INFORMATION HANDOUT

For Contract No. 07-297204
At LA-105, 710-R12,8/R14.2, R15.4/R16.4

Identified by
Project ID 0713000154

07-297204
07-LA-105, 710-R12.8/R14.2, R15.4/R16.4
Project ID 0713000154

MATERIALS INFORMATION

Geotechnical Design Report For HMLP Structures

Fiber Optic System As-Built Drawings

State of California
DEPARTMENT OF TRANSPORTATION

California State Transportation Agency

Memorandum

Serious drought.
Help save water!

To: MR. OSWALD ELIZONDO
DESIGN MANAGER
OFFICE OF TRAFFIC DESIGN
DISTRICT 7

Attention: Cesar Hernandez

Date: June 10, 2015

File: 07-LA-710/105
EA 07-297201
EFIS. 0713000154

From: **DEPARTMENT OF TRANSPORTATION**
Division of Engineering Services
METS-Geotechnical Service
Office of Geotechnical Design South-1

Subject: **GEOTECHNICAL DESIGN REPORT FOR HIGH MAST LIGH POLE STRUCTURES**

INTRODUCTION

As requested by your office in the memo dated May 14, 2015, the following is the geotechnical recommendations for 160 feet high mast light pole foundations proposed on State Route 105/710 connector in Los Angeles County.

PROJECT LOCATION

As shown in Figure 1, there will be 10 light poles at the Route 105/710 connector.

SCOPE OF WORK

The geotechnical work performed for this project includes:

- Review of geologic information, and as-built LOTBs.
- Visual inspection of job site.
- Interpretation of subsurface geologic and groundwater conditions.
- Preparation of this memorandum to present geotechnical recommendation for light pole foundations.

It should be noted that no subsurface exploration has been performed at the proposed light structure locations due to late request for the recommendations.

PROJECT DESCRIPTION

The proposed project consists of ten new light pole structures. The information on the proposed structures provided by District is summarized in Table 1.

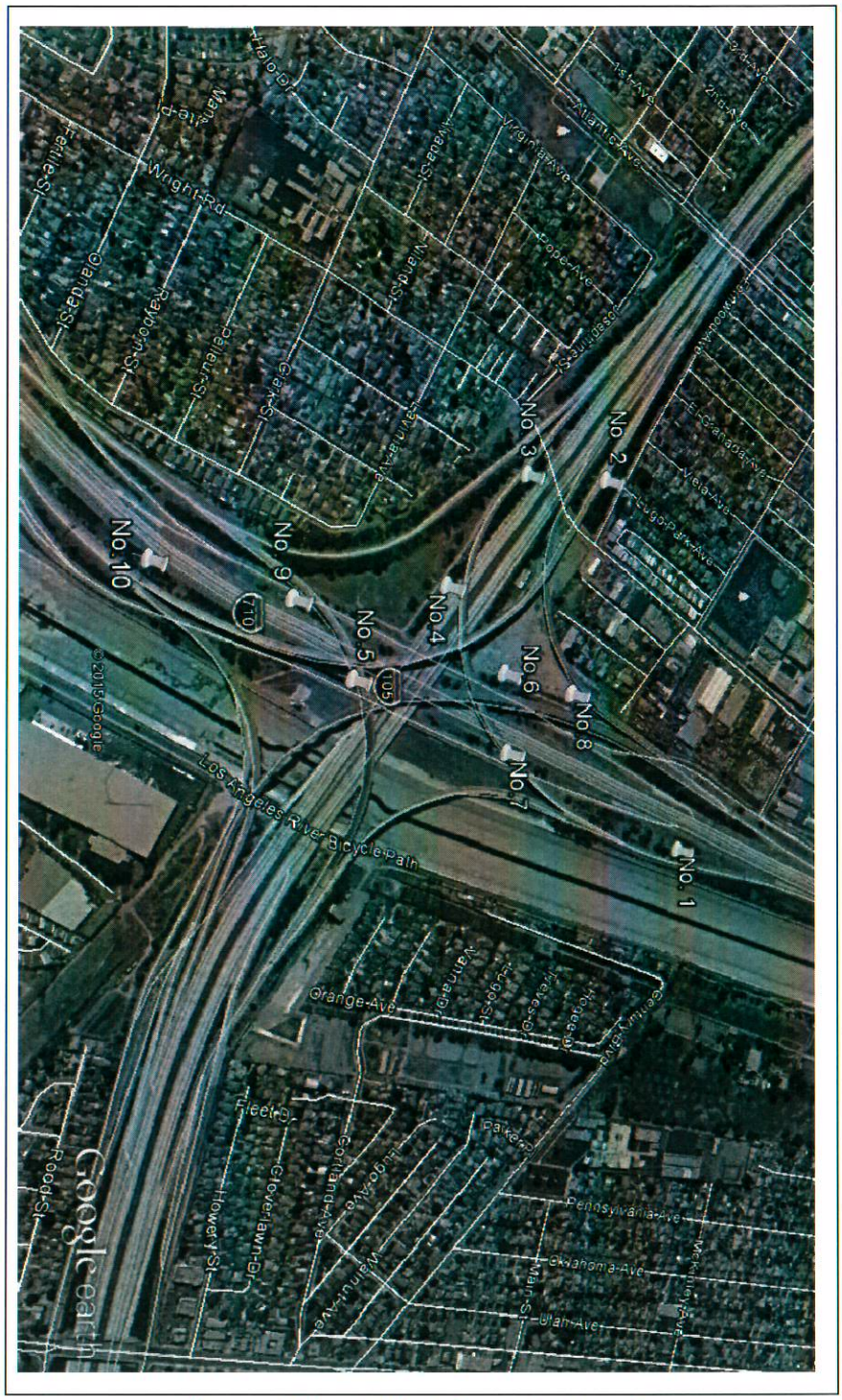


Figure 1 New Light Mast Pole Locations

Table 1 - Summary of New 160 feet High Light Mast Pole Structures

Pole Number	Location			CIDH PILE Foundation		As-built LOTBs near the pole location Bridge No.(Boring No.)
	Latitude	Longitude	Approx. Ground Elev. (ft)	Dia (ft)	Length (ft)	
1	33°55'01.9"	-118°10'43.4"	85	6	20	53-2420F (B-9)
2	33°54'53.2"	-118°11'04.3"	109	6	20	53-2415G (B-3)
3	33°55'48.8"	-118°11'02.9"	90	6	20	53-2453 (B-3)
4	33°54'46.1"	-118°10'54.7"	79	6	20	53-2418 (B-17)
5	33°54'42.6"	-118°10'47.6"	80	6	20	53-2415G (B-2)
6	33°54'50.3"	-118°10'50.6"	83	6	20	53-2415G (B-14)
7	33°54'51.5"	-118°10'45.9"	81	6	20	53-2418G (B-4)
8	33°54'54.3"	-118°10'50.6"	79	6	20	53-2416F (B-2)
9	33°54'38.7"	-118°10'51.1"	80	6	20	53-2414F (B-1)
10	33°54'31.7"	-118°10'50.8"	92	6	20	53-2455G (B-11)

SITE GEOLOGY AND SUBSURFACE CONDITIONS

Site Geology

For this report we reviewed the Geologic Compilation of Quaternary Surficial Deposits in Southern California Onshore Portion of the Long Beach 30' x 60' Quadrangle, compiled by Roffers and Bedrossian (2010). The map (Figure 2) shows that the I-105/I-710 interchange is overlying Young Alluvial Fan Deposits (shown on the map as Qyf). According to Roffers and Bedrossian, this deposit consists of unconsolidated to slightly consolidated, undissected to slightly dissected boulder, cobble, gravel, sand, and silt deposits derived from local valleys and canyons.

Subsurface Conditions

Based on the relevant as-built LOTBs and Stantec Site Investigation Report, dated March 12, 2015, the sites are underlain by loose to medium dense gray to brown silty sand (SM) with varying amount of silt, clay or fine gravel up to 20 feet below the ground surface (with SPT N values of 8 to 24). Underneath the top soil layer, the soil becomes denser with gray to brown silty sand (SM) or gray sand (SP) up to 30 feet (with SPT N values of 8 to 39).

Groundwater

As summarized in Table 2, according to the as-built LOTBs and Stantec Site Investigation Report, dated March 12, 2015, groundwater at the proposed pole locations ranged from no ground water or 19 feet to 35 feet below ground surface. I-710 trends north to south through the interchange with I-105 and is parallel to the Los Angeles River. The riverbanks and bed of the Los Angeles River are formed by concrete throughout most of the metropolitan Los Angeles area. At the interchange of I-105 and I-710, the riverbed is approximately 20 feet lower in

elevation than the top of the banks. Even though the river is lined in concrete, groundwater level will most likely follow the elevation of the riverbed.

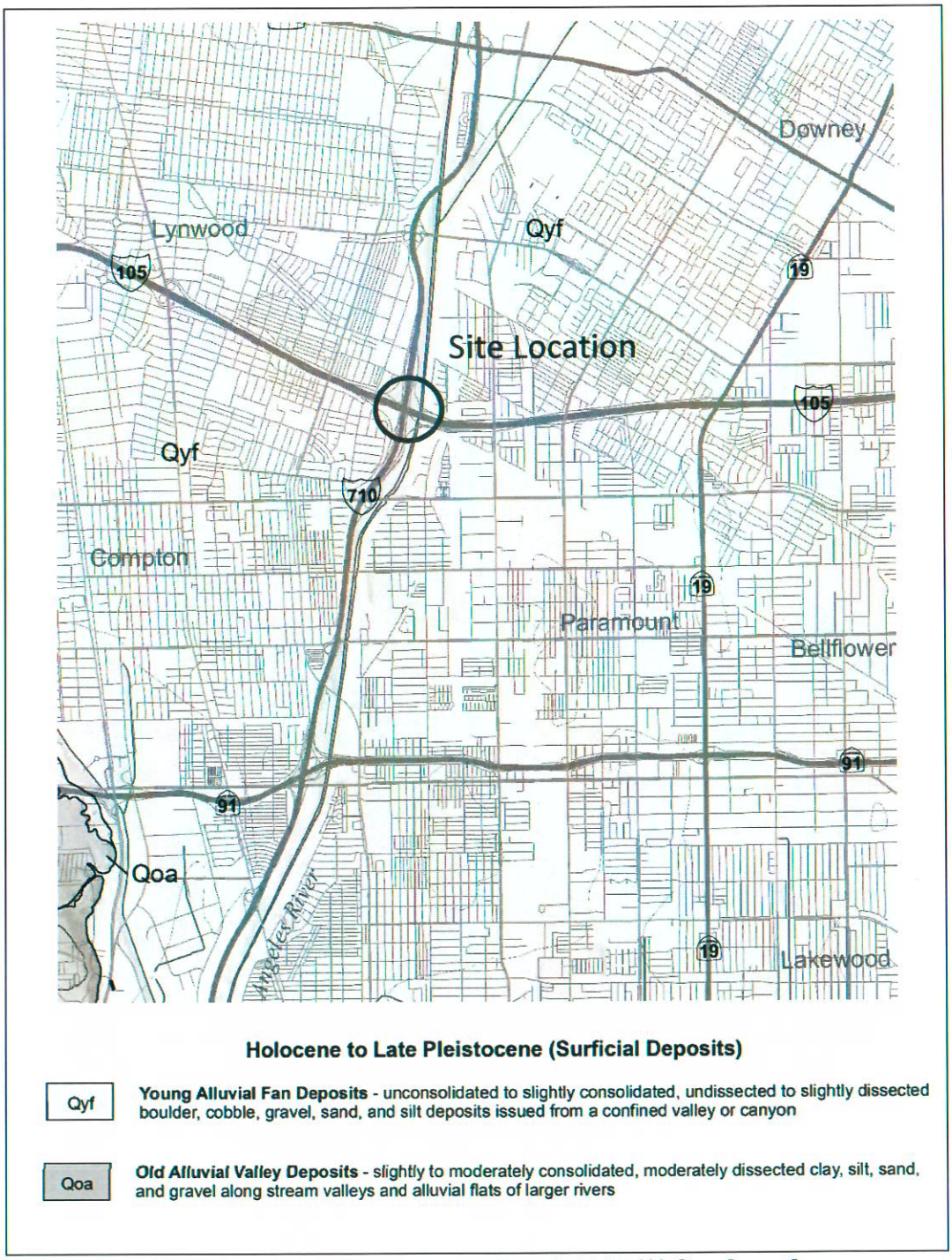


Figure 2 Geologic Map of the Long Beach 30'X60' Quadrangle, compiled by Peter D. Roffers and Trinda Bedrossian, CEG, July 2010.

Table 2 - Estimated Ground Water Table Elevation at Pole Locations based on LOTBs and Stantec Report

Light Pole No.	Approx. Ground Elev. (ft)	Approx. Ground Water Table Elev. (ft)	Approx. Ground Water Table below Ground Surface. (ft)
1	85	63	22
2	109	no water encountered	no water encountered
3	90	55	35
4	79	57	22
5	80	58	22
6	83	57	26
7	81	61	20
8	79	61	19
9	80	56	24
10	92	no water encountered	no water encountered

It should be noted that groundwater table levels can fluctuate with seasonal change and other factors including local irrigation.

Seismic Evaluation

The job site is not located within any California Geological Survey (CGS) designated Earthquake Fault Zone (EFZ). The job site is not considered prone to surface fault rupture hazard; therefore, the possibility of surface fault rupture hazard at this site is considered low.

Liquefaction

Although groundwater table is assumed relatively shallow at the location, liquefaction potential is considered to be low because of relatively high densities of silty sand at the site.

CORROSIVITY

Due to lack of soil samples for corrosion tests, foundation soil at the light pole locations should be assumed to be corrosive.

GEOTECHNICAL RECOMMENDATIONS

Idealized Soil Profile and Soil Strength Parameter

The idealized soil profile and interpreted engineering parameters for foundation design are

summarized in Table 3. Note that zero cohesion is assumed for sandy soils, although an apparent cohesion may exist.

Table 3 - Idealized Soil Profile and Strength Parameters

Soil Layer	Depth Below Ground Surface (ft)	Soil Type	Total unit weight (pcf)	Effective Unit Weight (pcf)	Friction Angle (degree)
1	0 – 20	SM	110.0	110.0	32
2	20 – 30	SP/SM	115.0	52.6	33

Note:
Ground water table was assumed to be at 20 ft below ground surface for the design of light pole foundation.

Pile Analysis

The design of the light pole foundations is primarily governed by lateral capacity of the pile. The analysis was performed using LPILE PLUS 5.0. The loads used in the analysis were provided by Special Design, Office of Design & Technical Services, Caltrans. Below is the detailed informatior of the parameters used in the LPILE analysis.

- CIDH pile diameter and reinforcement details are based on Caltrans Plan SES-1 (Lighting standard, 160' high mast light pole).
- Pile depth is determined based on the allowable lateral deflection at the pile head, which is under 1.0 in.
- The pile top is assumed to be at the ground surface.

The lateral pile analysis for the proposed pole foundations is summarized in the Table 4.

Table 4 - Boundary conditions and Maximum allowable pile deflection

Pole Type	Pile Diameter (ft)	Pile Depth (ft)	Axial Force (kips)	Bending Moment (kip-in)	Shear (kip)	Maximum allowable pile-head deflection (in)
HM 160	6.0	20.0	10.4	12170.0	12.1	1.0

The proposed light pole foundation may be constructed using Cast in Drilled Hole (CIDH) piles. The calculated deflections of these pole foundations are within the commonly accepted maximum deflection of 1.0 inch at the top of foundation for Pole structures.

The engineering properties of subsurface material at the project site were correlated with blow counts obtained from relevant as-built LOTBs. Based on the result of analysis with a pile length of 20 ft, the pile head-deflection induced by the boundary conditions are within the maximum allowable pile head deflection (1.0 inch) and the proposed foundation depth is sufficient to support

vertical load of the proposed light poles.

Maximum bending moment of 1035 kip-ft and a maximum shear force of 97.5 kips were computed as a result of applying the boundary condition at the top of pile head. The maximum bending moment and maximum shear force occurred at 3.4 feet and 13.5 feet below the pile head, respectively. The maximum lateral pile head deflection is approximately 0.3 in. from L-PILE analysis.

CONSTRUCTION CONSIDERATIONS

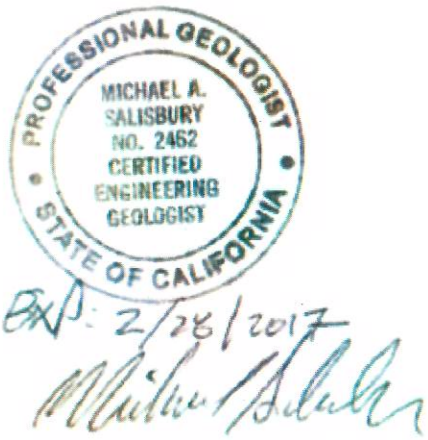
Section 49-1.03 Expected Difficult Pile Installation.

Moderate caving may be anticipated during excavation of the pile boring and during CIDH pile construction. Due to seasonal rainfall and fluctuating groundwater elevations, there is the high potential for groundwater to be encountered during the CIDH pile construction. Wet method for construction of CIDH pile is recommended.

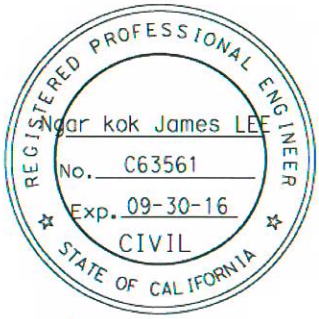
If you have any questions or comments, please call Sungro Cho at (916) 227-5398, or James Lee at (916) 227-7066 or Michael Salisbury at (916) 227-5392 or Deh-Jeng Jang at (916) 227-5722.

Prepared by: Date: 6/10/2015

Sungro Cho, Ph.D., P.E.
Transportation Engineer
Branch A



Michael Salisbury, C.E.G.
Engineering Geologist
Branch A



Ngar Kok James LEE, Ph.D., P.E.
Transportation Engineer
Branch A

Appendix

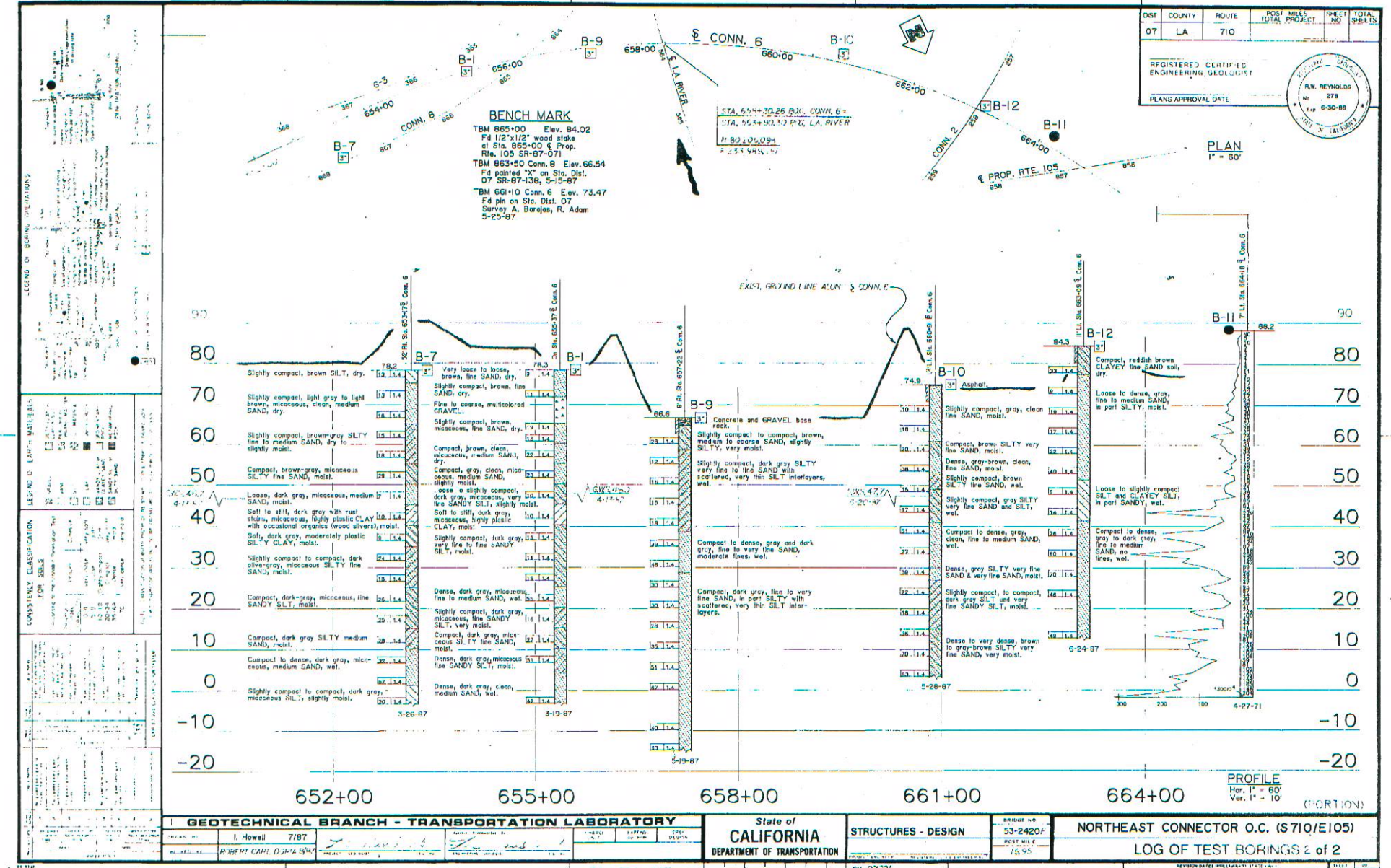
Approx. Light Mast Pole Locations and Relevant As-built LOTBs

Vicinity of No. 1 Pole Location (looking south-bound, 710)

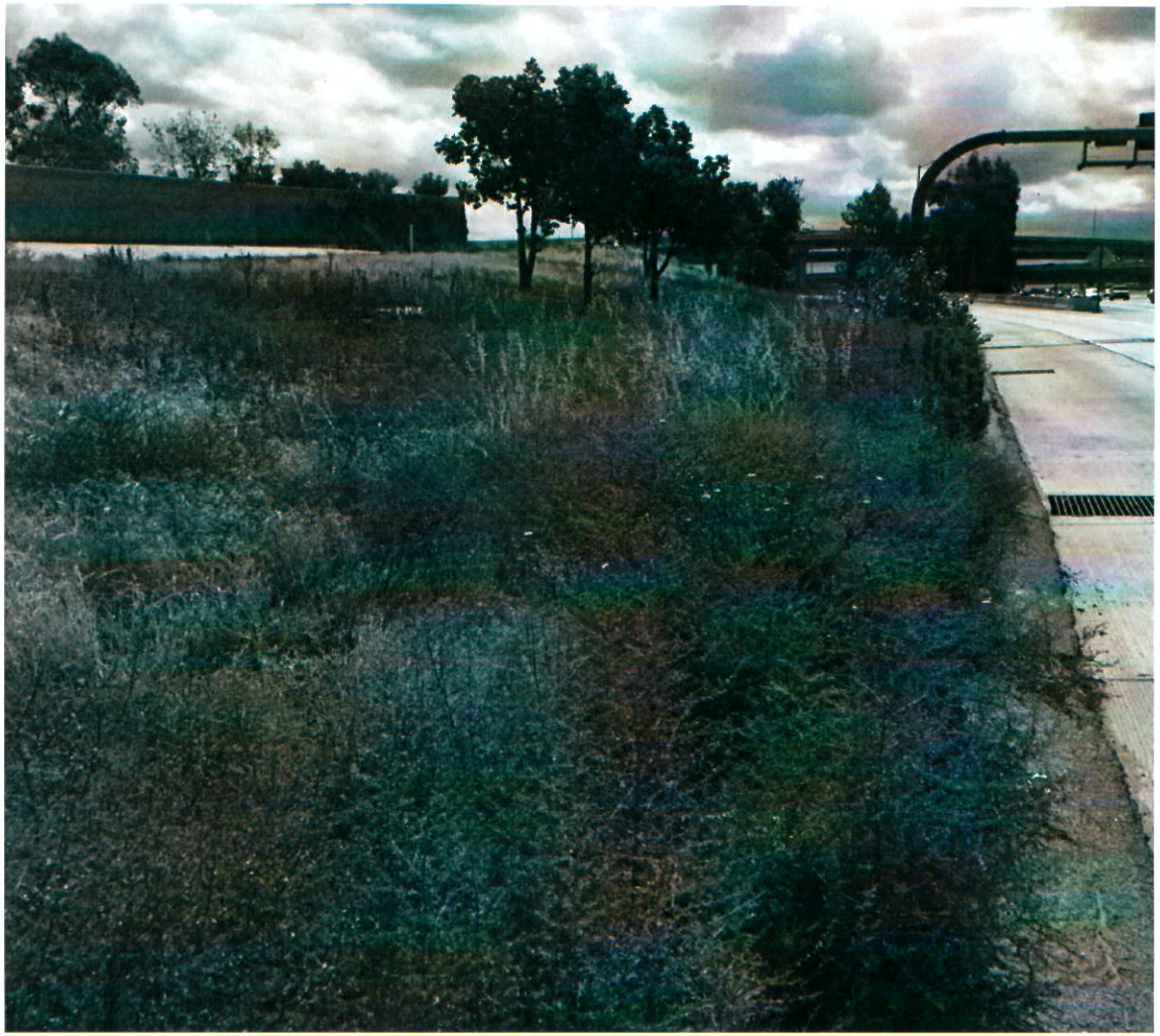
MR. OSWALD ELIZONDO
June 10, 2015

0713000154 (EA07-297201)

As-built LOTB near the No. 1 Pole Location, 53-2420F (B-9)



DIST 07
COUNTY LA
ROUTE 710
POST MILES TOTAL PROJECT
SHEET NO
TOTAL SHEETS
REGISTERED CERTIFIED ENGINEERING GEOLOGIST
PLANS APPROVAL DATE
R.W. REYNOLDS No. 278 Exp. 6-30-88
BENCH MARK
TBM 865+00 Elev. 84.02
Fd 1/2"x1/2" wood stake at Sta. 865+00 ℄ Prop. Rte. 105 SR-87-071
TBM 863+50 Conn. 8 Elev. 66.54
Fd painted "X" on Sta. Dist. 07 SR-87-138, 5-15-87
TBM 661+10 Conn. 6 Elev. 73.47
Fd pin on Sta. Dist. 07 Survey A. Barajas, R. Adam 5-25-87
℄ CONN. 6
℄ LA RIVER
CONN. 8
CONN. 2
℄ PROP. RTE. 105
PLAN
1" = 60'
EXIST. GROUND LINE ALONG ℄ CONN. 6
Slightly compact, brown SILT, dry.
Slightly compact, light gray to light brown, micaceous, clean, medium SAND, dry.
Slightly compact, brown-gray SILTY fine to medium SAND, dry to slightly moist.
Compact, brown-gray, micaceous SILTY fine SAND, moist.
Loose, dark gray, micaceous, medium SAND, moist.
Soft to stiff, dark gray with rust stains, micaceous, highly plastic CLAY with occasional organics (wood slivers), moist.
Soft, dark gray, moderately plastic SILTY CLAY, moist.
Slightly compact to compact, dark olive-gray, micaceous SILTY fine SAND, moist.
Compact, dark-gray, micaceous, fine SANDY SILT, moist.
Compact, dark gray SILTY medium SAND, moist.
Compact to dense, dark gray, micaceous, medium SAND, wet.
Slightly compact to compact, dark gray, micaceous SILT, slightly moist.
Very loose to loose, brown, fine SAND, dry.
Slightly compact, brown, fine SAND, dry.
Fine to coarse, multicolored GRAVEL.
Slightly compact, brown, micaceous, fine SAND, dry.
Compact, brown, clean, micaceous, medium SAND, dry.
Compact, gray, clean, micaceous, medium SAND, slightly moist.
Loose to slightly compact, dark gray, micaceous, very fine SANDY SILT, slightly moist.
Soft to stiff, dark gray, micaceous, highly plastic CLAY, moist.
Slightly compact, dark gray, very fine to fine SANDY SILT, moist.
Dense, dark gray, micaceous, fine to medium SAND, wet.
Slightly compact, dark gray, micaceous, fine SANDY SILT, very moist.
Compact, dark gray, micaceous SILTY fine SAND, moist.
Dense, dark gray, micaceous fine SANDY SILT, moist.
Dense, dark gray, clean, medium SAND, wet.
Concrete and GRAVEL base rock.
Slightly compact to compact, brown, medium to coarse SAND, slightly SILTY, very moist.
Slightly compact, dark gray SILTY very fine to fine SAND with scattered, very thin SILT interlayers, wet.
Compact to dense, gray and dark gray, fine to very fine SAND, moderate fines, wet.
Compact, dark gray, fine to very fine SAND, in part SILTY with scattered, very thin SILT interlayers.
Asphalt.
Slightly compact, gray, clean fine SAND, moist.
Compact, brown SILTY very fine SAND, moist.
Dense, gray-brown, clean, fine SAND, moist.
Slightly compact, brown SILTY fine SAND, wet.
Slightly compact, gray SILTY very fine SAND and SILT, wet.
Compact to dense, gray, clean, fine to medium SAND, wet.
Dense, gray SILTY very fine SAND & very fine SAND, moist.
Slightly compact, to compact, dark gray SILT and very fine SANDY SILT, moist.
Dense to very dense, brown to gray-brown SILTY very fine SAND, very moist.
Compact, reddish brown CLAYEY fine SAND soil, dry.
Loose to dense, gray, fine to medium SAND, in part SILTY, moist.
Loose to slightly compact SILT and CLAYEY SILT, in part SANDY, wet.
Compact to dense, gray to dark gray, fine to medium SAND, no fines, wet.
3-26-87
3-19-87
5-19-87
5-28-87
6-24-87
4-27-71
652+00
655+00
658+00
661+00
664+00
PROFILE
Hor. 1" = 60'
Ver. 1" = 10'
(PORTION)
GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY
I. Howell 7/87
ROBERT CARL DORIA 8/87
State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION
STRUCTURES - DESIGN
BRIDGE NO 53-2420F
POST MILE 15.95
NORTHEAST CONNECTOR O.C. (S710/E105)
LOG OF TEST BORINGS 2 of 2
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
CU 07221
EA 053601

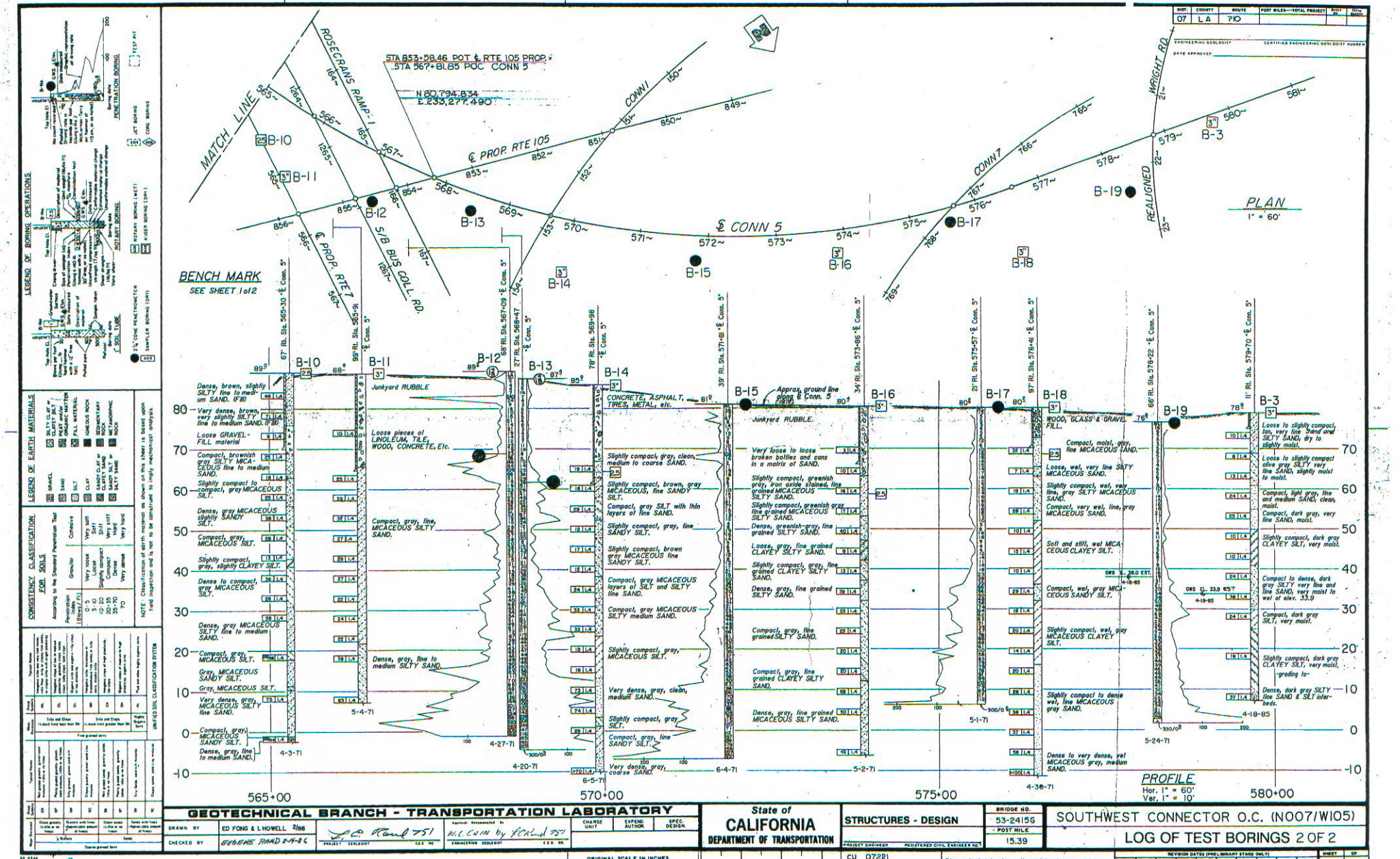


Vicinity of No. 2 Pole Location (looking east-bound, 105)

MR. OSWALD ELIZONDO
June 10, 2015

0713000154 (EA07-297201)

As-built LOTB near the No. 2 Pole Location, 53-2415G (B-3)


LEGEND OF BORING OPERATIONS
LEGEND OF EARTH MATERIALS
CONSISTENCY CLASSIFICATION FOR SOILS
UNIFIED SOIL CLASSIFICATION SYSTEM
NOTE: Classification of earth material as shown on this sheet is based upon field inspection and is not to be construed to imply mechanical analysis.
ROSECRANS RAMP: 1
MATCH LINE
STA 853+58.46 POT ℄ RTE 105 PROP.
STA 567+81.85 POC CONN 5
N 80,794.834
E 233,277.490
℄ PROP. RTE 105
CONN 1
CONN 7
℄ CONN 5
℄ PROP. RTE 7
S/B BUS COLL. RD.
WRIGHT RD.
REALIGNED
BENCH MARK
SEE SHEET 1 of 2
PLAN
1" = 60'
PROFILE
Hor. 1" = 60'
Ver. 1" = 10'
565+00
570+00
575+00
580+00
B-10
B-11
B-12
B-13
B-14
B-15
B-16
B-17
B-18
B-19
B-3
Junkyard RUBBLE
CONCRETE, ASPHALT, TIRES, METAL, etc.
Approx. ground line along ℄ Conn. 5
WOOD, GLASS & GRAVEL FILL.
Loose pieces of LINOLEUM, TILE, WOOD, CONCRETE, Etc.
Compact, gray, line, MICACEOUS SILTY SAND.
Dense, gray, fine to medium SILTY SAND.
Junkyard RUBBLE.
Very loose to loose broken bottles and cans in a matrix of sand.
Compact, moist, gray, fine MICACEOUS SAND.
Loose, wet, very fine SILTY MICACEOUS SAND.
Compact, very wet, fine, gray MICACEOUS SAND.
Soft and still, wet MICACEOUS CLAYEY SILT.
Compact, wet, gray MICACEOUS SANDY SILT.
Slightly compact, wet, gray MICACEOUS CLAYEY SILT.
Slightly compact to dense wet, fine MICACEOUS gray SAND.
Dense to very dense, wet MICACEOUS gray, medium SAND.
Loose to slightly compact, tan, very fine SAND and SILTY SAND, dry to slightly moist.
Loose to slightly compact olive gray, SILTY very fine SAND, slightly moist to moist.
Compact, light gray, fine and medium SAND, clean, moist.
Compact, dark gray, very fine SAND, moist.
Slightly compact, dark gray CLAYEY SILT, very moist.
Compact to dense, dark gray SILTY very fine and fine SAND, very moist to wet at elev. 33.9
Compact, dark gray SILT, very moist.
Slightly compact, dark gray CLAYEY SILT, very moist, -grading to-
Dense, dark gray SILTY fine SAND & SILT interbeds.
GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY
DRAWN BY ED FONG & L HOWELL 2/86
CHECKED BY EUGENE PAND 2-14-86
PROJECT GEOLOGIST
ENGINEERING GEOLOGIST
State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION
STRUCTURES - DESIGN
PROJECT ENGINEER
REGISTERED CIVIL ENGINEER NO.
BRIDGE NO. 53-2415G
POST MILE 15.39
CU 07221
SOUTHWEST CONNECTOR O.C. (N007/W105)
LOG OF TEST BORINGS 2 OF 2
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS
Disregard prints bearing earlier revision dates
REVISION DATES (PRELIMINARY STAGE ONLY)

Vicinity of No. 3 Pole Location (looking west-bound, 105)

MR. OSWALD ELIZONDO
June 10, 2015

0713000154 (EA07-297201)

As-built LOTB near the No. 3 Pole Location, 53-2453 (B-3)

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
07	LA	105			

W. C. Cain 7-2
REGISTERED - CERTIFIED ENGINEERING GEOLOGIST

W.C CAIN No. 2497 Exp. 6-30-90 REGISTERED GEOLOGIST STATE OF CALIFORNIA

PLANS APPROVAL DATE

NOTE
For Bench Marks and Plan View, refer to Sheet 1 of 2

LEGEND OF BORING OPERATIONS

LEGEND OF EARTH MATERIALS

CONSISTENCY CLASSIFICATION FOR SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM

Approx. ground line along ℄ Rte. 105

B-4 (B-9,53-2419RL) — 106' Rt. Sta. 839+92 ℄ Rte. 105

78.1 | 25

Slightly compact, brownish-gray, slightly micaceous SILT
Loose, brownish-gray, slightly SILTY fine SAND
Slightly compact, brownish-gray slightly micaceous SILT.
Slightly compact, brownish-gray, SANDY SILT.
Compact, gray, fine to medium very slightly SILTY SAND
Compact, gray, micaceous, SILTY fine SAND.
Slightly compact, gray, micaceous SILT.
Compact, gray, micaceous SILT
Compact, gray, micaceous, SANDY SILT.
Compact, gray, micaceous, SILT.
Slightly compact, gray, micaceous, lightly iron stained SILT.
Compact, gray, micaceous, SILTY fine SAND.
Compact, gray, micaceous, SANDY SILT.
Slightly compact, gray, micaceous, SILT.
Slightly compact, gray, slightly CLAYEY micaceous SILT.
Slightly compact, gray, slightly SANDY SILT.
Slightly compact, gray, micaceous SILT.
Slightly compact, gray, micaceous, slightly SANDY SILT.
Compact, gray, micaceous SILT.
Very dense, gray, fine to medium SAND
Dense, gray, slightly SANDY micaceous SILT.
Slightly compact, gray, micaceous, SILT.
Compact, gray, fine to medium slightly SILTY SAND.

3-19-71

B-2 (B-1,53-2418G) — 24' Lt. Sta. 841+05 ℄ Rte. 105

81.1 | 5"

Loose to slightly compact, brown, SILTY micaceous, fine SAND, dry to slightly moist.
Slightly compact, dark olive-brown, micaceous SILT; slightly moist.
Slightly compact, olive, mottled with rust, SILTY fine SAND, moist.
Slightly compact, olive, micaceous, very fine to fine SAND; slightly moist.
Compact, olive micaceous fine SAND, slightly moist.
Slightly compact, dark olive-gray, micaceous SILT, with ±20% fine SAND
Soft, dark gray, highly plastic CLAY; moist
Slightly compact, dark olive-gray, SILTY; moist.
Slightly compact, dark olive-gray, CLAYEY SILT, moist.
Slightly compact, dark gray, micaceous SILT, wet
Slightly compact to dense, olive, micaceous, SILT with ±20% very fine SAND; moist to wet
Stiff, dark olive-brown, highly plastic CLAY; moist.
Very dense, dark gray, micaceous, clean, medium SAND; moist to wet.
Dense, black, micaceous, medium to coarse SAND; wet
Very dense, dark gray, clean, micaceous, medium SAND; wet.

G.W.S.℄ Elev. 46.6 3-20-87

3-10-87

B-3 (B-1,53-2418G) — 112' Rt. Sta. 841+41 ℄ Rte. 105

78.7 | 3"

Slightly compact, olive tan, SILTY very fine SAND and fine SAND; dry.
Slightly compact, olive brown, SILT grading to very fine SANDY SILT, slightly moist.
Compact, olive-gray, fine and medium SAND; moist
Compact, dark gray, very fine SANDY SILT, grading to CLAYEY SILT, moist
Slightly compact, dark olive gray, SILTY; very moist.
Compact, dark olive-gray, SILTY; wet.
Slightly compact, dark gray SILT, very moist.

4-24-86

B-5 (B-3,53-2415G) — 211' Lt. Sta. 842+20 ℄ Rte. 105

78.9 | 3"

Loose to slightly compact, tan very fine SAND and SILTY SAND, dry to slightly moist.
Loose to slightly compact, olive gray, SILTY very fine SAND; slightly moist to moist.
Compact, light gray, fine and medium SAND; clean, moist.
Compact, dark gray, very fine SAND; moist
Slightly compact, dark gray, CLAYEY SILT, very moist.
Compact to dense, dark gray, SILTY very fine and fine SAND; SNS ℄ El. 33.9 4-19-85 very moist to wet at elev. 33.9
Compact, dark gray, SILTY; very moist.
Slightly compact, dark gray, CLAYEY SILT; very moist - grading to: Dense, dark gray, SILTY fine SAND and SILT interbeds.

4-18-85

B-1 — 97' Lt. Sta. 842+78 ℄ Rte. 105

78.4 | 5"

Slightly compact, gray-brown, SILT with 20-30% fine grained SAND; dry.
Compact, brown, micaceous, SILTY fine SAND, dry.
Compact, brown, SILT, dry.
Slightly compact to compact, olive-brown, SILT with ±25% fine SAND; dry.
Compact, brown, micaceous SILT with ±25% fine SAND; slightly moist.
G.W.S.℄ Elev. 48.4 3-20-87
Slightly compact, dark gray, SILTY, very fine to fine SAND, moist.
Loose, dark gray, SILT interbedded with soft, dark gray, highly plastic CLAY; moist
Slightly compact, dark gray, SILT, interbedded with olive SILT, with 20-30% fine SAND; moist.
Compact, dark gray, micaceous, SILTY fine SAND, moist.
Slightly compact, dark gray, micaceous, SILT; moist
Slightly compact, dark gray, micaceous SILT, with 20-30% very fine SAND; wet.
Slightly compact, dark gray, micaceous, SILT, moist.
Stiff, dark gray, highly plastic CLAY with ORGANICS (wood); moist
Compact, dark gray, micaceous, SILTY, fine to medium SAND; wet.
Very dense, dark gray, clean, micaceous, medium to coarse SAND; wet.

3-9-87

839 840 841 842 843

PROFILE
HORIZ. 1"= 20'
VERT. 1"= 10'

SHEET 2 OF 2

APR 1 71989

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY VICTOR SESTOKAS, 3-27-89
CHECKED BY R.C. DORIA 3/89
PROJECT GEOLOGIST R&T Carl Doria C.E.G. #0
ENGINEERING GEOLOGIST C.E.G. #0

CHARGE UNIT | EXPEND AUTHOR | SPEC DESIGN

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN
PROJECT ENGINEER REGISTERED CIVIL ENGINEER NO.

BRIDGE NO. 53-2453
POST MILE R13.19

WRIGHT ROAD UNDERCROSSING
LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

CU 07226
EA 053601

Disregard prints bearing earlier revision dates

REVISION DATES (PRELIMINARY STAGE ONLY)

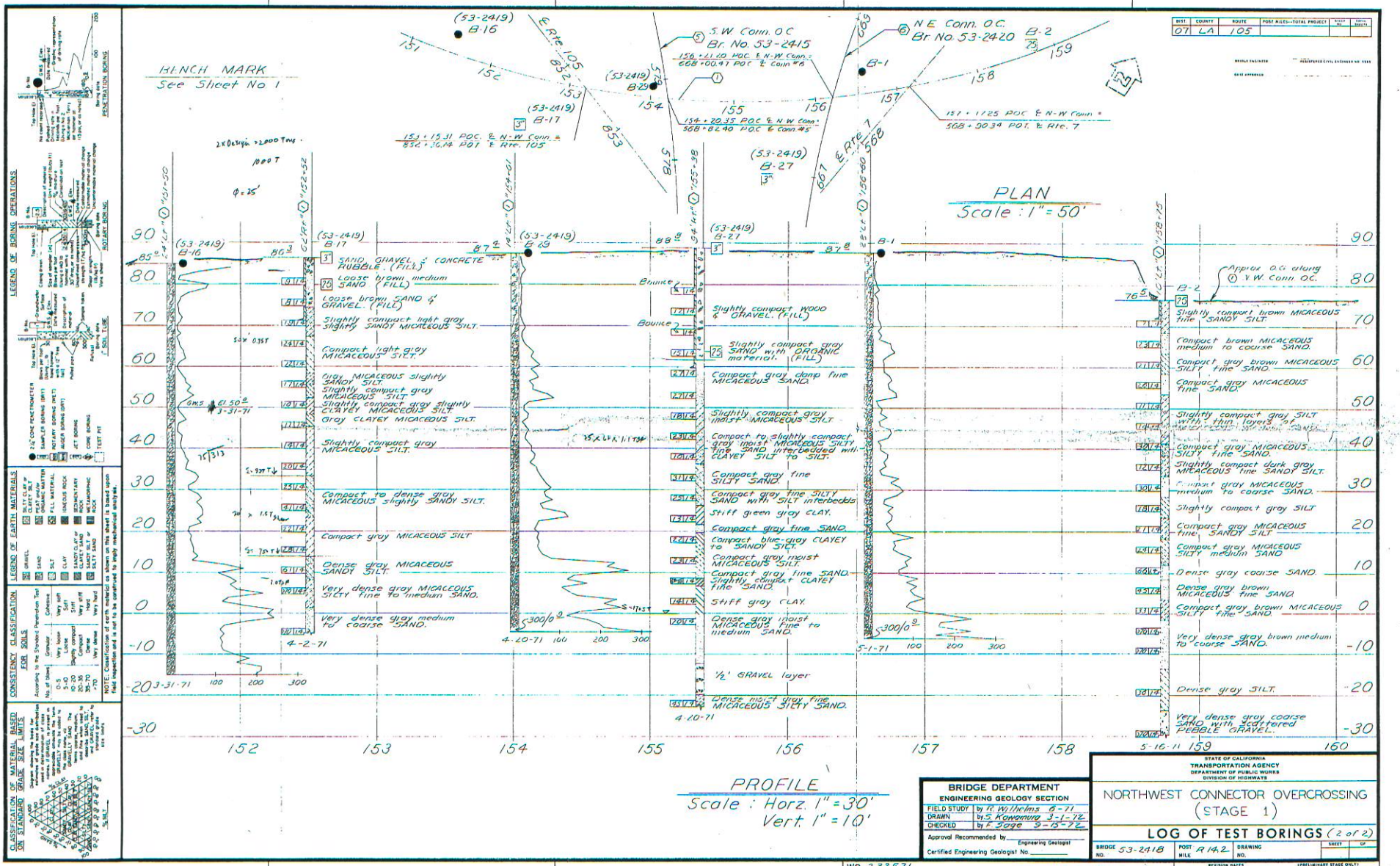
SHEET OF

Vicinity of No. 4 Pole Location (looking west-bound, 105)

MR. OSWALD ELIZONDO
June 10, 2015

0713000154 (EA07-297201)

As-built LOTB near the No. 4 Pole Location, 53-2418 (B-17)



DIST.	COUNTY	ROUTE	POST MILES—TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	105			

STATE OF CALIFORNIA
TRANSPORTATION AGENCY
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS

NORTHWEST CONNECTOR OVERCROSSING
(STAGE 1)

LOG OF TEST BORINGS (2 of 2)

BRIDGE DEPARTMENT
ENGINEERING GEOLOGY SECTION

FIELD STUDY	by R. Wilhelms 6-71
DRAWN	by S. Kawamura 3-1-72
CHECKED	by F. Sage 5-15-72

Approval Recommended by _____ Engineering Geologist
Certified Engineering Geologist No. _____

BRIDGE NO.	POST MILE	DRAWING NO.	SHEET	OF
53-2418	R 14.2			

REVISION DATES (PRELIMINARY STAGE ONLY)

Disregard print bearing earlier revision dates →

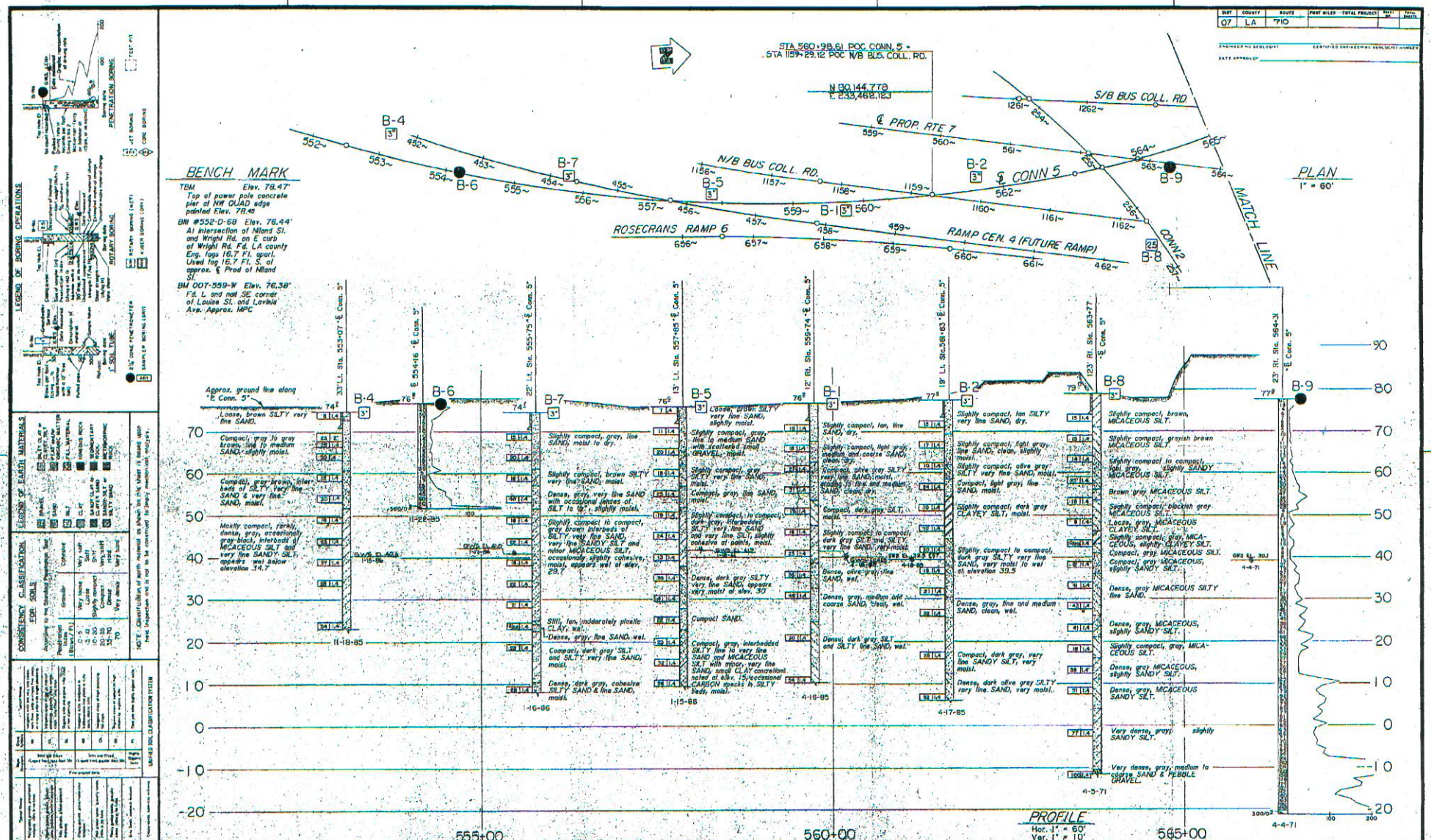
WO 232571
CU 07221

Vicinity of No. 5 Pole Location (looking north-bound, 710)

MR. OSWALD ELIZONDO
June 10, 2015

0713000154 (EA07-297201)

As-built LOTB near the No. 5 Pole Location, 53-2415G (B-2)



GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

State of CALIFORNIA DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

BRIDGE NO. 53-2415G

POST MILE 15.39

SOUTHWEST CONNECTOR O.C. (N007/W105)

LOG OF TEST BORINGS 1 OF 2

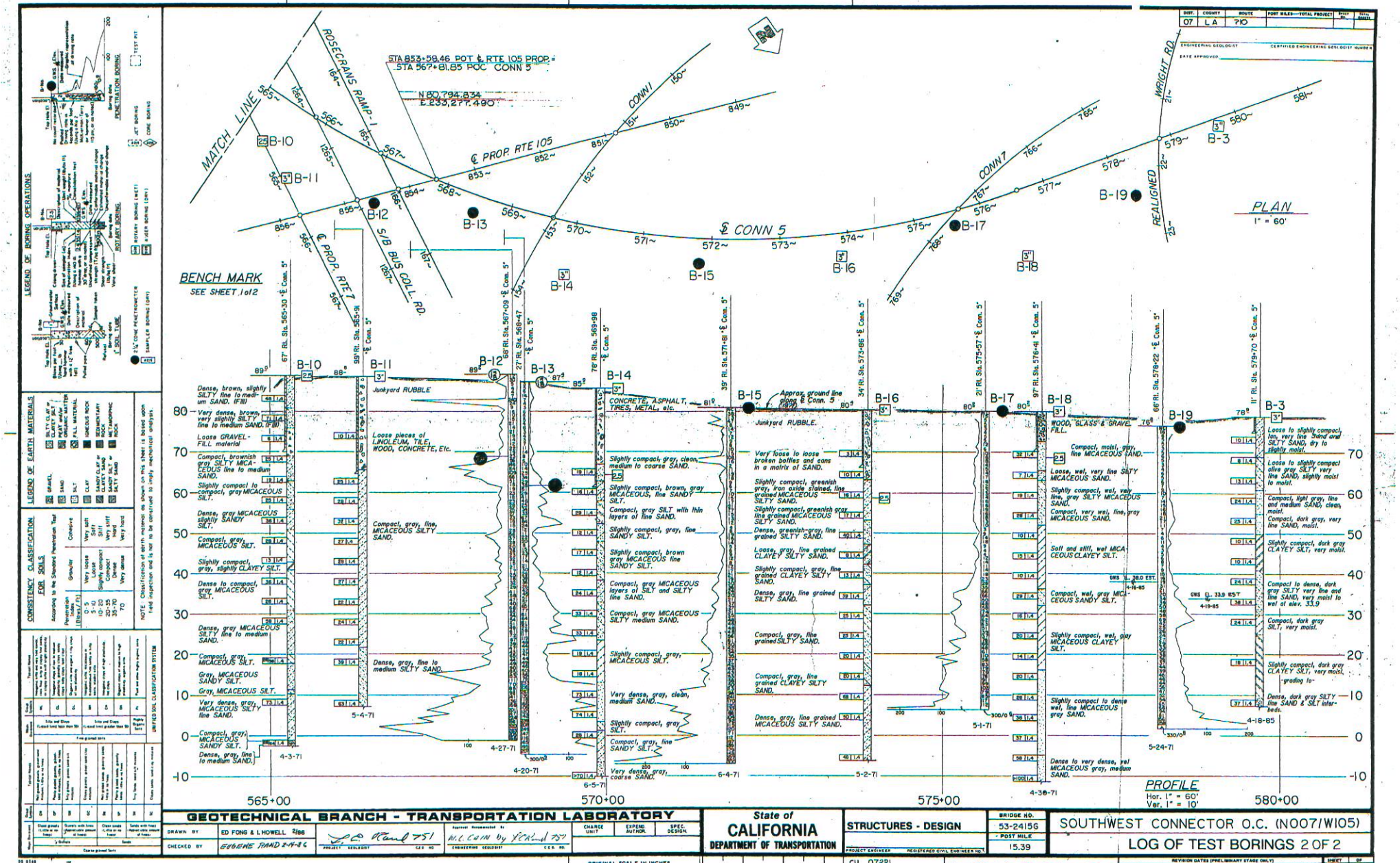
CU 07221
WO 053801

Vicinity of No. 6 Pole Location (looking west-bound, 105)

MR. OSWALD ELIZONDO
June 10, 2015

0713000154 (EA07-297201)

As-built LOTB near the No. 6 Pole Location, 53-2415G (B-14)



GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY: ED FONG & I. HOWELL 2/86
CHECKED BY: EUGENE THAND 2-14-86
PROJECT GEOLOGIST: C.E.G. NO.
ENGINEERING GEOLOGIST: C.E.G. NO.
CHARGE UNIT | EXPEND. AUTHOR. | SPEC. DESIGN.

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN
PROJECT ENGINEER — REGISTERED CIVIL ENGINEER NO.

BRIDGE NO. 53-2415G
POST MILE 15.39

CU 07221

SOUTHWEST CONNECTOR O.C. (N007/W105)
LOG OF TEST BORINGS 2 OF 2

DIST.	COUNTY	ROUTE	POST MILES—TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	710			

ENGINEERING GEOLOGIST — CERTIFIED ENGINEERING GEOLOGIST NUMBER
DATE APPROVED

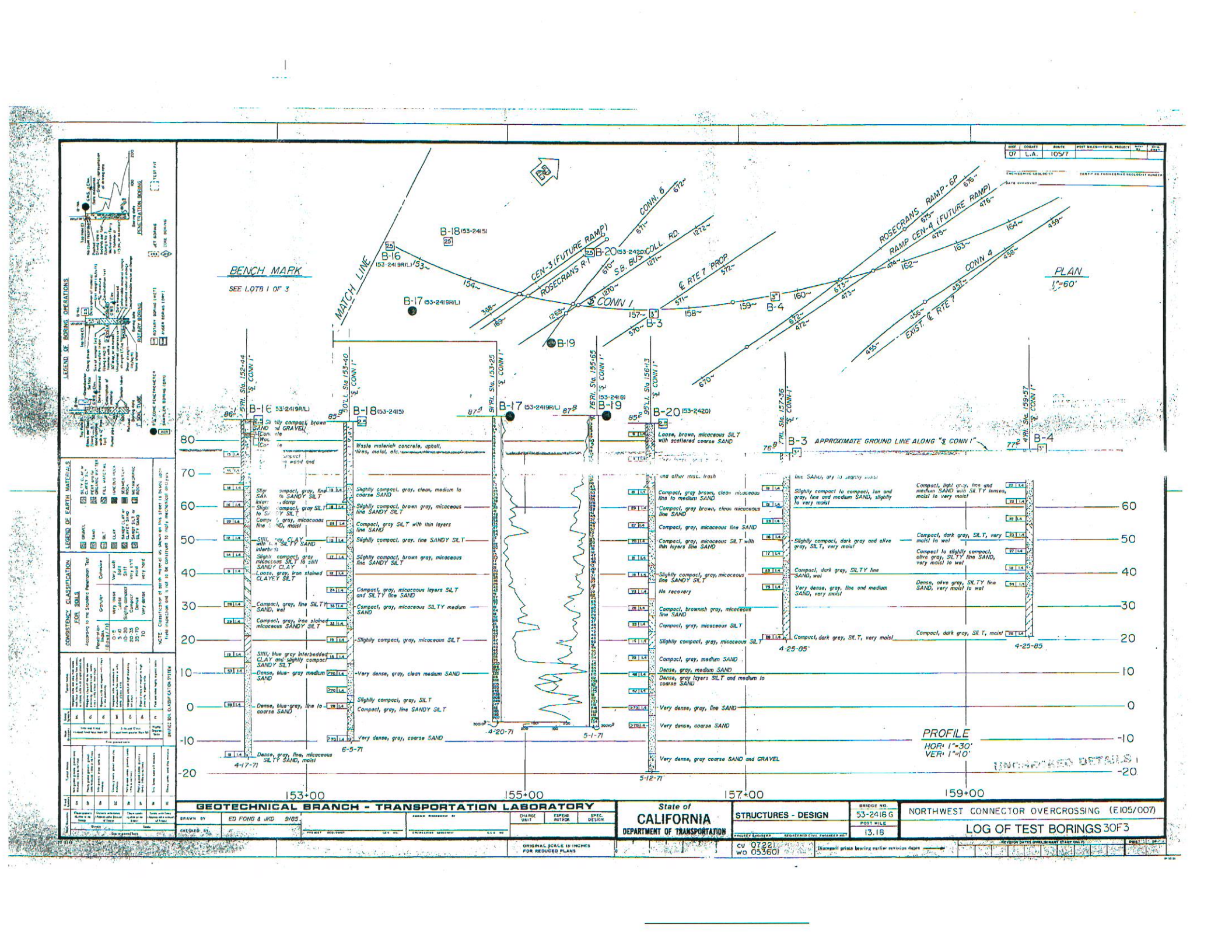
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

Disregard prints bearing earlier revision dates →

REVISION DATES (PRELIMINARY STAGE ONLY) | SHEET | OF

Vicinity of No. 7 Pole Location (looking north-bound, 710)

As-built LOTB near the No. 7 Pole Location, 53-2418G (B-4)



DIST	COUNTY	ROUTE	POST MILES—TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	L.A.	105/7			

ENGINEERING GEOLOGIST — CERTIFIED ENGINEERING GEOLOGIST NUMBER — DATE APPROVED

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY	CHECKED BY	PROJECT DESIGNER	CHARGE UNIT	EXPEND AUTHOR	SPEC. DESIGN
ED FONG & JKD 9/85					

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

PROJECT ENGINEER — REGISTERED CIVIL ENGINEER NO.

BRIDGE NO. 53-2418 G
POST MILE 13.18

NORTHWEST CONNECTOR OVERCROSSING (E105/007)

LOG OF TEST BORINGS 3 OF 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

CU 0722I
WD 053601

Discrepancies in prints bearing earlier revision dates —

REVISION DATES (PRELIMINARY STAGE ONLY) — BRIDGE NO. — POST MILE

Vicinity of No. 8 Pole Location (looking west-bound, 105)

MR. OSWALD ELIZONDO
June 10, 2015

0713000154 (EA07-297201)

As-built LOTB near the No. 8 Pole Location, 53-2416F (B-2)

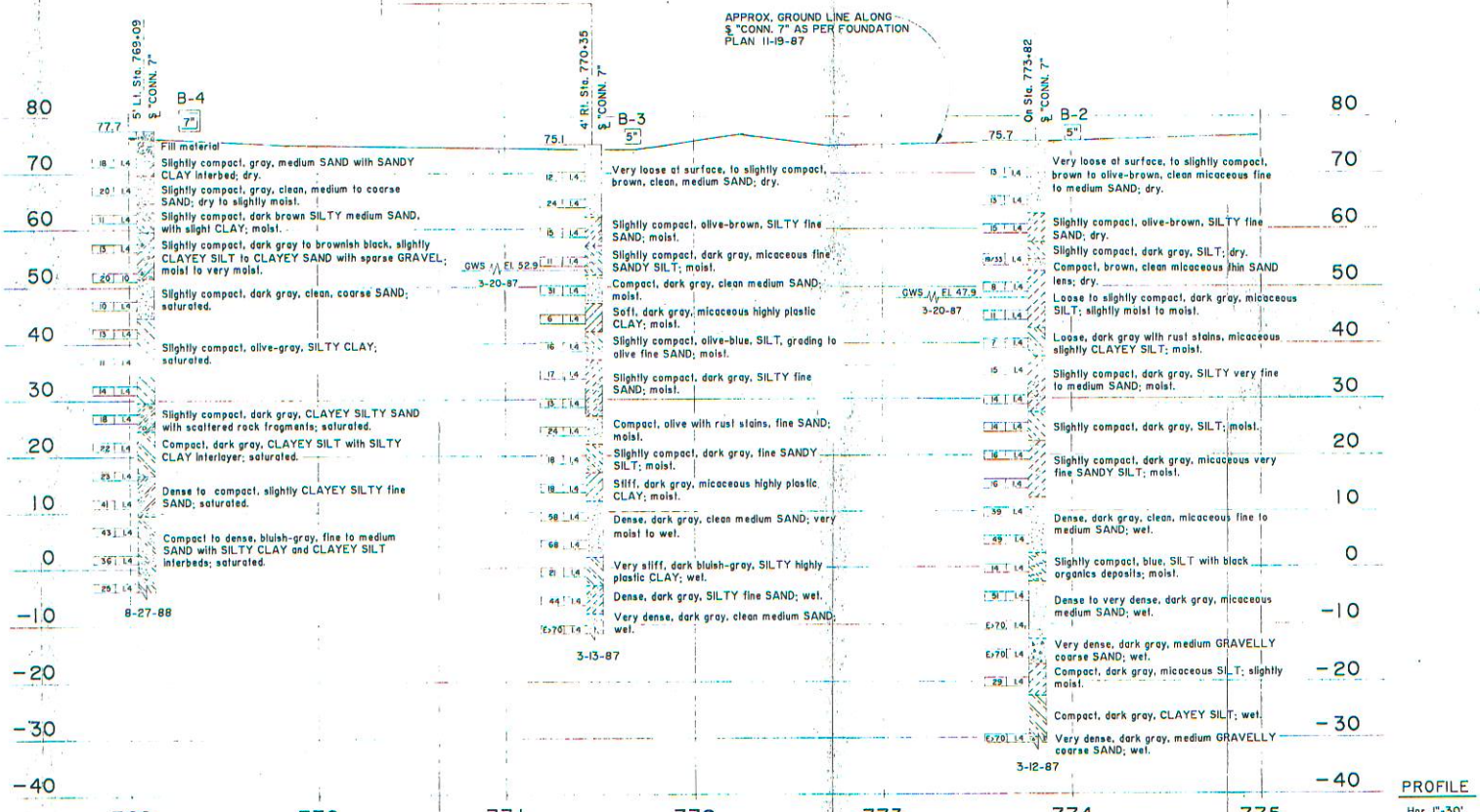
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	710			

REGISTERED - CERTIFIED ENGINEERING GEOLOGIST

PLANS APPROVAL DATE

REGISTERED GEOLOGIST W. C. CAIN No. 2497 Exp. 6/30/90 STATE OF CALIFORNIA

FOR PLAN VIEW SEE
LOG OF TEST BORINGS 1 OF 5



PROFILE
Hor. 1"=30'
Ver. 1"=10'

APR 28 1989

CONN. 7

LEGEND OF BORING OPERATIONS

LEGEND OF EARTH MATERIALS

CONSISTENCY CLASSIFICATION FOR SOILS

UNIFIED SOIL CLASSIFICATION SYSTEM

GEOTECHNICAL BRANCH - TRANSPORTATION LABORATORY

DRAWN BY	F. J. ANDRES 3/89	Robert Carl Davis	CHARGE UNIT	EXPEND AUTHOR	SPEC DESIGN
CHECKED BY	EUGENE RAN 4-9-87	PROJECT GEOLOGIST	ENGINEERING GEOLOGIST	C.E.G. NO.	

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

PROJECT ENGINEER — REGISTERED CIVIL ENGINEER NO.

BRIDGE NO. 53-2416F
POST MILE 15.93

WRIGHT ROAD U. C. CONN. (S710/105)

LOG OF TEST BORINGS 4 OF 5

ORIGINAL SCALE IN INCHES

CU 07221

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET OF

MR. OSWALD ELIZONDO
June 10, 2015

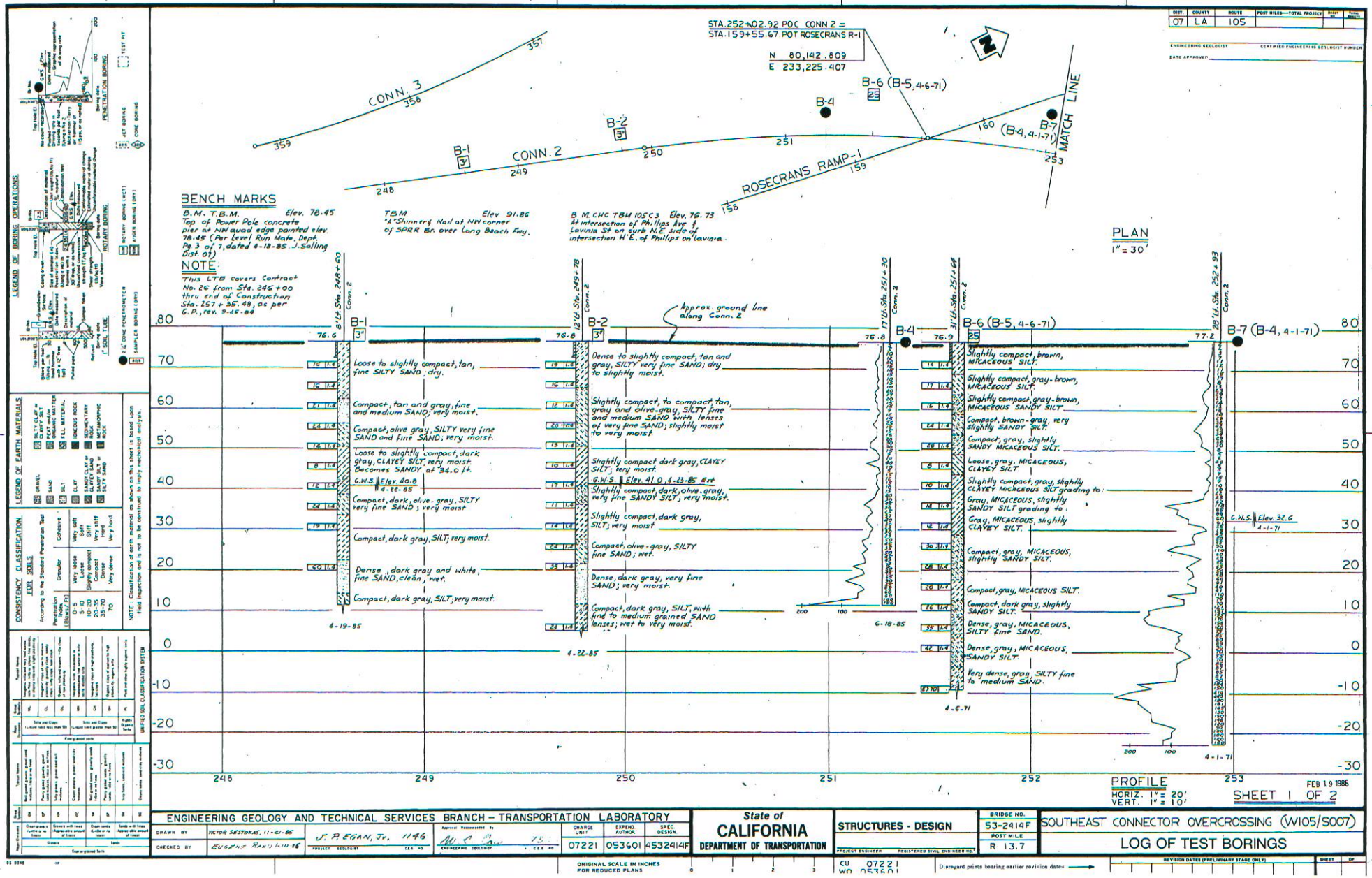
0713000154 (EA07-297201)

Vicinity of No. 9 Pole Location (looking north-bound, 710)

MR. OSWALD ELIZONDO
June 10, 2015

0713000154 (EA07-297201)

As-built LOTB near the No. 9 Pole Location, 53-2414F (B-1)



DIST.	COUNTY	ROUTE	POST MILES—TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	105			

ENGINEERING GEOLOGIST ____ CERTIFIED ENGINEERING GEOLOGIST NUMBER ____

DATE APPROVED ____

FEB 19 1986

SHEET 1 OF 2

ENGINEERING GEOLOGY AND TECHNICAL SERVICES BRANCH – TRANSPORTATION LABORATORY

DRAWN BY VICTOR SESTOKAS, 11-21-85

CHECKED BY EUGENE HAN, 1-10-86

J. P. EGAN, Jr. 1146 PROJECT GEOLOGIST

Approved Recommended by ENGINEERING GEOLOGIST

CHARGE UNIT	EXPEND. AUTHOR.	SPEC. DESIGN.
07221	053601	4532414F

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN
PROJECT ENGINEER REGISTERED CIVIL ENGINEER NO.

BRIDGE NO. 53-2414F
POST MILE R 13.7

SOUTHEAST CONNECTOR OVERCROSSING (W105/S007)

LOG OF TEST BORINGS

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

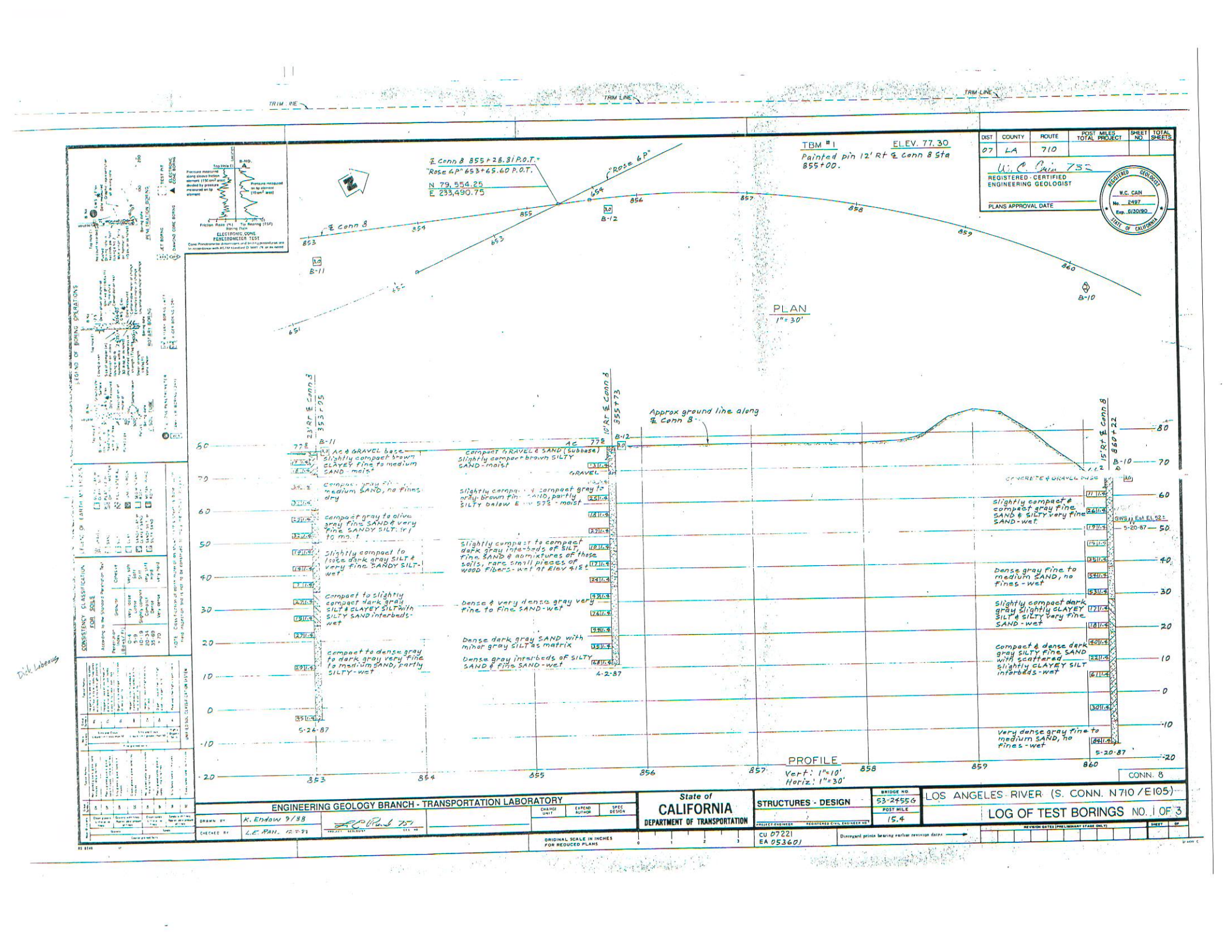
CU 07221 WO 053601

Disregard prints bearing earlier revision dates

REVISION DATES (PRELIMINARY STAGE ONLY) SHEET OF

Vicinity of No. 10 Pole Location (looking north-bound, 710)

As-built LOTB near the No. 10 Pole Location, 53-2455G (B-11)



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO	TOTAL SHEETS
07	LA	710			

W. C. Cain 7/3/
REGISTERED · CERTIFIED ENGINEERING GEOLOGIST
PLANS APPROVAL DATE

REGISTERED GEOLOGIST — W.C. CAIN — No. 2497 — Exp. 6/30/90 — STATE OF CALIFORNIA

ENGINEERING GEOLOGY BRANCH - TRANSPORTATION LABORATORY

DRAWN BY: K. Endow 9/88
CHECKED BY: L.E. Pan. 12-5-88

State of CALIFORNIA
DEPARTMENT OF TRANSPORTATION

STRUCTURES - DESIGN

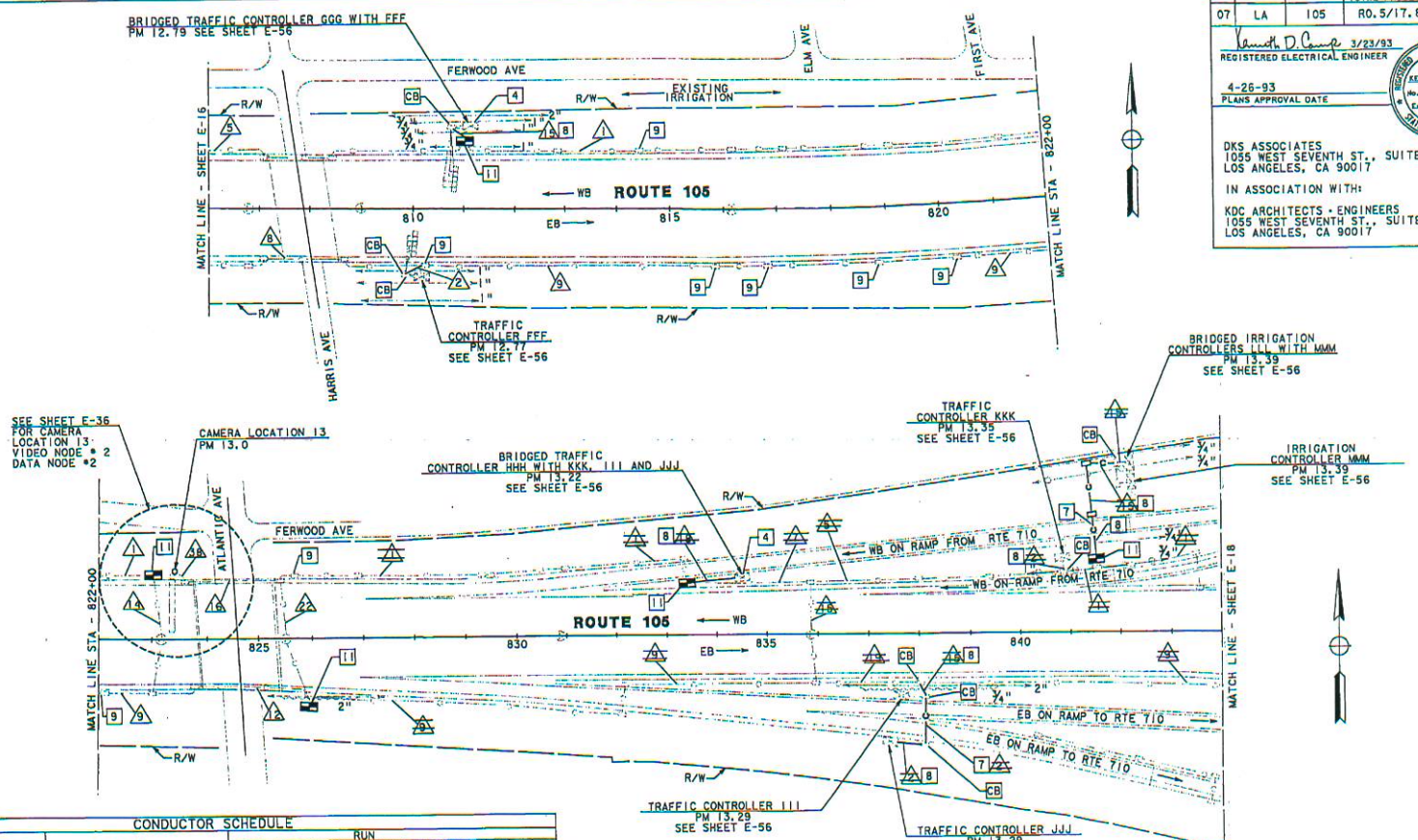
BRIDGE NO. 53-2F556
POST MILE 15.4

CU 07221
EA 053601

LOS ANGELES RIVER (S. CONN. N710/E105)

LOG OF TEST BORINGS NO. 1 OF 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	105	R0.5/17.8	36	92

Kenneth D. Camp 3/23/93
REGISTERED ELECTRICAL ENGINEER

4-26-93
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER KENNETH D CAMP No. E012917 Exp. 3/31/93 ELECTRICAL STATE OF CALIFORNIA

DKS ASSOCIATES
1055 WEST SEVENTH ST., SUITE 2850
LOS ANGELES, CA 90017

IN ASSOCIATION WITH:

KDC ARCHITECTS + ENGINEERS
1055 WEST SEVENTH ST., SUITE 2890
LOS ANGELES, CA 90017

DATE	REVISED BY	DATE REVISED
5/93	RL	5/93

CALCULATED/ DESIGNED BY
CHECKED BY

DESIGN OVERSIGHT
GLORIA GWYNNE

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

CONDUCTOR SCHEDULE

CONDUCTOR TYPE	FUNCTION	RUN													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
50 P22 CABLE	COMMUNICATION DATA	1													1
6 P22 CABLE	CONTROLLER DATA		1	1					2						
9 MMFO CABLE	CAMERA VIDEO														
24 SMFO CABLE	NODE LINK														
12 SMFO CABLE	VIDEO/DATA NODE LINK														
	CONDUIT SIZE	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"	2"

AS BUILT 119904
Contract No. 07-
Resident Engineer: Hillel Amos
Completion Date: October 3, 1997

CCTV AND COMMUNICATIONS SYSTEM ROUTING

SCALE: 1" = 100'

E-17

NOTE: THIS PLAN ACCURATE FOR ELECTRICAL ONLY.
SEE SHEET E-1 FOR LEGEND AND PROJECT NOTES.

LAST REVISION 03-23-93

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 1 2 3

CU 07374 EA 119900

FORM DC-OE-92-PF (REV. 7/88)

USERID: t7acruz@NODE FILE: /project/119901_ue/eb/t7eauch/711990u17.dgn DATE: Wed Jul 15 1998 TIME: 10:25

USERID: 17acruz@NODE FILE: /project/119901_ua/ab/17aauach/711990u18.dgn DATE: Wed Jul 15 1998 TIME : 10:26

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	105	R0.5/17.8	37	92

Kenneth D. Camp 3/23/93
REGISTERED ELECTRICAL ENGINEER

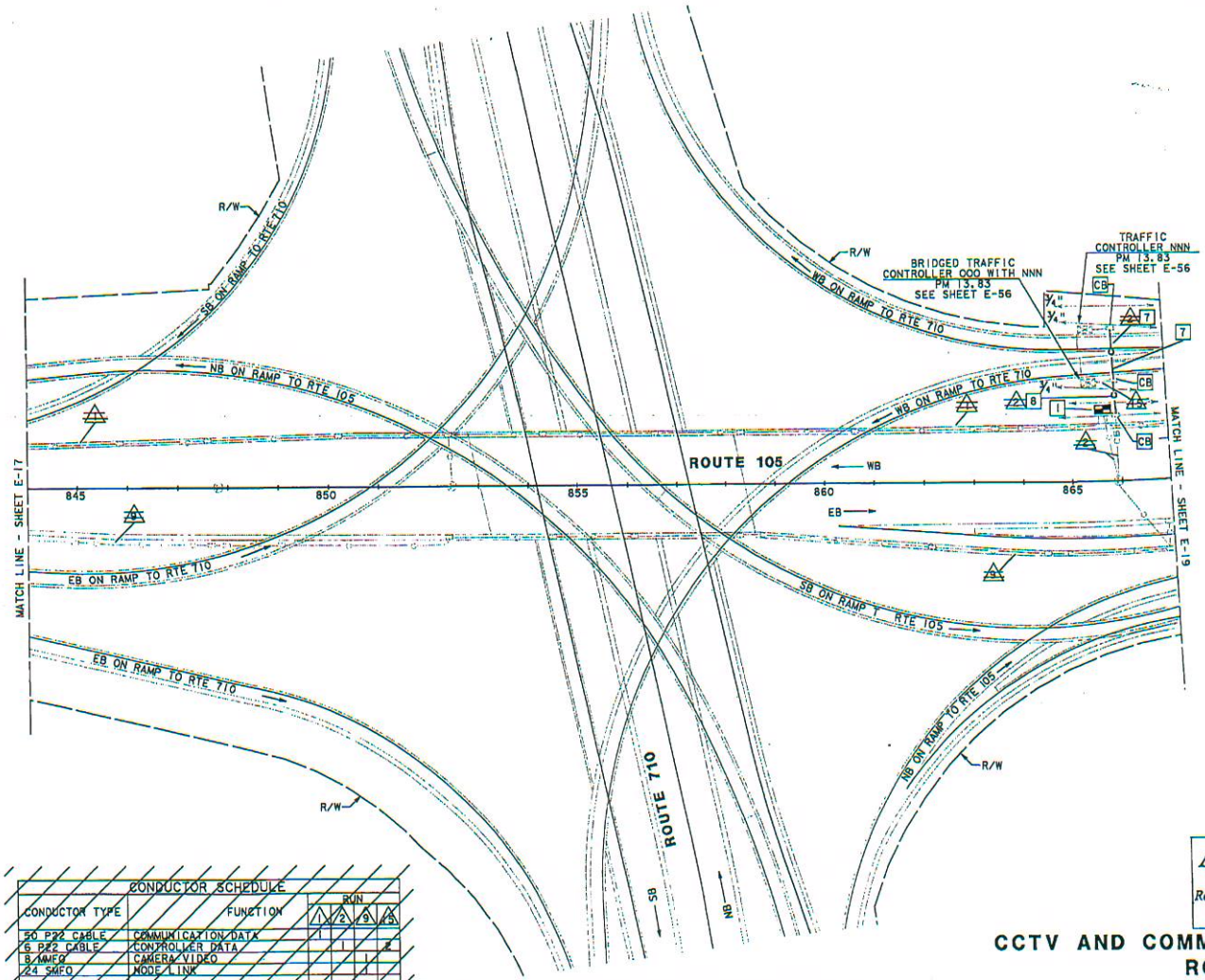
4-26-93
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER KENNETH D CAMP No. E012917 Exp. 3/31/93 ELECTRICAL STATE OF CALIFORNIA

DKS ASSOCIATES
1055 WEST SEVENTH ST., SUITE 2850
LOS ANGELES, CA 90017

IN ASSOCIATION WITH:

KDC ARCHITECTS • ENGINEERS
1055 WEST SEVENTH ST., SUITE 2890
LOS ANGELES, CA 90017



CONDUCTOR SCHEDULE					
CONDUCTOR TYPE	FUNCTION	RUN 1	2	9	5
50 P22 CABLE	COMMUNICATION DATA	1			
6 P22 CABLE	CONTROLLER DATA		1		2
8 MMFO	CAMERA VIDEO			1	
24 SMFO	NODE LINK			1	
	CONDUIT SIZE	2"	2"	2"	2"

NOTE: THIS PLAN ACCURATE FOR ELECTRICAL ONLY.
SEE SHEET E-1 FOR LEGEND AND PROJECT NOTES.

AS BUILT 119904
Contract No. 07-
Resident Engineer: Hillel Amos
Completion Date: October 3, 1997

CCTV AND COMMUNICATIONS SYSTEM ROUTING

SCALE: 1" = 100'

E-18

LAST REVISION 03-23-93

FORM DC-OE-92-PF (REV. 3/88)

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 1 2 3

CU 07374 EA 119900

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans

DESIGN OVERSIGHT GLORIA GWYNNE

CALCULATED/DESIGNED BY RL DATE 3/93 REVISED BY
CHECKED BY RS 3/93 DATE REVISED

USERID: 17acruz@NODE FILE: /project/119901_ua/ab/17aauach/711990u18.dgn DATE: Wed Jul 15 1998 TIME : 10:26

USERID: l7acruz@NODE FILE: /project/119901_us/ab/l7asusch/711990u19.dgn DATE: Wed Jul 15 1998 TIME: 10:30

DIST	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	105	R0.5/17.8	38	92

Kenneth D Camp 3/23/93
REGISTERED ELECTRICAL ENGINEER

4-26-93
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER — KENNETH D CAMP — No. E012917 — Exp. 3/31/93 — ELECTRICAL — STATE OF CALIFORNIA

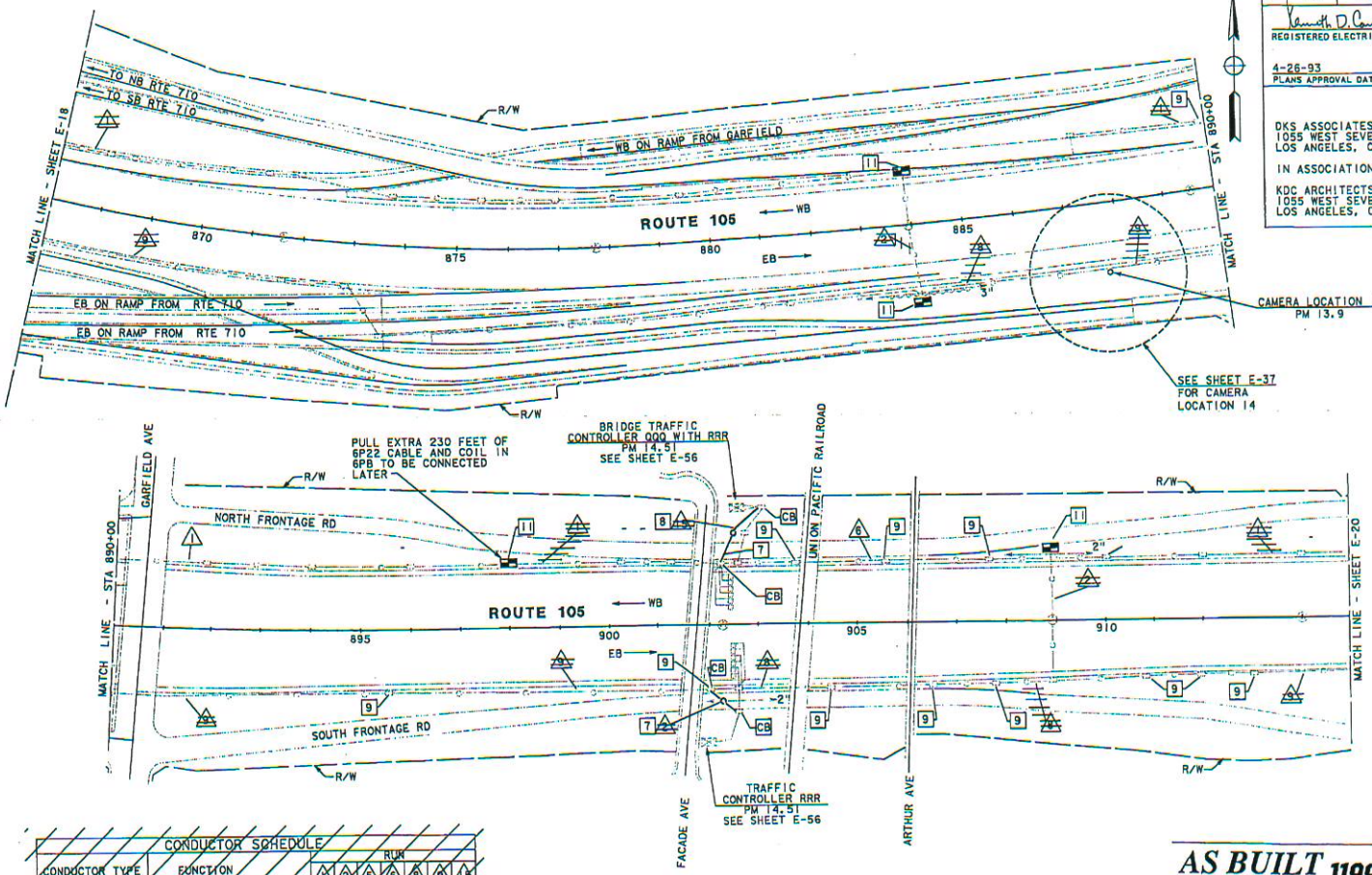
DKS ASSOCIATES
1055 WEST SEVENTH ST., SUITE 2850
LOS ANGELES, CA 90017

IN ASSOCIATION WITH:

KDC ARCHITECTS · ENGINEERS
1055 WEST SEVENTH ST., SUITE 2890
LOS ANGELES, CA 90017

DESIGN OVERSIGHT	CALCULATED/ DESIGNED BY	DATE	REVISED BY	DATE REVISED
GLORIA GWYNNE	RL	3/93	RS	3/93
CHECKED BY				

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans



CONDUCTOR SCHEDULE		RUN						
CONDUCTOR TYPE	FUNCTION	1	2	5	6	8	9	12
50 P22 CABLE	COMMUNICATION/DATA	1	1	2				2
6 P22 CABLE	CONTROLLER DATA				1	1	1	
8/MMFO	CAMERA VIDEO							
24 SMFO	NODE LINK							
	CONDUIT SIZE	2"	2"	2"	2"	2"	2"	2"

AS BUILT 119904
Contract No. 07-
Resident Engineer: Hillel Amos
Completion Date: October 3, 1997

CCTV AND COMMUNICATIONS SYSTEM ROUTING

SCALE: 1" = 100'

E-19

NOTE: THIS PLAN ACCURATE FOR ELECTRICAL ONLY.
SEE SHEET E-1 FOR LEGEND AND PROJECT NOTES.

LAST REVISION 03-23-93

FOR REDUCED PLANS ORIGINAL SCALE IS IN INCHES 0 1 2 3

CU 07374 EA 119900

FORM DC-OE-92-PF (REV. 3/88)
USER-D: l7acruz@NODE FILE: /project/119901_us/ab/l7asusch/711990u19.dgn DATE: Wed Jul 15 1998 TIME: 10:30