State of New Jersey

NEW JERSEY DEPARTMENT OF TRANSPORTATION
1035 PARKWAY AVENUE
P.O. Box 600
TRENTON, NEW JERSEY 08625-0600

BRIDGE EVALUATION SURVEY REPORT

STRUCTURE NO. 5###-###
US ROUTE 46 OVER BROWERTOWN ROAD
LITTLE FALLS TOWNSHIP
PASSAIC COUNTY

SAMPLE FORMAT A REPORT

(FOR GUIDANCE ONLY)

1ST CYCLE

JUNE 05, 2007

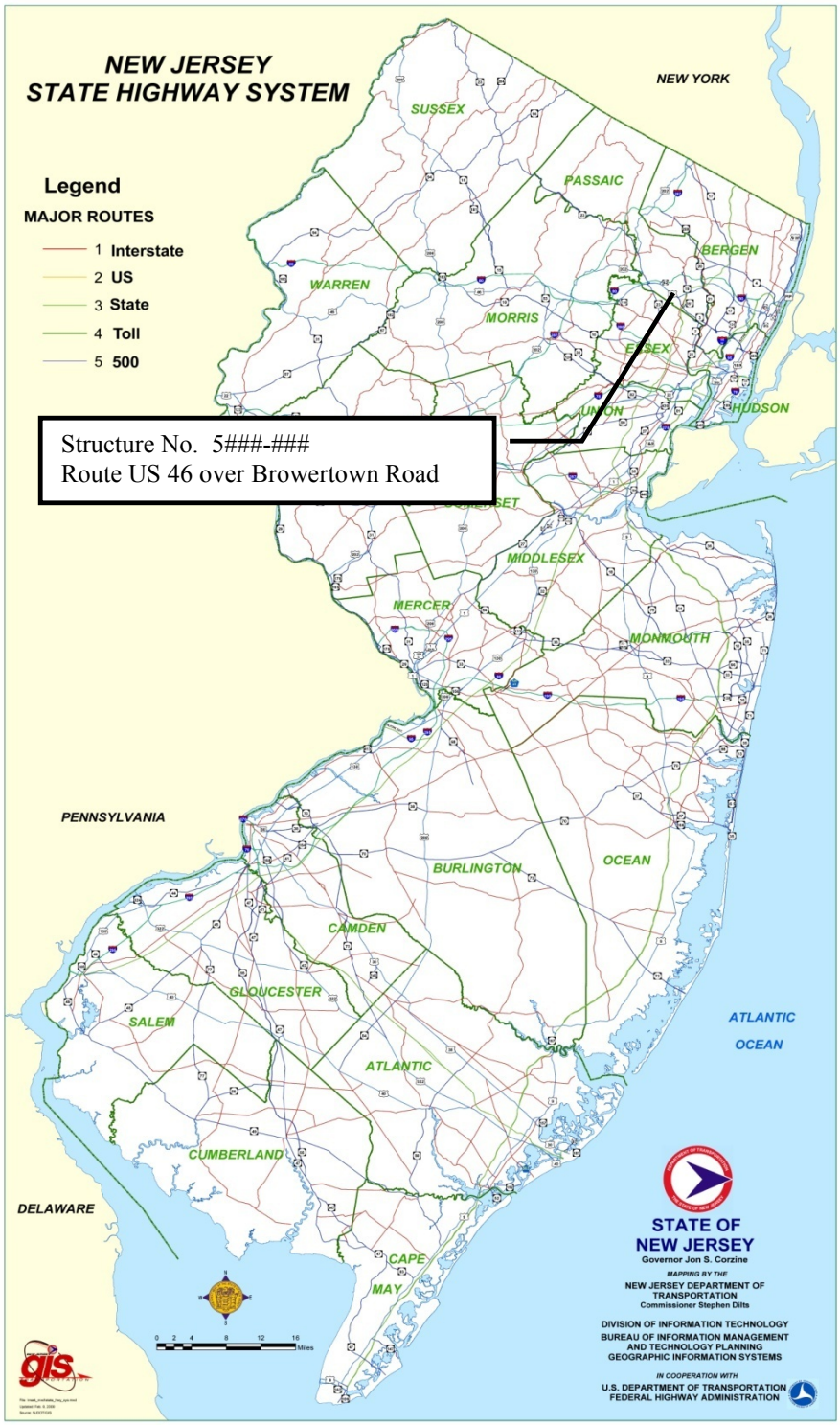
Prepared By:

ABC Consultant
(Consultant Name & Address)

TABLE OF CONTENTS:

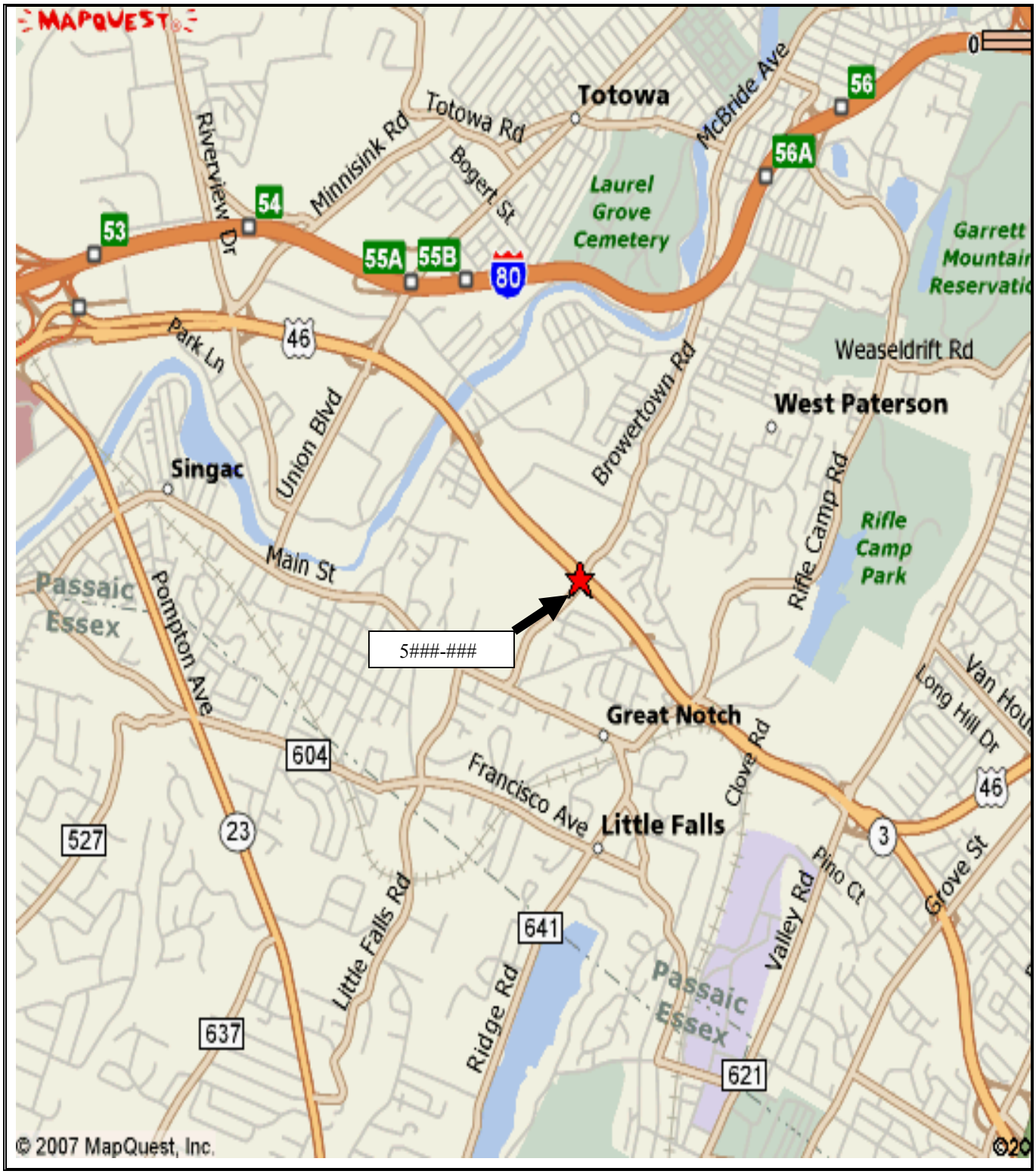
Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

GENERAL LOCATION MAP:



Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

BRIDGE LOCATION MAP:



N.J.D.O.T. - STRUCTURAL EVALUATION
EVALUATION BRIDGE SURVEY REPORT
CYCLE NO. 1

STRUCTURAL DATA:

Bridge No.:	5###-###	Year Built:	2006	Widened/ Rehab:	
Route No.:	US 46	Length:	69.0’	Width:	146.4’
Mile Point:	58.73	Date of this Evaluation:		June 5, 2007	
Municipality:	Little Falls Twp.	By:	ABC Consultant		
County:	Passaic	Special Equipment Used:		None	
Name:	US Route 46 over Browertown Road	Date of Underwater Inspection:*			
		By:*			
Structure Type:	Single span, simply supported, rolled steel stringers.	Scour Critical:*	Yes / No		

*Note: Only when applicable.

OVERALL CONDITION: Excellent

Inspection Team Leader: **Rajesh C. Patel** **Initials:** **RCP**

Certifying Engineer: **James Lane, P.E.**

NJ P.E. Number: **GE02859100**

I certify that this report is an accurate description of the Subject structure, to the extent determinable by visual Inspection and testing performed.

Signature: _____

Date: _____

Seal

Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

COMPONENT/MATERIAL	CONDITION RATING	REMARKS
DECK (Reinforced Concrete)	Excellent	No apparent defects
APPROACHES (Concrete)	Good	No apparent defects
SUPERSTRUCTURE (Pretension Prestressed Concrete)	Excellent	No apparent defects
SUBSTRUCTURE (Reinforced Concrete)	Excellent	No apparent defects
WATERWAY/CHANNEL	NA	NA
SAFETY FEATURES	1101	State any deficiency
DECK GEOMETRY	9	8 lanes; 4 lanes in each direction (including through ramp lanes) Roadway width = 129.6' curb to curb ADT = 128002; Year 2007 Item 68 = 9 from Table 2C
UTILITIES	Excellent	No apparent defects

The minimum vertical underclearance is 15.19 ft. under North fascia stringer at west edge
The lateral underclearances are: Left: 0.00 ft. Right: 12.50 ft.
For waterways include horizontal and vertical clearances of the main channel span.

CONTROLLING RATINGS:

Computer Program Used: Penn DOT BAR 7 (Version 7.11)
Based on the Load Factor / Working Stress method of analysis, the following load ratings have been computed in this cycle:

		Truck Type (Tons)			
Controlling Member	Rating Type	HS-20 (36)	3 (25)	3S2 (40)	3-3 (40)
Interior Stringer	Inventory Rating	83	78	105	125
	Operating Rating	138	130	176	208

Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

CONCLUSIONS & RECOMMENDATIONS:

The overall condition of the structure is excellent due to the superstructure and substructure.

We recommend that the following Emergency / Priority Repairs should be made to retard further deterioration, preserve the structural integrity of the bridge, improve safety and extend its useful life:

None

HISTORICAL INFORMATION:

Structure No. 5###-###, US Route 46 over Browertown Road was replaced in 2006 under the Route 46, Section 46 contract. The bridge is under the jurisdiction of the New Jersey Department of Transportation. This structure was constructed to replace the former structure at this location and provides a larger horizontal clearance for the routes above and below the structure.

The former structure was a single span, simply supported, concrete encased rolled steel multi-stringer bridge built in 1939.

BRIDGE DESCRIPTION:

Structure No. 5###-###, US Route 46 over Browertown Road, was constructed in 2006. The project was constructed according to construction plans prepared by CBA Design, Inc.

The bridge was designed in accordance with 1996 (16th Edition) Standard Specifications as modified by Section 3 of the 1998 NJDOT Design Manual for Bridges and Structures with the following allowable stresses:

Design Live Load: AASHTO MS 18 + 25% (MS 22.5) or tandem 108KN axles at 1.200 M centers (whichever governs).

Concrete (Deck) f ′c: 28 MPa = 4,000 psi (Class A).

Concrete (Abutment) f ′c: 21 MPa = 3,000 psi (Class B).

Structural Steel: AASHTO M 270M/M270, (Grade 345), fs= 50,000 psi

Reinforcing Steel: ASTM A615M (Grade 60), fs = 60,000 psi

The bridge is single span, simply supported rolled steel stringer structure designed to carry eastbound and westbound traffic of US Route 46.

The single span has a length of 67’ center to center of bearings. The total length of the bridge is 69’ between the rear faces of the abutment backwalls.

The deck is 9-1/4” thick concrete slab reinforced with epoxy coated reinforcing steel. The structure has a 129.6’ curb to curb width consistent for its full length. The structure carries 4 lanes of eastbound traffic and 4 lanes of westbound traffic, as well as corresponding shoulders. There are sidewalks on the bridge which measure 5.9’ and continue onto the approaches at all four corners. A split concrete median barrier extends the full length of the structure and concrete bridge railings (with balustrade type form liners) exist along the north and south fascias. A Type 3B chain link fence is present on the bridge railings on both fascias. The overall bridge width is 146.4’ measured out to out of the bridge fascias.

The superstructure consists of eighteen (18) simply supported, painted, composite, steel rolled beams supported on reinforced concrete abutments.

The substructure consists of reinforced concrete full height abutments and non-integral u-type wingwalls. Each substructure unit is supported on spread footings.

SI&A AND PONTIS SHEET:

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Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

Rated By: DJT Dated: 11/08 Checked By: IAA Dated: 11/08

SUMMARY OF RATINGS:

The Load Factor and Working Stress ratings, computed in the 1st Cycle report in accordance with the FHWA directive dated November 1993 and AASHTO Manual for Condition Evaluation of Bridges, 1994, as modified by Division 4 of the New Jersey Department of Transportation Design Manual, Bridges and Structures, are as follows:

Computer Program Used: PennDOT BAR 7 (Version 7.11)

PERCENT (%) SECTION LOSSES: *None.*

Allowable Stresses (Psi)

Material	Compressive Strength f 'c	Yield	Inventory	Operating
Concrete	4,000	---	1,600	2,400
Structural Steel	---	50,000	27,500	37,500
Reinforcing Steel	---	60,000	24,000	36,000

Rating (Tons)

Member	Truck Type (Tons)	Load Factor		Working Stress	
		Inventory	Operating	Inventory	Operating
Interior Stringer Center Span S-6	Type HS-20 (36T)	83	138	61	101
	Type 3 (25T)	78	130	58	95
	Type 3S2 (40T)	105	176	78	128
	Type 3-3 (40T)	125	208	92	152

STEEL MULTI – STRINGER RATING FORMAT

Route No. US-46 Bridge No. 1606-163 Made By DJT Date 11/13/08 Ckecked By JAA Date 11/13/08

Computer Input Data for(BAR7)– Bridge Analysis and Rating,Version 7.4 [Penn DOT – Software]

Bridge Type:

Reference: 1. AASHTO – Manual for Condition Evaluation of Bridges (1994)
2. AASHTO – Standard Specifications for Highway Bridges (1992)

Member to be rated:

W= Wheel Load

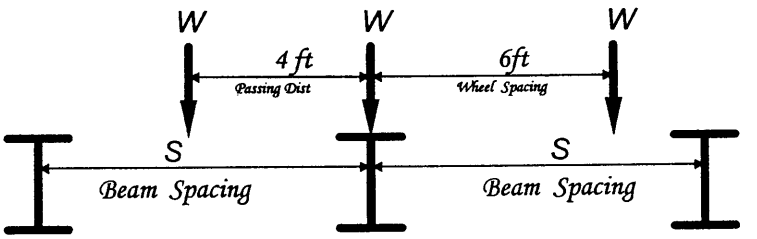
Span length (ft)= SL = 67.287'

Beam Spacing (ft)= S = 9.186'

Roadway Width (ft)= 146.443'

Number of lanes = NL = 8

Number of Beams = NB = 18



Slab Thickness (In) = 9.252" Concrete Strength f'c= 4,000 psi Structural Steel Stress fy = 50,000 psi

Distribution Factor for SHEAR = {1 + (S – 4) / S + (S – 6) / S } / 2 Ref. AASHTO – 3.23

(FOR AXLES) $= \frac{1}{2}\left[1 + \frac{5.186}{9.186} + \frac{3.186}{9.186}\right] = 0.9557$ Note: Disregard any negative component in this equation

Distribution Factor for MOMENT = S/(2 X 5.5) Ref. AASHTO – 3.23

(FOR AXLES) $= \frac{9.186}{11} = 0.8351$

Distribution Factor for DEFLECTION = (NL X Reduction Factor) / NB Ref. AASHTO – 3.12.1

$= \frac{(8 \times 0.75)}{18} = 0.3333$ Reduction Factor (NL 1 OR 2 = 1.0) (NL 3 = 0.9 & NL > 4 = .75)

Dead Loads (DL1) in k/lf : Diaphragms + Haunch + Bracings + Stiffeners + Encasement + SIP

MISC: (STIFFENERS, BRACINGS, DIAPHRAGMS, ETC.) = 0.020 k/lf

HAUNCH: $\frac{2.047"}{12} \times 0.150 \frac{k}{cf} \times \frac{16.496"}{12} = 0.035$ k/lf

SIP: $\left(9.186' - \frac{16.496"}{12}\right) \times \left(\frac{12\ lb}{ft^2}\right) \times \left(\frac{1k}{1000\ lb}\right) = 0.094$ k/lf

DL1 = 0.149 k/ft

Dead Loads (DL2) in k/lf : Parapet + Railing + Sidewalk

PARAPET: $(1.263' \times 3.002') \times (0.150 \frac{k}{cf}) \times \left(\frac{2}{18}\right) = 0.0632$ k/lf

+ MEDIAN: $\left(\frac{2}{18}\right)\left[(0.623')(2.904') + \frac{1}{2}(0.607')(1.066')\right] \times 0.150 \frac{k}{cf} = 0.0355$ k/lf

SIDEWALK: $\left(\frac{2}{18}\right)\left[(5.905)(0.55')\right](0.150 \frac{k}{cf}) = 0.0541$ k/lf

FENCE: $\left(0.025 \frac{k}{ft}\right)\left(\frac{2}{18}\right) = 0.0028$ k/lf

DL2 = 0.156 k/ft

CALCULATIONS:

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BRIDGE ANALYSIS AND RATING (BAR7) 331621

PROGRAM P4353000 11/14/2008 12:14
VERSION 7.11.0.8 LAST UPDATED 07/29/2005 DOCUMENTATION 07/2005

INPUT: RATING~1.DAT

STRUCTURE ID - 00000001606-163 - US 46 OVER BROWERTOWN ROAD

BRG TYPE	SLC LEV	LANES	LIVE LOAD	OUT-PUT	IMP FACT	GAGE DIST	PASS DIST	FAT-IGUE	CONC DECK	SPEC	RE-DIST	DIR	S OVER FACTOR	END PAN	HYB
GGG			E	0	0.00				Y	0	N		0.00		

BRIDGE CROSS SECTION AND LOADING

DECK WIDTH	OVERHANG OR SPACING	CL OF GIRDER OR TRUSS TO CURB	ROADWAY WIDTH	DISTRIBUTION FACTORS SHEAR	MOMENT	DEFLECT
0.00	9.19	0.00	99.00	0.956	0.835	0.333

SLAB THICKNESS	HAUNCH	DEAD LOADS DL1	DL2	F'C	N	SYMMETRY
9.25	2.05	0.149	0.156	4.000	9.	

STRINGER DL1	FLOORBEAM DL1	UNIT WEIGHT DECK CONCRETE
0.000	0.000	0.

SPAN LENGTHS (SIMPLE)

SPAN #	1
LENGTH	67.29

CONCRETE MEMBER PROPERTIES

TYPE	DEPTH	B	D	AS	D'	A'S	FY REINF
S	0.00	0.00	0.00	0.00	1.81	0.71	60.

ALLOWABLE FS IR	OR	ST DET	AV	SPECS	ALPHA	INTEGRAL WEARING SURFACE
0.0	0.0		0.00	0	0.	0.0

STEEL MEMBER PROPERTIES

G F S N	S P Y P E	RANGE	T WF BM OF I OR VRT LEG	WF BM AREA OR HRZ LEG	FLANGE ANGLE THICK	FLANGE WIDTH	V A R	WF BM OR WEB PLATE DEPTH	WEB THICK

```
G 1  67.29 W 16100.00   72.10  1.3500 16.510      36.08  0.8000
              TPW   TPT    BPW   BPT   COMP  FY  FY TOP FY BOT CG TOP CG BOT
              0.00 0.0000  0.00 0.0000   Y  50.0   0.0    0.0   0.000  0.000
```

LATERAL BRACE POINTS AND STIFFENER SPACINGS

B OR S G OR F CODE	SPAN	C O D E	NO. OF SPCS	SPACING	C O D E	NO. OF SPCS	SPACING	C O D E	NO. OF SPCS	SPACING	C O D E	NO. OF SPCS	SPACING
BG	1	B	1	22.31	B	1	22.67	B	1	22.31		0	0.00
			0	0.00		0	0.00		0	0.00		0	0.00
BG	1	C	1	67.29		0	0.00		0	0.00		0	0.00
			0	0.00		0	0.00		0	0.00		0	0.00

DEFAULT VALUES

SLC LEVEL	GAGE DISTANCE	PASSING DISTANCE	UNIT WEIGHT DECK	FY REINF	ALLOWABLE FS IR	ALLOWABLE FS OR	INTEGRAL WEARING SURFACE
I	6.0	4.0	150.	---	24.0	36.0	0.5

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++++++++++++++++++++++++++++++++++++++++++++
+                                          +
+       G I R D E R   A N A L Y S I S      +
+                                          +
++++++++++++++++++++++++++++++++++++++++++++
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DEAD LOADS ACTING ON GIRDER

INPUT DL1	GIRDER WEIGHT	SLAB WEIGHT	FL BEAM WEIGHT	STRINGER WEIGHT	FL BEAM DL1	STRINGER DL1	TOTAL DL1	TOTAL DL2
0.149	0.245	1.063	0.000	0.000	0.000	0.000	1.457	0.156

NOTE: IF THE LIVE LOAD STRESS IS ZERO AT ANY SECTION THE RATING FACTOR IS PRINTED AS 999.99 INDICATING THAT IT IS INFINITE.

NOTE: IF A SECTION DOES NOT MEET FLANGE OR WEB BUCKLING CRITERIA OF CURRENT AASHTO SPECIFICATIONS FOR LOAD FACTOR METHOD, THE RATING FACTORS ARE REPRINTED AS 888.88. THIS INDICATES THAT THERE IS A POTENTIAL FATIGUE PROBLEM.

GIRDER SECTION PROPERTIES

SPAN 1 - EFFECTIVE SLAB WIDTH: 105.00 THICKNESS: 8.75
=======

	DEPTH	GROSS AREA	MOMENT OF INERTIA	C BOTTOM	SECTION MODULUS TOP	SECTION MODULUS BOTTOM	SECTION MODULUS CONC OR NEG REINF
NON-COMPOSITE	36.08	72.10	16100.00	18.04	892.46	892.46	
COMPOSITE (N= 9)	46.88	174.18	42042.78	32.38	11357.27	1298.49	2899.13
COMPOSITE (N=27)	46.88	106.13	30153.73	25.88	2957.47	1164.95	1436.18

COMPOSITE (NEG M) 46.88 78.31 20278.91 20.18 1275.75 1004.69 814.88

DEFLECTIONS

SPAN 1 - LIVE LOAD IMPACT FACTOR FOR DEFLECTION: 1.26

	DEAD LOAD		LIVE LOAD + IMPACT				
X	DL1	DL2	H20	HS20	3	3S2	3-3
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6.73	0.448	0.026	0.052	0.075	0.053	0.064	0.061
13.46	0.848	0.048	0.099	0.142	0.102	0.121	0.114
20.19	1.161	0.066	0.136	0.197	0.140	0.165	0.155
26.92	1.360	0.078	0.160	0.230	0.164	0.193	0.181
33.65	1.428	0.082	0.169	0.242	0.172	0.202	0.190
40.37	1.360	0.078	0.160	0.230	0.164	0.193	0.181
47.10	1.161	0.066	0.136	0.197	0.140	0.165	0.155
53.83	0.848	0.048	0.099	0.142	0.102	0.121	0.114
60.56	0.448	0.026	0.052	0.075	0.053	0.064	0.061
67.29	0.000	0.000	0.000	0.000	0.000	0.000	0.000

****
* GIRDER - LIVE LOAD H20 *
****

MAXIMUM REACTIONS

					REACTIONS		MOMENTS	
SUPPORT	DL1	DL2	+(LL+I)	-(LL+I)	+I.F.	-I.F.	+I.F.	-I.F.
1	49.0	5.2	54.0 L	0.0	1.26			

NOTE: ALL SUPPORT REACTIONS AND END SHEARS IN EACH SPAN DUE TO A LIVE LOAD ARE CALCULATED BASED ON AASHTO ARTICLE 3.23.1 AS INTERPRETED IN SOL 431-93-05.

UNFACTORED MOMENTS AND SHEARS

SPAN 1 - LIVE LOAD IMPACT FACTORS : POS MOM 1.26

	DL1	DL2	+(LL+I)	-(LL+I)	DL1	DL2	+(LL+I)	-(LL+I)	
X	MOMENT	MOMENT	MOMENT	MOMENT	SHEAR	SHEAR	SHEAR	SHEAR	I.F.
0.00	0.0	0.0	0.0	0.0	49.0	5.2	54.0L	0.0	1.26
	SIMULT SHEAR		0.0	0.0	SIMULT MOM		0.0	0.0	
6.73	296.9	31.8	251.9L	0.0	39.2	4.2	43.3L	-3.4	1.27
	SIMULT SHEAR		35.4	0.0	SIMULT MOM		289.1	203.9	
13.46	527.8	56.5	447.8L	0.0	29.4	3.1	36.9L	-6.8	1.28
	SIMULT SHEAR		29.2	0.0	SIMULT MOM		489.6	362.5	
20.19	692.7	74.2	587.8L	0.0	19.6	2.1	31.0L	-11.1	1.29
	SIMULT SHEAR		22.9	0.0	SIMULT MOM		610.6	512.2	
26.92	791.6	84.8	671.7L	0.0	9.8	1.0	25.3L	-15.6	1.30
	SIMULT SHEAR		16.4	0.0	SIMULT MOM		661.3	609.0	
33.65	824.6	88.3	699.7L	0.0	0.0	0.0	20.0L	-20.0L	1.30
	SIMULT SHEAR		9.8	0.0	SIMULT MOM		650.7	650.7	
40.37	791.6	84.8	671.7L	0.0	-9.8	-1.0	15.6	-25.3L	1.30
	SIMULT SHEAR		-16.4	0.0	SIMULT MOM		609.0	661.3	

47.10	692.7	74.2	587.8L	0.0	-19.6	-2.1	11.1	-31.0L	1.29
	SIMULT	SHEAR	-22.9	0.0	SIMULT	MOM	512.2	610.6	
53.83	527.8	56.5	447.8L	0.0	-29.4	-3.1	6.8	-36.9L	1.28
	SIMULT	SHEAR	-29.2	0.0	SIMULT	MOM	362.5	489.6	
60.56	296.9	31.8	251.9L	0.0	-39.2	-4.2	3.4	-43.3L	1.27
	SIMULT	SHEAR	-35.4	0.0	SIMULT	MOM	203.9	289.1	
67.29	0.0	0.0	0.0	0.0	-49.0	-5.2	0.0	-54.0L	1.26
	SIMULT	SHEAR	0.0	0.0	SIMULT	MOM	0.0	0.0	

FLEXURAL STRESSES - BEAM

SPAN 1

	TOP FIBER STEEL STRESS				BOTTOM FIBER STEEL STRESS			
X	DL1	DL2	+(LL+I)	-(LL+I)	DL1	DL2	+(LL+I)	-(LL+I)
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6.73	-3.992	-0.129	-0.266	0.000	3.992	0.327	2.328	0.000
13.46	-7.096	-0.229	-0.473	0.000	7.096	0.582	4.138	0.000
20.19	-9.314	-0.301	-0.621	0.000	9.314	0.764	5.432	0.000
26.92	-10.644	-0.344	-0.710	0.000	10.644	0.873	6.208	0.000
33.65	-11.088	-0.358	-0.739	0.000	11.088	0.910	6.466	0.000
40.37	-10.644	-0.344	-0.710	0.000	10.644	0.873	6.208	0.000
47.10	-9.314	-0.301	-0.621	0.000	9.314	0.764	5.432	0.000
53.83	-7.096	-0.229	-0.473	0.000	7.096	0.582	4.138	0.000
60.56	-3.992	-0.129	-0.266	0.000	3.992	0.327	2.328	0.000
67.29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

FLEXURAL STRESSES - SLAB

SPAN 1

	CONCRETE STRESS		SLAB REINF STRESS	
X	DL2	+(LL+I)	DL2	-(LL+I)
0.00	0.000	0.000	0.000	0.000
6.73	-0.010	-0.116	0.000	0.000
13.46	-0.017	-0.206	0.000	0.000
20.19	-0.023	-0.270	0.000	0.000
26.92	-0.026	-0.309	0.000	0.000
33.65	-0.027	-0.322	0.000	0.000
40.37	-0.026	-0.309	0.000	0.000
47.10	-0.023	-0.270	0.000	0.000
53.83	-0.017	-0.206	0.000	0.000
60.56	-0.010	-0.116	0.000	0.000
67.29	0.000	0.000	0.000	0.000

SHEAR STRESSES AND ALLOWABLE STRESS RATINGS

SPAN 1

	SHEAR STRESSES				ALLOW COMPR	RATING FACTORS	
X	DL1	DL2	+(LL+I)	-(LL+I)	REDUCTION	IR	OR
0.00	1.836	0.197	2.021	0.000	1.000	7.24 V	10.21 V
6.73	1.469	0.157	1.621	-0.127	1.000	9.28 V	12.98 V
13.46	1.101	0.118	1.384	-0.256	1.000	4.79 B	7.21 B
20.19	0.734	0.079	1.160	-0.417	1.000	3.21 B	5.05 B

26.92	0.367	0.039	0.949	-0.583	1.000	2.57 B	4.19 B
33.65	0.000	0.000	0.747	-0.747	1.000	2.40 B	3.94 B
40.37	-0.367	-0.039	0.583	-0.949	1.000	2.57 B	4.19 B
47.10	-0.734	-0.079	0.417	-1.160	1.000	3.21 B	5.05 B
53.83	-1.101	-0.118	0.256	-1.384	1.000	4.79 B	7.21 B
60.56	-1.469	-0.157	0.127	-1.621	1.000	9.28 V	12.98 V
67.29	-1.836	-0.197	0.000	-2.021	1.000	7.24 V	10.21 V

NOTE: THE SHEAR CAPACITIES CALCULATED HEREIN ARE BASED ON STIFFENED OR UNSTIFFENED EQUATIONS AS SPECIFIED BY INPUT REGARDLESS OF THE STIFFENER SPACINGS INPUT AND ARE NOT CHECKED AGAINST AASHTO CRITERIA.

STRENGTHS AND LOAD FACTOR RATINGS

SPAN 1

	NON-COMP MOMENT	OVERLOAD MOMENT	SHEAR	NON-COMPACT RATING FACTORS		COMPACT MOMENT	COMPACT RATING FACTORS	
X	STRENGTH	STRENGTH	STRENGTH	IR	OR	STRENGTH	IR	OR
0.00	5410.4 B	5139.9	774.4	6.02 V	10.03 V	6097.8	6.02 V	10.03 V
6.73	5410.4 B	5139.9	774.4	7.65 V	12.76 V	6097.8	7.65 V	12.76 V
13.46	5410.4 B	5139.9	774.4	4.46 B	7.44 B	6097.8	5.50	9.17
20.19	5410.4 B	5139.9	774.4	3.14 B	5.23 B	6097.8	4.01	6.68
26.92	5410.4 B	5139.9	774.4	2.60 B	4.34 B	6097.8	3.41	5.68
33.65	5410.4 B	5139.9	774.4	2.46 B	4.09 B	6097.8	3.24	5.40
40.37	5410.4 B	5139.9	774.4	2.60 B	4.34 B	6097.8	3.41	5.68
47.10	5410.4 B	5139.9	774.4	3.14 B	5.23 B	6097.8	4.01	6.68
53.83	5410.4 B	5139.9	774.4	4.46 B	7.44 B	6097.8	5.50	9.17
60.56	5410.4 B	5139.9	774.4	7.65 V	12.76 V	6097.8	7.65 V	12.76 V
67.29	5410.4 B	5139.9	774.4	6.02 V	10.03 V	6097.8	6.02 V	10.03 V

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* GIRDER - LIVE LOAD HS20 *
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MAXIMUM REACTIONS

					REACTIONS		MOMENTS	
SUPPORT	DL1	DL2	+(LL+I)	-(LL+I)	+I.F.	-I.F.	+I.F.	-I.F.
1	49.0	5.2	70.1	0.0	1.26			

NOTE: ALL SUPPORT REACTIONS AND END SHEARS IN EACH SPAN DUE TO A LIVE LOAD ARE CALCULATED BASED ON AASHTO ARTICLE 3.23.1 AS INTERPRETED IN SOL 431-93-05.

UNFACTORED MOMENTS AND SHEARS

SPAN 1 - LIVE LOAD IMPACT FACTORS : POS MOM 1.26

	DL1	DL2	+(LL+I)	-(LL+I)	DL1	DL2	+(LL+I)	-(LL+I)	
X	MOMENT	MOMENT	MOMENT	MOMENT	SHEAR	SHEAR	SHEAR	SHEAR	I.F.
0.00	0.0	0.0	0.0	0.0	49.0	5.2	70.1	0.0	1.26
	SIMULT SHEAR		0.0	0.0	SIMULT MOM		0.0	0.0	

6.73	296.9	31.8	388.1	0.0	39.2	4.2	58.1	-3.4	1.27
	SIMULT SHEAR		58.1	0.0	SIMULT MOM		388.1	203.9	
13.46	527.8	56.5	674.2	0.0	29.4	3.1	50.9	-6.8	1.28
	SIMULT SHEAR		50.9	0.0	SIMULT MOM		674.2	362.5	
20.19	692.7	74.2	858.3	0.0	19.6	2.1	43.5	-13.5	1.29
	SIMULT SHEAR		43.5	0.0	SIMULT MOM		858.3	621.6	
26.92	791.6	84.8	964.1	0.0	9.8	1.0	36.1	-20.6	1.30
	SIMULT SHEAR		32.8	0.0	SIMULT MOM		940.6	804.6	
33.65	824.6	88.3	979.8	0.0	0.0	0.0	28.2	-28.2	1.30
	SIMULT SHEAR		-25.0	0.0	SIMULT MOM		920.8	920.8	
40.37	791.6	84.8	964.1	0.0	-9.8	-1.0	20.6	-36.1	1.30
	SIMULT SHEAR		-32.8	0.0	SIMULT MOM		804.6	940.6	
47.10	692.7	74.2	858.3	0.0	-19.6	-2.1	13.5	-43.5	1.29
	SIMULT SHEAR		-43.5	0.0	SIMULT MOM		621.6	858.3	
53.83	527.8	56.5	674.2	0.0	-29.4	-3.1	6.8	-50.9	1.28
	SIMULT SHEAR		-50.9	0.0	SIMULT MOM		362.5	674.2	
60.56	296.9	31.8	388.1	0.0	-39.2	-4.2	3.4	-58.1	1.27
	SIMULT SHEAR		-58.1	0.0	SIMULT MOM		203.9	388.1	
67.29	0.0	0.0	0.0	0.0	-49.0	-5.2	0.0	-70.1	1.26
	SIMULT SHEAR		0.0	0.0	SIMULT MOM		0.0	0.0	

FLEXURAL STRESSES - BEAM

SPAN 1

	TOP FIBER STEEL STRESS				BOTTOM FIBER STEEL STRESS			
X	DL1	DL2	+(LL+I)	-(LL+I)	DL1	DL2	+(LL+I)	-(LL+I)
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6.73	-3.992	-0.129	-0.410	0.000	3.992	0.327	3.586	0.000
13.46	-7.096	-0.229	-0.712	0.000	7.096	0.582	6.230	0.000
20.19	-9.314	-0.301	-0.907	0.000	9.314	0.764	7.932	0.000
26.92	-10.644	-0.344	-1.019	0.000	10.644	0.873	8.910	0.000
33.65	-11.088	-0.358	-1.035	0.000	11.088	0.910	9.054	0.000
40.37	-10.644	-0.344	-1.019	0.000	10.644	0.873	8.910	0.000
47.10	-9.314	-0.301	-0.907	0.000	9.314	0.764	7.932	0.000
53.83	-7.096	-0.229	-0.712	0.000	7.096	0.582	6.230	0.000
60.56	-3.992	-0.129	-0.410	0.000	3.992	0.327	3.586	0.000
67.29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

FLEXURAL STRESSES - SLAB

SPAN 1

	CONCRETE STRESS		SLAB REINF STRESS	
X	DL2	+(LL+I)	DL2	-(LL+I)
0.00	0.000	0.000	0.000	0.000
6.73	-0.010	-0.178	0.000	0.000
13.46	-0.017	-0.310	0.000	0.000
20.19	-0.023	-0.395	0.000	0.000
26.92	-0.026	-0.443	0.000	0.000
33.65	-0.027	-0.451	0.000	0.000
40.37	-0.026	-0.443	0.000	0.000
47.10	-0.023	-0.395	0.000	0.000
53.83	-0.017	-0.310	0.000	0.000
60.56	-0.010	-0.178	0.000	0.000
67.29	0.000	0.000	0.000	0.000

SHEAR STRESSES AND ALLOWABLE STRESS RATINGS

SPAN 1

X	SHEAR STRESSES DL1	DL2	+(LL+I)	-(LL+I)	ALLOW COMPR REDUCTION	RATING FACTORS IR	OR
0.00	1.836	0.197	2.626	0.000	1.000	5.57 V	7.86 V
6.73	1.469	0.157	2.176	-0.127	1.000	6.46 B	9.25 B
13.46	1.101	0.118	1.905	-0.256	1.000	3.18 B	4.79 B
20.19	0.734	0.079	1.631	-0.506	1.000	2.20 B	3.46 B
26.92	0.367	0.039	1.350	-0.770	1.000	1.79 B	2.92 B
33.65	0.000	0.000	1.057	-1.057	1.000	1.71 B	2.82 B
40.37	-0.367	-0.039	0.770	-1.350	1.000	1.79 B	2.92 B
47.10	-0.734	-0.079	0.506	-1.631	1.000	2.20 B	3.46 B
53.83	-1.101	-0.118	0.256	-1.905	1.000	3.18 B	4.79 B
60.56	-1.469	-0.157	0.127	-2.176	1.000	6.46 B	9.25 B
67.29	-1.836	-0.197	0.000	-2.626	1.000	5.57 V	7.86 V

NOTE: THE SHEAR CAPACITIES CALCULATED HEREIN ARE BASED ON STIFFENED OR UNSTIFFENED EQUATIONS AS SPECIFIED BY INPUT REGARDLESS OF THE STIFFENER SPACINGS INPUT AND ARE NOT CHECKED AGAINST AASHTO CRITERIA.

STRENGTHS AND LOAD FACTOR RATINGS

SPAN 1

X	NON-COMP MOMENT STRENGTH	OVERLOAD MOMENT STRENGTH	SHEAR STRENGTH	NON-COMPACT RATING FACTORS IR	OR	COMPACT MOMENT STRENGTH	COMPACT RATING FACTORS IR	OR
0.00	5410.4 B	5139.9	774.4	4.63 V	7.72 V	6097.8	4.63 V	7.72 V
6.73	5410.4 B	5139.9	774.4	5.70 V	9.51 V	6097.8	5.70 V	9.51 V
13.46	5410.4 B	5139.9	774.4	2.96 B	4.94 B	6097.8	3.65	6.09
20.19	5410.4 B	5139.9	774.4	2.15 B	3.58 B	6097.8	2.74	4.57
26.92	5410.4 B	5139.9	774.4	1.81 B	3.02 B	6097.8	2.37	3.96
33.65	5410.4 B	5139.9	774.4	1.75 B	2.92 B	6097.8	2.31	3.86
40.37	5410.4 B	5139.9	774.4	1.81 B	3.02 B	6097.8	2.37	3.96
47.10	5410.4 B	5139.9	774.4	2.15 B	3.58 B	6097.8	2.74	4.57
53.83	5410.4 B	5139.9	774.4	2.96 B	4.94 B	6097.8	3.65	6.09
60.56	5410.4 B	5139.9	774.4	5.70 V	9.51 V	6097.8	5.70 V	9.51 V
67.29	5410.4 B	5139.9	774.4	4.63 V	7.72 V	6097.8	4.63 V	7.72 V

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* GIRDER - LIVE LOAD 3 *
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MAXIMUM REACTIONS

SUPPORT	DL1	DL2	+(LL+I)	-(LL+I)	REACTIONS +I.F.	REACTIONS -I.F.	MOMENTS +I.F.	MOMENTS -I.F.
1	49.0	5.2	49.4	0.0	1.26			

NOTE: ALL SUPPORT REACTIONS AND END SHEARS IN EACH SPAN DUE TO A LIVE LOAD

ARE CALCULATED BASED ON AASHTO ARTICLE 3.23.1
AS INTERPRETED IN SOL 431-93-05.

UNFACTORED MOMENTS AND SHEARS

SPAN 1 - LIVE LOAD IMPACT FACTORS : POS MOM 1.26

X	DL1 MOMENT	DL2 MOMENT	+(LL+I) MOMENT	-(LL+I) MOMENT	DL1 SHEAR	DL2 SHEAR	+(LL+I) SHEAR	-(LL+I) SHEAR	I.F.
0.00	0.0	0.0	0.0	0.0	49.0	5.2	49.4	0.0	1.26
	SIMULT SHEAR		0.0	0.0	SIMULT MOM		0.0	0.0	
6.73	296.9	31.8	279.4	0.0	39.2	4.2	41.8	-2.5	1.27
	SIMULT SHEAR		41.8	0.0	SIMULT MOM		279.4	152.2	
13.46	527.8	56.5	488.1	0.0	29.4	3.1	36.8	-6.2	1.28
	SIMULT SHEAR		36.8	0.0	SIMULT MOM		488.1	327.9	
20.19	692.7	74.2	626.0	0.0	19.6	2.1	31.8	-10.2	1.29
	SIMULT SHEAR		31.8	0.0	SIMULT MOM		626.0	469.4	
26.92	791.6	84.8	705.6	0.0	9.8	1.0	26.6	-15.7	1.30
	SIMULT SHEAR		11.3	0.0	SIMULT MOM		693.0	614.7	
33.65	824.6	88.3	722.9	0.0	0.0	0.0	21.1	-21.1	1.30
	SIMULT SHEAR		-12.5	0.0	SIMULT MOM		689.3	689.3	
40.37	791.6	84.8	705.6	0.0	-9.8	-1.0	15.7	-26.6	1.30
	SIMULT SHEAR		-11.3	0.0	SIMULT MOM		614.7	693.0	
47.10	692.7	74.2	626.0	0.0	-19.6	-2.1	10.2	-31.8	1.29
	SIMULT SHEAR		-31.8	0.0	SIMULT MOM		469.4	626.0	
53.83	527.8	56.5	488.1	0.0	-29.4	-3.1	6.2	-36.8	1.28
	SIMULT SHEAR		-36.8	0.0	SIMULT MOM		327.9	488.1	
60.56	296.9	31.8	279.4	0.0	-39.2	-4.2	2.5	-41.8	1.27
	SIMULT SHEAR		-41.8	0.0	SIMULT MOM		152.2	279.4	
67.29	0.0	0.0	0.0	0.0	-49.0	-5.2	0.0	-49.4	1.26
	SIMULT SHEAR		0.0	0.0	SIMULT MOM		0.0	0.0	

FLEXURAL STRESSES - BEAM

SPAN 1

X	TOP FIBER STEEL STRESS DL1	DL2	+(LL+I)	-(LL+I)	BOTTOM FIBER STEEL STRESS DL1	DL2	+(LL+I)	-(LL+I)
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6.73	-3.992	-0.129	-0.295	0.000	3.992	0.327	2.583	0.000
13.46	-7.096	-0.229	-0.516	0.000	7.096	0.582	4.511	0.000
20.19	-9.314	-0.301	-0.661	0.000	9.314	0.764	5.785	0.000
26.92	-10.644	-0.344	-0.746	0.000	10.644	0.873	6.521	0.000
33.65	-11.088	-0.358	-0.764	0.000	11.088	0.910	6.681	0.000
40.37	-10.644	-0.344	-0.746	0.000	10.644	0.873	6.521	0.000
47.10	-9.314	-0.301	-0.661	0.000	9.314	0.764	5.785	0.000
53.83	-7.096	-0.229	-0.516	0.000	7.096	0.582	4.511	0.000
60.56	-3.992	-0.129	-0.295	0.000	3.992	0.327	2.583	0.000
67.29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

FLEXURAL STRESSES - SLAB

SPAN 1

CONCRETE STRESS	SLAB REINF STRESS

X	DL2	+(LL+I)	DL2	-(LL+I)
0.00	0.000	0.000	0.000	0.000
6.73	-0.010	-0.129	0.000	0.000
13.46	-0.017	-0.224	0.000	0.000
20.19	-0.023	-0.288	0.000	0.000
26.92	-0.026	-0.325	0.000	0.000
33.65	-0.027	-0.332	0.000	0.000
40.37	-0.026	-0.325	0.000	0.000
47.10	-0.023	-0.288	0.000	0.000
53.83	-0.017	-0.224	0.000	0.000
60.56	-0.010	-0.129	0.000	0.000
67.29	0.000	0.000	0.000	0.000

SHEAR STRESSES AND ALLOWABLE STRESS RATINGS

SPAN 1

	SHEAR STRESSES				ALLOW COMPR	RATING FACTORS	
X	DL1	DL2	+(LL+I)	-(LL+I)	REDUCTION	IR	OR
0.00	1.836	0.197	1.849	0.000	1.000	7.91 V	11.16 V
6.73	1.469	0.157	1.567	-0.095	1.000	8.98 B	12.85 B
13.46	1.101	0.118	1.379	-0.232	1.000	4.39 B	6.61 B
20.19	0.734	0.079	1.189	-0.382	1.000	3.01 B	4.74 B
26.92	0.367	0.039	0.995	-0.588	1.000	2.45 B	3.98 B
33.65	0.000	0.000	0.792	-0.792	1.000	2.32 B	3.82 B
40.37	-0.367	-0.039	0.588	-0.995	1.000	2.45 B	3.98 B
47.10	-0.734	-0.079	0.382	-1.189	1.000	3.01 B	4.74 B
53.83	-1.101	-0.118	0.232	-1.379	1.000	4.39 B	6.61 B
60.56	-1.469	-0.157	0.095	-1.567	1.000	8.98 B	12.85 B
67.29	-1.836	-0.197	0.000	-1.849	1.000	7.91 V	11.16 V

NOTE: THE SHEAR CAPACITIES CALCULATED HEREIN ARE BASED ON STIFFENED OR UNSTIFFENED EQUATIONS AS SPECIFIED BY INPUT REGARDLESS OF THE STIFFENER SPACINGS INPUT AND ARE NOT CHECKED AGAINST AASHTO CRITERIA.

STRENGTHS AND LOAD FACTOR RATINGS

SPAN 1

	NON-COMP OVERLOAD			NON-COMPACT		COMPACT	COMPACT	
	MOMENT	MOMENT	SHEAR	RATING FACTORS		MOMENT	RATING FACTORS	
X	STRENGTH	STRENGTH	STRENGTH	IR	OR	STRENGTH	IR	OR
0.00	5410.4 B	5139.9	774.4	6.58 V	10.96 V	6097.8	6.58 V	10.96 V
6.73	5410.4 B	5139.9	774.4	7.92 V	13.20 V	6097.8	7.92 V	13.20 V
13.46	5410.4 B	5139.9	774.4	4.09 B	6.82 B	6097.8	5.05	8.41
20.19	5410.4 B	5139.9	774.4	2.94 B	4.91 B	6097.8	3.76	6.27
26.92	5410.4 B	5139.9	774.4	2.48 B	4.13 B	6097.8	3.24	5.41
33.65	5410.4 B	5139.9	774.4	2.38 B	3.96 B	6097.8	3.14	5.23
40.37	5410.4 B	5139.9	774.4	2.48 B	4.13 B	6097.8	3.24	5.41
47.10	5410.4 B	5139.9	774.4	2.94 B	4.91 B	6097.8	3.76	6.27
53.83	5410.4 B	5139.9	774.4	4.09 B	6.82 B	6097.8	5.05	8.41
60.56	5410.4 B	5139.9	774.4	7.92 V	13.20 V	6097.8	7.92 V	13.20 V
67.29	5410.4 B	5139.9	774.4	6.58 V	10.96 V	6097.8	6.58 V	10.96 V

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* GIRDER - LIVE LOAD 3S2 *
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MAXIMUM REACTIONS

SUPPORT	DL1	DL2	+(LL+I)	-(LL+I)	REACTIONS +I.F.	REACTIONS -I.F.	MOMENTS +I.F.	MOMENTS -I.F.
1	49.0	5.2	57.2	0.0	1.26			

NOTE: ALL SUPPORT REACTIONS AND END SHEARS IN EACH SPAN DUE TO A LIVE LOAD ARE CALCULATED BASED ON AASHTO ARTICLE 3.23.1 AS INTERPRETED IN SOL 431-93-05.

UNFACTORED MOMENTS AND SHEARS

SPAN 1 - LIVE LOAD IMPACT FACTORS : POS MOM 1.26

X	DL1 MOMENT	DL2 MOMENT	+(LL+I) MOMENT	-(LL+I) MOMENT	DL1 SHEAR	DL2 SHEAR	+(LL+I) SHEAR	-(LL+I) SHEAR	I.F.
0.00	0.0	0.0	0.0	0.0	49.0	5.2	57.2	0.0	1.26
	SIMULT SHEAR		0.0	0.0	SIMULT MOM		0.0	0.0	
6.73	296.9	31.8	317.8	0.0	39.2	4.2	47.6	-2.3	1.27
	SIMULT SHEAR		47.6	0.0	SIMULT MOM		317.8	138.8	
13.46	527.8	56.5	533.6	0.0	29.4	3.1	40.3	-5.6	1.28
	SIMULT SHEAR		40.3	0.0	SIMULT MOM		533.6	299.0	
20.19	692.7	74.2	695.9	0.0	19.6	2.1	32.9	-9.0	1.29
	SIMULT SHEAR		30.4	0.0	SIMULT MOM		647.5	415.2	
26.92	791.6	84.8	776.4	0.0	9.8	1.0	25.4	-12.7	1.30
	SIMULT SHEAR		10.6	0.0	SIMULT MOM		662.1	496.6	
33.65	824.6	88.3	771.4	0.0	0.0	0.0	18.6	-18.6	1.30
	SIMULT SHEAR		14.0	0.0	SIMULT MOM		608.1	608.1	
40.37	791.6	84.8	776.4	0.0	-9.8	-1.0	12.7	-25.4	1.30
	SIMULT SHEAR		-10.6	0.0	SIMULT MOM		496.6	662.1	
47.10	692.7	74.2	695.9	0.0	-19.6	-2.1	9.0	-32.9	1.29
	SIMULT SHEAR		-30.4	0.0	SIMULT MOM		415.2	647.5	
53.83	527.8	56.5	533.6	0.0	-29.4	-3.1	5.6	-40.3	1.28
	SIMULT SHEAR		-40.3	0.0	SIMULT MOM		299.0	533.6	
60.56	296.9	31.8	317.8	0.0	-39.2	-4.2	2.3	-47.6	1.27
	SIMULT SHEAR		-47.6	0.0	SIMULT MOM		138.8	317.8	
67.29	0.0	0.0	0.0	0.0	-49.0	-5.2	0.0	-57.2	1.26
	SIMULT SHEAR		0.0	0.0	SIMULT MOM		0.0	0.0	

FLEXURAL STRESSES - BEAM

SPAN 1

X	TOP FIBER STEEL STRESS DL1	DL2	+(LL+I)	-(LL+I)	BOTTOM FIBER STEEL STRESS DL1	DL2	+(LL+I)	-(LL+I)
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6.73	-3.992	-0.129	-0.336	0.000	3.992	0.327	2.937	0.000
13.46	-7.096	-0.229	-0.564	0.000	7.096	0.582	4.931	0.000
20.19	-9.314	-0.301	-0.735	0.000	9.314	0.764	6.431	0.000
26.92	-10.644	-0.344	-0.820	0.000	10.644	0.873	7.175	0.000
33.65	-11.088	-0.358	-0.815	0.000	11.088	0.910	7.129	0.000

40.37	-10.644	-0.344	-0.820	0.000	10.644	0.873	7.175	0.000
47.10	-9.314	-0.301	-0.735	0.000	9.314	0.764	6.431	0.000
53.83	-7.096	-0.229	-0.564	0.000	7.096	0.582	4.931	0.000
60.56	-3.992	-0.129	-0.336	0.000	3.992	0.327	2.937	0.000
67.29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

FLEXURAL STRESSES - SLAB

SPAN 1
=======

	CONCRETE STRESS		SLAB REINF STRESS	
X	DL2	+(LL+I)	DL2	-(LL+I)
0.00	0.000	0.000	0.000	0.000
6.73	-0.010	-0.146	0.000	0.000
13.46	-0.017	-0.245	0.000	0.000
20.19	-0.023	-0.320	0.000	0.000
26.92	-0.026	-0.357	0.000	0.000
33.65	-0.027	-0.355	0.000	0.000
40.37	-0.026	-0.357	0.000	0.000
47.10	-0.023	-0.320	0.000	0.000
53.83	-0.017	-0.245	0.000	0.000
60.56	-0.010	-0.146	0.000	0.000
67.29	0.000	0.000	0.000	0.000

SHEAR STRESSES AND ALLOWABLE STRESS RATINGS

SPAN 1
=======

	SHEAR STRESSES				ALLOW COMPR	RATING FACTORS	
X	DL1	DL2	+(LL+I)	-(LL+I)	REDUCTION	IR	OR
0.00	1.836	0.197	2.141	0.000	1.000	6.84 V	9.64 V
6.73	1.469	0.157	1.782	-0.086	1.000	7.89 B	11.30 B
13.46	1.101	0.118	1.508	-0.211	1.000	4.02 B	6.05 B
20.19	0.734	0.079	1.230	-0.338	1.000	2.71 B	4.26 B
26.92	0.367	0.039	0.950	-0.475	1.000	2.23 B	3.62 B
33.65	0.000	0.000	0.698	-0.698	1.000	2.17 B	3.58 B
40.37	-0.367	-0.039	0.475	-0.950	1.000	2.23 B	3.62 B
47.10	-0.734	-0.079	0.338	-1.230	1.000	2.71 B	4.26 B
53.83	-1.101	-0.118	0.211	-1.508	1.000	4.02 B	6.05 B
60.56	-1.469	-0.157	0.086	-1.782	1.000	7.89 B	11.30 B
67.29	-1.836	-0.197	0.000	-2.141	1.000	6.84 V	9.64 V

NOTE: THE SHEAR CAPACITIES CALCULATED HEREIN ARE BASED ON STIFFENED OR UNSTIFFENED EQUATIONS AS SPECIFIED BY INPUT REGARDLESS OF THE STIFFENER SPACINGS INPUT AND ARE NOT CHECKED AGAINST AASHTO CRITERIA.

STRENGTHS AND LOAD FACTOR RATINGS

SPAN 1
=======

	NON-COMP OVERLOAD			NON-COMPACT		COMPACT	COMPACT	
	MOMENT	MOMENT	SHEAR	RATING FACTORS		MOMENT	RATING FACTORS	
X	STRENGTH	STRENGTH	STRENGTH	IR	OR	STRENGTH	IR	OR
0.00	5410.4 B	5139.9	774.4	5.68 V	9.47 V	6097.8	5.68 V	9.47 V

6.73	5410.4 B	5139.9	774.4	6.96 V	11.61 V	6097.8	6.96 V	11.61 V
13.46	5410.4 B	5139.9	774.4	3.75 B	6.24 B	6097.8	4.62	7.70
20.19	5410.4 B	5139.9	774.4	2.65 B	4.41 B	6097.8	3.38	5.64
26.92	5410.4 B	5139.9	774.4	2.25 B	3.76 B	6097.8	2.95	4.91
33.65	5410.4 B	5139.9	774.4	2.23 B	3.71 B	6097.8	2.94	4.90
40.37	5410.4 B	5139.9	774.4	2.25 B	3.76 B	6097.8	2.95	4.91
47.10	5410.4 B	5139.9	774.4	2.65 B	4.41 B	6097.8	3.38	5.64
53.83	5410.4 B	5139.9	774.4	3.75 B	6.24 B	6097.8	4.62	7.70
60.56	5410.4 B	5139.9	774.4	6.96 V	11.61 V	6097.8	6.96 V	11.61 V
67.29	5410.4 B	5139.9	774.4	5.68 V	9.47 V	6097.8	5.68 V	9.47 V

****
* GIRDER - LIVE LOAD 3-3 *
****

MAXIMUM REACTIONS

					REACTIONS		MOMENTS	
SUPPORT	DL1	DL2	+(LL+I)	-(LL+I)	+I.F.	-I.F.	+I.F.	-I.F.
1	49.0	5.2	56.4	0.0	1.26			

NOTE: ALL SUPPORT REACTIONS AND END SHEARS IN EACH SPAN DUE TO A LIVE LOAD
ARE CALCULATED BASED ON AASHTO ARTICLE 3.23.1
AS INTERPRETED IN SOL 431-93-05.

UNFACTORED MOMENTS AND SHEARS

SPAN 1 - LIVE LOAD IMPACT FACTORS : POS MOM 1.26

	DL1	DL2	+(LL+I)	-(LL+I)	DL1	DL2	+(LL+I)	-(LL+I)	
X	MOMENT	MOMENT	MOMENT	MOMENT	SHEAR	SHEAR	SHEAR	SHEAR	I.F.
0.00	0.0	0.0	0.0	0.0	49.0	5.2	56.4	0.0	1.26
	SIMULT SHEAR		0.0	0.0	SIMULT MOM		0.0	0.0	
6.73	296.9	31.8	308.6	0.0	39.2	4.2	46.2	-2.1	1.27
	SIMULT SHEAR		46.2	0.0	SIMULT MOM		308.6	125.4	
13.46	527.8	56.5	512.3	0.0	29.4	3.1	38.1	-5.1	1.28
	SIMULT SHEAR		28.1	0.0	SIMULT MOM		504.3	270.0	
20.19	692.7	74.2	639.0	0.0	19.6	2.1	31.1	-8.2	1.29
	SIMULT SHEAR		20.3	0.0	SIMULT MOM		612.0	377.2	
26.92	791.6	84.8	697.7	0.0	9.8	1.0	23.9	-13.0	1.30
	SIMULT SHEAR		16.7	0.0	SIMULT MOM		623.5	510.3	
33.65	824.6	88.3	723.8	0.0	0.0	0.0	17.8	-17.8	1.30
	SIMULT SHEAR		-9.3	0.0	SIMULT MOM		581.0	581.0	
40.37	791.6	84.8	697.7	0.0	-9.8	-1.0	13.0	-23.9	1.30
	SIMULT SHEAR		-16.7	0.0	SIMULT MOM		510.3	623.5	
47.10	692.7	74.2	639.0	0.0	-19.6	-2.1	8.2	-31.1	1.29
	SIMULT SHEAR		-20.3	0.0	SIMULT MOM		377.2	612.0	
53.83	527.8	56.5	512.3	0.0	-29.4	-3.1	5.1	-38.1	1.28
	SIMULT SHEAR		-28.1	0.0	SIMULT MOM		270.0	504.3	
60.56	296.9	31.8	308.6	0.0	-39.2	-4.2	2.1	-46.2	1.27
	SIMULT SHEAR		-46.2	0.0	SIMULT MOM		125.4	308.6	
67.29	0.0	0.0	0.0	0.0	-49.0	-5.2	0.0	-56.4	1.26
	SIMULT SHEAR		0.0	0.0	SIMULT MOM		0.0	0.0	

FLEXURAL STRESSES - BEAM

SPAN 1
=======

	TOP FIBER STEEL STRESS				BOTTOM FIBER STEEL STRESS			
X	DL1	DL2	+(LL+I)	-(LL+I)	DL1	DL2	+(LL+I)	-(LL+I)
0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
6.73	-3.992	-0.129	-0.326	0.000	3.992	0.327	2.852	0.000
13.46	-7.096	-0.229	-0.541	0.000	7.096	0.582	4.734	0.000
20.19	-9.314	-0.301	-0.675	0.000	9.314	0.764	5.905	0.000
26.92	-10.644	-0.344	-0.737	0.000	10.644	0.873	6.448	0.000
33.65	-11.088	-0.358	-0.765	0.000	11.088	0.910	6.689	0.000
40.37	-10.644	-0.344	-0.737	0.000	10.644	0.873	6.448	0.000
47.10	-9.314	-0.301	-0.675	0.000	9.314	0.764	5.905	0.000
53.83	-7.096	-0.229	-0.541	0.000	7.096	0.582	4.734	0.000
60.56	-3.992	-0.129	-0.326	0.000	3.992	0.327	2.852	0.000
67.29	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

FLEXURAL STRESSES - SLAB

SPAN 1
=======

	CONCRETE STRESS		SLAB REINF STRESS	
X	DL2	+(LL+I)	DL2	-(LL+I)
0.00	0.000	0.000	0.000	0.000
6.73	-0.010	-0.142	0.000	0.000
13.46	-0.017	-0.236	0.000	0.000
20.19	-0.023	-0.294	0.000	0.000
26.92	-0.026	-0.321	0.000	0.000
33.65	-0.027	-0.333	0.000	0.000
40.37	-0.026	-0.321	0.000	0.000
47.10	-0.023	-0.294	0.000	0.000
53.83	-0.017	-0.236	0.000	0.000
60.56	-0.010	-0.142	0.000	0.000
67.29	0.000	0.000	0.000	0.000

SHEAR STRESSES AND ALLOWABLE STRESS RATINGS

SPAN 1
=======

	SHEAR STRESSES				ALLOW COMPR	RATING FACTORS	
X	DL1	DL2	+(LL+I)	-(LL+I)	REDUCTION	IR	OR
0.00	1.836	0.197	2.112	0.000	1.000	6.93 V	9.77 V
6.73	1.469	0.157	1.730	-0.078	1.000	8.13 B	11.64 B
13.46	1.101	0.118	1.425	-0.191	1.000	4.19 B	6.30 B
20.19	0.734	0.079	1.163	-0.307	1.000	2.95 B	4.64 B
26.92	0.367	0.039	0.895	-0.488	1.000	2.48 B	4.03 B
33.65	0.000	0.000	0.667	-0.667	1.000	2.32 B	3.81 B
40.37	-0.367	-0.039	0.488	-0.895	1.000	2.48 B	4.03 B
47.10	-0.734	-0.079	0.307	-1.163	1.000	2.95 B	4.64 B
53.83	-1.101	-0.118	0.191	-1.425	1.000	4.19 B	6.30 B
60.56	-1.469	-0.157	0.078	-1.730	1.000	8.13 B	11.64 B
67.29	-1.836	-0.197	0.000	-2.112	1.000	6.93 V	9.77 V

NOTE: THE SHEAR CAPACITIES CALCULATED HEREIN ARE BASED ON STIFFENED OR

UNSTIFFENED EQUATIONS AS SPECIFIED BY INPUT REGARDLESS OF THE STIFFENER SPACINGS INPUT AND ARE NOT CHECKED AGAINST AASHTO CRITERIA.

STRENGTHS AND LOAD FACTOR RATINGS

SPAN 1

X	NON-COMP OVERLOAD MOMENT STRENGTH	OVERLOAD MOMENT STRENGTH	SHEAR STRENGTH	NON-COMPACT RATING FACTORS IR	NON-COMPACT RATING FACTORS OR	COMPACT MOMENT STRENGTH	COMPACT RATING FACTORS IR	COMPACT RATING FACTORS OR
0.00	5410.4 B	5139.9	774.4	5.76 V	9.60 V	6097.8	5.76 V	9.60 V
6.73	5410.4 B	5139.9	774.4	7.17 V	11.95 V	6097.8	7.17 V	11.95 V
13.46	5410.4 B	5139.9	774.4	3.90 B	6.50 B	6097.8	4.81	8.02
20.19	5410.4 B	5139.9	774.4	2.88 B	4.81 B	6097.8	3.68	6.14
26.92	5410.4 B	5139.9	774.4	2.51 B	4.18 B	6097.8	3.28	5.47
33.65	5410.4 B	5139.9	774.4	2.37 B	3.96 B	6097.8	3.13	5.22
40.37	5410.4 B	5139.9	774.4	2.51 B	4.18 B	6097.8	3.28	5.47
47.10	5410.4 B	5139.9	774.4	2.88 B	4.81 B	6097.8	3.68	6.14
53.83	5410.4 B	5139.9	774.4	3.90 B	6.50 B	6097.8	4.81	8.02
60.56	5410.4 B	5139.9	774.4	7.17 V	11.95 V	6097.8	7.17 V	11.95 V
67.29	5410.4 B	5139.9	774.4	5.76 V	9.60 V	6097.8	5.76 V	9.60 V

RATING SUMMARY

MEMBER: GIRDER

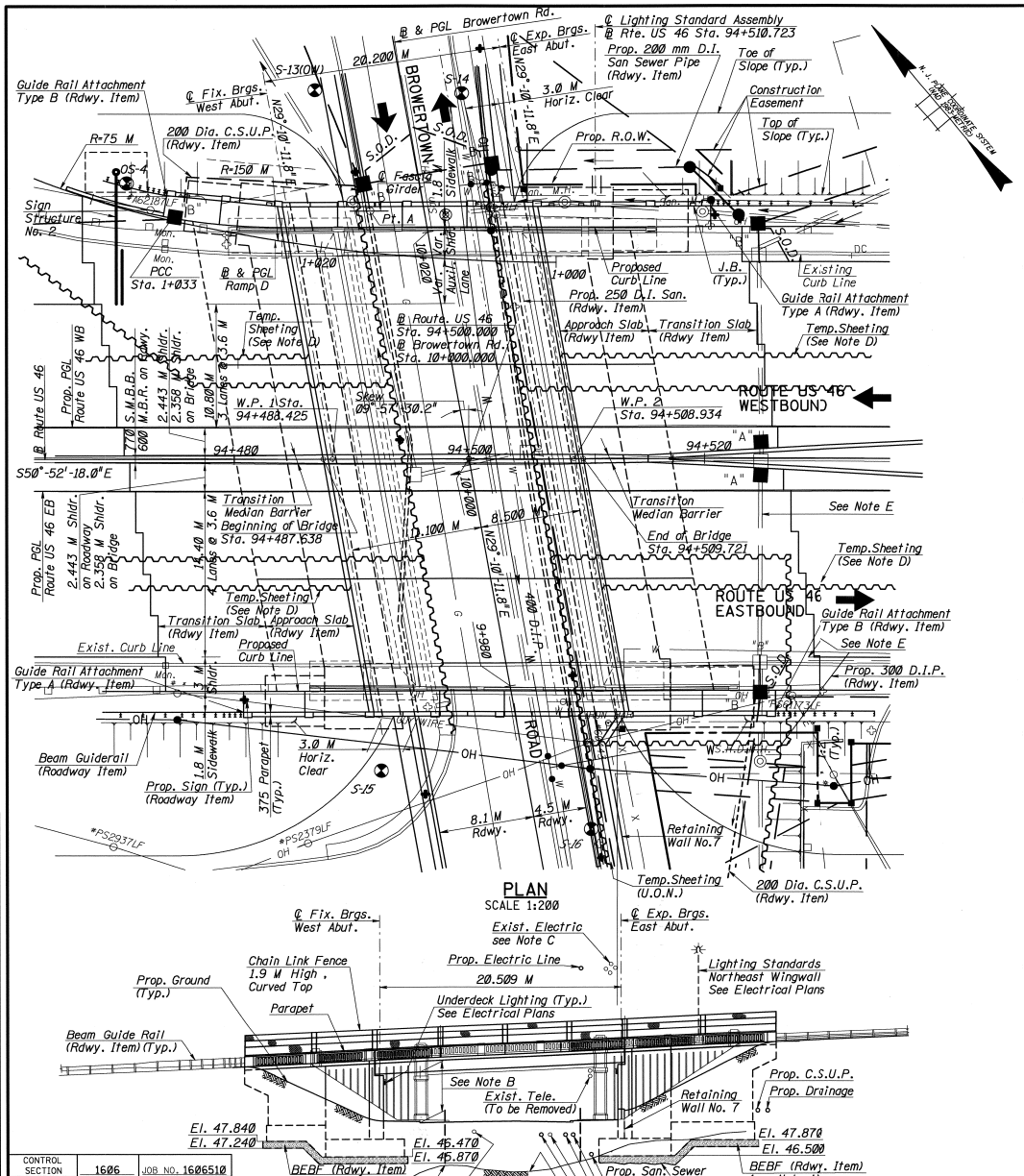
LOAD		ALLOWABLE STRESS RATING FACTOR	TONS	X	SPAN	LOAD FACTOR RATING FACTOR	TONS	X	SPAN
H20	IR (CRITICAL)	2.40 B	47.9	33.65	1	3.24	64.8	33.65	1
	OR (CRITICAL)	3.94 B	78.9	33.65	1	5.40	108.0	33.65	1
	IR (POS MOM)	2.40 B	47.9	33.65	1	3.24	64.8	33.65	1
	OR (POS MOM)	3.94 B	78.9	33.65	1	5.40	108.0	33.65	1
HS20	IR (CRITICAL)	1.71 B	61.6	33.65	1	2.31	83.3	33.65	1
	OR (CRITICAL)	2.82 B	101.4	33.65	1	3.86	138.8	33.65	1
	IR (POS MOM)	1.71 B	61.6	33.65	1	2.31	83.3	33.65	1
	OR (POS MOM)	2.82 B	101.4	33.65	1	3.86	138.8	33.65	1
3	IR (CRITICAL)	2.32 B	58.0	33.65	1	3.14	78.4	33.65	1
	OR (CRITICAL)	3.82 B	95.4	33.65	1	5.23	130.6	33.65	1
	IR (POS MOM)	2.32 B	58.0	33.65	1	3.14	78.4	33.65	1
	OR (POS MOM)	3.82 B	95.4	33.65	1	5.23	130.6	33.65	1
3S2	IR (CRITICAL)	2.17 B	78.3	33.65	1	2.94	105.8	33.65	1
	OR (CRITICAL)	3.58 B	128.8	33.65	1	4.90	176.3	33.65	1
	IR (POS MOM)	2.17 B	78.3	33.65	1	2.94	105.8	33.65	1
	OR (POS MOM)	3.58 B	128.8	33.65	1	4.90	176.3	33.65	1
3-3	IR (CRITICAL)	2.32 B	92.7	33.65	1	3.13	125.3	33.65	1
	OR (CRITICAL)	3.81 B	152.5	33.65	1	5.22	208.8	33.65	1
	IR (POS MOM)	2.32 B	92.7	33.65	1	3.13	125.3	33.65	1
	OR (POS MOM)	3.81 B	152.5	33.65	1	5.22	208.8	33.65	1

RATING FACTOR CODES:
T - TOP STEEL STRESS/STRENGTH GOVERNS
B - BOTTOM STEEL STRESS/STRENGTH GOVERNS
C - CONCRETE STRESS/STRENGTH GOVERNS

R - REINFORCEMENT STRESS/STRENGTH GOVERNS
V - SHEAR STRESS/STRENGTH GOVERNS
blank - COMPACT MOMENT STRENGTH GOVERNS
O - OVERLOAD PROVISIONS GOVERN
I - MOMENT-SHEAR INTERACTION GOVERNS
F - SECTION DOES NOT MEET FLANGE PROJECTION/THICKNESS RATIO CRITERIA
W - SECTION DOES NOT MEET WEB DEPTH/THICKNESS RATIO CRITERIA

NON-COMPACT MOMENT STRENGTH CODES:
B - SECTION IS BRACED
U - SECTION IS UNBRACED

NOTE: ALL RATINGS ARE BASED ON THE NUMBER OF DESIGN LANES OR THE ACTUAL TRAFFIC LANES AS DEFINED BY "D" OR "L" ENTERED FOR LANES IN THE PROJECT IDENTIFICATION.



INDEX OF DRAWINGS

NOTES:

A. Excavate Cohesive Soils on the North end of the East Abutment to at least Elevation 46.438 and replace with BEBF. Over excavate Rock on South end of East Abutment to Elevation 600 mm Below Footing and replace with BEBF. Excavate Cohesive Soils at the West Abutment to at least the Elevation shown and replace with BEBF.

B. Actual Vert. Cl. @ Pt. A = 4.587 M
Req'd. Min. Vert. Cl. @ Pt. A = 4.45 M

C. Existing Overhead Electrical Wires to be temporarily relocated away from bridge during construction. See Utility Plans for information.

D. The Temporary Sheeting at this location shall be abandoned after Construction.

E. The Contractor shall maintain roadway drainage during construction of the bridge. The cost of maintaining the existing drainage system shall be included in the Pay Item, "Temporary Sheeting".

REFERENCES:

1. For Typical Section, Working Point Layout and Profiles, see Sheet No. B4.
2. For Construction Staging, see Sheet No. B5.
3. For Summary of Quantities, see Sheet No. B4.
4. For Retaining Wall No. 7, see Sheet No. B72.

LEGEND:

BEBF Borrow Excavation, Bridge Foundation.
JB Junction Box
S.M.B.B. Split Median Barrier on Bridge
M.B.R. Median Barrier on roadway
U.O.N. Unless Otherwise Noted

All Dimensions on this Sheet are in Metric Units.
All Dimensions are shown in Millimeters unless otherwise noted. All elevations are shown in Meters.

GENERAL NOTES:

1. Design Specifications:
   (a) 1996 (16th Edition) AASHTO Standard Specifications for Highway Bridges (with Interims thru 1999) as modified by Section 3 of the 1998 NJDOT Design Manual for Bridges and Structures.
   (b) Allowable Fatigue Stresses based on Case 1 of AASHTO Table 10.3.2A
2. Construction Specifications:
   (a) 2001 Metric NJDOT Standard Specifications for Road and Bridge Construction as modified by the Special Provisions.
3. Live Load:
   (a) AASHTO MS 18 + 25% (MS 22.5) or tandem 108 kN axles at 1.200 M centers, whichever governs.
4. Concrete Design Stresses:
   (a) Specified Design Compressive Strength (f'c) (In accordance with the Retest Limit for Pay-Adjustment Items as specified in Table 914-4 of the NJDOT Standard Specifications and as modified by the Special Provisions).
   Class A.....28 MPa
   Class B.....21 MPa
   (The retest limit for Non-Pay-Adjustment Items shall be as specified on the last line of Table 914-4 of the NJDOT Standard Specifications and as modified by the Special Provisions).
   (b) Class Design Strengths (In accordance with Table 914-3 of the NJDOT Standard Specifications)
   Class A.....32 MPa
   Class B.....26 MPa
   (c) Allowable Stresses, Extreme Fiber in Compression (fc) structural Steel shall conform to the AASHTO M270M/M270 (ASTM A 709M/A 709), grades designated in Table 10.2 A of the AASHTO Standard Specifications for Highway Bridges. Meteric designations shall be used.
   Class A.....11.2 MPa
   Deck Slab..... 9.8 MPa
   Class B..... 8.4 MPa
5. Reinforcement Steel:
   (a) ASTM A615M (Grade 420) fs = 165 MPa.
6. Superstructure:
   (a) Dead Load includes 1.2 kPa Provision for future 50 MM thick Concrete Overlay protective System on the bridge deck.
   (b) Structural Steel: AASHTO M 270M/M 270, Grade 345 (ASTM A 709M/A 709, Grade 345) with Supplementary Requirements for Notch Toughness for all member components marked (T).
   (c) See Framing Plan for Cleaning and Painting Systems, and Finish Coat Color.
7. Seismic Design Notes
   Seismic Performance Category (SPC) ... B
   Acceleration Coefficient (A) 0.18
   Soil Profile.....Type I
8. Borings:
   ⊗ S-15 Indicates location of borings.

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	NH-0054 (190)		

STRUCTURE NO. 1606-163

STRUCTURE NAME:
ROUTE US 46 OVER BROWERTOWN ROAD

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

GENERAL PLAN AND ELEVATION

ROUTE U.S. 46 SECTION 46
TOWNSHIP OF LITTLE FALLS COUNTY OF PASSAIC
BOROUGH OF WEST PATERSON

REVISION	BY	C'K'D	DATE

DMJM+HARRIS, Inc.
WILLIAM D. COLON
P.E. N.J. LIC. NO. 25888

SCALE: AS NOTED
BRIDGE SHEET NO. B3 OF B98

271

CONTROL SECTION	1606
JOB NO.	1606510
DES. BY	SHAH
DWN. BY	MANAYATH
CHK. BY	LI

IN CHARGE OF CUMMINGS

login name: PMANAYATH
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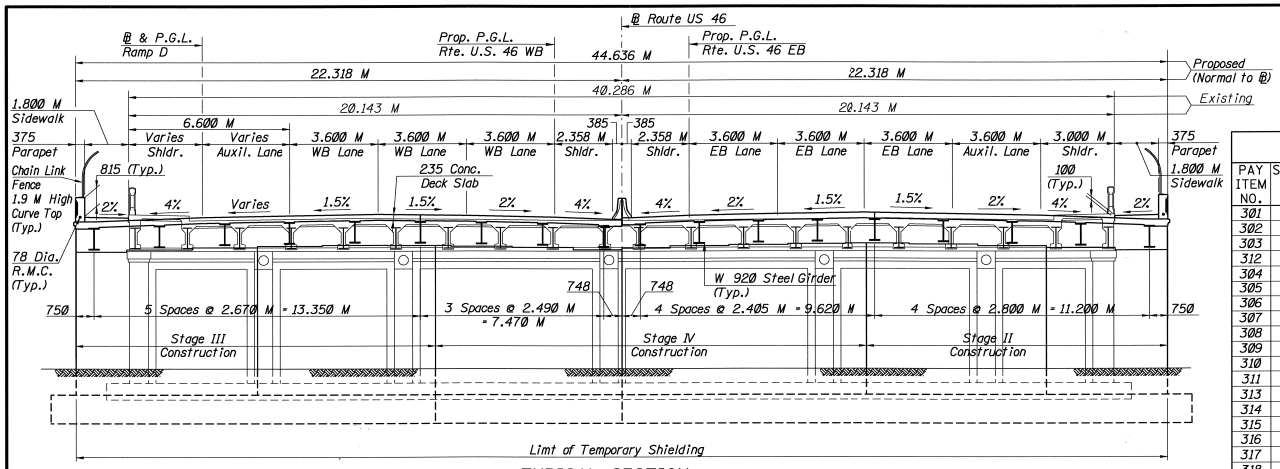
1-29



TYPICAL SECTION
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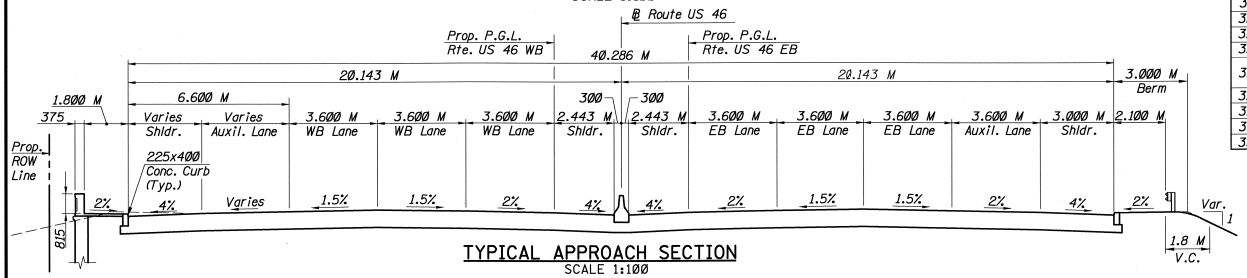

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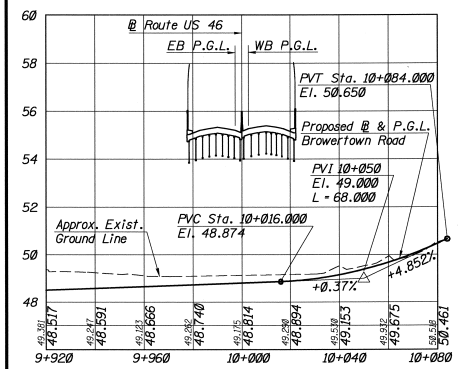
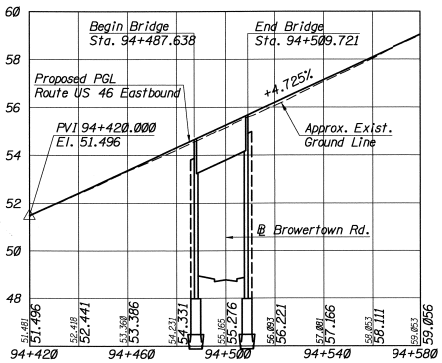
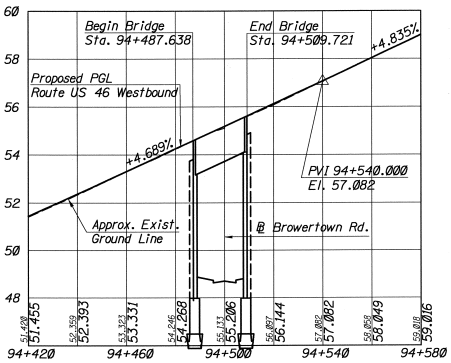


PROFILE BROWERTOWN ROAD
SCALE Horiz. 1:1000
Vert. 1:100



PROFILE ROUTE US 46 EASTBOUND
SCALE Horiz. 1:1000
Vert. 1:100



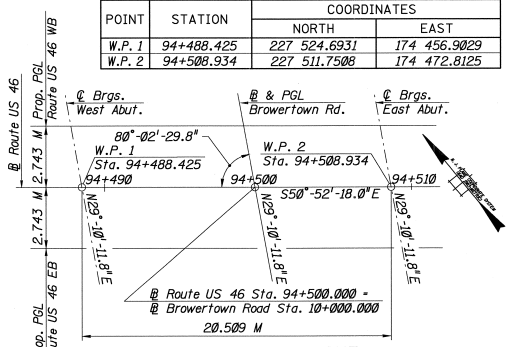
PROFILE ROUTE US 46 WESTBOUND
SCALE Horiz. 1:1000
Vert. 1:100

SUMMARY OF QUANTITIES

PAY ITEM NO.	STANDARD ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITY
301	2A21B	Temporary Shielding	L.S.	1
302	2A31C	Clearing Site, Bridge	L.S.	1
303	2F12E	Foundation Excavation	C.M.	2 010
312	5A31A	Concrete in Structures, Retaining Walls	C.M.	186
304	5A12B	Concrete in Substructures, Abutment Walls	C.M.	692
305	5A14C	Concrete in Superstructures, Deck Slab with Corrosion Inhibitor Admixture	C.M.	232
306	5A20H	45 x 45 MM Preformed Elastomeric Joint Sealer	L.M.	45
307	5A21A	Concrete in Structures, Footings	C.M.	1 031
308	5A21E	Reinforcement Steel in Structures	KG	87 100
309	5A21L	Sawcut Grooved Deck Surface	S.M.	805
310	N5A01	Concrete in Superstructure, Sidewalks with Corrosion Inhibitor Admixture	C.M.	12
311	5A30H	65 x 65 MM Preformed Elastomeric Joint Sealer	L.M.	45
313	5A31E	Reinforcement Steel In Structures, Epoxy Coated	KG	57 800
314	5A31G	Epoxy Waterproofing Seal Coat	S.M.	90
315	N5A02	Concrete in Superstructure, Parapets with Corrosion Inhibitor Admixture	L.M.	93
316	5C19A	Structural Steel (153 200 KG)	L.S.	1
317	5C21H	Shear Connectors	UNIT	7 488
318	5C22D	Structural Steel Deck Joints (7 800 KG)	L.S.	1
319	5H67D	Chain-Link Fence, Aluminium-Coated Steel, Bridge, 1.9M High, Curved Top	L.M.	93
321	N5L01	Temporary Beams and Supports	L.S.	1
320	5M21C	Temporary Sheeting	S.M.	1 620
322	N5W01	Structural Bearing Assembly	UNIT	36
325	6A20B	200 MM Corrugated Steel Underdrain Pipe	L.M.	151
326	N6E01	375 x 800 MM Concrete Barrier Curb, Bridge, with Corrosion Inhibitor Admixture	L.M.	45
327	7A41C	78 MM Rigid Metallic Conduit, Type CUG	L.M.	96
328	7A75J	Junction Box Frames And Covers	UNIT	4
329	N7A02	35 MM Rigid Metallic Conduit, Type CUG	L.M.	5
330	7A26C	41 MM Rigid Metallic Conduit, Type CUG	L.M.	2

WORKING POINTS

POINT	STATION	COORDINATES	
		NORTH	EAST
W.P. 1	94+488.425	227 524.6931	174 456.9029
W.P. 2	94+508.934	227 511.7508	174 472.8125



WORKING POINT LAYOUT
N.T.S.

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	NH-0054 (190)		

STRUCTURE NO. 1606-163

STRUCTURE NAME:
ROUTE US 46 OVER BROWERTOWN ROAD

CONTROL SECTION	1606	JOB NO. 1606510
DES. BY	SHAH	CHK. BY LI
DWN. BY	MANAYATH	
IN CHARGE OF CUMMINGS		

login name PMANAYATH
design file G:\3418\01\STRUCT\46OVERBROWERTOWN\004-3418TSAP.DGN
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All Dimensions on this Sheet are in Metric Units.
All Dimensions are shown in Millimeters unless otherwise noted. All elevations are shown in Meters.

REVISION	BY	C'K'D	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

TYPICAL SECTION AND CROSS SECTION

ROUTE U.S. 46 SECTION 46
TOWNSHIP OF LITTLE FALLS COUNTY OF PASSAIC
BOROUGH OF WEST PATERSON

DMJM+HARRIS, Inc.
WILLIAM D. COLON
P.E. N.J. LIC. NO. 25888

SCALE: AS NOTED
BRIDGE SHEET NO. B4 OF B98

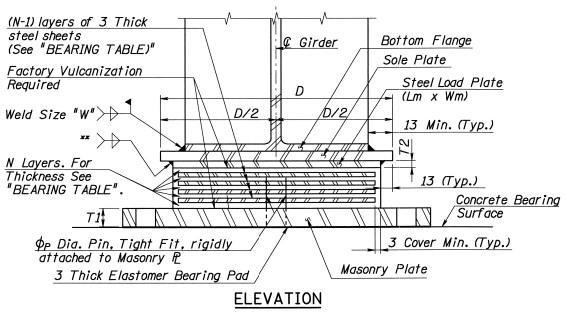
272

1-30

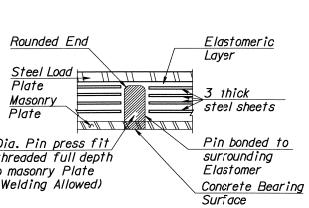
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	NH-0054 (190)		

STRUCTURE NO. 1606-163

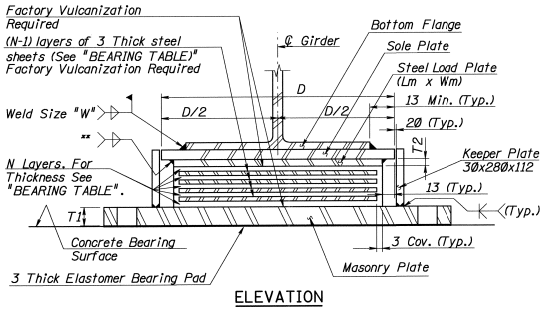
STRUCTURE NAME:
ROUTE US 46 OVER
BROWERTOWN ROAD



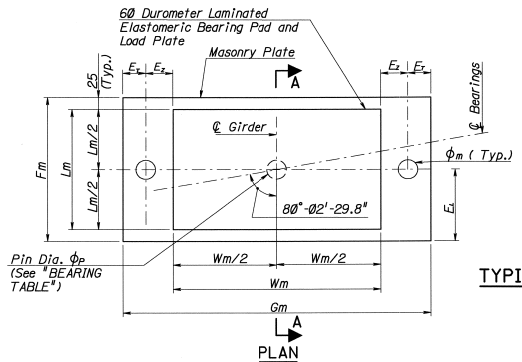
ELEVATION



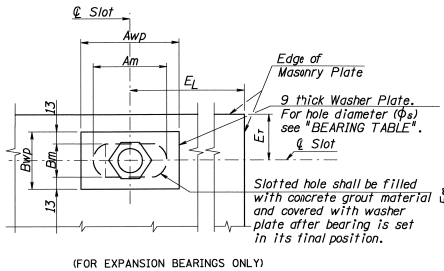
PIN DETAIL FOR FIXED BEARINGS



ELEVATION

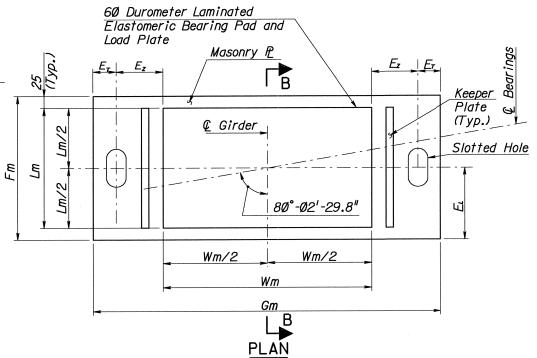


PLAN

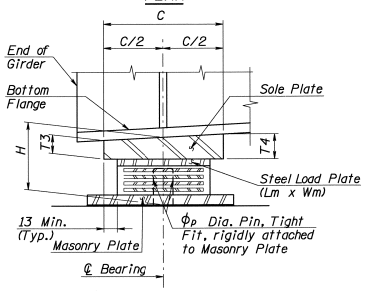


(FOR EXPANSION BEARINGS ONLY)

TYPICAL SLOTTED HOLE DETAIL MASONRY PLATE

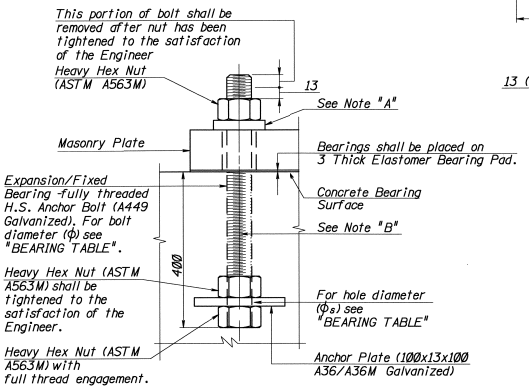


PLAN

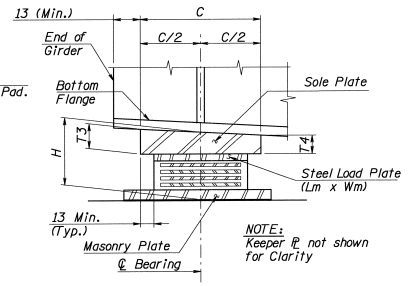


SECTION A-A

FIXED BEARINGS



ANCHOR BOLT DETAIL FOR ALL BEARINGS



SECTION B-B

EXPANSION BEARINGS

GENERAL NOTES:

1. Steel for the Masonry Plate, Load Plate, Sole Plate & Keeper Plate shall meet the requirements of ASTM A709M Grade 345.
2. Steel Surfaces not in contact with one another shall be painted.
3. Fill Holes in Masonry Plate around Anchor Bolts with an approved concrete grouting material to the top edge of the holes.
4. Anchor Bolts, Washers, & Nuts shall be Hot Dipped Galvanized in accordance with ASTM A153.
5. After final positioning of bearing and tightening of nuts, threads shall be deformed at top of nut.
6. The continuous weld connecting the sole plate to the load plate and the sole plate to the bottom flange shall be allowed to cool after each pass. However the temperature of the steel adjacent to the elastomer shall not exceed 93° C. Temperature shall be controlled by welding procedures and temperature indicating crayons or other devices approved by the Engineer.
7. The cost of Masonry Plate, Anchor Bolts, Keeper Plates, Sole Plate, Steel Load Plate, Elastomeric Bearing Pads etc. shall be included in Pay Item "Structural Bearing Assembly".
8. Bearing Height 'H' includes 3 MM thick Elastomer Bearing Pad.

REFERENCES:

1. For Bearing Locations, see Sheet Nos B18.

** Manufacturer shall provide the weld size (minimum size of weld shall be 8).

NOTE "A"
EXPANSION BEARING
9 Thick Washer Plate (A36/A36M Galvanized). For length (Awp) and width (Bwp) see "BEARING TABLE"
FIXED BEARING
Washer (ASTM F436 Plain-Galvanized) for Anchor Bolt

NOTE "B"
EXPANSION BEARING
℄ of slot in Masonry plate. For slot size see TYPICAL SLOTTED HOLE DETAIL
FIXED BEARING
℄ of ϕm Diameter hole in Masonry plate for Anchor Bolt, see BEARING TABLE for ϕ.

ELASTOMERIC BEARING TABLE (ALL DIMENSIONS ARE IN MILLIMETERS)

LOCATION	FIX / EXP.	PAY ITEM NO.	QUANTITY REQUIRED	MAX. DESIGN REACTION KN	SHAPE FACTOR	LOAD ℄ T2	ELASTOMER LAYERS				MASONRY ℄								BRG.	ANCHOR BOLTS		WELD SIZE	WASHER ℄		SOLE PLATE				DL+SDL KN	LL W/O IMP KN	ϕs	ϕP (PIN DIA.)
							THICKNESS	N LAYERS	Lm	Wm	T1	Fm	Gm	Am	Bm	ET	EL	Ez	ϕm	H	ϕ	BOLTS PER BRG.	W	Awp	Bwp	C	D	T3	T4				
West Abutment	Fix.	322	18	666	6.99	25	12*	5	280	420	60	330	640	-	-	56	165	54	41	172	32	2	8	-	-	306	446	13	27	276	310	34	38
East Abutment	Exp.	322	18	666	6.99	25	12*	5	280	420	60	330	776	70	41	61	165	117	-	172	32	2	8	132	67	306	446	27	13	276	310	34	-

* External Elastomer is 8 mm.

CONTROL SECTION	1606	JOB NO.	1606510
DES. BY	SHAH	CHK. BY	STONE
DWN. BY	MANAYATH		

IN CHARGE OF CUMMINGS

QUANTITIES

PAY ITEM NO.	STANDARD ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITY
322	N5W01	Structural Bearing Assembly	UNIT	36

All Dimensions on this Sheet are in Metric Units.
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REVISION	BY	C'K'D	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

BEARING DETAILS

ROUTE U.S. 46 SECTION 46
TOWNSHIP OF LITTLE FALLS COUNTY OF PASSAIC
BOROUGH OF WEST PATERSON

DMJM+HARRIS, Inc.
WILLIAM D. COLON
P.E. N.J. LIC. NO. 25888

SCALE: NOT TO SCALE

BRIDGE SHEET NO. B17 OF B98

285

1-31

login name PMANAYATH
design file G:\3418\01\STRUCT\46OVERBROWERTOWN\017-3418BD.DGN
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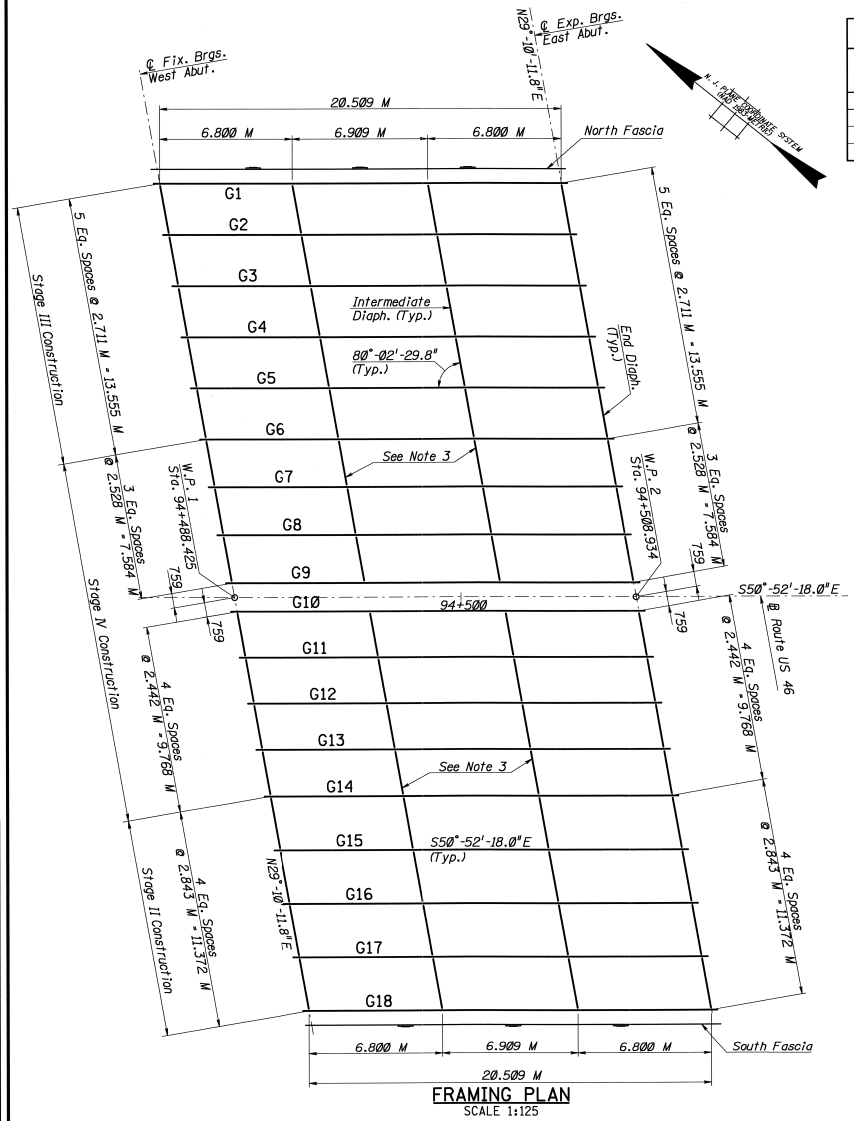
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	NH-0054 (190)		

STRUCTURE NO. 1606-163

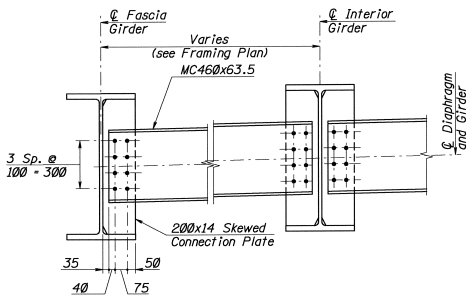
STRUCTURE NAME:
ROUTE US 46 OVER
BROWERTOWN ROAD



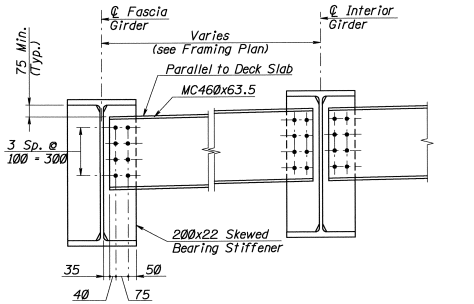
FRAMING PLAN
SCALE 1:125

QUANTITIES

PAY ITEM NO.	STAND. ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITY
316	5C19A	Structural Steel (153 200 KG)	L.S.	1
317	5C21H	Shear Connectors	UNIT	7 488



INTERMEDIATE DIAPHRAGM
SCALE 1:15



END DIAPHRAGM
SCALE 1:15

STRUCTURAL STEEL NOTES:

1. Structural Steel: AASHTO M 270M/M 270, Grade 345 (ASTM A 709M/A 709, Grade 345) with Supplementary Requirements for Notch Toughness for all member components marked (T).
2. All Diaphragm connections to be slip critical and shall be made with 22 MM Dia. high strength bolts (ASTM A325) with 24 MM Dia. bolt holes.
3. Bolt Holes in Connection Plates on Girders G6 and G14 for Intermediate and End Diaphragms installed under Stage IV Construction shall be field drilled.
4. The Paint Coating System shall consist of an Inorganic Zinc-Rich Prime coat, an Epoxy Polyamide Intermediate coat, and an Aliphatic Urethane Finish coat.
   Coating System: 1EU Color: Federal Color Chip #24172
   Finish Coat Color: Foliage Green
5. Welding shall conform to the Current ANSI/AASHTO/AWS Bridge Welding Code D1.5 with NJDOT Amendments. Welding and Nondestructive Testing symbols shall conform to Symbols for Welding, Brazing and Nondestructive Examination AWS A2.4-93.
6. Joint welding procedures, overall fabrication methods, and Quality Control Inspection procedure shall be included as written procedure specifications with the Shop Plan submission.
7. All Bearing Stiffeners and ends of girders shall be plumb under full dead load. Ends shall be ground smooth.
8. Girder lengths shown are along center line of girder, in Horizontal Plane.

REFERENCES:

1. For General Notes, see Sheet No. B3.
2. For Camber Table, see Sheet No. B19.
3. For Girder Details, see Sheet No. B19.
4. For Bearing Stffeners and Connection Plate Details, see Sheet No. B19.
5. For Bearing Details, see Sheet No. B17.
6. For working Points, see Sheet No. B4.

TOP OF STEEL ELEVATIONS

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16	G17	G18
℄ BRGS. EAST ABUT.	54.984	55.112	55.223	55.301	55.364	55.374	55.354	55.325	55.255	55.341	55.448	55.517	55.576	55.620	55.601	55.570	55.505	55.416
℄ BRGS. WEST ABUT.	54.014	54.143	54.242	54.340	54.402	54.412	54.392	54.363	54.294	54.371	54.479	54.547	54.607	54.651	54.632	54.601	54.536	54.447

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1250 0 1250 2500 5000
1:125
150 0 150 300 600
1:15

REVISION	BY	C'K'D	DATE

DMJM+HARRIS, Inc.
WILLIAM D. COLON
P.E. N.J. LIC. NO. 25888

SCALE: AS NOTED
BRIDGE SHEET NO. B18 OF B98

286

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

FRAMING PLAN

ROUTE U.S. 46 SECTION 46
TOWNSHIP OF LITTLE FALLS COUNTY OF PASSAIC
BOROUGH OF WEST PATERSON

CONTROL SECTION	1606	JOB NO. 1606510
DES. BY SHAH	CHK. BY	LI
DWN. BY MANAYATH		

IN CHARGE OF CUMMINGS

login name PMANAYATH
design file G:\3418\01\STRUCT\46OVERBROWERTOWN\018-3418FP.DGN
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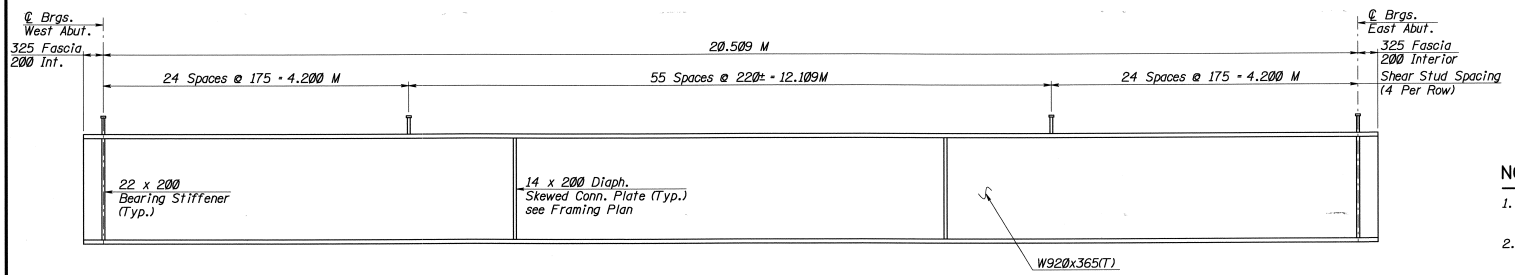
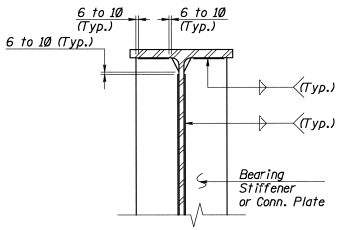
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	NH-0054 (190)		

STRUCTURE NO. 1606-163

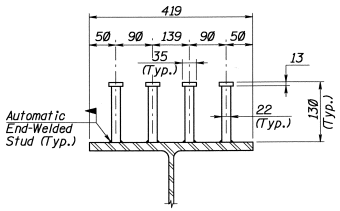
STRUCTURE NAME:
ROUTE US 46 OVER
BROWERTOWN ROAD



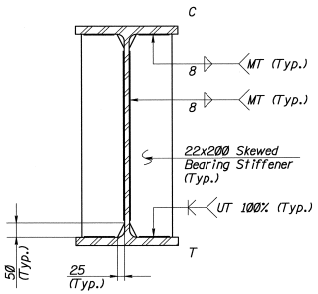
GIRDER ELEVATION
N.T.S.



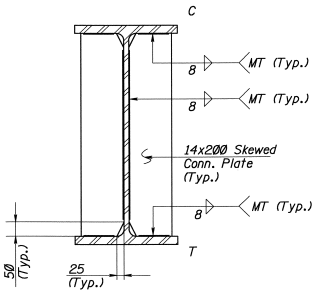
TYPICAL WELD TERMINATIONS
N.T.S.



SHEAR STUD DETAIL
N.T.S.



BEARING STIFFENER
N.T.S.



INTERMEDIATE DIAPHRAGM CONNECTION PLATE
(INTERIOR GIRDER SHOWN)
N.T.S.

CAMBER TABLE

GIRDER MARK	LOCATION	DEAD LOAD DEFLECTIONS (MM) STEEL	CONC.	S.I.P.	S.D.L.	F.P.A.	CAMBER (MM) TOTAL D.L.	ARCH.	TOTAL
G1	1/4 Point	4	16	1	2	2	25	12	37
	Mid Point	6	22	1	3	3	35	17	52
	3/4 Point	4	16	1	2	2	25	12	37
G2 - G5	1/4 Point	5	18	2	2	2	28	12	40
	Mid Point	7	26	2	3	3	40	17	57
	3/4 Point	5	18	2	2	2	29	12	41
G6	1/4 Point	4	15	2	3	2	26	12	38
	Mid Point	6	21	3	4	3	37	17	54
	3/4 Point	4	15	2	3	2	26	12	38
G7 & G8	1/4 Point	5	17	2	1	2	27	12	39
	Mid Point	7	24	2	1	3	37	17	54
	3/4 Point	5	17	2	1	2	27	12	39
G9	1/4 Point	4	15	1	1	2	23	12	35
	Mid Point	6	21	1	1	3	32	17	49
	3/4 Point	4	15	1	1	2	23	12	35
G10	1/4 Point	4	14	1	1	2	22	12	34
	Mid Point	6	20	1	1	3	31	17	48
	3/4 Point	4	14	1	1	2	22	12	34
G11 - G13	1/4 Point	5	17	2	1	2	27	12	39
	Mid Point	7	23	2	1	3	36	17	53
	3/4 Point	5	17	2	1	2	27	12	39
G14	1/4 Point	4	16	2	3	2	27	12	39
	Mid Point	6	22	3	4	3	38	17	55
	3/4 Point	4	16	2	3	2	27	12	39
G15 - G17	1/4 Point	5	19	2	2	2	30	12	42
	Mid Point	7	27	3	3	3	43	17	60
	3/4 Point	5	19	2	2	2	30	12	42
G18	1/4 Point	4	16	1	2	2	25	12	37
	Mid Point	6	23	1	3	3	36	17	53
	3/4 Point	4	16	1	2	2	25	12	37

CAMBER TABLE
CONSTRUCTION STAGES II, III & IV

GIRDER MARK	LOCATION	DEAD LOAD DEFLECTIONS (MM) STEEL	CONC.	S.I.P.	S.D.L.	F.P.A.
G6 Stage III	1/4 Point	4	9	1	2	0
	Mid Point	6	13	1	3	0
	3/4 Point	4	9	1	2	0
G6 Stage IV	1/4 Point	0	6	1	1	2
	Mid Point	0	8	1	1	3
	3/4 Point	0	6	1	1	2
G14 Stage II	1/4 Point	4	10	1	2	0
	Mid Point	6	14	1	3	0
	3/4 Point	4	10	1	2	0
G14 Stage IV	1/4 Point	0	6	1	1	2
	Mid Point	0	8	1	1	3
	3/4 Point	0	6	1	1	2

NOTES:

1. Ends of girders and bearing stiffeners shall be plumb under full dead load. Ends shall be ground smooth.
2. Girder lengths shown are along center line of Girder in horizontal plane.

REFERENCES:

1. For General Notes, see Sheet No. B3.
2. For Framing Plan, Connection Plate and Diaphragm Location, see Sheet No. B18.
3. For Bearing Details, see Sheet No. B17.
4. For Additional Structural Notes, see Sheet No. B18.
5. For Intermediate and End Diaphragm Details, see Sheet No. B18.
6. For Deck Joint Details, see Sheet No. B27.
7. For Quantities, see Sheet No. B18.

CAMBER NOTES:

"Steel" Dead Load of Steel Girder and Diaphragms

"Conc." Concrete deck slab including weight of haunches

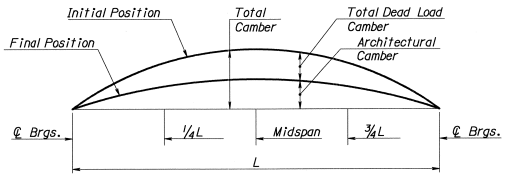
"S.I.P." Stay-in-Place Forms including added Concrete Thickness

"S.D.L." Superimposed Dead Load due to Parapets, Sidewalk and Barrier Curb

"F.P.A." Future Paving Allowance

"ARCH." Architectural Camber

Total = Steel + Conc. + S.I.P. +S.D.L. + F.P.A. + ARCH.



CAMBER DIAGRAM
N.T.S.

All Dimensions on this Sheet are in Metric Units.
All Dimensions are shown in Millimeters unless otherwise noted. All elevations are shown in Meters.

REVISION	BY	C'K'D	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

GIRDER DETAILS

ROUTE U.S. 46 SECTION 46
TOWNSHIP OF LITTLE FALLS COUNTY OF PASSAIC
BOROUGH OF WEST PATERSON

DMJM+HARRIS, Inc.
WILLIAM D. COLON
P.E. N.J. LIC. NO. 25888

SCALE: N.T.S
BRIDGE SHEET NO. B19 OF B98

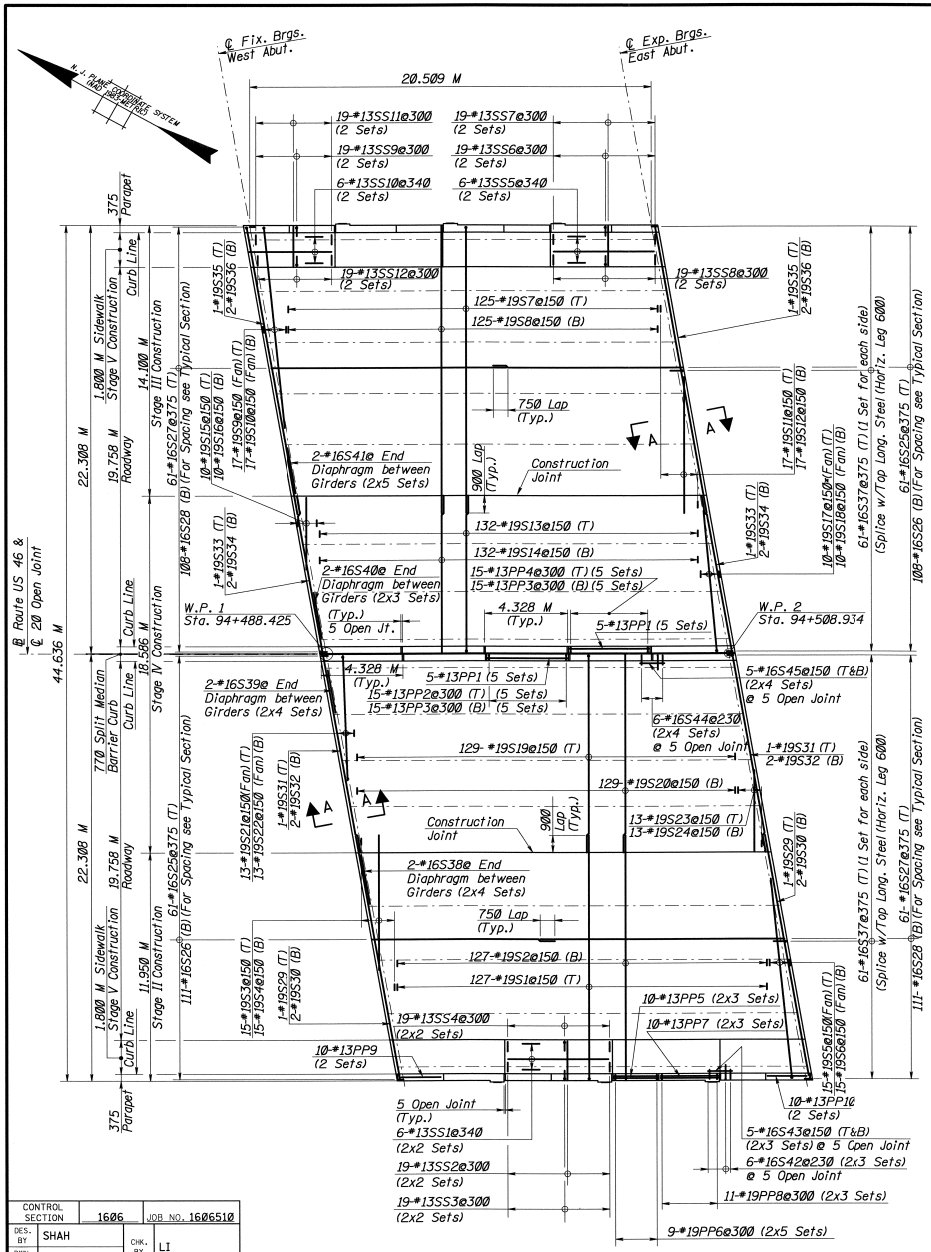
287

CONTROL SECTION	1606	JOB NO. 160651Ø
DES. BY	SHAH	CHK. BY LI
DWN. BY	MANAYATH	

IN CHARGE OF CUMMINGS

login name	PMANAYATH
design file	G:\3418101\STRUCT\46OVERBROWERTOWN\Ø19-3418GD.DGN
date & time	03/20/2003 11:42:46 AM

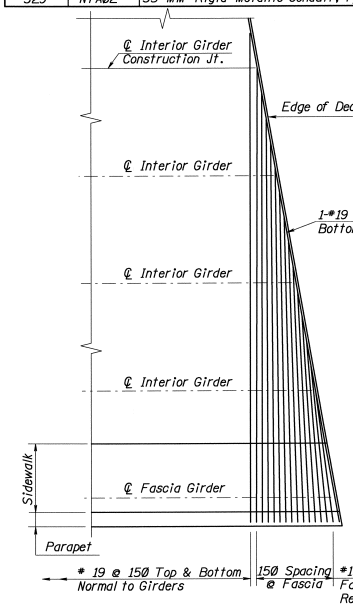
1-33



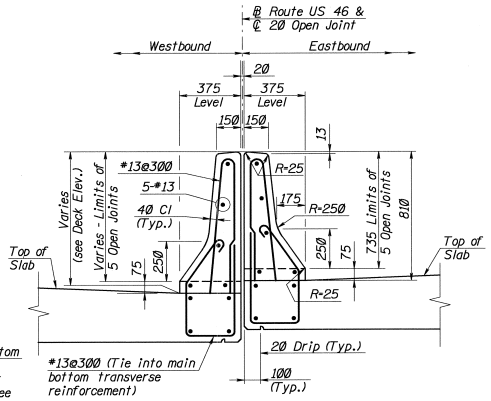
DECK PLAN
SCALE 1:125

QUANTITIES

PAY ITEM NO.	STANDARD ITEM NO.	DESCRIPTION	UNIT	CONTRACT QUANTITY
305	5A14C	Concrete in Superstructure, Deck Slab with Corrosion Inhibitor Admixture	C.M.	232
310	N5A01	Concrete in Superstructure, Sidewalks with Corrosion Inhibitor Admixture	C.M.	12
315	N5A02	Concrete in Superstructure, Parapets with Corrosion Inhibitor Admixture	L.M.	43
326	N6E01	375x800 MM Concrete Barrier Curb, Bridge, with Corrosion Inhibitor Admixture	L.M.	43
313	5A31E	Reinforcement Steel in Structures, Epoxy Coated	KG	46 800
306	5A20H	45x45 MM Preformed Elastomeric Joint Sealer	L.M.	45
311	5A30H	65x65 MM Preformed Elastomeric Joint Sealer	L.M.	45
309	5A21L	Sawcut Grooved Deck Surface	S.M.	805
318	5C22D	Structural Steel Deck Joints (7 800 KG)	L.S.	1
327	7A41C	78 MM Rigid Metallic Conduit, Type: CUG	L.M.	44
319	5H67D	Chain-Link Fence, Aluminum-Coated Steel, Bridge, 1.9 M High, Curved Top	L.M.	43
328	7A75J	Junction Box Frames and Covers	UNIT	1
329	N7A02	35 MM Rigid Metallic Conduit, Type CUG	L.M.	2



DETAIL OF REINFORCING ACUTE CORNERS OF SLAB
Not To Scale



810 MM HIGH SPLIT MEDIAN BARRIER ON BRIDGE
SCALE 1: 15

NOTES:

1. Stay-In-Place or removable deck forms may be used, except on deck overhang where removable deck forms shall be used.
2. All reinforcing bars in Deck Slab, Median Barrier, Parapets and Sidewalk shall be epoxy coated.
3. The Tops of the Split Median Barrier shall be constructed to the same elevation.

All Dimensions on this Sheet are in Metric Units. All Dimensions are shown in Millimeters unless otherwise noted. All elevations are shown in Meters.

LEGEND:

(T) Top
(B) Bottom

150 0 150 300 600
1:15
1250 0 1250 2500 5000
1:125

REVISION	BY	C'K'D	DATE

REFERENCES:

1. For Typical Deck Section, see Sheet No. B21.
2. For Top of Deck Elevations, see Sheet No. B22.
3. For Structural Steel Deck Joint Details, see Sheet No. B27.
4. For Bar List, see Sheet Nos. B31.
5. For Concrete Class and Pay Items, see NJDOT Std. Dwg. BCD-6.
6. For Section A-A, see Sheet No. B22.
7. For Parapet Details & Open Joint and Contraction Joint Layout, see Sheet No. B25.
8. For Deck Reinforcement at Median Barrier/Parapet Open Joint, see Sheet No. B23.
9. For Saw Cut Grooving Detail, see NJDOT Std. Dwg. BCD-5.
10. For Architectural Details for Parapet, see Sheet No. B25.
11. For Locations of Junction Boxes and Rigid Metallic Conduits, see Electrical Drawings.

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	NH-0054 (190)		

STRUCTURE NO. 1606-163

STRUCTURE NAME:
ROUTE US 46 OVER BROWERTOWN ROAD

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

DECK REINFORCING PLAN

ROUTE U.S. 46 SECTION 46
TOWNSHIP OF LITTLE FALLS COUNTY OF PASSAIC
BOROUGH OF WEST PATERSON

DMJM+HARRIS, Inc.
WILLIAM D. COLON
P.E. N.J. LIC. NO. 25888

SCALE: AS NOTED
BRIDGE SHEET NO. B20 OF B98

288

CONTROL SECTION	1606	JOB NO. 1606510
DES. BY	SHAH	CHK. BY LI
DWN. BY	MANAYATH	

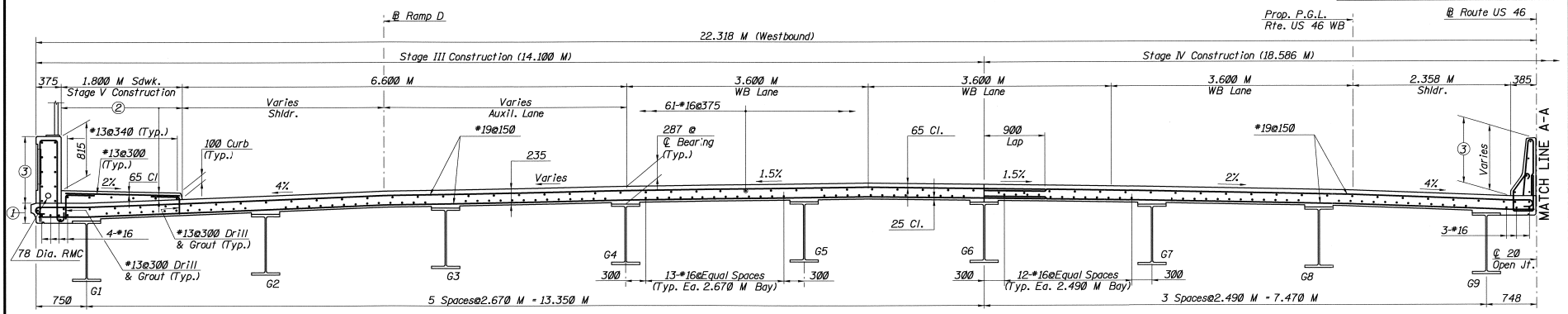
IN CHARGE OF CUMMINGS

login name	PMANAYATH
design file	C:\3418\01\STRUCT\460VERBROWERTOWN\B20-3418DP.DGN
date & time	03/20/2003 11:42:47 AM

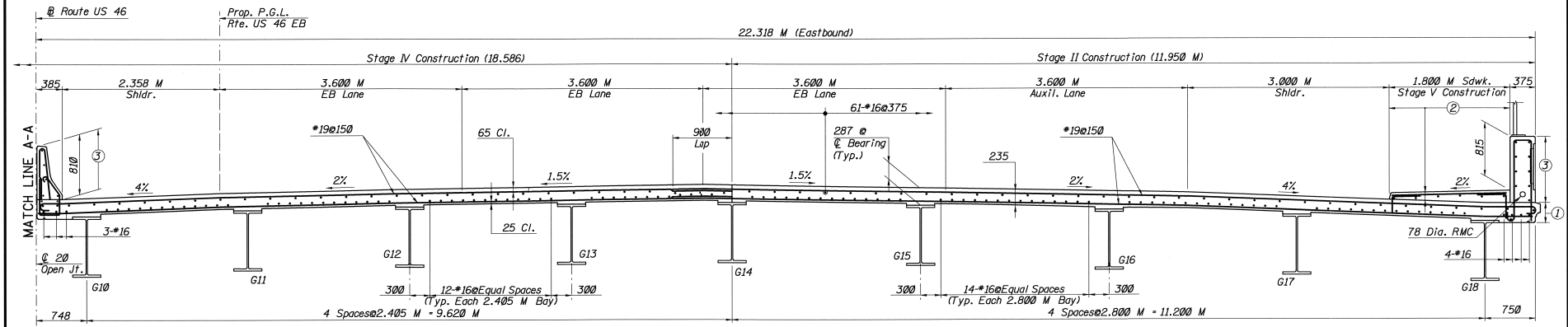
STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	NH-0054 (190)		

STRUCTURE NO. 1606-163

STRUCTURE NAME:
ROUTE US 46 OVER
BROWERTOWN ROAD



WESTBOUND ROADWAY



EASTBOUND ROADWAY

TYPICAL SECTION
SCALE 1:30

REFERENCES:

1. For General Notes, see Sheet No. B3.
2. For Framing Plan, see Sheet No. B18.
3. For Deck Reinforcing Plan, see Sheet No. B20.
4. For Top of Deck Elevations, see Sheet No. B22.
5. For Bar List, see Sheet No B31.
6. For Parapet Details, see Sheet No. B25.
7. For Conc. Median Barrier Curb, see Sheet No. B20.
8. For Diaphragms, see Sheet No. B18.
9. For Concrete Class and Pay Item, see Std. Dwg. BCD-6.

NOTES:

1. The Cost of Drilling and Grouting #13 bars for Sidewalk shall be included under Pay Item "Reinforcement Steel in Structures, Epoxy Coated".

All Dimensions on this Sheet are in Metric Units.
All Dimensions are shown in Millimeters unless otherwise noted. All elevations are shown in Meters.

REVISION	BY	C'K'D	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

DECK SECTION AND DETAILS

ROUTE U.S. 46 SECTION 46
TOWNSHIP OF LITTLE FALLS COUNTY OF PASSAIC
BOROUGH OF WEST PATERSON

DMJM+HARRIS, Inc.
WILLIAM D. COLON
P.E. N.J. LIC. NO. 25888

SCALE: 1:30
BRIDGE SHEET NO. B21 OF B98

289

CONTROL SECTION	1606	JOB NO. 1606510
DES. BY	SHAH	CHK. BY LI
DWN. BY	MANAYATH	

IN CHARGE OF CUMMINGS

login name: PMANAYATH
design file: D:\3418\01\STRUCT\46OVERBROWERTOWN\B21-34180S.DGN
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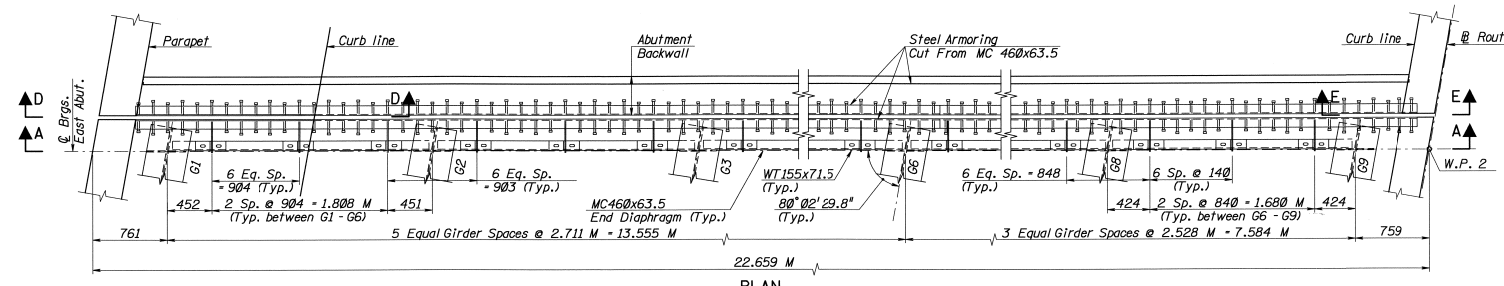
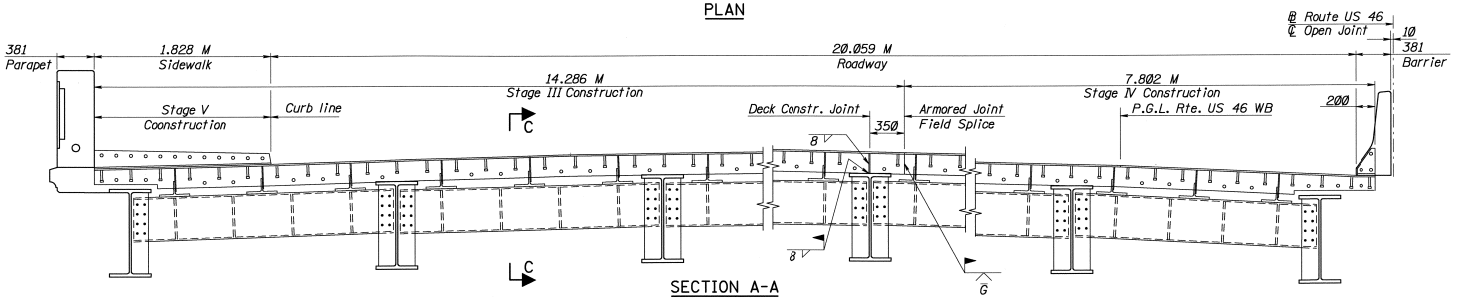


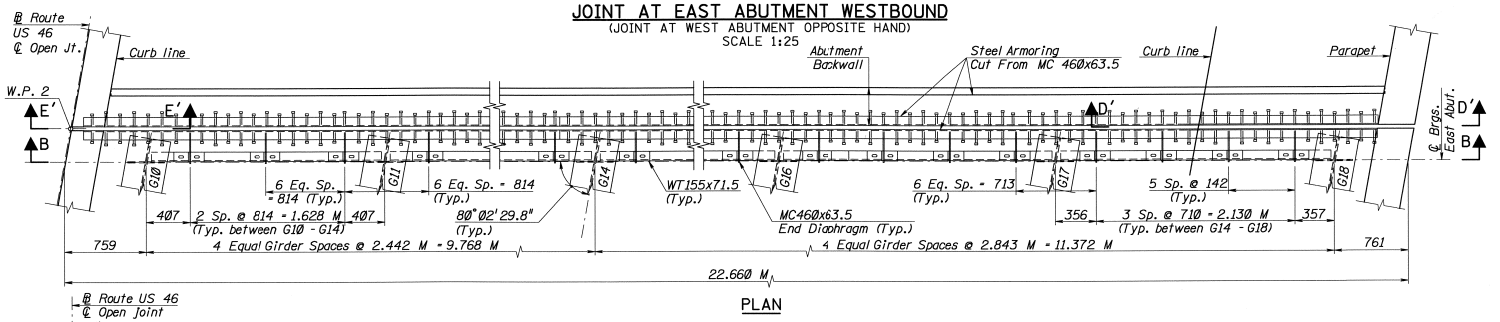
PLAN



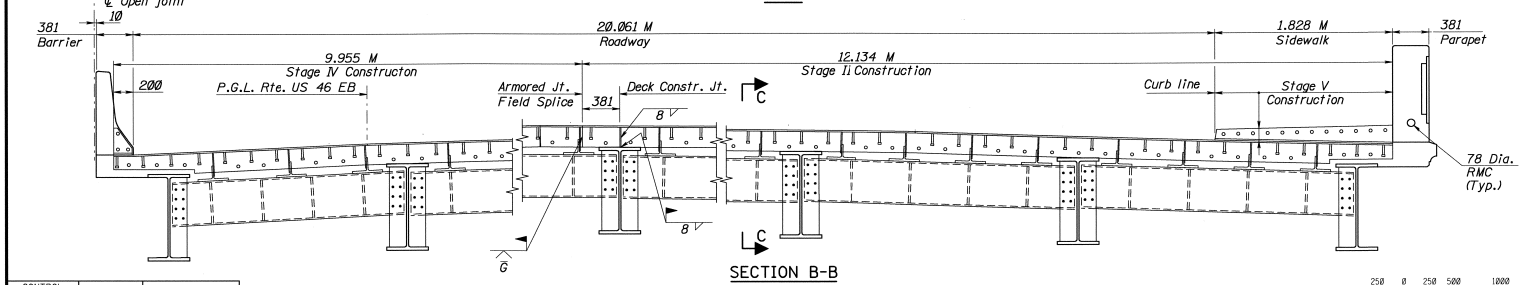
SECTION A-A

JOINT AT EAST ABUTMENT WESTBOUND

(JOINT AT WEST ABUTMENT OPPOSITE HAND)
SCALE 1:25



PLAN



SECTION B-B

JOINT AT EAST ABUTMENT EASTBOUND

(JOINT AT WEST ABUTMENT OPPOSITE HAND)
SCALE 1:25

All Dimensions on this Sheet are in Metric Units.
All Dimensions are shown in Millimeters unless otherwise noted. All elevations are shown in Meters.

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	NH-0054 (190)		

STRUCTURE NO. 1606-163

STRUCTURE NAME:
ROUTE US 46 OVER BROWERTOWN ROAD

N.J. PLANE COORDINATE SYSTEM (NAD 1983/91)

NOTES:

1. Deck Joint elevation is at front face of header.
2. Material for steel armoring shall conform to AASHTO M270/M 270M (ASTM A709/A709M) Grade 345 and shall be hot dipped galvanized after fabrication.
3. 4 additional Studs required at Field Splice Location.

REFERENCES:

1. For Preformed Elastomeric Compression Joint sealer Details and Notes, see Sheet No. B32.
2. For Deck Reinforcing Plan and section, see Sheet Nos. B20 & B21.
3. For End Diaphragm details, see Sheet No. B18.
4. For Section C-C, D-D, D'-D', E-E and E'-E', see Sheet No. B27.
5. For Girder Spacing, see Sheet No. B18.
6. For Deck Joint Grades, see Sheet No. B23.
7. For Quantities, see Sheet No. B20.

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

DECK JOINTS

ROUTE U.S. 46 SECTION 46
TOWNSHIP OF LITTLE FALLS COUNTY OF PASSAIC
BOROUGH OF WEST PATERSON

REVISION	BY	C'K'D	DATE

DMJM+HARRIS, Inc.
WILLIAM D. COLON
P.E. N.J. LIC. NO. 25888

SCALE: AS NOTED
BRIDGE SHEET NO. B26 OF B98

294

CONTROL SECTION	1606	JOB NO. 1606510
DES. BY	SHAH	CHK. BY LI
DWN. BY	MANAYATH	

IN CHARGE OF CUMMINGS

login name	PMANAYATH
design file	G:\3419\01\STRUCT\46OVERBROWERTOWN\B26-3416DJ.DGN
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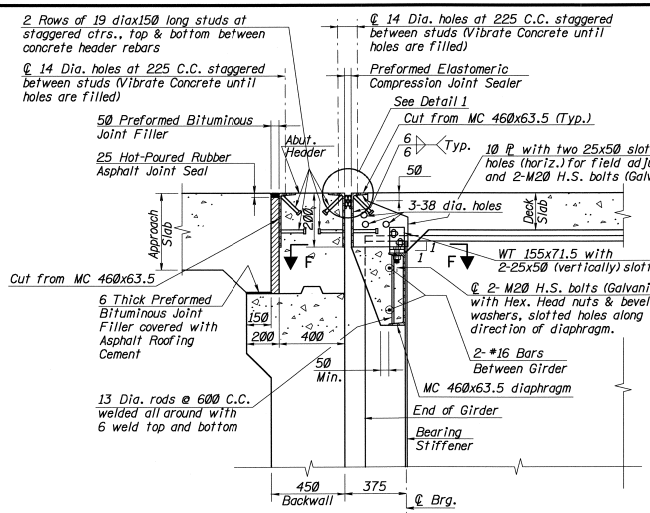
1-36

STATE	FEDERAL PROJECT NO.	SHEET	TOTAL SHEETS
N.J.	NH-0054 (190)		

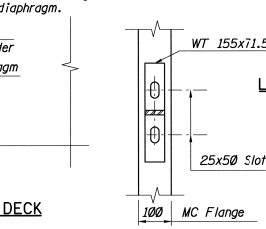
STRUCTURE NO. 1606-163

STRUCTURE NAME: ROUTE US 46 OVER BROWERTOWN ROAD

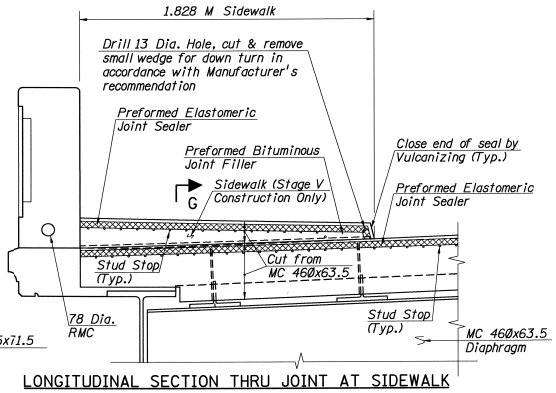


NORMAL SECTION AT ABUTMENT THRU DECK

SECTION C-C
SCALE 1:15

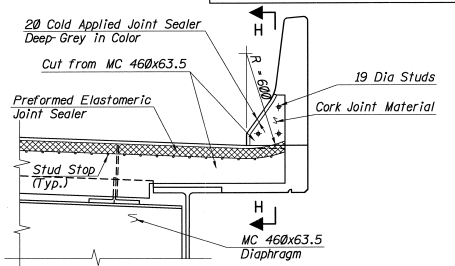


SECTION F-F
NOT TO SCALE



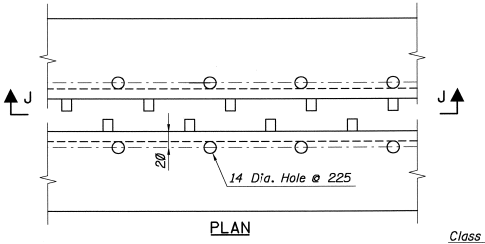
LONGITUDINAL SECTION THRU JOINT AT SIDEWALK

SECTION D-D
(SECTION D'-D' SIMILAR)
SCALE 1:15

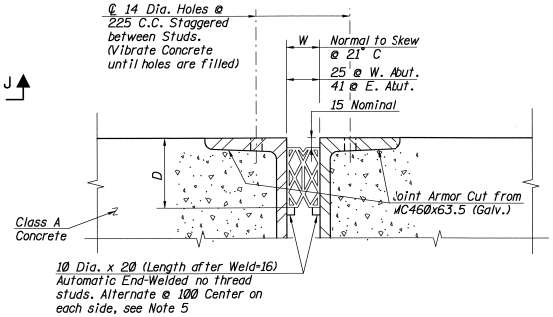


LONGITUDINAL SECTION THRU JOINT AT SPLIT MEDIAN BARRIER

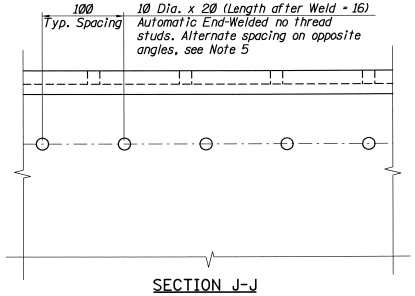
SECTION E-E (AS SHOWN)
SECTION E'-E' (SIMILAR)
SCALE 1:15



PLAN

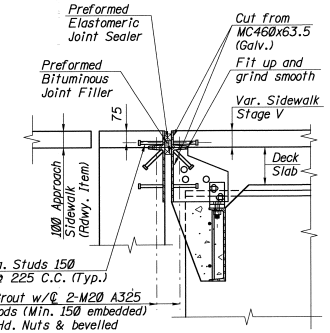


DETAIL 1
NOT TO SCALE



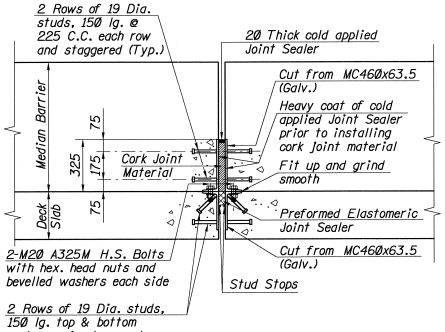
SECTION J-J

JOINT SEALER SEAT
NOT TO SCALE



SECTION THRU SIDEWALK AT ABUTMENT

SECTION G-G
SCALE 1:15



SECTION THRU MEDIAN BARRIER AT ABUTMENT

SECTION H-H
SCALE 1:15

NOTES:

1. The nominal height of compression seals may vary based upon manufacturer's specifications.
2. The ratio of the compression seal height to width shall not be less than 1.
3. The height and width of sealer shall not be less than nominal. The height may exceed the nominal manufacturer's sealer height by not more than 6 MM. See Section 908.03 of the NJDOT Standard Specifications for additional requirements.
4. "D" dimension is equal to compressed seal height per manufacturer's specifications plus 15 (±3) MM. Dimension "D" shall be set in the shop by the fabricator.
5. Automatic End Welded Studs shall be installed prior to Zinc coating of assembly. Areas of steel on which studs are to be welded, shall be cleaned of rust and scale by grinding.

NOMINAL SEALER SIZE (MM)		W MM	D
WIDTH	HEIGHT		
45	45	25	See Note 4
65	65	41	See Note 4

REFERENCES:

1. For Joint Grade Elevation, see Sheet No. B23.
2. For location of Section C-C, D-D, D'-D', E-E and E'-E', see Sheet No. B26.

All Dimensions on this Sheet are in Metric Units. All Dimensions are shown in Millimeters unless otherwise noted. All elevations are shown in Meters.

1:15

REVISION	BY	C'K'D	DATE

NEW JERSEY DEPARTMENT OF TRANSPORTATION
BUREAU OF STRUCTURAL ENGINEERING

DECK JOINT DETAILS

ROUTE U.S. 46 SECTION 46
TOWNSHIP OF LITTLE FALLS COUNTY OF PASSAIC
BOROUGH OF WEST PATERSON

DMJM+HARRIS, Inc.
WILLIAM D. COLON
P.E. N.J. LIC. NO. 25888

SCALE: AS NOTED
BRIDGE SHEET NO. B27 OF B98

295

CONTROL SECTION	1606	JOB NO. 1606510
DES. BY SHAH	CHK. BY LI	
DWN. BY MANAYATH		

IN CHARGE OF CUMMINGS

login name	PMANAYATH
design file	G:\3418\01\STRUCT\46OVERBROWERTOWN\027-3418DJD.DGN
date & time	03/28/2003 11:42:52 AM

DRAWING(S):

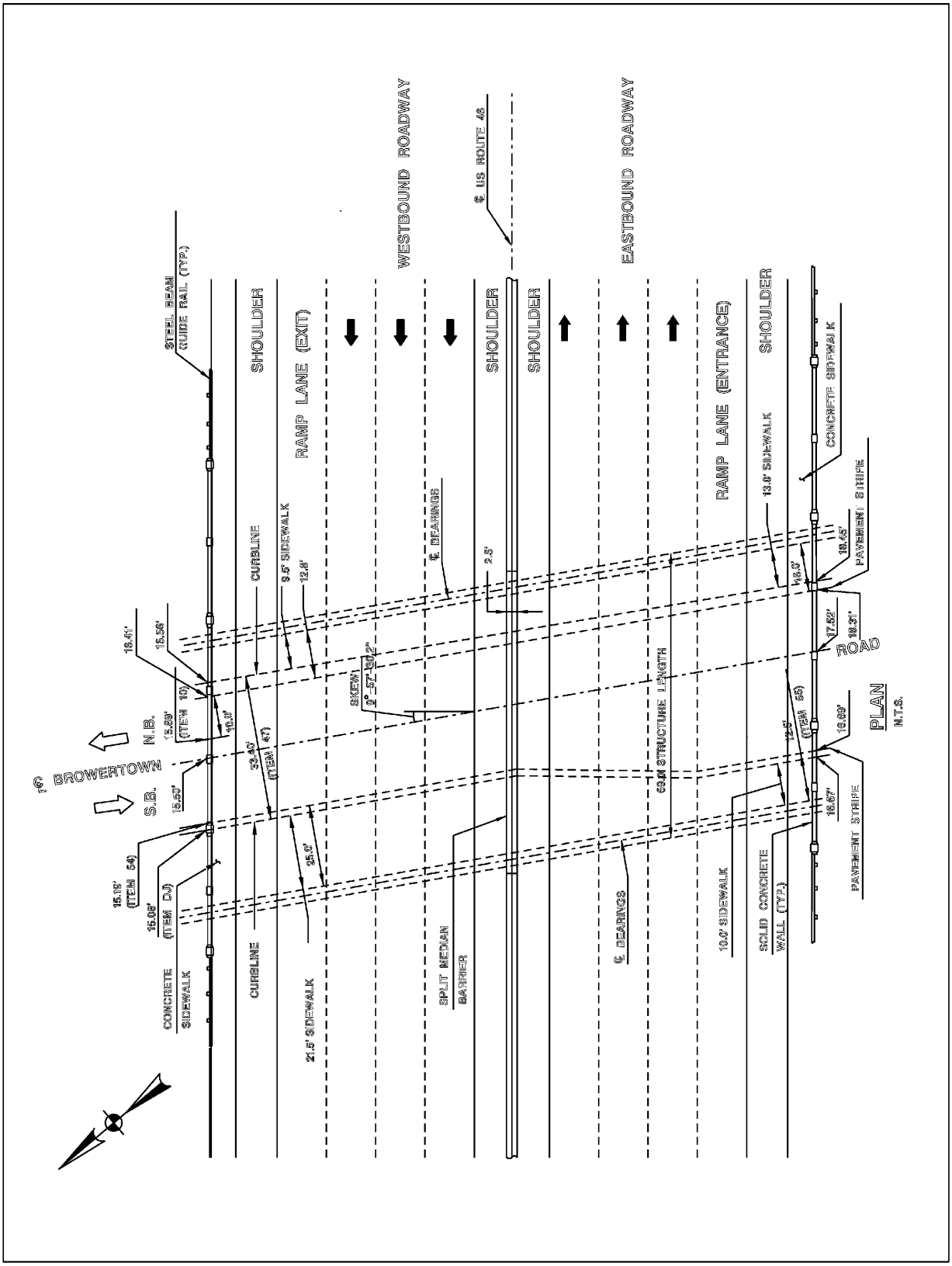

WESTBOUND ROADWAY
EASTBOUND ROADWAY
℄ US ROUTE 46
STEEL BEAM GUIDE RAIL (TYP.)
SHOULDER
RAMP LANE (EXIT)
CURBLINE
9.5' SIDEWALK
12.8'
℄ BEARINGS
2.5'
SHOULDER
SHOULDER
RAMP LANE (ENTRANCE)
SHOULDER
13.0' SIDEWALK
CONCRETE SIDEWALK
PAVEMENT STRIPE
18.45'
18.0'
17.52'
18.31'
ROAD
18.41'
15.56'
15.59' (ITEM 10)
10.8'
℄ BROWERTOWN
N.B.
S.B.
15.52'
33.40' (ITEM 47)
SKEW 2° 57' 32.2"
69.0' STRUCTURE LENGTH
12.3' (ITEM 55)
18.69'
16.67'
15.19' (ITEM 54)
15.08' (ITEM DJ)
CONCRETE SIDEWALK
CURBLINE
25.0'
21.5' SIDEWALK
SPLIT MEDIAN BARRIER
℄ BEARINGS
10.0' SIDEWALK
SOLID CONCRETE WALL (TYP.)
PAVEMENT STRIPE
PLAN
N.T.S.

Photo No: 1-1

Location:	North elevation, looking South.
Description:	General View.

Photo No: 1-2

Location:	East approach roadway, looking West.
Description:	General View.

Photo No: 1-3

Location:	Looking up and northwest.
Description:	General view of underdeck and superstructure.

Photo No: 1-4

Location:	Looking southwest in the westbound roadway.
Description:	General view of the deck.

Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

NEW JERSEY DEPARTMENT OF TRANSPORTATION
STRUCTURAL EVALUATION
BRIDGE EVALUATION CHECK LIST

(FIELD NOTES)

Inspectors: Igbal Aberra Name: Route US 46 over Browertown Road

Crew Chief: Rajesh Patel

Temperature: 80ºF Weather: Cloudy

Special Equipment Used: None

RATINGS:

N Not applicable
9 Excellent Condition
8 Very Good Condition – no problems noted.
7 Good Condition – some minor problems.
6 Satisfactory Condition – some minor deterioration of structural elements.
5 Fair Condition – minor section loss of primary structural elements.
4 Poor Condition – advance section loss of primary structural elements.
3 Serious Condition – seriously deteriorated primary structural elements.
2 Critical Condition – facility should be closed until repairs are made.
1 Imminent Failure Condition – facility closed. Study of repairs is feasible.
0 Failed Condition – facility is closed and beyond repair.

GPS COORDINATES
AT SW CORNER
40° 52' 56" N
74° 12'35" W

GENERAL

Type of Bridge: Single span, simply supported, composite rolled steel stringers.

Year Built: 2006 Year of Widening / Major Repairs: N/A

No. of Lanes: On 8 Under 2

Vertical Clearances: Over Deck: 99.99' (Unrestricted)

Minimum Under: 15.19' below north fascia stringer at west edge of pavement Browertown Road

Maximum Under (Item 10): 15.89' 10' from east curbline of Browertown Road at the north elevation

Horizontal Underclearance: Total Horizontal Clearance: 64.82' curb to curb

Right 12.5': Browertown Road southbound lane to West Abutment at the south fascia

Left 0.00'

Overall Physical Condition of Structure: (Indicate which Items controls :59 or 60 or 62) Superstructure and substructure are in Excellent Condition

Work Done: Structure was replaced since the last inspection.

Structure No.: 5###-### Route: US 46 Cycle No.: 1
Name: Route US 46 over Browertown Road Insp. Date: 6/5/2007

DECK

SI&A Item 58 Condition Rating: **9**

SPAN # Single

RATING	COMPONENT	REMARKS
9	~~Wearing Surface /~~ Top of Deck (Grooved Concrete)	
9	Underside of Deck (SIP Forms)\	
9	Median (Split NJ Barrier)	
9	Curbs (Concrete)	
7	Sidewalks / ~~Safetywalks~~	
9	Parapets/ ~~Balustrades~~	
9	~~Railings /~~ Fencing	
9	Deck Joints / Filler Material Compression sealers	
N	Drains and Scuppers	
N	Light Stands	
N	Utilities	
N	Others	

Additional Remarks:

Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

APPROACHES

SI&A Item BA Rating: **7**

SI&A Item 72 Rating: **8**

APPROACH West

RATING	COMPONENT	REMARKS
7	Approach Slab / ~~Pavement~~ (18 Slabs)*	
7	Approach Shoulder	
	Approach Roadway Vertical and Horizontal Alignment	Vertical: moderate upgrade toward bridge Horizontal: tangent
9	Guide Rail Condition	
9	Sidewalks	
9	Curbs	
N	Utilities	
9	Approach Roadway Embankment	
	Others	

Additional Remarks:

*Should be consistent with Pontis quantity

Structure No.: 5###-### Route: US 46 Cycle No.: 1
Name: Route US 46 over Browertown Road Insp. Date: 6/5/2007

APPROACHES

SI&A Item BA Rating: **7**

SI&A Item 72 Rating: **8**

APPROACH East

RATING	COMPONENT	REMARKS
7	Approach Slab / ~~Pavement~~ (18 Slabs)*	
7	Approach Shoulder	
	Approach Roadway Vertical and Horizontal Alignment	Vertical: moderate downgrade toward bridge Horizontal: tangent
9	Guide Rail Condition	
9	Sidewalks	
9	Curbs	
N	Utilities	
9	Approach Roadway Embankment	
	Others	

Additional Remarks:

*Should be consistent with Pontis quantity

Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

SUPERSTRUCTURE

SI&A Item 59 Condition Rating: **9**

SPAN # Single

RATING	COMPONENT	REMARKS
9	**Stringers** / Girders/ Floorbeams/ Trusses/ P/S. Beams **(18 stringers numbered south to north)**	
9	Diaphragms / Cross Frames	
9	Bearings (Elastomeric; fixed at West Abutment)	
	Deflection and Vibration	None observed.
	Others	

Additional Remarks:

FATIGUE DETAILS

Estimated percentage of Large trucks in ADT = 4%

Category	Detail Description and Location
C	Welded diaphragm attachment plates.

Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

PAINT INSPECTION

*Environment: 1

Date of Last Painting: 2006

1. Rural or Industrial, Mild exposure
2. Industrial, Severe Exposure
3A. Marine, Mild Exposure
3B. Marine, Severe Exposure
*Ref. NJDOT Design Manual Sec. 1.24.19

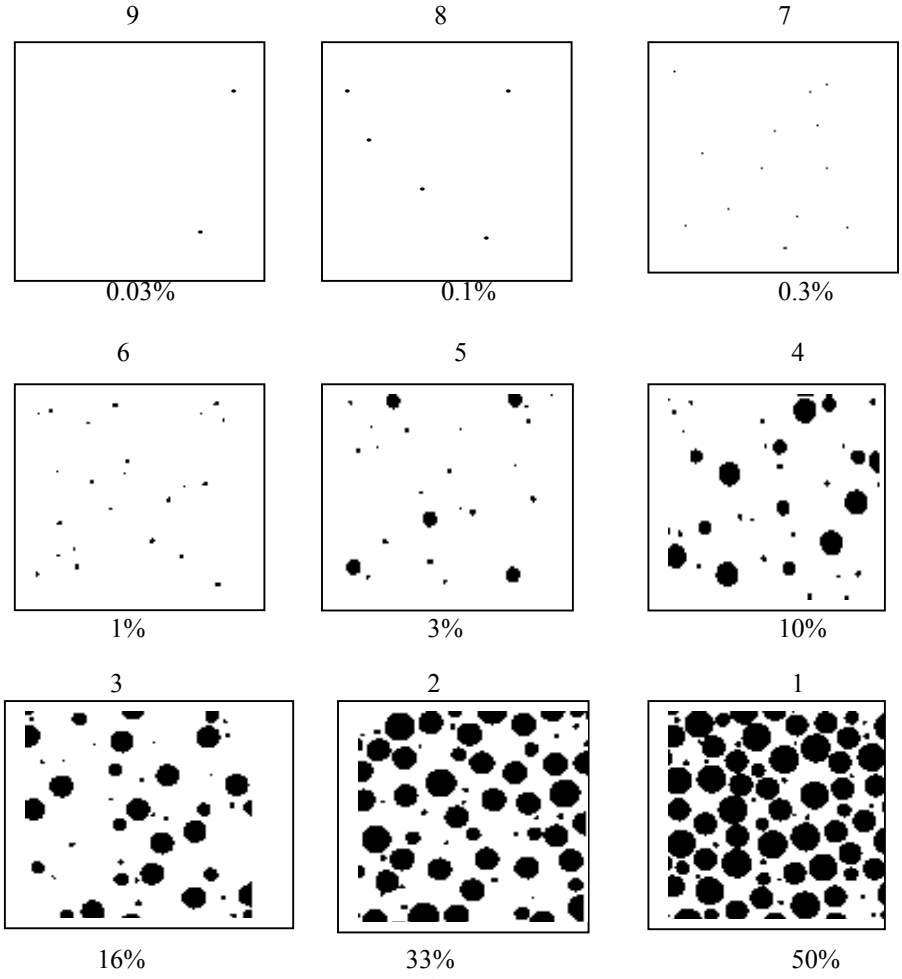


FIG. 1 Examples of Area Percentages

Note: Blistered Paint areas are counted as rust

10 = 0% Rust
0 = 100% Rust

Note: Use the closest rating to the actual field condition based on the average for the bridge. Indicate any areas of severe rusting in remarks.

INSPECTION RATINGS (0 THROUGH 10 OR N/A)

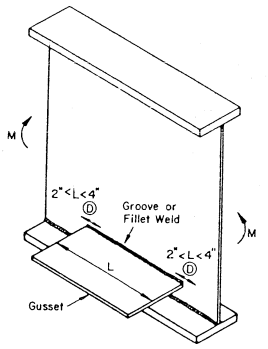
Fascia Beam:	10	Fascia Bottom Flange:	10	Beams Ends:	10
Interior Beam:	10	Interior Bottom Flange:	10	Connections:	10
Bracing:	10	Substructure:	N/A	Railings/Fence:	N/A
Bearings:	10	Above Deck Superstructure	N/A		

Remarks 1:

Remarks 2:

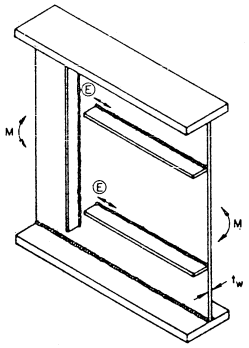
Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

TYPICAL FATIGUE DETAILS *(High light applicable detail)*



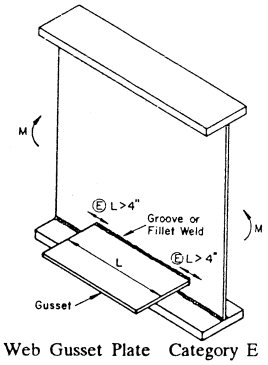
Short Wed Gusset Plate L < 4 in. Category D

Detail 1



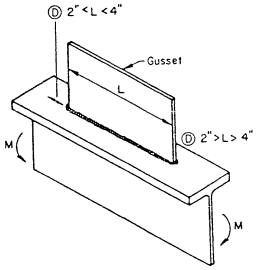
Termination of Longitudinal Stiffeners Category E

Detail 2



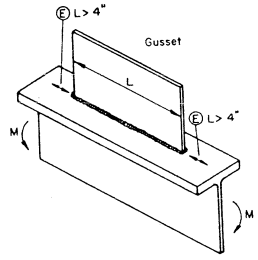
Web Gusset Plate Category E

Detail 3



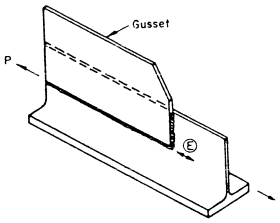
Short Flange Gusset Plate L ≤ 4 in. Category D

Detail 4



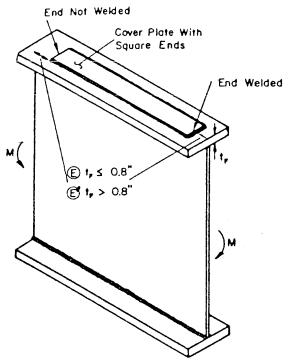
Flange Gusset Plate Category E

Detail 5



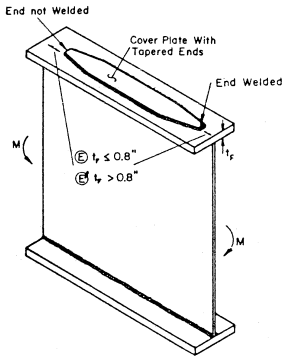
Gusset Welded to Bracing Member Category E

Detail 6



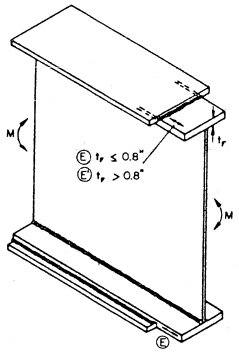
Square Ended Cover Plates Narrower than the Girder Flange Category E or E'

Detail 7



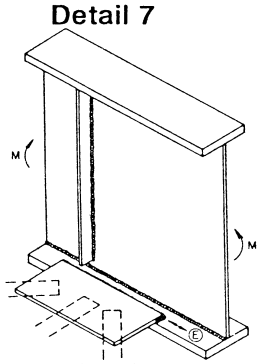
Cover Plates Narrower than the Girder Flange with Tapered Ends Category E or E'

Detail 8



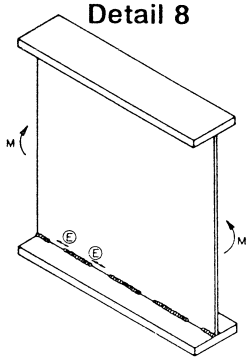
Cover Plates Wider than the Girder Flange with End Welds Category E or E'

Detail 9



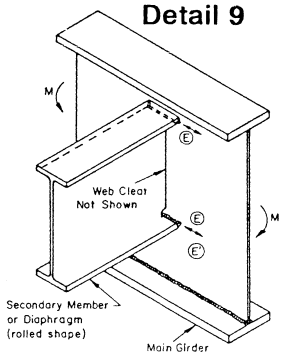
Flange Gusset Plate Category E

Detail 10



Intermittent Fillet Welds Category E

Detail 11



Stringer Framing into Girder Web Category E or E'

Detail 12

TYPICAL FATIGUE DETAILS

13. Field Weld Repairs - Proper welding procedures may not have been used; testing of weld by non-destructive methods was usually not done, therefore, the possibility of large flaws exists. Check carefully on the main structural members (stringers, floorbeams, girders).

14. Tack Welds - Check carefully on riveted members constructed in 1940's and 1950's as these welds were sometimes used to hold the plates together during riveting.

15. Plug Welds - Check at bolted connections on welded structures. These welds may have been used to fill-in incorrectly drilled holes (see sketch).

16. Backing Bars - These welds are possibly not full penetration. Check carefully on box girders if accessible and at butt (groove) welds made in the field.

17. Details with 2 or 3 Intersecting Welds (Slot Welds) - Incomplete penetration of the second and third welds is possible.

18. Butt (Groove) Welds on Horizontal Web Stiffeners - NDT of the weld was not always required on the stiffener in the tension zone. If the weld is not good, this will be an "E" detail or worse which can exist in a high stress area (This would be the same as or worse than typical detail 3).

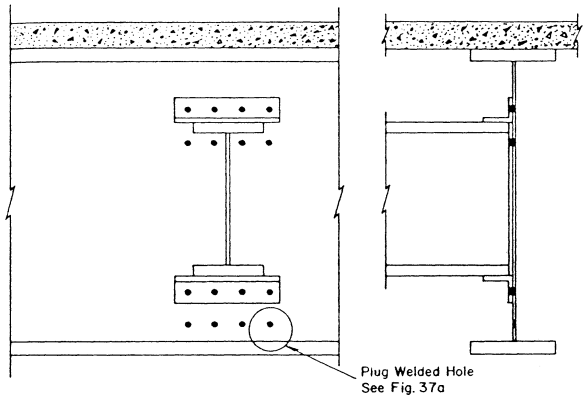
19. Detail Without Proper Welding Clearance - Poor welding can result if proper clearance for the welding rod is not maintained by the designer (such as a horizontal web stiffener placed too near the bottom flange of a girder; fillet weld at bottom of stiffener is difficult due to a lack of clearance for the welding rod).

20. Coped or Blocked Flanges - Check carefully when these details exist on main structural members (stringers and floorbeams). Coped flanges are a typical detail on movable spans.

21. Distortion (Bending) at Small Gaps - For typical details which exhibit damage due to this, see "Inspecting Steel Bridges for Fatigue Damage" (see sketches).

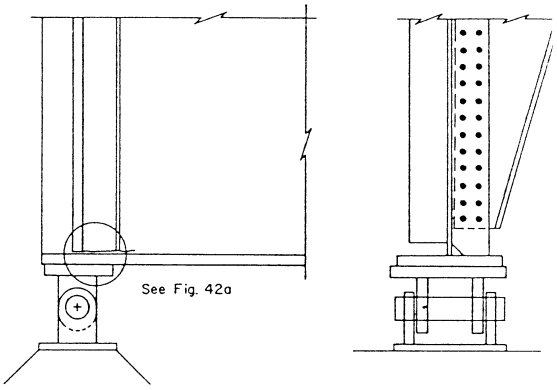
Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

TYPICAL FATIGUE DETAILS *(High light applicable detail)*



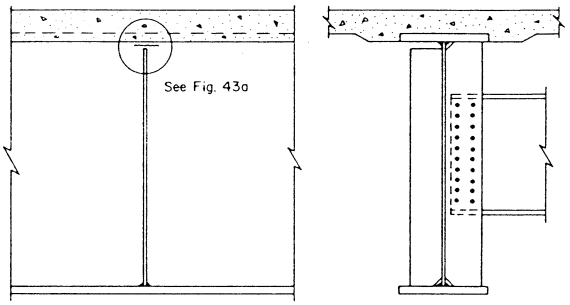
Schematic Showing Misplaced Holes Filled with Weld

Detail 15



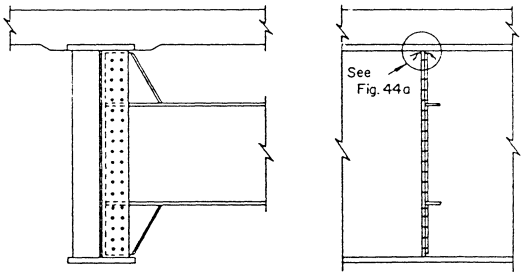
Schematic Showing Crack in Girder Web at Floor Beam Connection Plates at Supports

Detail 21A



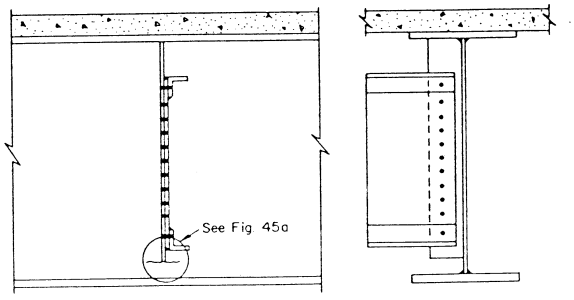
Schematic of Crack in Girder Web at Floor Beam Connection Plates in Negative Moment Region

Detail 21B



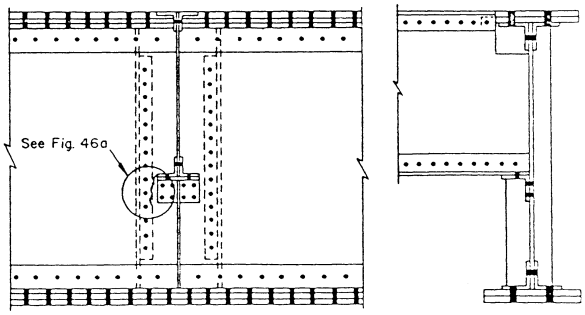
Schematic of Crack in Girder Web and Transverse Connection Plate Welds at Floor Beam in Negative Moment Region of Skewed Bridge

Detail 21C



Schematic of Transverse Diaphragm Attached to Cut Short Welded Connection Plate Showing Web Cracking in Gap

Detail 21D



Schematic Showing Stringer Framing into Riveted Floor Beam With Crack Between Seat Angle Connection and Adacent Web Stiffeners

Detail 21E

Structure No.: 5###-### Route: US 46 Cycle No.: 1
Name: Route US 46 over Browertown Road Insp. Date: 6/5/2007

SUBSTRUCTURE

SI&A Item 60 Condition Rating: **9**

ABUTMENT West

RATING	COMPONENT	REMARKS
9	Breastwall	
9	Backwall	
9	Bridge Seat	
9	Wingwalls / ~~Retaining Walls~~	
N	Embankment / Slope Protection	
	Others / Footings / Waterway Probing	

Additional Remarks:

ABUTMENT East

RATING	COMPONENT	REMARKS
9	Breastwall	
9	Backwall	
9	Bridge Seat	
9	Wingwalls / Retaining Walls	
N	Embankment / Slope Protection	
	Others / Footings / Waterway Probing	

Additional Remarks:

Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

HIGHWAY SAFETY

Coding of SI&A Item 36: **1101**
1: Good
0: Not Good
N: Not Applicable

RATING		COMPONENT	REMARKS
1		Bridge Railing	North and South: 2'-8" concrete parapet Median: spilt NJ barrier
1	1	Transition to Bridge Railing	
	1	Curb / Sidewalk Terminations	
0		Approach Guide Rails	Steel W-beam guide rails with steel spacers at SW and NE, neoprene spacers at the SE and NW corners
1		Approach Guide Rail End Terminals	

DECK GEOMETRY

SI&A Item 68 Rating: **9**

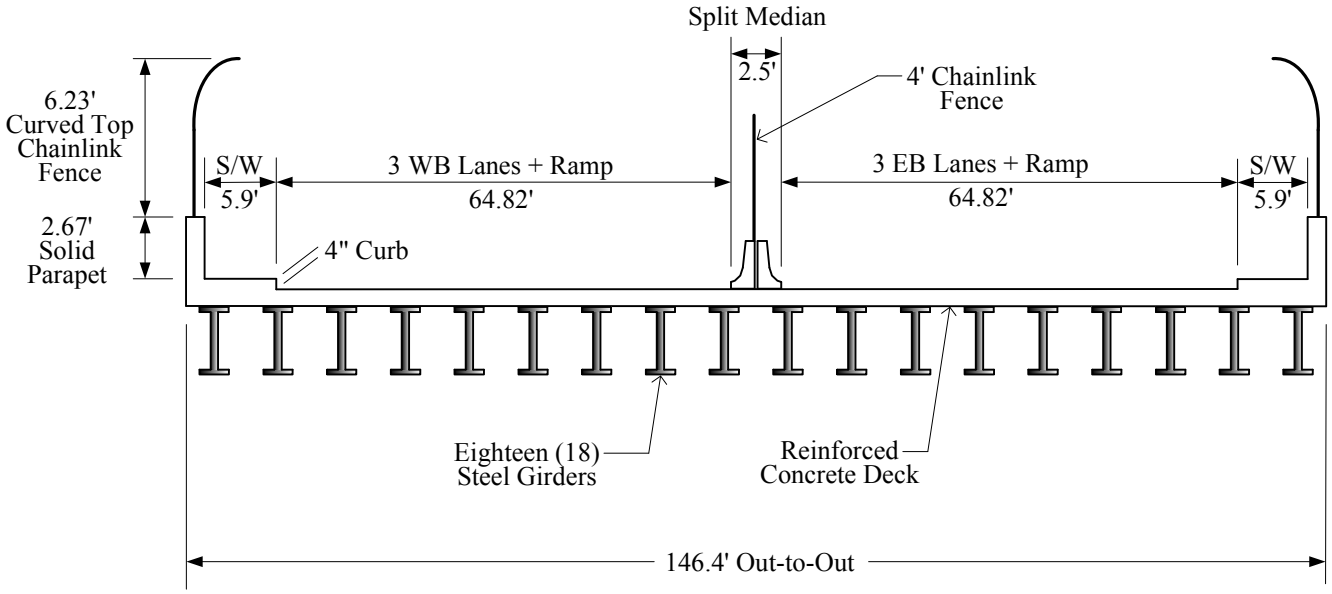
COMPONENT	REMARKS
Bridge Cross Section	Consistent with approach roadway section. (See sketch on next sheet)
Adequacy of Lane / Shoulder Widths	8 lanes; 4 lanes in each direction (including through ramp lanes) Roadway width = 129.6' curb to curb ADT = 128002; Year 2007 Item 68 = 9 from Table 2C
Vertical Clearance over Deck	99.99' (Unrestricted)

*Posting for Load / Speed / Clearance Restrictions (Include a photo)	N/A

DECK CROSS SECTION

Route US 46

(looking east)



Typical Section
(NTS)

Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

CLEARANCES

FEATURE ON STRUCTURE: Route US 46 SI&A SHEET 1

Minimum Vertical Clearance (SI&A item 10)	99.99’ (Unrestricted)
Total Horizontal Clearances (SI&A item 47)	64.82’ (curb to concrete median) eastbound and westbound roadways
Minimum Vertical Clearance (SI&A item 54)	15.19’ below north fascia stringer at west edge of pavement Browertown Road
Minimum Vertical Clearance (SI&A item DJ)	15.08’ below north fascia stringer at west curbline of Browertown Road
Lateral Right (SI&A item 55)	12.5’ from southbound lane of Browertown Road to West Abutment at south fascia
Lateral Left (SI&A Item 56)	0.00’ (N/A)

FEATURE UNDER STRUCTURE: Browertown Road SI&A SHEET 2

*Minimum Vertical Clearance (SI&A Item 10)	15.89’ 10’ from east curbline of Browertown Road at the north elevation
Total Horizontal Clearance (SI&A Item 47)	33.40’ at the north elevation (restricted by sidewalks)
Minimum Vertical Clearance (SI&A Item DJ)	15.08’ below north fascia stringer at west curbline of Browertown Road

* Minimum clearance for a 10 foot width of the pavement or traveled part of the roadway where the clearance is greatest shall be coded in feet and inches.

Structure No.:	5###-###	Route:	US 46	Cycle No.:	1
Name:	Route US 46 over Browertown Road			Insp. Date:	6/5/2007

CHAIN LINK FENCE

Coding of SI&A Item FN: **Y**

Coding of SI&A Item FO: **1**

Coding of SI&A Item FP (in thousands): **0**

Warranted (Per Design Manual Section 23): **Yes**/

If Yes: (# 1.23.1.a.1) Description: Highway carrying facility for pedestrian traffic.

Current Status of Fence & Sidewalk:	Left Side	Right Side
a. Fence:	**Yes**	**Yes**
b. Sidewalk Width:	5.9' FT	5.9' FT
c. Total Height of fence above Curb/Sidewalk	9.25' FT	9.25' FT
d. Type of Fence: (per Design Manual Section 23)	3B	3B

Action Recommended: None

Estimated Cost: $ 0