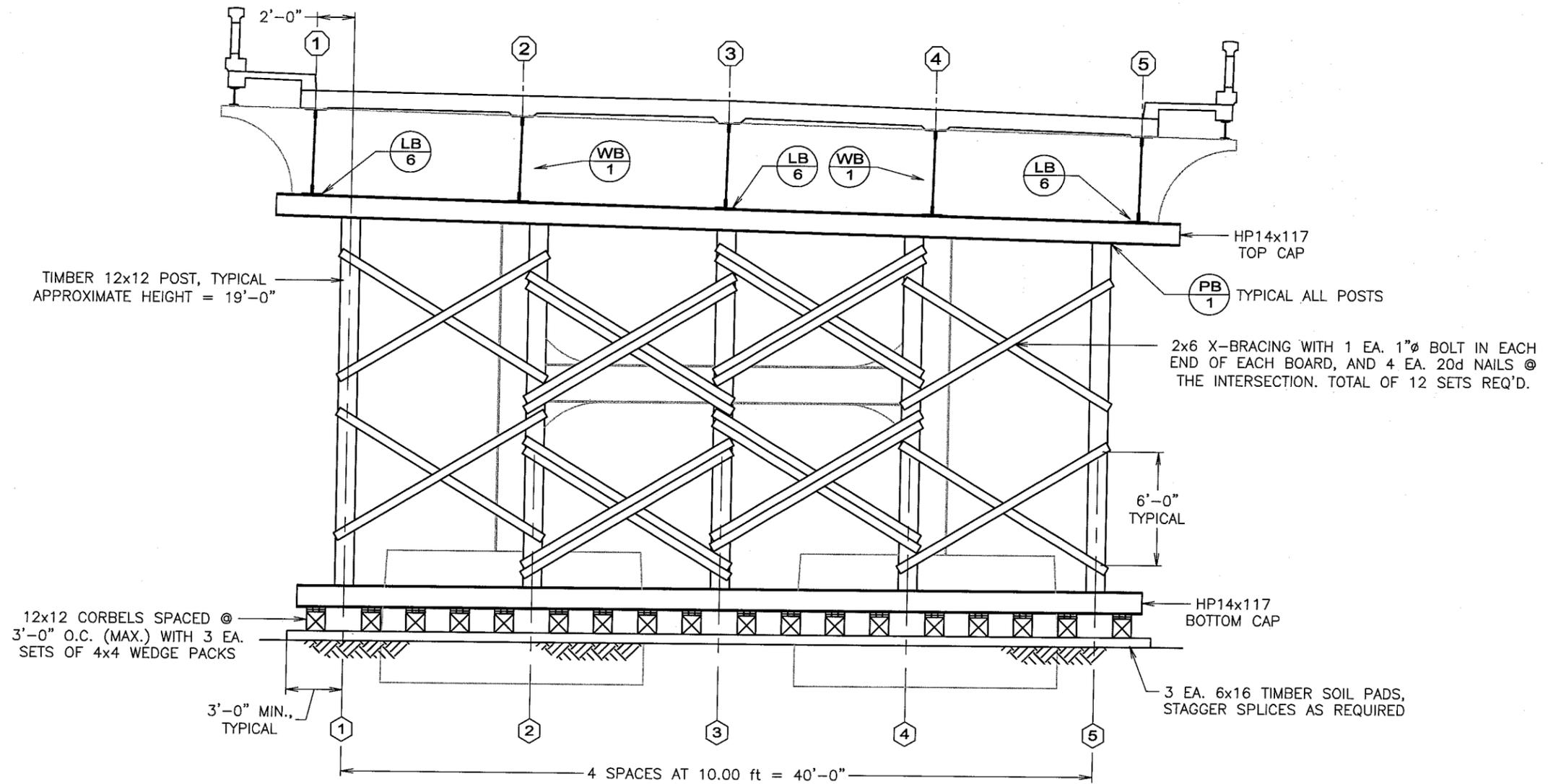


BENT 7, SPAN 6



PLACE SOIL PADS TIGHT AGAINST EXISTING CONCRETE BENT,
 CENTER OF TEMPORARY BENT TO CENTER OF THE PERMANENT BRIDGE
 BENT. = 2.83 ft±
 MAX. ANTICIPATED GROUND PRESSURE = 3,749 PSF

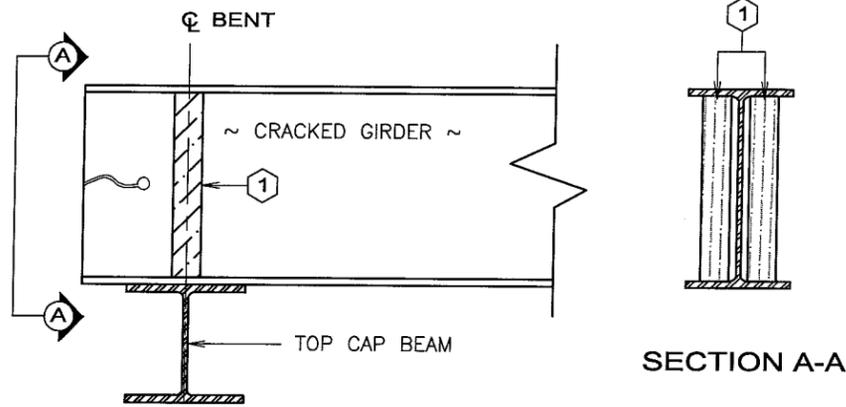
FILE: \City of San Bernardino\24031 Mt. Vernon Bridge\Mt. Vernon Bridge.dwg



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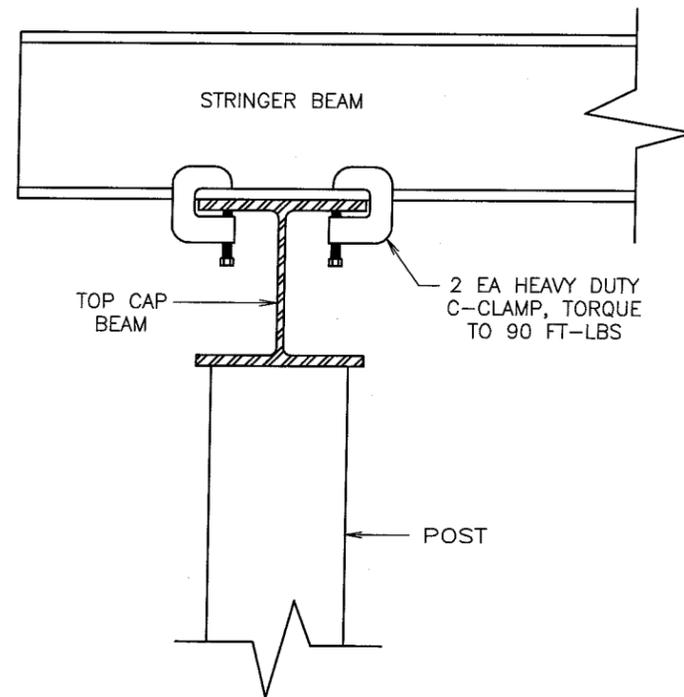
REVISION:	SCALE: 1:7
DATE: 09/09/08	JOB # 24031
BY: jds	SHEET 1 OF 3

CLIENT:	CITY OF SAN BERNARDINO
PROJECT:	MT. VERNON BRIDGE - TEMPORARY SHORE

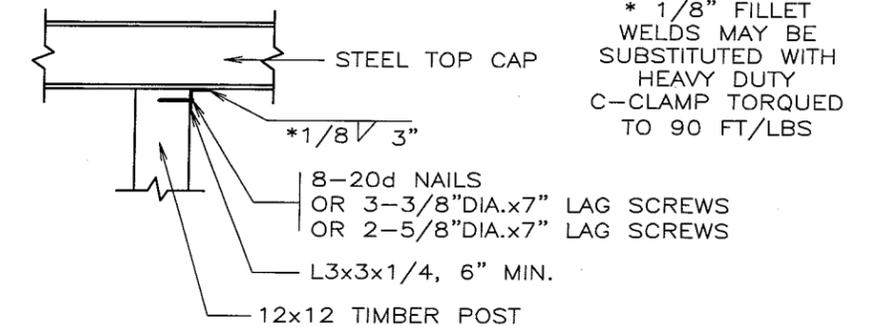


1 4x4 BLOCKING CUT TO FIT, AND WEDGE TIGHT, TYPICAL BOTH SIDES OF WEB

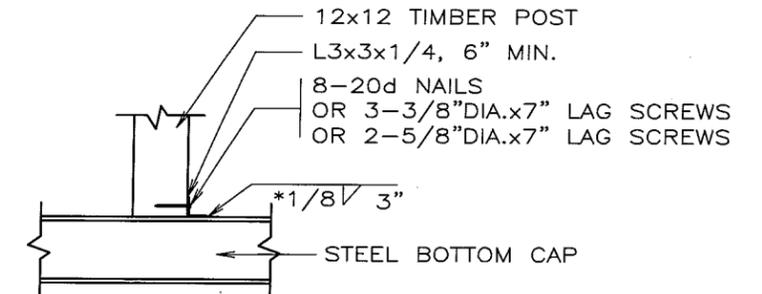
WB 1 WEB BLOCKING DETAIL



LB 6 LONGITUDINAL BRACING



TOP CAP CONNECTION

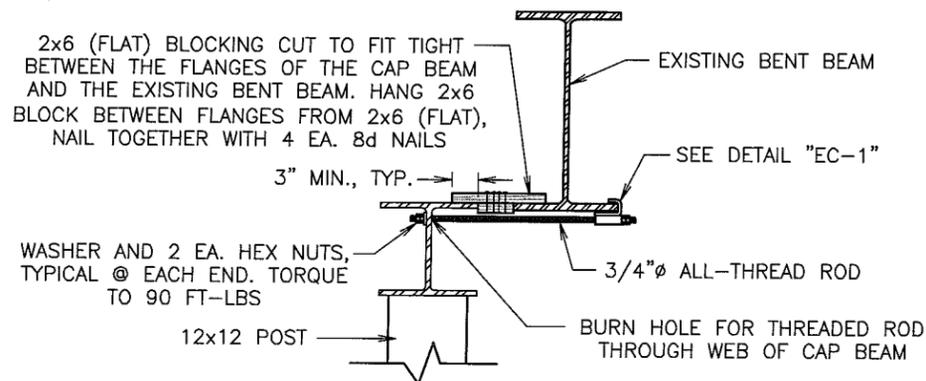


BOTTOM CAP CONNECTION

PC 1 POST TO CAP CONNECTION

GENERAL CONSTRUCTION NOTES:

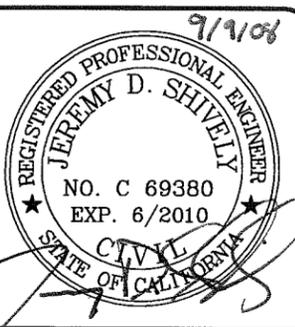
- 1) FALSEWORK IS CONSTRUCTED AS PER CONTRACT PLANS AND CALTRANS STANDARD SPECIFICATIONS SECTION 51-1.06, JULY, 1999 EDITION.
- 2) FALSEWORK IS TO BE INSPECTED BY THE FALSEWORK DESIGN ENGINEER (OR HIS DESIGNATED REPRESENTATIVE) TO DETERMINE THAT THE FALSEWORK IS CONSTRUCTED SUBSTANTIALLY TO CONFORM TO THESE PLANS.
- 3) ANTICIPATED SETTLEMENT OF ALL BENTS IS 5/8".
- 4) ALL TIMBER MEMBERS GREATER THAN 4" (NOMINAL) IS ROUGH DIMENSION LUMBER.
- 5) ALL DIMENSIONS ARE STANDARD U.S. DIMENSIONS (FT/IN).
- 6) TRAFFIC IMPACT BRACING IS REQUIRED FOR THE BENTS ADJACENT TO TRAFFIC. SEE DETAILS "TB-1" FOR TYPICAL CONNECTION DETAILS.
- 7) PLACE WOOD SHIMS BETWEEN F/W BENT TOP CAP AND EXISTING STRINGER BEAMS TO PROVIDE FULL CONTACT BETWEEN STRINGERS AND TOP CAP BEAMS (WHERE REQUIRED).



PB 1 POST BRACING DETAIL

MT. VERNON BRIDGE - TEMPORARY SHORE
ADDITIONAL BENT @ BENT 7, SPAN 6

FILE: \City of San Bernardino\24031 Mt. Vernon Bridge\Mt. Vernon Bridge.dwg



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REVISION:	SCALE: NONE
DATE: 09/09/08	JOB # 24031
BY: jds	SHEET 2 OF 3

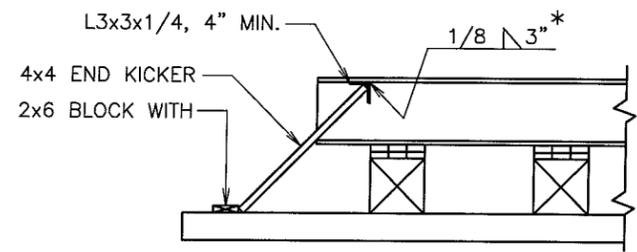
CLIENT:	CITY OF SAN BERNARDINO
PROJECT:	MT. VERNON BRIDGE - TEMPORARY SHORE

TB 1 TRAFFIC IMPACT BRACING DETAIL

CONNECT POSTS TO STEEL CAP BEAMS AS PER DETAIL "PC-1"

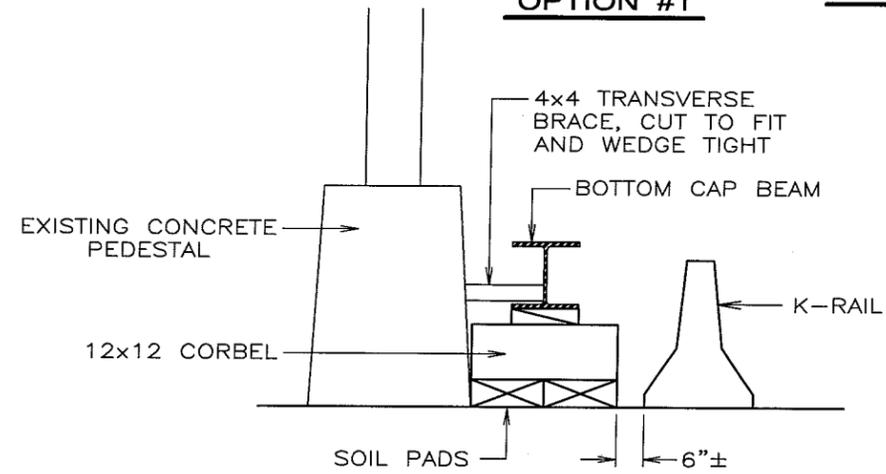
END KICKERS

* 1/8" FILLET WELDS MAY BE
SUBSTITUTED WITH HEAVY DUTY
C-CLAMP TORQUED TO 90 FT/LBS



INSTALL 4x4 END KICKERS AT EACH END OF TRAFFIC BENTS

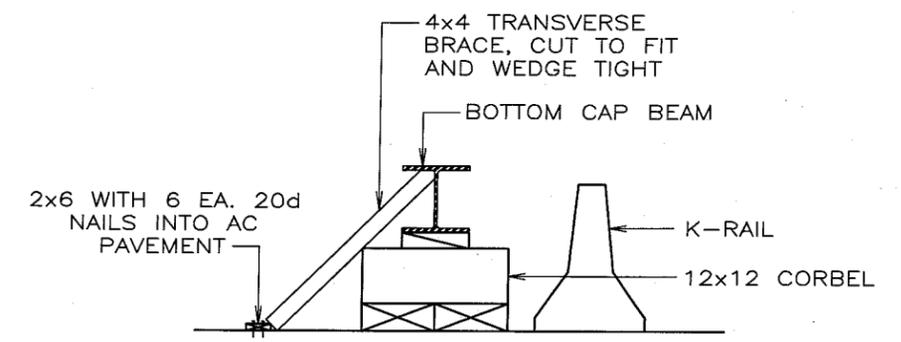
OPTION #1



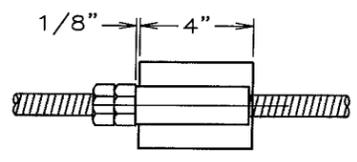
INSTALL 4x4 TRANSVERSE BRACE AT EACH END OF TRAFFIC BENTS

TRANSVERSE BRACING

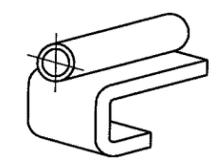
OPTION #2



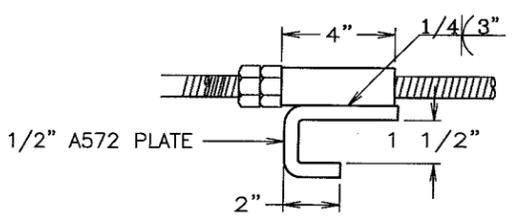
INSTALL 4x4 TRANSVERSE BRACE AT EACH END OF TRAFFIC BENTS



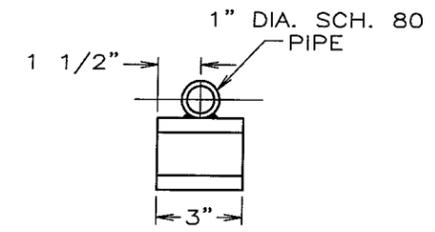
TOP VIEW



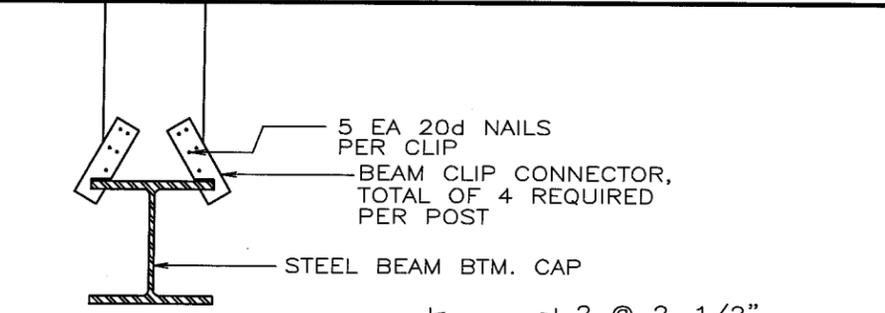
ISOMETRIC VIEW



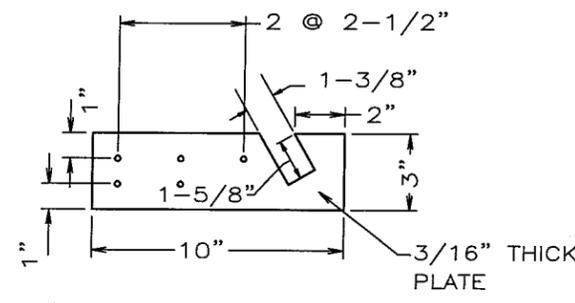
SIDE VIEW



END VIEW



POST TO BTM. CAP CONNECTION



BEAM CLIP DETAILS
BEAM CLIP DETAIL

BC 1

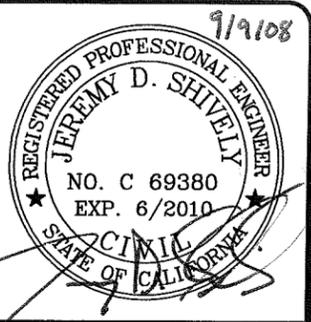
- 1) THIS DETAIL MAY BE USED AT THE TOP & THE BTM. OF ALL POST.
- 2) THIS DETAIL IS AN OPTIONAL ERECTION AID FOR THE CONTRACTOR AND MAY BE ELIMINATED AT HIS DISCRETION

ERECTION PROCEDURE:

- 1) GRADE EXISTING GROUND WHERE REQUIRED AND PLACE SOIL PADS AND CORBELS.
- 2) BUILD BENT ON THE GROUND INCLUDING THE TOP CAP, BOTTOM CAP, POSTS AND LATERAL X-BRACING.
- 3) INSTALL WEB BLOCKING AS PER DETAIL "WB-1" DIRECTLY OVER THE LOCATION OF THE CENTER OF THE TEMPORARY SUPPORT BENT, PRIOR TO ERECTING THE BENT.
- 4) STAND PREFABRICATED PORTION OF THE BENT USING A CRANE OR OTHER HOISTING EQUIPMENT.
- 5) ONCE THE BENT HAS BEEN PLACED ON THE CORBELS AND PLUMBED PLACE A HYDRAULIC BOTTLE JACK UNDER EACH POST BETWEEN THE BTM. FLANGE OF THE BOTTOM CAP BEAM AND THE TOP OF THE SOIL PADS. JACK SHOULD BE SET ON A STEEL JACKING PLATE (12x12x3/4 MIN.) WHICH RESTS ATOP THE SOIL PADS.
- 6) JACK BENT UP EVENLY UNTIL THE TOP CAP BEAM IS SNUG AGAINST THE BOTTOM OF THE EXISTING STRINGER BEAMS. TAKE CARE NOT TO DAMAGE THE EXISTING STRUCTURE BY OVER JACKING THE BENT.
- 7) TIGHTEN WEDGES BETWEEN THE CORBELS AND THE BOTTOM FLANGE OF THE BOTTOM CAP BEAM. ONCE ALL WEDGES HAVE BEEN SET TIGHT, RELEASE THE HYDRAULIC PRESSURE ON THE JACKS. REMOVE JACKS AND STEEL JACKING PLATE.
- 8) INSTALL PERMANENT LONGITUDINAL BRACING PER DETAIL "LB-6" AT THE LOCATIONS INDICATED ON THE PLANS.

EC 1

END CLIP DETAIL

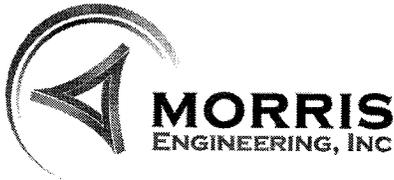


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REVISION:	SCALE: NONE
DATE: 09/09/08	JOB # 24031
BY: jds	SHEET 3 OF 3

CLIENT:	CITY OF SAN BERNARDINO
PROJECT:	MT. VERNON BRIDGE - TEMPORARY SHORE

FILE: \City of San Bernardino\24031 Mt. Vernon Bridge\Mt. Vernon Bridge.dwg



Job No.	24031	Sheet	1 of 6
Job Title	Mount Vernon Ave. – Temporary Shoring Calculations		
Client	City of San Bernardino		
Designer	jds	Date	09/09/08
Revision		Date	

JOB DESCRIPTION:

City of San Bernardino

**Mount Vernon Ave.
Temporary Shoring Calculations**

Additional Bent @ Bent 7, Span 6

PREPARED FOR:

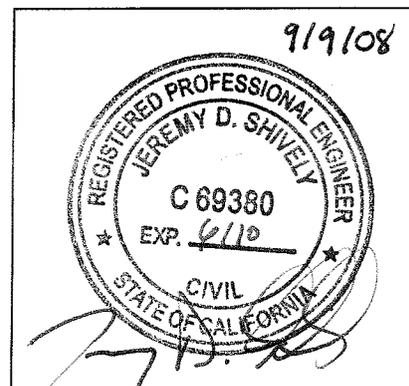
City of San Bernardino

300 N. "D" Street
San Bernardino, California 94218

ENGINEER OF RECORD:

The following calculations have been prepared by:

Jeremy D. Shively, P.E.
California # 69380, Exp. 06/30/10



BENTS

Location : **BENT Bent 7, Span 6**

BENT LOADING

Left Adjacent Span	N/A	Tributary Length	#N/A ft
Right Adjacent Span	N/A	Tributary Length	#N/A ft
		Total Tributary Length	#N/A ft

Point Loads	Load	Girder	D.L. (lb)	L.L. (lb)	X (ft.)	Total Load
	No.	Number				
	1	1	39,000	53,500	0	92,500
	2	2	34,000	53,500	11.01	87,500
	3	3	29,500	53,500	22.03	83,000
	4	4	25,000	53,500	33.04	78,500
	5	5	20,000	53,500	44.05	73,500
	6					
	7					
	8					
	9					
	10					
	11					
	12					

Subtotal = 415,000

Uniform Loads	Load	Description	Xstart	Xend	Load	Total Load
	No.					
	1	cap beam self weight	0.00	44.04	117	5,153
	2					
	3					
	4					
	5					

Subtotal = 5,153

Total Bent Loading = 420,153

Top Cap Summary

Top Cap Beam = HP14X117
 Bending = Fb = 12,374 lbs/in²
 Shear = Fv = 3,028 lbs/in²
 Max. Deflection = 0.02 in.

Sub Cap Summary

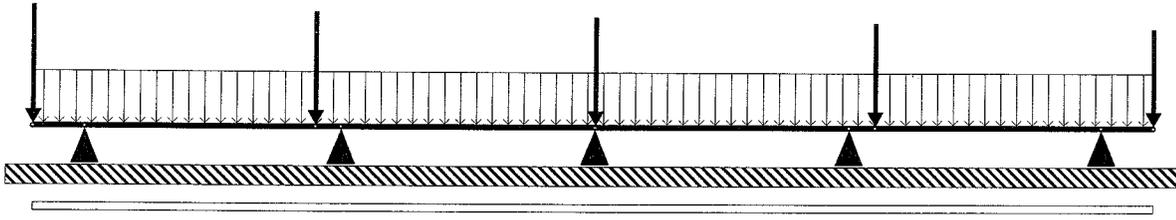
Sub Cap Beam =
 Bending = Fb = lbs/in²
 Shear = Fv = lbs/in²
 Max. Deflection = in.

Post

Loads	X (ft.)	Ry (lbs)
1	2.00	121,420
2	12.00	59,096
3	22.00	86,189
4	32.00	55,631
5	42.00	97,818
6		
7		

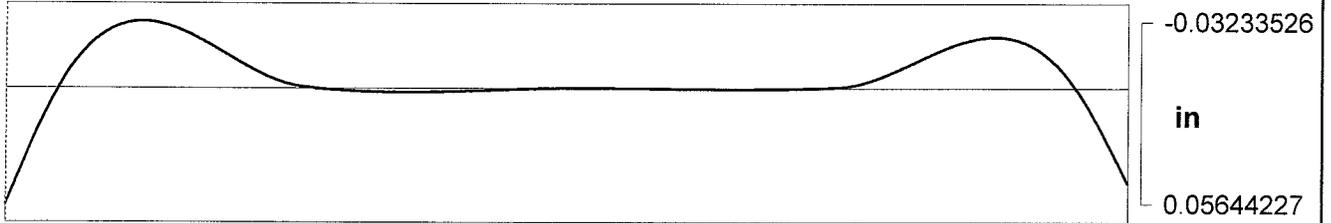
Total Load = 420,154

24031 - Mount Vernon Temp. Support - Bent 7 Span 6 - HP14x117 Top Cap



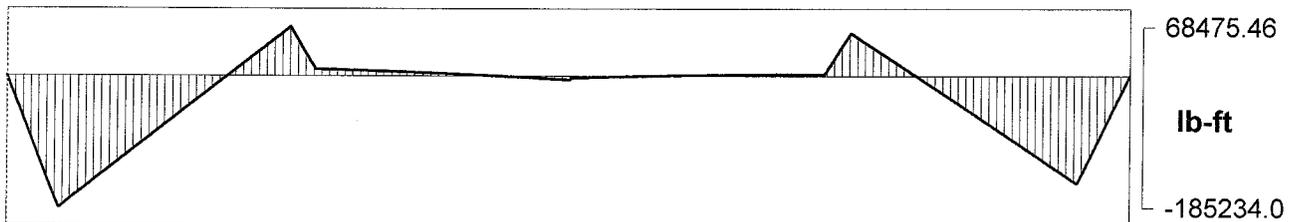
Beam Length: 44.05 ft

Location: 0.0 ft



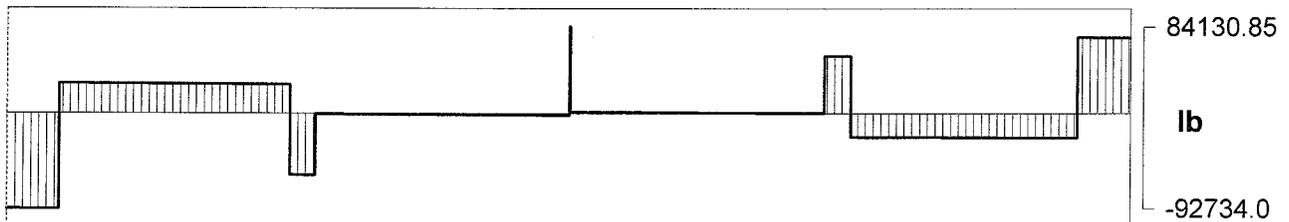
Deflection

0.05644227



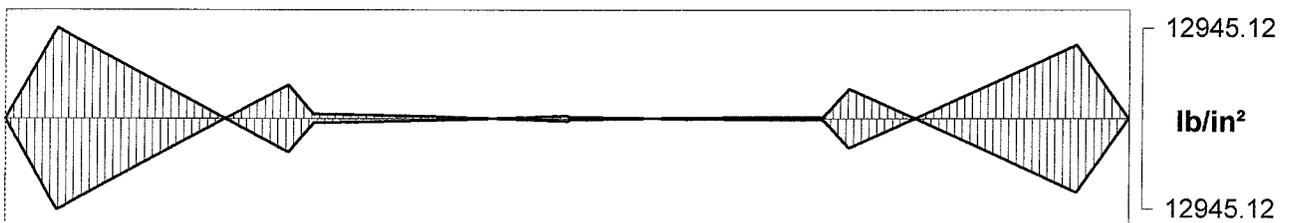
Moment

0.0



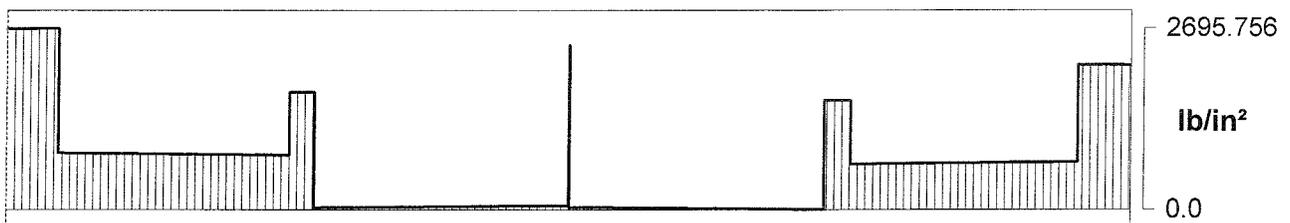
Shear

-92500.0



Bending Stress

Tensile: 0.0 Compressive: 0.0



Average Shear Stress

2688.953

** 24031 - Mount Vernon Temp. Support - Bent 7 Span 6 - HP14x117 Top Cap **

BEAM LENGTH = 44.05 ft

MATERIAL PROPERTIES

A36 Steel:

Modulus of elasticity = 29000000.0 lb/in²

CROSS-SECTION PROPERTIES

HP14x117 X:

Moment of inertia = 1220.0 in⁴

Top height = 7.105 in

Bottom height = 7.105 in

Area = 34.4 in²

EXTERNAL CONCENTRATED FORCES

Girder 1: 92500.0 lb at 0.0 ft

Girder 2: 87500.0 lb at 11.01 ft

Girder 3: 83000.0 lb at 22.03 ft

Girder 4: 78500.0 lb at 33.04 ft

Girder 5: 73500.0 lb at 44.05 ft

UNIFORMLY DISTRIBUTED FORCES

beam self weight: 117.0 lb/ft at 0.0 over 44.05 ft

LIMITS - ABSOLUTE

CALTRANS (A36):

Tensile = 22000.0 lb/in²

Compressive = 22000.0 lb/in²

Shear = 14500.0 lb/in²

SUPPORT REACTIONS ***

Simple at 2.0 ft

Reaction Force = -121419.7 lb

Simple at 12.0 ft

Reaction Force = -59096.34 lb

Simple at 22.0 ft

Reaction Force = -86188.78 lb

Simple at 32.0 ft

Reaction Force = -55631.3 lb

Simple at 42.0 ft

Reaction Force = -97817.7 lb

MAXIMUM DEFLECTION ***

0.05644227 in at 0.0 ft

No Limit specified

MAXIMUM BENDING MOMENT ***

-185234.0 lb-ft at 2.0 ft

MAXIMUM SHEAR FORCE ***

-92734.0 lb at 2.0 ft

MAXIMUM STRESS ***

Tensile = 12945.12 lb/in² Safety Factor = 1.699

Compressive = 12945.12 lb/in² Safety Factor = 1.699

Shear (Avg) = 2695.756 lb/in² Safety Factor = 5.379

BENTS

Location : **BENT Bent 7, Span 6**

TOP CAP

Top Cap Beam Type	HP14X117	Mod. of Elasticity	30,000,000 psi
Number of Top Cap Beams	1	Section Modulus	172 in ³
Top Cap Length	44.04 ft.	Moment of Inertia	1,120 in ⁴

Actual Bending Stress = fb =	12,374 lbs/in ²	Allowable Bending Stress = Fb =	22,000 lbs/in ²
Actual Shear Stress = fv =	3,028 lbs/in ²	Allowable Shear Stress = Fv =	14,500 lbs/in ²
Maximum Deflection =	0.02 in.		

POSTS

	1	2	3	4	5	6	7
Post No.	1	2	3	4	5	6	7
Post Size	tmb12x12	tmb12x12	tmb12x12	tmb12x12	tmb12x12		
No. of Posts	1	1	1	1	1		
Post Load (lbs)	121,420	59,096	86,189	55,631	97,818		
Max. Unbraced Post Height (ft)	19.42	19.42	19.42	19.42	19.42		
Adjacent to Traffic (yes or no)	yes	yes	yes	yes	yes		
Design Load (lbs)	182,130	88,644	129,284	83,447	146,727		
F(II) - Actual (psi)	1,265	616	898	579	1,019		
F(II) - Allowable (psi)	1,273	1,273	1,273	1,273	1,273		

Posts Adjacent to Traffic are Designed for 150% of Actual Load

$$\text{Allowable Stress Parallel to Grain} = F(II) = \frac{480,000}{(\text{Post Ht.} / \text{Least Post Dimension})^2} \quad (1,600 \text{ psi Maximum})$$

SOIL PADS

	1	2	3	4	5
Tributary Width (ft)	8.00	10.00	10.00	10.00	8.00
Pad Size	tmb6x16	tmb6x16	tmb6x16	tmb6x16	tmb6x16
No. of Pads	3	3	3	3	3
Actual Bearing Pressure (psf)	3794	1477	2155	1391	3057

LATERAL X-BRACING

Location =	BENT Bent 7, Span 6				BENT			
	Max. Bent Load = 420,153 lbs				Max. Bent Load = lbs			
Type (or Alternate) =	A	B	C	D	A	B	C	D
Post Size =	tmbr12x12							
Cross Bracing Member =	wd2X6							
Type of Connection =	bolt							
Number of Connectors =	1							
Size of Connectors =	1.00							
No. of Sets of X-Bracing =	6							
Width of Cross Bracing =	10.00							
Height of Cross Bracing =	6.00							
Compression Members	Lu =	5.83						
	Fb =	221						
	Fc =	910						
	HCAF =	780						
Tension Members	Am =	6.75						
	Ft =	8,100						
	HCAF =	6946						
Nailed Members	Fn =							
	L.F. =							
	Capacity =							
	HCAF =							
Bolted & Lag Screwed Members	Fp (Post) =	5,080						
	Fq (Post) =	2,770						
	Angle =	1.030						
	Fp (side member) =	3,750						
	Post Capacity =	3,936						
	Side Member Capacity =	3,516						
	Maximum Capacity =	3,516						
	HCAF =	3015						
Max. Comp. Force =	780							
Max. Tension Force =	3,015							
Max. Force per Set =	3,795							
Total Force per Type =	22,769							
	Assumed lateral load = 5.0%				Assumed lateral load = 2.0%			
	Min. Req'd Force = 21,008 lbs				Min. Req'd Force = lbs			

Lu = Unsupported length of X-Brace member
 Fb = Allowable axial stress due to buckling
 Fc = Allowable axial force in compression
 HCAF = Horizontal component of axial force
 Am = Cross sectional area of x-brace member
 Ft = Allowable tensile force in member

Fn = Shear capacity of single nail
 L.F. = Short term load factor
 Fp = Allowable force parrallel to grain
 Fq = Allowable force perpendicular to grain
 Angle = The angle between the x-brace and the post