

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**PROPOSED
HIGHWAY PLANS**

F.A.I. ROUTE 70 (I-70)
SECTION D7 BRIDGE PAINTING 2016-1

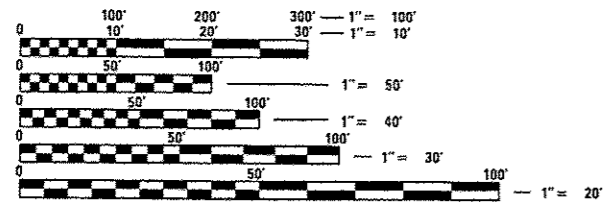
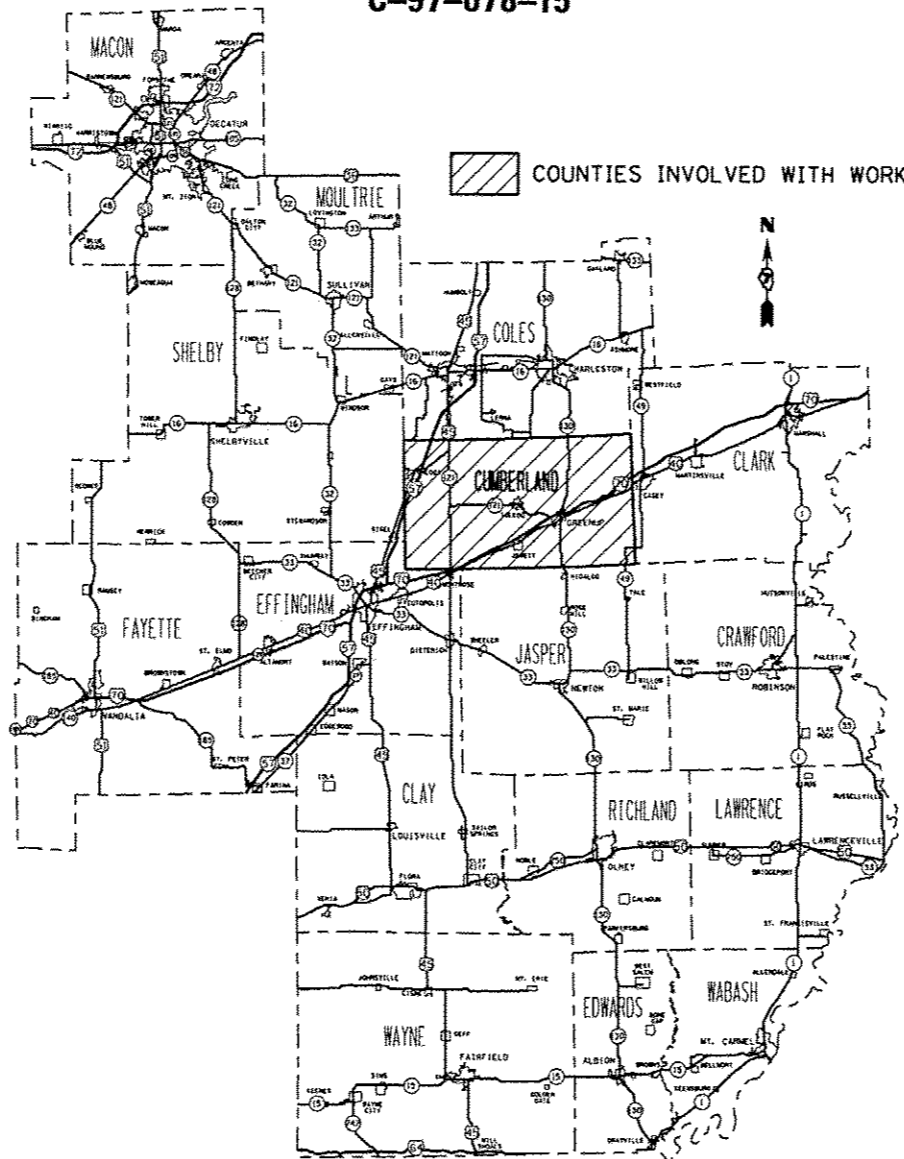
BRIDGE PAINTING
CUMBERLAND COUNTY
C-97-078-15

FOR INDEX OF SHEETS, SEE SHEET NO. 2

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
D7	BRIDGE PAINTING 2016-	CUMBERLAND	15	1
		ILLINOIS	CONTRACT NO. 74726	

* F.A.I. RTE. 70 & F.A.P. RTE. 130

** 15 + 4 = 19 TOTAL SHEETS
D-97-031-15



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

PROJECT ENGINEER: TOM RONAN
PROJECT MANAGER: TOM RONAN
PHONE: (217)-342-8320
CONTRACT NO. 74726

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED August 11 2015
Roger L. Dinkel
 DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

Oct 2 2015
John D. Baranzelli PE
 acting ENGINEER OF DESIGN AND ENVIRONMENT

Oct 2 2015
Amir Osman PE
 DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

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OF THE STATE OF ILLINOIS

INDEX OF SHEETS

SHEET NO.	ITEM
1	COVER SHEET
2	INDEX OF SHEETS, GENERAL NOTES &, LOCATION DESCRIPTIONS
3	SUMMARY OF QUANTITIES
4-15 *	EXISTING STRUCTURE PLANS

THE FOLLOWING STANDARDS ARE A PART OF THESE PLANS AND ARE INCLUDED AFTER SHEET NO. 15:

STD. NO.	DESCRIPTION
000001-06	STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
701001-02	OFF-RD OPERATIONS, 2L, 2W, MORE THAN 15' AWAY
701006-05	OFF-ROAD OPERATIONS, 2L, 2W, 15' TO 24" FROM PAVEMENT EDGE
701101-04	OFF-ROAD OPERATIONS, MULTILANE, 15' TO 24" FROM PAVEMENT EDGE
701106-02	OFF-RD OPERATIONS, MULTILANE, MORE THAN 15' AWAY
701201-04	LANE CLOSURE, 2L, 2W, DAY OPERATIONS ONLY
701400-08	APPROACH TO LANE CLOSURE, FREEWAY/EXPRESSWAY
701401-09	LANE CLOSURE, FREEWAY/EXPRESSWAY
701402-10	LANE CLOSURE, FREEWAY/EXPRESSWAY WITH BARRIER
701406-09	LANE CLOSURE, FREEWAY/EXPRESSWAY, DAY OPERATIONS ONLY
701901-04	TRAFFIC CONTROL DEVICES
704001-07	TEMPORARY CONCRETE BARRIER

* INCLUDES SHEETS 7A, 9A, 10A & 10B.

GENERAL NOTES

THIS SECTION SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS, THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" ADOPTED JANUARY 1, 2012; THE SUPPLEMENTAL SPECIFICATIONS, THE RECURRING SPECIAL PROVISIONS, AND THE SPECIAL PROVISIONS INCLUDED IN THE PROPOSAL.

THE PROPOSED PROJECT IS LOCATED AT THREE LOCATIONS ON ILLINOIS ROUTE 130 AND I-70 IN CUMBERLAND COUNTY.

THE WORK INCLUDED IN THIS SECTION CONSISTS OF CLEANING AND PAINTING FIVE BRIDGES AT THREE LOCATIONS AS SPECIFIED IN THE PLANS AND SPECIAL PROVISIONS.

THE STRUCTURAL STEEL SHALL BE CLEANED AND PAINTED AS SPECIFIED IN THE SPECIAL PROVISIONS.

ALL DECK DRAINS SHALL BE PAINTED ACCORDING TO THE REQUIREMENTS OF PAINT SYSTEM 1 - OZ/E/U. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AT THEIR OWN EXPENSE AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.

ALL TRASH AND PAINTING DEBRIS, EXCLUDING WASTE BARRELS OR ROLL - OFF DUMPSTERS, SHALL BE REMOVED BEFORE BEGINNING WORK AT ANOTHER LOCATION.

ONLY STRUCTURAL STEEL IS TO BE PAINTED. ALL OTHER SURFACES WILL BE PROTECTED FROM BEING PAINTED. ALL PAINT AND OVERSPRAY WILL BE REMOVED AT THE CONTRACTOR'S EXPENSE.

THE SSPC QP1 AND QP2 PAINTING CONTRACTOR CERTIFICATION WILL BE REQUIRED FOR THIS PROJECT.

BRIDGE LOCATION DESCRIPTIONS

LOCATION #1 & 2

ROUTE: FAI 70
 MARKED: I-70
 SECTION: 18-45HB-1
 STATION: 251+10.83
 STRUCTURE NUMBER: 018-0040 & 018-0041

TYPE OF BRIDGE: Wide Flange I Beams-3 Spans (7 Beams)
 LOCATION: 4.4 miles east of the Effingham County line
 FEATURE CARRIED/SPANNED: I-70 over FAS 1657

COLOR OF THE FINISH COAT SHALL BE GRAY, MUNSELL 5B 7/1.

Cleaning and painting of the existing structural steel shall be as specified in the special provision for "Cleaning and Painting Existing Steel Structures". All structural steel, including beams, bearings and diaphragms, shall be cleaned by SSPC-SP10- Near White Metal Blast Cleaning.

The designated areas cleaned per Near White Metal Blast Cleaning - SSPC-SP10 shall be painted according to the requirements of Paint System 1 - OZ/E/U.

Two air monitors will be required at this location.

LOCATION #3 & 4

ROUTE: FAI 70
 MARKED: I-70
 SECTION: 18-47B
 STATION: 158+31
 STRUCTURE NUMBERS: 0018-0049 & 018-0050

TYPE OF BRIDGES: Wide Flange I Beams-8 Spans (6 Beams)
 LOCATION: 12 miles east of the Effingham County line
 FEATURE CARRIED/SPANNED: I-70 over the Embarras River

COLOR OF THE FINISH COAT SHALL BE GRAY, MUNSELL 5B 7/1.
 Cleaning and painting of the existing structural steel shall be as specified in the special provision for "Cleaning and Painting Existing Steel Structures". All structural steel within 5' (measured along the beam) of the abutments and any expansion joints at piers, including beams, bearings and diaphragms, shall be cleaned by SSPC-SP10- Near White Metal Blast Cleaning. The entire outside and bottom of the bottom flange of both fascia beams, for the entire length of the beams, shall be cleaned by SSPC-SP10- Near White Metal Blast Cleaning.

The designated areas cleaned per Near White Metal Blast Cleaning - SSPC-SP10 shall be painted according to the requirements of Paint System 1 - OZ/E/U.

No air monitors will be required at this location.

LOCATION #5

ROUTE: FAP 116
 MARKED: ILL 130
 SECTION: 18-47HB-1
 STATION: 204+65.76
 STRUCTURE NUMBER: 018-0025

TYPE OF BRIDGE: Wide Flange I Beams-4 Spans (9 Beams)
 LOCATION: Greenup Interchange
 FEATURE CARRIED/SPANNED: ILL 130 over I-70

COLOR OF THE FINISH COAT SHALL BE GRAY, MUNSELL 5B 7/1.

Cleaning and painting of the existing structural steel shall be as specified in the special provision for "Cleaning and Painting Existing Steel Structures". All structural steel, including beams, bearings and diaphragms, shall be cleaned by SSPC-SP10- Near White Metal Blast Cleaning.

The designated areas cleaned per Near White Metal Blast Cleaning - SSPC-SP10 shall be painted according to the requirements of Paint System 1 - OZ/E/U.

Four air monitors will be required at this location.

FILE NAME *	USER NAME * stafffanek	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	INDEX OF SHEETS, GENERAL NOTES AND BRIDGE LOCATIONS		F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.		
pa\NLB64690\INTEG\illinois.gov\PH001\Do	Documents\DOT Office\Drawings\7\Projects\777	DRAWN	REVISED		SCALE: N/A	SHEET 1	OF 1	SHEETS	STA.	TO STA.	ILLINOIS	FED. AID PROJECT	
	PLOT SCALE * 1/8" = 1' / in.	CHECKED -	REVISED -								CUMBERLAND	15	2
Default	PLOT DATE * 9/18/2015	DATE -	REVISED -								CONTRACT NO. 74726		

100 % STATE

100 % STATE

SUMMARY OF QUANTITIES			TOTAL QUANTITIES	CONSTRUCTION TYPE CODE		
CODE NO	ITEM	UNIT		0014		
67100100	MOBILIZATION	LSUM	1	1		
70100207	TRAFFIC CONTROL AND PROTECTION, STANDARD 701402	EACH	1	1		
70100450	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201	LSUM	1	1		
70100700	TRAFFIC CONTROL AND PROTECTION, STANDARD 701406	LSUM	1	1		
70100800	TRAFFIC CONTROL AND PROTECTION, STANDARD 701401	LSUM	1	1		
70400100	TEMPORARY CONCRETE BARRIER	FOOT	275	275		
70400200	RELOCATE TEMPORARY CONCRETE BARRIER	FOOT	825	825		
70600250	IMPACT ATTENUATORS, TEMPORARY (NON-REDIRECTIVE), TEST LEVEL 3	EACH	1	1		
70600350	IMPACT ATTENUATORS, RELOCATE (NON-REDIRECTIVE), TEST LEVEL 3	EACH	3	3		
X7010410	SPEED DISPLAY TRAILER	CAL MO	6	6		
X7040125	PINNING TEMPORARY CONCRETE BARRIER	EACH	120	120		

SUMMARY OF QUANTITIES			TOTAL QUANTITIES	CONSTRUCTION TYPE CODE		
CODE NO	ITEM	UNIT		0014		
Z0007112	CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES	LSUM	1	1		
Z0010501	CLEANING AND PAINTING STEEL BRIDGE NO. 1	LSUM	1	1		
Z0010502	CLEANING AND PAINTING STEEL BRIDGE NO. 2	LSUM	1	1		
Z0010503	CLEANING AND PAINTING STEEL BRIDGE NO. 3	LSUM	1	1		
Z0010504	CLEANING AND PAINTING STEEL BRIDGE NO. 4	LSUM	1	1		
Z0010505	CLEANING AND PAINTING STEEL BRIDGE NO. 5	LSUM	1	1		

FILE NAME =	USER NAME = staffennk	DESIGNED -	REVISED -
pu\NL84EBID\INTEG\Illinois.gov\PWID07\Documents\DOT Offices\District 7\Projects\74726\DRAWING\CAD\sheet\0774726-shr-500.dgn		CHECKED -	REVISED -
		DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

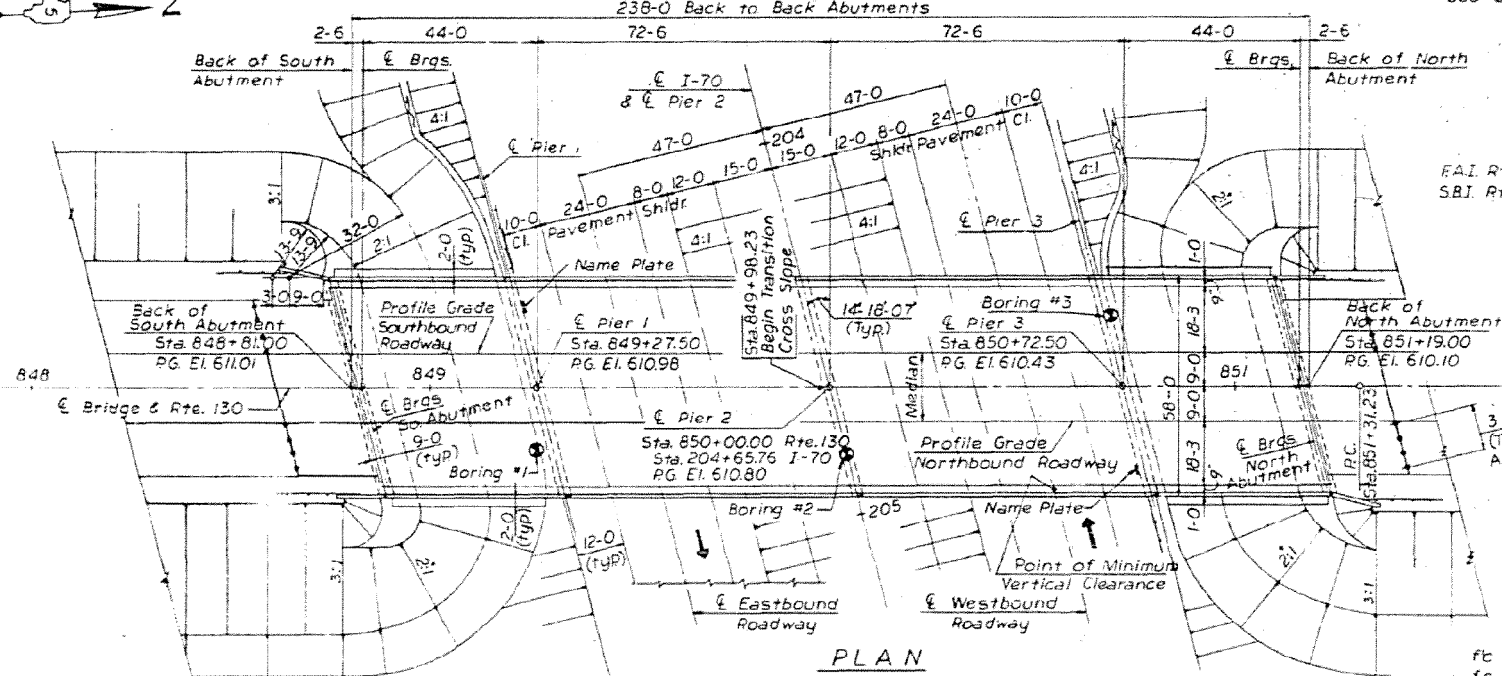
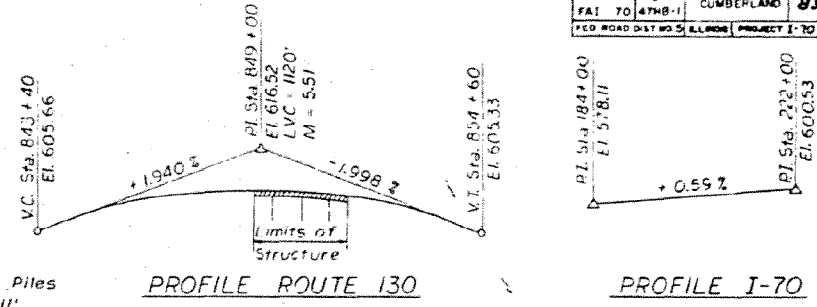
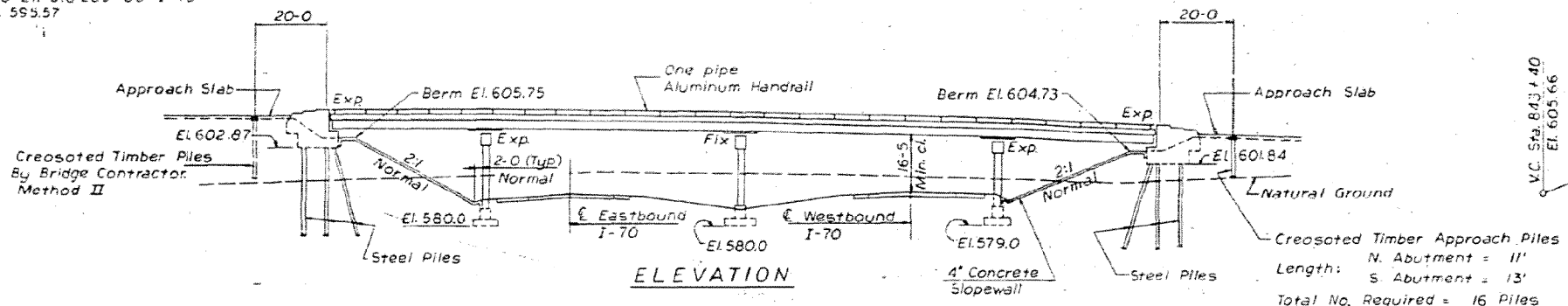
SUMMARY OF QUANTITIES			
SCALE: N/A	SHEET 1	OF 1 SHEETS	STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	D7 BRIDGE PAINTING 2016-	CUMBERLAND	15	3
			CONTRACT NO. 74726	
ILLINOIS FED. AID PROJECT				

* F.A.I. RTE. 70 & F.A.P. RTE. 316

Bench Mark: Bolt Spike in top of 30" stump on Rte. 130
 210' Lt. Sta 205+00 I-70
 El. 555.57

ROUTE NO	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
SBI 130	18-	CUMBERLAND	83	25
FAI 70	47HB-1			
FED. ROAD DIST. NO. 3 ILLINOIS PROJECT I-70-4(50)120				



HIGHWAY CLASSIFICATION			
	1984 DHV	CLASS	MPH
FAI Rte. 70	891	B-1	70
SBI Rte. 130	478	C	50

GENERAL NOTES

Course aggregate to be used in parapet handrails and end post must be absolutely free of chert, flint, limonite, lignite and soft sandstone.

The concrete floor slab shall be finished in accordance with Article 5119 of the Standard Specifications. Permanent forms will not be permitted in forming the concrete floor.

Slopewall shall be reinforced with welded wire fabric 6" x 6" mesh, weighing 56# per 100 Sq. Ft.

All reinforcement bars shall be lapped 20 diameters unless shown otherwise.

All welding shall conform to the current Std. Specifications for Welded Highway and Railway Bridges of the American Welding Society.

All structural steel shall conform with ASTM designation A-36

Rivets 3/4" Ø, Open holes 1/2" Ø, unless otherwise shown.

Excavation for portions of structures in the embankment shall not be classified.

Anchor bolts shall be set before bolting diaphragms over supports. The exposed surfaces of the expansion guard shall be given two shop coats of red lead paint. The contact surfaces shall be given one coat of red lead paint. Anchor studs shall not be painted.

Expansion guards are included in the quantity of structural steel. Estimated weight = 2,220#

Except as otherwise provided, all structural steel shall receive one shop coat of red lead paint and two field coats of paint. See Special Provisions for field paint.

The contractor shall drive one steel test pile in a permanent location at South abutment as directed by the engineer before ordering the remainder of piles.

Field welding of construction accessories to the bottom flanges or for a distance of 1/4 of the span each way from pier supports on the top flanges of beams or girders will not be permitted. Field welding in other areas will be permitted only when approved by the Engineer.

Stud shear connectors - 1/2" diam. Form steel 20050 - 1/2" field after the steel has been erected and deck forms are in place.

Flange shear connectors are included in the quantity of structural steel. Number required = 3672. Estimated weight = 2,720#

For layout and details of slopewall see Sheet No. 9

For cross slope transition diagram see Sheet No. 4

For location of Name Plate see Sheet No. 11

For details of Name Plate see Standard 2113-1

For Boring Logs see Sheet No. 12

For details of guardrail placement or all equipment wings see sheet No. 3A of 12.

DESIGN STRESSES

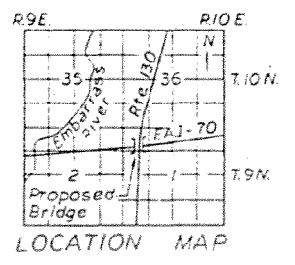
fc = 3500 psi
 fc = 1400 psi Superstructure & Substructure.

Vc = 75 psi Footings
 fs = 20000 psi Reinforcement
 fs = 20000 psi Structural (A36 Steel)
 n = 10

LOADING: HS-20-44
 Max. Soil Pressure = 2.4 1/8 F

TOTAL BILL OF MATERIALS				
ITEM	UNIT	SUPER STRUCTURE	SUB STRUCTURE	TOTAL
* Class "A" Excavation for Structures	Cu. Yd.	—	1255	1255
Class "X" Concrete	Cu. Yd.	386.2	460.2	846.4
Protective Coat	Sq. Yd.	1550	—	1550
Furnish & Erecting Structural Steel	Lbs.	329320	—	329320
Reinforcement Bars	Lbs.	98430	57800	156230
Slope Wall 4"	Sq. Yd.	—	650	650
Furnishing Creosoted Timber Piles	Lin. Ft.	—	192	192
Driving Timber Piles - 12BP53	Lin. Ft.	—	192	192
Furnishing Steel Piles - 12BP53	Lin. Ft.	—	735	735
Driving Steel Piles - 12BP53	Lin. Ft.	—	735	735
Test Pile - Steel - 12BP53	Each	—	1	1
Name Plates	Each	—	2	2
Aluminum Handrail	Lin. Ft.	470	—	470
* Bridge Seat Sealant	Lump Sum	1	—	1

* NOTE: 1. Class "A" Excavation for Structures includes excavation for slope wall.
 2. Bridge Seat Sealant to be used at both abutments.



HORIZONTAL CURVE DATA
 S.B.I. ROUTE 130

P.I. = 856+34.77
 Δ = 11° 42' 30"
 D = 11° 10' 00"
 R = 4911.07'
 T = 503.54'
 L = 1003.57'
 E = 25.75'
 SE = 0.030 1/2

Cross Slope Transition
 Sta. 849+98.23 to Sta. 851+98.23

STATION 204+65.76
 BUILT 196 BY
 STATE OF ILLINOIS
 FAI RT. 70 SEC 18-47HB-1
 LOADING HS-20

NAME PLATE
 2-Required

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

GENERAL PLAN
 S.B.I. ROUTE 130 UNDERPASS

STATION 204+65.76
 PROJECT NO. I-70-4(50)120

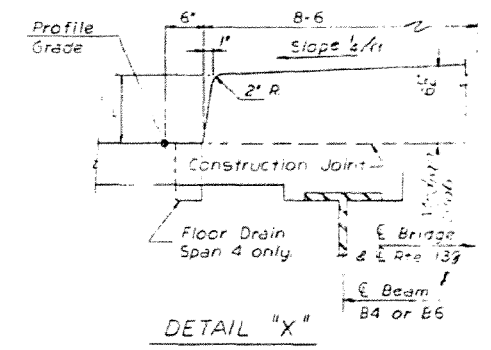
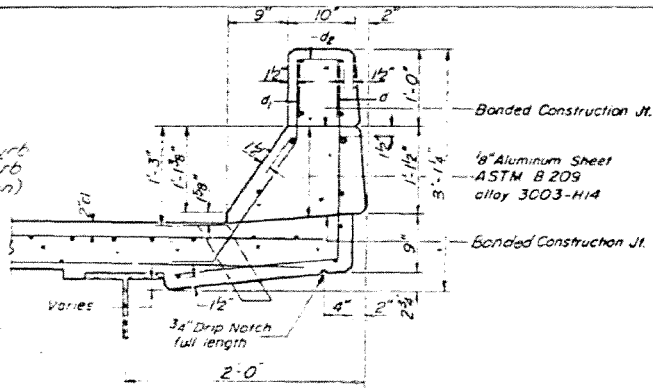
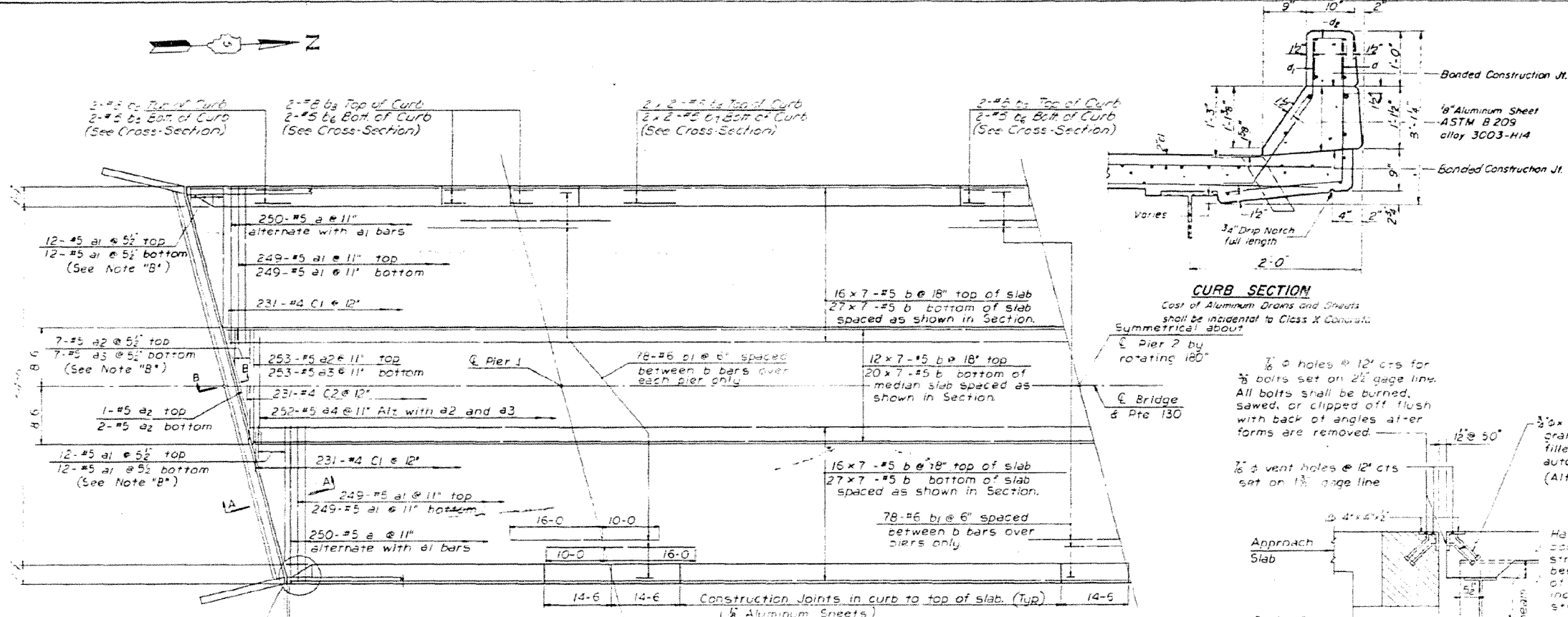
FAI, Rte. 70 CUMBERLAND CO. SECTION 18-47HB-1

WUNDERL, BENDER, STONE & ASSOCIATES, INC.
 CONSULTING ENGINEERS - CHICAGO, ILL.

SHEET NO. 1 OF 12

By: C.A. (Circ. Super From 422.1 to 386.2 Cu. Yds Sub From 409.9 to 460.2 Cu. Yd. Total From 422.1 to 386.2 Cu. Yds. Point Bars Super From 100,960# to 98,430#. Sub From 59,450# to 57,800#. Total From 156,410# to 156,230#. 2-16-66 L.W.

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
SBI 130	18-	CUMBERLAND	63	26
FAI 70	47HB-1			
FED. ROAD DIST. NO. 5	ILLINOIS PROJECT			

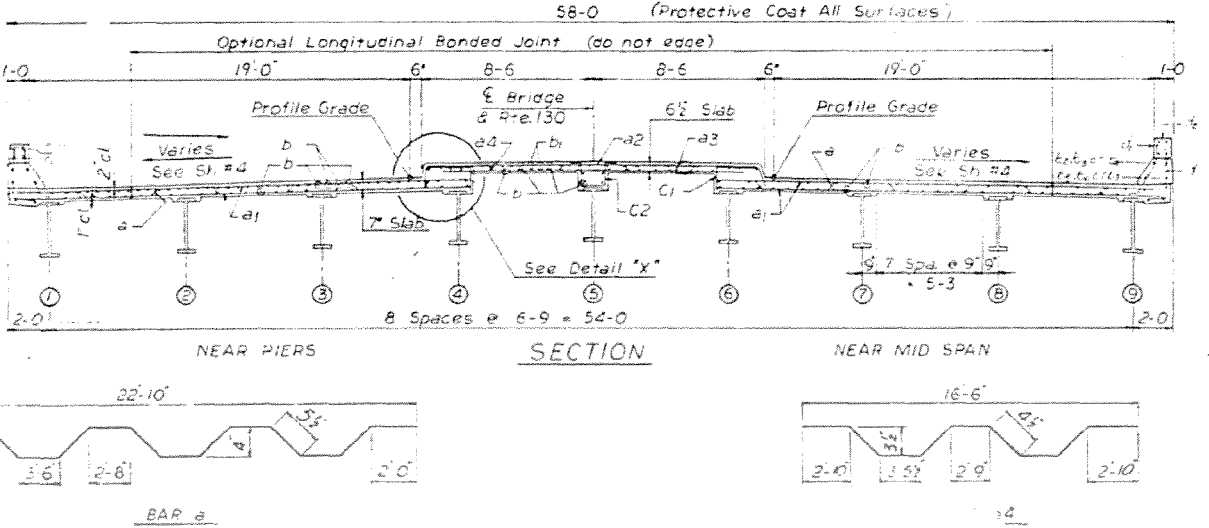
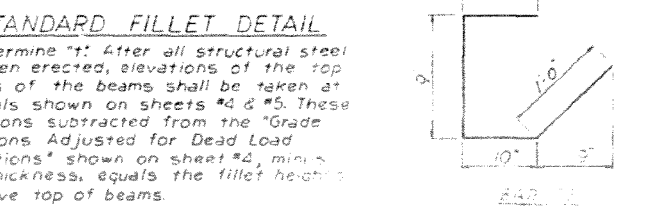
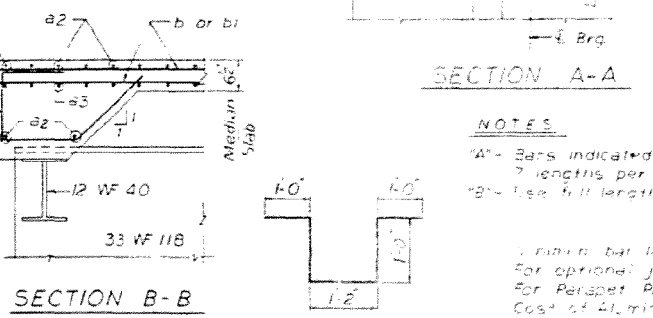
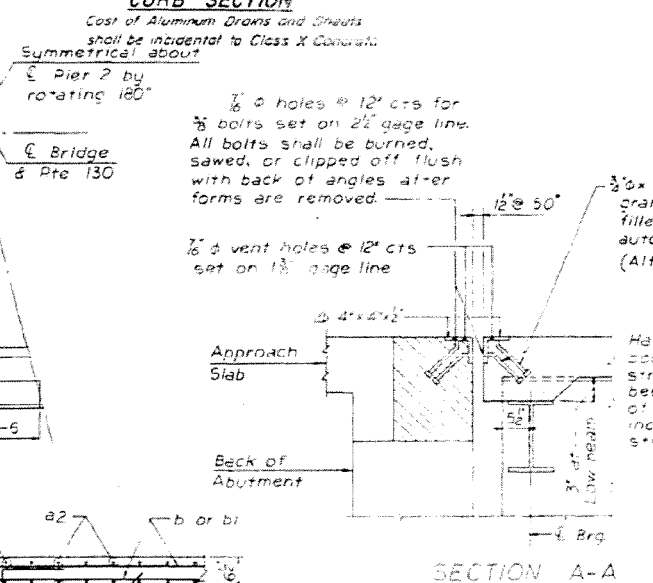


BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a	500	#5	23-7	
a1	1044	#5	22-8	
a2	266	#5	16-4	
a3	260	#5	13-6	
a4	252	#5	16-10	
b5	8	#5	29-2	
b6	24	#5	14-2	
a7	16	#5	22-9	
b1	470	#5	3-5	
b	802	#5	31-2	
b1	234	#5	25-0	
b2	6	#8	29-6	
b3	24	#8	14-2	
b4	16	#5	22-9	
c	48	#4	5-0	
c1	231	#4	3-7	
c2	34	#4	3-7	
c	470	#4	3-7	

ITEM

ITEM	UNIT	QTY
Class X Concrete	CY	37.0
Reinforcement Bars	Lb	15,250
Protective Coat	SQ	1,250



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

SLAB
SBI ROUTE 130 UNDERPASS

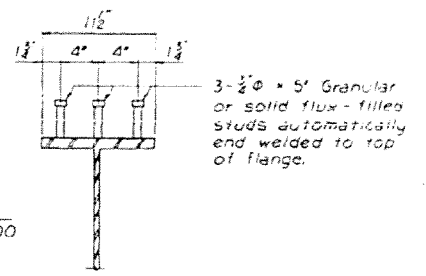
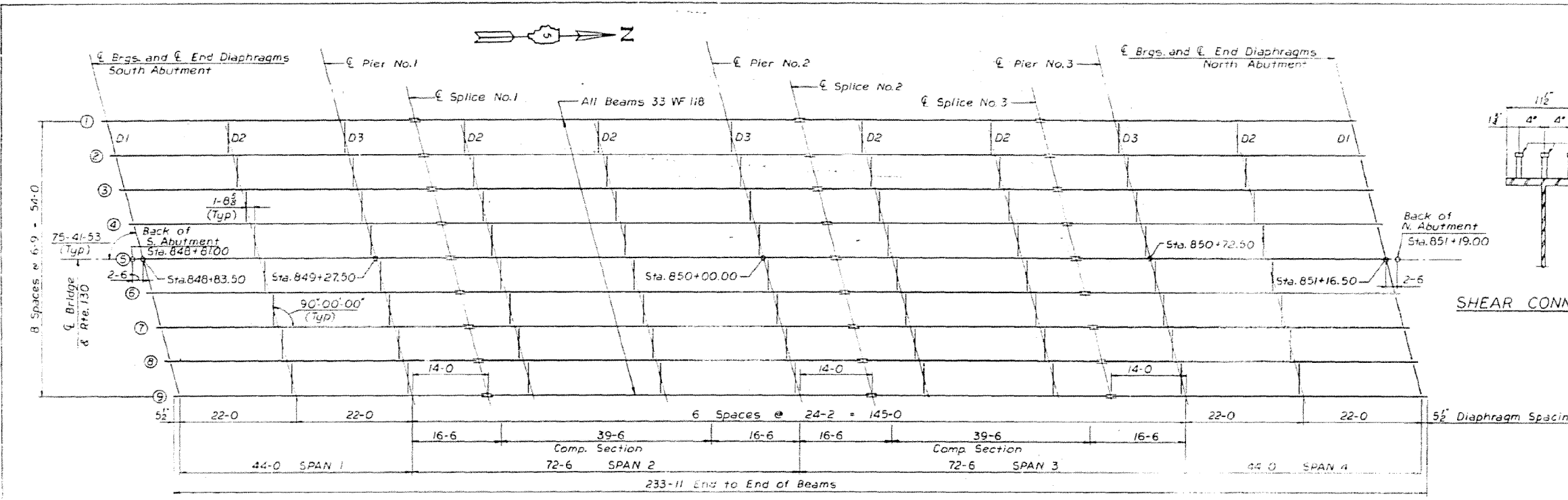
STATION 204+65.76
PROJECT NO.

FAI Rte. 70 CUMBERLAND CO. SECTION 18-47HB-1

KNOERLE, BENDER, STONE & ASSOCIATES, INC.
CONSULTING ENGINEERS - CHICAGO, ILL.

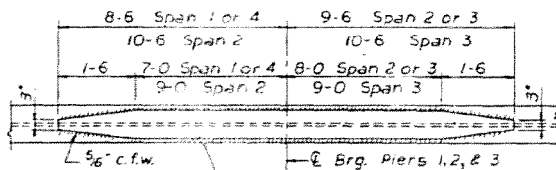
SHEET NO 2 OF 12

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
SBT 130-18	FAI 70-47MB-1	CUMBERLAND	83	30
FED. ROAD DIST. NO. 111-1008 PROJECT				

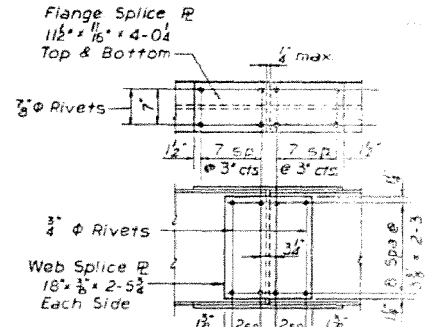


FRAMING PLAN

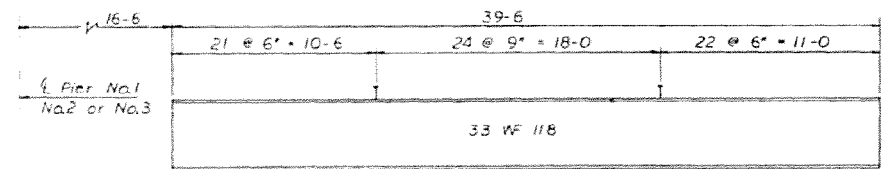
	MOMENTS			REACTIONS			
	0.4 Span 1 or Span 4	Pier 1 or 3	0.5 Span 2 or Span 3	Pier 2	Abut's.	Pier 1 or 3	Pier 2
D.L.	80	379	206	511	13.3	65.3	76.2
L.L.	257	318	428	410	33.5	44.7	48.7
IMP.	76	88	108	104	10.0	12.3	12.4
TOTAL	413	785	742	1025	56.8	122.3	137.3



DETAIL OF COVER PLATE



DETAIL OF SPLICE



COMPOSITE SECTION SPAN 2 & SPAN 3

Location	Pier 1 or Pier 3	Pier 2
Item	BB07	10727
IS	520	622
SIS	520	622

Ic	14690
Stc	1320
Sbc	510

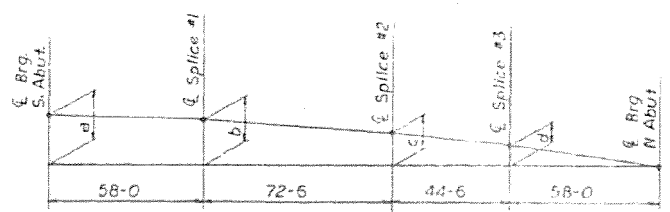
NOTES
For details of Diaphragms and Bearing Assemblies see Sheet No. 7

ITEM	UNIT	TOTAL
* Structural Steel	Lbs	133910

* Includes:
12520# Brg. Assemblies with lead plates and Anchor Bolts
2720# Stud Shear Connectors

Beam No.	€ Brg. S. Abut.	€ Pier 1	€ Splice #1	€ Pier 2	€ Splice #2	€ Splice #3	€ Pier 3	€ Brg. N. Abut.
1	610.24	610.18	610.17	609.99	609.95	609.94	609.91	609.81
2	610.31	610.25	610.23	610.05	610.01	609.93	609.88	609.72
3	610.38	610.32	610.30	610.12	610.08	609.92	609.85	609.62
4	610.43	610.37	610.34	610.16	610.11	609.91	609.82	609.55
5	610.43	610.36	610.34	610.15	610.11	609.90	609.81	609.54
6	610.43	610.36	610.34	610.15	610.10	609.89	609.80	609.52
7	610.39	610.31	610.29	610.09	610.05	609.83	609.74	609.45
8	610.32	610.24	610.21	610.02	609.97	609.78	609.66	609.33
9	610.25	610.17	610.14	609.94	609.89	609.69	609.58	609.22

Beam No.	a	b	c	d
1	0.432	0.356	0.139	0.133
2	0.597	0.517	0.296	0.218
3	0.761	0.678	0.454	0.299
4	0.880	0.793	0.562	0.355
5	0.894	0.803	0.570	0.358
6	0.907	0.813	0.575	0.361
7	0.938	0.840	0.598	0.386
8	0.981	0.879	0.634	0.428
9	1.029	0.925	0.673	0.477



CONSTRUCTION DIAGRAM

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

FRAMING PLAN
S.B.I. ROUTE 130 UNDERPASS

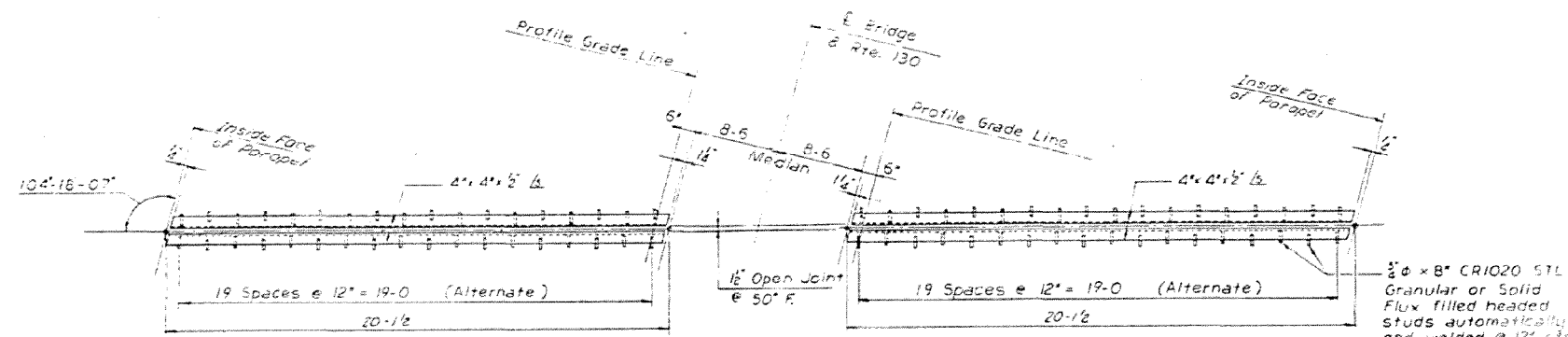
STATION 204+65.76
PROJECT NO.

FAI Rte. 70 CUMBERLAND CO. SECTION 18-47MB-1

KNOERLE, BENDER, STONE & ASSOCIATES, INC.
CONSULTING ENGINEERS - CHICAGO, ILL.

SHEET NO. 6 of 12

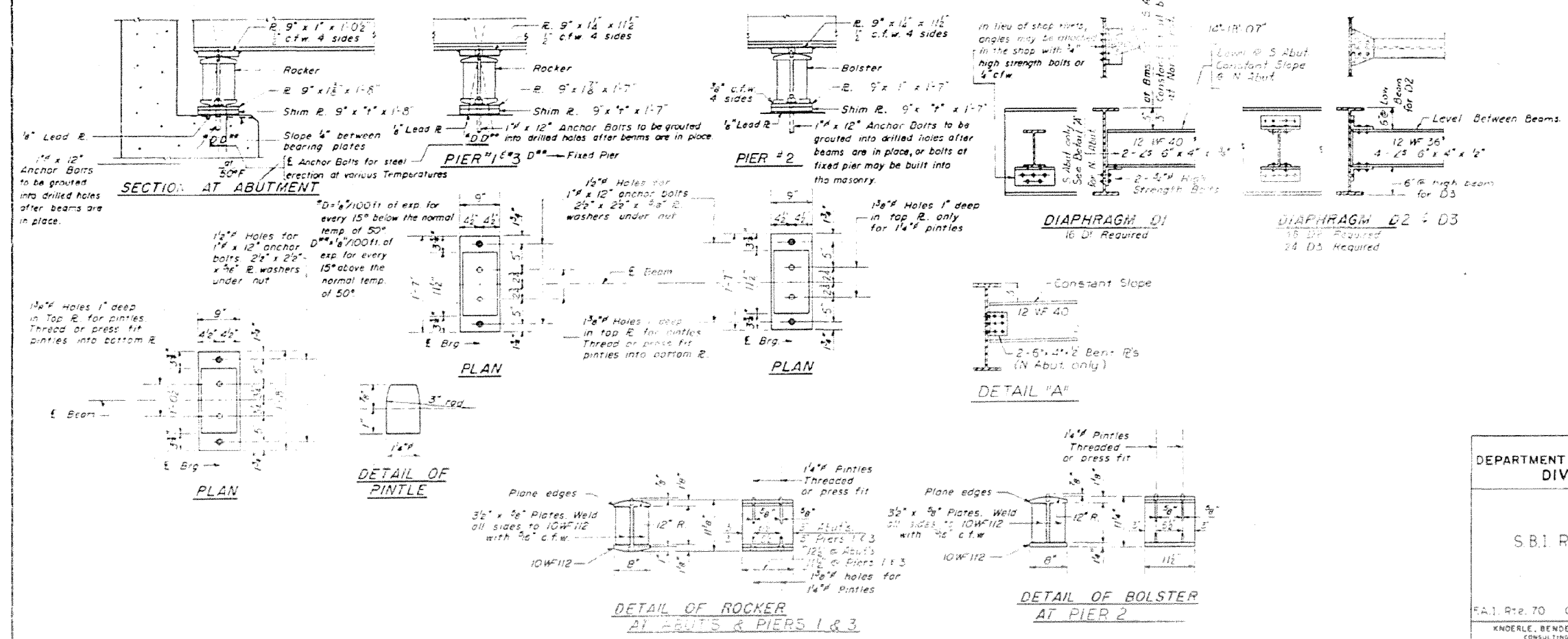
ROUTE NO	SECTION	COUNTY	TOTAL SHEETS	SHEET NO
SBI 130	18-	CUMBERLAND	63	31
F.A.I. 70	47MB-1			
FED. ROAD DIST. NO. 5	ILLINOIS PROJECT			



EXPANSION GUARD DETAILS
2- REQUIRED

SHIM "T" DIMENSIONS

Beam Location	1	2	3	4	5	6	7	8	9
S. Abutment	—	—	—	5/8"	5/8"	5/8"	—	—	—
Pier No. 1	—	—	1/8"	5/8"	5/8"	5/8"	—	—	—
Pier No. 2	—	—	—	5/8"	1/2"	1/2"	1/2"	1/4"	—
Pier No. 3	5/8"	—	—	5/8"	—	5/8"	—	—	—
N. Abutment	—	—	—	5/8"	5/8"	—	—	—	—



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

STEEL DETAILS
S.B.I. ROUTE 130 UNDERPASS

STATION 204+65.76
PROJECT NO.

F.A.I. Rte. 70 CUMBERLAND CO. SECTION 18-47MB-1

KNOERLE, BENDER, STONE & ASSOCIATES, INC.
CONSULTING ENGINEERS - CHICAGO, ILL.

SHEET NO. 7 OF

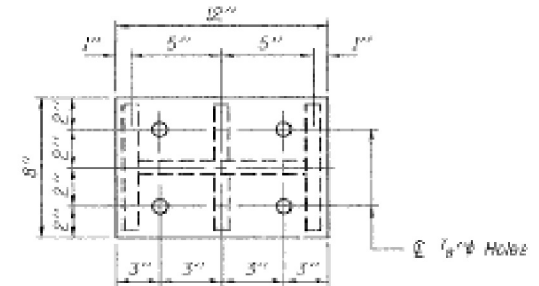
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BEAM REACTIONS

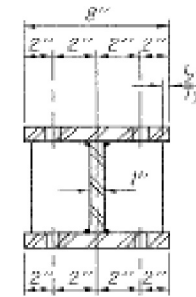
RP	(K)	10.4
SP	(K)	3.8
R1	(K)	33.3
Imp.	(K)	100.0
R (Total)	(K)	57.5

Notes:

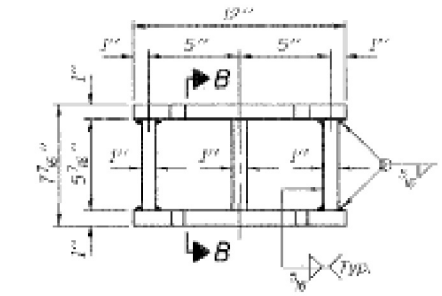
Diaphragm removal and reinstallation may be required to facilitate drilling holes. Cost included with Furnishing and Erecting Structural Steel.
New steel extensions, shim plates and connection bolts are included with Furnishing and Erecting Structural Steel.
Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions. Min. jack capacity = 30 Tons.
Anchor bolts shall be ASTM F1554 all-thread for an Engineer-approved alternate material of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
Anchor bolts for Type II bearings shall be placed in holes drilled through the bottom bearing plate after members are in place. Side retainers shall be placed after bolts are installed.
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
Side retainers shall be included in the cost of Elastomeric Bearing Assembly, Type II.
The 1/2" PTFE 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 MM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.
Bonding of 1/2" PTFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.



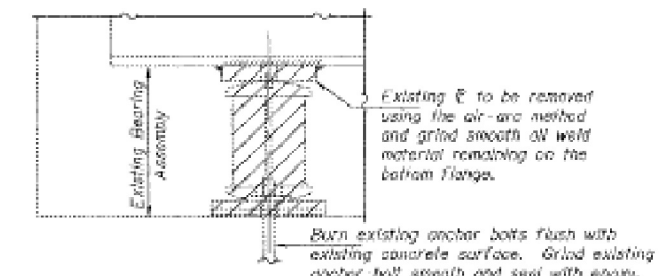
PLAN TOP AND BOTTOM PLATE



SECTION B-B



STEEL EXTENSION DETAIL



EXISTING BEARING REMOVAL DETAIL

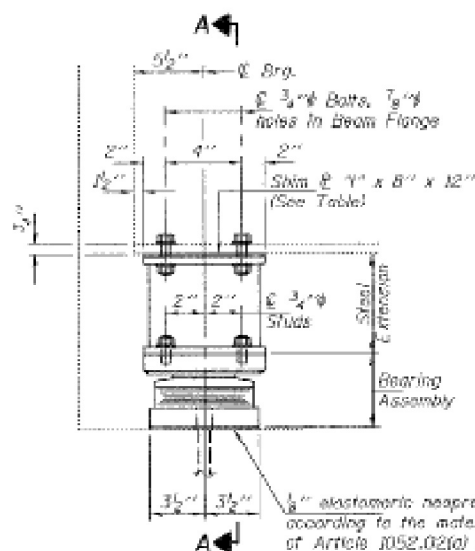
Cost included with Jack and Remove Existing Bearings.

BILL OF MATERIAL

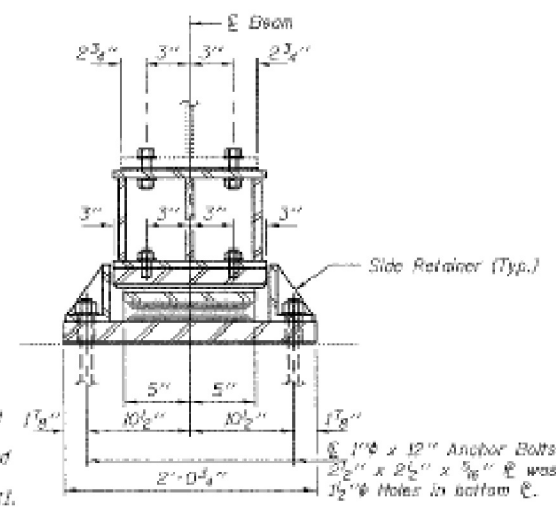
Item	Unit	Total
Elastomeric Bearing Assembly, Type II	Each	38
Jack and Remove Existing Bearings	Each	38
Furnishing and Erecting Structural Steel	Pound	1920
Anchor Bolts, 1 1/2"	Each	36

BEARING REPLACEMENT DETAILS
IL ROUTE 130
SN 018-0025

SHEET NO. 2	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2 SHEETS	116	(18-47HB-11BR)	CUMBERLAND	26	23
			CONTRACT NO. 74346		
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

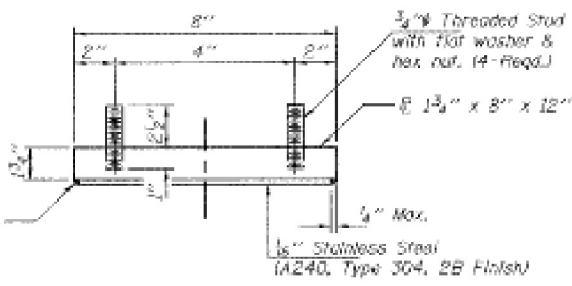


ELEVATION AT ABUTMENT

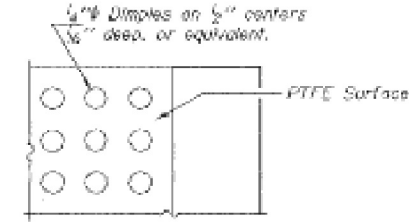


SECTION A-A

TYPE II TFE ELASTOMERIC EXP. BRG.



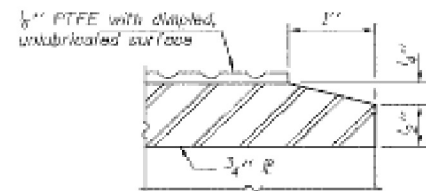
TOP BEARING ASSEMBLY



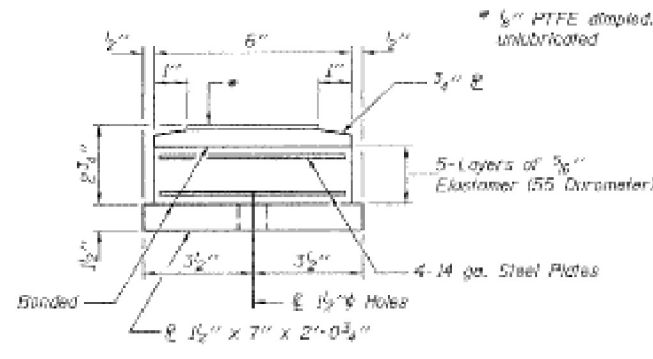
PLAN-PTFE SURFACE

SHIM PLATES

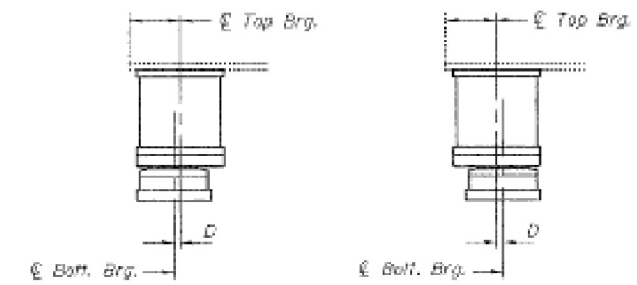
Abut.	Beam	7"
South	4, 5, 6	5/8"
North	4	3/8"
North	5	5/8"



SECTION THRU PTFE

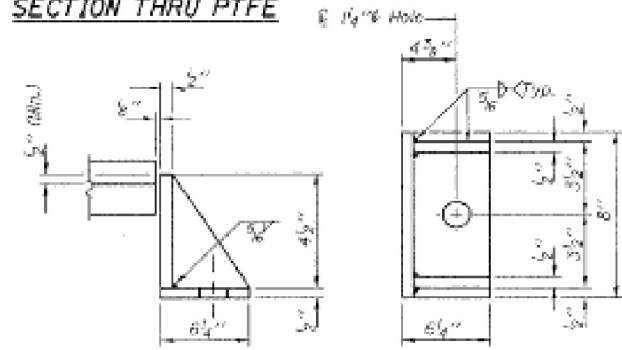


BOTTOM BEARING ASSEMBLY



SETTING ANCHOR BOLTS AT EXP. BRG.

D = 1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.



SIDE RETAINER

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

DESIGNED	VHV	APRIL 30, 2010
CHECKED	AJB	EXAMINED
DRAWN	Kyle M. Steffen	PASSED
CHECKED	VHV	AJB

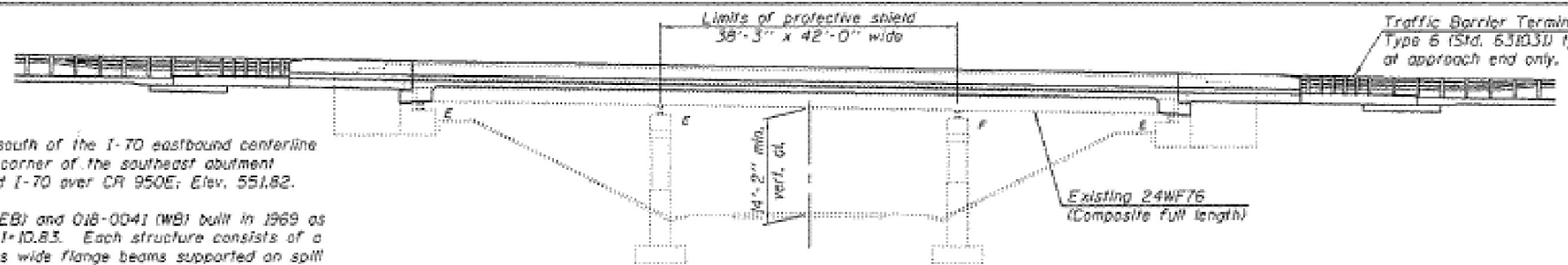
TYII/REPS 11-01-2006

F.A.I. RTE. 70 & F.A.P. RTE. 130

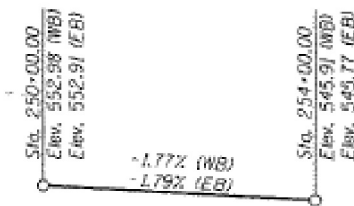
Benchmark: BM 803 - Station 251+35, 22' south of the I-70 eastbound centerline of roadway, chiseled square on the northeast corner of the southeast abutment wingwall on S.N. 018-0040, carrying eastbound I-70 over CR 950E; Elev. 551.82.

Existing structure: Structure No. 018-0040 (EB) and 018-0041 (WB) built in 1969 as F.A.I. Rte. 70, Section 18-45HB-1 at Sta. 251+10.83. Each structure consists of a reinforced concrete deck on 3 span continuous wide flange beams supported on a spill through abutments and multi-column piers. 101'-11" back-to-back abutments, 42'-0" out-to-out. Deck is to be removed and replaced. Traffic is to be maintained utilizing stage construction.

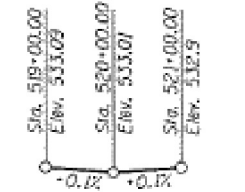
Salvage: None



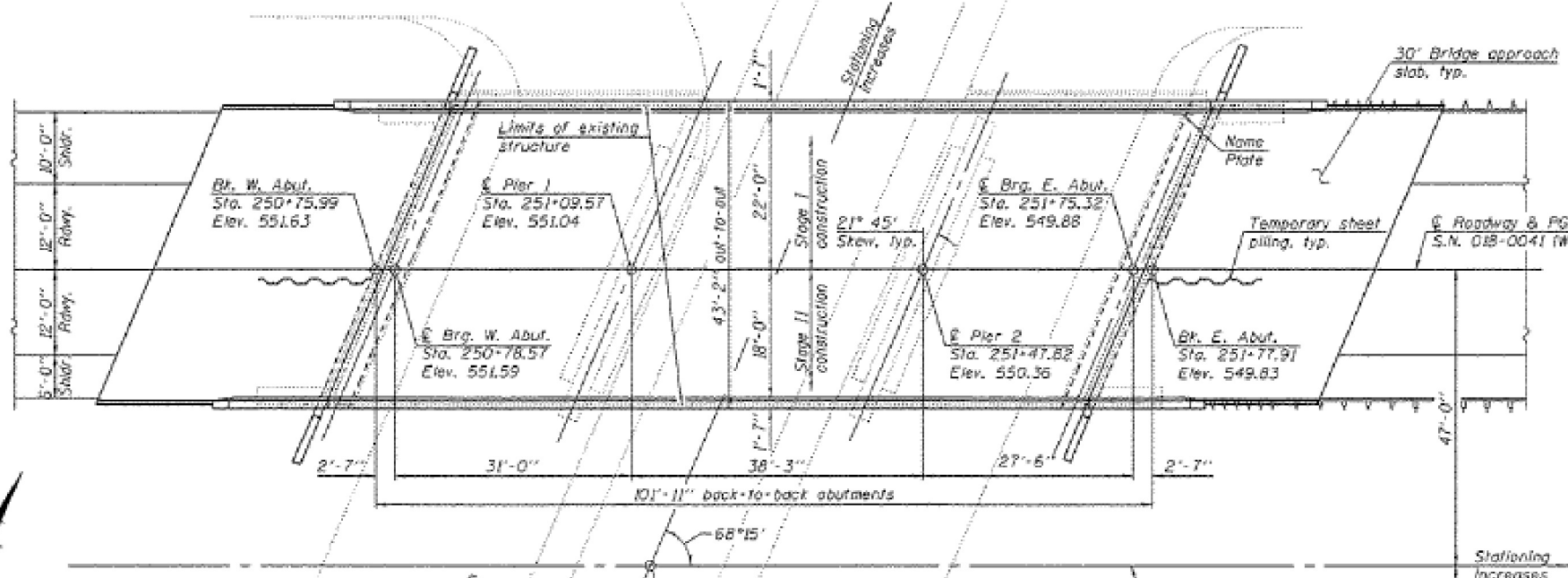
ELEVATION



PROFILE GRADE
F.A.I. Rte. 70



PROFILE GRADE
F.A.S. Rte. 1657



PLAN

DESIGN SPECIFICATIONS
2002 AASHTO Standard Specifications
for Highway Bridges

DESIGN STRESSES

FIELD UNITS (New construction)
f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)

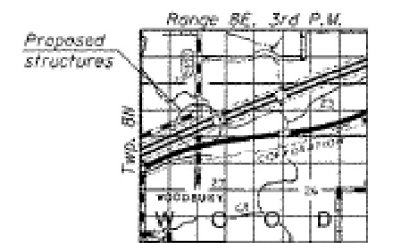
FIELD UNITS (Existing construction)
f'c = 3,500 psi
fy = 40,000 psi (Reinforcement)
fy = 36,000 psi (Structural steel)

LOADING HS20-44 & ALT.

Allow 50w/sq. ft. for
future wearing surface.

SEISMIC DATA

Seismic Performance Category (SPC) = A
Horizontal Bedrock Acceleration Coefficient (A) = 0.065 g
Site Coefficient (S) = 1.0



LOCATION SKETCH

GENERAL PLAN & ELEVATION
I-70 OVER F.A.S. ROUTE 1657
F.A.I. ROUTE 70 - SEC. (18-45HB-1)BR
CUMBERLAND COUNTY
STATION 251+09.95
STRUCTURE NO. 018-0040 (EB)
STRUCTURE NO. 018-0041 (WB)



EXPIRES 11-30-2014

DESIGNED - <i>David G. Clark</i>	EXAMINED - <i>James F. [Signature]</i>	DATE - 9/16/2014
CHECKED - <i>Michael A. [Signature]</i>	PASSED - <i>[Signature]</i>	
DRAWN - <i>Michael A. [Signature]</i>		
CHECKED - <i>[Signature]</i>		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET NO. 1 OF 36 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	18-45HB-1BR	CUMBERLAND	43	8
			CONTRACT NO. 7418T	
ILLINOIS FED. AID PROJECT				

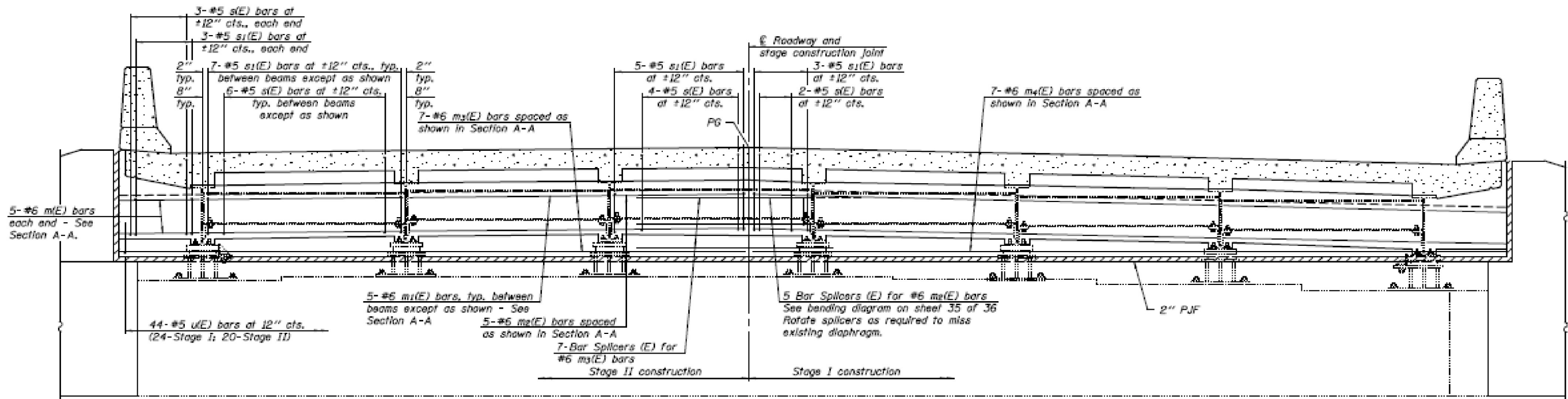
• F.A.I. RTE. 70 & F.A.P. RTE. 130

FILE NAME =	USER NAME = steffennik	DESIGNED -	REVISED -
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	PLOT DATE = 7/23/2015	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

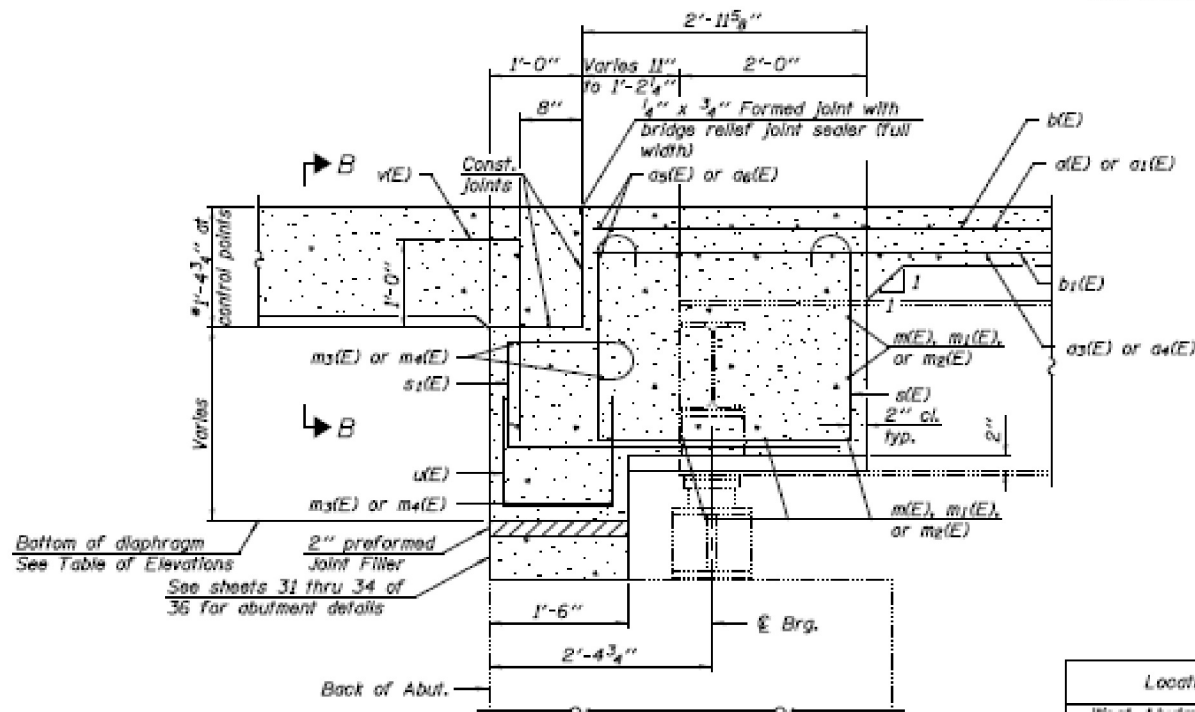
SCALE: N/A	SHEET 1 OF 3 SHEETS	STA. TO STA.
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	D7 BRIDGE PAINTING 2016-	CUMBERLAND	15	8
			CONTRACT NO. 74726	
ILLINOIS FED. AID PROJECT				



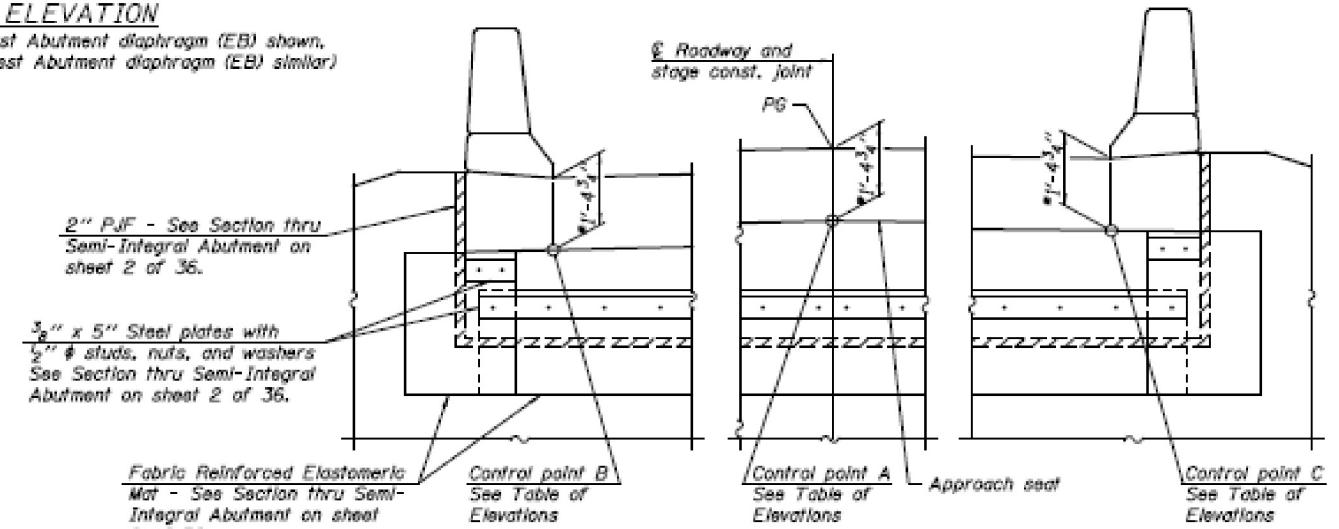
DIAPHRAGM ELEVATION

(West Abutment diaphragm (WB) or East Abutment diaphragm (EB) shown, East Abutment diaphragm (WB) and West Abutment diaphragm (EB) similar)



SECTION A-A

(Horizontal dimensions are of right L's to abutment).



VIEW B-B

(Showing approach seat control point locations, 2\"/>

TABLE OF ELEVATIONS

Location	Bottom of Diaphragm	Control Point A	Control Point B	Control Point C
West Abutment (WB)	548.04	550.24	550.06	549.69
East Abutment (WB)	548.28	548.48	548.29	547.92
West Abutment (EB)	548.71	550.83	550.39	550.59
East Abutment (EB)	546.98	549.04	548.60	548.80

Notes:

- Reinforcement bars in diaphragm are billed with superstructure on sheet 16 of 36.
- Concrete in diaphragm is included with Concrete Superstructure on sheet 16 of 36.
- For details of bars s(E), s1(E), u(E), and v(E), see sheet 16 of 36.
- The s(E), s1(E), u(E), and v(E) bars shall be placed parallel to the beams.
- Splicing for these bars shall be at right angles to the beams.
- The approach slab seat shall have a constant slope determined from the control points shown.

DESIGNED - FESSEHA TEKLEHAIMANOT	EXAMINED - [Signature]
CHECKED - JOSIE ORTIZ-VARELA	PASSED - [Signature]
DRAWN - MICHAEL B. MOSSMAN	
CHECKED - F.T. / J.G.V. / G.R.A.	

DATE - SEPTEMBER 16, 2014	REVISED -
REVISED -	REVISED -
REVISED -	REVISED -
REVISED -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DIAPHRAGM DETAILS
STRUCTURE NO. 018 - 0040 (EB) & 018 - 0041 (WB)
SHEET NO. 17 OF 36 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	018-45HS-08R	CUMBERLAND	43	24
ILLINOIS FED. AID PROJECT			CONTRACT NO. 74187	

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		CHECKED -	REVISED -
		DATE -	REVISED -

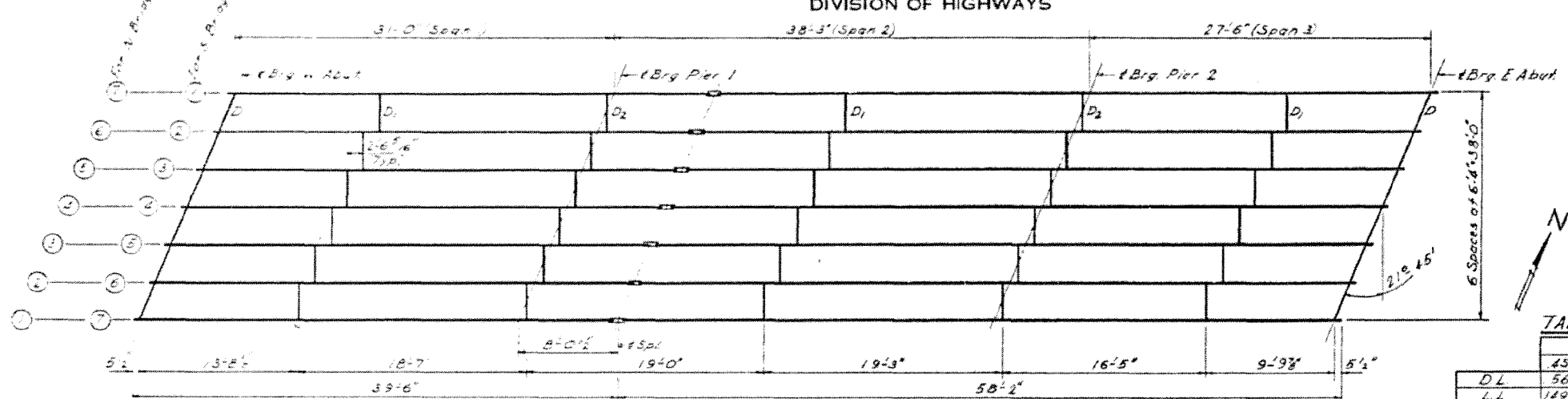
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PLAN
STRUCTURES 018-0040 & 018-0041
SCALE: N/A SHEET 2 OF 3 SHEETS STA. TO STA.

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	018-45HS-08R	CUMBERLAND	43	24
ILLINOIS FED. AID PROJECT			CONTRACT NO. 74726	

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

DATE	18-45	PROJECT	CUMBERLAND	23	10	SHEET NO. 5
NO. 70	18-45	SECTION	SEC 18-45NB-1	STATION	25+00.00	13 SHEETS



STRUCTURAL STEEL FRAMING PLAN
All BEAMS 24 WF 76

TABLE OF MOMENTS & REACTIONS

MOMENTS	REACTIONS								
	4Sp.1	Pier 1	5Sp.2	Pier 2	4Sp.3	W. Abut.	Pier 1	Pier 2	E. Abut.
DL	56.19	105.88	55.50	97.22	38.61	9.70	12.82	31.02	8.11
L.L	149.39	119.78	148.57	120.94	156.18	27.15	7.3	36.15	25.87
Imp	44.82	35.93	44.57	36.28	46.86	8.14	16.72	10.84	7.76
Total	250.34	261.59	248.64	254.44	241.65	44.99	26.84	78.01	41.74

Moments are in ft.kips Reactions are in kips

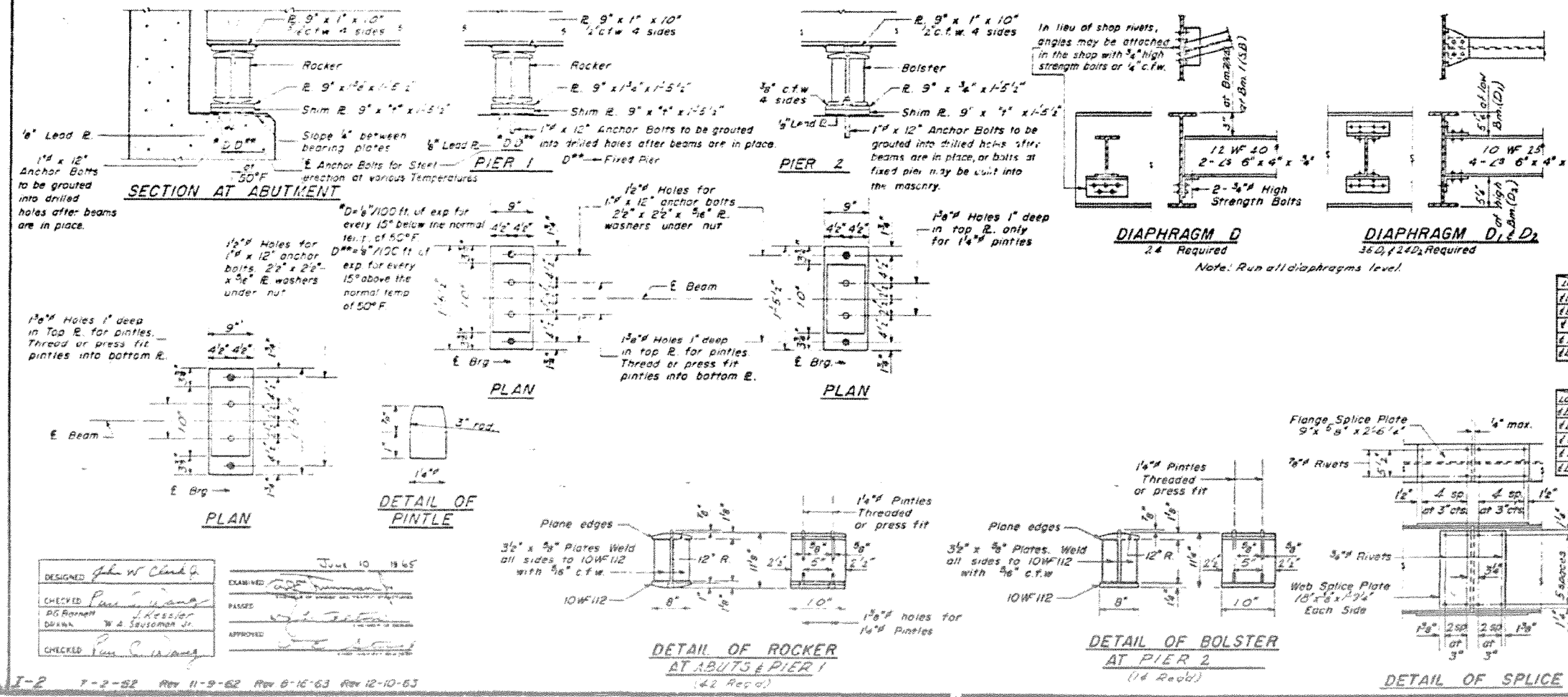


TABLE OF 'E' VALUES

NORTH BRIDGE

Loc.	BM	BM 1	BM 2	BM 3	BM 4	BM 5	BM 6	BM 7
4 Brg. W. Abut.	0	0	1/2	1/2	0	0	0	0
4 Brg. Pier 1	0	0	1/2	1/2	0	0	0	0
4 Brg. Pier 2	0	0	1/2	1/2	0	0	0	0
4 Brg. E. Abut.	0	0	1/2	1/2	0	0	0	0

SOUTH BRIDGE

Loc.	BM	BM 1	BM 2	BM 3	BM 4	BM 5	BM 6	BM 7
4 Brg. W. Abut.	0	0	0	0	0	0	0	0
4 Brg. Pier 1	0	0	0	0	0	0	0	0
4 Brg. Pier 2	0	0	0	0	0	0	0	0
4 Brg. E. Abut.	0	0	0	0	0	0	0	0

ELEVATION TOP OF WF

NORTH BRIDGE

Loc.	BM	BM 1	BM 2	BM 3	BM 4	BM 5	BM 6	BM 7
4 Brg. W. Abut.	550.66	550.74	550.78	550.75	550.65	550.48	550.31	
4 Brg. Pier 1	550.08	550.16	550.20	550.17	550.07	549.90	549.73	
4 Splice	549.93	550.01	550.05	550.02	549.92	549.75	549.58	
4 Brg. Pier 2	549.24	549.51	549.53	549.57	549.47	549.25	549.08	
4 Brg. E. Abut.	548.97	549.05	549.09	549.06	548.96	548.79	548.62	

SOUTH BRIDGE

Loc.	BM	BM 1	BM 2	BM 3	BM 4	BM 5	BM 6	BM 7
4 Brg. W. Abut.	551.07	551.25	551.37	551.43	551.42	551.34	551.25	
4 Brg. Pier 1	550.49	550.67	550.79	550.85	550.84	550.76	550.67	
4 Splice	550.34	550.52	550.64	550.70	550.69	550.61	550.52	
4 Brg. Pier 2	549.84	550.02	550.14	550.20	550.19	550.11	550.02	
4 Brg. E. Abut.	549.38	549.56	549.68	549.74	549.73	549.65	549.56	

DESIGNED: John W. Clark
 CHECKED: Paul S. ...
 DRAWN: W. A. Sautman Jr.
 APPROVED: ...
 DATE: June 10, 1965

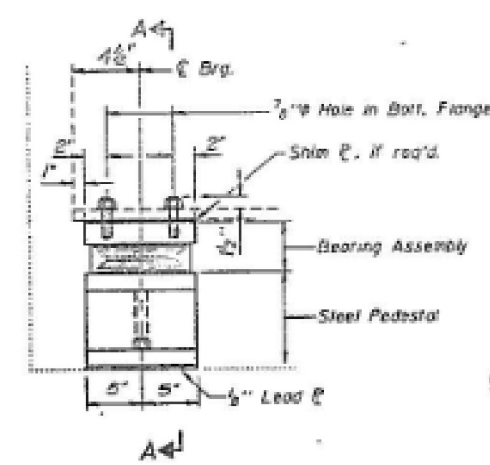
I-2 7-2-52 Rev 11-9-62 Rev 8-16-63 Rev 12-10-63

STRUCTURAL STEEL
F.A.I. RTE. 70 SEC 18-45NB-1
CUMBERLAND COUNTY
STATION 25+00.83

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

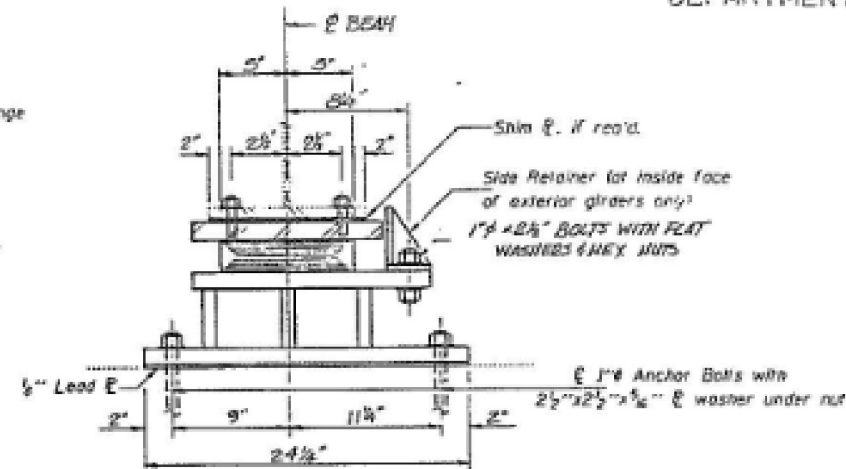
DATE	BY	NO.	REV.
01-17-10	CLARET CAMPBELL	10	10

*DISTRICT 5 BRIDGE REPAIR 1991-1



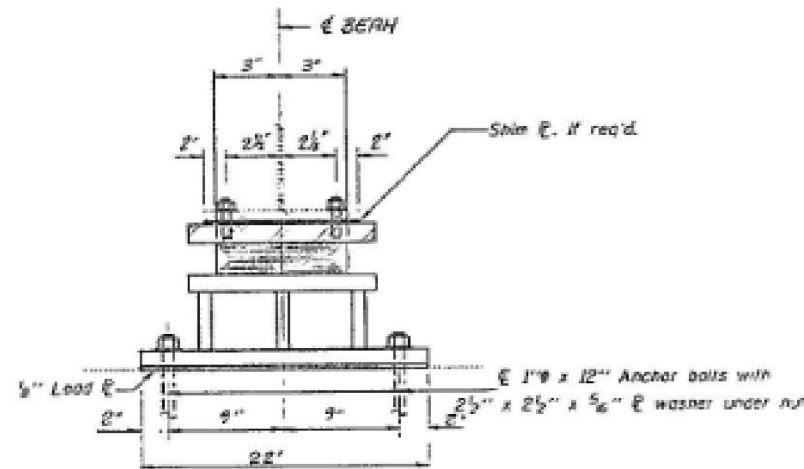
ELEVATION AT ABUT.

TYPE I ELASTOMERIC EXP. BRG.

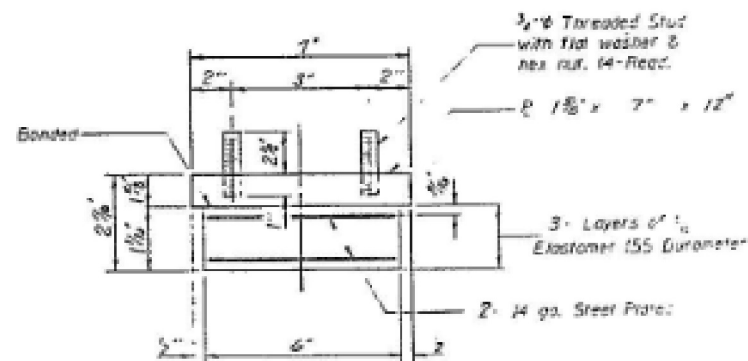


SECTION A-A
(Showing Exterior Girder)

TYPE I ELASTOMERIC EXP. BRG.

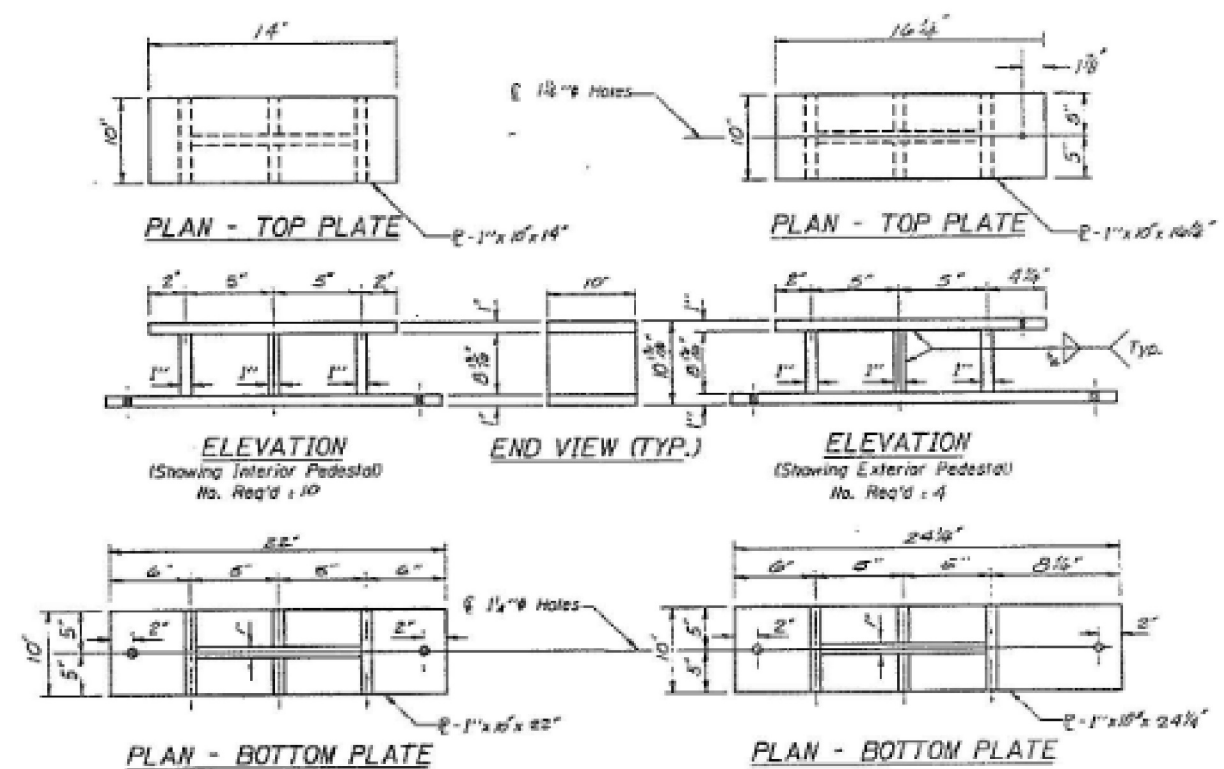


SECTION A-A
(Showing Interior Girder)



BEARING ASSEMBLY

Note: Shim plates shd not be placed under Bearing Assen't.



BEAM REACTIONS

Live Load	27.2 KIPS
Dead Load	9.7 KIPS
Impact	8.1 KIPS

Note: Diaphragm removal and replacement may be required to facilitate drilling holes in bottom flange for bearing attachment. Cost is incidental to F.B.E. Struct. Sies.

BILL OF MATERIAL

Item	Unit	Qty
Elastomeric Bearing Assembly Type I	Eac	14
Furnishing and Erecting Structural Sies	Lcs	29.85

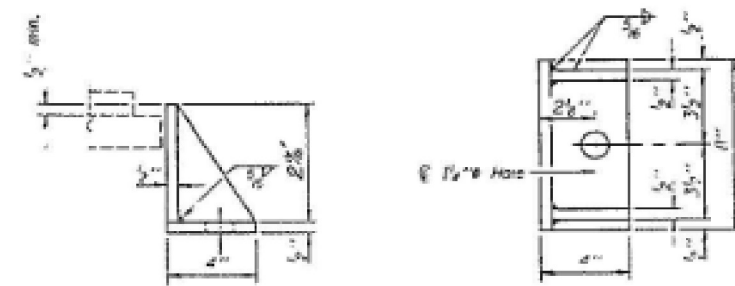
EAST ABUTMENTS
ELASTOMERIC BEARINGS
TYPE I 6" x 10"

F.A.I. ROUTE 70 SECTION 18-454B-1
CUMBERLAND COUNTY
STATION 251+10.81

(SIES. 08-000EB (0041H.B))

DESIGNED G.J. SHOULDERS	EMPOWERED
CHECKED	DESIGNED BY STRUCTURAL DIVISION
DRAWN T. B. CARBONE	APPROVED
CHECKED	SECTION OF REPORT

I-2-E1 12-1-82



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

Note: New side retainers and anchor bolts are included in Furn. and Erect. Structural Sies.

F.A.I. RTE. 70 & F.A.P. RTE. 130

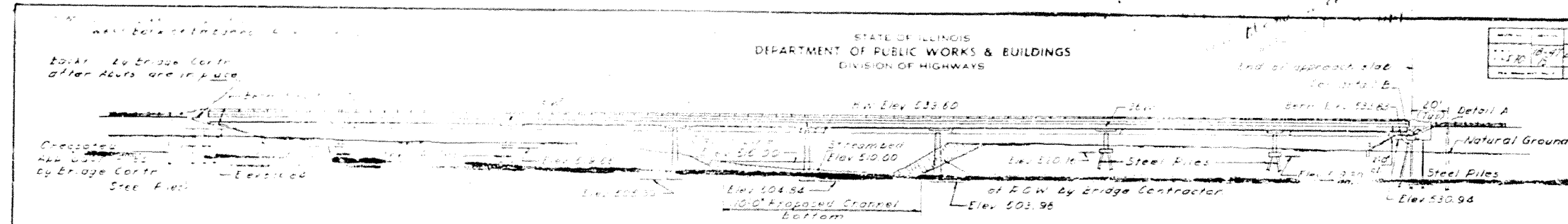
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Default	PLOT SCALE = 100.0000' / in.	CHECKED -	REVISED -
	PLOT DATE = 7/23/2015	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

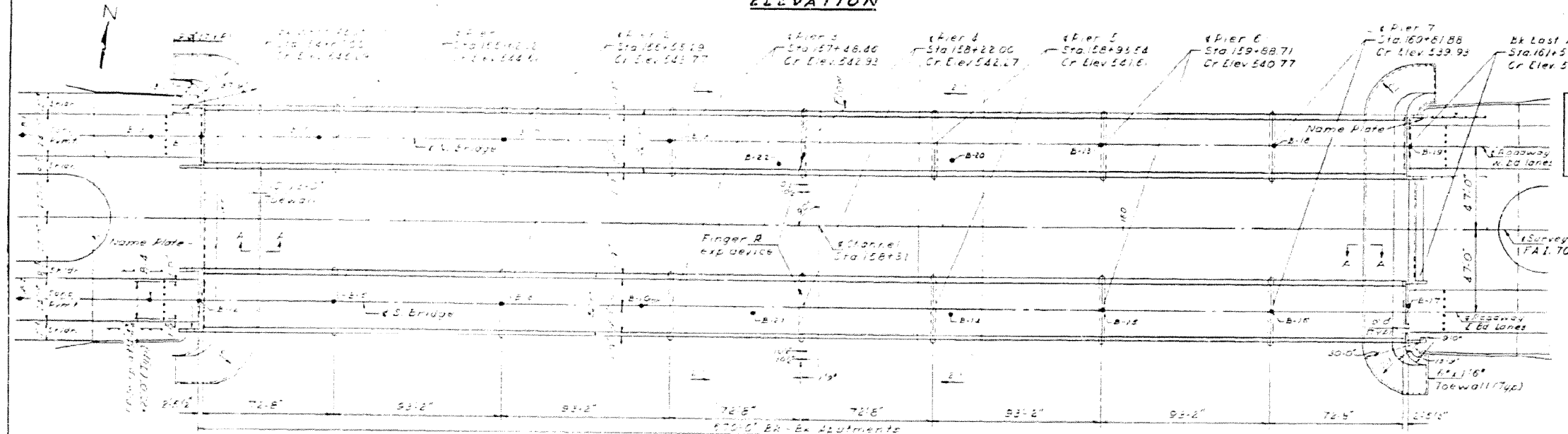
SCALE: N/A	SHEET 2 OF 3 SHEETS	PLAN STRUCTURES 018-0040 & 018-0041	F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
			70	D7 BRIDGE PAINTING 2016-1	CUMBERLAND	15	10B
							CONTRACT NO. 74726
							ILLINOIS FED. AID PROJECT

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

SHEET NO. 1	19 SHEETS
CHAMBERLAIN 23	5
1-15-70	457/107

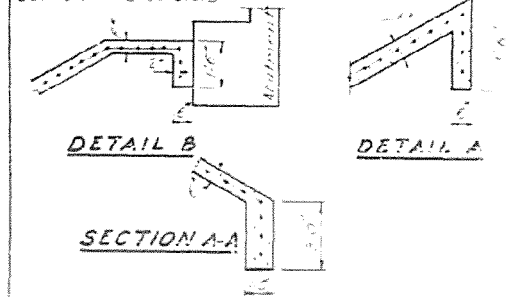


ELEVATION



P.L.A.N.

WATERWAY INFORMATION
 270,000 Acres
 Character: rolling, hilly wooded
 Required Opening: 150 yd
 Present Opening: 150 yd
 Proposed Opening: 150 yd
 Structure water elev: 533.60
 Low water elev: 510.00



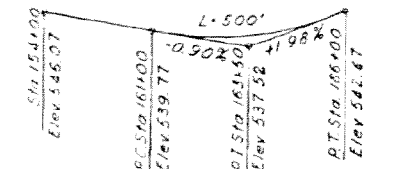
DESIGNED: [Signature]
 CHECKED: [Signature]
 DRAWN: [Signature]
 DATE: 8/10/2015

GENERAL NOTES

1. This structure is to be built in concrete and all steel must be free of rust, dirt, oil, and other impurities.
 2. The contractor shall be responsible for obtaining all necessary permits.
 3. Steel reinforcement shall be placed in accordance with Art 519 of the Standard Specifications.
 4. Spacing of reinforcement shall be as shown on drawings unless otherwise noted.
 5. All structural steel shall be painted with a rust-inhibiting paint.
 6. The contractor shall provide formwork for all concrete work.
 7. All concrete shall be placed in one continuous pour unless otherwise noted.
 8. The contractor shall provide all necessary safety equipment and personnel.
 9. The contractor shall be responsible for obtaining all necessary permits.
 10. The contractor shall be responsible for obtaining all necessary permits.

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Class A Inspec for Structures	Sq Yds		277	277
Rock Exc. - Structures	Sq Yds		112	112
Class A Concrete	Cu Yds	1273	1273	2546
Class B Concrete	Cu Yds	1273	1273	2546
Protective Coat	Sq Yds	2546		2546
Structural Steel	Lbs	2546		2546
Aluminum Handrail	Lin Ft	2546		2546
Reinforcement Bars	Lbs	2546		2546
Cast-in-place Piles (up to 30')	Lin Ft		2546	2546
Steel Piles (BBP36)	Lin Ft		2546	2546
Test Piles (Steel) (BBP36)	Lbs		2546	2546
Name Plates	EA		2546	2546
Slope Wall (C)	Sq Yds		2546	2546
Corridors (Pier 2)	EA		2546	2546
Corridors (Pier 4)	EA		2546	2546
Corridors (Pier 5)	EA		2546	2546
Corridors Excavation	Cu Yds		2546	2546
Bridge Seat Sealant	LS		2546	2546



DESIGN STRESSES

1. 1400 psi (Wind), 1400 psi all other
 2. 20,000 psi (Main)
 3. 20,000 psi (Struct)
 4. 75 psi (Figs)
 5. 10
 Max Ftg Pressure P-3, 5.10 ksi
 P-4, 4.83 ksi P-5, 4.82 ksi
 6. 4.75 Composite
 7. 4.75 Non-Composite
 LOADING HS20-44 & ALT.

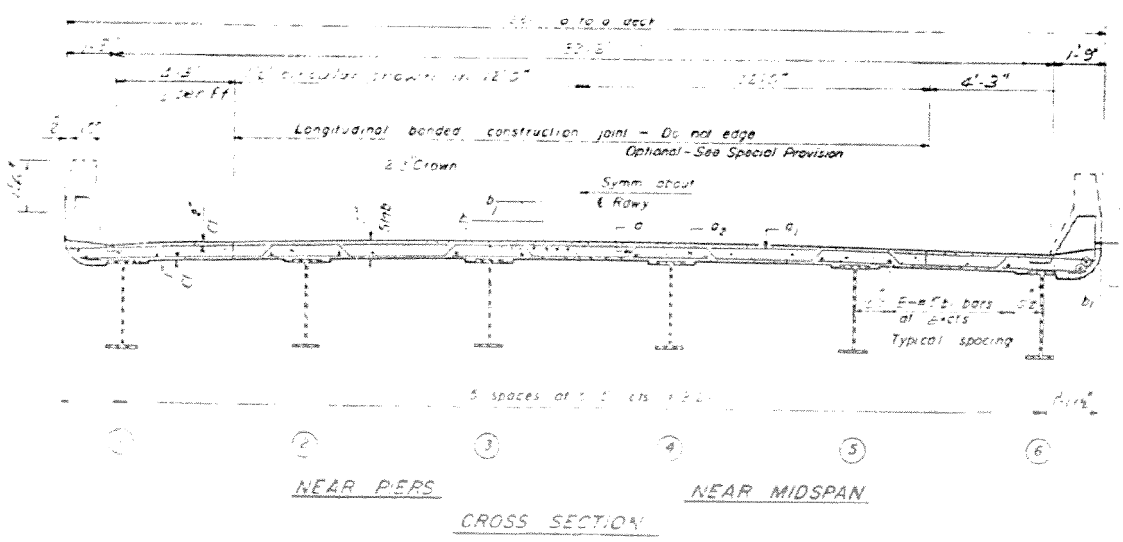
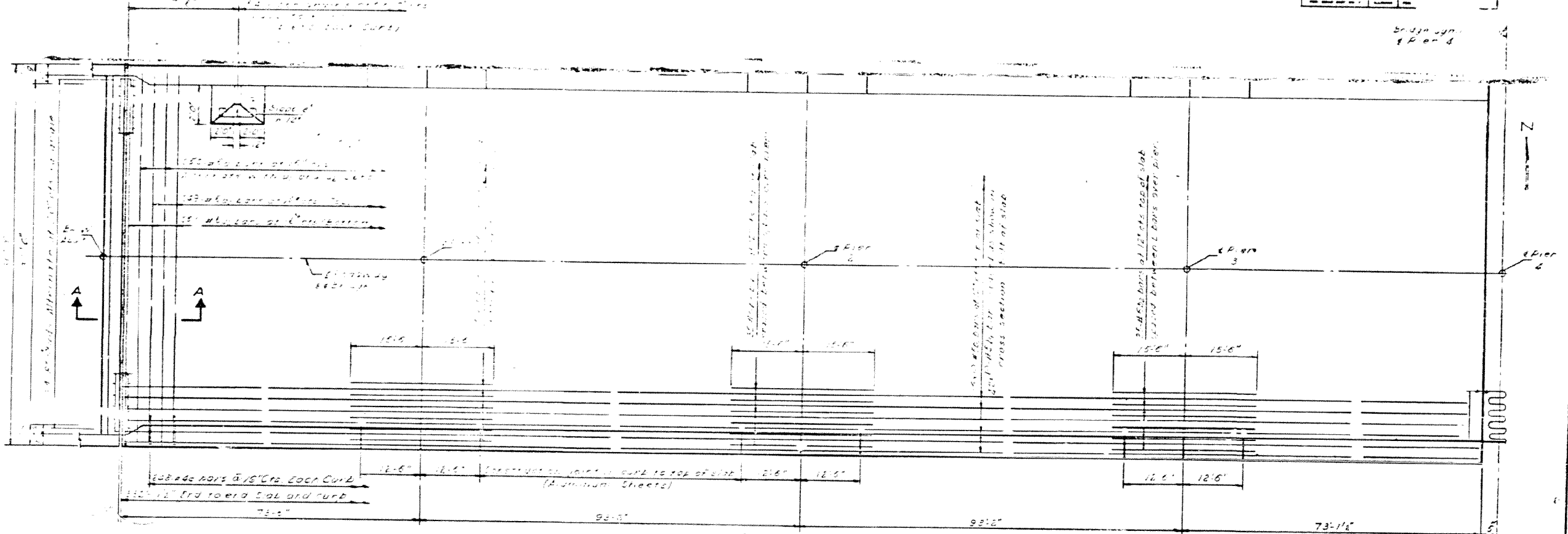
GENERAL PLAN & ELEVATION
 F.A.I. RT. 70 OVER EMBARRAS RIVER
 PROJ. 1-15-70-4(51)107
 F.A.I. RT. TO SEC. 18-47B
 CUMBERLAND COUNTY
 STATION 158+31

NOTE:
 Bars and cables plus 20% S.F. etc. indicates
 20% excess bars with 3 lengths per line
 M - No. 10 @ 20 dia

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

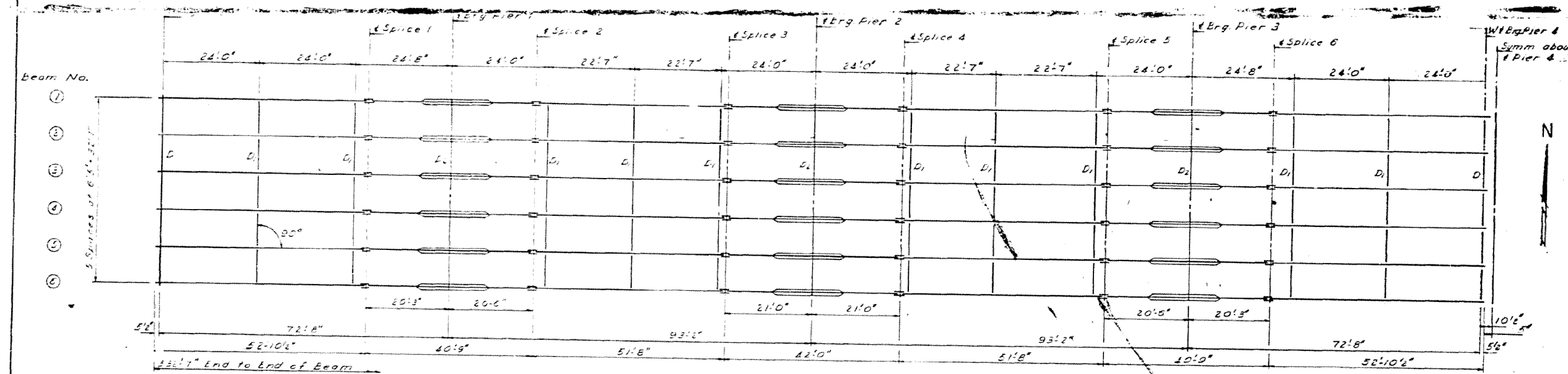
NO.	DATE	BY	REVISION
1	11-17-10	J. Messer	Initial
2			

SHEET NO. 4
 19 SHEETS



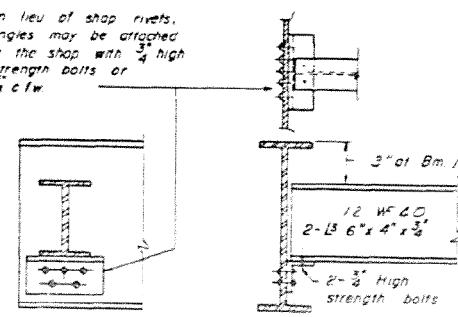
DESIGNED	EXAMINED
CHECKED	PREPARED
DRAWN	APPROVED
CHECKED	

SUPERSTRUCTURE
 NORTH & SOUTH BRIDGES
 I-74 RT TO SEC 10-67B
 CUMBERLAND COUNTY
 STATION 158+31



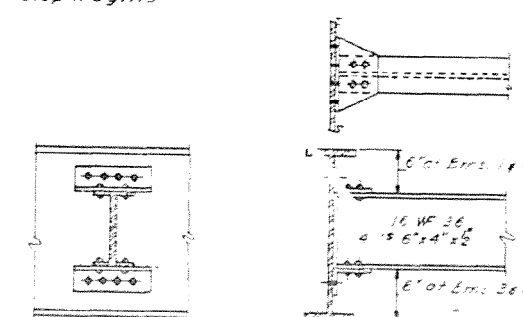
STRUCTURAL STEEL FRAMING PLAN
(All Beams 36W170)

In lieu of shop rivets, angles may be attached in the shop with 3/4" high strength bolts or 1/2" clw

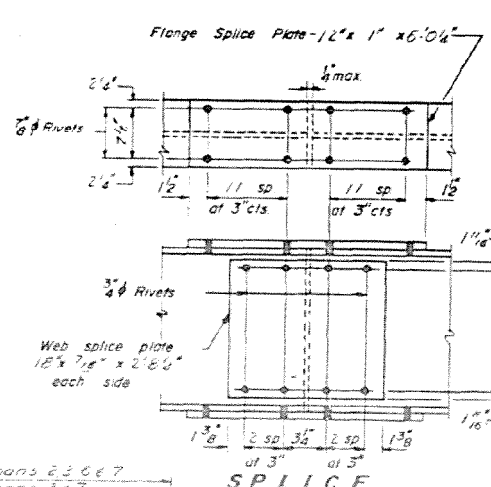


DIAPHRAGM D
20 Required

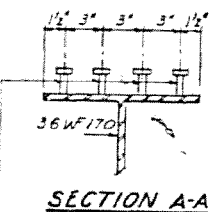
Note: Run all diaphragms level.



DIAPHRAGM D1 & D2



SPLICE



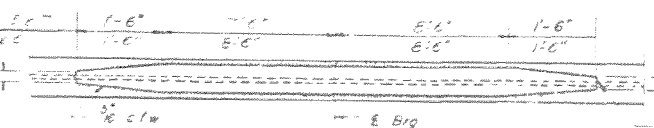
SECTION A-A

3/4" x 3/4" granular or solid flux filled headed studs, automatically end welded to W.
Est WT = 5420 LBS.
Included in structural steel req'd number per beam = 184

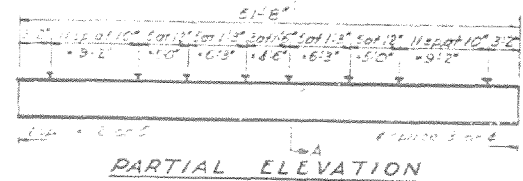
TOP OF WF ELEVATIONS *

Location	Bm 1or6	Bm 2or5	Bm 3or4
Brig. W. Abut.	544.49	544.62	544.69
Splice 1	543.93	544.08	544.15
Brig. Pier 1	543.78	543.91	543.98
Splice 2	543.60	543.73	543.80
Splice 3	543.18	543.36	543.33
Brig. Pier 2	542.94	543.07	543.14
Splice 4	542.75	542.88	542.95
Splice 5	542.29	542.42	542.49
Brig. Pier 3	542.10	542.23	542.30
Splice 6	541.91	542.04	542.11
W & Brig. Pier 4	541.49	541.62	541.69
E. Brig. Pier 4	541.49	542.62	541.69
Splice 7	540.95	541.08	541.15
Brig. Pier 5	540.78	540.91	540.98
Splice 8	540.60	540.73	540.80
Splice 9	540.13	540.26	540.33
Brig. Pier 6	539.94	540.07	540.14
Splice 10	539.76	539.89	539.96
Splice 11	539.29	539.42	539.49
Brig. Pier 7	539.10	539.23	539.30
Splice 12	538.91	539.04	539.11
Brig. E. Abut.	538.59	538.72	538.79

*For fabrication only



COVER PLATE



PARTIAL ELEVATION

STRUCTURAL STEEL
NORTH & SOUTH BRIDGES
F.A.I. RT. 70 SEC 18-418
CUMBERLAND COUNTY
STATION 158+31

DESIGNED: J. Schaefer
CHECKED: J. Schaefer
DRAWN: J. Schaefer
CHECKED: J. Schaefer

EXAMINED: J. Schaefer
PASSED: J. Schaefer
APPROVED: J. Schaefer

