

# **ADDITIONAL INFORMATION HANDOUT**

**For Contract No. 10-0T1604  
At Route 26**

**Identified by  
Project ID 1000000271**

10-0T1604  
Route 26  
Project ID 1000000271  
Page 1

## **MATERIALS INFORMATION**

Geotechnical Design Report, Dated October 29, 2012

**ADDED PER ADDENDUM No. 2 DATED JULY 18, 2013**

# Memorandum

*Flex your power!  
Be energy efficient!*

**To:** MR. MICHAEL HUTCHISON  
Design Manager, Branch J  
Office of Design IV  
Project Development Division

**Date:** October 29, 2012

**File:** 10-SJ-26  
PM 18.5/19.0  
EA 10-0T1601  
ID 1000000271  
Sandstone Creek  
Curve Correction

Attention: Mason Leung

**From:** DEPARTMENT OF TRANSPORTATION  
DIVISION OF ENGINEERING SERVICES  
GEOTECHNICAL SERVICES – MS 5

**Subject:** Geotechnical Design Report

## Introduction

This Geotechnical Design Report (GDR) has been prepared to provide geotechnical recommendations for the Sandstone Creek Curve Correction project. The project is located along State Route (SR) 26 from PM 18.5 to PM 19.0 in San Joaquin County. A vicinity map is presented on **Plate No. 1**.

The purpose of this report is to document subsurface geotechnical conditions, provide analyses of anticipated site conditions as they pertain to the project described herein, and to recommend design and construction criteria for the project.

## Existing Facilities and Proposed Improvements

SR 26 along this corridor is a rural two-lane conventional highway through rolling terrain. At the project location, SR 26 travels in a general east-west direction with 12 foot lanes and 0 to 4 foot shoulders. SR 26 was originally a county road that was transferred to the State and therefore has non-standard horizontal and vertical alignments. Sandstone Creek Bridge (Br. No. 29-0066), is located at PM 18.77 and sits between two nonstandard horizontal reversing curves. The bridge has 3-spans and both the abutments and bents are founded on spread footings. The existing bridge foundations show some evidence of scour.

This project proposes is to realign the existing nonstandard curves of SR 26 to conform to the proposed design speed of this segment of SR 26, replace Sandstone Creek Bridge with a Standard Plan box culvert, and provide standard shoulder widths. A site plan is presented on **Plate No. 2**.

### **Pertinent Reports and Investigations**

The following publications were reviewed to assist in the assessment of site conditions:

- Geologic map of the Sacramento quadrangle, 1:250,000: CDMG, 1981.
- Valley Springs SW, CA 7.5-Minute Quadrangles, USGS.
- Camp Pardee, Monthly Climate Summary, Western Regional Climate Center.
- Caltrans (CT) Standard Plans, 2010.
- Project Plans and Cross Secitons, D6 Design.

### **Physical Setting**

#### Climate

According to the Western Regional Climate Center, the average annual precipitation in the project area is about 22 in. The majority of this precipitation falls between October and April. The average annual maximum temperature is around 74°F with the highest average daily maximum of around 96°F in July. The average annual minimum temperature is around 49°F with the lowest average daily maximum of around 38°F in January. Freezing temperature conditions are usually brief and freeze/thaw conditions typically do not occur.

#### Topography

The USGS Valley Springs SW, CA 7.5-Minute Quadrangle was reviewed to determine the topographic features of the project region. The general terrain consists of rolling hills with original ground elevations within the project limits varying from approximately 165 feet to 185 feet. The main drainage feature is Sandstone Creek which crosses existing SR 26 at approximate STA 113+50.

## Regional Geology

The Geologic map of the Sacramento quadrangle (1981) indicates that the proposed project is situated within the Mehrten Formation (map unit Tm), which consists of andesitic conglomerate, sandstone, and breccia.

## **Geotechnical Conditions**

### Subsurface Soils

Two Cone Penetrometer Tests (CPT) were performed along the north shoulder of SR 26, one on each side of the existing Sandstone Creek Bridge. CPT-12-001 was performed to the west of the existing bridge at approximate STA 113+00 and hit refusal at a depth of approximately 8 feet. CPT-12-002 was performed east of the existing bridge at approximate STA 114+00 and hit refusal at a depth of approximately 5 feet. The CPT indicate that the soils consist of medium dense to very dense sands, silts, and gravels and very stiff to hard clay. The CPT locations are presented on **Plate No 3**. The CPT logs are presented on **Plate No. 4** and **Plate No. 5**.

### Ground Water

According to Department of Water Resources well data, ground water in the project area is in excess of 80 feet below the ground surface. As such, ground water is not anticipated to be encountered during construction. However, ground water conditions can be expected to fluctuate in response to seasons, storm events, and other factors. Localized saturated conditions or perched groundwater conditions near the ground surface should be anticipated during and following periods of heavy precipitation.

## **Geotechnical Testing**

### Corrosion Evaluation

Soil samples from the project location were submitted for laboratory testing to determine corrosion characteristics. The results of the corrosion testing indicate that the soil is non-corrosive to foundation elements.

## **Geotechnical Recommendations**

The following recommendations are based on the project plans and cross sections, communication with the D10 Office of Design, and subsurface conditions as determined from our field investigation.

### Fill Sections

To facilitate the realignment of SR 26, fill sections will be needed. According to the project plans, the fill sections will have a maximum height of approximately 6 feet and have side slopes of 4:1 (H:V). Based on our field review and subsurface investigation, the soils at within the fill sections are adequate to support the proposed fills. The fill section side slopes will be stable at the proposed inclination. Due to the dense nature of the subsurface soils, settlement of the proposed fills is anticipated to be minimal and occur during fill placement.

### Cut Sections

To facilitate the realignment of SR 26, cut sections will be needed. According to the project plans, the cut sections will have a maximum height of approximately 2 feet and have side slopes of 4:1 (H:V). Based on our field review and subsurface investigation, the soils within the proposed cut sections should be rippable by conventional means. The cut section side slopes will be stable at the proposed inclination.

### Box Culvert

A Standard Plan box culvert is proposed where realigned SR 26 will cross Sandstone Creek. The proposed box culvert will have three cell openings 7 feet in width and 3 feet in height and have a total length of about 68 feet and a total width of about 23 feet. Due to the potential for loose subsurface creek deposits, it is recommended that the soil be over-excavated to a depth of 2 feet below the bottom of the box culvert and then the soil be replaced and recompacted to 95% relative compaction per Caltrans Standard Specifications. As an alternative to replacing and recompacting the soil, the overexcavation may be backfilled lean concrete. The over-excavation shall extend the entire length and width of the box culvert.

With the soil remediation as described above, the soil strength will be adequate for support of the box culvert and settlement is anticipated to be minimal. For Structure Design purposes, an allowable bearing pressure of 3000 psf may be used. A detail showing the recommended over-excavation and replacement/recompaction for the box culvert is presented on **Plate No. 6**.

### **Construction Considerations**

Ground water is not anticipated to be encountered during construction. However, ground water conditions can be expected to fluctuate in response to seasons, storm events, and other factors. Localized saturated conditions or perched groundwater conditions near the ground surface should be anticipated during and following periods of heavy precipitation.

The CPT indicate that the subsurface material consists predominantly of medium dense to very dense silty and sandy soil. However, loose creek deposits may be present within the creek channel. Temporary shoring may be needed during excavations for the box culvert. Temporary cut slopes and shoring are the responsibility of the Contractor.

### **Project Information**

Standard Special Provision S5-280, "Project Information", discloses to bidders and contractors a list of pertinent information available for their inspection prior to bid opening. The following is an excerpt from SSP S5-280 disclosing information originating from Geotechnical Services. Items listed to be included in the Information Handout will be provided in Acrobat (.pdf) format to the addressee(s) of this report via electronic mail.

*Data and information attached with the project plans are:*

- A. *None.*

*Data and Information included in the Information Handout provided to the bidders and Contractors are:*

- A. *Geotechnical Design Report for EA 10-0T1601, dated 10/29/2012.*

*Data and Information available for inspection at the District Office:*

- A. *None.*

*Data and Information available for inspection at the Transportation Laboratory are:*

- A. *None.*

The recommendations contained in this report are based upon site conditions that we observed at the time of our investigation, data from our subsurface exploration, and our current understanding of proposed project. We have assumed that the information obtained from our limited subsurface exploration is representative of subsurface conditions throughout the site. If the scope of the proposed project changes from that described in this report, the recommendations should be reviewed by this Office.

If there are any questions or comments in regards to this report, please contact Ben Barnes at 916-227-1039.



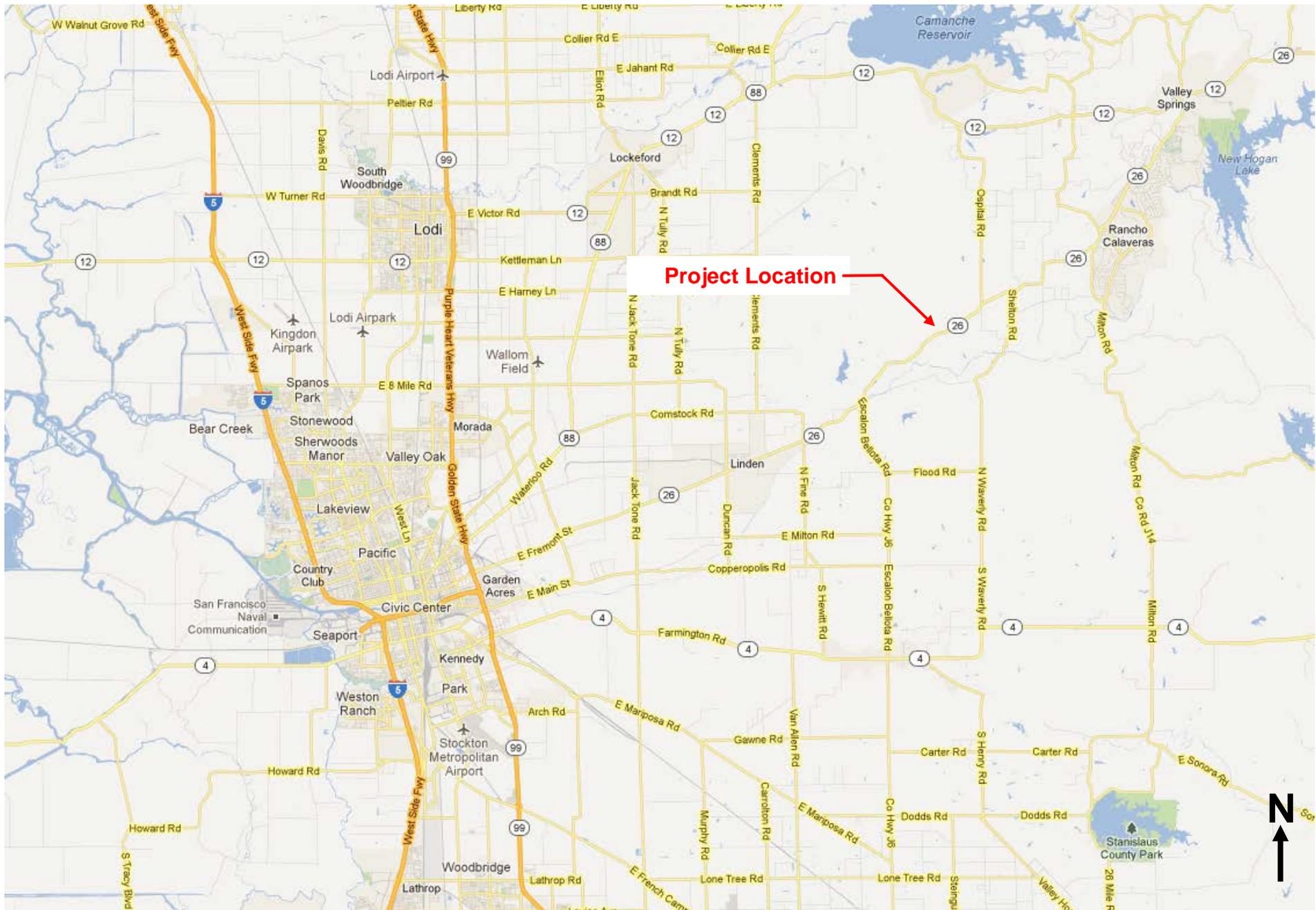
BENJAMIN M. BARNES, PE  
Transportation Engineer-Civil  
Office of Geotechnical Design North  
Branch E



### Attachments

- Plate No. 1: Vicinity Map
- Plate No. 2: Site Plan
- Plate No. 3: CPT Location Map
- Plate No. 4: Log for CPT-12-001
- Plate No. 5: Log for CPT-12-002
- Plate No. 6: Box Culvert Over-Excavation

- c: Qiang Huang (Geotechnical Services, OGDN-E)  
Scott Guidi (D10 Project Manager)  
Shira Rajendra (Geotechnical Services, Corporate Unit)  
District Construction R.E. Pending  
Dave Dhillon (D10 District Materials Engineer)  
Mike Downs (Structure Design)



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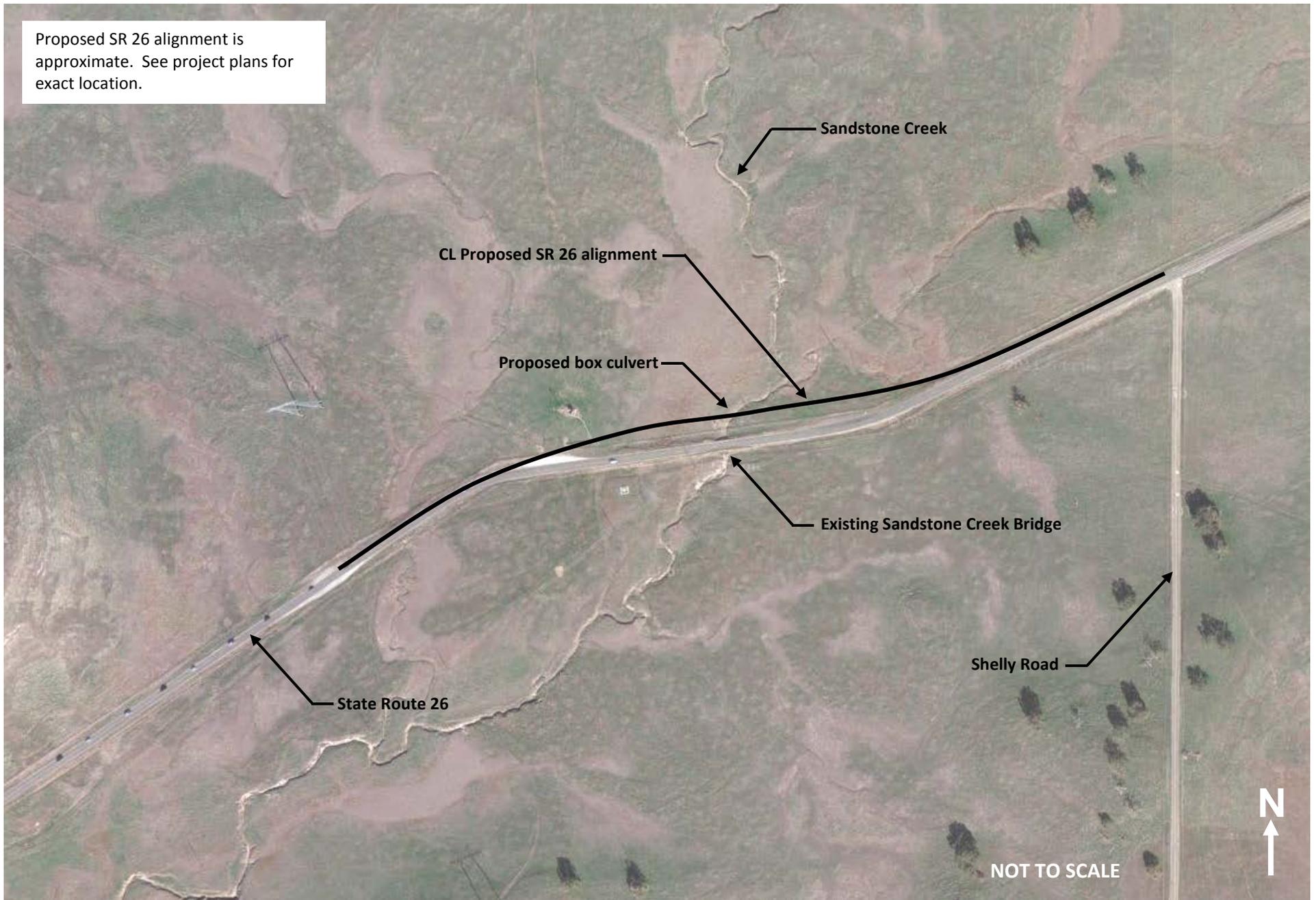
EA 10-0T1601

VICINITY MAP

SANDSTONE CREEK CURVE CORRECTION, 10-SJ-26 PM 18.5/19.0

Plate  
 No. 1

Proposed SR 26 alignment is approximate. See project plans for exact location.



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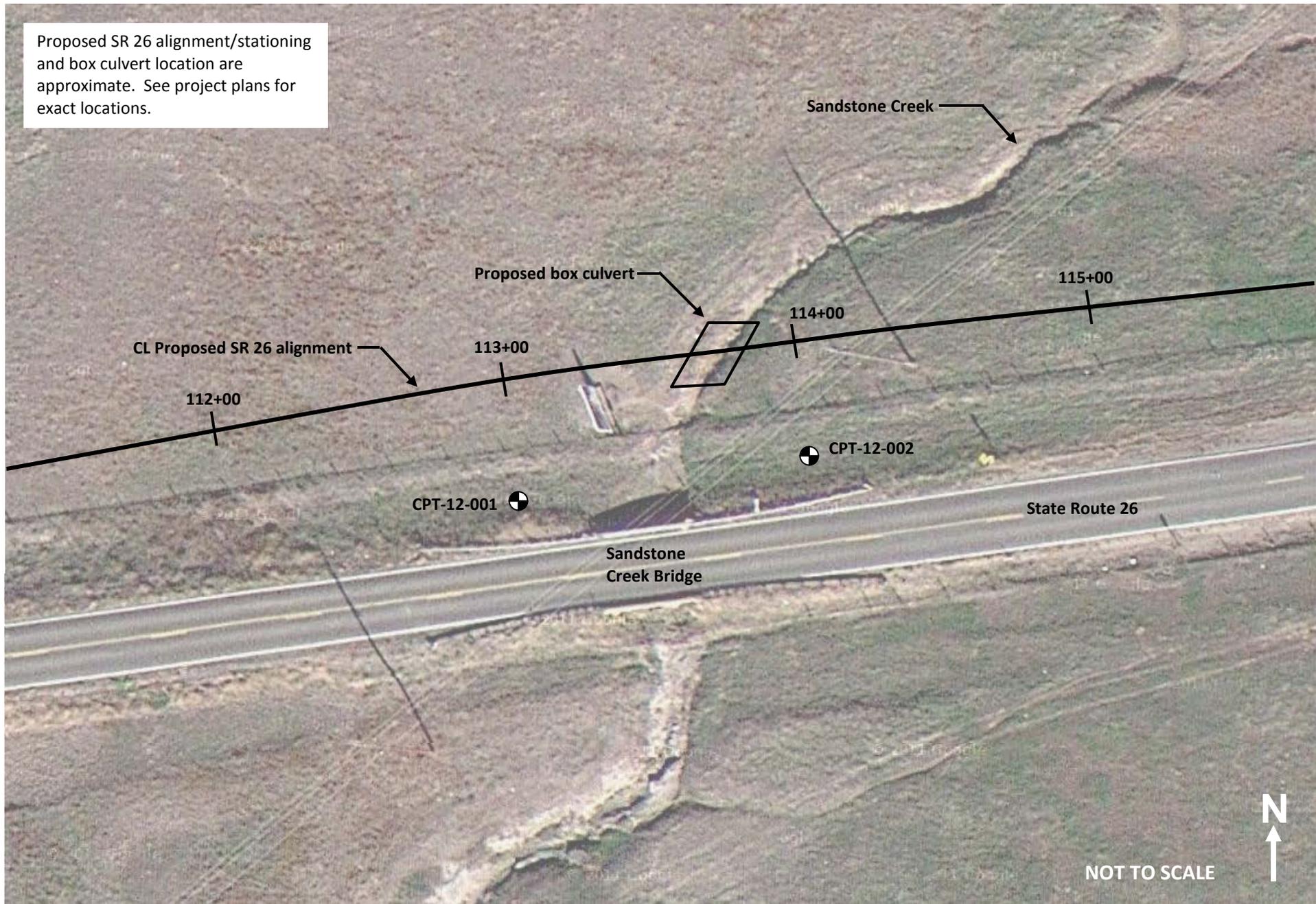
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SITE PLAN

SANDSTONE CREEK CURVE CORRECTION, 10-SJ-26 PM 18.5/19.0

Plate  
No. 2

Proposed SR 26 alignment/stationing and box culvert location are approximate. See project plans for exact locations.



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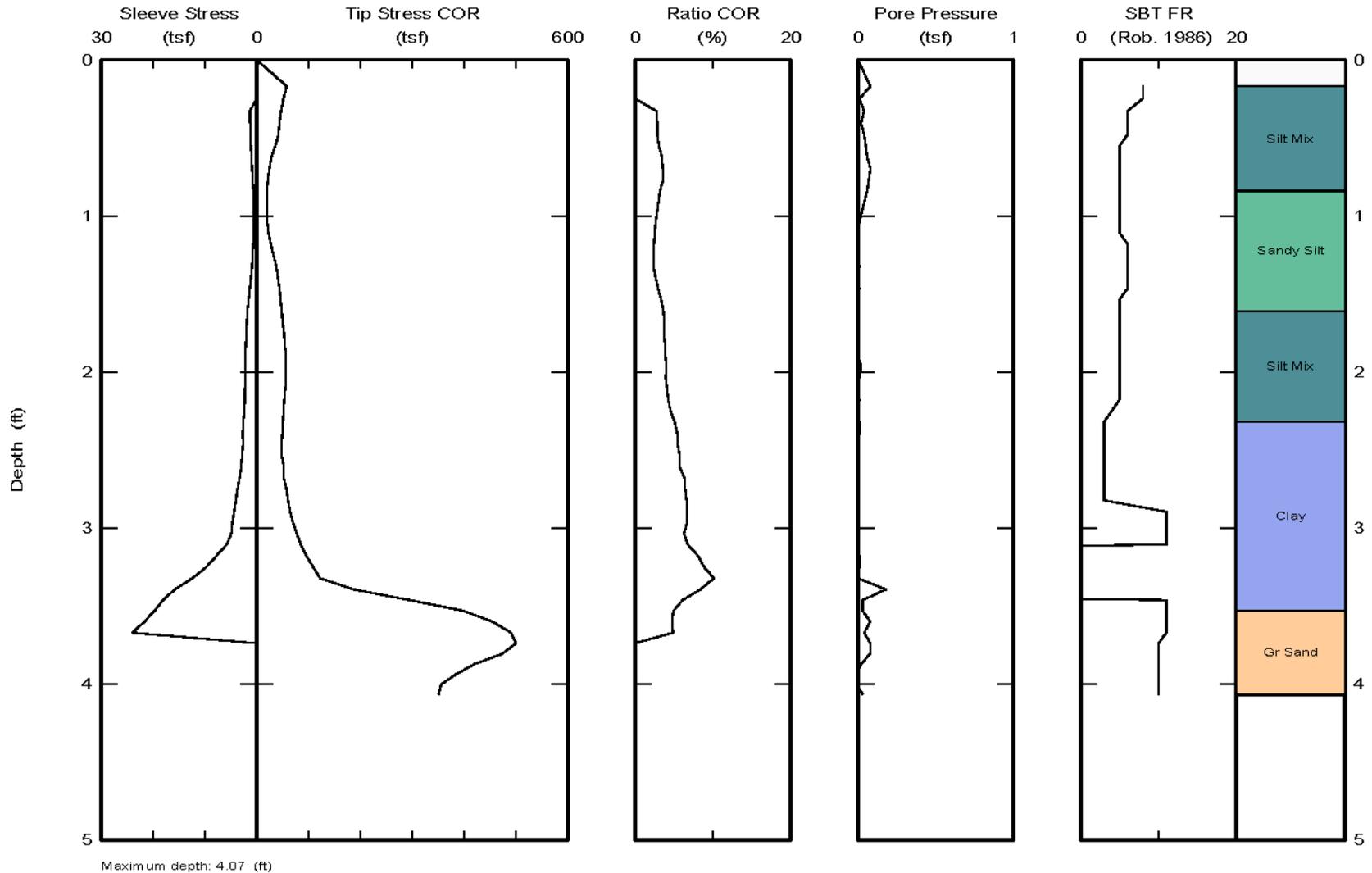
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CPT LOCATION MAP

SANDSTONE CREEK CURVE CORRECTION, 10-SJ-26 PM 18.5/19.0

Plate  
No. 3

CPT-12-001    Offset approx. 50 ft right CL Proposed SR 26  
 STA 113+00    Approx. top of CPT elev. 165 feet



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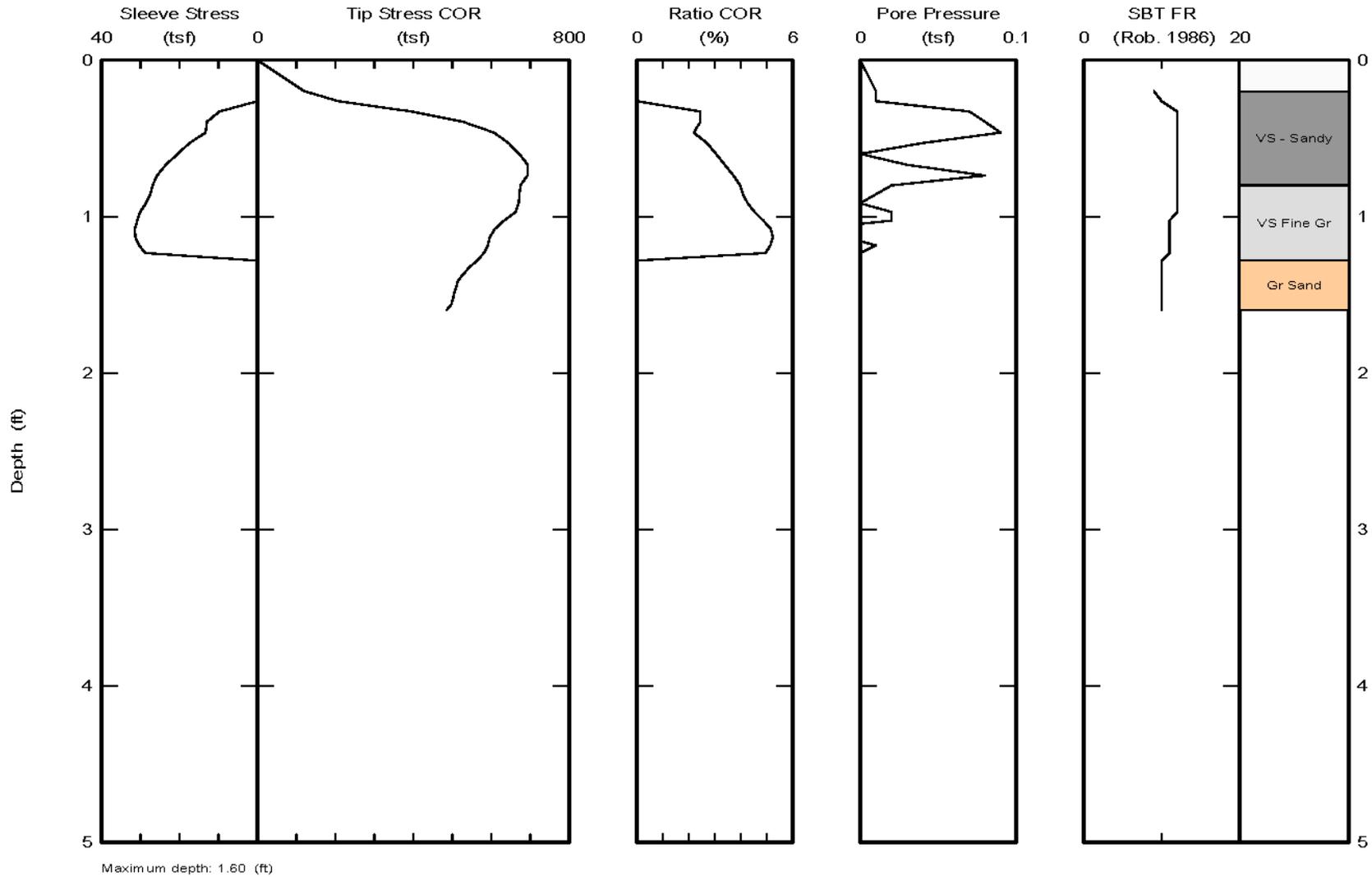
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CPT-12-001

SANDSTONE CREEK CURVE CORRECTION, 10-SJ-26 PM 18.5/19.0

Plate  
 No. 4

CPT-12-002    Offset approx. 50 ft right CL Proposed SR 26  
 STA 114+00    Approx. top of CPT elev. 165 feet



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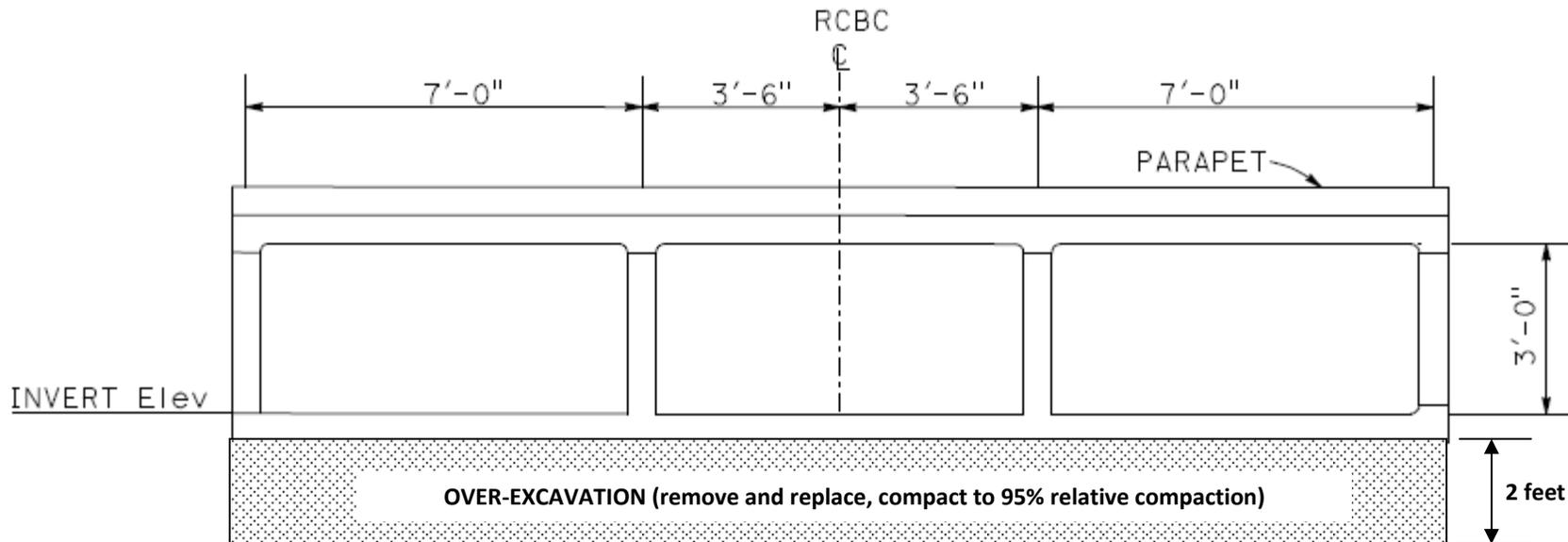
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CPT-12-002

SANDSTONE CREEK CURVE CORRECTION, 10-SJ-26 PM 18.5/19.0

Plate  
 No. 5



**NOTES**

1. Over excavation shall extend for entire length of box culvert.
2. Compaction shall follow Caltrans Standard Specifications.
3. This detail is for design purposes only. See project plans for actual box culvert layout and details.

**NOT TO SCALE**



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**BOX CULVERT OVER-EXCAVATION DETAIL**

SANDSTONE CREEK CURVE CORRECTION, 10-SJ-26 PM 18.5/19.0

Plate  
 No. 6