041

07-12-2019 LETTING ITEM 041

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
-	(19, 117) BP	SCOTT	12	1
FAP 562, FAS 743		CONTRACT NO. 72K78		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FOR INDEX OF SHEETS, SEE SHEET NO. 2

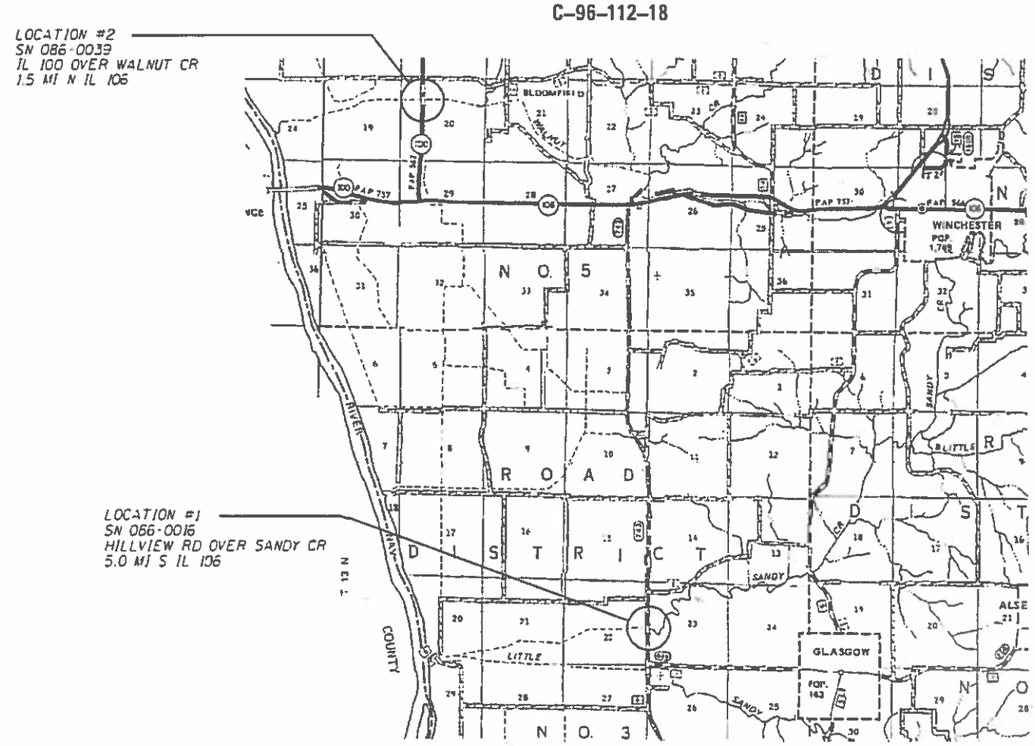
PROPOSED BRIDGE PAINTING

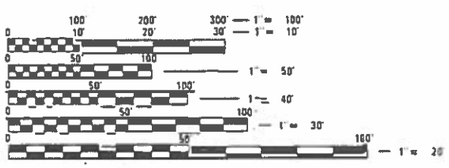
FAS 743, FAP 562 (HILLVIEW RD, IL 100)
SECTION (19, 117) BP
PROJECT STP-41TS(116)
BRIDGE PAINTING
SCOTT COUNTY

C-96-112-18

D-96-064-18

LOCATION OF SECTION INDICATED THUS:-





FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION
1-800-892-0123
OR 811

BRIDGE MAINTENANCE ENGINEER: BRANDON DUDLEY (217) 785-9290

GROSS LENGTH = x.xx FT. = x.xxx MILE
NET LENGTH = x.xx FT. = x.xxx MILE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBMITTED 30 October 2018
REGIONAL ENGINEER
June 14 19
ENGINEER OF DESIGN AND ENVIRONMENT
June 14 19
DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

3

PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS

CONTRACT NO. 72K78

REV. - MS

INDEX OF SHEETS

1 COVER SHEET
2 INDEX, STANDARDS, GENERAL NOTES, & SIGNATURES
3 SUMMARY OF QUANTITIES
4-12 EXISTING BRIDGE PLANS (FOR INFORMATION ONLY)

HIGHWAY STANDARDS

000001-07
001006
701001-02
701006-05
701201-05
701901-08

GENERAL NOTES:

1. WORK SHALL CONSIST OF BLASTING AND PAINTING STRUCTURAL STEEL AT LOCATIONS DESCRIBED IN THE SPECIAL PROVISIONS. CLEANING AND PAINTING OF THE EXISTING STRUCTURAL STEEL SHALL BE AS SPECIFIED IN THE SPECIAL PROVISIONS FOR "CLEANING AND PAINTING EXISTING STEEL STRUCTURES". ALL AREAS TO BE PAINTED SHALL SHALL BE CLEANED PER NEAR WHITE BLAST CLEANING PER SSPC SP 10. ALL EXISTING STEEL CLEANED SHALL BE PAINTED ACCORDING TO THE REQUIREMENTS OF PAINT SYSTEM 1 - OZ/E/U. THE COLOR OF THE FINAL FINISH COATS SHALL BE AS DESCRIBED IN THE SPECIAL PROVISIONS.

2 THE USE OF AIR MONITORS WILL NOT BE REQUIRED.

3. THE SSPC-OP-1 AND SSPC-OP2 PAINTING CONTRACTOR CERTIFICATIONS WILL BE REQUIRED.

4. CARE SHALL BE TAKEN NOT TO DAMAGE RUBBER BEARING OR JOINT COMPONENTS DURING BLASTING AND CLEANING OPERATIONS. ANY DAMAGE TO THESE COMPONENTS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. RUBBER COMPONENTS SHALL NOT BE PAINTED.

5. UPON COMPLETION OF PAINTING OPERATIONS, THE CONTRACTOR SHALL REMOVE ALL DEBRIS FROM PIER OR ABUTMENT CAPS UPON WHICH PAINTING OPERATIONS TOOK PLACE. FINAL CLEANUP SHALL BE CONSIDERED INCIDENTAL TO THE PAINT PAY ITEM FOR THE RESPECTIVE LOCATION. THE ENGINEER SHALL HAVE THE RIGHT TO WITHOLD PAYMENT UNTIL SATISFACTORY CLEANUP IS ACHIEVED.

6. NOTE THAT END DIAPHRAGMS AT SN 086-0016 ARE ENCASED IN CONCRETE AND NEED NOT BE PAINTED.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DISTRICT 6

EXAMINED August 23rd 20 18

ENGINEER OF OPERATIONS

EXAMINED August 28th 20 18

ENGINEER OF PROJECT IMPLEMENTATION

EXAMINED September 17 20 18

ENGINEER OF PROGRAM DEVELOPMENT

REV. - MS

USER NAME = duoleyom	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
PLOT SCALE = 100.0000 ' / In.	CHECKED -	REVISED -	
PLOT DATE = 5/28/2019	DATE -	REVISED -	

INDEX OF SHEETS, STANDARDS, GENERAL NOTES, & SIGNATURES

SCALE: SHEET OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(19, 117) BP	SCOTT	12	2
* FAP 562, FAS 743		CONTRACT NO. 72K78		
	ILLINOIS FED. AID PROJECT			

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CODE NO.	ITEM	UNIT	TOTAL QUANTITY	0-01373-6005 NHPP 80/20 BRIDGE-RURAL 0047 SCOTT
67100100	MOBILIZATION	L SUM	1	1
70100450	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201	L SUM	1	1
X5060601	CONTAINMENT AND DISPOSAL OF NON-LEAD PAINT CLEANING RESIDUES NO. 1	L SUM	1	1
X5060602	CONTAINMENT AND DISPOSAL OF NON-LEAD PAINT CLEANING RESIDUES NO. 2	L SUM	1	1
X7015005	CHANGEABLE MESSAGE SIGN	CAL DA	30	30
Z0010501	CLEANING AND PAINTING STEEL BRIDGE NO. 1	L SUM	1	1
Z0010502	CLEANING AND PAINTING STEEL BRIDGE NO. 2	L SUM	1	1

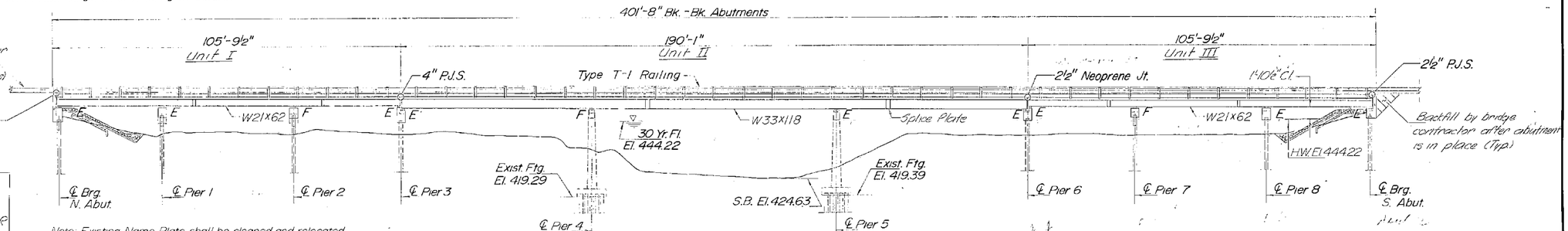
F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 743	19 BR	SCOTT	36	11
F.A.P. RTE.	ILLINOIS	PROJECT #	--	

* - BHF - 743 ( )

Sheet 1 of 24 Sheets

Existing Structure: Nine Span Reinforced Concrete Deck on wide flange deck beams, supported by six bent piers and two solid concrete piers. Open concrete abutments and concrete wingwalls. Bk.-Bk. Abutments 401'-8" Lengths: Spans 1 & 9 ±31'-9", Spans 2 & 8 ±40'-0", Spans 3 & 7 ±32'-4½", Spans 4 & 6 ±58'-0½", Span 5 ±74'-0". Clear Deck Width ±24'-0", 0° skew. Existing Structure No. 086-0016
Existing Structure to be used for Staging of Traffic during reconstruction.

Benchmark: U.S.G.S. tablet set in N.W. Wingwall of Existing Structure. El. 448.91



ELEVATION

STA. 282+79.13
REBUILT 199 BY
STATE OF ILLINOIS
F.A.S. RTE. 743 SEC. 19-BR
F.A. PROJ. RS-743 (101)
LOADING H520
STR. NO. 086-0016

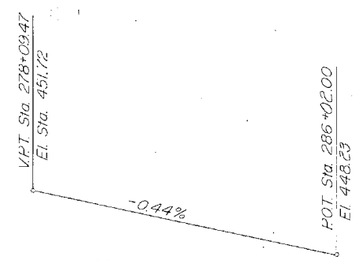
NAME PLATE
(Std. 2113).

Note: Existing Name Plate shall be cleaned and relocated beneath the new Name Plate. Cost shall be incidental to Name Plates. See Sheet 18 for detail.

WATERWAY INFORMATION

Drainage Area = 133.2 Sq. Mi. Low Grade Elev. = 447.01 @ Sta. 290+00

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head-Ft. Exist.	Head-Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
Design	30	12906	3043	3043	444.22	0.54	0.54	444.76	444.76
Base	100	16827	3667	3667	445.86	0.59	0.59	446.45	446.45
Overtopping	200	18800	3798	3798	446.43	0.61	0.61	447.24	447.24
Max. Calc.	500								



PROFILE GRADE

DESIGN STRESSES

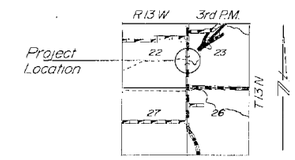
f'c = 3500 p.s.i.
fy = 60000 p.s.i. (Reinf.)
Fy = 50,000 p.s.i. (A.A.S.H.T.O. M-223, Grade 50)

DESIGN SPECIFICATIONS

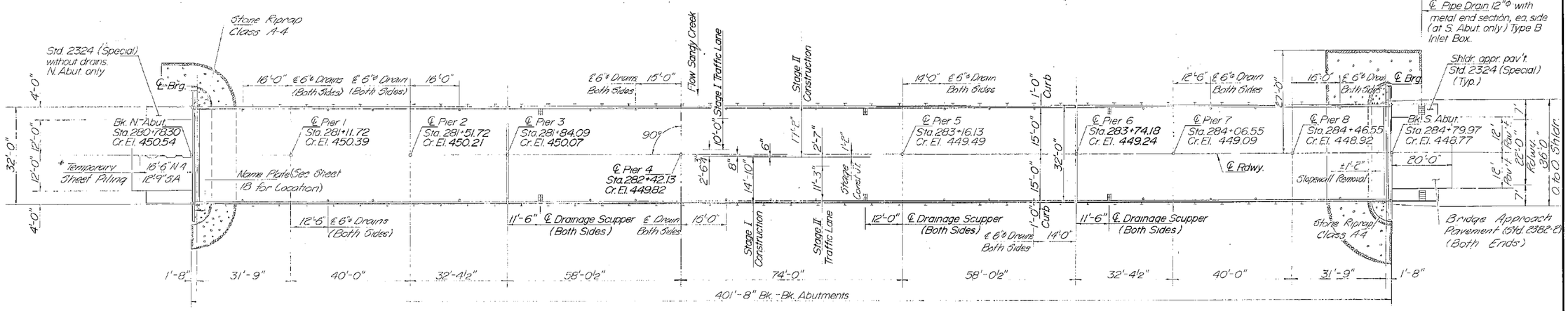
1989 A.A.S.H.T.O. Specifications & 1990 Interim Specifications.
Seismic Retrofitting Guidelines for Highway Bridges

LOADING HS 20-44

No Allowance for Future Wearing Surface



LOCATION SKETCH



PLAN

* North Abutment - Top El. 450.6
Tip El. 430.0
Est. Quant. 340 Sq. Ft.
South Abutment - Top El. 448.8
Tip El. 430.0
Est. Quant. 240 Sq. Ft.
See General Notes on Sheet No. 3 of 24

Expiration Date: 11/30/92

APPROVED
FOR STRUCTURAL ADEQUACY ONLY
(9-15-91)
Licensed Structural Engineer

Note: 6"ϕ Deck Drains shall be placed at 15'-0" centers and shall be placed at a minimum of 10'-0" from the face of all substructure units. Drainage Scuppers shall replace 6"ϕ Deck Drains as noted on the Plan view. Temporary Sheet Piling required behind each abutment for Stage Construction.

GENERAL PLAN & ELEVATION
F.A.S. ROUTE 743
SECTION 19 BR
SCOTT COUNTY
S.N. 086-0016

ALLEN, HENDERSON & ASSOCIATES CONSULTING CIVIL AND STRUCTURAL ENGINEERS SPRINGFIELD, ILL. PHONE (217) 544-2888

USER NAME = dudleybm	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = 100.0000 ' / in.	CHECKED -	REVISED -
PLOT DATE = 5/28/2019	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 086-0016
(FOR INFORMATION ONLY)

SCALE: SHEET OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(19, 117) BP	SCOTT	12	4
* FAP 562, FAS 743		CONTRACT NO. 72K78		
	ILLINOIS	FED. AID PROJECT		

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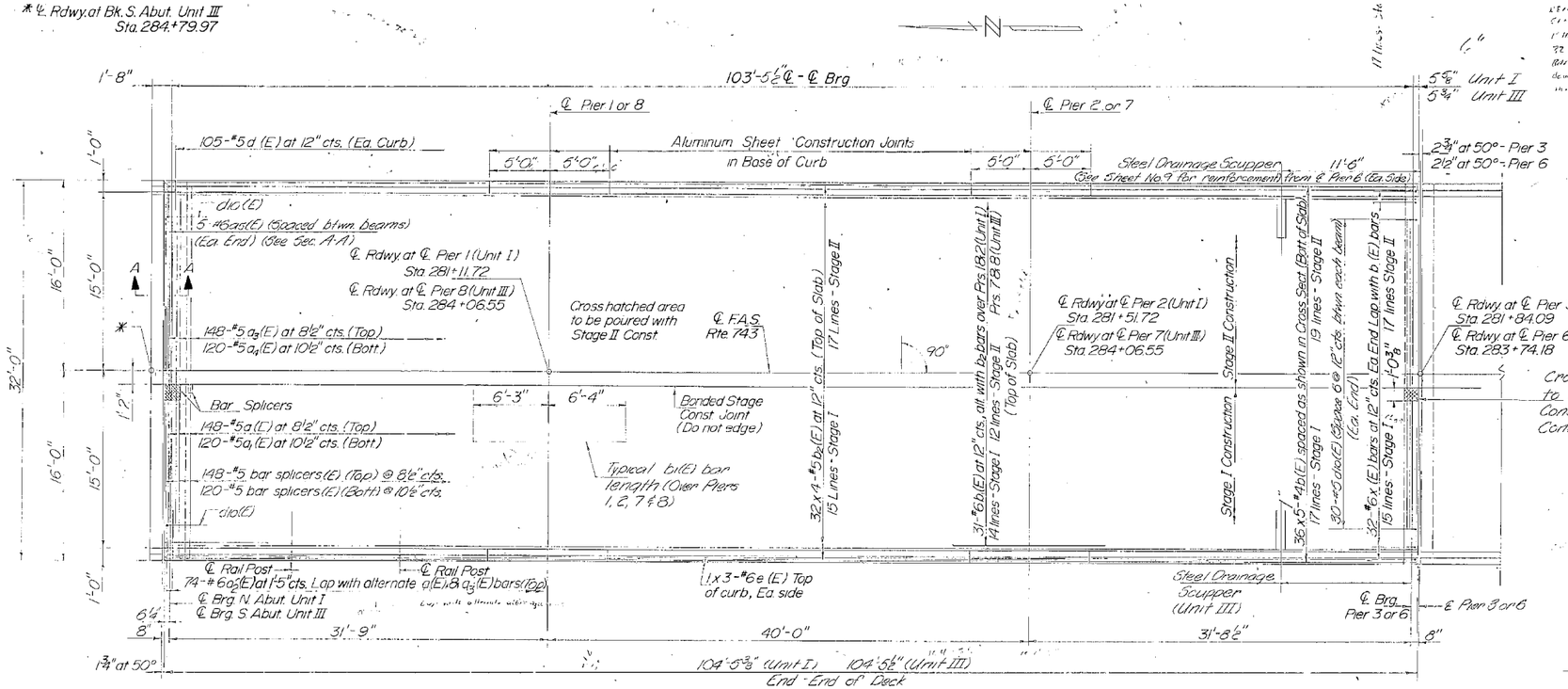
F.A.S. RTE. | ILLINOIS | PROJECT #

* - BHF = 743 ( )

Sheet 7 of 24 Sheets



Notes: See Sheet No 9 of 24 for Superstructure Details and Bill of Material.

Reinforcement bars designated (E) shall be epoxy coated.

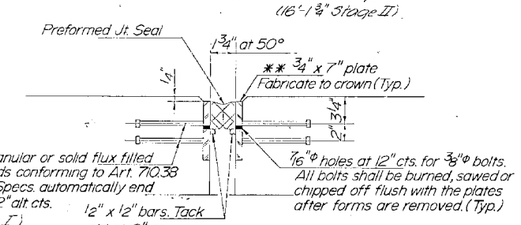
Bars indicated thus 32 x 4-#5 etc. indicates 32 lines of bars with 4 lengths per line.

Bar splicers shall be tied to lapped rebars with double the number of ties normally used.

Minimum bar lap - #5 bar = 1'-9", #4 bar = 1'-4", #6 bar = 2'-10".

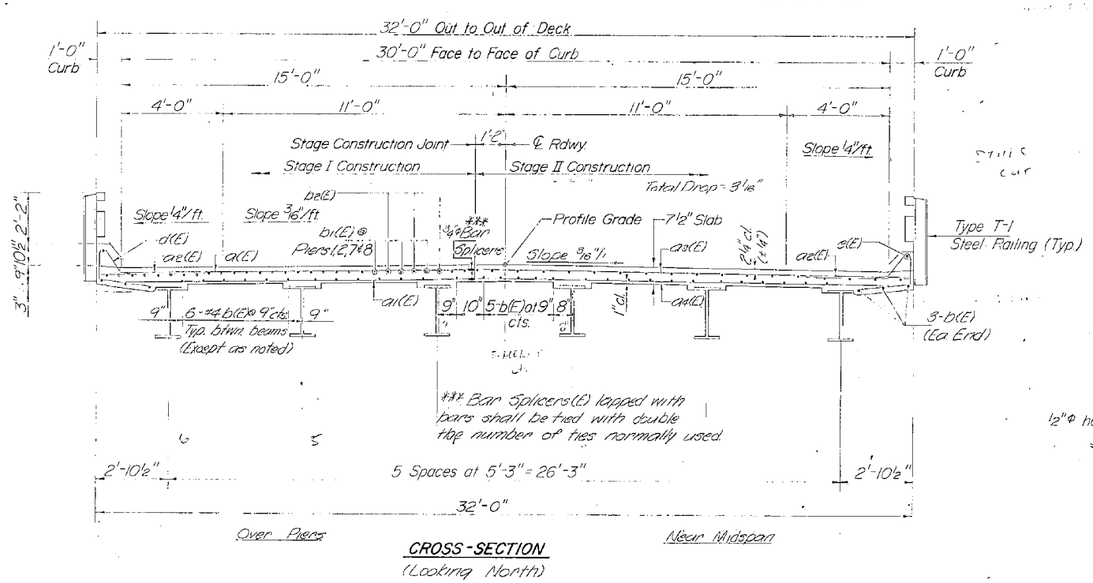
See Sheet No. 22 of 24 for Bar Splicer Details.

** ——— Maximum space between installed segments shall be 3/16". Seal space with Silicone Sealant suitable for Structural Steel. (13'-9 3/8" Stage I) (16'-1 3/8" Stage II)

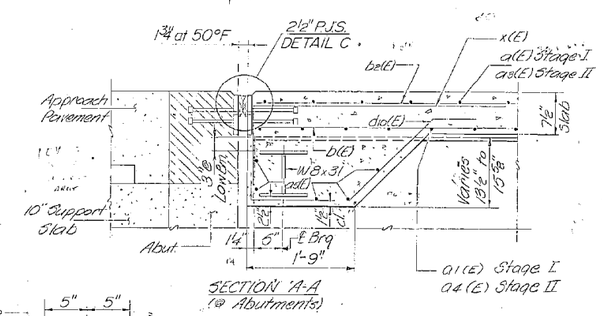


DETAIL C

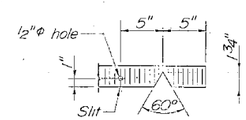
Note: After fabrication all surfaces of the steel plates shall be given on shop coat of paint specified for structural steel.



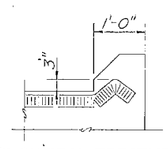
CROSS-SECTION
(Looking North)



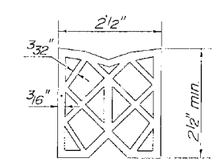
SECTION A-A
(@ Abutments)



SEAL CUT-OUT



END OF SEAL TREATMENT



PREFORMED JOINT SEAL 2 1/2"

SUPERSTRUCTURE
(SPANS 1-3) & (SPANS 7-9)
F.A.S. ROUTE 743
SECTION 19 BR
SCOTT COUNTY
S.N. 086-0016

USER NAME = dudleybm	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EXISTING PLANS, SN 086-0016 (FOR INFORMATION ONLY)	F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	DRAWN -	REVISED -			*	(19, 117) BP	SCOTT	12	5
PLOT SCALE = 100.0000 ' / in.	CHECKED -	REVISED -			* FAP 562, FAS 743		CONTRACT NO. 72K78		
PLOT DATE = 5/28/2019	DATE -	REVISED -		SCALE: SHEET OF SHEETS STA. TO STA.		ILLINOIS	FED. AID PROJECT		

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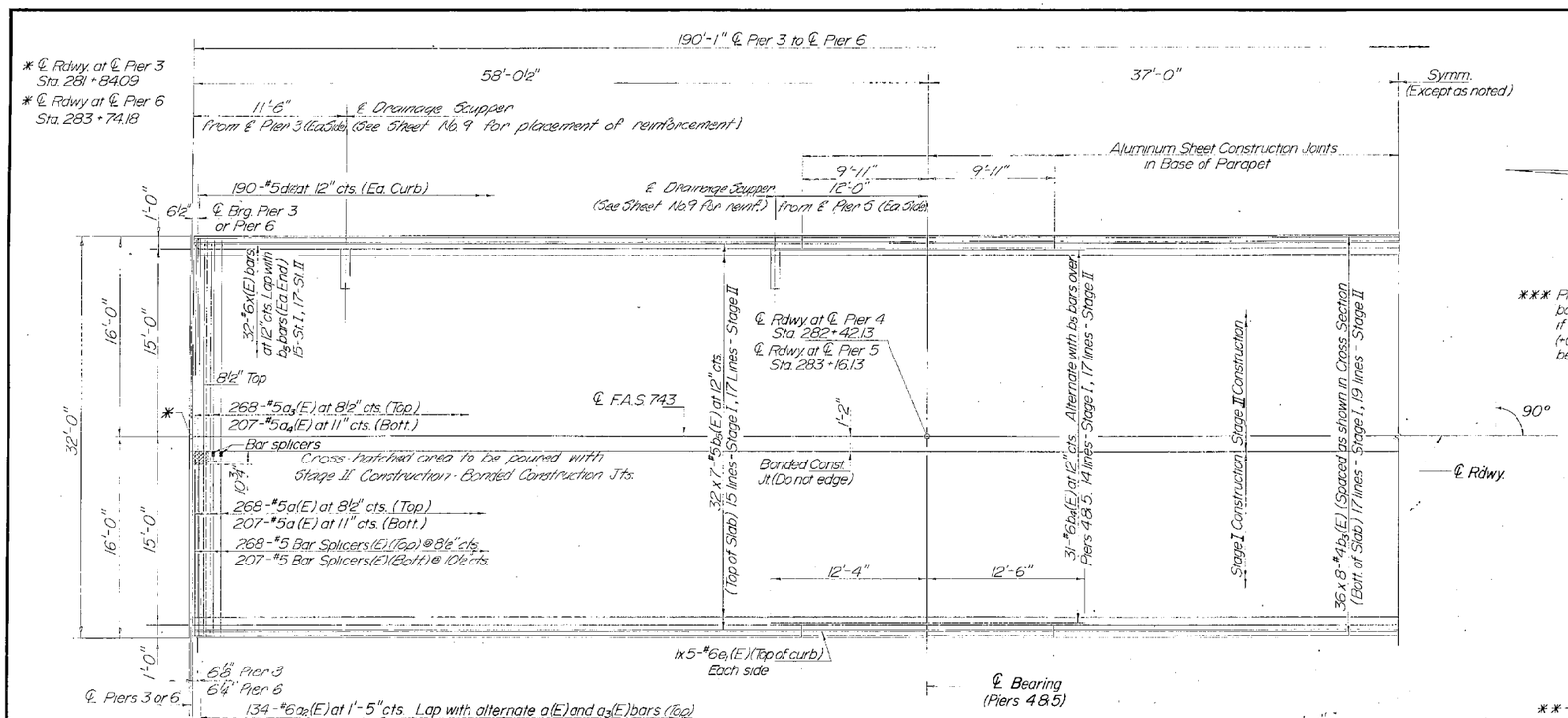
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 743	19 BR	SCOTT	36	18
F.A.P. RTE.	ILLINOIS	PROJECT #		

* - BHF - 743 ( )

Sheet 8 of 24 Sheets 18



PLAN
(Unit II)

Notes: See Sheet No. 9 of 24 for Superstructure Details and Bill of Material.

Reinforcement bars designated (E) shall be epoxy coated.

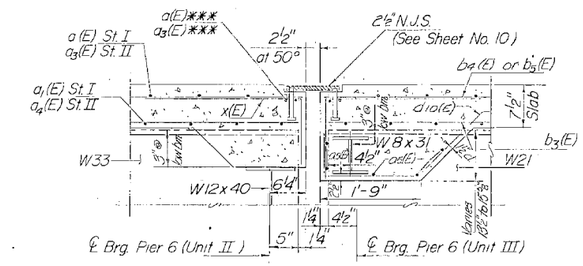
Bars indicated thus 32 x 4-#5 etc. indicates 32 lines of bars with 4 lengths per line.

Bar splicers shall be tied to lapped rebars with double the number of ties normally used.

Minimum bar lap - #5 bar = 1'-9", #4 bar = 1'-4", #6 bar = 2'-10"

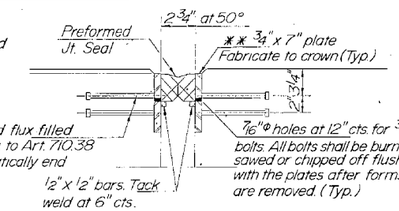
See Sheet No. 22 of 24 for Bar Splicer Details.

*** Place a(E) and a_3(E) bars in back of anchor bolt as shown if required to maintain 1" cl. (+0-⅛"). Anchor bolts should be tied to a(E) and a_3(E) bars.



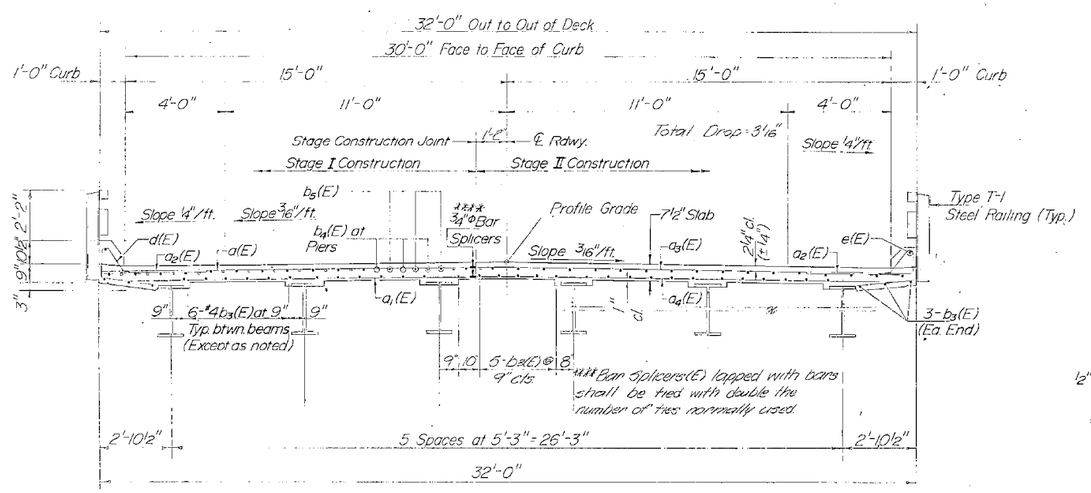
SECTION AT PIER 6

** —— Maximum space between installed segments shall be 3/16". Seal space with Silicone Sealant suitable for Structural Steel. (13'-9¾" Stage I) (18'-1¾" Stage II)



DETAIL D

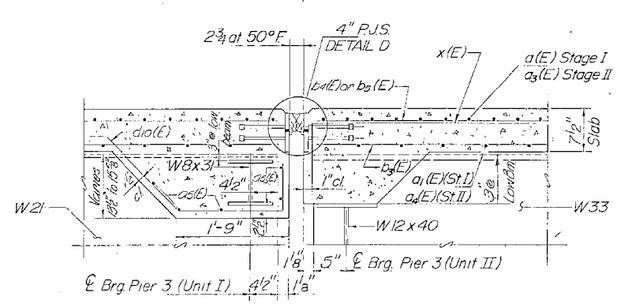
Note: After fabrication all surfaces of the steel plates shall be given a shop coat of paint specified for structural steel.



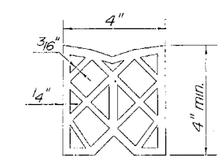
Over Piers

CROSS-SECTION
(Looking North)

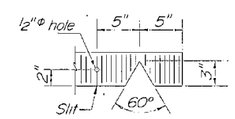
Near Midspan



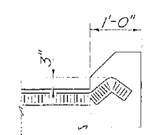
SECTION AT PIER 3



PREFORMED JOINT SEAL 4"



SEAL CUT-OUT



END OF SEAL TREATMENT

SUPERSTRUCTURE
(SPANS 4 THRU 6)
F.A.S. ROUTE 743
SECTION 19 BR
SCOTT COUNTY
S.N. 086-0016

ALLEN HENDERSON & ASSOCIATES CONSULTING CIVIL AND STRUCTURAL ENGINEERS SPRINGFIELD, ILL. PHONE (217) 544-8992

USER NAME = dudleybm	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
PLOT SCALE = 100.0000 ' / in.	CHECKED -	REVISED -	
PLOT DATE = 5/28/2019	DATE -	REVISED -	

EXISTING PLANS, SN 086-0016
(FOR INFORMATION ONLY)

SCALE: SHEET OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(19, 117) BP	SCOTT	12	6
* FAP 562, FAS 743		CONTRACT NO. 72K78		
	ILLINOIS	FED. AID PROJECT		

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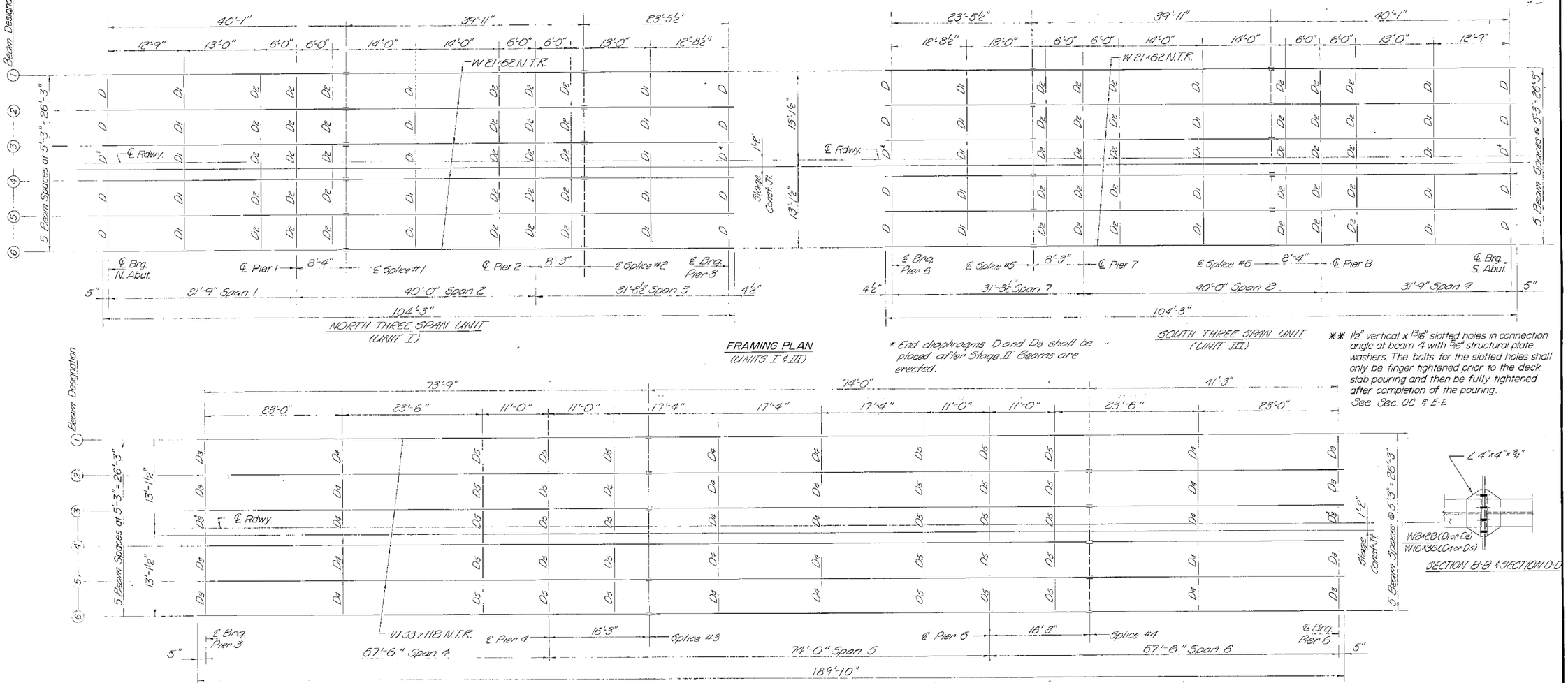
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 743	19 BR	SCOTT	36	25
F.A.P. RTE.	ILLINOIS	PROJECT *		

* - BHF - 743 ( )

Sheet 15 of 24 Sheets.

Note: All stringers, flange splice plates, web splice plates - M 223 Grade 50
All other Structural Steel - M 183

N.T.R. - Indicates members which shall conform to the Supplementary Requirements for Notch Toughness (Zone 2).

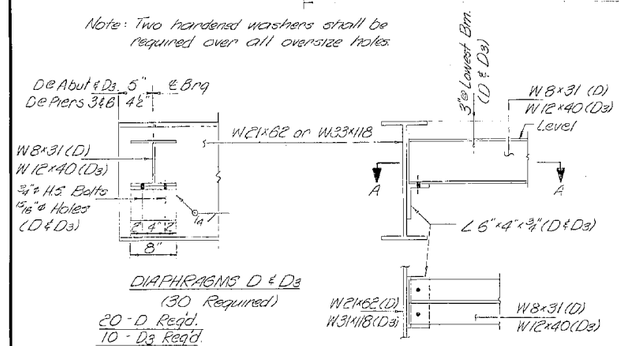


FRAMING PLAN (UNITS I & III)

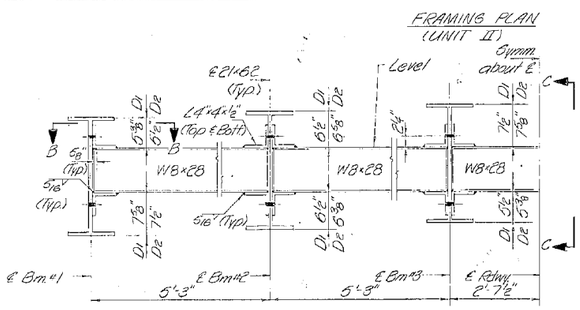
* End diaphragms D and D2 shall be placed after Stage II Beams are erected.

** 1/2" vertical x 13/16" slotted holes in connection angle at beam 4 with 9/16" structural plate washers. The bolts for the slotted holes shall only be finger tightened prior to the deck slab pouring and then be fully tightened after completion of the pouring. See Sec. CC & E-E

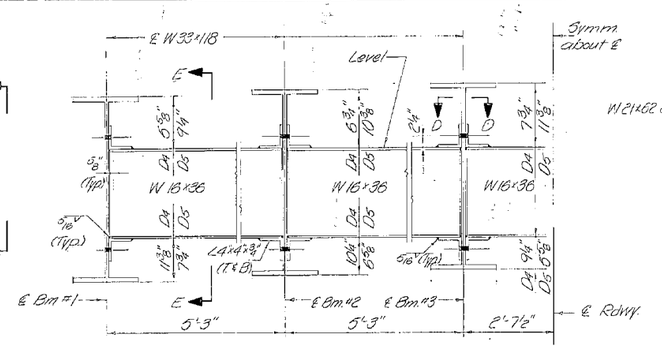
Note: Two hardened washers shall be required over all oversize holes.



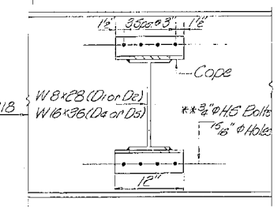
DIAPHRAGMS D & D3
(30 Required)
20 - D Reqd.
10 - D3 Reqd.



DIAPHRAGMS D1 & D2
30 D1 Required
60 D2 Required



DIAPHRAGMS D4 & D5
20 - D4 Required, 30 - D5 Required.



STRUCTURAL STEEL
F.A.S. ROUTE 743
SECTION 19 BR
SCOTT COUNTY
S.N. 086-0016

(FRAMING PLAN & DETAILS)

ALLEN HENDERSON & ASSOCIATES CONSULTING CIVIL AND STRUCTURAL ENGINEERS SPRINGFIELD, ILL. PHONE: (217) 544-8033

USER NAME = dudleybm	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
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PLOT DATE = 5/28/2019	DATE -	REVISED -	

EXISTING PLANS, SN 086-0016
(FOR INFORMATION ONLY)

SCALE: SHEET OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(19, 117) BP	SCOTT	12	7
* FAP 562, FAS 743		CONTRACT NO. 72K78		
		ILLINOIS FED. AID PROJECT		

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RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 743	19 BR	SCOTT	36	26
F.A.P. RTE.	ILLINOIS	PROJECT *		

*-BHF-743 ( )

Sheet 16 of 24 Sheets

TOP OF BEAM ELEVATION (UNIT I)

Location Girder No.	℄ Brg. N. Abut.	℄ Brg. Pier 1	℄ Splice 1	℄ Brg. Pier 2	℄ Splice 2	℄ Brg. Pier 3 Span 3
1	449.60	449.46	449.42	449.28	449.24	449.14
2	449.69	449.55	449.51	449.37	449.34	449.23
3	449.77	449.63	449.59	449.45	449.42	449.31
4	449.77	449.63	449.59	449.45	449.42	449.31
5	449.69	449.55	445.51	449.37	449.34	449.23
6	449.60	449.46	449.42	449.28	449.24	449.14

TOP OF BEAM ELEVATION (UNIT II)

Location Girder No.	℄ Brg. Pier 3 Span 4	℄ Brg. Pier 4	℄ Splice 3	℄ Brg. Pier 5	℄ Splice 4	℄ Brg. Pier 6 Span 6
1	449.13	448.88	448.81	448.55	448.48	448.31
2	449.22	448.97	448.90	448.64	448.57	448.40
3	449.30	449.05	448.98	448.73	448.66	448.48
4	449.30	449.05	448.98	448.73	448.66	448.48
5	449.22	448.97	448.90	448.64	448.57	448.40
6	449.13	448.88	448.81	448.55	448.48	448.31

TOP OF BEAM ELEVATION (UNIT III)

Location Girder No.	℄ Brg. Pier 6 Span 7	℄ Splice 5	℄ Brg. Pier 7	℄ Splice 6	℄ Brg. Pier 8	℄ Brg. S. Abut.
1	448.30	448.20	448.16	448.02	447.98	447.84
2	448.39	448.29	448.25	448.11	448.08	447.94
3	448.47	448.37	448.33	448.19	448.16	448.02
4	448.47	448.37	448.33	448.19	448.16	448.02
5	448.39	448.29	448.25	448.11	448.08	447.94
6	448.30	448.20	448.16	448.02	447.98	447.84

MOMENT TABLE (UNIT I & III)

4 Sp. 1 or 7.
6 Sp. 3 or 9

		4 Sp. 1 or 7. 6 Sp. 3 or 9	PIERS 1, 2, 7 & 8	0.5 Span 2 & 8
Is	(in⁴)	1330	1330	1330
Ss	(in³)	127	127	127
Z	(in³)	144	144	144
DL	(K/FT)	0.642	0.642	0.642
M DL	('K)	44.40	83.01	43.30
M LL	('K)	120.37	102.34	128.04
M(Imp)	('K)	36.11	30.70	38.41
5/3(M LL + I)	('K)	260.80	221.73	277.42
Ma	('K)	396.76	396.16	416.94
Mu	('K)	600	600	600
fs DL	(ksi)	4.20	7.84	4.09
fs 5/3(LL + I)	(ksi)	24.64	20.95	26.21
fs(Overload)	(ksi)	28.84	28.79	30.30

MOMENT TABLE (UNIT II)

		0.4 Span 4 0.65 Span 6	Piers 4 & 5	0.5 Span 5
Is	(in⁴)	5900	5900	5900
Ss	(in³)	359	359	359
Z	(in.)	415	415	415
DL	(K/FT)	0.707	0.707	0.707
M DL	('K)	158	312	172
M LL	('K)	290	253	310
M(Imp)	('K)	79.42	66.5	77.8
5/3(M LL + I)	('K)	615.42	532	646
Ma	('K)	1005	1097	1063
Mu	('K)	1729.17	1729.17	1729.17
fs DL	(ksi)	5.3	10.4	5.7
fs 5/3(LL + I)	(ksi)	20.57	17.8	21.6
fs(Overload)	(ksi)	25.9	28.2	27.3

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

Ma (Applied Moment) = 1.3 [M DL + 5/3 (M LL + I)]

Mu is the Full Plastic Moment Capacity for Compact, Braced section.

fs (Overload) is the sum of the stresses due to M DL + 5/3 (M LL + I).

M LL Moment due to live loads on section.

Z is the plastic section modulus used to determine the Fully Pastic Moments in the non-composite areas.

M DL Moment due to dead loads on section.

REACTION TABLE (UNITS I & III)

* N & S Abuts, Pier 3, Span 3 & Pier 6, Span 7

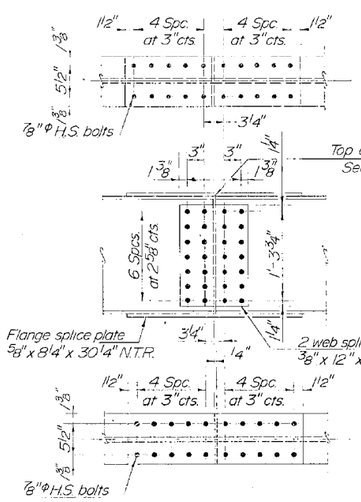
		*	Piers 1, 2, 7 & 8
R DL	(K)	7.35	26.07
R LL	(K)	22.60	30.38
Imp.	(K)	6.78	9.11
R Total	(K)	36.73	65.56

REACTION TABLE (UNIT II)

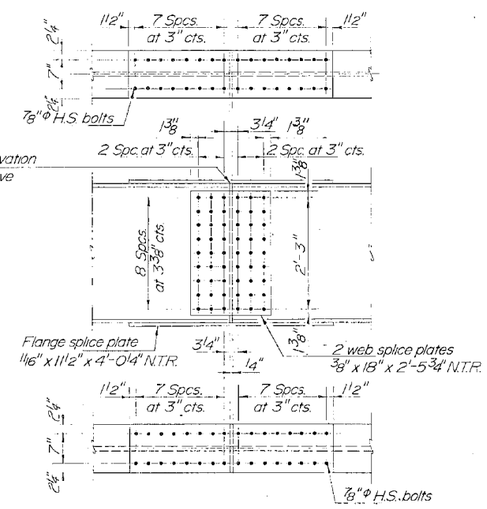
		Pr. 3, Sp. 4 & Pr. 6 Sp. 6	Piers 4 & 5
R DL	(K)	14.67	52.00
R LL +	(K)	27.57	36.20
Imp.	(K)	7.55	9.50
R Total	(K)	49.79	97.70

N.T.R. - Indicates plates which shall conform to the Supplemental Requirements for Notch Toughness (Zone 2).

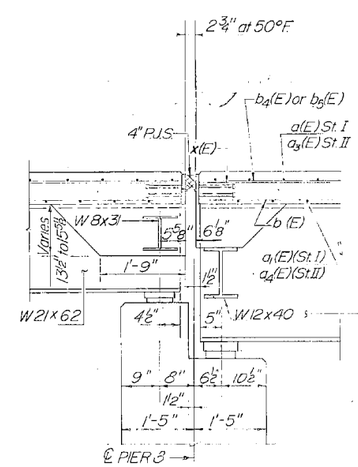
Note: All stringers, flange splice plates, web splice plates-M 223 Grade 50
All other Structural Steel-M 183



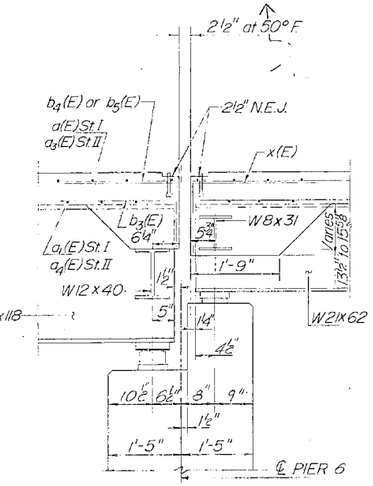
SPLICE DETAIL
UNITS 1 & 3



SPLICE DETAIL
UNIT 2



SECTION at PIER 3
(Looking East)



SECTION at PIER 6
(Looking East)

STRUCTURAL STEEL
F.A.S. ROUTE 743
SECTION 19 BR
SCOTT COUNTY
S.N. 086-0016

USER NAME = dudleybm	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = 100.0000 ' / in.	CHECKED -	REVISED -	
PLOT DATE = 5/28/2019	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 086-0016
(FOR INFORMATION ONLY)

SCALE: SHEET OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(19, 117) BP	SCOTT	12	8
* FAP 562, FAS 743		CONTRACT NO. 72K78		
		ILLINOIS	FED. AID PROJECT	

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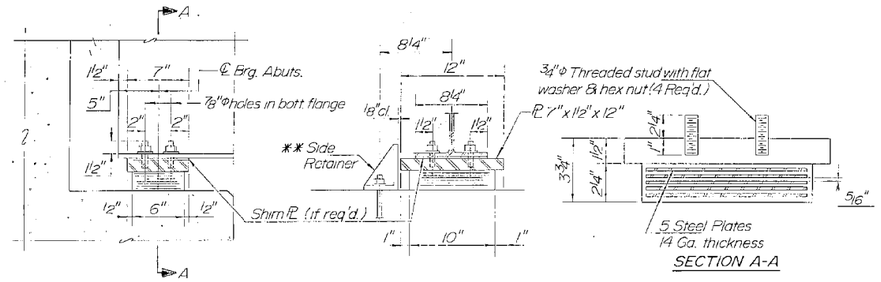
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 743	19 BR	SCOTT	36	27
F.A.P. RTE.	ILLINOIS	PROJECT #		

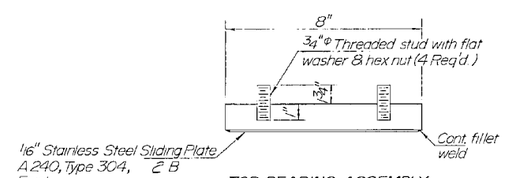
* - BHF - 743 (')

Sheet 17 of 24 Sheets

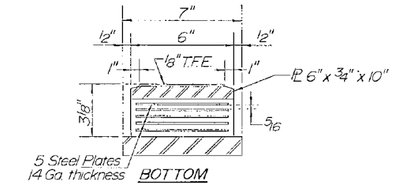


TYPE I ELASTOMERIC EXPANSION BEARING ABUTMENTS

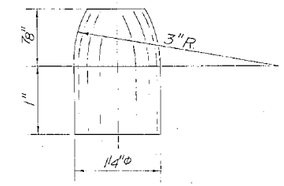
Note: See Sheet 23 of 24 for Anchor Bolt installation. Anchor bolts at fixed brgs. may be built into the masonry.



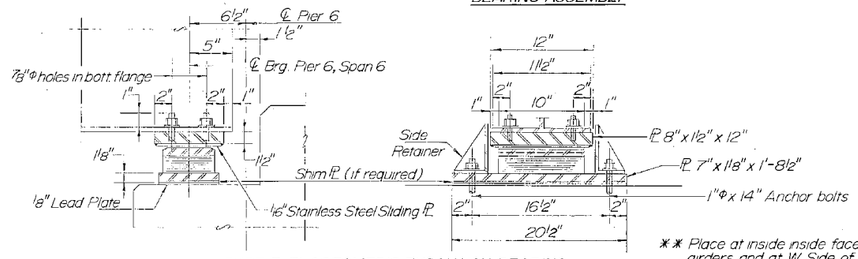
TOP BEARING ASSEMBLY



BOTTOM BEARING ASSEMBLY

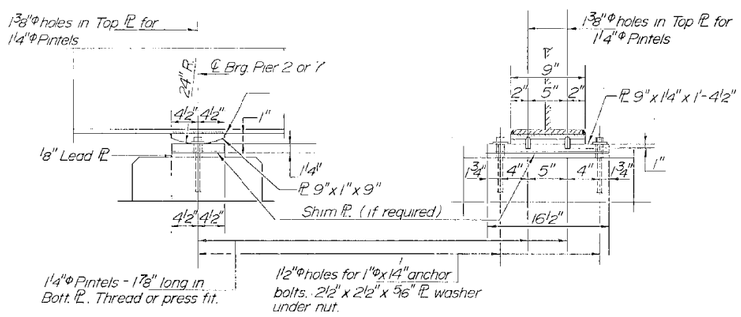


PINTLE DETAIL

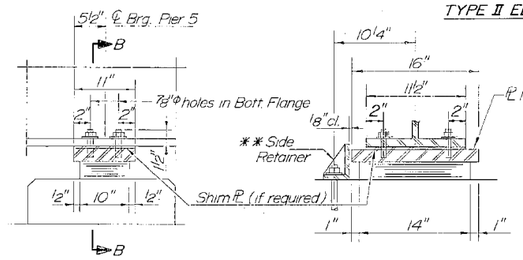


TYPE II ELASTOMERIC EXPANSION BEARING PIER 6, SPAN 6

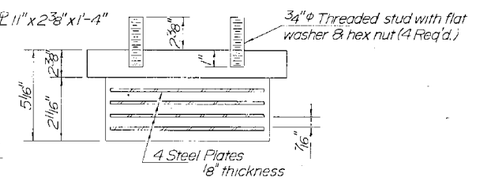
** Place at inside inside face of exterior girders and at W. Side of beam 4 (Req'd. in Stage 1 Construction)



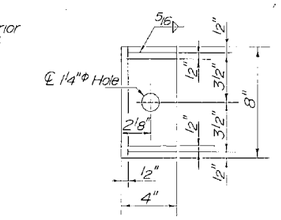
FIXED BEARING AT PIERS 2 & 7

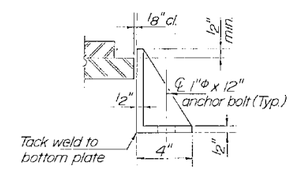


TYPE I ELASTOMERIC EXPANSION BEARING PIER 5

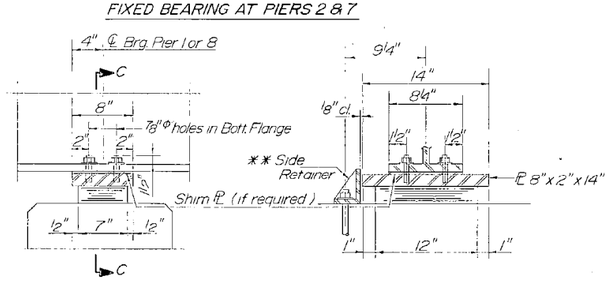


SECTION B-B

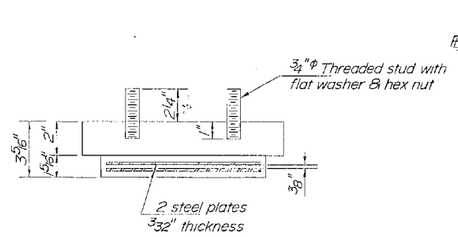




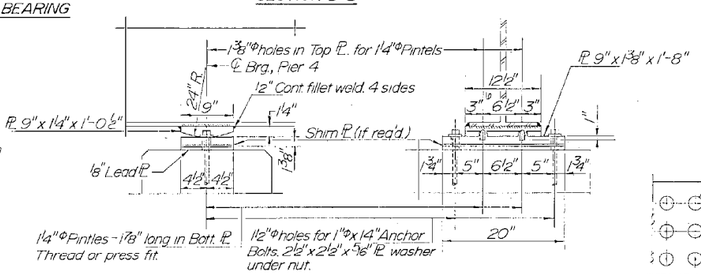
SIDE RETAINER DETAIL (25 Req'd.)



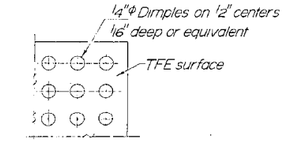
TYPE I ELASTOMERIC EXPANSION BEARING PIERS 1 & 8

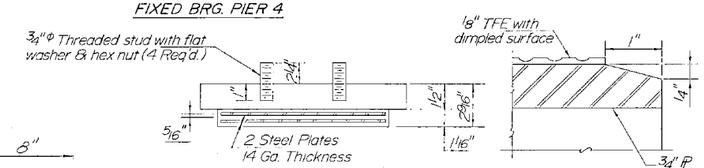


SECTION C-C



FIXED BRG. PIER 4

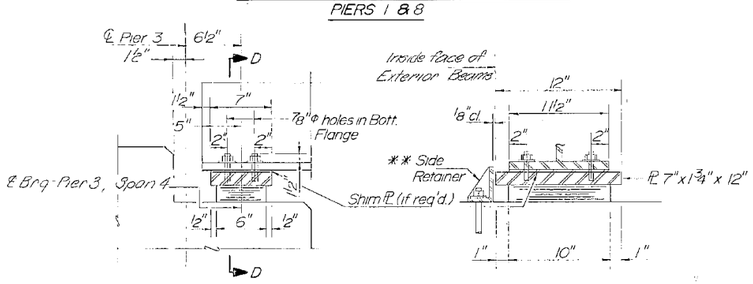




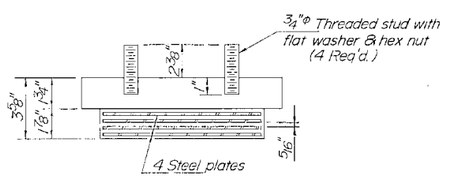
SECTION E-E

TFE DETAIL

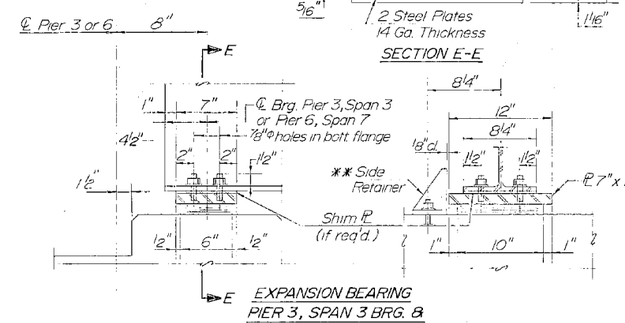
Note: The ⅛" TFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.



TYPE I ELASTOMERIC EXPANSION BEARING PIER 3, SPAN 4



SECTION D-D



EXPANSION BEARING PIER 3, SPAN 3 BRG. & PIER 6, SPAN 7 BRG.

STRUCTURAL STEEL
F.A.S. ROUTE 743
SECTION 19 BR
SCOTT COUNTY
S.N. 086-0016

(BEARINGS & DETAILS)

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PLOT DATE = 5/28/2019	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 086-0016
(FOR INFORMATION ONLY)

SCALE: | SHEET OF SHEETS | STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(19, 117) BP	SCOTT	12	9
* FAP 562, FAS 743		CONTRACT NO. 72K78		
	ILLINOIS	FED. AID PROJECT		

Bench Mark: USGS J245 Standard Bronze Disk in N.E. wingwall of walnut creek bridge, approx. 1.5 mi. north of intersection of U.S. Rte. 36 & S.B.I. Rte. 100 N. Elev. 447.29

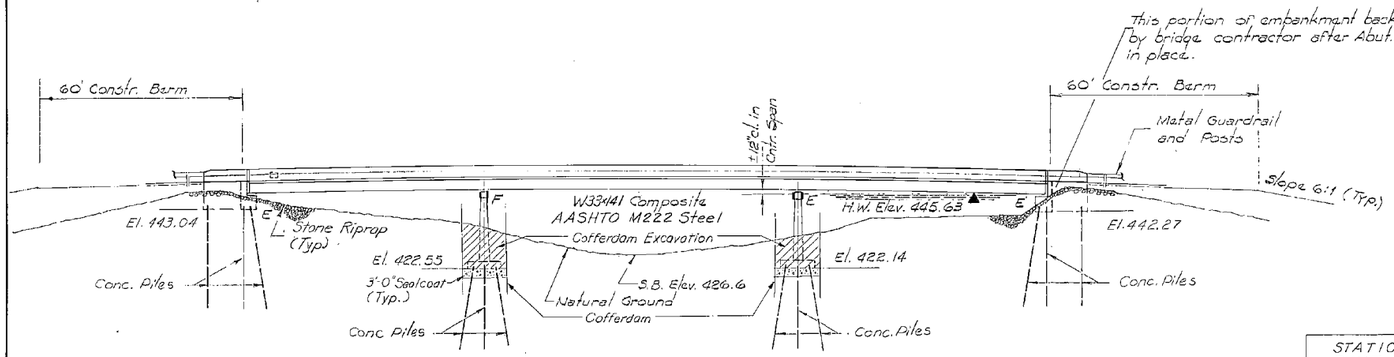
Existing Structure: Single Steel Span thru Truss cnt. to cnt. brgs. 125'-0" on closed abuts and 20.8 ft. face to face curbs. Built as S.B.I. Rte. 100 Section 117-B-C in 1932 @ Sta. 687+94
Existing bridge will be used for traffic during the construction of the new bridge.
Existing Structure #086-0010, to be removed by bridge contractor after the completion of the new bridge.

Salvage of existing truss Handrail

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
S.B.I. F.A. 562	117B-2	SCOTT	52	14
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

SHEET NO. 1 / 13 SHEETS

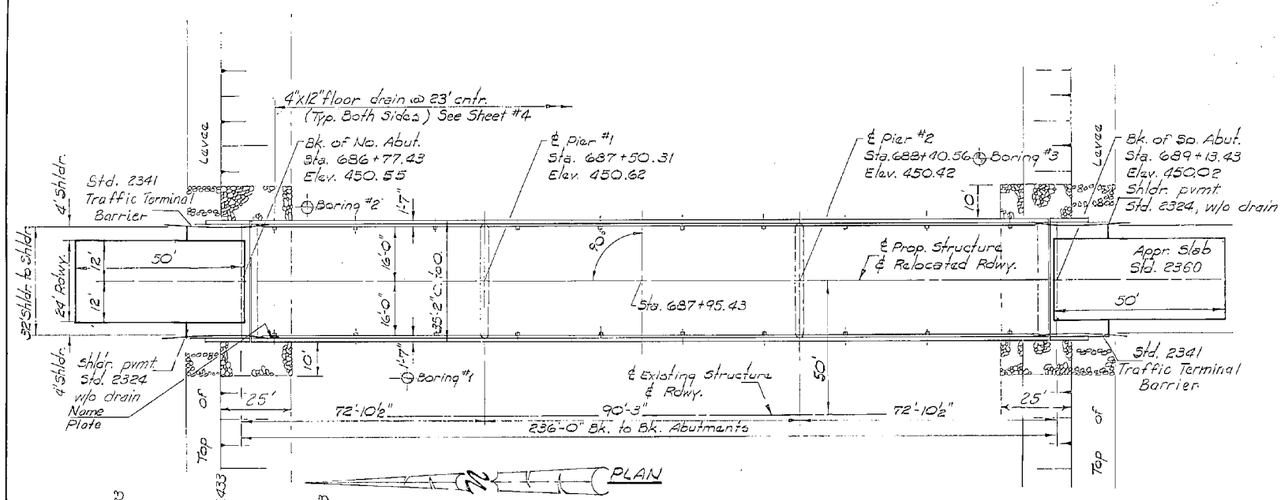


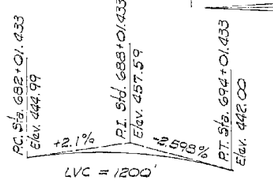
ELEVATION
Design high water elevation for Seal coat is ± 437.6.

STATION 687+95.43
BUILT 198 BY
STATE OF ILLINOIS
F.A. RT. 562 SEC. 117B-2
LOADING HS 20
STR. NO. 086-0039

PROJECT BRF-562(1)

NAME PLATE
(See Std. 2113)





PROPOSED PROFILE GRADE

GENERAL NOTES

See Proposal for Boring Data.

Fasteners shall be high strength bolts (AASHTO M 164, Type 3). Bolts ¾"φ, open holes 13/16"φ, unless otherwise noted.

Calculated weight of Structural Steel = 190,140 lbs.

The Zinc-Silicate and vinyl paint system shall be used for shop and field painting of Structural Steel except where otherwise noted.

All structural steel shall be AASHTO M 222 except expansion joint angles and attached bars which shall be AASHTO M 183.

Expansion joint angles and attached bars shall be shop painted with the Zinc-Silicate primer.

AASHTO M 222 structural steel shall not be painted except, that for a distance of three times the depth of the beams or girders (but not exceeding 10 feet) each way from deck joints, the AASHTO M 222 structural steel shall be cleaned and given one coat of the zinc-silicate primer and a dark maroon vinyl finish coat. Both coats may be applied in the shop with spot painting only in the field.

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

Anchor bolts shall be set before bolting diaphragms over supports.

The structural steel bearing plates of the Elastomeric Bearing Assembly shall conform to the requirements of AASHTO M 222.

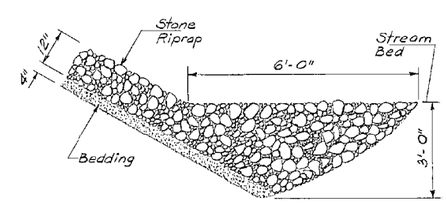
The main load carrying member components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These Components are the wide flange beams and all splice plate material.

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

The embankment configuration shown shall be the minimum embankment that must be constructed prior to construction of the abutments.

Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of ⅛ inch. Adjustment shall be made either by grinding the surface or by shimming the bearing. Two ⅛" adjusting shims, of the dimensions of the bottom bearing plate, shall be provided for each bearing in addition to all other plates or shims. For Type I Elastomeric Bearings, shims of the dimensions of top plate shall be provided and placed as detailed.

The contractor shall drive one (1) concrete test pile in a permanent location at the North Abut. & Pier #2 as directed by the Engineer before ordering the remainder of piles.



STONE RIPRAP ANCHOR DETAIL

TOTAL BILL OF MATERIAL

Item	Unit	Super	Sub.	Total
Protective Coat	Sq. Yd.	1,030		1,030
Removal of Existing Structures, No. 2	Each			1
Class X Concrete	Cu. Yd.	244.8	253.7	498.5
Stud Shear Connectors	Each	681		681
Reinforcement Bars	Pound		23,970	23,970
Reinf. Bars (Epoxy Coated)	Pound	66,060		66,060
Concrete Piles	Lin. Ft.		2,372	2,372
Test Piles (Concrete)	Each		2	2
Name Plates	Each	1		1
Stone Riprap	Tons		212	212
Neoprene Expansion Joint (2½")	Lin. Ft.	33		33
Preformed Joint Seal (2½")	Lin. Ft.	33		33
Seal Coat Concrete	Cu. Yd.		108.4	108.4
Cofferdams	Each		2	2
Floor Drains	Each	20		20
Cofferdam Excavation	Cu. Yd.		300	300
Structural Steel	L. Sum.			1
Structure Excavation	Cu. Yd.		140	140
Elastomeric Bearing Assembly Type I	Each	10		10
Elastomeric Bearing Assembly Type II	Each	5		5

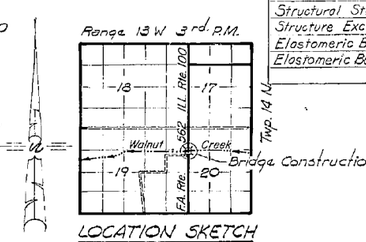
DESIGN STRESSES

f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (Structural AASHTO M222 Steel)

LOADING HS 20-44

Design Specifications: 1977 AASHTO and applicable interims (1978 thru 1982 Interim Specifications) as applicable.

Allow 25#/sq.ft. for future wearing surface.



LOCATION SKETCH

WATERWAY INFORMATION

Drainage Area 56.2 sq.mi. Low grade Elev. 429.0● @ Sta.

Flood	Freq. Yr.	Q C.F.S.	Opening sq.ft. Exist.	Opening sq.ft. Prop.	Nat. H.W.E.	Head-Ft. Exist.	Head-Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
	50	7,500●	1137	2220	445.63	0.38	0.04	446.01	445.67
Base	100	7670			445.83	0.38	0.04	446.21	445.87
Overtopping●	25	7500			445.63	0.38	0.04	446.01	445.67

● Levee d channel – Levees are over topped @ channel Sta. 5+00 the discharge is 7,500 cfs. The roadway design on the north approach is a 2 yr. frequency

DESIGNED	Bae Lin		
CHECKED	Patrick M. Petrone		
DRAWN	Bae Lin		
CHECKED	Patrick M. Petrone		

EXAMINED — January 22 1981 — ENGINEER OF BRIDGE AND TRAFFIC STRUCTURES
PASSED — ENGINEER OF DESIGN
APPROVED — DIRECTOR OF HIGHWAYS

CARL E. THUNHAN, JR. — STATE OF ILLINOIS — REG. ENGR.

GENERAL PLAN
F.A. Rte. 562 Over WALNUT CREEK
F.A. Rte. 562 SECTION 117 B-2
SCOTT COUNTY
Sta. 687+95.43

USER NAME = dudleybm	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = 100.0000 ' / in.	CHECKED -	REVISED -	
PLOT DATE = 5/28/2019	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 086-0039
(FOR INFORMATION ONLY)

SCALE: SHEET OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
"	(19, 117) BP	SCOTT	12	10
* FAP 562, FAS 743		CONTRACT NO. 72K78		
		ILLINOIS FED. AID PROJECT		

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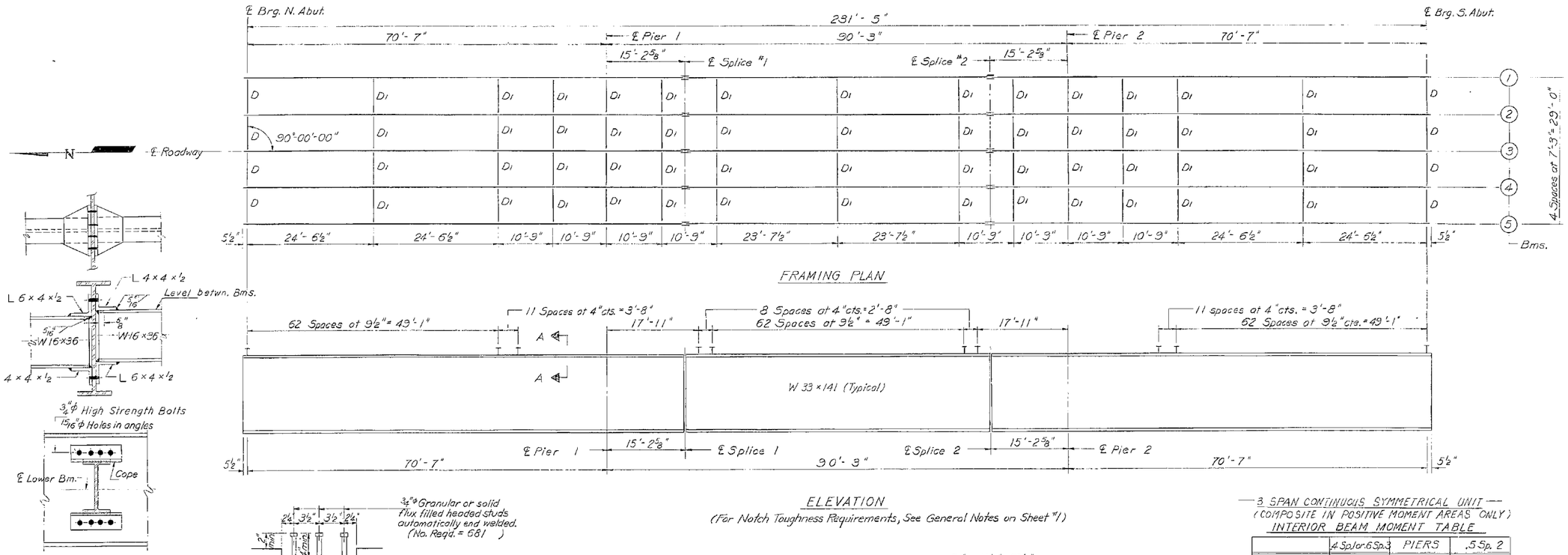
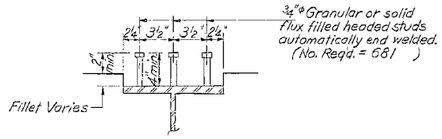
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A. 562	117B-2	SCOTT	52	19
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

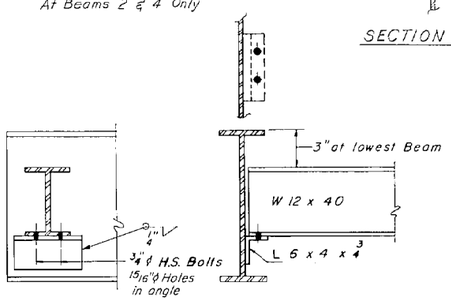
SHEET NO. 6
13 SHEETS



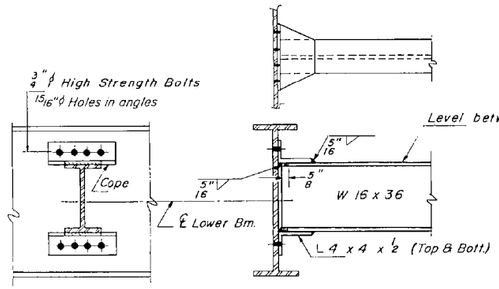
DIAPHRAGM D_1
At Beams 2 & 4 Only



SECTION A-A

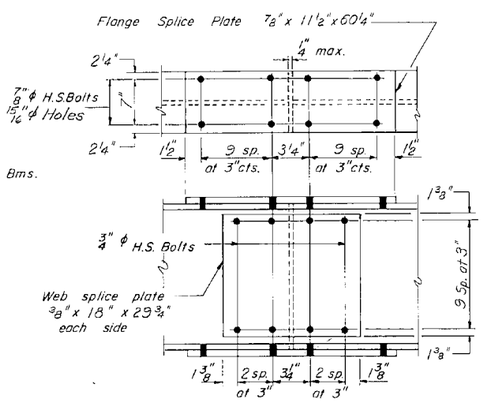


DIAPHRAGM D
8 Required



DIAPHRAGM D_1
At Beams 1, 3 & 5 Only
(Total D_1 Required 52)

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



SPLICE

3 SPAN CONTINUOUS SYMMETRICAL UNIT
(COMPOSITE IN POSITIVE MOMENT AREAS ONLY)

INTERIOR BEAM MOMENT TABLE

	.4 Spl or .6 Sp. 3	PIERS	.5 Sp. 2
Is (in⁴)	7450	7450	7450
Ic (in⁴)	18188	——	18188
Ss (in³)	448	448	448
Sc (in³)	624.4	——	624.4
Zs (in³)	514	514	514
ℓ (k/i)	.867	.867	.867
Sℓ (k/i)	.345	.345	.345
Mℓ (ik)	290	572	311
Msℓ (ik)	134	182	170
Mℓ (ik)	564	370	537
M(imp.) (ik)	144	90	148
M(ℓ+Imp.)	708	460	785
Mmax (ik)	2088	1979	2330
Mu (ik)	3662	2141	3662
VR (k)	55.4	——	47.1

Is and Ss are the moment of inertia and section modulus of the steel section. Zs is the plastic section modulus of the steel section. Ic and Sc are the moment of inertia and section modulus of the composite section. VR is the maximum ℓ + Imp. shear range in span used to determine shear connector spacing. M max. is the maximum moment indicated by the maximum design load = 1.3 x [Mℓ + Msℓ + 5/3 (Mℓ + I)]. Mu is the maximum moment capacity.

TOP OF BEAM ELEVATIONS

	Bms #1 & #5	Bms #2 & #4	Bm #3
℄ Brg. N. Abut.	449.65	449.78	449.89
℄ Pier #1	449.63	449.76	449.87
℄ Splice #1	449.63	449.76	449.87
℄ Splice #2	449.49	449.62	449.73
℄ Pier #2	449.43	449.56	449.67
℄ Brg. S. Abut.	449.13	449.26	449.37

Note :
All contact surfaces of joints for the diaphragms shall be free of paint or lacquer.
Fasteners shall be high strength bolts AASHTO M 164, Type 3.

INTERIOR BEAM REACTION TABLE

	ABUTS.	PIERS
Rℓ (k)	32.1	108.1
Rℓ (k)	40.2	55.7
Imp. (k)	10.3	13.6
R Total (k)	82.6	177.4

DESIGNED Bau Lin
CHECKED Patrick M. Petrone
DRAWN Bau Lin
CHECKED Patrick M. Petrone

JAN 22 1981
EXAMINED — ENGINEER OF BRIDGES AND TRAFFIC STRUCTURES
PASSED
APPROVED — ENGINEER OF DESIGN
UNDER SECRETARY, CHIEF TRANSPORTATION ENGINEER

I-2-D 4-15-73

STRUCTURAL STEEL
F.A. RTE. 562 SECTION 117 B-2
SCOTT COUNTY
STA. 687+95.43

USER NAME = dudleybm	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = 100.0000 ' / in.	CHECKED -	REVISED -	
PLOT DATE = 5/28/2019	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 086-0039
(FOR INFORMATION ONLY)

SCALE: SHEET OF SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(19, 117) BP	SCOTT	12	11
* FAP 562, FAS 743		CONTRACT NO. 72K78		
		ILLINOIS FED. AID PROJECT		

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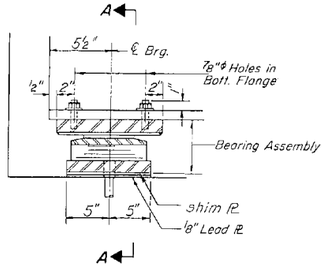
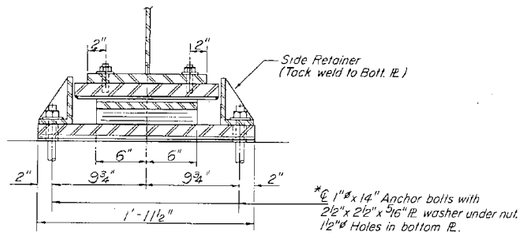
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.R.T. 562	117B-2	SCOTT	52	20
FED. ROAD DIST. NO. 5	ILLINOIS	FED. AID PROJECT		

SHEET NO. 7
13 SHEETS

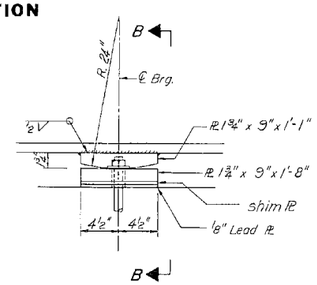


SECTION AT S. ABUT.

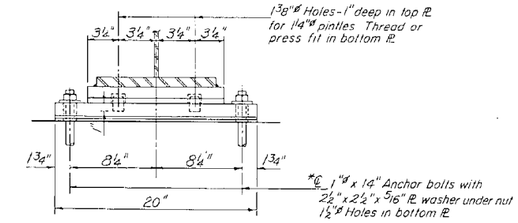


SECTION A-A

TYPE II TFE ELASTOMERIC EXP. BRG.



ELEVATION AT PIER 1

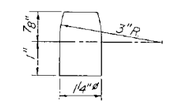


SECTION B-B

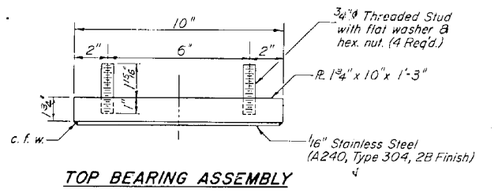
FIXED BEARING

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

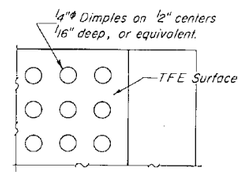
See Sheet #7A for Anchor Bolt Details.



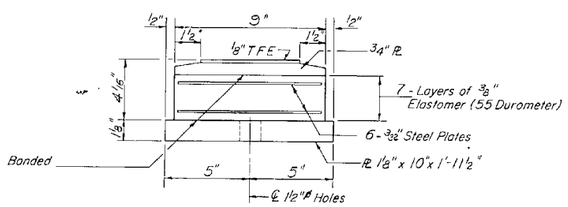
PINTLE



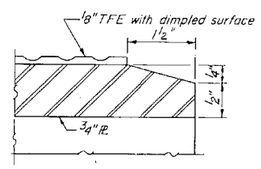
TOP BEARING ASSEMBLY



PLAN - TFE SURFACE



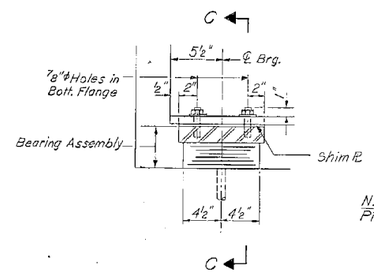
BOTTOM BEARING ASSEMBLY



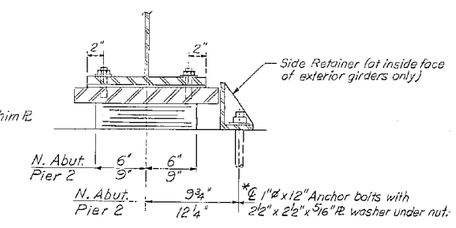
SECTION THRU TFE

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

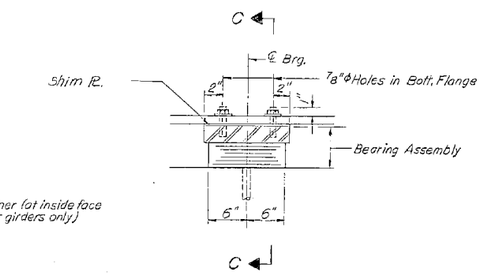
Bonding of ⅛" TFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.



SECTION AT N. ABUT.

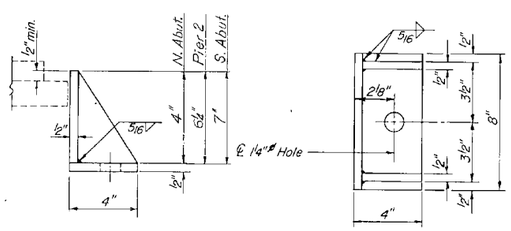


SECTION C-C



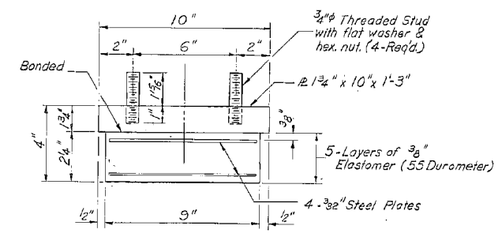
SECTION AT PIER 2

TYPE I ELASTOMERIC EXP. BRG.



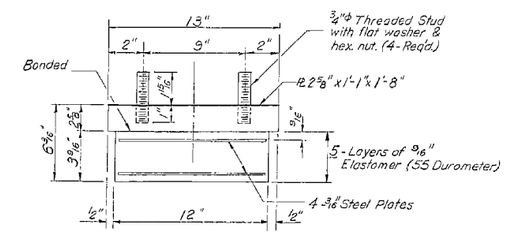
SIDE RETAINER

(Retainers built-up from ½" Angles are acceptable.)



BEARING ASSEMBLY

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



BEARING ASSEMBLY

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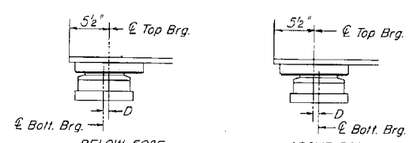

BELOW 50°F (Move bott. brg. away from fixed brg.)

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

SETTING ANCHOR BOLTS AT S. ABUT.

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

DESIGNED	Ben Liu
CHECKED	Patrick M. Petrone
DRAWN	Ben Liu
CHECKED	Patrick M. Petrone

EXAMINED — JAN. 22, 1981 — BRIDGE DESIGN ENGINEER AND TRAFFIC STRUCTURES
PASSED — ENGINEER OF DESIGN
APPROVED — DIRECTOR OF HIGHWAYS

I-2-E2 4-1-79
Rev.: RLP 10-12-83

BEARING DETAILS
F.A. RTE. 562 SECTION 117 B-2
SCOTT COUNTY
STA. 687+95.43

MODEL: Default
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USER NAME = dudleybm	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = 100.0000 ' / in.	CHECKED -	REVISED -	
PLOT DATE = 5/28/2019	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EXISTING PLANS, SN 086-0039
(FOR INFORMATION ONLY)

SCALE: | SHEET OF SHEETS | STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(19, 117) BP	SCOTT	12	12
* FAP 562, FAS 743		CONTRACT NO. 72K78		
		ILLINOIS	FED. AID PROJECT	