G - Part 5: As-Built Contract Plans

DIST.	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Sol	680	40.0/41.6 L0.0/2.1	122	557

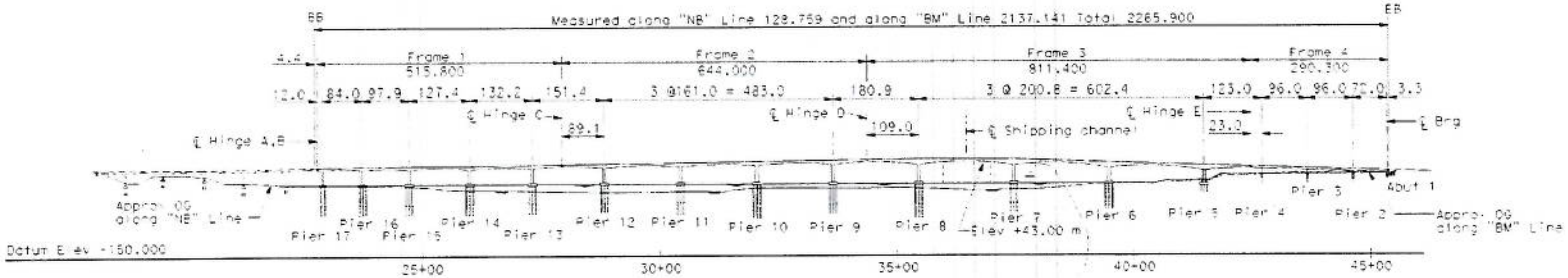
REGISTERED CIVIL ENGINEER

1=15-0'

PLANS APPROVAL DATE

T.Y.LIN / CHOW HILL
805 BATTERY STREET
SAN FRANCISCO, CA 94111

Caltrans Metric

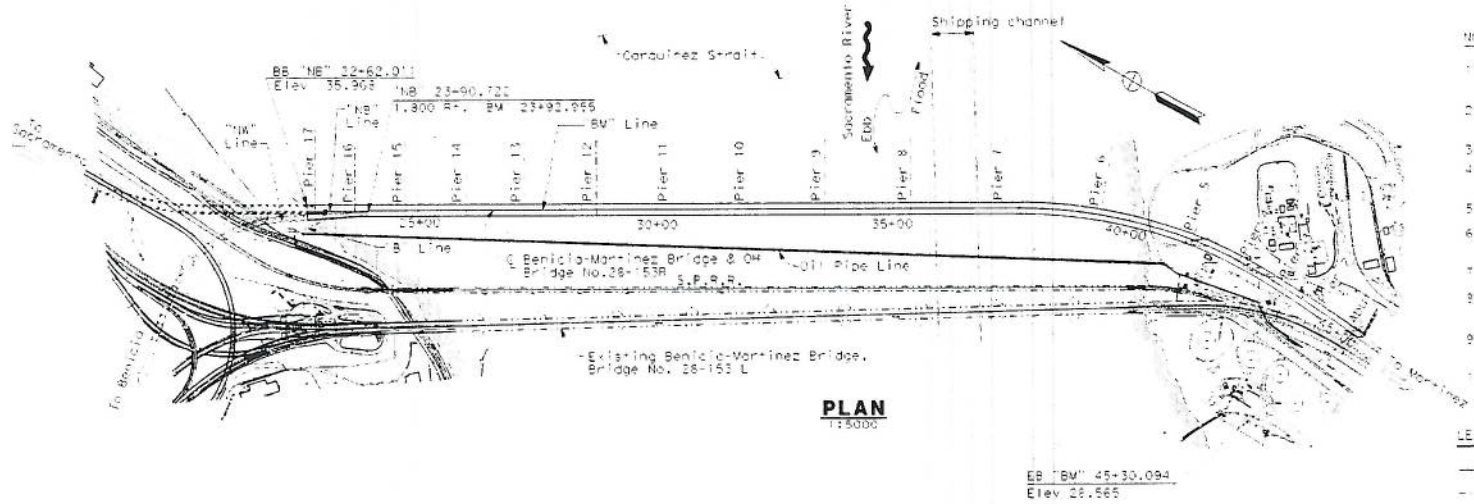


DEVELOPED ELEVATION

1:5000

(-Mean Higher High Water Elev=1.036
Mean Sea Level Elev =0.000
Mean Lower Low Water Elev=-0.762
National Geodetic vertical
Datum(NGVD) of 1929

NO AS-BUILT CHANGES
AS - BUILT PLANS
CHANGES BY C. Lagrasso (CALTRANS CONSTRUCTION)
RECORDED BY S. Chee / D. Henderson (DESIGN JV)
CONTRACT NO 04-006034
DATE 1/3/08



PLAN

1:5000

NOTES:

1. For Index to Plans, see "Index To Plans No.1" & "Index To Plans No.2" sheets.
2. For General Notes, and Index to Caltrans Standard Plans, see "General Notes No.1" sheet.
3. For sections, see "Cross Sections" sheets.
4. For profile and superelevation diagrams, see "Deck Contours No.2" sheet.
5. For Pile Data, see "Foundation Data" sheet.
6. For Hydraulic Summary, see "Foundation Plan No.2" sheet.
7. For Quantities, see "Index To Plans No.2" sheet.
8. For falsework requirements, see "General Notes No.4" sheet.
9. For "BM" line curve data, see "Structure Plan No.3" and "Structure Plan No.4" sheets.
10. For "NB" and "NW" line curve data, see "Structure Plan No.1" sheet.

LEGEND:

Indicates new structure
Indicates existing structure
Continuation of bridge, see EA 006061 plans
Indicates direction of travel

All dimensions are in meters unless otherwise shown

Thomas Post, Geography Manager	DESIGN: S. Abbas	CHECKED: K. Cordts	LEAD PLAN ENGR:	USE EXISTING MONUMENTS AND ALIGNMENTS AND PERMANENT CONTROL LEAD LINE BASE LINES	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
	REDRAWN: A. Lee	CHECKED: K. Cordts	LAYOUT: S. Abbas		M. Omer
	QUANTITIES: J. Tao	CHECKED: C. Kam	PRE-PLAN ENGR: H. Strandgaard	PLANS PREP. BY: H. Strandgaard	PROJECT ENGINEER

BENICIA MARTINEZ BRIDGE & OH

GENERAL PLAN

Ps/BM/04-006031/acgp002.dgn

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS

LU CALC.
EA 006031

PREVIOUS PROJECT REVISION DATE:

AS - BUILT PLAN SHEET NO. 0001 OF 6029

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC,Sol	680	40.1/41.4, L0.0/L1.0	125	557

REGISTERED CIVIL ENGINEER

1-15-01
PLANS APPROVAL DATE

Salid Abbas
No. C 055024
Exp. 12/30
CIVIL

T.Y.LIN - CHOW HILL
825 BATTERY STREET
SAN FRANCISCO, CA 941

GENERAL NOTES
LOAD FACTOR DESIGN

Methacrylate resin was used as a sealer on the final finished deck surface.
Methacrylate application rates in m²/l
Normal wt conc (frame 4)= 3.31
Light wt conc (CIP Frame 1)= 2.48
Light wt conc (Segmental)= 2.23

DESIGN: ✱ Project Specific Design Criteria for the Benicia Martinez Bridge, dated May 2000

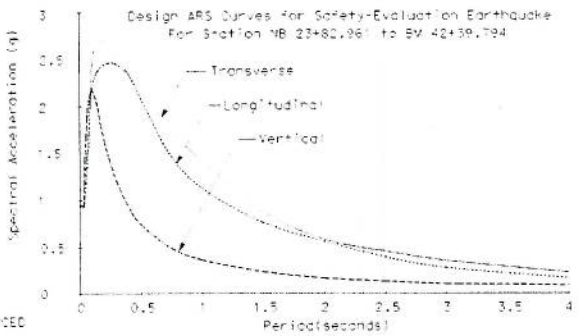
DEAD LOAD:

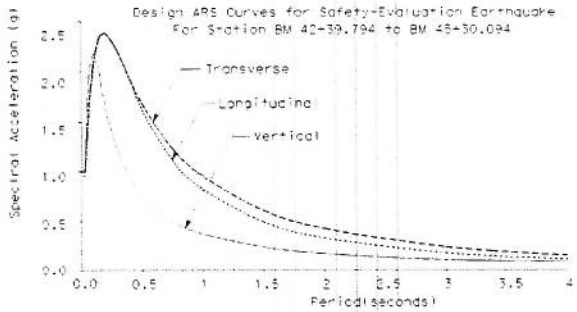
Structural Concrete, Bridge, including reinforcement	2400 kg/m³
Structural Concrete, Lightweight, including reinforcement	2005 kg/m³
Future BART appurtenances	6.7 kN/m
Utilities	7.3 kN/m

Integral wearing surface used. No allowance provided for future wearing surface

LIVE LOADING: HS20-44 and alternative and permit design load. Mass Transit: one track of standard BART loading

SEISMIC LOADING: Seismic Design Criteria for Benicia-Martinez Bridge & Overhead Project Dated June 20 1997
Site Specific Acceleration Response Spectra as set by EMI on Jan. 25,1999





REINFORCED AND PRESTRESSED CONCRETE: All concrete is normal weight concrete unless otherwise noted

Structural Concrete, Lightweight
fy = 415 MPa
f'c = 45 MPa
n = 8

Structural Concrete, Bridge
fy = 415 MPa
f'c = 45 MPa
n = 6

Structural Concrete, Bridge
fy = 415 MPa
f'c = 35 MPa
n = 7

Structural Concrete, Bridge footing,
fy = 415 MPa
f'c = 35 MPa @ 28 days
n = 7

CIDH Concrete Piling
fy = 415 MPa
f'c = 25 MPa
n = 7

NOTE: For additional notes on prestressed concrete, see "Prestressing Notes" sheet.

STRUCTURAL STEEL: Steel box girder at hinges "C" and "D" Grade 50 (AASHTO M270 ASTM A709 Gr.50) fy=345 MPa
Permanent Steel casing for pile Grade 50 (AASHTO M270 ASTM A709 Gr.50) fy=345 MPa

INTEGRAL WEARING SURFACE: 25 mm of additional deck thickness has been added to the required cover of 65 mm over the top deck reinforcement to allow profile grinding of the deck. Exceptions are:
-Frame 1, from BB to NB"23+88.010: 0 mm additional deck thickness. Transition from 0 mm additional deck thickness at "NB"23+88.010 to 25 mm additional deck thickness at end of Pier 15 cantilever construction, "BM" 23+98.794. Transition shall be linear over 8.6 m.
-Frame 4 (entire frame from Expansion Joint at Hinge E to EB): 0 mm additional deck thickness.

For location and details of Preformed Inductive Loops, Electroliers, CCTV Poles, Call Boxes, and Sign Structures see "Electrical Plans".

The details for conduits, sleeve pipes, and anchor bolts embedded into the bridge structure for the above are shown on the structure plans.

CONSTRUCTION LOADING: For construction methods and loads, see "Construction Sequence" sheets

INDEX TO CALTRANS STANDARD PLANS
DATED JULY 1997

A10A	Abbreviations
A10B	Symbols
A62B	Limits of Payment for Excavation and Backfill-Bridge
A62C	Limits of Payment for Excavation and Backfill-Bridge
B0-1	Bridge Details
B0-3	Bridge Details
B0-5	Bridge Details
B0-13	Bridge Details
B3-3	Retaining Wall Details No.1
B6-10	Utility Openings, T-Beam
B6-21	Joint Seals (Maximum Movement Rating = 50 mm)
B7-1	Box Girder Details
B7-6	Deck Drains-Types D-1 and D-2
B8-5	Cast-In-Place Prestressed Girder Details
B11-51	Tubular Hand Railing
B11-52	Chain Link Railing Type 7
B11-53	Concrete Barrier Type 25
D75	Pipe Inlet
ES-6B	Lighting Standards Types 15,21 and 22
ES-7A	Signal, Lighting and Electrical Systems-Electrical Details
ES-7B	Signal, Lighting and Electrical Systems-Electrical Details
ES-34A	Closed Circuit Television Pole Details
S2	Overhead Signs-Truss, Single Post Type
S3	Overhead Signs-Truss, Two Post Type
ES-4B	Control Cabinet Detail
ES-6B	Signal, Lighting and Electrical System Detectors

Standard Plan Sheet Number
Detail Number

AS - BUILT PLANS
CHANGES BY G. Murugesh (CALTRANS CONTRACT MANAGER)
RECORDED BY S. Chen / J. Ramirez (DESIGN JV)
CONTRACT NO. 04-006034
DATE 4/03/07

ABBREVIATIONS

NWC - Normal Weight Concrete
PT - Prestressing or point of tangency
SLWC - Sand Lightweight Concrete
Symm - Symmetrical
WP - Working Point
CJP - Complete Joint Penetration
Tot - Total

✱ At Piers 6 through 17, Footing Flexural Design was revised during construction based on Caltrans Seismic Design Criteria (SDC), Version 1.2, Section 3.4

All dimensions are in meters unless otherwise shown

Thomas Post.Sanapathy Murugesh
04/01/03

DESIGN	S. Abbas	CHECK	K. Cordtz
DETAIL	A. Lee	CHECK	K. Cordtz
QUANTITIES	S. Anguelova	CHECK	C. Kam

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

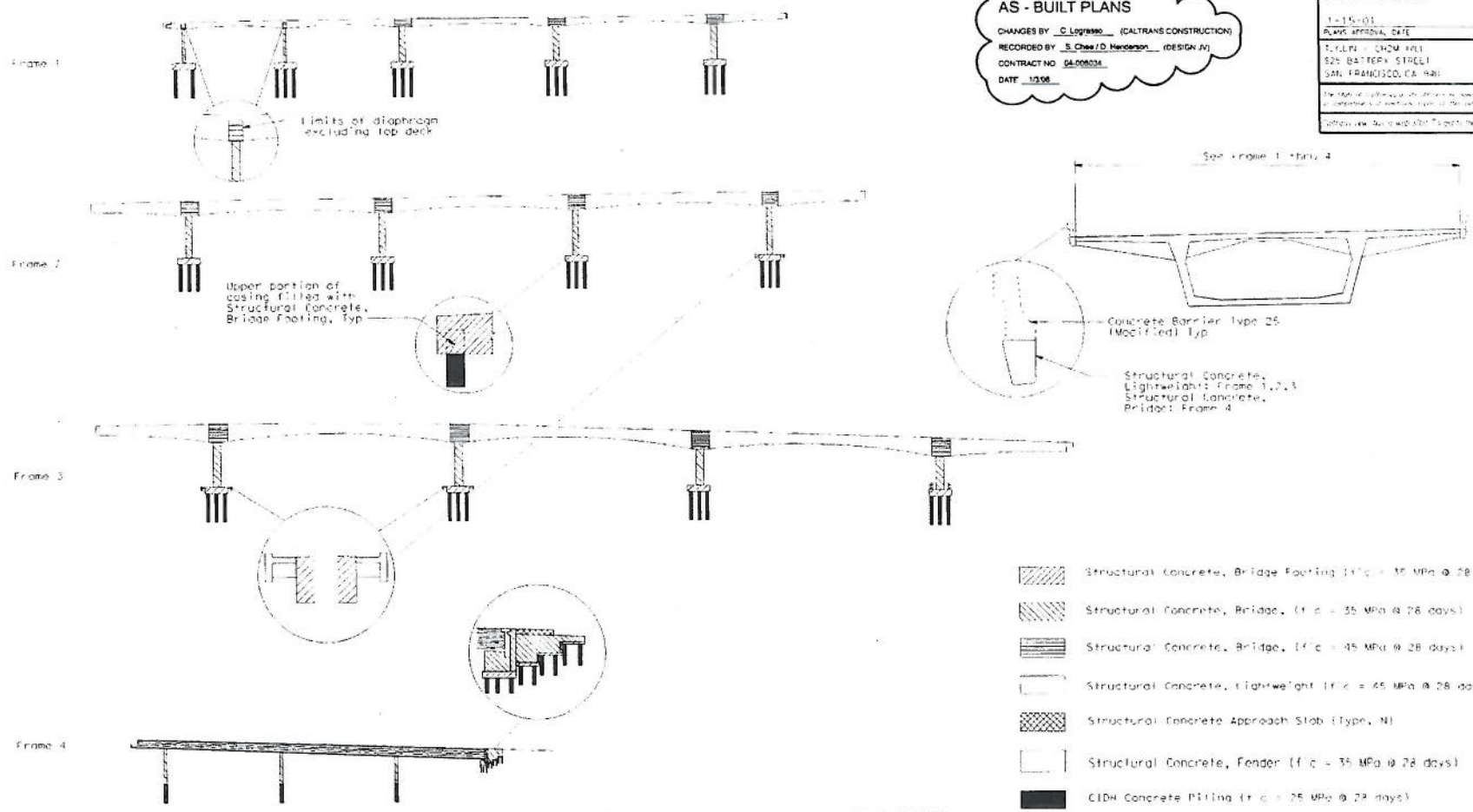
M. Olmer

BENICIA MARTINEZ BRIDGE & OH
GENERAL NOTES NO.1

Pw/BM/04-006031/c agenDl.dgn

AS - BUILT PLAN SHEET NO. 0004 OF 6029

NO AS-BUILT CHANGES
AS - BUILT PLANS
CHANGES BY C. Lograsso (CALTRANS CONSTRUCTION)
RECORDED BY S. Chee / D. Henderson (DESIGN JV)
CONTRACT NO. 04-006034
DATE 1/3/06



CONCRETE STRENGTH & TYPE LIMITS

No Scale

All dimensions are in meters unless otherwise shown

04	CC, Sol	680	30.1 41.4 0.0 1.0	1	457

REGISTERED CIVIL ENGINEER
1-15-01
PLANS APPROVAL DATE
T. CLIN / CHOW HILL
525 BATTERY STREET
SAN FRANCISCO, CA 94111

Thomas Post/Conopathy Murugesan
04/21/00

PLANNED BY S. Abbas, A. Lee, S. Anguelova
DESIGNED K. Cordtz, K. Cordtz, C. Kam
CHECKED M. Oliver

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

BENICIA MARTINEZ BRIDGE & OH
GENERAL NOTES NO.3

P:/BM/04-006031/ccgen02.dgn

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 20 40 60 80

CU 04267
EA 406031

BRIDGE NO. 28-0625
POST MILE 1.0/2.0

SUPERCEDES PREV. BEARING EARLIER REVISION DATES

DIST.	COUNTY	ROUTE	POST MT. TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Sol	680	40.1/41.4, 10.0/11.0	131	557

REGISTERED CIVIL ENGINEER

1-15-01

PLANS APPROVAL DATE

Solid Abbas No. C 055274 Exp. 12-31-00 CIVIL

T.Y.LIN / CHEN HALL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

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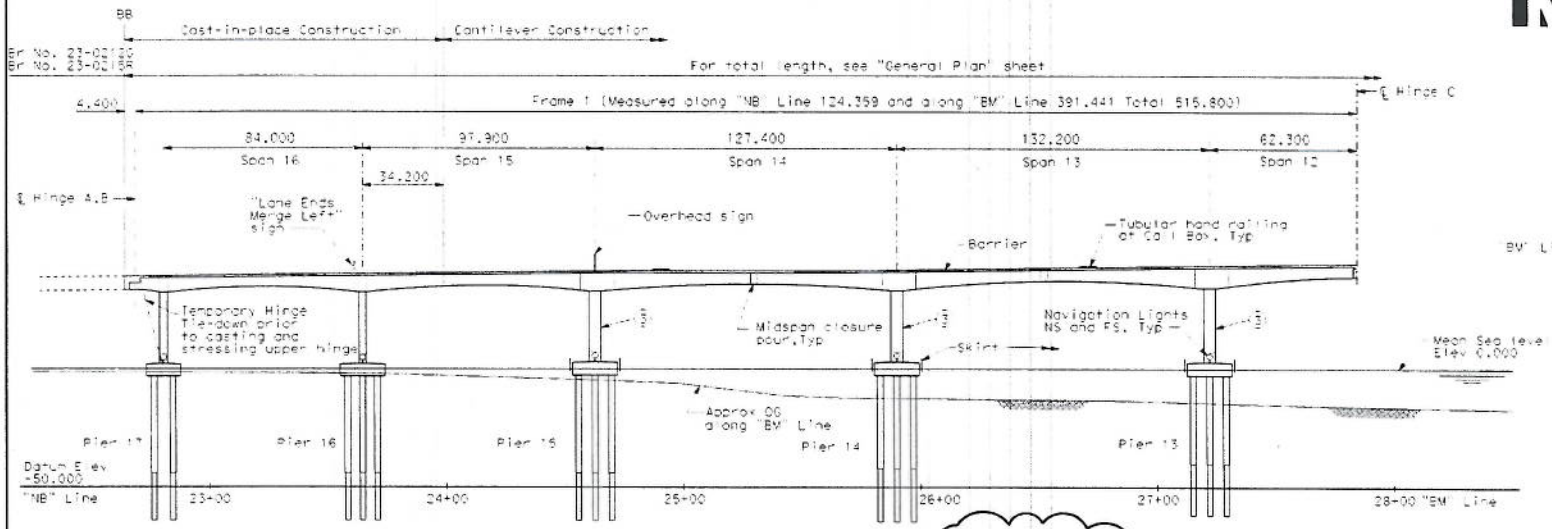
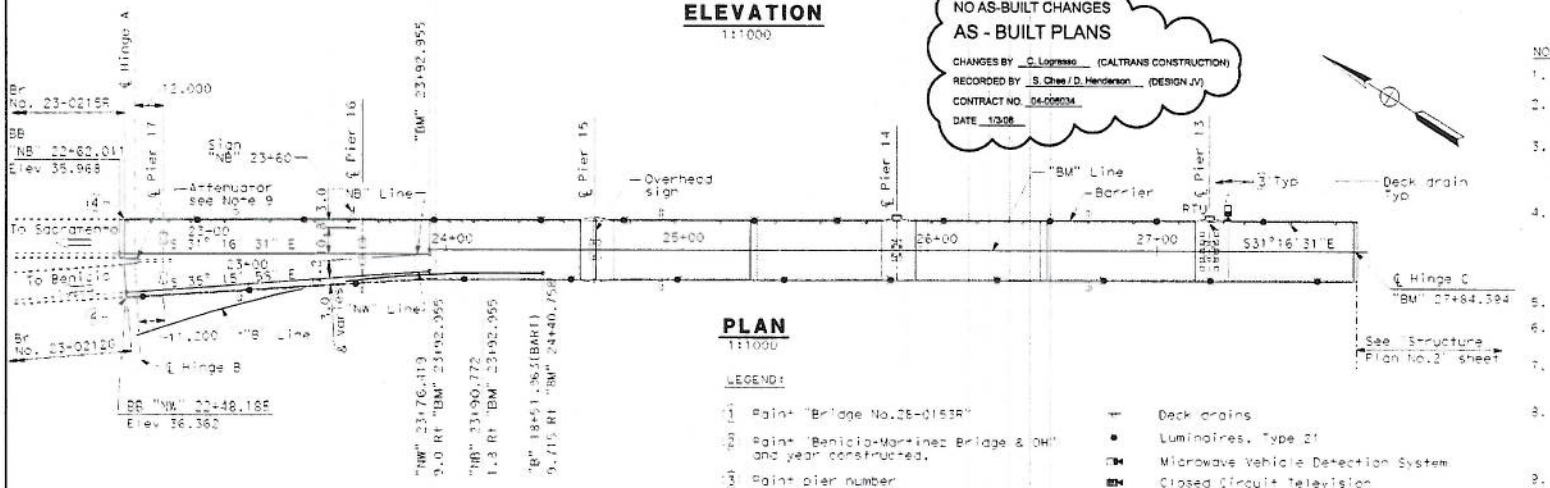


ELEVATION
1:1000

NO AS-BUILT CHANGES
AS - BUILT PLANS
CHANGES BY C. Lagrasso (CALTRANS CONSTRUCTION)
RECORDED BY S. Chee / D. Henderson (DESIGN JV)
CONTRACT NO. 04-006034
DATE 1/3/06



PLAN
1:1000

LEGEND:

1. Paint "Bridge No.28-0153R"
2. Paint "Benicia-Martinez Bridge & OH" and year constructed.
3. Paint pier number
4. Paint Hinge name "Hinge A", "Hinge B" or "Hinge C" as applicable.

℄ Navigation Lights

Deck drains
Luminaires, Type 21
MVDS Microwave Vehicle Detection System
CCTV Closed Circuit Television
Call Box
Inductive Loop Detector with Controller cabinet
RTU Cabinet platform

DECK DRAIN LOCATIONS

"BM" Line:	Sta. 22+65.350	Lt	Sta. 24+77.244	Lt
	Sta. 22+75.471	Lt	Sta. 24+86.444	Lt
	Sta. 22+82.832	Lt	Sta. 25+ 5.644	Lt
	Sta. 22+92.338	Lt	Sta. 25+38.744	Lt
	Sta. 23+06.596	Lt	Sta. 25+57.944	Lt
	Sta. 23+25.608	Lt	Sta. 25+77.144	Lt
	Sta. 23+44.620	Lt	Sta. 26+04.644	Lt
	Sta. 23+59.876	Lt	Sta. 26+23.844	Lt
	Sta. 23+76.461	Lt	Sta. 26+43.044	Lt
	Sta. 24+01.744	Lt	Sta. 26+70.944	Lt
	Sta. 24+06.544	Lt	Sta. 26+90.144	Lt
	Sta. 24+11.344	Lt	Sta. 27+09.344	Lt
	Sta. 24+30.544	Lt	Sta. 27+36.844	Lt
	Sta. 24+49.744	Lt	Sta. 27+56.044	Lt
			Sta. 27+75.244	Lt

NOTES:

1. Indicates direction of travel
2. For Deck Drain details, see "Drainage Details No.1" sheet.
3. For attachment of luminaires to concrete barrier, see ES-6E and "Road Plans".
4. For details of overhead signs, traffic operation systems platform, navigation lights, future traveler rail & grid cast-in-place inserts, tubular hand railing and Solano County Line rail mounted signs details, see "Miscellaneous Details" sheets.
5. For skirt details, see "Skirt Layout" sheets.
6. For all traffic control system box details, see "Road Plans".
7. For traffic attenuator details, see "Miscellaneous Details No.1" sheet.
8. For location of Luminaires, Microwave Vehicle Detection System, Closed Circuit Television, Call Box, Inductive Loop Detector, see "Road Plans".
9. For layout of attenuator, see "Deck Contours No.1" sheet.

All dimensions are in meters unless otherwise shown

Thomas Post, Senapathy Murugesan
Thomas J. Post / S. Murugesan
04/21/00

DESIGN	S. Abbas	REVIEW	K. Condtz
DETAILS	A. Lee	REVIEW	K. Condtz
QUANTITIES	S. Angueloya	REVIEW	C. Kan

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

M. Omer
PROJECT ENGINEER

04-006034
POST MT.
1.0/0

BENICIA MARTINEZ BRIDGE & OH
STRUCTURE PLAN NO.1

P:/BM/04-00603/c aspl01.dgn

GENERAL SCALE IN MILLIMETERS FOR PRESENTED PLANS: 0 20 40 60 80

CU 04-PT
EA 006021

REVIEWED PRINTS, MICRO. EXPLEF RETURN DATE

AS - BUILT PLAN SHEET NO. 0010 OF 6029

DIST.	COUNTY	ROUTE	POST MK. TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC, Sol	680	40.7/41.4, 0.0/11.0	132	557

NO AS-BUILT CHANGES
AS - BUILT PLANS
CHANGES BY C. Lograsso (CALTRANS CONSTRUCTION)
RECORDED BY S. Chee / D. Henderson (DESIGN JV)
CONTRACT NO. 04-008034
DATE 1/3/08

Caltrans Metric

REGISTERED CIVIL ENGINEER
1-15-01
PLANS APPROVAL DATE
Sajid Abbas No. C 055074 Exp. 12-31-03 CIVIL STATE OF CALIFORNIA

T.Y.LIN CHOW HALL
825 BATTERY STREET
SAN FRANCISCO, CA 941

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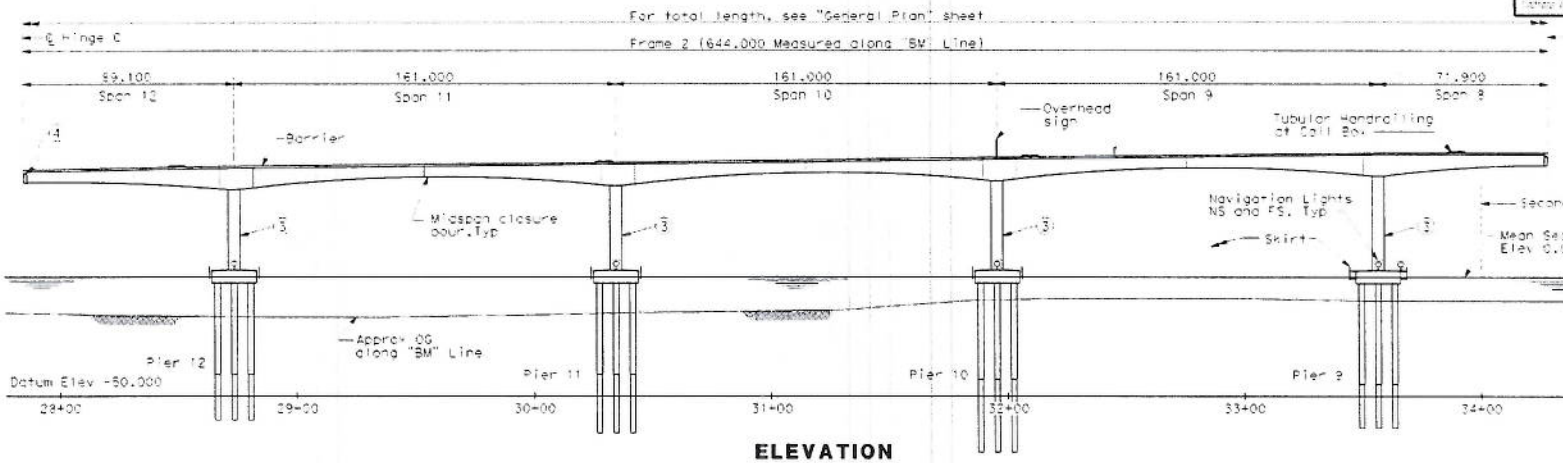
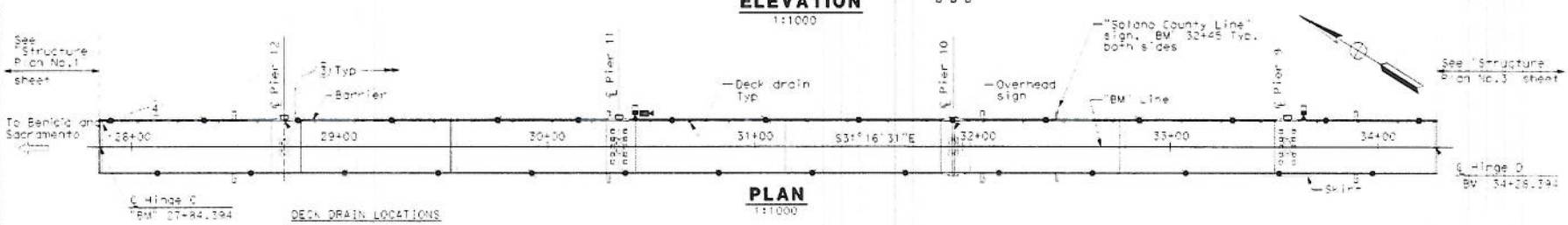


ELEVATION
1:1000



PLAN
1:1000

DECK DRAIN LOCATIONS

"BM" Line :	Sta. 28+03.144	Lt	Sta. 30+49.244	Lt	Sta. 32+86.144	Lt
	Sta. 28+22.344	Lt	Sta. 30+68.444	Lt	Sta. 33+05.344	Lt
	Sta. 28+41.544	Lt	Sta. 30+87.644	Lt	Sta. 33+24.544	Lt
	Sta. 28+60.744	Lt	Sta. 31+06.844	Lt	Sta. 33+43.744	Lt
	Sta. 28+88.244	Lt	Sta. 31+25.144	Lt	Sta. 33+71.244	Lt
	Sta. 29+07.444	Lt	Sta. 31+44.344	Lt	Sta. 33+90.444	Lt
	Sta. 29+26.644	Lt	Sta. 31+63.544	Lt	Sta. 34+09.644	Lt
	Sta. 29+45.844	Lt	Sta. 31+82.694	Lt	Sta. 34+19.244	Lt
	Sta. 29+64.144	Lt	Sta. 32+10.244	Lt		
	Sta. 29+83.344	Lt	Sta. 32+29.444	Lt		
	Sta. 30+02.544	Lt	Sta. 32+48.644	Lt		
	Sta. 30+21.744	Lt	Sta. 32+72.644	Lt		

NOTES:

1. For legend and notes, see "Structure Plan No.1" sheet.

All dimensions are in meters unless otherwise shown

Thomas Post, Geotechnical Manager
Pu/BM/04-00603/c aspl02.dgn

DESIGN	S. Abbas	REVIEW	K. Cordtz
DETAILS	A. Lee	CHECK	K. Cordtz
QUANTITIES	S. Angelovic	REVIEW	C. Kam

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Omer

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 20 40 60 80

CO. CALC. E.S. (CHECK)

BRIDGE NO. 28-0163R
POST MK. L0.0

BENICIA MARTINEZ BRIDGE & OH
STRUCTURE PLAN NO.2

REVISION DATED PRELIMINARY STRUCTURE
CONTRACT PLANS ARCHIVE
EARLIEST REVISION DATES

AS - BUILT PLAN SHEET NO. 0011 OF 6029

DIST.	COUNTY	ROUTE	POST MM TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Sol	680	40.1 41.4, 10.0/11.0	133	567

REGISTERED CIVIL ENGINEER

1-15-01
PLANS APPROVAL DATE

Sofia Abbas
No. C 065374
Exp. 12-31-01
CIVIL
STATE OF CALIFORNIA

TYLIN / CHOM HILL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

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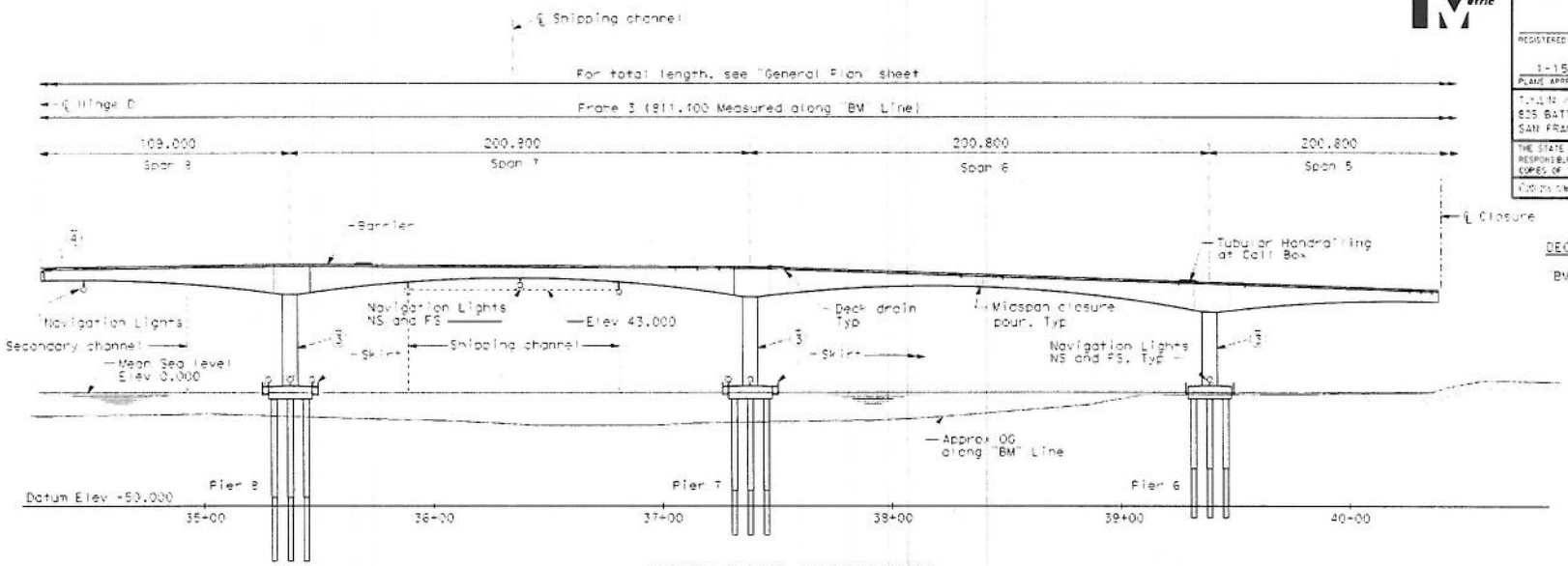

DEVELOPED ELEVATION

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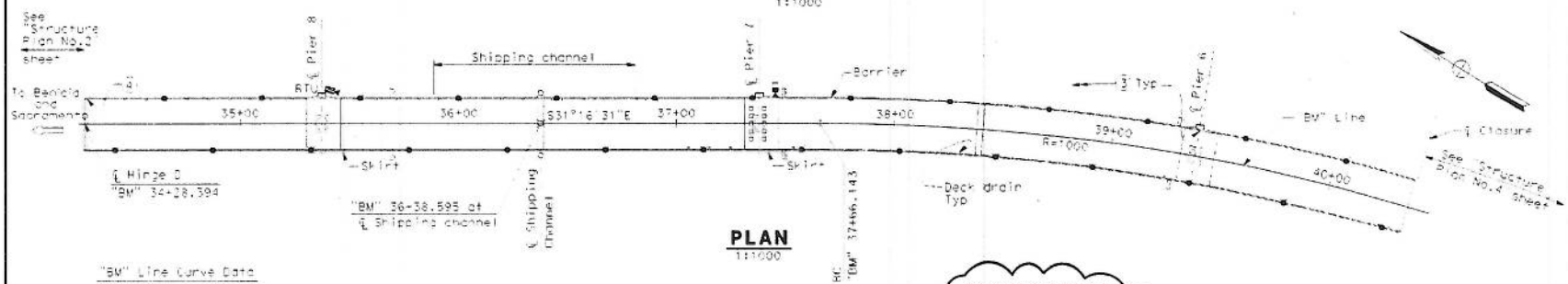


PLAN

1:1000

"BM" Line Curve Data

R= 1000
Δ= 32°16'46"
T= 289.858
L= 564.254

NO AS-BUILT CHANGES
AS - BUILT PLANS
CHANGES BY C. Lograsso (CALTRANS CONSTRUCTION)
RECORDED BY S. Chee / D. Henderson (DESIGN JV)
CONTRACT NO. 04-006034
DATE 1/3/08

DECK DRAIN LOCATIONS

"BM" Line :	Sta. 34+37.644	L+
	Sta. 34+47.144	L+
	Sta. 34+56.744	L+
	Sta. 34+66.344	L+
	Sta. 34+75.944	L+
	Sta. 34+85.544	L+
	Sta. 34+95.144	L+
	Sta. 35+04.744	L+
	Sta. 35+14.344	L+
	Sta. 35+23.944	L+
	Sta. 35+53.844	L+
	Sta. 35+63.444	L+
	Sta. 35+73.044	L+
	Sta. 35+81.644	L+
	Sta. 35+91.244	L+
	Sta. 36+00.844	L+
	Sta. 36+20.044	L+
	Sta. 36+29.644	L+
	Sta. 36+43.144	L+
	Sta. 36+47.944	L+
	Sta. 36+52.744	L+
	Sta. 36+57.544	L+
	Sta. 36+62.344	L+
	Sta. 36+67.144	L+
	Sta. 36+71.944	L+
	Sta. 36+76.744	L+
	Sta. 36+81.544	L+
	Sta. 36+86.344	L+
	Sta. 36+91.144	L+
	Sta. 37+05.544	R+
	Sta. 37+15.144	R+
	Sta. 37+24.744	R+
	Sta. 37+53.644	R+
	Sta. 38+30.444	R+
	Sta. 38+48.744	R+
	Sta. 39+25.544	R+
	Sta. 39+54.444	R+
	Sta. 40+26.444	R+
	Sta. 40+31.244	R+
	Sta. 40+36.044	R+

NOTES:

1. For legend and notes, see "Structure Plan No.1" sheet.

All dimensions are in meters unless otherwise shown

Thomas Post/Ganapathy Murugesh	DESIGN	S. Abbas	K. Cordtz
	DETAILS	A. Lee	K. Cordtz
	QUANTITIES	S. Angusilova	C. Kam

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Dimar
PROJECT ENGINEER

DISTRICT NO. 04
CONTRACT NO. 04-006034
POST MM 10.0

BENICIA MARTINEZ BRIDGE & OH
STRUCTURE PLAN NO.3

Pr/BM/04-006034/c aspl03.dgn

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 20 40 60 80

CU 04CH7
EA 406013

DISTRICT PRINT BEARING EARLIER REVISION DATES

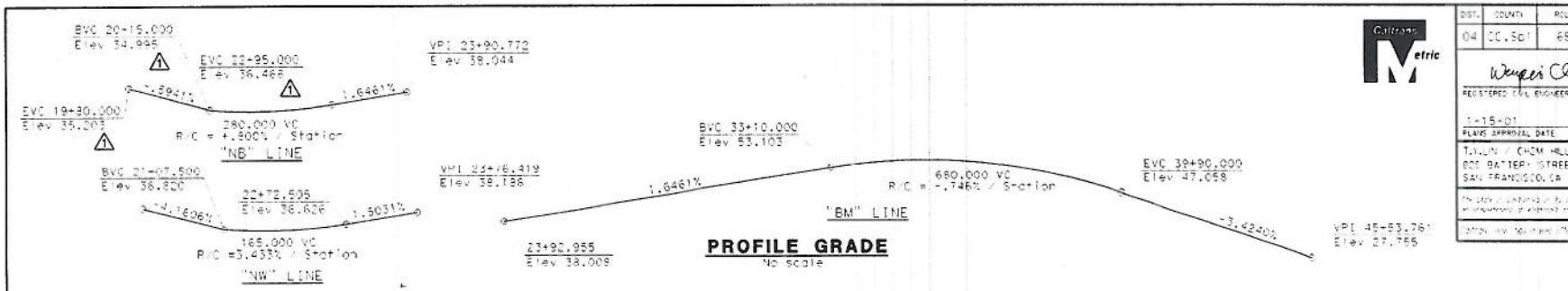
AS - BUILT PLAN SHEET NO. 0012 OF 6029

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC.Sol	680	40.1/4.4, LC.0/L1.0	36R	56T

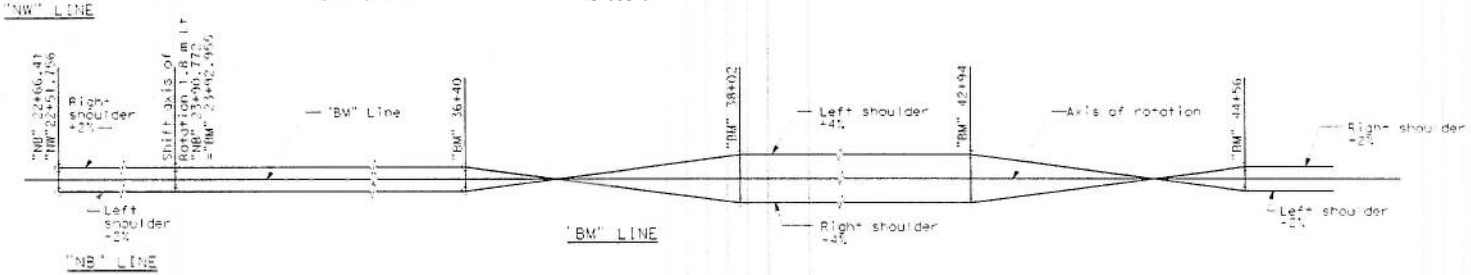
REGISTERED CIVIL ENGINEER

1-15-01
PLANS APPROVAL DATE

T.Y.LIN / CH2M HILL
601 BATTERY STREET
SAN FRANCISCO, CA 941



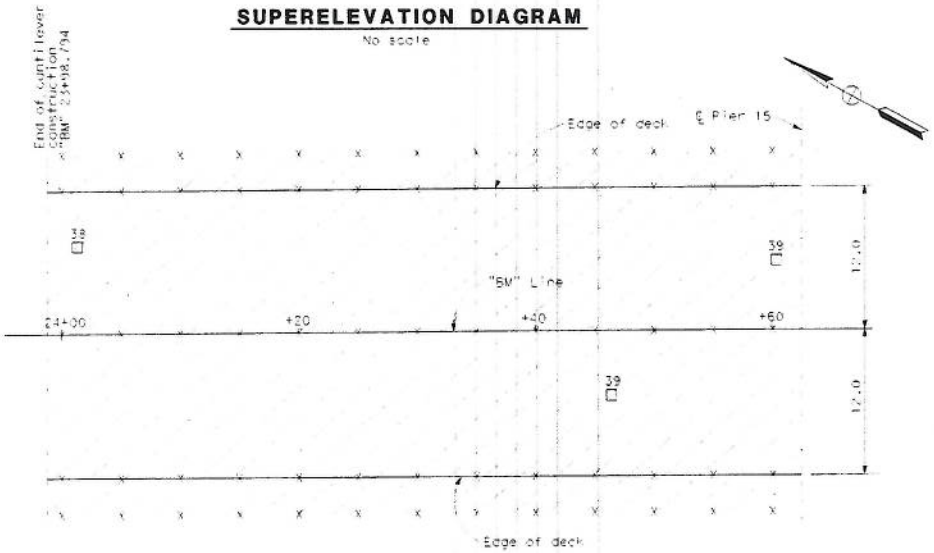
PROFILE GRADE
No scale



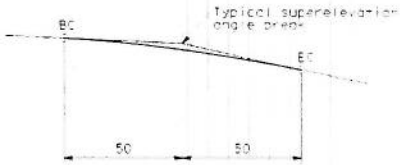
SUPERELEVATION DIAGRAM
No scale

MARK	DATE	DESCRIPTIONS	BY	CH'D
1	05/21/03	"NB" PROFILE GEOMETRY	JT	JK
		REVISIONS		

CONTRACT CHANGE ORDER NO. ____
SHEET ___ OF ___



PARTIAL PLAN
1:200



PROFILE CORRECTION FOR BARRIERS
No scale

NO AS-BUILT CHANGES
AS - BUILT PLANS
CHANGES BY C. Lograsso (CALTRANS CONSTRUCTION)
RECORDED BY S. Chae / D. Henderson (DESIGN JV)
CONTRACT NO. 04-006034
DATE 12/31/07

NOTES:

1. Contour intervals at 0.050 meter.
2. Contours do not include camber.
3. X-indicates 5.000 meter intervals along station line.
4. □-indicates every meter contour.
5. Contours indicate top of deck (integral surface) elevations, with no profile grinding.

All dimensions are in meters unless otherwise shown

Thomas Post-Gandolfo/Mr. Murugesh
Thomas Post-Gandolfo 03/21/03

DESIGN	P. Chou	CHECK	K. Cordtz
DETAILS	A. Lee	CHECK	K. Cordtz
QUANTITIES	S. Anguelova	CHECK	C. Kam

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

M. Olmer
PROJECT ENGINEER

BRIDGE No. 33-0038
ROUTE No.
LOCATION

BENICIA MARTINEZ BRIDGE & OH
DECK CONTOURS NO.2

PLANS NAME: SCALE IN MILLIMETER FOR RECORD PLAN

CU 0 / 0
EA 0Q8603

DESIGNED BRIDGE REGION FOR PS REVIEW DATE

PERMIT DATE: PRELIMINARY / FINAL / N/A

SHEET

Pi/BM/04-006031/c bdkc01.dgn

USERNAME : lcamkam
DGN FILE : bdkc01.dgn

AS - BUILT PLAN SHEET NO. 0015 OF 6029

DIST.	COUNTY	ROUTE	POST MT. TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC/SF	680	40U 41.4, 1C0.0/1L0	HERI	557

REGISTERED CIVIL ENGINEER

9-16-01

PLANS APPROVAL DATE

T.Y.LIN / CH2M HILL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

Seal & Approval No. C 055274 Exp. 12-31-96 CIVIL

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

NOTES:

1. For utilities, see "Road Plans".
2. Vertical datum based on: Metric NAD27 (Zones 2 & 3 coordinates) and NGVD29. Bridge horizontal and vertical control per Zone 2.
3. For existing grading at Abutment 1 embankment and Pier 4, see "Road Plans". Topography shown on "Foundation Plans" was current as of 01/22/99 and 03/23/99
4. Data between approximate shore lines is based on Bathymetry carried out in Nov. 1997 by Fugro West.

"BM" Line Curve Data

R = 1000.000
Δ = 32°19'46"
T = 289.858
L = 564.254

BATHYMETRY NOTES:

1. Horizontal positioning achieved using a starfix II differential GPS positioning system integrated with hypack navigation package.
2. Data acquisition was conducted on November 01 and 02 aboard the M/V JULIE ANN.
3. Bathymetric contours are in meters and reduced to NGVD 1929 Datum.
4. Bathymetric data were recorded on an odom dual frequency echotrac precision echosounder.
5. Side scan sonar data were recorded on a klein 595 dual frequency digital sonar.
6. Rhone-poulenc outfall pipeline location from plan drawing No.G-2 dated July 15,1991.Diffuser location was verified with sonar data.

BENCH MARKS AND DATUM

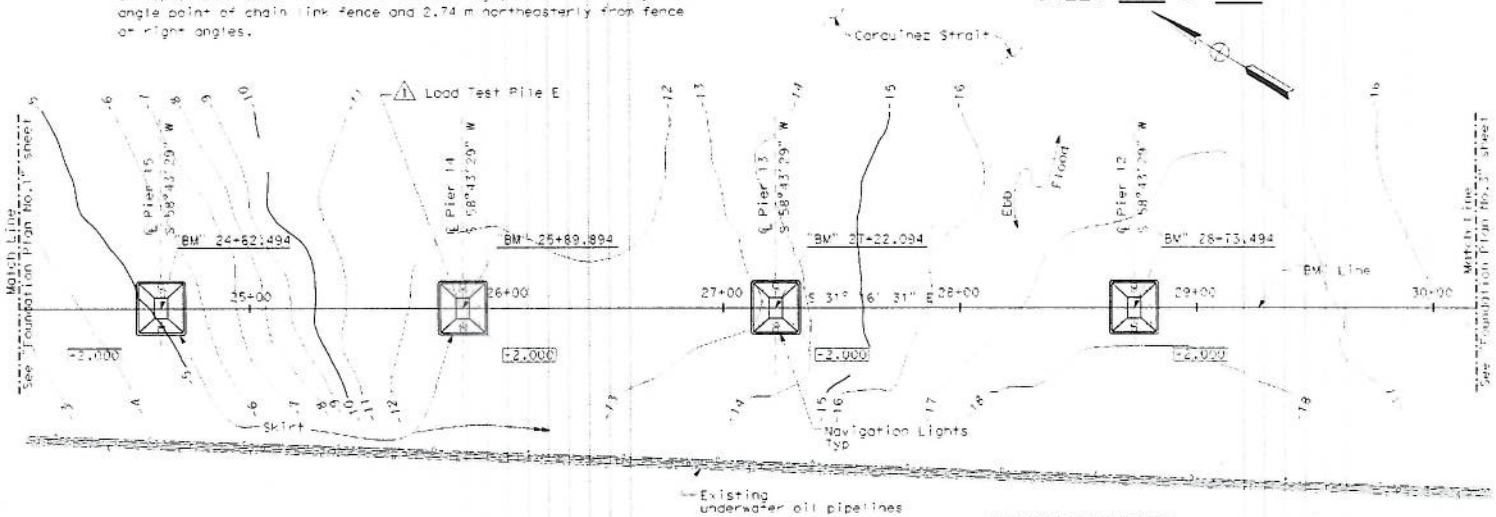
Bench Mark No.	North	East	Elevation	Description
DN700	40904.0964	599335.2728	23.3700	California DOT brass disk set in concrete at southerly end of SPRR Bridge 1.83 m north easterly from center of outside rail and 5.49 m southerly from Abutment.
DN701	42363.7878	598422.5764	39.7760	25 mm iron pipe with red plastic plug and tack down 0.15 m. located on top of bank above north end of SPRR Bridge, 5.79 m northerly from angle point of chain link fence and 2.74 m northeasterly from fence at right angles.

MARK	DATE	DESCRIPTIONS	BY	CH D
1	9/12/03	Added Test Pile E Location	HCS	KC

REVISIONS

CONTRACT CHANGE ORDER NO. 51.1
SHEET 1 OF 3

NO AS-BUILT CHANGES
AS - BUILT PLANS
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY J. Aldrich / D. Henderson (DESIGN JV)
CONTRACT NO. 04-006034
DATE 12/27/07



PARTIAL FOUNDATION PLAN

1:1000

LEGEND:

Indicates bottom of footing elevation
Indicates piles, not all piles are shown
Indicates navigation light

HYDROLOGIC SUMMARY

Drainage Area: 160,579 Square Kilometers

	Flood		
	Design	Base	Overtopping
Frequency (Years)	50	100	>1500
Discharge (m³/s)	5870	7880	N/A
WSE at bridge(m)	3.64	4.05	N/A

All dimensions are in meters unless otherwise shown.

Thomas Post, Gangadhar Murugesan

DATE METRIC CONV. Nov. 1997 DRAWN JJC 12/97 DESIGN S. Abbas REVIEW K. Cordiz
ENGINEER Fugro West M/V JULIE ANN STUDIED N/A DETAILS A. Lee CHECKED K. Cordiz
PLAN CHECKED N/A CHECKED N/A DRAFTING S. Angelova REVIEW C. Kim

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Omer

BRIDGE NO. 28-1.50 R

BENICIA MARTINEZ BRIDGE & OH
FOUNDATION PLAN NO.2

Pw/BM/04-006031/c cfnd01.dgn

PLOT SCALE IN MILLIMETERS FOR REDUCED PLAN 0 20 40 60 80

EA 0080D1

FOREWARD PRINT REGRID FIRLES RTI IN STATE

REVISION DATES PRELIMINARY PLAN ONLY

AS - BUILT PLAN SHEET NO. 0025 OF 6029

DIST.	COUNTY	ROUTE	POST MT. TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC/Sol	680	40.4/41.4, 0.0/1.0	47R2	557

REGISTERED CIVIL ENGINEER

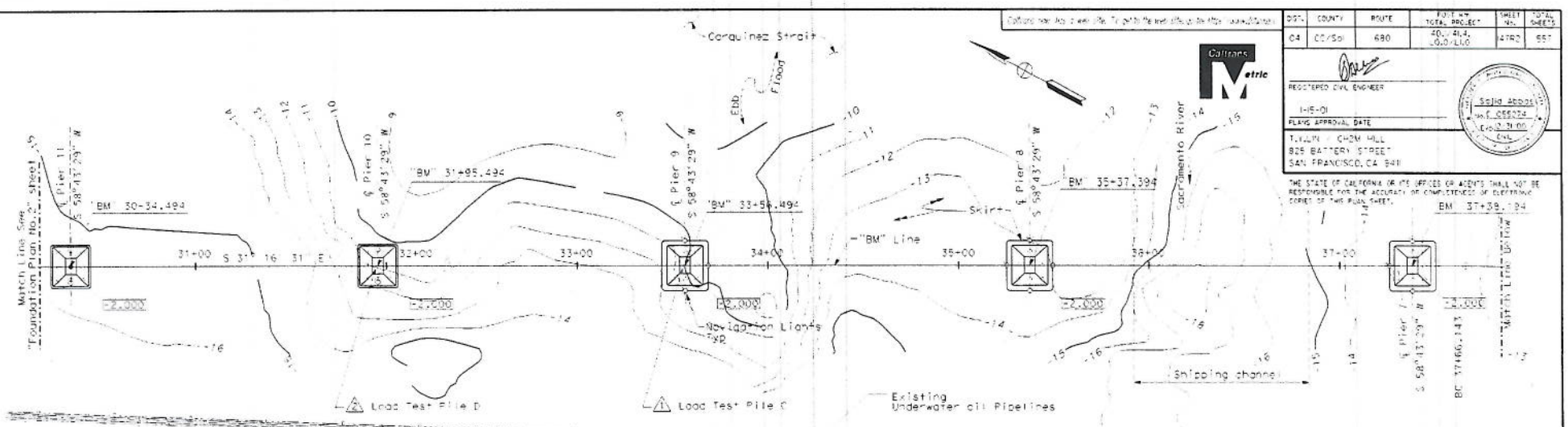
1-15-01

PLANS APPROVAL DATE

TAYLOR / CHOW HILL
825 BATTERY STREET
SAN FRANCISCO, CA 941

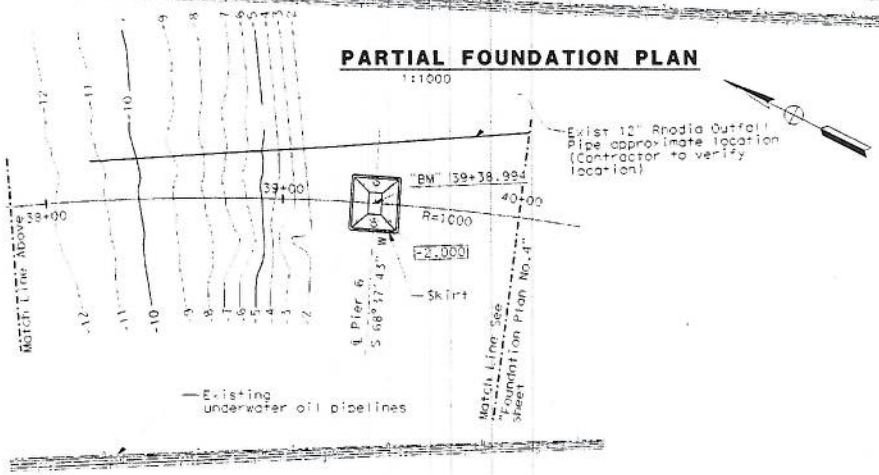
Solid Abbas
No. C 055724
Exp. 12-31-00
CIVIL

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



PARTIAL FOUNDATION PLAN

1:1000



NO AS-BUILT CHANGES
AS - BUILT PLANS
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY J. Aldrich / D. Henderson (DESIGN JV)
CONTRACT NO. 04-006034
DATE 12/21/07

LEGEND:

- Indicates bottom of footing elevation
- Indicates piles
- Indicates navigation light
- Right of way line, 3m ±

MARK	DATE	DESCRIPTIONS	BY	CH'D
2	6/19/03	Added Test Pile D Location	HCS	KC
1	5/14/02	Added Test Pile C Location	HCS	KC

REVISIONS

PARTIAL FOUNDATION PLAN

1:1000

CONTRACT CHANGE ORDER NO. 51
SHEET 1 OF 3

All dimensions are in meters unless otherwise shown.

Thomas Post, Sonoparthy Manager
Thomas J. Post
04/11/00

DATE PLOTTED: Nov. 1997 | DRAWN: JJC 12/97 | DESIGN: S. Abbas | CHECKED: K. Condtz
DATE: Eugene West M.Y. JULIE ANN | TRACED: | DETAILS: A. Lee | CHECKED: K. Condtz
ELD CHECKED: | CHECKED: | QUANTITIES: S. Angelova | CHECKED: C. Kam

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

M. Omer
PROJECT ENGINEER

BENICIA MARTINEZ BRIDGE & OH
FOUNDATION PLAN NO.3

Pu/BM/04-006031/c ofnd02.dgn

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 20 40 60 80 1

TU 04247
EA 006031

DISTRICT FILE STATION
EARLIER REVISION DATE

AS - BUILT PLAN SHEET NO. 0026 OF 6029

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC.Sol	880	20.1/R.4 - 7.7 L.0.0/L1.0	154	557

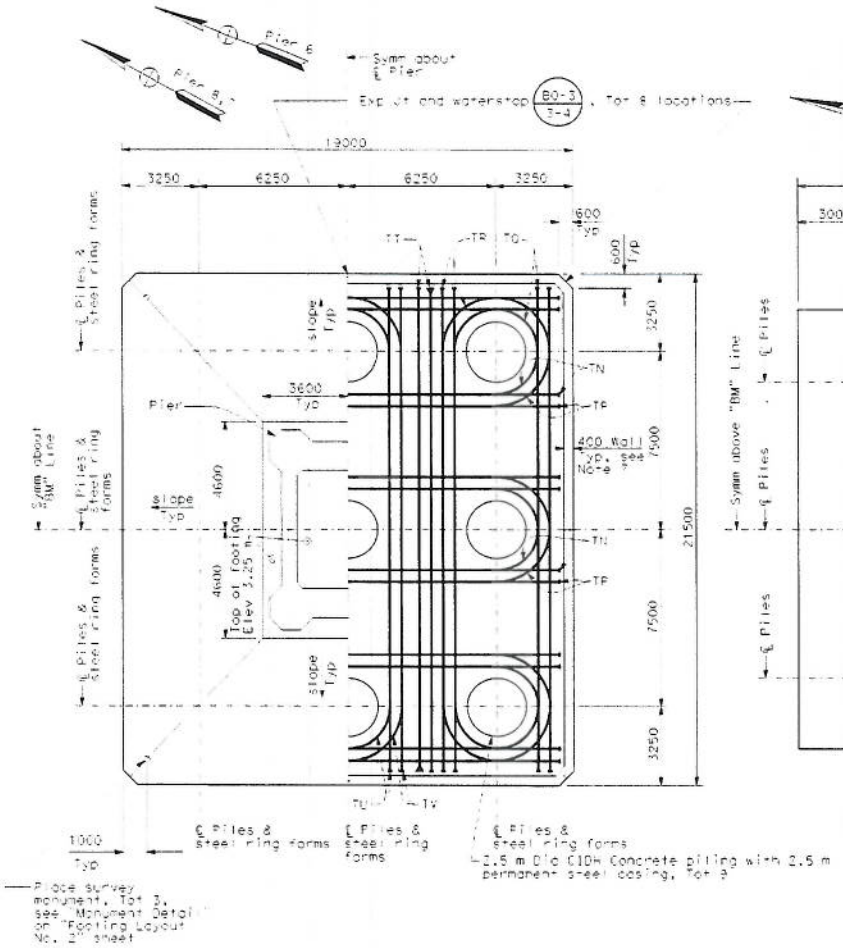
REGISTERED CIVIL ENGINEER

1-15-01

PLANS APPROVAL DATE

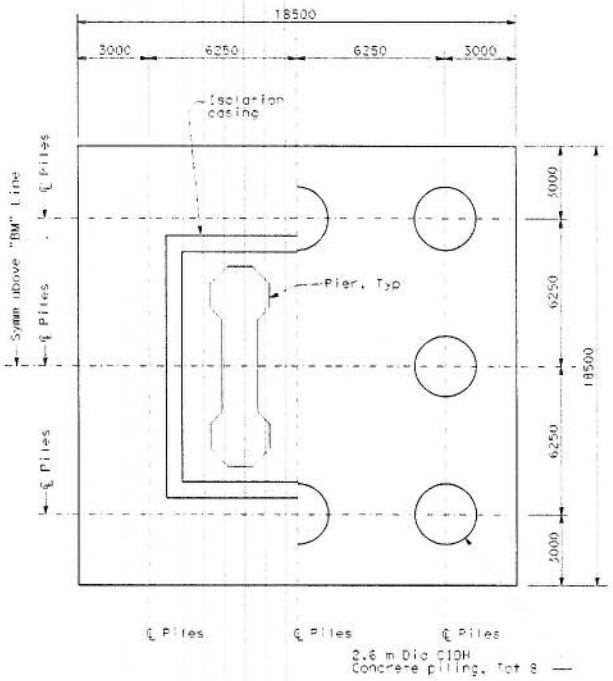
T.Y.LIN / CHOM HILL
805 BATTERY STREET
SAN FRANCISCO, CA 941

NO AS-BUILT CHANGES
AS - BUILT PLANS
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY J. Aldrich / D. Henderson (DESIGN JV)
CONTRACT NO 04-006034
DATE 1/3/08



FOOTING PLAN (Pier 6 thru Pier 8)

1:100



FOOTING PLAN (Pier 5)

1:100

NOTES:

1. For pile details, see "Pile Details" sheets.
2. For footing reinforcement, see "Footing Details" sheets.
3. TA, TB, TC....TV represent prestressing tendon types. Multiple layers of prestressing tendons shown superimposed. For prestressing notes and details, see "Footing Prestressing Details" and "Footing Details" sheets.
4. For fender skirt layout, see "Skirt Layout" sheets.
5. Anchorage symbols are as follows:
   - Jacking end
   - Dead end
6. For seismic instrumentation, see "Seismic Monitoring Installation" plans.
7. For stage 1 slab and wall unit, see "Substructure-Construction Sequence" sheet.
8. For steel ring form details, see "Miscellaneous Footing Details" sheet.

All dimensions are in millimeters unless otherwise shown

Thomas Post/Sandeep Murugesh

Pi/BM/04-006031/c ett102.dgn

DESIGN J. Aldrich R. Tamannaie/K. Cordts
DETAILS A. Lishansky R. Tamannaie/K. Cordts
QUANTITY S. Angulalova C. Kam

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Omer

BRIDGE NO. 33-0033F
ROUTE LINE
LOCATION

BENICIA MARTINEZ BRIDGE & OH

FOOTING LAYOUT NO.3

ORIGINAL SCALE IN MILLIMETERS FOR REVISED PLANS

JOB NO. 04-006031
EA 1C0601

DISPLAYED PRINTS REQUIRED EARLIER REVISION DATES

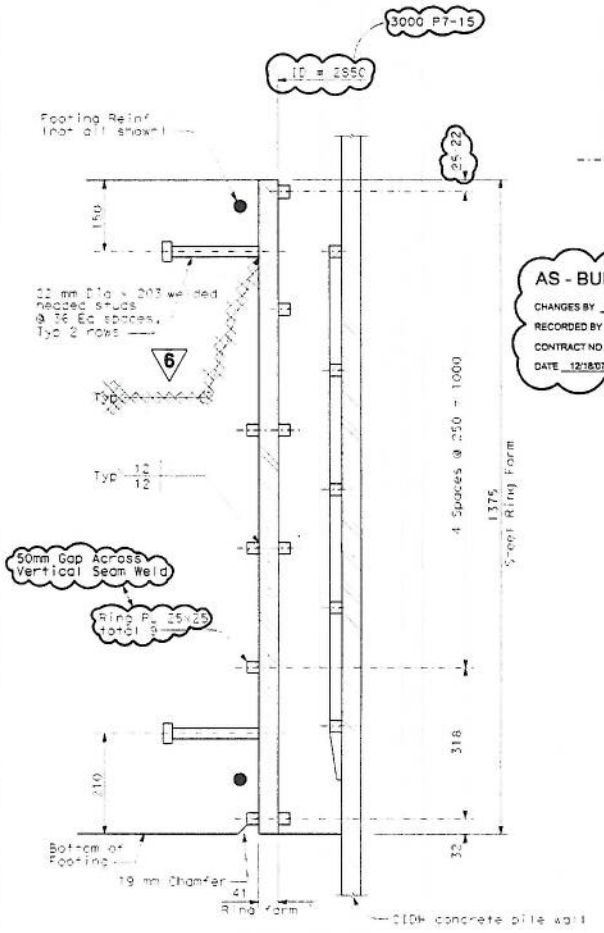
AS - BUILT PLAN SHEET NO. 0033 OF 6029

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,SOL	680	40.1/41.4 L0.0/L1.0	155	557

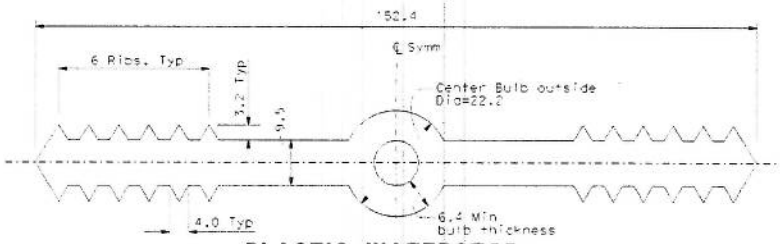
REGISTERED CIVIL ENGINEER

1-15-01
PLANS APPROVAL DATE

T.Y.LIN - CHOW HILL
525 BATTERY STREET
SAN FRANCISCO, CA 94111

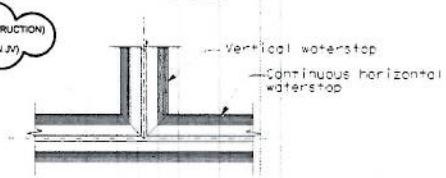


SECTION A-A
1:25

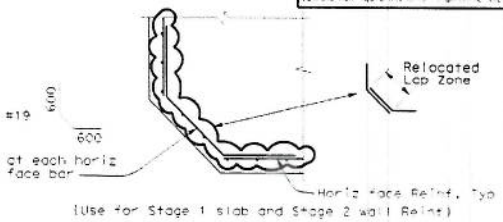


PLASTIC WATERSTOP
No scale

AS - BUILT PLANS
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY J. Aldrich / J. Ramirez (DESIGN JV)
CONTRACT NO 04-006034
DATE 12/18/07

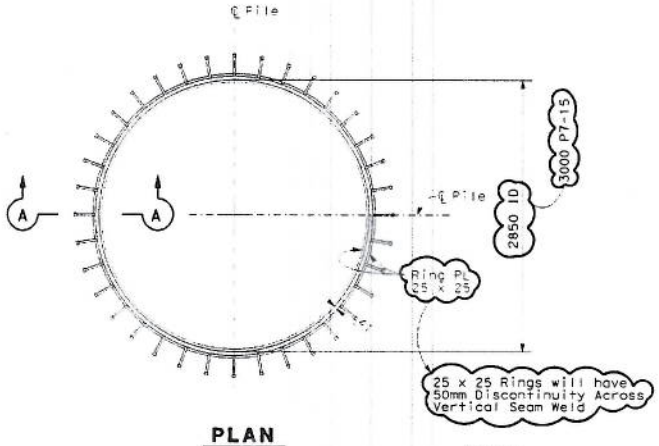


PLASTIC WATERSTOP CORNER SPLICE
No scale

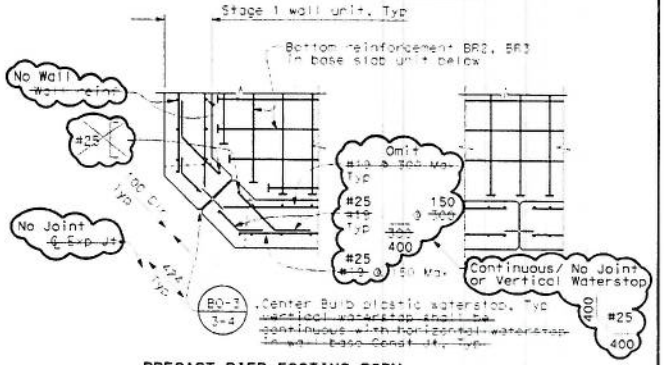


(Use for Stage 1 slab and Stage 2 wall Reinf)

PRECAST PIER FOOTING FORM
(STAGE 1 SLAB UNIT) & STAGE 2 CONCRETE (Piers 17 thru 6)



PLAN
1:25



PRECAST PIER FOOTING FORM
(STAGE 1 WALL UNIT) (Piers 17 thru 6 only)

WALL CORNER AND JOINT DETAIL
1:20

STEEL RING FORM DETAIL
No Scale

LEGEND

Indicates welded headed bar reinforcement (epoxy coated).

NOTES:

1. Ring form shall be AASHTO M270, Gr. 50, fy=345 MPa.
2. Epoxy coat steel ring form, ring plates and headed studs.

6 REVISED PER ADDENDUM NO. 6 DATED AUGUST 9, 2001

All dimensions are in millimeters unless otherwise shown

Thomas Rastogangathy Murugesh

DESIGN	J. Aldrich	CHECK	N. Tamannaie
DETAILS	A. Lishansky	CHECK	N. Tamannaie
QUANTITIES	M. Negrete	CHECK	E. Moechler / J. Epp

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

M. Omer
PROJECT ENGINEER

REVISED 10-01-07
REVISED L0.0

BENICIA MARTINEZ BRIDGE & OH
MISCELLANEOUS FOOTING DETAILS

(ORIGINAL SCALE IN MILLIMETERS FOR REVISED PLANS) 0 20 40 60 80

DISTRICT REPORT BEGINS
EARLIER REVISION DATES

EA 006031

FILENAME = 0ftg18.dgn
DGN FILE = FTG_DTLS.DGN

AS - BUILT PLAN SHEET NO. 0034 OF 6029

DIST.	COUNTY	ROUTE	CONTRACT TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC,Sol	680	4U, 4L4, L0U0/L1C	1655	1657

REGISTERED CIVIL ENGINEER

-15-01

PLANS APPROVAL DATE

TAYLOR / CHOW HILL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

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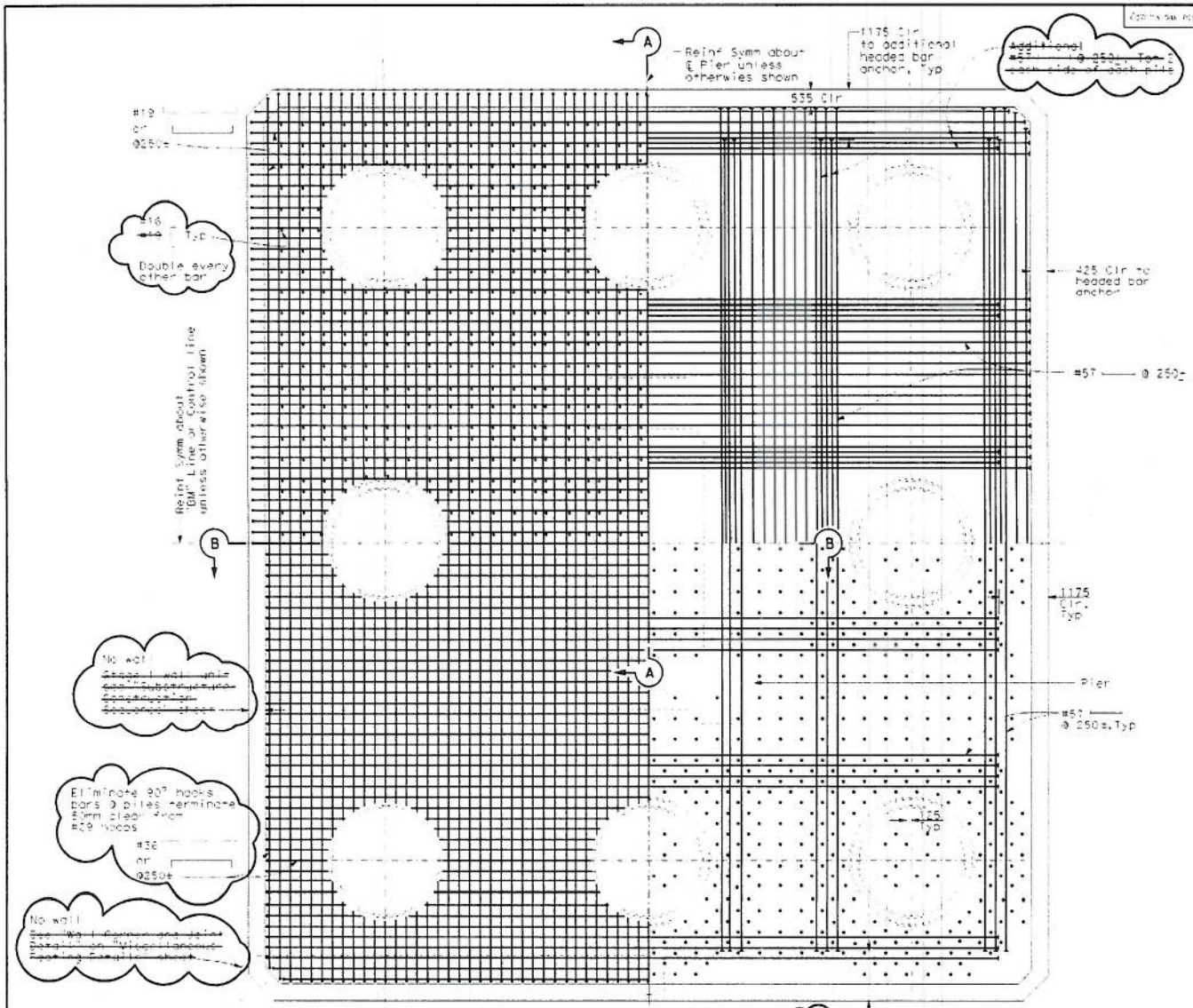


PLAN (Pier 15 thru Pier 10) 1:50

ADDED AS-BUILT SHEET

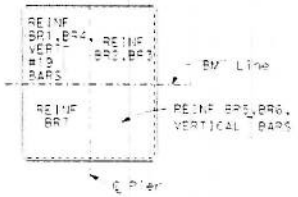
All dimensions are in millimeters unless otherwise shown

FOR PIER 10 THRU PIER 15

AS - BUILT PLANS

CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY J. Aldrich / N. Kiku (DESIGN JV)
CONTRACT NO. 04-000034
DATE 01/08/07

KEY PLAN



LEGEND:

——— Indicates welded headed bar reinforcement (epoxy coated)

BR# Indicates Bottom Reinforcement Layer No.

NOTES:

1. For Section A-A, see "Footing Details No.11" sheet.
2. For Section B-B, see "Footing Details No.12" sheet.
3. For fender skirt layout, see "Skirt Layout" sheets.
4. For prestressing details, see "Footing Prestressing Details" and Footing Details No.10" sheets.

Thomas Pastukanapathy, Murugesan

Pa/BM/04-000031/cefrg05a.dgn

DESIGN	J. Aldrich	CHECK	N. Tamannaie
DETAILS	S. Leong	CHECK	N. Tamannaie
DESIGN PROJECT	M. Negrete	CHECK	E. Maechler

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

M. Omer

BENICIA MARTINEZ BRIDGE & OH

FOOTING DETAILS NO.9

DISTRICT FRONTS DESIGN
EARLIER REVISION DATES

AS - BUILT PLAN SHEET NO. 0045 OF 6029

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC,Sol	680	40.1/41.4, 200.0/204.0	1685	587

REGISTERED CIVIL ENGINEER

03/16/00

PLANS APPROVAL DATE

TAYLOR / CHOW HILL
505 BATTERY STREET
SAN FRANCISCO, CA 94111

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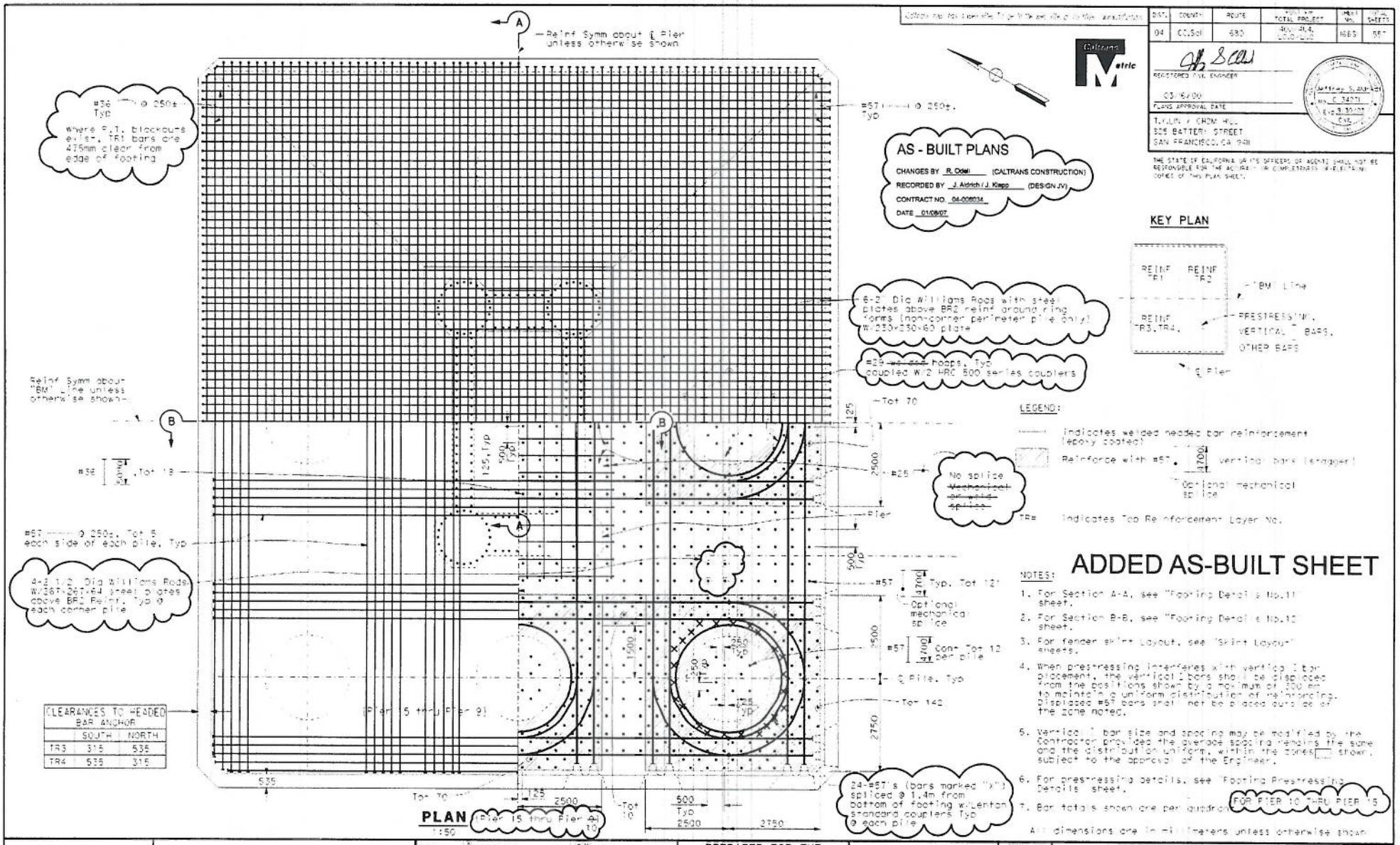


Thomas Post/Ganapathy Murugesh

DESIGN J. Aldrich | CHECK N. Tamannaie
DETAILS S. Leong | CHECK N. Tamannaie
QUANTITIES M. Nagrete | CHECK E. Maechler

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Omer

DESIGN NO. 04-0553F

BENICIA MARTINEZ BRIDGE & OH

FOOTING DETAILS NO.10

Pw/BM/04-006031/cafftg06a.dgn

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS

AS - BUILT PLAN SHEET NO. 0047 OF 6029

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,SOL	680	40.2/46.6 KP 64.7/75.0	6751	867

REGISTERED CIVIL ENGINEER 03/16/00

PLANS APPROVAL DATE

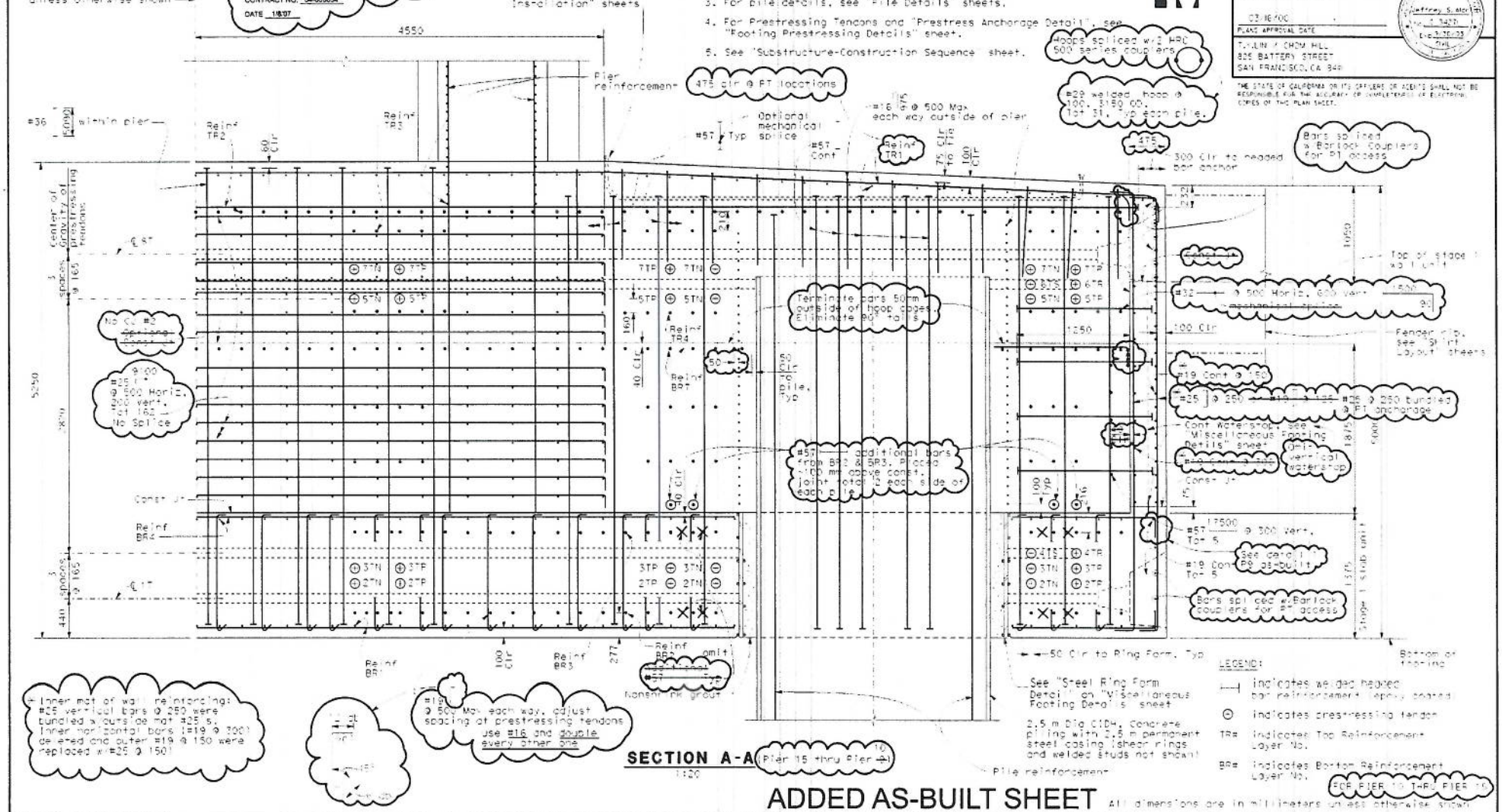
T.Y.LIN / CHOW HILL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

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

AS - BUILT PLANS
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY J. Aldrich / J. Klapp (DESIGN JV)
CONTRACT NO. 04-005034
DATE 1/8/07

NOTES:

1. Epoxy coat all reinforcement this sheet except pile reinforcement.
2. For "Bar Spiral Splice & Spiral Anchor and Hoop Detail", see "Pier Details No.8" sheet.
3. For pile details, see "File Details" sheets.
4. For Prestressing Tendons and "Prestress Anchorage Detail", see "Footing Prestressing Details" sheet.
5. See "Substructure-Construction Sequence" sheet.



ADDED AS-BUILT SHEET

All dimensions are in millimeters unless otherwise shown

Thomas Post/Chakpathy Murugesan	DESIGN J. Aldrich	CHECK N. Tamannaie	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
	DETAIL A. Wong	CHECK N. Tamannaie	
	SUPVTCD M. Negrete	CHECK E. Moechler	M. Ohmer

BENICIA MARTINEZ BRIDGE & OH

FOOTING DETAILS NO.11

Pt/BM/04-00603/cef1g07o.dgn

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 20 40 60 80

EA 0C603

DISTRICT FILE SCANNED EARLIER REVISION DATE

AS - BUILT PLAN SHEET NO. 0049 OF 6029

DIST.	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,SO	680	50.0/ 6.0, L0.0/ L1.0	N/ESI	53T

REGISTERED CIVIL ENGINEER

1-5-01

PLANS APPROVAL DATE

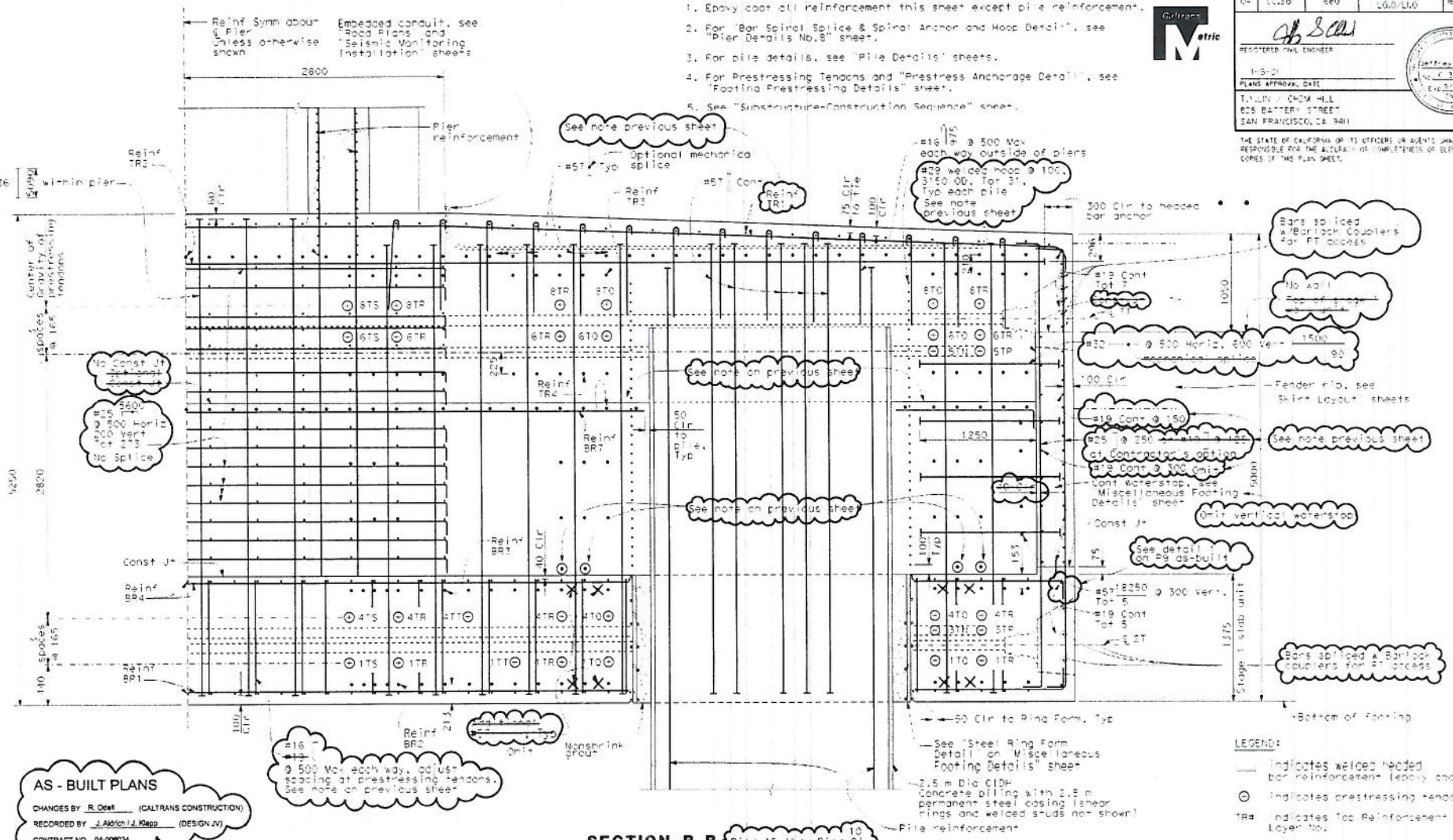
Jeffrey S. Allen No. C 34071 Exp. 3/31/03

T.Y.LIN - CHOW HILL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

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

NOTES:

1. Epoxy coat all reinforcement this sheet except pile reinforcement.
2. For "Bar Spiral Splice & Spiral Anchor and Hoop Detail", see "Pier Details No.8" sheet.
3. For pile details, see "Pile Details" sheets.
4. For Prestressing Tendons and "Prestress Anchorage Detail", see "Footing Prestressing Details" sheet.
5. See "Substructure-Construction Sequence" sheet.



AS - BUILT PLANS

CHANGES BY R. Odell (CALTRANS CONSTRUCTION)

RECORDED BY J. Aldrich / J. Klapp (DESIGN JV)

CONTRACT NO 04-006034

DATE 1/8/07

SECTION B-B (Pier 15 thru Pier ~~31~~ 10)

1:20

LEGEND:

Indicates welded headed bar reinforcement (epoxy coated)

⊖ Indicates prestressing tendon

TR# Indicates Top Reinforcement Layer No.

BR# Indicates Bottom Reinforcement Layer No.

FOR PIER 10 THRU PIER 15

ADDED AS-BUILT SHEET

All dimensions are in millimeters unless otherwise shown

Thomas Bart/Gonzalo Muñoz-Medina	DESIGN: V. Aldrich	CHECK: N. Tamannaie	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION
	DETAIL: A. Mong	CHECK: N. Tamannaie	
	QUANTITY: M. Negrete	CHECK: E. Moschler	

V. Ohmer

BENICIA MARTINEZ BRIDGE & OH

FOOTING DETAILS NO.12

P:/BM/04-006031/ceftgd8c.dgn

DESIGNED FOR PRESTRESSED DESIGN

AS - BUILT PLAN SHEET NO. 0051 OF 6029

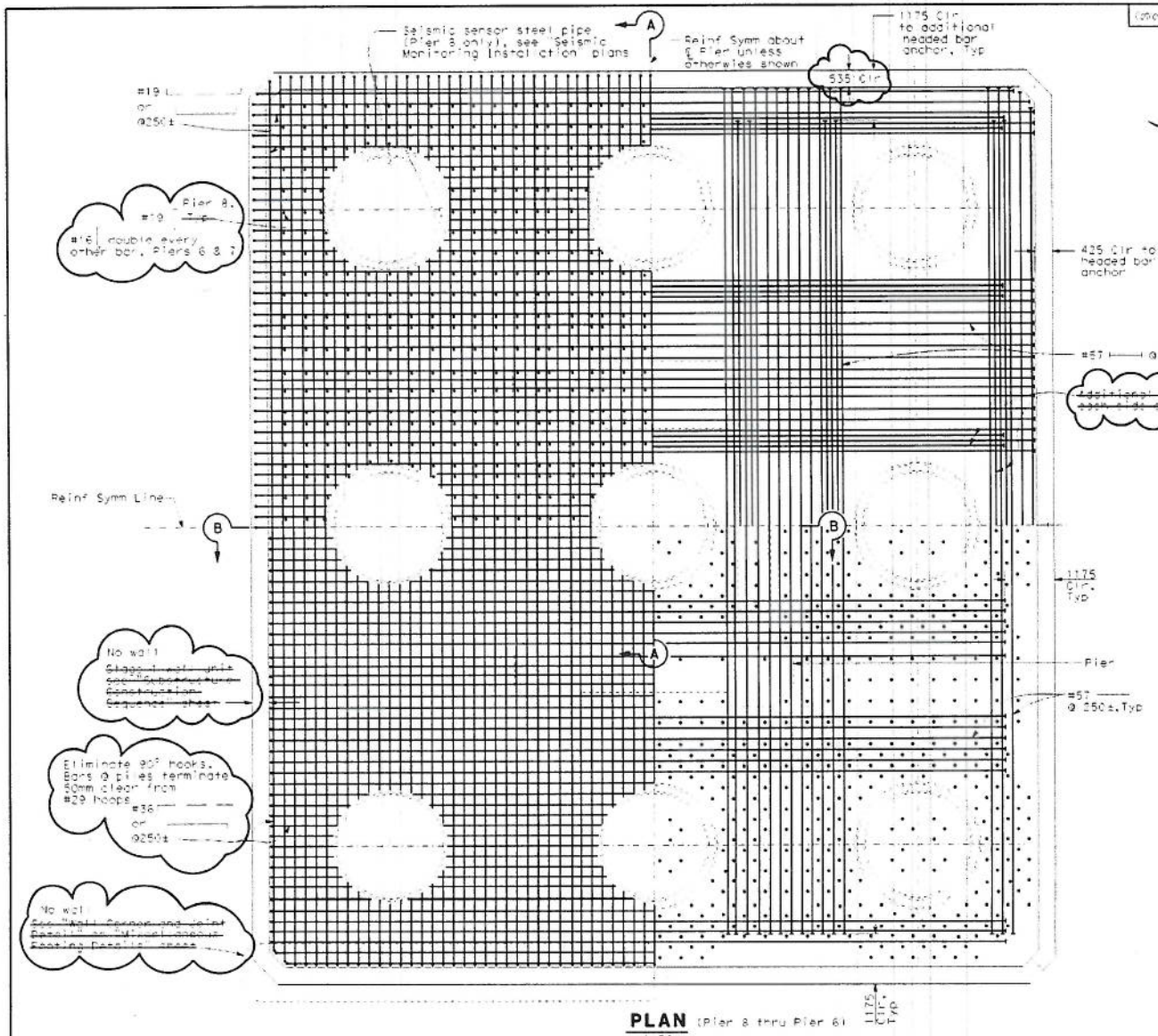
DIST.	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC,SCl	880	40.0/41.4 L0.0/L1.0	163	557

REGISTERED CIVIL ENGINEER

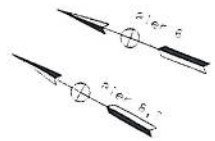
PLANS APPROVAL DATE

T.Y.LIN / CHOW HALL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

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



PLAN (Pier 8 thru Pier 6)
1:50



AS - BUILT PLANS

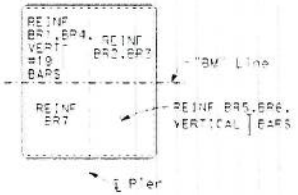
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)

RECORDED BY J. Aldrich / N. Kieu (DESIGN JV)

CONTRACT NO. 04-006034

DATE 01/08/07

KEY PLAN



LEGEND:

⟷ Indicates welded headed bar reinforcement (epoxy coated)

BR# Indicates Bottom Reinforcement Layer No.

NOTES:

1. For Section A-A, see "Footing Details No.11" sheet.
2. For Section B-B, see "Footing Details No.12" sheet.
3. For fender skirt layout, see "Skirt Layout" sheets.
4. For prestressing details, see "Footing Prestressing Details" and "Footing Details No.14" sheets.

All dimensions are in millimeters unless otherwise shown

Thomas Post, Gangadhar Murugesh	DESIGN: J. Aldrich	CHECK: N. Tamannaie	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	M. Olmer	BENICIA MARTINEZ BRIDGE & OH FOOTING DETAILS NO.13
	DETAILS: S. Leong	CHECK: N. Tamannaie			
	QUANTITIES: M. Negrete	CHECK: E. Moschler			

Ps/BM/04-00603/c ef1c09.dgn

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS

CU 04247
EA 0C0401

DISREGARD PRINTS BEARING EARLIER REVISION DATES

AS - BUILT PLAN SHEET NO. 0052 OF 6029

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,SF	880	30.1/31.2 LC,0.7/2.1C	170	657

REGISTERED CIVIL ENGINEER

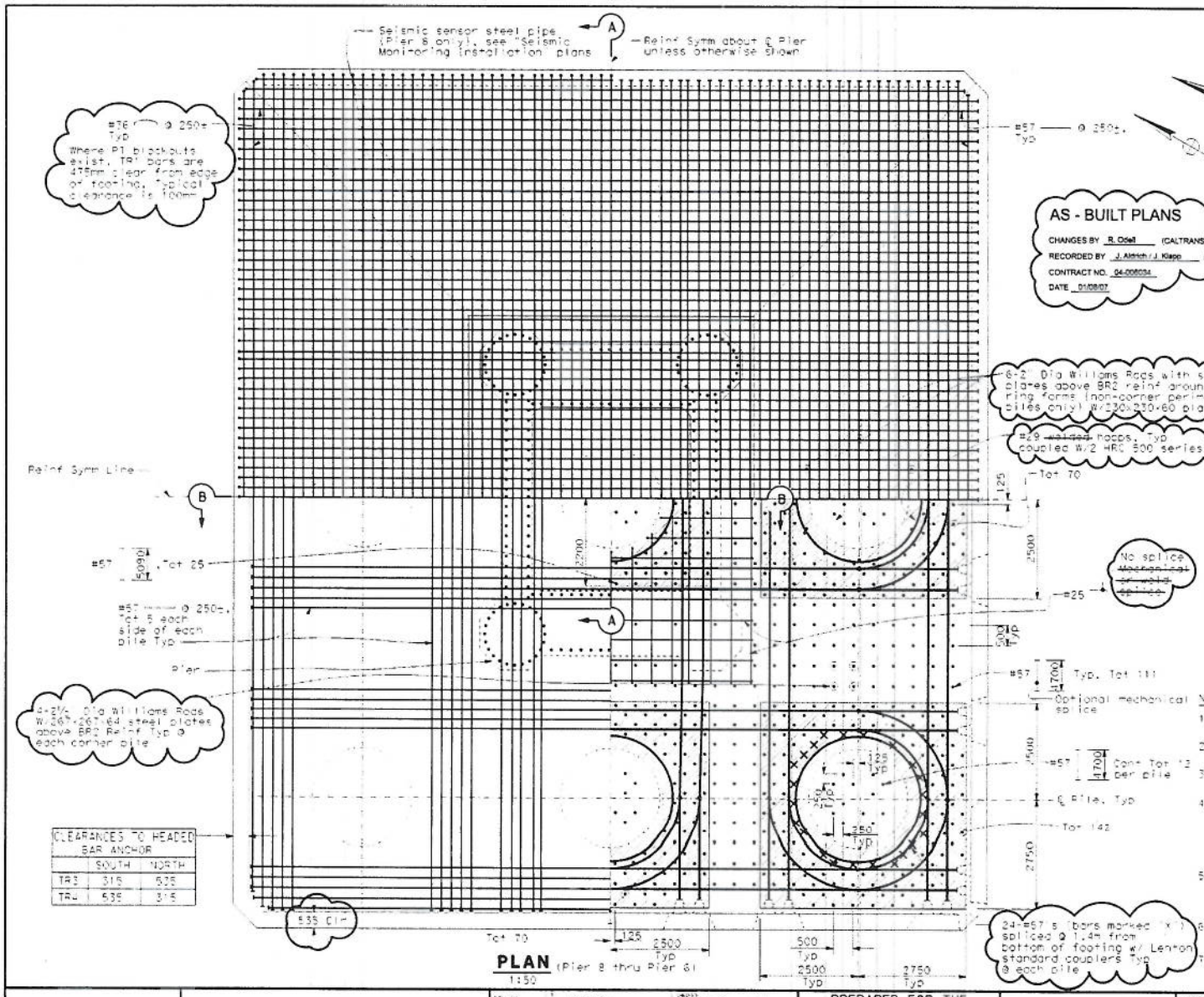
1-15-01

PLANS APPROVAL DATE

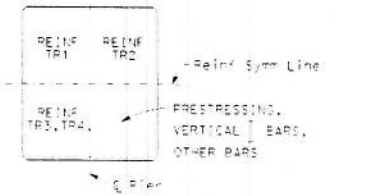
T.Y.LIN / CH2M HILL
305 BATTERY STREET
SAN FRANCISCO, CA 94111

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

Caltrans Metric



KEY PLAN



LEGEND:

- indicates welded headed bar reinforcement (epoxy coated)
- Reinforce with #57 vertical bars (stagger) — 4700 outside of pier, 5090 within pier; Optional mechanical splice
- TR# Indicates Top Reinforcement Layer No.

NOTES:

1. For Section A-A, see "Footing Details No.15" sheet.
2. For Section B-B, see "Footing Details No.16" sheet.
3. For fender skirt Layout, see "Skirt Layout" sheets.
4. When prestressing interferes with vertical bar placement, the vertical bars shall be displaced from the positions shown by a maximum of 300 mm to maintain a uniform distribution of reinforcing. Displaced #57 bars shall not be placed outside of the zone noted.
5. Vertical bar size and spacing may be modified by the Contractor provided the average spacing remains the same and the distribution uniform, within the zones shown, subject to the approval of the Engineer.
6. For prestressing details, see "Footing Prestressing Details" sheet.
7. Bar totals shown are per quadrant.

All dimensions are in millimeters unless otherwise shown

Thomas Post/Geraldine Murugesh
Post Mark 01/15/01

Ps/BM/04-006034/c effgt0.dgn

DESIGN	J. Aldrich	CHECKED	N. Tamannaie
DETAILS	S. Leong	CHECKED	N. Tamannaie
QUANTITIES	M. Nagrete	CHECKED	E. Maechler

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Omer
PROJECT ENGINEER

PROJECT NO. 15-440-STP
POST MIL LOCO

BENICIA MARTINEZ BRIDGE & OH
FOOTING DETAILS NO.14

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS

TO FIGURE EA 006034

DESIGNED PRIVATE RESIDENCE EXPIRES REVISION DATES

REVISION DATES PROJ ENGINEER INITIAL SIGN

DATE

AS - BUILT PLAN SHEET NO. 0053 OF 6029

DIST.	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,SOL	680	40.1/41.4 20.0/20.7	172	557

REGISTERED CIVIL ENGINEER

1-15-07

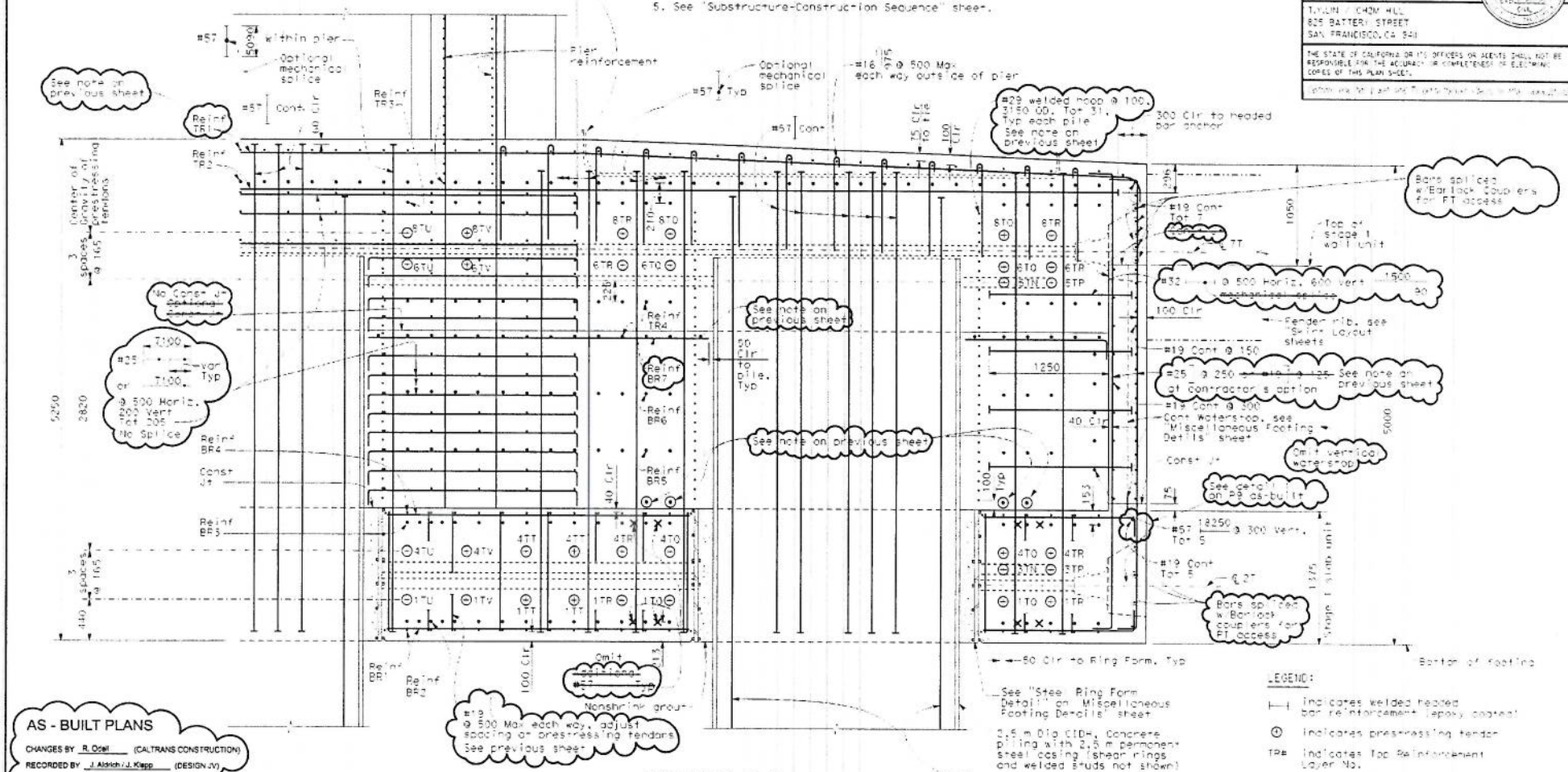
PLANS APPROVAL DATE

T.Y.LIN / CH2M HILL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

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

NOTES:

1. Epoxy coat all reinforcement this sheet except pile reinforcement.
2. For "Bar Spiral Splice & Spiral Anchor and Hoop Detail", see "Pier Details No.3" sheet.
3. For pile details, see "Pile Details" sheets.
4. For Prestressing Tendons and "Prestress Anchorage Detail", see "Footing Prestressing Details" sheet.
5. See "Substructure-Construction Sequence" sheet.



SECTION B-B (Pier 8 thru Pier 6)
1:20

LEGEND:

- indicates welded headed bar reinforcement (epoxy coated)
- indicates prestressing tendon
- TR# indicates Top Reinforcement Layer No.
- BR# indicates Bottom Reinforcement Layer No.

All dimensions are in millimeters unless otherwise shown

AS - BUILT PLANS
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY J. Aldrich / J. Klepp (DESIGN JV)
CONTRACT NO 04-006034
DATE 1/8/07

Thomas Post-Gonzalez, Manager	DESIGN J. Aldrich	CHECK N. Tamannaie	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	W. Olmer
	DETAIL A. Wong	CHECK N. Tamannaie		
	QUANTITIES M. Negrete	CHECK E. Moechler		

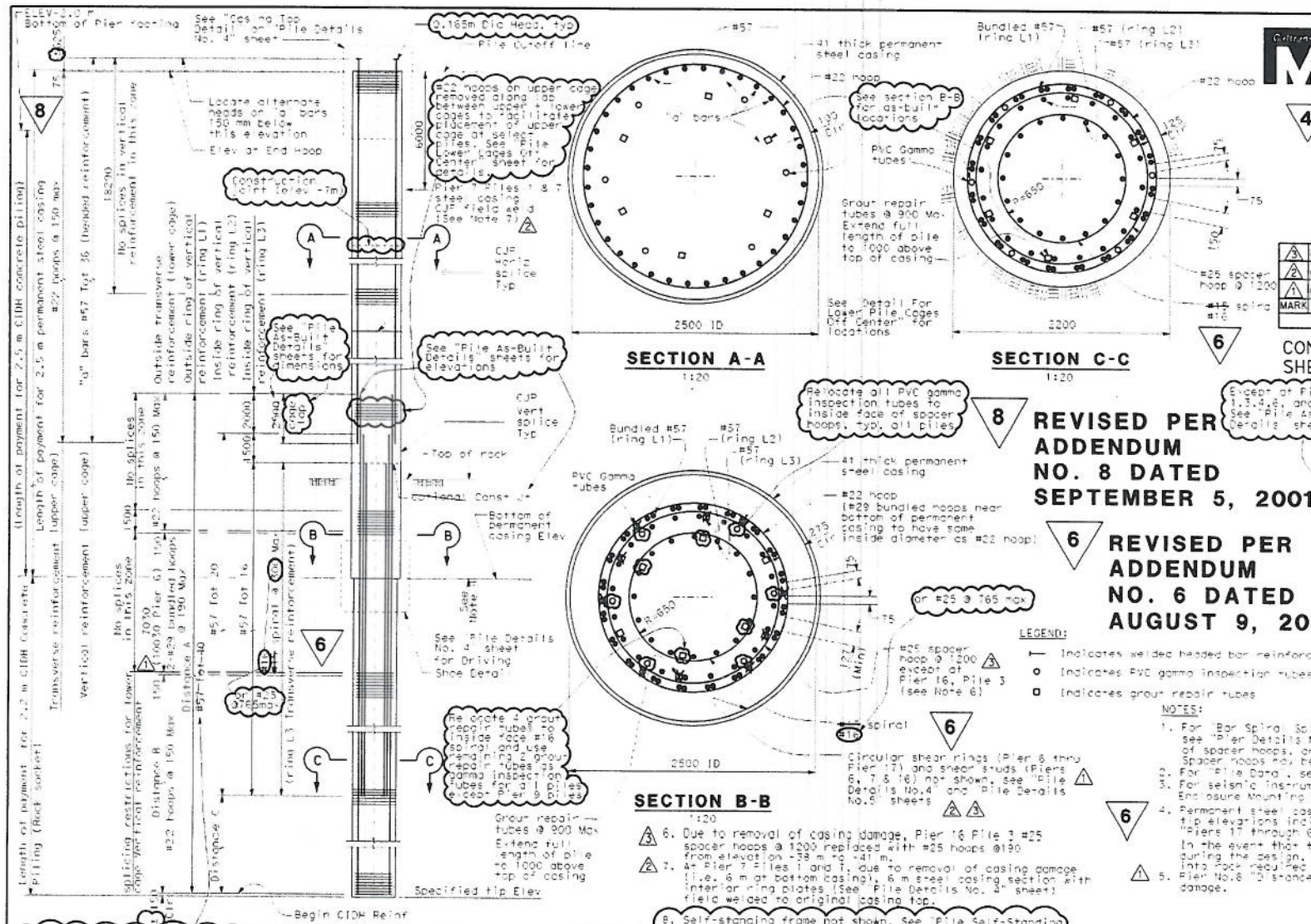
BENICIA MARTINEZ BRIDGE & OH
FOOTING DETAILS NO.16

Pi/BM/04-00603/c eftgl2.dgn

NORMAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 20 40 60 80

EA 006031

AS - BUILT PLAN SHEET NO. 0055 OF 6029



REVISED PER ADDENDUM NO. 8 DATED SEPTEMBER 5, 2001

REVISED PER ADDENDUM NO. 6 DATED AUGUST 9, 2001

REVISED PER ADDENDUM NO. 4 DATED JUNE 1, 2001

LEGEND:

- Indicates welded headed bar reinforcement
- Indicates PVC gamma inspection tubes
- Indicates grout repair tubes

NOTES:

1. For "Bar Splice, Splice & Spiral Anchor and Hoop Details", see "Pier Details No.8" sheet. All hoops, with the exception of spacer hoops, are to be butt welded continuous hoops. Spacer hoops may be lap spliced.
2. For "Pile Data", see "Foundation Data No.1" sheet.
3. For seismic instrumentation, see "Seismic Sensor Enclosure Mounting Details IV" sheet.
4. Permanent steel casings shall be advanced to the specified tip elevations indicated in the "Pile Data" table for "Piers 17 through 6" shown on "Foundation Data" sheet. In the event that the rock elevation differs from that assumed during the design, the embedment of the permanent steel casings into rock required by the design shall be maintained.
5. Pier No.8 "D" distance "B" modified due to removal of casing damage.
6. Due to removal of casing damage, Pier 16 Pile 3 #25 spacer hoops @ 1200 replaced with #25 hoops @190 from elevation -38 m to +41 m.
7. At Pier 7 Piles 1 and 7, due to removal of casing damage (i.e. 6 m at bottom casing), 6 m steel casing section with interior ring plates (See "Pile Details No. 4" sheet) field welded to original casing top.

PILE REINFORCEMENT LAYOUT DATA

Pier No.	Distance A	Distance B	Distance C
6	39500	~~1500~~	3000
7	37500	14500	3500
8	47000	23700	13700
9	39500	14400	4500
10	49500	26000	18000
11	44500	19500	9500
12	39000	15000	6000
13	39000	18000	9000
14	41500	18000	8500
15	41500	15300	5500
16	41500	15300	5500
17	44500	15300	5500

MARK	DATE	DESCRIPTIONS	BY	CH'D
3	09/05/03	PIER 16 PILE CASING REPAIR	RN	GC
2	09/05/03	PIER 7 PILE CASING REPAIR	RN	AH
1	06/06/03	PIER 6 PILE CASING REPAIR	RN	AH

REVISIONS

CONTRACT CHANGE ORDER NO. ____
SHEET ___ OF ___

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,SO	680	30.0/41.5, 30/G CVC	1(PR2)	85

REGISTERED CIVIL ENGINEER
1-5-01
PLANS APPROVAL DATE

T.Y.LIN / CHOW HILL
925 BATTERY STREET
SAN FRANCISCO, CA 94111

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

All dimensions are in millimeters unless otherwise shown

AS - BUILT PLANS
CHANGES BY J. Thomure
RECORDED BY J. Thomure / D. Henderson (DESIGN JV)
CONTRACT NO. 04-0J0014
DATE 12/4/07

Thomas Post/Gangadhar Murugesh

DESIGN	R. Nutt	A. Harrison/K. Cordts	
DETAILS	B. Kwok	A. Harrison/K. Cordts	
QA/QC	M. Negrete	E. Maechler/J. Epp	

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Olmer

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 20 40 60 80

EA 0J0031

BENICIA MARTINEZ BRIDGE & OH

PILE DETAILS NO.1

Pr/BM/04-0J0031/c epil01.dgn

AS - BUILT PLAN SHEET NO. 0065 OF 6029

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,SF	880	40.4, 41.4, L0.0, L1.0	176 R255	551

REGISTERED CIVIL ENGINEER

1-15-07

PLANS APPROVAL DATE

TAYLOR - CHOW HILL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

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

Pier 6 CIDH Rock Socket and Pile As-built Information

Pile No	Pile Tip Elev (m)	Top Grout Pad Elev (m) (see Note 1)	Pile PSC Tip Elev. Including Driving Shoe (m)	Pile CJ Elev (m)	Pile CJ Variation (m) (see Note 2)	Elev Bottom Upper Reinf Cage (m)	Elev Top Lower Reinf Cage (m)	Pile Reinf Cage Lap (m) (see Note 3)	Top of Lower Reinf Cage Offset (Blank if insignificant, see Note 4)		Over-Reaming During PSC Installation (Blank if not performed, See Note 5)			
									Magnitude (m)	Direction	Diameter (m)	Top Elev (m)	Bottom Elev (m)	Annulus Grouted
1	-52.90	NA	-31.00	-17.78	0.9	-14.82	-13.67	1.15			2.633	-21.70	-31.00	Yes
2	-51.44	NA	-30.00	-16.19	0.2	-13.84	-12.69	1.15	0.03	North-East	2.633	-23.11	-30.00	Yes
3	-51.01	NA	-29.00	-12.81	0.5	-12.54	-11.54	1.00	0.06	South	2.633	-21.36	-29.00	Yes
4	-52.50	NA	-30.50	-17.19	1.0	-14.23	-13.08	1.15	0.16	South-East	2.633	-21.20	-30.50	Yes
5	-53.10	NA	-29.50	-15.86	0.5	-14.33	-13.18	1.15	0.08	East	2.633	-25.79	-29.50	Yes
6	-49.60	NA	-25.50	-14.58	Approx Flat	-11.29	-10.14	1.15			2.633	-15.33	-25.50	Yes
7	-52.99	NA	-31.00	-16.98	0.3	-14.85	-13.70	1.15			2.633	-23.17	-31.00	Yes
8	-52.57	NA	-30.50	-14.41	Approx Flat	-14.41	-13.28	1.13	0.09	North-East	2.633	-22.52	-30.50	Yes
9	-53.37	NA	-33.00	-16.33	1.300	-16.02	-14.87	1.15	0.06	South-East	2.633	-26.70	-33.00	Yes

AS - BUILT PLANS
CHANGES BY J. Thomure
RECORDED BY J. Thomure / D. Henderson (DESIGN JV)
CONTRACT NO 04-000014
DATE 12/4/07

Pier 7 CIDH Rock Socket and Pile As-built Information

Pile No	Pile Tip Elev (m)	Top Grout Pad Elev (m) (see Note 1)	Pile PSC Tip Elev. Including Driving Shoe (m)	Pile CJ Elev (m)	Pile CJ Variation (m) (see Note 2)	Elev Bottom Upper Reinf Cage (m)	Elev Top Lower Reinf Cage (m)	Pile Reinf Cage Lap (m) (see Note 3)	Top of Lower Reinf Cage Offset (Blank if insignificant, see Note 4)		Over-Reaming During PSC Installation (Blank if not performed, See Note 5)			
									Magnitude (m)	Direction	Diameter (m)	Top Elev (m)	Bottom Elev (m)	Annulus Grouted
1	-72.02	NA	-47.225	-35.07	Approx Flat	-35.07	-33.85	1.22 (See *)			2.633	-38.09	-47.00	Yes
2	-71.74	-70.90	-47.225	-35.33	Approx Flat	-35.30	-32.65	2.65						
3	-71.76	-71.06	-47.225	-35.26	0.6	-35.54	-32.89	2.65	0.15	North-West	2.633	-43.67	-47.00	Yes
4	-71.78	-71.18	-47.225	-35.37	Approx Flat	-35.35	-32.68	2.67						
5	-71.75	NA	-47.225	-35.07	Approx Flat	-35.07	-32.46	2.61			2.633	-43.90	-47.00	Yes
6	-71.80	-71.02	-47.225	-35.39	Approx Flat	-34.87	-32.72	2.15	0.14	East				
7	-71.81	NA	-47.225	-35.34	Approx Flat	-35.18	-32.53	2.65	0.20	North-East	2.633	-41.00	-47.00	Yes
8	-71.73	NA	-47.225	-35.22	Approx Flat	-35.29	-32.64	2.65	0.08	East				
9	-71.76	NA	-47.225	-34.85	Approx Flat	-34.83	-32.69	2.14	0.10	South-East	2.633	-42.81	-47.00	Yes

* For Pier 7 Pile 1, add 28 #57 Bars to L2 layer from top of CJ to 3.5 m above bottom of "a" bars, uniformly distributed around circumference. Bundle radially as needed to maintain rebar clearances

Pier 8 CIDH Rock Socket and Pile As-built Information

Pile No	Pile Tip Elev (m)	Top Grout Pad Elev (m) (see Note 1)	Pile PSC Tip Elev. Including Driving Shoe (m)	Pile CJ Elev (m)	Pile CJ Variation (m) (see Note 2)	Elev Bottom Upper Reinf Cage (m)	Elev Top Lower Reinf Cage (m)	Pile Reinf Cage Lap (m) (see Note 3)	Top of Lower Reinf Cage Offset (Blank if insignificant, see Note 4)	
									Magnitude (m)	Direction
1	-84.72	-84.14	-50.450	-28.13	Approx Flat	-28.03	-26.49	1.54		
2	-74.73	-73.90	-50.450	-29.50	2.0	-28.02	-26.18	1.84		
3	-85.09	-83.80	-50.450	-27.77	Approx Flat	-27.52	-26.32	1.20		
4	-83.10	-81.60	-50.450	-27.57	Approx Flat	-27.37	-26.16	1.21		
5	-77.69	-76.78	-50.450	-29.32	Approx Flat	-28.02	-26.68	1.34		
6	-87.19	-84.73	-50.450	-28.63	Approx Flat	-28.02	-26.85	1.17		
7	-74.91	-74.14	-50.450	-28.92	Approx Flat	-28.02	-26.65	1.37		
8	-86.21	-84.40	-50.450	-27.67	Approx Flat	-27.53	-26.22	1.31		
9	-74.66	-73.85	-50.450	-28.60	Approx Flat	-28.02	-26.09	1.93		

NOTES:

1. PILE TIPS OVER-EXCAVATED WHEN SOFT MATERIAL ENCOUNTERED. GROUT PAD PLACED AT PILE BOTTOM IF NEEDED TO SUPPORT SELF-STANDING REINFORCEMENT CAGE FRAME.
2. ELEVATION OF PILE CJ VARIES DUE TO REMOVAL OF ANOMALOUS CONCRETE FOR PLACEMENT OF UPPER REINFORCING CAGE. THE TOP OF CJ ELEVATION IS PROVIDED IN THE TABLE.
3. LAP BETWEEN UPPER AND LOWER REINFORCING CAGES REDUCED TO FACILITATE CJ PREPARATION WHEN OVER POURED.
4. REINFORCING CAGE OFFSET MEASURED FROM CENTERLINE PILE TO CENTERLINE CAGE AT TOP OF LOWER CAGE. OFFSETS NOT PROVIDED IF DEEMED INSIGNIFICANT.
5. OVER-REAMING DURING PSC DRIVING PERFORMED AT SPECIFIC LOCATIONS TO ALLEVIATE DIFFICULT DRIVING CONDITIONS. ANNULUS BETWEEN OUTSIDE OF PSC AND ROCK GROUTED AT SELECT LOCATIONS IF REQUIRED BY DESIGN.
6. SEE "FOUNDATION DATA" SHEET FOR PILE NUMBERING SCHEME.

ADDED AS-BUILT SHEET

Thomas Post-Gondolfony Wongseen
PABOOLDON

DESIGN R. Nutt — A. Harrison/K. Condra
DETAILS B. Kwok — A. Harrison/K. Condra
QUANTITIES M. Negrete — E. Moechler/J. Epp

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Olmer

BRIDGE NO. 34-0070
POST MIL L0.0

PILE AS BUILT DETAILS

PIERS 6 THRU 8

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 20 40 60 80

CU 04,77
EA 0A0001

CONCURRENCE PRIOR TO ADDING EARLIER REVISION DATE

AS - BUILT PLAN SHEET NO. 0070 OF 6029

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,SO	680	40.0/41.4, 0.0/0.0	170 POST	557

REGISTERED CIVIL ENGINEER

1-15-01

PLANS APPROVAL DATE

T.Y.LIN - CHOW HILL
505 BATTERY STREET
SAN FRANCISCO, CA 94111

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

Caltrans Metric

AS - BUILT PLANS
CHANGES BY J. Thomure
RECORDED BY J. Thomure / D. Henderson (DESIGN JV)
CONTRACT NO. 04-006034
DATE 12/4/07

Pier 12 CIDH Rock Socket and Pile As-built Information

Pile No	Pile Tip Elev (m)	Top Grout Pad Elev (m) (see Note 1)	Pile PSC Tip Elev, Including Driving Shoe (m)	Pile CJ Elev (m)	Pile CJ Variation (m) (see Note 2)	Elev Bottom Upper Reinf Cage (m)	Elev Top Lower Reinf Cage (m)	Pile Reinf Cage Lap (m) (see Note 3)	Top of Lower Reinf Cage Offset (Blank if insignificant, see Note 4) Magnitude (m)	Direction
1	-61.45	-60.86	-43.225	-22.41	Approx Flat	-22.17	-21.02	1.15	0.04	East
2	-61.19	-60.77	-43.225	-23.30	Approx Flat	-22.99	-21.34	1.65	0.08	East
3	-61.36	-60.66	-43.225	-23.14	Approx Flat	-23.22	-21.37	1.85	0.10	South-East
4	-61.54	-61.05	-43.225	-24.65	Approx Flat	-24.65	-23.20	1.45	0.18	South-West
5	-61.50	NA	-43.225	-23.25	Approx Flat	-22.77	-21.55	1.22	0.06	North-East
6	-61.23	-61.06	-43.225	-23.44	1.1	-22.28	-21.12	1.16	0.10	West
7	-61.47	-60.94	-43.225	-23.63	0.2	-22.24	-21.07	1.17		
8	-61.59	-60.98	-43.225	-23.68	0.2	-22.37	-21.20	1.17	0.08	North

Pier 13 CIDH Rock Socket and Pile As-built Information

Pile No	Pile Tip Elev (m)	Top Grout Pad Elev (m) (see Note 1)	Pile PSC Tip Elev, Including Driving Shoe (m)	Pile CJ Elev (m)	Pile CJ Variation (m) (see Note 2)	Elev Bottom Upper Reinf Cage (m)	Elev Top Lower Reinf Cage (m)	Pile Reinf Cage Lap (m) (see Note 3)	Top of Lower Reinf Cage Offset (Blank if insignificant, see Note 4) Magnitude (m)	Direction
1	-65.53	-65.69	-41.45	-28.85	Approx Flat	-27.58	-24.38	3.20	0.06	North
2	-64.80	NA	-41.45	-29.69	Approx Flat	-26.66	-24.72	1.94	0.06	North-East
3	-65.45	NA	-41.45	-27.10	Approx Flat	-26.43	-25.26	1.17	0.08	South-West
4	-65.25	NA	-41.45	-28.10	Approx Flat	-26.09	-24.92	1.17	0.12	North
5	-65.43	-64.38	-41.45	-27.19	Approx Flat	-26.24	-25.07	1.17		
6	-64.75	-64.95	-41.45	-29.31	Approx Flat	-26.37	-25.31	1.05	0.08	South
7	-65.29	NA	-41.45	-28.88	Approx Flat	-26.46	-25.29	1.17	0.15	North-West
8	-65.43	-64.48	-41.45	-29.44	Approx Flat	-25.93	-24.76	1.17	0.20	East

Pier 14 CIDH Rock Socket and Pile As-built Information

Pile No	Pile Tip Elev (m)	Top Grout Pad Elev (m) (see Note 1)	Pile PSC Tip Elev, Including Driving Shoe (m)	Pile CJ Elev (m)	Pile CJ Variation (m) (see Note 2)	Elev Bottom Upper Reinf Cage (m)	Elev Top Lower Reinf Cage (m)	Pile Reinf Cage Lap (m) (see Note 3)	Top of Lower Reinf Cage Offset (Blank if insignificant, see Note 4) Magnitude (m)	Direction
1	-68.76	-67.70	-43.225	-28.00	Approx Flat	-28.00	-24.80	3.20	0.05	North-West
2	-68.61	NA	-43.225	-27.65	Approx Flat	-27.65	-25.42	2.23		
3	-68.45	NA	-43.225	-28.35	0.6	-28.35	-25.66	2.69		
4	-68.76	-67.88	-43.225	-27.70	Approx Flat	-27.70	-25.35	2.35	0.20	South-East
5	-68.42	-67.85	-43.225	-27.68	Approx Flat	-27.68	-25.23	2.45	0.12	South
6	-68.35	-67.76	-43.225	-30.25	0.5	-30.25	-25.30	4.95		
7	-68.43	-67.82	-43.225	-27.33	2.7	Not in Records	-25.69	Not in Records		
8	-68.35	NA	-43.225	-27.68	Approx Flat	-27.68	-25.13	2.55	0.05	South-West

NOTES:

1. PILE TIPS OVER EXCAVATED WHEN SOFT MATERIAL ENCOUNTERED. GROUT PAD PLACED AT PILE BOTTOM IF NEEDED TO SUPPORT SELF-STANDING REINFORCEMENT CAGE FRAME.
2. ELEVATION OF PILE CJ VARIES DUE TO REMOVAL OF ANOMALOUS CONCRETE FOR PLACEMENT OF UPPER REINFORCING CAGE. THE TOP OF CJ ELEVATION IS PROVIDED IN THE TABLE.
3. LAP BETWEEN UPPER AND LOWER REINFORCING CAGES REDUCED TO FACILITATE CJ PREPARATION WHEN OVER POURED.
4. REINFORCING CAGE OFFSET MEASURED FROM CENTERLINE PILE TO CENTERLINE CAGE AT TOP OF LOWER CAGE. OFFSETS NOT PROVIDED IF DEEMED INSIGNIFICANT.
5. SEE "FOUNDATION DATA" SHEET FOR PILE NUMBERING SCHEME.

ADDED AS-BUILT SHEET

Thomas Post/Gangadhar Murugesh
PAR003.DGN

DESIGN R. Nutt — A. Harrison/K. Condit
DETAILS B. Kwok — A. Harrison/K. Condit
QUANTITIES M. Negrete — E. Moechler/J. Eco

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Omer

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

PILE AS BUILT DETAILS

PIERS 12 THRU 14

AS - BUILT PLAN SHEET NO. 0072 OF 6029

DIST.	COUNTY	ROUTE	POST MIL TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC/SOL	680	40.0/43.2, L0.0/L1.0	190	557

REGISTERED CIVIL ENGINEER

02/16/00

PLANS APPROVAL DATE

T.Y.LIN / CHOW HILL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

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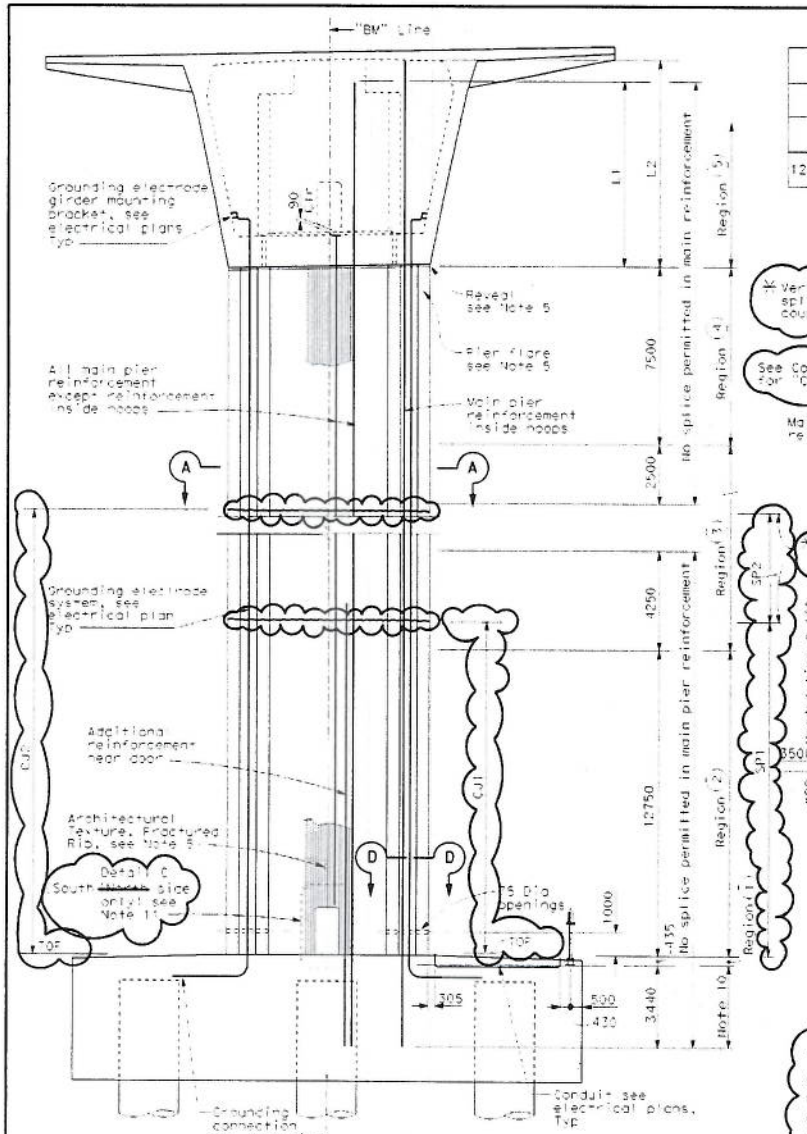


ELEVATION (Piers 14,13,12,11,10,9)
NO SCALE

PIER	L1	L2
14	6300	7200
13	7050	7950
12,11,10,9	7800	8700

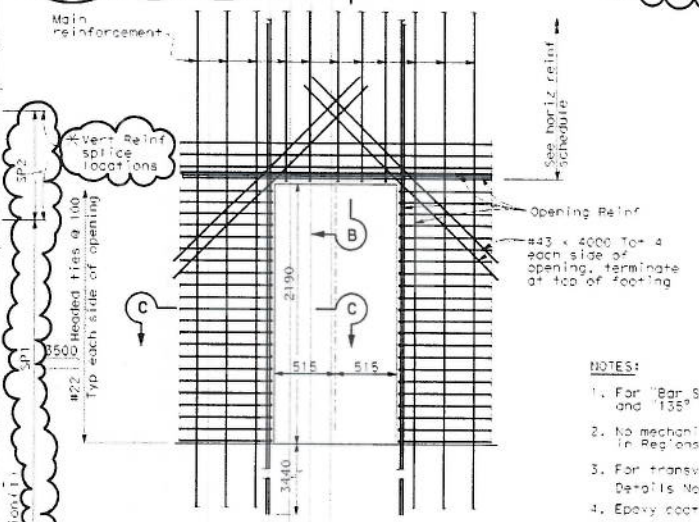
HORIZONTAL REINFORCEMENT SCHEDULE				
REGION	HOOPS	CROSS TIES	"L" BARS	"T" BARS
(1)	#25 @ 100	#19 @ 100	-	-
(2)	#25 @ 100	#19 @ 100	#25 @ 100	#22 @ 100
(3)	#25 @ 150	#19 @ 150	#32 @ 150	#22 @ 150
(4)	#25 @ 100	#19 @ 100	#25 @ 100	#22 @ 100
(5)	Note 3	Note 3	-	-

* Except in region near door

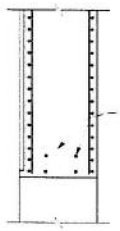
* Vertical Pier reinforcing spliced using HRC 500/510 couplers

See Contract Sheet 191 of 557 for "CJ1", "CJ2", "SP1" & "SP2"

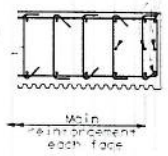
#19 cross ties changed to #16's and coupled up at every other location, 135° hall length = 6 db



ACCESS DOOR REINFORCEMENT DETAIL
1:20



SECTION B-B
1:20



SECTION C-C
1:20

NOTES:

1. For "Bar Spiral Splice & Spiral Anchor and Hoop Detail", and "135° Seismic Tie Hook", see "Pier Details No.8" sheet.
2. No mechanical splices permitted in hoop reinforcement in Regions (1), (2), (4) and (5).
3. For transverse reinforcement in Region (3), see "Pier Table Details No.1" thru "Pier Table Details No.12" sheets.
4. Epoxy coat all reinforcement below elevation 7.13 m.
5. For "Reveal Detail", "Pier Architectural Treatment, Fractured Rib Texture" and "Pier Flare Detail", see "Pier Details No.6" sheet.
6. For Section A-A, see "Pier Detail No.8" sheet.
7. For Section D-D, see "Pier Detail No.6" sheet.
8. For Detail C, see "Miscellaneous Details No.3" sheet.
9. No lap splices permitted in "L" and "T" bars.
10. For transverse reinforcement in footing region, see "Footing Details" sheets.
11. For Detail C, see "Miscellaneous Details No.3" sheet.

AS - BUILT PLANS
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY D. Fredericks / J. Klapp (DESIGN JV)
CONTRACT NO 04-006034
DATE 01/08/07

All dimensions are in millimeters unless otherwise shown

Thomas Post, Janardhan Murugesan

DESIGN P. Malik | DETAILS A. Lee | QUANTITIES S. Angualova | CHECKED A. Harrison | K. Condit | C. Kim

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Omer

BENICIA MARTINEZ BRIDGE & OH
PIER DETAILS NO.7

L0.0

P:/BM/04-006034/cepIr07.dgn

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 20 40 60 80

LU 14-26
EA 006034

EXPLANATION PANEL BELOW IS FOR REVISION DATES

AS - BUILT PLAN SHEET NO. 0090 OF 6029

DIST.	COUNTY	ROUTE	TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
04	CC,Sol	680	4C0.0/ 4.4, L0.0/ L1.0	191	557

REGISTERED CIVIL ENGINEER

03/6/00

PLANS APPROVAL DATE

TYLIN / CH2M HILL
825 BATTERY STREET
SAN FRANCISCO, CA 94111

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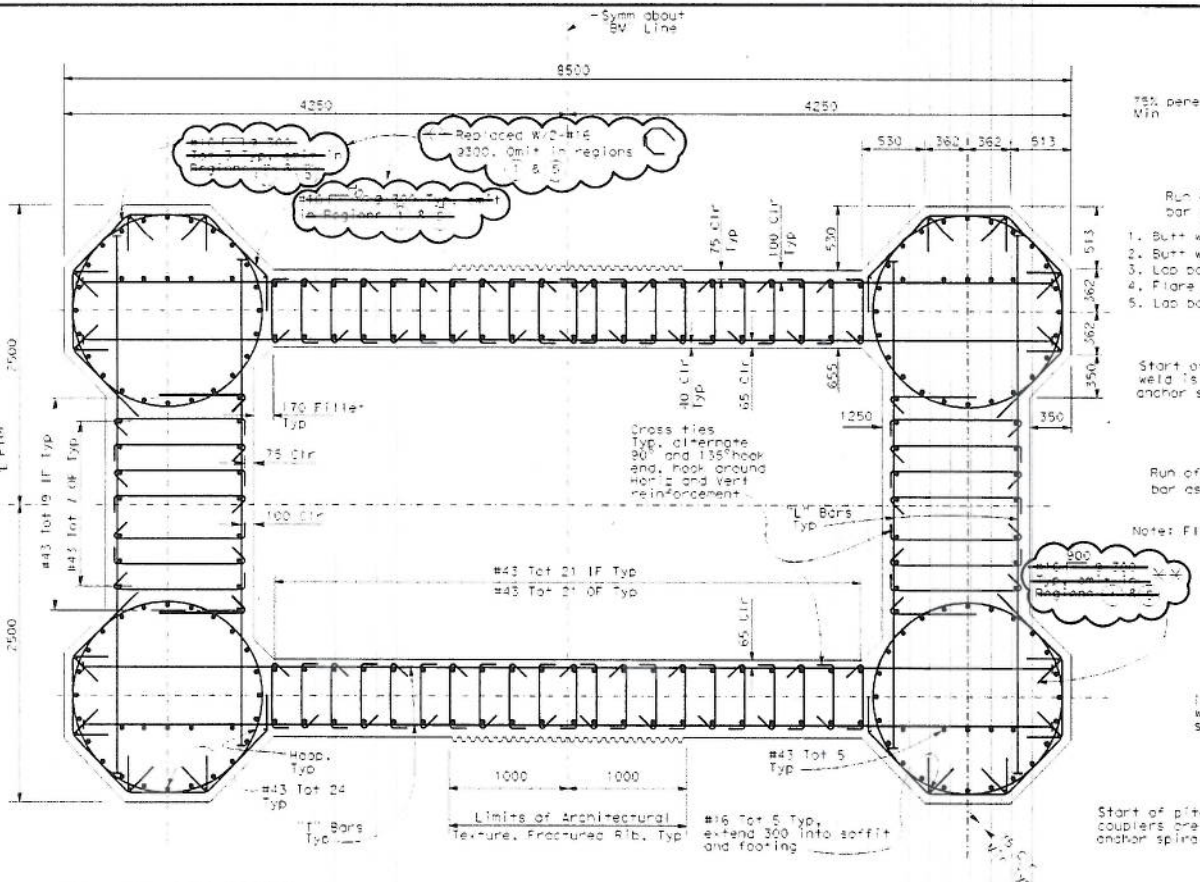


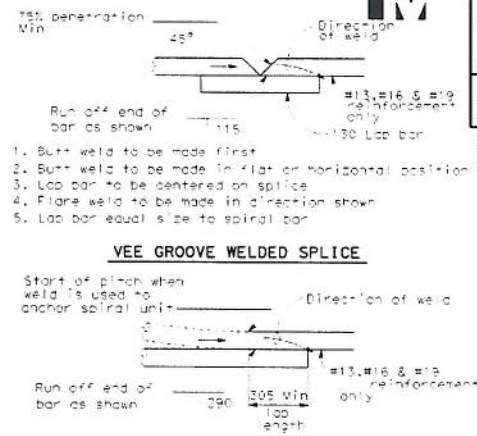
SECTION A-A (Piers 14,13,12,11,10,9)

1:20

LOCATIONS OF CONST JOINTS & REBAR SPLICE ZONES				
Pier	"CJ1" (m)	"CJ2" (m)	"SP1" (m)	"SP2" (m)
9	14.63	29.04	15.54	13.41
10	13.41	26.21	14.63	12.80
11	12.19	24.38	13.67	11.43
12	11.89	23.36	13.50	10.97
13	14.63	29.16	15.54	—
14	14.63	29.55	15.54	—

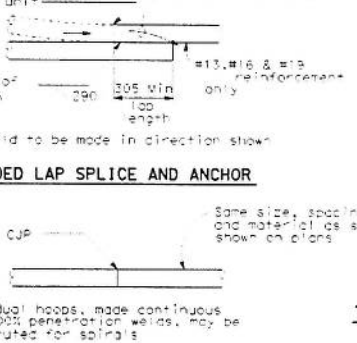
"L" & "T" Bars Lengths
Inside Face "L" bar length = 3630
Outside Face "L" bar length = 4310
Inside Face "T" bar length = 8020
Outside Face "T" bar length = 8020

LEGEND:
⊢⊣ indicates welded headed bar reinforcement



VEE GROOVE WELDED SPLICE

WELDED LAP SPLICE AND ANCHOR

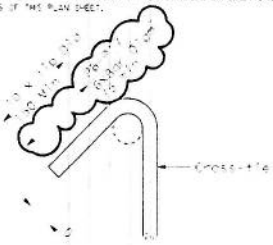


BUTT WELDED CONTINUOUS HOOP

MECHANICAL LAP SPLICE AND ANCHOR

BAR SPIRAL SPLICE & SPIRAL ANCHOR AND HOOP DETAIL

NO SCALE



BAR SIZE	"D"
13	51
16	64
19	114
22	133
25	152

135° SEISMIC TIE HOOK

No scale

AS - BUILT PLANS
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY D. Fredericks / J. Klapp (DESIGN JV)
CONTRACT NO 04-006034
DATE 01/08/07

NOTES:
1. For Pier reinforcement schedule, see "Pier Details No. 7" sheet.
2. For "Pier Architectural Treatment, Fractured Rib Texture", see "Pier Details No.6" sheet.

All dimensions are in millimeters unless otherwise shown

Thomas Pos*Janabathy Muruja
SUPERVISOR
04-13-00

P:/BM/04-006031/c eolr08.dgn

DESIGN	R. Malik	CHECK	A. Harrison
DETAILS	A. Lee	CHECK	K. Corotis
QUANTITIES	S. Anguelova	CHECK	C. Kim

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

M. Olmer
DISTRICT ENGINEER

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 0 20 40 60 80

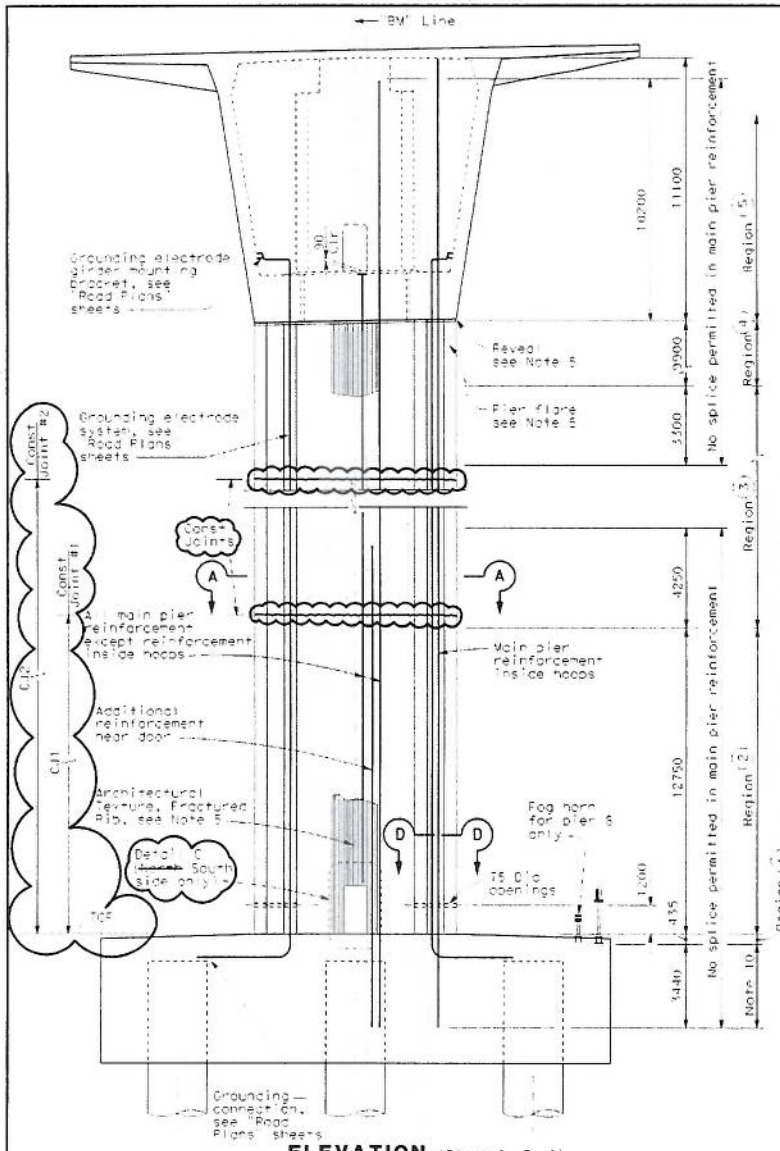
LU 14,267
EA J06031

BRIDGE NO. 33-0152R
POST MI
LOW

BENICIA MARTINEZ BRIDGE & OH
PIER DETAILS NO.8

DEPARTMENT FRONT DESIGN
EARLIEST REVISION DATE

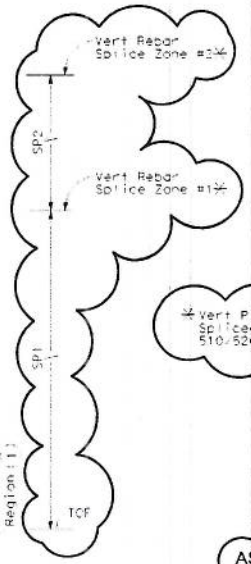
AS - BUILT PLAN SHEET NO. 0091 OF 6029



ELEVATION (Piers 8, 7, 6)

NO SCALE

LOCATIONS OF CONST. JOINTS & REBAR SPLICE ZONES				
Pier	"CJ1" (m)	"CJ2" (m)	"SP1" (m)	"SP2" (m)
6	12.19	23.16	13.41	10.67
7	14.63	26.67	15.54	12.04
8	14.63	27.43	15.54	12.04



* Vert Pier Rebars Spliced W/HRC 510/520 Couplers

HORIZONTAL REINFORCEMENT SCHEDULE				
REGION	HOOPS	CROSS TIES	"L" BARS	"T" BARS
(1)	#25 @ 100	#16 @ 100	-	-
(2)	#25 @ 100	#16 @ 100	#29 @ 100	#22 @ 100
(3)	#22 @ 150	#16 @ 150	#32 @ 150	#25 @ 150
(4)	#25 @ 100	#16 @ 100	#29 @ 100	#22 @ 100
(5)	Note 3	Note 3	-	-

NOTES:

1. For "Bar Spiral Splice & Spiral Anchor and Hoop Detail", and "135° Seismic Tie Hook", see "Pier Details No.6" sheet.
2. No mechanical splices permitted in hoop reinforcement in Regions (1), (2), (4) and (5).
3. For transverse reinforcement in Region (5), see "Pier Table Details No.13" thru "Pier Table Details No.24" sheets.
4. Epoxy coat all reinforcement below elevation 7.13 m.
5. For "Reveal Detail", "Pier Architectural Treatment, Fractured Rib Texture" and "Pier Flare Detail", see "Pier Details No.6" sheet.
6. For Section A-A, see "Pier Details No.10" sheet.
7. For Section D-D, see "Pier Details No.6" sheet.
8. For Detail C, see "Miscellaneous Details No.3" sheet, for access door reinforcement detail, see "Pier Details No.5" sheet.
9. No lap splices permitted in "L" and "T" bars.
10. For transverse reinforcement in footing region, see "Footing Details" sheets.

AS - BUILT PLANS
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY D. Fredericks / J. Klapp (DESIGN JV)
CONTRACT NO. 04-008034
DATE 01/08/07

All dimensions are in millimeters unless otherwise shown

Thomas Post/Ganapathy Murugesh
REGISTERED CIVIL ENGINEER
06/21/06
PLANS APPROVAL DATE

R. Malik — A. Harrison
B. Kwok — K. Condtz
S. Anguelova — C. Kam

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

M. Omer
PROJECT ENGINEER

04-008034

BENICIA MARTINEZ BRIDGE & OH
PIER DETAILS NO.9

P:/BM/04-008031/cepir09.dgn

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS

UC 01/06/07
EA 008031

DISTRICT REVIEW
EARLIER REVISION DATES

DIST.	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET No.	TOTAL SHEETS
04	CC,SOL	680	40.0/46.4, L0.0/L6.0	193	557

Caltrans Metric

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

T.Y.LIN / CH2M HILL
525 BATTERY STREET
SAN FRANCISCO, CA 941

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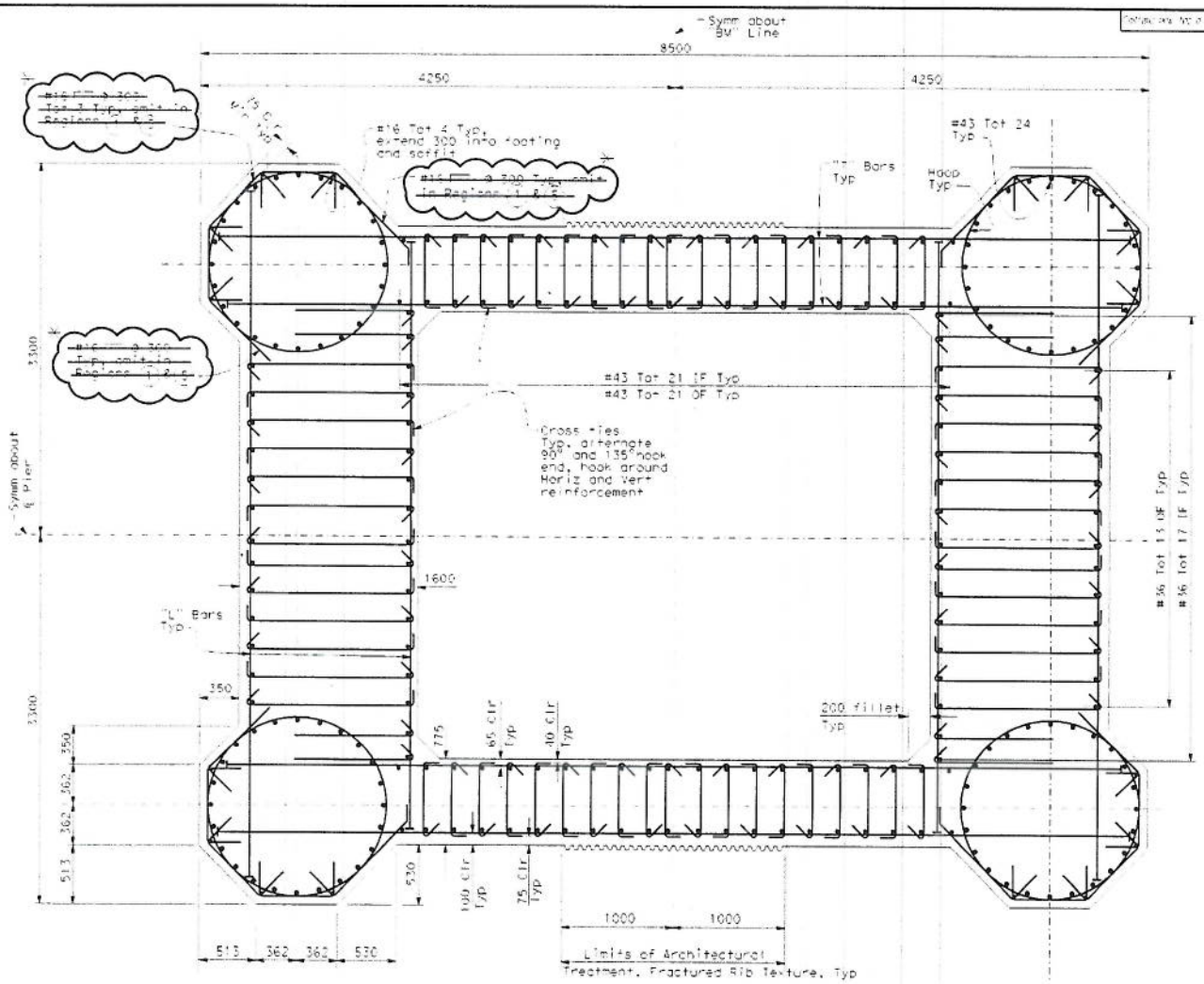

SECTION A-A (Piers 8, 7, 6)
1:20

AS - BUILT PLANS
CHANGES BY R. Odell (CALTRANS CONSTRUCTION)
RECORDED BY D. Frederickx / J. Klapp (DESIGN JV)
CONTRACT NO 04-006034
DATE 01/08/07

Replace W. 2-#16 @300 Typ

"L" & "T" Bars Lengths
Inside Face "L" bar length = 5080
Outside Face "L" bar length = 5970
Inside Face "T" bar length = 7370
Outside Face "T" bar length = 8020

LEGEND:
Indicates bar welded headed reinforcement

NOTES:

1. For Pier reinforcement schedule, see "Pier Details No.8" sheet.
2. For "Pier Architectural Treatment, Fractured Rib Texture", see "Pier Details No.8" sheet.

All dimensions are in millimeters unless otherwise shown

Thomas Rajit Gangadhar Murugesh
Date 04/23/00

Pi/BM/04-006034/c epirt10.dgn

DESIGN	R. Malik	CHECKED	A. Harrison
DETAILS	A. Lee	CHECKED	K. Cordtz
QUANTITIES	S. Angualova	CHECKED	C. Kiom

PREPARED FOR THE
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

M. Olmer
PROJECT ENGINEER

ORIGINAL SCALE IS 1 MILLIMETER FOR REDUCED PLANS

BRIDGE NO. 33-0 FRA
POST MILE L0.0

BENICIA MARTINEZ BRIDGE & OH

PIER DETAILS NO.10

DISTRICT TRAFFIC BRANCH
EFF. DATE REVISED

AS - BUILT PLAN SHEET NO. 0093 OF 6029

G - Part 6: Secondary Review Analysis Results

STRUCTURE EVALUATION (SECONDARY REVIEW) FOR ID'S – 17, 33, 76

I. PROJECT DESCRIPTION

BENICIA-MARTINEZ MAIN SPANS (BR. NO. 28-0153R)

LOCATION OF POTENTIAL ANOMALIES IN CIDH PILES:

- **PIER 6, PILE 5**
- **PIER 12, PILE 6**
- **PIER 14, PILE 8**

II. STRUCTURAL ANALYSIS RESULTS

ADINA MODEL EVALUATION:

EXCEL spreadsheet was used to organize the extracted ADINA analysis results for comparison. Variation in the maximum moment demand results between the primary review and the secondary review varied only slightly. The majority of the reviewed values for the moment and axial loads, for those Node numbers listed on Attachments 11, 13 and 15, matched exactly with the original ADINA results. Those moment and axial load values that did vary were within 1% of the primary values. ADINA time history models 1, 2 and 3 results were evaluated.

MOMENT DEMAND/CAPACITY (TOP OF PILE & MAXIMUM AT ALL VERTICAL NODES):

Pile sections moment capacities were calculated using XSECTION analysis software. Sections for four separate regions were modeled. These sections are identified as A-A, B-B, Upper S and Lower S. Sections A-A and B-B include inner core concrete and reinforcing steel combined with the moment capacity of the 41mm (1 5/8") thick steel casing. Sections Upper S and Lower S model the pile within the rock socket below the exterior steel casing. Reference the "Pile Details No. 1" sheet of the contract plans for the actual geometry of these pile sections. The moment capacity of the steel casing was assumed to not be composite with the inner concrete core but does contribute separately to the total moment capacity of the pile Sections A-A and B-B. Casing capacity was calculated separately and added to the concrete XSECTION capacities. Pile sections were modeled without anomalies and with anomalies (areas with greatly reduced concrete capacities). Check results are as follows:

Sections without anomalies:

Multiple XSECTION models for each pile section were performed. Axial loading was varied from as much as 20,000kips compression to -18,496kips tension, to produce a potential moment capacity range resulting from varying axial loading due to a potential seismic event. Checked moments capacities typically varied from the original moment

capacities with most results being less than the original capacities. Checked results for Section A-A and B-B were within 1% of the reported original results. The rock socket sections, Upper S and Lower S -below the steel casing, were as much as 4% less than the original reported results but well above the moment demands indicated by the ADINA models. Variation between the original and the checked results was primarily due to differences in how the sections and material properties were modeled with the analysis software. Demand/Capacity ratios from the check indicate no potential problems in the compression or tension models for any of the three piles in this study. Highest D/C ratios occur at the top of the Upper S section but capacities still exceed any potential demands.

Top of pile moment demand for the Pier 12 - Pile 6 slightly exceeds the original capacity. However, the steel casing ultimate strength is approximately 40% higher, based on actual Mill Certification testing results of the material. This higher ultimate steel strength provides a total pile capacity that exceeds the demand.

Sections with anomalies:

The previous XSECTION models were modified to account for those anomalies that were not repaired when the piles were first built and tested, as well as for anomalies from erroneous test results. Pile anomalies within Section A-A are assumed to be repaired, based on the data provided. Unrepaired anomalies, as provided to us, are present in the outer portions of concrete, between the casing and the horizontal hoops for Section B-B. For the Upper S and Lower S sections, anomalies are shown between the rock socket and the horizontal hoops. Anomaly areas were assumed to be filled with reduced capacity concrete. Concrete capacity of 0.5ksi was assumed for the anomaly regions instead of 3.625ksi, as shown on the contract plans. Moment reductions for those sections with anomalies are as follows -

	Section B-B	Upper S	Lower S
Pier 6, Pile 5 :	6% - 7%	3% - 4%	4% - 5%
Pier 12, Pile 6 :	3% - 7%	2% - 3%	3% - 4%
Pier 14, Pile 8 :	4% - 8%	1% - 2%	3% - 4%

SHEAR DEMAND/CAPACITY:

Pile shear demands were calculated taking the plastic moment capacity of the Columns and dividing by the Column length, then dividing that shear value by the number of piles in the Pier footing. Column moments were derived using XSECTION software. Column lengths were assumed to be from top of footing to the center of the bridge superstructure. These pile shear values are assumed to be applied to the full length of the pile and compared to the capacity of typical sections along the pile. Shear demands are very conservative for the rock-socket portion of the piles since the moment demand is much less in this region,

compared to the steel cased region. Primary shear results, in general, are very conservative. Secondary demand/capacity (D/C) ratios are listed below and are very similar to primary Pile Shear Analysis. Shear capacities are more than adequate for the assumed demand loads, even for the overly conservative levels in the rock-socket regions. There are no D/C ratios shown for the primary results or the secondary results that approach 1.0. The secondary analysis D/C ratios are as follows -

	Section A-A	Section B-B	Upper S	Lower S
Pier 6:	0.032	0.032	0.572	0.572
Pier 12:	0.031	0.031	0.609	0.609
Pier 14:	0.032	0.032	0.609	0.609

CONCLUSION:

Moment and shear capacities, for the analysis contained herein, meet or exceed demands extracted from the ADINA models. Only in a very limited region at the top of Pile 6 / Pier 12 does the moment demand approach the maximum capacity. An increased ultimate strength for the steel casing, based on mill certification testing, would be more than adequate for the "worst case" demand results from the model. Also, the piles analyzed are only one in a group of at least 8 piles per footing, which provides ample redundancy to redistribute footing loads in seismic events.

Tony Skreslet

Secondary Reviewer

January 24, 2013

APPENDIX H

NULL CASE VALUE BACKUP DOCUMENTATION

1. I-405 Retaining Wall A Structural Assessment Memo
2. I-405 Retaining Wall A as-built plans
3. S149-E70 Connector Separation Structural Assessment memo
4. S149-E70 Connector Separation Pile Data form
5. S149-E70 Connector Separation XSection program output results
6. S149-E70 Connector Separation as-built plans

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: BARTON NEWTON
State Bridge Engineer
Division of Engineering Services

Date: January 25, 2013

From: GERRARD HIGHT
Senior Bridge Engineer
Structure Policy & Innovation
Division of Engineering Services

Subject: **Retaining Wall A (07/LA/5/62.3)**

This memo details the analysis of the 18.3 m (60.00 ft) long retaining wall section from stations 25+92.80 to 26+11.10 as shown on the as-built plans. The analysis is limited only to the pile loads within this section of wall.

The Original design of the retaining wall in the as-built plans shows three rows of 24" diameter CIDH piles with 11 piles per row for a total of 33 piles. The 24" diameter CIDH piles were sized to 625 kN (140 kip) compression capacity, 250 kN (56 kip) tension capacity, and 178kN (40 kip) lateral load capacity. Gamma-Gamma Log testing was performed on all piles by the Foundation Testing Branch.

The analysis of the piles loads was performed with using Working Stress Design (WSD) with Bridge Design Specifications (1996 AASHTO with interims and revisions by Caltrans), as-built plans, and the geotechnical data provided on the as-built plans. The calculated pile loads were found to be less than the design capacity of the piles.

Summary of Controlling Load Cases using WSD (33 piles) for the original design:

RETAINING WALL A Analysis results (all piles)				
LOAD CASE	DESCRIPTION	CAPACITY (kips)	DEMAND (kips)	Factor of Safety
SERVICE LOADS	TOTAL LATERAL LOAD	1273	819	1.56
	MAX HEEL LOAD	140	81	1.73
	MAX TOE LOAD	140	87	1.61

The following analysis using the same geotechnical data assumes that piles 5 and 6 (as numbered for GGL testing) located in rows 2 and 1 respectively do not provide any vertical or lateral load capacity; therefore they are removed from this analysis. The removal of these two piles leaves a total of 31 piles, 10 in row 1, 10 in row 2, and 11 in row 3.

Summary of Controlling Load Cases using WSD (31 piles):

RETAINING WALL A Analysis results (with piles removed)				
LOAD CASE	DESCRIPTION	CAPACITY (kips)	DEMAND (kips)	Factor of Safety
SERVICE LOADS	TOTAL LATERAL LOAD	1196	819	1.46
	MAX HEEL LOAD	140	82	1.71
	MAX TOE LOAD	140	97	1.45

The removal of piles 5 and 6 increases the loads on the rest of the piles, but the minimum factor of safety calculated to be 1.45 for the piles in row 1(toe piles), 1.71 for the piles in row 3 (heel piles), and 1.46 for lateral loads on all piles remains well above the minimum required of 1.0 for both compression and lateral loads. This analysis did not find any piles in tension.
After running the analysis using different programs, it is my opinion that the removal of two (2) piles does not affect the safety or functionality of the structure.

Gerrard Hight
Senior Bridge Engineer

Cc:File

REGISTERED PROFESSIONAL ENGINEER
GERRARD HIGHT
No. 52364
Exp. 12/31/2014
CIVIL
STATE OF CALIFORNIA

Courtesy of John Peterson
1/18/2013

DIST	COUNTY	ROUTE	TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	405	62.3/63.2	469	537

Caltrans Metric

REGISTERED CIVIL ENGINEER 03/28/03

11-15-04
PLANS APPROVAL DATE

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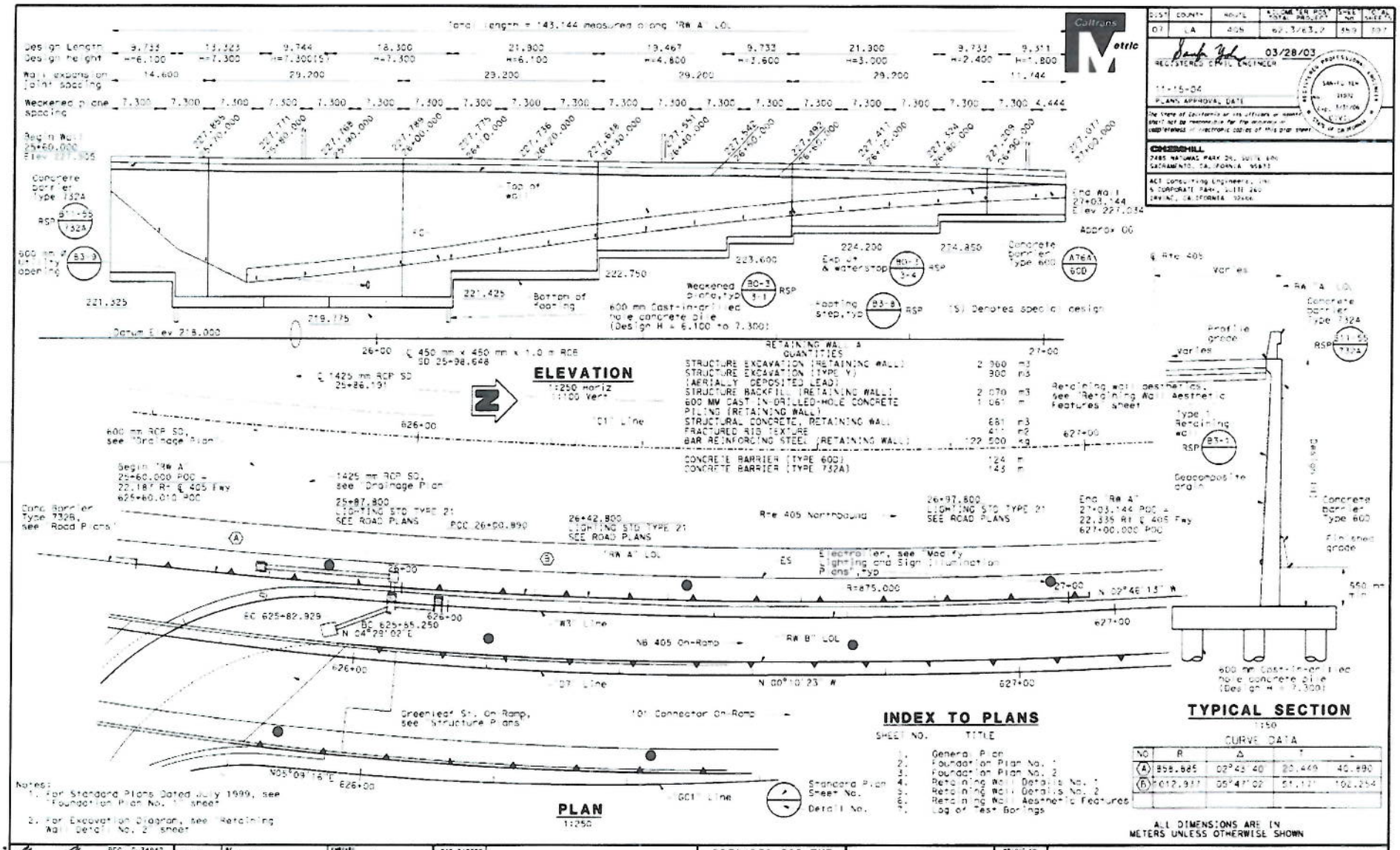
CH2MHILL
2485 NATOMAS PARK DR., SUITE 600
SACRAMENTO, CALIFORNIA 95833

ACE Consulting Engineers, Inc.
5 CORPORATE PARK, SUITE 260
IRVINE, CALIFORNIA 92606



Notes:
1. For Standard Plans Dated July 1999, see "Foundation Plan No. 1" sheet
2. For Excavation Diagram, see "Retaining Wall Detail No. 2" sheet

DESIGN	BY S. Yeh	CHECKED H. Yow	LOAD FACTOR DESIGN	
DETAILS	BY S. Yeh	CHECKED H. Yow	LAYOUT BY S. Yeh	CHECKED H. Yow
QUANTITIES	BY S. Yeh	CHECKED B. Ching	SPECIFICATIONS BY B. Ching	CHECKED AND SPEC. ENGINEER S. Yeh

RCE. C 34942 EXP. 9-30-05
DESIGN OFFICE CHIEF
6-5-2003
DESIGN OFFICE DATE

PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DOUGLAS M. FREDERICKS
PROJECT ENGINEER

DISTRICT NO. 07
EA 62.3

RETAINING WALL A
GENERAL PLAN

DESIGN GENERAL PLAN SHEET (METRIC) REV. 3/1/98

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

CU 07262
EA 201201

STANDARD PLANS REVISION DATE
DISTRICT REVISION DATE

1 7

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
07	LA	405	62.3/63.2	362	397

REGISTERED CIVIL ENGINEER 03/28/03

11-15-04
PLANS APPROVAL DATE

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GEOSHELL
1485 NATOMAS PARK DR., SUITE 600
SACRAMENTO, CALIFORNIA 95833

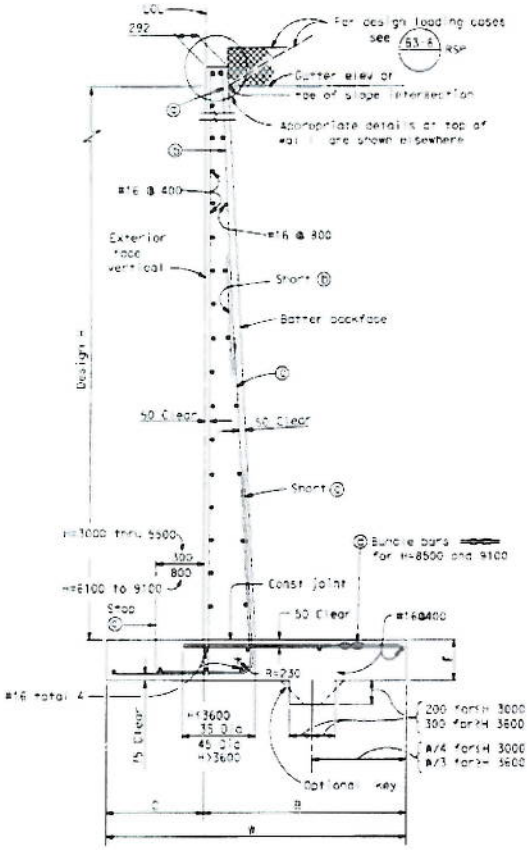
KCT Consulting Engineers, Inc
5 CORPORATE PARK, SUITE 260
IRVINE, CALIFORNIA 92606

GENERAL NOTES:

DESIGN: Bridge Design Specifications (1996 AASHTO with Interims and revisions by Caltrans)
SURCHARGE LOADING: (1.2 kPa Surcharge loading for horizontal backfill)
SOIL PARAMETERS: (For determination of design lateral earth pressure on wall)

Design Parameter	Horizontal Backfill
Friction Angle (Ø)	34
Active Earth Pressure Coefficient (Ka)	0.28A
Unit Weight	19.6 kN/m³
Applied Lateral Earth Pressure	5.6 kPa/m

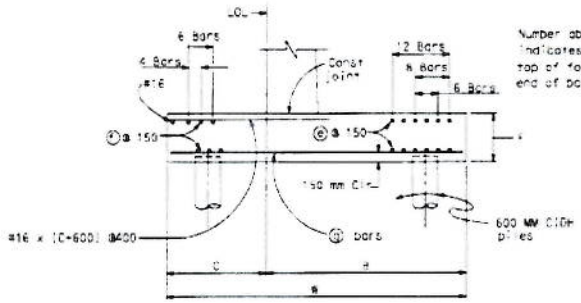
REINFORCED CONCRETE:
f_y = 420 MPa
f'_c = 25 MPa



SPREAD FOOTING SECTION

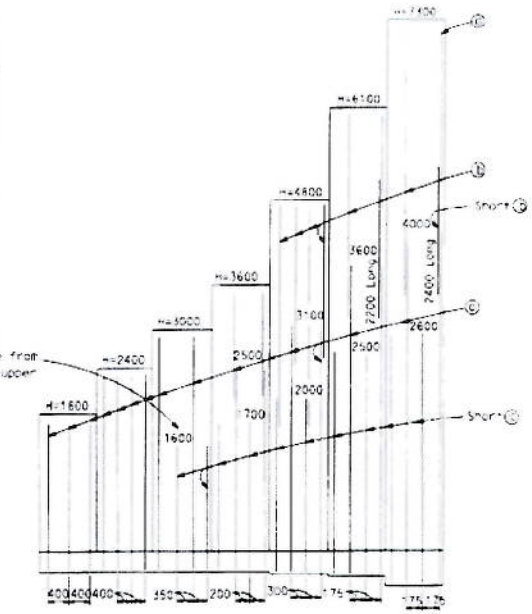
TABLE OF REINFORCING STEEL DIMENSIONS AND DATA

Design H	1800	2400	3000	3600	4800	6100	7300	7300(S)
A	1300	1600	1900	2200	2750	3660	5180	8555
C	400	500	600	700	900	1220	1830	3950
B	900	1 100	1300	1500	1850	2440	3350	4585
F	400	400	400	400	450	675	725	725
Batter	100:4	100:4	100:4	100:4	100:4	100:4	100:5	100:5
Ⓐ bars	—	—	—	—	—	#16@700	#16@700	#16@700
Ⓑ bars	—	—	—	#16@400	#16@300	#25@350	#25@350	#25@350
Ⓒ bars	#16@400	#16@400	#19@350	#19@200	#29@300	#29@175	#36@175	#36@175
Ⓓ bars	#16@400	#16@400	#16@350	#16@200	#29@300	#29@175	#36@175	#36@175
Total Ⓔ bars	6-#19	6-#19	12-#19	12-#19	12-#19	6-#19	6-#19	6-#19
Total Ⓕ bars	—	—	6-#19	6-#19	6-#19	6-#19	4-#16	4-#16
Ⓖ bars	—	—	—	—	—	#16@400	#16@400	#16@400



625 kN CIDH PILE FOOTING SECTION

Reinforcement detailed is to be placed in addition to that shown for spread footing. All piles not shown, see Pile Layout on other sheets.



ELEVATION

NO SCALE
ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

REG. C-34942 EXP. 9-30-04 DESIGN OFFICE 6-4-2003 SIGNOFF DATE	DESIGN S. Yen	CHECKED H. Tow	PREPARED FOR THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION	DOUGLAS M. FREDERICKS PROJECT ENGINEER
	DETAILS S. Yen	CHECKED H. Tow		
	QUANTITIES S. Yen	CHECKED B. Ching		

GROUP NO. —
UNIT NO. 62.3

RETAINING WALL A
RETAINING WALL DETAILS NO. 1

DESIGN DETAIL SHEET BRIDGE REV. 1-1-96

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

CU 07262
EA 201201

DISREGARD PRINTS DEARLIC EARLIER REVISION DATES

4 7

APPENDIX H – Continued

S149/E70 Connector Separation Backup Documentation

State of California
DEPARTMENT OF TRANSPORTATION

Business, Transportation and Housing Agency

Memorandum

Flex your power!
Be energy efficient!

To: **BARTON NEWTON**
Deputy Division Chief
Structure Policy and Innovation
State Bridge Engineer

Date: January 30, 2013

File: 03-BUT-70, 99, 149,191-VAR
S149-E70/Rte 149
Connector Sep.
03-3822V4
Br. No. 12-0199

From: **THOMAS A. OSTROM** T.A.O.
Chief, Office of Earthquake Engineering
Analysis & Research

Subject: S149-E70/Rte 149 Connector Separation Bent 2 Null Value Assessment

As part of the Department's GGL data evaluation, a string of null value data was discovered in the Bent 2 GGL file of the S149-E70/Rte. 149 Separator Connector, Br. No. 12-0199. Null values are written to the GGL file when data acquisition occurs faster than the GGL software can process. Five or more consecutive null values are being considered as an anomaly of significance for evaluation purposes.

The "null value" anomalies are being evaluated with the procedure defined in Memo to Designers (MTD) 3-7. Geotechnical Services generated a Pile Design Data Form characterizes the null value anomaly as 0.5 feet in length 31.0-31.5 feet below the top of pile in Bent 2 tube four. (See attached PDDF form)

The Engineer of Record for bridge assessed the structural adequacy of the Bent 2 pile shaft. As stated in Gamma-Gamma Logging Acceptance Testing Results for this bridge dated January 26, 2007, no significant anomalies were detected in the Bent 2 pile during construction. The evaluation was done per MTD 3-7 assuming that the tributary slice of the pile associated with tube four was void of concrete and steel. The flexural capacity was calculated with the cross section oriented to create the largest compression force in the removed slice section.

The Xsection program was used to calculate the reduced pile capacity at the depth of the null value anomaly in tube four. The reduced nominal moment capacity, M_{ne} for the Bent 2 shaft at 31-31.5 feet below the top of pile is 13, 900 kip-ft. The moment demand M_d at this location in the shaft is 5270 kip-ft. The seismic design criteria specify that for Type II pile shafts, $1.25\ M_d < M_{ne}$. This equates to the ratio $M_d/M_{ne} < .8$. For Bent 2 at 31.5 feet below pile cutoff, considering the null value anomaly, $M_d/M_{ne} = .38$.

The pile shear capacity considering the null value anomaly at 32 feet below the pile cut off elevation is 4868 kips. The shear demand in the shaft is 876 kips.

The effect of the null value anomaly on structural axial capacity of the pile shaft is negligible.

This project was designed in Bridge Design North in 2003 while I was in responsible charge of the office. Please contact me if any further structural assessment is necessary.

Thomas A. Ostrom, P.E.
License No. C 46063

3-7 Pile Design Data Form (GGL/CSL)

ATTACHMENT

1 Foundation Testing

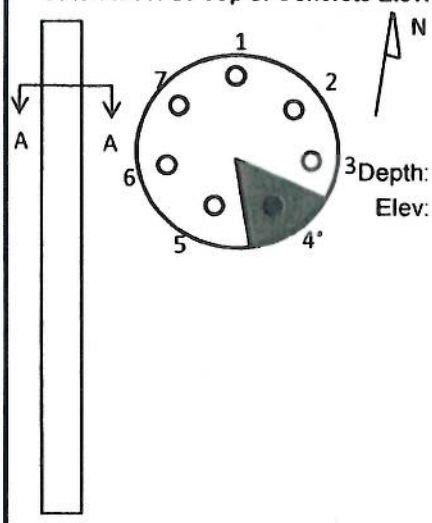
Name: Toua Vang
Phone: (916) 227-1060
Date: 1/16/2013

Anomaly Overview

Testing Performed X GGL ☐ CSL

Shaft Diameter: 2100 mm

Cutoff Elev. Or Top of Concrete Elev: 77.30 m



Section A - A

Depth: 9.51 m to 9.63 m
Elev: 67.78 m to 67.66 m

NOT TO SCALE

Tip Elev.: 54.30 m

Anomaly Description

Section A - A: Multiple null values detected in one (1) inspection pipe. Up to 14% of pile cross-section may be affected at this depth range.

2 Geotechnical

Name: THOMAS SONG
Phone: 916.227.1057
Date: 1/25/2013

Required Nominal Resistance of Shaft (per contract plans)

Compression: 13200 ~~kips~~ KN Tension: 0

Lowest Estimated Groundwater Elevation: 0*

Remaining Required Nominal Resistance To Be Developed Below Each Anomalous Section:

Section A-A: Compression 11251 KN **Tension** _____ **kips**

Soil and/or Rock Type: INTERMEDIATE GEOMATERIAL / SW-SP

Shaft is geotechnically ☑ Acceptable ☐ Unacceptable

Comments: * ASSUMED

3 Structural

Name:
Phone:

As-Designed Capacity of Shaft

Section A-A: Shear: _____ Moment: _____

Maximum Demand of Shaft at Section A-A:

Shear: _____ Moment: _____

Shaft is structurally: ☐ Acceptable ☐ Unacceptable

Comment _____

4 Corrosion

Name:

Consideration is ☐ Required ☐ Not Required

For anomalies between the top of pile and 3 feet below the lowest estimated groundwater level at the site, corrosion results listed in the Geotechnical report are used to assess the need for repair. For situations where results are not available, soil samples may be obtained adjacent to the anomaly and tested in accordance with California Test (CT) 643 (Parts 2, 3 and 4) and if necessary, CT 417 and CT 422 to determine soil corrosivity. For anomalies outside these limits, and where no stray current source can be identified, or for non-corrosive soil conditions, no consideration of corrosion potential is required.

Corrosion Potential at Section A-A: _____

5 Construction

Considering parts 2-4 of this form,

Structure Rep.:
Phone: Date:

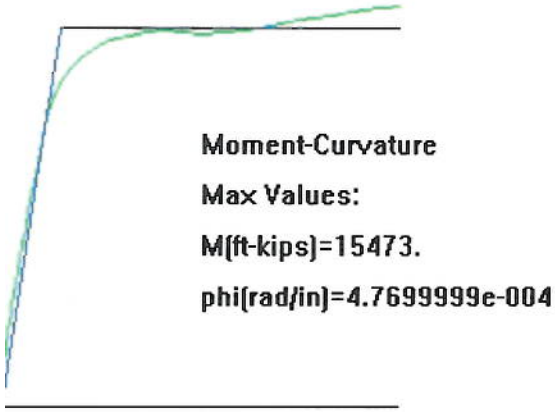
Sec. A-A is: ☐ Acceptable with Administrative Deduction ☐ Unacceptable; Mitigation is Required

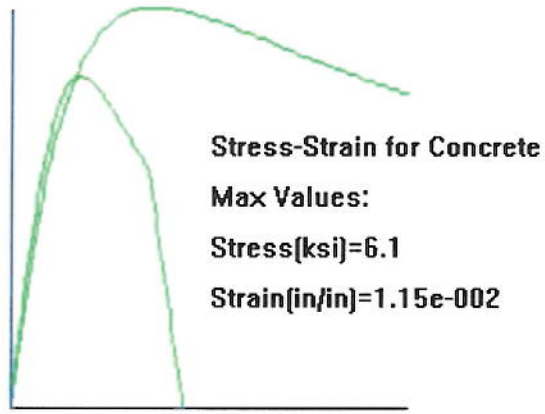
Project:	S149-E70/RT 149 Connect. Sep.	Structure:	12-0199		
Dist-Co.-Rte:	03-BUT-70,99,149,191-VAR	EA:	03-3822V4		Pile at Bent 2
Structure Rep.:	Steve Harvey	Phone:		Fax:	

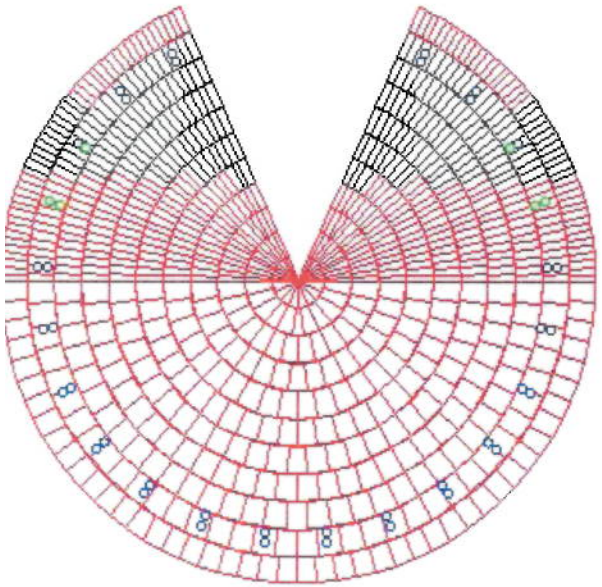
xSECTION
VER._4.00,_APR-01-06
(C)2006_Mahan_Engineering
Licensed_to:ZIPPY_ENGINEERING
ROCKET_AVE.
123-456
File:120199B2.xse

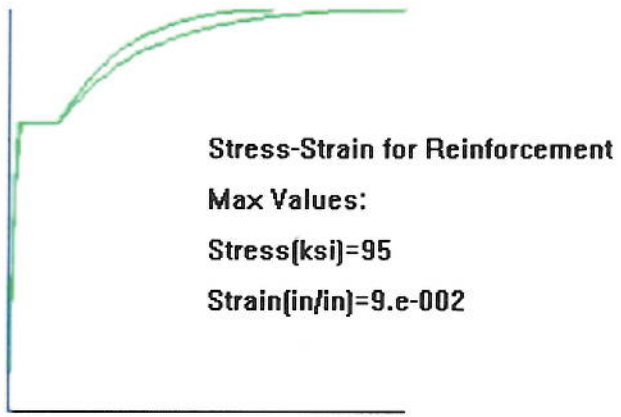
Fri Jan 25 10:04:26 2013

Ag (ft^2)= 33.38000107
Ig (ft^4)= 83.98000336
P (kips)= 1413.
Per. Steel= 1.43
Mp (ft-kips)= 14580.9697266
Phi-p (rad/in)= 4.07999993e-004
Icr (ft^4)= 30.025999069
Ec (ksf)= 580638
Idealized
Phi-y (rad/in)= 7.0000002e-005









Section Dimensions
H-min(in)=-42.
H-max(in)=42.
V-min(in)=-42.
V-max(in)=38.41

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
03	But	70, 99, (149, 191)	Var	901	1098

REGISTERED CIVIL ENGINEER 5-21-03

11-14-05
PLANS APPROVAL DATE

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Caltrans Metric

15+95.206 BVC
Elev 94.360

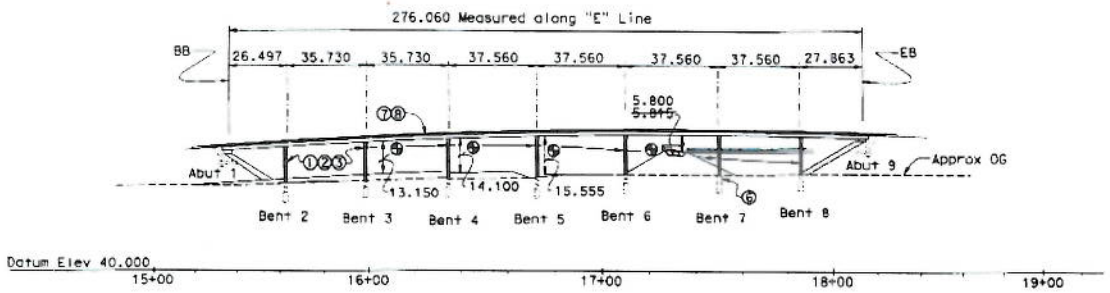
18+90.206 EVC
Elev 97.258

+4.502% — 295 VC — -2.537%

R/C = -2.386 % / Station

PROFILE GRADE

No Scale



ELEVATION

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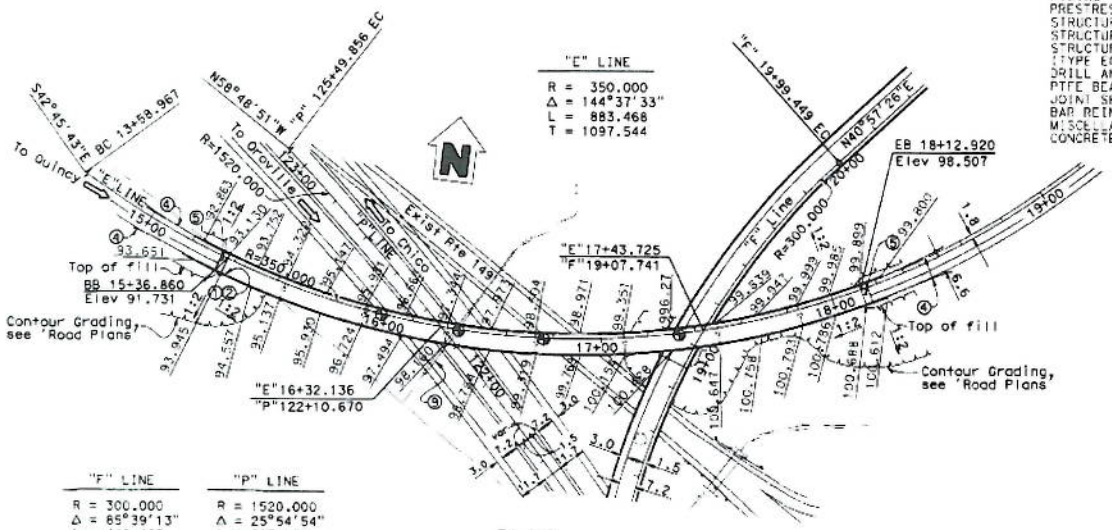


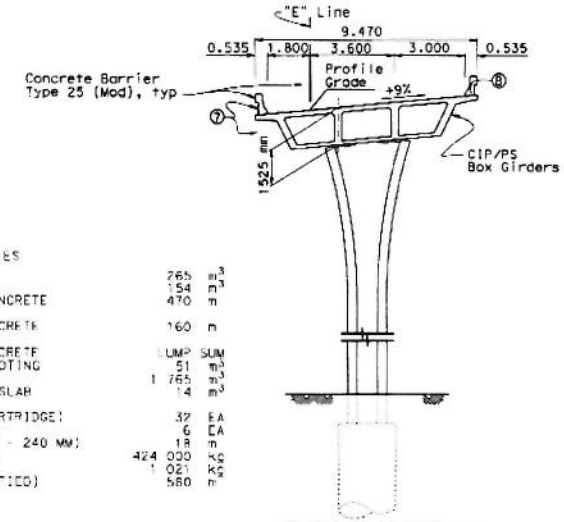
"F" LINE	"P" LINE
R = 300.000	R = 1520.000
Δ = 85°39'13"	Δ = 25°54'54"
L = 448.482	L = 687.499
T = 278.065	T = 349.732

PLAN

1: 1000

QUANTITIES

STRUCTURE EXCAVATION (BRIDGE)	765	m³
STRUCTURE BACKFILL (BRIDGE)	154	m³
600 MM CAST-IN-DRILLED-HOLE CONCRETE PILING	470	m
2.1 M CAST-IN-DRILLED-HOLE CONCRETE PILING	160	m
PRESTRESSING CAST-IN-PLACE CONCRETE	LUMP	SUM
STRUCTURAL CONCRETE, BRIDGE FOOTING	51	m³
STRUCTURAL CONCRETE, BRIDGE	1 765	m³
STRUCTURAL CONCRETE, APPROACH SLAB (TYPE EQ)	14	m³
DRILL AND BOND DOWEL (EPOXY CARTRIDGE)	32	EA
PTFE BEARING	6	EA
JOINT SEAL ASSEMBLY (MR 161 MM - 240 MM)	18	m
BAR REINFORCING STEEL (BRIDGE)	424 000	KG
MISCELLANEOUS METAL (BRIDGE)	1 021	KG
CONCRETE BARRIER (TYPE 25 MODIFIED)	580	m



TYPICAL SECTION

1:100

NOTES:

1. Point "Bridge No. 12-0199"
2. Point "S149-E70/Rte 149 Connector Separation"
3. Point "Bent No. _"
4. MBGR see 'Road Plans'
5. Structure Approach Type EQ(3)
6. Column Isolation Casing
7. Barrier Surface Texture
8. Electrical conduit, pull boxes, & future electroliers, see 'Road Plans'
9. Proposed drainage system No. 8 see 'Road Plans'
10. Point of Minimum Vertical Clearance

For 'General Notes' and 'Index to Plans' see "Index to Plans" sheet. For 'Pile Data Table' see "Pile Data" sheet.

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

DESIGN	BY Jose M Aquino III	CHECKED Lewis L Shen	SEISMIC FACTOR DESIGN	LIVE LOADING: MS20-44 AND ALTERNATIVE AND FUTURE DESIGN LOAD
DETAILS	BY Lydia Calubaq	CHECKED Lewis L Shen	ANCHOR	BY Jose M Aquino III — CHECKED Lewis L Shen
QUANTITIES	BY Nancie Bains	CHECKED Surendra Singh	SPECIFICATIONS	BY Stein Anderson — CHECKED AND SPECS COORDINATOR Stein Anderson

Joseph T. Dowling 5-21-03
DESIGN ENGINEER

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN 3

BRIDGE NO. 12-0199
KILOMETER POST 0.0

S149-E70/RTE 149 CONNECTOR SEPARATION
GENERAL PLAN

STRUCTURES DETAIL GENERAL PLAN SHEET METRIC (REV. 4/10/03)

GENERAL SCALE IN MILLIMETERS FOR REDUCED PLANS

CU 03226
EA 382241

DISTINGUISHED ACTS BEARING EARLIER REVISION DATES

REGISTERED CIVIL ENGINEER

DATE	REVISED	DATE	REVISED	DATE	REVISED	DATE	REVISED

SHEET 1 OF 31

A BUILT CORRECTIONS

CORRECTIONS TRANSFERRED BY: NCC
FIELD CORRECTIONS BY: Scott Salazar

TRANSFER DATE: 09-23-2009
FIELD CORRECTION DATE: 2-09-2008

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET No	TOTAL SHEETS
03	Sut	70, 99, 149, 19*	Var	993	1098

Caltrans Metric

REGISTERED CIVIL ENGINEER 5-21-03

11-14-05
PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER JOSE M AQUINO III No. 58386 Exp. 12-31-06 CIVIL STATE OF CALIFORNIA

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

NO AS BUILT CORRECTIONS

CORRECTIONS TRANSFERED BY: NCS
CORRECTIONS BY: Matt Salvio

TRANSFER DATE: 09-21-2009
FIELD CORRECTION DATE: 12-08-2008

PILE DATA TABLE

Location	Pile Type	Design Loading	Nominal Resistance Compression	Nominal Resistance Tension	Cut-off Elevation	Design Tip Elevation	Specified Tip Elevation
Abut 1	600 CIDH	525 kN	1150 kN	0 kN	N/A	65.300 m (1),(2)	65.300 m
Bent 2	2100 CIDH	N/A	13 200 kN	0 kN	77.300 m	54.300 m (1),(2)	54.300 m
Bent 3	2100 CIDH	N/A	13 800 kN	0 kN	78.100 m	58.800 m (1),(2)	58.800 m
Bent 4	2100 CIDH	N/A	14 100 kN	0 kN	78.500 m	57.900 m (1),(2)	57.900 m
Bent 5	2100 CIDH	N/A	14 500 kN	0 kN	79.400 m	53.200 m (1),(2)	53.200 m
Bent 6	2100 CIDH	N/A	14 300 kN	0 kN	80.200 m	57.800 m (1),(2)	57.800 m
Bent 7	2100 CIDH	N/A	14 250 kN	0 kN	82.200 m	56.600 m (1),(2)	56.600 m
Bent 8	2100 CIDH	N/A	13 650 kN	0 kN	82.300 m	60.500 m (1),(2)	60.500 m
Abut 9	600 CIDH	525 kN	1150 kN	0 kN	N/A	68.500 m (1),(2)	68.500 m

Design tip elevation is controlled by
(1) Compression
(2) Lateral

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

DESIGN	BY Jose M Aquino III	CHECKED Lewis L Shen	
DETAILS	BY Junie Chijono	CHECKED Lewis L Shen	
QUANTITIES	BY Randip Ba'ris	CHECKED Santosh Singh	

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN 3

REVISION NO. 12-0199
KILOMETER POST 0.0

S149-E70/RTE 149 CONNECTOR SEPARATION
PILE DATA

STRUCTURES DESIGN DETAIL SHEET METRIC (REV. 4/20/00)

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

CU 03226
EA 3822V1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

REVISION DATES (PRELIMINARY PLANS ONLY)

SHEET 3 OF 31

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
03	But	70,99, 149,191	Var	1012	1098

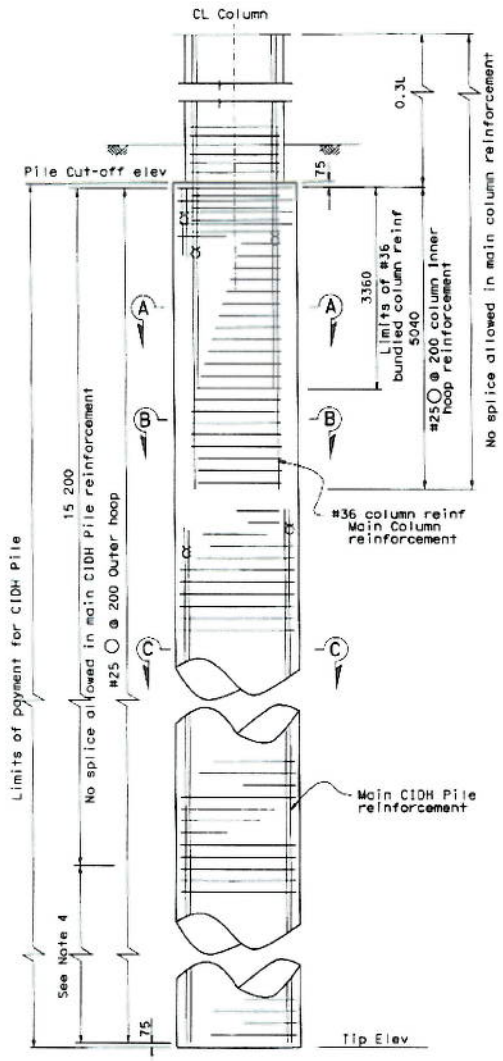
REGISTERED CIVIL ENGINEER 5-21-03

11-14-05
PLANS APPROVAL DATE

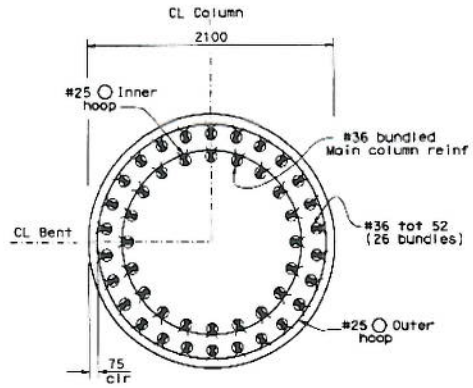
The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

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

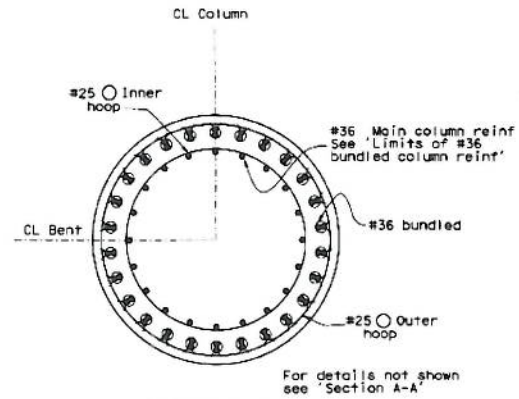
NO AS BUILT CORRECTIONS



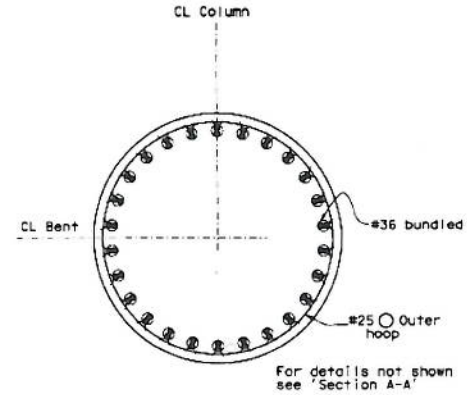
TYPICAL SECTION
1: 40



SECTION A-A
1: 20



SECTION B-B
1: 20



SECTION C-C
1: 20

NOTES:

1. For column geometrics see "Column Geometrics" sheet.
2. For pile data see "Pile Data" sheet.
3. All hoops are "ultimate" butt spliced continuous.
4. Only staggered "ultimate" butt splices are allowed in main CIDH pile reinforcement in this zone.
5. For bent details see "Bent Details" sheet.

○ Indicates bundled bars

6. An optional construction joint is allowed at the beginning of the column reinforcement 5040 mm below the pile cut-off elevation.

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

DESIGN	Jose M Aquino III	Lewis L Shen
DETAILS	Jonie Chiuong	Lewis L Shen
QUANTITIES	Ronald Baine	Santokh Singh

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

DIVISION OF STRUCTURES
STRUCTURE DESIGN 3

BRIDGE NO. 12-0199
KILOMETER POST 0.0

S149-E70/RTE 149 CONNECTOR SEPARATION
2100 mm Ø CIDH PILE DETAILS

CU 03226
EA 3822V1

DISREGARD PRINTS BEARING EARLIER REVISION DATES

PAGE 22 OF 51

STRUCTURES DESIGN DETAIL SHEET (METRIC) REV. 4/26/00

ORIGINAL SCALE IN MILLIMETERS FOR REDUCED PLANS 3 10 20 30 40 50 60 70 80 90 100