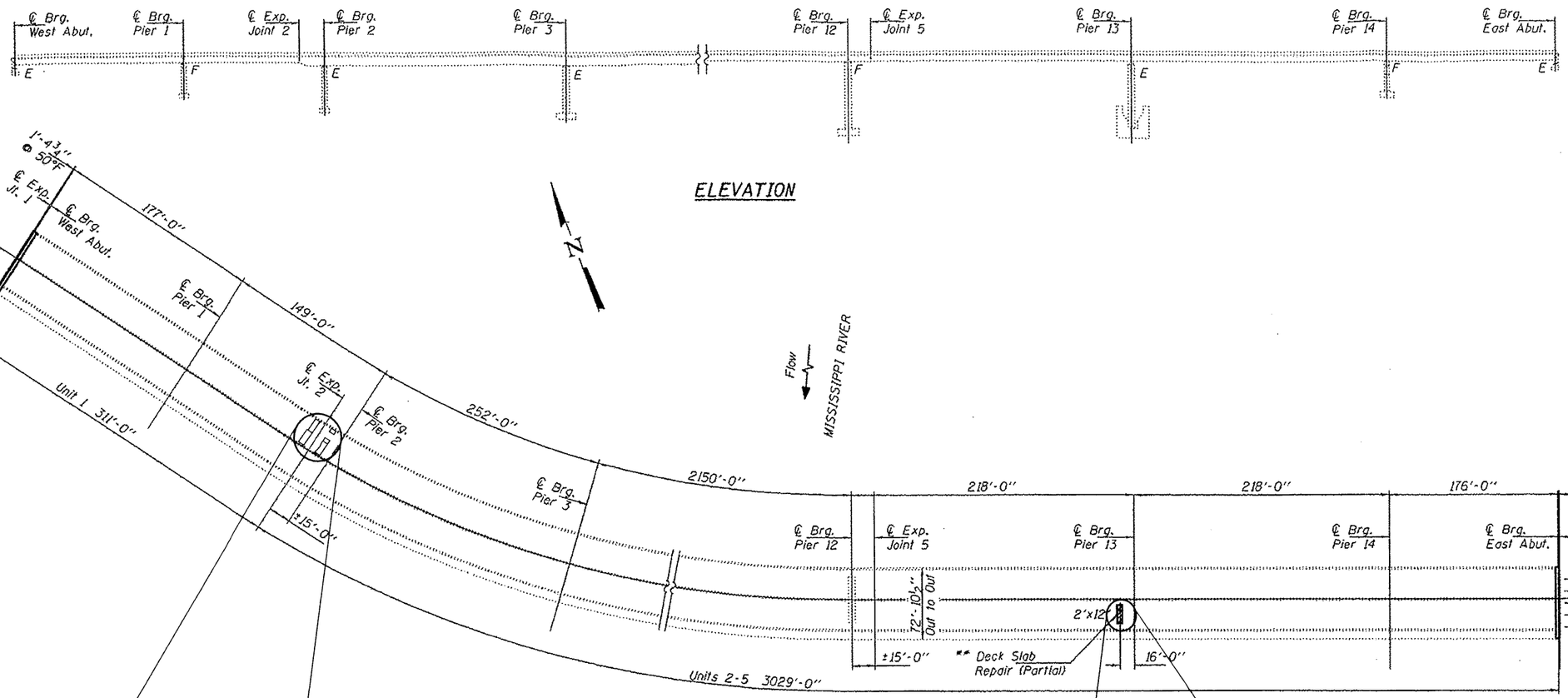
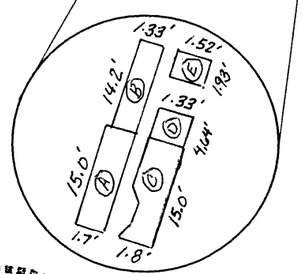
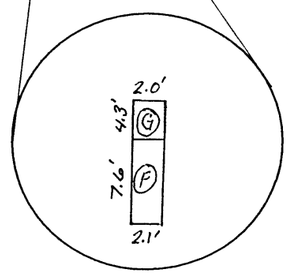


ELEVATION

PLAN





PATCH	SIZE (YD²)	TYPE
A	2.83	PD
B	2.10	PD
C	2.70	PD
D	0.69	PD
E	0.33	PD
F	1.77	PD
G	0.96	PD

GENERAL NOTES

All structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.

Plan dimensions and details relative to existing plans are subject to nominal construction 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 at the unit price bid for the work.

The deck surface shall have its final finish tined according to Article 420.09(e)(1) of the Standard Specifications. Cost included with Concrete Superstructure.

Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50° F.

Reinforcement bars designated (E) shall be epoxy coated.

TOTAL BILL OF MATERIAL

	ITEM	UNIT	QUANTITY
	Concrete Removal	Cu. Yd.	6.1
	Concrete Superstructure	Cu. Yd.	6.2
	Preformed Joint Strip Seal	Foot	140
	Reinforcement Bars, Epoxy Coated	Pound	660
	Bar Splicers	Each	16
	Deck Slab Repair (Partial)	Sq. Yd.	2.7
*	Protective Coat	Sq. Yd.	29.5

* New concrete only

LICENSED STRUCTURAL ENGINEER
DAVID CARL PUZEY
081-005470
SPRINGFIELD ILLINOIS
STATE OF ILLINOIS

Expires: November 30, 2016

DESIGNED -	Stephen M. Ryan
CHECKED -	Stephen M. Ryan
DRAWN -	Kyle M. Stratton
CHECKED -	CCC SMR

PASSED _____ DATE - MAY 5, 2015
ACTING ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION
U.S. ROUTE 136 OVER THE MISSISSIPPI RIVER
SN 034-0062
SHEET NO. 1 OF 5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(3018)R	HANCOCK	11	7
		CONTRACT NO. 72H56		
		ILLINOIS FED. AID PROJECT		

72H56

11-06-2015 LETTING ITEM 078

HANCOCK

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(30) BJR	HANCOCK	11	1
	ILLINOIS	CONTRACT NO. 72H56		

78

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROPOSED
HIGHWAY PLANS

FAP ROUTE 315 (US 136)
SECTION (30) BJR

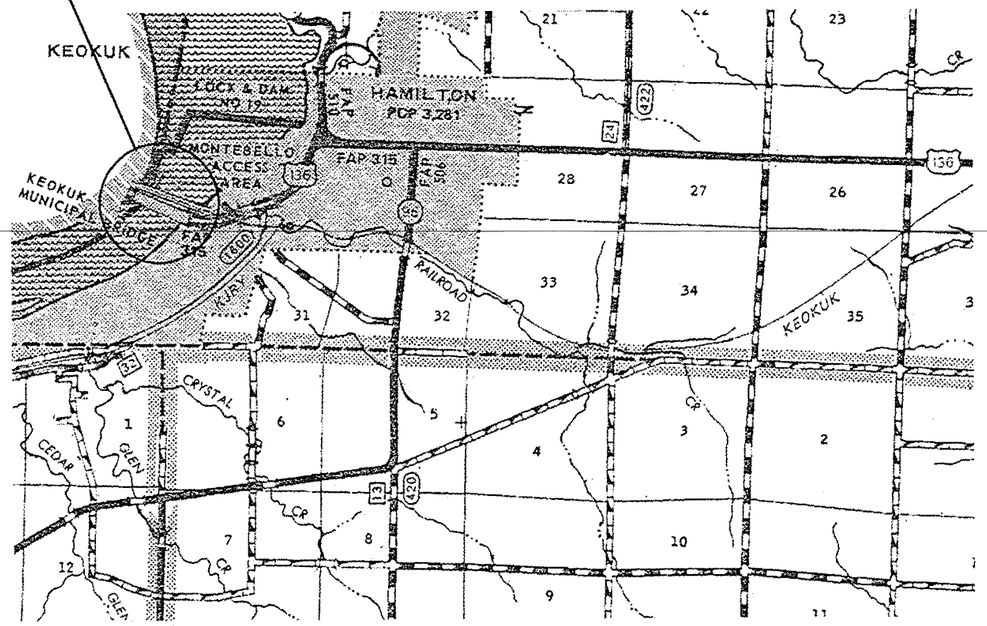
EXPANSION JOINT REPLACEMENT
HANCOCK COUNTY

C-96-031-15

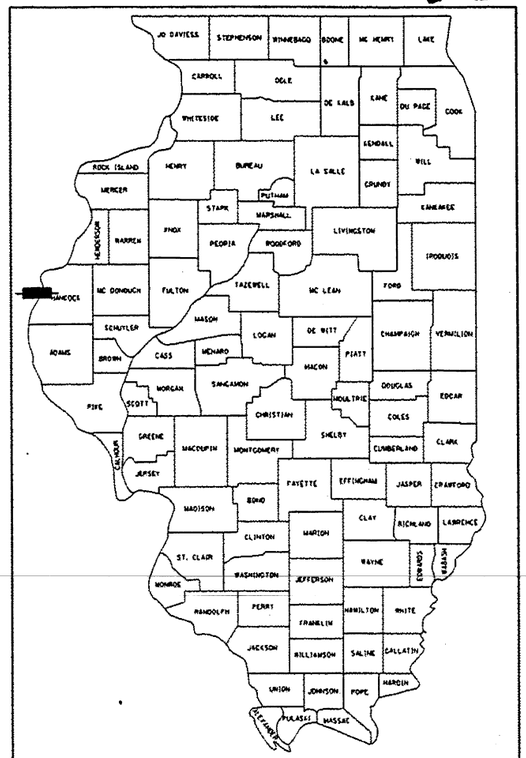
FOR INDEX OF SHEETS, SEE SHEET NO. 2

100%
8-20-2016

PROJECT LOCATION
SN 034-0062
US 136 OVER THE MISSISSIPPI
RIVER AT KEOKUK, IOWA
N40.3918° W91.3790°



D-96-031-15



LOCATION OF SECTION INDICATED THUS: –

100' 200' 300' — 1" = 100'
0 10' 20' 30' — 1" = 10'
0 50' 100' — 1" = 50'
0 50' 100' — 1" = 40'
0 50' 100' — 1" = 30'
0 50' 100' — 1" = 20'

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

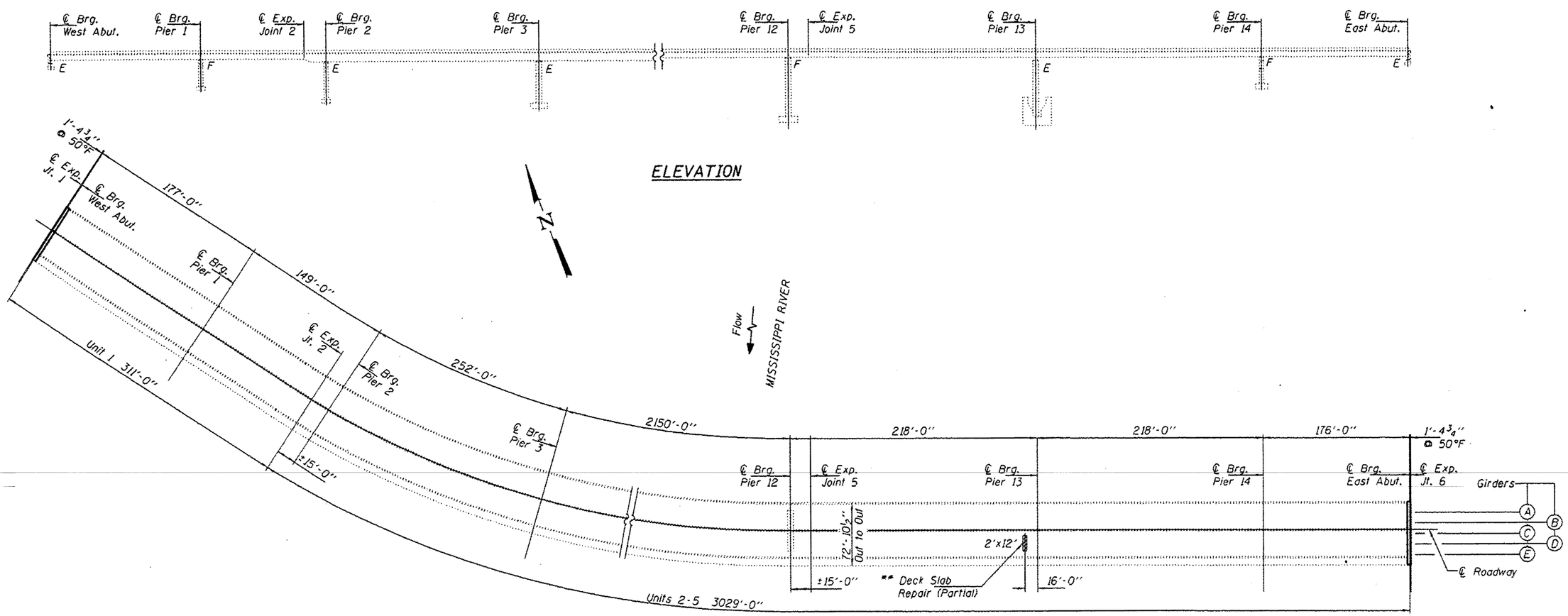
SUBMITTED March 23 20 15
Rose Z. Dudek
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER
May 8 20 15
John D. Baranzelli, P.E. /ba
acting ENGINEER OF DESIGN AND ENVIRONMENT
May 8 20 15
Omer Osman, P.E. /ba
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

BRIDGE MAINTENANCE ENGINEER (ACTING): BRANDON DUDLEY – (217) 785-9290
BRIDGE INSPECTION ENGINEER: DAVE COPENBARGER – (217) 785-5306

NET LENGTH = 3,340 FT. = 0.63 MILE

PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS

CONTRACT NO. 72H56 034-0062



ELEVATION

PLAN

** Existing weather monitors in the deck to be removed with partial depth patching.

LICENSED STRUCTURAL ENGINEER
DAVID CARL PUZEY
081-005470
SPRINGFIELD ILLINOIS
STATE OF ILLINOIS

Expires: November 30, 2016

GENERAL NOTES

All structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.

Plan dimensions and details relative to existing plans are subject to nominal construction 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 at the unit price bid for the work.

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Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50° F.

Reinforcement bars designated (E) shall be epoxy coated.

TOTAL BILL OF MATERIAL

	ITEM	UNIT	QUANTITY
	Concrete Removal	Cu. Yd.	6.1
	Concrete Superstructure	Cu. Yd.	6.2
	Preformed Joint Strip Seal	Foot	140
	Reinforcement Bars, Epoxy Coated	Pound	660
	Bar Splicers	Each	16
	Deck Slab Repair (Partial)	Sq. Yd.	2.7
*	Protective Coat	Sq. Yd.	29.5

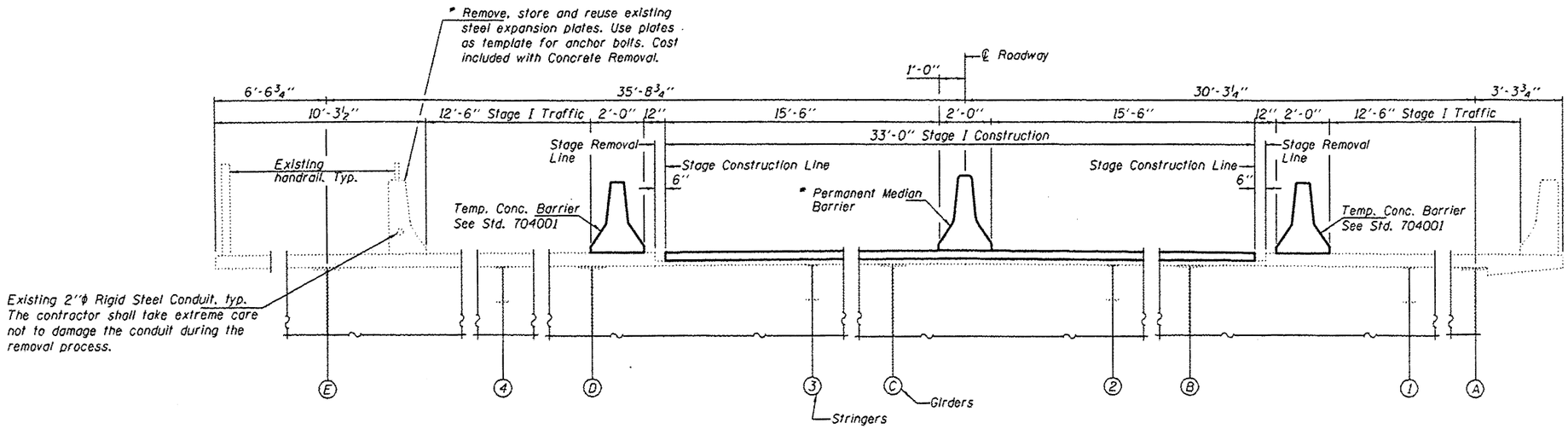
* New concrete only

DESIGNED -		DATE -	MAY 5, 2015
CHECKED -	Stephen M. Ryan		
DRAWN -	Kyle M. Stoffen	PASSED	
CHECKED -	CCC SMR		ACTING ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

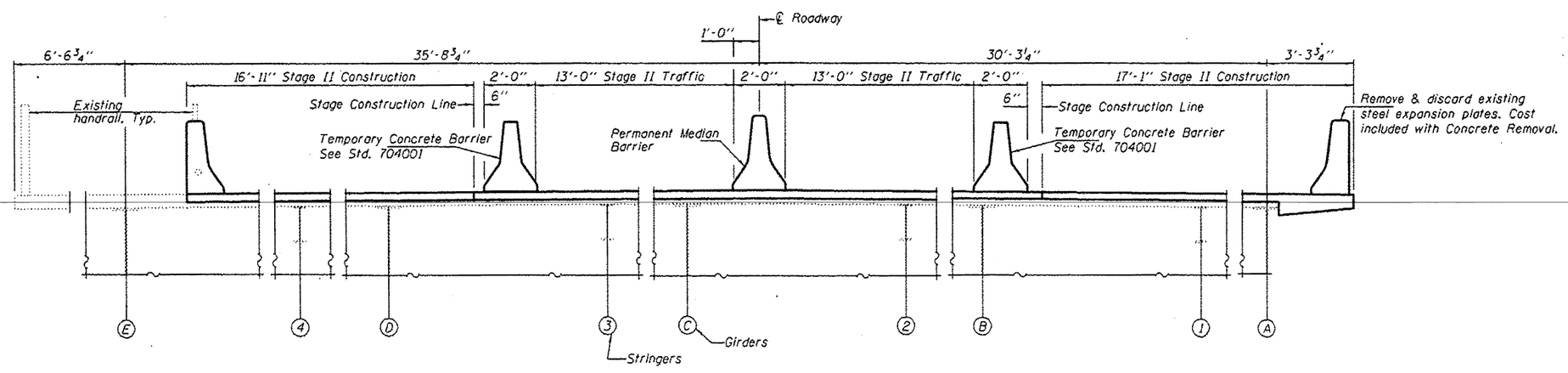
GENERAL PLAN & ELEVATION
U.S. ROUTE 136 OVER THE MISSISSIPPI RIVER
SN 034-0062
SHEET NO. 1 OF 5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(30)BJR	HANCOCK	11	7
		CONTRACT NO. 72H56		
	ILLINOIS FED. AID PROJECT			



STAGE I CONSTRUCTION DETAILS

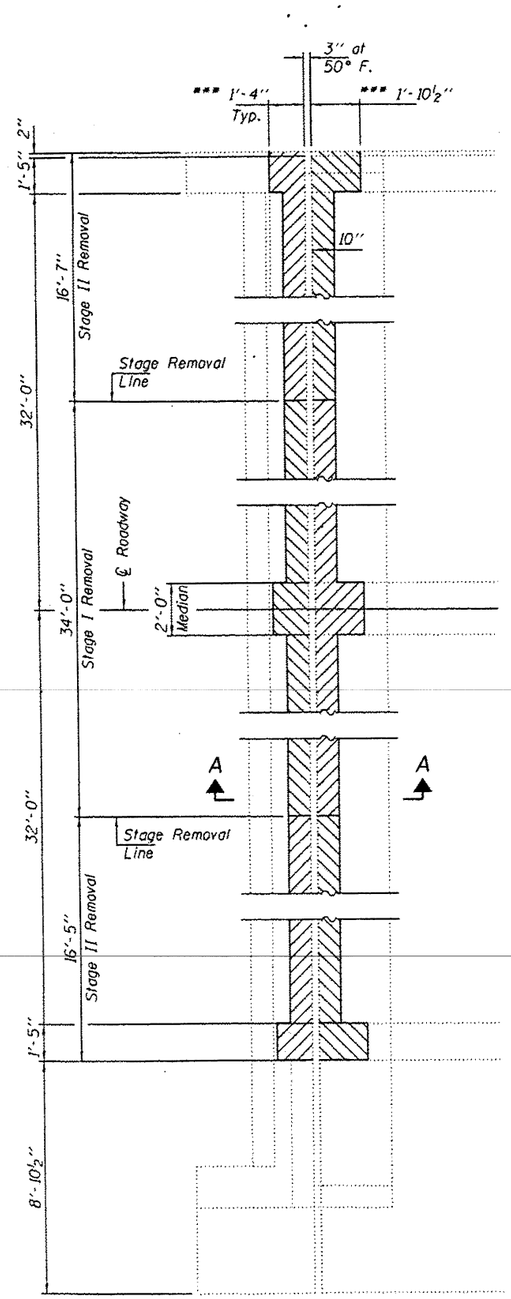
(Looking West)



STAGE II CONSTRUCTION DETAILS

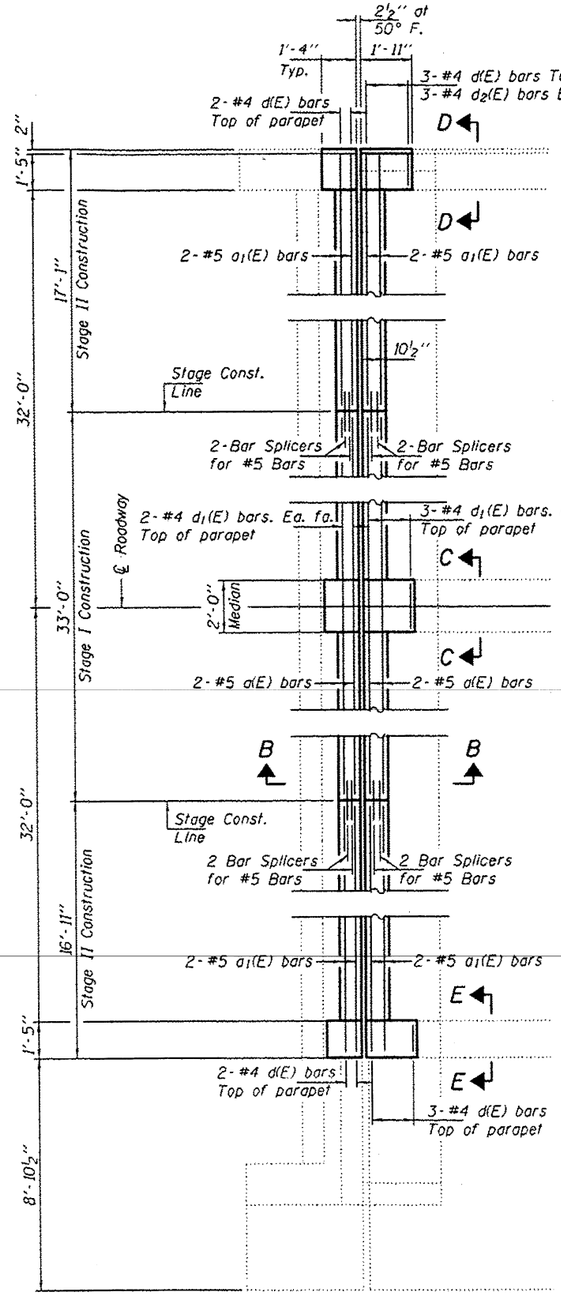
(Looking West)

DESIGNED - CCC	PASSED	DATE - MAY 5, 2015	**STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION**	**STAGING DETAILS SN 034-0062**	F.A.P. RTE.	SECTION	COUNTY / TOTAL SHEETS / SHEET NO.
CHECKED - SMR					315	(30)BJR	HANCOCK / 11 / 8
DRAWN - Kyle M. Steffen				SHEET NO. 2 OF 5 SHEETS			CONTRACT NO. 72H56
CHECKED - CCC SMR		ACTING ENGINEER OF BRIDGES AND STRUCTURES					ILLINOIS FED. AID PROJECT



CONCRETE REMOVAL AT ABUTMENT

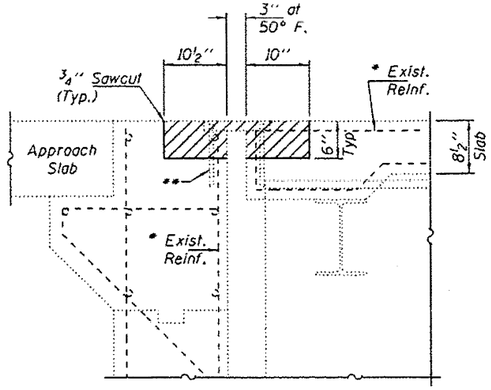
(West Abutment shown, East Abutment similar by 180° rotation)



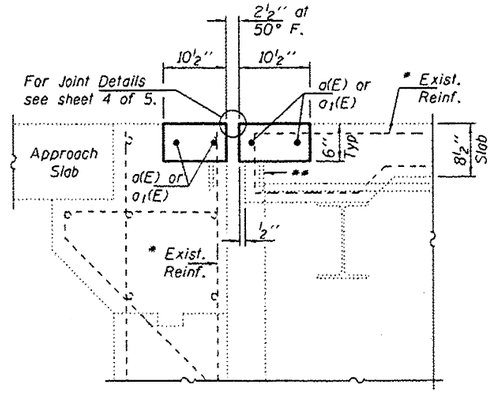
CONCRETE REPLACEMENT AT ABUTMENT

(West Abutment shown, East Abutment similar by 180° rotation)

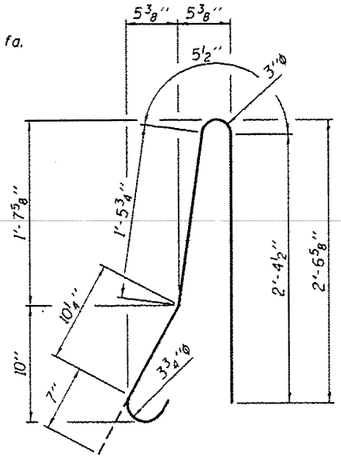
*** Limits of parapet removal may be varied in the field by the Engineer to match the locations of existing construction and open joints or to miss existing name plates. Any rail post anchorage within the removal area at the south parapet shall be cleaned and incorporated in the new construction. Cost included with concrete removal.



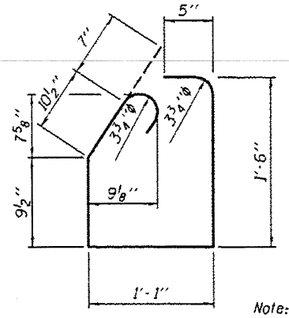
SECTION A-A



SECTION B-B

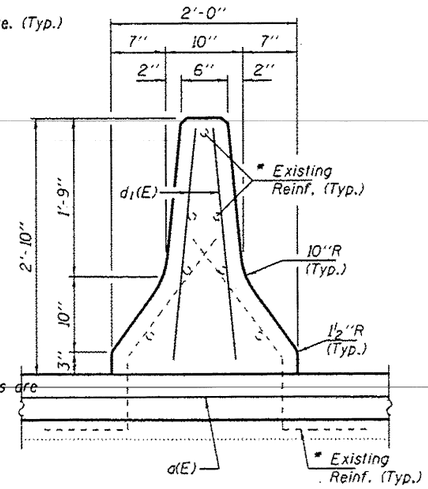


BAR d(E)

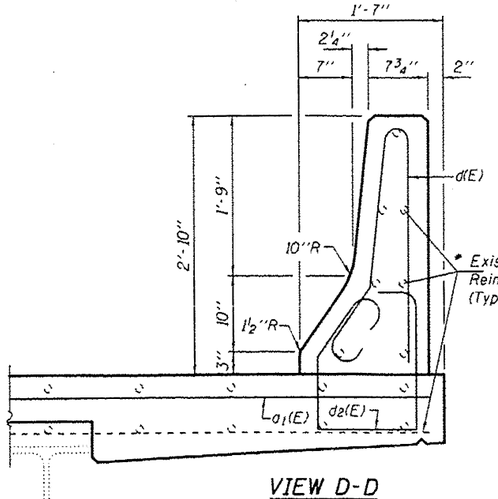


BAR $d_2(E)$

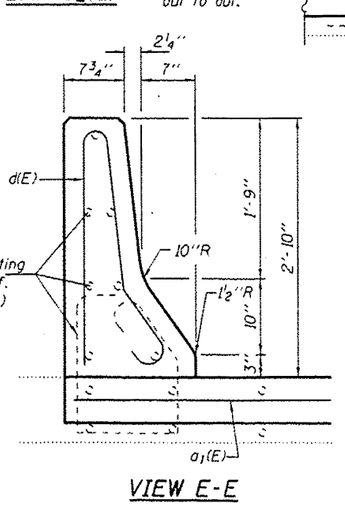
Note:
Rebar dimensions are out to out.



VIEW C-C



VIEW D-D



VIEW E-E

* Existing reinforcement bars extending into the removal area shall be cleaned, straightened and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal shall be replaced with an approved bar splicer or anchorage system. Cost included with Concrete Removal.

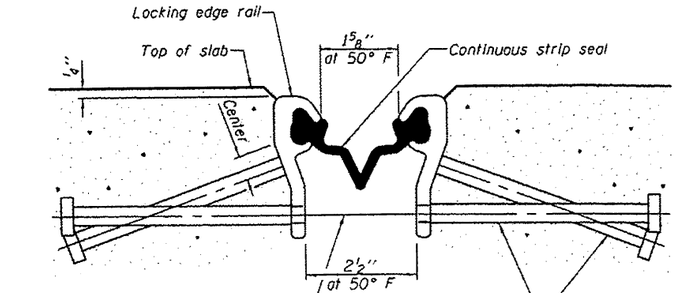
** Existing Studs to be cut flush with concrete. (Typ.)

BILL OF MATERIAL

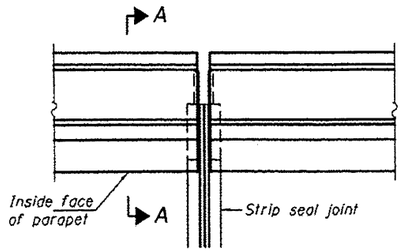
Bar	No.	Size	Length	Shape
a(E)	8	#5	32'-8"	
$a_1(E)$	16	#5	16'-7"	
d(E)	20	#4	5'-9"	
$d_1(E)$	10	#4	2'-7"	
$d_2(E)$	6	#4	5'-3"	
Concrete Removal			Cu. Yd.	6.1
Concrete Superstructure			Cu. Yd.	6.2
Bar Splicers			Each	16
Reinforcement Bars, Epoxy Coated			Pound	660

DESIGNED - CCC	DATE - MAY 5, 2015	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	JOINT REMOVAL & REPLACEMENT DETAILS SN 034-0062
CHECKED - SMR	PASSED		SHEET NO. 3 OF 5 SHEETS
DRAWN - Kyle M. Staffen	ACTING ENGINEER OF BRIDGES AND STRUCTURES		
CHECKED - CCC SMR			

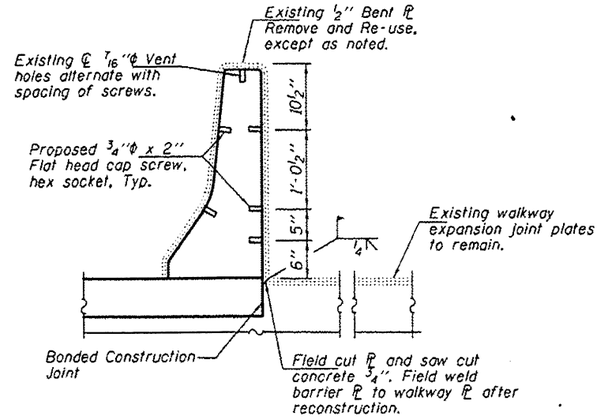
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(30)BJR	HANCOCK	11	9
		CONTRACT NO. 72H56		
		ILLINOIS FED. AID PROJECT		



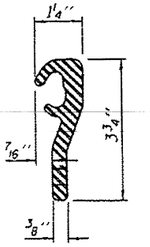
SECTION THRU SHALLOW STRIP SEAL JOINT



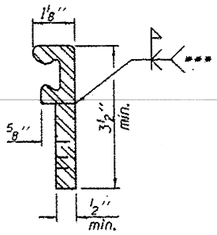
PLAN



SOUTH BARRIER

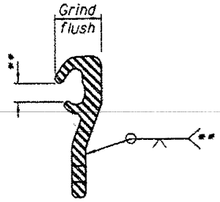


ROLLED (EXTRUDED) RAIL



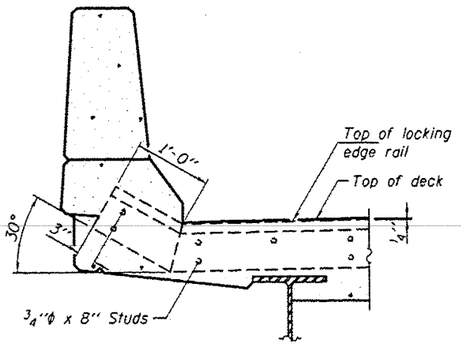
WELDED RAIL

LOCKING EDGE RAIL



LOCKING EDGE RAIL SPLICE

Rolled rail shown, welded rail similar.



SECTION A-A

** Omit weld at seal opening.

*** Back gouge not required if complete joint penetration is verified by mock-up.

Notes:

The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails.

The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed.

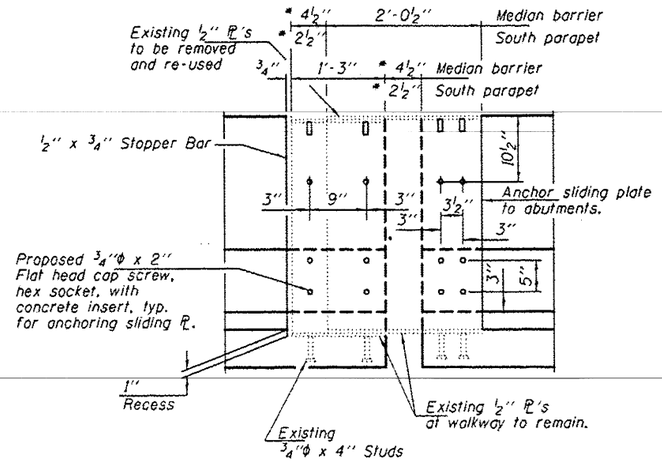
The inside of the Locking Edge Rail groove shall be free of weld residue.

Locking Edge Rails may be spliced at slope discontinuities and stage construction joints.

The manufacturer's recommended installation methods shall be followed.

All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.

Maximum space between rail segments at stage lines shall be 3/16", sealed with a suitable sealant



ELEVATION OF SOUTH BARRIER AT EXPANSION JOINT

(Median Barrier Similar)

* at 50°F

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	140

DESIGNED - CCC							
CHECKED - SMR							
DRAWN - Kyle M. Staffon							
CHECKED - CCC SMR							

PASSED — DATE - MAY 5, 2015

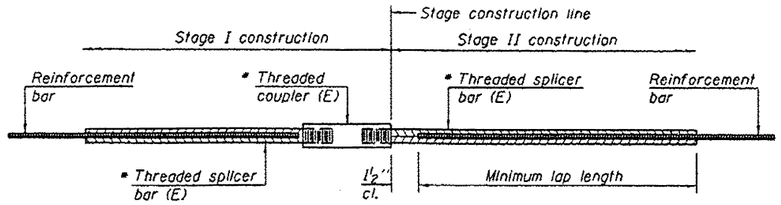
ACTING ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PREFORMED JOINT STRIP SEAL DETAILS
SN 034-0062

SHEET NO. 4 OF 5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(301)BJR	HANCOCK	11	10
		CONTRACT NO. 72H56		
	ILLINOIS FED. AID PROJECT			



STANDARD BAR SPLICER ASSEMBLY

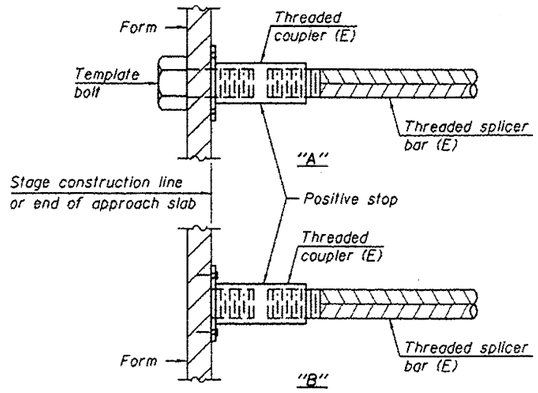
Minimum Lap Lengths						
Bar size to be spliced	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6
3, 4	1'-5"	1'-11"	2'-1"	2'-4"	2'-7"	2'-11"
5	1'-9"	2'-5"	2'-7"	2'-11"	3'-3"	3'-8"
6	2'-1"	2'-11"	3'-1"	3'-6"	3'-10"	4'-5"
7	2'-9"	3'-10"	4'-2"	4'-8"	5'-2"	5'-10"
8	3'-8"	5'-1"	5'-5"	6'-2"	6'-9"	7'-8"
9	4'-7"	6'-5"	6'-10"	7'-9"	8'-7"	9'-8"

Table 1: Black bar, 0.8 Class C
Table 2: Black bar, Top bar lap, 0.8 Class C
Table 3: Epoxy bar, 0.8 Class C
Table 4: Epoxy bar, Top bar lap, 0.8 Class C
Table 5: Epoxy bar, Class C
Table 6: Epoxy bar, Top bar top, Class C

Threaded splicer bar length = min. lap length + 1½" + thread length

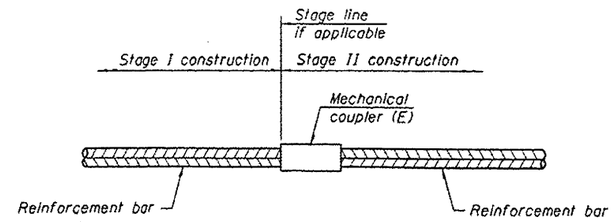
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length
W. Abut.	5	8	3
E. Abut.	5	8	3



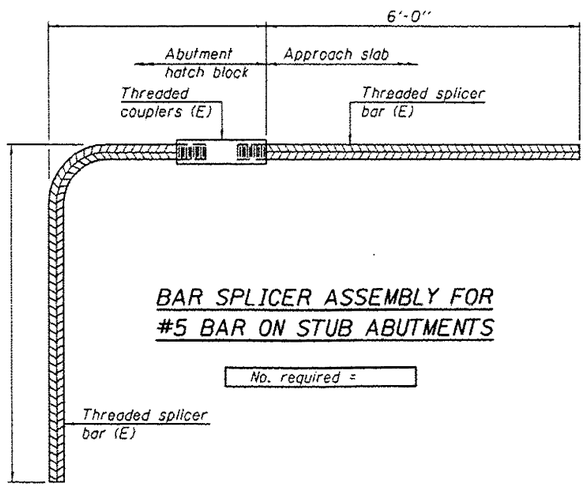
INSTALLATION AND SETTING METHODS

"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.



STANDARD MECHANICAL SPLICER

Location	Bar size	No. assemblies required



BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS

No. required =

NOTES

Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.

All reinforcement shall be lapped and tied to the splicer bars.

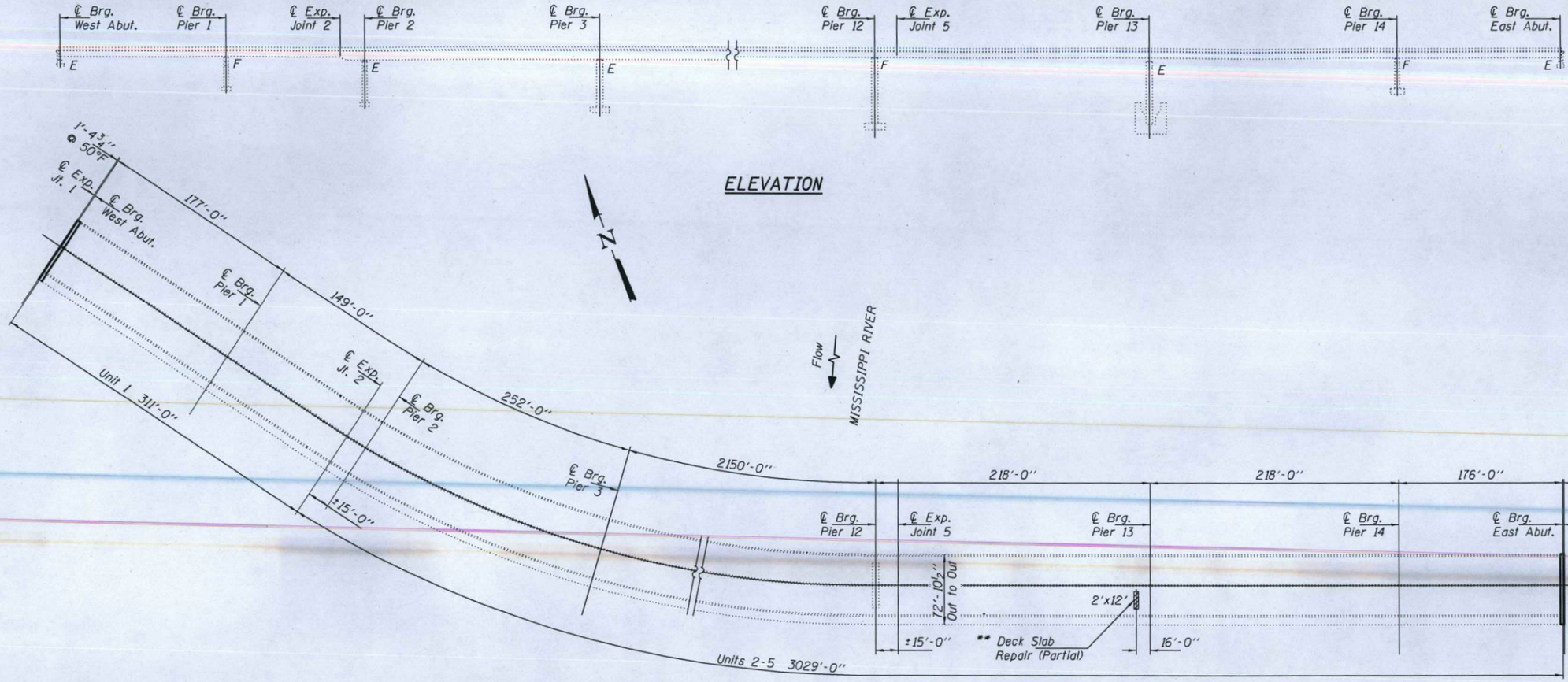
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.

See approved list of bar splicer assemblies and mechanical splicers for alternatives.

BSD-1 8-31-12

DESIGNED - CCC	DATE - MAY 5, 2015	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS SN 034-0062	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS / SHEET NO.
CHECKED - SMR				315	(301BJR	HANCOCK	11 / 11
DRAWN - Kyle M. Staffan	PASSED					CONTRACT NO. 72H56	
CHECKED - CCC SMR	ACTING ENGINEER OF BRIDGES AND STRUCTURES		SHEET NO. 5 OF 5 SHEETS			ILLINOIS FED. AID PROJECT	

UNIT COPY



ELEVATION

PLAN

** Existing weather monitors in the deck to be removed with partial depth patching.

LICENSED STRUCTURAL ENGINEER
DAVID CARL PUZEY
081-005470
SPRINGFIELD ILLINOIS
STATE OF ILLINOIS

Expires: November 30, 2016

GENERAL NOTES

All structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.

Plan dimensions and details relative to existing plans are subject to nominal construction 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 at the unit price bid for the work.

The deck surface shall have its final finish tined according to Article 420.09(e)(1) of the Standard Specifications. Cost included with Concrete Superstructure.

Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50° F.

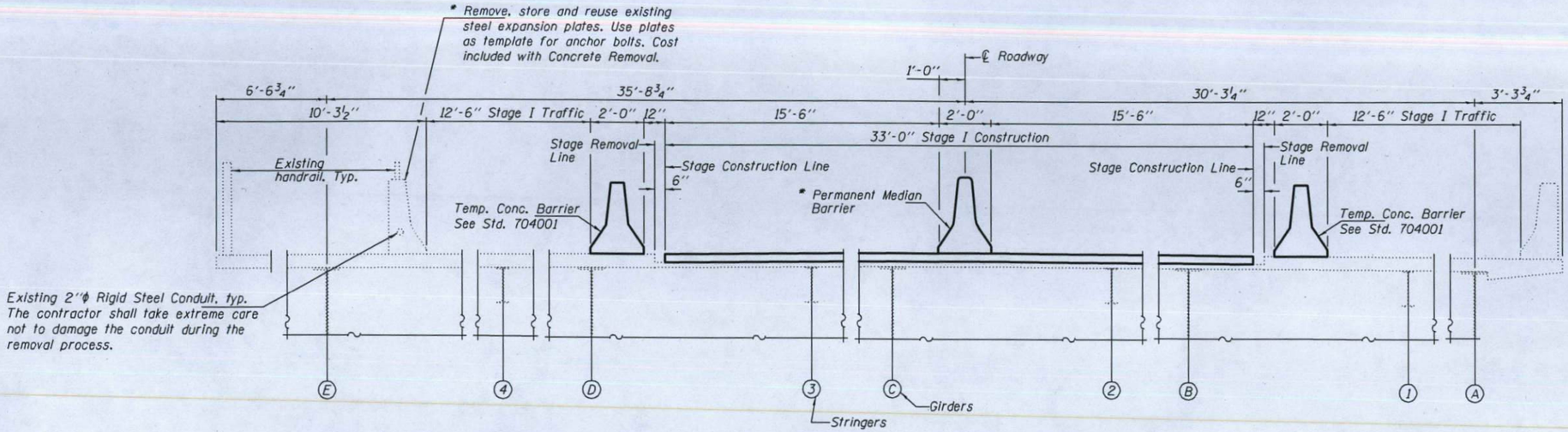
Reinforcement bars designated (E) shall be epoxy coated.

TOTAL BILL OF MATERIAL

	ITEM	UNIT	QUANTITY
	Concrete Removal	Cu. Yd.	6.1
	Concrete Superstructure	Cu. Yd.	6.2
	Preformed Joint Strip Seal	Foot	140
	Reinforcement Bars, Epoxy Coated	Pound	660
	Bar Splicers	Each	16
	Deck Slab Repair (Partial)	Sq. Yd.	2.7
*	Protective Coat	Sq. Yd.	29.5

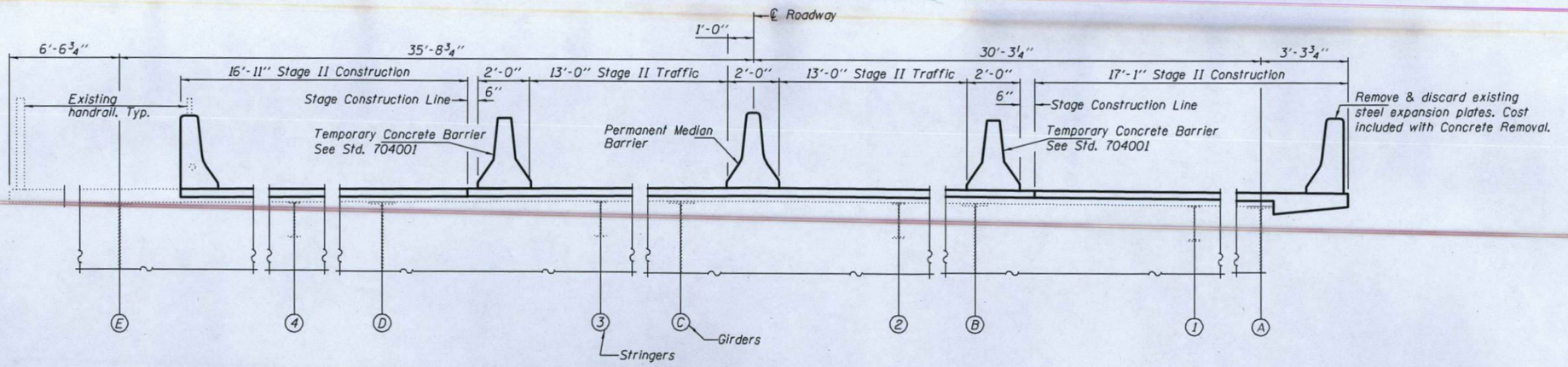
* New concrete only

DESIGNED -		PASSED	DATE - MAY 5, 2015	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL PLAN & ELEVATION U.S. ROUTE 136 OVER THE MISSISSIPPI RIVER SN 034-0062	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CHECKED -	Stephen Jon Ryan					315	(30)BJR	HANCOCK	11	7
DRAWN -	Kyle M. Steffen							CONTRACT NO. 72H56		
CHECKED -	ACC SMR		ACTING ENGINEER OF BRIDGES AND STRUCTURES		SHEET NO. 1 OF 5 SHEETS			ILLINOIS FED. AID PROJECT		



STAGE I CONSTRUCTION DETAILS

(Looking West)

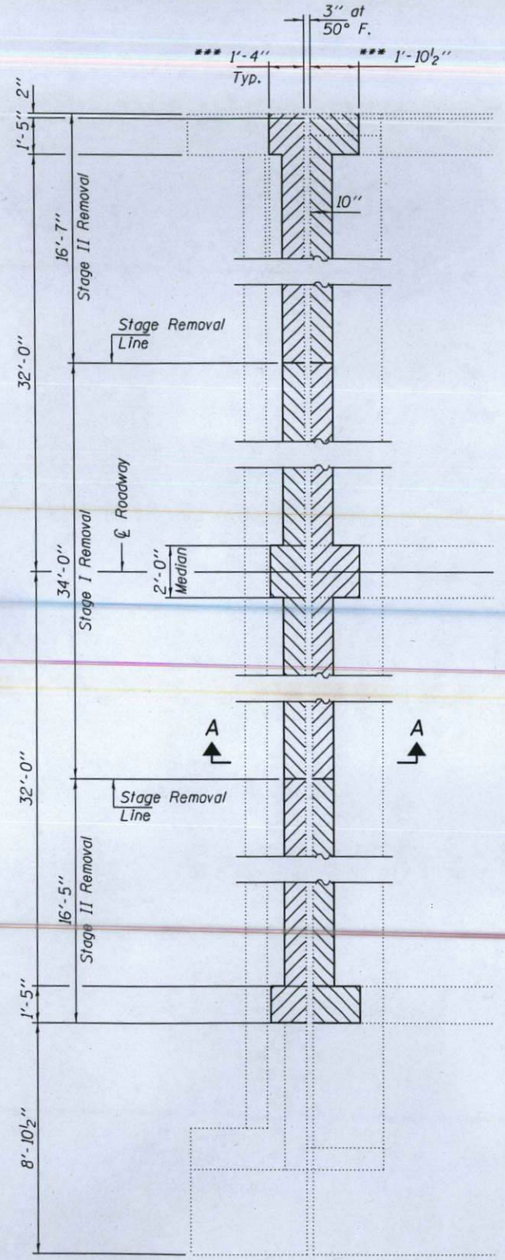


STAGE II CONSTRUCTION DETAILS

(Looking West)

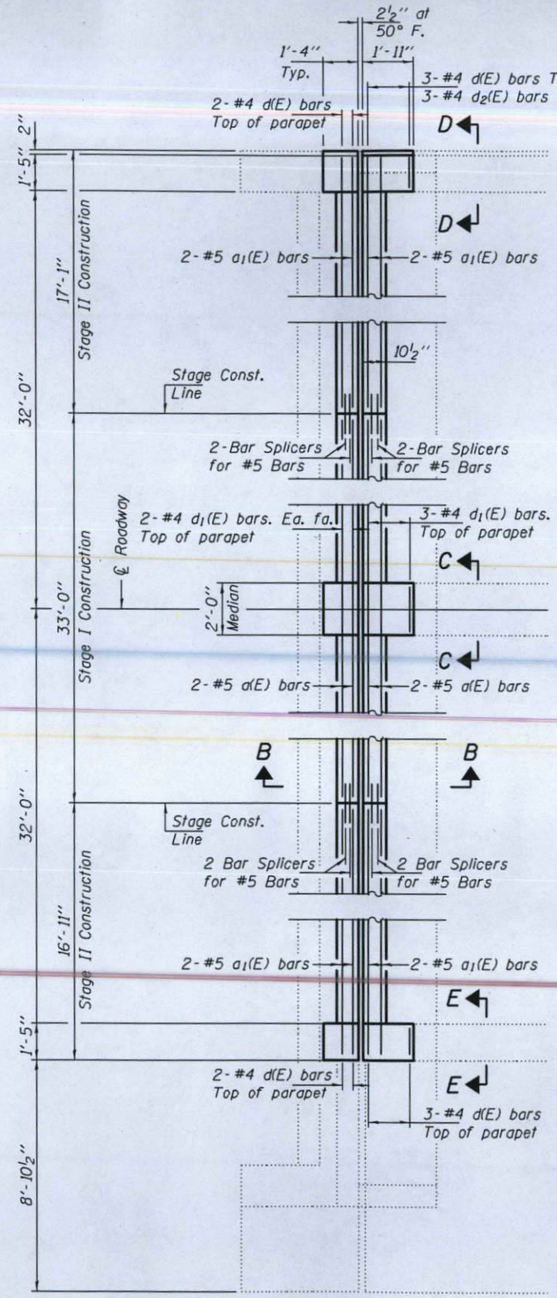
DESIGNED - CCC	DATE - MAY 5, 2015	STATE OF ILLINOIS	STAGING DETAILS
CHECKED - SMR	PASSED	DEPARTMENT OF TRANSPORTATION	SN 034-0062
DRAWN - Kyle M. Steffen	ACTING ENGINEER OF BRIDGES AND STRUCTURES		SHEET NO. 2 OF 5 SHEETS
CHECKED - CCC SMR			

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(30)BJR	HANCOCK	11	8
		CONTRACT NO. 72H56		
	ILLINOIS FED. AID PROJECT			



CONCRETE REMOVAL AT ABUTMENT

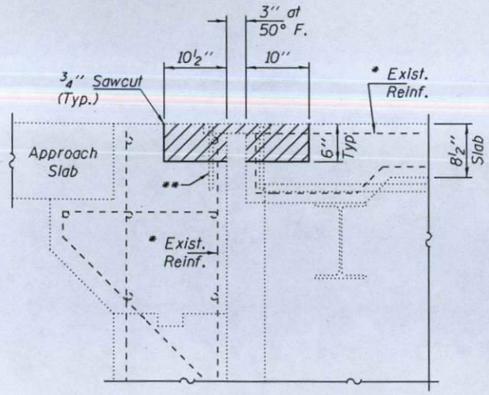
(West Abutment shown, East Abutment similar by 180° rotation)



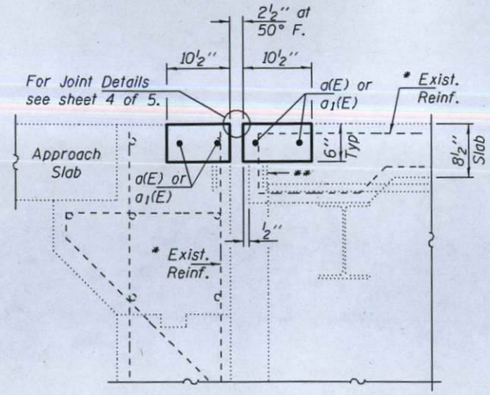
CONCRETE REPLACEMENT AT ABUTMENT

(West Abutment shown, East Abutment similar by 180° rotation)

*** Limits of parapet removal may be varied in the field by the Engineer to match the locations of existing construction and open joints or to miss existing name plates. Any rail post anchorage within the removal area at the south parapet shall be cleaned and incorporated in the new construction. Cost included with concrete removal.



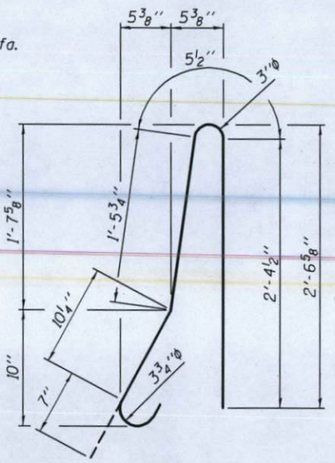
SECTION A-A



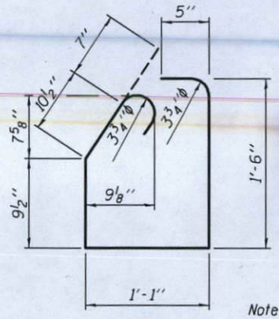
SECTION B-B

* Existing reinforcement bars extending into the removal area shall be cleaned, straightened and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal shall be replaced with an approved bar splicer or anchorage system. Cost included with Concrete Removal.

** Existing Studs to be cut flush with concrete. (Typ.)

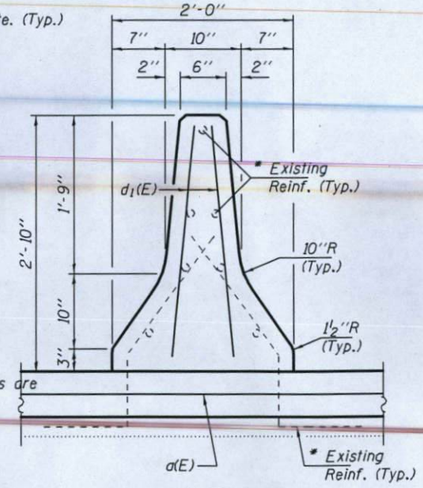


BAR d(E)

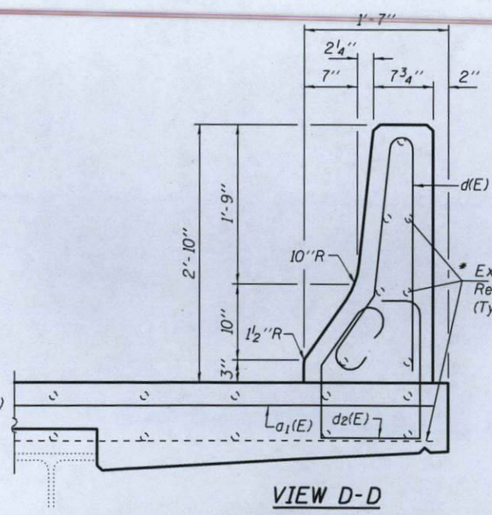


BAR d2(E)

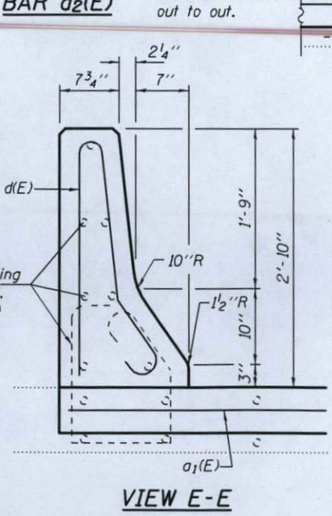
Note: Rebar dimensions are out to out.



VIEW C-C



VIEW D-D



VIEW E-E

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
d(E)	8	#5	32'-8"	
a1(E)	16	#5	16'-7"	
d(E)	20	#4	5'-9"	
d1(E)	10	#4	2'-7"	
d2(E)	6	#4	5'-3"	
Concrete Removal			Cu. Yd.	6.1
Concrete Superstructure			Cu. Yd.	6.2
Bar Splicers			Each	16
Reinforcement Bars, Epoxy Coated			Pound	660

DESIGNED -	CCC
CHECKED -	SMR
DRAWN -	Kyle M. Steffen
CHECKED -	CCC SMR

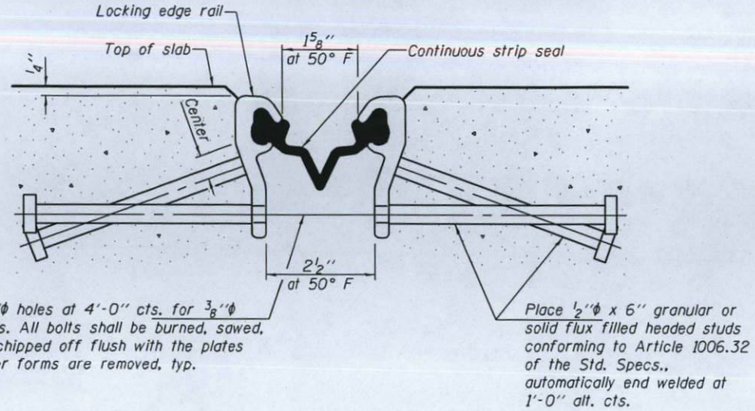
PASSED — DATE - MAY 5, 2015

ACTING ENGINEER OF BRIDGES AND STRUCTURES

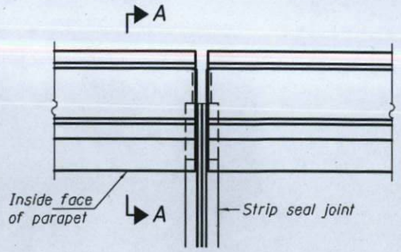
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

JOINT REMOVAL & REPLACEMENT DETAILS
SN 034-0062
SHEET NO. 3 OF 5 SHEETS

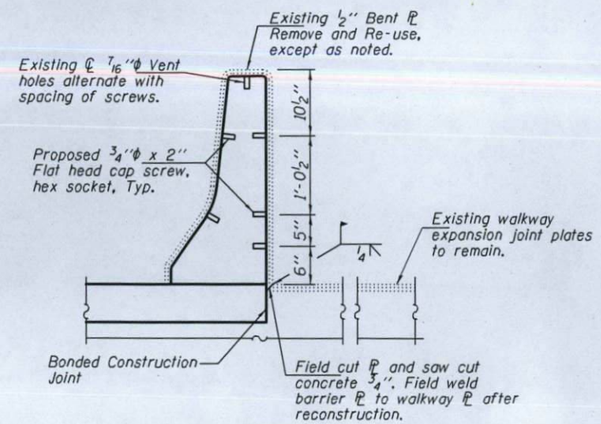
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(30)BJR	HANCOCK	11	9
		CONTRACT NO. 72H56		
	ILLINOIS FED. AID PROJECT			



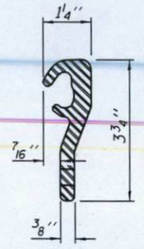
SECTION THRU SHALLOW STRIP SEAL JOINT



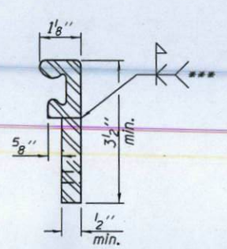
PLAN



SOUTH BARRIER

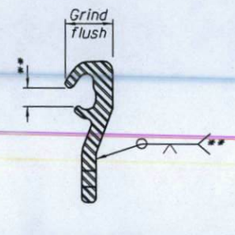


ROLLED (EXTRUDED) RAIL



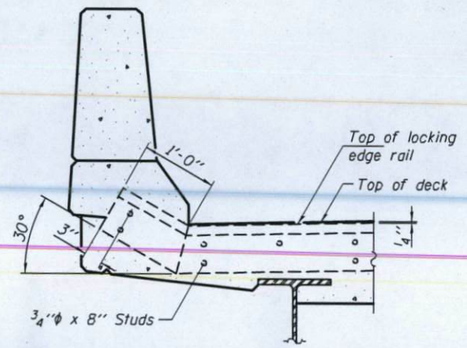
WELDED RAIL

LOCKING EDGE RAIL

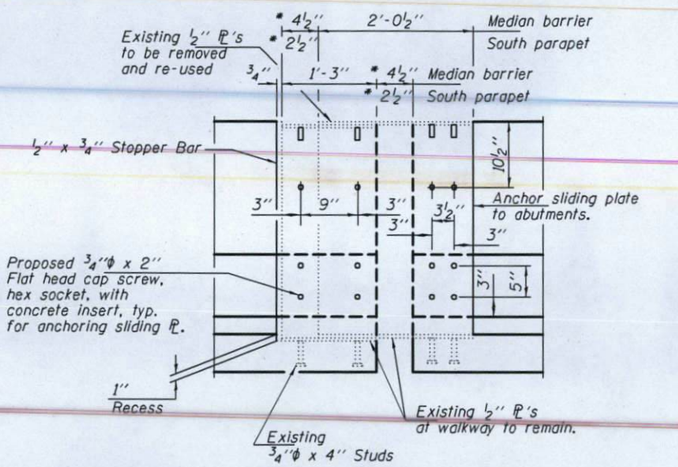


LOCKING EDGE RAIL SPLICE

Rolled rail shown, welded rail similar.



SECTION A-A



ELEVATION OF SOUTH BARRIER AT EXPANSION JOINT

(Median Barrier Similar)

* at 50°F

** Omit weld at seal opening.

*** Back gouge not required if complete joint penetration is verified by mock-up.

Notes:

The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails.

The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed.

The inside of the Locking Edge Rail groove shall be free of weld residue.

Locking Edge Rails may be spliced at slope discontinuities and stage construction joints.

The manufacturer's recommended installation methods shall be followed.

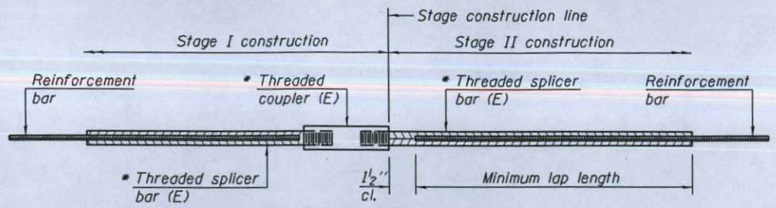
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.

Maximum space between rail segments at stage lines shall be 3/16", sealed with a suitable sealant

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	140

DESIGNED - CCC	PASSED	DATE - MAY 5, 2015	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PREFORMED JOINT STRIP SEAL DETAILS SN 034-0062	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CHECKED - SMR					315	(30)BJR	HANCOCK	11	10
DRAWN - Kyle M. Steffen							CONTRACT NO. 72H56		
CHECKED - CCC SMR		ACTING ENGINEER OF BRIDGES AND STRUCTURES		SHEET NO. 4 OF 5 SHEETS			ILLINOIS FED. AID PROJECT		



STANDARD BAR SPLICER ASSEMBLY

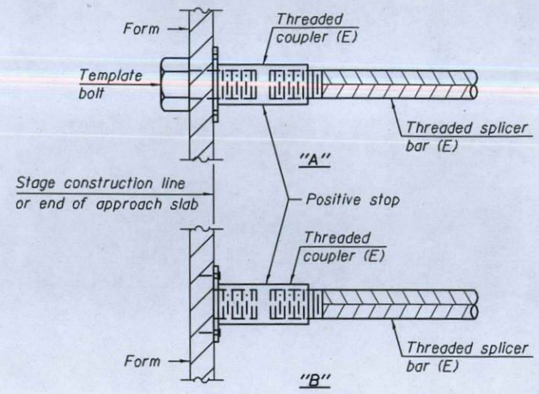
Minimum Lap Lengths						
Bar size to be spliced	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6
3, 4	1'-5"	1'-11"	2'-1"	2'-4"	2'-7"	2'-11"
5	1'-9"	2'-5"	2'-7"	2'-11"	3'-3"	3'-8"
6	2'-1"	2'-11"	3'-1"	3'-6"	3'-10"	4'-5"
7	2'-9"	3'-10"	4'-2"	4'-8"	5'-2"	5'-10"
8	3'-8"	5'-1"	5'-5"	6'-2"	6'-9"	7'-8"
9	4'-7"	6'-5"	6'-10"	7'-9"	8'-7"	9'-8"

Table 1: Black bar, 0.8 Class C
Table 2: Black bar, Top bar lap, 0.8 Class C
Table 3: Epoxy bar, 0.8 Class C
Table 4: Epoxy bar, Top bar lap, 0.8 Class C
Table 5: Epoxy bar, Class C
Table 6: Epoxy bar, Top bar top, Class C

Threaded splicer bar length = min. lap length + 1½" + thread length

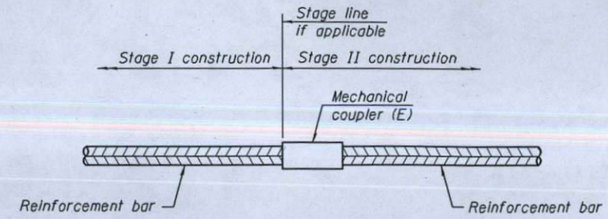
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length
W. Abut.	5	8	3
E. Abut.	5	8	3



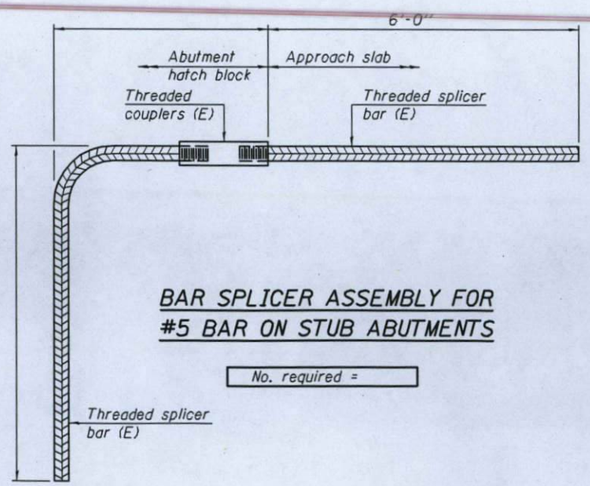
INSTALLATION AND SETTING METHODS

"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.



STANDARD MECHANICAL SPLICER

Location	Bar size	No. assemblies required



BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS

No. required =

NOTES

Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.

All reinforcement shall be lapped and tied to the splicer bars.

Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.

See approved list of bar splicer assemblies and mechanical splicers for alternatives.

BSD-1 8-31-12

DESIGNED - CCC	PASSED	DATE - MAY 5, 2015	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
CHECKED - SMR			
DRAWN - Kyle M. Steffen			
CHECKED - CCC SMR	ACTING ENGINEER OF BRIDGES AND STRUCTURES		

BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS
SN 034-0062
SHEET NO. 5 OF 5 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(30)BJR	HANCOCK	11	11
		CONTRACT NO. 72H56		
	ILLINOIS	FED. AID PROJECT		

7-30-10 LETTING ITEM 123

72052

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22B)i-1	HANCOCK	13	1
FED. ROAD DIST. NO. 6	ILLINOIS	CONTRACT NO. 72D52		

Hancock

123

. FOR INDEX OF SHEETS, SEE SHEET NO. 2

.

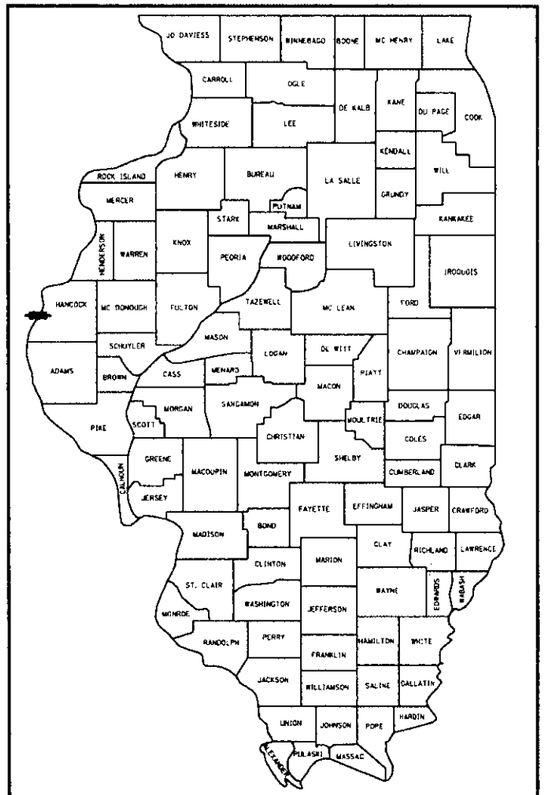
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROPOSED
HIGHWAY PLANS

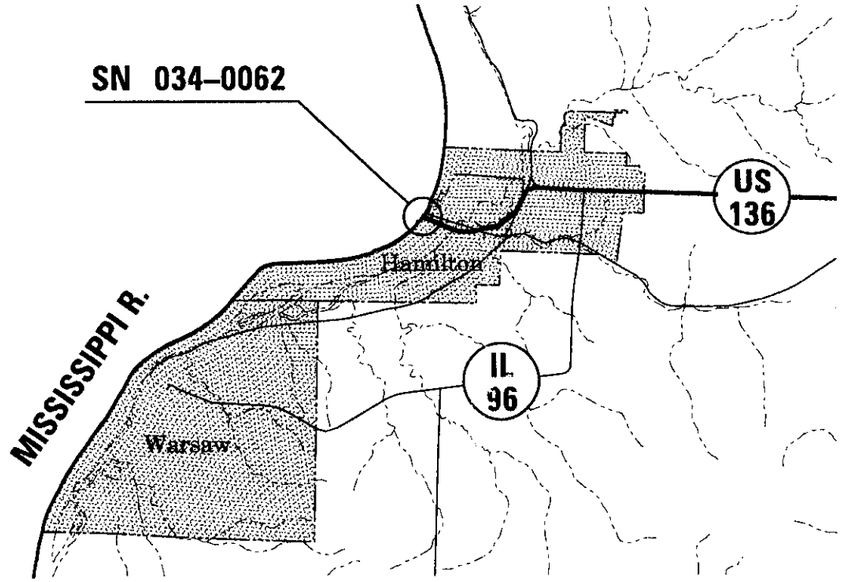
FAP ROUTE 315 (US 136)
SECTION (22B)i–1

BRIDGE REPAIR
HANCOCK COUNTY
C–96–183–10

C–96–183–10



LOCATION OF SECTION INDICATED THUS: –



NET LENGTH = 3340 FT. = 0.63 MILE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED February 17 20 10

Roger Z Driskell
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

May 7 20 10

Scott E. Stitt P.E. /BR
acting ENGINEER OF DESIGN AND ENVIRONMENT

May 7 20 10

Christine M. Reed /BR
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

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

D6 BRIDGE MAINTENANCE ENGINEER –
STEVE BERAN (217) 785–9290
D6 BRIDGE INSPECTION ENGINEER –
DAVE COPENBARGER (217) 785–5306

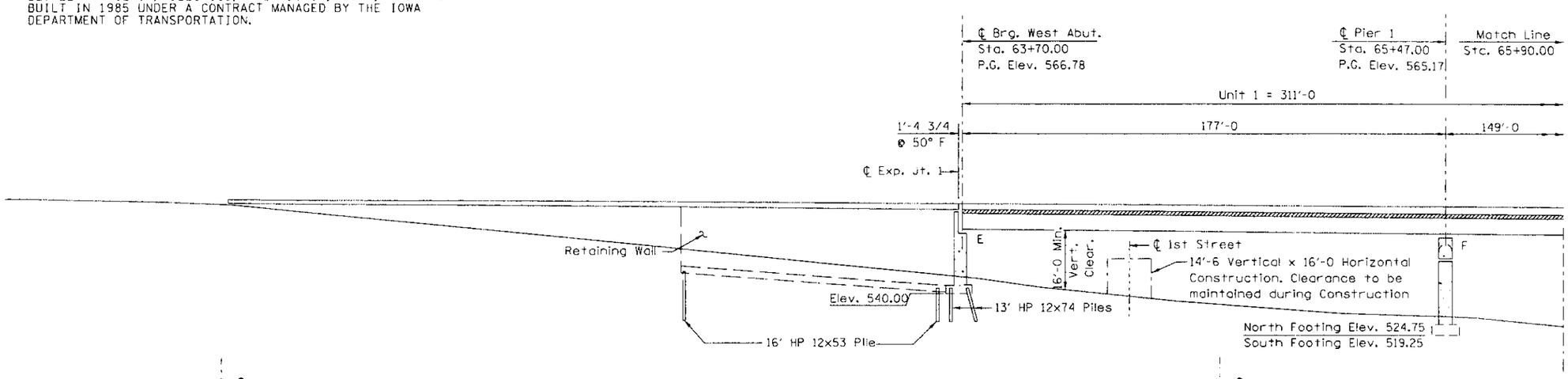
CONTRACT NO. 72D52

PRINTED BY THE AUTHORITY
OF THE STATE OF ILLINOIS

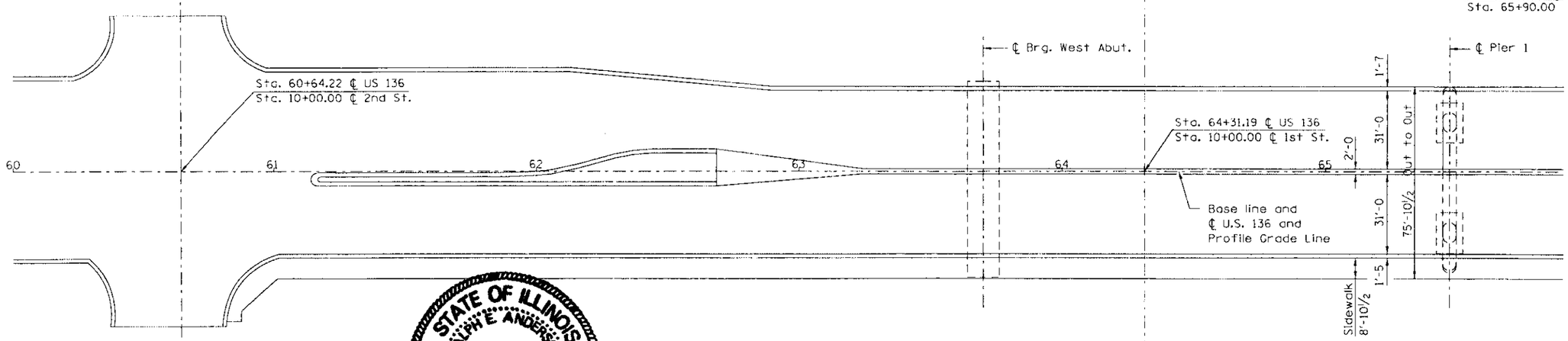
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22B)I-1	HANCOCK	13	5

EXISTING STRUCTURE:

SN 034-0062 CONSISTS OF 15 STEEL MULTI-BEAM WELDED PLATE GIRDER SPANS, WITH AN OVERALL LENGTH OF 3,340 FT MEASURED FROM BACK-TO-BACK OF ABUTMENTS, AND A TOTAL DECK WIDTH OF 75' 10". THE BRIDGE ROADWAY, COMPRISED OF TWO LANES IN EACH DIRECTION DIVIDED BY A BARRIER WALL, HAS A TOTAL COMBINED WIDTH OF 62' 0". THERE IS AN 8' 10" WIDE SIDEWALK ON THE SOUTH SIDE OF THE BRIDGE. THE BRIDGE CARRIES US 136 OVER THE MISSISSIPPI RIVER BETWEEN HAMILTON, ILLINOIS, AND KEOKUK, IOWA, AND WAS BUILT IN 1985 UNDER A CONTRACT MANAGED BY THE IOWA DEPARTMENT OF TRANSPORTATION.



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

STATE OF ILLINOIS
RALPH E. ANDERSON
081-004625
SPRINGFIELD
LICENSED STRUCTURAL ENGINEER

Expires 11/30/2010

9 — 2ND. STREET — 11

9 — 1ST. STREET — 11

REVISIONS NAME	DATE

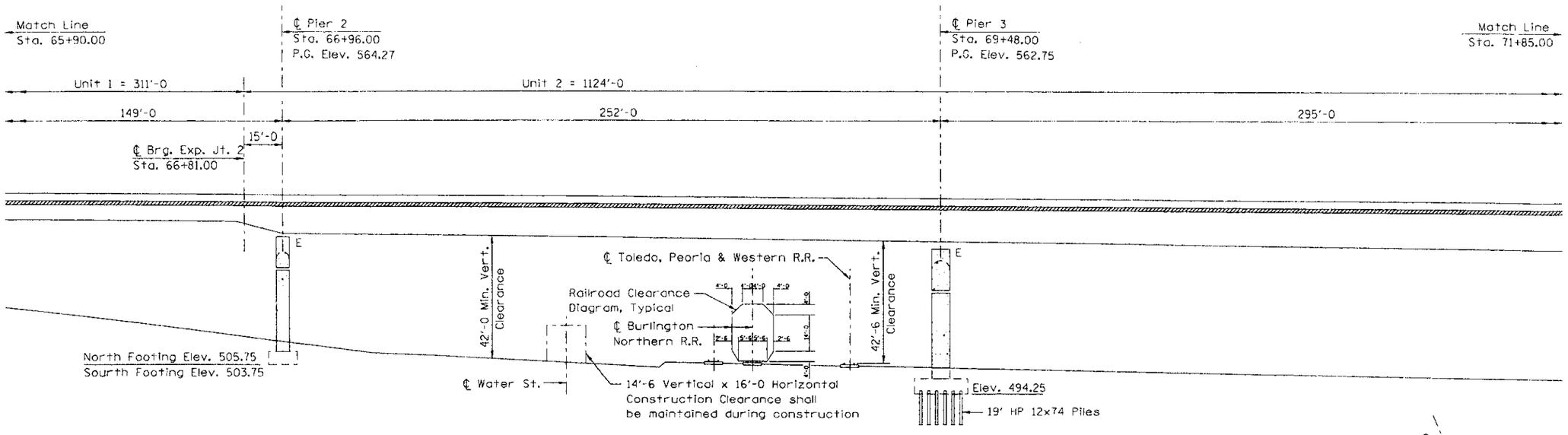
ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

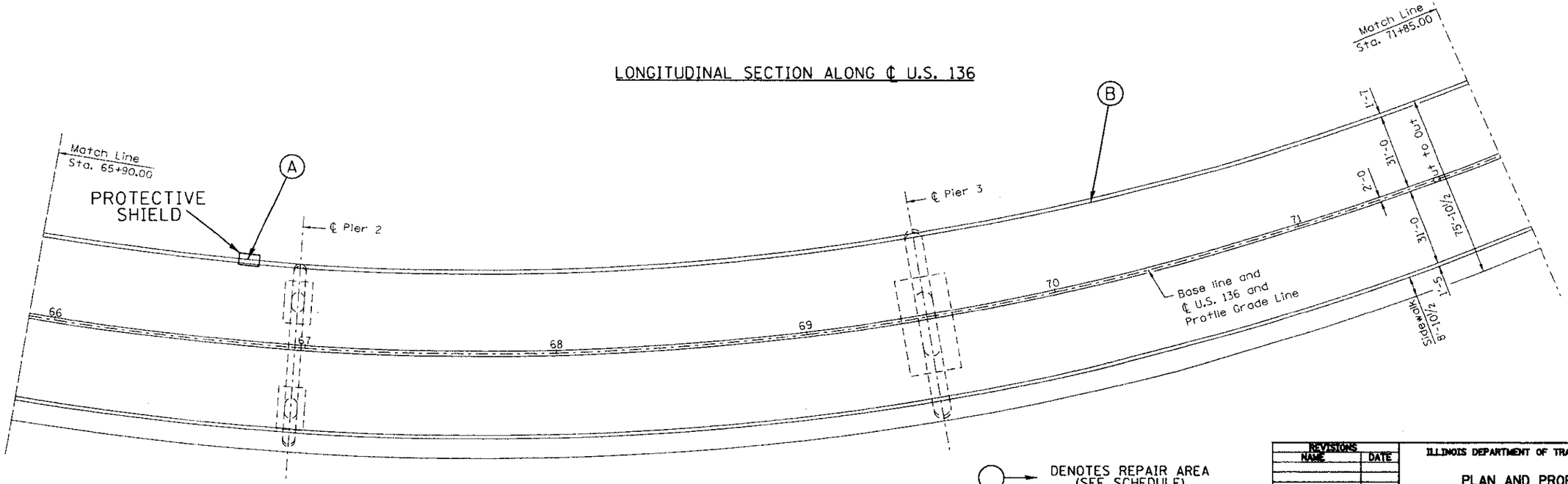
FAP 315 (US 136)
SECTION (22B)I-1
HANCOCK COUNTY

SN 034-0062

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(228)1-1	HANCOCK	13	6



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

℄ DENOTES REPAIR AREA (SEE SCHEDULE)

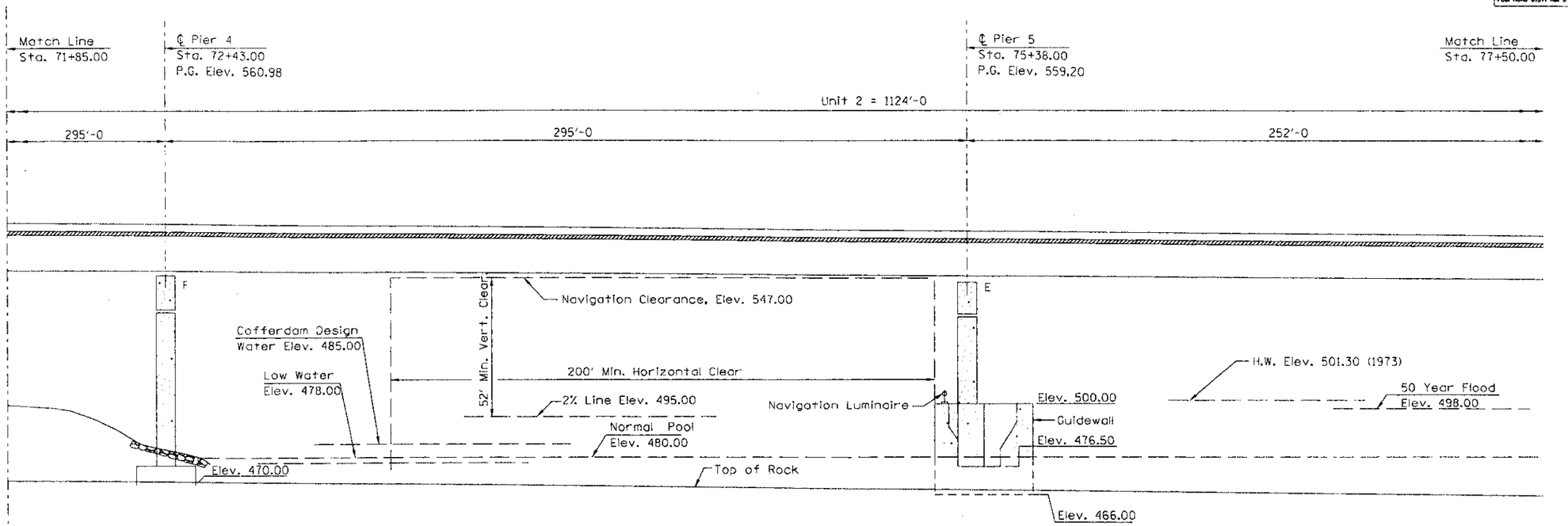
REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

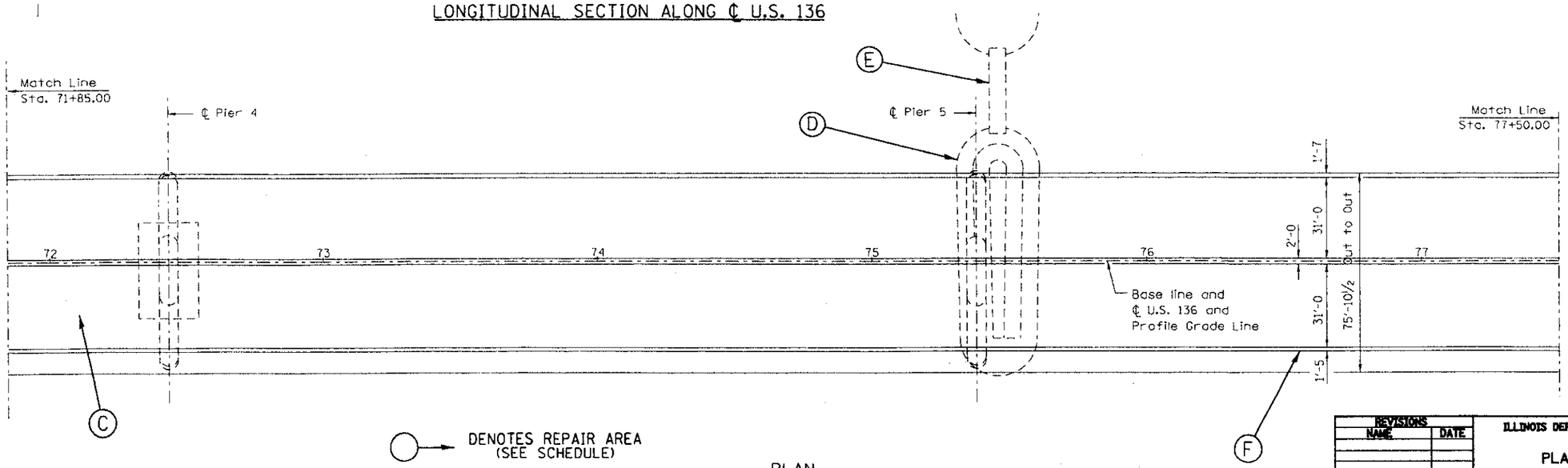
PLAN AND PROFILE

FAP 315 (US 136)
SECTION (228)1-1
HANCOCK COUNTY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22811-1	HANCOCK	13	7
STA.		TO STA.		
FED. ROAD DIST. NO. 6	ILLINOIS	FED. AID PROJECT		



LONGITUDINAL SECTION ALONG ℄ U.S. 136



DENOTES REPAIR AREA (SEE SCHEDULE)

PLAN

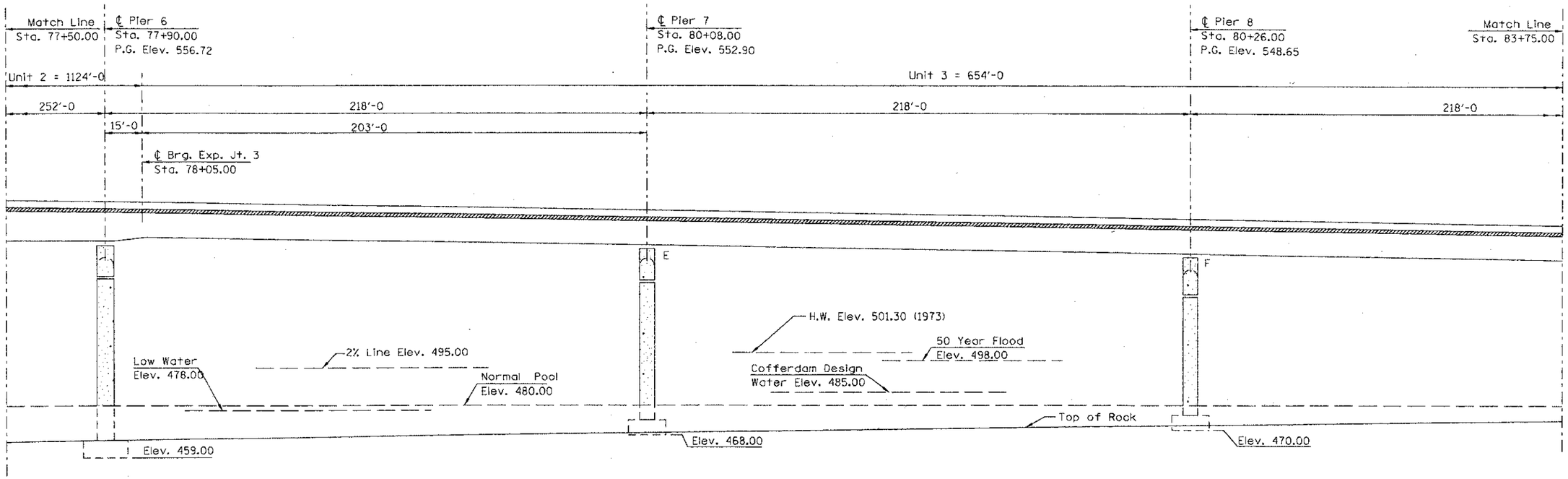
REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

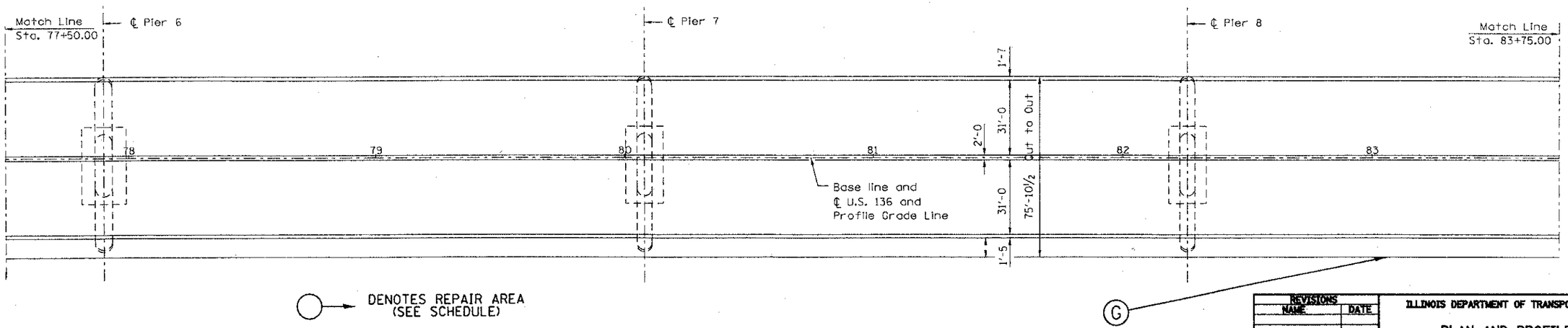
PLAN AND PROFILE

FAP 315 (US 136)
SECTION (22811-1
HANCOCK COUNTY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22BH)-1	HANCOCK	13	8



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

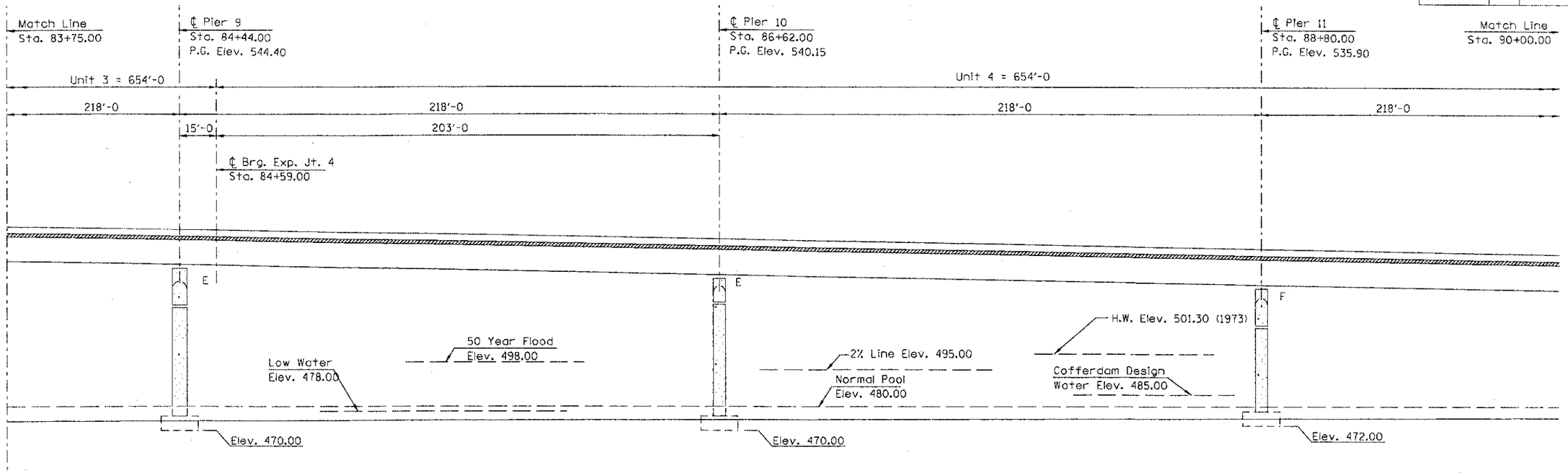
REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

FAP 315 (US 136)
SECTION (22BH)-1
HANCOCK COUNTY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22B)1-1	HANCOCK	13	9



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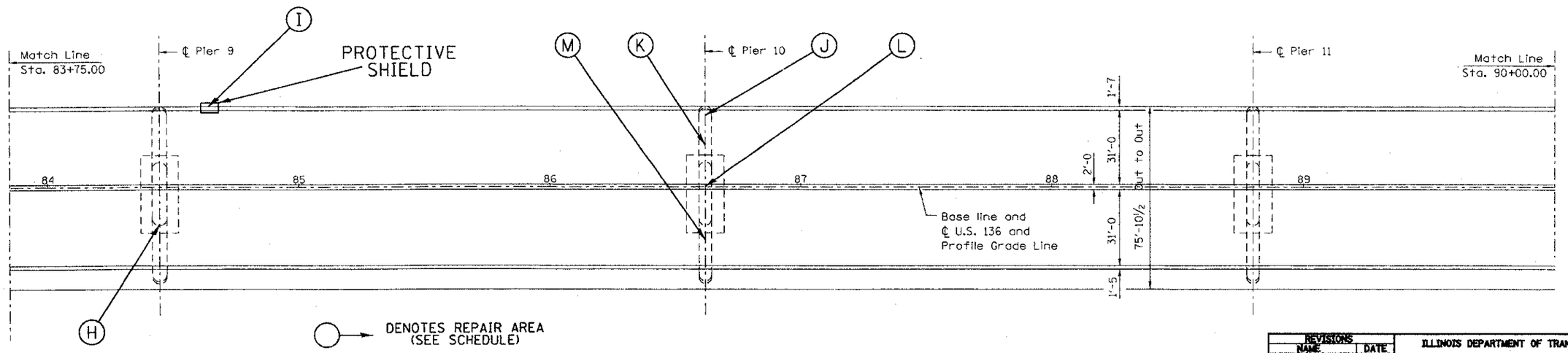


PLAN

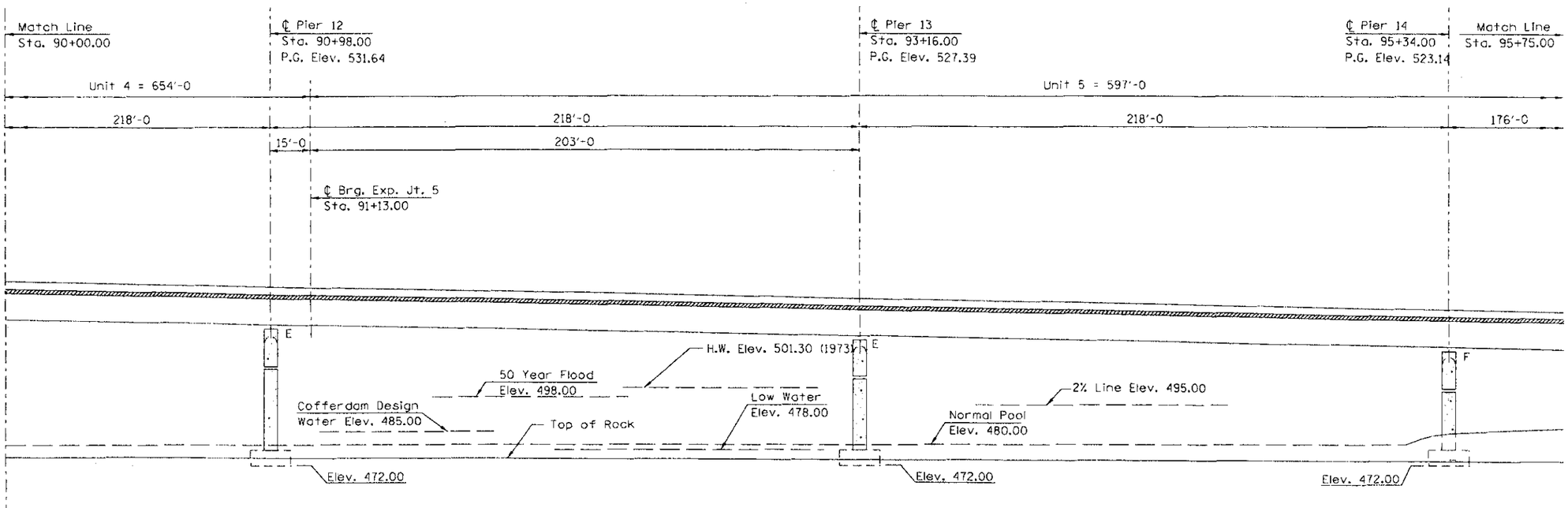
REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

FAP 315 (US 136)
SECTION (22B)1-1
HANCOCK COUNTY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22B)1-1	HANCOCK	13	10



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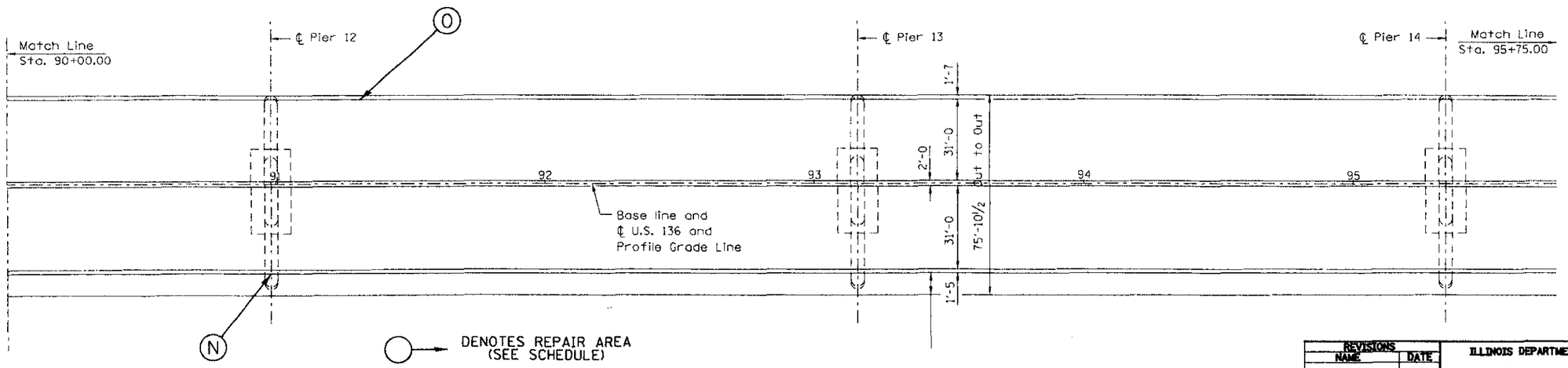


PLAN

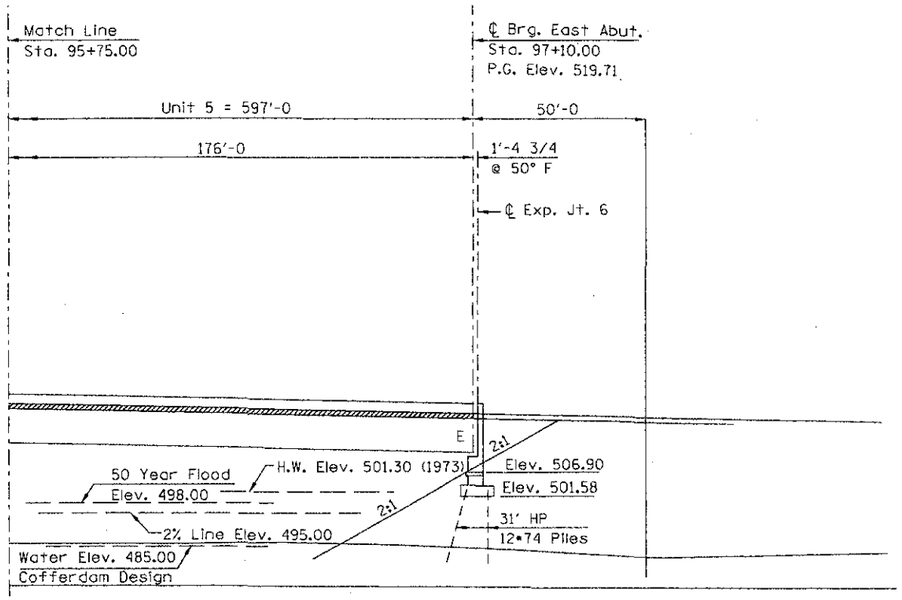
REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

FAP 315 (US 136)
SECTION (22B)1-1
HANCOCK COUNTY

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(228)1-1	HANCOCK	13	11



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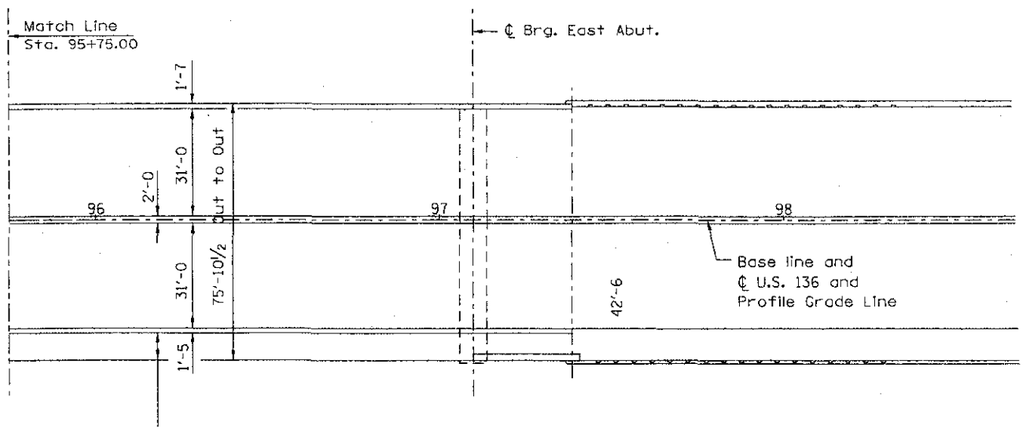


PLAN

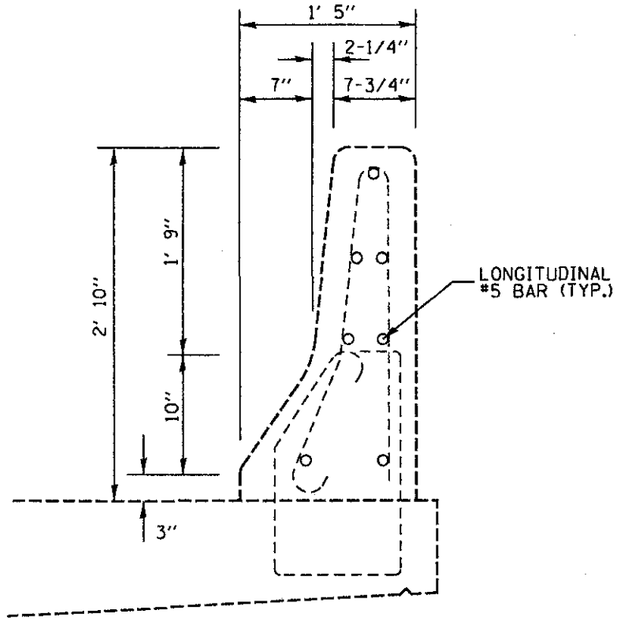
REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

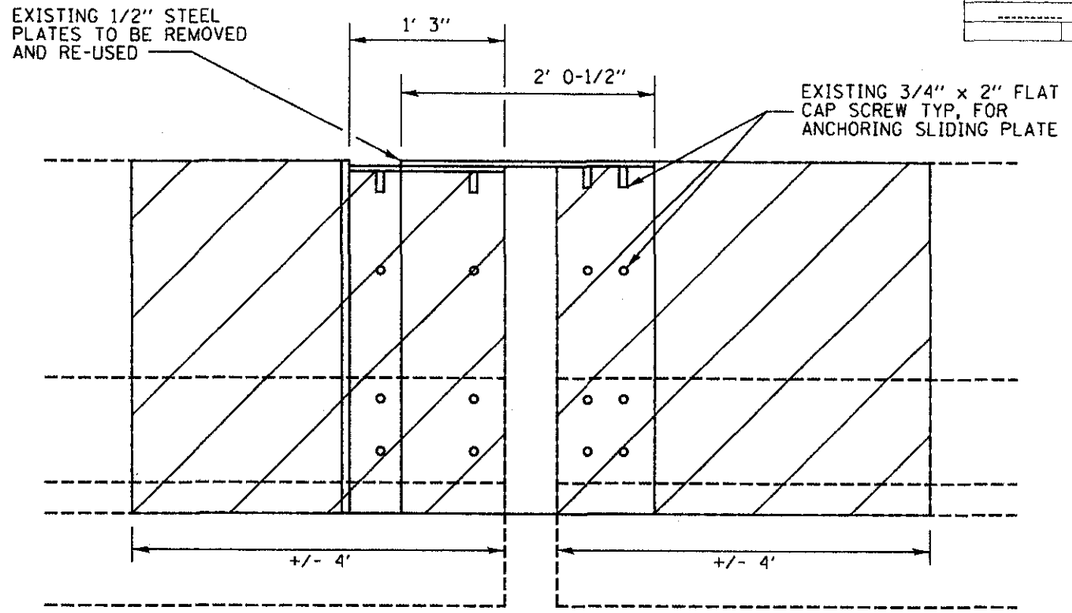
PLAN AND PROFILE

FAP 315 (US 136)
SECTION (228)1-1
HANCOCK COUNTY

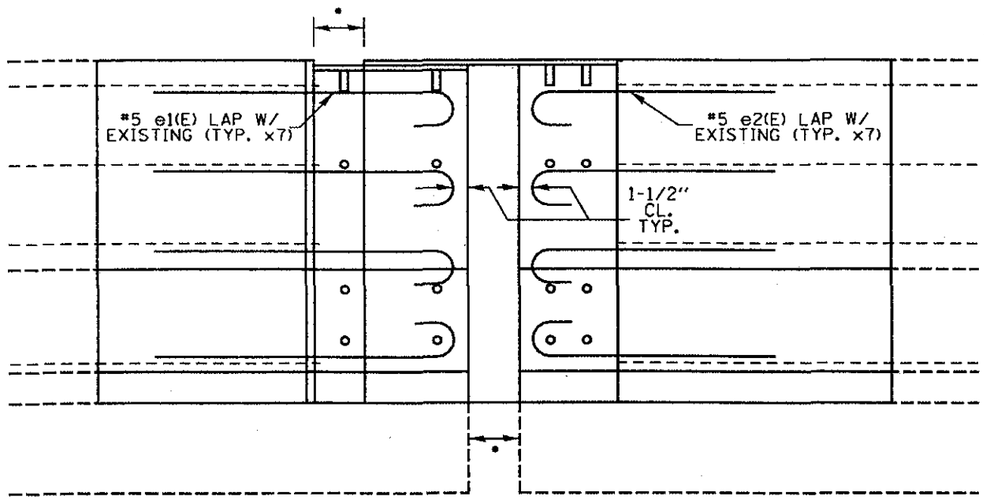
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22B)1-1	HANCOCK	13	12



EXISTING EDGE PARAPET
CROSS SECTION W/ REINFORCEMENT



EXISTING TYPICAL PARAPET
ELEVATION VIEW AT EXPANSION JTS.



PROPOSED TYPICAL PARAPET
ELEVATION VIEW AT EXPANSION JTS.
(VERTICAL REINFORCEMENT NOT SHOWN)

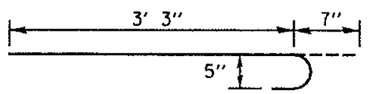
BILL OF MATERIAL (2 JOINTS)				
BAR	NO.	SIZE	SHAPE	LENGTH
e1(E)	14	5	⊂	3' 10"
e2(E)	14	5	⊂	3' 5"
REINFORCEMENT BARS (EPOXY COATED)				106 LBS
CONC. REMOVAL				1.6 CU YD
CONC. SUPERSTRUCTURE				1.6 CU YD

NOTES:

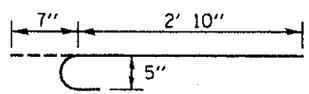
ALL EXISTING REINFORCEMENT IS TO REMAIN. ANY DAMAGE TO EXISTING REINFORCEMENT SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.

ALL PROPOSED REINFORCEMENT SHALL BE LAPPED A MINIMUM OF 2' 2" WITH THE EXISTING REINFORCEMENT. THE PROPOSED REINFORCEMENT MAY BE TRIMMED TO FIT PROVIDED THAT THE MINIMUM LAP LENGTH IS STILL ACHIEVED.

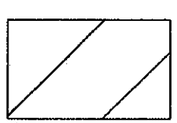
THE SLIDING PLATES SHALL BE RE-ANCHORED WITH NEW 3/4" DIAMETER, 2" LONG FLAT HEAD CAP SCREWS AFTER THE NEW CONCRETE IS POURED. THE EXISTING SCREW HOLES SHALL BE RE-USED. THE CONCRETE INSERTS USED FOR ANCHORING SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. THE COST OF THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR CONCRETE SUPERSTRUCTURE.



e1(E) BAR



e2(E) BAR



PROPOSED CONCRETE REMOVAL

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

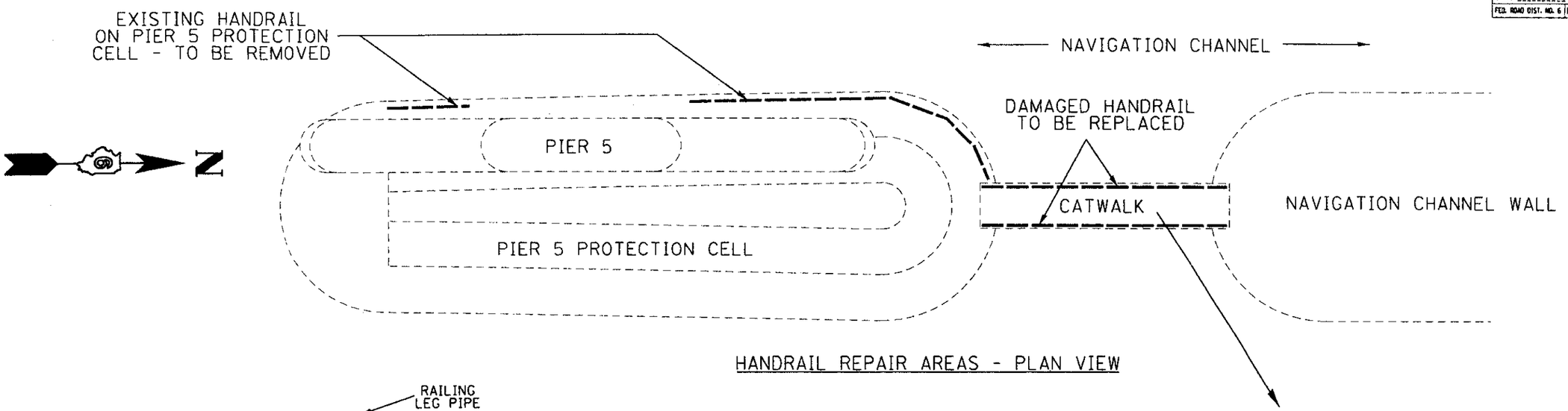
PARAPET REPAIR DETAILS

FAP 315 (US 136)
SECTION (22B)1-1
HANCOCK COUNTY

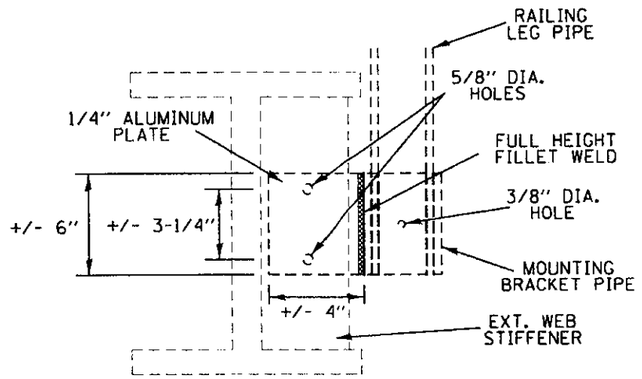
• EXPANSION GAP DIMENSION SHALL MATCH THE EXISTING GAP DIMENSION BETWEEN DECK ENDS AT TIME OF CONCRETE POUR.

CONTRACT NO. 72D52

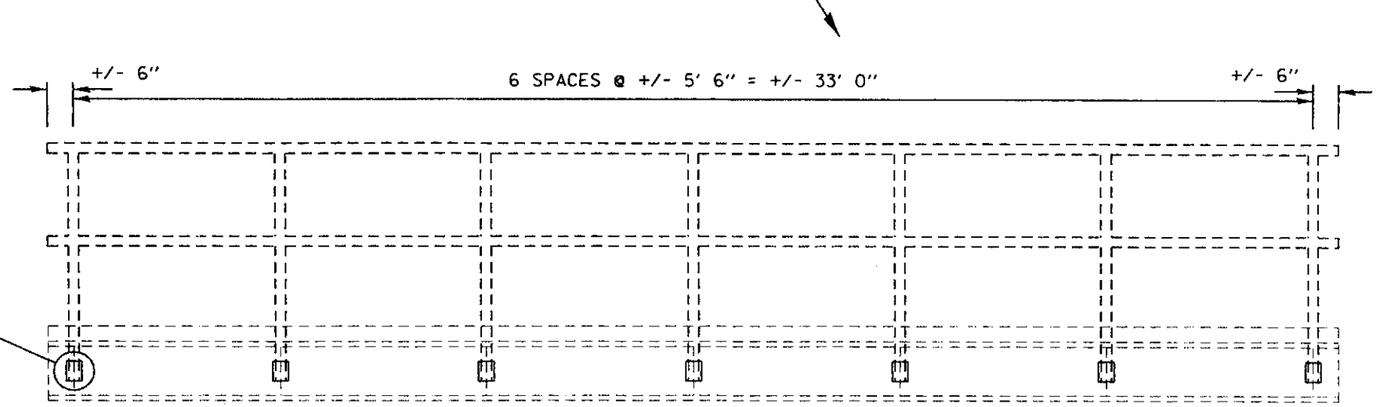
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22BDI-1	HANCOCK	13	13
STA. _____		TO STA. _____		
FED. ROAD DIST. NO. 6	ILLINOIS	FED. AID PROJECT		



HANDRAIL REPAIR AREAS - PLAN VIEW



TYPICAL EXISTING RAIL MOUNTING BRACKET ELEVATION VIEW



EXISTING CATWALK HANDRAIL ELEVATION

NOTES:

THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL PLAN DIMENSIONS PRIOR TO HANDRAIL FABRICATION.

THE NEW HANDRAIL SHALL BE HOLLAENDER SPEED-RAIL REMOVABLE RAILING OR EQUIVALENT (WWW.HOLLAENDER.COM). THE CONTRACTOR SHALL DESIGN A NEW HANDRAIL SYSTEM AND SUBMIT SHOP DRAWINGS TO THE ENGINEER FOR APPROVAL PRIOR TO ORDERING MATERIALS. THE HANDRAIL SHALL CONFORM TO ALL APPLICABLE OSHA STANDARDS, SPECIFICALLY 1910.23(e). THE RAIL SHALL BE CONSTRUCTED IN INDIVIDUAL SECTIONS BETWEEN 6' AND 16' IN LENGTH AND SHALL PROVIDE FOR EASY REMOVAL DURING FLOOD EVENTS. MOUNTING THE RAIL TO THE CATWALK USING THE EXISTING HOLES IN THE WEB STIFFENERS IS PREFERRED, BUT OTHER METHODS OF ATTACHMENT MAY BE USED IF APPROVED BY THE ENGINEER. THE PIPE USED SHALL BE 2" I. D. SCHEDULE 40, ALUMINUM ALLOY 6061-T6, WITH AN ANODIZED FINISH. ALL FITTINGS AND COUPLINGS SHALL ALSO HAVE AN ANODIZED FINISH. THE NEW HANDRAIL SHALL BE MEASURED FOR PAYMENT ALONG THE TOTAL LENGTH OF THE FINISHED RAILING.

ANY EXISTING HANDRAIL OR MOUNTING BRACKETS PRESENT ON THE CATWALK SHALL BE REMOVED PRIOR TO NEW RAIL INSTALLATION. THE COST FOR THIS WORK SHALL BE INCLUDED IN THE BID PRICE FOR HANDRAIL REMOVAL.

ACCESS TO THE WORK AREA SHALL BE VIA LOCK AND DAM #19. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE ARMY CORPS OF ENGINEERS. THE CONTACT PERSON WILL BE LOCK MASTER, BILL ROBINSON, PHONE (319) 524-2631. THE CORPS OF ENGINEERS SHALL HAVE AUTHORITY TO REGULATE THE CONTRACTORS ACCESS TO THE WORK AREA. SPECIAL CARE SHALL BE TAKEN BY THE CONTRACTOR TO IN NO WAY INHIBIT THE FLOW OF BARGE TRAFFIC OR ENCUMBER THE OPERATION OF THE LOCK.

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

HANDRAIL DETAILS

FAP 315 (US 136)
SECTION (22BDI-1
HANCOCK COUNTY

SCALE: VERT.
HORIZ.
DATE

DRAWN BY
CHECKED BY

~~3-3-07 Let~~ HANCOCK J&R

72A69

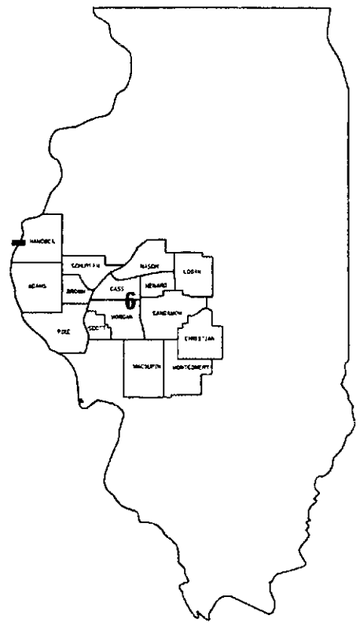
FOR INDEX OF SHEETS AND HIGHWAY STANDARDS, SEE SHEET 2.

100%
1-14-2008

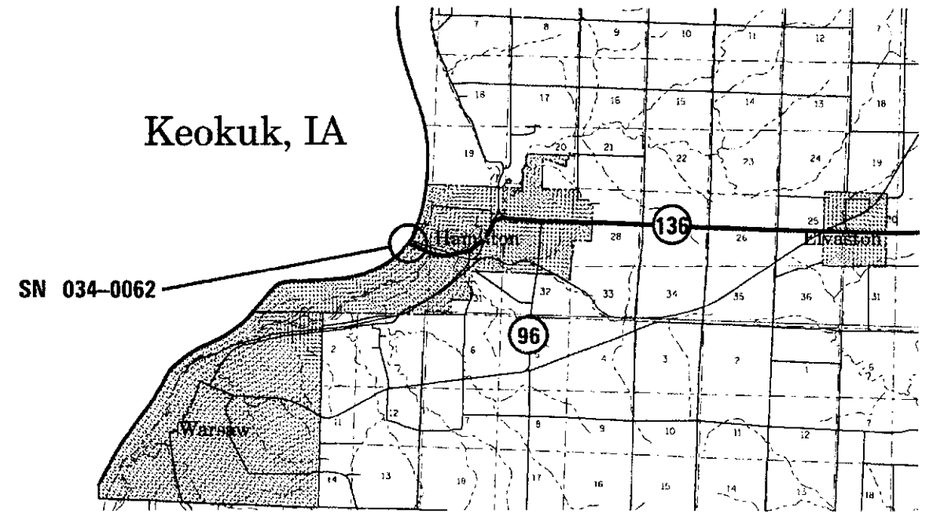
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROPOSED HIGHWAY PLANS

FAP ROUTE 315 (US 136)
SECTION (22B)L
HANCOCK COUNTY
C96-510-08 / D96-546-07



LOCATION OF SECTION INDICATED THUS: ■



NET LTH OF SEC 3340 FT = 0.63 MILE

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

D6 BRIDGE ENGINEER: STEVE BERAN
PHONE: (217) 785-9290

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED March 29, 2007
Quest H Reed
DEPUTY DIRECTOR OF HIGHWAYS, REGION FOUR ENGINEER

May 11, 2007
Eric E Harm (P.E.)
Interim ENGINEER OF DESIGN AND ENVIRONMENT

May 11, 2007
Milton R. Sees P.E.
DIRECTOR, DIVISION OF HIGHWAYS

PRINTED BY AUTHORITY OF THE STATE OF ILLINOIS

CONTRACT NO. 72A69
034-0062

SUMMARY OF QUANTITIES			
CODE NO.	ITEM	UNIT	100% STATE 1030-1E TOTAL QTY
67100100	MOBILIZATION	L SUM	1
70102630	TRAFFIC CONTROL AND PROTECTION, STANDARD 701601	L SUM	1
70102635	TRAFFIC CONTROL AND PROTECTION, STANDARD 701701	L SUM	1
70102640	TRAFFIC CONTROL AND PROTECTION, STANDARD 701801	L SUM	1
82102150	LUMINAIRE, SODIUM VAPOR, HORIZONTAL MOUNT, 150 WATT	EACH	18
82107100	UNDERPASS LUMINAIRE, 70 WATT, HIGH PRESSURE SODIUM VAPOR	EACH	2
82107500	UNDERPASS LUMINAIRE, 250 WATT, HIGH PRESSURE SODIUM VAPOR	EACH	3
82500515	LIGHTING CONTROLLER TYPE CB-RCS 60 AMP - 240 VOLT (DUAL)	EACH	1
84200600	REMOVAL OF EXISTING LIGHTING UNIT, NO SALVAGE	EACH	23
X0301588	NAVIGATION OBSTRUCTION LIGHT	EACH	1
X0324135	60 AMP STAINLESS STEEL DISCONNECT SWITCH	EACH	1
X0324579	GROUNDING AND BONDING	L SUM	1
X0325827	ATTACH BONDING CONDUCTOR	EACH	17

QUANTITIES
FAP 315 (US 136)
SECTION (22B)L
HANCOCK COUNTY

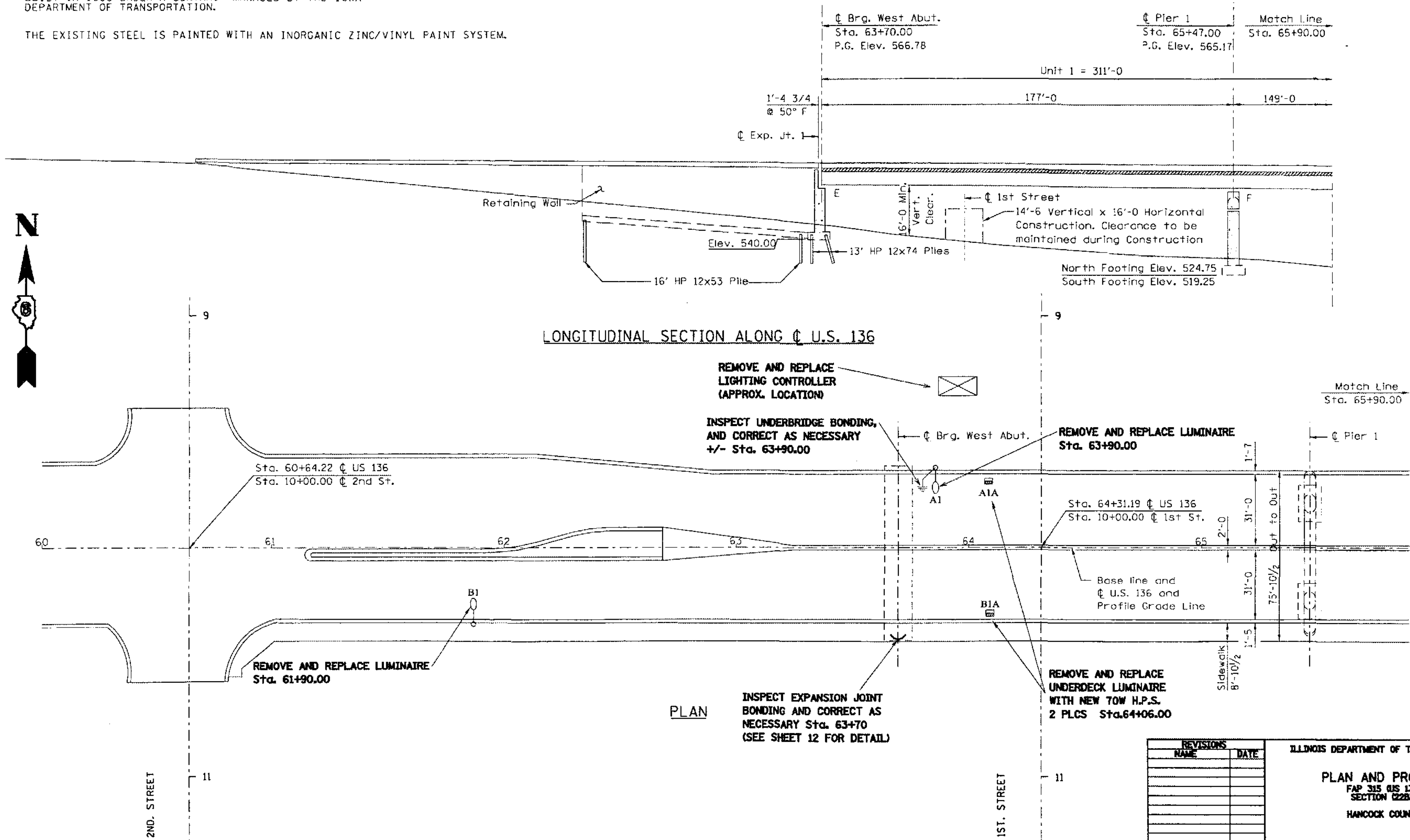
Rev.

CONTRACT NO. 72A69

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22B)L	HANCOCK	13	5

EXISTING STRUCTURE:
SN 034-0062 CONSISTS OF 15 STEEL MULTI-BEAM WELDED PLATE GIRDER SPANS, WITH AN OVERALL LENGTH OF 3,340 FT MEASURED FROM BACK-TO-BACK OF ABUTMENTS, AND A TOTAL DECK WIDTH OF 75' 10•". THE BRIDGE ROADWAY, COMPRISED OF TWO LANES IN EACH DIRECTION DIVIDED BY A BARRIER WALL, HAS A TOTAL COMBINED WIDTH OF 62' 0". THERE IS AN 8' 10•" WIDE SIDEWALK ON THE SOUTH SIDE OF THE BRIDGE. THE BRIDGE CARRIES US 136 OVER THE MISSISSIPPI RIVER BETWEEN HAMILTON, ILLINOIS, AND KEOKUK, IOWA, AND WAS BUILT IN 1985 UNDER A CONTRACT MANAGED BY THE IOWA DEPARTMENT OF TRANSPORTATION.

THE EXISTING STEEL IS PAINTED WITH AN INORGANIC ZINC/VINYL PAINT SYSTEM.



REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

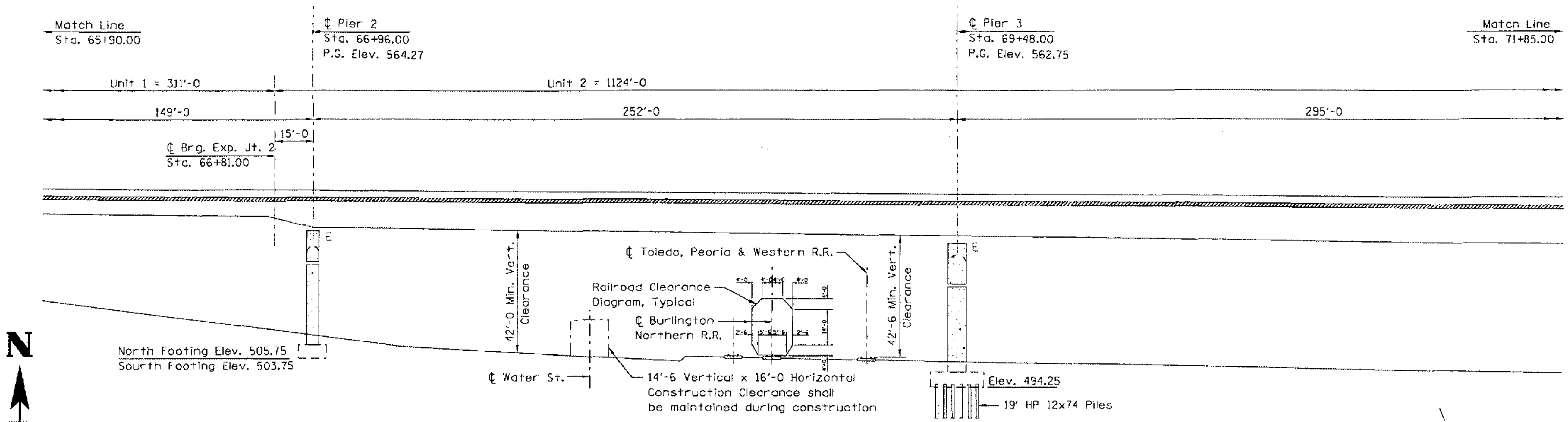
PLAN AND PROFILE
FAP 315 (US 136)
SECTION (22B)L
HANCOCK COUNTY

•DGN-SPEC• •DATE-TIME• •REF01

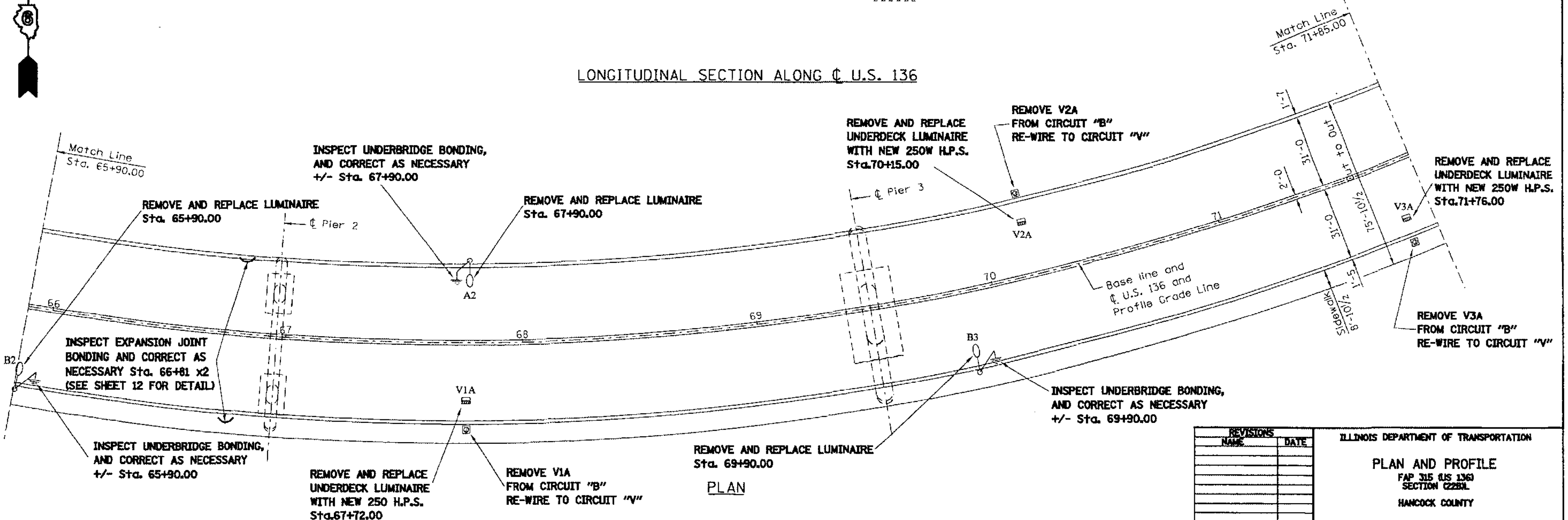
DG PROJECT: d656902 FILE: psheets_______.dgn

CONTRACT NO. 72A69

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	122BIL	HANCOCK	13	6



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

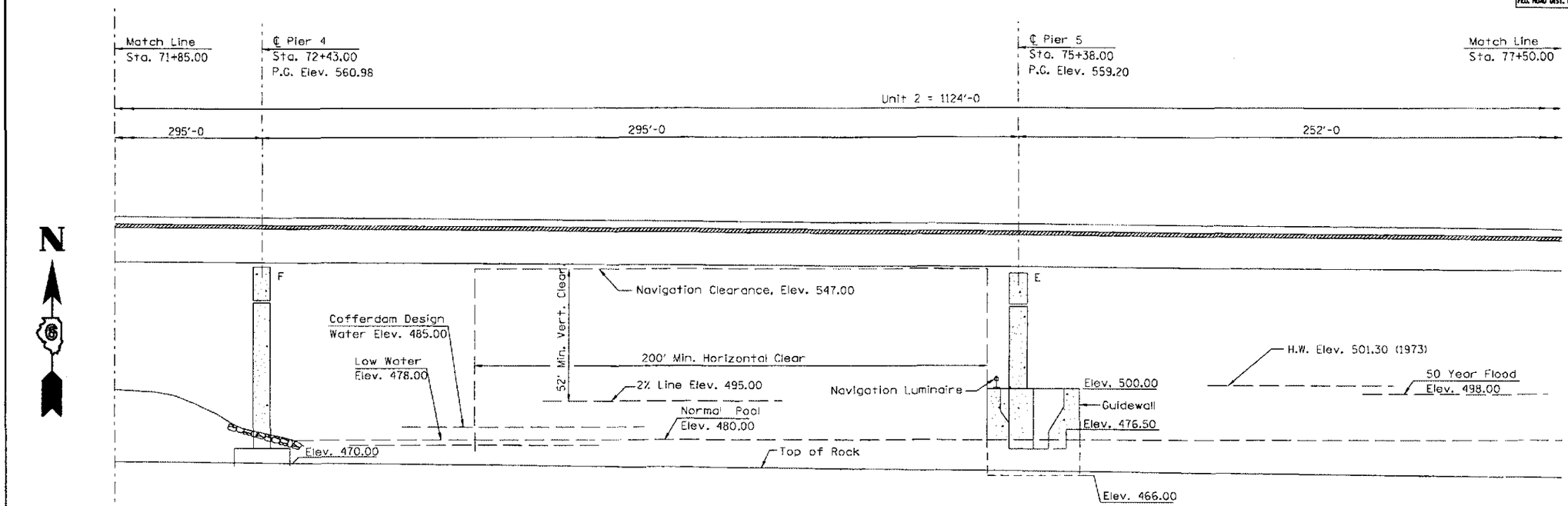
FAP 315 (US 136)
SECTION (122B)L

HANCOCK COUNTY

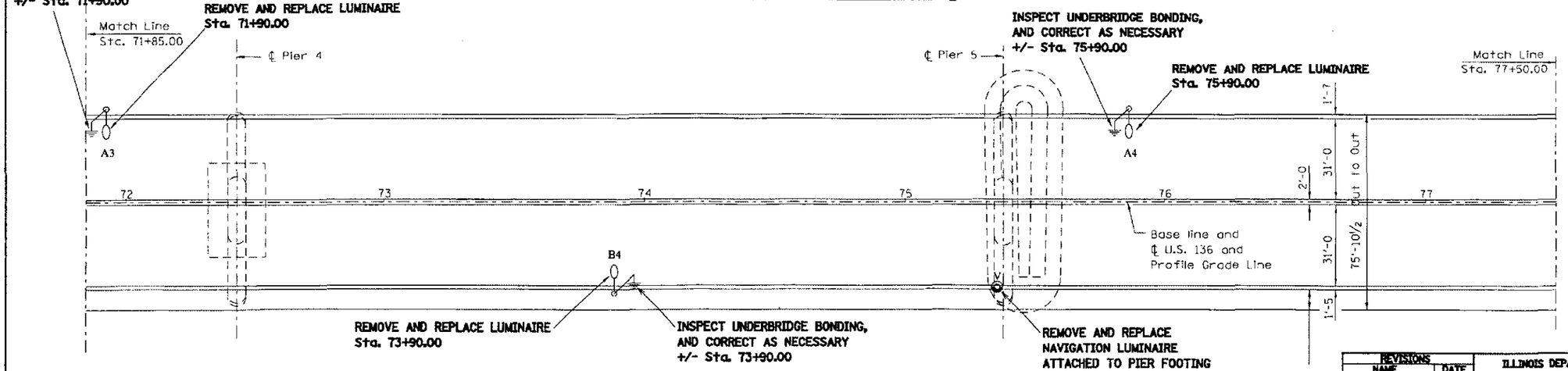
D6 PROJECT: d656982 FILE: pgboo1a.........dgn

CONTRACT NO. 72A69

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(228)L	HANCOCK	13	7
STA. _____	TO STA. _____			
FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT		



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

FAP 315 (US 136)
SECTION (228)L

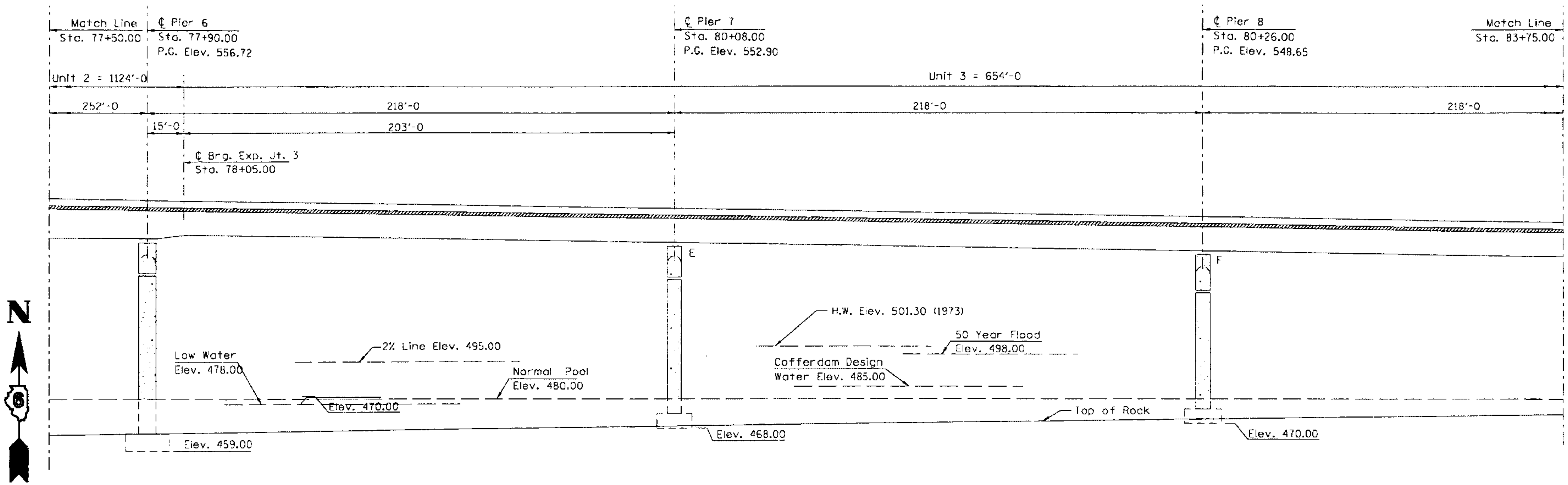
HANCOCK COUNTY

DGN-SPEC
DATE-TIME
*REF01

DS PROJECT: d655902 FILE: psheets_____.dgn

CONTRACT NO. 72A69

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22B)L	HANCOCK	13	8



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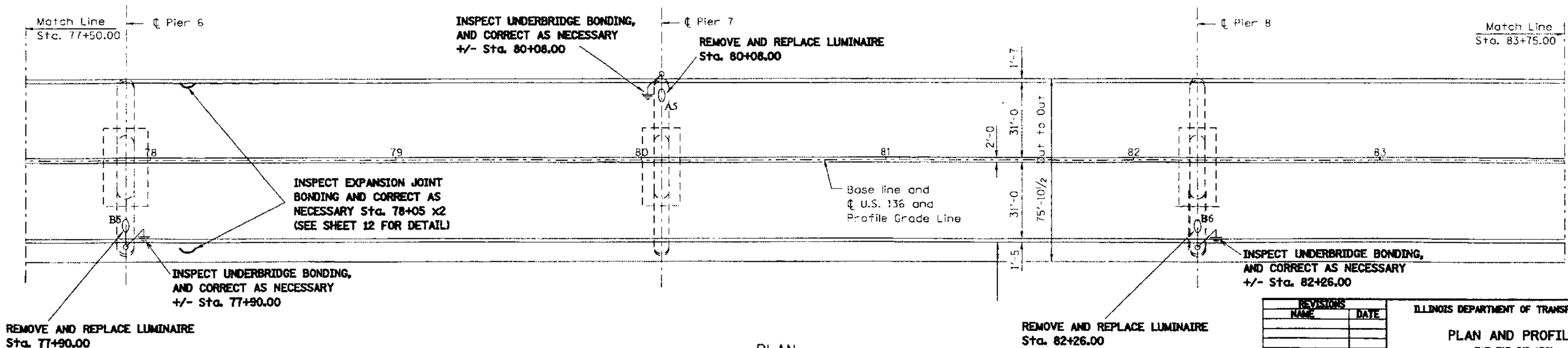


PLAN

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

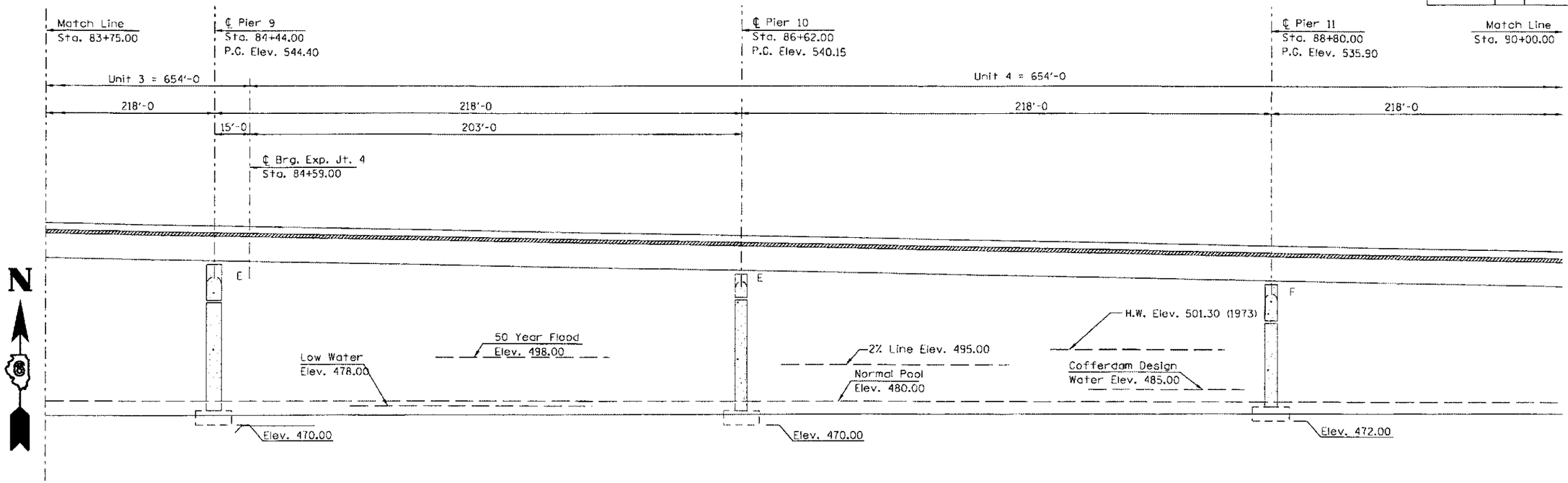
FAP 315 (US 136)
SECTION (22B)L
HANCOCK COUNTY

•CON-SPEC• •DATE-TIME• •REF01

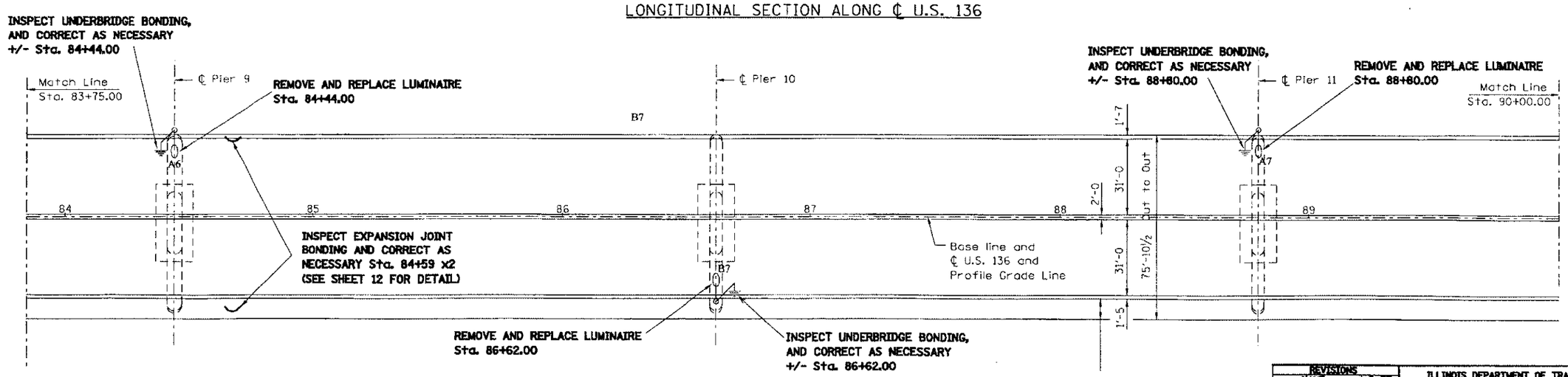
DS PROJECT: d656902 FILE: pobeets_______.dgn

CONTRACT NO. 72A69

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	122BL	HANCOCK	13	9



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PLOFILE
FAP 315 (US 136)
SECTION (22BX)

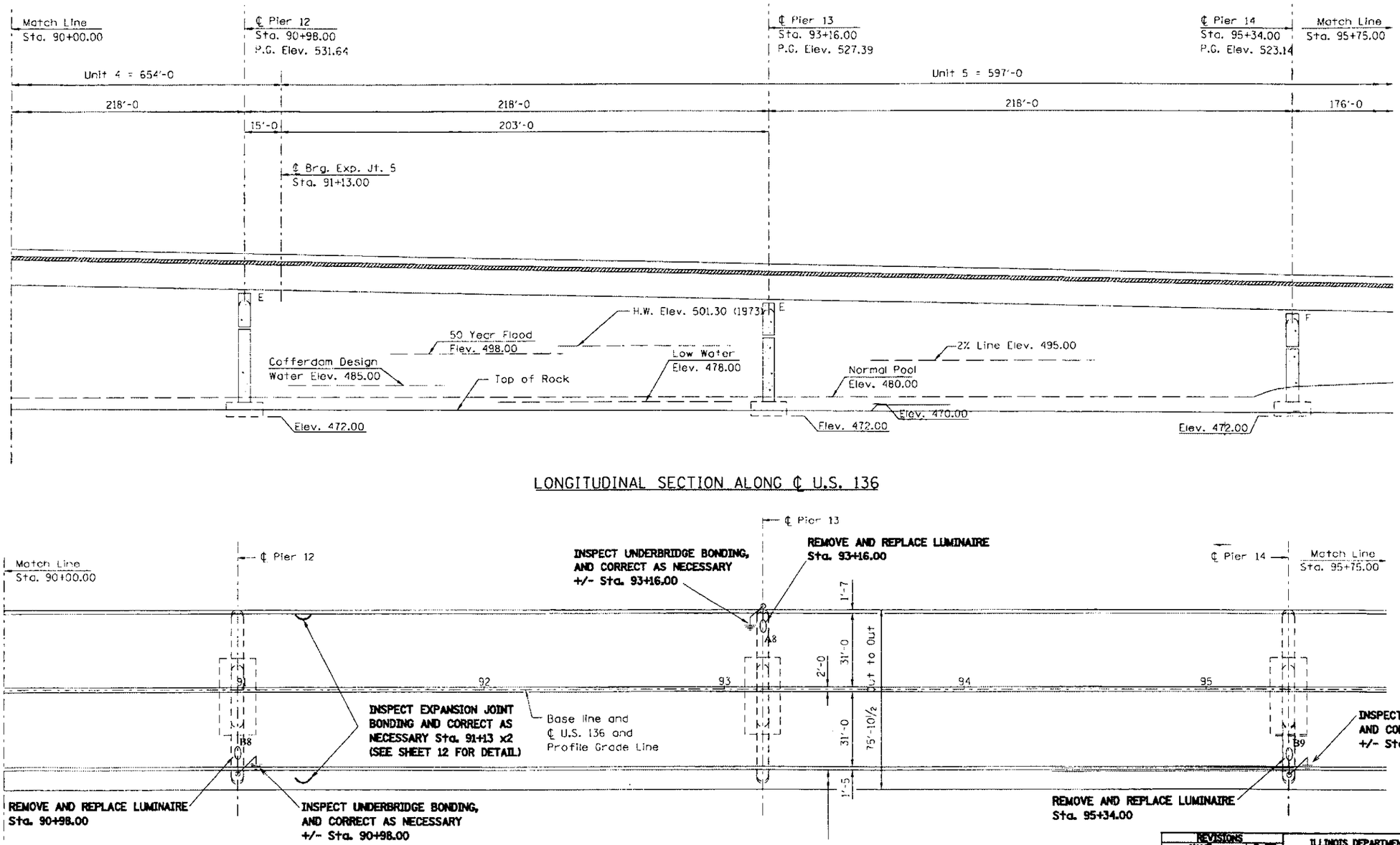
HANCOCK COUNTY

•DGN-SPEC-
•DATE-TIME-
•REF01

DG PROJECT: d656922 FILE: psbsels_____.dgn

CONTRACT NO. 72A69

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22BX,L	HANCOCK	13	10



PLAN

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

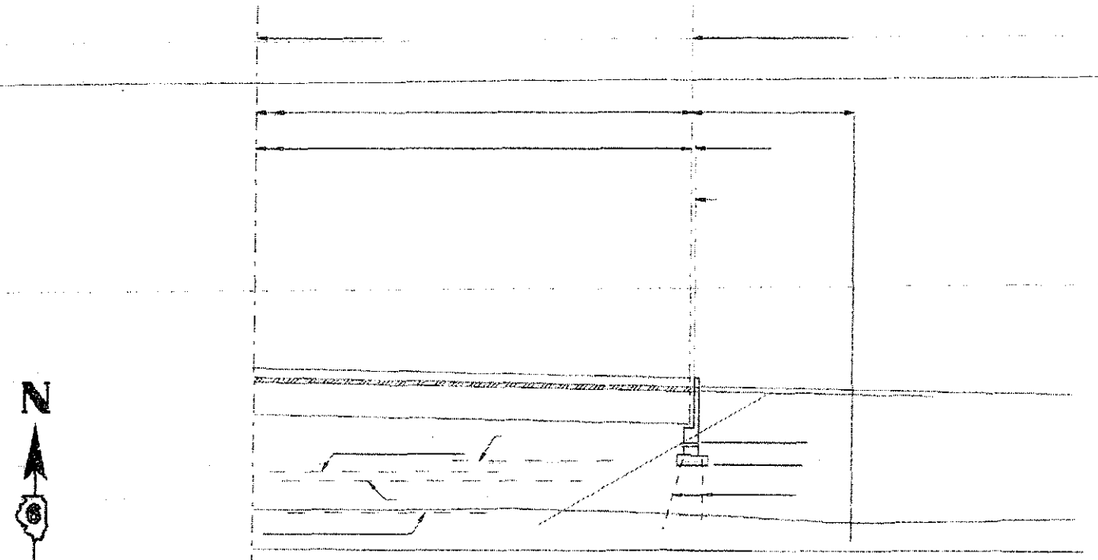
FAP 315 (US 136)
SECTION (22BX,L
HANCOCK COUNTY

DGN-SPEC
DATE-TIME
*REF#1

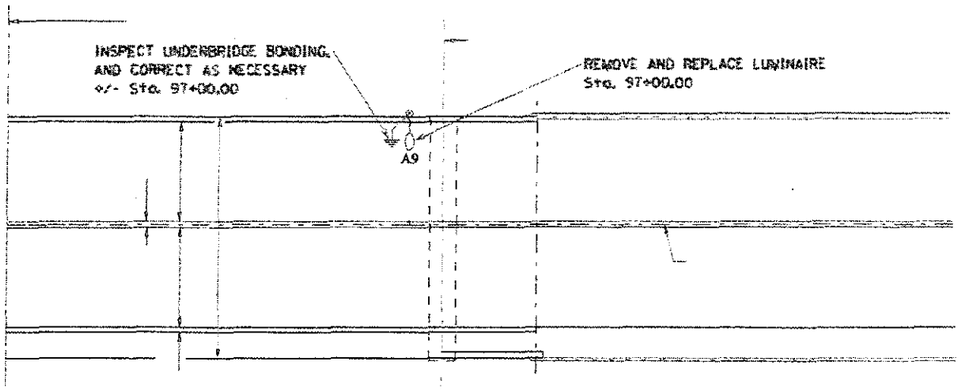
DG PROJECT: d656922 FILE: psheet1s_____.dgn

CONTRACT NO. 72A65

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	C228IL	HANCOCK	13	11



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

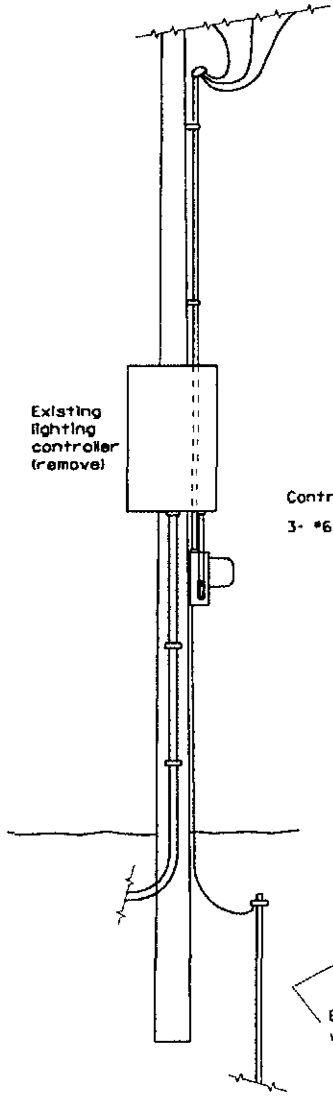
PLAN AND PROFILE

FAP 315 (US 136)
SECTION 228IL

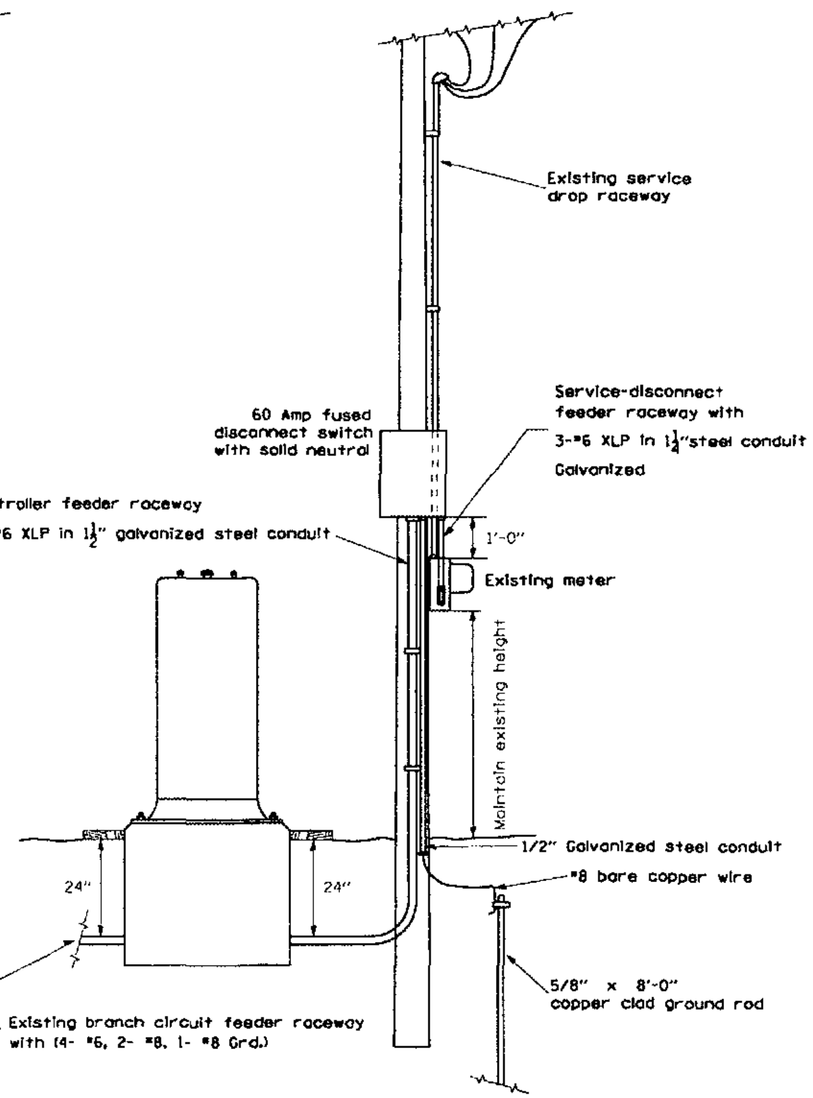
HANCOCK COUNTY

CONTRACT NO. 72A69

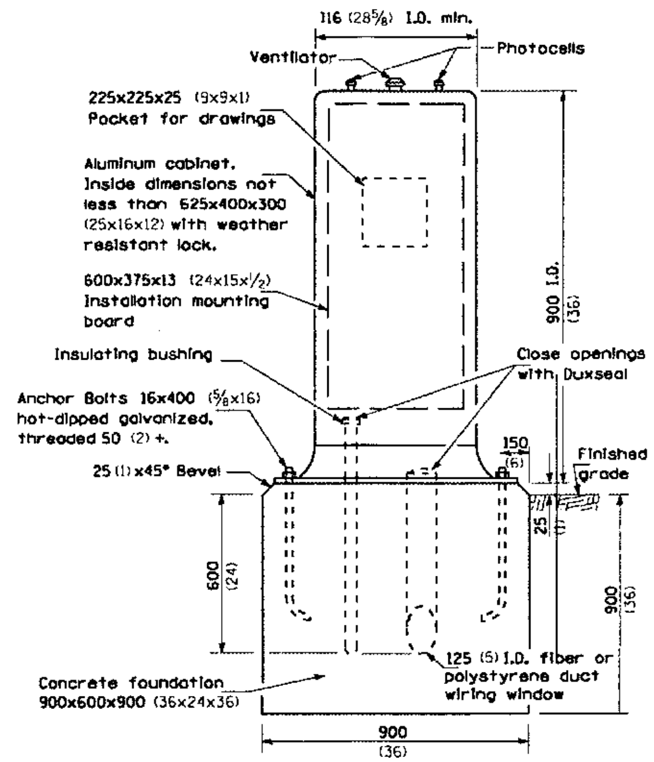
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22BX	HANCOCK	13	12
STA. ________	TO STA. ________			
FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT		



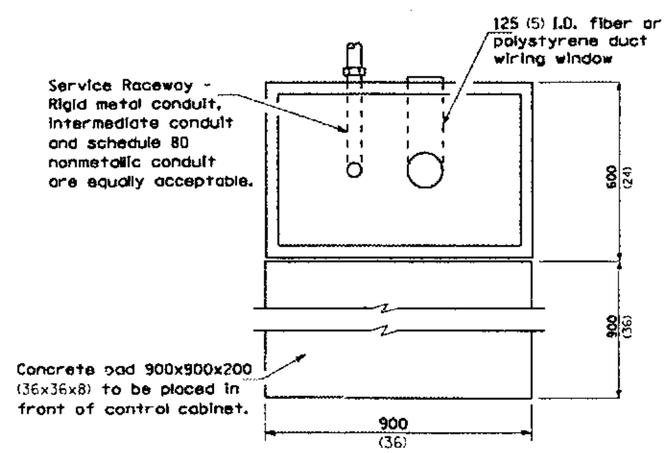
EXISTING
240 V. SERVICE POLE
CONFIGURATION



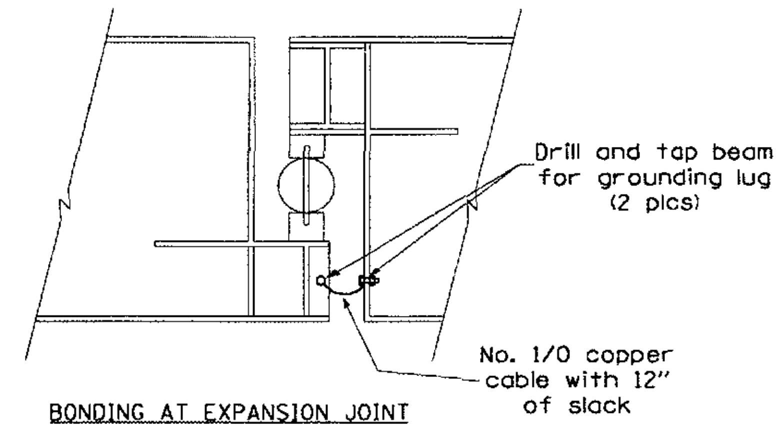
PROPOSED
240 V. SERVICE POLE
CONFIGURATION



CONTROL INSTALLATION
(FRONT VIEW)

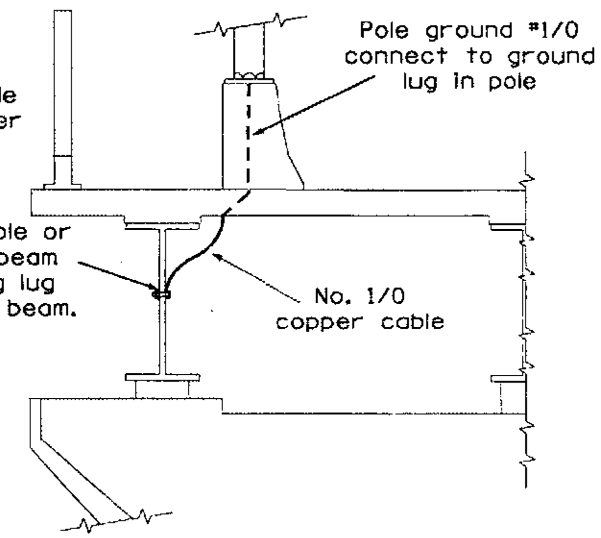


FOUNDATION
(TOP VIEW)



BONDING AT EXPANSION JOINT

NOTE:
Sidewalk side of roadway shown, pole grounding for other side similar



BONDING OF LIGHT POLES

Wiring shall be panel board fashion.
All bends shall be right angles.
All runs shall be vertical or parallel to panel board.
Wires shall be grouped or laced.
All control installation components shall be U.L. listed.
Label equipment ground and neutral.
Raceways shall terminate 75 (3) above top of concrete foundation.
All dimensions are in millimeters unless otherwise shown.

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

CONTROL INSTALLATION
DUAL

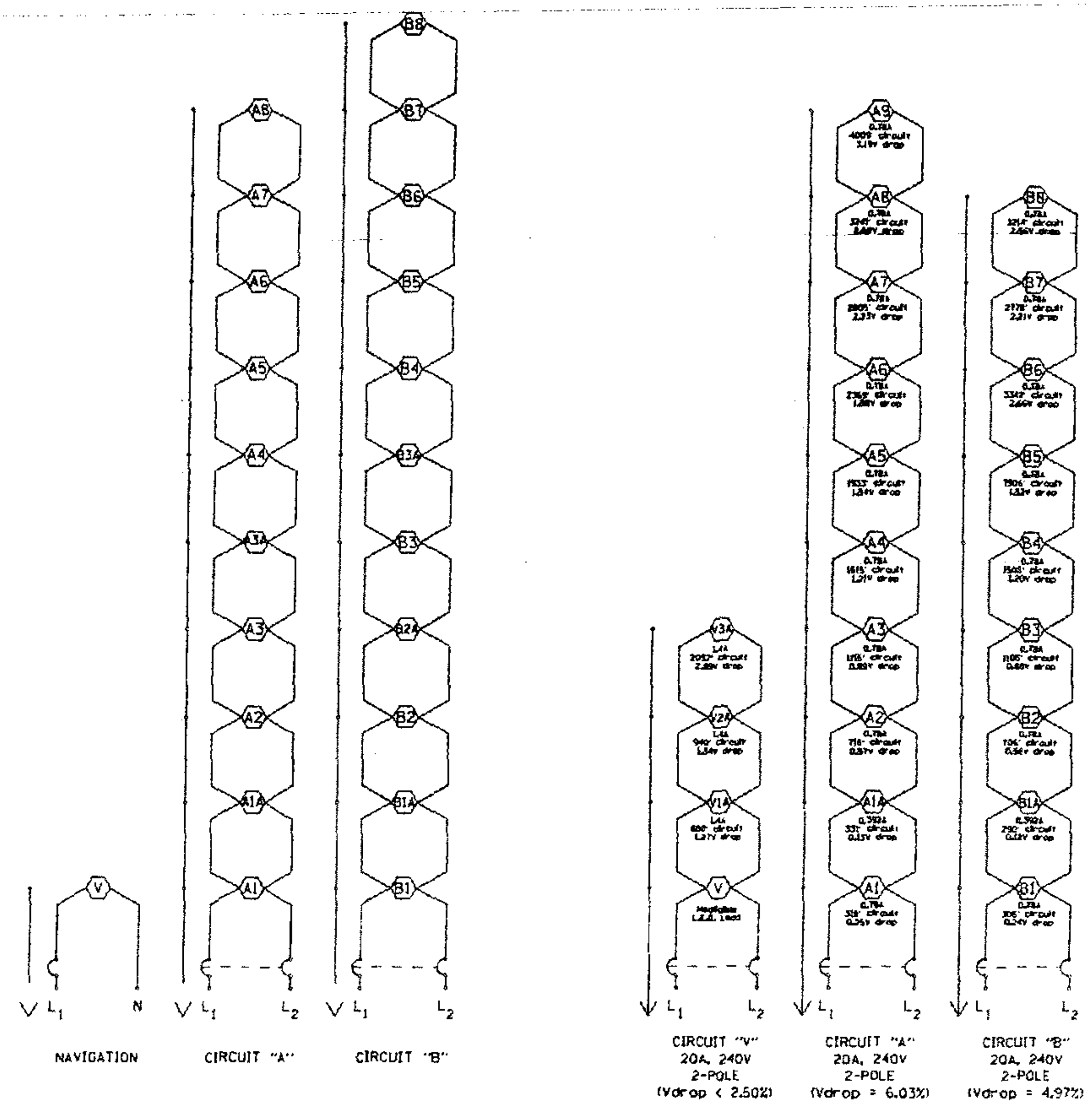
SCALE: VERT. HORIZ.
DATE
DRAWN BY
CHECKED BY

PLOT DATE = $DATE$
FILE NAME = $FILE$
PLOT SCALE = $SCALE$
USER NAME = $USER$

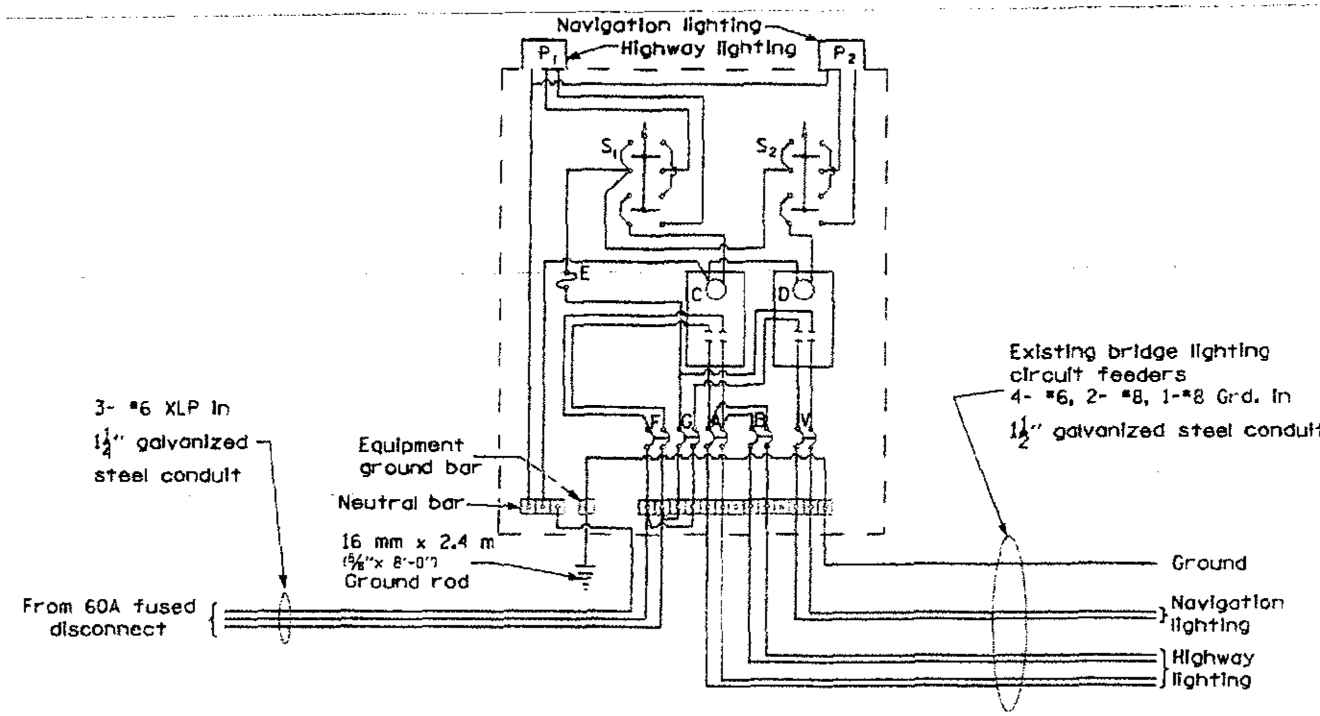
JLGT004

CONTRACT NO. 72469

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22B)L	HANCOCK	13	13
STA. __________	TO STA. __________			
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



LOAD CONNECTION DIAGRAM



WIRING DIAGRAM FOR PROPOSED CONTROLLER

P_1, P_2	Photocells w/integral surge arrestors
S_1, S_2	Selector switch
C	Contactor 40A., 2 pole, 240V.
D	Contactor, 30A., 2 pole, 240V.
E	10A.,Control fuse
F	40A., 2 pole, main breaker
G	30A., 2 pole, main breaker
A , B	20A., 2 pole, branch circuit breaker (2 pics)
V	20A., 2 pole, branch circuit breaker

Wiring shall be panel board fashion.
All bends shall be right angles.
All runs shall be vertical or parallel to panel board.
Wires shall be grouped or laced.
All control installation components shall be U.L. listed.
Label equipment ground and neutral.
Raceways shall terminate 75 (3) above top of concrete foundation.
All dimensions are in millimeters unless otherwise shown.

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

CONTROL INSTALLATION
DUAL

SCALE: VERT. HORIZ.
DATE
DRAWN BY
CHECKED BY

JLGT004

72640 #202 4-25-03. FAP315 Hancock & LEE IA Sec (22B) I I+R

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(22B) I	HANCOCK	35	1
FAP 315 (US 136)		IL. & LEE IA.		

D-96-569-02

INDEX OF SHEETS
SEE SHEET 2 FOR INDEX OF SHEETS

LIST OF STANDARDS
SEE SHEET 2 FOR LIST OF STANDARDS

202

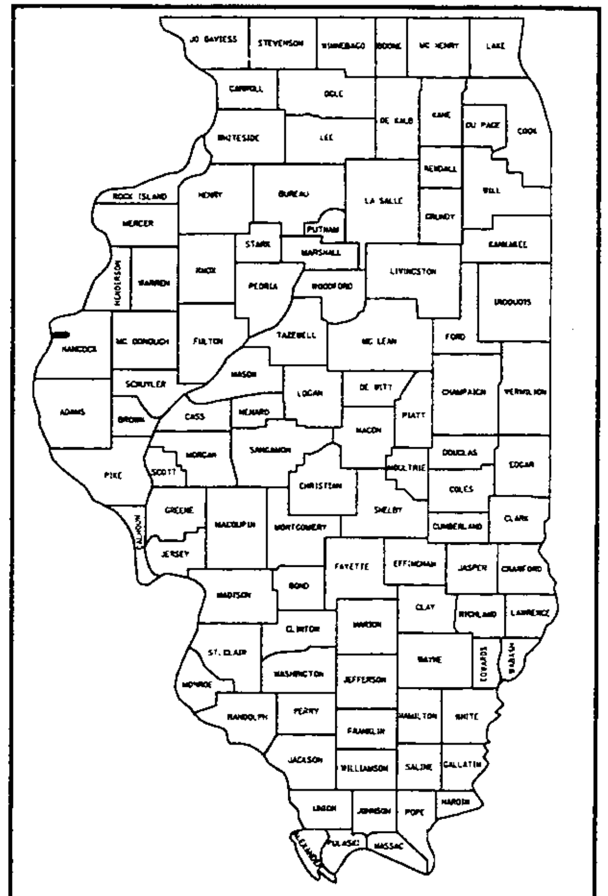
95%
11-15-2003

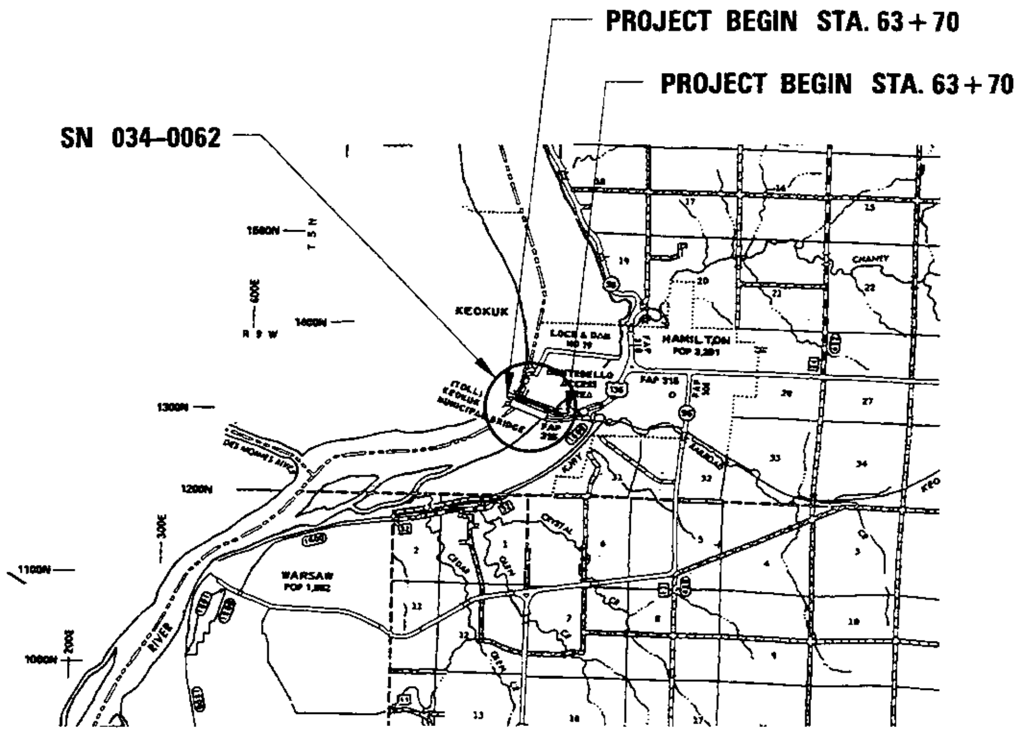
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROPOSED HIGHWAY PLANS

FAP 315 (US 136)
(22B) I

HANCOCK IL. AND LEE IA. COUNTIES
C-96-545-03





NET AND GROSS LENGTH = 0.63 mi

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS	
SUBMITTED December 30 2002	
DISTRICT ENGINEER	
January 31 2003	
ENGINEER OF DESIGN AND ENVIRONMENT	
January 31 2003	
DIRECTOR, DIVISION OF HIGHWAYS	

PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS

OTHER PRINCIPAL ARTERIAL
ADT 14,300 (2001)

6-276

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

CONTRACT NO. 72640 034-0062

PROJECT ENGINEER: JOHN NEGANGARD (217) 782-6990
SQUAD LEADER: VINCE MADONIA (217) 785-9046

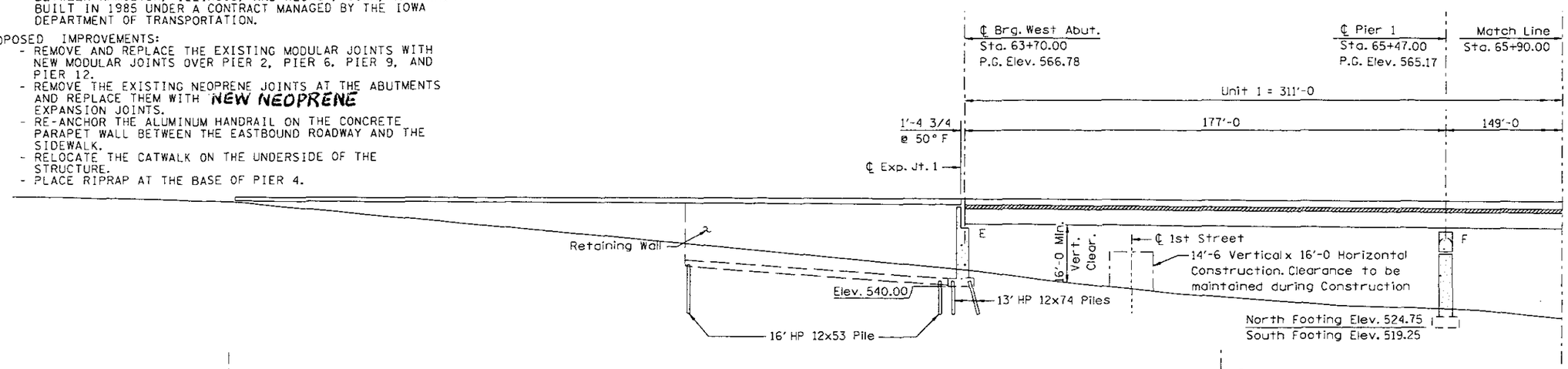
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22BI)	HANCOCK	35	4
STA.		TO STA. IX LEE IA		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

EXISTING STRUCTURE:

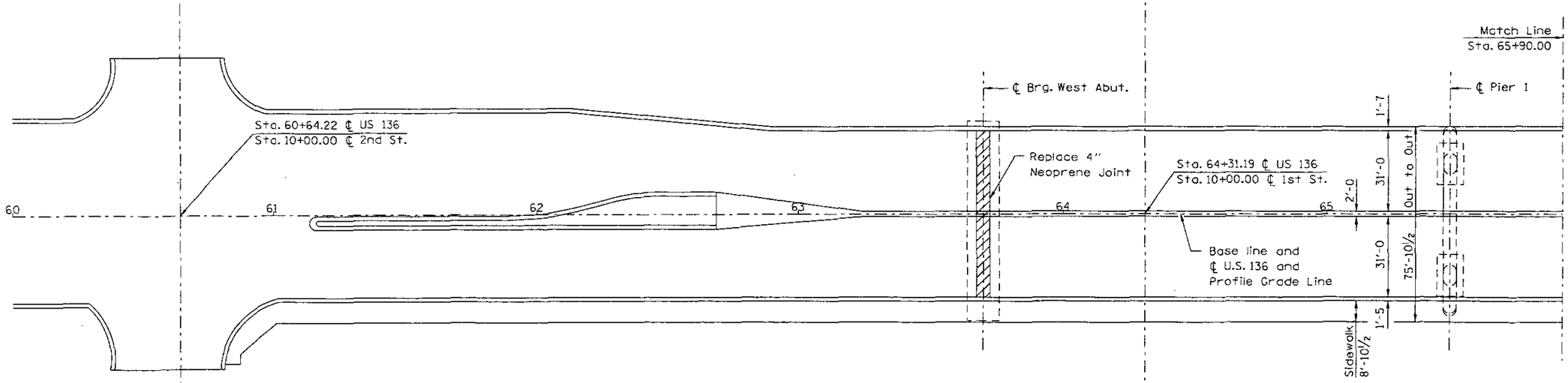
SN 034-0062 CONSISTS OF 15 STEEL MULTI-BEAM WELDED PLATE GIRDER SPANS, WITH AN OVERALL LENGTH OF 3,340 FT MEASURED FROM BACK-TO-BACK OF ABUTMENTS, AND A TOTAL DECK WIDTH OF 75' 10". THE BRIDGE ROADWAY, COMPRISED OF TWO LANES IN EACH DIRECTION DIVIDED BY A BARRIER WALL, HAS A TOTAL COMBINED WIDTH OF 62' 0". THERE IS AN 8' 10" WIDE SIDEWALK ON THE SOUTH SIDE OF THE BRIDGE. THE BRIDGE CARRIES US 136 OVER THE MISSISSIPPI RIVER BETWEEN HAMILTON, ILLINOIS, AND KEOKUK, IOWA, AND WAS BUILT IN 1985 UNDER A CONTRACT MANAGED BY THE IOWA DEPARTMENT OF TRANSPORTATION.

PROPOSED IMPROVEMENTS:

- REMOVE AND REPLACE THE EXISTING MODULAR JOINTS WITH NEW MODULAR JOINTS OVER PIER 2, PIER 6, PIER 9, AND PIER 12.
- REMOVE THE EXISTING NEOPRENE JOINTS AT THE ABUTMENTS AND REPLACE THEM WITH NEW NEOPRENE EXPANSION JOINTS.
- RE-ANCHOR THE ALUMINUM HANDRAIL ON THE CONCRETE PARAPET WALL BETWEEN THE EASTBOUND ROADWAY AND THE SIDEWALK.
- RELOCATE THE CATWALK ON THE UNDERSIDE OF THE STRUCTURE.
- PLACE RIPRAP AT THE BASE OF PIER 4.



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

9 — 2ND. STREET — 11 — 1ST. STREET — 11 — 9

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

FAP 315 (US 136)
SECTION (22BI)
HANCOCK COUNTY

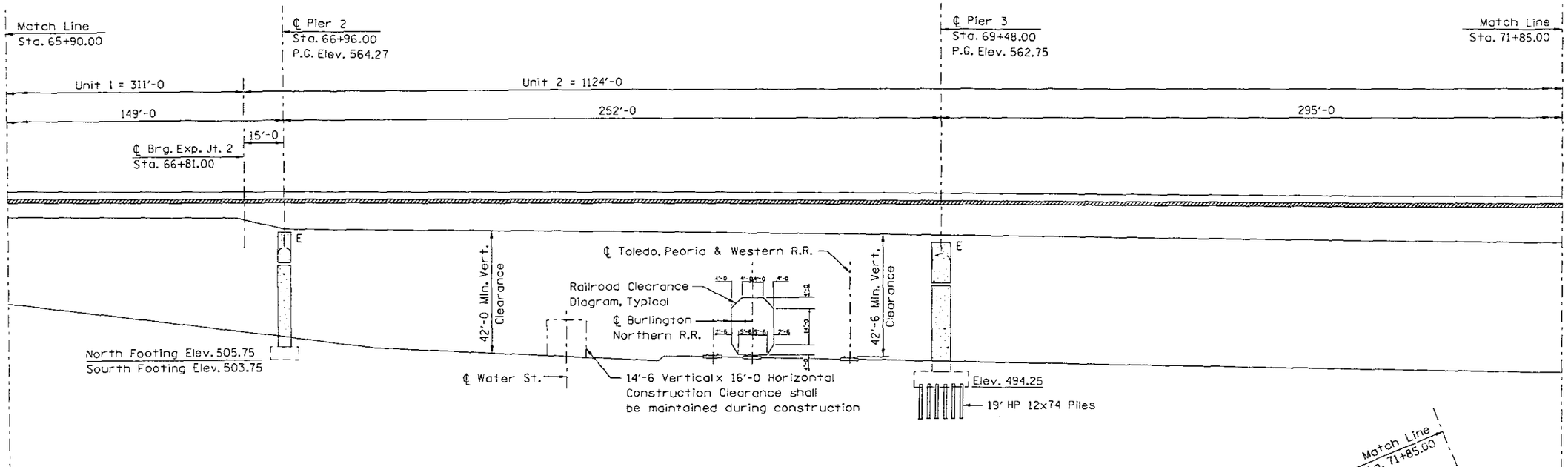
SCALE: VERT. : NONE
HORIZ. : NONE
DATE : SEPTEMBER, 2002

DRAWN BY JJB
CHECKED BY VJM

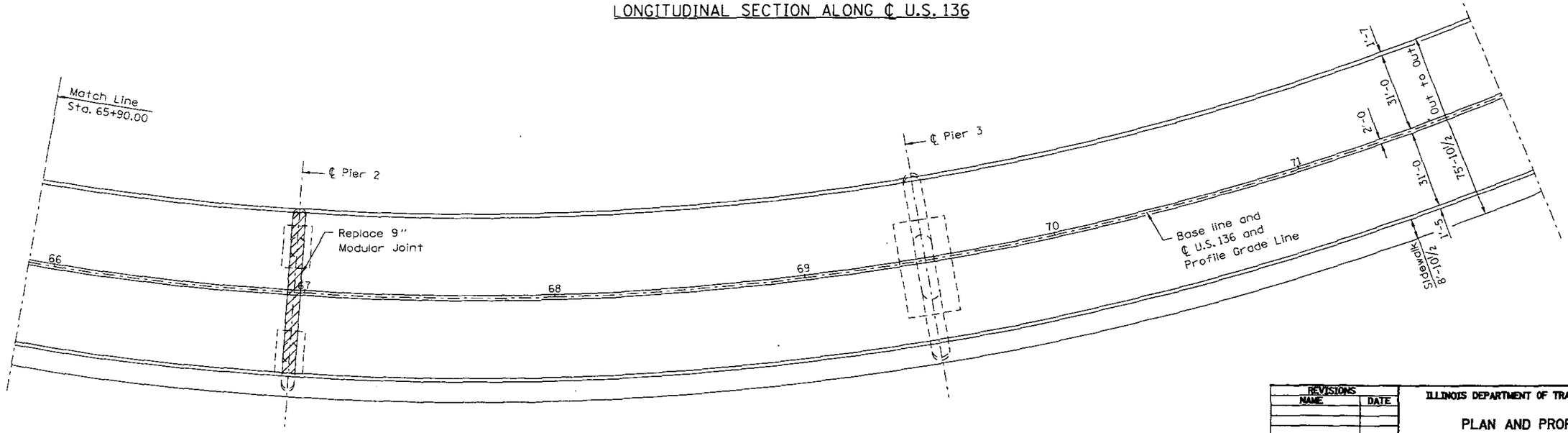
•DGN-SPEC•
•DATE-TIME•
•REF01

DG PROJECT: d656902 FILE: psheets .dgn

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(228B)	HANCOCK	35	5
STA.		TO STA.		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

FAP 315 (US 136)
SECTION (228B)
HANCOCK COUNTY

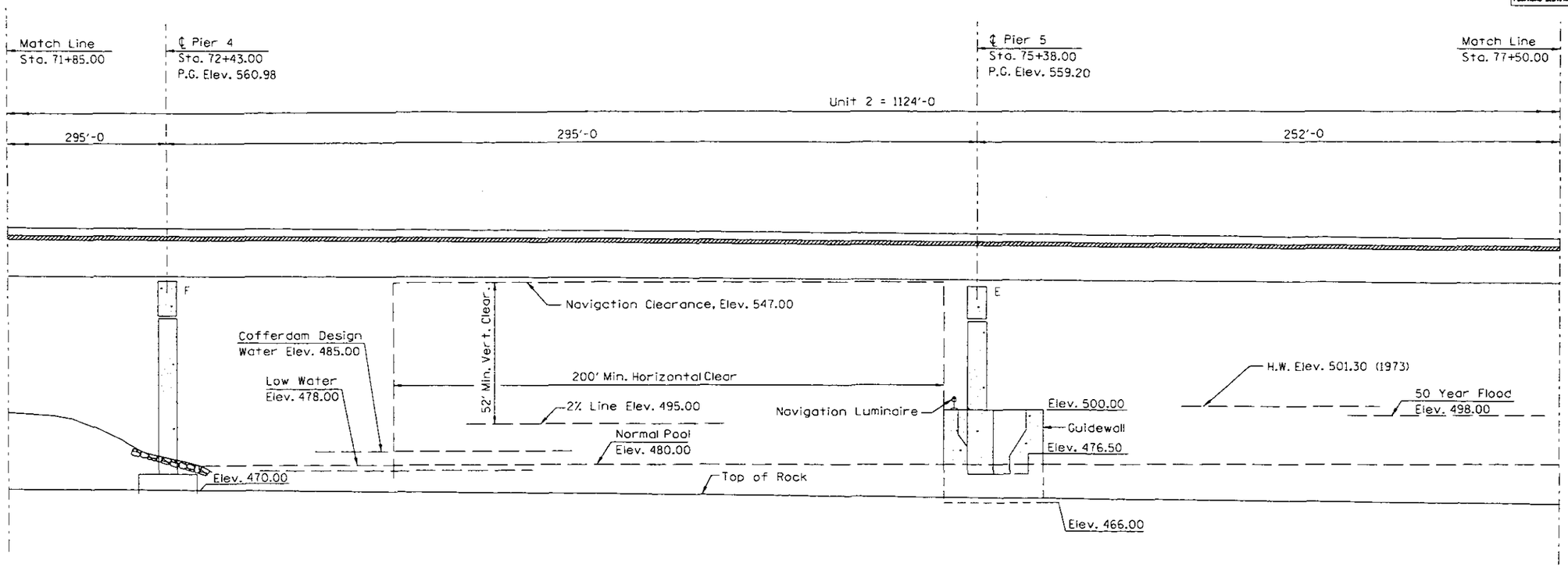
SCALE: VERT. : NONE
HORIZ.
DATE : SEPTEMBER, 2002

DRAWN BY JJB
CHECKED BY VJM

DGN-SPEC
DATE-TIME
*REF01

D6 PROJECT: d656902 FILE: psheets .dgn

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22B)1	HANCOCK	35	6
STA.		TO STA. IL & LEE IA		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



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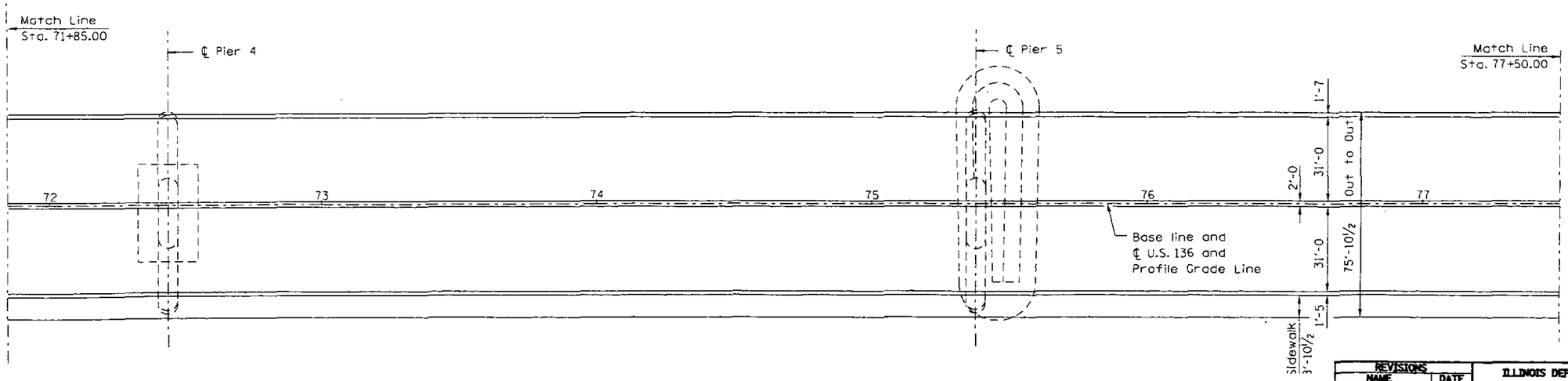


PLAN

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

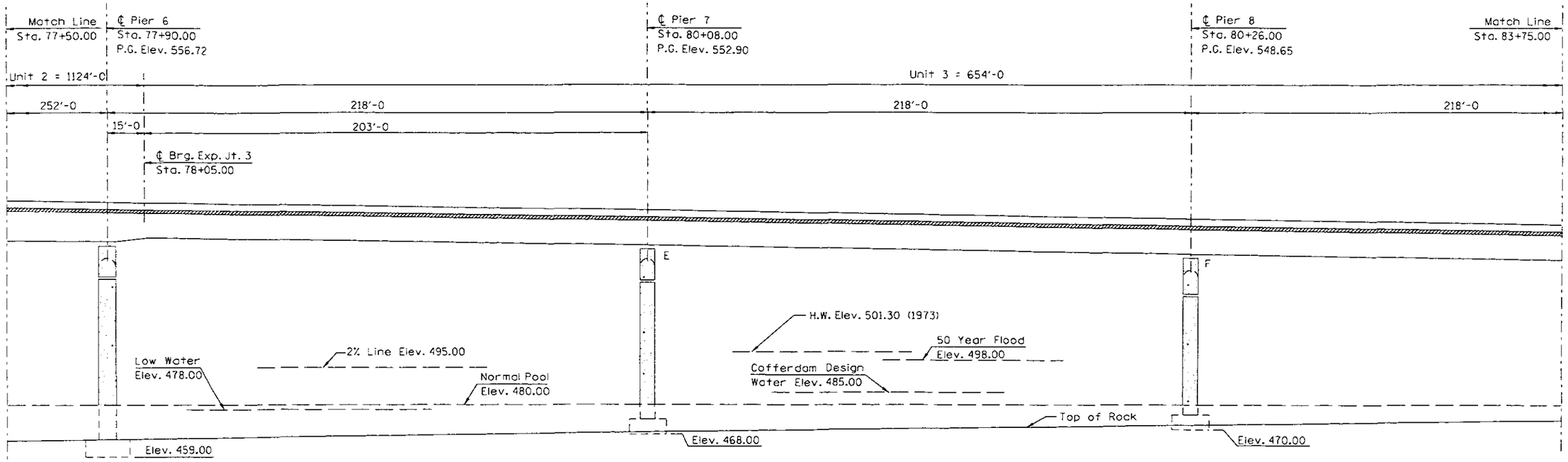
FAP 315 (US 136)
SECTION (22B)1
HANCOCK COUNTY

SCALE: VERT. : NONE
HORIZ. : NONE
DRAWN BY JJB
DATE : SEPTEMBER, 2002
CHECKED BY VJM

DGN-SPEC
DATE-TIME
*REF@1

DG PROJECT: d656902 FILE: psheets .dgn

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(22B)I	HANCOCK	35	7
STA.		TO STA. IL/LEE IA.		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



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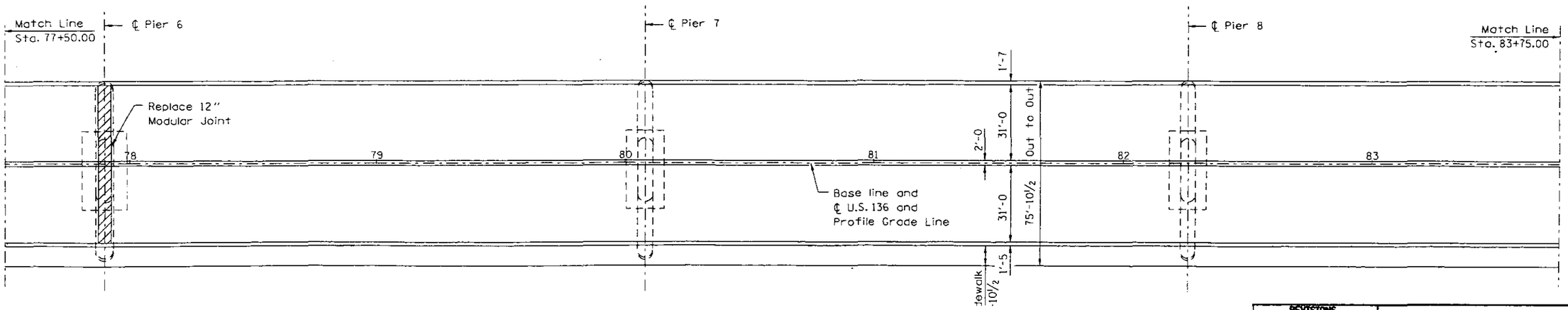


PLAN

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

FAP 315 (US 136)
SECTION (22B)I
HANCOCK COUNTY

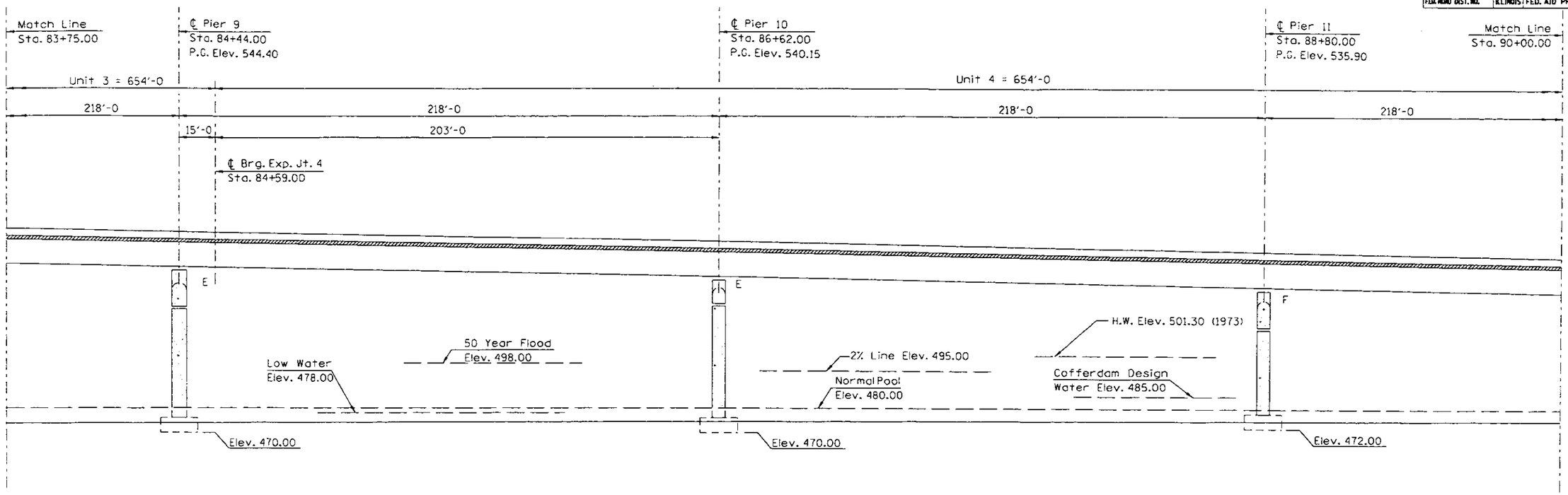
SCALE: VERT. : NONE
HORIZ. : NONE
DATE : SEPTEMBER, 2002

DRAWN BY JJB
CHECKED BY VJM

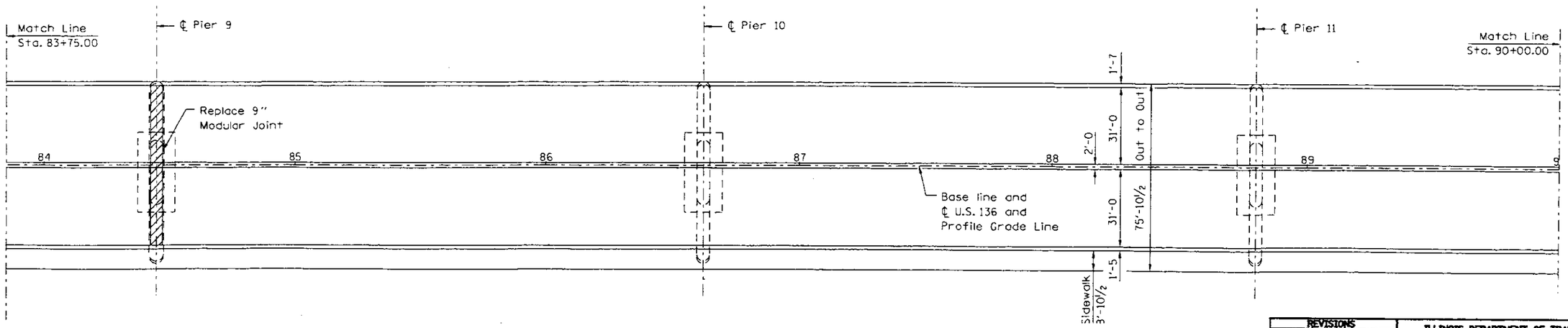
•DGN-SPEC•
•DATE-TIME•
•REF@1

DG PROJECT: d6569@2 FILE: psheets .dgn

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(228)I	HANCOCK	35	8
STA.		TO STA. IL. & LEE IA.		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

FAP 315 (US 136)
SECTION (228)I
HANCOCK COUNTY

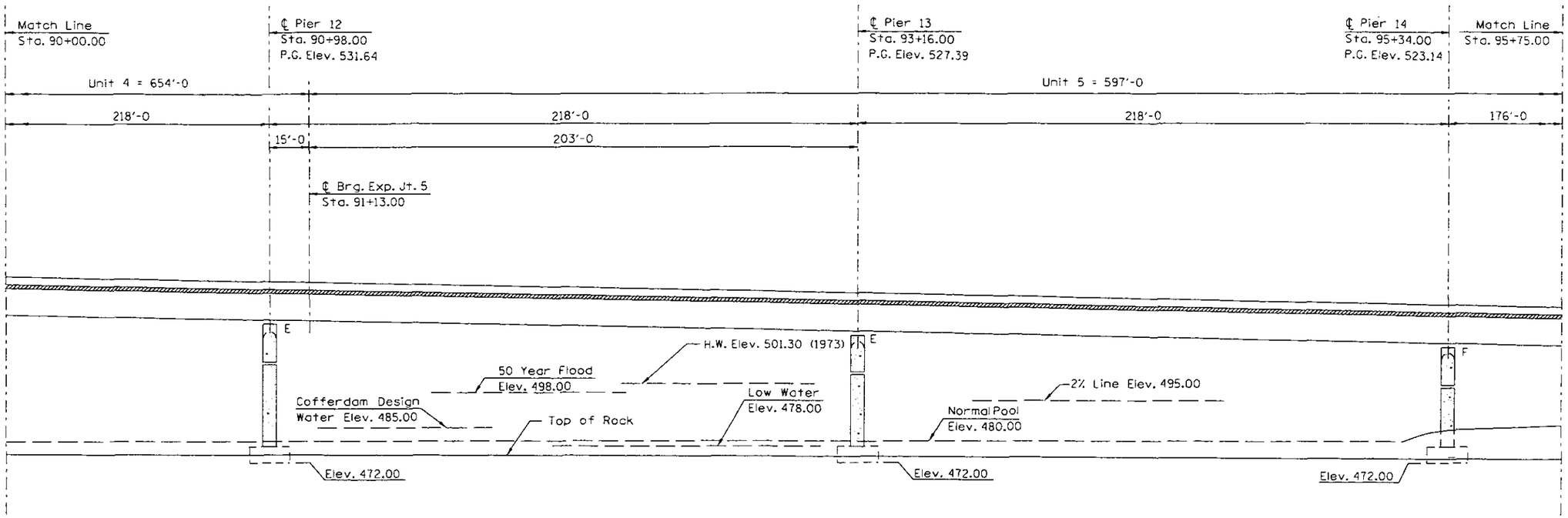
SCALE: VERT. : NONE
HORIZ.
DATE : SEPTEMBER, 2002

DRAWN BY JJB
CHECKED BY VJM

•DGN-SPEC•
•DATE:TIME•
•REF01

06 PROJECT: d656902 FILE: psheets .dgn

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
315	(228I)	HANCOCK	35	9
STA.		TO STA. IL. & LEE IA.		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



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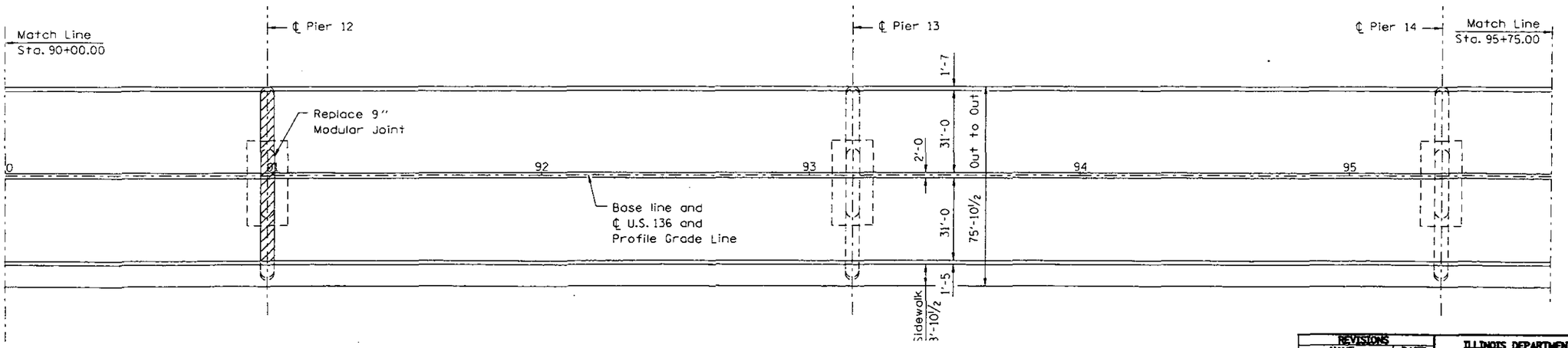

PLAN

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

FAP 315 (US 136)
SECTION (228I)
HANCOCK COUNTY

SCALE: VERT. : NONE
HORIZ.
DATE : SEPTEMBER, 2002

DRAWN BY JJB
CHECKED BY VJM

OGN-SPEC
DATE-TIME
*REFBI

D6 PROJECT: d6S6902 FILE: psheet1 .dgn

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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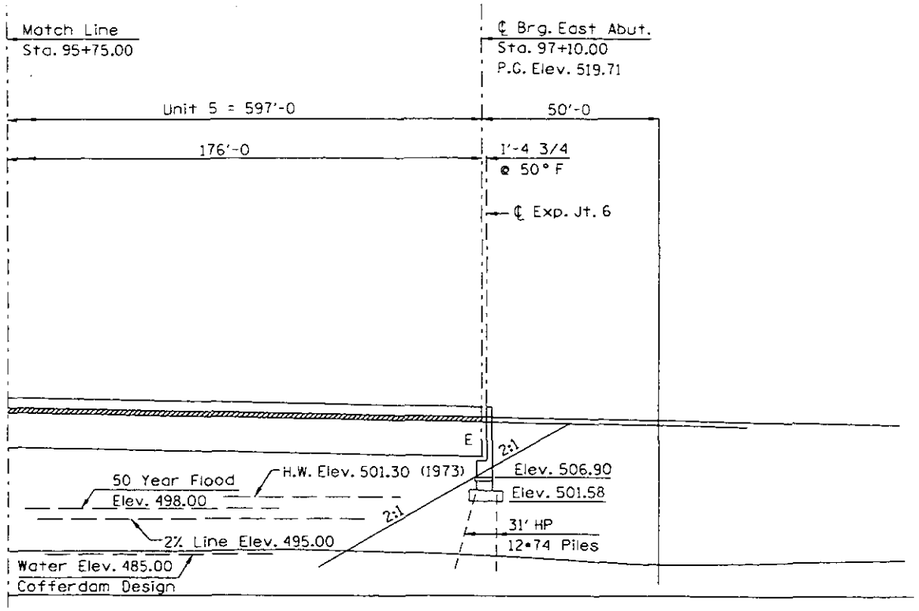
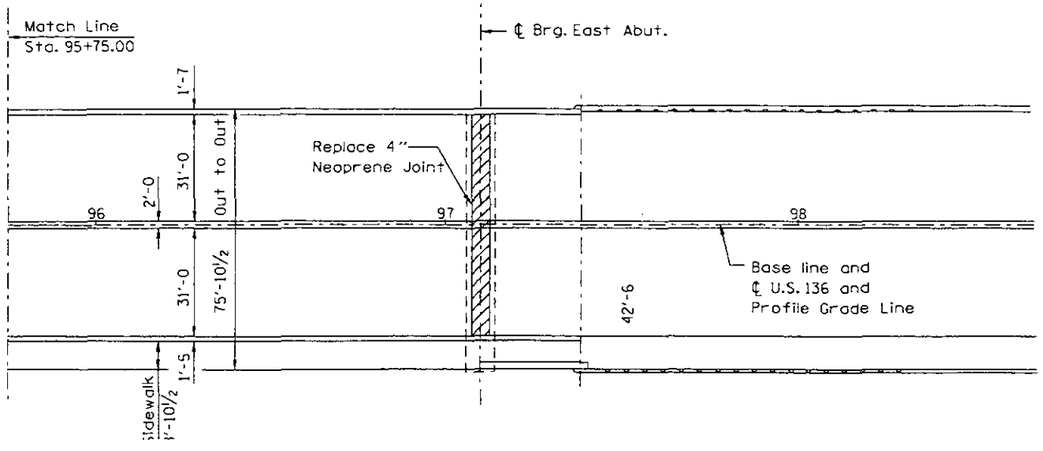
STA.		TO STA. IL. & LEE IA		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



LONGITUDINAL SECTION ALONG ℄ U.S. 136



PLAN

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

PLAN AND PROFILE

FAP 315 (US 136)
SECTION (22B)I
HANCOCK COUNTY

SCALE: VERT. , NONE
HORIZ.
DATE : SEPTEMBER, 2002

DRAWN BY JJB
CHECKED BY VJM

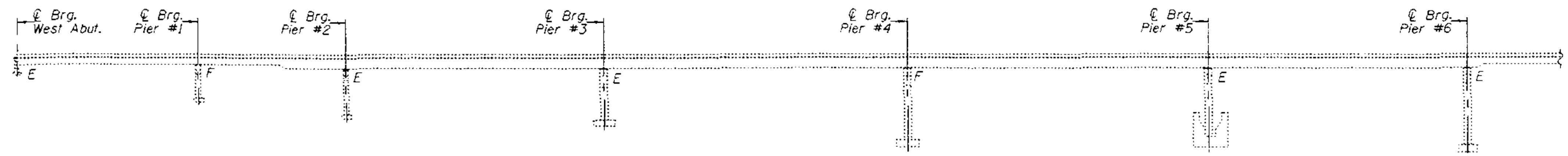
OGN-SPEC
DATE-TIME
*REF(0)

D6 PROJECT: d656902 FILE: psheets .dgn

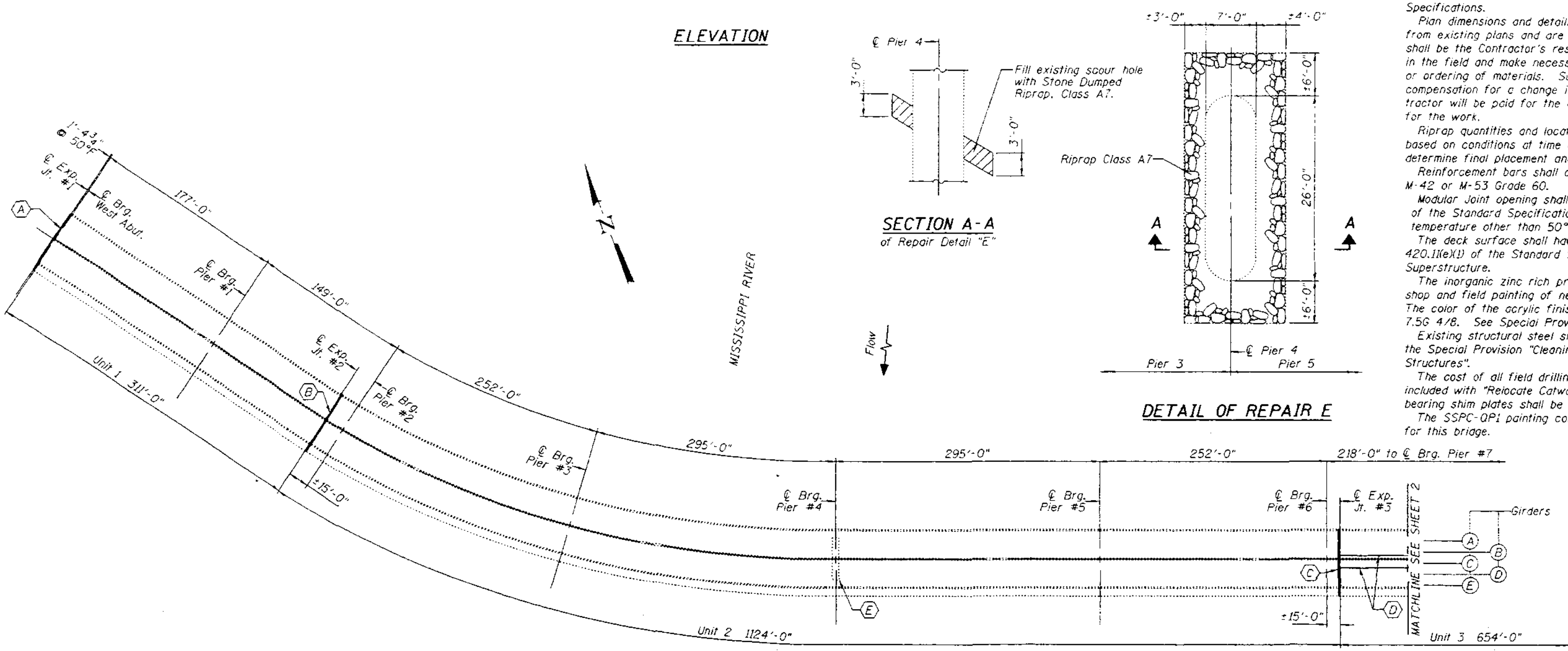
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315	(22B)I	Hancock IL & LEE IA.	35	11

SHEET NO. 1
13 SHEETS



ELEVATION



SECTION A-A
of Repair Detail "E"

DETAIL OF REPAIR E

PLAN

(A) Remove & Replace existing 4" Neoprene Expansion Joint.
(B) Rebuild joint using a 9" Modular Expansion Joint.
(C) Rebuild joint using a 12" Modular Expansion Joint.
(D) Relocate Existing Catwalk.
(E) Place Stone Dumped Riprap, Class A7

GENERAL NOTES

All structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.

Fasteners shall be high strength bolts. Bolts $\frac{7}{8}$"Φ, open holes $\frac{15}{16}$"Φ, unless otherwise noted.

Prior to pouring the new concrete deck, all loose rust, loose mill scale and other loose potentially detrimental foreign material shall be removed from the surfaces of the beams or girders in contact with concrete. The cost of this work will be included in the pay item covering removal of the existing concrete All heavy rust and other tightly adhered potentially detrimental foreign matter shall also be removed from the surfaces of the beams or girders in contact with concrete. Tightly adhered paint may remain unless otherwise noted. This removal shall be accomplished by methods that will not damage the steel. The cost of this work will be paid for according to Article 109.04 of the Standard Specifications.

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.

Riprap quantities and location of riprap at Pier #4 are approximate and based on conditions at time of field investigation. The Engineer shall determine final placement and quantity of this work in the field.

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

Modular Joint opening shall be adjusted according to Article 503.10(c) of the Standard Specifications when the deck is poured at an ambient temperature other than 50° F.

The deck surface shall have its final finish tined according to Article 420.11(e)(1) of the Standard Specifications. Cost included with Concrete Superstructure.

The inorganic zinc rich primer/acrylic/acrylic paint system shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the acrylic finish coat shall be Interstate Green, Munsell No. 7.5G 4/8. See Special Provision "Cleaning and Painting New Metal Structures".

Existing structural steel shall only be cleaned and painted as required by the Special Provision "Cleaning and Painting Adjacent Areas of Existing Steel Structures".

The cost of all field drilling required for Relocating Catwalk shall be included with "Relocate Catwalk". The cost of field drilling for steel bearing shim plates shall be included in "Modular Expansion Joint".

The SSPC-QP1 painting contractor certification will not be required for this bridge.

TOTAL BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Concrete Removal	Cu. Yd.	75.0
Concrete Superstructure	Cu. Yd.	75.0
Relocate Catwalk	L.S.	1
Catwalk Extension	L.S.	1
Neoprene Expansion Joint 4"	Foot	132
Modular Expansion Joint 9"	Foot	198
Modular Expansion Joint 12"	Foot	66
Polymer Concrete	Cu. Ft.	2
Stone Dumped Riprap, Class A7	Sq. Yd.	40

DESIGNED (signature)
CHECKED (signature)
DRAWN (signature)
CHECKED (signature) A.T.H.

January 13, 2003
EXAMINED John A. Morris
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

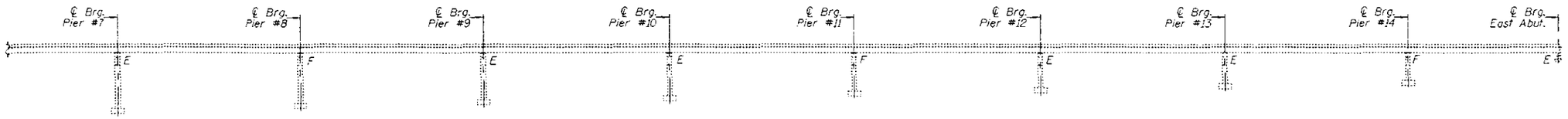
PLAN AND ELEVATION
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

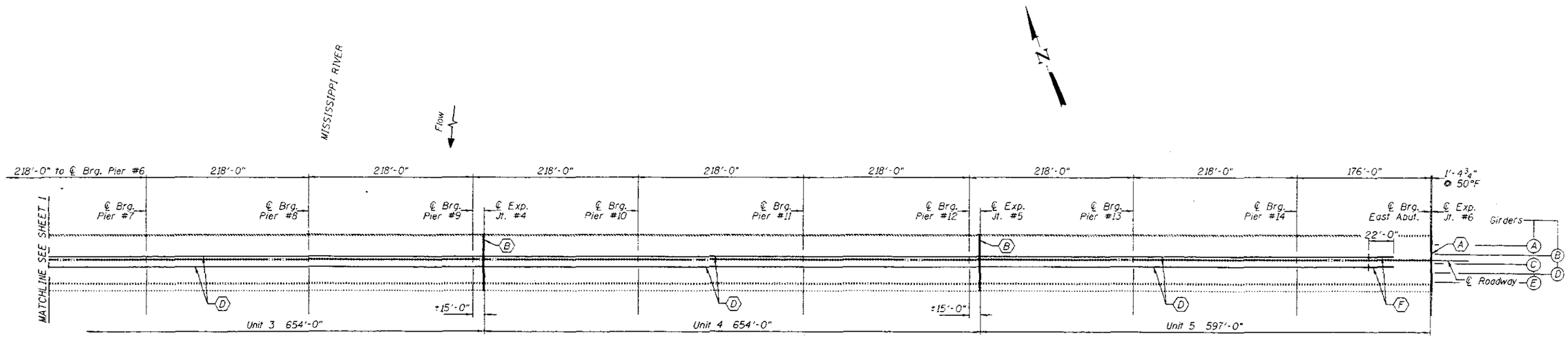
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315	(22B)I	Hancock IL	35	12
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 2
13 SHEETS

2 LEE IA.



ELEVATION



PLAN

(A) Remove & Replace existing 4" Neoprene Expansion Joint.
(B) Rebuild joint using a 9" Modular Expansion Joint.
(D) Relocate Existing Catwalk
(F) Extend Existing Catwalk and modify Access Restriction cage.

DESIGNED	J.P.A.
CHECKED	A.T.H.
DRAWN	Drew Christopher
CHECKED	J.P.A. A.T.H.

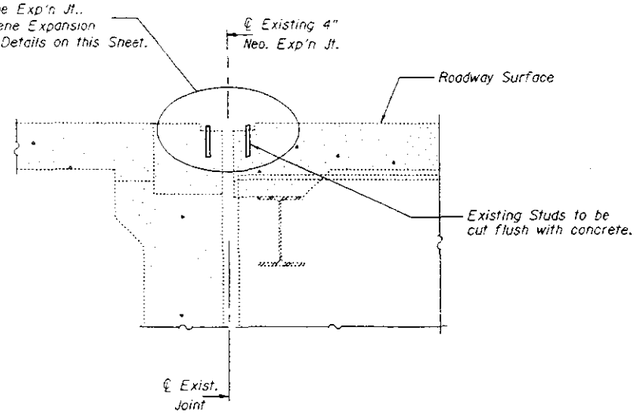
January 13, 2003
EXAMINED John A. Morris
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

PLAN AND ELEVATION
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

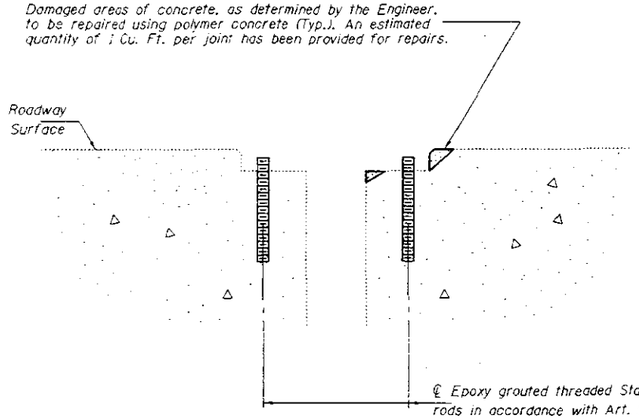
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315 (61B) I		Hancock IL	35	13
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

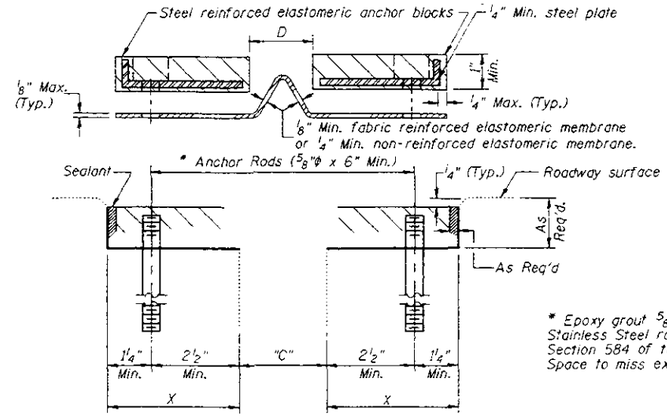
SHEET NO. 3
13 SHEETS
& LEE FAI



REPAIR A JOINT REPLACEMENT
(At Abutments)



DETAIL A



CROSS SECTION

* Epoxy grout ⅝" ϕ threaded Stainless Steel rods in accordance with Section 584 of the Standard Specs. Space to miss existing studs.

Joint Size	"C" at 50°F	"D" at 50°F
4"	3" (exist.)	2½" Min.

GENERAL NOTES

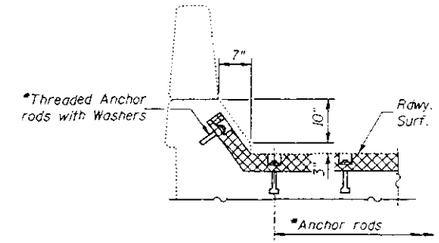
Continuous Seal Neoprene Expansion Joint shall consist of molded anchor blocks of elastomer and steel, field assembled over continuous lengths of elastomeric membrane.

The elastomeric membrane shall be premolded with a single or a double upward convolution that will have a "memory" to return to its molded position upon joint closure.

The convolution length shall be such that the extended length will not be greater than the manufactured length when the joint is fully expanded in its design range and will not protrude above the anchor blocks when the joint is fully compressed.

The parapet and roadway membrane shall be made continuous by an approved vulcanizing process. Lapping will not be permitted.

No cutting of the elastomeric membrane at the stage construction line will be allowed.



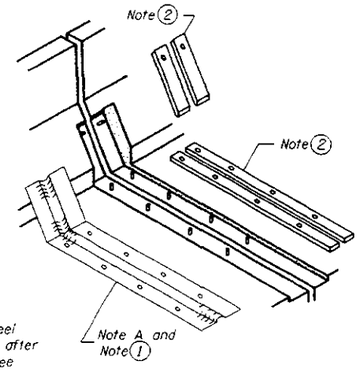
TYPICAL END OF SEAL TREATMENT

INSTALLATION NOTES

(1) Install continuous seal in roadway, parapet, curb, and sidewalk.

(2) Install anchor blocks as indicated.

NOTE A: Maximum spacing of anchor rods shall be 12" centers, spaced to match neoprene joint and to miss existing studs.



Note:
Remove existing sliding steel ℄'s at parapet and reinstall after new neoprene is in place. See Sheet 5 of 13 for detail.

AT PARAPET

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Polymer Concrete	Cu. Ft.	2
Neoprene Expansion Joint, 4"	Foot	132

DESIGNED	J.P.A.
CHECKED	A.T.H.
DRAWN	Drew Christopher
CHECKED	J.P.A. A.T.H.

January 13, 2003
EXAMINED John A. Morris
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

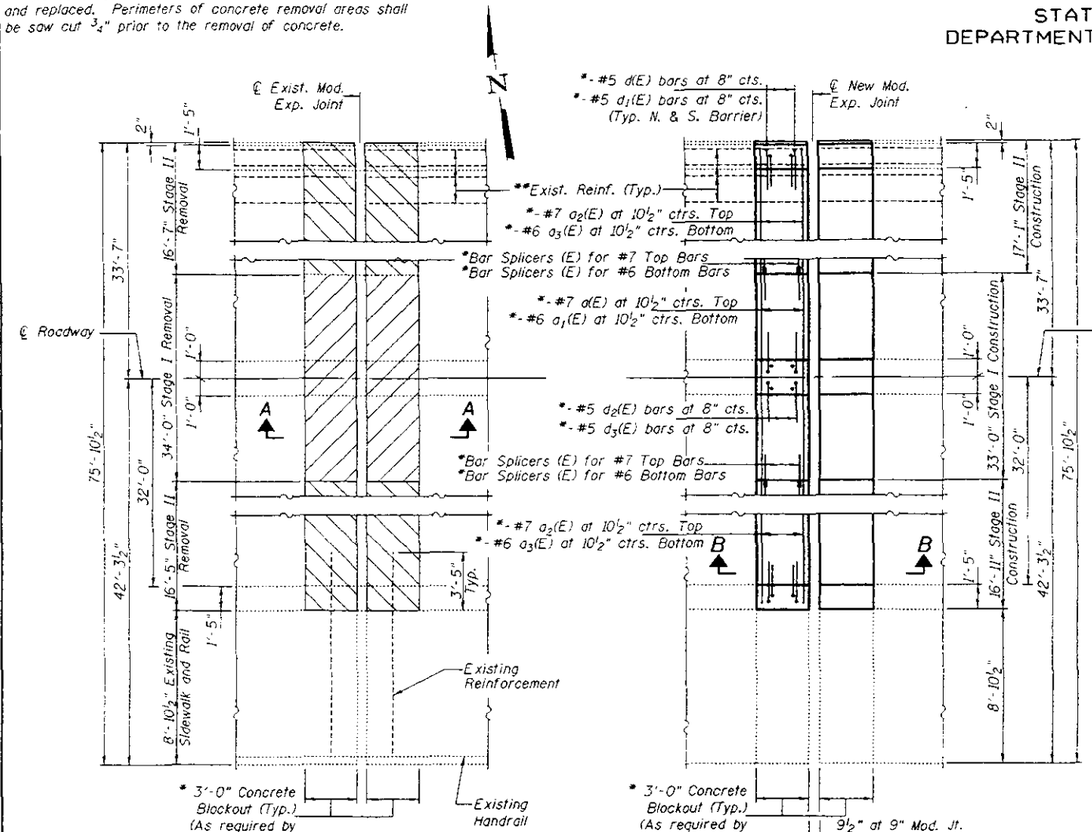
REPAIR DETAIL A
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

Hatched areas indicate concrete sections to be removed and replaced. Perimeters of concrete removal areas shall be saw cut ¾" prior to the removal of concrete.

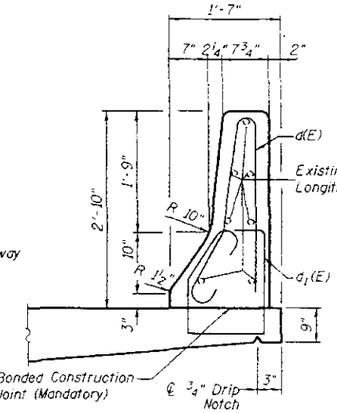
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315	62BH	HANCOCK IL	35	14
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

SHEET NO. 4
13 SHEETS
& LEE IA.

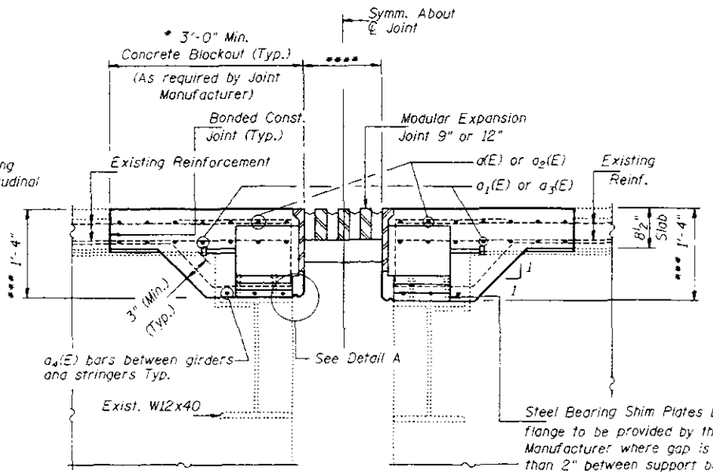


PLAN



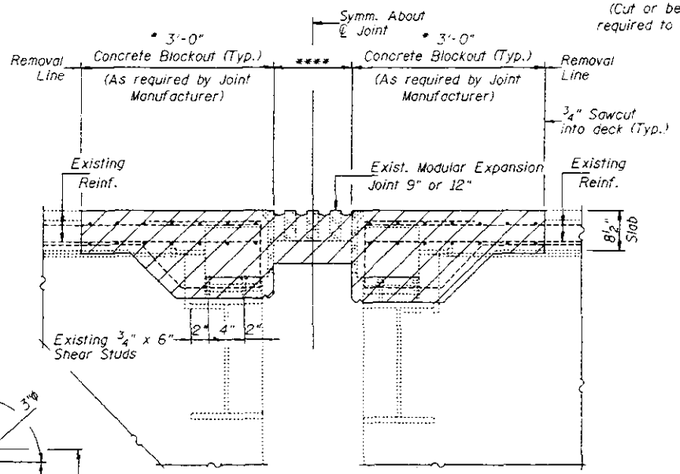
NORTH BARRIER TYP SECTION

South Barrier Similar
Dimensions vary at superelevated sections.

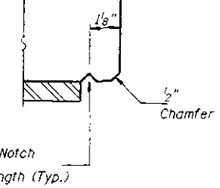


SECTION B-B

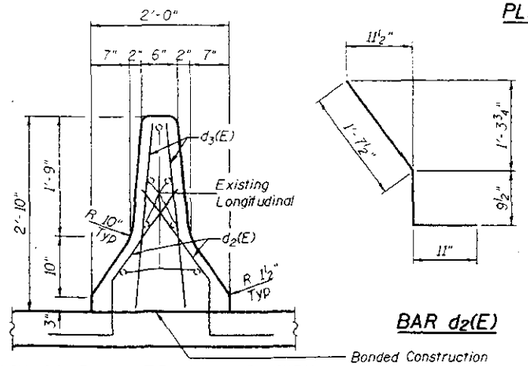
(Cut or bend reinforcement bars as required to miss support boxes by 1½")



SECTION A-A



DETAIL "A"

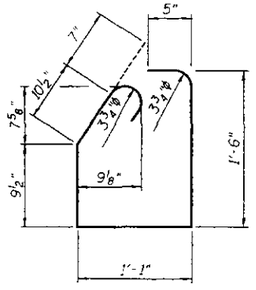


MEDIAN BARRIER TYP SECTION

Dimensions vary at superelevated sections.

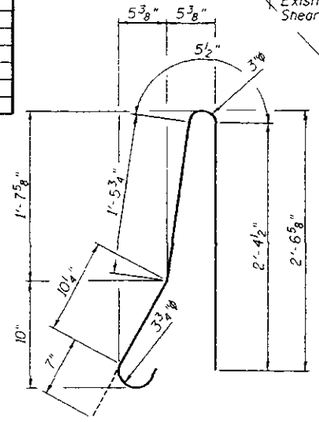
BAR d2(E)

*Bar	Size	Length	Shape
d(E)	#7	33'-0"	
a1(E)	#6	33'-0"	
a2(E)	#7	16'-9"	
a3(E)	#6	16'-9"	
a4(E)	#5	7'-9"	
d(E)	#5	5'-9"	
d1(E)	#5	5'-3"	
d2(E)	#5	3'-4"	
d3(E)	#5	2'-7"	



BAR d1(E)

Note:
Rebar dimensions are out to out.



BAR d(E)

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Concrete Removal	Cu. Yd.	75.0
Concrete Superstructure	Cu. Yd.	75.0
Modular Expansion Joint 9"	Foot	198
Modular Expansion Joint 12"	Foot	66

* Length of Blockout, width of Joint, number of reinforcement bars and bar splicers needed may vary as required by Joint Manufacturer. Cost of Reinforcement bars and bar splicers in this area are included with "Concrete Superstructures".
** Existing longitudinal reinforcement extending into the removal area shall be cleaned, straightened and incorporated into the new construction. Cut or bend existing longitudinal reinforcement as required to miss Support Boxes by 1½". Any longitudinal reinforcement bars that are damaged during concrete removal shall be replaced with an approved bar splicer or anchorage system. Cost shall be included with Concrete Superstructure.
*** Verify in field. Dimensions may vary.
**** 9½" @ 50°F at 9" Joint 1'-1" @ 50°F at 12" Joint May vary as required per Manufacturer

DESIGNED	J.P.A.
CHECKED	A.T.H.
DRAWN	Drew Christopher
CHECKED	J.P.A. A.T.H.

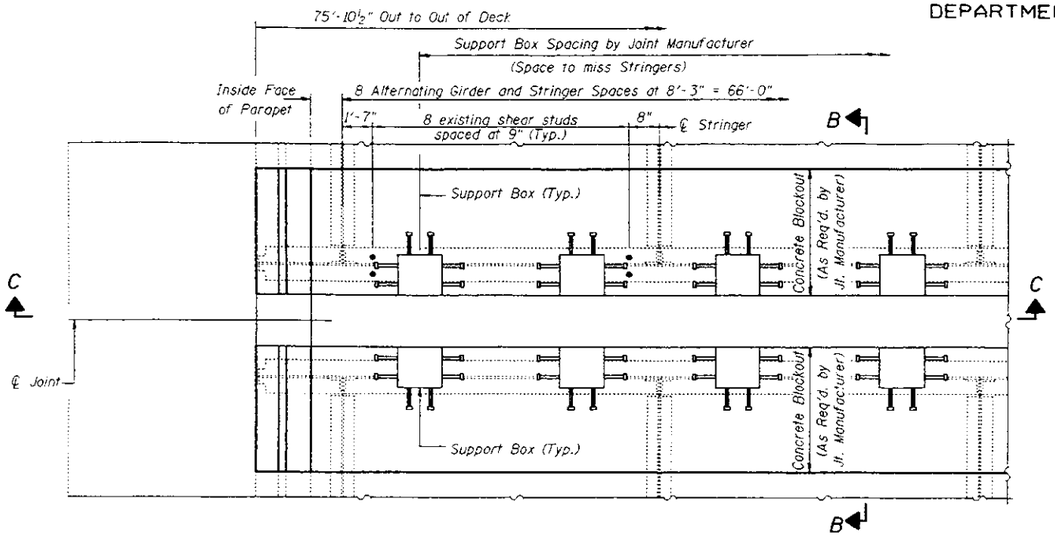
January 13, 2003
EXAMINED John A. Morris ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

REPAIR DETAILS "B" AND "C"
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315 (US 136)	I	Hancock IL	35	15
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT	& LEE IA	

SHEET NO. 5
13 SHEETS



PARTIAL PLAN AT JOINTS 2 THRU 5

(See Sheet 4 of 13 for Section B-B)
(See Sheet 6 of 13 for Section C-C)

Notes:

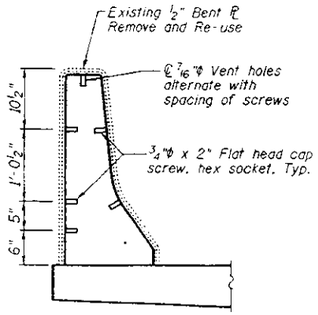
1. Modular Expansion Joint shall be designed according to the latest ASTM Specifications for HS20 Loading with 30% impact and for minimum movement of ±4½" (Total of 9") for 9" Modular Joint, and minimum movement of ±6" (Total of 12") for 12" Modular Joint.
2. The Modular Expansion Joint shall be either MAURER model "D" by D.S. Brown Co. or the Wabo model "D" by Watson Bowman Acme Corp.
3. Joint shall be fabricated and installed according to the manufacturer's recommendations and as approved by the Engineer.
4. Joint shall be fabricated to conform to the Roadway Profile and Cross-Slopes.
5. Cost of all hardware and installation of Steel Bearing Shim plates and additional reinforcement required to anchor the joint to the slab shall be included with "Modular Expansion Joint".
6. The inorganic zinc rich primer/acrylic/acrylic paint system shall be used for shop and field painting of new structural steel except no top coat required in non-exposed areas. The color of the acrylic finish coat shall be Gray, Munsell No. 5B 7/1. See Special Provisions "Cleaning and Painting New Metal Structures".

Location	Girder or Stringer	Top of Overlay Elevations	Dim "A" At ℄ Bearing Unit 1	Dim "A" At ℄ Bearing Unit 2
Joint #2 ℄ Bearing	A	562.28	12 3/8"	13 1/8"
	1	562.85	8 1/8"	8 1/8"
	B	563.41	12 3/8"	13 1/8"
	2	563.98	8 1/8"	8 1/8"
	C	564.55	12 3/8"	13 1/8"
	3	565.12	8 1/8"	8 1/8"
	D	565.69	12 3/8"	13 1/8"
	4	566.25	8 1/8"	8 1/8"
	E	566.82	12 3/8"	13 1/8"

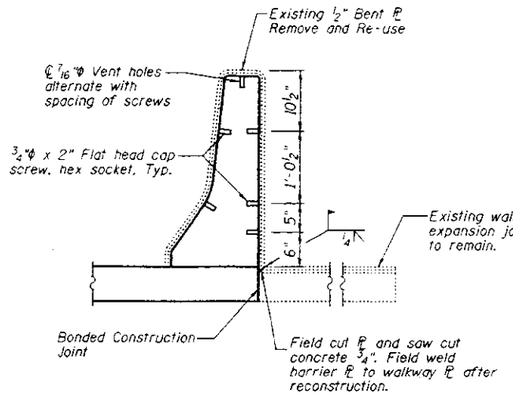
Location	Girder or Stringer	Top of Overlay Elevations	Dim "A" At ℄ Bearing Unit 2	Dim "A" At ℄ Bearing Unit 3
Joint #3 ℄ Bearing	A	555.90	13 1/8"	12 1/8"
	1	556.06	8 1/8"	8 3/8"
	B	556.23	13 1/8"	12 1/8"
	2	556.39	8 1/8"	8 3/8"
	C	556.45	13 1/8"	12 1/8"
	3	556.28	8 1/8"	8 3/8"
	D	556.12	13 1/8"	12 1/8"
	4	555.95	8 1/8"	8 3/8"
	E	555.79	13 1/8"	12 1/8"

Location	Girder or Stringer	Top of Overlay Elevations	Dim "A" At ℄ Bearing Unit 3	Dim "A" At ℄ Bearing Unit 4
Joint #4 ℄ Bearing	A	543.50	12 1/8"	12 1/8"
	1	543.66	8 3/8"	8 3/8"
	B	543.83	12 1/8"	12 1/8"
	2	543.99	8 3/8"	8 3/8"
	C	544.05	12 1/8"	12 1/8"
	3	543.89	8 3/8"	8 3/8"
	D	543.72	12 1/8"	12 1/8"
	4	543.56	8 3/8"	8 3/8"
	E	543.39	12 1/8"	12 1/8"

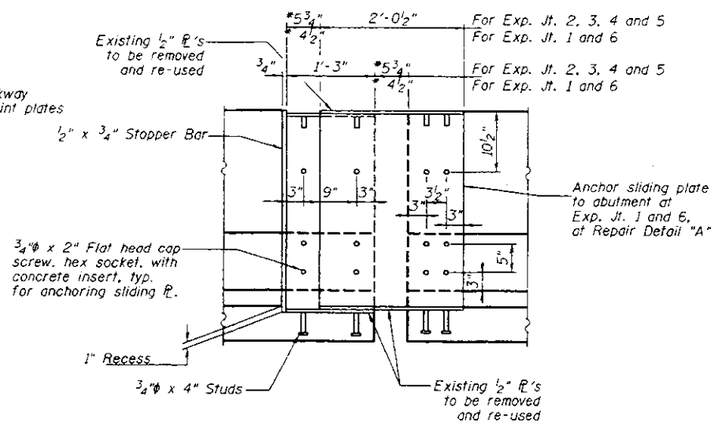
Location	Girder or Stringer	Top of Overlay Elevations	Dim "A" At ℄ Bearing Unit 4	Dim "A" At ℄ Bearing Unit 5
Joint #5 ℄ Bearing	A	530.75	12 1/8"	12"
	1	530.91	8 3/8"	8 3/8"
	B	531.08	12 1/8"	12"
	2	531.24	8 3/8"	8 3/8"
	C	531.30	12 1/8"	12"
	3	531.13	8 3/8"	8 3/8"
	D	530.97	12 1/8"	12"
	4	530.80	8 3/8"	8 3/8"
	E	530.64	12 1/8"	12"



NORTH BARRIER

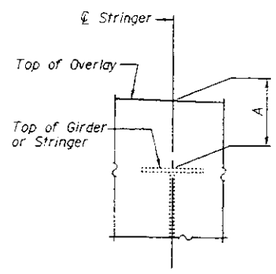


SOUTH BARRIER



ELEVATION OF SOUTH BARRIER AT EXPANSION JOINT

(North Barrier and Median Barrier Similar)
* at 50°F



DETAIL B

DESIGNED	J.P.A.
CHECKED	A.T.H.
DRAWN	Drew Christopher
CHECKED	J.P.A. A.T.H.

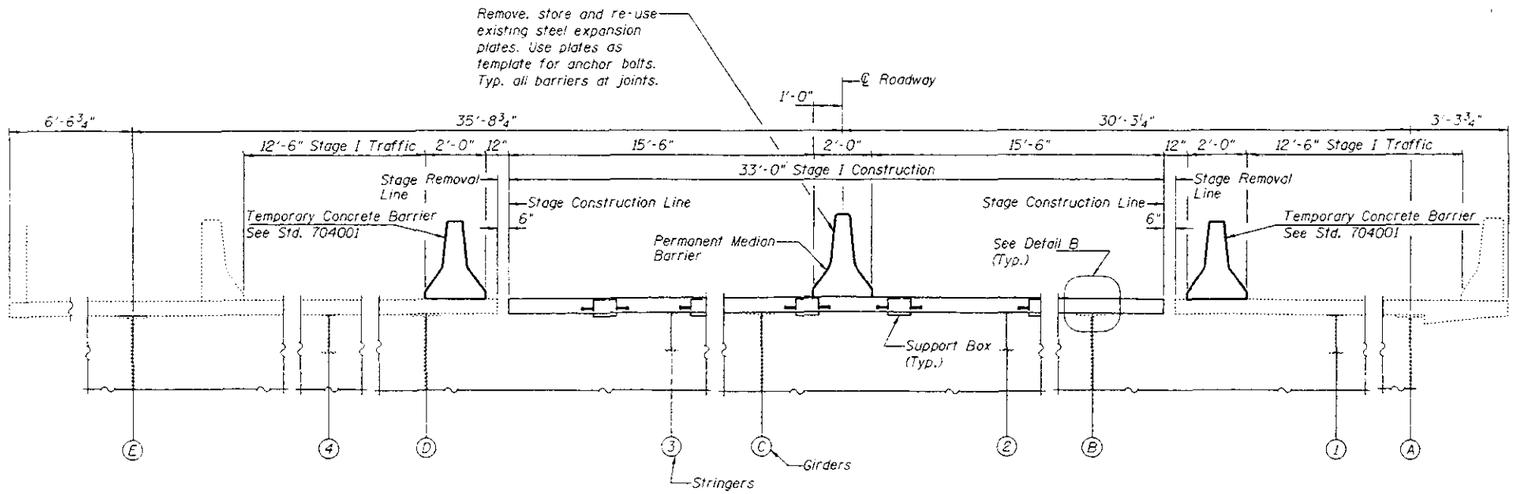
January 13, 2003
EXAMINED John A. Mouris
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

REPAIR DETAILS "B" AND "C"
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

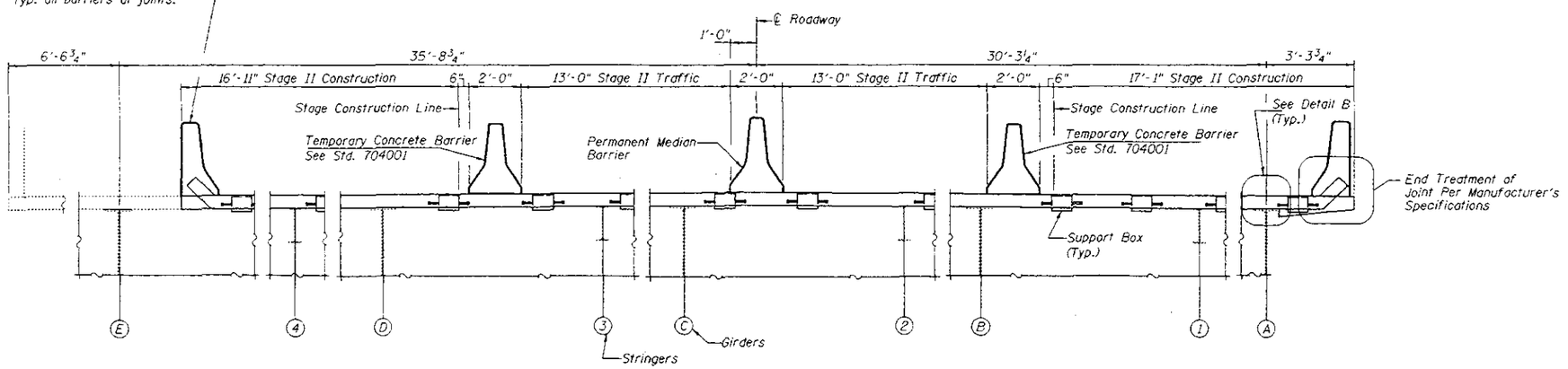
ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315 (US 136) I		Hancock IL & LEE IA	35	16
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 6
13 SHEETS



SECTION C-C
STAGE I
(Looking West)

See sheet 5 of 13 for detail B.



SECTION C-C
STAGE II
(Looking West)

DESIGNED	J.P.A.
CHECKED	A.T.H.
DRAWN	Drew Christopher
CHECKED	J.P.A. A.T.H.

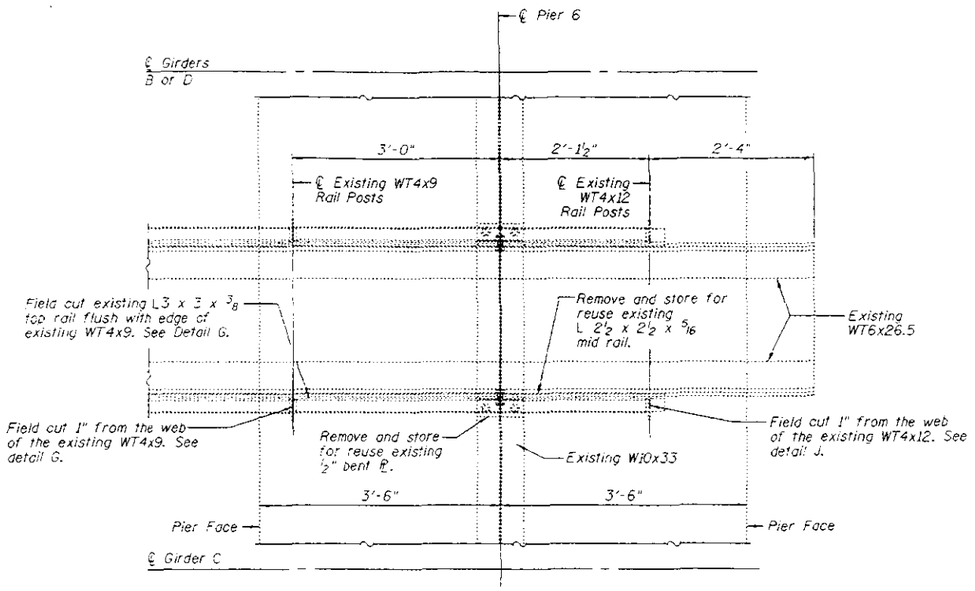
January 13, 2003
EXAMINED John A. Morris
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

REPAIR DETAILS "B" AND "C"
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

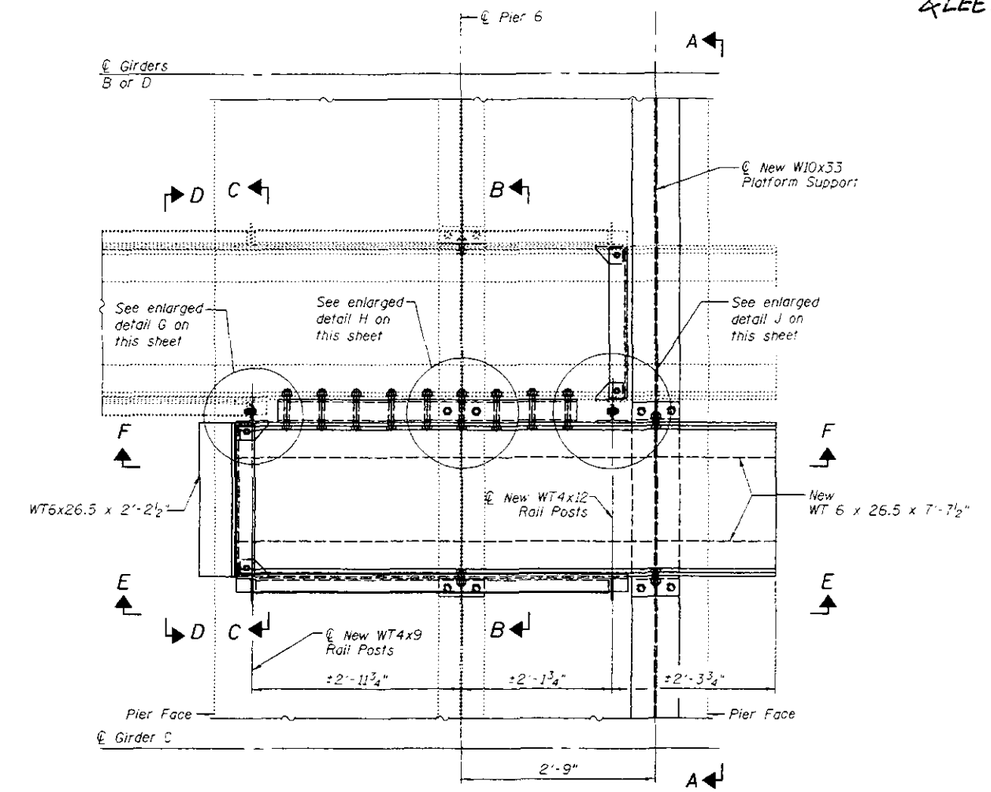
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
~~FAP~~ 315 (US136)		HANCOCK	35	17
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

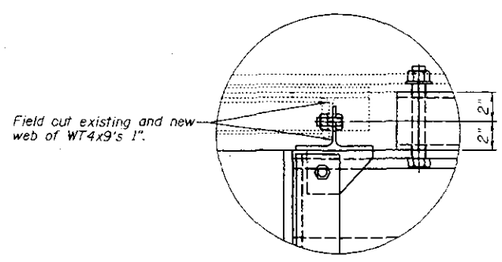
SHEET NO. 7
13 SHEETS
& LEE IA.



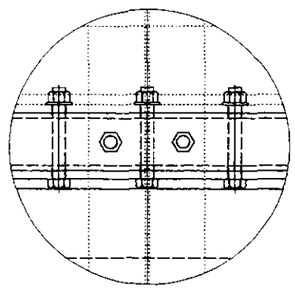
PLAN VIEW EXISTING CATWALK AT PIER 6
(2 Locations)



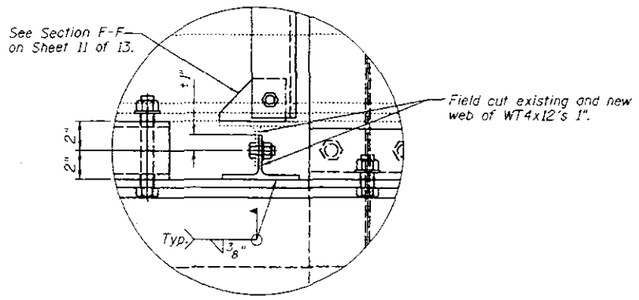
PLAN VIEW NEW CATWALK PLATFORM
(2 Locations)



DETAIL G



DETAIL H



DETAIL J

DESIGNED	J.P.A.
CHECKED	A.T.H.
DRAWN	Drew Christopher
CHECKED	J.P.A. A.T.H.

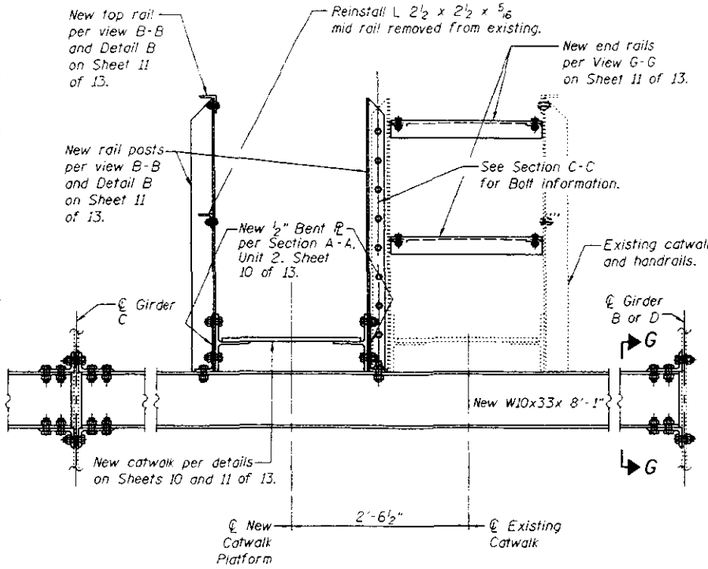
January 13, 2003
EXAMINED John A. Morris
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

CATWALK DETAILS
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

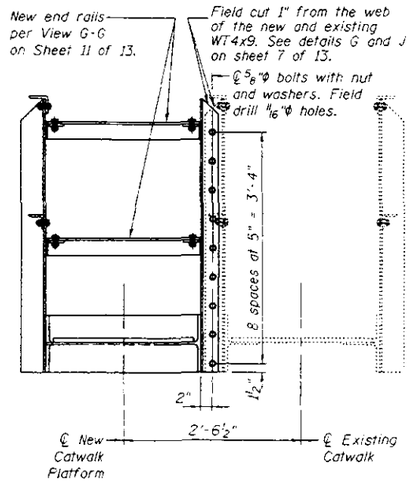
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315	022BI	Hancock IL	35	18
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 8
13 SHEETS
2 LEE IA.

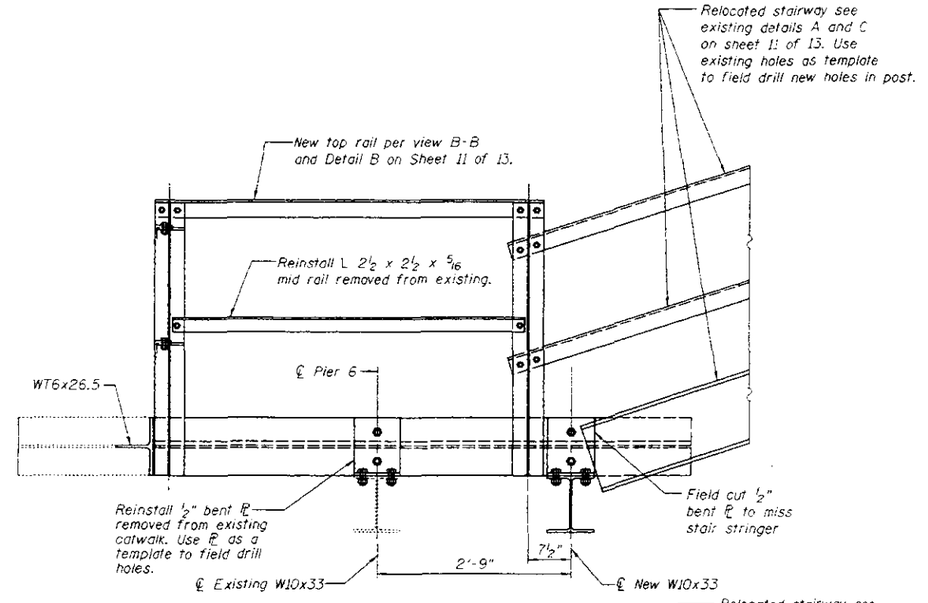


VIEW A-A

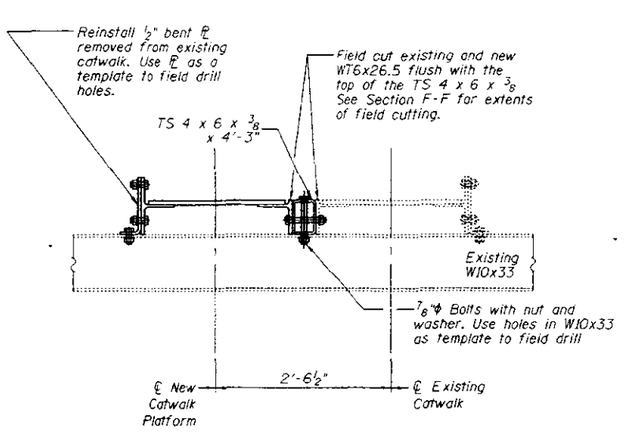
Notes:
For section G-G see Sheet 9 of 13.



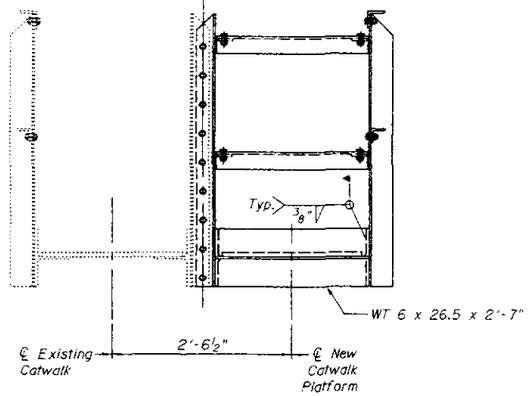
SECTION C-C



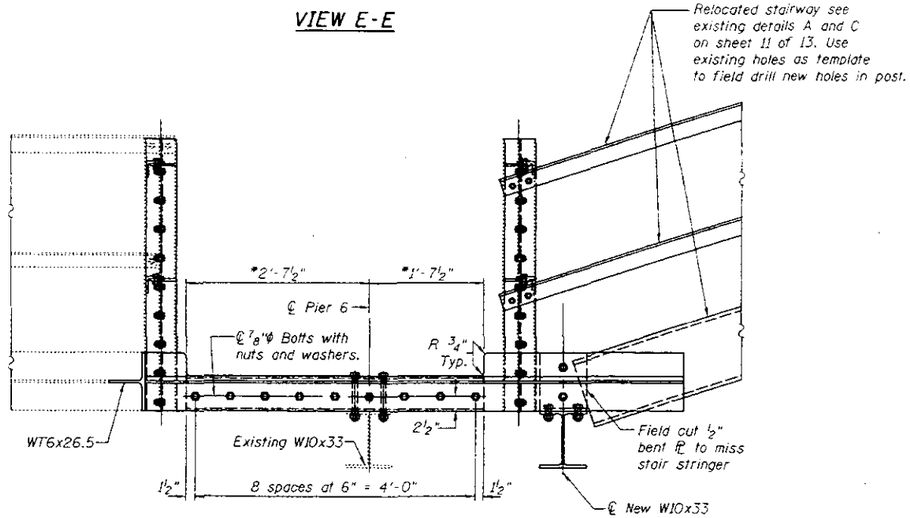
VIEW E-E



SECTION B-B



VIEW D-D



SECTION F-F

*Extents of field cutting of existing and new WT6x26.5 flush with top of TS6x4x3/8. See sections C-C and G-G.

DESIGNED	J.P.A.
CHECKED	A.T.H.
DRAWN	Drew Christopher
CHECKED	J.P.A. A.T.H.

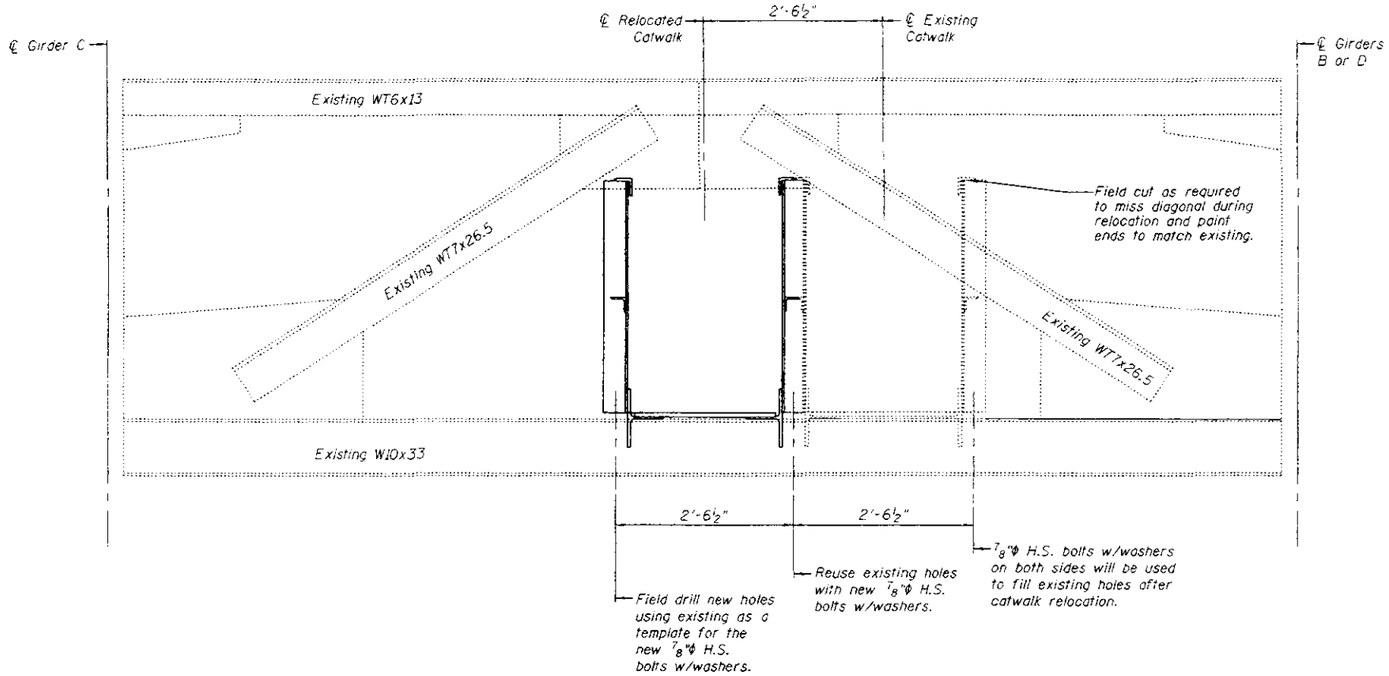
January 13, 2003
EXAMINED John A. Morris
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

CATWALK DETAILS
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

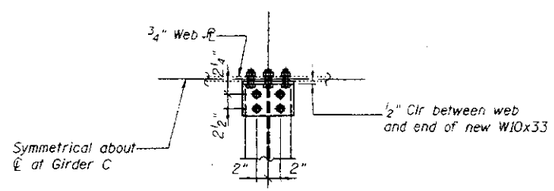
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315	(62B)I	Hancock	IL 35	19
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 9
13 SHEETS
&LEE IA



TYPICAL SECTION AT CATWALK RELOCATION

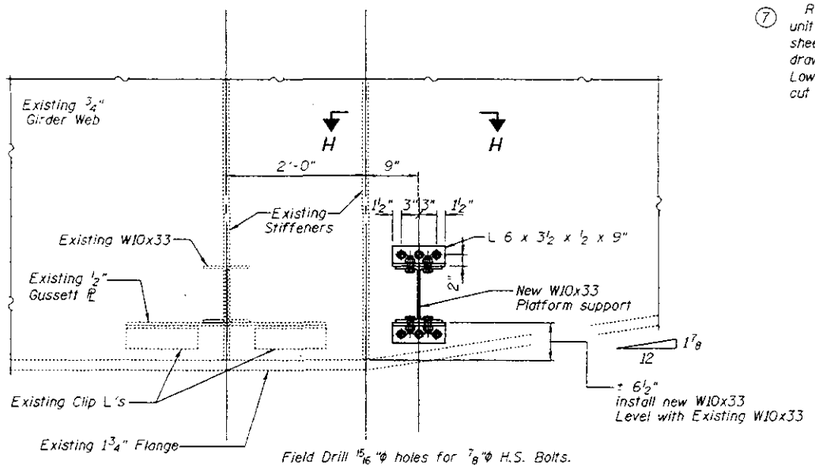
(Units 3, 4 and 5)



Field Drill 15/16"φ holes for ⅞"φ H.S. Bolts.

VIEW H-H

(Typical Girder Web to Platform Support Connection)



Field Drill 15/16"φ holes for ⅞"φ H.S. Bolts.

Section G-G

KEYED NOTES FOR EXISTING SHEETS 10 AND 11

1. Remove and replace ⅞"φ bolts w/nuts and washers after relocation. Use existing holes to align catwalk and as a template to field drill new holes.
2. Remove ½" bent ℄ and reuse on opposite side of lateral stem. Use existing holes as template to field drill new holes.
3. Only relocate catwalk on Units 3, 4 and 5. With catwalk extensions occuring only in Unit 5.
4. Extend catwalks 22'-0" towards the East Abutment, after relocation has occured. New extensions to be added using the existing details supplied. Use detail E on Sheet 10 of 13 for end of new catwalk treatment. Existing catwalk access restriction cage at East end of Unit 5 shall be modified to allow restricted entry along ℄ of relocated catwalk. Cost included with "Catwalk Extension."
5. To allow catwalk relocation, remove and reuse splice ℄'s at locations determined by the contractor and approved by the engineer. Field cut existing WT6x26.5 and grating along ℄ of splice to be removed. Relocate catwalk and reassemble with new splice and new ⅞"φ H.S. Bolts.
6. Splice to remain intact.
7. Remove existing stairway section at pier #6. Relocate catwalk in unit #3, then construct new platform at pier #6 as shown in details on sheets 7 and 8 of 13. Finally reassemble stairway using the existing drawings and the existing holes as a template for field drilling. Lower top rail at Expansion joint 3 to miss gussett ℄. Field cut all other top rail ends to miss diagonals and gussetts.

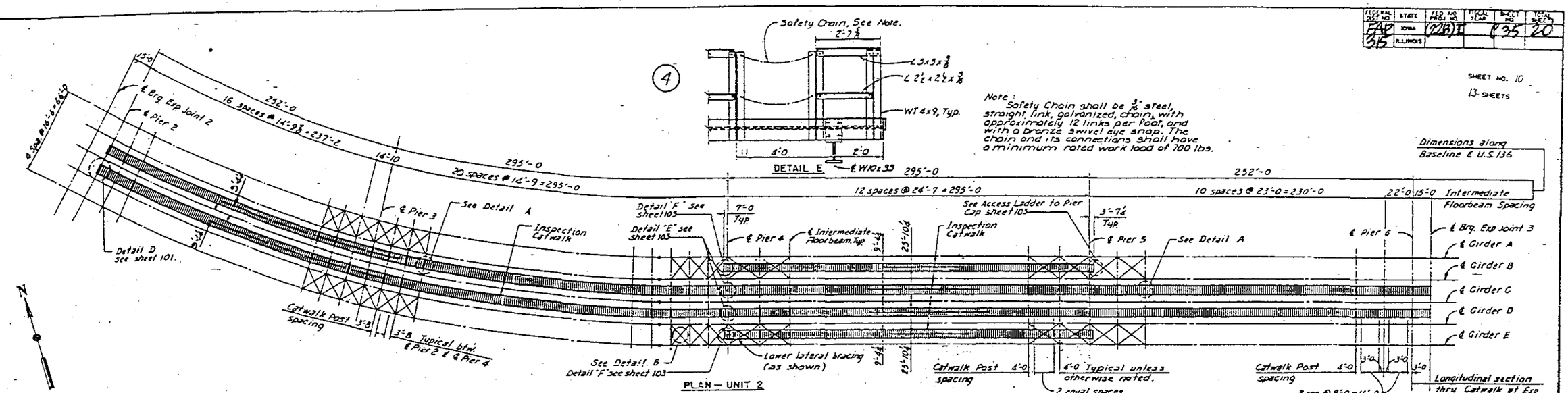
DESIGNED	J.P.A.
CHECKED	A.T.H.
DRAWN	Drew Christopher
CHECKED	J.P.A. A.T.H.

January 13, 2003
EXAMINED John A. Mouris
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

EXISTING CATWALK DETAILS
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

FEDERAL DIST NO	STATE	FED NO FAP NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
FAP 315	IOWA ILLINOIS	(MB)E		135	20

SHEET NO. 10
13 SHEETS



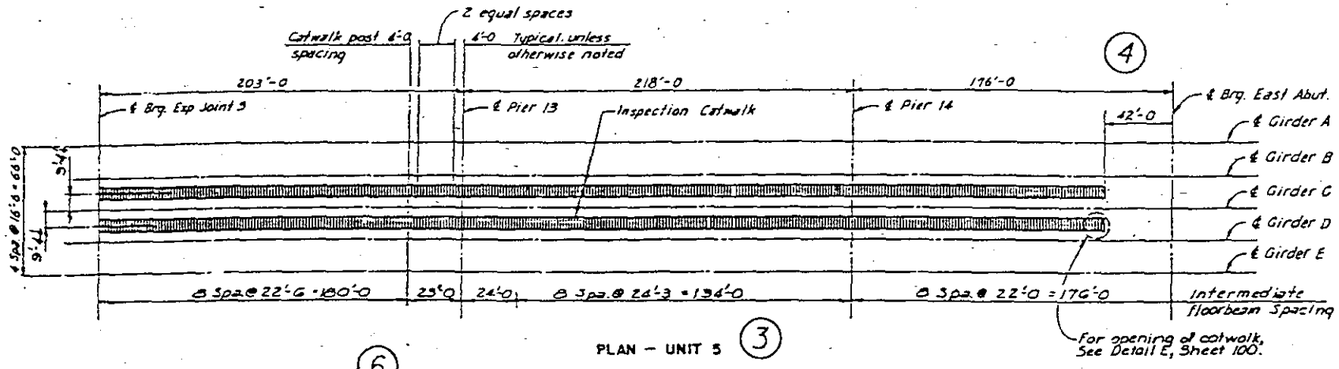
HNTB

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

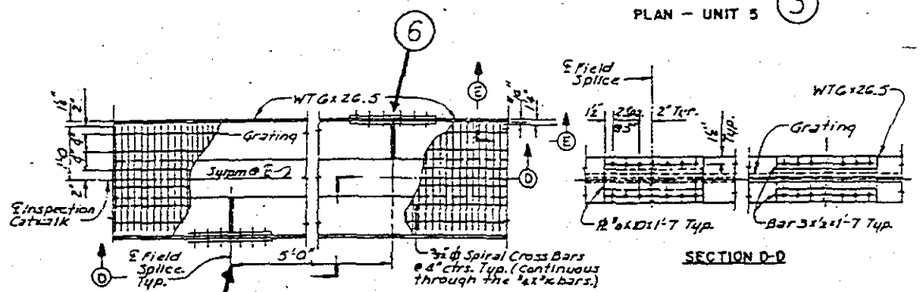
EXISTING CATWALK DETAILS
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

FOR INFORMATION ONLY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
EAP 315	IOWA ILLINOIS	(136)2		35	21

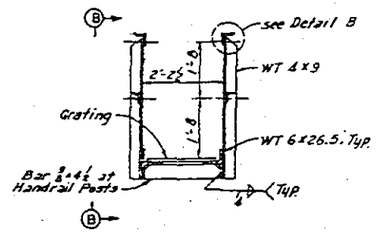


PLAN — UNIT 5 (3)

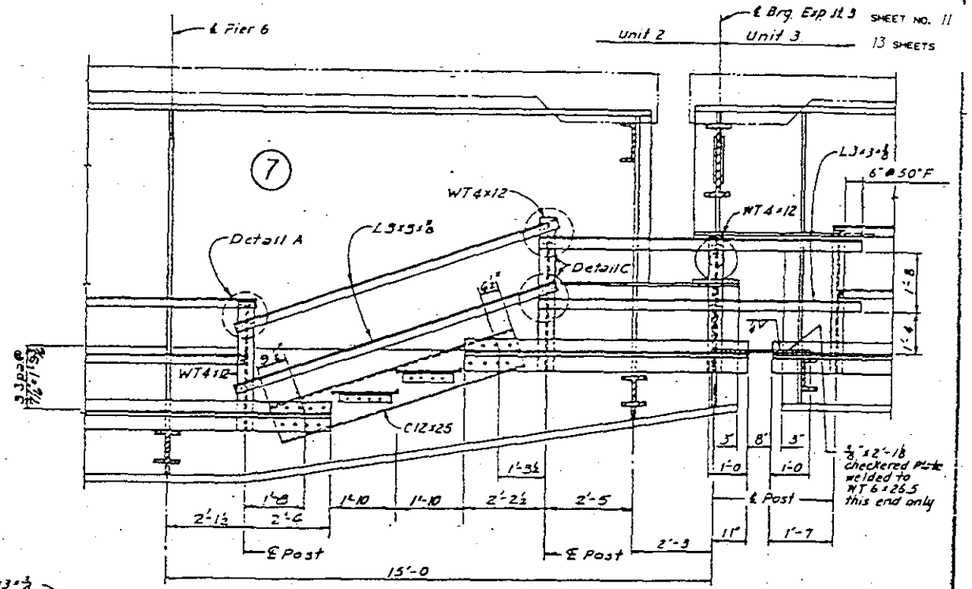


(6) FIELD SPLICE PLAN (5)

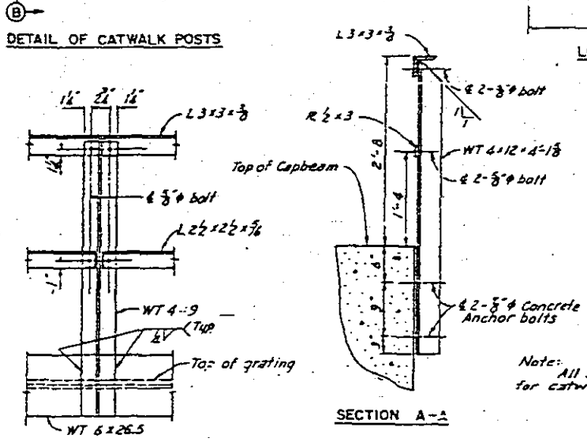
SECTION D-D



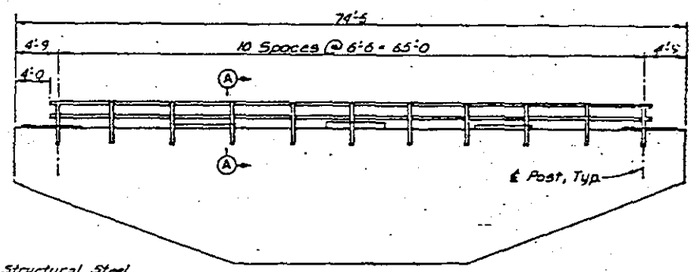
DETAIL OF CATWALK POSTS



LONGITUDINAL SECTION THRU CATWALK AT EXPANSION JOINT 3

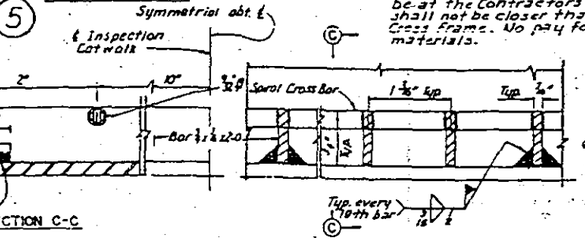


SECTION A-A



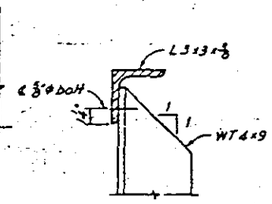
PIER 5 CAPBEAM ELEVATION
(Looking Back Station)

Note: All Structural Steel for catwalks shall be A36.



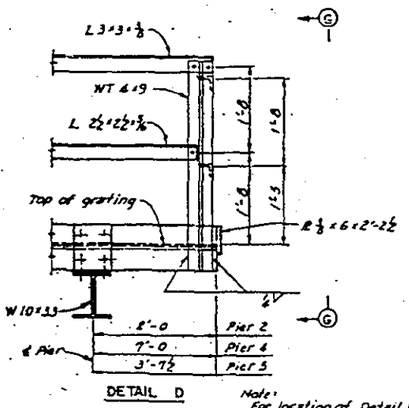
SECTION C-C

GRATING DETAILS



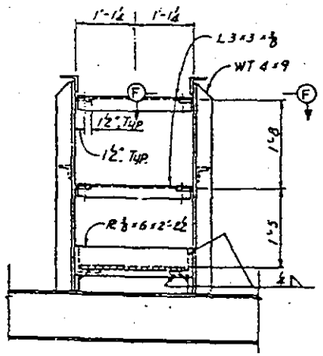
DETAIL B

VIEW B-B

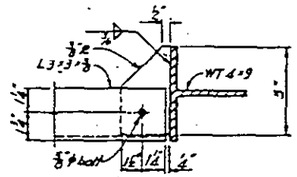


DETAIL D

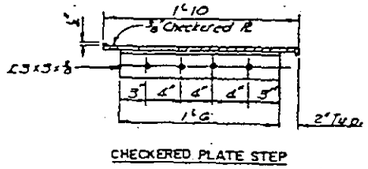
Note: For location of Detail D see Sheet 100.



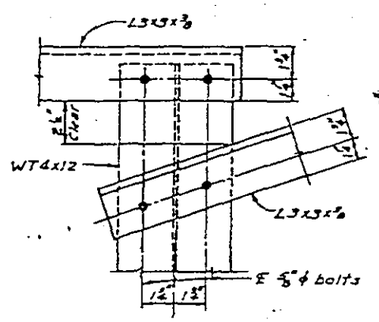
VIEW G-G
(Unit 2)



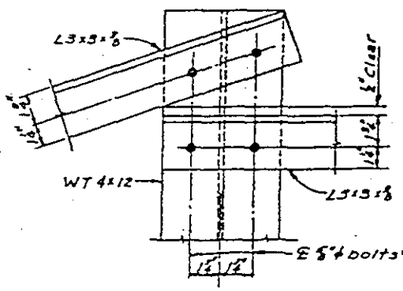
SECTION F-F



CHECKERED PLATE STEP



DETAIL A



DETAIL C

FOR INFORMATION ONLY

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

EXISTING CATWALK DETAILS
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

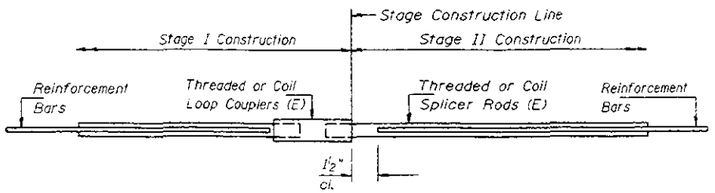
17-25-0

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315 (US 136)	I	Hancock	14	35
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 12
13 SHEETS

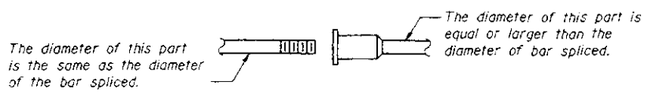
& LEE IA.



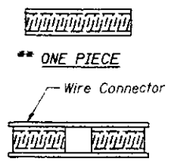
SPLICER DETAIL

Bar Size	No. Assemblies Required	Location
#7	8	Joint 2
#6	8	Joint 2
#7	8	Joint 3
#6	8	Joint 3
#7	8	Joint 4
#6	8	Joint 4
#7	8	Joint 5
#6	8	Joint 5

Note:
Number Required may vary with Joint Manufacturer's specifications.



ROLLED THREAD DOWEL BAR

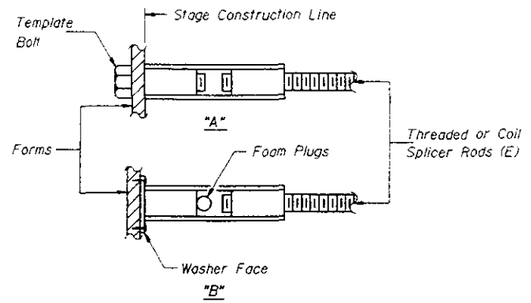


** ONE PIECE

WELDED SECTIONS

BAR SPLICER ASSEMBLY ALTERNATIVES

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



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.

NOTES

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 coiled 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 that the proposed bar splicer assembly satisfies the following requirements:

① Minimum Capacity (Tension in kips) = $1.25 \times f_y \times A_t$

② Minimum *Pull-out Strength (Tension in kips) = $1.25 \times fs_{allow} \times A_t$

Where f_y = Yield strength of lapped reinforcement bars in ksi.
fs_{allow} = Allowable tensile stress in lapped reinforcement bars in ksi (Service Load)
A_t = Tensile stress area of lapped reinforcement bars.
* = 28 day concrete

BAR SPLICER ASSEMBLIES			
		Strength Requirements	
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#5	2'-0"	23.0	9.2
#6	2'-7"	33.1	13.3
#7	3'-5"	45.1	18.0
#8	4'-6"	58.9	23.6

Bar splicer assemblies shall be according to Section 508 of the Standard Specifications, except as noted. The furnishing and installation of bar splicer assemblies are included with "Concrete Superstructure".

DESIGNED	J.P.A.
CHECKED	A.T.H.
DRAWN	Drew Christopher
CHECKED	J.P.A. A.T.H.

January 13, 2003
EXAMINED John A. Morris
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

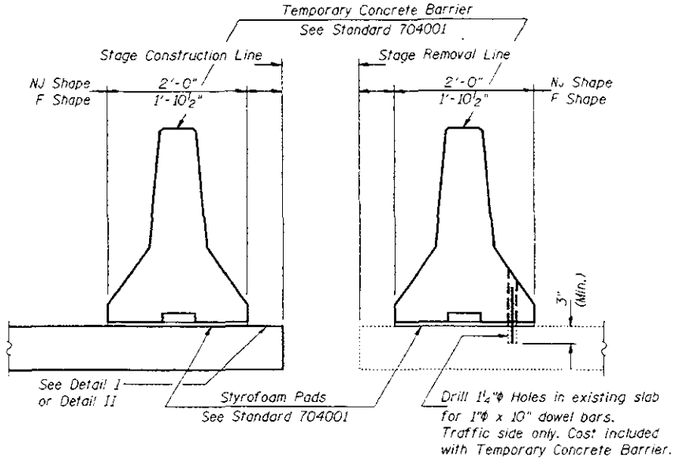
BAR SPLICERS
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315	(62B)H	Hancock IL	35	23
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

SHEET NO. 13
13 SHEETS

&LEE IA



NEW SLAB EXISTING SLAB

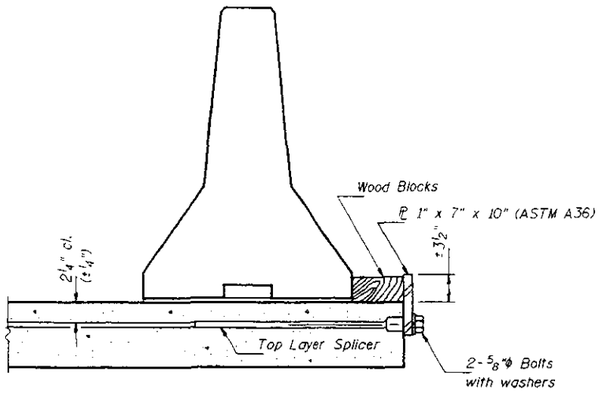
SECTIONS THRU SLAB

NOTES

Detail I - With Bar Splicer or Couplers:
Connect one (1) 1" x 7" x 10" steel ℙ to the top layer of couplers with 2-⅝"ϕ bolts screwed to coupler at approximate ℄ of each barrier panel.

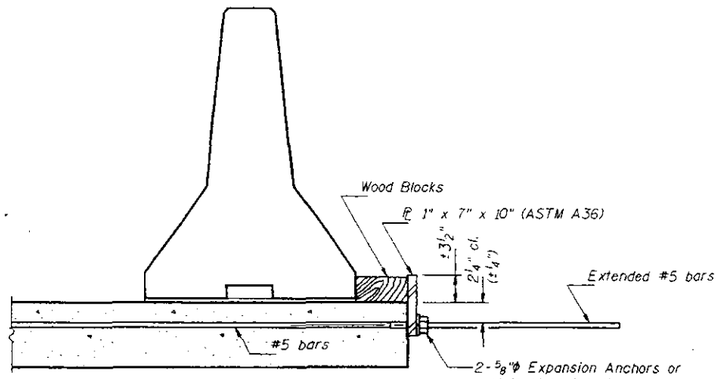
Detail II - With Extended Reinforcement Bars:
Connect one (1) 1" x 7" x 10" steel ℙ to the concrete slab with 2-⅝"ϕ Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate ℄ of each barrier panel.

Cost of anchorage is included with Temporary Concrete Barrier.



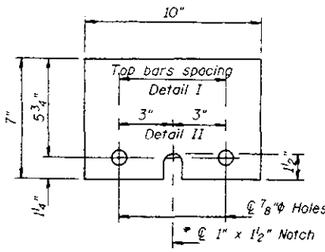
DETAIL I

The 1" x 7" x 10" Plate shall not be removed until Stage II Construction forms and reinforcement bars are in place.



DETAIL II

The 1" x 7" x 10" Plate shall not be removed until Stage II Construction forms and all reinforcement bars are in place and the concrete is ready to be placed.



ℙ 1" x 7" x 10"
* Required only with Detail II

DESIGNED	J.P.A.
CHECKED	A.T.H.
DRAWN	Drew Christopher
CHECKED	J.P.A. A.T.H.

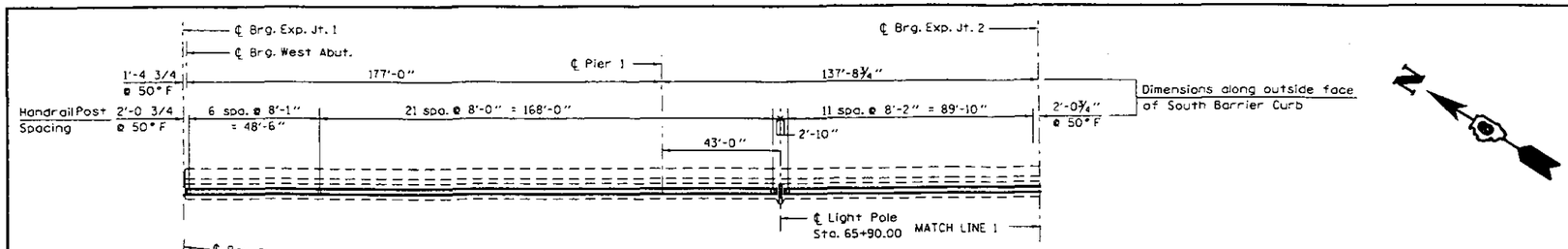
R-27

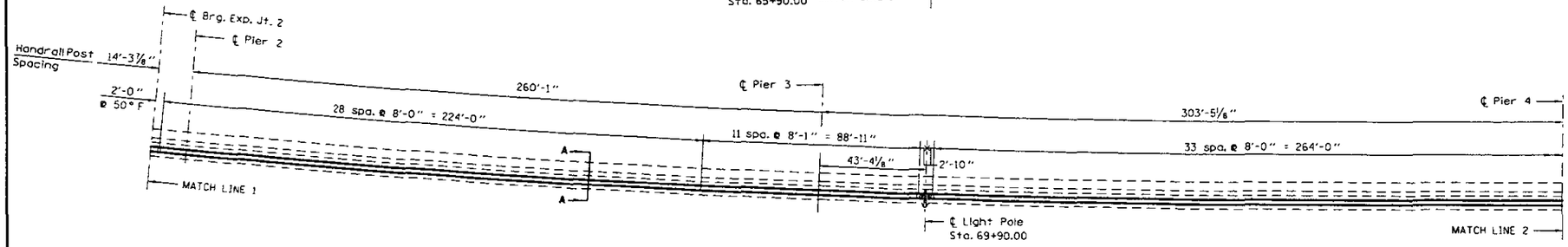
January 13, 2003
EXAMINED John A. Morris
ENGINEER OF STRUCTURAL SERVICES
PASSED
ENGINEER OF BRIDGES AND STRUCTURES

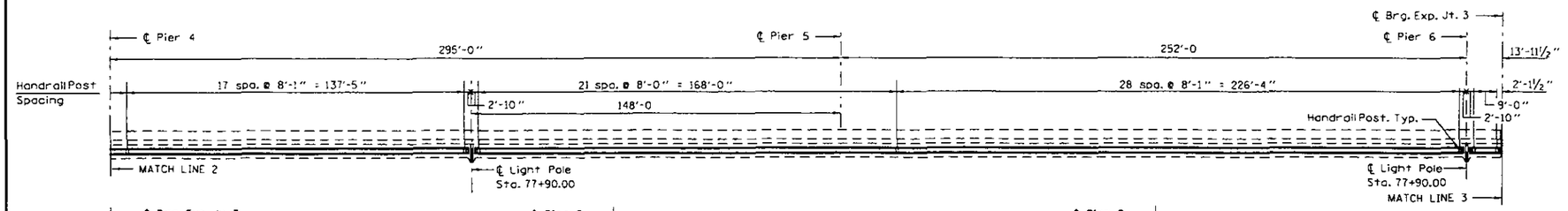
TEMPORARY CONCRETE BARRIER
F.A.P. RT. 315 (US 136)
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
SN.034-0062

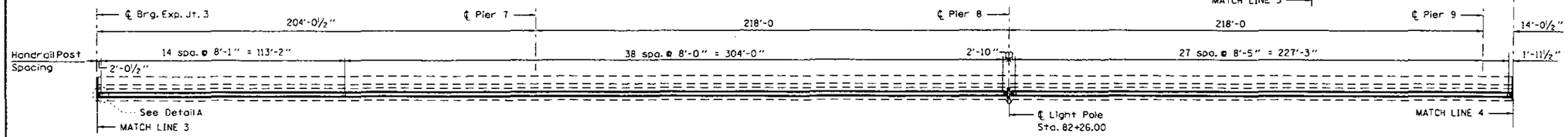
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(22B)I	HANCOCK	35	24
STA.	TO STA.			
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

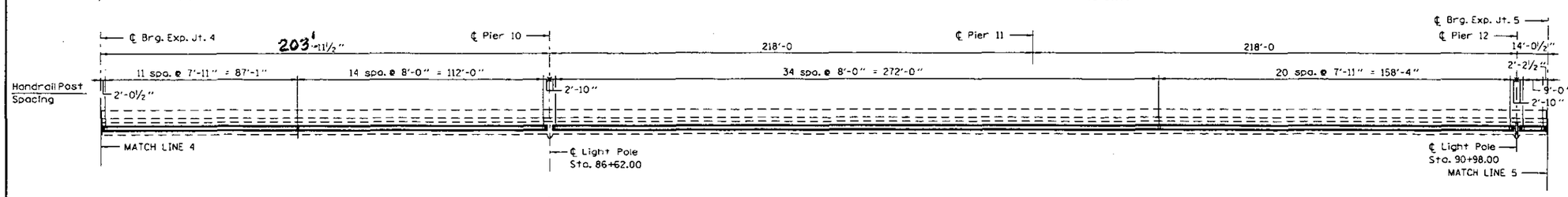
* FAP 315 (US 136)

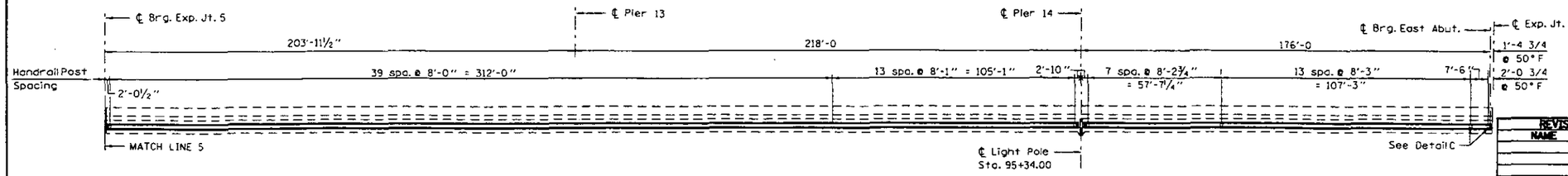




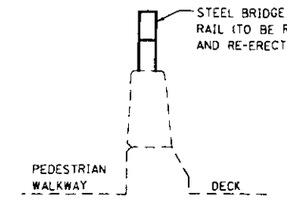








PLAN OF HANDRAIL SOUTH BARRIER CURB



TYPICAL A-A

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

HANDRAIL LAYOUT

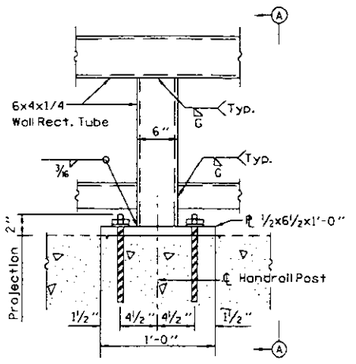
FAP 315 (US 136)
SECTION (22B)I
HANCOCK COUNTY

SCALE: VERT. : NONE
HORIZ.
DATE : DECEMBER 6, 2002

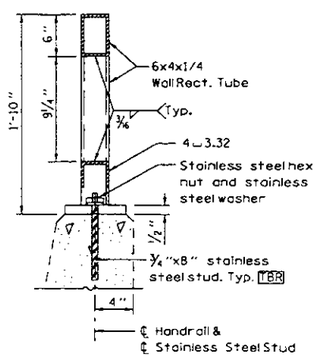
DRAWN BY CAD
CHECKED BY V.J.M

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(22B)1	HANCOCK	35	25
STA.		TO STA.		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

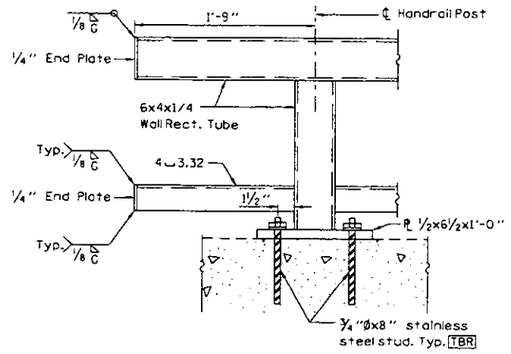
* FAP 315 (US 136)



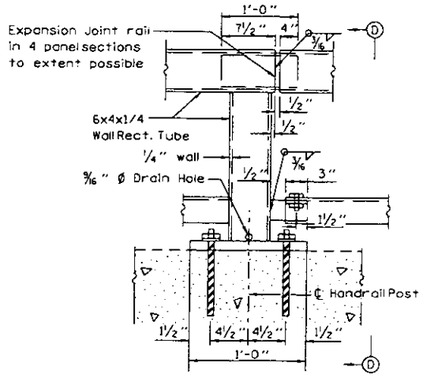
EXISTING HANDRAIL POST DETAIL



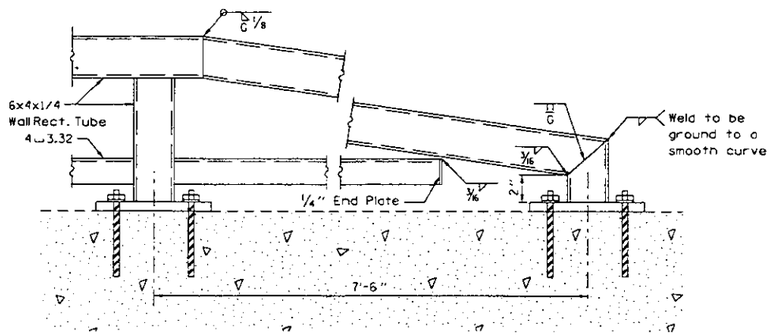
EXISTING SECTION A-A



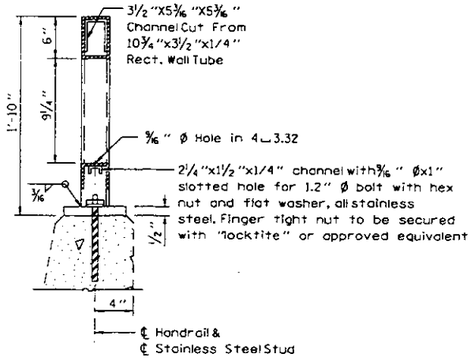
EXISTING DETAIL A



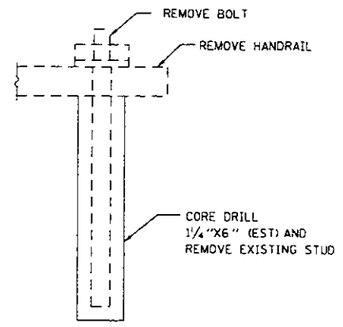
EXISTING JOINT DETAIL



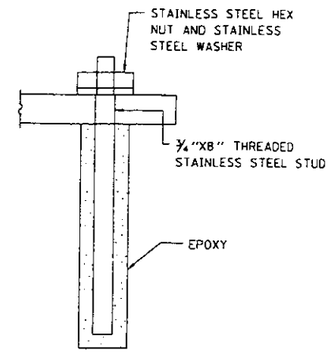
EXISTING DETAIL C



EXISTING SECTION D-D



HANDRAIL AND STUD REMOVAL DETAIL



HANDRAIL AND STUD REPLACEMENT DETAIL

EXISTING ALUMINUM HANDRAIL DETAILS FOR SOUTH BARRIER CURB

BILL OF MATERIALS

REMOVE EXISTING NUT/STUD	834 EA
STAINLESS STEEL THREADED STUD	834 EA
STAINLESS STEEL NUT/WASHER	834 EA

SUMMARY OF QUANTITIES

REMOVE AND RE-ERECTING EXISTING RAILING (SPECIAL) 3356 FT.

NOTE: THIS WORK CONSISTS OF REMOVING AND REPLACING THE EXISTING HANDRAIL WITH NEW ANCHOR RODS, TO BE PAID FOR AS REMOVE AND RE-ERECTING EXISTING RAILING (SPECIAL). ALL NEW THREADED RODS, NUTS, AND WASHERS AND REMOVAL OF EXISTING THREADED RODS, NUTS, AND WASHERS TO BE INCLUDED IN COST. QUANTITIES ARE PROVIDED FOR CONTRACTORS INFORMATION AND ARE TO BE FIELD VERIFIED.

REVISIONS NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

HANDRAIL DETAILS

FAP 315 (US 136)
SECTION (22B)1
HANCOCK COUNTY

SCALE: VERT. : NONE
HORIZ.
DATE : DECEMBER 6, 2002

DRAWN BY CAD
CHECKED BY V.M

D6 PROJECT: d656902 FILE: handrail-details.dgn

LETTING DATE JULY 6, 1983

PROJECT NO. BRF-19-1(3)--38-56

U.S. 136 MISSISSIPPI RIVER BRIDGE

LEE COUNTY

STATE	FED RD DIST	F Y	SHEET	TOTAL
IOWA	5		1	227

PROJECT NO. BRF-19-1(3)--38-56

R O W PROJECT NO. BRF-19-1(4)38-56

PRELIMINARY ENGINEERING

IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

PRIMARY ROAD SYSTEM
LEE COUNTY

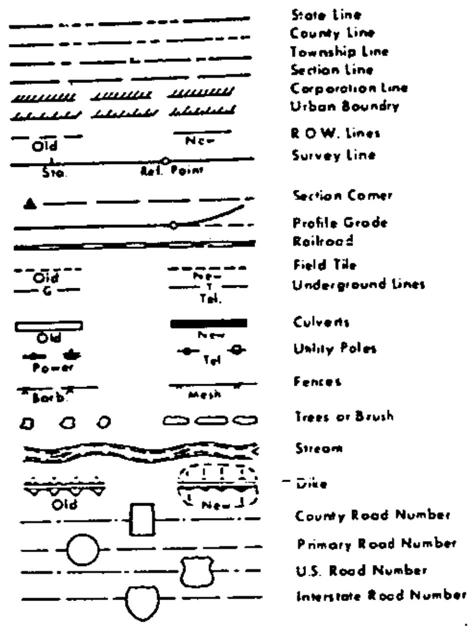
ON

U.S. 136
MISSISSIPPI RIVER BRIDGE

SCALES As Noted

THE STANDARD SPECIFICATIONS, SERIES OF 1977 OF THE IOWA DEPARTMENT OF TRANSPORTATION, SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

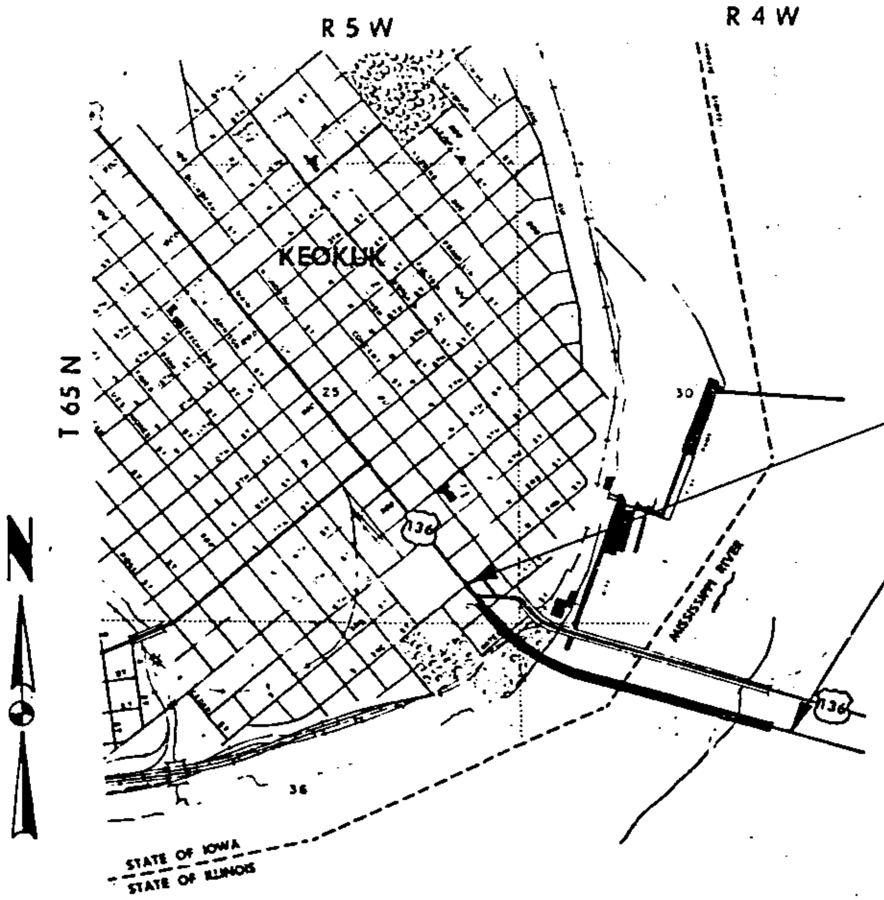
CONVENTIONAL SIGNS



NO MILEAGE SUMMARY

STATE CONTROL SECTION NUMBER 56-0100

NOTE: FOR INDEX OF SHEETS SEE SHEET 2



PROJECT LOCATION

300

Detail Plans reduced in size (Do Not Scale)

101-5

DESIGN DATA URBAN		
1983 AADT	10,570	V.P.D.
2000 AADT	15,960	V.P.D.
2000 DHV	1,915	V.P.H.
TRUCKS	5.5	%

LOCATION MAP SCALE

MILES

0 .01 .02 .03 .04 .05 .075 1.0

SUBMITTED BY:

REGISTERED STRUCTURAL ENGINEER ILLINOIS NO. 81-3117

ROAD DESIGN ENGINEER DATE

REVISIONS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA

5156

Highway Division

AUTHORIZED FOR LETTING

4-13-1983

DEPUTY CHIEF ENGINEER DATE

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION APPROVED

180-Q

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

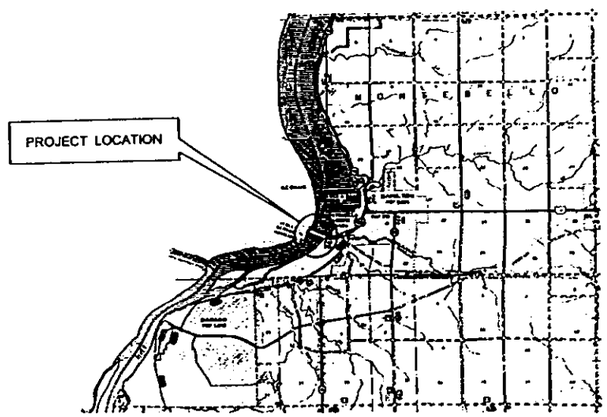
RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315 (US136)	(22B)I-DL 97	HANCOCK	7	1
F.H.W.A. REG.	ILLINOIS	PROJECT		

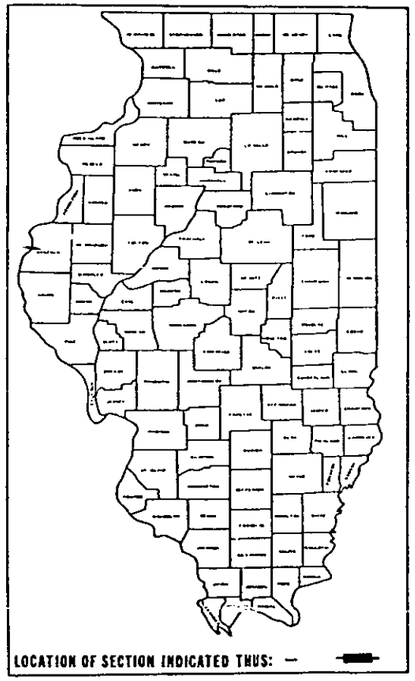
INDEX OF SHEETS

PLANS FOR PROPOSED
DAY LABOR

SCALES
PLAN
PROFILE HORIZ
PROFILE VERT.
CROSS SECTIONS HORIZ.
CROSS SECTIONS VERT

F.A.P. 315 (US 136)
SECTION (22B)I - DL97
HANCOCK COUNTY
C-96-068-95
D-96-033-95




LOCATION OF SECTION INDICATED THUS: —

STANDARDS

2298-12
2315-11

N

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED _____ 19__
DISTRICT ENGINEER
EXAMINED _____ 19__
ENGINEER OF PLANS AND CONTRACTS
PASSED _____ 19__
ENGINEER OF BRIDGES
APPROVED _____ 19__
DIRECTOR DIVISION OF HIGHWAYS

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ADMINISTRATOR DATE

JOINT UTILITY LOCATING INFORMATION FOR EXCAVATIONS PHONE: 800-892-0123

PRINTED BY AUTHORITY OF THE STATE OF ILLINOIS

DESIGN & PLANNING ENGINEER: TERRY FOUNTAIN
PLANS & CONTRACT ENGINEER / TECHNICIAN: CECIL DOWNING / BILL REAZER
PHONE: (217)782-7743

CONTRACT NO.

034-0062

DL-7

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315 (US 136)	(22B)I-DL-97	HANCOCK IL	7	2
STA.		TO STA.		
FED. ROAD DIST. NO. 8	ILLINOIS	FED. AID PROJECT -		

SUMMARY OF QUANTITIES

CODE NO.	ITEM	UNIT	TOTAL	MCHD FUND	50% ILL 50% IOWA SFTY-2A
2B100845	STONE DUMPED RIPRAP, CLASS C3	TON	308		308
50102300	CONCRETE REMOVAL	CU YD	6	6	
50300225	CONCRETE STRUCTURES	CU YD	6	6	
50800105	REINFORCEMENT BARS	POUND	1270	1270	
51000305	PIPE HANDRAIL, SPECIAL	FOOT	249		249
96500100	NAVIGATION LIGHTING SYSTEM	L SUM	1		1
90100700	TRAFFIC CONTROL AND PROTECTION, STANDARD 2316	L SUM	1	0.5	0.5

GENERAL NOTES

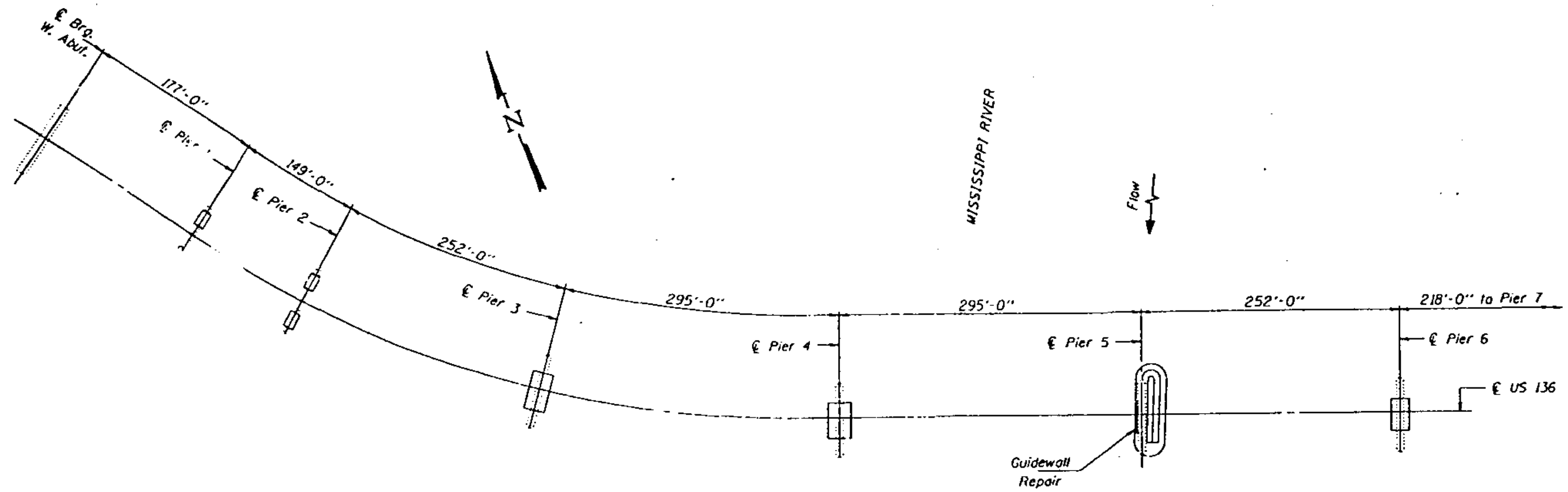
PLAN DIMENSIONS AND DETAILS RELATIVE TO THE EXISTING STRUCTURE HAVE BEEN TAKEN FROM EXISTING PLANS AND ARE SUBJECT TO NOMINAL CONSTRUCTION VARIATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY DIMENSIONS IN THE FIELD AND MAKE NECESSARY APPROVED ADJUSTMENTS PRIOR TO ORDERING MATERIALS. SUCH VARIATIONS SHALL NOT BE CAUSE FOR ADDITIONAL COMPENSATION, NOR A CHANGE IN THE SCOPE OF WORK; HOWEVER, THE CONTRACTOR WILL BE PAID FOR THE QUANTITY ACTUALLY FURNISHED AT THE UNIT PRICE BID FOR THE WORK.

SUMMARY OF QUANTITIES
GENERAL NOTES
FAP 315 (US 136)
SECTION (22B)I-DL-97
HANCOCK COUNTY

FAP315 (US 136)	*	HANCOCK	7	5	SHEET NO. 1 / 2 SHEETS

*(228)I-DL 97

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

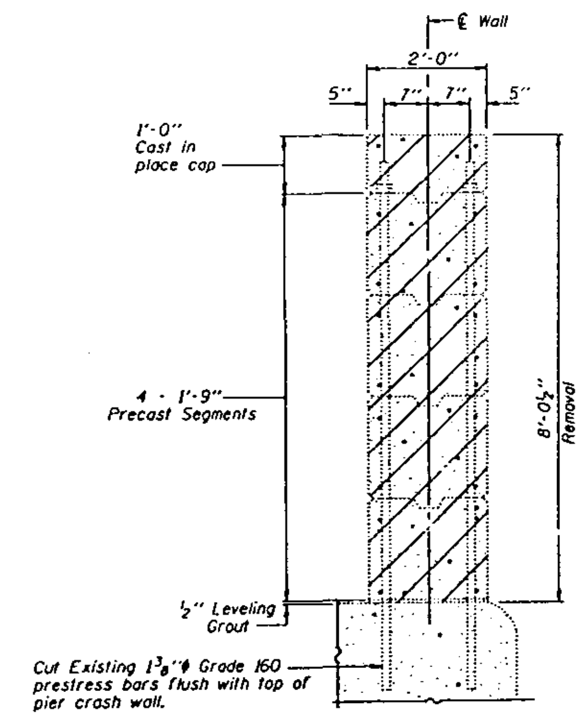


FOOTING & PIER PLAN

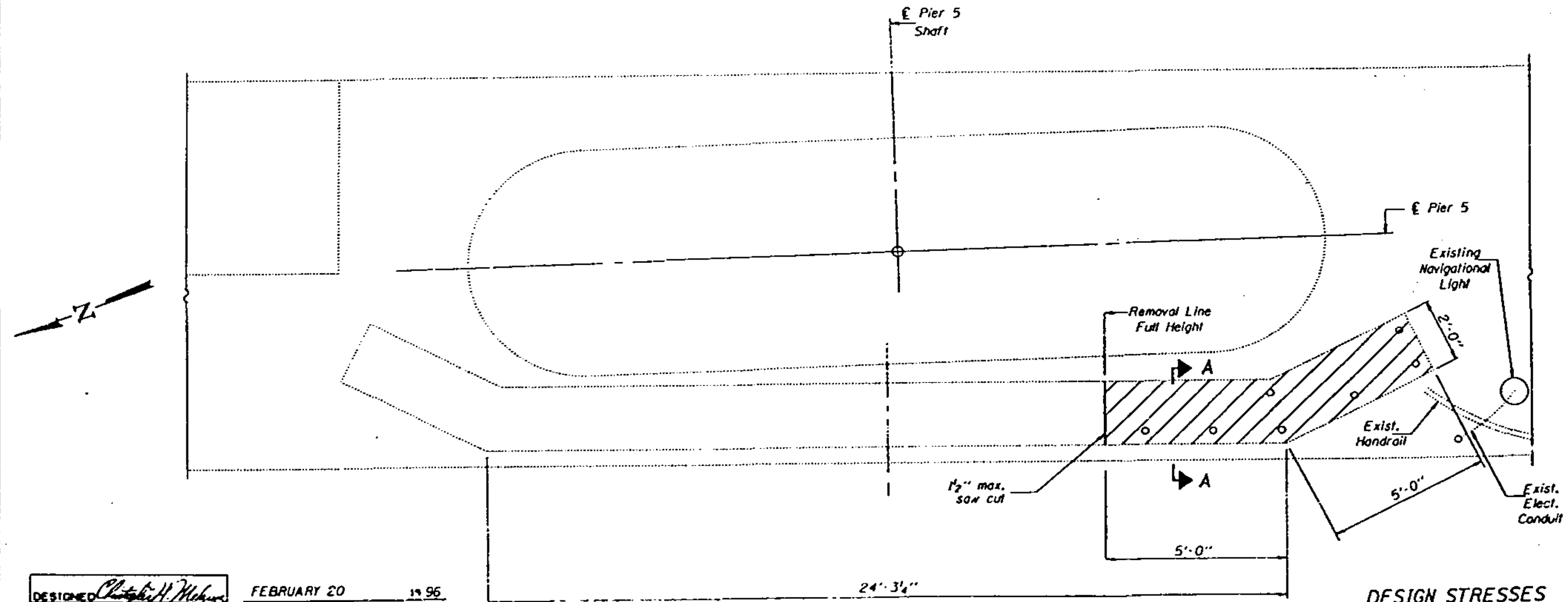
GENERAL NOTES

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

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.



SECTION A-A



PARTIAL PLAN AT PIER 5

TOTAL BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Concrete Removal	Cu. Yd.	6.0
Concrete Structures	Cu. Yd.	6.0
Reinforcement Bars	Lbs.	1270

DESIGN STRESSES

f'c = 3500 psi
fy = 60000 psi (Reinf.)

DESIGNED	
CHECKED	
DRAWN	Dherbert
CHECKED	CHM

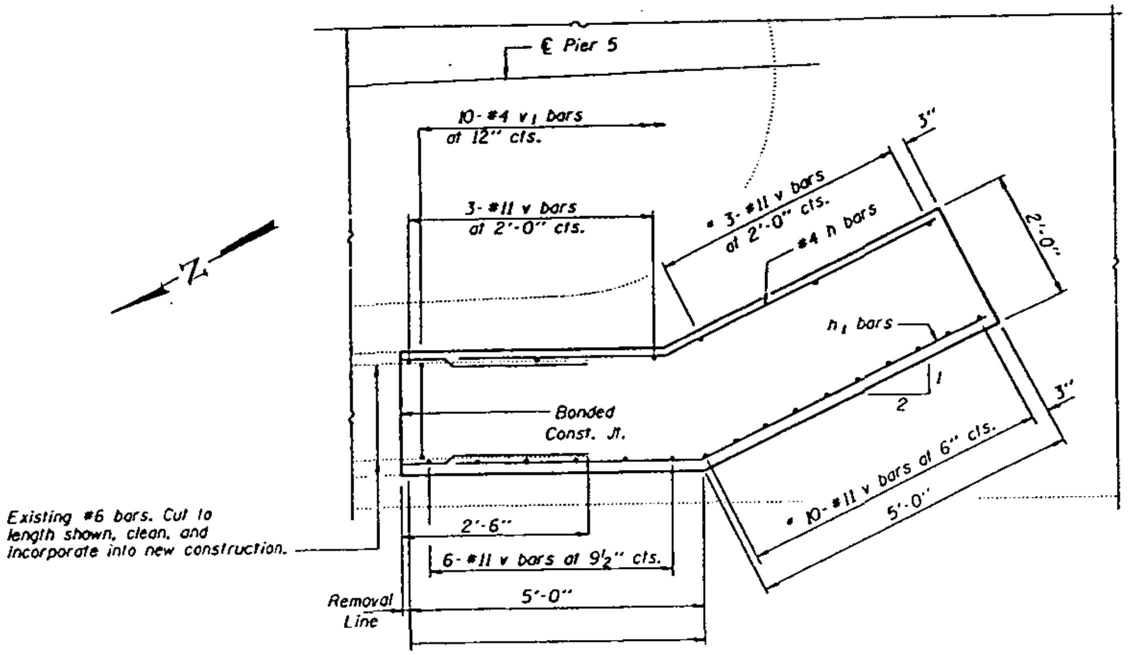
FEBRUARY 20 1996
EXAMINED ENGINEER OF STRUCTURAL SERVICES
PASSED ENGINEER OF BRIDGES AND STRUCTURES

BRIDGE REPAIRS
FAP RTE 315 (US 136) SEC (228)I-DL 97
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
S.N. 034-0062

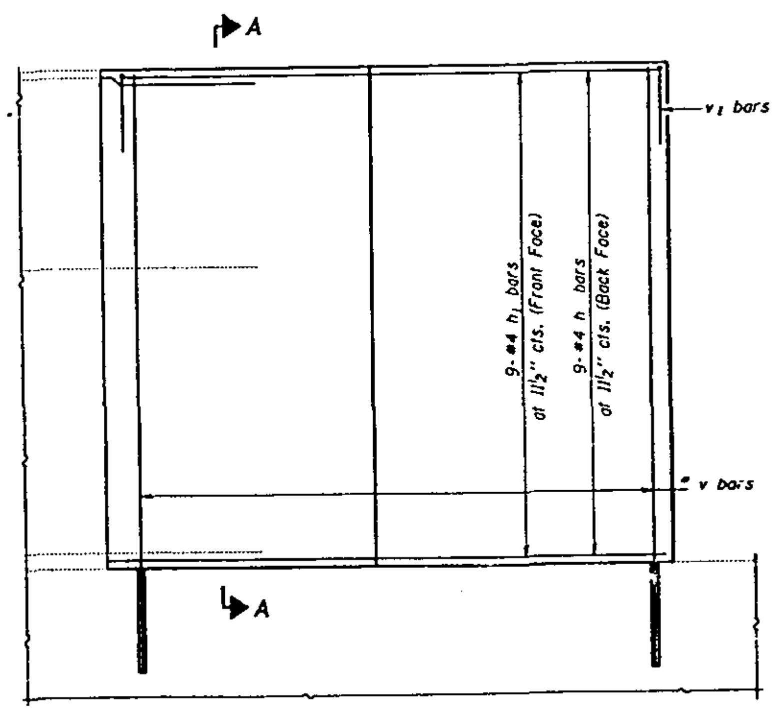
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FAP 315 (US 136)	*	HANCOCK	7	4	SHEET NO. 2 / 2 SHEETS

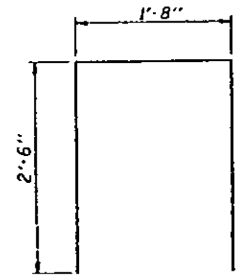
* (22B)I-DL 97



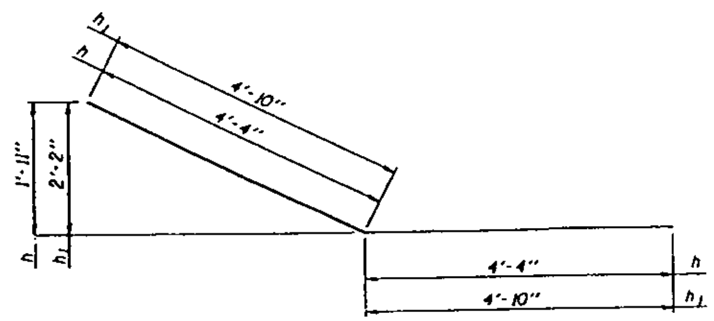
PARTIAL PLAN



PARTIAL ELEVATION

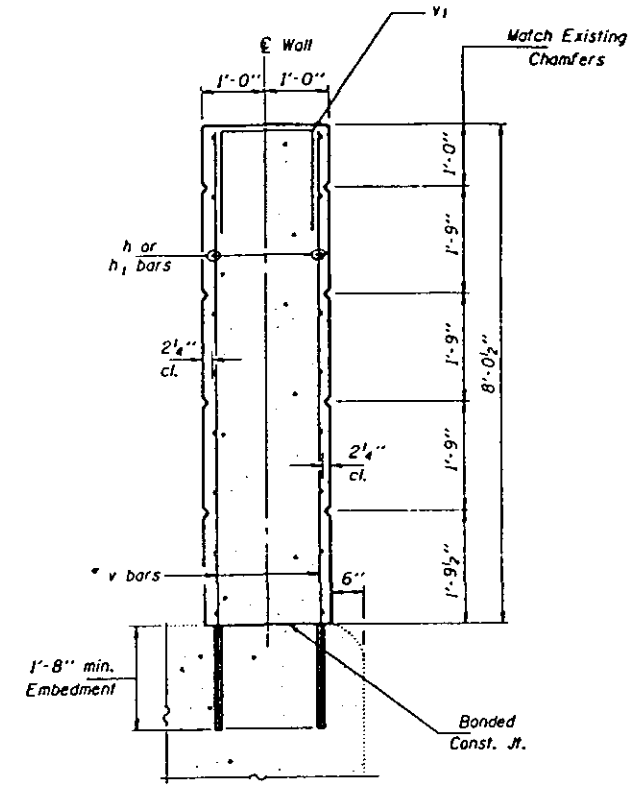


BAR v_1



BAR h_1

* #11 v bars to be Epoxy Grouted in 1⅝"φ x 1'-8" min. drilled holes in accordance with Section 584 of the Standard Specs.



SECTION A-A

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h	9	#4	8'-8"	
h_1	9	#4	9'-8"	
v	22	#11	9'-7"	
v_1	10	#4	6'-8"	
Concrete Removal		Cu. Yd.	6.0	
Concrete Structures		Cu. Yd.	6.0	
Reinforcement Bars		Lbs.	1270	

PIER 5 GUIDEWALL
CONCRETE REPLACEMENT
FAP RTE 315 (US 136) SEC (22 B)I-DL 97
OVER MISSISSIPPI RIVER
HANCOCK COUNTY
S.N. 034-0062

DESIGNED	CHM
CHECKED	JPV
DRAWN	D.Herbert
CHECKED	JPV CHM

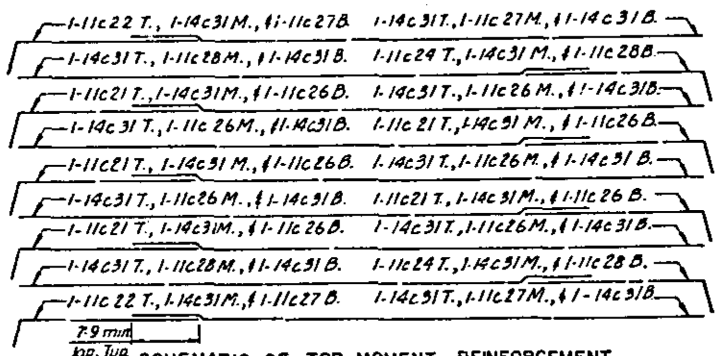
FEBRUARY 20 1996
EXAMINED [signature]
ENGINEER OF STRUCTURAL SERVICES
ENGINEER OF BRIDGES AND STRUCTURES

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

BILL OF REINFORCEMENT

PIER 14

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footing, Horizontal		17	31'-6	1821
11a2	Footing, Horizontal		41	14'-6	3159
11a3	Footing, Vertical		56	18'-4	5455
11a4	Footing, Vertical		56	12'-10	3818
4b1	Column, Horizontal		33	10'-1	256
4b2	Column, Horizontal		33	21'-0	533
4b3	Column, Horizontal		190	5'-1	645
4b4	Column, Horizontal		114	3'-4	254
11b5	Column, Vertical		56	19'-3	5727
11b6	Column, Vertical		56	24'-9	7364
4c1	Cap Beam Pad		50	7'-8	256
4c2	Cap Beam Pad		40	8'-8	232
4c3	Cap Beam, Ties		50	7'-8	400
6c4	Cap Beam, Vertical		4	18'-7	112
6c5	Cap Beam, Vertical		4 Ser		
			of 22	Varies	3332
6c6	Cap Beam, Vertical		4 Ser		
			of 7	Varies	1383
6c7	Cap Beam, Vertical		24	34'-7	1247
6c8	Cap Beam, Vertical		4	17'-3	104
9c9	Cap Beam, Horizontal		12	60'-0	2448
9c10	Cap Beam, Horizontal		2	11'-11	81
9c11	Cap Beam, Horizontal		2	6'-7	45
6c12	Cap Beam, Horizontal		11	37'-10	625
9c13	Cap Beam, Horizontal		2	56'-6	384
9c14	Cap Beam, Horizontal		2	51'-4	349
9c15	Cap Beam, Horizontal		2	46'-2	314
9c16	Cap Beam, Horizontal		2	41'-0	279
9c17	Cap Beam, Horizontal		2	35'-10	244
9c18	Cap Beam, Horizontal		2	30'-8	209
9c19	Cap Beam, Horizontal		4	32'-10	447
9c20	Cap Beam, Horizontal		4	16'-10	229
11c21	Cap Beam, Horizontal		5	23'-5	622
11c22	Cap Beam, Horizontal		2	20'-3	215
11c23	Cap Beam, Horizontal		10	38'-10	2063
11c24	Cap Beam, Horizontal		2	22'-0	234
11c25	Cap Beam, Horizontal		9	12'-5	594
11c26	Cap Beam, Horizontal		10	18'-9	996
11c27	Cap Beam, Horizontal		4	15'-7	331
11c28	Cap Beam, Horizontal		4	17'-4	368
11c29	Cap Beam, Horizontal		4	37'-7	799
11c30	Cap Beam, Horizontal		4	38'-2	811
14c31	Cap Beam, Horizontal		27	60'-0	12393
				Total	61,178

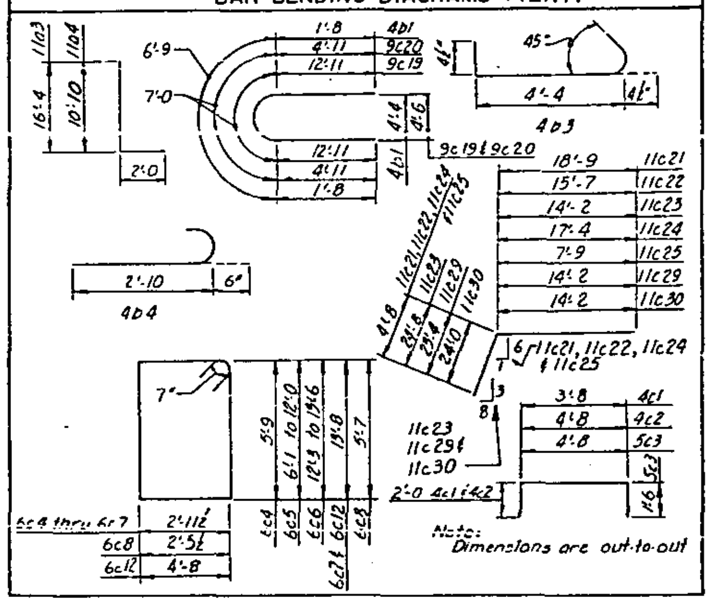


SCHEMATIC OF TOP MOMENT REINFORCEMENT

PIER 14

Note:
T. denotes Top
M. denotes Middle
B. denotes Bottom

BAR BENDING DIAGRAMS-PIER 14



CONCRETE PLACEMENT QUANTITIES-PIER 14

LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	157.9
Shaft -- Class C	C.Y.	83.9
Footing -- Class C	C.Y.	106.7
Total	C.Y.	348.5

ESTIMATED QUANTITIES - PIER 14

ITEM	UNIT	QUANTITY
Structural Concrete Cl. C	C.Y.	348.5
Reinforcing Steel	Lbs.	61,178
Excavation Class 23	C.Y.	177

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

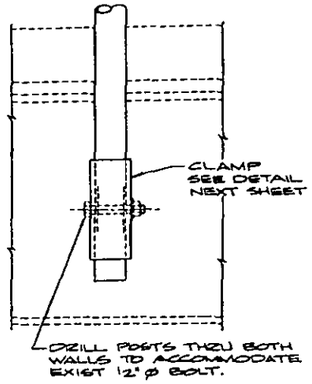
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED
PLATE GIRDER BRIDGE

PIER 14 DETAILS

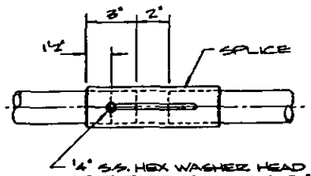
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE HCH DATE 8-10-82 CHECKED JFI DATE 8-24-82

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 318 (US 136)	(22B) I-DL-97	HANCOCK	7	5
STA.		TO STA.		
FED. ROAD DIST. NO. 8	ILLINOIS	FED. AID PROJECT -		

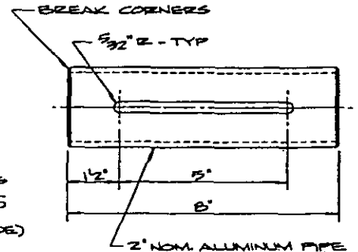


DETAIL B

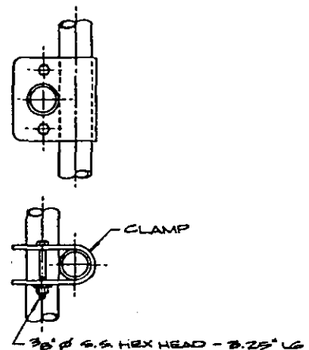


NOTE:
LOCATE SPLICES BETWEEN POSTS AS REQUIRED. TYPICAL ALL HANDRAIL.

DETAIL C

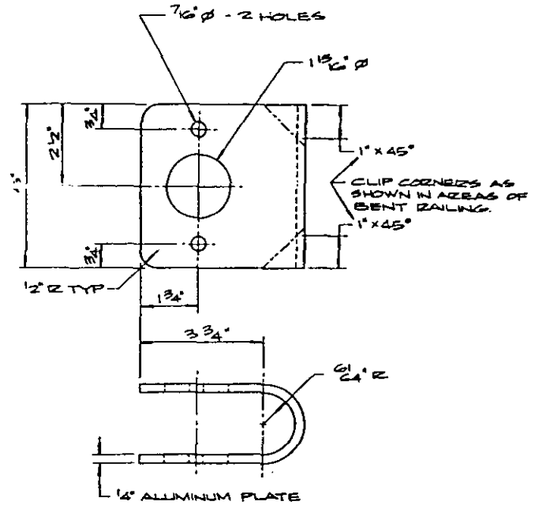


SPLICE

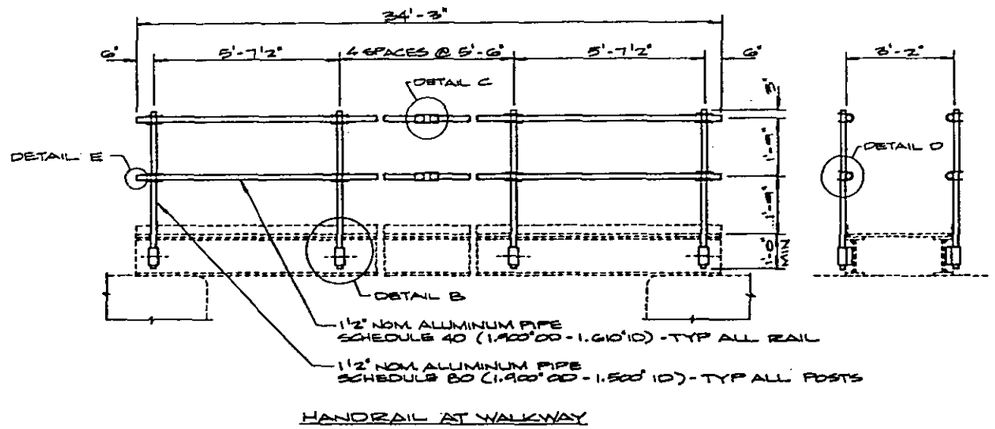


NOTE:
CLAMP WILL DEFORM WHEN BOLTS ARE SUFFICIENTLY TIGHTENED.

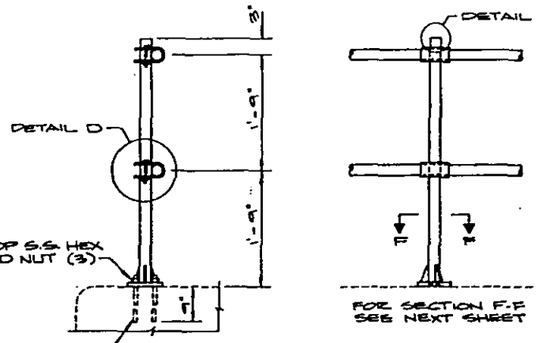
DETAIL D



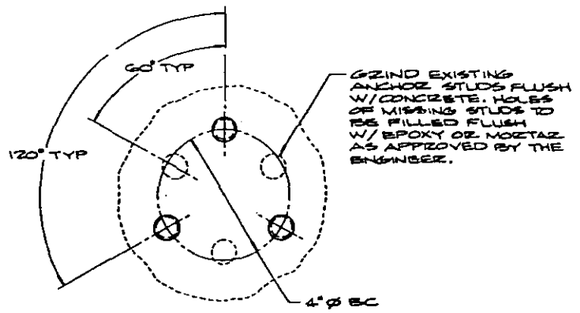
CLAMP



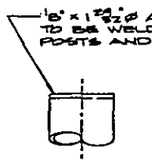
HANDRAIL AT WALKWAY



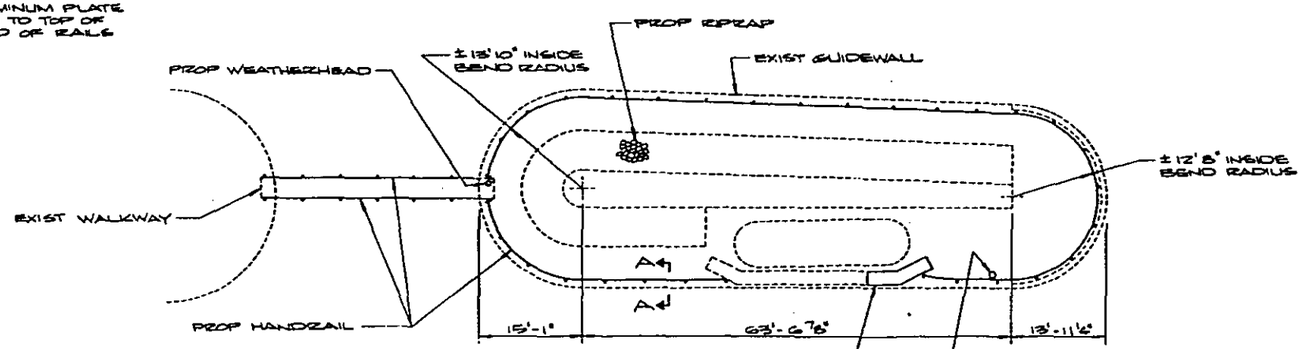
SECTION A-A



ANCHOR STUD LAYOUT



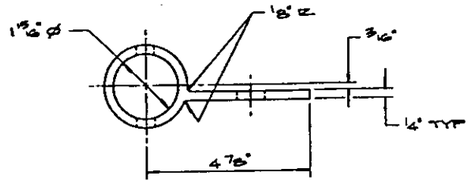
DETAIL E

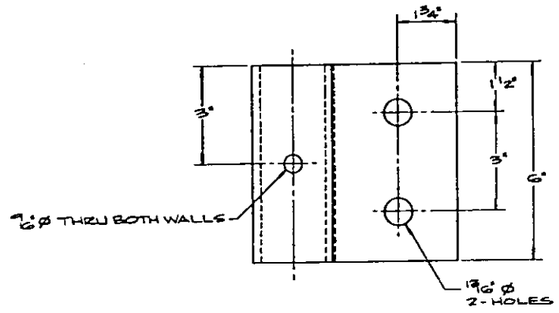


WALKWAY & GUIDEWALL AT PIER 5

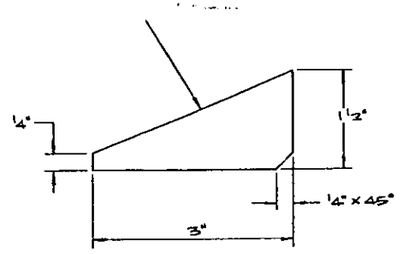
PLAN VIEW AND
HANDRAIL DETAILS
FAP 318 (US 136)
SECTION (22B) I-DL-97
HANCOCK COUNTY

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315 (US 136)	(72B)I-DL-97	HANCOCK	7	6
STA.		TO STA.		
FED. ROAD DIST. NO. 8	ILLINOIS	FED. AID PROJECT -		

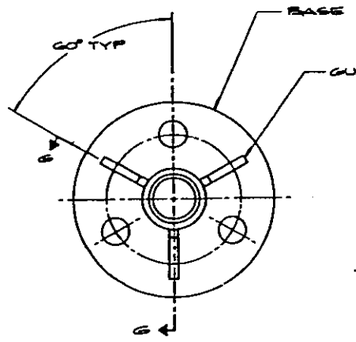




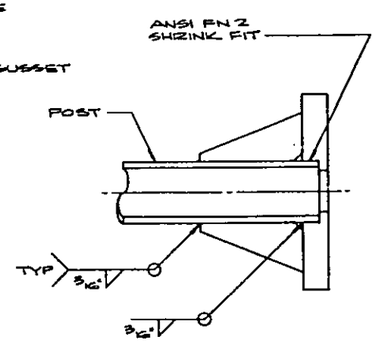
CLAMP
EXTRUDED



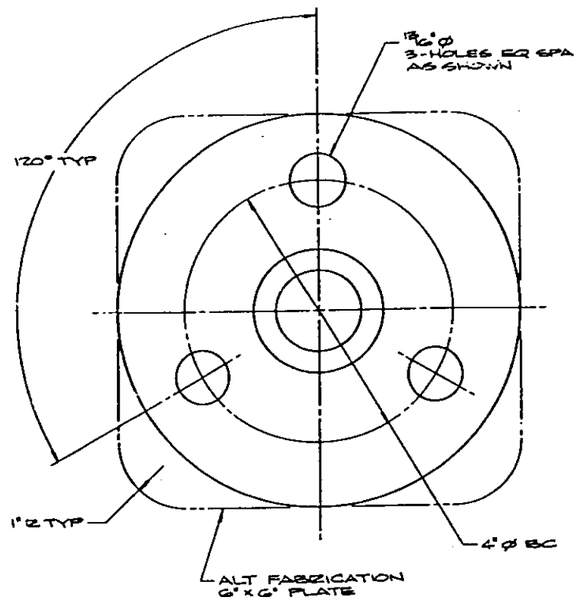
GUSSET



SECTION F-F

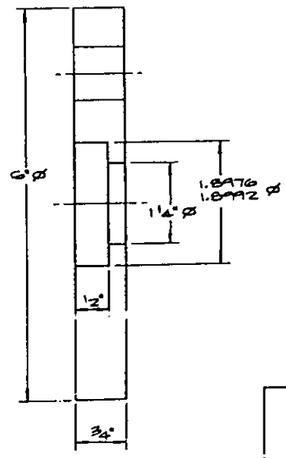


SECTION G-G



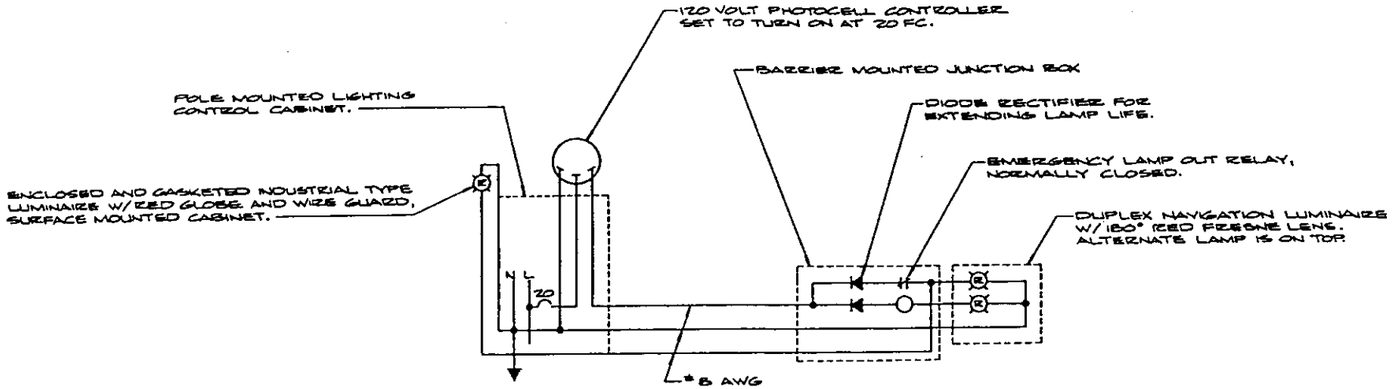
BASE

NOTE:
ALL BASES SHALL BE
SAME STYLE FABRICATION.

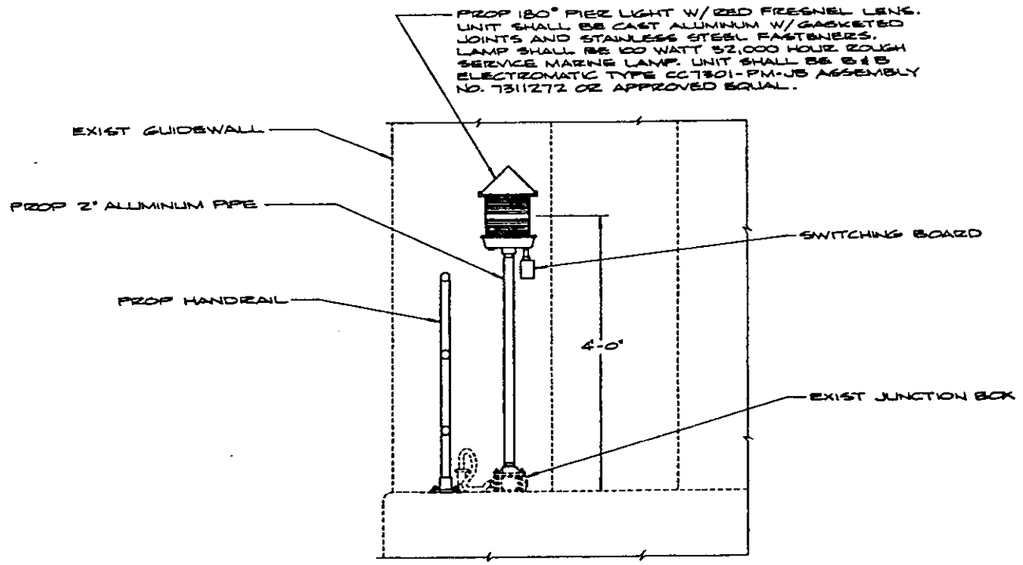


HANDRAIL DETAILS
FAP 315 (US 136)
SECTION (72B)I-DL-97
HANCOCK COUNTY

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 315 (US 136)	(228) I - D, 97	HANCOCK	7	7
STA.		FED. AID PROJECT -		
FED. ROAD DIST. NO. 8	ILLINOIS			



NAVIGATION LIGHT WIRING DIAGRAM



LIGHT INSTALLATION AT PIER 5
NTS

NAVIGATION LIGHT DETAIL
FAP 315 (US 136)
SECTION (228) I-CL 91
HANCOCK COUNTY

BRF-19-1(3)--38-56

CONVENTIONAL SIGNS

STATE LINE
COUNTY LINE
TOWNSHIP LINE
SECTION LINE
CORPORATION LINE
URBAN BOUNDRY
R.O.W. LINES

EXISTING PROP.
STA. REF. POINT

SURVEY LINES

SECTION CORNER

PROPOSED PROFILE GRADE
RAILROAD

FIELD TILE

EXISTING PROP.
UNDERGROUND LINES

CULVERTS

POWER
TEL
UTILITY POLES

BARB MESH
FENCES

TREES OR BRUSH

STREAM

DIKE

COUNTY ROAD NUMBER
PRIMARY ROAD NUMBER
U.S. ROAD NUMBER
INTERSTATE ROAD NUMBER

IOWA

DEPARTMENT OF TRANSPORTATION

Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

PRIMARY ROAD SYSTEM

LEE COUNTY

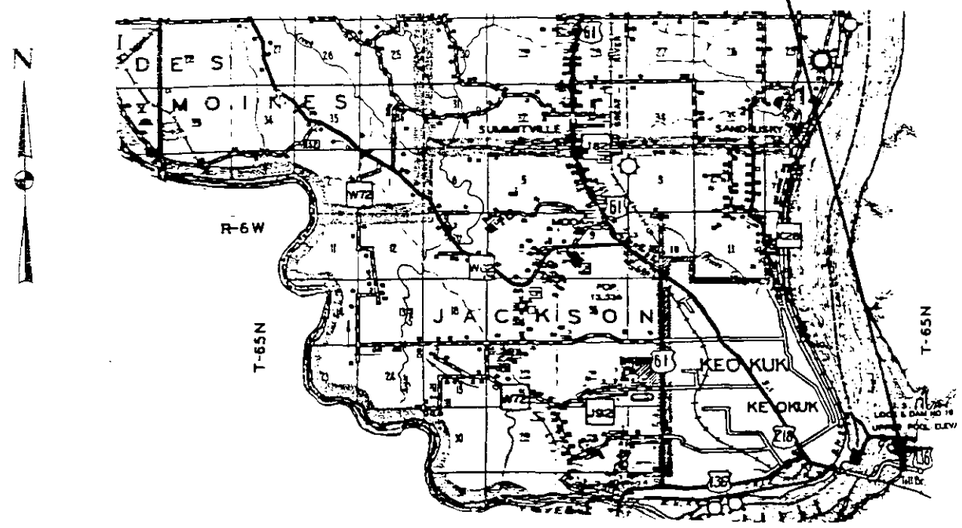
BRIDGE DECK OVERLAY

ON U.S.136 - OVER MISSISSIPPI RIVER - IN CITY OF KEOKUK

SCALES: As Noted

The standard specifications, series of 1984 of the Iowa Department of Transportation, shall apply to construction work on this project.

DESIGN NO. 186



880918
0027.05

PROJECT NUMBER
BRF-19-1(3)--38-56
R.O.W. PROJECT NUMBER
PIN
86-56-040-1

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2-13	BRIDGE DESIGN NO. 186

STANDARD ROAD PLANS

IDENT	DATE	IDENT	DATE
RS-63C	5-13-86		
RS-62	11-5-85		

STANDARD BRIDGE PLANS

STANDARD	ISSUED	REVISED

REVISIONS

Iowa Department of Transportation

AUTHORIZED FOR LETTING

DEPUTY CHIEF ENGINEER DATE

I hereby certify that this plan was prepared under my supervision and that engineering decisions with regard to the design were made by me or by other duly Registered Professional Engineers under the laws of the State of Iowa.

Name

Iowa Registration No. 4449 Date 4/14/88

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED

FOR THE DIVISION ADMINISTRATOR DATE

LETTING DATE STATE CONTROL SECTION NUMBER 56-0100 FILE NO. 26723 LEE COUNTY PROJECT NO. BRF-19-1(3)--38-56 SHEET NO. 1

GENERAL NOTES

THIS DESIGN IS FOR PLACING BRIDGE FLOOR OVERLAY ON THE EXISTING 3340' X 64' CONTINUOUS WELDED GIRDER BRIDGE, ORIGINAL DESIGN NO. 282 LEE COUNTY. PLANS OF THE EXISTING STRUCTURE MAY BE OBTAINED AT THE AMES OFFICE OF THE HIGHWAY DIVISION.

CONSTRUCTION SHALL BE DONE IN STAGES WITH AT LEAST ONE LANE OF TRAFFIC IN EACH ROADWAY MAINTAINED AT ALL TIMES IN ACCORDANCE WITH THE "TRAFFIC CONTROL PLAN" NOTE.

THE USE OF LATEX-MODIFIED CONCRETE AS PER SECTION 2413.02B OF THE STANDARD SPECIFICATIONS IS PROHIBITED ON THIS JOB.

IT IS THE INTENT OF THIS DESIGN THAT ONLY BRIDGE FLOOR OVERLAY IS TO BE PLACED. NO BRIDGE FLOOR REPAIR WORK IS TO BE DONE.

EXISTING BRIDGE FLOOR CONCRETE SHALL BE REMOVED TO A CONSTANT DEPTH OF 1/4 INCH BELOW THE EXISTING SURFACE EXCEPT WITHIN 75 FEET OF EXPANSION JOINTS AND AT FLOOR DRAINS AS SHOWN ON THESE PLANS.

THE PRICE BID FOR STRUCTURAL STEEL SHALL INCLUDE THE COST OF FURNISHING AND INSTALLING THE 1 1/4" RAISE PLATES, 1 1/4" X 1 3/16" SPACER PLATES AND REQUIRED STAINLESS STEEL BOLTS AT 8 OF THE EXISTING 2' X 3' DECK DRAINS.

THE EIGHT GRATE SECTIONS WHICH WILL HAVE THE NEW 1 1/4" X 1 3/16" SPACER PLATES WELDED TO THEM ARE TO BE RE-GALVANIZED UPON COMPLETION OF THE WELDING OPERATIONS. COST OF GALVANIZING TO BE CONSIDERED INCIDENTAL.

FAINT LINES ON PRINTS AND ON TRACINGS INDICATE EXISTING PORTION OF THE BRIDGE.

SURFACE RAISE, AS SHOWN ON THE PLANS, SHALL BE CONSIDERED A MINIMUM. IN ORDER TO LIMIT THE ADDITIONAL DEAD LOAD, SURFACE RAISE SHALL BE RESTRICTED TO A MAXIMUM OF 1/2" MORE THAN SHOWN ON THE PLANS. PROFILE MAY BE ADJUSTED TO THE EXTENT POSSIBLE WITHIN THESE LIMITS.

QUANTITY OF "CONCRETE SEALER, AS PER PLAN" IN SQUARE FEET, TO BE PAID FOR WILL BE COMPUTED FROM MEASUREMENTS OF AREAS ACTUALLY COVERED AND ARTICLE 1109.03 SHALL NOT APPLY. PLAN QUANTITY IS BASED ON P.C. CONCRETE FLOOR OVERLAY. See "Concrete Sealer Area" detail on this sheet.

PRESENT FLOOR THICKNESS IS ABOUT 8 1/2 INCHES. THE CONTRACTOR WILL BE REQUIRED TO EXERCISE CARE IN REMOVING CONCRETE IN ORDER TO PREVENT UNNECESSARY UNBONDING OF REINFORCING STEEL.

ALL DIMENSIONS AND DETAILS SHOWN ON THESE PLANS PERTINENT TO NEW CONSTRUCTION SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE STARTING CONSTRUCTION.

REMOVALS AND DISPOSALS OF ITEMS SCHEDULED FOR REMOVAL SHALL BE IN ACCORDANCE WITH SECTION 2419 OF THE SPECIFICATIONS. ANY DAMAGE TO ANY STEEL OR CONCRETE NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED BY HIM AT NO EXTRA COST TO THE STATE.

All costs of furnishing and installing the neoprene gaskets at the 2' x 3' drain boxes shall be considered incidental to other costs and no direct payment will be made

TRAFFIC CONTROL PLAN

108-23
11-10-83

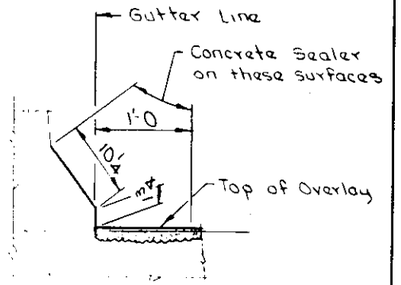
1. THROUGH TRAFFIC WILL BE MAINTAINED ON THE PROJECT AT ALL TIMES.
2. TRAFFIC CONTROL ON THIS PROJECT SHALL BE IN ACCORDANCE WITH LAYOUTS CONTAINED IN THE PLANS AND APPLICABLE STANDARD ROAD PLANS. FOR ADDITIONAL COMPLEMENTARY INFORMATION, REFER TO CURRENT SUPPLEMENTAL SPECIFICATION FOR TRAFFIC CONTROLS.
3. WHEN SPECIAL LAYOUT SHEET IS NOT IN EFFECT, STANDARD ROAD PLAN RS-62 SHALL BE USED FOR UNFINISHED WORK OR WORK WITHIN 12 FEET OF THE TRAVELED WAY, AND STANDARD ROAD PLAN RS-63C FOR WORK IN PROGRESS THAT ENCROACHES ON THE TRAVELED WAY.
4. ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, MAINTAINED AND REMOVED BY THE CONTRACTOR.
5. WHERE POSSIBLE, ALL POST MOUNTED SIGNS SHALL BE PLACED A MINIMUM OF TWO FEET CLEAR OF THE SHOULDER.
6. THE LOCATION FOR STORAGE OF EQUIPMENT BY THE CONTRACTOR DURING NON-WORKING HOURS WILL BE AS APPROVED BY THE ENGINEER IN CHARGE OF CONSTRUCTION.
7. THE ENGINEER MAY REQUIRE MODIFICATION OF, OR ADDITIONS TO, PAVEMENT MARKING DETAILS SHOWN. CONFLICTING PERMANENT EDGELINES OR LANE LINES SHALL BE REMOVED AND REPLACED WITH APPROPRIATE TEMPORARY LINES. AS APPLICABLE, PERMANENT EDGELINES AND LANELINES SHALL BE RESTORED BEFORE THE ROADWAY IS RETURNED TO NORMAL TRAFFIC.
8. PROPOSED SIGN SPACING MAY BE MODIFIED, AS APPROVED BY THE ENGINEER, TO MEET EXISTING FIELD RESTRICTIONS OR TO PREVENT OBSTRUCTION OF THE MOTORIST'S VIEW OF PERMANENT SIGNING.
9. PROPOSED CHANGES IN THE TRAFFIC CONTROL PLAN (INCLUDES LAYOUT SHEET) SHALL BE REVIEWED WITH THE OFFICE OF CONSTRUCTION BEFORE CHANGES ARE MADE.
10. THE BID ITEM "TRAFFIC CONTROL" SHALL INCLUDE THE COST OF ALL TRAFFIC CONTROL MEASURES REQUIRED OF THE CONTRACTOR EXCEPT THOSE WHICH ARE SEPARATED BID ITEMS OR ARE INCIDENTAL TO OTHER BID ITEMS.

TOTAL ESTIMATED QUANTITIES

Item N°	Item	Unit	Quantity
1	Bridge Floor Overlay	Sq.Yd.	22974
2	Structural Steel	Lbs.	675
3	Concrete Sealer as per Plan	Sq.Ft	26880
4	Pavement Markings	Sta.	240.5
5	Traffic Control	L.S	Lump Sum

Item N° ESTIMATE REFERENCE INFORMATION

4 Includes 78.5 Sta. removal of pavement markings, 72.0 Sta. of Yellow temporary and permanent pavement markings and 90.0 Sta. of White temporary and permanent pavement markings.



CONCRETE SEALER AREA

BRIDGE FLOOR OVERLAY QUANTITIES

Location	Unit	Amount
Unit # 1	Sq.Yd.	2151
Unit # 2	Sq.Yd.	7716
Unit # 3	Sq.Yd.	4493
Unit # 4	Sq.Yd.	4494
Unit # 5	Sq.Yd.	4120
Total (Sq.Yd.)		22974

CONCRETE SEALER QUANTITIES

Location	Unit	Amount
Unit # 1	Sq.Ft.	2535
Unit # 2	Sq.Ft.	9000
Unit # 3	Sq.Ft.	5260
Unit # 4	Sq.Ft.	5260
Unit # 5	Sq.Ft.	4825
Total (Sq.Ft.)		26880

LOCATION:
U.S. # 136 Over
Mississippi River at
Keokuk, Iowa - Hamilton, Illinois
Lee County, Iowa
T65N R4W Section 31
Hancock County, Illinois

SPECIFICATIONS:

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION SPECIFICATION, SERIES OF 1984, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1983.

STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 10, ASTM A-36.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA

DATE 4-12-88 — LeRoy Phillips — REG. NO. 4138

LE ROY PHILLIPS

Design for Bridge Floor Overlay to
3340 x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
MISSISSIPPI RIVER BRIDGE
Keokuk, Iowa - Hamilton, Illinois

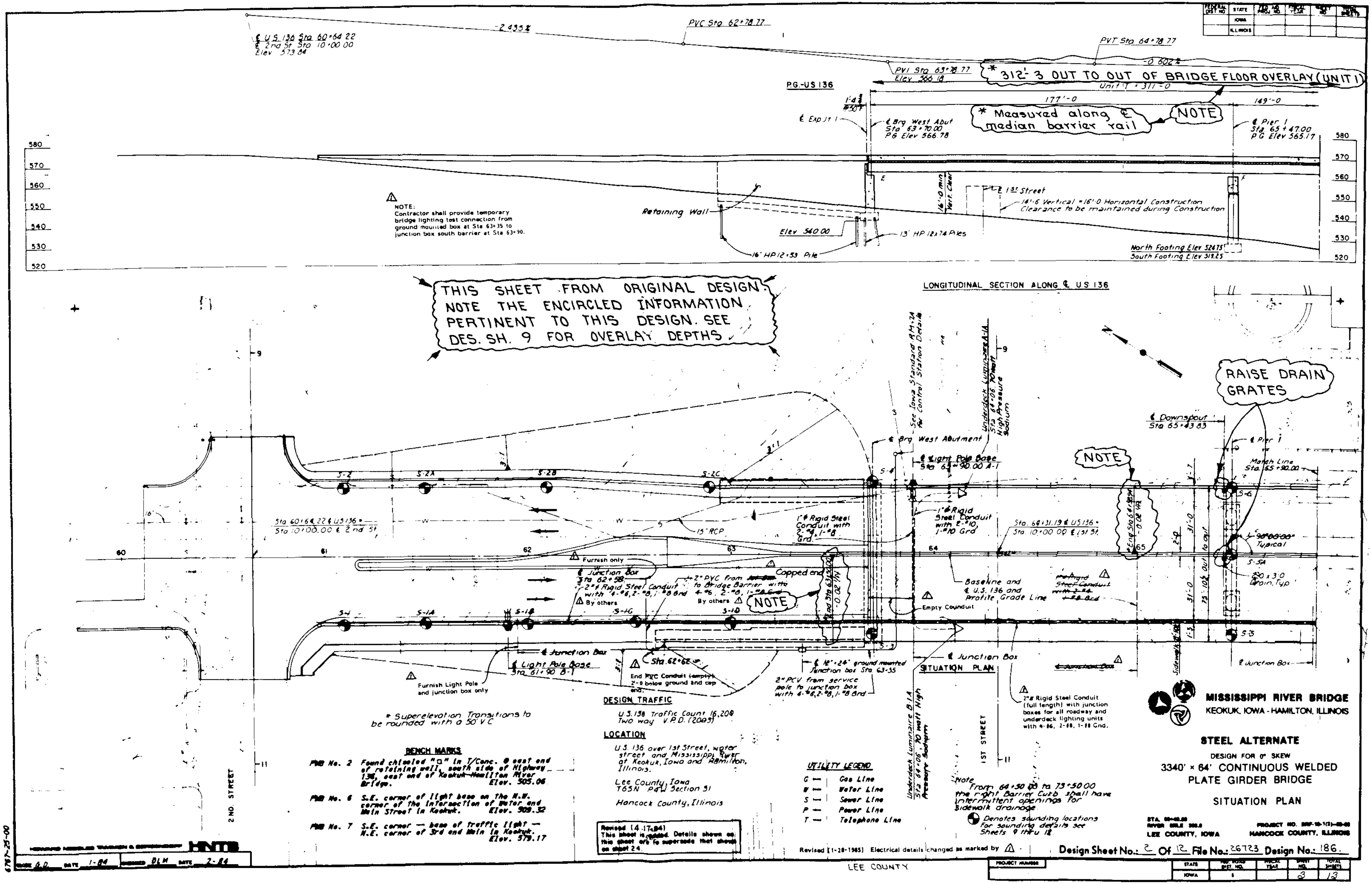
Sta. 80 +40.0', River Mile 363.9 March 1986

LEE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION

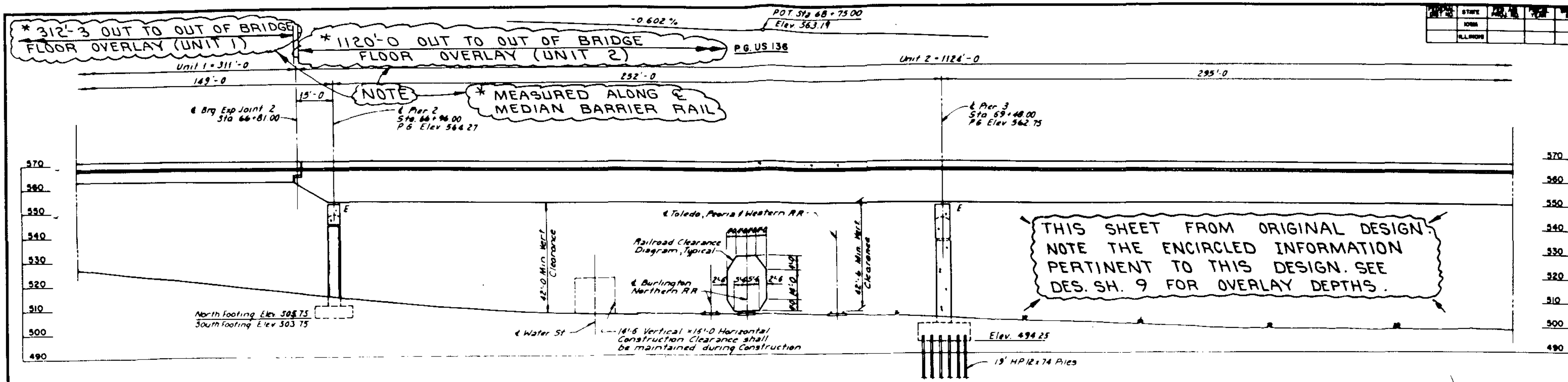
Design Sheet No.: 1 Of 12 File No.: 26723 Design No.: 186

DESIGNED BY LeRoy Orgeberg — TRACED BY Doug Waring
DETAILED BY Doug Waring — CHECKED BY Ron Welch
Section Leader L. Phillips
LEE COUNTY

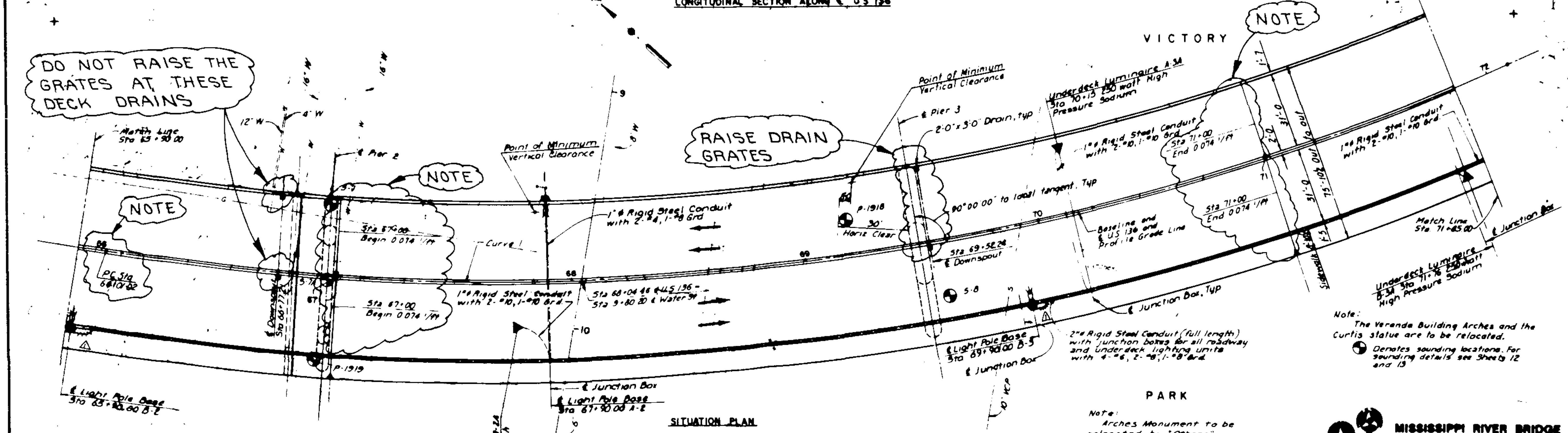
PROJECT NUMBER	STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
BRF-19-1 (3)--38-56	IOWA	7		2	13



PVC Sta 62+78.77
-2.455%
℄ U.S. 136 Sta 60+64.22
℄ 2nd St. Sta 10+00.00
Elev 573.84
PVT Sta 64+78.77
-0.602%
PVI Sta 63+78.77
Elev 566.18
* 312'-3 OUT TO OUT OF BRIDGE FLOOR OVERLAY (UNIT I)
Unit I = 311'-0
P.G.-US 136
177'-0
149'-0
* Measured along ℄ median barrier rail
NOTE
℄ Exp Jt 1
℄ Brg West Abut
Sta 63+70.00
P.G. Elev 566.78
℄ Pier 1
Sta 65+47.00
P.G. Elev 565.17
580
570
560
550
540
530
520
NOTE:
Contractor shall provide temporary bridge lighting test connection from ground mounted box at Sta 63+35 to junction box south barrier at Sta 63+90.
Retaining Wall
Elev 540.00
13' HP 12x74 Piles
16' HP 12x53 Pile
16'-0 min Vert. Clear
℄ 1st Street
14'-6 Vertical x 16'-0 Horizontal Construction Clearance to be maintained during Construction
North Footing Elev 524.75
South Footing Elev 519.25
LONGITUDINAL SECTION ALONG ℄ US 136
THIS SHEET FROM ORIGINAL DESIGN. NOTE THE ENCIRCLED INFORMATION PERTINENT TO THIS DESIGN. SEE DES. SH. 9 FOR OVERLAY DEPTHS.
RAISE DRAIN GRATES
See Iowa Standard RM-24 for Control Station Details
Underdeck Luminaire A-1A
Sta 64+06 70 watt High Pressure Sodium
℄ Downspout
Sta 65+43.83
℄ Brg West Abutment
℄ Light Pole Base
Sta 63+90.00 A-1
NOTE
℄ Pier 1
Match Line
Sta 65+90.00
S-2
S-2A
S-2B
S-2C
S-4
S-6
S-5A
S-5
S-1
S-1A
S-1B
S-1C
S-1D
S-3
Sta 60+64.22 ℄ US 136
Sta 10+00.00 ℄ 2nd St
15" RCP
1" Rigid Steel Conduit with 2-#4, 1-#8 Grd.
1" Rigid Steel Conduit with 2-#10, 1-#10 Grd
Sta 64+31.19 ℄ US 136
Sta 10+00.00 ℄ 1st St.
Typical
20x30 Drain, Typ
60
61
62
63
64
65
Furnish only
℄ Junction Box
Sta 62+58
2" Rigid Steel Conduit with 4-#6, 2-#8, 1-#8 Grd
By others
2" PVC from Junction Box to Bridge Barrier with 4-#6, 2-#8, 1-#8 Grd
By others
Capped end
NOTE
Baseline and ℄ U.S. 136 and Profile Grade Line
Empty Conduit
℄ Junction Box
℄ Light Pole Base
Sta 61+90 B-1
Furnish Light Pole and junction box only
Sta 62+62
End PVC Conduit (empty) 2'-0 below ground and cap end.
℄ 18"x24" ground mounted junction box Sta 63+35
2" PCV from service pole to junction box with 4-#6, 2-#8, 1-#8 Grd
℄ Junction Box
SITUATION PLAN
2" Rigid Steel Conduit (full length) with junction boxes for all roadway and underdeck lighting units with 4-#6, 2-#8, 1-#8 Gnd.
* Superelevation Transitions to be rounded with a 50' V.C.
DESIGN TRAFFIC
U.S. 136 Traffic Count 16,200 Two way V.P.D. (2005)
LOCATION
U.S. 136 over 1st Street, water street and Mississippi River at Keokuk, Iowa and Hamilton, Illinois.
Lee County, Iowa
T65N R4W Section 31
Hancock County, Illinois
BENCH MARKS
PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06
PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32
PMB No. 7 S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk. Elev. 579.17
UTILITY LEGEND
G — Gas Line
W — Water Line
S — Sewer Line
P — Power Line
T — Telephone Line
Underdeck Luminaire B-1A
Sta 64+06 70 watt High Pressure Sodium
1ST STREET
2 ND. STREET
Note
From 64+30.00 to 73+50.00 the right Barrier Curb shall have intermittent openings for sidewalk drainage
Denotes sounding locations for sounding details see Sheets 9 thru 12
Revised (4-17-84) This sheet is added. Details shown on this sheet are to supersede that shown on sheet 24.
Revised (1-28-1985) Electrical details changed as marked by △
MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS
STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
SITUATION PLAN
LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS
HNTB
LEE COUNTY
Design Sheet No.: 2 Of 12 File No.: 26723 Design No.: 186.
IOWA
ILLINOIS
3
13



LONGITUDINAL SECTION ALONG ℄ U.S. 136



SITUATION PLAN

Note: The Veranda Building Arches and the Curtis statue are to be relocated.

Denotes sounding locations. For sounding details see Sheets 12 and 13

Note: Arches Monument to be relocated by "Others".

* Superelevation transitions to be rounded with a 50' V.C.

BENCH MARKS

PBM No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PBM No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 508.32

PBM No. 7 S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk. Elev. 519.17

CURVE DATA

Curve 1
P. I. Sta. 69+14.85
Δ = 33°31'48.3"
D = 5°30'00.0"
T = 313.83'
L = 609.64'
E = 46.24'
R = 1041.74'

Revision (5-31-83) Telephone conduit base deleted as marked by △.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

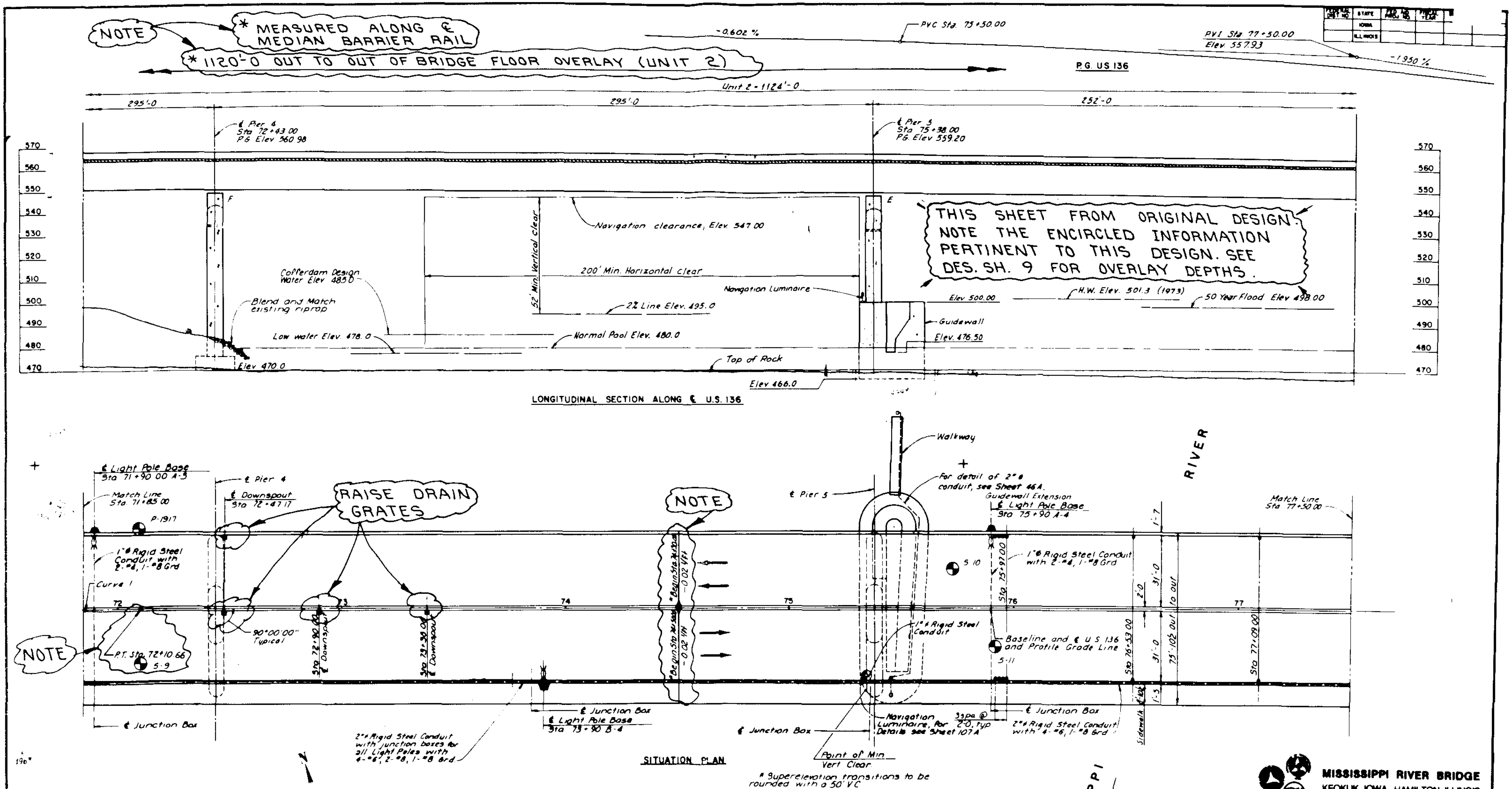
LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

HNTB — DLM — 12-82

Design Sheet No.: 3 Of 12 File No.: 26723 Design No.: 186

LEE COUNTY

6767-25-00



NOTE
* MEASURED ALONG ℄ MEDIAN BARRIER RAIL
* 1120'-0 OUT TO OUT OF BRIDGE FLOOR OVERLAY (UNIT 2)
-0.602 %
PVC Sta. 75+50.00
PVI Sta. 77+50.00
Elev. 557.93
-1.950 %
P.G. US 136
Unit 2 = 1124'-0
295'-0
295'-0
252'-0
℄ Pier 4
Sta. 72+43.00
P.G. Elev. 560.98
℄ Pier 5
Sta. 75+38.00
P.G. Elev. 559.20
THIS SHEET FROM ORIGINAL DESIGN. NOTE THE ENCIRCLED INFORMATION PERTINENT TO THIS DESIGN. SEE DES. SH. 9 FOR OVERLAY DEPTHS.
Navigation clearance, Elev. 547.00
52' Min. Vertical clear
200' Min. Horizontal clear
Cofferdam Design Water Elev. 485.0
Navigation Luminaire
2% Line Elev. 495.0
Blend and Match existing riprap
Low water Elev. 478.0
Normal Pool Elev. 480.0
Elev. 500.00
H.W. Elev. 501.3 (1973)
50 Year Flood Elev. 498.00
Guidewall
Elev. 476.50
Top of Rock
Elev. 470.0
Elev. 466.0
570
560
550
540
530
520
510
500
490
480
470
LONGITUDINAL SECTION ALONG ℄ U.S. 136
Walkway
RIVER
℄ Light Pole Base
Sta. 71+90.00 A-3
℄ Pier 4
Match Line
Sta. 71+85.00
℄ Downspout
Sta. 72+47.17
RAISE DRAIN GRATES
NOTE
℄ Pier 5
For detail of 2" ø conduit, see Sheet 46A.
Guidewall Extension
℄ Light Pole Base
Sta. 75+90 A-4
Match Line
Sta. 77+50.00
P-1917
1" ø Rigid Steel Conduit with 2-#4, 1-#8 Grd
Curve 1
S-10
1" ø Rigid Steel Conduit with 2-#4, 1-#8 Grd
72
74
75
76
77
90°00'00" Typical
Sta. 72+90.00 ℄ Downspout
Sta. 73+30.00 ℄ Downspout
* Begin Sta. -0.02 Ver
* Begin Sta. -0.02 Ver
1" ø Rigid Steel Conduit
Baseline and ℄ U.S. 136 and Profile Grade Line
S-11
NOTE
P.T. Sta. 72+10.66
S-9
Sta. 75+97.00
Sta. 76+53.00
Sta. 77+09.00
1'-7
2'-0
31'-0
31'-0
75'-10½ out to out
1'-3
℄ Junction Box
℄ Junction Box
℄ Light Pole Base
Sta. 73+90 B-4
℄ Junction Box
Navigation Luminaire, for Details see Sheet 107A
3 spa @ 2'-0, typ.
℄ Junction Box
2" ø Rigid Steel Conduit with 4-#6, 1-#8 Grd
Sidewalk
2" ø Rigid Steel Conduit with junction boxes for all Light Poles with 4-#6, 2-#8, 1-#8 Grd
SITUATION PLAN
Point of Min. Vert. Clear
* Superelevation transitions to be rounded with a 50' VC
MISSISSIPPI

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of ~~Keokuk-Hamilton River~~ Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

CURVE DATA

Curve 1
P. I. Sta. 69+14.85
Δ = 33°31'48.3"
D = 5°30'00.0"
T = 313.83
L = 609.64
E = 46.24
R = 1041.74'

LEGEND:
■ - 2'0" x 3'0" Drain
● - 6" x 10" Drain
Denotes sounding location. For sounding details see Sheets 13 and 14.

Revised (12-8-83)
This sheet is added. Details shown on this sheet are to supersede that shown on sheet 26.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

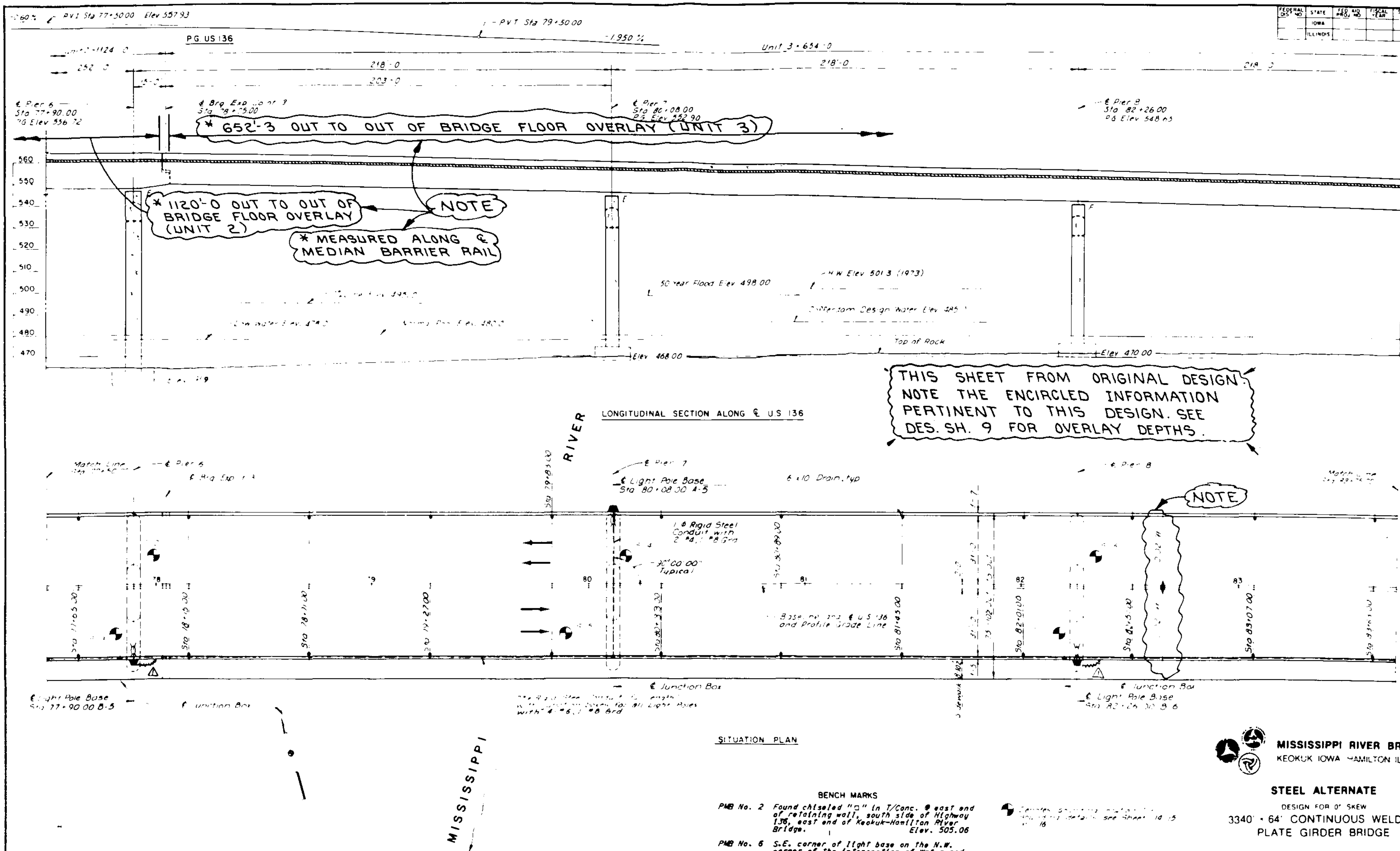
SITUATION PLAN

LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

Design Sheet No.: 4 Of 12 File No.: 26733 Design No.: 186

IOWA	1		5	13

LEE COUNTY


PVI Sta 77+50.00 Elev 557.93
PVT Sta 79+50.00
PG US 136
-1.950 %
Unit 3 = 654'-0
252'-0
218'-0
218'-0
218'-0
203'-0
℄ Pier 6
Sta 77+90.00
PG Elev 556.72
℄ Brg Exp Joint 3
℄ Pier 7
Sta 80+08.00
PG Elev 552.90
℄ Pier 8
Sta 82+26.00
PG Elev 548.65
* 652'-3 OUT TO OUT OF BRIDGE FLOOR OVERLAY (UNIT 3)
* 1120'-0 OUT TO OUT OF BRIDGE FLOOR OVERLAY (UNIT 2)
NOTE
* MEASURED ALONG ℄ MEDIAN BARRIER RAIL
50 Year Flood Elev 498.00
H.W. Elev 501.3 (1973)
Top of Rock
Elev 468.00
Elev 470.00
THIS SHEET FROM ORIGINAL DESIGN. NOTE THE ENCIRCLED INFORMATION PERTINENT TO THIS DESIGN. SEE DES. SH. 9 FOR OVERLAY DEPTHS.
LONGITUDINAL SECTION ALONG ℄ US 136
RIVER
MISSISSIPPI
Match Line
℄ Pier 6
℄ Brg Exp Jt 3
℄ Pier 7
℄ Light Pole Base
Sta 80+08.00 A-5
6 x 10 Drain, typ
℄ Pier 8
NOTE
1" ø Rigid Steel Conduit with 2 #4 1 #8 Grd
30°00'00" Typical
Baseline and ℄ US 136 and Profile Grade Line
℄ Light Pole Base
Sta 77+90.00 B-5
℄ Junction Box
℄ Junction Box
℄ Light Pole Base
Sta 82+26.00 B-6
SITUATION PLAN

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

Revision (5-31-83)
Telephone conduit base deleted as marked by △

MISSISSIPPI RIVER BRIDGE
KEOKUK IOWA HAMILTON ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE G.D. CHECKED DLM DATE 12-82

Design Sheet No.: 5 Of 12 File No.: 26723 Design No.: 186

LEE COUNTY

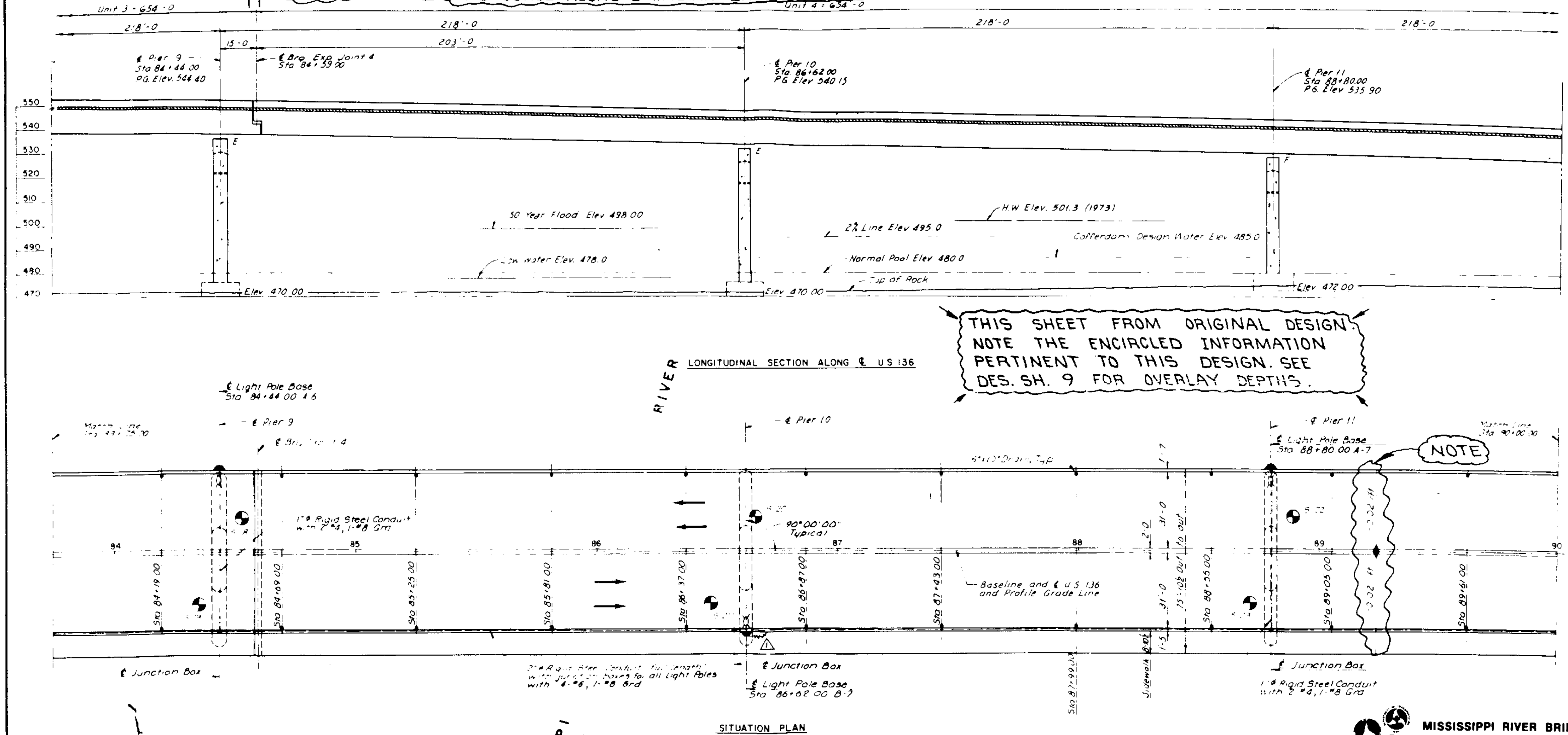
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA			6	13

6767-25-00

* 652'-3 OUT TO OUT OF BRIDGE FLOOR OVERLAY (UNIT 3)

* 652'-4 OUT TO OUT OF BRIDGE FLOOR OVERLAY (UNIT 4)

NOTE — * MEASURED ALONG ℄ MEDIAN BARRIER RAIL



POT Sta 87+50.00
Elev 538.43
-1.950 %
P.G. US136
Unit 3 = 654'-0
Unit 4 = 654'-0
218'-0
218'-0
218'-0
218'-0
15'-0
203'-0
℄ Pier 9
Sta 84+44.00
P.G. Elev. 544.40
℄ Brg. Exp. Joint 4
Sta 84+59.00
℄ Pier 10
Sta 86+62.00
P.G. Elev 540.15
℄ Pier 11
Sta 88+80.00
P.G. Elev 535.90
50 Year Flood Elev 498.00
H.W. Elev. 501.3 (1973)
2% Line Elev 495.0
Cofferdam Design Water Elev 485.0
Normal Pool Elev 480.0
Top of Rock
Elev 470.00
Elev 470.00
Elev 472.00
LONGITUDINAL SECTION ALONG ℄ US 136
RIVER
℄ Light Pole Base
Sta 84+44.00 A-6
℄ Pier 9
℄ Pier 10
℄ Pier 11
℄ Light Pole Base
Sta 88+80.00 A-7
NOTE
1"⌀ Rigid Steel Conduit with 2 #4, 1-#8 Grd
90°00'00" Typical
Baseline and ℄ US 136 and Profile Grade Line
84
85
86
87
88
89
90
Sta 84+19.00
Sta 84+09.00
Sta 85+25.00
Sta 85+81.00
Sta 86+37.00
Sta 86+87.00
Sta 87+43.00
Sta 88+55.00
Sta 89+05.00
Sta 89+61.00
℄ Junction Box
℄ Junction Box
℄ Light Pole Base
Sta 86+62.00 B-7
℄ Junction Box
1"⌀ Rigid Steel Conduit with 2 #4, 1-#8 Grd
Sidewalk
SITUATION PLAN
MISSISSIPPI

THIS SHEET FROM ORIGINAL DESIGN. NOTE THE ENCIRCLED INFORMATION PERTINENT TO THIS DESIGN. SEE DES. SH. 9 FOR OVERLAY DEPTHS.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. ℄ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

Denotes sounding location. For sounding details see Sheets 16 and 17

Revision (5-31-83) Telephone conduit base deleted as marked by △.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
SITUATION PLAN

STA 80+40.00
RIVER MILE 363.9
LEE COUNTY, IOWA
PROJECT NO. BRF-19-1(3)--39-56
HANCOCK COUNTY, ILLINOIS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

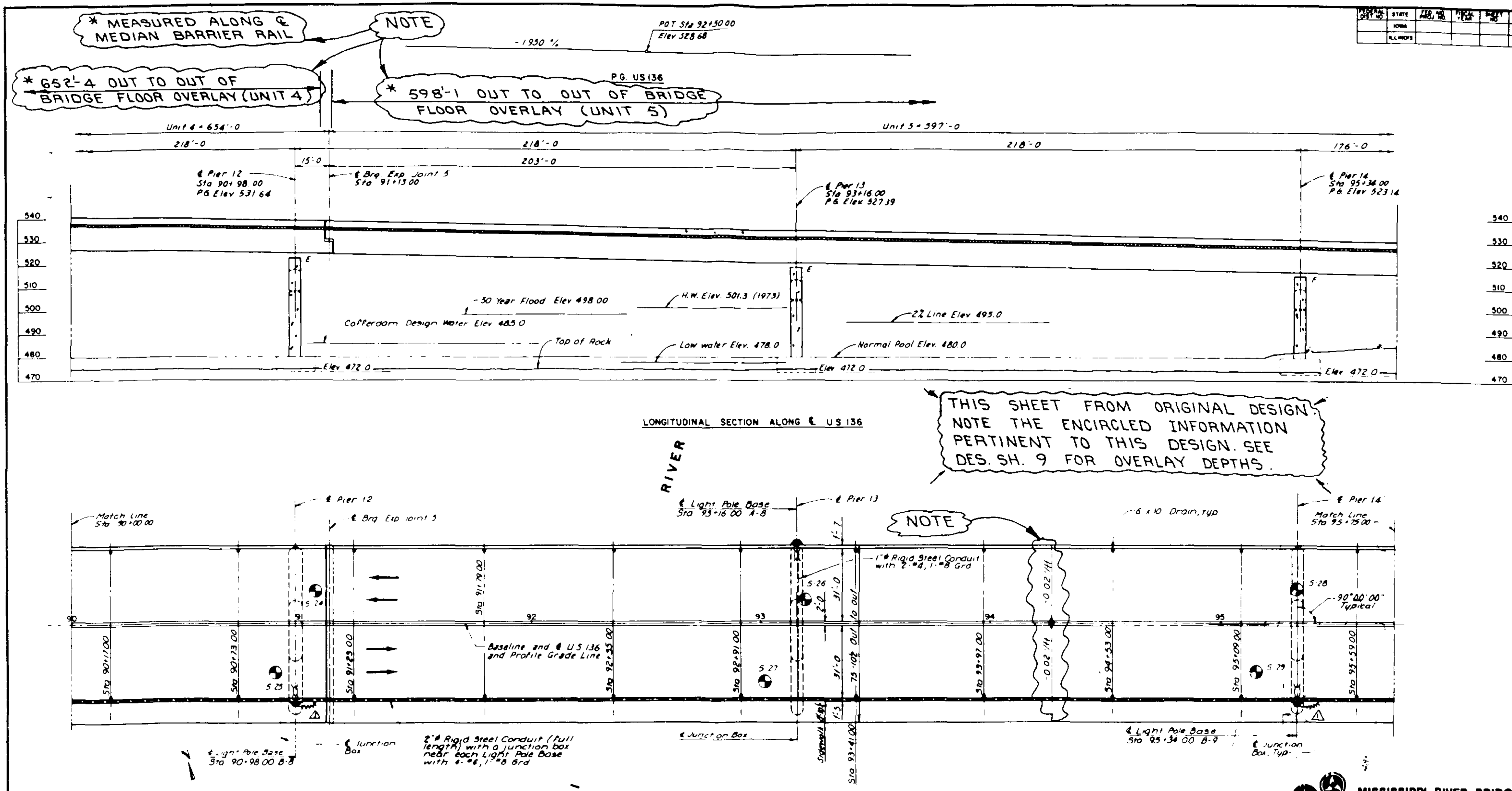
MADE G.J. DATE ___ CHECKED DLM DATE 12-82

Design Sheet No.: 6 Of 12 File No.: 26723 Design No.: 186

LEE COUNTY

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	6		7	13

6767-25-00


* MEASURED ALONG ℄ MEDIAN BARRIER RAIL
NOTE
* 652'-4 OUT TO OUT OF BRIDGE FLOOR OVERLAY (UNIT 4)
* 598'-1 OUT TO OUT OF BRIDGE FLOOR OVERLAY (UNIT 5)
P.G. US 136
P.O.T. Sta 92+50.00
Elev 528.68
-1.950 %
Unit 4 = 654'-0
Unit 5 = 597'-0
218'-0
218'-0
218'-0
176'-0
15'-0
203'-0
℄ Pier 12 Sta 90+98.00 P.G. Elev 531.64
℄ Brg. Exp. Joint 5 Sta 91+13.00
℄ Pier 13 Sta 93+16.00 P.G. Elev 527.39
℄ Pier 14 Sta 95+34.00 P.G. Elev 523.14
50 Year Flood Elev 498.00
H.W. Elev. 501.3 (1973)
2% Line Elev 495.0
Cofferdam Design Water Elev 485.0
Top of Rock
Low water Elev. 478.0
Normal Pool Elev. 480.0
Elev 472.0
THIS SHEET FROM ORIGINAL DESIGN. NOTE THE ENCIRCLED INFORMATION PERTINENT TO THIS DESIGN. SEE DES. SH. 9 FOR OVERLAY DEPTHS.
LONGITUDINAL SECTION ALONG ℄ US 136
RIVER
MISSISSIPPI
Match Line Sta 90+00.00
Match Line Sta 95+75.00
℄ Light Pole Base Sta 93+16.00 A-8
6 x 10 Drain, typ
1"⌀ Rigid Steel Conduit with 2-#4, 1-#8 Grd
NOTE
31'-0
31'-0
10 out
75'-10½ Out
-90°00'00" Typical
Baseline and ℄ US 136 and Profile Grade Line
℄ Junction Box
2"⌀ Rigid Steel Conduit (Full length) with a junction box near each Light Pole Base with 4-#6, 1-#8 Grd
℄ Light Pole Base Sta 90+98.00 B-8
℄ Light Pole Base Sta 95+34.00 B-9
℄ Junction Box, Typ.
SITUATION PLAN
Denotes sounding location for sounding details see Sheets 17, 18 and 19.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

Revision (5-31-83) Telephone conduit base deleted as marked by △.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

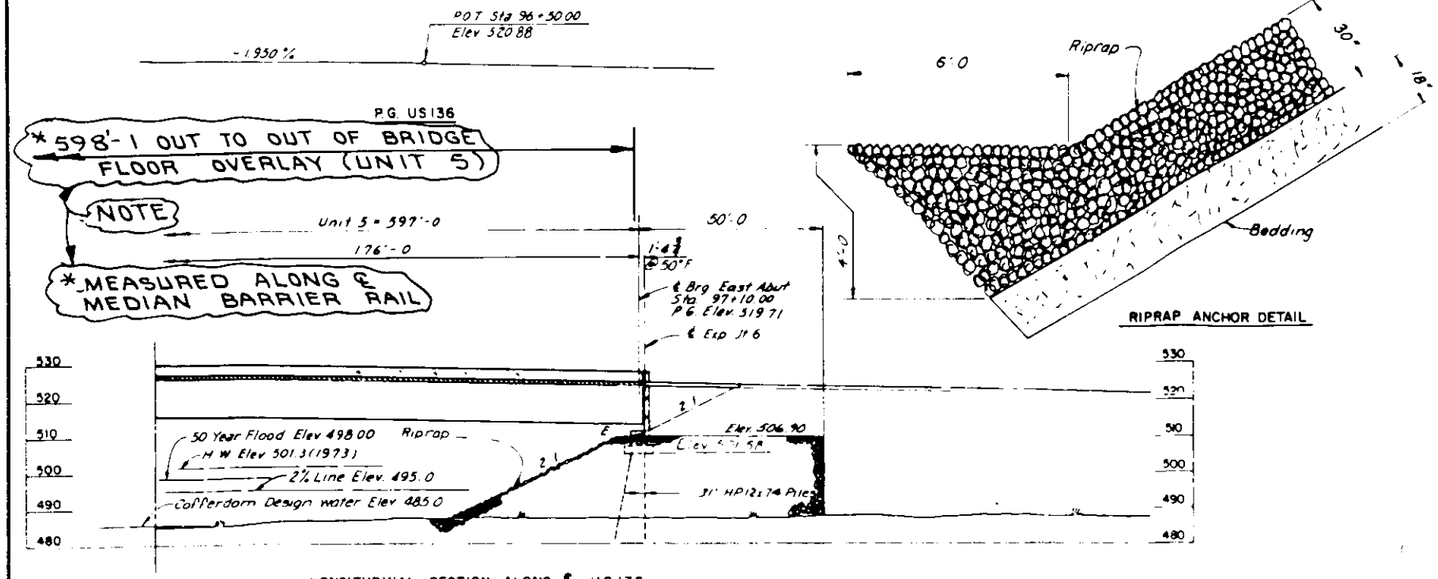
MADE G.D. DATE ___ CHECKED DLM DATE 12-82

Design Sheet No.: 7 Of 12 File No.: 26723 Design No.: 186

6767-25-00

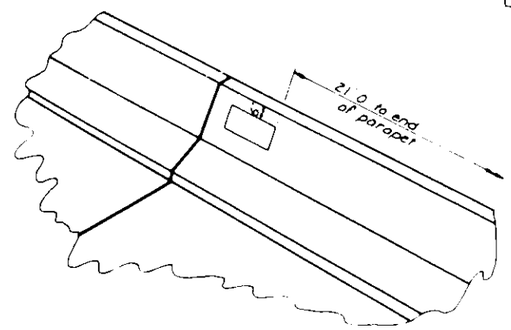
LEE COUNTY

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		8	13

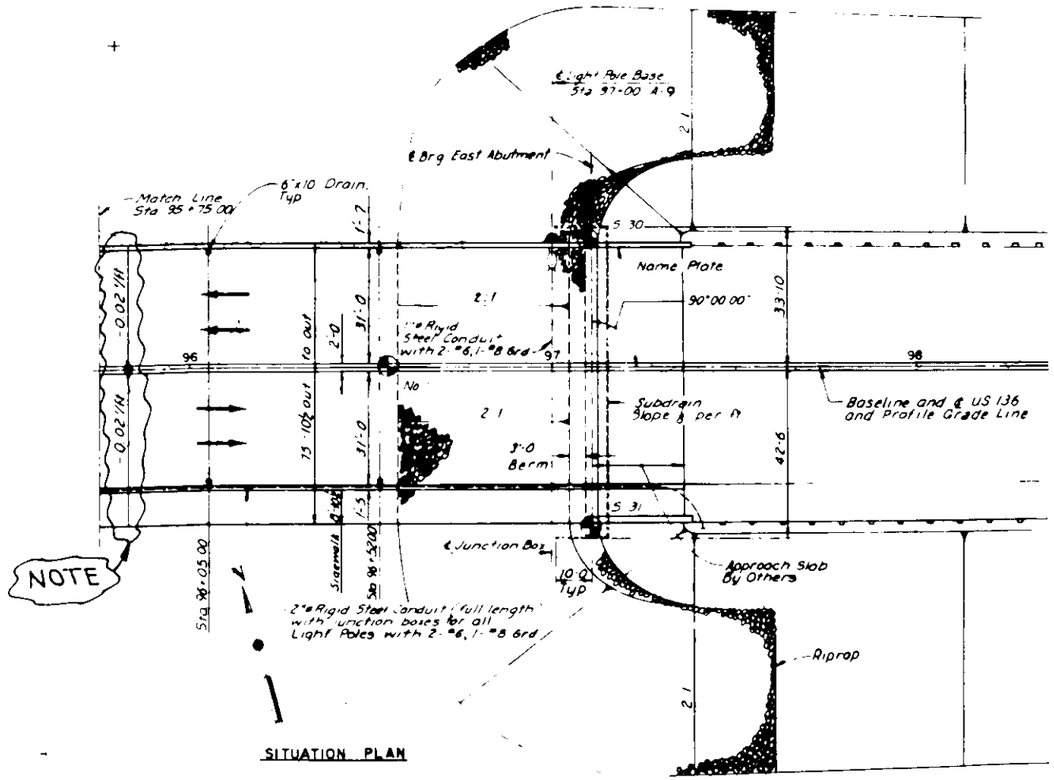


LONGITUDINAL SECTION ALONG ℄ US 136

RIPRAP ANCHOR DETAIL



NAME PLATE LOCATION
(East Abutment, North Barrier Curb)



SITUATION PLAN

Denotes sounding location for sounding data, see Sheet 19

Note
See Special Provisions for the Embankment Cone at the East Abutment

THIS SHEET FROM ORIGINAL DESIGN. NOTE THE ENCIRCLED INFORMATION PERTINENT TO THIS DESIGN. SEE DES. SH. 9 FOR OVERLAY DEPTHS.

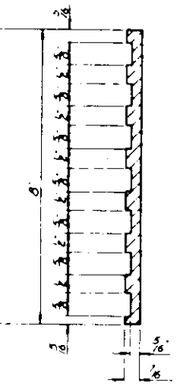
BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

STATION 80+40.00
BUILT IN 198(*)
F.A. RT. 53 SEC 22B
F.A. PROJ. BRF-19-1(3)--38-56
LOADING HS20
STR. NO. 034-9903



*Year bridge is completed

NAME PLATE

Notes
Name plate shall be best quality brass or bronze. Border and lettering shall be raised ¼ inch and square cut not tapered. Polish top surface. Plate shall have four lugs three inches long on back of plate.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

STA. 80+40.00
RIVER MILE 388.0
LEE COUNTY, IOWA
PROJECT NO. BRF-19-1(3)--38-56
HANCOCK COUNTY, ILLINOIS

Design Sheet No.: 8 Of 12 File No.: 26723 Design No.: 186

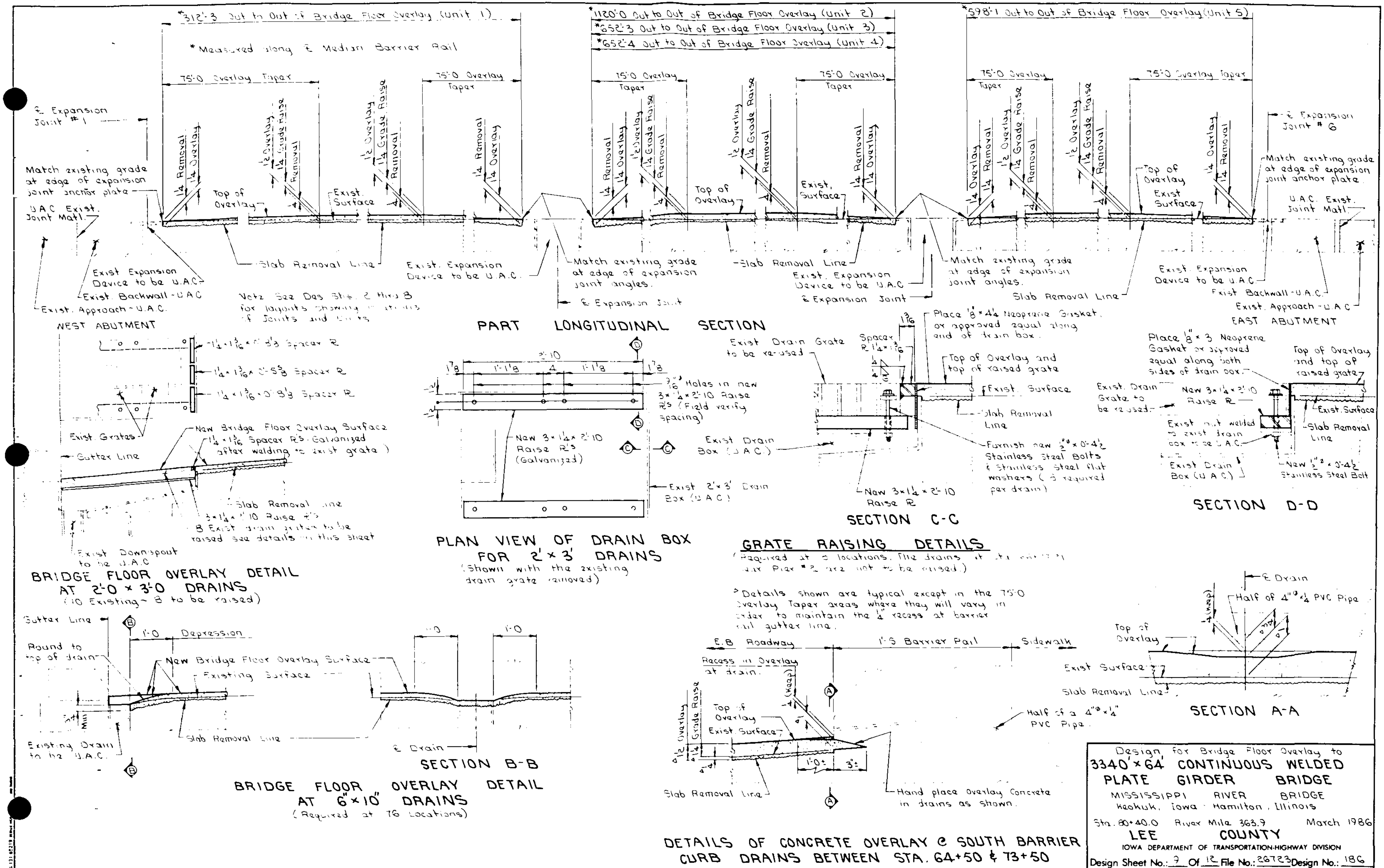
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA	6		9	13

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB
DRAWN GP DATE
CHECKED DLM DATE 12-82

6787-25-00

LEE COUNTY



Design for Bridge Floor Overlay to
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

MISSISSIPPI RIVER BRIDGE
Keokuk, Iowa - Hamilton, Illinois

Sta. 80+40.0 River Mile 363.9 March 1986

LEE COUNTY

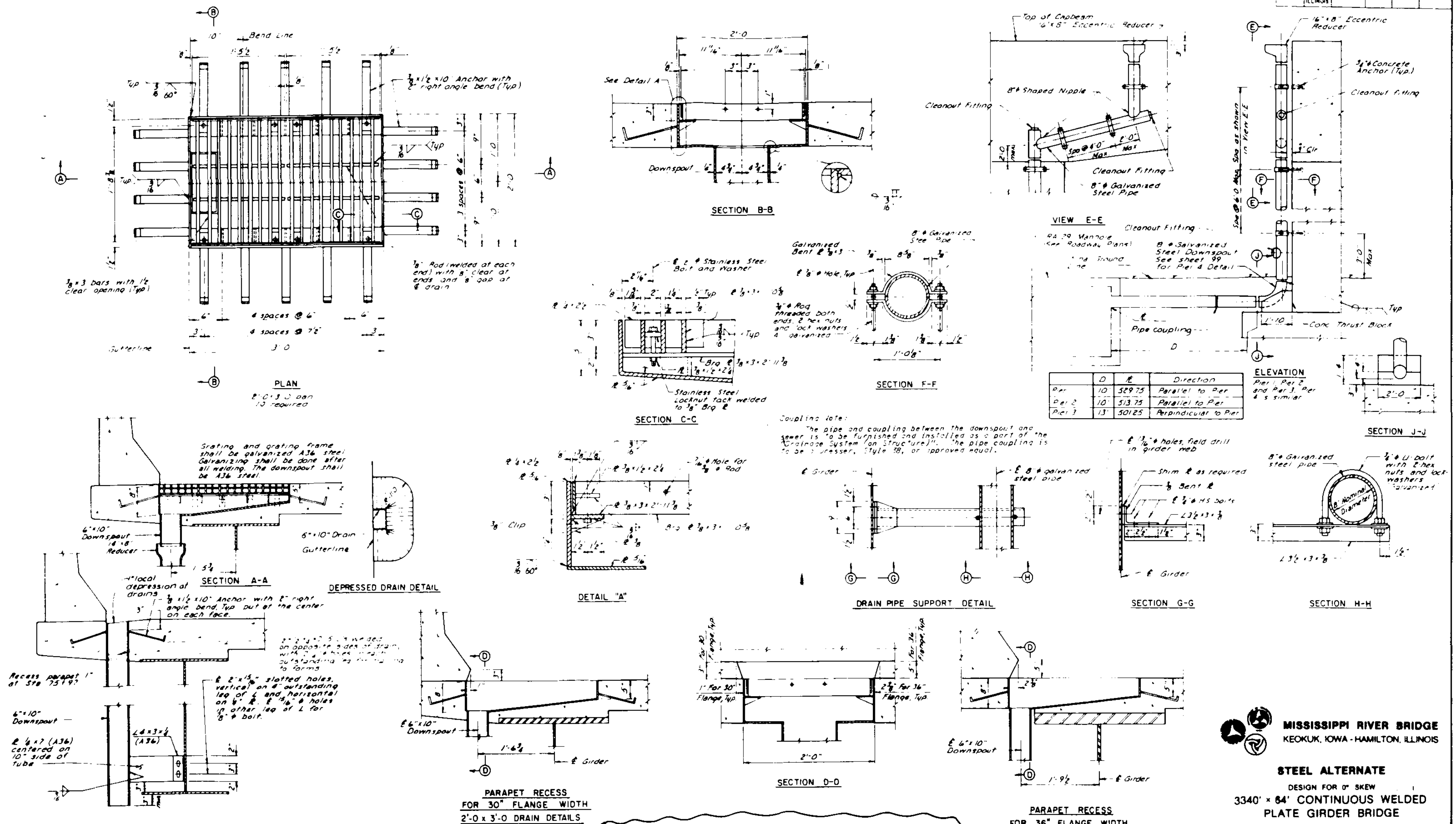
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION

Design Sheet No.: 7 Of 12 File No.: 26723 Design No.: 186

DESIGNED BY LeRoy Ornberg — TRACED BY — DETAILED BY — CHECKED BY Ron Welch

LEE COUNTY

STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		10	1[illegible]



THIS SHEET FROM ORIGINAL DESIGN TO SHOW EXISTING DRAIN BOX AND DRAIN GRATE DETAILS.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

DRAINAGE DETAILS

LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

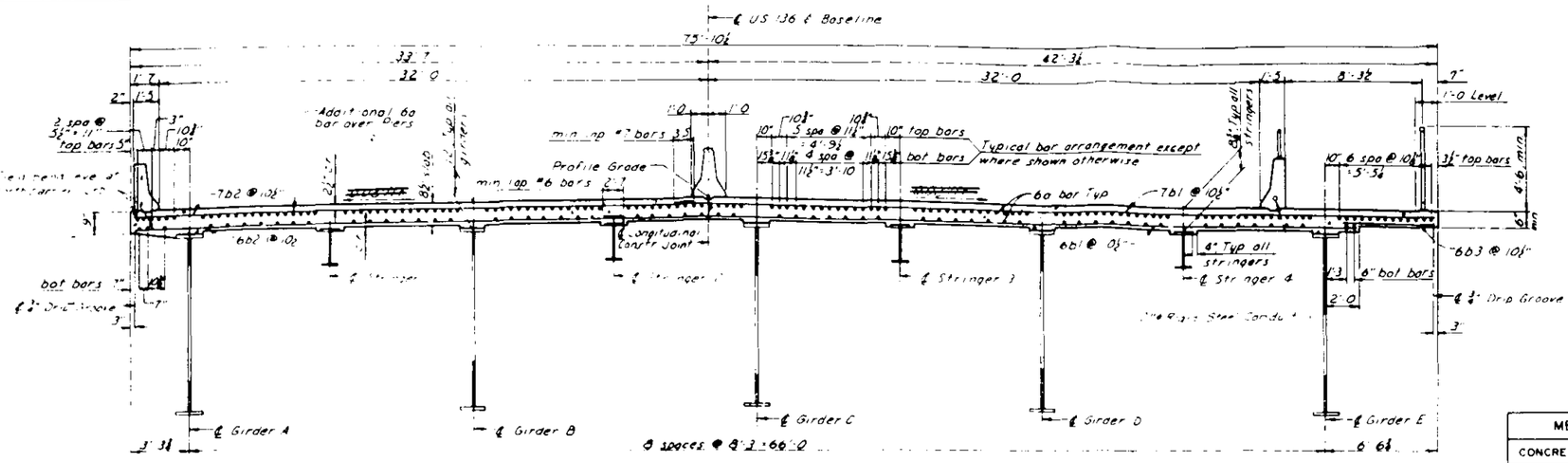
MADE JEL DATE 6-82 CHECKED LCY DATE 7-82

Design Sheet No.: 10 Of 12 File No.: 26723 Design No.: 186

LEE COUNTY

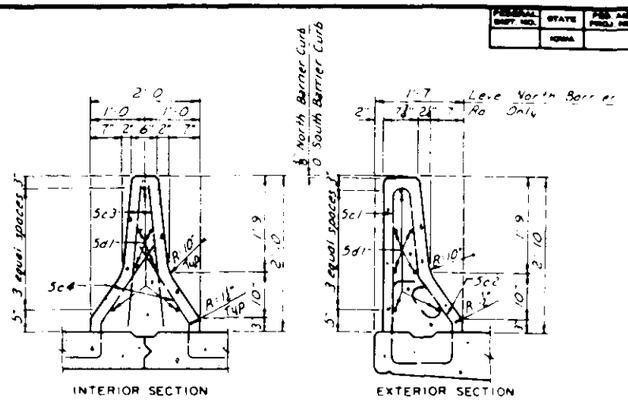
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		11	13

6767-25-00



TYPICAL SECTION

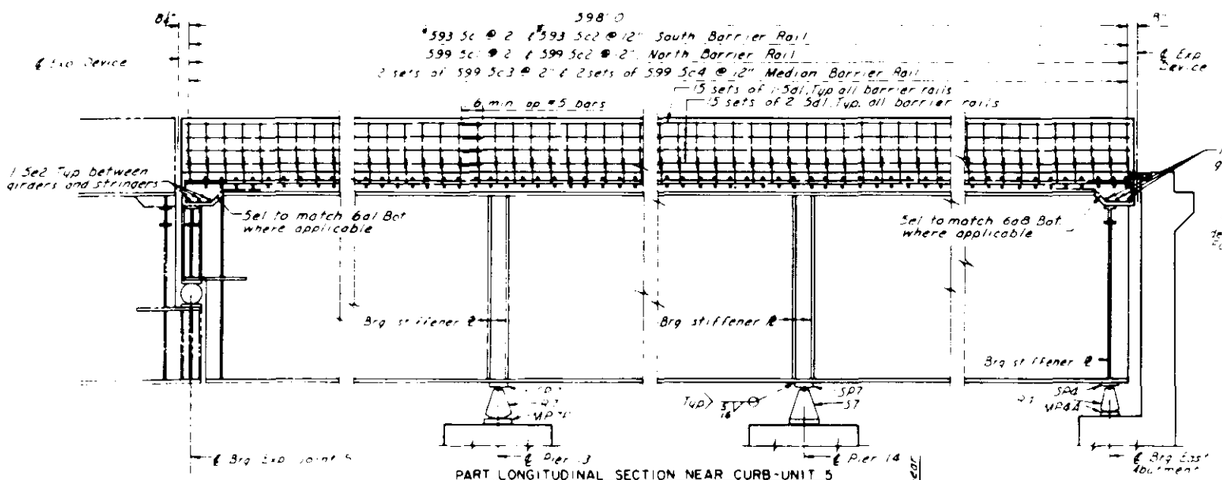
Note:
Diaphragms are not shown in typical section. For details see Sheet "8"



INTERIOR SECTION EXTERIOR SECTION

BARRIER RAIL REINFORCEMENT DETAILS

MEDIAN CURB CONCRETE QUANTITIES		
CONCRETE	599.0 ft X 1055 Cu Yd/ft	63.2 Cu Yd



*6-5c1 and 6-5c2 have been relocated at the light blisters. For details see Sheet "10".

PART LONGITUDINAL SECTION NEAR CURB-UNIT 5

TYPICAL ROCKER SETTINGS UNIT 5						
	EXPANSION JOINT		PIER 13	PIER 14	EAST ABUTMENT	
Temperature at Time of Setting						
90° F	6⅝"	+1"	+⅝"	0"	+⅛"	1¼"
50° F	9"	0"	0"	0"	0"	2½"
10° F	11⅜"	-1"	-⅝"	0"	-⅛"	3⅜"

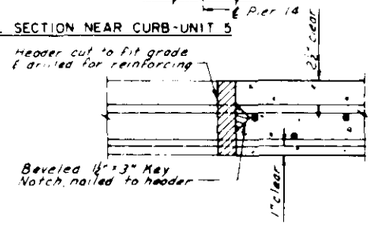
NOTES:

Rockers are to be set vertically at 50° F.

For temperatures above 50° F set masonry plate toward fixed shoe (+).

For temperatures below 50° F set masonry plate away from fixed shoe (-).

Settings for other temperatures are proportional to those shown for a 40° temperature change.



LONGITUDINAL SLAB CONSTRUCTION JOINT DETAIL

(Transverse slab construction joint similar except for bar detail)

THIS SHEET FROM ORIGINAL DESIGN TO SHOW EXISTING CROSS SECTION, SLAB THICKNESS AND GIRDER SPACING ~ TYP. ALL UNITS.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB DETAILS-UNIT 5

STA. 88+40.00
RIVER MILE 328.9
LEE COUNTY, IOWA
PROJECT NO. BRF-16-1(13)--38-56
HANCOCK COUNTY, ILLINOIS

Design Sheet No.: 11 Of 12 File No.: 26723 Design No.: 186

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB
DRAWN JMH DATE 5-82 CHECKED DLM DATE 7-82

6757-25-00

LEE COUNTY

PROJECT NUMBER	STATE	FED. ROAD PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA	6		12	12

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

Bot. of N. Fdg. Elev. 524.75 Steel Alt.
Bot. of N. Fdg. Elev. 524.50 Conc. Alt.
Bot. of S. Fdg. Elev. 519.25 Steel Alt.
Bot. of S. Fdg. Elev. 520.00 Conc. Alt.

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ___ TWP 65 N RANGE 5 W

COUNTY Lee
PROJECT NO BRF-19-1(2)-38-56
FILE NO ___
DES NO ___

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO ___ AT STA ___
SOUNDED BY Nebraska Testing Laboratories DATE 8-4-82

DESCRIPTION
TEST HOLE NO S-5A VERTICAL SCALE 1"= 5 FT.
STATION 65+47 STR. BED EL. ___
DISTANCE FROM ℄ - RT/LT. 0 FT FTG. EL. ___

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Flight Augers	DEPTH	NO. OF BLOWS/FT.
		530.9	Top	0	
A	3.0				
		527.9		3.0	
		Bottom of Boring			

6" Asphalt and Concrete
Light Brown, Sandy LOAM
Top of Rock at 3.0'

Drilling Data
0-3.0' Continuous Flight Augers

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 1

Bot. of N. Fdg. Elev. 524.75 Steel Alt.
Bot. of N. Fdg. Elev. 524.50 Conc. Alt.

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ___ TWP 65 N RANGE 5 W

COUNTY Lee
PROJECT NO BRF-19-1(2)-38-56
FILE NO ___
DES NO ___

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO ___ AT STA ___
SOUNDED BY Nebraska Testing Laboratories DATE 7-14-82

DESCRIPTION
TEST HOLE NO S-6 VERTICAL SCALE 1"= 5 FT.
STATION 65+47 STR. BED EL. ___
DISTANCE FROM ℄ - RT/LT. 33 FT FTG. EL. ___

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Flight Augers SPT	Rock Drilling	DEPTH	NO. OF BLOWS/FT.
		530.4	Top		0	
A	2.0	528.4			2.0	
			J-1 (2.0-2.5)			
			5" Rec			
			50/5"			
B	12.2					
		516.2			14.2	
		Bottom of Boring				

5" Asphalt
Gray Brown, Loamy Sand, Junk Fill
Top of Rock at 2.0'
Hard, Medium Gray, Broken Limestone
With Shale Partings
4.2-14.2 Continuous Hard Drilling

Drilling Data
0-4.2' Flight Augers
4.2-14.2' Rock Drilling

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 1

Bottom of South Footing Elev. 504.50 Concrete Alternate
Bottom of South Footing Elev. 503.75 Steel Alternate

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ___ TWP 65 N RANGE 5 W

COUNTY LEE
PROJECT NO BRF 19-1(2)-38-56
FILE NO ___
DES NO ___

U S Highway 136 BRIDGE OVER Mississippi River
ROAD NO ___ AT STA ___
SOUNDED BY Iowa Dept. of Transportation DATE 10-29-80

DESCRIPTION
TEST HOLE NO P-1919 VERTICAL SCALE 1"= 5 FT.
STATION 66+93 STR. BED EL. ___
DISTANCE FROM ℄ - RT/LT 15 FT FTG. EL. ___

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Auger Boring	DEPTH	NO. OF BLOWS/FT.
		514.1	Top	0	
A	2.5	511.6		2.5	
B	6.5	506.1		8.0	
C	2.0	504.1		10.0	
D	3.0	501.1		13.0	
		Bottom of Boring			

Stiff, Sandy Clay and Broken Concrete, Fill
Stiff, Sandy Clay, With Numerous Boulders
Broken and Weathered Limestone
Medium Hard Limestone

Ground Water Data
6.4' During Drilling

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 2

Bottom of North Footing Elev. 505.50 Concrete Alternate
Bottom of North Footing Elev. 505.25 Steel Alternate

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ___ TWP 65 N RANGE 5 W

COUNTY Lee
PROJECT NO BRF-19-1(2)-38-56
FILE NO ___
DES NO ___

U S Highway 136 BRIDGE OVER Mississippi River
ROAD NO ___ AT STA ___
SOUNDED BY Nebraska Testing Laboratories DATE 7-13-82

DESCRIPTION
TEST HOLE NO S-7 VERTICAL SCALE 1"= 5 FT.
STATION 66+96 STR. BED EL. ___
DISTANCE FROM ℄ - RT/LT. 30 FT FTG. EL. ___

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Flight Augers SPT NQ Wireline	DEPTH	NO. OF BLOWS/FT.
		515.1	Top	0	
A	3.5	511.6		3.5	
B	20.0	491.6		23.5	
		Bottom of Boring			

4" of Asphalt
J-1 (2.0-2.5') Hard, Yellow Brown Clay and Highly Weathered Limestone
*100/5" Rock at 3.5'
C-1 (3.5-6.2) 82% Rec 82% RQD
Hard, Medium Gray, Weathered Broken Limestone With Shale Partings
C-2 (6.2-11.2) 97% Rec 80% RQD
Hard, Medium Gray Limestone With Shale Partings
C-3 (11.2-16.2) 98% Rec 80% RQD
Hard, Medium Gray Limestone With Shale Partings
C-4 (16.2-21.2) 100% Rec 80% RQD
Hard, Medium Gray Limestone
C-5 (21.2-23.5) 100% Rec 80% RQD
Hard, Medium Gray Limestone

Drilling Data
0-3.5' Flight Augers
3.5-23.5' Rock Coring
1 7/8" Core
NQ Wireline

Ground Water Data
3.0' During Drilling

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 2

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
OR
3340' × 66' SEGMENTAL CONCRETE BOX GIRDER BRIDGE
SOUNDING DATA

STA. 50+46.50
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(3)--38-56
HANCOCK COUNTY, ILLINOIS

NOTE
For General Notes and Report of Bridge Sounding

NOTE:
Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the con-

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE RDS DATE 8-26-82 CHECKED GDJ DATE 8-26-82

PIER 2

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ___ TWP. 65 N RANGE 4 E

County: Lee
Project No.: BRF-19-1(2)--38-56
File No.: ___
Des. No.: ___

U.S. Highway 136 — Bridge over Mississippi River
Road No. ___ At Sta. ___
Sounded by: Nebraska Testing Laboratories — Date: 8-6-82

DESCRIPTION

Test Hole No.: S-7A — Vertical Scale 1" = 5 ft.
Station: 66+96 — Str. Bed El. ___
Distance from ℄ - RT/LT 0 ft. — Ftg. El. ___

Elevation	Depth	Description
515.4	Top 0	6" Asphalt
		Gray Brown, Silty Clay Loam With Debris, Junk Fill
512.4	3.0	Top of Rock at 3.0'
Bottom of Boring		

Drilling Data
(0-3.0') Continuous Flight Auger

Bot. of N Ftg. Elev. 505.25 Steel Alt.
Bot. of N Ftg. Elev. 503.50 Conc. Alt.
Bot. of S Ftg. Elev. 503.75 Steel Alt.
Bot. of S Ftg. Elev. 504.50 Conc. Alt.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 3

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ___ TWP. 65 N RANGE 5 W

County: LEE
Project No.: BRF-19-1(2)-38-56
File No.: ___
Des. No.: ___

U S Highway 136 — Bridge over Mississippi River
Road No. ___ At Sta. ___
Sounded by: Iowa Dept. of Transportation — Date: 10-29-80

DESCRIPTION

Test Hole No.: P-1918 — Vertical Scale 1" = 5 ft.
Station: 69+20 — Str. Bed El. ___
Distance from ℄ - RT/LT 15 ft. — Ftg. El. ___

Layer	Thickness	Elevation	Depth	Description
		504.1	Top 0	
A	12	492.1	12.0	Stiff, Sandy Clay and Broken Concrete Fill
B	2.5			Soft to Stiff, Silty Clay
C	9.5	480.1	24.0	Fine Sand With Occasional Clay Layers
D	3.0	477.1	27.0	Broken and Weathered Limestone
E	1.5	475.6	28.5	Medium Hard Limestone
Bottom of Boring				

Ground Water Data
15.3' During Drilling

Bottom of Footing Elev. 494.25 Steel Alt.
Bottom of Footing Elev. 492.50 Conc. Alt.
Estimated Pile Tip Elev. 477.00 Both Alternates

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 3

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ___ TWP. 65 N RANGE 4 W

County: Lee
Project No.: BRF-19-1(2)-38-56
File No.: ___
Des. No.: ___

U.S. Highway 136 — Bridge over Mississippi River
Road No. ___ At Sta. ___
Sounded by: Nebraska Testing Laboratories — Date: 7-12-82

DESCRIPTION

Test Hole No.: S-8 — Vertical Scale 1" = 5 ft.
Station: 69+58
Distance from ℄ - RT/LT 23 ft.

Columns: Flight Augers / Undisturbed/SPT / NQ Wireline

Layer	Thickness	Elevation	Depth	No. of Blows/Ft.	Sample	Description
		504.3	Top 0			
A	7.5				U-1 (1.0-2.5)	Stiff, Gray Brown, Silty Clay Loam, Junk Fill, Brick Pieces, Gravel
				7 6 9	J-1 (2.5-4.0) Qp = 1.5 tsf	Stiff, Grey Brown, Silty Clay Loam, Junk Fill, Brick Pieces, Gravel
		496.8	7.5	8 7 7	J-2 (5.0-6.5) Qp = 1.0 tsf	Firm, Gray Brown, Silty Clay Loam, Sand, Ashes, Brick
B	5.0	491.8	12.5	6 7 6	J-3 (10.0-11.5)	Medium Dense, Light Brown, Sandy Loam With Clay Seams
C	5.0	486.8	17.5	4 12 6	J-4 (15.0-16.5) Qp = 3.0 tsf	Very Stiff, Gray Brown, Loam
D	5.0	481.8	22.5	4 3 4	J-5 (20.0-21.5)	Medium Stiff, Gray, Sandy Loam
E	5.0	476.8	27.5	2 3 2 *	J-6 (25.0-26.5)	Loose, Medium Gray, Sand
					* 50/5"	Limestone at 27.5'
F	27.5				C-1 (27.5-31.5)	70% Rec RQD 37% Hard, Medium Grey, Broken Limestone With Shale Partings
					C-2 (31.5-36.5)	96% Rec RQD 82% Hard, Medium Gray, Broken Limestone With Shale Partings
					C-3 (36.5-41.5)	100% Rec RQD 96% Hard, Medium Gray, Limestone
					C-4 (41.5-46.5)	96% Rec RQD 88% Hard, Medium Gray, Limestone With Shale Partings
		456.8	47.5		C-5 (46.5-47.5)	100% Rec RQD 80% Hard, Medium Gray, Limestone With Shale Partings
Bottom of Boring						

Drilling Data		Ground Water Data
(0-27.5')	Continuous Flight Auger	16.0' During Drilling
(27.5-47.5')	Rock Coring 1 7/8" Core NQ Wireline	19.0' 48 Hrs.

Bottom of Footing Elev. 494.25 Steel Alt.
Bottom of Footing Elev. 492.50 Conc. Alt.
Estimated Pile Tip Elev. 477.00 Both Alternates

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 4

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ___ TWP. 65 N RANGE 5 W

County: LEE
Project No.: BRF 19-1(2)-38-56
File No.: ___
Des. No.: ___

U S Highway 136 — Bridge over Mississippi River
Road No. ___ At Sta. ___
Sounded by: Iowa Dept. of Transportation — Date: 10-29-80

DESCRIPTION

Test Hole No.: P-1917 — Vertical Scale 1" = 5 ft.
Station: 72+10
Distance from ℄ - RT/LT 35 ft.

Columns: Wash Bore / SPT / Rock Core

Layer	Thickness	Elevation	Depth	No. of Blows/Ft.	Description
		498.3	Top 0		
A	13.0			2	4.0' - 5.0' Stiff, Sandy Clay and Riprap Fill
				15	9.0' - 10.0'
		485.3	13.0		
B	3.5	481.8	16.5	8	14.0' - 15.0' Gravelly Sand With Clay Layers
C	10.0			16	19.0 - 20.0' Bouldery Gravel
		471.8	26.5	12	24.0' - 25.0'
D	12.5			*	Medium Hard Limestone
					29.0' - 29.4' Gray - Tan, Crinoidal Limestone *100/0.4'
					C-1 29.4' - 34.0' Rec. 100% Tan Earthy, Dolomite, Filled With Chert
					C-2 34.0' - 39.0' Rec. 100% Gray-Tan, Crinoidal Limestone, Cherty
Bottom of Boring					

Bottom of Footing Elevation 470.00

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

NOTE
For General Notes and Report of Bridge Sounding Legend, see Sheet No. ___

NOTE: Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the con-

Federal Dist. No.	State	Fed. Aid Proj. No.	Fiscal Year	Sheet No.	Total Sheets
	IOWA				
	ILLINOIS				

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
OR
3340' × 66' SEGMENTAL CONCRETE BOX GIRDER BRIDGE

SOUNDING DATA

STA. 80+40.00
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(2)-38-56
HANCOCK COUNTY, ILLINOIS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

Made: RDS Date: 8-26-82 Checked: GDJ Date: 8-26-82

FEDERAL PROJ NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 65 N RANGE 4 W

COUNTY Lee
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-12-82

DESCRIPTION
TEST HOLE NO. S-9 VERTICAL SCALE 1"= 5 FT.
STATION 72+10 STR. BED EL.
DISTANCE FROM ℄ - RT/LT 23 FT. FTG EL.
Boring Approximately 10' west of Rip Rap Covering West Bank of Mississippi River

Bottom of Footing Elevation 470.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Hollow Stem Augers / SPT / NQ Wireline	DEPTH	NO. OF BLOWS/FT.	
		497.7	Top	0		
	1.0		C-1 (0.5-2.0)		7	Stiff, Gray Brown, Silty Clay Loam, Fill, Debris, Broken Rock, Sand
			Qp = 1.5 tsf		11	
					12	
	2.0		C-2 (5.0-6.5)		4	
			Qp = 3.5 tsf		7	Very Stiff, Gray Brown, Silty Clay Loam, Gravel and Debris, Probable Riprap
					7	
	10.9	487.7				
			C-3 (10.0-11.5)		35	Medium Gray, Highly Weathered, Broken Limestone, Clay Present, Probable Riprap
					48	
					56	
	5.8		C-4 (15.0-16.5)		23	Medium Gray, Highly Weathered Limestone With Shale Sand Lenses, Probable Riprap
					19	
					9	
			C-5 (20.0-21.5)		28	Medium Gray, Badly Broken Highly Weathered Limestone Sand Present, Probable Riprap
					45	
					18	
	25.0	471.9				
			C-6 (25.0-25.8)	25.8	18	Soft, Medium Gray, Highly Weathered Limestone
			* 100/4"			
			C-1 (25.8-27.1)			100% Rec. RQD 100% Hard, Medium Gray, Limestone
			C-2 (27.1-32.1)			88% Rec. RQD 80% Hard, Medium Gray, Limestone
			C-3 (32.1-36.1)			92% Rec. RQD 90% Hard, Medium Gray, Limestone
			C-4 (36.1-41.1)			100% Rec. RQD 72% Hard, Medium Gray, Limestone
			C-5 (41.1-46.1)			96% Rec. RQD 92% Very Hard, Medium Gray, Limestone
			C-6 (46.1-49.1)			100% Rec. RQD 90% Very Hard, Medium Gray, Limestone
			C-7 (49.1-50.8)			100% Rec. RQD 100% Very Hard, Medium Gray, Limestone
		446.9	Bottom of Boring	50.8		

Drilling Data
(0-25.8) Hollow Stem Augers 16.0' During Drilling
(25.8-50.8) Rock Coring 19.6' 4B H-P
1 7/8" Core
NO Wireline

Ground Water Data

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 4

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 5 N RANGE 9 W

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-10-82

DESCRIPTION
TEST HOLE NO. S-10 VERTICAL SCALE 1"= 5 FT.
STATION 75+73 STR. BED EL.
DISTANCE FROM ℄ - RT/LT 12 FT. FTG EL.
Top of Water-0'

Bottom of Footing Elevation 466.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	NQ Wireline	DEPTH	NO. OF BLOWS/FT.	
		486.9	Top	0		
						Top of Rock-19.0'
			C-1 (19.0-21.6)			95% Rec. RQD 61% Hard, Medium Gray, Limestone Top 1' Slightly Weathered and Broken
			C-2 (21.6-24.0)			100% Rec. RQD 83% Hard, Medium Gray, Limestone
			C-3 (24.0-27.2)			78% Rec. RQD 63% Hard, Medium Gray, Limestone
			C-4 (27.2-32.3)			100% Rec. RQD 70% Hard, Medium Gray, Limestone
			C-5 (32.3-37.2)			94% Rec. RQD 76% Very Hard, Medium Gray, Limestone
			C-6 (37.2-38.2)			100% Rec. RQD 100% Very Hard, Medium Gray, Limestone
			C-7 (38.2-43.2)			98% Rec. RQD 82% Very Hard, Medium Gray, Limestone
			C-8 (43.2-44.0)			100% Rec. RQD 100% Very Hard, Medium Gray, Limestone
	19.0	467.9				
			A 25.0			
	25.0	442.9		44.0		
			Bottom of Hole			

Drilling Data
19.0 - 44.0 Rock Coring
1 7/8" Core
NO Wireline, 3" Casing
Start: 1:28 PM
End : 4:25 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 5

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 5 N RANGE 9 W

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-10-82

DESCRIPTION
TEST HOLE NO. S-11 VERTICAL SCALE 1"= 5 FT.
STATION 75+91 STR. BED EL.
DISTANCE FROM ℄ - RT/LT 17 FT. FTG EL.
Top of Water-0'

Bottom of Footing Elevation 466.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling	DEPTH	NO. OF BLOWS/FT.	
		486.9	Top	0		
						Top of Rock-18.7'
			(18.7-24.7)			Hard Medium Gray, Limestone With Shale Partings
			A 10.0			
			(24.7-28.7)			Very Hard, medium Gray, Limestone
	18.7	468.2				
	28.7	458.2	Bottom of Boring			

Drilling Data
18.7-28.7 ROCK DRILLING
2 15/16" Rock Bit
3" Casing
Start: 1:30 PM
End : 2:15 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 5

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 5 N RANGE 9 W

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-10-82

DESCRIPTION
TEST HOLE NO. S-13 VERTICAL SCALE 1"= 5 FT.
STATION 77+81 STR. BED EL.
DISTANCE FROM ℄ - RT/LT 21 FT. FTG EL.
Top of Water-0'

Bottom of Footing Elev. 459.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling / SPT	DEPTH	NO. OF BLOWS/FT.	
		486.9	Top	0		
						Top of Rock-20.3'
			(20.3-21.8)		85	2.5" of Badly Broken, Highly Weathered Limestone, With A Trace of Sand and Clay
			*(21.8-22.3)		45/6"	
			A 6.5			
			(22.3-26.8)			Hard, Medium Gray, Limestone
			(26.8-28.8)			Very Hard, Medium Gray Limestone
	20.3	466.6				
	28.8	458.1	Bottom of Boring			

Drilling Data
22.3-28.8 Rock Drilling
2 15/16" Carbide Drag Bit
3" Casing
Refusal at 28.8'
Start: 3:00 PM
End : 5:45 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 6

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
OR
3340' × 66' SEGMENTAL CONCRETE BOX GIRDER BRIDGE
SOUNDING DATA

STA. 50+40.00
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(2)-38-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 14 OF

NOTE
For General Notes and Report of Bridge Sounding

NOTE:
Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the construction of this project.

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE ROS DATE 8-26-82 CHECKED GDJ DATE 8-26-82

DESIGN NO. 383 LEE COUNTY FILE 38723 SHEET 14 OF 44

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 5 N RANGE 9 E

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO. ____
DES. NO. ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-10-82

DESCRIPTION
TEST HOLE NO. S-12 VERTICAL SCALE 1"= ____ FT.
STATION 77+53 STR. BED EL. ____
DISTANCE FROM ℄ - Lt. 14 FT FTG. EL. ____

Bottom of Footing Elev. 459.00

DEPTH TO WATER	LAYER	THICKNESS FT.	ELEVATION	NQ Wireline DEPTH	NO. OF BLOWS/FT.
			486.9	Top 0	
			465.0	21.9	
			437.0	49.9	
			Bottom of Boring		

Top of Water-0'

Top of Rock-21.9'
Seated Casing, 3.0 Into Badly Broken Limestone

C-1 (24.9-27.9) 43% Rec. RQD 0% Hard, Medium Gray, Broken Limestone

C-2 (27.9-32.9) 90% Rec. RQD 66% Hard, Medium Gray, Limestone With Shale Partings

C-3 (32.9-37.9) 100% Rec. RQD 100% Very Hard, Medium Gray, Limestone

C-4 (37.9-42.9) 100% Rec. RQD 70% Very Hard, Medium Gray, Limestone

C-5 (42.9-47.9) 100% Rec. RQD 100% Very Hard, Medium Gray, Limestone With Shale Partings

C-6 (47.9-49.9) 100% Rec. RQD 100% Very Hard, Medium Gray, Limestone With Shale Partings

Drilling Data
24.9-49.9 Rock Coring 1 7/8" Core, 3" Casing NQ Wireline
Start: 5:00 PM
End : 7:15 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 6

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 5 N RANGE 9 E

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO. ____
DES. NO. ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-9-82

DESCRIPTION
TEST HOLE NO. S-15 VERTICAL SCALE 1"= 5 FT.
STATION 79+89 STR. BED EL. ____
DISTANCE FROM ℄ - RT./Rt. 21 FT FTG. EL. ____

Bottom of Footing Elev. 468.00

DEPTH TO WATER	LAYER	THICKNESS FT.	ELEVATION	Rock Drilling DEPTH	NO. OF BLOWS/FT.
			486.3	Top 0	
			RUN 1	16.8	
			RUN 2	26.8	
			Bottom of Boring		

Top of Water 0'

Top of Rock 16.8'
(16.8-17.8) Badly Broken Limestone
(17.8-26.8) Hard, Medium Gray, Limestone With Shale Partings
Continuous Hard Drilling

Drilling Data
16.8-26.8 Rock Drilling 2 15/16" Rock Bit 3" Casing
Start: 8:53 PM
End : 5:31 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 7

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 5 N RANGE 9 E

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO. ____
DES. NO. ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-10-82

DESCRIPTION
TEST HOLE NO. S-14 VERTICAL SCALE 1"= 5 FT.
STATION 80+17 STR. BED EL. ____
DISTANCE FROM ℄ - WY./Lt 14 FT FTG. EL. ____

Bottom of Footing Elev. 470.00

DEPTH TO WATER	LAYER	THICKNESS FT.	ELEVATION	NQ Wireline DEPTH	NO. OF BLOWS/FT.
			486.9	Top 0	
			470.3	16.6	
			444.9	42.0	
			Bottom of Boring		

Top of Water-0'

Top of Rock 16.6'
Seated Casing to 17.0'

C-1 (17.0-17.8) 50% Rec. RQD 0% Hard Medium Gray, Badly Broken Limestone

C-2 (17.8-19.5) 28% Rec. RQD 0% Hard, Medium Gray, Badly Broken Limestone

C-3 (19.5-24.5) 95% Rec. RQD 60% Hard, Medium Gray, Broken Limestone With Shale Partings

C-4 (24.5-27.8) 85% Rec. RQD 85% Hard, Medium Gray, Limestone

C-5 (27.8-32.8) 96% Rec. RQD 92% Very Hard, Medium Gray, Limestone

C-6 (32.8-34.5) 100% Rec. RQD 92% Very Hard, Medium Gray Limestone

C-7 (34.5-36.0) 100% Rec. RQD 67% Very Hard Medium Gray, Limestone

C-8 (36.0-37.8) 56% Rec. RQD 0% Hard, Medium Gray, Limestone

C-9 (37.8-42.0) 85% Rec. RQD 78% Hard, Medium Gray, Limestone

Drilling Data
17.0-42.0 Rock Coring 1 7/8" Core NQ Wireline, 3" Casing
Start: 8:30 AM
End : 12:30 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 7

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 5 N RANGE 9 E

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO. ____
DES. NO. ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-9-82

DESCRIPTION
TEST HOLE NO. S-17 VERTICAL SCALE 1"= 5 FT.
STATION 82+17 STR. BED EL. ____
DISTANCE FROM ℄ - RT./Rt. 21 FT FTG. EL. ____

Bottom of Footing Elev. 470.00

DEPTH TO WATER	LAYER	THICKNESS FT.	ELEVATION	NQ Wireline DEPTH	NO. OF BLOWS/FT.
			486.3	Top 0	
			471.8	14.5	
			446.8	39.5	
			Bottom of Boring		

Top of Water 0'

Top of Rock 14.5'

C-1 (14.5-18.0) 51% Rec. RQD 50% Hard, Medium Gray, Limestone With Shale Partings

C-2 (18.0-23.0) 100% Rec. RQD 88% Hard, Medium Gray, Limestone With Several Layers of Shale

C-3 (23.0-28.0) 95% Rec. RQD 94% Hard, Medium Gray, Limestone

C-4 (28.0-33.0) 100% Rec. RQD 92% Hard, Medium Gray, Limestone

C-5 (33.0-38.0) 100% Rec. RQD 82% Hard, Medium Gray, Limestone

C-6 (38.0-39.5) 100% Rec. RQD 100% Hard, Medium Gray, Limestone

Drilling Data
14.5-39.5 Rock Coring 1 7/8" Core NQ Wireline
Start: 2:24 PM
End : 3:50 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 8

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

NOTE
For General Notes and Report of Bridge Sounding Legend, see Sheet No. 11

NOTE:
Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the construction of this project.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
OR
3340' × 66' SEGMENTAL CONCRETE BOX GIRDER BRIDGE
SOUNDING DATA

STA. 38+40.28
RIVER MILE 363.8
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(2)--38-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 15 OF

DESIGN NO. 238 LEE COUNTY FILE 36733 SHEET 20 OF 227

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 5 N RANGE 9 W 4th

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO. ____
DES. NO. ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories, Inc. 7-9-82

DESCRIPTION

TEST HOLE NO. S-16 VERTICAL SCALE 1"= 5 FT.
STATION 82+35 STR. BED EL. ____
DISTANCE FROM ℄ - RT/LT 14 FT. FTG. EL. ____

Bottom of Footing Elev. 470.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling	DEPTH	NO OF BLOWS/FT.
		486.3	Top	0	
		471.8		14.5	
A 10.0					
		461.8		24.5	

Bottom of Boring

Top of Water 0'

Top of Rock 14.5'

(14.5-15.5) Badly Broken Limestone

(15.5-24.5) Hard, Medium Gray, Limestone With Shale Partings

(17.5-18.2) Layer of Shale

(18.2-24.5) Continuous Hard Drilling

Drilling Data

14.5-24.5 Rock Drilling
2 15/16" Rock Bit
3" Casing
Start: 2:25 PM
End : 2:54 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 8

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 5 N RANGE 9 W 4th

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO. ____
DES. NO. ____

U.S. Highway 136 BRIDGE OVER Mississippi
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories, Inc. 7-9-82

DESCRIPTION

TEST HOLE NO. S-19 VERTICAL SCALE 1"= 5 FT.
STATION 84+35 STR. BED EL. ____
DISTANCE FROM ℄ - RT/LT 21 FT. FTG. EL. ____

Bottom of Footing Elev. 470.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling	DEPTH	NO OF BLOWS/FT.
		486.3	Top	0	
		472.3		14.0	
A 10.0					
		462.3		24.0	

Bottom of Boring

Top of Water 0'

Top of Rock 14.0'

(14.0-24.0) Hard, Medium Gray, Limestone With Shale Partings

(20.0-20.5) Shale Layer

(20.5-24.0) Continuous Hard Drilling

Drilling Data

14.0-24.0 Rock Drilling
2 15/16" Rock Bit
3" Casing
Start: 12:08 PM
End : 12:20 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 9

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. ____ TWP. 5 N RANGE 9 W 4th

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO. ____
DES. NO. ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories, Inc. 7-9-82

DESCRIPTION

TEST HOLE NO. S-18 VERTICAL SCALE 1"= 5 FT.
STATION 84+53 STR. BED EL. ____
DISTANCE FROM ℄ - RT/LT 5 FT. FTG. EL. ____

Bottom of Footing Elev. 470.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	NQ Wireline	DEPTH	NO OF BLOWS/FT.
		486.3	Top	0	
		472.8		13.5	
A 25.0					
		447.8		38.5	

Bottom of Boring

Top of Water 0'

Top of Rock 13.5'

C-1 (13.5-18.5) 82% Rec. RQD 50%
Hard, Medium Gray, Broke Limestone With Broken Shale Layers

C-2 (18.5-23.5) 96% Rec. RQD 80%
Hard, Medium Gray, Limestone With Shale Partings

C-3 (23.5-28.5) 100% Rec. RQD 94%
Hard, Medium Gray, Limestone With Shale Partings

C-4 (28.5-33.5) 100% Rec. RQD 90%
Hard, Medium Gray Limestone

C-5 (33.5-38.5) 100% Rec. RQD 70%
Hard, Medium Gray, Limestone

Drilling Data

13.5-38.5 Rock Coring
1 7/8" Core
NQ Wireline
Start: 12:05 PM
End : 2:00 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 9.

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. 5 TWP. 5 N RANGE 9 W 4th

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO. ____
DES. NO. ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ____ AT STA. ____
SOUNDED BY Nebraska Testing Laboratories, Inc. 7-9-82

DESCRIPTION

TEST HOLE NO. S-21 VERTICAL SCALE 1"= 5 FT.
STATION 86+47 STR. BED EL. ____
DISTANCE FROM ℄ - RT/LT 21 FT. FTG. EL. ____

Bottom of Footing Elev. 470.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	NQ Wireline	DEPTH	NO OF BLOWS/FT.
		486.3	Top	0	
		472.3		14.0	
A 25.0					
		447.3		39.0	

Bottom of Boring

Top of Water-0'

Top of Rock-14.0

C-1 (14.0-17.0) 57% Rec. RQD 47%
Hard, Medium Gray, Slightly Weathered Limestone

C-2 (17.0-18.?) 100% Rec. RQD 100%
Hard, Medium Gray, Limestone W/Shale Partings

C-3 (19.0-21.0) 100% Rec. RQD 86%
Hard, Medium Gray, Limestone With Shale Partings

C-4 (21.0-24.0) 100% Rec. RQD 93%
Hard, Medium Gray, Limestone With Shale Partings

C-5 (24.0-29.0) 96% Rec. RQD 86%
Hard, Medium Gray Limestone

C-6 (29.0-34.0) 96% Rec. RQD 96%
Hard, Medium Gray, Limestone

C-7 (34.0-39.0) 96% Rec. RQD 78%
Hard, Medium Gray, Limestone

Drilling Data

14.0-39.0 Rock Coring
1 7/8" Core
NQ Wireline
Start: 9:42 AM
End : 11:32 AM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 10

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
OR
3340' × 66' SEGMENTAL CONCRETE BOX GIRDER BRIDGE
SOUNDING DATA

STA. 89+68.89
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(7)-38-56
HANCOCK COUNTY, ILLINOIS

NOTE
For General Notes and Report of Bridge Sounding

NOTE:
Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the con-

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE RDS DATE 8-26-82 CHECKED GDJ DATE 8-26-82

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ___ TWP 5 N RANGE 9 W

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES. NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ___ AT STA. ___
SOUNDED BY Nebraska Testing Laboratories DATE 7-8-82

DESCRIPTION
TEST HOLE NO. S-20 VERTICAL SCALE 1"= 5 FT.
STATION 86+66 STR. BED EL. ___
DISTANCE FROM ℄ - BK/AT 74 FT. PTG. EL. ___

Bottom of Footing Elev. 470.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling	DEPTH	NO. OF BLOWS/FT.
		486.7	Top	0	
		472.8		13.9	
A 10.0		462.8		23.9	

Top of Water 0'

Top of Rock 13.9'

(13.9-23.9) Hard, Medium Gray, Limestone With Shale Partings
(15.4-15.5) Shale Layer
(16.9-17.1) Shale Layer

Hard Drilling Continuous From 17.2-23.9

Bottom of Boring

Drilling Data
13.9-23.9 Rock Drilling
2 15/16" Rock Bit
3" Casing
Start: 3:45 PM
End : 4:30 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 10

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ___ TWP 5 N RANGE 9 W

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES. NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ___ AT STA. ___
SOUNDED BY Nebraska Testing Laboratories DATE 7-8-82

DESCRIPTION
TEST HOLE NO. S-23 VERTICAL SCALE 1"= 5 FT.
STATION 88+71 STR. BED EL. ___
DISTANCE FROM ℄ - BK/AT 21 FT. PTG. EL. ___

Bottom of Footing Elev. 472.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling	DEPTH	NO. OF BLOWS/FT.
		486.7	Top	0	
		473.7		13.0	
A 10.0		463.7		23.0	

Top of Water 0'

Rock at 13.0'

(13.0-23.0 Hard, Medium Gray, Limestone With Shale Partings
(14.0-14.1) 2" Shale Layer
(15.6-16.1) 6" Shale Layer

(15.6-23.0' Continuous Hard Drilling

Bottom of Boring

Drilling Data
13.0-23.0 Rock Drilling
2 15/16" Bit
3" Casing
Start: 1:16 PM
End : 1:45 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 11

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ___ TWP 5 N RANGE 9 W

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES. NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ___ AT STA. ___
SOUNDED BY Nebraska Testing Laboratories DATE 7-8-82

DESCRIPTION
TEST HOLE NO. S-22 VERTICAL SCALE 1"= 5 FT.
STATION 88+89 STR. BED EL. ___
DISTANCE FROM ℄ - BK/AT 14 FT. PTG. EL. ___

Bottom of Footing Elev. 472.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	NQ Wireline	DEPTH	NO. OF BLOWS/FT.
		486.7	Top	0	
		474.0		12.7	
A 25.0		449.0		37.7	

Top of Water 0'

Top of Rock 12.7'

C-1 (12.7-14.2) 73% Rec. RQD 73%
Hard, Medium Gray, Limestone With Shale Partings
C-2 (14.7-19.2) 88% Rec. RQD 70%
Hard, Medium Gray, Limestone With Shale Partings
C-3 (19.2-24.2) 100% Rec. RQD 100%
Hard, Medium Gray, Limestone With Shale Partings
C-4 (24.2-29.2) 99% Rec. RQD 85%
Hard, Medium Gray, Limestone
C-5 (29.2-34.2) 100 Rec. RQD 100%
Hard, Medium Gray Limestone
C-6 (34.2-37.7) 100% Rec. RQD 94%
Hard, Medium Gray, Limestone

Bottom of Boring

Drilling Data
12.7-37.7' 1 7/8" Core, NQ Wireline
Start: 1:20 PM
End : 2:40 PM

HOWARD NEEDLES TAMMEN & BERGENDOFF

PIER 11

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ___ TWP 5 N RANGE 9 W

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES. NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. ___ AT STA. ___
SOUNDED BY Nebraska Testing Laboratories DATE 7-7-82

DESCRIPTION
TEST HOLE NO. S-25 VERTICAL SCALE 1"= 5 FT.
STATION 90+89 STR. BED EL. ___
DISTANCE FROM ℄ - BK/AHEAD 21 FT. PTG. EL. ___

Bottom of Footing Elev. 472.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling	NQ Wireline	DEPTH	NO. OF BLOWS/FT.
		485.7	Top		0	
		474.7			11.0	
A 16.8		457.9			27.8	

Top of Water 0'

Top of Rock 11.0'

C-1 (12.0-12.8) First 12" Drilled to Create Socket
100% Rec. RQD 100%
Medium Gray, Hard, Limestone With Shale Partings
C-2 (12.8-14.5) 76% Rec. RQD 76%
Hard, Medium Gray Limestone
C-3 (14.5-17.8) 96% Rec. RQD 64%
Hard, Medium Gray, Limestone With Shale Partings
C-4 (17.8-22.8) 100% Rec. RQD 98%
Hard, Medium Gray, Limestone With Shale Partings
C-5 (22.8-27.8) 100% Rec. RQD 92%
Hard, Medium Gray, Limestone

Bottom of Boring

Drilling Data
11.0-12.0 Rock Drilling
2 15/16" Rock Bit
12.0-27.8 Coring
1 7/8" Core
NQ Wireline
3" Casing

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 12

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
OR
3340' × 66' SEGMENTAL CONCRETE BOX GIRDER BRIDGE
SOUNDING DATA

STA. 89+48.50
RIVER MILE 363.8
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(2)-38-56
HANCOCK COUNTY, ILLINOIS

NOTE
For General Notes and Report of Bridge Sounding Legend, see Sheet No. 11

NOTE:
Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the con-

MADE RDS DATE 8-26-82 CHECKED GDJ DATE 8-26-82

DESIGN NO. 282 LEE COUNTY FILE 39720 SHEET 22 OF 227

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ____ TWP 5 N RANGE 9 W

COUNTY Hancock
PROJECT NO BRF-19-1(2)-38-56
FILE NO ____
DES. NO ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO ____ AT STA ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-7-82

DESCRIPTION

TEST HOLE NO. S-24 VERTICAL SCALE 1" = 5 FT.
STATION 91+07 STR. BED EL. ____
DISTANCE FROM ℄ - RT/LT 14 FT FTG. EL. ____

Bottom of Footing Elev. 472.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling	DEPTH	NO. OF BLOWS/FT.
		485.7	Top	0	
			Top of Water 0'		
		474.0	Top of Rock 11.7'	11.7	
			(11.7-21.7) Hard, Medium Gray Limestone, With Shale Seams		
			(15.6-16.1) 8" Shale Seam		
			(17.7-17.9) 3" Shale Seam		
			(19.4-19.5) 2" Shale Seam		
		464.0	Bottom of Boring	21.7	

Drilling Data
11.7-21.7 Rock Drilling
2 15/16" Rock Bit
9" Casing to Top of Rock
Start: 3:58 PM
End : 4:21 PM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 12

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ____ TWP 5 N RANGE 8 W

COUNTY Hancock
PROJECT NO BRF-19-1(2)-38-56
FILE NO ____
DES. NO ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO ____ AT STA ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-7-82

DESCRIPTION

TEST HOLE NO. S-27 VERTICAL SCALE 1" = 5 FT.
STATION 93+02 STR. BED EL. ____
DISTANCE FROM ℄ - RT/LT 25 FT FTG. EL. ____

Bottom of Footing Elev. 472.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling	DEPTH	NO. OF BLOWS/FT.
		485.7	Top	0	
			Top of Water 0'		
		474.2	Top of Rock 11.0'	11.0	
A 4.8			(11.0-15.8) Medium Gray, Hard, Limestone With Shale Seams		
			(12.0-12.5) 6" Shale Seam		
			(13.0-13.2) 3" Shale Seam		
			(13.8-14.1) 4" Shale Seam		
		469.9	Bottom of Boring	15.8	

Drilling Data
11.0-15.8 Rock Drilling
2 15/16" Rock Bit
3" Casing Down to Top of Rock
Start: 9:50 AM
End : 10:13 AM

Authorized Termination of Drilling at 15.8'

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 13

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ____ TWP 5 N RANGE 8 W

COUNTY Hancock
PROJECT NO BRF-19-1(2)-38-56
FILE NO ____
DES. NO ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO ____ AT STA ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-7-82

DESCRIPTION

TEST HOLE NO. S-26 VERTICAL SCALE 1" = 5 FT.
STATION 93+20 STR. BED EL. ____
DISTANCE FROM ℄ - RT/LT 30 FT FTG. EL. ____

Bottom of Footing Elev. 472.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling	MQ Wireline	DEPTH	NO. OF BLOWS/FT.
		485.7	Top		0	
			Top of Water 0'			
		473.8	Top of Rock 11.9'		11.9	*
			* 55 Blows/0" First 18" Rock Drilling to Create Socket			
A 20.6			L-1 (13.4-17.5) 93% Rec. RQD 66% Hard, Medium Gray, Limestone With Shale Partings			
			C-2 (17.5-22.5) 100% Rec. RQD 90% Hard, Medium Gray, Limestone With Shale Partings			
			C-3 (22.5-27.5) 100% Rec. RQD 100% Hard, Medium Gray, Limestone			
			C-4 (27.5-32.5) 100% Rec. RQD 80% Hard, Medium Gray, Limestone			
			Drilling Data (11.9-13.4) 2 15/16" Rock Bit (13.4-32.5) MQ Wireline 1 7/8" Core 3" Casing			
		453.2	Bottom of Boring		32.5	

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 13

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC ____ TWP 5 N RANGE 8 W

COUNTY Hancock
PROJECT NO BRF-19-1(2)-38-56
FILE NO ____
DES. NO ____

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO ____ AT STA ____
SOUNDED BY Nebraska Testing Laboratories DATE 7-8-82

DESCRIPTION

TEST HOLE NO. S-29 VERTICAL SCALE 1" = 5 FT.
STATION 95+15 STR. BED EL. ____
DISTANCE FROM ℄ - RT/LT 21 FT FTG. EL. ____

Bottom of Footing Elev. 472.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	ROCK DRILLING SPT MQ Wireline	DEPTH	NO. OF BLOWS/FT.
		486.7	Top	0	
			Top of Water 0'		
	7.0	479.7		7.0	
A 5.5			(7.0-10.0) Split Barrel Sank Under Its Own Weight		
	2		J-1 (10.0-11.5) Soft, Dark Gray, Silt Loam		
	2		Rec 18" Qu=0.15 tsf		
	12.5	474.2		12.5	
			Rock @ 12.5		
			C-1 (12.5-17.5) 68% Rec. 0% RQD Hard, Medium Gray, Limestone With Shale Partings		
			C-2 (17.5-22.5) 100% Rec. 96% RQD Hard, Medium Gray, Limestone		
B 25.0			C-3 (22.5-27.5) 100% Rec. 88% RQD Hard, Medium Gray, Limestone		
			C-4 (27.5-32.5) 96% Rec. 90% RQD Hard, Medium Gray, Limestone		
			C-5 (32.5-37.5) 96% Rec. 74% RQD Hard, Medium Gray, Limestone		
		449.2	Bottom of Boring	37.5	

Drilling Data
Used 2 15/16" Rock Bit to Drill Down to 12.5'
Started Rock Coring @ 12.5', 1 7/8" Core
Start: 8:30 AM
End : 11:25 AM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 14

NOTE
For General Notes and Report of Bridge Sounding
Legend, see Sheet No. 11.

NOTE:
Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the construction of this project.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
OR
3340' × 66' SEGMENTAL CONCRETE BOX GIRDER BRIDGE
SOUNDING DATA

STA. 89+40.00
RIVER MILE 383.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(3)--39--19
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 18 OF

MARK ROS DATE 8-26-82 CHECKED GDJ DATE 8-26-82

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. — TWP. 6 N — RANGE 8 W

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES. NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. AT STA.
SOUNDED BY Nebraska Testing Laboratories DATE 7-8-82

DESCRIPTION

TEST HOLE NO. S-28 VERTICAL SCALE 1" = 5 FT.
STATION 96+33 STR. BED EL.
DISTANCE FROM ℄ - BK/AH 38 FT FTG. EL.

Bottom of Footing Elev. 472.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Rock Drilling SPT	DEPTH	NO. OF BLOWS/FT.	
		486.7 Top		0		Top of Water 0'
						Top of Overburden 7.0'
				7.0		(7.0-10.0) Split Barrel Sank Under Its Own Weight
A	5.1				3	J-1 (10.0-11.5') Dark Gray, Very Soft, Silt Loam
					3	Qu = 0.15 tsf
		473.6		13.1		Top of Rock 13.1'
						(13.1-23.1) Hard, Medium Gray Limestone, Continuous Hard Drilling
B	10.0					
		463.6		23.1		
		Bottom of Boring				

Drilling Data
13.1-23.1 Rock Drilling
4 15/16" Rock Bit
5" Casing
Start: 8:24 AM
End: 9:44 AM

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

PIER 14

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. — TWP. 5 N — RANGE 8 W

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES. NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. AT STA.
SOUNDED BY Nebraska Testing Laboratories DATE 8-2-82

DESCRIPTION

TEST HOLE NO. S-30 VERTICAL SCALE 1" = 5 FT.
STATION 97+10 STR. BED EL.
DISTANCE FROM ℄ - BK/AH 33 FT FTG. EL.

Estimated Pile Tip Elev. 473.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Hollow Stem SPT NO Wireline	DEPTH	NO. OF BLOWS/FT.	
		487.7 Top		0		
A	3.2			3.2	1	J-1 (0-1.5') Very Loose, Gray Brown, Predominantly
					1	Rec = 12" Loamy Sand With Alternating
					1	Qu = 0.25 tsf Layers of Silt Loam
B	4.3					
		480.2		7.5	1	J-2 (5.0-6.5') Very Loose, Light Brown, Sand
					1	Rec = 8"
C	5.0				1	J-3 (10.0-11.5') Very Loose, Dark Brown, Loamy
					1	Rec = 8" Sand, Occasional Silt
		475.2		12.5		Loam Seams
						Top of Rock at 12.5'
D	2.3	472.1		15.6	2	J-4 (15.0-15.6') Medium Gray, Weathered
					*	Rec = 6" Broken Limestone
		Bottom of Boring				=50/1"

Drilling Data — Water Data
0-15.6' Hollow Stem Augers — 4.5' During Drilling; 2.0' 48 Hrs.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

EAST ABUTMENT

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

SEC. — TWP. 5 N — RANGE 8 W

COUNTY Hancock
PROJECT NO. BRF-19-1(2)-38-56
FILE NO.
DES. NO.

U.S. Highway 136 BRIDGE OVER Mississippi River
ROAD NO. AT STA.
SOUNDED BY Nebraska Testing Laboratories DATE 8-2-82

DESCRIPTION

TEST HOLE NO. S-31 VERTICAL SCALE 1" = 5 FT.
STATION 97+10 STR. BED EL.
DISTANCE FROM ℄ - BK/AH 43 FT FTG. EL.

Estimated Pile Tip Elev. 473.00

DEPTH TO WATER LAYER	THICKNESS FT.	ELEVATION	Light Augers Undist./SPT	DEPTH	NO. OF BLOWS/FT.	
		487.7 Top		0		
A	2.5			2.5	1	U-1 (U-1.5') Loose, Gray Brown, Loamy
					1	Rec = 8" Sand With Alternating Layers
					1	Qu = 0.15 tsf of Silt Loam
B	6.5					
		478.7		9.0	1	U-2 (5.0-6.5') Firm, Dark Brown, Silt
					1	Rec = 10" Loam With Seams of Loamy
					1	Qu = 1.0 tsf Sand
					1	U-3 (6.5-8.0') Firm, Dark Brown, Silt
					1	Rec = 18" Loam With Seams of Loamy
					1	Qu = 1.0 tsf Sand
C	9.5				1	U-2 (10.0-11.5') Loose, Dark Gray, Loamy
					2	Rec = 12" Sand
		475.21		12.5	2	
						Top of Rock at 12.5'
						Auger Refusal on
D	2.0					Apparent Limestone at 14.5'
		473.21		14.5		
		Bottom of Boring				

Drilling Data — Water Data
0-14.5' Continuous Flight Augers — 4.5' During Drilling; 2.3' 48 Hrs.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

EAST ABUTMENT

DRAWN RDS DATE 8-26-82 CHECKED GDJ DATE 8-26-82

NOTE
For General Notes and Report of Bridge Sounding

NOTE:
Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the con-

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

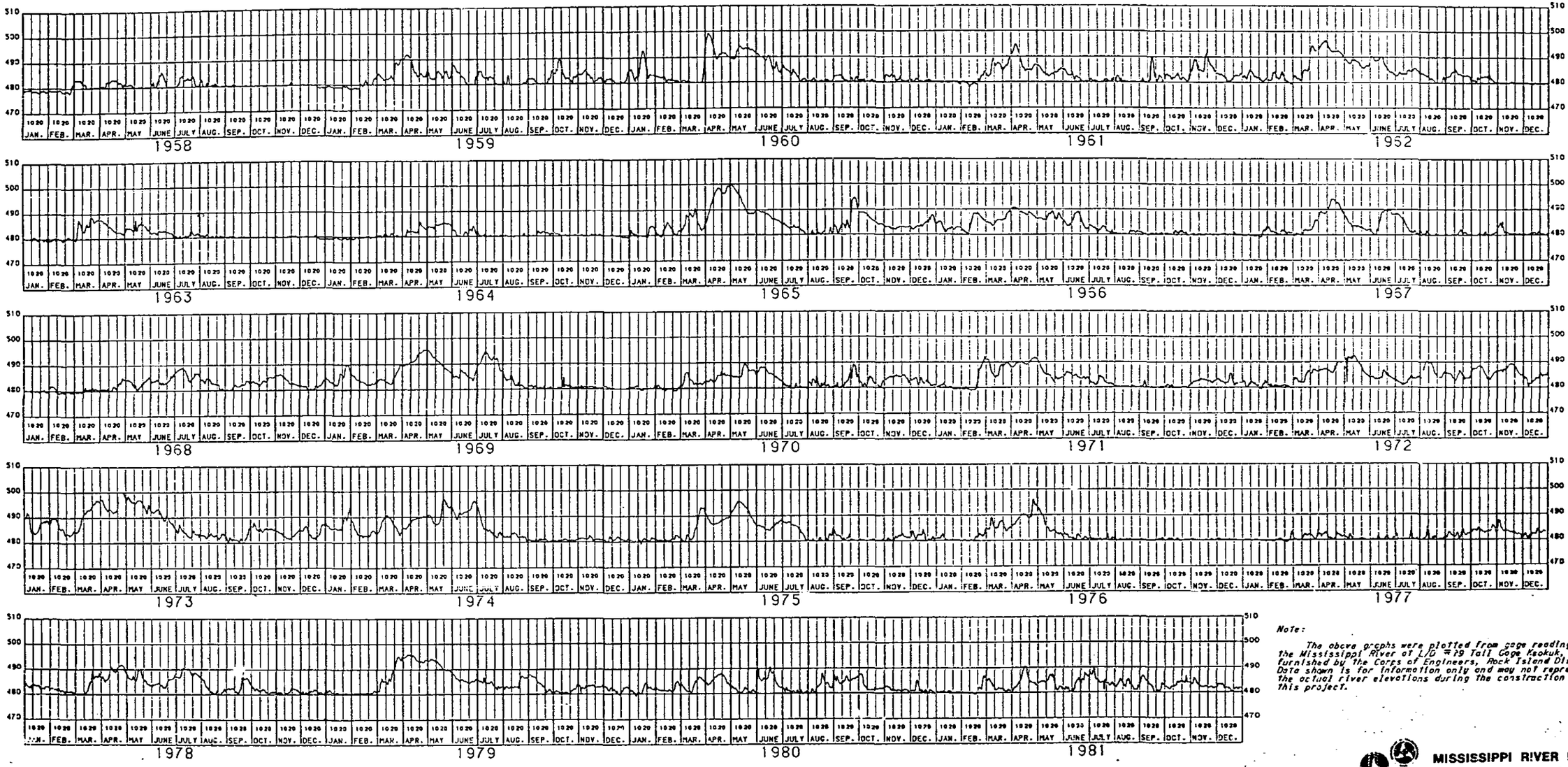
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
OR
3340' × 66' SEGMENTAL CONCRETE BOX GIRDER BRIDGE
SOUNDING DATA

STA. 80+40.00
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(2)-38-56
HANCOCK COUNTY, ILLINOIS

DESIGN NO. 363 LEE COUNTY FILE 38733 SHEET 24 OF 227

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



Note:

The above graphs were plotted from gage readings of the Mississippi River at L/D #19 Tail Gage Keokuk, Iowa furnished by the Corps of Engineers, Rock Island District. Data shown is for information only and may not represent the actual river elevations during the construction of this project.

HYDRAULIC DATA

DRAINAGE AREA:	*119,000 Sq.Mi.*
FLOOD OF RECORD:	
Date:	*April 24, 1973*
Q =	*344,000 cfs*
Water Elevation:	*500.76*
100-YEAR FLOOD:	
Q =	*340,000 cfs*
Water Elevation	*500.0*
50-YEAR FLOOD:	
Q =	*320,000 cfs*
Water Elevation	*498.0*

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
OR
3340' × 66' SEGMENTAL CONCRETE BOX GIRDER BRIDGE
STAGE HYDROGRAPH

STA. 89+40.00
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(7)--39-56
HANCOCK COUNTY, ILLINOIS

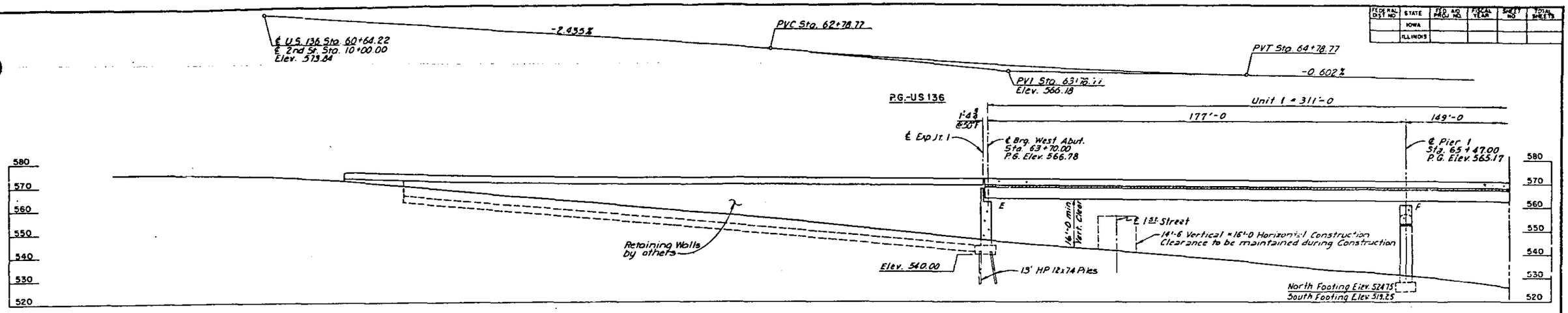
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE JLL DATE 4-96 CHECKED DLM DATE 4-96

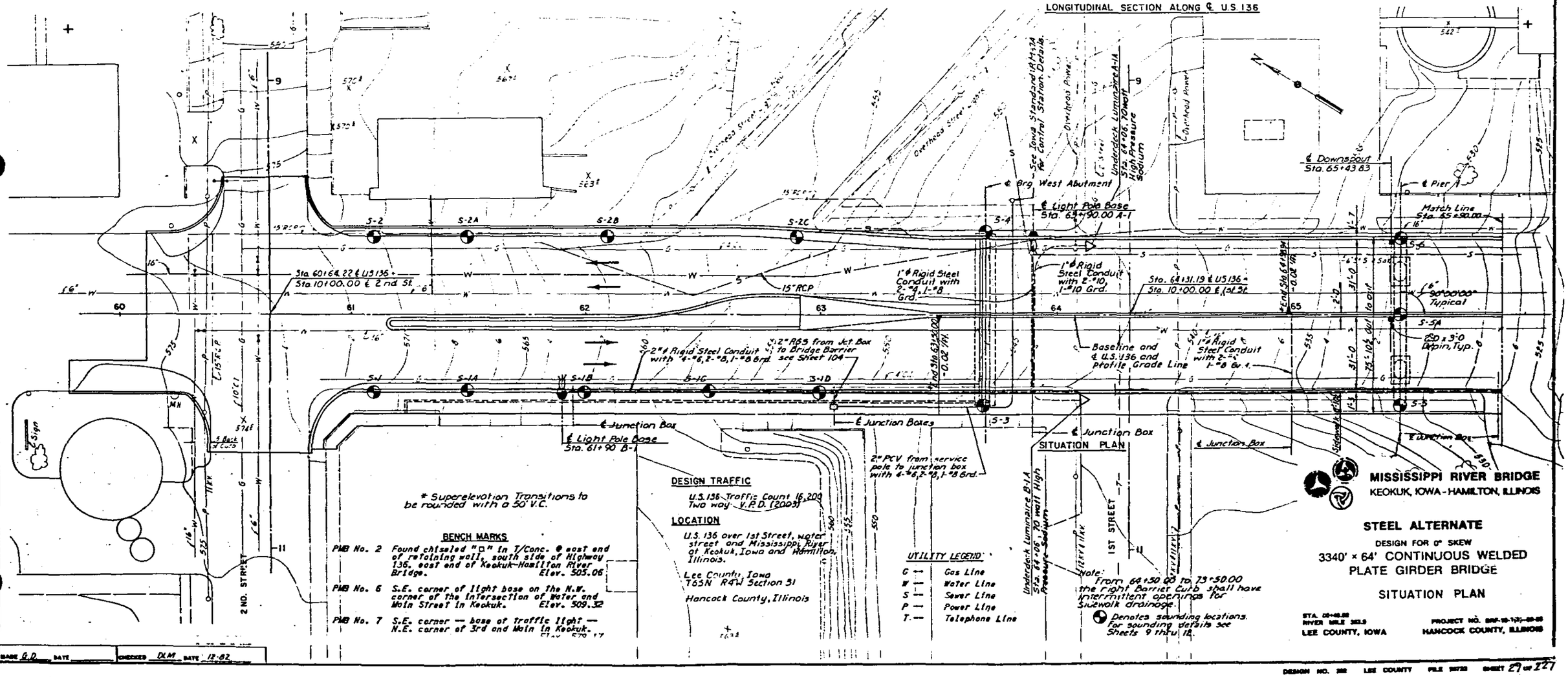
1-25-00

DESIGN NO. 282 LEE COUNTY FILE 35723 SHEET 25 OF 227

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



LONGITUDINAL SECTION ALONG ℄ U.S. 136



SITUATION PLAN

* Superelevation Transitions to be rounded with a 50' V.C.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk.

DESIGN TRAFFIC

U.S. 136 Traffic Count 16,200 Two way V.P.D. (2005)

LOCATION

U.S. 136 over 1st Street, water street and Mississippi River at Keokuk, Iowa and Hamilton, Illinois.

Lee County, Iowa
T65N R4W Section 31

Hancock County, Illinois

UTILITY LEGEND

G — Gas Line
W — Water Line
S — Sewer Line
P — Power Line
T — Telephone Line

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

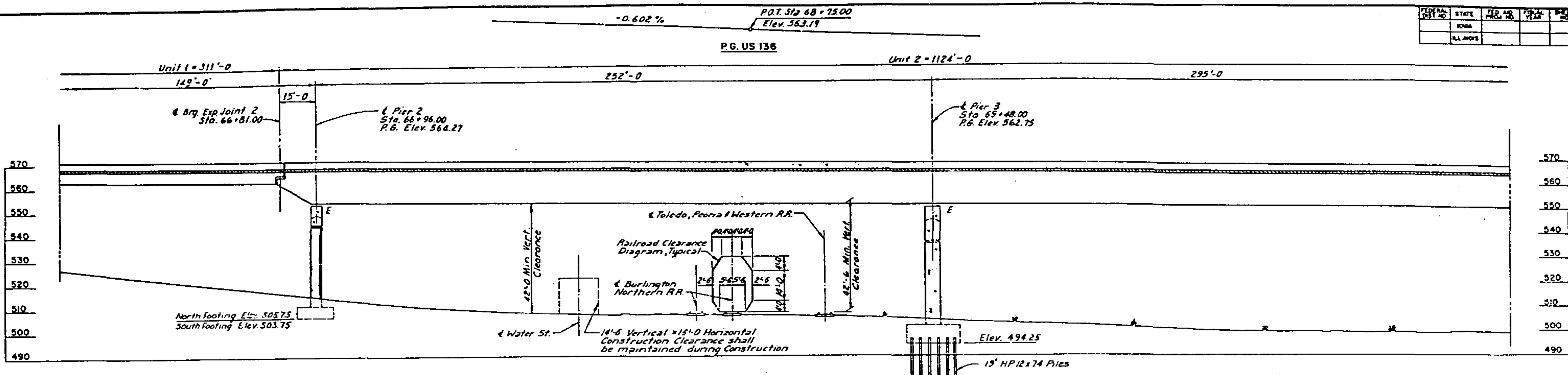
STA. 00+48.88 RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. BRF-10-1(7)-00-00
HANCOCK COUNTY, ILLINOIS

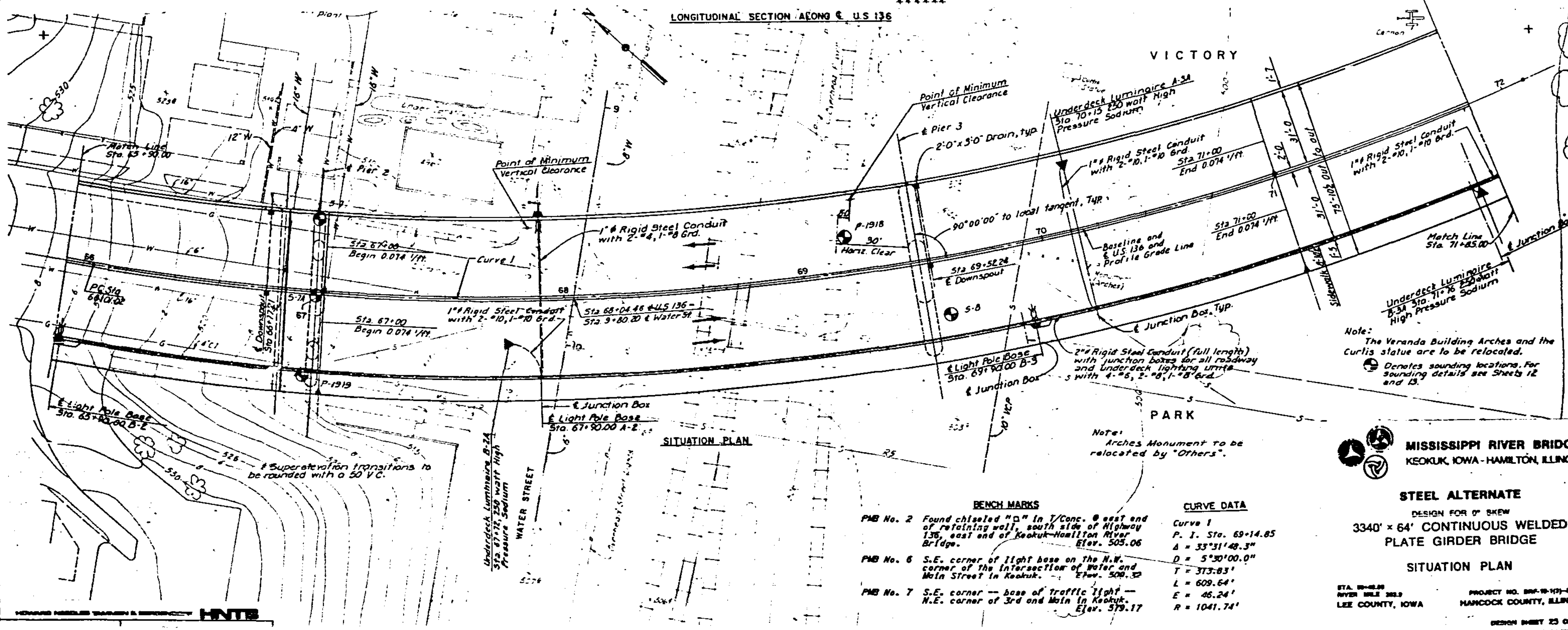
BASE G.D. DATE
CHECKED DLM DATE 12-02

5-00

DESIGN NO. 355 LEE COUNTY FILE 19723 SHEET 27 OF 227



LONGITUDINAL SECTION ALONG ℄ U.S 136



SITUATION PLAN

Note:
The Veranda Building Arches and the Curtis statue are to be relocated.
Denotes sounding locations. For sounding details see Sheets 12 and 13.

BENCH MARKS

PMB No. 2	Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06
PMB No. 6	S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32
PMB No. 7	S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk. Elev. 519.17

CURVE DATA

Curve 1
P. I. Sta. 69+14.85
Δ = 33°31'48.3"
D = 5°30'00.0"
T = 313.83'
L = 609.64'
E = 46.24'
R = 1041.74'

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

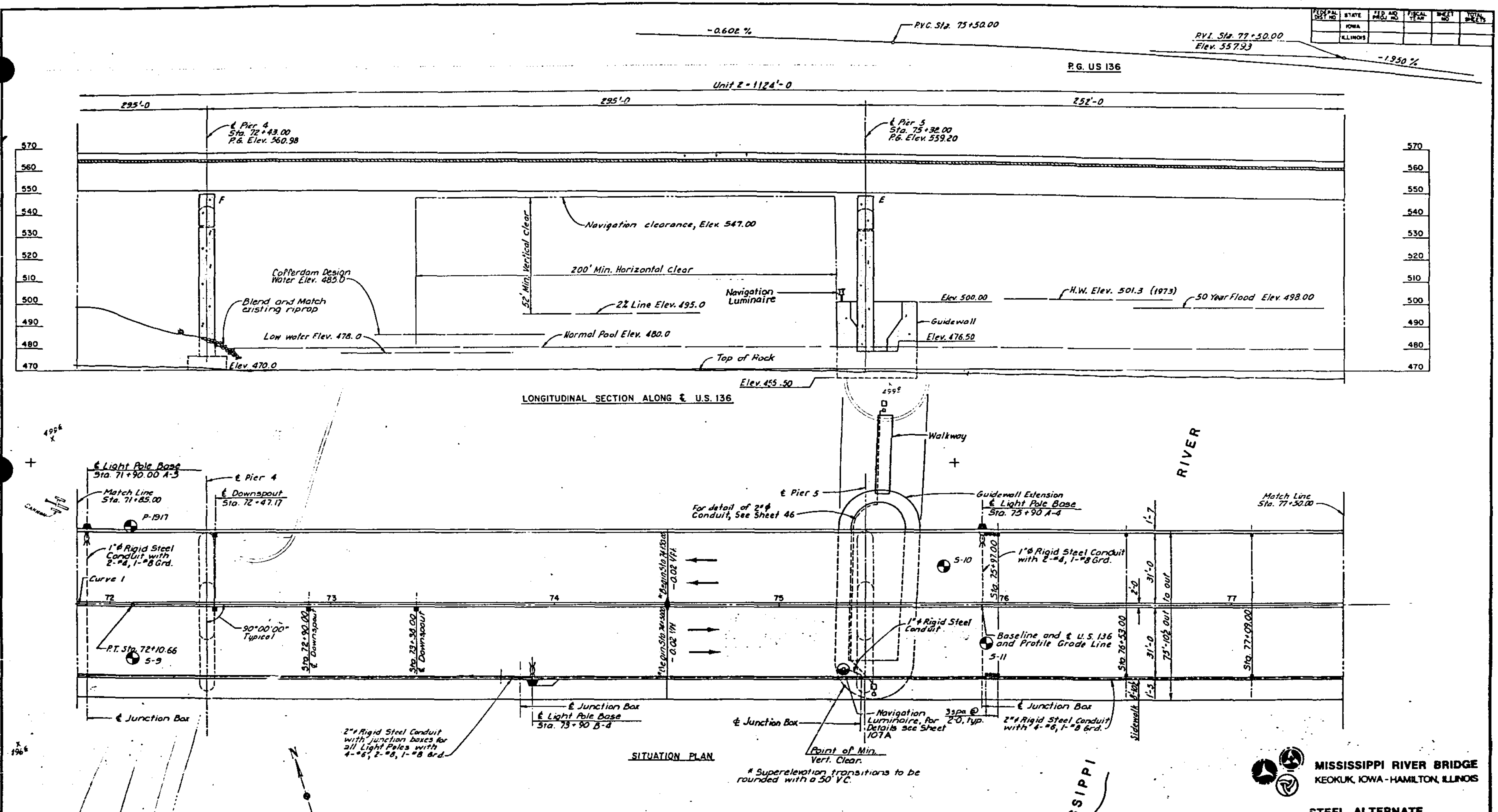
STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 23 OF

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB



-0.602 %
P.V.C. Sta. 75+50.00
P.V.I. Sta. 77+50.00
Elev. 557.93
-1.950 %
P.G. US 136
Unit 2 - 1124'-0
295'-0
295'-0
252'-0
℄ Pier 4
Sta. 72+43.00
P.G. Elev. 560.98
℄ Pier 5
Sta. 75+38.00
P.G. Elev. 559.20
Navigation clearance, Elev. 547.00
52' Min. Vertical clear
200' Min. Horizontal clear
Cofferdam Design Water Elev. 485.0
Blend and Match existing riprap
2% Line Elev. 495.0
Navigation Luminaire
Elev. 500.00
H.W. Elev. 501.3 (1973)
50 Year Flood Elev. 498.00
Guidewall
Elev. 476.50
Low water Elev. 478.0
Normal Pool Elev. 480.0
Top of Rock
Elev. 470.0
Elev. 455.50
LONGITUDINAL SECTION ALONG ℄ U.S. 136
Walkway
RIVER
℄ Light Pole Base
Sta. 71+90.00 A-3
℄ Pier 4
Match Line
Sta. 71+85.00
℄ Downspout
Sta. 72+47.17
P-1917
1"ϕ Rigid Steel Conduit with 2-#4, 1-#8 Grd.
Curve 1
P.T. Sta. 72+10.66
S-9
90°00'00" Typical
Sta. 72+90.00 ℄ Downspout
Sta. 73+38.00 ℄ Downspout
℄ Pier 5
For detail of 2"ϕ Conduit, See Sheet 46
Guidewall Extension
℄ Light Pole Base
Sta. 75+90 A-4
S-10
1"ϕ Rigid Steel Conduit with 2-#4, 1-#8 Grd.
Baseline and ℄ U.S. 136 and Profile Grade Line
S-11
Match Line
Sta. 77+50.00
Sta. 75+97.00
Sta. 76+53.00
Sta. 77+09.00
75'-10½ out
31'-0 to out
Sidewalk
℄ Junction Box
℄ Light Pole Base
Sta. 73+90 B-4
2"ϕ Rigid Steel Conduit with junction boxes for all Light Poles with 4-#6, 2-#8, 1-#8 Grd.
℄ Junction Box
Navigation Luminaire, for Details See Sheet 107A
Point of Min. Vert. Clear.
2"ϕ Rigid Steel Conduit with 4-#6, 1-#8 Grd.
SITUATION PLAN
MISSISSIPPI

* Superelevation transitions to be rounded with a 50' V.C.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

CURVE DATA

Curve 1
P. I. Sta. 69+14.85
Δ = 33°31'48.3"
D = 5°30'00.0"
T = 313.83
L = 609.64
E = 46.24
R = 1041.74'

LEGEND:

■ - 2'0" x 3'0" Drain
● - 6" x 10" Drain
Denotes sounding location. For sounding details see Sheets 13 and 14.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED
PLATE GIRDER BRIDGE

SITUATION PLAN

LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

MADE G.D. DATE ____ CHECKED ____ DATE ____

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

-0.60% — P.V.I. Sta. 77+50.00, Elev. 557.93 — P.V.T. Sta. 79+50.00 — -1.950 %

P.G. US 136

Unit 2 = 1126'-0 | Unit 3 = 654'-0

252'-0 | 15'-0" | 218'-0 | 203'-0 | 218'-0 | 218'-0

℄ Pier 6 Sta. 77+90.00 P.G. Elev. 556.72

℄ Brg. Exp. Joint 3 Sta. 78+05.00

℄ Pier 7 Sta. 80+08.00 P.G. Elev. 552.90

℄ Pier 8 Sta. 82+26.00 P.G. Elev. 548.65

560 550 540 530 520 510 500 490 480 470

E E F

2% Line Elev. 495.0

Low Water Elev. 478.0

Normal Pool Elev. 480.0

50 Year Flood Elev. 498.00

H.W. Elev. 501.3 (1973)

Cofferdam Design Water Elev. 485.0

Top of Rock

Elev. 459.0

Elev. 468.00

Elev. 470.00

LONGITUDINAL SECTION ALONG ℄ U.S. 136

RIVER

Match Line Sta. 77+50.00 — ℄ Pier 6 — ℄ Brg. Exp. Jt. 3 — Sta. 79+63.00 — ℄ Pier 7 — 6"x10" Drain, typ. — ℄ Pier 8 — Match Line Sta. 83+25.00

℄ Light Pole Base Sta. 80+08.00 A-5

1"℄ Rigid Steel Conduit with 2-#4, 1-#8 Grd.

90°00'00" Typical

Sta. 82+89.00

Baseline and ℄ U.S. 136 and Profile Grade Line

Sta. 81+45.00

2'-0 | 31'-0 | 1'-7 | 31'-0 | 73'-10½ out to out | 1'-5

Sidewalk Edge

Sta. 82+01.00

Sta. 82+51.00

Sta. 83+07.00

Sta. 83+63.00

-0.02%

-0.02%

78 79 80 81 82 83

S-12 S-13 S-14 S-15 S-16 S-17

Sta. 77+65.00 | Sta. 78+15.00 | Sta. 78+71.00 | Sta. 79+22.00 | Sta. 82+93.00

Jct. Box

℄ Light Pole Base Sta. 77+90.00 B-5

℄ Junction Box

2"℄ Rigid Steel Conduit (full length) - with junction boxes for all Light Poles with 2-#5, 1-#8 Grd.

℄ Junction Box

℄ Junction Box

℄ Light Pole Base Sta. 82+26.00 B-6

N

MISSISSIPPI

SITUATION PLAN

BENCH MARKS

PMB No. 2 — Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 — S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 — S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

Denotes sounding location. For sounding details see Sheets 14, 15 and 16.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

STA. 30+46.00 RIVER MILE 343.8

LEE COUNTY, IOWA

PROJECT NO. BRM-[illegible]

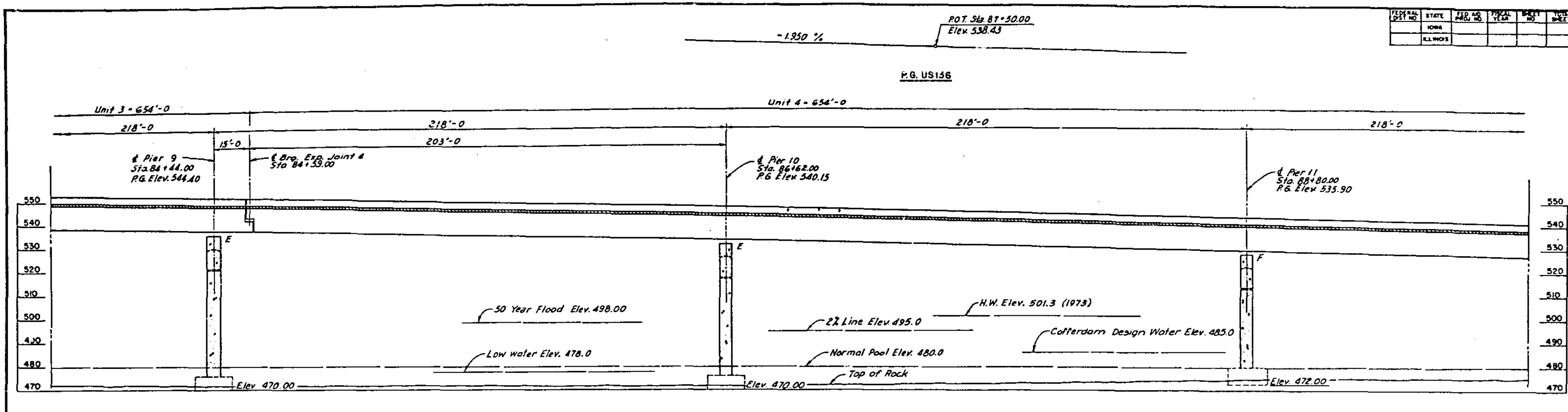
HANCOCK COUNTY, ILLINOIS

MADE G.D. DATE ____ CHECKED DLM DATE 12-82

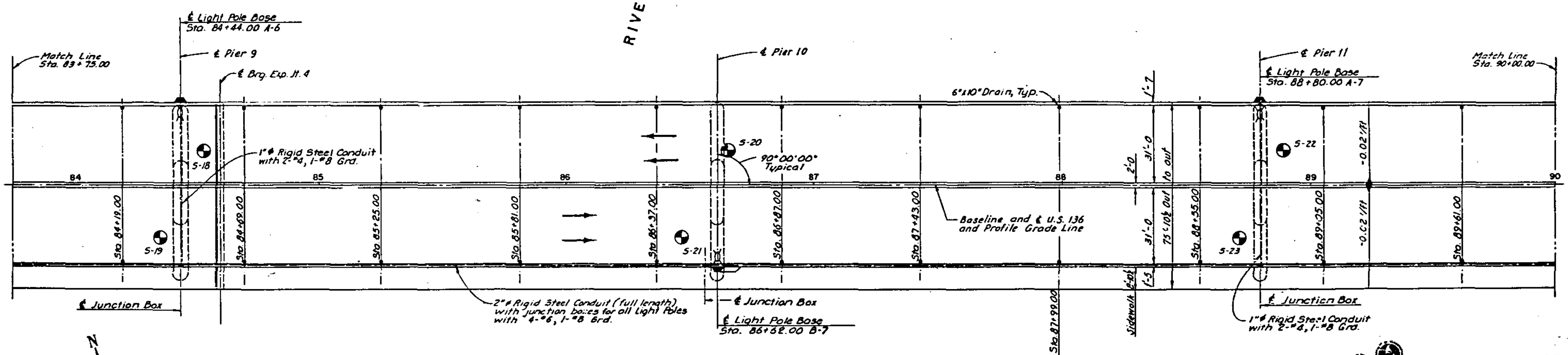
DESIGN NO. 282 LEE COUNTY FILE [illegible] SHEET 32 OF 227

6767

5-00


P.O.T. Sta. 87+50.00
Elev. 538.43
-1.950 %
P.G. US136
Unit 3 - 654'-0
Unit 4 - 654'-0
218'-0
15'-0
203'-0
℄ Pier 9
Sta. 84+44.00
P.G. Elev. 544.40
℄ Brg. Exp. Joint 4
Sta. 84+59.00
℄ Pier 10
Sta. 86+62.00
P.G. Elev. 540.15
℄ Pier 11
Sta. 88+80.00
P.G. Elev. 535.90
50 Year Flood Elev. 498.00
H.W. Elev. 501.3 (1973)
2% Line Elev. 495.0
Cofferdam Design Water Elev. 485.0
Low water Elev. 478.0
Normal Pool Elev. 480.0
Top of Rock
Elev. 470.00
Elev. 472.00

LONGITUDINAL SECTION ALONG ℄ U.S. 136


RIVER
MISSISSIPPI
℄ Light Pole Base
Sta. 84+44.00 A-6
Match Line
Sta. 83+75.00
℄ Pier 9
℄ Brg. Exp. Jt. 4
℄ Pier 10
℄ Pier 11
℄ Light Pole Base
Sta. 88+80.00 A-7
Match Line
Sta. 90+00.00
6"x10" Drain, Typ.
1"⌀ Rigid Steel Conduit with 2-#4, 1-#8 Grd.
90°00'00" Typical
Baseline and ℄ U.S. 136 and Profile Grade Line
2"⌀ Rigid Steel Conduit (full length) with junction boxes for all Light Poles with 4-#6, 1-#8 Grd.
℄ Junction Box
℄ Light Pole Base
Sta. 86+62.00 B-7
Sta. 87+99.00
Sidewalk
1"⌀ Rigid Steel Conduit with 2-#4, 1-#8 Grd.

SITUATION PLAN

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

⊕ Denotes sounding location. For sounding details see Sheets 16 and 17.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

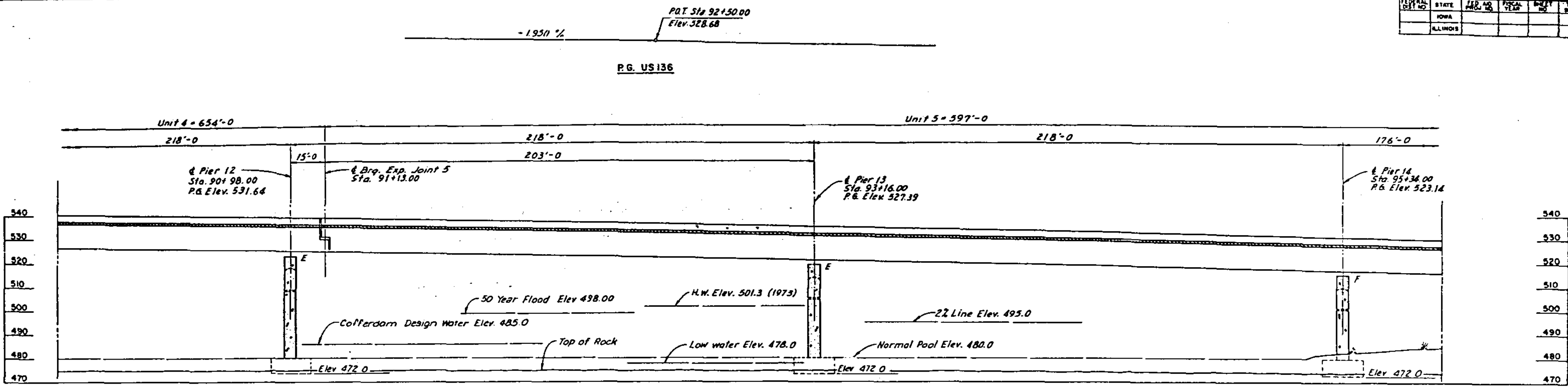
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

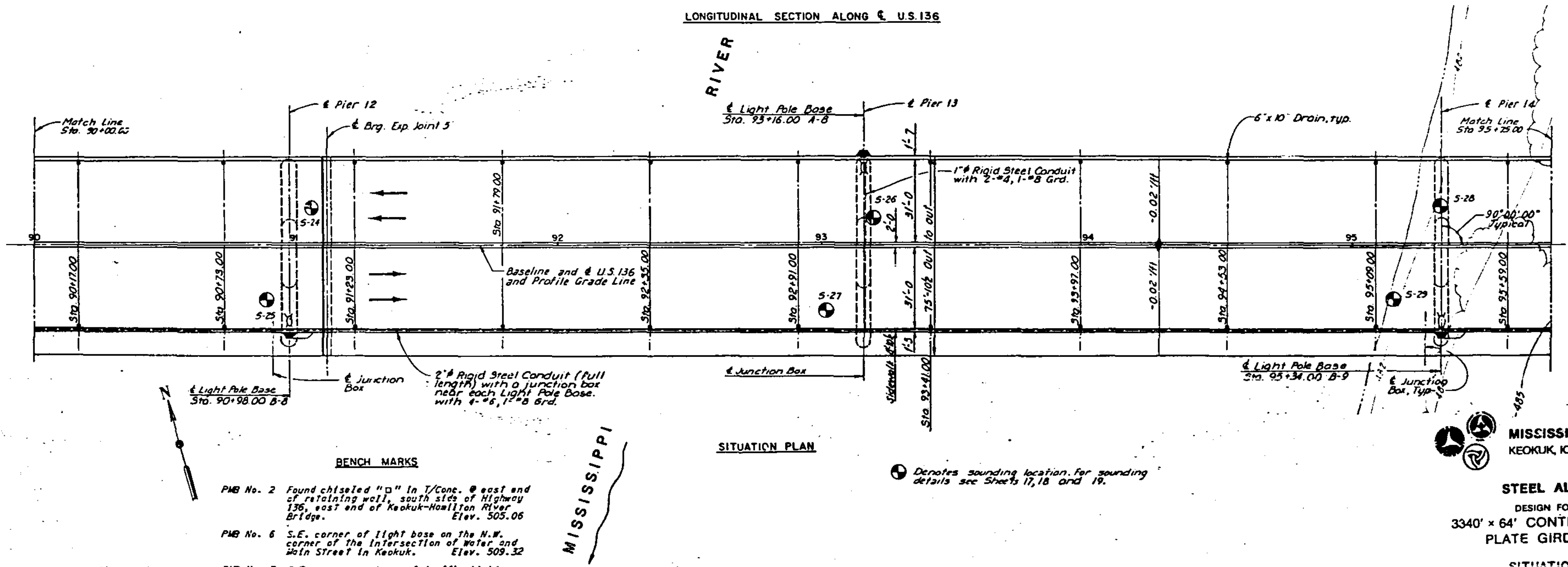
LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

HNTB

7-25-00



LONGITUDINAL SECTION ALONG ℄ U.S.136



SITUATION PLAN

Denotes sounding location. For sounding details see Sheets 17, 18 and 19.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

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PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

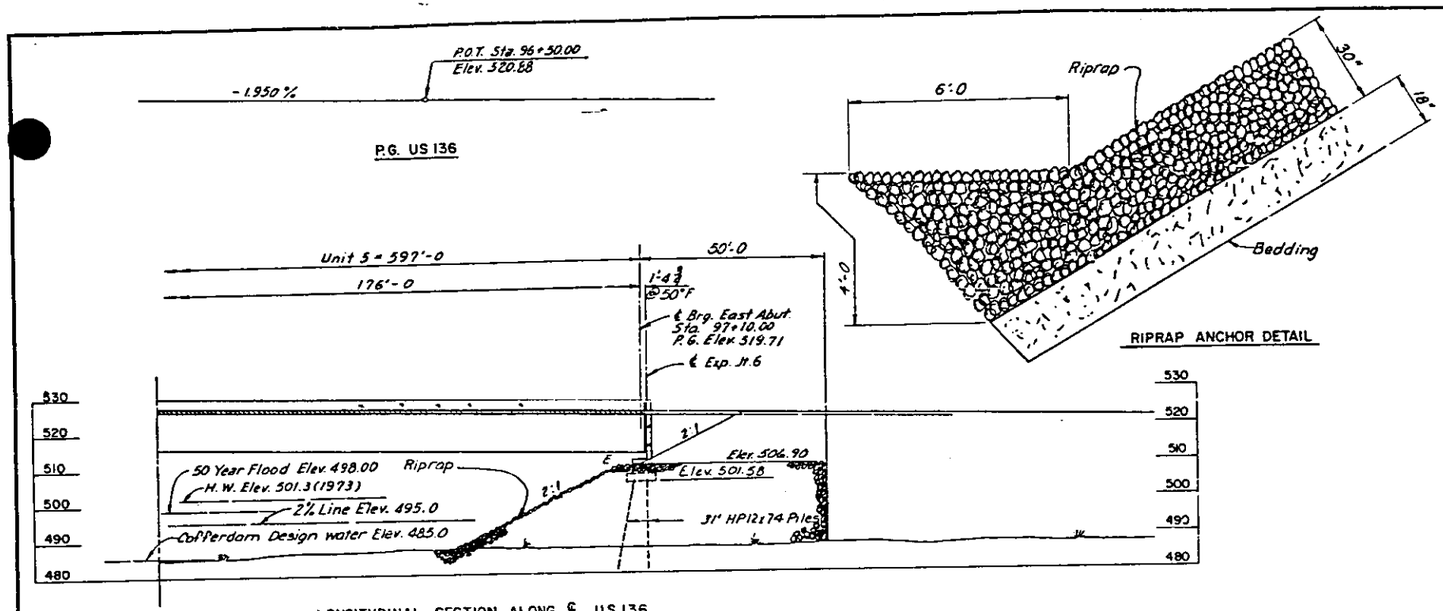
STA. 90+00.00
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. [illegible]
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 29 OF

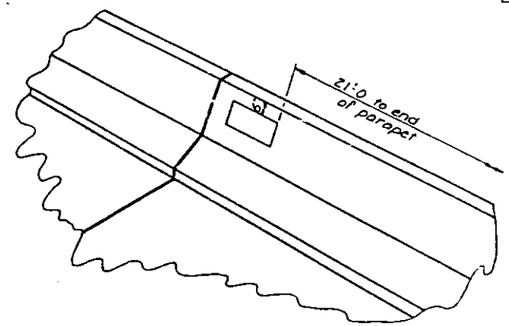
DESIGN NO. 282 LEE COUNTY FILE 28722 SHEET 34 OF 227

FEDERAL DIST NO	STATE	F.A.D. AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

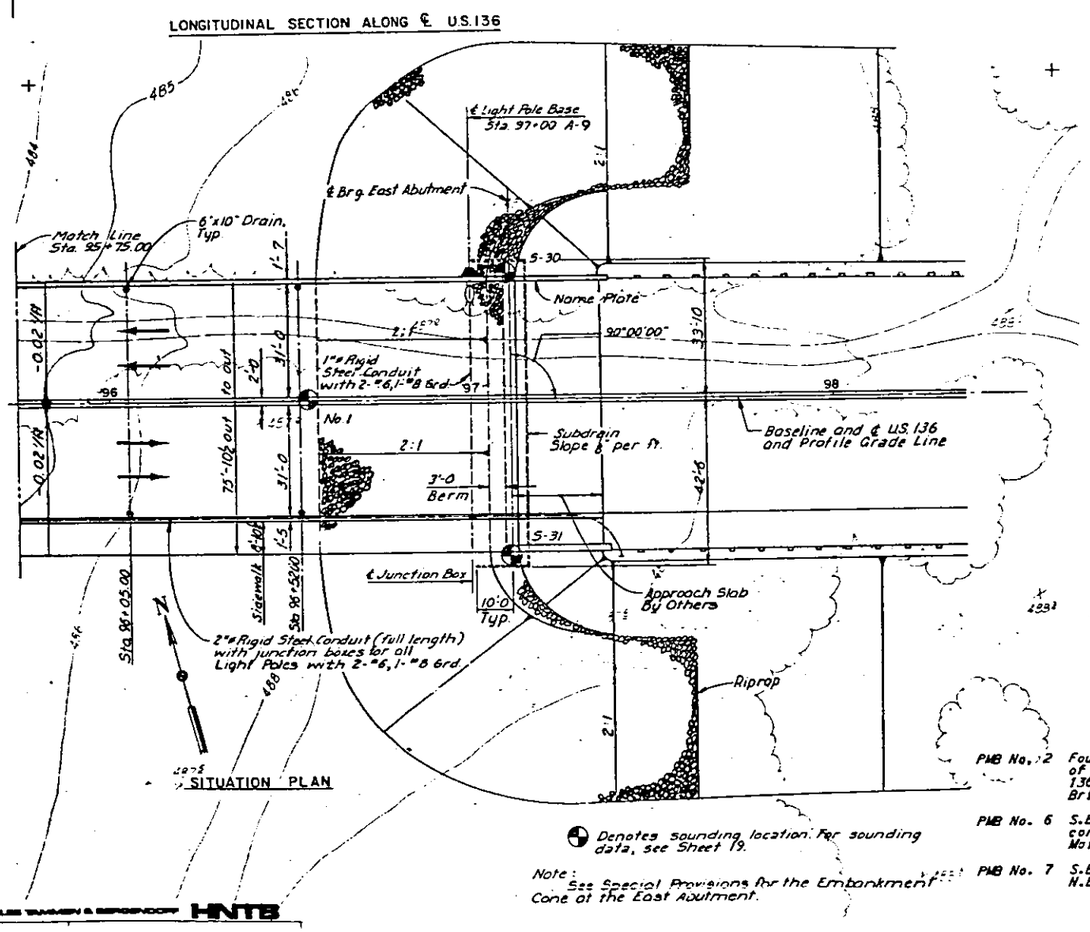


LONGITUDINAL SECTION ALONG ℄ U.S.136

RIPRAP ANCHOR DETAIL



NAME PLATE LOCATION
(East Abutment, North Barrier Curb)



Denotes sounding location. For sounding data, see Sheet 19.

Note: See Special Provisions for the Embankment Cone at the East Abutment.

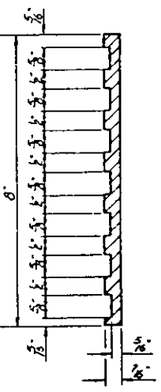
BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 519.17

STATION 80+40.00
BUILT IN 198(*)
F.A. RT. 53 SEC 22B
F.A. PROJ. BRF-19-1(3)--38-56
LOADING HS20
STR. NO. 034-~~0003~~ 0062



* Year bridge is completed.

NAME PLATE

Notes:
Name plate shall be best quality brass or bronze. Border and lettering shall be raised ¼ inch and square cut not tapered. Polish top surface. Plate shall have four lugs three inches long cast on back of plate.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

STA. ——.00
RIVER MILE 363.3
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(3)—38-56
HANCOCK COUNTY, ILLINOIS

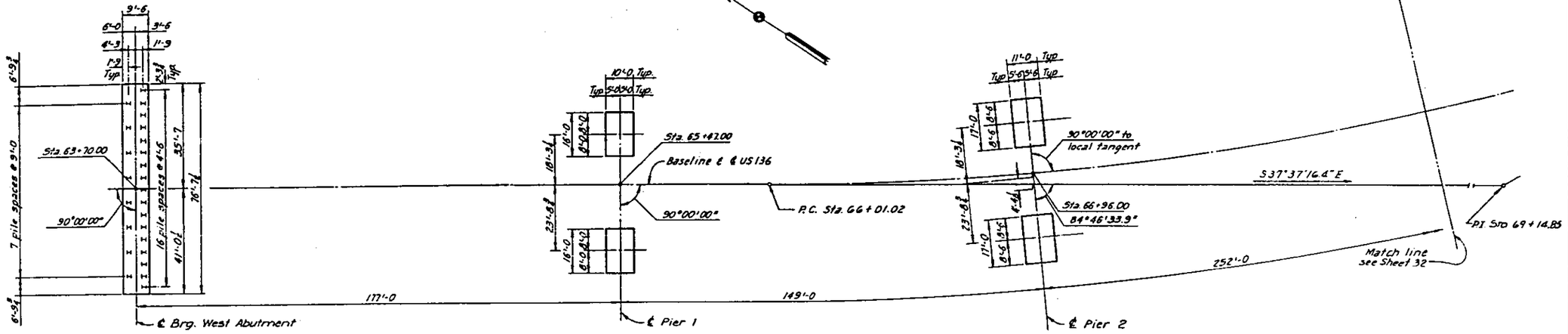
DESIGN SHEET 30 OF

DESIGN NO. 260 LEE COUNTY

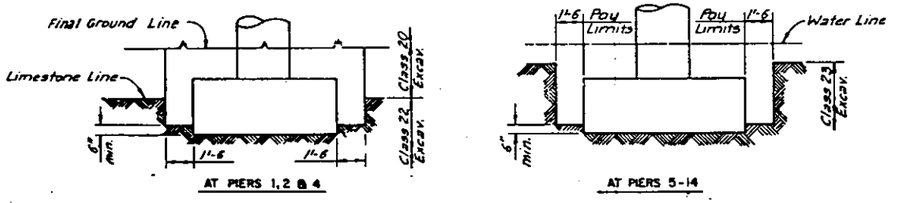
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

7-25-03

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



FOOTING PLAN



EXCAVATION DETAIL

Specifications

Design stresses for the following materials are in accordance with AASHTO Standard Specifications for Highway Bridges, Series of 1977, and Interim Specifications of 1978, 1979, 1980, 1981 and 1982.

Reinforcing steel in accordance with Section 1.5.30 fy = 60,000 psi.

Concrete in accordance with Section 1.5.30 f'c = 3,500 psi.

Welding shall be in accordance with Art. 2408.15.

General Notes:

This bridge is designed for HS20-44 and alternate military loading with allowance of 15 lbs. per sq. ft. of future wearing surface.

Drawing shall not be scaled.

Utilities are to be relocated by others.

The bridge contractor is to install the tile subdrain behind the East Abutment as detailed. The price bid for "Subdrain" is to include the excavation necessary for installation.

The bridge contractor is to level off and shape the berms to elevations and dimensions shown.

All dimensions are horizontal, unless otherwise shown.

The abutment piles are to be driven in oversized holes drilled through the fill to Elevation 587.0± at East Abutment. The minimum diameter of the drilled holes shall be 22". Voids around the steel pile shall be filled with dry sand. No separate payment will be made for drilling of holes or filling voids as the items are considered incidental to driving piles.

Steel Piles shall be driven to practical refusal and seated in limestone. Seating shall be done with a diesel hammer not more than 65,000 foot-pounds of rated energy operating at full capacity. The design capacity of the HP12X74 steel bearing piles is 96 tons per pile.

PIER NOTES

All exposed corners of 90° or sharper shall be filleted with a ¾-inch dressed and beveled strip.

Pile dimensions shown are at bottom of footings.

Column dowel bars shall be securely fastened into position prior to the placement of footing concrete.

The design bearing pressure for spread footings on limestone is 10 tons per sq. ft.

Structural concrete footing quantities shall be based on given plan dimensions.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

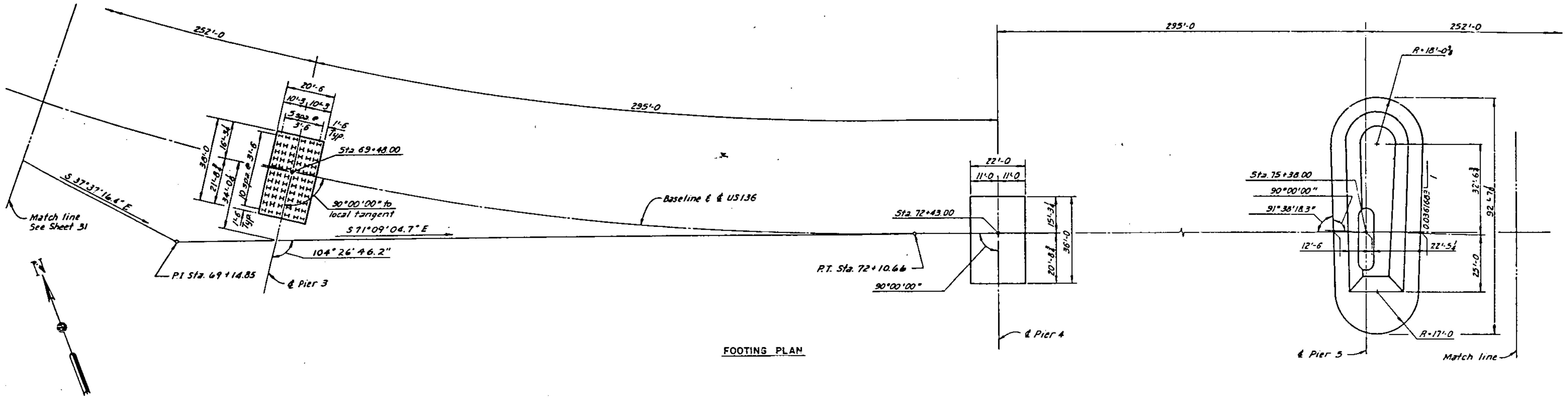
FOOTING PLAN

STA. 59+40.00
RIVER MILE 363.9
LEE COUNTY, IOWA

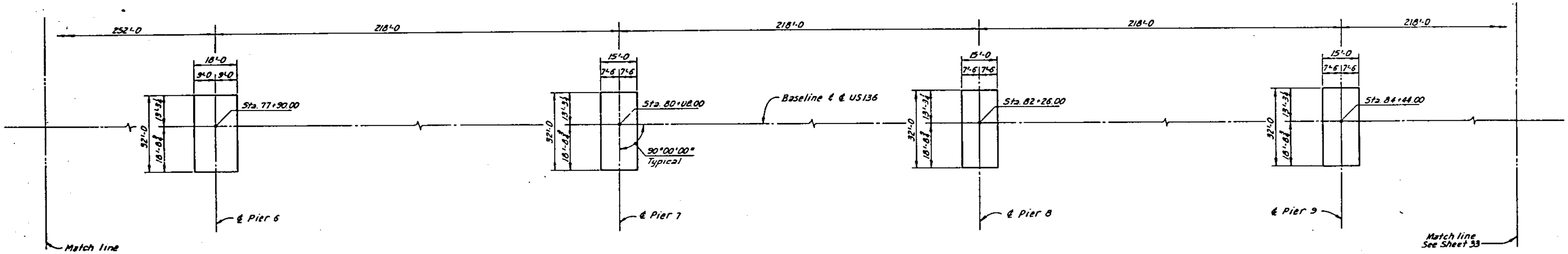
PROJECT NO. BRF-91-1(23)--39-56
HANCOCK COUNTY, ILLINOIS

67K 25-00

MADE ACC DATE 8-82 | CHECKED LCY DATE 8-82



FOOTING PLAN



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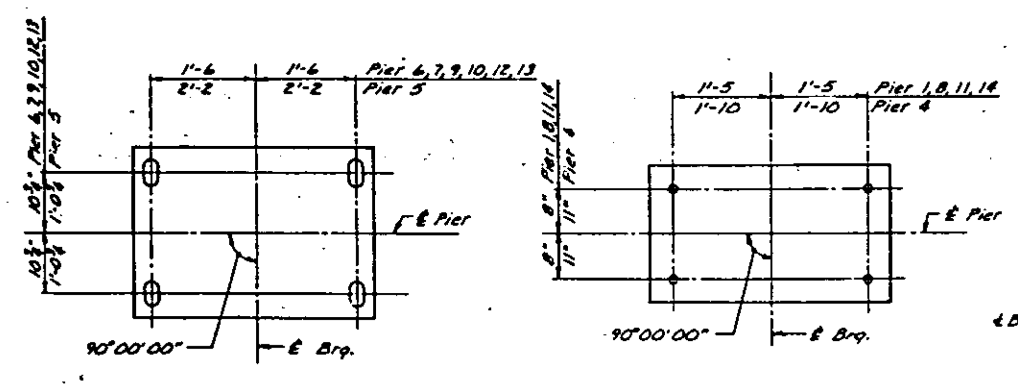
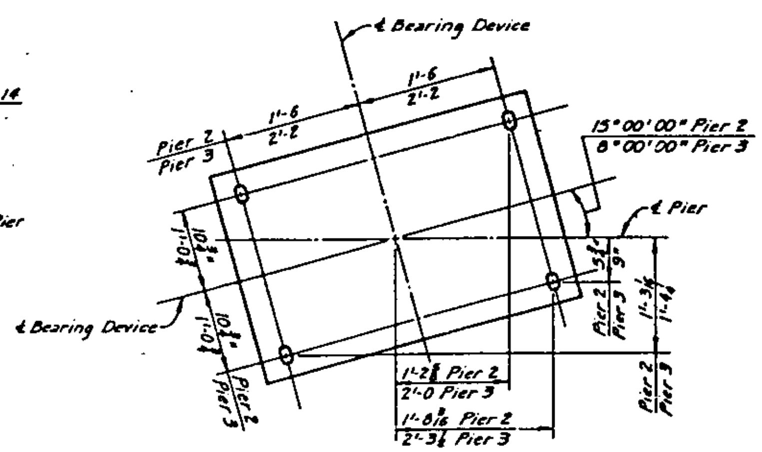


ANCHOR BOLT SETTING PLAN



MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

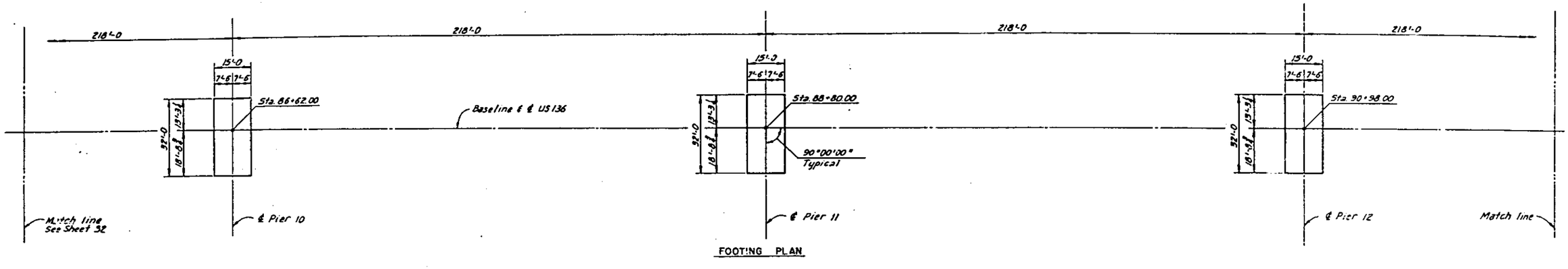
STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

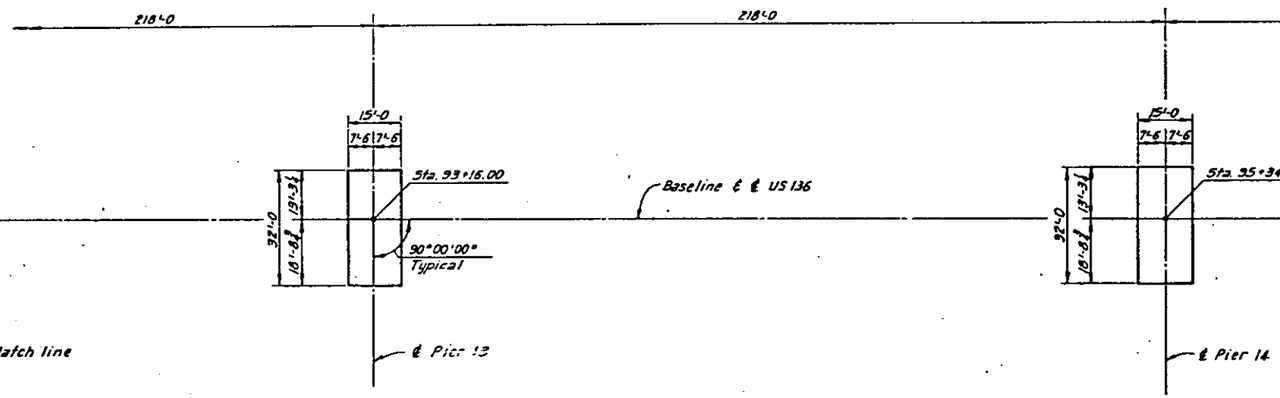
FOOTING PLAN

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB
MADE ACC DATE 8-82 | CHECKED LCY DATE 8-82

FEDERAL PROJ NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



FOOTING PLAN



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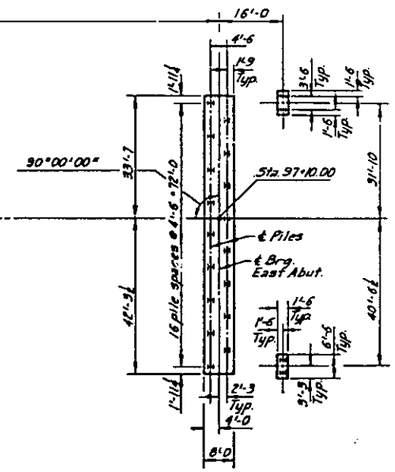
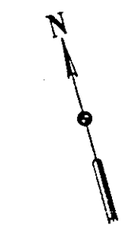




MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

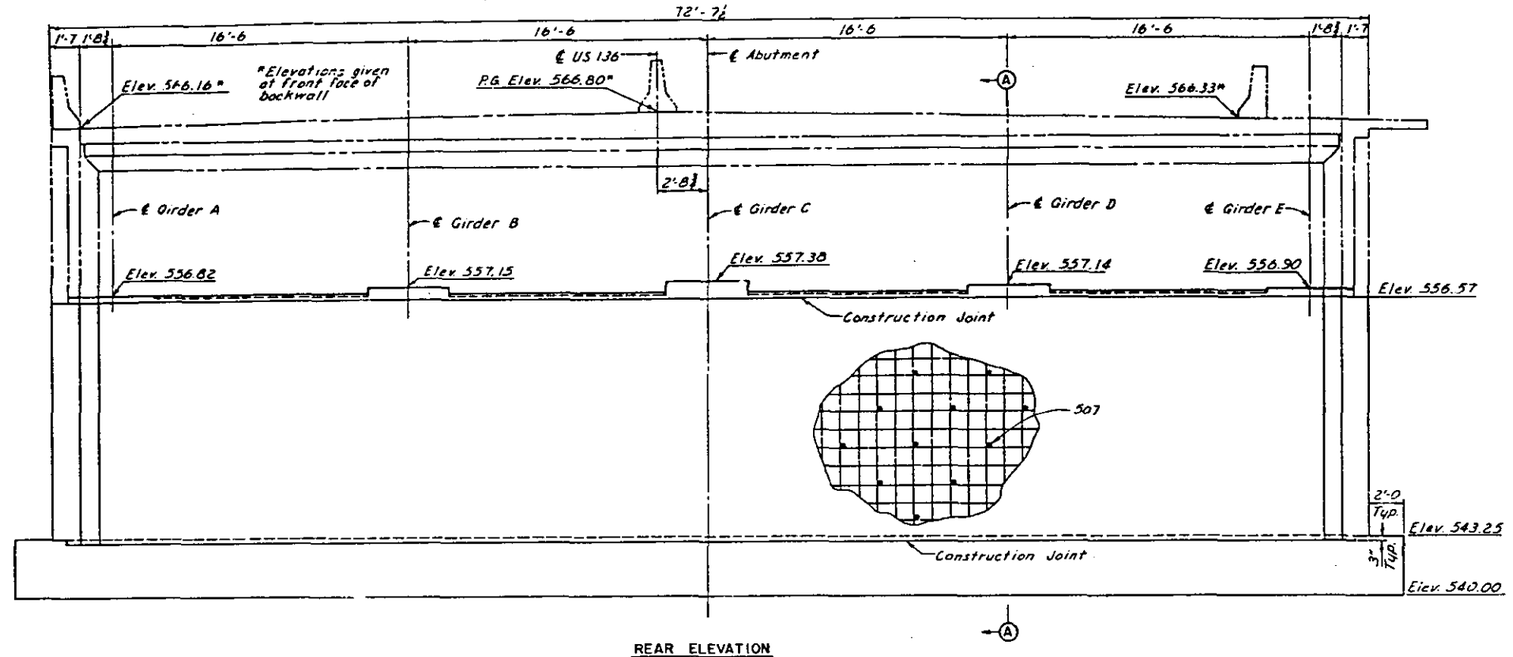
FOOTING PLAN

STA. [illegible]
LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS
DESIGN SHEET 33 OF

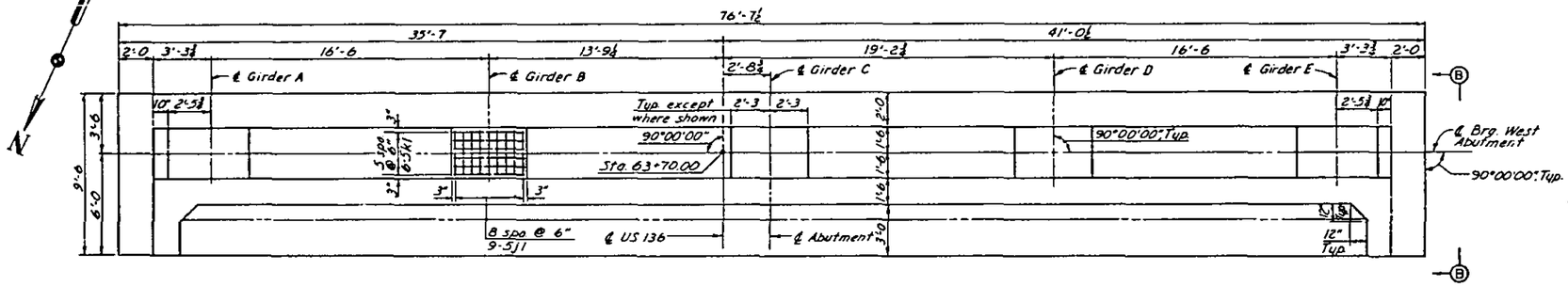
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB
DRAWN RCC DATE 8-82 CHECKED LCY DATE 8-82

DESIGN NO. [illegible] LEE COUNTY FILE [illegible] SHEET 38 OF 227

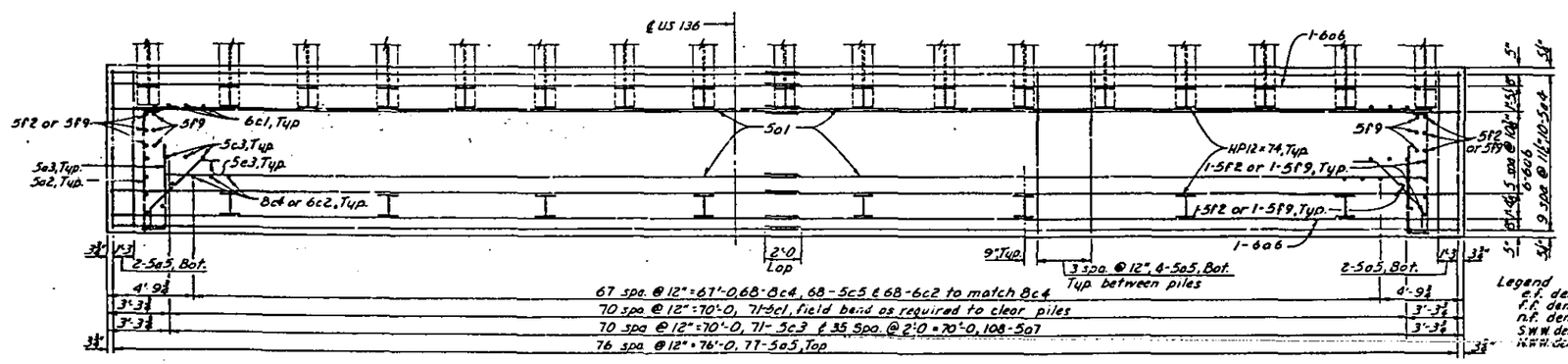
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



REAR ELEVATION



PLAN



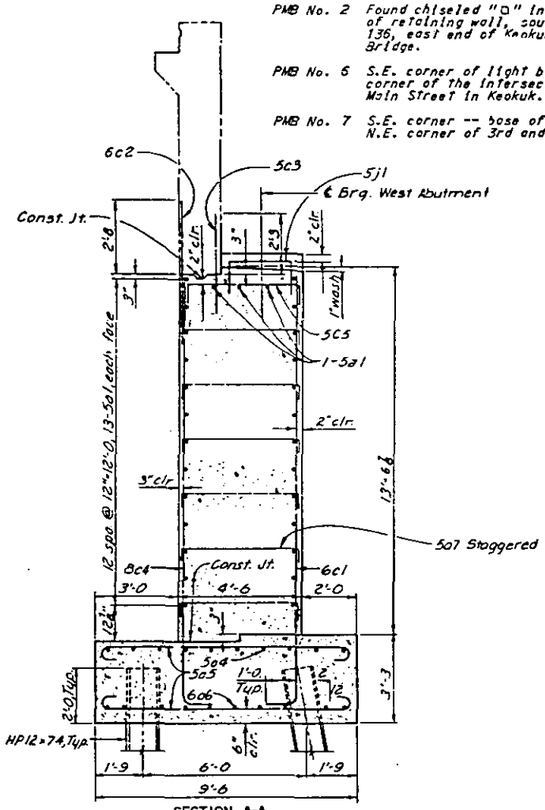
FOOTING PLAN

BENCH MARKS

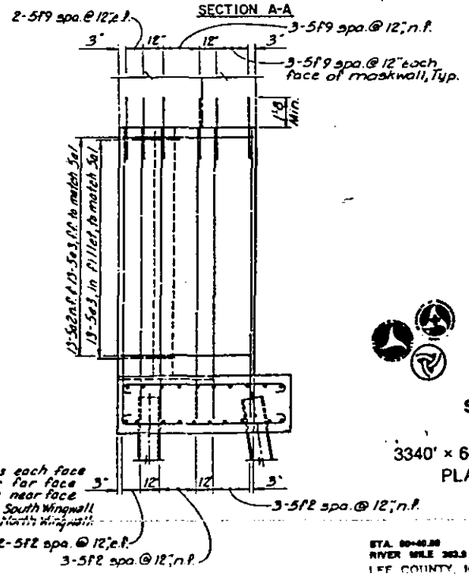
PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17



SECTION A-A



Legend
e.f. denotes each face
f.f. denotes far face
n.f. denotes near face
S.W.W. denotes South Wingwall
N.W.W. denotes North Wingwall

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

WEST ABUTMENT

STA. 80+48.38
RIVER MILE 383.9
LEE COUNTY, IOWA

PROJECT NO. BRF-90-1(37)-89-45
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 34 OF

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB
MADE JMH DATE 7-82 CHECKED LCY DATE 8-82

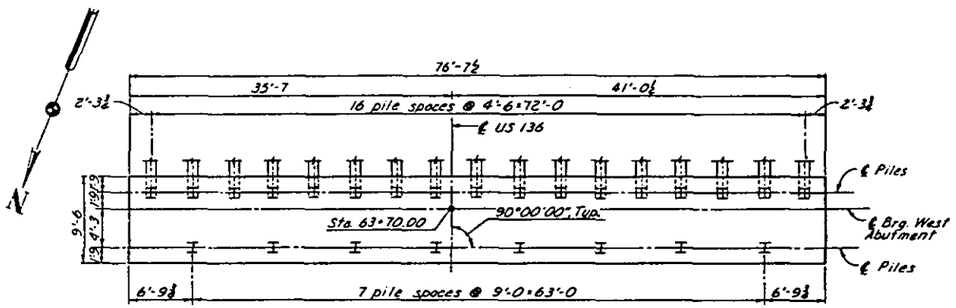
6767-00

DESIGN NO. 382 LEE COUNTY FILE 38723 SHEET 39 OF 227

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	NON-EPOXY COATED				
5a1	Barrel, Longit.		32	37'-2	1240
5a2	Wingwall, Longit.		26	8'-4	226
5a3	Wingwall, Longit.		26	5'-8	154
5a4	Footing, Longit.		20	39'-1	815
5a5	Footing, Trans.		145	10'-2	1538
6a5	Footing, Longit.		20	39'-1	1174
5a7	Barrel, Trans.		108	6'-1	685
5c3	Barrel, Dowel		71	3'-9.	278
6c1	Barrel, Vert.		71	16'-11	1804
5c5	Barrel. Trans.		68	6'-10	485
5e3	Fillet, Trans.		26	7'-1	192
5f2	Wingwall, Vert.		22	16'-10	386
5f9	Moskwall, Vert.		22	3'-4	76
5j1	Step, Longit.		30	5'-4	167
5k1	Step, Trans.		45	6'-10	321
				Total	9541
	EPOXY COATED				9541
6c2	Barrel, Dowel		68	4'-8	477
8c4	Barrel, Vert.		68	16'-11	3071
5f9	Moskwall, Vert.		6	3'-4	21
5a1	Barrel, Longit.		26	37'-2	1008
				TOTAL	4577

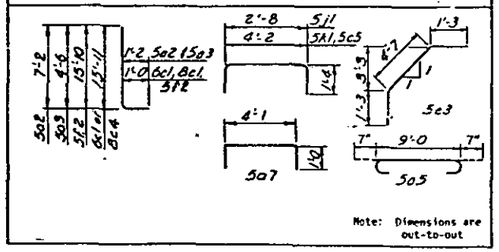


PILE PLAN

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footing -- Class C	C.Y.	84.2
Barrel -- Class C	C.Y.	162.3
Wingwall -- Class C	C.Y.	4.7
Fillet -- Class C	C.Y.	.5
Total	C.Y.	251.7

ESTIMATED QUANTITIES			
ITEM		UNIT	QUANTITY
Structural Concrete Class C		C.Y.	251.7
Excavation Class 20		C.Y.	221
Reinforcing Steel -- Non-Epoxy Coated		Lbs	9541
Epoxy Coated		Lbs.	4577
HP12x74, steel brg.	Furnish	Lin.Ft.	325
Piling 25@ 13'	Drive	Lin.Ft.	325

BAR BENDING DIAGRAMS



Note: Dimensions are out-to-out

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

DRAWN JMH DATE 7-82 CHECKED LCY DATE 8-82

6767-2-00

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

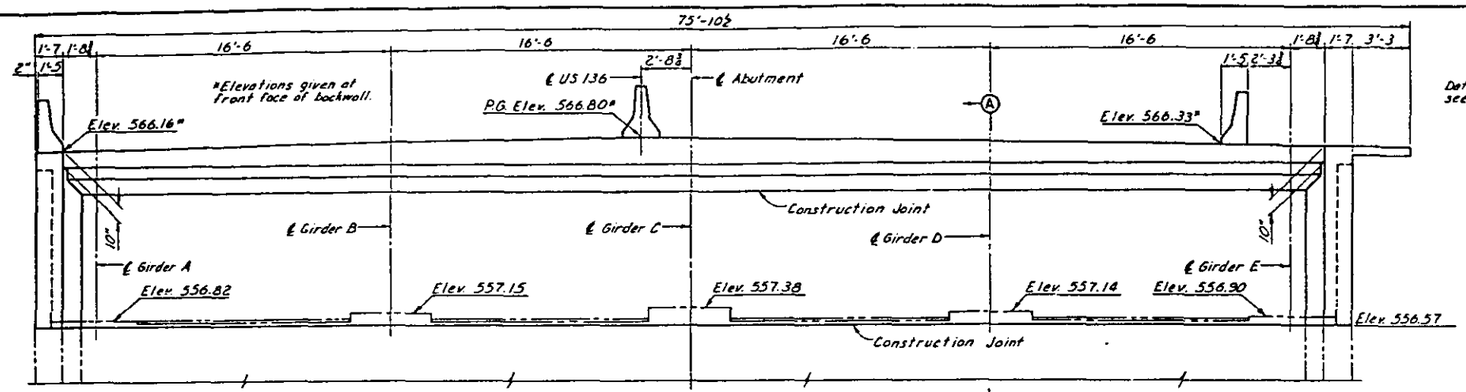
WEST ABUTMENT

STA. 58+68.00
RIVER MILE 363.9

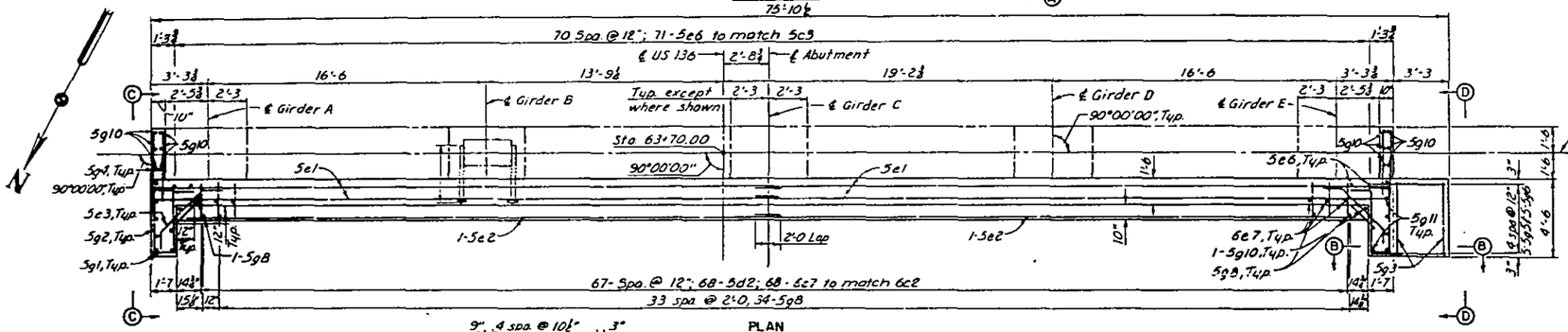
PROJECT NO. BRF-99-1(7)--58-23

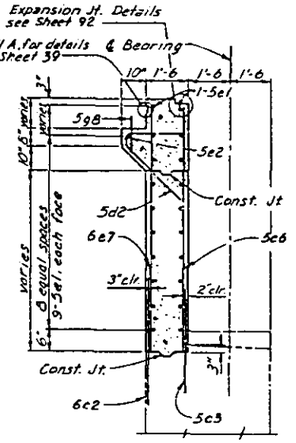
DESIGN NO. 282 LEE COUNTY FILE 39723 SHEET 40 OF 227

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



ELEVATION
75'-10½





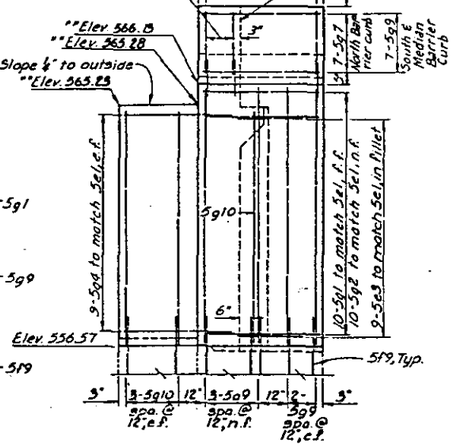
SECTION A-A

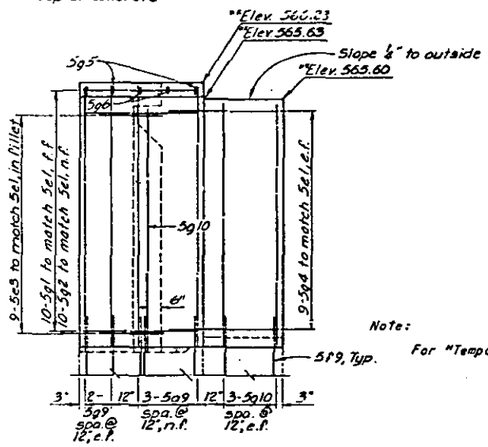
Note:
Bars 5c3, 6c2, 5f1, 5f2, 5f3, 5f4, 5f5 and 5f6 shall be placed by substructure contractor.
For Paving Block Details see Sheet 39

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	NON-EPOXY COATED				
5e1	Backwall, Longit.	—	20	37'-2	775
5e3	Fillet, Trans.		18	4'-2	78
5e6	Backwall, Vert.	—	71	7'-1	133
5g1	Wingwall, Longit.		20	6'-8	139
5g2	Wingwall, Longit.		20	5'-5	113
5g4	Maskwall, Longit.	—	36	4'-3	160
5g6	Sidewalk, Trans.	—	5	4'-5	23
5g10	Maskwall and Fillet	—	14	8'-10	129
5g11	Wingwall, Vert.	—	8	9'-4	78
5r1	Paving Block Hoop		9	2'-5	23
			Total		1651
	EPOXY COATED REINFORCING				
5d2	Slab Seat, Trans.		68	5'-2	366
5e1	Backwall, Longit.	—	20	37'-2	775
5e2	Slab Seat, Longit.	—	2	351'-5	74
6e7	Backwall, Vert.	—	68	9'-5	952
5g3	Sidewalk, Longit.	—	4	4'-2	17
5g5	Sidewalk, Trans.		5	5'-9	30
5g7	Curb, Longit.	—	7	4'-2	30
5g8	Paving Notch Dowel	—	35	1'-8	61
5g9	Curb, Longit.	—	14	1'-2	17
5g11	Wingwall, Vert.	—	6	9'-4	58
5h1	Curb, Transverse		7	5'-9	42
5h2	Curb, Transverse		7	5'-3	38
5h3	Curb, Transverse	—	4	2'-7	11
5h4	Curb, Transverse		4	3'-4	14
			Total		2495

PLAN



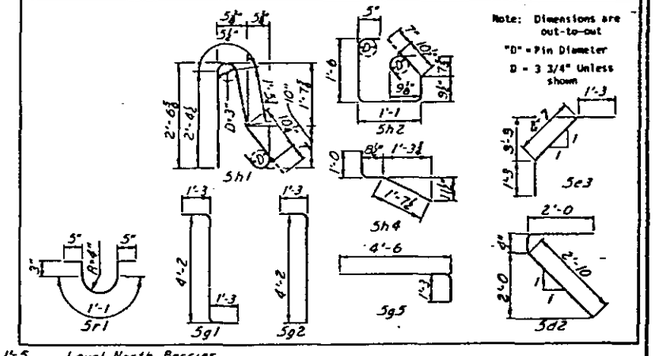


**Elevations given of outside face of wall, top of concrete

Note:
For "Temporary Paving Block Details" see Sheet 39.

SECTION B-B

BAR BENDING DIAGRAMS



BENCH MARKS

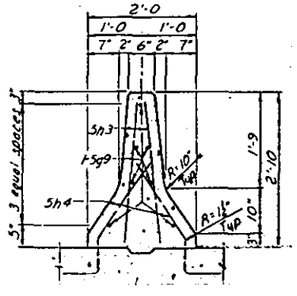
PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

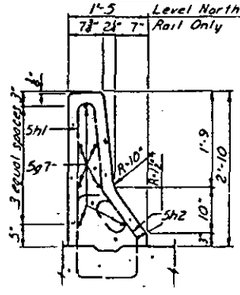
PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete Cl C	C.Y.	50.4
Reinforcing Steel -- Epoxy Coated	Lbs.	2495
Reinforcing Steel Non-Epoxy Coated	Lbs.	1651

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Backwall -- Class C	C.Y.	45.2
Wingwall -- Class C	C.Y.	1.2
Maskwall -- Class C	C.Y.	1.6
Temporary Paving Block-- Class C	C.Y.	2.4
Total	C.Y.	50.4



INTERIOR SECTION



EXTERIOR SECTION

BARRIER RAIL REINFORCEMENT DETAILS

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

WEST ABUTMENT

STA. 59+05.00
RIVER MILE 393.9
LEE COUNTY, IOWA

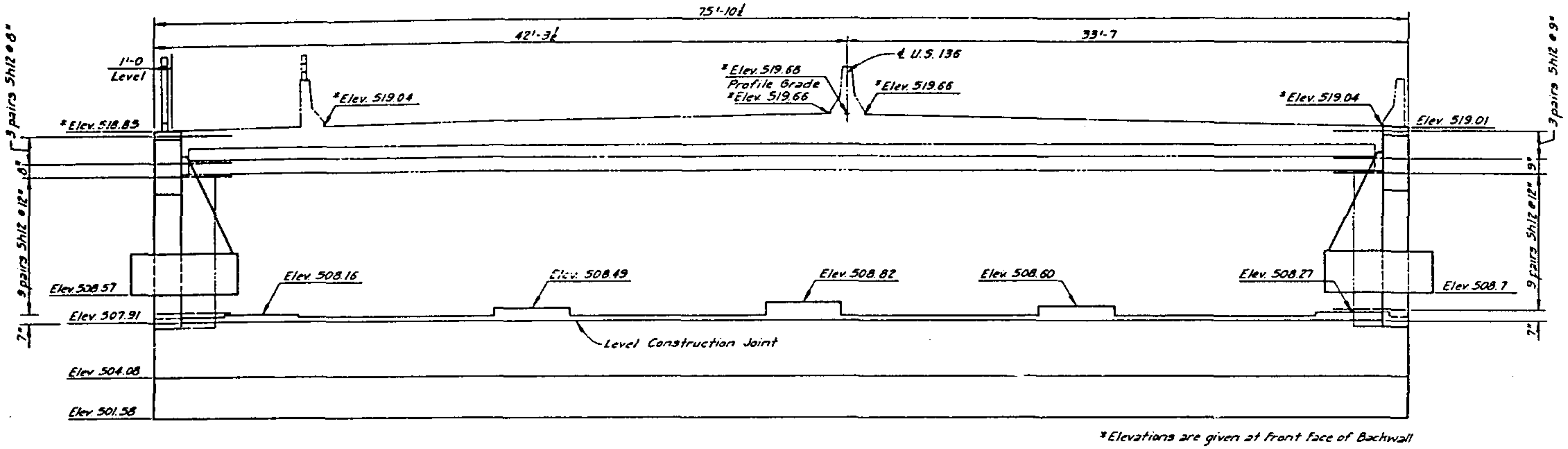
PROJECT NO. BRF-19-1(3)--39-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 36 OF

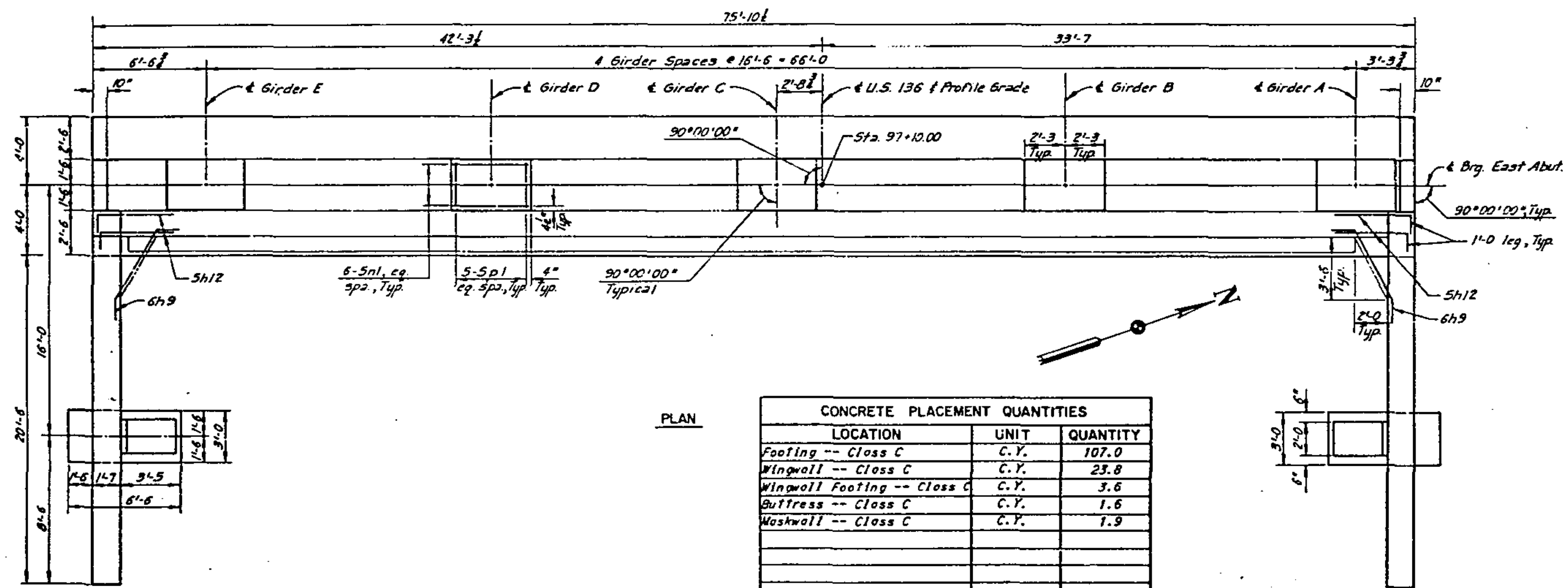
DESIGN NO. 398 LEE COUNTY FILE 39723 SHEET 41 OF 227

6767-5-00

MADE JMH DATE 7-82 CHECKED LCY DATE 8-82

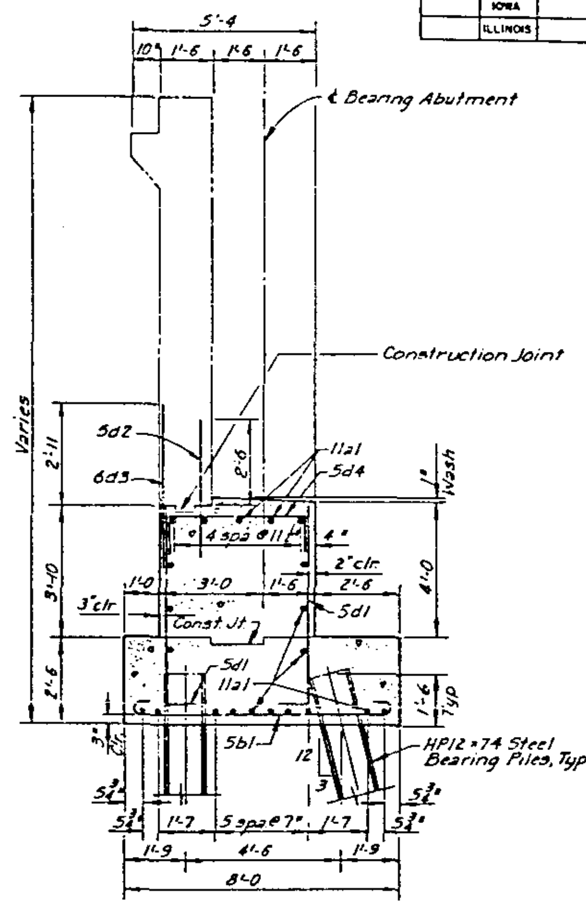


ELEVATION



PLAN

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footing -- Class C	C.Y.	107.0
Wingwall -- Class C	C.Y.	23.8
Wingwall Footing -- Class C	C.Y.	3.6
Buttress -- Class C	C.Y.	1.6
Washwall -- Class C	C.Y.	1.9
Total	C.Y.	137.9



TYPICAL SECTION

ESTIMATED QUANTITIES			
ITEM		UNIT	QUANTITY
Structural Concrete Class C		C.Y.	137.9
Reinforcing Steel (Non-Epoxy Coated)		Lbs.	13,833
*Reinforcing Steel (Epoxy Coated)		Lbs.	2388
Excavation -- Class 20		C.Y.	270
HP 12 x 74 Steel Bearing Piling	Furnish	Lin.Ft.	689
17 @ 31', 2 @ 37' and 2 @ 44'	Drive	Lin.Ft.	689

* See Sheet 94 for Barrier Curb details.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light --

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

EAST ABUTMENT

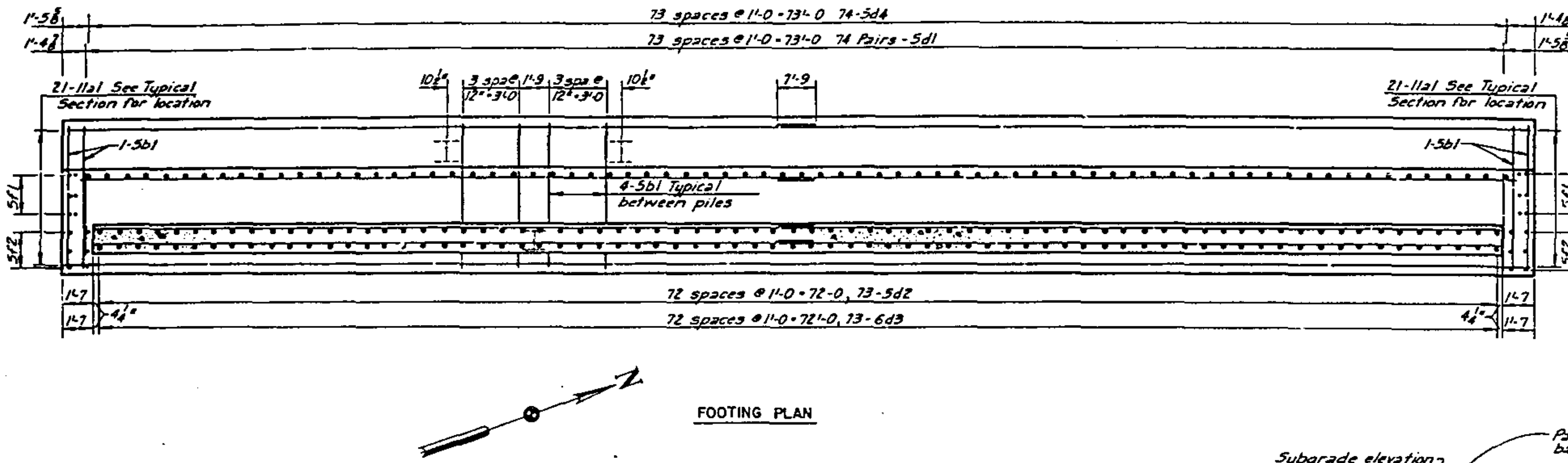
STA. [illegible]
RIVER MILE [illegible]
PROJECT NO. [illegible]

DESIGN SHEET 37 OF

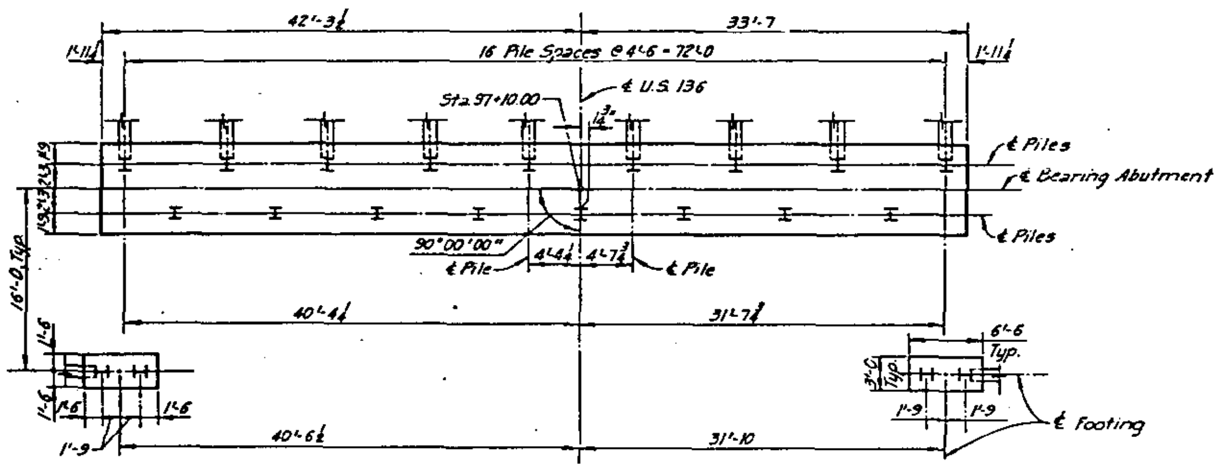
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB
MADE RCC DATE 7-82 CHECKED LCY DATE 8-82

DESIGN NO. 382 LEE COUNTY FILE [illegible] SHEET 42 OF 227

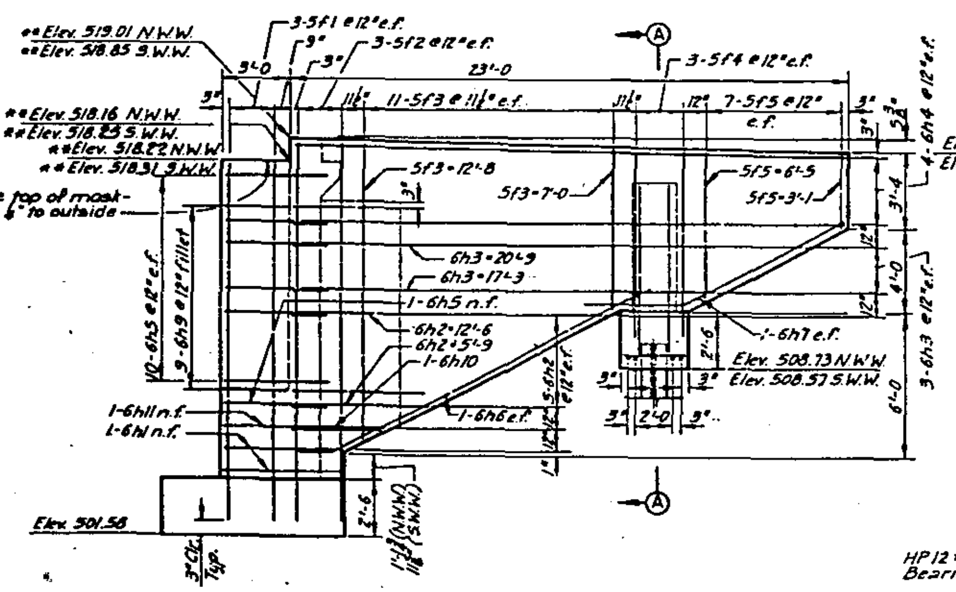
FEDERAL DIST NO.	STATE	FED AID PROJ NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



FOOTING PLAN

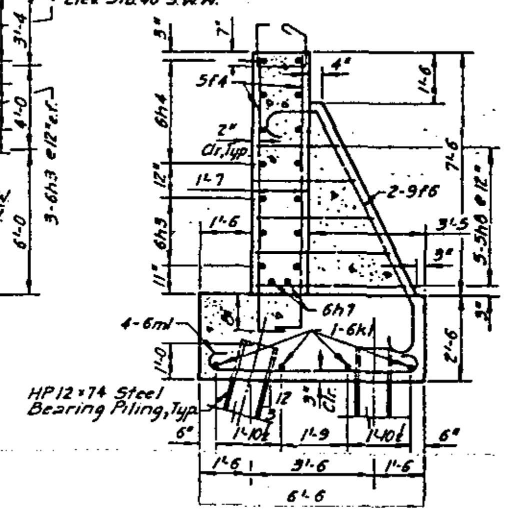


PILE PLAN

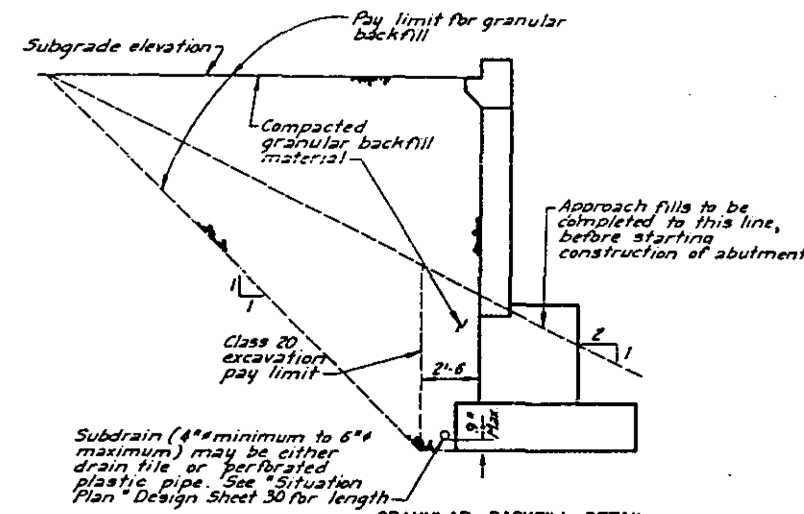


WINGWALL ELEVATION

N.W.W. denotes North Wingwall
S.W.W. denotes South Wingwall
e.f. denotes each face.
South Wingwall shown, North Wingwall similar.
** Elevations shown at outside fascia.



SECTION A-A



GRANULAR BACKFILL DETAIL

Abutment Notes:

Place top of backwall after superstructure slab is in place.

All exposed corners 90° or sharper are to be filleted with a ¾" dressed and beveled strip.

Reinforcing steel is to be securely wired in place before concrete is poured.

Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

Construction joint keyways are to be formed with beveled 2 x 6's.

Girders and masonry plates are to be set before the backwall is placed.

The maskwall is to be poured before the superstructure slab is poured.

All backfill behind the East Abutment between wings is to be granular backfill. The remainder of the abutment excavation is to be backfilled with soil.

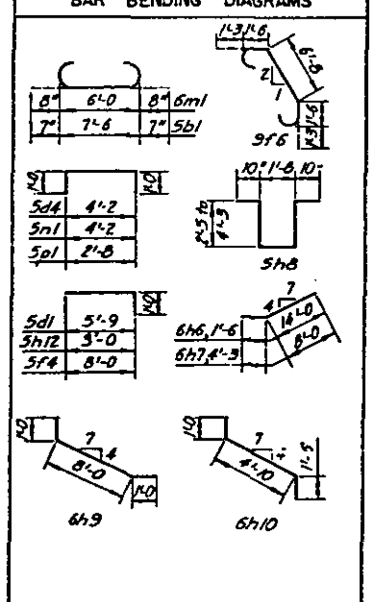
Pile dimensions are at bottom of footing.

Batter piles 3" per foot in direction shown.

For Barrier Curb Reinforcement and bending diagrams for the North Wingwall see Sheet 94.

The South Wingwall has an aluminum handrail for details see Sheet 95.

BAR BENDING DIAGRAMS



Note: Dimensions are out-to-out

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	NON-EPOXY COATED REINFORCING				
11a1	Footing and Barrel		36	41'-8	7969
5b1	Footing		68	8'-8	615
5d1	Barrel		74	6'-9	521
5d2	Barrel Dowel		73	4'-0	305
5d4	Barrel		74	6'-2	476
5f1	Maskwall		12	16'-3	203
5f2	Wingwall		12	16'-10	211
5f3	Wingwall		4 Ser.11	Varies	451
5f4	Wingwall		12	9'-0	113
5f5	Wingwall		4 Ser.7	Varies	139
9f6	Counterfort		4	12'-2	165
6h1	Wingwall		4	5'-2	31
6h2	Wingwall		4 Ser.5	Varies	274
6h3	Wingwall		4 Ser.3	Varies	342
6h4	Wingwall		16	22'-8	545
6h5	Maskwall		42	4'-6	284
6h6	Wingwall		4	15'-6	93
6h7	Wingwall		4	12'-3	74
5h8	Counterfort		2 Ser.5	Varies	104
6h9	Fillet		18	10'-0	270
6h10	Fillet		2	7'-4	22
6h11	Wingwall		2	6'-9	20
5h12	Wingwall		48	4'-0	200
6k1	Counterfort Footing		8	2'-8	32
6m1	Counterfort Footing		8	7'-4	88
5n1	Bearing Pad		30	6'-2	193
5p1	Bearing Pad		25	4'-8	122
			Total		13833
	EPOXY COATED REINFORCING				
6d3	Barrel Dowel		73	4'-11	539
5d1	Barrel		74	6'-9	521
11a1	Footing and Barrel		6	41'-8	1328
			Total		2388

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

EAST ABUTMENT DETAILS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

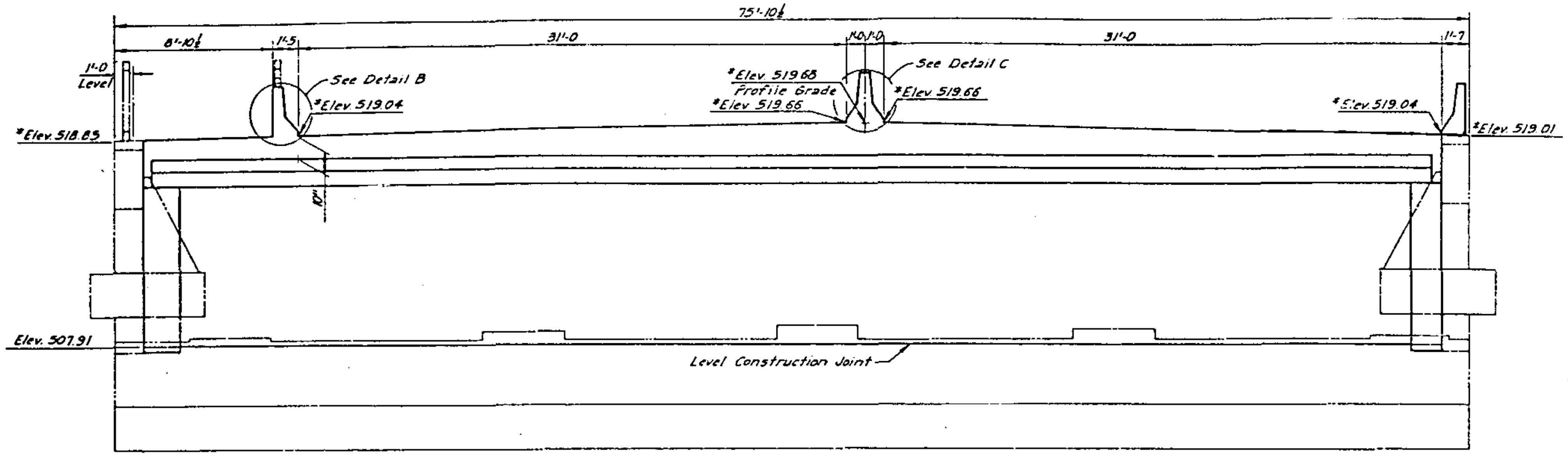
MADE ACC DATE 7-82 CHECKED LCY DATE 8-82

PROJECT NO.

DESIGN SHEET 39

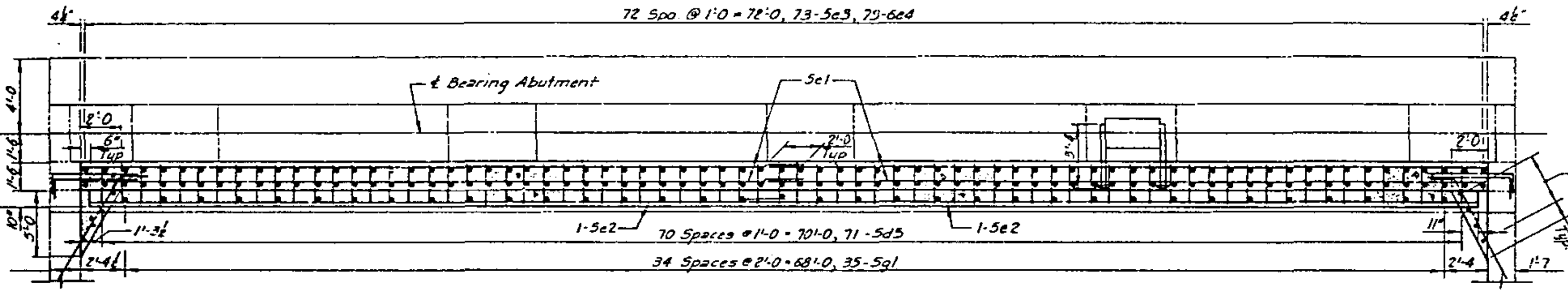
DESIGN NO. 382 LEE COUNTY SHEET 45 OF 127

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

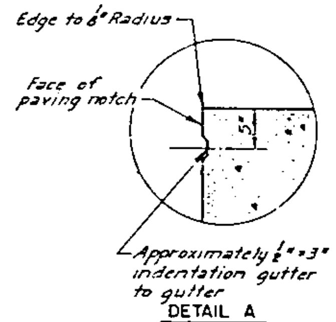


ELEVATION

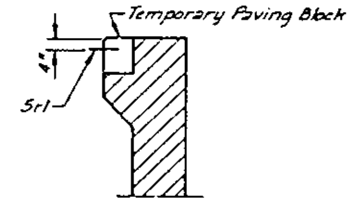
*Elevations are given at Front Face of Backwall



PLAN



DETAIL A

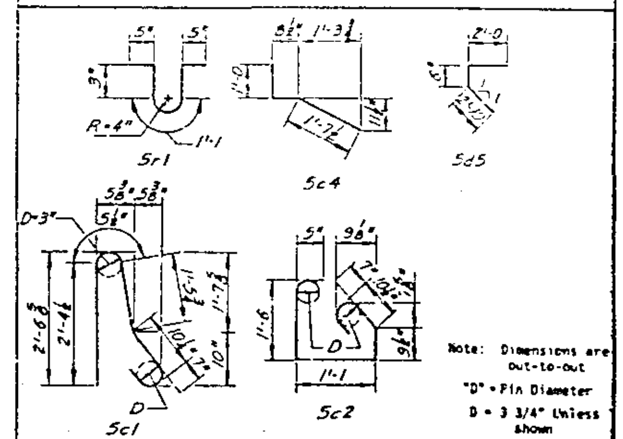


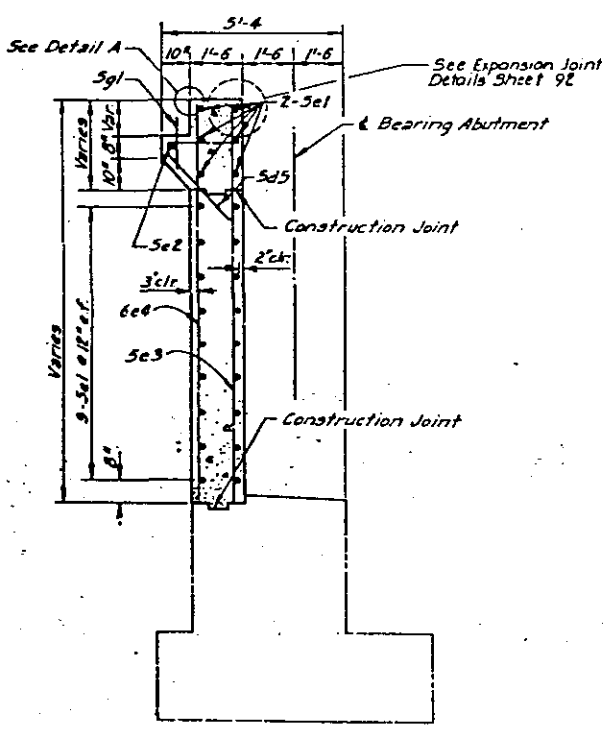
The concrete paving block is to be poured after the backwall is in place. Bend down 5g1 bars and line the notch with bar paper to prevent bond. Block is to be removed and 5g1 bars straightened before paving is poured.

PART SECTION OF BACKWALL PAVING BLOCK DETAIL

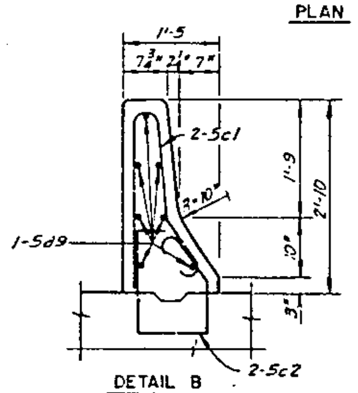
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	BILL OF REINFORCEMENT				
	NON-EPOXY COATED REINFORCING				
5e1	Backwall	—	24	37'-3	932
5e3	Backwall, Vert.	—	73	10'-7	805
5r1	Paving Block	⌐U¬	9	2'-5	23
5b13	Fillet	—	8	10'-0	83
			Total		1844
	EPOXY COATED REINFORCING				
5c1	Curb, Transverse		2	5'-9	12
5c2	Curb, Transverse		2	5'-3	11
5c3	Curb, Transverse	—	4	2'-7	11
5c4	Curb, Transverse		4	3'-4	14
5d5	App. Slab Seat		71	5'-4	355
5d9	Curb, Longitudinal	—	14	1'-2	17
5e1	Backwall	—	24	37'-3	932
5e2	App. Slab Seat	—	2	36'-9	77
6e4	Backwall, Vert.	—	73	10'-9	1179
5g1	App. Slab Seat	—	35	1'-6	55
			TOTAL		2703

BAR BENDING DIAGRAMS

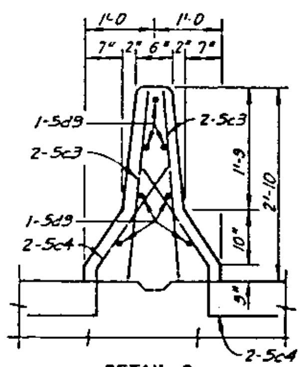




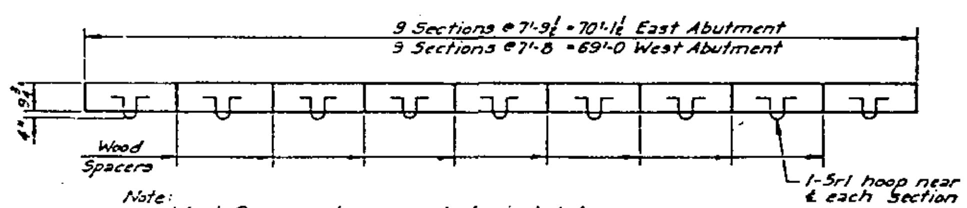
TYPICAL SECTION



DETAIL B



DETAIL C



Note: Wood Spacers shown are to be included in price bid for structural concrete.

TEMPORARY PAVING BLOCK DETAIL

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

Abutment Notes:

Place top of backwall after superstructure slab is in place.

All exposed corners 90° or sharper are to be filleted with a ¾" dressed and beveled strip.

Reinforcing steel is to be securely wired in place before concrete is poured.

Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

Cost of all preformed joint material is to be included in price bid for structural concrete.

Construction joint keyways are to be formed with beveled 2 x 6's.

Girders and masonry plates are to be set before the backwall is placed.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Concrete (Class C)	C.Y.	49.7
Reinforcing Steel (Non-Epoxy Coated)	Lbs.	1844
Reinforcing Steel (Epoxy Coated)	Lbs.	2703
Granular Backfill	C.Y.	463

CONCRETE PLACEMENT QUANTITIES

LOCATION	UNIT	QUANTITY
Backwall, Class C	C.Y.	44.9
Temporary Paving Block Class C	C.Y.	2.5
Fillet, Class C	C.Y.	2.3
TOTAL		49.7

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

EAST ABUTMENT

STA. 80+46.29

LEE COUNTY, IOWA HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 36 OF

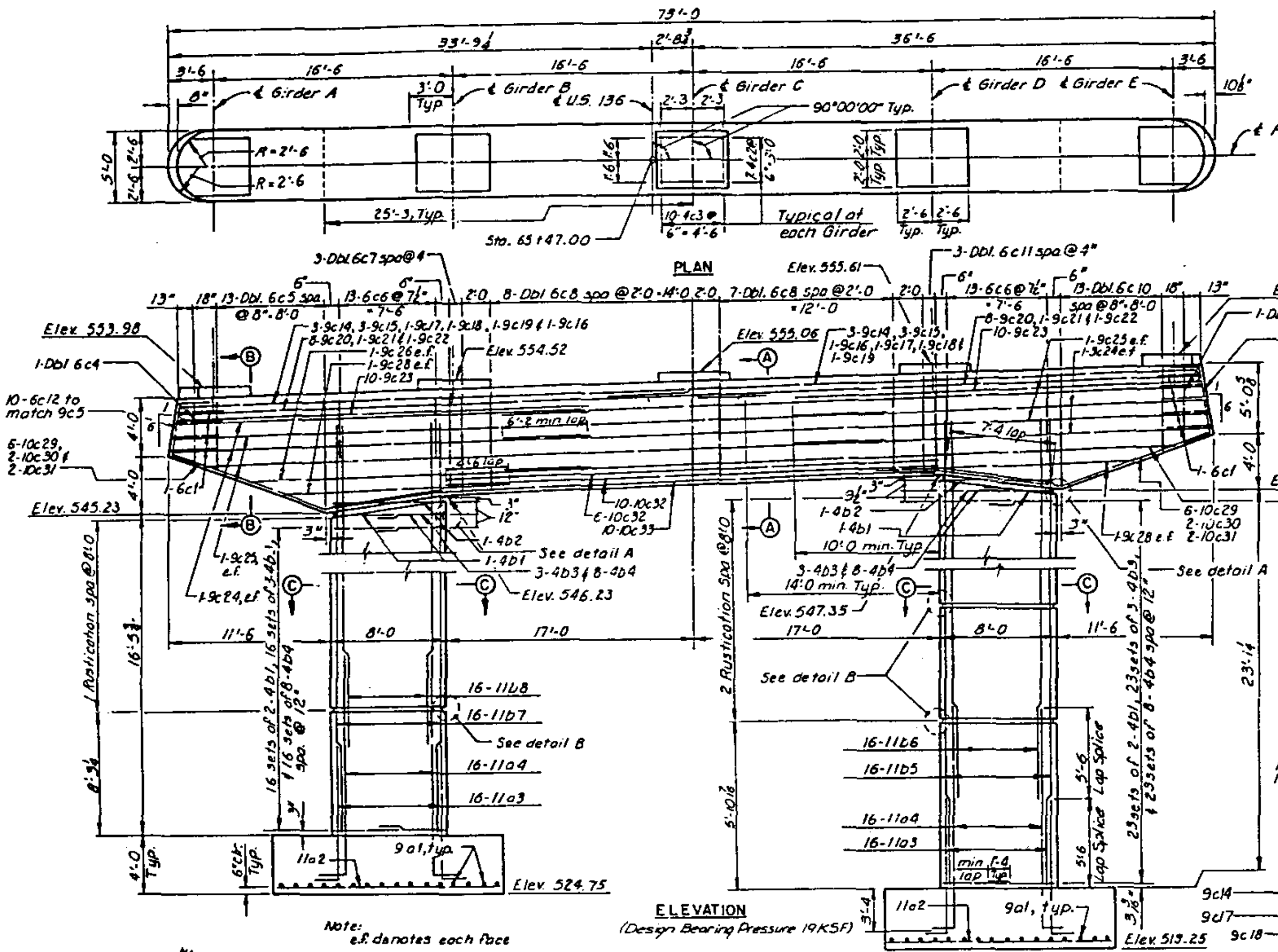
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE RCC DATE 8-82 CHECKED LCY DATE 8-82

6787 5-00

DESIGN NO. 382 LEE COUNTY FILE 28733 SHEET 44 OF 227

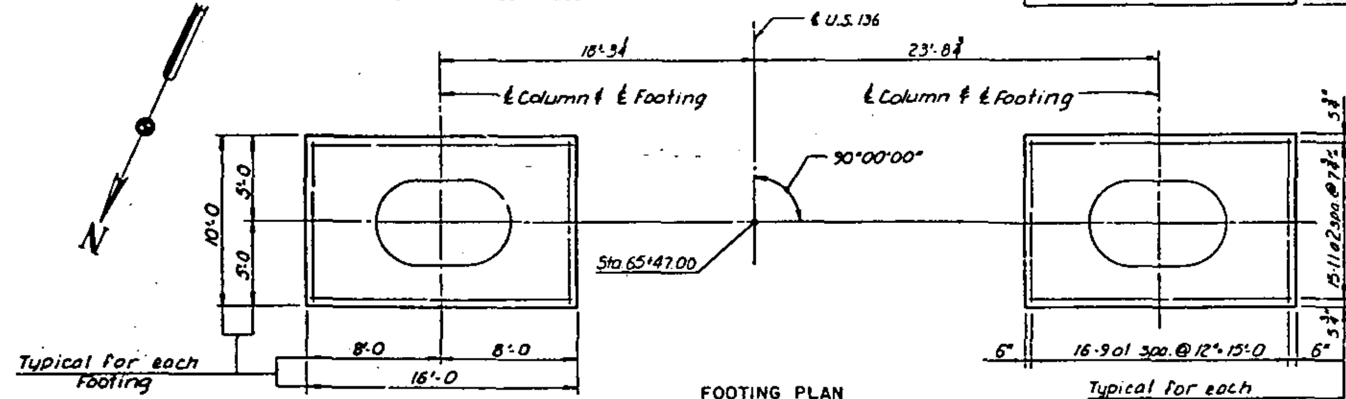
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



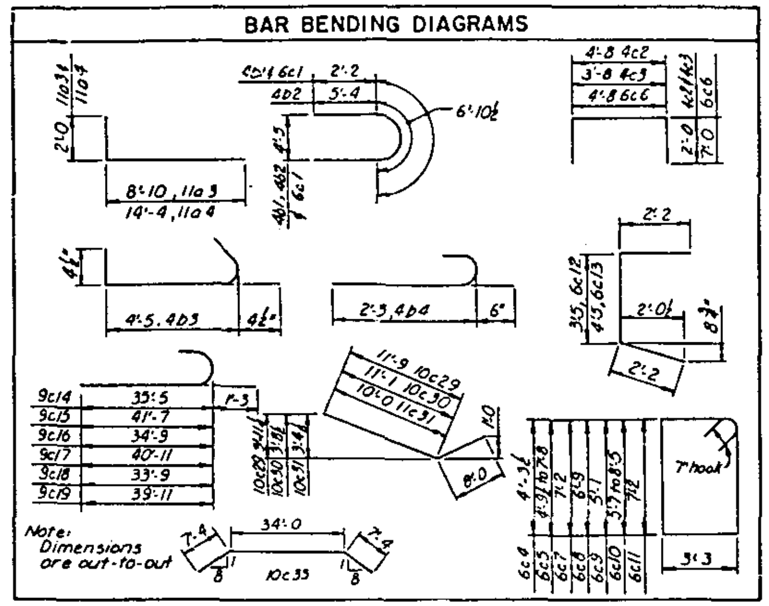
PLAN

ELEVATION (Design Bearing Pressure 19 KSF)

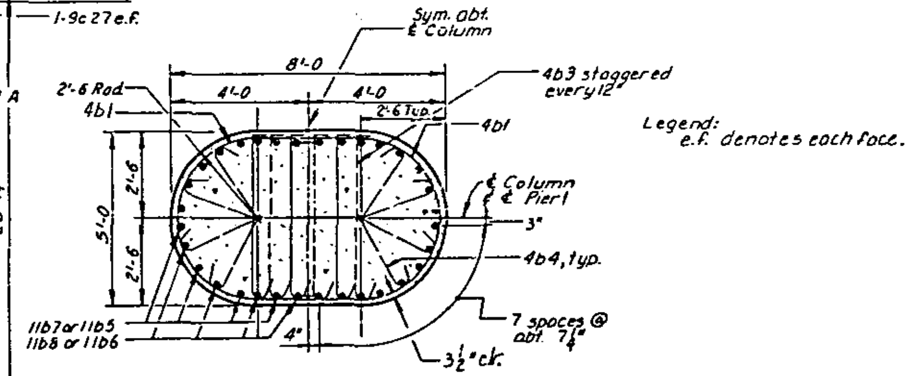
Note: e.f. denotes each face



FOOTING PLAN

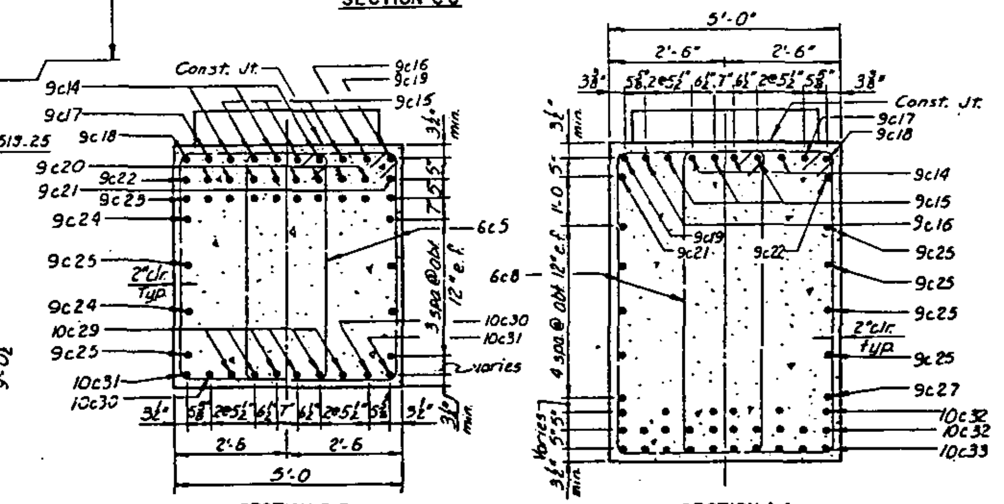


BAR BENDING DIAGRAMS



SECTION C-C

Legend: e.f. denotes each face.



SECTION B-B

SECTION A-A

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footing, Horizontal		32	9'-6	1034
11a2	Footing, Horizontal		30	15'-6	2471
11a3	Footing, Vertical		32	10'-10	1842
11a4	Footing, Vertical		32	16'-4	2777
4b1	Column, Horizontal		82	11'-3	616
4b2	Column, Horizontal		2	17'-7	23
4b3	Column, Horizontal		123	5'-2	425
4b4	Column, Horizontal		328	2'-9	603
11b5	Column, Vertical		16	29'-0	2465
11b6	Column, Vertical		16	23'-6	1958
11b7	Column, Vertical		16	22'-6	1913
11b8	Column, Vertical		16	17'-0	1445
6c1	Cap Beam, Horiz.		9	11'-3	152
4c2	Cap Beam, Pads		35	8'-8	203
4c3	Cap Beam, Pads		50	7'-8	256
6c4	Cap Beam, Vertical		2	16'-3	49
6c5	Cap Beam, Vertical		2 Ser.		
			of 13	Varies	785
6c6	Cap Beam, Vertical		26	18'-8	▲
6c7	Cap Beam, Vertical		6	22'-0	198
6c8	Cap Beam, Vertical		30	21'-2	954
6c9	Cap Beam, Vertical		2	17'-10	54
6c10	Cap Beam, Vertical		2 Ser.		
			of 13	Varies	847
6c11	Cap Beam, Vertical		6	22'-0	198
6c12	Cap Beam, Vertical		10	7'-9	116
6c13	Cap Beam, Vertical		10	8'-9	131
9c14	Cap Beam, Horiz.		6	36'-8	748
9c15	Cap Beam, Horiz.		6	42'-10	874
9c16	Cap Beam, Horiz.		2	36'-0	245
9c17	Cap Beam, Horiz.		2	42'-2	287
9c18	Cap Beam, Horiz.		2	35'-0	238
9c19	Cap Beam, Horiz.		2	41'-2	280
9c20	Cap Beam, Horiz.		16	32'-5	1763
9c21	Cap Beam, Horiz.		2	33'-9	230
9c22	Cap Beam, Horiz.		2	39'-11	271
9c23	Cap Beam, Horiz.		20	28'-5	1932
9c24	Cap Beam, Horiz.		8	29'-4	798
9c25	Cap Beam, Horiz.		8	49'-6	1346
9c26	Cap Beam, Horiz.		2	28'-5	193
9c27	Cap Beam, Horiz.		2	48'-8	331
9c28	Cap Beam, Horiz.		4	20'-1	273
10c29	Cap Beam, Horiz.		12	19'-9	1020
10c30	Cap Beam, Horiz.		4	19'-1	328
10c31	Cap Beam, Horiz.		4	18'-0	310
10c32	Cap Beam, Horiz.		16	34'-0	2341
10c33	Cap Beam, Horiz.		10	42'-8	2094
				Total	38,186

Notes:

For Pier Notes see Sheet 31.

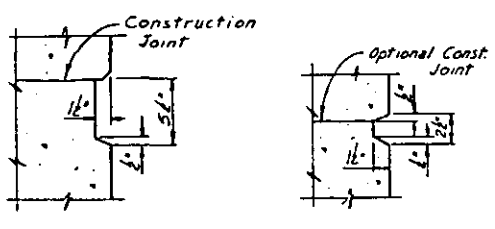
For Electrical Grounding Details, see Sheet 108.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17



DETAIL A

DETAIL C

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete **	C.Y.	198.8
Reinforcing Steel	Lbs.	38,186
Excavation Class 20	C.Y.	103
Class 22	C.Y.	46

** Class C

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	99.6
Column -- Class C	C.Y.	51.8
Footing -- Class C	C.Y.	47.4
Total	C.Y.	198.8

MISSISSIPPI RIVER BRIDGE

KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

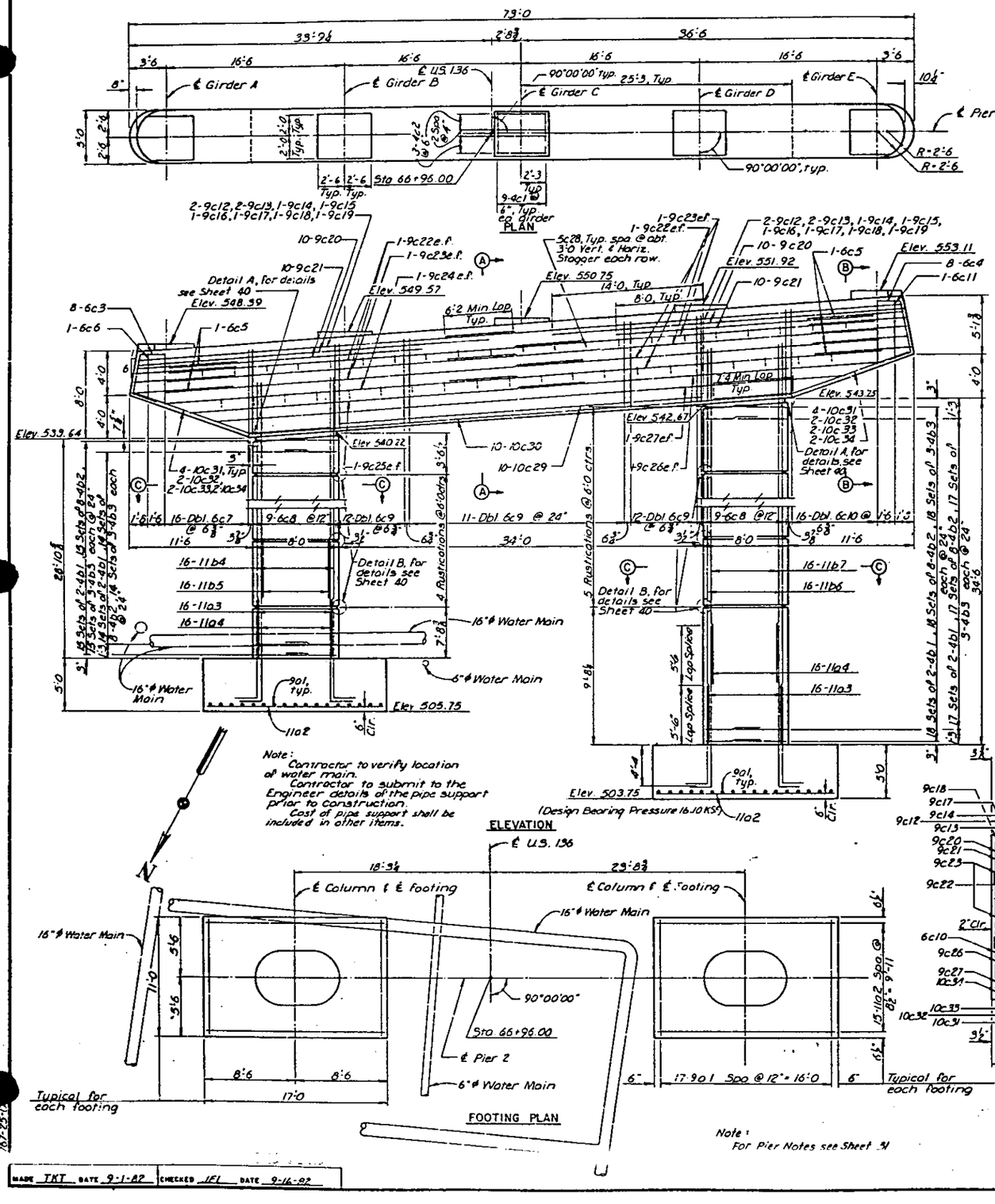
PIER 1

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

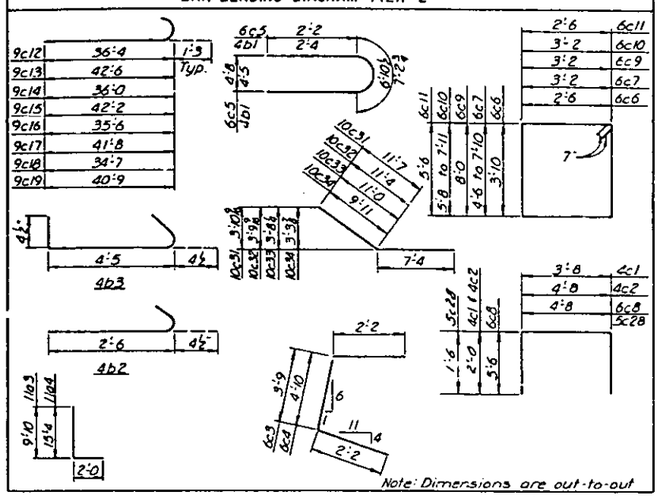
MADE HCM DATE 7-82 CHECKED JFJ DATE 8-82

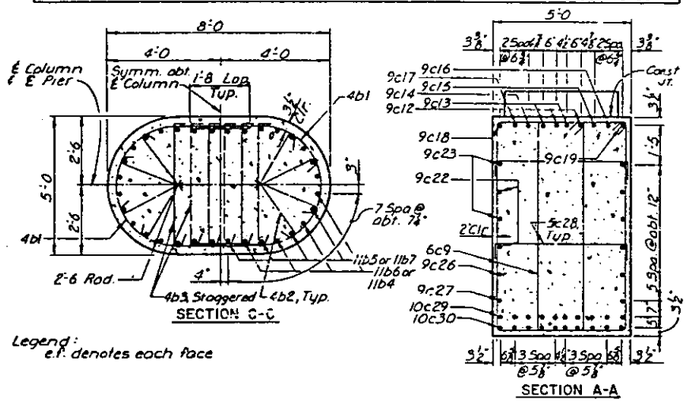
DESIGN SHEET 40 OF

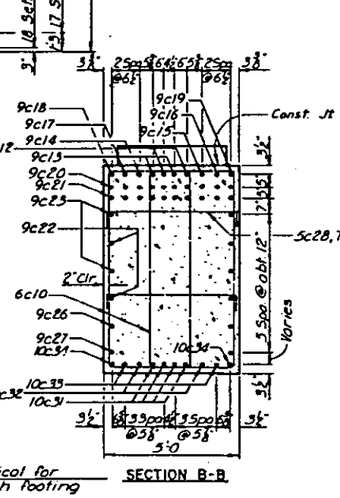
FEDERAL PROJ NO	STATE	FED. AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



BAR BENDING DIAGRAM PIER 2







CONCRETE PLACEMENT QUANTITIES-PIER 2

LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	109.1
Column -- Class C	C.Y.	80.8
Footing -- Class C	C.Y.	69.3
Total	C.Y.	259.2

ESTIMATED QUANTITIES - PIER 2

ITEM	UNIT	QUANTITY
Structural Concrete Cl. C	C.Y.	259.2
Reinforcing Steel	Lbs.	44,342
Excavation Class 20	C.Y.	140
Excavation Class 22	C.Y.	62

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

Elev. 579.17

BILL OF REINFORCEMENT

PIER 2

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footing, Horizontal		34	10'-6	1214
11a2	Footing, Horizontal		30	16'-6	2650
11a3	Footing, Vertical		32	11'-10	2,012
11a4	Footing, Vertical		32	17'-4	2,947
4b1	Column, Horizontal		128	11'-7	990
4b2	Column, Horizontal		512	2'-11	998
4b3	Column, Horizontal		192	5'-2	663
11b4	Column, Vertical		16	35'-6	3,018
11b5	Column, Vertical		16	30'-0	2,550
11b6	Column, Vertical		16	40'-6	3,443
11b7	Column, Vertical		16	35'-0	2,975
4c1	Cap Beam, Pad		45	7'-8	230
4c2	Cap Beam, Pad		30	8'-8	174
6c3	Cap Beam, Vertical		8	6'-1	97
6c4	Cap Beam, Vertical		8	9'-2	110
6c5	Cap Beam, Horizontal		9	11'-7	157
6c6	Cap Beam, Vertical		1	13'-10	21
6c7	Cap Beam, Vertical		2 Ser. 16	Varies	953
6c8	Cap Beam, Vertical		18	15'-8	424
6c9	Cap Beam, Vertical		70	23'-6	2,471
6c10	Cap Beam, Vertical		2 Ser. 16	Varies	1,013
6c11	Cap Beam, Vertical		1	17'-2	26
9c12	Cap Beam, Horizontal		4	37'-7	511
9c13	Cap Beam, Horizontal		4	43'-9	595
9c14	Cap Beam, Horizontal		2	37'-3	253
9c15	Cap Beam, Horizontal		2	43'-5	295
9c16	Cap Beam, Horizontal		2	36'-9	250
9c17	Cap Beam, Horizontal		2	42'-11	292
9c18	Cap Beam, Horizontal		2	35'-10	244
9c19	Cap Beam, Horizontal		2	42'-0	286
9c20	Cap Beam, Horizontal		20	32'-10	2233
9c21	Cap Beam, Horizontal		20	26'-10	1825
9c22	Cap Beam, Horizontal		8	40'-2	1093
9c23	Cap Beam, Horizontal		6	33'-9	689
9c24	Cap Beam, Horizontal		2	33'-2	226
9c25	Cap Beam, Horizontal		2	36'-8	249
9c26	Cap Beam, Horizontal		2	34'-0	231
9c27	Cap Beam, Horizontal		2	59'-0	401
5c28	Cap Beam, Horizontal		41	7'-8	328
10c29	Cap Beam, Horizontal		10	34'-1	1457
10c30	Cap Beam, Horizontal		10	50'-6	2173
10c31	Cap Beam, Horizontal		8	18'-11	651
10c32	Cap Beam, Horizontal		4	18'-8	321
10c33	Cap Beam, Horizontal		4	18'-4	316
10c34	Cap Beam, Horizontal		4	17'-3	297
	TOTAL				44,342

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 2

STA. 80+40.00
RIVER MILE 363.9
LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

PROJECT NO. BRF-90-1(3)--36-56

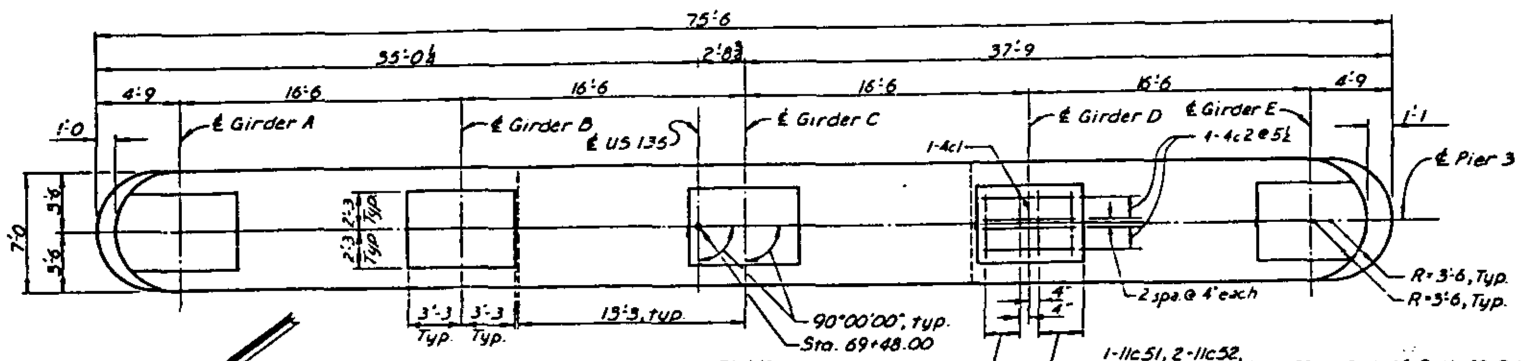
DESIGN SHEET 41 OF

DESIGN NO. 382 LEE COUNTY FILE 28723 SHEET 46 OF 227

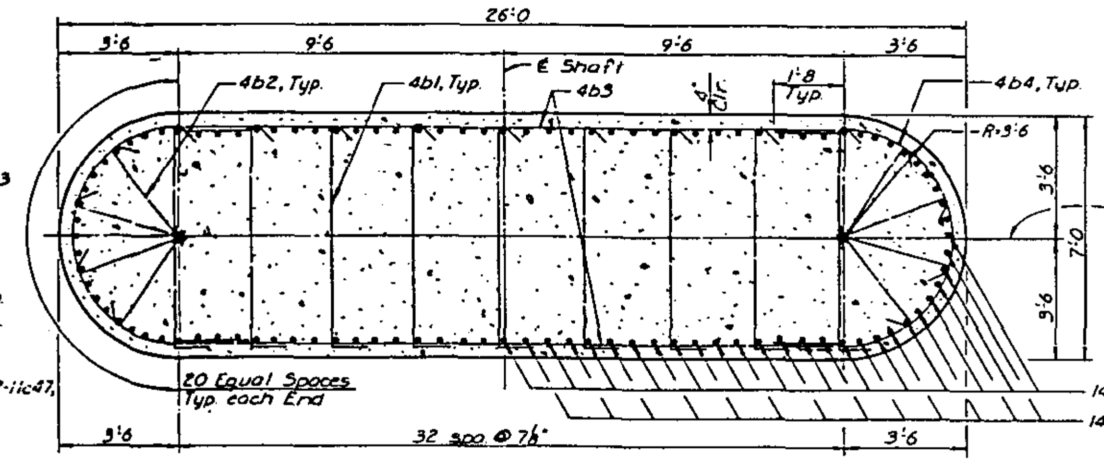
MADE TKT DATE 9-1-82 CHECKED JFL DATE 9-16-82

762-25-16

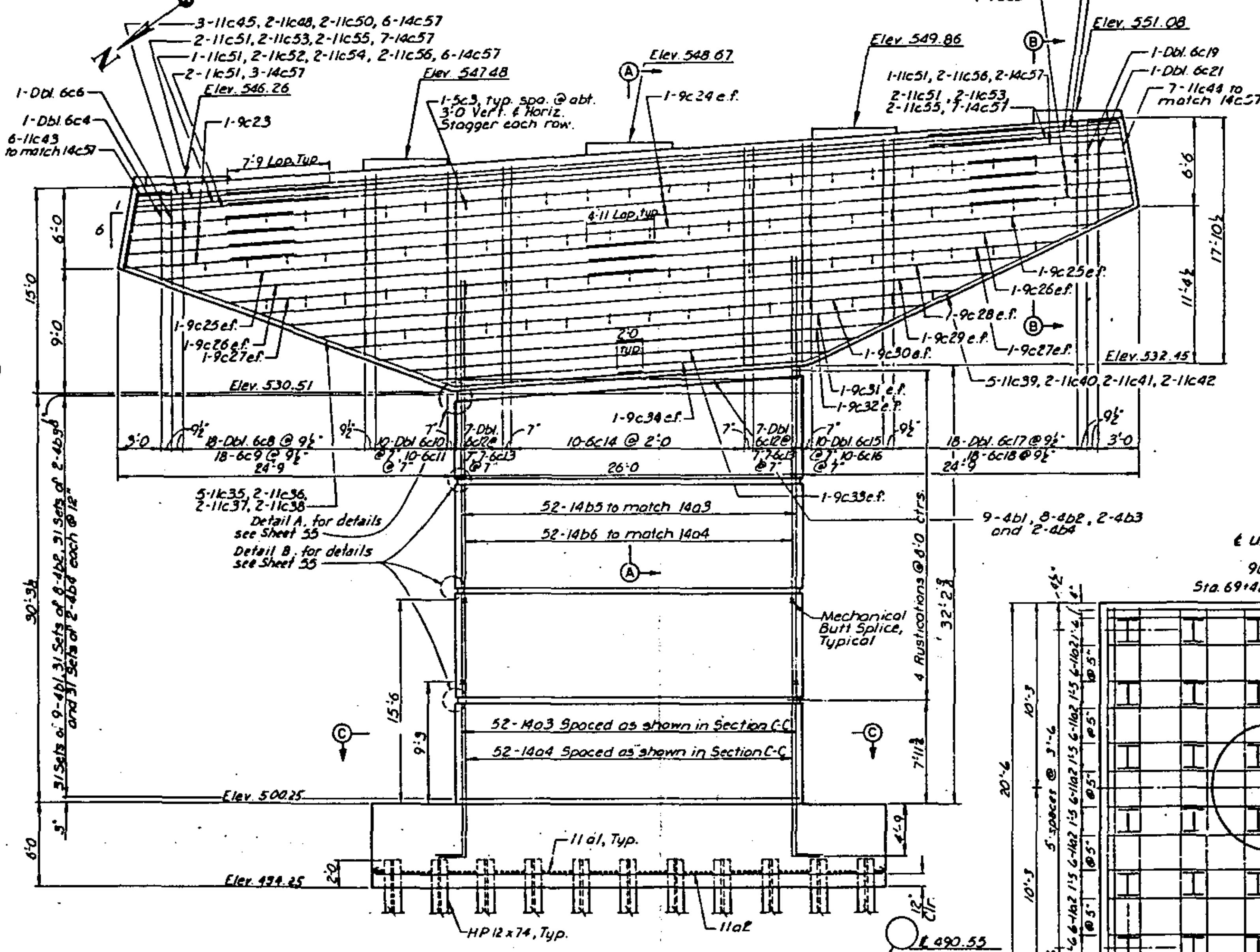
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



PLAN

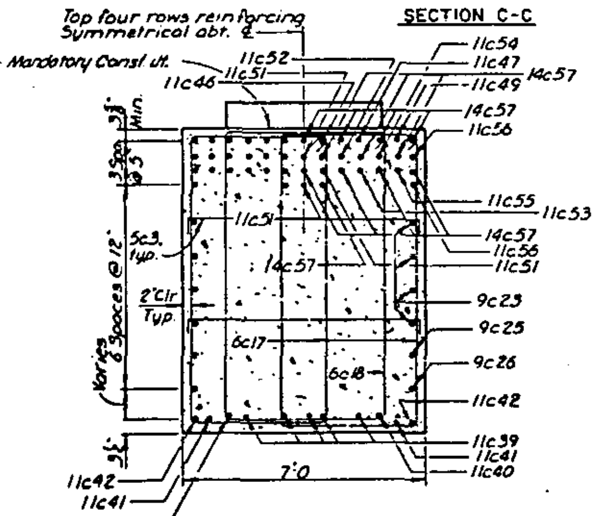


SECTION C-C

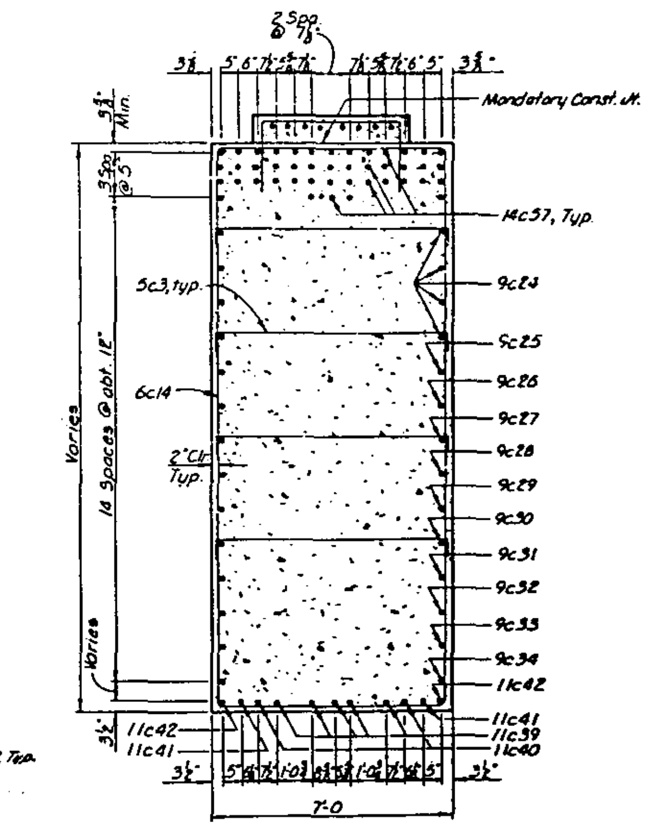


ELEVATION

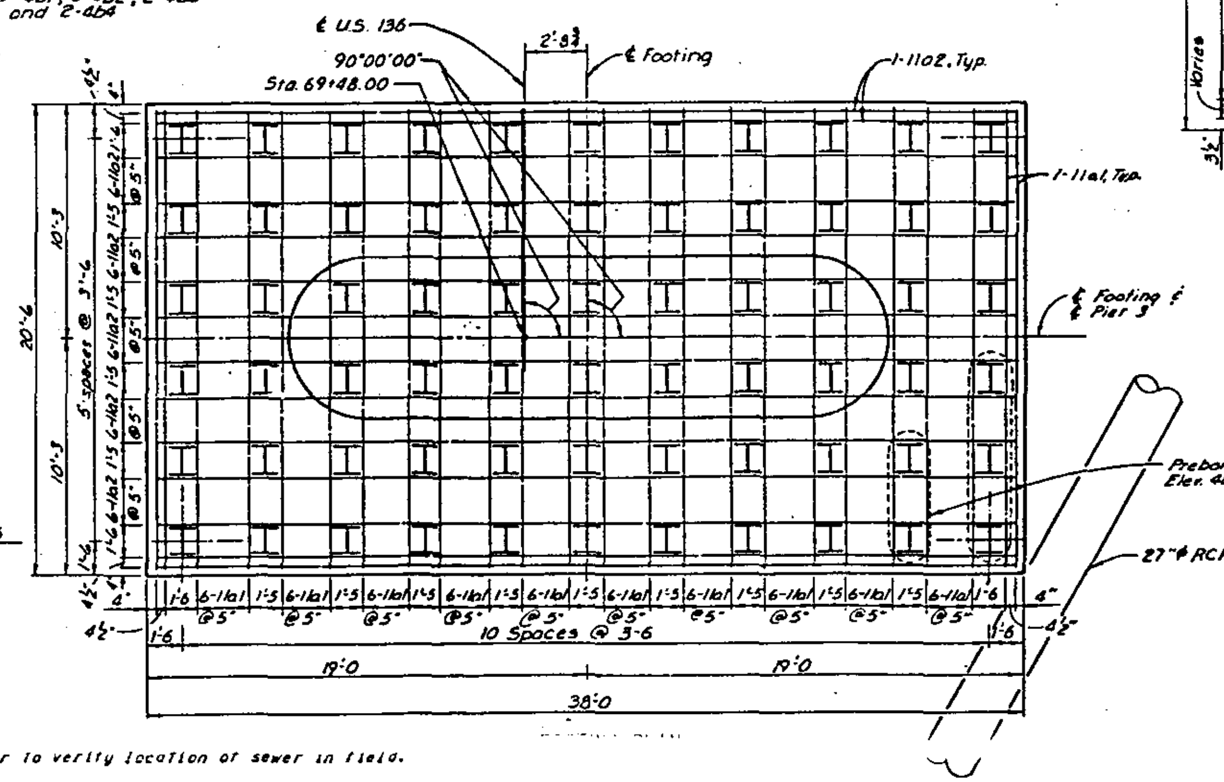
(Design Pile Load 185 Kips)



SECTION B-B



SECTION A-A



Notes:

For Pier Notes see Sheet 31

For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 43

Note:

Contractor to verify location of sewer in field.

MISSISSIPPI RIVER BRIDGE

KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 3

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE TKT DATE 9-9-82 CHECKED JFL DATE 9-16-82

DESIGN SHEET 42

FEDERAL DIST NO	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

BILL OF REINFORCEMENT

PIER 4

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footing, Horizontal		39	35'-6	7356
11a2	Footing, Horizontal		92	21'-0	10509
14a3	Footing, Vertical		56	14'-10	6355
14a4	Footing, Vertical		56	19'-10	8497
4b1	Shaft, Horizontal		485	7'-3	2354
4b2	Shaft, Horizontal		324	3'-10	830
4b3	Shaft, Horizontal		108	13'-1	944
4b4	Shaft, Horizontal		100	19'-0	1371
14b5	Shaft, Vertical		56	55'-2	23,633
14b6	Shaft, Vertical		56	50'-2	21,491
4c1	Pad, Horizontal		65	8'-2	355
4c2	Pad, Horizontal		40	10'-2	272
6c3	Cap Beam, Vertical		2	20'-10	63
6c4	Cap Beam, Vertical		1 Ser 17	Varies	804
6c5	Cap Beam, Vertical		2 Ser 17	Varies	1,524
6c6	Cap Beam, Vertical		1 Ser 6	Varies	363
6c7	Cap Beam, Vertical		2 Ser 6	Varies	695
6c8	Cap Beam, Vertical		10	41'-8	626
6c9	Cap Beam, Vertical		20	40'-0	1,202
6c10	Cap Beam, Vertical		9	45'-4	613
5c13	Cap Beam, Horizontal		74	9'-8	746
6c14	Cap Beam, Vertical		1 Ser 6	Varies	364
6c15	Cap Beam, Vertical		2 Ser 6	Varies	693
6c16	Cap Beam, Vertical		1 Ser 17	Varies	862
6c17	Cap Beam, Vertical		2 Ser 17	Varies	1,638
6c18	Cap Beam, Vertical		2	24'-4	73
11c19	Cap Beam, Horizontal		7	13'-5	499
11c20	Cap Beam, Horizontal		5	15'-1	481
11c21	Cap Beam, Horizontal		3	27'-0	430
11c22	Cap Beam, Horizontal		2	25'-8	273
11c23	Cap Beam, Horizontal		2	21'-8	230
11c24	Cap Beam, Horizontal		2	25'-4	269
11c25	Cap Beam, Horizontal		2	24'-6	260
11c26	Cap Beam, Horizontal		2	22'-8	241
11c27	Cap Beam, Horizontal		12	19'-8	1,254
11c28	Cap Beam, Horizontal		4	18'-10	400
11c29	Cap Beam, Horizontal		4	18'-4	390
11c30	Cap Beam, Horizontal		4	17'-0	361
11c31	Cap Beam, Horizontal		6	14'-4	457
9c32	Cap Beam, Horizontal		10	27'-5	532
9c33	Cap Beam, Horizontal		10	60'-0	2,040
9c34	Cap Beam, Horizontal		4	30'-10	501
9c35	Cap Beam, Horizontal		4	35'-6	483
9c36	Cap Beam, Horizontal		4	34'-0	462
9c37	Cap Beam, Horizontal		2	58'-2	396
9c38	Cap Beam, Horizontal		2	53'-0	360
9c39	Cap Beam, Horizontal		2	47'-5	322
9c40	Cap Beam, Horizontal		2	42'-4	288
9c41	Cap Beam, Horizontal		2	35'-6	241
9c42	Cap Beam, Horizontal		2	31'-4	213
11c43	Cap Beam, Horizontal		10	35'-5	2,094
14c44	Cap Beam, Horizontal		43	60'-0	19,757
11c48	Cap Beam, Horizontal		4	38'-11	827
11c49	Cap Beam, Horizontal		4	38'-3	813
11c50	Cap Beam, Horizontal		4	37'-6	797
11c51	Cap Beam, Horizontal		4	36'-7	777
				Total	131,056

CONCRETE PLACEMENT QUANTITIES-PIER 4

LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	252.5
Shaft -- Class C	C.Y.	335.5
Footing -- Class C	C.Y.	205.3
Total	C.Y.	793.3

ESTIMATED QUANTITIES - PIER 4

ITEM	UNIT	QUANTITY
Structural Concrete Cl. C	C.Y.	793.3
Reinforcing Steel	Lbs.	131,066
Excavation Class 20*	C.Y.	943
Excavation Class 22	C.Y.	65
Riprap	Ton	79

*Removal of existing riprap shall be included in unit bid price of Excavation Class 20. Removal of riprap may be required before sheet piles are driven.

CONCRETE PLACEMENT QUANTITIES-PIER 3

LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	255.4
Shaft -- Class C	C.Y.	201.4
Footing -- Class C	C.Y.	173.1
Total	C.Y.	629.9

ESTIMATED QUANTITIES - PIER 3

ITEM		UNIT	QUANTITY
Structural Concrete Cl. C		C.Y.	629.9
Reinforcing Steel		Lbs.	106,476
Excavation Class 20		C.Y.	355
Prebore		Lin.Ft.	50
HP 12 X 74 Steel Brg. Piling 66 @ 19'	Furnish	Lin.Ft.	1452 Δ
	Drive	Lin.Ft.	1254

Δ Note 'P':
Contractor shall furnish 33 piles 44' long and shall drive and cut as required.

BILL OF REINFORCEMENT

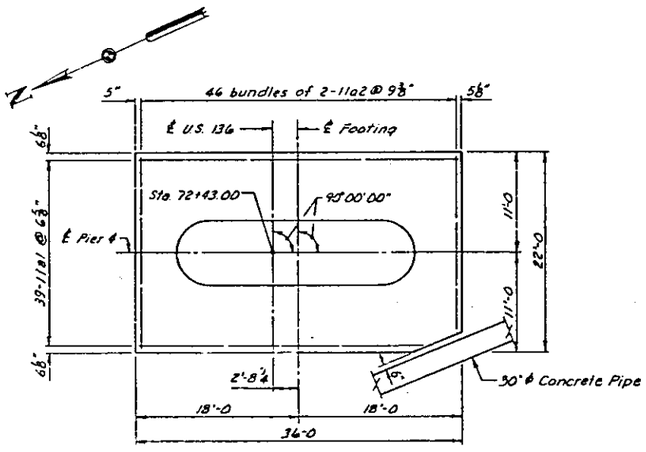
PIER 3

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footing, Horizontal		64	23'-2	7877
11a2	Footing, Horizontal		34	40'-8	7346
14a3	Footing, Vertical		52	16'-8	6,630
14a4	Footing, Vertical		52	22'-11	9,116
4b1	Shaft, Horizontal		288	7'-1	1363
4b2	Shaft, Horizontal		256	3'-11	670
4b3	Shaft, Horizontal		64	19'-0	812
4b4	Shaft, Horizontal		64	13'-3	566
14b5	Shaft, Vertical		52	31'-0	12,331
14b6	Shaft, Vertical		52	24'-9	9,846
4c1	Cap Beam, Pad		55	8'-2	300
4c2	Cap Beam, Pad		40	10'-2	272
5c3	Cap Beam, Horizontal		80	9'-3	807
6c4	Cap Beam, Vertical		2	21'-4	64
6c6	Cap Beam, Vertical		2	22'-0	66

BILL OF REINFORCEMENT

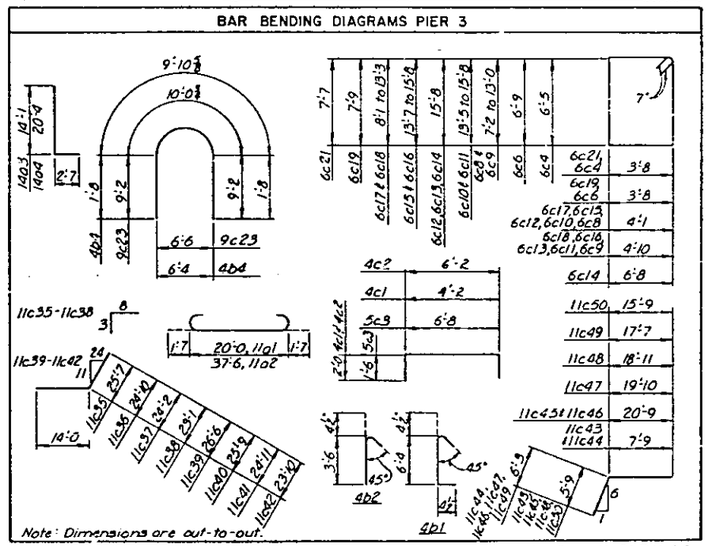
PIER 3

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c8	Cap Beam, Vertical		2 Ser.18	Varies	1,595
6c9	Cap Beam, Vertical		1 Ser.18	Varies	838
6c10	Cap Beam, Vertical		2 Ser.10	Varies	1,154
6c11	Cap Beam, Vertical		1 Ser.10	Varies	600
6c12	Cap Beam, Vertical		28	40'-8	1,710
6c13	Cap Beam, Vertical		14	42'-2	837
6c14	Cap Beam, Vertical		10	45'-10	688
6c15	Cap Beam, Vertical		2 Ser.10	Varies	1,159
6c16	Cap Beam, Vertical		1 Ser.10	Varies	602
6c17	Cap Beam, Vertical		2 Ser.18	Varies	1,658
6c18	Cap Beam, Vertical		1 Ser.18	Varies	870
6c19	Cap Beam, Vertical		2	24'-0	72
6c21	Cap Beam, Vertical		2	23'-8	71
9c23	Cap Beam, Horizontal		8	28'-5	773
9c24	Cap Beam, Horizontal		8	60'-0	1632
9c25	Cap Beam, Horizontal		4	38'-6	524
9c26	Cap Beam, Horizontal		4	35'-11	489
9c27	Cap Beam, Horizontal		4	33'-5	454
9c28	Cap Beam, Horizontal		2	57'-6	391
9c29	Cap Beam, Horizontal		2	52'-8	358
9c30	Cap Beam, Horizontal		2	47'-7	324
9c31	Cap Beam, Horizontal		2	43'-1	293
9c32	Cap Beam, Horizontal		2	37'-10	257
9c33	Cap Beam, Horizontal		2	33'-4	227
9c34	Cap Beam, Horizontal		2	28'-5	193
11c35	Cap Beam, Horizontal		5	39'-7	1,052
11c36	Cap Beam, Horizontal		2	38'-10	413
11c37	Cap Beam, Horizontal		2	38'-2	406
11c38	Cap Beam, Horizontal		2	37'-1	394
11c39	Cap Beam, Horizontal		5	40'-6	1,076
11c40	Cap Beam, Horizontal		2	39'-9	422
11c41	Cap Beam, Horizontal		2	38'-11	414
11c42	Cap Beam, Horizontal		2	37'-10	402
11c43	Cap Beam, Horizontal		6	13'-6	430
11c44	Cap Beam, Horizontal		7	14'-0	521
11c45	Cap Beam, Horizontal		3	26'-6	422
11c46	Cap Beam, Horizontal		2	27'-0	287
11c47	Cap Beam, Horizontal		2	26'-1	277
11c48	Cap Beam, Horizontal		2	24'-8	262
11c49	Cap Beam, Horizontal		2	23'-10	253
11c50	Cap Beam, Horizontal		2	21'-6	228
11c51	Cap Beam, Horizontal		9	20'-9	992
11c52	Cap Beam, Horizontal		4	21'-0	446
11c53	Cap Beam, Horizontal		4	19'-10	421
11c54	Cap Beam, Horizontal		4	18'-11	402
11c55	Cap Beam, Horizontal		4	17'-7	374
11c56	Cap Beam, Horizontal		6	15'-9	502
14c57	Cap Beam, Horizontal		44	60'-0	20,196
	TOTAL				106,476



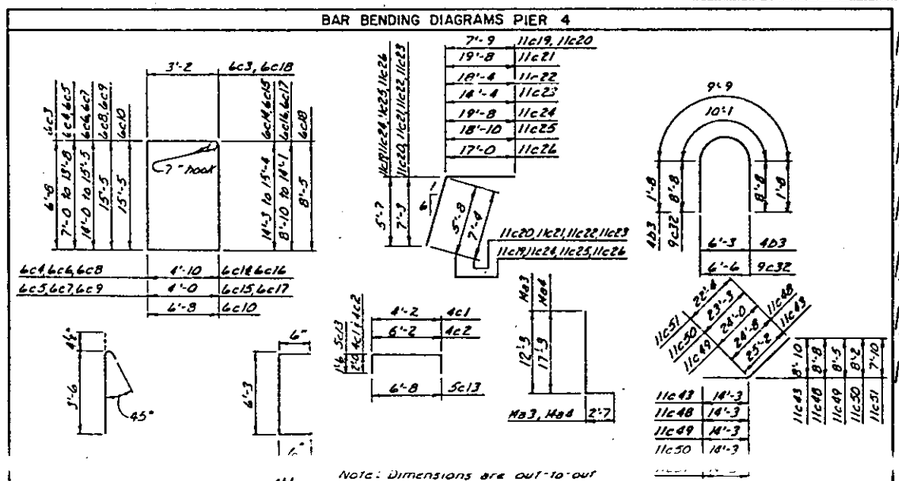
FOOTING PLAN – PIER 4

BAR BENDING DIAGRAMS PIER 3



Note: Dimensions are out-to-out

BAR BENDING DIAGRAMS PIER 4



Note: Dimensions are out-to-out

4b1

11c50 T., 14c57 T.M. & B., 11c56 B.M. — 14c57 T. & B.M., 11c56 T.M. & B.
14c57T. & B.M., 11c55 T.M. — 11c49 T., 14c57 T.M., 11c55 B.M.
11c48 T., 14c57 T.M., 11c54 B.M. — 14c57T. & B.M., 11c54 T.M.
14c57T. & B.M., 11c53 T.M. — 11c47 T., 14c57 T.M., 11c53 B.M.
11c45T., 14c57 T.M., 11c52 B.M. — 14c57T. & B.M., 11c52 T.M.
14c57T. & B.M., 11c51 T.M. & B. — 11c46 T., 14c57 T.M. & B., 11c51 B.M.
11c45T., 14c57 T.M. & B., 11c51 B.M. — 14c57T. & B.M., 11c51 T.M. & B.
14c57T. & B.M., 11c51 T.M. & B. — 11c46 T., 14c57 T.M. & B., 11c51 B.M.
11c45T., 14c57T.M., 11c52 B.M. — 14c57T. & B.M., 11c52 T.M.
14c57T. & B.M., 11c53 T.M. — 11c47 T., 14c57 T.M., 11c53 B.M.
11c48T., 14c57T.M., 11c54 B.M. — 14c57T. & B.M., 11c54 T.M.
14c57T. & B.M., 11c55 T.M. — 11c49T., 14c57T.M., 11c55 B.M.
11c50T., 14c57T.M. & B., 11c56 B.M. — 14c57T. & B.M., 11c56 T.M. & B.

7'-9 Lap typ.

SCHEMATIC OF TOP MOMENT REINFORCEMENT

PIER 3

Legend:
B denotes Bottom Row
BM denotes Bottom Middle Row

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 3 & 4 DETAILS

STA. 80+60.00
RIVER MILE 363.9

PROJECT NO. BRF-90-1(3)--38-00

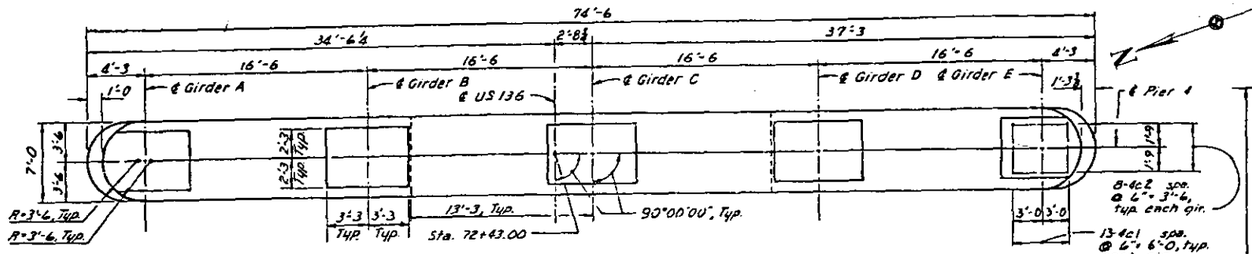
DESIGN SHEET 43 OF

DESIGN NO. 383 LEE COUNTY FILE 26729 SHEET 48 OF 227

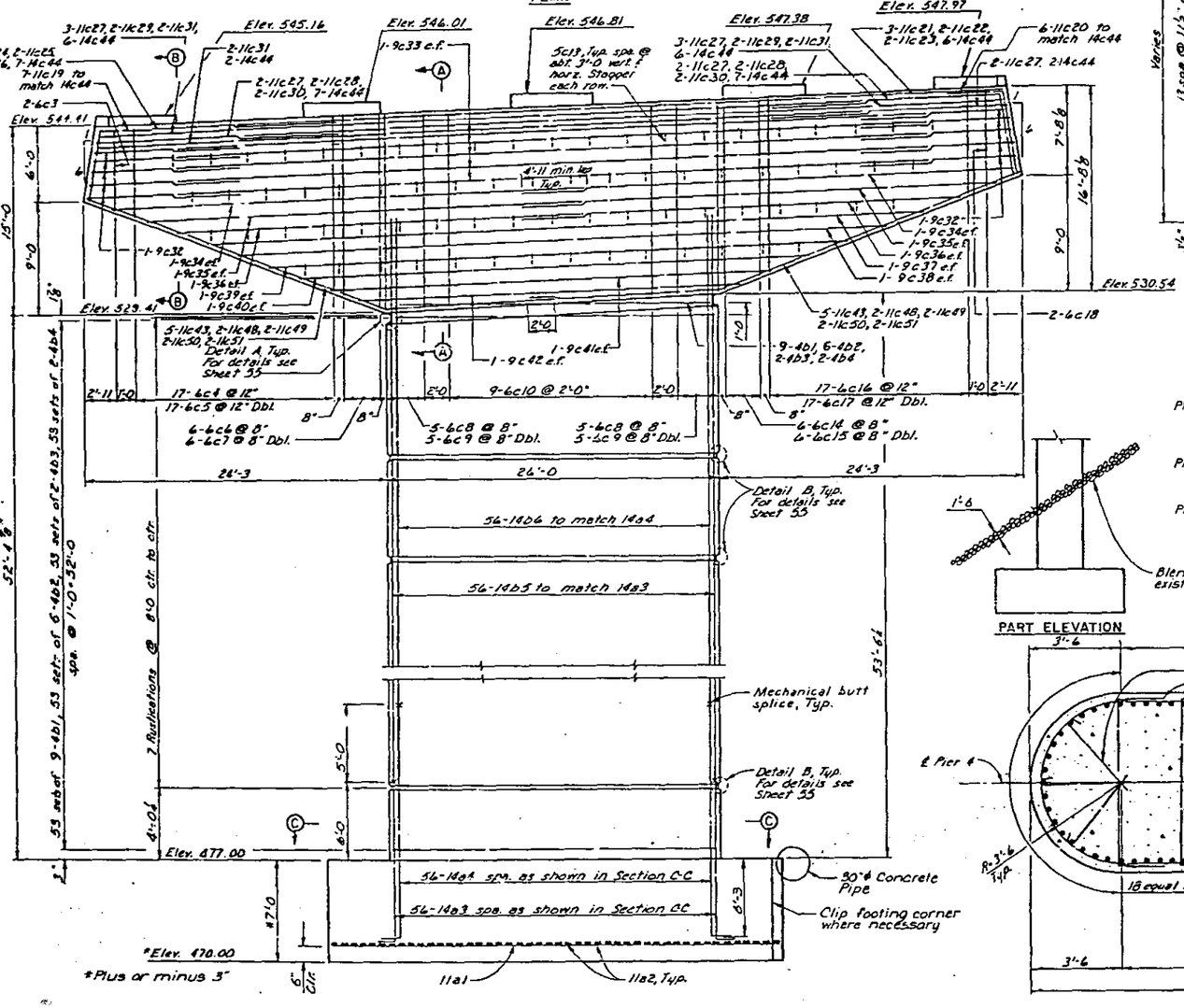
6767 5-00

MADE TKT DATE 6-82 CHECKED JEL DATE 8-82

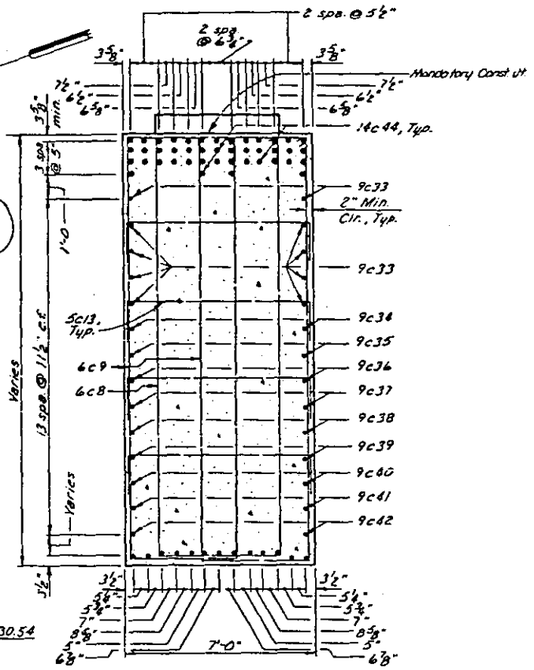
FEDERAL DIST NO	STATE	FED. AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



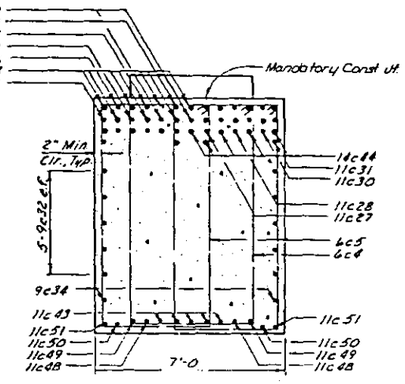
PLAN



ELEVATION
(Design Bearing Pressure 12.30 KSF)



SECTION A-A



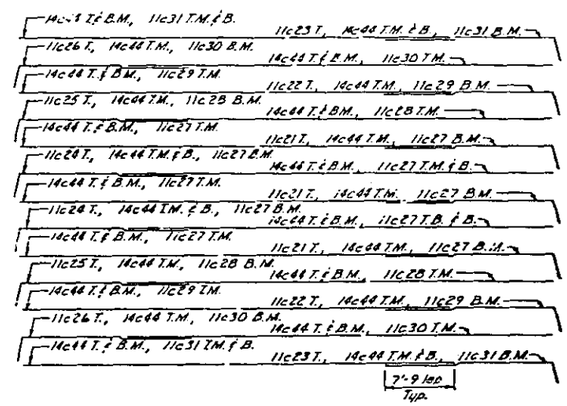
SECTION B-B

BENCH MARKS

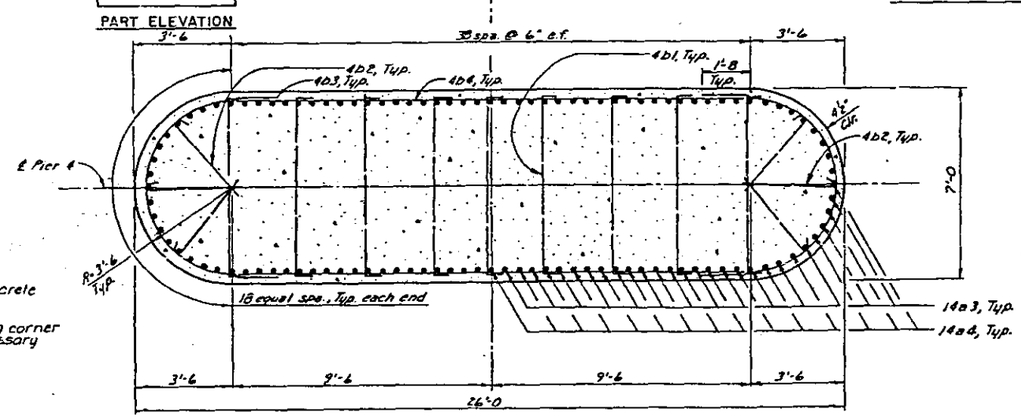
PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17



SCHEMATIC OF TOP MOMENT REINFORCEMENT



SECTION C-C

PART ELEVATION

Legend:

e.f. denotes each face
T. denotes top
T.M. denotes top middle
B.M denotes bottom middle
B. denotes bottom

Notes:
For Pier Notes see Sheet 31
For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 43
Sheet 105.

Note:
Sewer shall be braced during cofferdam construction and all costs shall be incidental to other items.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 4

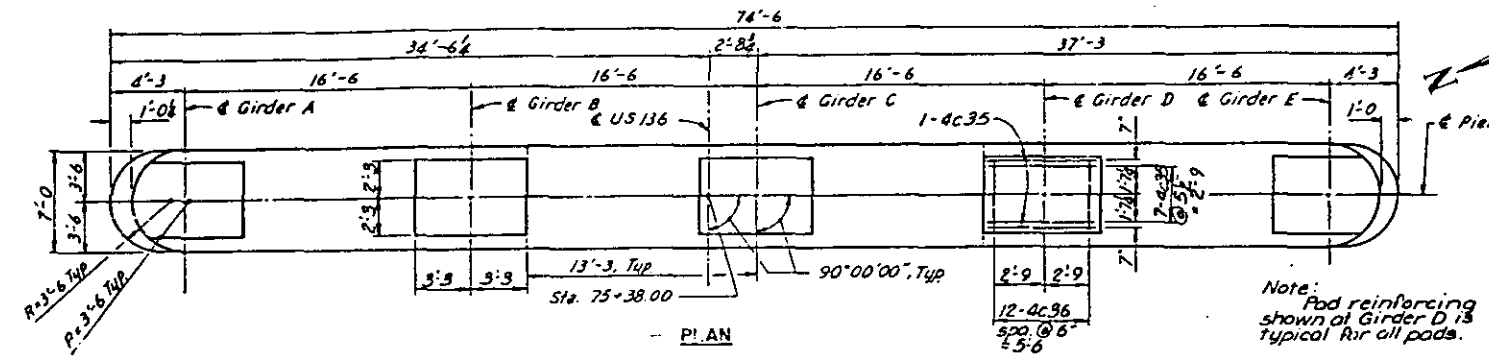
STA. 88+48.00
RIVER MILE 383.9
LEE COUNTY, IOWA

PROJECT NO. BRF-99-1(3)--88-99
HANCOCK COUNTY, ILLINOIS

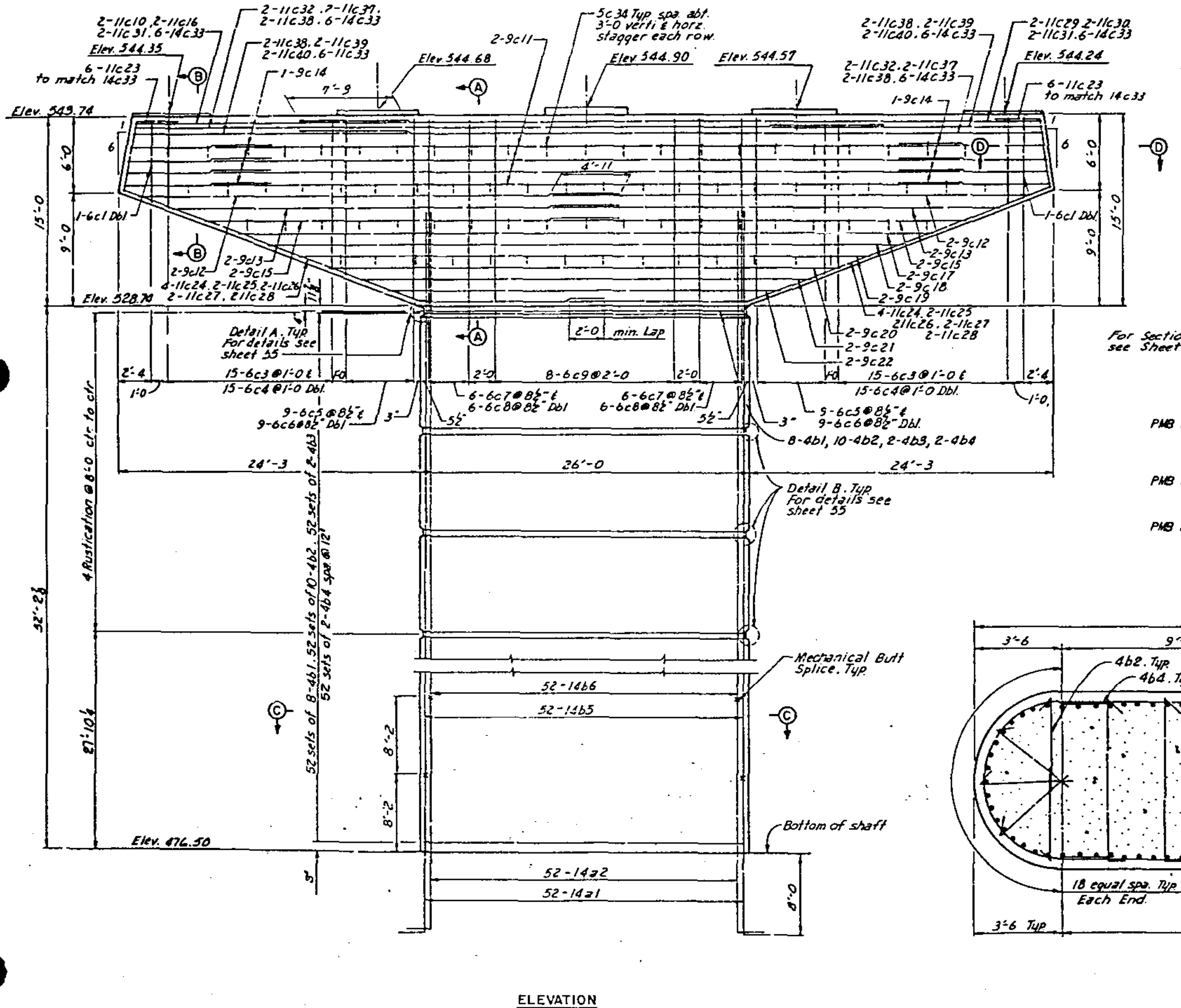
6767 5-00

MADE JEL DATE 7-82 | CHECKED DLM DATE 9-82

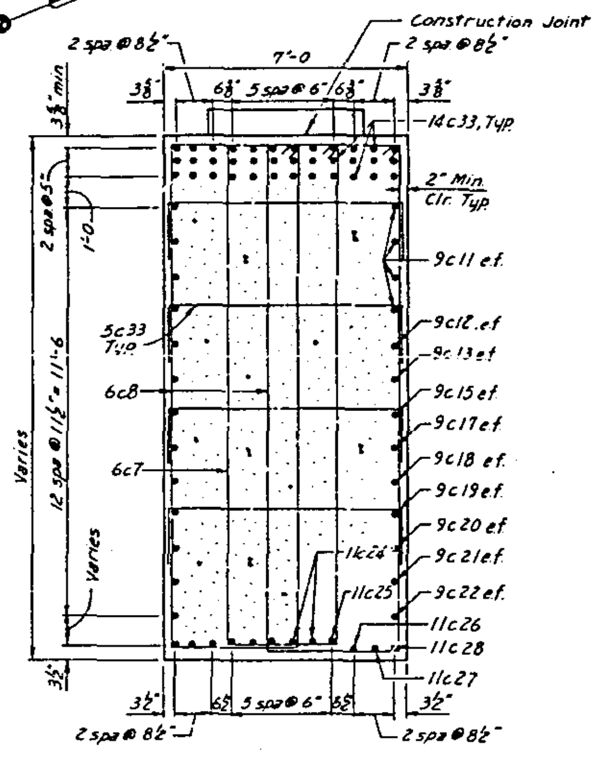
DESIGN NO. 382 LEE COUNTY FILE 28725 SHEET 49 OF 227



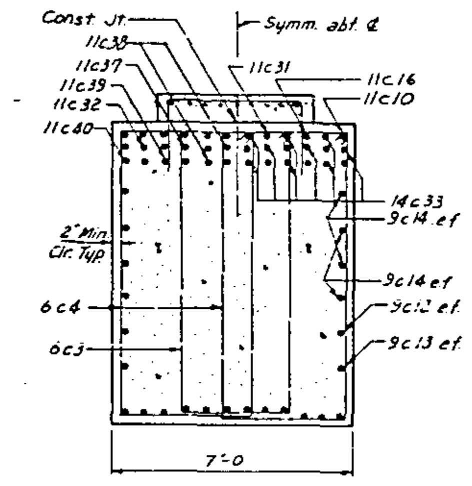
PLAN



ELEVATION
(Design Bearing Pressure 5.30 KSF)



SECTION A-A



SECTION B-B

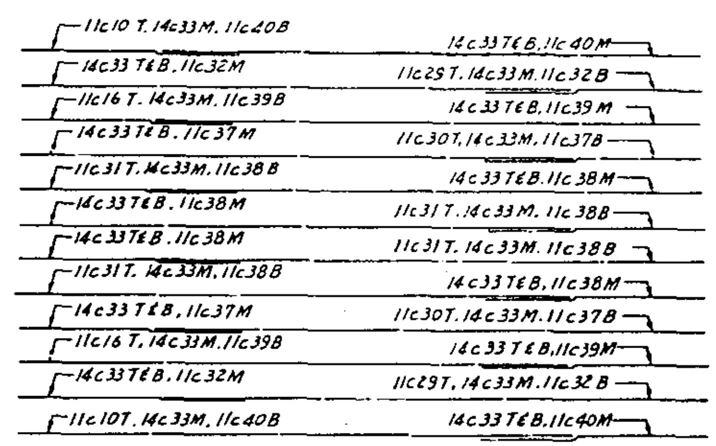
For Section D-D see Sheet 47.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

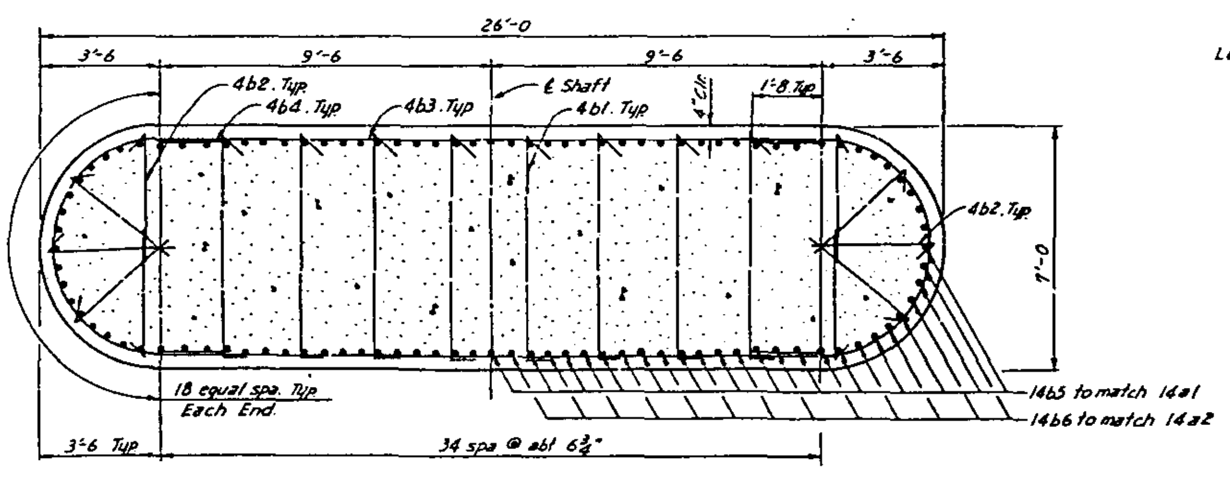
PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17



SCHEMATIC OF TOP MOMENT REINFORCEMENT

Legend:
e.f. denotes each face.
T. denotes top.
M. denotes middle.
B. denotes bottom.



SECTION C-C

Note:
For bar list and bar bends see Sheet 47.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

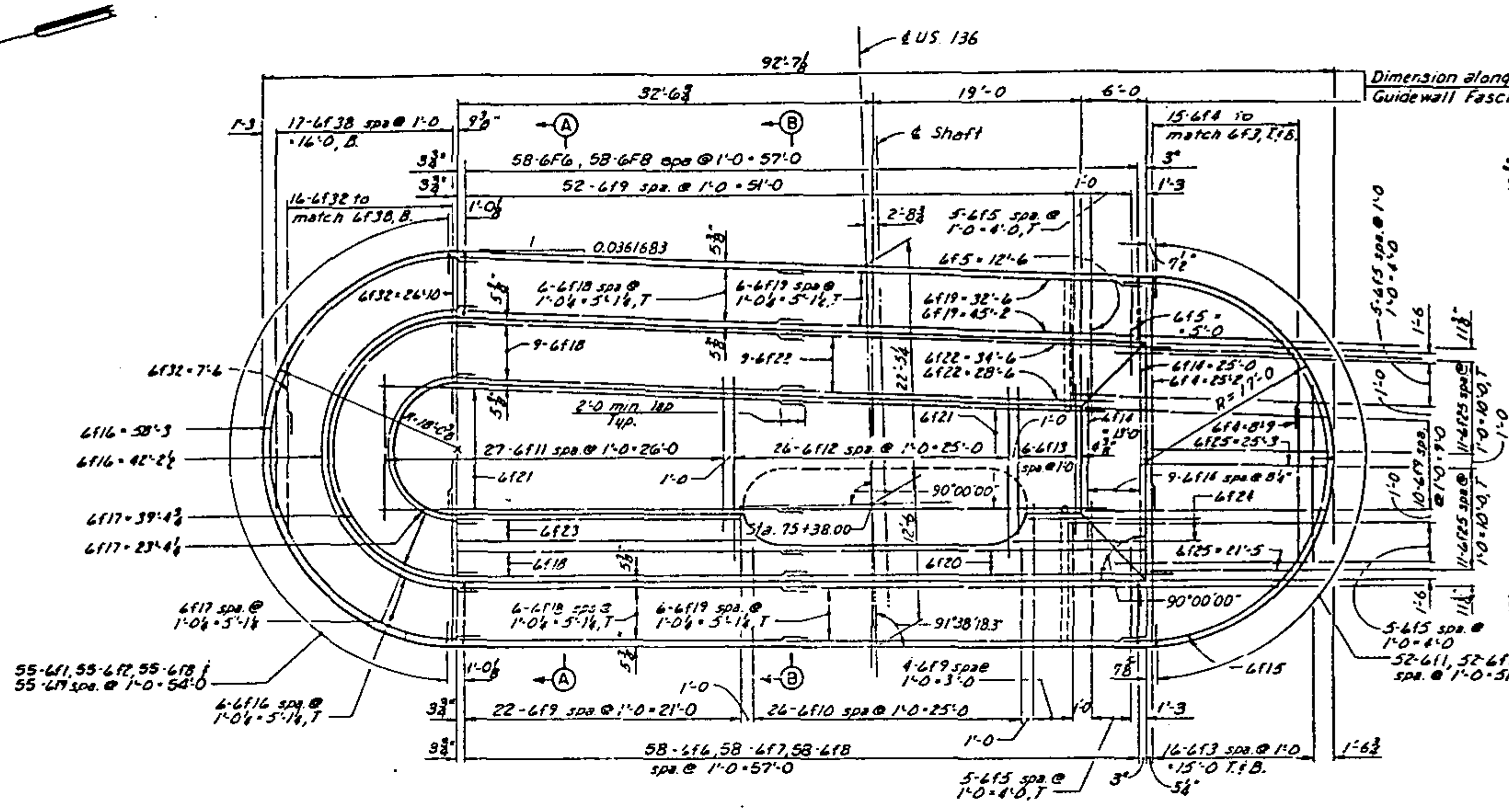
PIER 5

LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

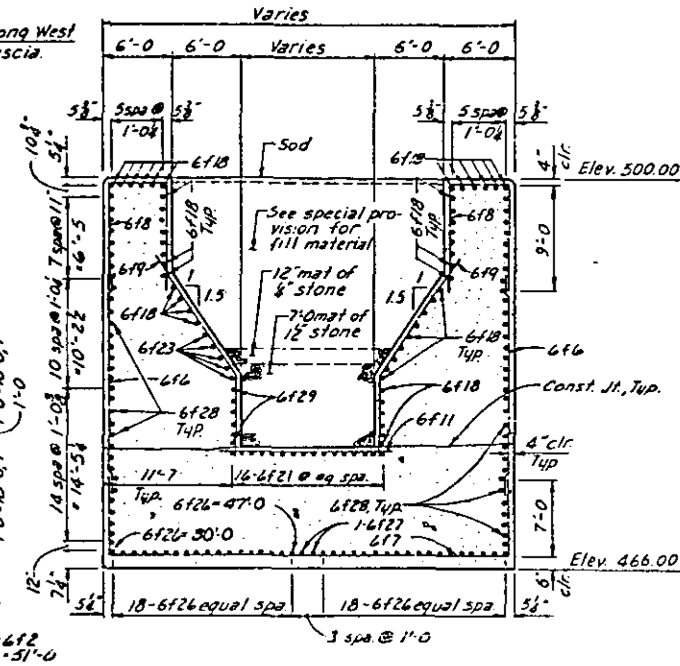
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MADE LCY DATE 8-82 CHECKED DLM DATE 9-82

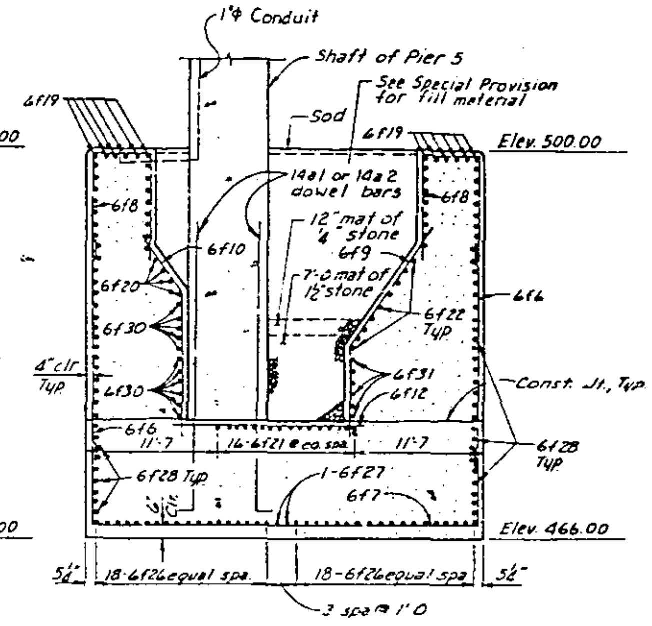
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



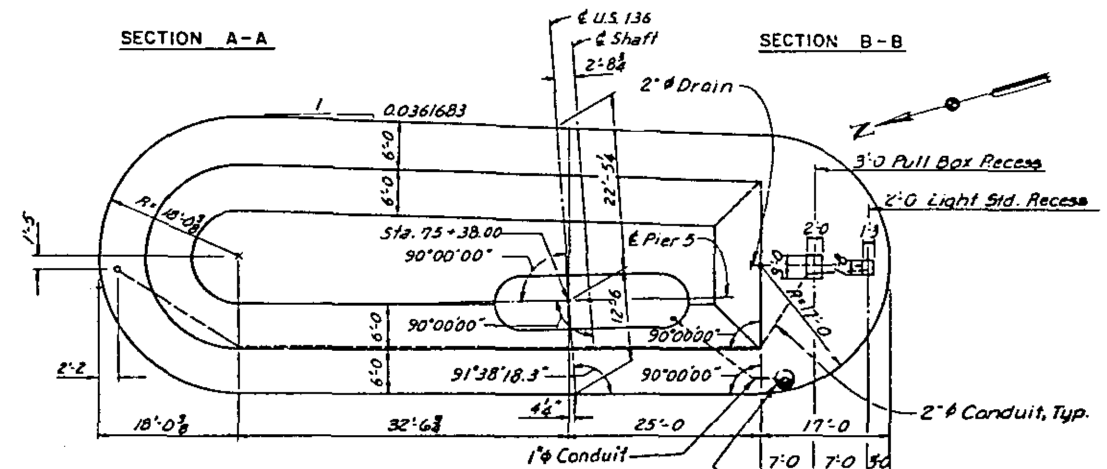
PLAN OF PIER 5



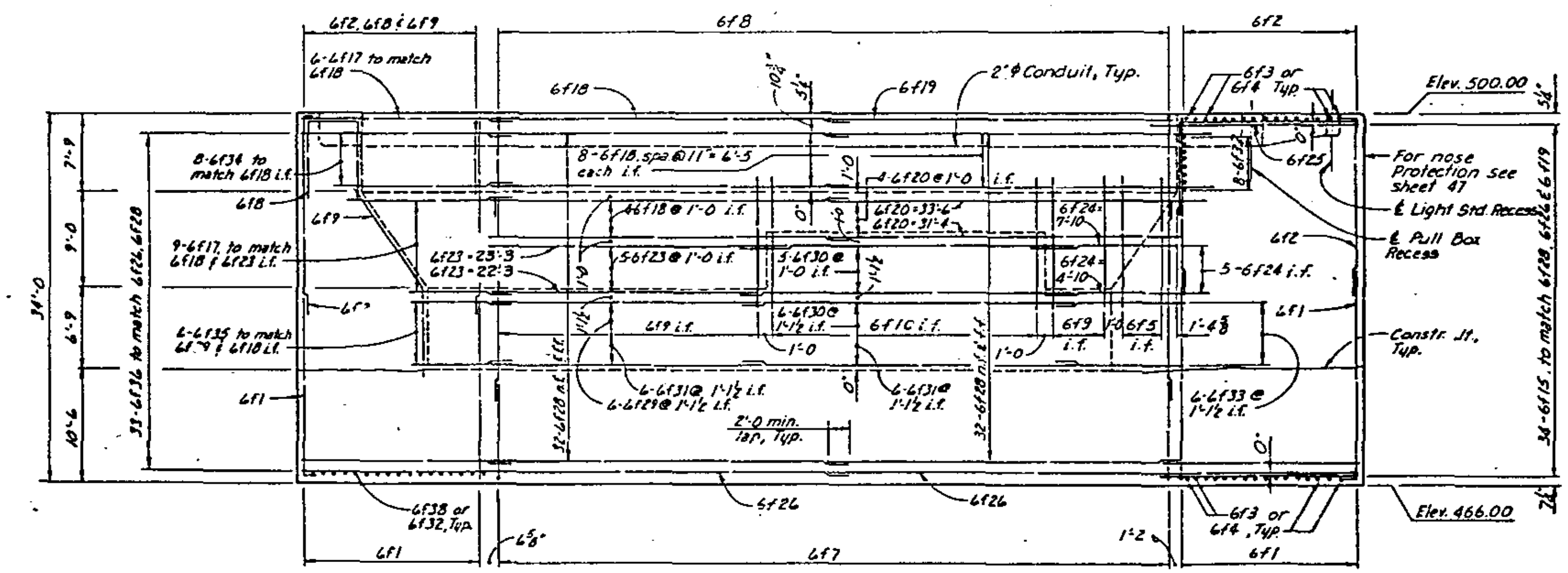
SECTION A-A



SECTION B-B



GUIDEWALL LAYOUT PLAN



GUIDEWALL ELEVATION

CONCRETE PLACEMENT QUANTITIES-PIER 5		
LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	234.5
Shaft -- Class C	C.Y.	334.3
Guidewall -- Class C	C.Y.	2,767.1
Total	C.Y.	3,335.9

ESTIMATED QUANTITIES - PIER 5		
ITEM	UNIT	QUANTITY
Structural Concrete *	C.Y.	3,335.9
Reinforcing Steel	Lbs.	157,139
Excavation Class 23	C.Y.	246
Structural Steel A36	Lbs.	22,624
Aluminum Handrail	Lin. Ft.	216

* Class C

Legend:

- i.f. denotes inner face.
- n.f. denotes near face.
- f.f. denotes far face
- T. denotes top
- B. denotes bottom.

Notes:

Reinforcing steel cover is 4", unless otherwise noted.

Adjust bars to miss 6" ϕ drain.

Adjust bars 6f25, 6f26 and 6f28 to miss reinforcing steel of shaft of Pier.

For bar list and bar bends see Sheet 47.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

DETAIL OF GUIDEWALL AT PIER 5

STA. 86+40.00 RIVER MILE 363.3 LEE COUNTY, IOWA — PROJECT NO. ... HANCOCK COUNTY, ILLINOIS

MADE LCY DATE 8-82 CHECKED DLM DATE 9-82

DESIGN SHEET 46 OF

DESIGN NO. 382 LEE COUNTY . FILE 30728 SHEET 51 OF 227

FEDERAL DIST NO	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

BILL OF REINFORCEMENT

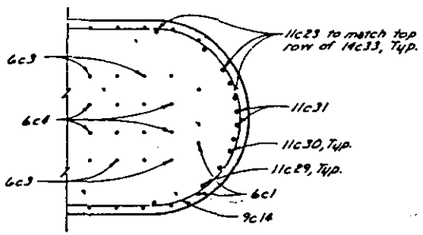
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
14a1	Guidewall, Vertical		52	18'-9	7459
14a2	Guidewall, Vertical		52	26'-11	10707
4b1	Shaft, Horizontal		424	7'-1	2006
4b2	Shaft, Horizontal		530	3'-8½	1313
4b3	Shaft, Horizontal		106	19'-0	1345
4b4	Shaft, Horizontal		106	13'-3	938
14b5	Shaft, Vertical		52	52'-7	20,918
14b6	Shaft, Vertical		52	44'-5	17,669
6c1	Cap Beam, Vertical		4	21'-9	131
6c3	Cap Beam, Vertical		2 Ser. 15	Varies	1,173
6c4	Cap Beam, Vertical		4 Ser. 15	Varies	2,512
6c5	Cap Beam, Vertical		2 Ser. 9	Varies	921
6c6	Cap Beam, Vertical		4 Ser. 9	Varies	1,943
6c7	Cap Beam, Vertical		12	36'-2	652
6c8	Cap Beam, Vertical		24	38'-0	1,370
6c9	Cap Beam, Vertical		8	43'-10	527
11c10	Cap Beam, Horizontal		2	22'-1	235
9c11	Cap Beam, Horizontal		8	60'-0	1,632
9c12	Cap Beam, Horizontal		4	36'-5	495
9c13	Cap Beam, Horizontal		4	35'-6	483
9c14	Cap Beam, Horizontal		8	27'-2	739
9c15	Cap Beam, Horizontal		4	33'-0	449
11c16	Cap Beam, Horizontal		2	26'-11	286
9c17	Cap Beam, Horizontal		2	57'-2	389
9c18	Cap Beam, Horizontal		2	52'-0	354
9c19	Cap Beam, Horizontal		2	46'-10	318
9c20	Cap Beam, Horizontal		2	41'-8	283
9c21	Cap Beam, Horizontal		2	36'-6	248
9c22	Cap Beam, Horizontal		2	31'-4	213
11c23	Cap Beam, Vertical		12	13'-5	855
11c24	Cap Beam, Horizontal		8	39'-6	1,679
11c25	Cap Beam, Horizontal		4	39'-2	832
11c26	Cap Beam, Horizontal		4	38'-8	822
11c27	Cap Beam, Horizontal		4	38'-0	808
11c28	Cap Beam, Horizontal		4	36'-9	781
11c29	Cap Beam, Horizontal		2	24'-7	261
11c30	Cap Beam, Horizontal		2	26'-0	276
11c31	Cap Beam, Horizontal		4	27'-7	586
11c32	Cap Beam, Horizontal		4	18'-11	402
14c33	Cap Beam, Horizontal		36	60'-0	16,524

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5c34	Cap Beam, Horizontal		76	8'-4	661
4c35	Pad, Horizontal		45	10'-2	306
4c36	Pad, Horizontal		60	8'-2	327
11c37	Cap Beam, Horizontal		4	21'-3	452
11c38	Cap Beam, Horizontal		8	21'-11	932
11c39	Cap Beam, Horizontal		4	20'-3	430
11c40	Cap Beam, Horizontal		4	16'-5	349
6f1	Guidewall, Vertical		108	19'-0	3082
6f2	Guidewall, Vertical		103	18'-1	2933
6f3	Guidewall, Horizontal		32	12'-9	613
6f4	Guidewall, Horizontal		2 Ser. 15	Varies	764
6f5	Guidewall, Vertical		4 Ser. 5	Varies	263
6f6	Guidewall, Vertical		116	21'-2	3688
6f7	Guidewall, Horizontal		1 Ser. 58	Varies	4211
6f8	Guidewall, Vertical		116	23'-4	4065
6f9	Guidewall, Vertical		134	20'-7	4143
6f10	Guidewall, Vertical		26	19'-3	752
6f11	Guidewall, Horizontal		27	15'-4	622
6f12	Guidewall, Horizontal		26	14'-2	553
6f13	Guidewall, Horizontal		6	13'-4	120
6f14	Guidewall, Horizontal		1 Ser. 9	Varies	257
6f15	Guidewall, Horizontal		34	55'-0½	2,811
6f16	Guidewall, Horizontal		1 Ser. 6	Varies	453
6f17	Guidewall, Horizontal		1 Ser. 9	Varies	424
6f18	Guidewall, Horizontal		57	27'-0	2312
6f19	Guidewall, Horizontal		2 Ser. 6	Varies	700
6f20	Guidewall, Horizontal		1 Ser. 4	Varies	195
6f21	Guidewall, Horizontal		32	34'-9	1670
6f22	Guidewall, Horizontal		1 Ser. 9	Varies	426
6f23	Guidewall, Horizontal		1 Ser. 5	Varies	171
6f24	Guidewall, Horizontal		1 Ser. 3	Varies	48
6f25	Guidewall, Horizontal		2 Ser. 11	Varies	771
6f26	Guidewall, Horizontal		4 Ser. 18	Varies	4164
6f27	Guidewall, Horizontal		4	47'-6	285
6f28	Guidewall, Horizontal		128	29'-9	5720
6f29	Guidewall, Horizontal		6	22'-3	201
6f30	Guidewall, Horizontal		11	29'-0	479
6f31	Guidewall, Horizontal		12	28'-9	518
6f32	Guidewall, Horizontal		1 Ser. 15	Varies	413
6f33	Guidewall, Horizontal		6	10'-10	98
6f34	Guidewall, Horizontal		8	42'-2½	507

BILL OF REINFORCEMENT

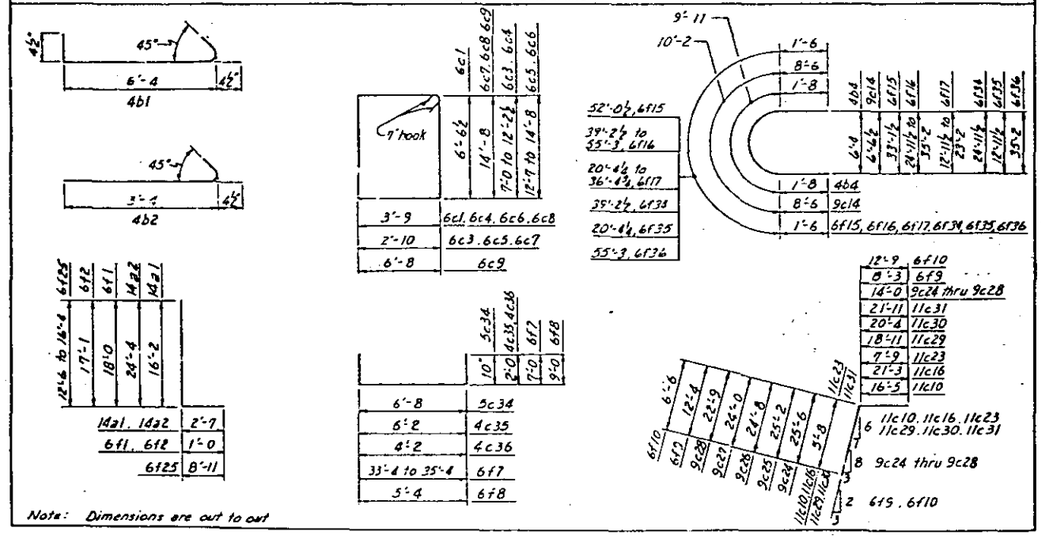
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6f35	Guidewall, Horizontal		6	23'-4½	211
6f36	Guidewall, Horizontal		33	58'-3	2,887
6f37	Guidewall, Horizontal		8	27'-8	332
6f38	Guidewall, Horizontal		17	11'-3	287
				Total	157,139



SECTION D-D

(Section is representative of all piers)

BAR BENDING DIAGRAMS



Note: Dimensions are out to out

MADE LCT DATE 9-82 CHECKED DLM DATE 9-82

25-00

676

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

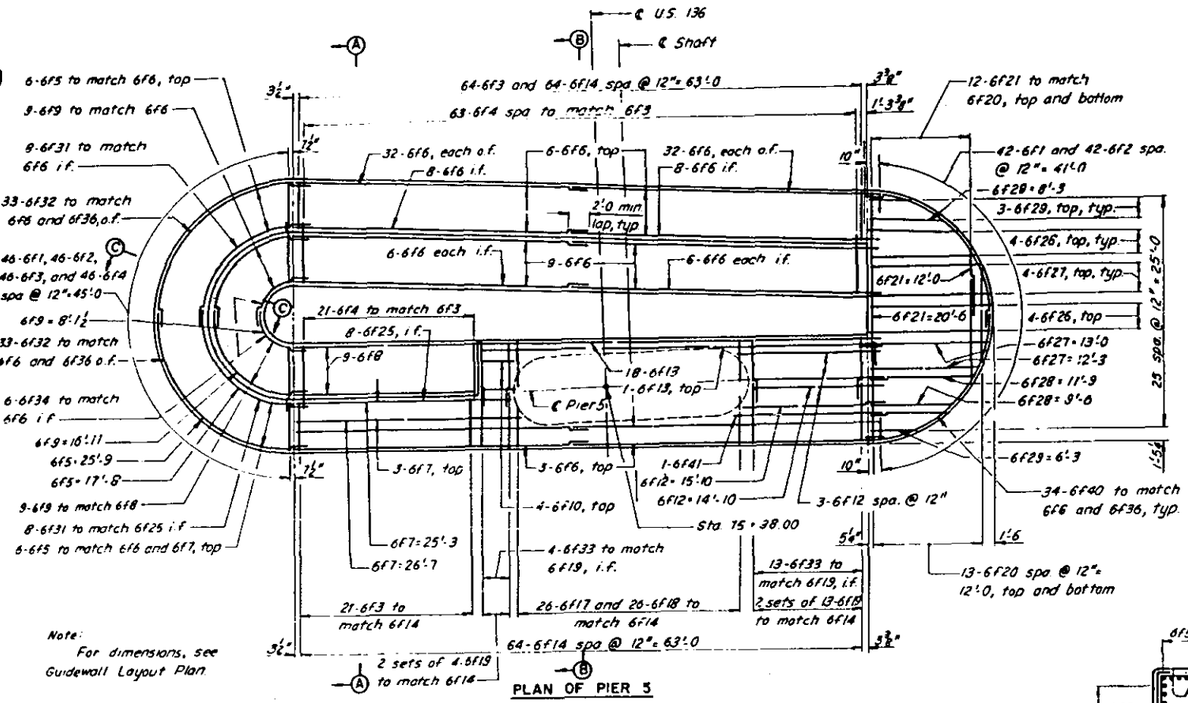
PIER 5

STA. [illegible]
RIVER SCALE [illegible]
LEE COUNTY, IOWA

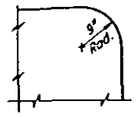
PROJECT NO. [illegible]
HANCOCK COUNTY, ILLINOIS

DESIGN NO. [illegible] LEE COUNTY FILE [illegible] SHEET 52 OF 227

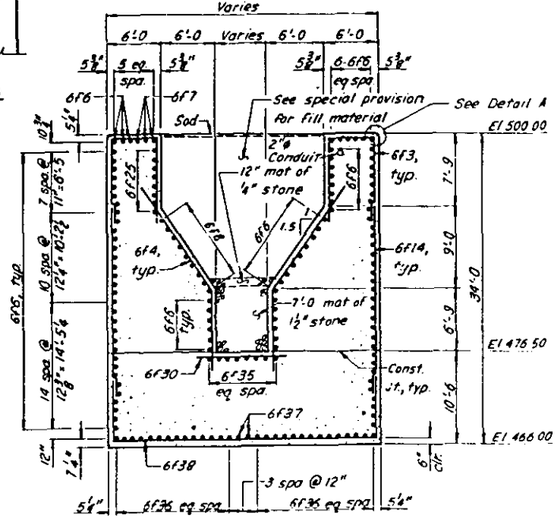
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



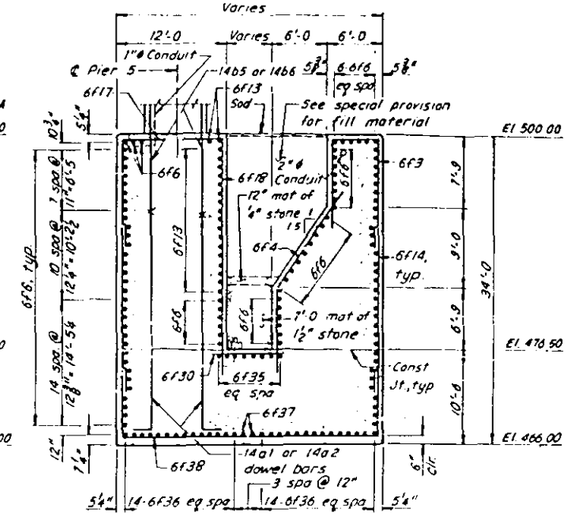
PLAN OF PIER 5



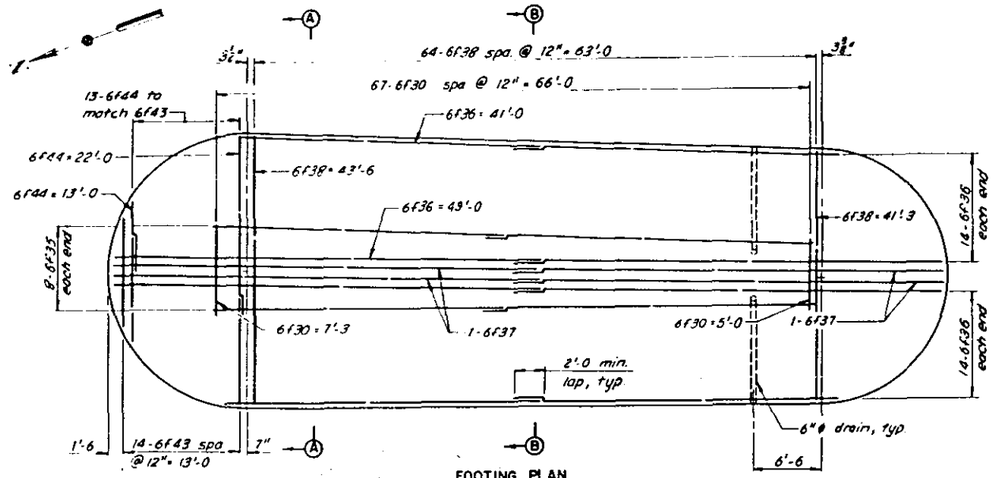
DETAIL A



SECTION A-A



SECTION B-B

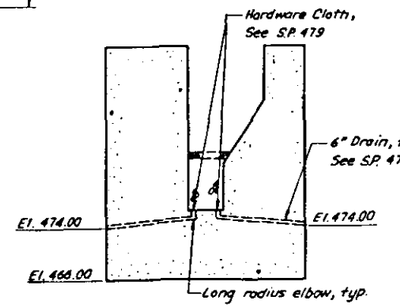


FOOTING PLAN
(Design Bearing Pressure 13.66 KSF)

SECTION C-C

GUIDEWALL LAYOUT PLAN

Notes:
Reinforcing steel may be cut or bent as necessary to clear recesses.



SECTION THRU GUIDEWALL AT 6" ϕ DRAIN

Notes:
Reinforcing steel cover is 4" unless noted otherwise.
Adjust bars to miss 6"ϕ drain.
For bar list and bar bends, see Sheet 47A.
i.f. denotes inner face.
o.f. denotes outer face

Revision (4-17-84) Item revised is marked by ⚠.

Revised (12-8-83) This sheet is added. Details shown on sheet 46.

CONCRETE PLACEMENT QUANTITIES PIER 5		
LOCATION	UNIT	QUANTITY
Cap Beam - Class C	C.Y.	234.1
Shaft - Class C	C.Y.	181.8
Guidewall - Class C	C.Y.	2590.3
Total	C.Y.	3006.2

ESTIMATED QUANTITIES PIER 5		
ITEM	UNIT	QUANTITY
Structural Concrete	C.Y.	3006.2
Reinforcing Steel	Lbs.	~~145,727~~ 155,777 ⚠
Excavation Class 23	C.Y.	211
Structural Steel A36	Lbs.	18,886
Aluminum Handrail	Lin. Ft	276.0

Notes:
Use RM-9 Type 2 junction box; ½" ϕ copper drain tube shall discharge into fill material at El. 498.5. See Sheet 106 for junction box details.
2"ϕ conduit which protrudes from light standard recess shall be capped. Light standard recess shall have a 2"ϕ drain sloped to discharge into fill material at El. 497.0. Light standard relocated from existing guidewall nose shall be resecured with galvanized anchor bolts 2'-0 long and having diameter and spacing which matches existing installation; fill recess with concrete.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

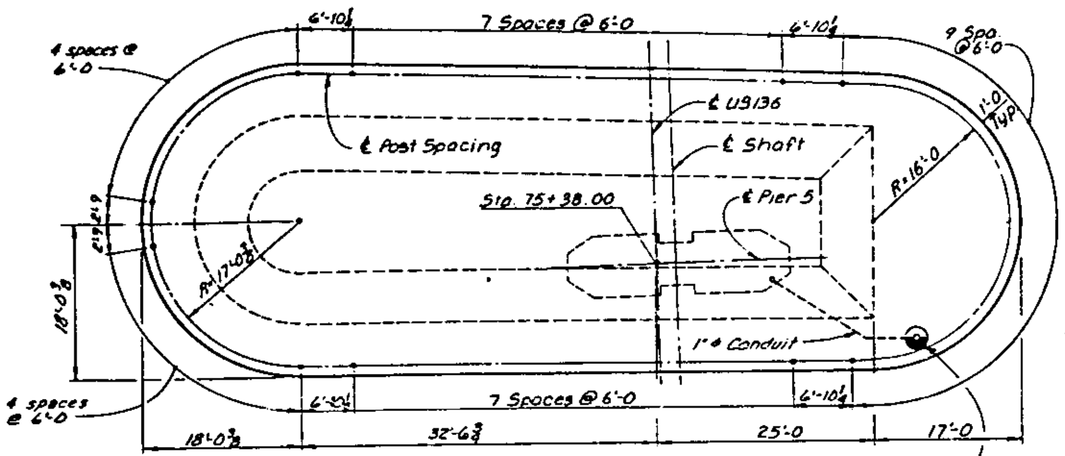
STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
DETAIL OF GUIDEWALL AT PIER 5

STA. 80+40.00
RIVER MILE 363.8
LEE COUNTY, IOWA

PROJECT NO. BRF-18-1(53)--38-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 46A OF

MADE CAK DATE 11-83 CHECKED BJB DATE 11-83



HANDRAIL POST SPACING PLAN

General Aluminum Handrail Notes:

The aluminum handrail is to be bid on a lineal foot basis, measured from end-to-end of rail. The price bid for "Aluminum Handrail" shall be full compensation for furnishing all material including the anchor bolts, all the equipment and labor required to erect the rail in accordance with these plans and specifications.

Material for anchor studs, hex nuts and washers shall be on an ASTM A-276 stainless steel with a minimum ultimate strength of 100,000 psi a minimum elongation in two inches of 12% and a minimum reduction area of 40%. Stud thread shall conform to ANSI B-11 for UNC threads series Class 2A fit. Threads may be rolled or cut. Diameter of stud shall not be less than pitch diameter of threads. The stainless steel nuts shall be hexagonal, finished and shall comply with ANSI B-18-2. Threads shall comply with ANSI B-11 for UNC threads series, Class 2B fit.

Material for steel nuts shall be ASTM A-307, Grade A, and shall conform with ANSI B-18.2. Threads shall comply with ANSI B11 for UNC threads, Class 2B fit.

Plates and extrusions are to be 6061-76 aluminum alloy.

Welding to be by an approved metal electrode process with an inert gas shied using ER 5356 welding wire.

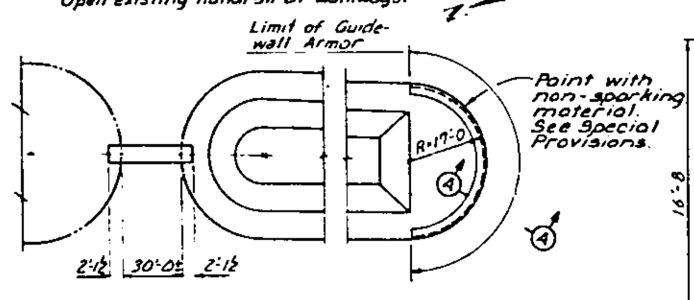
All aluminum surfaces in contact with concrete shall be protected with two coats of zinc chromate paint (one wash coat and one prime coat) and a finish coat of alkali resistant bituminous paint.

End of rail sections to be sawed or milled. Cut ends to be true, smooth and free from burrs or ragged edges.

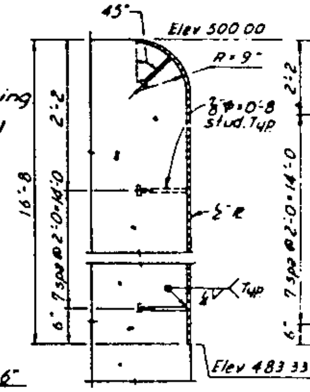
Handling, storage and installation of decorative handrail shall be in accordance with Section 2414.06 of the Standard Specifications, except that no caulking will be required.

Handrail dimensions are measured along centerline handrail.

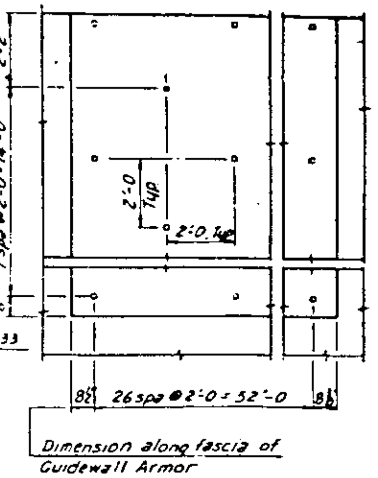
Note:
Non-sparking material shall be included in the unit bid price of structural steel A36.
Open existing handrail at walkways.



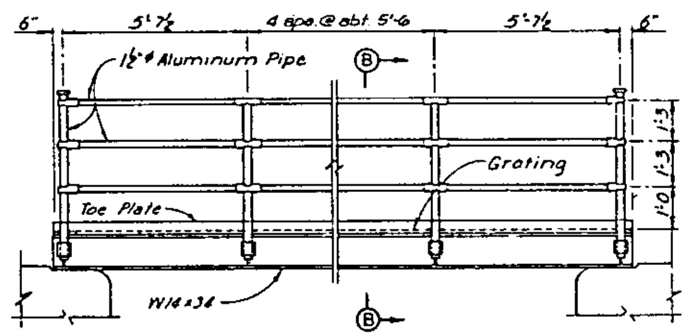
WALKWAY AND GUIDEWALL ARMOR PLAN



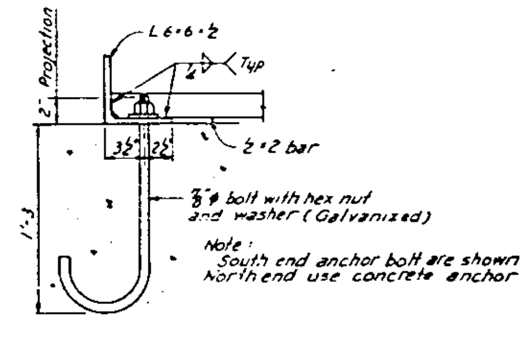
SECTION A-A



ARMOR ELEVATION

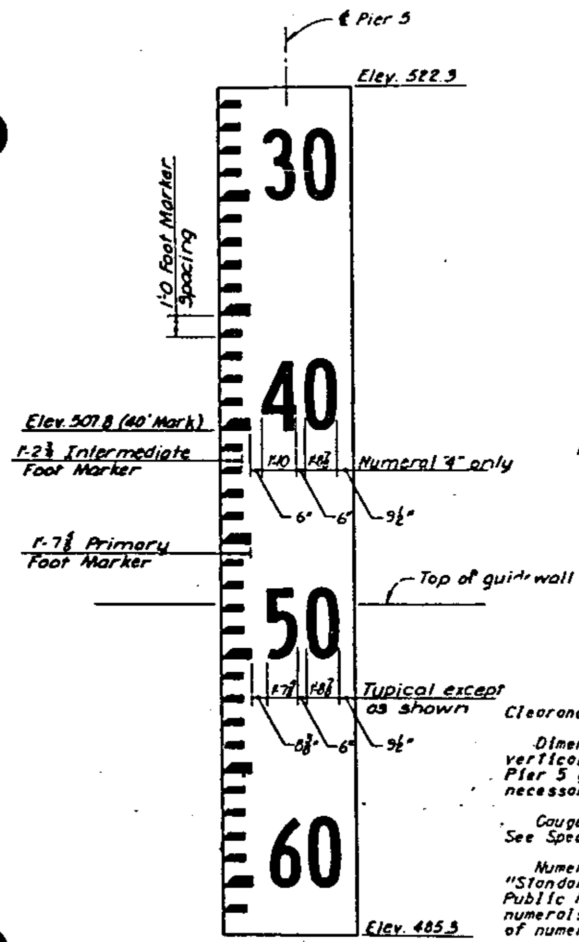


WALKWAY ELEVATION

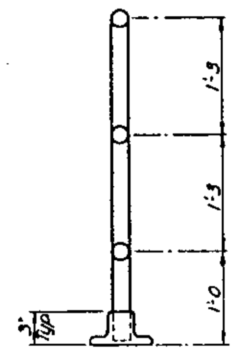


SECTION F-F

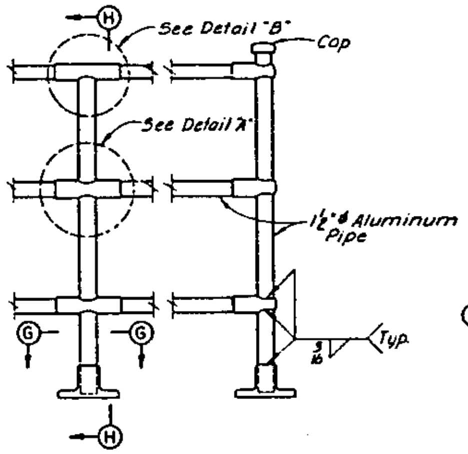
Note:
1½"φ Aluminum Handrail shall be included in the unit price bid for structural steel.



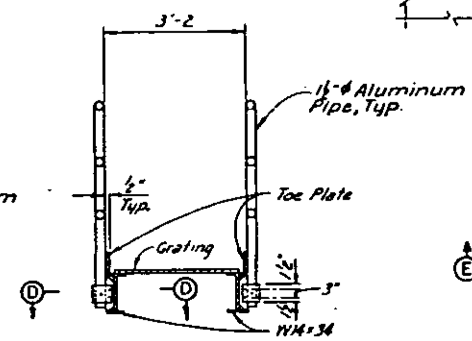
PIER 5
(Downstream)



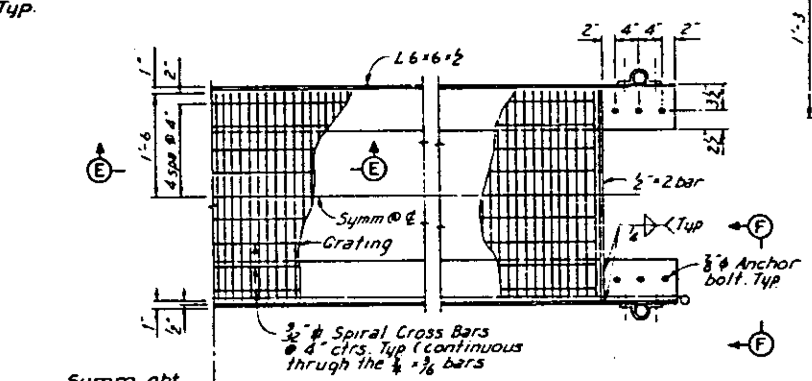
SECTION H-H



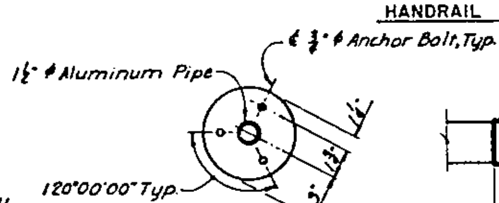
HANDRAIL DETAIL



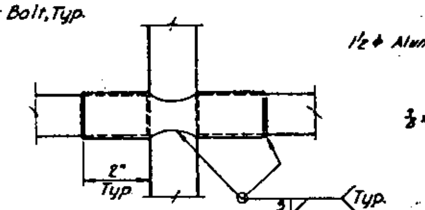
SECTION B-B



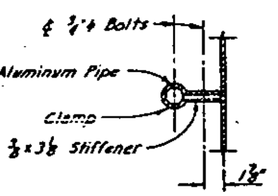
GRATING PLAN



SECTION G-G



DETAIL "A"



SECTION D-D

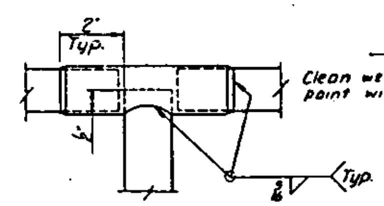
Clearance Gauge Notes:

Dimensions are shown (or noted) projected to a vertical plane normal to centerline of west face of Pier 5 guidewall; dimensions shall be adjusted as necessary to achieve that result.

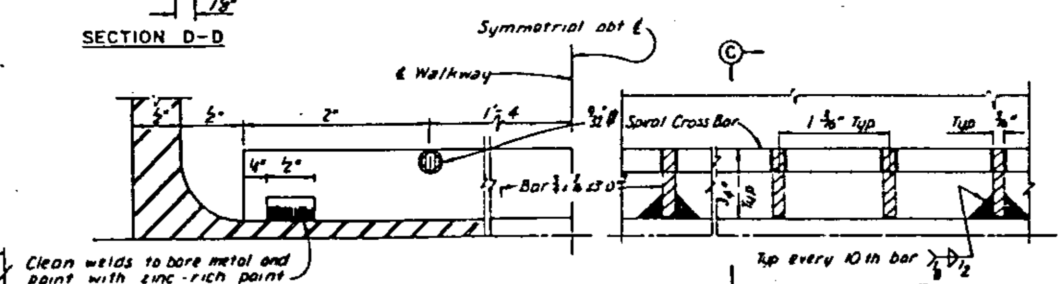
Gauge shall be painted on upstream nose of Pier 5. See Special Provisions for paint requirements.

Numeral type shall conform with that published in "Standard Alphabets for Highway Signs", Bureau of Public Roads Department of Transportation. Series C numerals, 36" in height, shall be used. Stroke width of numerals and primary foot markers shall be 5".

Primary foot markers shall be spaced at 5'-0" intervals; intermediate foot markers shall be spaced at 1'-0" intervals between primary foot markers. Intermediate foot markers shall have a stroke width of ½ that noted for primary foot markers.



DETAIL "B"



SECTION C-C

SECTION E-E

WALKWAY DETAILS

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

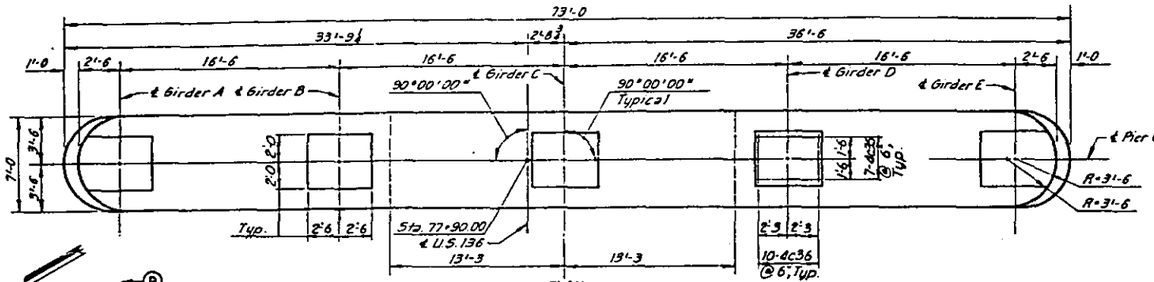
STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 5

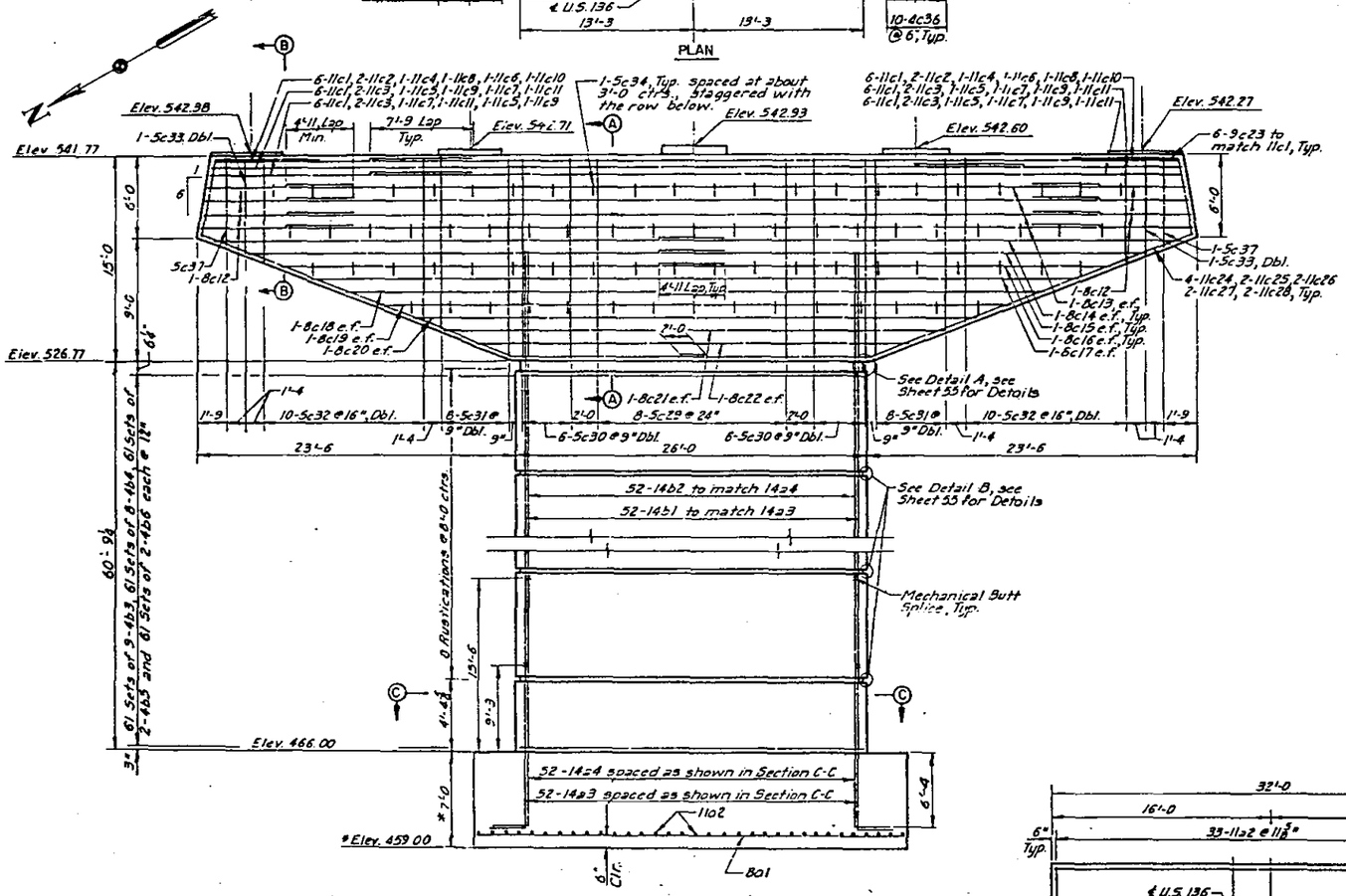
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB
MADE TKT DATE 12-20-82 CHECKED LDE DATE 12-30-82

DESIGN SHEET 47A OF
DESIGN NO. LEE COUNTY SHEET OF 227
53

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

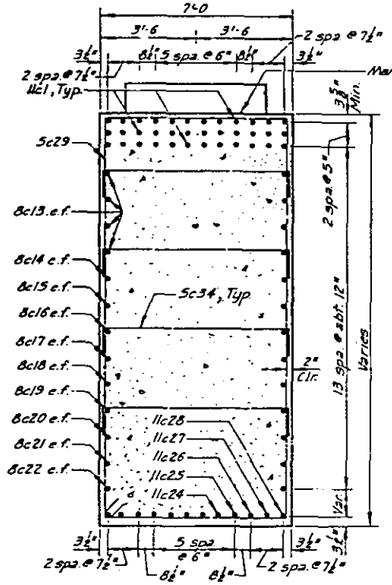


PLAN

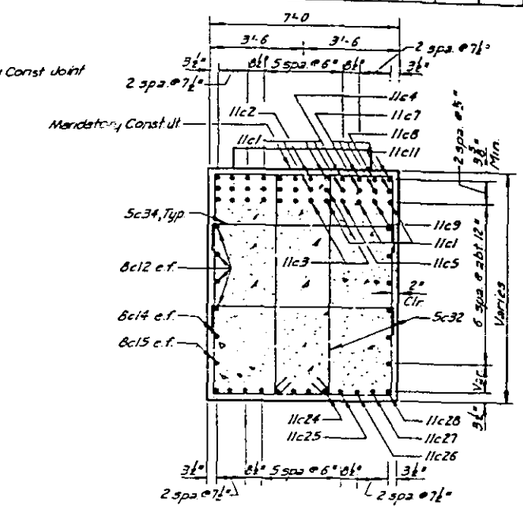


*Plus or Minus 3"

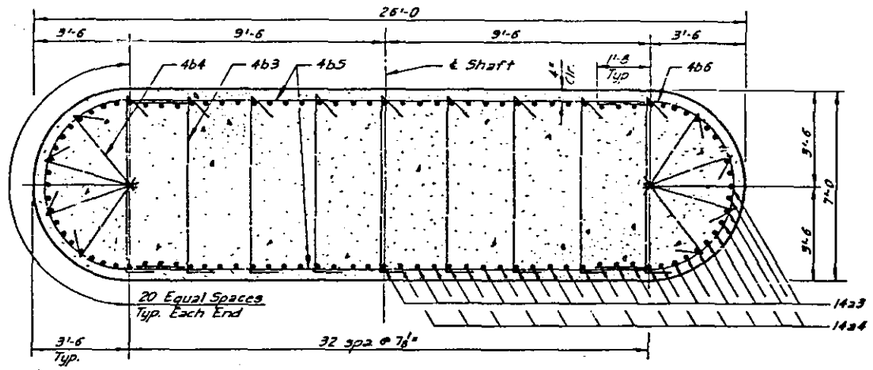
ELEVATION
(Design Bearing Pressure 16.90 KSF)



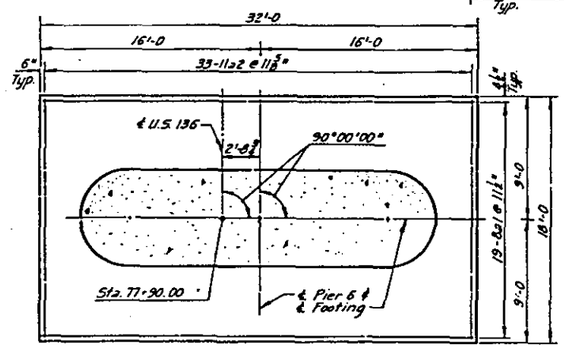
SECTION A-A



SECTION B-B



SECTION C-C



FOOTING PLAN

Notes:

For Pier Notes see Sheet 31

For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 49

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.05

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of Traffic Light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 6

STA. 80+46.00
RIVER MILE 343.9

PROJECT NO. BRF-90-1(3)--80-99

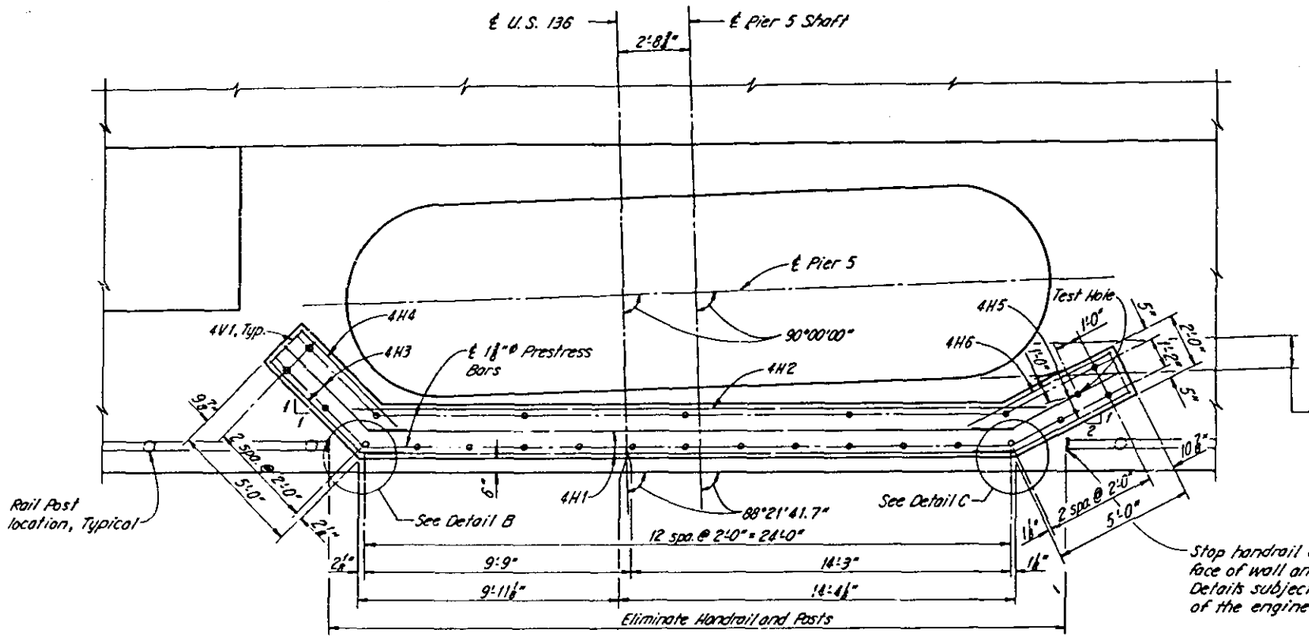
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE RCC DATE 8-82 CHECKED JFL DATE 8-82

DESIGN SHEET 48 OF

DESIGN NO. 315 LEE COUNTY FILE 39735 SHEET 57 OF 227

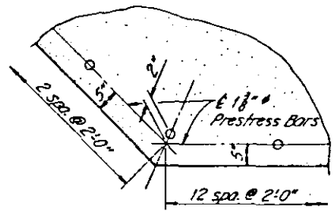
FEDERAL PROJECT NO	STATE	F.A. AID PROJ. NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



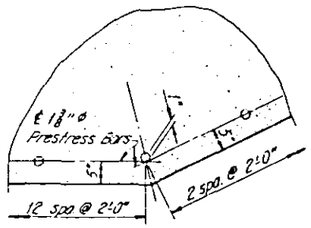
PLAN

Obscured pier clearance gage markings on pier shaft shall be duplicated on wall end.

Stop handrail approximately 6" from face of wall and cap ends, Typical. Details subject to prior approval of the engineer.

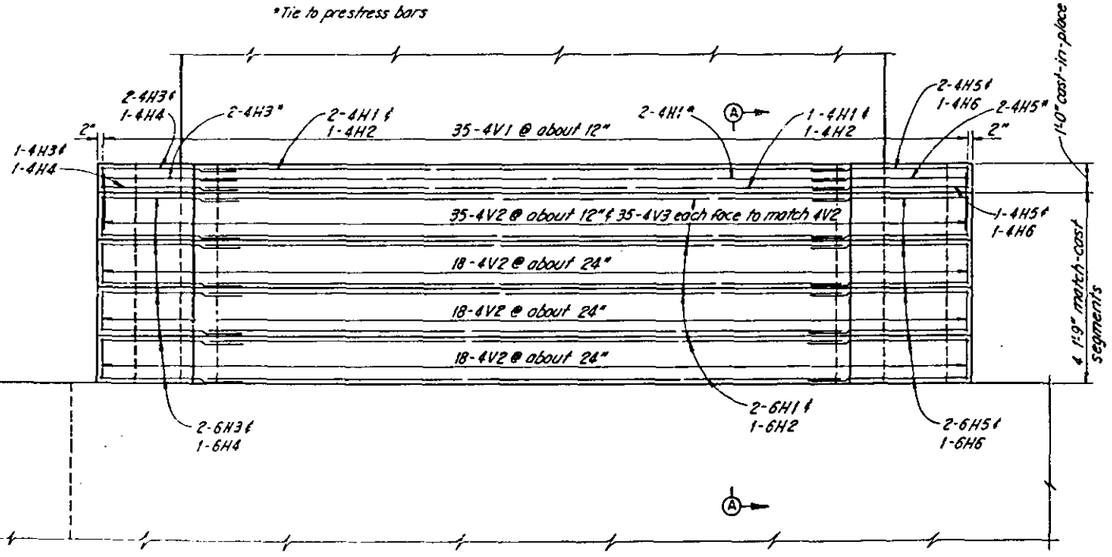


DETAIL B

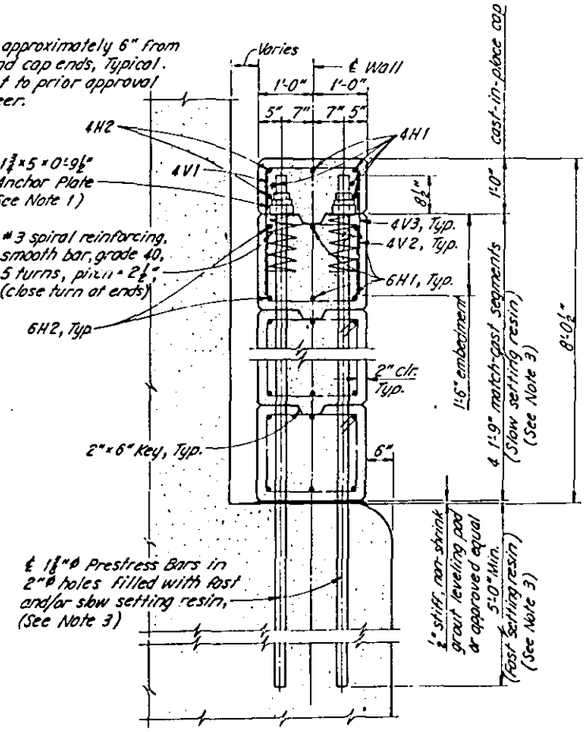


DETAIL C

*Tie to prestress bars



ELEVATION



SECTION A-A

Note:
For notes see sheet 470.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
WALL
PIER 5 GUIDEWALL

STA 80+40.00
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO BRF-10-1(3)--38 58
HANCOCK COUNTY, ILLINOIS

DRAWN BJT DATE 8-29-84 CHECKED BAW DATE 8-31-84

REVISED (9-19-1984) THIS SHEET ONLY

-99-08

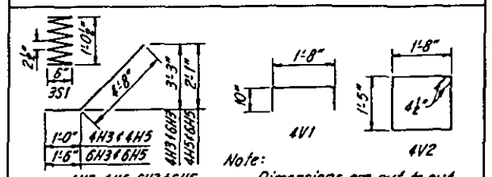
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
4H1	Wall, Horizontal	—	5	23'-10"	80
4H2	Wall, Horizontal	—	2	25'-8"	34
4H3	Wall, Horizontal	⟋	5	5'-8"	19
4H4	Wall, Horizontal	—	2	5'-2"	7
4H5	Wall, Horizontal	⟋	5	5'-8"	19
4H6	Wall, Horizontal	—	2	5'-10"	8
4V1	Wall, Vertical	⌐	35	3'-4"	78
4V2	Wall, Vertical	◪	89	6'-11"	411
4V3	Wall, Vertical	—	70	2'-3"	105
6H1	Wall, Horizontal	—	16	23'-10"	573
6H2	Wall, Horizontal	—	8	26'-8"	300
6H3	Wall, Horizontal	⟋	16	6'-2"	148
6H4	Wall, Horizontal	—	8	5'-8"	68
6H5	Wall, Horizontal	⟋	16	5'-2"	148
6H6	Wall, Horizontal	—	8	6'-4"	76
* 351	Anchor Plate Spiral	WWW	24	11'-0"	99
				Total	2,193

* Grade 40, smooth bar

BAR BENDING DIAGRAMS



Note: Dimensions are out to out.

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Cast-in-place Concrete	C.Y.	2.5
Precast Concrete	C.Y.	17.8
Reinforcing Steel	Lbs.	2,193
1¼"ø Prestress Bars	L.F.	306 (Min.)
Drill 2"ø Holes	L.F.	120 (Min.)

ESTIMATED QUANTITY

ITEM	QUANTITY
Protective Wall	Lump Sum

GENERAL NOTES - WALL

1. Anchor Plates shall be bedded per recommendation of the manufacturer.
2. Cap Concrete f'_c = 3,500 psi
   Precast Concrete f'_c = 5,000 psi
   Reinforcing Steel f'_y = 60,000 psi
   Prestressing Bars ASTM A722 1¼"ø Grade 160
   Dywidag Threadbar or approved equal, transfer stress to be 151.7 kips per bar.
3. The fully resin anchored and grouted system shown is similar to Dywidag Threadbar Resin Anchored Rock Bolt system; the engineer may approve an alternate system proposed by the contractor.
4. Contractor to refer to Pier 5 Guidewall plans and note presence of electrical conduit embedded in guidewall.
5. Guidewall reinforcing steel may be severed when drilling holes. Holes in precast segments shall be matched to a template made from holes drilled in guidewall. Drilled holes shall be securely capped to preclude entry of moisture and debris. The prevention of water accumulation in the holes is especially important during freezing weather. The contractor shall take whatever steps necessary to prevent this from occurring.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED
PLATE GIRDER BRIDGE
WALL
PIER 5 GUIDEWALL

STA 90+40.00
RIVER MILE 363.8

PROJECT NO. BRF-19-1(53)--38-56
HANCOCK COUNTY ILLINOIS

DESIGN SHEET 470 OF

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE BJT DATE 8-29-84 CHECKED BAW DATE 8-31-84

REVISED (9-18-1984) THIS SHEET ADDED.

5767-1-08

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

BILL OF REINFORCEMENT
PIER 6

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	Footing Horizontal	—	19	31'-6	1598
11a2	Footing Horizontal	—	33	17'-6	3068
14a3	Footing Vertical	⌐	52	18'-2	7227
14a4	Footing Vertical	⌐	52	24'-5	9713
14b1	Shaft Vertical	—	52	60'-0	23,868
14b2	Shaft Vertical	—	52	53'-9	21,382
4b3	Shaft Horizontal	⊂	549	7'-1	2598
4b4	Shaft Horizontal	⊂	488	3'-1	1277
4b5	Shaft Horizontal	⊂	122	19'-0	1548
4b6	Shaft Horizontal	⊂	122	13'-3	1080
11c1	Cap Beam Horizontal	—	36	60'-0	11,476
11c2	Cap Beam Horizontal	⌐	4	24'-2	514
11c3	Cap Beam Horizontal	—	8	18'-5	783
11c4	Cap Beam Horizontal	⌐	2	23'-8	251
11c5	Cap Beam Horizontal	—	4	17'-11	381
11c6	Cap Beam Horizontal	⌐	2	22'-10	243
11c7	Cap Beam Horizontal	—	4	17'-1	363
11c8	Cap Beam Horizontal	⌐	2	21'-8	230
11c9	Cap Beam Horizontal	- -	4	15'-11	338
11c10	Cap Beam Horizontal	⌐	2	19'-6	207
11c11	Cap Beam Horizontal	—	4	13'-9	292
8c12	Cap Beam Horizontal	⊂	8	28'-5	607
8c13	Cap Beam Horizontal	—	8	60'-0	1282
8c14	Cap Beam Horizontal	—	4	38'-2	408
8c15	Cap Beam Horizontal	—	4	35'-7	380
8c16	Cap Beam Horizontal	—	4	33'-0	352
8c17	Cap Beam Horizontal	—	2	55'-10	298
8c18	Cap Beam Horizontal	—	2	50'-8	271
8c19	Cap Beam Horizontal	—	2	45'-6	243
8c20	Cap Beam Horizontal	—	2	40'-4	215
8c21	Cap Beam Horizontal	—	2	35'-2	188
8c22	Cap Beam Horizontal	—	2	30'-0	160
9c23	Cap Beam Horizontal	⌐	12	13'-6	551
11c24	Cap Beam Horizontal	⌿	8	39'-1	1661
11c25	Cap Beam Horizontal	⌿	4	38'-10	825
11c26	Cap Beam Horizontal	⌿	4	38'-5	816
11c27	Cap Beam Horizontal	⌿	4	37'-9	802
11c28	Cap Beam Horizontal	⌿	4	36'-7	777
5c29	Cap Beam Vertical	⊐	8	43'-7	364
5c30	Cap Beam Vertical	⊐	24	38'-9	970
5c31	Cap Beam Vertical	⊐	4 Ser. 8	Varies	1221
5c32	Cap Beam Vertical	⊐	4 Ser. 10	Varies	1199
5c33	Cap Beam Vertical	⊐	4	22'-1	92
5c34	Cap Beam Horizontal	⌐	78	9'-8	786
4c35	Cap Beam Horizontal	⌐	35	8'-8	203
4c36	Cap Beam Horizontal	⌐	50	7'-8	256
5c37	Cap Beam Vertical	⊐	2	18'-3	38
			TOTAL		103,298

11c1 T&B, 11c11M
11c8 T, 11c1 M, 11c9 B
11c1 T&B, 11c7 M
11c4 T, 11c1 M, 11c5 B
11c1 T&B, 11c3 M
11c2 T, 11c1 M, 11c3 B
11c1 T&B, 11c3 M
11c2 T, 11c1 M, 11c3 B
11c1 T&B, 11c5 M
11c6 T, 11c1 M, 11c7 B
11c1 T&B, 11c9 M
11c10 T, 11c1 M, 11c11 B

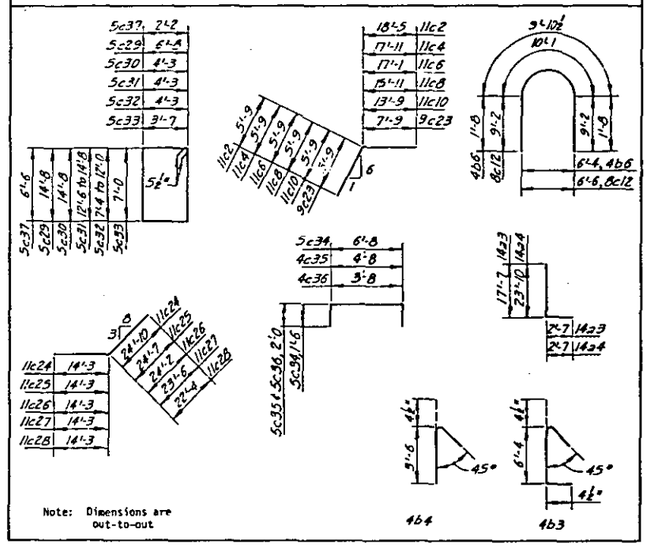
11c10 T, 11c1 M, 11c11 B
11c1 T&B, 11c9 M
11c6 T, 11c1 M, 11c7 B
11c1 T&B, 11c5 M
11c2 T, 11c1 M, 11c3 B
11c1 T&B, 11c3 M
11c2 T, 11c1 M, 11c3 B
11c1 T&B, 11c3 M
11c4 T, 11c1 M, 11c5 B
11c1 T&B, 11c7 M
11c8 T, 11c1 M, 11c9 B
11c1 T&B, 11c11 M

Min Lap 7'-9
Typ

SCHEMATIC OF TOP MOMENT REINFORCEMENT
PIER 6

Note:
T denotes Top
M denotes Middle
B denotes Bottom

BAR BENDING DIAGRAM PIER 6



Note: Dimensions are out-to-out

CONCRETE PLACEMENT QUANTITIES-PIER 6

LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	228.4
Shaft -- Class C	C.Y.	384.8
Footing -- Class C	C.Y.	192.0
Total	C.Y.	805.2

ESTIMATED QUANTITIES - PIER 6

ITEM	UNIT	QUANTITY
Structural Concrete	C.Y.	805.2
Reinforcing Steel	Lbs.	103,298
Excavation Class 23	C.Y.	185

11c34 T, 14c1M, & 11c36B
14c1 T&B, 11c9M
11c4T, 14c1M, & 11c8B
14c1 T&B, 11c7M
11c2T, 14c1M, & 11c6B
14c1 T&B, 11c7M
11c4 T, 14c1M, & 11c8B
14c1 T&B, 11c9M
11c34 T, 14c1M, & 11c36B

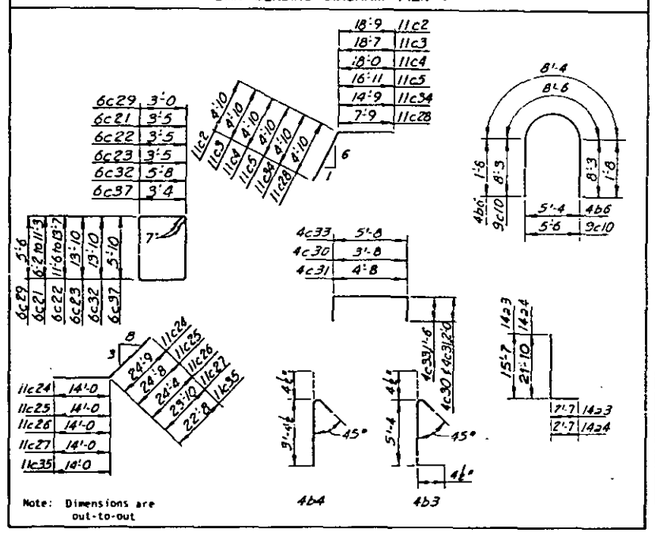
14c1 T&B, 11c36M
11c5T, 14c1M, & 11c9B
11c3T, 14c1M, & 11c7B
14c1 T&B, 11c6M
11c3T, 14c1M, & 11c7B
14c1 T&B, 11c8M
11c5T, 14c1M, & 11c9B
14c1 T&B, 11c36M

Min Lap 7'-9
Typ

SCHEMATIC OF TOP MOMENT REINFORCEMENT
PIER 7

Note:
T denotes Top
M denotes Middle
B denotes Bottom

BAR BENDING DIAGRAM PIER 7



Note: Dimensions are out-to-out

CONCRETE PLACEMENT QUANTITIES-PIER 7

LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	181.2
Shaft -- Class C	C.Y.	284.6
Footing -- Class C	C.Y.	106.7
Total	C.Y.	572.5

ESTIMATED QUANTITIES - PIER 7

ITEM	UNIT	QUANTITY
Structural Concrete Cl.C	C.Y.	572.5
Reinforcing Steel	Lbs.	92,307
Excavation Class 23	C.Y.	44

BILL OF REINFORCEMENT
PIER 7

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
10a1	Footing, Horizontal	—	17	31'-6	2304
11a2	Footing, Horizontal	—	40	14'-6	3082
14a3	Footing, Vertical	⌐	48	12'-11	4743
14a4	Footing, Vertical	⌐	48	16'-11	6212
14b1	Shaft, Vertical	—	48	55'-6	20,390
14b2	Shaft, Vertical	—	48	51'-6	18,911
4b3	Shaft, Horizontal	⊂	477	6'-1	1938
4b4	Shaft, Horizontal	⊂	318	3'-9	797
4b5	Shaft, Horizontal	—	106	20'-0	1416
4b6	Shaft, Horizontal	⊂	106	11'-8	826
14c1	Cap Beam, Horiz.	—	27	60'-0	12,393
11c2	Cap Beam, Horiz.	⌐	1	23'-7	125
11c3	Cap Beam, Horiz.	⌐	2	23'-5	249
11c4	Cap Beam, Horiz.	⌐	2	22'-10	243
11c5	Cap Beam, Horiz.	—	2	21'-10	232
11c6	Cap Beam, Horiz.	—	2	19'-1	203
11c7	Cap Beam, Horiz.	—	4	18'-10	400
11c8	Cap Beam, Horiz.	—	4	18'-4	390
11c9	Cap Beam, Horiz.	—	4	17'-4	368
9c10	Cap Beam, Horiz.	⊃	6	25'-0	510
9c11	Cap Beam, Horiz.	—	6	60'-0	1,224
9c12	Cap Beam, Horiz.	—	4	38'-6	524
9c13	Cap Beam, Horiz.	—	4	35'-10	487
9c14	Cap Beam, Horiz.	—	4	33'-3	452
9c15	Cap Beam, Horiz.	—	2	56'-4	383
9c16	Cap Beam, Horiz.	—	2	51'-3	349
9c17	Cap Beam, Horiz.	—	2	46'-2	314
9c18	Cap Beam, Horiz.	—	2	40'-11	278
9c19	Cap Beam, Horiz.	—	2	35'-9	243
9c20	Cap Beam, Horiz.	—	2	30'-7	208
6c21	Cap Beam, Vertical	⊐	4 Ser. 16	Varies	2,443
6c22	Cap Beam, Vertical	⊐	4 Ser. 9	Varies	1,789
6c23	Cap Beam, Vertical	⊐	28	35'-8	1,500
11c24	Cap Beam, Horiz.	⌿	2	38'-9	412
11c25	Cap Beam, Horiz.	⌿	4	38'-8	822
11c26	Cap Beam, Horiz.	⌿	4	38'-4	815
11c27	Cap Beam, Horiz.	⌿	4	37'-10	804
11c28	Cap Beam, Horiz.	⌿	9	12'-7	602
6c29	Cap Beam, Vertical	⊐	4	18'-2	109
4c30	Cap Beam, Pad	⌐	50	7'-8	256
4c31	Cap Beam, Pad	⌐	40	8'-8	232
6c32	Cap Beam, Vertical	⊐	8	40'-2	483
4c33	Cap Beam, Horiz.	⌐	74	8'-8	428
11c34	Cap Beam, Horiz.	⌿	2	20'-7	219
11c35	Cap Beam, Horiz.	⌿	4	35'-8	779
11c36	Cap Beam, Horiz.	—	4	14'-9	313
6c37	Cap Beam, Horiz.	⊐	4	19'-6	117
	Total				92,307

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIERS 6 & 7 DETAILS

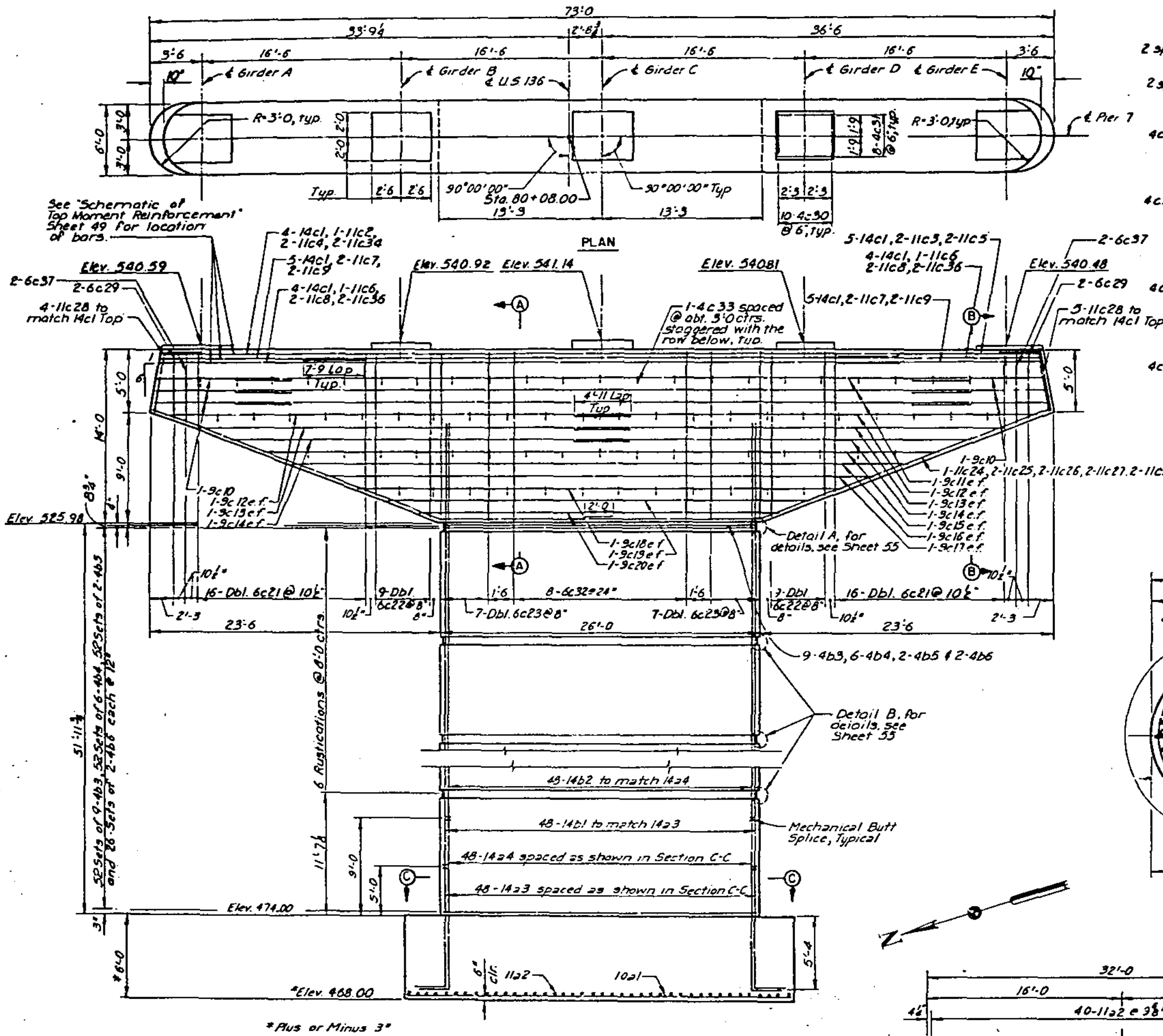
STA. 89+48.89
RIVER MILE 363.3
LEE COUNTY, IOWA

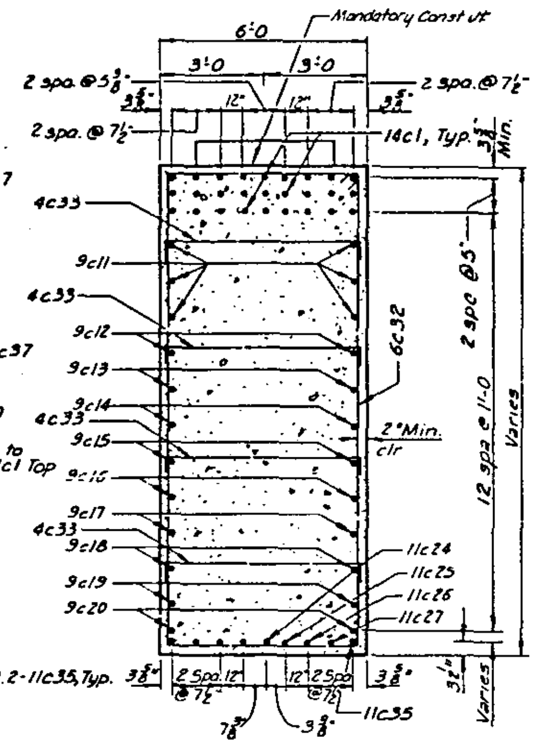
PROJECT NO. BRF-92-1(7)--38-56
HANCOCK COUNTY, ILLINOIS

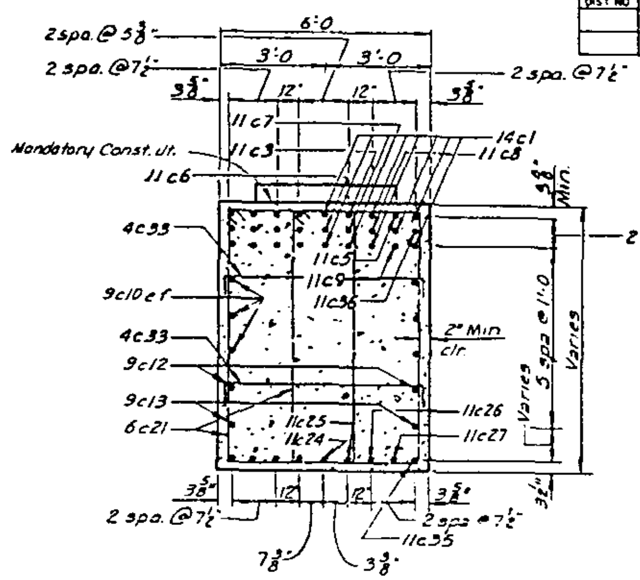
DESIGN NO. 396 LEE COUNTY FILE 23723 SHEET 55 OF 227

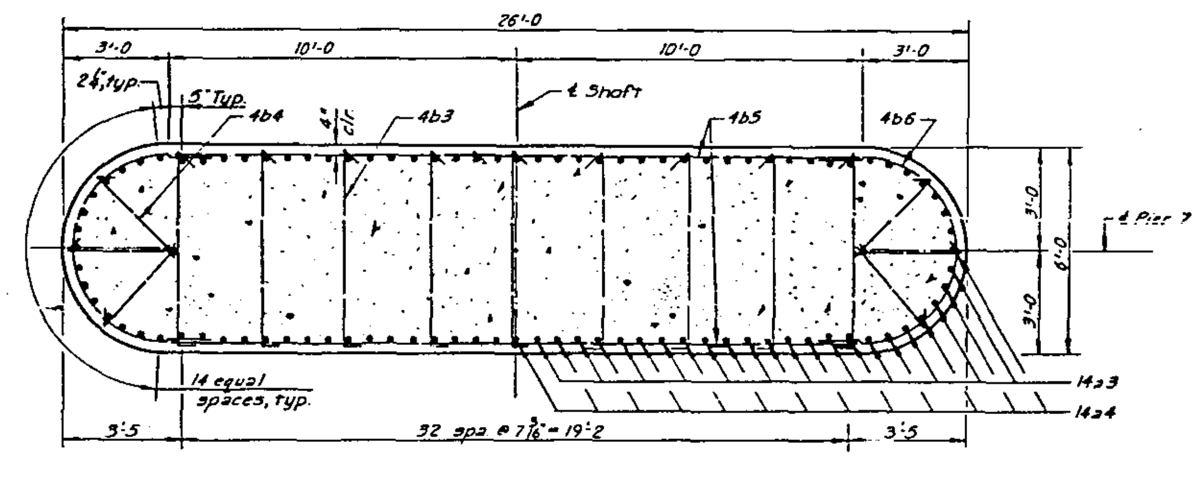
767-25-

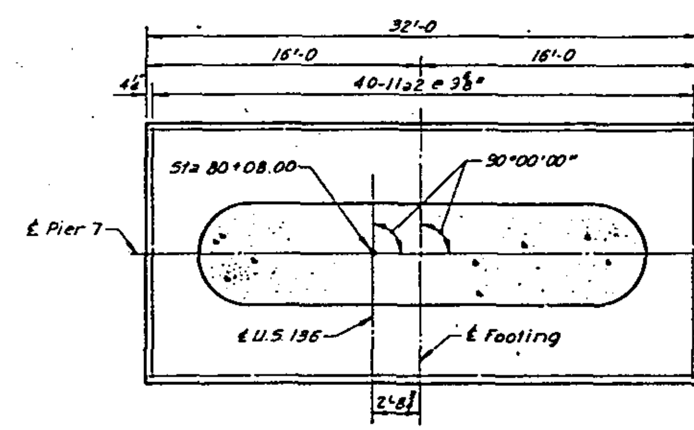
MADE TKT DATE 8-18-82 CHECKED JWH DATE 8-82











Notes:

For Pier Notes see Sheet 31

For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 49

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

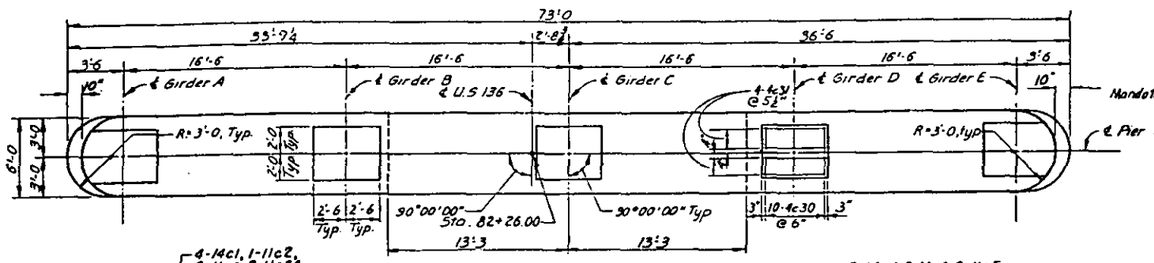
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

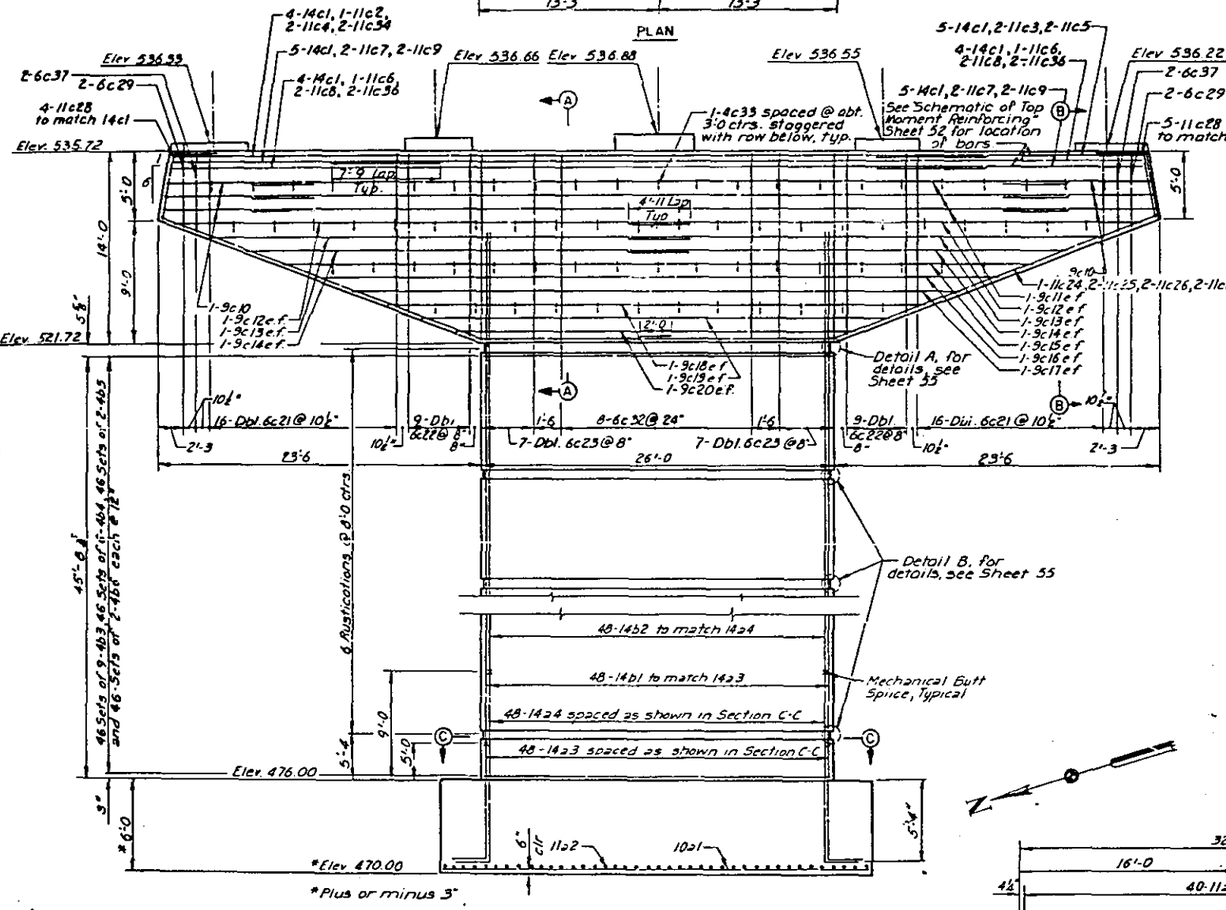
PIER 7

LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

MADE TKT DATE 7-82 CHECKED JMH DATE 8-82

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

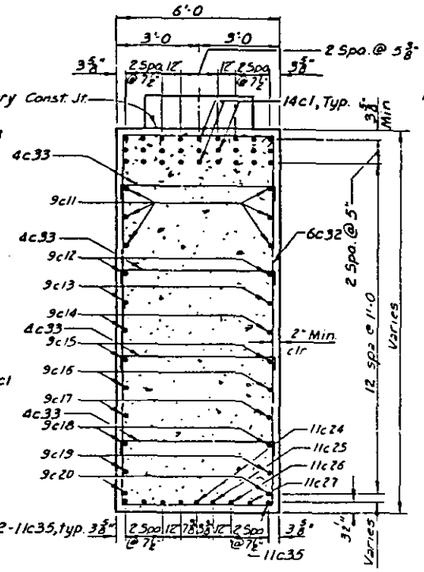




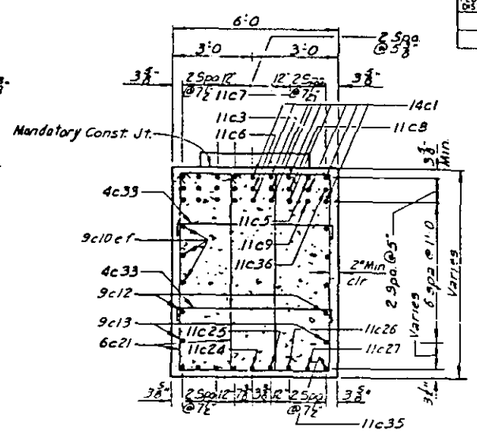
ELEVATION

(Design Bearing Pressure 20.20 KSF)

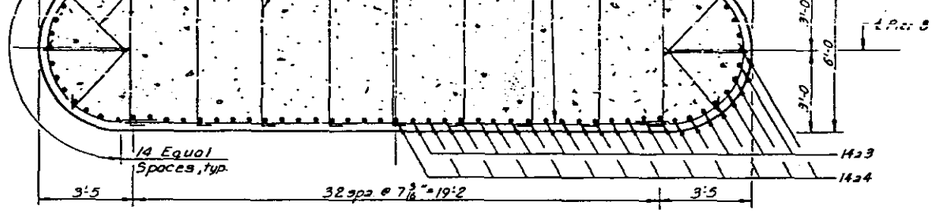
Note: e.f denotes each face



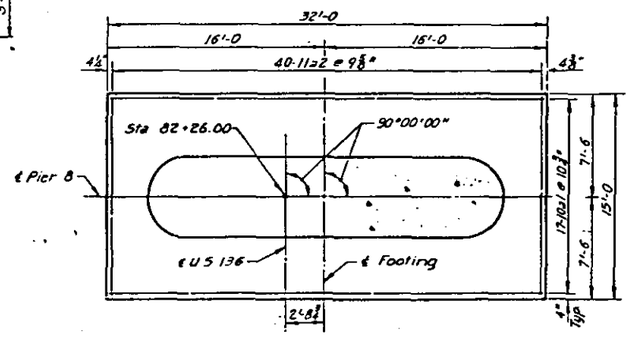
SECTION A-A



SECTION B-B



SECTION C-C



FOOTING PLAN

Notes:

For Pier Notes see Sheet 31.

For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 52.

For Electrical Grounding Details, see Sheet 108.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE TAT DATE 7-82 CHECKED JMH DATE 8-82

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 8

STA. 80+40.00
RIVER MILE 363.5
LEE COUNTY, IOWA

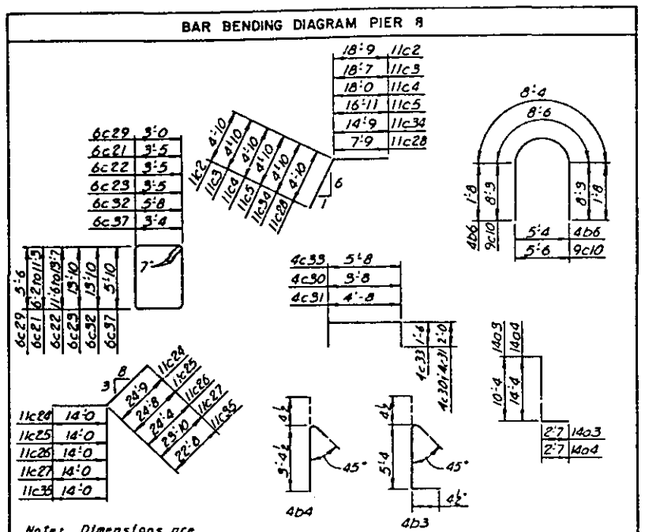
PROJECT NO. BRF-19-1(23)--38-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 51 OF

DESIGN NO. 382 LEE COUNTY FILE 33738 SHEET 57 OF 227

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

BAR BENDING DIAGRAM PIER 8



BILL OF REINFORCEMENT

PIER 8

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
10a1	Footing, Horizontal	—	17	31'-6	2304
11a2	Footing, Horizontal	—	40	14'-6	3082
14a3	Footing, Vertical	⌐	48	12'-11	4743
14a4	Footing, Vertical	⌐	48	16'-11	6212
14b1	Shaft, Vertical	—	48	49'-3	18,085
14b2	Shaft, Vertical	—	48	45'-3	16,616
4b3	Shaft, Horizontal	⊂	414	6'-1	1682
4b4	Shaft, Horizontal	⊂	276	3'-9	691
4b5	Shaft, Horizontal	—	92	20'-0	1229
4b6	Shaft, Horizontal	∪	92	11'-8	717
14c1	Cap Beam, Horiz.	—	27	60'-0	12,393
11c2	Cap Beam, Horiz.	⌐	1	23'-7	125
11c3	Cap Beam, Horiz.	⌐	2	23'-5	249
11c4	Cap Beam, Horiz.	⌐	2	22'-10	243
11c5	Cap Beam, Horiz.	⌐	2	21'-10	232
11c6	Cap Beam, Horiz.	—	2	19'-1	203
11c7	Cap Beam, Horiz.	—	4	18'-10	400
11c8	Cap Beam, Horiz.	—	4	18'-4	390
11c9	Cap Beam, Horiz.	—	4	17'-4	368
9c10	Cap Beam, Horiz.	∪	6	25'-0	510
9c11	Cap Beam, Horiz.	—	6	60'-0	1,224
9c12	Cap Beam, Horiz.	—	4	38'-6	524
9c13	Cap Beam, Horiz.	—	4	35'-10	487
9c14	Cap Beam, Horiz.	—	4	33'-3	452
9c15	Cap Beam, Horiz.	—	2	56'-4	383
9c16	Cap Beam, Horiz.	—	2	51'-3	349
9c17	Cap Beam, Horiz.	—	2	46'-2	314
9c18	Cap Beam, Horiz.	—	2	40'-11	278
9c19	Cap Beam, Horiz.	—	2	35'-9	243
9c20	Cap Beam, Horiz.	—	2	30'-7	208
6c21	Cap Beam, Vertical	□	4 Ser 16	Varies	2,443
6c22	Cap Beam, Vertical	□	4 Ser 9	Varies	1,739
6c23	Cap Beam, Vertical	□	28	35'-8	1,500
11c24	Cap Beam, Horiz.	⌐	2	38'-9	412
11c25	Cap Beam, Horiz.	⌐	4	38'-8	822
11c26	Cap Beam, Horiz.	⌐	4	38'-4	815
11c27	Cap Beam, Horiz.	⌐	4	37'-10	804
11c28	Cap Beam, Horiz.	—	9	12'-7	602
6c29	Cap Beam, Vertical	□	4	18'-2	109
4c30	Cap Beam, Pad	⌐	50	7'-8	307
4c31	Cap Beam, Pad	⌐	40	8'-8	232
6c32	Cap Beam, Vertical	□	8	40'-2	483
4c33	Cap Beam, Horiz.	⌐	74	8'-8	428
11c34	Cap Beam, Horiz.	⌐	2	20'-7	219
11c35	Cap Beam, Horiz.	⌐	4	36'-8	779
11c26	Cap Beam, Horiz.	—	4	14'-9	313
6c37	Cap Beam, Horiz.	□	4	19'-6	117
	Total				87,110

11c34 T, 14c1 M, & 11c36 B — 14c1 T & B, 11c36 M
14c1 T & B, 11c9 M — 11c5 T, 14c1 M, & 11c9 B
11c4 T, 14c1 M, & 11c8 B — 14c1 T & B, 11c8 M
14c1 T & B, 11c7 M — 11c3 T, 14c1 M, & 11c7 B
11c2 T, 14c1 M, & 11c6 B — 14c1 T & B, 11c6 M
14c1 T & B, 11c7 M — 11c3 T, 14c1 M, & 11c7 B
11c4 T, 14c1 M, & 11c8 B — 14c1 T & B, 11c8 M
14c1 T & B, 11c9 M — 11c5 T, 14c1 M, & 11c9 B
11c34 T, 14c1 M, & 11c36 B — 14c1 T & B, 11c36 M

8'-1 Min. Lap, typ.

SCHEMATIC OF TOP MOMENT REINFORCEMENT
PIER 8

Legend:
T denotes Top
M denotes Middle
B denotes Bottom

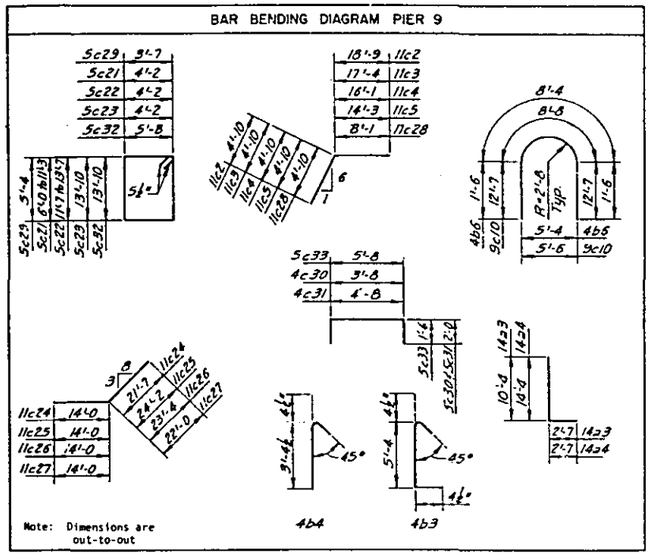
CONCRETE PLACEMENT QUANTITIES-PIER 8

LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	181.2
Shaft -- Class C	C.Y.	251.1
Footing -- Class C	C.Y.	106.7
Total	C.Y.	539.0

ESTIMATED QUANTITIES - PIER 8

ITEM	UNIT	QUANTITY
Structural Concrete	C.Y.	539.0
Reinforcing Steel	Lbs.	87,110
Excavation Class 23	C.Y.	42

BAR BENDING DIAGRAM PIER 9



11c1 T & B, 11c9 M — 11c5 T, 11c1 M, 11c9 B
11c3 T, 11c1 M, 11c8 B — 11c1 T & B, 11c8 M
11c1 T & B, 11c7 M — 11c4 T, 11c1 M, 11c7 B
11c2 T, 11c1 M, 11c6 B — 11c1 T & B, 11c6 M
11c1 T & B, 11c6 M — 11c2 T, 11c1 M, 11c6 B
11c2 T, 11c1 M, 11c6 B — 11c1 T & B, 11c6 M
11c1 T & B, 11c6 M — 11c2 T, 11c1 M, 11c6 B
11c2 T, 11c1 M, 11c6 B — 11c1 T & B, 11c6 M
11c1 T & B, 11c7 M — 11c4 T, 11c1 M, 11c7 B
11c3 T, 11c1 M, 11c8 B — 11c1 T & B, 11c8 M
11c1 T & B, 11c9 M — 11c5 T, 11c1 M, 11c9 B

SCHEMATIC OF TOP MOMENT REINFORCEMENT
PIER 9

Legend:
T denotes Top
M denotes Middle
B denotes Bottom

CONCRETE PLACEMENT QUANTITIES-PIER 9

LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	181.2
Shaft -- Class C	C.Y.	227.8
Footing -- Class C	C.Y.	106.7
Total	C.Y.	515.7

ESTIMATED QUANTITIES - PIER 9

ITEM	UNIT	QUANTITY
Structural Concrete Cl. C	C.Y.	515.7
Reinforcing Steel	Lbs.	80,525
Excavation Class 23	C.Y.	61

BILL OF REINFORCEMENT

PIER 9

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footing	—	17	31'-6	1821
11a2	Footing	—	33	14'-6	2542
14a3	Footing Dowels	⌐	48	12'-11	4743
14a4	Footing Dowels	⌐	48	16'-11	6212
14b1	Shaft	—	45	45'-2	16,585
14b2	Shaft	—	48	'-2	15,116
4b3	Shaft	⌐	378	6'-1	1536
4b4	Shaft	—	252	3'-9	631
4b5	Shaft	—	84	20'-0	1122
4b6	Shaft	∪	84	11'-4	536
11c1	Cap Beam	—	33	60'-0	10,520
11c2	Cap Beam	⌐	5	23'-7	626
11c3	Cap Beam	⌐	2	22'-2	236
11c4	Cap Beam	⌐	2	20'-11	222
11c5	Cap Beam	⌐	2	19'-9	210
11c6	Cap Beam	—	10	18'-5	978
11c7	Cap Beam	—	4	15'-9	335
11c8	Cap Beam	—	4	17'-0	361
11c9	Cap Beam	—	4	13'-11	296
9c10	Cap Beam	∪	6	33'-10	690
9c11	Cap Beam	—	6	59'-0	1,204
9c12	Cap Beam	—	4	37'-9	513
9c13	Cap Beam	—	4	35'-0	476
9c14	Cap Beam	—	4	32'-6	442
9c15	Cap Beam	—	2	54'-9	372
9c16	Cap Beam	—	2	49'-9	338
9c17	Cap Beam	—	2	44'-3	301
9c18	Cap Beam	—	2	39'-0	265
9c19	Cap Beam	—	2	33'-9	230
9c20	Cap Beam	—	2	28'-9	196
5c21	Cap Beam	□	4 Ser 11	Varies	1,879
5c22	Cap Beam	□	4 Ser 9	Varies	1,292
5c23	Cap Beam	□	28	36'-11	1,078
11c24	Cap Beam	⌐	10	38'-7	2,050
11c25	Cap Beam	⌐	4	38'-2	811
11c26	Cap Beam	⌐	4	37'-4	793
11c27	Cap Beam	⌐	4	36'-0	765
11c28	Cap Beam	—	11	12'-7	735
5c29	Cap Beam	□	4	20'-9	87
4c30	Cap Beam	⌐	50	7'-8	256
4c31	Cap Beam	⌐	35	8'-8	203
5c32	Cap Beam	□	8	39'-11	333
5c33	Cap Beam	⌐	54	8'-8	488
				TOTAL	80,525

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 8 & 9 DETAILS

STA. 80+00.00
RIVER MILE 383.9
LEE COUNTY IOWA

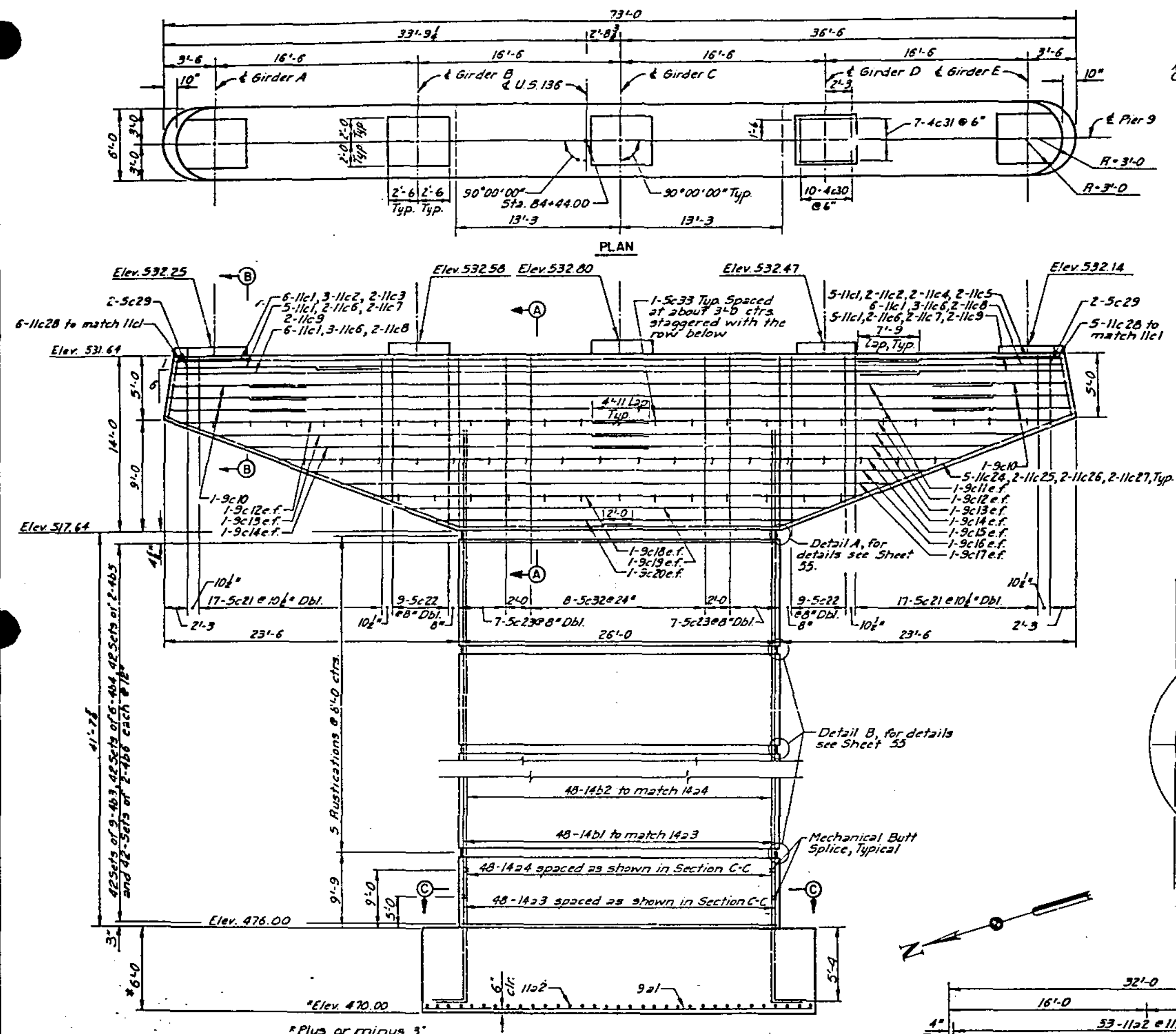
PROJECT NO. BRF-10-1(2)--38-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 52 OF

DESIGN NO. 382 LEE COUNTY FILE 39733 SHEET 50 OF 227

676 25-00

MADE RCC DATE 7-82 CHECKED DLM DATE 8-82

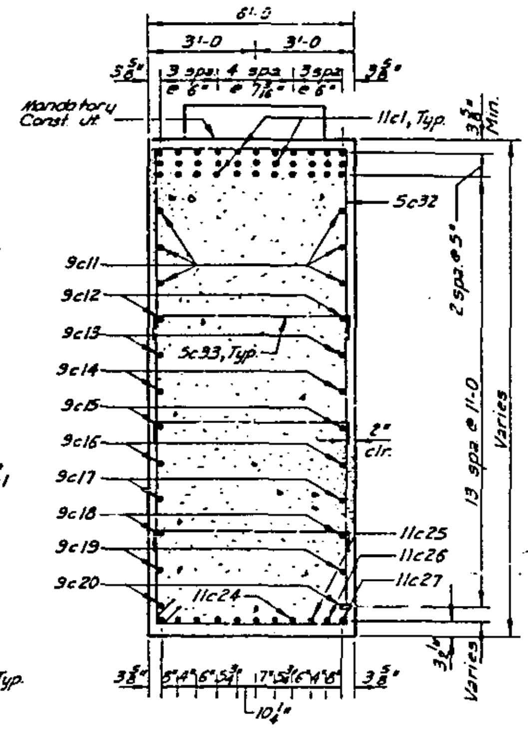


PLAN

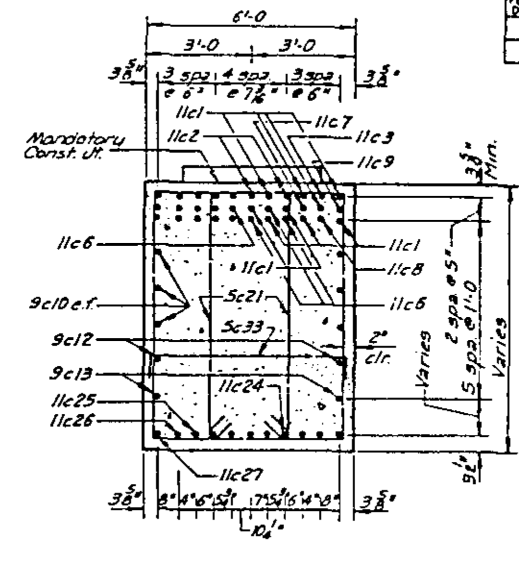
ELEVATION

(Design Bearing Pressure 14.69 KSF)

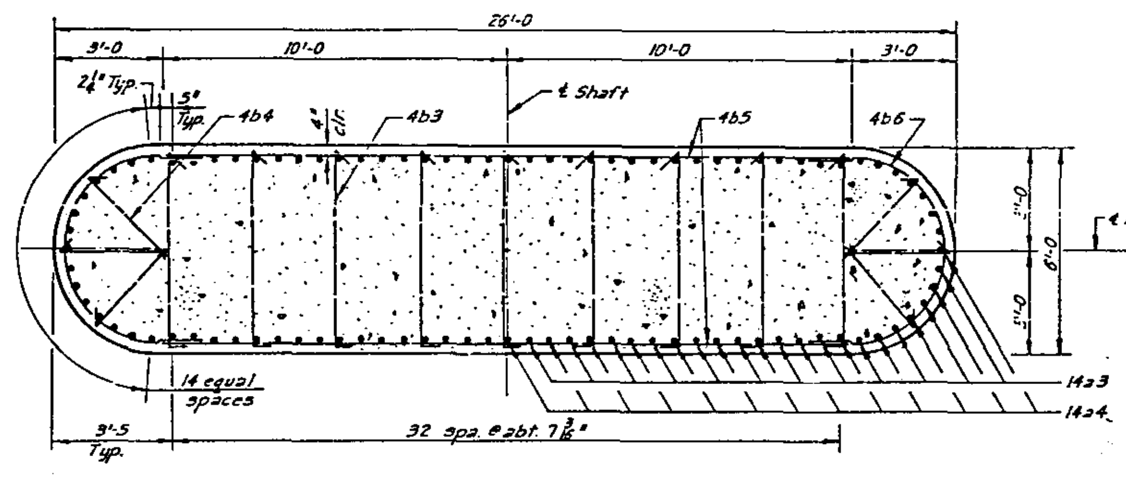
Note:
e.f. denotes each face



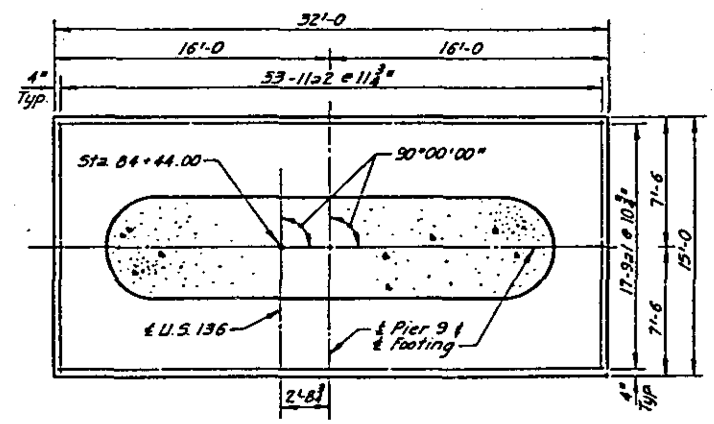
SECTION A-A



SECTION B-B



SECTION C-C



FOOTING PLAN

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

Notes:

For Pier Notes see Sheet 31

For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 52

FEDERAL DIST NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

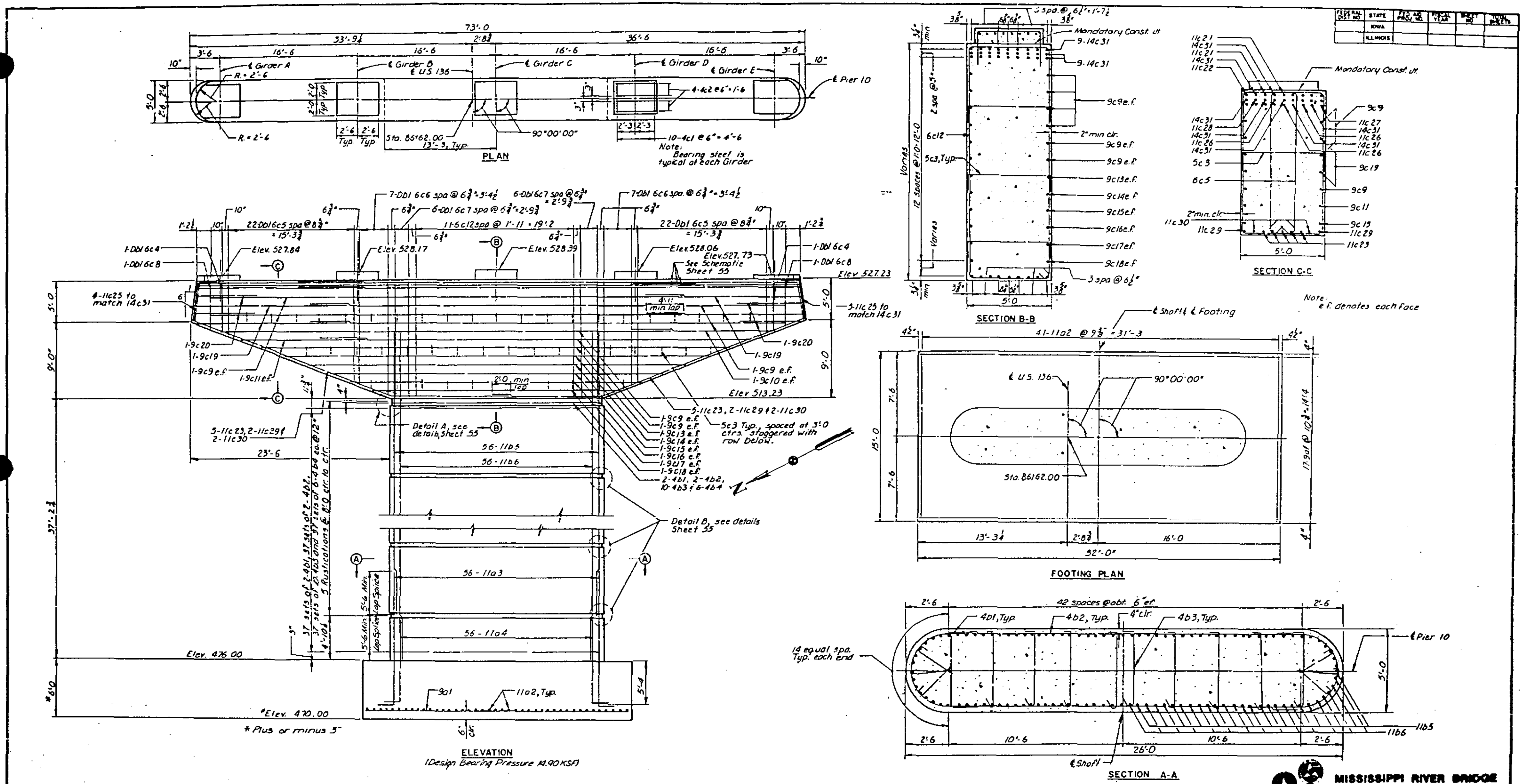
PIER 3

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE RCC DATE 7-82 CHECKED DLM DATE 8-82

DESIGN SHEET 53 OF

DESIGN NO. LEE COUNTY SHEET 57 OF 227



Notes:

For Pier Notes see Sheet 31

For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 55

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 10

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

DRAWN HGH DATE 8-5-82 CHECKED JMH DATE 8-82

SHEET 60 OF 227

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

BILL OF REINFORCEMENT
PIER 10

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footing, Horizontal	——	17	31'-6	1821
11a2	Footing, Horizontal	——	41	14'-6	3159
11a3	Footing, Vertical		56	18'-4	5455
11a4	Footing, Vertical		56	12'-10	3818
4b1	Column, Horizontal		76	10'-1	512
4b2	Column, Horizontal	——	76	21'-0	1056
4b3	Column, Horizontal		320	5'-1	1280
4b4	Column, Horizontal		228	3'-4	508
11b5	Column, Vertical	——	56	38'-3	11,380
11b6	Column, Vertical	——	56	43'-9	13,017
4c1	Cap Beam, Pad		50	7'-8	256
4c2	Cap Beam, Pad		40	8'-8	232
5c1	Cap Beam, Ties		50	7'-8	400
6c4	Cap Beam, Vertical		4	18'-11	114
6c5	Cap Beam, Vertical		4 Ser		
			of 22	Varies	3403
6c6	Cap Beam, Vertical		4 Ser		
			of 7	Varies	1384
6c7	Cap Beam, Vertical		24	34'-7	1247
6c8	Cap Beam, Vertical		4	17'-7	106
9c9	Cap Beam, Horizontal	——	12	60'-0	2448
9c10	Cap Beam, Horizontal	——	2	10'-11	74
9c11	Cap Beam, Horizontal	——	2	6'-3	43
6c12	Cap Beam, Horizontal		11	37'-10	625
9c13	Cap Beam, Horizontal	——	2	56'-5	384
9c14	Cap Beam, Horizontal	——	2	51'-3	349
9c15	Cap Beam, Horizontal	——	2	46'-0	313
9c16	Cap Beam, Horizontal	——	2	40'-9	277
9c17	Cap Beam, Horizontal	——	2	35'-7	242
9c18	Cap Beam, Horizontal	——	2	30'-4	206
9c19	Cap Beam, Horizontal		4	32'-0	435
9c20	Cap Beam, Horizontal		4	16'-10	229
11c21	Cap Beam, Horizontal		5	23'-5	622
11c22	Cap Beam, Horizontal		2	20'-3	215
11c23	Cap Beam, Horizontal		10	39'-6	2099
11c24	Cap Beam, Horizontal		2	22'-0	234
11c25	Cap Beam, Horizontal		9	12'-5	594
11c26	Cap Beam, Horizontal	——	10	18'-9	996
11c27	Cap Beam, Horizontal	——	4	15'-7	331
11c28	Cap Beam, Horizontal	——	4	17'-0	361
11c29	Cap Beam, Horizontal		4	37'-6	797
11c30	Cap Beam, Horizontal		4	38'-2	811
14c31	Cap Beam, Horizontal	——	27	60'-0	12393
				Total	74,246

1-11c22 T., 1-14c31 M., & 1-11c27 B. 1-14c31 T., 1-11c27 M., & 1-14c31 B.
1-14c31 T., 1-11c28 M., & 1-14c31 B. 1-11c24 T., 1-14c31 M., & 1-11c28 B.
1-11c21 T., 1-14c31 M., & 1-11c26 B. 1-14c31 T., 1-11c26 M., & 1-14c31 B.
1-14c31 T., 1-11c 26 M., & 1-14c31 B. 1-11c 21 T., 1-14c31 M., & 1-11c26 B.
1-11c21 T., 1-14c31 M., & 1-11c26 B. 1-14c31 T., 1-11c26 M., & 1-14c31 B.
1-14c31 T., 1-11c26 M., & 1-14c31 B. 1-11c21 T., 1-14c31 M., & 1-11c 26 B.
1-11c21 T., 1-14c31M., & 1-11c 26 B. 1-14c31 T., 1-11c26 M., & 1-14c31 B.
1-14c31 T., 1-11c28 M., & 1-14c31 B. 1-11c24 T., 1-14c31 M., & 1-11c28 B.
1-11c 22 T., 1-14c31 M., & 1-11c27 B. 1-14c31 T., 1-11c27 M., & 1-14c31 B.

7'-9 min. lap, Typ.

SCHEMATIC OF TOP MOMENT REINFORCEMENT
PIER 10

Note:
T. denotes Top
M. denotes Middle
B. denotes Bottom

1-11c22 T., 1-14c31 M., & 1-11c27 B. 1-14c31 T., 1-11c27 M., & 1-14c31 B.
1-14c31 T., 1-11c28 M., & 1-14c31 B. 1-11c24 T., 1-14c31 M., & 1-11c28 B.
1-11c21 T., 1-14c31 M., & 1-11c26 B. 1-14c31 T., 1-11c26 M., & 1-14c31 B.
1-14c31 T., 1-11c 26 M., & 1-14c31 B. 1-11c 21 T., 1-14c31 M., & 1-11c26 B.
1-11c21 T., 1-14c31 M., & 1-11c26 B. 1-14c31 T., 1-11c26 M., & 1-14c31 B.
1-14c31 T., 1-11c26 M., & 1-14c31 B. 1-11c21 T., 1-14c31 M., & 1-11c 26 B.
1-11c21 T., 1-14c31M., & 1-11c 26 B. 1-14c31 T., 1-11c26 M., & 1-14c31 B.
1-14c31 T., 1-11c28 M., & 1-14c31 B. 1-11c24 T., 1-14c31 M., & 1-11c28 B.
1-11c 22 T., 1-14c31 M., & 1-11c27 B. 1-14c31 T., 1-11c27 M., & 1-14c31 B.

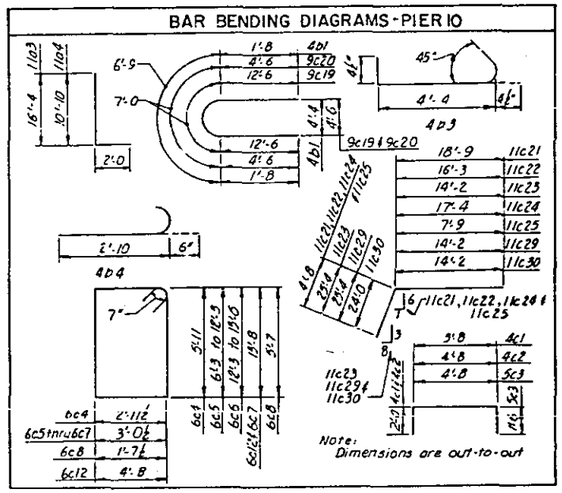
7'-9 min. lap, Typ.

SCHEMATIC OF TOP MOMENT REINFORCEMENT
PIER 11

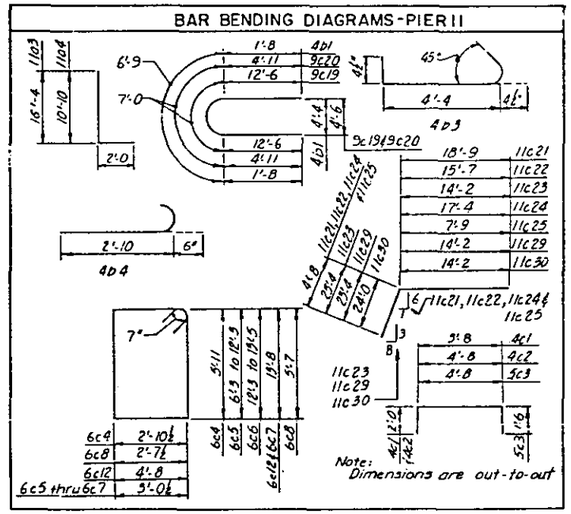
BILL OF REINFORCEMENT
PIER 11

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	Footing, Horizontal	——	17	31'-6	1821
	Footing, Horizontal	——	41	14'-6	3159
11a3	Footing, Vertical		56	18'-4	5455
11a4	Footing, Vertical		56	12'-10	3818
4b1	Column, Horizontal		64	10'-1	431
4b2	Column, Horizontal	——	64	21'-0	898
4b3	Column, Horizontal		320	5'-1	1087
4b4	Column, Horizontal		192	3'-4	428
11b5	Column, Vertical	——	56	32'-0	9521
11b6	Column, Vertical	——	56	37'-6	11,157
4c1	Cap Beam Pad		50	7'-8	256
4c2	Cap Beam Pad		40	8'-8	232
5c1	Cap Beam, Ties		50	7'-8	400
6c4	Cap Beam, Vertical		4	18'-11	114
6c5	Cap Beam, Vertical		4 Ser		
			of 22	Varies	3403
6c6	Cap Beam, Vertical		4 Ser		
			of 7	Varies	1384
6c7	Cap Beam, Vertical		24	34'-7	1247
6c8	Cap Beam, Vertical		4	17'-7	106
9c9	Cap Beam, Horizontal	——	12	60'-0	2448
9c10	Cap Beam, Horizontal	——	2	10'-11	74
9c11	Cap Beam, Horizontal	——	2	6'-3	43
6c12	Cap Beam, Horizontal		11	37'-10	625
9c13	Cap Beam, Horizontal	——	2	56'-5	384
9c14	Cap Beam, Horizontal	——	2	51'-3	349
9c15	Cap Beam, Horizontal	——	2	46'-0	313
9c16	Cap Beam, Horizontal	——	2	40'-9	277
9c17	Cap Beam, Horizontal	——	2	35'-7	242
9c18	Cap Beam, Horizontal	——	2	30'-4	206
9c19	Cap Beam, Horizontal		4	32'-0	435
9c20	Cap Beam, Horizontal		4	16'-10	229
11c21	Cap Beam, Horizontal		5	23'-5	622
11c22	Cap Beam, Horizontal		2	20'-3	215
11c23	Cap Beam, Horizontal		10	39'-6	2099
11c24	Cap Beam, Horizontal		2	22'-0	234
11c25	Cap Beam, Horizontal		9	12'-5	594
11c26	Cap Beam, Horizontal	——	10	18'-9	996
11c27	Cap Beam, Horizontal	——	4	15'-7	331
11c28	Cap Beam, Horizontal	——	4	17'-0	361
11c29	Cap Beam, Horizontal		4	37'-6	797
11c30	Cap Beam, Horizontal		4	38'-2	811
14c31	Cap Beam, Horizontal	——	27	60'-0	12393
				Total	68995

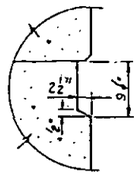
BAR BENDING DIAGRAMS - PIER 10



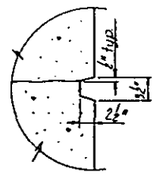
BAR BENDING DIAGRAMS - PIER 11



RUSTICATION DETAIL A



RUSTICATION DETAIL B



CONCRETE PLACEMENT QUANTITIES-PIER 10		
LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	157.9
Shaft -- Class C	C.Y.	171.1
Footing -- Special Class	C.Y.	106.7
TOTAL	C.Y.	435.7

ESTIMATED QUANTITIES - PIER 10		
ITEM	UNIT	QUANTITY
Structural Concrete	C.Y.	435.7
Reinforcing Steel	Lbs.	74,246
Excavation Class 23	C.Y.	61

CONCRETE PLACEMENT QUANTITIES-PIER 11		
LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	157.9
Shaft -- Class C	C.Y.	142.3
Footing -- Special Class	C.Y.	106.7
TOTAL	C.Y.	406.9

ESTIMATED QUANTITIES - PIER 11		
ITEM	UNIT	QUANTITY
Structural Concrete Cl.C	C.Y.	406.9
Reinforcing Steel	Lbs.	68995
Excavation Class 23	C.Y.	44

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 10 & 11 DETAILS

STA. 80+60.00
LEE COUNTY, IOWA

PROJECT NO. BRF-99-1(7)--39-99

DESIGN SHEET 55 OF

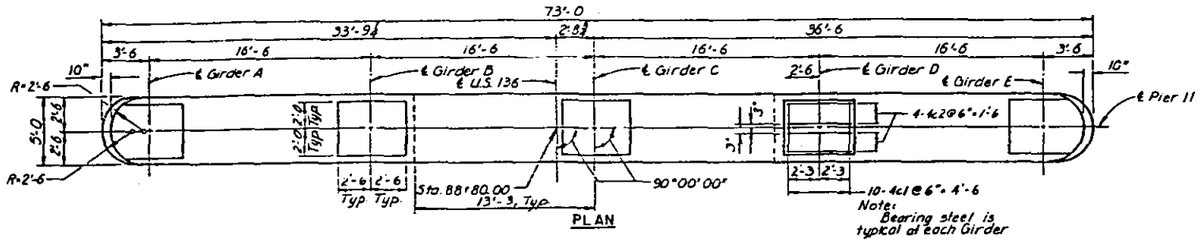
DESIGN NO. 302 LEE COUNTY FILE 39723 SHEET 61 OF 227

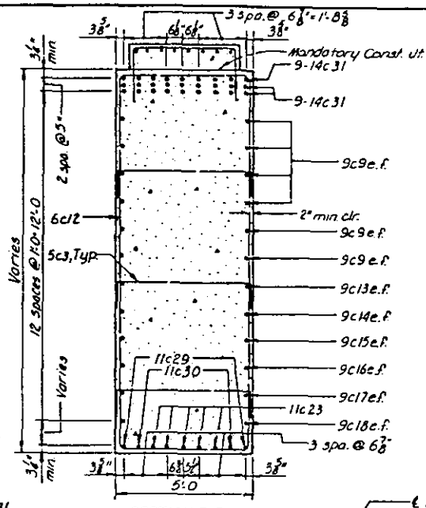
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

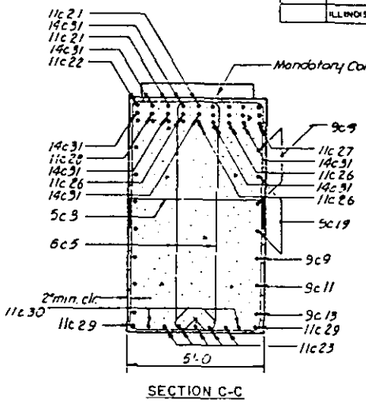
MADE HCH DATE 8-10-82 CHECKED JMH DATE 8-82

67 -25-00

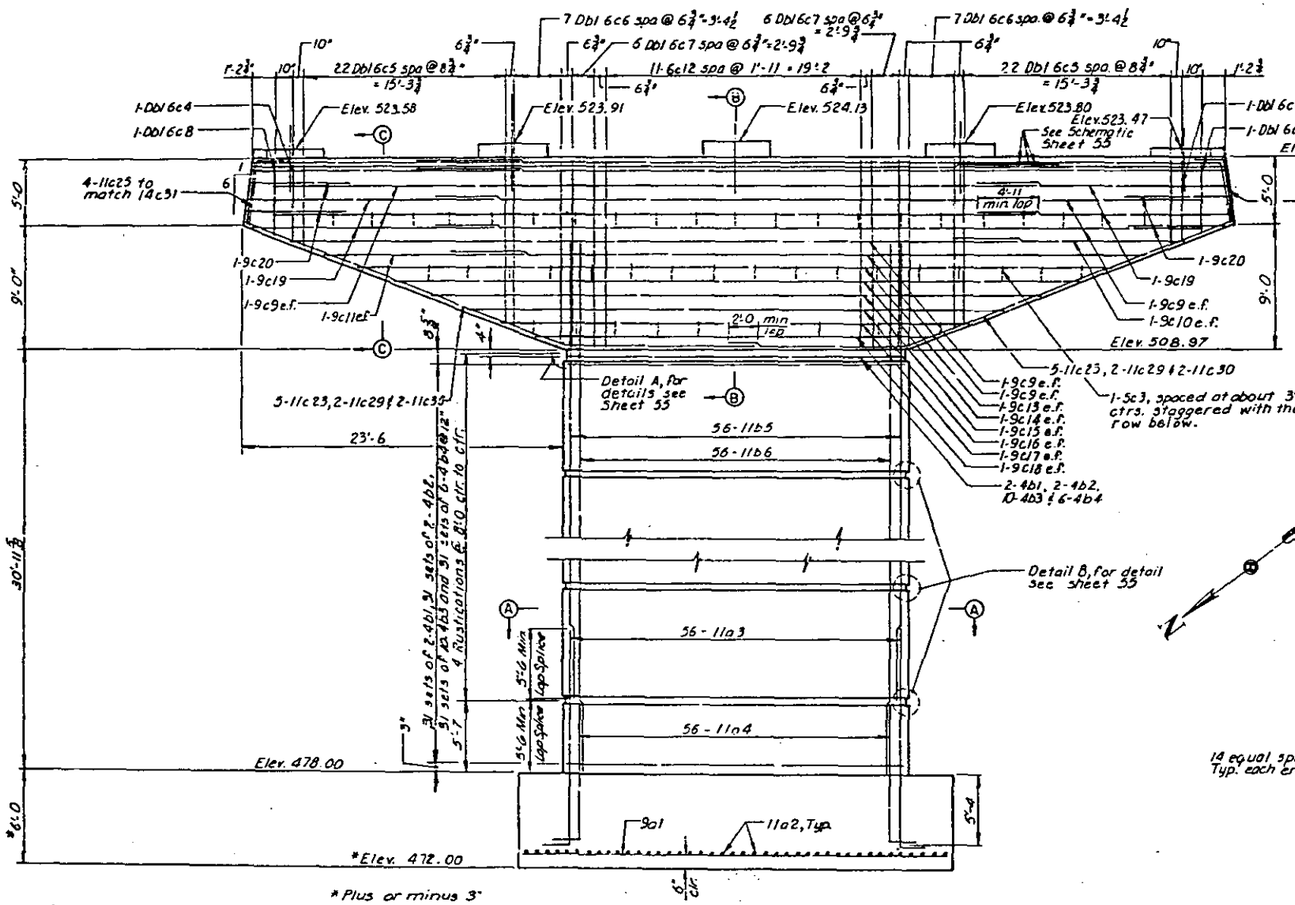
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

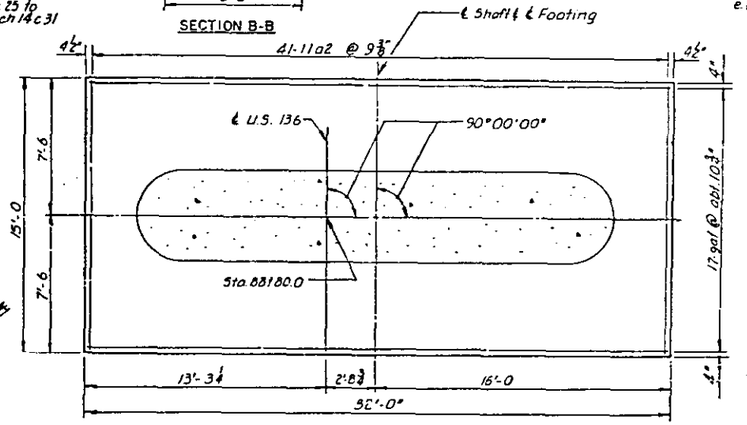


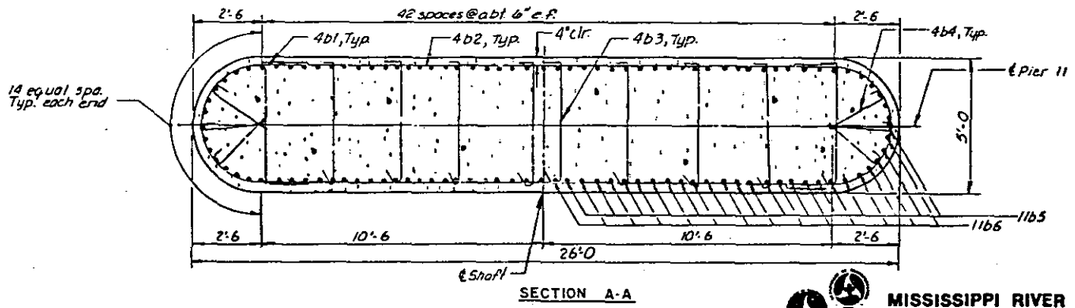




Note: e.f. denotes each face







Notes:

For Pier Notes see Sheet 31.

For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 55.
For Electrical Grounding Details, see Sheet 108.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 11

STA. 88+30.08
RIVER MILE 383.9

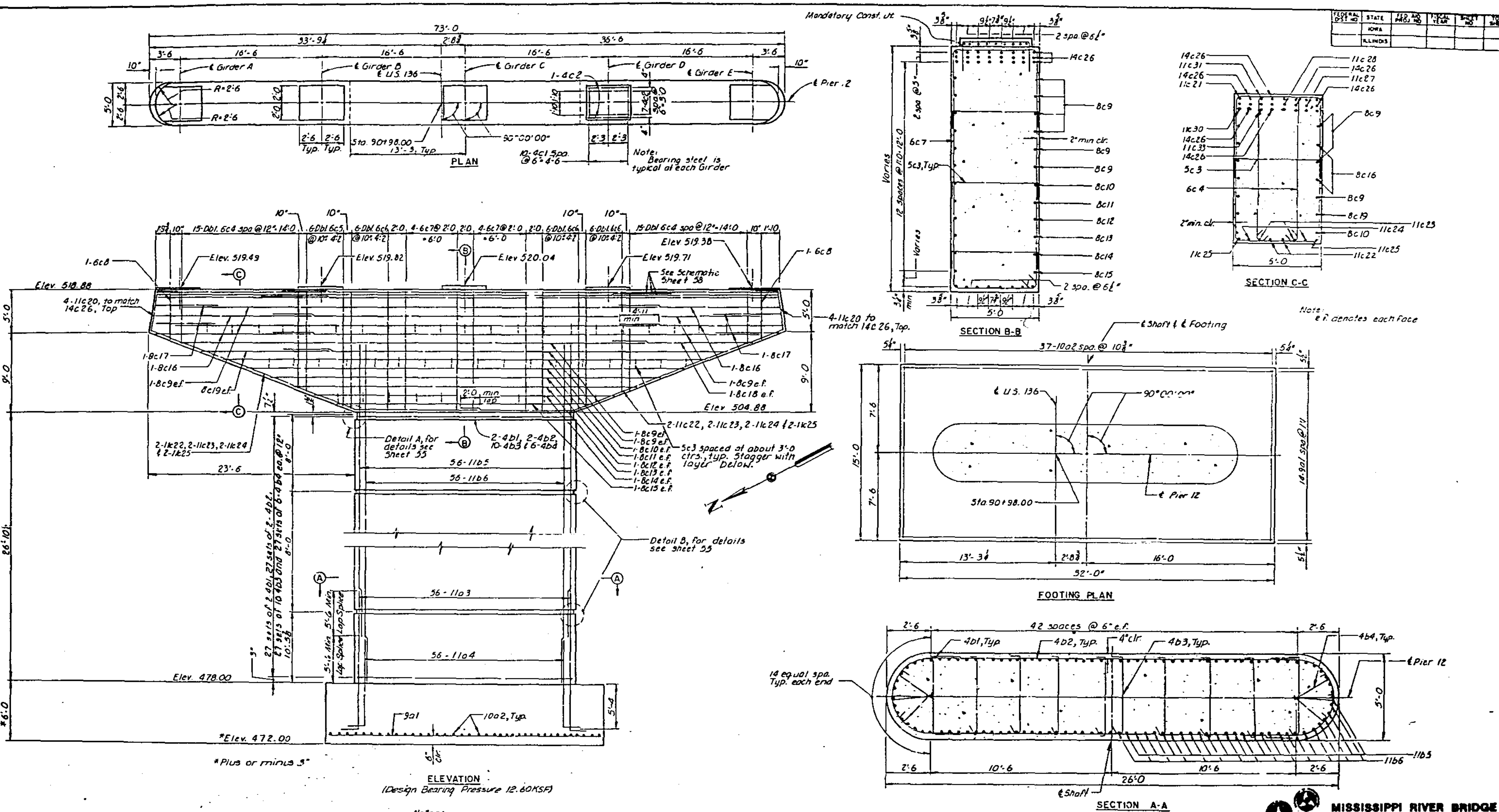
PROJECT NO. BRF-99-1(3)--38-99
HANCOCK COUNTY, ILLINOIS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE HCH DATE 7-26-82 CHECKED JMH DATE 8-82

DESIGN SHEET 56 OF

DESIGN NO. 382 LEE COUNTY FILE 30735 SHEET 62 OF 227



Notes:

For Pier Notes see Sheet 31

For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 58

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

FEDERAL DIST NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MISSISSIPPI RIVER BRIDGE

KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 12

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE HCH DATE 8-5-82 CHECKED JMH DATE 8-82

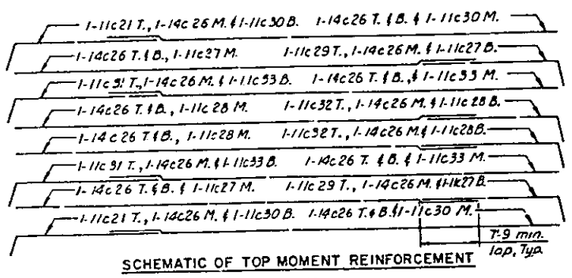
DESIGN SHEET 57 OF

DESIGN NO. 281 LEE COUNTY FILE 28900 SHEET 63 OF 127

FEDERAL PROJECT NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

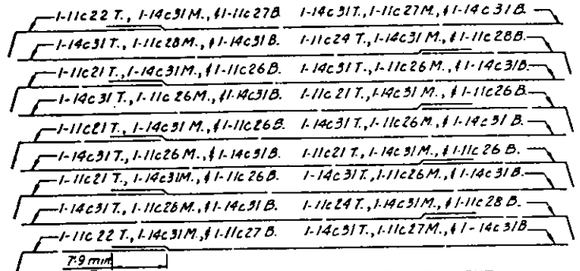
BILL OF REINFORCEMENT
PIER 12

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footing, Horizontal	—	14	31'-6	1499
10a2	Footing, Horizontal	—	37	14-6	2309
11a3	Footing, Vertical	⌐	56	18'-4	5455
11a4	Footing, Vertical	⌐	56	12'-10	3818
4b1	Column, Horizontal	⊂	56	10'-1	377
4b2	Column, Horizontal	—	56	21'-0	786
4b3	Column, Horizontal	⊃	280	5'-1	951
4b4	Column, Horizontal	⊃	168	3'-4	374
11b5	Column, Vertical	—	56	27'-10	8281
11b6	Column, Vertical	—	56	33'-4	9918
4c1	Cap Beam, Pad	⊓	50	7'-8	256
4c2	Cap Beam, Pad	⊓	45	8'-8	261
5c3	Cap Beam, Ties	⊓	50	7'-8	400
6c4	Cap Beam, Vertical	◫	4 Ser		
			of 15	Varies	2322
6c5	Cap Beam, Vertical	◫	4 Ser		
			of 6	Varies	1201
6c6	Cap Beam, Vertical	◫	24	35'-10	1292
6c7	Cap Beam, Vertical	◫	8	38'-0	457
6c8	Cap Beam, Vertical	◫	2	21'-10	66
8c9	Cap Beam, Horizontal	—	12	60'-0	1922
8c10	Cap Beam, Horizontal	—	2	56'-3	300
8c11	Cap Beam, Horizontal	—	2	51'-1	273
8c12	Cap Beam, Horizontal	—	2	45'-10	245
8c13	Cap Beam, Horizontal	—	2	40'-7	217
8c14	Cap Beam, Horizontal	—	2	35'-5	189
8c15	Cap Beam, Horizontal	—	2	30'-2	161
8c16	Cap Beam, Horizontal	⌒	4	32'-11	352
8c17	Cap Beam, Horizontal	⌒	4	16'-11	181
8c18	Cap Beam, Horizontal	—	2	11'-11	64
8c19	Cap Beam, Horizontal	—	2	6'-7	35
11c20	Cap Beam, Horizontal	⌐	8	12'-5	528
11c21	Cap Beam, Horizontal	⌐	2	20'-5	217
11c22	Cap Beam, Horizontal	⌐	4	39'-4	636
11c23	Cap Beam, Horizontal	⌐	4	39'-1	831
11c24	Cap Beam, Horizontal	⌐	4	38'-7	820
11c25	Cap Beam, Horizontal	⌐	4	37'-9	802
14c26	Cap Beam, Horizontal	—	24	60'-0	11016
11c27	Cap Beam, Horizontal	—	4	17'-9	377
11c28	Cap Beam, Horizontal	—	4	19'-1	406
11c29	Cap Beam, Horizontal	⌐	2	22'-3	236
11c30	Cap Beam, Horizontal	⌐	4	16'-1	342
11c31	Cap Beam, Horizontal	⌐	2	22'-11	244
11c32	Cap Beam, Horizontal	⌐	2	23'-5	249
11c33	Cap Beam, Horizontal	—	4	18'-7	395
				Total	61,261

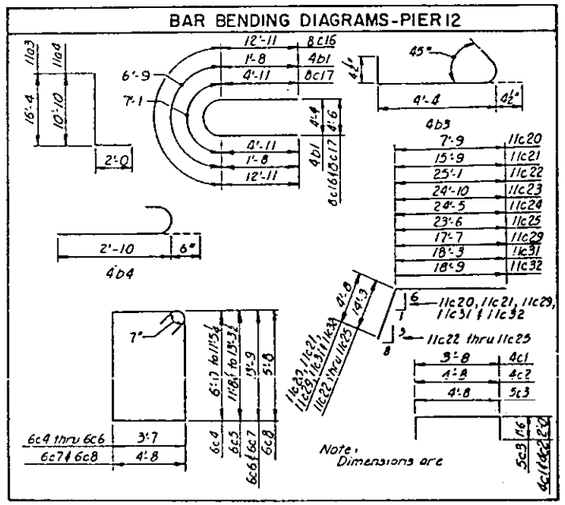


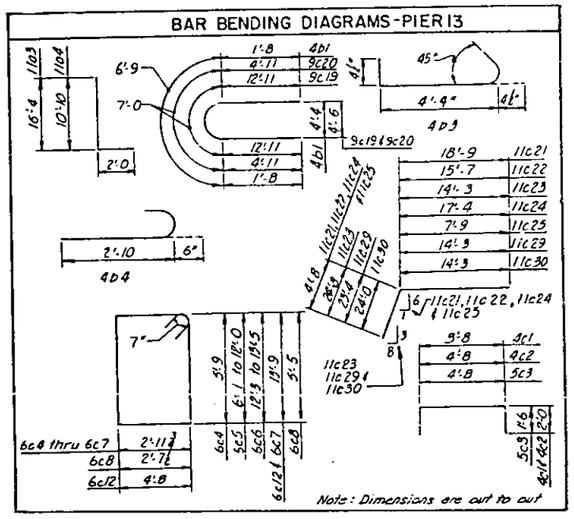
SCHEMATIC OF TOP MOMENT REINFORCEMENT
PIER 12

Note:
T. denotes Top
M. denotes Middle
B. denotes Bottom



SCHEMATIC OF TOP MOMENT REINFORCEMENT
PIER 13





CONCRETE PLACEMENT QUANTITIES-PIER12		
LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	157.9
Shaft -- Class C	C.Y.	123.5
Footing -- Class C	C.Y.	106.7
TOTAL	C.Y.	388.1

ESTIMATED QUANTITIES - PIER 12		
ITEM	UNIT	QUANTITY
Structural Concrete	C.Y.	388.1
Reinforcing Steel	Lbs.	61,261
Excavation Class 23	C.Y.	56

CONCRETE PLACEMENT QUANTITIES-PIER13		
LOCATION	UNIT	QUANTITY
Cap Beam -- Class C	C.Y.	157.9
Shaft -- Class C	C.Y.	103.2
Footing -- Class C	C.Y.	106.7
TOTAL	C.Y.	367.8

ESTIMATED QUANTITIES - PIER 13		
ITEM	UNIT	QUANTITY
Structural Concrete Cl.C	C.Y.	367.8
Reinforcing Steel	Lbs.	64,058
Excavation Class 23	C.Y.	54

BILL OF REINFORCEMENT
PIER 13

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footing, Horizontal	—	17	31'-6	1821
11a2	Footing, Horizontal	—	41	14'-6	3159
11a3	Footing, Vertical	⌐	56	18'-4	5455
11a4	Footing, Vertical	⌐	56	12'-10	3818
4b1	Column, Horizontal	⊂	46	10'-1	310
4b2	Column, Horizontal	—	46	21'-0	645
4b3	Column, Horizontal	⊃	250	5'-1	781
4b4	Column, Horizontal	⊃	138	3'-4	307
11b5	Column, Vertical	—	56	23'-6	6592
11b6	Column, Vertical	—	56	29'-0	8623
4c1	Cap Beam Pad	⊓	50	7'-8	256
4c2	Cap Beam Pad	⊓	40	8'-8	232
5c3	Cap Beam, Ties	⊓	50	7'-8	400
6c4	Cap Beam, Vertical	◫	4	18'-7	112
6c5	Cap Beam, Vertical	◫	4 Ser		
			of 22	Varies	3332
6c6	Cap Beam, Vertical	◫	4 Ser		
			of 7	Varies	1379
6c7	Cap Beam, Vertical	◫	24	32'-7	1247
6c8	Cap Beam, Vertical	◫	4	17'-3	104
9c9	Cap Beam, Horizontal	—	12	50'-0	2448
9c10	Cap Beam, Horizontal	—	2	11'-1	81
9c11	Cap Beam, Horizontal	—	2	6'-7	45
6c12	Cap Beam, Horizontal	◫	11	38'-0	628
9c13	Cap Beam, Horizontal	—	2	56'-6	384
9c14	Cap Beam, Horizontal	—	2	51'-3	349
9c15	Cap Beam, Horizontal	—	2	46'-2	314
9c16	Cap Beam, Horizontal	—	2	41'-0	279
9c17	Cap Beam, Horizontal	—	2	35'-10	244
9c18	Cap Beam, Horizontal	—	2	30'-8	209
9c19	Cap Beam, Horizontal	⌒	4	32'-10	447
9c20	Cap Beam, Horizontal	⌒	4	16'-10	229
11c21	Cap Beam, Horizontal	⌐	5	23'-5	622
11c22	Cap Beam, Horizontal	⌐	2	20'-3	215
11c23	Cap Beam, Horizontal	⌐	10	38'-11	2058
11c24	Cap Beam, Horizontal	⌐	2	22'-0	234
11c25	Cap Beam, Horizontal	⌐	9	12'-5	594
11c26	Cap Beam, Horizontal	—	10	18'-9	996
11c27	Cap Beam, Horizontal	—	4	15'-7	331
11c28	Cap Beam, Horizontal	—	4	17'-4	368
11c29	Cap Beam, Horizontal	⌐	4	37'-7	799
11c30	Cap Beam, Horizontal	⌐	4	38'-3	813
14c31	Cap Beam, Horizontal	—	27	60'-0	12353
				Total	64,058

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIERS 12&13 DETAILS

RIVER MILE 363
LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

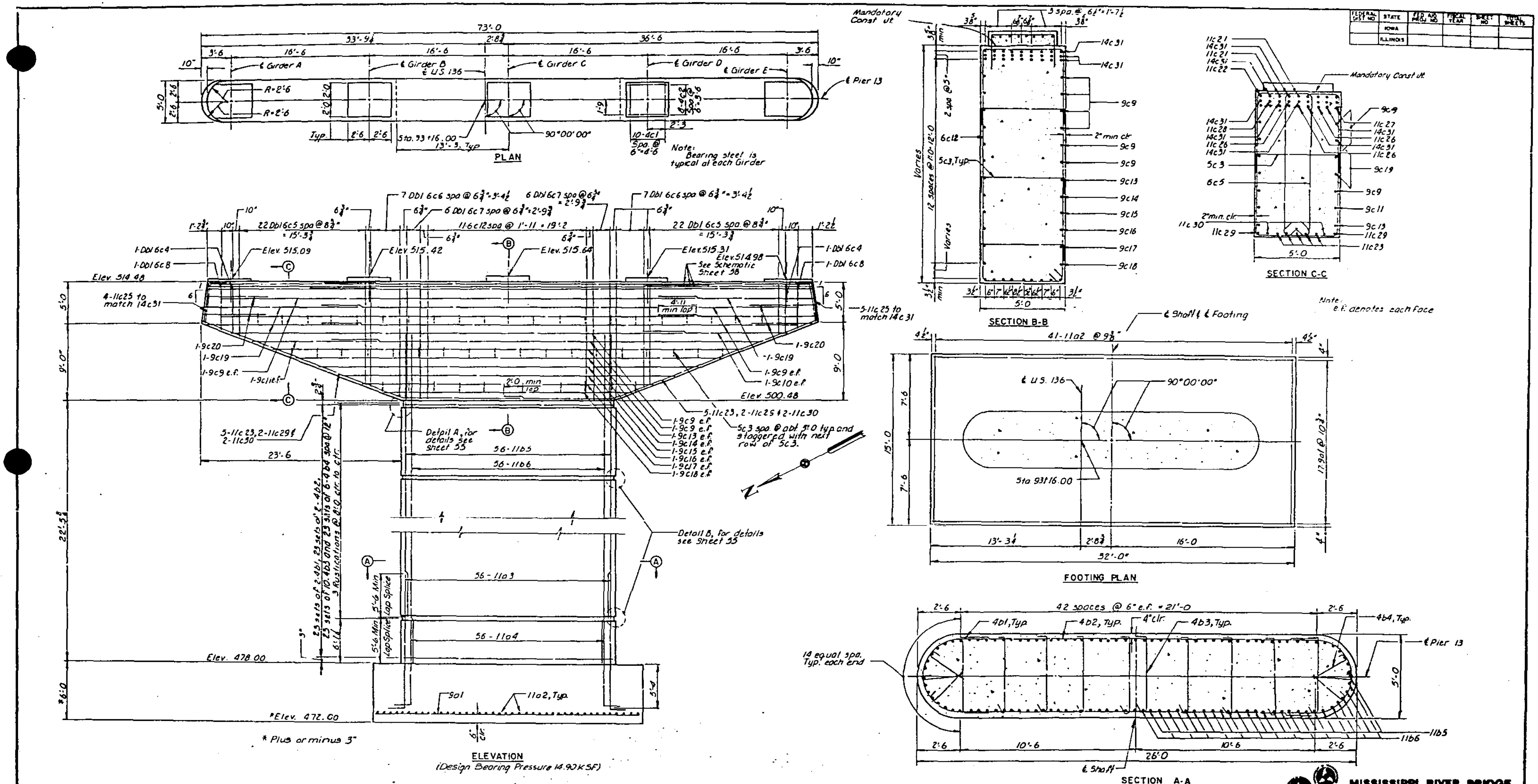
DESIGN SHEET 58 OF

DESIGN NO. 288 LEE COUNTY FILE 36733 SHEET 47 OF 227

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE HCH DATE 8-5-82 CHECKED JFL DATE 8-24-82

5-00-5-287



Notes:

For Pier Notes see Sheet 31

For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 58

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

MISSISSIPPI RIVER BRIDGE

KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

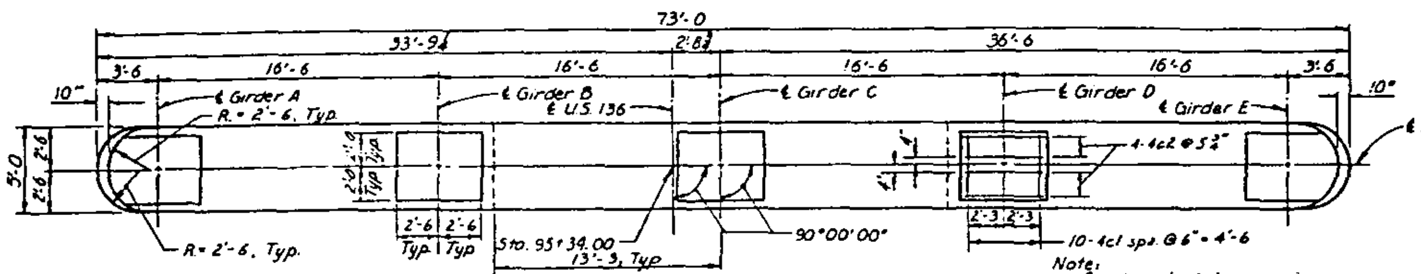
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 13

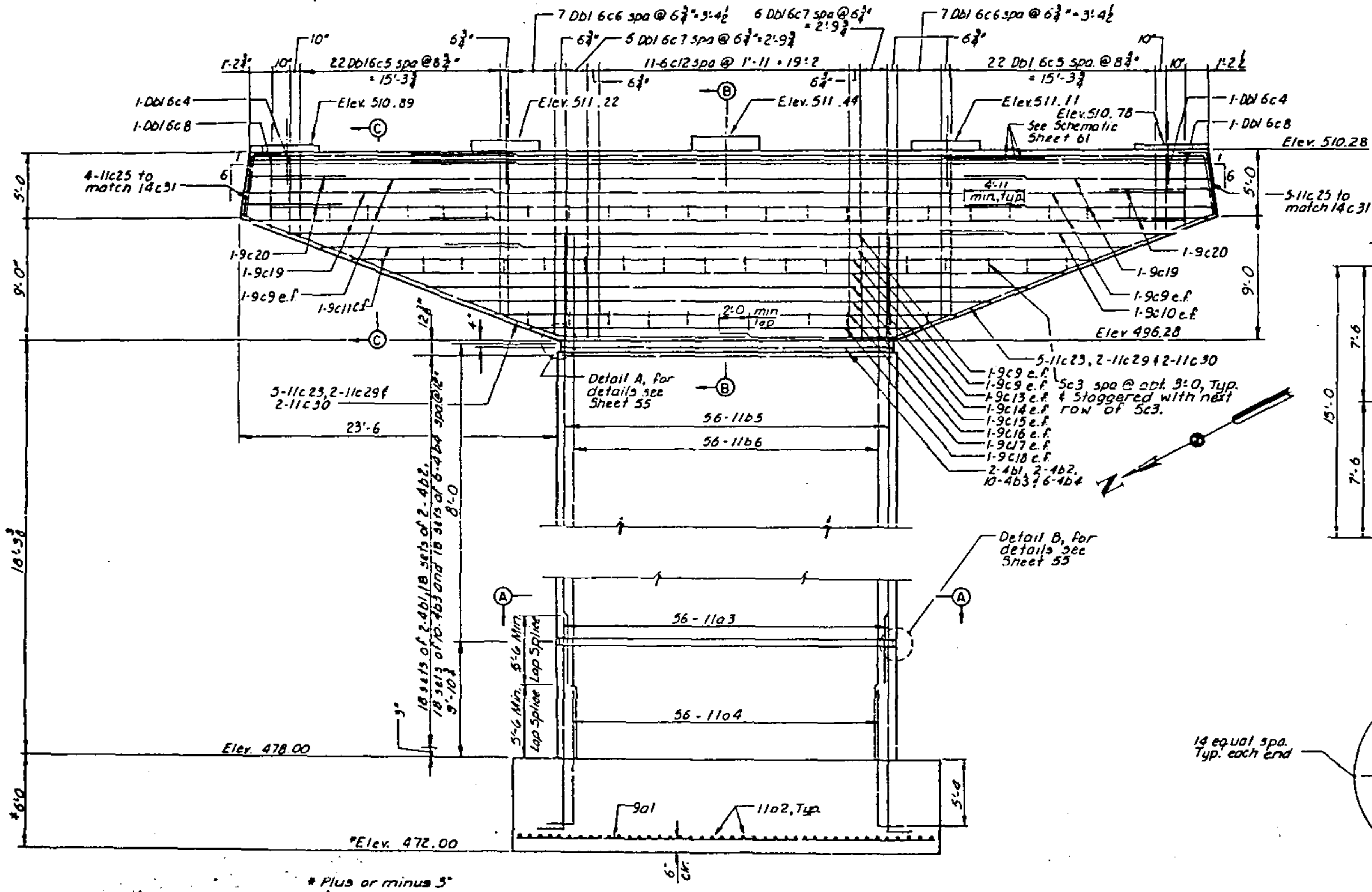
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE HCH DATE 8-5-82 CHECKED JEL DATE 8-24-82

LEE COUNTY SHEET 65 OF 227



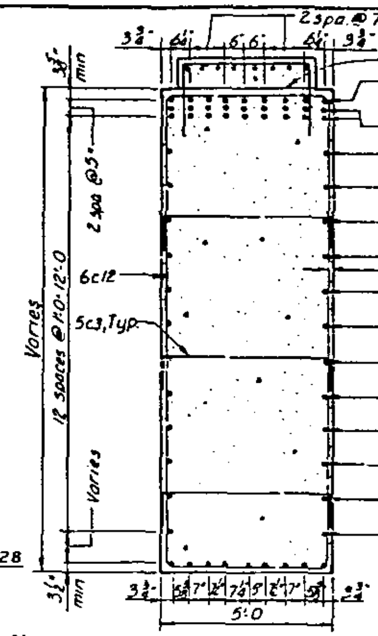
PLAN



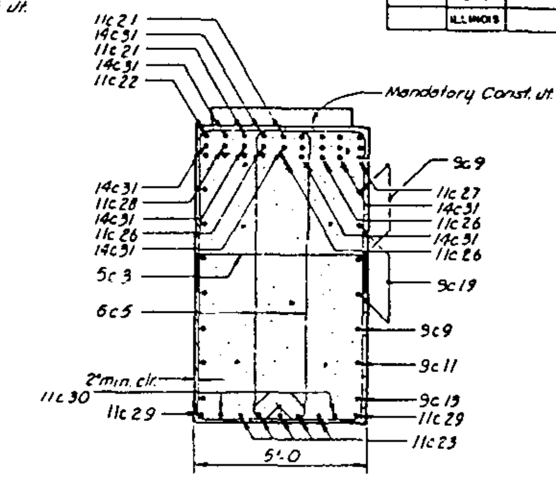
ELEVATION

(Design Bearing Pressure 15.34 KSF)

* Plus or minus 3"

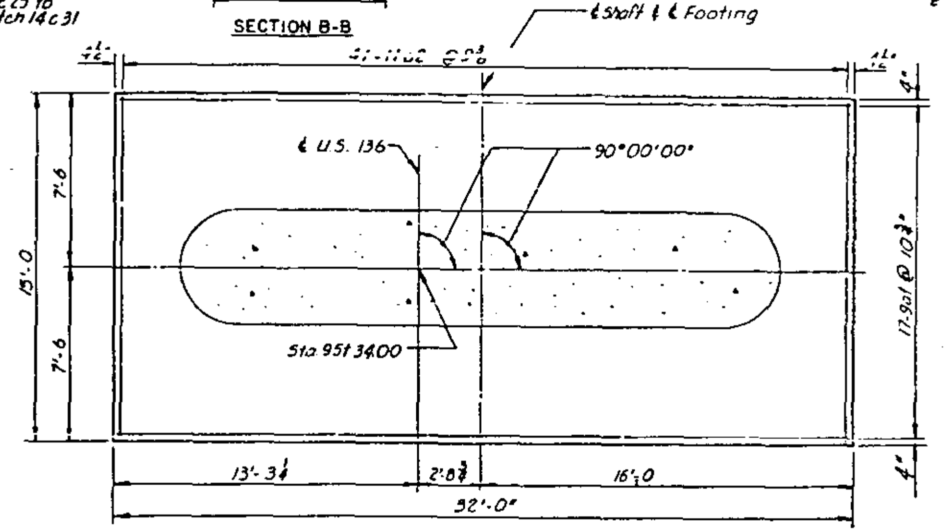


SECTION B-B

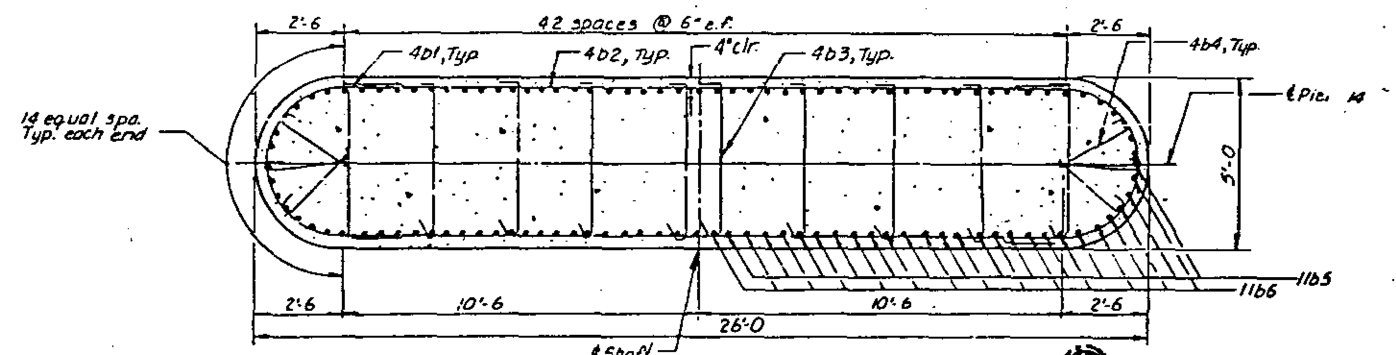


SECTION C-C

Note: e.f. denotes each face



FOOTING PLAN



SECTION A-A

Notes:

For Pier Notes see Sheet 31.

For Quantities, Bar Bending Diagrams and Bill of Reinforcement see Sheet 61.

For Electrical Grounding Details, see Sheet 108.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk.

MISSISSIPPI RIVER BRIDGE

KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

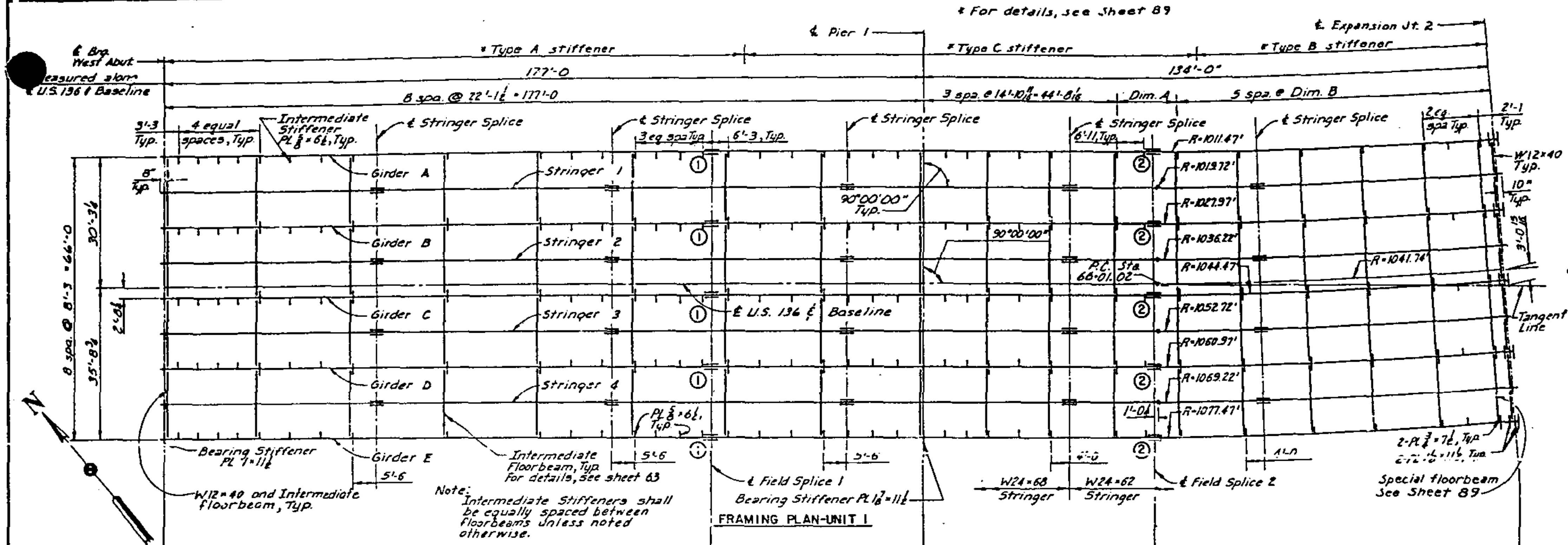
DESIGN FOR 0° SKEW

3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

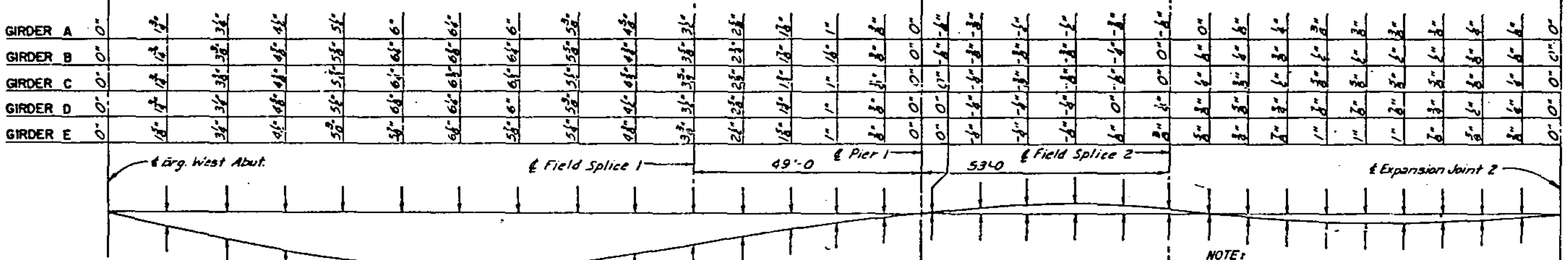
PIER 14

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

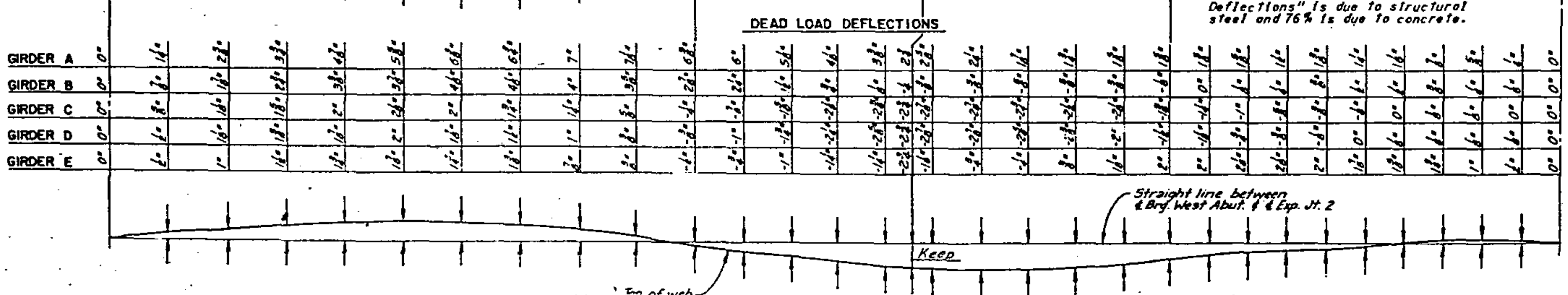
Drawn HCH Date 8-5-82 Checked JEI Date 8-26-82



GIRDER A	10 spa. @ abt. 12'-9⅝ = 128'-0	10 spa. @ abt. 10'-2⅜ = 102'-0	10 spa. @ abt. 7'-10¾ = 78'-8⅛
GIRDER B	10 spa. @ abt. 12'-9⅝ = 128'-0	10 spa. @ abt. 10'-2⅜ = 102'-0	10 spa. @ abt. 7'-11⅛ = 79'-11⅛
GIRDER C	10 spa. @ abt. 12'-9⅝ = 128'-0	10 spa. @ abt. 10'-2⅜ = 102'-0	10 spa. @ abt. 8'-1⅛ = 81'-2⅛
GIRDER D	10 spa. @ abt. 12'-9⅝ = 128'-0	10 spa. @ abt. 10'-2⅜ = 102'-0	10 spa. @ abt. 8'-3 = 82'-5⅛
GIRDER E	10 spa. @ abt. 12'-9⅝ = 128'-0	10 spa. @ abt. 10'-2⅜ = 102'-0	10 spa. @ abt. 8'-4½ = 83'-8



NOTE: 24% of the "Dead Load Deflections" is due to structural steel and 76% is due to concrete.



Note: Offsets are given at 1/10 points between ℄ brg. West Abutment and Field Splice 1, between Field Splice 1 and 2, and between Field Splice 2 and ℄ Brg. Exp. Jt. 2.

For girders as fabricated and erected diagram, negative values are below the line and positive values are above the line.

GIRDERS AS FABRICATED AND ERECTED DIAGRAM

Notes:

For floorbeam details see Sheet 63.

For girder field splice details, see Sheet 63.

For stringer field splice details, see Sheet 66.

TABLE OF DIMENSIONS

GIRDER	DIM. A	DIM. B
A	14'-8⅞	14'-5⅛
B	14'-9⅛	14'-8⅞
C	14'-10⅞	14'-11⅛
D	[illegible]	[illegible]
E	15'-0⅞	15'-4⅛

SPECIFICATIONS:

Design stresses for the following materials are in accordance with AASHTO Standard Specifications for Highway Bridges, Series of 1977, and Interim Specifications for 1978, 1979, 1980, 1981 and 1982.

Structural steel in accordance with Section 1.7.52, ASTM A36, f_y = 36,000 psi, ASTM A572 and A588, f_y = 50,000 psi.

Reinforcing steel in accordance with Section 1.5.30, f_y = 60,000 psi.

Concrete in accordance with Section 1.5.30, f'_c = 3,500 psi.

Construction: Standard Specifications of the Iowa Dept. of Transportation Series of 1977, plus current Special Provisions and current Supplemental Specifications.

Welding shall be in accordance with Art. 2408.15.

SUPERSTRUCTURE NOTES:

This bridge is designed HS20-44 and alternate military loading with allowance of 15 lbs. per sq.ft. of future wearing surface.

See Special Provisions for Charpy V-notch (CVN) impact test and preheating for flame cutting requirements.

Girder splices shall be sub-punched or sub-drilled and reamed. Before reaming, all girders shall be assembled for inspection. After inspection, holes shall be reamed and all parts match marked.

All field connections are to be bolted with "High Tensile Strength Bolts" conforming with ASTM A325. The estimated structural steel weight for these connections is based on "High Tensile Strength Bolts.". Unless otherwise noted, all open holes are to be ⅞" ϕ and all bolts are to be ¾" ϕ.

Bearing surfaces of rockers shall be faced in accordance with Article 2408.24 of Standard Specifications. Masonry plates shall be set on ⅛" lead sheet.

Bearing surfaces of unfinished plates shall be flat and true.

Forms for slab and curbs to be supported by the girders.

Shop painting shall be in accordance with Article 2408.33 of the Standard Specifications.

For shear stud spacing on girders, see Girder Elevation Sheets. Stringers are non-composite.

Stud shear connectors shall be welded in the shop or in the field at the locations shown on the design plans or on approved shop drawings. Weight of shear connectors is included in the structural steel quantities. There shall be no shear connector groups located at the ℄ Bearing Abutments, at the ℄ of piers or at ℄ Expansion Joints.

The design drawings indicate AWS pre-qualified welded joints, shop splices and web-to-flange welds shall be welded by submerged arc process. Alternate joint details may be submitted for approval.

Fill thickness shown on plans are based on the nominal girder dimensions. These thicknesses are to be verified or adjusted during fabrication to secure a close fit. Each fill plate shall fit to the nearest ⅛-inch in thickness and single plates are required at any fill location. Girders are to be truly square at splice points and reaction points with flanges perpendicular to webs.

Magnetic particle inspection of welds, in accordance with Article 2408.15 of the Standard Specifications will be required for the bearing stiffener welds of the girders and for the web-to-flange welds of the girder.

An "RT" shown on the girder elevations indicates the location of a welded flange butt splice in a tension or reversal stress area. All welded flange or web butt splices, in tension or reversal stress areas, shall be inspected according to Art. 6.7.1.1 of the Supplemental Specification No. 888. All other unmarked welded flange or web butt splices shall be tested according to Art. 6.7.1.2.

At the contractor's option negative moment girder flange plates may be extended to eliminate intervening butt welds. Pay weight in any case will be based upon materials shown in these design plans.

For intermediate and bearing stiffener details see sheet 89.

Shop laydown for stringers is not required.

Unless otherwise noted, all structural steel shall be A36. The bid weight for A36 shall include all material not specified to be bid as A588 or A572.

Slab top transverse reinforcing steel shall be parallel to and 2½" clear below top of slab. Slab bottom transverse reinforcing steel shall be parallel to and 1" clear above bottom of slab. Top and bottom reinforcing steel is to be supported by individual metal bar chairs spaced no more than 3'-0" centers longitudinally and transversely or continuous type bar chairs at 4'-0" centers.

Minimum clear distance, from edge of reinforcing bar to face of concrete shall be 2" unless otherwise noted or shown.

CURVE DATA

P. I. Sta. 69+14.85
Δ = 33°31'48.3"
D = 5°30'00.0"
T = 313.83
L = 609.64
E = 46.24
R = 1041.74

Note: All stringers shall be heat curved.

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

FRAMING PLAN AND DEFLECTIONS

UNIT I

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE JMH DATE 6-82 | CHECKED JEL DATE 7-82

6767-25

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

℄ Brg. West Abutment — ℄ Pier 1 — ℄ Brg. Exp. Joint 2

SPAN LENGTHS

	℄ Brg. West Abutment to ℄ Pier 1	℄ Pier 1 to ℄ Brg. Exp. Joint 2
GIRDER A	177'-0	131'-8 1/8
GIRDER B	177'-0	132'-11 5/16
GIRDER C	177'-0	134'-2 1/2
GIRDER D	177'-0	135'-5 11/16
GIRDER E	177'-0	136'-8 15/16

FIELD SPLICES (℄ Field Splice 1, ℄ Field Splice 2)

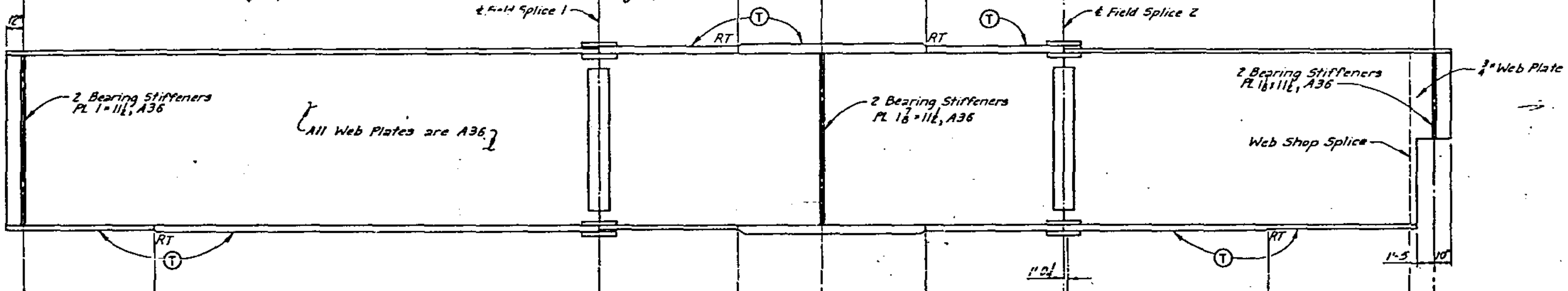
GIRDER A	128'-0	49'-0	53'-0	78'-8 1/8
GIRDER B	128'-0	49'-0	53'-0	79'-11 5/16
GIRDER C	128'-0	49'-0	53'-0	81'-2 1/2
GIRDER D	128'-0	49'-0	53'-0	82'-5 11/16
GIRDER E	128'-0	49'-0	53'-0	83'-8 15/16

SHEAR CONNECTOR SPACING

GIRDER A	1'-10	28 spa @ 13"=30'-4	36 spa @ 1'-6=54'-0	37 spa @ 13"=40'-1	1'-9	1'-9	20 spa @ 2'-0=40'-0	7'-3	7'-3	22 spa @ 2'-0=44'-0	1'-9	1'-9	42 spa @ 14"=49'-0	25 spa @ 12"=25'-0	2'-11 1/8
GIRDER B	1'-10	28 spa @ 13"=30'-4	36 spa @ 1'-6=54'-0	37 spa @ 13"=40'-1	1'-9	1'-9	20 spa @ 2'-0=40'-0	7'-3	7'-3	22 spa @ 2'-0=44'-0	1'-9	1'-9	43 spa @ 14"=50'-2	25 spa @ 12"=25'-0	3'-0 5/16
GIRDER C	1'-10	28 spa @ 13"=30'-4	36 spa @ 1'-6=54'-0	37 spa @ 13"=40'-1	1'-9	1'-9	20 spa @ 2'-0=40'-0	7'-3	7'-3	22 spa @ 2'-0=44'-0	1'-9	1'-9	44 spa @ 14"=51'-4	25 spa @ 12"=25'-0	3'-1 1/2
GIRDER D	1'-10	28 spa @ 13"=30'-4	36 spa @ 1'-6=54'-0	37 spa @ 13"=40'-1	1'-9	1'-9	20 spa @ 2'-0=40'-0	7'-3	7'-3	22 spa @ 2'-0=44'-0	1'-9	1'-9	45 spa @ 14"=52'-6	25 spa @ 12"=25'-0	3'-2 11/16
GIRDER E	1'-10	28 spa @ 13"=30'-4	36 spa @ 1'-6=54'-0	37 spa @ 13"=40'-1	1'-9	1'-9	20 spa @ 2'-0=40'-0	7'-3	7'-3	22 spa @ 2'-0=44'-0	1'-9	1'-9	44 spa @ 14"=51'-4	28 spa @ 12"=28'-0	2'-7 15/16

TOP FLANGE PLATE

GIRDER A	128'-0 PL 1 1/4 × 18, A572	31'-0 PL 1 5/8 × 24, A572	18'-0 PL 2 × 36 A572	23'-0 PL 2 × 36 A572	30'-0 PL 1 7/8 × 24, A572	78'-8 1/8 PL 1 × 18, A572
GIRDER B	128'-0 PL 1 1/4 × 18, A572	31'-0 PL 1 5/8 × 24, A572	18'-0 PL 2 × 36, A572	23'-0 PL 2 × 36, A572	30'-0 PL 1 7/8 × 24, A572	79'-11 5/16 PL 1 × 18, A572
GIRDER C	128'-0 PL 1 1/4 × 18, A572	31'-0 PL 1 5/8 × 24, A572	18'-0 PL 2 × 36, A572	23'-0 PL 2 × 36, A572	30'-0 PL 1 7/8 × 24, A572	81'-2 1/2 PL 1 × 18, A572
GIRDER D	128'-0 PL 1 1/4 × 18, A572	31'-0 PL 1 5/8 × 24, A572	18'-0 PL 2 × 36, A572	23'-0 PL 2 × 36, A572	30'-0 PL 1 7/8 × 24, A572	82'-5 11/16 PL 1 × 18, A572
GIRDER E	128'-0 PL 1 1/4 × 18, A572	31'-0 PL 1 5/8 × 24, A572	18'-0 PL 2 × 36, A572	23'-0 PL 2 × 36, A572	30'-0 PL 1 7/8 × 24, A572	83'-8 15/16 PL 1 × 18, A572



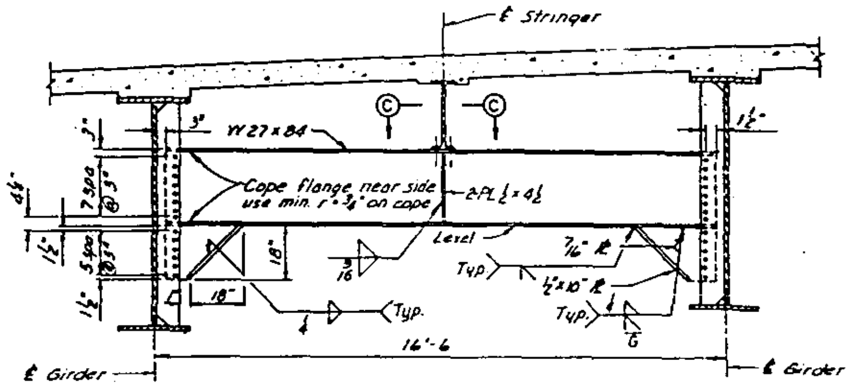
BOTTOM FLANGE PLATE

GIRDER A	29'-0 PL 1 1/4 × 24, A572	99'-0 PL 1 7/8 × 24, A572	31'-0 PL 1 7/8 × 24, A572	18'-0 PL 2 3/4 × 24, A588	23'-0 PL 2 3/4 × 24, A588	30'-0 PL 1 7/8 × 24, A572	43'-8 5/8 PL 1 7/8 × 24, A572	34'-11 1/2 PL 1 7/8 × 24, A572
GIRDER B	29'-0 PL 1 1/4 × 24, A572	99'-0 PL 1 7/8 × 24, A572	31'-0 PL 1 7/8 × 24, A572	18'-0 PL 2 3/4 × 24, A588	23'-0 PL 2 3/4 × 24, A588	30'-0 PL 1 7/8 × 24, A572	44'-4 15/16 PL 1 7/8 × 24, A572	35'-6 3/8 PL 1 7/8 × 24, A572
GIRDER C	29'-0 PL 1 1/4 × 24, A572	99'-0 PL 1 7/8 × 24, A572	31'-0 PL 1 7/8 × 24, A572	18'-0 PL 2 3/4 × 24, A588	23'-0 PL 2 3/4 × 24, A588	30'-0 PL 1 7/8 × 24, A572	45'-1 9/16 PL 1 7/8 × 24, A572	36'-1 15/16 PL 1 7/8 × 24, A572
GIRDER D	29'-0 PL 1 1/4 × 24, A572	99'-0 PL 1 7/8 × 24, A572	31'-0 PL 1 7/8 × 24, A572	18'-0 PL 2 3/4 × 24, A588	23'-0 PL 2 3/4 × 24, A588	30'-0 PL 1 7/8 × 24, A572	45'-9 15/16 PL 1 7/8 × 24, A572	36'-7 3/4 PL 1 7/8 × 24, A572
GIRDER E	29'-0 PL 1 1/4 × 24, A572	99'-0 PL 1 7/8 × 24, A572	31'-0 PL 1 5/8 × 24, A572	18'-0 PL 2 3/4 × 24, A588	23'-0 PL 2 3/4 × 24, A588	30'-0 PL 1 7/8 × 24, A572	46'-6 1/4 PL 1 7/8 × 24, A572	37'-2 11/16 PL 1 7/8 × 24, A572

WEB PLATE

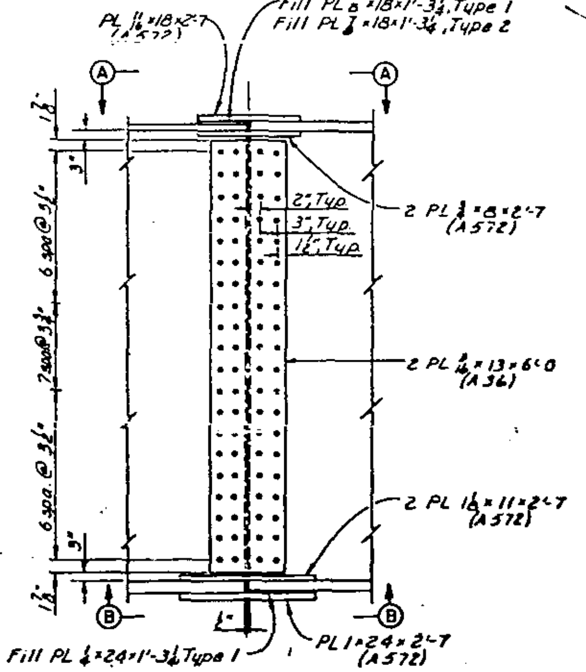
GIRDER A	128'-0 PL 5/8 × 78	49'-0 PL 3/4 × 78	53'-0 PL 3/4 × 78	73'-11 1/8 PL 5/8 × 78	4'-9
GIRDER B	128'-0 PL 5/8 × 78	49'-0 PL 3/4 × 78	53'-0 PL 3/4 × 78	75'-2 5/16 PL 5/8 × 78	4'-9
GIRDER C	128'-0 PL 5/8 × 78	49'-0 PL 3/4 × 78	53'-0 PL 3/4 × 78	76'-5 1/2 PL 5/8 × 78	4'-9
GIRDER D	128'-0 PL 5/8 × 78	49'-0 PL 3/4 × 78	53'-0 PL 3/4 × 78	77'-8 11/16 PL 5/8 × 78	4'-9
GIRDER E	128'-0 PL 5/8 × 78	49'-0 PL 3/4 × 78	53'-0 PL 3/4 × 78	78'-11 15/16 PL 5/8 × 78	4'-9

GIRDER ELEVATION



INTERMEDIATE FLOORBEAM

(Unit 1 Only)



FIELD SPLICE ELEVATION

(TYPES 1 & 2)

Note:

Two fill plates 15 gage × 6 × 6'-3 are required for web splices, Types 1 and 2.

(T) denotes tension flange plate.

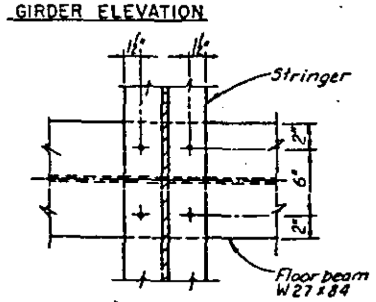
NOTES:

For "Shear Connector Detail" see Sheet 84

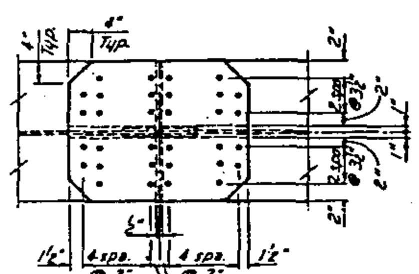
The weight of shear connectors are included in the Structural Steel Quantities.

There shall be no shear connector groups located at the ℄ of piers nor at ℄ Brg. Exp. Jt. and at field splices.

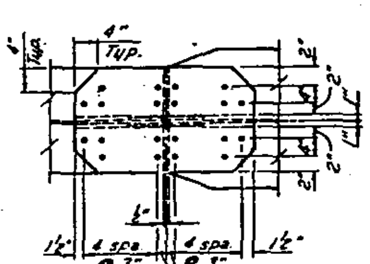
For girder end details see Sheet 88.



SECTION C-C



VIEW B-B



VIEW A-A

MISSISSIPPI RIVER BRIDGE

KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

GIRDER ELEVATION — UNIT 1

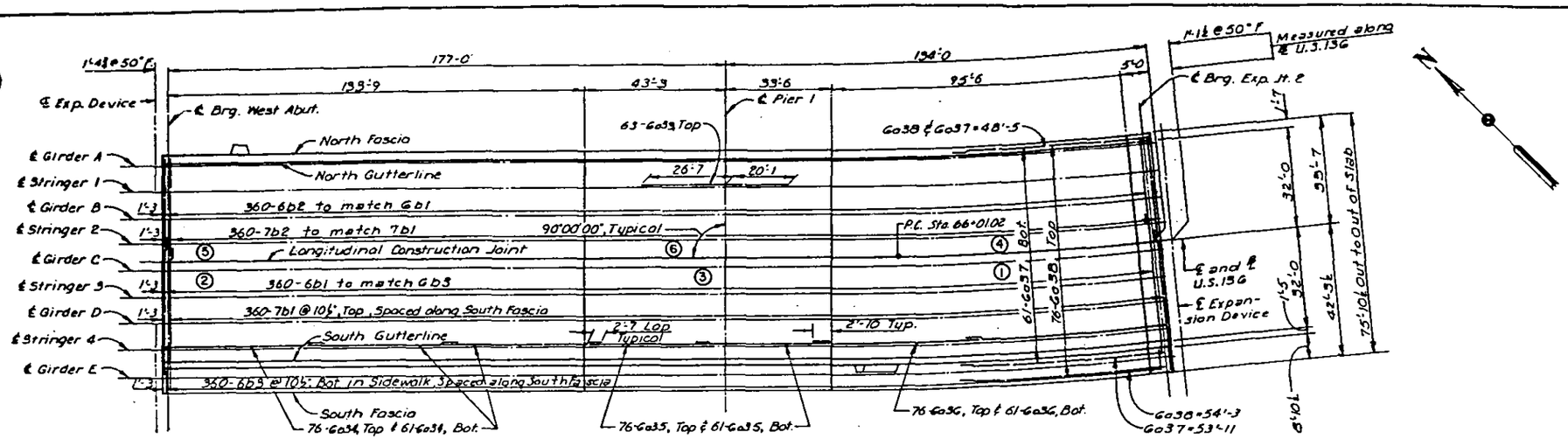
LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE ACC DATE 6-82 CHECKED LCY DATE 7-82

6787-2 30

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



CONCRETE PLACEMENT AND SLAB REINFORCEMENT PLAN - UNIT 1

TOP OF CONCRETE PAVEMENT ELEVATIONS UNIT 1

LOCATION	W. Abut.	.10	.20	.30	.40	.50	.60	.70	.80	.90	FS 1	.10	.20	.30	.40	.50	.60	.70	.80	.90	FS 2	.10	.20
Girder A	566.17	565.97	565.79	565.62	565.47	565.33	565.21	565.11	565.01	564.92	564.81	564.70	564.57	564.43	564.29	964.14	564.00	563.86	563.71	563.57	563.42	563.31	563.19
Stringer 1	566.34	566.14	565.96	565.79	565.64	565.50	565.38	565.27	565.18	565.09	564.53	564.89	564.78	564.66	564.54	564.42	564.30	564.18	564.05	563.93	563.81	563.71	563.62
Girder B	566.50	566.30	566.12	565.95	565.80	565.67	565.54	565.44	565.34	565.26	565.17	565.08	564.99	564.89	564.79	564.70	564.60	564.50	564.40	564.30	564.20	564.12	564.04
Stringer 2	566.67	566.47	566.29	566.12	565.97	565.83	565.71	565.60	565.51	565.43	565.34	565.27	565.20	565.12	565.05	564.97	564.90	564.82	564.74	564.67	564.59	564.53	564.47
Girder C	566.74	566.55	566.38	566.22	566.07	565.95	565.83	565.74	565.65	565.58	565.52	565.46	565.41	565.36	565.30	565.25	565.19	565.14	555.09	565.03	564.98	564.94	564.89
Stringer 3	566.62	566.46	566.31	566.18	566.07	565.97	565.88	565.81	565.76	565.72	565.68	565.65	565.62	565.59	565.55	565.52	565.49	565.46	565.43	565.40	565.37	565.34	565.32
Girder D	566.50	566.36	566.25	566.15	566.06	565.99	565.93	565.89	565.87	565.85	565.84	565.83	565.83	565.82	565.81	565.80	565.79	565.78	565.77	565.76	565.76	565.75	565.74
Stringer 4	566.38	566.27	566.18	566.11	566.05	566.01	565.98	565.97	565.97	565.99	566.01	566.02	566.03	566.05	566.06	566.08	566.09	566.10	566.12	566.13	566.14	566.15	566.17
Girder E	566.26	566.18	566.12	566.08	566.05	566.03	566.03	566.05	566.08	566.12	566.17	566.21	566.24	566.28	566.31	566.35	566.39	566.42	566.46	566.50	566.53	566.56	566.59

TOP OF CONCRETE PAVEMENT ELEVATIONS UNIT 1

LOCATION	.30	.40	.50	.60	.70	.80	.90	Exp. Jt.
Girder A	563.08	562.98	562.85	562.74	562.62	562.51	562.39	562.28
Stringer 1	563.52	563.42	563.33	563.23	563.13	563.04	562.94	562.85
Girder B	563.96	563.89	563.81	563.73	563.65	563.57	563.49	563.41
Stringer 2	564.41	564.35	564.29	564.22	564.16	564.10	564:04	564.98
Girder C	564.85	564.81	564.76	564.72	564.68	564.64	564.59	564.55
Stringer 3	565.29	565.27	565.24	565.22	565.19	565.17	565.14	565.12
Girder D	565.74	565.73	565.72	565.71	565.71	565.70	565.69	565.79
Stringer 4	566.18	566.19	566.20	566.21	566.22	566.23	566.24	566.25
Girder E	566.62	566.65	566.68	566.71	566.74	566.77	566.79	566.82

ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu. Yds.	648.7
Reinforcing Steel - Non Epoxy Coated	Lbs.	73,378
Reinforcing Steel - Epoxy Coated*	Lbs.	120,029
Structural Steel - A36	Lbs.	550,143
Structural Steel - A572	Lbs.	358,661
Structural Steel - A588	Lbs.	48,093
N. and S. Barrier Rail	Lin. Ft.	626.4
Median Barrier Rail	Lin. Ft.	313.2

*Includes 240 lbs. of reinforcing steel in light blisters, and 400 lbs. of reinforcing steel of drainage inlets.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of Traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

CURVE DATA

P. I. Sta. 69+14.85
Δ = 33°31'48.3"
D = 5°30'00.0"
T = 313.83
L = 609.64
E = 46.24
R = 1041.74

Notes:
Roadway slab shall be placed in sections and in the sequence indicated by circled numbers at intervals not exceeding 24 hours.
Alternate pocedures for placing concrete may be subattted for approval together with a statement of the proposed method and evidence that the contractor possesses the necessary equipment and facilities to accomplish the required results.
The transverse construction joints shall be placed parallel to the adjacent ℄ pier.
For detail of slab construction joint, see Sheet 65
For detail of longitudinal bar spacing, see Sheet 65
For "Light Pole Base Details", see Sheet 106
For "Drain Details", see Sheet 98 and 99
For location of drains see Sheet 24 and 25
"Top of Concrete Pavement Elevations" are shown at 1/10 points between Exp. Jt. 1 and F.S. 1 at 1/10 points between Exp. Jts. and at 1/10 points between F.S. 2 and Exp. Jt. 2.
F.S. denotes Field Splice.
Exp. Jt. denotes Expansion Joint.
5'-0 each side of Joint 2 shall be poured after both Unit 1 and 2 are completed and expansion joint is in place.

CONCRETE PLACEMENT QUANTITIES

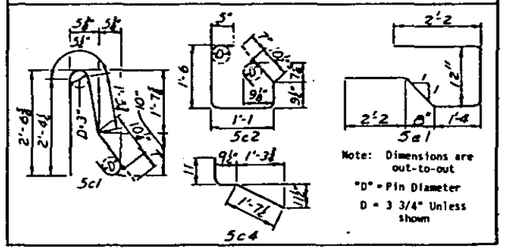
UNIT 1

POUR	CU. YDS.
1	116.4
2	151.4
3	87.6
4	94.2
5	126.1
6	72.7
Light Blister	.3
Total	648.7

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	NON-EPOXY COATED BARS				
6a34	Longitudinal	—	183	47'-7	13,079
6a35	Longitudinal	—	132	39'-6	7,238
6a36	Longitudinal	—	61	55'-4	5,070
6a37	Longitudinal	—	51	Varies	4,689
6b1	Transverse	—	360	44'-5	24,017
6b2	Transverse	—	360	29'-3	15,816
6b3	Transverse	—	360	6'-5	3,470
				TOTAL	73,378
	EPOXY COATED BARS				
6a34	Longitudinal	—	228	47'-7	16,295
6a35	Longitudinal	—	152	39'-6	9,018
6a36	Longitudinal	—	76	55'-4	6,316
6a38	Longitudinal	—	76	Varies	5,950
6a39	Long. over Piers	—	63	46'-8	4,416
7b1	Transverse	—	360	45'-9	24,297
7b2	Transverse	—	360	33'-5	24,835
5c1	Curb, Transverse		625	5'-9	3,748
5c2	Curb, Transverse		625	5'-3	3,422
5c3	Curb, Transverse	—	626	2'-7	1,687
5c4	Curb, Transverse		626	3'-4	2,176
5d6	Curb, Longitudinal	—	49	45'-11	2,347
5d7	Curb, Longitudinal	—	49	46'-4	2,368
5d8	Curb, Longitudinal	—	49	45'-7	2,330
5e1	End Beam		112	7'-7	886
5e2	End Beam	—	49	7'-9	388
				TOTAL	119,389

BAR BENDING DIAGRAMS



MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

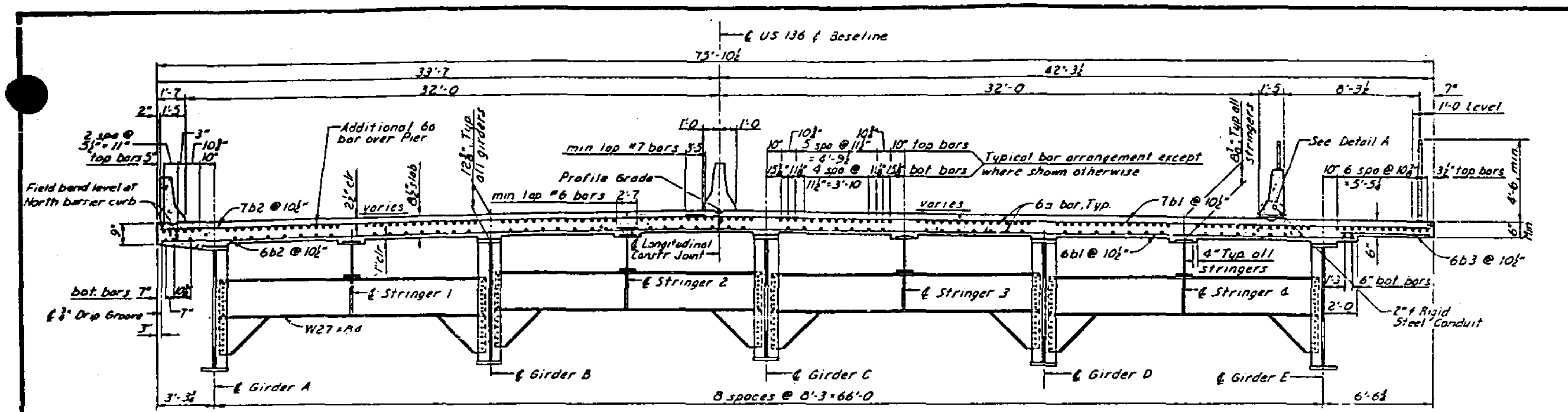
STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
SLAB PLAN - UNIT 1

STA. [illegible]
LEE COUNTY, IOWA
PROJECT NO. [illegible]

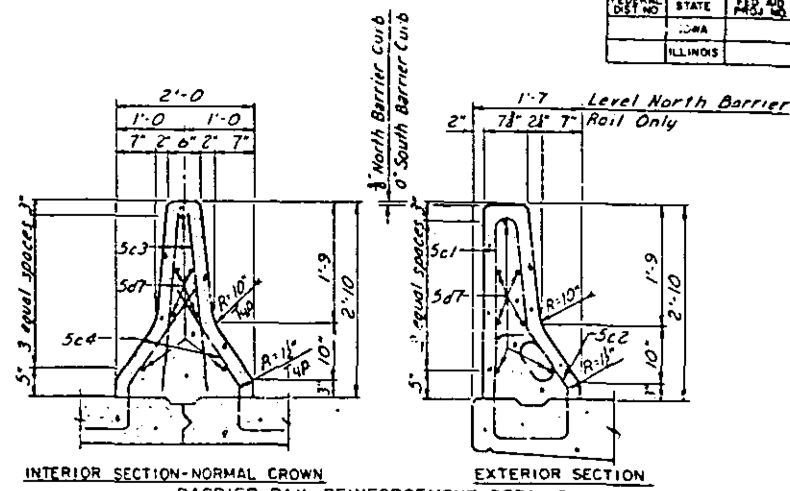
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE ACC DATE 6-82 CHECKED DLM DATE 7-82

DESIGN NO. [illegible] LEE COUNTY FILE [illegible] SHEET 70 OF 227



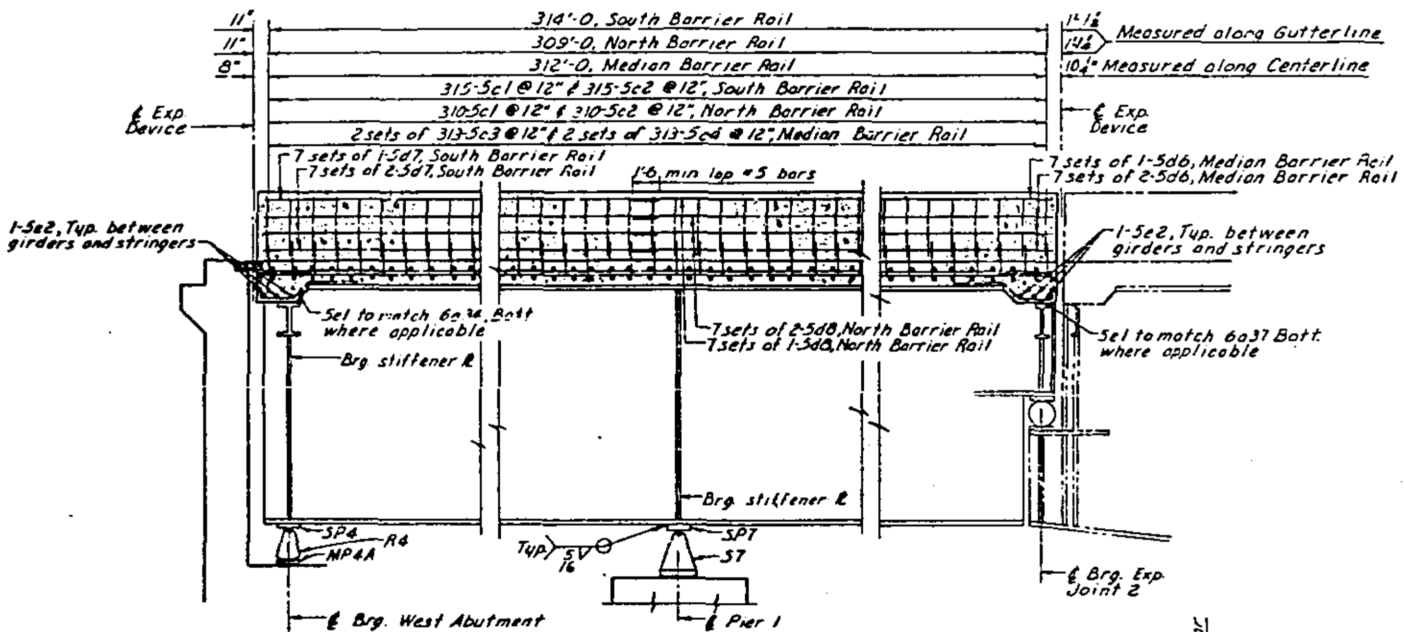
TYPICAL SECTION
(Normal Crown Shown)



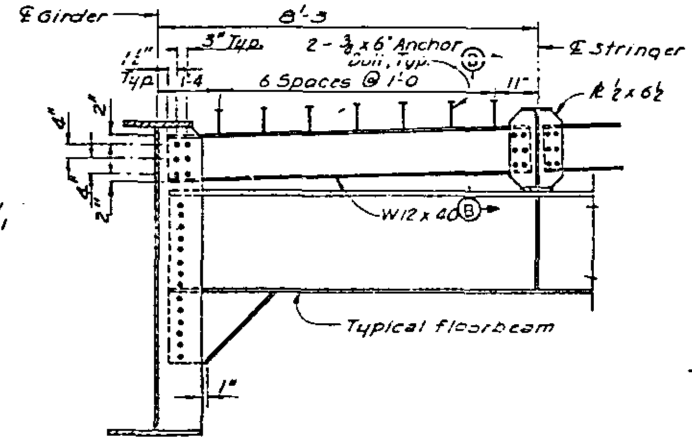
INTERIOR SECTION-NORMAL CROWN

EXTERIOR SECTION

BARRIER RAIL REINFORCEMENT DETAILS

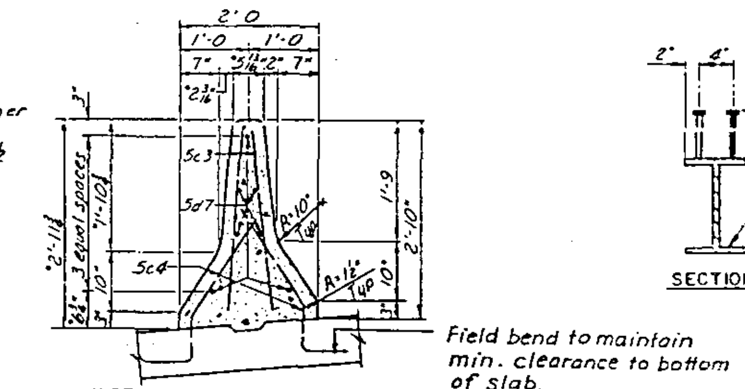


PART LONGITUDINAL SECTION NEAR CURB-UNIT 1



END DIAPHRAGM AT WEST ABUTMENT
(East Abutment similar)

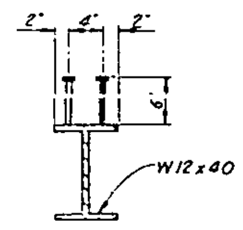
For floorbeam details see Sheet 63.



Field bend to maintain min. clearance to bottom of slab.

SUPERELEVATED BARRIER RAIL REINFORCEMENT DETAILS-INTERIOR SECTION

*Note: In superelevation transition areas these dimensions will vary. The slopes of the faces shall not change.



SECTION B-B

MEDIAN CURB CONCRETE QUANTITIES		
CONCRETE	313.2 ft X .1055 Cu.Yd/ft	33.0 Cu.Yd.

TYPICAL ROCKER SETTING - UNIT 1					
Temperature at Time of Setting	WEST ABUTMENT		PIER 1	EXPANSION JOINT	
90° F	1 5/8"	+ 3/8"	0"	+1 1/4"	7 3/8"
50° F	2 1/2"	0"	0"	0"	9 1/2"
10° F	3 3/8"	- 3/8"	0"	-1 1/4"	11 3/4"

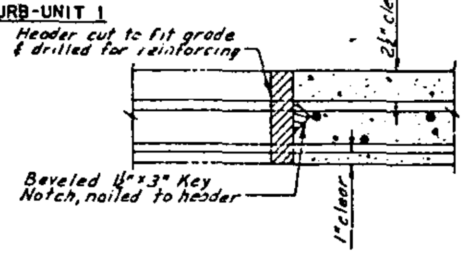
NOTES:

Rockers are to be set vertically at 50° F.

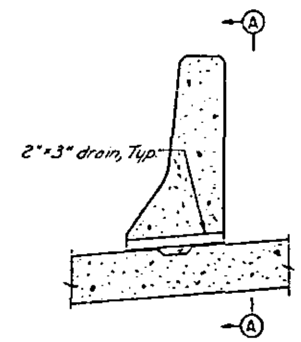
For temperatures above 50° F set masonry plate toward fixed shoe (+).

For temperatures below 50° F set masonry plate away from fixed shoe (-).

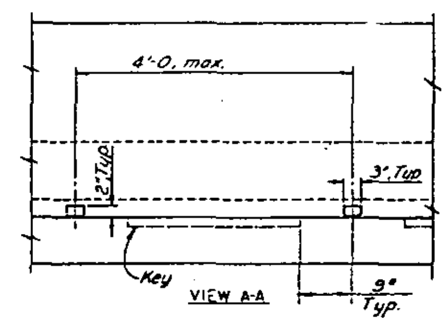
Settings for other temperatures are proportional to those shown for a 40° temperature change.



LONGITUDINAL SLAB CONSTRUCTION JOINT DETAIL
(Transverse slab construction joint similar except for bar detail)



SUPERELEVATED SECTION



VIEW A-A

DETAIL A
(Sta 64+50.00 thru Sta 73+50.00)

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

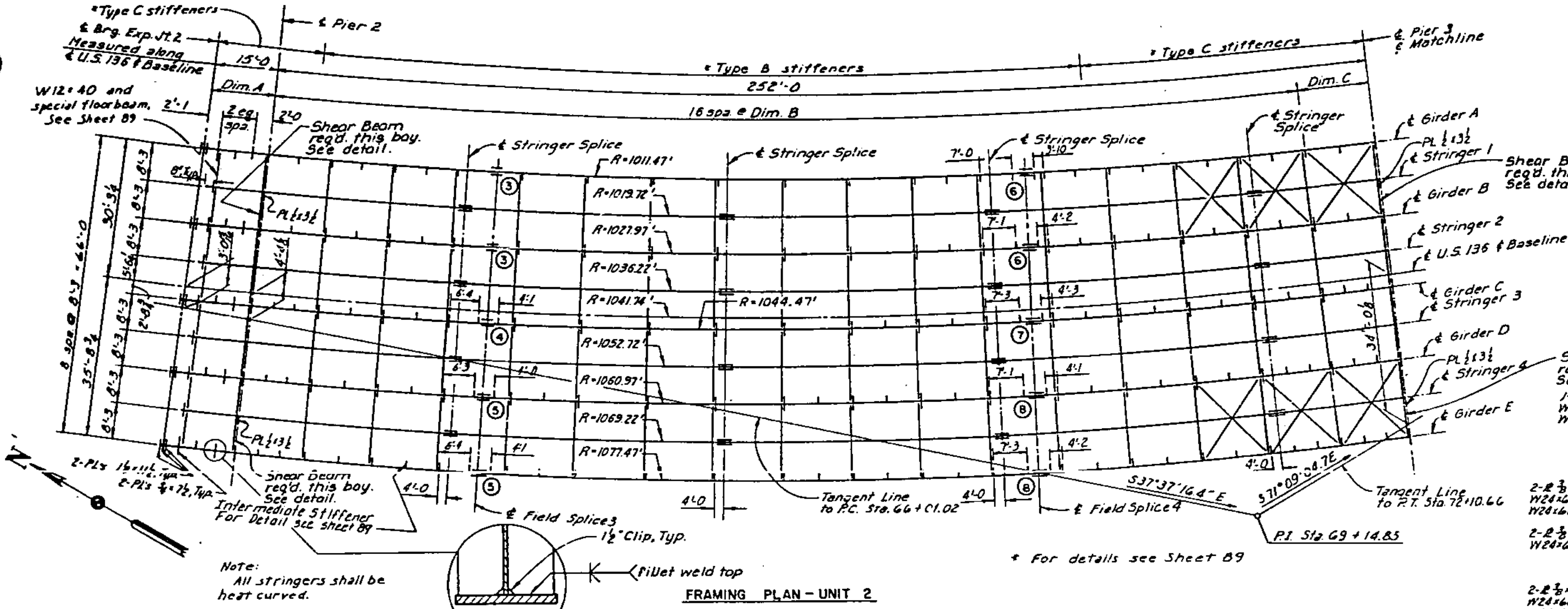
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB DETAILS-UNIT 1

HNTB
JMH DATE 5-82 CHECKED DLM DATE 7-82

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

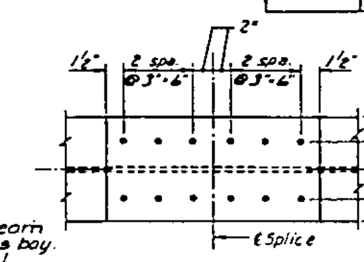
GIRDER	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E
A	14'-6 3/4	14'-4 9/16	14'-5 1/8	14'-3 7/8	14'-4 1/2
B	14'-9 5/8	14'-7 9/16	14'-7	14'-6 11/16	14'-6 5/8
C	15'-0 7/16	14'-10 3/8	14'-9 15/16	14'-9 9/16	14'-9 1/2
D	15'-3 5/16	15'-1 3/16	15'-0 13/16	15'-0 1/4	14'-11 1/2
E	15'-6 3/16	15'-4	15'-3 3/4	15'-3 1/16	15'-2 1/16



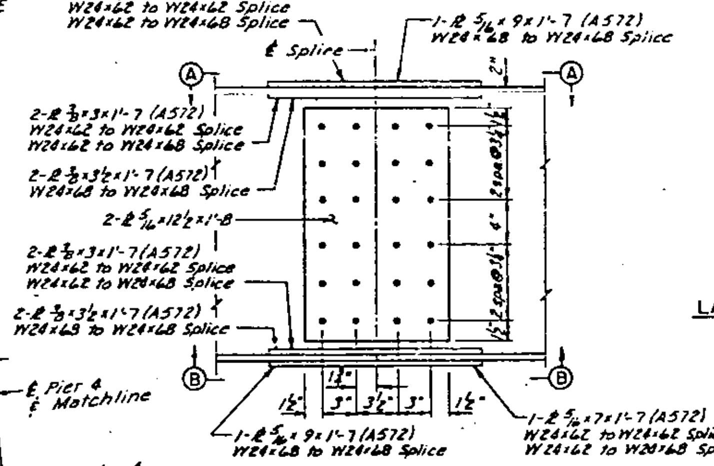
FRAMING PLAN - UNIT 2

Note:
All stringers shall be heat curved.

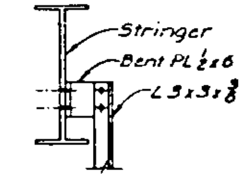
* For details see Sheet 89



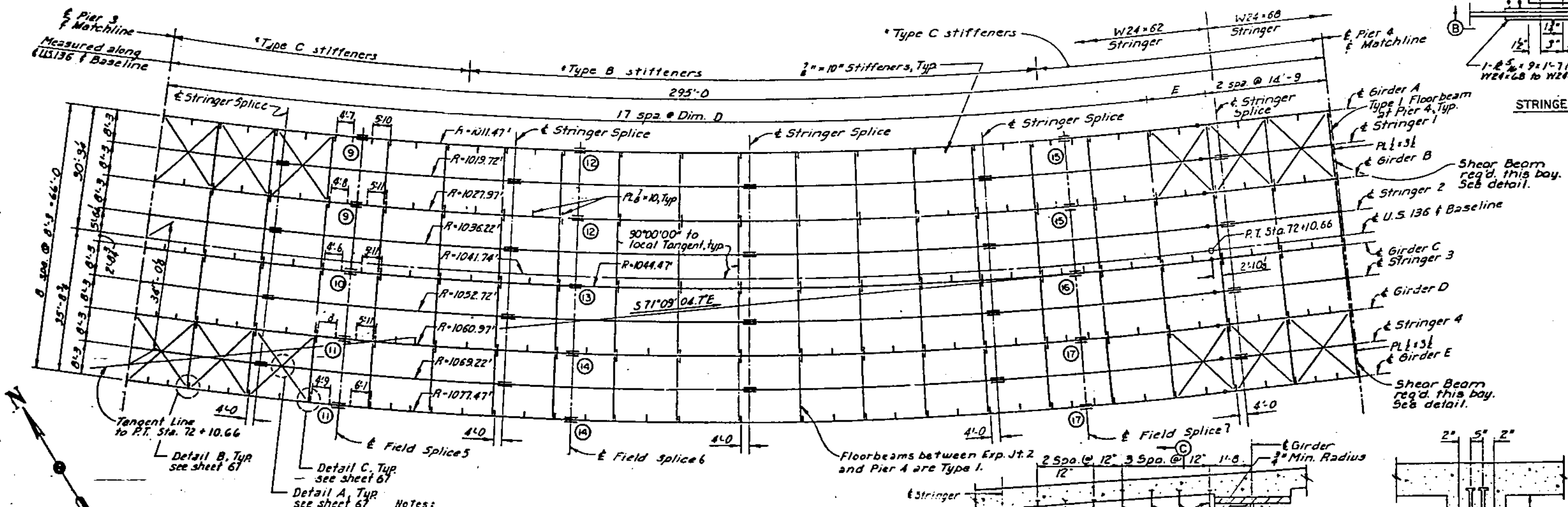
VIEW A-A & B-B



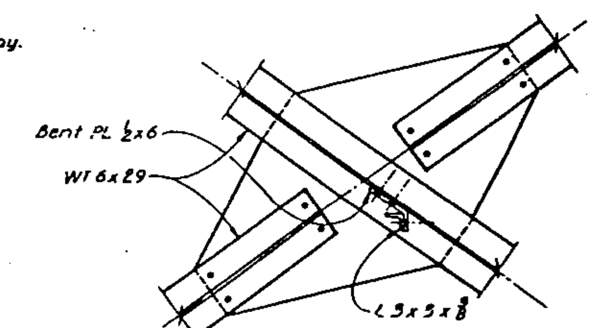
STRINGER SPLICE



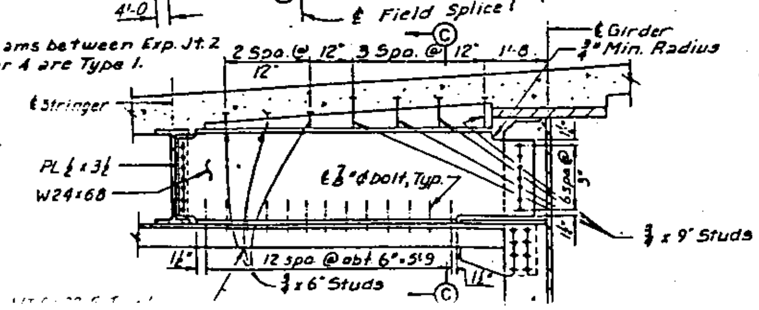
LATERAL SUPPORT DETAILS AT STRINGER

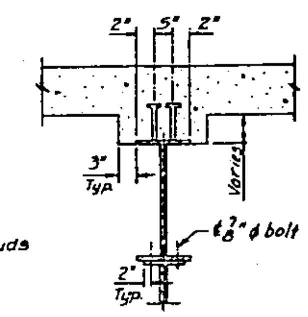


FRAMING PLAN - UNIT 2



LATERAL SUPPORT DETAILS
(For Details under Catwalk see Sheet 100.)





Notes:

For intermediate and floorbeam stiffener details see Sheet 89.

For floorbeam details see Sheet 67

⑫ denotes type of field splice to be used.

For girder field splice details see

Intermediate stiffeners shall be equally spaced between floorbeams unless noted otherwise.

CURVE DATA

P. I. Sta. 69+14.85
Δ = 33°31'48.3"
D = 5°30'00.0"
L = 609.64'
E = 46.24'
R = 1041.74'

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

FRAMING PLAN-UNIT 2

LEE COUNTY, IOWA

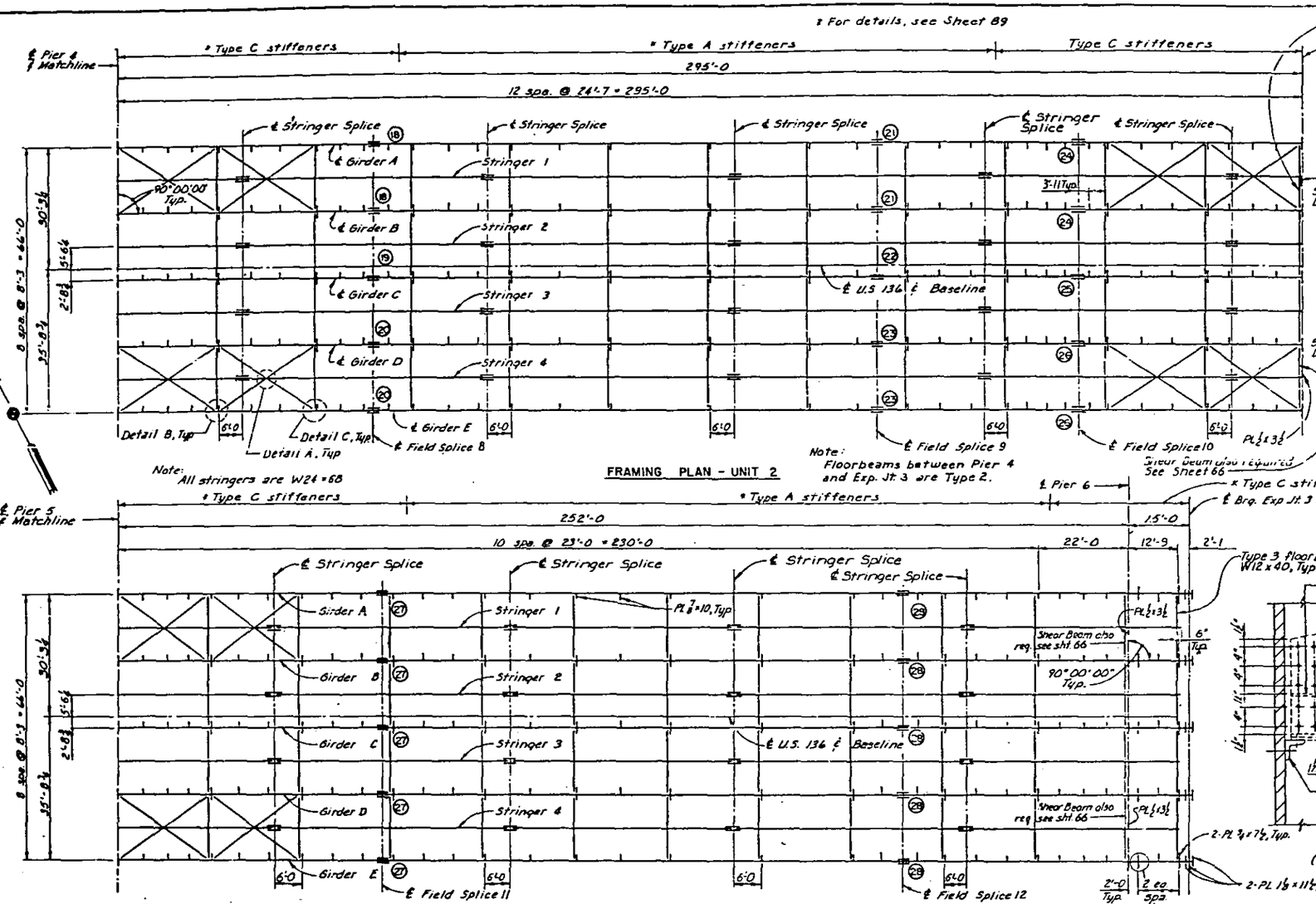
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE LCY DATE 7-82 CHECKED JMH DATE 8-82

DESIGN NO. 382 LEE COUNTY FILE 26725 SHEET 72 OF 227

DIST NO	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

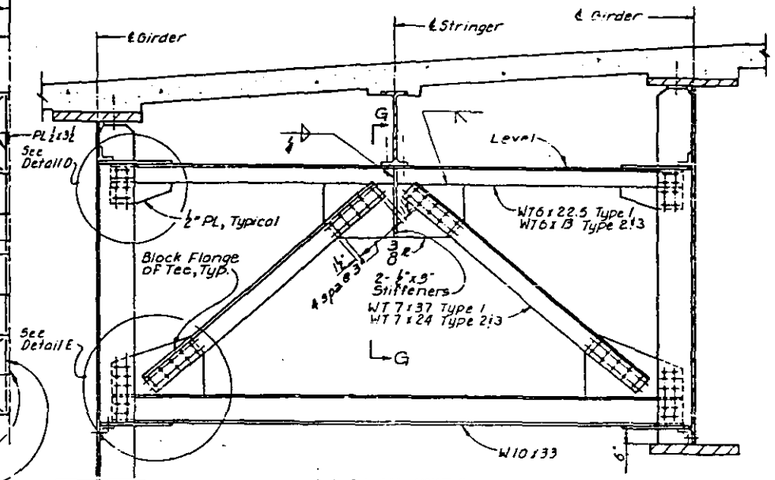
* For details, see Sheet 89



Note: All stringers are W24 x 68

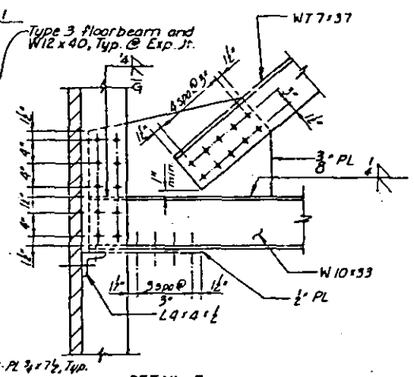
FRAMING PLAN - UNIT 2

Note: Floorbeams between Pier 4 and Exp. Jt. 3 are Type 2.

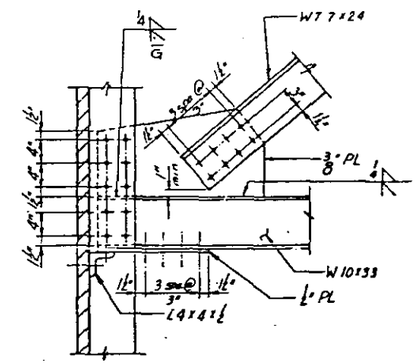


FLOORBEAM UNIT 2
(Types 1, 2 & 3)

See Section G-G on Sh. 75



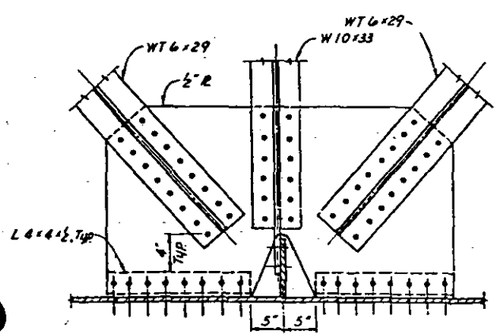
DETAIL E
(Type 1)



DETAIL E
(Types 2 & 3)

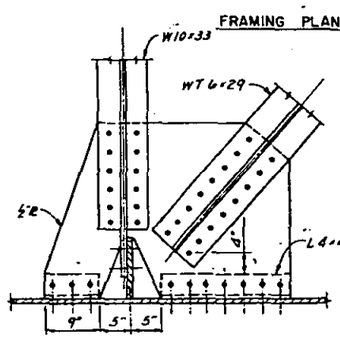
Note: Intermediate stiffeners shall be equally spaced between floorbeams unless noted otherwise.

(23) denotes type of girder field splice
For girder field splice details see sheet 73
For stringer field splice details see sheet 66
All re-entrant cuts shall have a 1" min. radius.



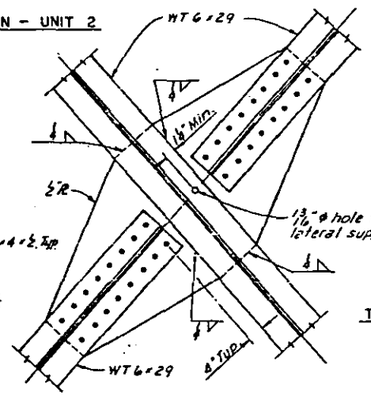
DETAIL B

Note: Radius of cope is 1½".

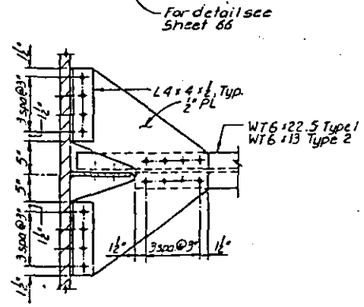


DETAIL C

FRAMING PLAN - UNIT 2

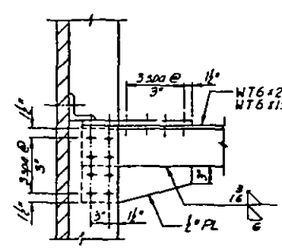


DETAIL A



TOP & BOTTOM GUSSET PLATE CONNECTION
(Type 1 & 2)

Note: For Lateral Support detail see sheet 66.



DETAIL D

Notes: For details of Top and Bottom Gusset Plate Connection for Type 3 see Sheet 68.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

FRAMING PLAN—UNIT 2

STA. 83+60.00 AHEAD
RIVER MILE 363.3
LEE COUNTY, IOWA

PROJECT NO. BRF-90-1(7)-83-99
HANCOCK COUNTY, ILLINOIS

676 25-00

BASE LCY DATE 9-82 CHECKED JMH DATE 8-82

DESIGN NO. 283 LEE COUNTY FILE 28723 SHEET 73 OF 227

SPAN LENGTHS

Girder	℄ Brg. Exp. Jt. 2 to ℄ Pier 2	℄ Pier 2 to ℄ Pier 3	℄ Pier 3 to ℄ Pier 4
GIRDER A	14'-6¾	244'-8⅛	287'-4 7/16
GIRDER B	14'-9⅝	248'-8	291'-6 5/16
GIRDER C	15'-0 7/16	252'-7½	295'-8¼
GIRDER D	15'-3 3/16	256'-7½	299'-10 1/16
GIRDER E	15'-6 7/16	260'-7¼	304'-0⅛

FIELD SPLICES

Girder								
GIRDER A	14'-6¾	51'-5½	115'-6½	77'-8⅛	49'-6 3/16	54'-4½	118'-5 7/16	65'-0 5/16
GIRDER B	14'-9⅝	52'-3 1/16	117'-5½	78'-11 9/16	50'-3 15/16	55'-3⅛	120'-4⅝	65'-6⅝
GIRDER C	15'-0 7/16	53'-1 1/16	119'-3¼	80'-2½	51'-1⅝	56'-1½	122'-3 13/16	66'-1 1/16
GIRDER D	15'-3 3/16	53'-11¼	121'-2⅜	81'-5 11/16	51'-11 5/16	57'-0⅜	124'-3	66'-7½
GIRDER E	15'-6 7/16	54'-9 13/16	123'-1	82'-8 9/16	52'-9	57'-11/16	126'-2 3/16	67'-1⅞

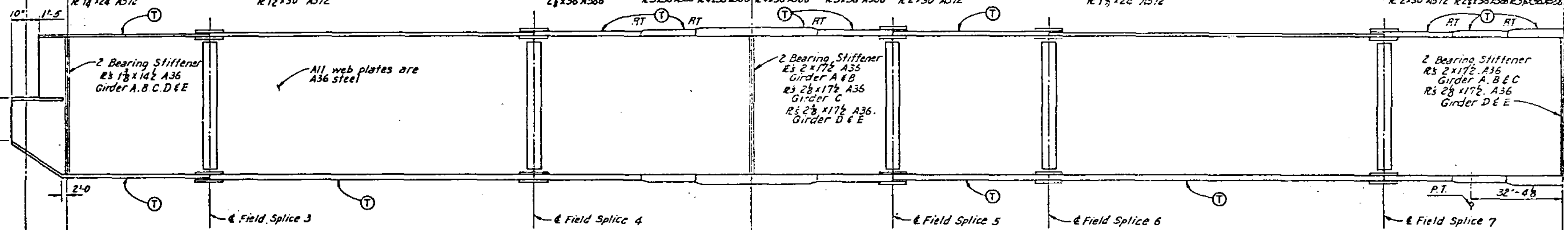
SHEAR CONNECTOR SPACING

3'-6 · 7'-0½ · 6'-11⅝ · 6'-10 7/16 · 6'-9 5/16 · 7'-0 3/16

Girder																					
GIRDER A	3'-6, 4 spa @ 12"	8'-1	31 spa @ 16" = 41'-4	4'-4	29 spa @ 24" = 58'-0	30 spa @ 18" = 45'-0	7 spa @ 15" = 8'-9	2'-9	24 spa @ 14" = 28'-0	20 spa @ 24" = 40'-0	8'-5⅝	9'-7 1/16	19 spa @ 24" = 38'-0	3'-8	51 spa @ 12" = 51'-0	3'-2	48 spa @ 16" = 64'-0	44 spa @ 14" = 51'-4	3'-2	26 spa @ 24" = 52'-0	11'-4⅜
GIRDER B	3'-6, 4 spa @ 13"	8'-8 11/16	31 spa @ 16" = 41'-4	4'-5	29 spa @ 24" = 58'-0	31 spa @ 18" = 46'-6	7 spa @ 16" = 9'-4	2'-9	25 spa @ 14" = 29'-2	20 spa @ 24" = 40'-0	8'-5 5/16	10'-5 1/16	19 spa @ 24" = 38'-0	3'-8	52 spa @ 12" = 52'-0	3'-4	49 spa @ 16" = 65'-4	44 spa @ 14" = 51'-4	3'-5	27 spa @ 24" = 54'-0	10'-0⅛
GIRDER C	3'-6, 4 spa @ 14"	8'-5 1/16	32 spa @ 16" = 42'-8	4'-2	30 spa @ 24" = 60'-0	31 spa @ 18" = 46'-6	7 spa @ 16" = 9'-4	2'-9	26 spa @ 14" = 30'-4	20 spa @ 24" = 40'-0	8'-3½	9'-3⅜	20 spa @ 24" = 40'-0	4'-0	52 spa @ 12" = 52'-0	3'-9	49 spa @ 16" = 65'-4	46 spa @ 14" = 53'-8	3'-2	27 spa @ 24" = 54'-0	10'-5⅜
GIRDER D	3'-6, 4 spa @ 15"	8'-9⅛	32 spa @ 16" = 42'-8	4'-10	30 spa @ 24" = 60'-0	33 spa @ 18" = 49'-6	7 spa @ 14" = 8'-2	2'-9	25 spa @ 14" = 29'-2	21 spa @ 24" = 42'-0	8'-9 1/16	9'-9 1/16	20 spa @ 24" = 40'-0	4'-2	53 spa @ 12" = 53'-0	4'-2	50 spa @ 16" = 66'-8	46 spa @ 14" = 53'-8	3'-4	27 spa @ 24" = 54'-0	11'-0⅛
GIRDER E	3'-6, 4 spa @ 15"	8'-5 13/16	33 spa @ 16" = 44'-0	4'-10	30 spa @ 24" = 60'-0	34 spa @ 18" = 51'-0	7 spa @ 14" = 8'-2	2'-9	26 spa @ 14" = 30'-4	21 spa @ 24" = 42'-0	9'-0 7/16	10'-6 1/16	20 spa @ 24" = 40'-0	4'-2	54 spa @ 12" = 54'-0	4'-0	50 spa @ 16" = 66'-8	48 spa @ 14" = 56'-0	3'-4	27 spa @ 24" = 54'-0	11'-4 1/16

TOP FLANGE PLATE

Girder												
GIRDER A	66'-0¼ PL 1¼x24 A572	115'-6½ PL 1⅜x24 A572	40'-9⅜ PL 1¾x30 A572	16'-6 1/16 PL 2⅜x36 A588	20'-4 1/16 PL 3¼x36 A588	20'-4 1/16 PL 3¼x36 A588	29'-1½ PL 2⅜x36 A588	54'-4½ PL 1½x30 A572	118'-5 7/16 PL 1¼x24 A572	27'-2¼ PL 1⅜x30 A572	16'-10 1/16 PL 2⅜x36 A588	21'-0 PL 3¼x36 A588
GIRDER B	67'-1 3/16 PL 1¼x24 A572	117'-5⅛ PL 1⅜x24 A572	41'-5 3/16 PL 1¾x30 A572	16'-9 3/16 PL 2⅜x36 A588	20'-8 1/16 PL 3¼x36 A588	20'-8 1/16 PL 3¼x36 A588	29'-7½ PL 2⅜x36 A588	55'-3⅛ PL 1½x30 A572	120'-4⅝ PL 1½x24 A572	27'-7½ PL 1⅜x30 A572	16'-11⅛ PL 2¼x36 A588	21'-0 PL 3¼x36 A588
GIRDER C	68'-2⅛ PL 1¼x24 A572	119'-3¼ PL 1½x24 A572	42'-1 5/16 PL 2x30 A572	17'-0½ PL 2⅜x36 A588	21'-0 1/16 PL 3⅜x36 A588	21'-0 1/16 PL 3½x36 A588	30'-0⅞ PL 2⅜x36 A588	56'-1¾ PL 1½x30 A572	122'-3 13/16 PL 1⅜x24 A572	28'-0⅜ PL 1⅜x30 A572	17'-0¼ PL 2⅜x36 A588	21'-0 PL 3⅜x36 A588
GIRDER D	69'-3 1/16 PL 1¼x24 A572	121'-2⅜ PL 1½x30 A572	42'-9 5/16 PL 2⅛x36 A588	17'-3¼ PL 3x36 A588	21'-4⅜ PL 4x36 A588	21'-4⅜ PL 4x36 A588	30'-6⅛ PL 3x36 A588	57'-0⅜ PL 2x30 A572	124'-3 PL 1⅜x24 A572	28'-6¼ PL 2x30 A572	17'-1¼ PL 2¾x36 A588	21'-0 PL 3½x36 A588
GIRDER E	70'-4 PL 1¼x24 A572	123'-1 PL 1½x30 A572	43'-5 3/16 PL 2⅛x36 A588	17'-7 PL 3x36 A588	21'-8⅜ PL 4x36 A588	21'-8⅜ PL 4x36 A588	31'-0⅜ PL 3x36 A588	57'-11/16 PL 2x30 A572	126'-2 3/16 PL 1⅜x24 A572	28'-11½ PL 2x30 A572	17'-2⅜ PL 2⅜x36 A588	21'-0 PL 3½x36 A588



BOTTOM FLANGE PLATE

Girder												
GIRDER A	66'-0¼ PL 1½x30 A572	115'-6½ PL 2x30 A572	40'-9⅜ PL 2x30 A572	16'-6 1/16 PL 2¼x36 A588	20'-4 1/16 PL 3x36 A588	20'-4 1/16 PL 3x36 A588	29'-1½ PL 2¼x36 A588	54'-4½ PL 1¾x30 A572	118'-5 7/16 PL 1¾x30 A572	27'-2¼ PL 1¾x30 A572	16'-10 1/16 PL 2¼x36 A588	21'-0 PL 3x36 A588
GIRDER B	67'-1 3/16 PL 1½x30 A572	117'-5⅛ PL 2x30 A572	41'-5 3/16 PL 2x30 A572	16'-9 5/16 PL 2¼x36 A588	20'-8 1/16 PL 3x36 A588	20'-8 1/16 PL 3x36 A588	29'-7½ PL 2¼x36 A588	55'-3⅛ PL 1¾x30 A572	120'-4⅝ PL 1¾x30 A572	27'-7½ PL 1¾x30 A572	16'-11⅛ PL 2¼x36 A588	21'-0 PL 3x36 A588
GIRDER C	68'-2⅛ PL 1⅝x30 A572	119'-3¼ PL 2¼x30 A588	42'-1 5/16 PL 2¼x30 A588	17'-0½ PL 2⅜x36 A588	21'-0 1/16 PL 3⅛x36 A588	21'-0 1/16 PL 3⅛x36 A588	30'-0⅞ PL 2⅝x36 A588	56'-1¾ PL 1⅞x30 A572	122'-3 13/16 PL 1⅞x30 A572	28'-0⅜ PL 1⅞x30 A572	17'-0¼ PL 2⅜x36 A588	21'-0 PL 3⅛x36 A588
GIRDER D	69'-3 1/16 PL 1¾x30 A572	121'-2⅜ PL 2¼x34 A588	42'-9 5/16 PL 2¼x34 A588	17'-3¼ PL 3x36 A588	21'-4⅜ PL 3¾x36 A588	21'-4⅜ PL 3¾x36 A588	30'-6⅛ PL 3x36 A588	57'-0⅜ PL 2¼x30 A588	124'-3 PL 2¼x30 A588	28'-6¼ PL 2¼x30 A588	17'-1¼ PL 2⅝x36 A588	21'-0 PL 3⅜x36 A588
GIRDER E	70'-4 PL 1¾x30 A572	123'-1 PL 2¼x34 A588	43'-5 3/16 PL 2¼x34 A588	17'-7 PL 3x36 A588	21'-8⅝ PL 3¾x36 A588	21'-8⅝ PL 3¾x36 A588	31'-0⅞ PL 3x36 A588	57'-11/16 PL 2¼x30 A588	126'-2 3/16 PL 2¼x30 A588	28'-11½ PL 2¼x30 A588	17'-2⅜ PL 2⅝x36 A588	21'-0 PL 3⅜x36 A588

WEB PLATE

Girder							
GIRDER A	66'-0¼ PL ½x120	115'-6½ PL ½x120	77'-8⅛ PL ⅞x120	49'-6 3/16 PL ⅞x120	54'-4½ PL ¾x120	118'-5 7/16 PL ¾x120	65'-0⅝ PL ⅞x120
GIRDER B	67'-1 3/16 PL ¾x120	117'-5⅛ PL ¾x120	78'-11 9/16 PL ⅞x120	50'-3 15/16 PL ⅞x120	55'-3⅛ PL ¾x120	120'-4⅝ PL ¾x120	65'-6⅝ PL ⅞x120
GIRDER C	68'-2⅛ PL ¾x120	119'-3¼ PL ¾x120	80'-2½ PL ⅞x120	51'-1⅝ PL ⅞x120	56'-1¾ PL ¾x120	122'-3 13/16 PL ¾x120	66'-1 1/16 PL ⅞x120
GIRDER D	69'-3 1/16 PL ½x120	121'-2⅜ PL ¾x120	81'-5 11/16 PL ⅞x120	51'-11 5/16 PL ⅞x120	57'-0⅜ PL ¾x120	124'-3 PL ¾x120	66'-7½ PL ⅞x120
GIRDER E	70'-4 PL ¾x120	123'-1 PL ¾x120	82'-8 9/16 PL ⅞x120	52'-9 PL ⅞x120	57'-11/16 PL ¾x120	126'-2 3/16 PL ¼x120	67'-1⅞ PL ⅞x120

GIRDER ELEVATION

Notes:

For field splice details see Sheet 73

For "Shear Connector Details" see Sheet 69.

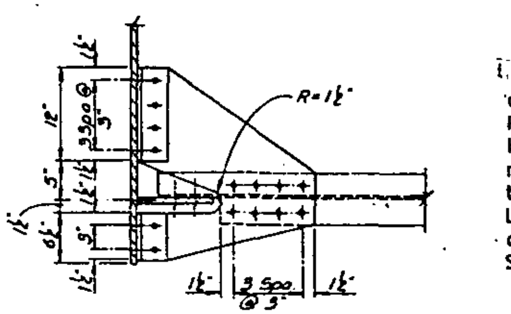
The weight of the shear connectors are included in the Structural Steel Quantities.

There shall be no shear connector groups located at the ℄ of pier or at ℄ Brg. Exp. Joints and field splices.

RT denotes location of splices that require radiographic inspection.

For girder end details see Sheet 88.

(T) denotes tension flange plate



TOP & BOTTOM GUSSET PLATE CONNECTION

The Contractor shall furnish Iowa D.O.T. with one test coupon taken from each of two 36" x 4" top flange plates at Pier #3. The test coupons shall be 6" x 8" with 8" in the longitudinal rolling direction. Both coupons shall be properly marked with rolling direction and heat number. The Contractor shall deliver the coupons to Iowa D.O.T. Material Laboratory in Ames. The cost of furnishing these two test coupons shall be included in the price bid for Structural Steel.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu. Yds.	2382.6
Reinforcing Steel - Non Epoxy Coated	Lbs.	266,493
Reinforcing Steel - Epoxy Coated*	Lbs.	449,226
Structural Steel - A36	Lbs.	3,534,044
Structural Steel - A572	Lbs.	1,122,329
Structural Steel - A588	Lbs.	1,167,434
N. and S. Barrier Rail	Lin. Ft.	2242.0
Median Barrier Rail	Lin. Ft.	1121.0

*Includes 720 lbs. of reinforcing steel in light blisters, and 600 lbs. of reinforcing steel of drainage inlets.

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

GIRDER ELEVATION - UNIT 2

STA. 30+40.00

PROJECT NO. BRF-18-1(3)--38-56

LEE COUNTY, IOWA

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE LCY DATE 6-82 CHECKED DLM DATE 7-82

6767 - 2 · 00

DESIGN SHEET 68 OF

DESIGN NO. 383 LEE COUNTY FILE 28723 SHEET 74 OF 227

℄ Pier 4 & Matchline — ℄ Pier 5 — ℄ Brg. Exp. Jt. 3 — ℄ Pier 6

SPAN LENGTHS

GIRDER A	295'-0	252'-0	15'-0
GIRDER B	295'-0	252'-0	15'-0
GIRDER C	295'-0	252'-0	15'-0
GIRDER D	295'-0	252'-0	15'-0
GIRDER E	295'-0	252'-0	15'-0

FIELD SPLICES

GIRDER A	64'-0	126'-0	50'-0	55'-0	66'-0	130'-0	56'-0	15'-0
GIRDER B	64'-0	126'-0	50'-0	55'-0	66'-0	130'-0	56'-0	15'-0
GIRDER C	64'-0	126'-0	50'-0	55'-0	66'-0	130'-0	56'-0	15'-0
GIRDER D	64'-0	126'-0	50'-0	55'-0	66'-0	130'-0	56'-0	15'-0
GIRDER E	64'-0	126'-0	50'-0	55'-0	66'-0	130'-0	56'-0	15'-0

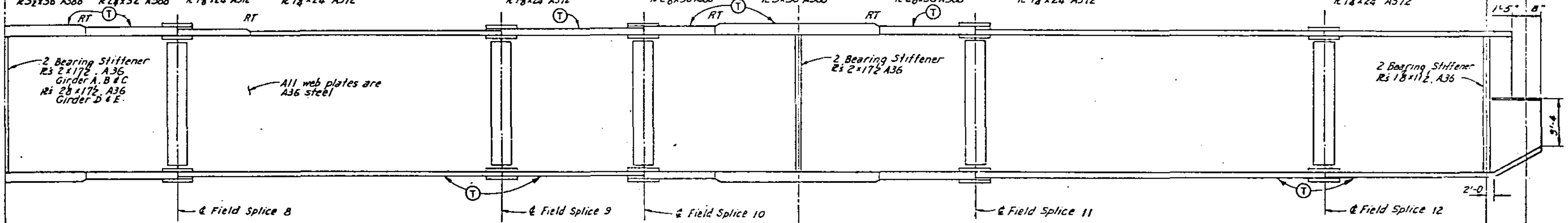
SHEAR CONNECTOR SPACING

GIRDER A	10'-6	26 spa@24"=52'-0	3'-3	43 spa@15"=53'-9	46 spa@18"=69'-0	3'-3	37 spa@15"=46'-3	4'-0	22 spa@24"=44'-0	9'-0	8'-6	28 spa@24"=56'-0	3'-0	26 spa@15"=32'-6	30 spa@20"=50'-0	22 spa@24"=44'-0	4'-0	34 spa@16"=45'-4	8'-8	6'-2	3'-10
GIRDER B	10'-6	26 spa@24"=52'-0	3'-3	43 spa@15"=53'-9	46 spa@18"=69'-0	3'-3	37 spa@15"=46'-3	4'-0	22 spa@24"=44'-0	9'-0	8'-6	28 spa@24"=56'-0	3'-0	26 spa@15"=32'-6	30 spa@20"=50'-0	22 spa@24"=44'-0	4'-0	34 spa@16"=45'-4	8'-8	6'-2	3'-10
GIRDER C	10'-6	26 spa@24"=52'-0	3'-3	43 spa@15"=53'-9	46 spa@18"=69'-0	3'-3	37 spa@15"=46'-3	4'-0	22 spa@24"=44'-0	9'-0	8'-6	28 spa@24"=56'-0	3'-0	26 spa@15"=32'-6	30 spa@20"=50'-0	22 spa@24"=44'-0	4'-0	34 spa@16"=45'-4	8'-8	6'-2	3'-10
GIRDER D	10'-6	26 spa@24"=52'-0	3'-3	43 spa@15"=53'-9	46 spa@18 =69'-0	3'-3	37 spa@15"=46'-3	4'-0	22 spa@24"=44'-0	9'-0	8'-6	28 spa@24"=56'-0	3'-0	26 spa@15"=32'-6	30 spa@20"=50'-0	22 spa@24"=44'-0	4'-0	34 spa@16"=45'-4	8'-8	6'-2	3'-10
GIRDER E	10'-6	26 spa@24"=52'-0	3'-3	43 spa@15"=53'-9	46 spa@18"=69'-0	3'-3	37 spa@15"=46'-3	4'-0	22 spa@24"=44'-0	9'-0	8'-6	28 spa@24"=56'-0	3'-0	26 spa@15"=32'-6	30 spa@20"=50'-0	22 spa@24"=44'-0	4'-0	34 spa@16"=45'-4	8'-8	6'-2	3'-10

4 spa@15"=5'-0 (at 3'-10, Girders A–B, C–D, E)

TOP FLANGE PLATE

GIRDER A	30'-0 R 3x36 A588	34'-0 R 2¼x30 A588	24'-0 R 1¼x24 A572	102'-0 R 1¼x24 A572	50'-0 R 1⅛x24 A572	25'-0 R 2⅞x30 A588	30'-0 / 30'-0 R 3x36 A588	36'-0 R 2⅞x30 A588	130'-0 R 1¼x24 A572	71'-0 R 1¼x24 A572
GIRDER B	30'-0 R 3x36 A588	34'-0 R 2¼x30 A588	24'-0 R 1¼x24 A572	102'-0 R 1¼x24 A572	50'-0 R 1⅛x24 A572	25'-0 R 2⅞x30 A588	30'-0 / 30'-0 R 3x36 A588	36'-0 R 2⅞x30 A588	130'-0 R 1¼x24 A572	71'-0 R 1¼x24 A572
GIRDER C	30'-0 R 3⅛x36 A588	34'-0 R 2¼x30 A588	24'-0 R 1⅛x24 A572	102'-0 R 1¼x24 A572	50'-0 R 1⅛x24 A572	25'-0 R 2⅞x30 A588	30'-0 / 30'-0 R 3x36 A588	36'-0 R 2⅞x30 A588	130'-0 R 1¼x24 A572	71'-0 R 1¼x24 A572
GIRDER D	30'-0 R 3½x36 A588	34'-0 R 2¼x32 A588	24'-0 R 1⅜x24 A572	102'-0 R 1⅛x24 A572	50'-0 R 1⅛x24 A572	25'-0 R 2⅞x30 A588	30'-0 / 30'-0 R 3x36 A588	36'-0 R 2⅞x30 A588	130'-0 R 1¼x24 A572	71'-0 R 1¼x24 A572
GIRDER E	30'-0 R 3½x36 A588	34'-0 R 2¼x32 A588	24'-0 R 1⅝x24 A572	102'-0 R 1¼x24 A572	50'-0 R 1⅛x24 A572	25'-0 R 2⅞x30 A588	30'-0 / 30'-0 R 3x36 A588	36'-0 R 2⅞x30 A588	130'-0 R 1¼x24 A572	71'-0 R 1⅛x24 A572



BOTTOM FLANGE PLATE

GIRDER A	30'-0 R 3x36 A588	34'-0 R 1⅞x36 A572	126'-0 R 1⅞x30 A572	50'-0 R 1⅞x30 A572	25'-0 R 1¼x36 A572	30'-0 R 3x36 A588	30'-0 R 3x36 A588	36'-0 R 1¼x36 A572	130'-0 R 1⅞x30 A572	71'-0 R 1¼x24 A572
GIRDER B	30'-0 R 3x36 A588	34'-0 R 1⅞x36 A572	126'-0 R 1⅞x30 A572	50'-0 R 1⅞x30 A572	25'-0 R 1¼x36 A572	30'-0 R 3x36 A588	30'-0 R 3x36 A588	36'-0 R 1⅛x36 A572	130'-0 R 1⅞x30 A572	71'-0 R 1¼x24 A572
GIRDER C	30'-0 R 3⅛x36 A588	34'-0 R 1⅞x36 A572	126'-0 R 1½x30 A572	50'-0 R 1½x30 A572	25'-0 R 1¼x36 A572	30'-0 R 3x36 A588	30'-0 R 3x36 A588	36'-0 R 1¼x36 A572	130'-0 R 1⅞x30 A572	71'-0 R 1¼x24 A572
GIRDER D	30'-0 R 3⅛x36 A588	34'-0 R 2⅞x36 A588	126'-0 R 1½x30 A572	50'-0 R 1½x30 A572	25'-0 R 1⅛x36 A572	30'-0 R 3x36 A588	30'-0 R 3x36 A588	36'-0 R 1⅛x36 A572	130'-0 R 1⅞x30 A572	71'-0 R 1¼x24 A572
GIRDER E	30'-0 R 3⅛x36 A588	34'-0 R 2⅞x36 A588	126'-0 R 1½x30 A572	50'-0 R 1½x30 A572	25'-0 R 1¼x36 A572	30'-0 R 3x36 A588	30'-0 R 3x36 A588	36'-0 R 1¼x36 A572	130'-0 R 1⅞x30 A572	71'-0 R 1¼x24 A572

WEB PLATE

GIRDER A	64'-0 R ⅞x120	126'-0 R ¾x120	50'-0 R ¾x120	55'-0 R ⅞x120	66'-0 R ⅞x120	130'-0 R ¾x120	71'-0 R ¾x120
GIRDER B	64'-0 R ⅞x120	126'-0 R ¾x120	50'-0 R ¾x120	55'-0 R ⅞x120	66'-0 R ⅞x120	130'-0 R ¾x120	71'-0 R ¾x120
GIRDER C	64'-0 R ⅞x120	126'-0 R ¾x120	50'-0 R ¾x120	55'-0 R ⅞x120	66'-0 R ⅞x120	130'-0 R ¾x120	71'-0 R ¾x120
GIRDER D	64'-0 R ⅞x120	126'-0 R ¾x120	50'-0 R ¾x120	55'-0 R ⅞x120	66'-0 R ⅞x120	130'-0 R ¾x120	71'-0 R ¾x120
GIRDER E	64'-0 R ⅞x120	126'-0 R ¾x120	50'-0 R ¾x120	55'-0 R ⅞x120	66'-0 R ⅞x120	130'-0 R ¾x120	71'-0 R ¾x120

GIRDER ELEVATION

NOTES:

For field splice details see Sheet 73

For "Shear Connector Details" for 18" and 24" flange see Sheet 84

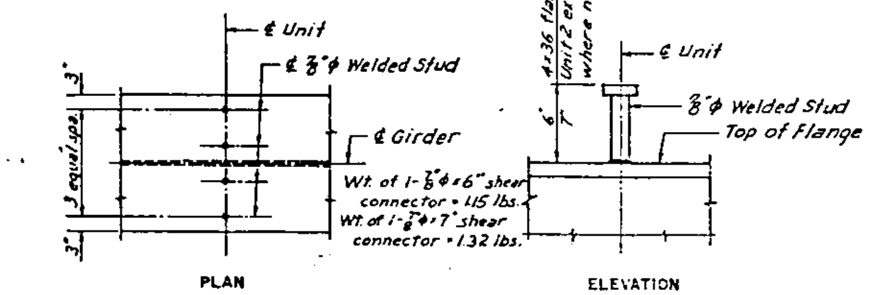
The weight of the shear connectors are included in the Structural Steel Quantities.

There shall be no shear connector groups located at the ℄ of pier or at ℄ Brg. Exp. Joints and field splices.

RT denotes location of splices that require radiographic inspection.

For girder end details see Sheet 88.

(T) denotes tension flange plate.



SHEAR CONNECTOR DETAIL

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

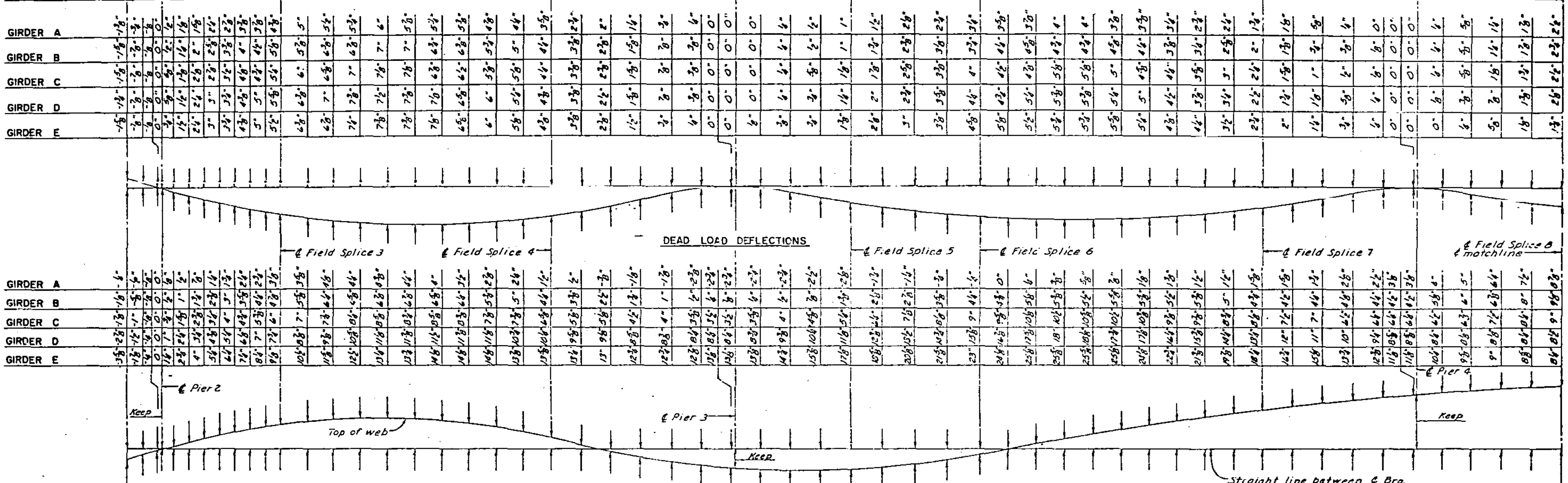
GIRDER ELEVATION - UNIT 2

FEDERAL DIST NO.	STATE	FED AID PROJ NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MADE LCY DATE 6-82 | CHECKED DLM DATE 7-82

	℄ Bearing Expansion Joint 2 / ℄ Pier 2	℄ Field Splice 3	℄ Field Splice 4 / ℄ Pier 3	℄ Field Splice 5	℄ Field Splice 6	℄ Field Splice 7 / ℄ Pier 4
GIRDER A	10 spa. @ abt. 6'-7 1/4 = 66'-0 1/8	10 spa. @ abt. 11'-6 5/8 = 115'-6 1/2	10 spa. @ abt. 12'-8 5/8 = 127'-2 5/16	4 spa. @ abt. 13'-7 1/8 = 54'-4 1/2	10 spa. @ abt. 11'-10 1/8 = 118'-5 7/16	10 spa. @ abt. 12'-10 1/2 = 129'-0 5/16
GIRDER B	10 spa. @ abt. 6'-8 1/2 = 67'-1 3/16	10 spa. @ abt. 11'-8 15/16 = 117'-5 1/8	10 spa. @ abt. 12'-11 1/8 = 129'-3 1/4	4 spa. @ abt. 13'-9 3/4 = 55'-3 1/8	10 spa. @ abt. 12'-0 7/16 = 120'-4 5/8	10 spa. @ abt. 12'-11 7/16 = 129'-6 5/8
GIRDER C	10 spa. @ abt. 6'-9 13/16 = 68'-2 1/8	10 spa. @ abt. 11'-11 3/16 = 119'-3 3/4	10 spa. @ abt. 13'-1 5/8 = 131'-4 1/8	4 spa. @ abt. 14'-0 7/16 = 56'-1 3/4	10 spa. @ abt. 12'-2 3/4 = 122'-3 13/16	10 spa. @ abt. 13'-0 1/8 = 130'-1 1/16
GIRDER D	10 spa. @ abt. 6'-11 1/8 = 69'-3 1/16	10 spa. @ abt. 12'-1 7/16 = 121'-2 3/8	10 spa. @ abt. 13'-4 1/8 = 133'-5	4 spa. @ abt. 14'-3 1/8 = 57'-0 3/8	10 spa. @ abt. 12'-5 1/8 = 124'-3	10 spa. @ abt. 13'-0 3/8 = 130'-7 1/2
GIRDER E	10 spa. @ abt. 7'-0 3/8 = 70'-4	10 spa. @ abt. 12'-3 11/16 = 123'-1	10 spa. @ abt. 13'-6 9/16 = 135'-5 15/16	4 spa. @ abt. 14'-5 3/8 = 57'-11 1/16	10 spa. @ abt. 12'-7 7/16 = 126'-2 3/16	10 spa. @ abt. 13'-1 1/8 = 131'-1 1/8

℄ Field Splice 8 ℄ Matchline



GIRDERS AS FABRICATED AND ERECTED DIAGRAM

Note: Offsets are given at ¼ points between F.S. 5 and F.S. 6; at ¼ points between F.S. 9 and F.S. 10; at 1/10 points between Exp. Jt. 2 and F.S. 3; at 1/10 points between Exp. Jt. 3 and F.S. 12 and at 1/10 points between all other field splices.

Legend
F.S. denotes field splice
Exp. Jt. denotes expansion joint

NOTE:
35% of the "Dead Load Deflections" is due to structural steel and 65% is due to concrete.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

TOP OF CONCRETE PAVEMENT ELEVATIONS UNIT 2

LOCATION	Exp. Jt.	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S.3	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S.4	.10	.20	.30	.40	.50	.60
Girder A	562.28	562.19	562.12	562.04	561.98	561.93	561.88	561.84	561.79	561.75	561.71	561.64	561.57	561.50	561.43	561.35	561.28	561.21	561.14	561.07	561.00	560.92	560.84	560.76	560.68	560.60	560.52
Stringer 1	563.09	562.98	562.88	562.78	562.69	562.61	562.54	562.48	562.43	562.38	562.32	562.25	562.18	562.11	562.04	561.97	561.89	561.82	561.75	561.68	561.61	561.53	561.45	561.37	561.29	561.21	561.13
Girder B	563.41	563.35	563.30	563.24	563.19	563.14	563.10	563.06	563.02	562.97	562.93	562.86	562.79	562.72	562.65	562.58	562.50	562.43	562.36	562.29	562.22	562.14	562.05	561.98	561.90	561.82	561.75
Stringer 2	563.98	563.93	563.89	563.84	563.79	563.75	563.71	563.67	563.63	563.59	563.54	563.47	563.40	563.33	563.26	563.19	563.11	563.04	562.97	562.90	562.83	562.75	562.67	562.59	562.51	562.43	562.36
Girder C	564.55	564.51	564.48	564.44	564.40	564.36	564.32	564.28	564.24	564.20	564.15	564.08	564.01	563.94	563.87	563.80	563.73	563.65	563.58	563.51	563.44	563.36	563.28	563.20	563.12	563.04	562.97
Stringer 3	565.12	565.09	565.07	565.04	565.00	564.97	564.93	564.89	564.85	564.81	564.77	564.69	564.62	564.55	564.48	564.41	564.34	564.26	564.19	564.12	564.05	563.97	563.89	563.81	563.73	563.66	563.58
Girder D	565.69	565.67	565.66	565.63	565.61	565.58	565.54	565.50	565.46	565.42	565.38	565.30	565.23	565.16	565.09	565.02	564.95	564.87	564.80	564.73	564.66	564.58	564.50	564.42	564.34	564.26	564.19
Stringer 4	566.25	566.25	566.25	566.23	566.21	566.18	566.15	566.11	566.07	566.03	565.99	565.91	565.84	565.77	565.70	565.63	565.56	565.49	565.41	565.34	565.27	565.19	565.11	565.03	564.95	564.88	564.80
Girder E	565.82	566.83	566.84	566.83	566.82	566.79	566.76	566.72	566.68	566.64	566.60	566.53	566.45	566.38	566.31	566.24	566.17	566.10	566.02	565.95	565.88	565.80	565.72	565.64	565.57	565.49	565.41
LOCATION	.70	.80	.90	F.S.5	.25	.50	.75	F.S.6	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S.7	.10	.20	.30	.40	.50	.60	.70	.80	.90
Girder A	560.45	560.37	560.29	560.21	560.12	560.04	559.96	559.87	559.80	559.73	559.66	559.62	559.58	559.56	559.55	559.53	559.51	559.50	559.48	559.46	559.44	559.43	559.41	559.39	559.37	559.36	559.34
Stringer 1	561.06	560.98	560.90	560.82	560.74	560.65	560.57	560.48	560.41	560.34	560.27	560.22	560.17	560.14	560.11	560.07	560.04	560.01	559.98	559.94	559.91	559.87	559.84	559.80	559.77	559.74	559.70
Girder B	561.67	561.59	561.51	561.43	561.35	561.26	561.18	561.09	561.02	560.95	560.88	560.82	560.76	560.71	560.66	560.62	560.57	560.52	560.47	560.42	560.37	560.32	560.27	560.22	560.17	560.12	560.07
Stringer 2	562.28	562.20	562.12	562.04	561.96	561.87	561.79	561.70	561.63	561.56	561.49	561.42	561.35	561.29	561.22	561.16	561.10	561.03	560.97	560.90	560.83	560.77	560.70	560.63	560.56	560.50	560.43
Girder C	562.89	562.81	562.73	562.65	562.57	562.48	562.40	562.31	562.24	562.17	562.09	562.01	561.93	561.85	561.77	561.69	561.61	561.52	561.44	561.35	561.26	561.17	561.09	561.00	560.91	560.82	560.73
Stringer 3	563.50	563.42	563.34	563.26	563.18	563.09	563.01	562.92	562.85	562.78	562.70	562.61	562.51	562.40	562.29	562.18	562.07	561.96	561.85	561.73	561.62	561.50	561.38	561.27	561.15	561.03	560.91
Girder D	564.11	564.03	563.95	563.87	563.79	563.70	563.62	563.53	563.46	563.39	563.30	563.20	563.08	562.95	562.81	562.68	562.54	562.40	562.26	562.12	561.97	561.83	561.68	561.53	561.39	561.24	561.10
Stringer 4	564.72	564.64	564.56	564.48	564.40	564.31	564.23	564.15	564.07	564.00	563.90	563.79	563.65	563.50	563.33	563.17	563.01	562.84	562.67	562.50	562.33	562.15	561.98	561.80	561.63	561.45	561.28
Girder E	565.33	565.25	565.17	565.09	565.01	564.92	564.84	564.76	564.69	564.61	564.51	564.38	564.23	564.04	563.85	563.66	563.47	563.22	563.09	562.89	562.69	562.48	562.28	562.07	561.87	561.66	561.46

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MADE JEL DATE 7-82 CHECKED JMH DATE 7-82

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

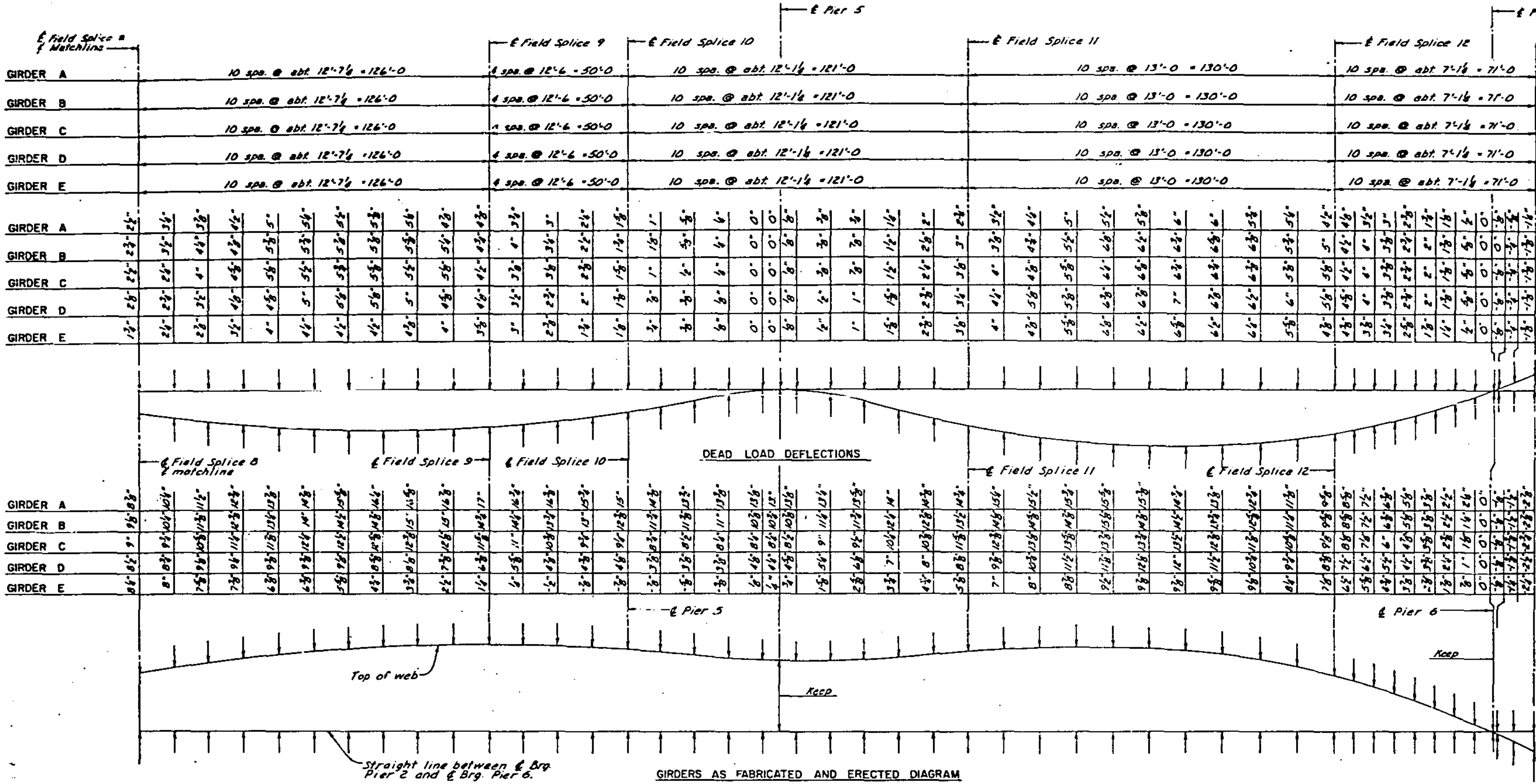
STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

DEAD LOAD DEFLECTIONS-UNIT 2

LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

STATE
IOWA
ILLINOIS



DEAD LOAD DEFLECTIONS

GIRDERS AS FABRICATED AND ERECTED DIAGRAM

NOTE: 35% of the "Dead Load Deflections" is due to structural steel and 65% is due to concrete.

TOP OF CONCRETE PAVEMENT ELEVATIONS UNIT 2

LOCATION	F.S. 8	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S. 9	.25	.50	.75	F.S. 10	.10	.20	.30	.40	.50	.60	.70	.80
Girder A	559.32	559.31	559.29	559.27	559.25	559.24	559.22	559.20	559.19	559.17	559.15	559.12	559.07	559.01	558.93	558.86	558.79	558.71	558.64	558.57	558.49	558.42	558.33
Stringer 1	559.67	559.64	559.60	559.57	559.54	559.50	559.47	559.44	559.41	559.37	559.34	559.29	559.24	559.17	559.10	559.02	558.95	558.88	558.81	558.73	558.66	558.58	558.50
Girder B	550.02	559.97	559.92	559.87	559.82	559.77	559.72	559.67	559.62	559.58	559.52	559.47	559.41	559.34	559.26	559.19	559.12	559.04	558.97	558.90	558.82	558.75	558.65
Stringer 2	560.36	560.30	560.23	560.17	560.10	560.04	559.97	559.91	559.84	559.78	559.71	559.64	559.57	559.50	559.43	559.35	559.28	559.21	559.14	559.06	558.99	558.91	558.83
Girder C	560.65	560.56	560.48	560.39	560.31	560.22	560.14	560.05	559.97	559.88	559.80	559.71	559.63	559.56	559.48	559.41	559.34	559.26	559.19	559.12	559.04	558.97	558.88
Stringer 3	560.80	560.68	560.57	560.46	560.35	560.23	560.12	560.01	559.89	559.78	559.67	559.57	559.48	559.39	559.32	559.24	559.17	559.10	559.03	558.95	558.88	558.80	558.72
Girder D	560.95	560.81	560.67	560.53	560.39	560.25	560.10	559.96	559.82	559.68	559.54	559.42	559.32	559.23	559.15	559.08	559.01	558.93	558.86	558.79	558.71	558.64	558.55
Stringer 4	561.10	560.93	560.76	560.60	560.43	560.26	560.09	559.92	559.75	559.58	559.42	559.28	559.16	559.06	558.99	558.91	558.84	558.77	558.70	558.62	558.55	558.47	558.39
Girder E	561.25	561.06	560.86	560.66	560.47	560.27	560.07	559.88	559.68	559.48	559.29	559.13	559.00	558.90	558.82	558.75	558.68	558.60	558.53	558.46	558.38	558.31	558.22
LOCATION	.90	F.S. 11	.10	.20	.30	.40	.50	.60	.70	.80	.90	FS12	.10	.20	.30	.40	.50	.60	.70	.80	.90	Exp. Jt.	
Girder A	558.25	558.15	558.05	557.94	557.82	557.70	557.57	557.44	557.30	557.16	557.01	556.85	556.76	556.67	556.58	556.49	556.40	556.30	556.20	556.10	556.00	555.90	
Stringer 1	558.41	558.32	558.21	558.10	557.99	557.87	557.74	557.60	557.47	557.32	557.17	557.01	556.93	556.84	556.75	556.65	556.56	556.46	556.37	556.27	556.17	556.06	
Girder B	559.58	558.48	558.38	558.27	558.15	558.03	557.90	557.77	557.63	557.49	557.34	557.18	557.09	557.00	556.91	556.82	556.73	556.63	556.53	556.43	556.33	556.23	
Stringer 2	558.74	558.65	558.54	558.43	558.32	558.20	558.07	557.94	557.80	557.65	557.50	557.35	557.26	557.17	557.08	556.99	556.89	556.79	556.70	556.60	556.50	556.39	
Girder C	558.80	558.71	558.60	558.49	558.37	558.25	558.12	557.99	557.85	557.71	557.56	557.40	557.31	557.22	557.13	557.04	556.95	556.85	556.75	556.65	556.55	556.45	
Stringer 3	558.63	558.54	558.43	558.32	558.21	558.09	557.96	557.83	557.69	557.54	557.39	557.24	557.15	557.06	556.97	556.88	556.78	556.69	556.59	556.49	556.39	556.28	
Girder D	558.47	558.38	558.27	558.16	558.04	557.92	557.79	557.66	557.52	557.38	557.23	557.07	556.98	556.89	556.80	556.71	556.62	556.52	556.42	556.32	556.22	556.12	
Stringer 4	558.30	558.21	558.10	557.99	557.88	557.76	557.63	557.50	557.36	557.21	557.06	557.91	556.82	556.73	556.64	556.55	556.45	556.36	556.26	556.16	556.06	555.95	
Girder E	558.14	558.05	557.94	557.83	557.71	557.59	557.46	557.33	557.19	557.05	556.93	556.74	556.65	556.56	556.47	556.38	556.29	556.19	556.09	555.99	555.89	555.79	

Note: Offsets are given at ¼ points between F.S. 5 and F.S. 6; at ¼ points between F.S. 9 and F.S. 10; at 1/10 points between Exp. Jt. 2 and F.S. 3; at 1/10 points between Exp. Jt. 3 and F.S. 12 and at 1/10 points between all other field splices.

Legend:
F.S. denotes field splice
Exp. Jt. denotes expansion joint

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner -- base of traffic light -- N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA-HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

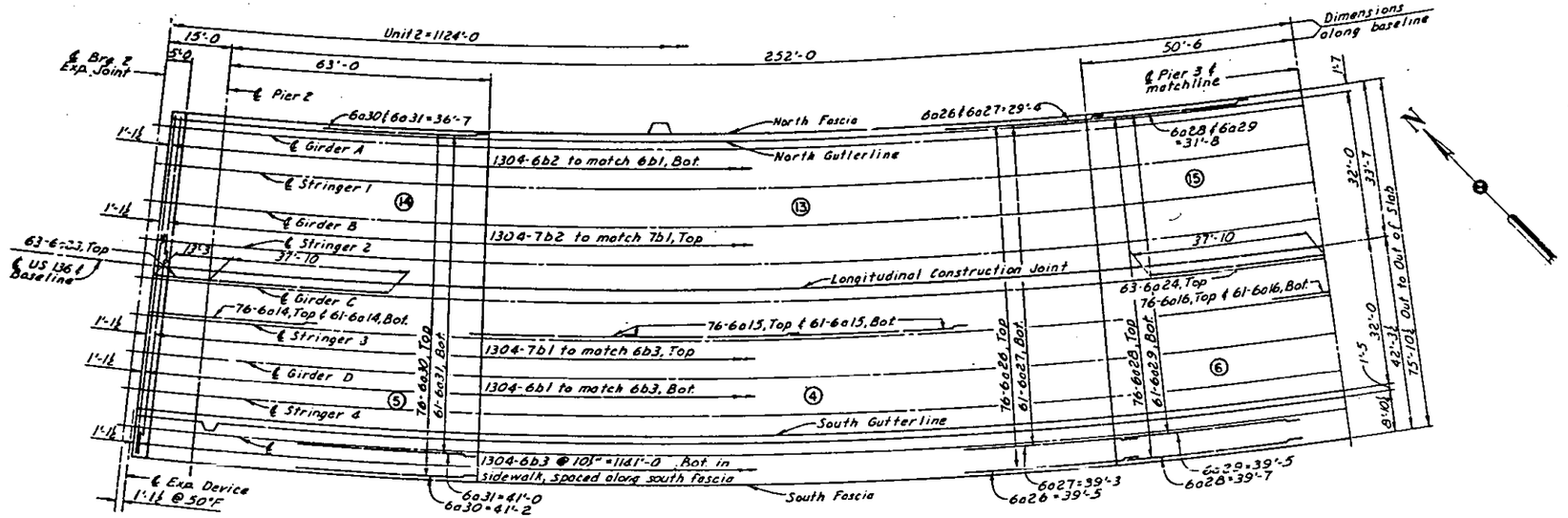
DEAD LOAD DEFLECTIONS-UNIT 2

LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

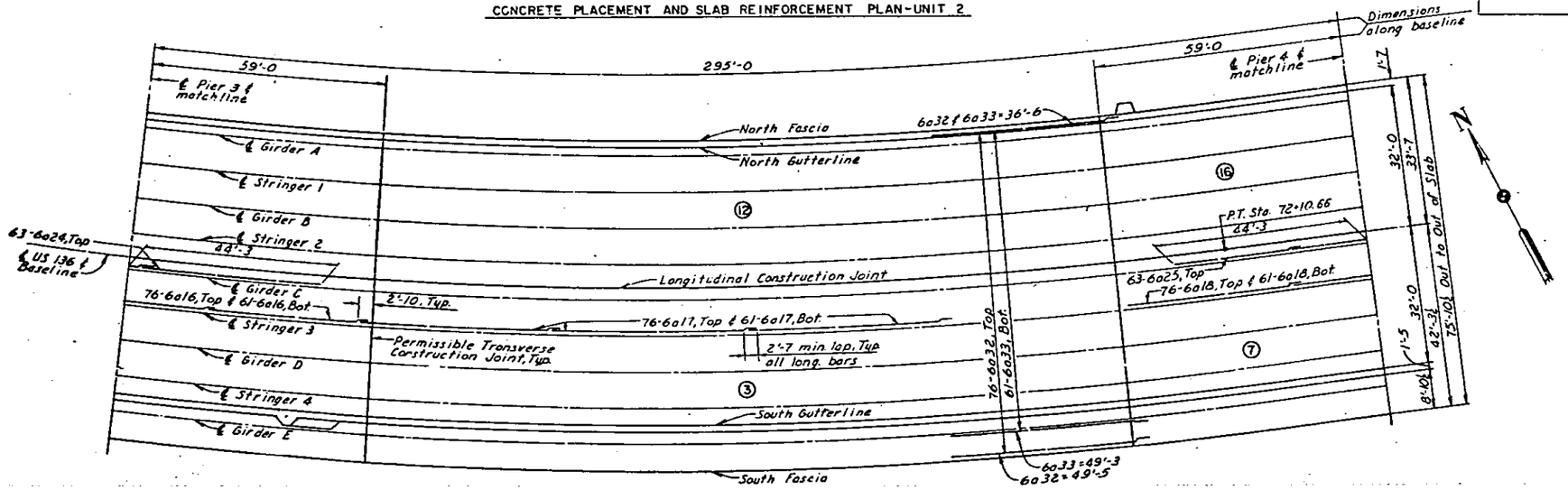
676 25-00

MADE JEL DATE 7-82 CHECKED JMH DATE 7-82

FEDERAL DIST NO	STATE	FED NO PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



CONCRETE PLACEMENT AND SLAB REINFORCEMENT PLAN-UNIT 2



CONCRETE PLACEMENT QUANTITIES	
UNIT 2	
POUR	CU. YDS.
1	160.1
2	204.2
3	208.2
4	164.3
5	93.2
6	127.5
7	136.0
8	125.9
9	92.4
10	132.7
11	169.5
12	167.1
13	130.4
14	74.7
15	102.7
16	112.0
17	104.1
18	76.8
Light Blisters	.8
Total	2382.6

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	NON-EPOXY COATED				
6a14	Longitudinal	——	61	41'-2	3772
6a15	Longitudinal	——	183	39'-5	10834
6a16	Longitudinal	——	122	39'-7	7253
6a17	Longitudinal	——	183	49'-5	13583
5a18	Longitudinal	——	183	41'-3	11338
6a19	Longitucinal	——	244	47'-7	17439
6a20	Longitudinal	——	183	38'-1	10468
6a21	Longitudinal	——	244	38'-0	13927
6a22	Longitudinal	——	122	39'-0	7147
6a27	Longitudinal	——	61	Varies	3142
6a29	Longitudinal	——	61	Varies	3256
6a31	Longitudinal	——	61	Varies	3554
6a33	Longitudinal	——	61	Varies	3928
6b1	Transverse	——	1304	44'-5	86995
6b2	Transverse	——	1304	29'-3	57269
6b3	Transverse	——	1304	6'-5	12568
			TOTAL		265493
	EPOXY COATED				
6a14	Longitudinal	——	76	41'-2	4599
6a15	Longitudinal	——	228	39'-5	13498
6a16	Longitudinal	——	152	39'-1	9037
6a17	Longitudinal	——	228	49'-5	16925
6a18	Longitudinal	——	229	41'-3	14126
6a19	Longitudinal	——	304	47'-7	21727
6a20	Longitudinal	——	228	38'-1	13042
6a21	Longitudinal	——	304	38'-0	17351
6a22	Longitudinal	——	152	39'-0	8904
6a23	Long. over Piers	——	126	51'-1	9658
6a24	Long. over Piers	——	252	42'-4	16023
6a25	Long. over Piers	——	189	31'-3	8871
6a26	Longitudinal	——	76	Varies	3924
6a28	Longitudinal	——	76	Varies	4067
6a30	Longitudinal	——	76	Varies	4438
6a32	Longitudinal	——	76	Varies	4904
7b1	Transverse	——	1304	45'-3	120608
7b2	Transverse	——	1304	33'-9	89956
5c1	Curb, Transverse	B	2224	5'-9	13338
5c2	Curb, Transverse	C	2224	5'-3	12178
5c3	Curb, Transverse	——	2242	2'-7	6041
5c4	Curb, Transverse	J	2242	3'-4	7794
5d3	Curb, Longitudinal	——	196	41'-0	8282
5d4	Curb, Longitudinal	——	210	39'-5	8633
5d5	Curb, Longitudinal	——	196	41'-6	8484
5e1	End Beam	——	114	7'-7	902
5e2	End Beam	——	49	7'-9	388
			TOTAL		447906

NOTES:

Roadway slab shall be placed in sections and in the sequence indicated by circled numbers at intervals not exceeding 24 hours.

Alternate procedures for placing concrete may be submitted for approval together with a statement of the proposed method and evidence that the contractor possesses the necessary equipment and facilities to accomplish the required results.

The transverse construction joints shall be placed parallel to the adjacent ℄ pier.

For detail of slab construction joint, see Sheet 74

For detail of longitudinal bar spacing, see Sheet 74

For "Light Pole Base Details", see Sheet 105 and 106
For "Drain Details", see Sheets 98 and 99
For location of drains see Sheet 25, 26 and 27
5'-0 each side of Joint 2 shall be poured after both Unit 1 and 2 are completed and expansion joint is in place.

CONCRETE PLACEMENT AND SLAB REINFORCEMENT PLAN-UNIT 2

CURVE DATA

P. I. Sta. 69+14.85
Δ = 33°31'48.3"
D = 5°30'00.0"
T = 313.83'
L = 609.64'
E = 45.24'
R = 1041.74'

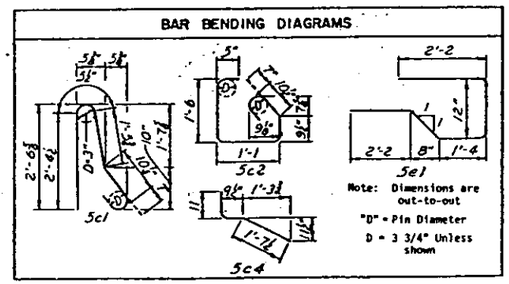
BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

BAR BENDING DIAGRAMS



MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

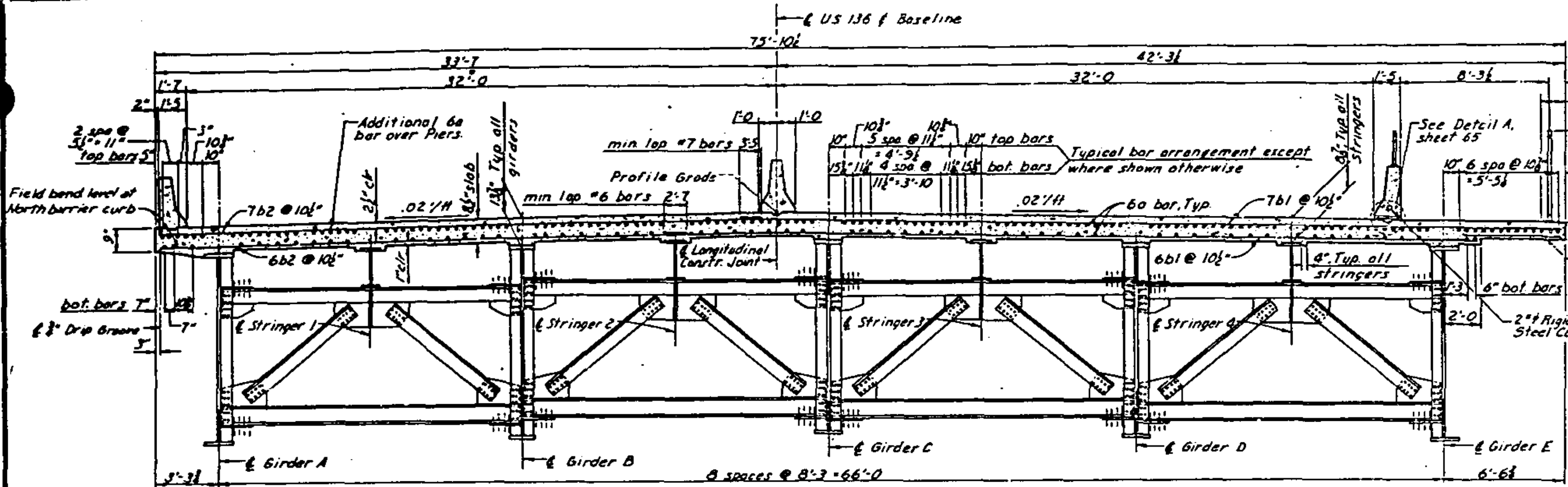
SLAB PLAN-UNIT 2

STA. 20+00.00
RIVER MILE 383.9
LEE COUNTY, IOWA

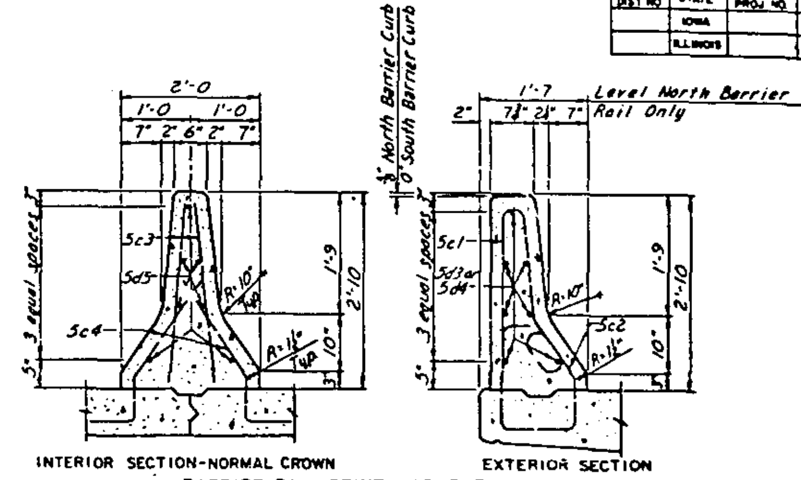
PROJECT NO. BRF-19-1(2)--00-00
HANCOCK COUNTY, ILLINOIS

DESIGNED UMH DATE 5-82 CHECKED DLM DATE 7-82

DESIGN NO. 382 LEE COUNTY FILE 38720 SHEET 78 OF 227

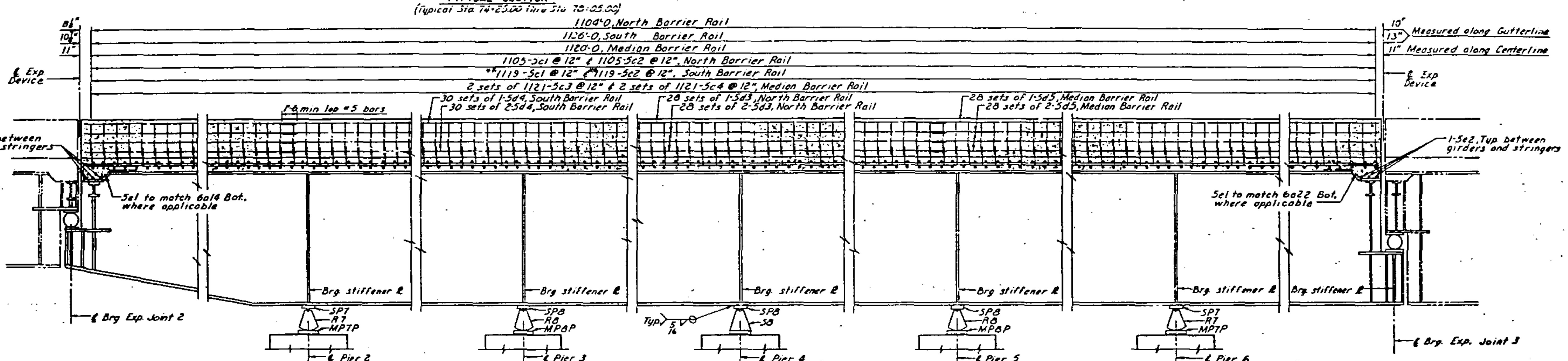


TYPICAL SECTION
(Typical Sta 74+25.00 thru Sta 78+05.00)



BARRIER RAIL REINFORCEMENT DETAILS

MEDIAN CURB CONCRETE QUANTITIES		
CONCRETE	1120.98 ft X .1055 Cu.Yd/ft	118.3 Cu.Yd.



PART LONGITUDINAL SECTION NEAR CURB-UNIT 2

**18-5c1 and 18-5c2 have been deleted at the light blisters. For details see Sheet 105.

TYPICAL ROCKER SETTINGS UNIT 2									
Temperature at Time of Setting	EXPANSION JOINT		PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	EXPANSION JOINT	
90° F	7¾"	+1¼"	+1⅜"	+⅝"	0"	+⅝"	+1⅜"	+1¼"	10¾"
50° F	9¼"	0"	0"	0"	0"	0"	0"	0"	13¼"
10° F	11¾"	-1¼"	-1⅜"	-⅝"	0"	-⅝"	-1⅜"	-1¼"	15¾"

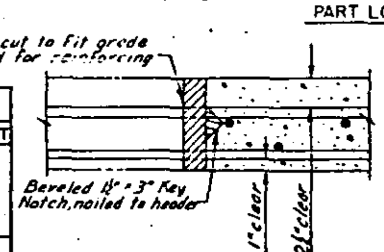
NOTES:

Rockers are to be set vertically at 50° F.

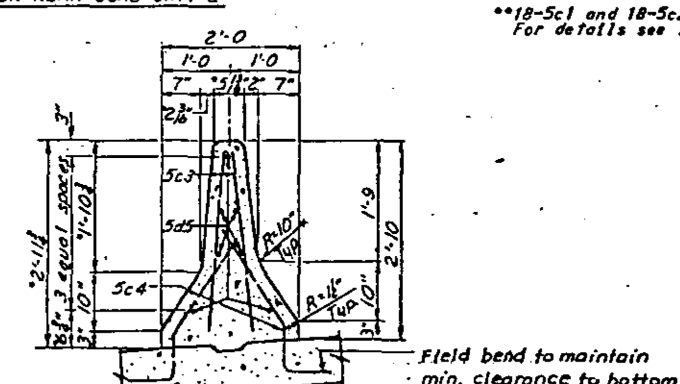
For temperatures above 50° F set masonry plate toward fixed shoe (+).

For temperatures below 50° F set masonry plate away from fixed shoe (-).

Settings for other temperatures are proportional to those shown for a 40° temperature change.



LONGITUDINAL SLAB CONSTRUCTION JOINT DETAIL
(Transverse slab construction joint similar except for bar detail)



SUPERELEVATED BARRIER RAIL REINFORCEMENT DETAILS-INTERIOR SECTION

*Note: In superelevation transition areas these dimensions will vary. The slopes of the faces shall not change.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA-HAMILTON, ILLINOIS

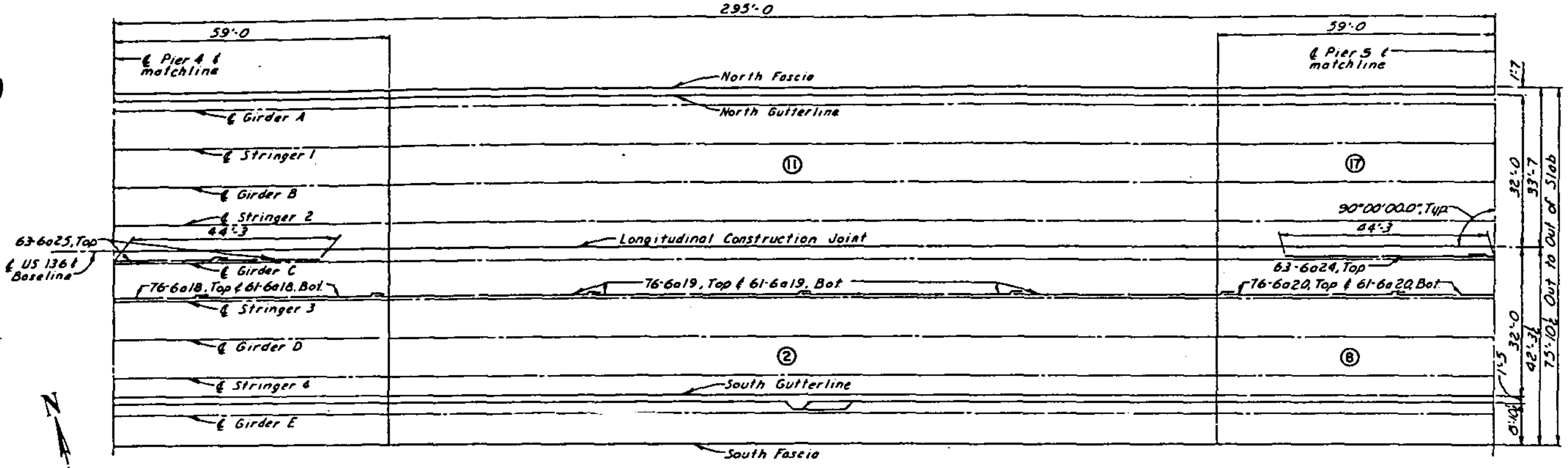
STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

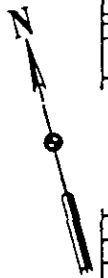
SLAB DETAILS-UNIT 2

LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

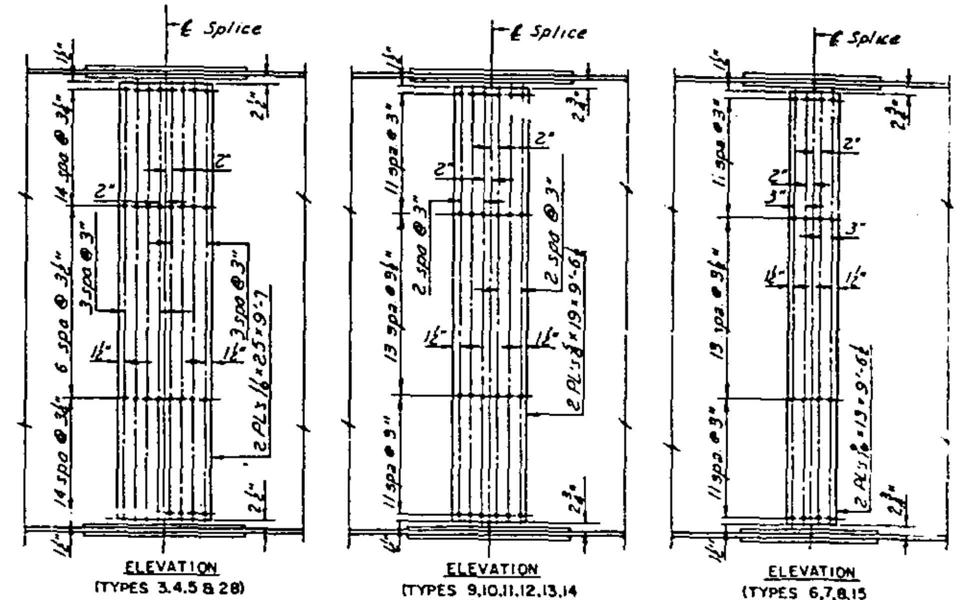
JMH DATE 5-82 CHECKED DLM DATE 7-82

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				





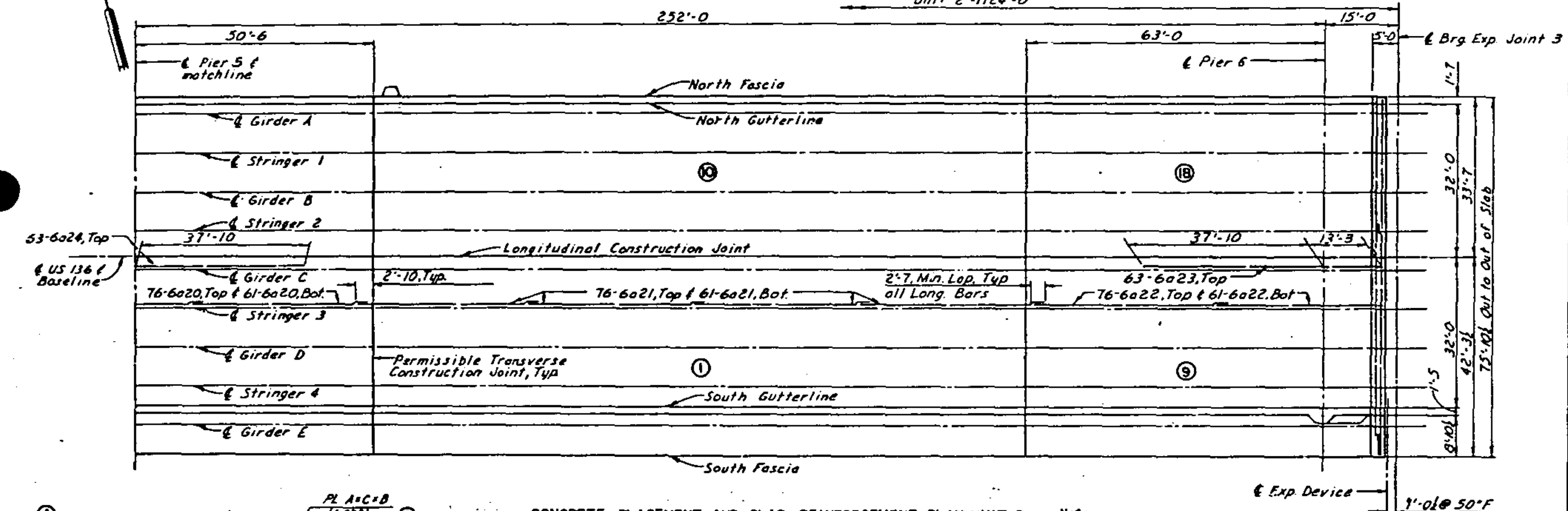
CONCRETE PLACEMENT AND SLAB REINFORCEMENT PLAN-UNIT 2



GIRDER WEB FIELD SPLICE DETAILS

Note:
Two fill plates 15 gage x 6"x9'-9 are required for web splices, Types 6, 7, 8, 15, 16, 17, 18, 19, 20 and 27.

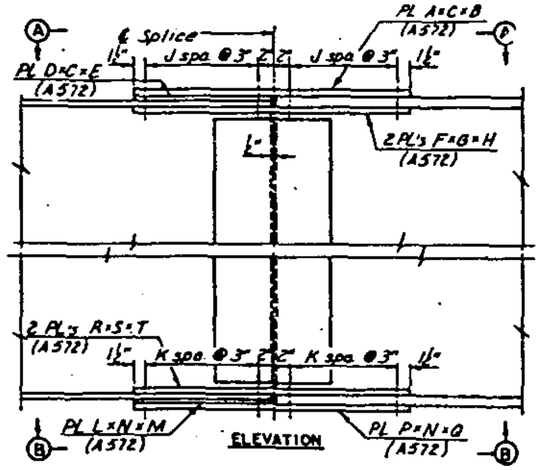
Two fill plates 15 gage x 9"x9'-9 are required for web splices, Types 9, 10, 11 24, 25 and 26.



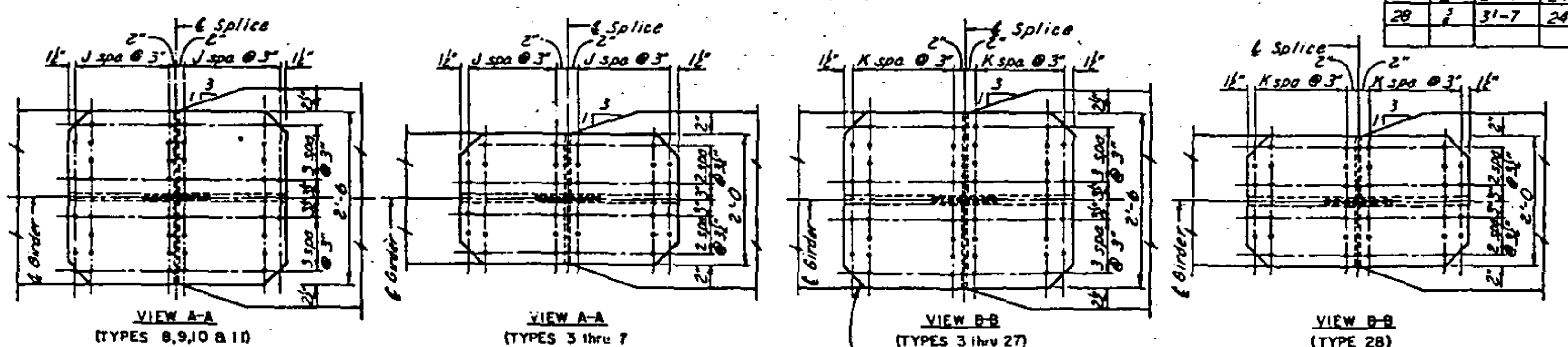
CONCRETE PLACEMENT AND SLAB REINFORCEMENT PLAN-UNIT 2

Note:
5'-0 each side of Joint 3 shall be poured after both Unit 2 and 3 are completed and expansion joint is in place.

TABLE OF FIELD SPLICE DIMENSIONS																		
Type	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
3	5/8	3'-7	24	1/2	1'-9 1/2	11/16	11	3'-7	6	6	1/2	1'-9 1/2	30	3/4	3'-7	13/16	14	3'-7
4	5/8	3'-7	24	1/2	1'-9 1/2	11/16	11	3'-7	6	7	3/4	2'-0 1/2	30	13/16	4'-1	7/8	14	4'-1
5	3/4	4'-1	24	1/2	2'-0 1/2	11/16	11	4'-1	7	8	3/4	2'-3 1/2	30	7/8	4'-7	13/16	14	4'-7
6	13/16	2'-1	24	3/4	1'-0 1/2	7/8	11	2'-1	3	5	-	-	30	1 1/4	3'-1	1 1/4	14	3'-1
7	13/16	2'-1	24	1/2	1'-0 1/2	7/8	11	2'-1	3	5	-	-	30	1 1/4	3'-1	1 1/4	14	3'-1
8	3/4	2'-1	30	3/4	1'-0 1/2	13/16	14	2'-1	3	6	-	-	30	1 1/4	3'-7	1 3/8	14	3'-7
9	11/16	3'-1	30	7/8	1'-6 1/2	3/4	14	3'-1	5	6	1/2	1'-9 1/2	30	7/8	3'-7	13/16	14	3'-7
10	11/16	3'-1	30	1 1/8	1'-6 1/2	3/4	14	3'-1	5	7	3/4	2'-0 1/2	30	1	4'-1	1 1/4	14	4'-1
11	13/16	3'-7	30	1	1'-9 1/2	1	14	3'-7	6	7	3/4	2'-0 1/2	30	1 1/4	4'-1	1 1/4	14	4'-1
12	5/8	2'-7	24	1/2	1'-3 1/2	11/16	11	2'-7	4	6	-	-	30	7/8	3'-7	13/16	14	3'-7
13	3/4	3'-1	24	1/2	1'-6 1/2	3/4	11	3'-1	5	6	-	-	30	1	3'-7	1 1/4	14	3'-7
14	7/8	3'-7	24	3/4	1'-9 1/2	13/16	11	3'-7	6	7	-	-	30	1 1/4	4'-1	1 1/4	14	4'-1
15	9/16	2'-7	24	3/4	1'-3 1/2	3/4	11	2'-7	4	4	-	-	30	7/8	2'-7	13/16	14	2'-7
16	5/8	2'-7	24	1/2	1'-3 1/2	11/16	11	2'-7	4	4	-	-	30	1	2'-7	1 1/4	14	2'-7
17	3/4	2'-7	24	3/4	1'-3 1/2	13/16	11	2'-7	4	5	-	-	30	1 1/4	3'-1	1 1/4	14	3'-1
18	3/4	2'-7	24	1	1'-3 1/2	7/8	11	2'-7	4	5	1/2	1'-6 1/2	30	7/8	3'-1	13/16	14	3'-1
19	3/4	2'-7	24	1	1'-3 1/2	7/8	11	2'-7	4	5	3/4	1'-6 1/2	30	7/8	3'-1	13/16	14	3'-1
20	3/4	2'-7	24	3/4	1'-3 1/2	7/8	11	2'-7	4	5	3/4	1'-6 1/2	30	7/8	3'-1	13/16	14	3'-1
21	5/8	2'-7	24	1/2	1'-3 1/2	11/16	11	2'-7	4	6	-	-	30	3/4	3'-7	7/8	14	3'-7
22	5/8	2'-7	24	1/2	1'-3 1/2	11/16	11	2'-7	4	6	-	-	30	3/4	3'-7	7/8	14	3'-7
23	5/8	2'-7	24	3/4	1'-3 1/2	11/16	11	2'-7	4	6	-	-	30	3/4	3'-7	7/8	14	3'-7
24	5/8	3'-1	24	3/4	1'-6 1/2	11/16	11	3'-1	5	5	1/2	1'-6 1/2	30	7/8	3'-1	3/4	14	3'-1
25	5/8	3'-1	24	3/4	1'-6 1/2	11/16	11	3'-1	5	5	1/2	1'-6 1/2	30	3/4	3'-1	7/8	14	3'-1
26	3/4	3'-7	24	1/2	1'-9 1/2	13/16	11	3'-7	6	5	1/2	1'-6 1/2	30	3/4	3'-1	7/8	14	3'-1
27	9/16	2'-7	24	7/8	1'-3 1/2	3/4	11	2'-7	4	5	1/2	1'-6 1/2	30	1	3'-1	1 1/4	14	3'-1
28	5/8	3'-7	24	-	-	11/16	11	3'-7	6	8	1/2	2'-3 1/2	24	13/16	4'-7	1	11	4'-7



ELEVATION



GIRDER FLANGE FIELD SPLICE DETAILS

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

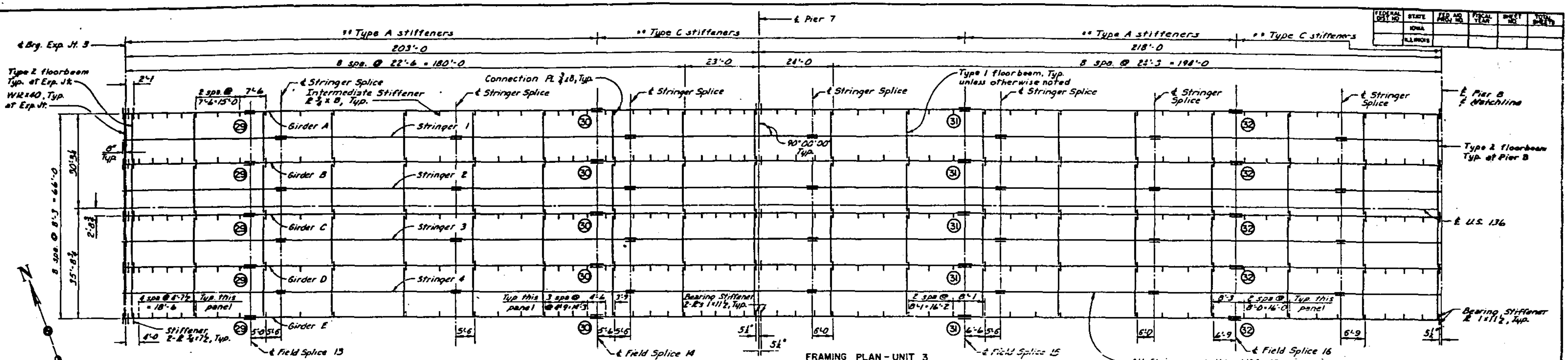
STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB PLAN-UNIT 2

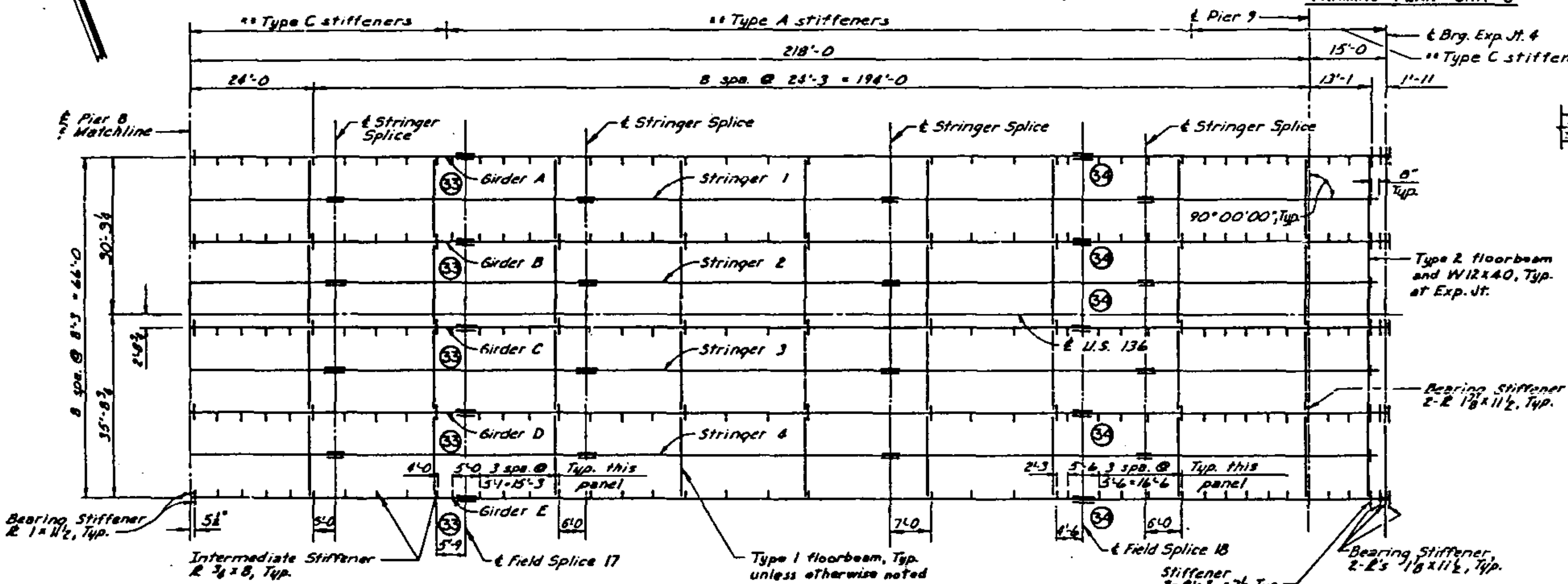
LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

7-25-00

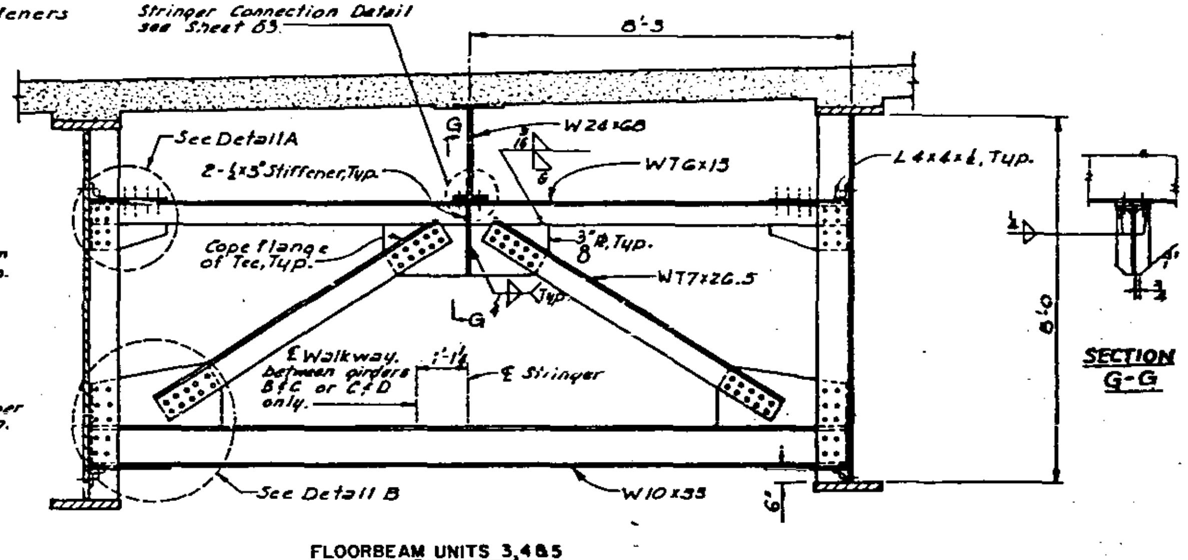
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB



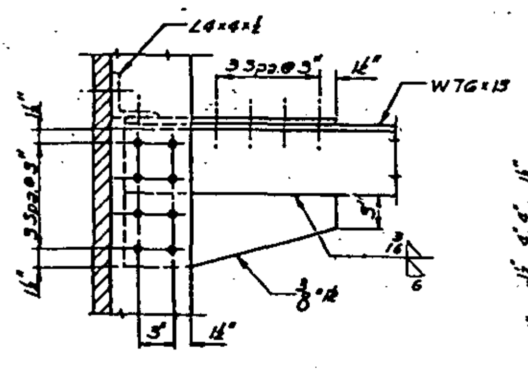
FRAMING PLAN - UNIT 3



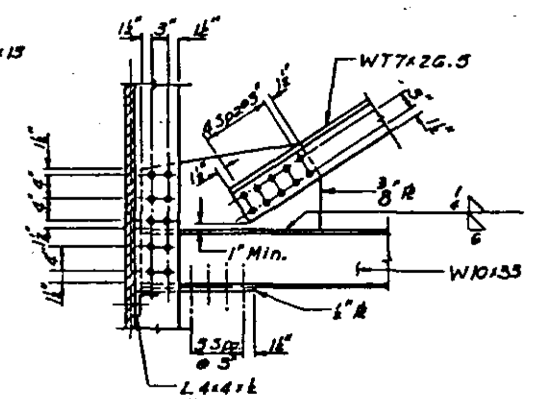
FRAMING PLAN - UNIT 3



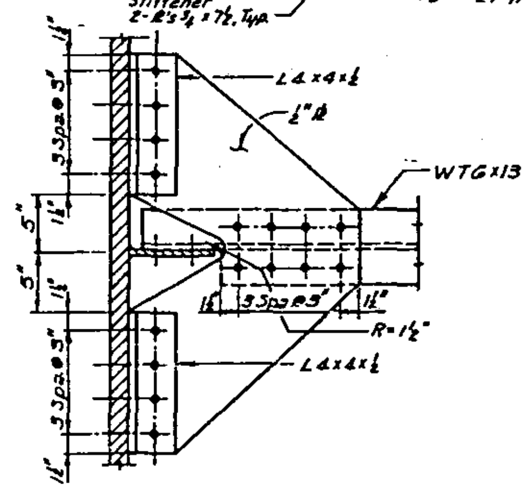
FLOORBEAM UNITS 3,4&5
(Type 1 & 2)



DETAIL A



DETAIL B



TOP & BOTTOM GUSSET PLATE CONNECTION - TYPE 1
(For Type 2 top and bottom gusset plate connection, See Sheet 68.)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu. Yds.	1343.2
Reinforcing Steel - Non Epoxy Coated	Lbs.	153,300
Reinforcing Steel - Epoxy Coated*	Lbs.	254,516
Structural Steel - A36	Lbs.	1,489,366
Structural Steel - A572	Lbs.	466,571
Structural Steel - A588	Lbs.	524,226
N. and S. Barrier Rail	Lin. Ft.	1307.0
Median Barrier Rail	Lin. Ft.	654.0

*Includes 344 lbs. of reinforcing steel in light blisters.

Notes:

Intermediate stiffeners shall be spaced equally between intermediate floorbeams unless otherwise shown.

The circle near the girder field splices with a number within represents the type of splice.

For girder field splice details see Sheet 83

For stringer splice details, see Sheet 66

All re-entrant cuts shall have a ¾" min. radius.

For intermediate and bearing stiffener details see Sheet 89.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

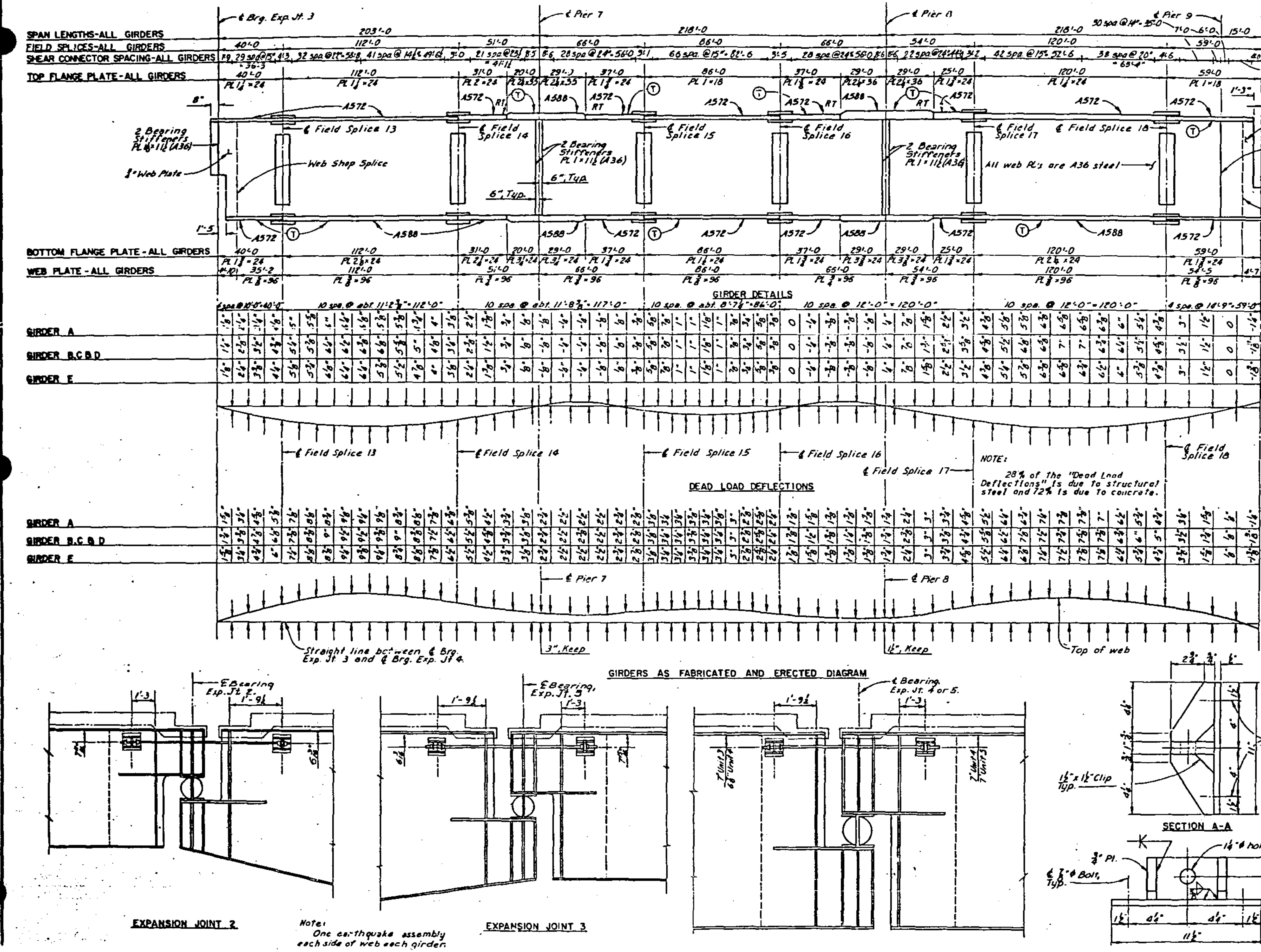
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

FRAMING PLAN-UNIT 3

LEE COUNTY, IOWA

HANCOCK COUNTY, ILLINOIS

HNTB



NOTES:

For Shear Connector Detail see Sheet 84

The weight of shear connectors are included in the Structural Steel Quantities.

There shall be no shear connector groups located at the ℄ of piers nor at ℄ Brg. Exp. Jt. or field splices.

For "Field Splice Details" see Sheet 83

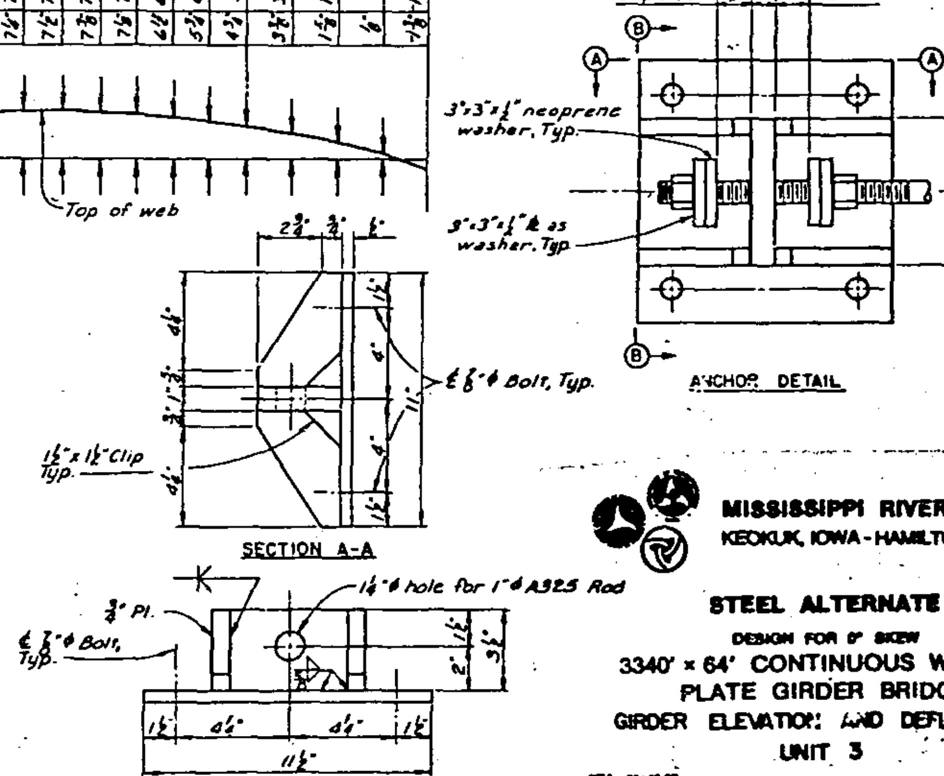
For girder end details see Sheet 88

(T) denotes tension flange plate.

NOTE:

Offsets are given at 1⁄4 points between ℄ Brg. Exp. Jt. and field splice and at 1/10 points between field splices.

Exp Jt 2	5"	1"	4 1⁄2"	@ 50°F
Exp Jt 3	6 1⁄2"	1"	5 1⁄2"	@ 50°F
Exp Jt 4	4 1⁄2"	1"	4"	@ 50°F
Exp Jt 5	4 1⁄2"	1"	4"	@ 50°F



MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

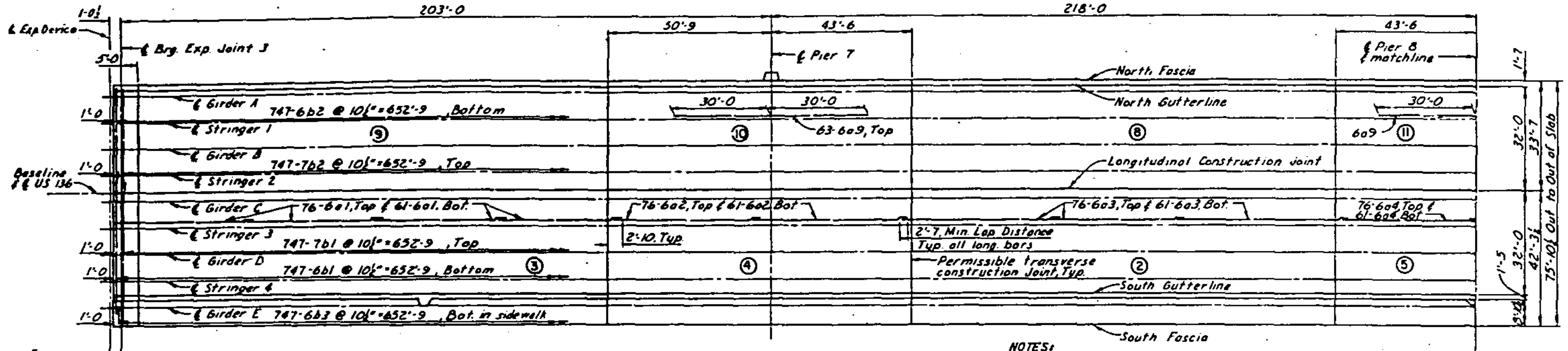
STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
GIRDER ELEVATION AND DEFLECTIONS
UNIT 3

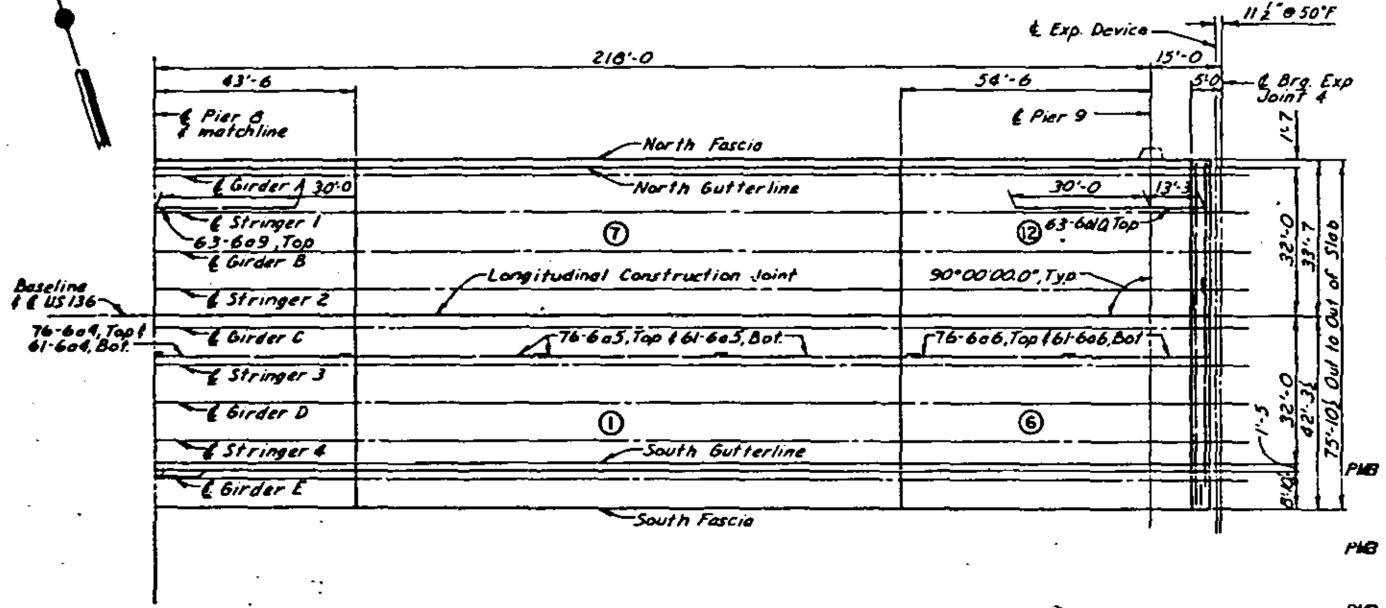
LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

HNTB — JMH 7-82 — DLM 7-82

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



CONCRETE PLACEMENT AND SLAB REINFORCING PLAN-UNIT 3



CONCRETE PLACEMENT AND SLAB REINFORCING PLAN - UNIT 3

NOTES:

Roadway slab shall be placed in sections and in the sequence indicated by circled numbers at intervals not exceeding 24 hours.

Alternate procedures for placing concrete may be submitted for approval together with a statement of the proposed method and evidence that the contractor possesses the necessary equipment and facilities to accomplish the required results.

The transverse construction joints shall be placed parallel to the adjacent ℄ pier.

For detail of slab construction joint, see Sheet 78

For detail of longitudinal bar spacing, see Sheet 78

For "Light Pole Base Details", see Sheet 105 and 106

For "Drain Details", see Sheets 98 and 99

For location of drains see Sheet 28 and 29

5'-0 each side of Joint 3 shall be poured after both Unit 2 and 3 are completed and expansion joint is in place.

5'-0 each side of Joint 4 shall be poured after both Unit 3 and 4 are completed and expansion joint is in place.

CONCRETE PLACEMENT QUANTITIES	
UNIT 3	
POUR	CU. YDS.
1	134.5
2	145.9
3	174.4
4	104.9
5	97.1
6	77.5
7	111.3
8	120.9
9	144.5
10	87.0
11	80.5
12	64.4
Light Blister	.3
Total	1343.2

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

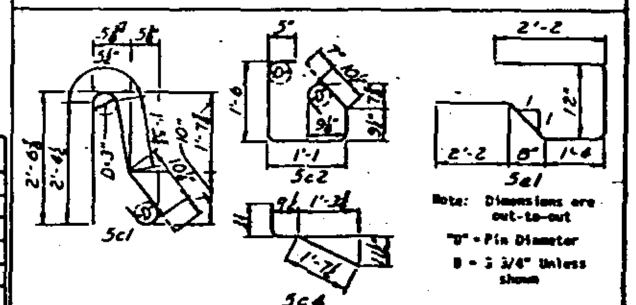
PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
NON-EPOXY COATED					
6a1	Longitudinal	—	244	40'-11	14995
6a2	Longitudinal	—	122	48'-2	8826
6a3	Longitudinal	—	183	47'-3	12987
6a4	Longitudinal	—	122	44'-7	8170
6a5	Longitudinal	—	183	43'-7	11980
6a6	Longitudinal	—	122	35'-5	6490
6b1	Transverse	—	747	44'-5	49835
6b2	Transverse	—	747	29'-3	32818
6b3	Transverse	—	747	6'-5	7199
			Total		153300
EPOXY-COATED					
6a1	Longitudinal	—	304	40'-11	18683
6a2	Longitudinal	—	152	48'-2	10997
6a3	Longitudinal	—	228	47'-3	16181
6a4	Longitudinal	—	152	44'-7	10179
6a5	Longitudinal	—	228	43'-7	14925
6a6	Longitudinal	—	152	35'-5	8086
6a9	Long. over Pier	—	126	60'-0	11355
6a10	Long. over Pier	—	63	43'-3	4093
7b1	Transverse	—	747	45'-3	69091
7b2	Transverse	—	747	33'-9	51532
5c1	Curb, Transverse		1296	5'-9	7772
5c2	Curb, Transverse		1296	5'-3	7097
5c3	Curb, Transverse	—	1308	2'-7	3524
5c4	Curb, Transverse		1308	3'-4	4547
5d2	Curb, Longitudinal	—	336	42'-4	14836
5e1	End Beam		112	7'-7	886
5e2	End Beam	—	48	7'-9	388
			Total		254172

BAR BENDING DIAGRAMS



TOP OF CONCRETE PAVEMENT ELEVATIONS UNIT 3

LOCATION	EXP. JT.	.25	.50	.75	F.S. 13	.10	.20	.30	.40.	.50	.60	.70	.80	.90	F.S. 14	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S. 15	.10	.20	.30	.40
GIRDER A	555.90	555.75	555.60	555.44	555.29	555.11	554.92	554.73	554.54	554.34	554.14	553.93	553.72	553.51	553.29	553.06	552.83	552.60	552.38	552.15	551.92	551.69	551.46	551.24	551.01	550.84	550.67	550.50	550.34
STRINGER 1	556.06	555.92	555.76	555.61	555.45	555.27	555.09	554.90	554.70	554.51	554.30	554.10	553.89	553.67	553.45	553.23	553.00	552.77	552.54	552.31	552.08	551.86	551.63	551.40	551.17	551.00	550.84	550.67	550.50
GIRDER B	556.23	556.08	555.93	555.77	555.62	555.44	555.25	555.06	554.87	554.67	554.47	554.26	554.05	553.84	553.62	553.39	553.16	552.93	552.71	552.48	552.25	552.02	551.79	551.57	551.34	551.17	551.00	550.83	550.67
STRINGER 2	556.39	556.25	556.09	555.94	555.78	555.60	555.42	555.23	555.03	554.84	554.63	554.43	554.22	554.00	553.78	553.56	553.33	553.10	552.87	552.64	552.41	552.19	551.96	551.73	551.50	551.33	551.17	551.00	550.83
GIRDER C	556.45	556.30	556.15	556.00	555.84	555.66	555.47	555.28	555.09	554.89	554.69	554.48	554.27	554.06	553.84	553.61	553.38	553.15	552.93	552.70	552.47	552.24	552.01	551.79	551.56	551.39	551.22	551.05	550.89
STRINGER 3	556.28	556.14	555.98	555.83	555.67	555.49	555.31	555.12	554.92	554.73	554.52	554.32	554.11	553.89	553.67	553.45	553.22	552.99	552.76	552.53	552.31	552.08	551.85	551.62	551.39	551.23	551.06	550.89	550.72
GIRDER D	556.12	555.97	555.82	555.67	555.51	555.33	555.14	554.95	554.76	554.56	554.36	554.15	553.94	553.73	553.51	553.28	553.05	552.82	552.60	552.37	552.14	551.91	551.68	551.46	551.23	551.06	550.89	550.72	550.56
STRINGER 4	555.95	555.81	555.65	555.50	555.34	555.16	554.98	554.79	554.59	554.40	554.19	553.99	553.78	553.56	553.34	553.12	552.89	552.66	552.43	552.20	551.98	551.75	551.52	551.29	551.06	550.90	550.73	550.56	550.39
GIRDER E	555.79	555.64	555.49	555.34	555.18	555.00	554.81	554.62	554.43	554.23	554.03	553.82	553.61	553.40	553.18	552.95	552.72	552.49	552.27	552.04	551.81	551.58	551.35	551.13	550.90	550.73	550.56	550.39	550.23

TOP OF CONCRETE PAVEMENT ELEVATIONS UNIT 3

LOCATION	.50	.60	.70	.80	.90	F.S. 16	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S. 17	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S. 18	.25	.50	.75	Exp. Jt.
GIRDER A	550.17	550.00	549.83	549.67	549.50	549.33	549.10	548.86	548.63	548.39	548.16	547.93	547.69	547.46	547.22	546.99	546.76	546.52	546.29	546.05	545.82	545.59	545.35	545.12	544.88	544.65	544.36	544.07	543.79	543.50
STRINGER 1	550.33	550.17	550.00	549.83	549.66	549.50	549.26	549.03	548.79	548.56	548.33	548.09	547.86	547.62	547.39	547.16	546.92	546.69	546.45	546.22	545.99	545.75	545.52	545.28	545.05	544.82	544.53	544.24	543.95	543.66
GIRDER B	550.50	550.33	550.16	550.00	549.83	549.66	549.43	549.19	548.96	548.72	548.49	548.26	548.02	547.79	547.55	547.32	547.09	546.85	546.62	546.38	546.15	545.92	545.68	545.45	545.21	544.98	544.69	544.40	544.12	543.83
STRINGER 2	550.66	550.50	550.33	550.16	549.99	549.83	549.59	549.36	549.12	548.89	548.66	548.42	548.19	547.95	547.72	547.49	547.25	547.02	546.78	546.55	546.32	546.08	545.85	545.61	545.38	545.15	544.86	544.57	544.28	543.99
GIRDER C	550.72	550.55	550.38	550.22	550.05	549.88	549.65	549.41	549.18	548.94	548.71	548.48	548.24	548.01	547.77	547.54	547.31	547.07	546.84	546.60	546.37	546.14	545.90	545.67	545.43	545.20	544.91	544.63	544.34	544.05
STRINGER 3	550.55	550.39	550.22	550.05	549.88	549.72	549.48	549.25	549.01	548.78	548.55	548.31	548.08	547.84	547.61	547.38	547.14	546.91	546.67	546.44	546.21	545.97	545.74	545.50	545.27	545.04	544.75	544.46	544.17	543.89
GIRDER D	550.39	550.22	550.05	549.89	549.72	549.55	549.32	549.08	548.85	548.61	548.38	548.15	547.91	547.68	547.44	547.21	546.98	546.74	546.51	546.27	546.04	545.81	545.57	545.34	545.10	544.87	544.58	544.30	544.01	543.72
STRINGER 4	550.22	550.06	549.89	549.72	549.55	549.39	549.15	548.92	548.68	548.45	548.22	547.98	547.75	547.51	547.28	547.05	546.81	546.58	546.34	546.11	545.88	545.64	545.41	545.17	544.94	544.71	544.42	544.13	543.84	543.56
GIRDER E	550.06	549.89	549.72	549.56	549.39	549.22	548.99	548.75	548.52	548.28	548.05	547.82	[illegible]	547.35	547.11	546.88	546.65	546.41	546.18	545.94	545.71	545.46	545.24	545.01	544.77	544.54	544.25	543.97	543.68	543.39

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

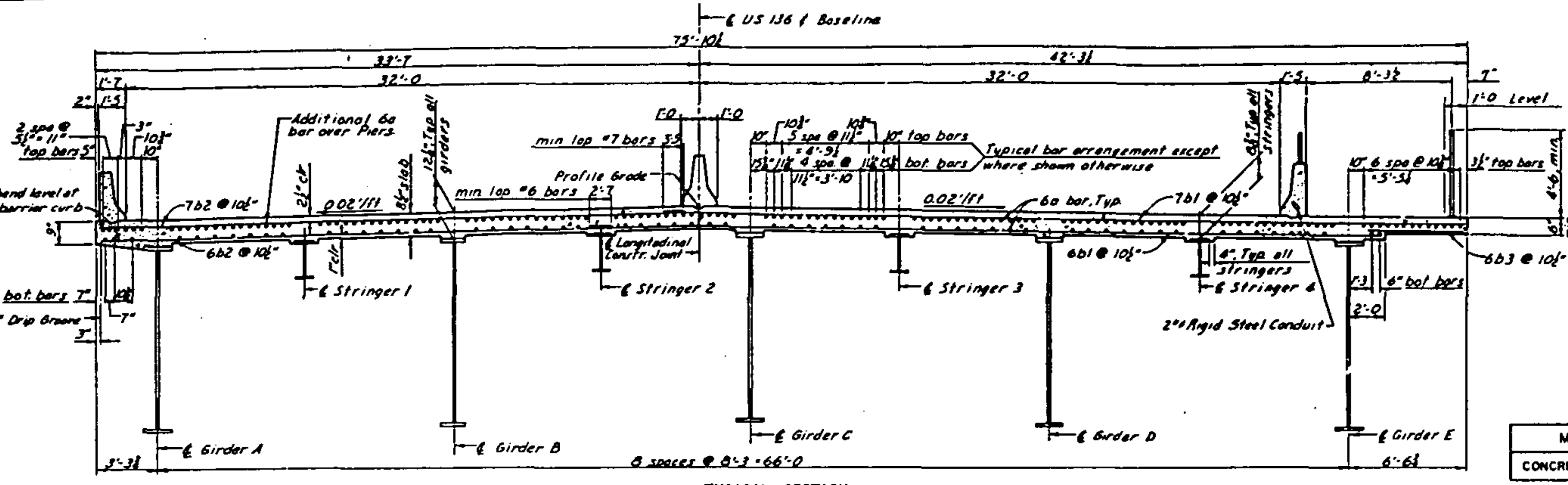
STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB PLAN - UNIT 3

LEE COUNTY, IOWA   HANCOCK COUNTY, ILLINOIS

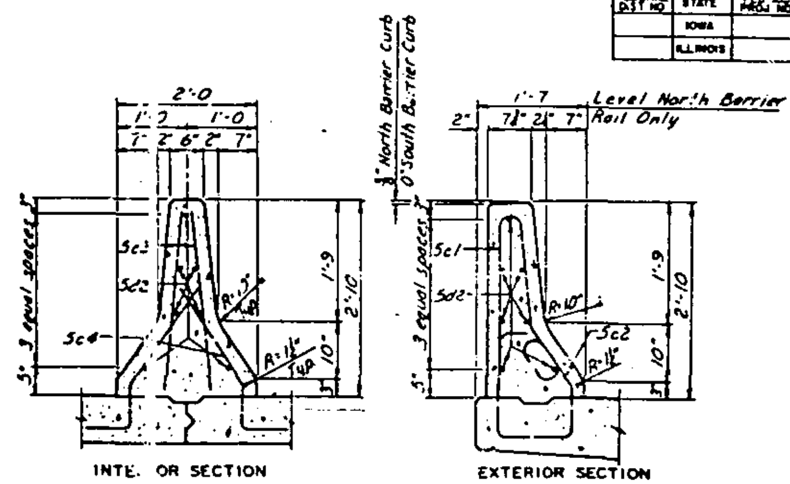
DRAWN JMH DATE 5-82   CHECKED DLM DATE 7-82



TYPICAL SECTION

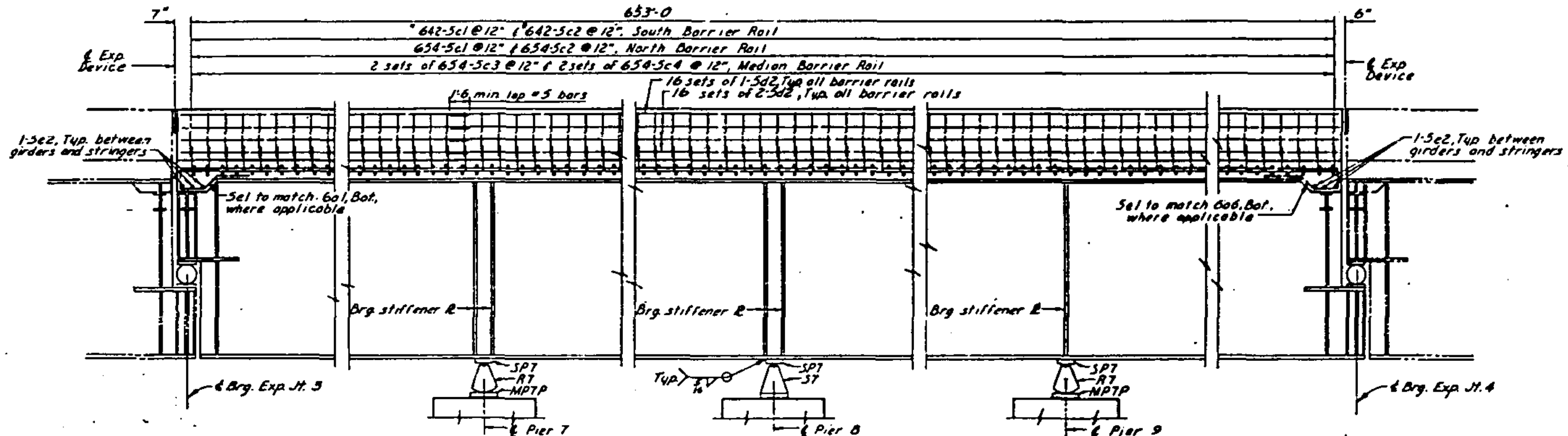
Note:

Diaphragms are not shown in typical section. For details see Sheet 75



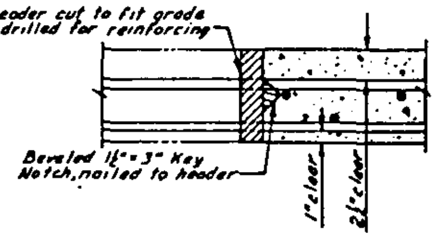
BARRIER RAIL REINFORCEMENT DETAILS

MEDIAN CURB CONCRETE QUANTITIES		
CONCRETE	653.5 ft X .1055 Cu.Yd/ft	68.9 Cu.Yd.



PART LONGITUDINAL SECTION NEAR CURB-UNIT 3

*12-5c1 and 12-5c2 have been deleted at the light blisters. For details see Sheet 105



LONGITUDINAL SLAB CONSTRUCTION JOINT DETAIL

(Transverse slab construction joint similar except for bar detail)

TYPICAL ROCKER SETTINGS UNIT 3							
Temperature at Time of Setting	EXPANSION JOINT		PIER 7	PIER 8	PIER 9	EXPANSION JOINT	
90° F	10[illegible]"	+1[illegible]"	+[illegible]"	0"	+[illegible]"	+1"	6[illegible]"
50° F	13[illegible]"	0"	0"	0"	0"	0"	9"
10° F	16[illegible]"	-1[illegible]"	-[illegible]"	0"	-[illegible]"	-1"	11[illegible]"

NOTES:

Rockers are to be set vertically at 50° F.

For temperatures above 50° F set masonry plate toward fixed shoe (+).

For temperatures below 50° F set masonry plate away from fixed shoe (-).

Settings for other temperatures are proportional to those shown for a 40° temperature change.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 6° SKEW

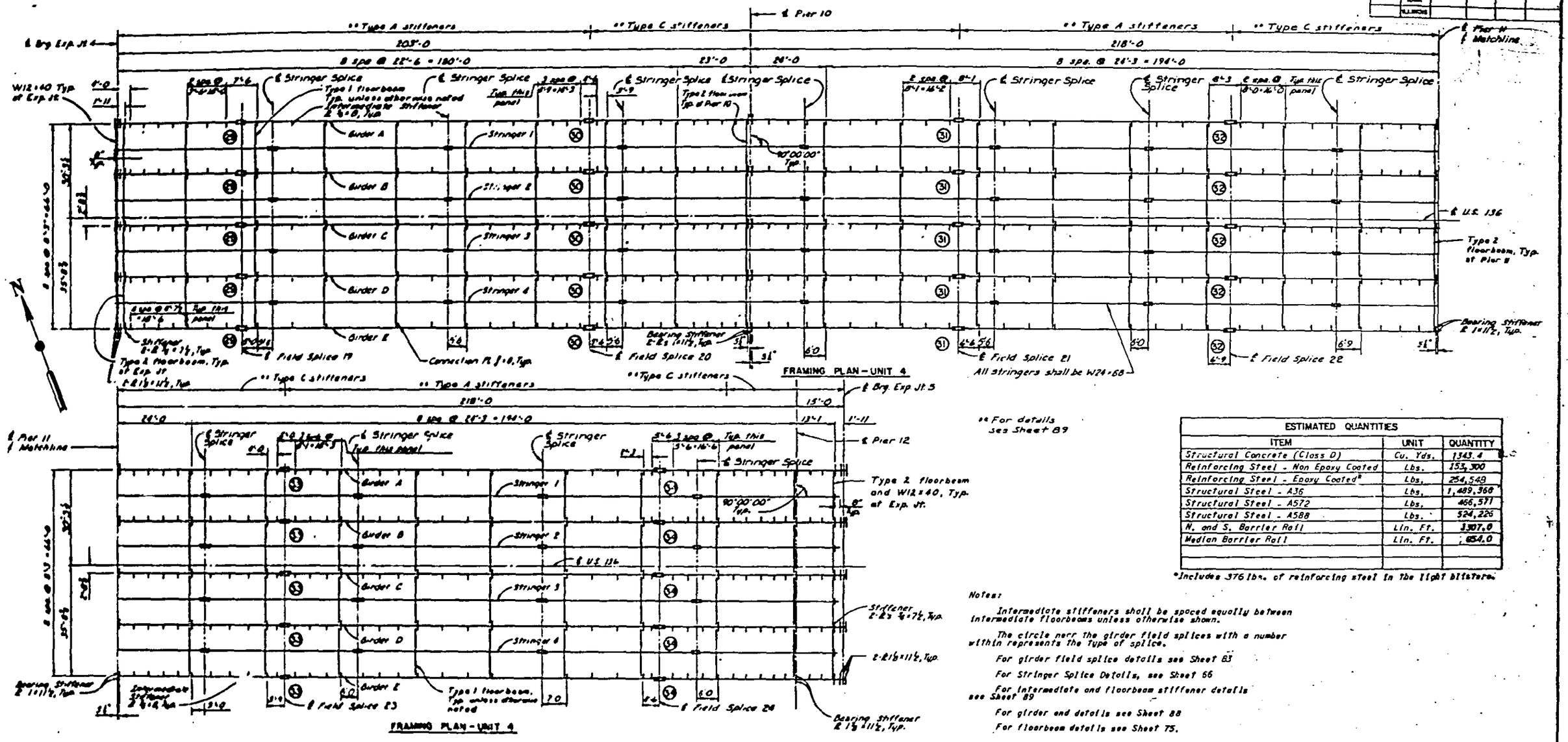
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB DETAILS-UNIT 3

LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

DRAWN JMH DATE 5-82 CHECKED DLM DATE 7-82

SHEET 84 OF 227



** For details see Sheet 89

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu. Yds.	1343.4
Reinforcing Steel - Non Epoxy Coated	Lbs.	153,300
Reinforcing Steel - Epoxy Coated*	Lbs.	254,549
Structural Steel - A36	Lbs.	1,489,360
Structural Steel - A572	Lbs.	466,571
Structural Steel - A588	Lbs.	524,226
N. and S. Barrier Rail	Lin. Ft.	3307.0
Median Barrier Rail	Lin. Ft.	654.0

*Includes 376 lbs. of reinforcing steel in the light bilsters.

Notes:

Intermediate stiffeners shall be spaced equally between intermediate floorbeams unless otherwise shown.

The circle near the girder field splices with a number within represents the type of splice.

For girder field splice details see Sheet 83

For Stringer Splice Details, see Sheet 66

For intermediate and floorbeam stiffener details see Sheet 89

For girder end details see Sheet 88

For floorbeam details see Sheet 75.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

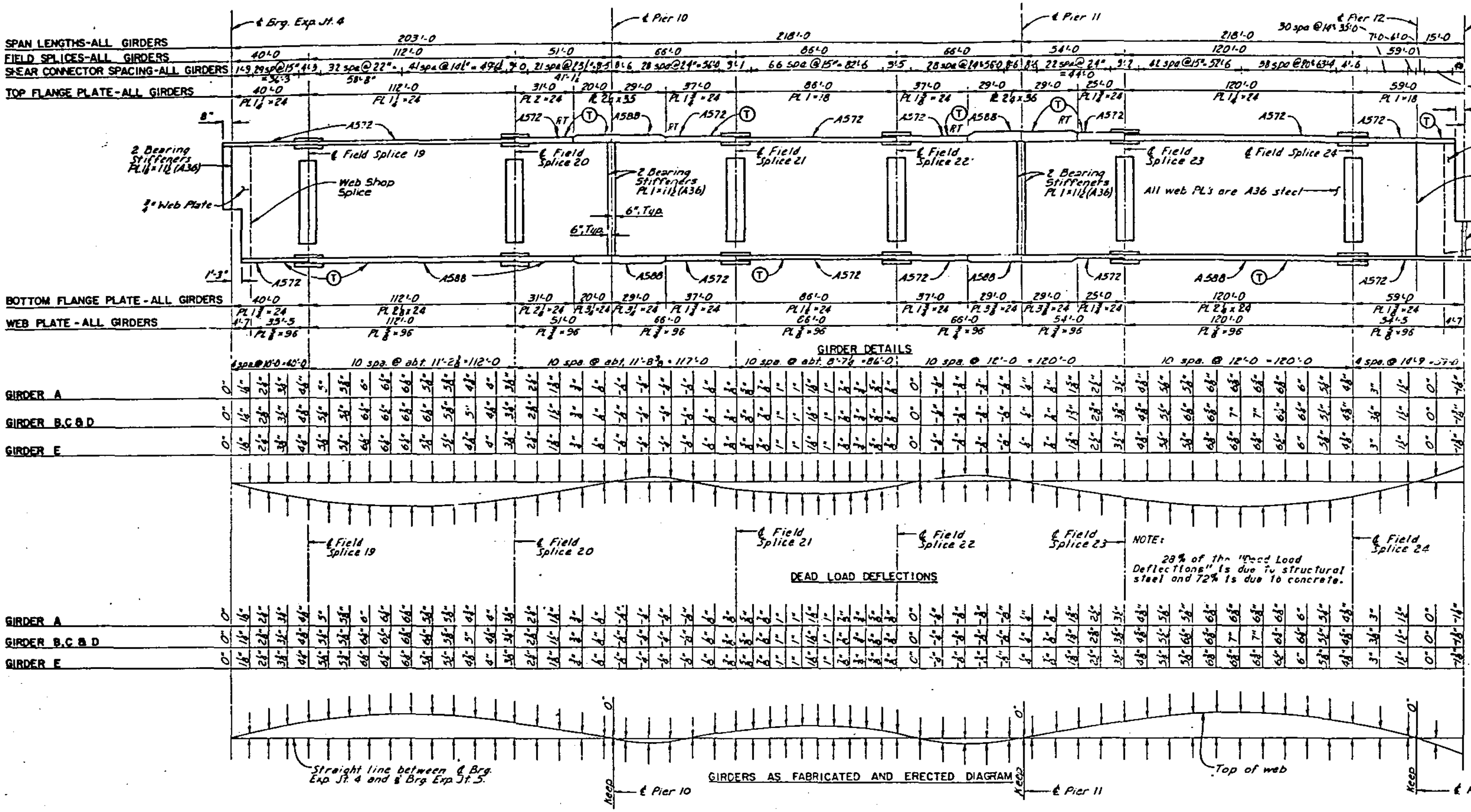
STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

FRAMING PLAN - UNIT 4

STA. 88+65.00
RIVER MILE 383.9
LEE COUNTY, IOWA

PROJECT NO. BRF-90-1(3)--88-56
HANCOCK COUNTY, ILLINOIS

DESIGN NO. 382 LEE COUNTY FILE 38738 SHEET 85 OF 227



NOTES:

For Shear Connector Detail see Sheet 84.

The weight of shear connectors are included in the Structural Steel Quantities.

There shall be no shear connector groups located at the ℄ of piers, at ℄ Brg. Exp. Jt., or at the field splices.

For "Field Splice Details" see Sheet 83.

(T) denotes tension flange plate.

NOTE:

Offsets are given at ¼ points between ℄ Brg. Exp. Jt and field splice and at 1/10 points between field splices.

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

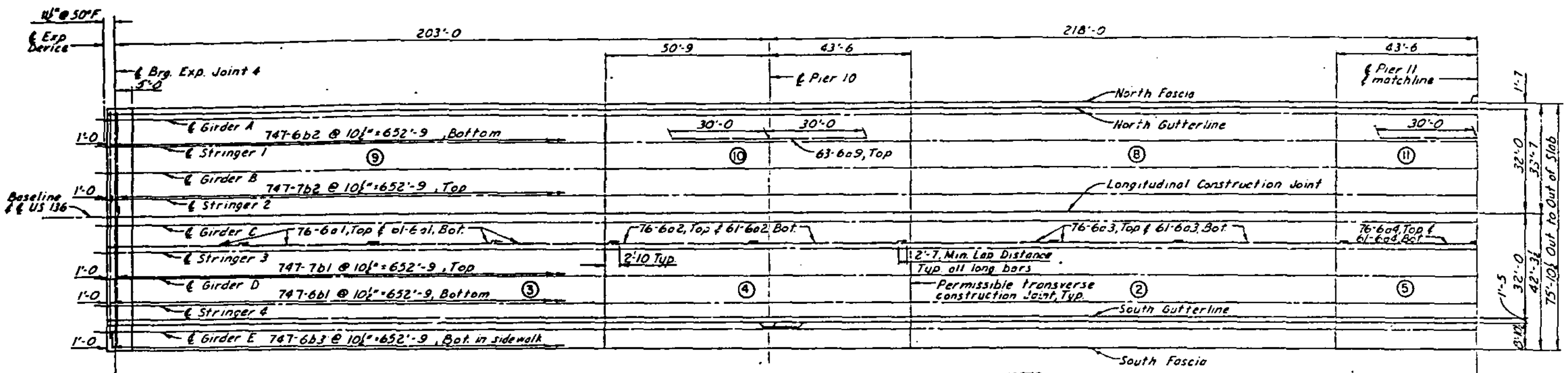
STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
GIRDER ELEVATION AND DEFLECTIONS
UNIT 4

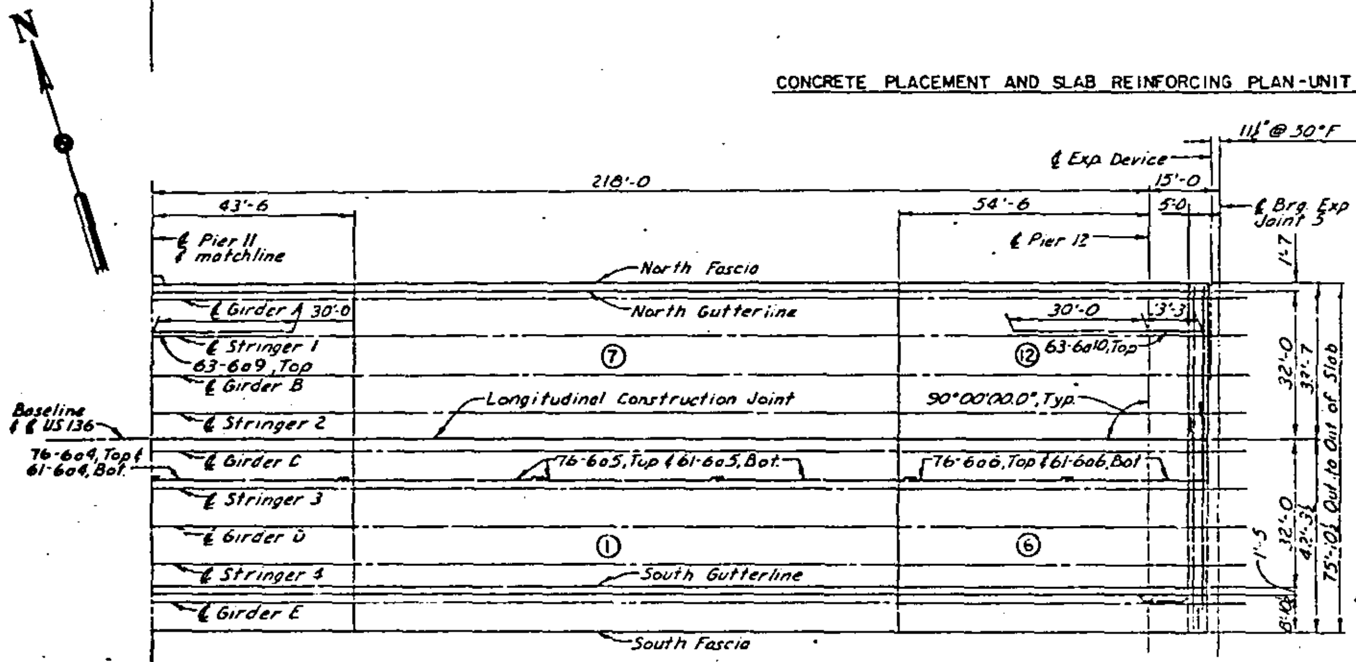
LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

MADE JMH DATE 6-82 CHECKED DLM DATE 7-82

DESIGN NO. LEE COUNTY FILE SHEET 86 OF 227



CONCRETE PLACEMENT AND SLAB REINFORCING PLAN-UNIT 4



CONCRETE PLACEMENT AND SLAB REINFORCING PLAN - UNIT 4

NOTES:

Roadway slab shall be placed in sections and in the sequence indicated by circled numbers at intervals not exceeding 24 hours.

Alternate procedures for placing concrete may be submitted for approval together with a statement of the proposed method and evidence that the contractor possesses the necessary equipment and facilities to accomplish the required results.

The transverse construction joints shall be placed parallel to the adjacent ℄ pier.

For detail of slab construction joint, see Sheet 82

For detail of longitudinal bar spacing, see Sheet 82

For "Light Pole Base Details", see Sheet 105 and 106

For "Drain Details", see Sheets 98 and 99

For location of drains see Sheet 28 and 29

"Top of Concrete Pavement Elevations" are shown at ¼ points between Exp. Jt. and F.S. 19 and at 1/10 points between all field splices and at ¼ points between F.S. 24 and Exp. Jt.

F.S. denotes Field Splice.

5'-0 each side of Joint 4 shall be poured after both Unit 3 and 4 are completed and expansion joint is in place.

5'-0 each side of Joint 5 shall be poured after both Unit 4 and 5 are completed and expansion joint is in place.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

CONCRETE PLACEMENT QUANTITIES

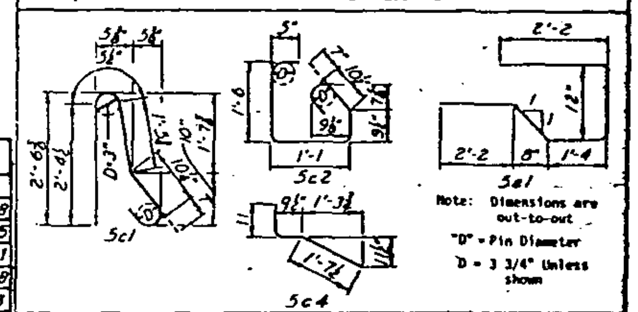
UNIT 4

POUR	CU. YDS.
1	134.5
2	145.9
3	174.1
4	104.9
5	97.1
6	77.5
7	111.3
8	120.9
9	144.5
10	87.0
11	80.5
12	64.4
Light Blisters	.5
Total	1343.4

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
NON-EPOXY COATED					
6a1	Longitudinal	—	244	40'-11	14995
6a2	Longitudinal	—	122	48'-2	8826
6a3	Longitudinal	—	183	47'-3	12987
6a4	Longitudinal	—	122	44'-7	8170
6a5	Longitudinal	—	183	43'-7	11980
6a6	Longitudinal	—	122	35'-5	6490
6b1	Transverse	—	747	44'-5	49835
6b2	Transverse	—	747	29'-3	32818
6b3	Transverse	—	747	6'-5	7199
			Total		153300
EPOXY-COATED					
6a1	Longitudinal	—	304	40'-11	18683
6a2	Longitudinal	—	152	48'-2	10997
6a3	Longitudinal	—	228	47'-3	16181
6a4	Longitudinal	—	152	44'-7	10179
6a5	Longitudinal	—	228	43'-7	14925
6a6	Longitudinal	—	152	35'-5	8086
6a9	Long. over Pier	—	126	60'-0	11355
6-10	Long. over Pier	—	63	43'-3	4093
7b1	Transverse	—	747	45'-3	69091
7b2	Transverse	—	747	33'-9	51532
5c1	Curb, Transverse		1296	5'-9	7772
5c2	Curb, Transverse		1296	5'-3	7097
5c3	Curb, Transverse	—	1308	2'-7	3524
5c4	Curb, Transverse		1308	3'-4	4547
5d2	Curb, Longitudinal	—	336	42'-4	14836
5e1	End Beam		112	7'-7	886
5e2	End Beam	—	48	7'-9	388
			Total		254172

BAR BENDING DIAGRAMS



TOP OF CONCRETE PAVEMENT ELEVATIONS UNIT 4

LOCATION	EXP. JT.	.25	.50	.75	F.S.19	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S.20
GIRDER A	543.50	543.30	543.11	542.91	542.72	542.50	542.28	542.06	541.85	541.63	541.41	541.19	540.97	540.75	540.54
STRINGER 1	543.66	543.47	543.27	543.08	542.88	542.67	542.45	542.23	542.01	541.79	541.57	541.36	541.14	540.92	540.70
GIRDER B	543.83	543.63	543.44	543.24	543.05	542.83	542.61	542.39	542.18	541.96	541.74	541.52	541.30	541.08	540.87
STRINGER 2	543.99	543.80	543.60	543.41	543.21	543.00	542.78	542.56	542.34	542.12	541.90	541.69	541.47	541.25	541.03
GIRDER C	544.05	543.86	543.66	543.47	543.27	543.05	542.83	542.61	542.40	542.18	541.96	541.74	541.52	541.30	541.08
STRINGER 3	543.89	543.69	543.50	543.30	543.11	542.89	542.67	542.45	542.23	542.01	541.80	541.58	541.36	541.14	540.92
GIRDER D	543.72	543.53	543.33	543.14	542.94	542.72	542.50	542.29	542.07	541.85	541.63	541.41	541.19	540.97	540.76
STRINGER 4	543.56	543.36	543.17	542.97	542.78	542.56	542.34	542.12	541.90	541.68	541.47	541.25	541.03	540.81	540.59
GIRDER E	543.39	543.20	543.00	542.81	542.61	542.39	542.17	541.96	541.74	541.52	541.30	541.08	540.86	540.64	540.43

LOCATION	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S.21	.10	.20	.30	.40
GIRDER A	540.31	540.08	539.85	539.62	539.39	539.17	538.94	538.71	538.48	538.25	538.09	537.92	537.75	537.58
STRINGER 1	540.47	540.24	540.02	539.79	539.56	539.33	539.10	538.88	538.65	538.42	538.25	538.08	537.92	537.75
GIRDER B	540.64	540.41	540.18	539.95	539.72	539.50	539.27	539.04	538.81	538.58	538.42	538.25	538.08	537.91
STRINGER 2	540.80	540.57	540.35	540.12	539.89	539.66	539.43	539.21	538.98	538.75	538.58	538.41	538.25	538.08
GIRDER C	540.85	540.63	540.40	540.17	530.94	539.72	539.49	539.26	539.03	538.80	538.64	538.47	538.30	538.13
STRINGER 3	540.69	540.47	540.24	540.01	539.78	539.55	539.32	539.10	538.87	538.64	538.47	538.30	538.14	537.97
GIRDER D	540.53	540.30	540.07	539.84	539.62	539.39	539.16	538.93	538.70	538.47	538.31	538.14	537.97	537.80
STRINGER 4	540.36	540.14	539.91	539.68	539.45	539.22	538.99	538.77	538.54	538.31	538.14	537.97	537.81	537.64
GIRDER E	540.20	539.97	539.74	539.51	539.29	539.06	538.83	538.60	538.37	538.14	537.98	537.81	537.64	537.47

TOP. OF CONCRETE PAVEMENT ELEVATIONS UNIT 4

LOCATION	.50	.60	.70	.80	.90	F.S.22	.10	.20	.30	.40	.50	.60	.70	.80	.90
GIRDER A	537.42	537.25	537.08	536.91	536.74	536.58	536.34	536.11	535.88	535.64	535.41	535.17	534.94	534.71	534.47
STRINGER 1	537.58	537.41	537.25	537.08	536.91	536.74	536.51	536.27	536.04	535.81	535.57	535.34	535.10	534.87	534.64
GIRDER B	537.75	537.58	537.41	537.24	537.07	536.91	536.67	536.44	536.21	535.97	535.74	535.50	535.27	535.04	534.80
STRINGER 2	537.91	537.74	537.58	537.41	537.24	537.07	536.84	536.60	536.37	536.14	535.90	535.67	535.43	535.20	534.97
GIRDER C	537.97	537.80	537.63	537.46	537.30	537.13	536.89	536.66	536.43	536.19	535.96	535.72	535.49	535.26	535.02
STRINGER 3	537.80	537.63	537.47	537.30	537.13	536.96	536.73	536.49	536.26	536.03	535.79	535.56	535.32	535.09	534.86
GIRDER D	537.64	537.47	537.30	537.13	536.97	536.80	536.56	536.33	536.10	535.86	535.63	535.39	535.16	534.93	534.69
STRINGER 4	537.47	537.30	537.14	536.97	536.80	536.63	536.40	536.17	535.93	535.70	535.46	535.23	535.00	534.76	534.53
GIRDER E	537.31	537.14	536.97	536.80	536.64	536.47	536.23	536.00	535.77	535.53	535.30	535.06	534.83	534.60	534.36

LOCATION	F.S.23	.10	.20	.30	.40	.50	60	.70	.80	.90	F.S.24	.25	.50	.75	Exp. Jt.
GIRDER A	534.24	534.00	533.77	533.54	533.30	533.07	532.83	532.60	532.37	532.13	531.90	531.61	531.32	531.03	530.75
STRINGER 1	534.40	534.17	533.93	533.70	533.47	533.23	533.00	532.76	532.53	532.30	532.06	531.77	531.49	531.20	530.91
GIRDER B	534.57	534.33	534.10	533.87	533.63	533.40	533.16	532.93	532.70	532.46	532.23	531.94	531.65	531.36	531.08
STRINGER 2	534.73	534.50	534.26	534.03	533.80	533.56	533.33	533.09	532.86	532.63	532.39	532.10	531.82	531.53	531.24
GIRDER C	534.79	534.55	534.32	534.09	533.85	533.62	533.38	533.15	532.92	532.68	532.45	532.16	531.87	531.59	531.30
STRINGER 3	534.62	534.39	534.15	533.92	533.69	533.45	533.22	532.98	532.75	532.52	532.28	532.00	531.71	531.42	531.13
GIRDER D	534.46	534.22	533.99	533.76	533.52	533.29	533.05	532.82	532.59	532.35	532.12	531.83	531.54	531.26	530.97
STRINGER 4	534.29	534.06	533.83	533.59	533.36	533.12	532.89	532.66	532.42	532.19	531.95	531.67	531.38	531.09	530.80
GIRDER E	534.13	533.89	533.66	533.43	533.19	532.96	532.72	532.49	532.26	532.02	531.79	531.50	531.21	530.93	530.64

MISSISSIPPI RIVER BRIDGE

KEOKUK, IOWA-HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

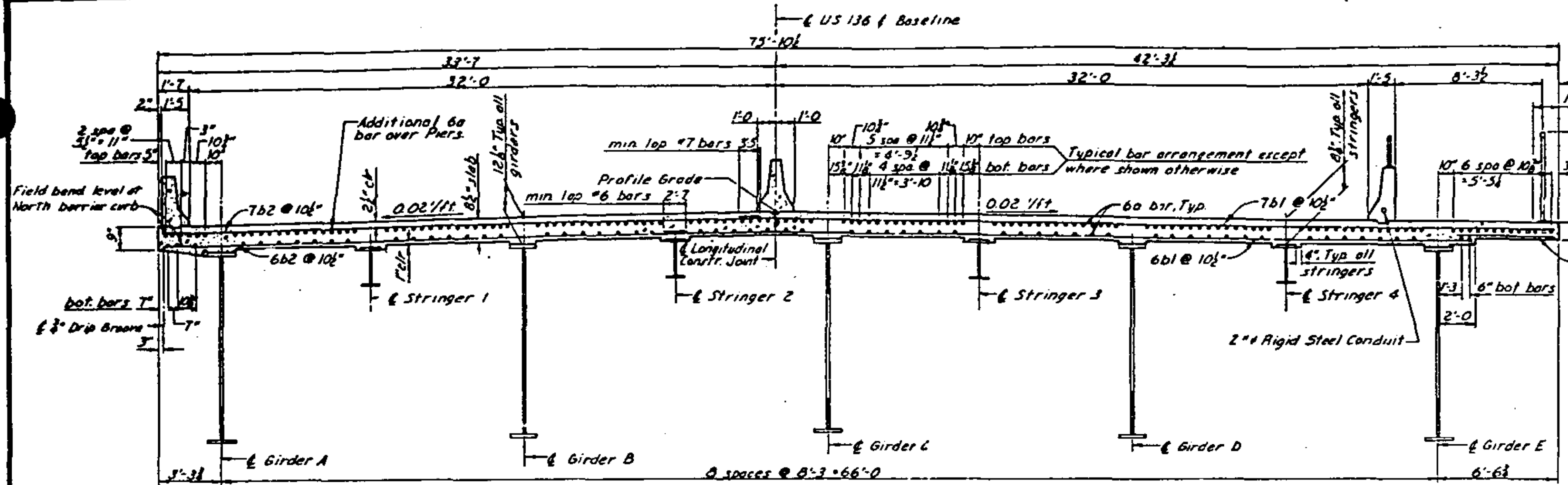
SLAB PLAN-UNIT 4

LEE COUNTY, IOWA

HANCOCK COUNTY, ILLINOIS

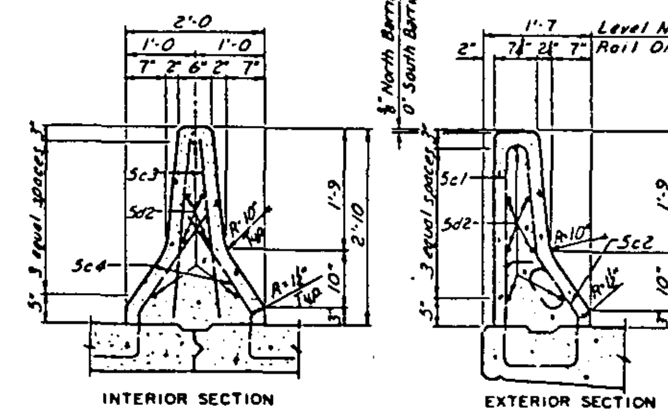
HNTB

DRAWN JMN DATE 5-82 CHECKED DLM DATE 7-82



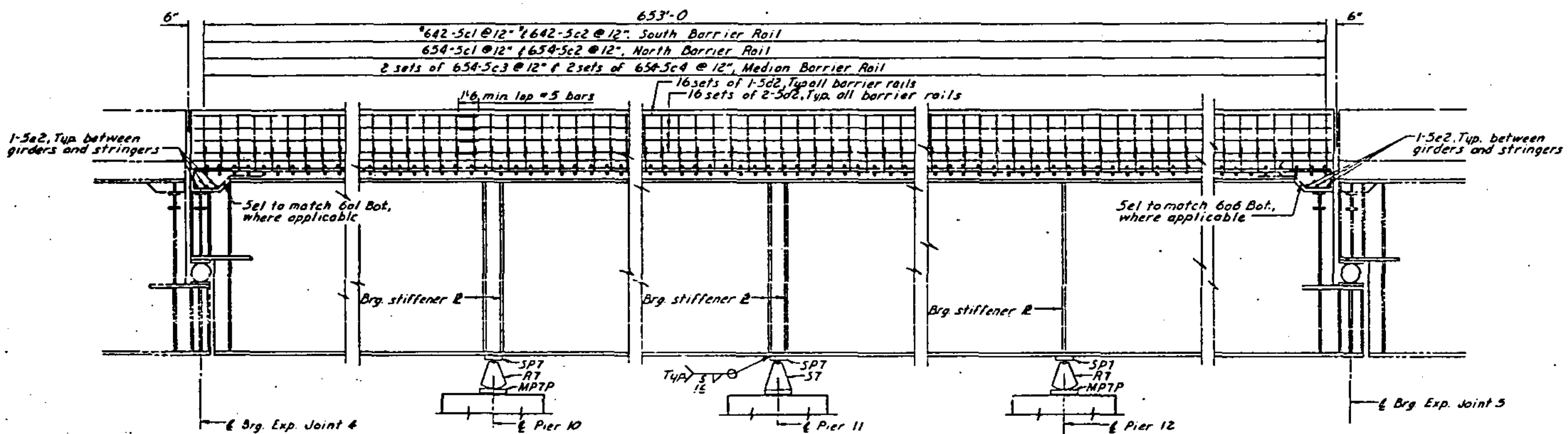
TYPICAL SECTION

Note:
Diaphragms are not shown in typical section. For details see Sheet 75



BARRIER RAIL REINFORCEMENT DETAILS

MEDIAN CURB CONCRETE QUANTITIES		
CONCRETE	653.5 ft X .1055 Cu.Yd/ft	68.9 Cu.Yd.



PART LONGITUDINAL SECTION NEAR CURB-UNIT 4

*12-5c1 and 12-5c2 have been deleted at the light blisters. For details see Sheet 105

TYPICAL ROCKER SETTINGS UNIT 4							
Temperature at Time of Setting	EXPANSION JOINT		PIER 10	PIER 11	PIER 12	EXPANSION JOINT	
90° F	6[illegible]"	+1"	+[illegible]"	0"	+[illegible]"	+1"	6[illegible]"
50° F	9"	0"		0"	0"	0"	9"
10° F	11[illegible]"	-1"	-[illegible]"	0"	-[illegible]"	-1"	11[illegible]"

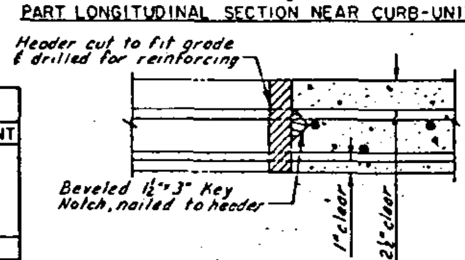
NOTES:

Rockers are to be set vertically at 50° F.

For temperatures above 50° F set masonry plate toward fixed shoe (+).

For temperatures below 50° F set masonry plate away from fixed shoe (-).

Settings for other temperatures are proportional to those shown for a 40° Temperature change.



LONGITUDINAL SLAB CONSTRUCTION JOINT DETAIL

(Transverse slab construction joint similar except for bar detail)

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB DETAILS-UNIT 4

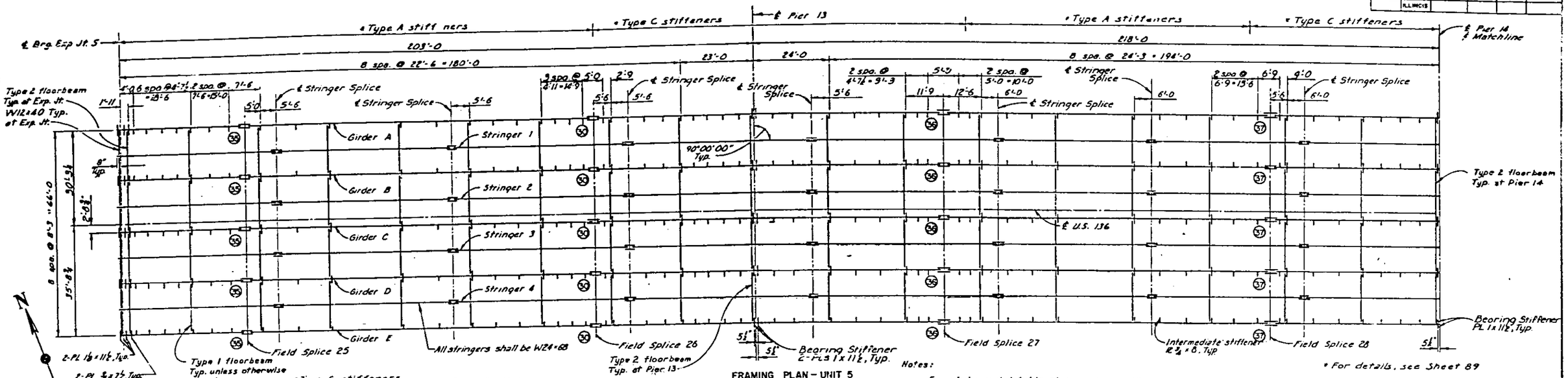
LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

HNTB

LEE COUNTY

88 of 227

FEDERAL AID PROJ. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



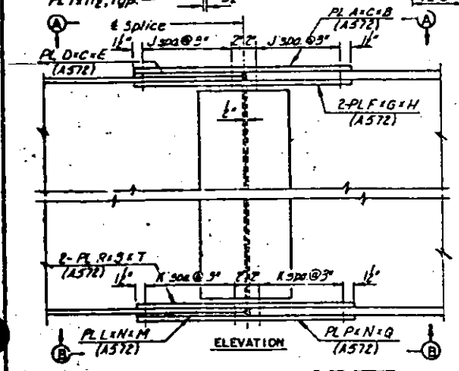
FRAMING PLAN – UNIT 5

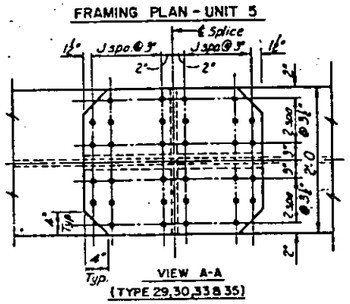
Notes:
For girder end details at exp. jt. see Sheet 88.
For floorbeam details see Sheet 75.

TABLE OF FIELD SPLICE DIMENSIONS

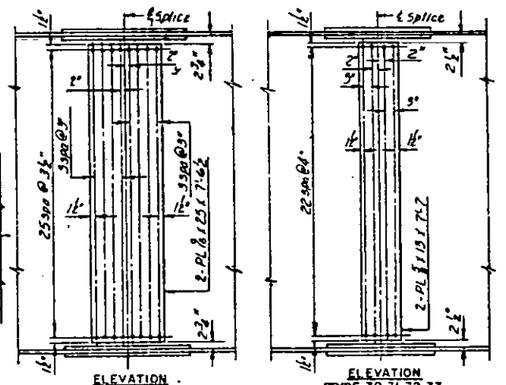
TYPE	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
29	⅜"	3'-7	24"	—	——	⅝"	11"	3'-7	6	8	⅞"	2'-3½	24"	⅝"	4'-7	1"	11"	4'-7
30	⅜"	2'-1	24"	⅜"	1'-0½	⅝"	11"	2'-1	3	5	——	——	24"	1⅛"	3'-1	1"	11"	3'-1
31	⅜"	2'-1	18"	⅜"	1'-0½	⅝"	8"	2'-1	3	4	⅞"	1'-3½	24"	⅝"	2'-7	¾"	11"	2'-7
32	⅜"	2'-7	18"	⅜"	1'-3½	⅝"	8"	2'-7	4	4	⅞"	1'-3½	24"	⅝"	2'-7	¾"	11"	2'-7
33	⅜"	2'-1	24"	⅞"	1'-0½	⅝"	11"	2'-1	3	5	⅞"	1'-6½	24"	⅝"	3'-1	1"	11"	3'-1
34	½"	3'-7	18"	1"	1'-9½	⅝"	8"	3'-7	6	7	¾"	2'-0½	24"	½"	4'-1	¾"	11"	4'-1
35	⅜"	3'-7	24"	—	——	⅝"	11"	3'-7	6	8	⅞"	2'-3½	24"	½"	4'-7	⅝"	11"	4'-7
36	½"	2'-7	18"	⅜"	1'-3½	⅝"	8"	2'-7	4	4	⅞"	1'-3½	24"	1"	2'-7	¾"	11"	2'-7
37	½"	2'-1	18"	⅞"	1'-0½	⅝"	8"	2'-1	3	4	——	——	24"	½"	2'-7	¾"	11"	2'-7
38	⅜"	2'-1	18"	⅜"	1'-0½	⅝"	8"	2'-1	3	5	—	—	24"	⅝"	3'-1	¾"	11"	3'-1

Notes:
For intermediate and bearing stiffener details see Sheet 89.
The intermediate stiffeners shall be spaced equally between floorbeams, unless otherwise noted.
The circle near the girder field splices, with a number within, represents the type of splice.
For Stringer Splice Details, see Sheet 66.

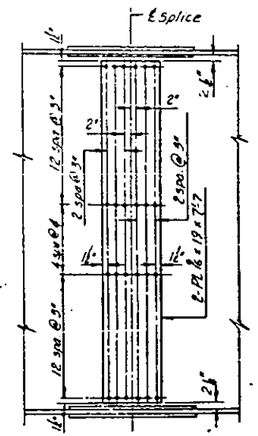




GIRDER FLANGE FIELD SPLICE DETAILS



GIRDER WEB FIELD SPLICE DETAILS



Note:
Two fill plates, 15 gage x 4 x 7'-7 are required for the web splice, Type 30, 31, 32, 33, 36, 37 & 38.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

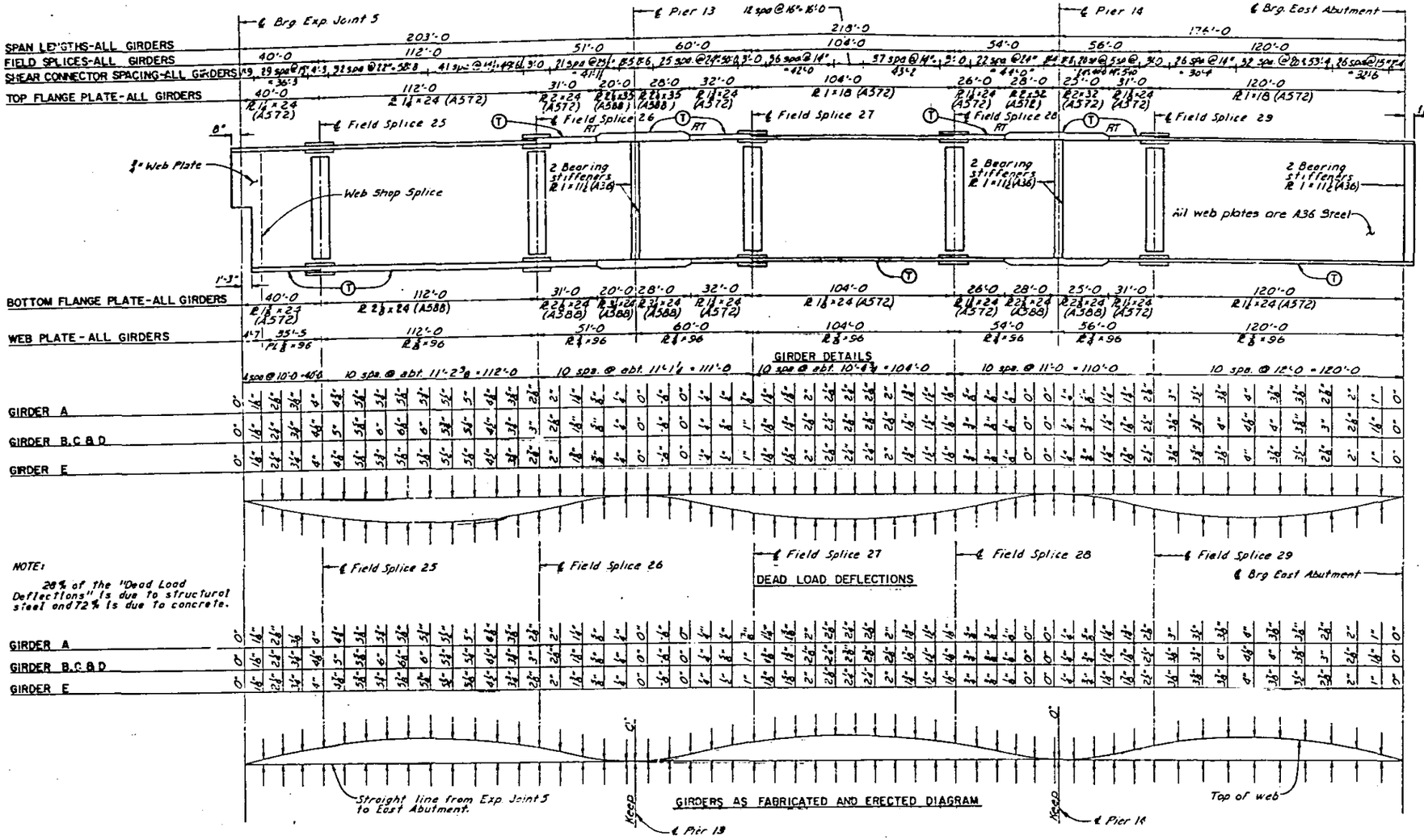
FRAMING PLAN – UNIT 5

STA. 86+45.00
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. BRF-10-1(1)-62-56
HANCOCK COUNTY, ILLINOIS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB
DESIGNED JEL DATE 5-82 CHECKED LCY DATE 6-82

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



T denotes tension flange plate

NOTES:

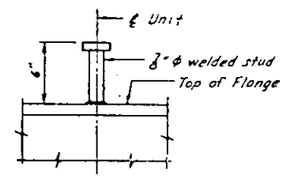
The weight of shear connectors are included in the Structural Steel Quantities.

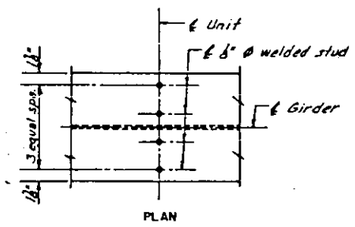
There shall be no shear connector groups located at the ℄ of piers nor at ℄ Brg. Exp. Jt.

For "Field Splice Details" see Sheet 83

Note:

Offsets are given at 1/4 points between ℄ Brg. Exp. Jt. and the field splice and at 1/10 points between field splices and between ℄ Brg. East Abutment and field splice.





SHEAR CONNECTOR DETAIL

(Wt. of one Shear Connector = 1.15 lbs.)

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu. Yds.	1232.4
Reinforcing Steel - Non Epoxy Coated	Lbs.	140,217
Reinforcing Steel - Epoxy Coated*	Lbs.	229,905
Structural Steel - A36	Lbs.	1,361,250
Structural Steel - A572	Lbs.	442,586
Structural Steel - A588	Lbs.	366,434
N. and S. Barrier Rail	Lin. Ft.	1198.0
Median Barrier Rail	Lin. Ft.	559.0

*Includes 344 lbs. of reinforcing steel in light blisters.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
GIRDER ELEVATION AND DEFLECTIONS
UNIT 5

STA. 89+40.29
RIVER MILE 363.0
LEE COUNTY, IOWA

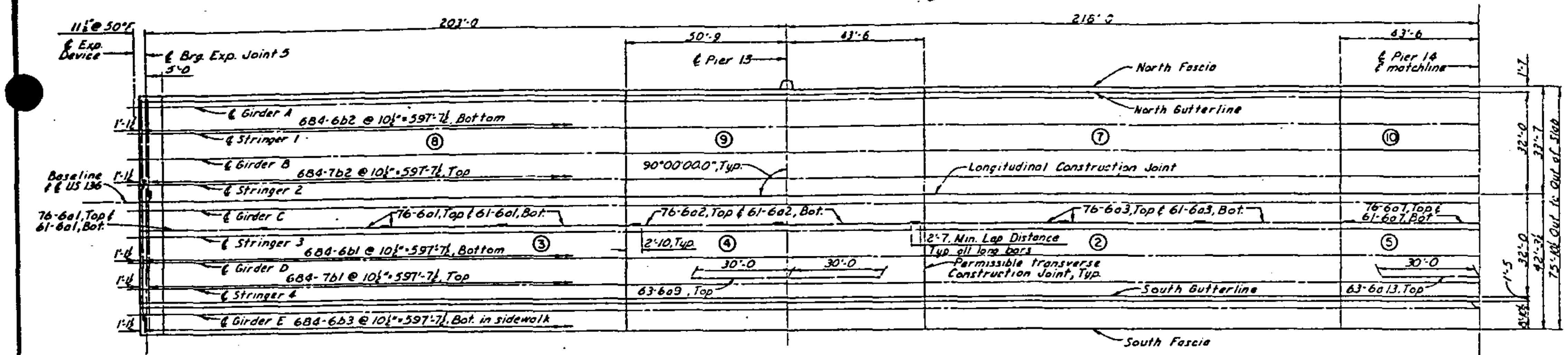
PROJECT NO. BRF-99-1(31)--39-99
HANCOCK COUNTY, ILLINOIS

HNTB

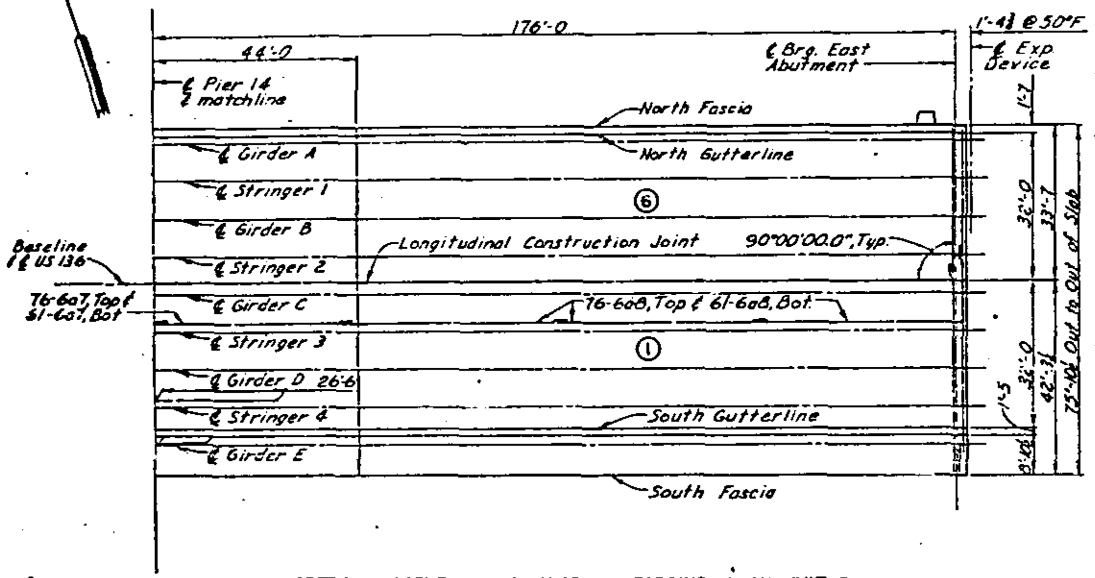
BASE JNH DATE 2 06 CHECKED LCJ DATE 6-06

DESIGN NO. 36 LEE COUNTY FILE 29723 SHEET 90 OF 227

FEDERAL DIST NO.	STATE	FED AID PROJ NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



CONCRETE PLACEMENT AND SLAB REINFORCING PLAN-UNIT 5



CONCRETE PLACEMENT AND SLAB REINFORCING PLAN-UNIT 5

NOTES:

Roadway slab shall be placed in sections and in the sequence indicated by circled numbers at intervals not exceeding 24 hours.

Alternate procedures for placing concrete may be submitted for approval together with a statement of the proposed method and evidence that the contractor possesses the necessary equipment and facilities to accomplish the required results.

The transverse construction joints shall be placed parallel to the adjacent ℄ pier.

For detail of slab construction joint, see Sheet 86

For detail of longitudinal bar spacing, see Sheet 85

For "Light Pole Base Details", see Sheet 105 and 106
For "Drain Details", see Sheets 98 and 99
For location of drains see Sheet 28 and 29

"Top of Concrete Pavement Elevations" are shown at ¼ points between Exp. Jt. and F.S. 25 and at 1/10 points between all field splices and at 1/10 points between F.S. 29 and East Abutment.

F.S. denotes Field Splice.

5'-0 each side of Joint shall be poured after both Unit 4 and 5 are completed and expansion joint is in place.

BENCH MARKS

PMB No. 2 Found chiseled "□" in T/Conc. @ east end of retaining wall, south side of Highway 136, east end of Keokuk-Hamilton River Bridge. Elev. 505.06

PMB No. 6 S.E. corner of light base on the N.W. corner of the intersection of Water and Main Street in Keokuk. Elev. 509.32

PMB No. 7 S.E. corner — base of traffic light — N.E. corner of 3rd and Main in Keokuk. Elev. 579.17

CONCRETE PLACEMENT QUANTITIES

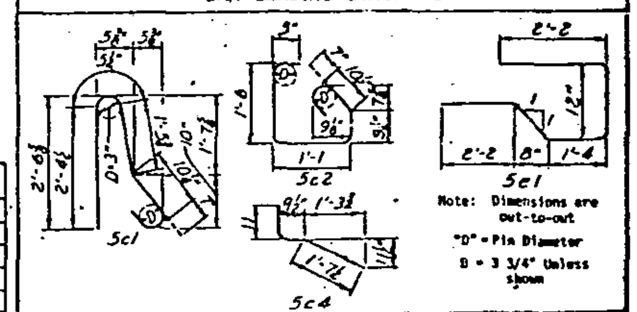
UNIT 5

POUR	CU. YDS.
1	150.4
2	146.0
3	174.4
4	104.9
5	97.9
6	124.8
7	121.0
8	144.5
9	86.9
10	81.1
Light Blisters	.5
Total	1232.4

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	NON-EPOXY COATED				
6a1	Longitudinal	—	244	40'-11	14995
6a2	Longitudinal	—	122	48'-2	8826
6a3	Longitudinal	—	183	47'-3	12987
6a7	Longitudinal	—	122	44'-10	8215
6a8	Longitudinal	—	183	47'-0	12919
6b1	Transverse	—	684	44'-5	45632
6b2	Transverse	—	684	29'-3	30051
6b3	Transverse	—	684	6'-5	6592
			Total		140217
	EPOXY-COATED				
6a1	Longitudinal	—	304	40'-11	18683
6a2	Longitudinal	—	152	48'-2	10997
6a3	Longitudinal	—	228	47'-3	16181
6a7	Longitudinal	—	152	44'-10	10236
6a8	Longitudinal	—	228	47'-0	16095
6a9	Long. over Pier	—	63	60'-0	5678
6a13	Long. over Pier	—	63	56'-6	5346
7b1	Transverse	—	684	45'-3	63264
7b2	Transverse	—	684	33'-9	47186
5c1	Curb, Transverse		1192	5'-9	7143
5c2	Curb, Transverse		1192	5'-3	6527
5c3	Curb, Transverse	—	1198	2'-7	3228
5c4	Curb, Transverse		1198	3'-4	4165
5d1	Curb, Longitudinal	—	315	41'-3	13552
5e1	End Beam		112	7'-7	886
5e2	End Beam	—	48	7'-9	388
			Total		229,561

BAR BENDING DIAGRAMS



TOP OF CONCRETE PAVEMENT ELEVATIONS UNIT 5.

LOCATION	EXP.JT.	.25	.50	.75	F.S. 25	.10	.20	.30	.40	.50	.60	.70	.80	.90
GIRDER A	530.75	530.55	530.36	530.16	529.97	529.75	529.53	529.31	529.09	528.87	528.66	528.44	528.22	528.00
STRINGER 1	530.91	530.72	530.52	530.33	530.13	529.91	529.69	529.48	529.26	529.04	528.82	528.60	528.38	528.17
GIRDER B	531.08	530.88	530.69	530.49	530.30	530.08	529.86	529.64	529.42	529.20	528.99	528.77	528.55	528.33
STRINGER 2	531.24	531.05	530.85	530.66	530.45	530.24	530.02	529.81	529.59	529.37	529.15	528.93	528.71	528.50
GIRDER C	531.30	531.10	530.91	530.71	530.52	530.30	530.08	529.86	529.64	529.43	529.21	528.99	528.77	528.55
STRINGER 3	531.13	530.94	530.74	530.55	530.35	530.13	529.92	529.70	529.48	529.26	529.04	528.82	528.61	528.39
GIRDER D	530.97	530.77	530.58	530.38	530.19	529.97	529.75	529.53	529.31	529.10	528.88	528.66	528.44	528.22
STRINGER 4	530.80	530.61	530.41	530.22	530.02	529.80	529.59	529.37	529.15	528.93	528.71	528.49	528.28	528.06
GIRDER E	530.64	530.44	530.25	530.05	529.86	529.64	529.42	529.20	528.98	528.77	528.55	528.33	528.11	527.89

LOCATION	F.S. 26	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S. 27	.10	.20	.30	.40
GIRDER A	527.78	527.57	527.35	527.13	526.92	526.70	526.48	526.27	526.05	525.83	252.62	525.42	525.21	525.01	524.81
STRINGER 1	527.95	527.73	527.51	527.30	527.08	526.87	526.65	526.43	526.22	526.00	525.78	525.58	525.38	525.17	524.97
GIRDER B	528.11	527.90	527.68	527.46	527.25	527.03	526.81	526.60	526.38	526.16	525.95	525.75	525.54	525.34	525.14
STRINGER 2	528.28	528.06	527.84	527.63	527.41	527.20	526.98	526.76	526.55	526.33	526.11	525.91	525.71	525.50	525.30
GIRDER C	528.33	528.12	527.90	527.68	527.47	527.25	527.03	526.82	526.60	526.39	526.17	525.97	525.76	525.56	525.36
STRINGER 3	528.17	527.95	527.74	527.52	527.30	527.09	526.87	526.65	526.44	526.22	526.00	525.80	525.60	525.40	525.19
GIRDER D	528.00	527.79	527.57	527.35	527.14	526.92	526.70	526.49	526.27	526.06	525.84	525.64	525.43	525.23	525.03
STRINGER 4	527.84	527.62	527.41	527.19	526.97	526.76	526.54	526.32	525.11	525.89	525.67	525.47	525.27	525.07	524.86
GIRDER E	527.67	527.45	527.24	527.02	526.81	526.59	526.37	526.16	525.94	525.73	525.51	525.31	525.10	524.90	524.70

TOP OF CONCRETE PAVEMENT ELEVATIONS UNIT 5

LOCATION	.50	.60	.70	.80	.90	F.S. 28	.10	.20	.30	.40	.50	.60	.70	.80
GIRDER A	524.60	524.40	524.20	524.00	523.79	523.59	523.38	523.16	522.95	522.73	522.52	522.30	522.09	521.87
STRINGER 1	524.77	524.57	524.36	524.16	523.96	523.76	523.54	523.33	523.11	522.90	522.68	522.47	522.25	522.04
GIRDER B	524.93	524.73	524.53	524.33	524.12	523.92	523.71	523.49	523.28	523.06	522.85	522.63	522.42	522.20
STRINGER 2	525.10	524.90	524.69	524.49	524.29	524.09	523.87	523.66	523.44	523.23	523.01	522.80	522.58	522.37
GIRDER C	525.15	524.95	524.75	524.55	524.34	524.14	523.93	523.71	523.50	523.28	523.07	522.85	522.64	522.42
STRINGER 3	524.99	524.79	524.58	524.38	524.18	523.98	523.76	523.55	523.33	523.12	522.90	522.69	522.47	522.26
GIRDER D	524.82	524.62	524.42	524.22	524.01	523.81	523.60	523.38	523.17	522.95	522.74	522.52	522.31	522.09
STRINGER 4	524.66	524.46	524.25	524.05	523.85	523.65	523.43	523.22	523.00	522.79	522.57	522.36	522.14	521.93
GIRDER E	524.49	524.29	524.09	523.89	523.68	523.48	523.27	523.05	522.84	522.62	522.41	522.19	521.98	521.76

LOCATION	.90	F.S. 29	.10	.20	.30	.40	.50	.60	.70	.80	.90	E.Abut.			
GIRDER A	521.66	521.45	521.21	520.98	520.74	520.51	520.28	520.04	519.81	519.57	519.34	519.11			
STRINGER 1	521.82	521.61	521.38	521.14	520.91	520.57	520.44	520.21	519.97	519.74	519.50	519.27			
GIRDER B	521.99	521.78	521.54	521.31	521.07	520.84	520.61	520.37	520.14	519.90	519.67	519.44			
STRINGER 2	522.15	521.94	521.71	521.47	521.24	521.00	520.77	520.54	520.30	520.07	519.83	519.60			
GIRDER C	522.21	522.00	521.76	521.53	521.29	521.06	520.83	520.59	520.36	520.12	519.89	519.66			
STRINGER 3	522.05	521.83	521.60	521.36	521.13	520.89	520.66	520.43	520.19	519.96	519.72	519.49			
GIRDER D	521.88	521.67	521.43	521.20	520.96	520.73	520.50	520.26	520.03	519.79	519.56	519.33			
STRINGER 4	521.72	521.50	521.27	521.03	520.80	520.57	520.33	520.10	519.86	519.63	519.40	519.16			
GIRDER E	521.55	521.34	521.10	520.87	520.63	520.40	520.17	519.93	519.70	519.46	519.23	519.20			

HNTB

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

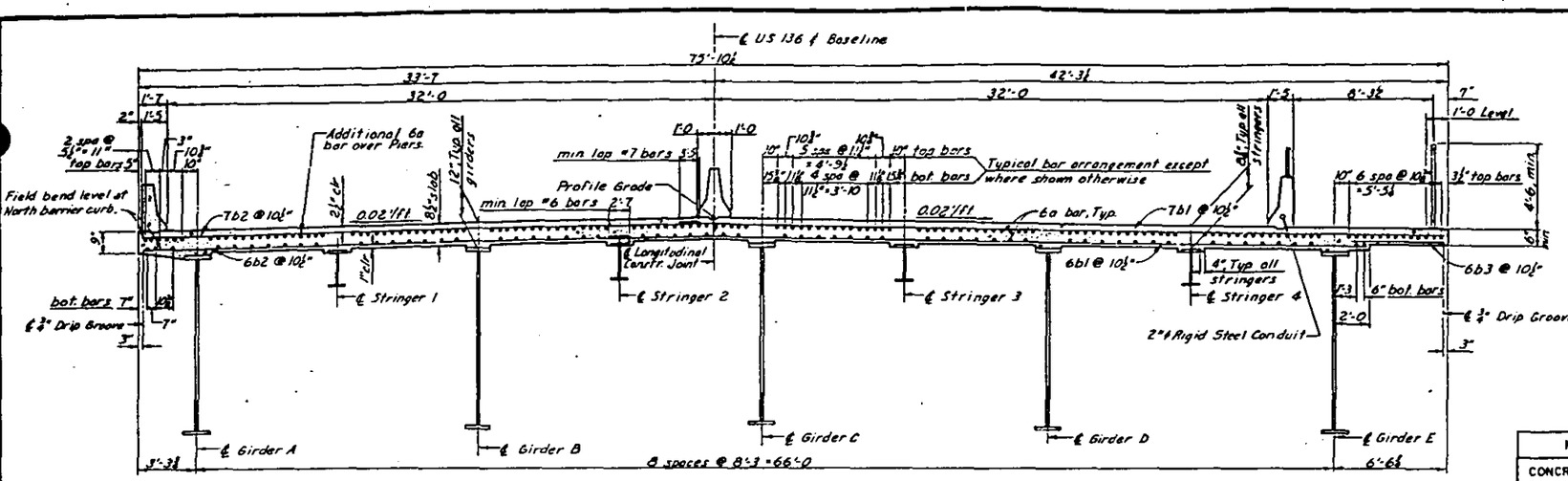
DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB PLAN - UNIT 5

LEE COUNTY, IOWA

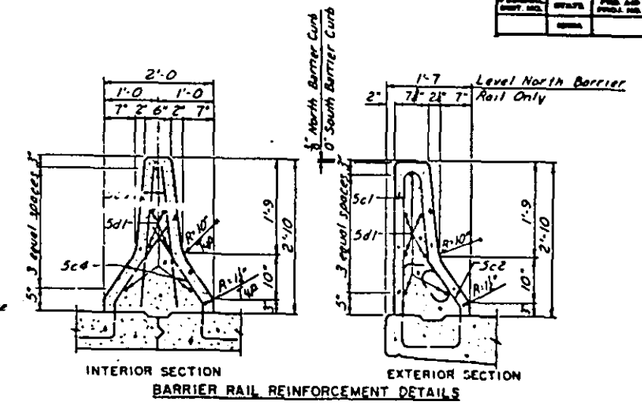
HANCOCK COUNTY, ILLINOIS



TYPICAL SECTION

Note:

Diaphragms are not shown in typical section. For details see Sheet 75.

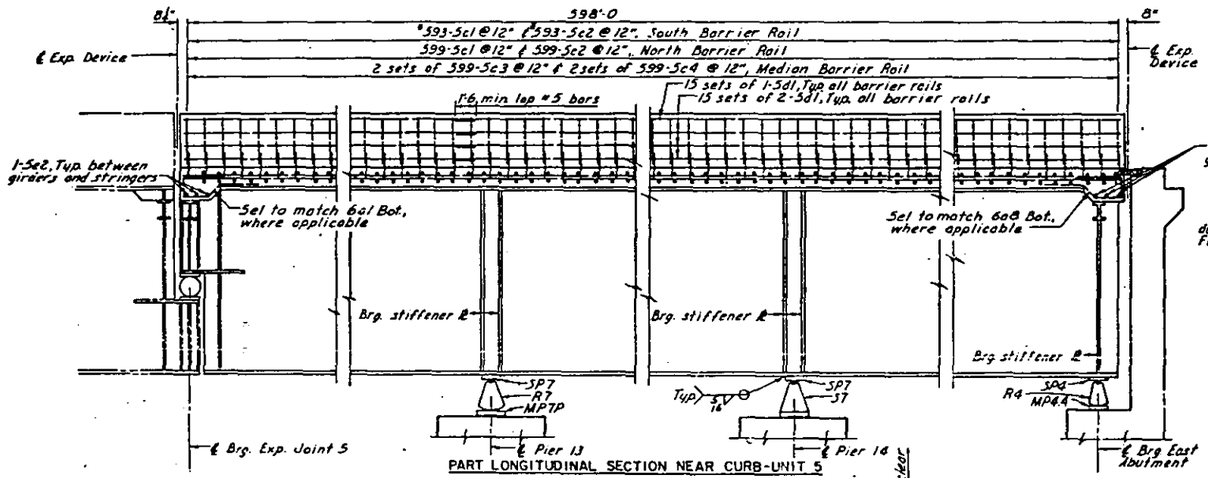


INTERIOR SECTION

EXTERIOR SECTION

BARRIER RAIL REINFORCEMENT DETAILS

MEDIAN CURB CONCRETE QUANTITIES		
CONCRETE	599.011 X .1055 Cu.Yd/ft	63.2 Cu.Yd.



PART LONGITUDINAL SECTION NEAR CURB-UNIT 5

TYPICAL ROCKER SETTINGS UNIT 5.						
	EXPANSION JOINT		PIER 13	PIER 14	EAST ABUTMENT	
Temperature at Time of Setting						
90° F	6⅝"	+1"	+⅜"	0"	+⅜"	1⅝"
50° F	9"	0"	0"	0"	0"	2½"
10° F	11⅜"	-1"	-⅜"	0"	-⅜"	3½"

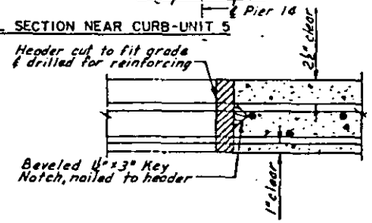
NOTES:

Rockers are to be set vertically at 50° F.

For temperatures above 50° F set masonry plate toward fixed shoe (+).

For temperatures below 50° F set masonry plate away from fixed shoe (-).

Settings for other temperatures are proportional to those shown for a 40° temperature change.



LONGITUDINAL SLAB CONSTRUCTION JOINT DETAIL

(Transverse slab construction joint similar except for bar detail)

HNTB

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB DETAILS-UNIT 5

STA. [illegible]
RIVER MILE [illegible]
LEE COUNTY, IOWA

PROJECT NO. [illegible]
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 86 OF [illegible]

TABLE OF MOMENTS AND REACTIONS IN FOOT KIPS AND KIPS — UNIT 1

GIRDER	ITEM	MAXIMUM POSITIVE MOMENT SPAN 1	SPAN 2	MAX. NEG. MOMENT PIER 1	REACTIONS W. ABUT.	PIER 1
A	Dead Load "A"	4080	1092	7001	122.4	371.9
	Dead Load "B"	1354	438	1691	32.2	104.8
	Live Load	2298	1429	2344	69.3	128.5
	Impact	381	276	421	11.5	24.9
	Total	--	--	11,457	241.4	640.1
B	Dead Load "A"	5220	1582	9131	157.3	424.9
	Dead Load "B"	1349	464	1702	33.2	105.3
	Live Load	3451	2221	3574	103.9	210.7
	Impact	572	431	639	17.2	37.7
	Total	--	--	15,046	316.6	838.6
C	Dead Load "A"	5185	1744	9219	156.8	489.4
	Dead Load "B"	1341	506	1723	38.1	106.6
	Live Load	3457	2279	3615	104.0	212.6
	Impact	573	440	644	17.2	37.9
	Total	--	--	15,201	316.1	846.5
D	Dead Load "A"	[illegible]28	1954	9360	156.0	496.7
	Dead Load "B"	[illegible]	533	1736	38.0	107.1
	Live Load	[illegible]	2350	3676	104.1	215.6
	Impact	57[illegible]	456	653	17.2	[illegible]
	Total	--	--	15,425	315.3	857.7
E	Dead Load "A"	[illegible]258	1893	8058	130.6	427.9
	Dead Load "B"	1718	511	1781	37.7	110.2
	Live Load	1173	[illegible]	1314	35.2	76.9
	Impact	194	[illegible]	[illegible]	5.8	13.6
	Total	--	[illegible]	11,326	209.3	628.6

TABLE OF MOMENTS AND REACTIONS IN FOOT KIPS AND KIPS — UNIT 3

GIRDER	ITEM	MAXIMUM POSITIVE MOMENT SPAN 7	SPAN 8	SPAN 9	MAXIMUM NEGATIVE MOMENT PIER 7	PIER 8	PIER 9	REACTIONS PIER 7	PIER 8	PIER 9	EXP. JT.
A	Dead Load "A"	5756	18[illegible]7	556[illegible]	[illegible]	10,038	2371	457.0	462.0	346.0	149.7
	Dead Load "B"	1725	[illegible]08	1692	[illegible]	[illegible],437	688	125.0	126.1	100.6	43.2
	Live Load	3207	28[illegible]5	3542	3741	[illegible]47	1121	175.4	179.6	151.0	79.2
	Impact	489	[illegible]12	516	55[illegible]	[illegible]76	163	26.2	26.2	22.0	12.1
	Total	--	--	--	16,275	[illegible]98	4343	783.6	795.9	619.6	284.2
B C D	Dead Load "A"	7595	2[illegible]41	7347	12,660	[illegible]	3172	601.9	609.0	462.8	197.5
	Dead Load "B"	1725	[illegible]08	1692	2,364	[illegible]	688	125.0	126.1	100.6	43.2
	Live Load	4807	4[illegible]35	5310	5,608	5,[illegible]	1690	263.0	269.2	228.3	118.8
	Impact	733	[illegible]18	774	836	[illegible]	[illegible]45	39.2	39.3	33.0	18.1
	Total	--	--	--	21,468	22,[illegible]5	[illegible]	1029.1	1043.6	822.7	377.6
E	Dead Load "A"	5934	1913	57[illegible]4	9,907	10,34[illegible]	[illegible]	471.0	475.3	357.3	154.3
	Dead Load "B"	1725	[illegible]08	1692	2364	2,437	[illegible]	125.0	126.1	100.6	43.2
	Live Load	1624	[illegible]31	1794	1895	1,999	[illegible]	[illegible].9	91.0	76.5	40.1
	Impact	248	[illegible]09	262	282	292	[illegible]	[illegible].2	13.3	11.1	6.1
	Total	--	--	--	14,448	15,075	3,[illegible]	[illegible]	705.7	545.5	243.7

TABLE OF MOMENTS AND REACTIONS IN FOOT KIPS AND KIPS — UNIT 4

GIRDER	ITEM	MAXIMUM POSITIVE MOMENT SPAN 10	SPAN 11	SPAN 12	MAXIMUM NEGATIVE MOMENT PIER 10	PIER 11	PIER 12	REACTIONS PIER 10	PIER 11	PIER 12	EXP. JT.
A	Dead Load "A"	5756	1857	5561	9612	10,033	2371	457.[illegible]	[illegible].0	346.0	147.1
	Dead Load "B"	1725	808	1692	2364	2,437	683	125.0	[illegible]	100.6	47.0
	Live Load	3207	2825	3542	3741	3,947	1121	175.4	[illegible]	151.0	78.1
	Impact	489	412	516	558	576	163	26.2	[illegible]	22.0	11.9
	Total	--	--	--	16,275	16,998	4343	783.6	79[illegible]	[illegible]9.6	279.7
B C D	Dead Load "A"	7595	2441	7347	12,660	13,230	3172	601.9	60[illegible]	[illegible].8	194.1
	Dead Load "B"	1725	808	1692	2,364	2,437	688	125.0	126.[illegible]	[illegible]	42.6
	Live Load	4807	4235	5310	5,608	5,916	1680	263.0	269.[illegible]	[illegible]	117.1
	Impact	733	618	774	836	863	245	39.2	39.3	[illegible]	17.9
	Total	--	--	--	21,460	22,446	5785	1029.1	1043.6	[illegible]	371.7
E	Dead Load "A"	5934	1913	5734	9,907	10,347	2449	471.0	475.3	[illegible]	151.7
	Dead Load "B"	1725	808	1692	2364	2,437	688	125.0	126.1	100.6	[illegible]2.6
	Live Load	1624	1431	1794	1895	1,999	568	88.9	91.0	76.5	[illegible]
	Impact	242	209	262	282	292	63	13.2	13.3	11.1	[illegible]
	Total	--	--	--	14,448	15,075	3723	639.1	706.7	545.5	[illegible]

TABLE OF MOMENTS AND REACTIONS IN FOOT KIPS AND KIPS — UNIT 2

GIRDER	ITEM	MAXIMUM POSITIVE MOMENTS SPAN 3	SPAN 4	SPAN 5	SPAN 6	MAXIMUM NEGATIVE MOMENT PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	REACTIONS EXP. JT.	PIER 2	PIER 3	PIER 4	PIER 5	PIER 6	EXP. JT.
A	Dead Load "A"	7725	[illegible]	6540	7742	1173	17,765	17,414	20,197	2463	62.9	290.3	640.3	646.9	709.5	397.4	149.7
	Dead Load "B"	[illegible]	1431	2046	2112	392	3,591	3,674	3962	684	21.6	77.1	143.2	151.6	161.8	104.4	43.2
	Live Load	[illegible]	3807	4839	4751	913	4,930	5,667	6064	1134	59.3	129.2	184.5	203.0	219.7	161.2	79.2
	Impact	545	461	519	630	142	631	600	781	137	11.6	20.1	23.6	24.4	27.6	22.4	12.1
	Total	--	--	--	--	2620	26,325	27,435	31,064	4,438	135.4	516.7	991.6	1025.9	1118.6	685.4	284.2
B	Dead Load "A"	10,634	7269	7549	8871	1176	24,277	22,712	25,154	3,231	86.5	403.9	875.8	840.2	889.1	512.6	197.5
	Dead Load "B"	2137	1790	2012	2123	392	3712	3773	3553	684	22.2	80.7	153.7	155.1	161.3	104.5	43.2
	Live Load	6731	6717	7290	7137	1426	8496	9184	9105	1699	90.8	202.9	312.1	326.1	330.4	242.2	118.8
	Impact	921	806	870	846	220	1073	1097	1143	238	17.7	31.3	59.5	59.0	41.5	33.6	18.1
	Total	--	--	--	--	3764	37,551	36,764	39,357	5850	217.2	718.8	1381.1	1360.4	1422.3	892.9	377.6
C	Dead Load "A"	11,429	7990	7542	9930	1176	28,350	21,437	24,585	3231	81.2	418.5	934.0	861.3	665.3	513.3	197.5
	Dead Load "B"	2266	1940	1909	2135	392	4019	3997	3553	684	23.4	83.3	163.9	158.9	160.7	104.6	43.2
	Live Load	7197	7209	7311	7152	1494	9154	9590	9121	1699	91.8	206.3	332.1	339.0	331.1	242.5	118.8
	Impact	911	852	811	940	221	1147	1141	1145	238	17.7	32.0	41.6	40.2	41.6	33.7	18.1
	Total	--	--	--	--	3795	40,064	38,035	39,175	5850	224.2	742.0	1470.6	1398.4	1418.7	894.1	377.6
D	Dead Load "A"	11,725	5135	7336	10,102	1176	29,620	24,703	24,576	3231	97.7	443.6	1046.0	901.3	878.0	514.9	197.5
	Dead Load "B"	2549	2310	1098	2154	392	4502	4090	3873	684	24.1	87.8	178.6	165.8	159.6	104.8	43.2
	Live Load	7230	8396	7398	7167	1511	10,124	10,309	9137	1699	83.9	217.6	368.9	360.2	352.1	243.0	118.8
	Impact	1318	900	875	850	232	1281	1221	1147	238	18.0	33.2	45.8	42.7	41.7	33.8	18.1
	Total	--	--	--	--	3959	45,727	40,312	38,732	5850	233.7	782.2	1619.3	1470.0	1411.4	896.5	377.6
E	Dead Load "A"	12,450	5753	5676	8019	1597	26,932	22,377	20,444	2535	89.8	422.3	990.2	813.1	737.9	423.0	154.3
	Dead Load "B"	2526	2517	1815	2101	392	3142	4309	3611	684	26.6	94.6	199.9	174.1	158.4	105.0	43.2
	Live Load	3630	4462	2495	2427	603	5171	4540	3093	574	35.0	87.3	181.4	156.4	113.5	82.8	40.1
	Impact	490	521	297	322	91	635	535	390	90	6.6	13.2	22.3	18.4	14.3	11.5	6.1
	Total	--	--	--	--	2643	35,880	31,761	27,736	[illegible]	156.0	617.4	1393.8	1162.0	1024.1	622.3	243.7

TABLE OF MOMENTS AND REACTIONS IN FOOT KIPS AND KIPS — UNIT 5

GIRDER	ITEM	MAXIMUM POSITIVE MOMENT SPAN 13	SPAN 14	SPAN 15	MAX. NEG. MOMENT PIER 13	PIER 14	REACTIONS PIER 13	PIER 14	E. ABUT.
A	Dead Load "A"	5552	2320	3764	16,104	8075	445.7	411.5	115.7
	Dead Load "B"	1681	947	1200	2,475	2010	127.9	115.8	38.7
	Live Load	3125	2468	2551	3,447	3349	171.0	161.8	75.0
	Impact	478	369	425	544	550	25.0	25.6	13.1
	Total	--	--	--	16,767	13,648	769.6	716.5	248.7
B C D	Dead Load "A"	7325	3068	5059	13,316	10,711	614.4	545.7	139.7
	Dead Load "B"	1681	947	1200	2,475	2,010	127.9	115.8	38.7
	Live Load	4876	4000	3913	5,446	4,405	258.5	245.2	105.7
	Impact	713	583	637	615	765	38.7	38.3	18.7
	Total	--	--	--	23,609	19,318	1040.5	945.0	323.4
E	Dead Load "A"	3724	2380	3901	10,216	8,325	475.7	424.7	133.4
	Dead Load "B"	1681	943	1200	2,275	2,010	127.6	115.8	38.7
	Live Load	1500	1353	1305	1,646	1,451	87.6	83.0	36.6
	Impact	241	197	219	275	257	13.1	13.0	6.7
	Total	--	--	--	19,009	12,241	704.5	635.7	203.5

NOTE:

Positive moments due to Dead Load B, Live Load and Impact are resisted by composite action. Dead Load A includes weight of slab and girders. Dead Load B includes weight of curbs, rails and wearing surface. Moments and reactions shown are for normal Live Load loadings. Equivalent lane loading governs.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

TABLE OF MOMENTS AND REACTIONS

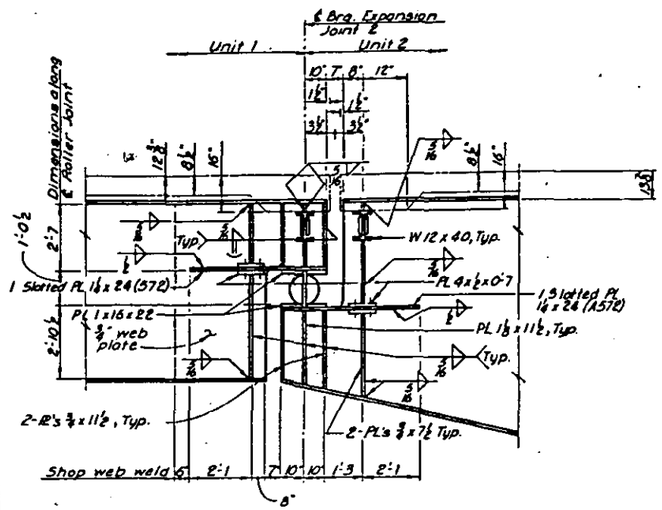
STA. [illegible]
RIVER MILE [illegible]
LEE COUNTY, IOWA

PROJECT NO. [illegible]
HANCOCK COUNTY, ILLINOIS

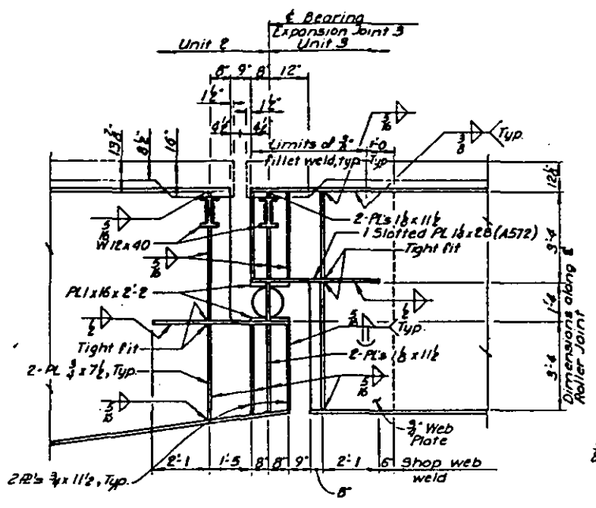
DESIGN SHEET 87 OF

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

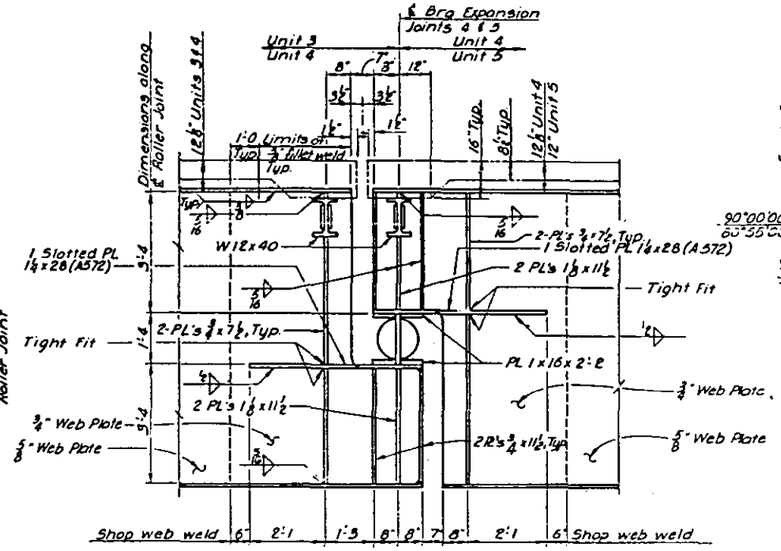
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



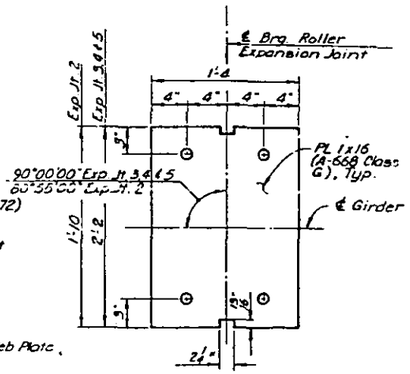
EXPANSION JOINT 2



EXPANSION JOINT 3

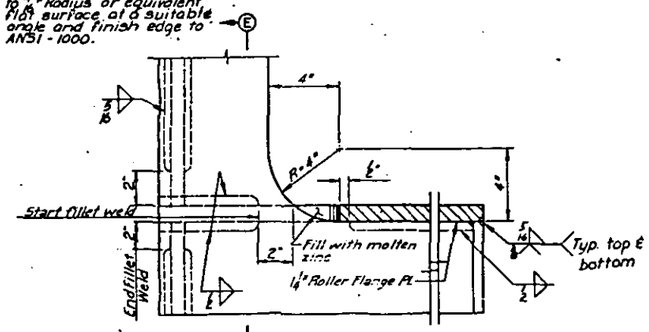


EXPANSION JOINTS 4 & 5

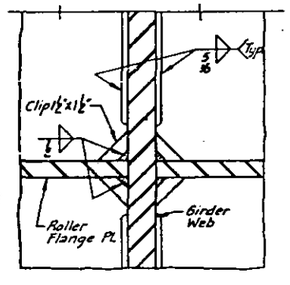


SECTION B-B

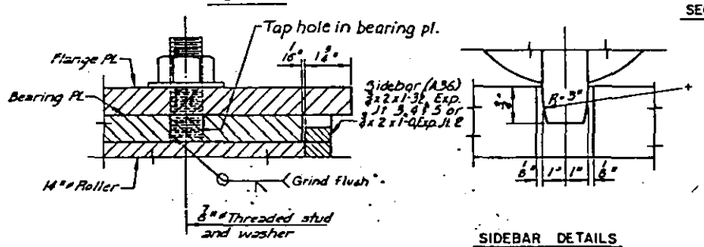
Edges shall be rounded to ¼" Radius or equivalent F10 surface at a suitable angle and finish edge to ANSI - 1000.



DETAIL A



SECTION E-E



SECTION A-A

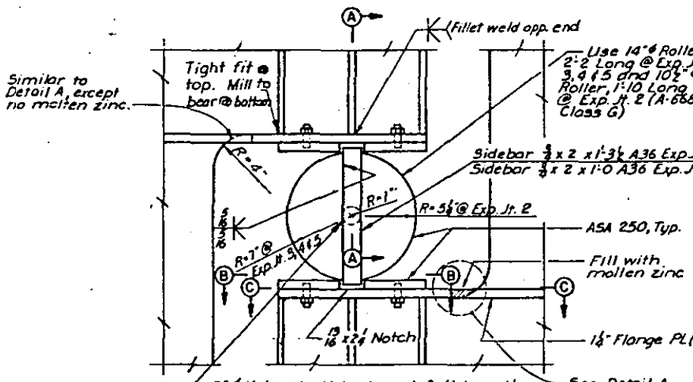
SIDEBAR DETAILS

Notes:

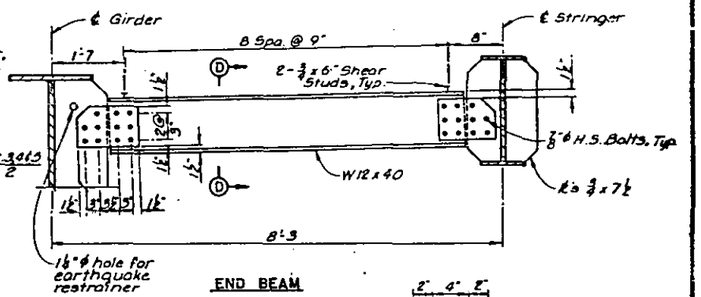
Roller and Roller Bearing Plate shall be A-668 Class G steel.

Steel shall be A36 unless noted otherwise.

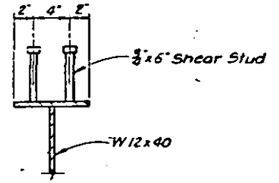
A-668 steel shall be included in the price bid for "Structural Steel -- A36."



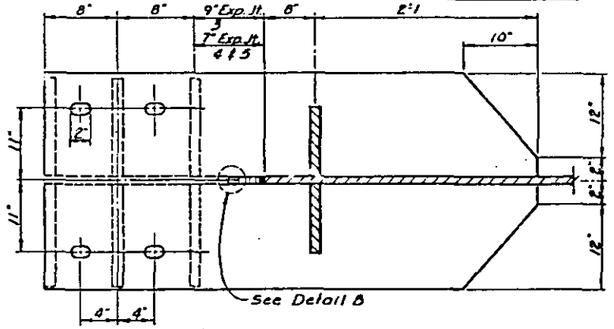
ROLLER DETAIL



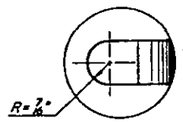
END BEAM



SECTION D-D



SECTION C-C
(Exp Jt 3, 4 & 5, for Exp. Jt. 2, see Sheet 89)



DETAIL B

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

GIRDER EXPANSION JOINTS

STA. 89+48.88
RIVER MILE 363.9
LEE COUNTY, IOWA

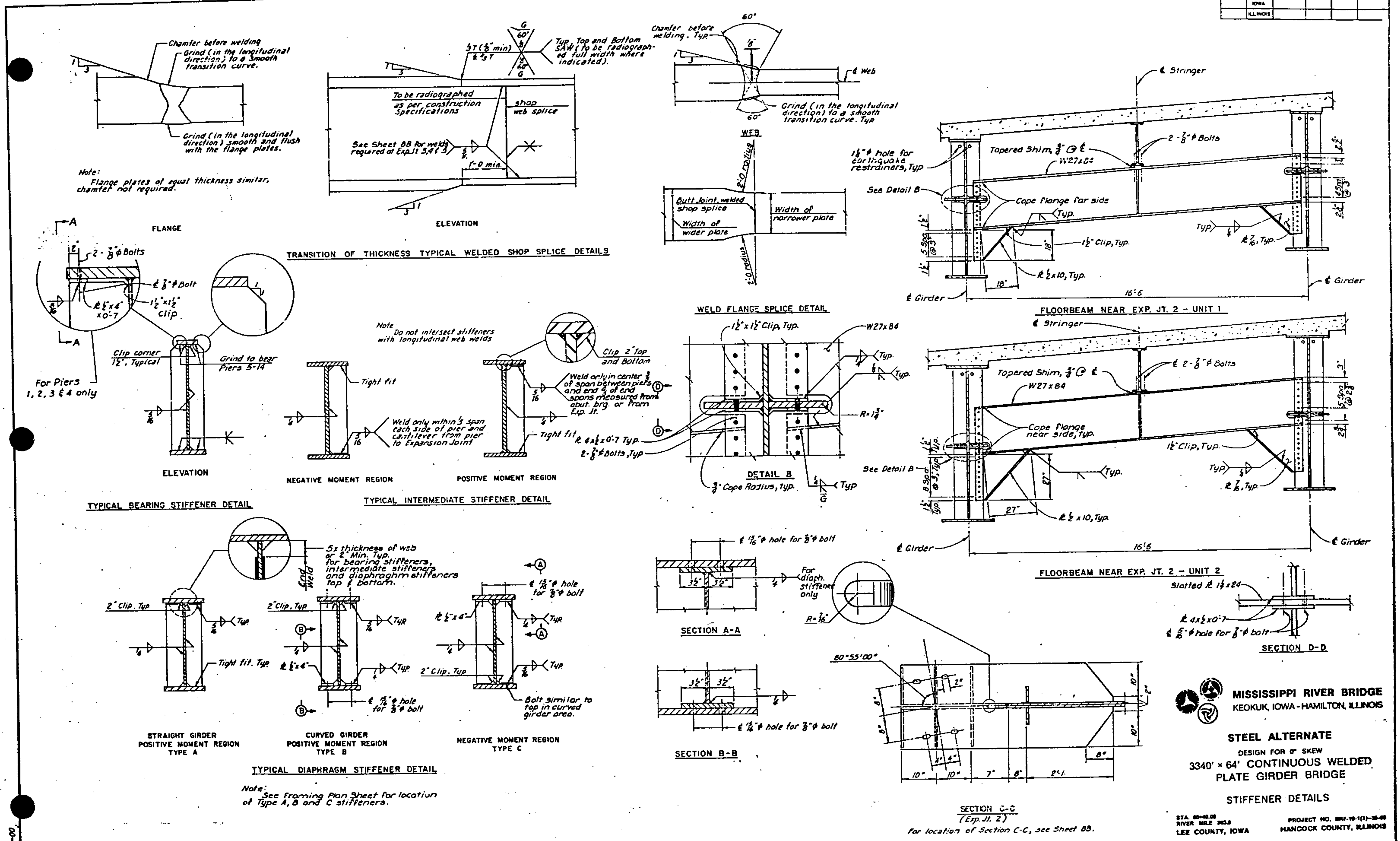
PROJECT NO. BRF-91-1(2)--89-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 88 OF

DESIGN NO. 352 LEE COUNTY

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

787-25-00



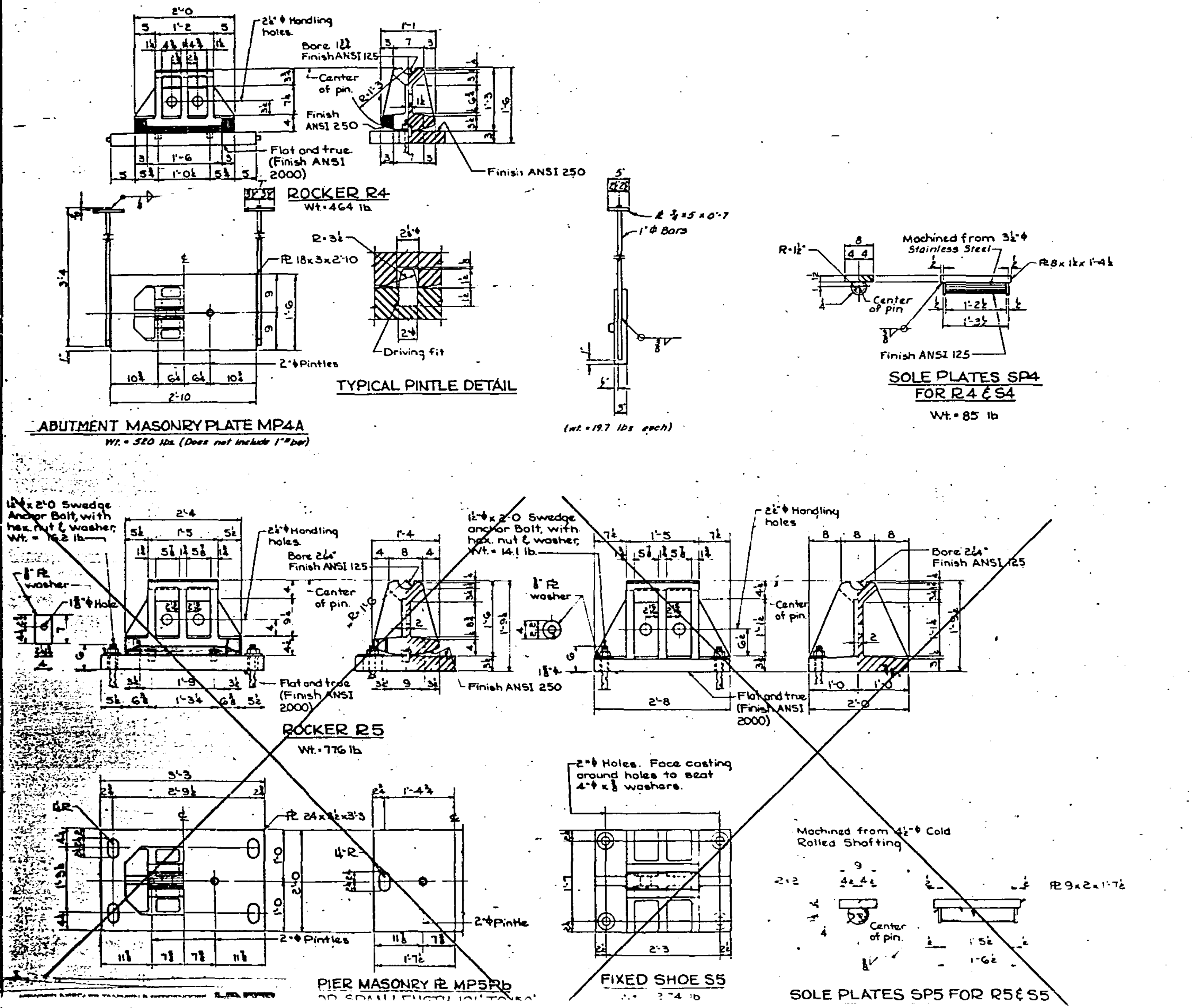
MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

STIFFENER DETAILS

LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB
MADE LCY DATE 7-82 CHECKED DLM DATE 8-82



BEARING NOTES:

Castings R4, R5, S4 and S5 shall be Nodular Iron Castings complying with Article 4153.04 of the Standard Specifications.

Masonry plates MP4P and MP5P shall be either Nodular Iron Castings complying with Article 4153.04 or structural steel complying with ASTM A-588, except that the supplementary requirement S1 (Impact Properties) of AASHO M222 shall not apply.

All plates and bars shall comply with ASTM A-36. Pins shall comply with Article 4153.02 of the Standard Specifications and with ASTM A-108.

Anchor bolts shall be set in accordance with Article 2408.41 of the Standard Specifications.

All bearings are to be set on a ⅛" lead sheet in accordance with Article 2408.38 of the Specifications.

The weight of bearings shown does not include the weight of paint.

As soon as the surfacing process is done, the surfaces finished with an ANSI 125 finish shall be shop coated with an application of waterproof National Lubricating Grease Institute Nº 3 multipurpose grease. Just before the erection of the structural steel in the field, the shop coated surfaces are to be wiped clean and a field coat of N.L.G.I. Nº 3 grease is to be applied.

All masonry plates, swedge bolts, nuts and washers shall be galvanized. Galvanizing shall be in accordance with Article 4100.10 of the Standard Specifications.

Weight of all steel shall be included in the bid item "Structural Steel A-588".

DISTANCE FROM TOP OF SOLE PLATE TO BRIDGE SEAT	
Rockers & Fixed Shoes	D*
R4 & S4	1'-8⅝
R5 & S5	2'-0⅞

* Including ⅛" lead sheet.

MAXIMUM REACTION (In Kips)	
R4 S4	R5 S5
475	650

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

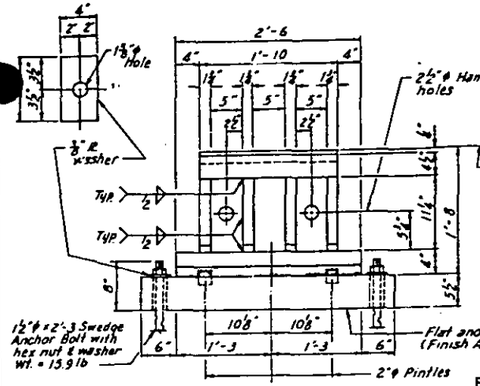
BEARING DEVICES

LEE COUNTY, IOWA — HANCOCK COUNTY, ILLINOIS

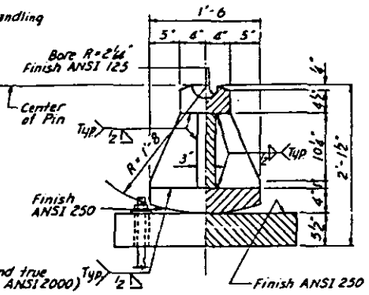
Revision (7-6-64) Finish on shoes and masonry plates in contact with concrete added. Revision Masonry plates, swedge anchor bolts, nuts and washers galvanized.
Revision (5-27-65) Weights for MP4P, MP5Pa and MP5Pb changed.
Revision (6-20-66) Nodular Iron Casting ASTM number and grade changed.
Revision (9-28-72) ASA changed to ANSI.
Revision (11-22-72) Note concerning finishing changed.
Revision (7-11-73) Material for Rockers, Shoes and Masonry Plates changed.
Revision (8-29-77) Notes concerning material to fill slots, and seating of bearings changed.

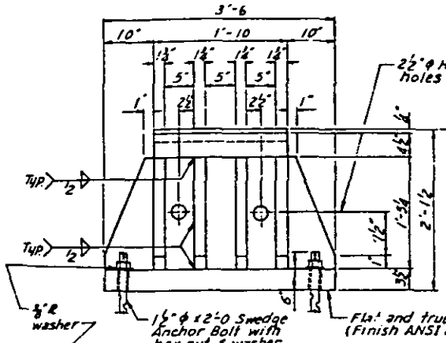
DRAWN FKT DATE 8-15-82 CHECKED DLM DATE 8-82

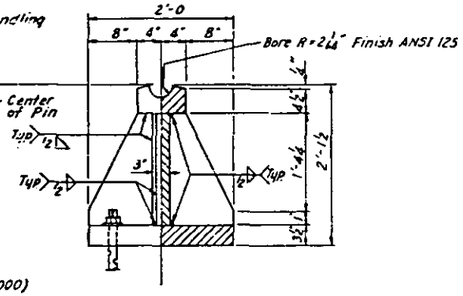
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				

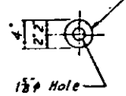


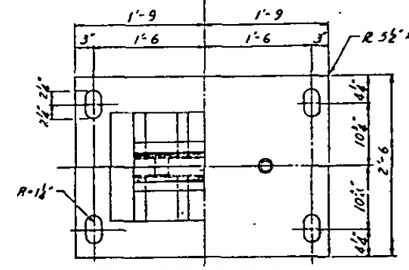
ROCKER R7
(Wt = 1032 lbs)



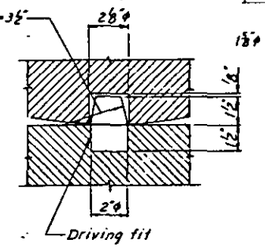




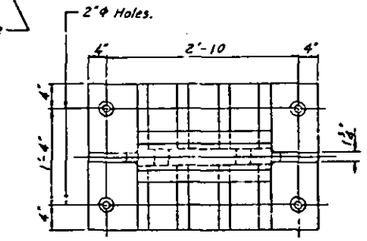




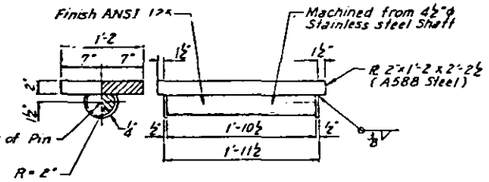
PIER MASONRY PLATE MP7P
(Wt. = 1981 lbs)



TYPICAL PINTLE DETAIL



FIXED SHOE S7
(Wt. = 2056 lbs)



SOLE PLATES SP7
FOR R7 & S7
(Wt. = 289 lbs)

BEARING NOTES:

All steel shall be structural steel complying with A-588 unless otherwise shown, except that the supplementary requirement S1 (Impact Properties) of AASHTO M222 shall not apply.

Anchor bolts shall be set in accordance with Article 2408.47 of the Standard Specifications.

All bearings are to be set on a ⅛" lead sheet in accordance with Article 2408.38 of the Specifications.

The weight of bearings shown does not include the weight of paint.

As soon as the surfacing process is done, the surfaces finished with an ANSI 125 finish shall be shop coated with an application of waterproof National Lubricating Grease Institute No. 3 multi-purpose grease. Just before the erection of the structural steel in the field, the shop coated surfaces are to be wiped clean and a field coat of N.L.G.I. No. 3 grease is to be applied.

After masonry plates, rockers and shoes are in correct location, fill slotted holes around anchor bolts with a sulphur-based compound or epoxy resin adhesive in accordance with Article 2408.47 of the Standard Specifications.

All masonry plates, swedge bolts, nuts and washers shall be galvanized. Galvanizing shall be in accordance with Article 4100.10 of the Standard Specifications.

All steel shall be included in the bid item "Structural Steel A-588."

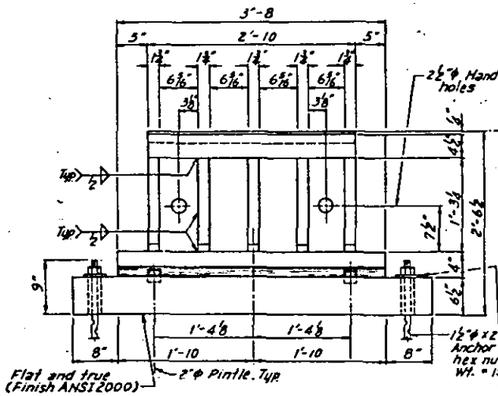
Stainless steel alloy with yield point of 50,000 psi.

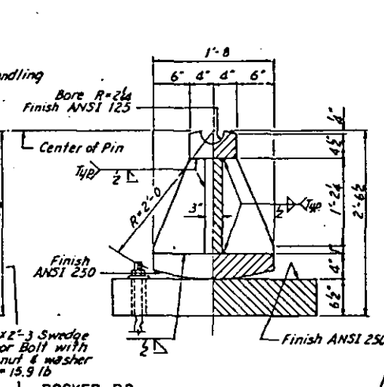
DISTANCE FROM TOP OF SOLE PLATE TO BRIDGE SEAT	
ROCKERS & FIXED SHOES	D*
R7 & S7	2'-5⅜
R8 & S8	2'-10⅜

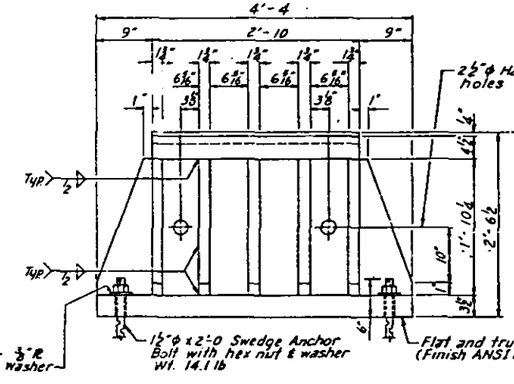
* Including ⅛" Lead sheet.

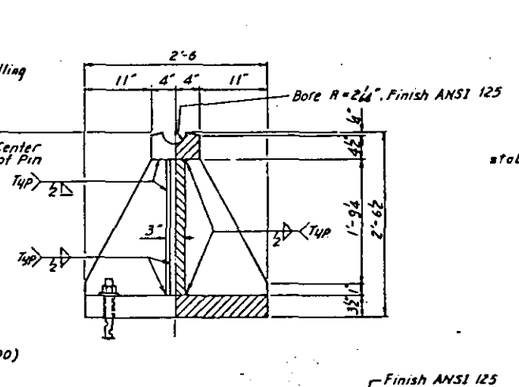
MAXIMUM REACTION (In Kips)	
R7 , S7	R8 , S8
1075	1630

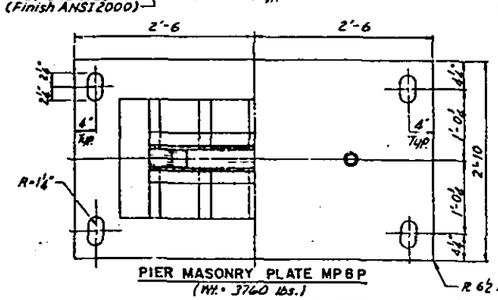
Weldment shall be stress-relieved for dimensional stability prior to machining.



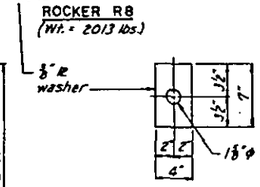


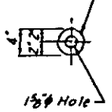


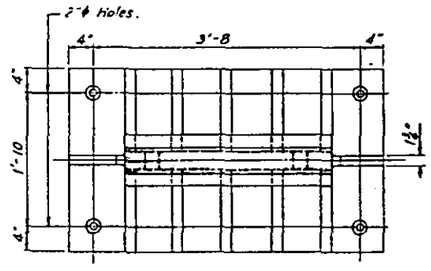




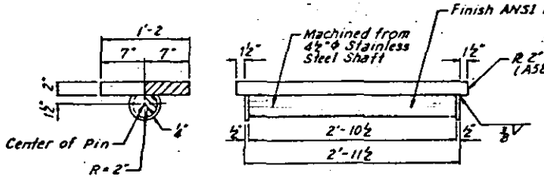
PIER MASONRY PLATE MP8P
(Wt. = 3760 lbs.)







FIXED SHOE S8
(Wt. = 3599 lbs.)



SOLE PLATES SP8
FOR R8 & S8
(Wt. = 416 lbs.)

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

BEARING DEVICES

STA. 50+40.00
RIVER MILE 363.9
LEE COUNTY, IOWA

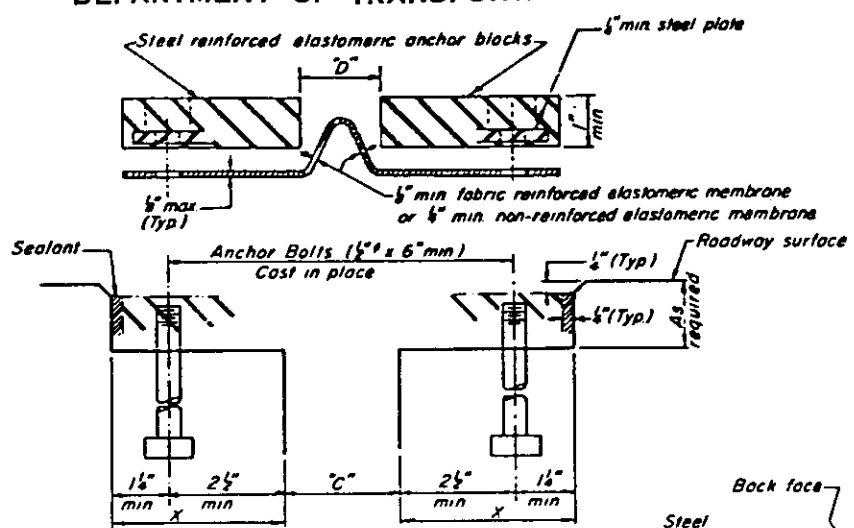
PROJECT NO. BRF-10-1(3)--38-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 25 OF

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

17-25-0

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



CROSS SECTION

INSTALLATION NOTES

Use anchor blocks and continuous seal as anchor bolt location templates.

① Install sponge mandrels into positions shown to form flap convolution

② Install parapet or sidewalk piece (trim roadway flap to fit before applying epoxy)

③ Install continuous seal in roadway

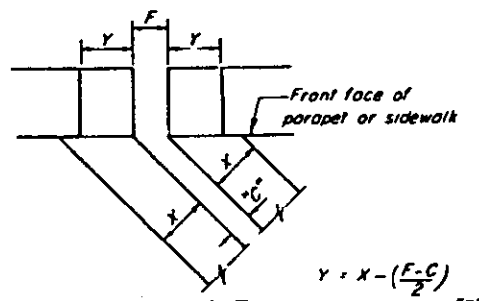
④ Install anchor blocks as indicated

NOTE A_ Maximum spacing of anchor bolts shall be 12" centers

SKEW LIMITATIONS

The details of the anchor blocks and the elastomeric membrane in the parapet, as shown, are for up to 50° skews

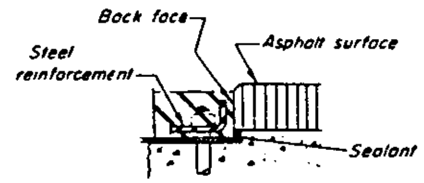
For skews greater than 50°, the anchor blocks and the elastomeric membrane, installed in accordance with dimension "D", might require modifications to insure a minimum clearance of 1½" from centerline of anchor studs to edge of parapet opening. The anchor blocks and the elastomeric membrane shall also be installed to the top of the parapet with the anchor studs spaced at ±12" cts



FORMING BLOCKOUT SKETCH

$Y = X - (\frac{F-C}{2})$

For dimension "F" see sheet #



ANCHOR BLOCK REINFORCEMENT with ASPHALT SURFACE

GENERAL NOTES

Continuous Seal Neoprene Expansion Joint shall consist of molded anchor blocks of elastomer and steel, field assembled over continuous lengths of elastomeric membrane. See Special Provisions.

The elastomeric membrane shall be premolded with a single or a double upward convolution that will have a "memory" to return to its molded position upon joint closure.

The steel reinforcement must extend up the back face of anchor blocks when asphalt surfaces are used but is optional in concrete Blockout.

The convolution length shall be such that the extended length will not be greater than the manufactured length when the joint is fully expanded in its design range and will not protrude above the anchor blocks when the joint is fully compressed.

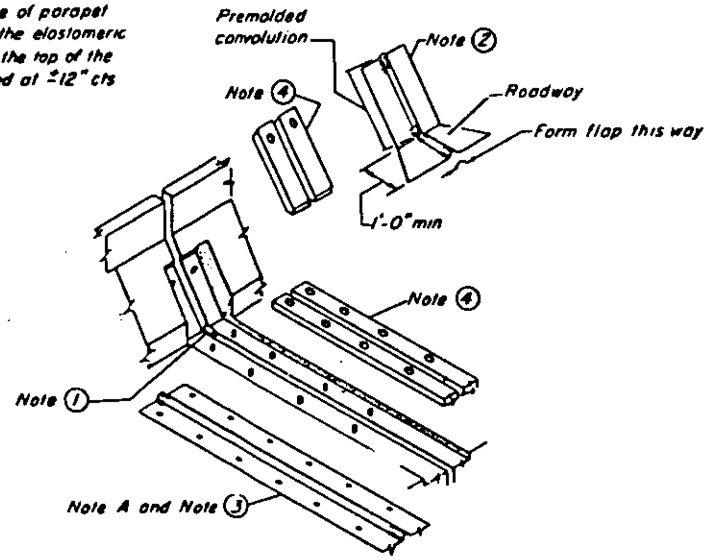
Joint openings shall be adjusted in accordance with Article 503.07(c) of the Standard Illinois Specifications when the deck is poured at an ambient temperature other than 50°F.

The parapet and sidewalk flaps may be furnished factory vulcanized to the roadway membrane provided the centerline of the convolution is maintained and the process and method meet the approval of the Engineer.

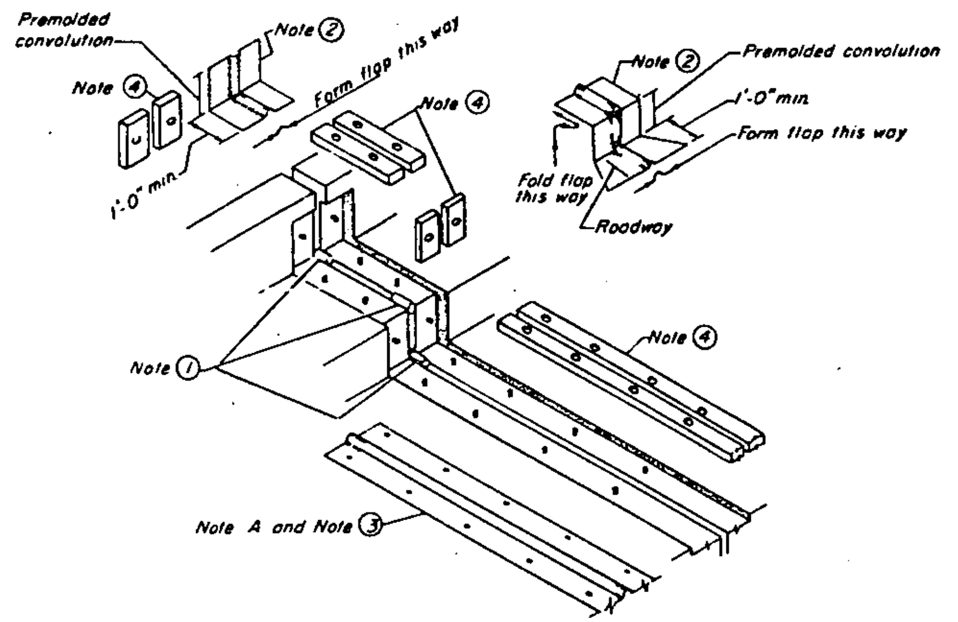
Joint shall be continuous through median curb.

Payment shall be Lin. Feet measured gutterline to gutterline.

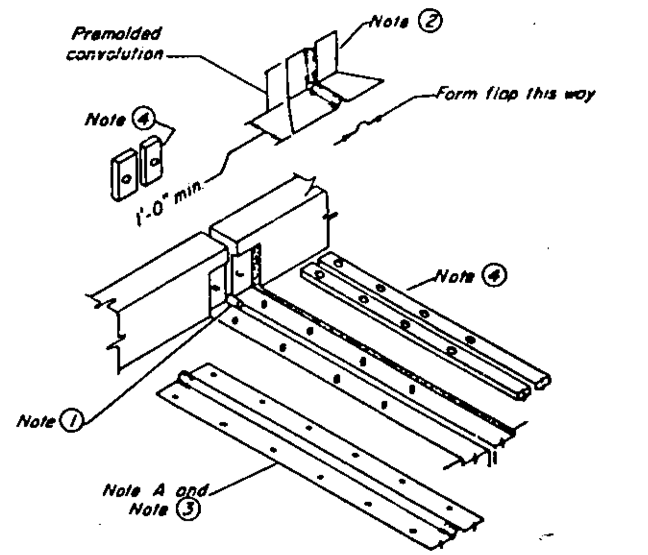
Joint Size	"C" at 50°F	"D" at 50°F
4	3"	2½" Min.



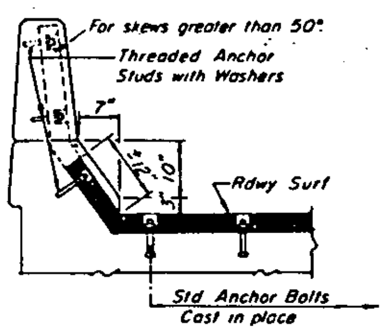
AT PARAPET



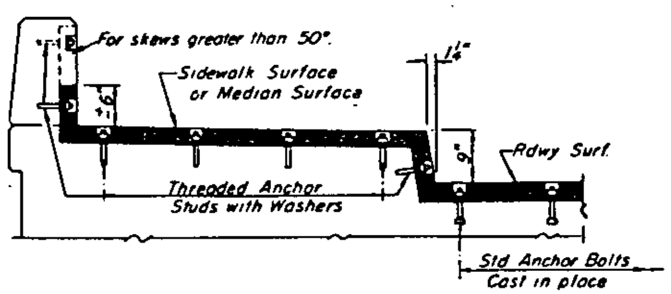
AT SIDEWALK or MEDIAN



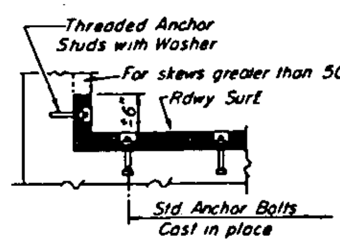
AT WALL



AT PARAPET



AT SIDEWALK or MEDIAN



AT WALL

TYPICAL END TREATMENTS

Sheet provided by Illinois DOT. Standard Sheet EJ-CS 2-1-83

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

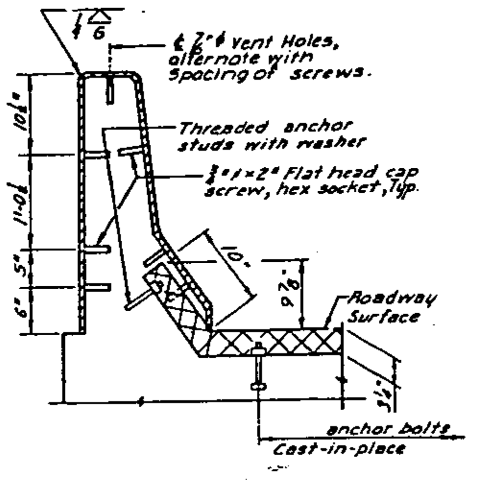
ABUTMENT EXPANSION JOINT DETAILS

LEE COUNTY, IOWA

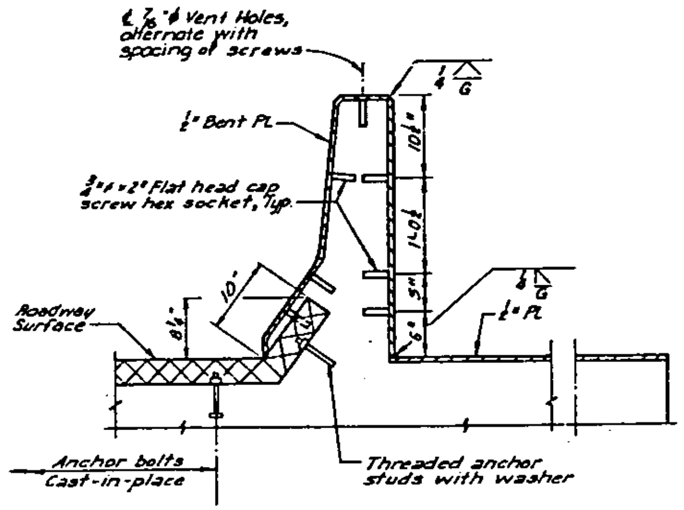
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 92 OF

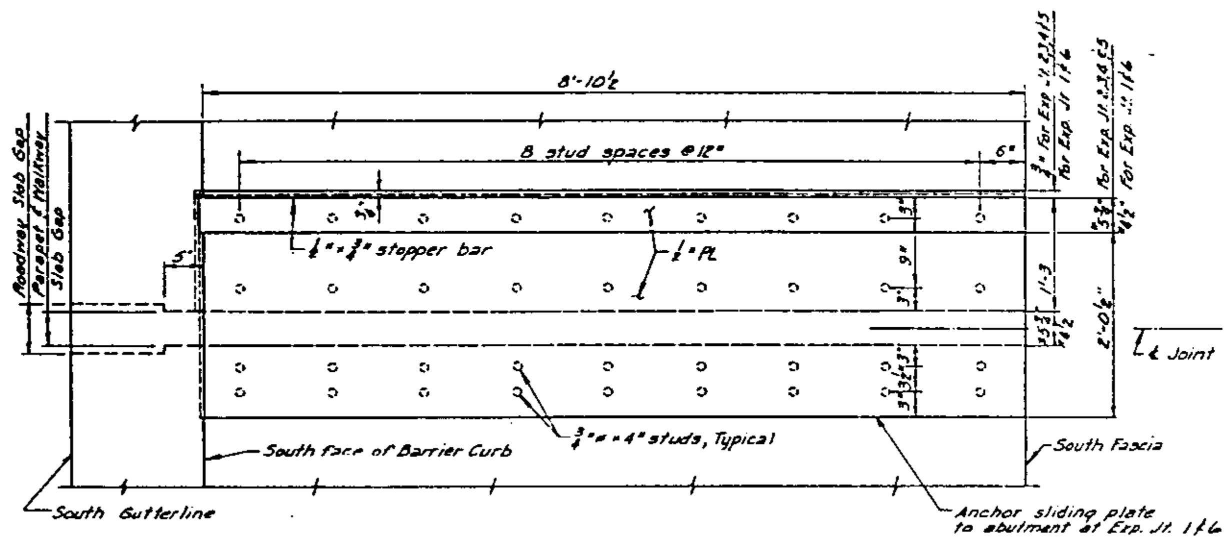
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB



EXPANSION JOINT TREATMENT AT NORTH BARRIER



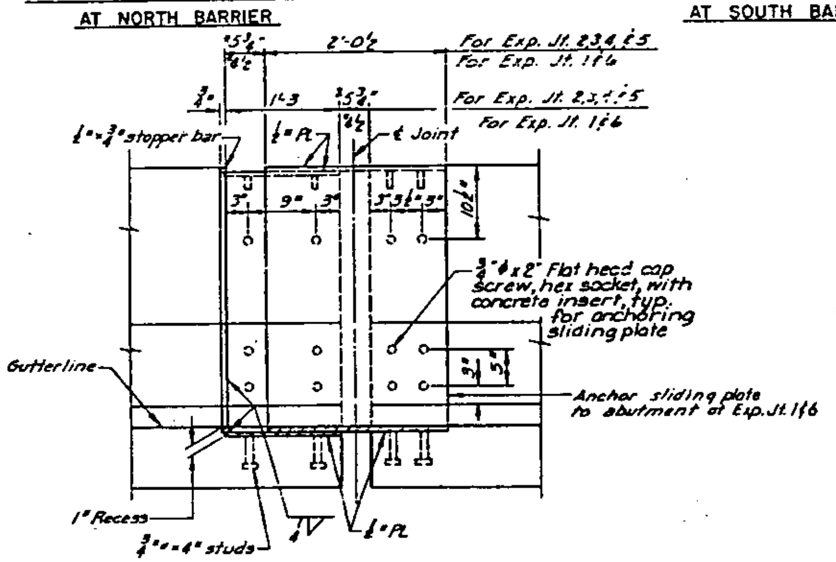
EXPANSION JOINT TREATMENT AT SOUTH BARRIER



PLAN OF SIDEWALK EXPANSION JOINT

* At 50° F

(Expansion Joints 1,2,3,4 & 5. Expansion Joint 6 is similar)



ELEVATION OF SOUTH BARRIER AT EXPANSION JOINT

* At 50° F

(North Barrier and Median Barrier similar)

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

ABUTMENT EXPANSION JOINT DETAILS

LEE COUNTY, IOWA

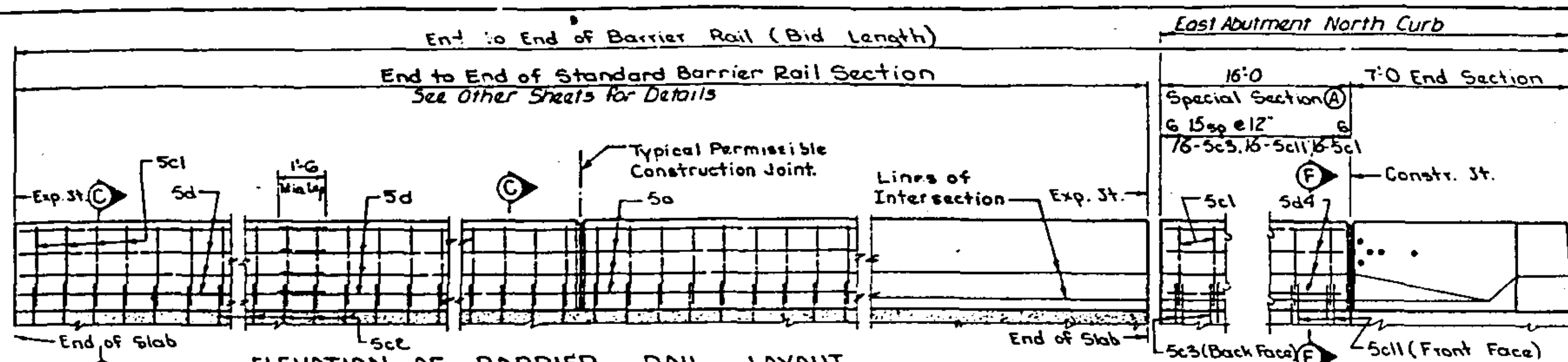
HANCOCK COUNTY, ILLINOIS

HNTB

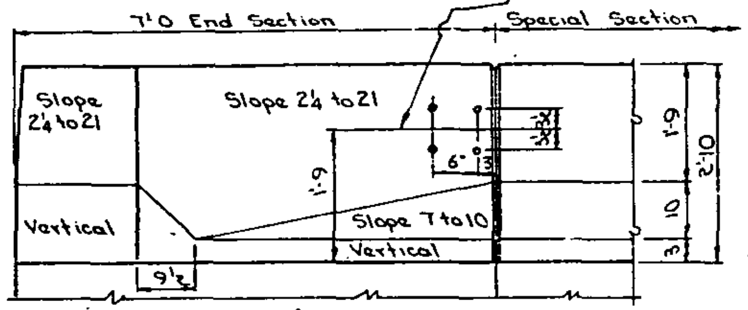
CONCRETE QUANTITIES		
Unit	Ft.	Yds.
1	626	59.6
2	2242	*214.5
3	1307	*125.1
4	1307	*125.1
5	1198	*114.4
West Abut.	4	4

* Includes light blister concrete on South Curb.

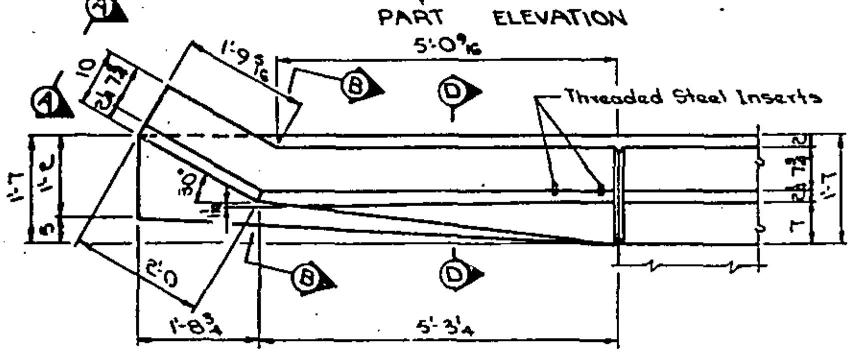
Provide four - 3 unit expanding or self drilling anchors for ⅝" ϕ Bolts with Standard Washers. Cost of inserts to be included in price bid for North and South Barrier Curb. Screws and washers are not a part of this contract.



ELEVATION OF BARRIER RAIL LAYOUT



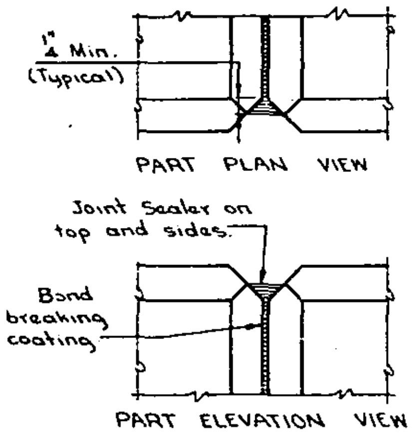
PART ELEVATION

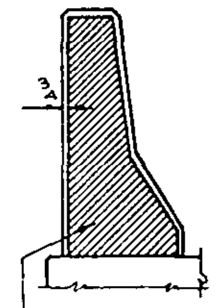


PART PLAN VIEW

DETAILS OF END SECTION-NORTH CURB EAST ABUTMENT

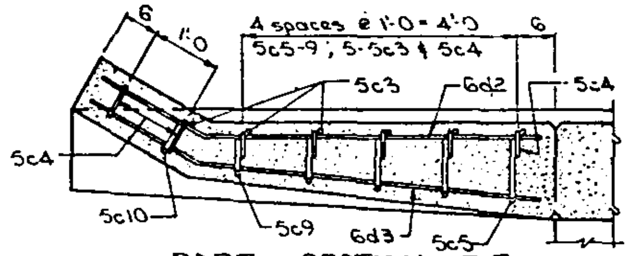
(1 REQUIRED)





Hatched area indicates area of bond breaking coating.

BARRIER RAIL JOINT DETAILS AT CONSTRUCTION JOINTS



PART SECTION E-E

BARRIER RAIL NOTES:

All barrier rail reinforcing steel is to be epoxy-coated.

Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

All exposed corners 90° or sharper are to be filleted with a ¾" dressed and beveled strip.

Top of the barrier rail is to be parallel to the theoretical ℄ grade.

The permissible construction joints are to be placed between vertical bars at a minimum spacing of 20 feet. Construction joint contact surfaces are to be coated with an approved bond breaker.

The concrete barrier rail is to be bid on a lineal foot basis measured from end to end of rail. The number of lineal feet of barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for Concrete Barrier Rail shall be full compensation for furnishing all material, excluding reinforcing steel, and all of the equipment and labor required to erect the rail in accordance with these plans and current specifications. All barrier rail reinforcing steel is to be included with the East Abutment reinforcing steel.

All barrier rail concrete is to be Class D.

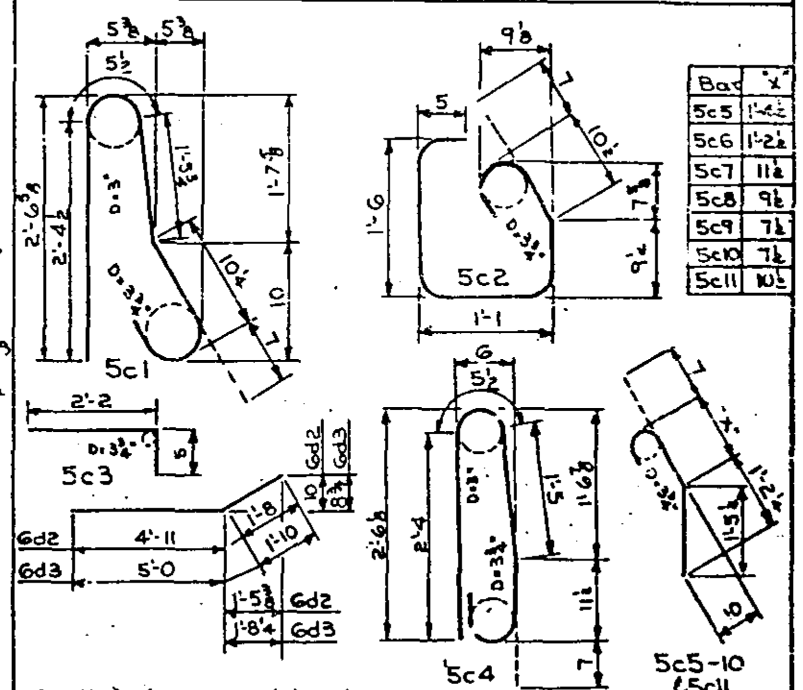
The joint sealer shall conform to Fed. Spec. TT-S00230 or TT-S00227 for Type II, Class A or B.

Cost of the joint sealer and bond breaker shall be considered incidental to other construction.

Cross Sectional Area of the Special Sections and Standard Section of the Barrier Rail = 2.57 Sq.Ft.

EPOXY REINFORCING STEEL - TWO BARRIER RAILS						
Section	Bar	Location	Shape	No.	Length	Weight
1-7'-0 End Sections	5c3	Vertical		6	2'-7	16
	5c4	Vertical		7	5'-0	42
	5c5-10	Vertical		6	Varies	19
	6d2	Longitudinal		6	6'-7	59
	6d3	Longitudinal		1	6'-10	10
Special Sections (All reinforcing required)	5c1	Vertical		16	5'-0	96
	5c3	Vertical		16	2'-7	43
	5c11	Vertical		16	2'-11	49
	5d4	Longit.-Special Sections (A)		7	15'-8	114
(Include with East Abutment Reinforcing)					Total (lb)	448

BENT BAR DETAILS

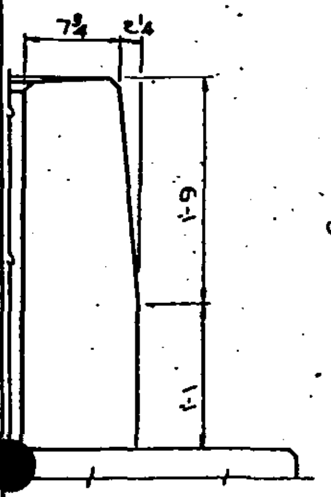


Bar	'x'
5c5	1'-4½
5c6	1'-2½
5c7	11½
5c8	9½
5c9	7½
5c10	7½
5c11	10½

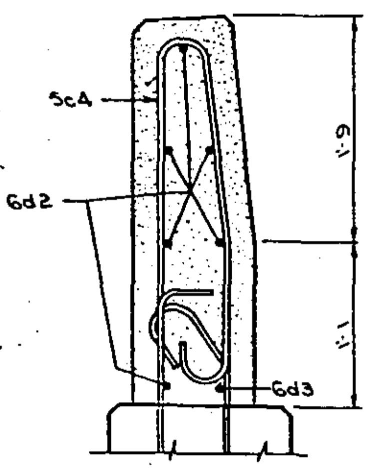
All dimensions are out to out.

CONCRETE PLACEMENT SUMMARY		
Section		Total
Standard Section (See above for unit breakdown)	@ .0952 cy per ft	
End Section	1 @ 0.62	.6
Special Section (A)		1.5
	Total Cu. Yds.	641.2

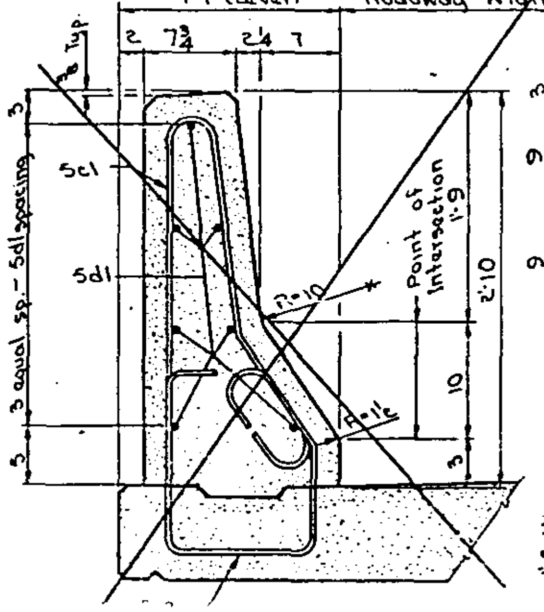
CONCRETE BARRIER RAIL QUANTITIES		
Item	Unit	Quantities
See Estimated Quantities Table each Unit		



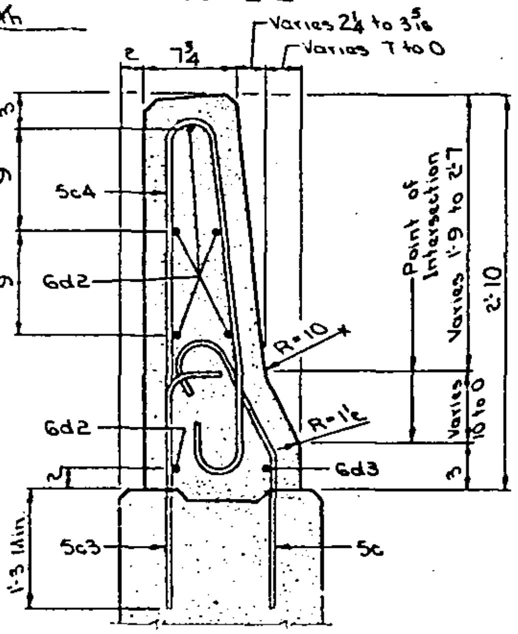
END VIEW A-A



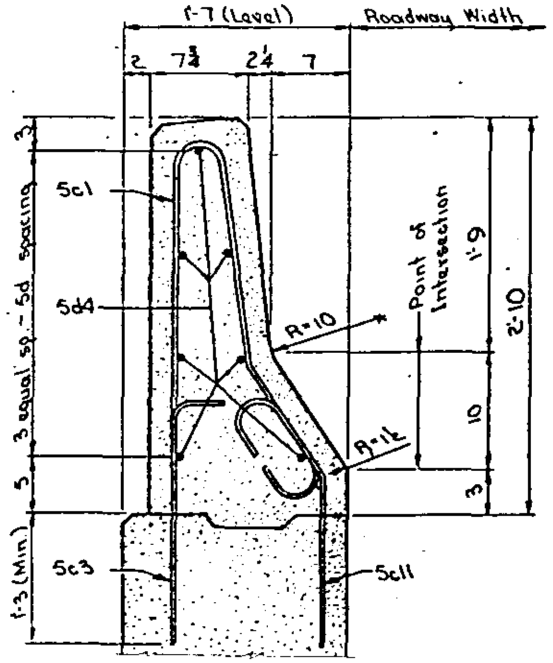
PART SECTION B-B



PART SECTION C-C



PART SECTION D-D



PART SECTION F-F

Rev. 2" Barrier Rail Height Increased (2") and Quantities Changed Accordingly.

DRAWN TKT DATE 9-82 CHECKED DLM DATE 9-82

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

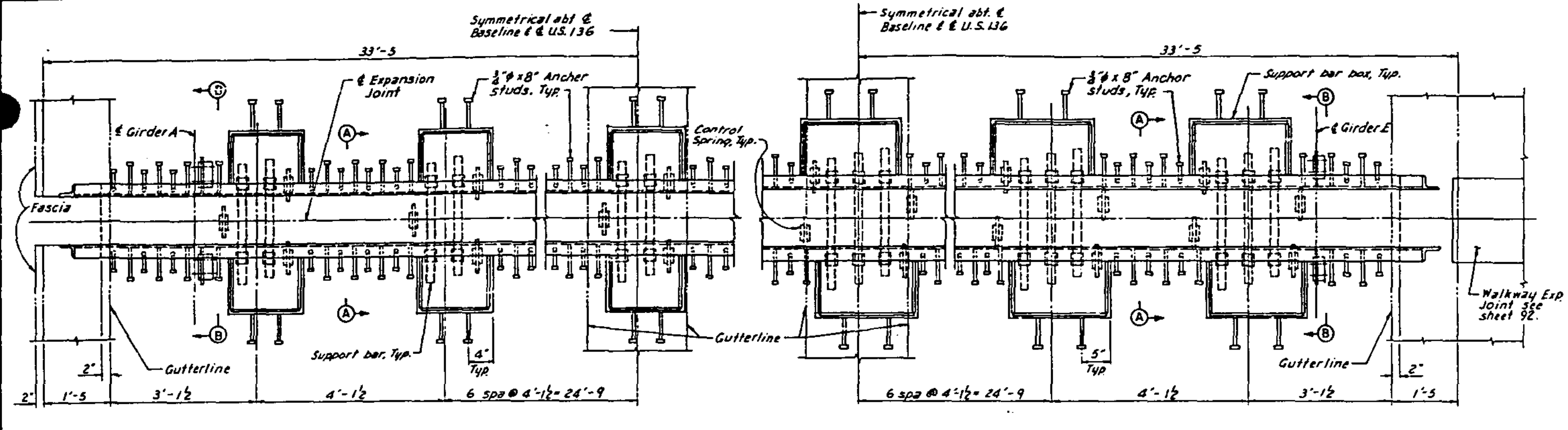
STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

BARRIER RAIL DETAILS

LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

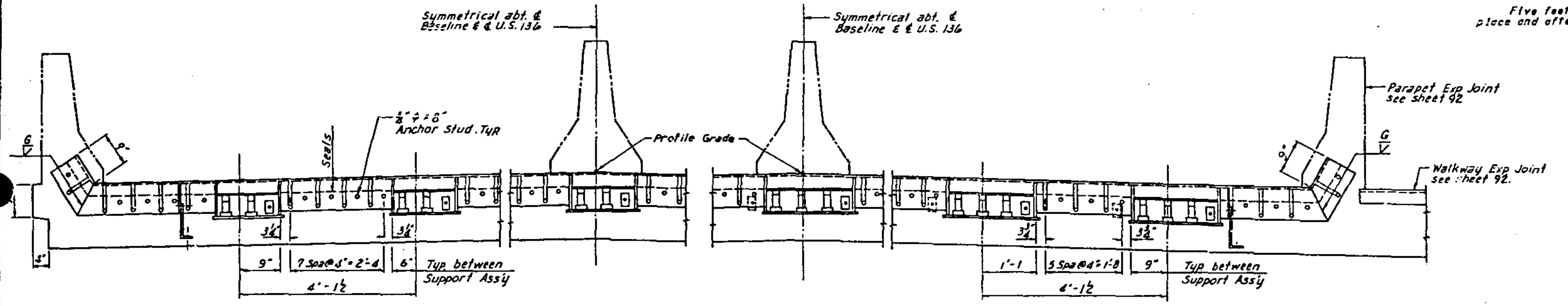
FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



EXPANSION JOINT 2, 4 & 5 (MSB-900)

PLAN

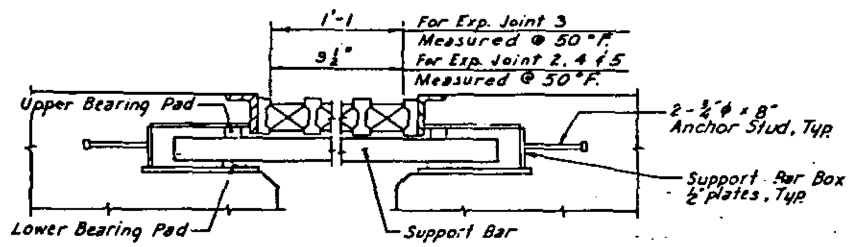
EXPANSION JOINT 3 (MSB-1200)



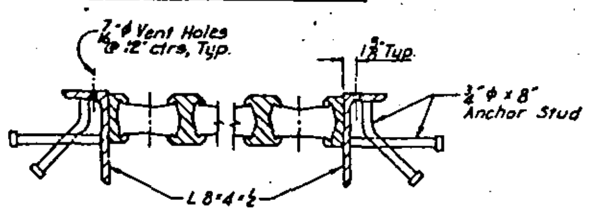
EXPANSION JOINT 2, 4 & 5 (MSB-900)

ELEVATION

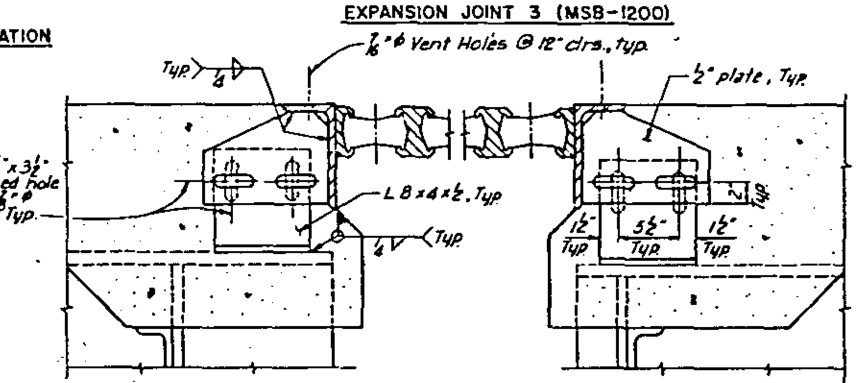
EXPANSION JOINT 3 (MSB-1200)



SECTION THRU MODULAR UNIT



SECTION A-A



SECTION B-B

Note:

Blockout slab 5'-0 each side of joint.

GENERAL NOTES:

The expansion joint seal shall be installed in accordance with the manufacturer's instructions shown on the shop drawings and in accordance with Special Provisions.

Approved No. 5 bars or deformed bar anchors (ASTM A496) may be used in lieu of stud welded anchors shown.

See Special Provisions for painting.

Plan dimensions are based on installation at 50°F. The expansion gap and other dimensions shall be adjusted during installation for compliance with any temperature change.

Furnishing painting and installing the modular joints will be paid for at the contract unit price per linear foot.

Use Acme Highway Products, MSB-900 and MSB-1200 expansion joint or Wabo Maurer D-1040 and D1300 or approved equal.

Structural steel for expansion joint to be ASTM A36, unless noted.

Steel extrusions shall be ASTM A-588.

All metal surfaces not embedded in concrete or not in direct contact with sealer shall be painted with zinc-rich epoxy primer.

For Expansion Joint 2, 4 and 5, expansion gap shall be increased ¼" for each 10° fall in temperature and decreased ¼" for each 10° rise in temperature.

For Expansion Joint 3, expansion gap shall be increased ⅜" for each 10° fall in temperature and decrease ⅜" for each 10° rise in temperature.

Five feet of slab each side of joint will be poured after joint is in place and after both spans each side of joint has been poured.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

EXPANSION JOINTS 2,3,4 & 5

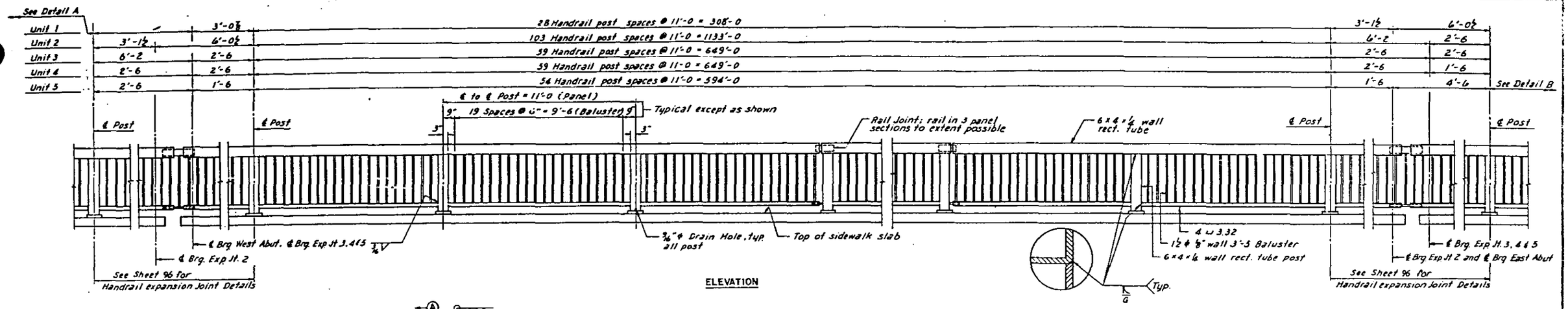
LEE COUNTY, IOWA

HANCOCK COUNTY, ILLINOIS

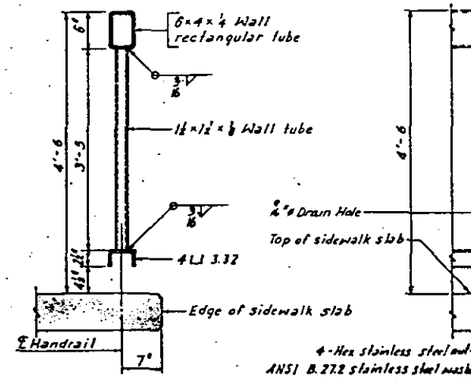
DESIGN SHEET 93 OF

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

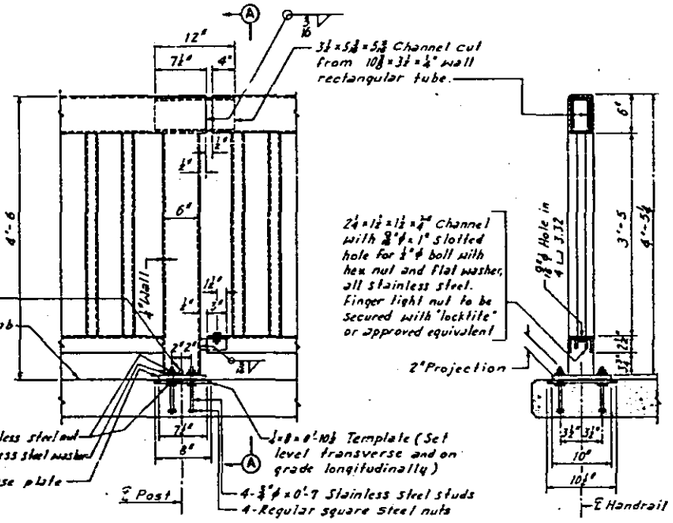
FEDERAL PROJ. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



ELEVATION

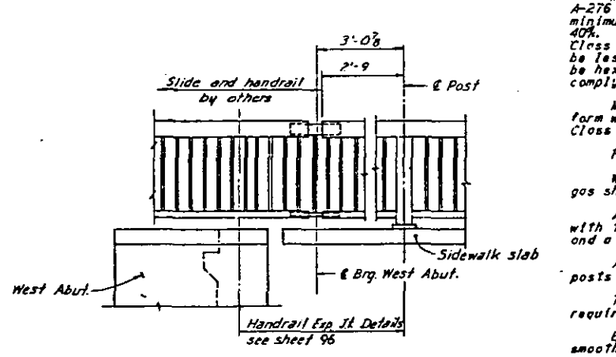


TYPICAL SECTION



RAIL JOINT DETAIL

SECTION A-A



DETAIL A

General Aluminum Handrail Notes:

The aluminum handrail is to be bid on a lineal foot basis measured from end to end of rail. The price bid for "Aluminum Handrail" shall be full compensation for furnishing all material including the anchor bolts, expansion joints and all the equipment and labor required to erect the rail in accordance with these plans and specifications.

Material for aluminum shims shall be ASTM B-209, Alloy 1100-0.

Material for anchor studs, hex nuts and washers shall be on ASTM A-276 stainless steel with a minimum ultimate strength of 100,000 psi, a minimum elongation in two inches of 12% and a minimum reduction area of 40%. Stud thread shall conform to ANSI B-1 for UNC threads series, Class 2A fit. Threads may be rolled or cut. Diameter of stud shall not be less than pitch diameter of threads. The stainless steel nuts shall be hexagonal, finished and shall comply with ANSI B-18-2. Threads shall comply with ANSI B-1 for UNC threads series, Class 2B fit.

Material for steel nuts shall be ASTM A-307, Grade A, and shall conform with ANSI B-18.2. Threads shall comply with ANSI B1 for UNC threads, Class 2B fit.

Plates and extrusions are to be 6061-T6 aluminum alloy.

Welding to be by an approved metal electrode process with an inert gas shield using ER 5356 welding wire.

All aluminum surfaces in contact with concrete shall be protected with two coats of zinc chromate paint (one wash coat and one prime coat) and a finish coat of alkali resistant bituminous paint.

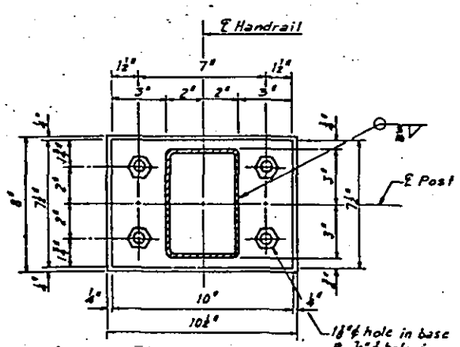
At locations where the local grade exceeds 1.0% the bottom of the posts shall be beveled such that the post will be vertical.

Two shim plates are to be furnished for each post, to be used as required.

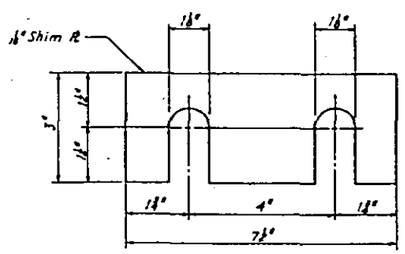
End of rail sections to be sawed or milled. Cut ends to be true, smooth and free from burrs or ragged edges.

Handling, storage and installation of decorative handrail shall be in accordance with Section 2414.06 of the Standard Specifications, except that no caulking will be required.

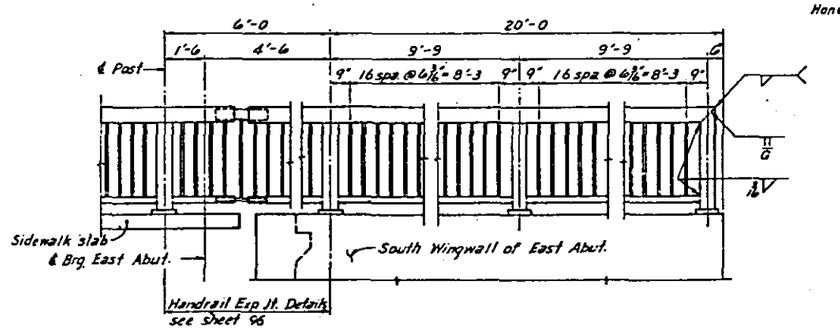
Handrail dimensions are measured along centerline handrail.



BASE PLATE PLAN



SHIM PLATE DETAIL



DETAIL B

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

ALUMINUM PEDESTRIAN HANDRAIL

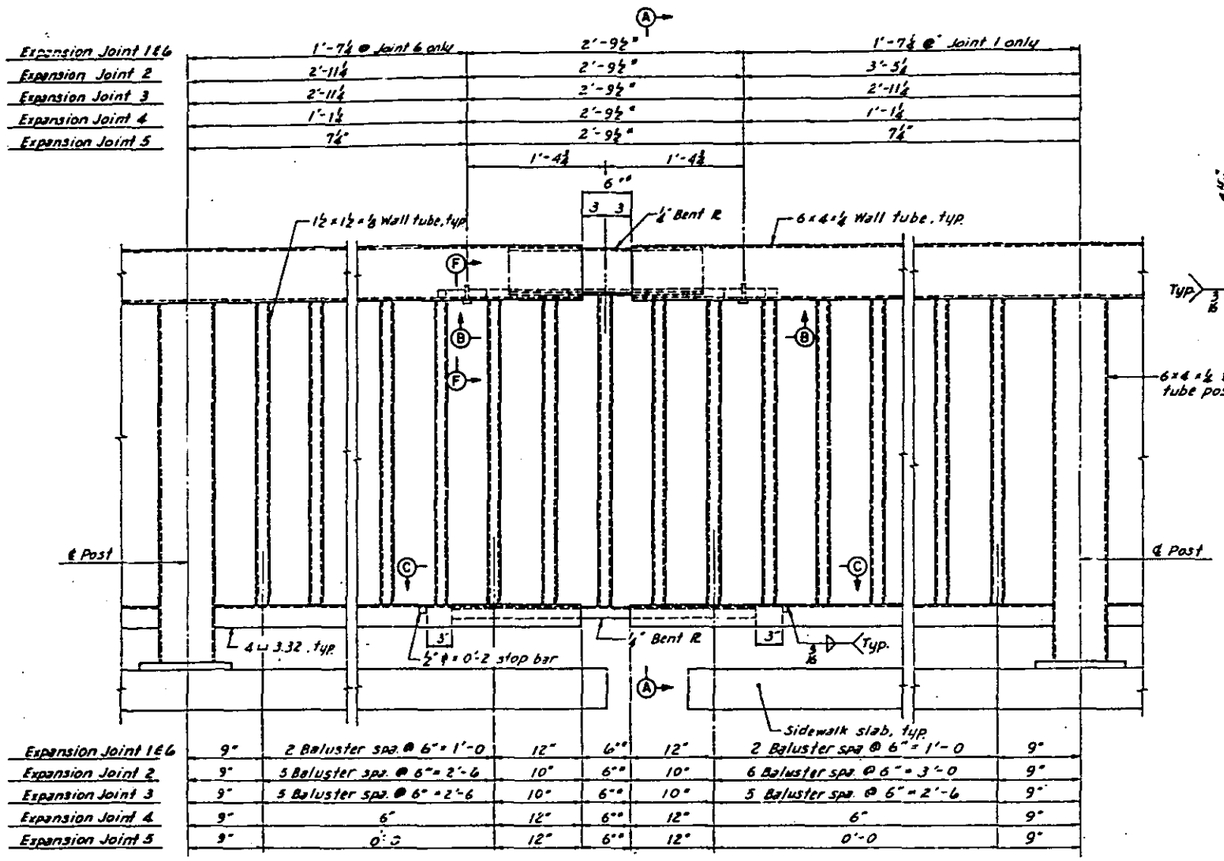
STA. [illegible]
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(21)-69-99
HANCOCK COUNTY, ILLINOIS

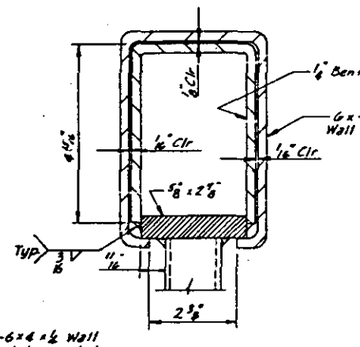
DESIGN CO. [illegible]

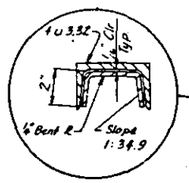
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

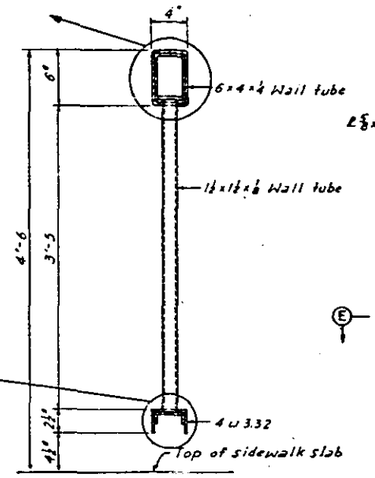
FEDERAL AID PROJ NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



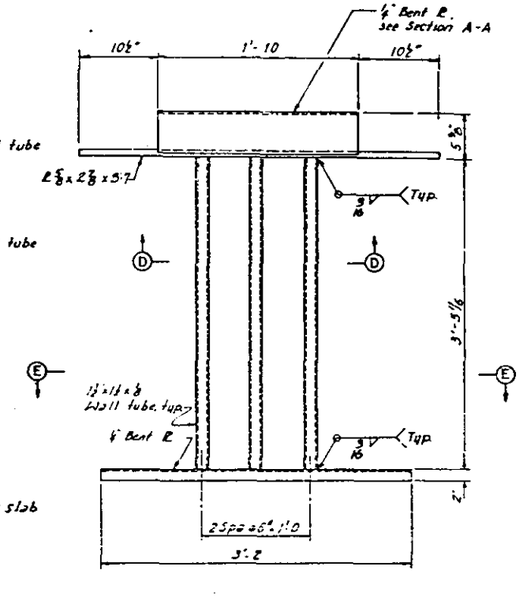
ELEVATION



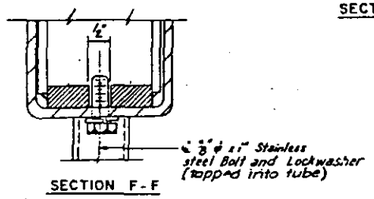




SECTION A-A

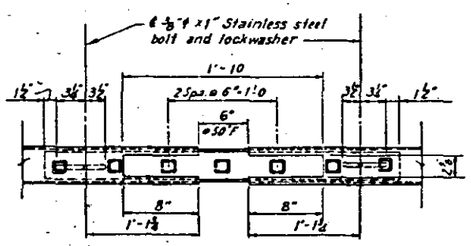


ELEVATION OF SLIDE

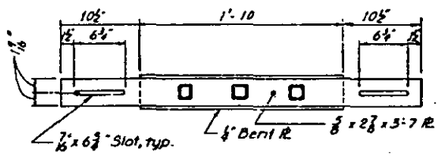


SECTION F-F

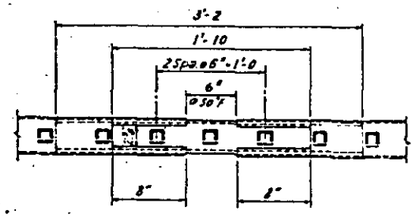
Note:
* Dimensions based on 50°F temperature.



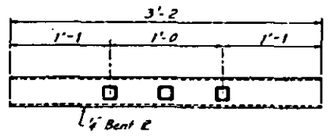
SECTION B-B



SECTION D-D



SECTION C-C



SECTION E-E

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

DRAWN LGT DATE 7-82 CHECKED DLM DATE 7-82

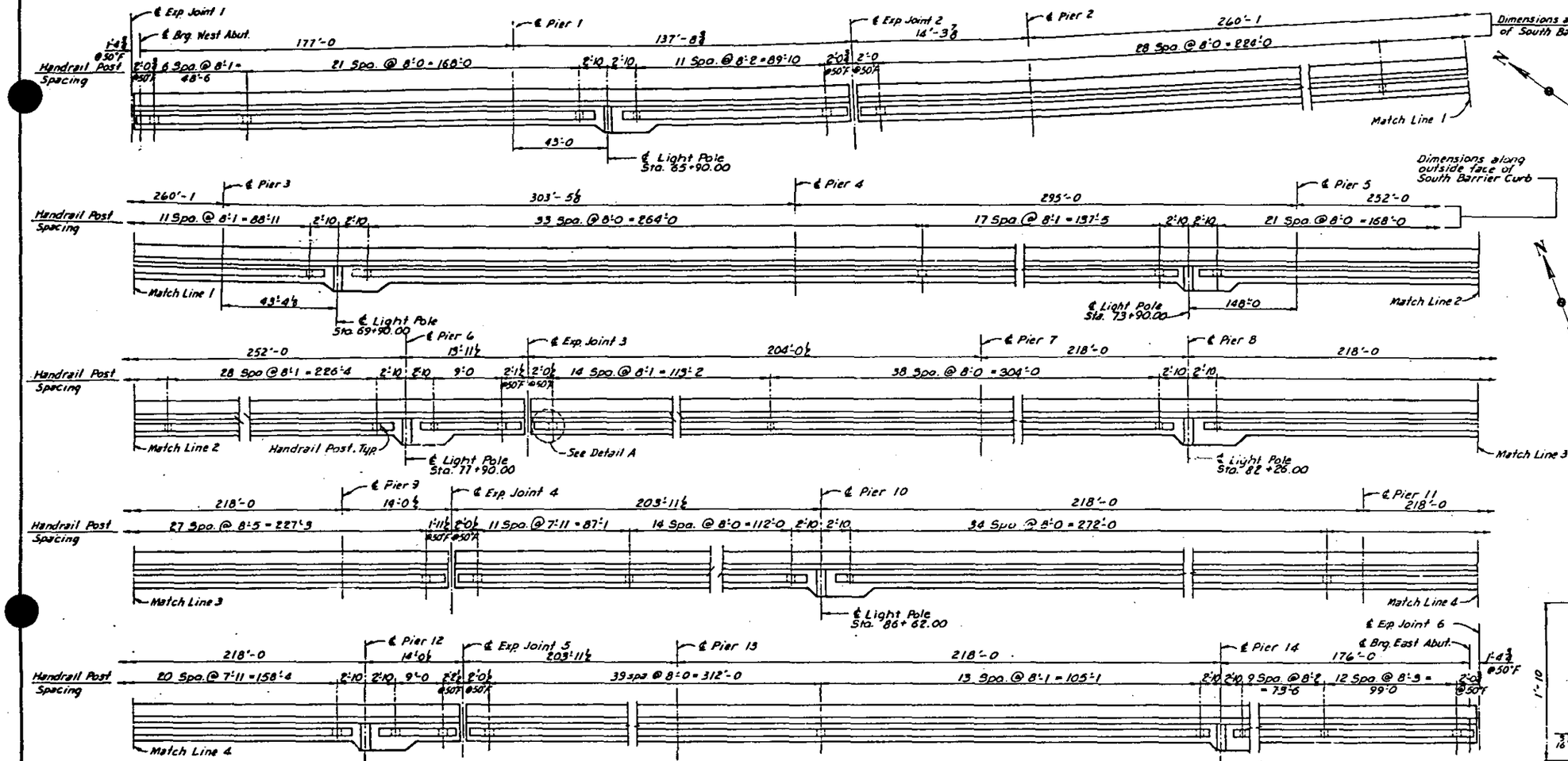
MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED
PLATE GIRDER BRIDGE
ALUMINUM PEDESTRIAN HANDRAIL
EXPANSION JOINT

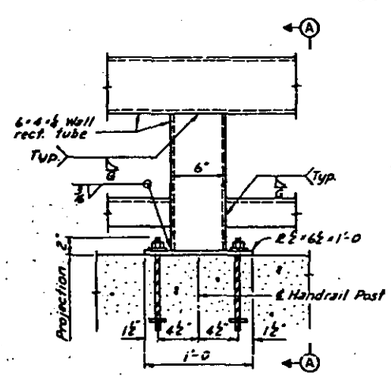
STA. 88+68.09
RIVER MILE 343.8
LEE COUNTY, IOWA
PROJECT NO. BRF-[illegible]
HANCOCK COUNTY, ILLINOIS

DESIGN NO. 382 LEE COUNTY FILE [illegible] SHEET 143 OF 227

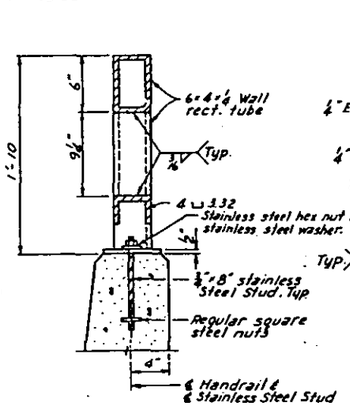
FED. AID. PROJ. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



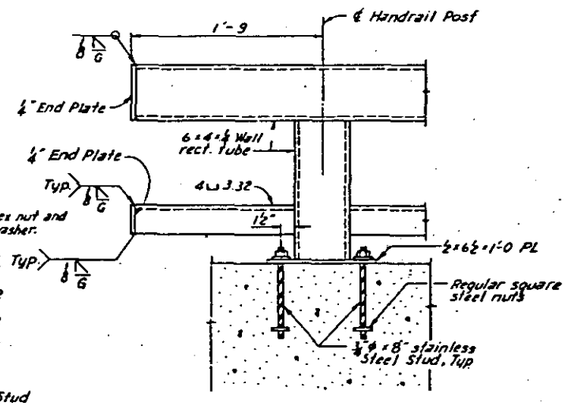
PLAN OF HANDRAIL SOUTH BARRIER CURB



HANDRAIL POST DETAIL

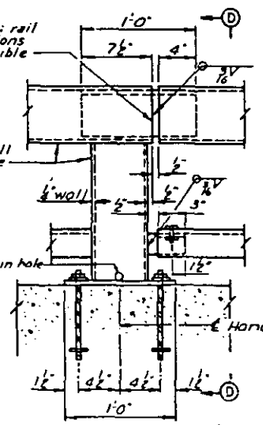


SECTION A–A



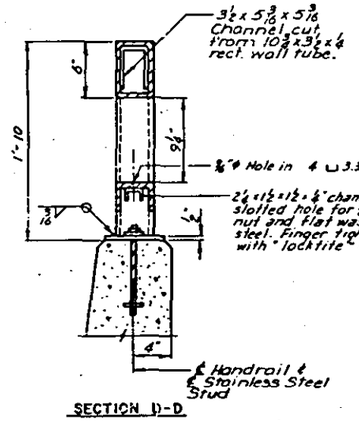
DETAIL A

ALUMINUM HANDRAIL DETAILS FOR SOUTH BARRIER CURB



JOINT DETAIL

Note: For "General Aluminum Handrail Notes" see sheet 95.



SECTION D–D

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

SIDEWALK HANDRAIL DETAILS

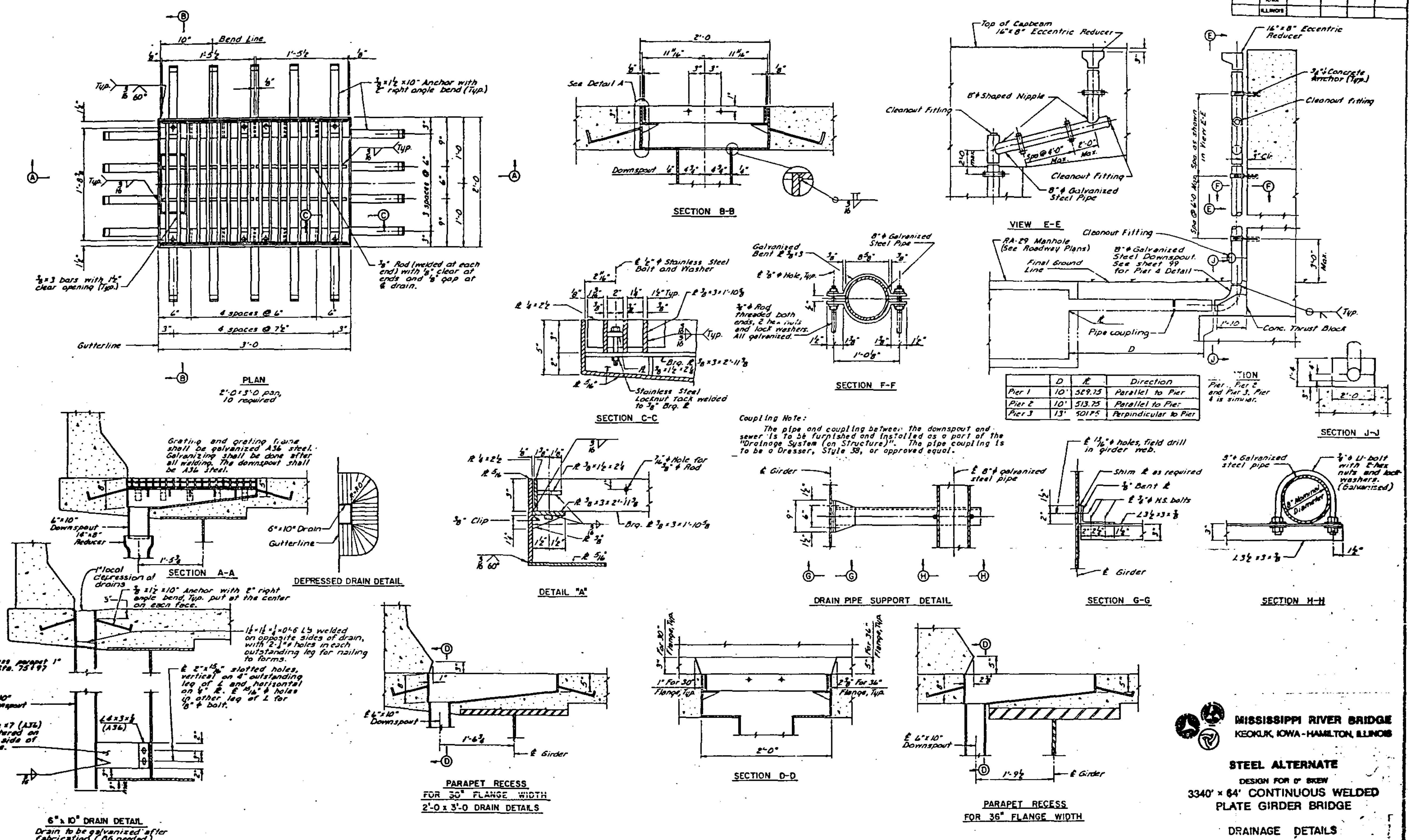
STA. 69+90.00 RIVER MILE 363.3
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(7)--69-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 97 OF

DESIGN NO. 355 LEE COUNTY

'67-25



	D	℄	Direction
Pier 1	10'	529.75	Parallel to Pier
Pier 2	10'	513.75	Parallel to Pier
Pier 3	13'	501.75	Perpindicular to Pier

Coupling Note:
The pipe and coupling between the downspout and sewer is to be furnished and installed as a part of the "Drainage System (on Structure)". The pipe coupling is to be a Dresser, Style 38, or approved equal.

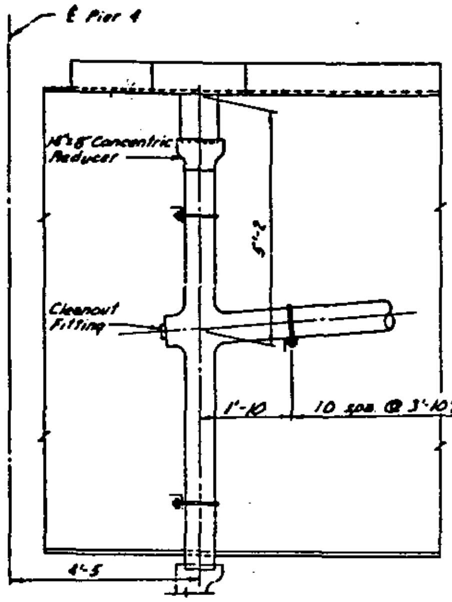
MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

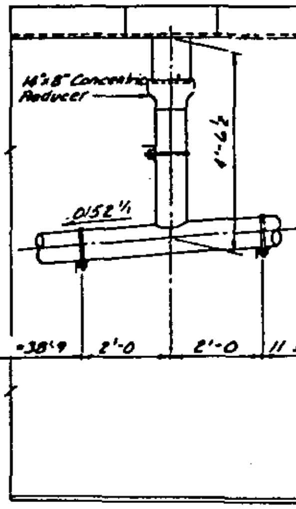
DRAINAGE DETAILS

LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

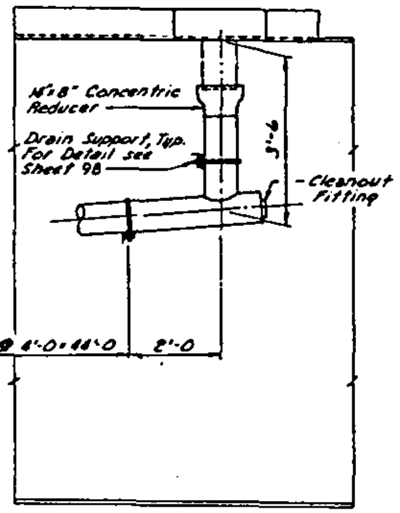
HNTB



GIRDER C ELEVATION
NEAR PIER 4

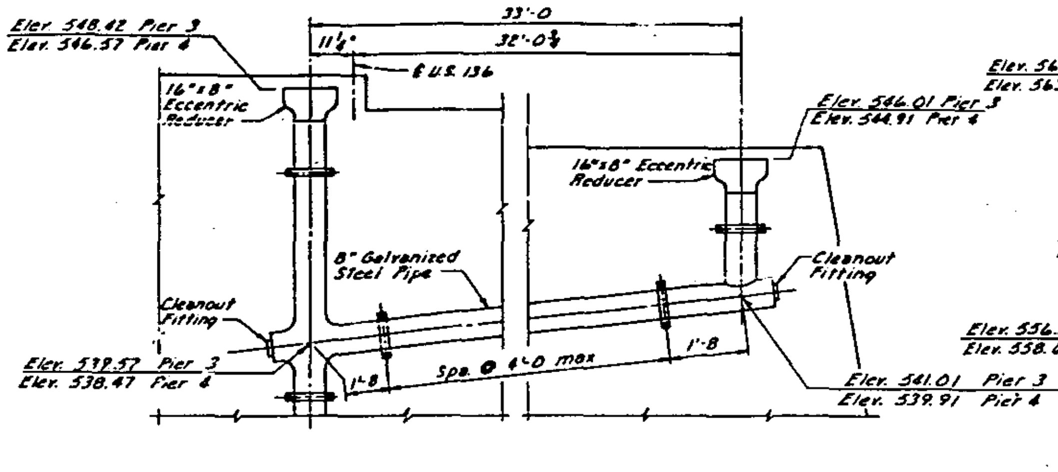


GIRDER C ELEVATION
AT STA. 72+90.00

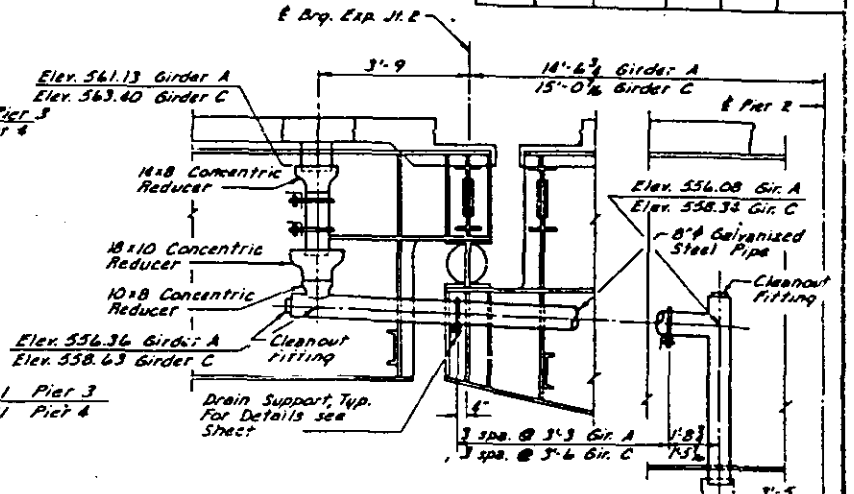


GIRDER C ELEVATION
AT STA. 73+38.00

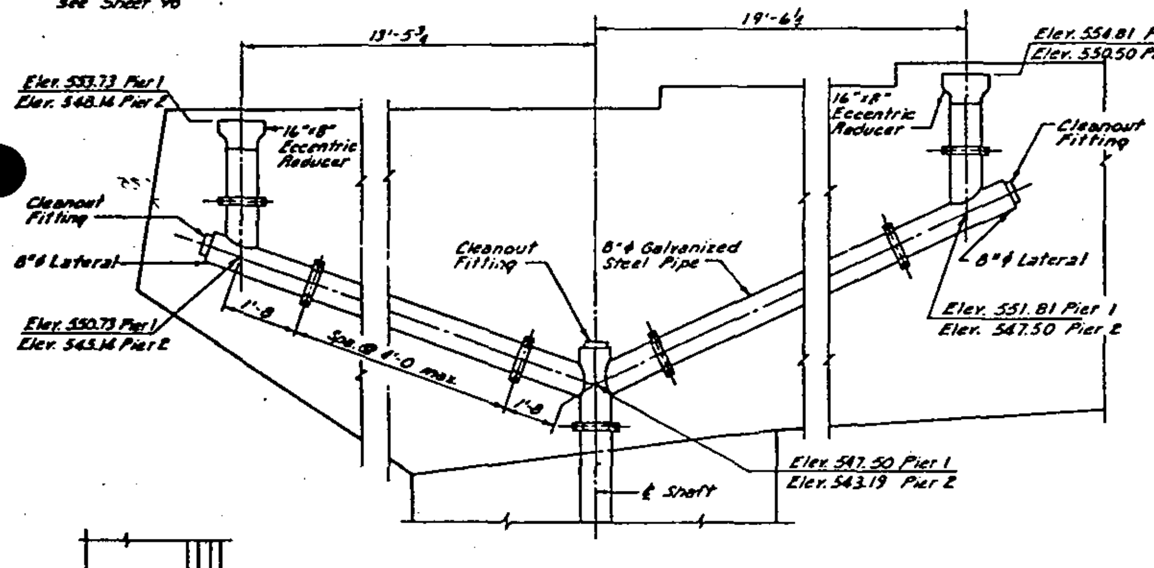
Note:
For drain pipe support detail, see Sheet 98



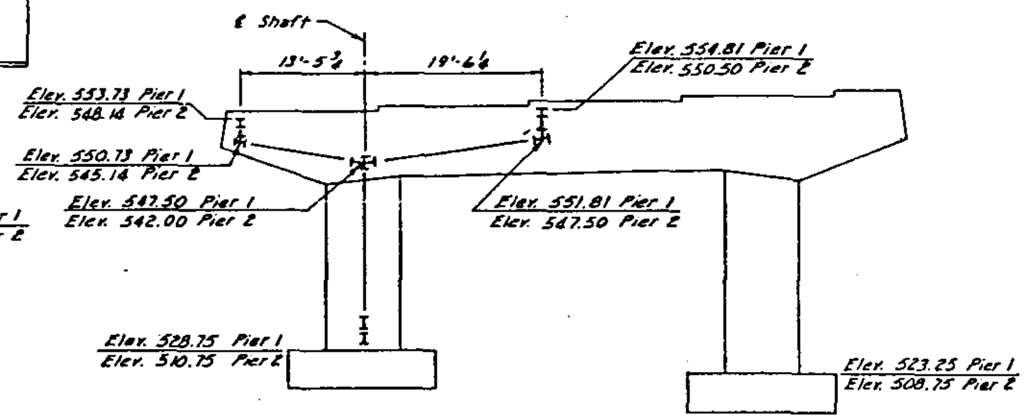
PART ELEVATION PIER 3 & 4
Looking Back Station



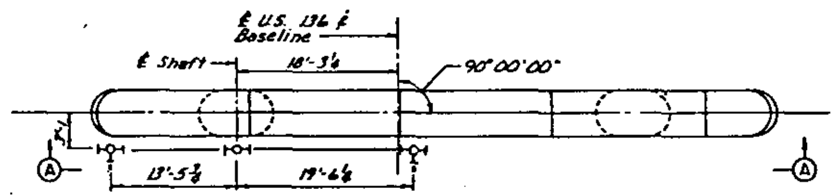
GIRDER A & C ELEVATION
AT EXPANSION JOINT 2



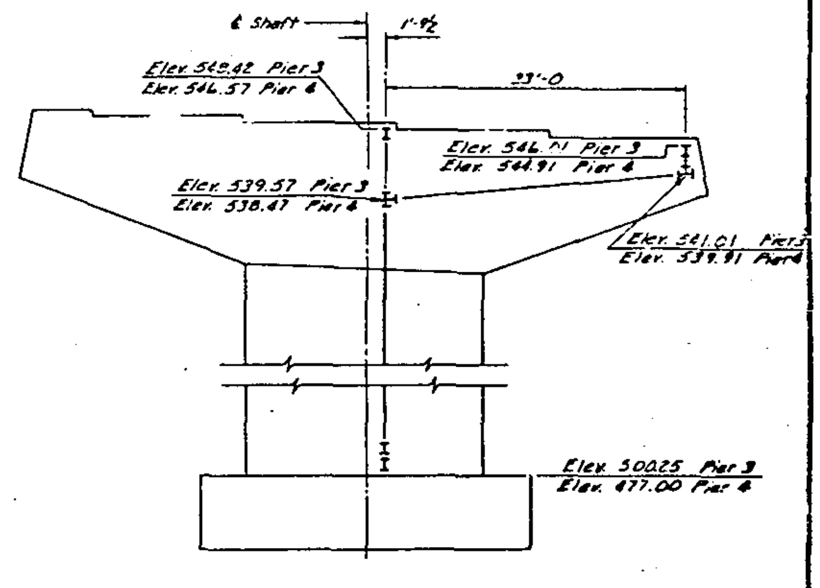
PART ELEVATION PIER 1 & 2
Looking Up Station



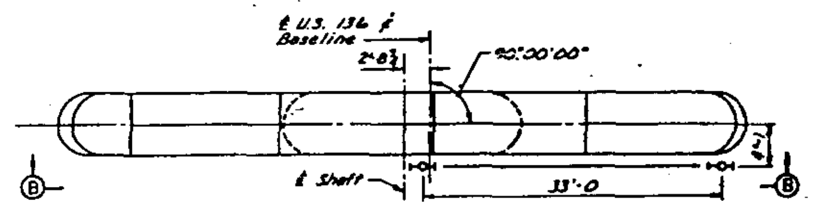
VIEW A-A
Looking Up Station



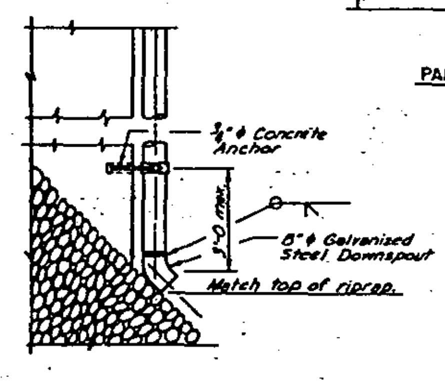
PLAN OF PIER 1 & 2
Looking Up Station



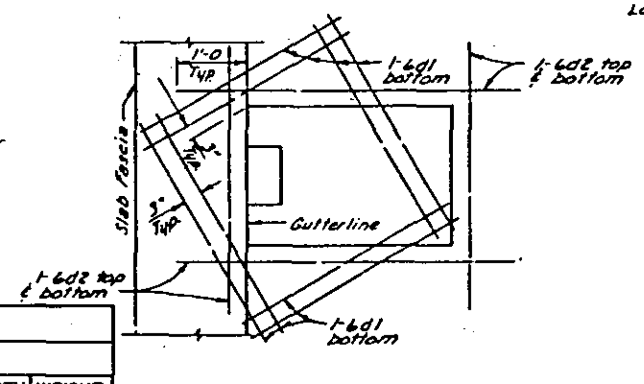
VIEW B-B
Looking Back Station



PLAN OF PIER 3 & 4
Looking Back Station



DOWNSPOUT AT PIER 4



ADDITIONAL REINFORCEMENT
AT DECK INLET
(2'-0×3'-0 pan only)

BILL OF REINFORCEMENT					
EPOXY-COATED					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6d1	Drainage, Horizontal	——	8	3'-4	40
6d2	Drainage, Horizontal	——	8	5'-0	
				Total	100

4 required Unit 1 4 required Unit 2

Notes:

See Situation Plans for location of deck inlets.

Cut slab reinforcing bars to clear deck inlets. Additional reinforcing bars 6d1 and 6d2 shall be set between top and bottom bars.

All material for deck inlet and supports shall be A36 except where shown otherwise and shall be galvanized after fabrication.

Cost of furnishing and installing concrete inserts, threaded anchor rods, nuts, washers, anchor straps, downspouts, deck inlets and other necessary drainage system incidentals shall be included in the lump sum price bid "Drainage System (on Structure)".

Concrete anchors shall be of self-drilling expansion type made of case hardened and drawn carburized steel with self-cutting annular broaching grooves.

The pipe shall be ASTM A-120 galvanized steel pipe, schedule 40.

The cost of concrete thrust block is to be included in the price bid for "Drainage System (on Structure)".

Elbows and laterals to be trimmed as required.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

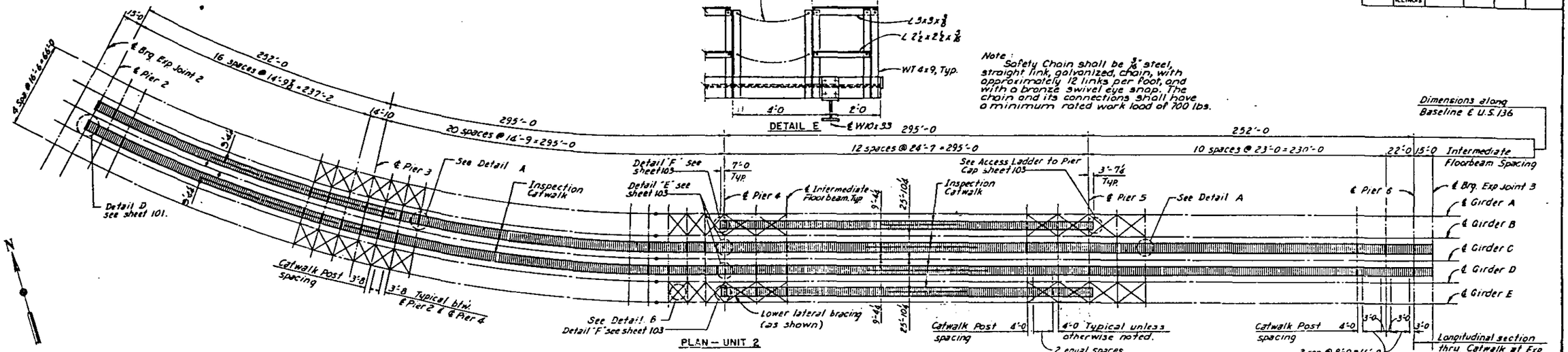
DRAINAGE DETAILS

LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS

FEDERAL DIST NO.	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

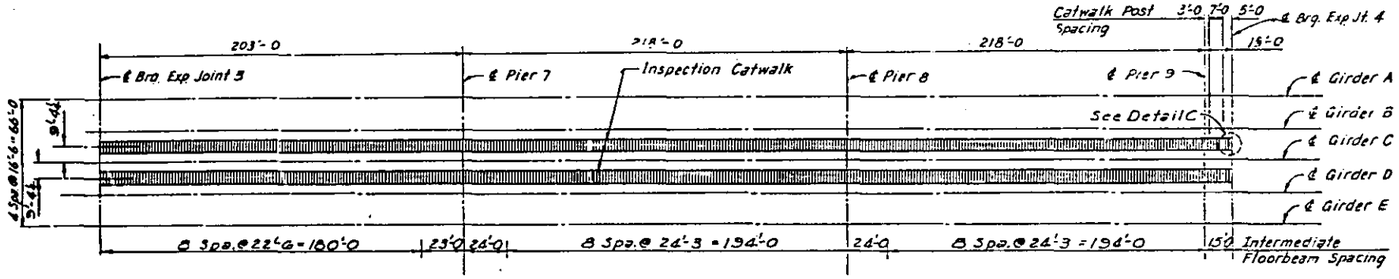
FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



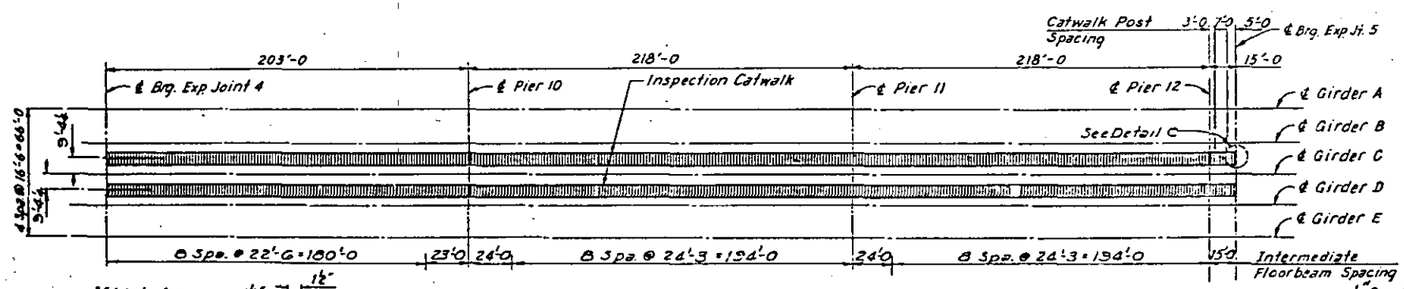
PLAN — UNIT 2

DETAIL E

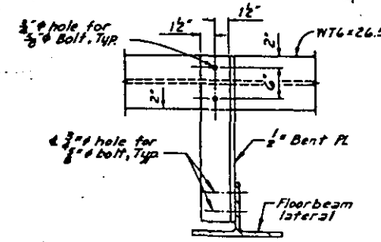
Note: Safety Chain shall be 3/16" steel, straight link, galvanized, chain, with approximately 12 links per foot, and with a bronze swivel eye snap. The chain and its connections shall have a minimum rated work load of 700 lbs.



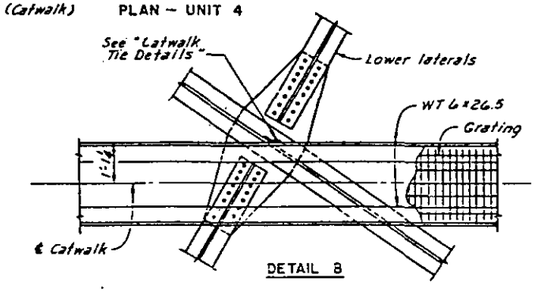
PLAN — UNIT 3



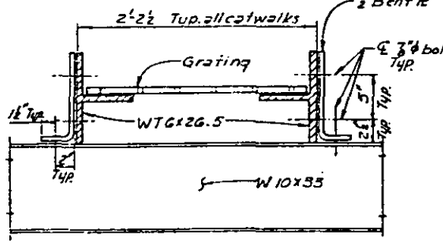
PLAN — UNIT 4



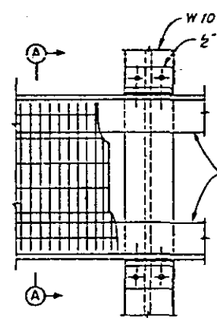
CATWALK TIES DETAIL



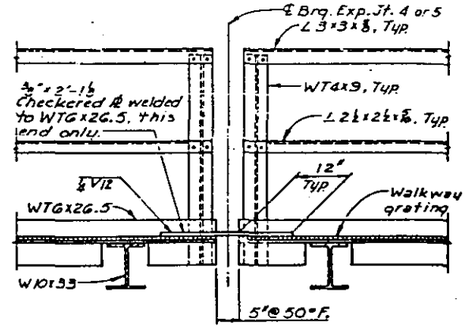
DETAIL B



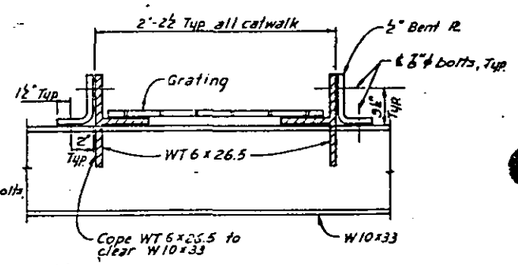
SECTION A-A (Unit 2 only)



DETAIL A



DETAIL C



SECTION A-A (Unit 3,4 & 5)

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

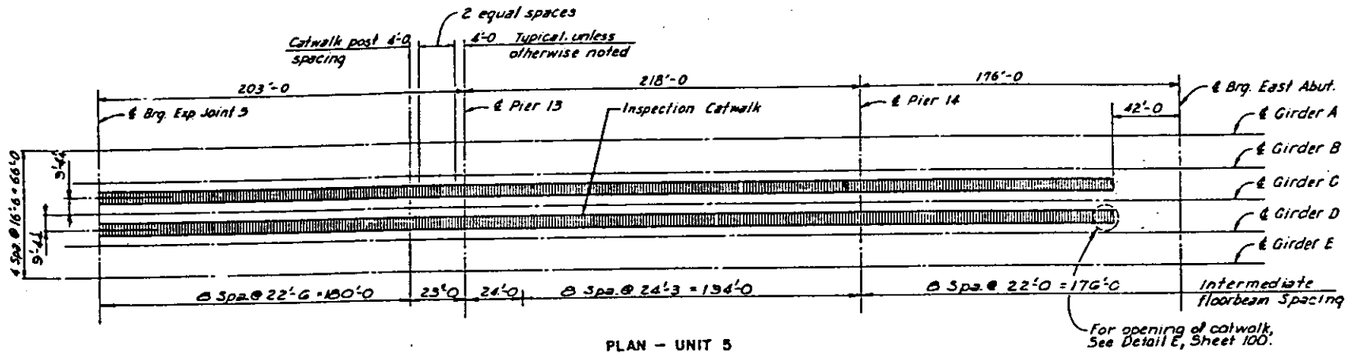
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

INSPECTION CATWALK

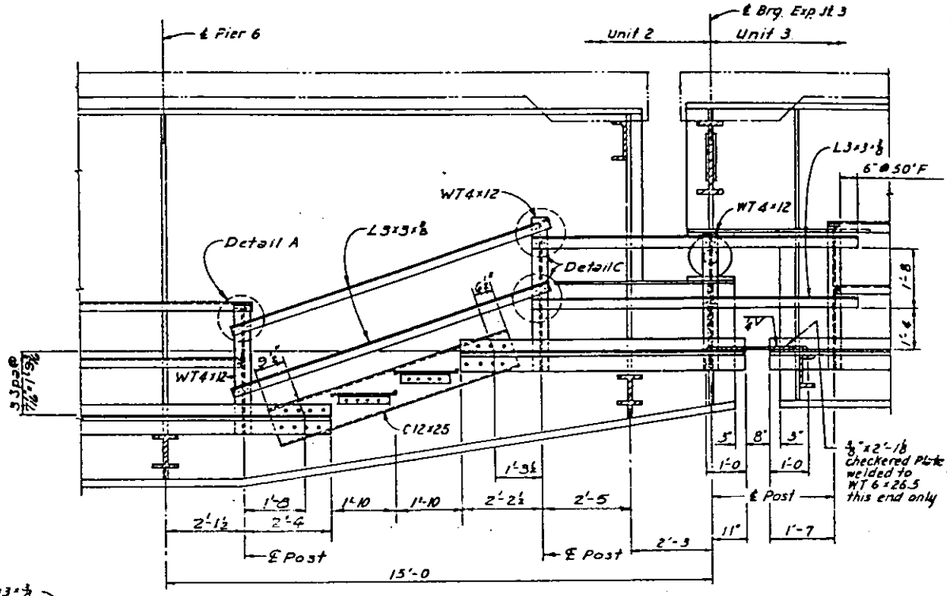
STA. 89+45.08
RIVER MILE 333.8
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(37)--89--56
HANCOCK COUNTY, ILLINOIS

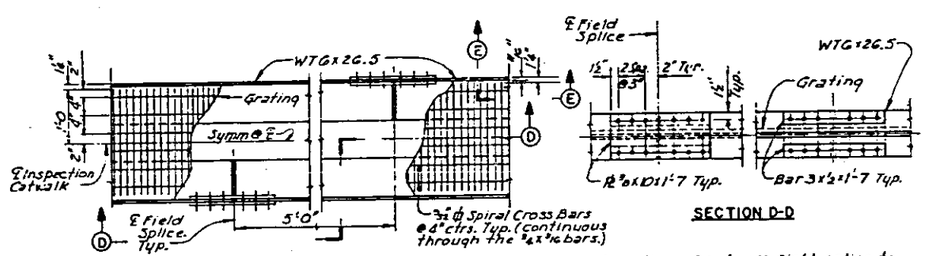
FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



PLAN – UNIT 5

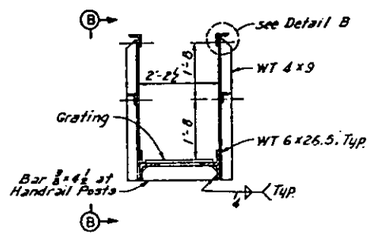


LONGITUDINAL SECTION THRU CATWALK AT EXPANSION JOINT 3



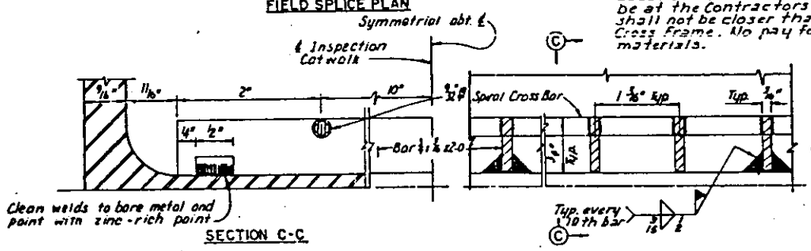
FIELD SPLICE PLAN

SECTION D-D



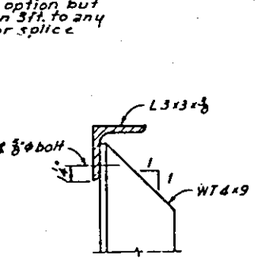
DETAIL OF CATWALK POSTS

Location of catwalk field splice to be at the Contractors option but shall not be closer than 3ft. to any Cross Frame. No pay for splice materials.

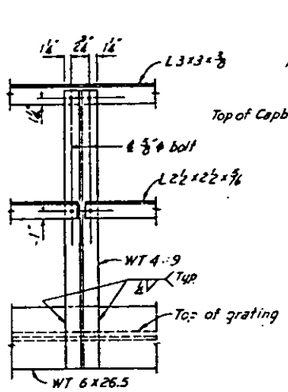


SECTION C-C

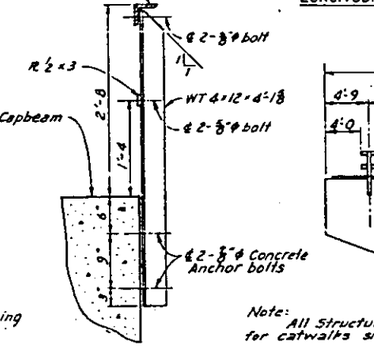
GRATING DETAILS



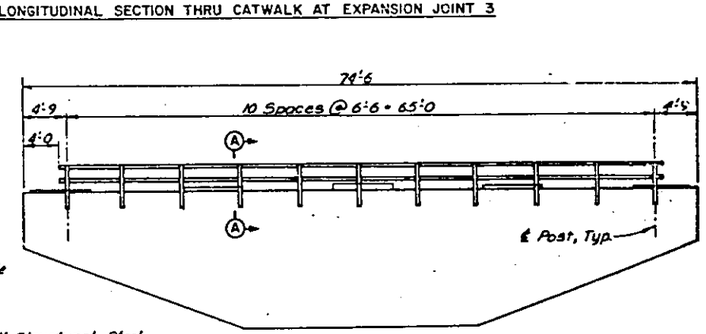
DETAIL B



VIEW B-B

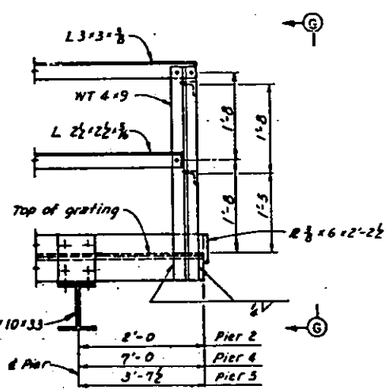


SECTION A-A



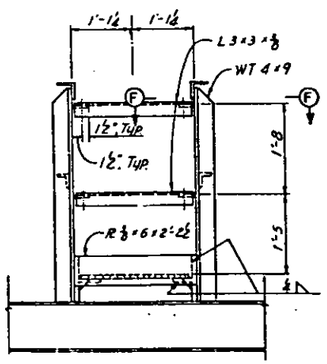
Note: All Structural Steel for catwalks shall be A36.

PIER 5 CAPBEAM ELEVATION
(Looking Back Station)

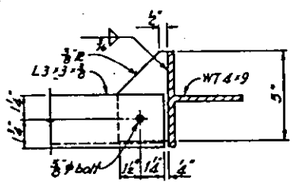


DETAIL D

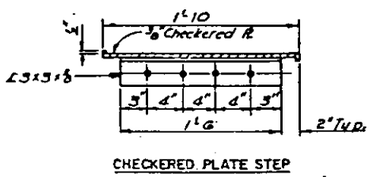
Note: For location of Detail D see Sheet 100.



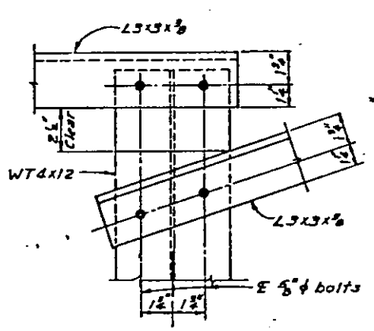
VIEW G-G
(Unit 2.)



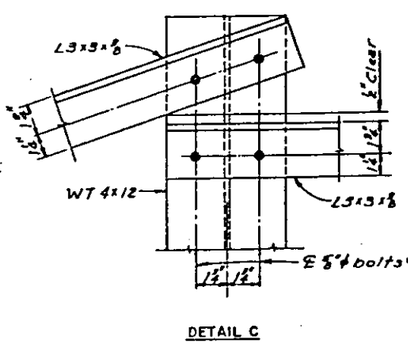
SECTION F-F



CHECKERED PLATE STEP



DETAIL A



DETAIL C

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

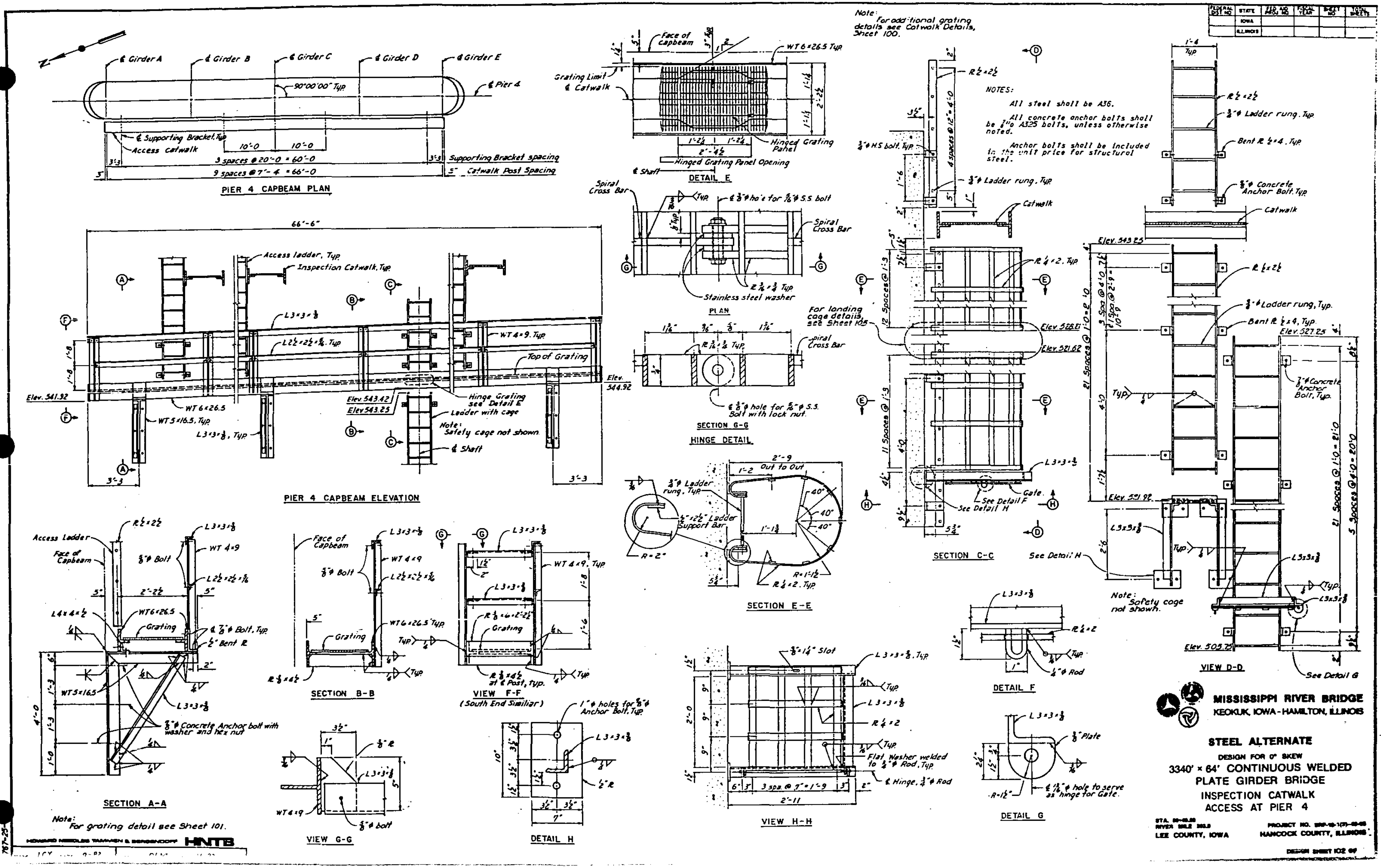
INSPECTION CATWALK

STA. [illegible]
RIVER MILE [illegible]
LEE COUNTY, IOWA

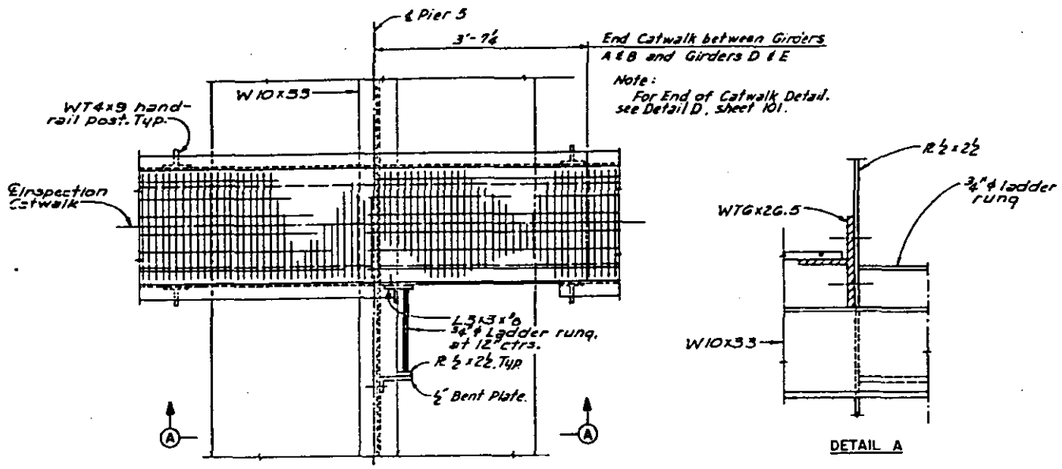
PROJECT NO. [illegible]
HANCOCK COUNTY, ILLINOIS

DESIGN SECT. [illegible]

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

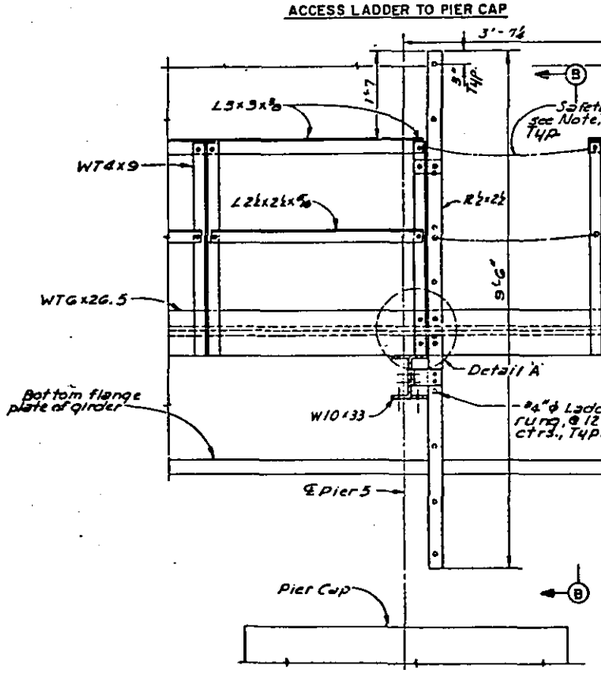

PIER 4 CAPBEAM PLAN
℄ Girder A
℄ Girder B
℄ Girder C
℄ Girder D
℄ Girder E
℄ Pier 4
90°00'00" Typ
℄ Supporting Bracket, Typ
Access Catwalk
3 spaces @ 20'-0 = 60'-0
Supporting Bracket spacing
9 spaces @ 7'-4 = 66'-0
Catwalk Post Spacing
PIER 4 CAPBEAM ELEVATION
66'-6"
Access ladder, Typ
Inspection Catwalk, Typ
WT 4×9, Typ
Top of Grating
Elev. 541.92
Elev. 544.92
Elev. 543.42
Elev. 543.25
WT 6×26.5
WT 5×16.5, Typ
Hinge Grating see Detail E
Ladder with cage
Note: Safety cage not shown
℄ Shaft
DETAIL E
Face of capbeam
WT 6×26.5 Typ
Grating Limit ℄ Catwalk
Hinged Grating Panel
Hinged Grating Panel Opening
PLAN
Spiral Cross Bar
Stainless steel washer
SECTION G-G
HINGE DETAIL
Bolt with lock nut.
Note: For additional grating details see Catwalk Details, Sheet 100.
NOTES:
All steel shall be A36.
All concrete anchor bolts shall be ⅞" ø A325 bolts, unless otherwise noted.
Anchor bolts shall be included in the unit price for structural steel.
For landing cage details, see Sheet 105
SECTION C-C
SECTION E-E
Out to Out
Ladder rung, Typ.
Catwalk
Gate.
See Detail F
See Detail H
VIEW D-D
Ladder rung, Typ.
Concrete Anchor Bolt, Typ.
Elev. 543.25
Elev. 528.81
Elev. 521.62
Elev. 527.25
Elev. 521.92
Elev. 509.75
Note: Safety cage not shown.
See Detail G
SECTION A-A
Access Ladder
Face of Capbeam
Grating
Concrete Anchor bolt with washer and hex nut
Note: For grating detail see Sheet 101.
SECTION B-B
VIEW F-F (South End Similiar)
VIEW G-G
DETAIL H
VIEW H-H
Flat Washer welded to ¼" ø Rod, Typ.
Hinge, ¼" ø Rod
DETAIL F
DETAIL G
hole to serve as hinge for Gate.
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB
MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS
STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE
INSPECTION CATWALK ACCESS AT PIER 4
LEE COUNTY, IOWA
HANCOCK COUNTY, ILLINOIS
DESIGN SHEET 102

FEDERAL DIST NO	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

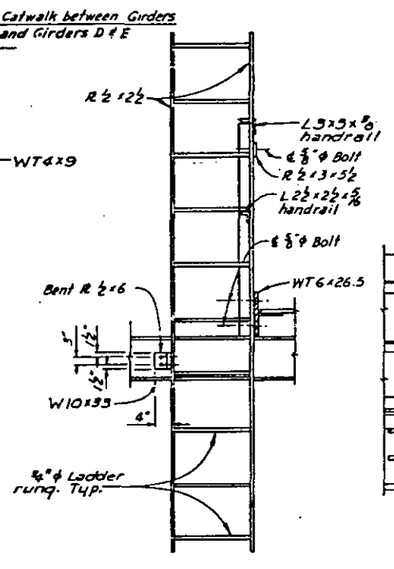


ACCESS LADDER TO PIER CAP

DETAIL A

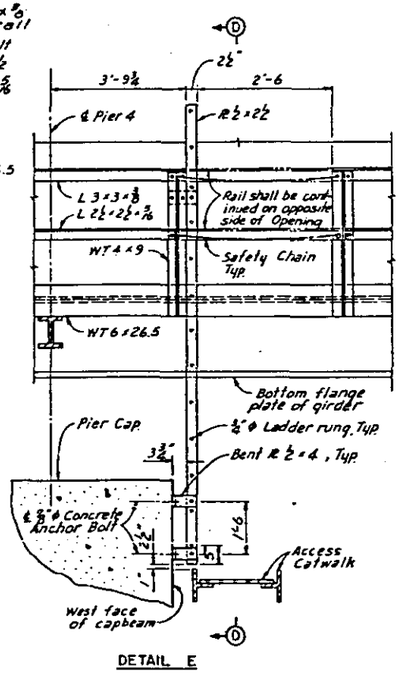


SECTION A-A

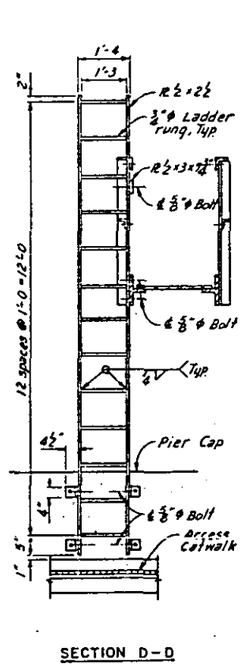


SECTION B-B

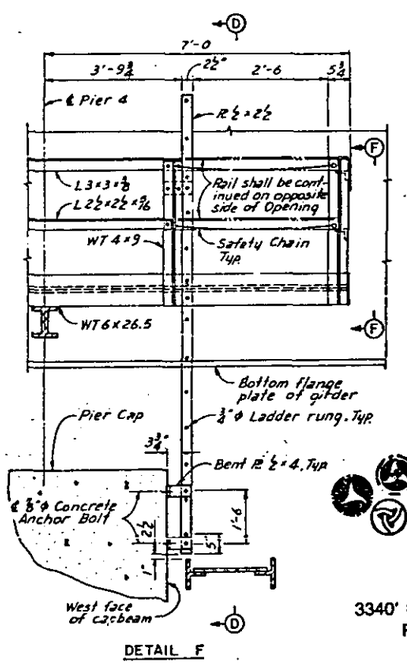
Note: Safety chain shall be "⅛" steel, straight link, galvanized, chain, with approximately 12 links per foot, and with a bronze swivel eye snap. The chain and its connections shall have a minimum rated work load of 700 lbs.



DETAIL E



SECTION D-D



DETAIL F

Notes:
For "VIEW F-F" see sheet 102.
For location of Detail "E" and Detail "F" see sheet 100.

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

INSPECTION CATWALK

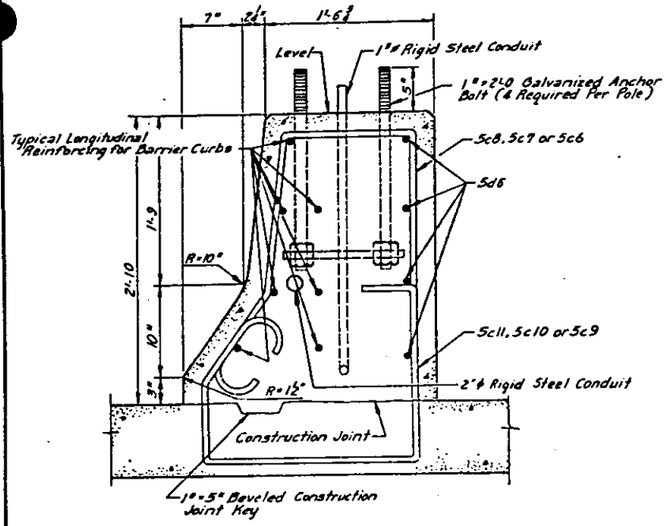
STA. 59+45.00
RIVER MILE 383.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(7)-38-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 103 OF

DESIGN NO. 382 LEE COUNTY FILE 38/23

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



SECTION THRU LIGHT BLISTER

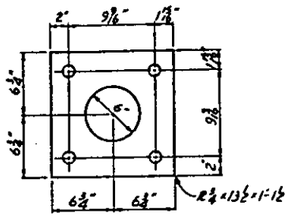
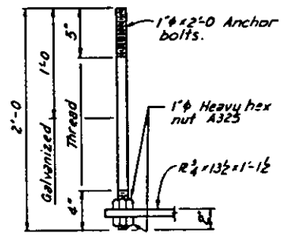


PLATE DETAIL



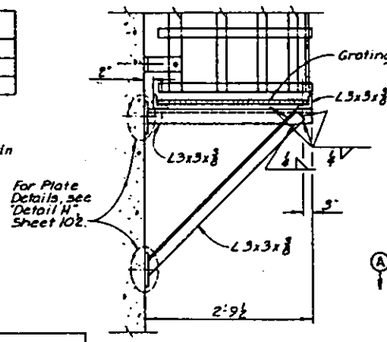
ANCHOR BOLT DETAIL

QUANTITIES (EACH)		
CONCRETE	Cu. Yd.	.35
REINFORCING STEEL	Lbs.	136

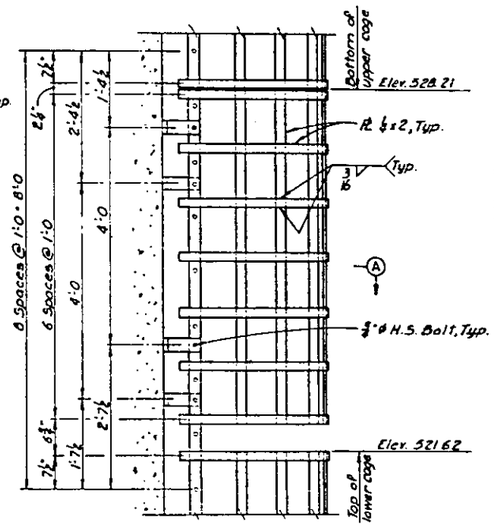
Note:
Quantities for South Barrier Curb included in bid item other sheets.
For "Lighting Notes" see Sheet 106

BILL OF REINFORCEMENT
LIGHT POLE BASE BLISTER (EACH)

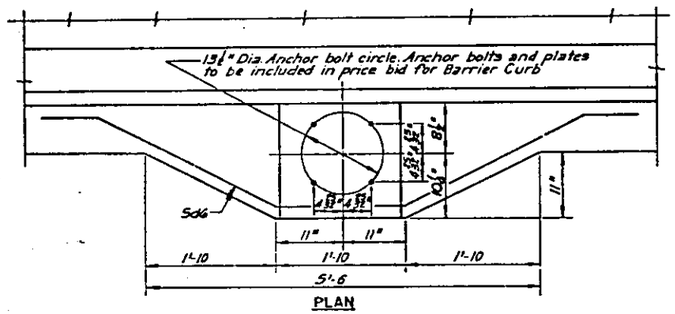
BAR	LOCATION	SHAPE	NO	LENGTH	WEIGHT
5c6	Light Pole Base		2	5'-10	12
5c7	Light Pole Base		2	6'-4	13
5c8	Light Pole Base		4	6'-8	26
5c9	Light Pole Base		2	5'-4	11
5c10	Light Pole Base		2	5'-10	12
5c11	Light Pole Base.		4	6'-2	26
5c6	Light Pole Base		4	8'-2	34
				Total	136



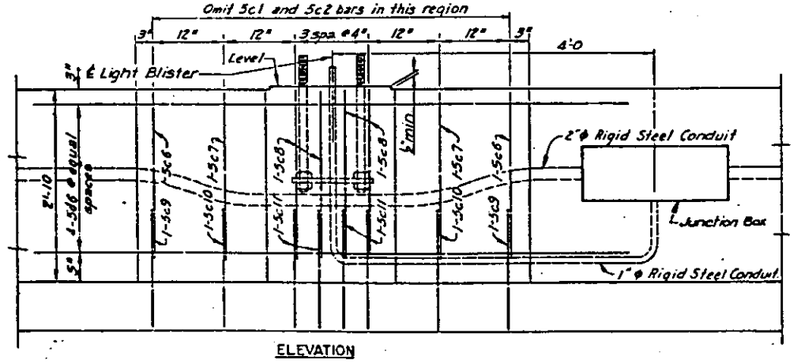
LADDER LANDING



LANDING CAGE DETAIL



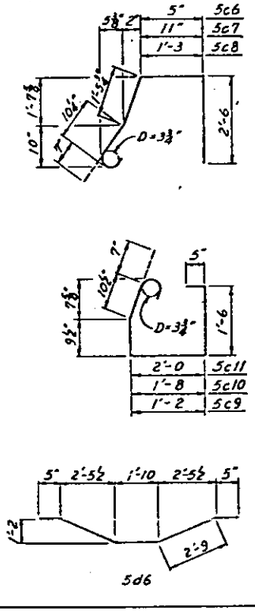
PLAN

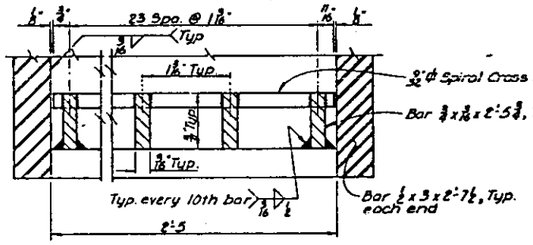


ELEVATION

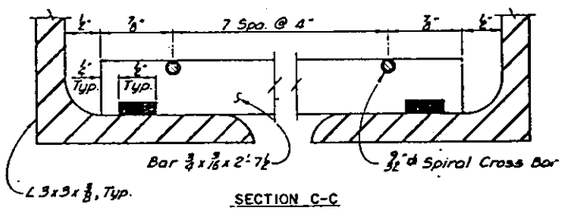
LIGHT POLE BASE DETAILS FOR SOUTH BARRIER CURB

BAR BENDING DIAGRAM

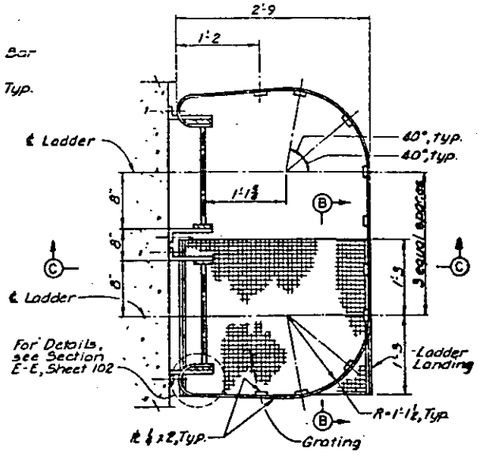




SECTION B-B



SECTION C-C



SECTION A-A

LADDER LANDING CAGE DETAILS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

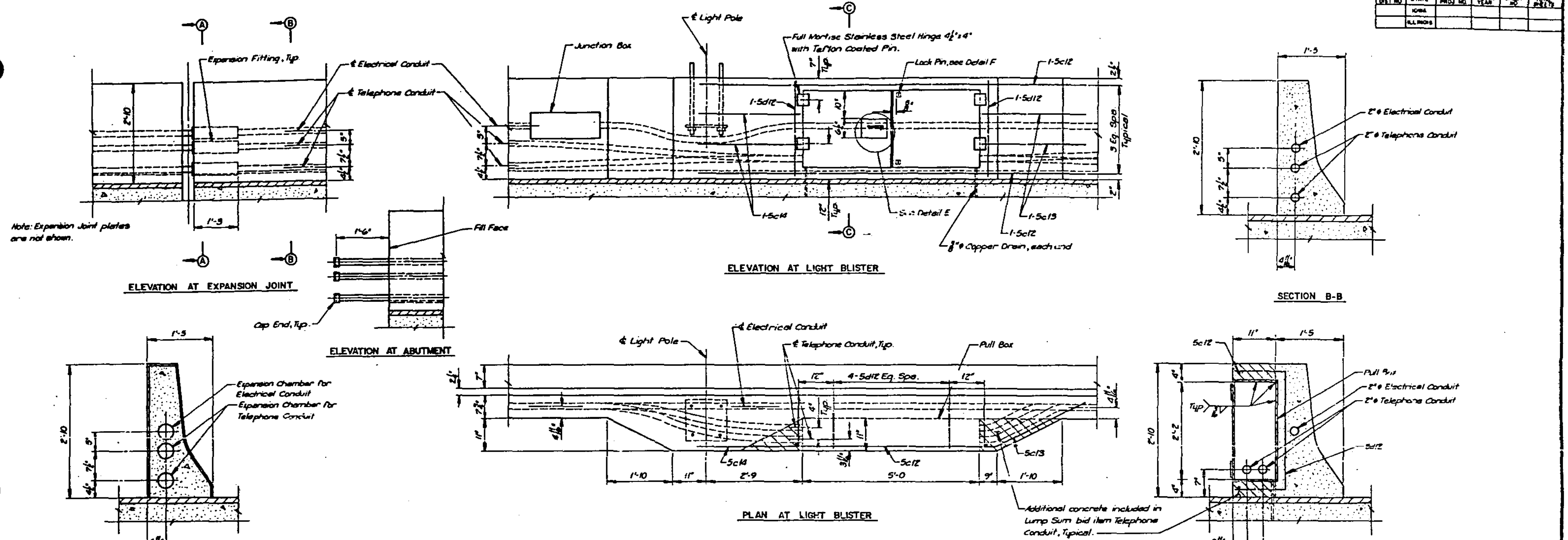
STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

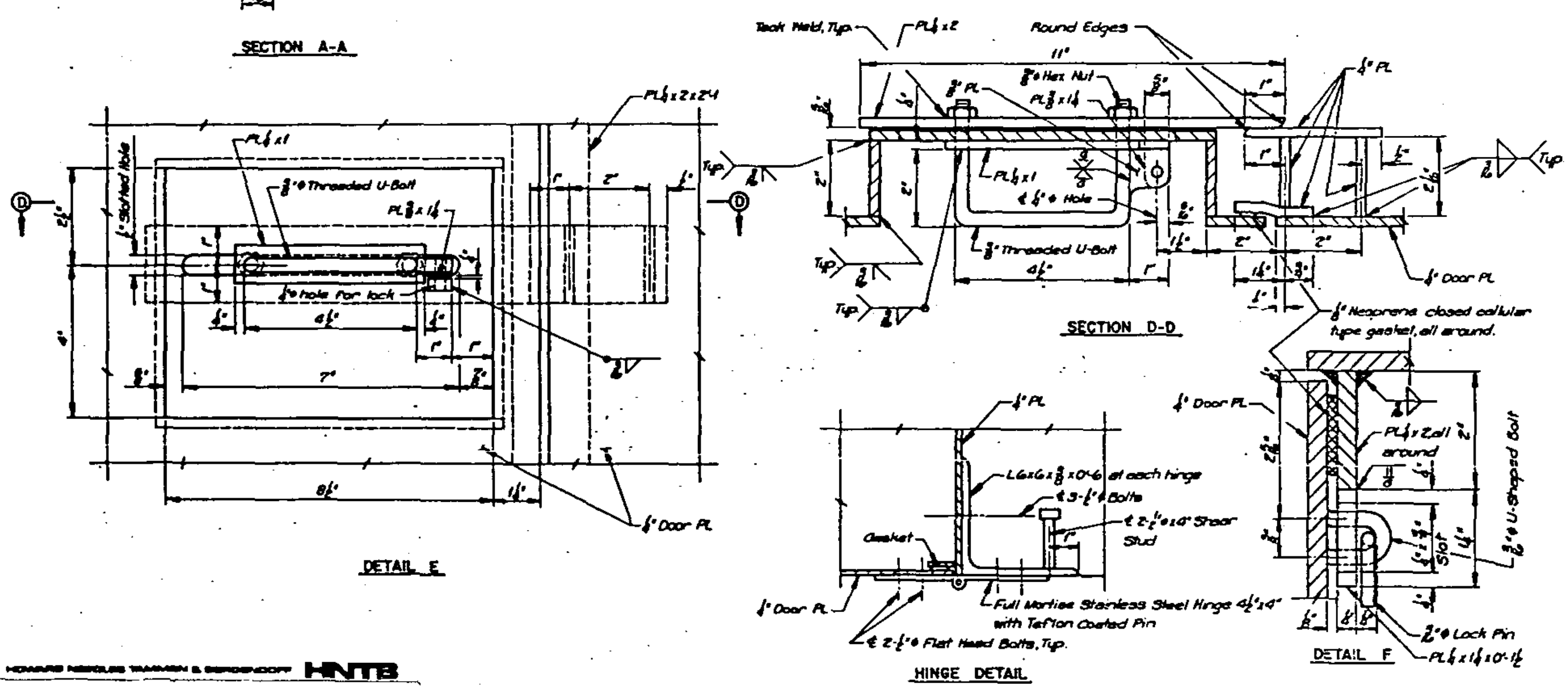
LIGHT POLE BASE DETAILS

STA. 88+68.28
RIVER MILE 363.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(3)--38-56
HANCOCK COUNTY, ILLINOIS

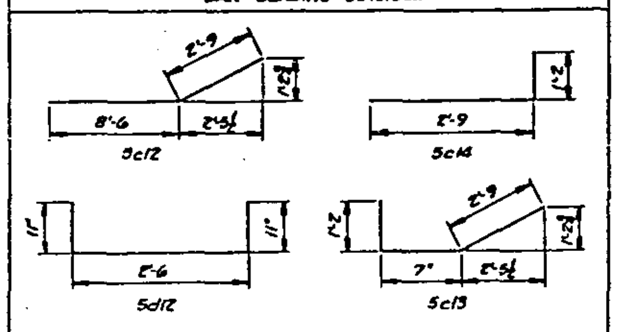
DESIGN NO. 362 LEE COUNTY





BILL OF REINFORCEMENT *					
LIGHT POLE BASE BLISTER (EACH)					
BAR	LOCATION	SHAPE	NO	LENGTH	WEIGHT
5c12	Pull Box		2	11'-3	23
5c13	Pull Box		2	4'-6	9
5c14	Pull Box		2	3'-11	8
5d12	Pull Box		6	4'-4	27
				Total	67

BAR BENDING DIAGRAM



* Epoxy Coated

Notes:

All steel shall be A36 unless otherwise noted.

All steel shall be galvanized after fabrication.

Approximate quantities included in bid item Telephone Conduit

9 Pull Boxes

536 lbs. Epoxy coated reinforcing steel

29 Cu. Yds. Structural Concrete

6620 Lin. Ft. 2"⌀ galvanized steel conduit including fittings.

One pull box will be installed by others and shall be stored per direction of the Engineer.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW

3340' × 66' SEGMENTAL CONCRETE BOX GIRDER BRIDGE

TELEPHONE CONDUIT DETAILS

LEE COUNTY, IOWA

HANCOCK COUNTY, ILLINOIS

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

LIGHTING NOTES:

Construction shall conform to the current Iowa D.O.T. Standard Specifications and Special Provisions and current Supplemental Specifications for Highway Lighting.

Conduit installation shall comply with the article "Electrical Ducts", section 2523.

All "C" entrance holes in junction boxes shall be drilled and tapped for the specified conduit size. All other holes shall have a concrete - tight slip fit. Conduit ends shall not protrude into junction box more than 1/4". Drain pipe end shall be flush with inside surface of box. Grounding buttons shall be located approximately 3" from the inside surface of the box wall, and not closer than 3" to the edge of any hole in the box floor. Holes for drain pipe shall be placed in the low corner of the box, with a minimum clearance of 1" between the edge of the hole and the inside surface of the box wall. Typical details are shown on this sheet.

The contract unit price per lineal foot of conduit shall be full compensation for furnishing all material (including junction boxes and fittings), labor and any work incidental to the installation. The concrete and weight of reinforcing steel is included in the Superstructure Estimated Quantities.

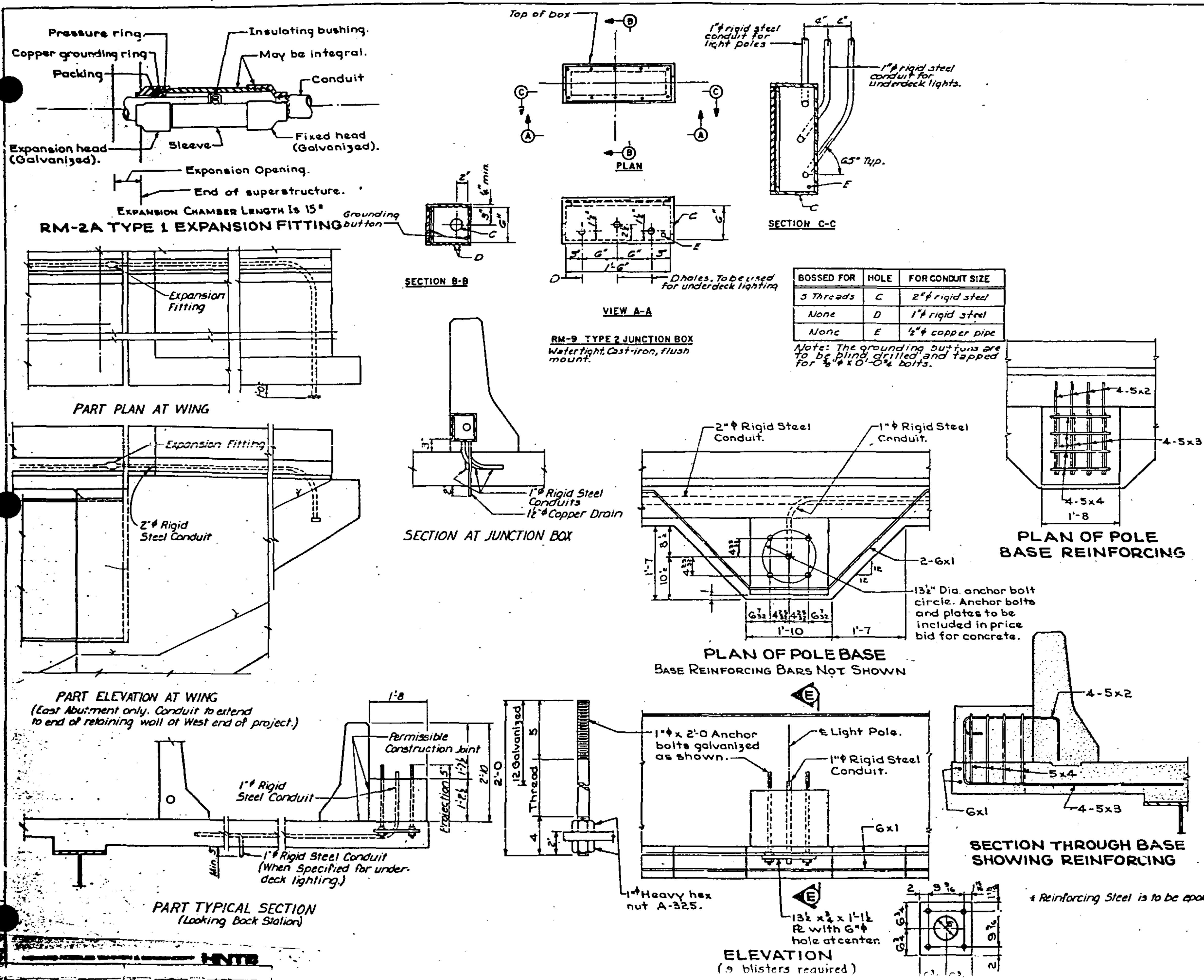
The length of conduit installed shall be measured in feet by the Engineer.

Cost of furnishing and installing poles, lights and lighting conductor is not a part of this estimate.

Expansion fitting shall be as specified or as approved by the Engineer. Typical details are shown on this sheet.

Anchor bolt material shall comply with the requirements of ASTM A-325 or A-193 Grade B7. Anchor bolt nuts shall comply with ASTM A-325. Anchor bolts shall be galvanized.

For location and lengths of conduits needed see Design Sheet 24-30. Total quantities for concrete and reinforcing steel for pole bases are included in the superstructure quantities on another sheet.

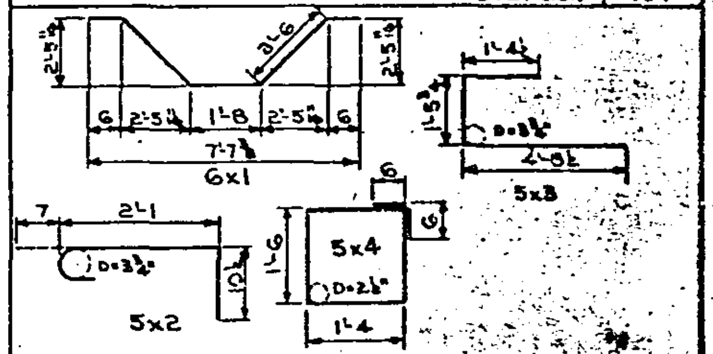


BOSSED FOR	HOLE	FOR CONDUIT SIZE
3 Threads	C	2"ϕ rigid steel
None	D	1"ϕ rigid steel
None	E	1/2"ϕ copper pipe

Note: The grounding buttons are to be blind drilled and tapped for 3/8"ϕ x 0'-0 1/4 bolts.

REINFORCING BAR LIST - ONE BASE

Bar	Location	Shape	Nº	Length	Weight
6x1	Slab Anchors		2	9'-5	29
5x2	Pole Base To Barrier Rail		4	5'-7	15
5x3	Pole Base To Slab		4	7'-7	32
5x4	Pole Base Hoop		4	6'-8	28
				Total (lb.)	104



All dimensions are out to out, D= Pin diameter.

LIGHTING QUANTITIES

Item	Amount	
2"ϕ Rigid Steel Conduit	3629	L.F.
1"ϕ Rigid Steel Conduit		L.F.
Structural Concrete Class D		C.Y.
*Reinforcing Steel	936	lb.

* Reinforcing Steel is to be epoxy coated.

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

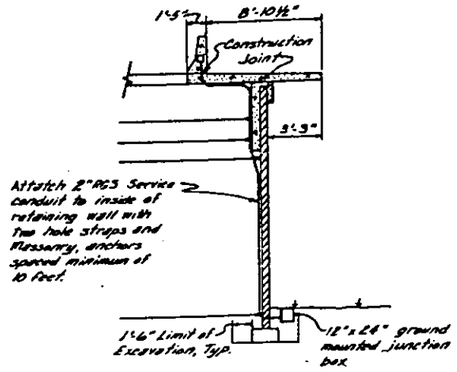
3340' × 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

LIGHTING DETAILS

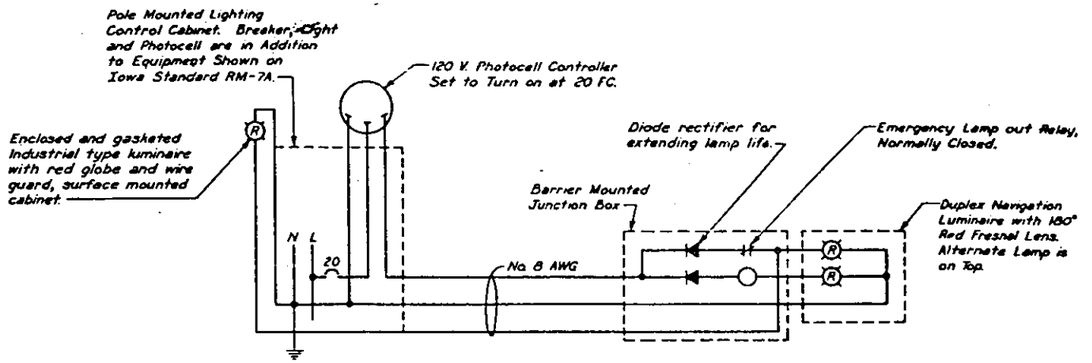
LEE COUNTY, IOWA HANCOCK COUNTY, ILLINOIS

HNTB

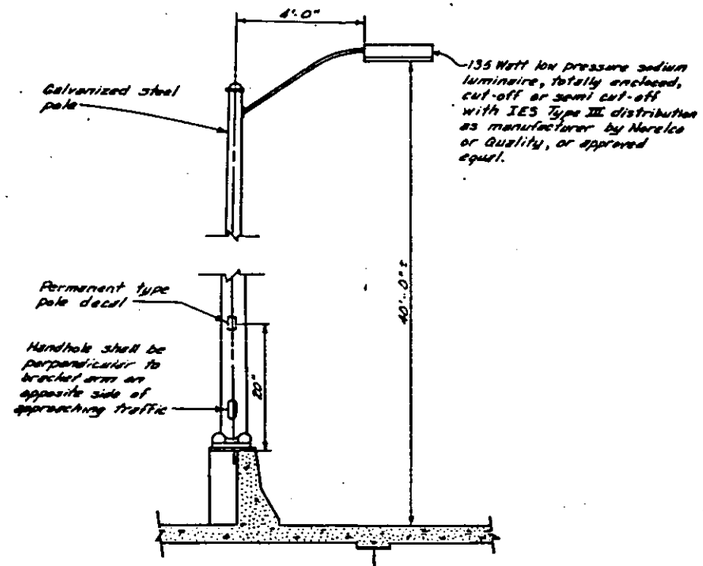
FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



LIGHTING SERVICE DETAIL

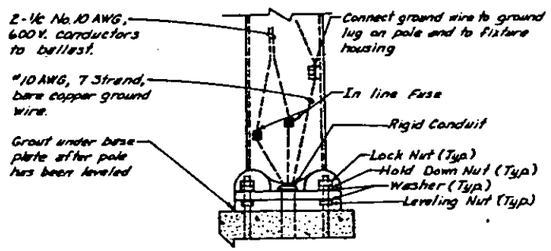


NAVIGATION LIGHT WIRING DIAGRAM

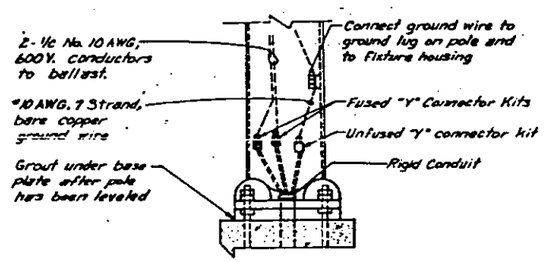


BRIDGE LIGHTING STANDARD

1. Lighting poles shall be steel as specified in the Iowa Standard Specifications with the exception that the shall not be less than 7 gage.
2. Lighting poles shall be factory fitted with interior counter weights for vibration dampening.



POLE MOUNTING AND WIRING
END OF CIRCUIT



POLE MOUNTING AND WIRING

NOTE:
All Electrical and Lighting work shall conform to the Iowa Standard Specifications

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

LIGHTING DETAILS

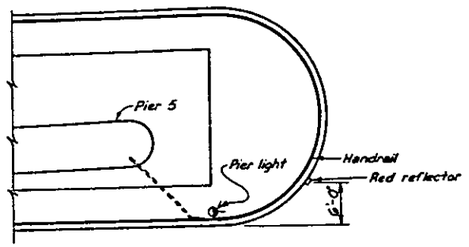
STA. 88+48.88
RIVER MILE 383.8
LEE COUNTY, IOWA

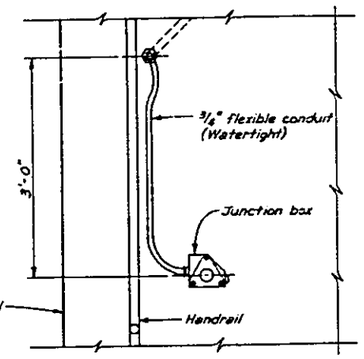
PROJECT NO. BRF-88-4(23)--88-45
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET 107 OF 117

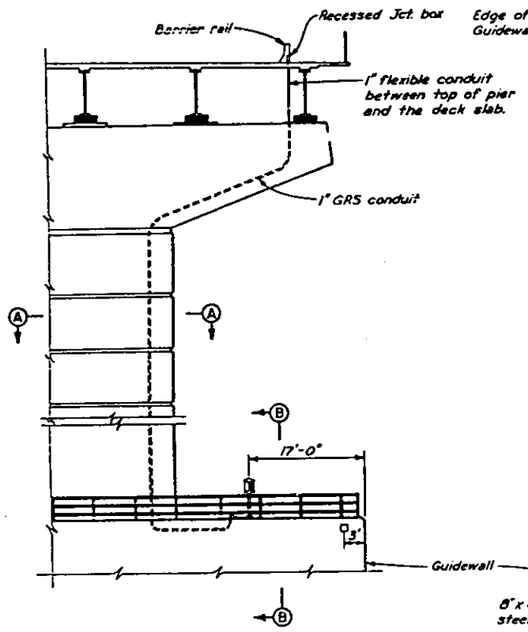
HNTB

FEDERAL DIST NO	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				



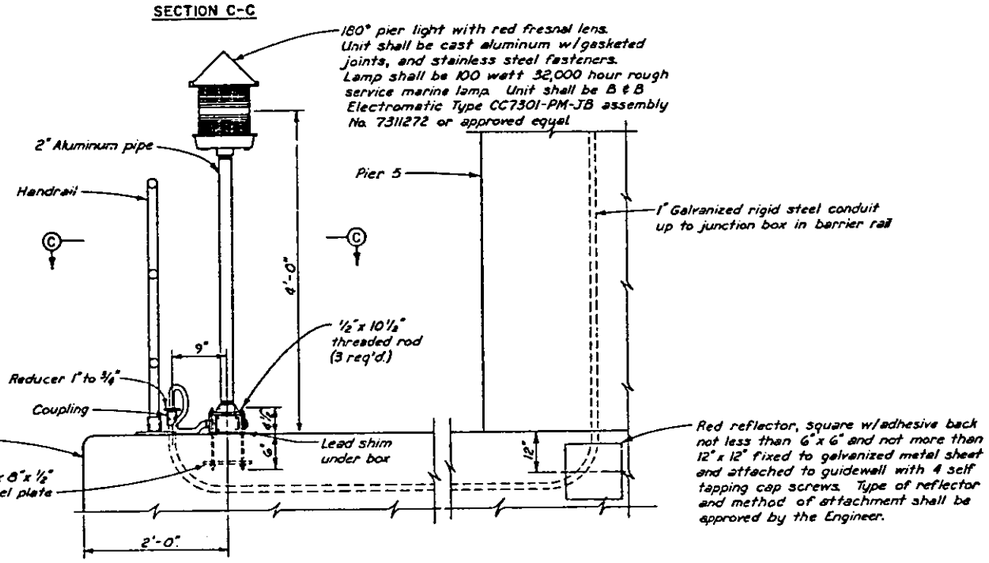


SECTION A-A



PARTIAL ELEVATION AT PIER 5
(Looking East)

SECTION C-C



SECTION B-B

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE

DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

NAVIGATION LIGHT DETAILS

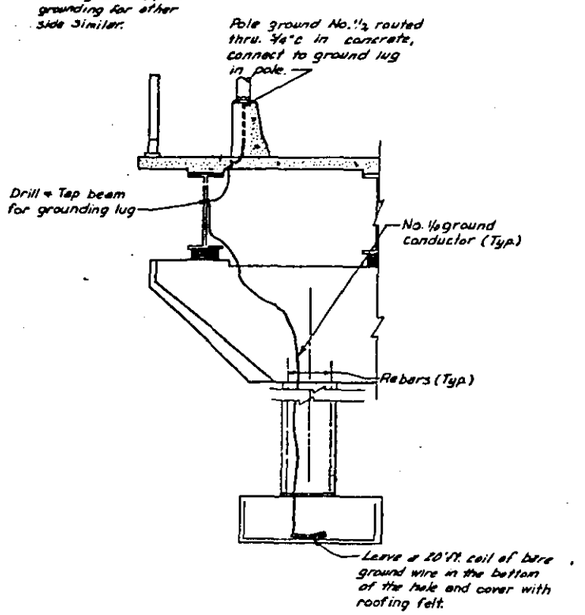
STA. 80+42.00
RIVER MILE 383.9
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(7)—39-56
HANCOCK COUNTY, ILLINOIS

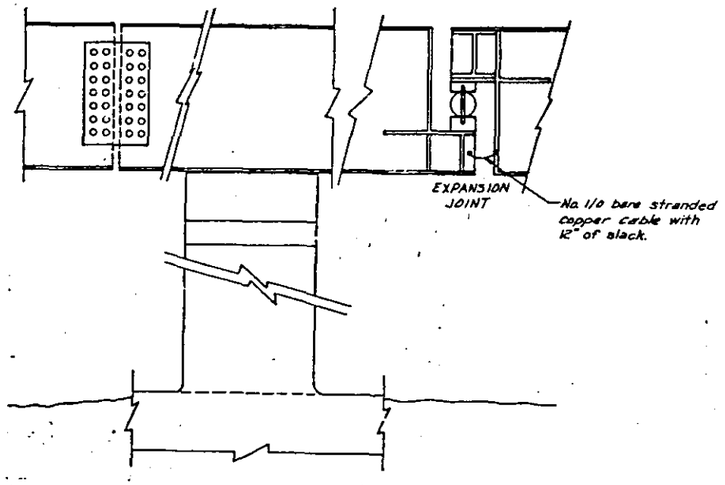
MADE SMS DATE 4-19-83 CHECKED JGS DATE 4-19-83

DESIGN NO. 382 LEE COUNTY FILE 35733 SHEET 114A OF 227

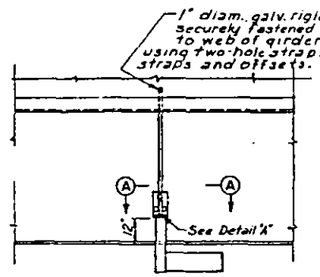
NOTE: Sidewalk side of roadway shown, pole grounding for other side similar.

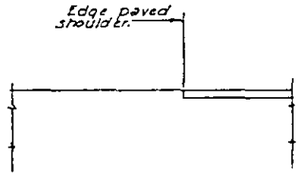


GROUNDING FOR PIERS NO. 1, 4, 8, 11, & 14

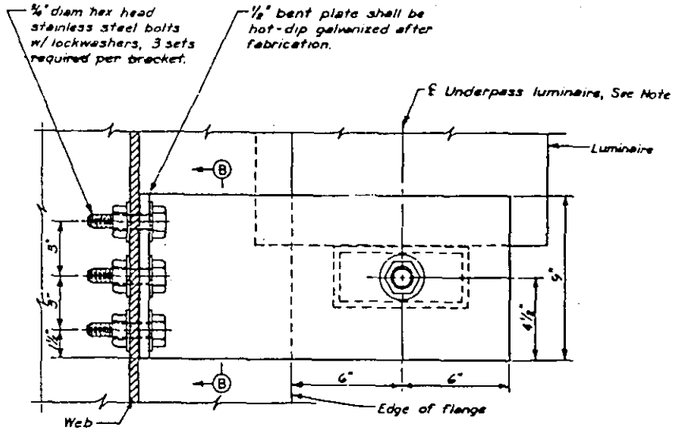


STRUCTURE BONDING



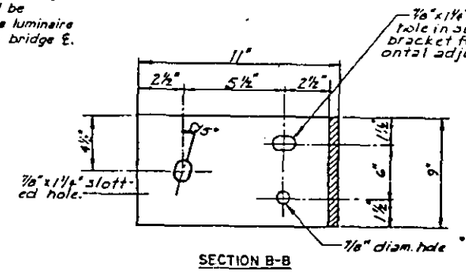


UNDERPASS LIGHT MOUNTING DETAIL
STEEL GIRDER BRIDGE

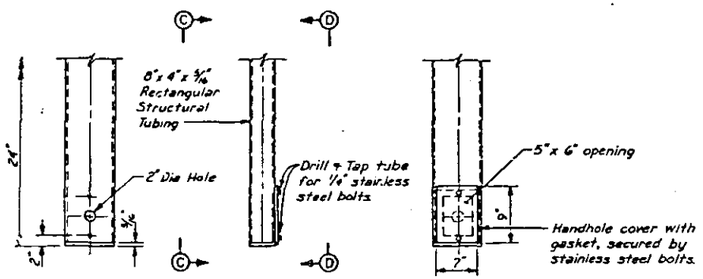


Notes:
1. The luminaire bracket assembly shall be constructed such that the luminaire ℄ is perpendicular to the roadway below.
2. The luminaire bracket assembly for the park lighting shall be constructed such that the luminaire ℄ is perpendicular to the bridge ℄.

SECTION A-A

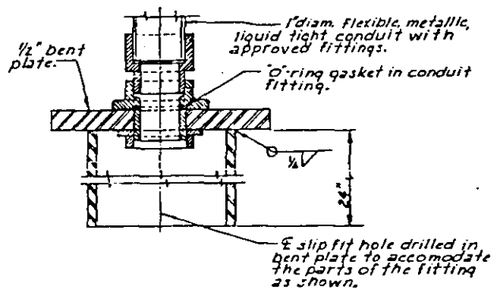


SECTION B-B



SECTION C-C ELEVATION SECTION D-D

UNDERPASS LIGHTING UNIT HANGER DETAILS



DETAIL "A"

BRIDGE CIRCUIT SCHEDULE		
BREAKER	DEVICE SIZE	WIRE SIZE
Mains	60A.	No. 4 USE
Circuit 1	20A. Ltg.	No. 6 USE, XHHW
Circuit 2	20A. Ltg.	No. 6 USE, XHHW
Circuit 3	20A. Rec.	No. 8 USE, XHHW
Circuit 4	Space	
Contactor	4P-100A	No. 4 USE

Note:
1. Service and Underground Wiring Shall be Type USE. XHHW Type Cable Shall be used on Structure.
2. No. 10 XHHW Shall be used Between the Luminaire and the Fused Connector Kit.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				
	ILLINOIS				

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

LIGHTING DETAILS

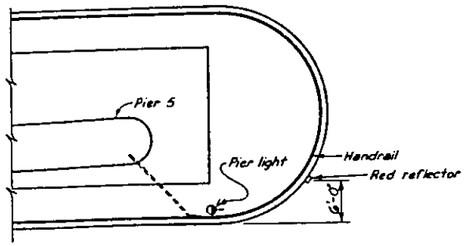
STA. [illegible]
RIVER MILE [illegible]
LEE COUNTY, IOWA

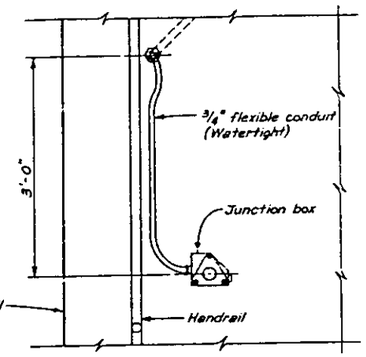
PROJECT NO. [illegible]
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET [illegible]

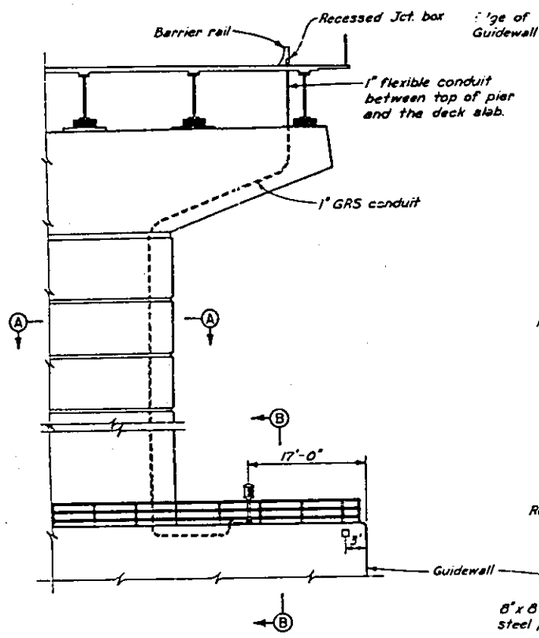
HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

FEDERAL DIST NO	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				
	ILLINOIS				



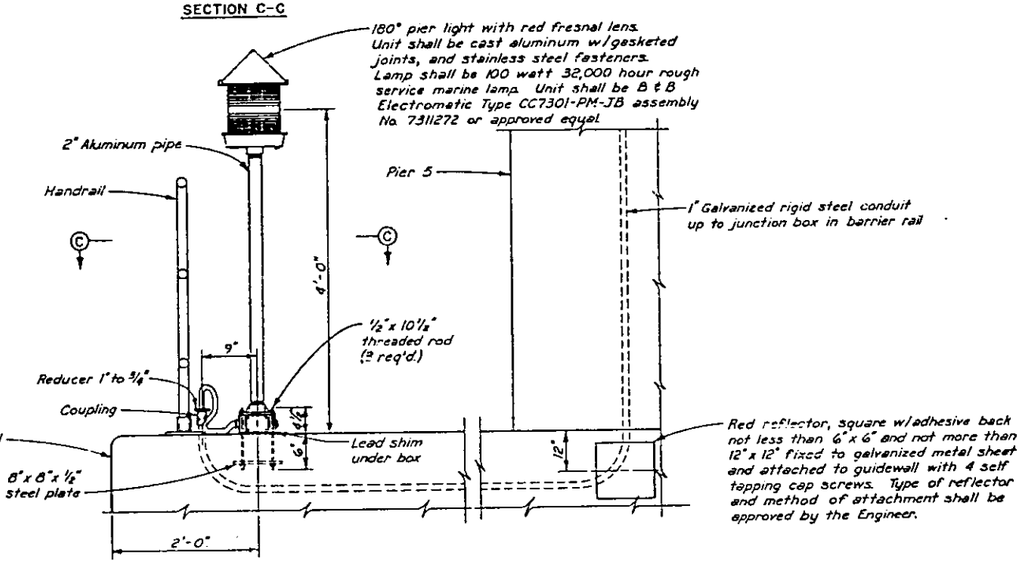


SECTION A-A



PARTIAL ELEVATION AT PIER 5
(Looking East)

SECTION C-C



SECTION B-B

HOWARD NEEDLES TAMMEN & BERGENDOFF HNTB

MISSISSIPPI RIVER BRIDGE
KEOKUK, IOWA - HAMILTON, ILLINOIS

STEEL ALTERNATE
DESIGN FOR 0° SKEW
3340' x 64' CONTINUOUS WELDED PLATE GIRDER BRIDGE

NAVIGATION LIGHT DETAILS

STA. 90+40.88
RIVER MILE 363.5
LEE COUNTY, IOWA

PROJECT NO. BRF-19-1(3)--39-56
HANCOCK COUNTY, ILLINOIS

DESIGN SHEET NO 2 OF 2