

6-13-08 Letting, Item 077

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS
**PROPOSED
HIGHWAY PLANS**

F.A.S. ROUTE 502 (LEVERETT ROAD)

SECTION (86BR)BR

PROJECT NO. ACBHS-0502 (109)

SALINE BRANCH EAST OF LEVERETT

BRIDGE SUPERSTRUCTURE REPLACEMENT AND SUBSTRUCTURE REPAIR

CHAMPAIGN COUNTY

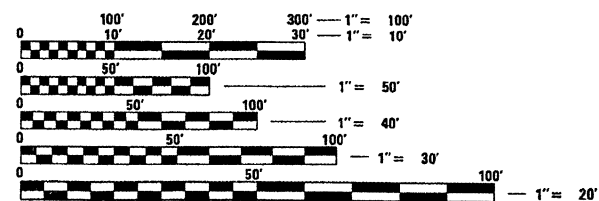
C-95-070-04

PROPOSED P.P.C. DECK BEAM
S.N. 010-0237
STA. 71 + 38.50
LENGTH = 93'-4"
HORIZ. CLR = 32'-0"
SKEW = 0 DEGREES

SECTION (86BR)BR
PROJECT BEGINS STA. 70 + 91.83

ADT: 3,950 (2006)
SU: 5.2%
MU: 4.6%
TOWNSHIP: SOMER TOWNSHIP
FUNCTIONAL CLASS: MAJOR COLLECTOR (NON-URBAN)

SECTION (86BR)BR
PROJECT ENDS STA. 71 + 85.17



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.

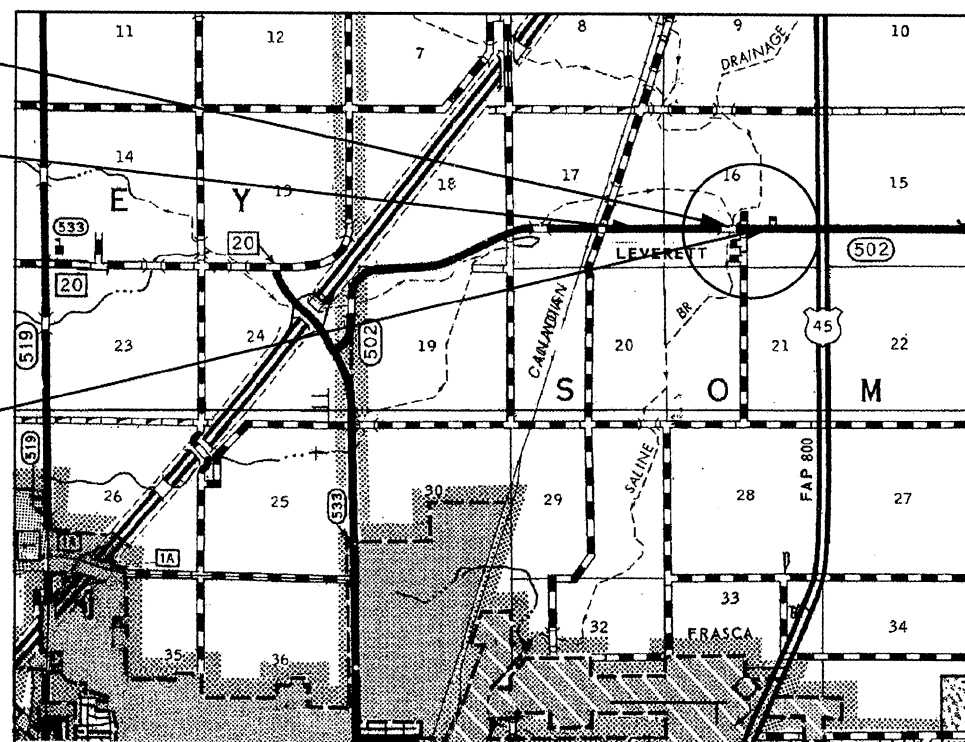
J.U.L.I.E.
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION
1-800-892-0123
OR 811

PROJECT ENGINEER: NANCY J. FASIG
PROJECT MANAGER: JASON W. STULTS
PHONE NUMBER: 217-465-4181

CONTRACT NO. 70426

010-0237

RANGE 9 E 3RD P.M.



PROJECT LOCATION MAP SCALE (IN MILES)

GROSS AND NET LENGTH OF PROJECT = 93.34 FEET = 0.018 MILES

ADT = 3,950 (2006)
5,400 (2026)

99.51.
10-25-08

TOWNSHIP 20 N.



F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
502	(86BR)BR	CHAMPAIGN	30	1
FED. ROAD DIST. NO.		ILLINOIS	CONTRACT NO. 70426	



LOCATION OF SECTION INDICATED THUS: -

STRAND ASSOCIATES, INC.
ENGINEERS
1170 SOUTH HOUBOLT ROAD
JOLIET, ILLINOIS 60431
(815) 744-4200

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED MARCH 24 2008
Joseph E. Lowe
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

May 9 2008
Eric E. Harn
ENGINEER OF DESIGN AND ENVIRONMENT

May 9 2008
Christine M. Reed
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

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OF THE STATE OF ILLINOIS

REGISTERED PROFESSIONAL ENGINEER
ANTHONY J. STANDISH
No. 062-056084
APR 11 2009

Benchmark: B.M. 4360-9 Brass disk on SW Wingwall SN 010-0237, 18' Rt. Sta. 70+92, Elev. 752.52

Existing Structure: Structure Number 010-0237 was built in 1980 as FAS 502, Section 86 BR. The three span structure consists of PPC deck beams on open abutments. The bk. to bk. abutment is 93'-4" and the o. to o. width is 33'-0". The existing superstructure shall be replaced with PPC deck beams. Existing abutments and piers shall be repaired. Traffic will be detoured during construction.

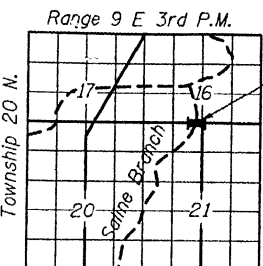
Salvage: Existing abutments and piers.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

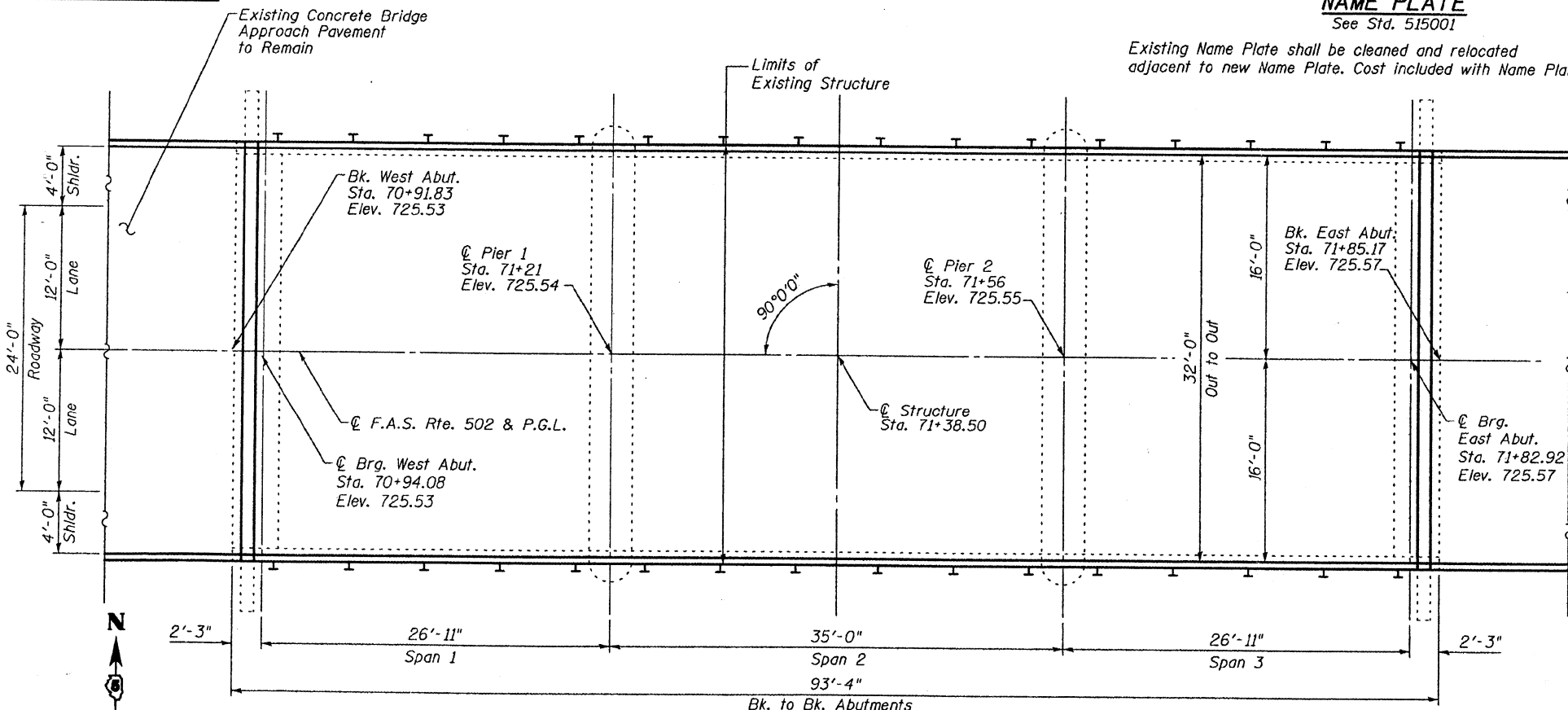
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET	SHEET NO.
F.A.S. 502	(86BR)BR	CHAMPAIGN	30	11	8 SHEETS
Contract # 70426					

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
40600100 Bituminous Materials (Prime Coat)	Gal	25	0	25
40600625 Leveling Binder (Machine Method), N50	Ton	8	0	8
40603310 Hot-Mix Asphalt Surface Course, Mix "C", N50	Ton	39	0	39
50101500 Removal Of Existing Superstructures	Each	1	0	1
50102400 Concrete Removal	Cu Yd	0	36	36
50300225 Concrete Structures	Cu Yd	0	36	36
50400305 Precast Prestressed Concrete Deck Beams (17" Depth)	Sq Ft	2875	0	2875
50800205 Reinforcement Bars, Epoxy Coated	Pound	0	3710	3710
50901050 Steel Railing, Type SM	Foot	180	0	180
51500100 Name Plates	Each	1	0	1
58300100 Portland Cement Mortar Fairing Course	Foot	693	0	693
59000200 Epoxy Crack Injection	Foot	0	36	36
X0322121 Sheet Waterproofing Membrane System	Sq Yd	328	0	328
X0325305 Structural Repair Of Concrete (Depth Equal To Or Less Than 5 Inches)	Sq Ft	0	427	427



LOCATION SKETCH



ELEVATION

NAME PLATE

See Std. 515001

Existing Name Plate shall be cleaned and relocated adjacent to new Name Plate. Cost included with Name Plates.

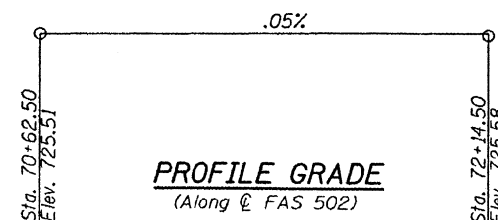
PLAN

EXISTING WATERWAY INFORMATION *

Drainage Area	45.88 sq. mi.
Discharge (Design Flood 30 yr.)	3040 c.f.s.
Design H.W. Q(30) Elev.	723.27
Existing Opening (Below 30 yr. HWE)	668 sq. ft.
Required Opening (Below 30 yr. HWE)	730 sq. ft.
Prop. Opening (Below 30 yr. HWE)	730 sq. ft.
Created Head for Design Flood	0.6 ft.
100 yr. Discharge	3875 c.f.s.
Q(100) H.W. Elev.	724.17
Created Head for 100 yr. Flood	0.8 ft.

* Note: Information per 1980 as-built construction plans. Elevations adjusted from NGVD29 (assumed) to NAVD88.

DESIGNED	FGE
CHECKED	JAR
DRAWN	KAS
CHECKED	AJS



PROFILE GRADE
(Along FAS 502)

NOTES:

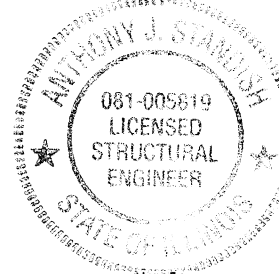
Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See Special Provisions. Reinforcement bars designated (E) shall be epoxy coated. Plan dimensions and details relative to existing plans are subject to routine variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished based upon the unit price bid for the work.

The Contractor is advised that the existing PPC Deck Beams are in a deteriorated condition with reduced load carrying capacity. It is the Contractor's responsibility to account for the condition of the beams when developing construction procedures for removal and replacement of the superstructure.

If the Contractor's procedure for existing beam removal and placement of new beams involves placement of cranes or other heavy equipment on existing or new beams, a detailed procedure shall be submitted to the Engineer for approval. The procedure shall include calculations, prepared and sealed by an Illinois Licensed Structural Engineer, verifying that the equipment and procedure used will not overstress the existing or new beams. To distribute load to multiple beams and protect the concrete, in all cases a double layer mat of heavy timbers shall be used at all times under crane tracks or wheels and any outriggers in the down position. If necessary, shims shall be used under the crane mat to ensure uniform contact with the underlying beams. Prior to placement of the timber mats on new beams, the following shall be done: placement and tightening of transverse tie assemblies, grouting and curing the dowel rods 24 hours minimum and grouting and curing the shear keys.

APPROVED
For Structural Adequacy Only

Ralph E. Andersen
Engineer of Bridges & Structures



GENERAL PLAN AND ELEVATION
LEVERETT ROAD OVER THE SALINE BRANCH
CHAMPAIGN COUNTY

F.A.S. ROUTE 502 - SEC. (86BR) BR

STATION 71+38.50

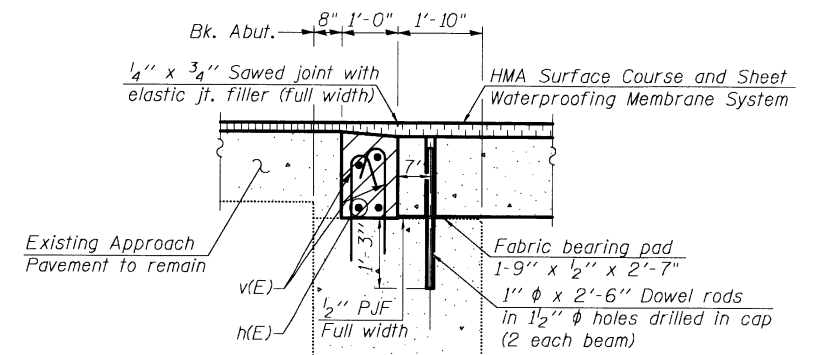
S.N. 010-0237

STRAND ASSOCIATES, INC.

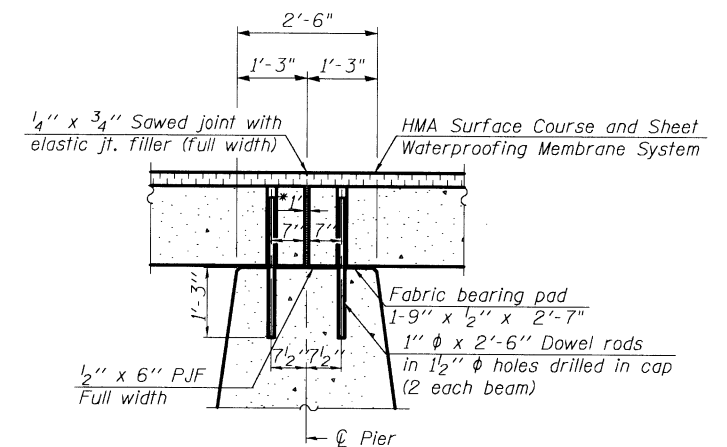
ILLINOIS STRUCTURAL NO. 081-005819 (Expires 11/30/08)

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 502	(B6BR)BR	CHAMPAIGN	30	12
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT-	

Contract # 70426



SECTION A-A THRU ABUTMENT



SECTION B-B THRU FIXED PIER

*1" Jt. shall be filled with non-shrink grout. 1" dimension may vary to accommodate tolerance in beam lengths.

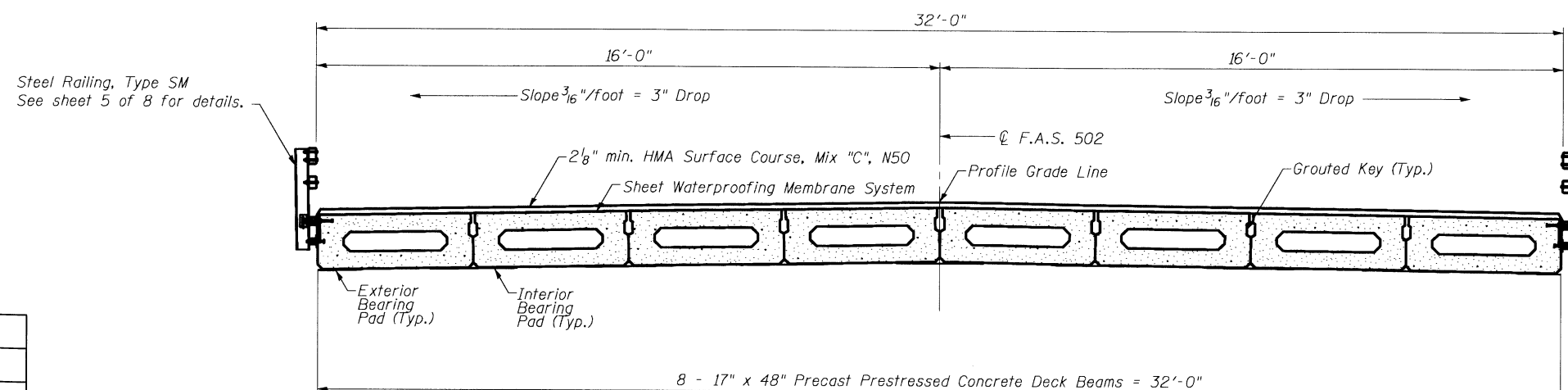
NOTES:

After beams have been erected, holes shall be drilled into substructure and anchor dowels placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure min. 24 hrs. prior to grouting the shear keys.

See sheet 4 of 8 for bearing pad details.

SUPERSTRUCTURE
LEVERETT ROAD OVER THE SALINE BRANCH
CHAMPAIGN COUNTY
F.A.S. ROUTE 502 - SEC. (86BR) BR
STATION 71+38.50
S.N. 010-0237

STRAND ASSOCIATES, INC.



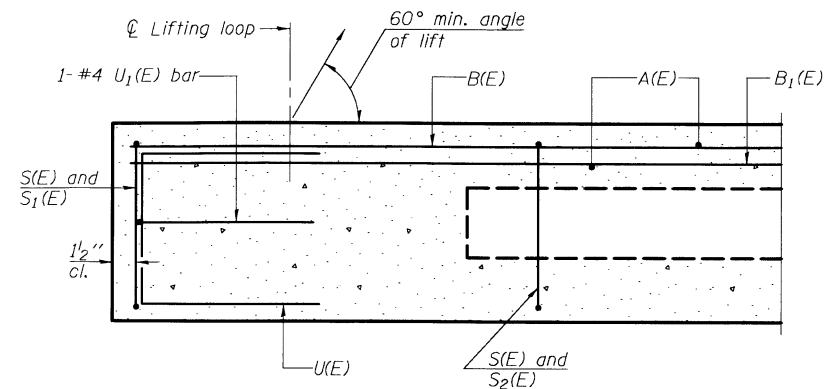
CROSS SECTION

DESIGNED	FGE
CHECKED	JAR
DRAWN	KAS
CHECKED	AJS

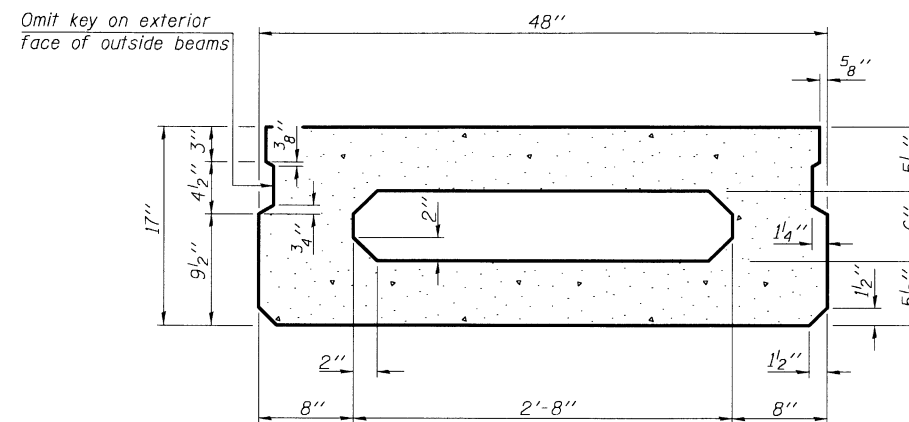
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 502	(86BR) BR	CHAMPAIGN	30	13
Contract # 70426				

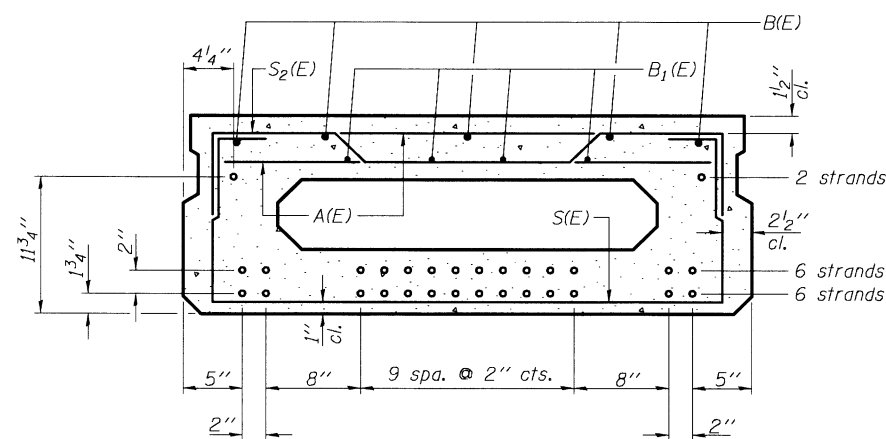
8 SHEETS



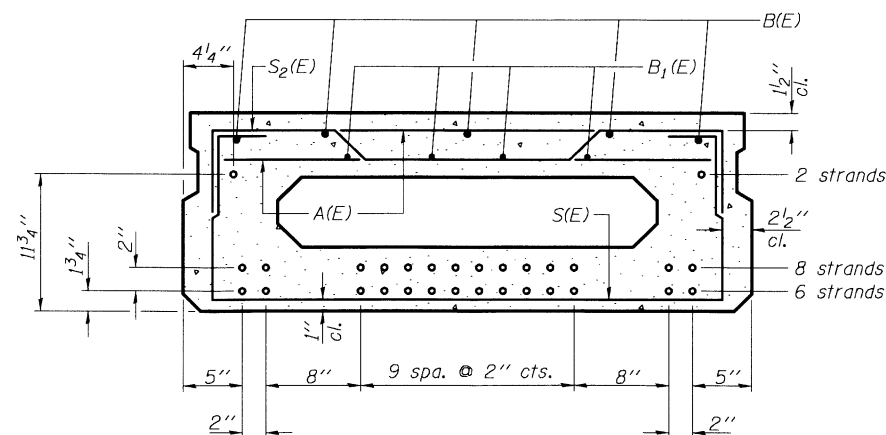
SECTION C-C



SECTION A-A
(Showing dimensions)

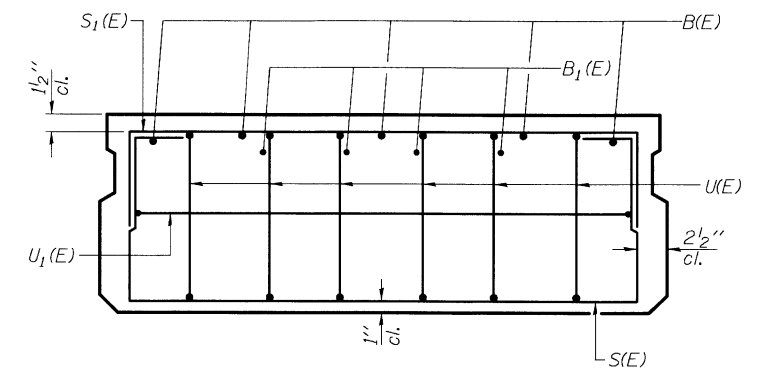


SECTION A-A
Spans 1&3



SECTION A-A
Span 2

(Showing reinforcement and permissible strand locations)
Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.



VIEW B-B

BAR LIST
ONE BEAM ONLY
Spans 1&3
(For information only)

Bar	No.	Size	Length	Shape
A(E)	24	#4	3'-7"	—
B(E)	5	#5	27'-2"	—
B1(E)	4	#4	27'-2"	—
S(E)	40	#4	6'-9"	U
S1(E)	10	#4	5'-11"	U
S2(E)	30	#4	6'-2"	U
U(E)	12	#5	3'-8"	U
U1(E)	2	#4	6'-0"	U

Note: See sheet 4 of 8 for additional details and Bill of Material.

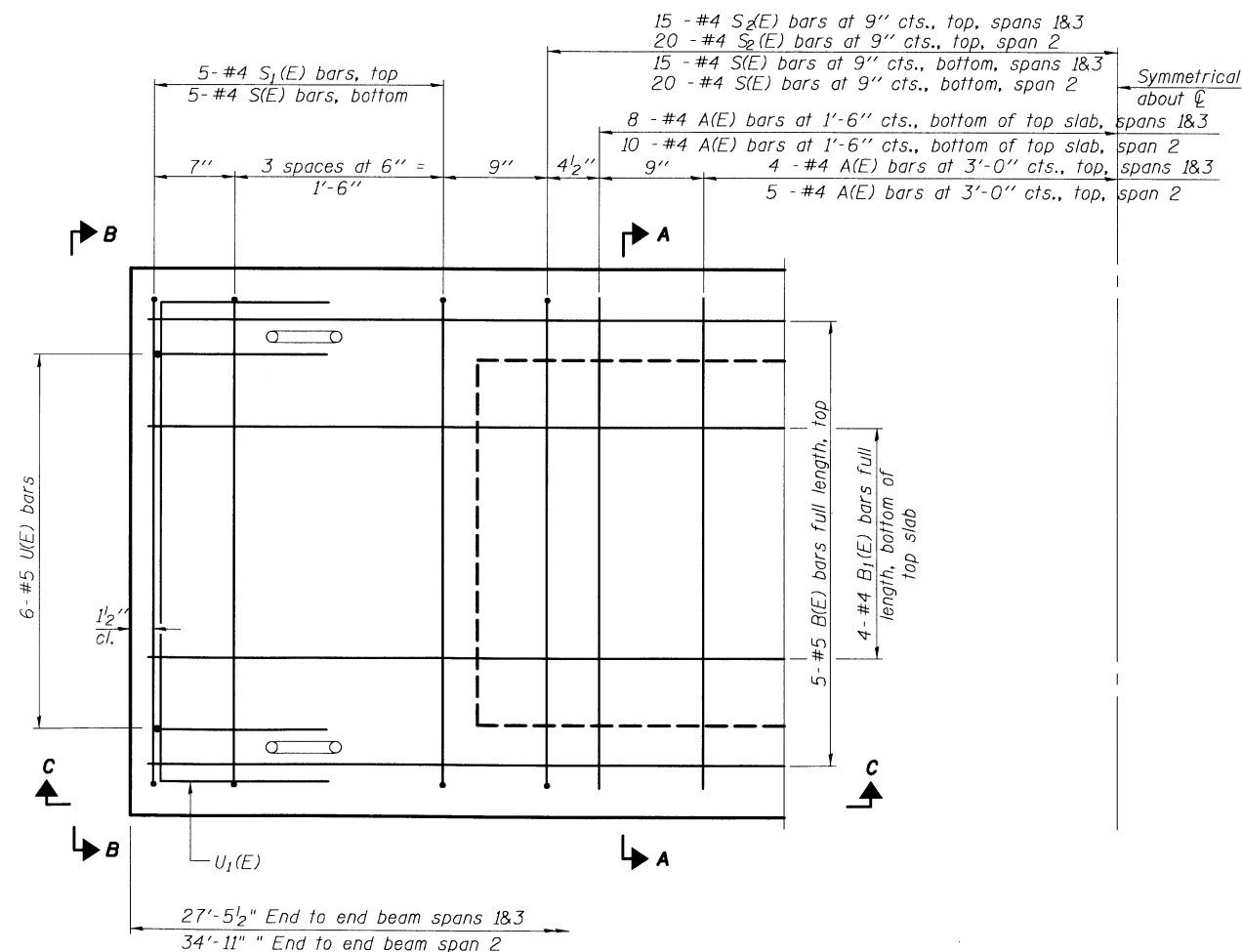
BAR LIST
ONE BEAM ONLY
Span 2
(For information only)

Bar	No.	Size	Length	Shape
A(E)	30	#4	3'-7"	—
B(E)	5	#5	34'-8"	—
B1(E)	4	#4	34'-8"	—
S(E)	50	#4	6'-9"	U
S1(E)	10	#4	5'-11"	U
S2(E)	40	#4	6'-2"	U
U(E)	12	#5	3'-8"	U
U1(E)	2	#4	6'-0"	U

Note: See sheet 4 of 8 for additional details and Bill of Material.

SUPERSTRUCTURE DETAILS 1
LEVERETT ROAD OVER THE SALINE BRANCH
CHAMPAIGN COUNTY
F.A.S. ROUTE 502 - SEC. (86BR) BR
STATION 71+38.50
S.N. 010-0237

STRAND ASSOCIATES, INC.



PLAN VIEW

Note: Spacing of S(E) and S2(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.

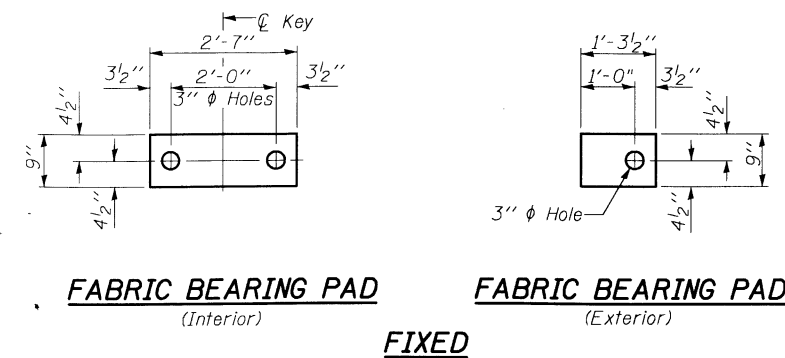
DESIGNED	FGE
CHECKED	JAR
DRAWN	KAS
CHECKED	AJS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

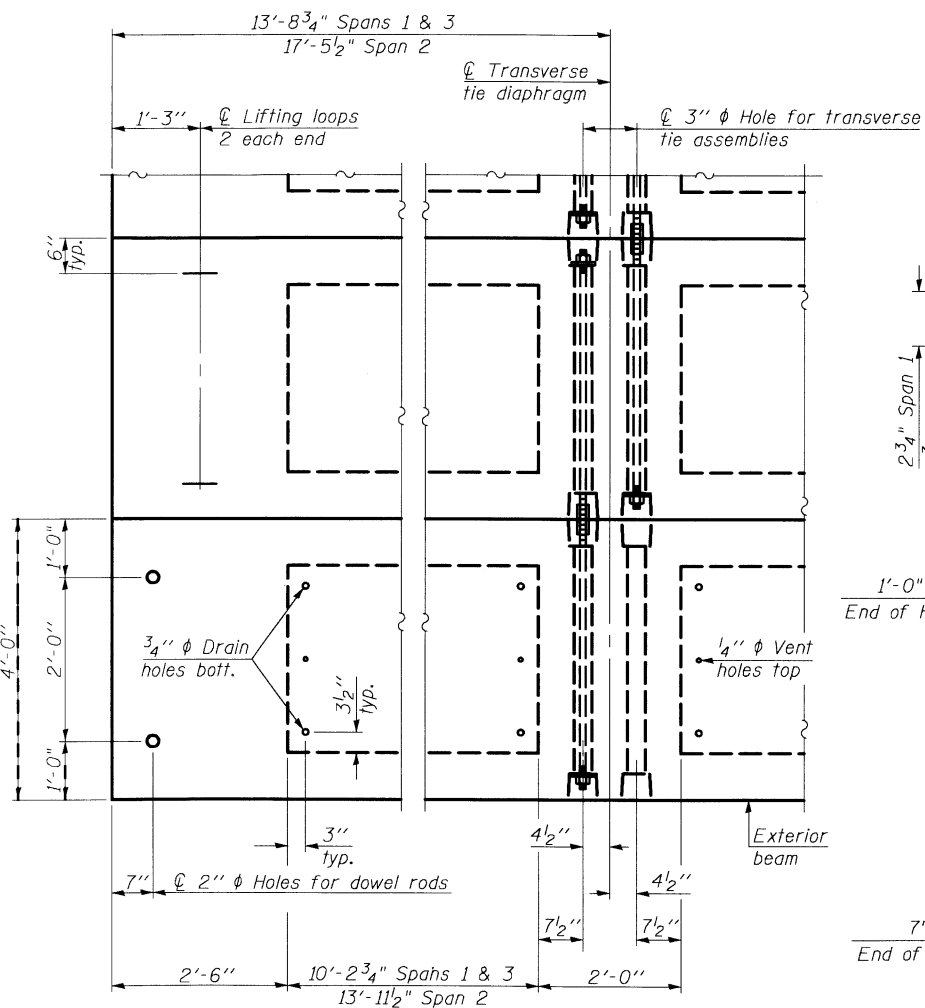
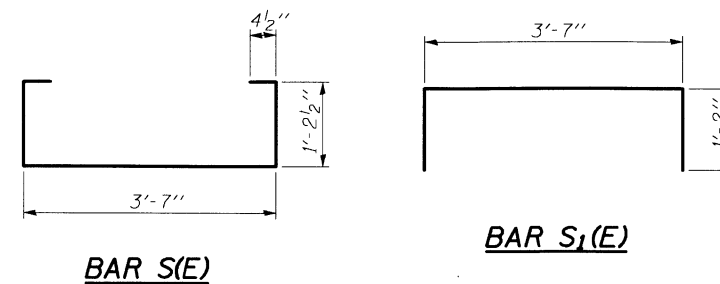
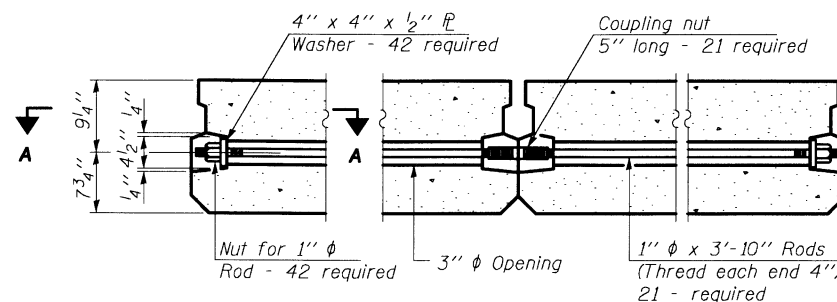
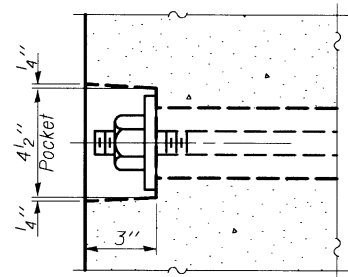
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 502	(86BR) BR	CHAMPAIGN	30	14
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT -		

Contract # 70426

SHEET NO. 4
8 SHEETS



FIXED



Note: Connect beams in pairs with the transverse tie configuration shown.

DESIGNED	FGE
CHECKED	JAR
DRAWN	KAS
CHECKED	AJS

NOTES:

Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place.

Reinforcement bars shall conform to ASTM A 706 (IL MOD), Grade 60. (See Special Provisions)

Two 1/8" fabric adjusting shims of the dimensions of the exterior bearing pad shall be provided for each bearing pad location.

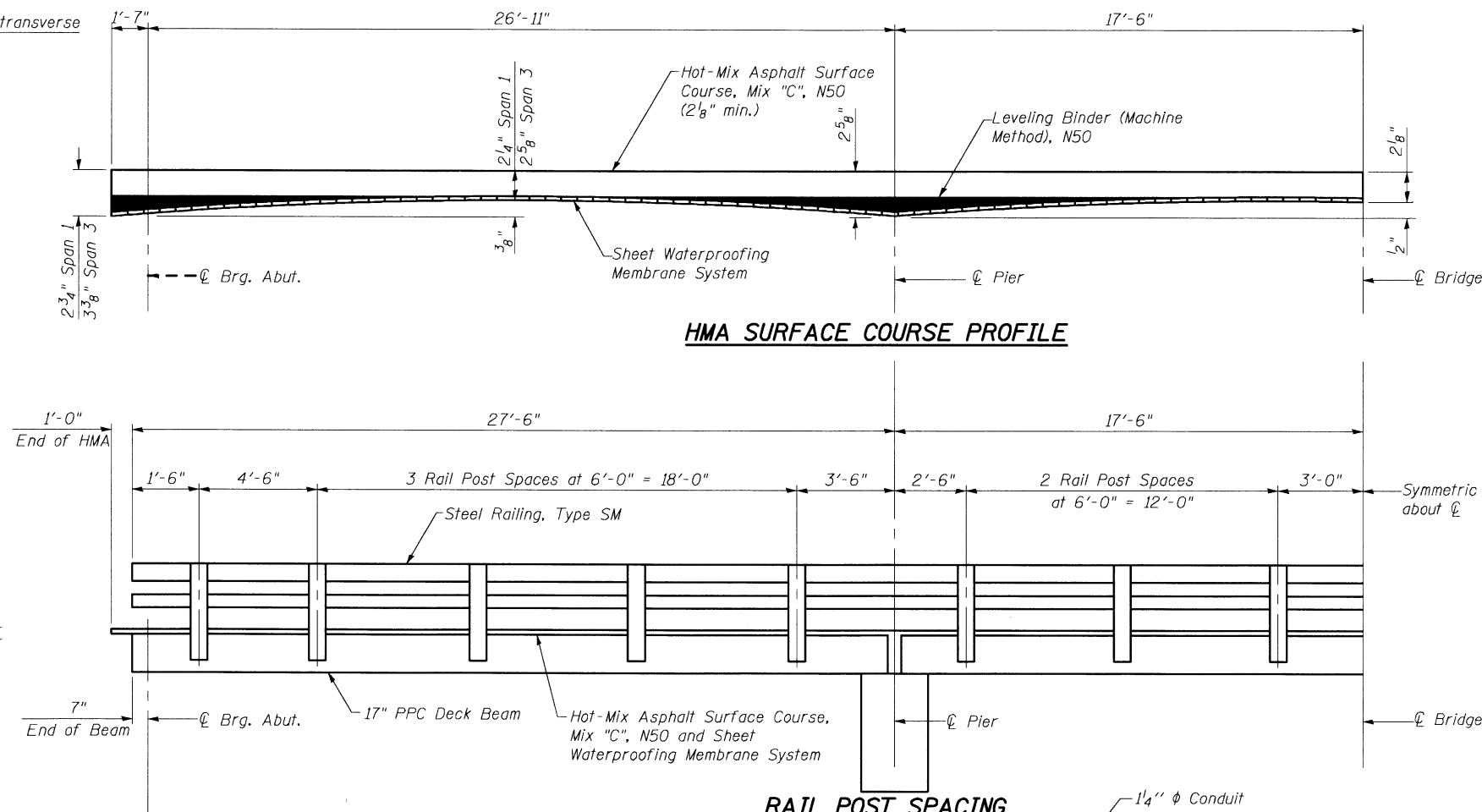
A minimum 2 1/2" lifting pin shall be used to engage the lifting loops during handling.

Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams.

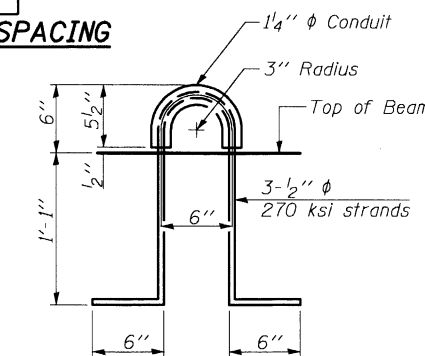
Compressive strength of prestressed concrete, f'_c, shall be 6000 psi.

Compressive strength of prestressed concrete at release, f'_{ci}, shall be 5000 psi.

The top surface of the beams shall be finished according to the IDOT Manual for Fabrication of Precast Prestressed Concrete Products.



RAIL POST SPACING



BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (17" Depth)	Sq. Ft.	2875
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SUPERSTRUCTURE DETAILS 2
LEVERETT ROAD OVER THE SALINE BRANCH
CHAMPAIGN COUNTY
F.A.S. ROUTE 502 - SEC. (86BR) BR
STATION 71+38.50
S.N. 010-0237

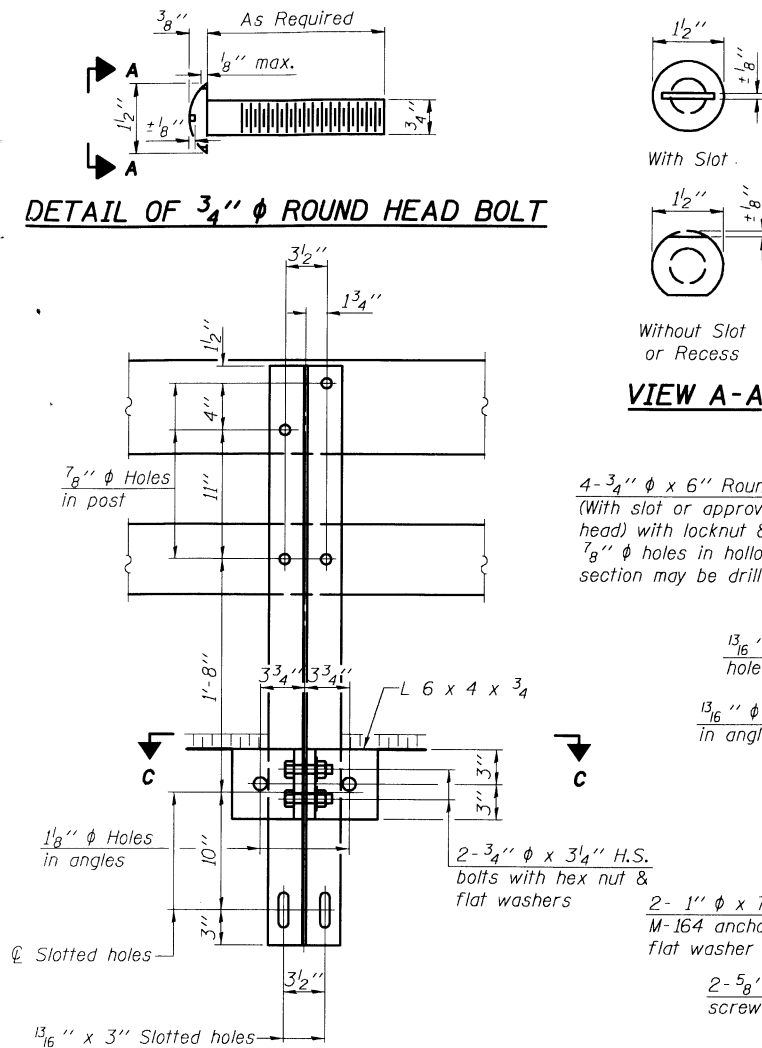
STRAND ASSOCIATES, INC.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 502	(86BR) BR	CHAMPAIGN	30	15
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

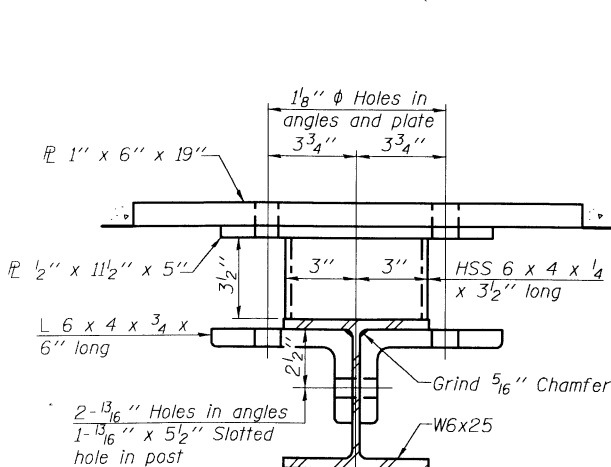
Contract # 70426

DETAIL OF $\frac{3}{4}$ " ϕ ROUND HEAD BOLT



VIEW A-A

SECTION B-B

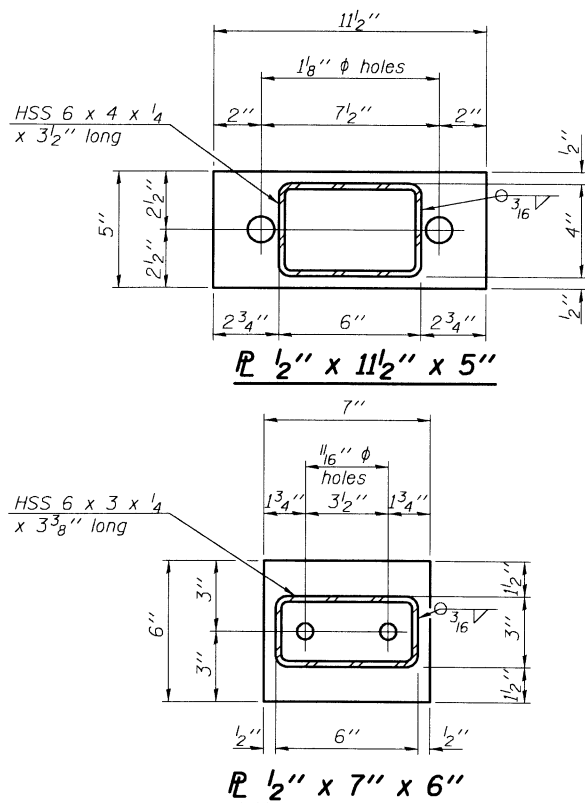


SECTION C-C

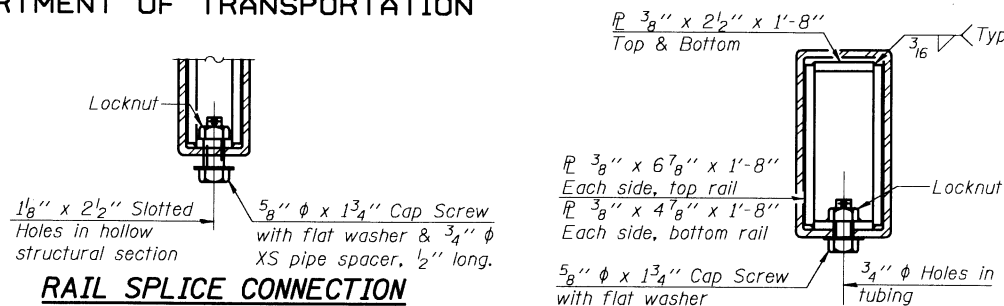
DESIGNED	FGE
CHECKED	JAR
DRAWN	KAS
CHECKED	AJS

(6'-3" Maximum Post Spacing) (1/4" minimum to 3/8" maximum HMA thickness)

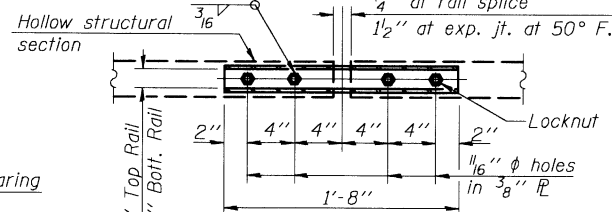
SECTION AT RAIL POST



RAIL SPLICE CONNECTION
AT EXPANSION JT.

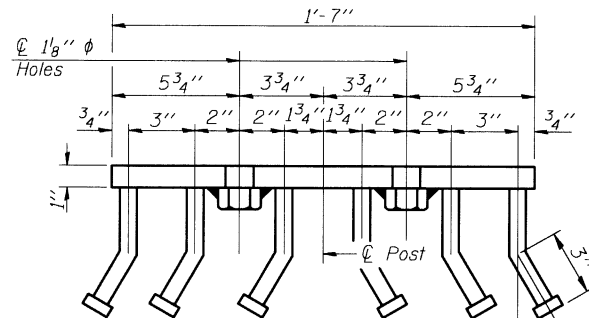


RAIL SPLICE CONNECTION
AT EXPANSION JT.

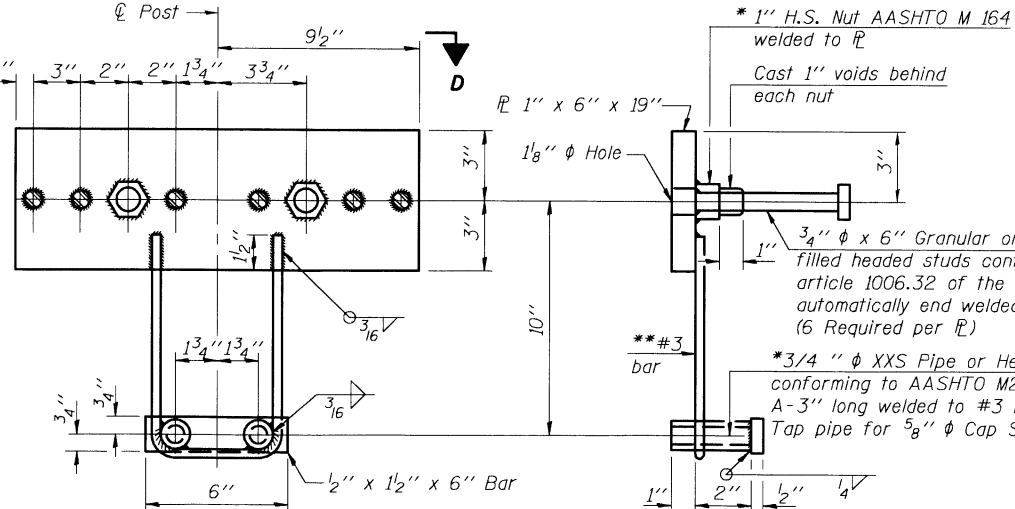


PLAN-BOTT. SPLICE P
TYPICAL

5/8" reduced base welded studs. Provide 4 - 5/8" washers and self-locking nuts or nuts and jam nuts for guardrail connection shown on Std. 631032



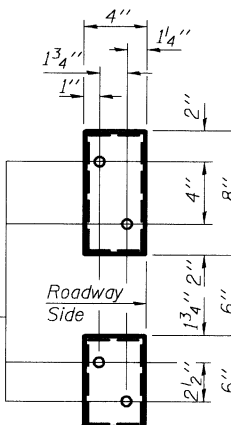
VIEW D-D



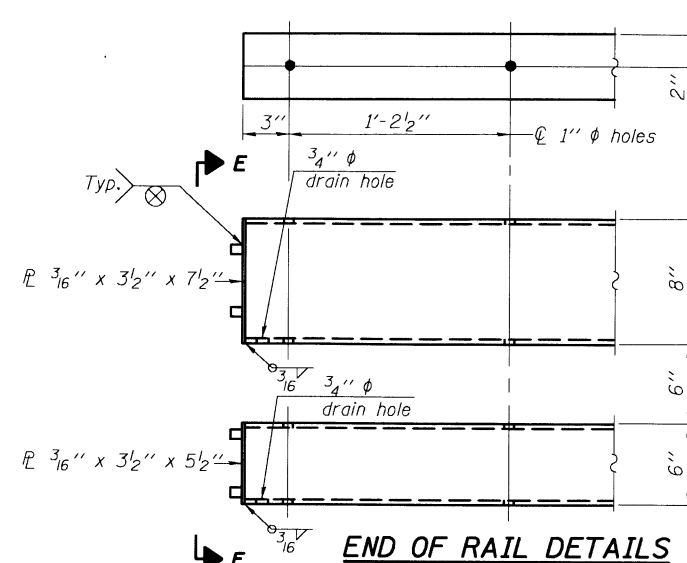
ANCHOR DEVICE

*Threaded areas shall be plugged or blocked off during casting of beam. Galvanized after fabrication.

SECTION AT
RAIL SPLICE



VIEW E-E



END OF RAIL DETAILS

Notes:
All field drilled holes shall be coated with an approved zinc rich paint before erection.
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Steel Railing, Type SM.
All steel rail members shall be galvanized according to Article 509.05 of the Standard Specifications.
***The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.

BILL OF MATERIAL

Item	Unit	Quantity
Steel Railing, Type SM	Foot	180

STEEL RAILING, TYPE SM
WITH HOT-MIX ASPHALT
WEARING SURFACE

RAILING DETAILS
LEVERETT ROAD OVER THE SALINE BRANCH
CHAMPAIGN COUNTY
F.A.S. ROUTE 502 - SEC. (86BR) BR
STATION 71+38.50
S.N. 010-0237

STRAND ASSOCIATES, INC.

**Whenever the lower insert assemblies interfere with strand locations, the #3 bars shall be cut and adjusted in order to allow raising or lowering of the lower inserts. Maximum adjustment not to exceed 1/2".

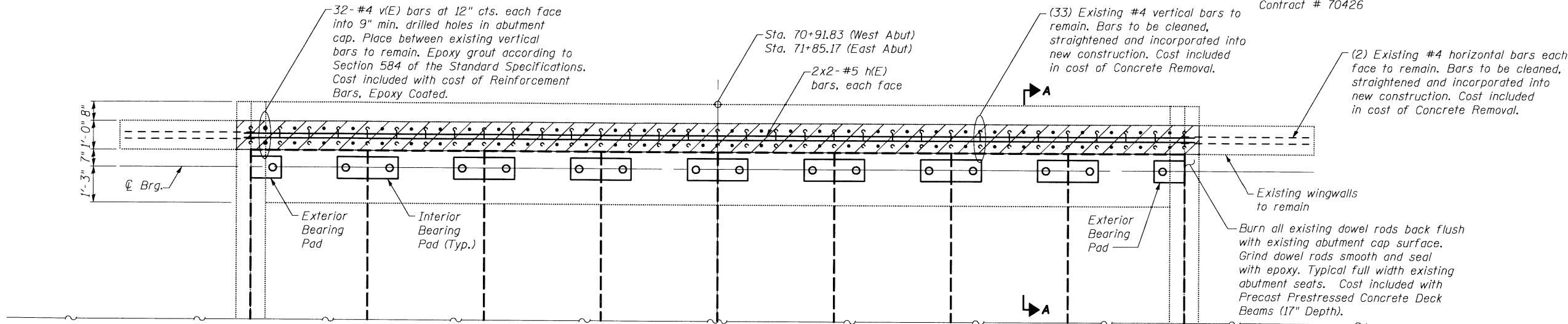
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 502	(86BR) BR	CHAMPAIGN	30	16
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

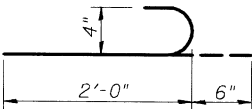
SHEET NO. 6

8 SHEETS

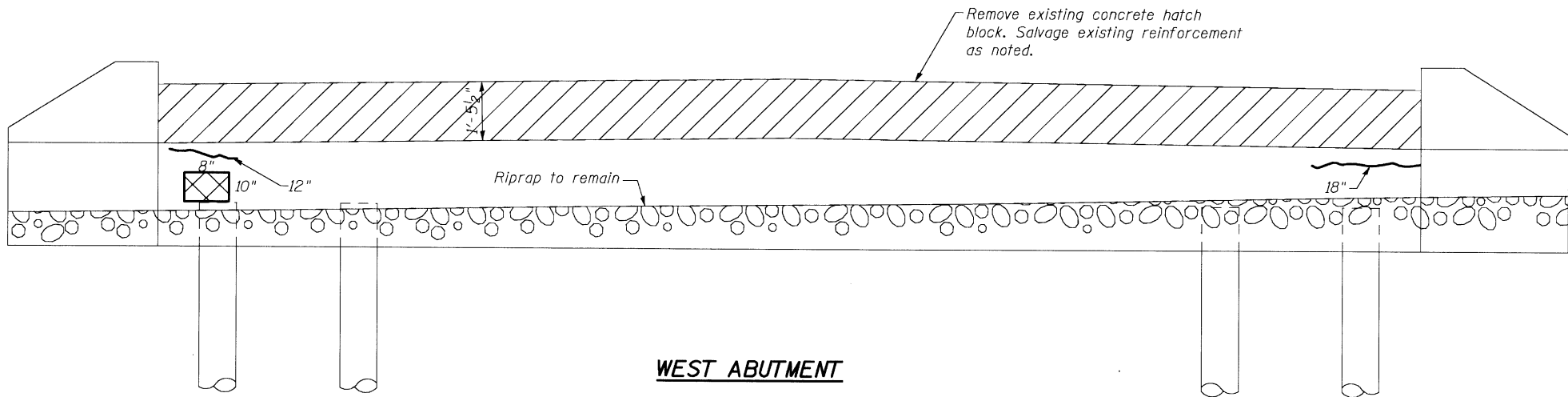
Contract # 70426



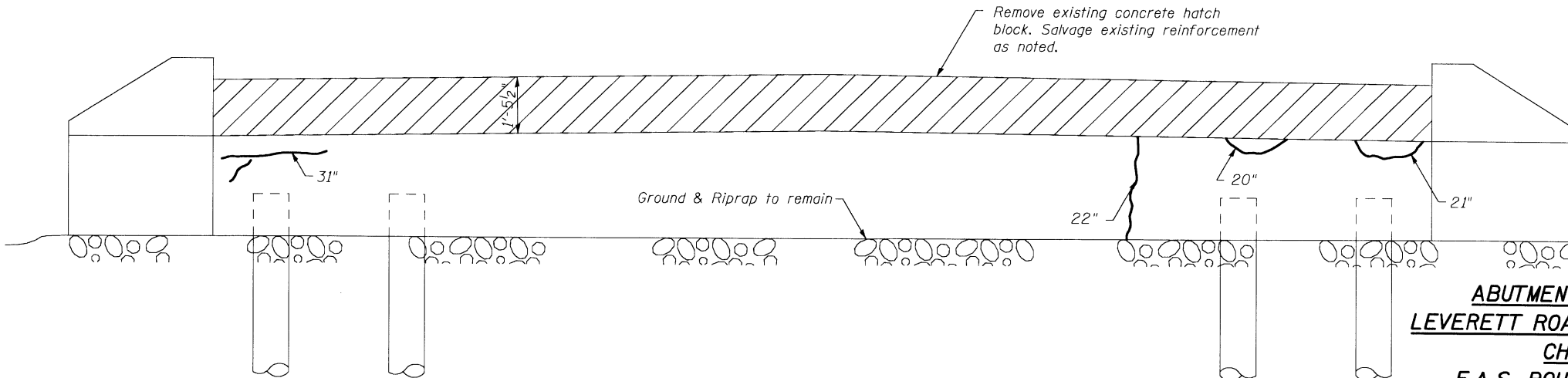
PLAN AT ABUTMENT
(Wearing surface not shown)



BAR v(E)



WEST ABUTMENT



EAST ABUTMENT

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	16	#5	17'-8"	—
v(E)	128	#4	2'-6"	U
Concrete Removal		CU YD	4	
Concrete Structures		CU YD	4	
Reinforcement Bars, Epoxy Coated		POUND	510	
Epoxy Crack Injection		FOOT	12	
Structural Repair of Concrete (Depth Less Than or Equal to 5")		SQ FT	1	

NOTES:

Hatched areas indicate concrete removal. These areas to be poured after beams are in place.
For section "A-A", see sheet 2 of 8.

ABUTMENT REPAIR AND DETAILS
LEVERETT ROAD OVER THE SALINE BRANCH
CHAMPAIGN COUNTY
F.A.S. ROUTE 502 - SEC. (86BR) BR
STATION 71+38.50
S.N. 010-0237

STRAND ASSOCIATES, INC.

LEGEND

- Crack - Epoxy Crack Injection
- Portion of Existing Structure To Be Removed
- Structural Repair of Concrete (Depth Less than or Equal to 5")

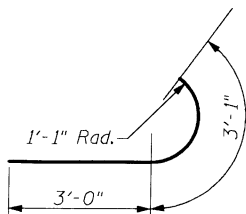
DESIGNED	FGE
CHECKED	JAR
DRAWN	KAS
CHECKED	AJS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

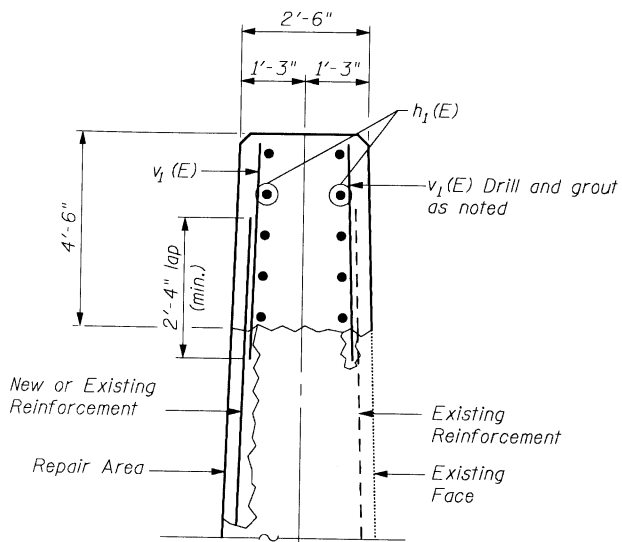
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 502	(86BR)BR	CHAMPAIGN	30	17
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 7
8 SHEETS

Contract # 70426



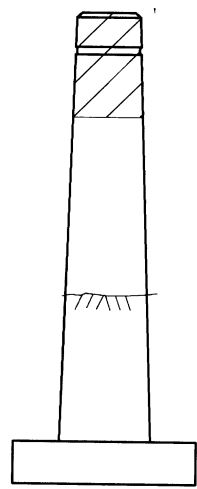
BAR $h_2(E)$



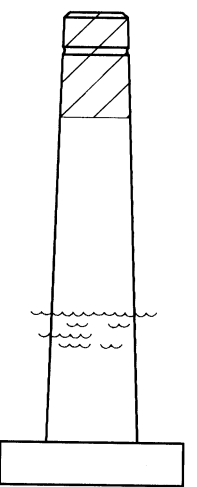
SHOWING NEW CAP
ABOVE REPAIR AREA

SHOWING NEW CAP
ABOVE NON-REPAIR AREA

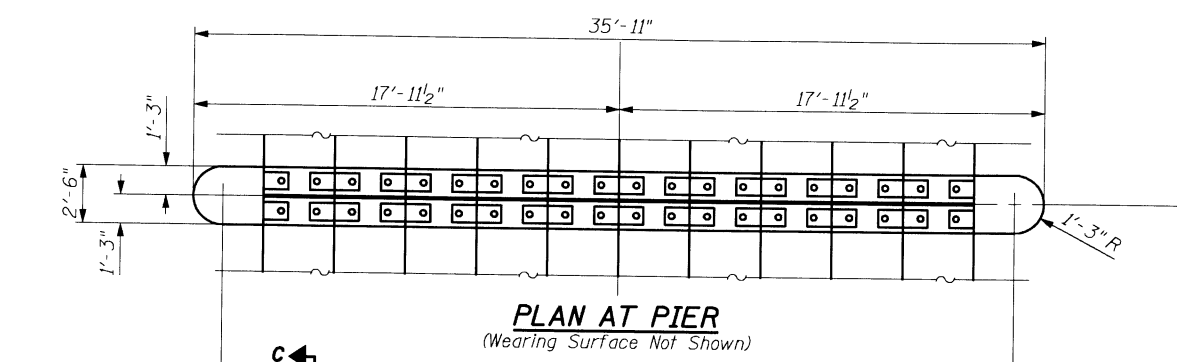
SECTION C-C



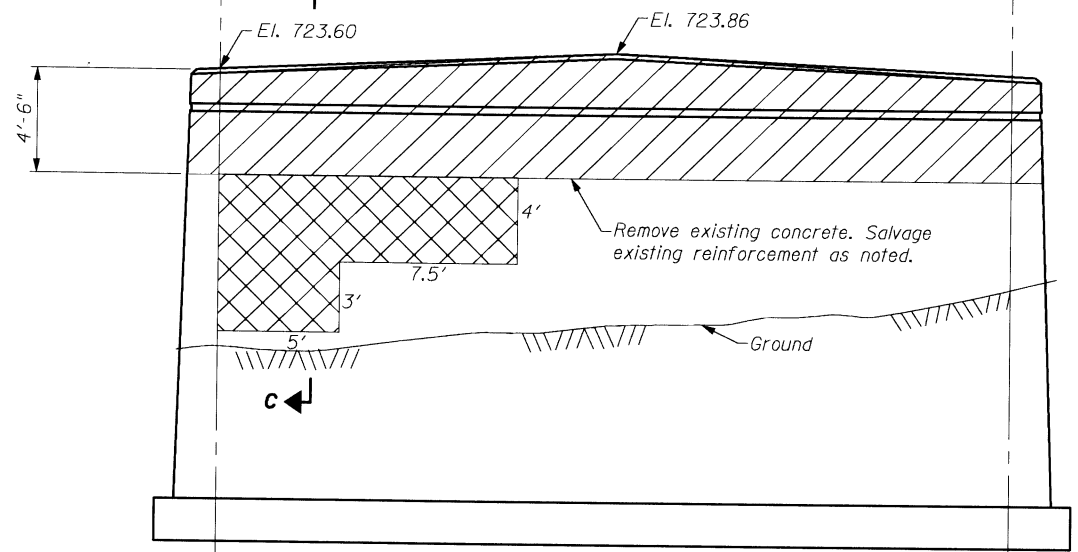
SOUTH



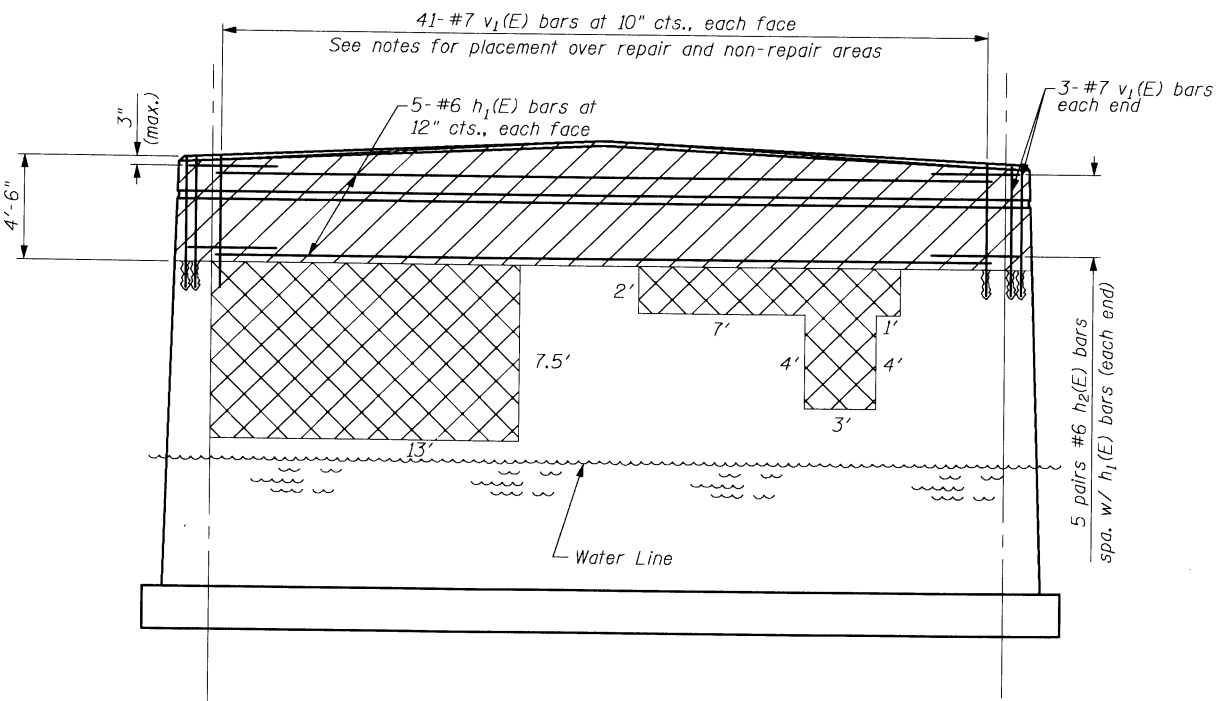
NORTH



PLAN AT PIER
(Wearing Surface Not Shown)



WEST FACE



EAST FACE

NOTES:

For Section "B-B", see sheet 2 of 8.
Hatched areas indicate concrete removal. These areas to be poured after structural repair of concrete is complete for remainder of the pier.
For cap removal over non-repair areas, salvage existing #7 vertical bars. Bars to be cleaned, straightened, and incorporated into new construction. Cost included in cost of Concrete Removal.
For $v_1(E)$ bars in non-repair areas, place bars in 9" min. drilled holes in top of pier at removal limit. Place bars between salvaged vertical bars to remain. Epoxy grout according to Section 584 of the Standard Specifications. Cost included with cost of Reinforcement Bars, Epoxy Coated.
For cap removal over repair areas, evaluate the existing #7 vertical bars as outlined in the Structural Repair of Concrete Special Provision. Where new or supplemental reinforcing is provided lap splice the $v_1(E)$ bars to the new bars, otherwise lap splice the $v_1(E)$ bars to the existing reinforcement to remain.

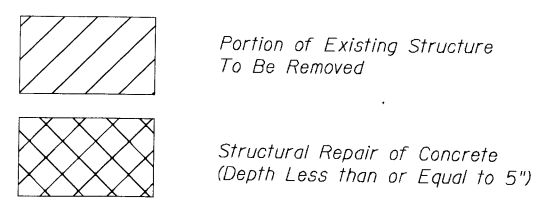
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
$h_1(E)$	10	#6	33'-5"	—
$h_2(E)$	20	#6	6'-2"	U
$v_1(E)$	88	#7	5'-1"	—
Concrete Removal		CU YD	16	
Concrete Structures		CU YD	16	
Reinforcement Bars, Epoxy Coated		POUND	1600	
Structural Repair of Concrete (Depth Less Than or Equal to 5")		SQ FT	216	

PIER 1 REPAIR DETAILS
LEVERETT ROAD OVER THE SALINE BRANCH
CHAMPAIGN COUNTY
F.A.S. ROUTE 502 - SEC. (86BR) BR
STATION 71+38.50
S.N. 010-0237

STRAND ASSOCIATES, INC.

LEGEND



DESIGNED	FGE
CHECKED	JAR
DRAWN	KAS
CHECKED	AJS

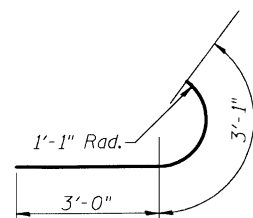
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.S. 502	(86BR) BR	CHAMPAIGN	30	18
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

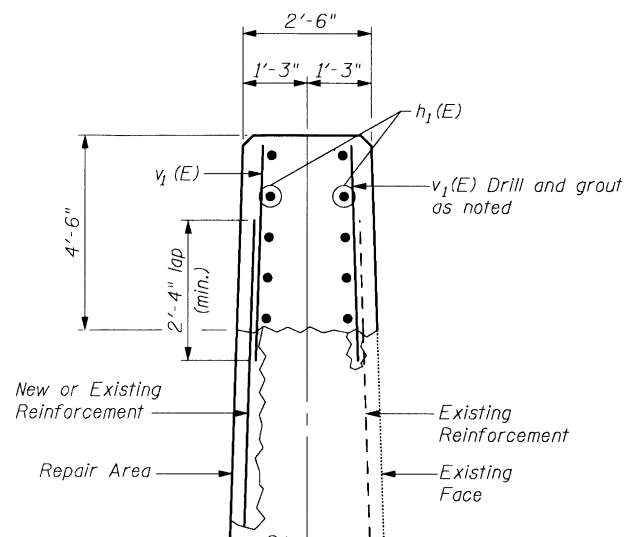
SHEET NO. 8

8 SHEETS

Contract # 70426



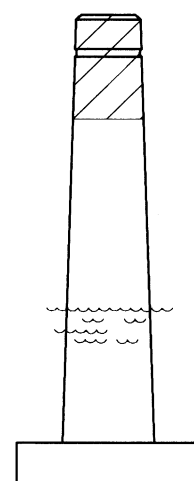
BAR $h_2(E)$



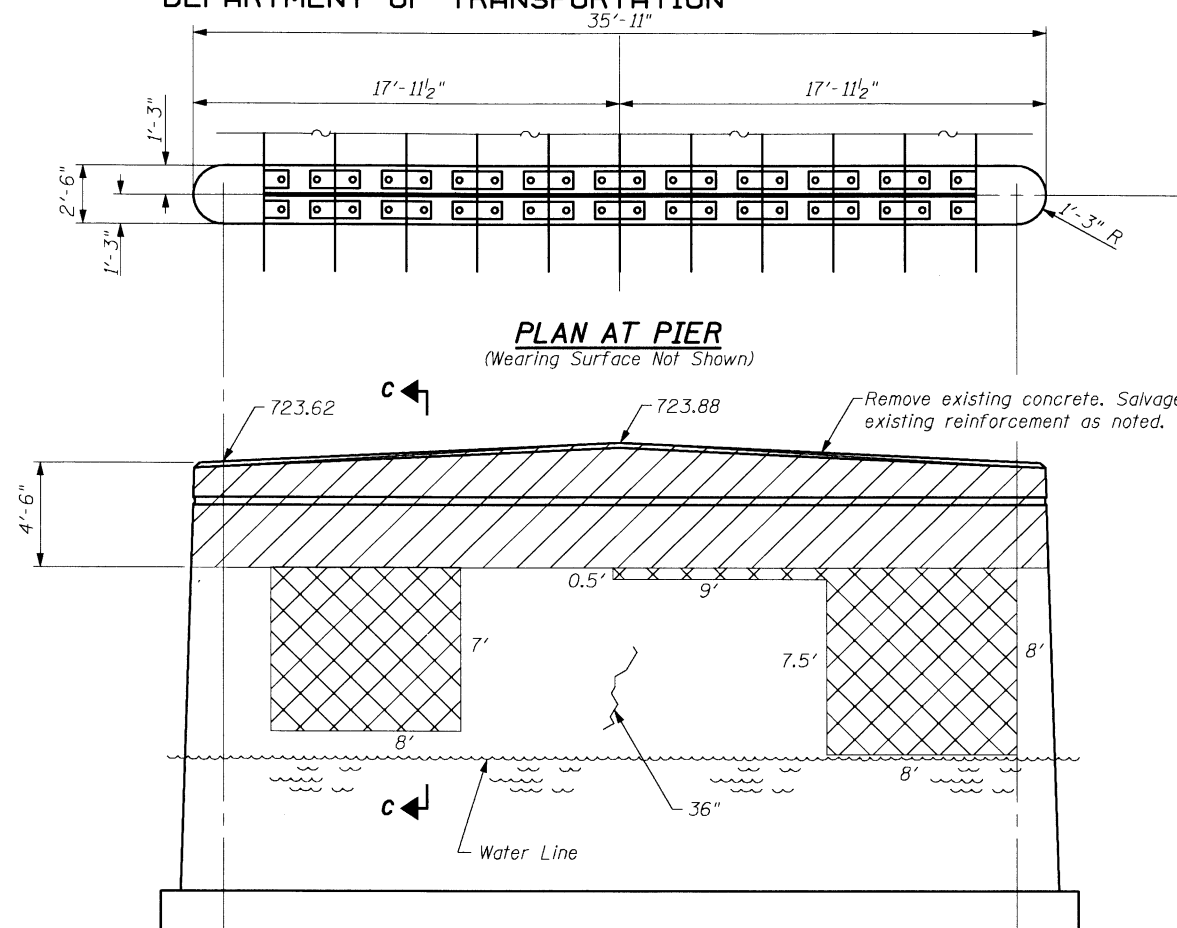
SHOWING NEW CAP
ABOVE REPAIR AREA

SHOWING NEW CAP
ABOVE NON-REPAIR AREA

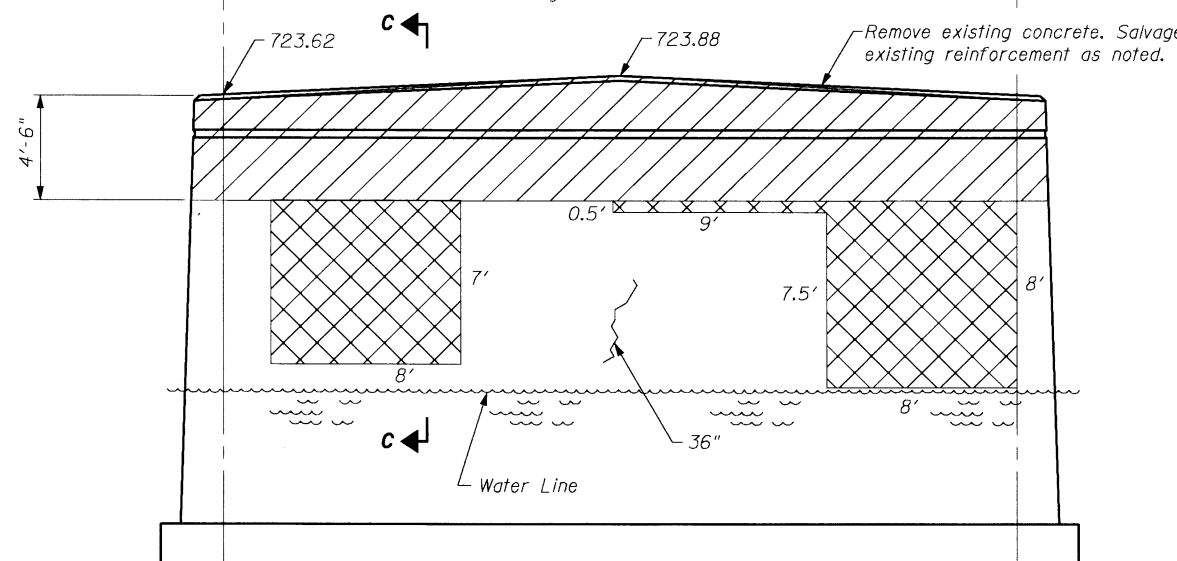
SECTION C-C



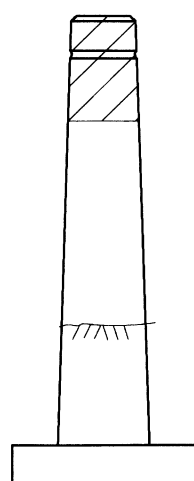
SOUTH



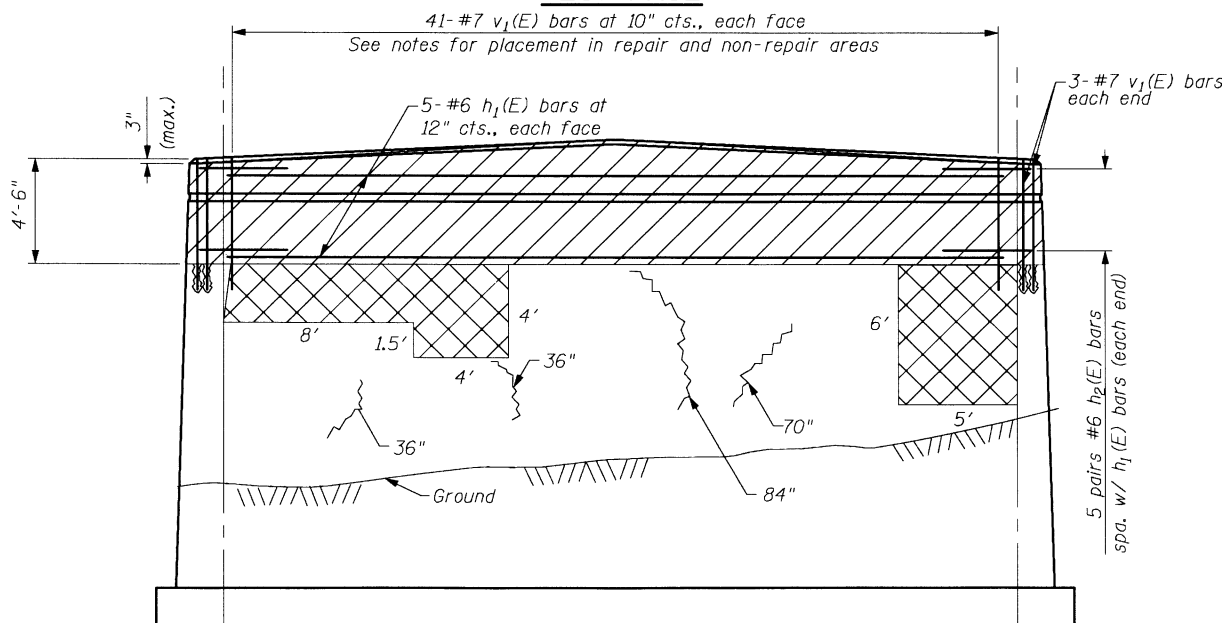
PLAN AT PIER
(Wearing Surface Not Shown)



WEST FACE

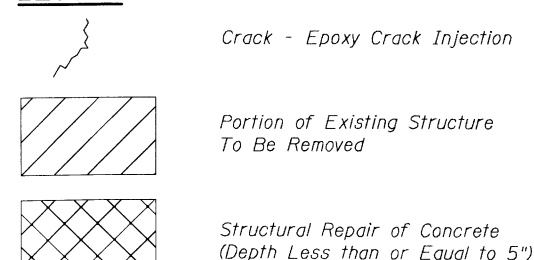


NORTH



EAST FACE

LEGEND



NOTES:

For Section "B-B", see sheet 2 of 8.
Hatched areas indicate concrete removal. These areas to be poured after structural repair of concrete is complete for remainder of the pier.

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BILL OF MATERIAL

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$h_2(E)$	20	#6	6'-2"	—
$v_1(E)$	88	#7	5'-1"	—
Concrete Removal		CU YD	16	
Concrete Structures		CU YD	16	
Reinforcement Bars, Epoxy Coated		POUND	1600	
Epoxy Crack Injection		FOOT	24	
Structural Repair of Concrete (Depth Less Than or Equal to 5")		SQ FT	210	

PIER 2 REPAIR DETAILS
LEVERETT ROAD OVER THE SALINE BRANCH
CHAMPAIGN COUNTY
F.A.S. ROUTE 502 - SEC. (86BR) BR
STATION 71+38.50
S.N. 010-0237

STRAND ASSOCIATES, INC.

DESIGNED	FGE
CHECKED	JAR
DRAWN	KAS
CHECKED	AJS

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PLANS FOR PROPOSED
FEDERAL AID HIGHWAY

FOR INDEX OF SHEETS, SEE SHEET NO. 4
FOR SUMMARY OF QUANTITIES, SEE SHEET NO. 5

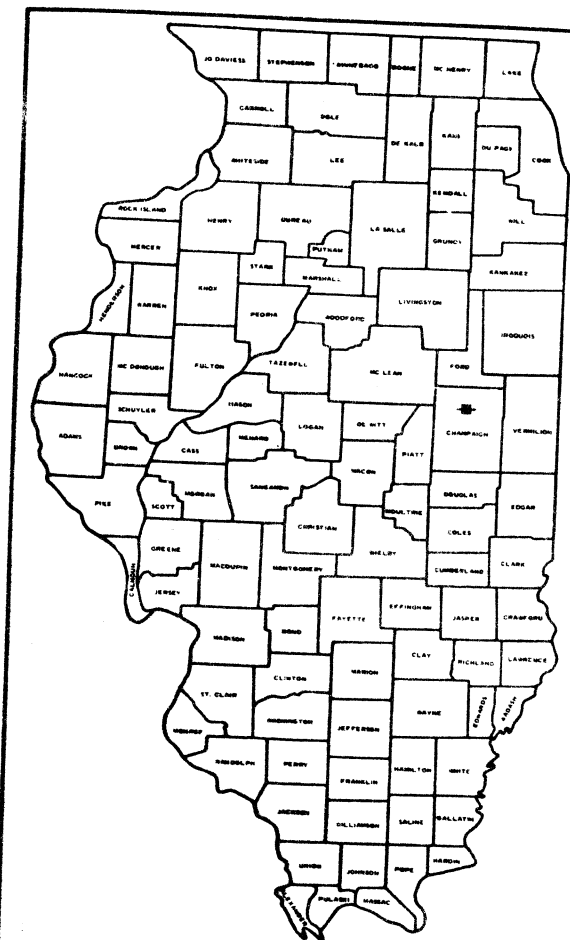
PLAN
PROFILE HORIZ.
PROFILE VERT.
CROSS SECTIONS

F.A.S. ROUTE 502, SECTION 86 BR
CHAMPAIGN COUNTY
PROJECT RS-502(103)

BRIDGE REPLACEMENT
C-95-055-80

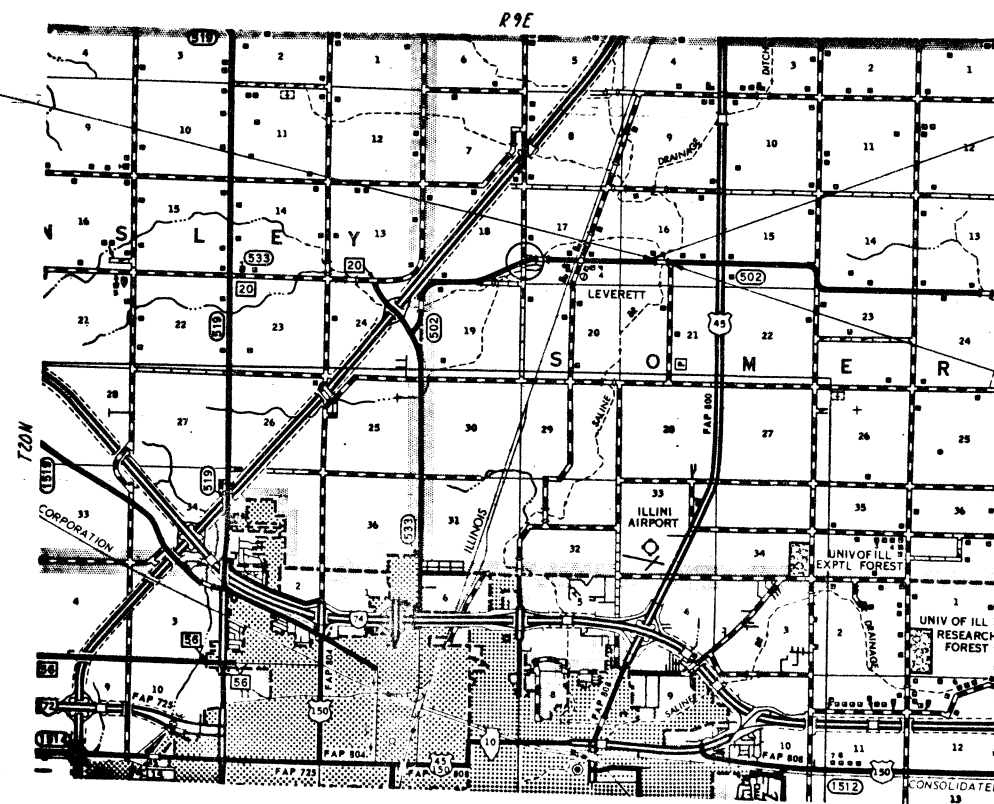
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS
502	86 BR	CHAMPAIGN	15

P-95-019-77



LOCATION OF SECTION INDICATED THUS: —

SPECIAL BRIDGE DESIGN
SECTION 86 BR
3 SPANS, 2 @ 25'-0" + 1 @ 35'-0"
CONCRETE ABUTMENTS & PIERS
17' PRECAST PRESTRESSED CONCRETE DECK BEAMS
30'-0" HORIZONTAL CLEARANCE
STATION 71+37



PROJECT RS-502(103) &
SECTION 86 BR BEGINS
STATION 68+00

PROJECT RS-502(103) &
SECTION 86 BR ENDS
STATION 74+00

SCALE: 1" = 1 MILE

TOTAL LENGTH OF SECTION 86 BR: 532.00 FEET - 0.101 MILES
NET LENGTH OF SECTION 86 BR: 532.00 FEET - 0.101 MILES
NET LENGTH OF PROJECT RS-502(103): 532.00 FEET - 0.101 MILES

010-0237

CONTRACT NO. 34508

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED: May 2, 1980
EXAMINED: May 30, 1980
PASSED: May 30, 1980
APPROVED: May 30, 1980

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED

DIVISION ADMINISTRATOR DATE

5-110

BENCH MARK: CHISELED SQUARE ON S.W. WING WALL
OF EXISTING BRIDGE STRUCTURE = EL. 725.69.
EXIST. STRUCTURE TO BE REMOVED BEFORE CONSTRUCTION
OF NEW STRUCTURE BY CONTRACTOR.
ROAD TO BE CLOSED DURING CONSTRUCTION.

Design load: HS20-44. Allow 25 p.s.f. for
future wearing surface. Design Specifications:
1977 AASHTO & 1978 and 1979 Interim
Specifications.

EXISTING STRUCTURE-NO. 010-0130
S.A. ROUTE 1-A, SECTION 86B-15D
Sta. 71+37 one Span @ 60'x22' Wide, Steel Truss Bridge
with concrete deck, closed abutments and wing walls.
Originally built in 1932. The bridge contractor shall
remove existing structure in accordance with
Section 501 of the Standard Specifications.
All materials are considered non-salvageable,
except that broken concrete which meets the
requirements for broken concrete riprap may
be used as riprap.

WATERWAY INFORMATION

Drainage Area	45.88 Sq. Mi.
Discharge (Design Flood 30 yr.)	3040 c.f.s.
Existing Opening (Below 30 yr. HWE)	668 Sq. ft.
Required Opening (Below 30 yr. HWE)	730 Sq. ft.
Prop. Opening (Below 30 yr. HWE)	730 Sq. ft.
Created Head for Design Flood	0.6 ft.
100 yr. Discharge	3875 c.f.s.
Created Head for 100 yr. Flood	0.8 ft.

NOTES

- THE "STATE OF ILLINOIS STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION" ADOPTED OCTOBER 1, 1979, SHALL APPLY.
- THE CONTRACTOR SHALL DRIVE 1 CONCRETE TEST PILES IN A PERMANENT LOCATION AT THE EAST ABUTMENT AS DIRECTED BY THE ENGINEER BEFORE ORDERING THE REMAINDER OF PILES.
- THE TOP SURFACE OF THE BEAMS SHALL BE FINISHED IN ACCORDANCE WITH ARTICLE 505.06 OF THE STANDARD SPECIFICATION EXCEPT THAT THE SURFACE SHALL NOT BE ROUGHENED BY BROOMING. THE FINISHED SURFACE SHALL BE FREE OF DEPRESSIONS OR HIGH SPOTS WITH SHARP CORNERS.
- SEE PROPOSAL FOR BORING DATA.
- PROTECTIVE COAT SHALL NOT BE APPLIED TO SURFACES TO WHICH WATERPROOFING MEMBRANE SYSTEM IS APPLIED.
- REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 OR M-53 GRADE 60.
- A CALCIUM NITRITE CORROSION INHIBITOR, AS COVERED IN THE SPECIAL PROVISIONS SHALL BE USED IN THE CONCRETE FOR PRECAST PRESTRESSED CONCRETE DECK BEAMS AND CLASS X-CONCRETE FOR PARAPET.

PRECAST PRESTRESSED UNITS

$f'_c = 5000$ p.s.i.
 $f'_{ci} = 4000$ p.s.i.
 $f_{si} = 189,000$ p.s.i. (Prestressing Steel)
 $f_y = 60,000$ p.s.i. (Non-Prestressing Steel)
 $f'_3 = 270,000$ p.s.i. (Prestressing Steel)

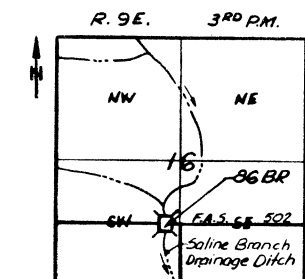
DESIGN STRESSES FIELD UNITS

$f'_t = 3500$ p.s.i.
 $f_y = 60,000$ p.s.i.
 $n = 9.0$

NAME PLATE (SEE STD. 2113)

STATION 71+37
SALINE BRANCH DRAINAGE
DITCH
BUILT 198
F.A.S. RT. 502, SEC. 86 BR
F.A. PROJ. RS 502(103)
LOADING HS-20
STR. NO. 010-0237

ROADWAY PROFILE



LOCATION SKETCH



BILL OF MATERIALS

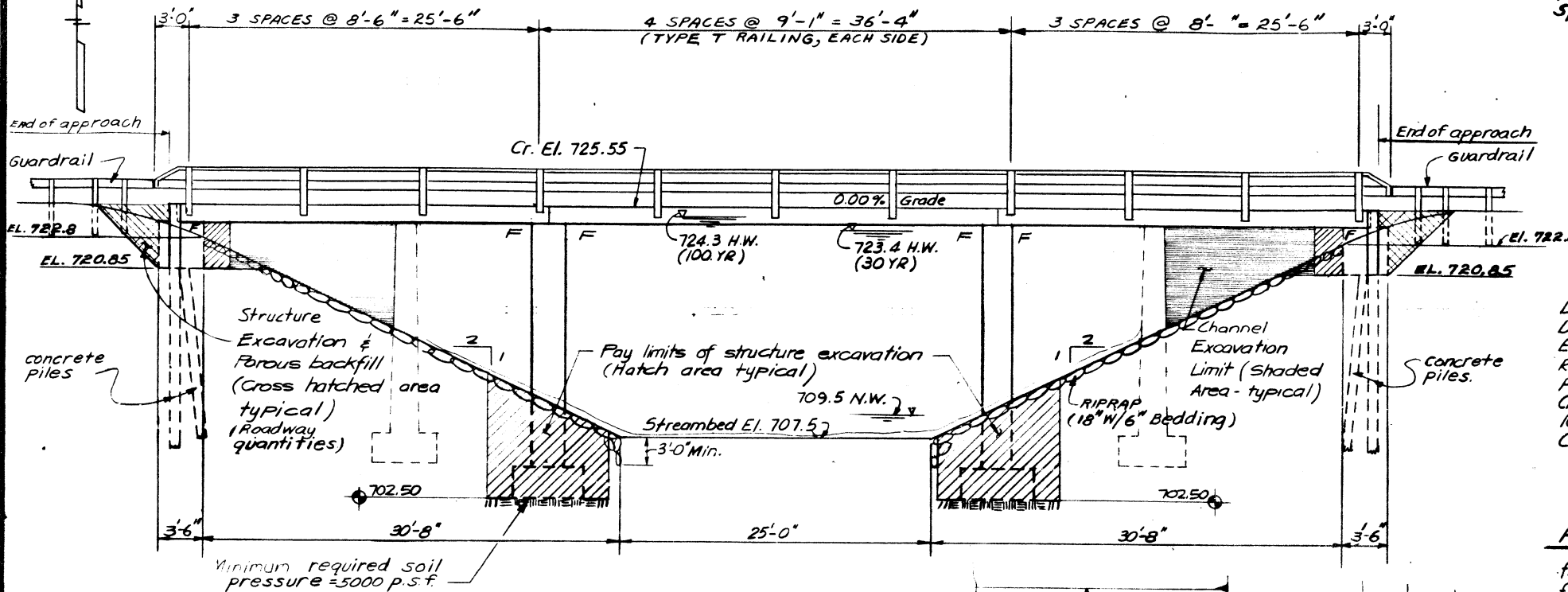
ITEM	UNIT	SUPER	SUB.	TOTAL
CHANNEL EXCAVATION	Cu. Yd.			154
POROUS GRANULAR BACKFILL	Ton			34
LEVELING BINDER (MACHINE METHOD)	Ton	9		9
BITUMINOUS CONCRETE SURFACE COURSE, MIXTURE D, CLASS 1	Ton	22		22
REMOVAL OF EXISTING STRUCTURES	Ea.			1
STRUCTURE EXCAVATION	Cu. Yd.			309
PROTECTIVE COAT	SY	50		50
CLASS X CONCRETE	Cu. Yd.	5.5	214.6	220.1
PRECAST PRESTRESSED CONCRETE DECK BEAMS (17" DEPTH)	SF	2965		2965
STEEL RAILING, TYPE T	LF	187		187
REINFORCEMENT BARS	LB	126	18,592	18,718
CONCRETE PILES	LF		527	527
TEST PILE - CONCRETE	Ea.		1	1
NAME PLATE	Ea.	1		1
RIP RAP - 18 INCH	SY			255
PORTLAND CEMENT MORTAR FAIRING COURSE	LF	398		398
WATERPROOFING MEMBRANE SYSTEM	SY	317		317

GENERAL PLAN AND ELEVATION

Date	5-5-80	Surveyed	
Revisions		Designed	J.D.
		Drawn	R.M.
		Checked	J.D.
		Appr.	

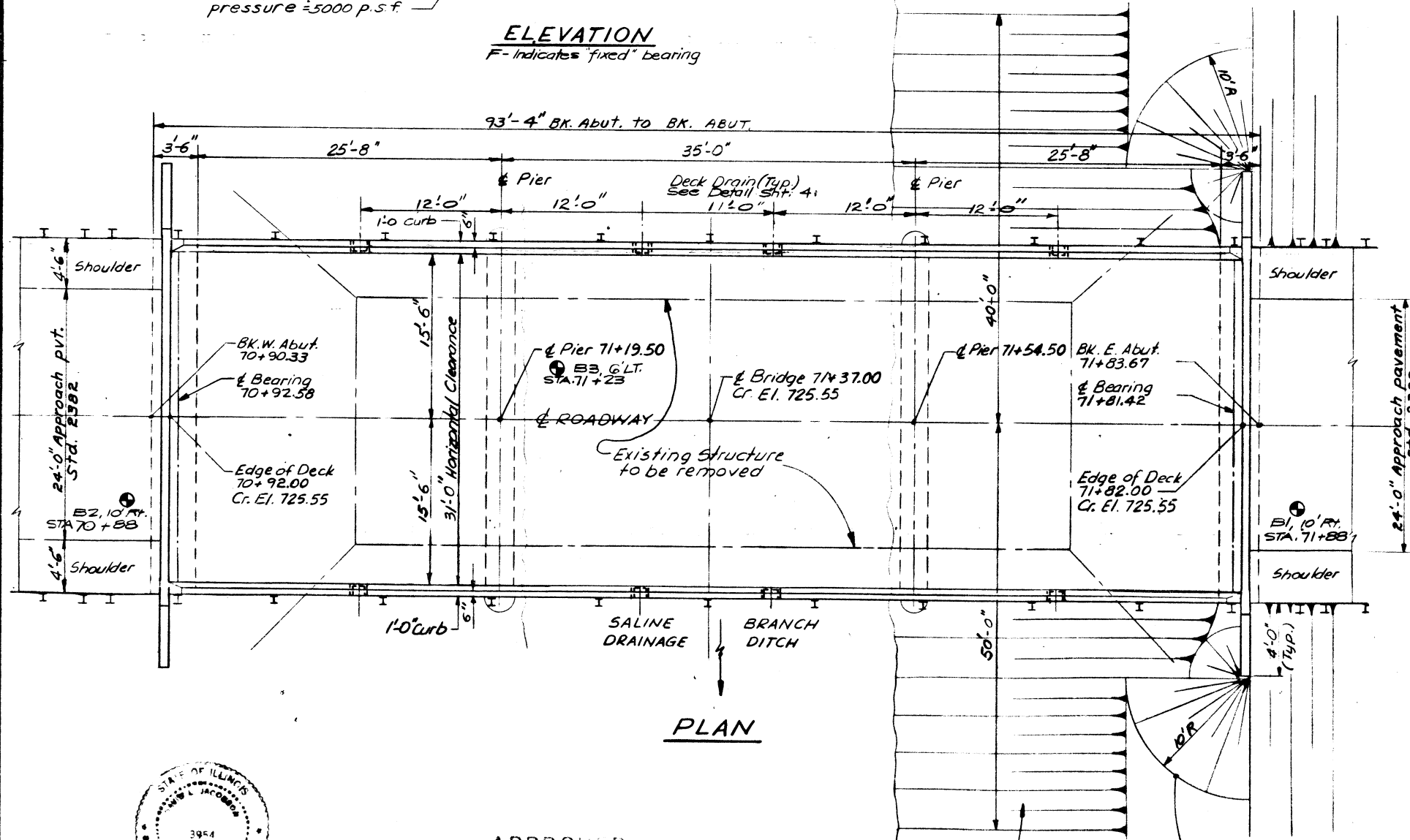
CHAMPAIGN CO. F.A.S. ROUTE 502
SECTION 86 BR
STATION 71+37

Sheet



ELEVATION

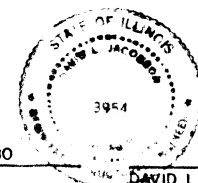
F- Indicates "fixed" bearing



PLAN

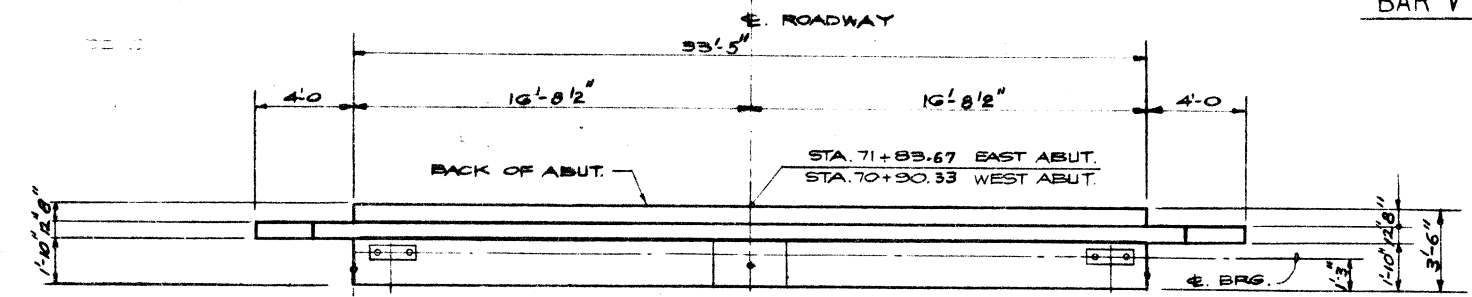
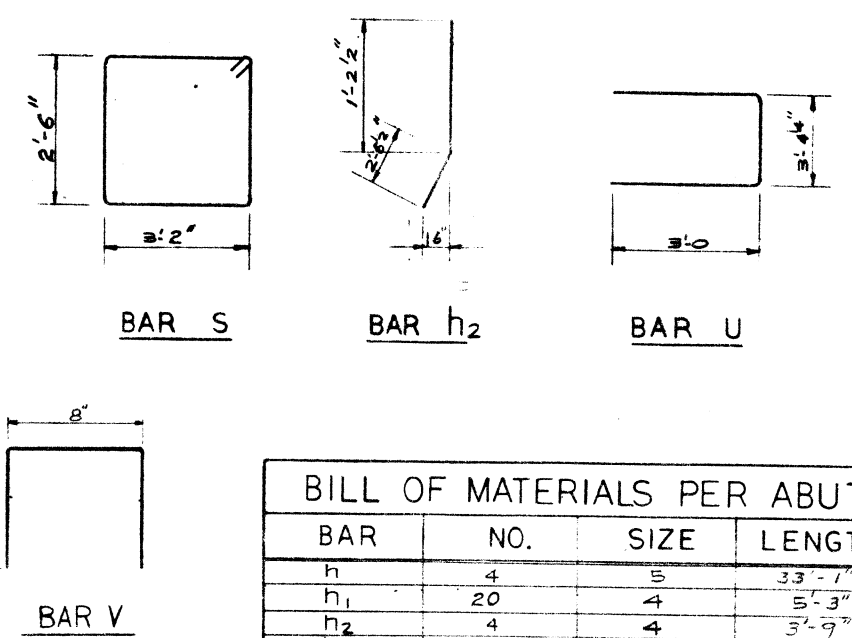
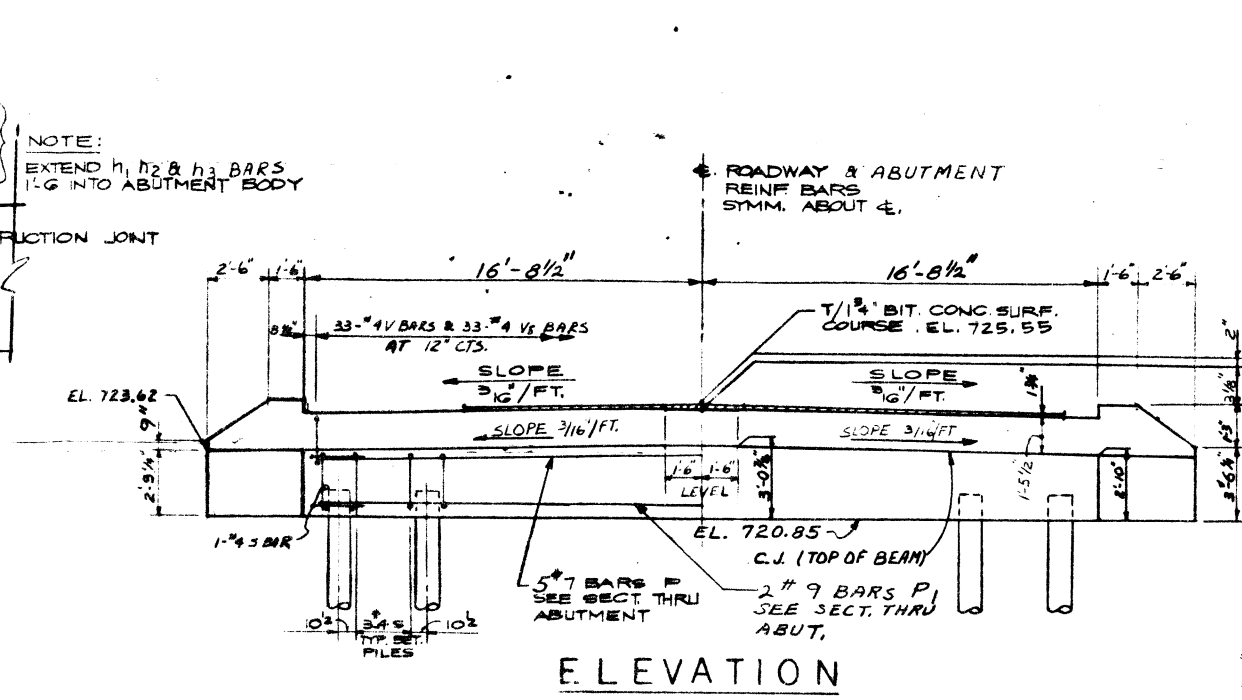
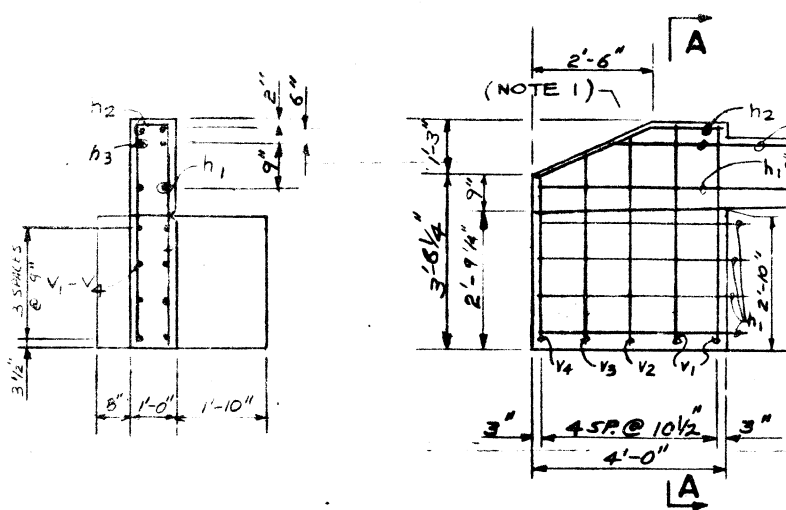
Riprap Configuration.
Typical all 4 corners
(See roadway plans
for limits of riprap)

Meet Proposed drainage ditch
elevations to be designed by
others during roadway design phase.

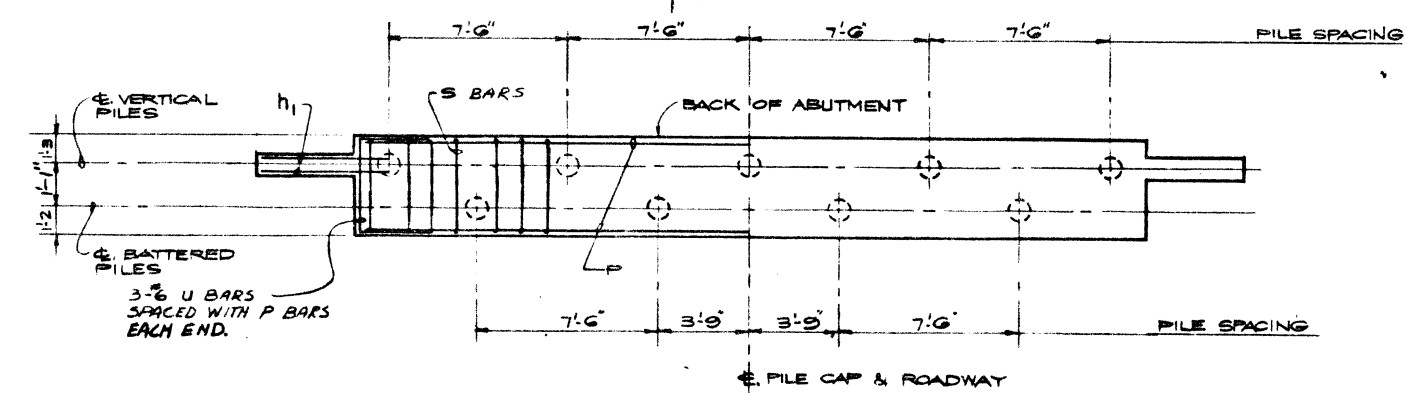
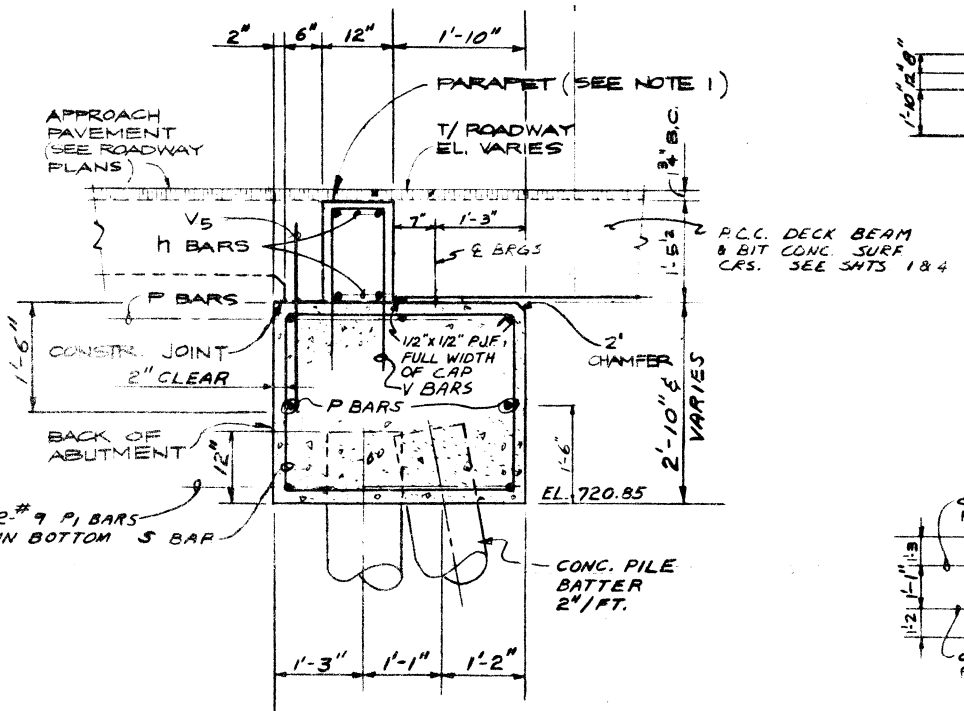


DATE 4-16-80
DAVID L. JACOBSON
ILL. REGISTERED STRUCTURAL
ENGINEER NO. 3954

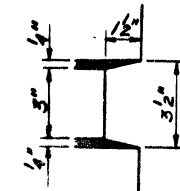
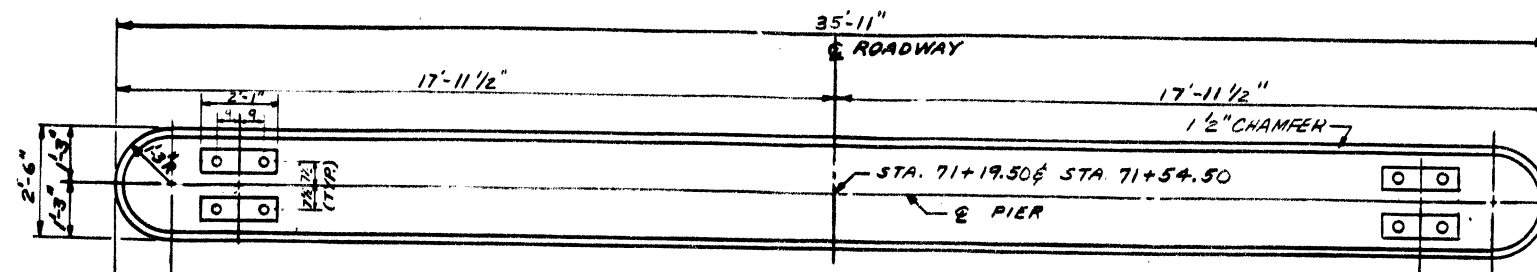
APPROVED
FOR SEAL AND SIGNATURE ONLY



BILL OF MATERIALS PER ABUTMENT				
BAR	NO.	SIZE	LENGTH	SHAPE
h_1	4	5	33'-1"	
h_2	20	4	5'-3"	
h_3	4	4	3'-9"	
h_3	4	4	4'-0"	
P	5	7	33'-1"	
P_1	2	9	33'-1"	
S	26	4	11'-8"	
U	6	6	9'-4"	
V	33	4	6'-8"	
V_1	4	4	4'-4"	
V_2	2	4	4'-0"	
V_3	2	4	3'-8"	
V_4	2	4	3'-3"	
V_5	33	4	2'-6"	
CLASS X CONCRETE			CU. YDS.	15.7
REINFORCEMENT BARS			LBS.	1307
CONCRETE PILES			LIN. FT.	279
TOTAL MATERIALS FOR TWO ABUTMENTS				
CLASS X CONCRETE			CU. YDS.	31.4
REINFORCEMENT BARS			LBS.	2614
CONCRETE PILES			LIN. FT.	527
TEST PILE			EACH	1



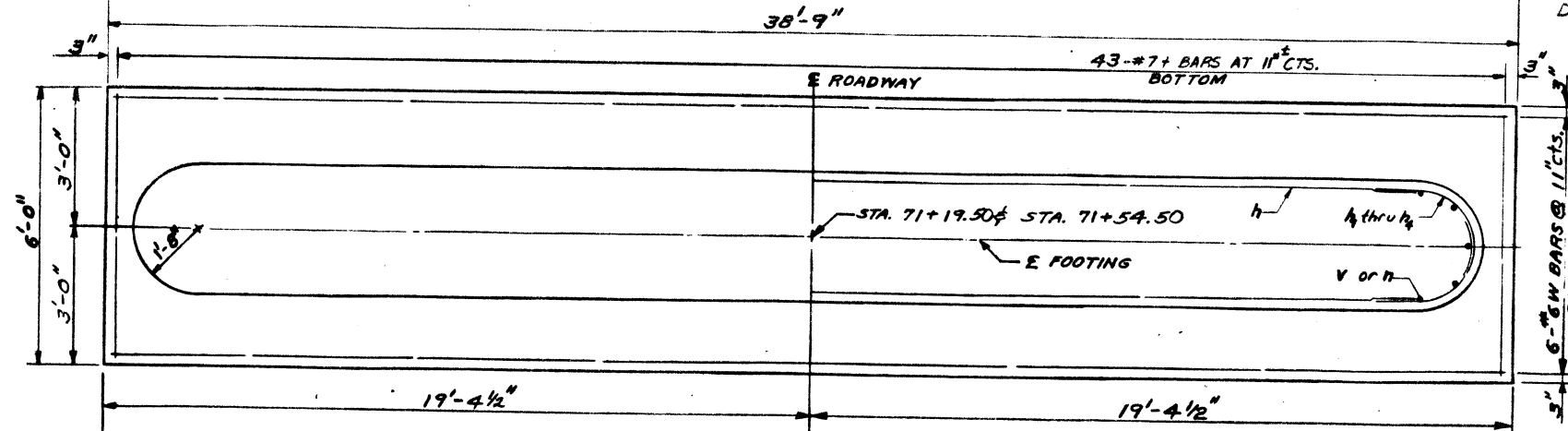
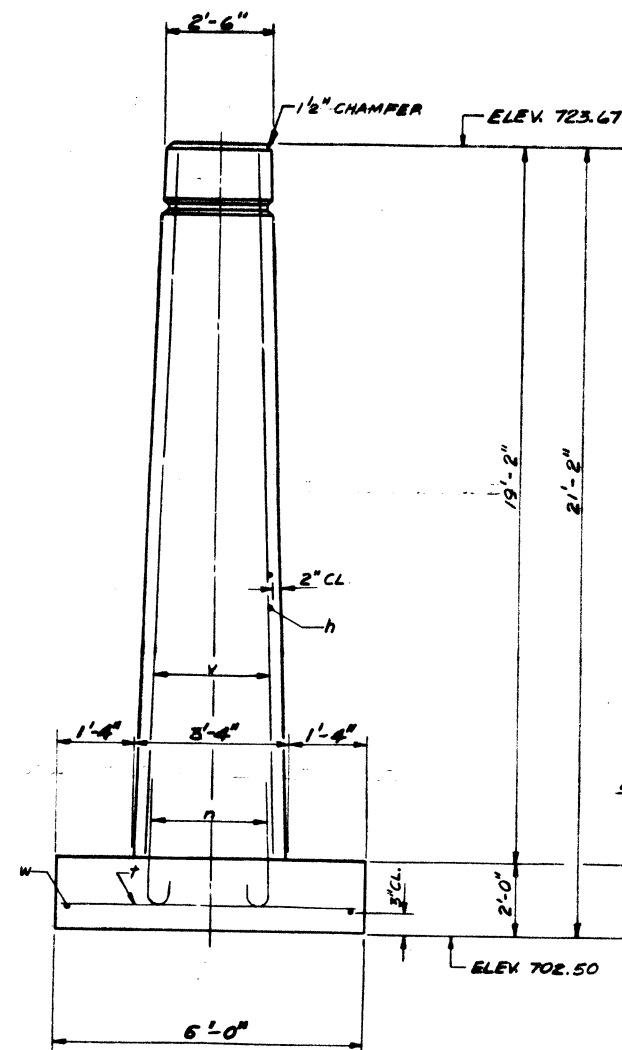
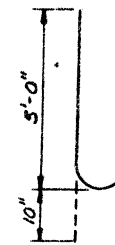
- NOTES
- THESE PORTIONS TO BE POURED AFTER DECK BEAMS ARE PLACED AND DOWELED.
 - CONSTRUCTION JOINT TO BE BONDED CONSTRUCTION JOINT WITH 3" NOTCH ON EXPOSED FACE
 - USE $R\frac{3}{4}$ " CHAMFER ON ALL EXPOSED EDGES OF WING WALLS



BAR	R	A
h ₁	1'-1"	2'-6"
h ₂	1'-2"	2'-7"
h ₃	1'-3"	2'-9"
h ₄	1'-5"	3'-0"

DETAIL OF BARS

h₁ - h₄



ELEVATION
(LOOKING EAST)

- 5 PAIRS #6 h₁ BARS @ 12" CTS. (EACH END)
- 5 PAIRS #6 h₂ BARS @ 12" CTS. (EACH END)
- 5 PAIRS #6 h₃ BARS @ 12" CTS. (EACH END)
- 5 PAIRS #6 h₄ BARS @ 12" CTS. (EACH END)
- 3-#7n BARS EACH END

BILL OF MATERIAL PER PIER

BAR	NO.	SIZE	LENGTH	SHAPE
h	40	#6	33'-5"	—
h ₁	20	#6	5'-6"	—
h ₂	20	#6	5'-7"	—
h ₃	20	#6	5'-9"	—
h ₄	20	#6	6'-0"	—
n	88	#7	5'-10"	—
i	43	#7	5'-6"	—
v	88	#7	10'-0"	—
w	6	#6	38'-3"	—
CLASS X CONCRETE			CU. YDS.	9.6
REINFORCEMENT BARS			LBS.	7989

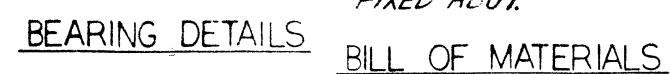
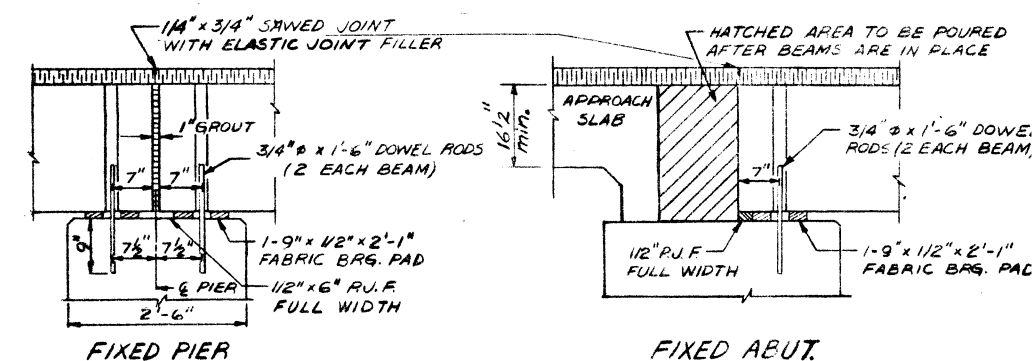
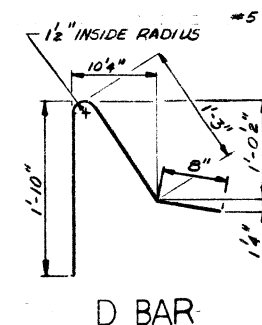
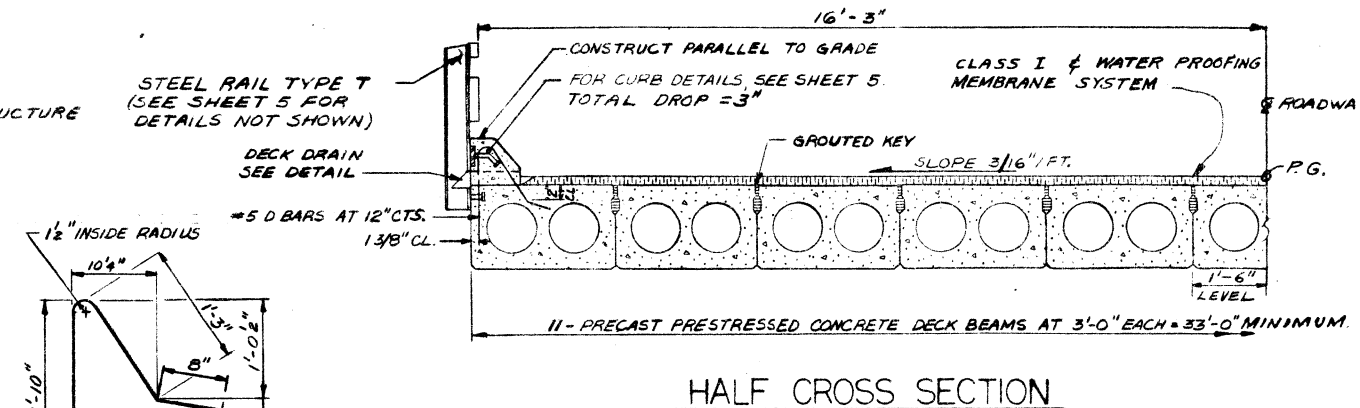
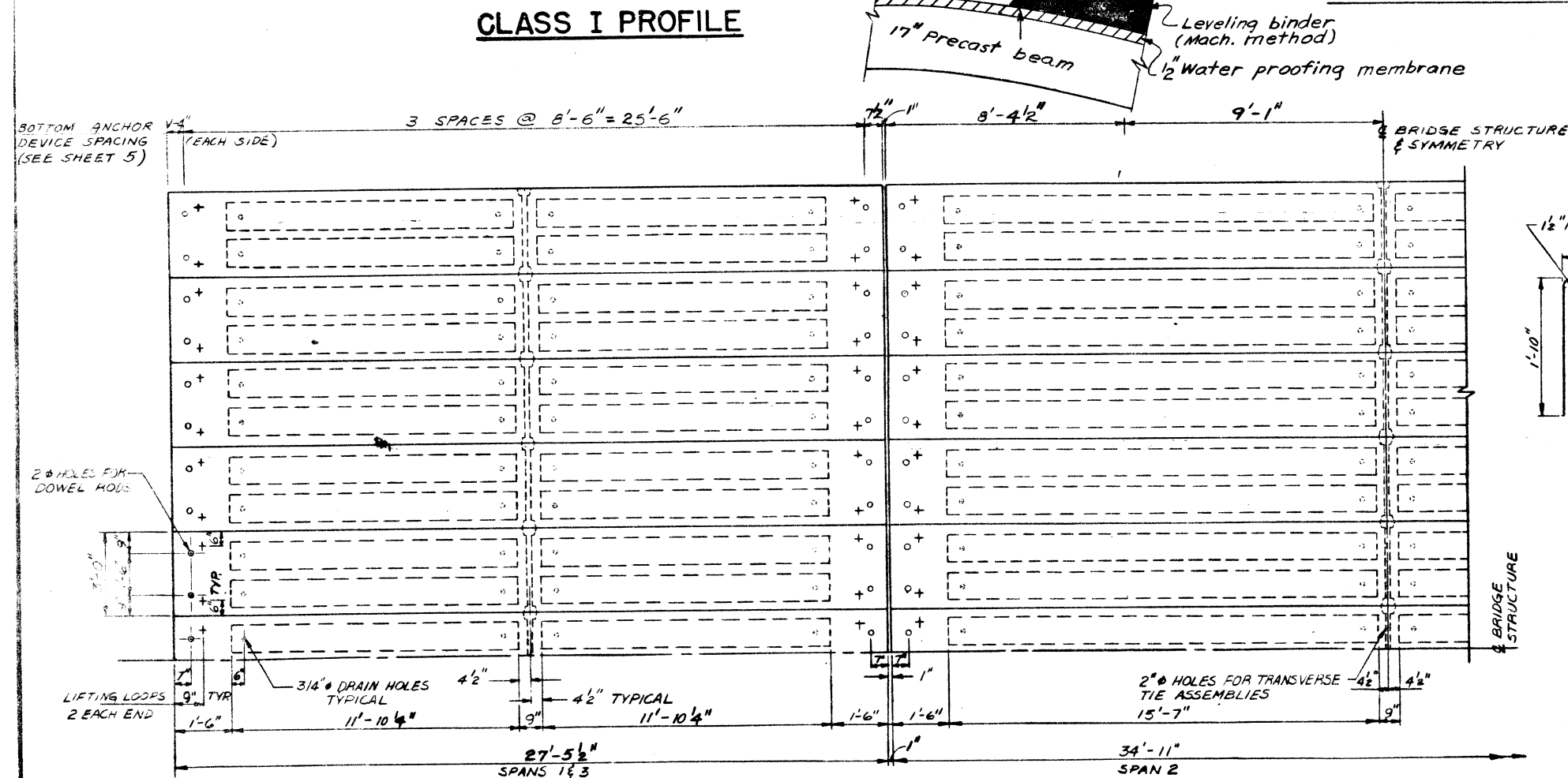
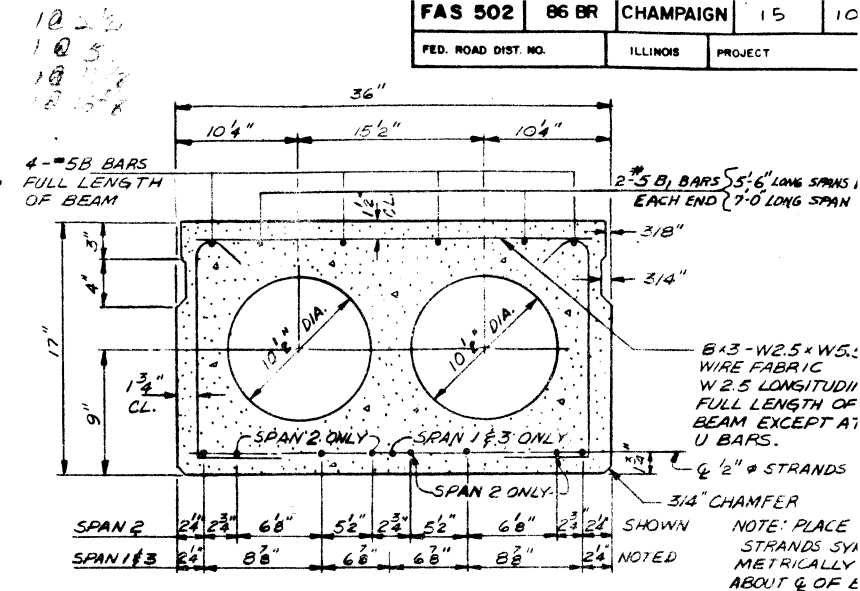
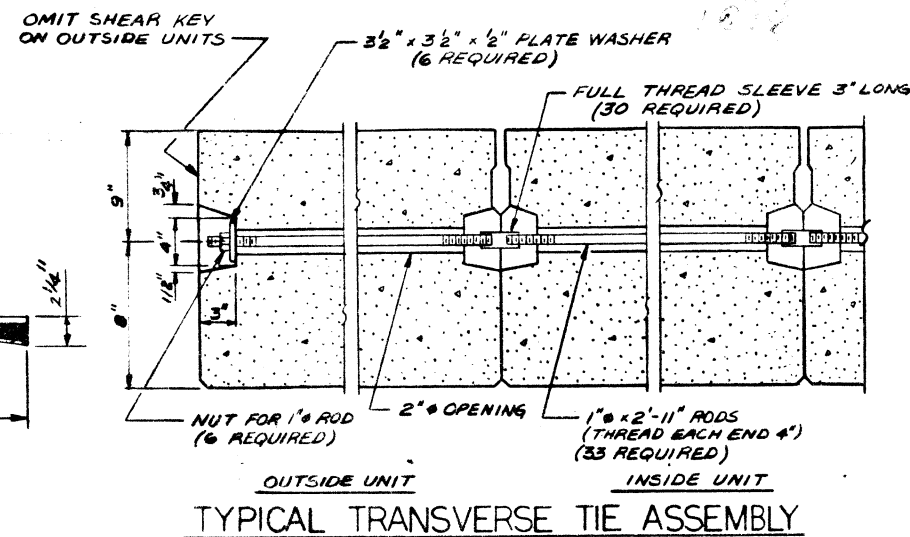
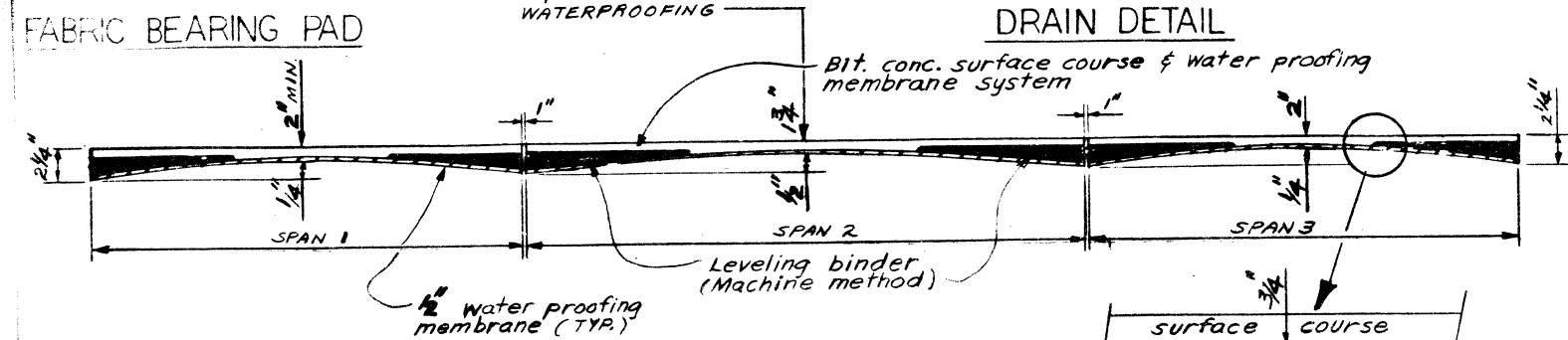
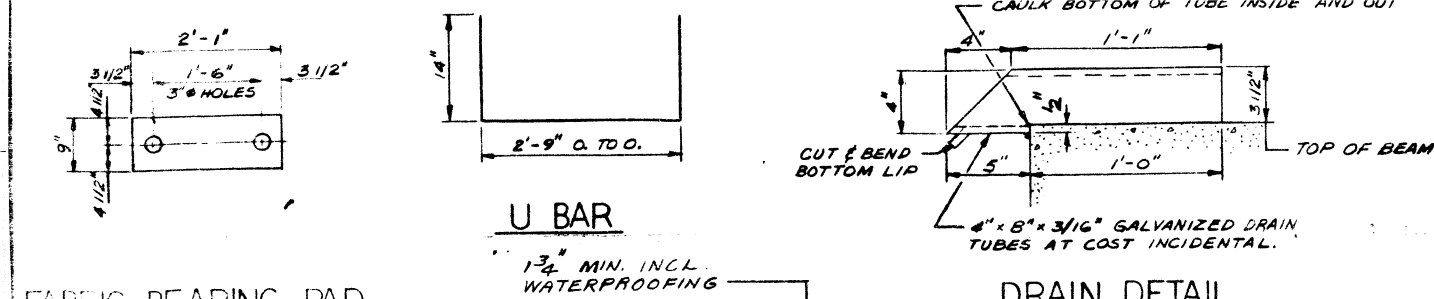
TOTAL QUANTITIES FOR TWO PIERS

CLASS X CONCRETE	CU. YDS.	18.2
REINFORCEMENT BARS	LBS.	15978

SUBSTRUCTURE - PIERS

Date	3/5/50
Revisions	
Designed	D.J.
Drawn	L.S.K.
Checked	
Appr.	

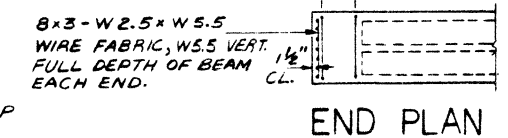
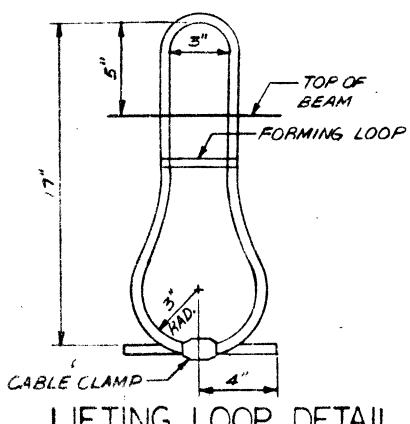
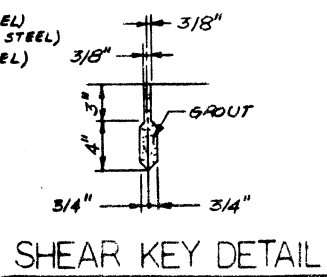
CHAMPAIGN CO. F.A.S. ROUTE 502
SECTION 86 BR
STATION 71+37



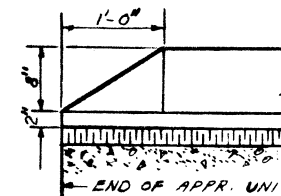
BAR	NO.	SIZE	LENGTH	SHAPE
PRECAST PRESTRESSED CONCRETE DECK BEAMS			SQ. FT.	2965

NOTES

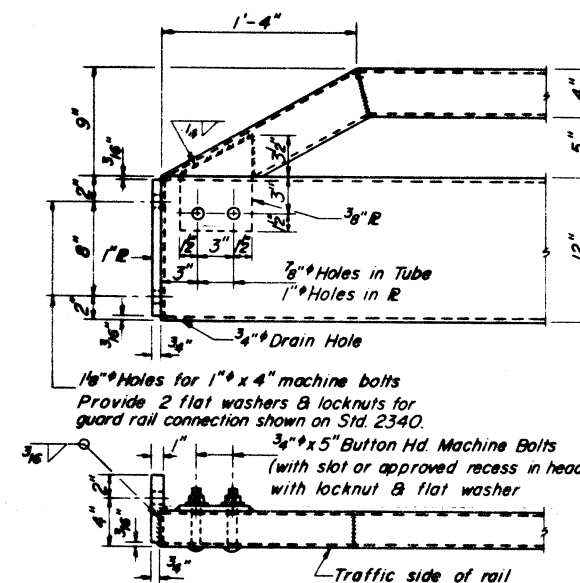
PRESTRESSING STEEL SHALL BE NON-GALVANIZED HIGH STRENGTH, STRESS-RELIEVED 7-WIRE STRAND, GRADE 270. THE NOMINAL DIAMETER SHALL BE 1/2" AND THE NOMINAL CROSS-SECTIONAL AREA SHALL BE 0.153 SQ. IN. LIFTING LOOPS SHALL BE 1/2" DIAMETER, 6 x 25 CLASS WIRE ROPE WITH FIBER CORE AND SHALL HAVE A MINIMUM ULTIMATE TENSILE STRENGTH OF 21,000 LBS. THE 1/8" RODS IN THE TRANSVERSE TIE ASSEMBLY SHALL BE TIGHTENED TO A SNUG FIT AND THE THREADS SET. POCKETS THAT RECEIVE TRANSVERSE TIE BAR ON OUTSIDE SHALL BE FILLED WITH GROUT AFTER TRANSVERSE TIE ASSEMBLY IS IN PLACE. LONGITUDINAL SHEAR KEYS SHALL BE PACKED WITH A VERY DRY MIX OF 2:1 SAND AND P.C. MORTAR. AFTER BEAMS HAVE BEEN ERECTED, HOLES FOR THE DOWEL ANCHORS SHALL BE DRILLED INTO THE SUB-STRUCTURE AND THE ANCHOR DOWELS SHALL BE GROUTED IN PLACE. REINFORCEMENT BARS SHALL CONFORM TO AASHTO: M-31 OR M-41, GRADE 60. COST OF REINFORCEMENT AND ACCESSORIES CAST INTO THE BEAM, OF BEARING PADS, OR ARMOR ANGLES, AND OF GROUTING LONGITUDINAL SHEAR KEYS IS INCLUDED IN UNIT PRICE BID FOR 'PRECAST PRESTRESSED CONCRETE DECK BEAMS'.



SUPERSTRUCTURE			
Date <u>3/5/80</u>	Surveyed	CHAMPAIGN CO. F.A.S. ROUTE 502 SECTION 86 BR STATION 71+37	Sheet 4
Revisions	Designed <u>D.J.</u>		
	Drawn <u>L.S.K.</u>		
	Checked <u>P</u>		
	Appr.		

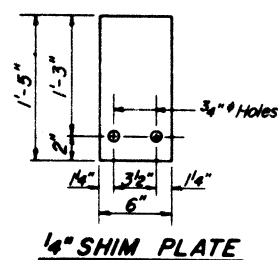


PARTIAL ELEVATION

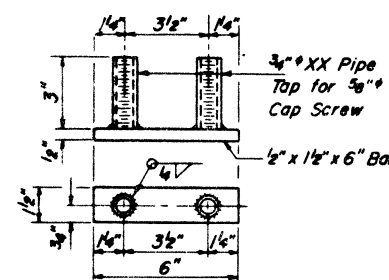


SECTION A-A

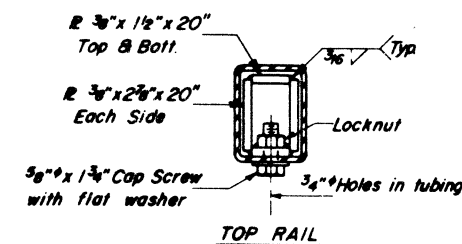
SECTION AT RAIL POST



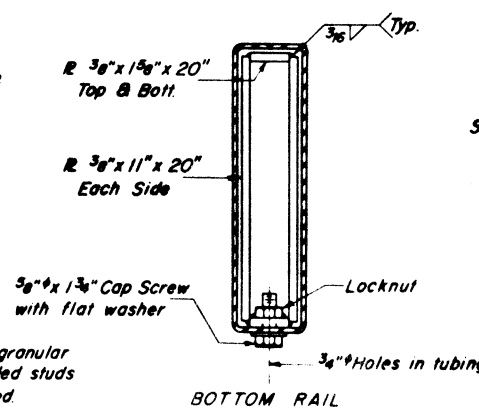
1/4" SHIM PLATE



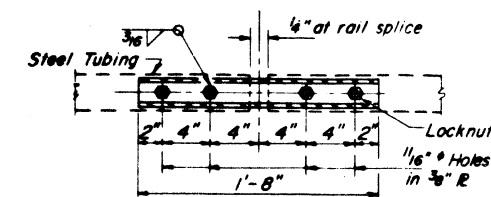
BOTTOM ANCHOR DEVICE



TOP RAIL



SECTIONS AT RAIL SPLICE



PLAN-BOTT. SPLICE R
TYPICAL

How structural steel tubing shall conform to the requirements of A.S.T.M. designation A-500 Grade B or A-501 Structural Steel Tubing.

All other steel shapes and plates shall conform to the requirements of A.A.S.H.T.O. M-183 except posts and angles shall conform to A.A.S.H.T.O. M-223, Grade 50.

Bolts, cap screws, and nuts shall conform to the requirement of A.S.T.M. designation A-307 except for high strength bolts, nuts and washers noted which shall conform to A.A.S.H.T.O. M-164.

All bolts, nuts, cap screws, washers and lock washers shall be galvanized in accordance with A.A.S.H.T.O. M-232.

All posts, railing, rail splices, anchor devices and angles shall be galvanized after shop fabrication in accordance with A.A.S.H.T.O. M-111 and A.S.T.M. A-385.

Galvanized rail shall not be painted.

Railing shall be in accordance with Section 508 of the Standard Specifications, except as noted, and shall be paid for at the contract unit price per lineal foot for STEEL RAILING, TYPE T.

All field drilled holes shall be coated with an approved zinc rich paint before erection.

The lower portion of the post flange in contact with concrete shall receive two coats of asphalt paint conforming to Section 714.08 Type B or place 1/8" fabric bearing pad between the post and concrete.

The 3/4" high strength bolts used to connect the 6 x 4 x 3/4" angles to the post shall be tightened in accordance with Article 50704(g)(3) of the Standard Specifications. The 1" high strength bolts connecting the angles to the concrete shall be tightened to a snug fit and given an additional 1/2 turn. The 5/8" cap screws in bottom of posts shall be tightened to a snug fit only.

For multi-span bridges, sufficient 4" x 6" x 1/2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost incidental to Steel Railing.

CURB & RAIL
BILL OF MATERIAL

<i>Bar</i>	<i>No.</i>	<i>Size</i>	<i>Length</i>	<i>Shape</i>
e	6	#4	31'-6"	
	3 e BARS / SIDE (LAP 2'-0")			
<i>Reinforcement Bars</i>			Lbs.	126
<i>Class X Concrete</i>			Cu Yds.	5.5
<i>Steel Railing, Type T</i>			Lin Ft.	187

TYPE T
STEEL RAILING

DESIGNER: <i>S. J.</i>	19
CHECKED: <i>D. J.</i>	EXAMINED
DRAWN: <i>L. J.</i>	ENGINEER OF BRIDGE AND TRAFFIC STRUCTURES
CHECKED	PASSED
	ENGINEER OF BRIDGE
	APPROVED
	ENGINEER OF BRIDGE

