249.684
DESCRIPTION: B2-13, Test bore hole REFR424 - CPT-14-024

CAiCE STATION & OFFSET REPORT FROM CHAIN **"VSD2"**

Location 3

3725+29.30 69.60 'Rt EL 88.040 N 2082882.811 E 6161201.952
DESCRIPTION: B3-1, Test bore hole REFR425 - CPT-14-045

3725+92.75 69.04 ' Rt EL 87.780 N 2082926.021 E 6161157.510
DESCRIPTION: B3-2, Test bore hole REFR426 - CPT-14-046

3726+09.04 69.23 ' Rt EL 87.730 N 2082937.500 E 6161146.486
DESCRIPTION: B3-3, Test bore hole REFR427 - CPT-14-047

3726+66.00 69.18 ' Rt EL 87.630 N 2082977.611 E 6161107.917
DESCRIPTION: B3-4, Test bore hole REFR428 - CPT-14-048

3726+87.81 69.09 ' Rt EL 87.650 N 2082993.113 E 6161093.300
DESCRIPTION: B3-5, Test bore hole REFR429 - CPT-14-049

3727+35.28 69.02 ' Rt EL 87.680 N 2083027.597 E 6161061.619
DESCRIPTION: B3-6, Test bore hole REFR430 - CPT-14-050

3727+73.33 67.94 ' Rt EL 87.700 N 2083054.998 E 6161035.196
DESCRIPTION: B3-7, Test bore hole REFR431 - CPT-14-051

3727+99.25 68.89 ' Rt EL 87.720 N 2083074.799 E 6161018.443
DESCRIPTION: B3-8, Test bore hole REFR432 - CPT-14-052

CAiCE STATION & OFFSET REPORT FROM CHAIN **"VSD2"**

Location 4

3586+69.70 -67.83 ' Lt EL 174.100 N 2074312.609 E 6172059.060
DESCRIPTION: B4-1, Test bore hole REFR452 - CPT-14-025

3586+91.54 -67.70 ' Lt EL 174.030 N 2074326.719 E 6172042.390
DESCRIPTION: B4-2, Test bore hole REFR451 - CPT-14-026

3587+09.06 -67.52 ' Lt EL 174.150 N 2074338.099 E 6172029.060
DESCRIPTION: B4-3, Test bore hole REFR450 - CPT-14-027

3587+32.74 -68.20 ' Lt EL 174.180 N 2074352.769 E 6172010.460
DESCRIPTION: B4-4, Test bore hole REFR449 - CPT-14-028

3587+53.51 -68.73 ' Lt EL 174.190 N 2074365.679 E 6171994.190
DESCRIPTION: B4-5, Test bore hole REFR448 - CPT-14-029

3587+92.26 -67.46 ' Lt EL 174.400 N 2074391.519 E 6171965.280
DESCRIPTION: B4-6, Test bore hole REFR447 - CPT-14-030

CAiCE STATION & OFFSET REPORT FROM CHAIN **"VSD2"**

Location 5

3630+03.08 -67.63 ' Lt EL 152.880 N 2077092.836 E 6168735.126
DESCRIPTION: B5-1, Test bore hole REFR446 - CPT-14-031

3630+71.70 -67.23 ' Lt EL 152.660 N 2077137.166 E 6168682.746
DESCRIPTION: B5-2, Test bore hole REFR445 - CPT-14-032

3630+96.11 -68.90 ' Lt EL 152.590 N 2077151.546 E 6168662.956
DESCRIPTION: B5-3, Test bore hole REFR444 - CPT-14-033

3631+07.60 -68.40 ' Lt EL 152.570 N 2077159.296 E 6168654.456
DESCRIPTION: B5-4, Test bore hole REFR443 - CPT-14-034

3631+23.15 -68.66 ' Lt EL 152.410 N 2077169.076 E 6168642.356
DESCRIPTION: B5-5, Test bore hole REFR442 - CPT-14-035

3631+32.47 -67.42 ' Lt EL 152.510 N 2077176.006 E 6168636.006
DESCRIPTION: B5-6, Test bore hole REFR441 - CPT-14-036

3631+59.40 -68.11 ' Lt EL 152.570 N 2077192.756 E 6168614.906
DESCRIPTION: B5-7, Test bore hole REFR440 - CPT-14-037

3631+97.55 -67.98 ' Lt EL 152.710 N 2077217.326 E 6168585.726
DESCRIPTION: B5-8, Test bore hole REFR439 - CPT14-038

3632+14.89 -67.68 ' Lt EL 152.730 N 2077228.686 E 6168572.616
DESCRIPTION: B5-9, Test bore hole REFR438 - CPT-14-039

3632+27.66 -68.05 ' Lt EL 152.690 N 2077236.596 E 6168562.586
DESCRIPTION: B5-10, Test bore hole REFR437 - CPT-14-040

3632+49.35 -68.04 ' Lt EL 152.620 N 2077250.516 E 6168545.956
DESCRIPTION: B5-11, Test bore hole REFR436 - CPT-14-041

3633+68.33 -67.73 ' Lt EL 153.690 N 2077327.086 E 6168454.886
DESCRIPTION: B5-12, Test bore hole REFR435 - CPT-14-042

3635+73.08 -68.56 ' Lt EL 157.070 N 2077457.806 E 6168297.296
DESCRIPTION: B5-13, Test bore hole REFR434 - CPT14-043

3637+23.67 -68.41 ' Lt EL 160.100 N 2077554.526 E 6168181.876
DESCRIPTION: B5-14, Test bore hole REFR433 - CPT-14-044

INDEX OF PLANS

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	1	XXX

STATE OF CALIFORNIA

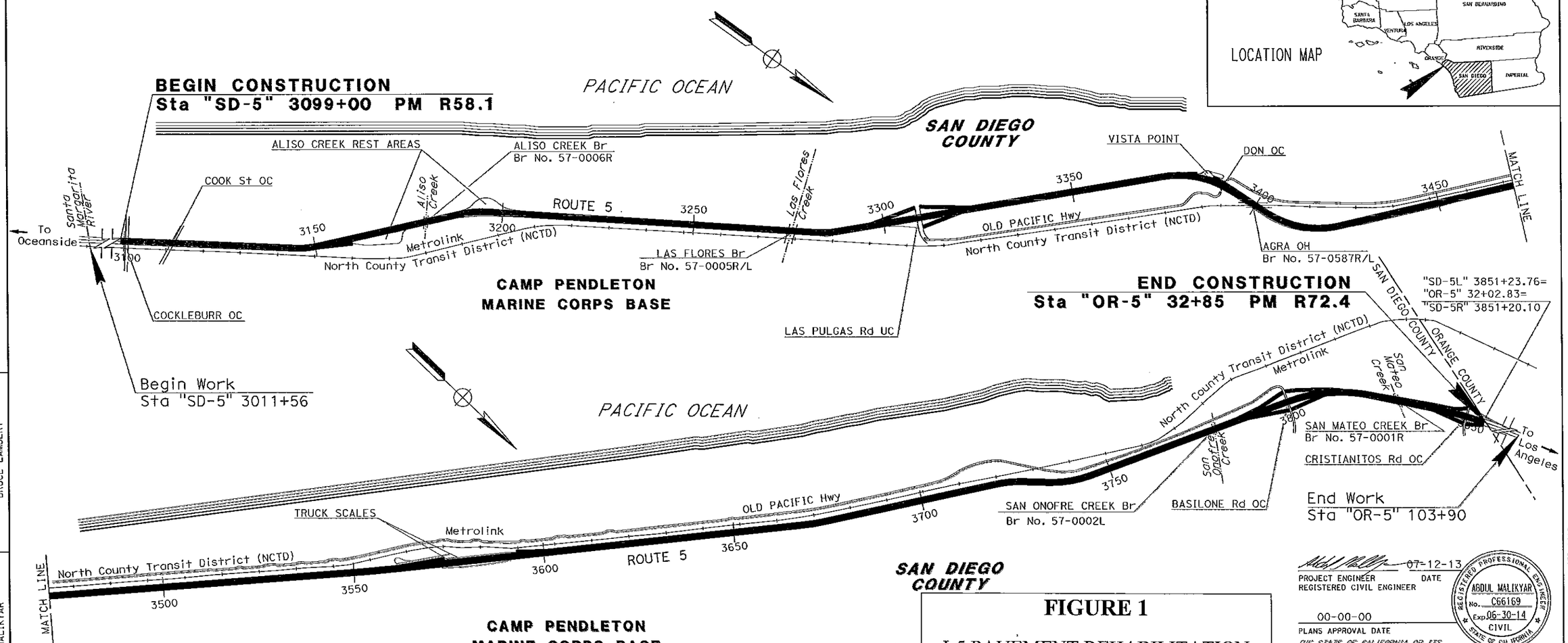
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY

IN SAN DIEGO COUNTY NEAR OCEANSIDE FROM COCKLEBURR OVERCROSSING TO THE SAN DIEGO COUNTY LINE

TO BE SUPPLEMENTED BY STANDARD PLANS DATED 2010



PROJECT MANAGER	BRUCE LAMBERT
DESIGN ENGINEER	ABDUL MALIKYAR

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

NO SCALE

FIGURE 1

I-5 PAVEMENT REHABILITATION

PROJECT LOCATION

EA: 11-406701 2014

07-12-13
PROJECT ENGINEER DATE
REGISTERED CIVIL ENGINEER

00-00-00
PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

CONTRACT No.	11-406704
PROJECT ID	1100020342

LAST REVISION 07-16-13 DATE PLOTTED => 13-SEP-2013 TIME PLOTTED => 10:13

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	33	259

07-12-13
REGISTERED CIVIL ENGINEER DATE

11-04-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEETS.

3 REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

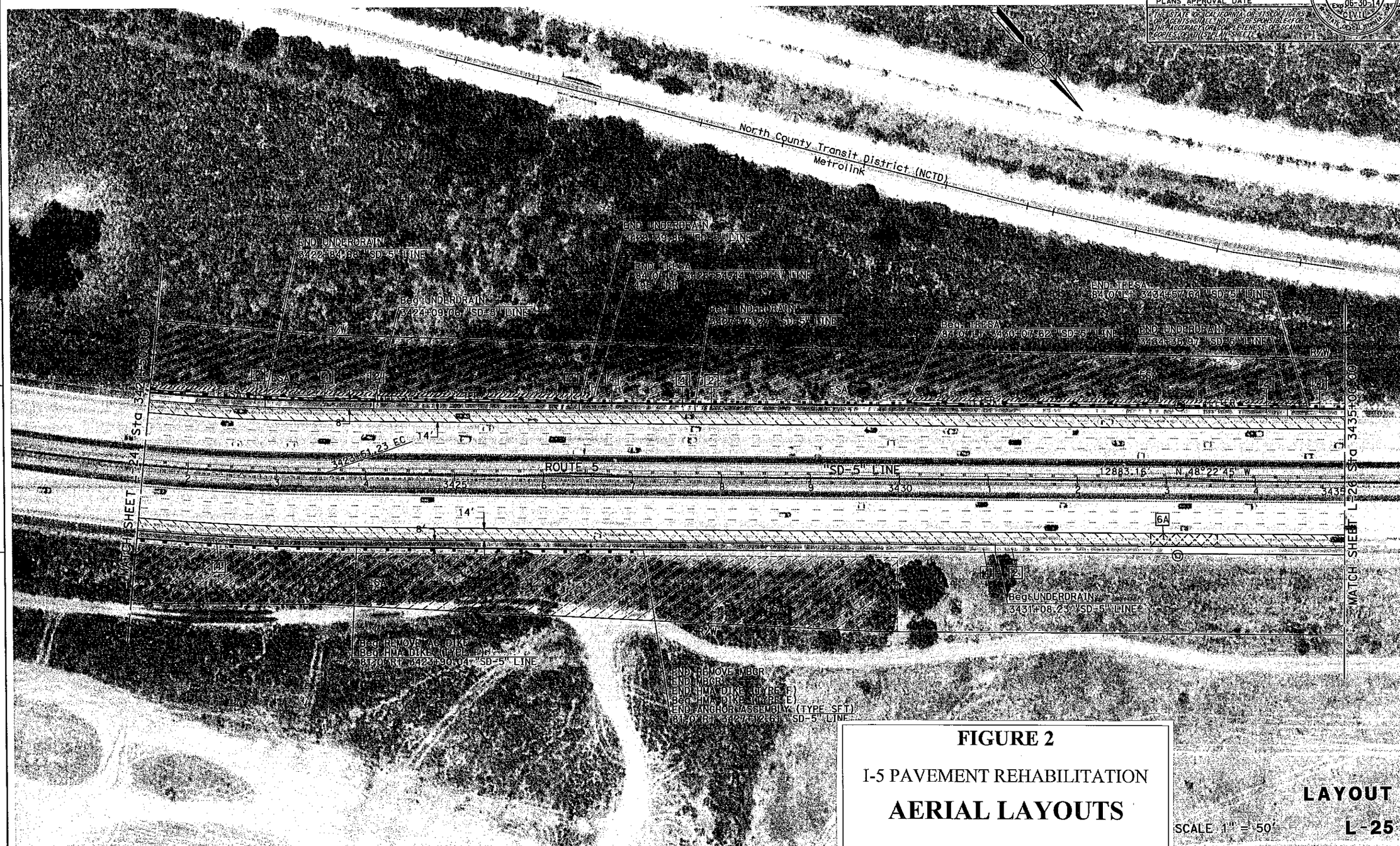


FIGURE 2

I-5 PAVEMENT REHABILITATION

AERIAL LAYOUTS

EA: 11-406701 2014

LAYOUT L-25

SCALE 1" = 50'

& PHASE 11000203421

LAST REVISION 02-27-14 DATE PLOTTED => 26-MAR-2014 TIME PLOTTED => 15:33

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY
DATE REVISED

BORDER LAST REVISED 7/2/2010
USERNAME => s115131
DGN FILE => 110002034 2ea025.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	38	259

07-12-13
REGISTERED CIVIL ENGINEER DATE

11-04-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

3 **REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014**

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

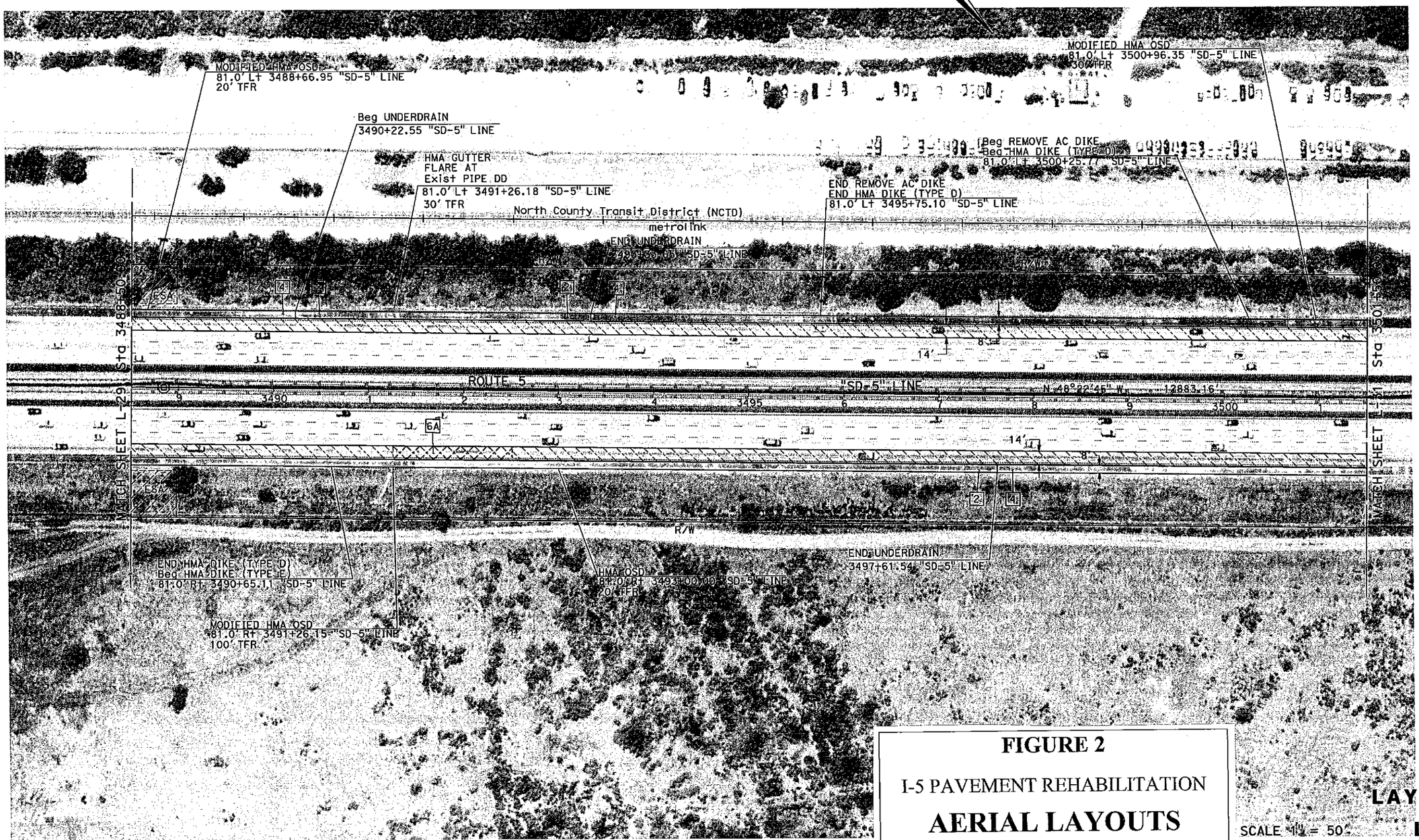


FIGURE 2

I-5 PAVEMENT REHABILITATION

AERIAL LAYOUTS

EA: 11-406701 2014

LAYOUT L-30

SCALE 1" = 50'

& PHASE 11000203421

LAST REVISION	DATE PLOTTED => 26-MAR-2014
02-27-14	TIME PLOTTED => 15:34

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN

FUNCTIONAL SUPERVISOR	EDWARD HAJJ
CALCULATED-DESIGNED BY	ABDUL MALIKYAR
CHECKED BY	HECTOR GRACIA
REVISED BY	
DATE REVISED	

BORDER LAST REVISED 7/2/2010

USERNAME => s115131
DGN FILE => 1100020342ea030.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	45	259

07-12-13
REGISTERED CIVIL ENGINEER DATE

11-04-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

3 REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

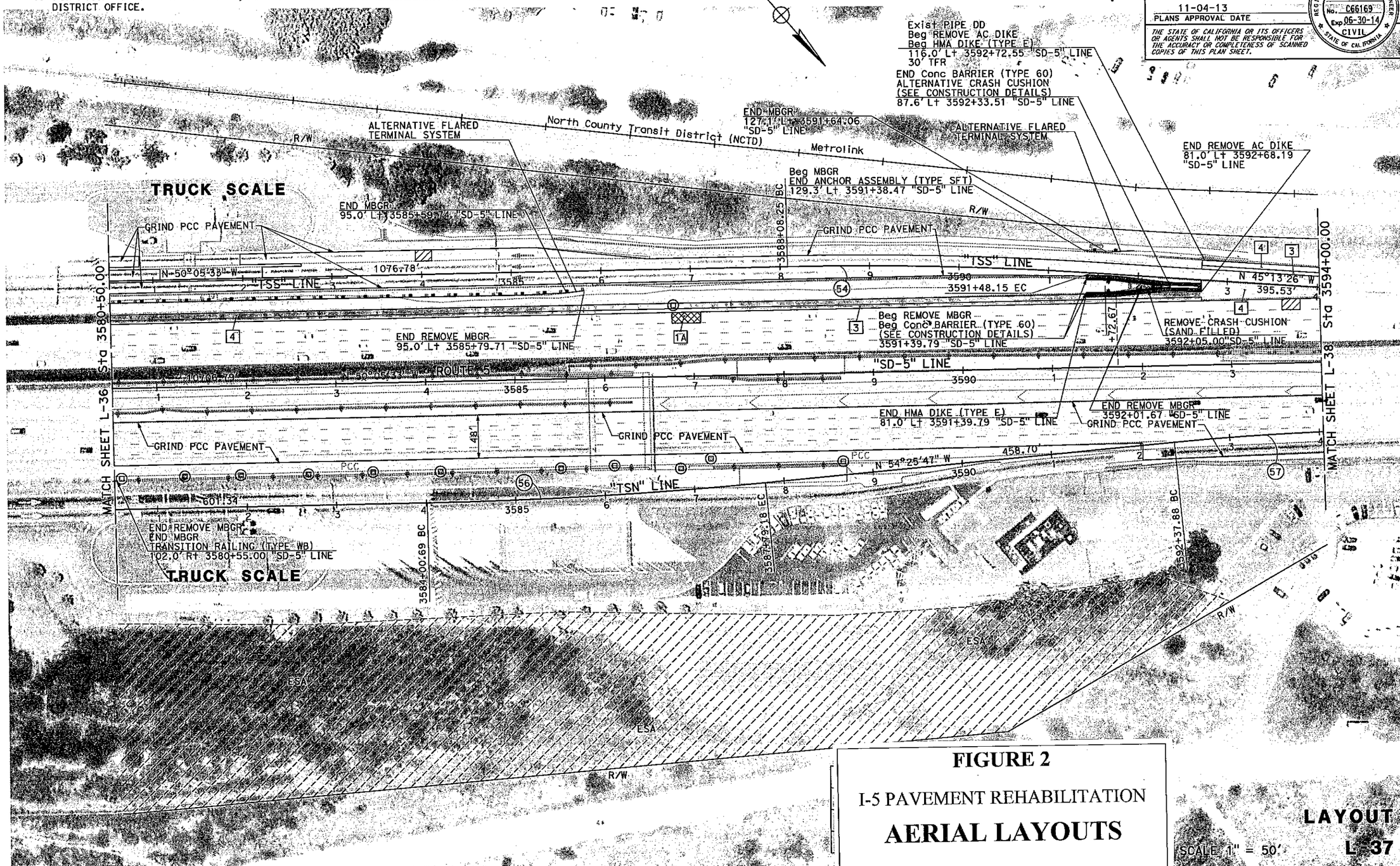


FIGURE 2

I-5 PAVEMENT REHABILITATION

AERIAL LAYOUTS

EA: 11-406701 2014

LAYOUT L-37

SCALE 1" = 50'

& PHASE 11000203421

LAST REVISION DATE PLOTTED => 26-MAR-2014
02-19-14 TIME PLOTTED => 15:34

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY
DATE REVISED

BORDER LAST REVISED 7/2/2010

USERNAME => s115131
DGN FILE => 1100020342ea037.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	48	259

REGISTERED CIVIL ENGINEER 07-12-13 DATE

11-04-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED VIDEO OF THIS PLANSHEET.

3 REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

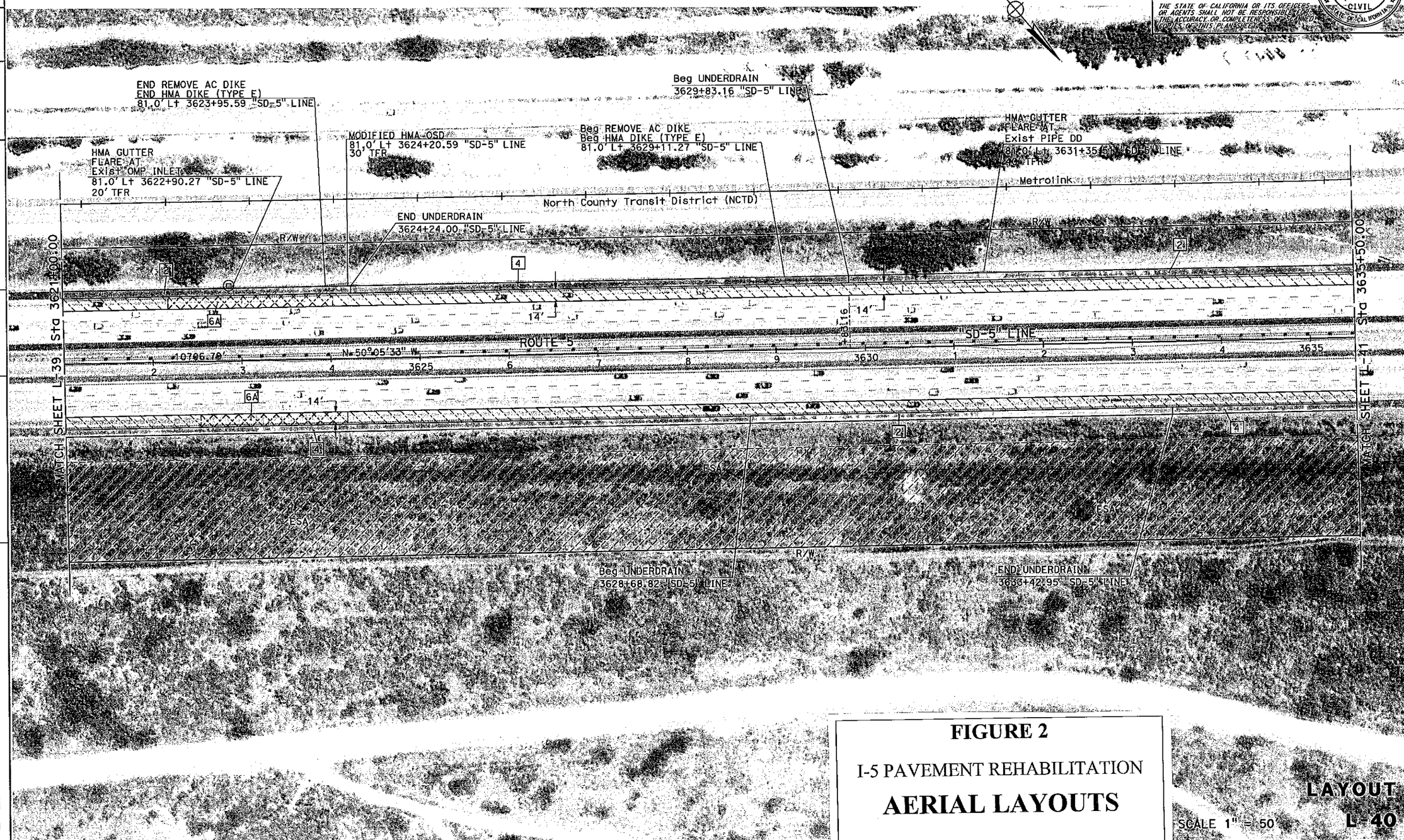


FIGURE 2

I-5 PAVEMENT REHABILITATION

AERIAL LAYOUTS

EA: 11-406701 2014

LAYOUT L-40

SCALE 1" = 50'

LAST REVISION 02-27-14 DATE PLOTTED => 26-MAR-2014 TIME PLOTTED => 15:35

R & PHASE 11000203421

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans DESIGN

FUNCTIONAL SUPERVISOR EDWARD HAJJ

CALCULATED-DESIGNED BY ABDUL MALIKYAR

CHECKED BY HECTOR GRACIA

REVISED BY

DATE REVISED

BORDER LAST REVISED 7/2/2010

USERNAME => s115131
DGN FILE => 1100020342eo040.dgn

RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	49	259

07-12-13
REGISTERED CIVIL ENGINEER DATE

11-04-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

"THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET."

3 REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

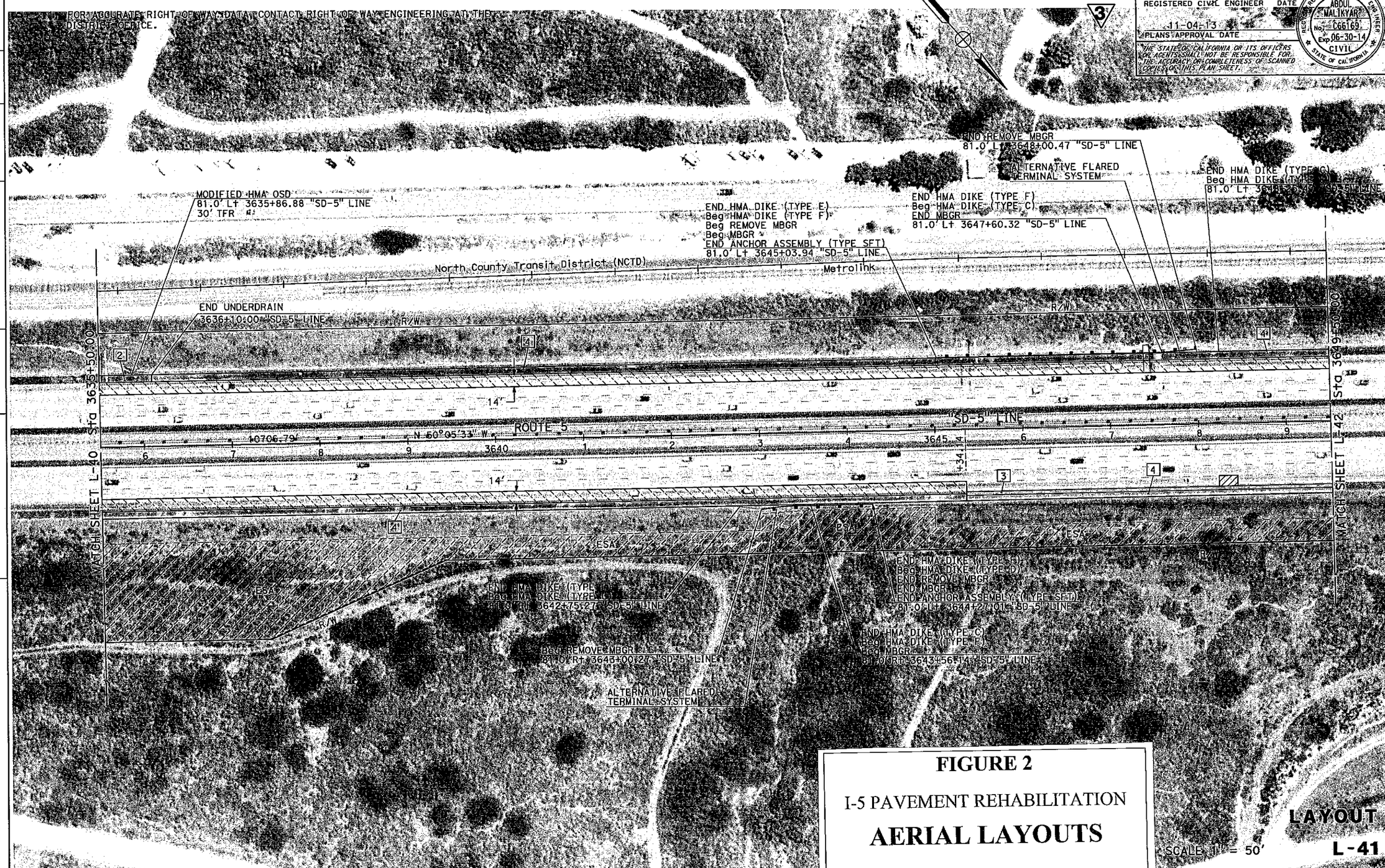


FIGURE 2

I-5 PAVEMENT REHABILITATION

AERIAL LAYOUTS

EA: 11-406701 2014

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY / DATE REVISED

LAST REVISION 02-27-14
DATE PLOTTED => 26-MAR-2014
TIME PLOTTED => 15:35

BORDER LAST REVISED 7/2/2010
USERNAME => s115131
DGN FILE => 11000203421ea041.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
ER & PHASE 11000203421

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	55	259

07-12-13
REGISTERED CIVIL ENGINEER DATE

11-04-13
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.

3 REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014

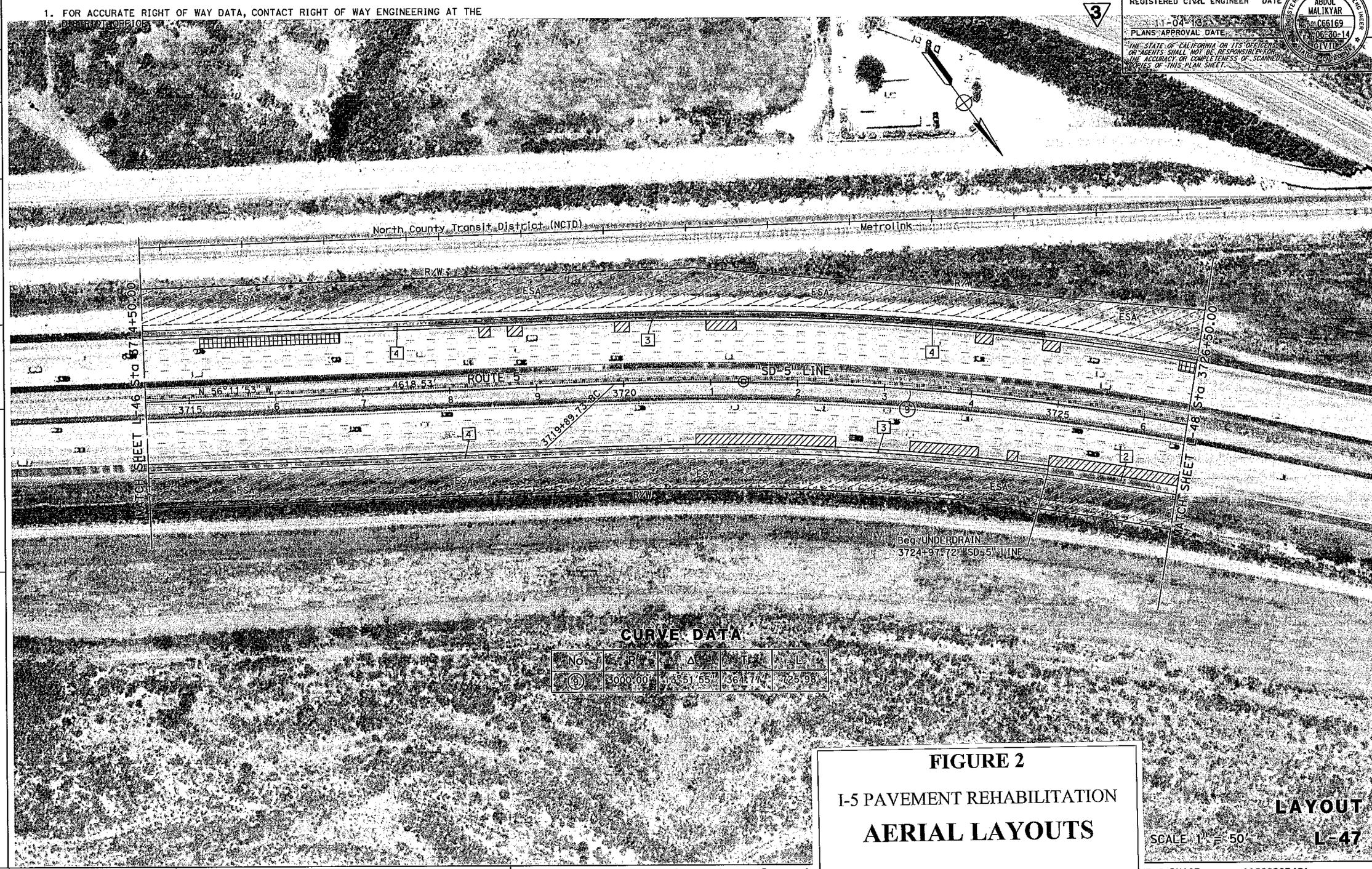


FIGURE 2

I-5 PAVEMENT REHABILITATION

AERIAL LAYOUTS

EA: 11-406701 2014

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY
DATE REVISED

LAST REVISION 02-13-14
DATE PLOTTED => 26-MAR-2014
TIME PLOTTED => 15:36

BORDER LAST REVISED 7/2/2010
USERNAME => s115131
DGN FILE => 110002034 2ea047.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

R & PHASE 11000203421

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	56	259

REGISTERED CIVIL ENGINEER 07-12-13 DATE

11-04-13
PLANS APPROVAL DATE

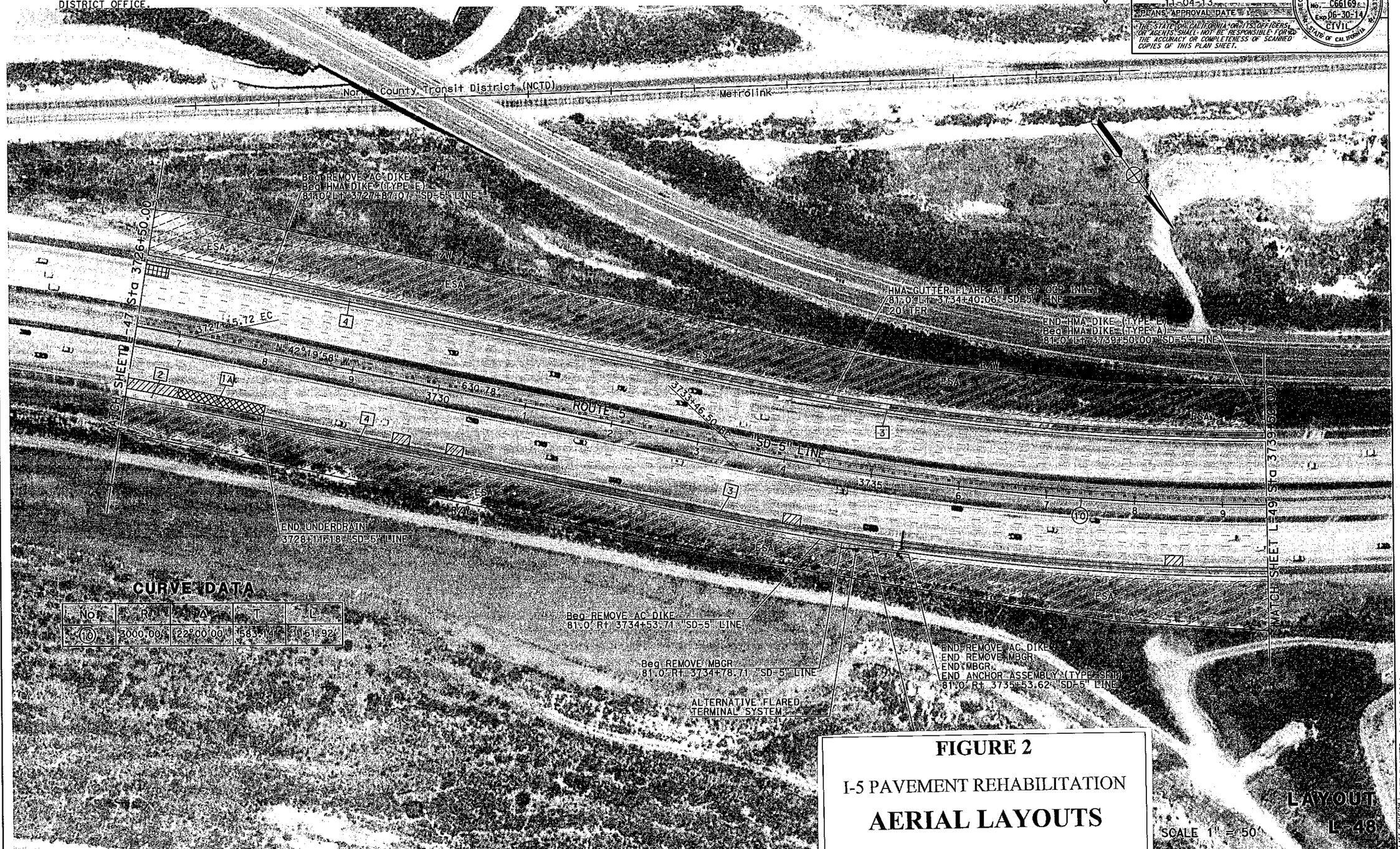
THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

3 **REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014**

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



CURVE DATA

No.	R	Δ	T	L
10	3000.00'	22°00'00"	583.14'	1151.92'

FIGURE 2

I-5 PAVEMENT REHABILITATION

AERIAL LAYOUTS

EA: 11-406701 2014

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY
DATE REVISED

LAST REVISION 02-19-14
DATE PLOTTED => 26-MAR-2014
TIME PLOTTED => 15:36

BORDER LAST REVISED 7/2/2010
USERNAME => s115131
DGN FILE => 1100020342ea048.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3

R & PHASE 11000203421

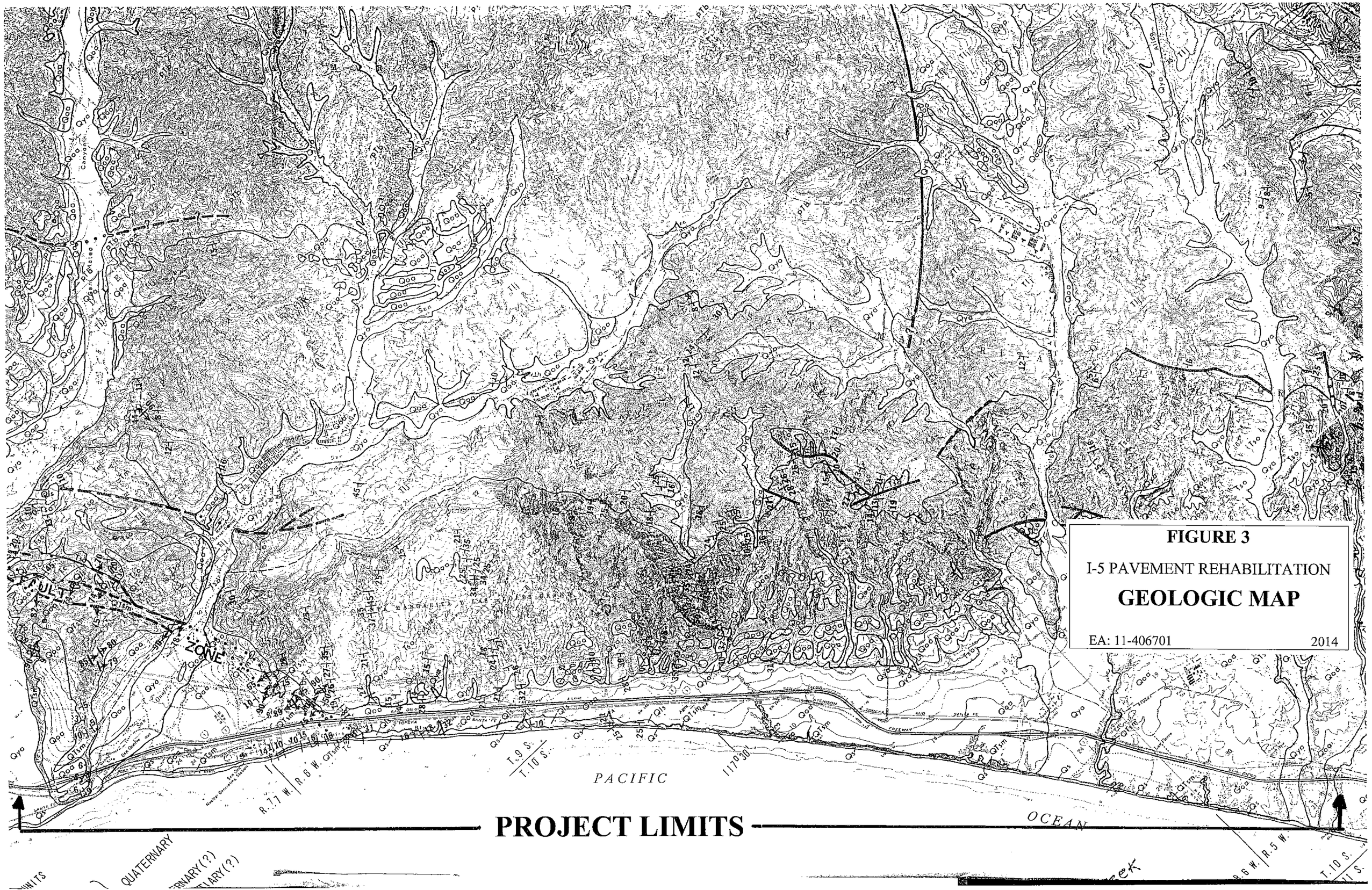
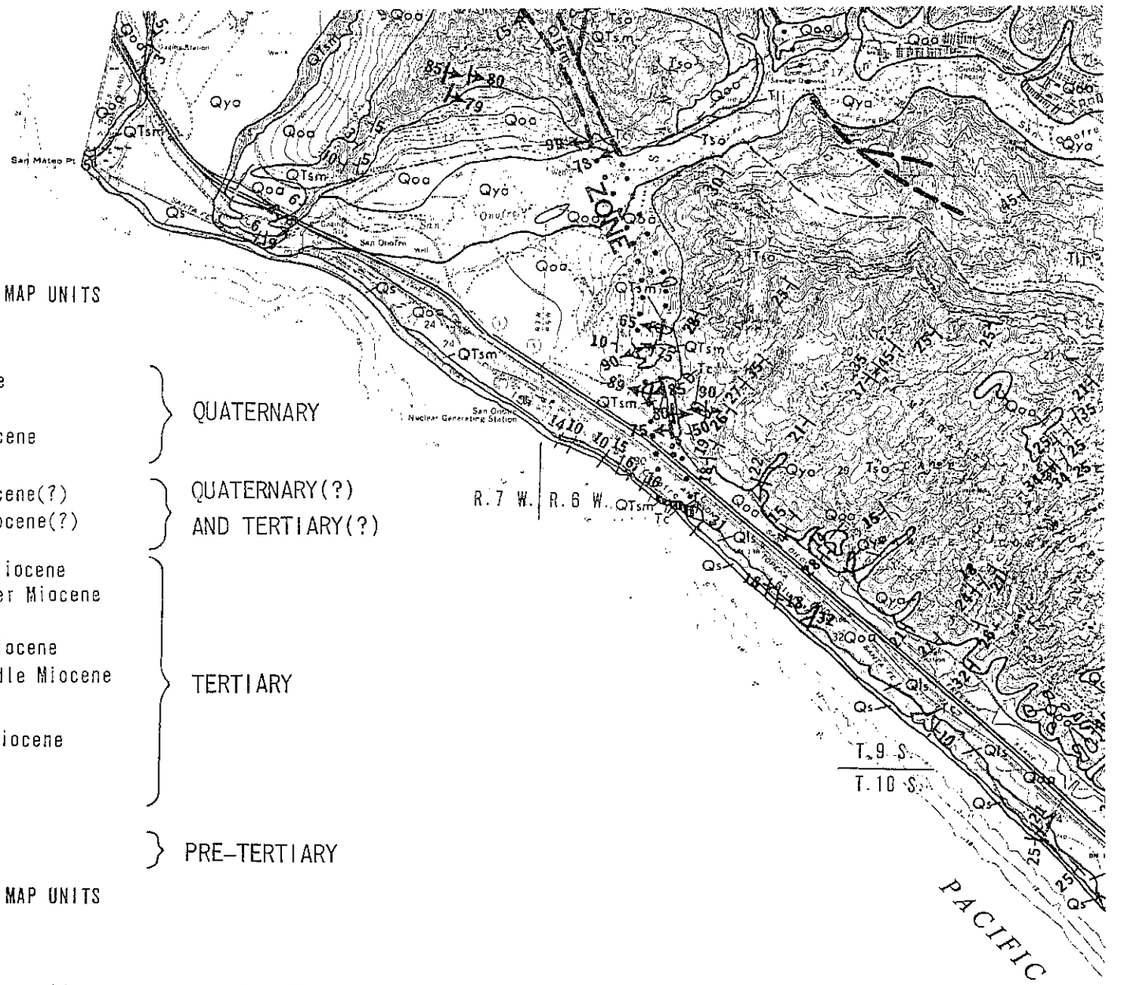


FIGURE 3
I-5 PAVEMENT REHABILITATION
GEOLOGIC MAP
EA: 11-406701
2014
PACIFIC
OCEAN
PROJECT LIMITS
QUATERNARY
T. 9 S.
T. 10 S.
R. 7 W.
R. 6 W.
R. 5 W.
117°30'



CORRELATION OF MAP UNITS

Qya	Qls	Qs	Holocene	QUATERNARY
Qoa		Qos	Pleistocene	QUATERNARY
QTsm			Pleistocene(?) and Pliocene(?)	QUATERNARY(?) AND TERTIARY(?)
Tc			Lower Pliocene and upper Miocene	TERTIARY
Tm			Upper Miocene and middle Miocene	TERTIARY
Tso			Middle Miocene	TERTIARY
Tlj			Eocene	TERTIARY
pTb				PRE-TERTIARY

DESCRIPTION OF MAP UNITS

UNCONSOLIDATED DEPOSITS

Qya — YOUNGER ALLUVIUM--Boulders, gravel, sand, silt, and clay beneath alluvial fans and plains; largely above the water table, but where saturated yields water to wells

Qls — LANDSLIDE DEPOSITS--Disordered blocks are highly fragmented debris derived locally from surrounding formations. Not saturated

Qs — BEACH SAND--Fine sand along the ocean

Qoa — OLDER ALLUVIUM--Arkosic gravel, sand, silt, and clay, generally weathered and unconsolidated. Where saturated, yields water freely to wells. Includes terrace deposits

Qos — OLDER SAND DUNES--Fine, wind-blown sand lying on older units. Not saturated

CONSOLIDATED ROCKS

QTsm — SAN MATEO FORMATION OF WOODFORD (1925)--Gravel, sand, silt, and clay. Yields small to large quantities of water; locally contains water of poor quality near the ocean

Tc — CAPISTRANO FORMATION--Silty shale, mudstone, sandstone, and siltstone. May yield small quantities of water, generally of poor quality

Tm — MONTEREY FORMATION--Diatomaceous siltstone and thin-bedded sandstone

Tso — SAN ONOFRE BRECCIA--Breccia of glaucophane schists and shale. Considered to be non-water-bearing

Tlj — LA JOLLA GROUP--Sand, sandstone, and shale. Yields small quantities of water generally of poor quality. Equivalent to Santiago and Silverado Formations in adjacent Orange County

pTb — BASEMENT COMPLEX--Igneous and metamorphic rocks. Yields small quantities of water from joints, fractures, and weathered zones. Includes Pleasants and Schulz Ranch Sandstone Members of the Williams Formation, Trabuco Formation, Woodson Mountain Granodiorite, Bonsall Tonalite, and the San Marcos Gabbro, all of Cretaceous age. Unit also includes the Santiago Peak Volcanics and some unnamed granodioritic rocks of Jurassic and Cretaceous(?) age; and the Bedford Canyon Formation of Triassic(?) and Jurassic age

GEOLOGIC CONTACT--Dashed where approximately located

FAULT--Dashed where approximately located, dotted where concealed, queried where doubtful

17 — STRIKE AND DIP OF BEDS

80 — STRIKE AND DIP OF FAULT

90 — STRIKE OF VERTICAL FAULT

FIGURE 3

I-5 PAVEMENT REHABILITATION

GEOLOGIC MAP

EA: 11-406701 2014

Nor
Safe

TO CON

5013-34

GEOLOGIC MAP OF WESTERN PART OF C

COMPILED BY

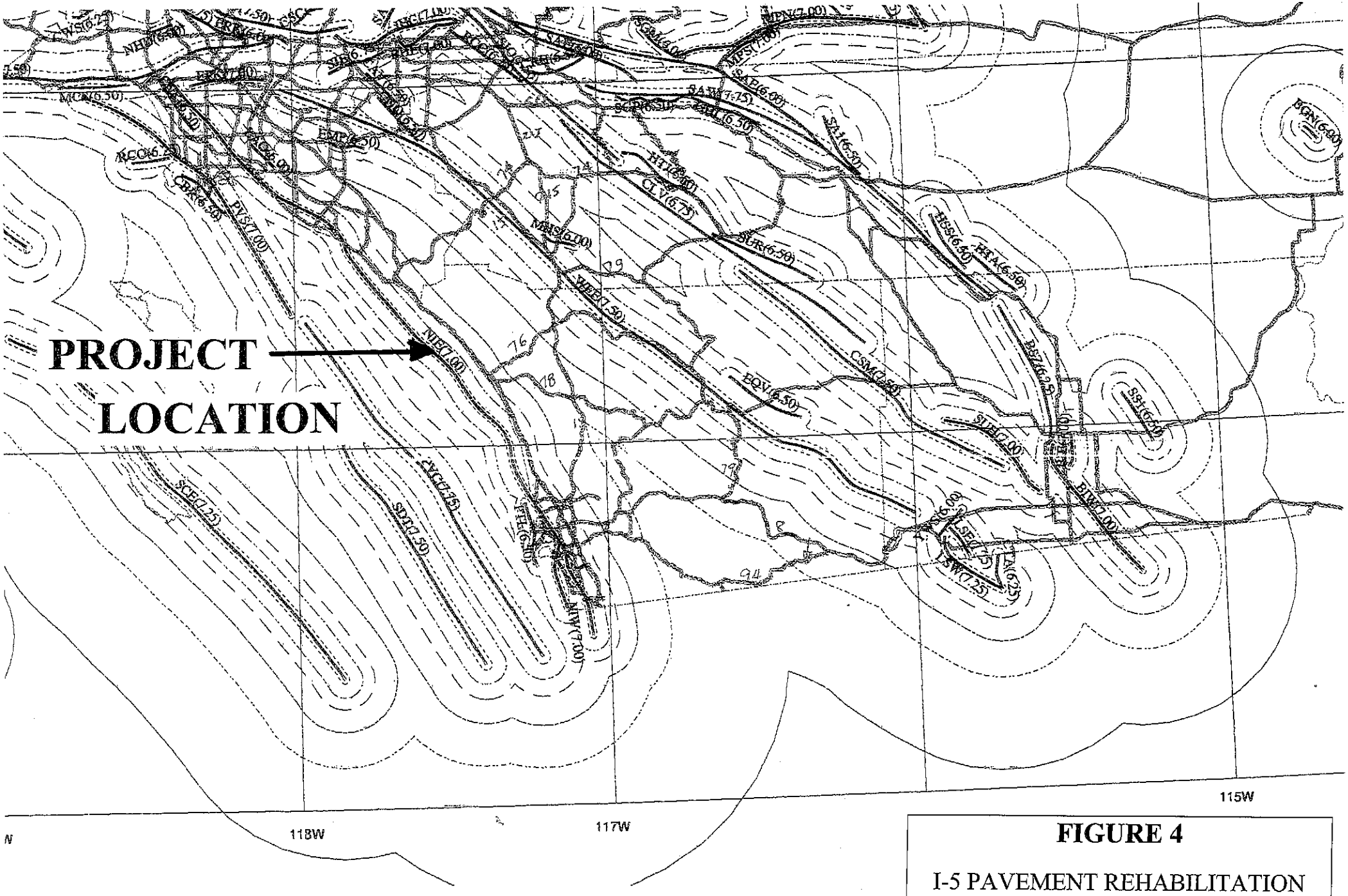
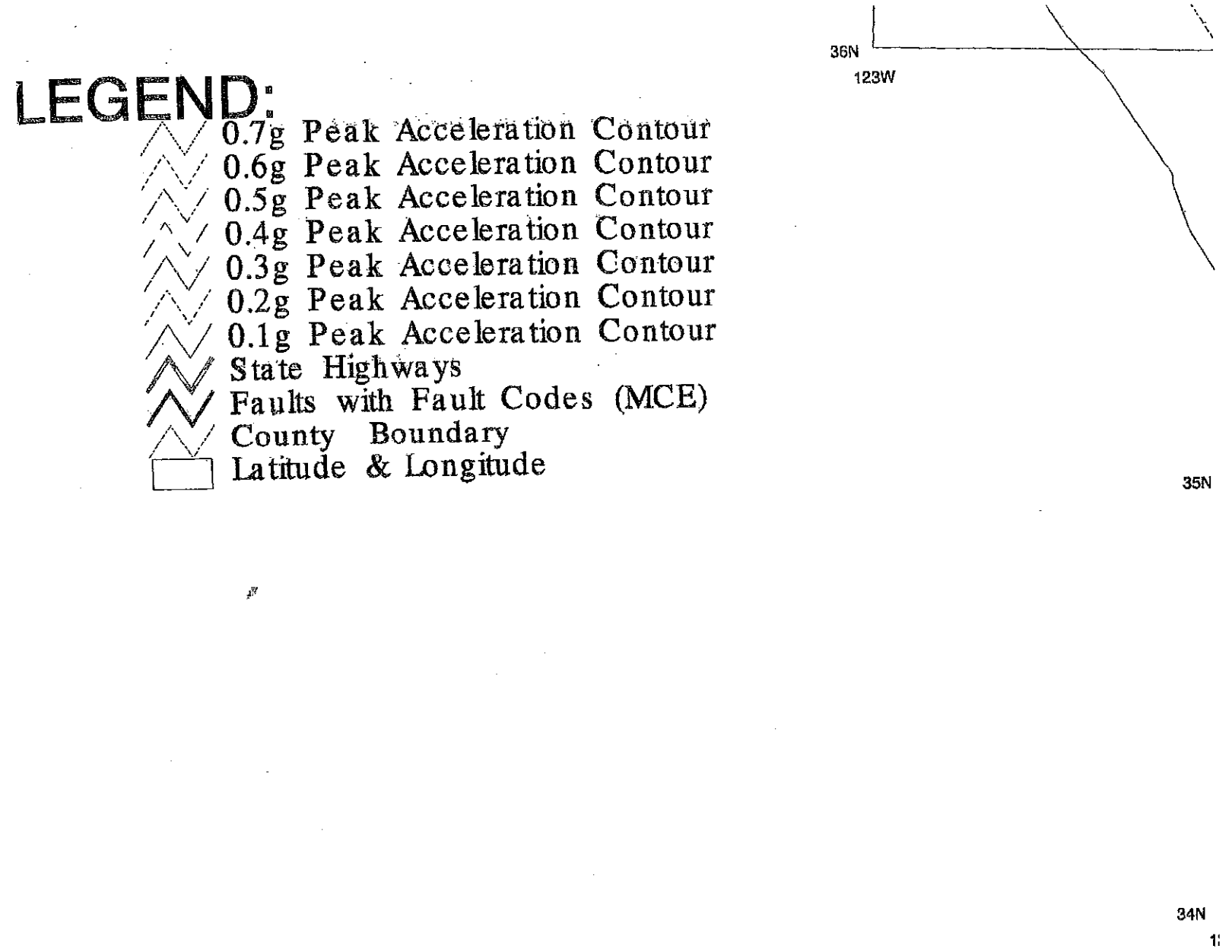


FIGURE 4

I-5 PAVEMENT REHABILITATION

REGIONAL FAULT MAP

EA: 11-406701 2014



NOTE: SEE ACCOMPANYING TECHNICAL REPORT FOR NAMES OF FAULTS CORRESPONDING TO FAULT CODES

FIGURE 4

I-5 PAVEMENT REHABILITATION

REGIONAL FAULT MAP

EA: 11-406701 2014

SCALE

0 50 100 150 200 250 Kilometers

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	33	259

07-12-13
REGISTERED CIVIL ENGINEER DATE

11-04-13
PLANS APPROVAL DATE

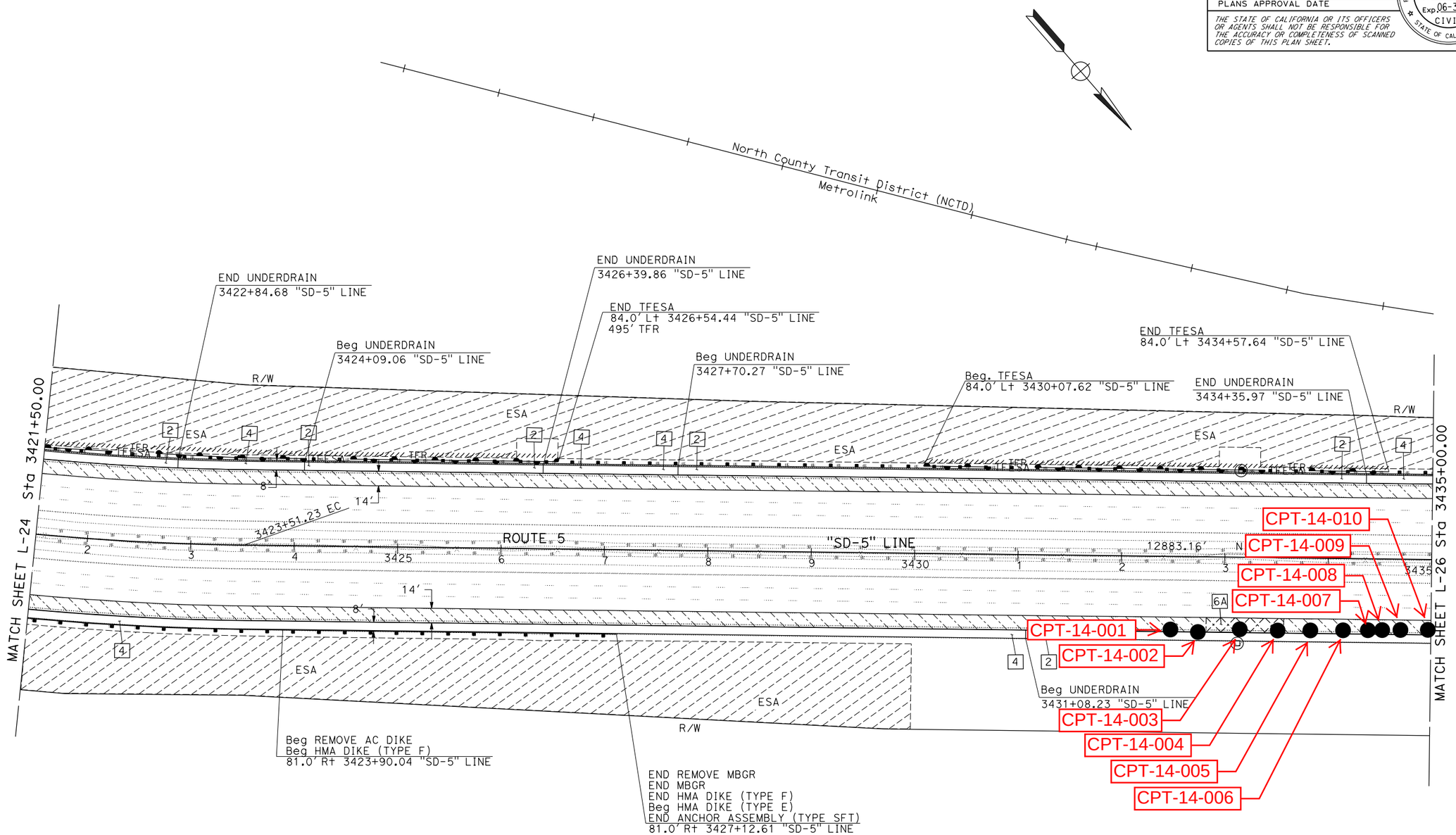
REGISTERED PROFESSIONAL ENGINEER
ABDUL MALIKYAR
No. C66169
Exp. 06-30-14
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

3 **REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014**

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



LEGEND:

● CPT-14-002 - CPT LOCATIONS

FIGURE 5
I-5 PAVEMENT REHABILITATION
CONE PENETROMETER TEST LOCATIONS

SCALE 1" = 50' 2014 EA: 11-406701

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans
DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY
DATE REVISED

LAST REVISION 02-27-14
DATE PLOTTED => 26-MAR-2014
TIME PLOTTED => 15:17

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	38	259

REGISTERED CIVIL ENGINEER 07-12-13 DATE

11-04-13
PLANS APPROVAL DATE

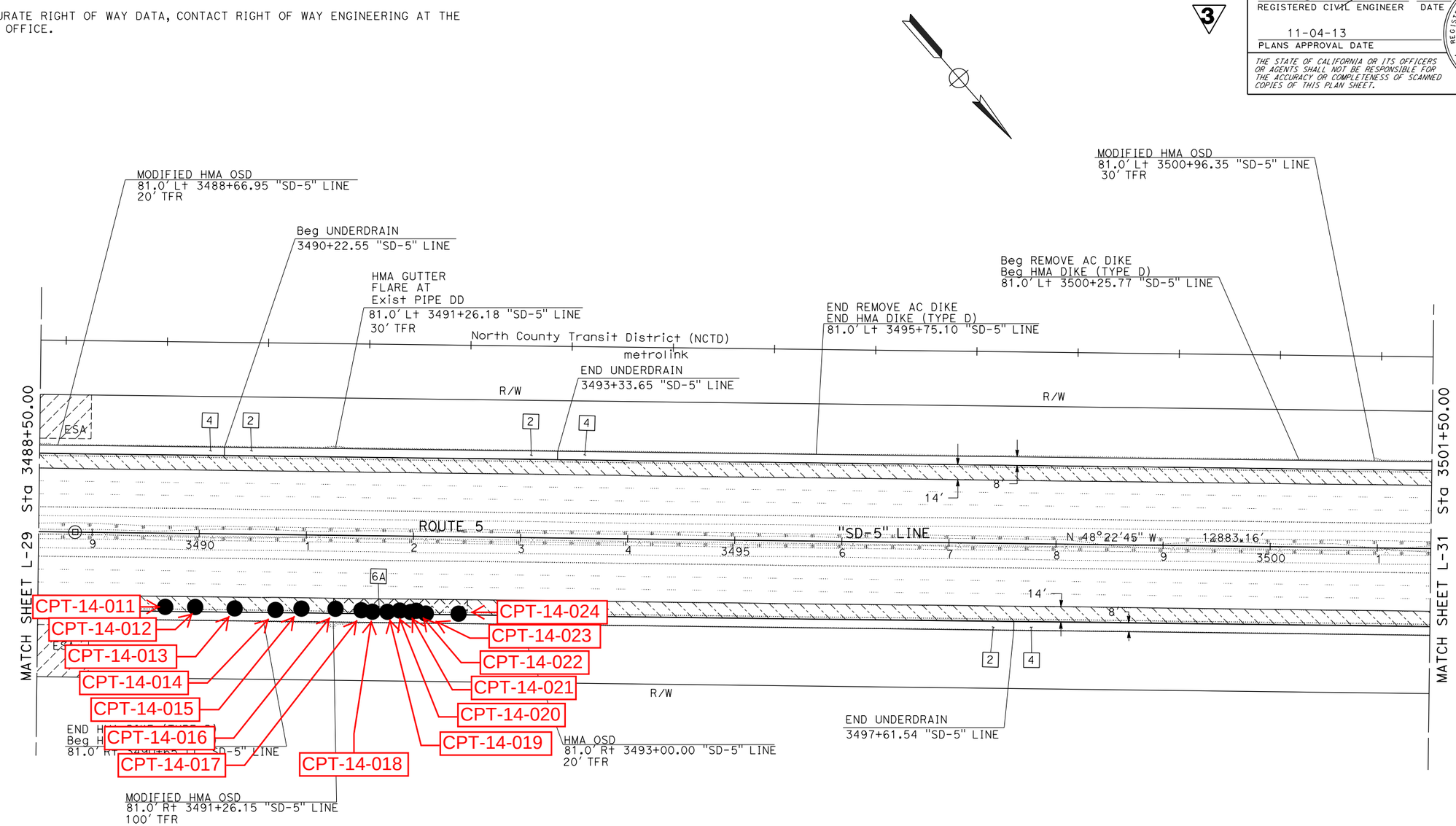
REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

3 **REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014**

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



LEGEND:

● CPT-14-012 - CPT LOCATIONS

SCALE: 1" = 50'

FIGURE 5
I-5 PAVEMENT REHABILITATION
CONE PENETROMETER TEST LOCATIONS
2014 EA; 11-406701

REVISED BY	DATE REVISED
ABDUL MALIKYAR	HECTOR GRACIA
CALCULATED-DESIGNED BY	CHECKED BY
FUNCTIONAL SUPERVISOR	EDWARD HAJJ

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DESIGN

LAST REVISION 02-27-14 DATE PLOTTED => 26-MAR-2014 TIME PLOTTED => 15:17

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	45	259

REGISTERED CIVIL ENGINEER 07-12-13 DATE

11-04-13
PLANS APPROVAL DATE

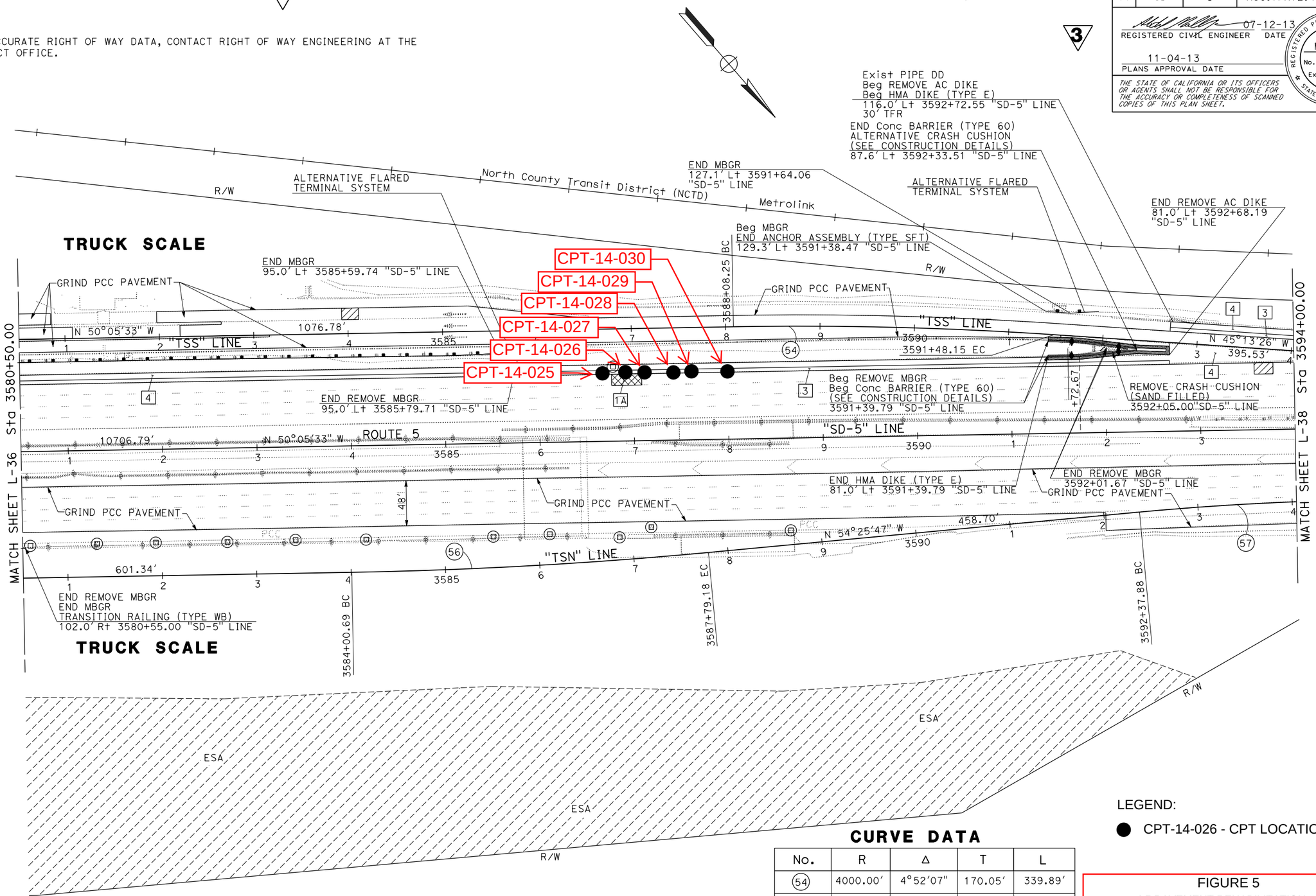
REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

3 **REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014**

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



CURVE DATA

No.	R	Δ	T	L
54	4000.00'	4°52'07"	170.05'	339.89'
56	5000.00'	4°20'14"	189.34'	378.49'
57	3000.00'	3°11'29"	83.57'	167.10'

SCALE: 1" = 50'

LEGEND:

● CPT-14-026 - CPT LOCATIONS

FIGURE 5
I-5 PAVEMENT REHABILITATION
CONE PENETROMETER TEST LOCATIONS
2014
EA: 11-406701

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY
DATE REVISED

LAST REVISION 02-19-14
DATE PLOTTED => 26-MAR-2014
TIME PLOTTED => 15:17

BORDER LAST REVISED 7/2/2010
USERNAME => s115131
DGN FILE => 1100020342ea037.add
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 2761
PROJECT NUMBER & PHASE 11000203421

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	48	259

REGISTERED CIVIL ENGINEER 07-12-13 DATE

11-04-13
PLANS APPROVAL DATE

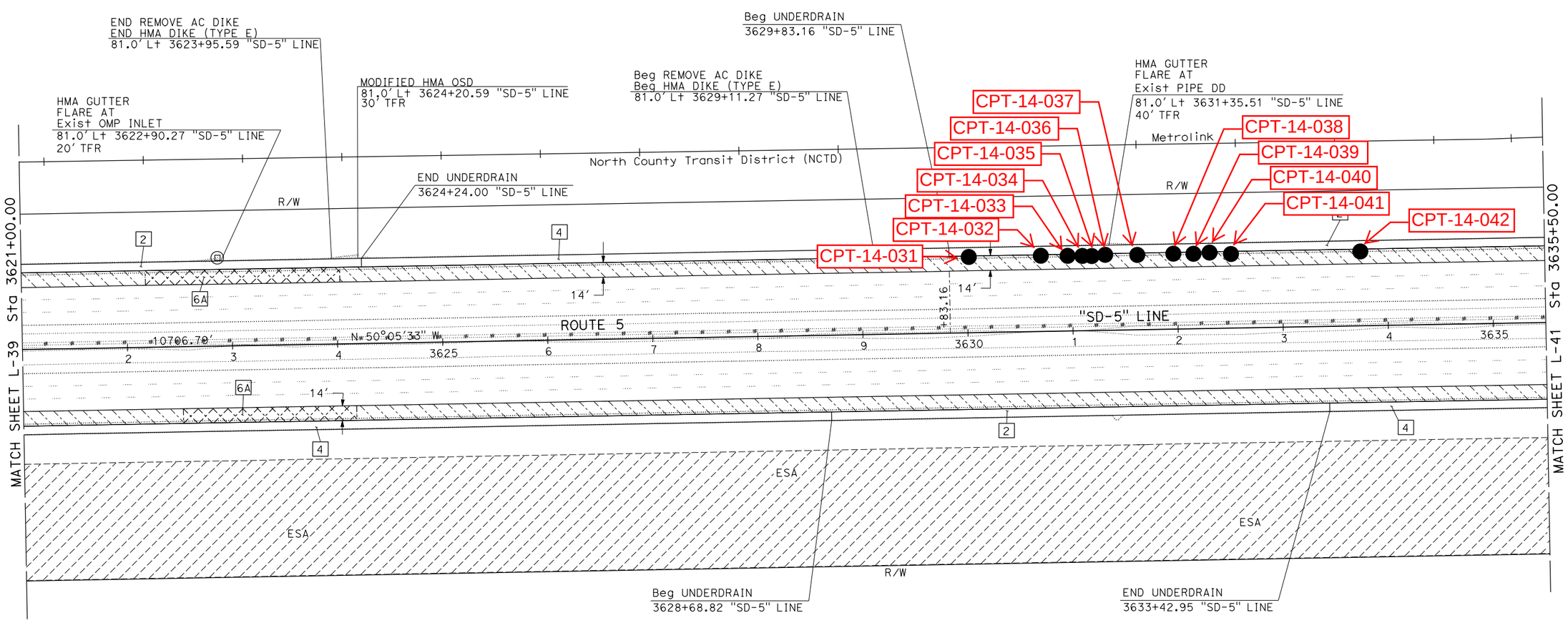
REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

3 **REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014**

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



LEGEND:

● CPT-14-032 - CPT LOCATIONS

SCALE: 1" = 50'

FIGURE 5
I-5 PAVEMENT REHABILITATION
CONE PENETROMETER TEST LOCATIONS
2014 EA: 11-406701

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY / DATE REVISED

LAST REVISION 02-27-14 DATE PLOTTED => 26-MAR-2014 TIME PLOTTED => 15:18

BORDER LAST REVISED 7/2/2010 | USERNAME => s115131 DGN FILE => 1100020342ea040.dgn | RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3 | UNIT 2761 | PROJECT NUMBER & PHASE 11000203421

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	49	259

REGISTERED CIVIL ENGINEER 07-12-13 DATE

11-04-13
PLANS APPROVAL DATE

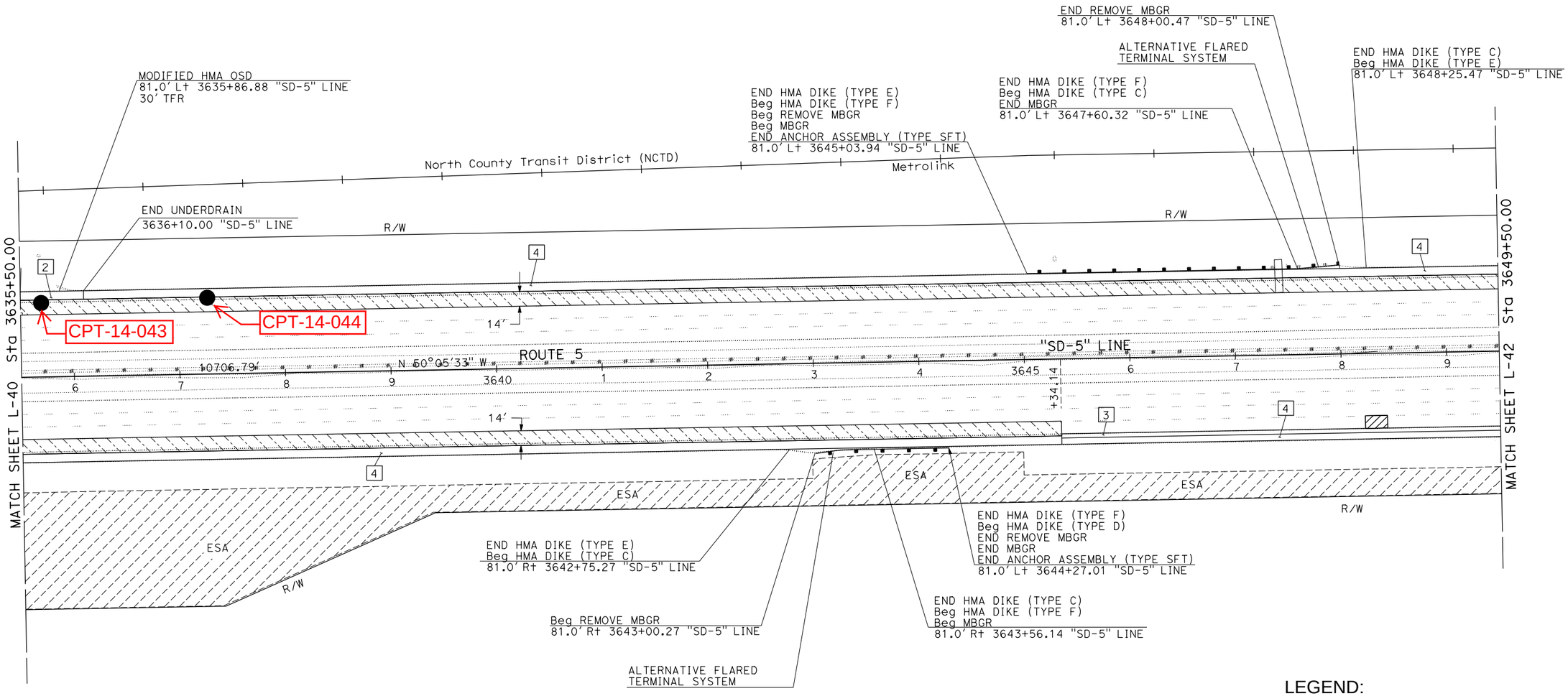
REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

3 **REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014**

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



LEGEND:

● CPT-14-044 - CPT LOCATIONS

SCALE: 1" = 50'

FIGURE 5
I-5 PAVEMENT REHABILITATION
CONE PENETROMETER TEST LOCATIONS

2014 EA: 11-406701

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY / DATE REVISED

LAST REVISION 02-27-14
DATE PLOTTED => 26-MAR-2014
TIME PLOTTED => 15:18

BORDER LAST REVISED 7/2/2010
USERNAME => s115131
DGN FILE => 1100020342ea041.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 2761
PROJECT NUMBER & PHASE 11000203421

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	55	259

07-12-13
REGISTERED CIVIL ENGINEER DATE

11-04-13
PLANS APPROVAL DATE

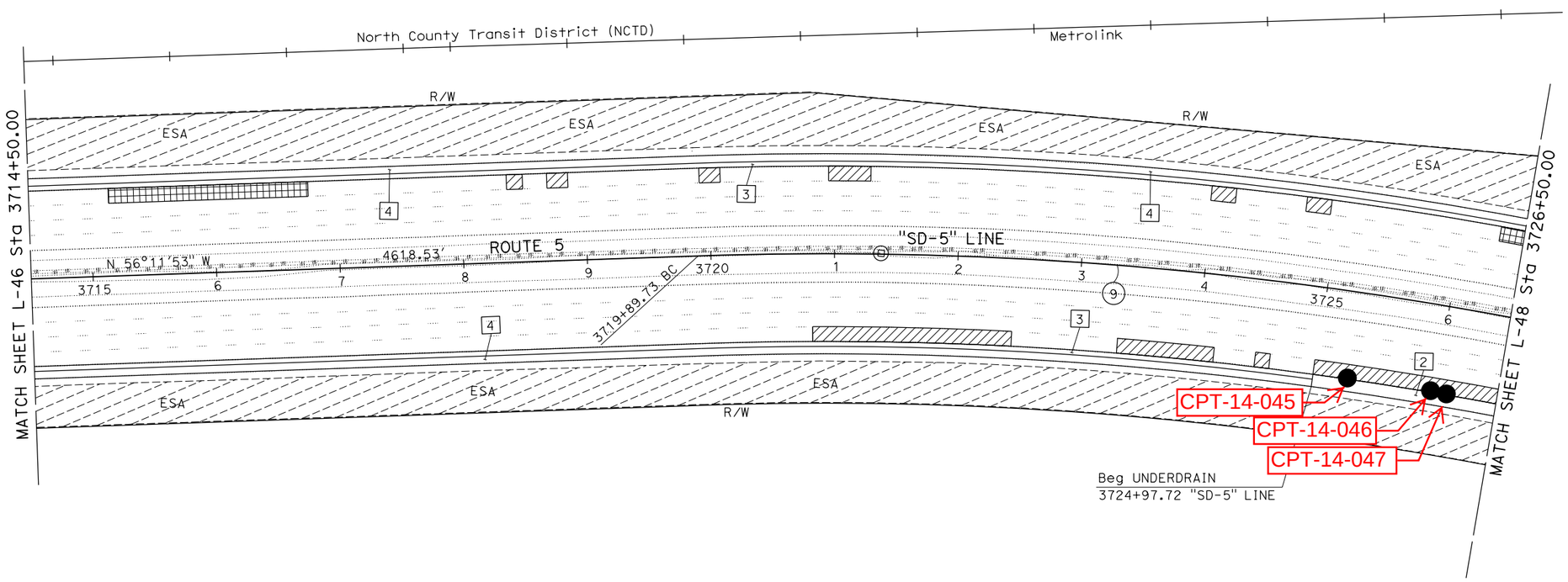
REGISTERED PROFESSIONAL ENGINEER
ABDUL MALIKYAR
No. C66169
Exp. 06-30-14
CIVIL
STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

3 **REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014**

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



CURVE DATA

No.	R	Δ	T	L
9	3000.00'	13°51'55"	364.77'	725.98'

LEGEND:

● CPT-14-046 - CPT LOCATIONS

SCALE: 1" = 50'

FIGURE 5
I-5 PAVEMENT REHABILITATION
CONE PENETROMETER TEST LOCATIONS
2014 EA: 11-406701

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans® DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY
DATE REVISED

LAST REVISION 02-13-14
DATE PLOTTED => 26-MAR-2014
TIME PLOTTED => 15:18

BORDER LAST REVISED 7/2/2010
USERNAME => s115131
DGN FILE => 1100020342ea047.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 2761
PROJECT NUMBER & PHASE 11000203421

Dist	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
11	SD	5	R58.1/R72.4	56	259

REGISTERED CIVIL ENGINEER 07-12-13 DATE

11-04-13
PLANS APPROVAL DATE

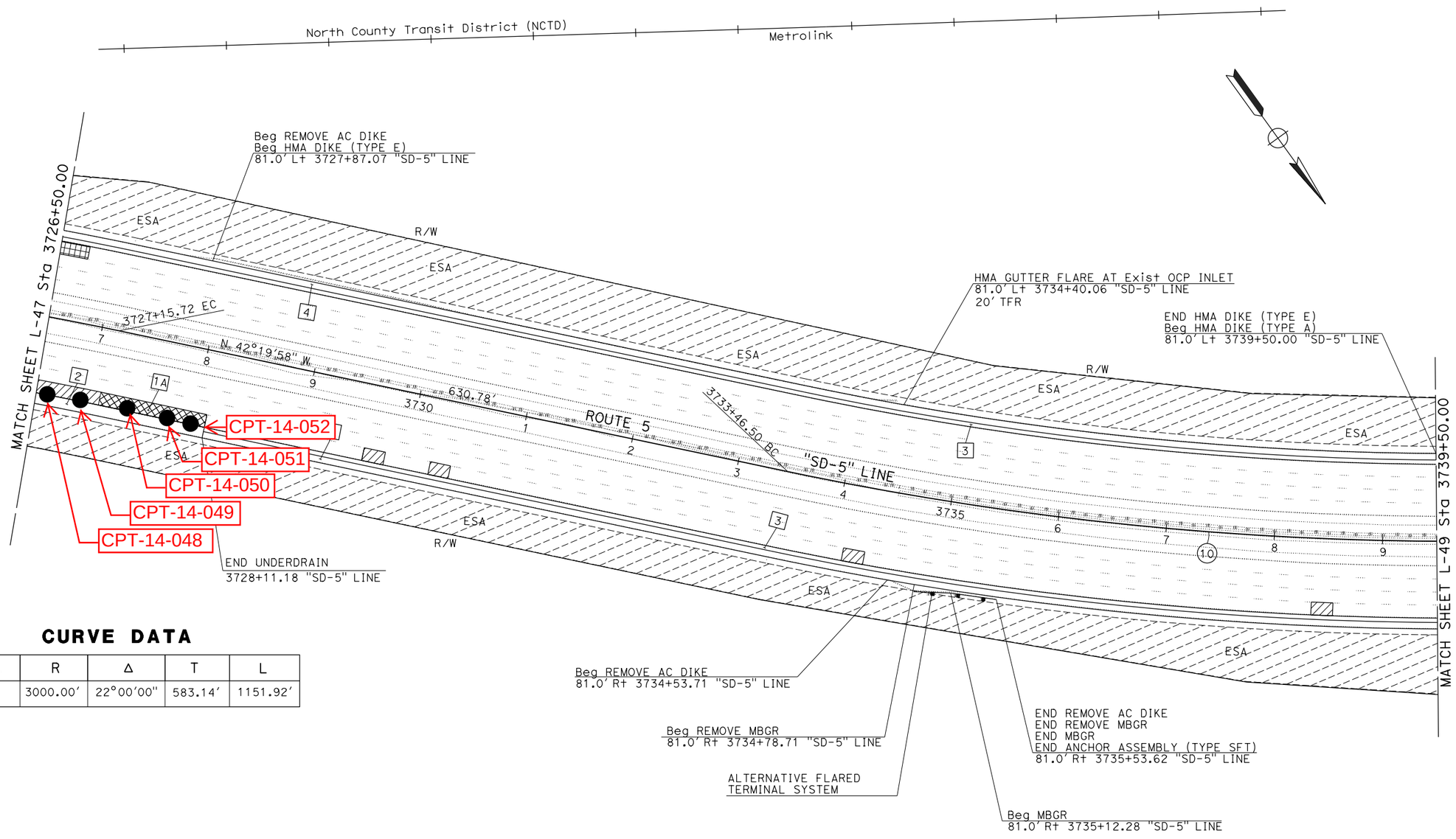
REGISTERED PROFESSIONAL ENGINEER ABDUL MALIKYAR No. C66169 Exp. 06-30-14 CIVIL STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

3 **REPLACED PER ADDENDUM No. 3 DATED MARCH 14, 2014**

NOTE:

1. FOR ACCURATE RIGHT OF WAY DATA, CONTACT RIGHT OF WAY ENGINEERING AT THE DISTRICT OFFICE.



CURVE DATA

No.	R	Δ	T	L
10	3000.00'	22°00'00"	583.14'	1151.92'

LEGEND:

● CPT-14-048 - CPT LOCATIONS

SCALE: 1" = 50'

FIGURE 5
I-5 PAVEMENT REHABILITATION
CONE PENETROMETER TEST LOCATIONS
2014 EA: 11-406701

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans DESIGN

FUNCTIONAL SUPERVISOR: EDWARD HAJJ
CALCULATED-DESIGNED BY: ABDUL MALIKYAR
CHECKED BY: HECTOR GRACIA
REVISED BY / DATE REVISED

LAST REVISION 02-19-14
DATE PLOTTED => 26-MAR-2014
TIME PLOTTED => 15:18

BORDER LAST REVISED 7/2/2010
USERNAME => s115131
DGN FILE => 1100020342ea048.dgn
RELATIVE BORDER SCALE IS IN INCHES 0 1 2 3
UNIT 2761
PROJECT NUMBER & PHASE 11000203421