DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
04	CC,Sol	680,780	38.0/41.0 L0.0/R1.6,1.1/2.3		

REGISTERED CIVIL ENGINEER 4-2-07

PLANS APPROVAL DATE

Humayun R. Syed No. 39950 Exp. 12-31-07 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

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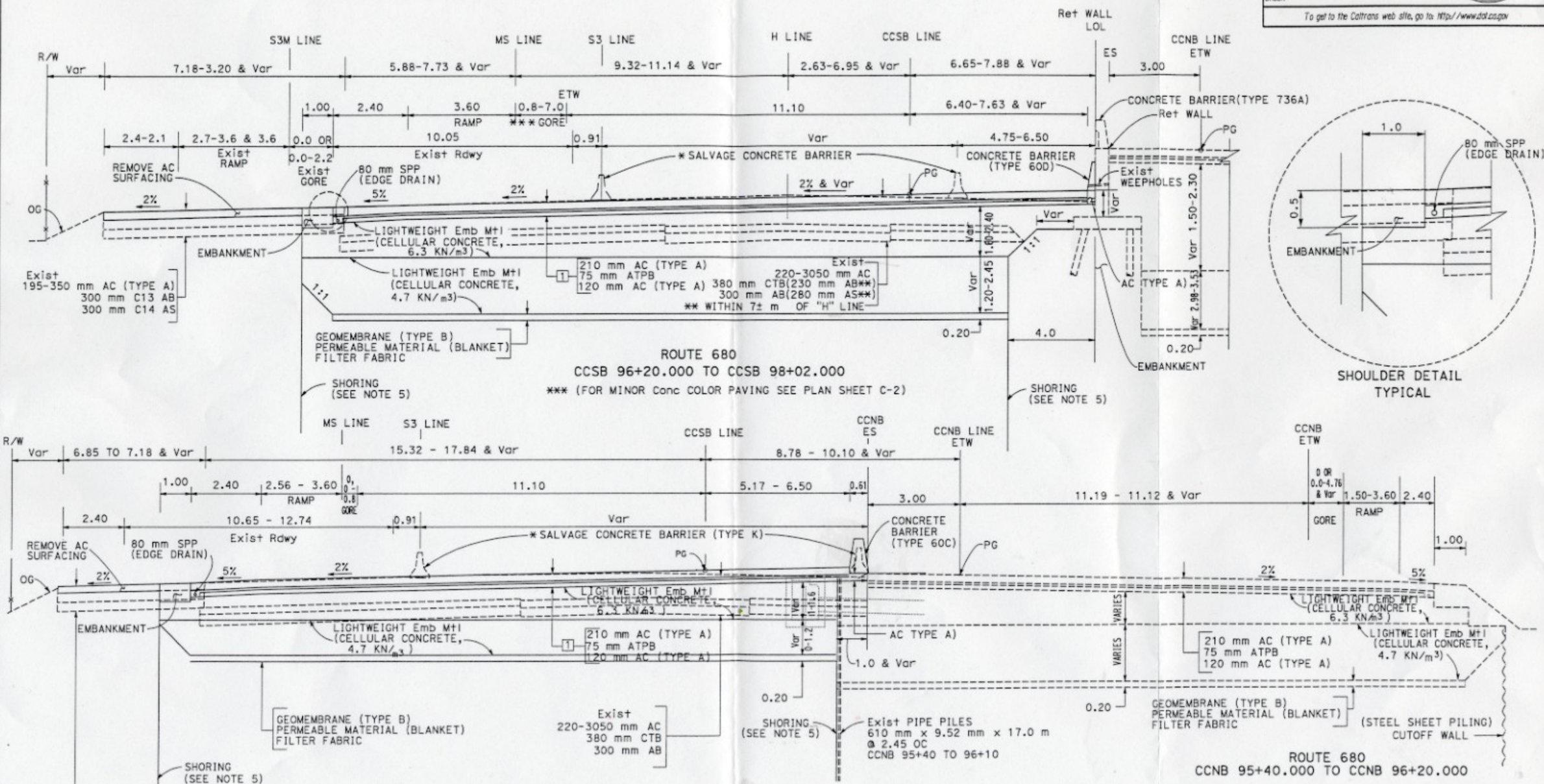
To get to the Caltrans web site, go to: http://www.dot.ca.gov

Caltrans Metric



TYPICAL CROSS SECTIONS

NO SCALE

FOR NOTES, ABBREVIATIONS &/OR LEGEND, SEE SHEET X-1

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

X-2

DATE	REVISED BY	DATE REVISED

CALCULATED/DESIGNED BY | CHECKED BY

PROJECT ENGINEER: HUMAYUN SYED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PROJECT DEVELOPMENT

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC,Sol	680,780	38.0/41.0 L0.0/R1.6,1.1/2.3		

REGISTERED CIVIL ENGINEER 4-2-07

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Humayun R. Syed No. 39950 Exp. 12-31-07 CIVIL STATE OF CALIFORNIA

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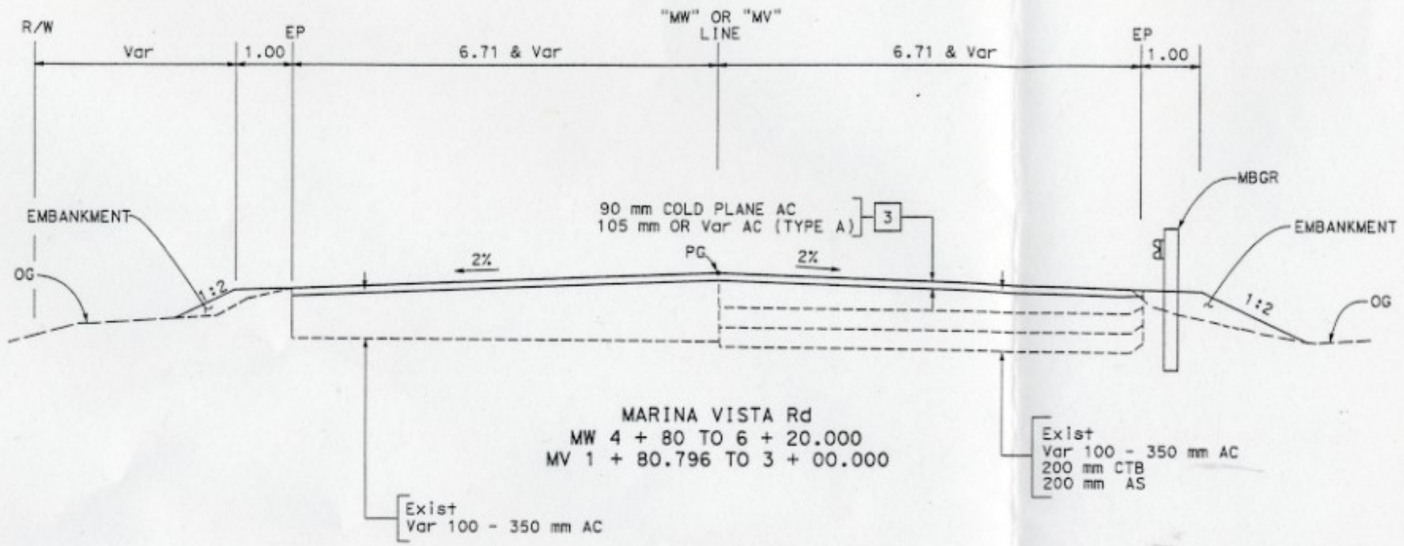
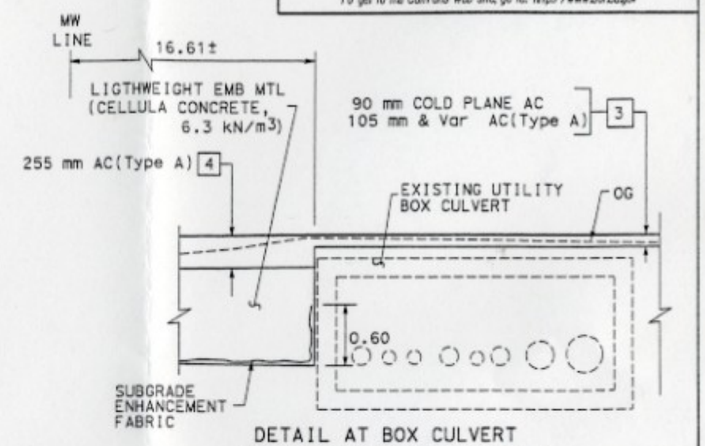
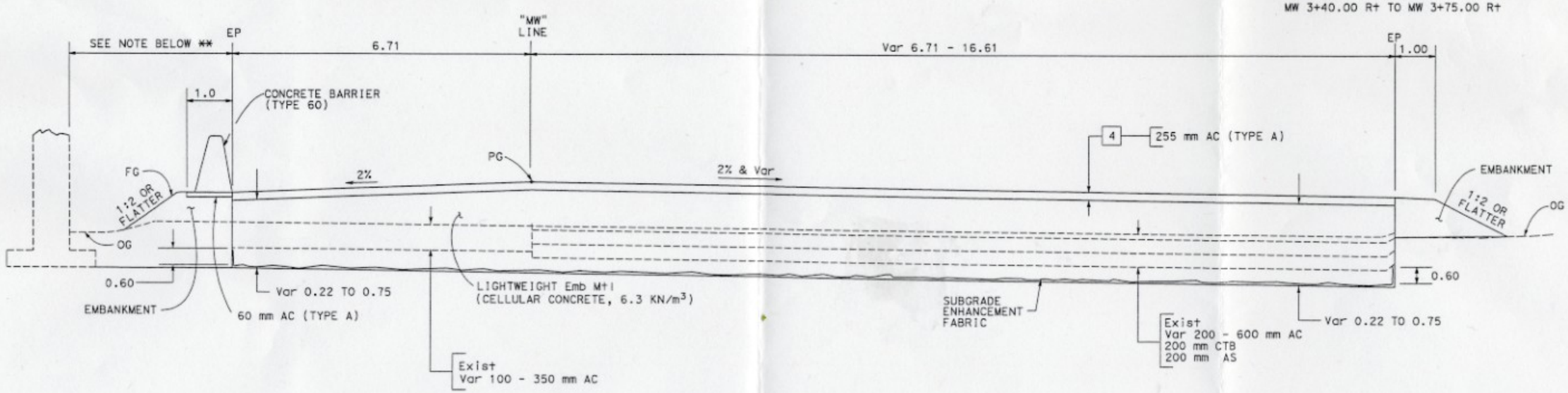
Caltrans Metric



MARINA VISTA Rd
MW 4 + 80 TO 6 + 20.000
MV 1 + 80.796 TO 3 + 00.000



DETAIL AT BOX CULVERT
MW 3+40.00 R+ TO MW 3+75.00 R+



MARINA VISTA Rd
MW 2 + 99.948 TO 4 + 80.000

** Min. DISTANCE TO THE COLUMN SHALL BE 1.52 m (Sta 3+70.0±)

FOR NOTES, ABBREVIATIONS &/OR LEGEND, SEE SHEET X-1

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

TYPICAL CROSS SECTIONS

NO SCALE

X-8

DATE	REVISED BY	DATE REVISED

CALCULATED/DESIGNED BY | CHECKED BY

PROJECT ENGINEER: HUMAYUN SYED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PROJECT DEVELOPMENT

LAST REVISION 06-11-07 | DATE PLOTTED => 14-JUN-2007 | TIME PLOTTED => 15:48

RELATIVE BORDER SCALE IS IN MILLIMETERS 0 20 40 60 80

USERNAME => llin1
DGN FILE => 40060aca008.dgn

CU 04253 | EA 0060A1

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC,Sol	680,780	38.0/41.0 L0.0/R1.6,1.1/2.3		

REGISTERED CIVIL ENGINEER 4-2-07

PLANS APPROVAL DATE

Humayun R. Syed No. 39950 Exp. 12-31-07 CIVIL STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

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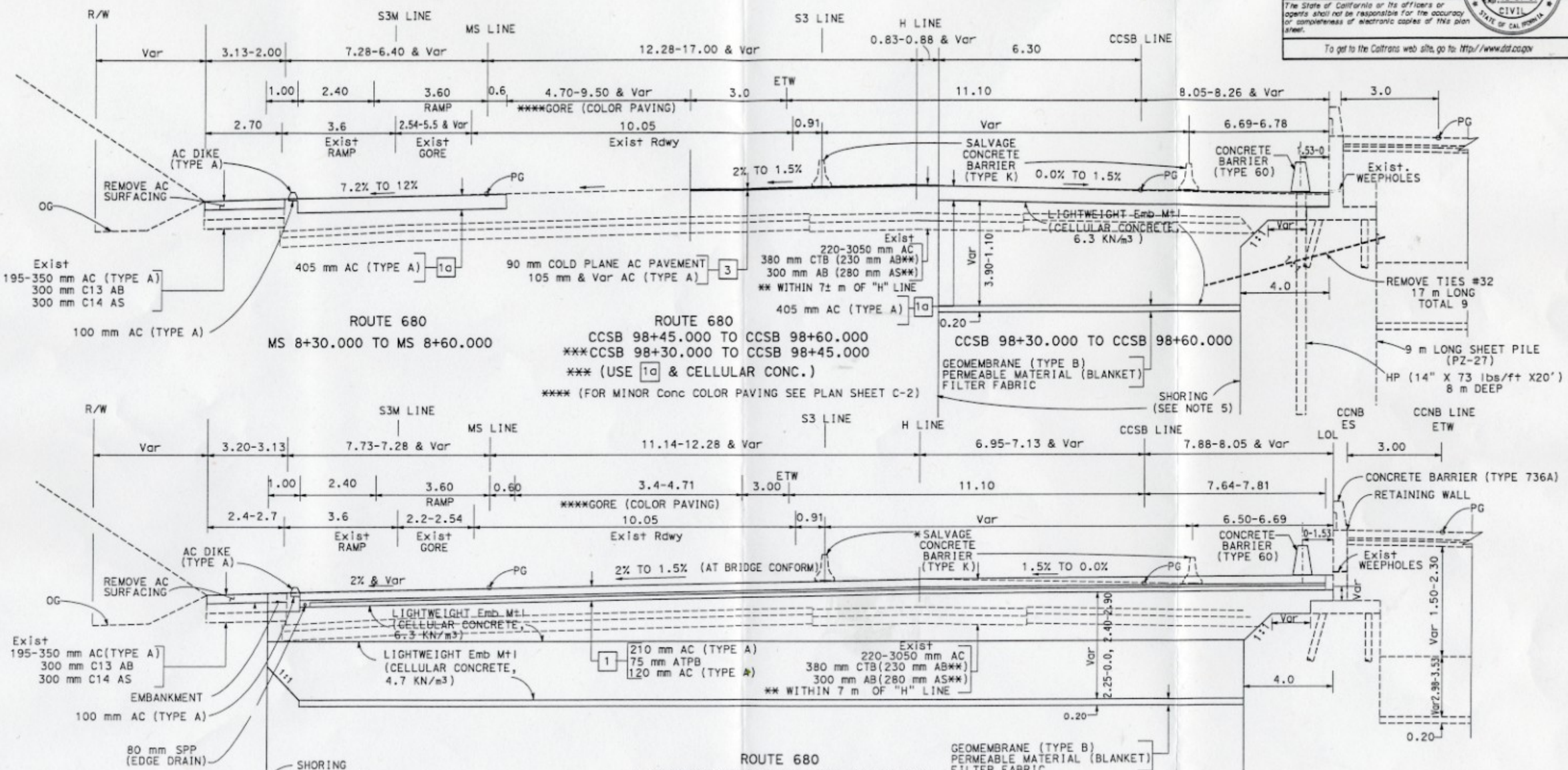
To get to the Caltrans web site, go to: http://www.dot.ca.gov

Caltrans Metric



ROUTE 680
MS 8+30.000 TO MS 8+60.000

ROUTE 680
CCSB 98+45.000 TO CCSB 98+60.000
***CCSB 98+30.000 TO CCSB 98+45.000
*** (USE 1a & CELLULAR CONC.)
**** (FOR MINOR Conc COLOR PAVING SEE PLAN SHEET C-2)

CCSB 98+30.000 TO CCSB 98+60.000

ROUTE 680
* CCSB 98+02.000 TO CCSB 98+30.000
**** (FOR MINOR Conc COLOR PAVING SEE PLAN SHEET C-2)

GEOMEMBRANE & FILTER FABRIC DETAIL (TYPICAL)

* Conc BARRIER (TYPE K) IS DOWELED TO THE Pvmt

FOR NOTES, ABBREVIATIONS &/OR LEGEND, SEE SHEET X-1

TYPICAL CROSS SECTIONS

NO SCALE

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

X-3

DATE	REVISED BY	DATE REVISED

CALCULATED/DESIGNED BY | CHECKED BY

PROJECT ENGINEER HUMAYUN SYED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PROJECT DEVELOPMENT

LAST REVISION DATE PLOTTED 05-JUL-2007

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC, Sol	680, 780	38.0/41.0 LO.0/R1.6, 1.1/2.3		

REGISTERED CIVIL ENGINEER 4-2-07

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Humayun R. Syed No. 39950 Exp. 12-31-07 CIVIL STATE OF CALIFORNIA

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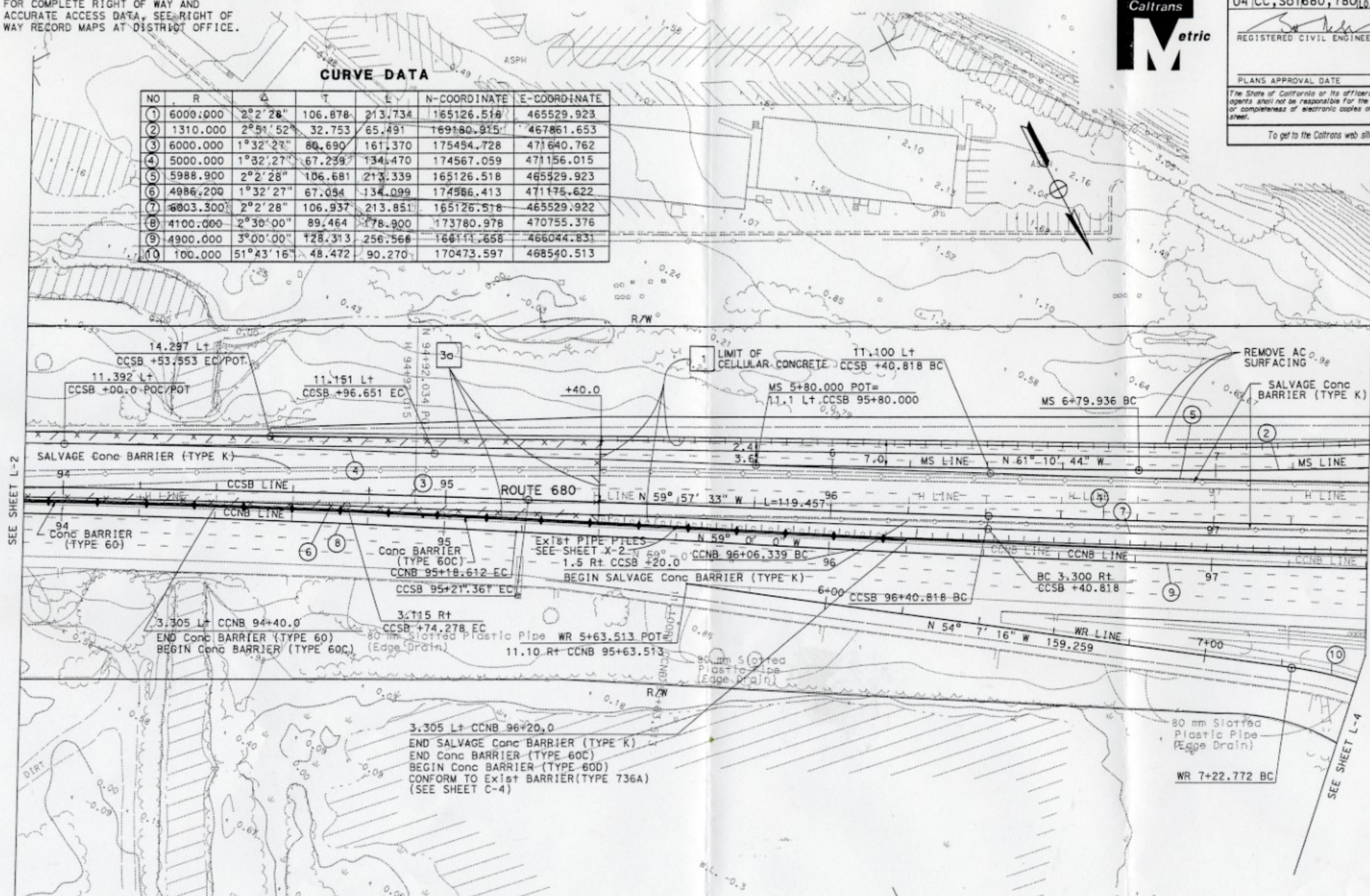
To get to the Caltrans web site, go to http://www.dot.ca.gov

Caltrans Metric

FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, SEE RIGHT OF WAY RECORD MAPS AT DISTRICT OFFICE.

CURVE DATA

NO	R	Δ	T	L	N-COORDINATE	E-COORDINATE
1	6000.000	2°2'28"	106.878	213.734	165126.518	465529.923
2	1310.000	2°51'52"	32.753	65.491	169180.915	467861.653
3	6000.000	1°32'27"	80.690	161.370	175454.728	471640.762
4	5000.000	1°32'27"	67.239	134.470	174567.059	471156.015
5	5988.900	2°2'28"	106.681	213.339	165126.518	465529.923
6	4986.200	1°32'27"	67.054	134.099	174586.413	471175.622
7	6003.300	2°2'28"	106.937	213.851	165126.518	465529.922
8	4100.000	2°30'00"	89.464	178.900	173780.978	470755.376
9	4900.000	3°00'00"	128.313	256.566	166111.658	466044.831
10	100.000	51°43'16"	48.472	90.270	170473.597	468540.513



FOR NOTES, ABBREVIATIONS &/OR LEGEND, SEE SHEET L-1

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

LAYOUT

SCALE 1:500

L-3

DATE	REVISED BY	DATE REVISED

CALCULATED/DESIGNED BY | CHECKED BY

PROJECT ENGINEER HUMAYUN SYED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PROJECT DEVELOPMENT

FOR REDUCED PLANS ORIGINAL 0 20 40 60 80 USERNAME => hsyed

LAST REVISION DATE PLOTTED => 30-JUL-2007

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC, Sol	680, 780	38.0/41.0 L0.0/R1.6,1.1/2.3		

REGISTERED CIVIL ENGINEER 4-2-07

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Humayun R. Syed No. 39950 Exp. 12-31-07 CIVIL STATE OF CALIFORNIA

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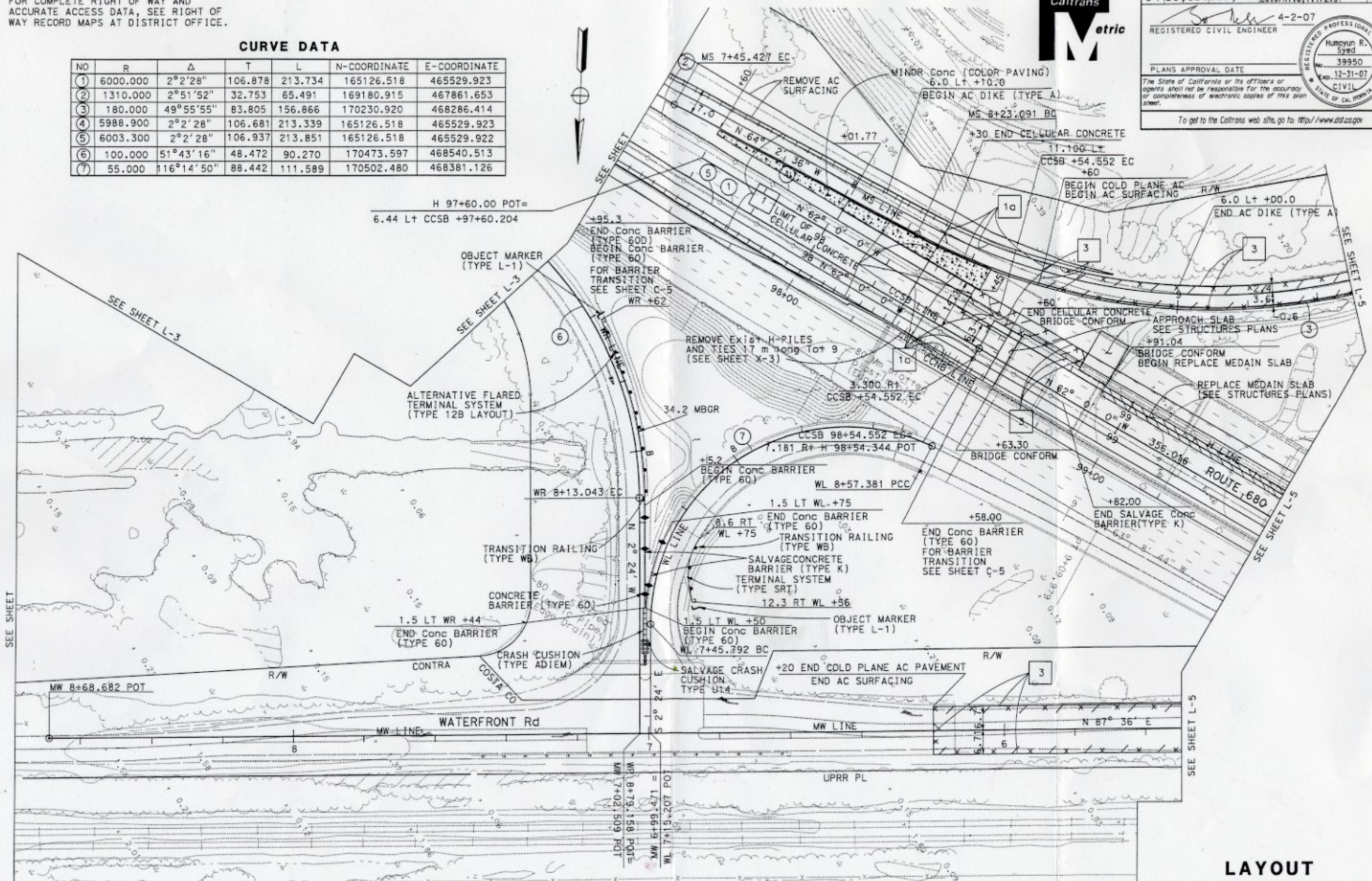
To get to the Caltrans web site, go to: http://www.dot.ca.gov

Caltrans Metric

FOR COMPLETE RIGHT OF WAY AND ACCURATE ACCESS DATA, SEE RIGHT OF WAY RECORD MAPS AT DISTRICT OFFICE.

CURVE DATA

NO	R	Δ	T	L	N-COORDINATE	E-COORDINATE
1	6000.000	2°2'28"	106.878	213.734	165126.518	465529.923
2	1310.000	2°51'52"	32.753	65.491	169180.915	467861.653
3	180.000	49°55'55"	83.805	156.866	170230.920	468286.414
4	5988.900	2°2'28"	106.681	213.339	165126.518	465529.923
5	6003.300	2°2'28"	106.937	213.851	165126.518	465529.922
6	100.000	51°43'16"	48.472	90.270	170473.597	468540.513
7	55.000	116°14'50"	88.442	111.589	170502.480	468381.126



FOR NOTES, ABBREVIATIONS &/OR LEGEND, SEE SHEET L-1

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

LAYOUT

SCALE 1:500

L-4

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PROJECT DEVELOPMENT

PROJECT ENGINEER HUMAYUN SYED

CALCULATED/DESIGNED BY

CHECKED BY

REVISED BY

DATE REVISED

DATE

LAST REVISION 06-21-07

DATE PLOTTED => 30-JUL-2007

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC, Sol	680, 780	38.0/41.0 L0.0/R1.6, 1.1/2.3		

REGISTERED CIVIL ENGINEER 4-2-07

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER Humayun R. Syed No. 39950 Exp. 12-31-07 CIVIL STATE OF CALIFORNIA

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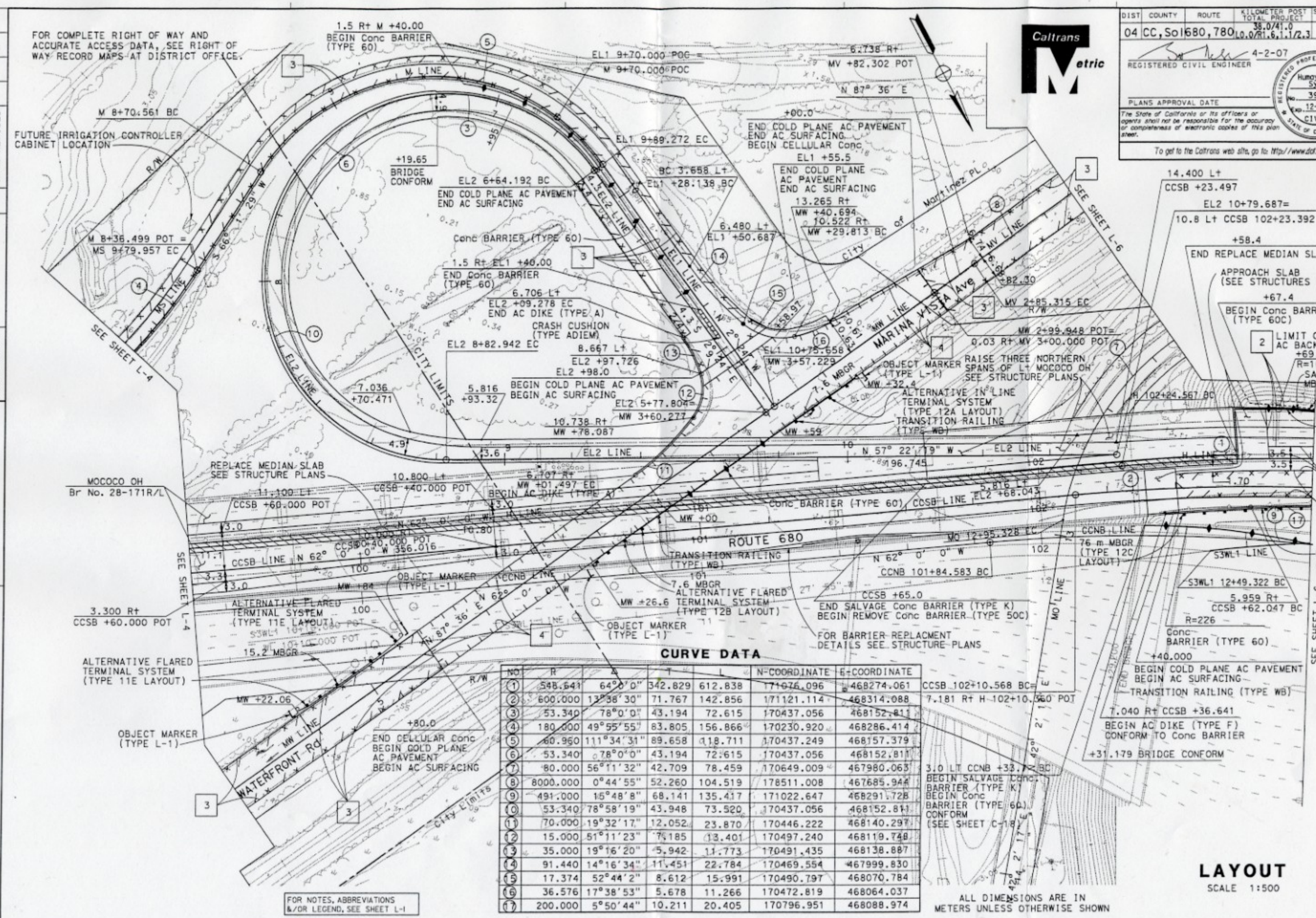
Caltrans Metric



CURVE DATA

NO	R	Δ	T	L	N-COORDINATE	E-COORDINATE
1	548.641	64°0'0"	342.829	612.838	171076.096	468274.061
2	600.000	13°38'30"	71.767	142.856	171121.114	468314.088
3	53.340	78°0'0"	43.194	72.615	170437.056	468152.811
4	180.000	49°55'55"	83.805	156.866	170230.920	468286.414
5	60.960	111°34'31"	89.658	118.711	170437.249	468157.379
6	53.340	78°0'0"	43.194	72.615	170437.056	468152.811
7	80.000	56°11'32"	42.709	78.459	170649.009	467980.063
8	8000.000	0°44'55"	52.260	104.519	178511.008	467685.944
9	491.000	15°48'8"	68.141	135.417	171022.647	468291.728
10	53.340	78°58'19"	43.948	73.520	170437.056	468152.811
11	70.000	19°32'17"	12.052	23.870	170446.222	468140.297
12	15.000	51°11'23"	7.185	13.401	170497.240	468119.748
13	35.000	19°16'20"	5.942	11.773	170491.435	468138.887
14	91.440	14°16'34"	11.451	22.784	170469.554	467999.830
15	17.374	52°44'2"	8.612	15.991	170490.797	468070.784
16	36.576	17°38'53"	5.678	11.266	170472.819	468064.037
17	200.000	5°50'44"	10.211	20.405	170796.951	468088.974

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

LAYOUT

SCALE 1:500

L-5

DATE	REVISED BY	DATE REVISED

CALCULATED/DESIGNED BY | CHECKED BY

PROJECT ENGINEER HUMAYUN SYED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans PROJECT DEVELOPMENT

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC, Sol	680, 780	38.0/41.0 L0.0/R1.6,1.1/2.3		

REGISTERED CIVIL ENGINEER 3-31-04

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER H. Nikoui-G No. 42698 Exp. 3-31-08 CIVIL STATE OF CALIFORNIA

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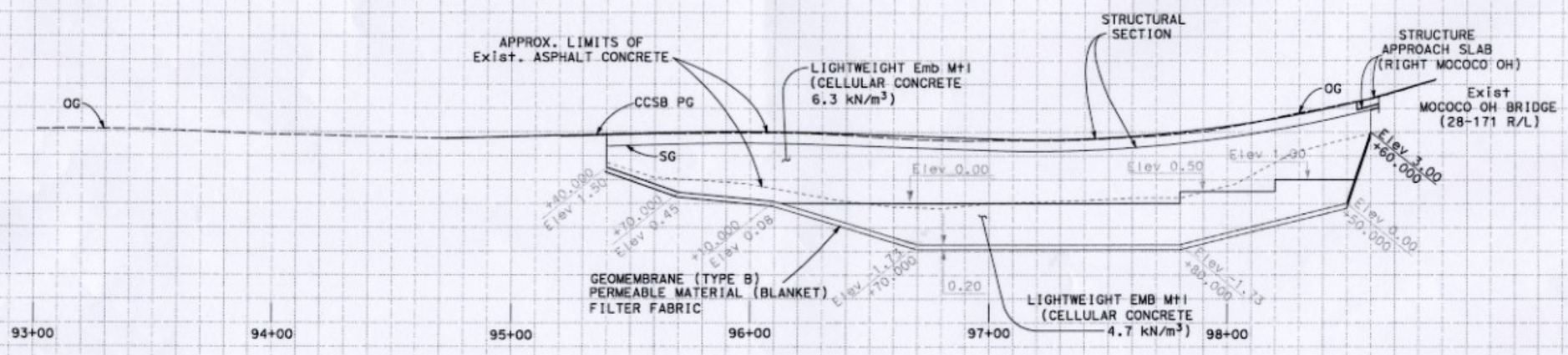
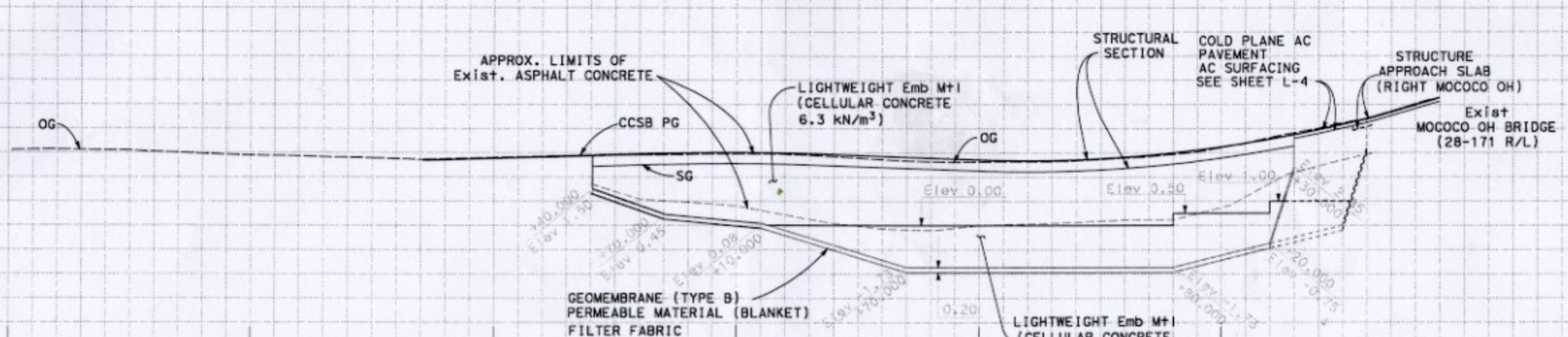
Caltrans Metric



CCSB LINE
CELLULAR CONCRETE SUBGRADE PROFILE
(2 LEFT LANE)



CCSB LINE
CELLULAR CONCRETE SUBGRADE PROFILE
(2 RIGHT LANE & RAMP)

SCALE: Horiz 1:1000
Vert 1:100

All Dimensions are in Meters unless otherwise shown

CONSTRUCTION DETAILS
(LIGHTWEIGHT Emb Mtl)

SCALE: Horiz 1:1000
Vert 1:100

C-1

DATE	REVISED BY	DATE REVISED

CALCULATED/DESIGNED BY
CHECKED BY

PROJECT ENGINEER HUMAYUN SYED

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PROJECT DEVELOPMENT

Station	
m³ Exc	
m³ Emb	

LAST REVISION 03-31-07 DATE PLOTTED => 20-SEP-2007 TIME PLOTTED => 09:22

RELATIVE BORDER SCALE IS IN MILLIMETERS 0 20 40 60 80

USERNAME => hsyed
DGN FILE => 4006bdg0001rev.dgn

CU 04253 EA 0060A1

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC,Sol	680,780	38.0/41.0 L0.0/R1.6,1.1/2.3		

Caltrans Metric

3-31-07
REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER H. Nikoui-G No. 42698 Exp. 3-31-08 CIVIL STATE OF CALIFORNIA

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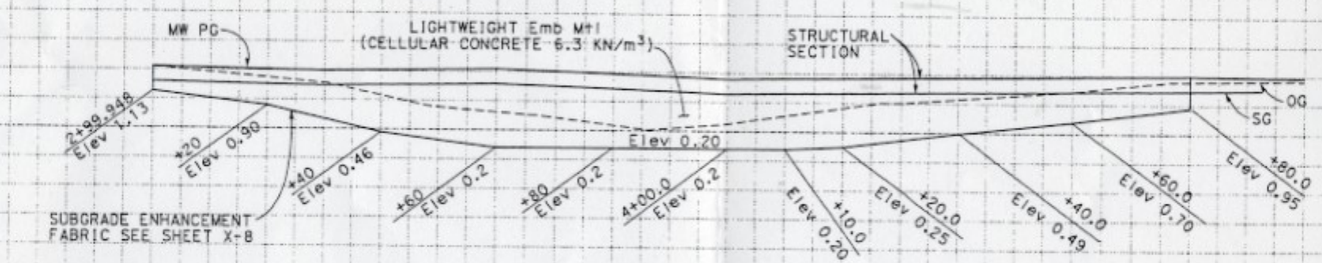

MW LINE
CELLULAR CONCRETE SUBGRADE PROFILE

All Dimensions are in Meters unless otherwise shown

CONSTRUCTION DETAILS
(LIGHTWEIGHT Emb Mtl)

SCALE: Horiz 1:1000
Vert 1:50

C-3

Station	3+00	4+00	5+00
m³ Exc			
m³ Emb			

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans PROJECT DEVELOPMENT

PROJECT ENGINEER: HUMAYUN SYED
CALCULATED/DESIGNED BY
CHECKED BY
DATE REVISED BY
DATE REVISED

LAST REVISION 06-11-07
DATE PLOTTED => 14-JUN-2007
TIME PLOTTED => 15:50

RELATIVE BORDER SCALE IS IN MILLIMETERS 0 20 40 60 80
USERNAME => ||||

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	680	38.5/40.1	262	430

Erik E. Ohlberg
CERTIFIED ENGINEER GEOLOGIST

4-8-02
PLANS APPROVAL DATE

REGISTERED GEOLOGIST — Erik Ohlberg — No. 1972 — Exp. 2-28-01 — CERTIFIED ENGINEERING GEOLOGIST — STATE OF CALIFORNIA

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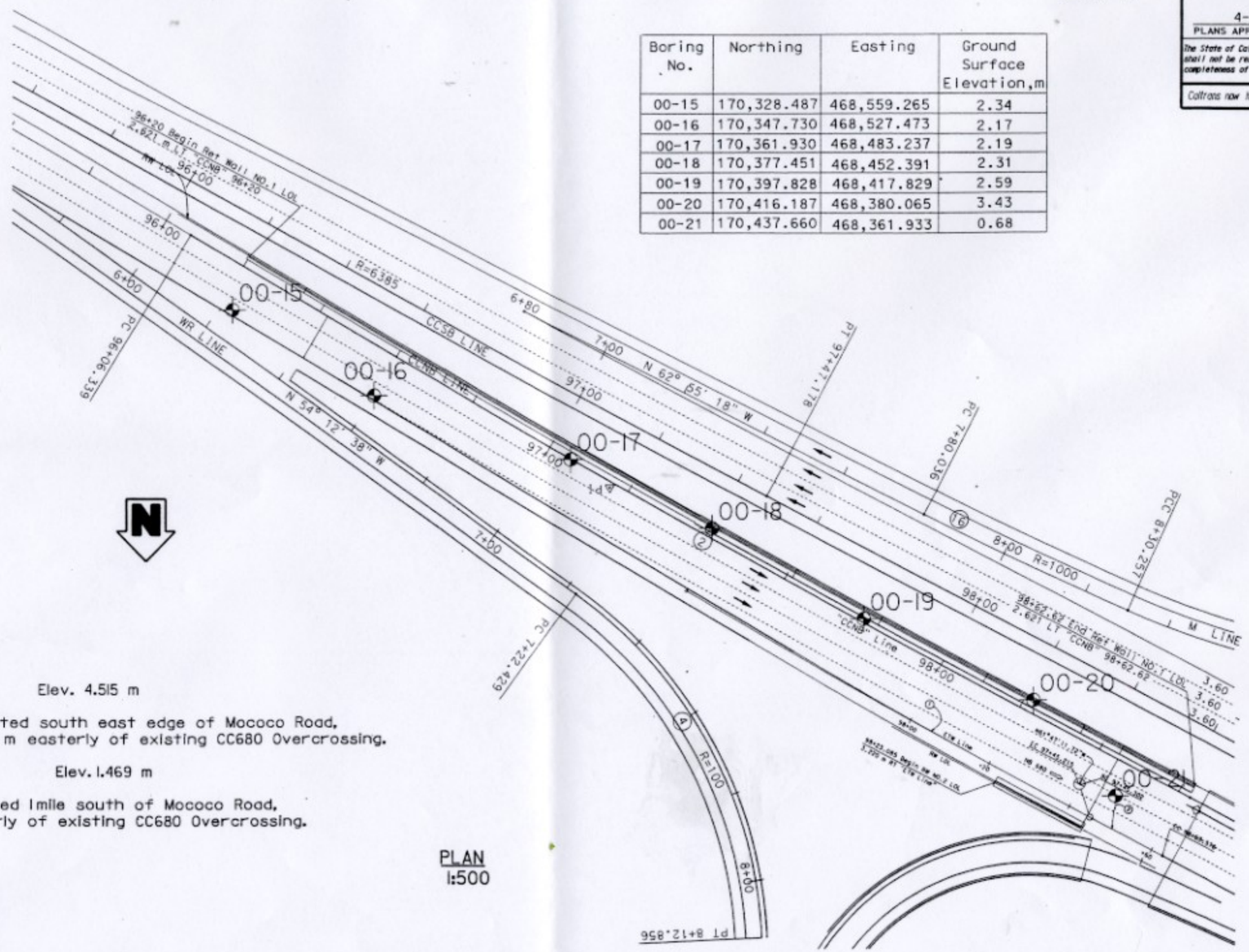
Caltrans now has a web site! To get to the web site, go to: http://www.dot.ca.gov

Caltrans Metric

Boring No.	Northing	Easting	Ground Surface Elevation, m
00-15	170,328.487	468,559.265	2.34
00-16	170,347.730	468,527.473	2.17
00-17	170,361.930	468,483.237	2.19
00-18	170,377.451	468,452.391	2.31
00-19	170,397.828	468,417.829	2.59
00-20	170,416.187	468,380.065	3.43
00-21	170,437.660	468,361.933	0.68



N

PLAN
1:500

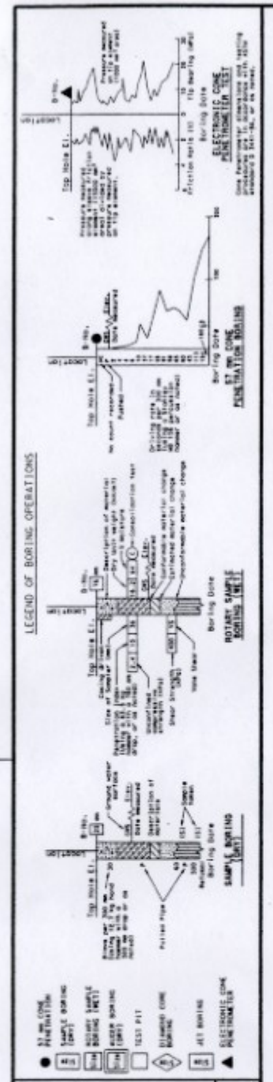
BENCH MARK

PM -115 Elev. 4.515 m

Shiner located south east edge of Mococo Road,
Approx. 160 m easterly of existing CC680 Overcrossing.

SPK-3 Elev. 1.469 m

Spike located 1 mile south of Mococo Road,
5 m westerly of existing CC680 Overcrossing.



DESIGN OVERSIGHT	DRAWN BY: Hugo Hawkins, Paul Truong	Mark Egbert, Warham Stejer	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
SIGN OFF DATE	CHECKED BY: Warham Stejer	FIELD INVESTIGATION BY: DATE:	PROJECT ENGINEER

BRIDGE NO.
KILOMETER POST 39.1

[redacted]

LOG OF TEST BORINGS 1 OF 5

GEOLOGIST LOG OF TEST BORINGS SHEET (METRIC) (REV. 2/1/00)

(ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS) 0 10 20 30 40 50 60 70 80 90 100

CU 04
EA 006051

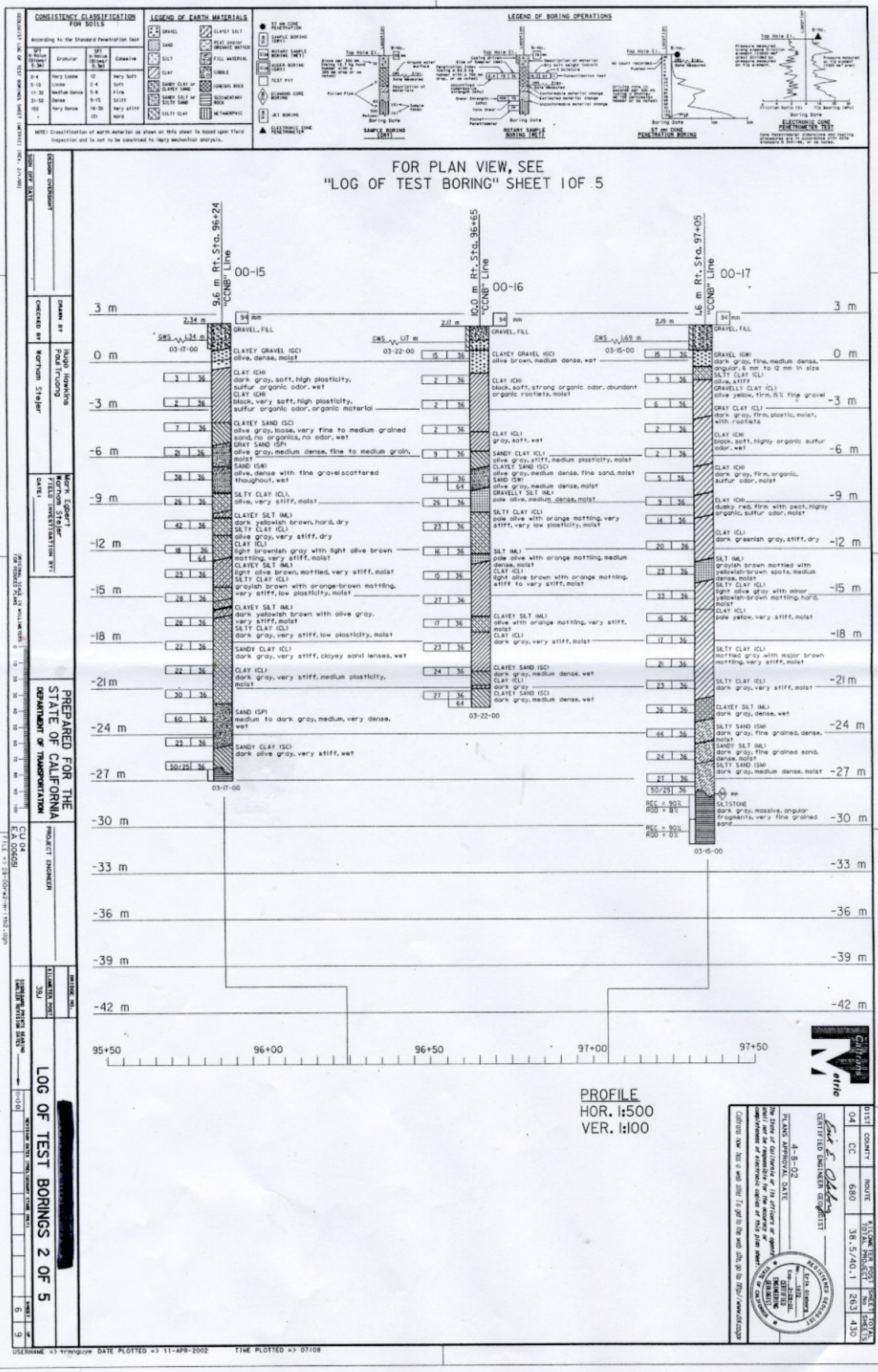
DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY): 10-13-01

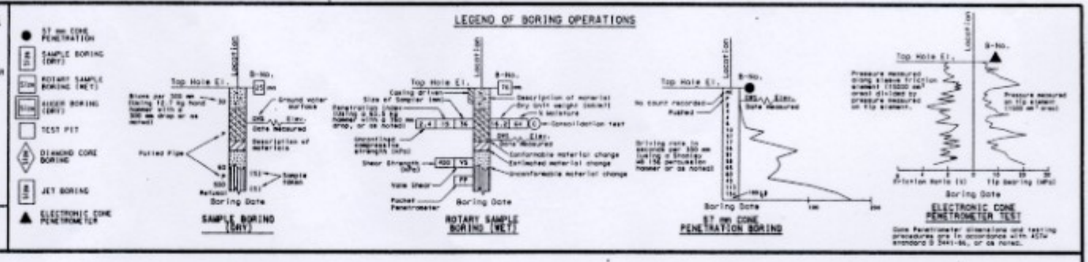
SHEET 5 OF 9

FILE => 28-00rw2-m-rtb1.dgn

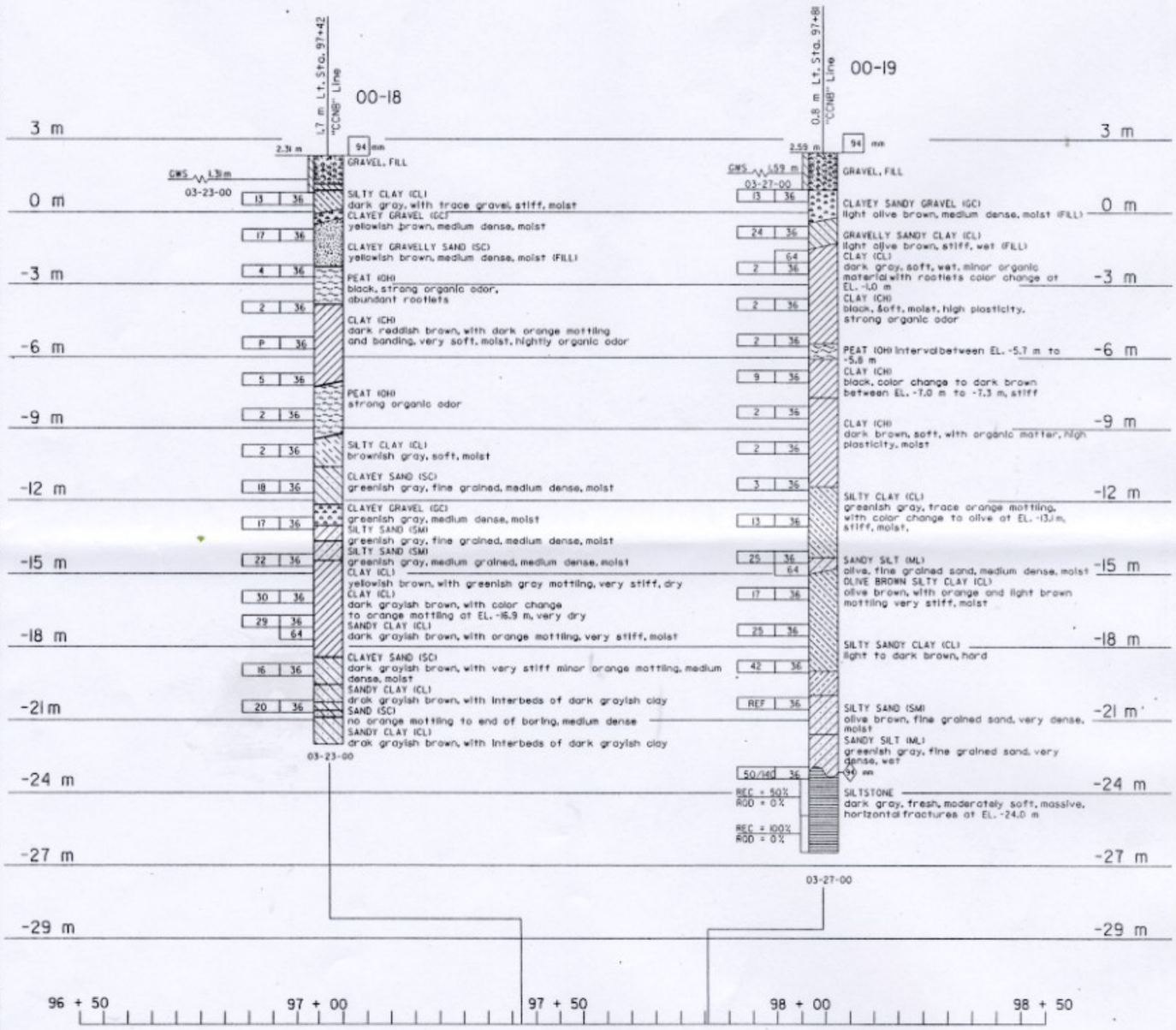
USERNAME => DATE PLOTTED => 11-APR-2002 TIME PLOTTED => 07:08



CONSISTENCY CLASSIFICATION FOR SOILS
According to the Standard Penetration Test
LEGEND OF EARTH MATERIALS
LEGEND OF BORING OPERATIONS
SAMPLE BORING (DRY)
ROTARY SAMPLE BORING (WET)
57 mm CONE PENETRATION BORING
ELECTRONIC CONE PENETROMETER TEST
FOR PLAN VIEW, SEE "LOG OF TEST BORING" SHEET 1 OF 5
9.6 m Rt. Sta. 96+24 "CCNB" Line
00-15
10.0 m Rt. Sta. 96+65 "CCNB" Line
00-16
1.6 m Rt. Sta. 97+05 "CCNB" Line
00-17
GRAVEL, FILL
CLAYEY GRAVEL (GC) olive, dense, moist
CLAY (CH) dark gray, soft, high plasticity, sulfur organic odor, wet
CLAY (CH) black, very soft, high plasticity, sulfur organic odor, organic material
CLAYEY SAND (SC) olive gray, loose, very fine to medium grained sand, no organics, no odor, wet
GRAY SAND (SP) olive gray, medium dense, fine to medium grain, moist
SAND (SW) olive, dense with fine gravel scattered thoughout, wet
SILTY CLAY (CL), olive, very stiff, moist
CLAYEY SILT (ML) dark yellowish brown, hard, dry
SILTY CLAY (CL) olive gray, very stiff, dry
CLAY (CL) light brownish gray with light olive brown mottling, very stiff, moist
CLAYEY SILT (ML) light olive brown, mottled, very stiff, moist
SILTY CLAY (CL) grayish brown with orange-brown mottling, very stiff, low plasticity, moist
CLAYEY SILT (ML) dark yellowish brown with olive gray, very stiff, moist
SILTY CLAY (CL) dark gray, very stiff, low plasticity, moist
SANDY CLAY (CL) dark gray, very stiff, clayey sand lenses, wet
CLAY (CL) dark gray, very stiff, medium plasticity, moist
SAND (SP) medium to dark gray, medium, very dense, wet
SANDY CLAY (SC) dark olive gray, very stiff, wet
CLAYEY GRAVEL (GC) olive brown, medium dense, wet
CLAY (CH) black, soft, strong organic odor, abundant organic rootlets, moist
CLAY (CL) gray, soft, wet
SANDY CLAY (CL) olive gray, stiff, medium plasticity, moist
CLAYEY SAND (SC) olive gray, medium dense, fine sand, moist
SAND (SW) olive gray, medium dense, moist
GRAVELLY SILT (ML) pale olive, medium dense, moist
SILTY CLAY (CL) pale olive with orange mottling, very stiff, very low plasticity, moist
SILT (ML) pale olive with orange mottling, medium dense, moist
CLAY (CL) light olive brown with orange mottling, stiff to very stiff, moist
CLAYEY SILT (ML) olive with orange mottling, very stiff, moist
CLAY (CL) dark gray, very stiff, moist
CLAYEY SAND (SC) dark gray, medium dense, wet
CLAY (CL) dark gray
CLAYEY SAND (SC) dark gray, medium dense, wet
GRAVEL (GW) dark gray, fine, medium dense, angular, 6 mm to 12 mm in size
SILTY CLAY (CL) olive, stiff
GRAVELLY CLAY (CL) olive yellow, firm, 15% fine gravel
GRAY CLAY (CL) dark gray, firm, plastic, moist, with rootlets
CLAY (CH) black, soft, highly organic sulfur odor, wet
CLAY (CH) dark gray, firm, organic, sulfur odor, moist
CLAY (CH) dusky red, firm with peat, highly organic, sulfur odor, moist
CLAY (CL) dark greenish gray, stiff, dry
SILT (ML) grayish brown mottled with yellowish-brown spots, medium dense, moist
SILTY CLAY (CL) light olive gray with minor yellowish-brown mottling, hard, moist
CLAY (CL) pale yellow, very stiff, moist
SILTY CLAY (CL) mottled gray with major brown mottling, very stiff, moist
SILTY CLAY (CL) dark gray, very stiff, moist
CLAYEY SILT (ML) dark gray, dense, wet
SILTY SAND (SM) dark gray, fine grained, dense, moist
SANDY SILT (ML) dark gray, fine grained sand, dense, moist
SILTY SAND (SM) dark gray, medium dense, moist
SILTSTONE dark gray, massive, angular fragments, very fine grained sand
REC = 90% RQD = 0%
03-17-00
03-22-00
03-15-00
3 m
0 m
-3 m
-6 m
-9 m
-12 m
-15 m
-18 m
-21 m
-24 m
-27 m
-30 m
-33 m
-36 m
-39 m
-42 m
95+50
96+00
96+50
97+00
97+50
PROFILE
HOR. 1:500
VER. 1:100
DESIGN OVERSIGHT
DRAWN BY Hugo Hawkins Paul Truong
CHECKED BY Warham Stejer
Mark Egbert Warham Stejer
FIELD INVESTIGATION BY:
DATE:
PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
PROJECT ENGINEER
CU 04 EA 006051
LOG OF TEST BORINGS 2 OF 5
DISTRICT 4
DIST 04
COUNTY CC
ROUTE 680
KILOMETER POST TOTAL PROJECT 38.5/40.1
SHEET No 263
TOTAL SHEETS 430
CERTIFIED ENGINEER GEOLOGIST
4-8-02
PLANS APPROVAL DATE
USERNAME => trmnguye DATE PLOTTED => 11-APR-2002 TIME PLOTTED => 07:08



FOR PLAN VIEW, SEE
"LOG OF TEST BORING" SHEET 1 OF 5



PROFILE
HOR. 1:500
VER. 1:100

LOG OF TEST BORINGS 3 OF 5

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	680	38.5/40.1	264	430

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DESIGN OVERSIGHT

DRAWN BY Hugo Hawkins, Paul Truong

CHECKED BY Warham Stelzer

Mark Egbert, Warham Stelzer FIELD INVESTIGATION BY

DATE:

PROJECT ENGINEER

CU 04 EA 006051

FILE => 28-00W2-mm-1103.dgn

39J

REGISTERED GEOLOGIST

4-8-02 PLANS APPROVAL DATE

CERTIFIED ENGINEERING GEOLOGIST

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USERNAME => DATE PLOTTED => 11-APR-2002 TIME PLOTTED => 07:08

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	680	38.5/40.1	265	430

Erik E. Olsborg
CERTIFIED ENGINEER GEOLOGIST

4-8-02
PLANS APPROVAL DATE

REGISTERED GEOLOGIST — Erik Olsborg — No. 1872 — Exp. 2-28-03 — CERTIFIED ENGINEERING GEOLOGIST — STATE OF CALIFORNIA

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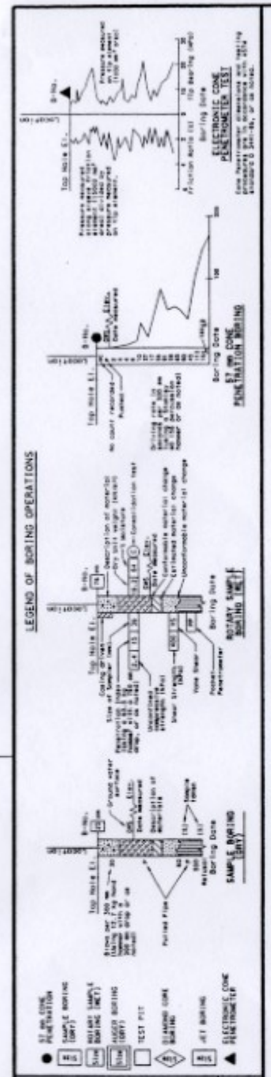
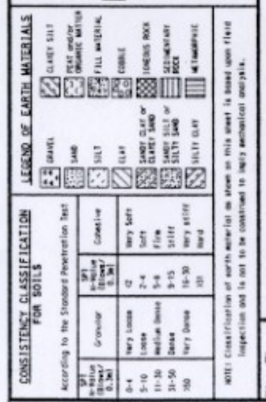
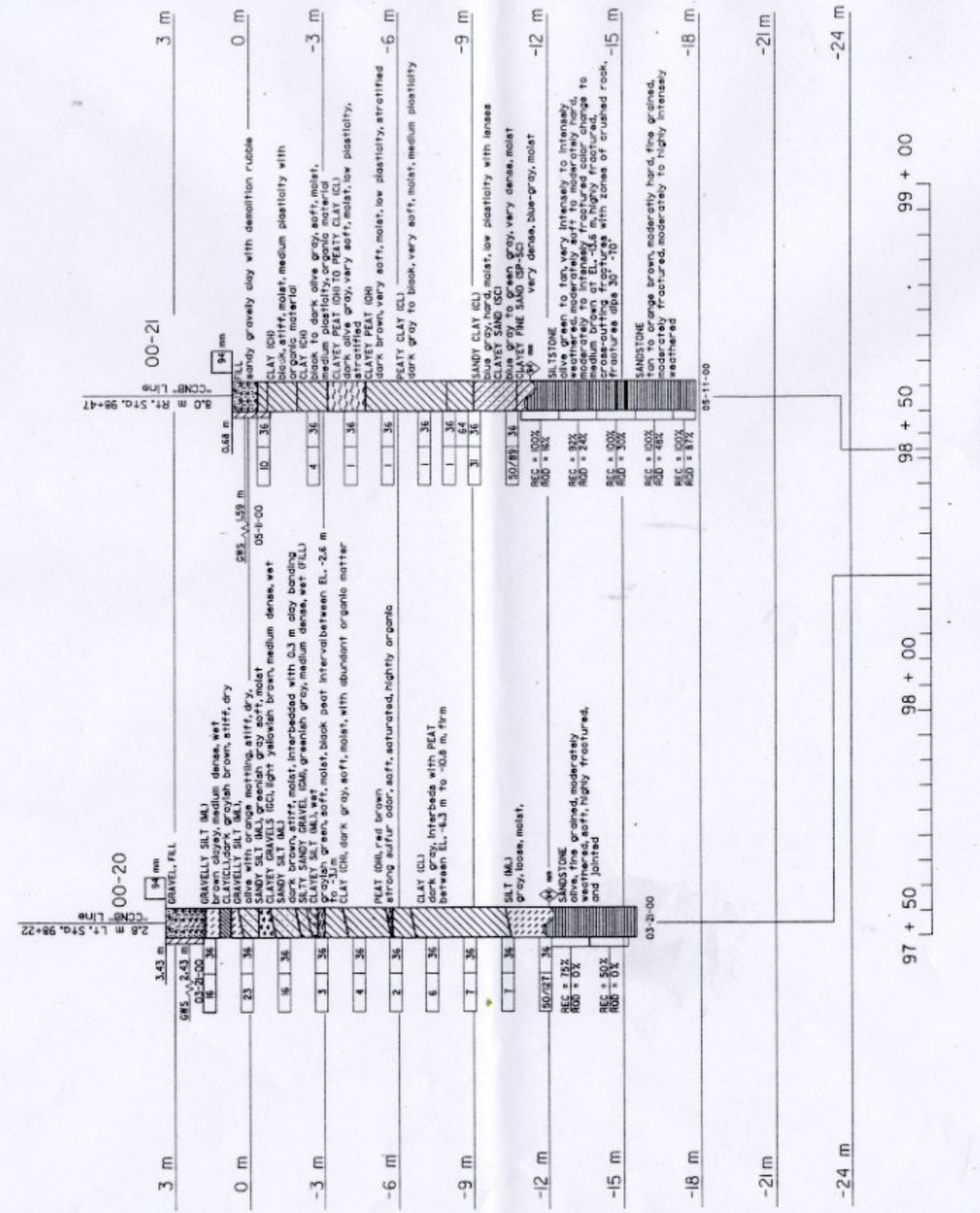
FOR PLAN VIEW, SEE "LOG OF TEST BORING" SHEET 1 OF 5





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.



DESIGN OVERSIGHT	DRAWN BY: Hugo Hawkins, Paul Truong	Mark Egbert, Warham Stejer — FIELD INVESTIGATION BY:	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER
SIGN OFF DATE	CHECKED BY: Warham Stejer	DATE:		

BRIDGE NO.
KILOMETER POST: 39.1

[redacted]

LOG OF TEST BORINGS 4 OF 5

CU 04
EA 006051

DISREGARD PRINTS BEARING EARLIER REVISION DATES → 11-13-01

REVISION DATES (PRELIMINARY STAGE ONLY) — SHEET 8 OF 9

GEOLOGIST LOG OF TEST BORINGS SHEET (METRIC) (REV. 2/1/00)

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

FILE => 28-00rw2-m-1104.dgn

USERNAME => trmoguye DATE PLOTTED => 11-APR-2002 TIME PLOTTED => 07:08

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
04	CC	680	38.5/40.1	266	430

Caltrans Metric

Erik S. Olsborg
CERTIFIED ENGINEER GEOLOGIST

4-8-02
PLANS APPROVAL DATE

REGISTERED GEOLOGIST Erik Olsborg No. 1072 Exp. 2-28-01 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

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WEATHERING DESCRIPTORS

Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.

Descriptors		Diagnostic features					General characteristics (strength, excavation, etc.)[§]
		Chemical weathering-Discoloration and/or oxidation		Mechanical weathering-Grain boundary conditions (disaggregation) primarily for granitics and some coarse-grained sediments	Texture and solutioning		
Alphanumeric descriptor	Descriptive term	Body of rock	Fracture surfaces[†]		Texture	Solutioning	
W1	Fresh	No discoloration, not oxidized.	No discoloration or oxidation.	No separation, intact (tight).	No change.	No solutioning.	Hammer rings when crystalline rocks are struck. Almost always rock excavation except for naturally weak or weakly cemented rocks such as siltstones or shales.
W2	Slightly weathered to fresh[*]						
W3	Slightly weathered	Discoloration or oxidation is limited to surfaces of, or short distance from, fractures; some feldspar crystals are dull.	Minor to complete discoloration or oxidation of most surfaces.	No visible separation, intact (tight).	Preserved.	Minor leaching of some soluble minerals may be noted.	Hammer rings when crystalline rocks are struck. Body of rock not weakened. With few exceptions, such as siltstones or shales, classified as rock excavation.
W4	Moderately to slightly weathered[*]						
W5	Moderately weathered	Discoloration or oxidation extends from fractures usually throughout; Fe-Mg minerals are "rusty," feldspar crystals are "cloudy."	All fracture surfaces are discolored or oxidized.	Partial separation of boundaries visible.	Generally preserved.	Soluble minerals may be mostly leached.	Hammer does not ring when rock is struck. Body of rock is slightly weakened. Depending on fracturing, usually is rock excavation except in naturally weak rocks such as siltstones or shales.
W6	Intensely to moderately weathered[*]						
W7	Intensely weathered	Discoloration or oxidation throughout; all feldspars and Fe-Mg minerals are altered to clay to some extent; or chemical alteration produces in-situ disaggregation, see grain boundary conditions.	All fracture surfaces are discolored or oxidized, surfaces friable.	Partial separation, rock is friable; in semiarid conditions granitics are disaggregated.	Texture altered by chemical disintegration (hydration, argillation).	Leaching of soluble minerals may be complete.	Dull sound when struck with hammer, usually can be broken with moderate to heavy manual pressure or by light hammer blow without reference to planes of weakness such as incipient or hairline fractures, or veinlets. Rock is significantly weakened. Usually common excavation.
W8	Very intensely weathered						
W9	Decomposed	Discolored or oxidized throughout, but resistant minerals such as quartz may be unaltered; all feldspars and Fe-Mg minerals are completely altered to clay.		Complete separation of grain boundaries (disaggregated).	Resembles a soil, partial or complete remnant rock structure may be preserved; leaching of soluble minerals usually complete.		Can be granulated by hand. Always common excavation. Resistant minerals such as quartz may be present as "stringers" or "dikes."

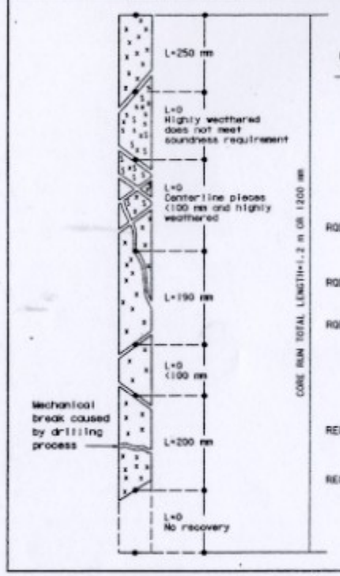
Note: This chart and its horizontal categories are more readily applied to rocks with feldspars and mafic minerals. Weathering in various sedimentary rocks, particularly limestones and poorly indurated sediments, will not always fit the categories established. This chart and weathering categories may have to be modified for particular site conditions or alteration such as hydrothermal effects; however, the basic framework and similar descriptors are to be used.

* Combination descriptors are permissible where equal distribution of both weathering characteristics are present over significant intervals or where characteristics present are "in between" the diagnostic feature. However, dual descriptors should not be used where significant, identifiable zones can be delineated. When given as a range only two adjacent terms may be combined. "Decomposed to slightly weathered," or "moderately weathered to fresh" are not acceptable.

† Does not include directional weathering along shears or faults and their associated features. For example, a shear zone that carried weathering to great depths into a fresh rock mass would not require the rock mass to be classified as weathered.

§ These are generalizations and should not be used as diagnostic features for weathering or excavation classification. These characteristics vary to a large extent based on naturally weak materials or cementation and type of excavation.

ROCK QUALITY DESIGNATION (RQD) & PERCENT RECOVERY (REC) LOGGING



RQD (ROCK QUALITY DESIGNATION)	DESCRIPTION OF ROCK QUALITY
0 - 25%	VERY POOR
25 - 50%	POOR
50 - 75%	FAIR
75 - 90%	GOOD
90 - 100%	EXCELLENT

$$RQD = \frac{\sum \text{Length of sound core pieces} \geq 100\text{ mm}}{\text{Total core run length}}$$

$$RQD = \frac{250+190+200}{1200} \times 100\%$$

RQD = 53% (fair)

REC = Percent Core Recovery

$$REC = \frac{\sum \text{Length of all core pieces}}{\text{Total core run length}}$$

(No Scale)
After Deere & Deere, 1989

FRACTURE DENSITY

Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.

FRACTURE DENSITY- Based on the spacing of all natural fractures in an exposure or core recovery lengths in boreholes; excludes mechanical breaks, shears, and shear zones; however, shear-disturbed zones (fracturing outside the shear) are included. Descriptors for fracture density apply to all rock exposures such as tunnel walls, dozer trenches, outcrops, or foundation cut slopes and inverts, as well as boreholes. Descriptive criteria presented below are based on borehole cores where lengths are measured along the core axis, for other exposures the criteria is distance measured between fractures (size of blocks).

UNFRACTURED (FD0): No fractures.

VERY SLIGHTLY FRACTURED (FD1): Core recovered mostly in lengths greater than 1 m.

SLIGHTLY TO VERY SLIGHTLY FRACTURED (FD2)*

SLIGHTLY FRACTURED (FD3): Core recovered mostly in lengths from 300 to 1000 mm, with few scattered lengths less than 300 mm or greater than 1000 mm.

MODERATELY TO SLIGHTLY FRACTURED (FD4)*

MODERATELY FRACTURED (FD5): Core recovered mostly in 100 to 300 mm lengths with most lengths about 200 mm.

INTENSELY TO MODERATELY FRACTURED (FD6)*

INTENSELY FRACTURED (FD7): Lengths average from 30 to 100 mm with scattered fragmented intervals. Core recovered mostly in lengths less than 100 mm.

VERY INTENSELY TO INTENSELY FRACTURED (FD8)*

VERY INTENSELY FRACTURED (FD9): Core recovered mostly as chips and fragments with a few scattered short core lengths.

* Combinations of fracture densities (e.g. very intensely to intensely fractured, or moderately to slightly fractured) are used where equal distribution of both fracture density characteristics are present over a significant interval or exposure, or where characteristics are "in between" the descriptor definitions.

ROCK HARDNESS DESCRIPTORS

Alphanumeric Descriptor	Descriptor	Criteria
H1	Extremely hard	Core, fragment, or exposure cannot be scratched with knife or sharp pick; can only be chipped with repeated heavy hammer blows.
H2	Very hard	Cannot be scratched with knife of sharp pick. Core or fragment breaks with repeated heavy hammer blows.
H3	Hard	Can be scratched with knife or sharp pick with difficulty (heavy pressure). Heavy hammer blow required to break specimen.
H4	Moderately hard	Can be scratched with knife or sharp pick with light or moderate pressure. Core or fragment breaks with moderate hammer blow.
H5	Moderately soft	Can be grooved 2 mm deep by knife or sharp pick with moderate or heavy pressure. Core or fragment breaks with light hammer blow or heavy manual pressure.
H6	Soft	Can be grooved or gouged easily by knife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
H7	Very soft	Can be readily indented, grooved or gouged with fingernail, or carved with a knife. Breaks with light manual pressure.

Any bedrock unit softer than H7, very soft, is to be described using ASTM D-2488 consistency descriptors.

Note: Although "sharp pick" is included in these definitions, descriptions of ability to be scratched, grooved or gouged by a knife is the preferred criteria.

Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.

BEDDING, FOLIATION, OR FLOW TEXTURE DESCRIPTORS

Descriptors	Thickness / Spacing
Massive	Greater than 3 m
Very thickly (bedded, foliated, or banded)	1 to 3 m
Thickly	300 mm to 1 m
Moderately	100 to 300 mm
Thinly	30 to 100 mm
Very thinly	10 to 30 mm
Laminated (intensely foliated or banded)	Less than 10 mm

Modified from United States Bureau of Reclamation, Engineering Geology Field Manual.

ENGINEERING SERVICE CENTER	STRUCTURE FOUNDATIONS	FIELD INVESTIGATION BY: Brunsing Associates, INC.	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DIVISION OF STRUCTURES STRUCTURE DESIGN 15	BRIDGE NO. 28-0356R KILOMETER POST 39.1	[redacted] LOG OF TEST BORINGS 5 OF 5
DRAWN BY						
CHECKED BY						

CU 04
EA 006051

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY STAGE ONLY)

SHEET 9 OF 9

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

GSF GEOLOGIST LOG OF TEST BORINGS SHEET (METRIC) (REV. 10/5/2000)

FILE => $REQUEST

TIME PLOTTED => $TIME
PLOTTED => $DATE
USERNAME => $USER

DIST.	COUNTY	ROUTE	KILOMETER POSTS TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	C.C.	680	45.22/61.31		

05-08-07
REGISTERED ENGINEER - CIVIL

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER H. Nikoui-D 42698 Exp. 3-31-08 CIVIL STATE OF CALIFORNIA

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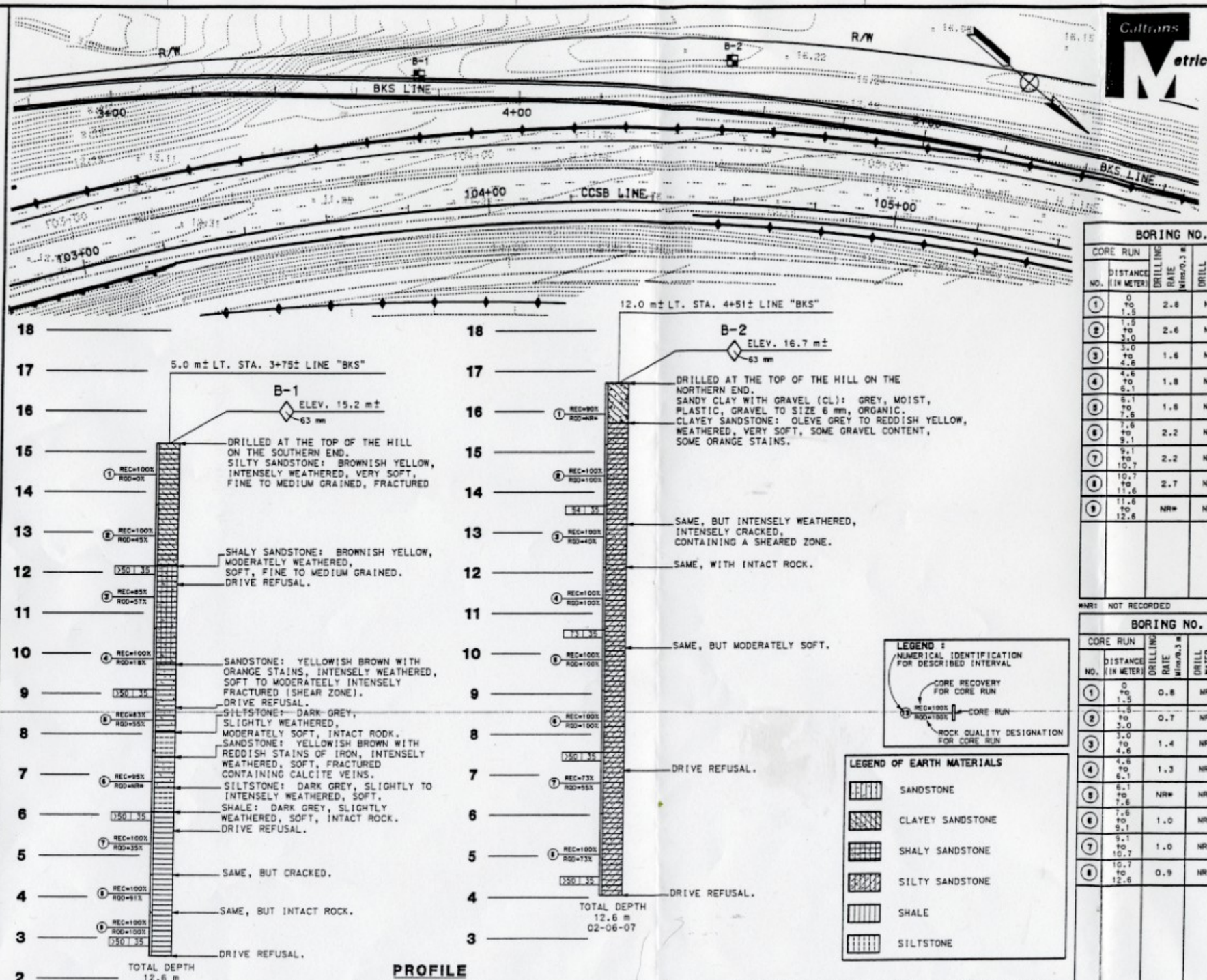
All Dimensions are in Meters unless otherwise shown



PROFILE
SCALE 1 : 50

POST MILE LOCATION: 28.10/38.10

BORING NO. B-1 - GEOLOGIC LOG OF DRILL HOLE

CORE RUN NO.	DISTANCE (IN METER)	DRILLING RATE Mins/0.3 m	DRILL WATER RETURN
1	0 to 1.5	2.8	NR*
2	1.5 to 3.0	2.6	NR*
3	3.0 to 4.6	1.6	NR*
4	4.6 to 6.1	1.8	NR*
5	6.1 to 7.6	1.8	NR*
6	7.6 to 9.1	2.2	NR*
7	9.1 to 10.7	2.2	NR*
8	10.7 to 11.6	2.7	NR*
9	11.6 to 12.6	NR*	NR*

*NR: NOT RECORDED

BORING NO. B-2 - GEOLOGIC LOG OF DRILL HOLE

CORE RUN NO.	DISTANCE (IN METER)	DRILLING RATE Mins/0.3 m	DRILL WATER RETURN
1	0 to 1.5	0.8	NR*
2	1.5 to 3.0	0.7	NR*
3	3.0 to 4.6	1.4	NR*
4	4.6 to 6.1	1.3	NR*
5	6.1 to 7.6	NR*	NR*
6	7.6 to 9.1	1.0	NR*
7	9.1 to 10.7	1.0	NR*
8	10.7 to 12.6	0.9	NR*

*NR: NOT RECORDED

LEGEND :
NUMERICAL IDENTIFICATION FOR DESCRIBED INTERVAL
CORE RECOVERY FOR CORE RUN
REC=100% RQD=100% — CORE RUN
ROCK QUALITY DESIGNATION FOR CORE RUN

LEGEND OF EARTH MATERIALS
SANDSTONE
CLAYEY SANDSTONE
SHALY SANDSTONE
SILTY SANDSTONE
SHALE
SILTSTONE

LEGEND OF BORING OPERATIONS

LEGEND OF EARTH MATERIALS

CONSISTENCY CLASSIFICATION (SOIL)

NOTE: Classification of earth material as shown on this sheet is based upon Field Inspection and is not to be construed to imply petrologic analysis.

DIVISION OF ENGINEERING SERVICES	FIELD INVESTIGATION BY:	STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	GEOTECHNICAL SERVICES OFFICE OF GEOTECHNICAL DESIGN - WEST	BRIDGE NO. / KILOMETER POST	ROAD WIDENING LOG OF TEST BORINGS
DRAWN BY: M. REYNOLDS 04/07	R. NASHED		CU 00000 EA 0060A1		SHEET 1 OF 1
CHECKED BY: A. KADDOURA					

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 10 20 30 40 50 60 70 80 90 100

USERNAME => mreynold

DATE PLOTTED => 16-MAY-2007

(Rev 01/02)