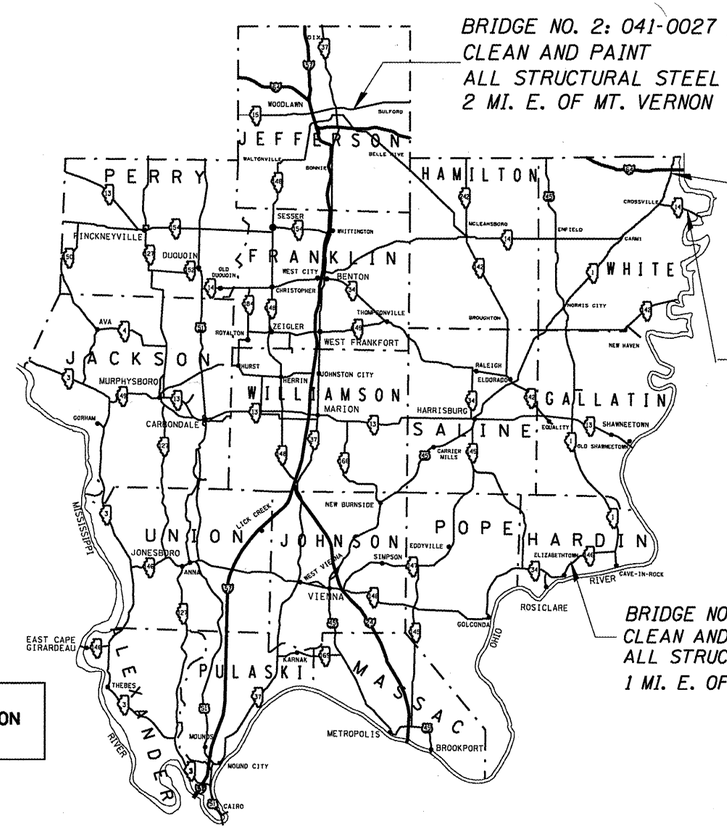
FOR INDEX OF SHEETS, SEE SHEET NO. 2.
FOR SUMMARY OF QUANTITIES, SEE SHEET NO. 4.

11-7-08 Letting, Item 037

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR.	•	**	31	1

•D9 BRIDGE PAINTING FY 09-1
CONTRACT NO. 78093
Hardin, Jefferson, White

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROPOSED
HIGHWAY PLANS
VARIOUS ROUTES
SECTION D9 BRIDGE PAINTING FY 09-1
HARDIN, JEFFERSON & WHITE COUNTIES
C-99-003-09

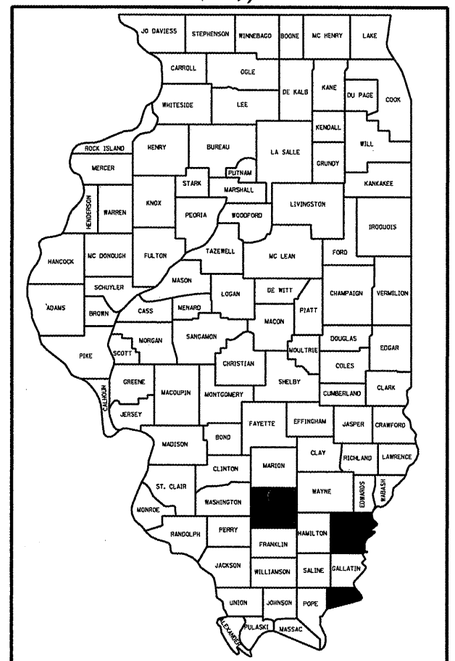


BRIDGE NO. 2: 041-0027
CLEAN AND PAINT
ALL STRUCTURAL STEEL
2 MI. E. OF MT. VERNON

BRIDGE NO. 3: 097-0005
CLEAN AND PAINT
ALL STRUCTURAL STEEL
2 MI. S. OF GRAYVILLE

BRIDGE NO. 4: 097-0032
CLEAN AND PAINT
ALL STRUCTURAL STEEL
5 MI. E. OF CROSSVILLE

BRIDGE NO. 1: 035-0011
CLEAN AND PAINT
ALL STRUCTURAL STEEL
1 MI. E. OF ELIZABETHTOWN



LOCATION OF SECTION INDICATED THUS:-

PROJECT ENGINEER: CASEY TECKENBROCK PHONE: (618) 549-2171
SQUAD LEADER: RITA GAUTNEY

J.U.L.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION
1-800-892-0123 or www.julie1call.com

CONTRACT NO. 78093

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED 8/13 20 08
Mary C. Lamie
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER
October 3, 20 08
Erin E. Harn
Interim ENGINEER OF DESIGN AND ENVIRONMENT
October 3, 20 08
Christine M. Reed
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS

Rev.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR.	*	VARIOUS	31	2

*D9 BRIDGE PAINTING FY 09-1
CONTRACT NO. 78093

INDEX OF SHEETS

STANDARDS

701201-02	LANE CLOSURE, 2L, 2W, DAY ONLY, FOR SPEEDS >= 45 MPH
701901	TRAFFIC CONTROL DEVICES

Approved: Aug 13 2008
DATE
DEPUTY DIRECTOR OF HIGHWAYS/REGION 5 ENGINEER

Prepared By: Kevin Hammel
DISTRICT OPERATIONS ENGINEER

Examined By: Danny L Clayton
ASSISTANT REGIONAL ENGINEER

Examined By: Les Lewis Emery
DISTRICT LAND ACQUISITION ENGINEER

Examined By: Carrie Nelson
DISTRICT PROGRAM DEVELOPMENT ENGINEER

Examined By: Joe Glenn Brewer
DISTRICT STUDIES & PLANS ENGINEER

Examined By: Jim Smothers
DISTRICT CONSTRUCTION ENGINEER

Examined By: Bruce Wisecup
DISTRICT MATERIALS ENGINEER

Examined By: Jim Smothers
DISTRICT PROJECT IMPLEMENTATION ENGINEER

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR.	*	VARIOUS	31	3

*D9 BRIDGE PAINTING FY 09-1
CONTRACT NO. 78093

GENERAL NOTES

All structural steel shall be cleaned and painted on each structure. Cleaning and painting shall conform to the requirements of special provision "Cleaning And Painting Existing Steel Structures". Near White Metal Blast Cleaning - SSPC - SP10 and Paint System 1 - OZ/E/U shall be used unless otherwise noted.

SSPC - QP1 and SSPC - QP2 Painting Contractor Certifications are required.

The color of the final finish coat on all structures shall be Gray, Munsell No. 5B 7/1.

On Structure 041-0027 (Bridge No. 2), two fascia beams and associated diaphragms and appurtenances are new, with an existing inorganic zinc prime coat applied by others. See item (c) of special provision "Cleaning and Painting Existing Steel Structures.

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR.	*	VARIOUS	31	4

*D9 BRIDGE PAINTING FY 09-1
CONTRACT NO. 78093

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

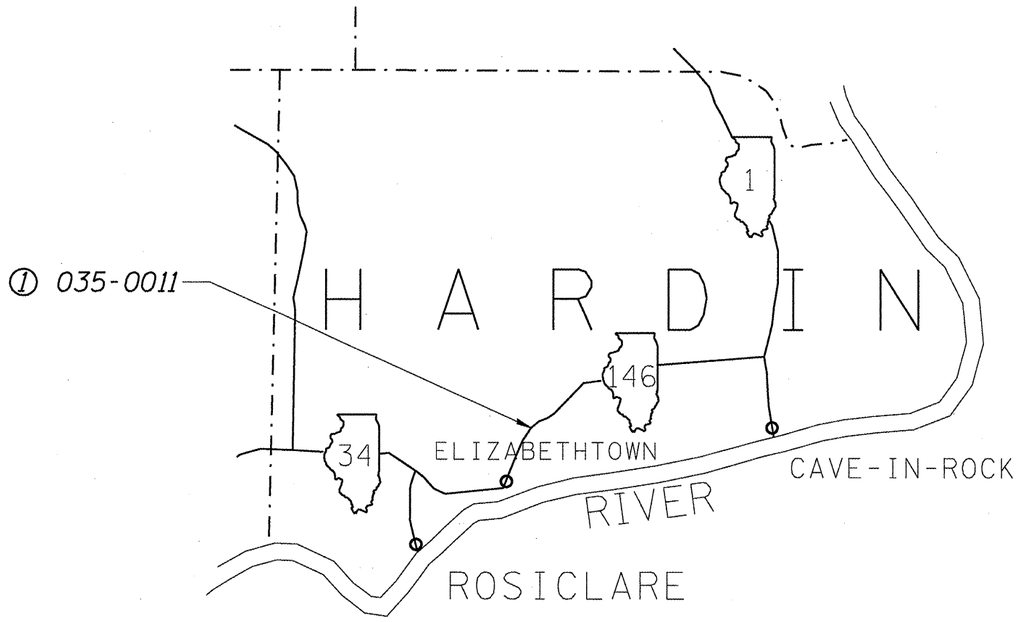
SUMMARY OF QUANTITIES

100% STATE				RURAL	URBAN	RURAL	
CONSTRUCTION TYPE CODE SFTY-2A			COUNTY	HARDIN	JEFFERSON	WHITE	
CODE NUMBER	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	035-0011	041-0027	097-0005	097-0032
50600600	CLEANING AND PAINTING STEEL BRIDGE NO. 1	L SUM	1	1			
50600700	CLEANING AND PAINTING STEEL BRIDGE NO. 2	L SUM	1		1		
50600800	CLEANING AND PAINTING STEEL BRIDGE NO. 3	L SUM	1			1	
50600900	CLEANING AND PAINTING STEEL BRIDGE NO. 4	L SUM	1				1
50606401	CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES NO. 1	L SUM	1	1			
50606402	CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES NO. 2	L SUM	1		1		
50606403	CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES NO. 3	L SUM	1			1	
50606404	CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES NO. 4	L SUM	1				1
67000400	ENGINEER'S FIELD OFFICE, TYPE A	CAL. MO	3	0.75	0.75	0.75	0.75
67100100	MOBILIZATION	L SUM	1	0.25	0.25	0.25	0.25
70100450	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201	L SUM	1	0.25	0.25	0.25	0.25

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR.	*	VARIOUS	31	5

* 09 BRIDGE PAINTING FY 09-1
CONTRACT NO. 78093



① 035-0011	1 MILE EAST OF ELIZABETHTOWN ILL 146 OVER HOSICK CREEK LENGTH: 129.3 FT. WIDTH: 33.8 FT. ADT = 2150, 6% TRUCKS POSTED SPEED = 55 M.P.H. INVENTORY RATING HS 21.8 OPERATING RATING HS 36.3

VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 6 OF 31

B.M. S. & 2W. Root 31" Pecan
120' Lt. Sta. 86+20 Elev. 344.18
Existing Structure to remain in place.
Located approx. 1200' upstream from Proposed Bridge.

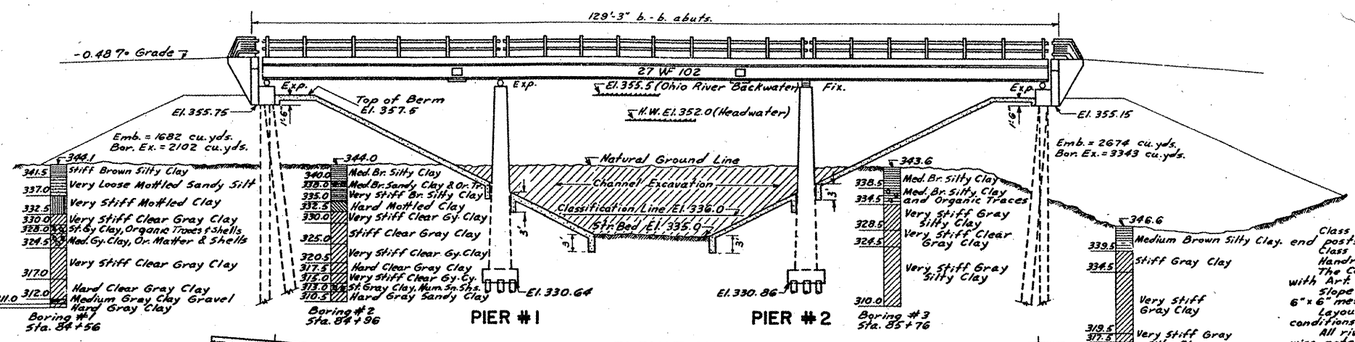
STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS & BUILDINGS
DIVISION OF HIGHWAYS

STATION 85+51.37
BUILT 195 BY
STATE OF ILLINOIS
F.A. RTE. 35 SEC. II-B-1
F.A. PROJ. F-610(5)
LOADING H20-S16

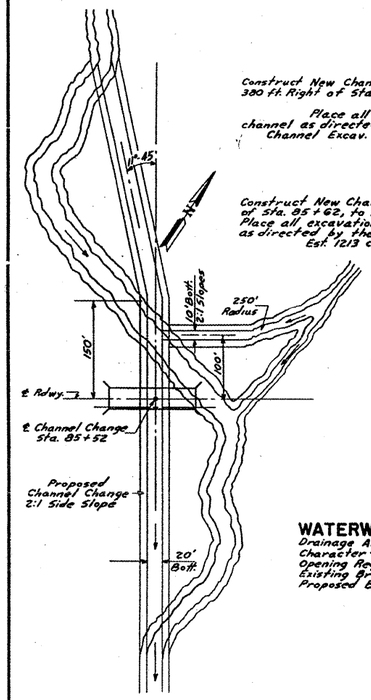
LETTERING FOR NAME PLATE
See Std. 1882

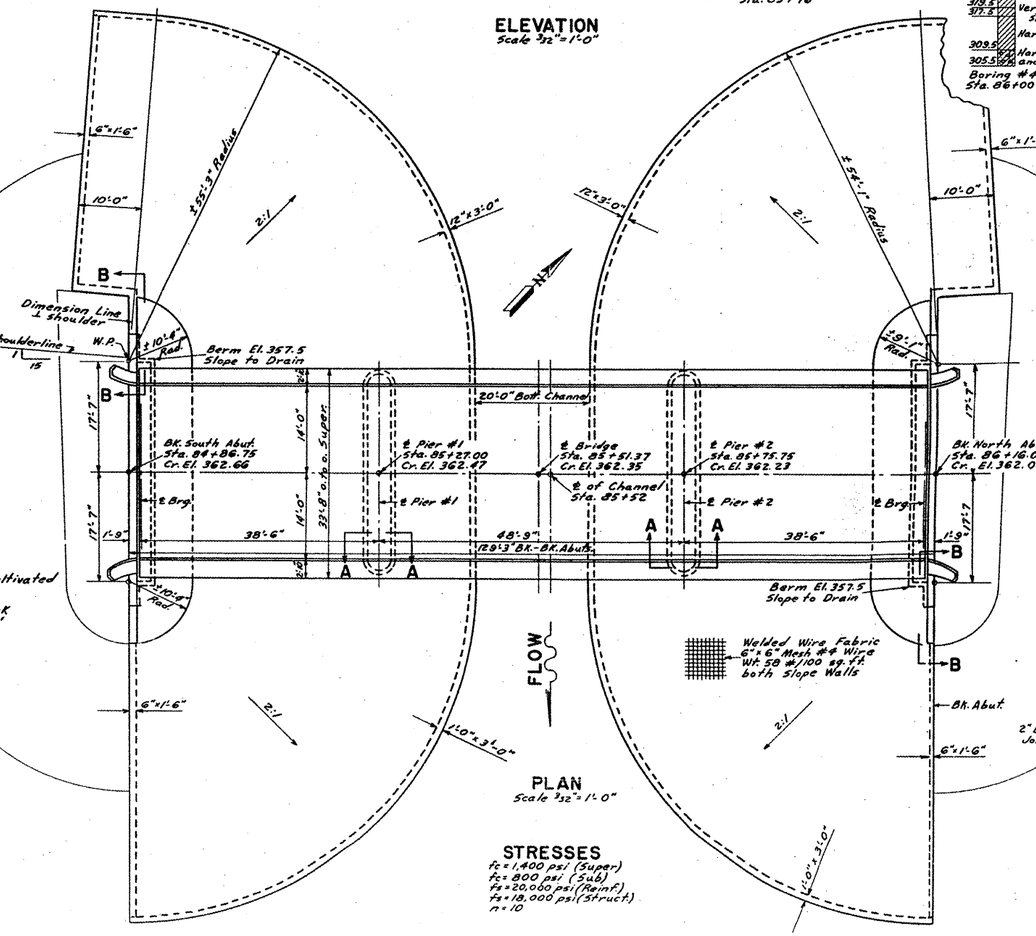
TYPICAL SECTION BRANCH CHANNEL

TYPICAL SECTION MAIN CHANNEL



ELEVATION
Scale 3/32" = 1'-0"





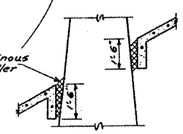
PLAN
Scale 3/32" = 1'-0"

GENERAL NOTES

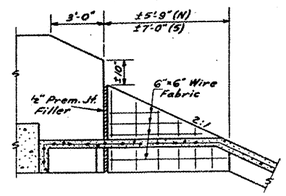
Class X Concrete shall be used throughout except in rail end posts and in Piers.
Class A Concrete shall be used in Piers.
Handrail Concrete shall be used in Rail End Posts.
The Concrete Floor Slab shall be finished in accordance with Art. 51.18 (a) of the Std Specs.
Slope Wall shall be reinforced with welded wire fabric 6" x 6" mesh, #4 wires, weighing 58 #/100 sq. ft.
Layout of slope wall may be varied to suit ground conditions in the field, as directed by the Engineer.
All rivets shall be 3/4" ø, Open holes 13/16" ø, unless otherwise noted.
All field connections shall be riveted.
Railings shall be adjusted to true alignment after curbs have been poured.
All rollers, rockers, bearing plates, lead plates, pintles, and anchor bolts shall be fabricated and set in accordance with Art. 54.14 of the Std. Specs. and are included for payment as Structural Steel.
Anchor Bolts shall be set before riveting diaphragms over supports.
Expansion Guards are included for payment as Structural Steel.
Except as otherwise provided, all Structural Steel shall receive one shop coat of red lead paint and two field coats of aluminum paint. See Art. 57.1 to 57.5 inclusive of the Std Specs.
All paint shall be furnished and applied by the Contractor.
The Contractor shall drive one Precast Concrete Test Pile in a permanent location as directed by the Engineer before casting the remainder of the Concrete Piles.
The Contractor shall drive one Timber Test Pile in a permanent location as directed by the Engineer before ordering the remainder of the Timber Piles. All Timber Piles shall be untreated.
Boring Data are shown on the plans only as a guide to bidders in estimating soil conditions which may be encountered in the work.

TOTAL BILL OF MATERIAL

Item	Unit	Super	Abuts.	Piers	Total
Class X Concrete	cu.yd.	114.7	44.5		159.2
Class A Concrete	cu.yd.			288.2	288.2
Handrail Concrete	cu.yd.				16
Reinforcement Bars	lb.	18,790	3,440	9,960	32,190
Structural Steel	lb.	100,020			100,020
Metal Handrail	lin.ft.	256.83			256.83
Name Plate	ea.	1			1
Concrete Slopewall	sq.yd.				1630
Channel Excavation	cu.yd.				12,093
Precast Concrete Piles (40' lg.)	lin.ft.		440		440
Precast Concrete Test Piles	ea.		1		1
Untreated Timber Piles (16' lg.)	lin.ft.			1120	1120
Untreated Timber Test Piles	ea.			1	1
Class A Excavation For Struct.	cu.yd.			240	240
Class B Excavation For Struct.	cu.yd.			210	210
Borrow Excavation	cu.yd.		5445		5445



SECTION A-A



SECTION B-B

WATERWAY INFORMATION

Drainage Area ---------- 1750 Acres
Character ---------- Hilly, Wooded, Cultivated
Opening Req. 'd (Co. of Talbot) - 217.0'
Existing Bridge Opening - - 220.0'
Proposed Bridge Opening - (Ohio River Back Water) 862.0'

CHANNEL CHANGE LAYOUT

STRESSES

f_c = 1,400 psi (Super.)
f_c = 800 psi (Sub.)
f_s = 20,060 psi (Reinf.)
f_s = 18,000 psi (Struct.)
n = 10

DESIGNED	R.A. Sandoval	Nov 24 19 52
CHECKED	James J. Herring	EXAMINED W.G. Hanson, ENGINEER OF BRIDGE AND TRAFFIC SERVICES
DRAWN	W.A. Sausaman Jr.	PASSED E.K. Baker, ENGINEER OF DESIGN
CHECKED	James J. Herring	APPROVED F.M. Barker, CHIEF HIGHWAY ENGINEER

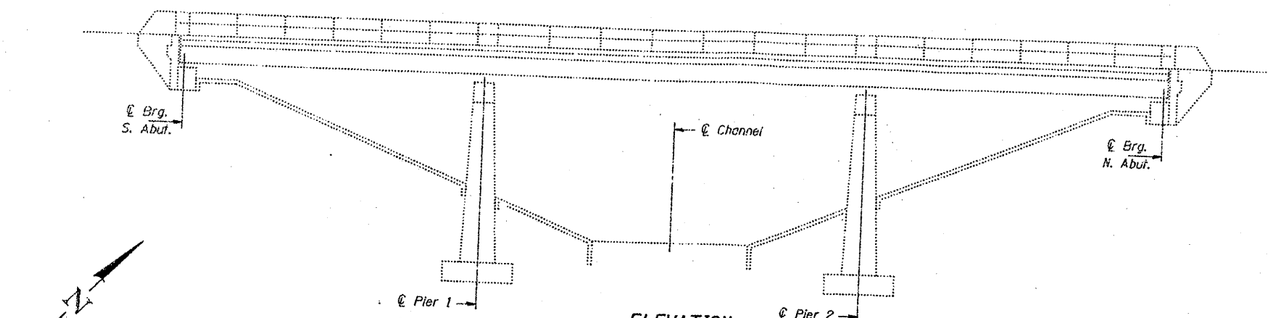
LOADING H20-S16-44

BRIDGE NO. 1

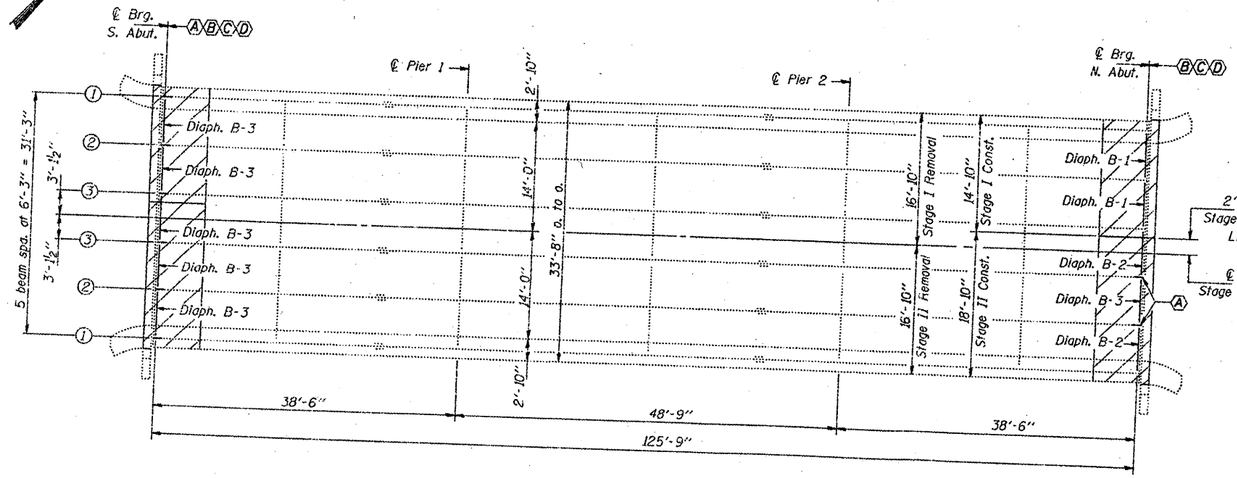
BRIDGE OVER HOSICK CREEK
F.A. RTE. 35 SEC. II-B-1
HARDIN COUNTY
STA. 85+51.37

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 7 OF 31

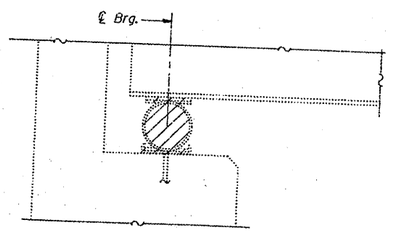


ELEVATION



PLAN

Notes: (A) Existing Beam ends to be repaired.
(B) Replace end diaphragms.
(C) Remove and replace existing bearings.
(D) Existing expansion joint to be removed and replaced.
Cross-hatching indicates Concrete Removal.



EXISTING BEARING REMOVAL DETAIL

Minimum jack capacity shall be 15 Tons.
Before installing the new bearings, remove the top plate of the existing bearing assembly from the bottom flange using the air-arc method and grind smooth all weld material remaining on the bottom flange. Burn existing anchor bolts flush with existing concrete surface. Grind existing anchor bolt smooth and seal with epoxy. Cost is incidental to "Jack & Remove Existing Bearings".

GENERAL NOTES

All new structural steel shall conform to AASHTO Classification M-270 Gr. 36.
All new fasteners shall be high strength bolts. Holes shall be subpunched or subdrilled 1/16" ø and reamed in the field to 1/16" ø for 3/4" ø high strength bolts (except as noted on the plans) after new structural steel sections are properly fitted into position.
Reinforcement bars shall conform to the requirements of AASHTO M-31, M-42 or M-53 Grade 60.
Prior to pouring the new concrete for the deck, all loose rust, loose mill scale, and all other foreign material shall be removed from the embedded portions of flanges of beams. The removal shall be accomplished in accordance with the requirements of the SSPC Surface Preparation Specifications SP3 for Power Tool Cleaning or SP2 for Hand Tool Cleaning. Cost shall be incidental to Concrete Removal.
The Contractor will be required to mark, on the top of the concrete deck, the location of the top flange of the steel beams prior to any removal of the concrete bridge deck. Saw cutting directly over the top of the beam is not permitted.
Any reinforcement bars that are damaged during concrete removal shall be replaced with an approved bar splicer or anchorage system. Cost incidental to "Concrete Removal".
Plan dimensions and details relative to existing structure have been taken from existing plans and are subject to nominal construction variations. It shall be the Contractor's responsibility to verify such dimensions and details in the field and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in the scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.
Existing Structural steel shall only be cleaned and painted as required by the Special Provision "Cleaning and Painting Adjacent Areas of Existing Steel Structures".
The inorganic zinc-silicate/acrylic/acrylic paint system shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the acrylic finish coat shall be Light Grey, Munsell No. 10Y 7/1. See Special Provisions.
Removal of all damaged members necessary to complete the work as detailed on the plans and as specified in the Special Provisions shall be considered incidental to the contract.
Traffic control shall be determined by the District.

TOTAL BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Concrete Removal	Cu. Yd.	15.2
Concrete Superstructure	Cu. Yd.	15.2
Furnishing and Erecting Structural Steel	Pound	7550
Elastomeric Bearing Assembly Type I	Each	6
Elastomeric Bearing Assembly Type II	Each	6
Jack and Remove Existing Bearings	Each	12
Reinforcement Bars, Epoxy Coated	Pound	2290
Traffic Control & Prot 2309	L.S.	1
Polymer Modified Portland Cement Mortar	Cu. Ft.	21
Stud Shear Connectors	Each	216

DESIGNED	Nicholas J. Lovell
CHECKED	Kenneth P. Stutz
DRAWN	D.Herbert
CHECKED	NJS KPS

DECEMBER 8 19 94

EXAMINED _____
ENGINEER OF STRUCTURAL SERVICES

PASSED _____
ENGINEER OF BRIDGES AND STRUCTURES

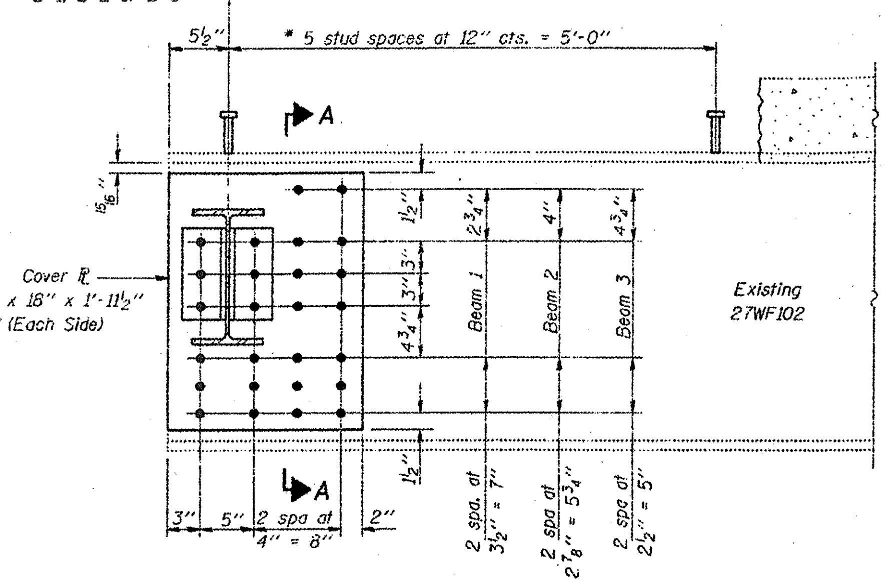
BRIDGE REPAIRS
F.A. RTE. 35 (IL 146) SEC. 11-B-1
OVER HOSICK CREEK
HARDIN COUNTY
S.N. 035-0011

BRIDGE NO. 1

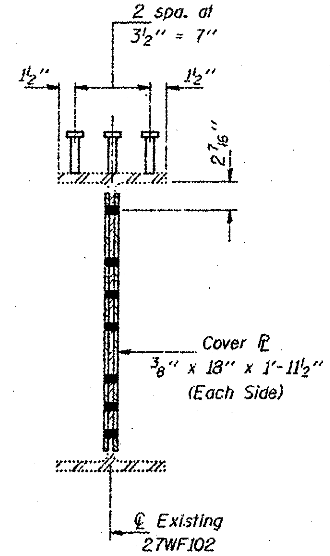
VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

* $\frac{3}{4}$"φ x 4" granular or solid flux filled headed studs automatically end welded in accordance with Art. 706.32 of the Std. Specs. (216 Req'd.)

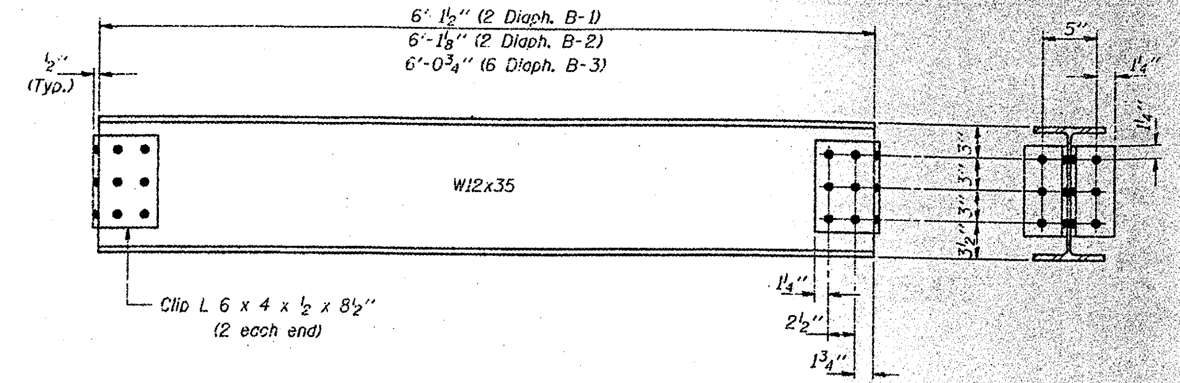


ELEVATION
BEAM END REPAIR



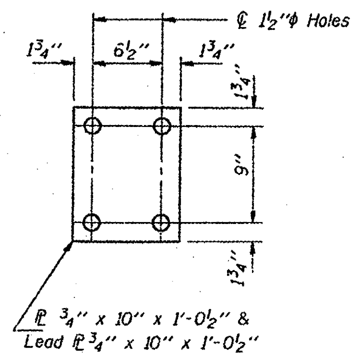
SECTION A-A

REPAIR A
(8 Locations)



REPLACEMENT DIAPHRAGMS
(Number Req'd. = 10)

REPAIR B



ANCHOR ℙ
(Number Req'd. = 4)
See Sheet 2 for location.

DESIGNED	NJS
CHECKED	KPS
DRAWN	D-Herbert
CHECKED	NJS KPS

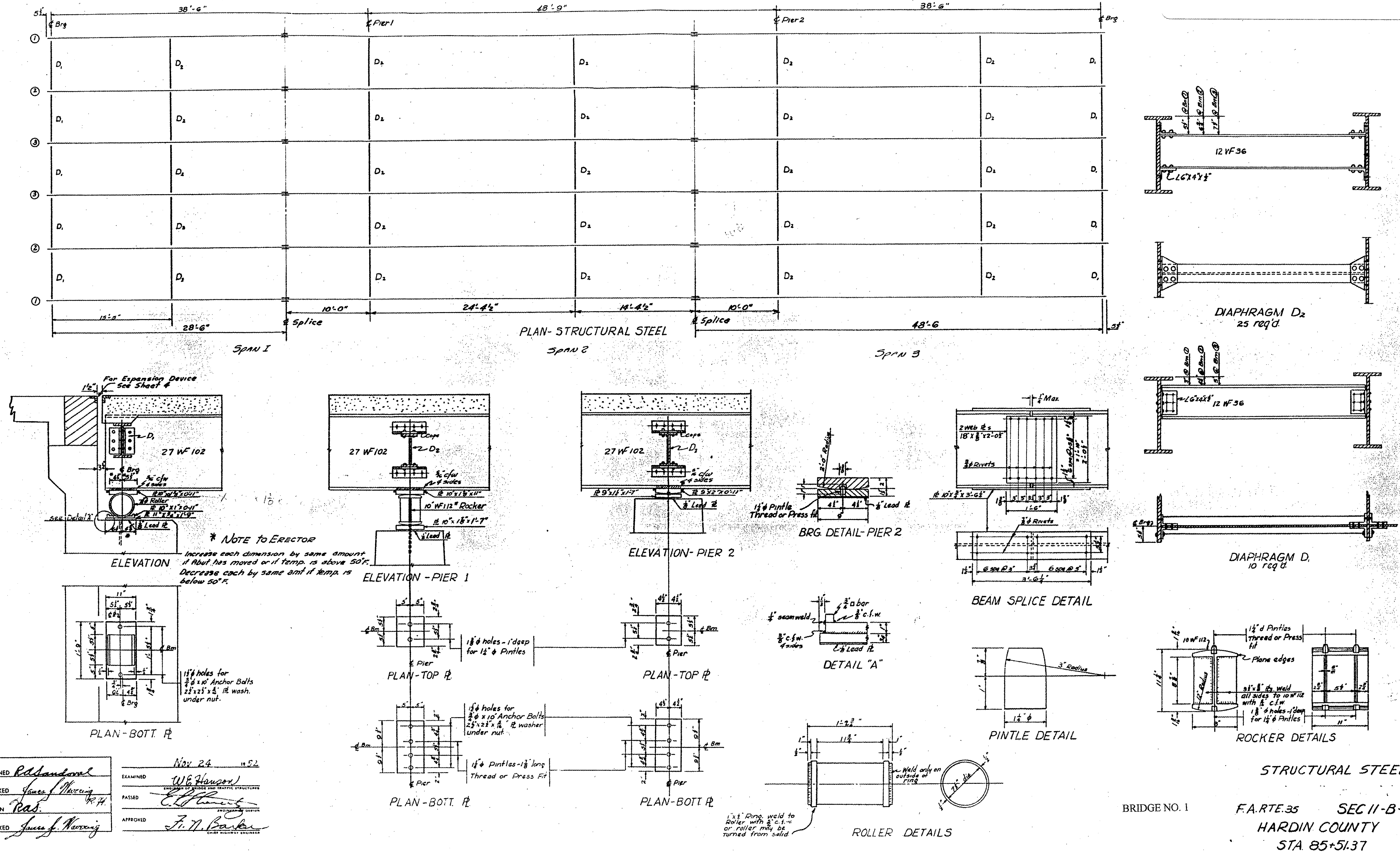
DECEMBER 8 1994
EXAMINED [illegible]
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

BRIDGE NO. 1

BRIDGE REPAIRS
STRUCTURAL STEEL DETAILS
F.A. RTE. 35 (IL 146) SEC. 11-B-1
HARDIN COUNTY
S.N. 035-0011

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS & BUILDINGS
DIVISION OF HIGHWAYS

VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY



DESIGNED	R.A. Sandoval
CHECKED	James J. Warring
DRAWN	Ras.
CHECKED	James J. Warring
	Nov 24 1952
EXAMINED	W.E. Hanson
PASSED	
APPROVED	F. N. Barker

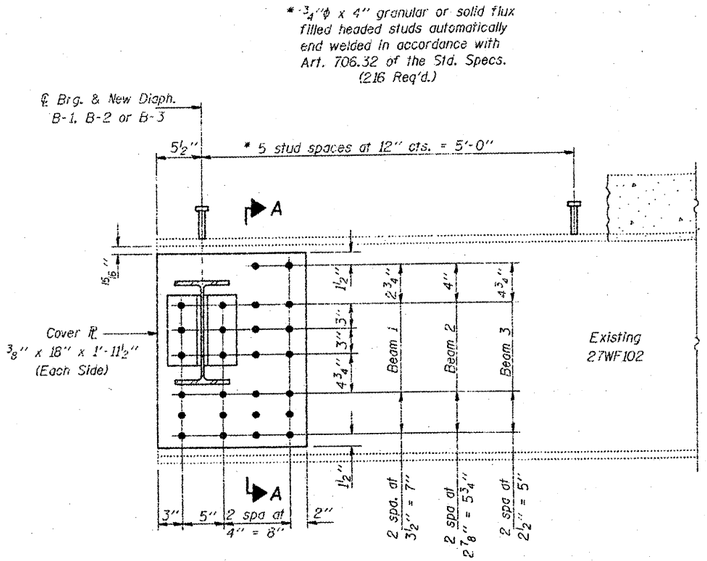
STRUCTURAL STEEL

BRIDGE NO. 1

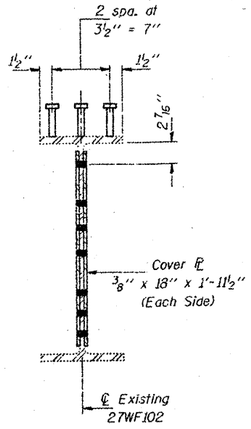
F.A. RTE. 35 SEC 11-B-1
HARDIN COUNTY
STA. 85+51.37

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

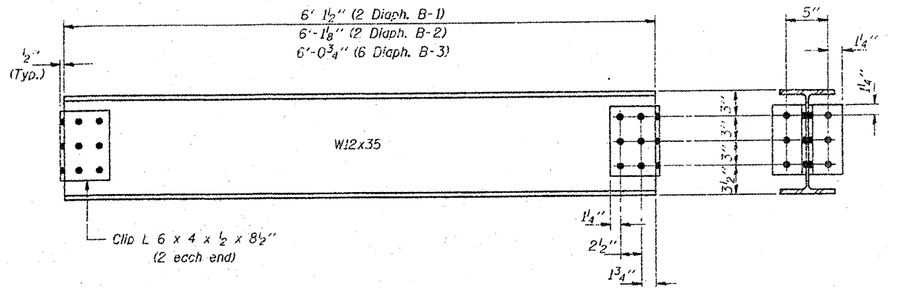
VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 10 OF 31



ELEVATION
BEAM END REPAIR



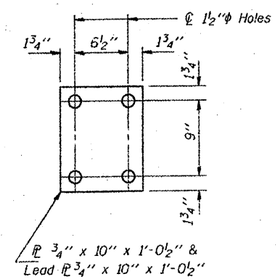
SECTION A-A



REPLACEMENT DIAPHRAGMS
(Number Req'd. = 10)

REPAIR B

REPAIR A
(8 Locations)



ANCHOR PL
(Number Req'd. = 4)
See Sheet 2 for location.

DESIGNED	NJS
CHECKED	KPS
DRAWN	DHerbert
CHECKED	NJS KPS

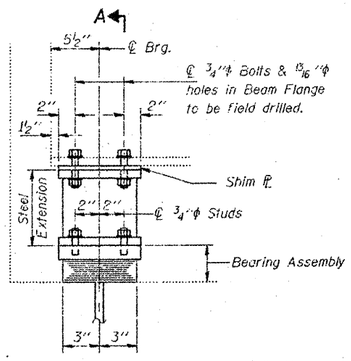
DECEMBER 8 19 94
EXAMINED Todd E. Adams
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

BRIDGE NO. 1

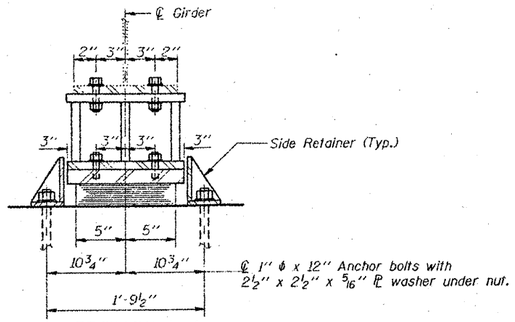
BRIDGE REPAIRS
STRUCTURAL STEEL DETAILS
F.A. RTE. 35 (IL 146) SEC. 11-B-1
HARDIN COUNTY
S.N. 035-0011

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 11 OF 31

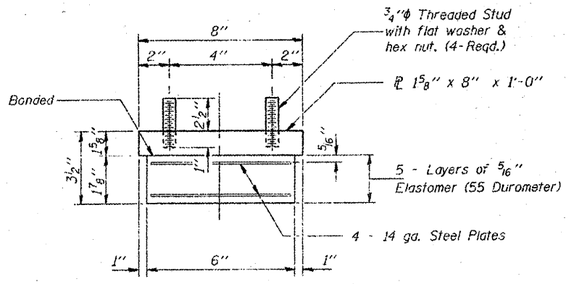


ELEVATION AT NORTH ABUTMENT



SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.

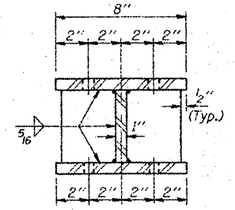


BEARING ASSEMBLY

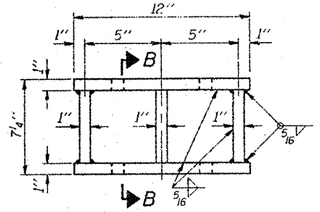
Note: Shim plates shall not be placed under Bearing Assembly.

GIRDER REACTIONS

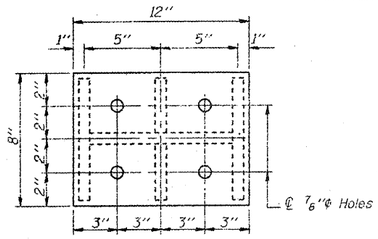
RP	(K)	15.0
RL	(K)	29.3
Imp.	(K)	8.8
R (Total)	(K)	53.1



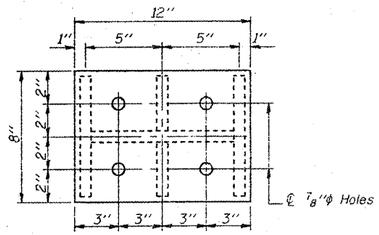
SECTION B-B



STEEL EXTENSION DETAIL

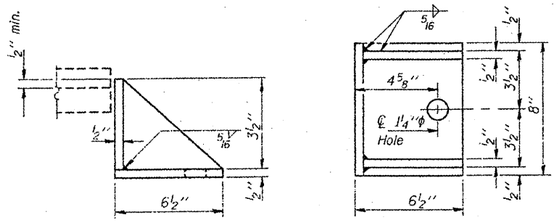


PLAN TOP PLATE



PLAN BOTTOM PLATE

Notes: Diaphragm removal and replacement may be required to facilitate drilling holes in bottom flange for bearing attachment. Cost is incidental to "Furnishing and Erecting Structural Steel".
New steel extensions, connection bolts and anchor bolts are included in "Furnishing and Erecting Structural Steel".
See sheet 7 for Anchor Bolt installation.
Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.



SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	6

DESIGNED	NJS
CHECKED	KPS
DRAWN	Dierbert
CHECKED	NJS KPS

DECEMBER 8 19 94
EXAMINED Todd E. Adams
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

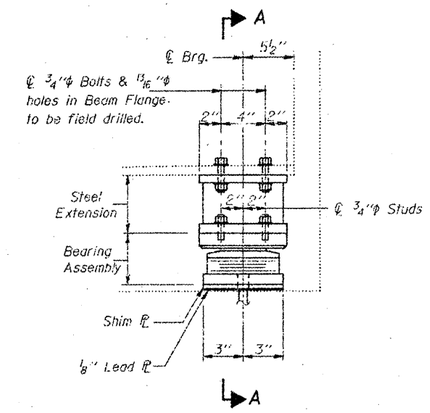
BRIDGE NO. 1

NORTH ABUTMENT
TYPE I BEARING REPLACEMENT
F.A. RTE. 35 (IL 146) SEC. 11-B-1
HARDIN COUNTY
S.N. 035-0011

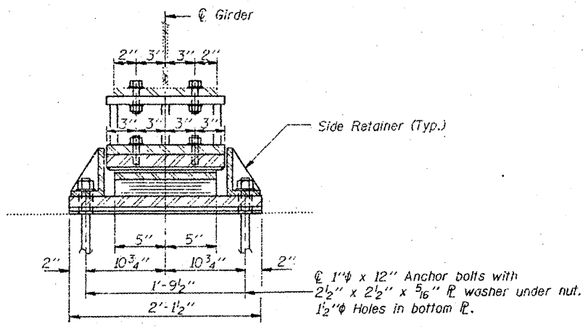
STATE OF ILLINOIS

DEPARTMENT OF TRANSPORTATION

VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 12 OF 31

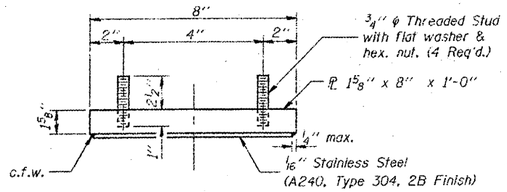


ELEVATION AT SOUTH ABUTMENT

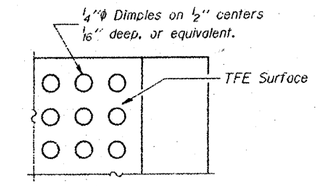


SECTION A-A

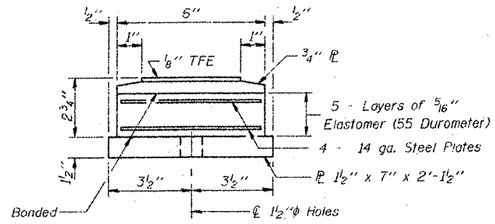
TYPE II TFE ELASTOMERIC EXP. BRG.



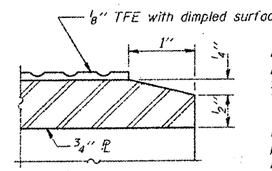
TOP BEARING ASSEMBLY



PLAN-TFE SURFACE



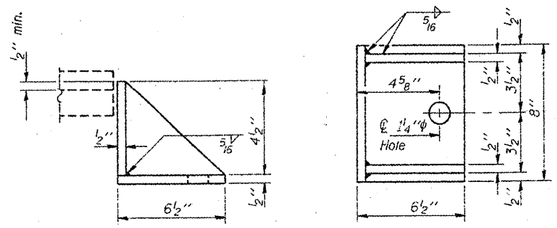
BOTTOM BEARING ASSEMBLY



SECTION THRU TFE

Note: The ⅛" TFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.

Bonding of ⅛" TFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.



SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

GIRDER REACTIONS

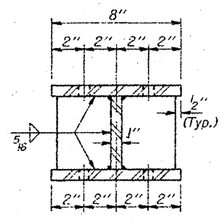
R℄	(K)	15.0
RL	(K)	29.3
Imp.	(K)	8.8
R (Total)	(K)	53.1

Notes: Diaphragm removal and replacement may be required to facilitate drilling holes for Anchor Bolts. Cost is incidental to "Furnishing and Erecting Structural Steel".

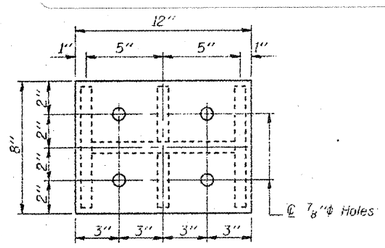
New steel extensions, side retainers, lead plates, connection bolts and anchor bolts are included in "Furnishing and Erecting Structural Steel".

See sheet 7 for Anchor Bolt installation.

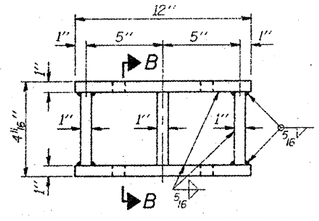
Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.



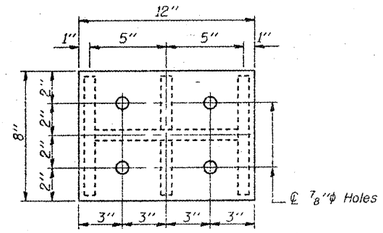
SECTION B-B



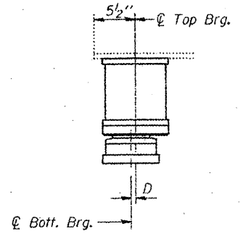
PLAN TOP PLATE



STEEL EXTENSION DETAIL

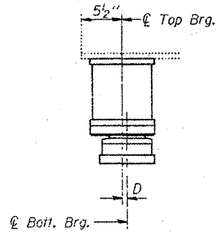


PLAN BOTTOM PLATE



BELOW 50°F.

(Move bott. brg. away from fixed brg.)



ABOVE 50°F.

(Move bott. brg. toward

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type II	Each	6

SETTING ANCHOR BOLTS AT EXP. BI

D=⅛" per each 100' of expansion for every 15° temp change from the normal temp. of 50°F.

DESIGNED	NJS
CHECKED	KPS
DRAWN	D.Herbert
CHECKED	NJS KPS

DECEMBER 8 1994

EXAMINED Todd E. Adams
ENGINEER OF STRUCTURAL SERVICES

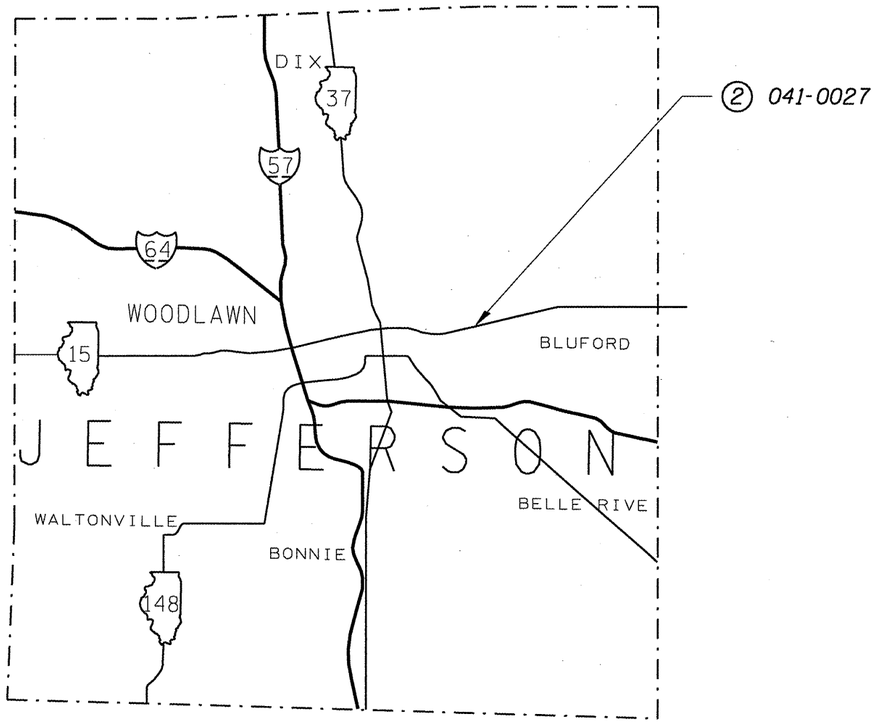
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

BRIDGE NO. 1

SOUTH ABUTMENT
TYPE II BEARING REPLACEMENT
F.A. RTE. 35 (IL 146) SEC. 11-B-1
HARDIN COUNTY
S.N. 035-0011

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 13 OF 31



② 041-0027	2 MILES EAST OF MT. VERNON ILL 15 OVER SEVEN MILE CREEK LENGTH: 168.0 FT. WIDTH: 44.17 FT. ADT = 5200, 7% TRUCKS POSTED SPEED = 55 M.P.H. INVENTORY RATING HS 25.0 OPERATING RATING HS 36.7

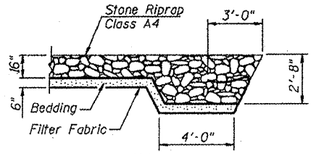
VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 14 OF 31

B.M. #403 Chiseled Square on the Northeast Wingwall of Structure 041-0027, 17.5' Lt of Sta. 130+90, Elev. 455.235

Existing Structure: S.N. 041-0027, Built in 1957 as SBI-15 Section 15-2B at Station 129+81. The existing structure is a Three Span Non-Composite Continuous Wide Flange Beam Bridge supporting a R.C. Slab on concrete pile bent piers and abutments. Overall length is 168'-0" back to back of abutments. Bridge width is 34'-5" out to out of deck with two 14'-0" traffic lanes measured face to face curbs. The contractor will remove and replace the existing concrete deck, widen substructure, add new beam lines and complete other work as described in the plans.

Traffic shall be maintained at all times utilizing Stage Construction.

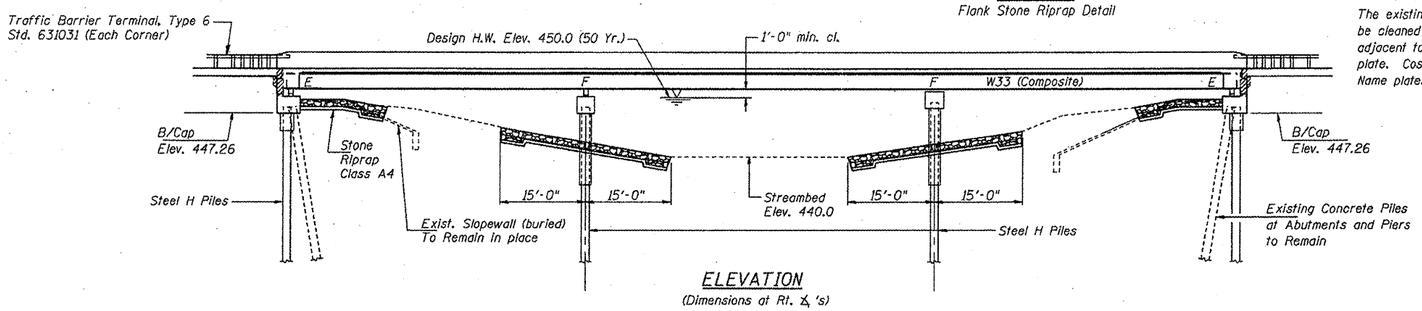
No Salvage.



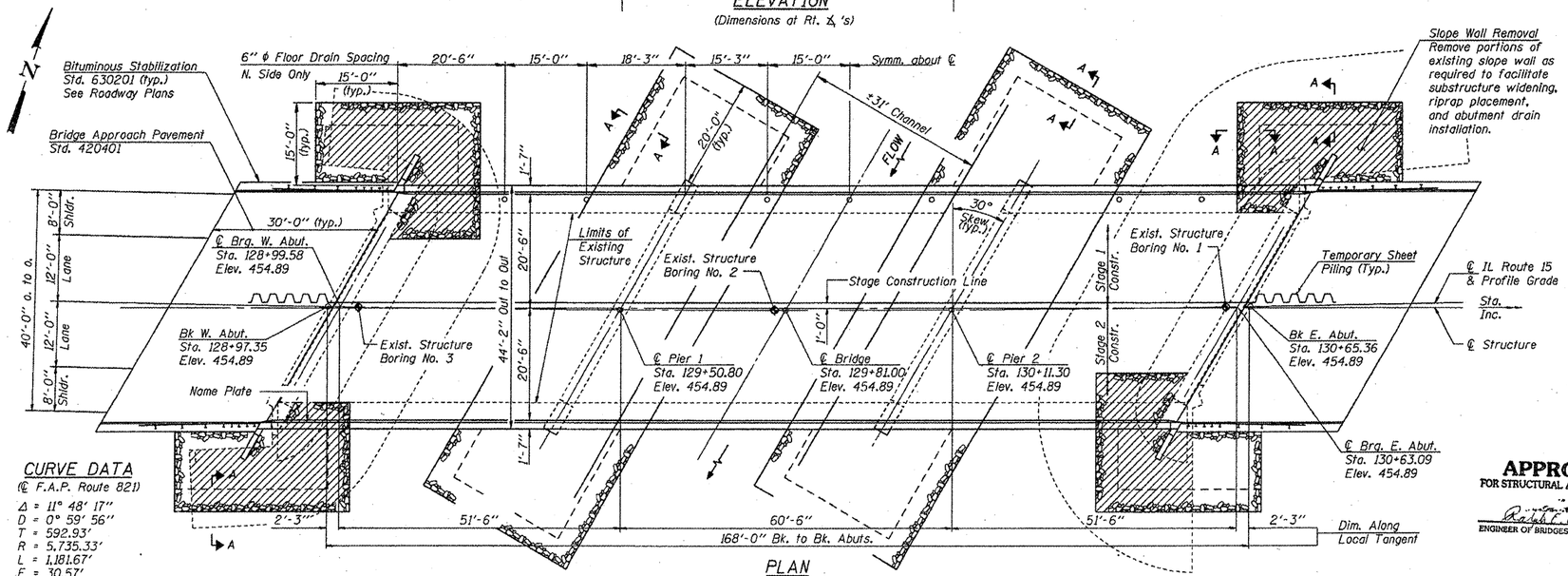
SEC A-A
Flank Stone Riprap Detail

STATION 129+81
REBUILT 200 BY
STATE OF ILLINOIS
F.A.P. RT. 821 SEC. (15-2)BR
F.A. PROJ.
LOADING HS20
STR. NO. 041-0027

LETTERING FOR NAME PLATES
See Std. 515001
The existing name plate shall be cleaned and relocated adjacent to the new name plate. Cost included with Name plates.



ELEVATION
(Dimensions at Rt. ℄'s)



PLAN

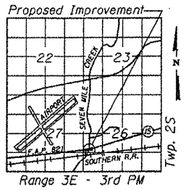
CURVE DATA
(℄ F.A.P. Route 821)
Δ = 11° 48' 17"
D = 0° 59' 56"
T = 592.93'
R = 5,735.33'
L = 1,181.67'
E = 30.57'
P.C. Sta. = 120+72.65
P.I. Sta. = 126+65.59
P.T. Sta. = 132+54.32
S.E. = 0.02"/Ft.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	TSH / RVB
CHECKED	Michael D. Cummins

WATERWAY INFORMATION

Drainage Area = 21.10 Sq. Mi. Low Grade Elevation: 454.7 ft. @ Sta. 128+00

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head - Ft. Exist.	Head - Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
	10	2090	651	651	449.5	0.9	0.9	450.4	450.4
Design	50	3030	714	714	450.0	1.5	1.5	451.5	451.5
Base	100	3440	741	741	450.2	1.7	1.7	451.9	451.9
Overtopping									
Max. Calc.	500	4355	794	794	450.6	2.4	2.4	453.0	453.0



LOCATION SKETCH

MICHAEL D. CUMMINS
081-004822
LICENSED
STRUCTURAL
ENGINEER
OF
ILLINOIS

BRIDGE NO. 2

(Expires

APPROVED
FOR STRUCTURAL ADEQUACY ONLY
ENGINEER OF BRIDGES AND STRUCTURES

INDEX OF SHEETS

DESIGN SPECIFICATIONS
2002 AASHTO
1995 Seismic Retrofitting Manual for Highway Bridges FHWA-RD-94-052

LOADING HS20-44
Allow 25#/Sq. Ft. for future wearing surface

SEISMIC DATA
Seismic Performance Category (SPC) = B
Bedrock Acceleration Coefficient (A) = 0.098g
Site Coefficient (S) = 1.2

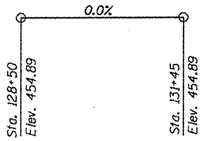
DESIGN STRESSES

New Construction

f'_c = 3,500 psi
f_y = 36,000 psi (Structural Steel)
f_y = 60,000 psi (Reinforcement)

Existing Structure

f_c = 1,400 psi (Superstructure)
f'_c = 800 psi (Substructure)
f_s = 20,000 psi (Reinforcement)
f_s = 18,000 psi (Structural Steel)



PROFILE GRADE
(along ℄ F.A.P. Rte. 821)

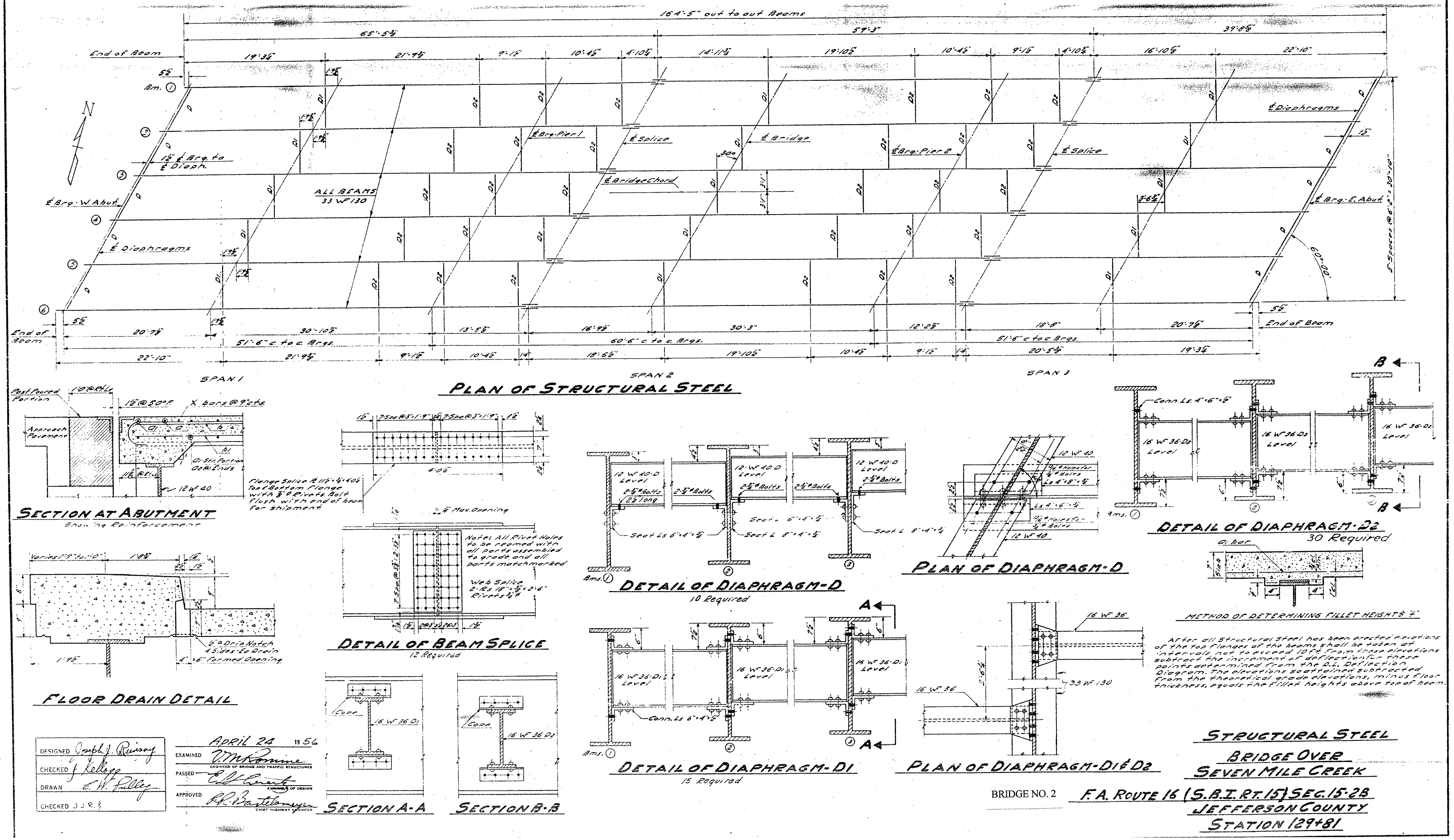
GENERAL PLAN & ELEVATION

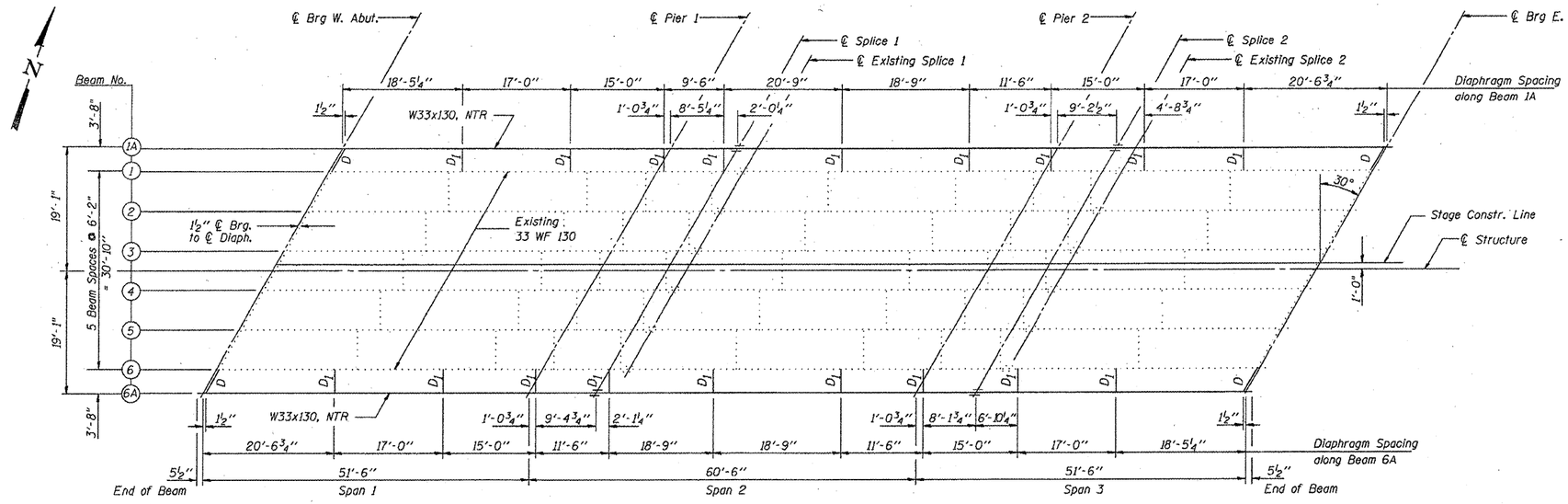
IL ROUTE 15 OVER SEVEN MILE CREEK
F.A.P. ROUTE 821 SECTION (15-2)BR
JEFFERSON COUNTY
STA. 129+81.00
S.N. 041-0027

CUMMINS ENGINEERING CORPORATION

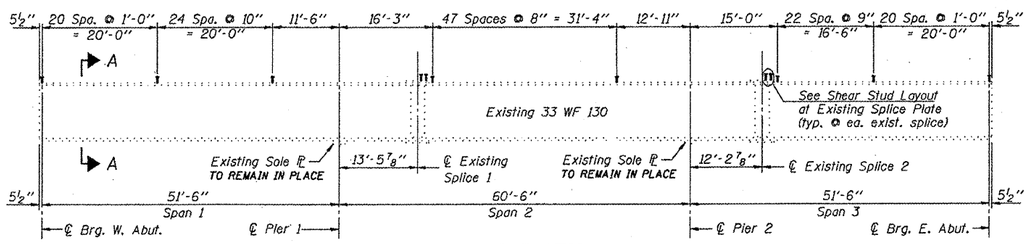
JOB #: 2175
FILE: 2175gpe
DATE: 8/7/06

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS & BUILDINGS
DIVISION OF HIGHWAYS

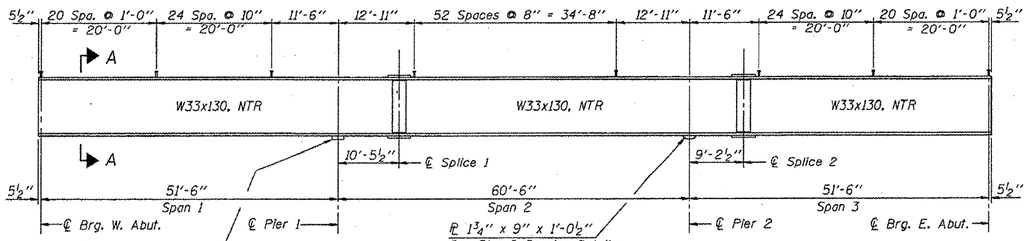




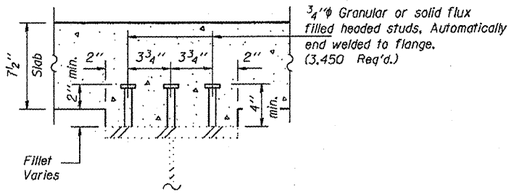
FRAMING PLAN



BEAM ELEVATION
Existing Beams 1 thru 6



BEAM ELEVATION
New Beams 1A & 6A



SECTION A-A
(Except at existing splices)
Applies to both Existing & Proposed Beams.
Existing Beams Shown.

Notes:
"NTR" denotes members to which Notch Toughness Requirements, Zone 2 are applicable.
Work this sheet with sheet 10 of 19.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	TSH / RVB
CHECKED	Michael D. Cummins

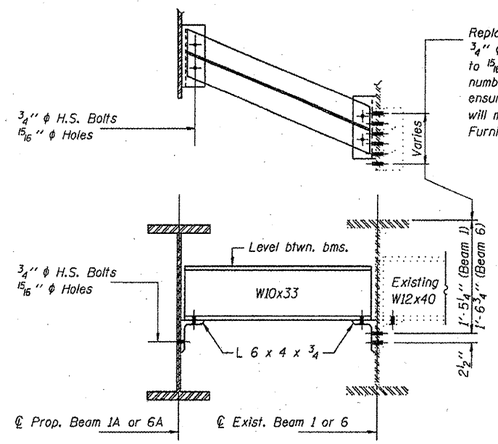
BRIDGE NO. 2

STRUCTURAL STEEL

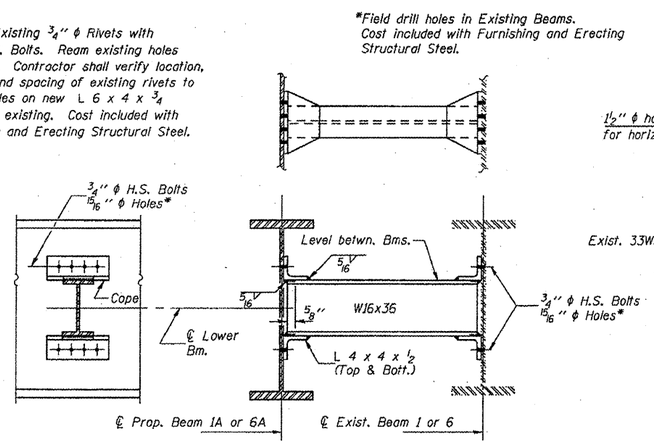
IL ROUTE 15 OVER SEVEN MILE CREEK
F.A.P. ROUTE 821 SECTION (15-2)BR
JEFFERSON COUNTY
STA. 129+81.00
S.N. 041-0027

CUMMINS ENGINEERING CORPORATION

JOB #: 2175
FILE: 2175ss
DATE: 5/26/06

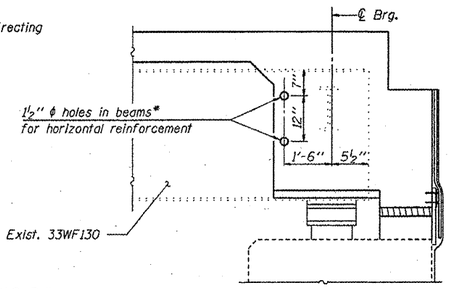


DIAPHRAGM D
(4 Required)

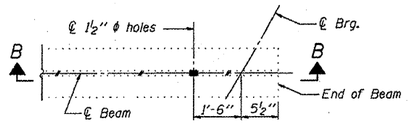


DIAPHRAGM D1
(18 Required)

Note:
Two hardened washers shall be required over all oversize holes for diaphragms.



SECTION B-B
(Dimensions Along ℄ Beams)



END OF BEAM DETAILS
Applies to both Existing & Proposed Beams.
Existing Beams Shown.

INTERIOR BEAM REACTION TABLE			
		Abuts.	Piers
RD	(k)	46.4	61.8
RL	(k)	32.1	37.9
Imp.	(k)	9.0	10.6
R (Total)	(k)	87.5	110.3

INTERIOR BEAM MOMENT TABLE				
		0.4 Sp. 1 0.6 Sp. 4	Piers 1 & 2	0.5 Sp. 2
Is	(in⁴)	6710	6710	6710
Ic (n)	(in⁴)	17200	——	17200
Ic (3n)	(in⁴)	12590	——	12590
Ss	(in³)	406	406	406
Sc (n)	(in³)	586	——	586
Sc (3n)	(in³)	529	——	529
wD	(k/ft.)	0.75	1.00	0.75
MD	('k)	145	298	108
sD	(k/ft.)	0.25	——	0.25
MsD	('k)	55	——	53
ML	('k)	316	170	323
M (Imp)	('k)	89	48	87
5/3[ML+M(Imp)]	('k)	675	363	683
Ma	('k)	1140	860	1100
** Mu	('k)	1520	——	1540
fsD non-comp	(k.s.i.)	4.3	8.8	3.2
fsD (comp)	(k.s.i.)	1.2	——	1.2
fs 5/3 (L+Imp)	(k.s.i.)	13.8	10.7	14.0
fs (Overload)	(k.s.i.)	19.3	19.5	18.4
*** fs (Total)	(k.s.i.)	——	25.4	——
VR	(k)	44.8	——	39.1

**Compact, braced section.
***Non-compact, braced section.

Is and Ss are the moment of inertia and section modulus of the steel section used in computing fs (Total & Overload).

$Ic_{(n)}$ and $Sc_{(n)}$ are the moment of inertia and section modulus of the composite section used in computing stresses due to Live Load.

$Ic_{(3n)}$ and $Sc_{(3n)}$ are the moment of inertia and section modulus of the composite section used in computing stresses due to superimposed dead loads. (see AASHTO 10.38)

VR is the maximum Live Load + Impact shear range in span.

The Plastic Moment capacity (Mu) is computed according to AASHTO 10.48.1 and 10.50.1.1.

fs (Total) (Non-compact section) is the sum of the stresses due to 1.3[MD + MsD + 5/3(ML + M(Imp))].

fs (Overload) is the sum of the stresses due to MD + MsD + 5/3(ML + M(Imp)).

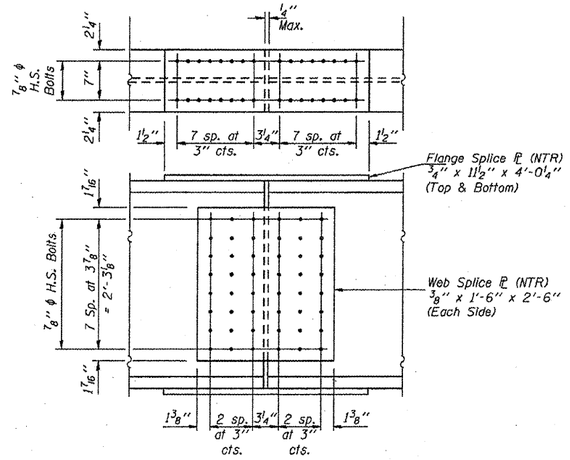
MD - Moment due to dead loads on non-composite section.

MsD - Moment due to dead loads on composite section.

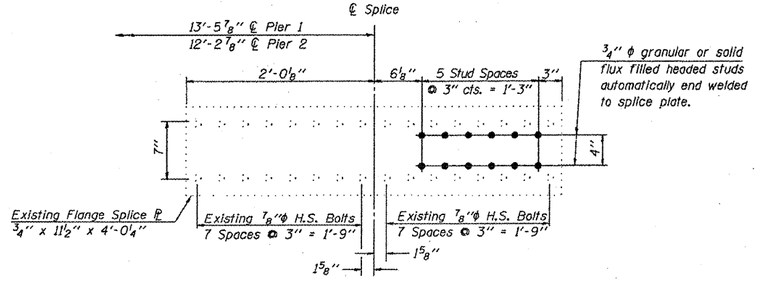
ML - Moment due to live loads on non-composite or composite section.

M (Imp) - Moment due to live load impact on non-composite or composite section.

Ma (Applied Moment)=1.3[MD + MsD + 5/3(ML + M(Imp))].



DETAIL OF PROPOSED SPLICE 1 & 2
(4 Required)



SHEAR STUD LAYOUT AT EXISTING SPLICE PLATE
Locate studs as shown at existing splices only.

TOP OF BEAM ELEVATIONS
(Existing Beams 1-6 For Information Only; Proposed 1A & 6A For Fabrication Only)

Location	Beam 1A	Beam 1	Beam 2	Beam 3	Beam 4	Beam 5	Beam 6	Beam 6A
℄ Brg. W. Abut.	453.77	453.84	453.97	454.09	454.22	454.34	454.47	454.54
℄ Pier 1	453.72	453.79	453.92	454.04	454.17	454.29	454.42	454.49
℄ Splice 1	453.71	453.78	453.91	454.03	454.16	454.28	454.41	454.48
℄ Pier 2	453.71	453.78	453.91	454.03	454.16	454.28	454.41	454.48
℄ Splice 2	453.71	453.78	453.91	454.03	454.16	454.28	454.41	454.48
℄ Brg. E. Abut.	453.77	453.84	453.97	454.09	454.22	454.34	454.47	454.54

Note: Elevations have been taken from the existing plans and reduced by 0.40' to match the new bench mark datum.

Notes:
Beams 1A & 6A (W33x130), L's and splice plates shall be AASHTO M270, Grade 36.
"NTR" denotes members to which Notch Toughness Requirements, Zone 2 are applicable.
Work this sheet with sheet 9 of 19.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	TSH / RVB
CHECKED	Michael D. Cummins

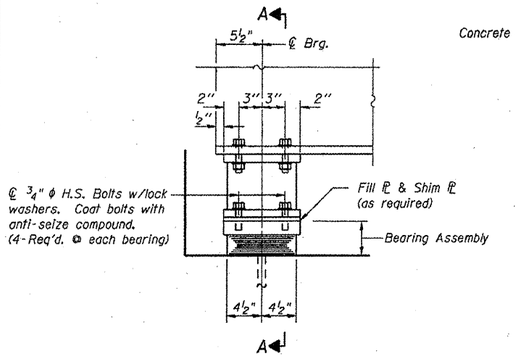
BRIDGE NO. 2

STRUCTURAL STEEL

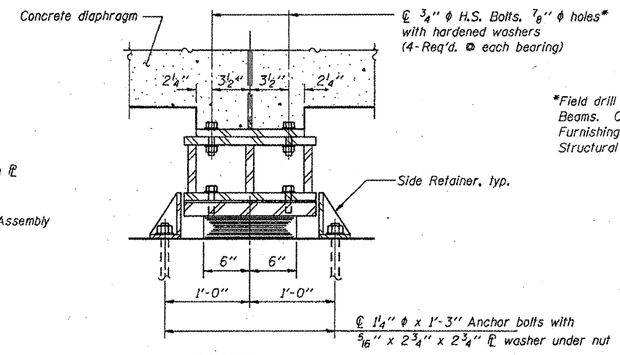
IL ROUTE 15 OVER SEVEN MILE CREEK
F.A.P. ROUTE 821 SECTION (15-2)BR
JEFFERSON COUNTY
STA. 129+81.00
S.N. 041-0027

CUMMINS ENGINEERING CORPORATION

JOB #: 2175
FILE: 2175ss
DATE: 3/07/06



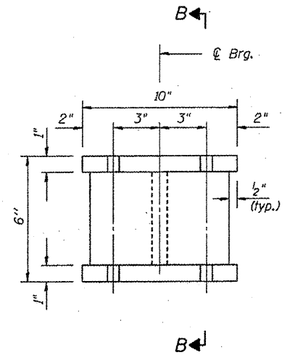
ELEVATION AT ABUT.



*Field drill holes in Existing Beams. Cost included with Furnishing and Erecting Structural Steel.

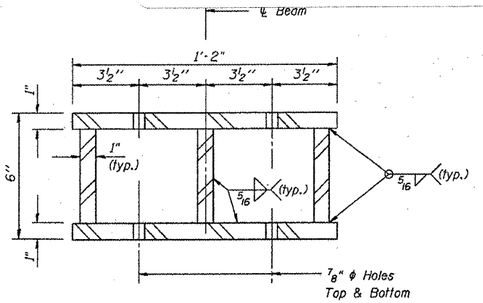
SECTION A-A

TYPE I ELASTOMERIC EXP. BRG. AT ABUTMENTS

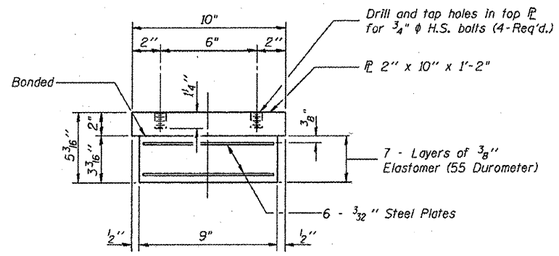


ELEVATION STEEL EXTENSION

(16 Required)



SECTION B-B



BEARING ASSEMBLY

Note: Shim plates shall not be placed under Bearing Assembly.

FILL ℄'s AT BOTH ABUTMENTS

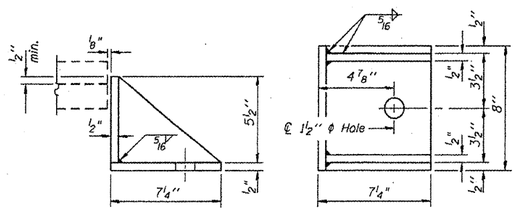
	Beam 1A	Beams 1 thru 6	Beam 6A
Thickness	——	¾"	1½"

Dimension same as top bearing plate.

EXISTING BEARING REMOVAL AT ABUTS

℄ Reaction @ Abuts. = 4 kips (Wt. of steel only)
Min. Jack Capacity @ Abuts. = 3 tons

PLAN STEEL EXTENSION



SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	16
Jack and Remove Existing Bearings	Each	12

Notes: Diaphragm removal and replacement may be required to facilitate drilling holes. Cost shall be included with Furnishing and Erecting Structural Steel.

Cost of side retainers, shim ℄'s, fill ℄'s, steel extensions, connection bolts, and anchor bolts are included with Furnishing and Erecting Structural Steel.

See sheet 18 of 19 for Anchor Bolt installation.

Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	TSH / RVB
CHECKED	Michael D. Cummins

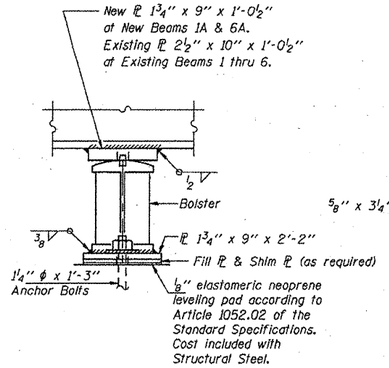
BRIDGE NO. 2

BEARING DETAILS ABUTMENTS

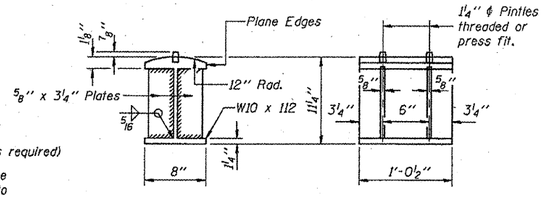
IL ROUTE 15 OVER SEVEN MILE CREEK
F.A.P. ROUTE 821 SECTION (15-2)BR
JEFFERSON COUNTY
STA. 129+81.00
S.N. 041-0027

CUMMINS ENGINEERING CORPORATION

JOB #: 2175
FILE: 2175brg
DATE: 4/10/06



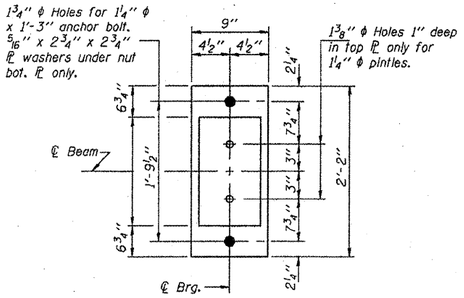
ELEVATION AT PIER 1



DETAIL OF BOLSTER

FIXED BEARING AT PIER 1

(8 Required at Existing & New Beams)

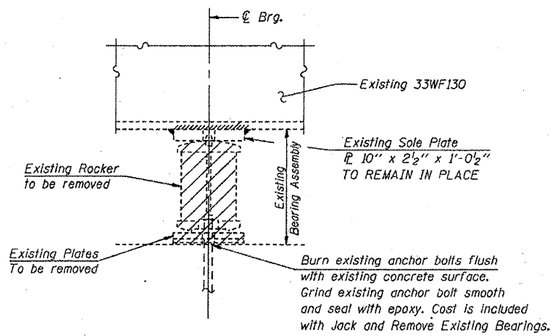


PLAN AT PIER 1

FILL ℄'s AT BOTH PIERS

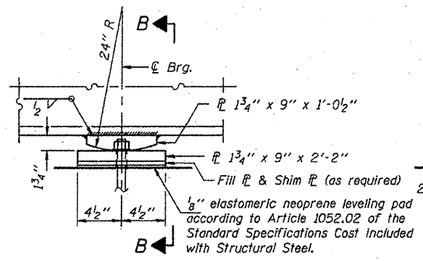
	Beam 1A	Beams 1 thru 6	Beam 6A
Thickness	——	——	1¾"

Dimension same as bottom bearing plate.

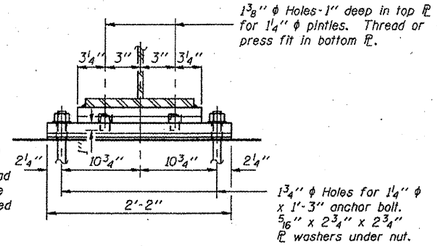


EXISTING BEARING REMOVAL AT PIER 1

℄ Reaction @ Pier 1 = 10 kips (Wt. of steel only)
Min. Jack Capacity @ Abuts. = 8 tons



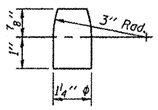
ELEVATION AT PIER 2



SECTION B-B

FIXED BEARING AT PIER 2

(2 Required at New Beams 1A & 6A)



DETAIL OF PINTLE

BILL OF MATERIAL

Item	Unit	Total
Jack and Remove Existing Bearings	Each	6

Notes: Diaphragm removal and replacement may be required to facilitate drilling holes. Cost shall be included with Furnishing and Erecting Structural Steel.

Cost of bearing ℄'s, bolsters, shim ℄'s, fill ℄'s, pintles and anchor bolts are included with Furnishing and Erecting Structural Steel.

See sheet 18 of 19 for Anchor Bolt installation.

Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.

DESIGNED	Ruben V. Boehler
CHECKED	Tim S. Howard
DRAWN	TSH / RVB
CHECKED	Michael D. Cummins

BRIDGE NO. 2

BEARING DETAILS
PIERS

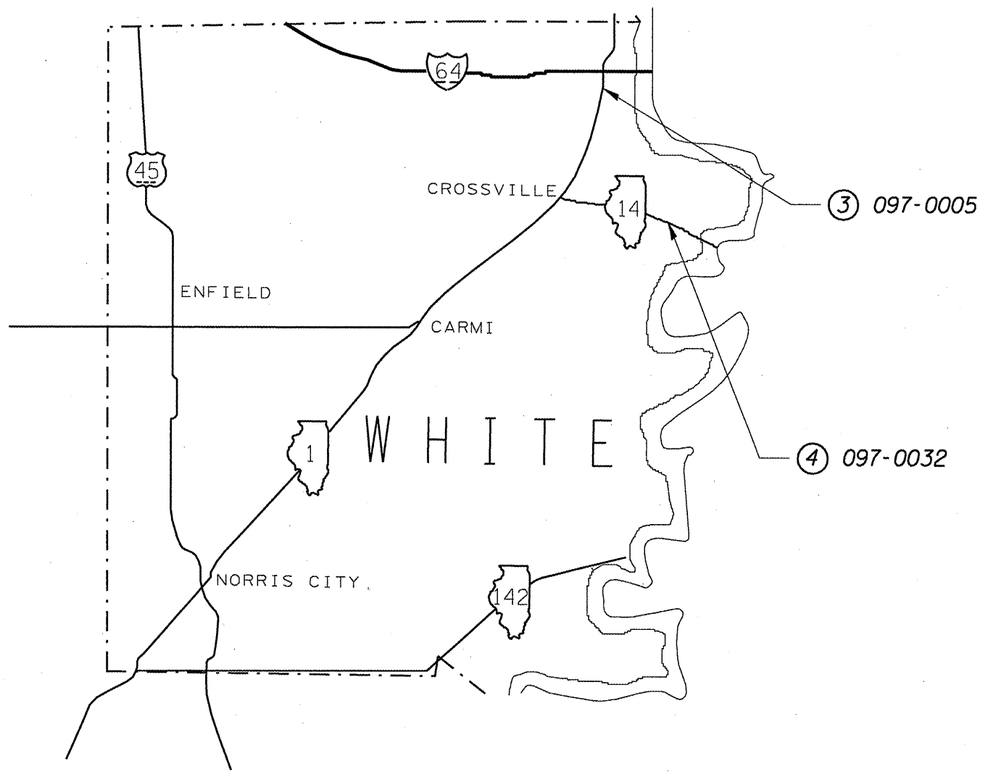
IL ROUTE 15 OVER SEVEN MILE CREEK
F.A.P. ROUTE 821 SECTION (15-2)BR
JEFFERSON COUNTY
STA. 129+81.00
S.N. 041-0027

CUMMINS ENGINEERING CORPORATION

JOB #: 2175
FILE: 2175brg
DATE: 4/10/06

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 20 OF 31

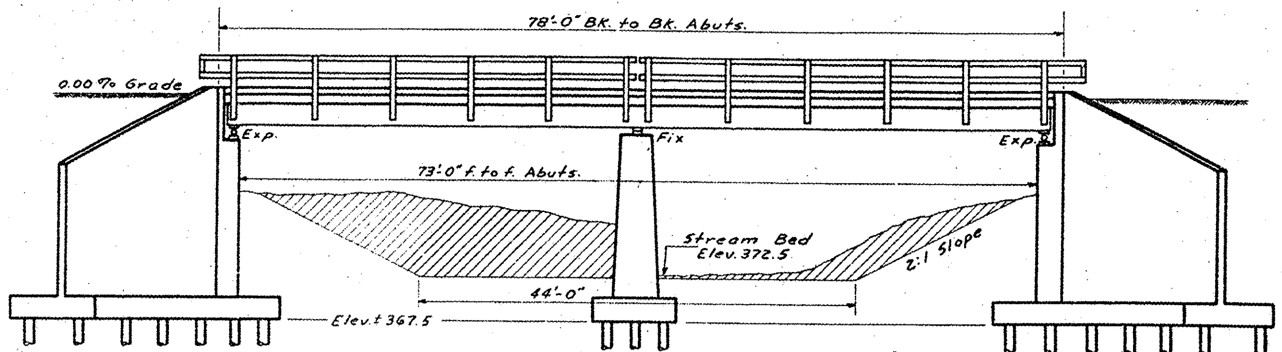


③ 097-0005	2 MILES SOUTH OF GRAYVILLE ILL 1 OVER FRENCH CREEK LENGTH: 78.0 FT. WIDTH: 37.8 FT. ADT = 3650, 20% TRUCKS POSTED SPEED = 55 M.P.H. INVENTORY RATING HS 26.7 OPERATING RATING HS 38.9

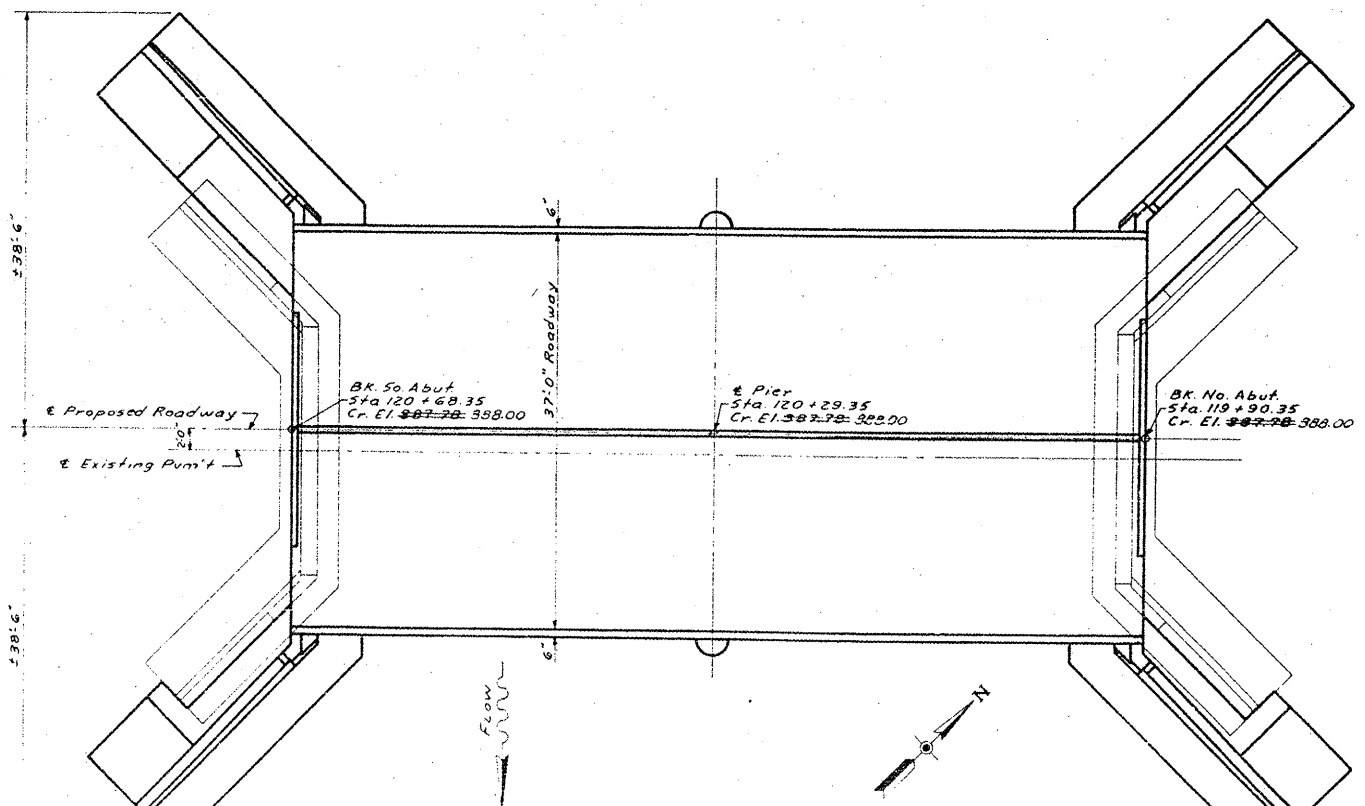
④ 097-0032	5 MILES EAST OF CROSSVILLE ILL 14 OVER FOX RIVER SLOUGH LENGTH: 284.3 FT. WIDTH: 34.0 FT. ADT = 950, 4% TRUCKS POSTED SPEED = 55 M.P.H. INVENTORY RATING HS 20.6 OPERATING RATING HS 34.4

B.M. x Top N.E. Wingwall of Bridge
@ Sta. 120+29 Elev. 385.77
Existing Structure: R.C. Thru Girder
2 @ 35' Rdwy. 20' R.C. Abuts.
Bridge Contractor to remove superstructure during Construction of new Bridge.
No Salvage of Superstructure.

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS & BUILDINGS
DIVISION OF HIGHWAYS



ELEVATION



PLAN

GENERAL NOTES

Class X Concrete shall be used thru out.

Concrete floor slab shall be finished in accordance with Art. 61.3 (e) of the Standard Specs. and shall be poured in one continuous operation on either side of the center joint.

All connections shall be riveted, except as noted. Rivets shall be 3/4"⌀ and holes 13/16"⌀, except as noted.

All holes for splices shall be punched 11/16"⌀ and reamed to proper size (13/16"⌀ in web and 15/16"⌀ in flange) with all stringers assembled in shop in proper position with or without diaphragms in place. Leave assembled in shop for inspection.

All rollers, bearing plates, lead plates, and Anchor bolts shall be finished, painted and set in accordance with Art. 54.3 (d) of the Standard Specs. and are included for payment as structural steel. Est. Weight 6190 #.

Structural Steel shall receive one shop coat of red lead paint after inspection and two field coats of Aluminum paint. All paint to be furnished and applied by the Contractor.

Anchor bolts shall be set before riveting diaphragms over abutments and piers.

Welding shall comply with Art. 55.6 (36) of the Standard Specs.

Railing shall be readjusted to true alignment after the Floor Slab and curb have been poured.

The contract unit price each for "Expansion Bolts" shall include furnishing, drilling holes and setting Expansion Bolts.

For waterproofing at backs of Abutments. See Special Provisions.

STATION 120+29.35
BUILT 1950 BY
STATE OF ILLINOIS
S.B.I. RT. 1 SEC. 5-B-Y
F.A. PROJ. F-52(7)
LOADING H20-S16

NAME PLATE
See Std. 1881

TOTAL BILL OF MATERIAL

Item		Super	Substr.	Total	
Class X Concrete	cu. yds.	70.5	~~311.7~~ 319.3	~~382.2~~	3898
Reinforcement Bars	lbs.	13,150	21990	35140	
Structural Steel	lbs.	81,990		81,990	
Name Plate	ea.	1		1	
Untr. Timber Piles (30' lg.)	lin. ft.		3990	3990	
Removal of Ex. Structures	ea.			1	
Masonry Removal	cu. yds.		89.3	89.3	
Expansion Bolts	ea.		45	45	

WATERWAY INFORMATION

Drainage Area	11,520 Acres
Character	Rolling
Opening Req'd. (C=.45 Talbot)	500 Sq. Ft.
Proposed Opening	753 Sq. Ft.

STRESSES

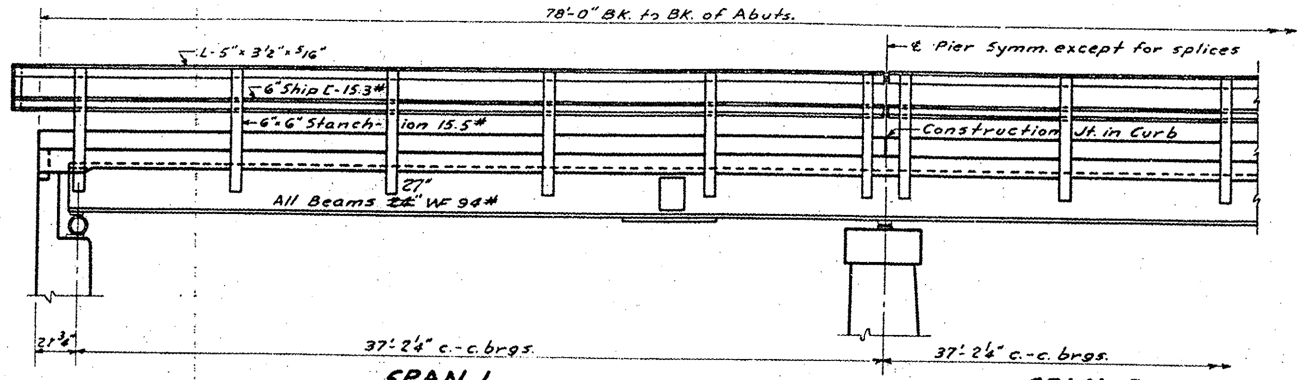
fs = 20,000 Reinf.
fs = 18,000 Structural
fc = 1200 Super
fc = 800 Sub
n = 10
H-20 S-16 44 Loading

[illegible]

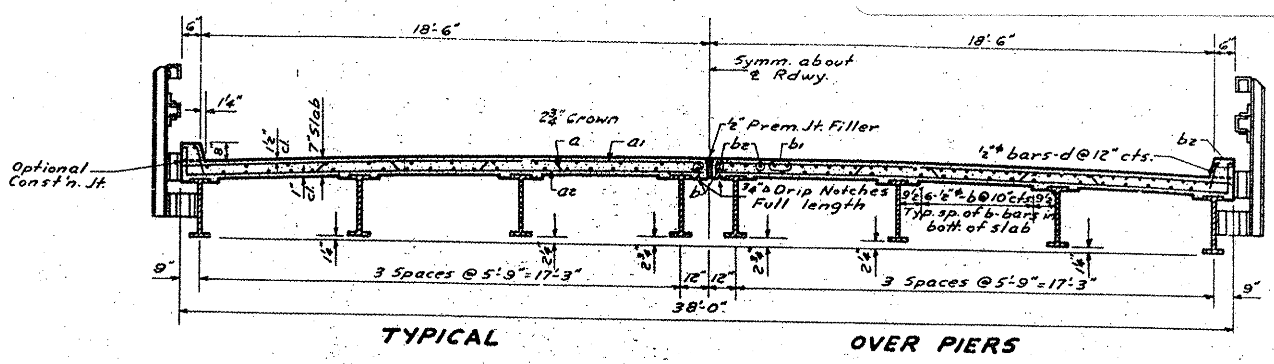
BRIDGE NO. 3

GENERAL PLAN & ELEVATION
PROJ. F-52 (7)
BRIDGE OVER FRENCH CREEK
F.A. RT. 1 (S.B.I. RT. 1) SEC. 5-B-Y
WHITE COUNTY
STA. 120+29.35

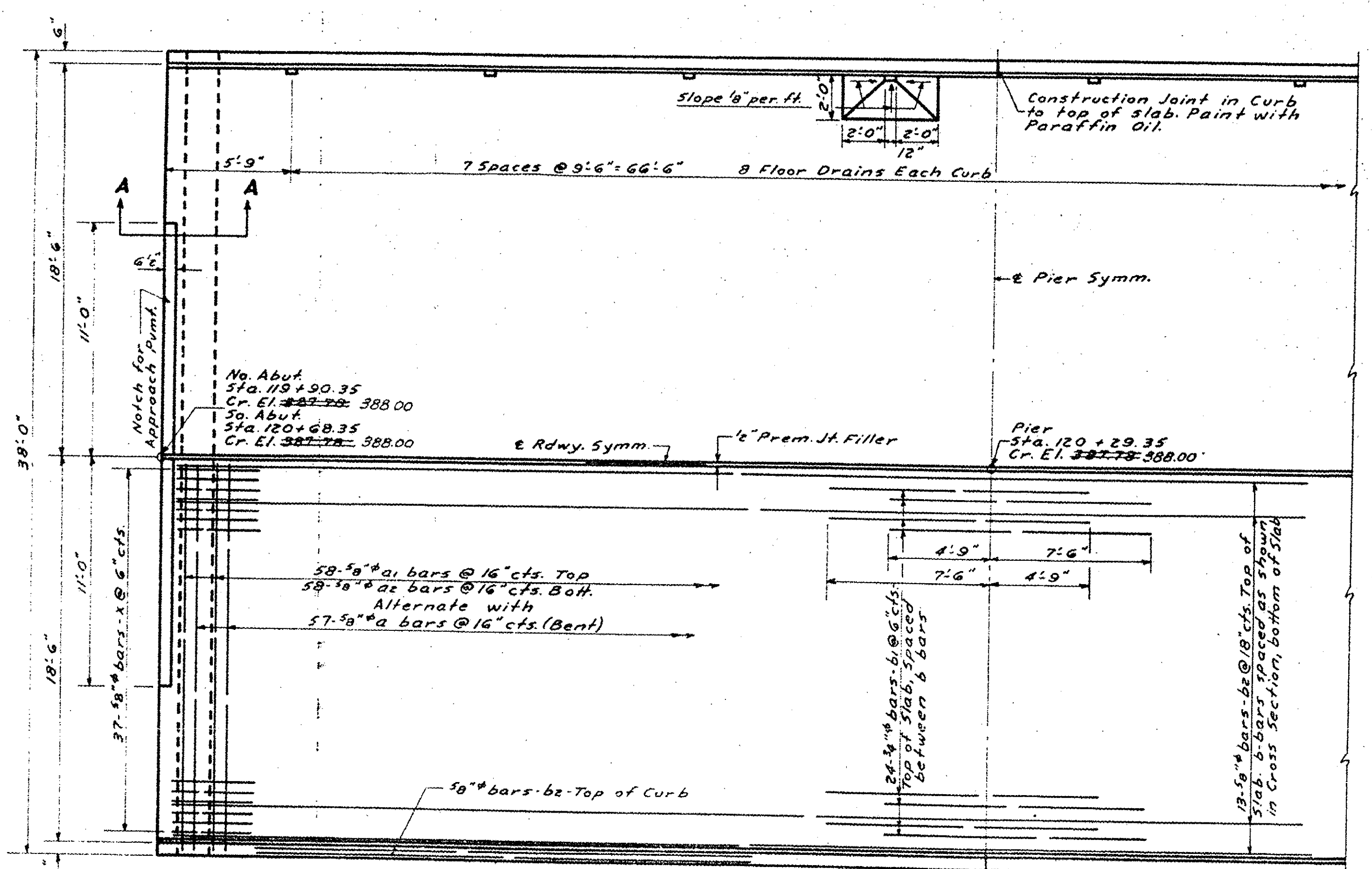
STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS & BUILDINGS
DIVISION OF HIGHWAYS



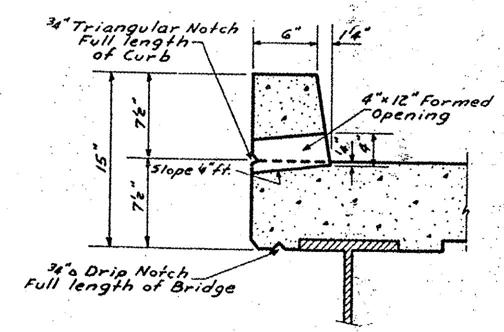
ELEVATION



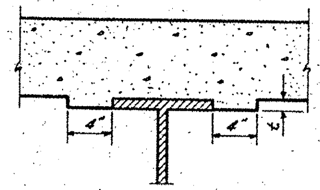
CROSS SECTION



PLAN

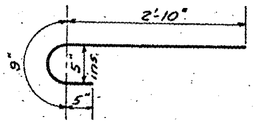


FLOOR DRAIN DETAIL

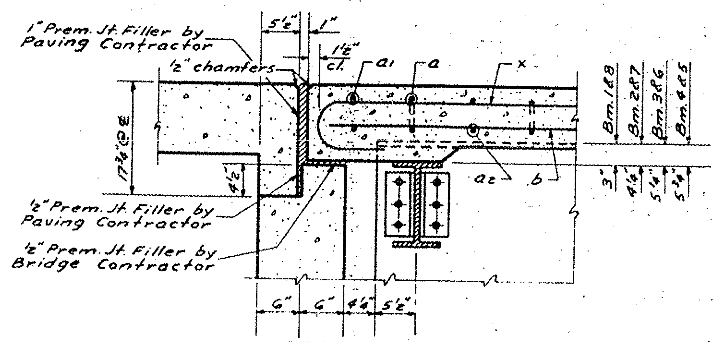


Fillet height "t" equals the difference between the underside of Top flange of Beam and Bottom of slab plus D.L. Deflection.

FILLET DETAIL



BAR X



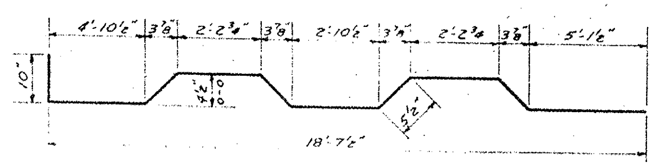
SECTION A-A

BILL OF MATERIAL

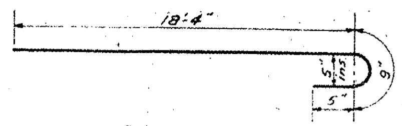
Bar	No.	Size	Length	Shape
a	114	⅝" ø	20'-0"	
a₁	116	⅝" ø	19'-6"	
a₂	116	⅝" ø	18'-9"	
b	152	½" ø	20'-0"	
b₁	48	¾" ø	12'-3"	
b₂	120	⅝" ø	20'-0"	
d	156	½" ø	1'-0"	
x	148	⅝" ø	4'-0"	

Class X Concrete	cu. yds.	70.5
Reinforcement Bars	lbs.	13,150
* Structural Steel	lbs.	81,990
Name Plate	ea.	1

* Weight of Rollers, Bearing Pls., Lead Pls. and Anchor Bolts included as Structural Steel. Est. Weight 6190.



BAR a



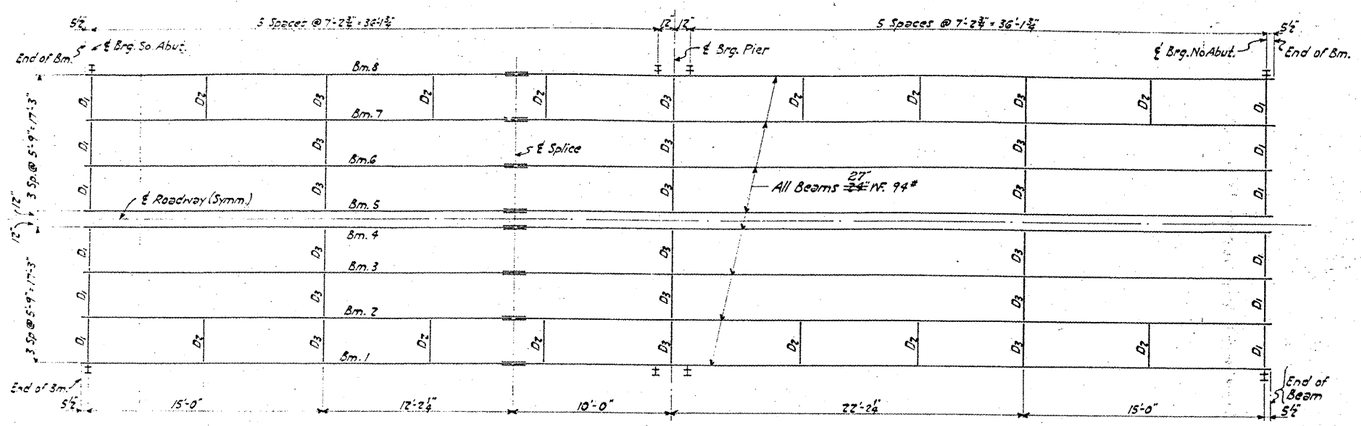
BAR a₁

SUPERSTRUCTURE
PROJ. F-52 (7)
BRIDGE OVER FRENCH CREEK
~~F.A. RT. 1~~ (S.B.I. RT. 1) SEC. 5-B-Y
WHITE COUNTY
STA. 120 + 29.35

BRIDGE NO. 3

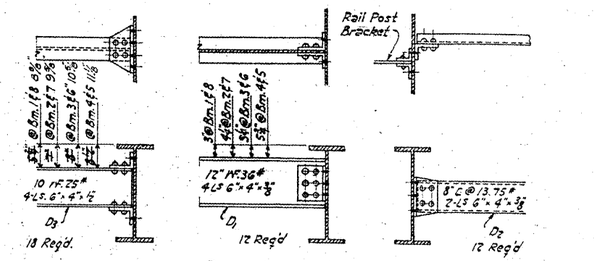
VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 23 OF 31

STATE OF ILLINOIS
DEPARTMENT OF PUBLIC WORKS & BUILDINGS
DIVISION OF HIGHWAYS

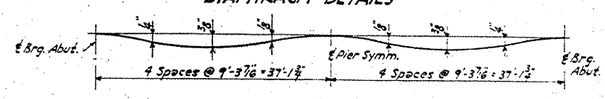


SPAN-1 SPAN 2

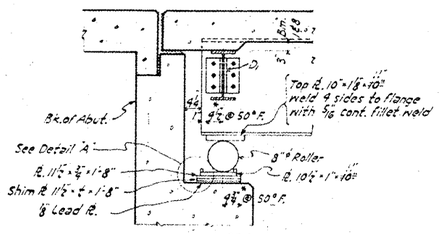
PLAN OF STRUCTURAL STEEL



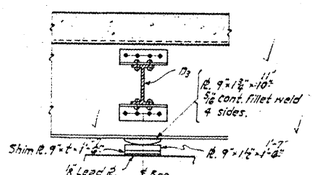
DIAPHRAGM DETAILS



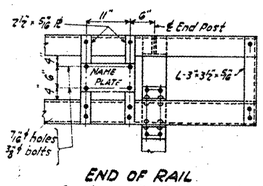
D.L. DEFLECTION DIAGRAM



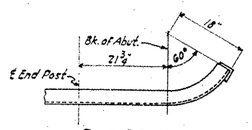
SECTION AT ABUTMENT



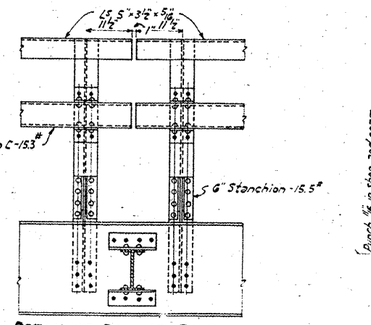
PIER



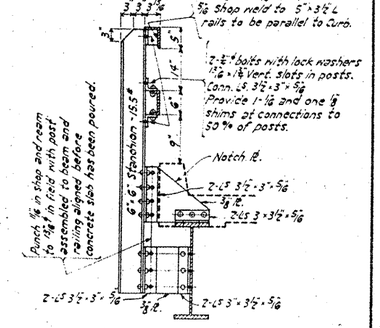
END OF RAIL
Provide connection for Name Plate at N.W. Corner only.



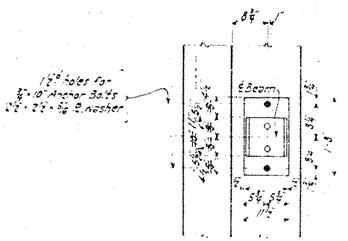
RAIL BEND



DETAIL OF RAIL AT PIER



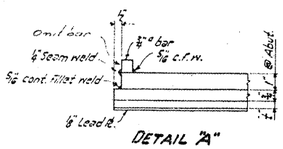
RAIL POST DETAILS



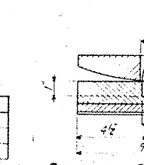
PLAN

PLAN

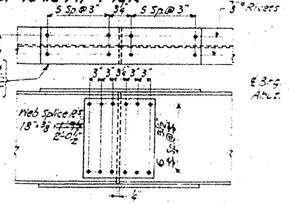
*Note to Erector:
Increase each elment on by the same amount if abutment has moved or if temp. is over 50° F. Decrease each by the same amount if temp. is below 50° F.



DETAIL "A"



PINTLE

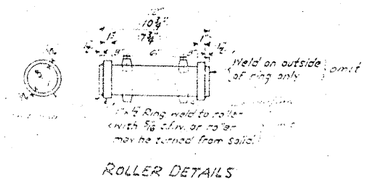


DETAIL OF SPLICE

DETAIL OF BEARING AT PIER

TABLE OF "t" DIMENSIONS

BEAM NO.	1	2	3	4	5	6	7	8
ABUTS.	0	0	0	½	½	0	0	0
Pier	0	0	0	½	½	0	0	0



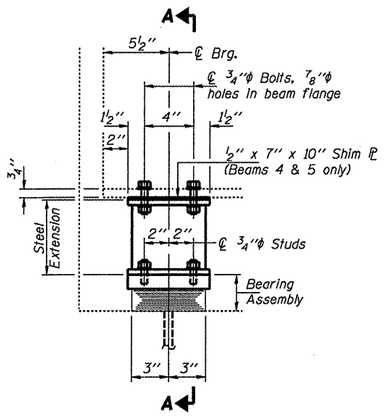
ROLLER DETAILS

STRUCTURAL STEEL
PROJ. F-52(7)
BRIDGE OVER FRENCH CREEK
F.A.R.I. (S.B.I. Rt. 1) SEC. 5 B.Y
WHITE COUNTY
STA. 120+29.35

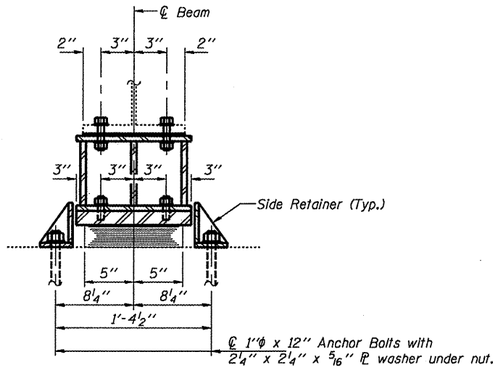
BRIDGE NO. 3

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 24 OF 31



ELEVATION AT ABUTMENT



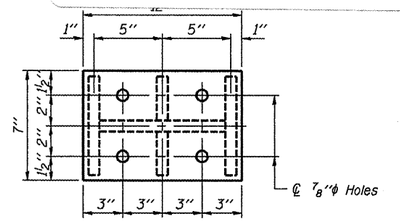
SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.

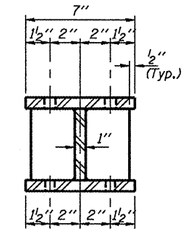
BEAM REACTIONS

Rℓ	(K)	11.7
R4	(K)	26.5
Imp.	(K)	8.0
R (Total)	(K)	46.2

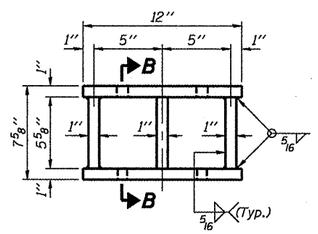
Notes:
Diaphragm removal and reinstallation may be required to facilitate drilling holes. Cost included with Furnishing and Erecting Structural Steel.
New steel extensions, shim plates and connection bolts are included with Furnishing and Erecting Structural Steel.
Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.
Min. Jack capacity = 25 Tons.
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
Side retainers shall be included in the cost of Elastomeric Bearing Assembly, Type I.



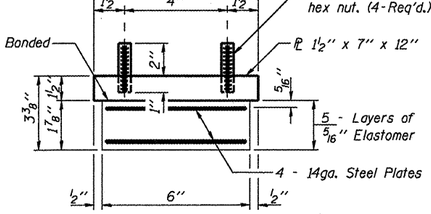
PLAN TOP AND BOTTOM PLATE



SECTION B-B

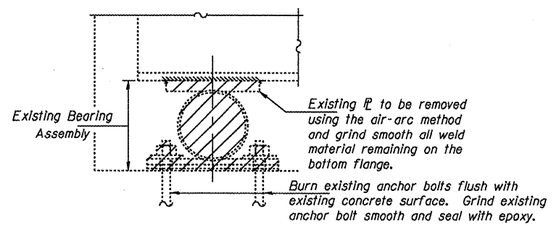


STEEL EXTENSION DETAIL



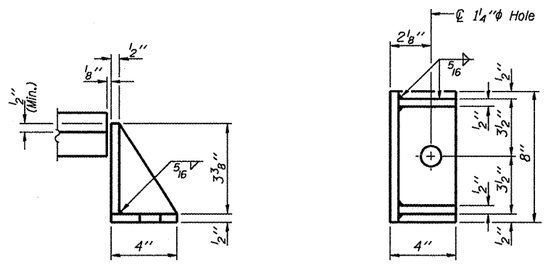
BEARING ASSEMBLY

Note:
Shim plates shall not be placed under Bearing Assembly.



EXISTING BEARING REMOVAL DETAIL

Cost included with Jack and Remove Existing Bearings.



SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	16
Jack and Remove Existing Bearings	Each	16
Furnishing and Erecting Structural Steel	Pound	1530
Anchor Bolts	Each	32

DESIGNED	DAB
CHECKED	AJB
DRAWN	baliva
CHECKED	DAB AJB

TYI/REPS 11-01-2006

BRIDGE REPAIRS
FA 132 OVER FRENCH CREEK
WHITE COUNTY
SN 097-0005

BRIDGE NO. 3

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Bench Mark - B.M. #4 Chiseled "B" Top N.E. wing of bridge Sta. 259+00 Elev. 385.91 No. 097-0282

Existing Structure — Built in 1951 on S.B.I. Rte. 139, Section ... at station 269+00 (5 Bent) 3 span, 23" I Beams, with R.C. deck and concrete pile bents for the substructure. Existing slab and railing to be removed, widened to 32'-0" base to base of curb. Provide cap @ E. Abut. bent, to provide seat and additional piles for structure extension; to provide additional waterway opening. Extension to be an independent 2 span W36 with RC slab structure. Traffic during construction to be maintained on a detour 200' North.

GENERAL NOTES

See Proposal for Boring Data.

Fasteners shall be high strength bolts. Bolts ...

Calculated weight of Structural Steel M-183 = 172870 Lbs.

The basic lead silico chromate paint system shall be used for shop and field painting of new Structural Steel.

Field welding of construction accessories will not be permitted to the bottom flange of beams nor to the top flange, in spans 4 & 5, for a distance equal to one-fourth each way from pier supports. Field welding in other areas will be permitted only when approved by the Engineer.

Anchor bolts shall be set before bolting diaphragms over support.

Layout of slope walls may be varied in the field to suit ground conditions as directed by the Engineer.

The Contractor shall drive one (1) Precast concrete test pile in a permanent location at Bent #4 and one (1) concrete test pile in a permanent location at the East Abutment bent, as directed by the Engineer, before ordering the remainder of piles.

Plan dimensions and details relative to existing structure have been taken from existing plans and are subject to nominal construction variations. It shall be the Contractor's responsibility to verify such dimensions and details in the field and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in the scope of the work, however the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.

Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/8 inch. Adjustment shall be made either by grinding the surface or by shimming the bearing. Two 1/8" adjusting shims, of the dimensions of the bottom bearing plate for Type II bearing, and top bearing plate for Type I bearings, shall be provided for each bearing in addition to all other plates or shims.

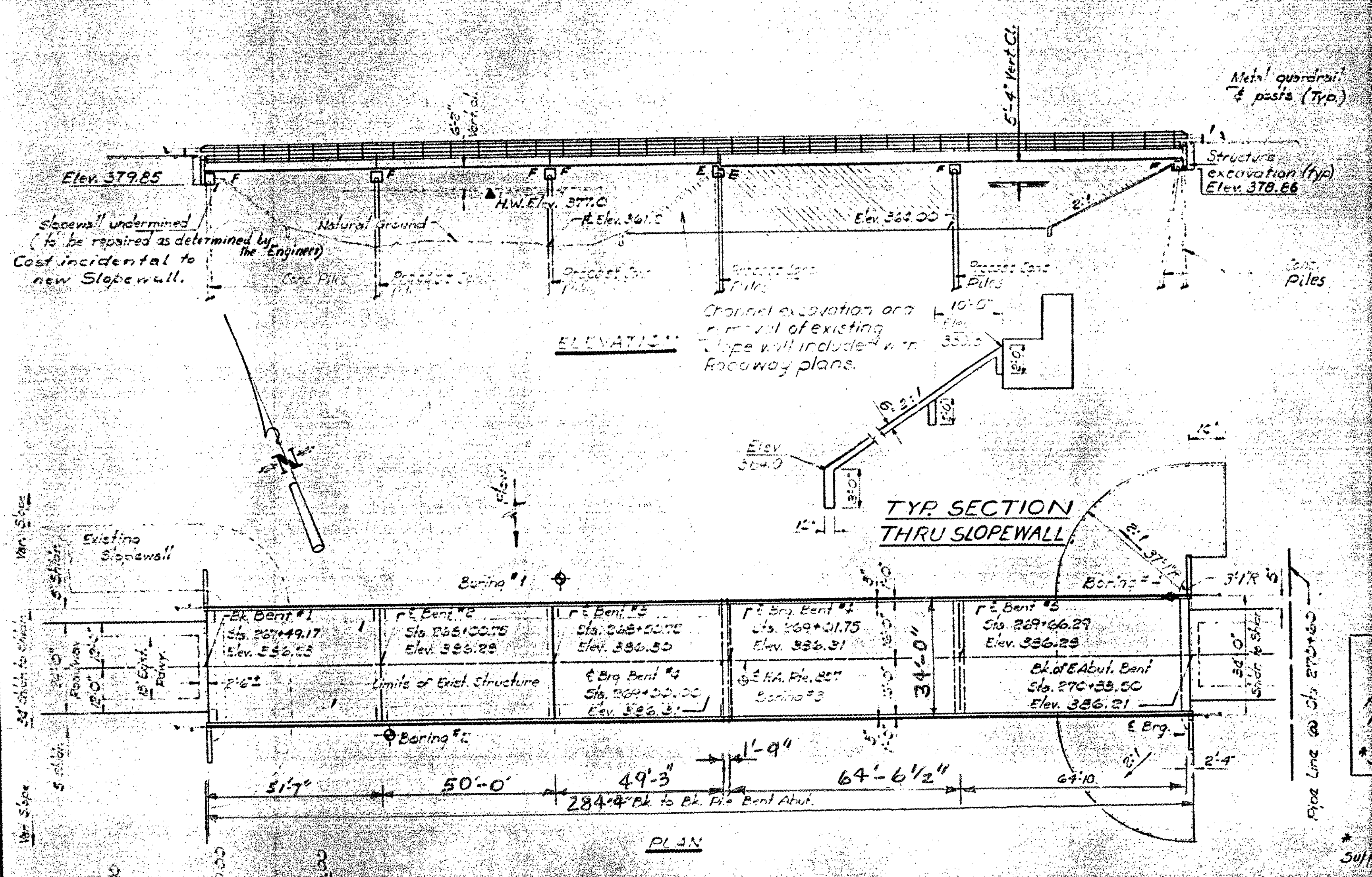
The main load carrying member components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These Components are the tension flanges, webs and all splice plate material of the wide flange beams.

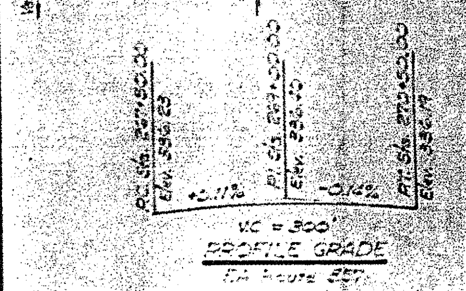
Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-53 Grade 60.

Slope wall shall be reinforced with welded wire fabric 6"x6" W4.0 x W4.0, weighing 58# per 100 sq. ft.

Expansion bolts shall consist of approved expansion anchors, providing certified Min. proof load = 4,080 lbs., and 3/4" Ø x 12" hooked bolts.

All existing Structural Steel shall be cleaned by Method I and painted with three coats of basic lead silico chromate paint system (Approximately 50 tons of existing structural steel to be painted).





WATERWAY INFORMATION

Drainage Area 30000 Sq. Miles Low Grade Elev. 386.0 @ Sta.									
Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head—Ft. Exist.	Head—Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
Design	50	12182*	3500	3200	377				
Base	100	13,950*	3800	3478	378				
Overtopping									
Max. Calc.	500	17680*	4150	3895	379.5				

* Structures are within the Wabash River Flood plain and no estimation of Created head was made for these structures.

STATION 268+25.75
REBUILT 198_ BY
STATE OF ILLINOIS
F.A. RTE. 857 SEC. 101-BR2
F.A. PROJECT
LOADING HS20
*STRUCT. # 097-0032

NAME PLATE

Std. 2113
* Structure Number to be Supplied by the District.

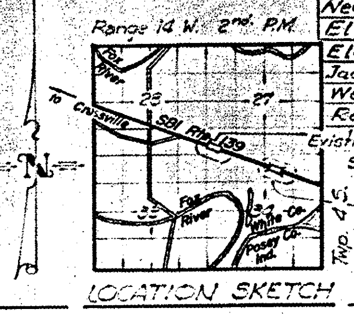
DESIGN STRESSES (NEW CONSTR.)

f'c = 3500 psi
fy = 60,000 psi Reinforcement
fy = 36,000 psi Structural steel

LOADING HS 20-44

Design Specifications: 1977 AASHTO 1978 & 1979 Interim Specifications.

Range 14 W. 2nd P.M.



LOCATION SKETCH

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub	Total
Name Plates	Each			1
Slope Wall (6")	Sq. Yds		450	450
Preformed Joint Seal (2½")	Lin. Ft.	68		68
Concrete Removal	Cu. Yds.		13	13
Expansion Bolts (¾"Ø)	Each		57	57
Removal of Existing Concrete Deck	L.S.	1		1
Structure Excavation	Cu. Yds.		92	92
Floor Drains	Each	88		88
Protective Coat	Sq. Yds.	1107		1107
Class "X" Concrete	Cu. Yds.	247.2	62.7	309.9
Structural Steel	L.S.			1
Stud Shear Connectors	Each	2208		2208
Steel Railing Type T-1	Lin. Ft.	569		569
Cleaning and Painting Steel Bridge	L.S.			1
Reinforcement Bars	Lbs	25230	5610	30840
Reinforcement Bars (Epoxy Coated)	Lbs	34010		34010
Precast Concrete Piles (14")	Lin. Ft.		821	821
Concrete Piles	Lin. Ft.		376	376
Test Pile Precast Concrete	Each		1	1
Test Pile Concrete	Each		1	1
Pav't. Removal & P.C.C. Repl. Type II (10")	Sq. Yds	10		10
Jacking and Cribbing	L. Sum	1		1
Neoprene Expansion Joint (4")	Lin. Ft.	34		34
Elastomeric bearing, Assembly, Type I	Each		7	7
Elastomeric bearing, Assembly, Type II	Each		8	8
Jack and Replace Bearings	Each	6		6
Web repair	Each	12		12
Remove and Replace Diaphragms	Each	9		9

GENERAL PLAN & ELEVATION
F.A. Rte. 857 FOX RIVER OVERFLOW
F.A. Rte. 857 (S.B.I. 139) SECTION 101 BR-2
WHITE COUNTY
STA. 268+25.75

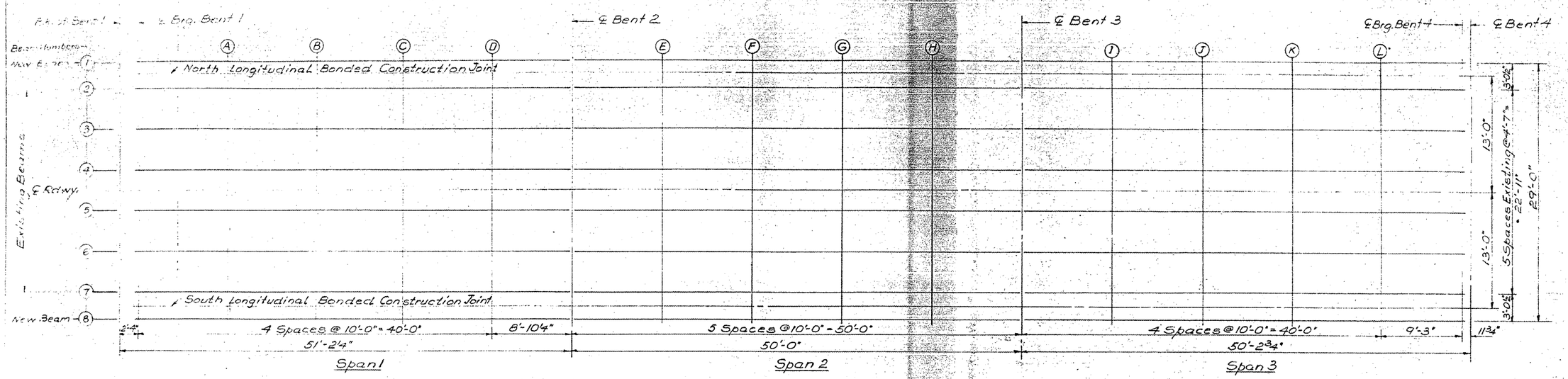
BRIDGE NO. 4

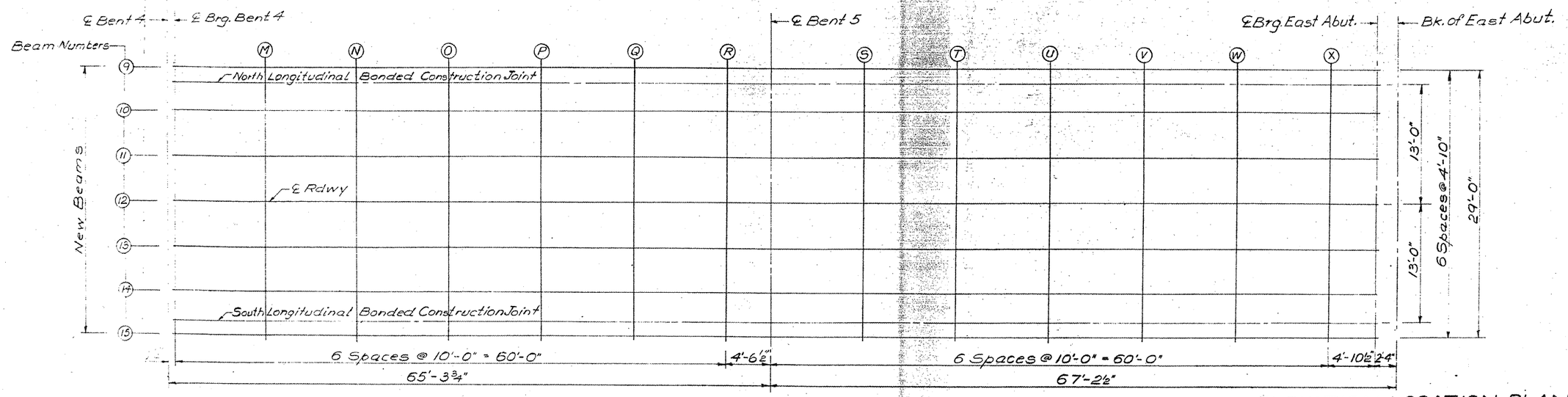
DESIGNED	EXAMINED January 13 1981
CHECKED ... PLD	PASSED
DRAWN ... JFP	APPROVED
CHECKED	

Updated 3-26-82 D.A.B. 4-12-82 D.A.B. 5-21-82 D.A.B.

VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY
SHEET 26 OF 31

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION





DESIGNED	
CHECKED	
DRAWN	V.H.
CHECKED	

EXAMINED JAN 13 1993
ENGINEER OF BRIDGE AND TRAFFIC STRUCTURES
PASSED
APPROVED
ENGINEER OF DESIGN
DIRECTOR OF HIGHWAYS

ELEVATION LOCATION PLAN

F.A. RTE. 857-SECTION 101 BR-2

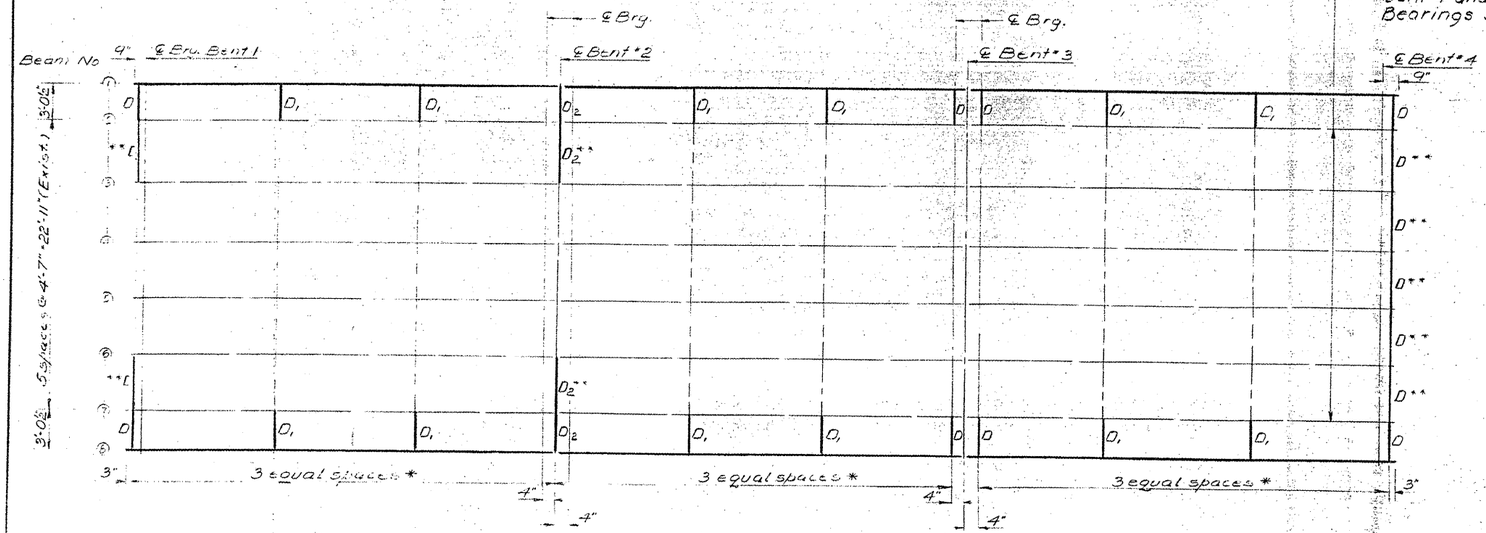
WHITE COUNTY

STA. 268+25.75

BRIDGE NO. 4

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Bms. 2 thru 7 shall be jacked and cribbed during reconstruction of Bent 4 and placement of New Bearings See Special Provisions.

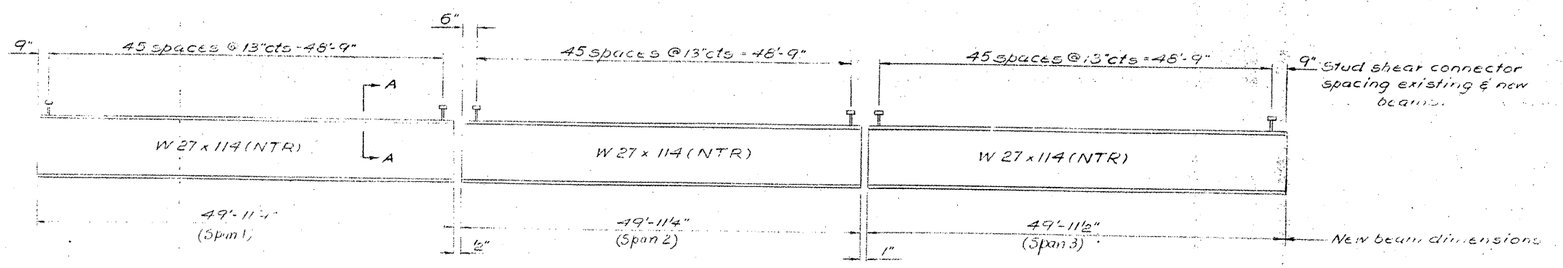


FRAMING PLAN

* Holes for Diaphragms shall be field drilled to match existing Diaphragm holes

** Existing Diaphragms to be removed and replaced with new Diaphragms. Cost included with "Remove & Replace Diaphragms".

All contact surfaces of joints for the diaphragms shall be free of paint or lacquer.



ELEVATION

MOMENT TABLE
(at Midspan)

	Exist. Beams	Beam 1&6
Is (in⁴)	3711	4090
Ic (in⁴)	8389	8396
I'c (in⁴)	6445	6107
Ss (in³)	265.1	300
Sc (in³)	366.2	398.2
S'c (in³)	331.4	356.1
Q (K/1)	.537	.423
MQ (1-K)	164	129
fs (Non-Comp)(KSI)	7.4	5.2
SQ (K/1)	.05	.05
MSQ (1-K)	15	15
fs (Superimposed)(KSI)	.5	.5
M4 (1-K)	308	308
M imp (1-K)	89	89
M4 + imp (1-K)	397	397
fs (live load)(KSI)	13.0	12.0
f (total Stress)(KSI)	20.9	17.7
VR (K)	37.7	37.7

Ic & Sc are the section modulus and moment of inertia of the composite section (where the modular Ratio = n, used in computing fs (Non-Comp.) and fs (Live Load))

I'c & S'c are the section modulus and moment of inertia of the composite section (where the modular Ratio = 3n, used in computing fs (Superimposed)).

REACTION TABLE
(Beams 1&6)

	Bent 1 & 4	Bent 2 & 3
RQ (K)	11.7	11.7
R4 (K)	29.2	29.2
RIMP (K)	8.5	8.5
RTOTAL (K)	49.4	49.4

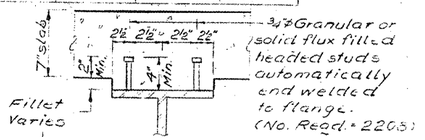
REACTION TABLE
(Existing Beams)

	Bent 1 & 4	Bent 2 & 3
RQ (K)	14.5	14.5
R4 (K)	29.2	29.2
RIMP (K)	8.4	8.4
RTOTAL (K)	52.1	52.1

TOP OF FLANGE ELEVATIONS (FOR FABRICATION PURPOSES ONLY)

Location / Girder	℄ Brg. Bent 1	℄ Brg. Bent 2		℄ Brg. Bent 3		℄ Brg. Bent 4
		Span 1	Span 2	Span 2	Span 3	
1	385.22	385.30	385.30	385.30	385.30	385.33
8	385.22	385.30	385.30	385.30	385.30	385.33

The main load carrying members of steel bridges subject to tensile stresses shall conform to the Supplemental Requirements for Notch Toughness (Zone 1). The tensile members are the bottom flange and are designated by NTS.



SECTION A-A

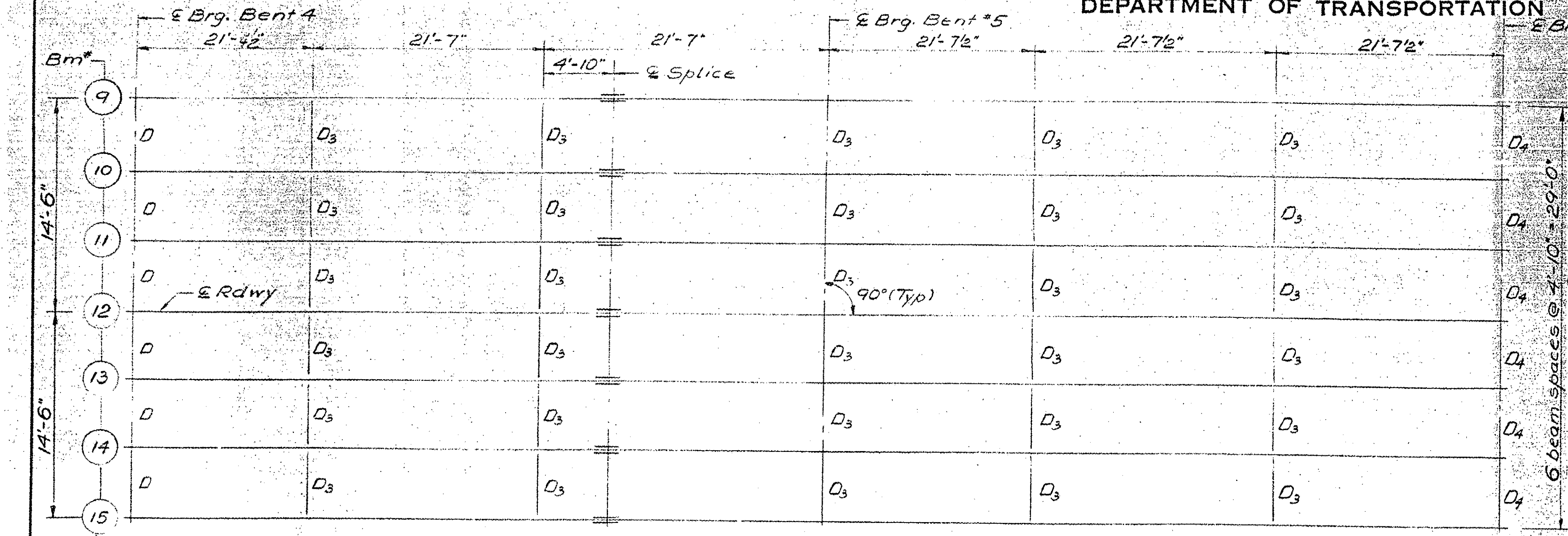
STRUCTURAL STEEL
SPANS 1,2 & 3
F.A. RTE. 857 - SECTION 101 BR-2
WHITE COUNTY
STA. 268 + 25.75

BRIDGE NO. 4

DESIGNED	Steel & Misc.
CHECKED	
DRAWN	V.H.
CHECKED	

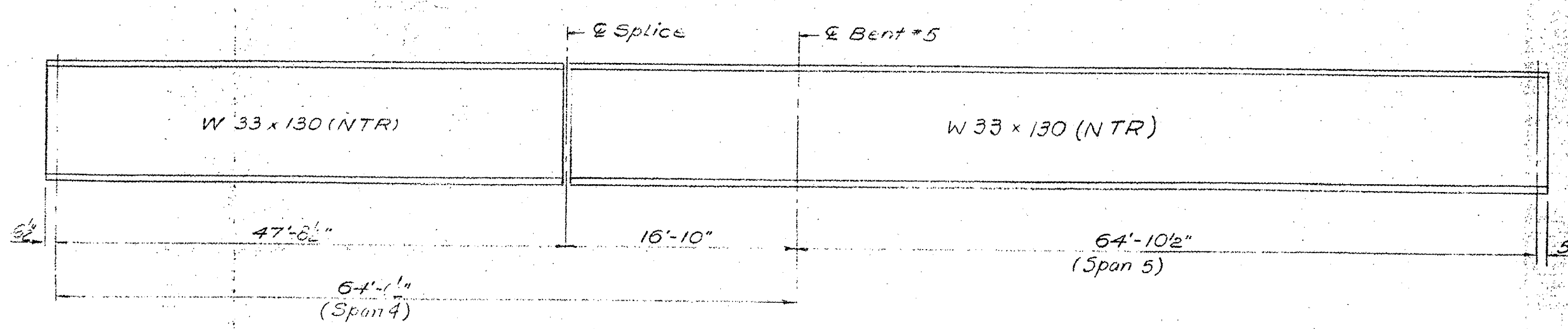
EXAMINED JAN 13 1931
ENGINEER OF BRIDGES AND TRAFFIC STRUCTURES
PASSED
ENGINEER OF DESIGN
APPROVED
DIRECTOR OF HIGHWAYS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



FRAMING PLAN

All contact surfaces of joints for the diaphragms shall be free of paint or lacquer.



BEAM ELEVATION

Note: The main load carrying members of steel bridges subject to tensile stresses shall conform to the Supplemental Requirements for Notch Toughness (Zone 2). These tensile members, including beams and splice plates, are designated by (NTR).

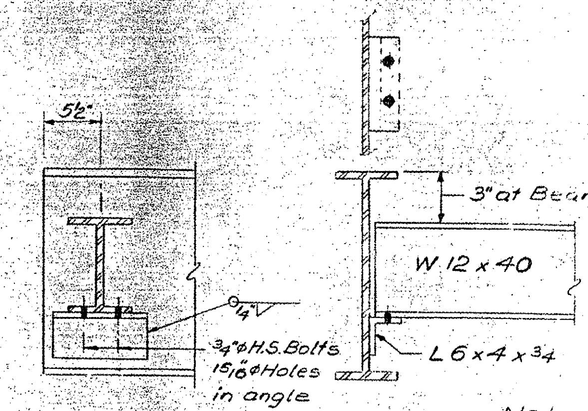
Interior Girder Reaction Table		
	Abut. or Bent 4	Bent 5
R℄ (K)	16.2	53.8
R℄ (K)	29.6	34.7
IMP (K)	7.7	9.0
R Total (K)	53.5	97.5

TOP OF FLANGE ELEVATION
(For fabrication only)

Girder \ Location	℄ Brg. Bent 4	℄ Splice	℄ Brg. Bent 5	℄ Brg. Bent 6
9 & 15	385.41	385.38	385.38	385.31
10 & 14	385.50	385.47	385.47	385.40
11 & 13	385.58	385.54	385.55	385.48
12	385.65	385.62	385.62	385.55

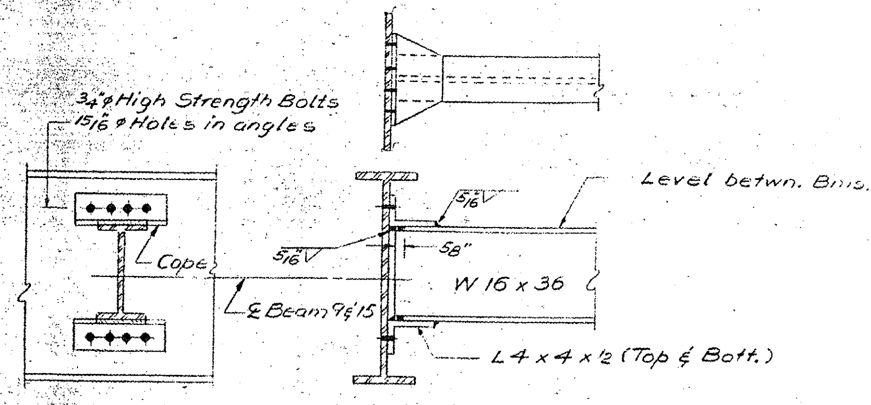
Interior Girder Moment Table		
	.4 span 4 or .6 span 5	Bent 5
Is (in⁴)	6710	6710
S_s (in³)	406	406
℄+S℄ (K/l)	.667	.667
M℄+S℄ (ik)	196.8	351.3
fs (℄+S℄) (ksi)	5.8	10.4
M℄ (ik)	355.0	244.7
M imp (ik)	93.0	63.6
M℄+imp (ik)	451.0	308.3
fs (℄+imp) (ksi)	13.3	9.1
fs (total) (ksi)	19.1	19.5

Is and Ss are the moment of inertia and section modulus, respectively of the steel section used in computing fs.

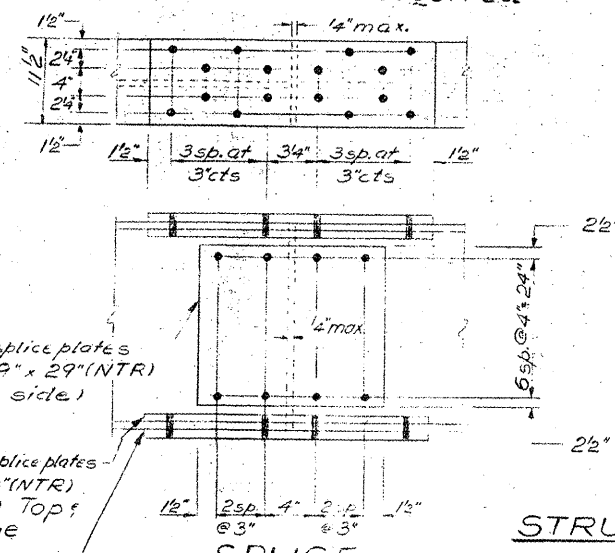


DIAPHRAGM D4
6 Required

Note: Two Hardened washers shall be required over 15/16"φ holes in angles.



DIAPHRAGM D3
30 Required



SPLICE

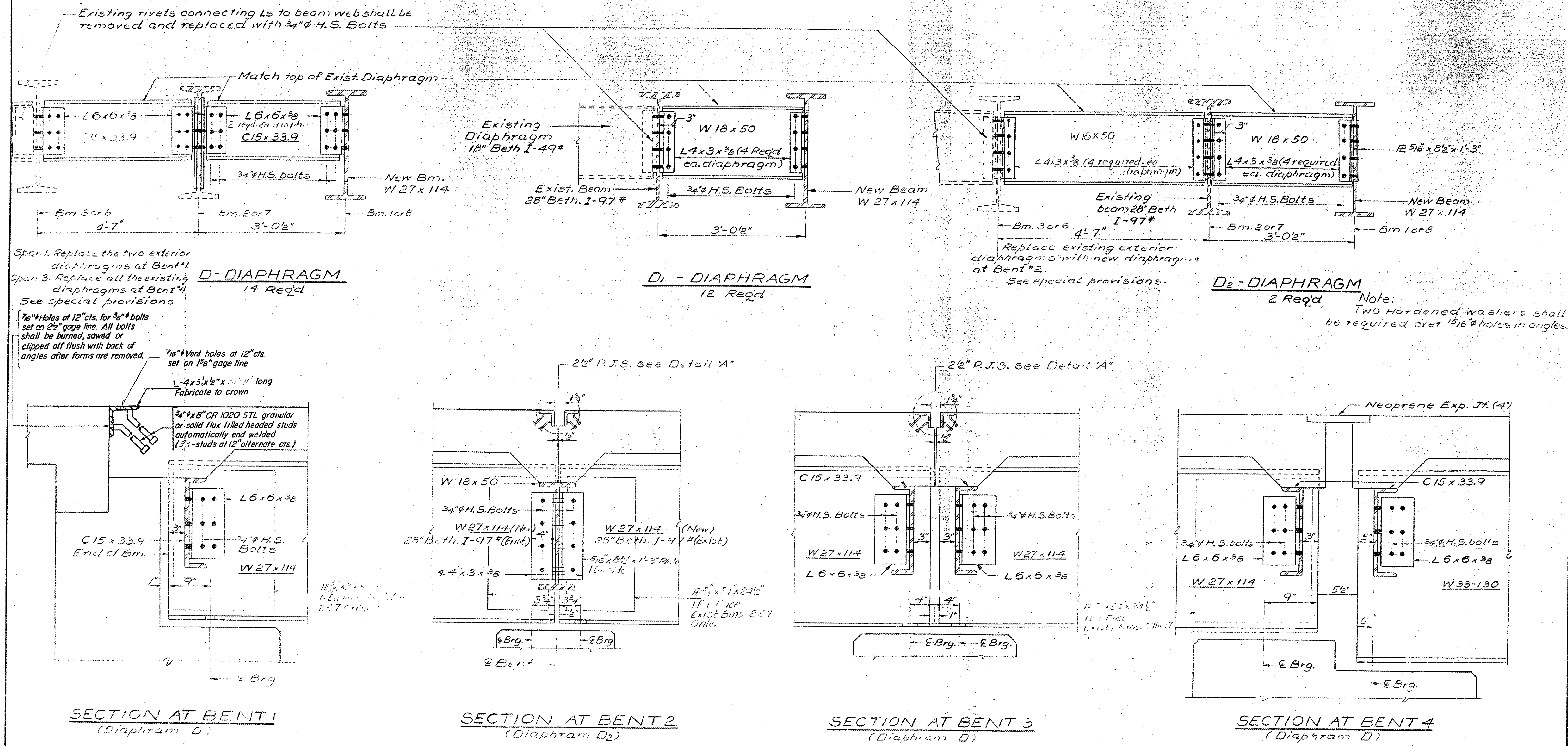
STRUCTURAL STEEL
SPANS 4 & 5
F.A. RTE. 857 - SECTION 101 BR-2
WHITE COUNTY
STA. 266 + 25.75

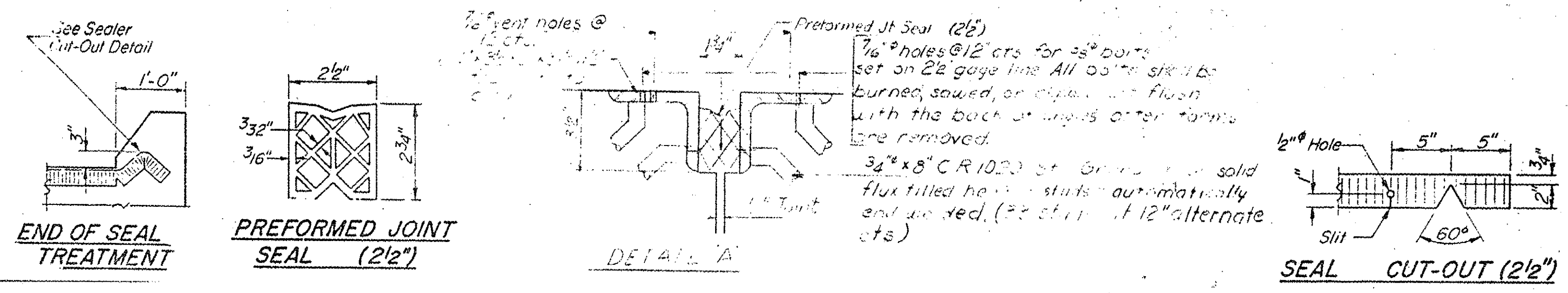
BRIDGE NO. 4

DESIGNED	[signature]
CHECKED	[signature]
DRAWN	V.H.
CHECKED	[signature]

JAN. 13, 1981
EXAMINED [signature] ENGINEER OF BRIDGE AND TRAFFIC STRUCTURES
PASSED ENGINEER OF DESIGN
APPROVED DIRECTOR OF HIGHWAYS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION


Existing rivets connecting Ls to beam web shall be removed and replaced with 3/4"φ H.S. Bolts
Match top of Exist. Diaphragm
L6x6x3/8
C15x33.9
3/4"φ H.S. bolts
New Bm. W 27x114
Bm 3 or 6
4'-7"
Bm. 2 or 7
3'-0½"
Bm. 1 or 8
Span 1. Replace the two exterior diaphragms at Bent #1
Span 3. Replace all the existing diaphragms at Bent #4
See special provisions
D- DIAPHRAGM
14 Req'd
Existing Diaphragm 18" Beth I-49#
W 18x50
L4x3x3/8 (4 Req'd ea. diaphragm)
Exist. Beam 28" Beth. I-97#
3/4"φ H.S. Bolts
New Beam W 27x114
3'-0½"
D1 - DIAPHRAGM
12 Req'd
W16x50
L4x3x3/8 (4 required ea. diaphragm)
Existing beam 28" Beth I-97#
W 18x50
L4x3x3/8 (4 required ea. diaphragm)
3/4"φ H.S. Bolts
PL 5/16 x 8½" x 1'-3"
New Beam W 27x114
Bm. 3 or 6
4'-7"
Bm. 2 or 7
3'-0½"
Bm 1 or 8
Replace existing exterior diaphragms with new diaphragms at Bent #2.
See special provisions.
D2 - DIAPHRAGM
2 Req'd
Note: Two Hardened washers shall be required over 15/16"φ holes in angles.
7/16"φ Holes at 12" cts. for 3/8"φ bolts set on 2½" gage line. All bolts shall be burned, sawed or clipped off flush with back of angles after forms are removed.
7/16"φ Vent holes at 12" cts. set on 1 5/8" gage line
Fabricate to crown
3/4"φ x 8" CR 1020 STL granular or solid flux filled headed studs automatically end welded
L6x6x3/8
C15x33.9 End of Bm.
3/4"φ H.S. Bolts
W 27x114
2½" P.J.S. see Detail "A"
W 18x50
3/4"φ H.S. Bolts
W27x114 (New)
28" Beth. I-97# (Exist.)
W 27x114 (New)
28" Beth. I-97# (Exist)
L4x3x3/8
℄ Brg.
℄ Bent
C15x33.9
3/4"φ H.S. Bolts
W 27x114
L6x6x3/8
℄ Brg.
Neoprene Exp. Jt. (4")
C15x33.9
3/4"φ H.S. bolts
L6x6x3/8
W 27x114
W 33-130
℄ Brg.
SECTION AT BENT 1
(Diaphram D)
SECTION AT BENT 2
(Diaphram D2)
SECTION AT BENT 3
(Diaphram D)
SECTION AT BENT 4
(Diaphram D)



DESIGNED	
CHECKED	
DRAWN	V.H.
CHECKED	

JAN. 13 1931
EXAMINED — ENGINEER OF BRIDGE AND TRAFFIC STRUCTURES
PASSED — ENGINEER OF DESIGN
APPROVED — DIRECTOR OF HIGHWAYS

DIAPHRAGM DETAILS

F.A. RTE. 857-SECTION 101 BR-2

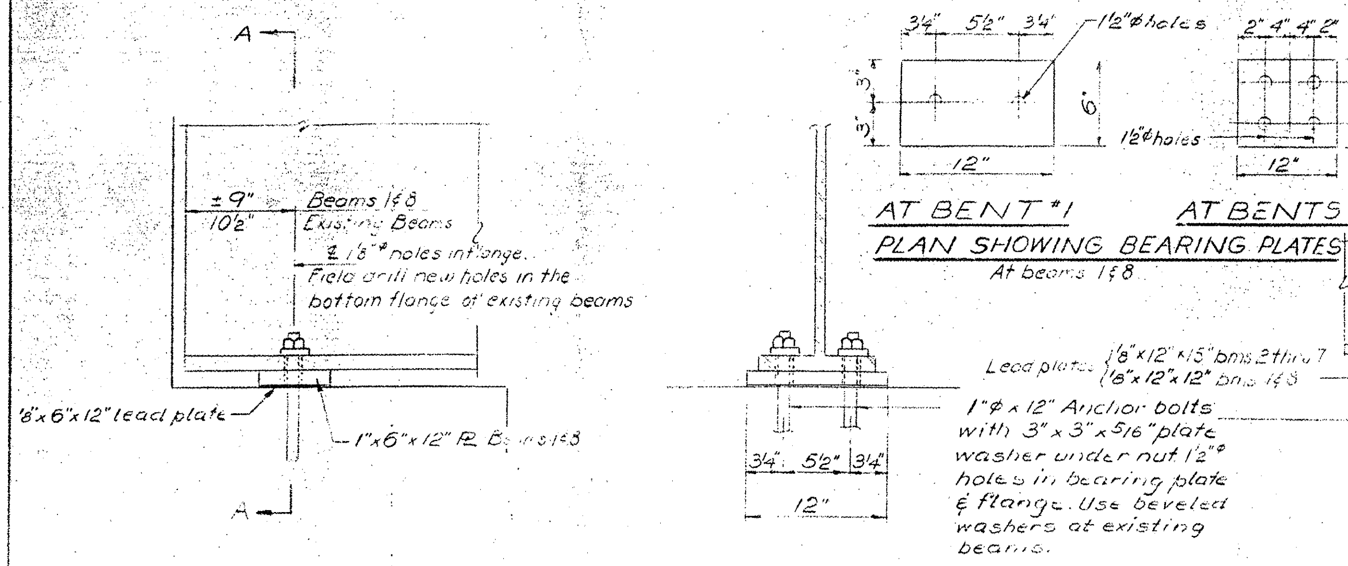
WHITE COUNTY

STA. 268 +25.75

BRIDGE NO. 4

VARIOUS ROUTES
D9 BRIDGE PAINTING FY 09-1
VARIOUS COUNTIES
CONTRACT 78093
FOR INFORMATION ONLY

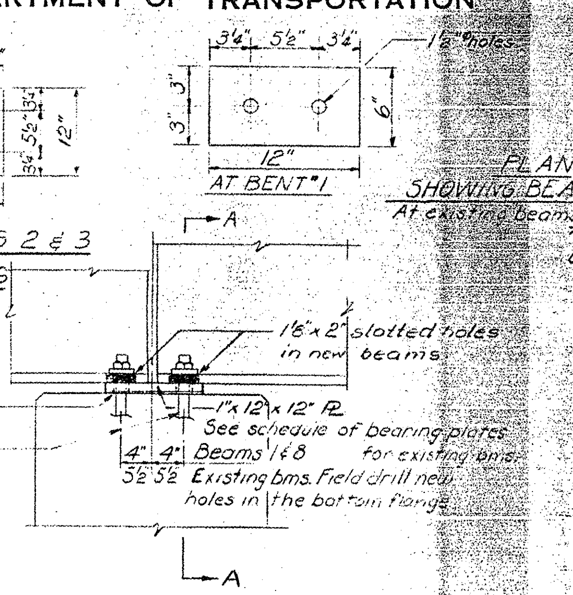
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



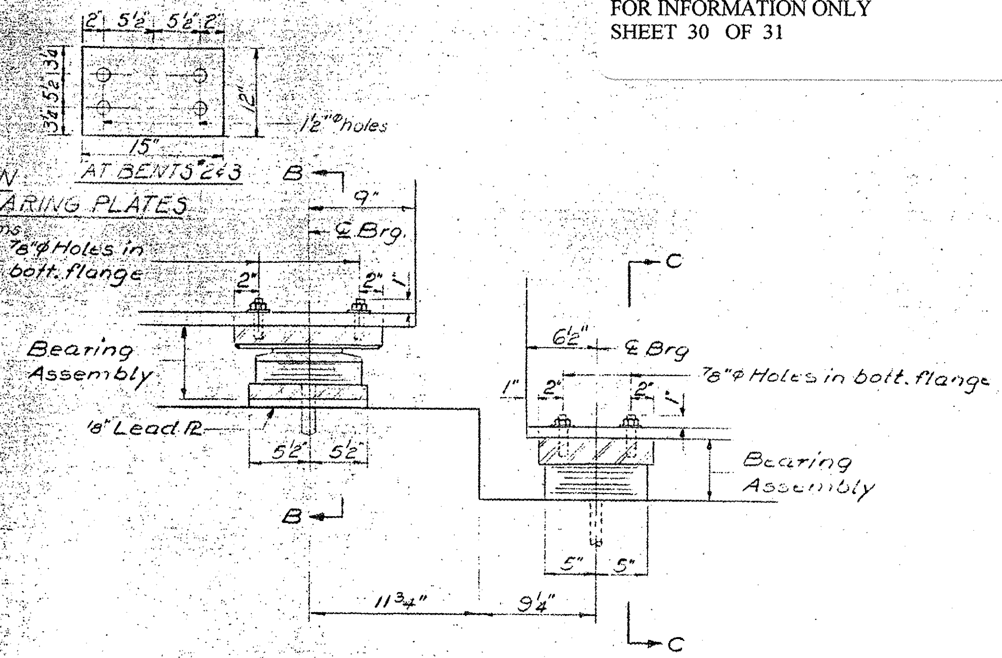
SECTION A-A

BENT #1

See schedule for location & size of new bearing plates under existing Beams.



BENTS #2 & #3

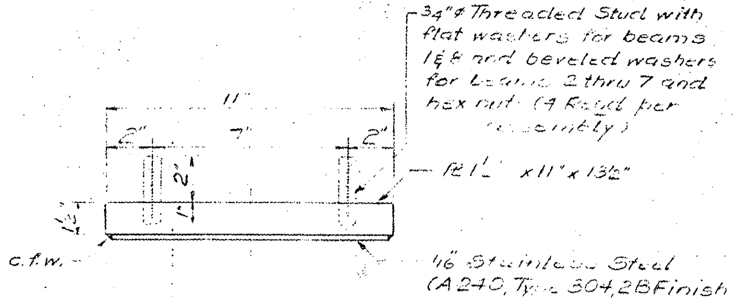


BENT #4
(Looking North)

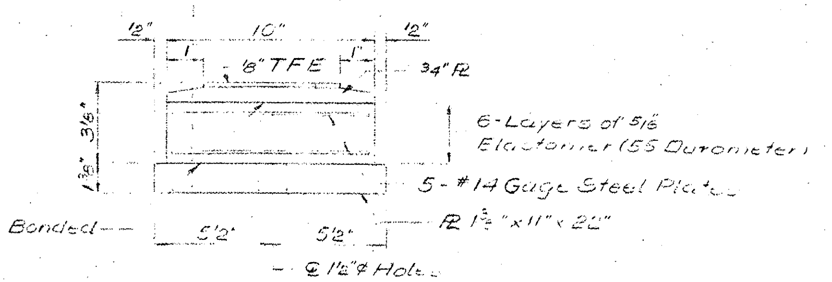
SCHEDULE OF BEARING PLATE REPLACEMENT UNDER EXIST. BEAMS

Location	Bm. 2	Bm. 3	Bm. 4	Bm. 5	Bm. 6	Bm. 7
Bent #1 (N. Abut.)	—	—	PL 2¼x6x12	—	—	PL ¾x6x12
Bent #2	—	—	—	PL 2¼x12x15	—	—
Bent #3	—	—	PL 2¼x12x15	PL 2¼x12x15	PL 1¾x12x15	—
** Bent #4	—	—	—	—	—	—

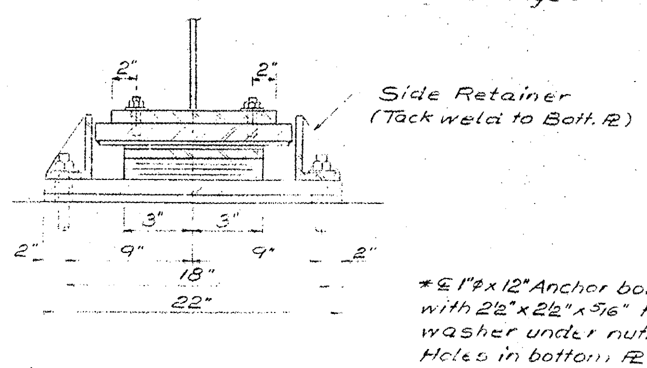
** See special provisions for 'Jack and replace existing bearings'.



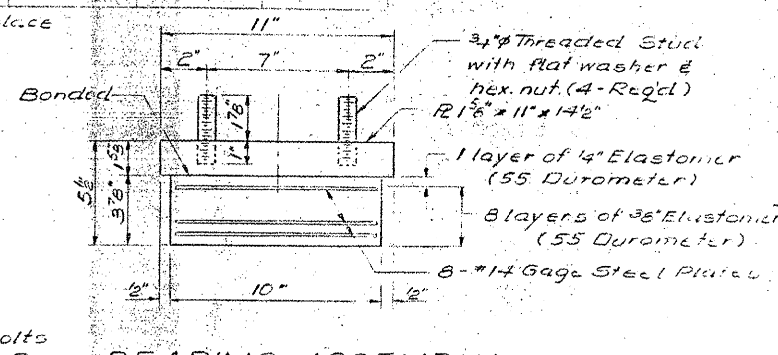
TOP BEARING ASSEMBLY



BOTTOM BEARING ASSEMBLY
(8-Required)

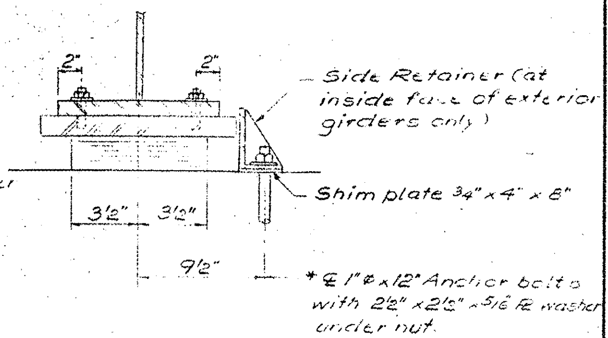


SECTION B-B



BEARING ASSEMBLY
(7-Required)

Note: Shim plates shall not be placed under Type I Bearing Assembly



SECTION C-C

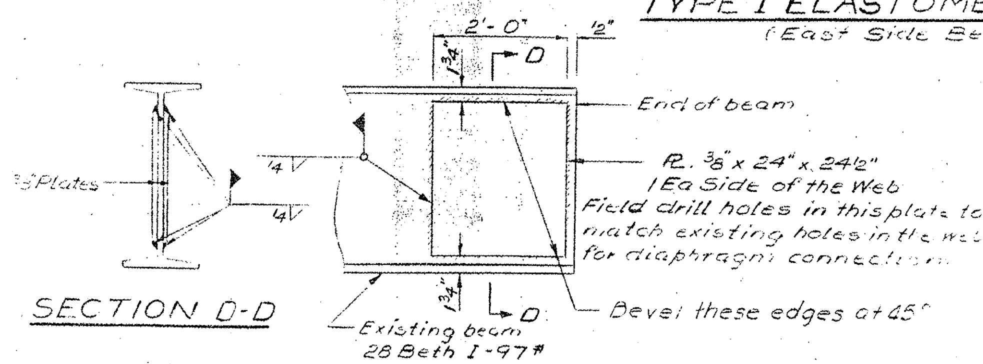
TYPE I ELASTOMERIC EXP BRG
(East Side Bent #4)

TYPE II TFE ELASTOMERIC EXP. BRG.
(WEST SIDE BENT #4)
Note: See sheet #12 for TFE Details

SCHEDULE OF WEB REPAIR

Location	Beams to be repaired
Bent #1 (West Abut.)	Beams 2 and 7 - span 1
Bent #2	Beams 2 and 7 - spans 1 & 2
Bent #3	No web repair anticipated
Bent #4	Beams 2, 3, 4, 5, 6 & 7 Span 3

See special provisions for web repair.



SECTION D-D

WEB REPAIRS OF EXISTING BEAMS
(See special provisions)

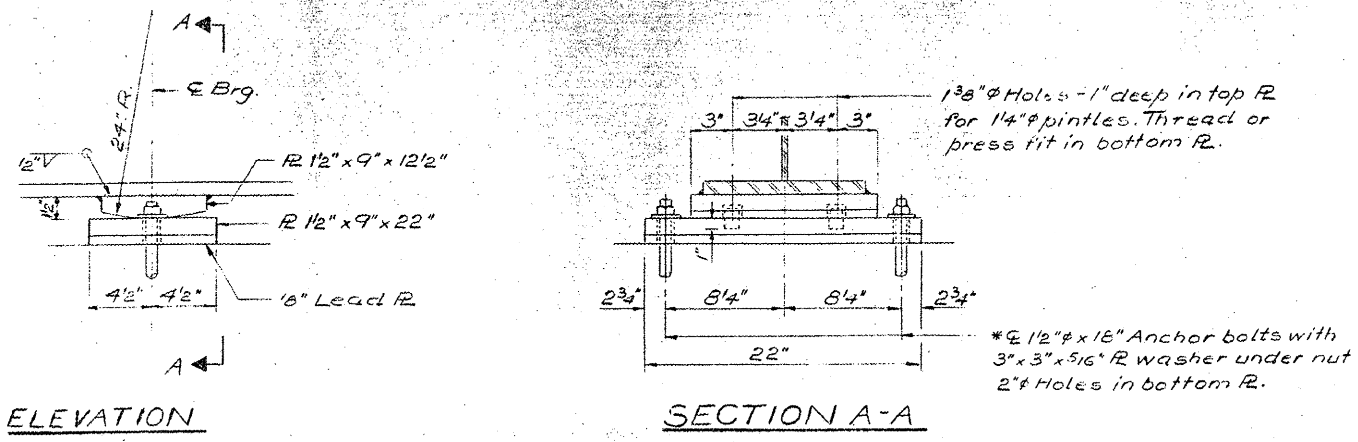
DESIGNED	Steve F. Mays
CHECKED	
DRAWN	VH
CHECKED	

EXAMINED — Jan. 13 1981 — ENGINEER OF BRIDGES AND TRAFFIC STRUCTURES
PASSED — ENGINEER OF DESIGN
APPROVED — DIRECTOR OF HIGHWAYS

BRIDGE NO. 4

BEARINGS
F.A. RTE. 857-SECTION 101 BR-2
WHITE COUNTY
STA. 268 + 25.75

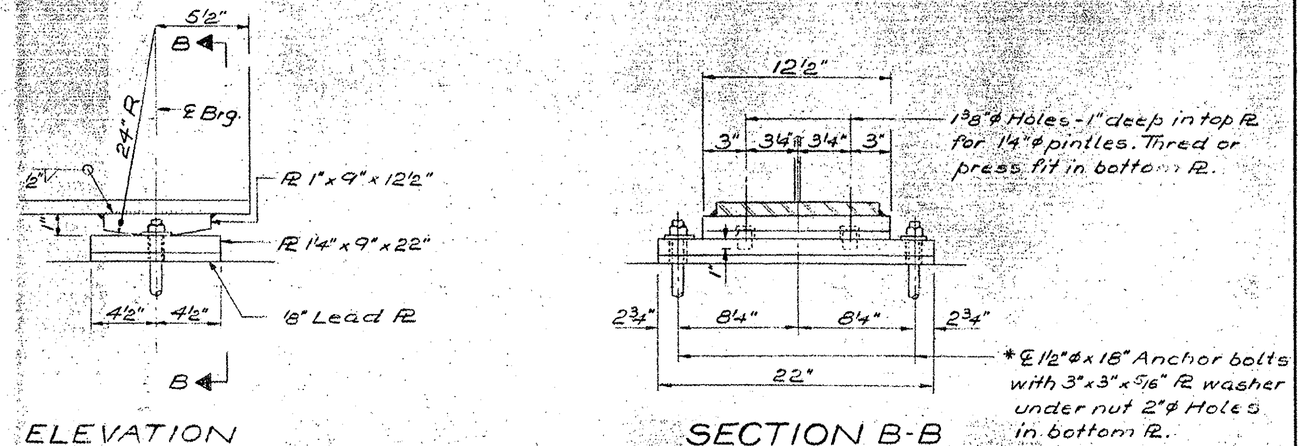
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



ELEVATION

SECTION A-A

FIXED BEARING
Bent #5

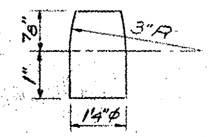


ELEVATION

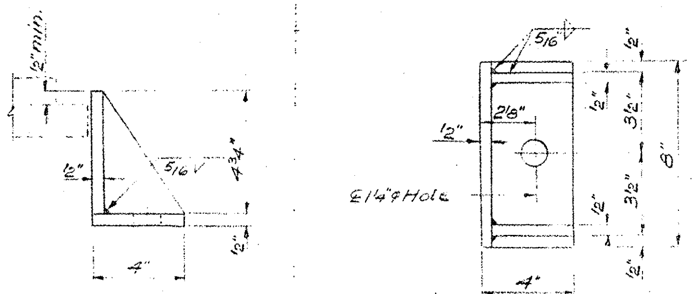
SECTION B-B

FIXED BEARING
East Abut

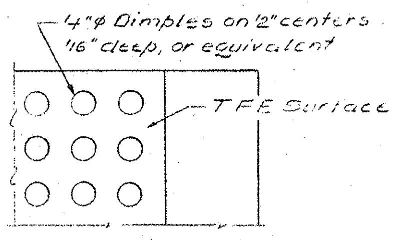
* Note: After girders have been erected holes at expansion bearings shall be drilled and anchor bolts grouted in place. Anchor bolts at fixed bearings may be built into the masonry.



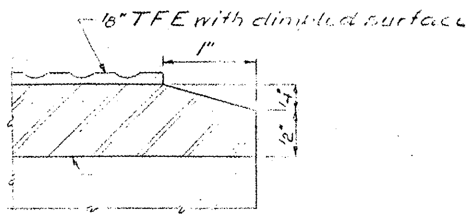
PINTLE



SIDE RETAINER



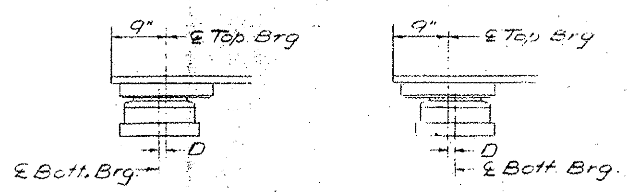
PLAN - TFE SURFACE



SECTION THRU TFE

Note: The 1/8" TFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surface.

Bonding of 1/8" TFE sheet due to vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.



BELOW 50°F
(Move bott. brg. away from fixed brg.)

ABOVE 50°F
(Move bott. brg. toward fixed brg.)

SETTING ANCHOR BOLTS AT EXP. BRG
D - 1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50° F.

DESIGNED	Steve A. Meyer
CHECKED	[illegible]
DRAWN	V.H.
CHECKED	[illegible]

Jan. 13, 1981
EXAMINED: ENGINEER OF BRIDGE AND TRAFFIC STRUCTURES
PASSED: ENGINEER OF DESIGN
APPROVED: DIRECTOR OF HIGHWAYS

BEARING DETAILS
F.A. RTE. 857-SECTION 101 BR-2
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