

PLATE NO.	SECTION	SHEET	FEET	INCHES	SHEET NO. 2
57	*	ILLINOIS	12	42	3 SHEETS
FEET ROAD DIST. NO.	DANGER		FEET ROAD IMPROVED		

* (38-5) RS-1

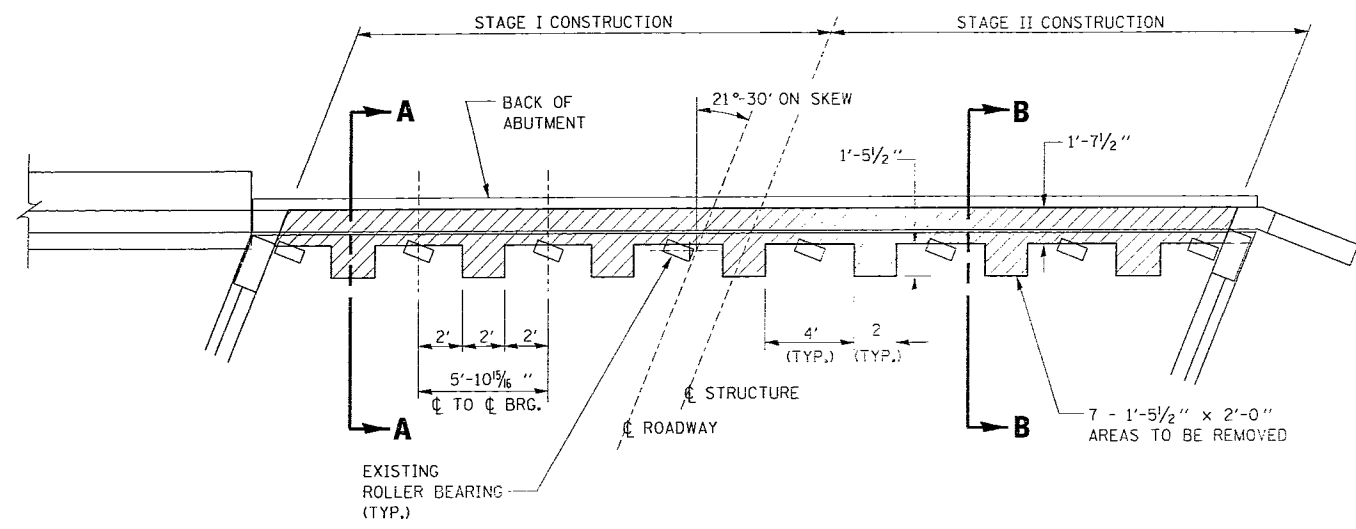


TOTAL BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	SHAPE
C1E	18	#5	12'-0"	
C2(E)	48	#5	6'-0"	
C3(E)	42	#5	12'-0"	
b1(E)	42	#5	6'-0"	
CONCRETE REMOVAL			62 CU YD	
REINFORCEMENT BARS, EPOXY COATED			780 LBS	
CONCRETE SUPERSTRUCTURE			18 CU YD	
BAR SPLICERS			8 EACH	

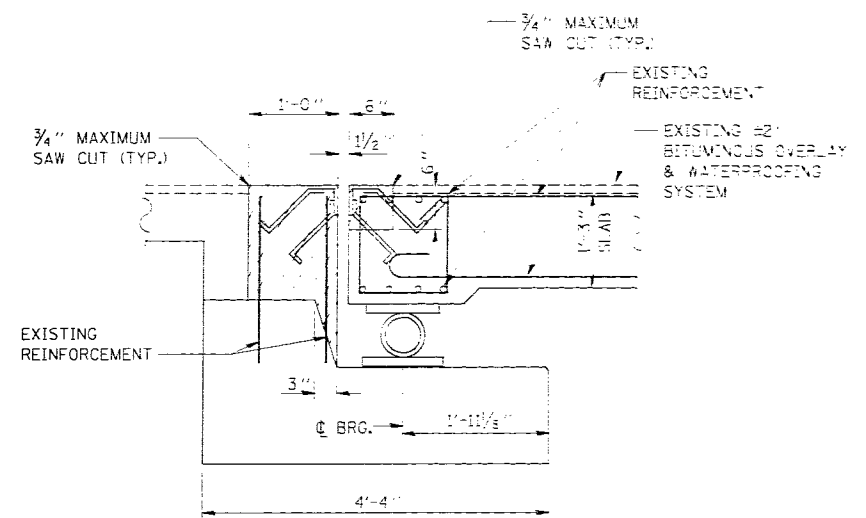
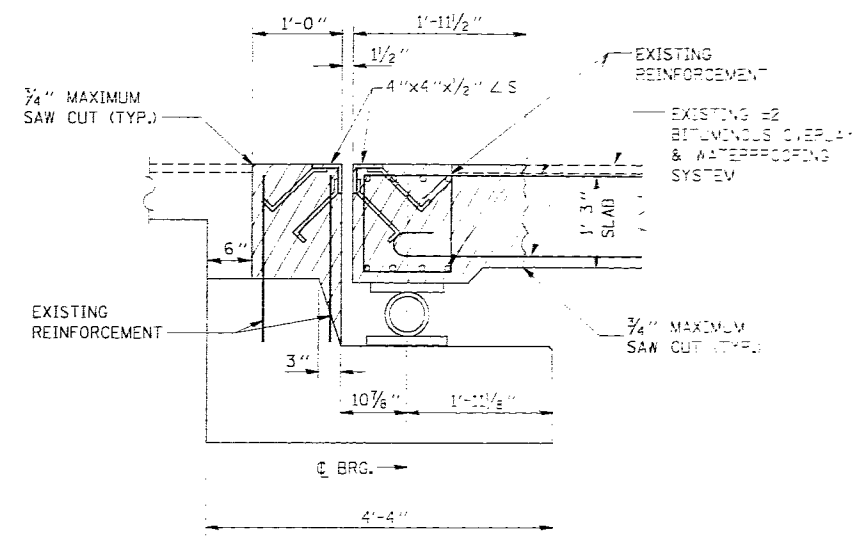
DESIGNED	19
CHECKED	EXAMINED
DRAWN	ENGINEER OF BRIDGE DESIGN
CHECKED	PASSED
	ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET	POST	SHEET NO. 3
57	*	IROQUOIS	127	43	8 SHEETS
* (38-5)RS-1					



NOTES: EXISTING REINFORCEMENT TO BE CLEANED, STRAIGHTENED, AND INCORPORATED INTO THE NEW CONSTRUCTION.
COST OF REMOVAL OF EXISTING ANGLE IRON SHALL BE CONSIDERED INCLUDED IN THE COST OF CONCRETE REMOVAL. THE EXISTING ANGLE IRON SHALL, AT THE DISCRETION OF THE ENGINEER, BECOME PROPERTY OF THE STATE.
HATCHED AREAS INDICATE CONCRETE REMOVAL.



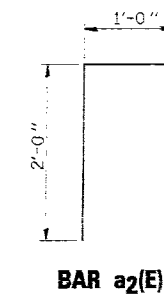
DESIGNED	19
CHECKED	EXAMINED
DRAWN	PASSED
CHECKED	ENGINEER OF BRIDGES AND STRUCTURES

STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION (38-5)RS-1
IROQUOIS COUNTY
S.N. 038-0001
STA. 697 + 75

FEB 11 2000
VBO2099.BROGDET.DGN

ROUTE NO.	SECTION	COUNT	DATE	TIME	SHEET NO. 4
NO. 1 P.A. 57	*	IRROGUCIS	127	44	8 SHEETS
FIELD ROAD DIST. NO. 1		MILEAGE		FEET, NOS. APPROX.	

* (38-5) PS-1



STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION (38-5)RS-1
IROQUOIS COUNTY
S.N. 038-0001
STA. 697 + 75

DESIGNED
CHECKED
DRAWN
CHECKED

19

EXAMINED

PASSED

ENGINEER OF BRIDGE DESIGN

ENGINEER OF BRIDGES AND STRUCTURES

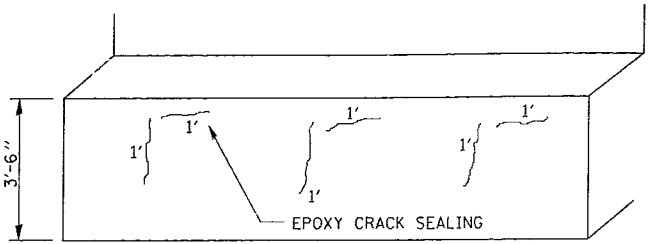
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	LENG.	POST	SHEET NO.
57	*	IROQUOIS	127	45	5
SHEETS					

* (38-5)RS-1

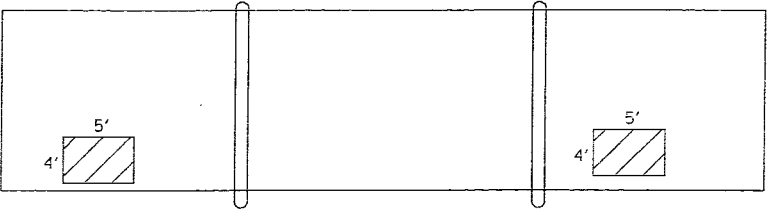
NOTE

Areas of deck repairs shown are estimated. The Engineer and show actual locations of deck repairs to As Built conditions.



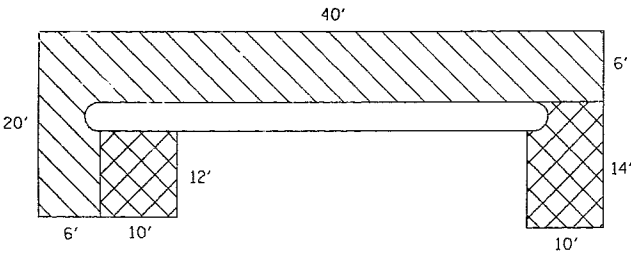
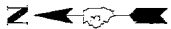
SOUTH ABUTMENT

EPOXY CRACK SEALING = 6'



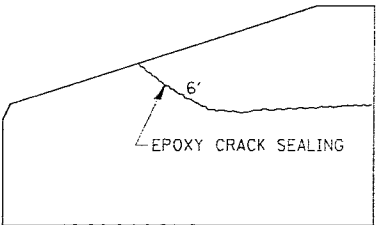
DECK UNDERSIDE

POLYMER MODIFIED PC MORTAR = 40 SQ. FT.



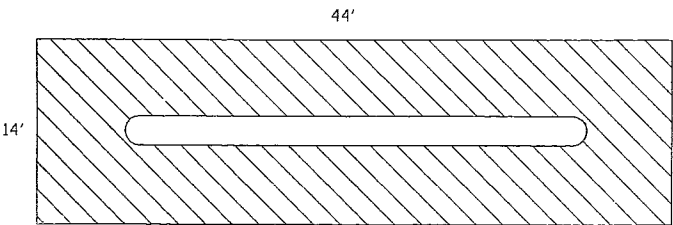
NORTH PIER

SLOPEWALL REMOVAL = 36 SQ YD
SLOPEWALL 6" = 36 SQ YD
SLOPEWALL SLURRY PUMPING = 20 CU YD



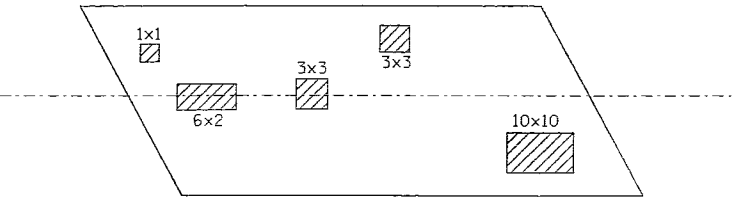
NORTHWEST WINGWALL

EPOXY CRACK SEALING = 6'



SOUTH PIER

SLOPEWALL REMOVAL = 70 SQ YD
SLOPEWALL 6" = 70 SQ YD



TOP OF DECK

DECK SLAB REPAIR (PARTIAL DEPTH) = 15 SQ YD

BILL OF MATERIALS	
ITEM	QUANTITY
DECK SLAB REPAIR (PARTIAL DEPTH)	15 SQ YD
EPOXY CRACK SEALING	12 FOOT
POLYMER MODIFIED PC MORTAR	40 SQ FT
SLOPEWALL REMOVAL	106 SQ YD
SLOPEWALL 6"	106 SQ YD
SLOPEWALL SLURRY PUMPING	20 CU YD

DESIGNED	19
CHECKED	EXAMINED
DRAWN	PASSED
CHECKED	ENGINEER OF BRIDGES AND STRUCTURES

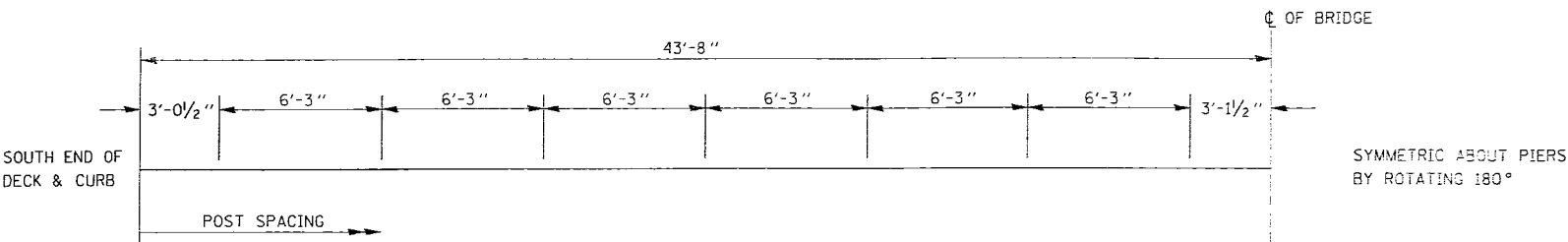
DATE OF SURVEY 01-10-00

STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION (38-5)RS-1
IROQUOIS COUNTY
S.N. 038-0001
STA. 697+75

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

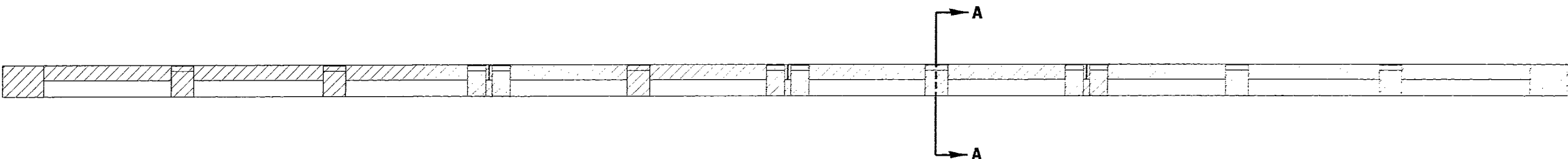
ROUTE NO.	SECTION	COUNTY	SHEET	SHEET NO.
57	*	IROQUOIS	127	46
SHEETS				8

*38-5)RS-1

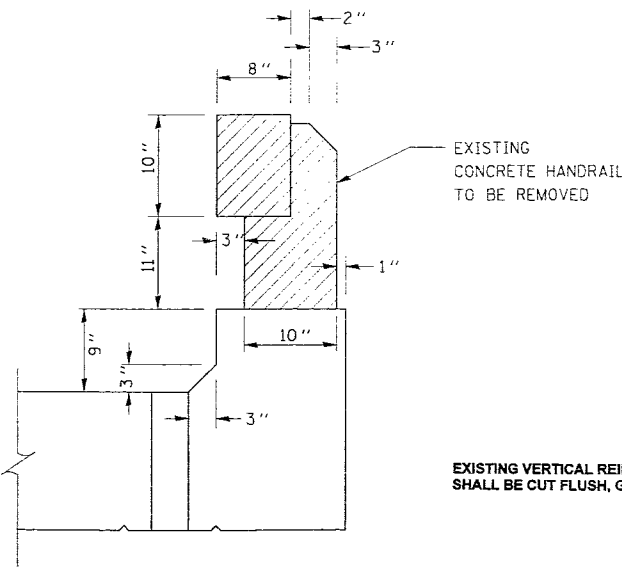


LAYOUT OF PROPOSED STEEL BRIDGE RAIL POSTS

NOTE: FOR DETAILS OF THE STEEL BRIDGE RAIL, SEE THE DETAIL - TYPE 2399
STEEL BRIDGE RAIL CURB MOUNTED



HANDRAIL CONCRETE REMOVAL



EXISTING VERTICAL REINFORCEMENT BARS EXTENDING FROM CURB
SHALL BE CUT FLUSH, GRIND SMOOTH AND SEAL WITH EPOXY.

BILL OF MATERIALS	
ITEM	QUANTITY
HANDRAIL CONCRETE REMOVAL	178 FT

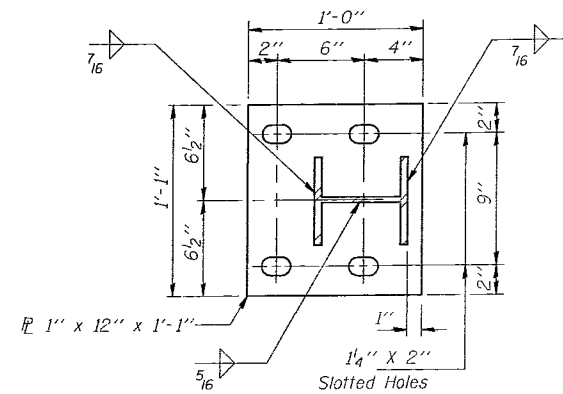
STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION 38-5)RS-1
IROQUOIS COUNTY
S.N. 038-0001
STA. 697 + 75

DESIGNED	19
CHECKED	EXAMINED
DRAWN	PASSED
CHECKED	ENGINEER OF BRIDGES AND STRUCTURES

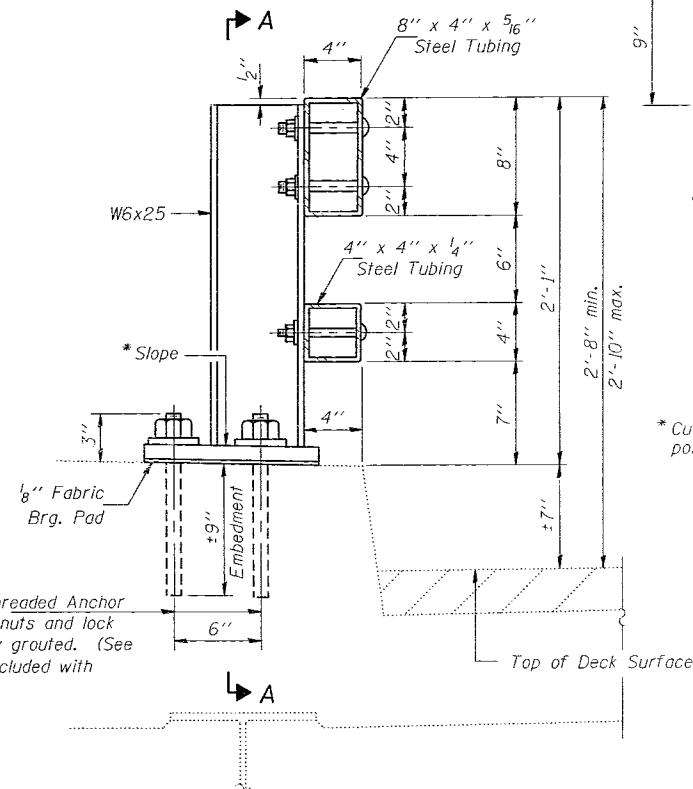
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

*(38-5)RS-1

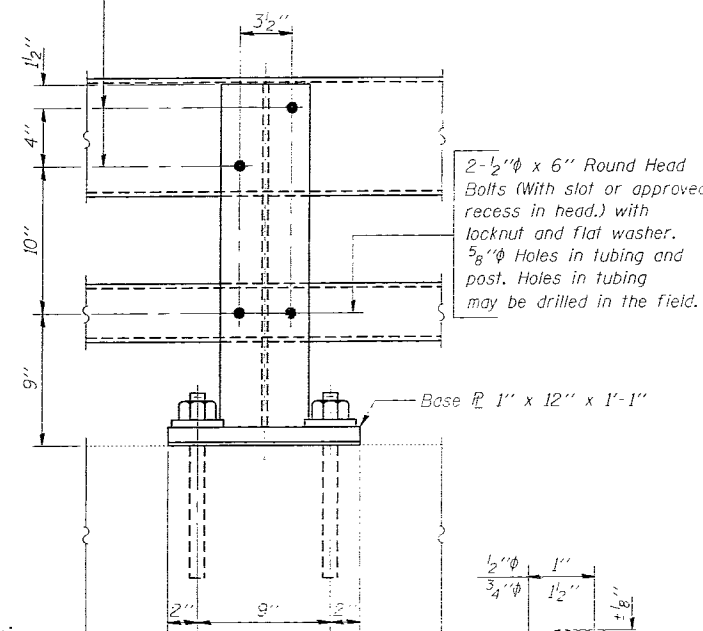
PROJECT NO.	SECTION	DATE	REV.	SHEET NO.
57	*	IRROQUOIS	127 47	8 SHEETS



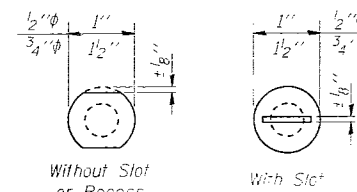
BASE PLATE DETAIL



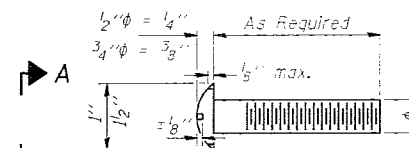
SECTION AT RAIL POST



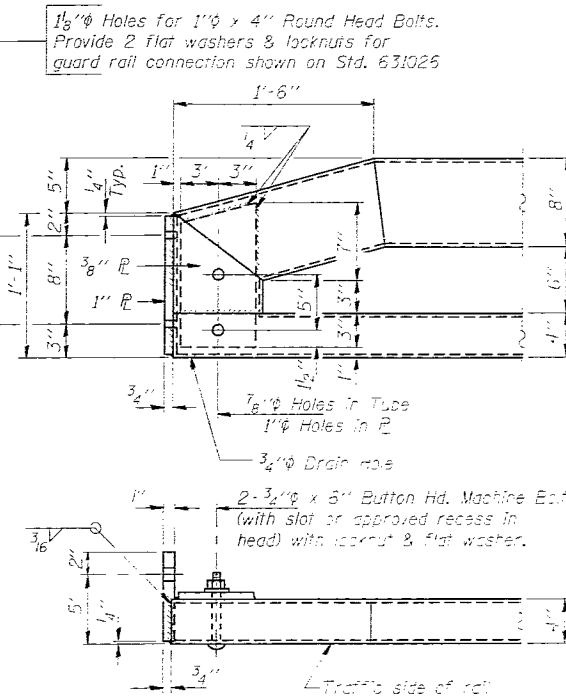
SECTION A-A



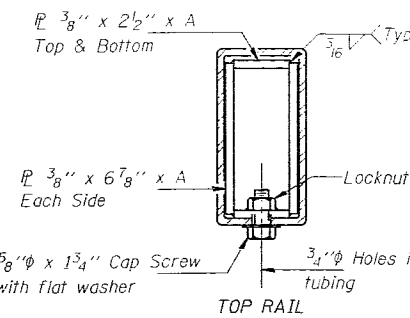
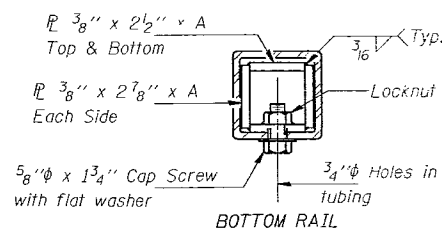
VIEW A-A



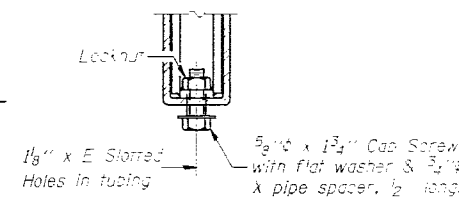
DETAIL OF 1/2\"/>



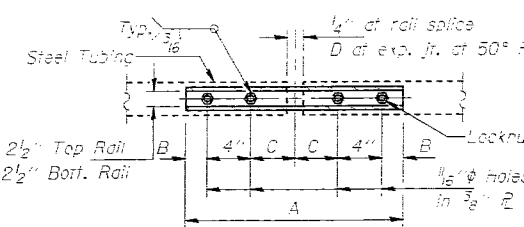
END OF RAIL DETAILS



SECTIONS AT RAIL SPLICE



RAIL SPLICE CONNECTION
AT EXPANSION JT.



PLAN-BOTT. SPLICE R
TYPICAL

NOTES

Hollow structural steel tubing and conform to the requirements of ASTM designation A 500 Grade B. Structural Steel Tubing and end meet the longitudinal oval requirements of 16 FR-05 of AISC.

All other steel shapes and plates and conform to the requirements of AASHTO M 270 Grade 36 except posts and conform to AASHTO M 270, Grade 50.

Bolts, cap screws and nuts and conform to the requirements of ASTM designation A 307 except that threaded rods, nuts and washers shall conform to AASHTO M 294.

All bolts, nuts, cap screws, washers and lock washers shall be galvanized according to AASHTO M 294.

All posts, railing, rail splices and anchor rods shall be galvanized after shop fabrication according to AASHTO M 111 and ASTM A 368. Galvanized rail shall not be painted.

Railing shall be according to Section 812 of the Standard Specifications, except as noted, and will be paid for at the contract unit price per foot for STEEL BRIDGE RAIL.

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

Posts shall not be located closer than 1'-5\"/>

STEEL BRIDGE RAIL expansion joint shall be provided between any two (2) posts which span a bridge expansion joint. Posts located at expansion joint shall be provided with locknuts and end be tightened only to a point that will allow rolling movement.

Provide one 1/2\"/>

Expansion joint width shall be 1/2\"/>

The Contractor shall use the capsule of the adhesive composite type anchor rods that have been previously tested and given a prior approval of the Department. The Contractor shall install these anchor rods in pre-drilled holes according to the manufacturer's recommendations and procedures. The capsule of the adhesive composite shall be sealed with premeasured amounts of the adhesive material.

Nuts for the threaded anchor rods connecting the base plate to the concrete shall be tightened to a snug fit and given an additional 1/4 turn.

BILL OF MATERIAL

ITEM	QTY	UNIT	DESCRIPTION
1	1	EA	Steel Bridge Rail

SPLICE DIMENSIONS

RAIL TYPE	SPACING	SPACING	SPACING	SPACING	SPACING
1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48
49	50	51	52	53	54
55	56	57	58	59	60
61	62	63	64	65	66
67	68	69	70	71	72
73	74	75	76	77	78
79	80	81	82	83	84
85	86	87	88	89	90
91	92	93	94	95	96
97	98	99	100	101	102

T = Total movement at expansion joint as shown on the design plans.

STEEL BRIDGE RAIL
CURB MOUNTED

(2399)
S.N. 038-0001
STA. 697 + 75

DESIGNED	19
CHECKED	
DRAWN	
CHECKED	

EXAMINED	ENGINEER OF BRIDGE DESIGN
PASSED	ENGINEER OF BRIDGES AND STRUCTURES

R-31 4-30-99

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET	SHEET NO.
57	*	IROQUOIS	127	48
8 SHEETS				

NOTES
*(38-5)RS-1

Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.

Splicer rods shall be of minimum 60 ksi yield strength, threaded or rolled full length. All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.

Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.

Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory and the proposed bar splicer assembly satisfies the following requirements:

- Minimum Capacity (Tension in kips) = $1.25 \times f_y \times A_s$
- Minimum Pull-out Strength (Tension in kips) = $1.25 \times f_{allow} \times A_s$

Where f_y = Yield strength of lapped reinforcement bars in ksi.

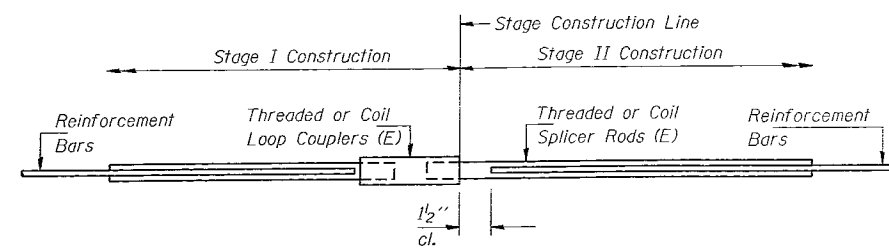
f_{allow} = Allowable tensile stress in lapped reinforcement bars in ksi. Service Load.

A_s = Tensile stress area of lapped reinforcement bars.

* = 28 day concrete

BAR SPLICER ASSEMBLIES				
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements		
		Min. Capacity kips - tension	Min. Pull-out Strength kips - tension	
#5	2'-0"	23.0	9.2	
#6	2'-7"	33.0	13.5	
#7	3'-5"	48.0	19.0	
#8	4'-6"	65.0	25.6	

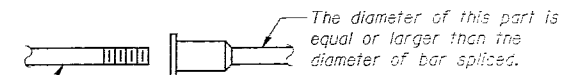
Bar splicer assemblies shall be according to Section 818 of the Standard Specifications, except as noted. The furnishing and installation of bar splicer assemblies will be measured and paid for at the contract unit price each for "BAR SPLICERS."



SPLICER DETAIL

Bar Size	No. Assemblies Required	Location
#5	8	ABUTMENTS

The diameter of this part is the same as the diameter of the bar spliced.

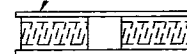


ROLLED THREAD DOWEL BAR



** ONE PIECE

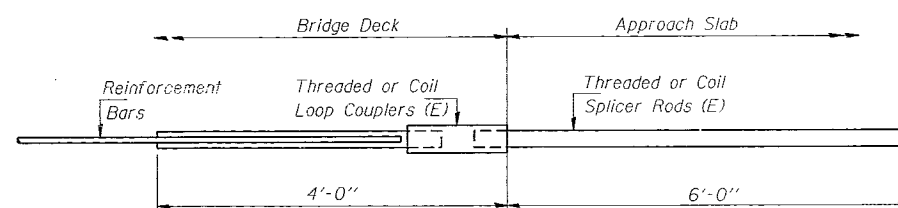
Wire Connector



WELDED SECTIONS

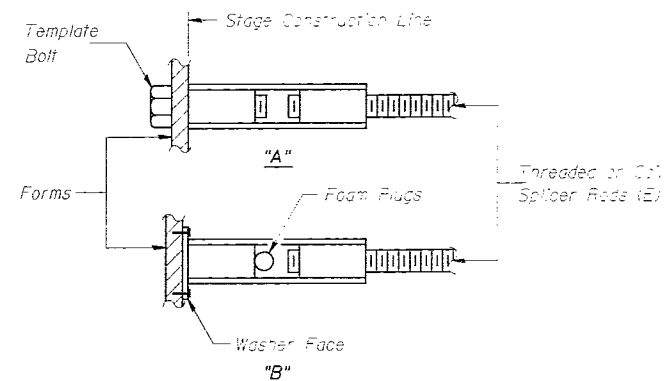
BAR SPLICER ASSEMBLY ALTERNATIVES

** Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



INTEGRAL ABUTMENT
BAR SPLICER ASSEMBLY DETAIL
FOR #5 BAR

Min. Capacity = 23.0 kips - tension
Min. Pull-out Strength = 9.2 kips - tension
No. Required =



INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.

"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.

(E) : Indicates epoxy coating.

DESIGNED
CHECKED
DRAWN
CHECKED

BSD-1 4-30-99

EXAMINED	19
PASSED	ENGINEER OF BRIDGE DESIGN
	ENGINEER OF BRIDGES AND STRUCTURES

STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION (38-5)RS-1
IROQUOIS COUNTY

BAR SPLICER ASSEMBLY DETAILS

S.N. 038-0001
STA. 697 + 75

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	STATION	SHEET NO.	SHEETS
FAI 57	* IROQUOIS	127	48	2
PROJECT NO. 038-0002				

* (38-5)RS-1

GENERAL NOTES

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

The existing structural steel coating contains lead. The Contractor should take appropriate precautions to deal with the presence of lead on this project.

Reinforcement bars shall conform to the requirements of AASHTO M-31, M-42, OR M-53 grade 60.

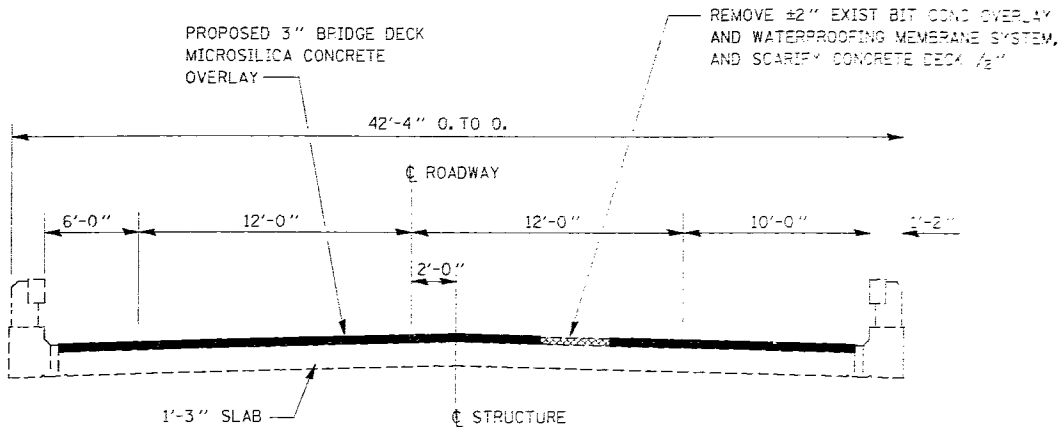
Any reinforcement bars that are damaged during concrete removal shall be replaced with an approved bar splicer or anchorage system. This work shall be included in the cost of "Concrete Removal."

Removal of existing expansion angles shall be included in the cost of "Concrete Removal."

The limits of all concrete removal shall be saw cut prior to removal. The depth of saw cut shall be $\frac{3}{4}$ " unless shown elsewhere in the plans.

A quantity has been provided for slopewall slurry pumping for any slopewall that is undermined.

Slopewall shall be reinforced with welded wire fabric, 6"x6" W4.0xW4.0, weighing 58 lbs. per 100 sq. ft.



CROSS SECTION

LOOKING NORTH
SN 038-0002

TOTAL BILL OF MATERIALS

ITEM	QUANTITY
BRIDGE DECK GROOVING	380 SQ YD
BIT CONCRETE REMOVAL (DECK)	380 SQ YD
CONCRETE DECK SCARIFICATION (1/2 INCH)	380 SQ YD
BRIDGE DECK MICROSILICA CONCRETE OVERLAY	380 SQ YD
DECK SLAB REPAIR (PARTIAL DEPTH)	3 SQ YD
EPOXY CRACK SEALING	10 FOOT
POLYMER MODIFIED PORTLAND CEMENT MORTAR	30 SQ FT
SLOPEWALL REMOVAL	117 SQ YD
SLOPEWALL 6"	117 SQ YD
CONCRETE REMOVAL	3.2 CU YD
CONCRETE SUPERSTRUCTURE	18 CU YD
REINFORCING BARS, EPOXY COATED	750 LBS
BAR SPLICERS	8 EACH
CHANNEL EXCAVATION	80 CU YD
HANDRAIL CONCRETE REMOVAL	178 FOOT
STEEL BRIDGE RAIL	178 FOOT
SLOPEWALL SLURRY PUMPING	30 CU YD
MECHANICAL SPLICE	28 EACH
PROTECTIVE COAT	380 SQ YD

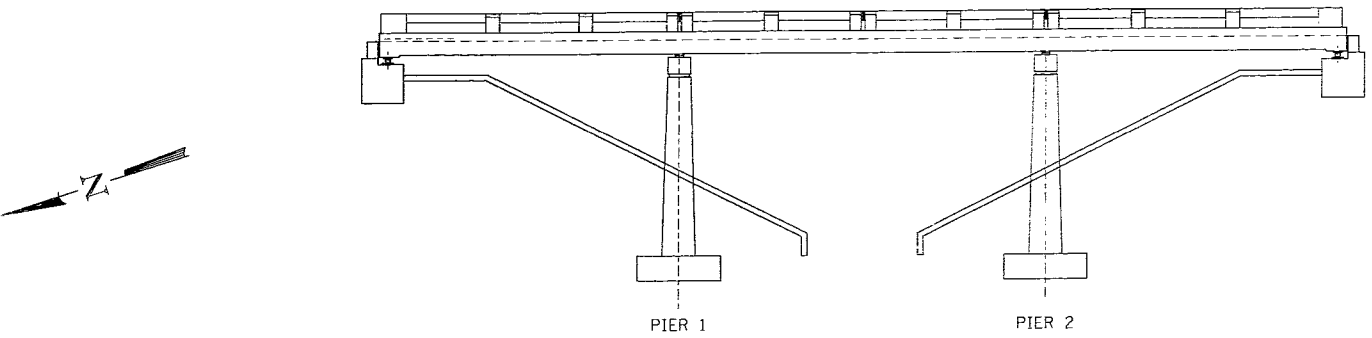
STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION (38-5)RS-1
IROQUOIS COUNTY
S.N. 038-0002
STA. 697 + 75

DESIGNED	19
CHECKED	EXAMINED
DRAWN	PASSED
CHECKED	ENGINEER OF BRIDGES AND STRUCTURES

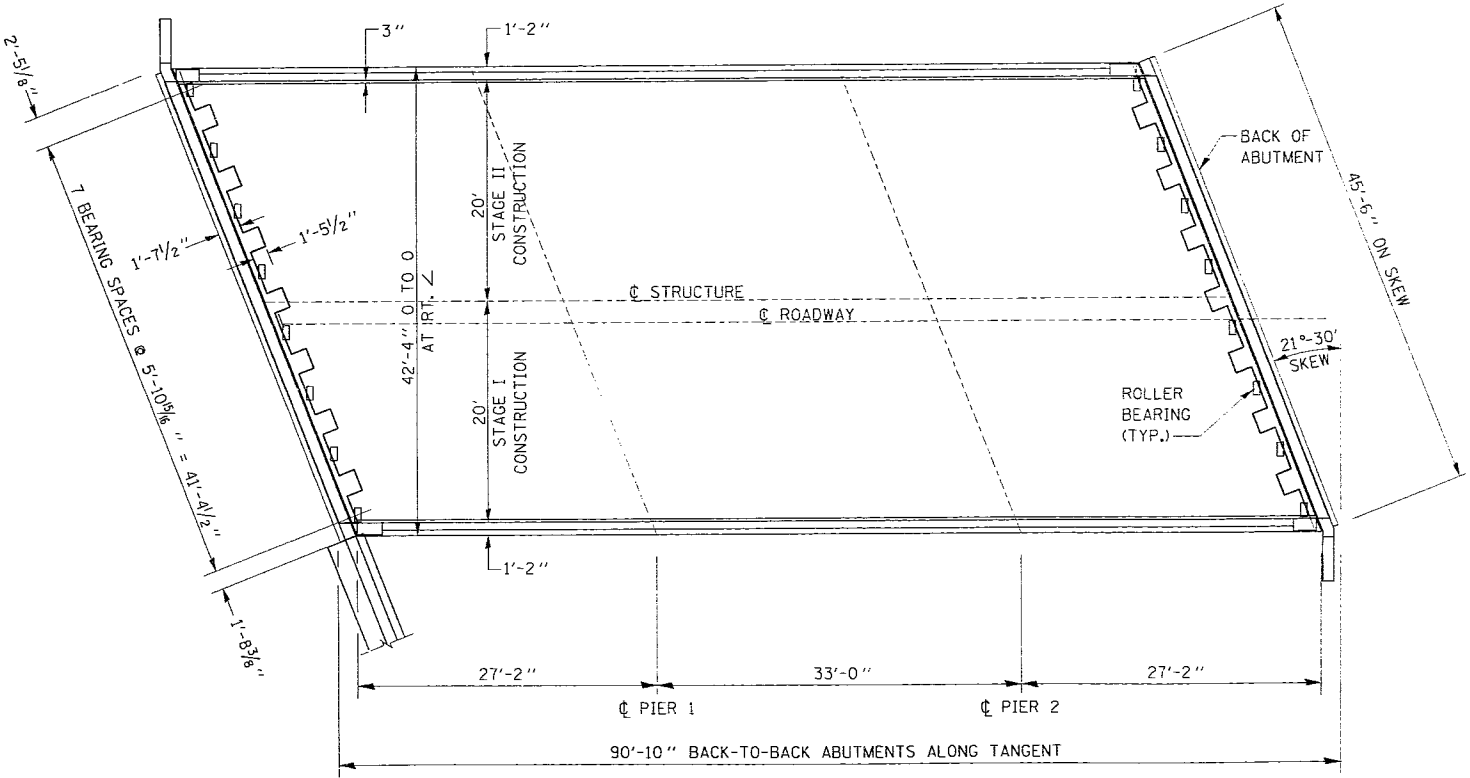
MAR 23 2000
LEP02099.BROGDET.DGN

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	SPAN	STA.	SHEET NO. 2
57	*	IRROQUOIS	127 50	8 SHEETS
* (38-5)RS-1				



ELEVATION



PLAN

TOTAL BILL OF MATERIALS				
BAR	NO.	SIZE	LENGTH	SHAPE
c(E)	16	#5	20'-3"	—
c2(E)	46	#5	3'-0"	—
c3(E)	42	#5	2'-3"	—
b(E)	42	#5	3'-1"	—
CONCRETE REMOVAL			8.2 CU YD	
REINFORCEMENT BARS, EPOXY COATED			780 LBS	
CONCRETE SUPERSTRUCTURE			18 CU YD	
BAR SPLICERS			8 EACH	

REINFORCED BARS DESIGNATED (E)
SHALL BE EPOXY COATED.

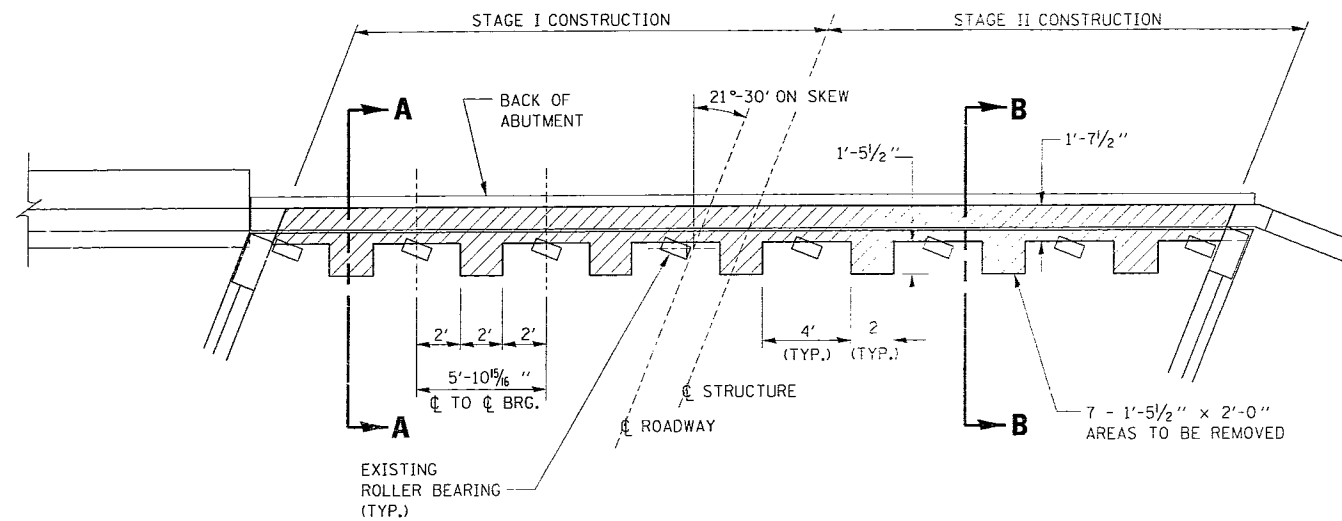
STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION (38-5)RS-1
IROQUOIS COUNTY
S.N. 038-0002
STA. 697 + 75

DESIGNED	19
CHECKED	
DRAWN	
CHECKED	

EXAMINED	ENGINEER OF BRIDGE DESIGN
PASSED	ENGINEER OF BRIDGES AND STRUCTURES

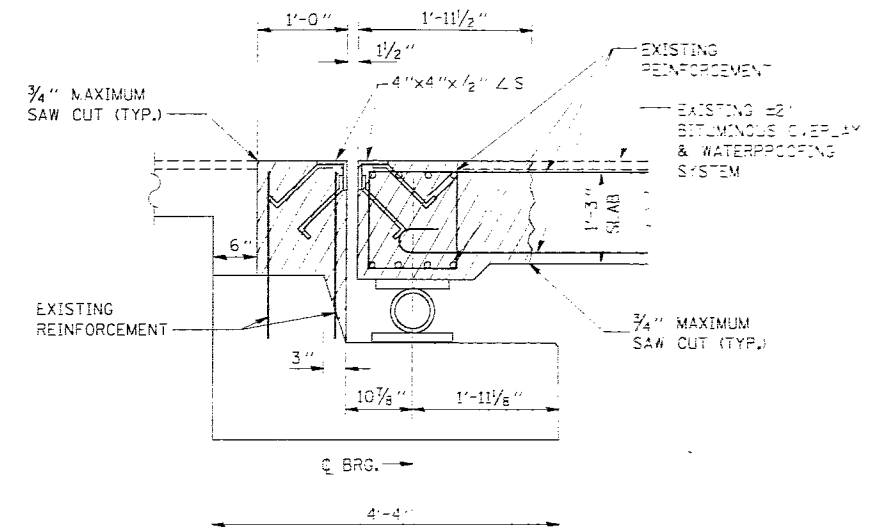
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	SLAB	SP	PS	SHEET NO. 3
57	*	IRROQUOIS	127	51	8 SHEETS
* (38-5)RS-1					

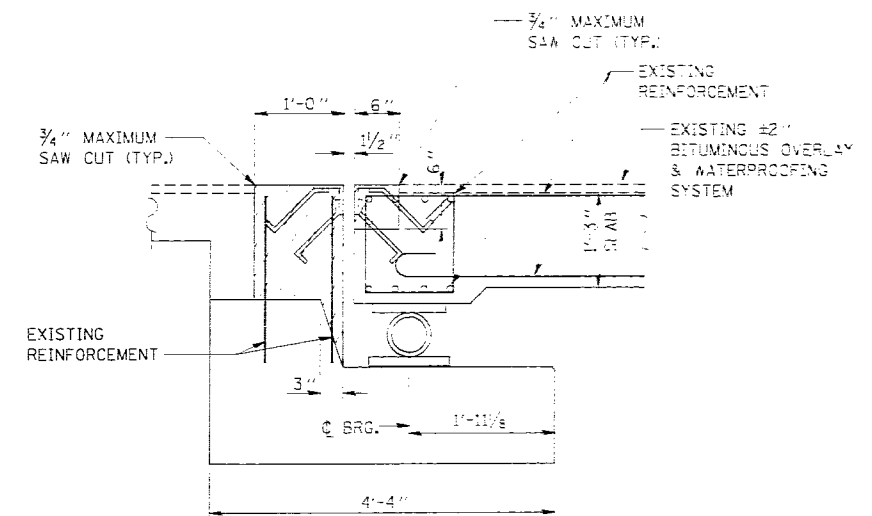


PLAN

NOTES: EXISTING REINFORCEMENT TO BE CLEANED, STRAIGHTENED, AND INCORPORATED INTO THE NEW CONSTRUCTION.
COST OF REMOVAL OF EXISTING ANGLE IRON SHALL BE CONSIDERED INCLUDED IN THE COST OF CONCRETE REMOVAL. THE EXISTING ANGLE IRON SHALL, AT THE DISCRETION OF THE ENGINEER, BECOME PROPERTY OF THE STATE.
HATCHED AREAS INDICATE CONCRETE REMOVAL.



SECTION A-A



SECTION B-B

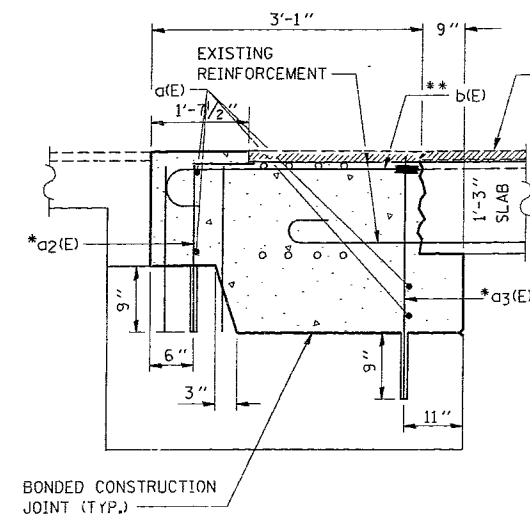
DESIGNED
CHECKED
DRAWN
CHECKED

19
EXAMINED
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

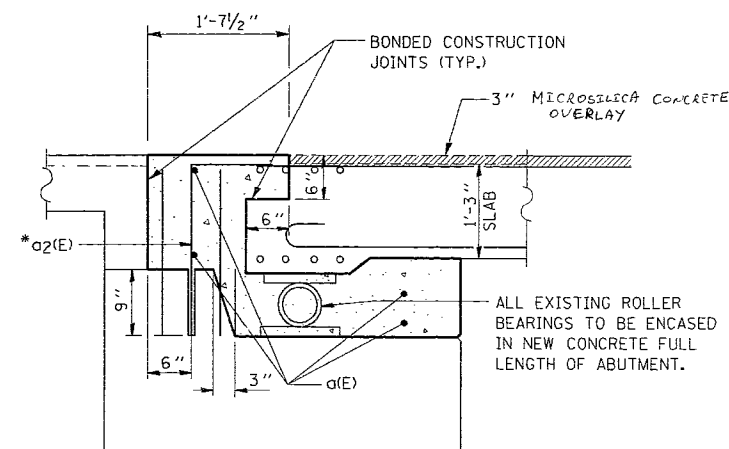
STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION (38-5)RS-1
IRROQUOIS COUNTY
S.N. 038-0002
STA. 697 + 75

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

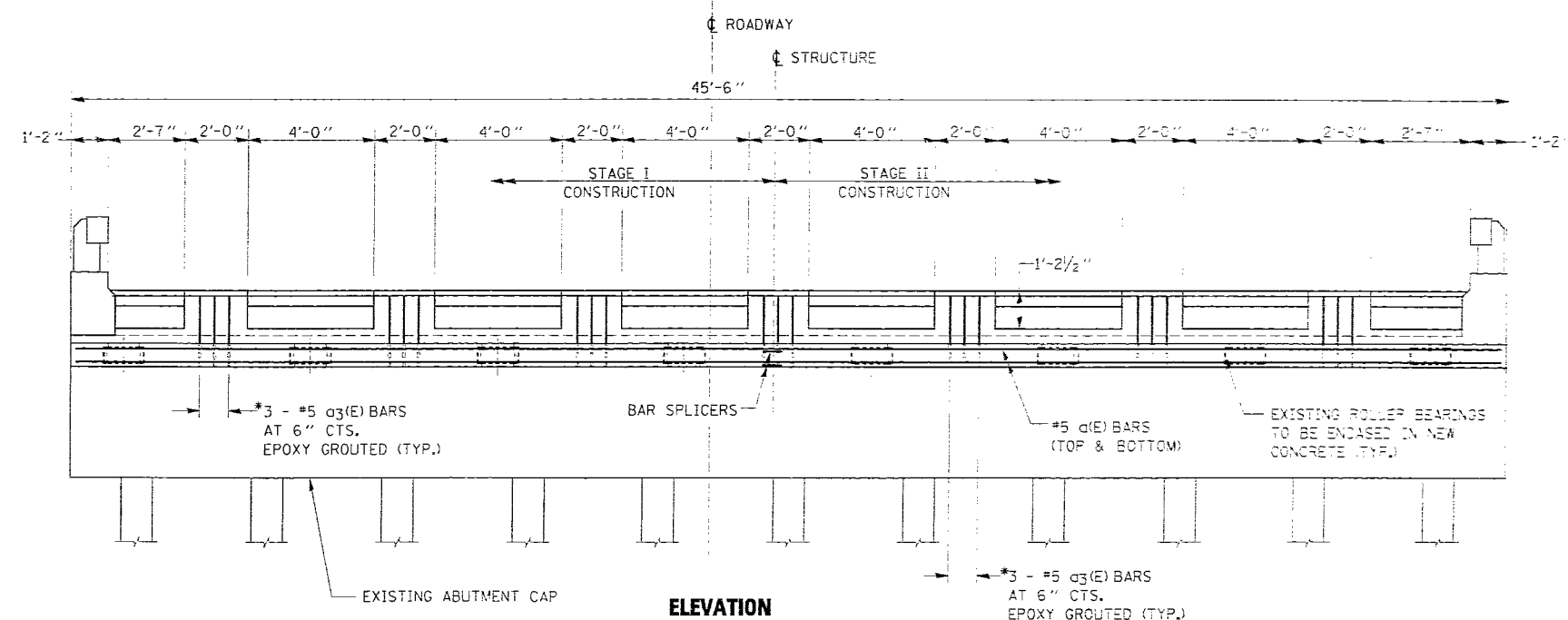
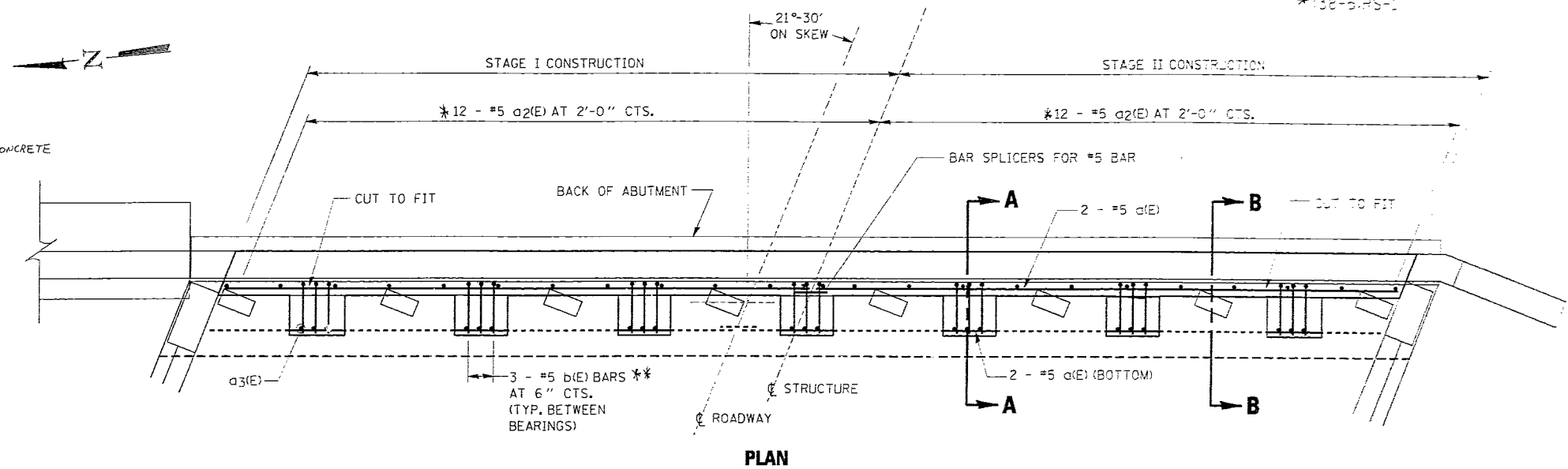
PROJECT NO.	SECTION	DATE	BY	SCALE	SHEET NO.
57	127	127	52		52
S-SHEETS					
*138-5-RS-1					



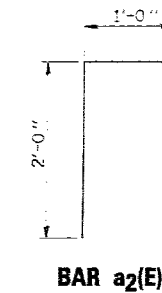
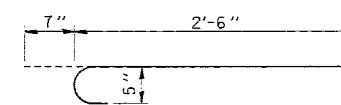
SECTION A-A



SECTION B-B



NOTE: *EPOXY GROUT $a_2(E)$ & $a_3(E)$ BARS IN $\frac{7}{8}$ " ϕ $\times$ 9" (MIN.) DRILLED HOLES
ACCORDING TO SECTION 584 OF THE STANDARD SPECIFICATIONS.
COST INCLUDED IN COST OF "REINFORCEMENT BARS, EPOXY COATED".
**WHERE POSSIBLE MECHANICALLY SPLICE $b(E)$ BARS WITH EXISTING LONGITUDINAL BARS.



DESIGNED	19
CHECKED	
DRAWN	
CHECKED	

EXAMINED	ENGINEER OF BRIDGE DESIGN
PASSED	ENGINEER OF BRIDGES AND STRUCTURES

STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION (38-5)RS-1
IROQUOIS COUNTY
S.N. 038-0002
STA. 697+75

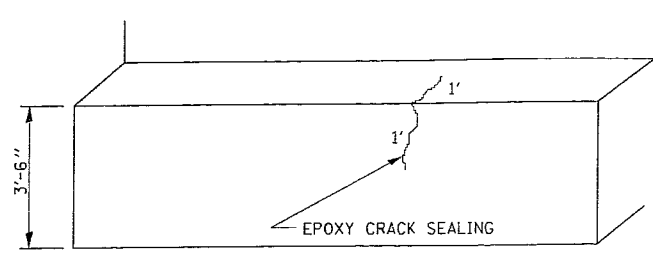
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	BLANK	DATE	SHEET NO.
57	*	IPRODUIS	127	53
SHEETS				

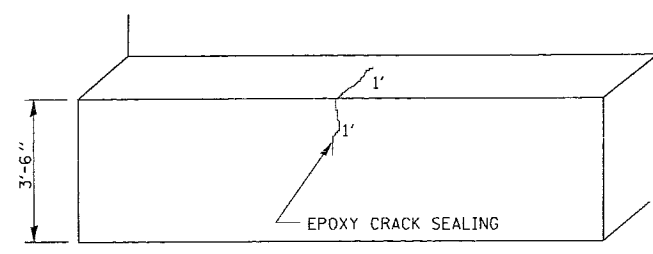
*138-5/RS-1

NOTE

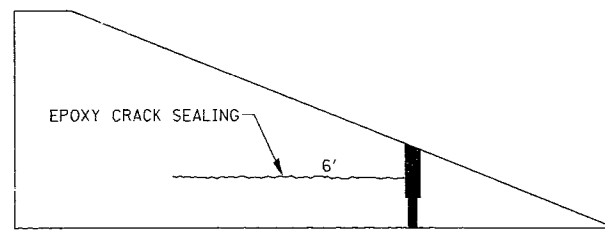
Areas of deck repairs shown are estimated. The Engineer and contractor locations of deck repairs in this Bill of Materials.



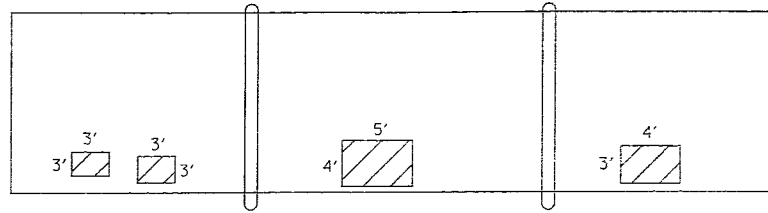
SOUTH ABUTMENT
EPOXY CRACK SEALING = 2'



NORTH ABUTMENT
EPOXY CRACK SEALING = 2'

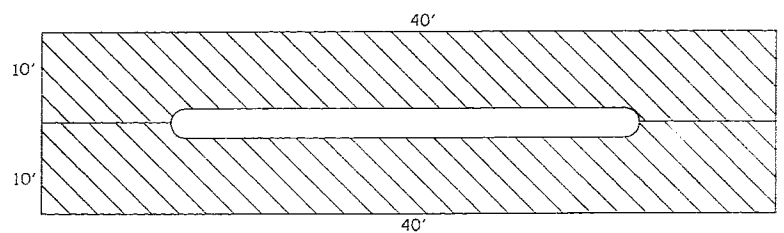


NORTHEAST WINGWALL
EPOXY CRACK SEALING = 6'



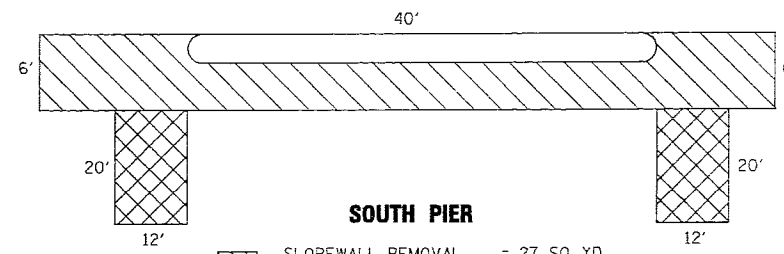
DECK UNDERSIDE

POLYMER MODIFIED PC MORTAR = 50 SQ FT



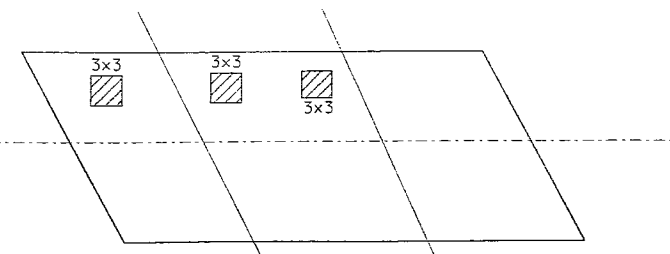
NORTH PIER

SLOPEWALL REMOVAL = 90 SQ YD
SLOPEWALL 6" = 90 SQ YD



SOUTH PIER

SLOPEWALL REMOVAL = 27 SQ YD
SLOPEWALL 6" = 27 SQ YD
SLOPEWALL SLURRY PUMPING = 30 CU YD



TOP OF DECK

DECK SLAB REPAIR (PARTIAL DEPTH) = 3 SQ YD

BILL OF MATERIALS	
ITEM	QUANTITY
DECK SLAB REPAIR (PARTIAL DEPTH)	3 SQ YD
EPOXY CRACK SEALING	10 SQ FT
POLYMER MODIFIED PC MORTAR	50 SQ FT
SLOPEWALL REMOVAL	117 SQ YD
SLOPEWALL 6"	117 SQ YD
SLOPEWALL SLURRY PUMPING	30 CU YD

STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION (38-5)RS-1
IROQUOIS COUNTY
S.N. 038-0002
STA. 697 + 75

DESIGNED	19
CHECKED	
DRAWN	
CHECKED	

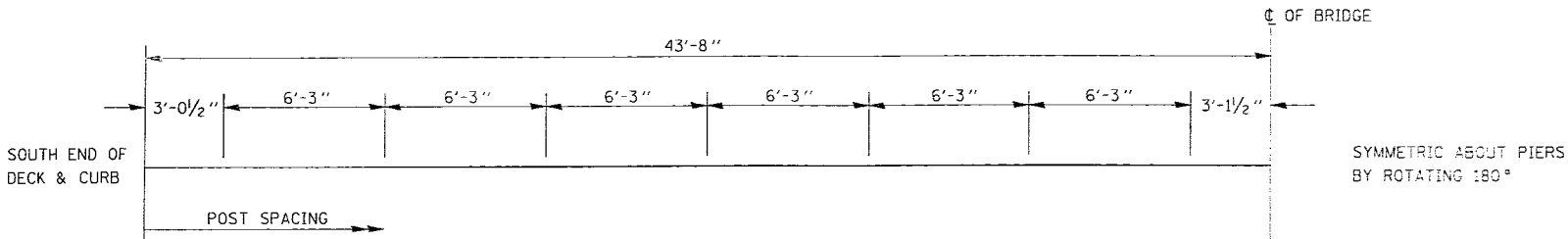
EXAMINED	ENGINEER OF BRIDGE DESIGN
PASSED	ENGINEER OF BRIDGES AND STRUCTURES

DATE OF SURVEY 01-10-00

MAR. 23, 2000
EPO2039, BROSEDET, DON

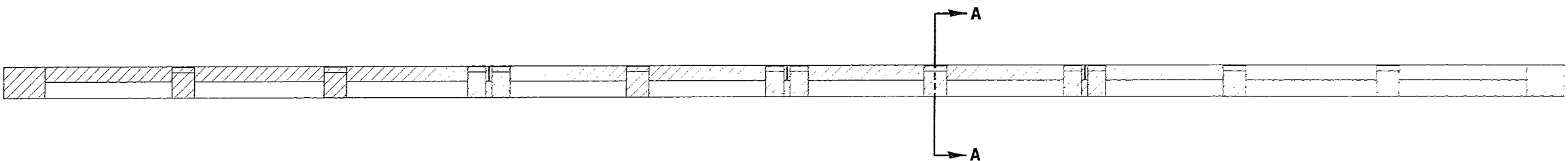
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	SPAN	PIERS	PIERS	SHEET NO. 6
57	*	127	54	8	SHEETS
*38-RS-1					

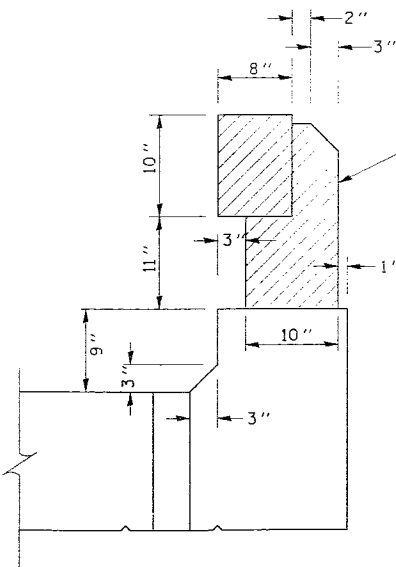


LAYOUT OF PROPOSED STEEL BRIDGE RAIL POSTS

NOTE: FOR DETAILS OF THE STEEL BRIDGE RAIL, SEE THE DETAIL - TYPE 2399
STEEL BRIDGE RAIL CURB MOUNTED



HANDRAIL CONCRETE REMOVAL



EXISTING
CONCRETE HANDRAIL
TO BE REMOVED

EXISTING VERTICAL REINFORCEMENT BARS EXTENDING FROM CURB
SHALL BE CUT FLUSH, GRIND SMOOTH AND SEAL WITH EPOXY.

BILL OF MATERIALS	
ITEM	QUANTITY
HANDRAIL CONCRETE REMOVAL	178 FT

DESIGNED	19
CHECKED	EXAMINED
DRAWN	PASSED
CHECKED	ENGINEER OF BRIDGES AND STRUCTURES

STRUCTURE REHABILITATION
FAI 57 (RTE 57)
SECTION (38-5)RS-1
IROQUOIS COUNTY
S.N. 038-0002
STA. 697 + 75

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

*(38-5)RS-1

PROJECT NO.	SECTION	DATE	DESIGNER	CHECKER
57	*	1/27	127	55
DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	

SHEET NO. 7
8 SHEETS

NOTES

1. All steel structures shall conform to the requirements of ASTM designation A 500, Grade B, Structural Steel Tubing and shall meet the longitudinal and lateral requirements of AASHTO M 270, Grade 30, except posts and shall conform to AASHTO M 270, Grade 30.

2. Bolts, cap screws and nuts shall conform to the requirements of ASTM designation A 307, except that threaded rods, nuts and washers shall conform to AASHTO M 292.

3. Bolts, nuts, cap screws, washers and lock washers shall be galvanized according to AASHTO M 292.

4. All posts, railing, rail to base and anchor rods shall be galvanized after shop fabrication according to AASHTO M 111 and ASTM A 338. Galvanized rail shall not be painted.

5. Railing shall be according to Section 809 of the Standard Specifications, except as noted, and will be built for at the approach joint or for full length for STEEL BRIDGE RAIL.

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

7. Posts shall not be located closer than 1'-5" to an existing bridge expansion joint or end of bridge.

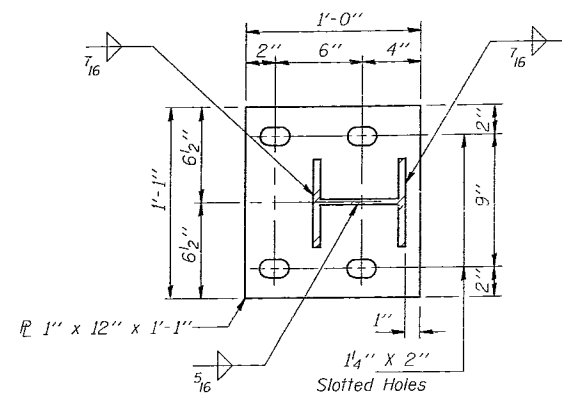
8. STEEL BRIDGE RAIL expansion joint shall be provided between any two (2) posts which span a bridge expansion joint. Bolts across an expansion joint shall be provided with locknuts and shall be tightened only to a point that will allow railing movement.

9. Provide one 1/2" and two 3/4" steel shims for each of the posts. Shims shall be similar to those shown in size and shape.

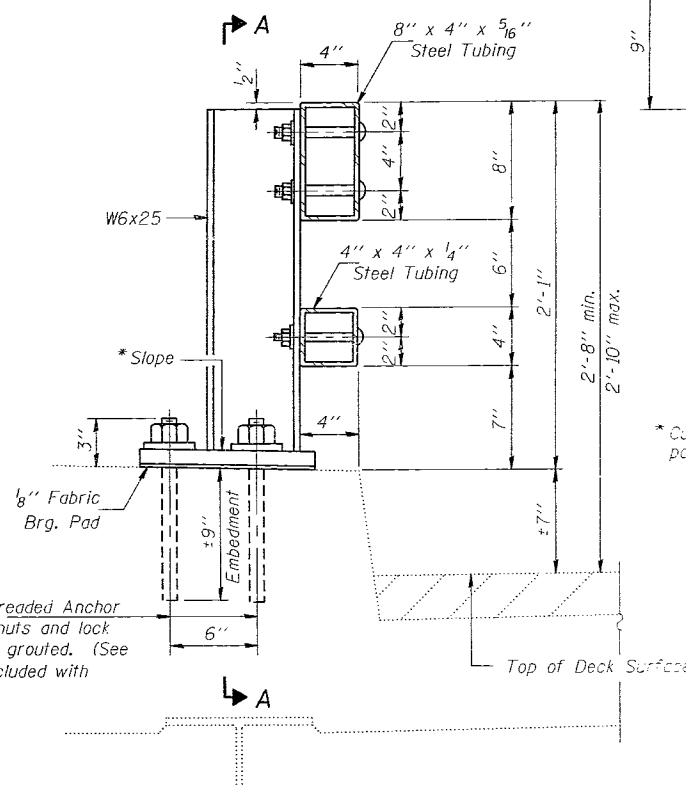
10. Expansion joint shall be 10" at 60° F and shall be adjusted for other temperatures according to Article 803.01 of the Standard Specifications.

11. The Contractor shall use the advice of the adhesive carriage type anchor rods that have been previously tested and given a prior approval by the Department. The Contractor shall install these anchor rods in accordance with the manufacturer's recommendations and procedures. The advice of the adhesive carriage shall be based on premeasured amounts of the adhesive material.

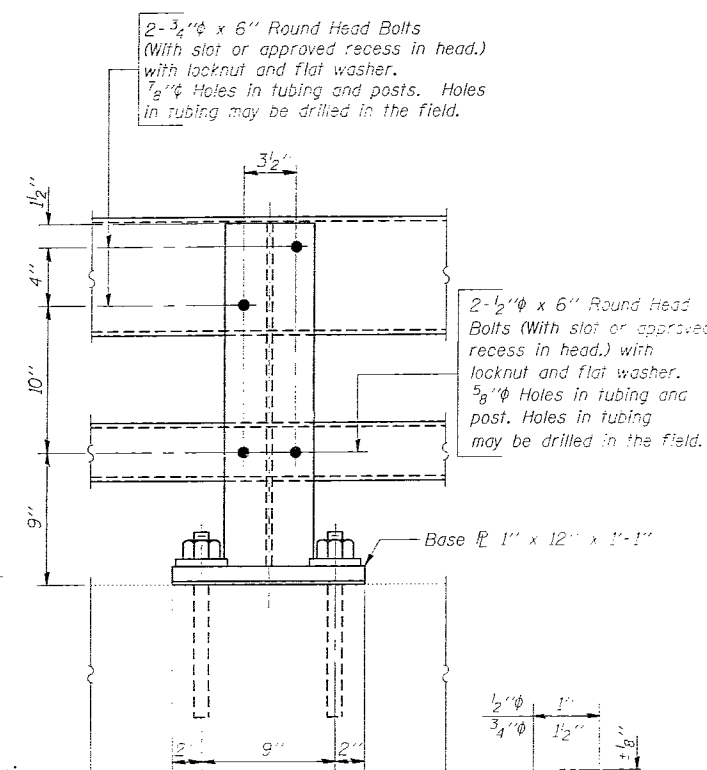
12. Note for 1/2" threaded anchor rods connecting the base plate to the concrete shall be tightened to a snug fit and given an additional 1/4 turn.



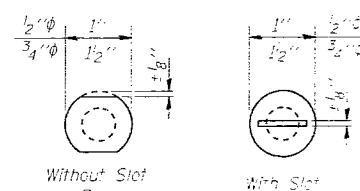
BASE PLATE DETAIL



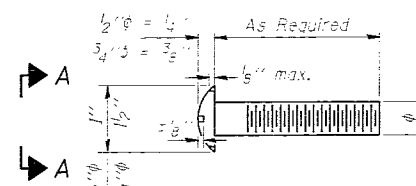
SECTION AT RAIL POST



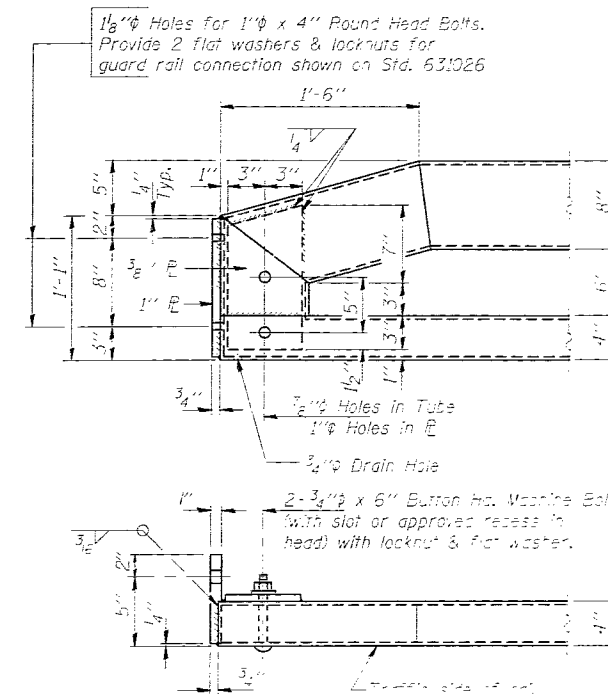
SECTION A-A



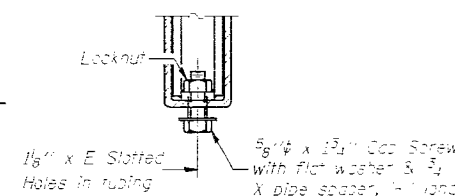
VIEW A-A



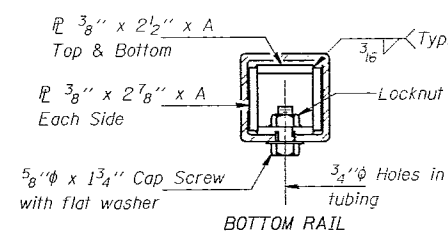
DETAIL OF 1/2' & 3/4' ROUND HEAD BOLTS



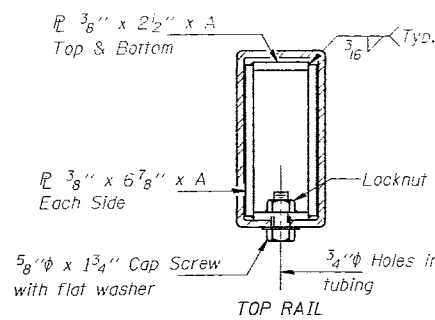
END OF RAIL DETAILS



RAIL SPLICE CONNECTION AT EXPANSION JT.

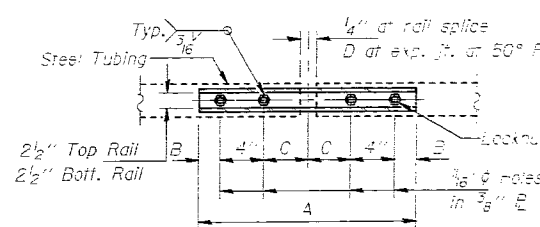


BOTTOM RAIL



TOP RAIL

SECTIONS AT RAIL SPLICE



PLAN-BOTT. SPLICE R TYPICAL

BILL OF MATERIAL

Item	Qty	Unit	Remarks
Steel Bridge Rail	500	ft	

SPLICE DIMENSIONS

Item	Qty	Unit	Remarks
Steel Bridge Rail	500	ft	

T = Total movement at expansion joint as shown on the design plans.

STEEL BRIDGE RAIL
CURB MOUNTED

(2399)

S.N. 038-0062

STA. 697 + 75

DESIGNED	19
CHECKED	
DRAWN	
CHECKED	

EXAMINED	ENGINEER OF BRIDGE DESIGN
PASSED	ENGINEER OF BRIDGES AND STRUCTURES

R-31 4-30-99

(6'-3" Maximum Post Spacing)