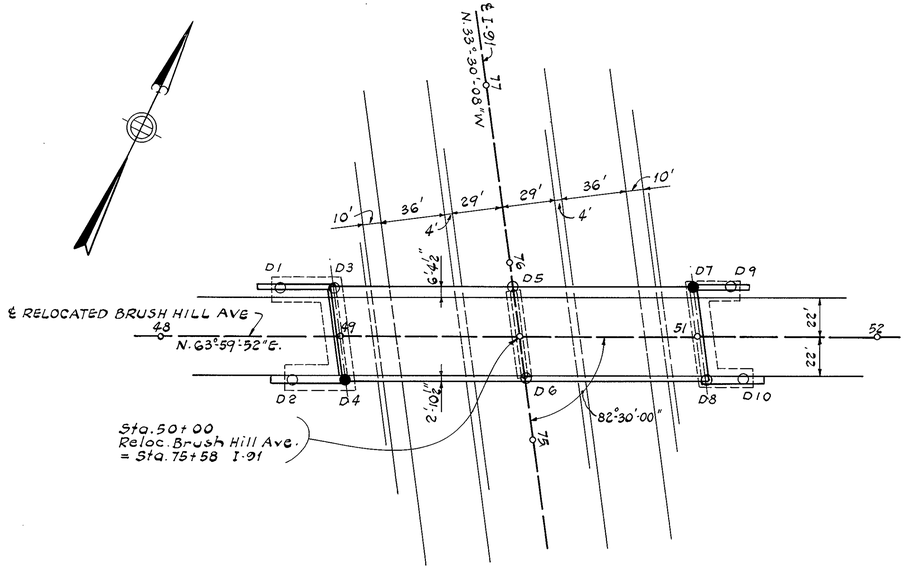
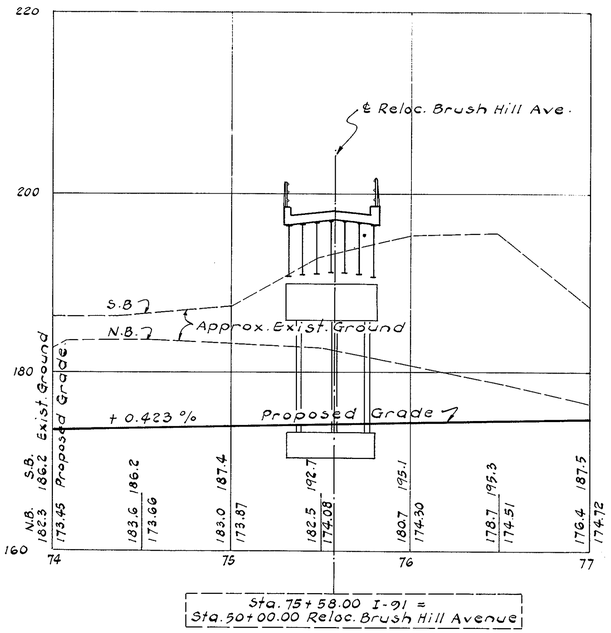


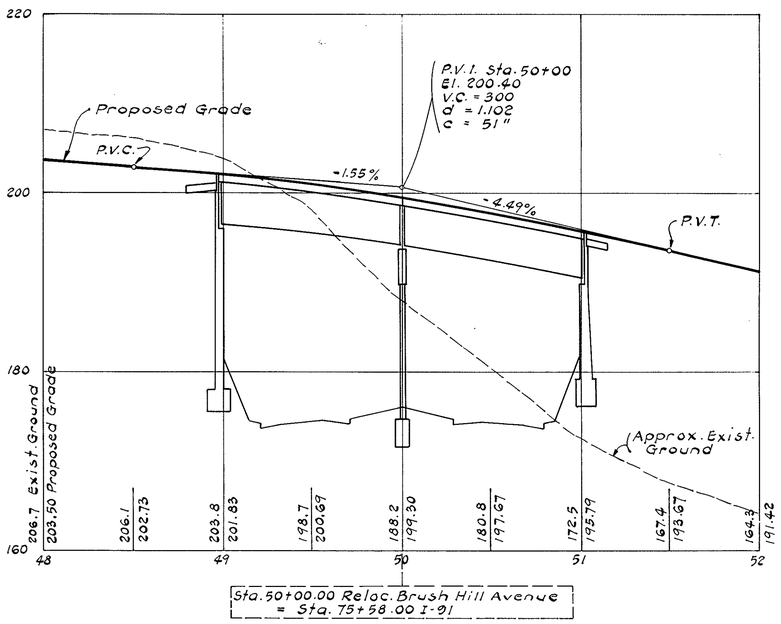
KEY PLAN

Scale: 1" = 40'



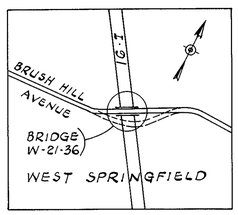
PROFILE OF I-91

Scales: 1"=8' Vert.; 1"=40' Horiz.



PROFILE OF RELOCATED BRUSH HILL AVE.

Scales: 1"=8' Vert.; 1"=40' Horiz.



LOCUS

Scale: 1"=800'

BARSTOW & MULLIGAN
CONSULTING ENGINEERS
566 ATLANTIC AVE.
BOSTON, MASS.

PUB. RD. DIV. NO.	STATE	FED.AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS	I-91-1(64)9	1967	7?	393

GENERAL NOTES:

DESIGN:
In accordance with the current specifications of the American Association of Highway Officials (1961 Edition) H20-44 Loading.

DATE AND SEAL:
To be placed on the inside face of the Northeast and Southwest End Posts. A sheet showing the size and character of the numerals will be furnished. The seal will be furnished by the State and shall be set by the Contractor.

FOUNDATIONS:
May be altered, if necessary, to suit conditions encountered during construction.

UNSUITABLE MATERIAL
Shall be removed within the limits of the foundations of the structure.

BRIDGE RAILINGS:
See Department Standard Metal Railing Plans, dated Oct. 1966 for Details of Bridge Railings.

REINFORCEMENT:
All bars shall have deformations conforming to A.S.T.M. designation A-305. Unless otherwise noted on the Plans, Reinforcing Bars shall be lapped 20 diameters to make a splice except that Main Reinforcing Bars near the top of the slabs and beams having more than 12 inches of concrete under the bars shall be lapped 35 diameters to make a splice.

ANCHOR BOLTS:
Shall be set by template and placed before concrete is poured, except at the Abutments where drilling and grouting may be used at the Contractor's option.

SCALE:
Scales noted on Plans are not applicable to reduced size Prints. Divide Scales by 2 for ½ size Prints.

FIELD BOOK:

BENCH MARK: MEAN SEA LEVEL DATUM OF 1929 (U.S.C. & G.S.).
B.M.#7 - Nut on side of High Tension Tower #5104.
N.E. Leg (Nut with Ground Wire) Brush Hill Ave. El. 195.49

ESTIMATED QUANTITIES
(Not Guaranteed)

Class B Rock Excavation	10 C.Y.
Bridge Excavation	1,900 C.Y.
Gravel Borrow	1,490 C.Y.
Gravel Borrow for Bridge Foundation	475 C.Y.
Crushed Stone for Bridge Foundation	90 C.Y.
Class I Bituminous Concrete Pavement Type I-1	74 Tons
Class I Dense Protective Bottom Course for Bridges	74 Tons
Metal Bridge Railing (3-Rail) Option	531 L.F.
8 Inch Subdrain Option	125 L.F.
Bridge Structure (No. W-21-36)	1 L.S.
Estimated Weight of Reinforcing Steel	172,050 LBS.
Estimated Weight of Structural Steel (A.S.T.M. A36)	362,000 LBS.

These Quantities are part of Item 995.01 Bridge Structure (Bridge No. W-21-36) and are not guaranteed.

	JULY 13, 1967 ⚠ Revision Sheet 8
DESIGNED BY	MARCH 25, 1967 ISSUED FOR CONSTRUCTION
DRAWN BY	
CHECKED BY	
APPROVED FOR	
DESIGN	
SPECS.	

THE COMMONWEALTH OF MASSACHUSETTS
PROPOSED BRIDGE

WEST SPRINGFIELD

BRUSH HILL AVENUE RELOCATED OVER INTERSTATE ROUTE 91

SCALES AS NOTED
OFFICE OF
DEPARTMENT OF PUBLIC WORKS
100 NASHUA ST. BOSTON, MASS.

MARCH 1967
BRIDGE ENGINEER — CHIEF ENGINEER

SHEET 1 OF 11 SHEETS BRIDGE NO. W-21-36

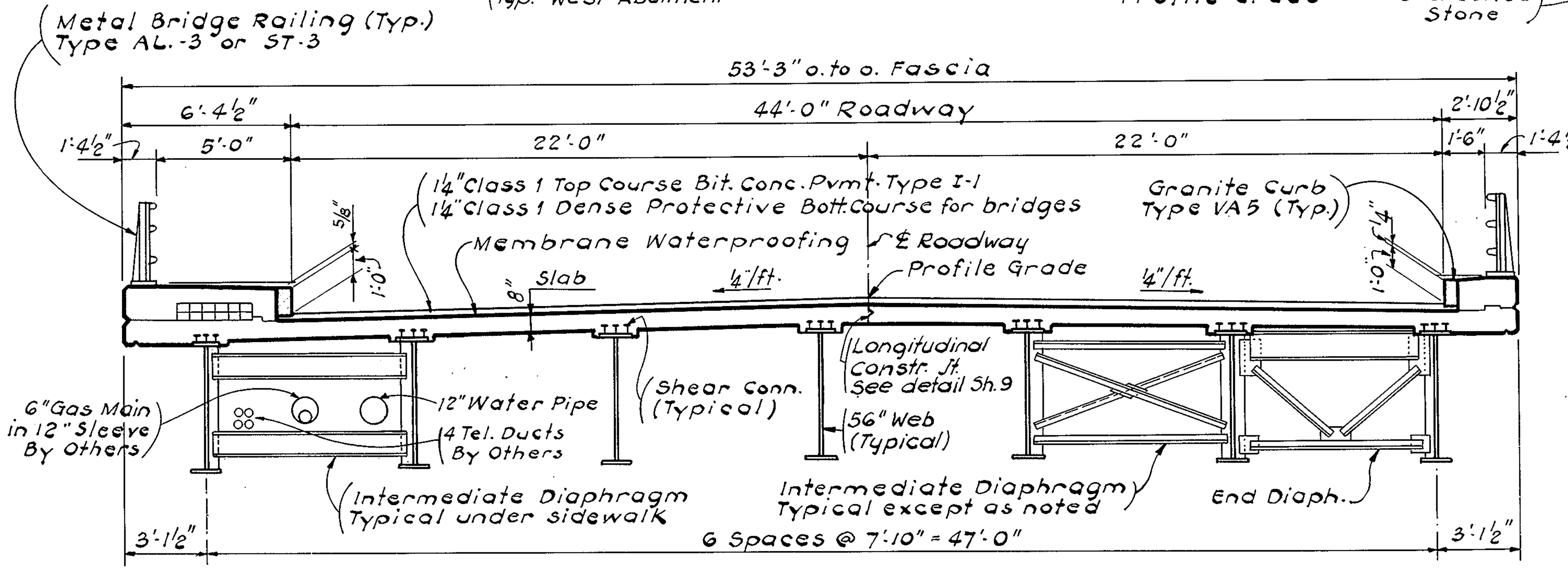
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS	I-91-1(64)9	1967	82	393

276'-2¼"
44'-6"
1'-4⅛"
100'-9"
100'-9"
1'-4⅛"
27'-6"
For Sidewalk Slab see Sh. 7
*Limit of Special Slope paving
* Limit of 2½" Bit. Conc. Walk Surface Typ.
For Sidewalk Details see Sheet No. 5
*Limit of Special Slope paving
8" Subdrain
Approach Slab Removable Panel Detail see Sh. 7
* Granite Curb VA3 Typ. North side
Drain Pipe where shown - Typical Detail see Sh. #9
6" Gas Main by Others
℄ 12" Water Pipe
℄ 4 Tel. Ducts By Others
Profile Gr. Line
Paraffin Joint Typ.
Minimum Vertical Clearance
Location of Date & Seal for Details see Sh. 5
1½" Preformed Jt. Filler between wall and sidewalk slab Typ. North Side
Approach Slab Removable Panel Detail see Sh. #7
Sta. 48+99.25
53'-3" o. to o. Fascia
Profile Grade Line
P.G. Line
℄ BRUSH HILL AVE. RELOCATED
N. 63°-59'-52" E.
Sta. 51+00.75
15'-0" Approach Slab
½" Preformed Jt. Filler between wall and approach slab. Typical South side.
½" Joint
8" C.I. Pipe
8" Subdrain
Sta. 75+58.00 I-91 = Sta. 50+00.00 Brush Hill Ave. Reloc.
½" Joint
½" Joint
15'-0" Approach Slab
Face of Granite Curb
Limit of Subdrain incld. in Bridge Quantities
For Safety Walk Details see Sh. 5
48°-45'
Location of Date & Seal for Details see Sh. 5
℄ Brg. (Exp.) West Abutment
Connect to Rdwy. Subdrain
℄ I-91 = ℄ Pier N. 33°-30'-08" W.
℄ Brg. Fix.
℄ Brg. (Exp.) East Abut.
* Not Bridge Items (See Sheet 3 of 13 Sheets Bridge No. H-21-58 = W-21-39 For Special Slope Paving Construction Details)

PLAN
Scale: 1" = 10'

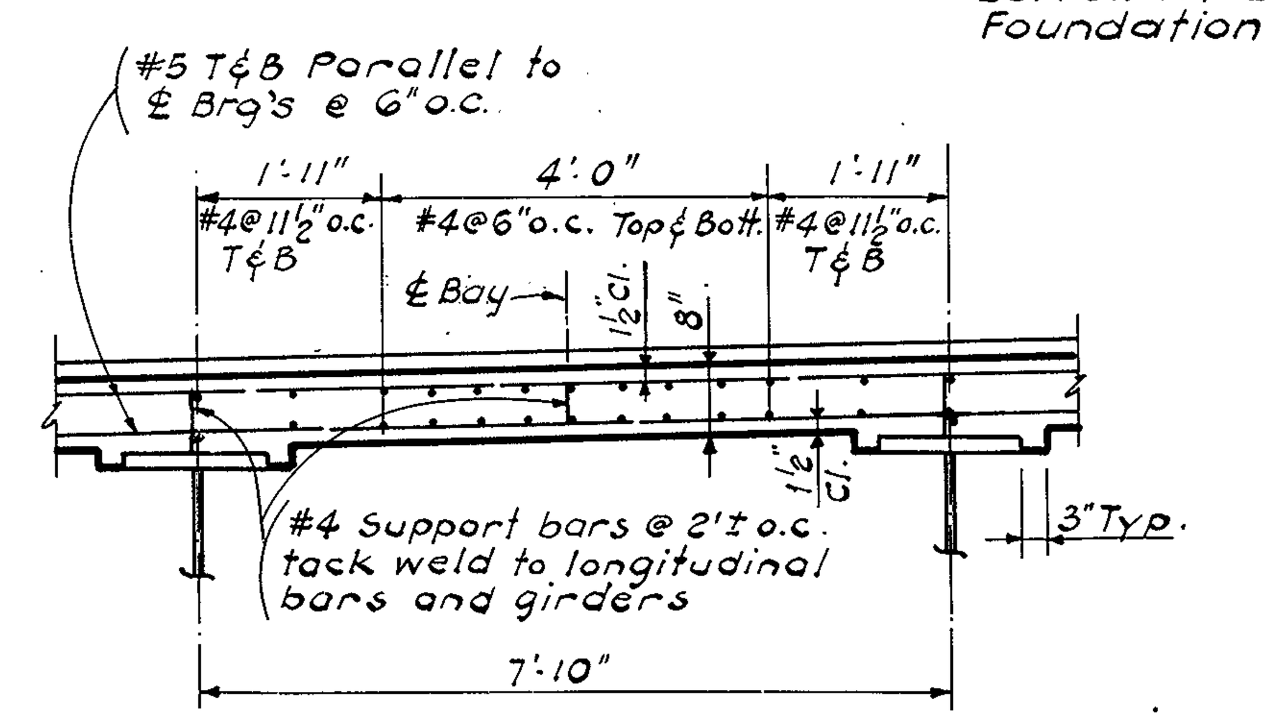
5'-5"
11⅞"
11 Spaces @ 6'-6" = 71'-6"
Spacing for Bridge Railing both sides of bridge. Skew Dimensions 30 Spaces @ 6'-4¾" = 191'-10½"
11⅞"
5'-5"
Spc'g for Paraffin Joints Both Sides of Bridge
17'-2⅛"
19'-6"
12'-9"
12'-9"
19'-2"
20'-9"
17'-7⅛"
19'-3"
12'-9"
12'-9"
19'-3"
20'-6"
Skew Dimensions
Splice
2'-0" Typ.
For End Post Details see Sh. 5
3'-0"
56" Web
56" Web
3'-0" Typ.
For Striation Detail See Sh. 5
16'-6⅜" Min. Vert. Clearance
Gravel Borrow for bridge foundations. Depth to be determined by the Engineer
Constr. Jt.
Square Dimensions
3'-0"
10'-0"
12'-0"
12'-0"
12'-0"
4'-0"
29'-0"
29'-0"
4'-0"
12'-0"
12'-0"
12'-0"
10'-0"
3'-0"
8" Subdrain Typ.
℄ Pier
El. 175.5
El. 176.5
6" Crushed Stone Typ. West Abutment
Profile Grade
6" Crushed Stone
El. 170.5
Profile Grade
Approx. Exist. Ground

ELEVATION
Scale: 1" = 10'



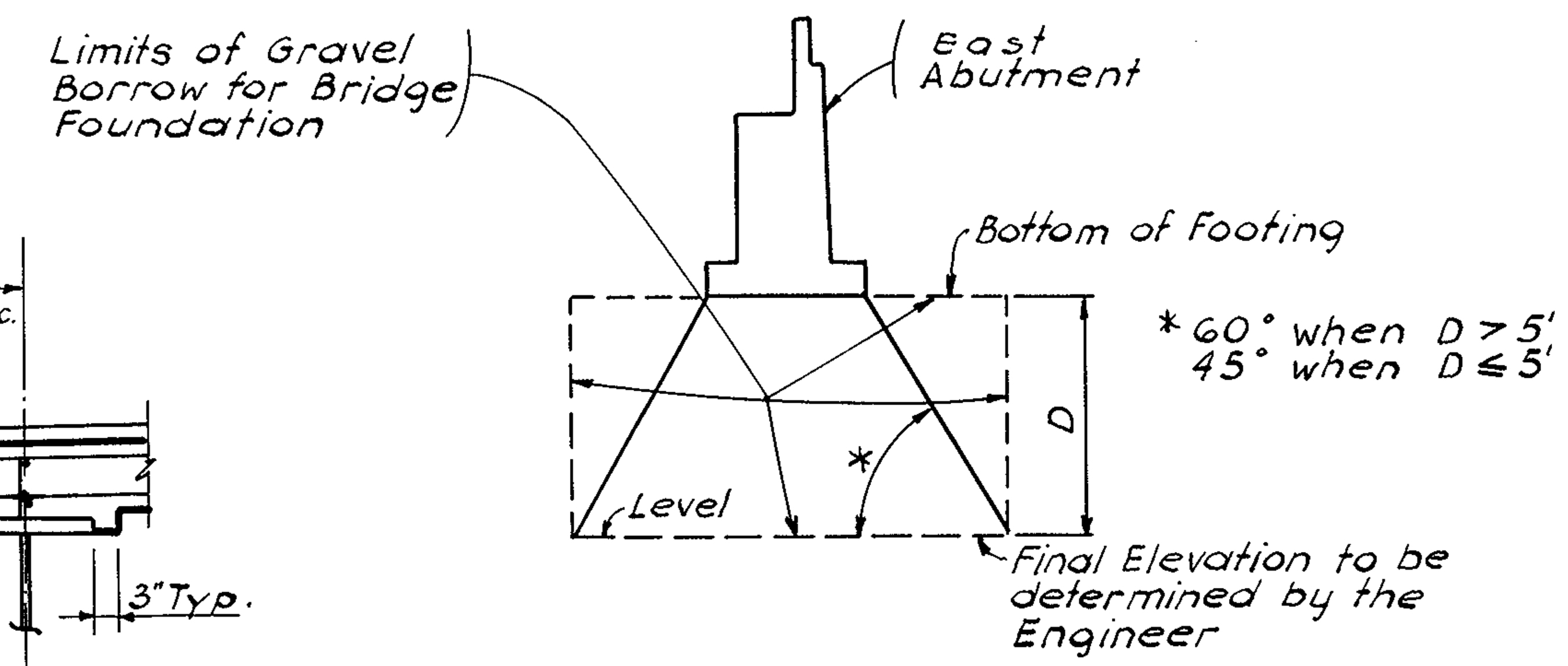
Metal Bridge Railing (Typ.) Type AL.-3 or ST-3
53'-3" o. to o. Fascia
6'-4½"
44'-0" Roadway
2'-10½"
1'-4½"
5'-0"
22'-0"
22'-0"
1'-6"
1'-4½"
1¼" Class 1 Top Course Bit. Conc. Pvmt. Type I-1
1¼" Class 1 Dense Protective Bott. Course for bridges
Granite Curb Type VA5 (Typ.)
Membrane Waterproofing
℄ Roadway
Profile Grade
Slab
¼"/ft.
¼"/ft.
Longitudinal Constr. Jt. See detail Sh. 9
Shear Conn. (Typical)
56" Web (Typical)
6" Gas Main in 12" Sleeve By Others
12" Water Pipe
4 Tel. Ducts By Others
Intermediate Diaphragm Typical under sidewalk
Intermediate Diaphragm Typical except as noted
End Diaph.
3'-1½"
6 Spaces @ 7'-10" = 47'-0"
3'-1½"

TYPICAL CROSS SECTION
Scale: ¼" = 1'-0"



NOTE: An equal device may be substituted for the #4 Bar upon written approval of the Engineer

TYPICAL SLAB REINFORCEMENT
Scale: ½" = 1'-0"



GRAVEL BORROW FOR BRIDGE FOUNDATION
Not to Scale

NOTES: Same Treatment is to be used at Ends. Unsuitable Material to be removed before Gravel Borrow for Bridge Foundation is placed.

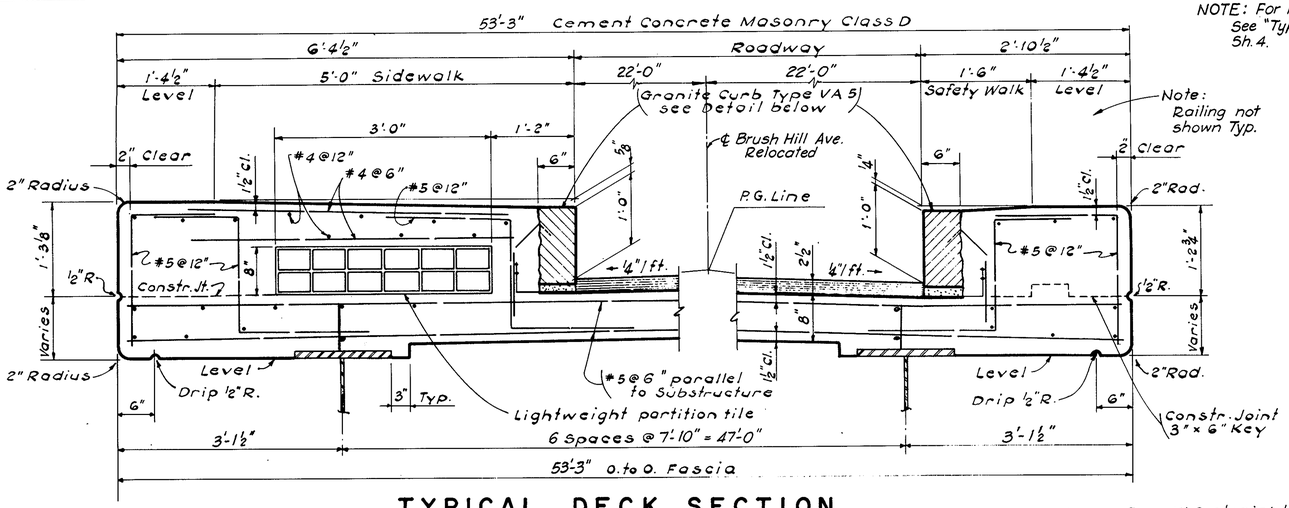
DATE	DESCRIPTION
MARCH 25, 1967	ISSUED FOR CONSTRUCTION

USE ONLY PRINTS OF LATEST DATE

SHEET 4 OF 11 SHEETS BRIDGE NO. W-21-36

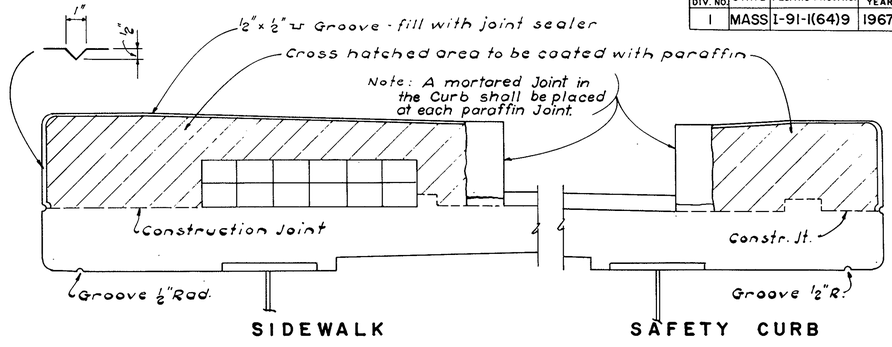
PUB. RD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS	I-91-1(64)9	1967	83	393

NOTE: For missing details of Deck See "Typical Slab Reinforcement" Sh. 4.



TYPICAL DECK SECTION

Scale: 1"=1'-0"

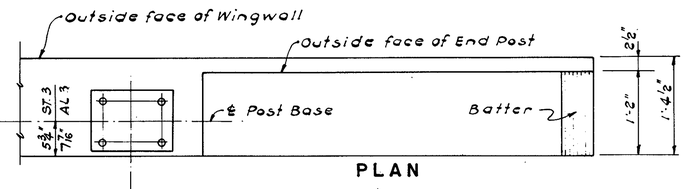


PARAFFIN JOINT DETAIL

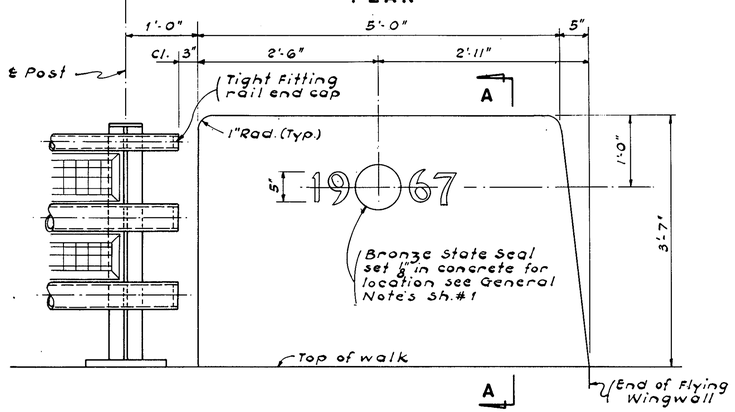
Scale: 1"=1'-0"

Notes

Sidewalk and Safety Curb shall be poured in alternate section and shall have a curing period of not less than 5 days between pours.
For location of joints see Sheet 4
End of bars to be 2" clear of joint.
Do not carry longitudinal bars in sidewalk and safety curb through joints
Joint sealer to be same color as concrete.
Joints shall be square to face of curb.
Joint in curb shall be mortared no sooner than 5 days after concrete in sidewalk has been poured.



PLAN



ELEVATION

END POST DETAIL

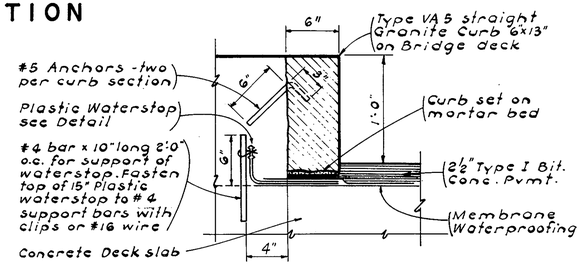
Scale: 1" = 1'-0"

Note:

Bridge Railing Type ST-3 shown; Alternate Type AL-3 may be used.

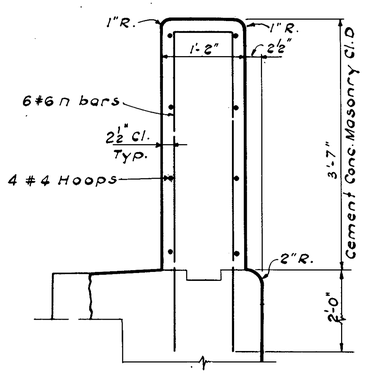
Railing anchor bolts to be set by template and placed before concrete is poured.

For location of Date & Seal see General Notes Sheet #1.



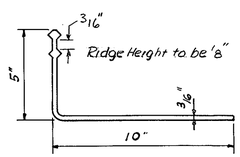
DETAIL AT CURB

Scale: 1½"=1'-0"



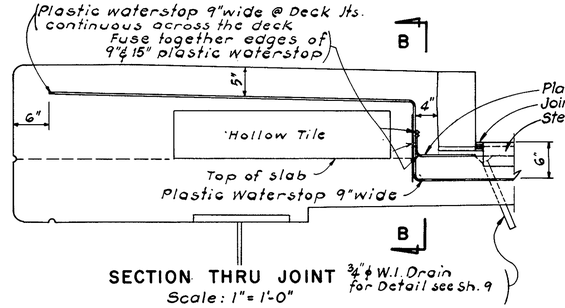
SECTION A-A

Scale: 1"=1'-0"



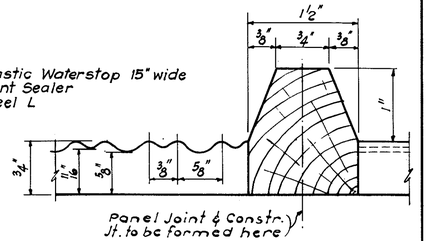
PLASTIC WATERSTOP

Scale: 3"=1'-0"



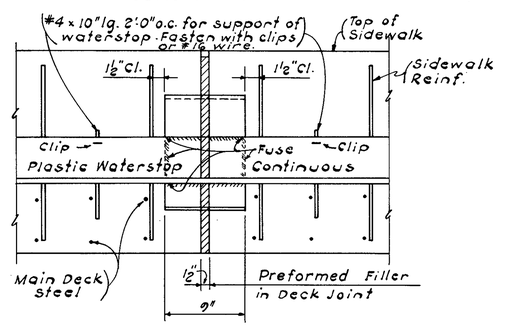
SECTION THRU JOINT ¾" ℄ W.I. Drain for Detail see Sh. 9

Scale: 1"=1'-0"



STRIATION DETAIL

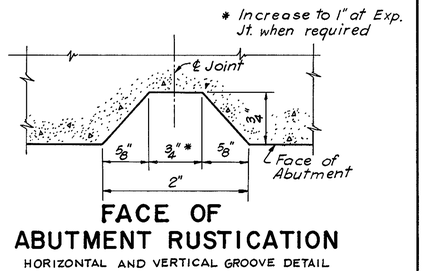
Scale: Full Size



SECTION B-B

CURB DETAIL AT DECK JOINT

Scale: 1½"=1'-0"

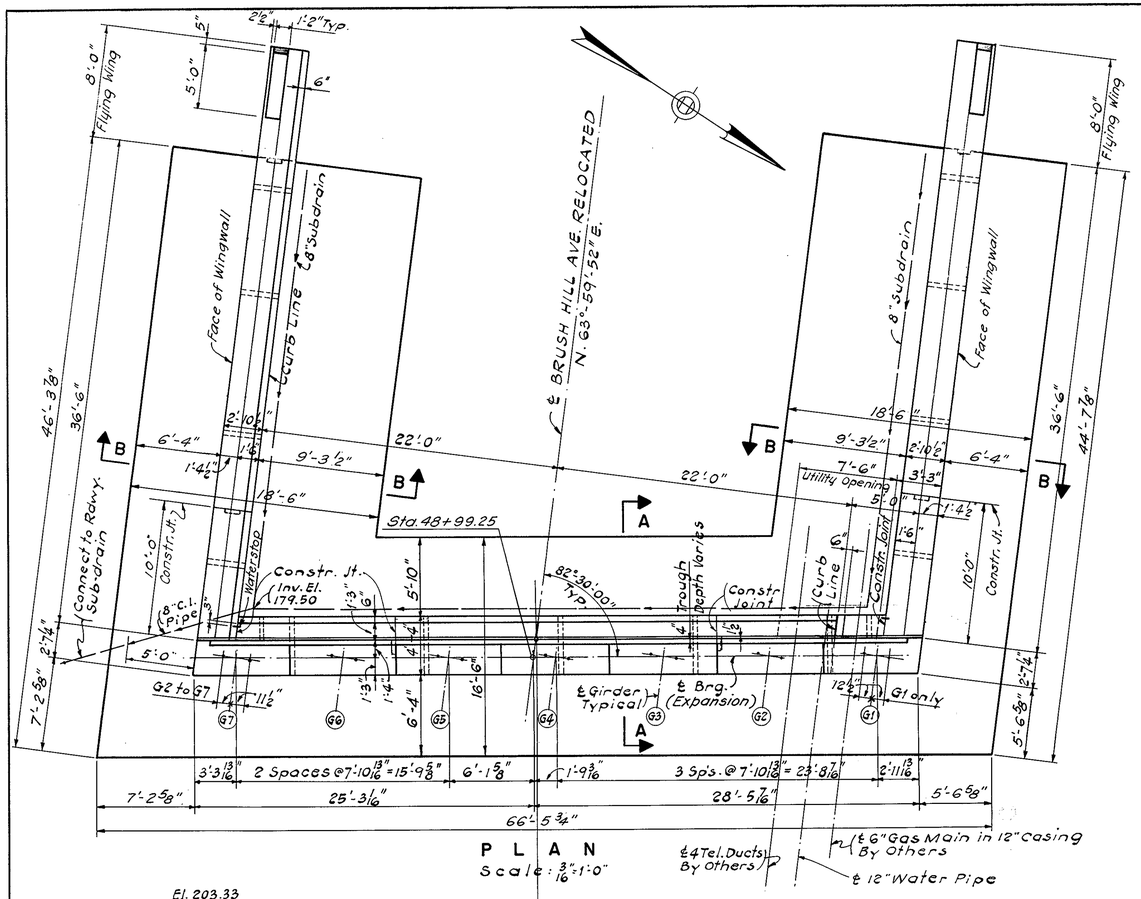


FACE OF ABUTMENT RUSTICATION

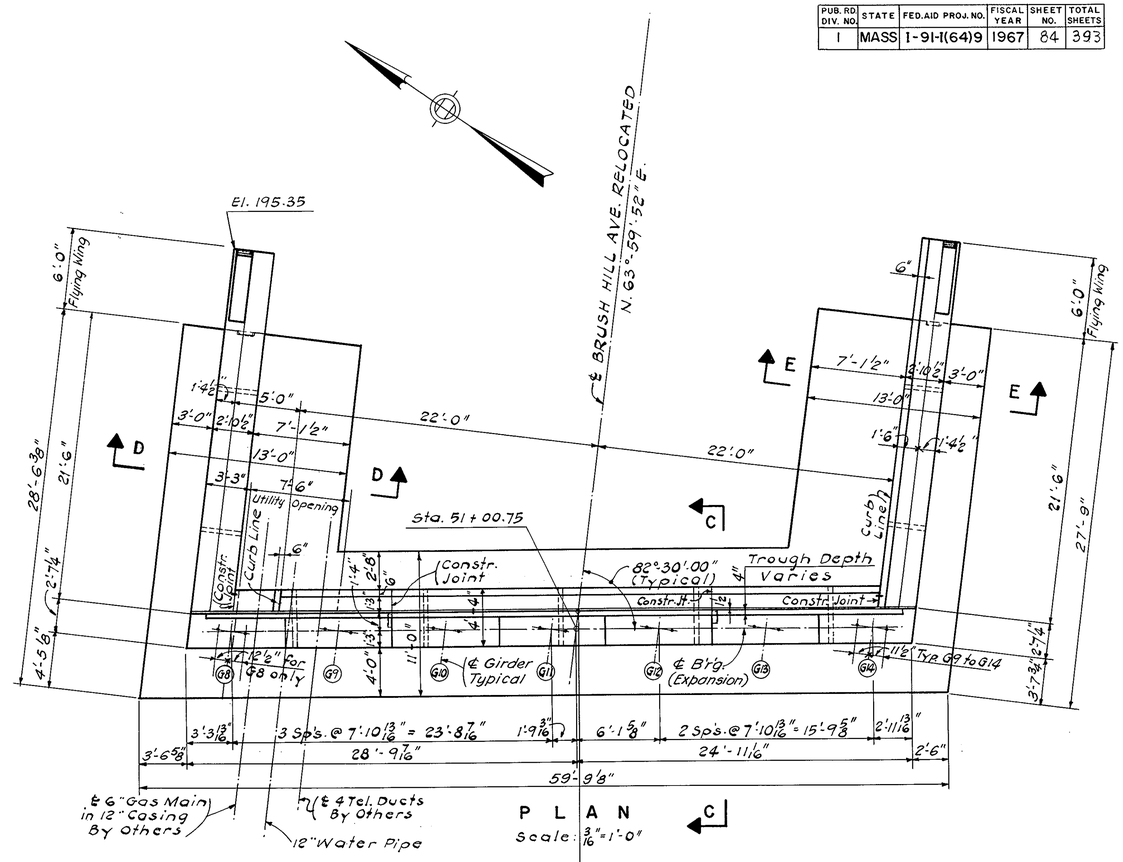
HORIZONTAL AND VERTICAL GROOVE DETAIL

DATE	DESCRIPTION
MARCH 25, 1967	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

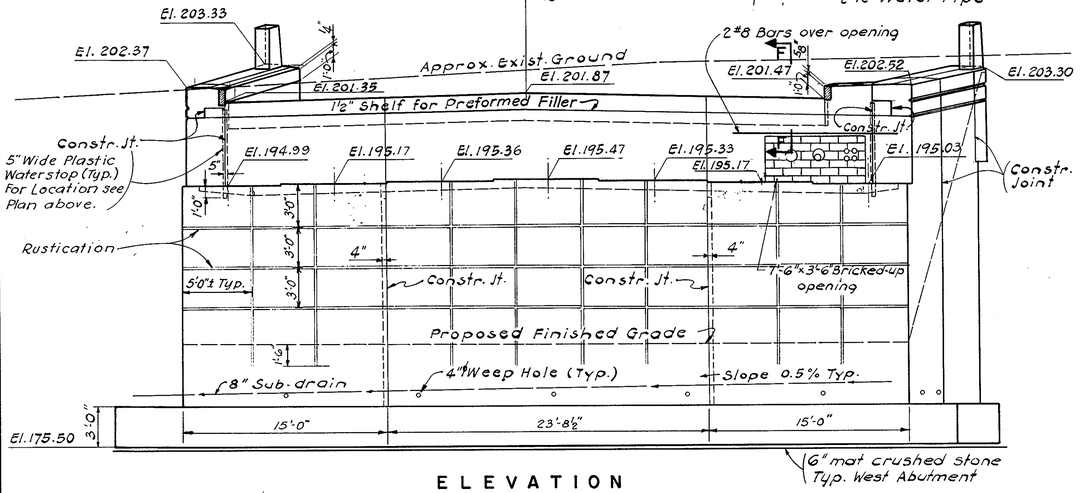
PUB. RD DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS	I-91-1(64)9	1967	84	393



P L A N
Scale : 3/16" = 1'-0"

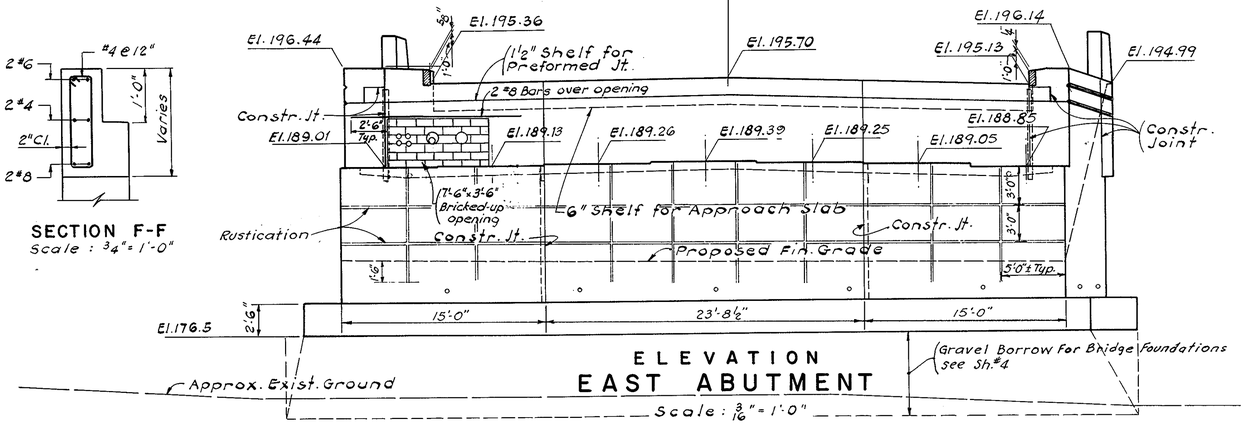


P L A N
Scale : 3/16" = 1'-0"



E L E V A T I O N
WEST ABUTMENT
Scale : 3/16" = 1'-0"

SECTION F-F
Scale : ¾" = 1'-0"

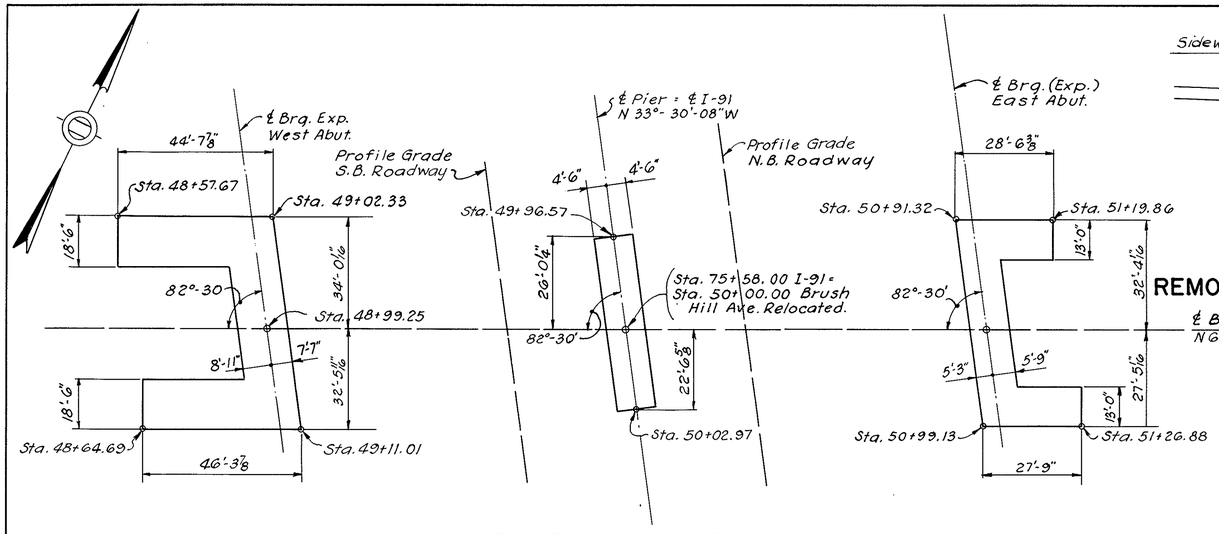


E L E V A T I O N
EAST ABUTMENT
Scale : 3/16" = 1'-0"

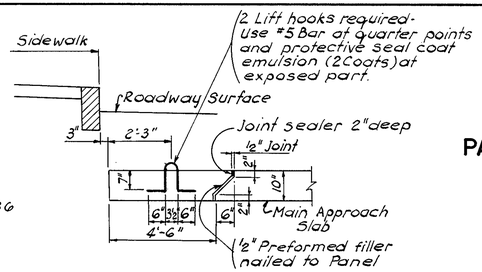
DATE	DESCRIPTION
MARCH 25, 1967	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 6 OF 11 SHEETS BRIDGE NO. W-21-36

PUB. RD DIV. NO.	STATE	FED.AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(64)9	1967	85	393

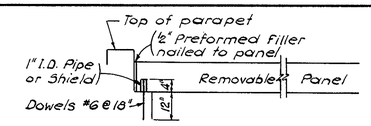


FOOTING LAYOUT PLAN



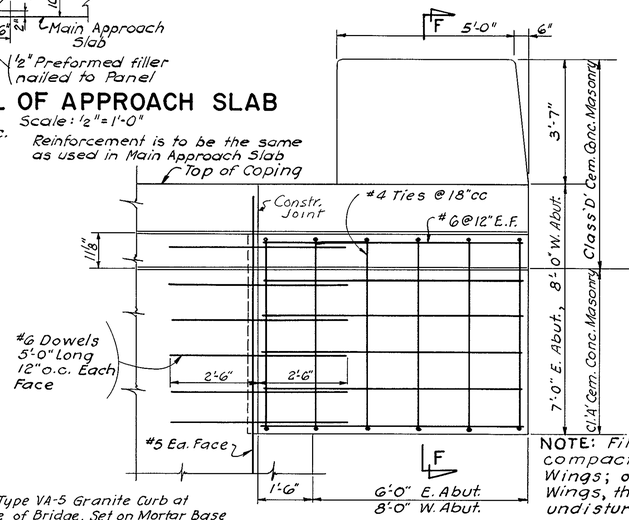
REMOVABLE PANEL OF APPROACH SLAB

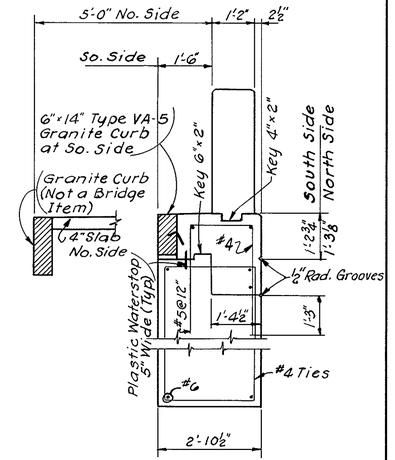
Scale: ½"=1'-0"



PANEL DETAIL AT ABUTMENT

Scale: ½"=1'-0"

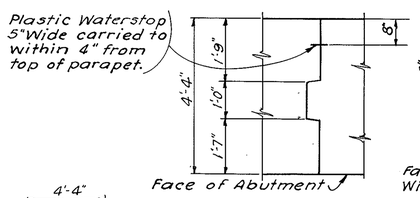




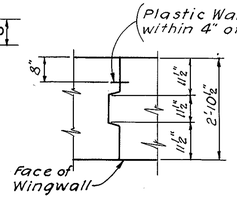
NOTE: Fill shall be placed and thoroughly compacted to the Grade of the Bottom of the Wings; or where no fill is required below the Wings, the Concrete shall be placed upon undisturbed soil.

SECTION F-F

FLYING WING FOR WINGWALLS

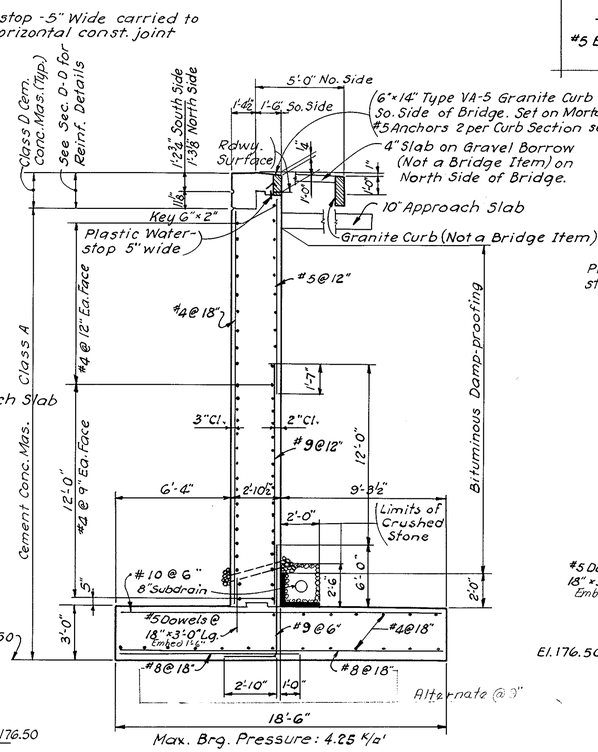


AT ABUTMENTS

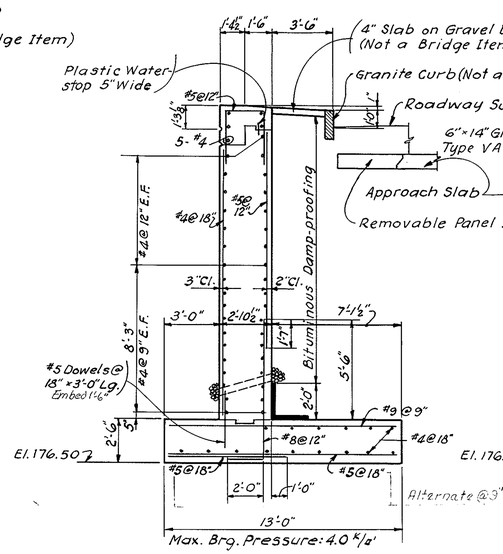


AT WINGWALLS

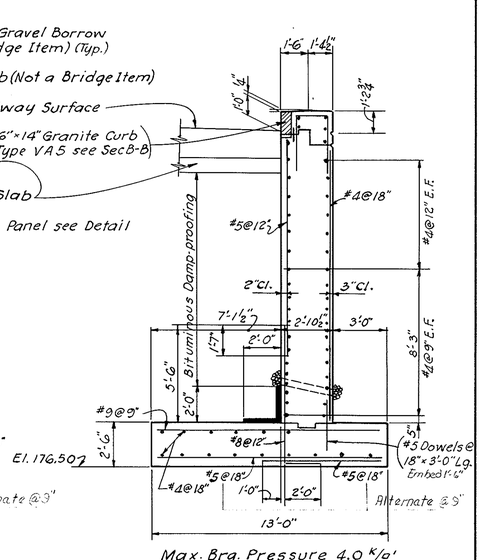
CONSTRUCTION JOINT



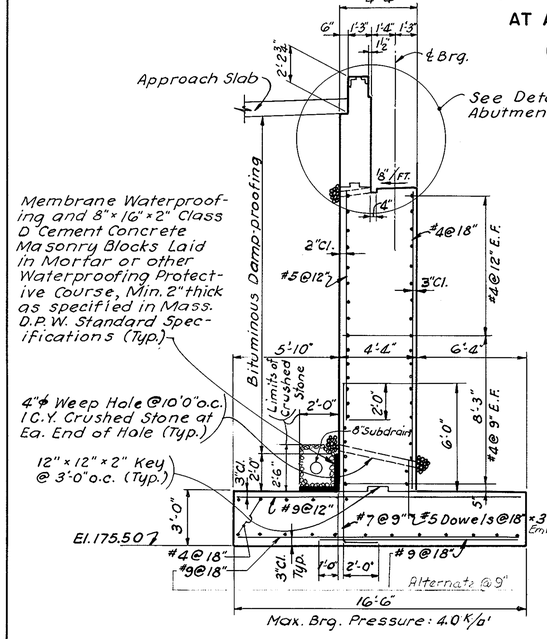
SECTION B-B



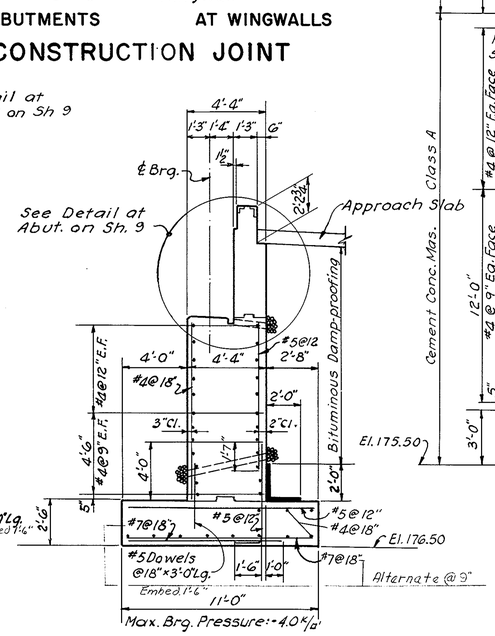
SECTION D-D



SECTION E-E



SECTION A-A

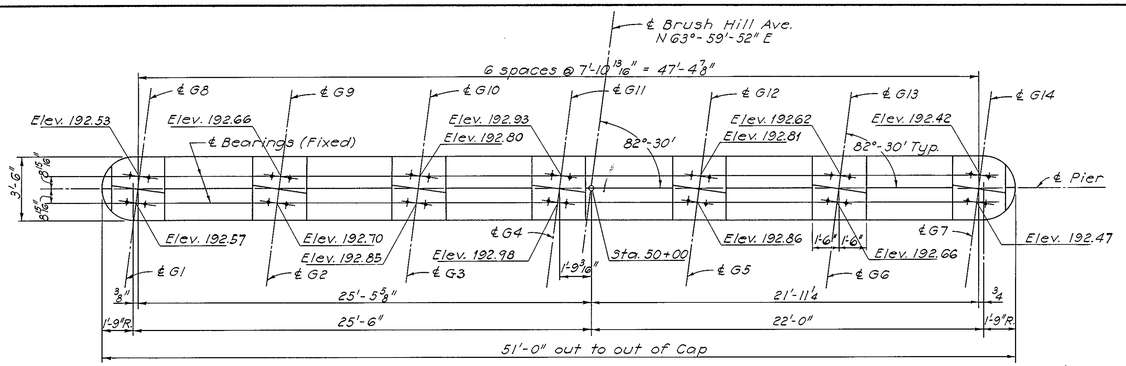


SECTION C-C

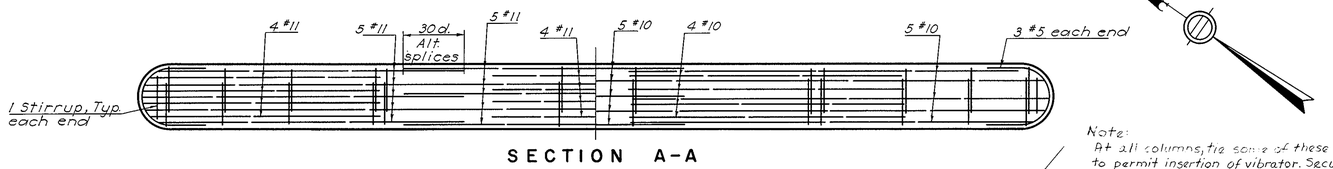
NOTE:
All concrete shall be cement concrete masonry Class A except as otherwise noted

DATE	DESCRIPTION
MARCH 23 1967	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

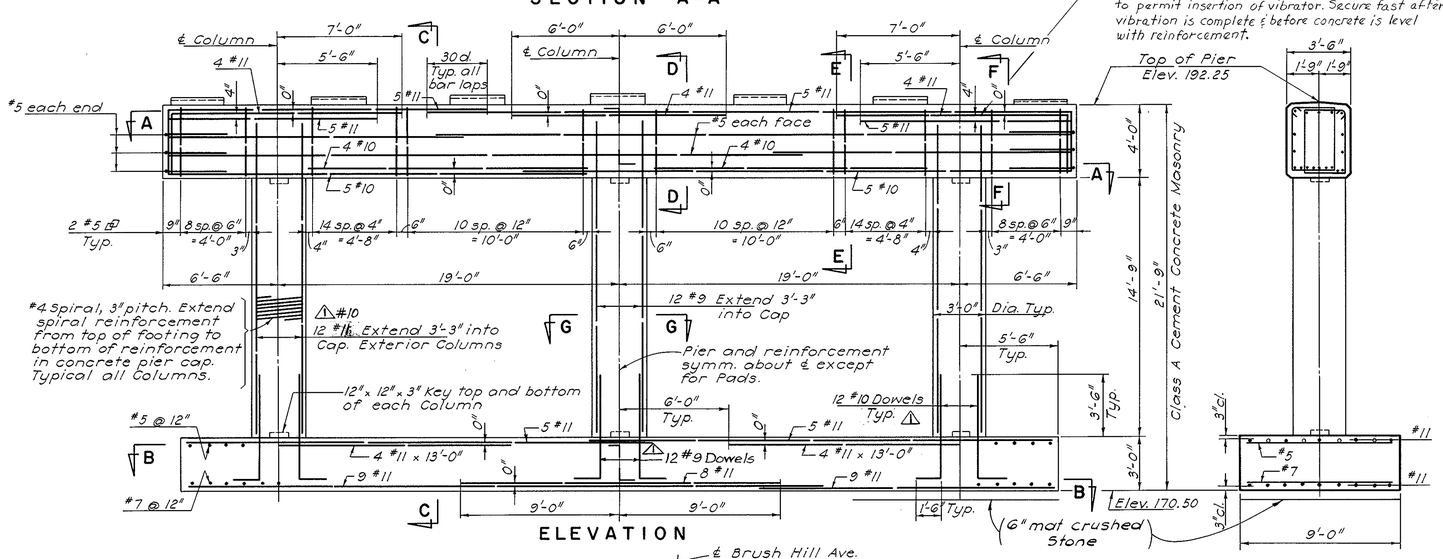
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I	MASS	I-91-1(64)9	1967	86	393



PIER CAP PLAN



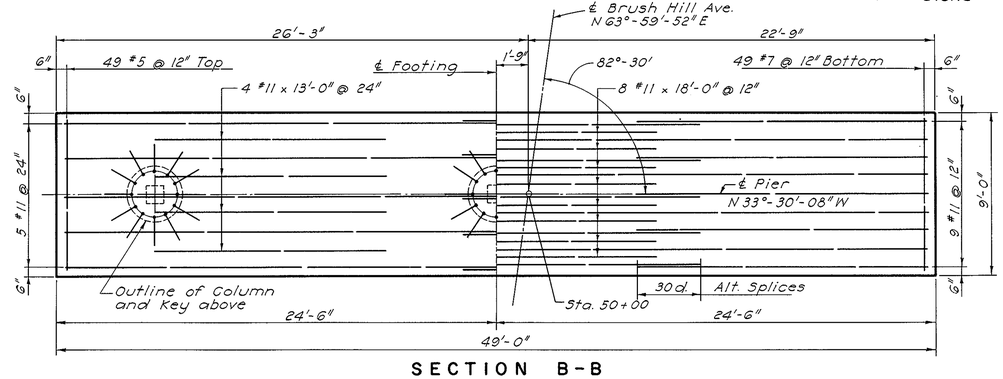
SECTION A-A



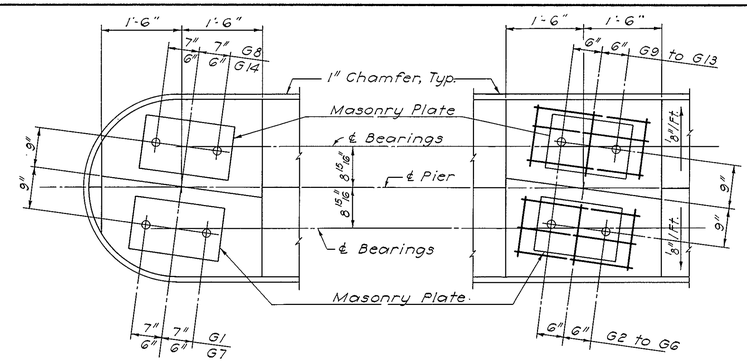
ELEVATION

Note:
At all columns, tie some of these bars loosely to permit insertion of vibrator. Secure fast after vibration is complete & before concrete is level with reinforcement.

SECTION C-C



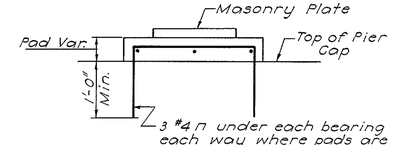
SECTION B-B
Scale: 1/4" = 1'-0"



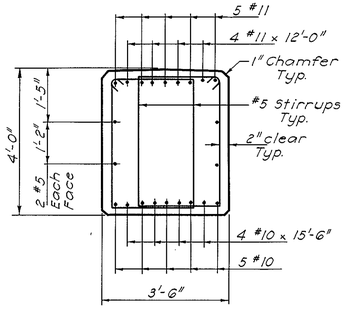
FASCIA GIRDERS

INTERIOR GIRDERS

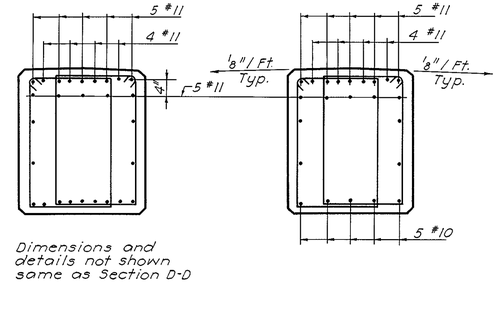
PAD DETAILS
Scale: 3/4" = 1'-0"



PAD ELEVATION



SECTION D-D



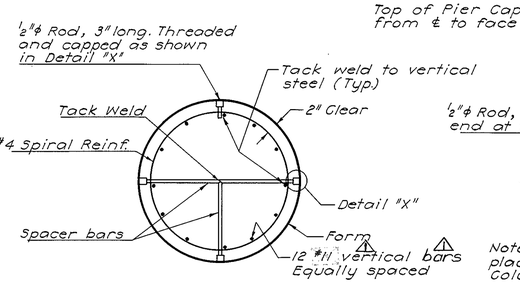
Dimensions and details not shown same as Section D-D

SECTION E-E

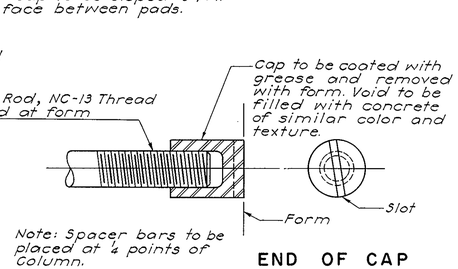
SECTION F-F

Scale: 1/2" = 1'-0"

Top of Pier Cap to be sloped 1/8" / Ft. from ℄ to face between pads.



SECTION G-G
Scale: 3/4" = 1'-0"



Note: Spacer bars to be placed at 1/4 points of Column.

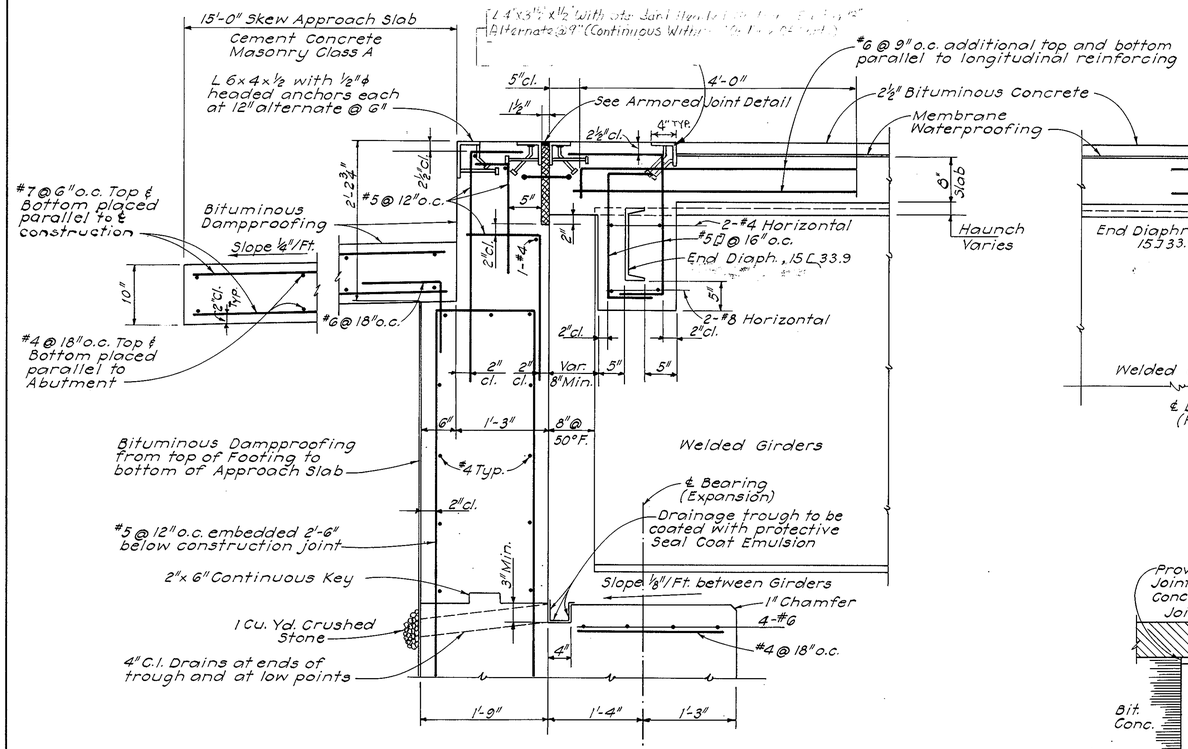
DETAIL X
N.T.S.

END OF CAP

Notes:
For bearing and anchor bolt details see Sheet 10.
Contractor shall place reinforcement to clear all anchor bolts.
All exposed edges of concrete to have a 1" chamfer unless otherwise shown.
All keys to be slightly tapered.
All forms to be stripped as prescribed in the Specifications.
Maximimum Design Bearing Pressure = 4.24 Kips/Sq. Ft.
Tie some of the top bars in the pier cap loosely to permit insertion of vibrator. Fasten securely after vibrating & before conc. is level with reinf.

DATE	DESCRIPTION
JULY 13, 1967	⚠ Reinf. bar changes, lettering added & deleted
MARCH 25, 1967	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

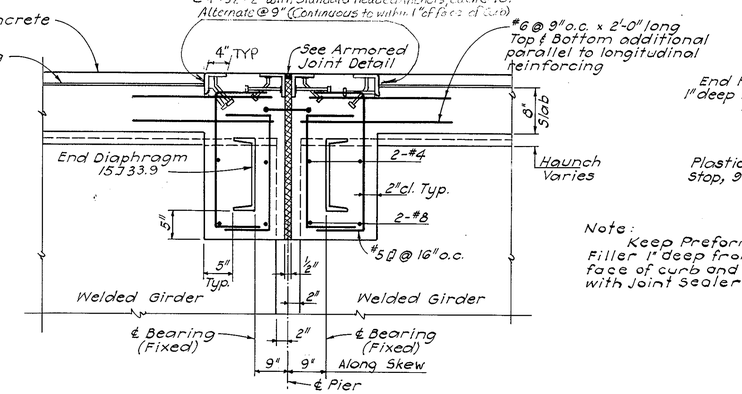
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS	I-91-1(64)9	1967	87	393



DETAIL AT ABUTMENTS

Scale: 1"=1'-0"

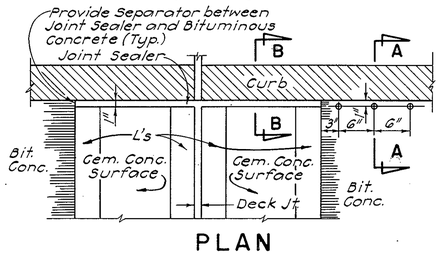
Note: All dimensions shown are square distances except as noted.
For Abutment Details see Sheets 5 and 6.



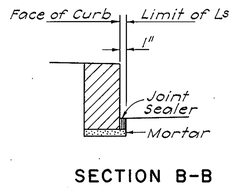
DETAIL AT PIER

Scale: 1"=1'-0"

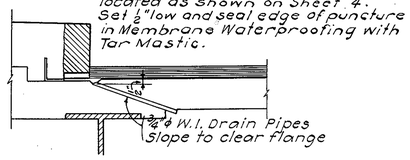
All dimensions shown are square distances, except as noted



PLAN



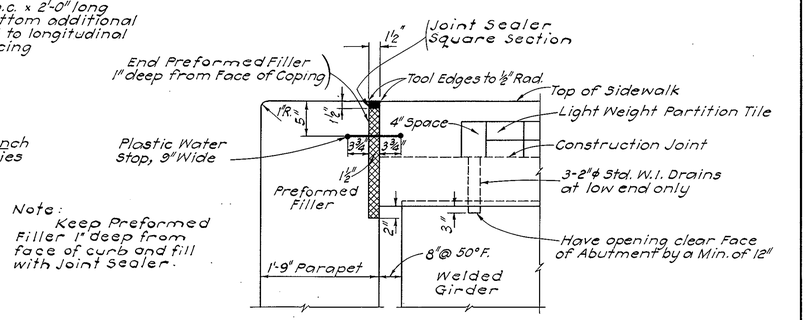
SECTION B-B



SECTION A-A

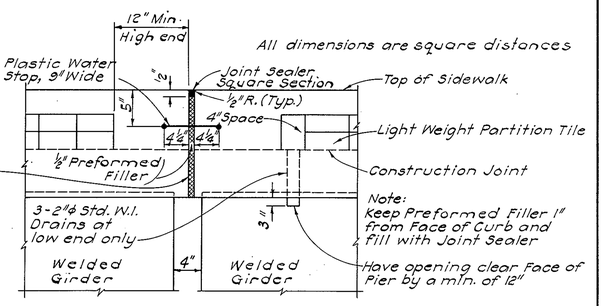
DETAILS OF JOINT AT FACE OF CURB

Detail as shown is at Safety Curb; for Detail at Sidewalk see Sheet #5



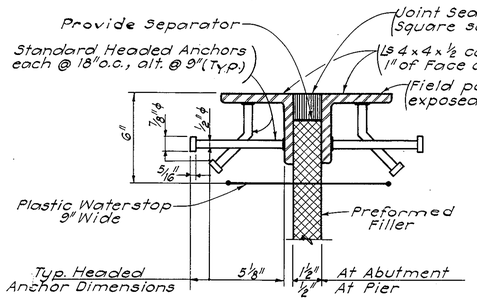
SIDEWALK SECTION AT ABUTMENT

Scale: 1"=1'-0"



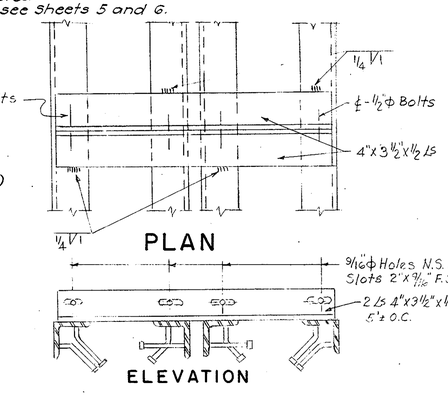
SIDEWALK SECTION OVER PIER

Scale: 1"=1'-0"



ARMORED JOINT DETAIL

Scale: 3"=1'-0"



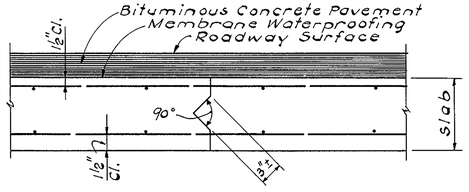
PLAN

ELEVATION

SHIPPING DEVICE FOR ARMORED JOINT ASSEMBLY

Scale: 1½"=1'-0"

Notes:
(A) All Armored Joint Assemblies must be properly fitted in shop and shipped with device for maintaining proper spacing and fit.
(B) Bolts on shipping device must be loosened within one hour after concrete is placed so that movement may take place. Device shall be removed after concrete has set on both sides of assembly.
(C) Grind Armored Joint Surface To A Smooth Finish After Removal Of Shipping Device.
(D) All Exposed Surface Of A Joint Shall Be Field Painted After Grinding.



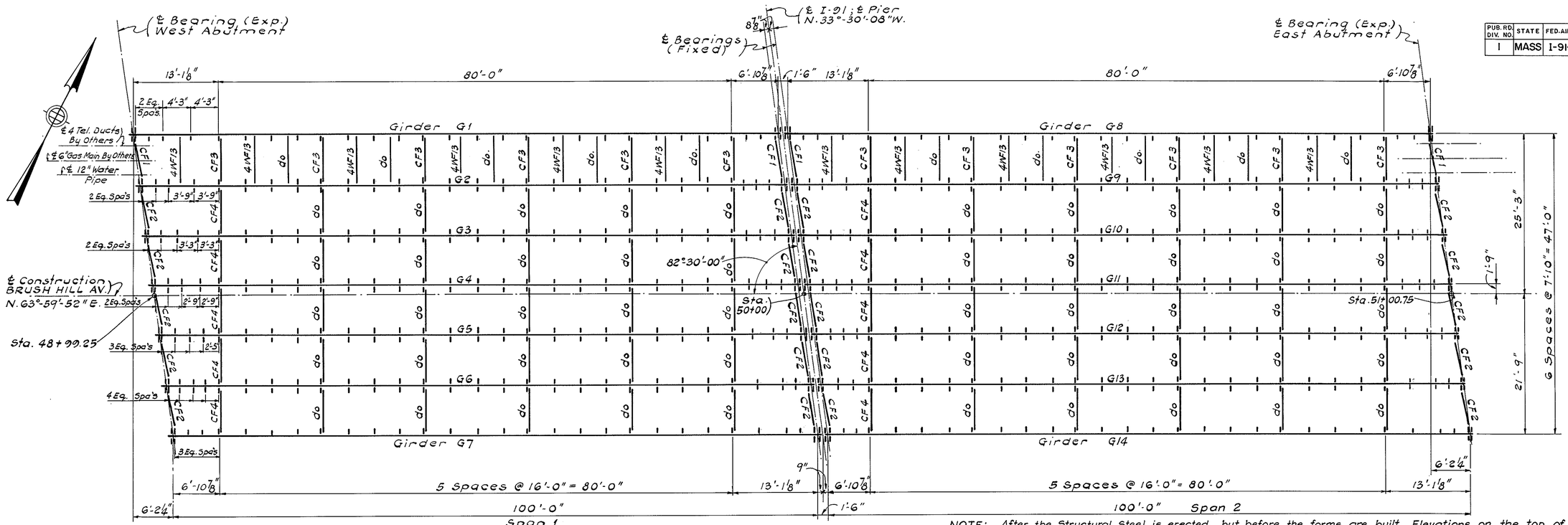
LONGITUDINAL CONSTRUCTION JOINT DETAILS IN SLAB

Scale: 1½"=1'-0"

Note:
Longitudinal Construction Joints in Bridge Deck slabs may be omitted when the Contractor's proposed method of construction is approved by the Engineer in writing.

MARCH 25, 1967	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

PUB. RD DIV. NO.	STATE	FED. AID. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I	MASS	I-91-1(64)9	1967	88	393



FRAMING PLAN

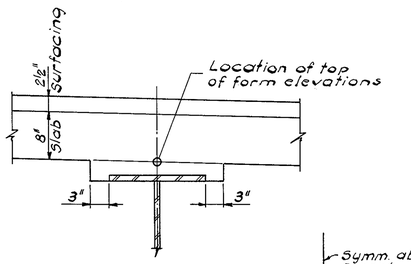
Scale: ⅛" = 1'-0"

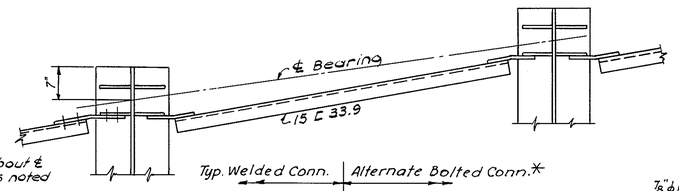
NOTE: After the Structurol Steel is erected, but before the forms are built, Elevations on the top of the Flange of the Beams are to be obtained at the Points indicated in the Table. The Difference between the Elevation obtained and those shown in the Table gives the actual Blocking Distance from the Top of Beam to the bottom of Slab at Centerline of Beam. See Haunch Detail.

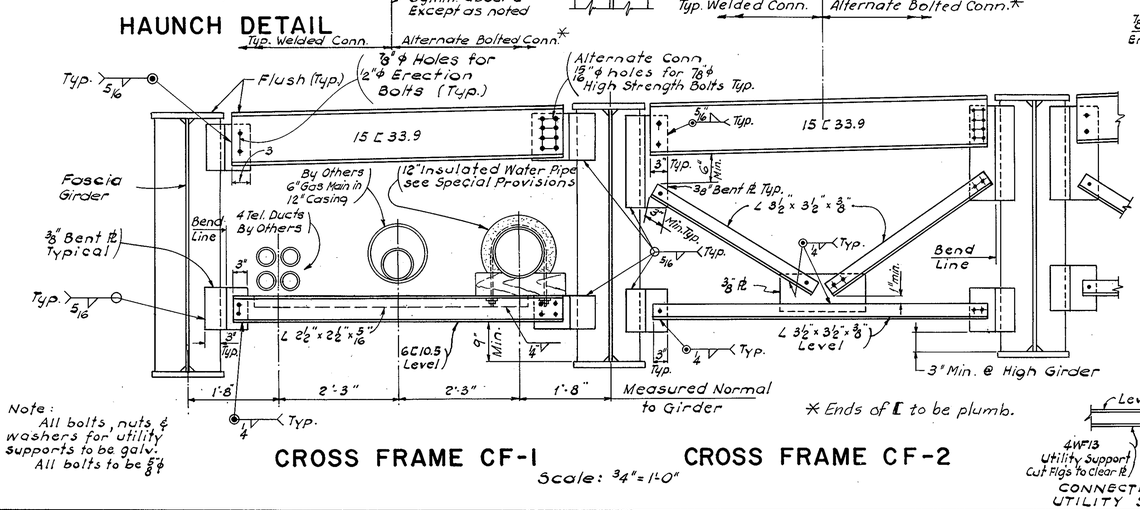
TOP OF FORM ELEVATIONS FOR DECK SLAB PRIOR TO PLACEMENT OF CONCRETE

	SPAN 1									SPAN 2								
GIRDER	℄ BRG.	⅛ PT.	¼ PT	⅜ PT	½ PT	⅝ PT	¾ PT	⅞ PT	℄ BRG.	GIRDER	℄ BRG.	⅛ PT.	¼ PT	⅜ PT	½ PT	⅝ PT	¾ PT	⅞ PT	℄ BRG.
G 1	200.49	200.31	200.10	199.85	199.56	199.23	198.86	198.44	198.00	G 8	197.95	197.65	197.32	196.95	196.53	196.07	195.58	195.04	194.47
G 2	200.63	200.46	200.25	200.00	199.71	199.38	199.00	198.58	198.13	G 9	198.09	197.79	197.46	197.08	196.67	196.21	195.71	195.17	194.59
G 3	200.77	200.59	200.38	200.13	199.84	199.50	199.13	198.71	198.26	G 10	198.22	197.91	197.58	197.20	196.79	196.33	195.82	195.28	194.71
G 4	200.92	200.73	200.52	200.27	199.98	199.64	199.26	198.84	198.39	G 11	198.35	198.04	197.71	197.33	196.91	196.45	195.95	195.41	194.83
G 5	200.82	200.62	200.41	200.15	199.86	199.52	199.14	198.72	198.27	G 12	198.23	197.92	197.58	197.21	196.79	196.32	195.82	195.28	194.70
G 6	200.62	200.44	200.22	199.97	199.67	199.33	198.95	198.53	198.08	G 13	198.03	197.72	197.39	197.01	196.59	196.12	195.62	195.07	194.50
G 7	200.44	200.25	200.04	199.79	199.49	199.15	198.77	198.34	197.88	G 14	197.84	197.53	197.20	196.82	196.40	195.93	195.43	194.88	194.29

HAUNCH DETAIL



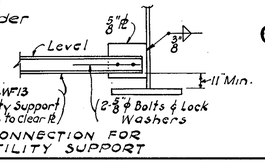




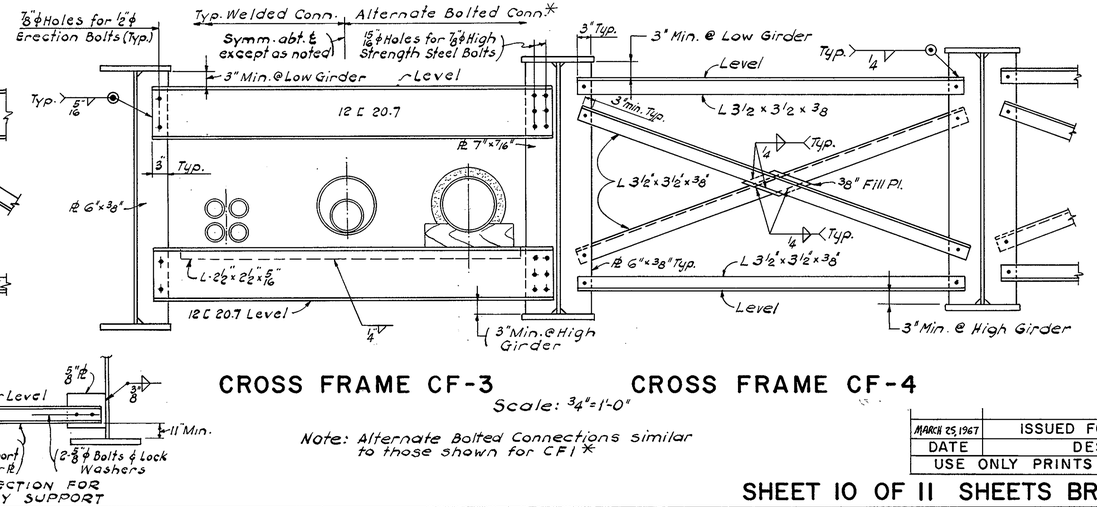
Note: All bolts, nuts & washers for utility supports to be galv. All bolts to be ⅝" ϕ

CROSS FRAME CF-1 CROSS FRAME CF-2

Scale: ¾" = 1'-0"



CONNECTION FOR UTILITY SUPPORT



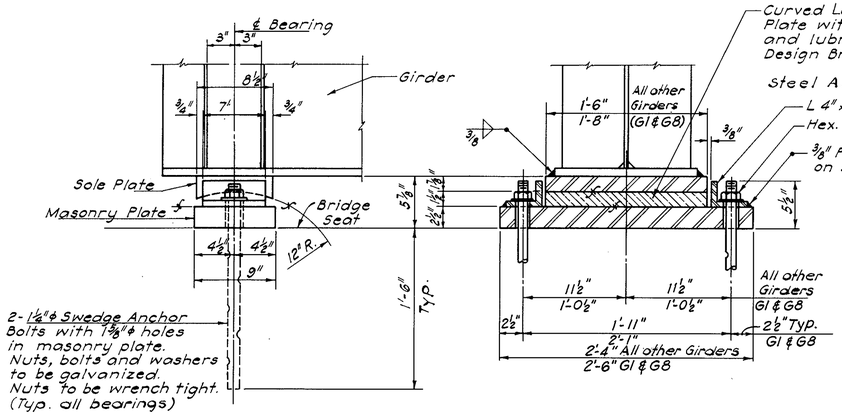
CROSS FRAME CF-3 CROSS FRAME CF-4

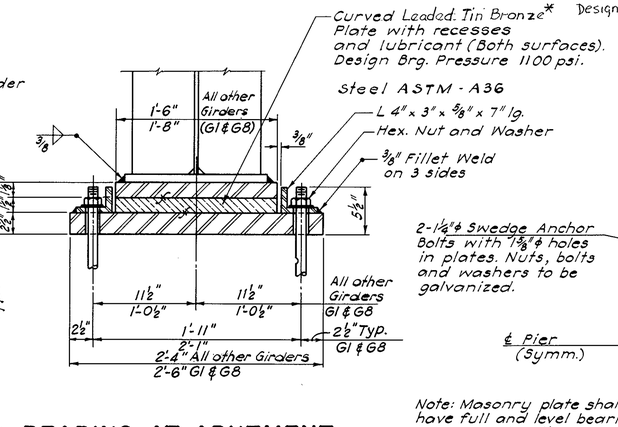
Scale: ¾" = 1'-0"

Note: Alternate Bolted Connections similar to those shown for CF1 *

MARCH 25, 1967	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS	I-91-1(64)9	1967	89	395

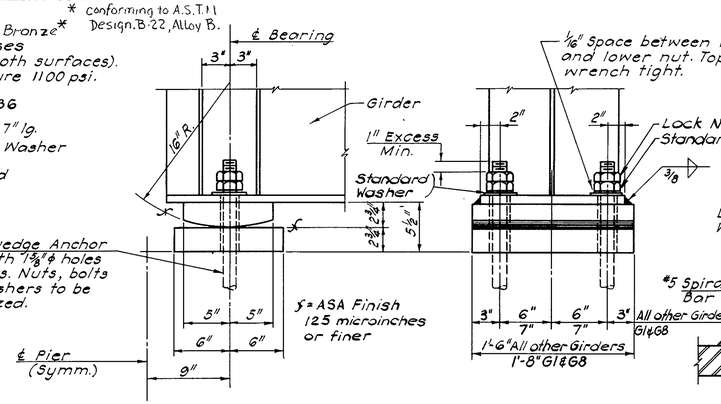




EXPANSION BEARING AT ABUTMENT

Scale: 1½" = 1'-0"

Note: f = A.S.A. 125 micro-inches or finer

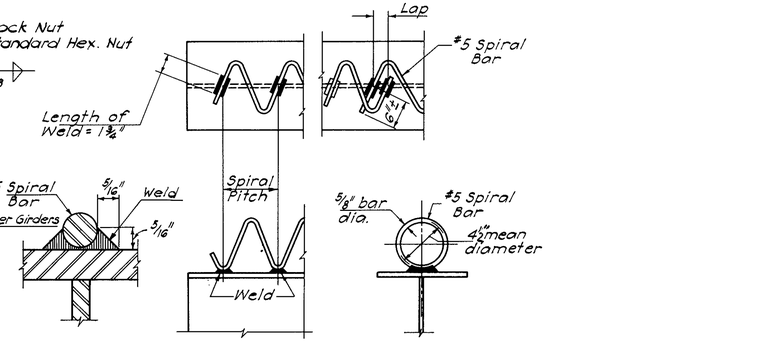


Note: Masonry plate shall have full and level bearing before placing the stringers on the Bearing Assembly.

FIXED BEARING AT PIER

Scale: 1½" = 1'-0"

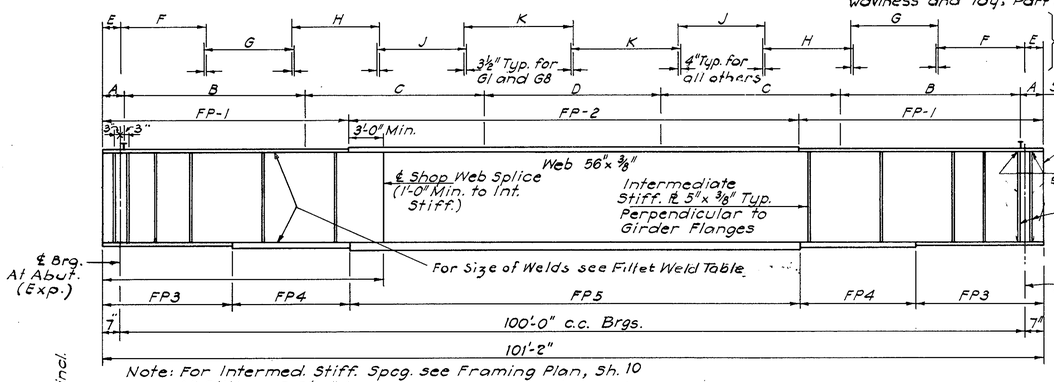
Note: Bevel Washer and Sole Plate as required by profile.



DETAILS OF SPIRAL SHEAR CONNECTORS

Not to Scale

NOTE: The finished Surfaces shall meet the American Standards Association surface roughness requirements as defined in ASA B46-1, surface roughness, waviness and lay, Part I.

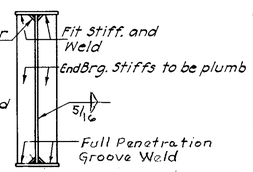


Note: For Intermed. Stiff. Spcg. see Framing Plan, Sh. 10

GIRDER ELEVATION

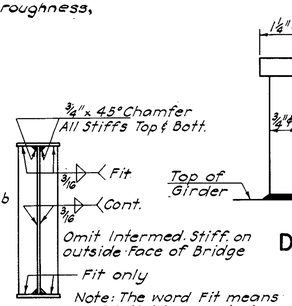
Not to Scale

Ends of girders shall be fabricated so that under full load the ends will be plumb



END BEARING STIFFENERS

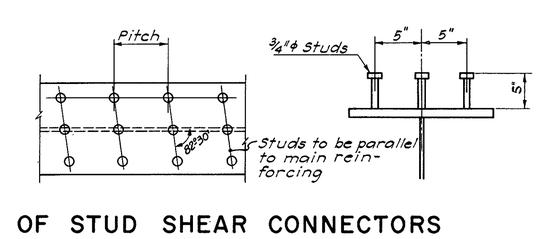
Not to Scale



Note: The word Fit means to fit tight to exclude water after painting.

INTERMEDIATE STIFFENERS

Not to Scale



DETAILS OF STUD SHEAR CONNECTORS

Not to Scale

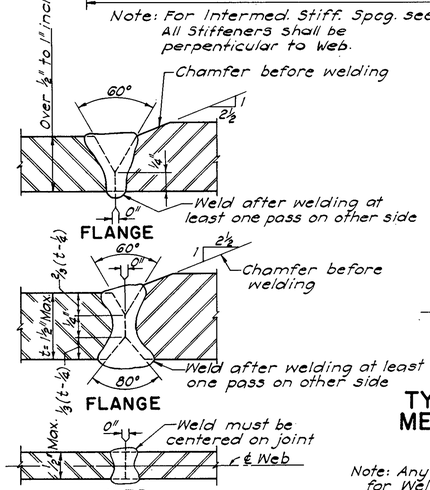
Note: ⅞" diameter studs may be substituted for ¾" diameter studs by providing an equivalent cross-sectional area and adjusting the pitch accordingly with a max. pitch of 24".

Shear connectors shall be either spirals or studs at the option of the Contractor.

GIRDER NO.	FLANGE PLATE (F.P.) 1	2	3	4	5	SHEAR CONNECTOR SPACING — STUDS A	B	C	D	SPIRALS E	F	G	H	J	K	CAMBER (MIN.)
G1 & G8	18 x ⅞ x 28'-7"	18 x 1⅛ x 44'-0"	18 x 1 x 16'-7"	18 x 1½ x 11'-0"	18 x 2 x 46'-0"	9½"	19Sps @ 10" = 15'-10"	12Sps @ 16" = 16'-0"	18Sps @ 24" = 36'-0"	7"	21Sps @ 6" = 10'-6"	15Sps @ 8" = 10'-0"	12Sps @ 10" = 10'-0"	10Sps @ 12" = 10'-0"	8Sps @ 16" = 10'-8"	4¼"
G2 & G9	16 x ⅞ x 27'-7"	16 x 1⅛ x 46'-0"	16 x 1 x 16'-7"	16 x 1½ x 10'-0"	16 x 2 x 48'-0"	7½"	16Sps @ 12" = 16'-0"	12Sps @ 16" = 16'-0"	18Sps @ 24" = 36'-0"	7½"	18Sps @ 6" = 9'-0"	"	13Sps @ 10" = 10'-10"	11Sps @ 12" = 11'-0"	"	4 3/8"
G3-G6 Inc. G10-G13 Inc.	16 x ⅞ x 32'-1"	16 x 1 x 37'-0"	16 x 1 x 19'-1"	16 x 1½ x 12'-0"	16 x 1⅞ x 39'-0"	"	"	"	"	"	"	"	"	"	"	4¼"
G7-G14	16 x ⅞ x 31'-1"	16 x 1 x 39'-0"	16 x 1 x 18'-1"	16 x 1½ x 12'-0"	16 x 1⅞ x 41'-0"	"	"	"	"	"	"	"	"	"	"	4 3/8"

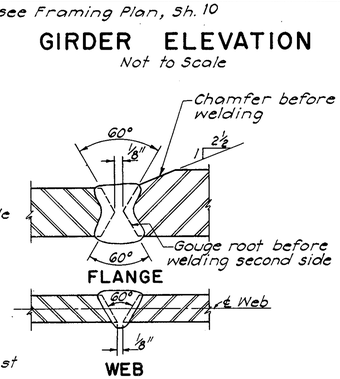
For Girder Location see Framing Plan, Sh. #10

TABLE OF FILLET WELDS - WEB ℞ TO FLANGE ℞	
All Girders: Web To Flange ℞'s F.P. #1, #2, #3 & #4	5/16"
All Girders: Web To Flange ℞ F.P. #5	3/8"



TYPICAL SUBMERGED ARC WELDED JOINTS

Not to Scale



TYPICAL MANUAL SHIELDED METAL ARC WELDED JOINTS

Not to Scale

Note: Any welded joint prequalified by A.W.S. Specs. for Welded Highway and Railway Bridges (1966 Edition) will be acceptable in the fabrication of the Structural Steel.

All butt welds on the exterior face of the exterior girders shall be ground smooth and flush.

Preparation of Material for Welding shall conform to the provisions of Art 402, A.W.S. D2.0-66. Assembly of Material for Welding shall conform to the provisions of Art. 403, A.W.S. D2.0-66.

DATE	DESCRIPTION
MARCH 25, 1967	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 11 OF 11 SHEETS BRIDGE NO. W-21-36

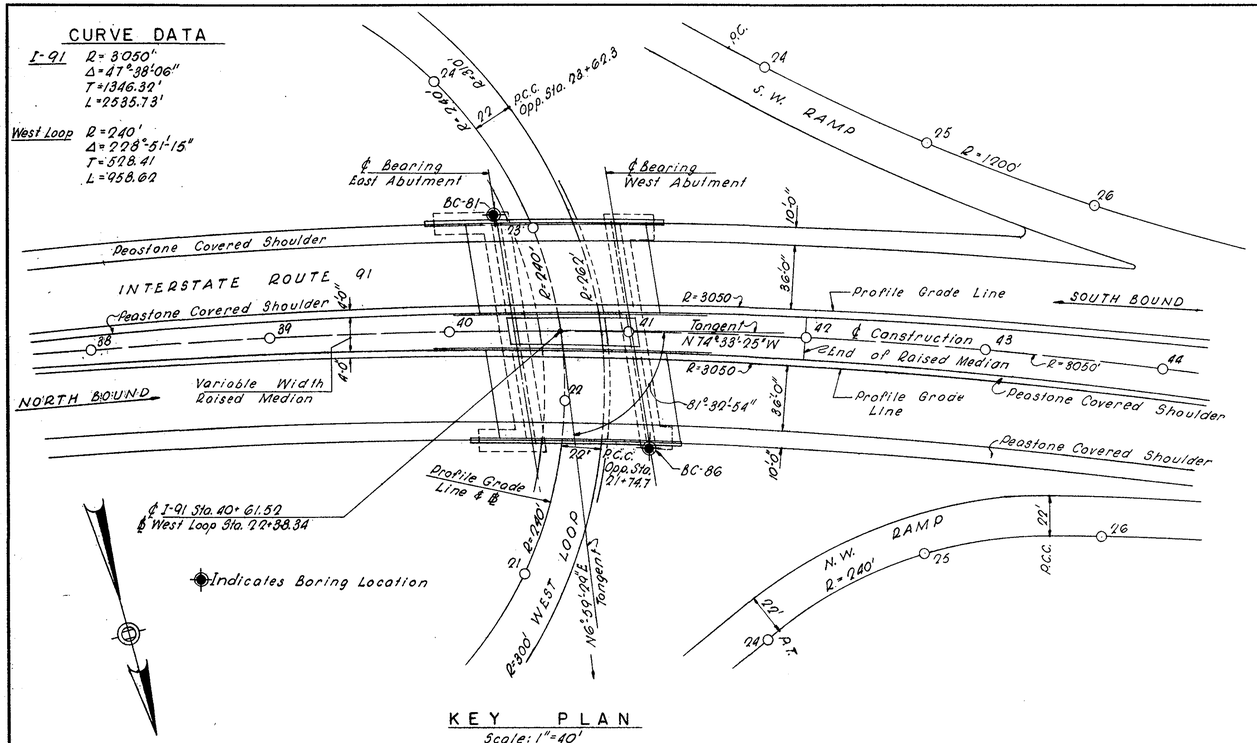
INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. NO. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS	I-91-1(54)9	19	G8	188

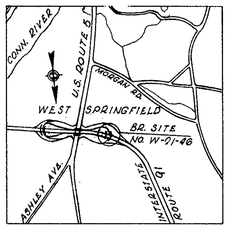
CURVE DATA

I-91 R = 3050'
Δ = 47°38'06"
T = 1346.32'
L = 2585.73'

West Loop R = 240'
Δ = 228°51'15"
T = 528.41
L = 958.62



KEY PLAN
Scale: 1" = 40'



LOCUS PLAN
Scale: 1" = 2000'

GENERAL NOTES

FOUNDATIONS
Foundations may be altered if necessary to suit conditions encountered during Construction.

DATE AND SEAL
To be located as shown on Sheet 6. A Sheet showing Size and Character of Numerals will be furnished. Seal to be furnished by the State and shall be set by the Contractor.

DESIGN
In Accordance with the current AASHO Specifications (1961 Edition) and Interim Specifications for H-20-44 Loading, modified for military Loading.

REINFORCEMENT
All bars shall have deformations conforming to A.S.T.M.A.-308. Unless otherwise shown on the plans, Bars shall be lapped 20 diameters for Splices, except that Bars near the Top of Slabs and Beams with more than 12 inches of Concrete under the Bars shall be lapped 35 diameters for Splices.

BRIDGE RAILING
See Department Standard Plans dated May 1965 for details of Bridge Railings.

SCALES
Scales noted on Plans are not applicable to reduced Size Prints. Divide Scales by 2 for 4-Size Prints.

BENCH MARK
B.M. Top of Right Outer Corner Bottom Concrete Step House #1162 Route 5, Sta. 101+38 ℄ Route 5 68' Rt. El. = 67.31

SURVEY BOOK NUMBERS
27,361 & 21,000.

UNSUITABLE MATERIAL
All Unsuitable Material Shall be Removed Within the Limits of the Foundations of the Structure.

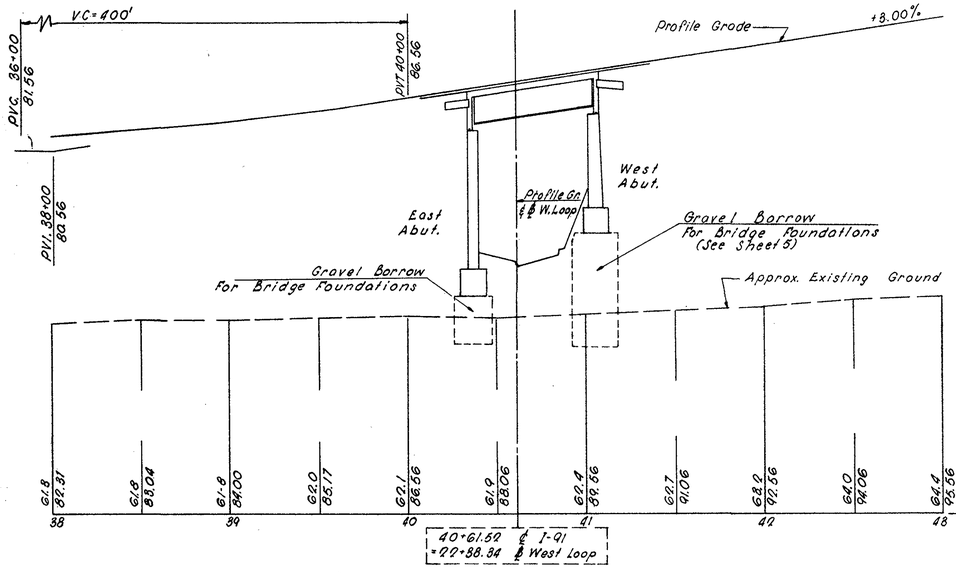
ANCHOR BOLTS
All Anchor Bolts are to be Set by Template and Placed Before Concrete is Poured

ESTIMATED QUANTITIES
(NOT GUARANTEED)

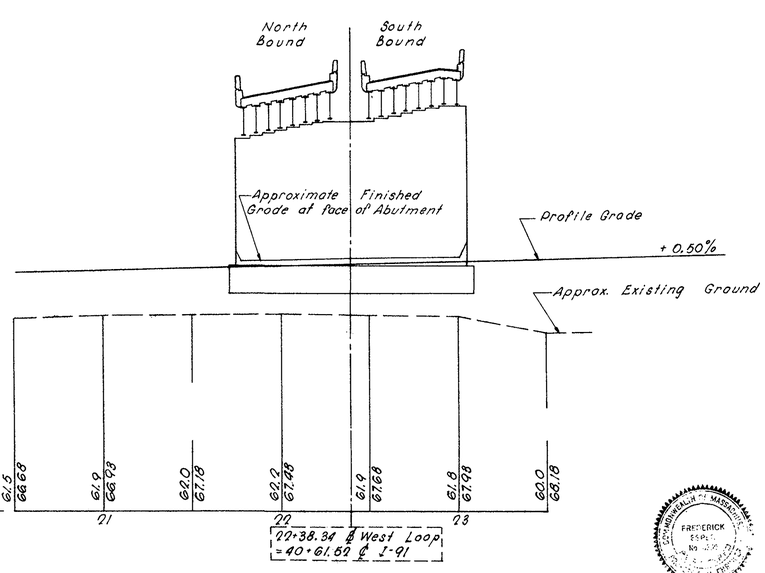
ITEM	QUANTITIES
Bridge Excavation	475 C.Y.
Class 'B' Rock Excavation	5 C.Y.
Gravel Borrow	1,450 C.Y.
Gravel Borrow For Bridge Foundations	2,900 C.Y.
Class I Bituminous Concrete Pavement Type I-1	58 Tons
Class I Dense Protective Bottom Course for Bridges	62 Tons
Metal Bridge Railing (1 Rail) Option	404 L.F.
Bridge Structure (W-21-46)	1 L.S.

The following Quantities are included in Item 384.02

Steel Reinforcement for Structures	124,000 lbs.
Structural Steel	206,000 lbs.



INTERSTATE ROUTE 91



WEST LOOP

PROFILES
Scale horiz: 1" = 40'-0"
Vertical: 1" = 8'-0"

LOUIS BERGER & ASSOCIATES
CONSULTING ENGINEER
WELLESLEY HILLS, MASS.

DESIGNED BY	APRIL 9, 1966 — ISSUED FOR CONSTRUCTION
DRAWN BY	
CHECKED BY	
APPROVED FOR DESIGN	

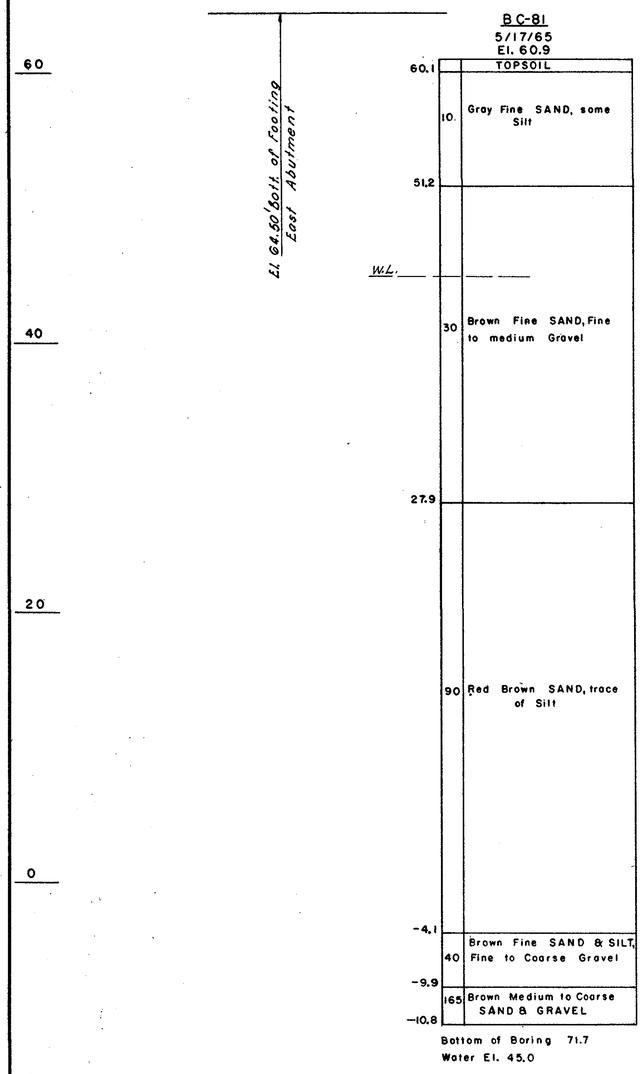
THE COMMONWEALTH OF MASSACHUSETTS
PROPOSED BRIDGE
WEST SPRINGFIELD MASS
INTERSTATE ROUTE 91
INTERSTATE ROUTE 91 OVER WEST LOOP (AT ROUTE 5)
SCALES AS NOTED

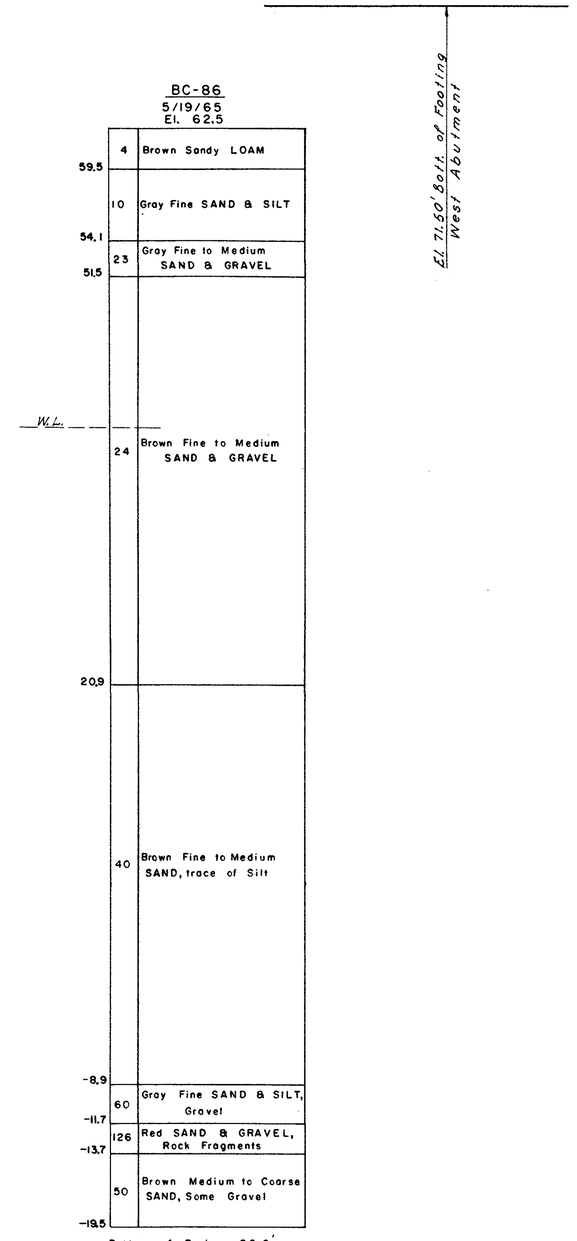
OFFICE OF
DEPARTMENT OF PUBLIC WORKS
100, NASHUA ST. BOSTON MASS.
BRIDGE ENGINEER — APR. 1966 — CHIEF ENGINEER

SHEET 1 OF 12 SHEETS BRIDGE NO. W-21-46

INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	69	188





BORING DATA
Scale: 3/16"=1'-0"

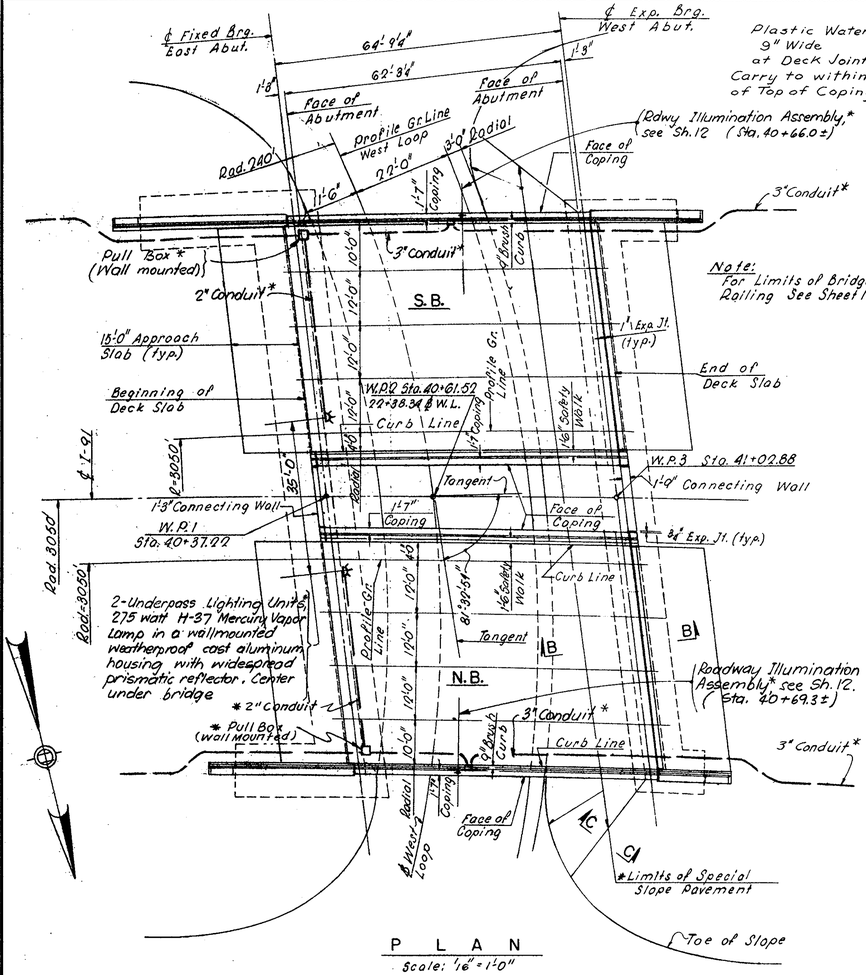
BORING NOTES:

Location of Borings shown on Key Plan, Sheet 1 thus: ⊕ BC-81. BC indicates a Bridge Core Boring.
Borings taken for purpose of Design & show conditions at Boring Points only but do not necessarily show Nature of Material to be encountered during construction.
Figures in left hand column indicate Number of Blows required to drive 2" O.D. Sampler 12" using 140lb. weight falling 30".
Borings were made by Allstate Drilling Co. 227 Wampanoag Trail, Riverside, R. I.
Boring Samples may be seen at the Research and Materials Division, 99 Worcester Street, Wellesley Hills, at the intersectin of Route 9 and Route 128. by appointment only.
Water levels shown on the Borings Logs were observed at the time of taking borings and do not necessarily show the true ground water level.

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

INTERSTATE ROUTE 91
WEST SPRINGFIELD

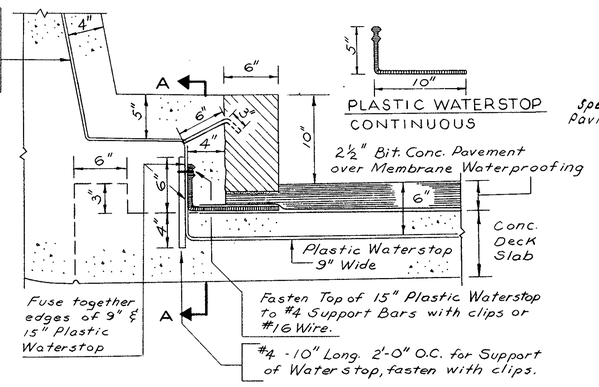
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I	MASS.	I-91-1(54)19	19	70	188

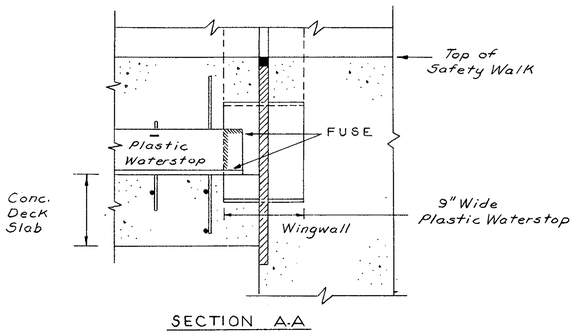


P L A N
Scale: 1/16" = 1'-0"

Plastic Waterstop 9" Wide at Deck Joints. Carry to within 3" of Top of Coping.

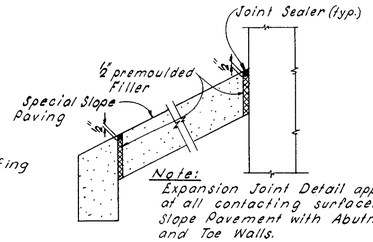
Note: For Limits of Bridge Railing See Sheet 11



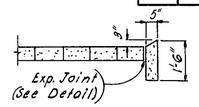


SECTION A-A

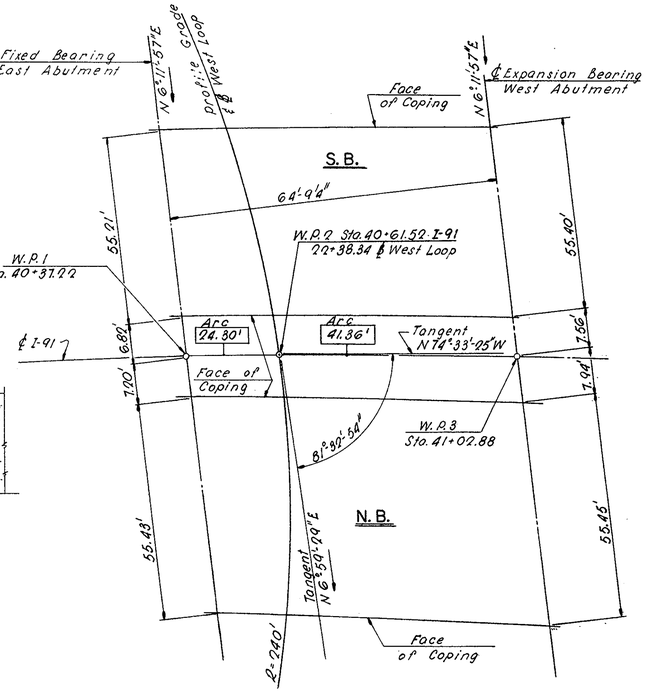
CURB DETAIL AT DECK JOINT



EXPANSION JOINT DETAIL FOR SLOPE PAVING
Not to Scale

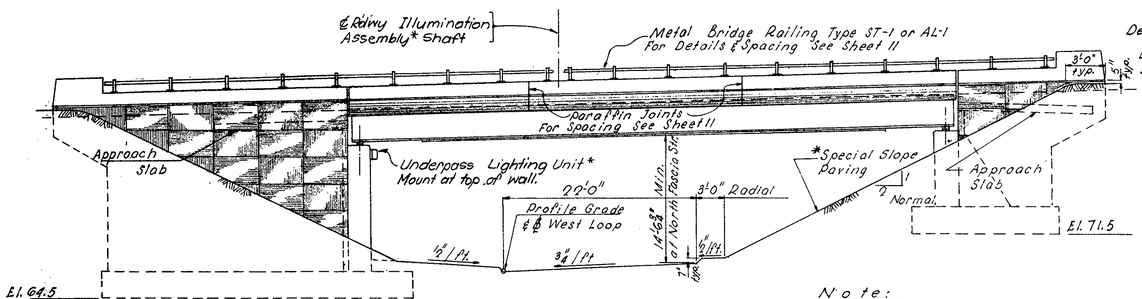


SECTION C - C
Not to Scale



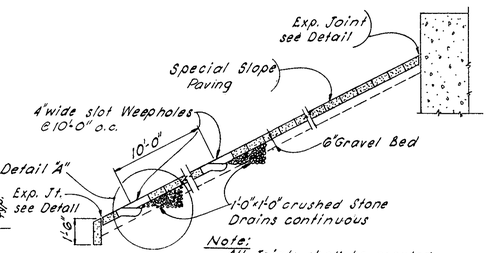
W O R K I N G P O I N T D I A G R A M
Not to Scale

Note: Dimension denotes distance between W.Ps

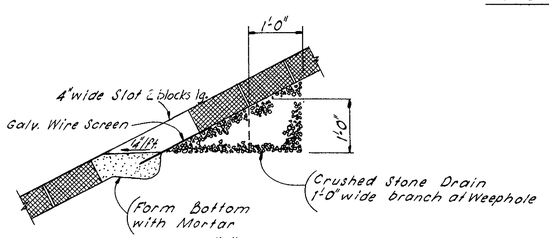


E L E V A T I O N
Scale: 1/8" = 1'-0"

Note:
*denotes Item not included in Bridge estimate. For Rail Post spacing & other details see Sheet 11.



SECTION B - B
DETAILS OF SPECIAL SLOPE PAVING
Not to Scale



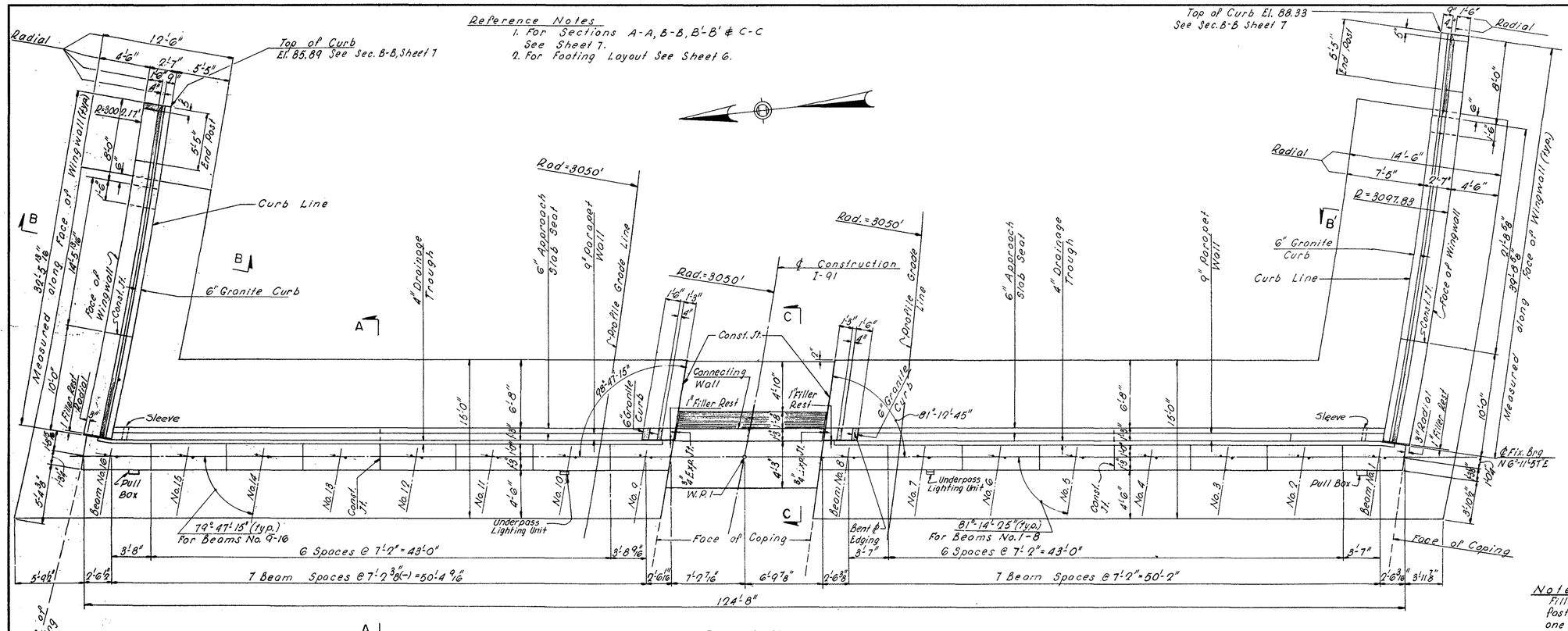
DETAIL "A"
Not to Scale

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

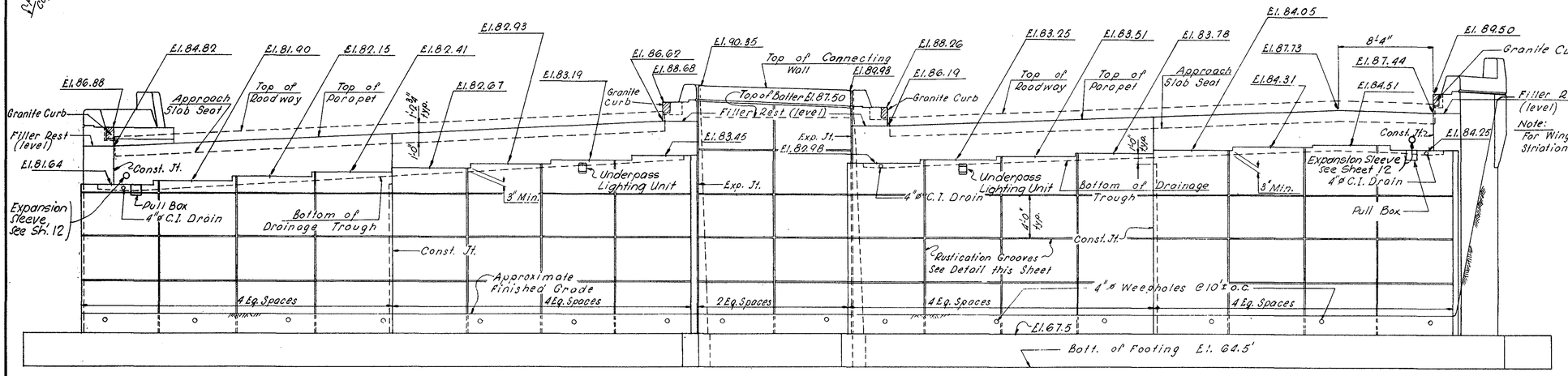
INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(5)439	19	71	188

Reference Notes
1. For Sections A-A, B-B, B'-B' & C-C See Sheet 7.
2. For Footing Layout See Sheet 6.

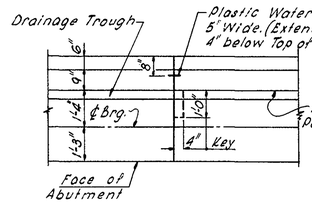


PLAN

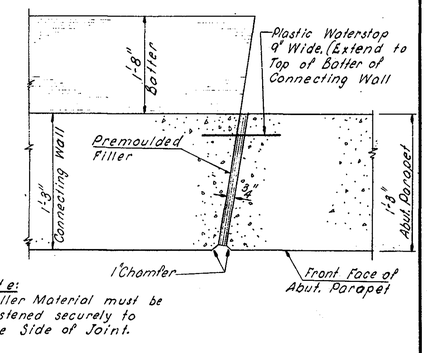


ELEVATION
EAST ABUTMENT
Scale: 3/16" = 1'-0"

NOTE: Lighting Conduit omitted for clarity. See sheet 5.

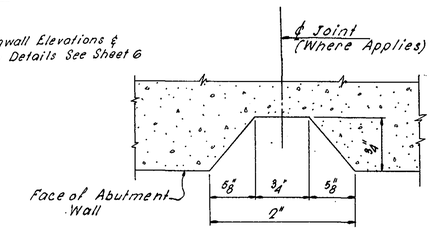


CONSTRUCTION JOINT
Scale: 3/8" = 1'-0"



Note: Filler Material must be Fastened securely to one Side of Joint.

EXPANSION JOINT
Scale: 1 1/2" = 1'-0"



RUSTICATION GROOVE DETAIL
Full Size

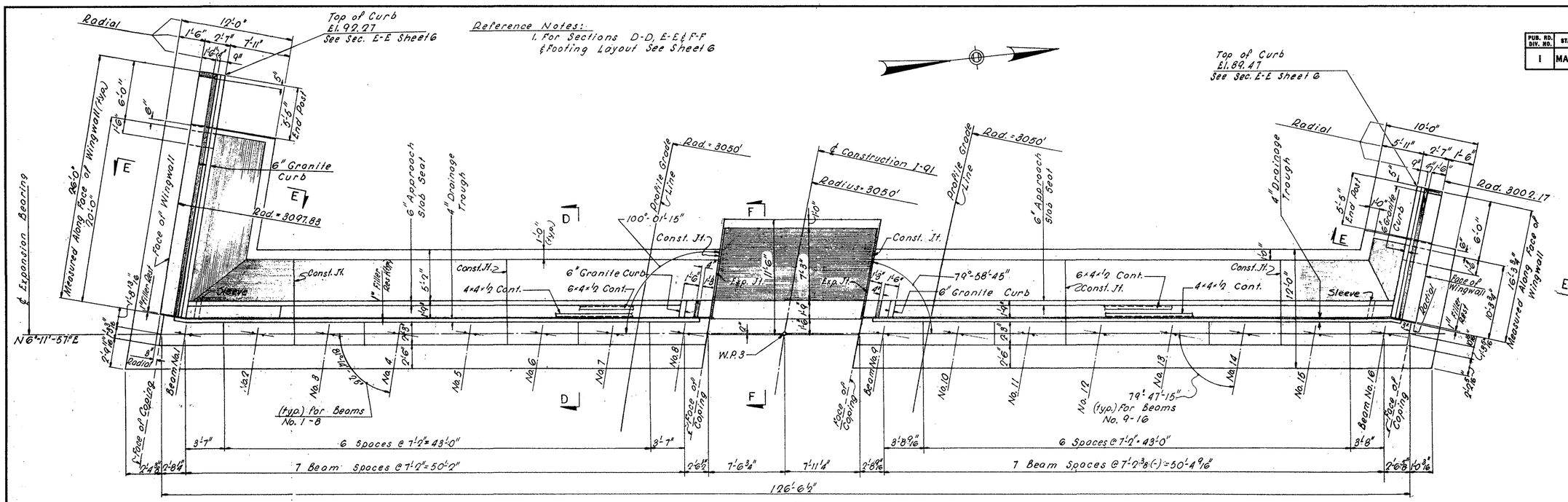
APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 4 OF 12 SHEETS - BRIDGE NO. W-21-46

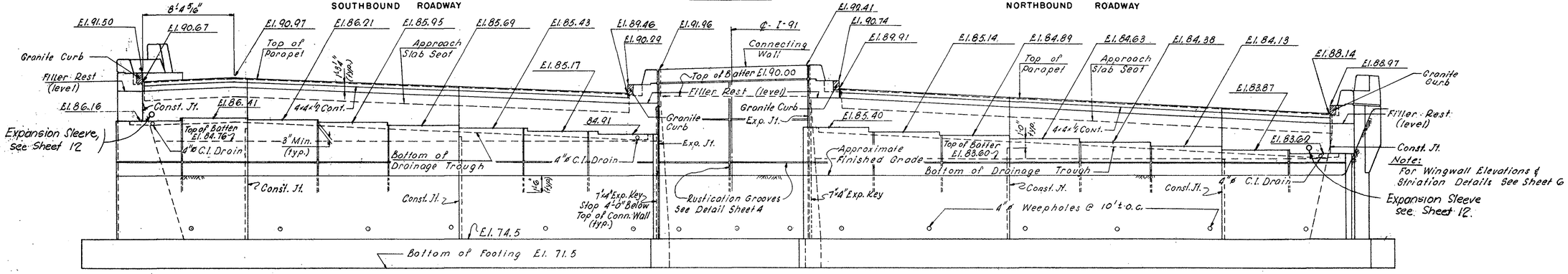
INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	72	188

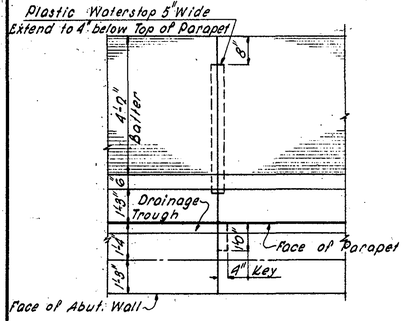
Reference Notes:
1. For Sections D-D, E-E & F-F & Footing Layout See Sheet 6



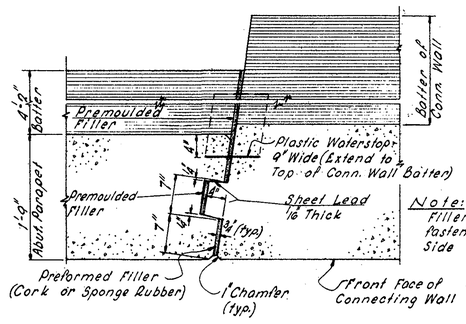
PLAN



ELEVATION
WEST ABUTMENT
Scale: 3/16" = 1'-0"

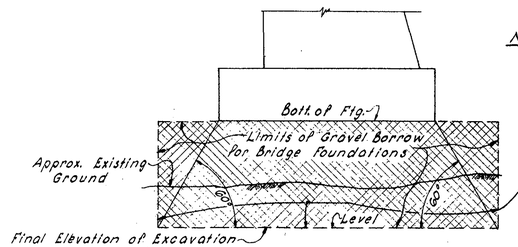


CONSTRUCTION JOINT
Scale: 3/8" = 1'-0"



Note: Filler Material must be fastened securely to one Side of Joint.

EXPANSION JOINT
Scale: 1" = 1'-0"



Notes:
Same Treatment to be used at Wingwalls. See Standard Specifications for Compaction.

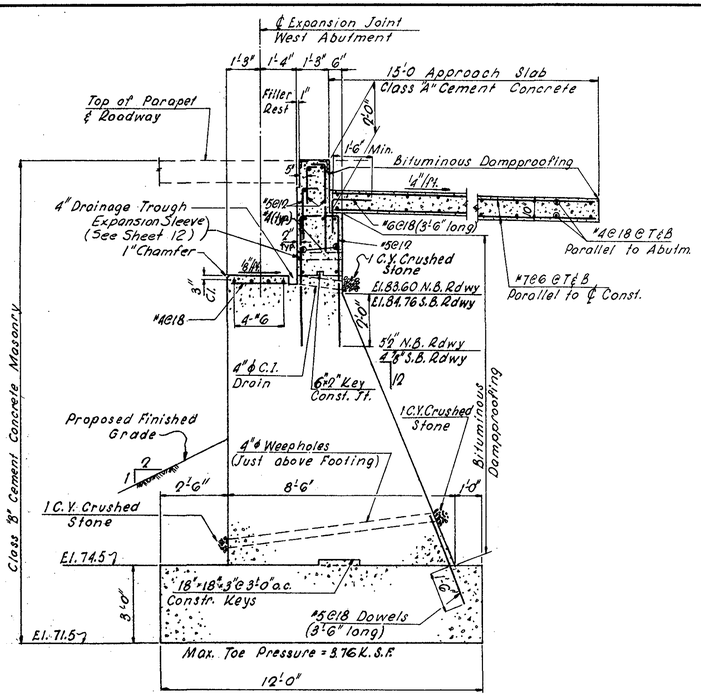
LIMITS OF BRIDGE EXCAVATION AND LIMITS OF GRAVEL BORROW FOR BRIDGE FOUNDATIONS
Not to Scale

DATE	DESCRIPTION
APRIL 9, 1966	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE

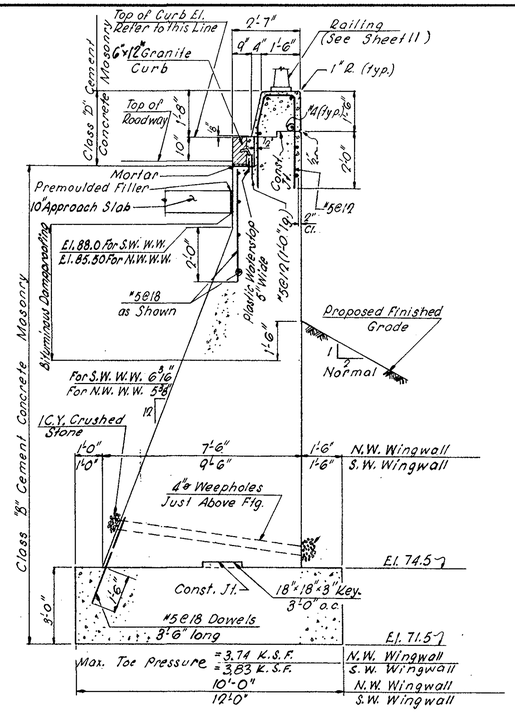
SHEET 5 OF 12 SHEETS - BRIDGE NO. W-21-46

INTERSTATE ROUTE 91
WEST SPRINGFIELD

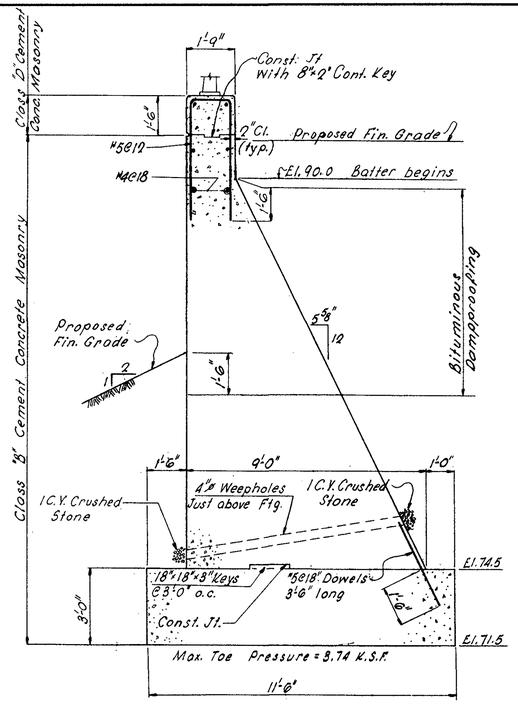
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	73	188



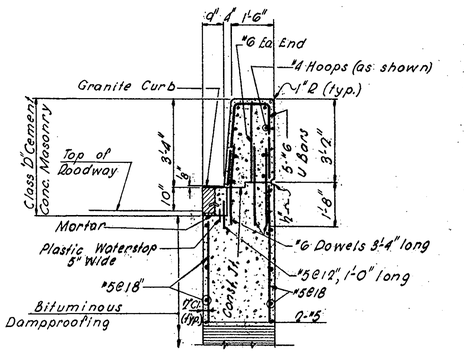
SECTION D-D
Scale: 3/8"=1'-0"



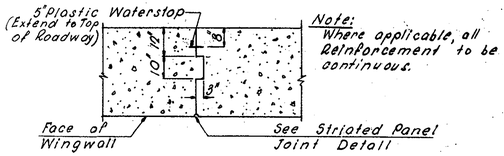
SECTION E-E
Scale: 3/8"=1'-0"



SECTION F-F
Scale: 3/8"=1'-0"

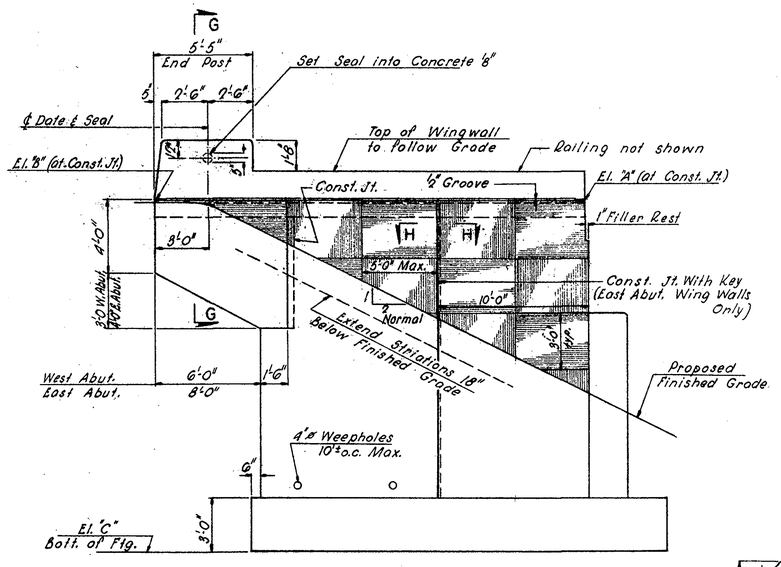


SECTION G-G
Scale: 3/8"=1'-0"



Note:
Where applicable, all Reinforcement to be continuous.

Note: For Abut. Wingwalls only
SECTION H-H
Scale: 3/8"=1'-0"

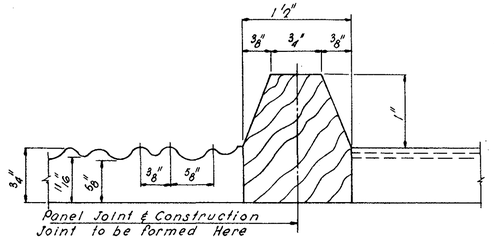


TYPICAL WINGWALL ELEVATION
Scale: ½"=1'-0"

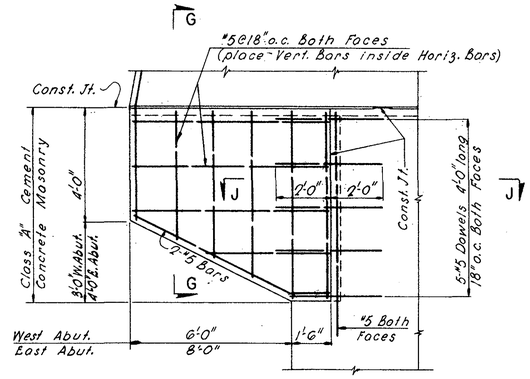
WINGWALL ELEVATIONS

Wingwall	El. 'A'	El. 'B'	El. 'C'
North East	87.05	86.06	64.50
South East	89.67	88.50	64.50
North West	89.14	89.64	71.50
South West	91.67	92.44	71.50

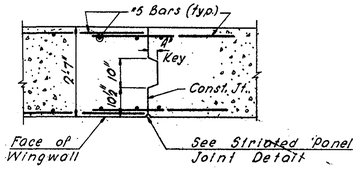
Note:
Date & Seal to be located at the inside faces of N.E. & S.W. Wingwalls. Fill shall be placed and thoroughly compacted to the Grade of the Bottom of the Wings; or Where no Fill is Required Below the Wings, the Concrete Shall be Placed Upon Undisturbed Soil.



TYPICAL STRIATED PANEL JOINT
Full Size



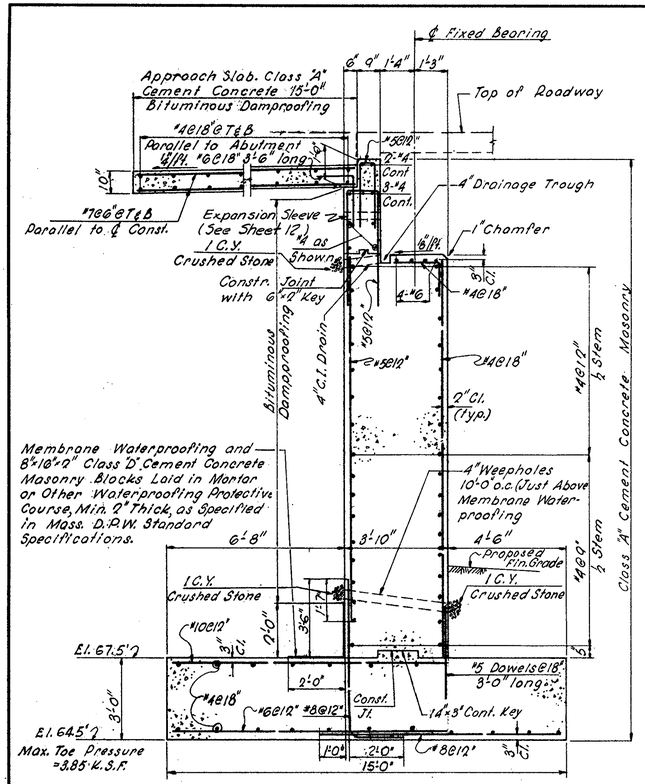
FLYING WING REINFORCEMENT
Scale: 3/8"=1'-0"



SECTION J-J
Scale: 3/8"=1'-0"

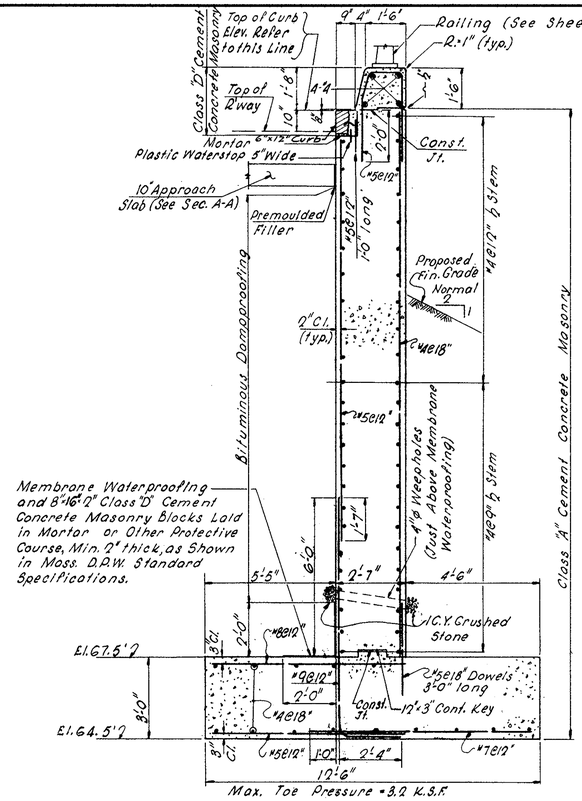
Notes:
For Footing Layout & Gravel Borrow Sections See Sheet 7.

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	



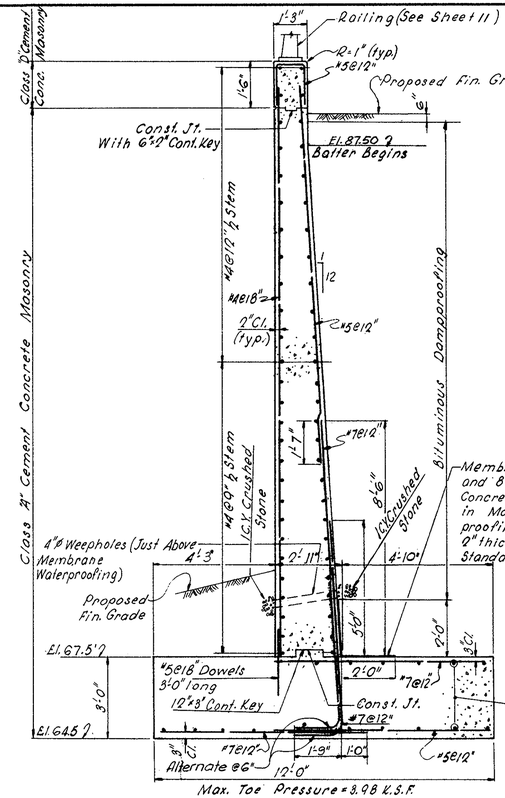
SECTION A-A

Scale: 3/8" = 1'-0"



SECTION B-B

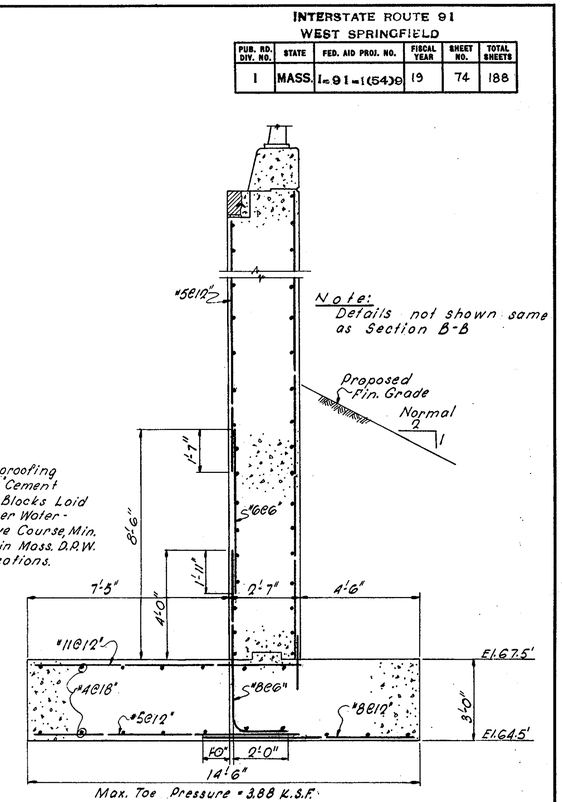
Scale: 3/8" = 1'-0"



Max. Toe Pressure = 3.98 K.S.F.

SECTION C-C

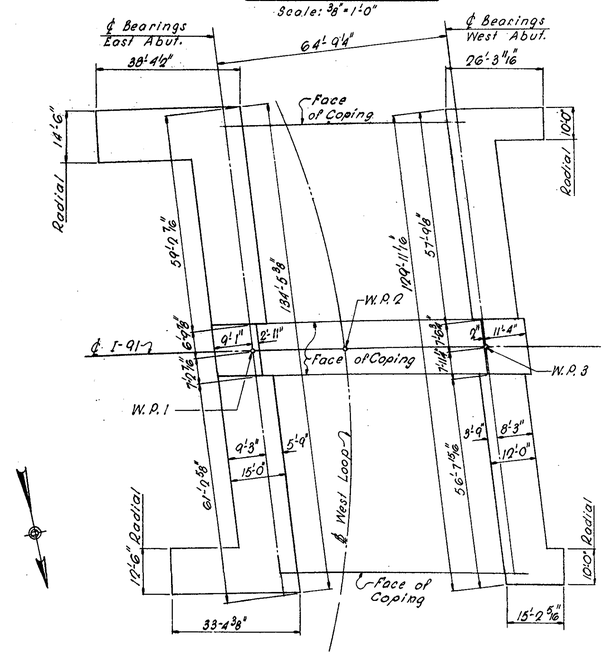
Scale: 3/8" = 1'-0"



Max. Toe Pressure = 3.88 K.S.F.

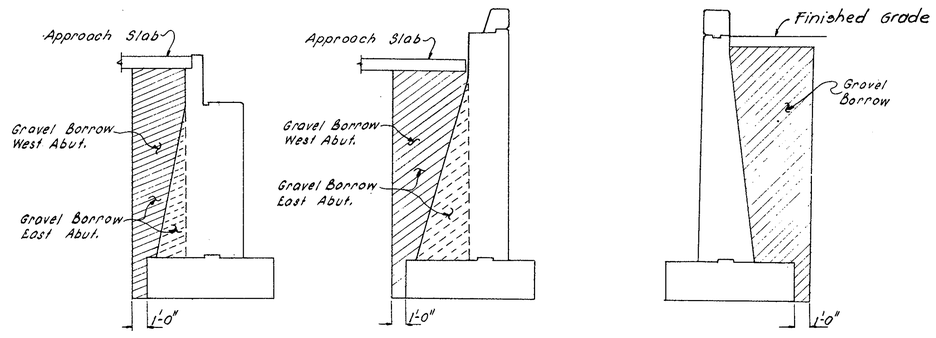
SECTION B'-B'

Scale: 3/8" = 1'-0"



FOOTING LAYOUT PLAN

Scale: 1" = 20'

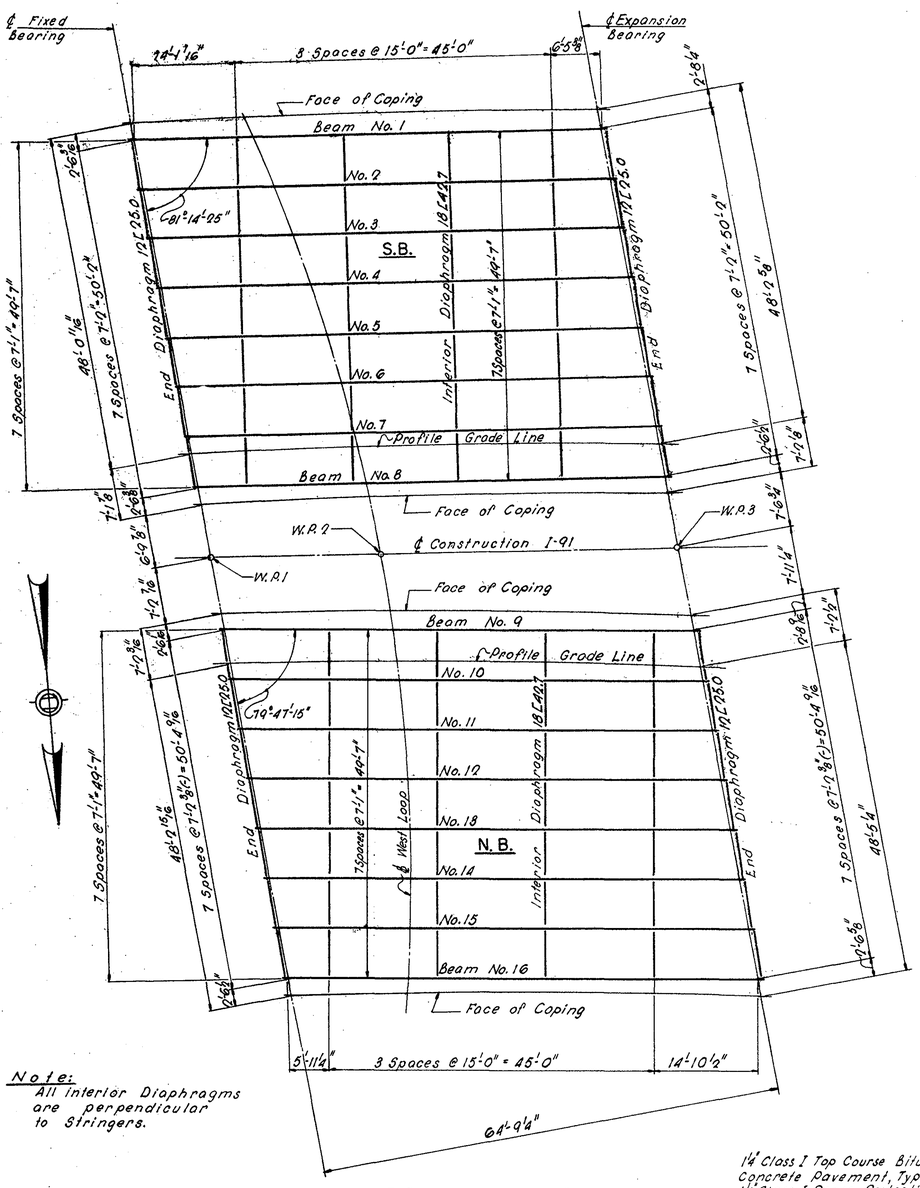


SECTIONS SHOWING GRAVEL BORROW

Scale: 3/16" = 1'-0"

Notes:
For Wingwall Elevation & Details see Sheet 6
For typical Striated Panel Joint see Sheet 6

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	



INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I	MASS.	I-91-1(54)9	19	75	188

Note:
All interior Diaphragms are perpendicular to Stringers.

FRAMING PLAN

Scale: 1" = 10'-0"

Note:
An Equal Device may be Substituted for #4 Tack Weld Bar Upon Written Approval by the Engineer.

TYPICAL DECK REINFORCEMENT

Scale: 1/2" = 1'-0"

Note: Tack Weld Support Bars to Longitudinal Reinforcement.

Notes:
1. Brush Curb and coping shall be poured in alternate sections and shall have a curing period of not less than 5 days between pours.
2. For Spacing of Joints see Sheet 11.
3. Ends of bars to be 2" clear of joint.
4. Longitudinal bars in Curb and Coping are not to be carried through the joints.
5. Joint sealer to be same color as concrete.
6. Joints to be square to face of coping.
7. Flashing to be continuous thru Paraffin Joint.
8. A Mortared Joint in the Curb Shall be Placed at each Paraffin Joint.

PARAFFIN JOINT THRU COPING

Scale: 3/4" = 1'-0"

Note:
Joint in Curb shall be Mortared no Sooner than 5 Days After Concrete in Coping has been Placed.

*Top of pavement cross slope to be continued

DETAILS AT BRUSH CURB

Scale: 3/4" = 1'-0"

DETAILS AT SAFETY CURB

Scale: 3/4" = 1'-0"

Note:
Construction Joint in Deck Slab may be omitted when the Contractor's Proposed Method of Construction is Approved by the Engineer in Writing.

CONSTRUCTION JOINT IN DECK SLAB

Scale: 1 1/2" = 1'-0"

HAUNCH DETAIL

Scale: 1 1/2" = 1'-0"

GRANITE CURB DETAIL

Scale: 1 1/2" = 1'-0"

Note: For Curb Detail at Deck Joint see Sheet 3.

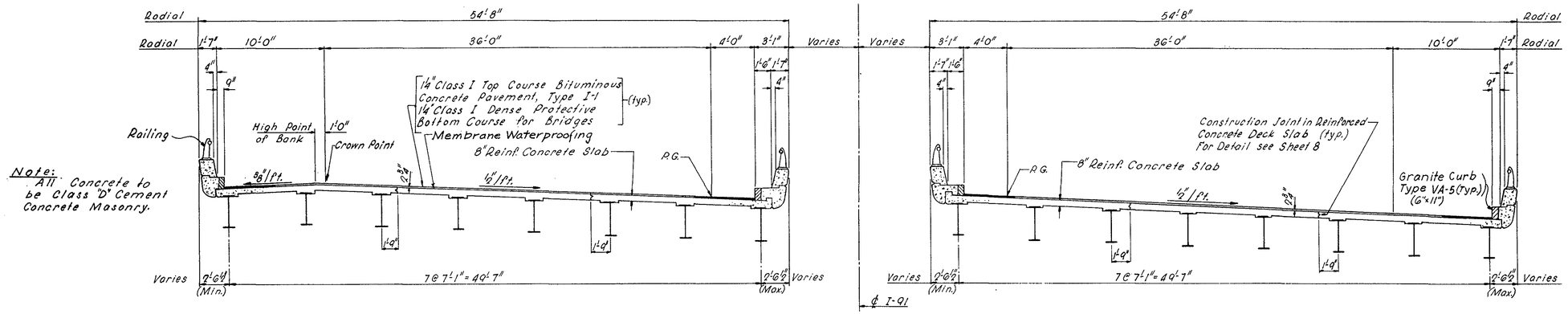
APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

USE ONLY PRINTS OF LATEST DATE

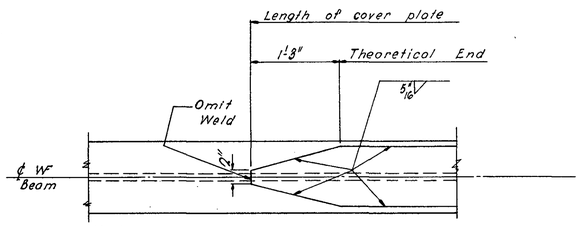
SHEET 8 OF 12 SHEETS - BRIDGE NO. W-21-46

INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(35) 19	19	7C	188

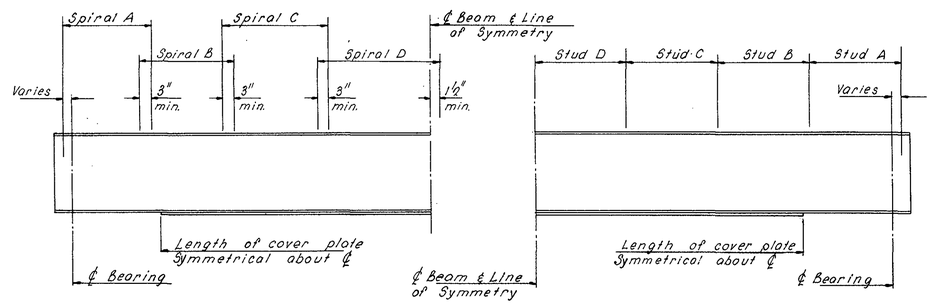


TYPICAL CROSS SECTION
Scale: 3/16" = 1'-0"



Notes:
Preparation of material for welding shall conform to art. 402, A.W.S. 1968.
Assembly of material for welding shall conform to art. 408, A.W.S. 1968.

COVER PLATE DETAIL
Not to Scale



BEAM NO.	†DEFLECTION DUE TO CONCRETE SLAB			TOTAL DEAD LOAD DEFLECTIONS			CAMBER AT MID SPAN
	1/4 SPAN	1/2 SPAN	3/4 SPAN	1/4 SPAN	1/2 SPAN	3/4 SPAN	
1	7/16"	9/16"	7/16"	1"	1 3/8"	1"	2 1/4"
2	5/8"	13/16"	5/8"	1 1/8"	1 11/16"	1 1/8"	2 3/8"
3							
4							
5							
6							
7	5/8"	13/16"	5/8"	1 1/8"	1 1/2"	1 1/8"	2 3/8"
8	7/16"	9/16"	7/16"	1"	1 3/8"	1"	2 1/4"
9	7/16"	9/16"	7/16"	1"	1 3/8"	1"	2 1/4"
10	5/8"	13/16"	5/8"	1 1/8"	1 1/2"	1 1/8"	2 3/8"
11							
12							
13							
14							
15	5/8"	13/16"	5/8"	1 1/8"	1 1/2"	1 1/8"	2 3/8"
16	7/16"	9/16"	7/16"	1"	1 3/8"	1"	2 1/4"

† The Deflection due to Concrete Slab is 80% of the theoretical Value and is intended for the use of Resident Engineer only.

DESIGN ELEVATIONS ALONG TOP FLANGE				
EAST BEARING	1/4 SPAN	1/2 SPAN	3/4 SPAN	WEST BEARING
87.67	88.27	88.79	89.24	89.61
87.93	88.53	89.05	89.50	89.86
87.73	88.33	88.85	89.30	89.66
87.47	88.06	88.58	89.03	89.40
87.20	87.80	88.32	88.77	89.14
86.93	87.54	88.06	88.51	88.88
86.67	87.27	87.79	88.25	88.62
86.40	87.00	87.52	87.98	88.36
86.87	87.47	88.00	88.46	88.85
86.61	87.22	87.75	88.21	88.59
86.35	86.96	87.49	87.96	88.34
86.09	86.71	87.24	87.70	88.08
85.83	86.45	86.98	87.44	87.83
85.57	86.19	86.72	87.19	87.58
85.32	85.93	86.47	86.93	87.32
85.06	85.67	86.20	86.67	87.07

BEAM NO.	SIZE	LENGTH ℄ - ℄ BEAR'GS	BOTTOM COVER PLATE	2-5/8"ϕ SPIRAL SHEAR CONNECTORS								3-3/4"ϕ STUD SHEAR CONNECTORS							
				SPIRAL A		SPIRAL B		SPIRAL C		SPIRAL D		STUD A		STUD B		STUD C		STUD D	
				LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH
1	36 WF 135	65'-6½"	10"x⅞"x 50'-9"	9'-7½"	5¼"	8'-9"	7"	7'-6"	9"	8'-0"	10"	9'-0"	4½"	9'-2"	5½"	8'-0"	8"	7'-0"	10½"
2-7	↓	65'-6½"	10"x1"x 51'-9"	9'-4½"	4½"	↓	7"	7'-6"	9"	↓	12"	9'-0"	4½"	9'-2"	5½"	7'-6"	7½"	7'-6"	10"
8	↓	65'-6½"	10"x⅞"x 50'-9"	9'-7½"	5¼"	↓	7"	7'-6"	9"	↓	10"	9'-0"	4½"	9'-2"	5½"	8'-0"	8"	7'-0"	10½"
9	↓	65'-9½"	10"x⅞"x 50'-9"	9'-7½"	5¼"	↓	7"	7'-6"	9"	↓	10"	9'-0"	4½"	9'-2"	5½"	8'-0"	8"	7'-0"	10½"
10-15	↓	65'-9½"	10"x1"x 51'-9"	9'-9"	4½"	↓	7"	7'-6"	9"	↓	12"	9'-0"	4½"	9'-2"	5½"	7'-6"	7½"	7'-6"	10"
16	36 WF 135	65'-9½"	10"x⅞"x 50'-9"	9'-7½"	5¼"	8'-9"	7"	7'-6"	9"	8'-0"	10"	9'-0"	4½"	9'-2"	5½"	8'-0"	8"	7'-0"	10½"

Notes:
1. Ends of all beams shall be fabricated so that under full dead load the ends will be plumb.
2. The table of Design Elevations along top flange is for the use of Resident Engineer in the field for comparison of:
a) Elevations along top flange of stringers in place and
b) the design elevations tabulated.
3. Any Welded Joint Prequalified by American Welding Society Specifications for Welded Highway and Railway Bridges (1963 Edition), will be Acceptable in the Fabrication of the Structural Steel.

DATE	DESCRIPTION
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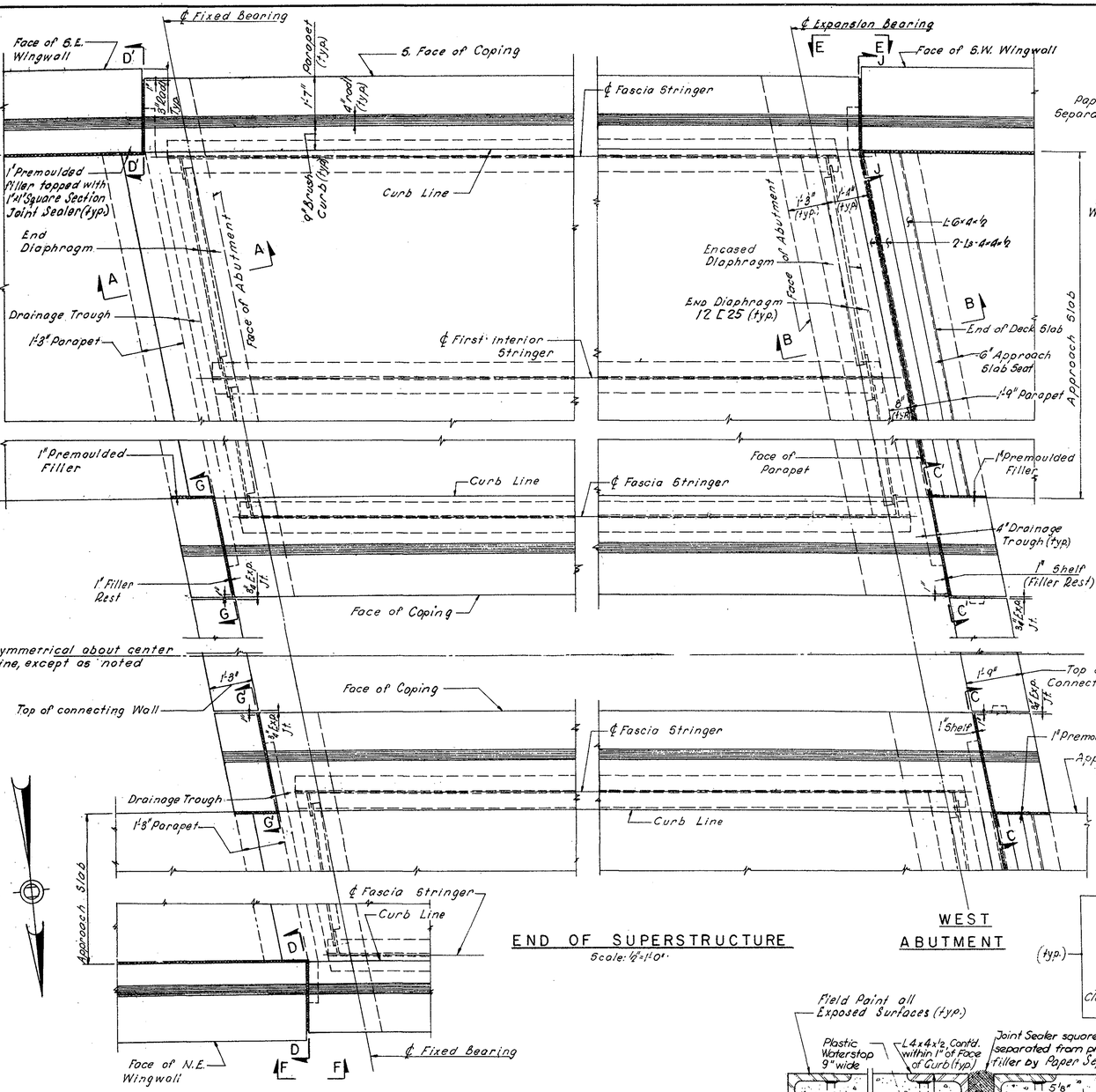
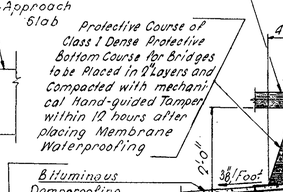
INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1([illegible])X	19	77	188

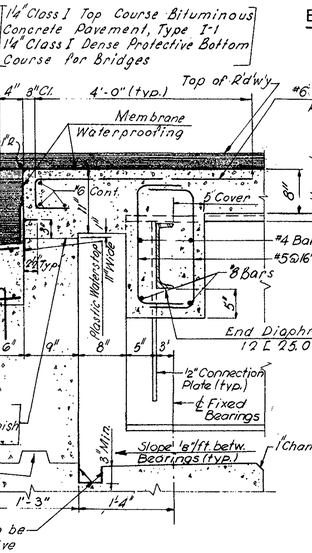


END OF SUPERSTRUCTURE
Scale: 1/2"=1'-0"

EAST ABUTMENT



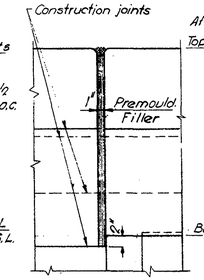
DETAIL "H"
Scale: 3"=1'-0"



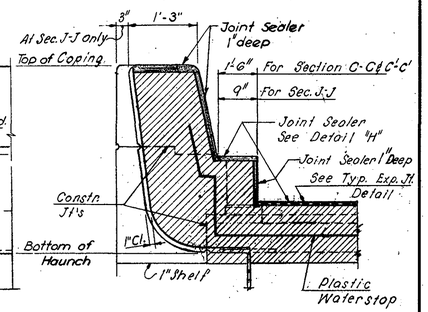
Notes:
1. Grind Armored Joint Surface to a Smooth Finish After Removal of Shipping Device.
2. All Exposed Surfaces of Joint Shall be Field Painted After Grinding.

Notes:
a) All Expansion Joint Assemblies must be properly fitted in Shop and shipped with Device for maintaining proper Spacing and Fit.
b) Bolts on Shipping Device must be loosened within one hour after Concrete has been placed so that movement may take place. Device shall be removed after Concrete has set on both sides of Assembly.

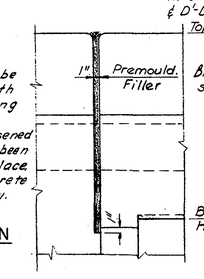
SHIPPING DEVICE FOR EXPANSION JOINT ASSEMBLY



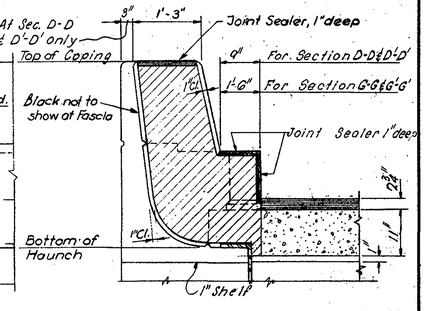
ELEVATION E-E
Scale: 3/4"=1'-0"



SECTION C-C & J-J
SECTION C'-C' OPPOSITE
Scale: 3/4"=1'-0"



ELEVATION F-F
Scale: 3/4"=1'-0"

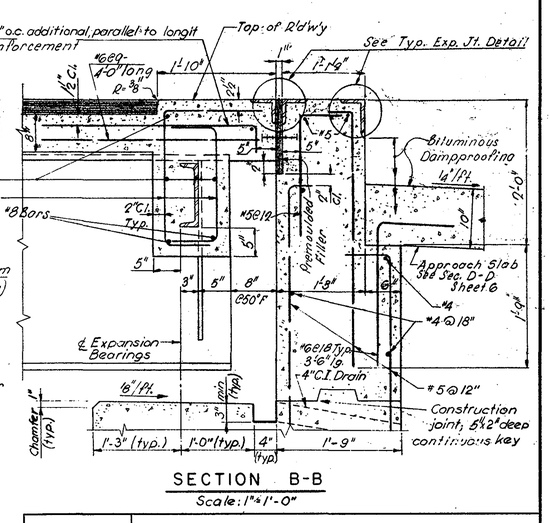


SECTION D-D & G-G
SECTION D'-D' & G'-G' OPPOSITE
Scale: 3/4"=1'-0"

TYPICAL EXPANSION JOINT DETAIL
Scale: 3"=1'-0"

WEST ABUTMENT

SECTION A-A
Scale: 1"=1'-0"



SECTION B-B
Scale: 1"=1'-0"

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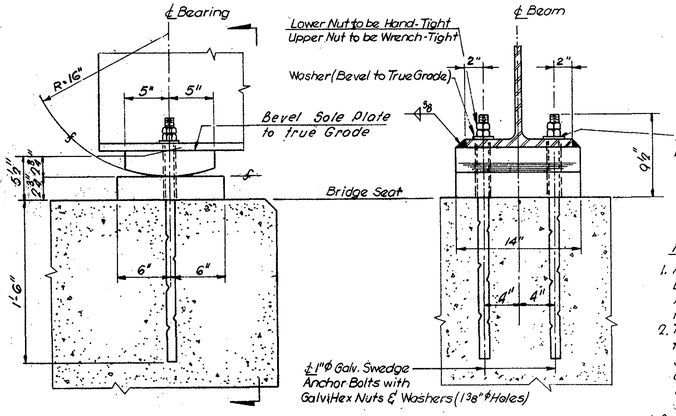
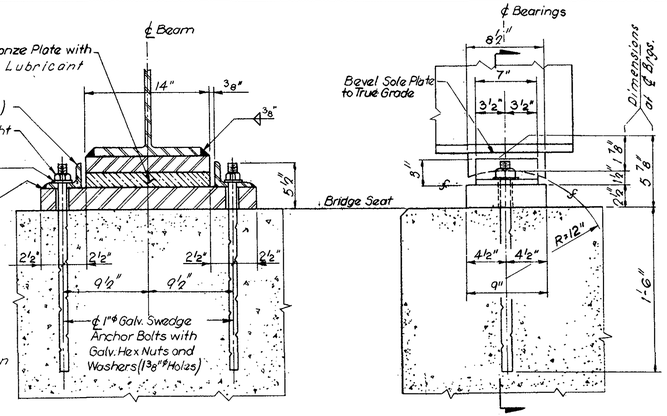
SHEET 10 OF 12 SHEETS-BRIDGE NO. W-21-46

INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	78	188



FIXED BEARINGS
Scale 1½"=1'-0"

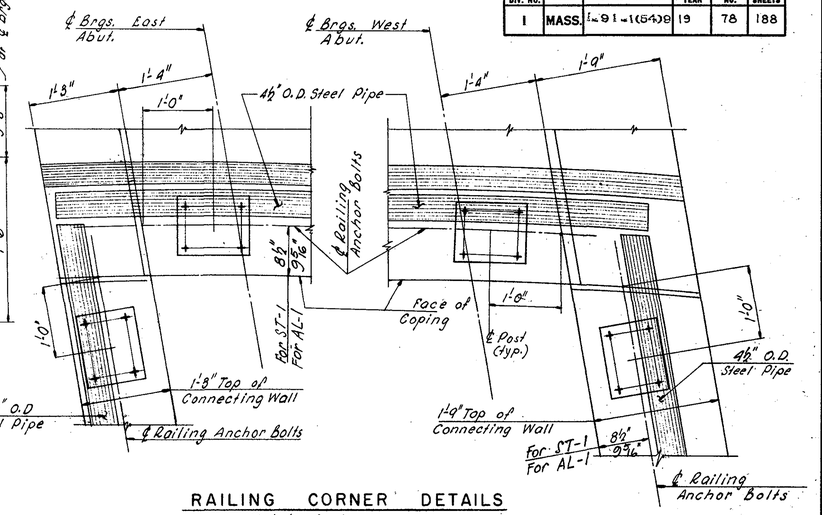


Notes

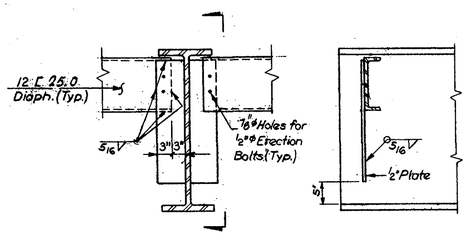
1. Masonry Plates and Sole Plates to be ASTM A36 Steel. ♯ denotes ASA 125 microinches or finer.
2. The Finished Surfaces shall meet the American Standard's Association surface roughness requirements as defined in ASA B46.1, surface roughness, waviness and lay, Part I.
3. Anchor Bolts to be set by template and placed before Concrete is poured.
4. Masonry Plate to have full bearing and to be adjusted for level before placing the Stringers on Bearing Assembly.

Maximum Design Unit Pressure on Bronze ℘ = 980 #/in²

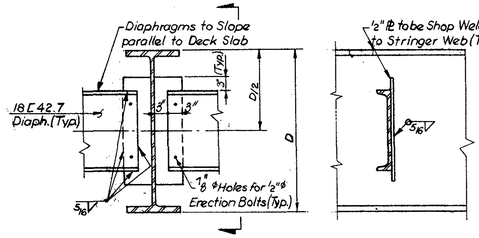
EXPANSION BEARINGS
Scale 1½"=1'-0"



RAILING CORNER DETAILS
Not to Scale



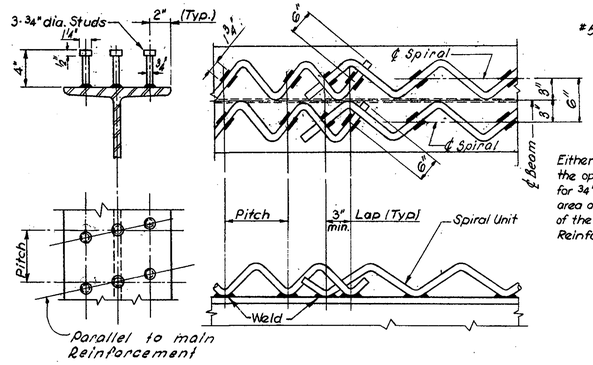
END DIAPHRAGM

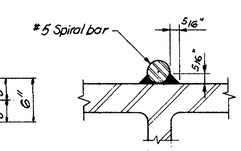


INTERIOR DIAPHRAGM

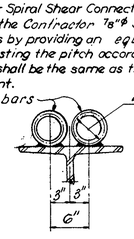
Erection Bolts, Nuts and Standard Washers for Diaph. Connections shall be furnished by the Fabricator.

TYPICAL DIAPHRAGM CONNECTIONS
Scale ¾"=1'-0"

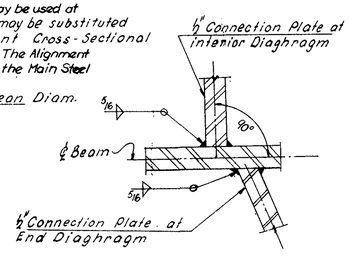




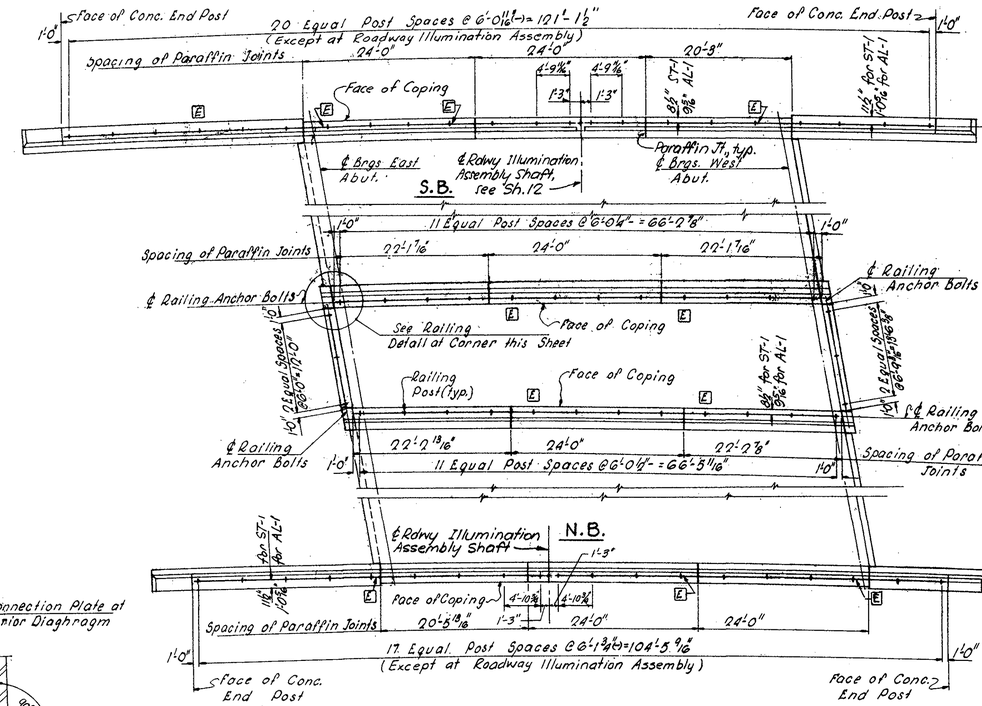
Either Stud or Spiral Shear Connectors may be used at the option of the Contractor. 7/8"ϕ Studs may be substituted for ¾"ϕ Studs by providing an equivalent Cross-Sectional area and adjusting the pitch accordingly. The Alignment of the Studs shall be the same as that of the Main Steel Reinforcement.



SHEAR CONNECTOR DETAILS
Not to Scale



CONNECTION PLATE DETAIL



℄ Denotes Location of Expansion Joint in Rail for Metal Bridge Railing Type ST-1 or AL-1. For Details see Standard Railing Sheets. Expansion in Rails To Be At Arrow Side Of Post.

Note:
Spacings for Railing Posts and Paraffin Joints are measured along ℄ of Railing Anchor Bolts.

RAILING POST & PARAFFIN JOINT LAYOUT PLAN
Not to Scale

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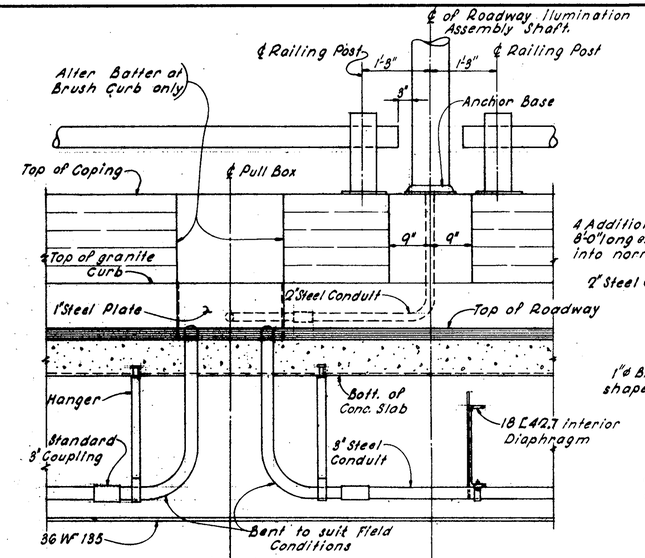
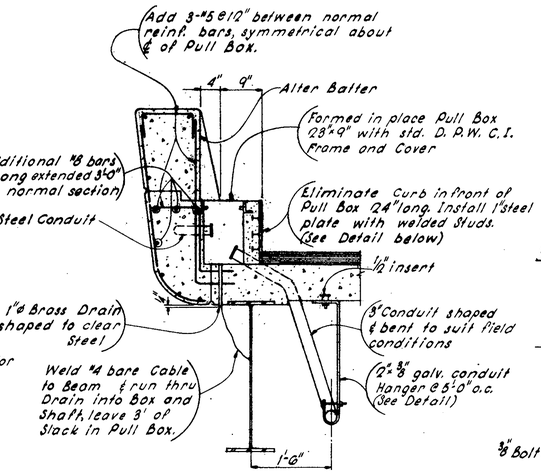
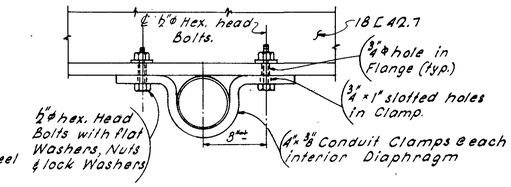
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	79	188



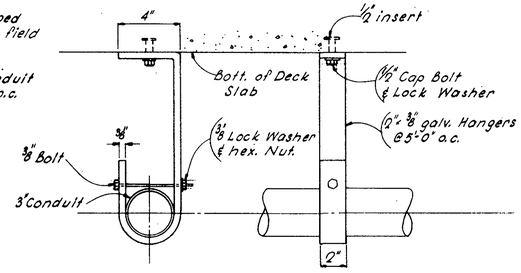
VIEW A-A



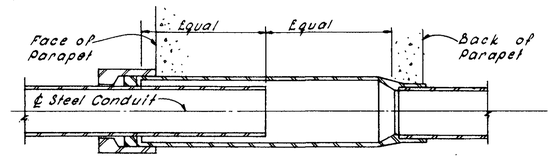
SECTION B-B



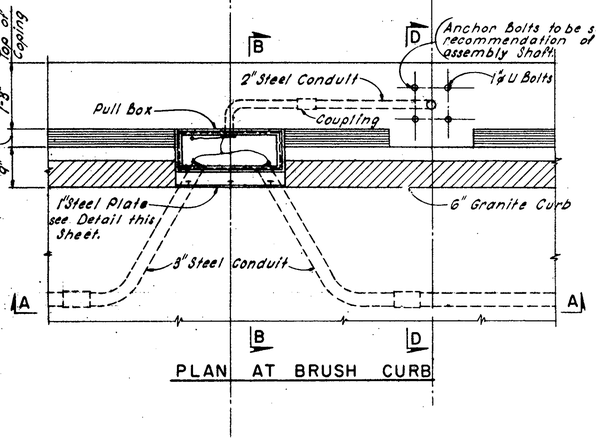
CONDUIT SUPPORT AT DIAPHRAGMS
(No Scale)



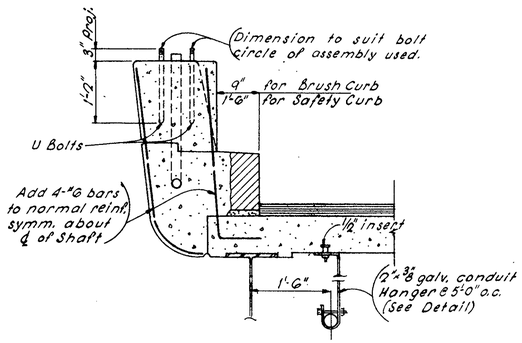
CONDUIT HANGER
(No Scale)



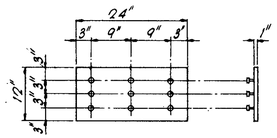
EXPANSION SLEEVE AT ABUTMENT
(No Scale)



PLAN AT BRUSH CURB



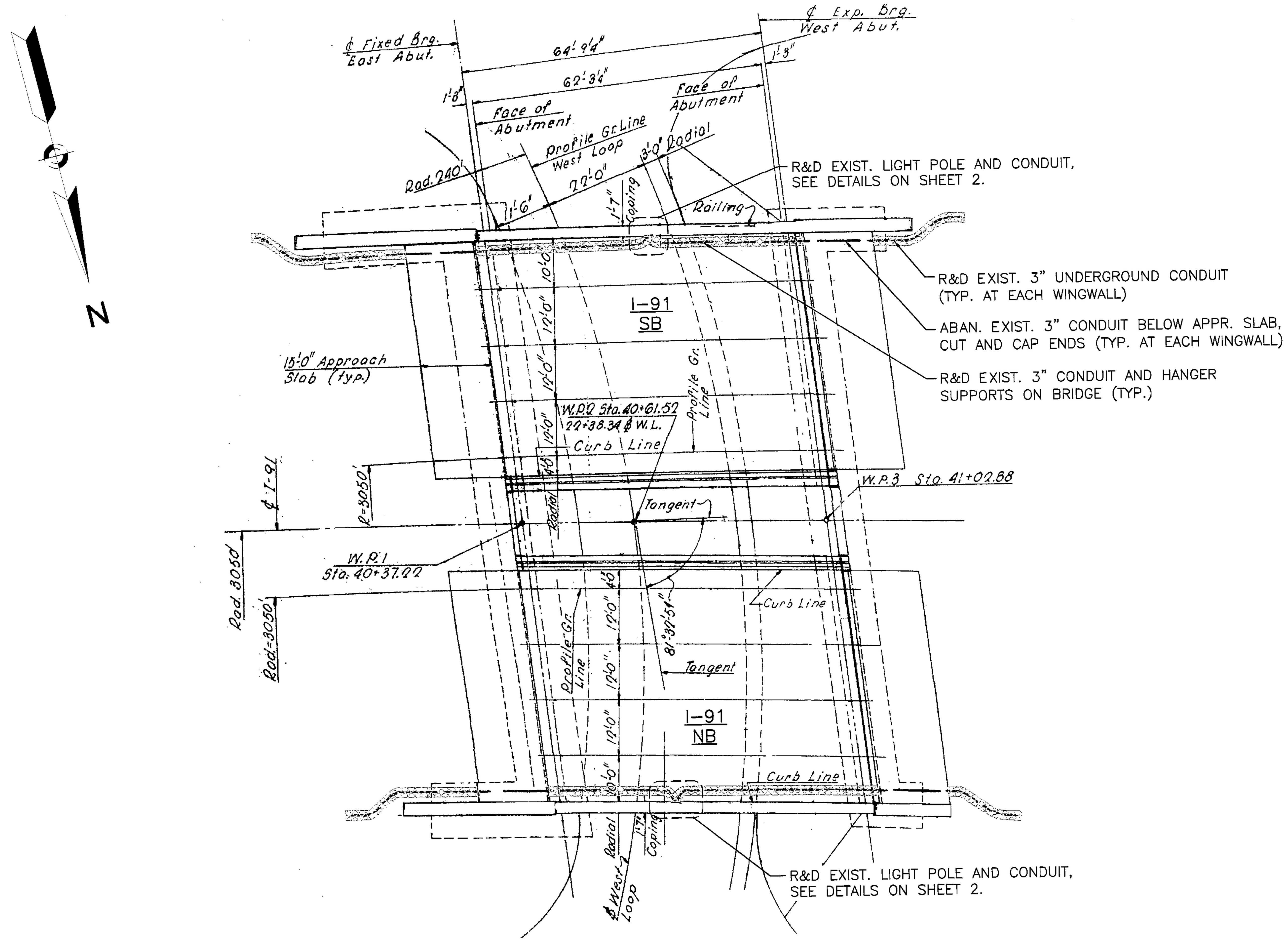
SECTION D-D



STEEL PLATE CURB FACING

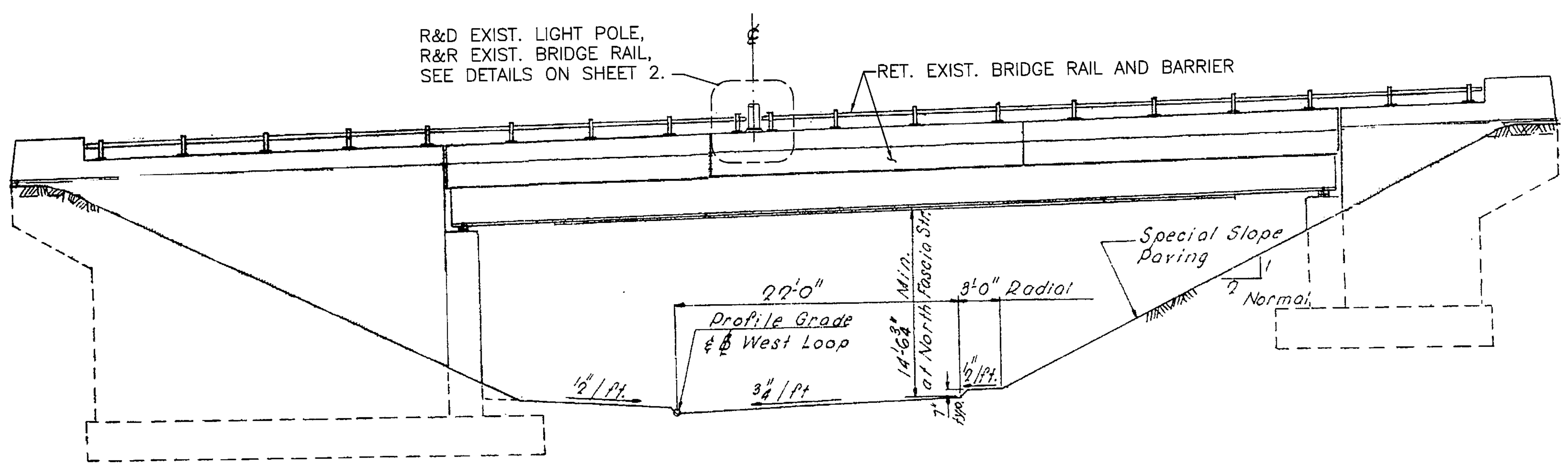
ROADWAY ILLUMINATION ASSEMBLY DETAILS
Scale: 3/4" = 1'-0" except as noted

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	



PLAN

SCALE: 1/16" = 1'-0"



NORTH ELEVATION

SCALE: 1/8" = 1'-0"

GENERAL NOTES:

EXISTING BRIDGE PLANS

PLANS FOR EXISTING BRIDGE NUMBER W-21-046 (BIN 10X) CAN BE FOUND AT THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION – HIGHWAY DIVISION, 10 PARK PLAZA, BOSTON, MASSACHUSETTS.

EXISTING PLAN, ELEVATION, BASELINE STATIONING, AND UTILITIES SHOWN WERE TAKEN FROM RECORD BRIDGE DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY ALL RELEVANT DIMENSIONING AND DETAILS PRIOR TO CONSTRUCTION OR ORDERING OF MATERIAL.

DEMOLITION

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL ALL PROPOSED CONSTRUCTION METHODS, EQUIPMENT, CONSTRUCTION SEQUENCE PLANS, AND MATERIAL TO PERFORM THE WORK.

ALL MODIFICATIONS TO PROPOSED WORK SHOWN ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO COMMENCING WORK.

THE CONTRACTOR SHALL EXERCISE CAUTION TO AVOID DAMAGING EXISTING BRIDGE AND ANY COMPONENTS TO REMAIN, AND SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED DURING DEMOLITION AND CONSTRUCTION.

EMPLOY TEMPORARY SHIELDING AS REQUIRED TO PROTECT SURROUNDING ROADWAY FROM FALLING OBJECTS AND CONSTRUCTION DEBRIS. DURING CONSTRUCTION THE ENGINEER MAY REVIEW SHIELDING AND DETERMINE WHETHER ADEQUATE PROTECTION HAS BEEN PROVIDED BY THE CONTRACTOR. IF DEEMED NOT ACCEPTABLE, WORK WILL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

SCALES

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALED BY 2 FOR HALF-SIZE PRINTS.

TRAFFIC MANAGEMENT

REFER TO THE TRAFFIC MANAGEMENT PLANS FOR STAGED CONSTRUCTION SEQUENCING AND PROPOSED TRAFFIC MAINTENANCE THROUGHOUT ALL STAGES OF CONSTRUCTION.

ELECTRICAL WORK

REFER TO THE LIGHTING PLANS FOR ADDITIONAL GENERAL NOTES REGARDING PROJECT ELECTRICAL WORK.

EXISTING UTILITIES

THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO DEMOLITION AND THE COMMENCEMENT OF EXCAVATION ACTIVITIES. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION AND SHALL COORDINATE WORK WITH THE UTILITY COMPANIES PERFORMING WORK IN THE SAME AREA.

THE CONTRACTOR SHALL NOTIFY DIG-SAFE (1-888-344-7233) AT LEAST 72 BUSINESS HOURS BEFORE CONSTRUCTION BEGINS.

THE CONTRACTOR SHALL DE-ENERGIZE ALL ELECTRICAL CIRCUITS IN CONDUITS THAT ARE IN AREAS TO BE DEMOLISHED. THE CONTRACTOR SHALL ALSO VERIFY AS NEEDED THE LOCATIONS OF EXISTING REBAR AND ELECTRICAL CONDUIT TO AVOID DAMAGE DURING CONSTRUCTION.

LEGEND:

(shaded pattern) LIMITS OF DEMOLITION

ESTIMATED QUANTITIES

(NOT GUARANTEED)

STEEL THRIE BEAM BRIDGE RAIL REMOVED AND RESET	40 FT
ELECTRICAL CONDUIT REMOVED AND DISPOSED	130 FT
METAL BRIDGE RAILING REMOVED AND RESET	80 FT
METAL BRIDGE RAILING (1 RAIL), ALUMINUM (TYPE AL-1)	6 FT

DEC. 8, 2018 — ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS — BRIAN P. BRISELLI — STRUCTURAL — No. 53003 — REGISTERED PROFESSIONAL ENGINEER

Brian P. Briselli 2/4/19

massDOT Massachusetts Department of Transportation Highway Division

PROPOSED BRIDGE REHABILITATION

WEST SPRINGFIELD

INTERSTATE ROUTE 91
OVER WEST LOOP (AT ROUTE 5)

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

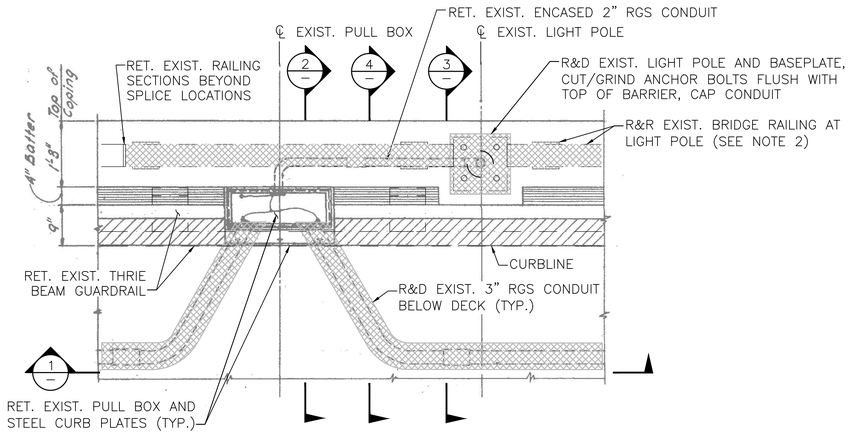
JACOBS
120 ST. JAMES AVENUE
5TH FLOOR
BOSTON, MA 02116

TITLE: STATE BRIDGE ENGINEER — Thomas A. DiPaolo, P.E. for CHIEF ENGINEER

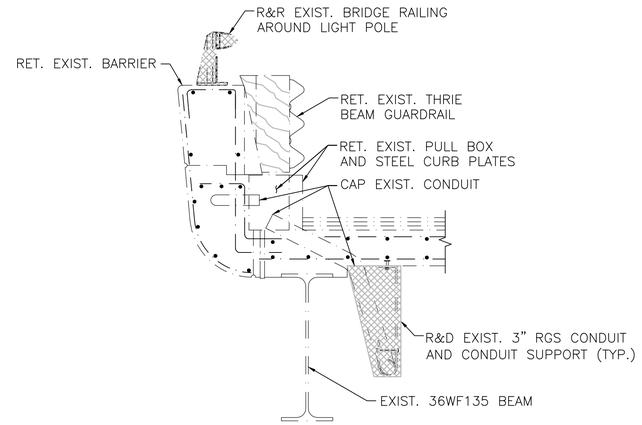
WEST SPRINGFIELD / CHICOPEE
INTERSTATE 91 / ROUTE 5

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(NHS)-091S(305)X	36	39
PROJECT FILE NO.	608600		

LIGHT SUPPORT DETAILS



PARTIAL PLAN AT EXISTING LIGHT POLE
SCALE: ¾" = 1'–0"



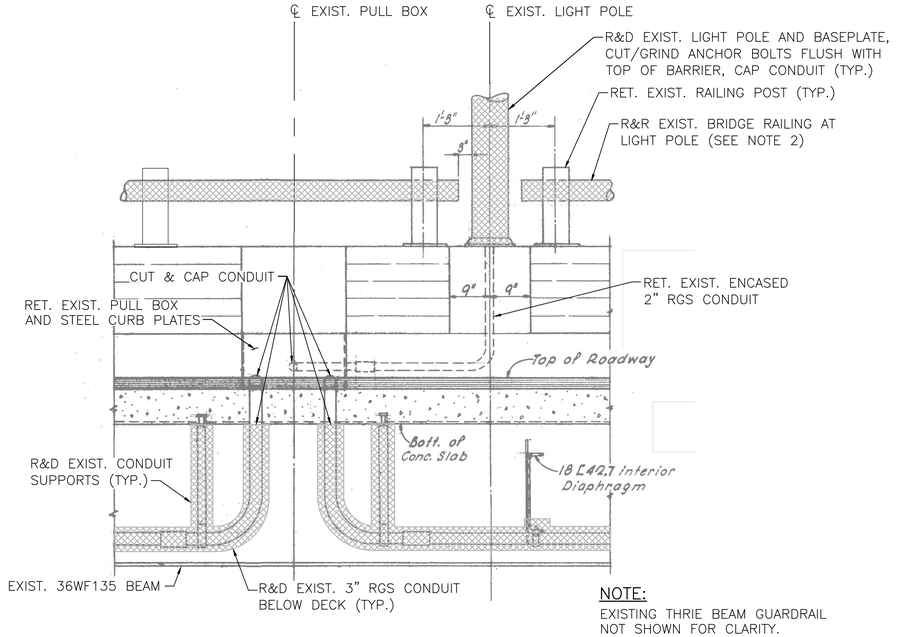
SECTION AT EXISTING PULL BOX (2)
SCALE: ¾" = 1'–0"

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 1 OF 2.
2. PROPOSED BRIDGE RAILING SHALL BE REINSTALLED CONTINUOUS AT AREAS OF EXISTING LIGHT POLE REMOVAL. CONTRACTOR SHALL FIELD VERIFY RAILING SECTION LENGTHS, SPLICE LOCATIONS, AND POST LOCATIONS TO DETERMINE WHAT COMPONENTS AND LOCATIONS CAN BE REUSED. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL OF MATERIALS AND PROPOSED LAYOUT PRIOR TO RAILING REINSTALLATION.

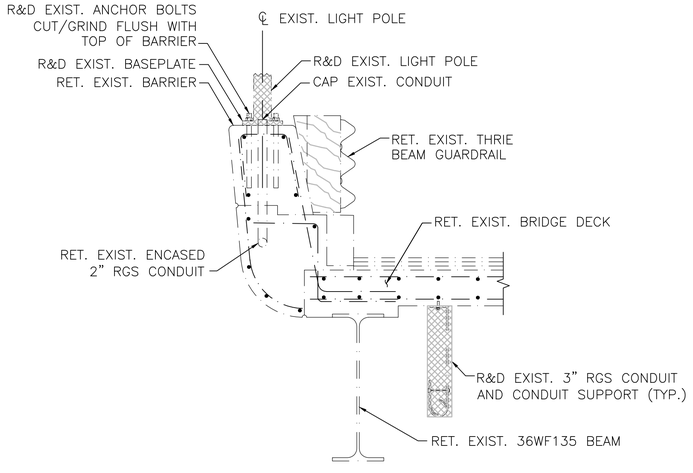
LEGEND:

LIMITS OF DEMOLITION

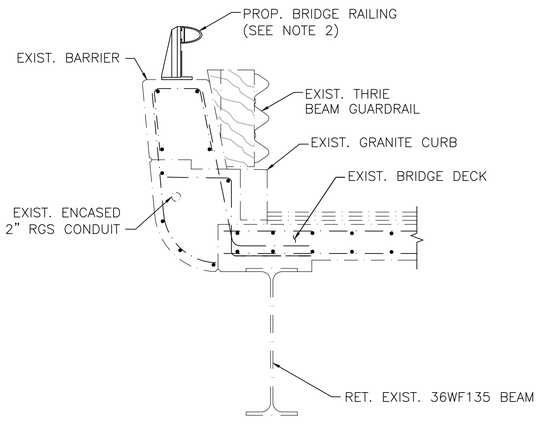


NOTE:
EXISTING THRIE BEAM GUARDRAIL NOT SHOWN FOR CLARITY.

SECTION AT EXISTING LIGHT POLE (1)
SCALE: ¾" = 1'–0"



SECTION AT EXISTING LIGHT POLE BASE (3)
SCALE: ¾" = 1'–0"

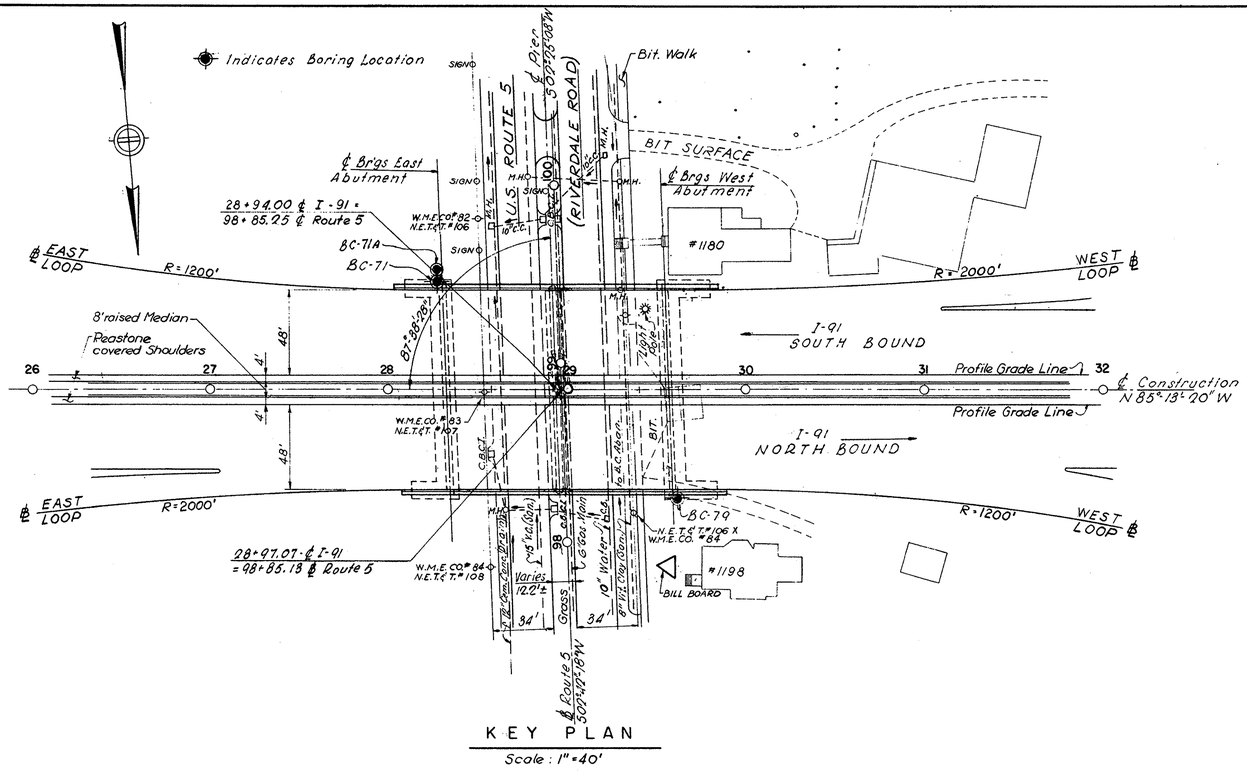


PROPOSED SECTION (4)
SCALE: ¾" = 1'–0"

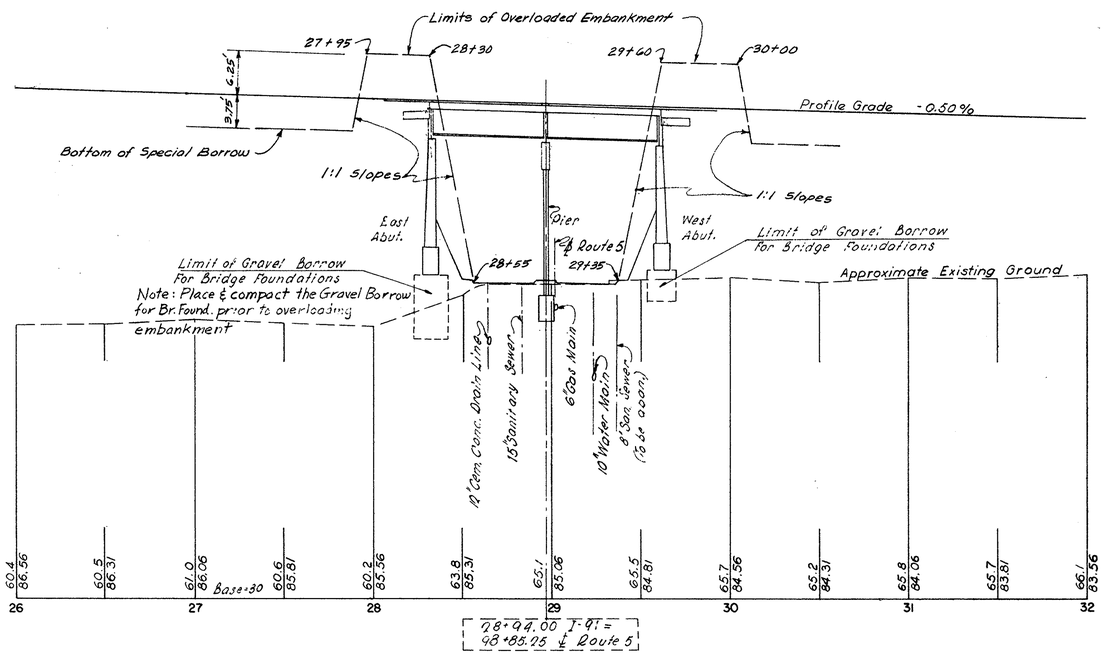
DATE	DESCRIPTION
DEC. 8, 2018	ISSUED FOR CONSTRUCTION
USE ONLY PRINTS OF LATEST DATE	

INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
1	MASS.	I-91-1(54)39	19	80	188

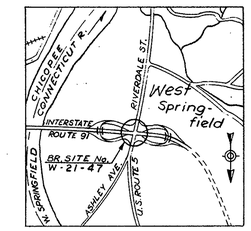


KEY PLAN
Scale: 1" = 40'

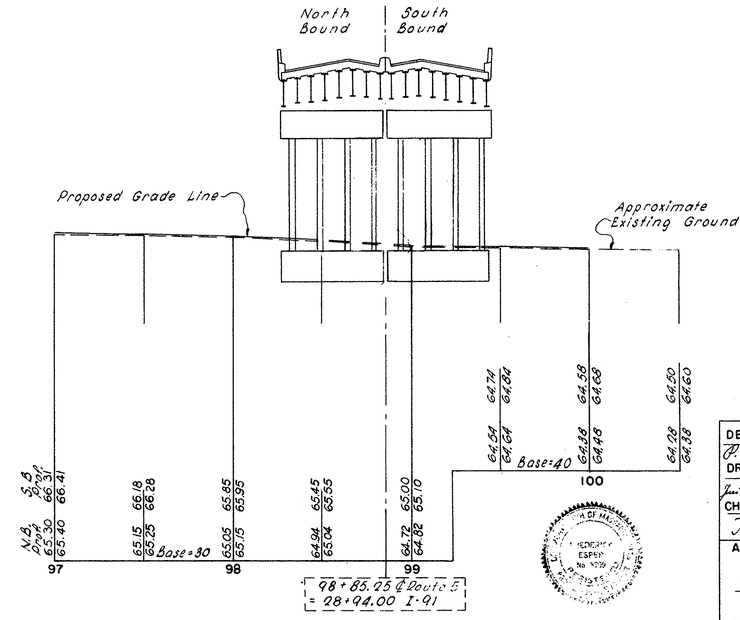


PROFILES
Scales: Horiz. 1" = 40'
Vert. 1" = 8'

INTERSTATE ROUTE 91
ROUTE 5



LOCUS PLAN
Scale: 1" = 2000'



LOUIS BERGER & ASSOCIATES
CONSULTING ENGINEER
WELLESLEY HILLS, MASS.

GENERAL NOTES

FOUNDATIONS
Foundations may be altered if necessary to suit conditions encountered during Construction.

DATE AND SEAL
To be located as shown on Sheet 5. A Sheet showing Size and Character of Numerals will be furnished. Seal to be furnished by the State and shall be set by the Contractor.

DESIGN
In Accordance with the current AASHO Specifications (1961 Edition) and Interim Specifications for H520-44 Loading, modified for military Loading.

REINFORCEMENT
All bars shall have deformations conforming to A.S.T.M.A.-305. Unless otherwise shown on the plans, Bars shall be lapped 20 diameters for Splices, except that Bars near the Top of Slabs and Beams with more than 12 inches of Concrete under the Bars shall be lapped 35 diameters for Splices.

BRIDGE RAILING
See Department Standard Plans dated May 1965, for details of Bridge Railings, (1 Rail) Option

SCALES
Scales noted on Plans are not applicable to reduced Size Prints. Divide Scales by 2 for 4-Size Prints.

BENCH MARK
B.M. #7 - Top of right outer corner bottom concrete Step - House Number 1162 Route 5. Sta. 101+38 ℄ Route 5, 68' Rt. Elev. 67.31

SURVEY BOOK NUMBERS
27361, 27363, 20976, 19814

UNSUITABLE MATERIAL
All Unsuitable Material Shall be Removed Within the Limits of the Foundation of the Structure.

ANCHOR BOLTS
All Anchor Bolts are to be Set by Template and Placed Before Concrete is Poured.

ESTIMATED QUANTITIES
(NOT GUARANTEED)

ITEM	QUANTITIES
Class "B" Rock Excavation	5 C.Y.
Bridge Excavation	1730 C.Y.
Gravel Borrow	850 C.Y.
Gravel Borrow for Bridge Foundations	1545 C.Y.
Class I Bituminous Concrete Pavement Type I-1	110 Tons
Class I Dense Protective Bottom Course for Bridges	120 Tons
Metal Bridge Railing (1 Rail) Option	336 L.F.
Metal Bridge Railing - Type M-2	130 L.F.
Bridge Structure (W-21-47)	1 L.S.

The following Quantities are included in Item 339.03

Steel Reinforcement for Structures	184,500 lbs.
Structural Steel	378,000 lbs.

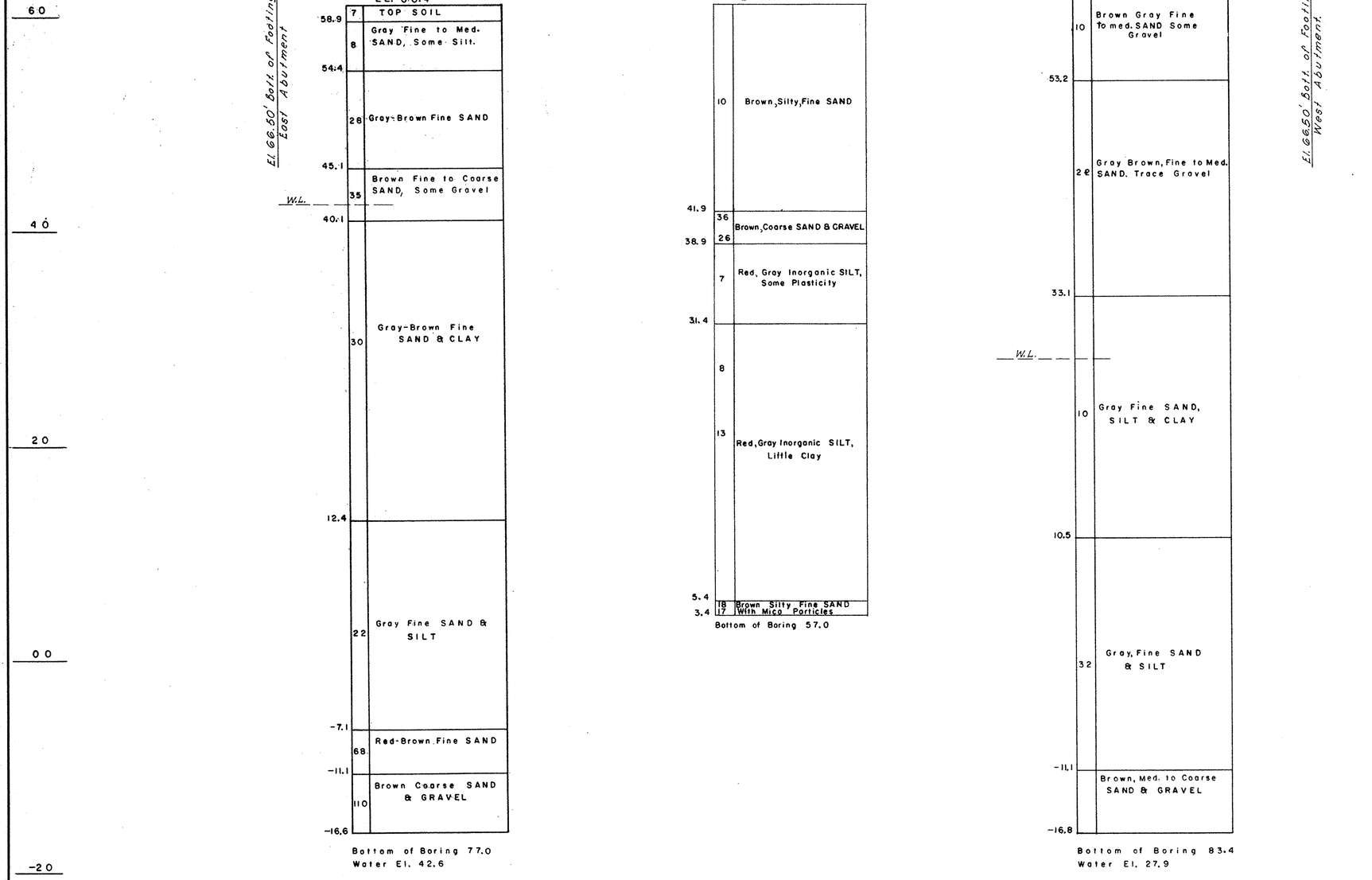
DESIGNED BY	APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DRAWN BY		
CHECKED BY		
APPROVED FOR DESIGN		

THE COMMONWEALTH OF MASSACHUSETTS
PROPOSED BRIDGE
WEST SPRINGFIELD MASS.
INTERSTATE ROUTE 91
INTERSTATE ROUTE 91 OVER ROUTE 5
SCALES AS NOTED
OFFICE OF
DEPARTMENT OF PUBLIC WORKS
100 NASHUA ST. BOSTON MASS.
APR. 1966
BRIDGE ENGINEER
CHIEF ENGINEER

SHEET 1 OF 11 SHEETS BRIDGE NO. W-21-47

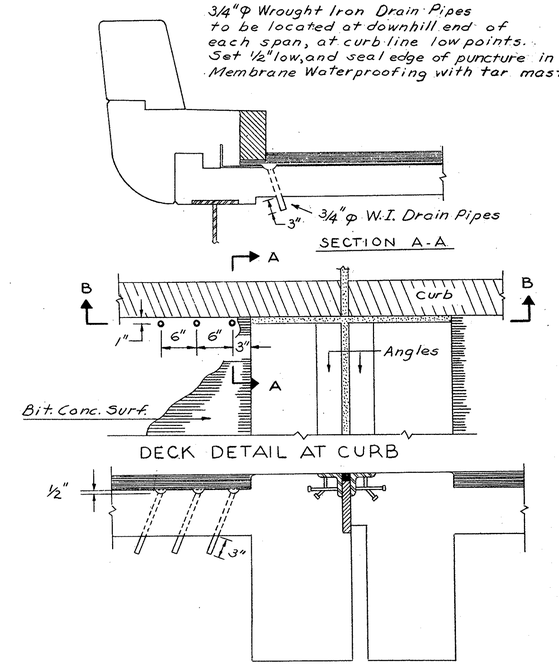
INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)S	19	81	188



BORING DATA
Scale: 3/16" = 1'-0"

3/4"φ Wrought Iron Drain Pipes to be located at downhill end of each span, at curb line low points. Set 1/2" low, and seal edge of puncture in Membrane Waterproofing with tar mastic.



DETAIL OF DRAIN PIPES THROUGH DECK SLAB

BORING NOTES

Location of Borings shown on Key Plan, Sheet 1 thus: ◉ BC-71. BC indicates a Bridge Core Boring. Borings taken for purpose of Design & show conditions at Boring Points only but do not necessarily show Nature of Material to be encountered during construction.

Figures in left hand column indicate Number of Blows required to drive 2" O.D. Sampler 12" using 140 lb. weight falling 30".

Borings were made by Allstate Drilling Co., 227 Wampanoag Trail. Riverside, R.I. May 1965.

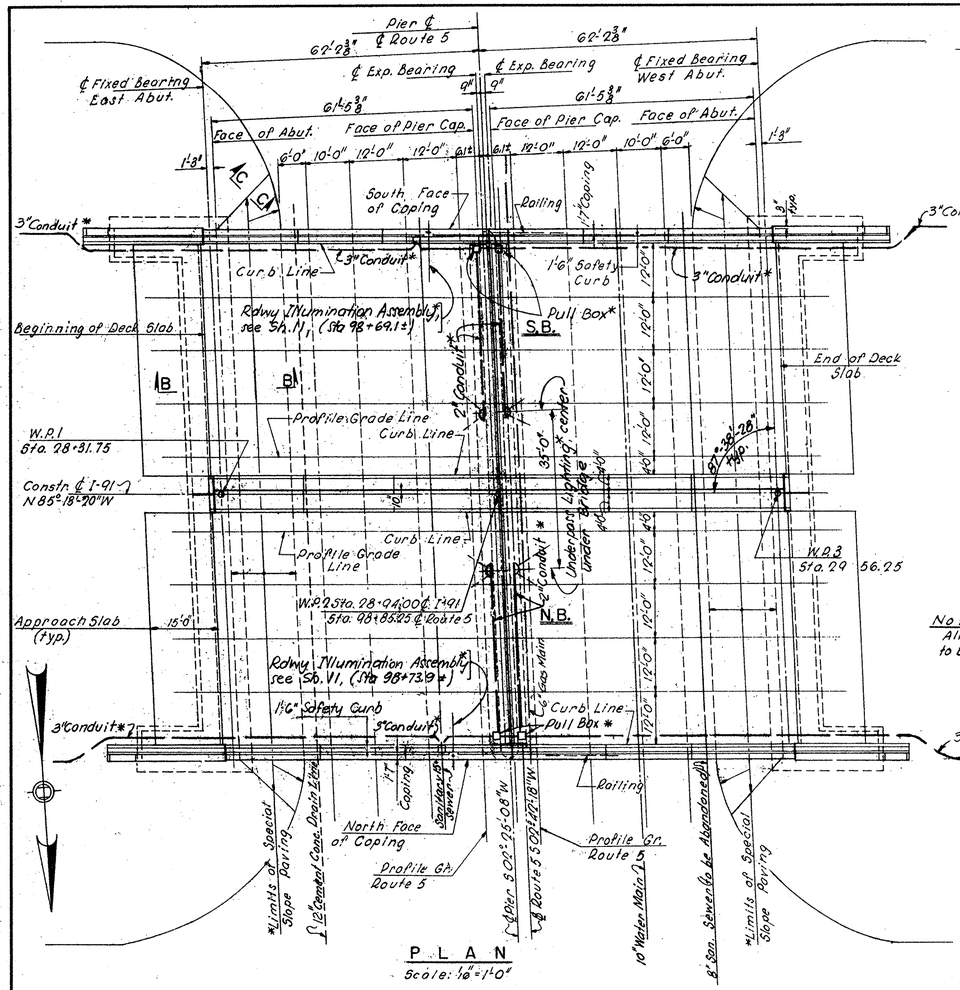
Boring Samples may be seen at the Research and Material Division, 99 Worcester Street, Wellesley Hills, at the intersection of Route 9 and Route 128 by appointment only.

Water levels shown on the Boring Logs were observed at the time of taking borings and do not necessarily show the true ground water level.

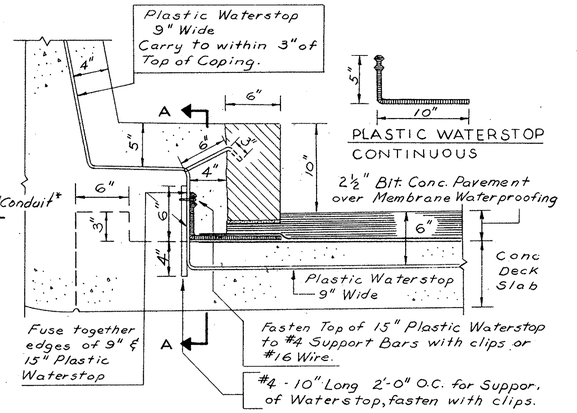
APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

INTERSTATE ROUTE 91
WEST SPRINGFIELD

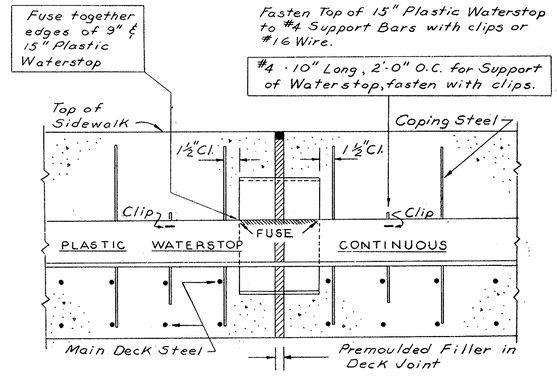
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	82	188

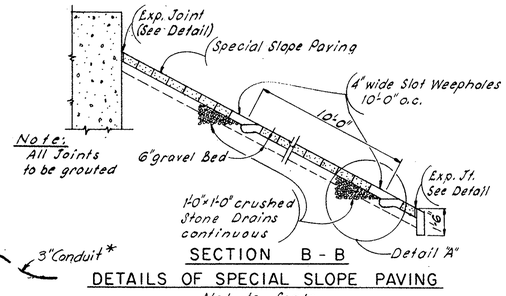


PLAN
Scale: 1/8" = 1'-0"

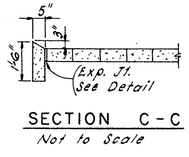


DETAILS OF SAFETY CURB AT DECK JOINT



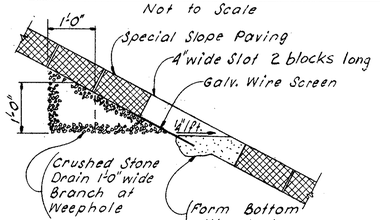


SECTION B - B

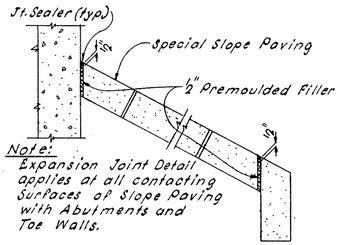


SECTION C - C
Not to Scale

DETAILS OF SPECIAL SLOPE PAVING
Not to Scale

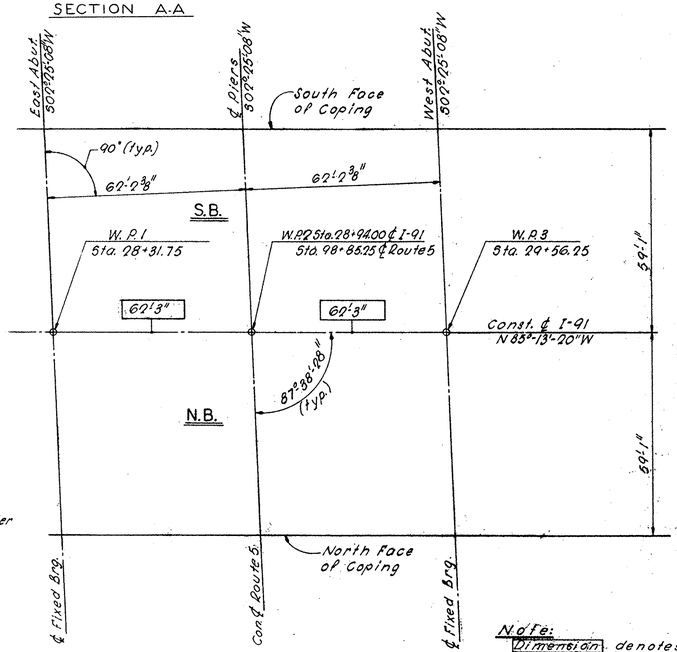


DETAIL "A"
Not to Scale

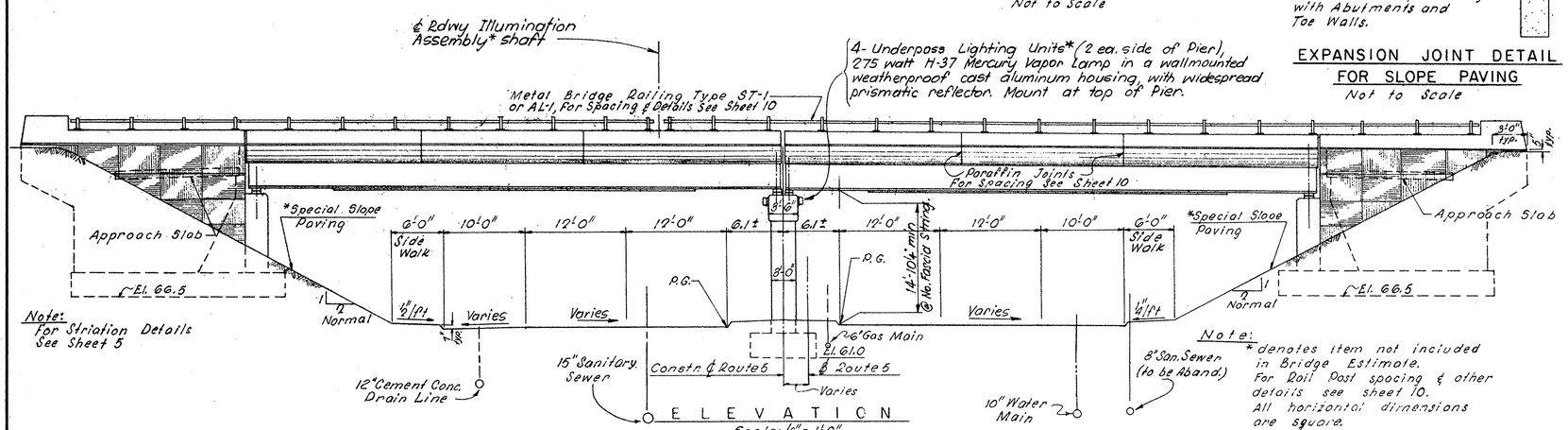


EXPANSION JOINT DETAIL FOR SLOPE PAVING
Not to Scale

SECTION A-A



WORKING POINT DIAGRAM
Not to scale



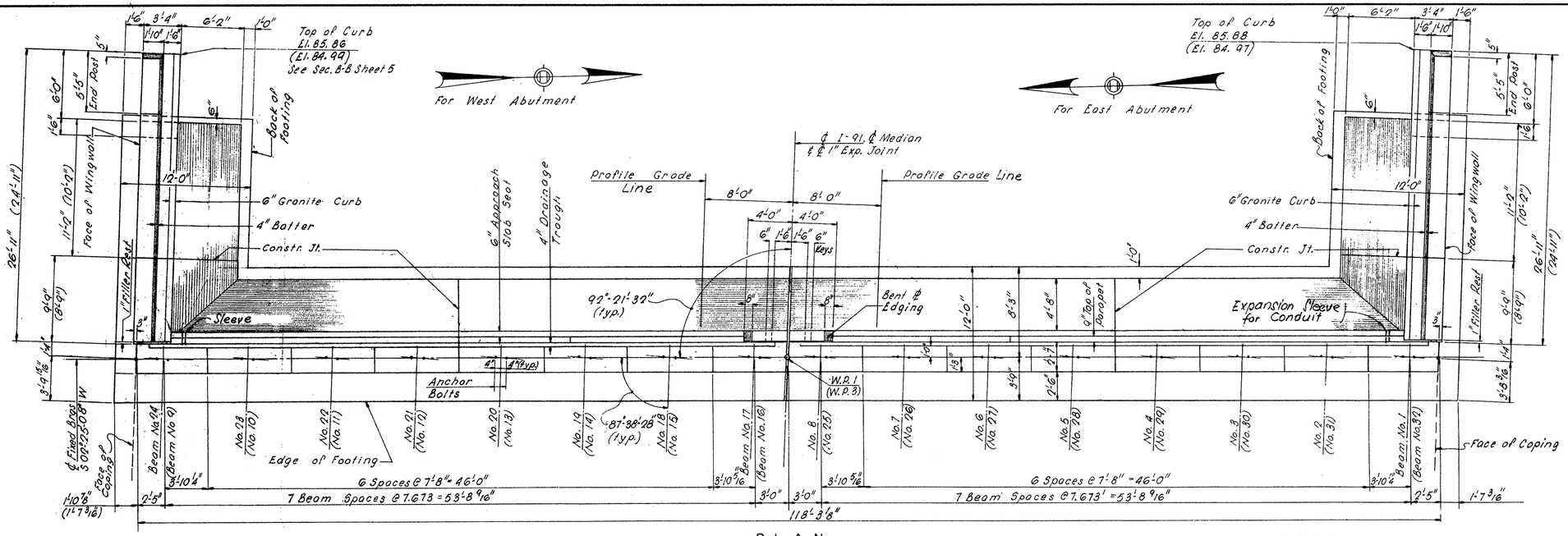
ELEVATION
Scale: 1/8" = 1'-0"

Note:
* denotes item not included in Bridge Estimate.
For Rail Post spacing & other details see sheet 10.
All horizontal dimensions are square.
P.G. indicates Profile Grade

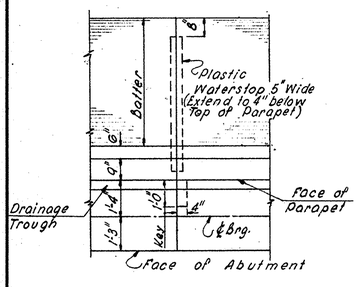
APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	83	188

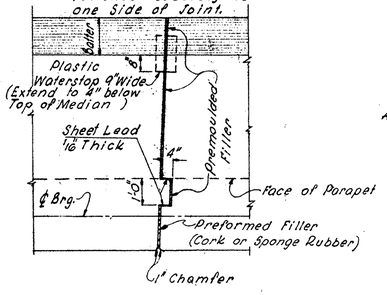


Note:
(.....) denotes Dimensions, Elevations or Beam numbers, etc. of West Abutment, when they differ from East Abutment.

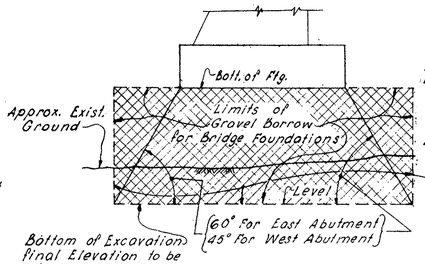


CONSTRUCTION JOINT
Scale: 3/8" = 1'-0"

Note:
Filler Material must be fastened securely to one side of joint.



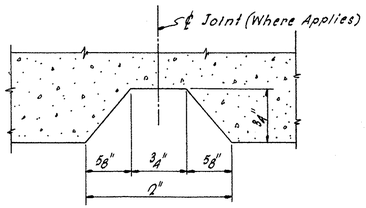
EXPANSION JOINT
Scale: 3/8" = 1'-0"



LIMITS OF BRIDGE EXCAVATION AND LIMITS OF GRAVEL BORROW FOR BRIDGE FOUNDATIONS AT ABUTMENT
Not to Scale

Notes:
1. Same Treatment to be used at Wingwalls & Ends. See Standard Specifications for Compaction.
2. See Sheet 6 of 188 for Limits of Bridge Excavation of Overlooded Embankment.

Limits of Bridge Excavation. Upper Limit of Bridge Excavation to be Bottom of "Topsoil Excavated and Stacked".



RUSTICATION GROOVE DETAIL
Full Size

Note:
For Wingwall Elevations & Striation Details See Sheet 6

Notes:
1. For Footing Layout Plan see Sheet 5.
2. For Median Details See Sheet 7.
3. Work this Sheet with Sheet 5.
4. For Typical Abutment & Wingwall Sections See Sheet 5.

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

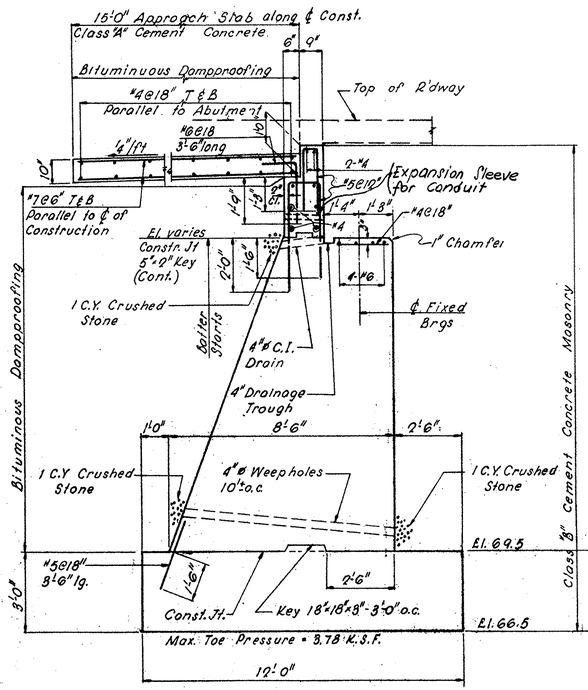
INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(6)39	19	84	188

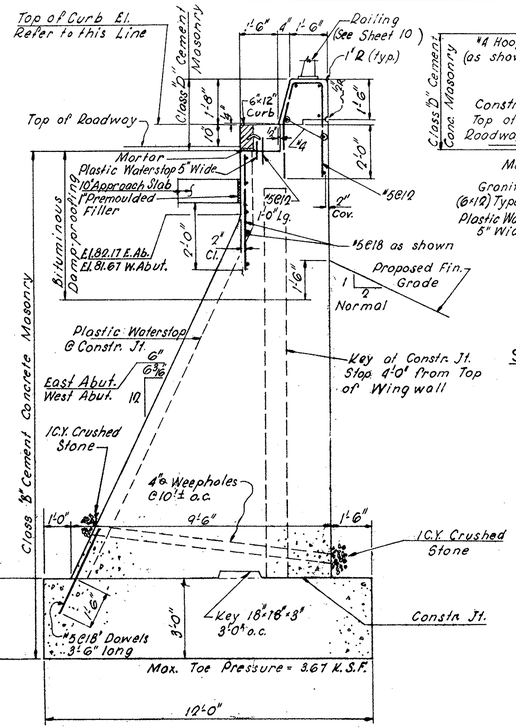
WINGWALL ELEVATIONS

Wingwall	El. "A"	El. "B"	El. "C"
North East	85.90	86.03	66.50
South East	85.92	86.06	66.50
North West	85.26	85.14	66.50
South West	85.28	85.16	66.50

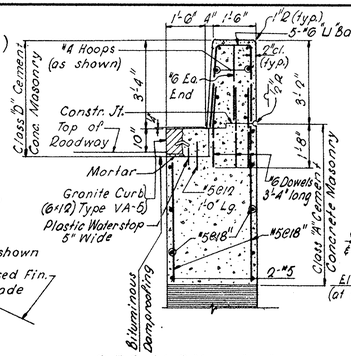
Note:
Date & Seal to be located at the inside Faces of S.W. & N.E. Wingwalls. Fill shall be placed and thoroughly compacted to the Grade of the Bottom of the Wings; or where no Fill is Required Below the Wings, the Concrete shall be Placed Upon Undisturbed Soil.



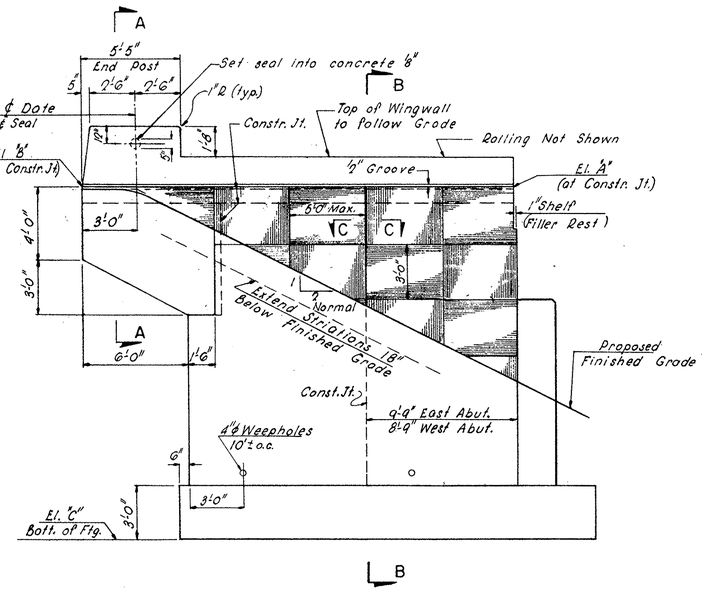
TYPICAL ABUTMENT SECTION
Scale: 3/8" = 1'-0"



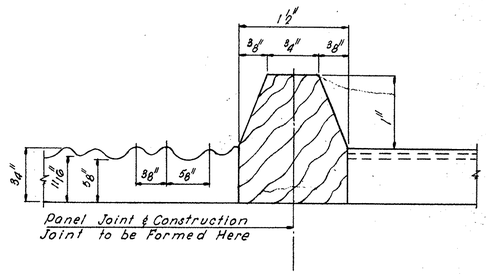
TYPICAL WINGWALL SECTION B-B
Scale: 3/8" = 1'-0"



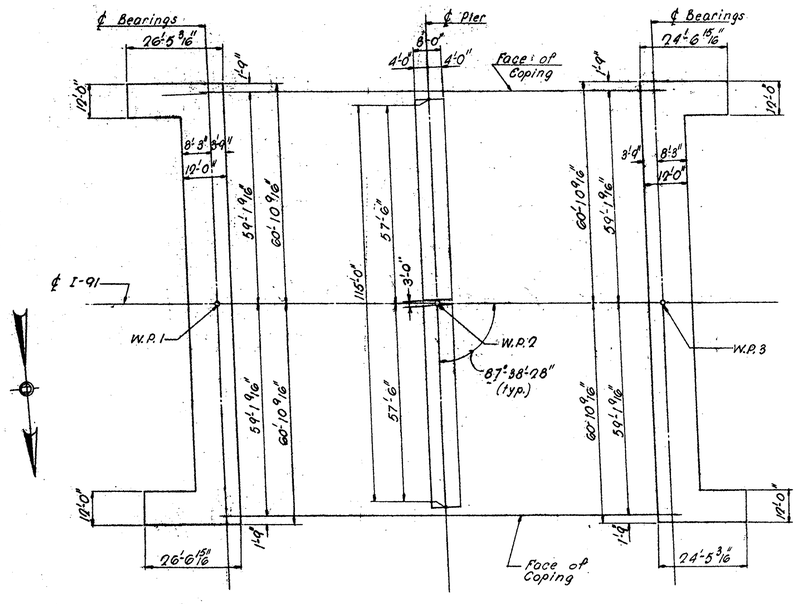
SECTION A-A
Scale: 3/8" = 1'-0"



TYPICAL WINGWALL ELEVATION
Scale: 1/4" = 1'-0"

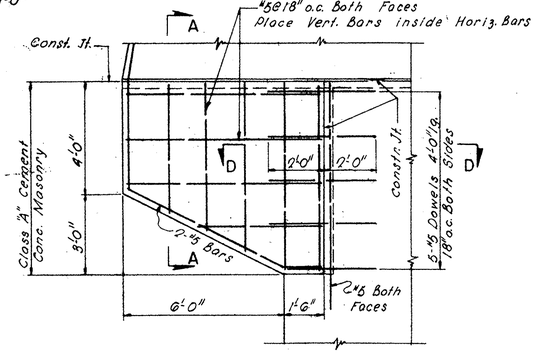


TYPICAL STRIATED PANEL JOINT
Full Size

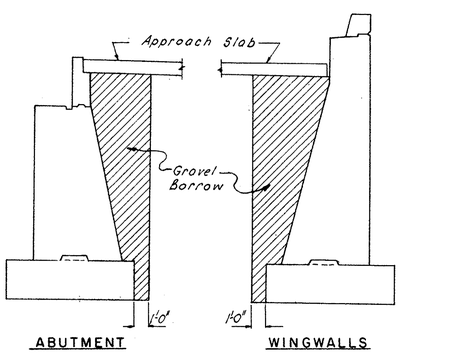


EAST ABUTMENT — WEST ABUTMENT

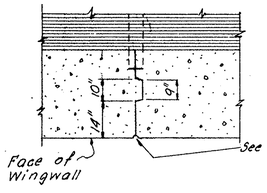
FOOTING LAYOUT PLAN
Scale: 1" = 20'-0"



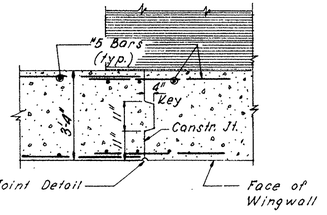
FLYING WING REINFORCEMENT
Scale: 3/8" = 1'-0"



SECTIONS SHOWING GRAVEL BORROW
Scale: 3/16" = 1'-0"



SECTION C-C
Scale: 3/8" = 1'-0"

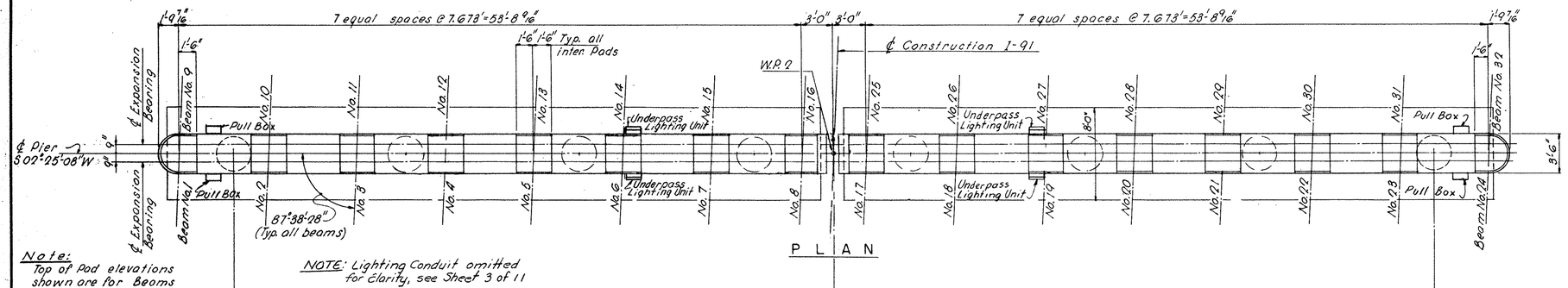


SECTION D-D
Scale: 3/8" = 1'-0"

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
	USE ONLY PRINTS OF LATEST DATE

INTERSTATE ROUTE 91
WEST SPRINGFIELD

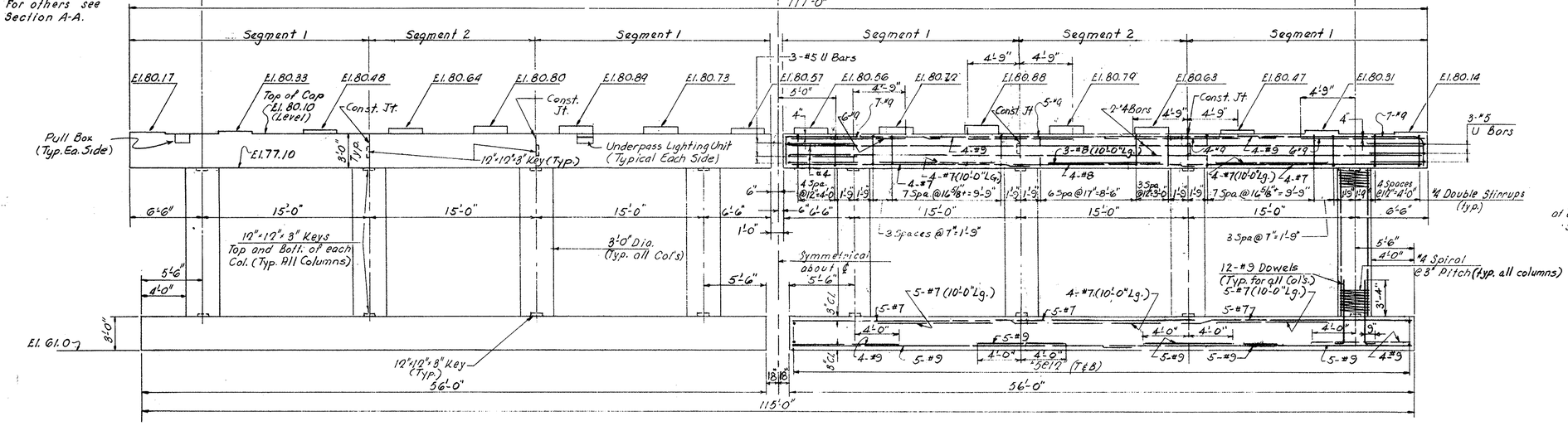
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	85	188



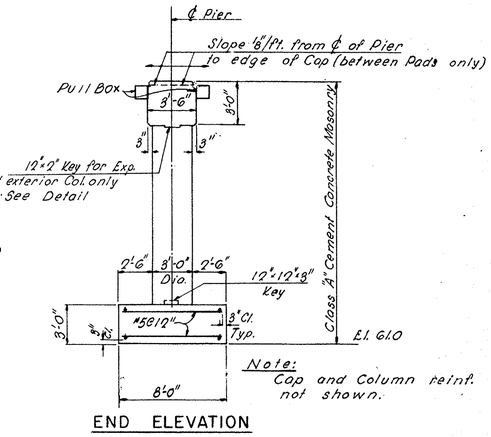
PLAN

Note:
Top of pad elevations shown are for Beams No. 1 - No. 8 & No. 17 - No. 24. For others see Section A-A.

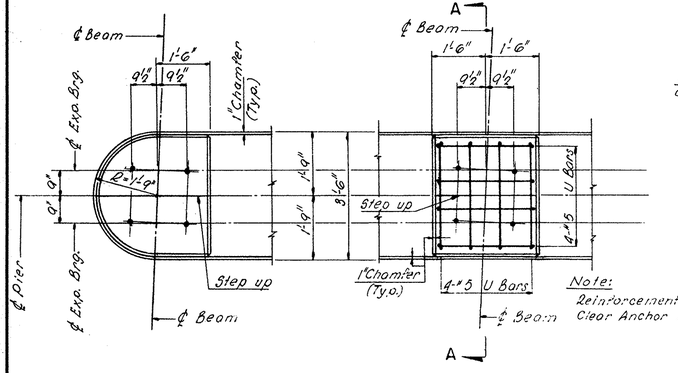
NOTE: Lighting Conduit omitted for Clarity, see Sheet 3 of 11



ELEVATION
Scale: 3/16"=1'-0"

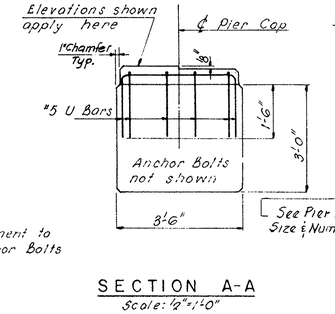


END ELEVATION



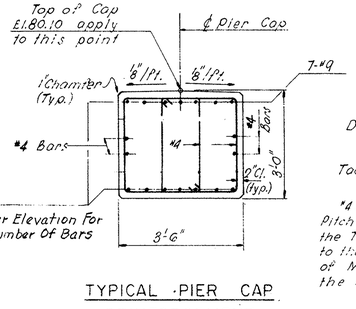
EXTERIOR PAD INTERIOR PAD

TYPICAL BEARING PAD DETAILS
Scale: ½"=1'-0"

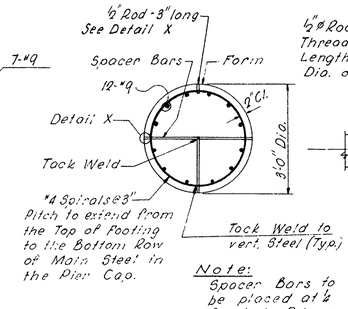


SECTION A-A
Scale: ½"=1'-0"

Notes:
Pads Less than 4" to be Poured Together with Pier. (No Dowels or Reinforcement Required)

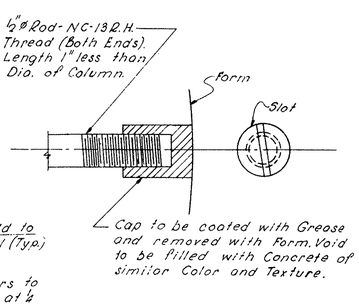


TYPICAL PIER CAP REINFORCEMENT
Scale: ½"=1'-0"



Note:
Spacer Bars to be placed at ¼ Points in Column

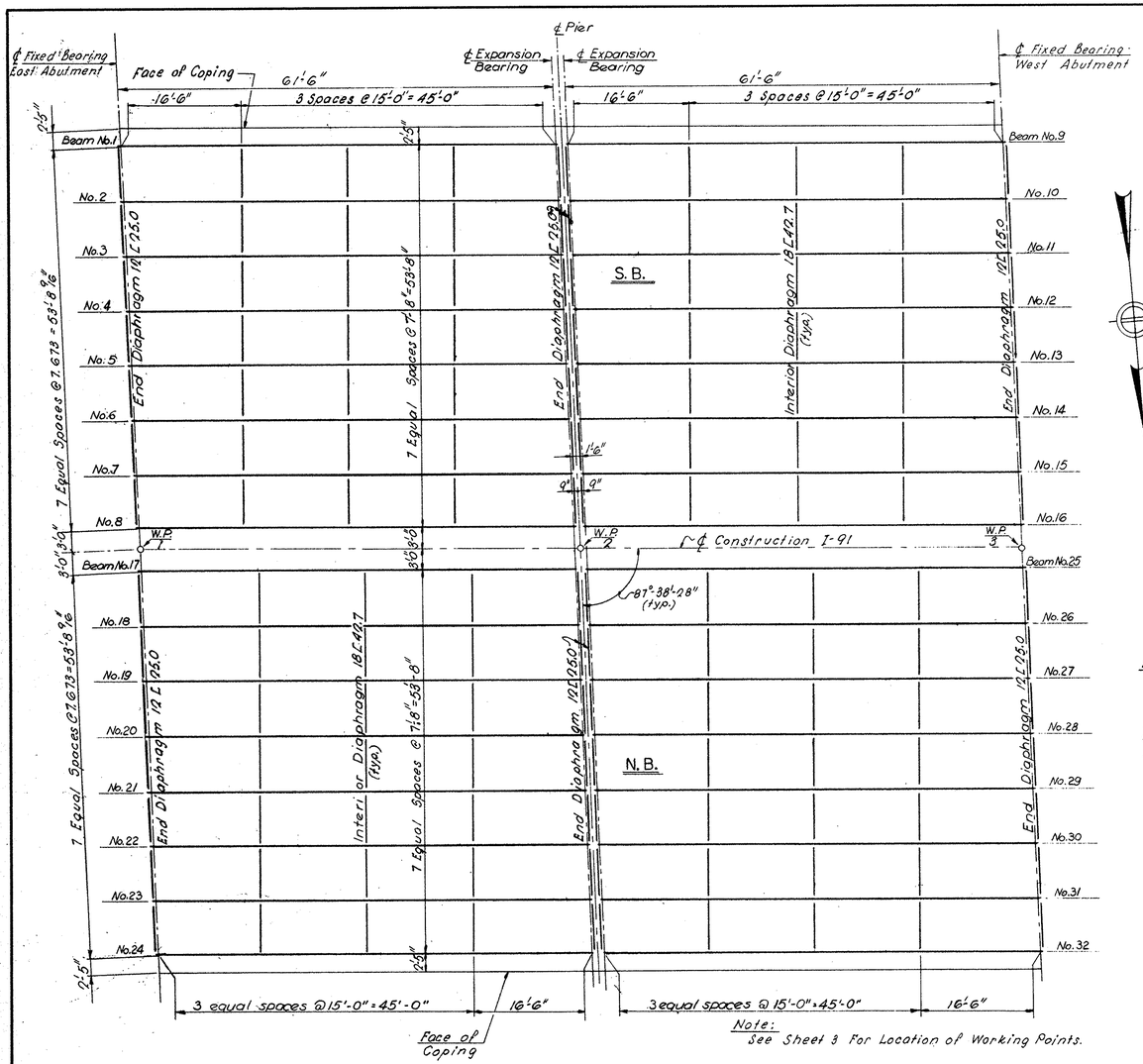
TYPICAL COLUMN REINFORCEMENT
Scale: ½"=1'-0"

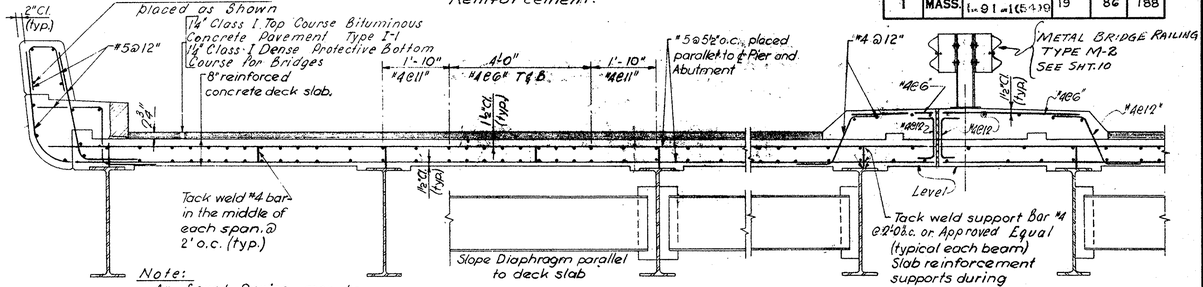


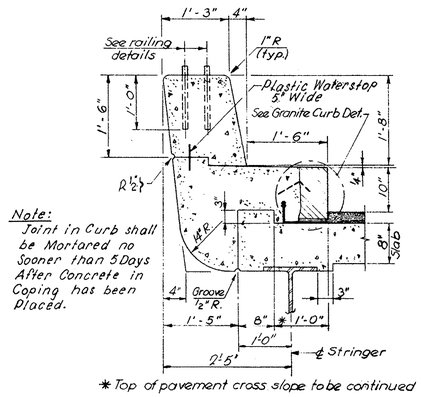
DETAIL "X"

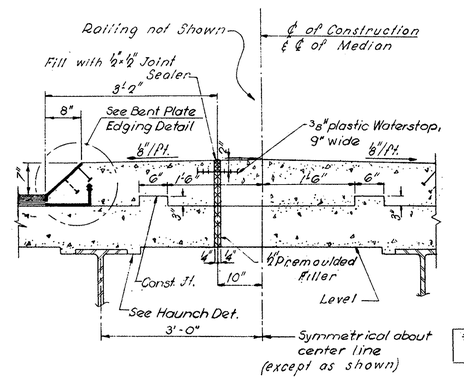
Notes:
1. Pouring Sequence of Pier Caps: Pour Segments 1 First. Pour Segment 2, 24 Hours after completion of Pours of Segments 1.
2. Maximum Footing Pressure: 2.73 T/Sq.Ft.
3. Anchor Bolts to be Placed by Template Before the Concrete is Poured. For Details See Sheet 10.
4. All Construction Keys in Pier to be Slightly Tapered.
5. All Concrete in Pier Shall be Class A Cement Concrete Masonry.
6. No Joints Permitted other than as Shown.
7. On all Exposed Corners and Edges Use 1"Chamfer or 1" Radius.
8. For Footing Layout Plan See Sheet 5.

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	









INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	86	188

Note: See Sheet 3 For Location of Working Points.

FRAMING PLAN

Scale: 1" = 10'-0"

Note: Tack Weld Support Bar to Longitudinal Reinforcement.

Note: An Equal Device may be Substituted for #4 Tack Weld Bar Upon Written Approval of the Engineer.

TYPICAL DECK REINFORCEMENT

Scale: 1/2" = 1'-0"

Note: Joint in Curb shall be Mortared no Sooner than 5 Days After Concrete in Coping has been Placed.

* Top of pavement cross slope to be continued

Note: For Details of Safety Curb at Deck Joint, see Sheet 3.

DETAILS AT SAFETY CURB

Scale: 3/4" = 1'-0"

Symmetrical about center line (except as shown)

MEDIAN DETAIL

Scale: 3/4" = 1'-0"

GRANITE CURB DETAIL

Scale: 1 1/2" = 1'-0"

Note: Longitudinal construction Joint in Deck Slab may be omitted when the Contractor's Proposed Method of Construction is Approved by the Engineer in Writing.

CONSTRUCTION JOINT IN DECK SLAB

Scale: 1 1/2" = 1'-0"

MEDIAN

SAFETY CURB & COPING

Notes:
1. Safety Curb and Coping shall be poured in alternate sections and shall have a curing period of not less than 5 days between pours.
2. For Spacing of Joints see Sheet 10.
3. Ends of bars to be 2" clear of joint.
4. Longitudinal bars in Curb and Coping are not to be carried through the joints.
5. Joint sealer to be same color as concrete
6. Joints to be square to Face of Coping.
7. Flashing to be continuous thru Paraffin Joint.
8. A Mortared Joint in the Curb shall be Placed at each Paraffin Joint.

DETAILS OF PARAFFIN JOINTS

Scale: 3/4" = 1'-0"

Fasten Top of 15" Plastic Waterstop to #4 Support Bars with clips or #16 Wire.

#4 - 10" Long. 2'-0" O.C. for Support of Waterstop, fasten with clips.

BENT PLATE EDGING

Scale: 1 1/2" = 1'-0"

HAUNCH DETAIL

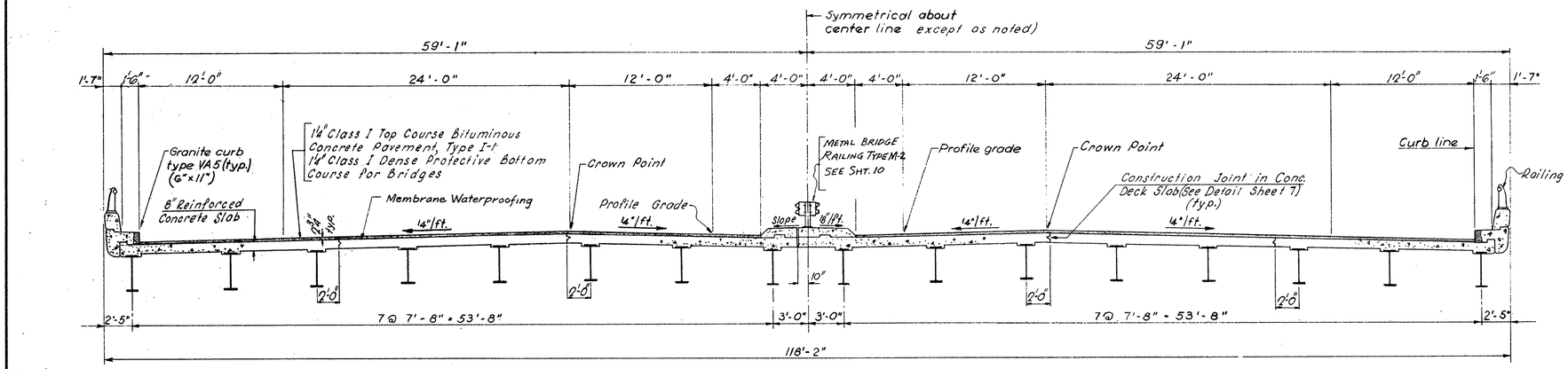
Scale: 1 1/2" = 1'-0"

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 7 OF 11 SHEETS - BRIDGE NO. W-21-47

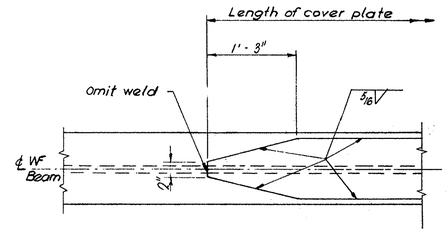
INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)8	19	87	188



Note:
All Concrete to be Class "D" Cement Concrete Masonry

TYPICAL CROSS SECTION
Scale: 3/16" = 1'-0"



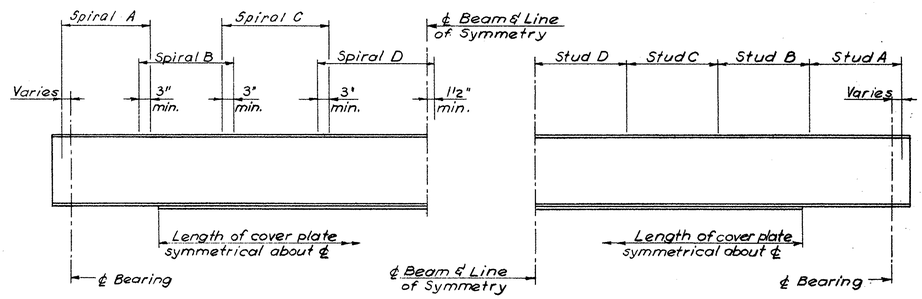
Notes:
Preparation of material for welding shall conform to art. 402, A.W.S. 1963.
Assembly of material for welding shall conform to art. 403, A.W.S. 1963.

COVER PLATE DETAIL
Not to Scale

BEAM NO.	†DEFLECTION DUE TO CONCRETE SLAB ¼ SPAN	½ SPAN	¾ SPAN	TOTAL DEAD LOAD DEFLECTIONS ¼ SPAN	½ SPAN	¾ SPAN	CAMBER AT MID SPAN
1	3/8"	7/16"	3/8"	3/4"	15/16"	3/4"	1 7/16"
2	1/2"	11/16"	1/2"	3/4"	1"	3/4"	1 1/2"
3							
4							
5							
6							
7	1/2"	11/16"	1/2"	3/4"	1"	3/4"	1 1/2"
8	7/16"	9/16"	7/16"	3/4"	1"	3/4"	1 1/2"
9	3/8"	7/16"	3/8"	3/4"	15/16"	3/4"	1 7/16"
10	1/2"	11/16"	1/2"	3/4"	1"	3/4"	1 1/2"
11							
12							
13							
14							
15	1/2"	11/16"	1/2"	3/4"	1"	3/4"	1 1/2"
16	7/16"	9/16"	7/16"	3/4"	1"	3/4"	1 1/2"
17	1/2"	11/16"	1/2"	13/16"	1 1/16"	13/16"	1 9/16"
18	1/2"	11/16"	1/2"	3/4"	1"	3/4"	1 1/2"
19							
20							
21							
22							
23	1/2"	11/16"	1/2"	3/4"	1"	3/4"	1 1/2"
24	3/8"	7/16"	3/8"	3/4"	15/16"	3/4"	1 7/16"
25	1/2"	11/16"	1/2"	13/16"	1 1/16"	13/16"	1 9/16"
26	1/2"	11/16"	1/2"	3/4"	1"	3/4"	1 1/2"
27							
28							
29							
30							
31	1/2"	11/16"	1/2"	3/4"	1"	3/4"	1 1/2"
32	3/8"	7/16"	3/8"	3/4"	15/16"	3/4"	1 7/16"

†The Deflection due to Concrete Slab is 80% of the theoretical Value and is intended for the use of Resident Engineer only.

DESIGN ELEVATIONS ALONG TOP FLANGE EAST BEARING	¼ SPAN	½ SPAN	¾ SPAN	WEST BEARING
83.90	83.91	83.86	83.75	83.60
84.06	84.07	84.02	83.91	83.76
84.22	84.23	84.18	84.07	83.91
84.38	84.38	84.33	84.23	84.07
84.54	84.54	84.49	84.39	84.23
84.62	84.63	84.58	84.48	84.32
84.46	84.47	84.42	84.32	84.16
84.30	84.30	84.25	84.15	84.00
83.59	83.59	83.54	83.44	83.28
83.75	83.75	83.70	83.60	83.44
83.90	83.91	83.86	83.76	83.60
84.06	84.07	84.02	83.92	83.76
84.22	84.23	84.18	84.07	83.91
84.31	84.32	84.27	84.16	84.00
84.15	84.15	84.11	84.00	83.84
83.99	83.99	83.94	83.84	83.68
84.30	84.31	84.26	84.16	83.99
84.46	84.46	84.42	84.31	84.15
84.62	84.62	84.57	84.47	84.31
84.53	84.53	84.48	84.38	84.20
84.36	84.37	84.32	84.22	84.06
84.20	84.21	84.16	84.06	83.90
84.04	84.05	84.00	83.89	83.74
83.88	83.88	83.83	83.73	83.57
83.98	83.99	83.95	83.84	83.68
84.14	84.15	84.10	84.00	83.84
84.30	84.31	84.26	84.15	83.99
84.21	84.22	84.07	84.06	83.90
84.05	84.06	84.01	83.90	83.74
83.89	83.89	83.85	83.74	83.58
83.73	83.73	83.68	83.58	83.42
83.56	83.57	83.52	83.41	83.26



	BEAM NO	SIZE	LENGTH ℄–℄ BEAR'GS	BOTTOM COVER PLATE	2-⅝"Φ SPIRAL SHEAR CONNECTORS SPIRAL A LENGTH	PITCH	SPIRAL B LENGTH	PITCH	SPIRAL C LENGTH	PITCH	SPIRAL D LENGTH	PITCH	3-¾"Φ STUD SHEAR CONNECTORS STUD A LENGTH	PITCH	STUD B LENGTH	PITCH	STUD C LENGTH	PITCH	STUD D LENGTH	PITCH
SPAN 1	1	36WF135	61'-0"	10"x 1 1/16"x 46'-6"	8'-4"	5"	7'-7"	6½"	7'-1"	8½"	8'-9"	10½"	8'-4"	4"	7'-4"	5½"	7'-0"	7"	8'-3"	9"
	2-7			10"x 7/8"x 47'-9"	8'-4"		8'-0"	6"	7'-4"	8"	8'-4"	10"	8'-4"	4"	7'-11"	5"	6'-5"		8'-3"	
	8			10"x 5/8"x 46'-3"	7'-6"		7'-7"	6½"	7'-9½"	8½"	8'-9"	10½"	9'-4½"	4½"	7'-0"	6"	6'-10½"		7'-11"	
	17			10"x 3/4"x 47'-3"	8'-4"		7'-7"	6½"	7'-1"	8½"	8'-9"	10½"	8'-4"	4"	7'-4"	5½"	7'-0"		8'-3"	
	18-23			10"x 7/8"x 47'-6"	8'-4"		8'-0"	6"	7'-4"	8"	8'-4"	10"	8'-4"	4"	7'-11"	5"	6'-5"		8'-3"	
	24			10"x 1 1/16"x 46'-6"	8'-4"		7'-7"	6½"	7'-1"	8½"	8'-9"	10½"	8'-4"	4"	7'-4"	5½"	7'-0"		8'-3"	
SPAN 2	9			10"x 1 1/16"x 46'-6"	8'-4"		7'-7"	6½"	7'-1"	8½"	8'-9"	10½"	8'-4"	4"	7'-4"	5½"	7'-0"		8'-3"	
	10-15			10"x 7/8"x 47'-9"	8'-4"		8'-0"	6"	7'-4"	8"	8'-4"	10"	8'-4"	4"	7'-11"	5"	6'-5"		8'-3"	
	16			10"x 5/8"x 46'-3"	7'-6"		7'-7"	6½"	7'-9½"	8½"	8'-9"		9'-4½"	4½"	7'-0"	6"	6'-10½"		7'-11"	
	25			10"x 3/4"x 47'-3"	8'-4"		7'-7"	6½"	7'-1"	8½"	8'-9"	10½"	8'-4"	4"	7'-4"	5½"	7'-0"		8'-3"	
	26-31			10"x 7/8"x 47'-6"	8'-4"		8'-0"	6"	7'-4"	8"	8'-4"	10"	8'-4"	4"	7'-11"	5"	6'-5"		8'-3"	
	32	36WF135	61'-6"	10"x 1 1/16"x 46'-6"	8'-4"	5"	7'-7"	6½"	7'-1"	8½"	8'-9"	10½"	8'-4"	4"	7'-4"	5½"	7'-0"	7"	8'-3"	9"

Notes:

1. Ends of all beams shall be fabricated so that under full dead Load the Ends will be plumb.
2. The table of Design Elevations along top flange is for the use of the Resident Engineer in the field for comparison of:
a) Elevations along top flange of stringers in place and -
b) the design elevations tabulated.
3. Any Welded Joint Prequalified by American Welding Society Specifications for Welded Highway and Railway Bridges (1963 Edition), will be acceptable in the Fabrication of the Structural Steel.

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INTERSTATE ROUTE 91
WEST SPRINGFIELD

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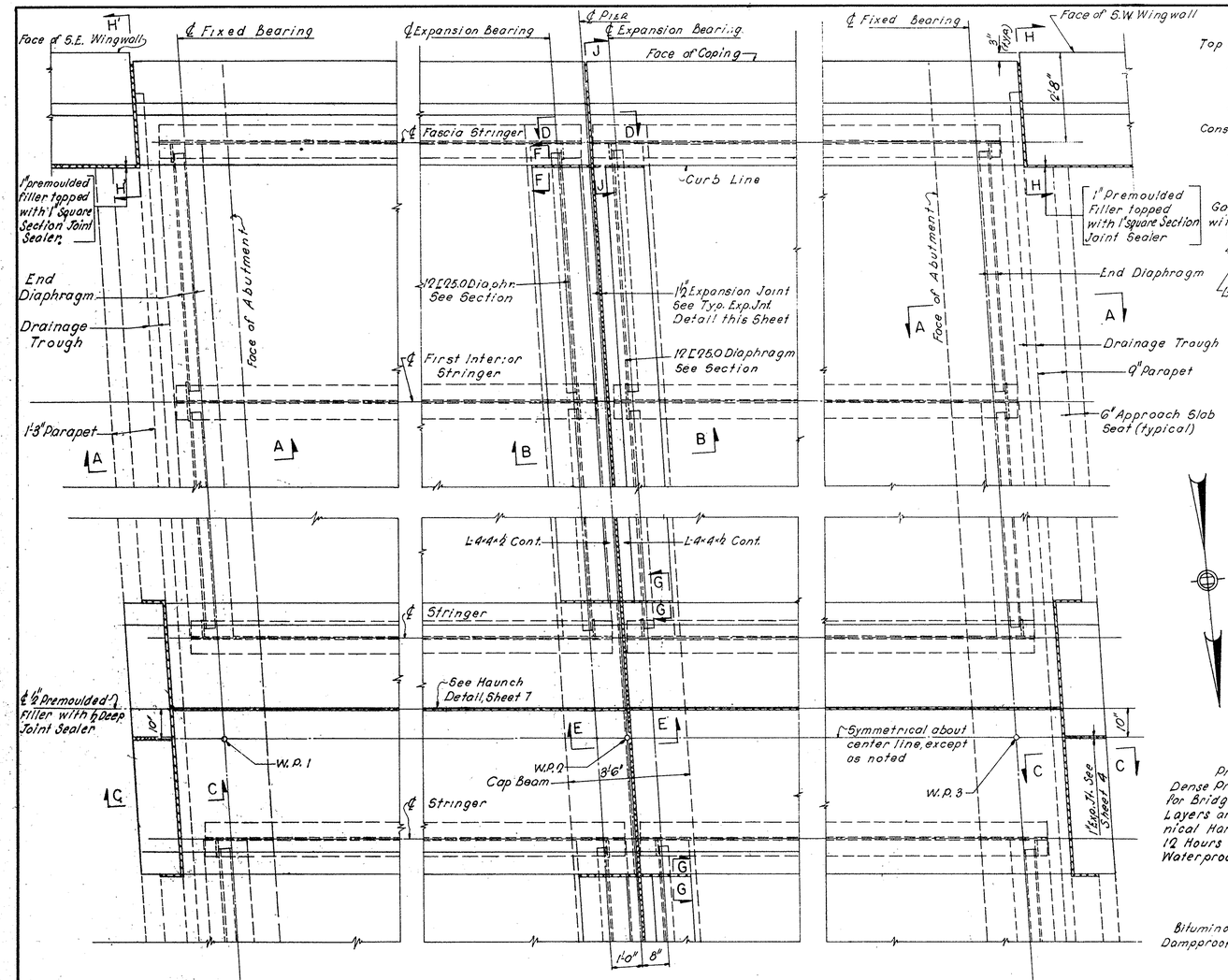
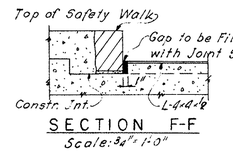
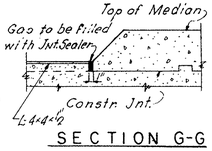
I	MASS.	[illegible]	19	88	188



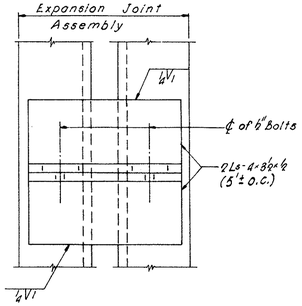
PLAN OF DECK JOINTS
Scale: ½" = 1'-0"



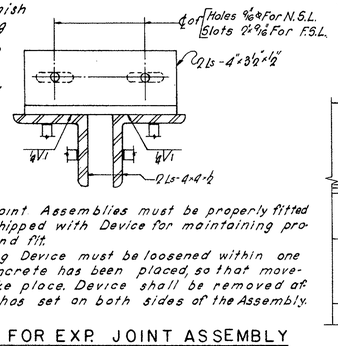
SECTION F-F
Scale: 3"=1'-0"



SECTION G-G
Scale: 3"=1'-0"

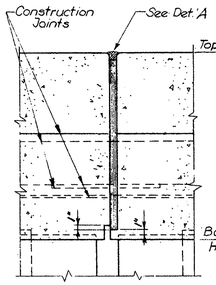


Notes:
1. Grind Armored Joint Surface to a Smooth Finish After Removal of Shipping Device.
2. All Exposed Surfaces of Joint shall be Field Painted After Grinding.

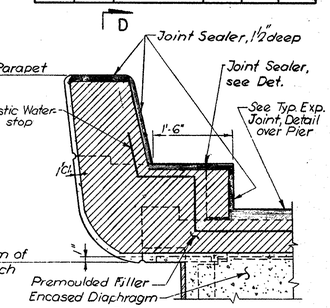


Notes:
a) All expansion Joint Assemblies must be properly fitted in Shop and shipped with Device for maintaining proper Spacing and Tilt.
b) Bolts on Shipping Device must be loosened within one hour after Concrete has been placed, so that movement may take place. Device shall be removed after Concrete has set on both sides of the Assembly.

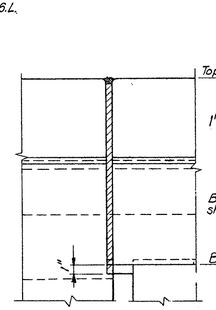
SHIPPING DEVICE FOR EXP. JOINT ASSEMBLY
Scale: 8"=1'-0"



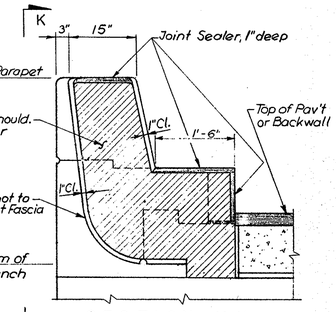
SECTION D-D
Scale: 3"=1'-0"



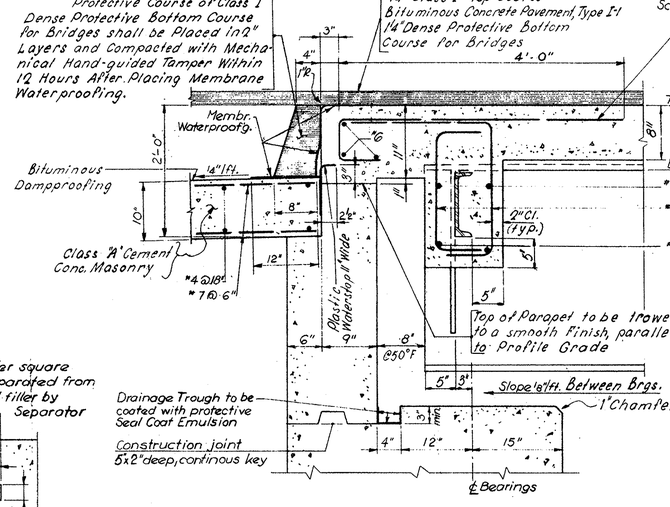
SECTION J-J
Scale: 3"=1'-0"



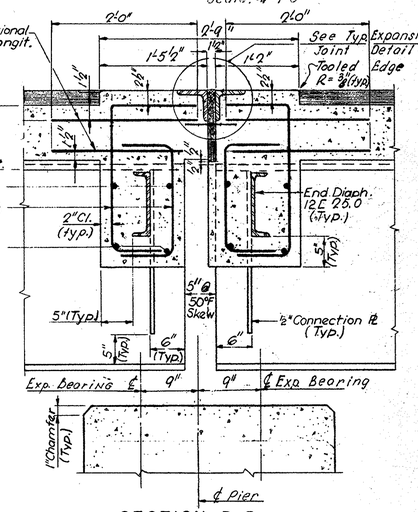
ELEVATION K-K
Scale: 3"=1'-0"



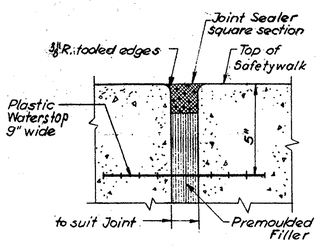
SECTION H-H
SECTION H'-H' OPPOSITE
Scale: 3"=1'-0"



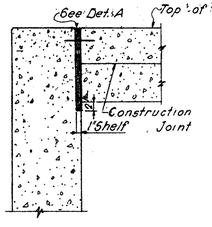
SECTION A-A
Scale: 1"=1'-0"



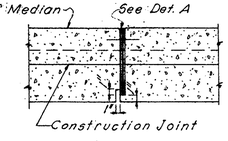
SECTION B-B
Scale: 1"=1'-0"



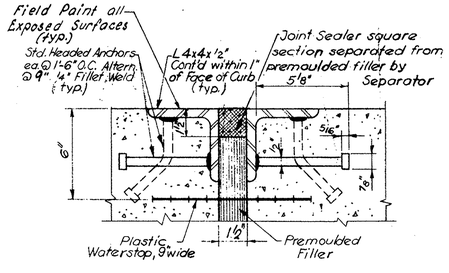
DETAIL A
Scale: 3"=1'-0"



SECTION C-C
Scale: 3"=1'-0"



SECTION E-E
Scale: 3"=1'-0"

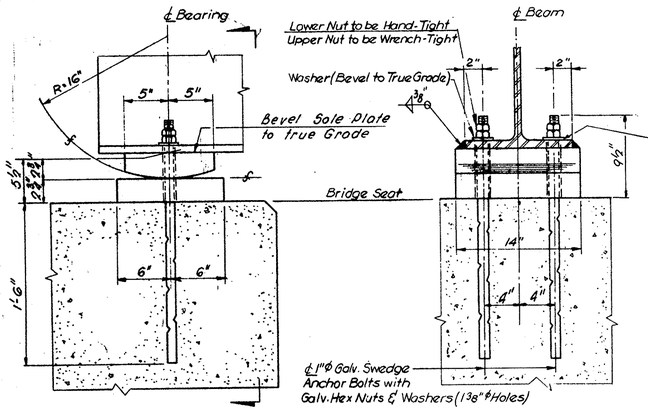


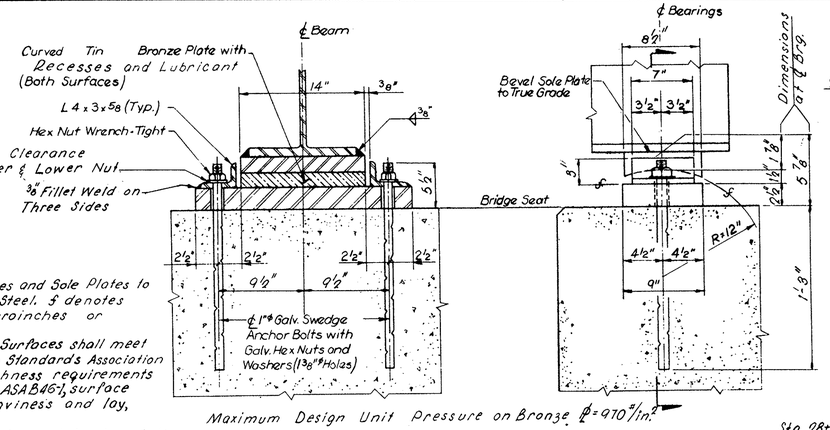
TYPICAL EXPANSION JOINT DETAIL
Scale: 3" = 1'-0"

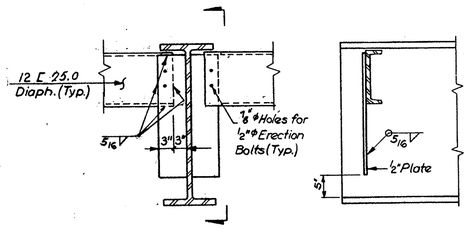
Note:
Main reinforcement in Approach Slab to be: #7 @ 6" top and bottom placed parallel to ℄ Construction. Tie bars to be #4 @ 18" top and bottom between main reinforcement and placed parallel to Abutments.

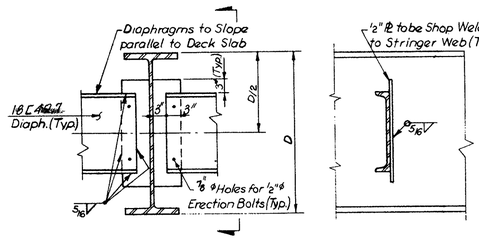
APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

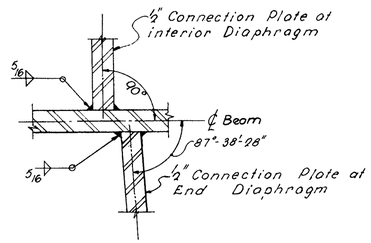
SHEET 9 OF 11 SHEETS - BRIDGE NO. W-21-47











INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I	MASS.	I-91-1(54)9	19	89	188

FIXED BEARINGS

Scale 1½"=1'-0"

Notes

1. Masonry Plates and Sole Plates to be ASTM A36 Steel. ƒ denotes ASA 125 microinches or Finer.
2. The finished Surfaces shall meet the American Standards Association surface roughness requirements as defined in ASA B46.1, surface roughness, waviness and lay, Part I.
3. Anchor Bolts to be set by template and placed before Concrete is poured.
4. Masonry Plate to have full bearing and to be adjusted for level before placing the Stringers on Bearing Assembly.

Maximum Design Unit Pressure on Bronze ℗=970#/in²

EXPANSION BEARINGS

Scale 1½"=1'-0"

Note: Railing Posts and Paraffin Joints Spacing at Coping are measured along Face of Bridge.

* Note: Except at illumination Assembly

Ⓔ Denotes Location of Expansion Joint in Rail for Metal Bridge Railing Type ST-1 or AL-1. For Details see Standard Railing Sheets. Expansion In Rails To Be At Arrow Side Of Post.

RAILING POST & PARAFFIN JOINT LAYOUT PLAN

Not to Scale

END DIAPHRAGM

Erection Bolts, Nuts and Standard Washers for Diaph. Connections shall be furnished by the Fabricator.

INTERIOR DIAPHRAGM

TYPICAL DIAPHRAGM CONNECTIONS

Scale ¾"=1'-0"

CONNECTION PLATE DETAIL

Either Stud or Spiral Shear Connectors may be used at the option of the Contractor. ⅞"φ Studs may be substituted for ¾"φ Studs by providing an equivalent Cross-Sectional area and adjusting the pitch accordingly. The Alignment of the Studs shall be the same as that of the Main Steel Reinforcement.

SHEAR CONNECTOR DETAILS

No Scale

Note: Provide Expansion Joint Where Panel is Over Expansion Joint in Deck

ELEVATION OF POST

Note: Posts and Base Plates to be Structural Steel A-36

BASE PLATE

METAL BRIDGE RAILING - TYPE M-2

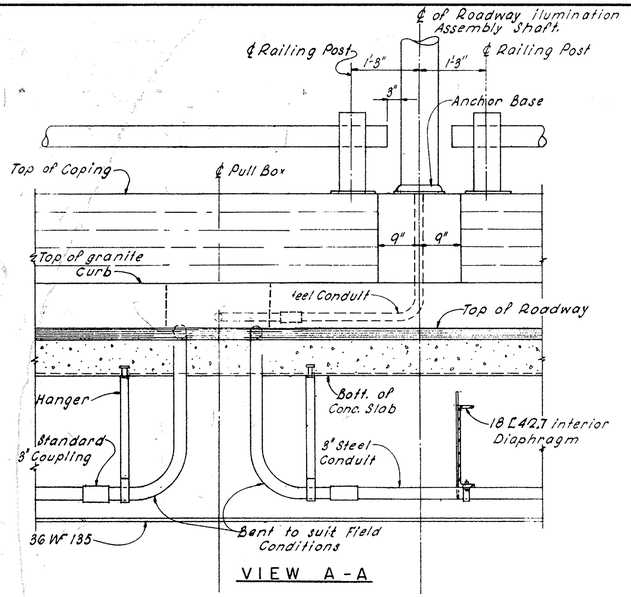
Scale: 1"=0'-6"

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION

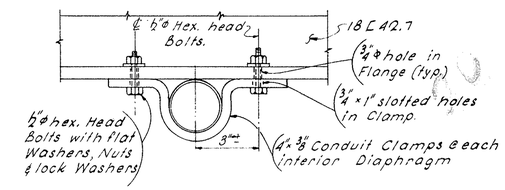
USE ONLY PRINTS OF LATEST DATE

SHEET 10 OF 11 SHEETS - BRIDGE NO. W-21-47

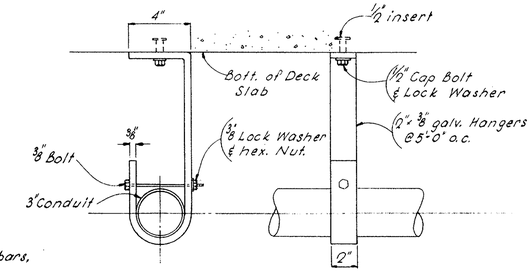
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9		90	188



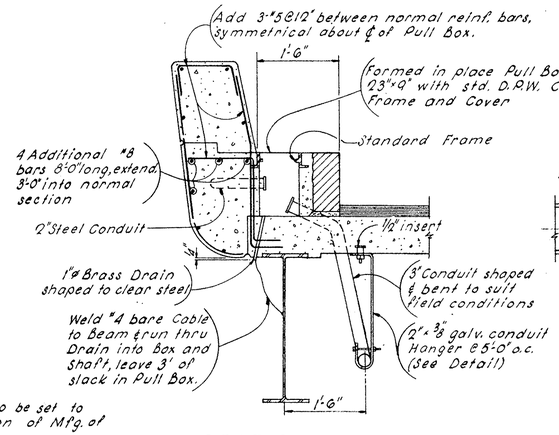
VIEW A-A



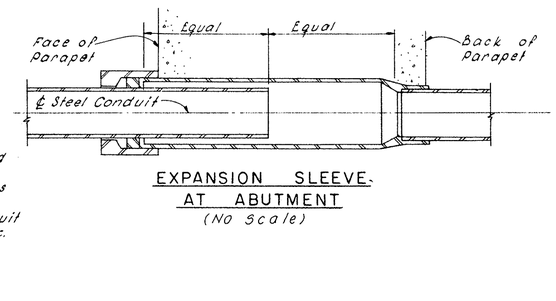
CONDUIT SUPPORT AT DIAPHRAGMS
(NO Scale)



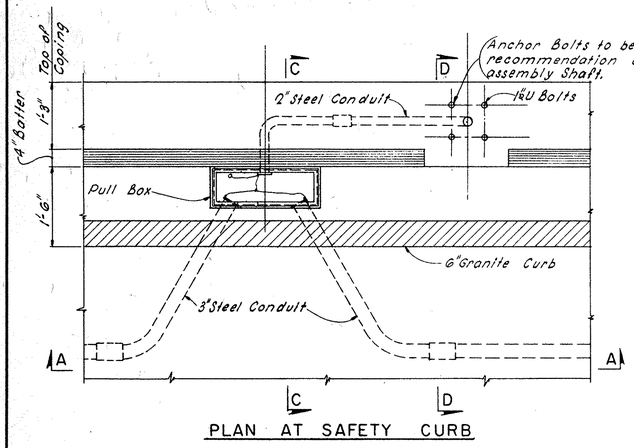
CONDUIT HANGER
(NO Scale)



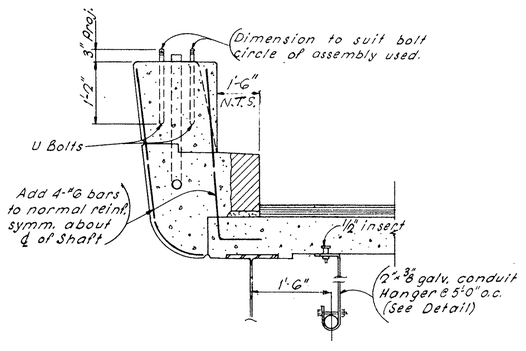
SECTION C-C



EXPANSION SLEEVE AT ABUTMENT
(NO Scale)



PLAN AT SAFETY CURB



SECTION D-D

ROADWAY ILLUMINATION ASSEMBLY DETAILS

Scale: 3/4" = 1'-0" Except as noted

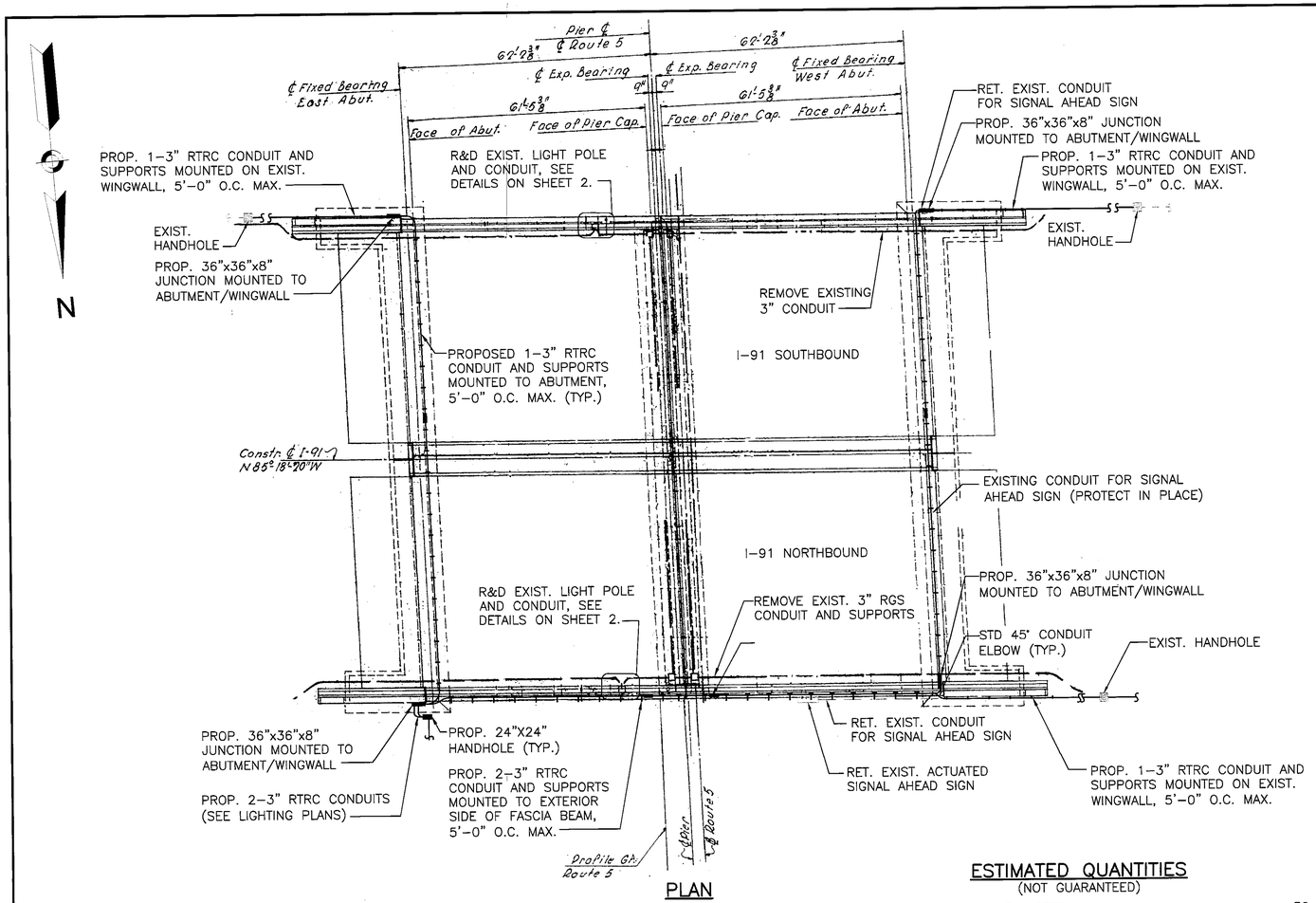
APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

WEST SPRINGFIELD / CHICOPEE
INTERSTATE 91 / ROUTE 5

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(NHS)-091S(305)X	37	39
	PROJECT FILE NO. 608600		

BRIDGE PLAN AND ELEVATION

37_608600_BR1(W21047).DWG 4-Feb-2019



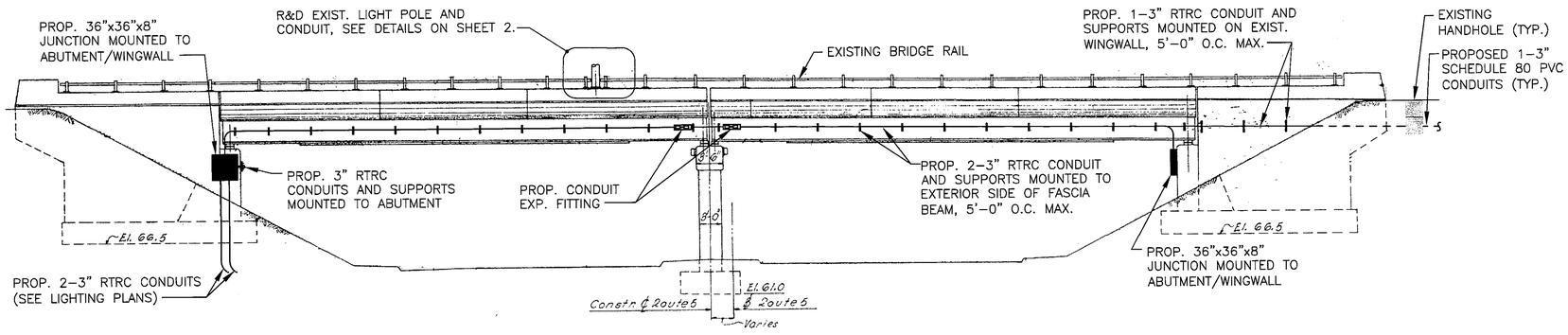
PLAN

SCALE: 1/16" = 1'–0"

ESTIMATED QUANTITIES

(NOT GUARANTEED)

CLEAN AND PAINT STRUCTURAL STEEL	30 SF
STEEL THRIE BEAM BRIDGE RAIL REMOVED AND RESET	40 FT
ELECTRICAL CONDUIT REMOVED AND DISPOSED	250 FT
3 INCH ELECTRICAL CONDUIT – RTRC	680 FT
JUNCTION BOX – 36X36X8 INCHES – STAINLESS STEEL	4 FT
WIRE TYPE 8 NO. 2 DIRECT BURIAL	7920 FT
HIGHWAY LIGHITNG POLE AND LUMINAIRE REMOVED & DISCARDED	2 EA
STRUCTURAL STEEL – STAINLESS STEEL	400 LB
METAL BRIDGE RAILING REMOVED AND RESET	80 FT
METAL BRIDGE RAILING (1 RAIL), ALUMINUM (TYPE AL–1)	6 FT



NORTH ELEVATION

SCALE: 1/8" = 1'–0"

DESIGN

CONDUIT SUPPORT DESIGN IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) STEEL CONSTRUCTION MANUAL, 14TH EDITION. MAXIMUM SUPPORT SPACING AND MATERIALS IN ACCORDANCE WITH MASSDOT STANDARD, SUPPLEMENTAL, AND INTERIM SPECIFICATIONS.

EXISTING BRIDGE PLANS

PLANS FOR EXISTING BRIDGE NUMBER W–21–047 (BIN 10W) CAN BE FOUND AT THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION – HIGHWAY DIVISION, 10 PARK PLAZA, BOSTON, MASSACHUSETTS.

EXISTING PLAN, ELEVATION, BASELINE STATIONING, AND UTILITIES SHOWN WERE TAKEN FROM RECORD BRIDGE DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY ALL RELEVANT DIMENSIONING AND DETAILS PRIOR TO CONSTRUCTION OR ORDERING OF MATERIAL.

DEMOLITION

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL ALL PROPOSED CONSTRUCTION METHODS, EQUIPMENT, CONSTRUCTION SEQUENCE PLANS, AND MATERIAL TO PERFORM THE WORK.

ALL MODIFICATIONS TO PROPOSED WORK SHOWN ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO COMMENCING WORK.

THE CONTRACTOR SHALL EXERCISE CAUTION TO AVOID DAMAGING EXISTING BRIDGE AND ANY COMPONENTS TO REMAIN, AND SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED DURING DEMOLITION AND CONSTRUCTION.

EMPLOY TEMPORARY SHIELDING AS REQUIRED TO PROTECT SURROUNDING ROADWAY FROM FALLING OBJECTS AND CONSTRUCTION DEBRIS. DURING CONSTRUCTION THE ENGINEER MAY REVIEW SHIELDING AND DETERMINE WHETHER ADEQUATE PROTECTION HAS BEEN PROVIDED BY THE CONTRACTOR. IF DEEMED NOT ACCEPTABLE, WORK WILL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

SCALES

SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALED BY 2 FOR HALF–SIZE PRINTS.

TRAFFIC MANAGEMENT

REFER TO THE TRAFFIC MANAGEMENT PLANS FOR STAGED CONSTRUCTION SEQUENCING AND PROPOSED TRAFFIC MAINTENANCE THROUGHOUT ALL STAGES OF CONSTRUCTION.

ELECTRICAL WORK

REFER TO THE LIGHTING PLANS FOR ADDITIONAL GENERAL NOTES REGARDING PROJECT ELECTRICAL WORK.

EXISTING UTILITIES

THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO DEMOLITION AND THE COMMENCEMENT OF EXCAVATION ACTIVITIES. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION AND SHALL COORDINATE WORK WITH THE UTILITY COMPANIES PERFORMING WORK IN THE SAME AREA.

THE CONTRACTOR SHALL NOTIFY DIG–SAFE (1–888–344–7233) AT LEAST 72 BUSINESS HOURS BEFORE CONSTRUCTION BEGINS.

THE CONTRACTOR SHALL DE–ENERGIZE ALL ELECTRICAL CIRCUITS IN CONDUITS THAT ARE IN AREAS TO BE DEMOLISHED. THE CONTRACTOR SHALL ALSO VERIFY AS NEEDED THE LOCATIONS OF EXISTING REBAR AND ELECTRICAL CONDUIT TO AVOID DAMAGE DURING CONSTRUCTION.

EXPANSION ANCHORS

UNLESS NOTED OTHERWISE, EXPANSION ANCHORS SHALL BE 3/4"ø STAINLESS STEEL WITH A MINIMUM ALLOWABLE TENSILE CAPACITY OF 2 KIPS AND MINIMUM SHEAR CAPACITY OF 2.5 KIPS IN 3000 PSI CONCRETE WITH A FACTOR OF SAFETY OF 4.0 USED FOR DESIGN. THE CONTRACTOR SHALL SUBMIT PROPOSED SYSTEM TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

STRUCTURAL STEEL FOR CONDUIT SUPPORTS:

STRUCTURAL STEEL MATERIALS SHALL MEET THE FOLLOWING REQUIREMENTS:

- ANGLES, PLATES: ASTM A276
- BOLTS: ASTM F593
- COLD–FORMED CHANNELS: ASTM A240
- NUTS: ASTM F594
- WASHERS: ASTM A240

STRUCTURAL STEEL FOR CONDUIT AND EQUIPMENT SUPPORTS AND ALL HARDWARE INCLUDING BOLTS, NUTS, AND WASHERS SHALL BE TYPE 316 STAINLESS STEEL UNLESS NOTED OTHERWISE.

SHOP CONNECTIONS SHALL BE WELDED, UNLESS NOTED OTHERWISE.

ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS APPROVED BY THE STATE OF MASSACHUSETTS AND SHALL CONFORM TO THE LATEST EDITION OF THE AWS STRUCTURAL WELDING CODES INCLUDING AWS D1.1 (STEEL) AND AWS D1.6 (STAINLESS STEEL).

NO FIELD WELDING SHALL BE PERMITTED, UNLESS NOTED OTHERWISE ON THE PLANS.

INSULATING NEOPRENE WASHERS AND BUSHINGS SHALL BE PROVIDED IN BOLTED CONNECTIONS MADE BETWEEN STAINLESS STEEL COMPONENTS AND DISSIMILAR MATERIALS.

ALL U–BOLT NUTS FOR CONDUIT SUPPORT CONNECTION SHALL BE NYLOCK TYPE AND HAND TIGHTENED.

LEGEND:

LIMITS OF DEMOLITION

DEC. 8, 2018	ISSUED FOR CONSTRUCTION

COMMONWEALTH OF MASSACHUSETTS
BRIAN P. BRISELLI
STRUCTURAL
No. 53008
REGISTERED
PROFESSIONAL ENGINEER
Brian P. Briselli 2/4/19

JACOBS
100 ST. JAMES AVENUE
5TH FLOOR
BOSTON, MA 02116

MassDOT
Massachusetts Department of Transportation
Highway Division

PROPOSED BRIDGE REHABILITATION

WEST SPRINGFIELD

INTERSTATE 91
OVER ROUTE 5

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

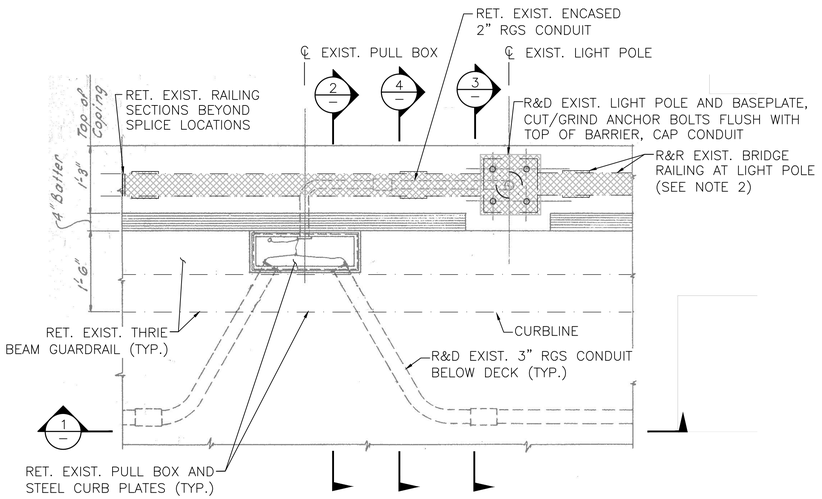
TITLE: State Bridge Engineer — Thomas A. DiPaolo P.E. CHIEF ENGINEER

WEST SPRINGFIELD / CHICOPEE
INTERSTATE 91 / ROUTE 5

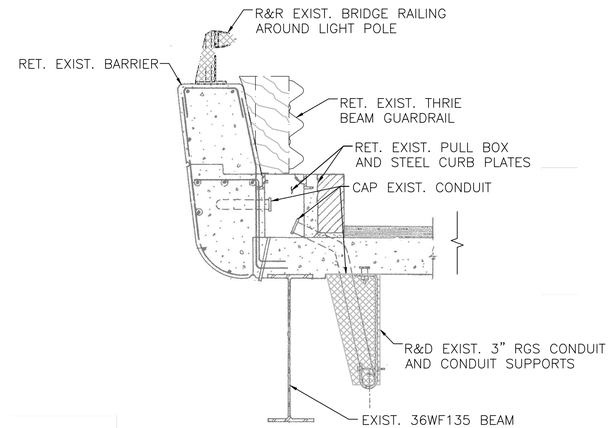
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(NHS)-091S(305)X	38	39
	PROJECT FILE NO. 608600		

LIGHT SUPPORT DETAILS

38-39_608600_BR2-3(W21047).DWG 4-Feb-2019



PARTIAL PLAN AT EXISTING LIGHT POLE
SCALE: ¾" = 1'–0"



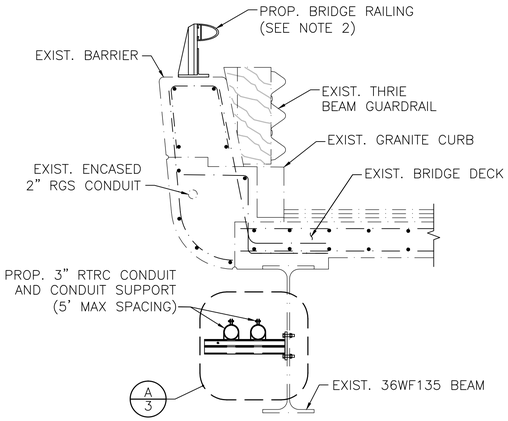
SECTION THROUGH EXISTING PULLBOX (2/–)
SCALE: ¾" = 1'–0"

NOTES:

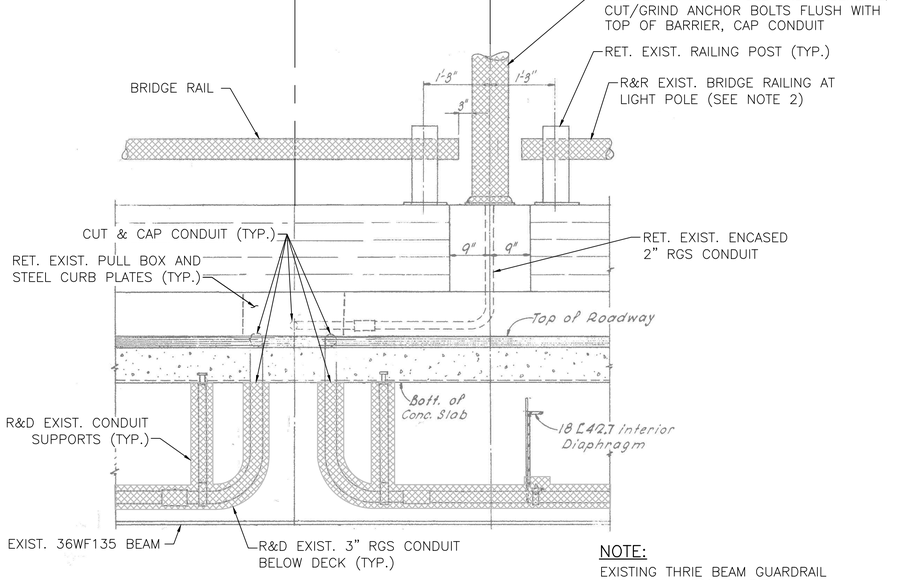
1. FOR GENERAL NOTES, SEE SHEET 1 OF 3.
2. PROPOSED BRIDGE RAILING SHALL BE REINSTALLED CONTINUOUS AT AREAS OF EXISTING LIGHT POLE REMOVAL. CONTRACTOR SHALL FIELD VERIFY RAILING SECTION LENGTHS, SPLICE LOCATIONS, AND POST LOCATIONS TO DETERMINE WHAT COMPONENTS AND LOCATIONS CAN BE REUSED. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL OF MATERIALS AND PROPOSED LAYOUT PRIOR TO RAILING REINSTALLATION.

LEGEND:

LIMITS OF DEMOLITION

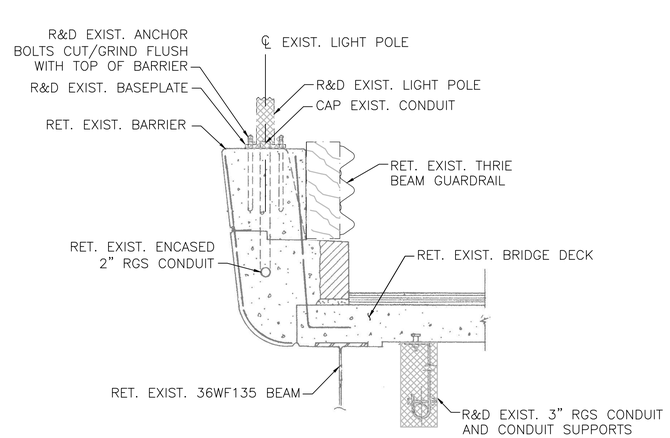


PROPOSED SECTION (4/–)
SCALE: ¾" = 1'–0"



SECTION AT EXISTING LIGHT POLE (1/–)
SCALE: ¾" = 1'–0"

NOTE:
EXISTING THRIE BEAM GUARDRAIL NOT SHOWN FOR CLARITY.



SECTION THROUGH EXISTING LIGHT POLE BASE (3/–)
SCALE: ¾" = 1'–0"

DEC. 8, 2018	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

WEST SPRINGFIELD / CHICOPEE
INTERSTATE 91 / ROUTE 5

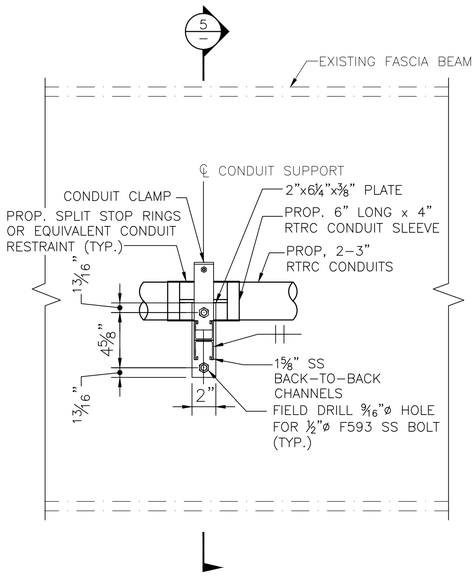
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(NHS)-091S(305)X	39	39
PROJECT FILE NO.	608600		

PROPOSED CONDUIT SUPPORT DETAILS

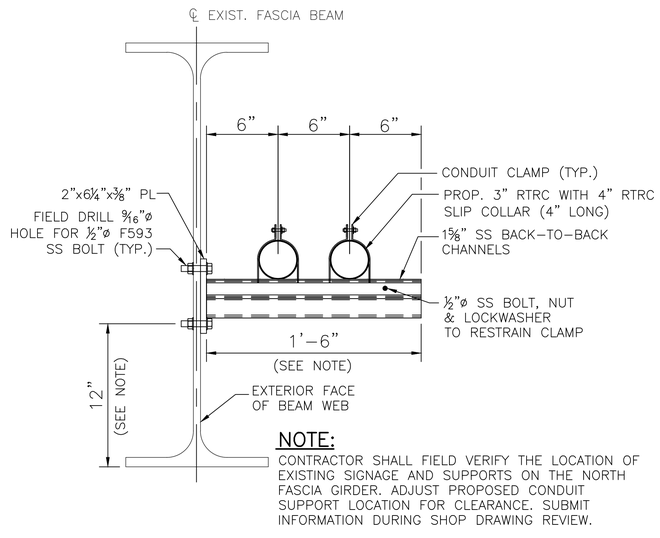
38-39_608600_BR2-3(W21047).DWG 4-Feb-2019

NOTE:

1. FOR GENERAL NOTES, SEE SHEET 1 OF 3.

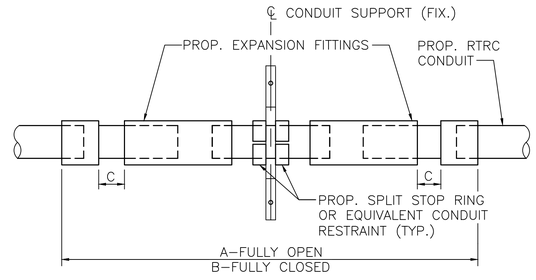


BRIDGE CONDUIT SUPPORT DETAIL
NTS



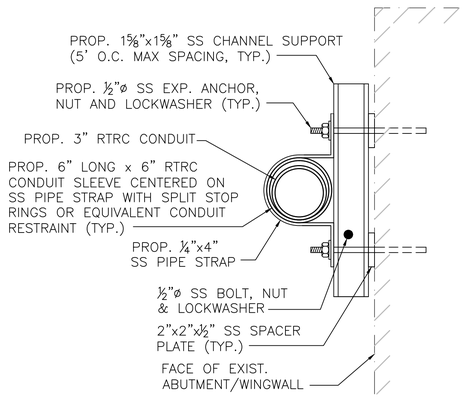
NOTE:
CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF EXISTING SIGNAGE AND SUPPORTS ON THE NORTH FASCIA GIRDER. ADJUST PROPOSED CONDUIT SUPPORT LOCATION FOR CLEARANCE. SUBMIT INFORMATION DURING SHOP DRAWING REVIEW.

SECTION 5
NTS



A	B	C STROKE EACH SIDE
60½"	48½"	6"

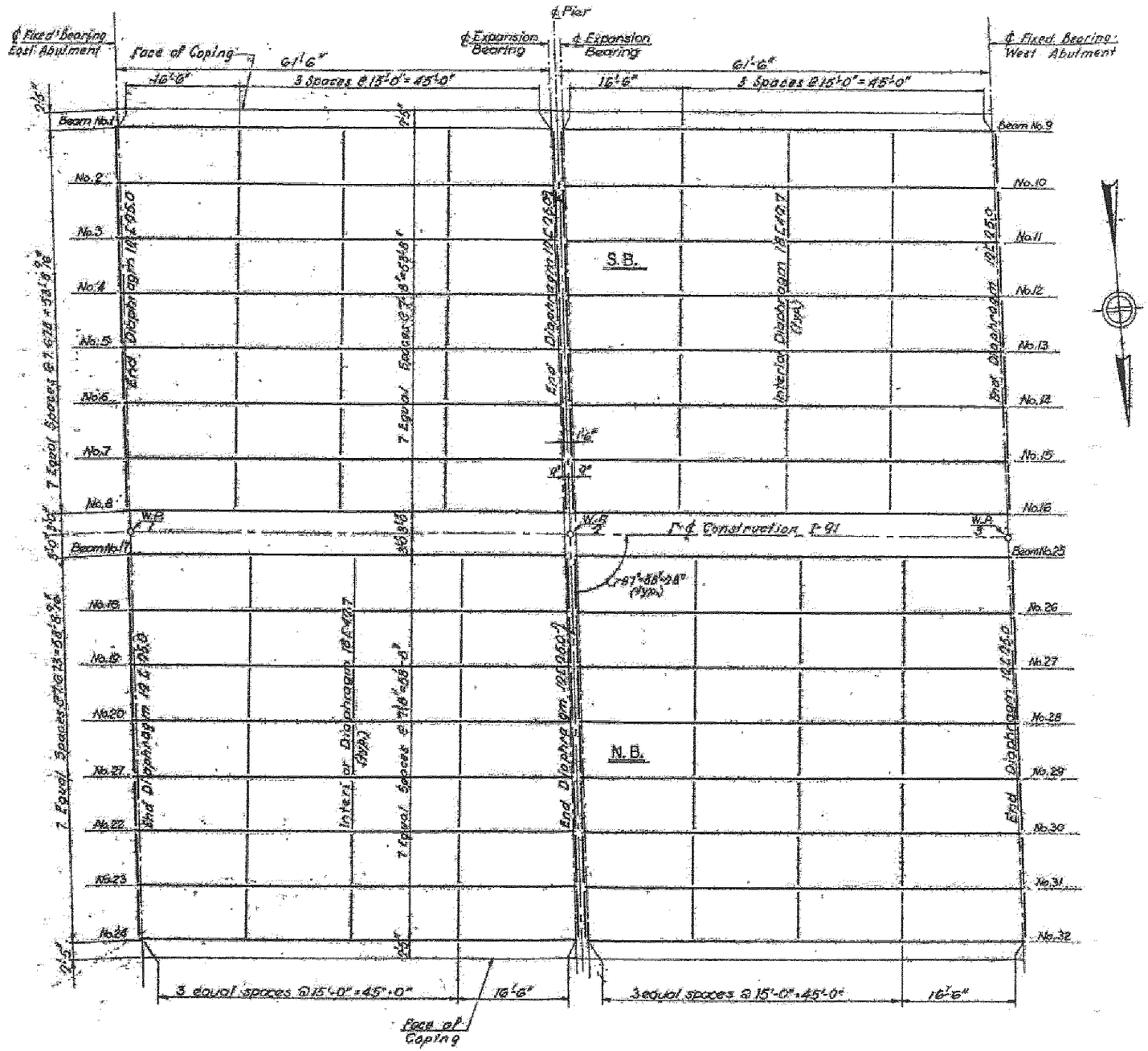
CONDUIT EXPANSION JOINT ASSEMBLY
NTS



ABUTMENT/WINGWALL CONDUIT SUPPORT DETAIL
NTS

DEC. 8, 2018	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

STRUCTURAL REPAIRS – DISTRICT 2
MIG CORPORATION
CONTRACT NO. 42404
WORK ORDER NO. 08

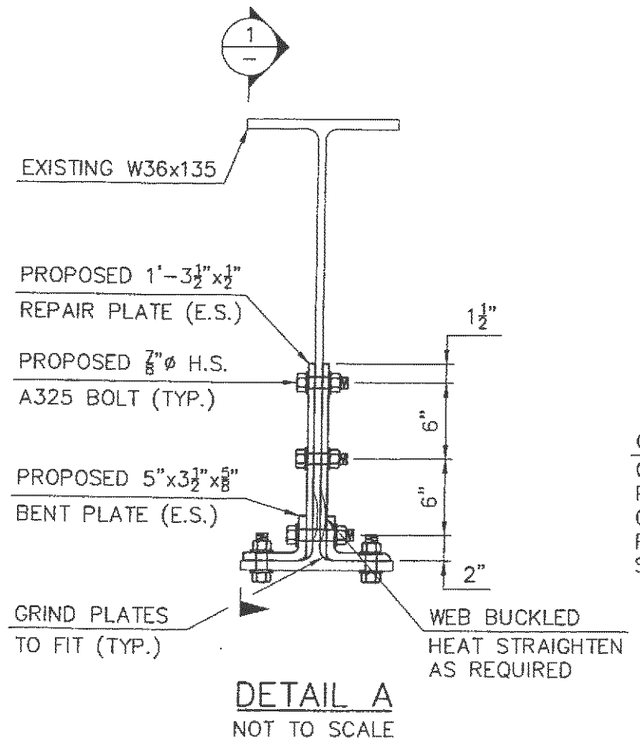


COMMONWEALTH OF MASSACHUSETTS
EDWARD T. BAUMANN
STRUCTURAL
No. 41257
REGISTERED PROFESSIONAL ENGINEER

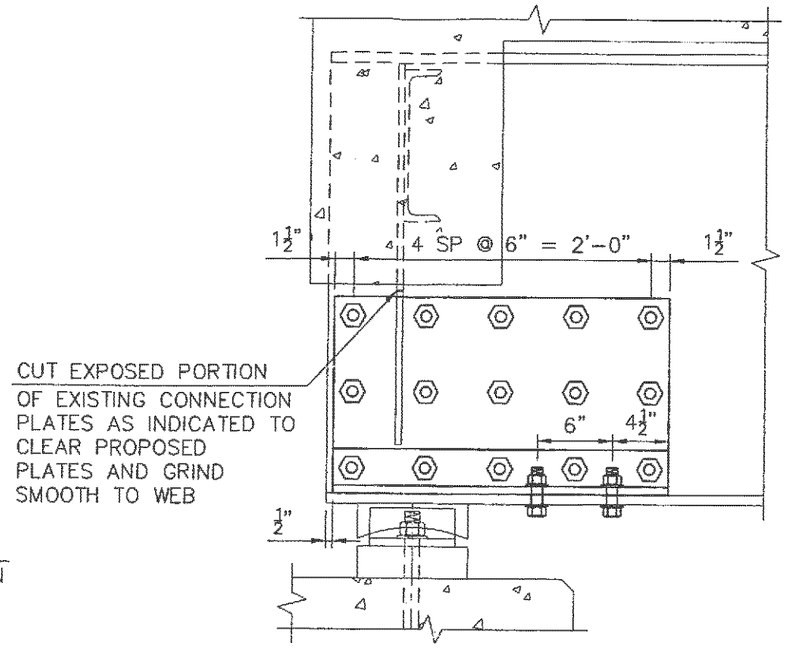
Edward T. Baumann

DATE: 04/27/06

FRAMING PLAN STRUCTURAL REPAIRS FOR BRIDGE NO. W-21-047 (10W)	PURCELL ASSOCIATES Eastern Harbor Office Park 50 Redfield Street, Suite 102 Boston, MA 02122 Tel. (617) 288-0900 FAX (617) 265-8739	I-91 SOUTHBOUND & NORTHBOUND OVER ROUTE 5 – RIVERDALE STREET WEST SPRINGFIELD, MASSACHUSETTS	SK-1 OF 2



DETAIL A
NOT TO SCALE



SECTION 1
NOT TO SCALE

REPAIR NOTES:

1. THE CONTRACTOR SHALL ASSUME THAT THE COATINGS ON THE STEEL CONTAIN LEAD, UNLESS OTHERWISE DETERMINED BY TESTING. THE CONTRACTOR SHALL CERTIFY IN WRITING TO THE ENGINEER THE RESULTS OF ALL TESTING, AND SHALL ALSO CERTIFY THAT ANY LEAD COATED STEEL REMOVED FROM THE PROJECT WAS NOT REUSED OR BURIED, BUT WAS SENT TO A SCRAP METAL RECYCLING FACILITY.

2. ALL AREAS THAT ARE TO RECEIVE REPAIR ELEMENTS SHALL BE WIRE BRUSHED CLEANED OF ALL RUST AND HAVE ALL LOOSE, DELAMINATED, OR FLAKING STEEL REMOVED TO PROVIDE A SMOOTH SURFACE THAT WILL ALLOW UNIFORM CONTACT OF THE PROPOSED AND EXISTING ELEMENTS (SSPC-SP3).

3. PRIOR TO CUTTING OR BURNING OF ANY PAINTED STEEL SURFACES, THE CONTRACTOR MUST CHEMICALLY REMOVE THE ENTIRE COATING DOWN TO BARE METAL. THE PAINT COATING MUST BE REMOVED IN AN AREA PRESCRIBED BY A 6" MINIMUM OFFSET FROM THE REQUIRED CUT. THE CONTRACTOR SHALL INSTALL PROPER SHIELDING AND/OR TARPAULINS UNDER THE LEAD REMOVAL OPERATIONS IN ORDER TO CATCH ALL DEBRIS GENERATED DURING THIS PROCEDURE.

4. ALL PROPOSED STEEL SHALL BE AASHTO M270 GRADE 36 (ASTM A-36).

5. ALL STRUCTURAL STEEL ELEMENTS AND HIGH STRENGTH BOLTS SHALL BE PAINTED IN ACCORDANCE WITH SUBSECTION 960.63 OF THE MASSHIGHWAY STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.

6. LIMITS OF STEEL DETERIORATION AND EXISTING DIMENSIONS SHALL BE FIELD VERIFIED PRIOR TO FABRICATION.

7. BOLTS SHALL BE SUFFICIENTLY LONG SUCH THAT THREADS OF BOLTS WILL NOT BE IN THE SHEAR PLANE.

DATE: 04/27/06

DETAIL A STRUCTURAL REPAIRS FOR BRIDGE NO. W-21-047 (10W)	PURCELL ASSOCIATES Eastern Harbor Office Park 50 Redfield Street, Suite 102 Boston, MA 02122 Tel. (617) 288-0900 FAX (617) 265-8739	I-91 SOUTHBOUND & NORTHBOUND OVER ROUTE 5 - RIVERDALE STREET WEST SPRINGFIELD, MASSACHUSETTS	SK-2 OF 2

GENERAL NOTES:

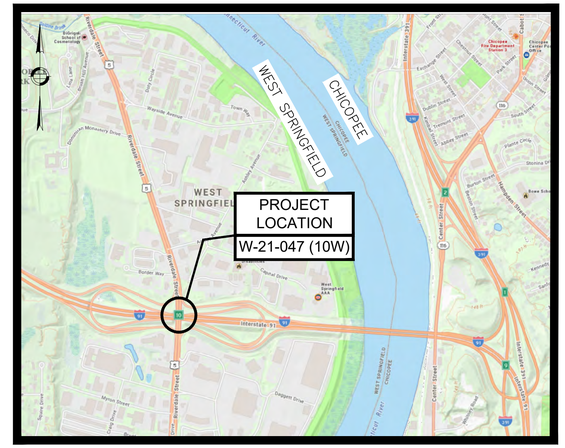
1. GENERAL DESIGN IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 17TH EDITION, 2002, FOR HS20 LOADING.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE RELEVANT PROVISIONS OF THE 2023 EDITION OF THE MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES AND THE CONTRACT SPECIAL PROVISIONS.
3. THESE DRAWINGS WERE FORMATTED FOR 24"x36" PLAN SHEETS. SCALES NOTED ON THE DRAWINGS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS.
4. EXISTING STRUCTURE DIMENSIONS AND DETAILS ARE ACCORDING TO ORIGINAL CONSTRUCTION DRAWINGS, OBSERVATION, AND FIELD MEASUREMENTS AND ARE NOT GUARANTEED. THE CONTRACTOR SHALL DETERMINE AND ESTABLISH ALL DIMENSIONS AND EXISTING DETAILS NECESSARY FOR COMPLETION OF ALL WORK BY FIELD MEASUREMENT (I.E. BEARING LOCATIONS, EXISTING REPAIRS, ETC.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADEQUACY AND ACCURACY THEREOF, AND SHALL NOT ORDER ANY MATERIAL OR COMMENCE ANY FABRICATION UNTIL THEY HAVE MADE THE REQUIRED MEASUREMENTS ON THE ACTUAL STRUCTURE AND THE EXTENT OF THE PROPOSED WORK HAS BEEN APPROVED BY THE ENGINEER.
5. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY NOT TO DAMAGE UTILITIES, EQUIPMENT, STRUCTURES, OR THOSE PORTIONS OF THE SUPERSTRUCTURE THAT ARE TO REMAIN IN PLACE, THAT ARE TO BE REUSED, OR THAT ARE TO REMAIN THE PROPERTY OF OTHERS. ANY PORTION OF THE SUPERSTRUCTURE AND SUBSTRUCTURE TO REMAIN WHICH BECOMES DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.
6. WELDING AND FABRICATION OF STEEL SHALL CONFORM TO THE RELEVANT PROVISIONS OF THE AASHTO ASD STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE, AND THE MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
7. ALL PAINTING AND PREPARATION WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 961 – MAINTENANCE PAINTING OF STEEL BRIDGES OF THE MASSDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES AND THE CONTRACT SPECIAL PROVISIONS. THE LIMITS OF PAINTING SHALL EXTEND 6" BEYOND THE LIMITS OF THE BEAM END REPAIRS OR 5'–0" FROM THE BEAM END, WHICHEVER IS GREATER. ALL REPAIRS, CLEANING, AND PAINT AREAS SHALL INCLUDE THE BEARINGS.
8. NO REPAIRS SHALL COMMENCE UNTIL ALL MEASUREMENTS HAVE BEEN MADE AND MATERIAL ARE ON HAND FOR THE REPAIR
9. THE CONTRACTOR SHALL ASSUME THE COATING ON THE STEEL CONTAINS LEAD UNLESS OTHERWISE DETERMINED BY TESTING. THE CONTRACTOR SHALL CERTIFY IN WRITING TO THE ENGINEER THAT RESULTS OF ALL TESTING, AND SHALL ALSO CERTIFY THAT ANY LEAD COATED STEEL REMOVED FROM THE PROJECT WAS PROPERLY DISPOSED OF.

MATERIALS:

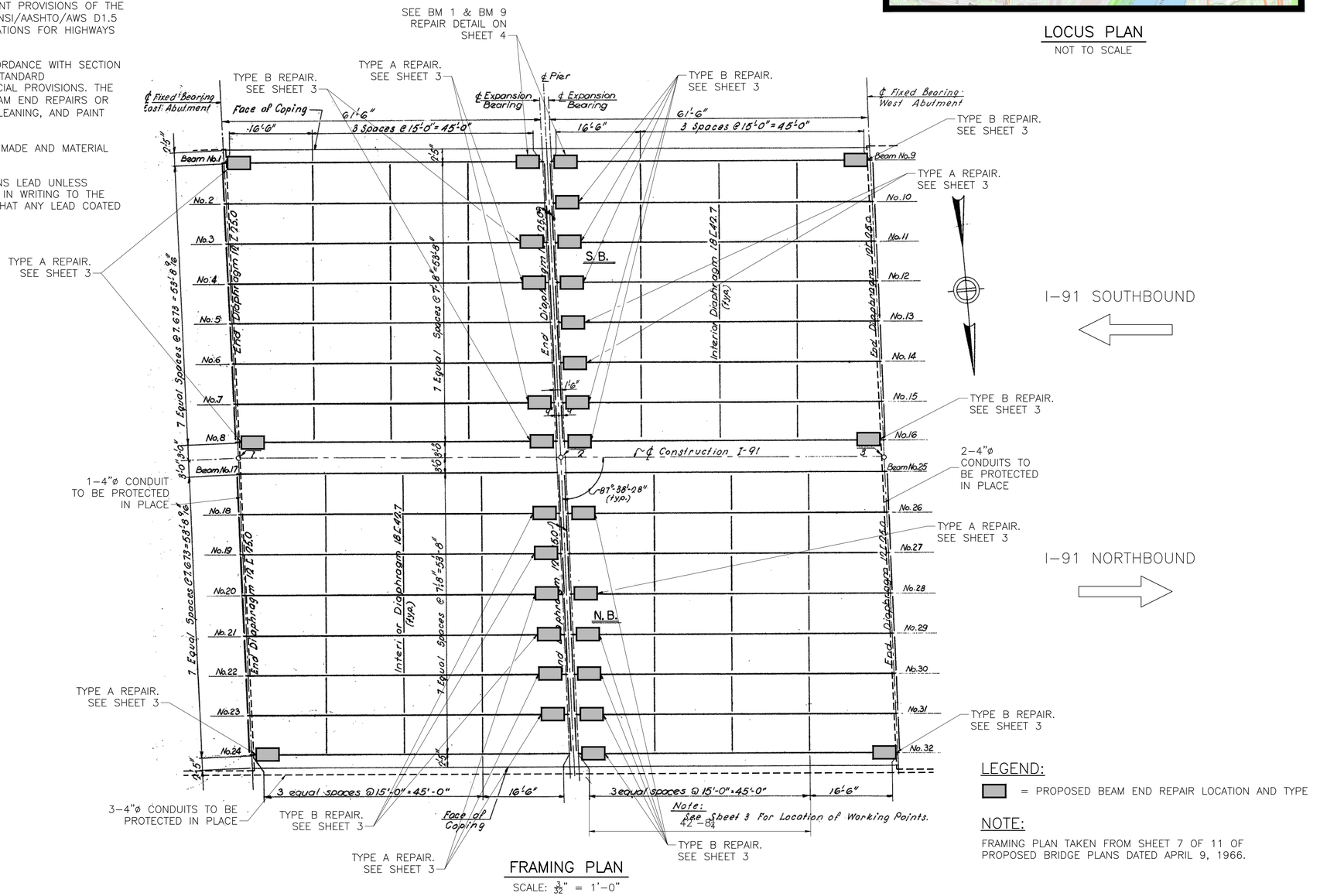
1. ALL STRUCTURAL STEEL FOR BEAM END REPAIRS SHALL CONFORM TO AASHTO M270 GRADE 36 OR GRADE 50. THE STEEL SHALL BE CONSIDERED A MAIN MEMBER AND CONFORM TO THE CHARPY V–NOTCH REQUIREMENTS OF AASHTO M270 ZONE T2. ALL NEW STRUCTURAL STEEL SHALL BE SHOP PRIMED. PRIMER USED MUST BE NEPCOAT APPROVED, USED WITH A NEPCOAT APPROVED INTERMEDIATE AND TOPCOAT SYSTEM, AND HAVE A SLIP COEFFICIENT OF CLASS B.
2. ALL BOLTS SHALL BE $\frac{7}{8}$"ø HIGH STRENGTH BOLTS (H.S.) IN $\frac{15}{16}$"ø HOLES. THE BOLTS SHALL CONFORM TO ASTM F3125, GRADE 325, TYPE 1 AND NUTS AND WASHERS SHALL CONFORM TO AASHTO M291 (ASTM A563) AND M293 (ASTM F436) RESPECTIVELY. ALL BOLTS SHALL BE MECHANICALLY GALVANIZED IN ACCORDANCE WITH ASTM B695 CLASS 50. NUTS AND WASHERS SHALL BE MECHANICALLY GALVANIZED BY THE SAME PROCESS. NUTS SHALL BE LUBRICATED WITH A LUBRICANT CONTAINING A VISIBLE DYE. BOLTS, NUTS AND WASHERS SHALL BE FIELD PAINTED AFTER INSTALLATION.

TRAFFIC:

TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH AN APPROVED TRAFFIC MANAGEMENT PLAN DEVELOPED BY OTHERS



LOCUS PLAN
NOT TO SCALE



FRAMING PLAN
SCALE: $\frac{3}{32}$" = 1'–0"

LEGEND:

▭ = PROPOSED BEAM END REPAIR LOCATION AND TYPE

NOTE:

FRAMING PLAN TAKEN FROM SHEET 7 OF 11 OF PROPOSED BRIDGE PLANS DATED APRIL 9, 1966.

Contract 120828
Project 612791

✔	Approved		Revise and resubmit
	Approved as noted, Resubmission not required		Not Approved

MassDOT Highway Division — District 2 NORTHAMPTON

Signed: Date: October 17, 2023

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63 KENDRICK STREET
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GILL ENGINEERING

W21047 REPAIR PLANS.dwg Plotted on 16-Oct-2023 6:50 PM

DATE	DRW. BY	CALC. BY	APPRV. BY	DESCRIPTION
10/6/2023	SSV	SSV	JVC	ISSUED FOR CONSTRUCTION
10/16/2023	SSV	SSV	JVC	REV.1 MASSDOT COMMENTS ADDRESSED

REGISTERED PROFESSIONAL ENGINEER — DATE

COMMONWEALTH OF MASSACHUSETTS
JHONY VELEZ
CIVIL
No. 57139
REGISTERED PROFESSIONAL ENGINEER
10/16/2023

BEAM END REPAIR PLANS

SPS NEW ENGLAND INC.

BEAM END REPAIR PLANS
W–21–047 (10W)
I–91 OVER ROUTE 5 (RIVERDALE ST.)

LOCUS MAP AND FRAMING PLAN

SHEET 1 OF 4

BEAM END REPAIR NOTES:

1. CONTRACTOR SHALL FIELD VERIFY ALL REPAIR PLATE AND ANGLE DIMENSIONS AFTER CLEANING AND PAINTING OPERATIONS AND PRIOR TO ORDERING REPAIR STEEL.
2. NO REPAIRS SHALL COMMENCE UNTIL ALL MATERIALS ARE ON HAND FOR A REPAIR.
3. THE CONTRACTOR SHALL ASSUME ALL EXISTING COATINGS CONTAIN LEAD UNLESS OTHERWISE DETERMINED BY TESTING. ALL DEBRIS CREATED BY CLEANING AND PAINTING OPERATIONS SHALL BE PROPERLY CONTAINED AND DISPOSED OF.
4. PAINT AND SURFACE PREPARATION SHALL CONFORM TO THE REQUIREMENTS OF CONTRACT SPECIAL PROVISIONS. THE CONTACT SURFACES SHALL BE FREE OF PAINT, OIL, AND GREASE. THE CONTACT SURFACES OF THE BOLTED PARTS WERE DESIGNED AS A CLASS B SLIP CRITICAL CONNECTION. PRIMER SHALL BE ON THE NEPCOAT QUALIFIED PRODUCTS LIST AND HAVE A SLIP COEFFICIENT OF CLASS B.
5. ENGINEER TO INSPECT CLEANED REPAIR AREA AND VERIFY REPAIR LIMITS BASED ON CONDITIONS EXPOSED BY CLEANING. IF IT IS DETERMINED, AFTER CLEANING, THAT THE LIMITS OF REPAIRS NEED TO BE EXTENDED, THE CLEANING AND PAINTING MAY BE EXTENDED AT THE DISCRETION OF THE ENGINEER.
6. CONTRACTOR SHALL GRIND ALL PLATES AND SHAPES AS REQUIRED TO CLEAR THE FILLET OF THE EXISTING BEAM FLANGES.
7. THE BEAM SHALL BE INSPECTED FOR DAMAGE DUE TO CONTRACTOR OPERATIONS. ANY DAMAGE BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTORS' EXPENSE.
8. EPOXY REPAIR COMPOUND SHALL BE APPLIED TO PRIOR TO BOLTED REPAIR STEEL INSTALLATION.
9. IN THE CASE THAT ANY STEEL REPAIR ANGLE INTERFERES WITH THE EXISTING ANCHOR BOLT, A LEG OF THE ANGLE CAN BE COPED TO PROVIDE CLEARANCE AROUND THE EXISTING ANCHOR BOLT.
10. THE CONTRACTOR SHALL MAKE TEMPLATES FROM THE PROPOSED STEEL LOCATING ALL HOLES FOR H.S. BOLTS. THE TEMPLATES SHALL BE LOCATED AND HELD SECURELY IN PLACE ON THE EXISTING STRUCTURE AND THE LOCATIONS OF ALL HOLES SUB DRILLED TO $\frac{13}{16}$"ø.
11. THE PROPOSED STEEL REPAIR PLATES AND SHAPES SHALL BE SECURED IN PLACE WITH POSITIONING BOLTS, INSTALLED SNUG TIGHT TO ENSURE THAT THE PROPOSED STEEL MAINTAINS ITS ALIGNMENT WITH THE EXISTING STEEL.
12. ALL HOLES SHALL BE REAMED TO FULL SIZE, $\frac{15}{16}$"ø, IN THE ASSEMBLED POSITION. ADJUST LOCATION OF POSITIONING BOLTS AS REQUIRED TO COMPLETE ALL HOLES.
13. AFTER ALL HOLES HAVE BEEN REAMED TO FULL SIZE, REMOVE THE PROPOSED STEEL AND APPLY A COATING OF EPOXY REPAIR COMPOUND TO ALL PITTED/DETERIORATED STEEL FAYING SURFACES (PLUS 1") OF THE EXISTING STEEL.
14. SECURE THE PROPOSED STEEL WITH POSITIONING BOLTS AND ALLOW THE EPOXY COMPOUND TO CURE PRIOR TO INSTALLING THE $\frac{7}{8}$"ø H.S. BOLTS.
15. FOR BOLTING OF REPAIR PLATES AND SHAPES, ALL BOLTS SHALL BE INSTALLED SNUG TIGHT. ONCE ALL BOLTS ARE INSTALLED THEY SHALL BE TIGHTENED TO THE PROPER PRETENSION LOAD FOLLOWING MASSDOT STANDARD PROCEDURE. FINAL TENSIONING SHALL BEGIN AT THE CENTER OF THE PLATES AND SHAPES AND THEN PROCEED OUTWARD FROM THE CENTER TO THE TWO ENDS.
16. AFTER BOLTING IS COMPLETED, THE INTERMEDIATE AND TOP COATS OF PAINT SHALL BE APPLIED.
17. PERIMETER OF ALL REPAIR PLATES AND ANGLES SHALL BE SEALED USING SILICONE CAULK UPON COMPLETION OF PAINTING OF REPAIRS.
18. THE CONTRACTOR MAY PROPOSE AN ALTERNATE METHOD OF BOLT AND REPAIR PLATE INSTALLATION TO THAT DESCRIBED HEREIN. THE CONTRACTOR SHALL SUBMIT A DETAILED PROCEDURE DESCRIBING ALL STEPS NECESSARY TO ACCOMPLISH THE WORK FOR REVIEW AND APPROVAL BY THE ENGINEER.
19. IF THERE ARE REVISIONS TO THE APPROVED PLANS, THE CONTRACTOR SHALL SUBMIT THESE CHANGES TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. ONCE THESE REVISIONS ARE APPROVED BY THE MASSDOT DESIGNER OF RECORD, THEY SHALL BE SUBMITTED TO MASSDOT FOR FILING.

✔	Approved		Revise and resubmit
	Approved as noted, Resubmission not required		Not Approved

massDOT Commonwealth of Massachusetts Highway Division — District 2 NORTHAMPTON

Signed: Date: October 17, 2023

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REPAIR COMPOUND NOTES:

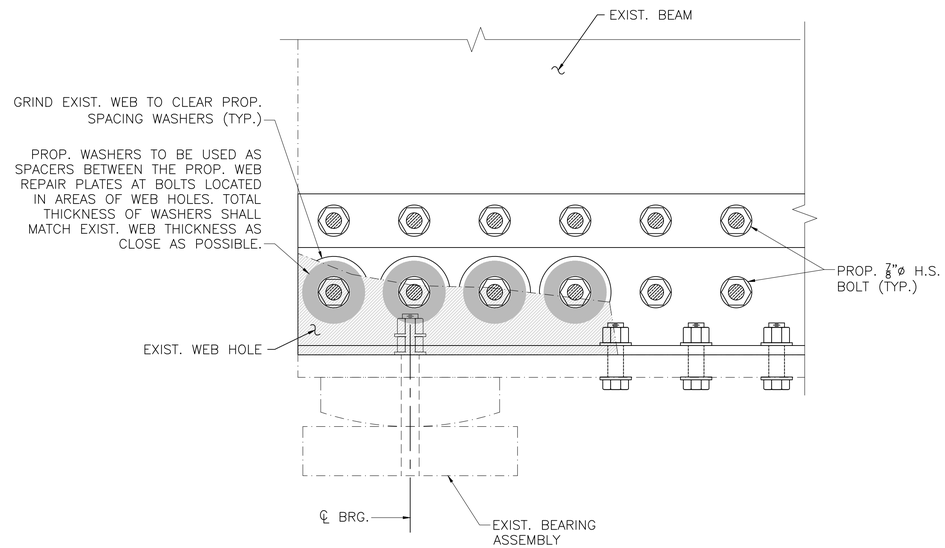
IN LOCATIONS WHERE HEAVY DETERIORATION HAS OCCURRED OR AS DIRECTED BY THE ENGINEER, EPOXY REPAIR FAIRING COMPOUND SHALL BE APPLIED OVER THE PRIME COAT AS FOLLOWS:

1. THE EPOXY REPAIR COMPOUND SHALL BE APPLIED TO THE DETERIORATED AREAS IN STRICT ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER OF RECORD FOR REVIEW AND APPROVAL THE METHODS, PROCEDURES, AND MATERIALS TO BE USED FOR THE WORK.
2. THE REPAIR COMPOUND SHALL ONLY BE APPLIED TO THOSE AREAS OF THE EXISTING STEEL THAT EXHIBIT SEVERE SECTION LOSS TO COMPLETELY FILL THE IRREGULARITIES IN THE EXISTING STEEL SURFACES SUCH THAT NO VOIDS REMAIN BETWEEN THE PLIES OF THE EXISTING STEEL AND THE PROPOSED STRENGTHENING STEEL IN THE FINAL REPAIRED CONDITION.
3. THE PROPOSED REPAIR STEEL SHALL BE PROPERLY POSITIONED AND BROUGHT INTO FIRM CONTACT WITHIN THE WORKING TIME LIMITS OF THE EPOXY REPAIR COMPOUND. THE REPAIR STEEL SHALL BE SECURED IN PLACE USING POSITIONING BOLTS TENSIONED TO A SNUG TIGHT CONDITION AND CLAMPS OR OTHER MECHANICAL MEANS TO BRING THE PLIES OF THE EXISTING STEEL AND NEW STEEL INTO FIRM CONTACT. WELDING IS NOT ALLOWED.
4. ONCE THE PROPOSED STEEL HAS BEEN SECURED INTO POSITION WITH THE POSITIONING BOLTS, AND THE EPOXY COMPOUND HAS CURED, THE REMAINING H.S. BOLTS SHALL BE INSTALLED FOLLOWING THE PROCEDURE OUTLINED IN THE GENERAL NOTES.
5. EPOXY COMPOUND FOR STRUCTURAL STEEL REPAIRS SHALL BE A SOLVENT FREE, MOISTURE TOLERANT, EPOXY PASTE ADHESIVE SYSTEM. THE EPOXY PASTE SHALL BE DEVELOPED SPECIFICALLY FOR FILLING, SMOOTHING, SEALING, OR FAIRING APPLICATIONS ON METALS. THE PASTE SHALL BE APPLIED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S LATEST WRITTEN INSTRUCTIONS. AN ACCEPTABLE PRODUCT SHALL BE ONE OF THE FOLLOWING OR AN APPROVED EQUAL.

SIKADUR 31, HI–MOD GEL MANUFACTURED BY:
SIKA CORPORATION
201 POLITO AVENUE, LYNDHURST, NJ 07071
800–933–7452
201–933–6225
WEBSITE: WWW.SIKAUSA.COM

DEVCON PLASTIC STEEL PUTTY (A) MANUFACTURED BY:
ITW DEVCON
30 ENDICOTT STREET, DANVERS, MA 01923
800–933–8266
WEBSITE: WWW.DEVCON.COM

FX–738 METAL FILLED EPOXY MANUFACTURED BY:
SIMPSON STRONG–TIE
PLEASANTON, CA 94588
800–999–5099
WEBSITE: WWW.STRONGTIE.COM



TYPICAL BOLT INSTALLATION DETAIL AT LOCATIONS OF EXISTING WEB HOLES

SCALE: 3" = 1'–0"

63 KENDRICK STREET
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781-355-7100
781-355-7101 (FAX)

GILL ENGINEERING

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W21047 REPAIR PLANS.dwg

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REGISTERED PROFESSIONAL ENGINEER — DATE

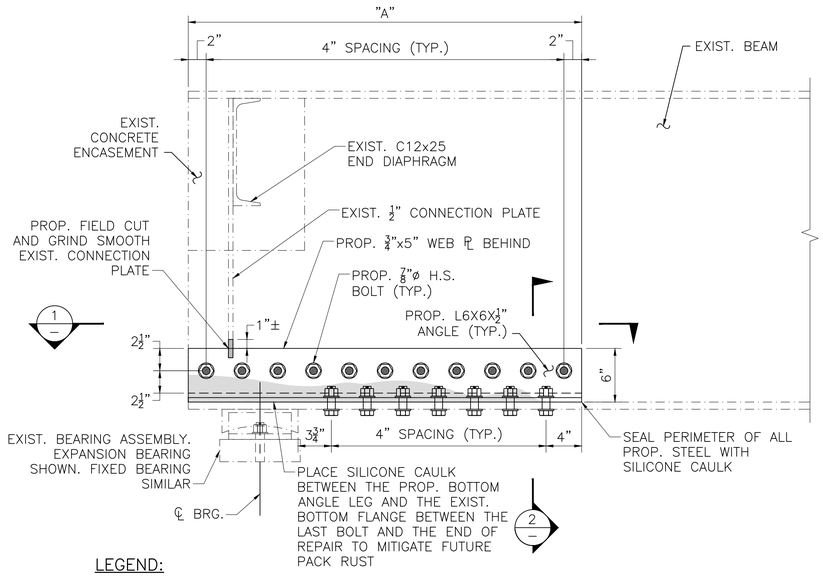
JHONY VELEZ — No. 57039 — REGISTERED PROFESSIONAL ENGINEER — COMMONWEALTH OF MASSACHUSETTS
10/16/2023

BEAM END REPAIR PLANS

SPS NEW ENGLAND INC.

BEAM END REPAIR PLANS
W–21–047 (10W)
I–91 OVER ROUTE 5 (RIVERDALE ST.)

TYP. BEAM END REPAIR NOTES



LEGEND:

= AREA OF DETERIORATION UP TO 3" HIGH

NOTE:

1. DECK NOT SHOWN FOR CLARITY.
2. AT LOCATIONS WHERE THE DECK DRAIN PIPES INTERFERE WITH THE INSTALLATION OF THE PROP. WEB REPAIR PLATES AND ANGLES, REMOVE EXIST. NON-WELDED CONDUIT CLAMPS AND RE-ATTACHED THEM AFTER INSTALLATION OF PROP. REPAIRS. A BIGGER CONDUIT CLAMP MAY BE REQUIRED.

TYPE A REPAIR

SCALE: 1½" = 1'-0"

LEGEND:

= AREA OF DETERIORATION UP TO 7" HIGH

NOTES:

1. DECK NOT SHOWN FOR CLARITY.
2. AT LOCATIONS WHERE THE DECK DRAIN PIPES INTERFERE WITH THE INSTALLATION OF THE PROP. WEB REPAIR PLATES AND ANGLES, REMOVE EXIST. NON-WELDED CONDUIT CLAMPS AND RE-ATTACHED THEM AFTER INSTALLATION OF PROP. REPAIRS. A BIGGER CONDUIT CLAMP MAY BE REQUIRED.

TYPE B REPAIR

SCALE: 1½" = 1'-0"

✔	Approved		Revise and resubmit
	Approved as noted, Resubmission not required		Not Approved

MassDOT Highway Division — District 2 NORTHAMPTON

Signed: Date: October 17, 2023

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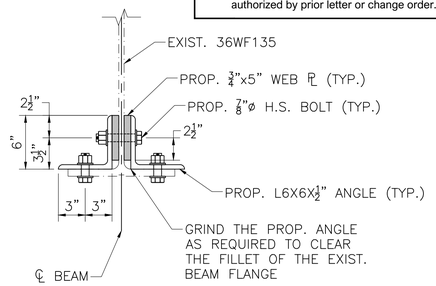
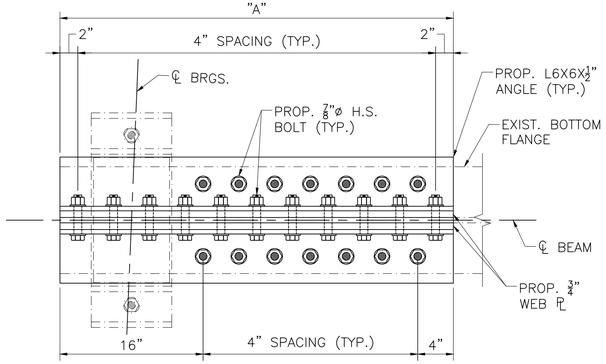


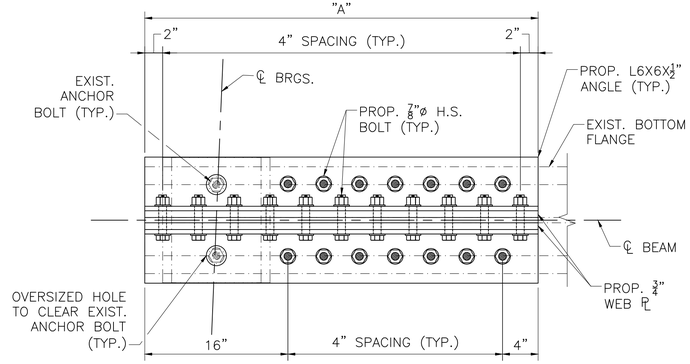
SECTION 2

SCALE: 1½" = 1'-0"

TYPE A REPAIR DIMENSIONS		
LOCATION		"A"
I-91- SOUTHBOUND	BM 1 AT E. ABUTMENT	13'-0"
	BM 8 AT E. ABUTMENT	5'-4"
	BM 4 AT PIER	5'-4"
	BM 7 AT PIER	4'-8"
	BM 13 AT PIER	5'-8"
	BM 14 AT PIER	6'-4"
I-91 NORTHBOUND	BM 24 AT E. ABUTMENT	5'-0"
	BM 20 AT PIER	3'-4"
	BM 22 AT PIER	4'-8"
	BM 23 AT PIER	2'-4"
	BM 28 AT PIER	4'-4"



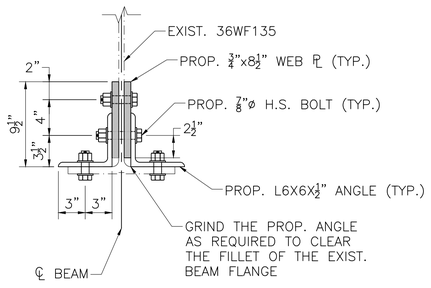
REPAIR OVER EXPANSION BEARINGS



REPAIR OVER FIXED BEARINGS

SECTION 1

SCALE: 1½" = 1'-0"



SECTION 3

SCALE: 1½" = 1'-0"

TYPE B REPAIR DIMENSIONS		
LOCATION		"A"
I-91- SOUTHBOUND	BM 3 AT PIER	5'-8"
	BM 8 AT PIER	1'-8"
	BM 10 AT PIER	8'-4"
	BM 11 AT PIER	11'-4"
	BM 12 AT PIER	6'-8"
	BM 15 AT PIER	5'-8"
	BM 16 AT PIER	4'-4"
	BM 9 AT W. ABUTMENT	3'-0"
	BM 16 AT W. ABUTMENT	4'-4"
I-91 NORTHBOUND	BM 18 AT PIER	6'-4"
	BM 19 AT PIER	3'-0"
	BM 21 AT PIER	3'-0"
	BM 26 AT PIER	8'-0"
	BM 29 AT PIER	7'-8"
	BM 30 AT PIER	6'-8"
	BM 31 AT PIER	4'-4"
	BM 32 AT PIER	4'-8"
	BM 32 AT W. ABUTMENT	14'-4"

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GILL ENGINEERING

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DESCRIPTION	DRW. BY	CALC. BY	APPRV. BY	DATE
ISSUED FOR CONSTRUCTION	SSV	SSV	JVC	10/6/2023
REV.1 MASSDOT COMMENTS ADDRESSED	SSV	SSV	JVC	10/16/2023

REGISTERED PROFESSIONAL ENGINEER — DATE

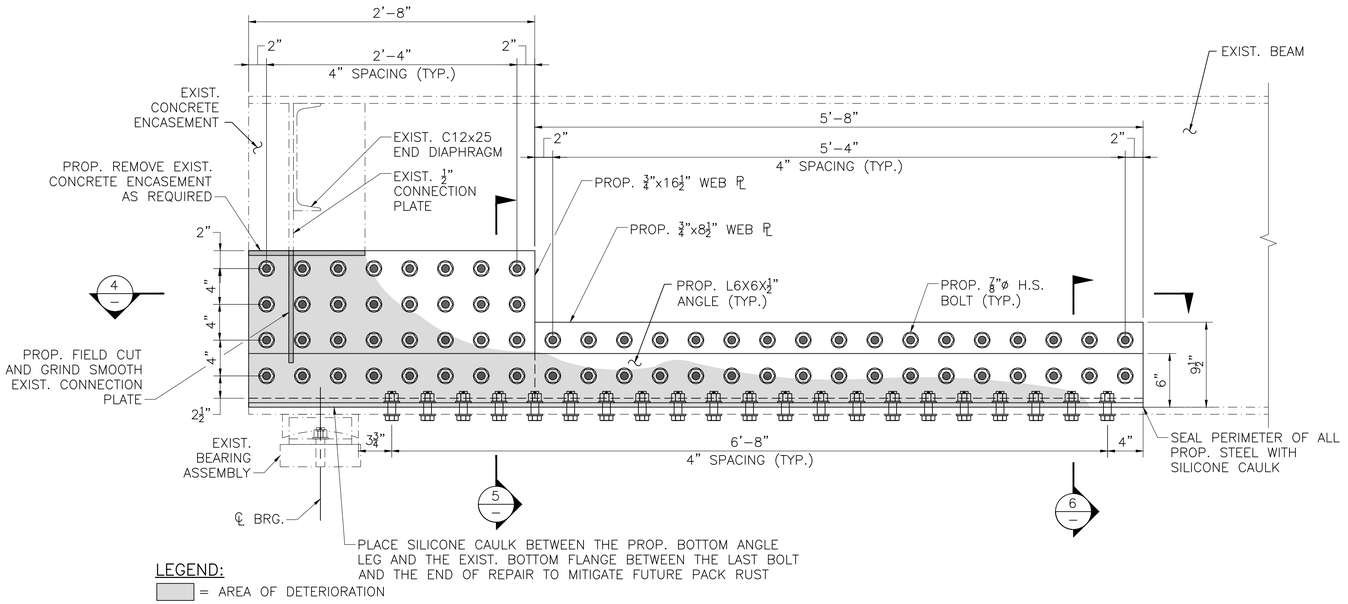
COMMONWEALTH OF MASSACHUSETTS — JHONY VELEZ — CIVIL — No. 57551 — REGISTERED PROFESSIONAL ENGINEER — 10/16/2023

BEAM END REPAIR PLANS

SPS NEW ENGLAND INC.

BEAM END REPAIR PLANS
W-21-047 (10W)
I-91 OVER ROUTE 5 (RIVERDALE ST.)

BEAM END REPAIR TYPE A & B



LEGEND:

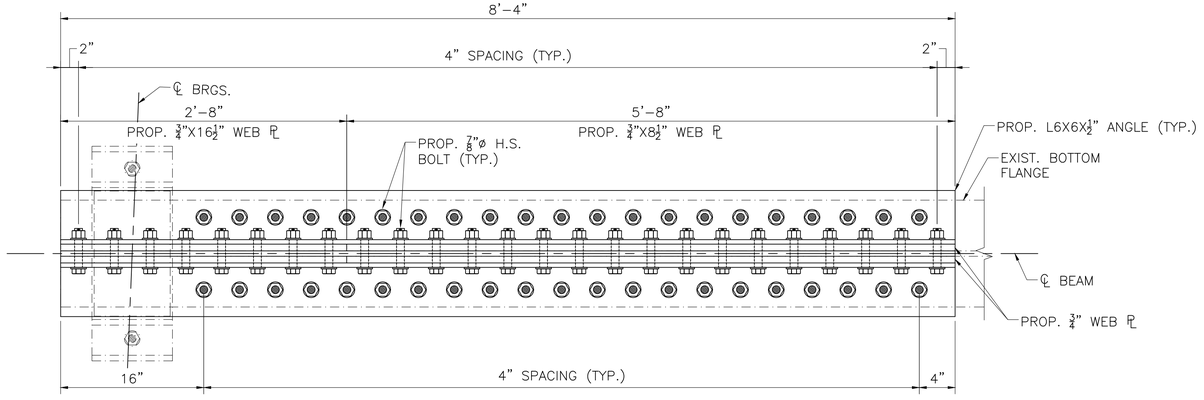
▭ = AREA OF DETERIORATION

NOTE:

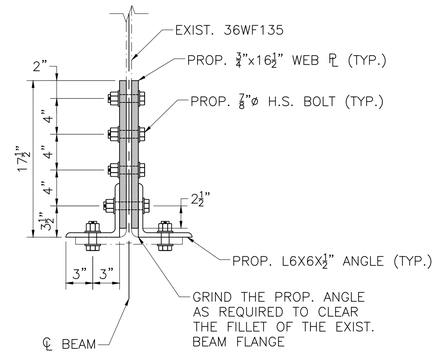
1. DECK NOT SHOWN FOR CLARITY.
2. AT LOCATIONS WHERE THE DECK DRAIN PIPES INTERFERE WITH THE INSTALLATION OF THE PROP. WEB REPAIR PLATES AND ANGLES, REMOVE EXIST. NON-WELDED CONDUIT CLAMPS AND RE-ATTACHED THEM AFTER INSTALLATION OF PROP. REPAIRS. A BIGGER CONDUIT CLAMP MAY BE REQUIRED.

BM 1 & BM 9 AT PIER REPAIR

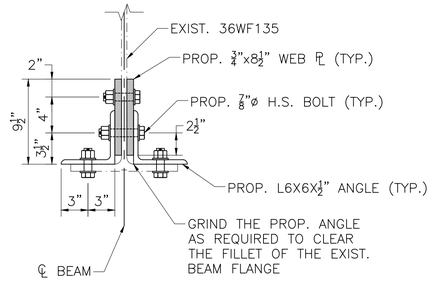
SCALE: 1½" = 1'-0"



SECTION 4 — SCALE: 1½" = 1'-0"



SECTION 5 — SCALE: 1½" = 1'-0"



SECTION 6 — SCALE: 1½" = 1'-0"

✔	Approved		Revise and resubmit
	Approved as noted, Resubmission not required		Not Approved

massDOT Commonwealth of Massachusetts Department of Transportation Highway Division — District 2 NORTHAMPTON

Signed: _____ Date: October 17, 2023

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REGISTERED PROFESSIONAL ENGINEER — DATE

COMMONWEALTH OF MASSACHUSETTS — JHONY VELEZ — CIVIL — No. 57439 — REGISTERED PROFESSIONAL ENGINEER — 10/16/2023

BEAM END REPAIR PLANS

SPS NEW ENGLAND INC.

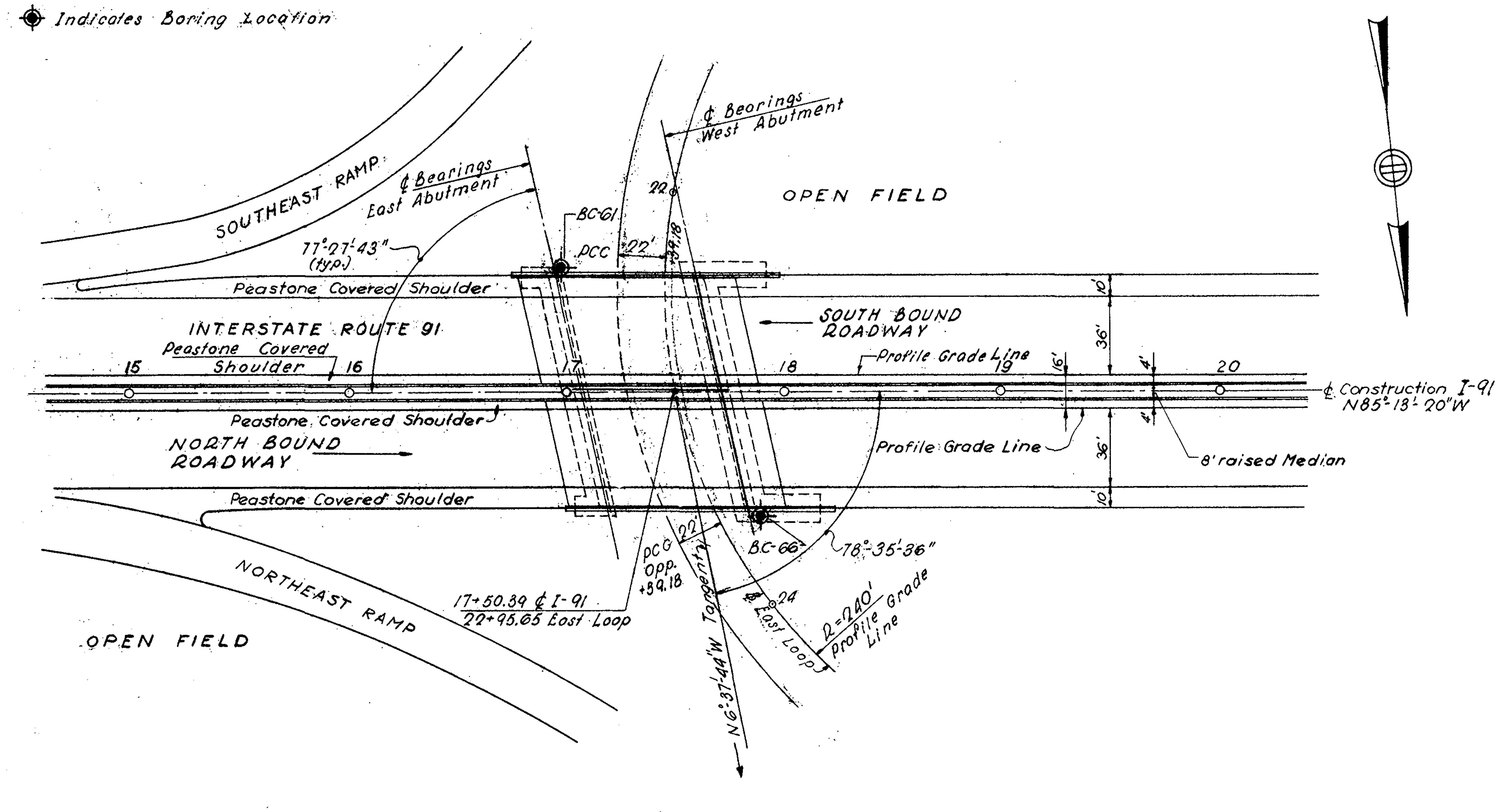
BEAM END REPAIR PLANS
W-21-047 (10W)
I-91 OVER ROUTE 5 (RIVERDALE ST.)

BEAM END REPAIR TYPE C

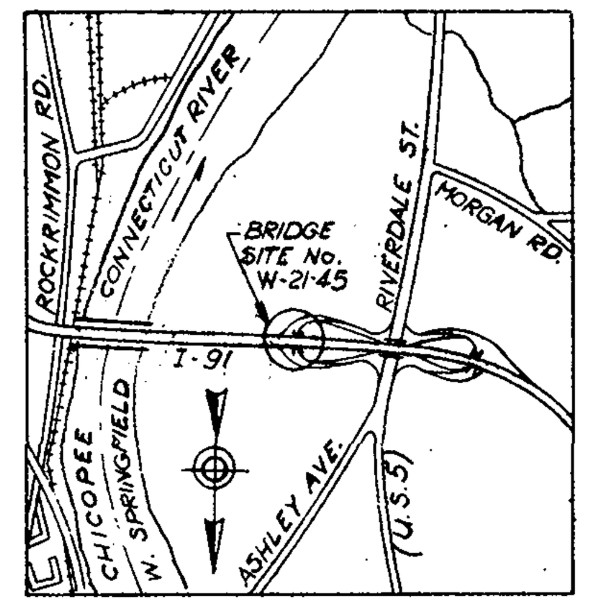
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS	I-91-1(54)9	19	57	188

INTERSTATE ROUTE 91
WEST SPRINGFIELD

⊕ Indicates Boring Location



KEY PLAN
Scale 1" = 40'



LOCUS PLAN
Scale : 1" = 2000'

GENERAL NOTES

FOUNDATIONS
Foundations may be altered if necessary to suit Conditions encountered during Construction.

DATE AND SEAL
To be located as shown on Sheet 6. A Sheet showing Size and Character of Numerals will be furnished. Seal to be furnished by the State and shall be set by the Contractor.

DESIGN
In Accordance with the current AASHO Specifications (1961 Edition) and Interim Specifications for HS20-44 Loading modified for military Loading.

REINFORCEMENT
All Bars shall have Deformations conforming to A.S.T.M.A.-305. Unless otherwise shown on the Plans, Bars shall be lapped 20 diameters for Splices, except that Bars near the Top of Slab and Beams with more than 12 inches of Concrete under the Bars shall be lapped 35 diameters for Splices.

BRIDGE RAILING
See Department Standard Plans dated May 1965, for Details of Bridge Railings (1 Rail) Option

SCALES
Scales noted on Plans are not applicable to reduced Size Prints. Divide Scales by 2 for ½-Size Prints.

BENCH MARK
B.M.#7 - Top of Right outer Corner, Bottom Concrete Step, House #1162 Route 5, Sta. 101+38 ¢ Route 5, 68' Rt. El. = 67.31. U.S.C.&G.S. Mean Sea Level of 1929.

SURVEY BOOK NUMBERS
27361 & 27363.

UNSUITABLE MATERIAL
All Unsuitable Material Shall be Removed Within the Limits of the Foundations of the Structure.

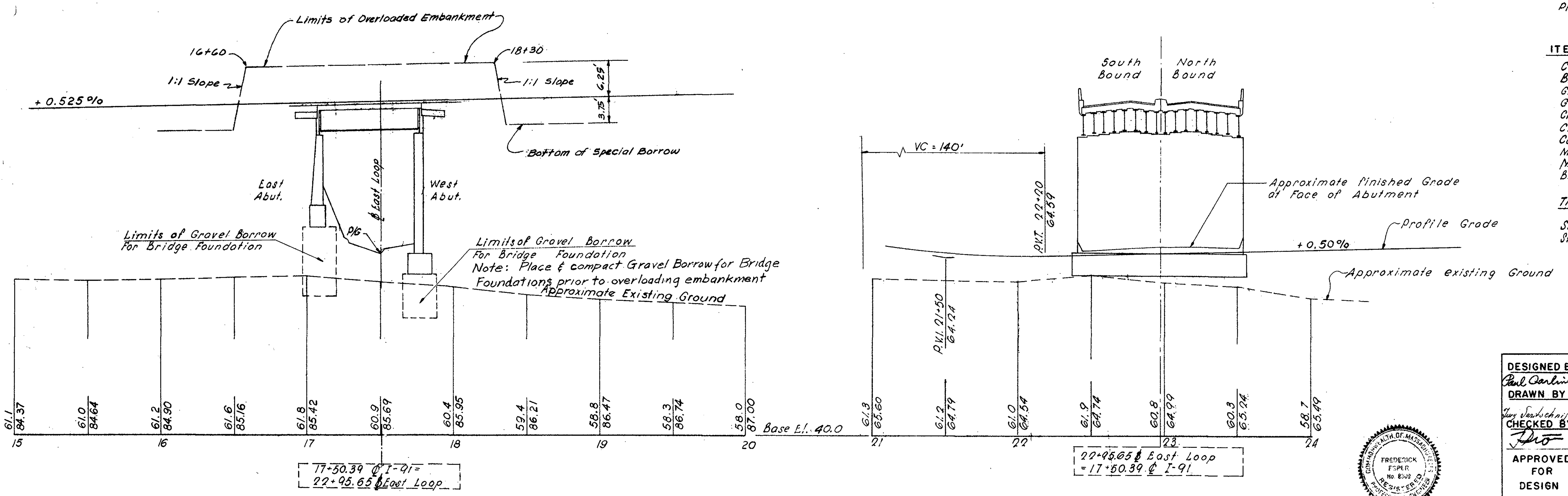
ANCHOR BOLTS
All Anchor Bolts are to be Set by Template and Placed Before the Concrete is Poured.

ESTIMATED QUANTITIES
(NOT GUARANTEED)

ITEM	QUANTITIES
Class 'B' Rock Excavation	5 C.Y.
Bridge Excavation	2360 C.Y.
Gravel Borrow	1300 C.Y.
Gravel Borrow for Bridge Foundations	2160 C.Y.
Class I Bituminous Concrete Pavement Type I-1	55 Tons
Class I Dense Protective Bottom Course for Bridges	60 Tons
Metal Bridge Railing (1 Rail) Option	229 L.F.
Metal Bridge Railing - Type M-2	71 L.F.
Bridge Structure (W-21-45)	1 L.S.

The Following Quantities are Included in Item 339.01

ITEM	QUANTITIES
Steel Reinforcement for Structures	124,500 lbs.
Structural Steel	202,000 lbs.



INTERSTATE ROUTE 91

PROFILES
Scales: Horz. 1" = 40' Vert. 1" = 8'

EAST LOOP

LOUIS BERGER & ASSOCIATES
CONSULTING ENGINEER
WELLESLEY HILLS, MASS.

DESIGNED BY
DRAWN BY
CHECKED BY
APPROVED FOR DESIGN

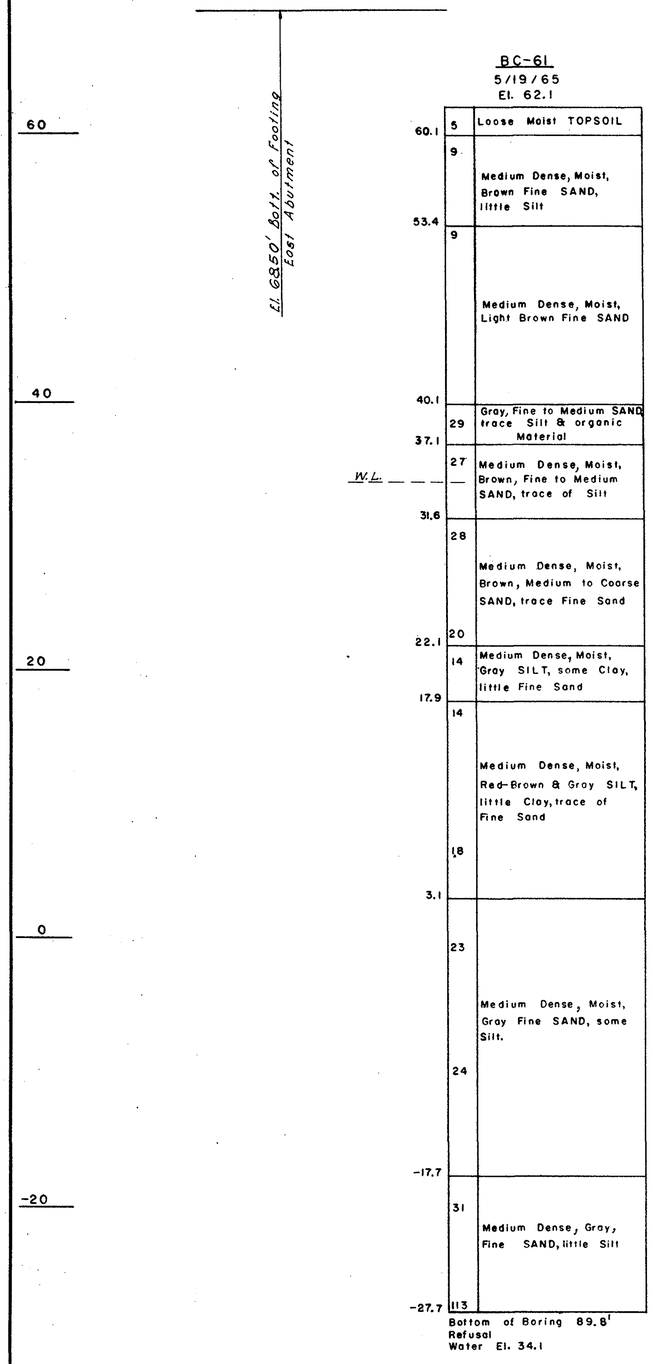
APRIL 9, 1966 — ISSUED FOR CONSTRUCTION:

THE COMMONWEALTH OF MASSACHUSETTS
PROPOSED BRIDGE
WEST SPRINGFIELD MASS
INTERSTATE ROUTE 91
INTERSTATE ROUTE 91 OVER EAST LOOP (AT ROUTE 5)
SCALES AS NOTED
OFFICE OF DEPARTMENT OF PUBLIC WORKS
100 NASHUA ST. BOSTON MASS.
APR. 1966
BRIDGE ENGINEER — CHIEF ENGINEER

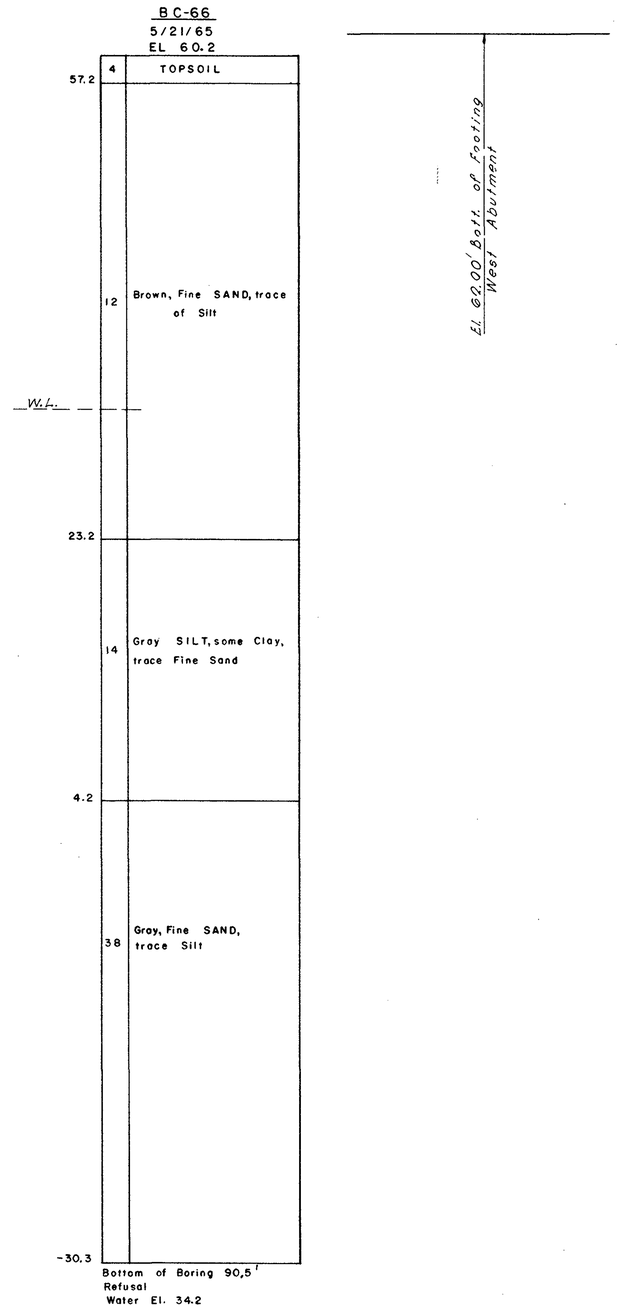
SHEET 1 OF 11 SHEETS - BRIDGE NO. W-21-45

INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	58	188



BORING DATA
Scale: 3/16" = 1'-0"



BORING NOTES

Location of Borings shown on Key Plan, Sheet 1 thus: ◉ BC-61. BC indicates a Bridge Core Boring.
Borings taken for purpose of Design & show conditions at Boring Points only but do not necessarily show Nature of Material to be encountered during construction.
Figures in left hand column indicate Number of Blows required to drive 2" O.D. Sampler 12" using 140lb. weight falling 30".
Borings were made by Allstate Drilling Co. 227 Wampanoag Trail, Riverside, R.I., May 1965.
Boring Samples may be seen at the Research and Material Division, 99 Worcester Street, Wellesley Hills, at the intersection of Route 9 and Route 128, by appointment only.
Water levels shown on the Borings Logs were observed at the time of taking borings and do not necessarily show the true ground water level.

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WEST SPRINGFIELD

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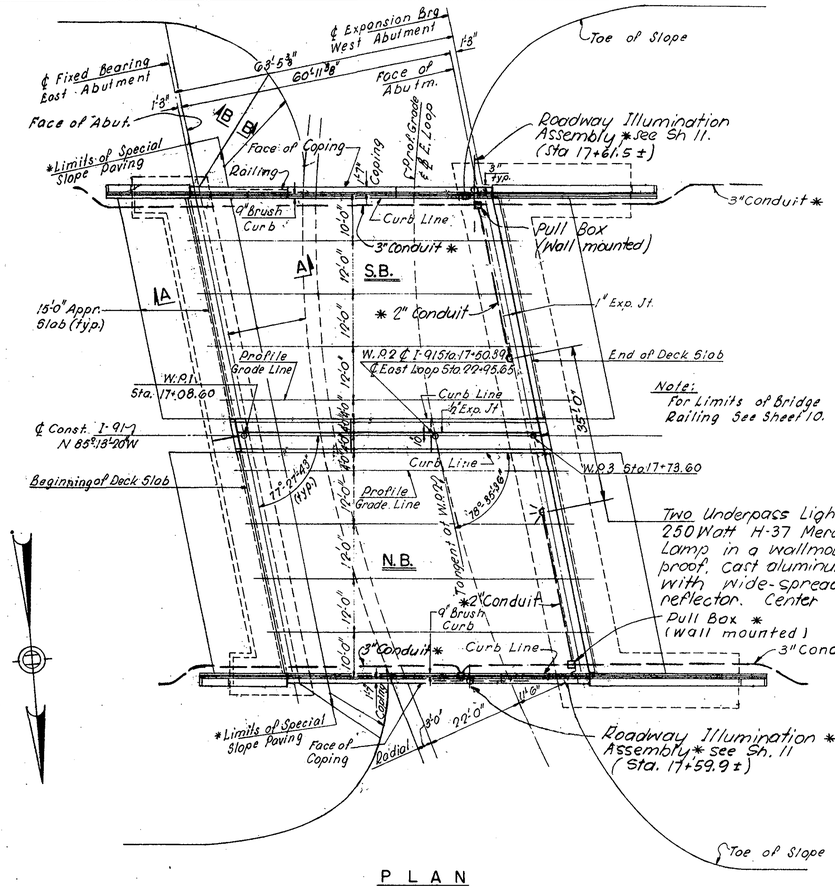
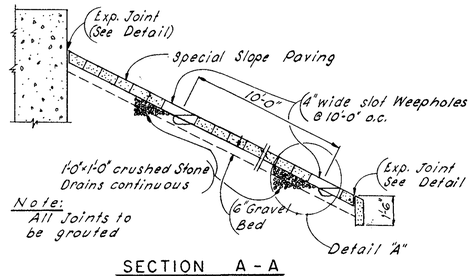
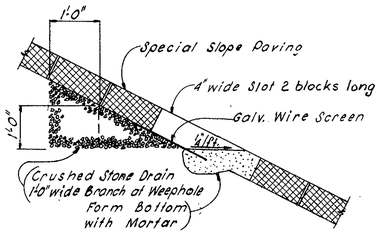
1	MASS.	I-91-1(65)78	19	59	188



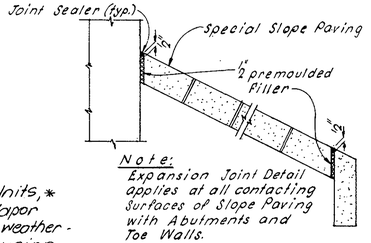
PLAN
Scale: 1/16" = 1'-0"



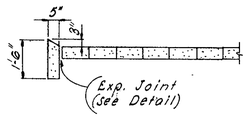
SECTION A - A
DETAILS OF SPECIAL SLOPE PAVING
Not to Scale



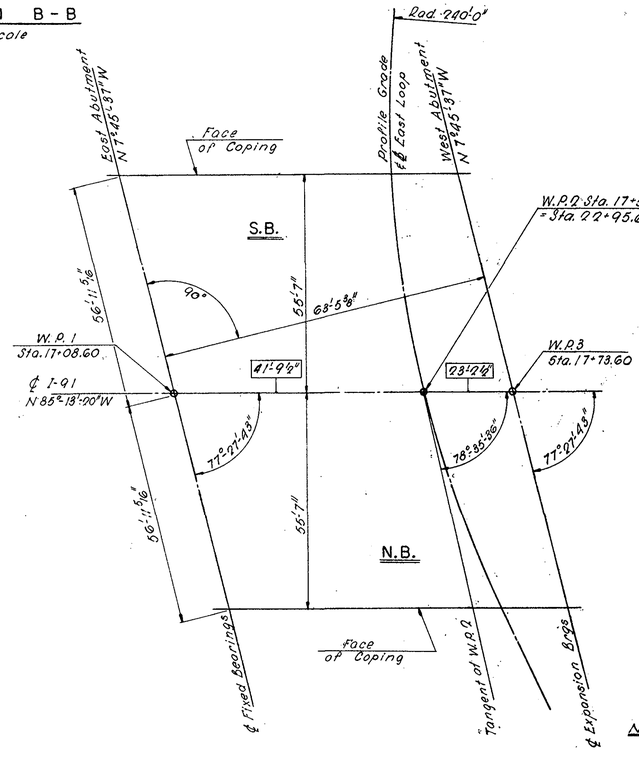
DETAIL "A"
Not to Scale



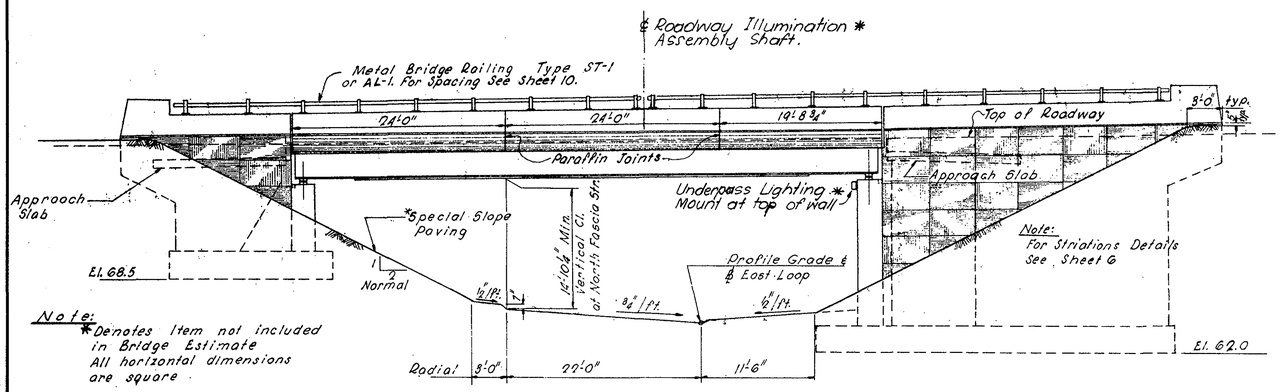
EXPANSION JOINT DETAIL
FOR SLOPE PAVING
Not to Scale



SECTION B - B
Not to Scale



WORKING POINT DIAGRAM
Not to Scale



ELEVATION
Scale: 1/8" = 1'-0"

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
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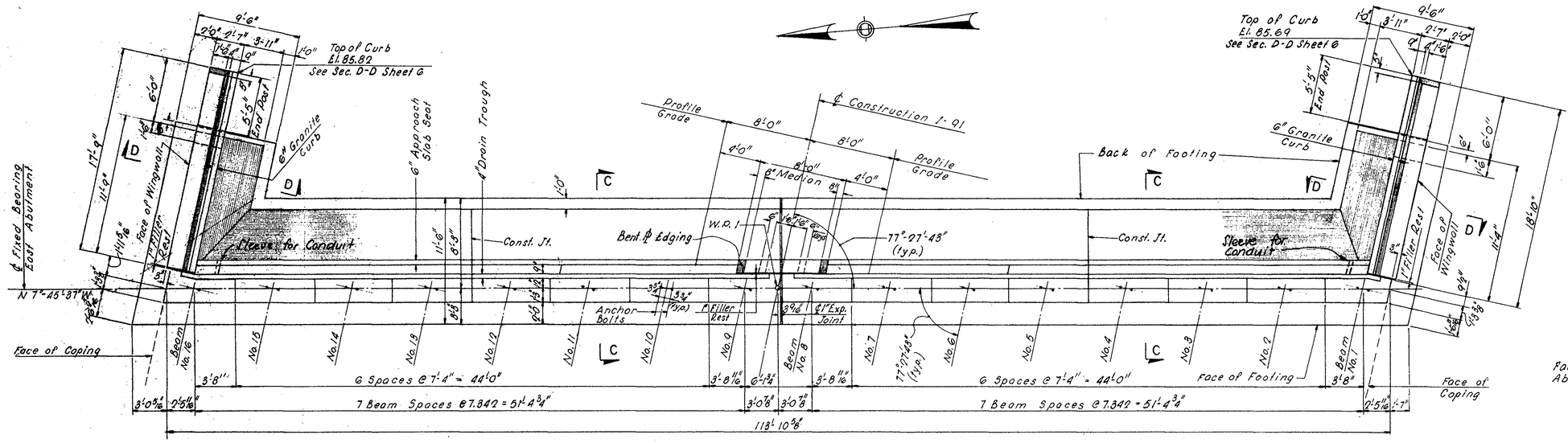
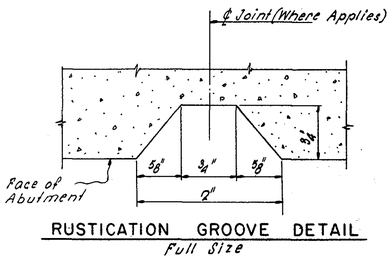
INTERSTATE ROUTE 91
WEST SPRINGFIELD

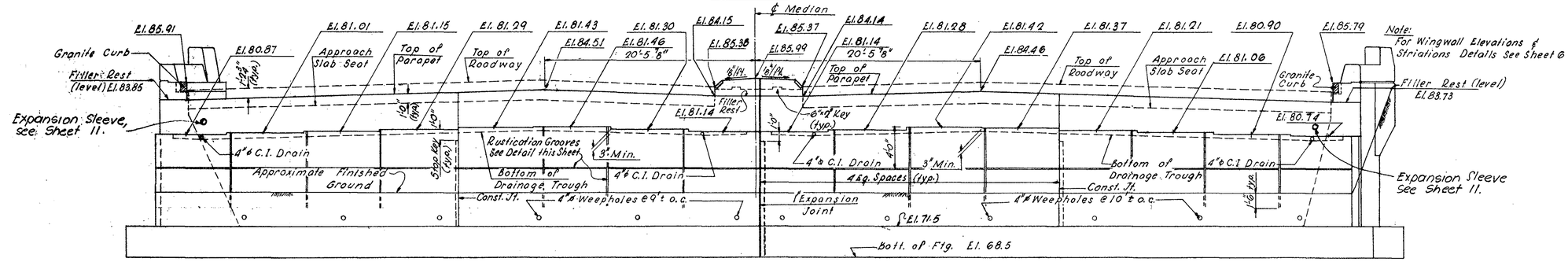
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(154)9	19	60	188





RUSTICATION GROOVE DETAIL
Full Size

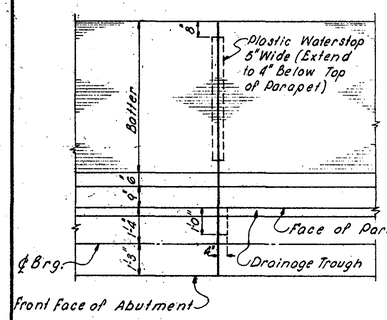
PLAN



Note: For Wingwall Elevations & Striations Details See Sheet 6

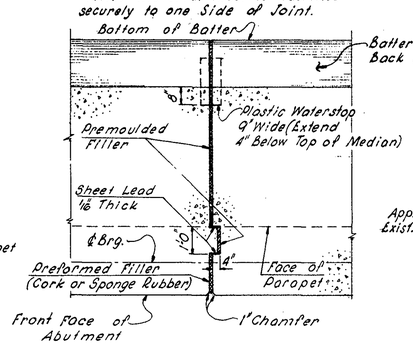
ELEVATION
EAST ABUTMENT
Scale: 3/16" = 1'-0"

Notes:
1. For Sections C-C, D-D & Footing Layout See Sheet 6.
2. For Median Details See Sheet 7.

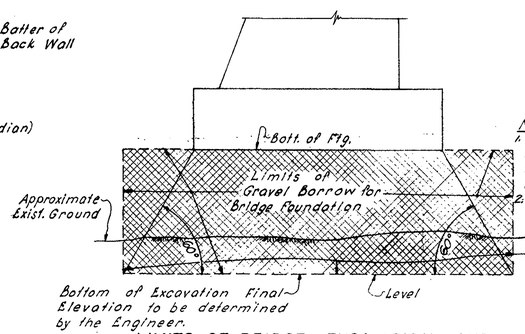


CONSTRUCTION JOINT
Scale: 3/8" = 1'-0"

Note: Filler Material must be fastened securely to one Side of Joint.



EXPANSION JOINT
Scale: 3/8" = 1'-0"



LIMITS OF BRIDGE EXCAVATION AND LIMITS OF GRAVEL BORROW FOR BRIDGE FOUNDATIONS
Not to Scale

Notes:
1. Some treatment is to be used at Wingwalls & at Ends. See Standard Specifications for Compaction.
2. See Sheet 6 of 188 for Limits of Bridge Excavation of Overloaded Embankment.

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INTERSTATE ROUTE 91
WEST SPRINGFIELD

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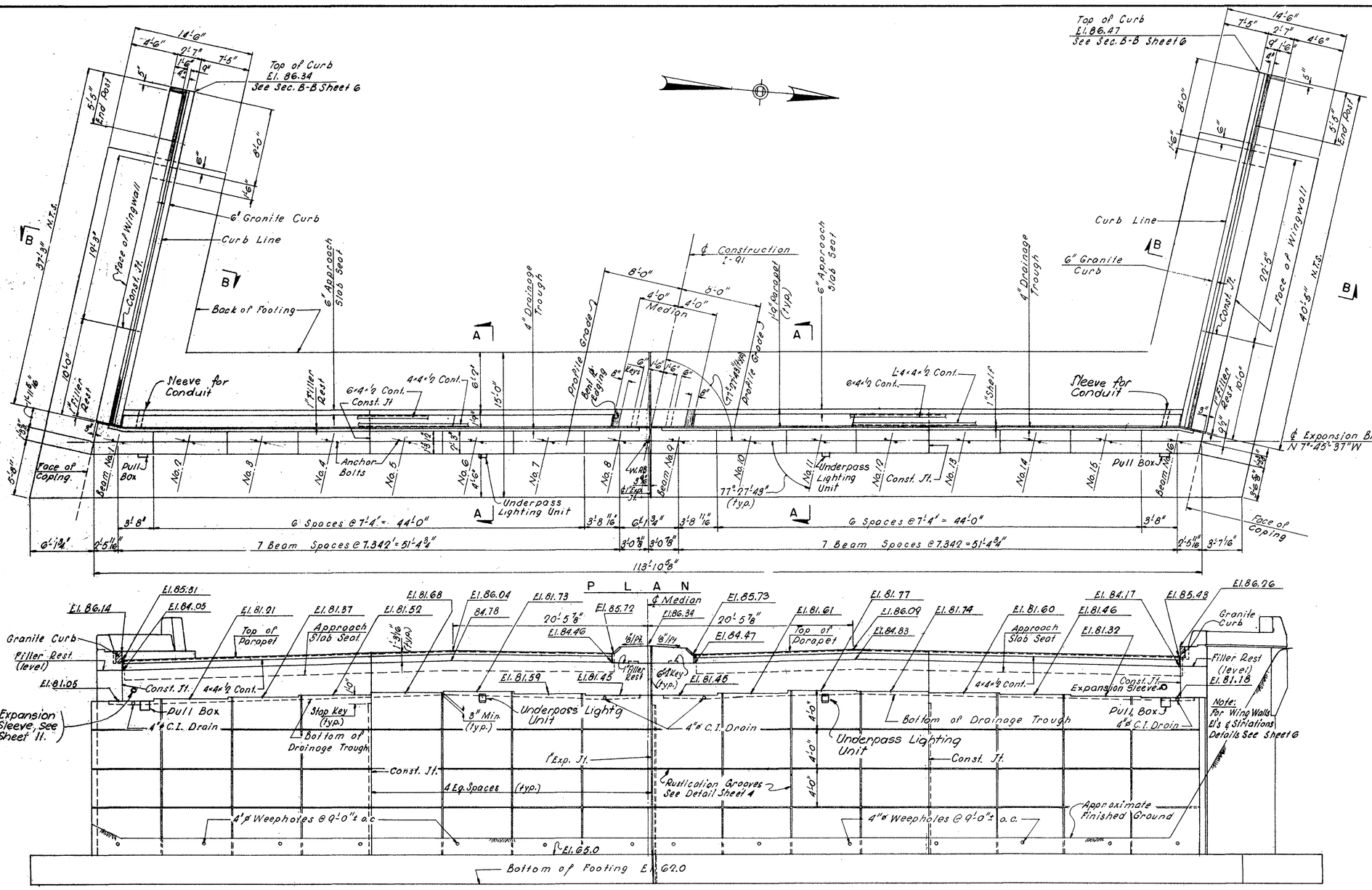
1	MASS.	I-91-1(54)9	19	61	188



P L A N

E L E V A T I O N

WEST ABUTMENT

Scale: 3/16" = 1'-0"

Note: Lighting Conduit Omitted For Clarity See Sheet 3

Notes:
1. For Sections A-A, B-B & Footing Layout See Sheet 6
2. For Limits of Gravel Borrow See Sheet 4

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WEST SPRINGFIELD

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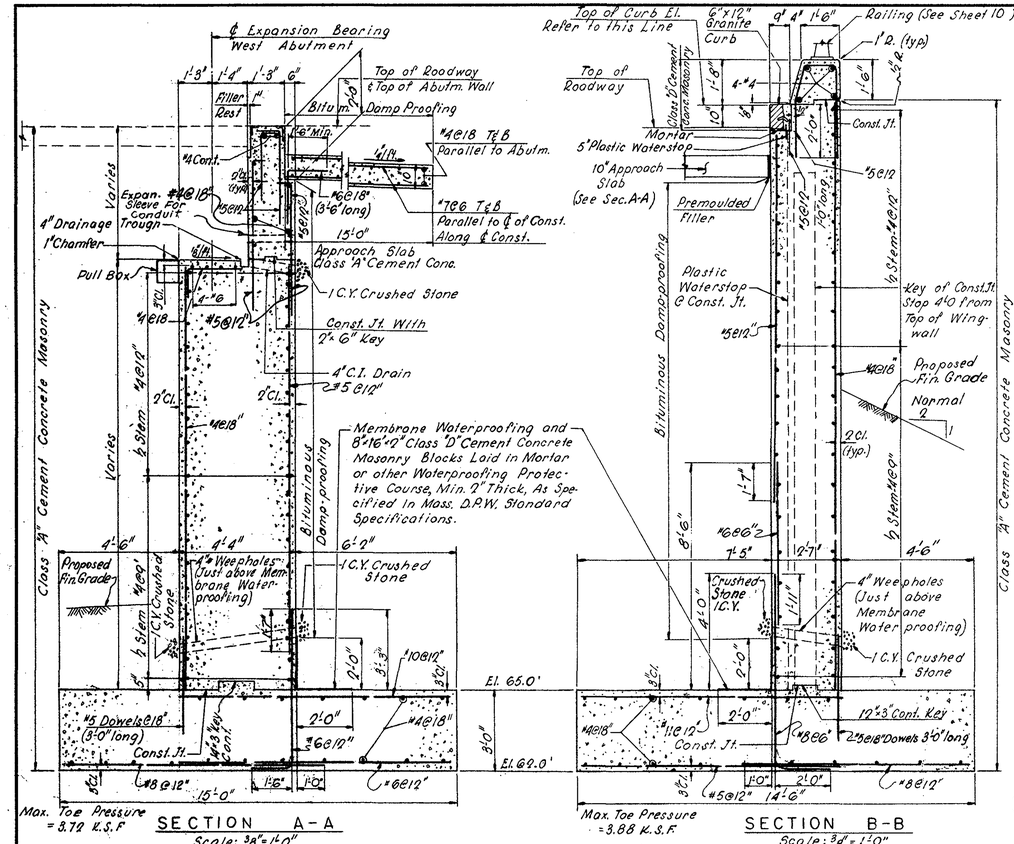
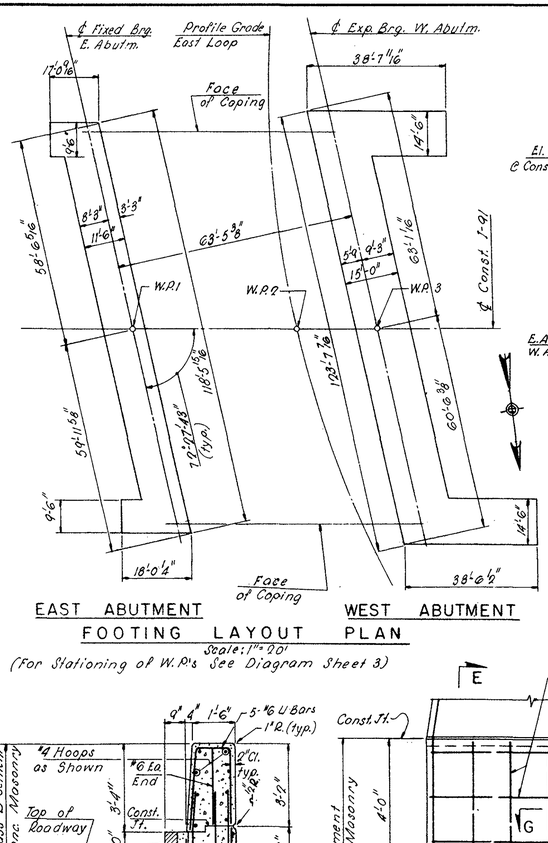
1	MASS.	I-91-1(5)49	19	G2	188

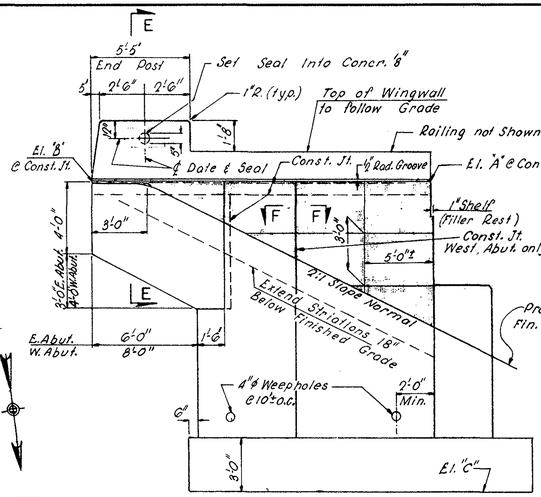
WINGWALL ELEVATIONS

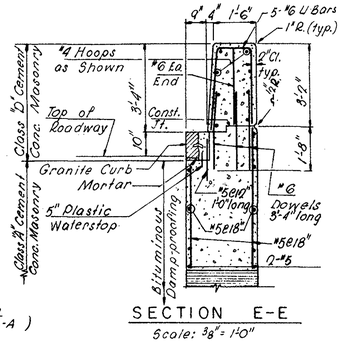
Wingwall	El. "A"	El. "B"	El. "C"
North East	86.08	85.99	68.50
South East	85.96	85.86	68.50
North West	86.43	86.64	67.00
South West	86.31	86.51	67.00

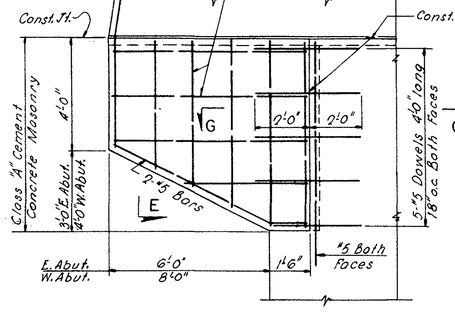
Note:
Date & Seal to be located at the Inside Face of N.E. & S.W. Wingwalls.
Fill Shall be placed and thoroughly compacted to the Grade of the Bottom of the Wings; or Where no Fill is required below the Wings, the Concrete shall be placed upon undisturbed Soil.

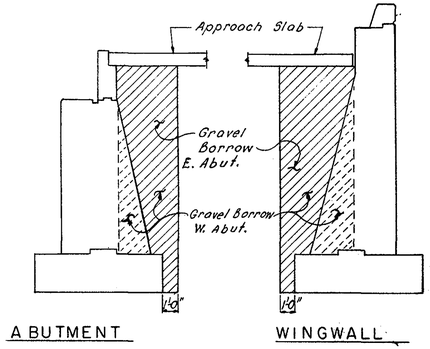


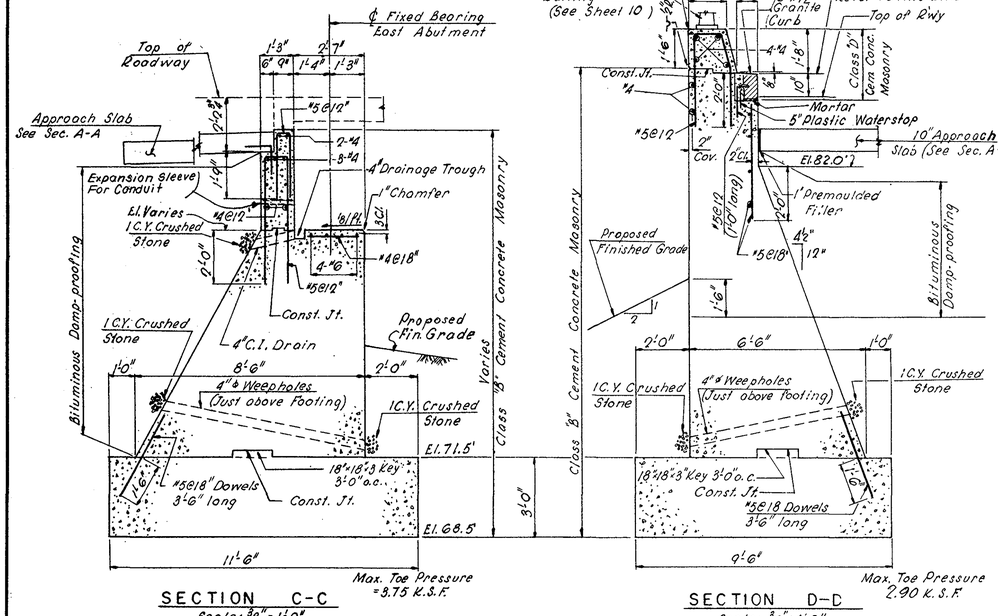


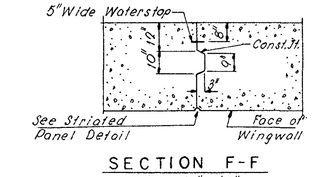


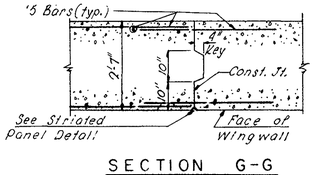


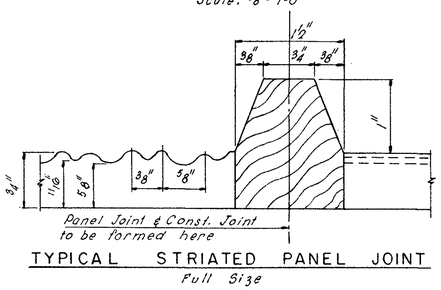












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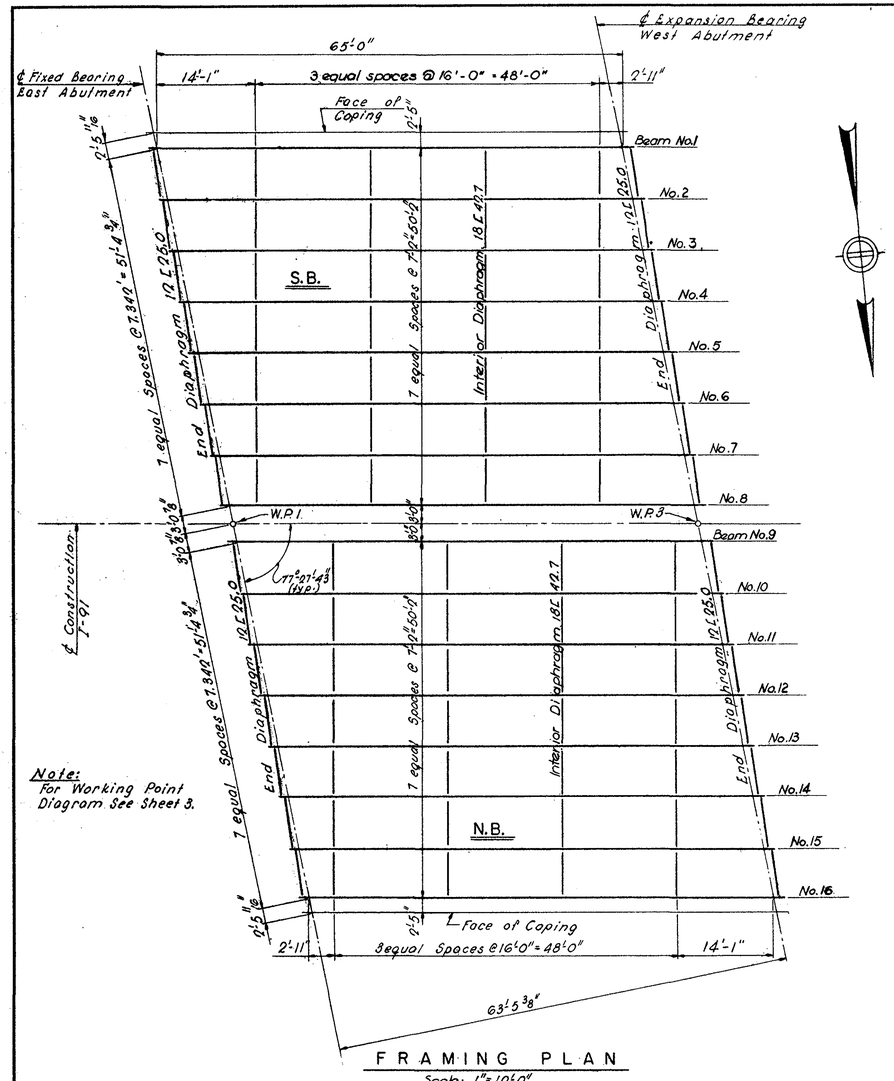
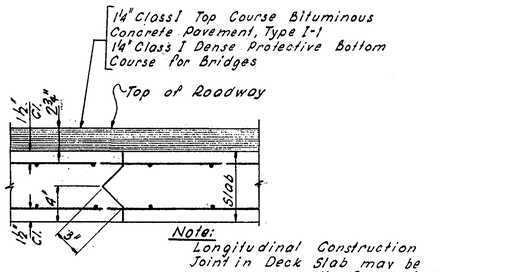
INTERSTATE ROUTE 91
WEST. SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(154)S	19	63	188



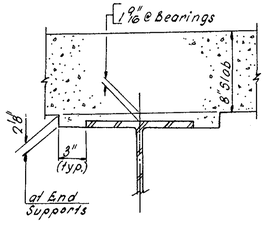
Note:
For Working Point Diagram See Sheet 3.

FRAMING PLAN
Scale: 1" = 10'-0"

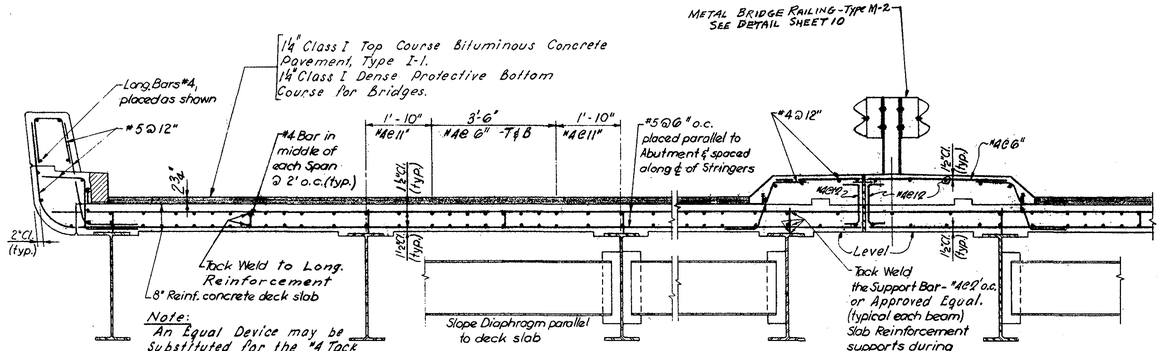


Note:
Longitudinal Construction Joint in Deck Slab may be omitted when the Contractor's Proposed Method of Construction is Approved by the Engineer in Writing.

CONSTRUCTION JOINT IN DECK SLAB
Scale: 1 1/2" = 1'-0"

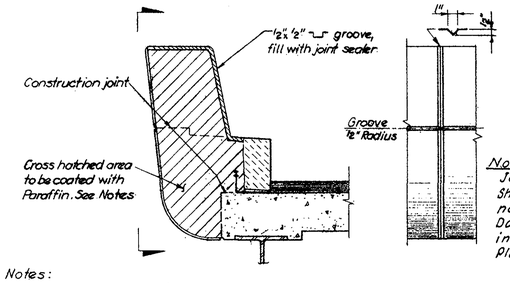


HAUNCH DETAIL
Scale: 1 1/2" = 1'-0"



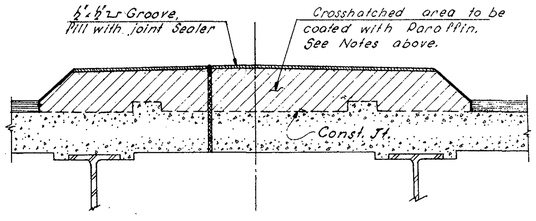
Note:
An Equal Device may be Substituted for the #4 Tack Weld Bar Upon Written Approval of the Engineer.

TYPICAL DECK REINFORCEMENT
Scale: 1/2" = 1'-0"

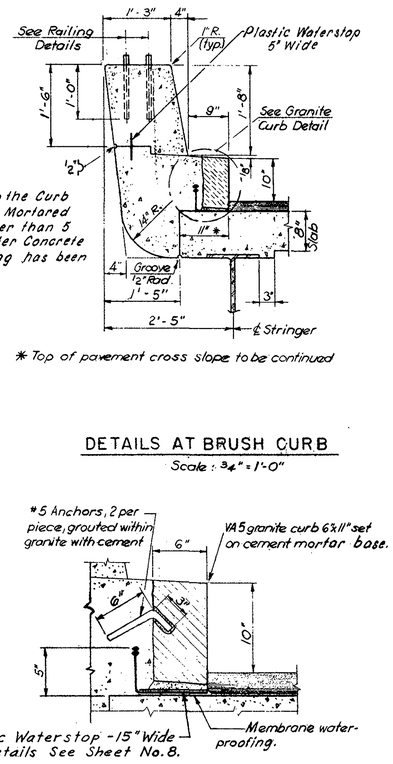


Notes:
1. Brush Curb and Coping shall be poured in alternate sections and shall have a curing period of not less than 5 days between pours.
2. For Spacing of Joints see Sheet 10.
3. Ends of bars to be 2" clear of joint.
4. Longitudinal bars in Curb and Coping are not to be carried through the joints.
5. Joint sealer to be same color as concrete.
6. Joints to be square to face of coping.
7. Flashing to be continuous thru Paraffin Joint.
8. A Mortared Joint in the Curb Shall be Placed at each Paraffin Joint.

PARAFFIN JOINT THRU COPING
Scale: 3/4" = 1'-0"



PARAFFIN JOINT THRU MEDIAN
Scale: 3/4" = 1'-0"

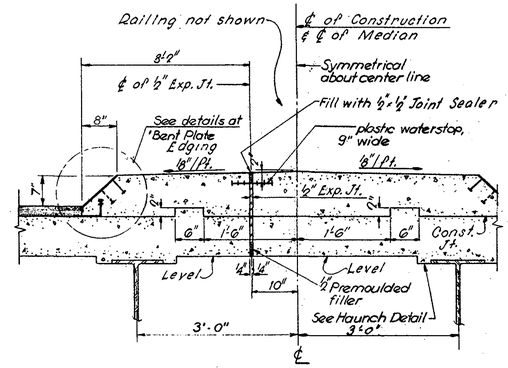


* Top of pavement cross slope to be continued

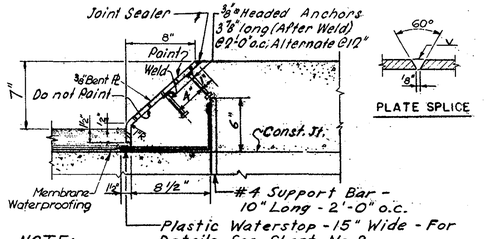
DETAILS AT BRUSH CURB
Scale: 3/4" = 1'-0"

Plastic Waterstop - 15" Wide - For Details See Sheet No. 8.

GRANITE CURB DETAIL
Scale: 1 1/2" = 1'-0"



MEDIAN DETAILS
Scale: 3/4" = 1'-0"



Plastic Waterstop - 15" Wide - For Details See Sheet No. 8.

NOTE:
Carry 9" Plastic Waterstop at Exp. Jt. through Median

BENT PLATE EDGING
Scale: 1 1/2" = 1'-0"

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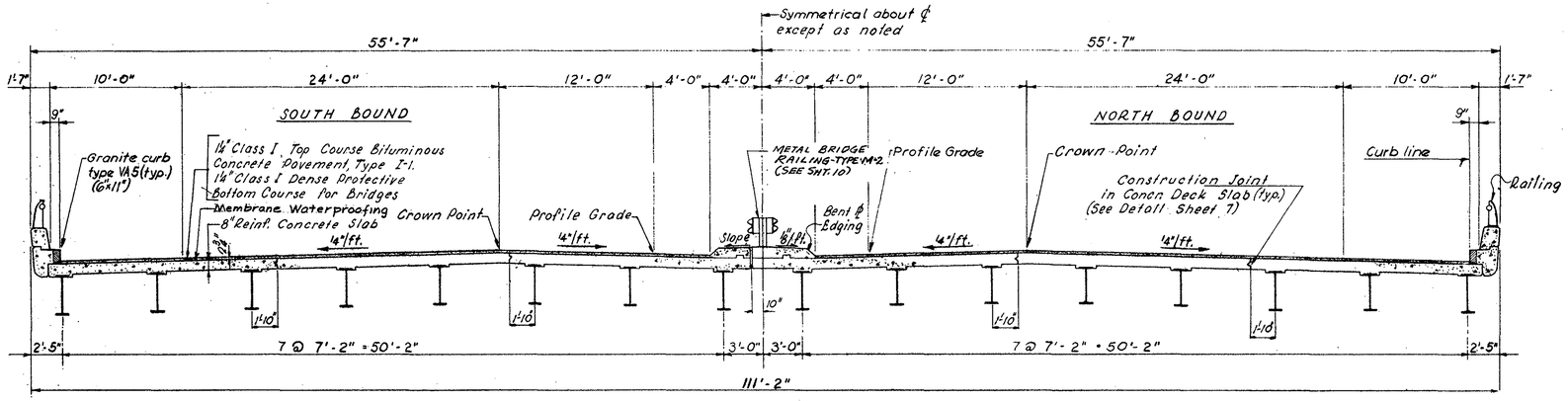
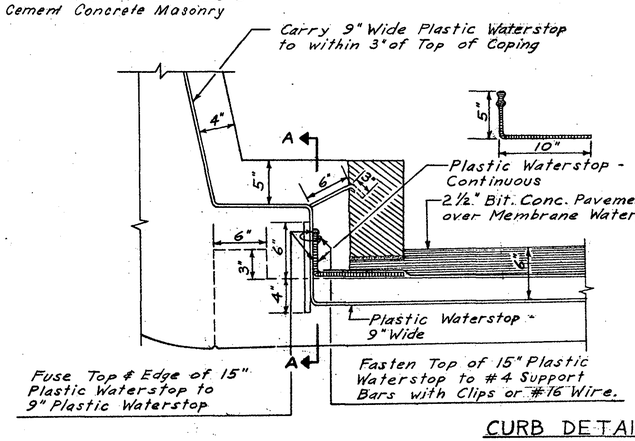
INTERSTATE ROUTE 91
WEST SPRINGFIELD

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9	19	64	188



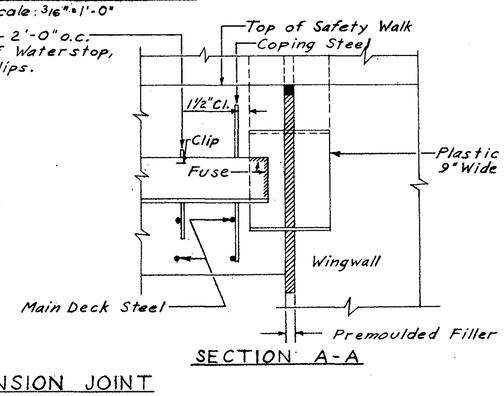
Note:
All Concrete to be Class "D" Cement Concrete Masonry



TYPICAL CROSS SECTION

Scale: 3/16" = 1'-0"

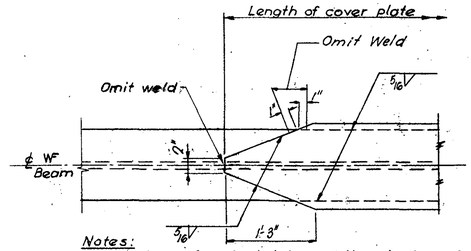
#4 - 10" Long - 2'-0" o.c. for Support of Waterstop, Fasten with Clips.



SECTION A-A

CURB DETAIL AT EXPANSION JOINT

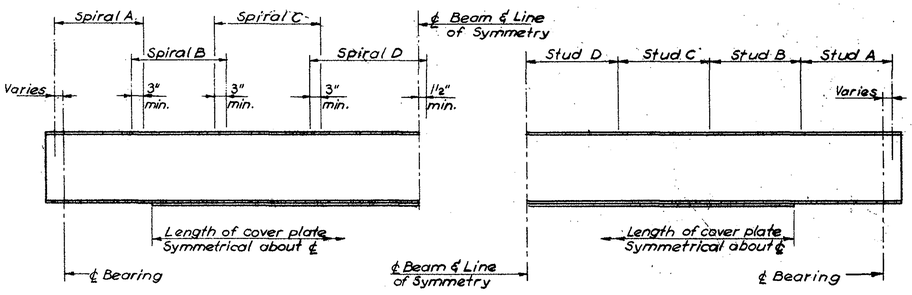
Scale: 1½" = 1'-0"



Notes:
Preparation of material for welding shall conform to art. 402, A.W.S. 1963.
Assembly of material for welding shall conform to art. 403, A.W.S. 1963.

COVER PLATE DETAIL

Not to Scale



BEAM NO.	†DEFLECTION DUE TO CONCRETE SLAB			TOTAL DEAD LOAD DEFLECTIONS			CAMBER AT MID SPAN
	¼ SPAN	½ SPAN	¾ SPAN	¼ SPAN	½ SPAN	¾ SPAN	
1	7/16"	5/8"	7/16"	1"	1 3/8"	1"	2 1/4"
2	11/16"	15/16"	11/16"	1 5/8"	1 1/2"	1 1/8"	2 3/8"
3	↓	↓	↓	↓	↓	↓	↓
4							
5							
6							
7	11/16"	15/16"	11/16"	1 5/8"	1 1/2"	1 1/8"	2 3/8"
8	9/16"	3/4"	9/16"	1"	1 3/8"	1"	2 1/4"
9	3/4"	15/16"	3/4"	1 1/8"	1 1/2"	1 1/8"	2 3/8"
10	11/16"	15/16"	11/16"	1 1/8"	1 1/2"	1 1/8"	2 3/8"
11	↓	↓	↓	↓	↓	↓	↓
12							
13							
14							
15	11/16"	15/16"	11/16"	1 5/8"	1 1/2"	1 1/8"	2 3/8"
16	7/16"	5/8"	7/16"	1"	1 3/8"	1"	2 1/4"

† The deflection due to Concrete Slab is 80% of the theoretical value and is intended for the use of the Resident Engineer only.

DESIGN ELEVATIONS ALONG TOP FLANGE				
EAST BEARING	¼ SPAN	½ SPAN	¾ SPAN	WEST BEARING
83.94	84.15	84.27	84.32	84.28
84.10	84.31	84.44	84.48	84.44
84.26	84.47	84.60	84.64	84.60
84.41	84.63	84.75	84.80	84.75
84.57	84.78	84.91	84.95	84.91
84.62	84.83	84.96	85.00	84.96
84.48	84.69	84.82	84.86	84.82
84.34	84.54	84.67	84.71	84.68
84.34	84.56	84.69	84.73	84.68
84.50	84.71	84.84	84.88	84.84
84.66	84.87	85.00	85.04	85.00
84.63	84.84	84.97	85.01	84.97
84.49	84.70	84.83	84.87	84.83
84.35	84.56	84.69	84.73	84.69
84.21	84.42	84.55	84.59	84.55
84.06	84.27	84.40	84.44	84.41

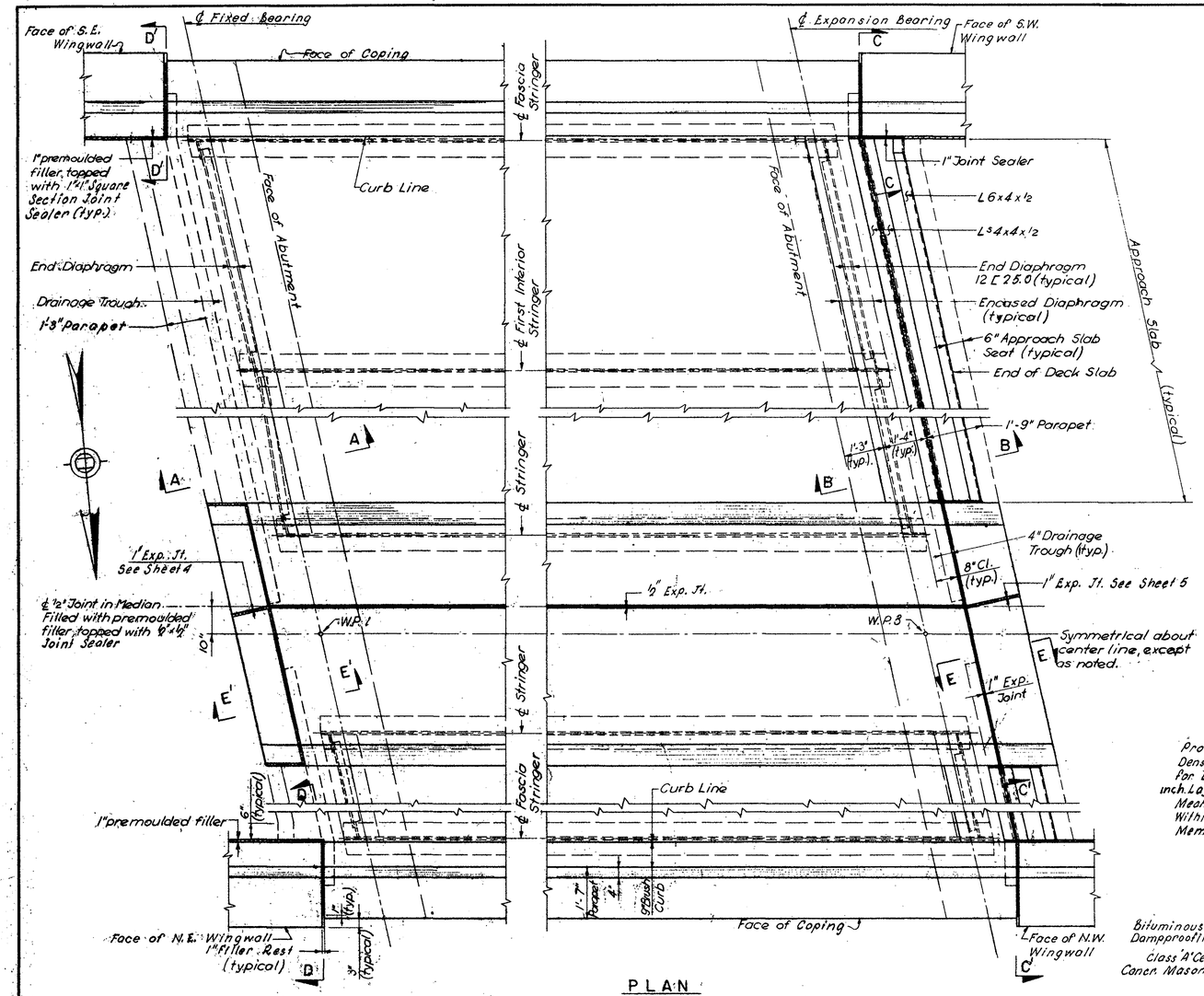
BEAM NO.	SIZE	LENGTH ℄ - ℄ BEARGS	BOTTOM COVER PLATE	2-⅝" ϕ SPIRAL SHEAR CONNECTORS								3-¾" ϕ STUD SHEAR CONNECTORS							
				SPIRAL A		SPIRAL B		SPIRAL C		SPIRAL D		STUD A		STUD B		STUD C		STUD D	
				LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH	LENGTH	PITCH
1	33 WF 118	65'-0"	15"x 13/16" x 52'-6"	9'-4½"	4½"	8'-0"	6"	8'-8"	8"	7'-4"	11"	5'-0"	4"	6'-0"	4½"	10'-0"	6"	9'-9"	9"
2-7	↓	↓	15" x 7/8" x 53'-6"	↓	↓	↓	↓	↓	↓	↓	↓	6'-0"	↓	6'-4½"	↓	↓	↓	8'-3"	↓
8			15" x 3/4" x 52'-6"									5'-0"		6'-0"				9'-9"	
9			15" x 7/8" x 53'-6"									5'-0"		6'-0"				9'-9"	
10-15			15" x 15/16" x 53'-6"									6'-0"		6'-4½"				8'-3"	
16	33 WF 118	65'-0"	15" x 13/16" x 52'-9"	9'-4½"	4½"	8'-0"	6"	8'-8"	8"	7'-4"	11"	6'-0"	4"	6'-4½"	4½"	10'-0"	6"	8'-3"	9"

Notes:
1. Ends of all beams shall be fabricated so that under full dead load the ends will be plumb.
2. The table of Design Elevations along top flange is for the use of the Resident Engineer in the field for comparison of:
a) Elevations along top flange of stringers in place and
b) the design elevations tabulated.
3. Any Welded Joint Prequalified by American Welding Society Specifications for Welded Highway and Railway Bridges (1963 Edition), will be Acceptable in the Fabrication of the Structural Steel.

DATE	DESCRIPTION
APRIL 9, 1966	ISSUED FOR CONSTRUCTION
	USE ONLY PRINTS OF LATEST DATE

INTERSTATE ROUTE 91
WEST SPRINGFIELD

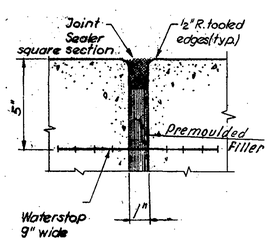
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(5499)	19	65	188



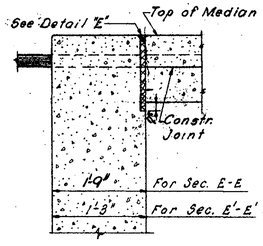
EAST ABUTMENT

PLAN
END OF SUPERSTRUCTURE
Scale: ½" = 1'-0"

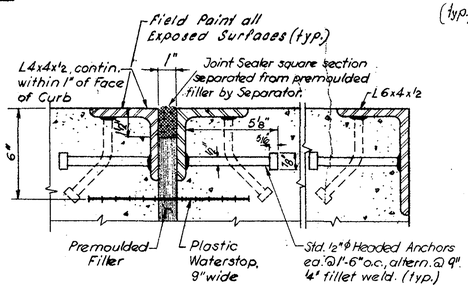
WEST ABUTMENT



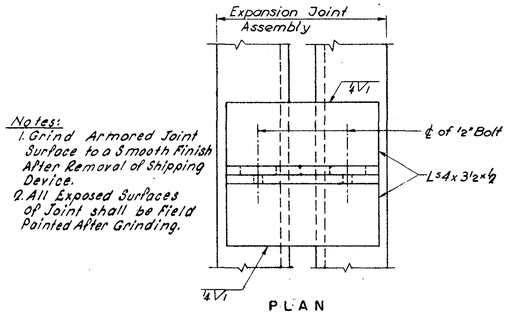
DETAIL "E"
Scale: 3"=1'-0"



SECTION E-E & E'-E'
Scale: ¾"=1'-0"



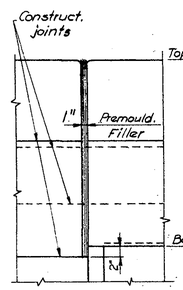
TYPICAL EXPANSION JOINT DETAIL
Scale: 3"=1'-0"



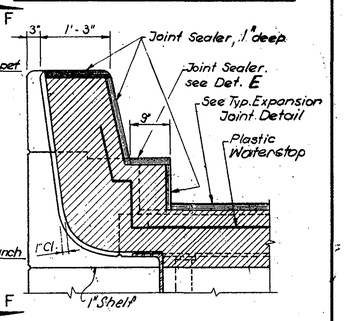
Notes:
1. Grind Armored Joint Surface to a Smooth Finish After Removal of Shipping Device.
2. All Exposed Surfaces of Joint shall be field Painted After Grinding.

Notes:
a) All Expansion Joint Assemblies must be properly fitted in shop and shipped with Device for maintaining proper spacing and fit.
b) Bolts on Shipping Device must be loosened within one hour after concrete is placed, so that movement may take place. Device shall be removed after Concrete has set on both sides of the Assembly.

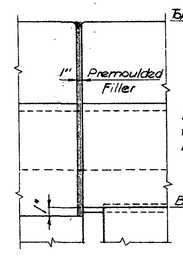
SHIPPING DEVICE FOR EXP. JOINT ASSEMBLY
Scale: 3"=1'-0"



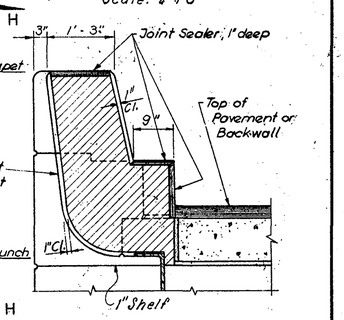
ELEVATION F-F
Scale: ¾"=1'-0"



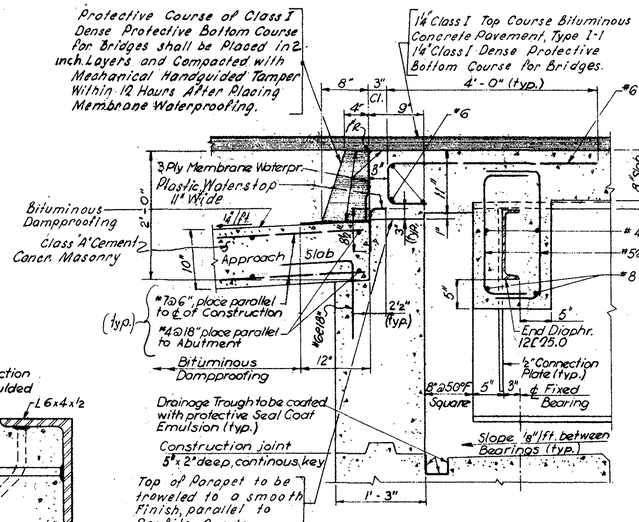
SECTION C-C
SECTION C'-C' OPPOSITE
Scale: ¾"=1'-0"



ELEVATION H-H
Scale: ¾"=1'-0"



SECTION D-D
SECTION D'-D' OPPOSITE
Scale: ¾"=1'-0"



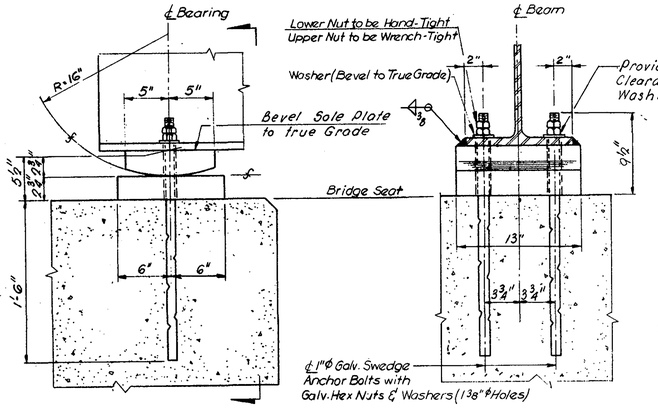
SECTION A-A
Scale: 1"=1'-0"

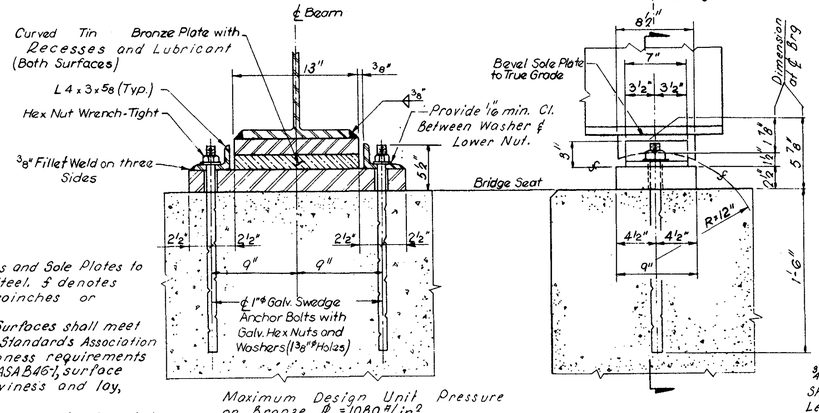
SECTION B-B
Scale: 1"=1'-0"

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

SHEET 9 OF 11 SHEETS - BRIDGE NO. W-21-45

PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	[illegible]	19	GG	188





Notes

1. Masonry Plates and Sole Plates to be ASTM A36 Steel. ∮ denotes ASA 125 microinches or finer.
2. The finished surfaces shall meet the American Standard's Association surface roughness requirements as defined in ASA B46.1, surface roughness, waviness and lay, Part I.
3. Anchor Bolts to be set by template and placed before Concrete is poured.
4. Masonry Plate to have full bearing and to be adjusted for level before placing the Stringers on Bearing Assembly.

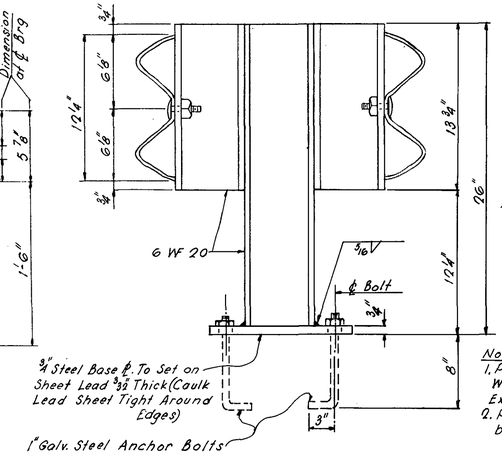
Maximum Design Unit Pressure on Bronze $f_p = 1080\ lb/in.^2$

FIXED BEARINGS

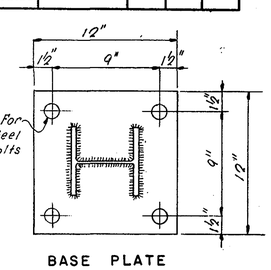
Scale 1 1/2" = 1'-0"

EXPANSION BEARINGS

Scale 1 1/2" = 1'-0"



ELEVATION OF POST

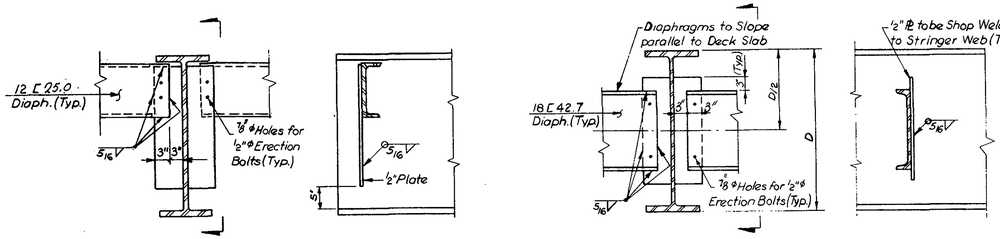


BASE PLATE

Notes:
1. Provide Expansion Joint Where Panel is Over Expansion Joint in Deck
2. Posts and Base ℄s to be Structural Steel A-36

METAL BRIDGE RAILING - TYPE M-2

Scale: 1" = 0'-6"



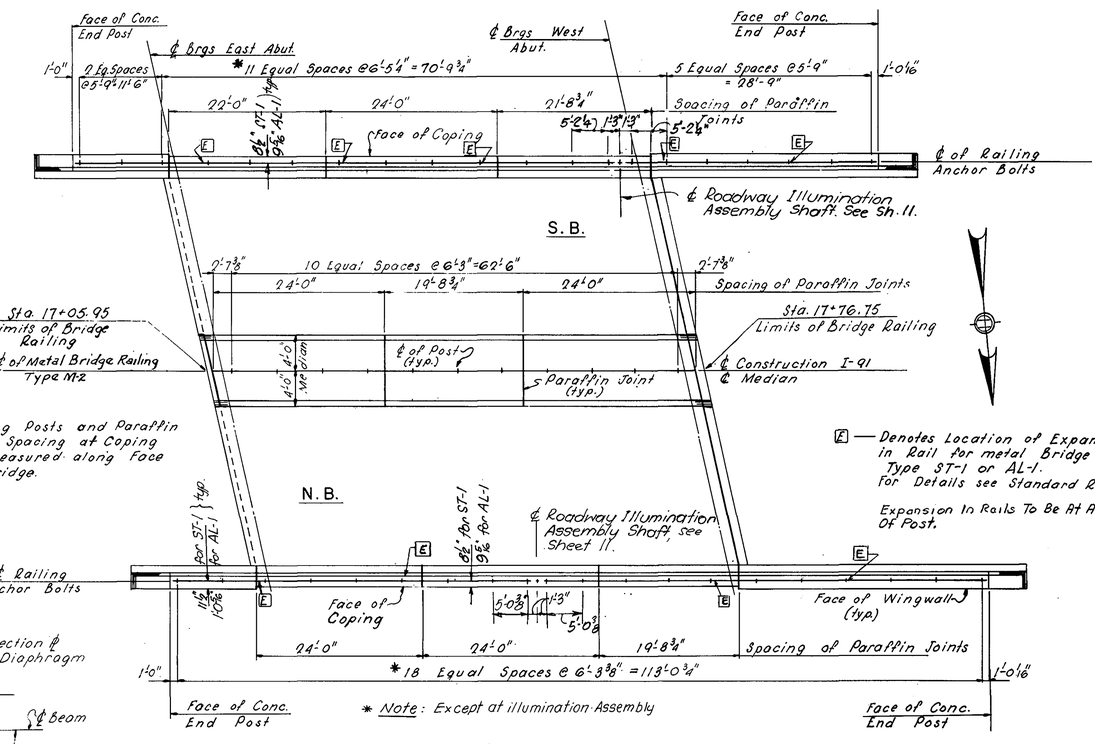
END DIAPHRAGM

Erection Bolts, Nuts and Standard Washers for Diaph. Connections shall be furnished by the Fabricator.

INTERIOR DIAPHRAGM

TYPICAL DIAPHRAGM CONNECTIONS

Scale 3/4" = 1'-0"



Note: Railing Posts and Paraffin Joints Spacing at Coping are measured along face of Bridge.

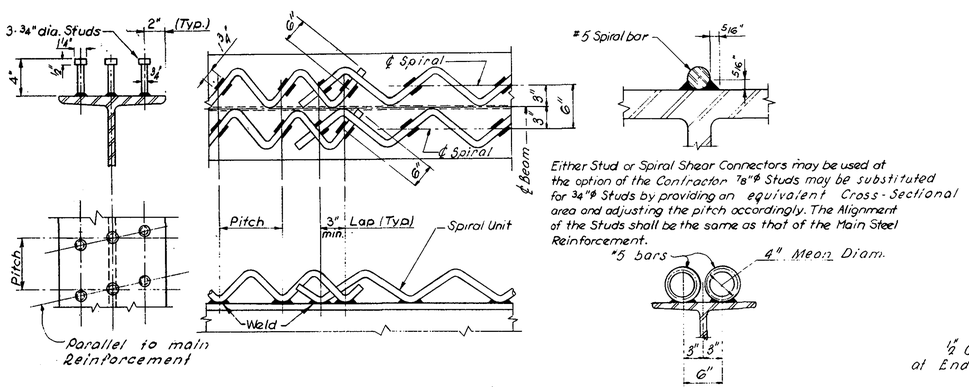
E — Denotes Location of Expansion in Rail for metal Bridge Railing Type ST-1 or AL-1. For Details see Standard Railing Sheets

Expansion In Rails To Be At Arrow Side Of Post.

* Note: Except at illumination Assembly

RAILING POST & PARAFFIN JOINT LAYOUT PLAN

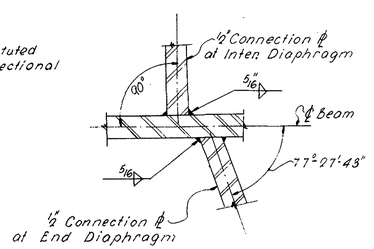
Not to scale



Either Stud or Spiral Shear Connectors may be used at the option of the Contractor. 7/8" ϕ Studs may be substituted for 3/4" ϕ Studs by providing an equivalent Cross-Sectional area and adjusting the pitch accordingly. The Alignment of the Studs shall be the same as that of the Main Steel Reinforcement.

SHEAR CONNECTOR DETAILS

No Scale

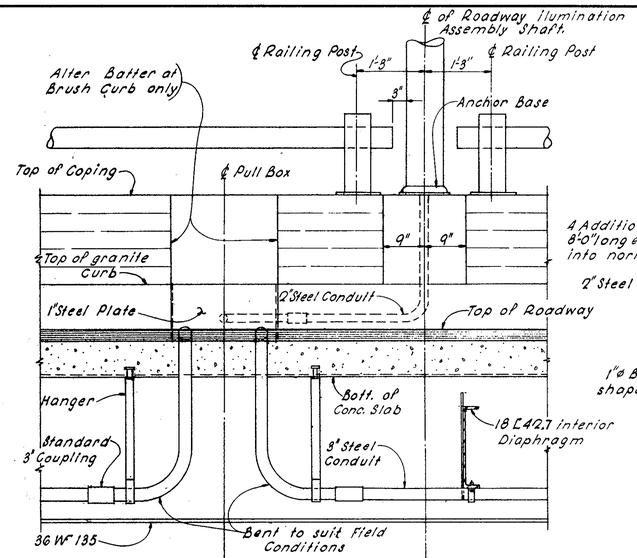


CONNECTION PLATE DETAIL

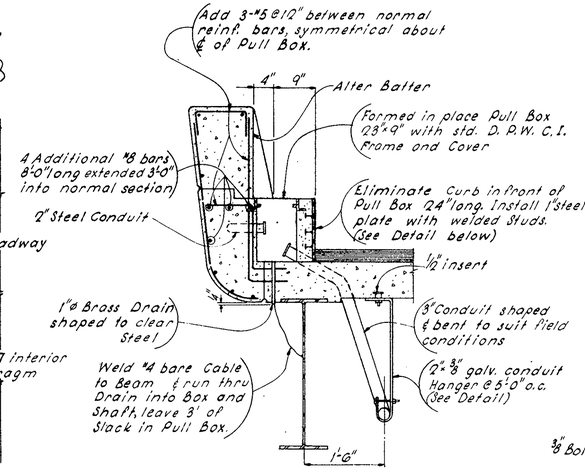
APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

INTERSTATE ROUTE 91
WEST SPRINGFIELD

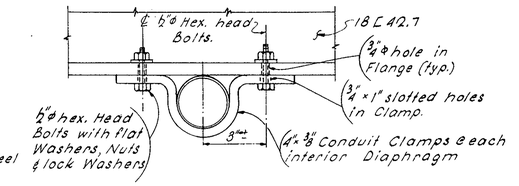
PUB. RD. DIV. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	MASS.	I-91-1(54)9		G7	188



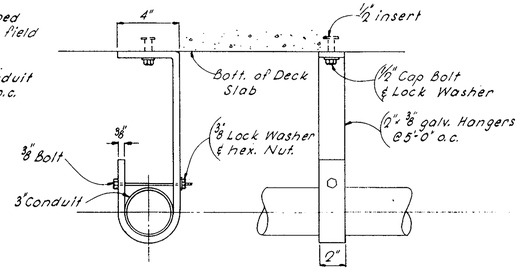
VIEW A-A



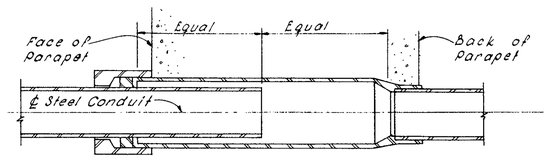
SECTION B-B



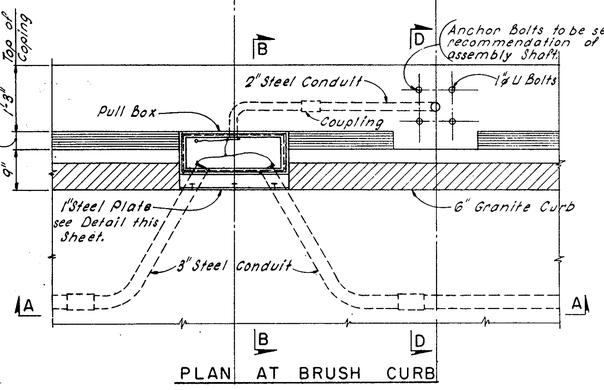
CONDUIT SUPPORT AT DIAPHRAGMS
(No Scale)



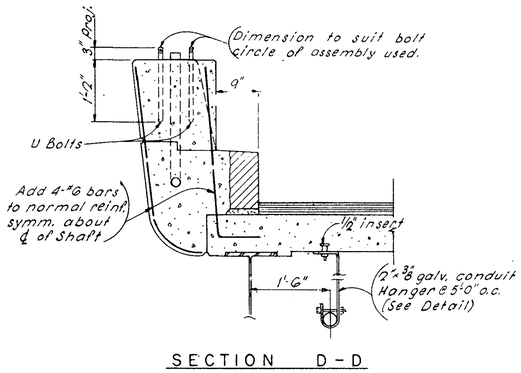
CONDUIT HANGER
(NO Scale)



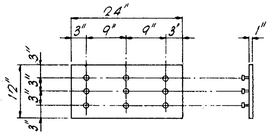
EXPANSION SLEEVE AT ABUTMENT
(NO Scale)



PLAN AT BRUSH CURB



SECTION D-D



STEEL PLATE CURB FACING

ROADWAY ILLUMINATION ASSEMBLY DETAILS
Scale: 3/4"= 1'-0" Except as noted

APRIL 9, 1966	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	

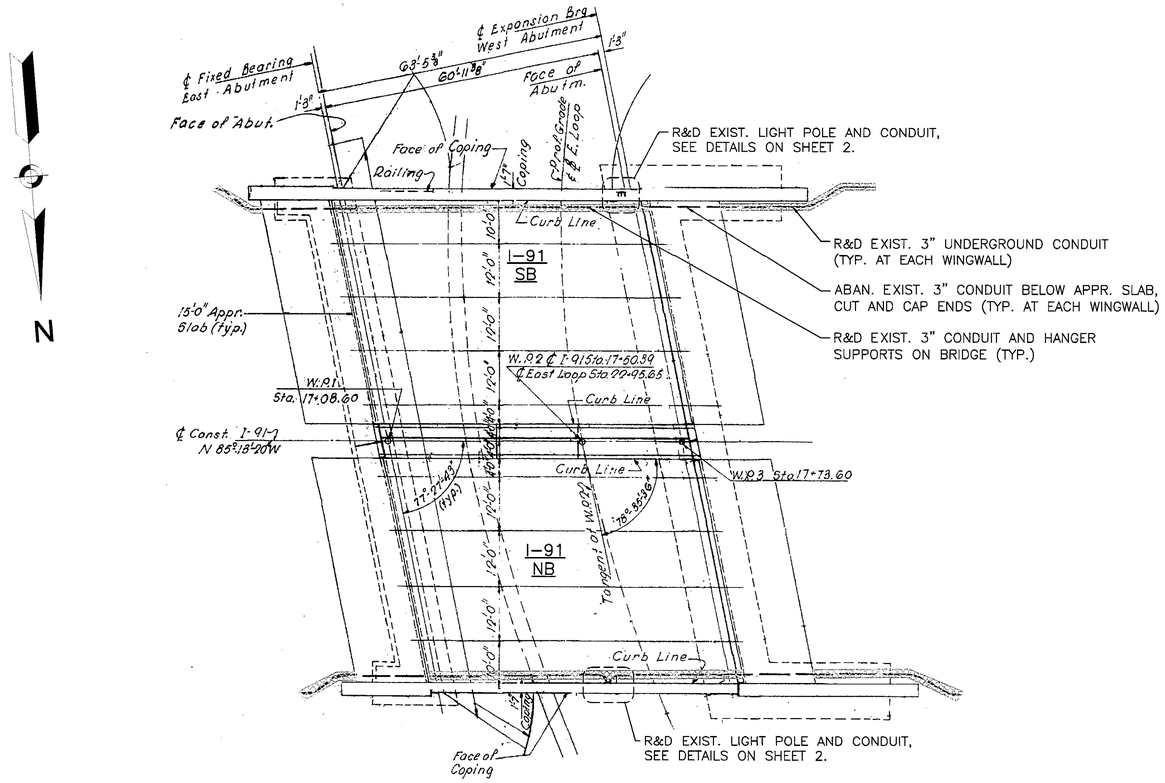
SHEET 11 OF 11 SHEETS - BRIDGE NO. W-21-45

WEST SPRINGFIELD / CHICOPEE
INTERSTATE 91 / ROUTE 5

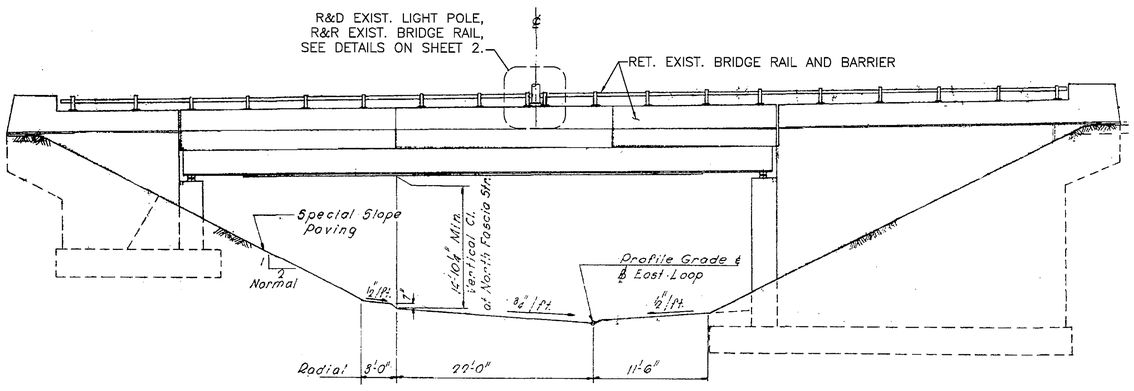
STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(NHS)-091S(305)X	33	39
PROJECT FILE NO.	608600		

BRIDGE PLAN AND ELEVATION

32_608600_BR1(W21045).DWG 4-Feb-2019



PLAN
SCALE: 1/16" = 1'-0"



NORTH ELEVATION
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

EXISTING BRIDGE PLANS
PLANS FOR EXISTING BRIDGE NUMBER W-21-045 (BIN 10V) CAN BE FOUND AT THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION – HIGHWAY DIVISION, 10 PARK PLAZA, BOSTON, MASSACHUSETTS.

EXISTING PLAN, ELEVATION, BASELINE STATIONING, AND UTILITIES SHOWN WERE TAKEN FROM RECORD BRIDGE DRAWINGS. THE CONTRACTOR SHALL FIELD VERIFY ALL RELEVANT DIMENSIONING AND DETAILS PRIOR TO CONSTRUCTION OR ORDERING OF MATERIAL.

DEMOLITION
PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR APPROVAL ALL PROPOSED CONSTRUCTION METHODS, EQUIPMENT, CONSTRUCTION SEQUENCE PLANS, AND MATERIAL TO PERFORM THE WORK.

ALL MODIFICATIONS TO PROPOSED WORK SHOWN ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO COMMENCING WORK.

THE CONTRACTOR SHALL EXERCISE CAUTION TO AVOID DAMAGING EXISTING BRIDGE AND ANY COMPONENTS TO REMAIN, AND SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED DURING DEMOLITION AND CONSTRUCTION.

EMPLOY TEMPORARY SHIELDING AS REQUIRED TO PROTECT SURROUNDING ROADWAY FROM FALLING OBJECTS AND CONSTRUCTION DEBRIS. DURING CONSTRUCTION THE ENGINEER MAY REVIEW SHIELDING AND DETERMINE WHETHER ADEQUATE PROTECTION HAS BEEN PROVIDED BY THE CONTRACTOR. IF DEEMED NOT ACCEPTABLE, WORK WILL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

SCALES
SCALES NOTED ON THE PLANS ARE NOT APPLICABLE TO REDUCED SIZE PRINTS. DIVIDE SCALED BY 2 FOR HALF-SIZE PRINTS.

TRAFFIC MANAGEMENT
REFER TO THE TRAFFIC MANAGEMENT PLANS FOR STAGED CONSTRUCTION SEQUENCING AND PROPOSED TRAFFIC MAINTENANCE THROUGHOUT ALL STAGES OF CONSTRUCTION.

ELECTRICAL WORK
REFER TO THE LIGHTING PLANS FOR ADDITIONAL GENERAL NOTES REGARDING PROJECT ELECTRICAL WORK.

EXISTING UTILITIES
THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO DEMOLITION AND THE COMMENCEMENT OF EXCAVATION ACTIVITIES. THE CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES DURING CONSTRUCTION AND SHALL COORDINATE WORK WITH THE UTILITY COMPANIES PERFORMING WORK IN THE SAME AREA.

THE CONTRACTOR SHALL NOTIFY DIG-SAFE (1-888-344-7233) AT LEAST 72 BUSINESS HOURS BEFORE CONSTRUCTION BEGINS.

THE CONTRACTOR SHALL DE-ENERGIZE ALL ELECTRICAL CIRCUITS IN CONDUITS THAT ARE IN AREAS TO BE DEMOLISHED. THE CONTRACTOR SHALL ALSO VERIFY AS NEEDED THE LOCATIONS OF EXISTING REBAR AND ELECTRICAL CONDUIT TO AVOID DAMAGE DURING CONSTRUCTION.

LEGEND:
LIMITS OF DEMOLITION

ESTIMATED QUANTITIES
(NOT GUARANTEED)

STEEL THRIE BEAM BRIDGE RAIL REMOVED AND RESET	40 FT
ELECTRICAL CONDUIT REMOVED AND DISPOSED	130 FT
METAL BRIDGE RAILING REMOVED AND RESET	80 FT
METAL BRIDGE RAILING (1 RAIL), ALUMINUM (TYPE AL-1)	6 FT

COMMONWEALTH OF MASSACHUSETTS
BRIAN P. BRINELLI
STRUCTURAL
No. 53008
REGISTERED PROFESSIONAL ENGINEER
Brian P. Brinelli 2/4/19

JACOBS
120 ST. JAMES AVENUE
5TH FLOOR
BOSTON, MA 02116

DEC. 8, 2018	ISSUED FOR CONSTRUCTION

MassDOT Massachusetts Department of Transportation Highway Division

PROPOSED BRIDGE REHABILITATION

WEST SPRINGFIELD

INTERSTATE ROUTE 91
OVER EAST LOOP (AT ROUTE 5)

MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
HIGHWAY DIVISION
10 PARK PLAZA BOSTON, MASS

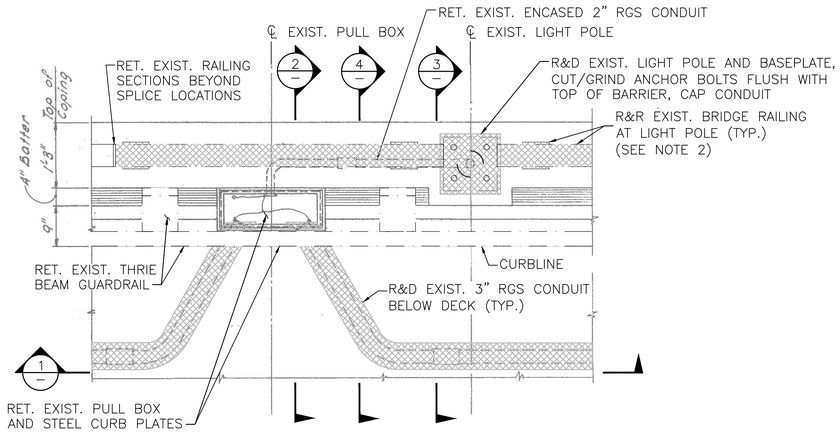
TITLE: State Bridge Engineer — Thomas A.D. Rolo, P.E. CHIEF ENGINEER

WEST SPRINGFIELD / CHICOPEE
INTERSTATE 91 / ROUTE 5

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	NHP(NHS)-091S(305)X	34	39
	PROJECT FILE NO. 608600		

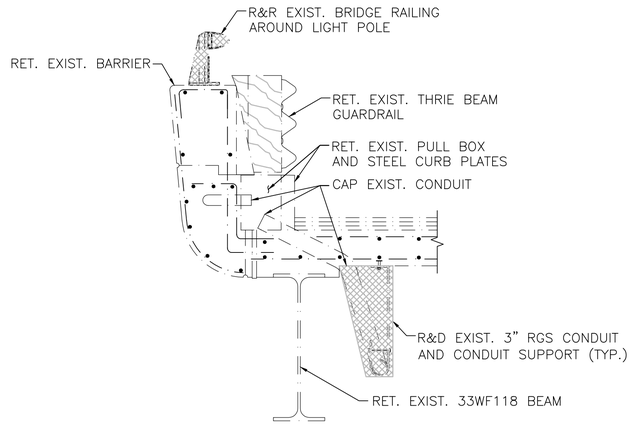
LIGHT SUPPORT DETAILS

34_608600_BR2(W21045).DWG 4-Feb-2019



PARTIAL PLAN AT EXISTING LIGHT POLE

SCALE: ¾" = 1'–0"



SECTION AT EXISTING PULL BOX (2)

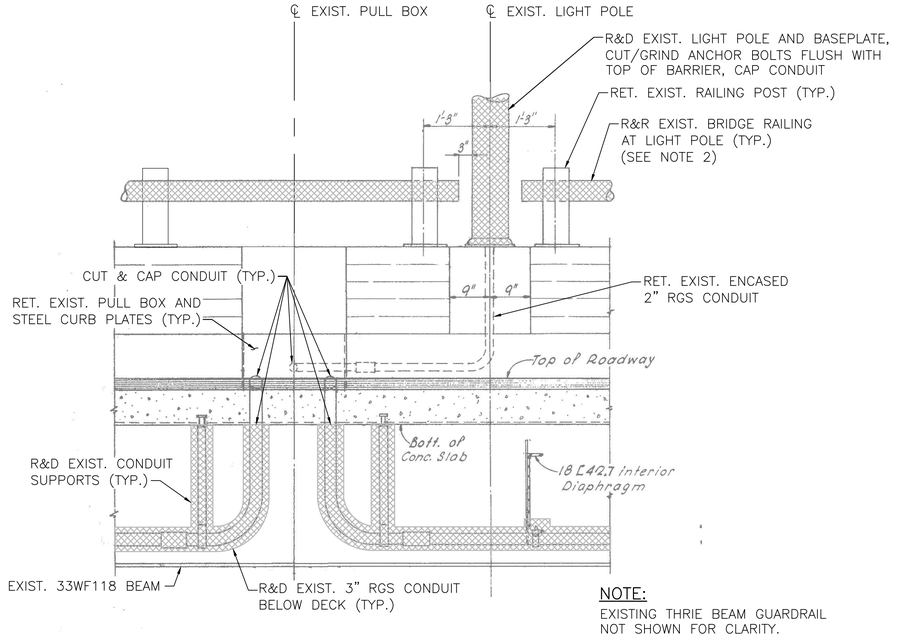
SCALE: ¾" = 1'–0"

NOTES:

1. FOR GENERAL NOTES, SEE SHEET 1 OF 2.
2. PROPOSED BRIDGE RAILING SHALL BE REINSTALLED CONTINUOUS AT AREAS OF EXISTING LIGHT POLE REMOVAL. CONTRACTOR SHALL FIELD VERIFY RAILING SECTION LENGTHS, SPLICE LOCATIONS, AND POST LOCATIONS TO DETERMINE WHAT COMPONENTS AND LOCATIONS CAN BE REUSED. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL OF MATERIALS AND PROPOSED LAYOUT PRIOR TO RAILING REINSTALLATION.

LEGEND:

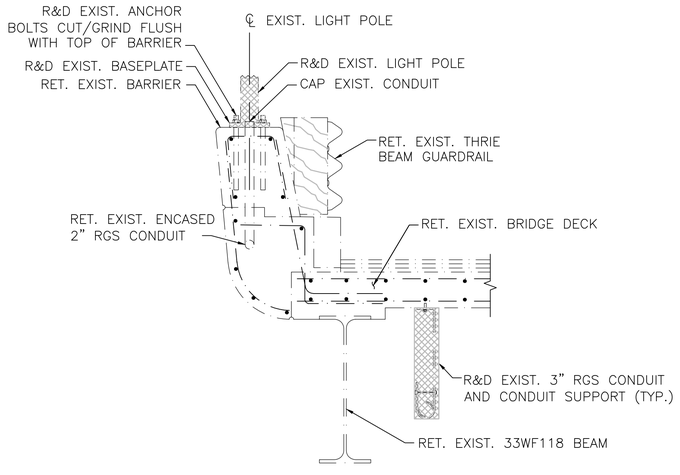
LIMITS OF DEMOLITION



NOTE:
EXISTING THRIE BEAM GUARDRAIL NOT SHOWN FOR CLARITY.

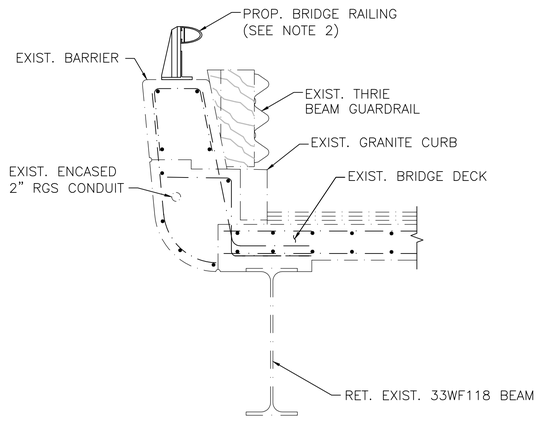
SECTION AT EXISTING LIGHT POLE (1)

SCALE: ¾" = 1'–0"



SECTION AT EXISTING LIGHT POLE BASE (3)

SCALE: ¾" = 1'–0"



PROPOSED SECTION (4)

SCALE: ¾" = 1'–0"

DEC. 8, 2018	ISSUED FOR CONSTRUCTION
DATE	DESCRIPTION
USE ONLY PRINTS OF LATEST DATE	