STATE OF CALIFORNIA
0DEPARTMENT OF TRANSPORTATION

Form HC-10A (Rev. 6/80)

Job Stamp
04-0120F4
SFOBB SAS

Const. Calendar: 92
Project Work Day No.: 1302

Date 12/09/2009

Inspectors Hours Shift Hours: Start 7:00 AM (06:30) Stop 17:30 (15:30)

ASSISTANT RESIDENT ENGINEER'S

CONTRACTOR – ABFJV, Sub SDI

EQUIPMENT AND/OR LABOR:

Equip. #	NO. MEN	DESCRIPTION (Of Equipment or Labor)	HOURS - ITEM NO. #37 Cable Tie -Down	#38 Structural Conc Bridge								IDLE OR DOWN	REMARKS Name	Contractor
1	1	General Foreman										8	Terry Cronk	ABF Pier 7
2	1	Pile Driver										8	Jesse Johnsen	ABF Pier 7
3	1	Pile Driver										8	Richie Yembo	ABF Pier 7
4	1	Pile Driver										8	Kurt Chaisson	ABF Pier 7
5	1	Pile Driver										8	Jamal Whitney	ABF Pier 7
6	1	Pile Driver										8	Danny Schwartz	ABF Pier 7
7	1	Laborer										8	Rigiberto Campos	ABF Pier 7
8	1	Elevator Operator	8									8	Howard Schroyer	ABF
9	1	Crane Operator											Joe Shawn	ABF Laid off
10	1	Oiler/Apprentice										8	Ross Scott	ABF Pier 7
		Sub-contractors SDI											See Matt's diary	SDI
		Sub-contractor Rebar		4										
	1	Crane LR 1300										8		ABF no operator
	1	Lincoln Welding Machine 768-50-4005												ABF
	1	Lincoln Welding Machine 768-50-4009												ABF
	1	MQ Power Generator 220	8											ABF
	1	Ingersoll Rand Air Compressor	8											ABF used by others
	1	Fork Lift												ABF
	1	Pick up												ABF
	1	Elevator	8											

Weather: Sunny with cool temperatures – Hi 40°F Low 30°F, frost, windy.

RECD H32 JAN-11 #011732

Description of Work by ABF and its Sub-contractors.

ABF

- ABF has completed chipping the concrete for the MEP utility opening southeast retaining wall at North Foundation Wall.
    - ABF moved all its labor to Pier 7 or the work on water.
    - ABF's crane operator Jow was laid off last Friday. As such there is no crane operator on the site.
    - Only the elevator operator Howard is there.
    - The other people working are on the Temporary Trusses for performing miscellaneous tasks for the OBG installation.

SDI

- SDI has a small crew of 3 people on the job site.
- SDI post-tensioned hole E-11 on 11/24/09 on E-Line and moved its stressing equipment to the north tie downs.
- SDI post-tensioned hole W-4 on 11/25/09.
- On 11/30/09, SDI post-tensioned holes W-11. They moved the stressing rams and pumps to E-Line and post-tensioned the strands for hole E-4, thus stressing strands for all 4 of 28 holes or 15 % of total stressing.
- On 12/01/09, SDI post-tensioned the strands for holes E-5, W-10 and W-3.
- On 12/02/09, SDI post tensioned the strands for holes E-12 and E-10. They have stressed strands in 9 out of 28 holes or 32% of total stressing as of today.
- On 12/03/09, SDI stresses the strands for holes W5, W11 and E3. As such as of now, they have stressed strands for 12 out of 28 Tendons or 45 % of the total.
- On 12/04/09, SDI stressed strands in the Vertical Tie Down Hole E9 and started on Hole W-6. As such as of now, they have stressed strands for 13 out of 28 Tendons or 48 % of the total.
- ON 12/08/09 SDI continued on finished stressing at W6, W13 and E2.
- On 12/09/09 SDI continued and finished stressing at E6, W9 and W2. As of now ABF/SDI has stressed Tendons for 19 out of 28 or about 66% of the total.
- I was busy with my presentation later this afternoon. As such Matt worked all himself.
- The stressing was performed as follows:
    - The values for SDI's hydraulic gauge were 1250 psi at 30% P-Jack and 4200 psi at 100 % P-Jack.
    - These were corresponding the CT's gauge at about 10 kips and 32.9 kips respectively.
    - The elongations from 30 % P-Jack to 100% P-Jack forces varied from 6.75 inches to 7.25 inches.
    - There was a relaxation of ½" each time after the force was released.

OBG Presentation Work:

- Continue to review Submittal 1245 R00 and Submittal 1201R00 for the presentation this afternoon on Dec9, 2009 for OBG and Cross Beam installation.

Additional Work at or outside of W2 site:

- CC Myers continues to dismantle the sidelined portion of the bridge.
- CC Myers is removing the foundations for the temporary bracings.
- CC Myers have started to the slab form the slide out portion of the old bridge.
- There was no work today because of heavy rains and extremely cold weather.
- CT has installed air monitoring equipment on the site at several locations.
- As of today, CC Myers finished 6 bays.
- They have also removed many of the framing columns and beams.
- CC Myers are moving away all the material.
- CC Myers have 6 to 8 equipment working on this task.

Inspector: Lalit Mathur, P.E.

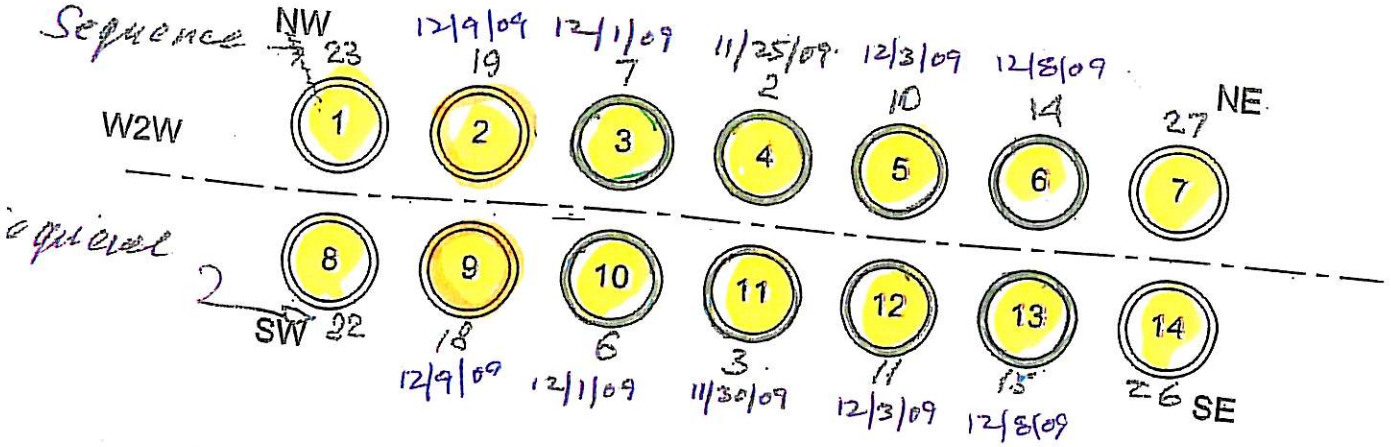
L K Mathur Transportation Engineer (D)

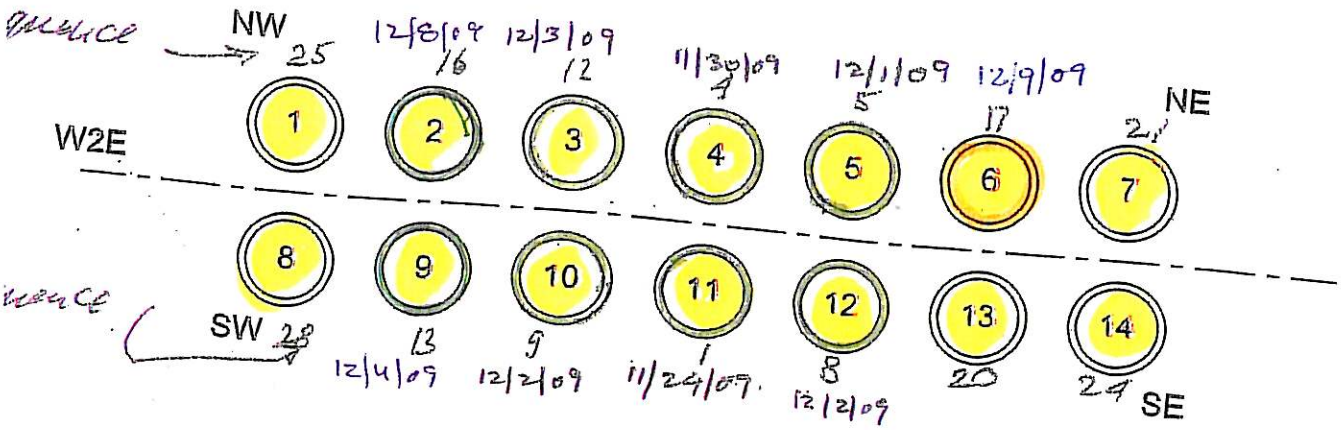
12/9/09

PREV. DONE

DONE TODAY

SAS TIE DOWN TENDON ID





OBG and Cross Beam Installation

The Key Elements in this Presentation are:

- The Shear Leg Crane
- The OBG or Box Girder
- Box Girder Support Frame on the Barge
- The Temporary Trusses E-Line and W-Line
- The Cradle supporting the Box Girder
- The Slider or Pushing Frame
- The Cross Beams
- The Cross Beam Erection Gantry Crane

The other Elements mentioned are

- Vertical Jacks and Pressure.
- Vertical Jacking Force Recording
- Lateral Jacks
- DNE or Do Not Exceed Loads
- Seismic Stops, Shim Plates, Additional Seismic Capacity
- OBG Survey Plan & Erection Engineering Report
- Longitudinal Jacks and Williams Rods
- The Shear Plates
- The Splice Plates (External and Internal), Types A & B
- OBG Splice Plate and Cradle Pins for Proper Alignment
- Splice Plates, Field Drilling of Holes with Splice Plate Templates
- 6 Ton Ratchet Hoist for Cradle Tie Down to Truss
- Strand Tier Beams secured to Gantry Crane
- Gantry Column Supports on OBG on 6' square pads
- 1 1/8" dia Temporary Bolts
- M24 Permanent Bolts
- Minimum 64, 268 and 648 Bolts for Cross Beam Connections
- 65 MT Steel and 17.4 MT Concrete counter weights

Self-Anchored Suspension Span (SAS)
OBG & CB INSTALLATION

By Lalit Mathur, P.E on 12/09/09

Submittals 1245R00,1201R00 & 762R01-02

OBG INSTALLATION TEAM 2

- Unload OBG from Ship to Barge
  - With Shear Leg Crane
  - On the Supporting Frame (See photo)
  - Check Supporting Frame for any visual damage to the Frame prior to unloading.
  - Check supporting Frame for any unusual movements after unloading.

OBG INSTALLATION TEAM 2

- OBG INSPECTION
  - Remove Blue Tag and all Documents.
  - Coordinate with other Teams for Completion of Punch List Items.
  - Coordinate with METS for acceptance.

OBG INSTALLATION TEAM 2

- Check complete Installation of
  - Temporary Hand Rails
  - Interior Scaffolding
  - PT Tendon Anchors
  - Barrier Protection
  - Exterior Shear Plates
  - **(Ext. Shear Plate Holes match with Tapered Pins on the Cradle for Proper Alignment of OBG and Cradle)**

OBG INSTALLATION TEAM 2

- Issue Field Release of OBG Lift 1E
  - The OBG Storage Barge can now be moved to Site after Field Release.

OBG INSTALLATION TEAM 2

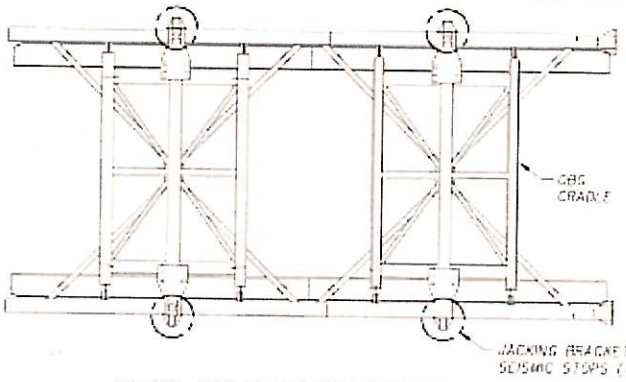
Position Shear Leg And Storage Barge

OBG INSTALLATION TEAM 2

- Assure that Cradle and Pushing Frame are in their proper location.
  - Unload OBG 1 E onto the Cradle on the Temporary Truss
  - Secure the OBG to Cradle
- Install Bolts in the OBG's Exterior Shear Plates and the Cradle for alignment .
- Disconnect OBG from Shear Leg Crane

OBG INSTALLATION TEAM 2

- Check Vertical Jacking System
  - Adjust Elev. of Jacking Pedestal for Sliding
  - Record Jack Pressures in the Spread Sheet for all 4 locations (Being Developed).



CRADLE JACKING BRACKET LAYOUT PLAN VIEW

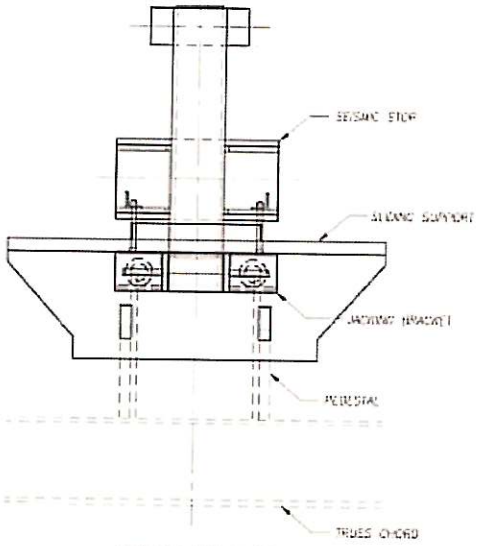
TYP. FOR 1E/W, 4E/W, 6E/W - 11E/W
(ALL OTHER CRADLES SIMILAR)

GENERAL NOTES:

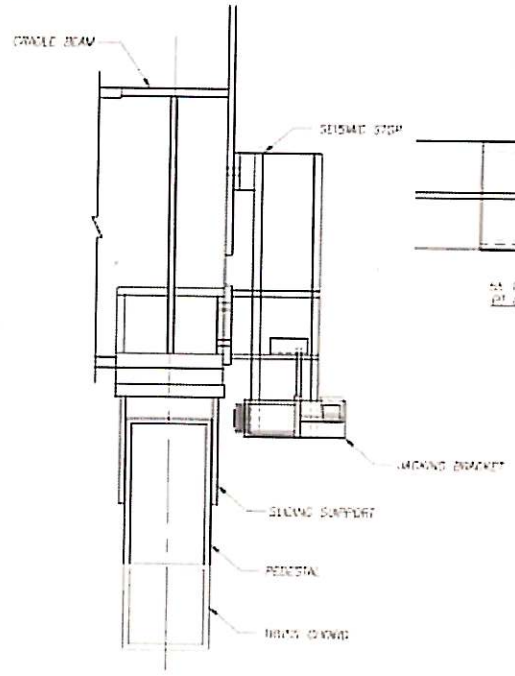
1. THE JACKING BRACKETS ARE DESIGNED FOR THE FULL CAPACITY OF THE JACKS (i.e. 110 T) WITH A COEFFICIENT OF FRICTION OF 10% THE REQUIRED JACKING FORCE ON THE HEAVIEST DWG LIFT IS 78T

BILL OF MATERIAL

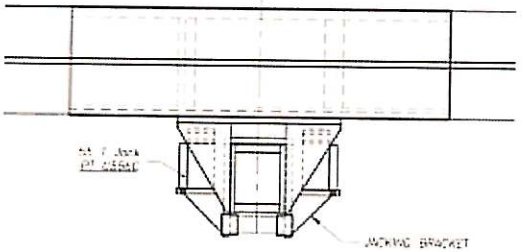
LINE	TOTAL NO. of PCS	MATERIAL DESCRIPTION	MATERIAL LENGTH	MARK	REMARKS
1	-	-	-	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	-	-	-
5	-	-	-	-	-
6	-	-	-	-	-
7	-	-	-	-	-
8	-	-	-	-	-
9	-	-	-	-	-
10	-	-	-	-	-
11	-	-	-	-	-
12	-	-	-	-	-
13	-	-	-	-	-
14	-	-	-	-	-
15	-	-	-	-	-
16	-	-	-	-	-
17	-	-	-	-	-
18	-	-	-	-	-
19	-	-	-	-	-
20	-	-	-	-	-
21	-	-	-	-	-
22	-	-	-	-	-
23	-	-	-	-	-
24	-	-	-	-	-
25	-	-	-	-	-



JACKING BRACKET
Elevation



JACKING BRACKET
Side View



JACKING BRACKET
Plan View

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONTRACT NO. 04-0120F4
BRIDGE NO. 34-0006LR

DISTRICT	COUNTY	ROUTE	KILOMETER POST
04	SF	80	13.2 / 13.9

SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF ANCHORED SUSPENSION BRIDGE
(SUPERSTRUCTURE AND TOWER)

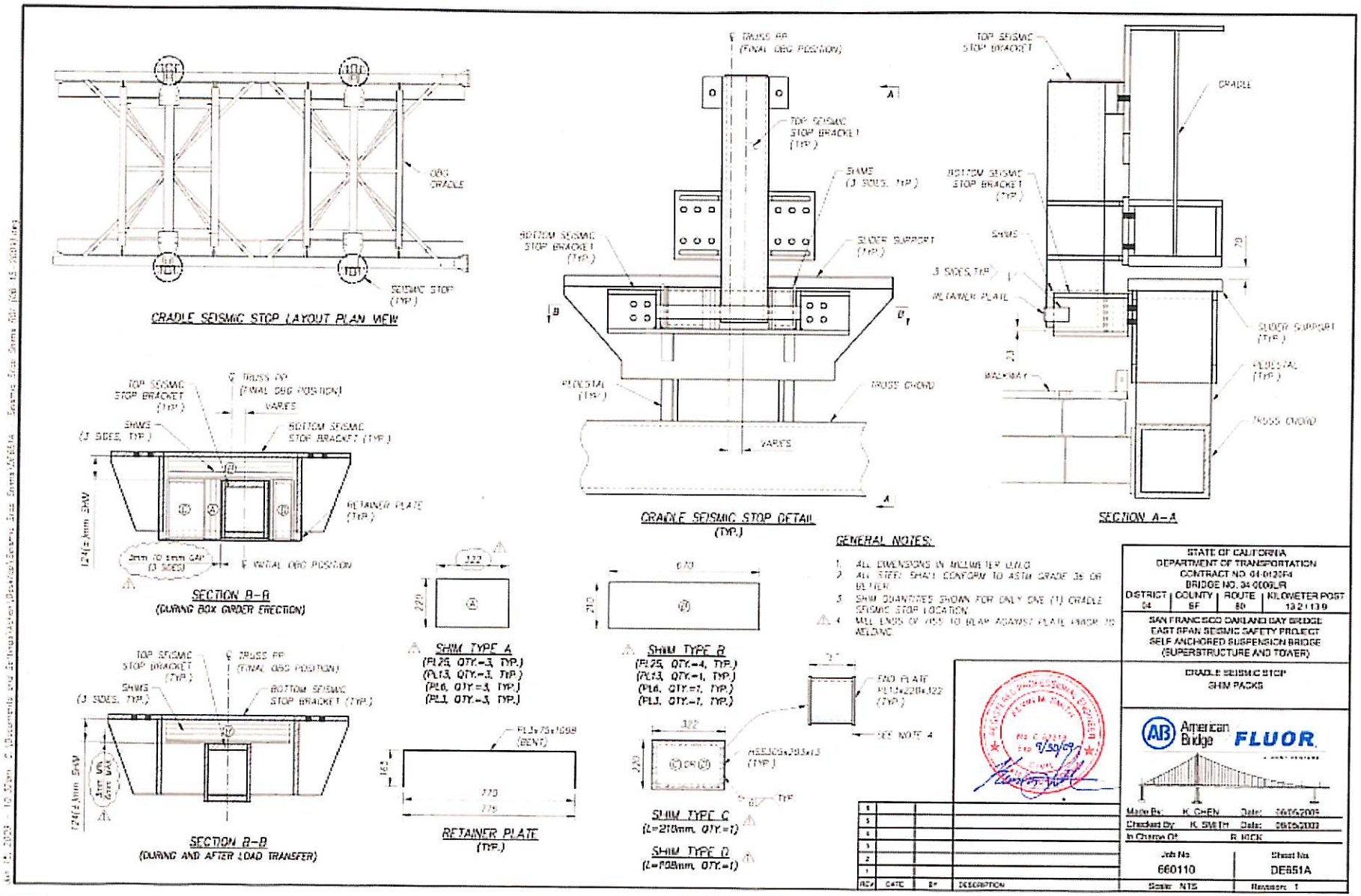
TRANSVERSE ADJUSTMENT JACKING SYSTEM
JACKING BRACKET LOCATIONS AND
GENERAL ARRANGEMENT

American Bridge FLUOR

REV	DATE	BY	DESCRIPTION
6			
5			
4			
3			
2			
1			

Made By: SCY Date: 6/16/09
Checked By: MM Date: 6/17/09
In Charge Of: R. RICK

Job No. 660110
Sheet No. DE230A
Scale: NTS
Revision: 0


CRADLE SEISMIC STOP LAYOUT PLAN VIEW
OBG CRADLE
SEISMIC STOP (TYP.)
CRADLE SEISMIC STOP DETAIL (TYP.)
TOP SEISMIC STOP BRACKET (TYP.)
SHIMS (3 SIDES, TYP.)
BOTTOM SEISMIC STOP BRACKET (TYP.)
SLIDER SUPPORT (TYP.)
PEDESTAL (TYP.)
TRUSS CHORD
VARIES
SECTION A-A
CRADLE
SHIMS
3 SIDES, TYP.
RETAINER PLATE
WALKWAY
SECTION B-B
(DURING BOX GIRDER ERECTION)
RETAINER PLATE (TYP.)
SECTION B-B
(DURING AND AFTER LOAD TRANSFER)
SHIM TYPE A
(PL25, QTY.=3, TYP.)
(PL13, QTY.=3, TYP.)
(PL6, QTY.=3, TYP.)
(PL3, QTY.=3, TYP.)
SHIM TYPE B
(PL25, QTY.=4, TYP.)
(PL13, QTY.=1, TYP.)
(PL6, QTY.=1, TYP.)
(PL3, QTY.=1, TYP.)
SHIM TYPE C
(L=210mm, QTY.=1)
SHIM TYPE D
(L=108mm, QTY.=1)
RETAINER PLATE (TYP.)
END PLATE
SEE NOTE 4
GENERAL NOTES:
1. ALL DIMENSIONS IN MILLIMETER U.N.O.
2. ALL STEEL SHALL CONFORM TO ASTM GRADE 36 OR BETTER.
3. SHIM QUANTITIES SHOWN FOR ONLY ONE (1) CRADLE SEISMIC STOP LOCATION.
4. MILL ENDS OF PLATE TO BEAR AGAINST PLATE PRIOR TO WELDING.
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONTRACT NO. 04-0120F4
BRIDGE NO. 34-0009LR
DISTRICT 04
COUNTY SF
ROUTE 80
KILOMETER POST 13.2 / 13.9
SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF ANCHORED SUSPENSION BRIDGE
(SUPERSTRUCTURE AND TOWER)
CRADLE SEISMIC STOP
SHIM PACKS
American Bridge
FLUOR
Made By: K. CHEN
Checked By: K. SMITH
In Charge Of: R. KICK
Job No. 660110
Sheet No. DE651A
Scale: NTS
Revision: 1
REV
DATE
BY
DESCRIPTION

OBG INSTALLATION TEAM 2

- Engage OBG Pushing Frame to Cradle
  - Push OBG on the Cradle to its Final Erected Position on Temporary Truss (See Photos)

L1E

OBG INSTALLATION TEAM 2

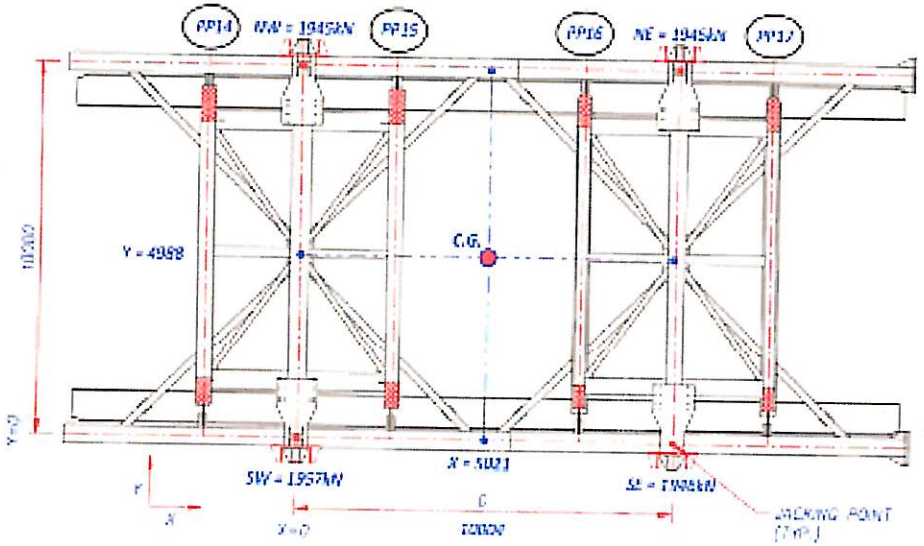
- Assure
  - Vertical Position by adjusting with Vertical Jacks
  - Longitudinal Position by adjusting with Pushing Frame/Slider
  - Lateral Position by adjusting with Lateral Alignment Jacks.
- Verify Location & Cross Slopes per OBG Survey Plan (Erection Engineering Report)
- Stay Within DNE Loads and Shimming Limits
- Continue per Jacking and Load Monitoring Plan.

American Bridge / FLUOR

A JOINT VENTURE

GBG LIFT NO. 2W DATE: 6/23/2009

GBG VERTICAL JACKING FORCE RECORD



COMPONENT	NW JACK PAIR I.D. NO. 1-1	NE JACK PAIR I.D. NO. 2-2	SW JACK PAIR I.D. NO. 3-3	SE JACK PAIR I.D. NO. 4-4
CRADLE SELF-WEIGHT	1000 PSI 93.8 KIP	1000 PSI 88.0 KIP	1000 PSI 91.7 KIP	1000 PSI 85.7 KIP
CRADLE AND BOX GIRDER WEIGHT	5000 PSI 437.3 KIP	5000 PSI 437.3 KIP	5000 PSI 439.9 KIP	5000 PSI 437.5 KIP
BOX GIRDER WEIGHT	✔ 347.5 KIP	✔ 349.3 KIP	✔ 348.2 KIP	✔ 351.8 KIP

BOX GIRDER LIFT 2W: WGT = 6211 kN (= 1396.9 kip)

BOX GIRDER C.G.: X = 5021 mm

Y = 4988 mm

RECORDED BY:

CHECKED BY:

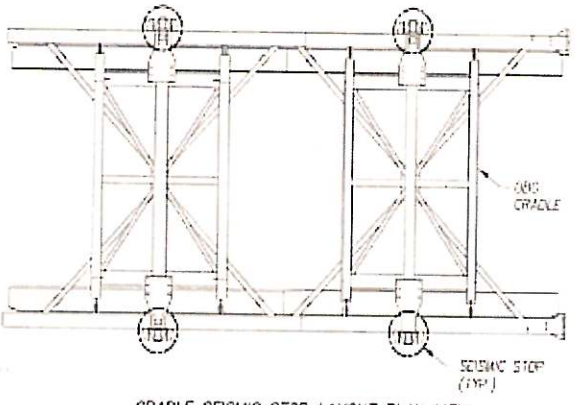
DATE:

OBG INSTALLATION TEAM 2

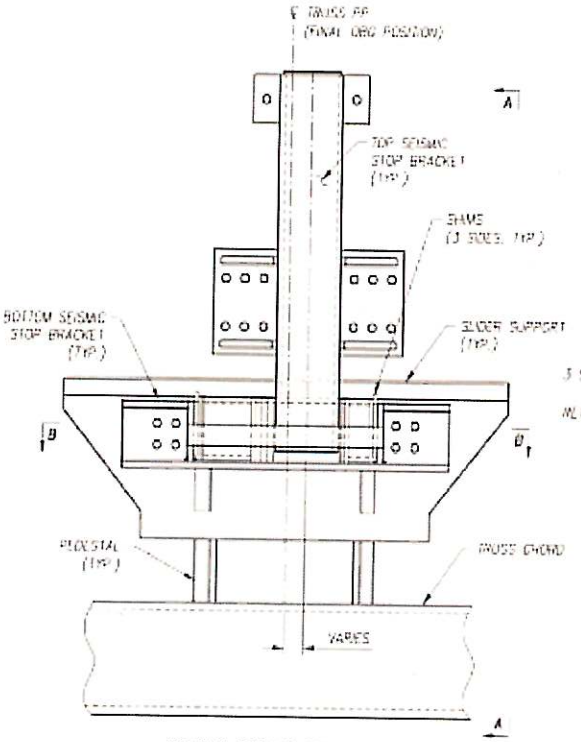
- Assure that Longitudinal Line coincides with E-Line (W-Line)
- The East End of OBG should generally coincide with C/L of the Cross Walkway of the Temporary Truss.

OBG INSTALLATION TEAM 2

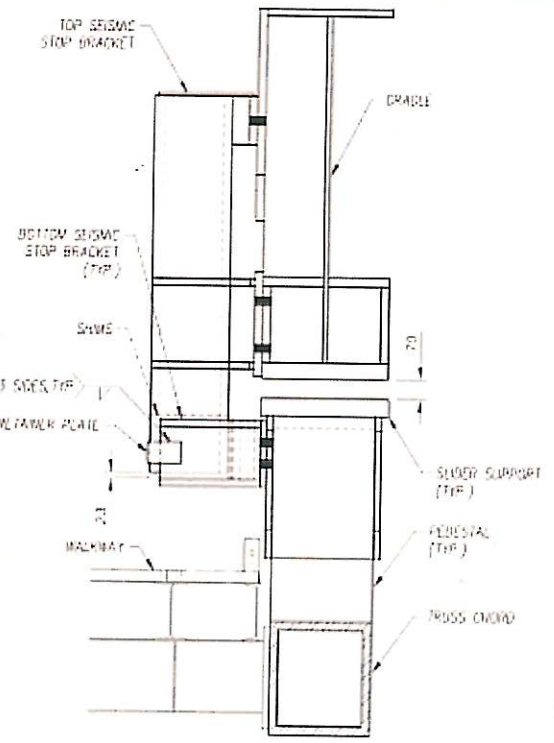
- Remove Lateral Jacks
- Install Seismic Stops between Cradle and the Temporary Truss
  - Install Shims around Seismic Stops per Drawing DE651A.



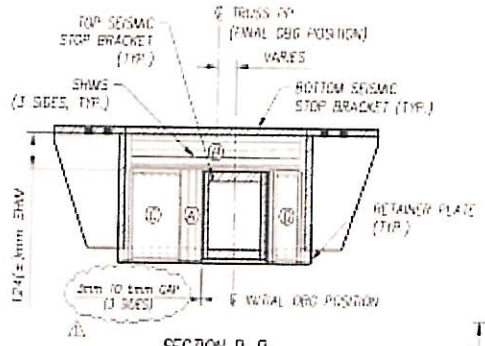
CRADLE SEISMIC STOP LAYOUT PLAN VIEW



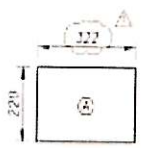
CRADLE SEISMIC STOP DETAIL (TYP.)



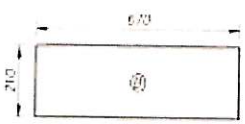
SECTION A–A



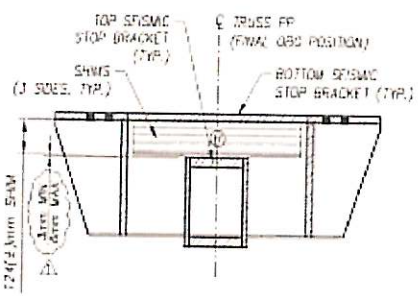
SECTION B–B
(DURING BOX GIRDER ERECTION)



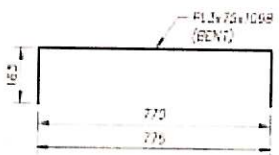
SHIM TYPE A
(PL25, QTY.=3, TYP.)
(PL13, QTY.=3, TYP.)
(PL6, QTY.=3, TYP.)
(PL3, QTY.=3, TYP.)



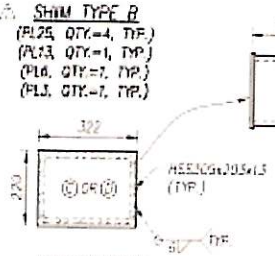
SHIM TYPE B
(PL25, QTY.=4, TYP.)
(PL13, QTY.=1, TYP.)
(PL6, QTY.=1, TYP.)
(PL3, QTY.=1, TYP.)



SECTION B–B
(DURING AND AFTER LOAD TRANSFER)



RETAINER PLATE
(TYP.)



SHIM TYPE C
(L=210mm, QTY.=1)

SHIM TYPE D
(L=198mm, QTY.=1)

GENERAL NOTES:

1. ALL DIMENSIONS IN MILLIMETER U.N.O.
2. ALL STEEL SHALL CONFORM TO ASTM GRADE 36 OR BETTER.
3. SHIM QUANTITIES SHOWN FOR ONLY ONE (1) CRADLE SEISMIC STOP LOCATION.
4. MILL ENDS OF HSS TO BEAR AGAINST PLATE PRIOR TO WELDING.

REV	DATE	BY	DESCRIPTION
6			
5			
4			
3			
2			
1			

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONTRACT NO. 04-0120F4
BRIDGE NO. 34-0006LR

DISTRICT	COUNTY	ROUTE	KILOMETER POST
04	SF	80	13.2 / 13.9

SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF ANCHORED SUSPENSION BRIDGE
(SUPERSTRUCTURE AND TOWER)

CRADLE SEISMIC STOP
SHIM PACKS

American Bridge FLUOR

Made By: K. CHEN Date: 06/06/2009
Checked By: K. SMITH Date: 06/06/2009
In Charge Of: R. KICK

Job No.	Sheet No.
660110	DE651A
Scale: NTS	Revision: 1

OBG INSTALLATION TEAM 2

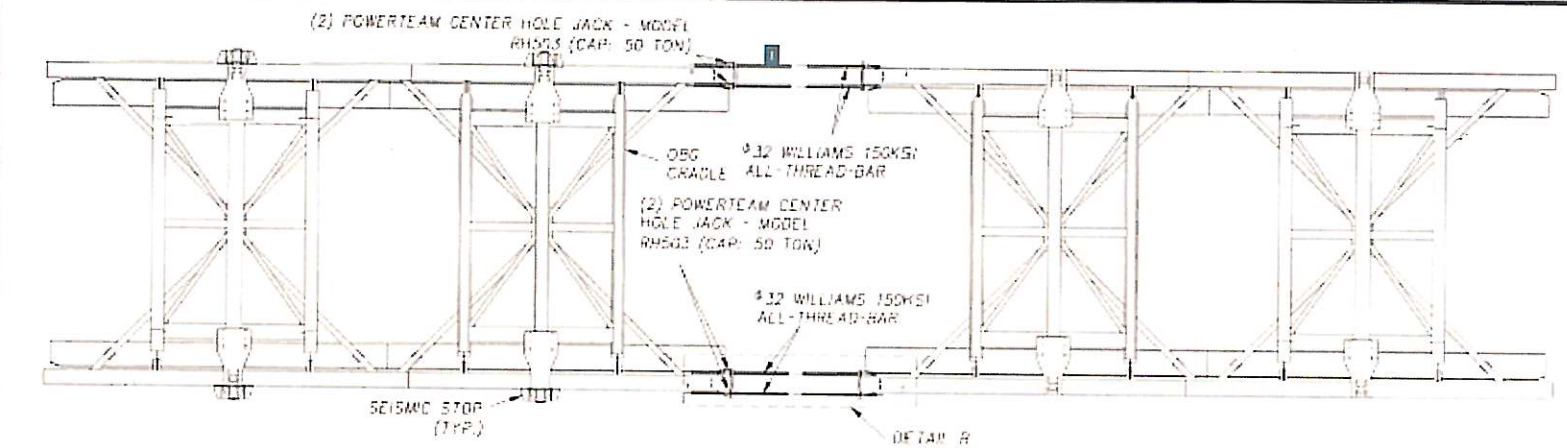
- Field Drill Holes in the Box Girder using remaining splice Plates as Templates.
  - Fully Bolt the remaining Splice Plates between the Cradle and the Box Girder.

OBG INSTALLATION TEAM 2

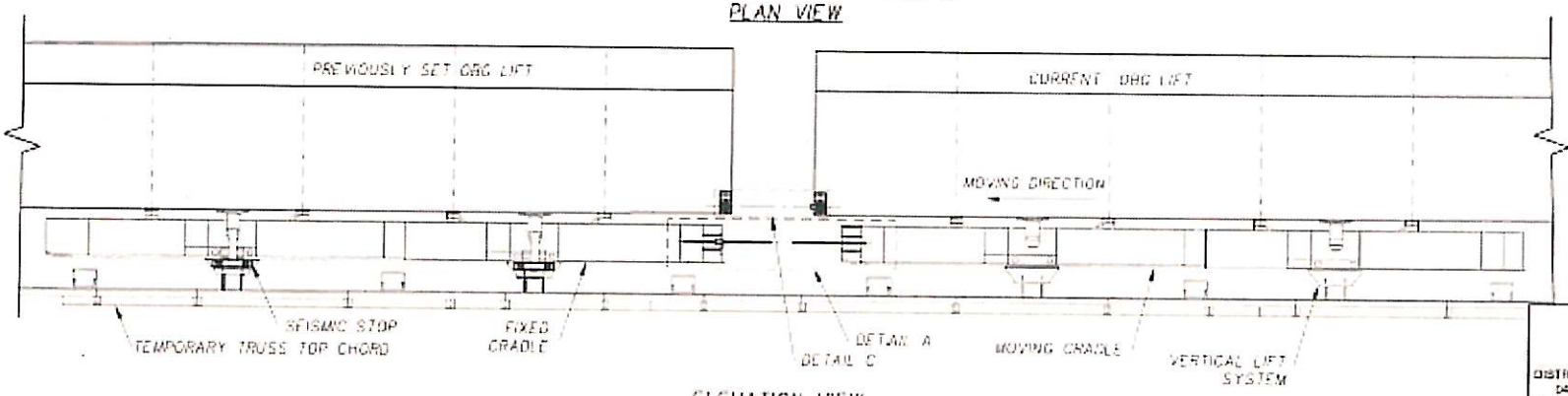
Repeat Same steps for OBG 2E

OBG INSTALLATION TEAM 2

- Use Pushing Frame to slide Lift 2E on its Cradle to its final erected position
  - Install Longitudinal Alignment Jacks, (Power Team Center Hole Jacks, Model RH503, Cap 50 T) and rods (#32 Williams All Thread Bars) at the OBG Splice location.



PLAN VIEW



ELEVATION VIEW

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.

2. THE DESIGN OF THE THIS JACKING SYSTEM ASSUMES A COEFFICIENT OF FRICTION BETWEEN THE CRADLE AND THE SLIDER PAD OF 1-% OR LESS. THE MAXIMUM JACKING FORCE SHALL BOT EXCEED THE CAPACITY OF THE JACKS (55 TON PER JACK).

3. JACK PAIRS SHALL BE MANIFOLDED TO ENSURE EQUAL LOADING ON EITHER SIDE OF THE BEAM.

REV	DATE	BY	DESCRIPTION
5			
4			
3			
2			
1			

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONTRACT NO. 04-0120F4
BRIDGE NO. 34-0006R

DISTRICT	COUNTY	ROUTE	KILOMETER POST
04	SF	80	13.2 / 13.9

SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF ANCHORED SUSPENSION BRIDGE
(SUPERSTRUCTURE AND TOWER)

OBG ERECTION PLAN
LONGITUDINAL ALIGNMENT JACKING SYSTEM
GENERAL ARRANGEMENT

American Bridge FLUOR

Made By:	E. BLUE	Date: 4/28/09
Checked By:	K. SMITH	Date: 4/28/09
In Charge Of:	R. KICK	

Job No.	Sheet No.
060110	DE229AB
Scale: NTS	Revision: 0

OBG INSTALLATION TEAM 2

- Disconnect the Pushing Frame from the Cradle.
  - Return the Pushing Frame to its Starting Location.

OBG INSTALLATION TEAM 2

- Align the Splice Plate between 2E and 1E as follows:
  - Vertical direction by Vertical Jacks
  - Longitudinal direction by Longitudinal Jacks
  - Lateral Direction by Lateral Jacks.
- Verify the Splice Alignment and Location per OBG Survey Plan and Erection Engineering Report
- Do not Exceed DNE Loads

JACK	DL *	LL **	DL+LL	DO NOT EXCEED LOADS ***	D/C
E 1-1 S	- 3,529	-156	-3,686	-4,903	0.75
E 1-1 N	- 3,502	-156	-3,658	-4,903	0.75
E 1-2 S	- 2,326	-192	-2,518	-3,414	0.74
E 1-2 N	- 2,745	-192	-2,937	-3,414	0.86
E 2-1 S	- 2,811	-192	-3,002	-3,673	0.82
E 2-1 N	- 3,074	-192	-3,266	-3,673	0.89
E 2-2 S	- 3,020	-209	-3,229	-3,691	0.87
E 2-2 N	- 3,040	-209	-3,250	-3,691	0.88
E 3-1 S	- 1,694	-209	-1,904	-3,679	0.52
E 3-1 N	- 1,598	-209	-1,807	-3,679	0.49
E 3-2 S	- 1,659	-174	-1,833	-3,679	0.50
E 3-2 N	- 1,629	-174	-1,803	-3,679	0.49
E 4-1 S	- 3,057	-174	-3,231	-3,684	0.88
E 4-1 N	- 2,821	-174	-2,995	-3,684	0.81
E 4-2 S	- 1,528	-227	-1,755	-3,684	0.48
E 4-2 N	- 2,149	-227	-2,375	-3,684	0.64
E 5-1 S	- 2,573	-227	-2,799	-5,252	0.53
E 5-1 N	- 2,435	-227	-2,662	-5,252	0.51
E 5-2 S	- 2,168	-314	-2,482	-5,252	0.47
E 5-2 N	- 2,161	-314	-2,475	-5,252	0.47
E 6-1 S	- 3,506	-314	-3,820	-4,830	0.79
E 6-1 N	- 3,608	-314	-3,922	-4,830	0.81
E 6-2 S	- 4,047	-419	-4,466	-4,830	0.92
E 6-2 N	- 2,993	-419	-3,412	-4,830	0.71

JACK	DL *	LL **	DL+LL	DO NOT EXCEED LOADS ***	D/C
W 1-1 S	- 3,660	-156	-3,816	-4,903	0.78
W 1-1 N	- 3,444	-156	-3,600	-4,903	0.73
W 1-2 S	- 2,876	-192	-3,068	-3,374	0.91
W 1-2 N	- 2,448	-192	-2,640	-3,374	0.78
W 2-1 S	- 3,164	-192	-3,356	-3,661	0.92
W 2-1 N	- 2,842	-192	-3,034	-3,661	0.83
W 2-2 S	- 2,933	-209	-3,142	-3,678	0.85
W 2-2 N	- 2,797	-209	-3,007	-3,678	0.82
W 3-1 S	- 2,427	-209	-2,636	-3,654	0.72
W 3-1 N	- 2,282	-209	-2,491	-3,654	0.68
W 3-2 S	- 2,047	-174	-2,221	-3,020	0.74
W 3-2 N	- 2,007	-174	-2,181	-3,020	0.72
W 4-1 S	- 3,070	-174	-3,244	-3,680	0.88
W 4-1 N	- 2,958	-174	-3,132	-3,680	0.85
W 4-2 S	- 1,602	-227	-1,829	-3,680	0.50
W 4-2 N	- 1,620	-227	-1,847	-3,680	0.50
W 5-1 S	- 2,301	-227	-2,528	-5,214	0.48
W 5-1 N	- 2,427	-227	-2,654	-5,214	0.51
W 5-2 S	- 2,737	-314	-3,051	-5,214	0.59
W 5-2 N	- 2,623	-314	-2,937	-5,214	0.56
W 6-1 S	- 3,123	-314	-3,437	-4,875	0.70
W 6-1 N	- 2,697	-314	-3,011	-4,875	0.62
W 6-2 S	- 3,156	-419	-3,574	-4,875	0.73
W 6-2 N	- 2,832	-419	-3,250	-4,875	0.67

NOTE: * Demands based on construction sequences 1- 34 (Closure Pour). Construction stages beyond lift 6 may cause higher jacking forces

** Live Load, LL based on a uniform distributed area load = 0.96 kPa applied to the full deck area, and an edge loading of 1.1 kN/m applied to both edges. Tributary length is based on a fully connected OBG. Crane Live loads were not included in this analysis.

Table 1. Jacking Force Envelope and Do Not Exceed Load Summary

OBG INSTALLATION TEAM 2

- Bolt the Splice between 1E and 2E per Bolting and Welding Plan of the OBG Erection Plan.
- Remove Lateral Jacks
- Install Seismic Stops between the Cradle and the Temporary Truss
- Install Shims around the Seismic Stops per Dwg. DE651A
- Seismic Stops and Shim Plate installation provides the Additional Seismic Capacity per the Erection Plan

OBG INSTALLATION TEAM 2

- Field Drill holes in the OBG using the remaining shear plates as templates
- Bolt the remaining shear plates between the Cradle and the OBG.
- This step provides the Additional Seismic Capacity per the Erection Plan.

OBG INSTALLATION TEAM 2

- Repeat for OBG Lift 3E
- Repeat for OBG Lift 4E
- Repeat for OBG lift 1W

CB INSTALLATION TEAM 2

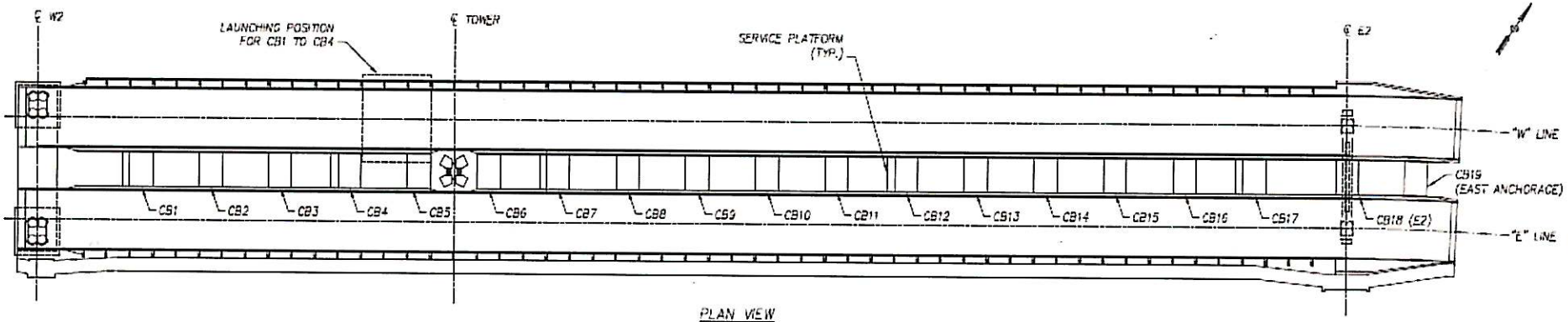
Erect Cross Beam CB1

Per

Submittal 1201 R00

CB INSTALLATION TEAM 2

- The Cross Beam Gantry will be used to erect cross beams CB1 through CB4.
- The Shear Leg Crane will be used for cross beams CB5, CB7 through CB17.



PLAN VIEW

ERECTION SEQUENCE ORDER:

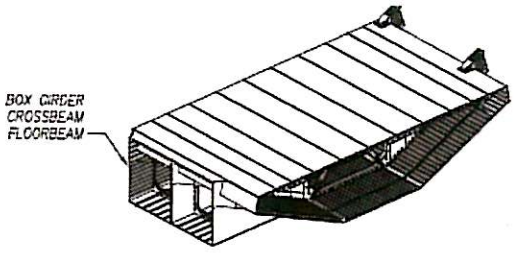
1. CB1
2. CB2
3. CB3
4. CB4
5. CB5
6. CB7
7. CB8
8. CB9
9. CB10
10. CB11
11. CB12
12. CB13
13. CB14
14. CB15
15. CB16
16. CB18 (E2)
17. CB17
18. CB19 (EAST ANCHORAGE)
19. CB6

GENERAL NOTES:

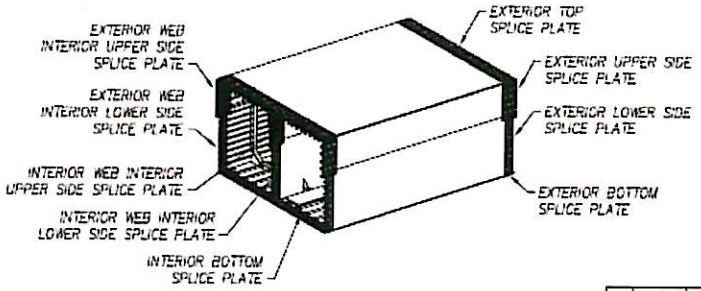
1. ALL DIMENSIONS ARE IN MILLIMETERS, U.N.O.
2. THIS CROSSBEAM ERECTION PLAN PROVIDES THE MEANS AND METHODS FOR ERECTION OF CROSSBEAMS CB1–CB5 AND CB7–CB17.
3. FOR DETAILS OF SHEAR LEG CRANE POSITION DURING ERECTION, REFER TO ASF–SUB–00105R00.
4. THE ERECTION PLANS FOR REMAINING CROSSBEAMS WILL BE PROVIDED AS SEPERATE SUBMITTALS.

NOTES:

1. THE CROSSBEAM GANTRY WILL BE USED (BUT NOT LIMITED) TO ERECT CROSSBEAMS CB1 THROUGH CB4.
2. CROSSBEAMS CB5 AND CB7 THROUGH CB17 WILL BE SET BY THE SHEAR LEG CRANE.
3. SPLICE PLATES SHOWN IN CROSSBEAM KEY ARE FOR A TYPICAL CROSSBEAM (CB1 THROUGH CB17). THEY ARE SHOWN IN THEIR FINAL POSITION, NOT THEIR ERECTED POSITION



BOX GIRDER KEY



CROSSBEAM KEY
(SEE NOTE 4)

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONTRACT NO. 04-0120F4
BRIDGE NO. 34-0096R

DISTRICT	COUNTY	ROUTE	KILOMETER POST
04	SF	80	13.2 / 13.9

SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF ANCHORED SUSPENSION BRIDGE
(SUPERSTRUCTURE AND TOWER)

CROSSBEAM ERECTION PLAN
(CB1-CB5 & CB7-CB17)
GENERAL OVERVIEW

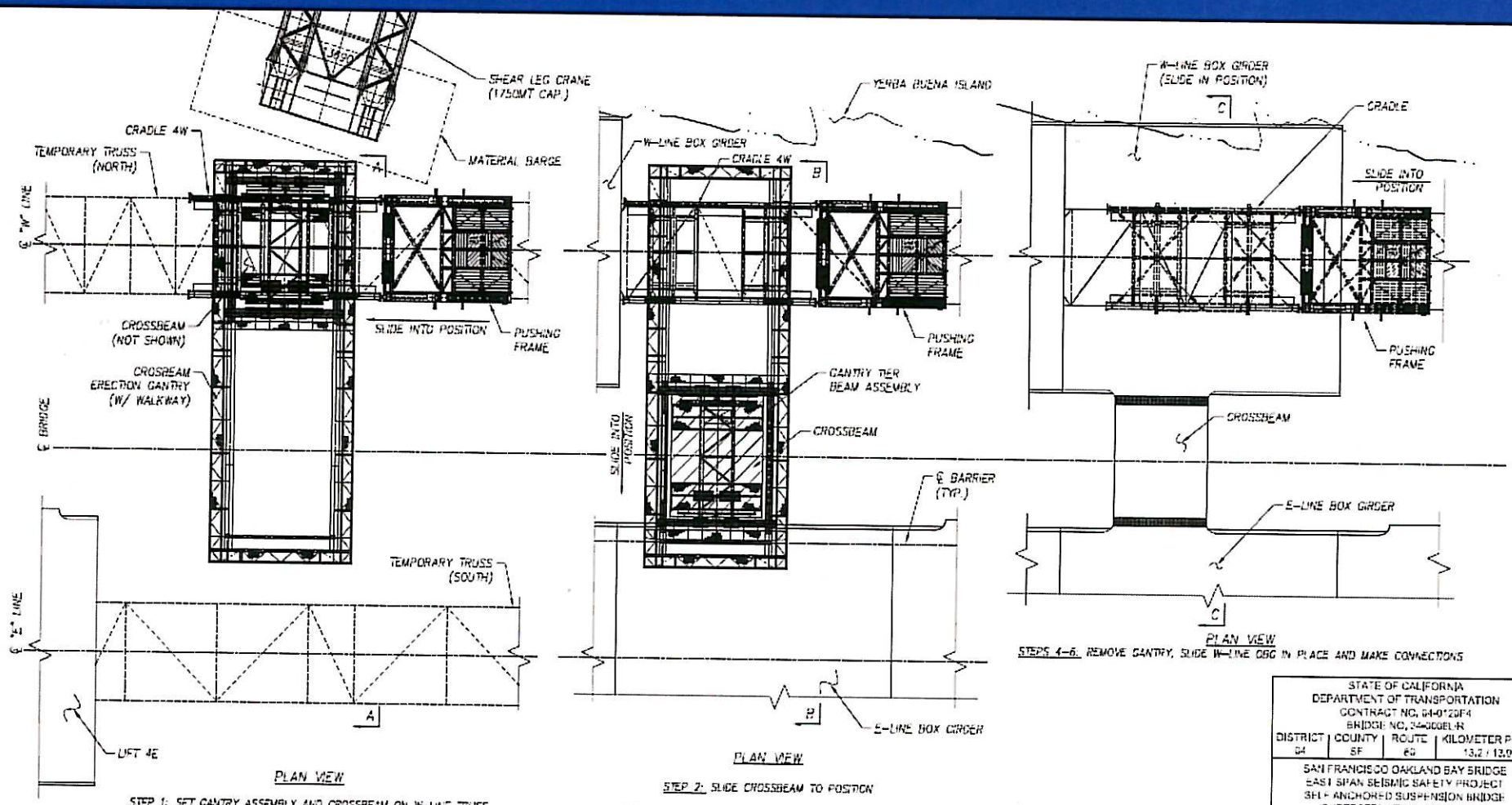
REGISTERED PROFESSIONAL ENGINEER
KENRIK M. SMITH
No. C 52218
Exp 9/30/09
CIVIL
STATE OF CALIFORNIA

American Bridge / FLUOR

6			
5			
4			
3			
2			
1			

Made By: K. CHEN Date: 04/13/2009
Checked By: K. SMITH Date: 04/16/2009
In Charge Of: R. KICK

Job No. 660110 | Sheet No. DE221AT



GANTRY CROSSBEAM ERECTION PLAN (CROSSBEAMS CB1 THROUGH CB4):

1. USE THE SHEAR LEG CRANE TO SET THE GANTRY ASSEMBLY WITH CROSSBEAM ONTO THE TEMPORARY TRUSS NEAR PANEL POINT 35W.
2. USE THE PUSHING FRAME TO SLIDE THE GANTRY ASSEMBLY AND THE CROSSBEAM LONGITUDINALLY INTO POSITION. INSTALL BLOCKING TO SUPPORT THE SOUTH END OF THE GANTRY ON THE E-LINE BOX GIRDER. USE THE ERECTION GANTRY TO MOVE THE CROSSBEAM TRANSVERSELY INTO POSITION RELATIVE TO THE E-LINE BOX GIRDER.
3. INSTALL A SUFFICIENT NUMBER OF BOLTS TO SECURE THE CROSSBEAM TO THE E-LINE GIRDER. DISCONNECT THE GANTRY FROM THE CROSSBEAM AND REMOVE THE GANTRY.
4. USE THE PUSHING FRAME TO SLIDE THE W-LINE BOX GIRDER INTO POSITION.
5. INSTALL A SUFFICIENT NUMBER OF BOLTS TO SECURE THE W-LINE BOX GIRDER TO THE PREVIOUSLY ERECTED BOX GIRDER. ALIGN THE NORTH END OF THE CROSSBEAM WITH THE W-LINE BOX GIRDER AND INSTALL A SUFFICIENT NUMBER OF BOLTS TO SECURE THE CROSSBEAM TO THE W-LINE BOX GIRDER.
6. INSTALL THE REMAINING BOLTS IN THE CROSSBEAM TO BOX GIRDER CONNECTION.

NOTES:

1. REFER TO GENERAL NOTES ON SHEET DE221AT.
2. CB1 WEIGHS 131.2MT, CB2 WEIGHS 110.4MT, CB3 WEIGHS 110.3MT, AND CB4 WEIGHS 113.1MT.
3. CB EXTERIOR BOLTING PLATFORM NOT SHOWN FOR CLARITY.
4. "GANTRY ASSEMBLY" INCLUDES CRADLE 4W, CROSSBEAM ERECTION GANTRY, AND EXTERIOR SPLICE PLATE ACCESS PLATFORM.
5. REFERENCE SHEET DE221CT FOR SECTION VIEWS A-A, B-B, AND C-C.
6. FOR ERECTION OF THE CROSSBEAM ERECTION GANTRY, SEE SHEETS DE221KT, DE221LT, DE221MT, AND DE221NT.

REV	DATE	BY	DESCRIPTION
6			
5			
4			
3			
2			
1			

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONTRACT NO. 04-0120F4
BRIDGE NO. 34-0008E/R

DISTRICT	COUNTY	ROUTE	KILOMETER POST
04	SF	80	13.2 / 13.9

SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SKEIN ANCHORED SUSPENSION BRIDGE
(SUPERSTRUCTURE AND TOWER)

CROSSBEAM ERECTION PLAN
(CB1-CB5 & CB7-CB17)
CROSSBEAMS CB1-CB4 ERECTION (1 OF 2)

American Bridge FLUOR

Made By: K. CHEN Date: 04/13/2009
Checked By: K. SMITH Date: 04/16/2009
In Charge Of: R. KICK

Job No.	Sheet No.
660110	DE221BT
Scale: N.T.S.	Revision: 0

CB INSTALLATION TEAM 2

- Cross Beam General Erection Plan
  - Follow steps similar for OBGs
  - Unload Cross Beams
  - Outfit CBs with Shear Plates
  - Outfit CBs with Lifting attachments

CB INSTALLATION TEAM 2

- On the E- Line OBGs install Type B Splice Plates
- On W-Line OBGs, install Type A splice Plates
- All interior splice plates will be installed in retracted position using permanent bolts
- All stiffener splice bolts will be bolted to cross beam in a retracted position.

CB INSTALLATION TEAM 2

- Erect Scaffolding inside the cross beam.
- Erect the cross beam bolting platform at the south end of cross beam.
- Bolt the cross beam Lifting Brackets and Pad eyes at the crossbeam splices.

CB INSTALLATION TEAM 2

CB1 through CB4 Erection Plan

CB INSTALLATION TEAM 2

- CB1 erection will begin after Lifts 1E through 4E and Lift 1W are in place with all required bolts and welding.
- Use the Shear Leg Crane and Lifting Frame to lift the Assembly of:
  - Cross Beam,
  - Cradle 4W,
  - Exterior Bolting Platform and the
  - Erection Gantry

CB INSTALLATION TEAM 2

- Set this Assembly as a unit on W-Line Temporary Truss near Panel Point 35.
- Tie north end of Cradle 4W to the Temporary Truss with two 6 ton ratchet hoists.
- Remove Gantry Lifting Brackets.

CB INSTALLATION TEAM 2

- Erect the Strand Tier Beams (using Shear Leg Auxiliary Hooks).
- Secure Tier Beams to the Erection Gantry (with Gripper jacks)
- Disconnect Ratchet Hoist

CB INSTALLATION TEAM 2

- Use Pushing Frame to slide the Cross Beam Gantry Assembly on W Line to proper location.
- Use two 20 tonne jacks at the south end columns of the Gantry Crane
- Support the Gantry columns on the temporary blockings on top of OBG 1E.

CB INSTALLATION TEAM 2

- Move Cross beam longitudinally and transversely along the Gantry Runway and align with OBG Lift 2E.
- Install Pins and 11/8” diameter A325 Bolts to support the cross beam as a cantilever off E-Line OBG.

CB INSTALLATION TEAM 2

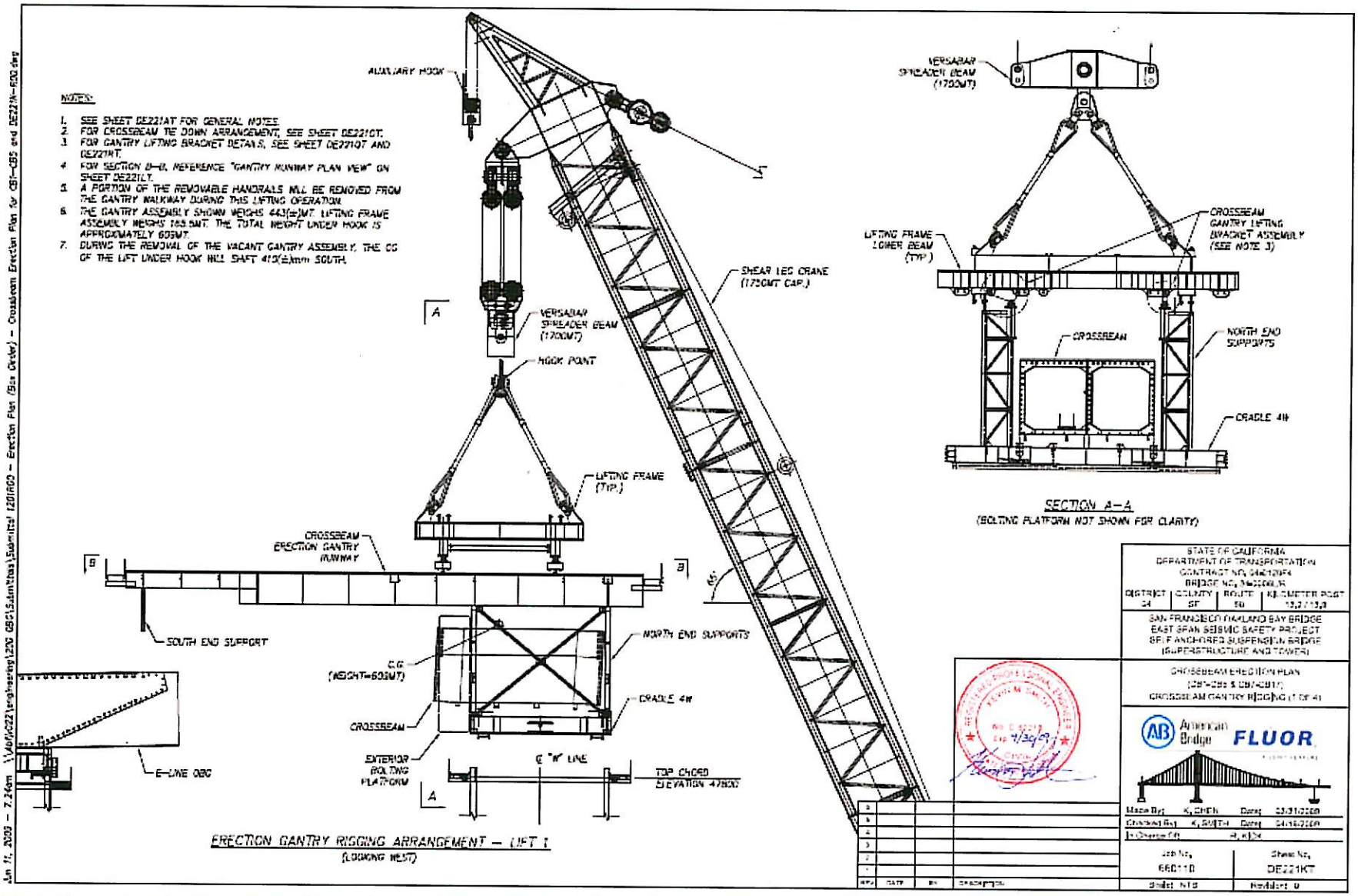
- Relocate the scaffolding and exterior bolting platform and secure to the OBG
- Install permanent bolts in the cross beam to the E-Line OBG.
- Prepare to remove the Erection Gantry.
  - Detach the Strand Jacks from Cross Beam
  - Slide and secure the Strand Jack tier Beams to north most location
  - Remove the Temporary supports from E-Line OBG.

CB INSTALLATION TEAM 2

- Use Pushing Frame to slide the Gantry Crane back to its original location.
- Remove Gantry Crane to Barge

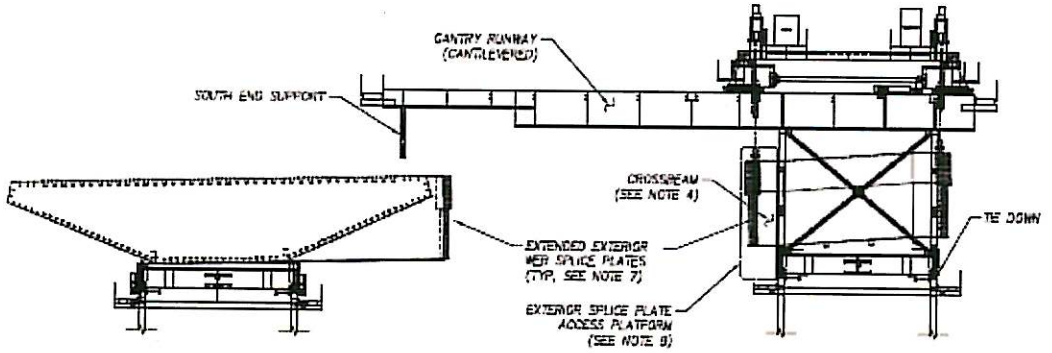
CB INSTALLATION TEAM 2

- Install the next Cross Beam on Cradle 4W (and prepare for next cross beam erection).
  - Erect W-Line Box Girder in position and install sufficient number of bolts to secure the W-Line OBG.
  - Align north end of CB1 to the W-Line OBG.

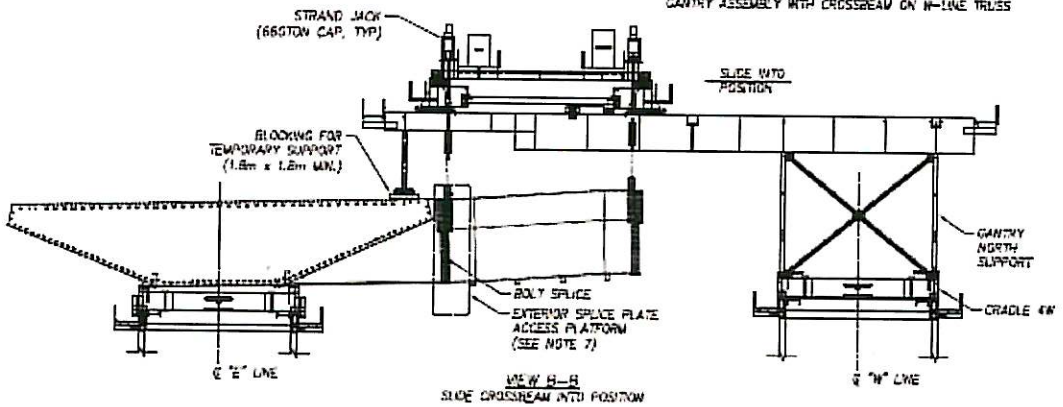

NOTES:
1. SEE SHEET DE221AT FOR GENERAL NOTES.
2. FOR CROSSBEAM TIE DOWN ARRANGEMENT, SEE SHEET DE221DT.
3. FOR GANTRY LIFTING BRACKET DETAILS, SEE SHEET DE221QT AND DE221RT.
4. FOR SECTION B–B, REFERENCE "GANTRY RUNWAY PLAN VIEW" ON SHEET DE221LT.
5. A PORTION OF THE REMOVABLE HANDRAILS WILL BE REMOVED FROM THE GANTRY WALKWAY DURING THIS LIFTING OPERATION.
6. THE GANTRY ASSEMBLY SHOWN WEIGHS 443(±)MT. LIFTING FRAME ASSEMBLY WEIGHS 165.5MT. THE TOTAL WEIGHT UNDER HOOK IS APPROXIMATELY 609MT.
7. DURING THE REMOVAL OF THE VACANT GANTRY ASSEMBLY, THE CG OF THE LIFT UNDER HOOK WILL SHIFT 415'(±)mm SOUTH.
AUXILIARY HOOK
SHEAR LEG CRANE (1750MT CAP.)
VERSABAR SPREADER BEAM (1700MT)
HOOK POINT
LIFTING FRAME (TYP.)
CROSSBEAM ERECTION GANTRY RUNWAY
SOUTH END SUPPORT
C.G (WEIGHT=609MT)
NORTH END SUPPORTS
CRADLE 4W
CROSSBEAM
EXTERIOR BOLTING PLATFORM
℄ "W" LINE
TOP CHORD ELEVATION 47'8"
E-LINE OBC
ERECTION GANTRY RIGGING ARRANGEMENT – LIFT 1
(LOOKING WEST)
VERSABAR SPREADER BEAM (1700MT)
LIFTING FRAME LOWER BEAM (TYP.)
CROSSBEAM GANTRY LIFTING BRACKET ASSEMBLY (SEE NOTE 3)
CROSSBEAM
NORTH END SUPPORTS
CRADLE 4W
SECTION A–A
(BOLTING PLATFORM NOT SHOWN FOR CLARITY)
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONTRACT NO. 04E120F4
BRIDGE NO. 34-0006R
DISTRICT 04 | COUNTY SF | ROUTE 80 | KILOMETER POST 13.2/13.8
SAN FRANCISCO-OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF ANCHORED SUSPENSION BRIDGE
(SUPERSTRUCTURE AND TOWER)
CROSSBEAM ERECTION PLAN
(OBC-OBS & OBT-OBW)
CROSSBEAM GANTRY RIGGING (1 OF 4)
American Bridge FLUOR
Made By: K. CHEN Date: 03/31/2009
Checked By: K. SMITH Date: 04/16/2009
Job No. 660110
Sheet No. DE221KT
Scale: NTS
Revision: 0
Jan 11, 2009 – 7:44am \\Vdi\ICO2\engineering\200 GBS\Admin\Submittal 120\RFD – Erection Plan (Bay Girder) – Crossbeam Erection Plan for OBT–OBS and DE221N–RFD.dgn

NOTES:

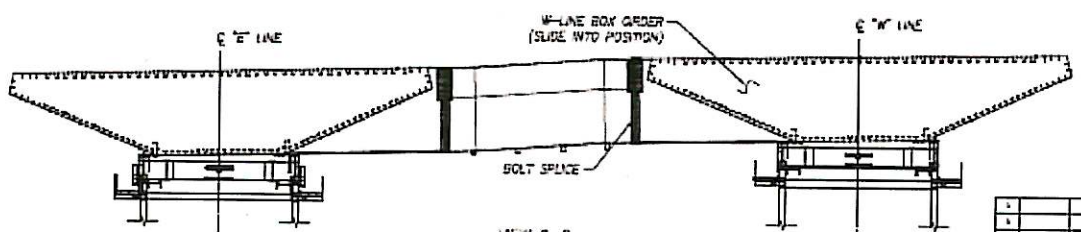
1. REFER TO GENERAL NOTES ON SHEET DE221AT.
2. REFER TO PLAN VIEWS ON SHEET DE221BT.
3. BEFORE MOVING THE CROSSBEAM TRANSVERSELY, DEVELOP BLOCKING AND TIE DOWN THE SOUTH END SUPPORT TO THE E-LINE OBG. REFER TO ALLNORTH CONSULTANT'S DRAWING NO. CB206 FOR GENERAL ARRANGEMENT OF THE TIE DOWN SYSTEM.
4. CROSSBEAM 1 SHOWN, CROSSBEAMS 2 AND 3 SIMILAR.
5. GANTRY WALKWAY NOT SHOWN FOR CLARITY.
6. REFERENCE SHEETS DE221ET, DE221FT, AND DE221GT FOR INTERIOR AND EXTERIOR SPLICE PLATES INSTALLATION DETAILS.
7. FOR CROSSBEAM TIE DOWN AND RIGGING ARRANGEMENT, SEE SHEETS DE221GT AND DE221PT.
8. EXTERIOR BOLTING PLATFORM NOT SHOWN FOR CLARITY.



VIEW A–A
GANTRY ASSEMBLY WITH CROSSBEAM ON W-LINE TRUSS



VIEW B–B
SLIDE CROSSBEAM INTO POSITION



VIEW C–C
SLIDE W-LINE BOX GIRDER INTO POSITION

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
CONTRACT NO. 04-0120F4
BRIDGE NO. 34-0006UR

DISTRICT	COUNTY	ROUTE	KILOMETER POST
04	SF	80	13.7 / 13.8

SAN FRANCISCO OAKLAND BAY BRIDGE
EAST SPAN SEISMIC SAFETY PROJECT
SELF ANCHORED SUSPENSION BRIDGE
(SUPERSTRUCTURE AND TOWER)

CROSSBEAM ERECTION PLAN
(CB1-CB5 & CB7-CB17)
CROSSBEAMS CB1-CB4 ERECTION (2 OF 2)

American Bridge FLUOR

Made By: K. CHEN Date: 03/31/2009
Checked By: K. SMITH Date: 04/16/2009
In Charge Of: H. KIDA

Job No.	Sheet No.
660110	DE221CT
Scale: NTS	Revision: 0

REV	DATE	BY	DESCRIPTION
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1			

Jun 11, 2009 – 7:13am \\Asf\v222\engineering\200 OBG\Submittals\Submittal 1201R00 – Erection Plan (Box Girder) – Crossbeam Erection Plan for CB1-CB5 and DE221C-R00.dwg

CB INSTALLATION TEAM 2

- Install Permanent Bolts in the cross beam to W-Line OBG Splice to support the cross beam.
- Install all remaining Bolts of Cross Beam to OBG.
- Repeat for installation of Cross Beams CB2, CB3 and CB4.

CB INSTALLATION TEAM 2

- **Cross Beam Bolting Sequencing**
- 1 1/8" Dia A325 Bolts for CB top flange and interior web splice (Min 64 bolts for personnel to enter).
- Install and torque all permanent M24 bolts (268 bolts min)
- Release the Cross Beam from the Crane
- Connect the cross beam to E-Line and W-Line OBGs by installing all bolts (min. 648 bolts).
- Ref Dwgs DE221FT to DE221JT

CB INSTALLATION TEAM 2

- **Over View of Gantry Crane**
- Used for CB1 to CB4
- Erection Gantry & Cross Beam are initially supported on Cradle 4W
- Cantilevered towards south
- 65MT Steel and 17.4 MT Concrete Counter Weights for stability during transport on Temp truss
- South end supported on 6'x6' blocking on OBG for launching of Cross beam

CB INSTALLATION TEAM 2

- Two Strand jacks are on the Gantry to raise the cross beam and for its transverse support.
- Adjustment Rigging per Dwg DE221PT are used to adjust longitudinal slope of cross beam.
- Skid jacks & Hilman rollers allow the cross beam to move Longitudinally and transversally.
- Fine tuning during bolting by Ratchet Hoists, Pins, All thread rods and jacks.

CB INSTALLATION TEAM 2

- To Be Continued