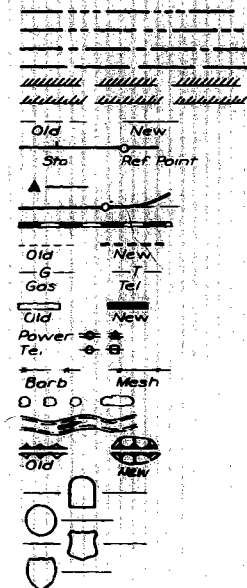


BRIDGES
I-380-6(39)261-01-57
JUNE 20, 1972
MAY 30, 1973
LETTING DATE
LINN COUNTY

State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line
Sec. Corner
Profile Grade
Railroad
Field Tile
Underground Lines
Culverts
Utility Poles
Fences
Trees Or Brush
Stream
Dike
County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.

CONVENTIONAL SIGNS



STATE OF IOWA STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

INTERSTATE ROAD SYSTEM LINN COUNTY BRIDGES

IN CEDAR RAPIDS FROM 28th AVE. S.W., NORTH TO 3rd AVE. S.W.

SCALE: AS NOTED

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS
FOR CONSTRUCTION WORK, SERIES OF 1972 SHALL
APPLY TO WORK ON THIS PROJECT
(PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS)

All Welding shall meet the requirements of the Eighth Edition
of the "Specifications for Welded Highway and Railway Bridges
(AWS D2.0-69) of the American Welding Society, except as
modified by the Standard Specifications and the current
Supplemental Specifications.

Design stresses for the following materials are in accordance
with AASHTO'S Standard Specifications for Highway Bridges,
Series of 1969, plus Interim Specifications.

Concrete in accordance with Section 1.5.1, $f'_c = 3,500$ psi.
Reinforcing steel in accordance with Section 1.5.1 $f_s = 20,000$ psi.
Structural Steel in accordance with Section 1.7.1, ASTM A-36, $f_s = 20,000$ psi.
Prestressed Concrete in accordance with Section 1.6.7, $f'_c = 5,000$ psi.
Prestressing Steel in accordance with Section 1.6.7, $P_s = 270,000$ psi.

MILEAGE SUMMARY				105.1	STATE CONTROL SECTION NO.
DIV.	LOCATION	LINE FT.	MILES		
	BR. AT STA. 305+12.87	272.229	.052		
	BR. AT STA. 295+96.90	638.00	.121		
	BR. AT STA. 272+73.11 & 269+21.70	486.833	.092		
	TOTAL		.265		

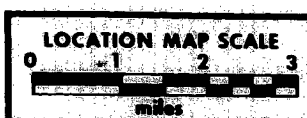
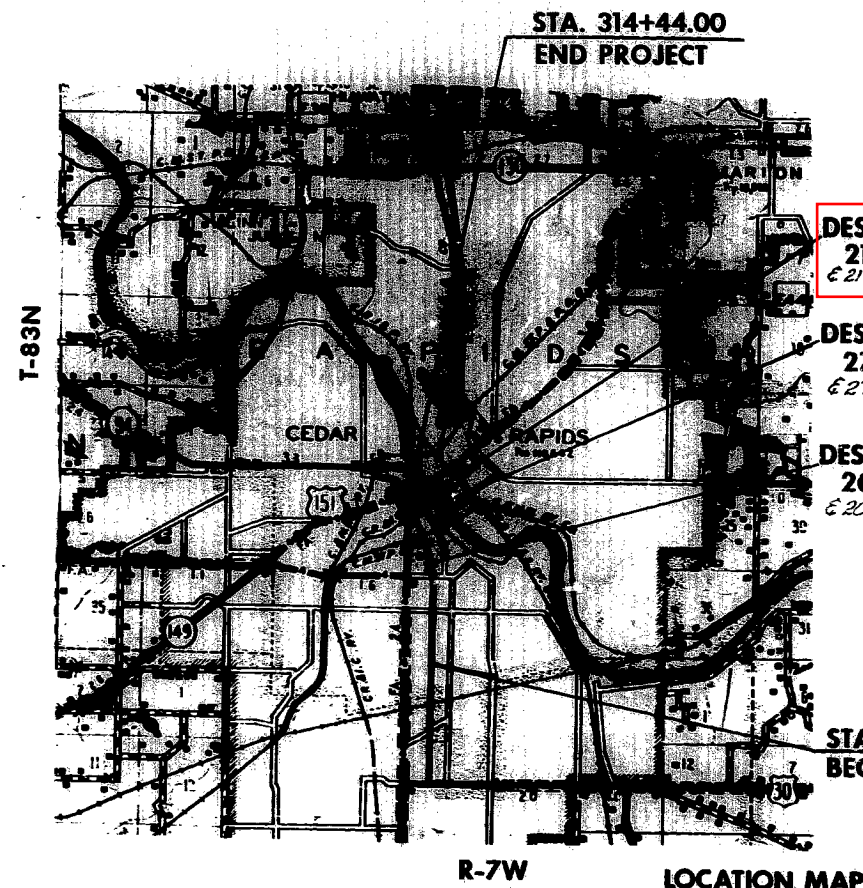
DESIGN DATA			
197	AADT	V.P.D.	
1994	AADT	V.P.D.	
1994	DHV	V.P.H.	
Directional	60 %		
Trucks	5 %		
Design V	60	M.P.H.	
FULL ACCESS CONTROL			

APPROVED
SEE FOLLOWING SHEET 1A
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED
UNDER MY SUPERVISION AND THAT ENGINEERING
DECISIONS WERE MADE BY ME OR BY OTHERS UNDER MY
SUPERVISION AND UNDER THE LAWS OF
THE STATE OF IOWA
See Sheet 1-380-6(39)261-01-57
IOWA REGISTRATION NUMBER DATE

APPROVED
U.S. DEPT. OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
DATE

IOWA STATE HIGHWAY COMMISSION STANDARDS REQUIRED
(Available at the I.S.H.C. Storeroom)
STANDARD ISSUED REVISED

INDEX OF SHEETS		105.3
NO.	DESCRIPTION	
1	TITLE SHEET	
1A	REVISION SHEET	
2	ESTIMATE SHEET	
3-33	BRIDGE DESIGN NO. 2070	
34-57	BRIDGE DESIGN NO. 2170	
58-129	BRIDGE DESIGN NO. 2770	
129A-14	BRIDGE DESIGN NO. 2070A	
129B-14	BRIDGE DESIGN NO. 2170A	
129C-12	BRIDGE DESIGN NO. 2770A	



57-1800

STATE CONTROL SECTION NUMBER

FILE NO. 24009

LINN COUNTY

PROJECT NO. I-380-6(39)261-01-57

SHEET NO. 1-380-6(39)261-01-57

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS	DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
July 27, '72	Sheet 1A of 129	This sheet added to project (Revision Sheet). Design 2770			
	Sheet 125 of 129	Weld size corrected.			
	Sheet 60 & 120 of 129	Bleeder drain coupling note added plus miscellaneous corrections.			
	Sheet 59 of 129	Pile note corrected. Design 2170			
	Sheet 54 of 129	Weld size corrected.			
	Sheet 48 & 51 of 129	Bleeder drain coupling note added. Design 2070			
	Sheet 30 of 129	Weld size corrected.			
	Sheet 28 of 129	Bleeder drain coupling note added.			
	Sheet 2 of 129	Design 2770 -- Class of concrete corrected.			
	Sheet 1 of 129	Sheet 1A added to "Index of Sheets".			
Jan. 11, '73	Sheet 127 of 129	Design 2770 Nose Block widened.			
	Sheet 118 of 129	Nose Block reinforcing changed to fit new detail.			
	Sheet 117 of 129	Nose Block widened, Section B-B added to show changes.			
	Sheet 60 of 129	Reinforcing Steel quantity changed.			
	Sheet 2 of 129	Design 2770 -- Reinforcing Steel quantity changed. REASON: It has been decided to use a "HYDRO CUSHION" vehicle attenuator system of this bridge. Details modified slightly to accommodate a standard size unit.			
April 9, '73	Sheets 129C1 thru 129C12	Designs 2070A, 2170A & 2770A These sheets added to project (Details for Design 2770A).			
	Sheets 129B1 thru 129B4	These sheets added to project (Details for Design 2170A).			
	Sheets 129A1 thru 129A4	These sheets added to project (Details for Design 2070A).			
	Sheet 2 of 129	Quantities for designs 2070A, 2170A and 2770A added.			
	Sheet 1 of 129	Sheets 129A1 thru 129A4, 129B1 thru 129B4 and 129C1 thru 129C4 added to "Index of Sheets" (Details for Designs 2070A, 2170A and 2770A). REASON: The built up deck membrane waterproofing and special A. C. surface course have been deleted from the original contracts so that an improved, preformed membrane waterproofing system may be utilized as per these added designs.			

COUNTY

PROJECT NUMBER

DATE
12/20/2011
TIME
12:00:00
USER
hjm
IP
192.168.1.1

IN LETTING GROUP 20 1972

DESIGN NO. 2070 LINN COUNTY SECTIONS 33-28		I-380 OVER 15TH AND 16TH AVES. S.W. CITY OF CEDAR RAPIDS T-83N R-7W		STA. 272+73.11 @ I-380 - STA. 12+05.31 @ 15th Ave. SW STA. 269+21.70 @ I-380 - STA. 2+02.29 @ 16th Ave. SW. RAPIDS TOWNSHIP	
DESIGN FOR 0° SKEW DUAL 482'-0 x 52'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE					
ESTIMATE OF QUANTITIES					
ITEM NO.	ITEM			UNIT	TOTAL
1	Structural Concrete			Cu. Yds.	2 904.0
2	Reinforcing Steel			Lbs.	613 700
3	Structural Steel			Lbs.	25 540
4	Prestensioned	B34	No.	32	
	Prestressed	B55	No.	80	
	Concrete Beam	B63	No.	32	
5	Steel Handrail			Lin. Ft.	1 982.6
6	Aluminum Handrail			Lin. Ft.	1 982.6
7	4" Tie Subdrain			Lin. Ft.	296
8	HP10 x 42 Steel Bearing Pile	Furnish Drive	Lin. Ft.	9 071	
			Lin. Ft.	9 071	
9	Excavation Class 20			Cu. Yds.	1 395
10	Granular Backfill			Cu. Yds.	328
11	Concrete Slope Protection			Sq. Yds.	858
12	2" Rigid Steel Conduit			Lin. Ft.	1 074
13	Deck Membrane Waterproofing			Sq. Yds.	5 564
14	Bleeder Drains			Each	208
15	Special A.C. Surface Course			Tons	744

ESTIMATE REFERENCE INFORMATION		100.4
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.		
ITEM NO.	DESCRIPTION	
1.	1,098.0 cu. yds. Class "C" Concrete. 1,806.0 cu. yds. Class "D" Concrete.	
11.	Includes 44 lin. ft. of 1" Rigid Steel Conduit.	

IN LETTING OF JUNE 20, 1972

DESIGN NO. 2170 LINN COUNTY SECTION 28		CEDAR VALLEY FREEWAY OVER RELOCATED 5TH AVE. S.W. CITY OF CEDAR RAPIDS T-83N R-7W		STA. 305+12.87 @ I-380 - STA. 15+00 @ REL. 5TH AVE. S.W. RAPIDS TOWNSHIP	
DESIGN FOR 40°06'27.8" SKEW DUAL 267'-0" x 52'-0" CONTINUOUS WELDED PLATE GIRDER BRIDGE					
ESTIMATE OF QUANTITIES					
ITEM NO.	ITEM			UNIT	TOTAL
1	Structural Concrete			Cu. Yds.	1 673.6
2	Reinforcing Steel			Lbs.	340 824
3	Structural Steel			Lbs.	660 900
4	HP10 x 42 Steel Piling	Furnish Drive	L.F.	5 320	
5	Class 20 Excavation			Cu. Yds.	1 109
6	4" Tile Subdrain			L.F.	344
7	Granular Backfill			Cu. Yds.	536
8	Aluminum Handrail			L.F.	1 147.6
	Steel Handrail			L.F.	1 147.6
9	Concrete Slope Protection			Sq. Yds.	1 428
10	Deck Membrane Waterproofing			Sq. Yds.	3 090.4
11	Bleeder Drains			Each	116
12	Special A.C. Surface Course			Tons	412
13	2" Rigid Steel Conduit			L.F.	648

ESTIMATE REFERENCE INFORMATION		100.4
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.		
ITEM NO.	DESCRIPTION	
1.	Structural concrete consists of 618.8 cu. yds. of class "C" and 1,054.8 cu. yds. of class "D".	
13.	2" Rigid Steel Conduit includes 18 L.F. of 1" Rigid Steel Conduit per lane.	

IN LETTING OF JUNE 20, 1972

DESIGN NO. 2770 LINN COUNTY SECTION 28		I-380 OVER 8TH AVE. S.W. C.M. ST. P. & P.R.R., C.R. & J.C. R.R. CITY OF CEDAR RAPIDS T-83N R-7W		STA. 295+96.90 @ I-380 = STA. 15+00.47 @ REL. 8TH AVE. (FUTURE) RAPIDS TWP.	
DESIGN FOR VARIABLE SKEW DUAL 633'-0" x VARIABLE WIDTH CONTINUOUS WELDED PLATE GIRDER BRIDGE					
ESTIMATE OF QUANTITIES					
ITEM NO.	ITEM		UNIT	TOTAL	
1	Structural Concrete		Cu. Yds.	5 308.4	
2	Reinforcing Steel		Lbs.	1 280 172 1-280-144	
3	Structural Steel - A-36		Lbs.	2 043 100	
4	Steel Handrail or Aluminum Handrail		Lin. Ft.	3 363.3	
5	4" Tile Subdrain		Lin. Ft.	397	
6	Creosoted Piling		Lin. Ft.	23 280	
7	HP10 x 42	Furnish	Lin. Ft.	8 933	
8	Bearing Piling	Drive	Lin. Ft.	3 933	
9	Excavation, Class 20		Cu. Yds.	3 150	
10	Granular Backfill		Cu. Yds.	550	
11	Concrete Slope Protection		Sq. Yds.	1 014	
12	2" Rigid Steel Conduit		Lin. Ft.	1 506	
13	Deck Membrane Waterproofing		Sq. Yds.	9 685	
14	Bleeder Drains		Each	218	
15	Special A.C. Surface Course		Tons	1 294	

ESTIMATE REFERENCE INFORMATION		100.4
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.		
ITEM NO.	DESCRIPTION	
1.	2,420.6 c.y. Class "C" Concrete. 2,387.3 c.y. Class "D" Concrete.	
3.	Includes 3,851 lbs. of A237 steel.	
11.	Includes 38" of 1" Rigid Steel Conduit.	

IN LETTING OF MAY 31, 1973

DESIGN NO. 2070A LINN COUNTY SECTIONS 33-28		I-380 OVER 15TH AND 16TH AVES. S.W. CITY OF CEDAR RAPIDS T-83N R-7W		STA. 272+73.11 @ I-380 - STA. 12+05.31 @ 15th Ave. SW STA. 269+21.70 @ I-380 - STA. 2+02.29 @ 16th Ave. SW. RAPIDS TOWNSHIP	
DESIGN FOR 0° SKEW DUAL 482'-0" x 52'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE					
DECK MEMBRANE WATERPROOFING					
ESTIMATE OF QUANTITIES					
ITEM NO.	ITEM	UNIT	TOTAL		
1	Deck Membrane Waterproofing	sq. yds.	5564		
2	Deck Membrane Asph. Concr. Surface	tons	744		
3	Asphalt Cement	tons	42		

ESTIMATE REFERENCE INFORMATION		100.4
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.		
ITEM NO.	DESCRIPTION	

IN L. E. MAY 30, 1978

DESIGN NO. 2170A LINN COUNTY SECTION 28	CEDAR VALLEY FREEWAY OVER RELOCATED 5TH AVE. S. W. CITY OF CEDAR RAPIDS T-83N R-7W	STA. 305+12.87 @ I-380 - STA. 15+00 @ REL. 5TH AVE. S. W. RAPIDS TOWNSHIP	
DESIGN FOR 40°06'27.5" SKEW DUAL 267'-0 x 52'-0 CONTINUOUS WELDED PLATE GIRDER BRIDGE			
DECK MEMBRANE WATERPROOFING			
ESTIMATE OF QUANTITIES			
ITEM NO	ITEM	UNIT	TOTAL
1	Deck Membrane Waterproofing	Sq. yds.	3,090
2	Deck Membrane Asph. Concr. Surface	Tons	412
3	Asph't Cement	Tons	24

ESTIMATE REFERENCE INFORMATION		100.4
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.		
ITEM NO.	DESCRIPTION	

DESIGN NO. 2770A
LINN COUNTY
SECTION 28

I-380 OVER 8TH AVE. S.W.
C.M. ST. P. & P.R.R., C.R. & J.C. R.R.
CITY OF CEDAR RAPIDS
T-83N R-7W

STA. 295+96.90 @ I-380 -
STA. 15+00.47 @ REL.
8TH AVE. (FUTURE)
RAPIDS TWP.

DESIGN FOR VARIABLE SKEW

DUAL 633'-0" x VARIABLE WIDTH CONTINUOUS WELDED PLATE GIRDER BRIDGE

DECK MEMBRANE WATERPROOFING

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL
1	Deck Membrane Waterproofing	sq yds	9685
2	Deck Membrane Asph. Concr. Surface	tons	12944
3	Asphalt Cement	tons	75

ESTIMATE REFERENCE INFORMATION		100.4
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.		
ITEM NO.	DESCRIPTION	

Revised 1-11-73: Design 2770--Reinforcing Steel quantity changed.
Revised 7-27-72: Design 2770--Concrete of Concrete Corrected
Revised 4-9-73: Quantities for Designs 2070A, 2170A & 2770A added.

ESTIMATE SHEET (BRIDGES)

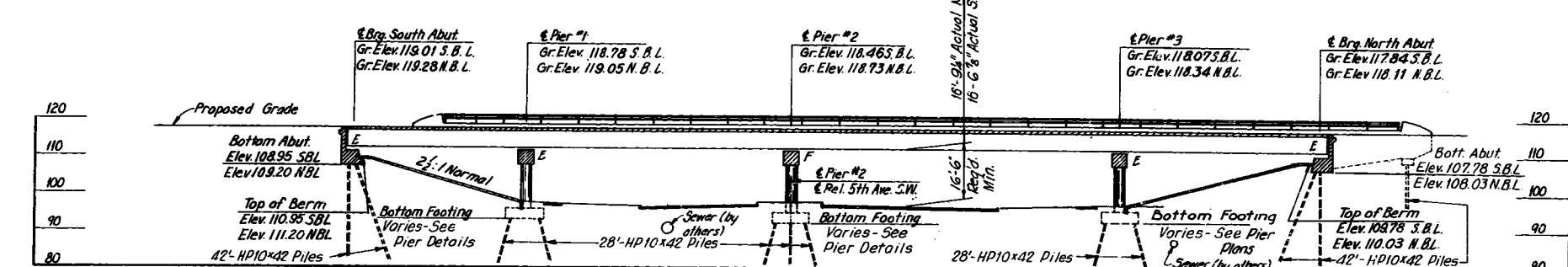
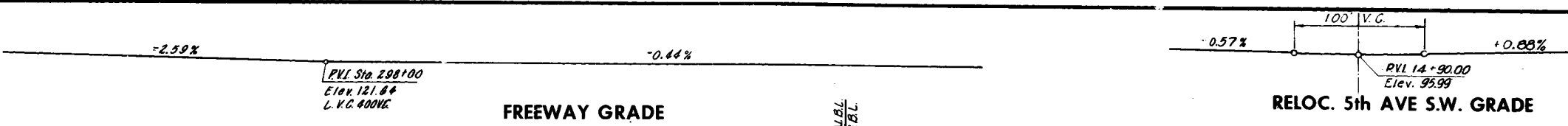
FILE NO. 24009

Linn County

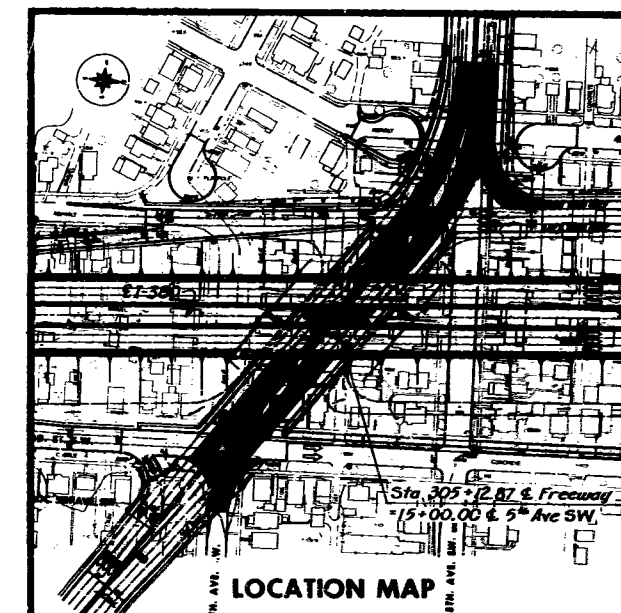
PROJECT NUMBER

I-380-6430264-42-57

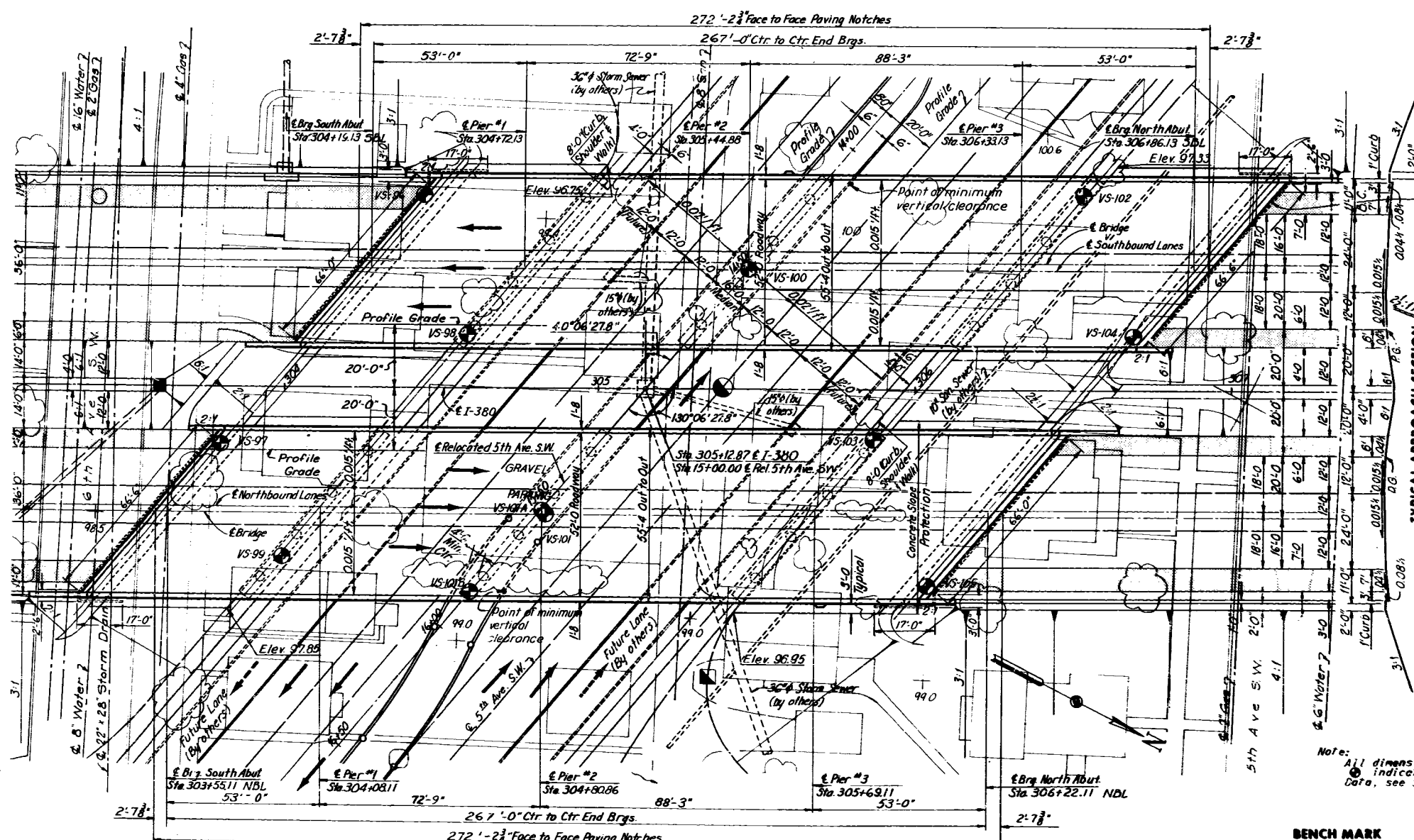
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	IOWA				



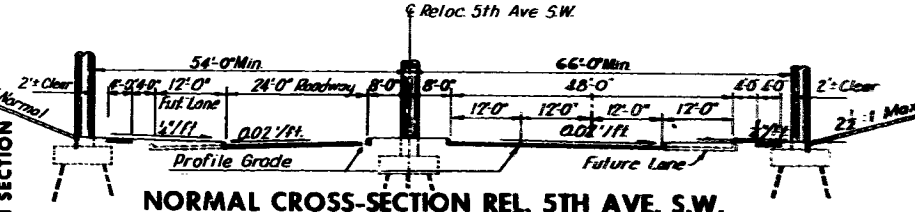
LONGITUDINAL SECTION ALONG C/L OF LANES



LOCATION MAP



4" Tile Subdrain Slope downward 1/4" per foot from median to extend through fill, typical



NORMAL CROSS-SECTION REL. 5TH AVE. S.W.

(Looking Backstation)

LOCATION

Cedar Valley Freeway over Relocated 5th Ave. S.W.
City of Cedar Rapids
Linn County
Repairs Trp. 783 N. RTW Section 28

DESIGN TRAFFIC

I-380 Traffic Count 35,400
V.P.D. (1990) Reloc. 5th Ave S.W.
Traffic Count 27,400 V.P.D. (1990)

I hereby certify that this plan, specification or report 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.

Paul L. Heineman, P.E., Iowa Reg. No. 5154

I-380 OVER 5th AVENUE S.W.

DESIGN FOR 40' 06" 27.5° SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED PLATE GIRDER BRIDGE
53'-0", 72'-9", 88'-3", 53'-0" SPANS

SITUATION PLAN

STA 305+12.87 E I-380 = STA 15+00.00 E REL. 5th AVE. S.W.
PROJECT NO. I-380-429/261-00-57
LINN COUNTY

IOWA STATE HIGHWAY COMMISSION

APRIL 1972

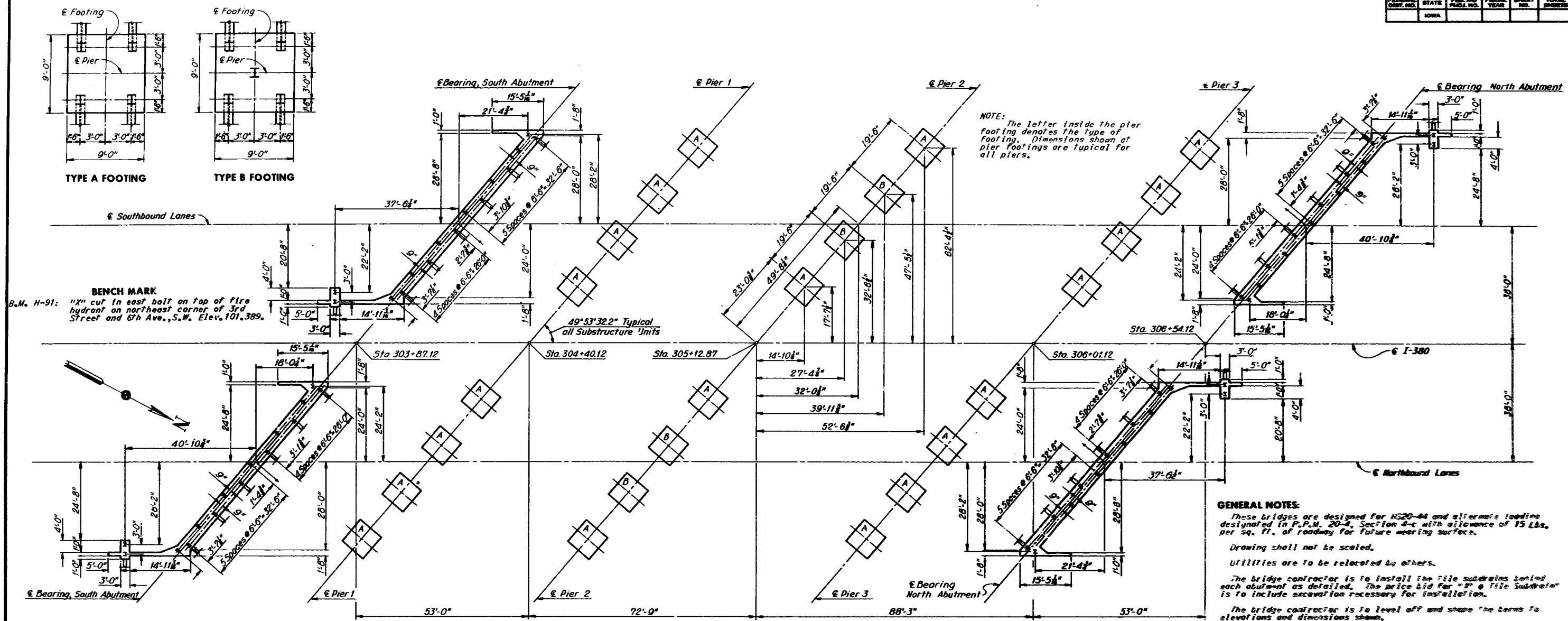
SHEET 1 OF 24

DESIGN NO. 2170 LINN COUNTY FILE 24009 SHEET 34 OF 129

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK

MADE J.P.M. DATE 8-18-71 CHECKED D.N.S. DATE 11-8-71

ISHC J. Sweeney



FOOTING PLAN

SPECIFICATIONS:

Design Stresses for the following materials are in accordance with AASHTO Standard Specifications for Highway Bridges, Series of 1969, and Interim Specifications of 1970 and 1971.

Structural steel in accordance with Section 7 "Structural Steel Design," ASTM A36 $f_s=20,000$ psi.

Reinforcing steel in accordance with Section 1.5.1 "Reinforcement," $f_s=20,000$ psi.

Concrete in accordance with Section 1.5.1 $f'_c=3,500$ psi.

Construction: Standard Specifications of the Iowa State Highway Commission Series of 1972, plus current Special Provisions and current Supplemental Specifications.

Welding: 1969 American Welding Society Specifications, except as modified in Standard Specifications.

GENERAL NOTES:

These bridges are designed for HS20-44 and alternate loading designated in P.P.M. 20-A, Section 4-c with allowance of 15 lbs. per sq. ft. of roadway for future wearing surface.

Drawing shall not be scaled.

Utilities are to be relocated by others.

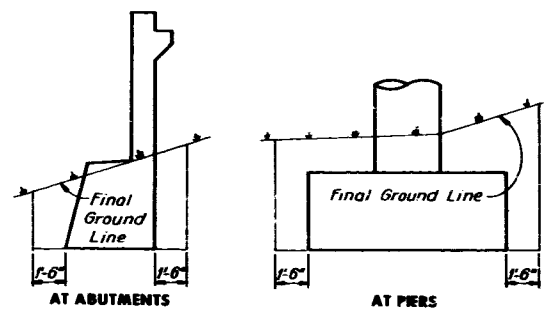
The bridge contractor is to install the file subdrains behind each abutment as detailed. The price bid for "3" x 6" File Subdrain" is to include excavation necessary for installation.

The bridge contractor is to level off and shape the berms to elevations and dimensions shown.

All dimensions are horizontal, unless otherwise shown.

The HP10x42 steel piles at abutments and piers shall be driven to a minimum bearing value of 37 tons per pile beneath assumptions and 55 tons per pile beneath piers with a diesel hammer of adequate capacity. Piles shall be driven to practical refusal and sealed in lime-sand. Sealing shall be done with a diesel hammer of at least 26,000 foot-pounds of rated energy operating at full capacity or a gravity hammer having an effective weight of at least 6,000 pounds, and driving energy of not less than 39,000 foot-pounds nor more than 40,000 foot-pounds.

The approaches are not a part of this estimate.



ITEM NO.

- 1
- 4
- 13

REFERENCE INFORMATION

Structural Concrete consists of 618.8 C.Y. of Class C and 1,054.8 C.Y. of Class D.

HP10x42 Steel Piling consists of 60 @ 42' and 100 @ 28'.

2" Rigid Steel Conduit includes 18 L.F. of 1" Rigid Steel Conduit per lane.

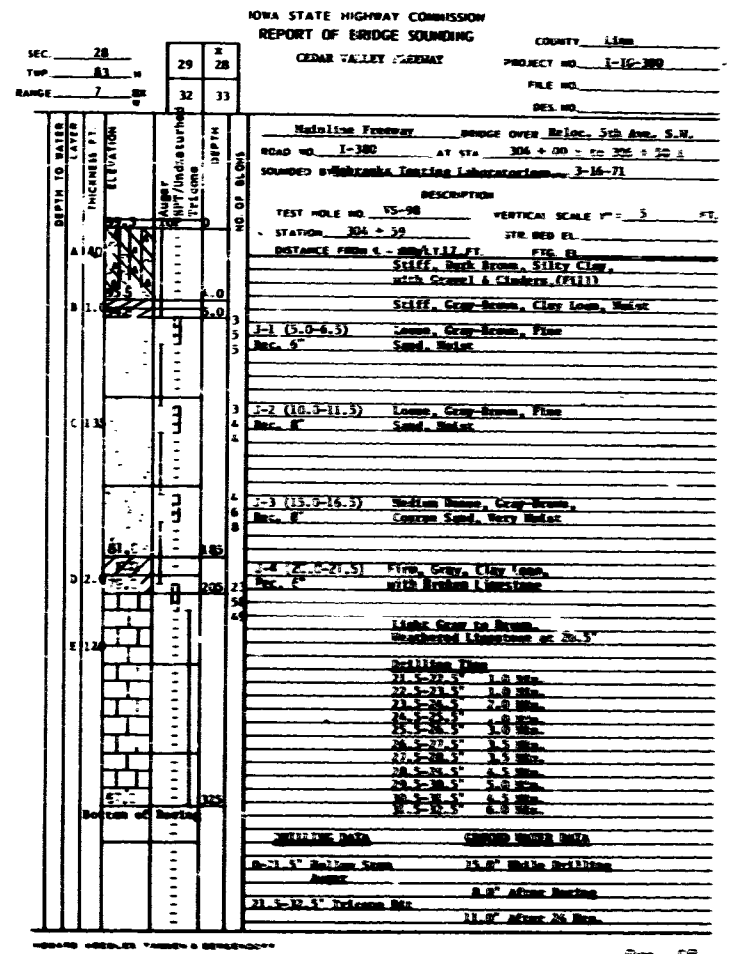
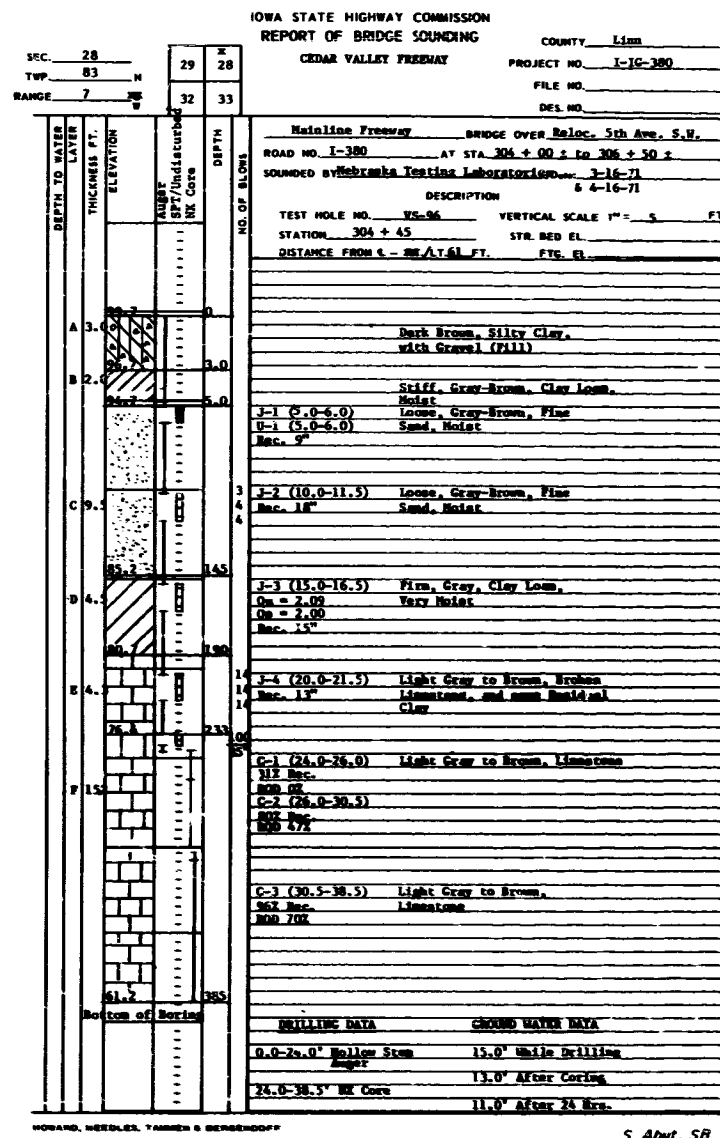
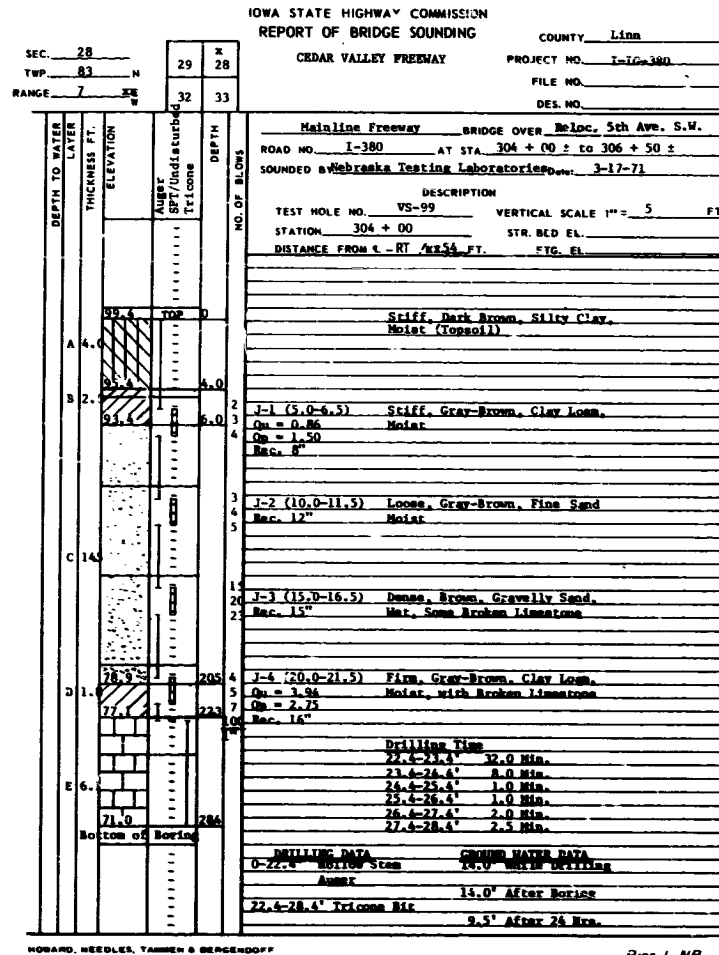
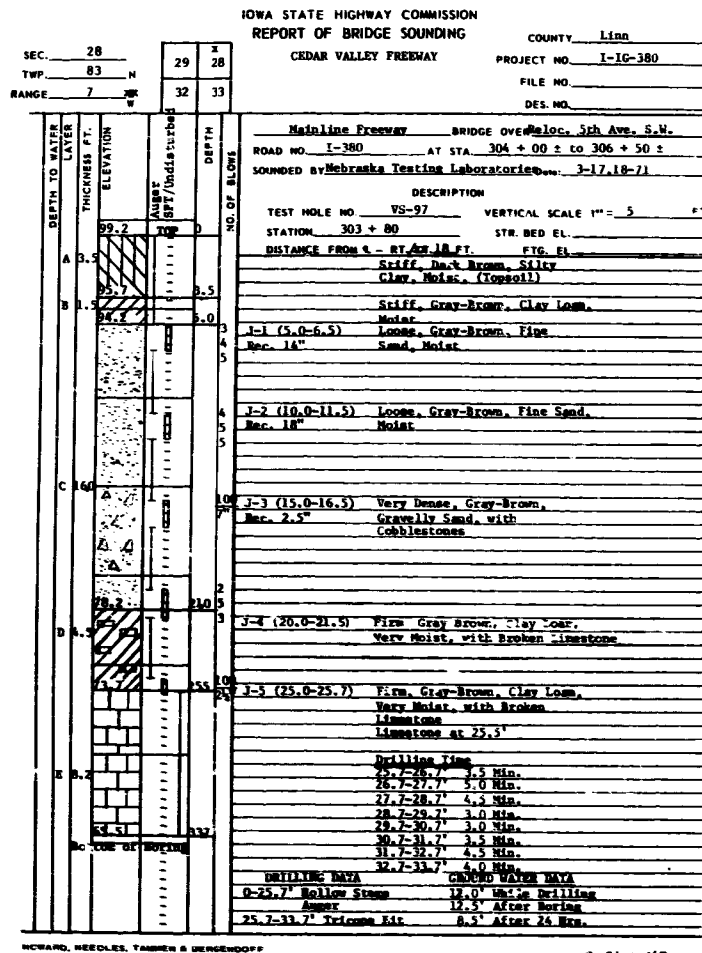
TOTAL ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	SOUTHBOUND LANES			NORTHBOUND LANES			TOTAL
			SUBSTR.	SUPERSTR.	TOTAL	SUBSTR.	SUPERSTR.	TOTAL	
1	Structural Concrete	C.Y.	407.3	429.2	836.5	407.9	429.2	837.1	1,673.6
2	Reinforcing Steel	Lbs.	50,557	119,821	170,378	50,625	119,821	170,446	340,824
3	Structural Steel	Lbs.		330,450	330,450		330,450	330,450	660,900
4	HP10x42 Steel Piling	L.F.	2,660		2,660	2,560		2,560	5,220
5	Class 20 Excavation	C.Y.	532		532	537		537	1,069
6	4" Tile Subdrain	L.F.	172		172	172		172	344
7	Granular Backfill	C.Y.	268		268	263		263	531
8	Aluminum Handrail or Steel Handrail	L.F.		573.8	573.8		573.8	573.8	1,147.6
9	Concrete Slope Protection	S.Y.	714		714	714		714	1,428
10	Deck Membrane Waterproofing	S.Y.	1,545.2		1,545.2	1,545.2		1,545.2	3,090.4
11	Bleeder Drains	Each	58		58	58		58	116
12	Special A. C. Surface Course	Tons	206		206	206		206	412
13	2" Rigid Steel Conduit	L.F.	324		324	324		324	648

I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40' 00" 27.8' SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED PLATE GIRDER BRIDGE
53'-0", 72'-9", 88'-3", 53'-0" SPANS

GENERAL NOTES & FOOTING PLAN

STA. 305+12.87 E I-380 - STA. 15+00.00 E R.R. 5th AVE S.W.
PROJECT NO. I-380-6439261-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



REPORT OF BRIDGE SOUNDING LEGEND

- SPT - Interval of Standard Penetration Test
- Undisturbed - Interval in which a 3" O.D. Shelby Tube Sample was attempted
- Wash or NX Core - In Rock Core Interval a 2-1/8" Diameter Rock Core Sample was taken.
- No. of Blows - Indicates results of Standard Penetration Test (i.e. Number of blows of a 140 pound hammer falling 30 inches required to drive a 2 inch O.D. Split Barrel Sampler three 6 inch increments.) Penetration less than 6 inches is denoted by 60/4" (Blows/Penetration.)
- Field Unconfined Compressive Strength Values in tsf
 - Q_u - Results of Rimex Spring Tester
 - Q_p - Results of Pocket Penetrometer
- Core Recovery Designation in Per Cent
 - Rec. - Normal Per Cent Recovery for Rock Coring.
 - RQD - (Rock Quality Designation) a modified core recovery procedure used as an Index of Rock Quality.

RQD (%)	Description of Rock Quality
0 - 25	Very Poor
25 - 50	Poor
50 - 75	Fair
75 - 90	Good
90 - 100	Excellent

GENERAL NOTES

- For boring locations in plan see Sheet 1 of 24
- Foundation borings shown on these sheets were drilled by Nebraska Testing Laboratories, Omaha, Nebraska, between March 16 - April 17, 1971
- All borings were drilled by conventional rotary drilling methods
- Elevation Datum - Cedar Rapids City Datum (627.42 MSL = C. City Datum)

MORE 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 construction of the project.

I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40' 06" 27' 8" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
PLATE GIRDER BRIDGE
53'-0" 72'-9" 88'-3" 53'-0" SPANS

SOUNDING DATA

STA 305+12.87 ± I-380 - STA 15+00.00 ± REL. 5th AVE S.W.
PROJECT NO. I-380-61391261.00.57
LINN COUNTY

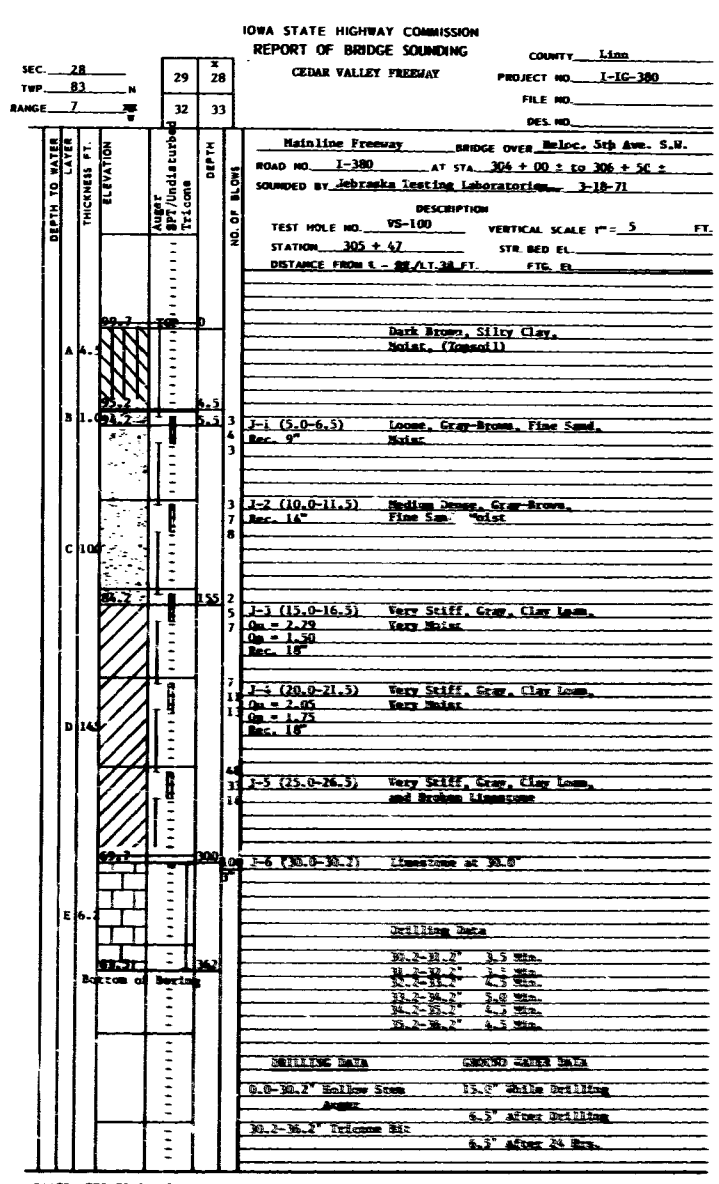
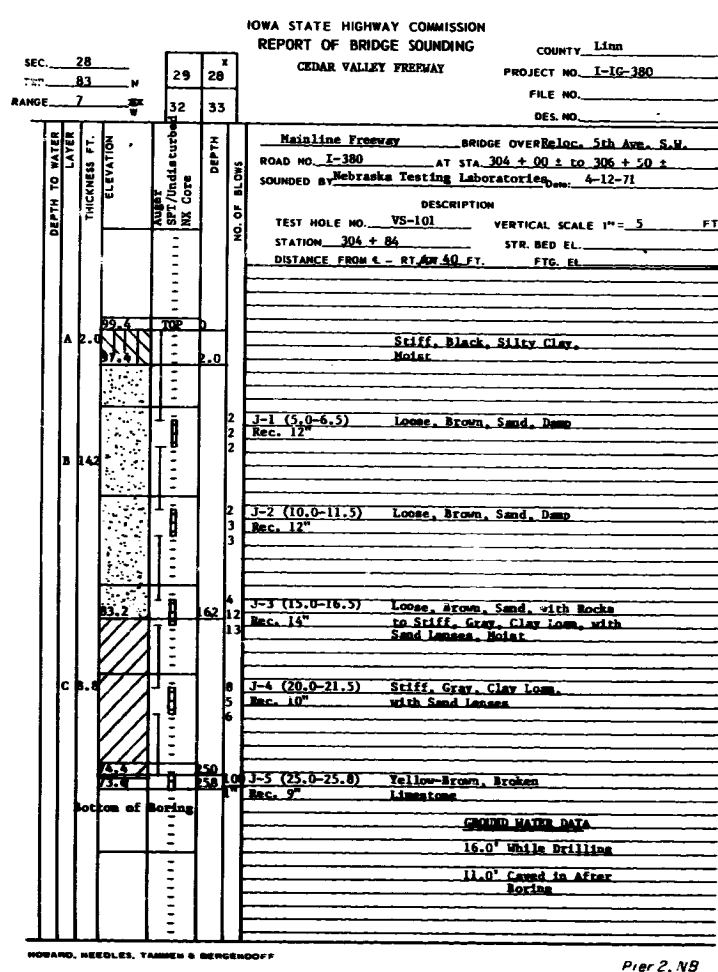
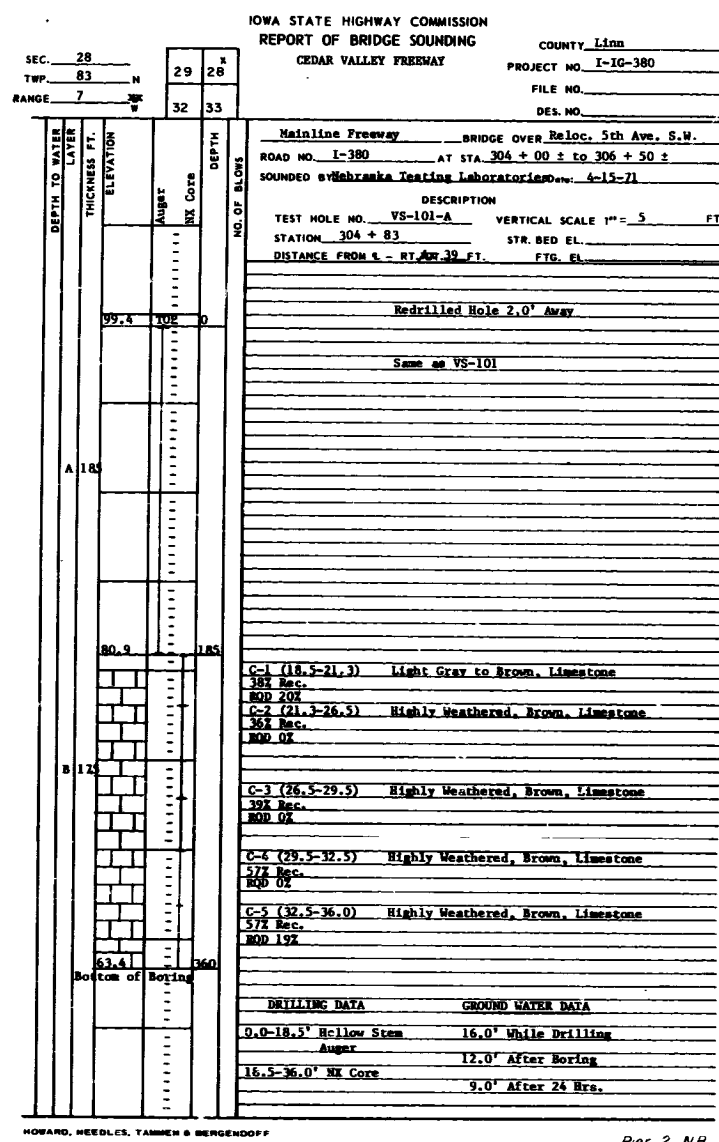
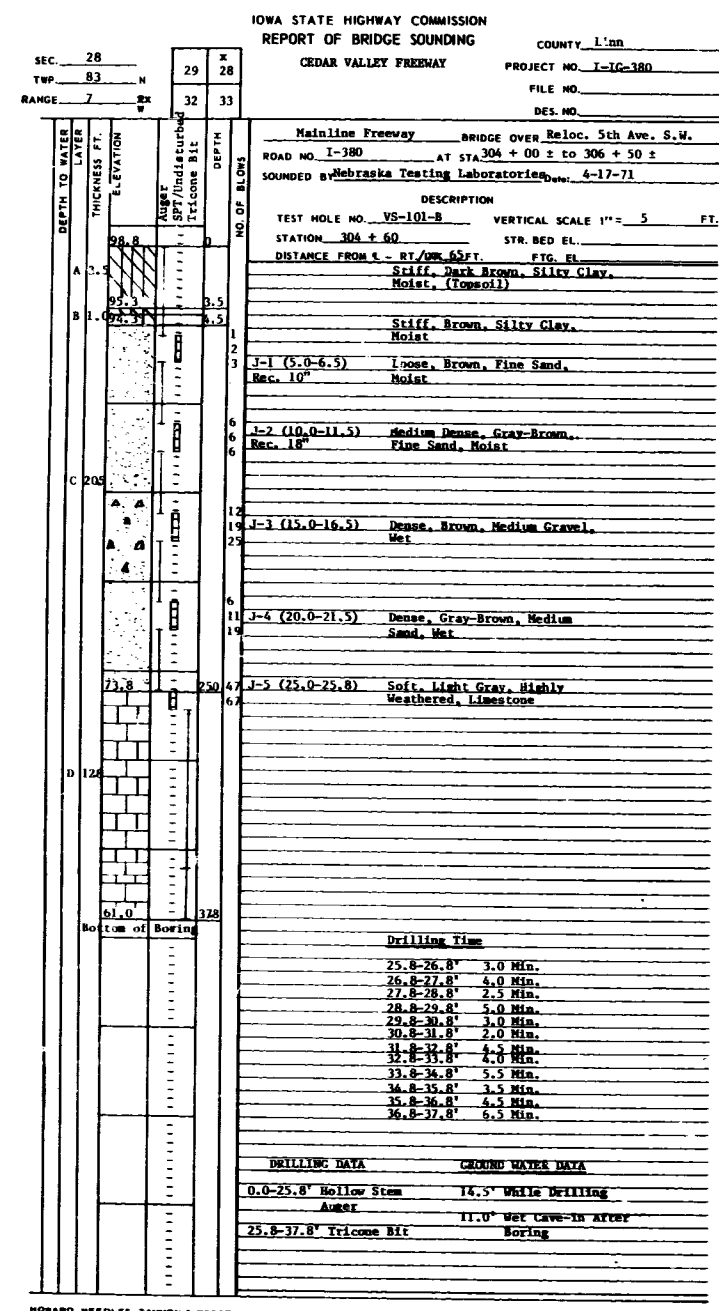
IOWA STATE HIGHWAY COMMISSION

APRIL 1972

SHEET 3 OF 24

DESIGN NO. 2170 LINN COUNTY FILE 24009

SHEET 36 OF 129



I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40' 06' 27.8" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
PLATE GIRDER BRIDGE
53'-0" 72'-9" 88'-3" 53'-0" SPANS
SOUNDING DATA

STA 305+12.87 & I-380 = STA 15+00.00 @ REL 5th AVE S.W
PROJECT NO. I-380-6(19)261-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

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 construction of the project.

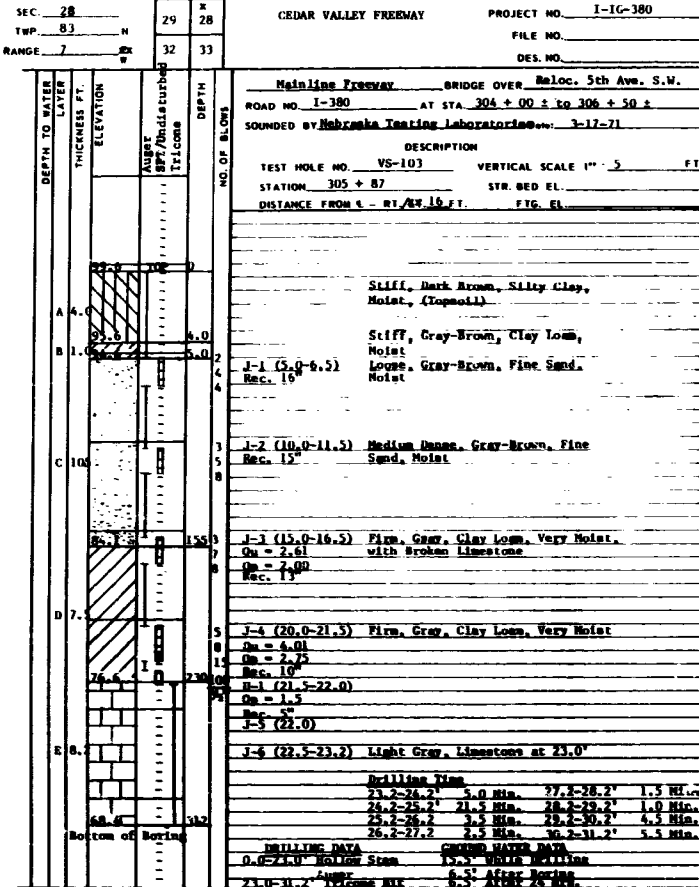
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HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE CGL DATE 8-27-71 CHECKED GDU/INB DATE 8-31-71

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

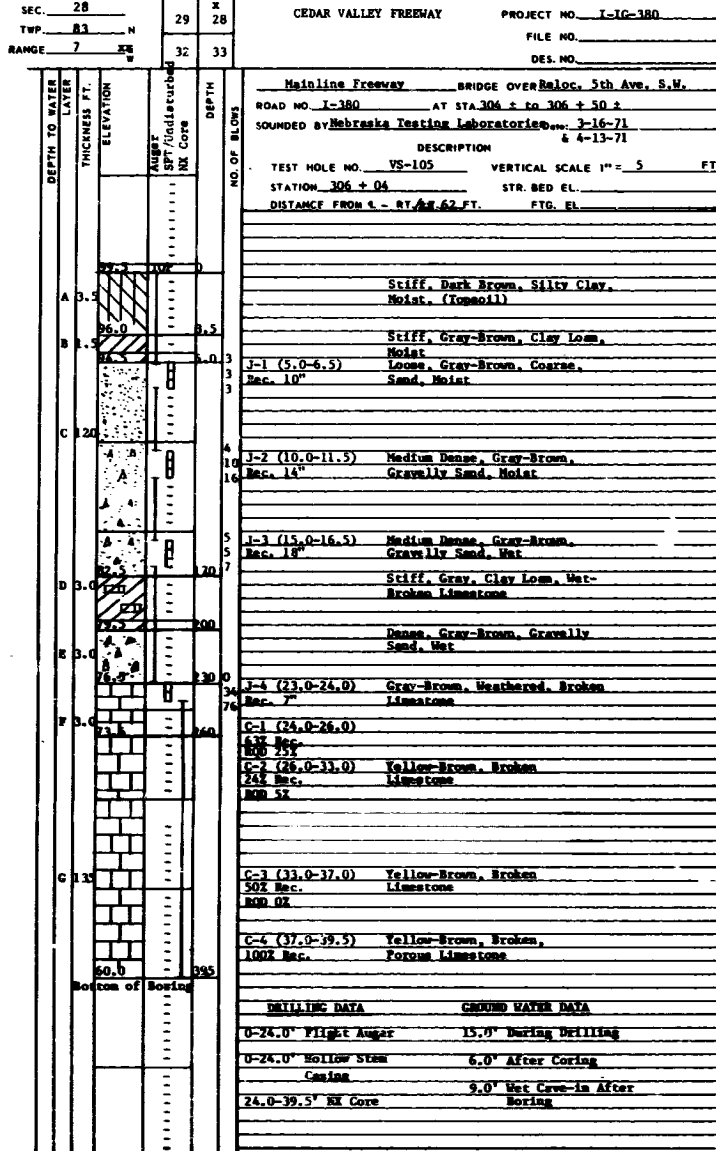
COUNTY Linn



Pier 3, NB

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

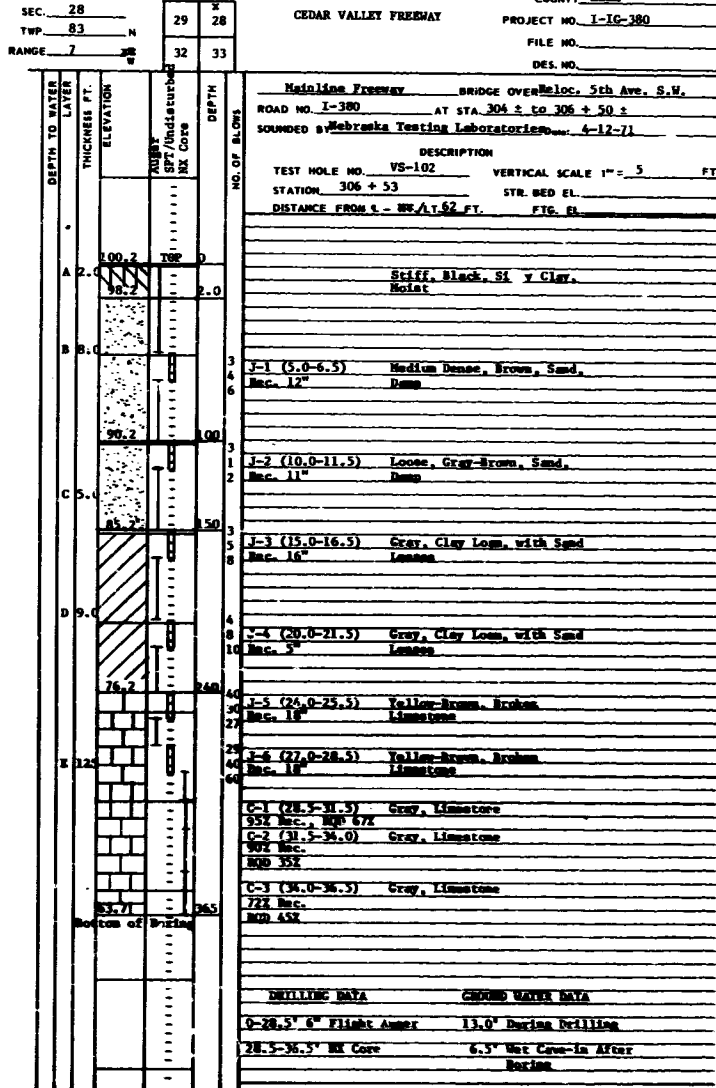
COUNTY Linn



N Abut, NB

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

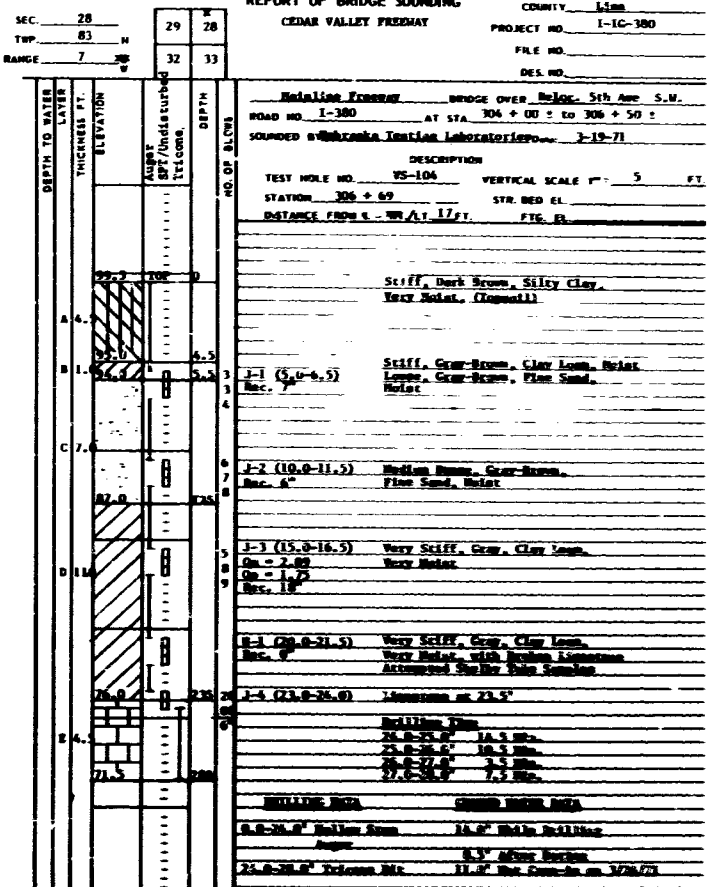
COUNTY Linn



Pier 3, SB

IOWA STATE HIGHWAY COMMISSION
REPORT OF BRIDGE SOUNDING

COUNTY Linn



N Abut, SB

I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40' 04" 27' 8" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
PLATE GIRDER BRIDGE
53'-0" 72'-9" 80'-3" 53'-0" SPANS

SOUNDING DATA

STA. 305+12.87 @ I-380 - STA. 315+00.00 @ 5th AVE S.W.
PROJECT NO. I-380-4(39)261-01-57
LINN COUNTY

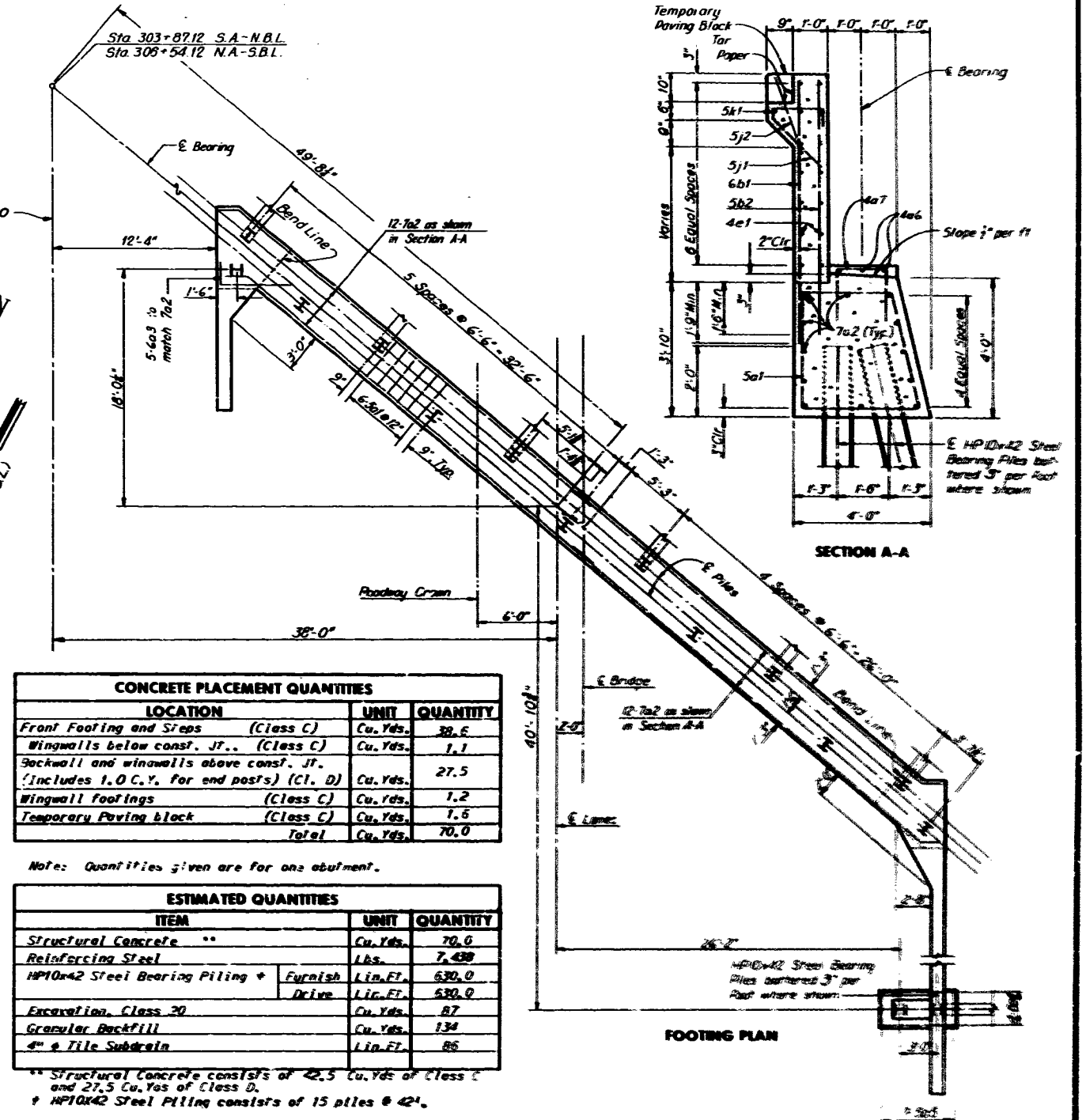
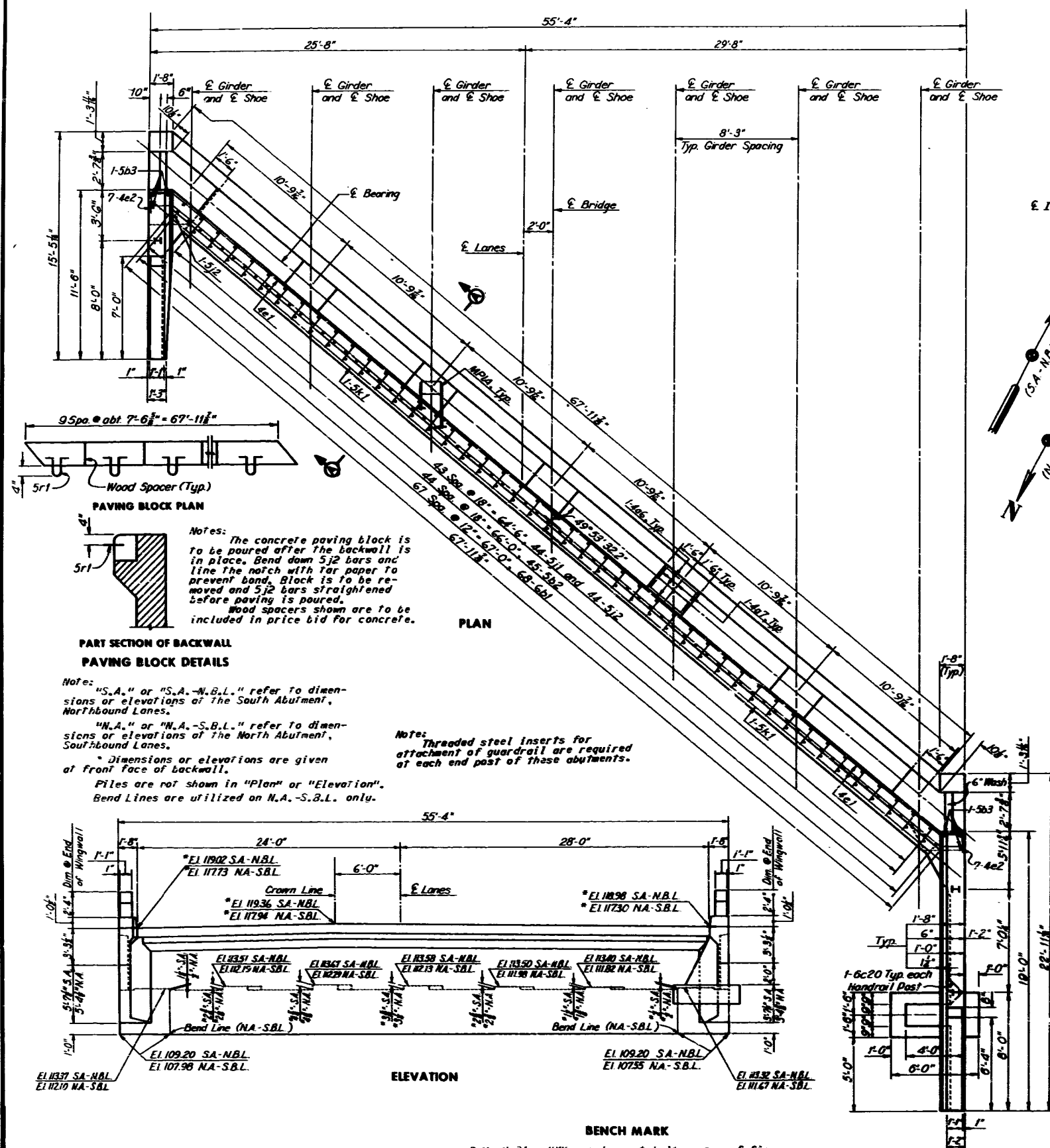
IOWA STATE HIGHWAY COMMISSION

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 construction of the project.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

CONSULTING ENGINEERS
KANSAS CITY

MADE CGL DATE 8-27-71 CHECKED GJH/MB DATE 8-31-71



CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Front Footing and Steps (Class C)	Cu. Yds.	38.6
Wingwalls below const. JT. (Class C)	Cu. Yds.	1.1
Backwall and wingwalls above const. JT. (Includes 1.0 C.Y. for end posts) (Cl. D)	Cu. Yds.	27.5
Wingwall footings (Class C)	Cu. Yds.	1.2
Temporary Paving block (Class C)	Cu. Yds.	1.6
Total	Cu. Yds.	70.0

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete **	Cu. Yds.	70.0
Reinforcing Steel	Lbs.	7,439
HP10x42 Steel Bearing Piling +	Furnish	630.0
	Drive	630.0
Excavation, Class 20	Cu. Yds.	87
Granular Backfill	Cu. Yds.	134
4" x 6" Tile Subdrain	Lin. Ft.	86

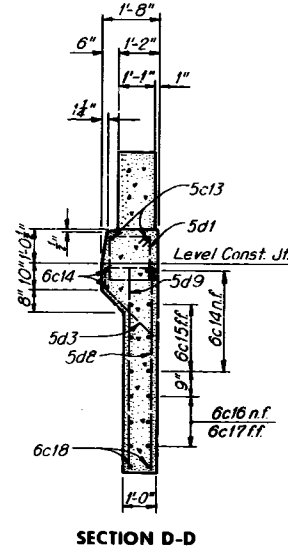
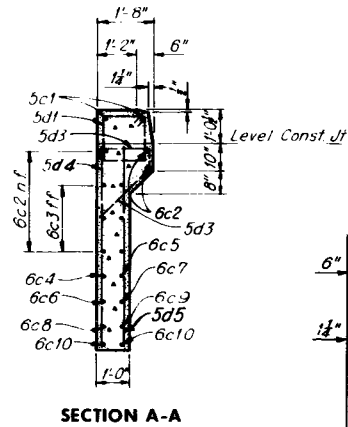
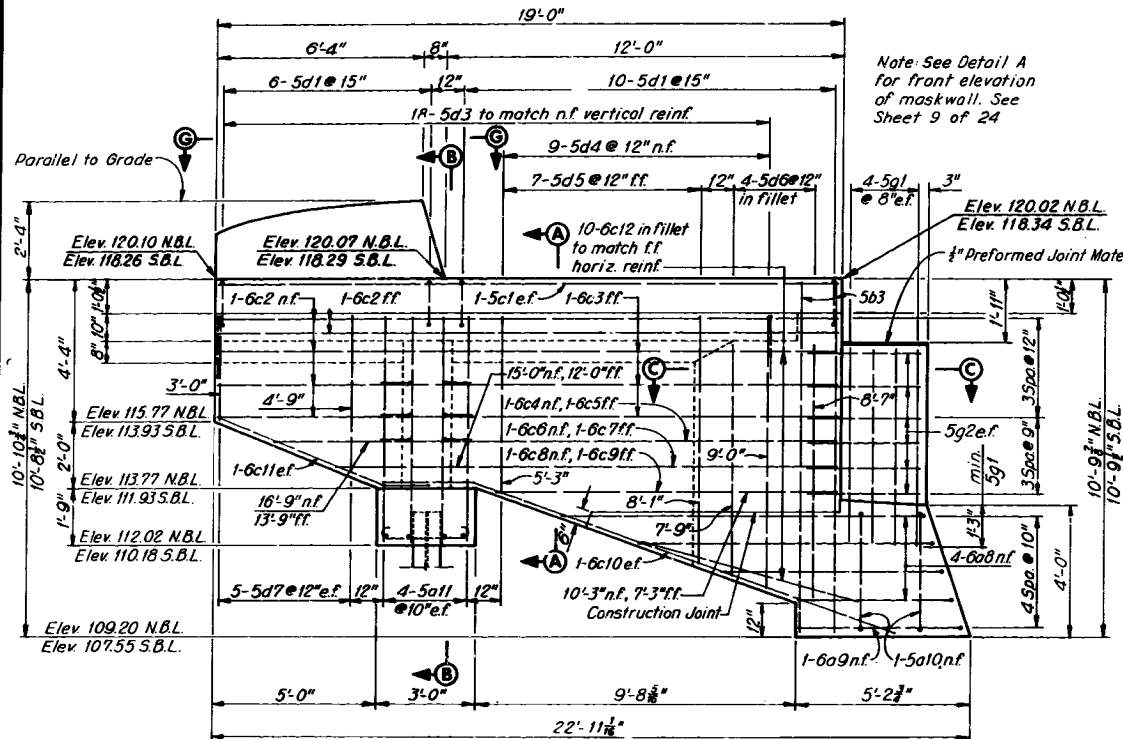
Notes: Quantities given are for one abutment.

** Structural Concrete consists of 42.5 Cu. Yds. of Class C and 27.5 Cu. Yds. of Class D.

+ HP10x42 Steel Piling consists of 15 piles @ 42'.

Notes: All exposed corners of 90° or sharper are to be filled with a 1" 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 nearest reinforcing bars is to be 2" unless otherwise noted or shown. All backfill behind the abutments between wings is to be granular backfill. The remainder of the abutment excavation is to be backfilled with soil. See Sheet 7 of 24 for "Bill of Reinforcement". See Sheet 8 of 24 for "Backfill Detail". The abutment backwall and the remainder of the wingwalls are to be placed after the Superstructure is in place. See Sheet 7 of 24 for "End Post Detail". Better piles 3" per foot in direction shown. All piles are to be driven to full penetration if practicable but to at least 37-ton bearing value for HP10x42. See General Notes on Sheet 2 of 24. Pile spacing shown is at bottom of footing. Minimum acceptable bearing per pile is 32 tons.

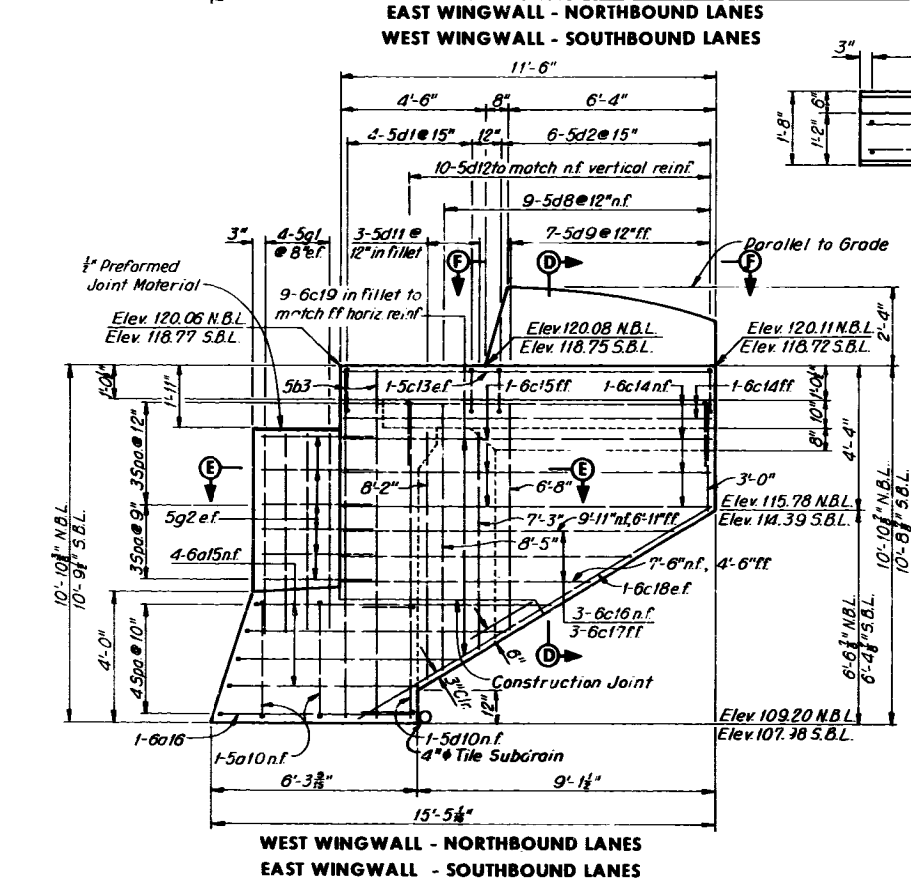
I-380 OVER 5th AVENUE S.W.
 DESIGN FOR 40' BY 27' SECS
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED PLATE GIRDER BRIDGE
 53'-0" 71'-9" 88'-3" 53'-0" SPANS
SOUTH ABUTMENT-NORTHBOUND LANES
NORTH ABUTMENT-SOUTHBOUND LANES
 STA 305+12.87 & I-380 = STA 15+00.00 @ 5th AVE S.W.
 PROJECT NO. I-380-A(139)240-DR-57
LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION



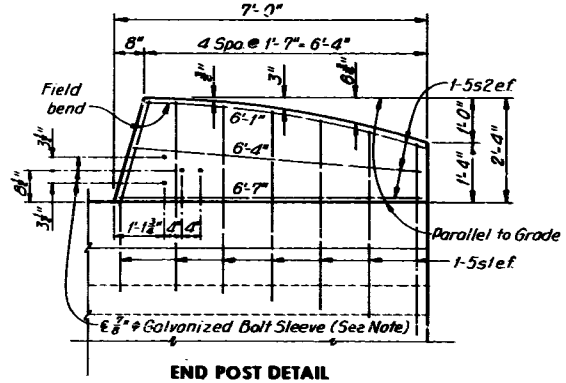
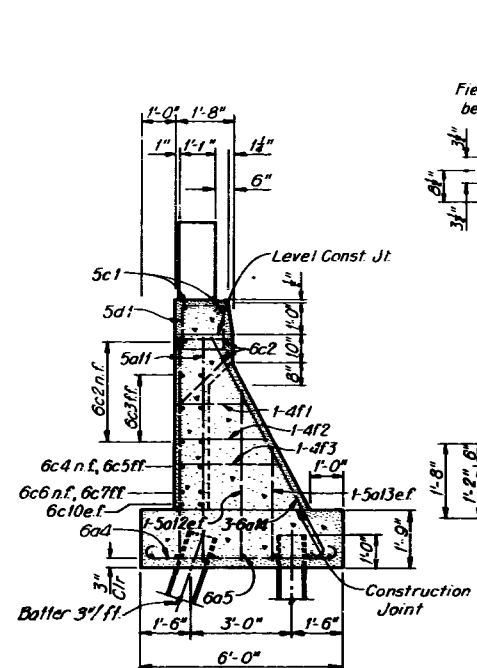
BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5a1	Barrel		60	13'-9"	860
7a2	Barrel		24	36'-5"	1,787
6a3	Barrel		5	6'-8"	50
6a4	Wingwall footing		4	6'-10"	41
6a5	Wingwall footing		7	3'-10"	40
4a6	Pads		21	5'-4"	75
4a7	Pads		21	4'-2"	58
6a8	Barrel		1 Ser. 4	Varies	55
6a9	Barrel		1	6'-4"	10
5a10	Barrel		4	5'-10"	24
5a11	Wingwall footing		8	6'-8"	56
5a12	Counterfort		2	5'-0"	10
5a13	Counterfort		2	3'-6"	7
6a14	Counterfort		3	8'-0"	36
6a15	Barrel		1 Ser. 4	Varies	53
6a16	Barrel		1	7'-3"	11
6b1	Backwall		68	7'-8"	783
5b2	Backwall		45	7'-5"	348
5b3	Backwall		6	10'-5"	65
5c1	Curb		2	18'-8"	39
6c2	Wingwall		6	18'-8"	168
6c3	Wingwall		3	15'-8"	71
6c4	Wingwall		1	17'-1"	26
6c5	Wingwall		1	14'-1"	21
6c6	Wingwall		1	15'-2"	23
6c7	Wingwall		1	12'-2"	18
6c8	Wingwall		1	10'-3"	15
6c9	Wingwall		1	7'-3"	11
6c10	Wingwall		2	16'-6"	50
6c11	Wingwall		2	6'-10"	21
6c12	Wingwall		10	10'-6"	158
5c13	Curb		2	11'-2"	23
6c14	Wingwall		5	11'-2"	101
6c15	Wingwall		3	8'-2"	37
6c16	Wingwall		1 Ser. 3	Varies	39
6c17	Wingwall		1 Ser. 3	Varies	26

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c18	Wingwall		2	12'-4"	37
6c19	Wingwall		9	6'-7"	89
6c20	Post Anchor		3	5'-0"	23
5d1	Curb		20	5'-10"	122
5d2	Curb		1 Ser. 6	Varies	35
5d3	Wingwall		18	3'-11"	74
5d4	Wingwall		1 Ser. 9	Varies	67
5d5	Wingwall		1 Ser. 7	Varies	49
5d6	Fillet		1 Ser. 4	Varies	34
5d7	Wingwall		2 Ser. 5	Varies	40
5d8	Wingwall		1 Ser. 9	Varies	54
5d9	Wingwall		1 Ser. 7	Varies	35
5d10	Wingwall		1	9'-5"	10
5d11	Fillet		1 Ser. 3	Varies	24
5d12	Wingwall		1 Ser. 10	Varies	36
4e1	Backwall		28	36'-2"	677
4e2	Backwall		14	3'-0"	28
4f1	Counterfort		1	6'-6"	4
4f2	Counterfort		1	7'-6"	5
4f3	Counterfort		1	8'-6"	6
5g1	Maskwall		16	6'-0"	100
5g2	Maskwall		24	3'-5"	88
5j1	Backwall		44	3'-10"	176
5j2	Backwall		44	2'-4"	107
5k1	Slab Seat		2	36'-5"	76
5r1	Paving Block		9	2'-5"	23
5s1	End Post		28	4'-3"	124
5s2	End Post		4 Ser. 3	Varies	79
Total One Abutment					7,438

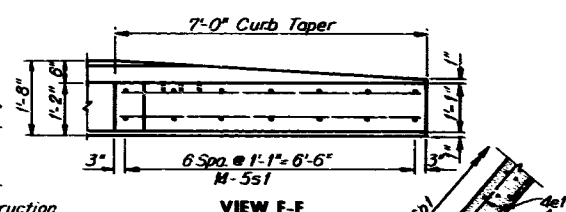
NOTE: Provide 4-Threaded Steel Inserts with solid bottom to fit 1" x 2" Galvanized Cap Screws with Galvanized Round Washers. Cost of Inserts to be included in price bid for "Structural Concrete". Screws and washers are not a part of this contract.



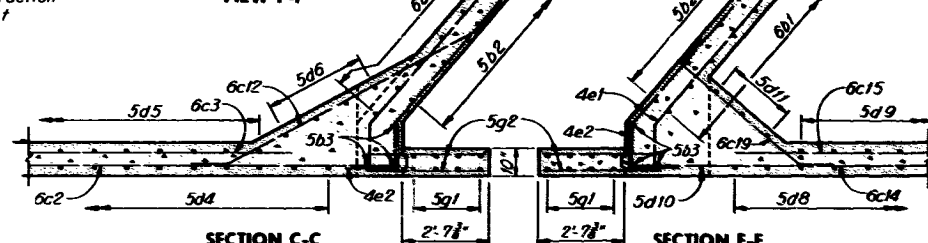
VIEW G-G



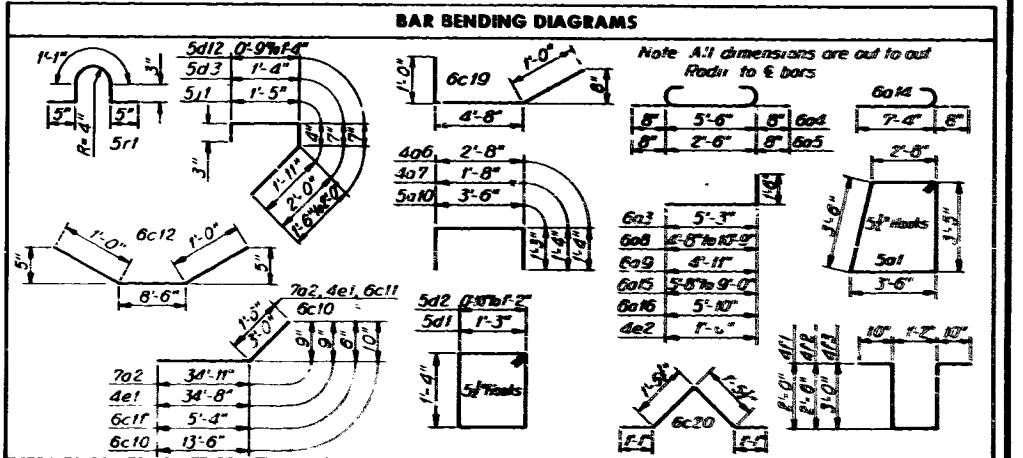
END POST DETAIL



VIEW F-F



SECTION C-C



BAR BENDING DIAGRAMS

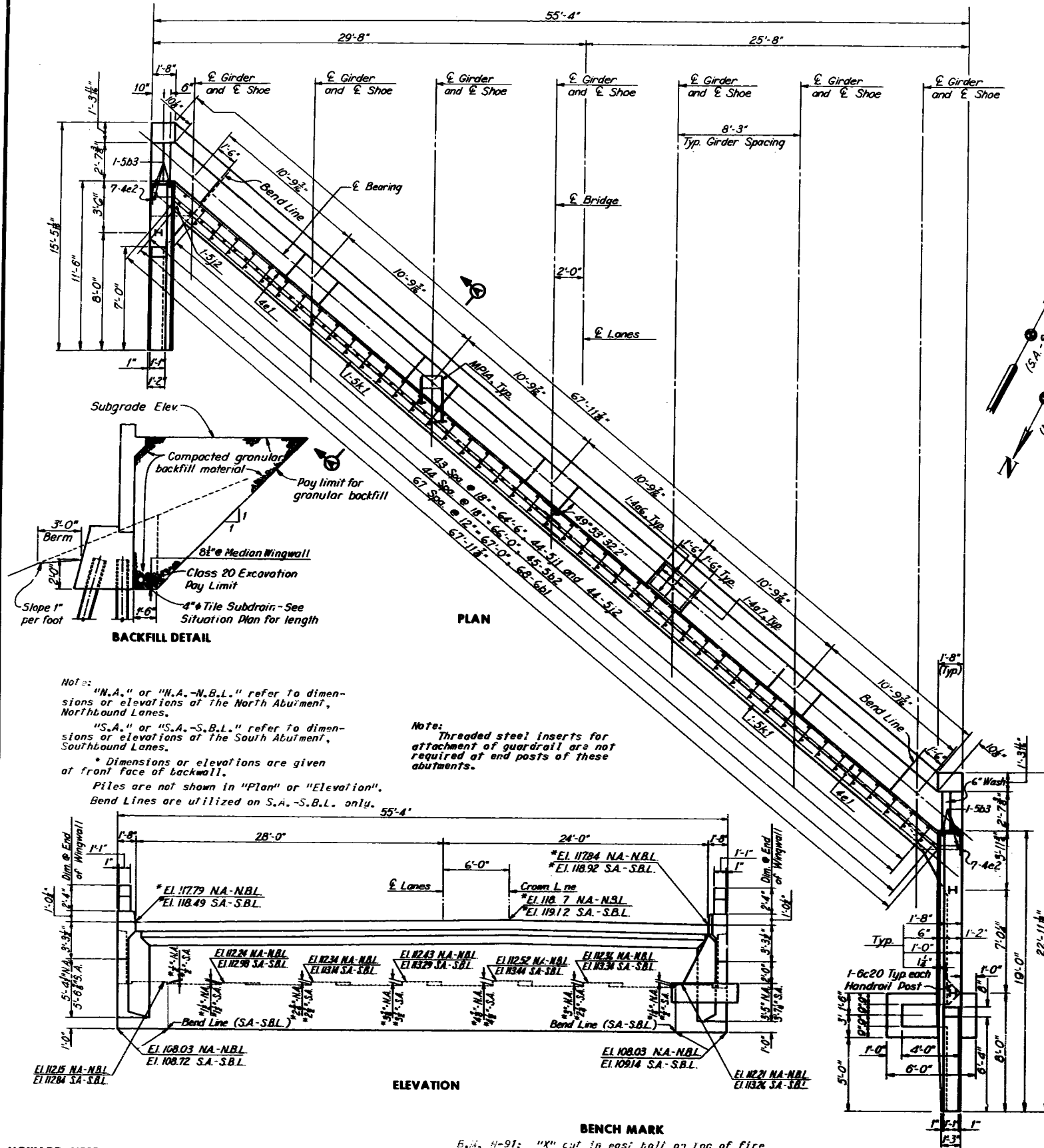
Note: All dimensions are out to out Radius to E bars

BENCH MARK
B.M. H-91: "X" cut in east wall on top of fire hydrant on northeast corner of 3rd Street and 6th Ave., S.W., Elev. 101.389.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE D.W.S. DATE 11-11-71 CHECKED J.P.P. DATE 11-12-71

I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40' 00" 27.8' SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
PLATE GIRDER BRIDGE
53'-0", 72'-0", 88'-3", 53'-0" SPANS
SOUTH ABUTMENT-NORTHBOUND LANES
NORTH ABUTMENT-SOUTHBOUND LANES
STA 305+12.87 E I-380 = STA 15+00.00 E REL 5th AVE S.W.
PROJECT NO. I-380-6(39)261-01-57
LINN COUNTY



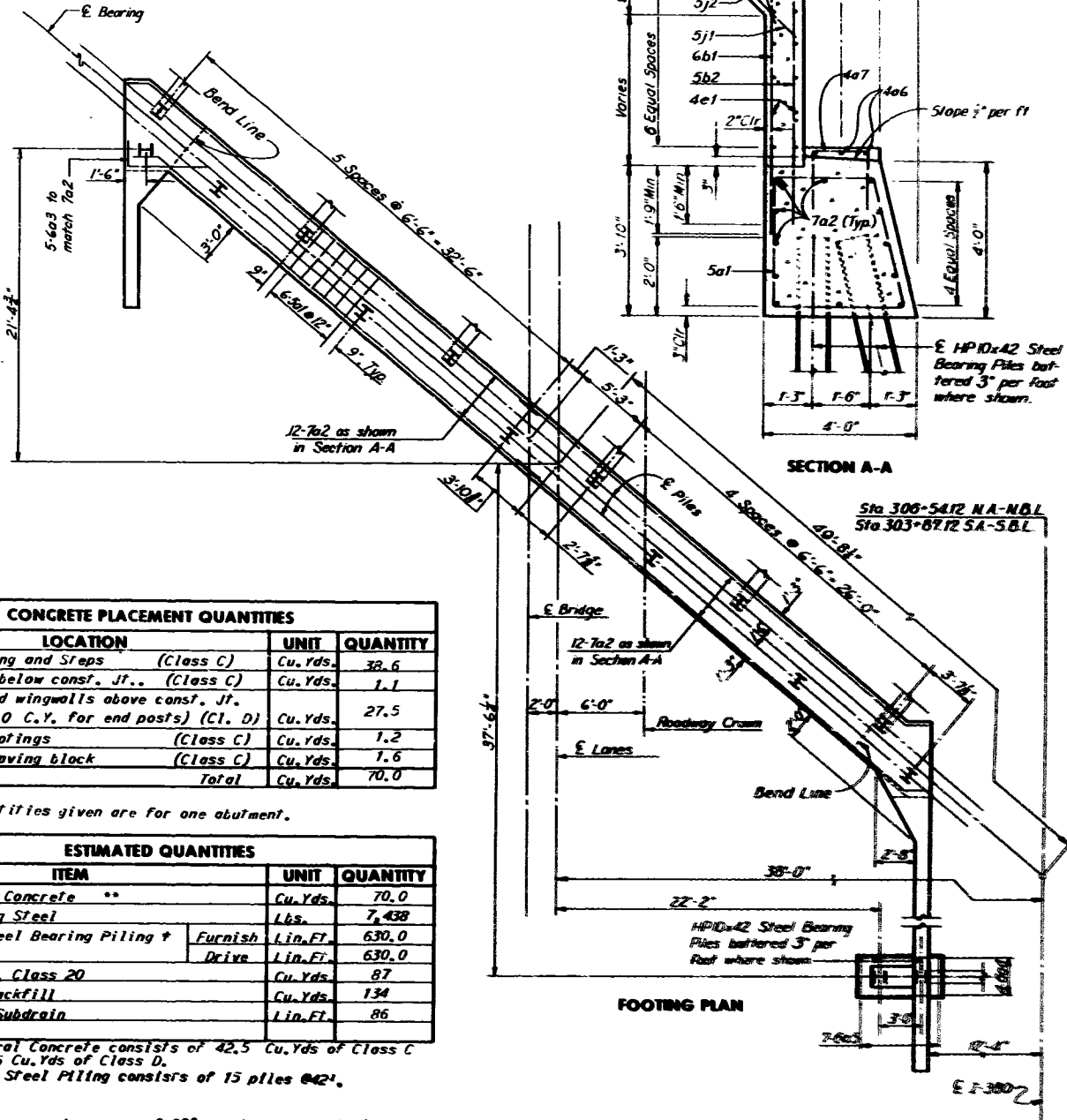
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Front Footing and Steps (Class C)	Cu. Yds.	32.6
Wingwalls below const. Jt. (Class C)	Cu. Yds.	1.1
Backwall and wingwalls above const. Jt. (Includes 1.0 C.Y. for end posts) (Cl. D)	Cu. Yds.	27.5
Wingwall footings (Class C)	Cu. Yds.	1.2
Temporary Paving block (Class C)	Cu. Yds.	1.6
Total	Cu. Yds.	70.0

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete **	Cu. Yds.	70.0
Reinforcing Steel	Lbs.	7,438
HP10x42 Steel Bearing Piling †	Furnish Lin. Ft.	630.0
	Drive Lin. Ft.	630.0
Excavation, Class 20	Cu. Yds.	87
Granular Backfill	Cu. Yds.	134
4" Tile Subdrain	Lin. Ft.	86

** Structural Concrete consists of 42.5 Cu. Yds. of Class C and 27.5 Cu. Yds. of Class D.
 † HP10x42 Steel Piling consists of 15 piles @ 42'.

Notes:

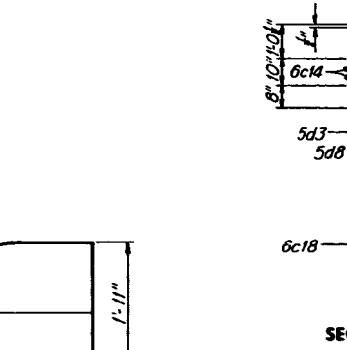
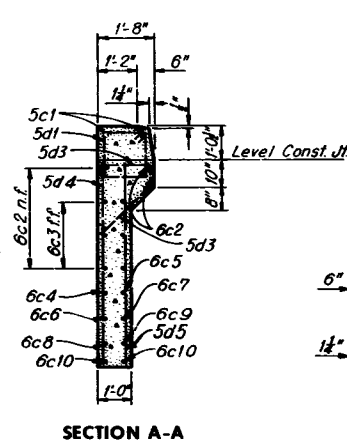
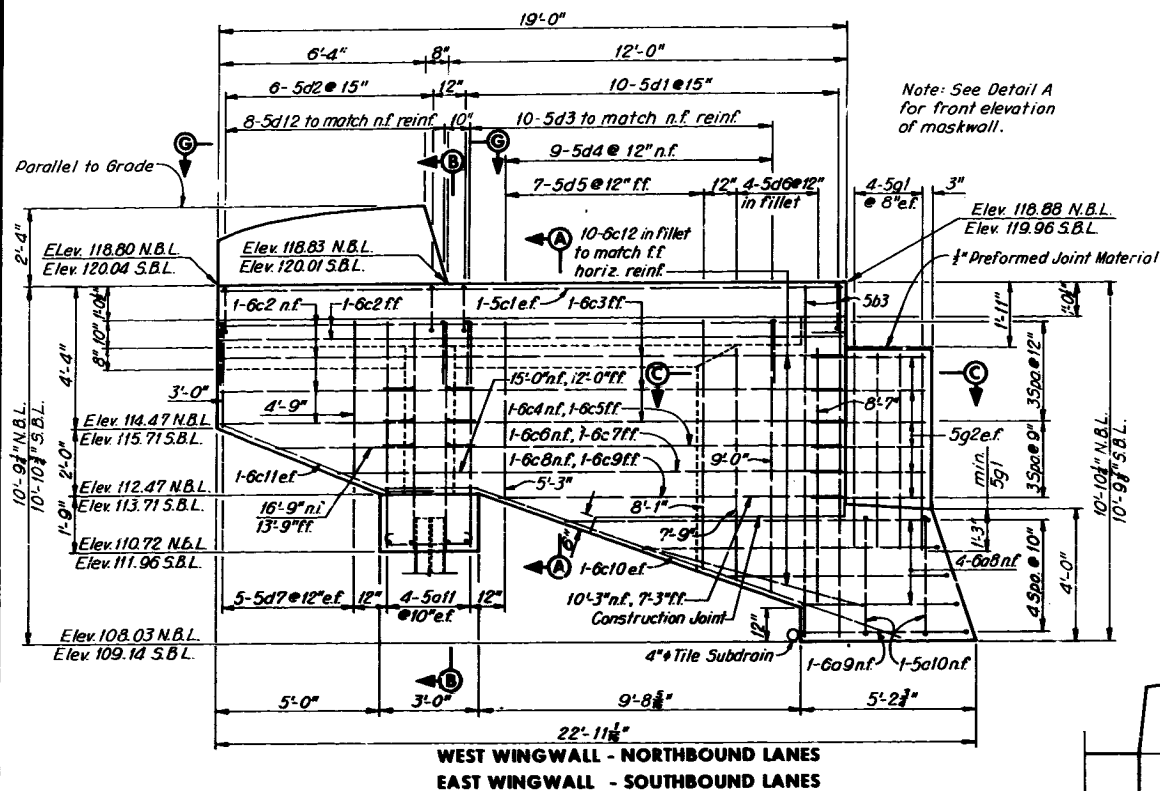
All exposed corners of 90° or sharper are to be filled with a 2" dressed and beveled strip.
 Reinforcing steel is to be securely wired in place before concrete is poured.
 Minimum clear distance from face of concrete to nearest reinforcing bars is to be 2" unless otherwise noted or shown.
 All backfill behind the abutments between wings is to be granular backfill. The remainder of the abutment excavation is to be backfilled with soil.
 See Sheet 9 of 24 for "Bill of Reinforcement".
 See Sheet 6 of 24 for Paving Block Plan.
 The abutment backwall and the remainder of the wingwalls are to be placed after the Superstructure is in place.
 See Sheet 7 of 24 for "End Post Detail".
 Batter piles 3" per foot in direction shown.
 All piles are to be driven to full penetration if practicable but to at least 37-ton bearing value for HP10x42. See General Notes on Sheet 2 of 24.
 Pile spacing shown is at bottom of footing.
 Minimum acceptable bearing per pile is 32 tons.



1-380 OVER 5th AVENUE S.W.
 DESIGN FOR 40° 06' 27" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED PLATE GIRDER BRIDGE
 53'-8", 72'-8", 88'-3", 53'-8" SPANS
NORTH ABUTMENT-NORTHBOUND LANES
SOUTH ABUTMENT-SOUTHBOUND LANES
 STA. 305+12.87 @ 1-380 = STA. 15+00.00 @ 5th AVE S.W.
 PROJECT NO. 1-380-6(19)241-01-S7
LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

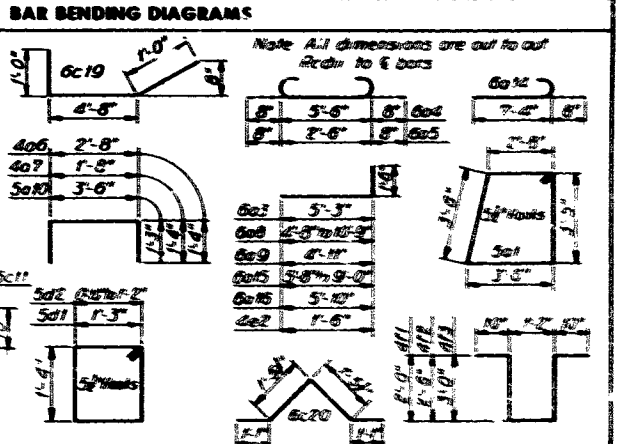
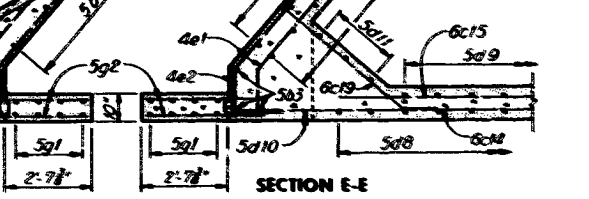
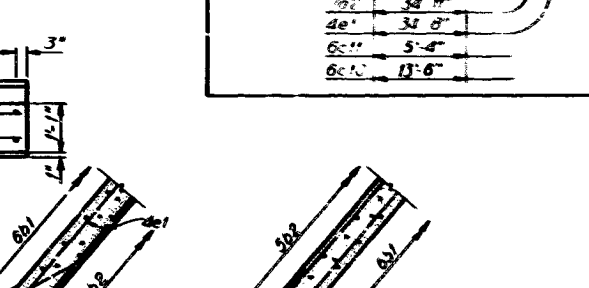
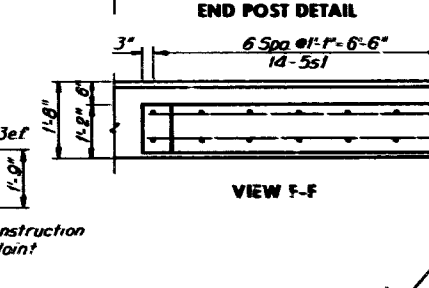
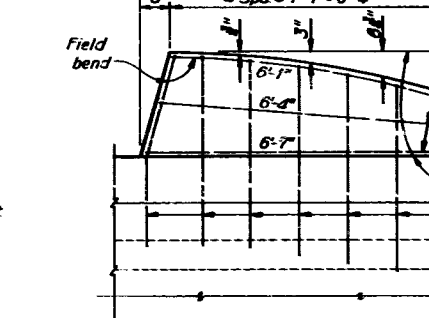
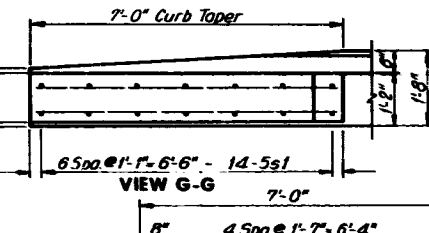
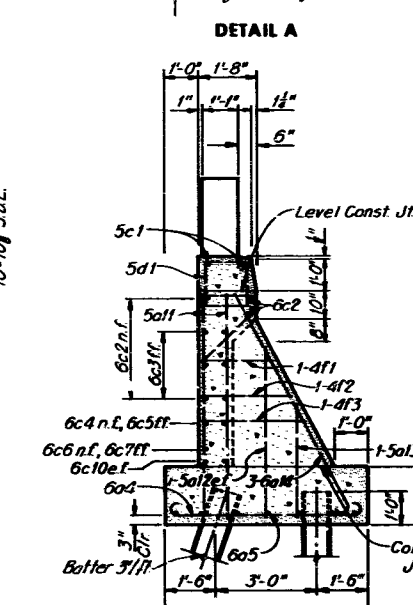
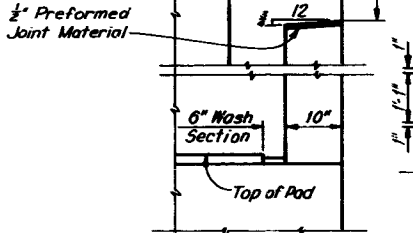
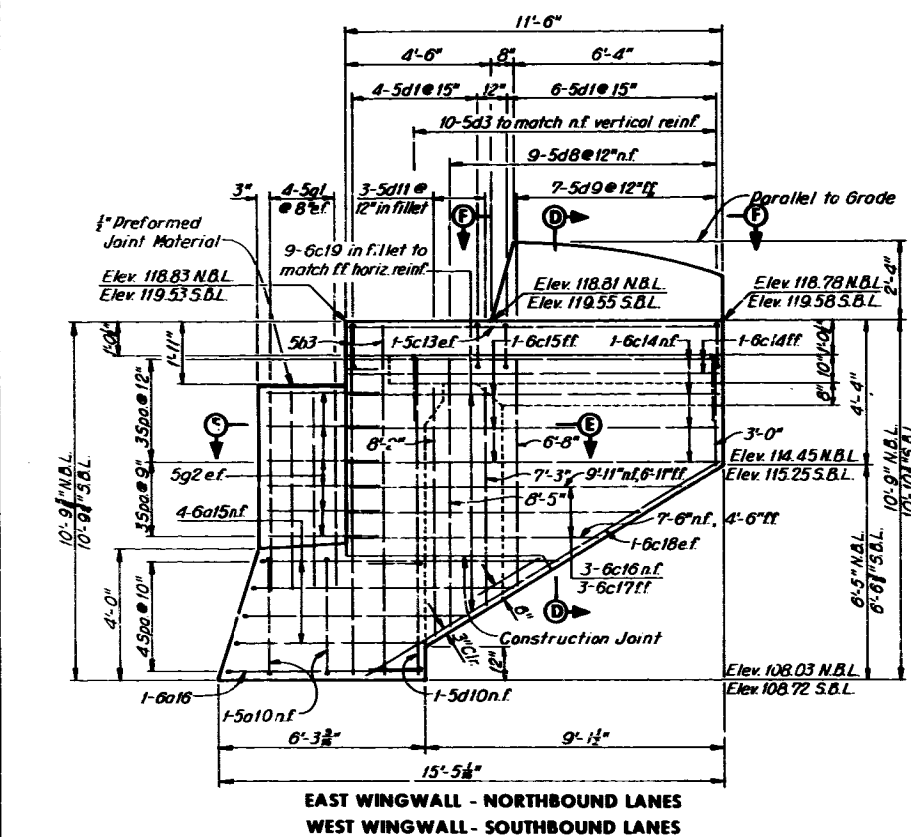
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE LBM DAY 10-21-71 CHECKED DWS DATE 11-2-71



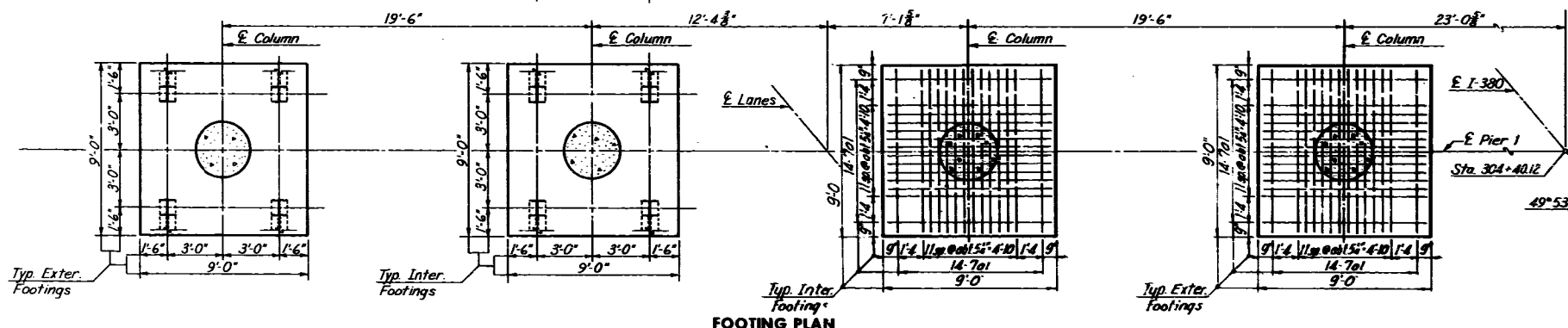
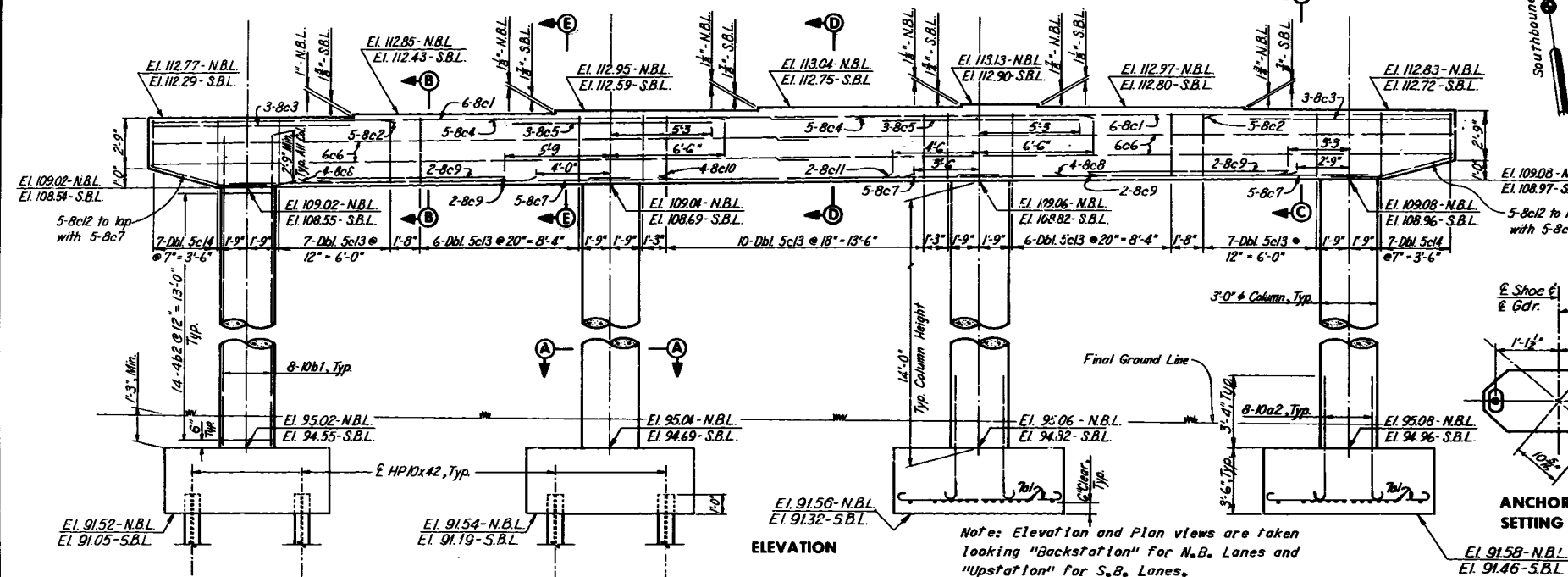
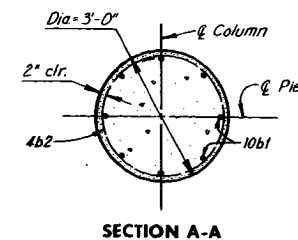
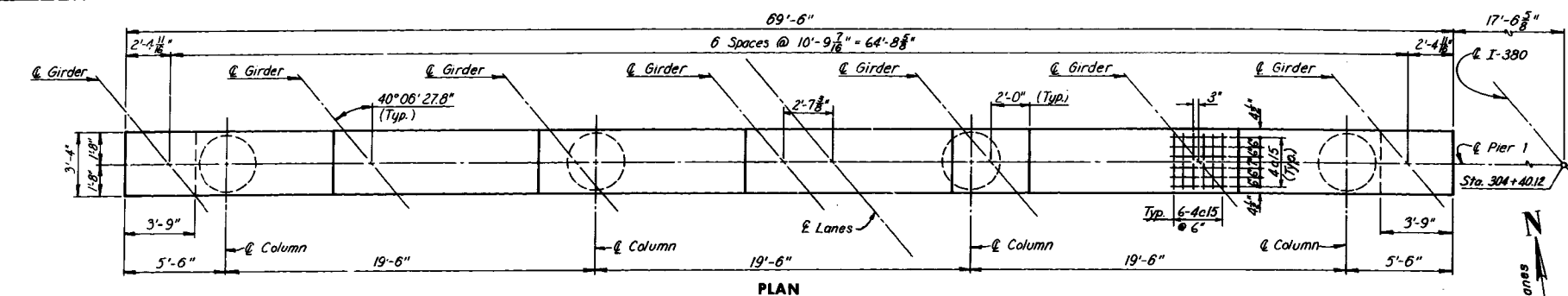
BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5a1	Barrel		60	13'-9"	860
7a2	Barrel		24	36'-5"	1,787
6a3	Barrel		5	6'-8"	50
6a4	Wingwall footing		4	6'-10"	41
6a5	Wingwall footing		7	3'-10"	40
4a6	Pads		21	5'-4"	75
4a7	Pads		21	4'-2"	58
6a8	Barrel		1 Ser. 4	Varies	55
6a9	Barrel		1	6'-4"	10
5a10	Barrel		4	5'-10"	24
5a11	Wingwall footing		8	6'-8"	56
5a12	Counterfort		2	5'-0"	10
5a13	Counterfort		2	3'-6"	7
6a14	Counterfort		3	8'-0"	26
6a15	Barrel		1 Ser. 4	Varies	53
6a16	Barrel		1	7'-3"	11
5b1	Backwall		68	7'-8"	783
5b2	Backwall		45	7'-5"	348
5b3	Backwall		6	10'-5"	65
5c1	Curb		2	18'-8"	35
6c2	Wingwall		6	18'-8"	168
6c3	Wingwall		3	15'-8"	71
6c4	Wingwall		1	17'-1"	26
6c5	Wingwall		1	14'-1"	21
6c6	Wingwall		1	15'-2"	23
6c7	Wingwall		1	12'-2"	18
6c8	Wingwall		1	10'-3"	15
6c9	Wingwall		1	7'-3"	11
6c10	Wingwall		2	16'-6"	50
6c11	Wingwall		2	6'-10"	21
6c12	Wingwall		10	10'-6"	158
5c13	Curb		2	11'-2"	23
6c14	Wingwall		6	11'-2"	101
6c15	Wingwall		3	8'-2"	37
6c16	Wingwall		1 Ser. 3	Varies	39
5c17	Wingwall		1 Ser. 3	Varies	26

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6c18	Wingwall		2	12'-2"	37
6c19	Wingwall		9	6'-7"	89
6c20	Post Anchor		3	5'-0"	23
5d1	Curb		20	5'-10"	122
5d2	Curb		1 Ser. 6	Varies	35
5d3	Wingwall		20	3'-11"	82
5d4	Wingwall		1 Ser. 9	Varies	67
5d5	Wingwall		1 Ser. 7	Varies	49
5d6	Fillet		1 Ser. 4	Varies	34
5d7	Wingwall		2 Ser. 5	Varies	40
5d8	Wingwall		1 Ser. 9	Varies	54
5d9	Wingwall		1 Ser. 7	Varies	35
5d10	Wingwall		1	9'-5"	10
5d11	Fillet		1 Ser. 3	Varies	24
5d12	Wingwall		1 Ser. 8	Varies	28
4e1	Backwall		28	36'-2"	677
4e2	Backwall		14	3'-0"	28
4f1	Counterfort		1	6'-8"	4
4f2	Counterfort		1	7'-5"	5
4f3	Counterfort		1	8'-8"	6
5g1	Maskwall		16	6'-0"	100
5g2	Maskwall		24	3'-6"	88
5j1	Backwall		44	3'-10"	176
5j2	Backwall		44	2'-8"	107
5k1	Slab Seat		2	36'-6"	76
5r1	Paving Block		9	2'-5"	23
5s1	End Post		28	4'-3"	124
5s2	End Post		1 Ser. 3	Varies	75
Total One Abutment					7,439



I-300 OVER 5th AVENUE S.W.
 DESIGN FOR 48° 06' 27.8" SKEW
 DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
 PLATE GIRDER BRIDGE
 53'-0", 72'-0", 85'-3", 53'-0" SPANS
 NORTH ABUTMENT-NORTHBOUND LANES
 SOUTH ABUTMENT-SOUTHBOUND LANES
 STA. 305+12.87 @ I-300 = STA. 1+00.00 @ 5th AVE S.W.
 PROJECT NO. I-300-6(3)124-01-57
 LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

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



Note: Minimum acceptable bearing per pile is 55 tons.

BENCH MARK

B.M. H-91: "X" cut in east bolt on top of fire hydrant on northeast corner of 3rd Street and 6th Ave., S.W. Elev. 101.389.

* Structural Concrete consists of 74.8 Cu. Yds. of Class C and 14.7 Cu. Yds. of Class D.

**HP10x42 Piles consists of 16 @ 28'.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE J.P.M. DATE 10-27-71 CHECKED D.W.S. DATE 11-3-71

NORTHBOUND LANES		
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings - Class C	Cu. Yds.	42.0
Columns - Class D	Cu. Yds.	14.7
Cap Beam - Class C	Cu. Yds.	32.8
Total	Cu. Yds.	89.5

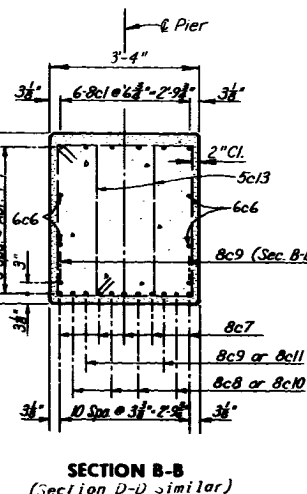
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete*	Cu. Yds.	89.5
Reinforcing Steel	Lbs.	11,939
Excavation, Class 20	Cu. Yds.	134
Steel Piling, HP 10x42**	Lin. Ft.	448.0

SOUTHBOUND LANES		
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings - Class C	Cu. Yds.	42.0
Columns - Class D	Cu. Yds.	14.7
Cap Beam - Class C	Cu. Yds.	32.8
Total	Cu. Yds.	89.5

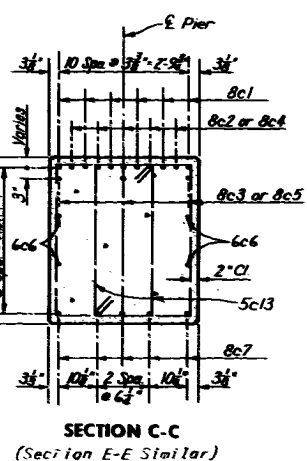
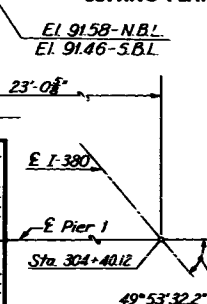
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete*	Cu. Yds.	89.5
Reinforcing Steel	Lbs.	11,939
Excavation, Class 20	Cu. Yds.	125
Steel Piling, HP 10x42**	Lin. Ft.	448.0

SUBSTRUCTURE NOTES:

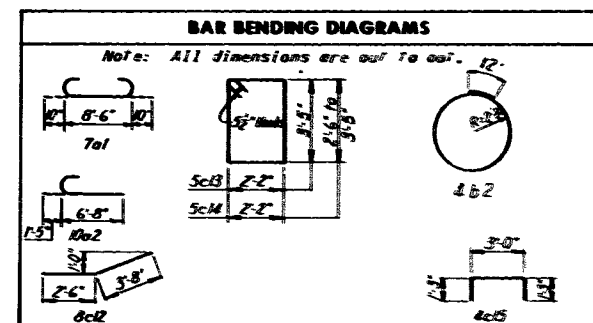
All exposed corners of 90° or sharper are to be filleted with a 1/4-inch dressed and beveled strip.
Use 2 inches clear on all reinforcing unless shown otherwise.
Columns may be formed with Iowa Highway Commission approved fiber pulp board tube such to produce a seamless finish.
Pile dimensions shown are at bottom of footings.
All piles are to be driven to full penetration if practicable but at least to a 55 ton bearing value.
All swaged anchor bolts are to be pre-set.
Piles are battered 3" per foot perpendicular to pier where indicated.
Column dowel bars shall be securely fastened into position prior to the placement of footing concrete.



ANCHOR BOLT SETTING PLAN



BILL OF REINFORCEMENT					
* PIER 1					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
7a1	Footings, Horiz.	U	112	10'-2"	2,328
10a2	Footings, Vert.	U	32	8'-1"	1,113
10b1	Column, Vert.	U	32	16'-9"	2,306
4b2	Column, Tie	U	56	9'-3"	346
8c1	Cap Beam, Horiz.	U	12	35'-5"	1,143
8c2	Cap Beam, Horiz.	U	10	13'-0"	347
8c3	Cap Beam, Horiz.	U	6	10'-7"	170
8c4	Cap Beam, Horiz.	U	10	13'-0"	347
8c5	Cap Beam, Horiz.	U	6	10'-6"	168
8c6	Cap Beam, Horiz.	U	8	35'-5"	429
8c7	Cap Beam, Horiz.	U	15	21'-6"	861
8c8	Cap Beam, Horiz.	U	8	12'-9"	272
8c9	Cap Beam, Horiz.	U	8	10'-6"	224
8c10	Cap Beam, Horiz.	U	4	13'-6"	144
8c11	Cap Beam, Horiz.	U	2	10'-6"	56
8c12	Cap Beam, Horiz.	U	10	6'-2"	165
5c13	Cap Beam, Vert.	U	72	11'-41"	895
5c14	Cap Beam, Vert.	U	4 Ser. 7	Varies	325
4c15	Pads	U	84	5'-4"	299
Total Northbound Lanes				11,939	
Total Southbound Lanes				11,939	



*List of bars shown in the Bill of Reinforcement are for the Pier for one lane. Reinforcing bars for the other Pier are identical.

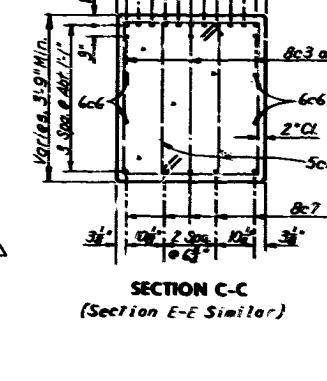
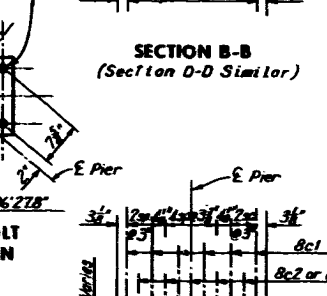
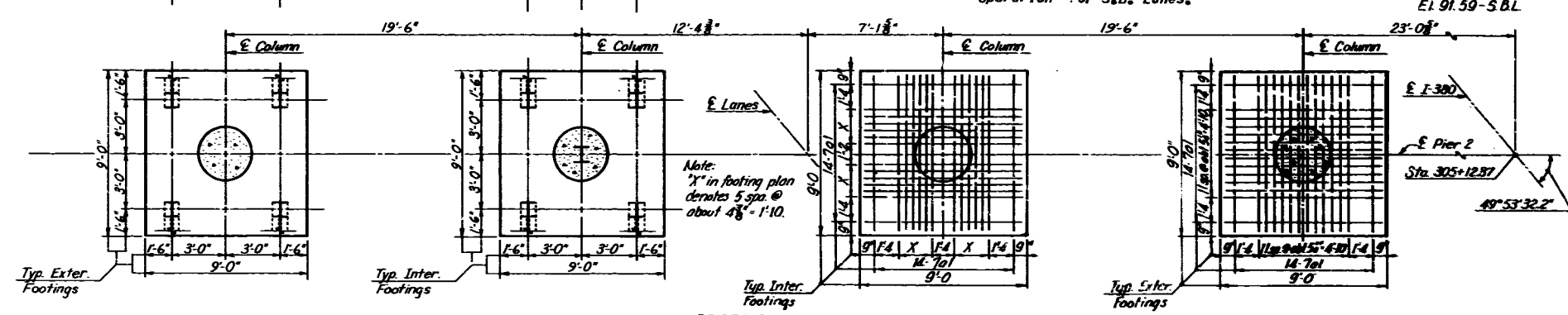
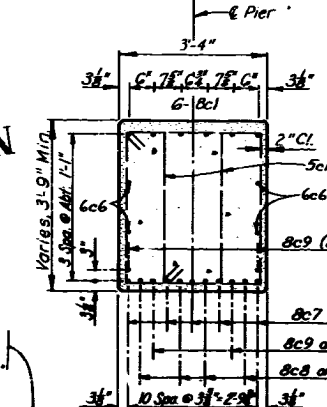
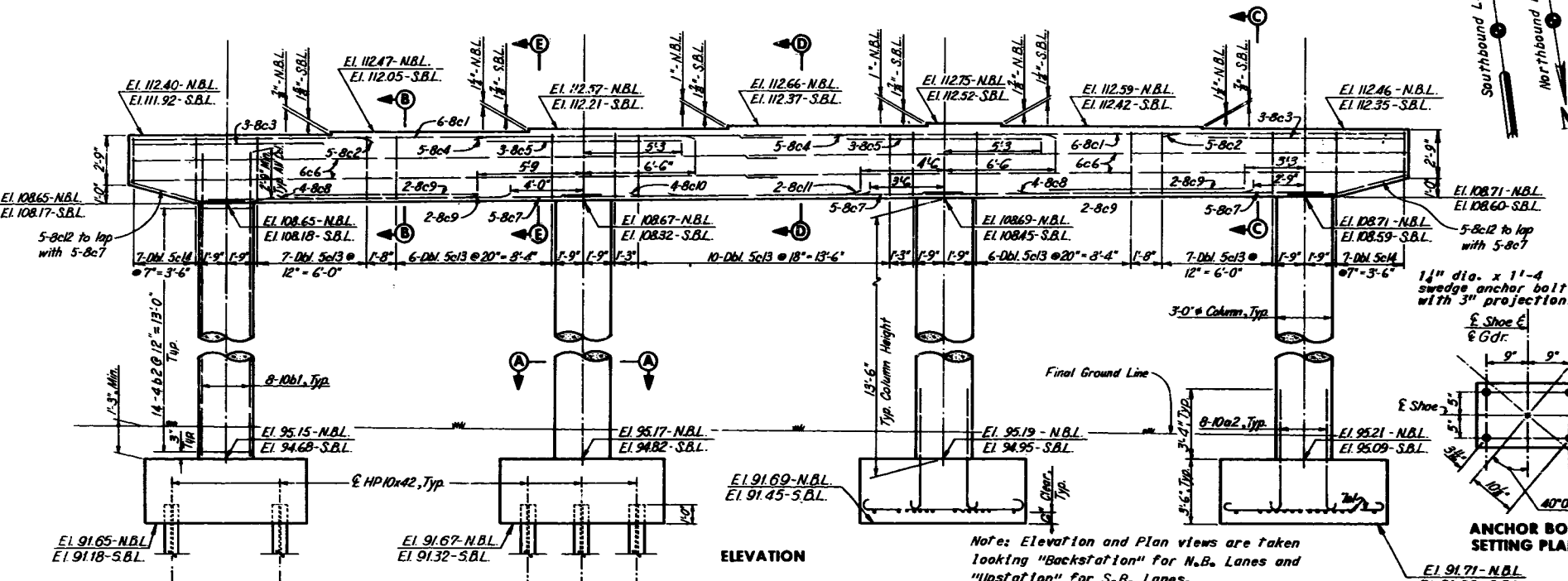
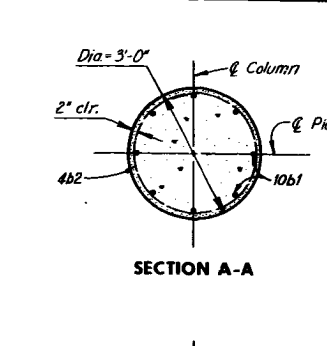
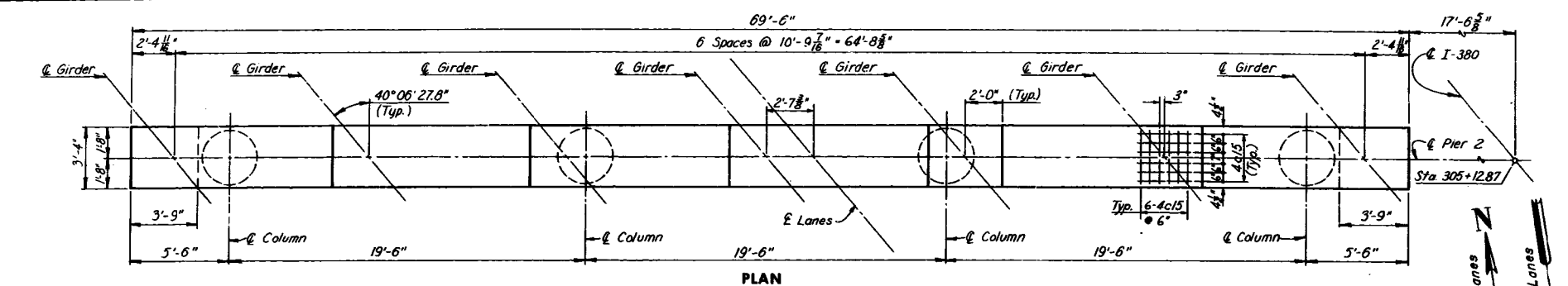
I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40° 06' 27.8" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
PLATE GIRDER BRIDGE
53'-0", 72'-0", 88'-3", 53'-0" SPANS

PIER 1 DETAILS

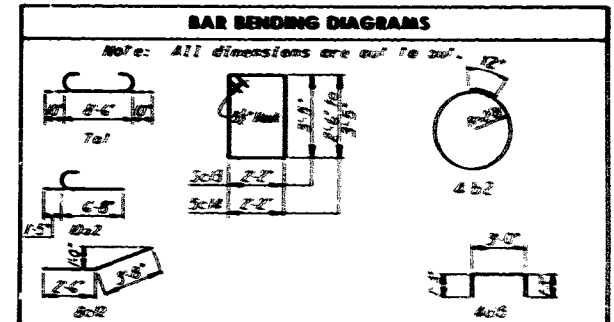
STA. 305+12.87 E I-380 = STA. 35+00.00 E RBL 5th AVE S.W.
PROJECT NO. I-380-4(39)261-01-57

LINN COUNTY

IOWA STATE HIGHWAY COMMISSION



BILL OF REINFORCEMENT					
* PIER 2					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
7a1	Footings, Horiz.	U	112	10'-2"	2,328
10a2	Footings, Vert.	U	32	8'-1"	1,113
10b1	Column, Vert.	U	32	16'-3"	2,238
4b2	Column, Tie	O	56	9'-3"	346
8c1	Cap Beam, Horiz.	U	12	35'-8"	1,143
8c2	Cap Beam, Horiz.	U	10	13'-0"	347
8c3	Cap Beam, Horiz.	U	6	10'-7"	170
8c4	Cap Beam, Horiz.	U	10	13'-0"	347
8c5	Cap Beam, Horiz.	U	6	10'-6"	168
8c6	Cap Beam, Horiz.	U	8	35'-8"	429
8c7	Cap Beam, Horiz.	U	15	21'-6"	851
8c8	Cap Beam, Horiz.	U	8	12'-9"	272
8c9	Cap Beam, Horiz.	U	8	10'-6"	224
8c10	Cap Beam, Horiz.	U	4	13'-6"	144
8c11	Cap Beam, Horiz.	U	2	10'-6"	56
8c12	Cap Beam, Horiz.	U	10	6'-2"	155
5c13	Cap Beam, Vert.	U	72	11'-11"	855
5c14	Cap Beam, Vert.	U	4 Ser. 7	Varies	325
4c15	Pads	U	84	5'-0"	292
Total Northbound Lanes				11,871	
Total Southbound Lanes				11,871	



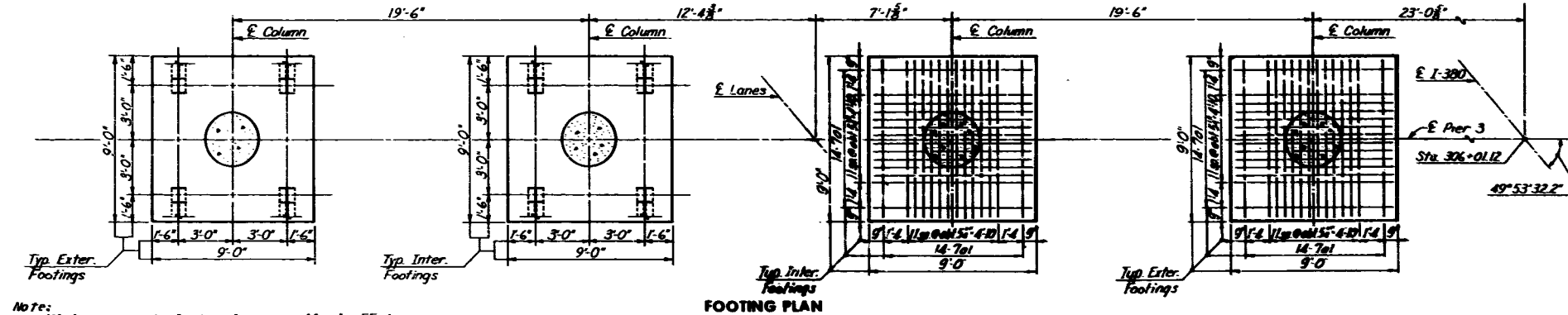
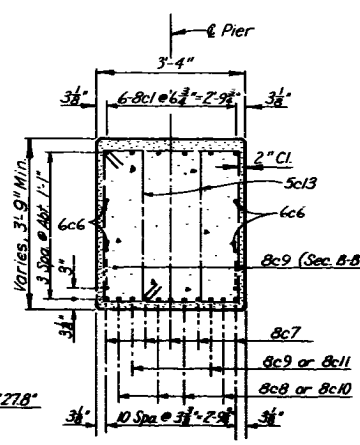
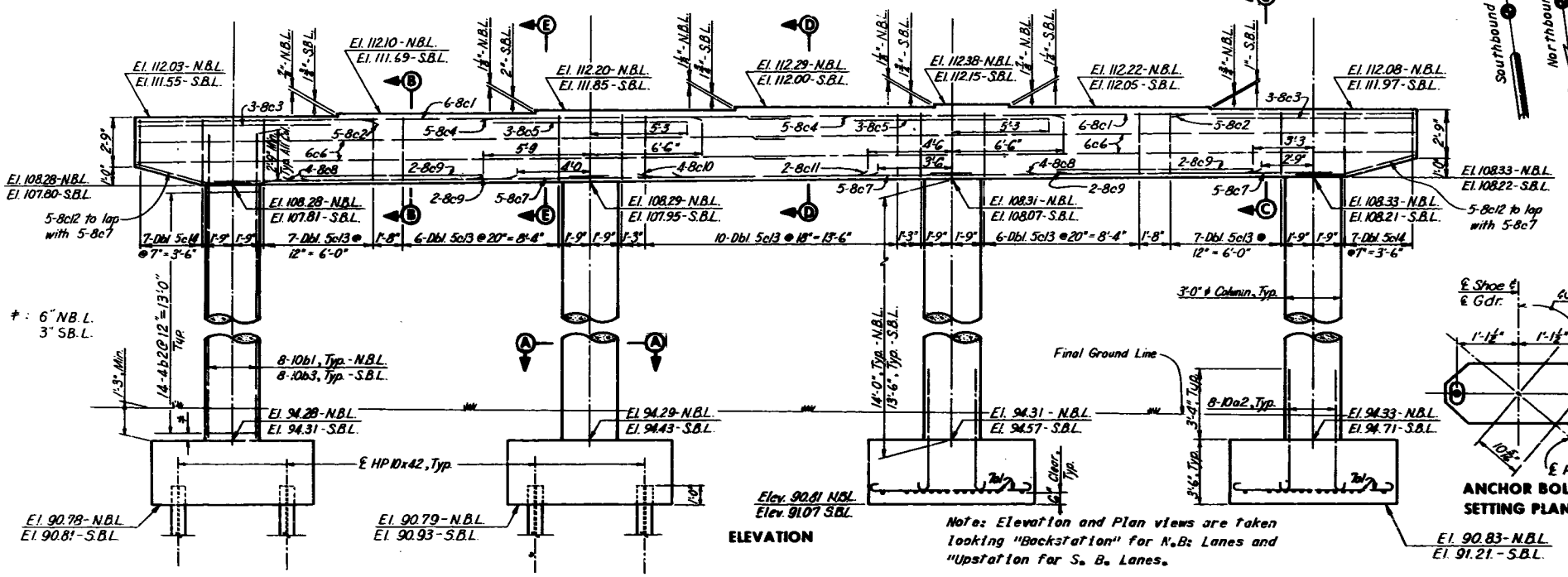
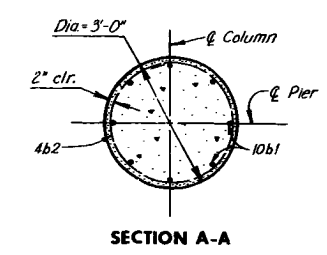
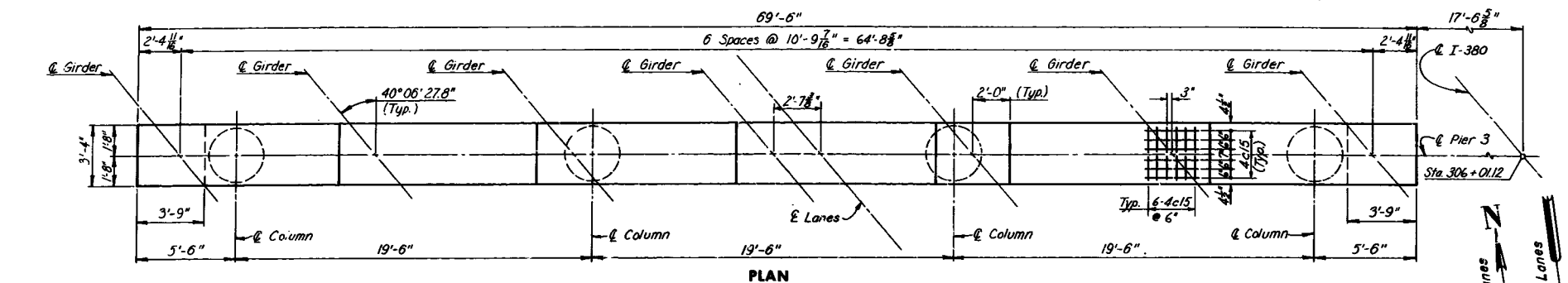
Notes:
 Minimum acceptable bearing per pile is 52 tons.
BENCH MARK
 B.M. H-91: "X" cut in east bolt on top of fire hydrant on northeast corner of 3rd Street and 6th Ave., S.W. Elev. 101.389.
 * Structural Concrete consists of 74.8 Cu.Yds. of Class C and 14.1 Cu.Yds. of Class D.
 **HP10x42 Piles consists of 18 @ 28'.

NORTHBOUND LANES		
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings - Class C	Cu.Yds.	42.0
Columns - Class D	Cu.Yds.	14.1
Cap Beam - Class C	Cu.Yds.	32.8
Total	Cu.Yds.	88.9
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete*	Cu.Yds.	88.9
Reinforcing Steel	Lbs.	11,871
Excavation, Class 20	Cu.Yds.	120
Steel Piling, HP 10x42**	Lin.Ft.	504.0

SOUTHBOUND LANES		
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings - Class C	Cu.Yds.	42.0
Columns - Class D	Cu.Yds.	14.1
Cap Beam - Class C	Cu.Yds.	32.8
Total	Cu.Yds.	88.9
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete*	Cu.Yds.	88.9
Reinforcing Steel	Lbs.	11,871
Excavation, Class 20	Cu.Yds.	120
Steel Piling, HP 10x42**	Lin.Ft.	504.0

SUBSTRUCTURE NOTES:
 All exposed corners of 90° or sharper are to be filled with a 2-inch dressed and beveled strip.
 Use 2 inches clear on all reinforcing unless shown otherwise.
 Columns may be formed with Iowa Highway Commission approved fiber pulp board tube such to produce a seamless finish.
 Pile dimensions shown are at bottom of footings.
 All piles are to be driven to full penetration if practicable or at least to a 55 ton bearing value.
 All swaged anchor bolts are to be pre-set.
 Piles are battered 3" per foot perpendicular to E Pier where indicated.
 Column dowel bars shall be securely fastened into position prior to the placement of footing concrete.

1-380 OVER 5th AVENUE S.W.
 DESIGN FOR 40' 06" 27.8" SKWB
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED PLATE GIRDER BRIDGE
 53'-8", 72'-9", 88'-3", 53'-8" SPANS
PIER 2 DETAILS
 STA. 305+12.87 ± 1-380 ± STA. 35+00.00 ± DEL. 5th AVE S.W.
 PROJECT NO. 1-380-4(39)261-01-57
LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION
 APRIL 1972
 DESIGN NO. 2178 LINN COUNTY FILE 2-4809 SHEET 44 of 129



Note: Minimum acceptable bearing per pile is 55 tons.

BENCH MARK
B.M. H-91: "X" cut in east ball on top of fire hydrant on northeast corner of 3rd Street and 6th Ave., S.W. Elev. 101.389.

* Structural Concrete consists of 74.8 Cu.Yds. of Class C and 14.7 Cu.Yds. of Class D.
** HP10x42 Piles consists of 16 @ 28'.
*** Structural Concrete consists of 74.8 Cu.Yds. of Class C and 14.1 Cu.Yds. of Class D.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE J.P.M. DAY 11-3-71 CHECKED J.H.S. DATE 71

NORTHBOUND LANES		
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings - Class C	Cu.Yds.	42.0
Columns - Class D	Cu.Yds.	14.7
Cap Beam - Class C	Cu.Yds.	32.8
Total	Cu.Yds.	89.5

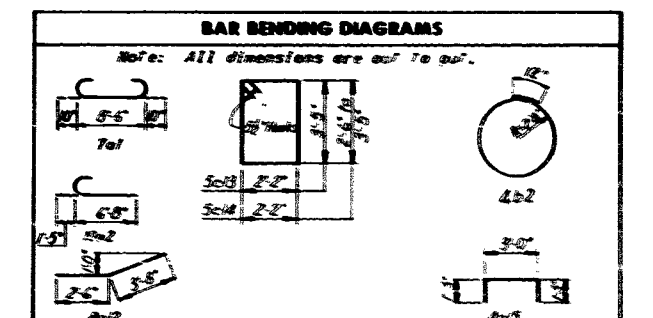
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete*	Cu.Yds.	89.5
Reinforcing Steel	Lbs.	11,939
Excavation, Class 20	Cu.Yds.	129
Steel Piling, HP 10x42**	Lin.Ft.	448.0

SOUTHBOUND LANES		
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings - Class C	Cu.Yds.	42.0
Columns - Class D	Cu.Yds.	14.1
Cap Beam - Class C	Cu.Yds.	32.8
Total	Cu.Yds.	88.9

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete***	Cu.Yds.	88.9
Reinforcing Steel	Lbs.	11,871
Excavation, Class 20	Cu.Yds.	131
Steel Piling, HP 10x42**	Lin.Ft.	448.0

SUBSTRUCTURE NOTES:
All exposed corners of 90° or sharper are to be filled with a 3-inch dressed and leveled strip.
Use 2 inches clear on all reinforcing unless shown otherwise.
Columns may be formed with Iowa Highway Commission approved fiber pulp board such to produce a seamless finish.
Pile dimensions shown are at bottom of footings.
All piles are to be driven to full penetration if practicable but at least to a 55 ton bearing value.
All swaged anchor bolts are to be pre-set.
Piles are battered 3" per foot perpendicular to & pier where indicated.
Column dowel bars shall be securely fastened in position prior to the placement of footing concrete.

BILL OF REINFORCEMENT					
PIER 3					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
7a1	Footings, Horiz.	U	112	10'-2"	2,328
10a2	Footings, Vert.	U	32	8'-1"	1,113
Northbound Lanes					
10b1	Column, Vert.	U	32	16'-9"	2,306
4b2	Column, Tie	O	56	9'-3"	346
Southbound Lanes					
10b1	Column, Vert.	U	32	16'-9"	2,306
4b2	Column, Tie	O	56	9'-3"	346
8c1	Cap Beam, Horiz.	U	12	35'-8"	1,143
8c2	Cap Beam, Horiz.	U	10	13'-0"	347
8c3	Cap Beam, Horiz.	U	6	10'-7"	170
8c4	Cap Beam, Horiz.	U	10	13'-0"	347
8c5	Cap Beam, Horiz.	U	6	10'-6"	168
8c6	Cap Beam, Horiz.	U	8	35'-8"	429
8c7	Cap Beam, Horiz.	U	15	21'-8"	861
8c8	Cap Beam, Horiz.	U	8	12'-9"	272
8c9	Cap Beam, Horiz.	U	8	10'-6"	224
8c10	Cap Beam, Horiz.	U	4	13'-6"	144
8c11	Cap Beam, Horiz.	U	2	10'-6"	56
8c12	Cap Beam, Horiz.	U	10	6'-2"	185
5c13	Cap Beam, Vert.	U	72	11'-11"	855
5c14	Cap Beam, Vert.	U	4 Ser. 7	Varies	325
4c15	Pads	U	84	5'-4"	299
Total Northbound Lanes				11,339	
Total Southbound Lanes				11,871	



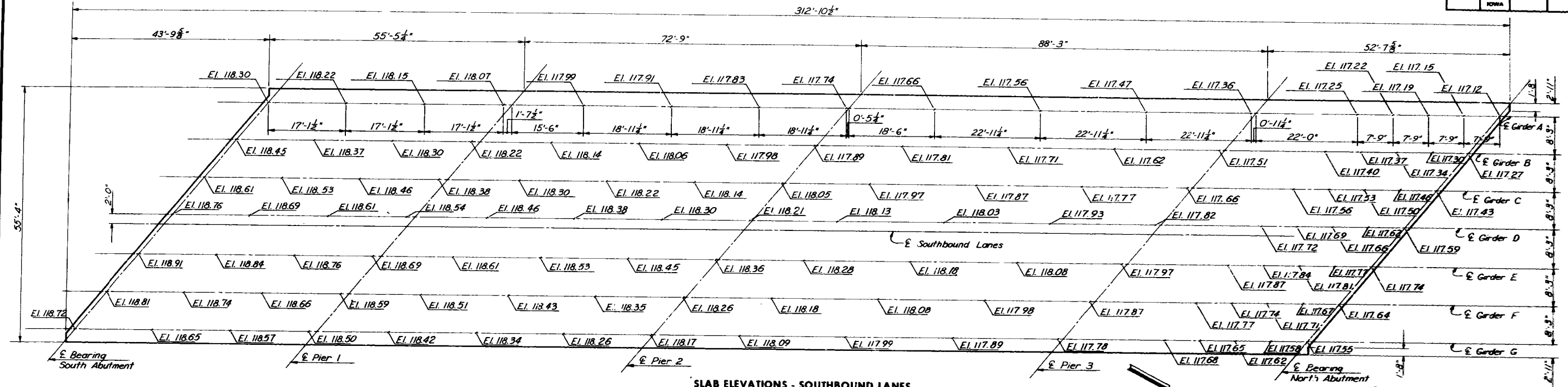
*List of bars shown in the Bill of Reinforcement are for the Pier for one lane. Reinforcing bars for the other Pier are identical.

I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40' 06" 27.8" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED PLATE GIRDER BRIDGE
33'-0", 77'-0", 88'-3", 53'-0" SPANS

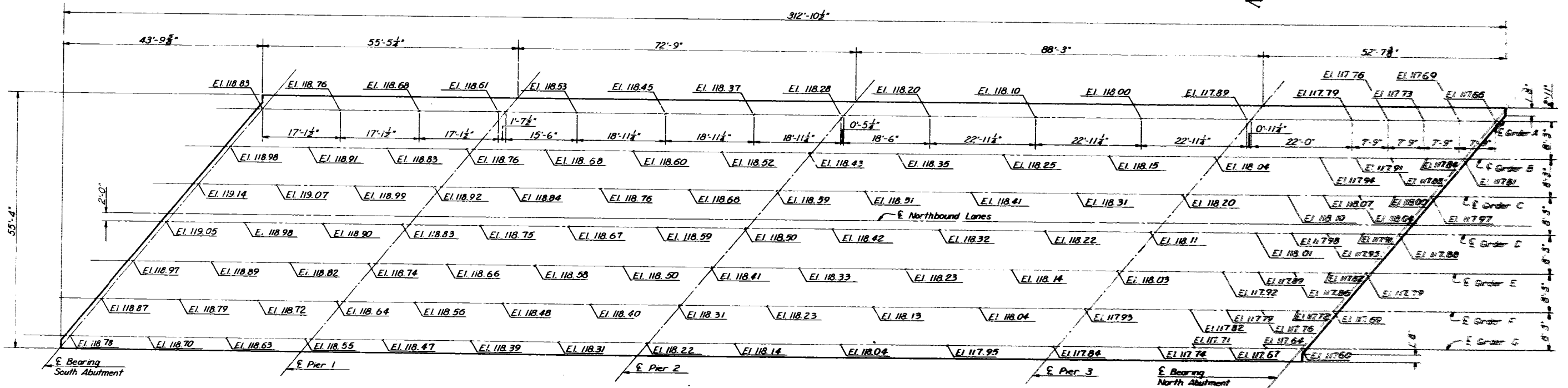
PIER 3 DETAILS
STA 305+12.87 & I-380 = STA 15+00.00 @ 5th AVE S.W.
PROJECT NO. I-380-4(39)261-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION
APRIL 1972
DESIGN NO. 2178 LINN COUNTY FILE 248-9 SHEET 45 OF 129

MADE J.P.K. DATE 9-22-71 CHECKED D.W.S. DATE 9-27-71

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



SLAB ELEVATIONS - SOUTHBOUND LANES



SLAB ELEVATIONS - NORTHBOUND LANES

BENCH MARK
 B.M. H-91: "x" cut in east bolt on top of fire hydrant on northeast corner of 3rd Street and 6th Ave., S.W. Elev. 101.389.

Note: Slab elevations are at top of concrete slab and are expected to occur after all dead loads have been imposed upon the structure. Locations of slab elevations are coincident with Dead Load Deflection ordinates shown on Sheet 17 of 24.

I-380 OVER 5th AVENUE S.W.
 DESIGN FOR 40' 0" 27' 5" SKEW
 DUAL 267'-0" x 52'-0" CONTINUOUS WELDED PLATE GIRDER BRIDGE
 53'-0" 72'-9" 88'-3" 53'-0" SPANS

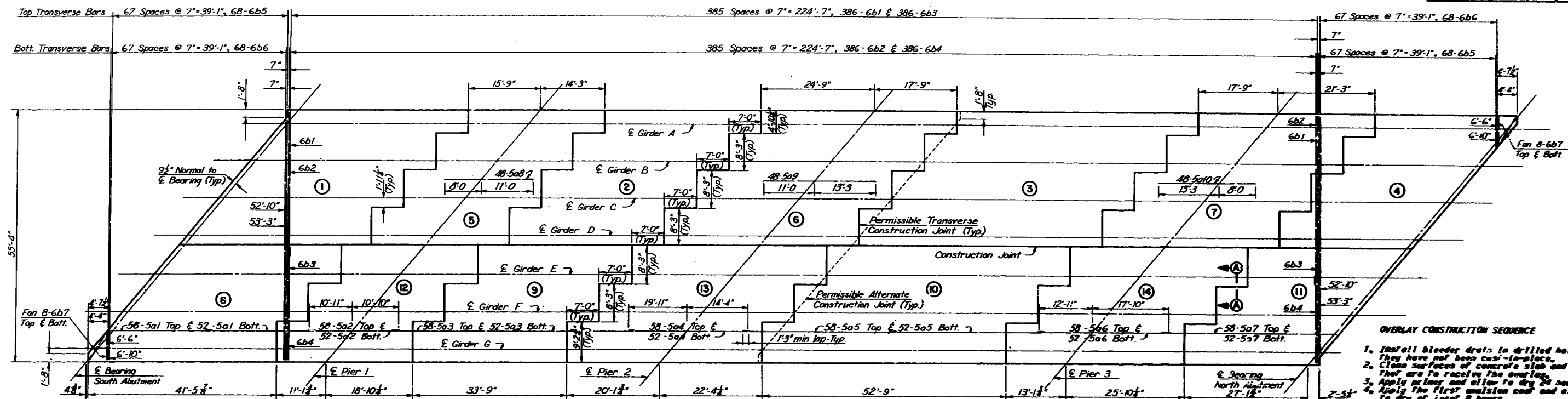
SLAB ELEVATIONS

STA 305+12.87 to I-380 = STA 15+00.00 to REL 5th AVE S.W.
 PROJECT NO. I-380-4(39)263-28-57
 LINN COUNTY

IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

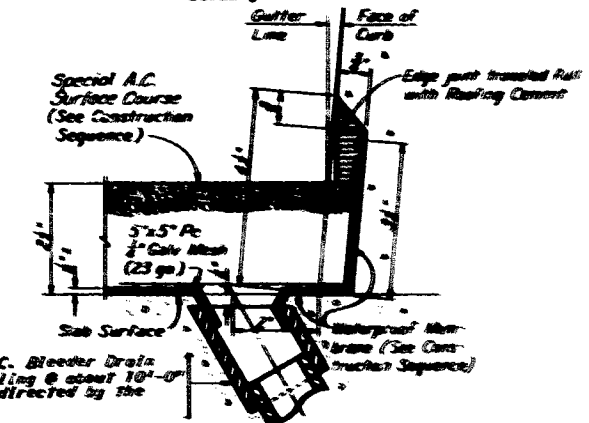
MADE J.P.M. DATE 9-15-71 CHECKED D.W.S. DATE 9-27-71



TYPICAL SLAB REINFORCING PLAN

OVERLAY CONSTRUCTION SEQUENCE

1. Install bleeder drains in drilled holes if they have not been cast-in-place.
2. Clean surfaces of concrete slab and curbs that are to receive the overlay.
3. Apply primer and allow to dry 24 hours.
4. Apply the first emulsion coat and allow to dry at least 8 hours.
5. Apply the second emulsion coat and place fibreglass cloth longitudinally on the wet emulsion coat. Allow to dry at least 8 hours.
6. Apply the third emulsion coat and place fibreglass cloth longitudinally on the wet emulsion coat. Allow to dry at least 8 hours.
7. Apply emulsion slurry coat and allow to dry at least 24 hours.
8. Complete preparation of waterproofing of bleeders and install wire mesh.
9. Have with modified asphaltic concrete surfacing mix in two lifts.
10. Treat all edge joints with coal tar roofing cement.



*Using P.V.C. Bleeder Drains with Coupling @ about 10'-0\"/>

MEMBRANE WATERPROOFING CURB DETAIL

I-380 OVER 5th AVENUE S.W.

DESIGN FOR 40' 0\"/>

SLAB PLAN

STA 305+12.87 TO STA 305+00.00 4' BEL. 5th AVE. S.W.
PROJECT NO. 1-200-41391201-01-S7

LINN COUNTY

IOWA STATE HIGHWAY COMMISSION

BILL OF REINFORCEMENT					
SOUTHBOUND LANES					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5a1	Slab, Long.	—	220	22'-9"	5,220
5a2	Slab, Long.	—	110	21'-9"	2,495
5a3	Slab, Long.	—	220	22'-11"	5,258
5a4	Slab, Long.	—	110	34'-3"	3,930
5a5	Slab, Long.	—	220	32'-5"	7,438
5a6	Slab, Long.	—	110	30'-9"	3,528
5a7	Slab, Long.	—	110	37'-1"	4,274
5a8	Slab, Long.	—	48	19'-0"	951
5a9	Slab, Long.	—	48	24'-3"	1,214
5a10	Slab, Long.	—	48	21'-3"	1,064
6b1	Slab, Trans.	—	386	32'-6"	18,843
6b2	Slab, Trans.	—	386	36'-6"	21,162
6b3	Slab, Trans.	—	386	24'-0"	13,515
6b4	Slab, Trans.	—	386	20'-0"	11,595
6b5	Slab, Trans.	—	2 Ser 68	Varies	6,137
6b6	Slab, Trans.	—	2 Ser 68	Varies	6,061
6b7	Slab, Trans.	—	32	6'-0"	288
5c1	Curb, Trans.	□	508	6'-2"	3,267
5c2	Post Anchor	—	64	5'-0"	481
5c3	Curb, Long.	—	28	39'-6"	1,154
5c4	Curb, Long.	—	4	19'-0"	79
5c5	Curb, Long.	—	4	24'-3"	101
5c6	Curb, Long.	—	4	21'-3"	89
5d1	End Diaph, Vert.	—	108	3'-9"	422
6d2	End Diaph, Horiz.	—	36	10'-0"	541
6d3	End Diaph, Horiz.	—	4	33'-2"	199
Total (Lbs.)					119,706

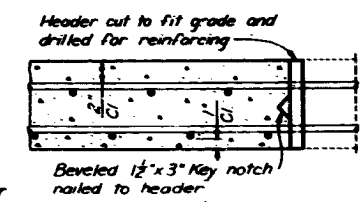
*Add 115 lbs. to this total weight for Light Blister reinforcing steel.

CONCRETE PLACEMENT QUANTITIES	
POUR	CU. YDS.
1	31.0
2	25.8
3	40.4
4	25.5
5	23.0
6	32.6*
7	29.9
8	26.8
9	22.4
10	35.0
11	22.3**
12	19.9
13	28.2
14	25.8
E. Curb	20.1
W. Curb	20.1
TOTAL	428.8

* Add 0.4 C.Y. to this pour for Light Blister concrete on S. B. Lanes.

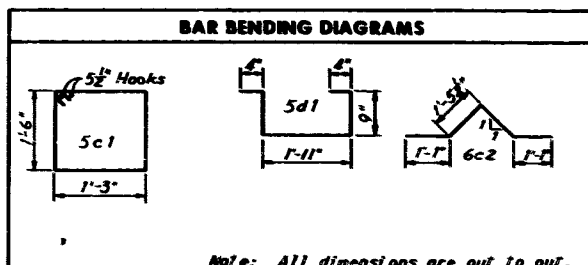
** Add 0.4 C.Y. to this pour for Light Blister concrete on N. B. Lanes.

Note: "Bill of Reinforcement" and "Concrete Pour Quantities" for Northbound Lanes is the same as Southbound Lanes.



SECTION A-A
SLAB CONSTRUCTION JOINT DETAIL

Notes:
For typical curb reinforcing detail, see Sheet 19 of 24.
Bleeder drains may be cast-in-place or placed in 2\"/>



Note: All dimensions are out to out.

Revised 7-27-72: Bleeder drain coupling note added

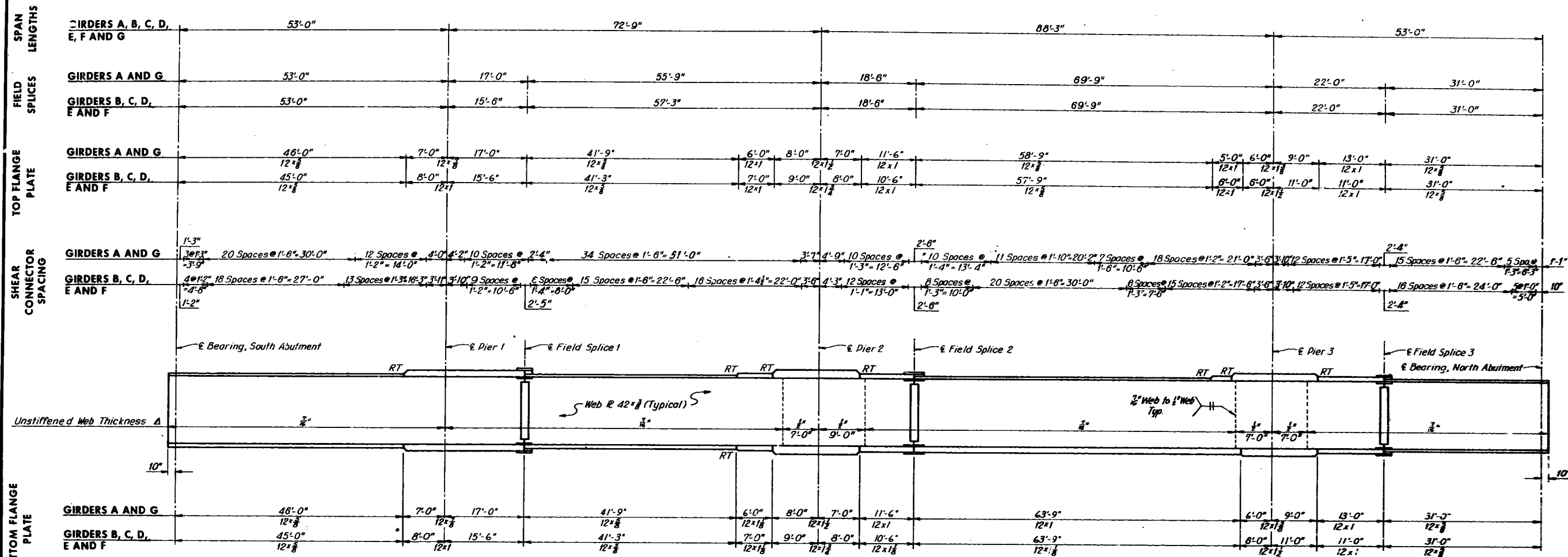
HOWARD, NEEDLES, TAMMEN & BERGENDOFF

CONSULTING ENGINEERS

KANSAS CITY

DATE J.R.M. DATE 8-30-71 CHECKED G.W.S. DATE 9-28-71

2024-28-00



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. HS 20-44 Truck Loading governs for positive moments and abutment reactions. Equivalent Lane Loading governs for negative moments and reactions of piers.

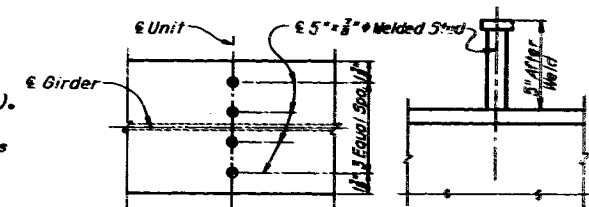
RADIOGRAPHIC INSPECTION NOTE:

An "RT" shown on girder elevations indicates location of tension splices or splices subject to reversal stresses and requires radiographic inspection of adjacent flange and web, flange, or web welds in accordance with the Construction Specifications. Splices not otherwise designated are compression or shear splices subject to radiographic inspection in accordance with Construction Specifications.

GIRDER DETAILS

NOTE TO CONTRACTOR

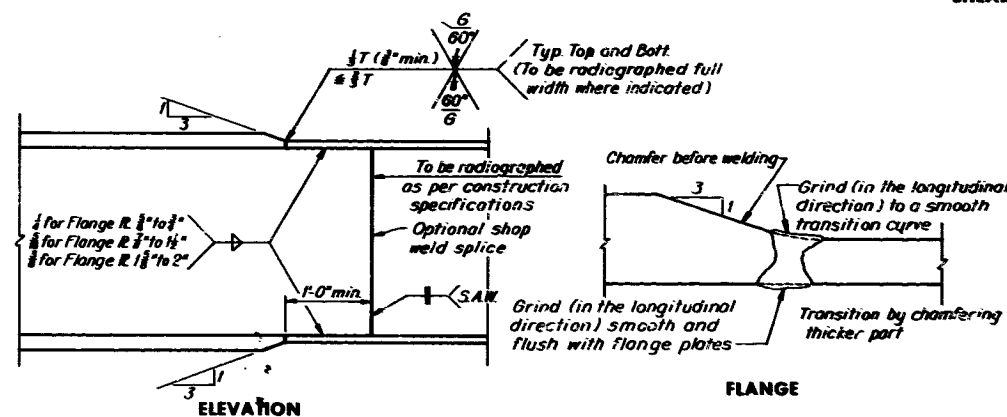
At the option of the Contractor, thicker girder web plates without intermediate stiffeners (unstiffened webs) may be substituted for the detailed girder web plates with intermediate stiffeners (stiffened webs). If the unstiffened web option is chosen, the web plates shall be 42"x1/2" or 42"x3/4" as shown. Girder details and girder splices will be as shown for the stiffened web except girder web field splices shall be filled as required. If the unstiffened web option is selected, the Contractor shall recalculate the dead load deflections and shall adjust camber and blocking dimensions accordingly. Copies of these calculations shall be furnished to the Engineer for review. Payweight in any case will be based on material shown on the design plans for stiffened girder webs.



SHEAR CONNECTOR DETAILS

TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS													
GIRDERS	ITEM	MAXIMUM POSITIVE MOMENT				MAXIMUM NEGATIVE MOMENT			REACTIONS				
		SPAN 1	SPAN 2	SPAN 3	SPAN 4	PIER 1	PIER 2	PIER 3	S. ABUT.	PIER 1	PIER 2	PIER 3	N. ABUT.
A and G	Dead Load A	184	147	345	116	364	637	575	19	65	83	79	15
	Dead Load B	78	74	159	52	142	240	220	8	27	34	32	6
	Live Load	378	441	535	385	350	462	432	39	47	54	52	39
	Impact	106	112	125	108	93	112	110	11	13	13	13	11
	Total					949	1,451	1,337	77	152	184	176	71
B, C, D, E and F	Dead Load A	202	162	379	127	401	700	633	21	71	91	87	17
	Dead Load B	88	83	179	58	160	270	248	9	30	38	36	7
	Live Load	417	487	590	425	386	510	476	51	63	71	68	51
	Impact	117	123	138	119	102	123	122	15	17	17	18	15
	Total					1,049	1,603	1,479	96	181	217	209	90

Notes: The Contractor shall submit for approval the welding procedure and detail of shop welded girder splice. Shop splices and web to flange welds shall be welded by the submerged arc process.



FLANGE

Note: Flange plates of equal thickness similar, chamfer not required.

I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40° 06' 27.8" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
PLATE GIRDER BRIDGE
53'-0", 72'-9", 88'-3", 53'-0" SPANS

SUPERSTRUCTURE DETAILS

STA. 305+12.87 TO 380+00.00 (REL. 5th AVE. S.W.)
PROJECT NO. I-380-6(39)261-01-57
LINN COUNTY

IOWA STATE HIGHWAY COMMISSION

APRIL 1972

SHEET 16 OF 24

DESIGN NO. 2170 LINN COUNTY FILE 24000 SHEET 49 OF 129

HOWARD, NEEDLES, TAMMEN & BERGENDOFF

CONSULTING ENGINEERS
KANSAS CITY

MADE D.W.S. DATE 9-18-71 CHECKED J.P.M. DATE 9/20/71

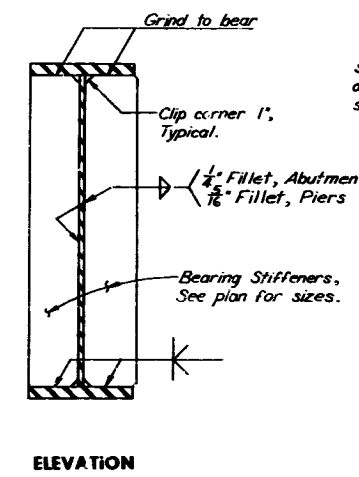
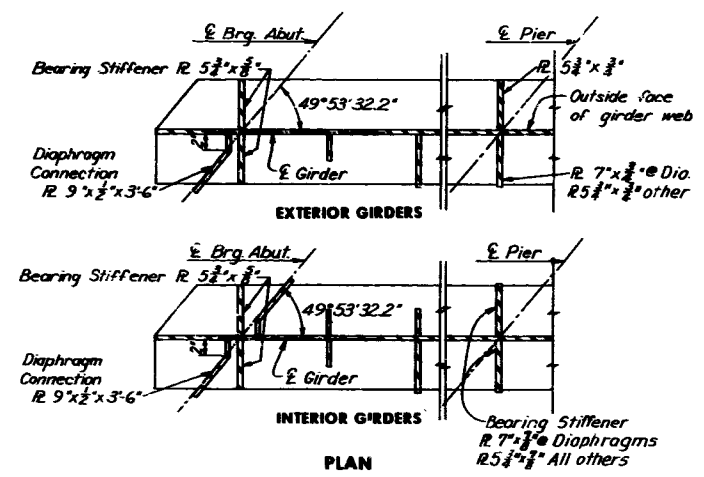
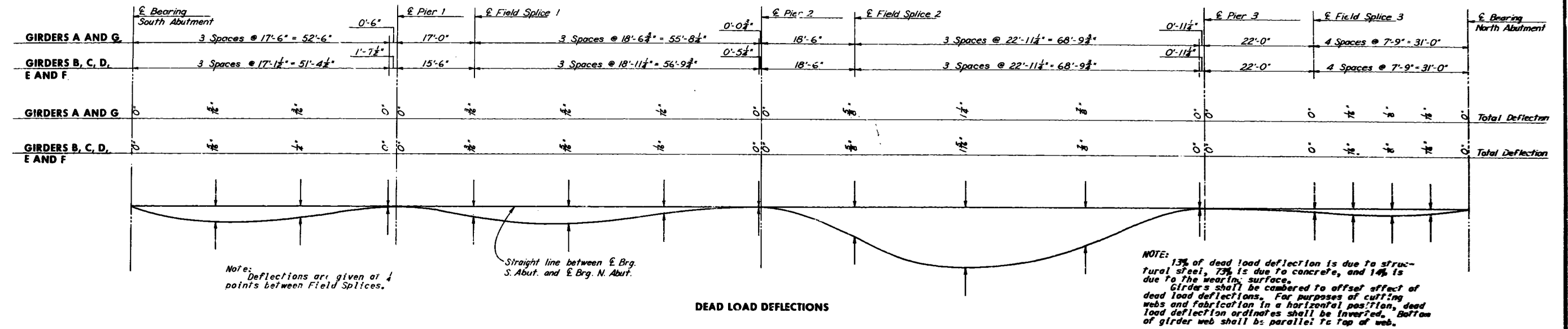
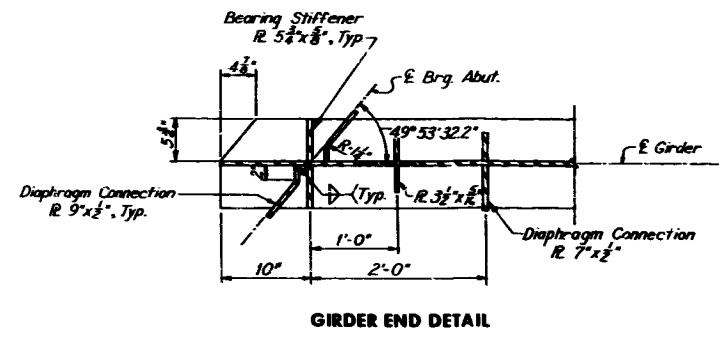
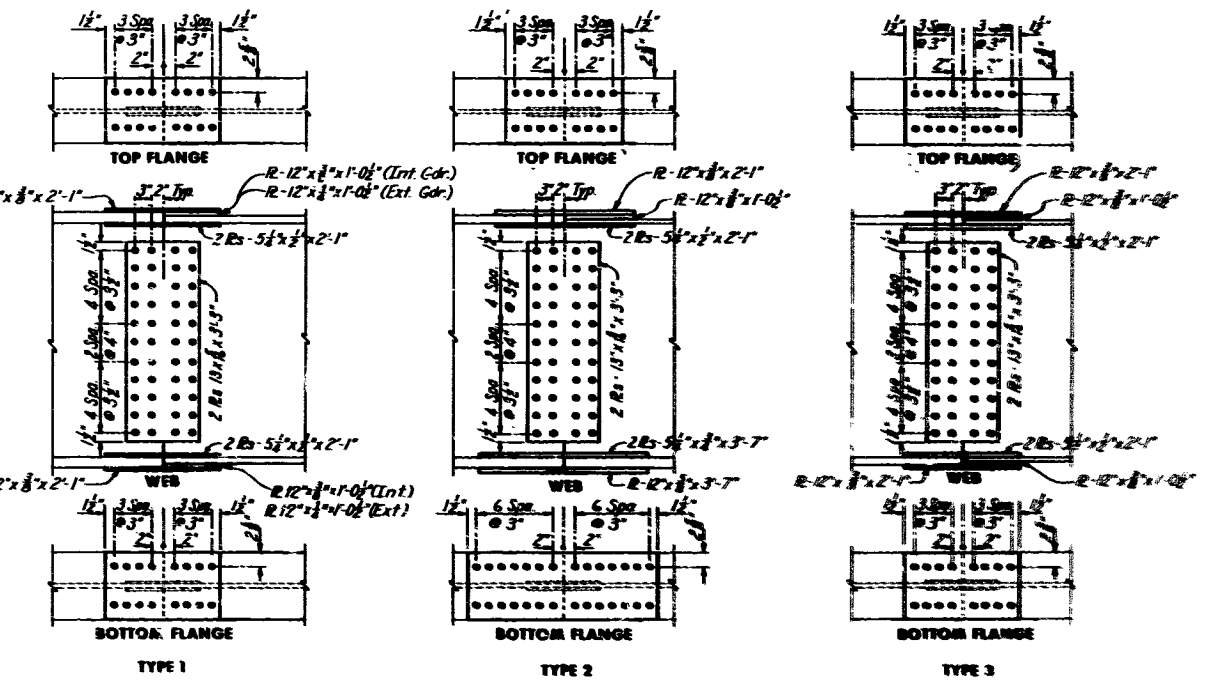
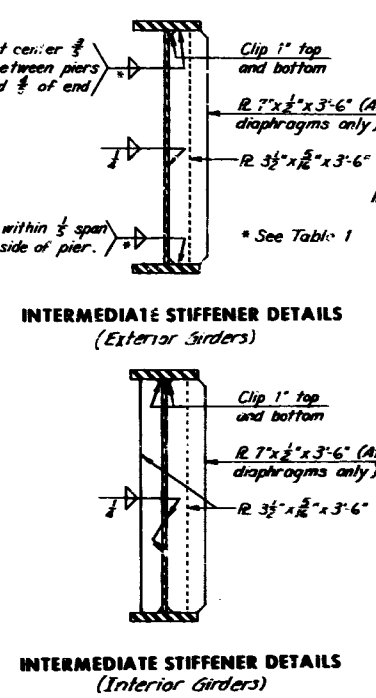


TABLE 1	
Flange R	Fillet
1/2" to 1"	1/4"
1" to 1 1/2"	3/8"
1 1/2" to 2"	1/2"



SUPERSTRUCTURE ESTIMATED QUANTITIES			
ITEM	UNIT	SOUTHBOUND LANES	NORTHBOUND LANES
Structural Concrete (Class D)	Cu. Yds.	429.2	429.2
Reinforcing Steel	Lbs.	119 706	119 706
Structural Steel	Lbs.	330 450	330 450

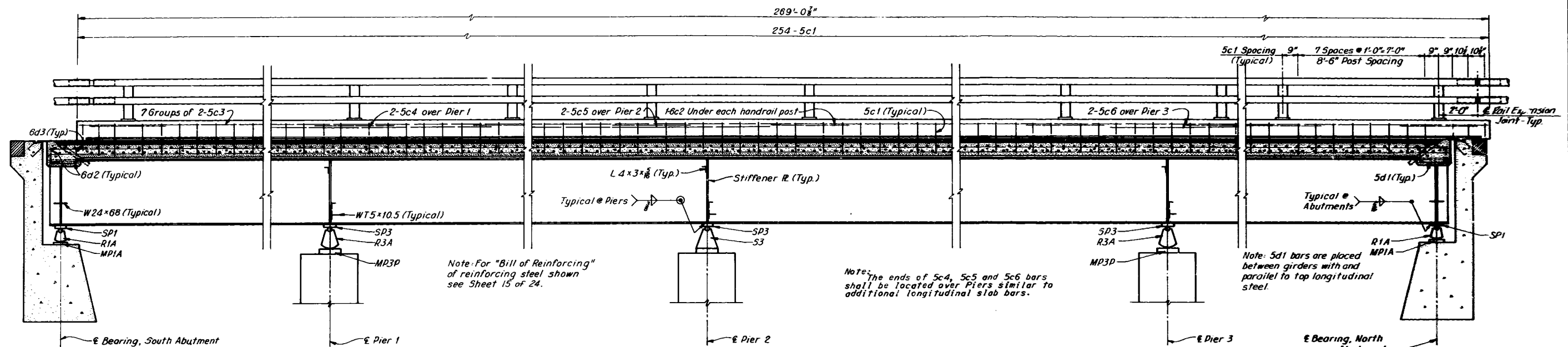
Note: Estimated Quantities do not include Reinforcing Steel quantities for light supports. See Sheet 21 of 24

1-380 OVER 5th AVENUE S.W.
 DESIGN FOR 40' 00" 27.5' SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED PLATE GIRDER BRIDGE
 33'-0", 72'-0", 86'-3", 53'-0" SPANS

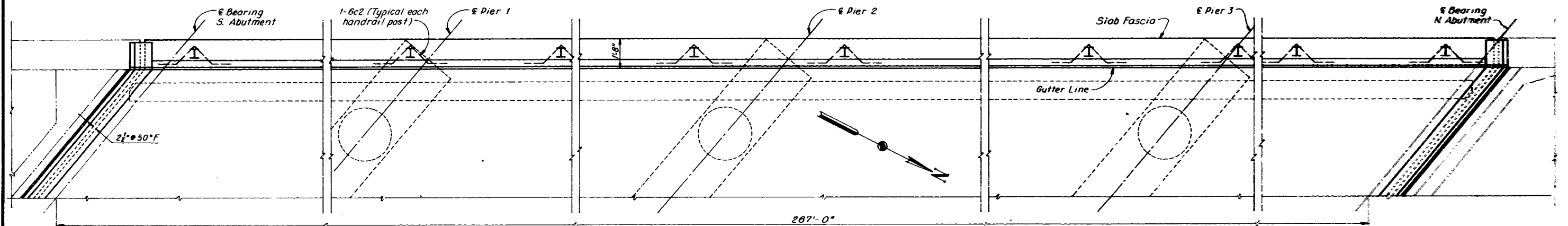
SUPERSTRUCTURE DETAILS

STA. 305+12.87 (1-380) = STA. 15+00.00 (I-380) 5th AVE S.W.
 PROJECT NO. 1-380-4(19)261-01-57
LINN COUNTY

IOWA STATE HIGHWAY COMMISSION



PART LONGITUDINAL SECTION NEAR CURB

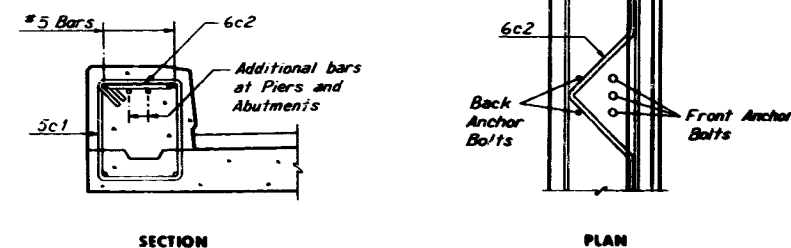


PART PLAN

Note: 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.

TYPICAL ROCKER SETTING						
Temperature at time of setting	S. ABUTMENT	PIER 1	PIER 2	PIER 3	N. ABUTMENT	
90°F	2 1/2"	1"	1"	1"	1"	2 1/2"
50°F	2 1/2"	0	0	0	0	2 1/2"
10°F	2 1/2"	-1"	-1"	-1"	-1"	2 1/2"

Note: For detail showing dimension D see Section A-A Sheet 18 of 24.



CURB REINFORCING DETAIL

I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40° 06' 27.8" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
PLATE GIRDER BRIDGE
53'-0" 72'-0" 88'-3" 53'-0" SPANS

SUPERSTRUCTURE DETAILS

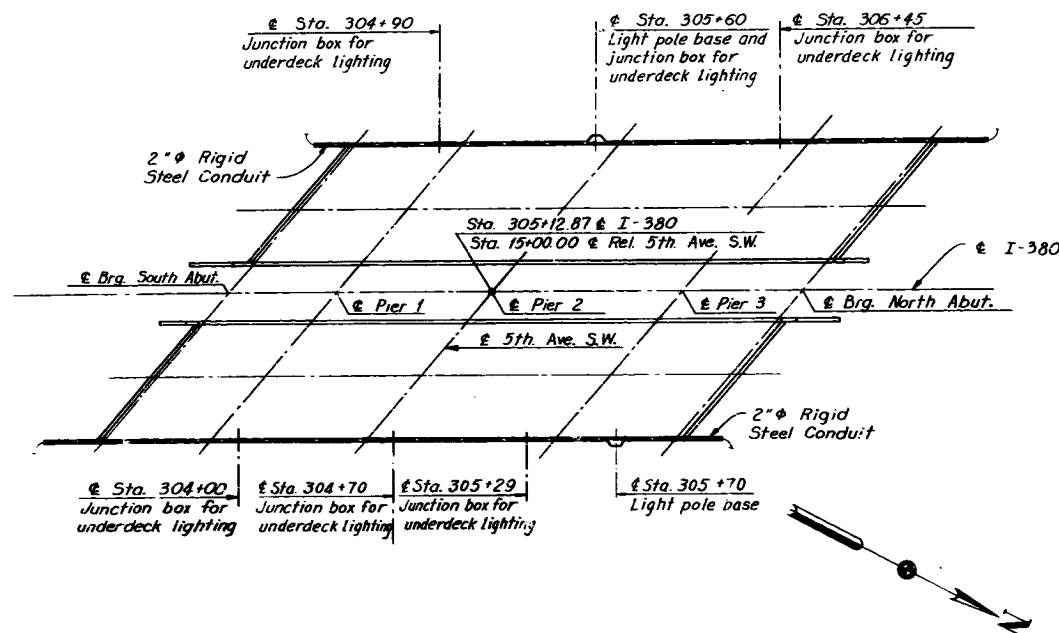
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PROJECT NO. I-380-4(39)261-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

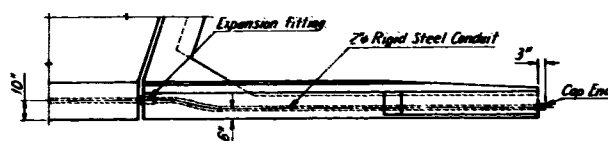
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APRIL 1972 SHEET 19 OF 24
DESIGN NO. 2170 LINN COUNTY FILE 24009 SHEET 52 OF 129

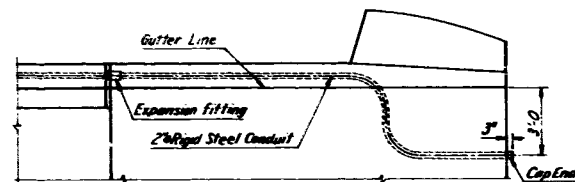
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	IOWA				



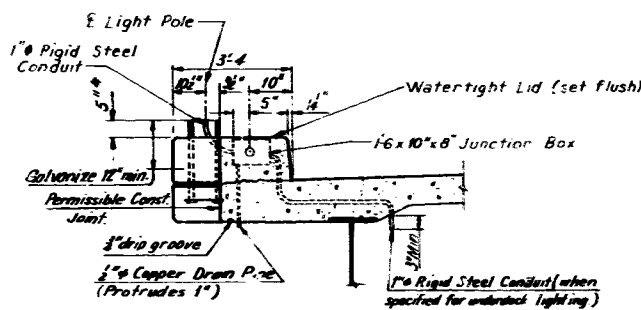
LOCATION PLAN



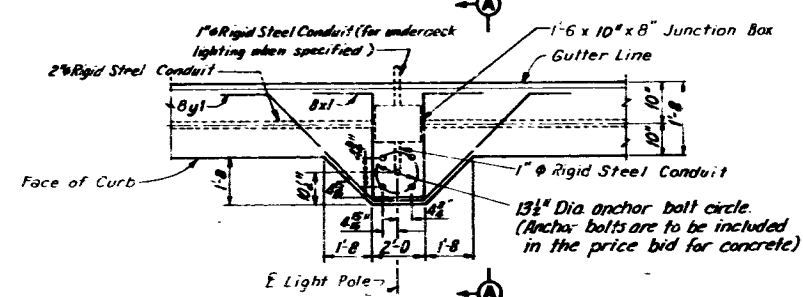
PART PLAN AT ABUTMENTS



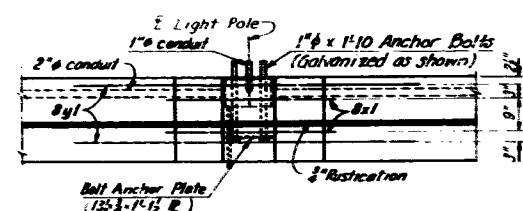
PART ELEVATION AT ABUTMENTS



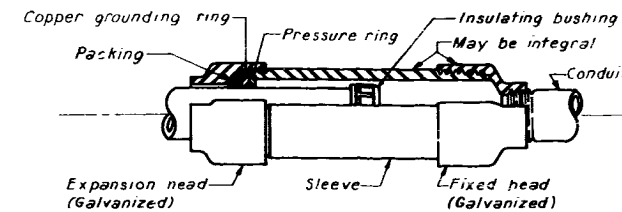
SECTION A-A



PLAN



ELEVATION



RM-2, TYPE 1 EXPANSION FITTING

Expansion Chamber length is 3"

Bossed For	Hole	For Conduit Size
5 threads	C	2" Rigid Steel
None	D	1" Rigid Steel
None	E	1/2" (Copper Pipe)

Note: The grounding buttons are to be blind drilled and tapped for 3/8" x 0.04 bolts.

GENERAL NOTES:

Construction shall conform with the current Iowa State Highway Commission Standard Specifications plus current Special Provisions and current Supplemental Specifications for Highway Lighting.

Anchor bolts shall be galvanized as shown and conform to the requirements of ASTM A-325.

After conduit runs have been installed a stiff, oversize wire brush or mandrel shall be pulled through the conduit to make certain that no appreciable foreign material remains in the conduit, and that the conduit has not been flattened or otherwise blocked during construction. Each open end of the conduit shall be threaded. Threads shall be protected with an approved bituminous compound. Temporary caps or plugs shall be installed to exclude dirt and moisture.

Expansion fittings shall be as specified or as approved by the Engineer. Typical details are shown on this sheet.

All entrance holes in junction boxes except for drain pipes shall be tapped for the specified conduit size. 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.

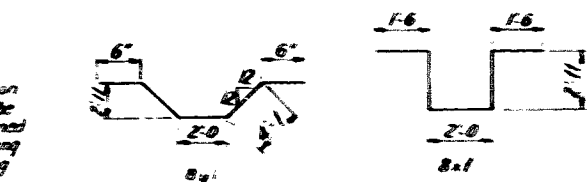
Location of the E of light pole may be shifted ± 1'-0" so that the location of the junction box does not interfere with the rail post anchor bolts and base plate.

The contract unit price per linear 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.

REINFORCING BAR LIST - ONE BASE					
BAR	LOCATION	SHAPE	NO.	LENGTH	REMARKS
4#1	Curb Anchor		2	11'-0"	60
5#1	Base Anchor		2	10'-6"	55
				22'-6"	115



Note: Dimensions are out to out of box.

BILL OF REINFORCEMENT		
Southbound Lane	1 (Base)	115 Tons
Northbound Lane	1 (Base)	115 Tons

I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40' 00" 27' 8" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
PLATE GIRDER BRIDGE
53.0 72.9 88.3 53.0 SPANS

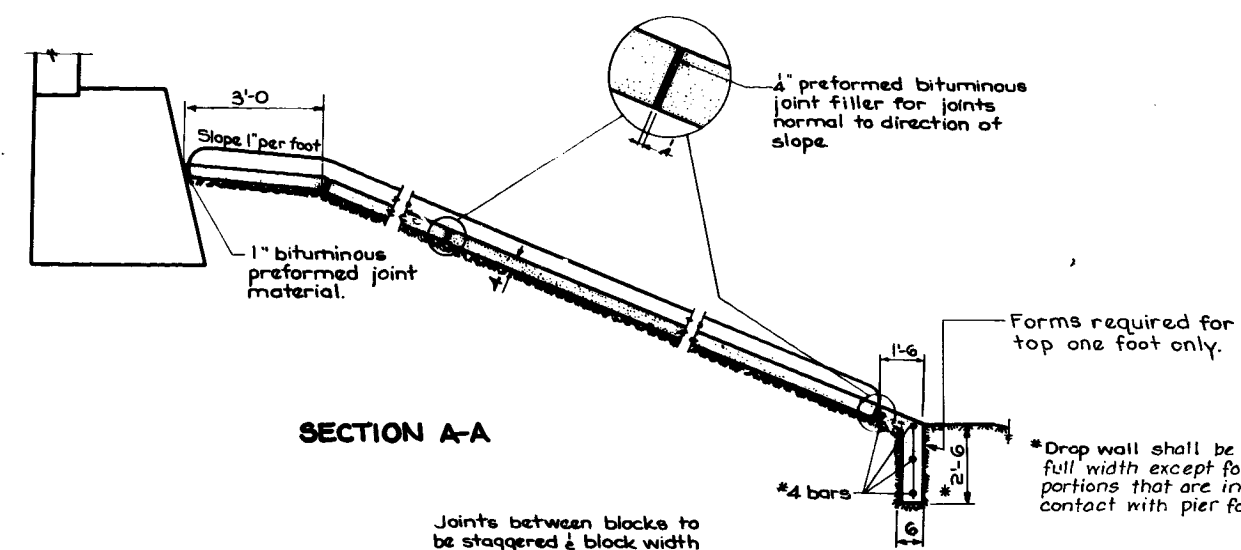
LIGHTING DETAILS

STA 305+12.87 & I-380 - STA 15+00.00 & REL 5th AVE S.W.
PROJECT NO. I-380-4(39)261-01-57
LINN COUNTY

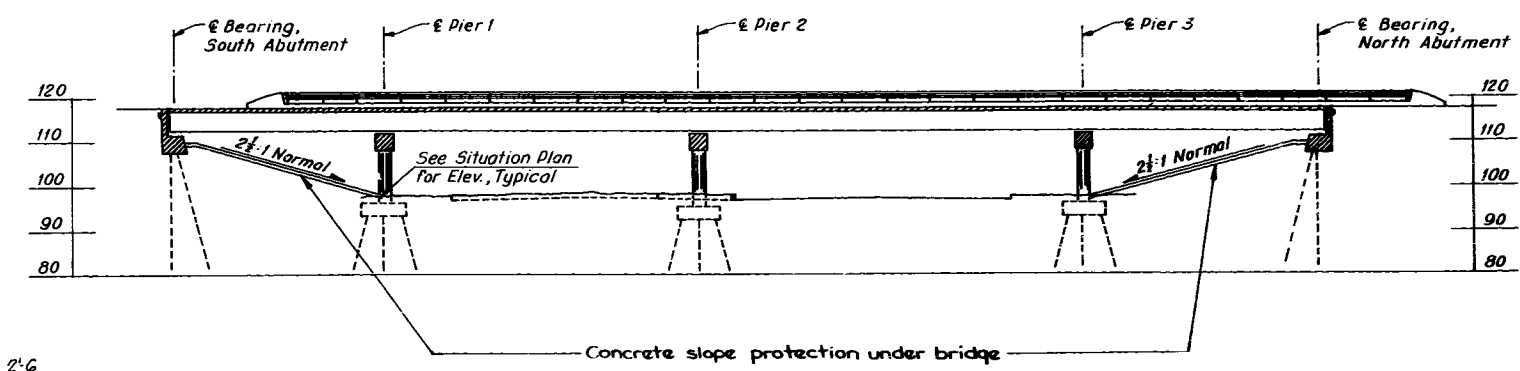
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY NEW YORK
MADE BY J.K. DATE 12-8-71 CHECKED D.W.S. DATE 12-10-71

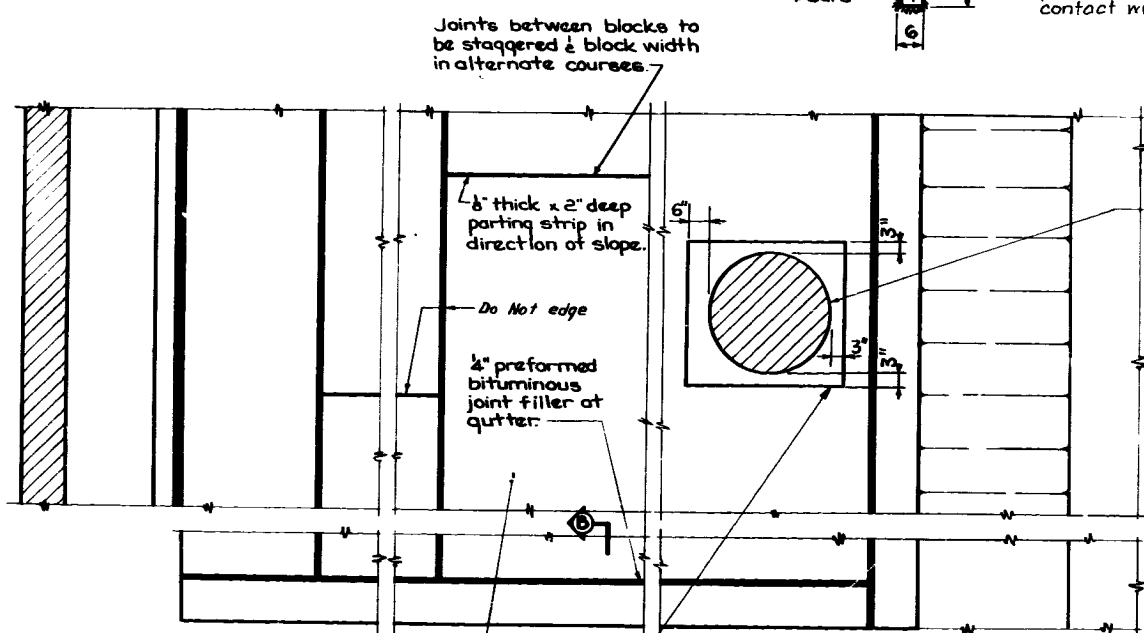
Revised 7-27-72: Mold size corrected.



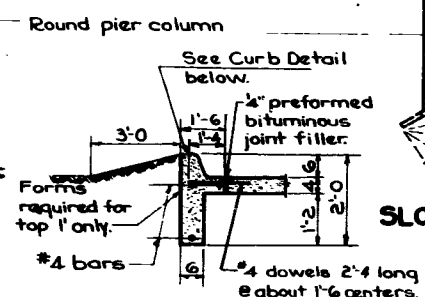
SECTION A-A



LONGITUDINAL SECTION ALONG & OF ROADWAY

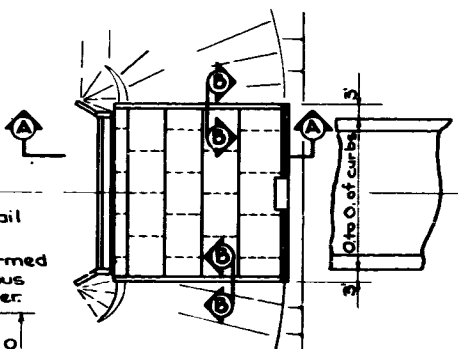


Nominal dimension of cast in place concrete blocks = 10' x 10'

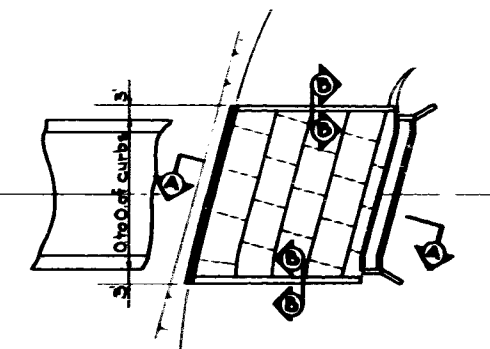


SECTION B-B

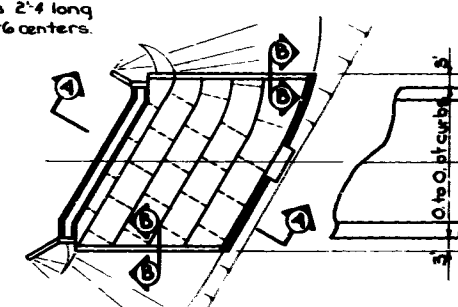
CURB DETAIL



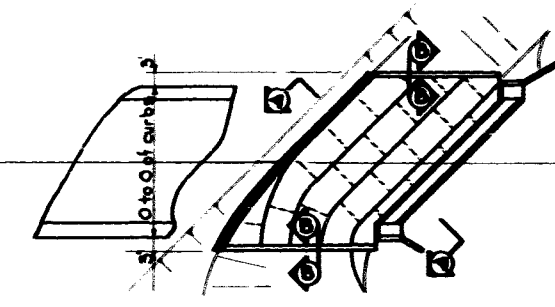
SLOPE PROTECTION LAYOUT 0° SKEW



SLOPE PROTECTION LAYOUT 15° SKEW



SLOPE PROTECTION LAYOUT 30° SKEW



SLOPE PROTECTION LAYOUT 45° SKEW

GENERAL NOTES:

This sheet shows details for placing portland cement concrete slope protection under overhead structures. The current specifications of the Iowa Highway Commission shall apply with modifications or additions listed below.

Concrete - Class C Structural

Finish - Class 1, Floated Surface Finish

Cure - Cure as per current Specifications

Subgrade Preparation - The subgrade is to be shaped and compacted so that finished slope protection will be similar to examples shown on this sheet. The subgrade shall be firm when concrete is placed. Sprinkling required shall be done early enough so that concrete is not placed on a muddy subgrade. No subgrade paper will be required.

The cast in place concrete is to be poured in approximately 10' wide courses, but all courses on one slope should have approximately equal widths. Adjacent courses shall not be poured within 15 hours of one

another. The joints in the direction of the slope are to be staggered about 1/2 block width. Basis of payment: Payment will be made on a square yard basis for slope protection constructed. The unit price bid per square yard is to include costs of all materials and labor required to construct this protection as shown or intended by these plans. The subgrade preparation including any necessary excavation or filling required to shape the slope to the lines shown on the plans and disposal of excess earth excavated as directed by the Engineer, are considered incidental to placing the concrete slope protection.

Where erosion control work is completed the Contractor shall be responsible for any plant materials destroyed adjacent to slope protection area. The Contractor shall replant, reseed and re-mulch all areas disturbed adjacent to slope protection areas in accordance with section 2601 of Standard Specifications, Series of 1972, at his expense.

Pay quantities are to be based on field measured out to out dimensions.

ESTIMATED QUANTITIES

	SOUTHBOUND LANE	NORTHBOUND LANE
South Abutment	357 Sq. Yds.	357 Sq. Yds.
North Abutment	357 Sq. Yds.	357 Sq. Yds.
Total	714 Sq. Yds.	714 Sq. Yds.

PART SLOPE PROTECTION PLAN (0° SKEW) FOR COLUMNS IN SLOPE

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS

KANSAS CITY NEW YORK
MADE D.M.S. DATE 10-1-71 CHECKED J.P.M. DATE 10-6-71

I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40' 06" 27' 8" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED PLATE GIRDER BRIDGE
53-0 72-9 88-3 53-0 SPANS

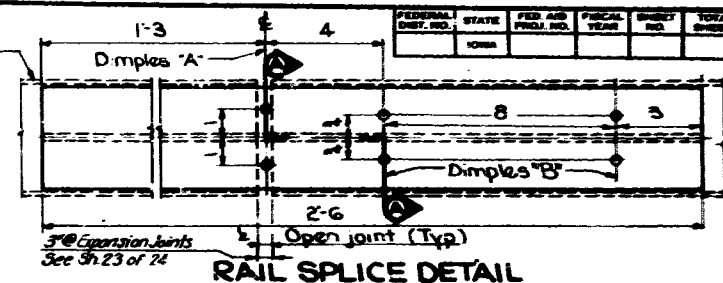
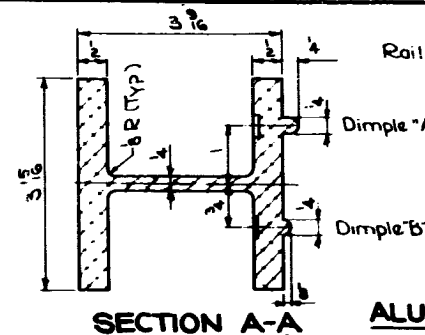
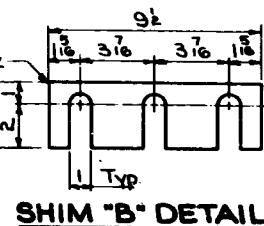
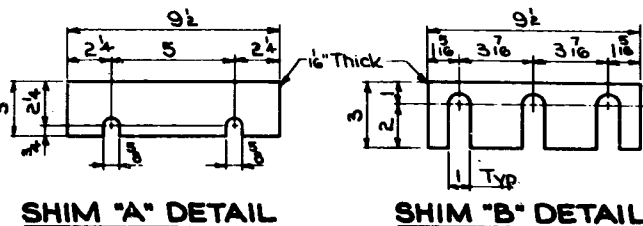
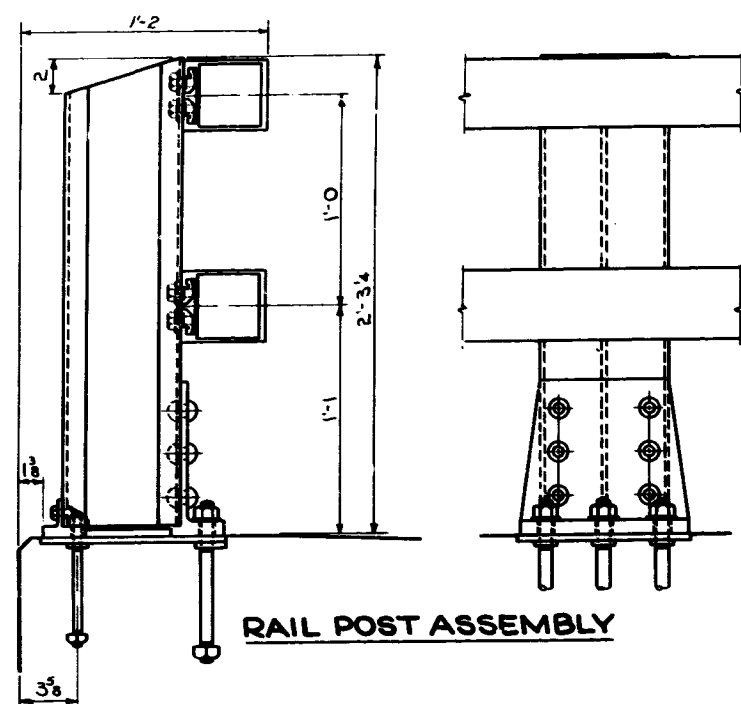
CONCRETE SLOPE PROTECTION

STA 305+12.87 & I-380 = STA 15+00.00 & REL 5th AVE S.W.
PROJECT NO. I-380-4(39)261-34-57
LINN COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO 2170 LINN COUNTY FILE 24009 SHEET 56 of 129

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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 and all of the equipment and labor required to erect the rail in accordance with these plans and specifications.

Each rail section must be attached to as many posts as possible but to at least three posts before being spliced.

Material for rails, post, post base plate, rail splice bar and clamp bar shall be ASTM B-221 Alloy 6061-T6. Material for aluminum rails shall be ASTM B-211 Alloy 6061-T6 or 6262-T9. Material for the aluminum bolts shall be ASTM B-211 Alloy 2024-T3.

Material for aluminum washers and shims shall be ASTM A-209, 1100.
Alclad 2024-T3 for washers and Alclad 1100-0 for shims.

Material for anchor studs shall be an A578 / 275 stainless steel with a minimum ultimate strength of 100,000 psi, a minimum elongation of 14.5 inches of 12% and a minimum reduction of area of 40%. The threaded shell conform to A.S.A. B-11 for UNC threads series, class 2B fil. Threads may be rolled or cut. Diameter of stud shall be not less than pitch diameter of threads. The material for the stainless steel nuts and washers shall be A.S.A. A-193 for stainless steel nuts and washers, type 304, type 304, type 304, finished and shall comply with A.S.A. B-18.2. Threads shall comply with A.S.A. B-11 for UNC thread series, Class 2B fil.

Material for steel nuts shall be A578 / 275 Grade 2, and shall conform to A.S.A. B-18.2. Threads shall comply with A.S.A. B-11 for UNC thread series, class 2B fil.

The anchor bolt assembly plate shall be a flat and true aluminum alloy permanent mold casting complying with ASTM B-108 Alloy 3070 1 or 2. Condition F is acceptable. Suitable alternatives will be considered for approval.

The entire surfaces of anchor bolt assembly shall be primed and the nuts are to be given one shop coat of zinc chromate shop coat paint or red lead shop coat paint.

One shim "A" and one shim "B" are to be furnished for each case, to be used as required.

Material for clamp bar bolt shall be stainless steel 1/4" x 1-1/2". Type B8 (Carbide solution treated) or ASTM A-276 Type 430 (Annealed or cold finished).

Ends of rail sections to be sawed or milled. ~~Not~~ ends to be sawed, smooth and free from burrs or ragged edges.

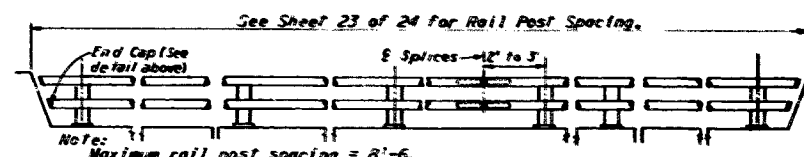
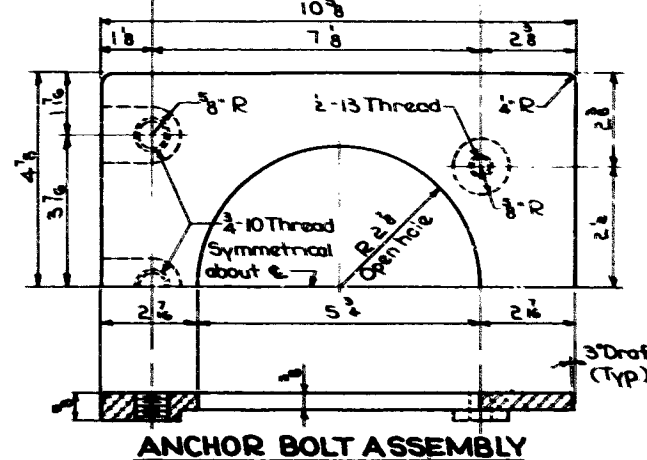
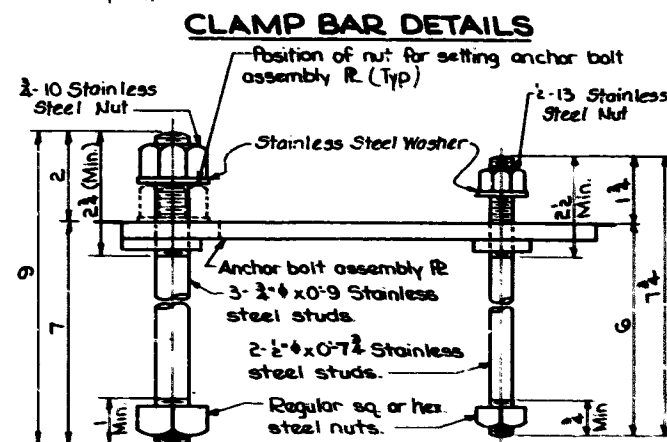
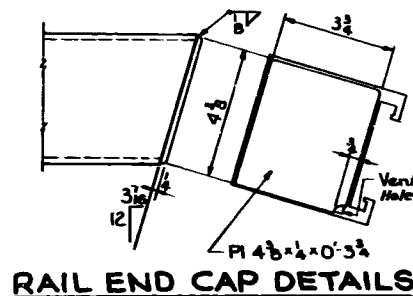
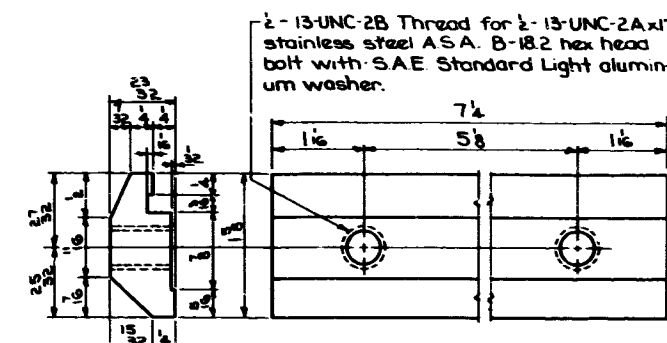
Rail end caps may be either aluminum alloy or steel with sand mold casting.

handling, storage and installation of aluminum hardware shall be in accordance with Section 2614.05 of the Standard Specification Form, except that no caulking will be required.

Material for aluminum rivets shall be 1170 3-32 or 3-32 1170
6061-T6. Rivets shall be 1/4" or 3/8" diam. 100% stress and 100% proof.

A 1" x 1/2" hole is to be provided, 2 inches in from the end of the bolt on side of the end section of the bolt.

Handrail dimensions are measured along a line 3'-0" above the top face of the curb.



DESIGN SPECIFICATIONS:

Designed in accordance with 1964 interim AASHTO Specifications.

ALUMINUM HANDRAIL QUANTITIES	
Northbound Lanes	572.4 L.F.
Southbound Lanes	572.4 L.F.

I-380 OVER 5th AVENUE S.W.

DESIGN FOR 40° OR 27.5° SLEW

**DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
PLATE GIRDER BRIDGE**

53'-0", 77'-9", 88'-3", 53'-0" SPANS

ALUMINUM HANDRAIL DETAILS

STA 105+12.87 @ 1-300 = STA 15+00.00 @ RBL SW AVE SW

PROJECT NO. 1-300-6179201-01-57

LINN COUNTY

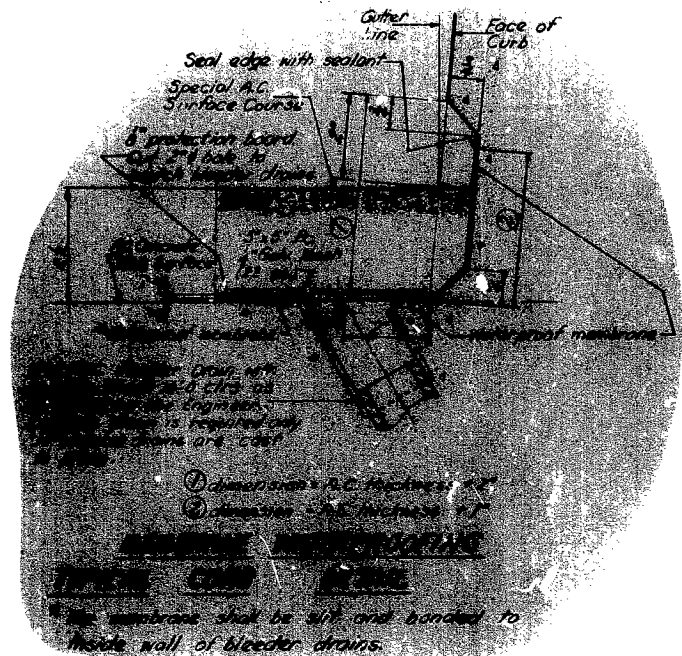
IOWA STATE HIGHWAY COMMISSION

APRIL 1972

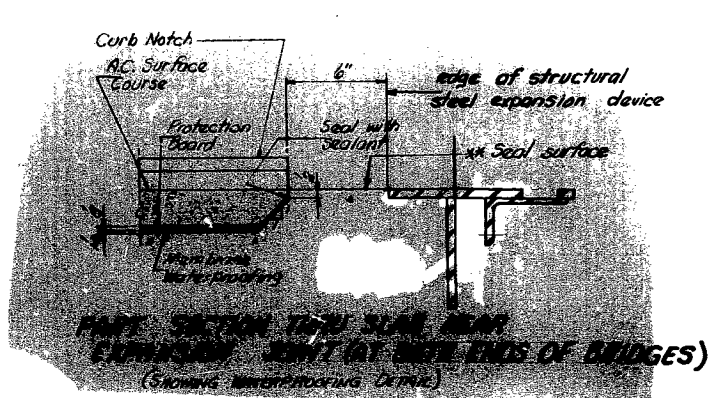
SHEET 24 OF 24

DESIGN NO. 2129 LINN COUNTY FILE 2-4000 SHEET 57 of 12

GENERAL NOTES:
It is the intent of this design (Design 2770A) that deck membrane waterproofing and a special A.C. surface course be installed on these recently completed bridge decks in accordance with the Specifications and the details and/or notes shown on this sheet.
Sheets 2 thru 4 of this plan (Project sheet Nos. 12901-4) are reproductions of the pertinent sheets of the plan used to construct these bridges and are included for informational purposes only. It should be noted that A.C. surface course and the membrane waterproofing indicated on some of the above noted sheets was deleted from the original contract. The bleeder drain pipes were installed as a part of the original contract.
The bridge will not be open to traffic during this contract period.
Porters of the P.C. Concrete roadway surface, which are installed after A.C. surface course is placed, shall be coated with a penetrating sealer such as Silux PE-20, or an approved equal, and shall be applied in accordance with the manufacturer's recommendations at a rate of 100 square feet per gallon when the temperature of the deck surface is above 60° F. The cost of furnishing and applying this sealer is considered incidental to construction and no direct payment will be made therefor.



Note: Slab, bleeder drains and curbs are in place.



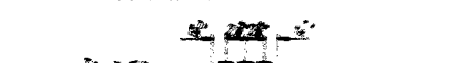
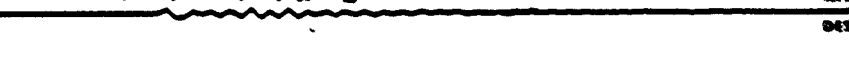
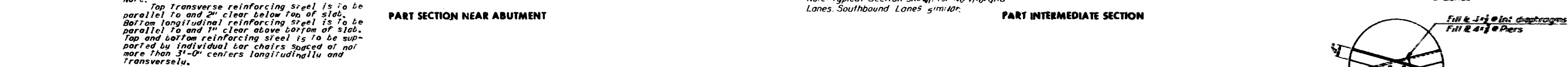
** See General Notes.

SPECIFICATIONS:
Construction: Iowa State Highway Commission Standard Specifications, Series of 1972, plus current supplemental specifications and special provisions and including:
Spec. 738 "Supplemental Specification for Deck Membrane Waterproofing."

TOTAL		ESTIMATED		QUANTITIES	
ITEM NO.	ITEM	UNITS	SOUTHWIND BRIDGE	NORTHWIND BRIDGE	TOTAL
1	Deck Membrane Waterproofing	sq. yds.	1545	1545	3090
2	Deck Membrane Asph. Concr. Surface	tons	206	206	412
3	Asphalt Cement	tons	12	12	24

ITEM NO. ESTIMATE REFERENCE INFORMATION

I-380 OVER 5TH AVENUE SW
Design For 40'06" 27.8' Span
DUAL 26'7"0 x 53'0 CONTINUOUS WELDED
PLATE GIRDER BRIDGE
53'0, 22'9, 89'3, 53'0 Spans
DECK MEMBRANE WATERPROOFING DETAILS
Sta. 385+12.87 E I-380+ Sta. 15+00.00 END 5TH AVE. SW
Project No. I-380-6(39) 261-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION
April, 1973 Design Sheet 1 of 4

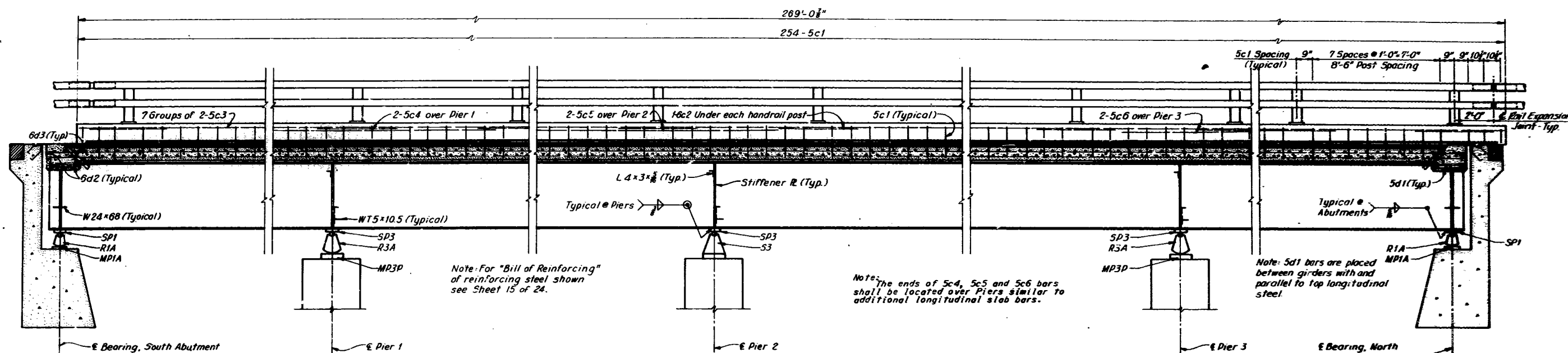


SUPERSTRUCTURE DETAILS

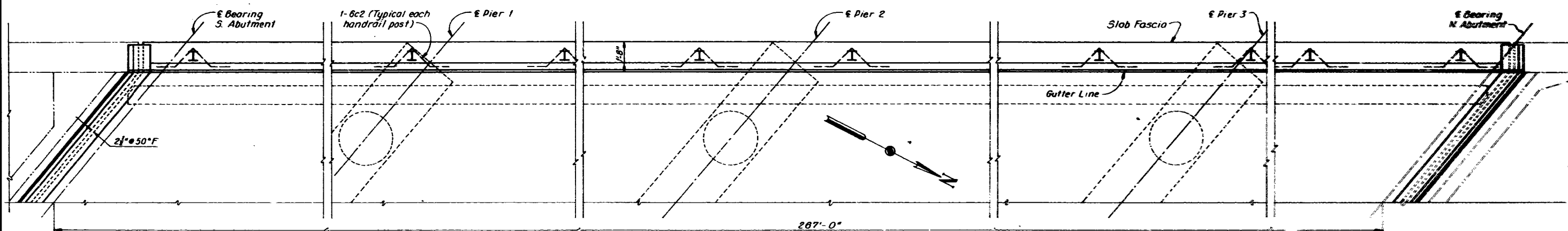
IOWA STATE HIGHWAY COMMISSION
 JUL 1972
 SHEET 3 OF 4

APRIL 1972 SHEET 3 OF 4

DESIGN NO. 2170-A LINCOLN COUNTY FILE 2-4300 SHEET 129 OF 129



PART LONGITUDINAL SECTION NEAR CURB

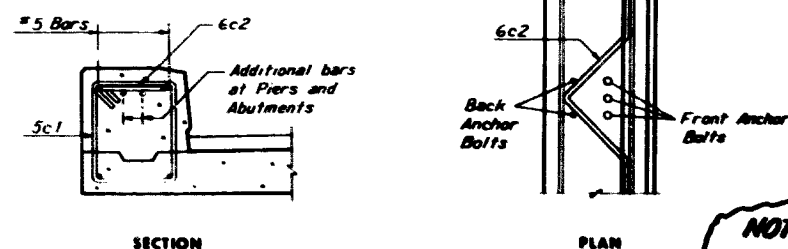


PART PLAN

Note:
Rockets 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

TYPICAL ROCKER SETTING						
Temperature of time of setting	S. ABUTMENT	PIER 1	PIER 2	PIER 3	N. ABUTMENT	
90°F	2 1/4"	1"	1"	1"	1"	2 1/4"
50°F	2 1/4"	0	0	0	0	2 1/4"
10°F	2 1/4"	-1"	-1"	-1"	-1"	2 1/4"

Note:
For detail showing dimension D see Section A-A Sheet 18 of 24.



SECTION

PLAN

CURB REINFORCING DETAIL

NOTE: THIS SHEET INCLUDED FOR INFORMATIONAL PURPOSES ONLY

I-380 OVER 5th AVENUE S.W.
DESIGN FOR 40° 06' 27.5" SKEW
DUAL 267'-0" x 52'-0" CONTINUOUS WELDED
PLATE GIRDER BRIDGE
53'-0" 72'-0" 86'-3" 53'-0" SPANS

SUPERSTRUCTURE DETAILS

STA 305+12.87 TO 313+00.00 OVER 5th AVE S.W.
PROJECT NO. I-380-412-100-01-57
LINN COUNTY

IOWA STATE HIGHWAY COMMISSION

APRIL 1972

SHEET 4 OF 4

DESIGN NO. 2176-A LINN COUNTY FILE 24000 SHEET 429.24 of 429

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
BARNES CITY

MADE C-10 DATE 10/1/71 DESIGNED JPM DATE 10/8/71

2834-28-00