IM-235-2 (313) 8--13-77

BRIDGE REPLACEMENT - STEEL GIRDER

LETTING DATE 10-25-2005

POLK COUNTY

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POLK COUNTY - DESIGN NO. 2406

CONVENTIONAL SIGNS

- DIVIDED HIGHWAY
- PAVED ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTH ROAD
- INTERSTATE HIGHWAY
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY
- RAILROAD
- PIPLINE
- AIRPORT
- HYDROLOGY
- BRIDGE
- STATE BOUNDARY
- COUNTY BOUNDARY
- CORPORATE LIMIT LINE
- TOWNSHIP LINE
- SECTION LINE

Iowa Department of Transportation

Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

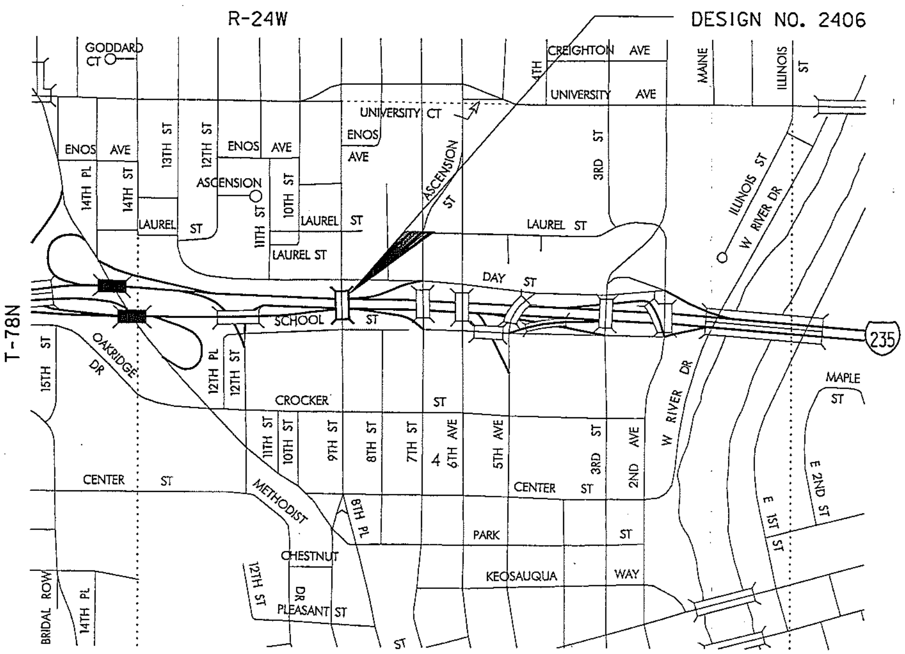
INTERSTATE ROAD SYSTEM

POLK COUNTY

BRIDGE REPLACEMENT - STEEL GIRDER ON 9th ST. OVER I-235

THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2001, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

VALUE ENGINEERING SAVES. REFER TO THE GENERAL NOTES IN THESE PLANS.



PART OF CITY OF DES MOINES

	TOTAL SHEETS
PROJECT NUMBER	
IM-235-2 (313) 8--13-77	
R.O.W. PROJECT NUMBER	
PROJECT IDENTIFICATION NUMBER	
99-77-235-332-05	

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
1A	REVISION SHEET
2	BRIDGE ESTIMATE SHEET
2A	BRIDGE GENERAL NOTES
2-42	BRIDGE DESIGN NO. 2406
43	UTILITY ESTIMATE SHEET
43-44	UTILITY SHEETS
45-50	FENCE SHEETS
51	CIP WALL ESTIMATE SHEET
51-57	CIP WALL DESIGN NO. 2606

INDEX OF SEALS

SHEET NO.	NAME	TYPE
1	ROBERT A. MAGLIOLA	STRUCTURAL DESIGN
5	KOLE C. BERG	GEOTECHNICAL DESIGN
45	WILLIAM D. TUCKER	STRUCTURAL DESIGN

REVISIONS

1/22/07, SEE SHEET 1A
4/25/07, SEE SHEET 1A

DESIGN DATA URBAN (I-235)

1996 AADT	48,500	V.P.D.
2025 AADT	74,100	V.P.D.
TRUCKS	8%	

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER Robert A. Magliola 15398 IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Robert A. Magliola 4/25/07
Signature Date

Robert A. Magliola
Printed or Typed Name

My license renewal date is December 31, 2007

Pages or sheets covered by this seal: 1, 2, 2A, 3, 4, 6-44, 51-57

THESE PLANS WERE PREPARED FOR THE IOWA DEPARTMENT OF TRANSPORTATION BY: PARSONS

ALL WORKING DRAWINGS INCLUDING SHOP DRAWINGS AND FALSEWORK DRAWINGS WILL BE REVIEWED BY:

PARSONS
10 SOUTH RIVERSIDE, SUITE 400
CHICAGO, IL 60606

PROJECT DIRECTORY NAME: 77235180C96 - SECTION 5

DESIGN TEAM:	METRIC	IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES	FILE NO. 29552	POLK COUNTY	PROJECT NUMBER IM-235-2 (313) 8--13-77	SHEET NUMBER 1

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LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS	DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
1-22-07	2, 11	REVISED PIER FOOTING CONCRETE QUANTITY			
4-25-07		REVISIONS FOR NEW SEPARATION BARRIER			
	2	REVISED EPOXY COATED REINFORCING STEEL AND HIGH PERFORMANCE STRUCTURAL CONCRETE QUANTITIES AND ERI NOTES			
	2A	REVISED BARRIER RAIL NOTE			
	13, 14, 17, 18, 19	REVISED SEPARATION BARRIER AND DIMENSIONS IN PART ELEVATIONS AND SECTIONS			
	34	REVISED SEPARATION BARRIER, SIDEWALK AND DIMENSIONS			
	35	REVISED BAR LIST AND QUANTITIES			
	37	REVISED SEPARATION BARRIER PLAN AND DIMENSIONS			
	39	REVISED ENTIRE SHEET			
	39A	sheeT added.			

POLK COUNTY
DESIGN NO. 2406
REVISION SHEET
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

FILE NO. 29552 | POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 1A

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IM-235-2 (313) 8--13-77
BRIDGE REPLACEMENT - STEEL GIRDER
LETTING DATE 10-25-05
POLK COUNTY

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POLK COUNTY - DESIGN NO. 2406

Iowa Department of Transportation
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

INTERSTATE ROAD SYSTEM
POLK COUNTY

BRIDGE REPLACEMENT - STEEL GIRDER ON 9th ST. OVER I-235

CONVENTIONAL SIGNS

- DIVIDED HIGHWAY
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VALUE ENGINEERING SAVES. REFER TO THE GENERAL NOTES IN THESE PLANS.

R-24W

DESIGN NO. 2406

T-78N

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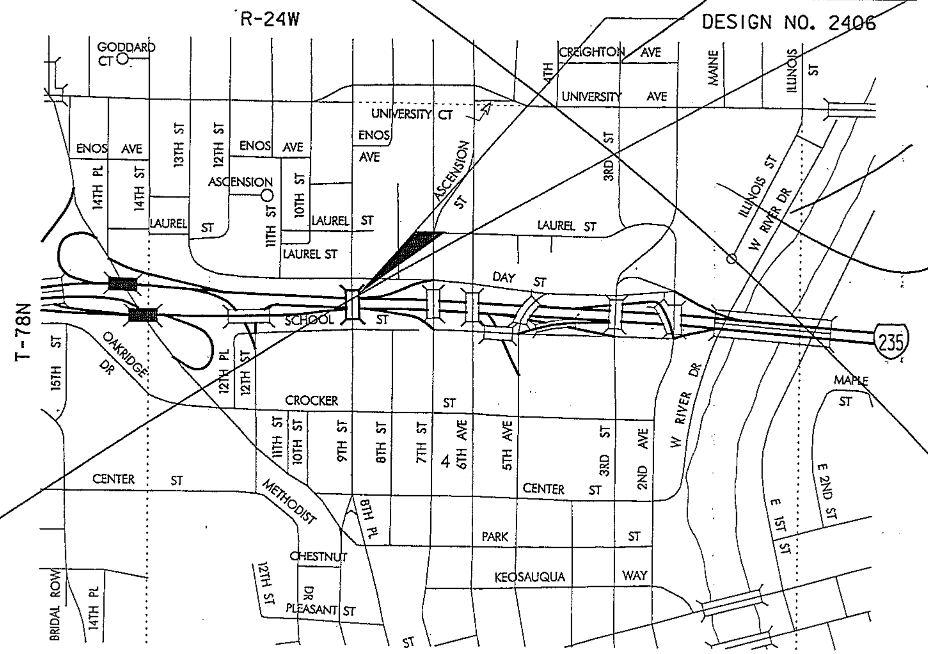

PART OF CITY OF DES MOINES

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10 SOUTH RIVERSIDE, SUITE 400
CHICAGO, IL 60606

PROJECT DIRECTORY NAME: 77235180C96 - SECTION 5

TOTAL SHEETS
PROJECT NUMBER
IM-235-2 (313) 8--13-77
R.O.W. PROJECT NUMBER
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99-77-235-332-05

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DESIGN DATA URBAN (I-235)

1996	AADT	48,500	V.P.D.
2025	AADT	74,100	V.P.D.
TRUCKS		8%	

REVISIONS

1/22/07, SEE SHEET 1A

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER Robert A. Magliola 15398 IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Robert A. Magliola 1/23/07
Signature Date
Robert A. Magliola
Printed or Typed Name

My license renewal date is December 31, 2007

Pages or sheets covered by this seal: 1, 2, 2A, 3, 4, 6-44, 51-57

DESIGN TEAM: | METRIC | IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES | FILE NO. 29552 | POLK COUNTY | PROJECT NUMBER IM-235-2 (313) 8--13-77 | SHEET NUMBER 1

IM-235-2 (313) 8--13-77
BRIDGE REPLACEMENT - STEEL GIRDER
LETTING DATE 10/25/2005

POLK COUNTY

POLK COUNTY - DESIGN NO. 2406

POLK 2406, 2606 ⓔ

CONVENTIONAL SIGNS

- DIVIDED HIGHWAY
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Iowa Department of Transportation
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

INTERSTATE ROAD SYSTEM

POLK COUNTY

BRIDGE REPLACEMENT - STEEL GIRDER ON 9th ST. OVER I-235

TOTAL SHEETS
PROJECT NUMBER
IM-235-2 (313) 8--13-77
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99-77-235-332-05

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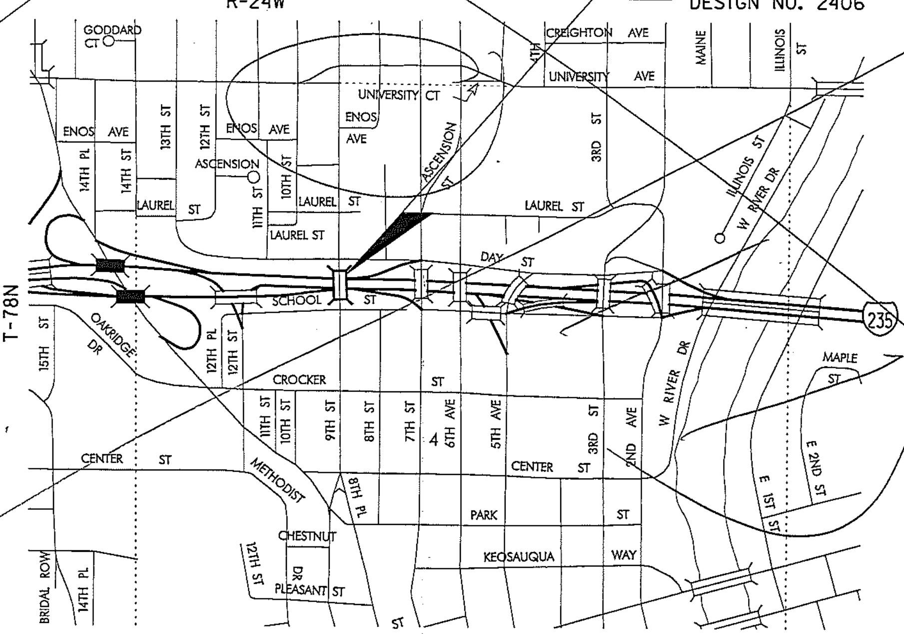

DESIGN DATA URBAN (I-235)

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2025 AADT	74,100	V.P.D.
TRUCKS	8%	

REVISIONS

STRUCTURAL DESIGN

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LICENSED PROFESSIONAL ENGINEER Robert A. Magliola 15398 IOWA

Robert A. Magliola 6/16/05
Signature Date
Robert A. Magliola
Printed or Typed Name

My license renewal date is December 31, 2005

Pages or sheets covered by this seal: 1, 2, 2A, 3, 4, 6-44, 51-57

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PARSONS
10 SOUTH RIVERSIDE, SUITE 400
CHICAGO, IL 60606

7 EKJ

PART OF CITY OF DES MOINES

250

PROJECT DIRECTORY NAME: 77235180C96 - SECTION 5

DESIGN TEAM:	METRIC	IOWA DOT * OFFICE OF BRIDGES AND STRUCTURES	FILE NO. 29552	POLK COUNTY	PROJECT NUMBER IM-235-2 (313) 8--13-77	SHEET NUMBER 1

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77-2352-269

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
1-22-07	2, 11	REVISED PIER FOOTING CONCRETE QUANTITY

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS

POLK COUNTY
DESIGN NO. 2406
REVISION SHEET
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

FILE NO. 29552

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 1A

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ESTIMATED BRIDGE QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2301--991100	LONGITUDINAL GROOVING IN CONCRETE	m^2	1660.0	
2	2402--120000	EXCAVATION, CLASS 20	m^3	198.0	
3	2403--100010	STRUCTURAL CONCRETE (BRIDGE)	m^3	~~87.5~~ 110.2	
4	2403--300210	HIGH PERFORMANCE STRUCTURAL CONCRETE	m^3	~~809.4~~ 806.9	
5	2403--300220	TRIAL BATCH HIGH PERFORMANCE STRUCTURAL CONCRETE	LS	1.0	
6	2404--100100	REINFORCING STEEL	kg	64097	
7	2404--100200	REINFORCING STEEL, EPOXY COATED	kg	~~143319~~ 139799	
8	2408--100000	STRUCTURAL STEEL	kg	297876	
9	2414--001410	CONCRETE BARRIER, REINFORCED, SEPARATION	m	190.150	
10	2414--020010	CONCRETE PARAPET, FENCE	m	199.089	
11	2414--020020	STEEL FENCE, WELDED WIRE MESH	m	193.8	
12	2501--490760	CONCRETE DRILLED SHAFT, 760 mm DIAMETER	m	168.3	
13	2501--490910	CONCRETE DRILLED SHAFT, 910 mm DIAMETER	m	228.13	
14	2501--500012	LOAD CELL TEST	EACH	1.0	
15	2501--500014	DEMONSTRATION SHAFT	m	20.0	
16	2501--600600	PILE CASING, CORRUGATED METAL PIPE, 600 mm	m	142.4	
17	2507--004000	ENGINEERING FABRIC	m^2	110.0	
18	2526--001000	CONSTRUCTION SURVEY	LS	1.0	
19	2533--100000	MOBILIZATION	LS	1.0	
20	2599--999901	PILES, FURNISH STEEL BEARING, HP310x125	m	202.4	
21	2601--108400	SLOPE PROTECTION WASHED GRAVEL	m^2	100.0	

ITEM NO.	ESTIMATE REFERENCE INFORMATION
2	INCLUDES EXCAVATION NECESSARY TO CONSTRUCT NEW PIERS. EXCAVATION AT THE ABUTMENTS IS INCLUDED IN THE ROADWAY PLANS.
3	ALL PIER FOOTING AND ABUTMENT FOOTING CONCRETE IS CLASS "C". INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL AND SUBDRAIN OUTLET AT ABUTMENTS. INCLUDES ~~22.8~~ 45.5 m^3 OF PIER FOOTING CONCRETE f'c = 28 MPa AND 64.7 m^3 OF ABUTMENT FOOTING CONCRETE f'c = 24 MPa. INCLUDES 12 m OF 38 mm DIA. AND 6.4 m OF 89 mm DIA. RIGID STEEL CONDUIT AT PIER 2.
4	INCLUDES ~~630.6~~ 628.1 m^3 OF DECK, SIDEWALK AND ABUTMENT DIAPHRAGM CONCRETE, f'c = 31 MPa AND 178.8 m^3 OF PIER COLUMN AND CAP CONCRETE, f'c = 28 MPa. INCLUDES ANCHOR BOLTS AND PLATES AT LIGHT POLE BASE.
8	INCLUDES GIRDER SOLE PLATES, BEARING MASONRY PLATES, SHIM PLATES, SWEDGE ANCHORS AND LEAD SHEETS AT PIER BEARINGS.
9 & 10	IF PLACEMENT OF CONCRETE IS DONE BY THE SLIPFORMING METHOD, CLASS BR CONCRETE IS REQUIRED. ~~WHEN CLASS D CONCRETE IS USED FOR CONCRETE BARRIER RAILS, THE CAST-IN-PLACE (FIXED FORM) METHOD OF PLACEMENT WILL BE REQUIRED.~~ CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF CAST-IN-PLACE FORMS IF REQUIRED FOR PLACEMENT OF THE CONCRETE.
10	INCLUDES 447 m OF 51 mm DIA. RIGID STEEL CONDUIT. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS.
12 - 15	REFER TO THE SUPPLEMENTAL SPECIFICATION FOR CONCRETE DRILLED SHAFT FOR FURTHER INSTRUCTION.
16	INCLUDES ALL COSTS FOR FURNISHING AND PLACING CMP, BLOCKING AND BENTONITE FILL AT ABUTMENTS.
20	INCLUDES FURNISHING AND PLACING STEEL H-PILES, GRADE 345 AS DESCRIBED IN THESE PLANS. THE QUANTITY FOR WHICH PAYMENT WILL BE MADE WILL BE THE QUANTITY SHOWN IN THE PLANS. BASIS OF PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER METER.
21	PAYMENT WILL BE MADE ON A SQUARE METER BASIS FOR SLOPE PROTECTION CONSTRUCTED. THE UNIT PRICE BID PER SQUARE METER SHALL INCLUDE ALL COST FOR MATERIAL AND LABOR REQUIRED TO CONSTRUCT THE SLOPE PROTECTION SHOWN IN THESE PLANS.

DESIGN HISTORY AT THIS SITE

DESIGN NO.	TYPE OF WORK
1159	ORIGINAL DESIGN
3265	DECK OVERLAY REPAIR
2692	PIER COLUMN REPAIR
794	DECK OVERLAY REPAIR, C.I.P RAIL & FENCE
2406	REPLACE BRIDGE

TRAFFIC CONTROL NOTE:

REFER TO THE TRAFFIC CONTROL PLAN SHOWN IN IM-NHS-235-2(269)7--03-77.

POLLUTION PREVENTION PLAN IS SHOWN IN IM-NHS-235-2(269)7--03-77.

ROADWAY QUANTITIES ARE SHOWN IN IM-NHS-235-2(269)7--03-77.

SPECIFICATIONS :

DESIGN: AASHTO SERIES OF 1996 PLUS 1997, 1998, 1999, 2000 AND 2002 INTERIM SPECIFICATIONS. ALLOWABLE STRESSES AND LOADING INFORMATION HAVE BEEN CONVERTED TO METRIC.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY & BRIDGE CONSTRUCTION, SERIES OF 2001, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDING SUPPLEMENTAL SPECIFICATIONS FOR "CONCRETE DRILLED SHAFT" AND "CLEANING, SURFACE PREPARATION AND PAINTING OF GALVANIZED SURFACES", DEVELOPMENTAL SPECIFICATIONS FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" AND "WATER MAIN (DES MOINES WATER WORKS)" AND SPECIAL PROVISIONS FOR "WATER MAIN BRIDGE CROSSING (DES MOINES WATER WORKS)" SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES :

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1996 PLUS 1997, 1998, 1999, 2000 AND 2002 INTERIM SPECIFICATIONS. DESIGN STRESS INFORMATION HAS BEEN CONVERTED TO METRIC.

REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 400.

CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 24 MPa, EXCEPT AS NOTED.

ALL PIER DRILLED SHAFT CONCRETE IS TO HAVE A 28 DAY STRENGTH OF f'c = 24 MPa.
ALL PIER FOOTING CONCRETE IS TO HAVE A 28 DAY DESIGN STRENGTH OF f'c = 28 MPa.
ALL PIER COLUMN AND CAP CONCRETE IS TO HAVE A 28 DAY DESIGN STRENGTH OF f'c = 28 MPa.
ALL DECK AND BARRIER RAIL CONCRETE IS TO HAVE A 28 DAY DESIGN STRENGTH OF f'c = 31 MPa.

STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 10. ASTM A 709M, GRADE 345W, FATIGUE STRESS CYCLES BASED ON CASE II.

STRUCTURAL STEEL H-PILES IN ACCORDANCE WITH SECTION 10. ASTM A 572M, GRADE 345.

REVISED 1/22/07, FOOTING CONCRETE QUANTITY
REVISED 4/25/07, SEPARATION BARRIER

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

NOTES & QUANTITIES I

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s01

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 2

GENERAL NOTES :

THIS DESIGN INVOLVES THE CONSTRUCTION OF A 94.0 m x VARIABLE WIDTH CONTINUOUS WELDED PLATE GIRDER BRIDGE ON 9TH STREET OVER I-235.

THE CONSTRUCTION SEQUENCE FOR THIS BRIDGE SHALL BE IN ACCORDANCE WITH THE STAGING NOTE IN THE ROADWAY PLANS, IM-NHS-235-2(269)7--03-77. DELAY IN THE CONSTRUCTION OF CERTAIN BRIDGE COMPONENTS WILL BE REQUIRED TO FACILITATE THE CONSTRUCTION OF THE ADJACENT ROADWAY. REFER TO IM-NHS-235-2(269)7--03-77 FOR THE REQUIRED SEQUENCE.

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

THE CITY AND UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THIS BRIDGE IS DESIGNED FOR MS18 LOADING, PLUS 960 Pa FOR FUTURE WEARING SURFACE.

THE BRIDGE CONTRACTOR IS ENCOURAGED TO TAKE FULL ADVANTAGE OF SPECIFICATION 1105.15 -- VALUE ENGINEERING INCENTIVE PROPOSAL. PAMPHLET AND CONCEPTUAL PROPOSAL FORM WILL BE AVAILABLE AT THE PRECONSTRUCTION CONFERENCE.

ALL DIMENSIONS IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.

ALL ELEVATIONS ON THESE PLANS SHOWN IN METERS (m).

ALL STATIONS SHOWN IN METERS (m).

IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

SLOUGHING OF EARTH FROM UNDER AN ACTIVE TRAFFIC LANE WILL NOT BE PERMITTED. IF TEMPORARY SHORING (SHEET PILE OR OTHER) IS NECESSARY TO PREVENT THE EARTH UNDER A TRAFFIC LANE, OR AT ANOTHER LOCATION, FROM SLOUGHING IN DURING CONSTRUCTION, THE CONTRACTOR WILL SUBMIT A SHORING PLAN TO THE ENGINEER FOR APPROVAL. COST OF SHORING, IF REQUIRED, WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO DIRECT PAYMENT WILL BE MADE. ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. SHORING IS TO BE REMOVED ONLY AFTER BACKFILLING HAS BEEN COMPLETED.

SUBSTRUCTURE CONCRETE SHALL BE PROTECTED FROM STAINING BY A WRAPPING OF POLYETHYLENE OR SIMILAR MATERIALS WHICH SHALL BE LEFT IN PLACE AND KEPT IN A SERVICEABLE CONDITION UNTIL AFTER THE DECK HAS BEEN PLACED. IF SUBSTRUCTURE CONCRETE IS STAINED, THE STAINS SHALL BE REMOVED BY METHODS APPROVED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH THE PROTECTION AND ANY REQUIRED CLEANING OF THE SUBSTRUCTURE CONCRETE SHALL BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL STEEL".

THIS STRUCTURE SHALL BE BUILT WITH WEATHERING STEEL. ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709M GRADE 345W. PAINTING REQUIREMENTS FOR THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION 2408.30.

CONCRETE BARRIER RAILS PLACED USING THE SLIP FORM METHOD WILL REQUIRE THE USE OF A CLASS BR CONCRETE IN ACCORDANCE WITH ARTICLE 2513.03B OF THE STANDARD SPECIFICATION. ~~CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILS PLACED USING THE SLIPFORM METHOD.~~

CAST-IN-PLACE BARRIER RAILS SHALL USE CLASS C MIX. CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILS (CAST-IN-PLACE OR SLIPFORMED METHOD).

RUSTICATION GROOVE DETAILS ARE SHOWN IN THE PLANS. THE CONTRACTOR SHALL SUBMIT RUSTICATION GROOVE LAYOUTS FOR ALL REQUIRED SURFACES TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. ALL COST ASSOCIATED WITH CONCRETE RUSTICATIONS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "HIGH PERFORMANCE STRUCTURAL CONCRETE".

ALL COARSE AGGREGATE FOR STRUCTURAL CONCRETE SHALL BE CRUSHED LIMESTONE.

ORIGINAL DESIGN DRAWINGS INDICATE THAT BATTERED PILES AT EXISTING PIER FOUNDATIONS ARE BATTERED 0.167m/m AND ARE 9.14 m LONG. GIVEN UNKNOWN CONSTRUCTION TOLERANCES AND THE PROXIMITY OF THE FOOTING TO THE DRILLED SHAFTS, THE CONTRACTOR SHOULD BE PREPARED TO ENCOUNTER WOOD PILES DURING DRILLING AND INCLUDE THE COST IN "CONCRETE DRILLED SHAFT, 910 mm DIA."

CONSTRUCTION ACTIVITIES NEAR THE ESTES PROPERTY (944 - 9TH ST.), THE BERRY PROPERTY (1039 - 9TH ST.), AND FORMER FIRE STATION #4 (1041 - 8TH ST.) SHALL NOT CREATE VIBRATIONS IN EXCESS OF A PEAK PARTICLE VELOCITY OF 0.13 INCH/SEC. THE IOWA DOT WILL INSTALL MONITORING DEVICES (SEISMOGRAPHS) AND CONTINUOUSLY MONITOR VIBRATIONS (PEAK PARTICLE VELOCITY) DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL IMMEDIATELY SHUT DOWN OPERATIONS IF THE PEAK PARTICLE VELOCITY THRESHOLD IS REACHED OR EXCEEDED (VIBRATION EVENT). THE SHUT DOWN WILL REMAIN IN EFFECT UNTIL THE CAUSE OF THE VIBRATION EVENT IS IDENTIFIED AND ALTERNATE EQUIPMENT OR METHODS APPROVED BY THE ENGINEER ARE IN PLACE. THERE WILL BE NO COMPENSATION FOR DOWNTIME AS THE RESULT OF EXCEEDING THE NOTED VIBRATION LIMIT. THERE WILL BE NO COMPENSATION FOR ADJUSTMENT OF PROCESS OR EQUIPMENT TO REDUCE VIBRATION LEVELS TO MEET THE NOTED VIBRATION LIMIT. ALL CONSTRUCTION ACTIVITY AFTER RESUMPTION REMAINS GOVERNED BY THE PREVIOUSLY STATED MAXIMUM PPV VALUE (0.13 INCH/SEC.).

THE CONTRACTOR SHALL PROVIDE A PRE-CONSTRUCTION PLAN 30 DAYS PRIOR TO INITIAL CONSTRUCTION IN THE 9TH ST. AREA. THE PLAN SHALL DESCRIBE THE FOLLOWING:

1. CONSTRUCTION METHODS AND EQUIPMENT THAT WILL BE USED TO MINIMIZE VIBRATION.
2. ALTERNATIVE EQUIPMENT AND METHODS TO BE USED IN CASE OF A VIBRATION EVENT.
3. SITE COMMUNICATIONS METHODS AND EQUIPMENT.
4. DAILY ACTIVITY LOGGING TO ENSURE TIMELY SHUT DOWN AND IDENTIFICATION OF CAUSE.

THE IOWA DOT AND ITS SEISMIC CONSULTANT WILL DETERMINE THE LOCATION OF THE MONITORING DEVICES (SEISMOGRAPHS).

THE CONTRACTOR SHALL PLACE A CHAIN LINK FENCE BETWEEN THE CONSTRUCTION AREA AND THE ESTES PROPERTY (944 - 9TH ST.).

REVISED 4/25/07, SEPARATION BARRIER

DESIGN FOR 6°36'00" SKEW (L.A.)
94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK
25.300m, 31.600, 37.100 SPANS
NOTES & QUANTITIES II
STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)
OCTOBER 2005
POLK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 1A OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s01a

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 2A

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ESTIMATED BRIDGE QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2301--991100	LONGITUDINAL GROOVING IN CONCRETE	m^2	1660.0	
2	2402--120000	EXCAVATION, CLASS 20	m^3	198.0	
3	2403--100010	STRUCTURAL CONCRETE (BRIDGE)	m^3	110.2	
4	2403--300210	HIGH PERFORMANCE STRUCTURAL CONCRETE	m^3	809.4	
5	2403--300220	TRIAL BATCH HIGH PERFORMANCE STRUCTURAL CONCRETE	LS	1.0	
6	2404--100100	REINFORCING STEEL	kg	64097	
7	2404--100200	REINFORCING STEEL, EPOXY COATED	kg	143319	
8	2408--100000	STRUCTURAL STEEL	kg	297876	
9	2414--001410	CONCRETE BARRIER, REINFORCED, SEPARATION	m	190.150	
10	2414--020010	CONCRETE PARAPET, FENCE	m	199.089	
11	2414--020020	STEEL FENCE, WELDED WIRE MESH	m	193.8	
12	2501--490760	CONCRETE DRILLED SHAFT, 760 mm DIAMETER	m	168.3	
13	2501--490910	CONCRETE DRILLED SHAFT, 910 mm DIAMETER	m	228.13	
14	2501--500012	LOAD CELL TEST	EACH	1.0	
15	2501--500014	DEMONSTRATION SHAFT	m	20.0	
16	2501--600600	PILE CASING, CORRUGATED METAL PIPE, 600 mm	m	142.4	
17	2507--004000	ENGINEERING FABRIC	m^2	110.0	
18	2526--001000	CONSTRUCTION SURVEY	LS	1.0	
19	2533--100000	MOBILIZATION	LS	1.0	
20	2599--999901	PILES, FURNISH STEEL BEARING, HP310x125	m	202.4	
21	2601--108400	SLOPE PROTECTION WASHED GRAVEL	m^2	100.0	

ESTIMATE REFERENCE INFORMATION

ITEM NO.	
2	INCLUDES EXCAVATION NECESSARY TO CONSTRUCT NEW PIERS. EXCAVATION AT THE ABUTMENTS IS INCLUDED IN THE ROADWAY PLANS.
3	ALL PIER FOOTING AND ABUTMENT FOOTING CONCRETE IS CLASS "C". INCLUDES FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL AND SUBDRAIN OUTLET AT ABUTMENTS. INCLUDES 45.5 m^3 OF PIER FOOTING CONCRETE f'c = 28 MPa AND 64.7 m^3 OF ABUTMENT FOOTING CONCRETE f'c = 24 MPa. INCLUDES 12 m OF 38 mm DIA. AND 6.4 m OF 89 mm DIA. RIGID STEEL CONDUIT AT PIER 2.
4	INCLUDES 630.6 m^3 OF DECK, SIDEWALK AND ABUTMENT DIAPHRAGM CONCRETE, f'c = 31 MPa AND 178.8 m^3 OF PIER COLUMN AND CAP CONCRETE, f'c = 28 MPa. INCLUDES ANCHOR BOLTS AND PLATES AT LIGHT POLE BASE.
8	INCLUDES GIRDER SOLE PLATES, BEARING MASONRY PLATES, SHIM PLATES, SWEDGE ANCHORS AND LEAD SHEETS AT PIER BEARINGS.
9 & 10	IF PLACEMENT OF CONCRETE IS DONE BY THE SLIPFORMING METHOD, CLASS BR CONCRETE IS REQUIRED. WHEN CLASS D CONCRETE IS USED FOR CONCRETE BARRIER RAILS, THE CAST-IN-PLACE (FIXED FORM) METHOD OF PLACEMENT WILL BE REQUIRED. PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF CAST-IN-PLACE FORMS IF REQUIRED FOR PLACEMENT OF THE CONCRETE.
10	INCLUDES 447 m OF 51 mm DIA. RIGID STEEL CONDUIT. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH PROVIDING AND INSTALLING RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS.
12 - 15	REFER TO THE SUPPLEMENTAL SPECIFICATION FOR CONCRETE DRILLED SHAFT FOR FURTHER INSTRUCTION.
16	INCLUDES ALL COSTS FOR FURNISHING AND PLACING CMP, BLOCKING AND BENTONITE FILL AT ABUTMENTS.
20	INCLUDES FURNISHING AND PLACING STEEL H-PILES, GRADE 345 AS DESCRIBED IN THESE PLANS. THE QUANTITY FOR WHICH PAYMENT WILL BE MADE WILL BE THE QUANTITY SHOWN IN THE PLANS. BASIS OF PAYMENT WILL BE AT THE CONTRACT UNIT PRICE PER METER.
21	PAYMENT WILL BE MADE ON A SQUARE METER BASIS FOR SLOPE PROTECTION CONSTRUCTED. THE UNIT PRICE BID PER SQUARE METER SHALL INCLUDE ALL COST FOR MATERIAL AND LABOR REQUIRED TO CONSTRUCT THE SLOPE PROTECTION SHOWN IN THESE PLANS.

DESIGN HISTORY AT THIS SITE

DESIGN NO.	TYPE OF WORK
1159	ORIGINAL DESIGN
3265	DECK OVERLAY REPAIR
2692	PIER COLUMN REPAIR
794	DECK OVERLAY REPAIR, C.I.P RAIL & FENCE
2406	REPLACE BRIDGE

TRAFFIC CONTROL NOTE:

REFER TO THE TRAFFIC CONTROL PLAN SHOWN IN IM-NHS-235-2(269)7--03-77.

POLLUTION PREVENTION PLAN IS SHOWN IN IM-NHS-235-2(269)7--03-77.

ROADWAY QUANTITIES ARE SHOWN IN IM-NHS-235-2(269)7--03-77.

SPECIFICATIONS :

DESIGN: AASHTO SERIES OF 1996 PLUS 1997, 1998, 1999, 2000 AND 2002 INTERIM SPECIFICATIONS. ALLOWABLE STRESSES AND LOADING INFORMATION HAVE BEEN CONVERTED TO METRIC.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY & BRIDGE CONSTRUCTION, SERIES OF 2001, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDING SUPPLEMENTAL SPECIFICATIONS FOR "CONCRETE DRILLED SHAFT" AND "CLEANING, SURFACE PREPARATION AND PAINTING OF GALVANIZED SURFACES", DEVELOPMENTAL SPECIFICATIONS FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" AND "WATER MAIN (DES MOINES WATER WORKS)" AND SPECIAL PROVISIONS FOR "WATER MAIN BRIDGE CROSSING (DES MOINES WATER WORKS)" SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES :

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1996 PLUS 1997, 1998, 1999, 2000 AND 2002 INTERIM SPECIFICATIONS. DESIGN STRESS INFORMATION HAS BEEN CONVERTED TO METRIC.

REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 400.

CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 24 MPa, EXCEPT AS NOTED.

ALL PIER DRILLED SHAFT CONCRETE IS TO HAVE A 28 DAY STRENGTH OF f'c = 24 MPa.
ALL PIER FOOTING CONCRETE IS TO HAVE A 28 DAY DESIGN STRENGTH OF f'c = 28 MPa.
ALL PIER COLUMN AND CAP CONCRETE IS TO HAVE A 28 DAY DESIGN STRENGTH OF f'c = 28 MPa.
ALL DECK AND BARRIER RAIL CONCRETE IS TO HAVE A 28 DAY DESIGN STRENGTH OF f'c = 31 MPa.

STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 10. ASTM A 709M, GRADE 345W, FATIGUE STRESS CYCLES BASED ON CASE II.

STRUCTURAL STEEL H-PILES IN ACCORDANCE WITH SECTION 10. ASTM A 572M, GRADE 345.

REVISED 1/22/07, FOOTING CONCRETE QUANTITY

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

NOTES & QUANTITIES I

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235) OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s01

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 2

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ESTIMATED BRIDGE QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
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3	2403--100010	STRUCTURAL CONCRETE (BRIDGE)	m^3	87.5	
4	2403--300210	HIGH PERFORMANCE STRUCTURAL CONCRETE	m^3	809.4	
5	2403--300220	TRIAL BATCH HIGH PERFORMANCE STRUCTURAL CONCRETE	LS	1.0	
6	2404--100100	REINFORCING STEEL	kg	64097	
7	2404--100200	REINFORCING STEEL, EPOXY COATED	kg	143319	
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11	2414--020020	STEEL FENCE, WELDED WIRE MESH	m	193.8	
12	2501--490760	CONCRETE DRILLED SHAFT, 760 mm DIAMETER	m	168.3	
13	2501--490910	CONCRETE DRILLED SHAFT, 910 mm DIAMETER	m	228.13	
14	2501--500012	LOAD CELL TEST	EACH	1.0	
15	2501--500014	DEMONSTRATION SHAFT	m	20.0	
16	2501--600600	PILE CASING, CORRUGATED METAL PIPE, 600 mm	m	142.4	
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ITEM NO. — ESTIMATE REFERENCE INFORMATION

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9 & 10 — IF PLACEMENT OF CONCRETE IS DONE BY THE SLIPFORMING METHOD, CLASS BR CONCRETE IS REQUIRED. WHEN CLASS D CONCRETE IS USED FOR CONCRETE BARRIER RAILS, THE CAST-IN-PLACE (FIXED FORM) METHOD OF PLACEMENT WILL BE REQUIRED. PRICE BID FOR THIS ITEM SHALL INCLUDE THE COST OF CAST-IN-PLACE FORMS IF REQUIRED FOR PLACEMENT OF THE CONCRETE.

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12 - 15 — REFER TO THE SUPPLEMENTAL SPECIFICATION FOR CONCRETE DRILLED SHAFT FOR FURTHER INSTRUCTION.

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21 — PAYMENT WILL BE MADE ON A SQUARE METER BASIS FOR SLOPE PROTECTION CONSTRUCTED. THE UNIT PRICE BID PER SQUARE METER SHALL INCLUDE ALL COST FOR MATERIAL AND LABOR REQUIRED TO CONSTRUCT THE SLOPE PROTECTION SHOWN IN THESE PLANS.

DESIGN HISTORY AT THIS SITE

DESIGN NO.	TYPE OF WORK
1159	ORIGINAL DESIGN
3265	DECK OVERLAY REPAIR
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TRAFFIC CONTROL NOTE:

REFER TO THE TRAFFIC CONTROL PLAN SHOWN IN IM-NHS-235-2(269)7--03-77.

POLLUTION PREVENTION PLAN IS SHOWN IN IM-NHS-235-2(269)7--03-77.

ROADWAY QUANTITIES ARE SHOWN IN IM-NHS-235-2(269)7--03-77.

SPECIFICATIONS :

DESIGN: AASHTO SERIES OF 1996 PLUS 1997, 1998, 1999, 2000 AND 2002 INTERIM SPECIFICATIONS. ALLOWABLE STRESSES AND LOADING INFORMATION HAVE BEEN CONVERTED TO METRIC.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY & BRIDGE CONSTRUCTION, SERIES OF 2001, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDING SUPPLEMENTAL SPECIFICATIONS FOR "CONCRETE DRILLED SHAFT" AND "CLEANING, SURFACE PREPARATION AND PAINTING OF GALVANIZED SURFACES", DEVELOPMENTAL SPECIFICATIONS FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" AND "WATER MAIN (DES MOINES WATER WORKS)" AND SPECIAL PROVISIONS FOR "WATER MAIN BRIDGE CROSSING (DES MOINES WATER WORKS)" SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

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STRUCTURAL STEEL H-PILES IN ACCORDANCE WITH SECTION 10. ASTM A 572M, GRADE 345.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

NOTES & QUANTITIES I

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s01

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 2

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GENERAL NOTES :

THIS DESIGN INVOLVES THE CONSTRUCTION OF A 94.0 m x VARIABLE WIDTH CONTINUOUS WELDED PLATE GIRDER BRIDGE ON 9TH STREET OVER I-235.

THE CONSTRUCTION SEQUENCE FOR THIS BRIDGE SHALL BE IN ACCORDANCE WITH THE STAGING NOTE IN THE ROADWAY PLANS, IM-NHS-235-2(269)7--03-77. DELAY IN THE CONSTRUCTION OF CERTAIN BRIDGE COMPONENTS WILL BE REQUIRED TO FACILITATE THE CONSTRUCTION OF THE ADJACENT ROADWAY. REFER TO IM-NHS-235-2(269)7--03-77 FOR THE REQUIRED SEQUENCE.

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

THE CITY AND UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THIS BRIDGE IS DESIGNED FOR MS18 LOADING, PLUS 960 Pa FOR FUTURE WEARING SURFACE.

THE BRIDGE CONTRACTOR IS ENCOURAGED TO TAKE FULL ADVANTAGE OF SPECIFICATION 1105.15 -- VALUE ENGINEERING INCENTIVE PROPOSAL. PAMPHLET AND CONCEPTUAL PROPOSAL FORM WILL BE AVAILABLE AT THE PRECONSTRUCTION CONFERENCE.

ALL DIMENSIONS IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.

ALL ELEVATIONS ON THESE PLANS SHOWN IN METERS (m).

ALL STATIONS SHOWN IN METERS (m).

IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES.

SLOUGHING OF EARTH FROM UNDER AN ACTIVE TRAFFIC LANE WILL NOT BE PERMITTED. IF TEMPORARY SHORING (SHEET PILE OR OTHER) IS NECESSARY TO PREVENT THE EARTH UNDER A TRAFFIC LANE, OR AT ANOTHER LOCATION, FROM SLOUGHING IN DURING CONSTRUCTION, THE CONTRACTOR WILL SUBMIT A SHORING PLAN TO THE ENGINEER FOR APPROVAL. COST OF SHORING, IF REQUIRED, WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION AND NO DIRECT PAYMENT WILL BE MADE. ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. SHORING IS TO BE REMOVED ONLY AFTER BACKFILLING HAS BEEN COMPLETED.

SUBSTRUCTURE CONCRETE SHALL BE PROTECTED FROM STAINING BY A WRAPPING OF POLYETHYLENE OR SIMILAR MATERIALS WHICH SHALL BE LEFT IN PLACE AND KEPT IN A SERVICEABLE CONDITION UNTIL AFTER THE DECK HAS BEEN PLACED. IF SUBSTRUCTURE CONCRETE IS STAINED, THE STAINS SHALL BE REMOVED BY METHODS APPROVED BY THE ENGINEER. ALL COSTS ASSOCIATED WITH THE PROTECTION AND ANY REQUIRED CLEANING OF THE SUBSTRUCTURE CONCRETE SHALL BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL STEEL".

THIS STRUCTURE SHALL BE BUILT WITH WEATHERING STEEL. ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709M GRADE 345W. PAINTING REQUIREMENTS FOR THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATION 2408.30.

CONCRETE BARRIER RAILS PLACED USING THE SLIP FORM METHOD WILL REQUIRE THE USE OF A CLASS BR CONCRETE IN ACCORDANCE WITH ARTICLE 2513.03B OF THE STANDARD SPECIFICATION. CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILS PLACED USING THE SLIPFORM METHOD.

RUSTICATION GROOVE DETAILS ARE SHOWN IN THE PLANS. THE CONTRACTOR SHALL SUBMIT RUSTICATION GROOVE LAYOUTS FOR ALL REQUIRED SURFACES TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION. ALL COST ASSOCIATED WITH CONCRETE RUSTICATIONS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "HIGH PERFORMANCE STRUCTURAL CONCRETE".

ALL COARSE AGGREGATE FOR STRUCTURAL CONCRETE SHALL BE CRUSHED LIMESTONE.

ORIGINAL DESIGN DRAWINGS INDICATE THAT BATTERED PILES AT EXISTING PIER FOUNDATIONS ARE BATTERED 0.167m/m AND ARE 9.14 m LONG. GIVEN UNKNOWN CONSTRUCTION TOLERANCES AND THE PROXIMITY OF THE FOOTING TO THE DRILLED SHAFTS, THE CONTRACTOR SHOULD BE PREPARED TO ENCOUNTER WOOD PILES DURING DRILLING AND INCLUDE THE COST IN "CONCRETE DRILLED SHAFT, 910 mm DIA."

CONSTRUCTION ACTIVITIES NEAR THE ESTES PROPERTY (944 - 9TH ST.), THE BERRY PROPERTY (1039 - 9TH ST.), AND FORMER FIRE STATION #4 (1041 - 8TH ST.) SHALL NOT CREATE VIBRATIONS IN EXCESS OF A PEAK PARTICLE VELOCITY OF 0.13 INCH/SEC. THE IOWA DOT WILL INSTALL MONITORING DEVICES (SEISMOGRAPHS) AND CONTINUOUSLY MONITOR VIBRATIONS (PEAK PARTICLE VELOCITY) DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL IMMEDIATELY SHUT DOWN OPERATIONS IF THE PEAK PARTICLE VELOCITY THRESHOLD IS REACHED OR EXCEEDED (VIBRATION EVENT). THE SHUT DOWN WILL REMAIN IN EFFECT UNTIL THE CAUSE OF THE VIBRATION EVENT IS IDENTIFIED AND ALTERNATE EQUIPMENT OR METHODS APPROVED BY THE ENGINEER ARE IN PLACE. THERE WILL BE NO COMPENSATION FOR DOWNTIME AS THE RESULT OF EXCEEDING THE NOTED VIBRATION LIMIT. THERE WILL BE NO COMPENSATION FOR ADJUSTMENT OF PROCESS OR EQUIPMENT TO REDUCE VIBRATION LEVELS TO MEET THE NOTED VIBRATION LIMIT. ALL CONSTRUCTION ACTIVITY AFTER RESUMPTION REMAINS GOVERNED BY THE PREVIOUSLY STATED MAXIMUM PPV VALUE (0.13 INCH/SEC.).

THE CONTRACTOR SHALL PROVIDE A PRE-CONSTRUCTION PLAN 30 DAYS PRIOR TO INITIAL CONSTRUCTION IN THE 9TH ST. AREA. THE PLAN SHALL DESCRIBE THE FOLLOWING:
1. CONSTRUCTION METHODS AND EQUIPMENT THAT WILL BE USED TO MINIMIZE VIBRATION.
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THE IOWA DOT AND ITS SEISMIC CONSULTANT WILL DETERMINE THE LOCATION OF THE MONITORING DEVICES (SEISMOGRAPHS).

THE CONTRACTOR SHALL PLACE A CHAIN LINK FENCE BETWEEN THE CONSTRUCTION AREA AND THE ESTES PROPERTY (944 - 9TH ST.).

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

NOTES & QUANTITIES II

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1A OF 49 FILE NO. 29552 DESIGN NO. 2406

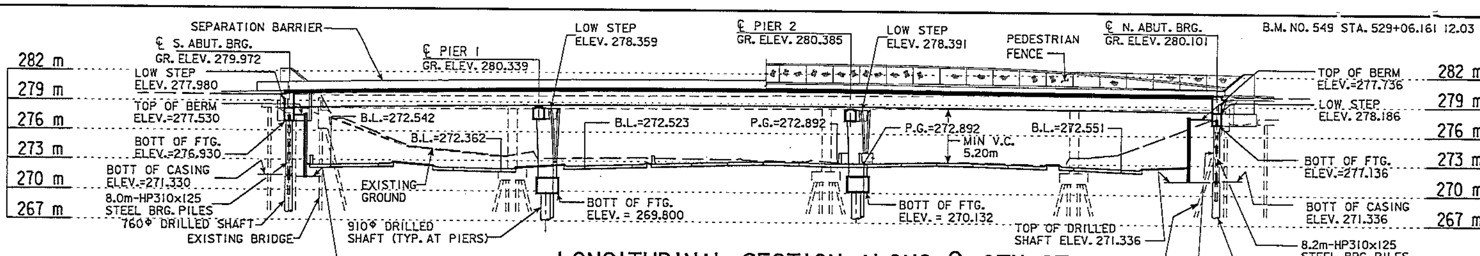
DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s01a

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 2A

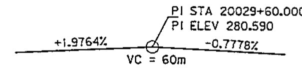
XXXXXXXXXSYSTEMTIME XXXXXXUSERNAME XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXDGNSPEC

8/15/2005 1:53:23 PM p:\643909\2406\sheet\h772406.s01a

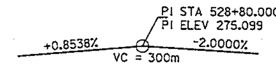
B.M. NO. 549 STA. 529+06.161 12.03 RT. N. LEG OF OVERHEAD SIGN W OF 9TH ST BRG ELEV. 275.015



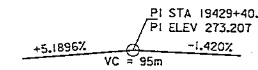
LONGITUDINAL SECTION ALONG ℄ 9TH ST.


PI STA 20029+60.000
PI ELEV 280.590
+1.9764%
-0.7778%
VC = 60m

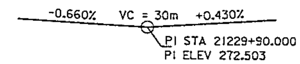
PROPOSED GRADE ON 9TH ST.


PI STA 528+80.000
PI ELEV 275.099
+0.8538%
-2.0000%
VC = 300m

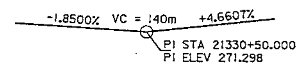
PROPOSED GRADE ON I-235


PI STA 19429+40.000
PI ELEV 273.207
+5.1896%
-1.420%
VC = 95m

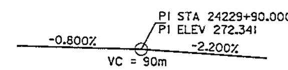
PROPOSED GRADE ON KEOSAUQUA WAY RAMP "D"


-0.660%
VC = 30m
+0.430%
PI STA 21229+90.000
PI ELEV 272.503

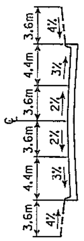
PROPOSED GRADE ON 7 TH ST. RAMP "B"


-1.8500%
VC = 140m
+4.6607%
PI STA 21330+50.000
PI ELEV 271.298

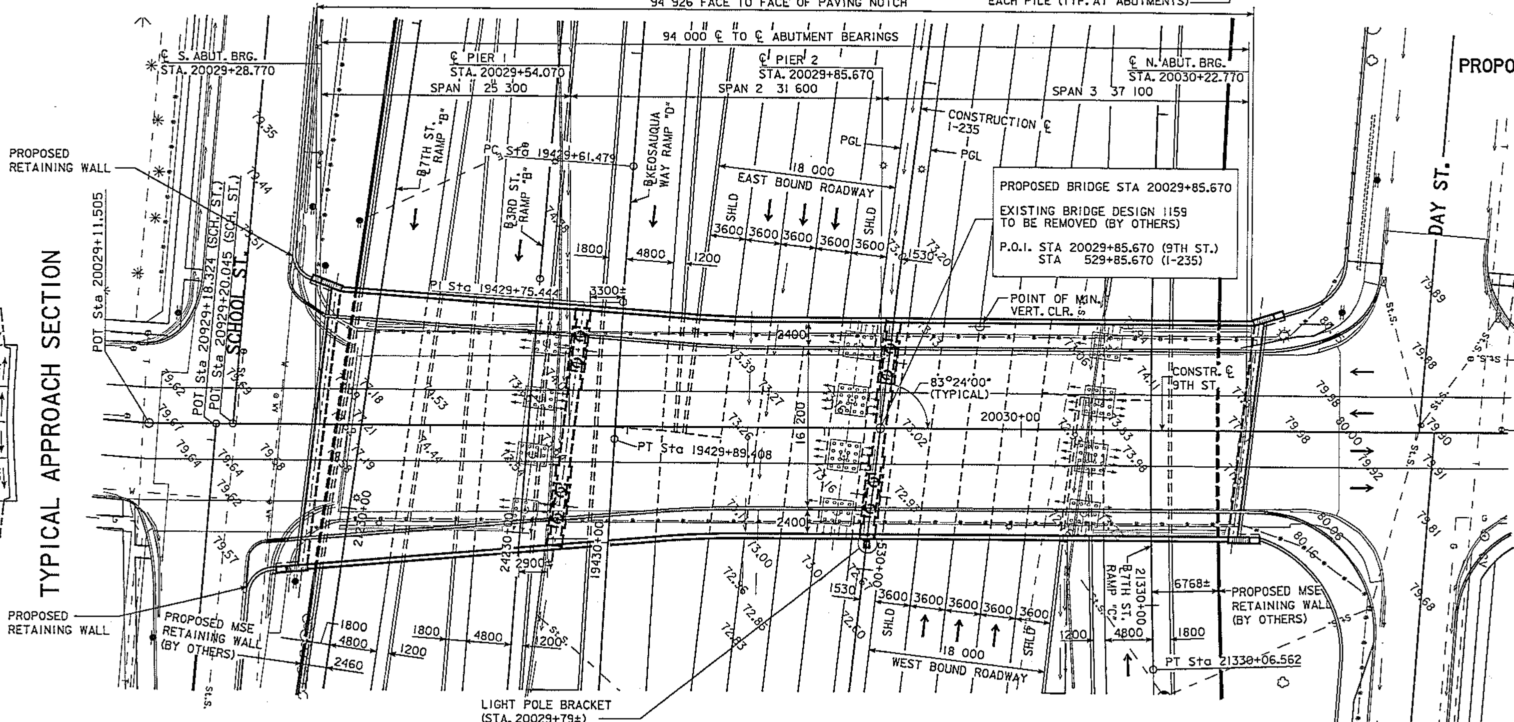
PROPOSED GRADE ON 7 TH ST. RAMP "C"


PI STA 24229+90.000
PI ELEV 272.341
-0.800%
-2.200%
VC = 90m

PROPOSED GRADE ON 3 RD ST. RAMP "B"



TYPICAL APPROACH SECTION



SITUATION PLAN

I-235 CURVE DATA	7TH ST. RAMP C CURVE DATA	KEO WAY RAMP D CURVE DATA
Δ = 3°16'15.01" (LT)	Δ = 9°28'01.96" (LT)	Δ = 0°48"00.36" (LT)
T = 142.756m	T = 74.525m	T = 13.965m
L = 285.434m	L = 148.711m	L = 27.929m
R = 5000.000m	R = 900.000m	R = 2000.000m
E = 2.038m	E = 3.080m	E = 0.049m

NOTES:

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.

STATIONS ALONG REFERENCE LINES ARE IN METERS (m).

ADD 200.000 TO SITUATION PLAN SPOT GROUND ELEVATIONS.

LOCATION

9TH ST. OVER I-235
T-78 N R-24 W
SECTION 4
DES MOINES TOWNSHIP
POLK COUNTY
CITY OF DES MOINES
BRIDGE MAINT. NO. 7708.10235
FHWA NO. 042571

TRAFFIC ESTIMATE (I-235)

ADT = 48,500 VPD (1996)
ADT = 74,100 VPD (2025)
8% TRUCKS

MINIMUM VERTICAL CLEARANCE

OVERHEAD STATION=20029+95.684; 10.485LT
OVERHEAD ELEVATION=280.158
DEPTH OF SUPERSTRUCTURE=1.710m
UNDERPASS STATION=529+74.083; 8.73LT
UNDERPASS ELEVATION=273.249
MINIMUM VERTICAL CLEARANCE=5.20m

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SITUATION PLAN

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)
OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 49 FILE NO. 29552 DESIGN NO. 2406

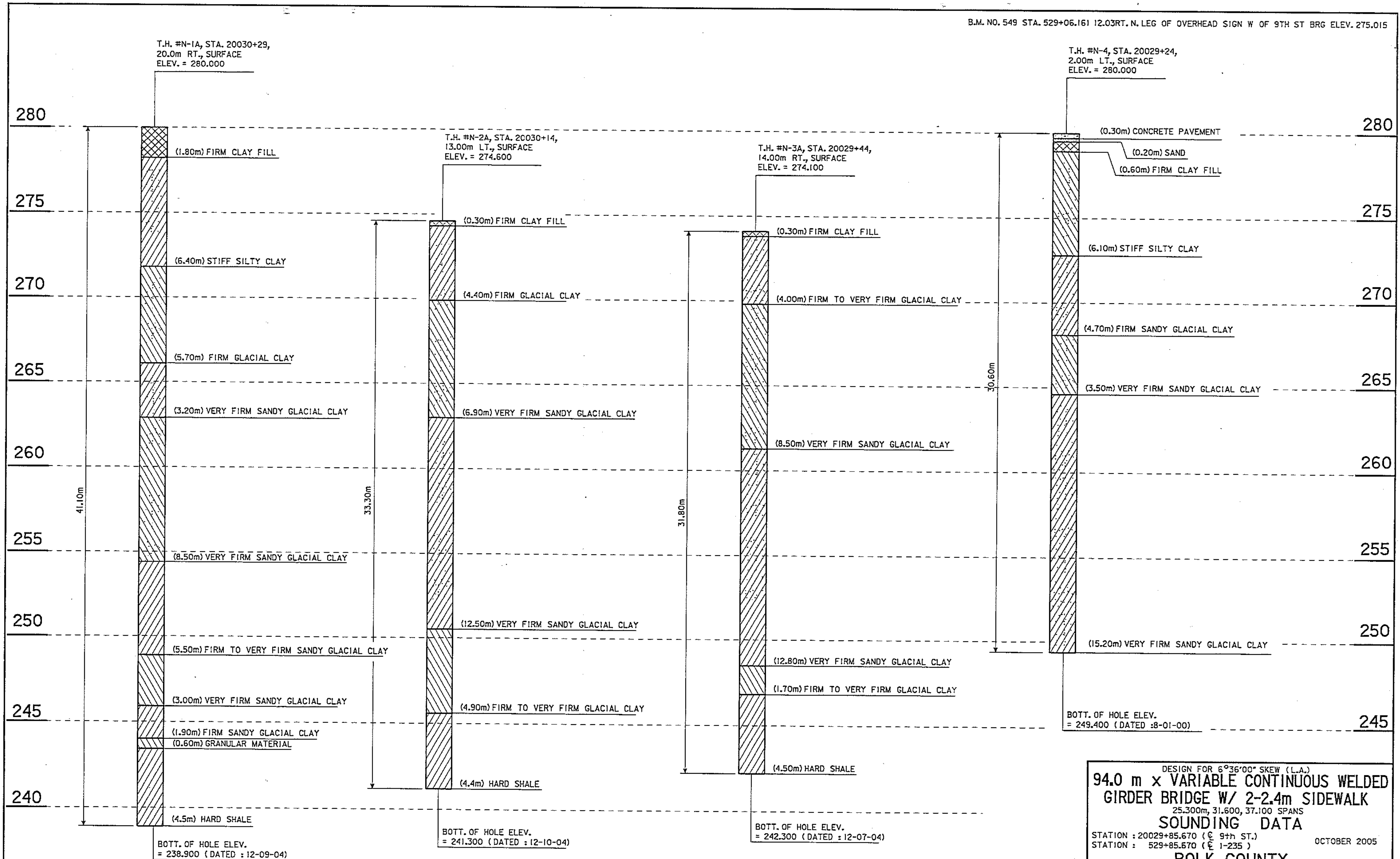
PROPOSED BRIDGE STA 20029+85.670

EXISTING BRIDGE DESIGN 1159 TO BE REMOVED (BY OTHERS)

P.O.I. STA 20029+85.670 (9TH ST.)
STA 529+85.670 (I-235)

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s02

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 3



SOUNDING DATA

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SOUNDING DATA

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ	CHECKED BY DL		
DETAILED BY FTE	CADD FILE h772406.s03		
POLK COUNTY	PROJECT NUMBER IM-235-2(313)8--13-77	SHEET NUMBER 4	

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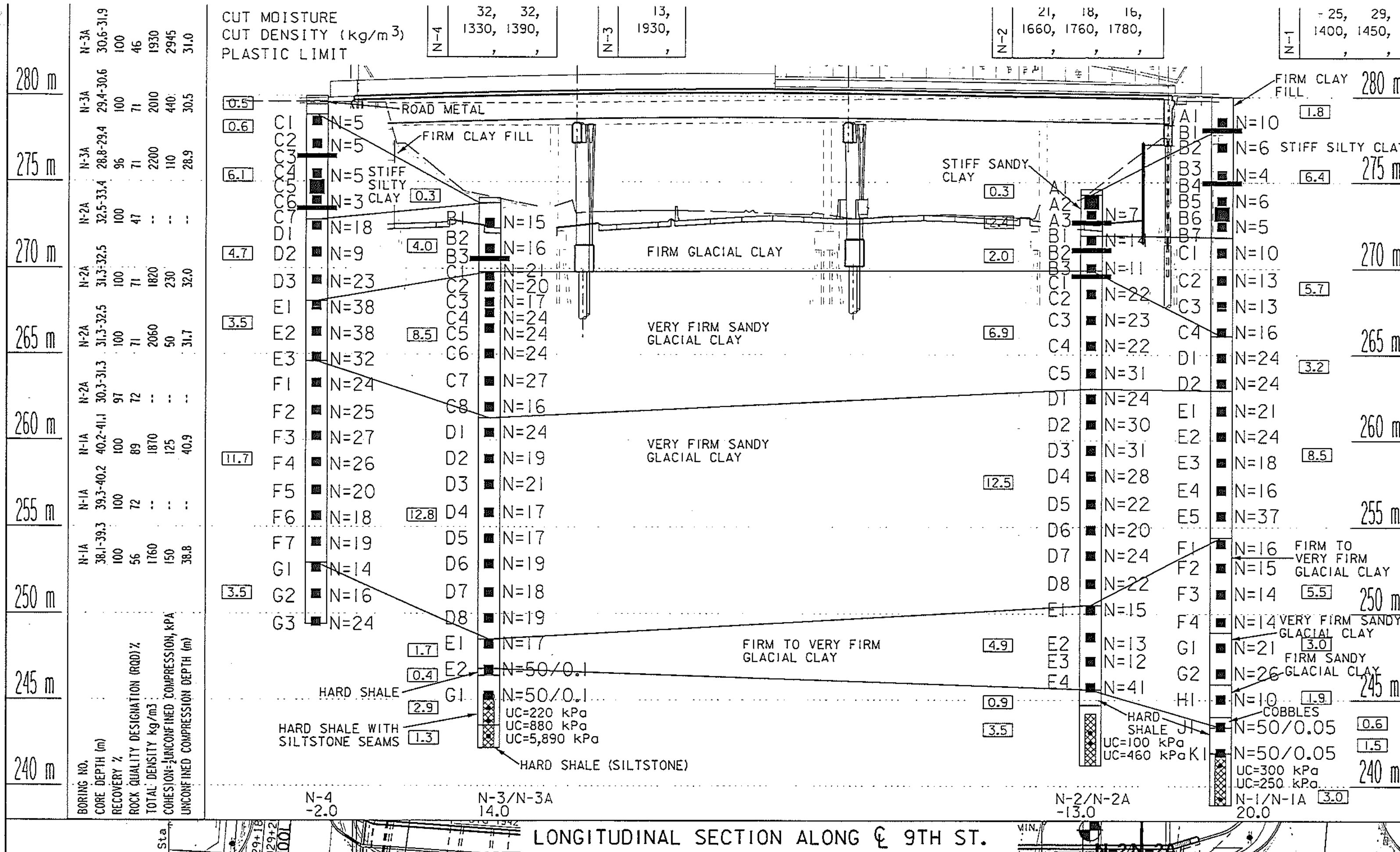


THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION. DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

SHELBY TUBE CORE DATA

BORING NO.	N-1/N-1A	N-2/N-2A	N-4
DEPTH IN METERS	6.4	0.3	4.9
CLASSIFICATION [AASHTO]	A-6(15)	--	--
COEFF.CONSOL. m^2/DAY	N/A	--	--
TRIAXIAL COMPRESSION	CU	UC	UC
COHESION - kPa	28	60	20
FRICTION COEFF.	0.291	--	--
MOISTURE CONTENT %	28	22	31
DENSITY - kg/m^3	1540	1600	1390

UU-UNCONSOLIDATED & UNDRAINED
CU-CONSOLIDATED & UNDRAINED
UC-UNCONFINED COMPRESSION (C=1/2 Qu)

BLOW COUNT
LAYER - N. BLOWS

B2 ■ 5

-INDICATES LAYER THICKNESS (m)

LOCATION

9TH ST. OVER I-235
T-78 N R-24 W
SECTION 4
DES MOINES TOWNSHIP
POLK COUNTY
BRIDGE MAINT. NO. 7708.10235
FHWA NO. 042571

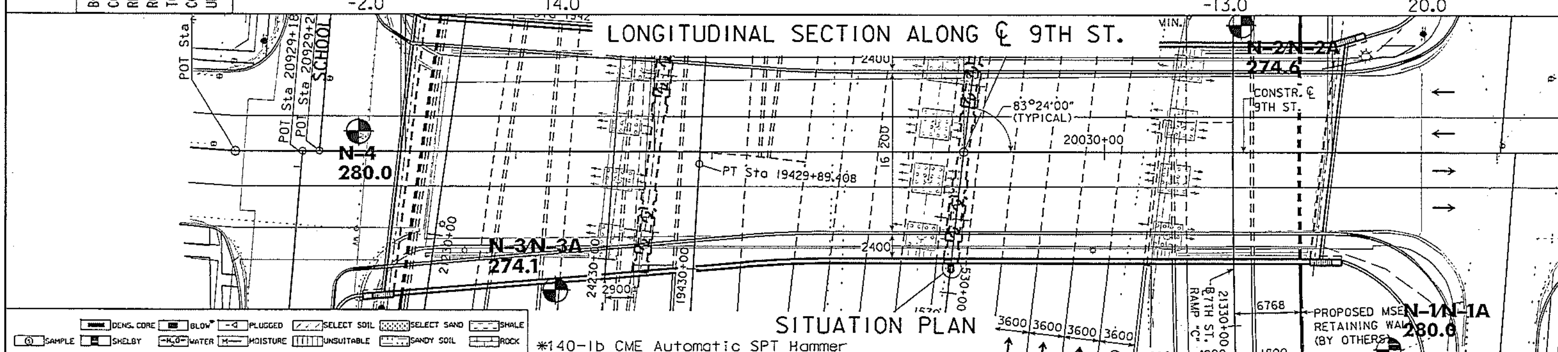
METERS 0 25

GEOTECHNICAL DESIGN

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 licensed Professional Engineers under the laws of the State of Iowa.

KOLE C. BERG 17013

Signature: Kole C. Berg Date: 6/13/05
Printed or Typed Name: KOLE C. BERG
My license renewal date is December 31, 2005
Pages or sheets covered by this seal: SPS-01



DENS. CORE, BLOW, PLUGGED, SELECT SOIL, SELECT SAND, SHALE, SAMPLE, SHELBY, WATER, MOISTURE, UNSUITABLE, SANDY SOIL, ROCK

*140-lb CME Automatic SPT Hammer

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SOILS PROFILE SHEET

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.570 (℄ I-235)
APRIL 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

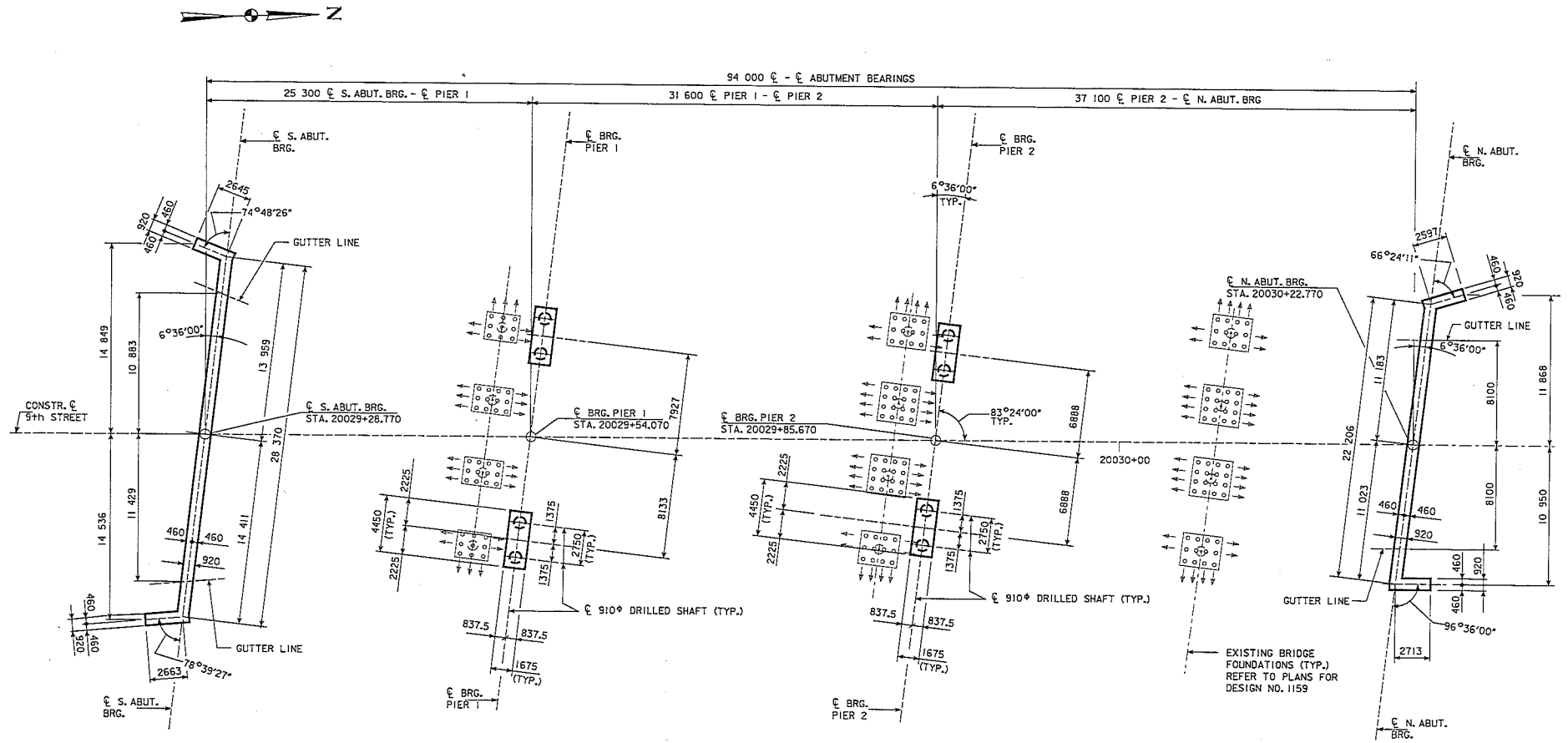
DESIGN SHEET NO. 4 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY ______ CHECKED BY ______
DETAILED BY ______ CADD FILE h772406.s04

Terracon

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 5

B.M. NO. 549 STA. 529+06.161 12.03RT. N. LEG OF OVERHEAD SIGN W OF 9TH ST BRG ELEV. 275.015



SUBSTRUCTURE LAYOUT

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUBSTRUCTURE LAYOUT

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s05

POLK COUNTY | PROJECT NUMBER | IM-235-2(313)8--13-77 | SHEET NUMBER 6

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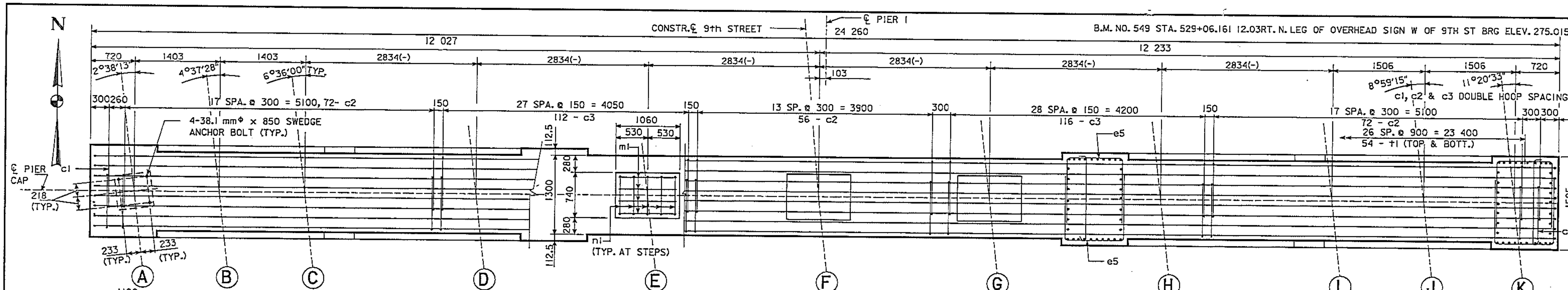
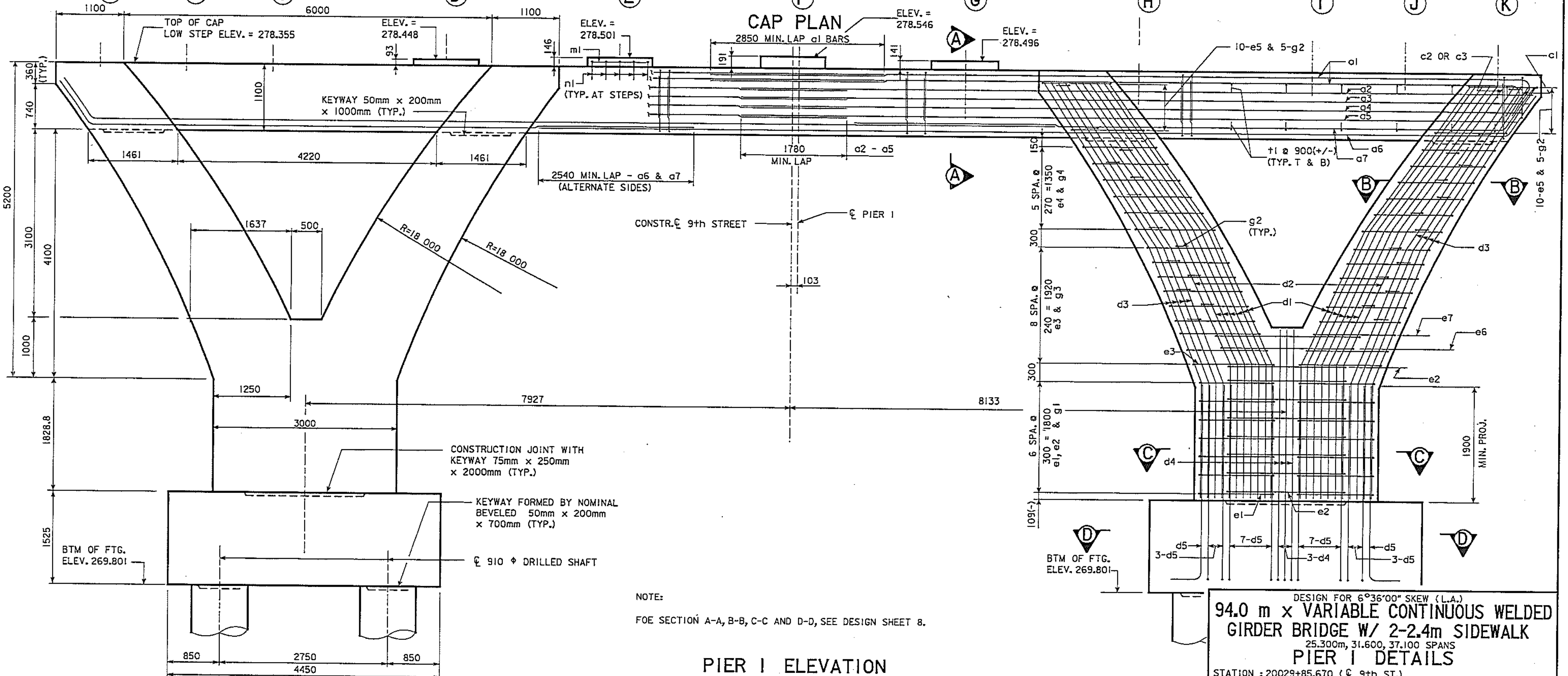


CAP PLAN



NOTE:

FOE SECTION A-A, B-B, C-C AND D-D, SEE DESIGN SHEET 8.

PIER I ELEVATION

(LOOKING UPSTATION)

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

PIER I DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s06

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 7

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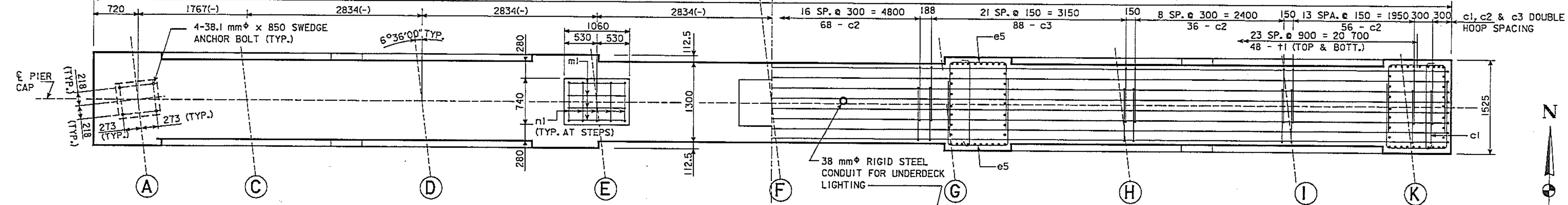
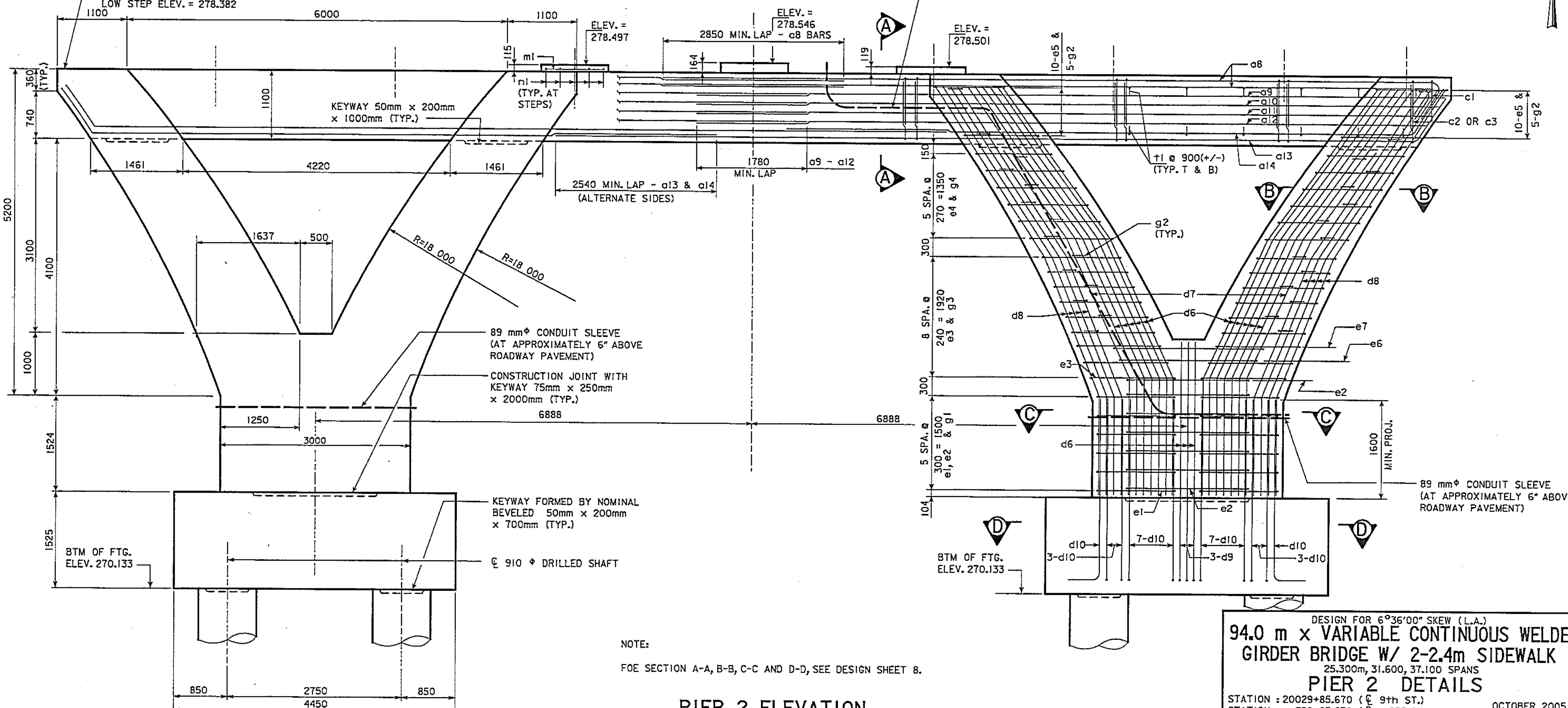
B.M. NO. 549 STA. 529+06.161 12.03RT. N. LEG OF OVERHEAD SIGN W OF 9TH ST BRG ELEV. 275.015



CAP PLAN



NOTE:

FOE SECTION A-A, B-B, C-C AND D-D, SEE DESIGN SHEET 8.

PIER 2 ELEVATION

(LOOKING UPSTATION)

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

PIER 2 DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s07

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 8

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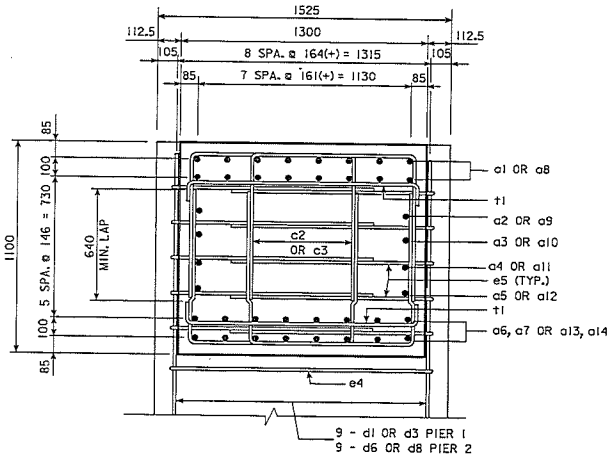
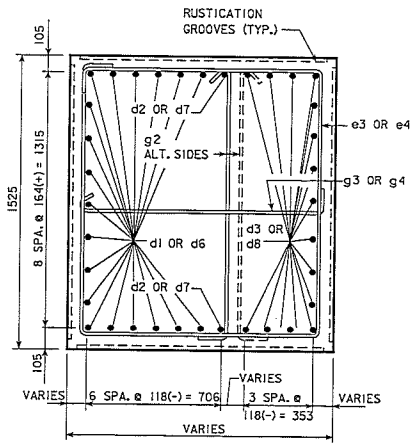
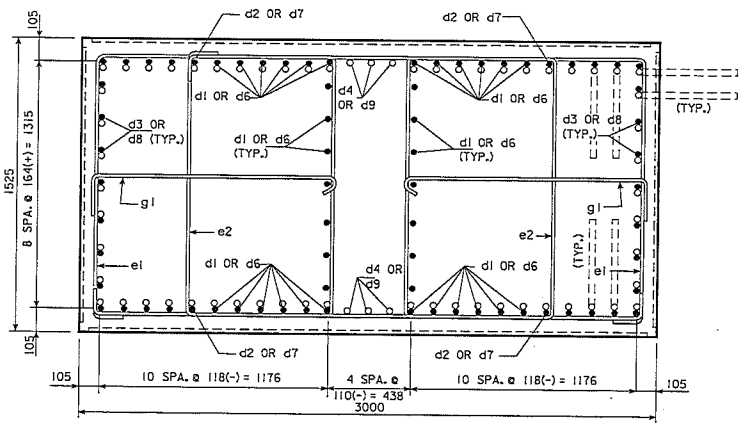
B.M. NO. 549 STA. 529+06.161 12.03RT. N. LEG OF OVERHEAD SIGN W OF 9TH ST BRG ELEV. 275.015



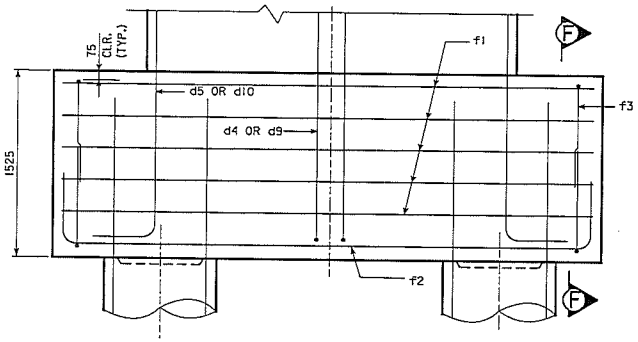
SECTION A-A
(CAP)



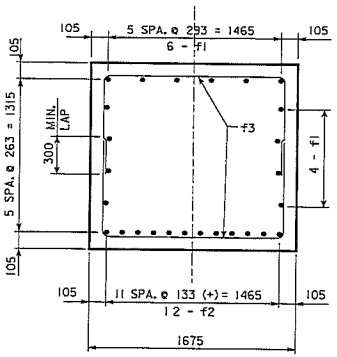
SECTION B-B
(COLUMN)



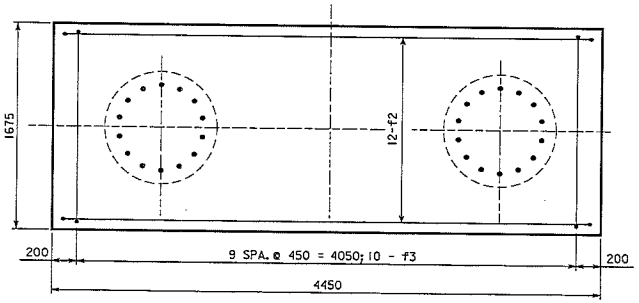
SECTION C- C
(STEM)



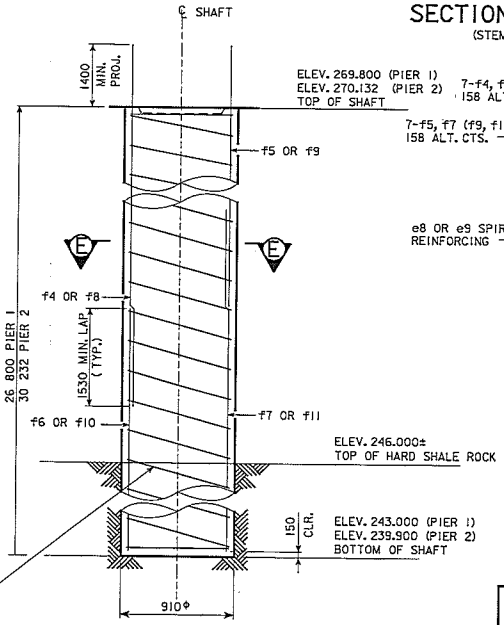
FOOTING ELEVATION



SECTION F-F
NOTE: f2 BARS MAY BE SHIFTED TO AVOID SHAFT BARS.

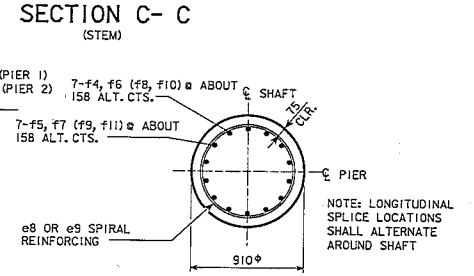


SECTION D-D
(FTG.)

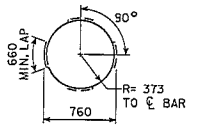


SHAFT ELEVATION

NOTE:
SPIRAL REINFORCING SHALL BE NO. 15 BAR WITH 760 DIAMETER, 300 PITCH, WITH 4 EQUALLY SPACED L22x22x3.2 SPACERS PUNCHED TO HOLD SPIRALS. SPIRALS ARE TO HAVE 1½ EXTRA TURNS AT TOP AND BOTTOM OF SHAFT.



SECTION E-E



#15 ALTERNATE DRILLED SHAFT TIE
ROTATE LAP 90° EVERY LAYER WHEN PLACING BAR.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

PIER 1 & 2 DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE n772406.s08

POLK COUNTY | PROJECT NUMBER | IM-235-2(313)8--13-77 | SHEET NUMBER 9

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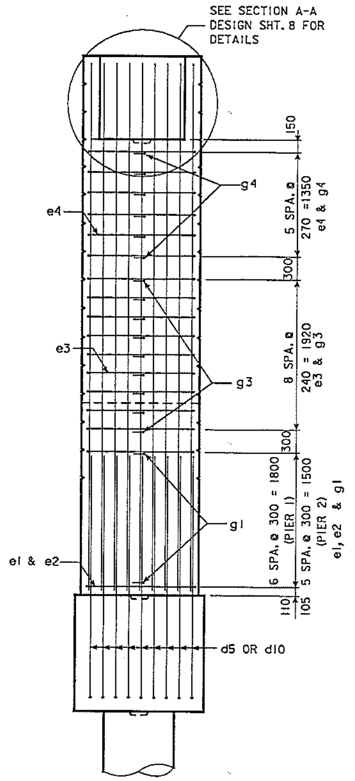
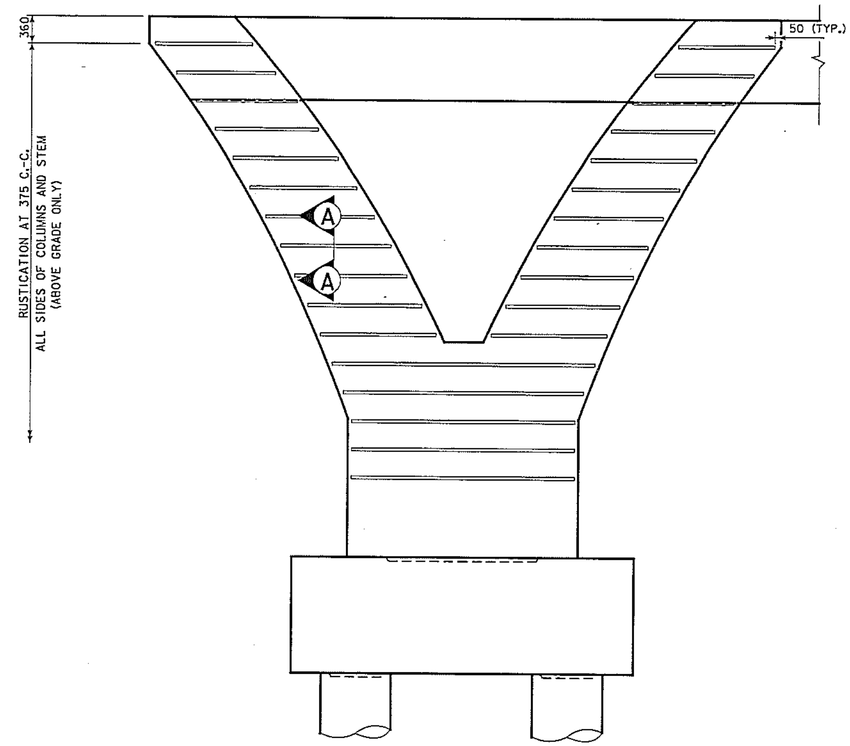
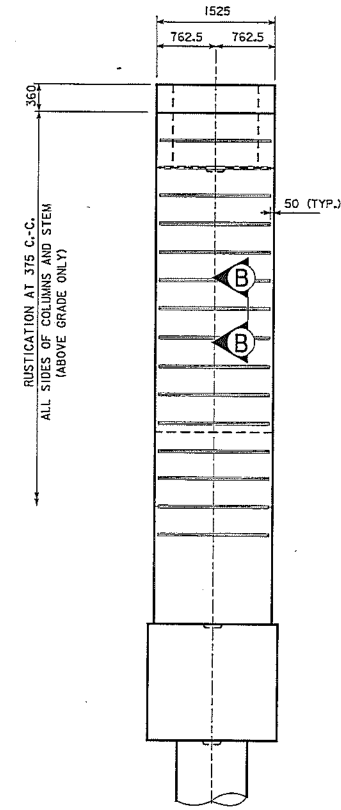


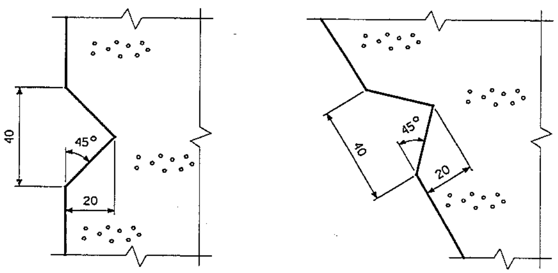
PART END VIEW
SHOWING REINFORCING



PARTIAL PIER ELEVATION
LOOKING UPSTATION



END ELEVATION



RUSTICATION DETAILS

NOTES:

1. RUSTICATION GROOVES ARE NOT REQUIRED BELOW GROUND LINE.
2. RUSTICATION GROOVES SHALL TERMINATE 50mm FROM CORNER.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

PIER 1 & 2 DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s09

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 10

PIER REINFORCING BAR LIST - PIER NO. 1

MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
a1	35	CAP, TOP, LONGITUDINAL		32	14 330	3 600
a2	25	CAP, SIDE, LONGITUDINAL		4	12 970	204
a3	25	CAP, SIDE, LONGITUDINAL		4	12 890	202
a4	25	CAP, SIDE, LONGITUDINAL		4	12 790	201
a5	25	CAP, SIDE, LONGITUDINAL		4	12 690	199
a6	35	CAP, BOTTOM, LONGITUDINAL		16	16 820	2 113
a7	35	CAP, BOTTOM, LONGITUDINAL		16	11 010	1 383
c1	15	CAP, HOOPS, CANTILEVER		4	2 960	19
c2	15	CAP, STIRRUPS		200	2 320	728
c3	20	CAP, STIRRUPS		228	2 350	1 262
e8	15	SHAFT SPIRAL		4	217 160	1 364
		L22x22x3.2 SPIRAL SPACER (1.0 kg/m)		16	26 680	427
f1	25	FOOTING, TOP AND SIDES		28	4 300	473
f2	30	FOOTING, BOTTOM LONGITUDINAL		24	5 300	699
f3	15	FOOTING, STIRRUPS		40	3 225	203
f4	30	SHAFT, LONGITUDINAL		28	14 500	2 231
f5	30	SHAFT, LONGITUDINAL		28	11 450	1 762
f6	30	SHAFT, LONGITUDINAL		28	15 240	2 345
f7	30	SHAFT, LONGITUDINAL		28	18 280	2 813
m1	15	CAP, STEP, LONGITUDINAL		16	960	24
n1	15	CAP, STEP, TRANSVERSE		20	1 580	50
t1	15	CAP, TRANSVERSE		54	1 510	128
			TOTAL NON-COATED (kg)			22 430
EPOXY COATED						
d1	30	STEM, VERTICAL		76	7 595	3 172
d2	30	STEM, VERTICAL		8	6 365	280
d3	30	STEM, VERTICAL		60	7 515	2 478
d4	30	FOOTING TO STEM DOWELS		12	4 680	309
d5	30	FOOTING TO STEM DOWELS		116	3 800	2 422
e1	15	STEM HOOPS		28	5 540	244
e2	15	STEM HOOPS		16	6 880	173
e3	15	COLUMN HOOPS		36	VARIES	320
e4	15	COLUMN HOOPS		24	VARIES	211
e5	15	COLUMN HAIRPINS		40	VARIES	220
e6	15	STEM HOOPS		2	7 400	23
e7	15	STEM HOOPS		2	7 900	25
g1	15	STEM TIE		28	1 520	67
g2	15	COLUMN TIE		68	1 660	177
g3	15	COLUMN AND STEM TIE		36	VARIES	90
g4	15	COLUMN TIE		24	VARIES	58
			TOTAL EPOXY COATED (kg)			10 269

PIER REINFORCING BAR LIST - PIER NO. 2

MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
a8	35	CAP, TOP, LONGITUDINAL		32	13 180	3 311
a9	25	CAP, SIDE, LONGITUDINAL		4	11 830	186
a10	25	CAP, SIDE, LONGITUDINAL		4	11 750	184
a11	25	CAP, SIDE, LONGITUDINAL		4	11 650	183
a12	25	CAP, SIDE, LONGITUDINAL		4	11 550	181
a13	35	CAP, BOTTOM, LONGITUDINAL		16	14 520	1 824
a14	35	CAP, BOTTOM, LONGITUDINAL		16	11 010	1 383
c1	15	CAP, HOOPS, CANTILEVER		4	2 960	19
c2	15	CAP, STIRRUPS		252	2 320	918
c3	20	CAP, STIRRUPS		176	2 350	974
e9	15	SHAFT SPIRAL		4	244 090	1 533
		L22x22x3.2 SPIRAL SPACER (1.0 kg/m)		16	30 100	482
f1	25	FOOTING, TOP AND SIDES		28	4 300	473
f2	30	FOOTING, BOTTOM LONGITUDINAL		24	5 300	699
f3	15	FOOTING, STIRRUPS		40	3 225	203
f8	30	SHAFT, LONGITUDINAL		28	17 930	2 759
f9	30	SHAFT, LONGITUDINAL		28	14 890	2 291
f10	30	SHAFT, LONGITUDINAL		28	15 240	2 345
f11	30	SHAFT, LONGITUDINAL		28	18 280	2 813
m1	15	CAP, STEP, LONGITUDINAL		12	960	18
n1	15	CAP, STEP, TRANSVERSE		15	1 580	37
t1	15	CAP, TRANSVERSE		48	1 510	114
			TOTAL NON-COATED (kg)			22 930
EPOXY COATED						
d6	30	STEM, VERTICAL		76	7 285	3 042
d7	30	STEM, VERTICAL		8	6 055	266
d8	30	STEM, VERTICAL		60	7 205	2 375
d9	30	FOOTING TO STEM DOWELS		12	4 370	288
d10	30	FOOTING TO STEM DOWELS		116	3 500	2 231
e1	15	STEM HOOPS		24	5 540	209
e2	15	STEM HOOPS		14	6 880	151
e3	15	COLUMN HOOPS		36	VARIES	320
e4	15	COLUMN HOOPS		24	VARIES	211
e5	15	COLUMN HAIRPINS		40	VARIES	220
e6	15	STEM HOOPS		2	7 400	23
e7	15	STEM HOOPS		2	7 900	25
g1	15	STEM TIE		24	1 520	57
g2	15	COLUMN TIE		68	1 660	177
g3	15	COLUMN AND STEM TIE		36	VARIES	90
g4	15	COLUMN TIE		24	VARIES	58
			TOTAL EPOXY COATED (kg)			9 743

H.P. STRUCTURAL CONCRETE PLACEMENT QUANTITIES - TWO PIERS

LOCATION	PIER NO. 1	PIER NO. 2	QUANTITY
CAP AND STEPS	36.0	32.6	68.6
STEM/COLUMNS	56.5	53.7	110.2
TOTAL - m³	92.5	86.3	178.8

CONCRETE PLACEMENT QUANTITIES - TWO PIERS

LOCATION	PIER NO. 1	PIER NO. 2	QUANTITY
FOOTINGS	22.7	22.7	45.5
TOTAL - m³			45.5

ESTIMATED QUANTITIES - TWO PIERS

ITEM	UNIT	PIER NO. 1	PIER NO. 2	TOTAL
HIGH PERFORMANCE STRUCTURAL CONCRETE	m³	92.5	86.3	178.8
STRUCTURAL CONCRETE (BRIDGE)	m³	22.7	22.7	45.5
REINFORCING STEEL-EPOXY COATED	kg	10 269	9 743	20 012
REINFORCING STEEL	kg	22 430	22 930	45 360
EXCAVATION CLASS 20	m³	115.0	83.0	198.0
CONCRETE DRILLED SHAFT, 910 DIA.	m	107.20	120.93	228.13

PIER NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 50 mm UNLESS OTHERWISE NOTED OR SHOWN.

ALL EXPOSED CORNERS 90° OR SHARPER TO BE FILLETED WITH A 20 mm DRESSED OR BEVELED STRIP.

ALL REINFORCING IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED. FORMS FOR DIAGONAL PIER COLUMNS SHALL BE ADEQUATELY BRACED TO PREVENT SPREADING OR DEFLECTION OF THE COLUMNS PRIOR TO THE PLACING AND CURING OF THE CAP.

THE USE OF STEEL FORMS IS REQUIRED FOR THE FORMING OF ALL PIER CONCRETE SURFACES FROM THE TOPS OF FOOTINGS TO THE BOTTOM OF PIER CAP BEAM, INCLUDING STEM AND PIER COLUMNS. USE OF MEDIUM-DENSITY OVERLAID (MDO) OR HIGH-DENSITY OVERLAID (HDO) PLYWOOD FACED FORMS IS ALLOWED FOR FORMING OF THE PIER CAP BEAM AND COLUMN PROJECTIONS IN THE REGION OF THE PIER CAP. PLAIN PLYWOOD-FACED FORMS WILL NOT BE ALLOWED FOR ANY PORTION OF THE PIER COLUMN OR CAP SURFACES.

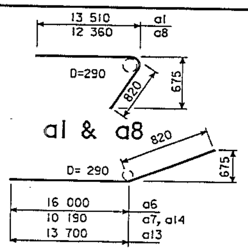
THE SPIRAL REINFORCING IN THE DRILLED SHAFT MAY BE SPLICED BY LAPPING 600 mm. THE LENGTH OF SPIRAL SHOWN DOES NOT INCLUDE THE LAPPED LENGTH OF SPLICES. THE COST OF THE LAPS AT SPLICES IS TO BE INCLUDED IN THE PRICE BID FOR REINFORCING.

THE FORMS FOR THE SHAFT, COLUMN AND CAP CONCRETE SHALL BE LEFT IN PLACE FOR A MINIMUM OF 5 DAYS. FORM REMOVAL SHALL BE IN ACCORDANCE WITH ARTICLE 2403.18 OF THE STANDARD SPECIFICATIONS.

THE DESIGN CAPACITY FOR ALL PIER DRILLED SHAFTS = 4200 kN. THIS CAPACITY IS BASED ON WORKING STRESS DESIGN.

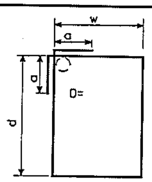
THE MASS OF ANCHOR BOLTS IS INCLUDED IN THE STRUCTURAL STEEL QUANTITY.

BENT BAR DETAILS



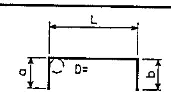
a1 & a8

a6, a7, a13 & a14



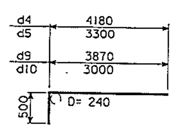
	a	d	w	D=
c1	150	650	880	60
e1	150	1380	1240	60
e2	150	1380	1910	60
e3	150	1380	1360 TO 1250	60
e4	150	1380	1310 TO 1220	60
e6	150	1380	2170	60
e7	150	1380	2420	60

c1, e1, e2, e3, e4, e6 & e7

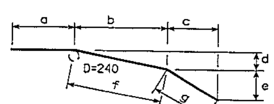


	L	a	b	D=
c2	880	820	820	60
c3	890	830	830	120
f2	4300	500	500	240
f3	1525	850	850	60
e5	1200 to 1140	1170	1170	60
n1	740	200	470	60
t1	1200	155	155	60

c2, c3, f2, f3, e5, n1 & t1

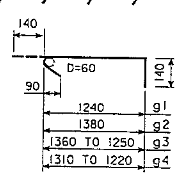


d4, d5, d9 & d10



	a	b	c	d	e	f	g
d1	2210	2220	2400	1000	1715	2435	2950
d2	2210	2220	1400	1000	1000	2435	1720
d3	1910	2220	2700	880	1740	2390	3215
d6	1900	2220	2400	1000	1715	2435	2950
d7	1900	2220	1400	1000	1000	2435	1720
d8	1600	2220	2700	880	1740	2390	3215

d1, d2, d3, d6, d7 & d8



g1 TO g4

NOTE : ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

REVISED 1/22/07, FOOTING CONCRETE QUANTITY

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

PIER DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s10

PIER REINFORCING BAR LIST - PIER NO. 1

MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
a1	35	CAP, TOP, LONGITUDINAL		32	14 330	3 600
a2	25	CAP, SIDE, LONGITUDINAL		4	12 970	204
a3	25	CAP, SIDE, LONGITUDINAL		4	12 890	202
a4	25	CAP, SIDE, LONGITUDINAL		4	12 790	201
a5	25	CAP, SIDE, LONGITUDINAL		4	12 690	199
a6	35	CAP, BOTTOM, LONGITUDINAL		16	16 820	2 113
a7	35	CAP, BOTTOM, LONGITUDINAL		16	11 010	1 383
c1	15	CAP, HOOPS, CANTILEVER		4	2 960	19
c2	15	CAP, STIRRUPS		200	2 320	728
c3	20	CAP, STIRRUPS		228	2 350	1 262
e8	15	SHAFT SPIRAL		4	217 160	1 364
		L22x22x3.2 SPIRAL SPACER (1.0 kg/m)		16	26 680	427
f1	25	FOOTING, TOP AND SIDES		28	4 300	473
f2	30	FOOTING, BOTTOM LONGITUDINAL		24	5 300	699
f3	15	FOOTING, STIRRUPS		40	3 225	203
f4	30	SHAFT, LONGITUDINAL		28	14 580	2 231
f5	30	SHAFT, LONGITUDINAL		28	11 450	1 762
f6	30	SHAFT, LONGITUDINAL		28	15 240	2 345
f7	30	SHAFT, LONGITUDINAL		28	18 280	2 813
m1	15	CAP, STEP, LONGITUDINAL		16	960	24
n1	15	CAP, STEP, TRANSVERSE		20	1 580	50
t1	15	CAP, TRANSVERSE		54	1 510	128
		TOTAL NON-COATED (kg)				22 430
EPOXY COATED						
d1	30	STEM, VERTICAL		76	7 595	3 172
d2	30	STEM, VERTICAL		8	6 365	280
d3	30	STEM, VERTICAL		60	7 515	2 478
d4	30	FOOTING TO STEM DOWELS		12	4 680	309
d5	30	FOOTING TO STEM DOWELS		116	3 800	2 422
e1	15	STEM HOOPS		28	5 540	244
e2	15	STEM HOOPS		16	6 880	173
e3	15	COLUMN HOOPS		36	VARIES	320
e4	15	COLUMN HOOPS		24	VARIES	211
e5	15	COLUMN HAIRPINS		40	VARIES	220
e6	15	STEM HOOPS		2	7 400	23
e7	15	STEM HOOPS		2	7 900	25
g1	15	STEM TIE		28	1 520	67
g2	15	COLUMN TIE		68	1 660	177
g3	15	COLUMN AND STEM TIE		36	VARIES	90
g4	15	COLUMN TIE		24	VARIES	58
		TOTAL EPOXY COATED (kg)				10 269

PIER REINFORCING BAR LIST - PIER NO. 2

MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
a8	35	CAP, TOP, LONGITUDINAL		32	13 180	3 311
a9	25	CAP, SIDE, LONGITUDINAL		4	11 830	186
a10	25	CAP, SIDE, LONGITUDINAL		4	11 750	184
a11	25	CAP, SIDE, LONGITUDINAL		4	11 650	183
a12	25	CAP, SIDE, LONGITUDINAL		4	11 550	181
a13	35	CAP, BOTTOM, LONGITUDINAL		16	14 520	1 824
a14	35	CAP, BOTTOM, LONGITUDINAL		16	11 010	1 383
c1	15	CAP, HOOPS, CANTILEVER		4	2 960	19
c2	15	CAP, STIRRUPS		252	2 320	918
c3	20	CAP, STIRRUPS		176	2 350	974
e9	15	SHAFT SPIRAL		4	244 090	1 533
		L22x22x3.2 SPIRAL SPACER (1.0 kg/m)		16	30 100	482
f1	25	FOOTING, TOP AND SIDES		28	4 300	473
f2	30	FOOTING, BOTTOM LONGITUDINAL		24	5 300	699
f3	15	FOOTING, STIRRUPS		40	3 225	203
f8	30	SHAFT, LONGITUDINAL		28	17 930	2 759
f9	30	SHAFT, LONGITUDINAL		28	14 890	2 291
f10	30	SHAFT, LONGITUDINAL		28	15 240	2 345
f11	30	SHAFT, LONGITUDINAL		28	18 280	2 813
m1	15	CAP, STEP, LONGITUDINAL		12	960	18
n1	15	CAP, STEP, TRANSVERSE		15	1 580	37
t1	15	CAP, TRANSVERSE		48	1 510	114
		TOTAL NON-COATED (kg)				22 930
EPOXY COATED						
d6	30	STEM, VERTICAL		76	7 285	3 042
d7	30	STEM, VERTICAL		8	6 055	266
d8	30	STEM, VERTICAL		60	7 205	2 375
d9	30	FOOTING TO STEM DOWELS		12	4 370	288
d10	30	FOOTING TO STEM DOWELS		116	3 500	2 231
e1	15	STEM HOOPS		24	5 540	209
e2	15	STEM HOOPS		14	6 880	151
e3	15	COLUMN HOOPS		36	VARIES	320
e4	15	COLUMN HOOPS		24	VARIES	211
e5	15	COLUMN HAIRPINS		40	VARIES	220
e6	15	STEM HOOPS		2	7 400	23
e7	15	STEM HOOPS		2	7 900	25
g1	15	STEM TIE		24	1 520	57
g2	15	COLUMN TIE		68	1 660	177
g3	15	COLUMN AND STEM TIE		36	VARIES	90
g4	15	COLUMN TIE		24	VARIES	58
		TOTAL EPOXY COATED (kg)				9 743

H.P. STRUCTURAL CONCRETE PLACEMENT QUANTITIES - TWO PIERS

LOCATION	PIER NO. 1	PIER NO. 2	QUANTITY
CAP AND STEPS	36.0	32.6	68.6
STEM/COLUMNS	56.5	53.7	110.2
TOTAL - m^3	92.5	86.3	178.8

CONCRETE PLACEMENT QUANTITIES - TWO PIERS

LOCATION	PIER NO. 1	PIER NO. 2	QUANTITY
FOOTINGS	11.4	11.4	22.8
TOTAL - m^3			22.8

ESTIMATED QUANTITIES - TWO PIERS

ITEM	UNIT	PIER NO. 1	PIER NO. 2	TOTAL
HIGH PERFORMANCE STRUCTURAL CONCRETE	m^3	92.5	86.3	178.8
STRUCTURAL CONCRETE (BRIDGE)	m^3	11.4	11.4	22.8
REINFORCING STEEL-EPOXY COATED	kg	10 269	9 743	20 012
REINFORCING STEEL	kg	22 430	22 930	45 360
EXCAVATION CLASS 20	m^3	115.0	83.0	198.0
CONCRETE DRILLED SHAFT, 910 DIA.	m	107.20	120.93	228.13

PIER NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 50 mm UNLESS OTHERWISE NOTED OR SHOWN.

ALL EXPOSED CORNERS 90° OR SHARPER TO BE FILLETED WITH A 20 mm DRESSED OR BEVELED STRIP.

ALL REINFORCING IS TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED. FORMS FOR DIAGONAL PIER COLUMNS SHALL BE ADEQUATELY BRACED TO PREVENT SPREADING OR DEFLECTION OF THE COLUMNS PRIOR TO THE PLACING AND CURING OF THE CAP.

THE USE OF STEEL FORMS IS REQUIRED FOR THE FORMING OF ALL PIER CONCRETE SURFACES FROM THE TOPS OF FOOTINGS TO THE BOTTOM OF PIER CAP BEAM, INCLUDING STEM AND PIER COLUMNS. USE OF MEDIUM-DENSITY OVERLAID (MDO) OR HIGH-DENSITY OVERLAID (HDO) PLYWOOD FACED FORMS IS ALLOWED FOR FORMING OF THE PIER CAP BEAM AND COLUMN PROJECTIONS IN THE REGION OF THE PIER CAP. PLAIN PLYWOOD-FACED FORMS WILL NOT BE ALLOWED FOR ANY PORTION OF THE PIER COLUMN OR CAP SURFACES.

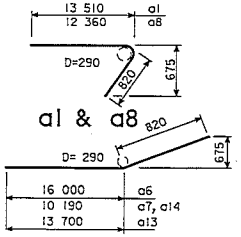
THE SPIRAL REINFORCING IN THE DRILLED SHAFT MAY BE SPLICED BY LAPPING 600 mm. THE LENGTH OF SPIRAL SHOWN DOES NOT INCLUDE THE LAPPED LENGTH OF SPLICES. THE COST OF THE LAPS AT SPLICES IS TO BE INCLUDED IN THE PRICE BID FOR REINFORCING.

THE FORMS FOR THE SHAFT, COLUMN AND CAP CONCRETE SHALL BE LEFT IN PLACE FOR A MINIMUM OF 5 DAYS. FORM REMOVAL SHALL BE IN ACCORDANCE WITH ARTICLE 2403.18 OF THE STANDARD SPECIFICATIONS.

THE DESIGN CAPACITY FOR ALL PIER DRILLED SHAFTS = 4200 kN. THIS CAPACITY IS BASED ON WORKING STRESS DESIGN.

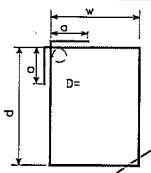
THE MASS OF ANCHOR BOLTS IS INCLUDED IN THE STRUCTURAL STEEL QUANTITY.

BENT BAR DETAILS



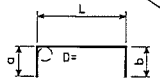
a1 & a8

a6, a7, a13 & a14



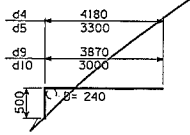
	a	d	w	D=
c1	150	650	880	60
e1	150	1380	1240	60
e2	150	1380	1910	60
e3	150	1380	1360 TO 1250	60
e4	150	1380	1310 TO 1220	60
e6	150	1380	2170	60
e7	150	1380	2420	60

c1, e1, e2, e3, e4, e6 & e7

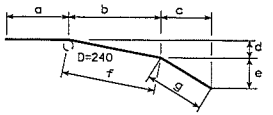


	L	a	b	D=
c2	880	820	820	60
c3	890	830	830	120
f2	4300	500	500	240
f3	1525	850	850	60
e5	1200 to 1140	1170	1170	60
n1	740	200	470	60
t1	1200	155	155	60

c2, c3, f2, f3, e5, n1 & t1

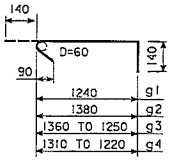


d4, d5, d9 & d10



	a	b	c	d	e	f	g
d1	2210	2220	2400	1000	1715	2435	2950
d2	2210	2220	1400	1000	1000	2435	1720
d3	1910	2220	2700	880	1740	2390	3215
d6	1900	2220	2400	1000	1715	2435	2950
d7	1900	2220	1400	1000	1000	2435	1720
d8	1600	2220	2700	880	1740	2390	3215

d1, d2, d3, d6, d7 & d8



g1 TO g4

NOTE : ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s10

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

PIER DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 49 FILE NO. 29552 DESIGN NO. 2406

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 11

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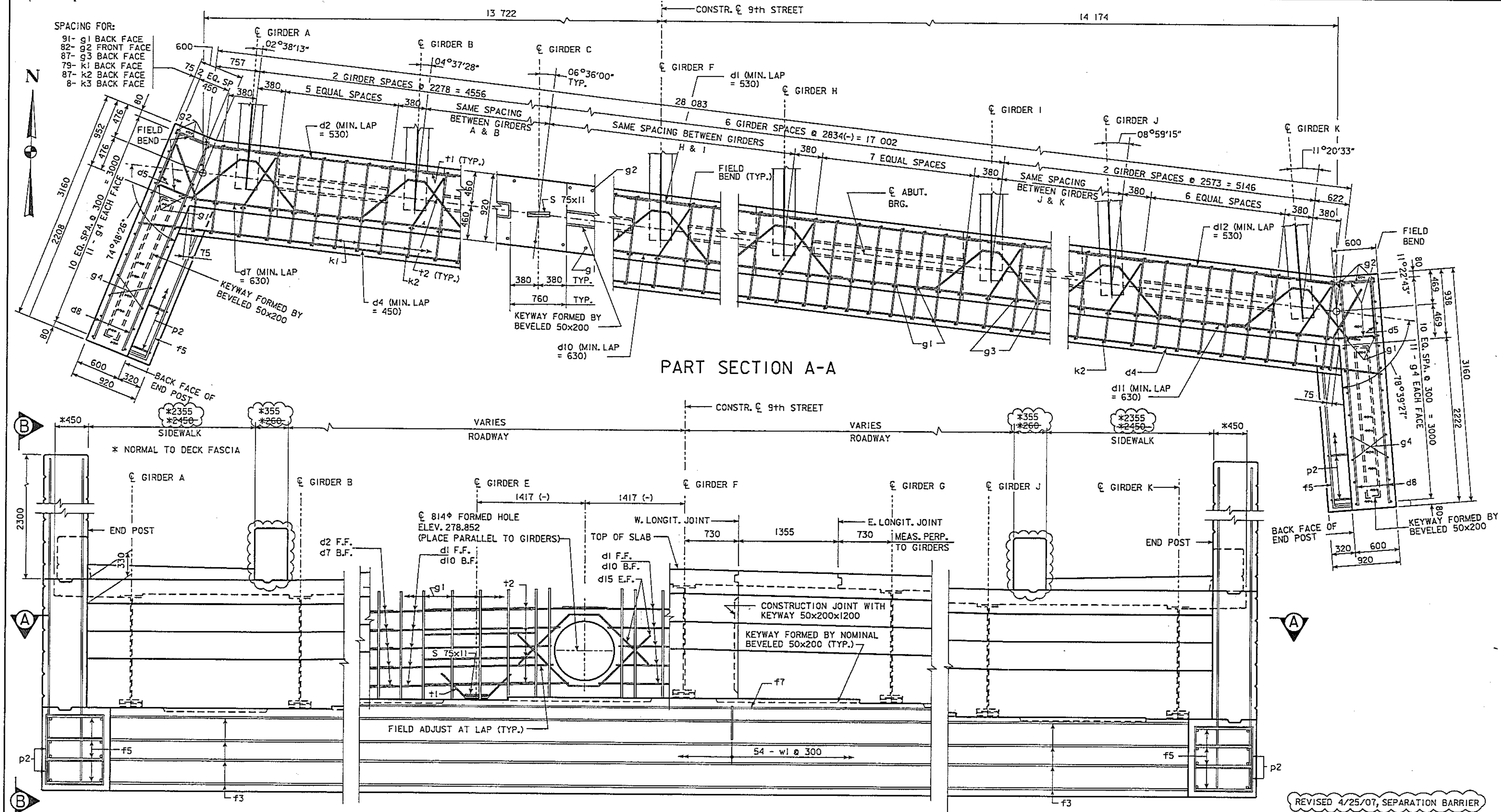

REVISED 4/25/07, SEPARATION BARRIER

NOTES :

SHIFT g2 BARS IN F.F. AS NECESSARY TO MISS GIRDERS AND HOLE. SHIFT g1 BARS IN B.F. TO MISS HOLE.
SHIFT k2 BARS IN APPROACH SEAT TO MISS HOLE.
PLACE g3 BARS PARALLEL TO LONGITUDINAL STEEL.

FOR SECTION THRU ABUTMENT, VIEW B-B, SEE DESIGN SHEET 14.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SOUTH ABUTMENT DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s12

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 13

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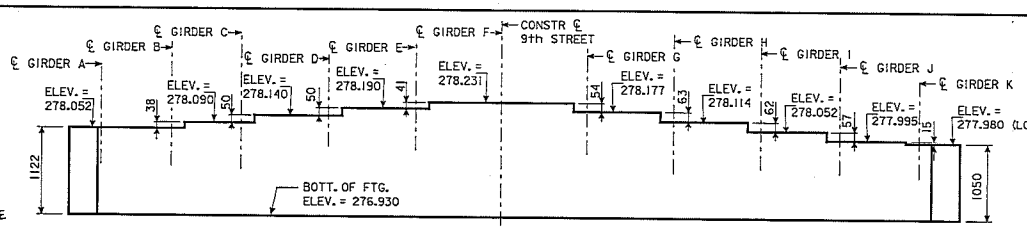
B.M. NO. 549 STA. 529+06.161 12.03RT. N. LEG OF OVERHEAD SIGN W OF 9TH ST BRG ELEV. 275.015

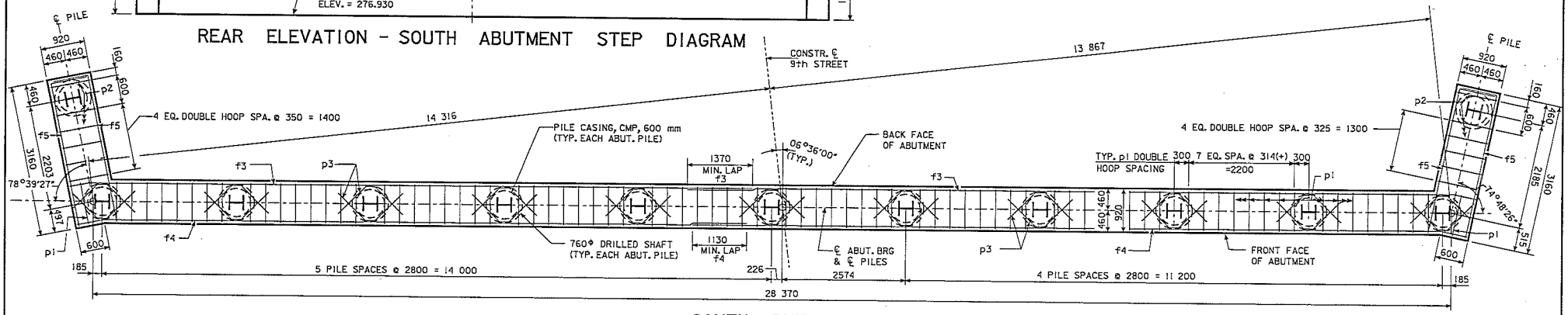
ABUTMENT NOTES :

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 50 mm UNLESS OTHERWISE NOTED OR SHOWN. THE DESIGN BEARING FOR THE ABUTMENT PILES AND DRILLED SHAFTS IS 543 kN.

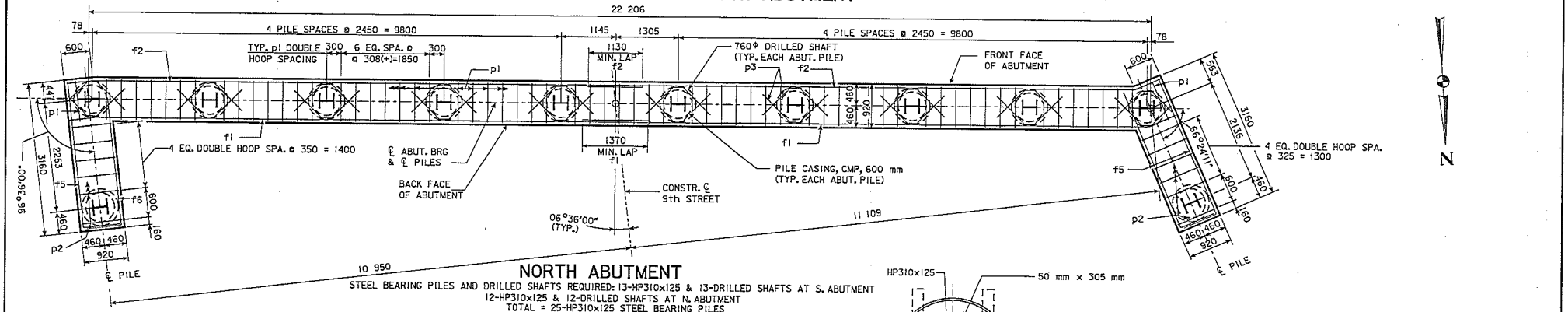
IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE DECK OR BACKWALL FROM CONSTRUCTION EQUIPMENT, AN APPROPRIATE METHOD OF PROTECTION APPROVED BY THE ENGINEER SHALL BE PROVIDED BY THE BRIDGE CONTRACTOR AT NO EXTRA COST TO THE STATE.



REAR ELEVATION - SOUTH ABUTMENT STEP DIAGRAM

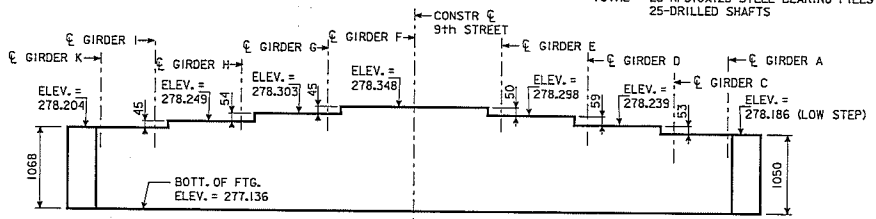


SOUTH ABUTMENT

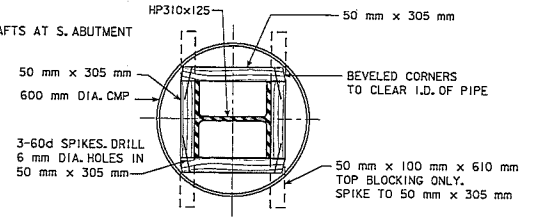


NORTH ABUTMENT

STEEL BEARING PILES AND DRILLED SHAFTS REQUIRED: 13-HP310x125 & 13-DRILLED SHAFTS AT S. ABUTMENT
12-HP310x125 & 12-DRILLED SHAFTS AT N. ABUTMENT
TOTAL = 25-HP310x125 STEEL BEARING PILES
25-DRILLED SHAFTS



REAR ELEVATION - NORTH ABUTMENT STEP DIAGRAM



CMP BLOCKING DETAIL

ONE REQUIRED AT TOP AND BOTTOM OF CMP. BOTTOM BLOCKING SHALL BE TREATED MATERIAL AND SHALL REMAIN IN PLACE. TOP BLOCKING SHALL BE REMOVED PRIOR TO BACKFILLING INSIDE THE CMP. COST FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR PILING CASING.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

ABUTMENT DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 11 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY DL CHECKED BY MBQ
DETAILED BY FTE CADD FILE h772406.s11

POLK COUNTY | PROJECT NUMBER | IM-235-2(313)8--13-77 | SHEET NUMBER 12

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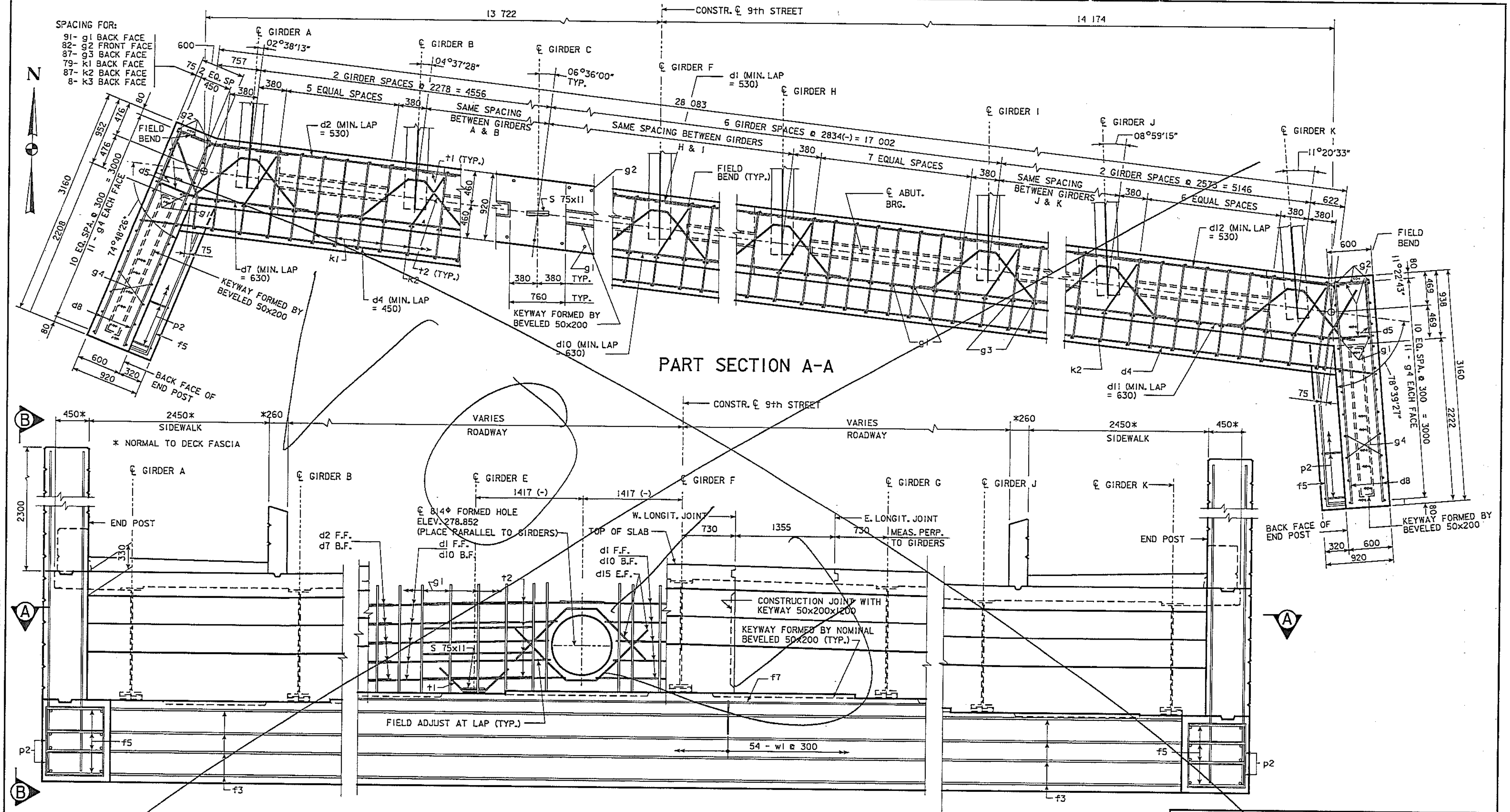

PART REAR ELEVATION AT SOUTH ABUTMENT

NOTES :

SHIFT g2 BARS IN F.F. AS NECESSARY TO MISS GIRDERS AND HOLE. SHIFT g1 BARS IN B.F. TO MISS HOLE. SHIFT k2 BARS IN APPROACH SEAT TO MISS HOLE. PLACE g3 BARS PARALLEL TO LONGITUDINAL STEEL.

FOR SECTION THRU ABUTMENT, VIEW B-B, SEE DESIGN SHEET 14.

DESIGN FOR 6°36'00" SKEW (L.A.)

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OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s12

POLK COUNTY | PROJECT NUMBER | IM-235-2(313)8--13-77 | SHEET NUMBER 13

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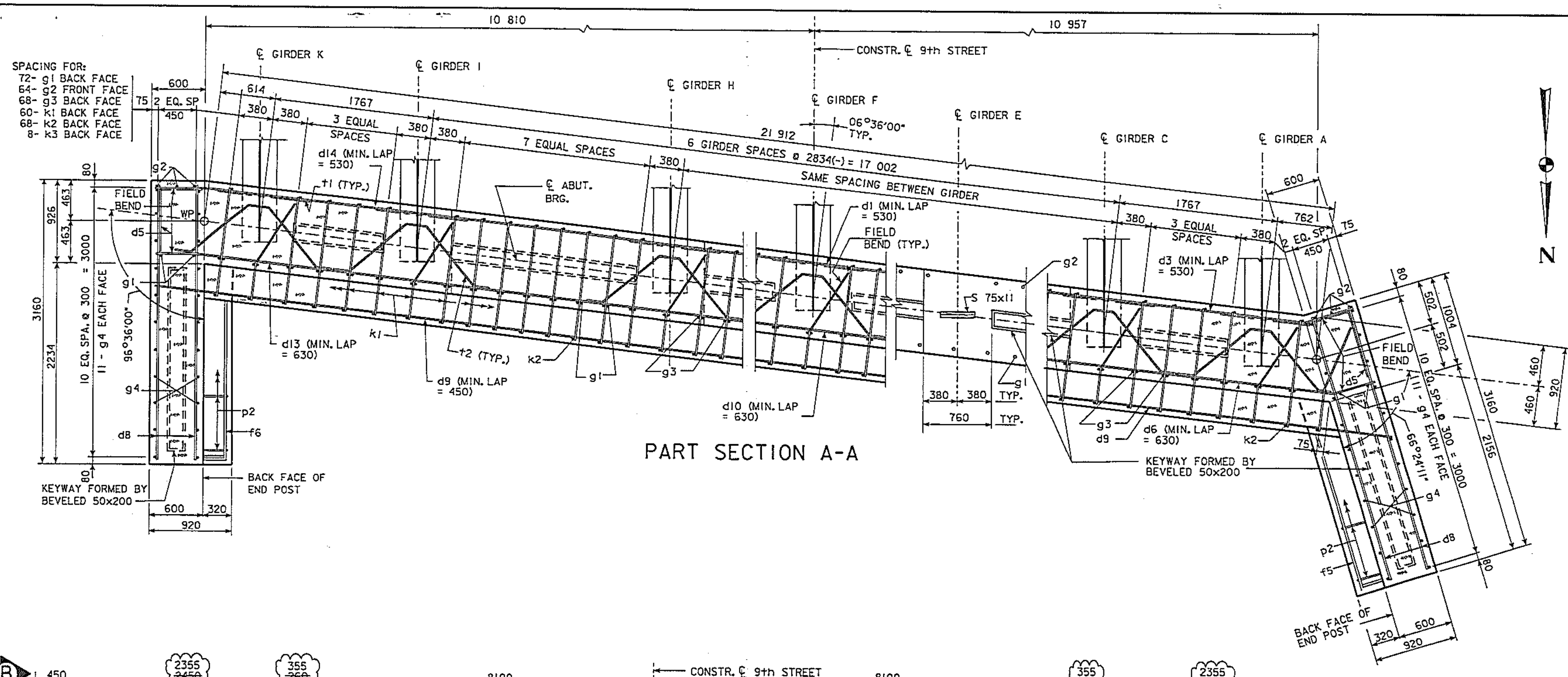

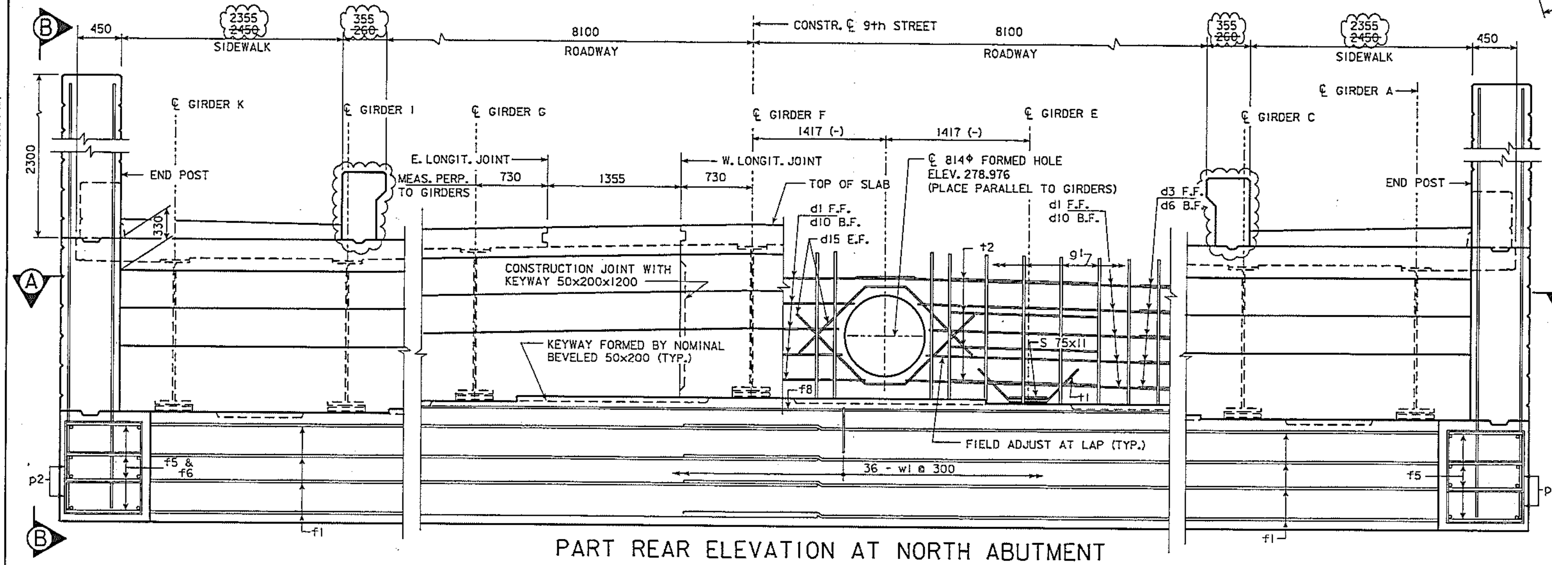

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SHIFT k2 BARS IN APPROACH SEAT TO MISS HOLE.
PLACE g3 BARS PARALLEL TO LONGITUDINAL STEEL.

FOR SECTION THRU ABUTMENT, VIEW B-B, SEE DESIGN SHEET 14.

REVISED 4/25/07, SEPARATION BARRIER

DESIGN FOR 6°36'00" SKEW (L.A.)

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25.300m, 31.600, 37.100 SPANS

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OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 13 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s13

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 14

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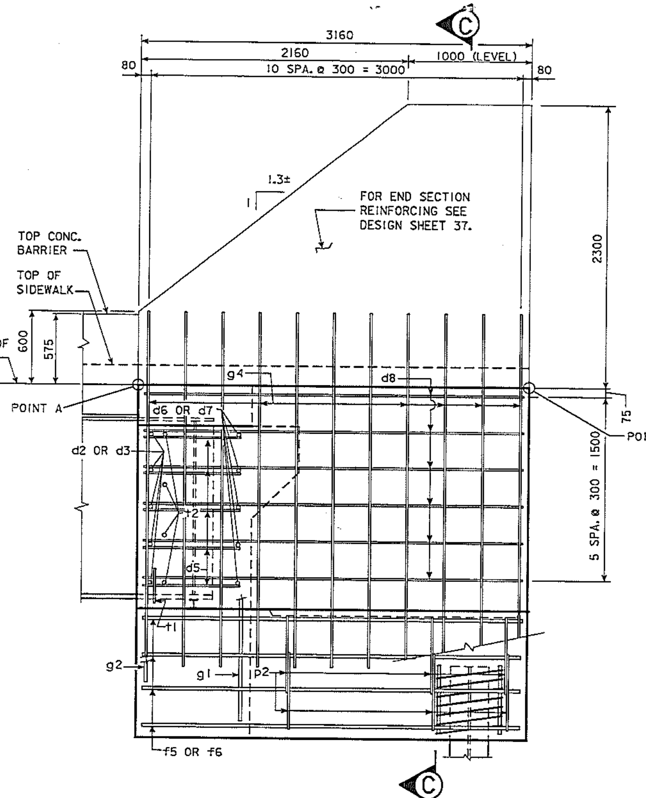
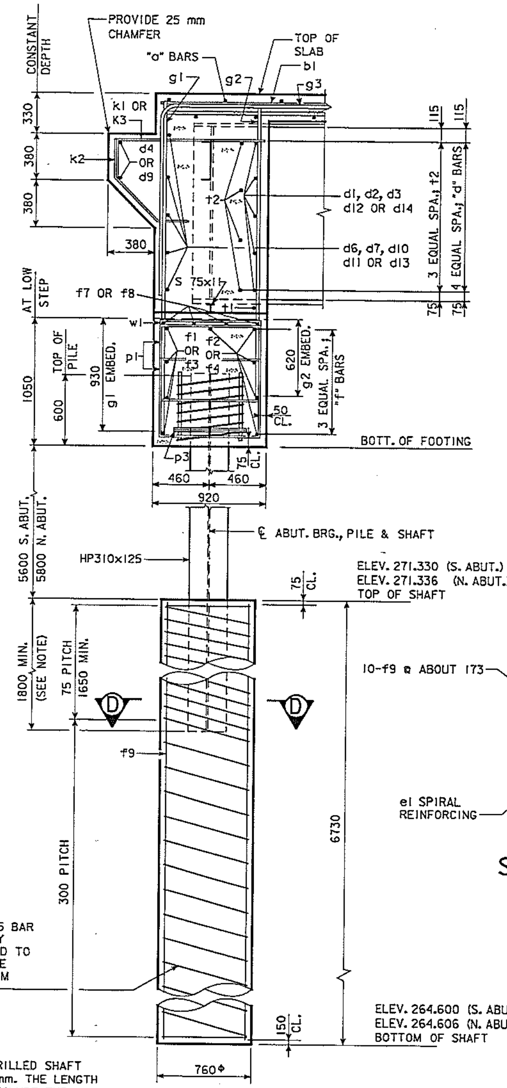


VIEW B - B

NOTE :
SEE DESIGN SHEETS 12 & 13 FOR LOCATION OF VIEW B - B



SECTION THRU ABUTMENT

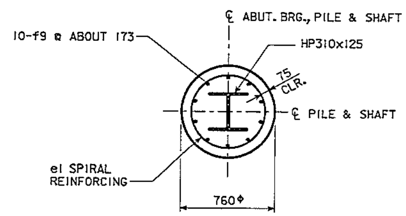
(NORTH ABUT. SHOWN, SOUTH ABUT. SIMILAR)

SPIRAL REINFORCING SHALL BE NO. 15 BAR WITH 610 DIAMETER, WITH 4 EQUALLY SPACED L22x22x3.2 SPACERS PUNCHED TO HOLD SPIRALS. SPIRALS ARE TO HAVE 1½ EXTRA TURNS AT TOP AND BOTTOM OF SHAFT.

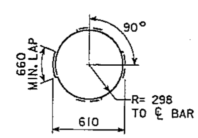
NOTE:
THE SPIRAL REINFORCING IN THE DRILLED SHAFT MAY BE SPLICED BY LAPPING 600 mm. THE LENGTH OF THE SPIRAL SHOWN DOES NOT INCLUDE THE LAPPED LENGTH OF SPLICES. THE COST OF THE LAPS AT SPLICES IS TO BE INCLUDED IN THE PRICE BID FOR REINFORCING.

NOTE : THE SPIRAL AT THE TOP OF EACH PILE TO BE 7 TURNS OF SIZE NO. W5 WIRE, CONFORMING TO ASTM A 82, 535 mm DIAMETER, 75 mm PITCH WITH 2 - L 22 x 22 x 3.2 SPACERS PUNCHED TO HOLD SPIRAL.

NOTE:
AT THE CONTRACTOR'S OPTION, THE HP310X125 MAY BE EXTENDED INTO THE SHAFT BEYOND THE 1800mm MINIMUM INDICATED. ALL COSTS ASSOCIATED WITH SUCH AN EXTENSION, INCLUDING THE COST OF ADDITIONAL FURNISHED PILE LENGTH, SHALL BE ASSUMED ENTIRELY BY THE CONTRACTOR AND NO ADDITIONAL PAYMENT WILL BE MADE.

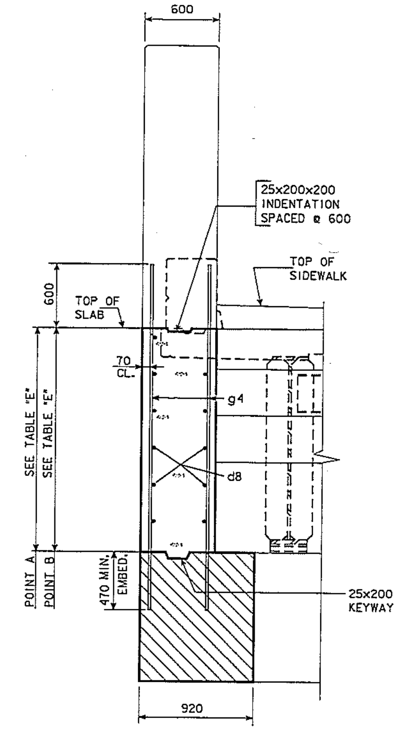


SECTION D-D



#15 ALTERNATE DRILLED SHAFT TIE

ROTATE LAP 90° EVERY LAYER WHEN PLACING BAR.



SECTION C -C

TABLE "E"		
LOCATION	POINT A	POINT B
SOUTHWEST CORNER	1750	1690
SOUTHEAST CORNER	1750	1690
NORTHWEST CORNER	1760	1730
NORTHEAST CORNER	1760	1730

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25.300m, 31.600, 37.100 SPANS

ABUTMENT DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)
OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 14 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY DL CHECKED BY MBQ
DETAILED BY FTE CADD FILE h772406.s14

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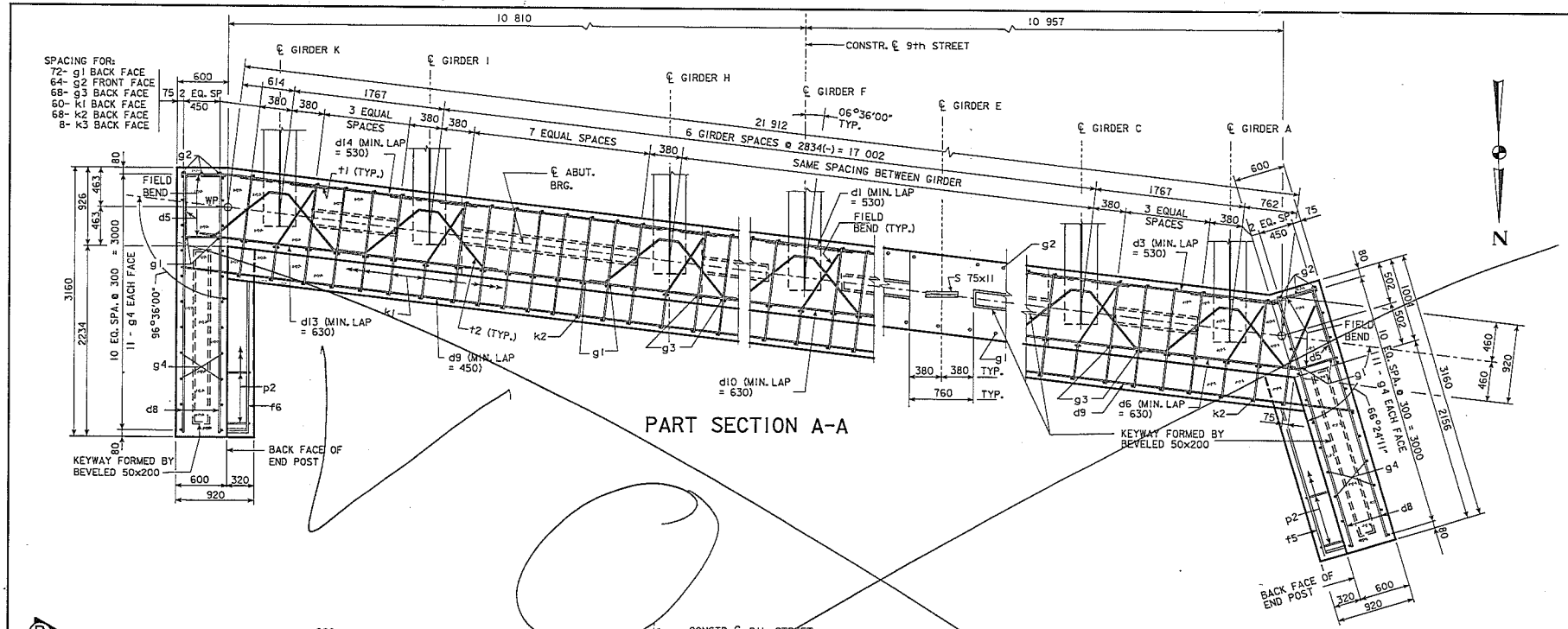
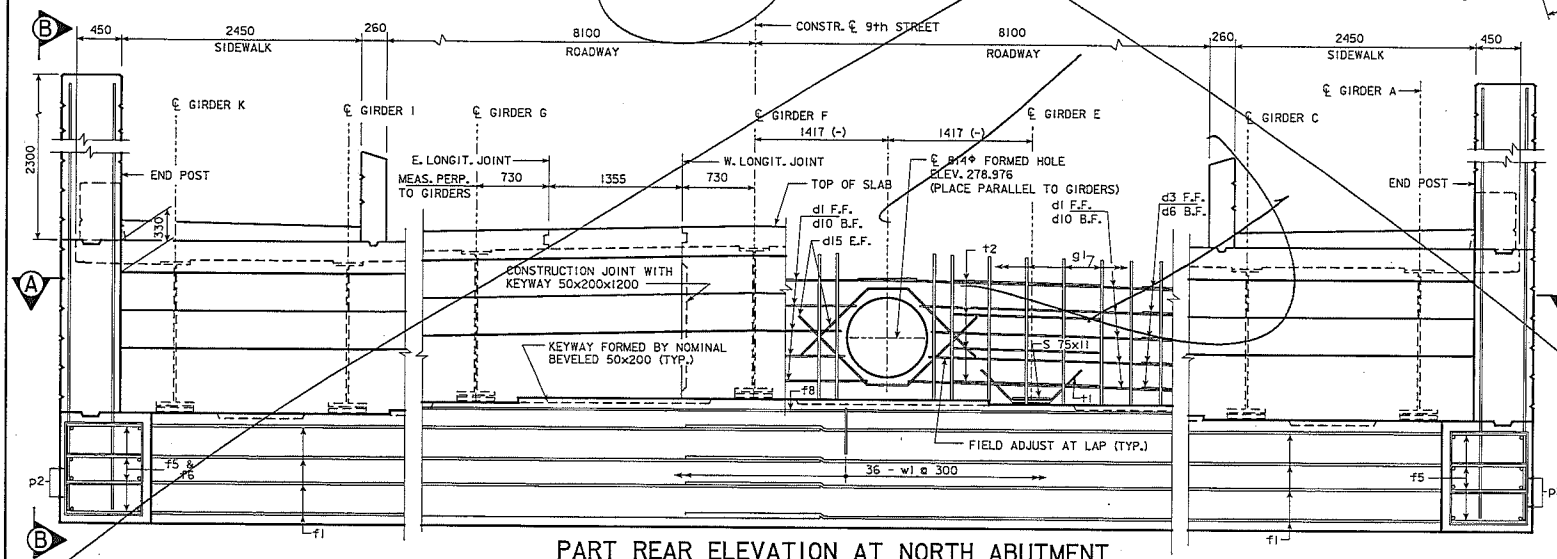


PART SECTION A-A



PART REAR ELEVATION AT NORTH ABUTMENT

NOTES :

SHIFT g2 BARS IN F.F. AS NECESSARY TO MISS GIRDERS AND HOLE. SHIFT g1 BARS IN B.F. TO MISS HOLE.
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PLACE g3 BARS PARALLEL TO LONGITUDINAL STEEL.

FOR SECTION THRU ABUTMENT, VIEW B-B, SEE DESIGN SHEET 14.

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OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 13 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s13

POLK COUNTY | PROJECT NUMBER | IM-235-2(313)8--13-77 | SHEET NUMBER 14

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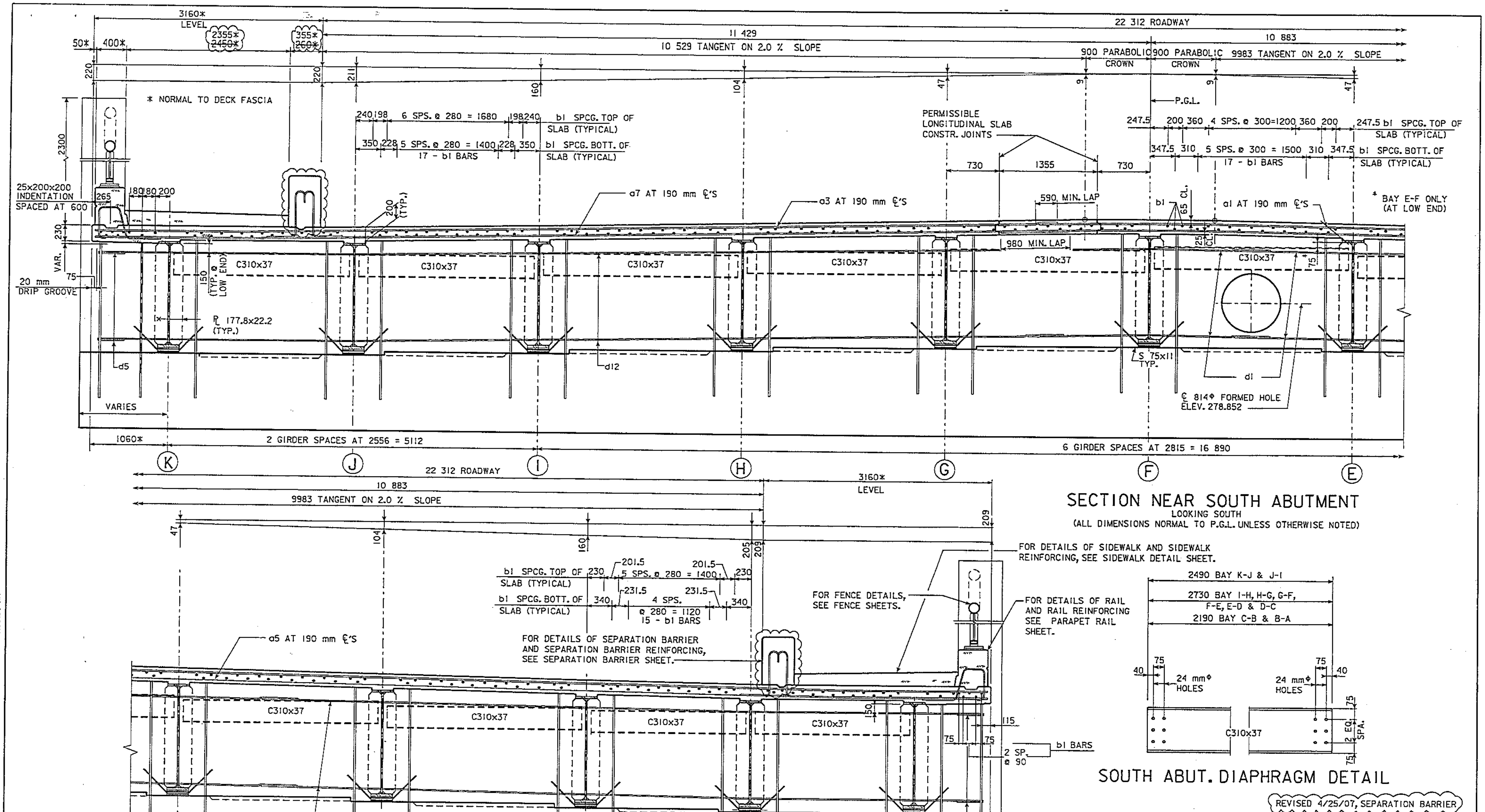

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25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

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OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 49 FILE NO. 29552 - DESIGN NO. 2406

DESIGNED BY MRQ	CHECKED BY DL		
DETAILED BY FTE	CADD FILE h772406.s16		
POLK COUNTY	PROJECT NUMBER	IM-235-2(313)8--13-77	SHEET NUMBER 17

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SUBDRAIN NOTES :

THIS PLAN SHEET SHOWS DETAILS FOR PLACING ALL SUBDRAINS AND SUBDRAIN OUTLETS REQUIRED FOR THIS STRUCTURE.

THE SUBDRAINS SHALL BE 100 mm IN DIAMETER AND MEET THE REQUIREMENTS OF SECTION 4143.01B OF THE CURRENT I.D.O.T. STANDARD SPECIFICATION. THE SUBDRAIN OUTLET SHALL BE CONNECTED TO OTHER DRAINAGE SYSTEMS AS DETAILED ON THIS SHEET.

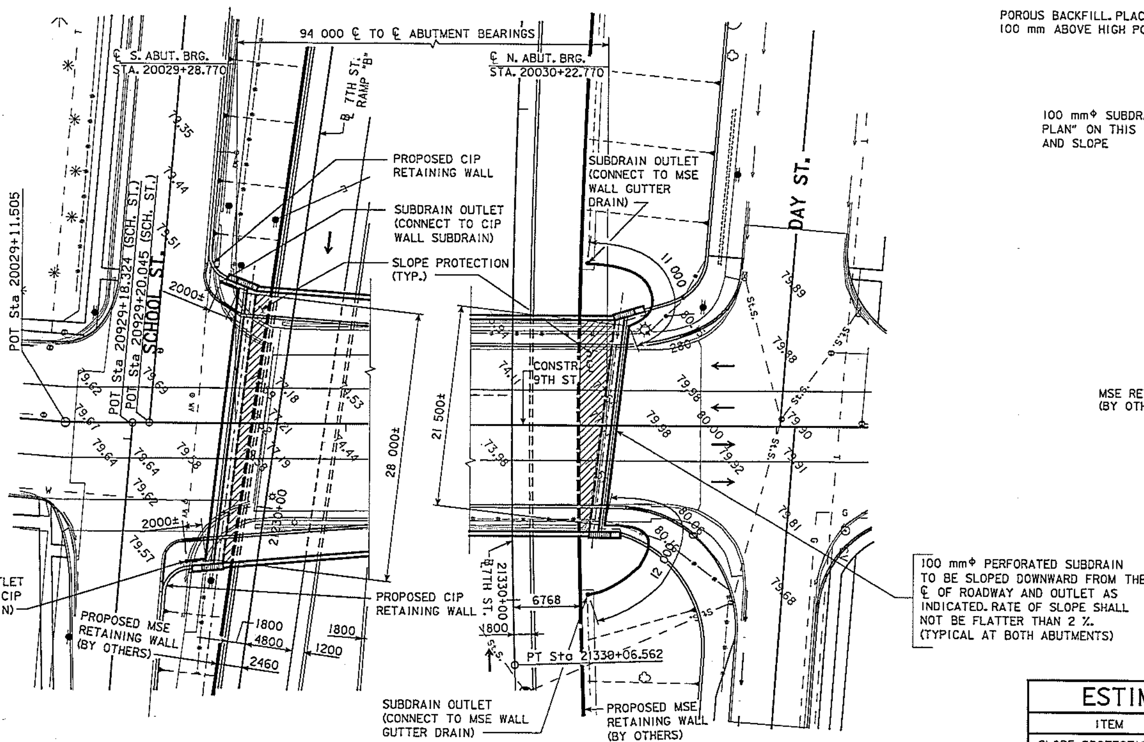
THE COST OF FURNISHING AND PLACING SUBDRAIN (INCLUDING EXCAVATION), GRANULAR BACKFILL, POROUS BACKFILL, AND SUBDRAIN OUTLET IS TO BE INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE (BRIDGE)". NO EXTRA PAYMENT WILL BE MADE.

THE DIMENSIONS SHOWN FOR THE PROPOSED SUBDRAINS ARE BASED ON THE PROPOSED LAYOUT OF MSE GUTTER DRAINS AND CIP WALL SUBDRAINS. THE DIMENSIONS SHOWN ARE FOR ESTIMATING ONLY. REQUIRED LENGTHS AND GENERAL LOCATIONS OF SUBDRAINS ARE SUBJECT TO CHANGE DUE TO FIELD ADJUSTMENTS OF THE LAYOUT.

SLOPE PROTECTION NOTE :

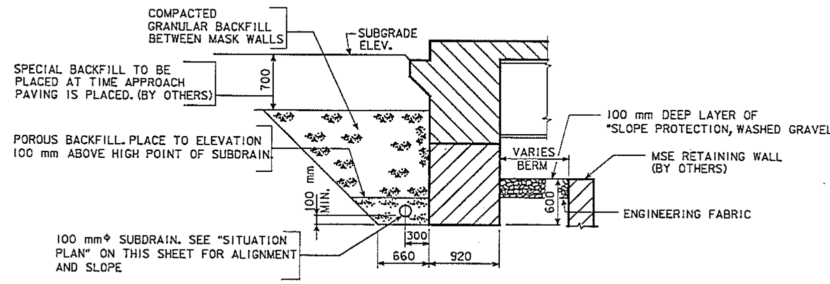
THE BRIDGE BERM FORESLOPE SHALL BE AS SHOWN ON THE SITUATION PLAN AND THE SLOPE PROTECTION DETAIL. THE ENGINEERING FABRIC SHALL MEET THE REQUIREMENTS OF 4196.01C. IF THE ENGINEERING FABRIC IS LAPPED, THE LAPS SHALL BE A MINIMUM OF 300 mm IN LENGTH, SHINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY. THE WASHED GRAVEL SHALL MEET THE REQUIREMENT OF 4131, GRAVEL (NO LIMESTONE OR DOLOMITE IS ALLOWED). THE WASHED GRAVEL SHALL BE DEPOSITED, SPREAD, CONSOLIDATED AND SHAPED BY MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE.

SUBDRAIN OUTLET ELEVATIONS	
LOCATION	ELEVATION
NORTHWEST ABUTMENT	COORDINATE WITH MSE WALL CONTRACTOR
NORTHEAST ABUTMENT	COORDINATE WITH MSE WALL CONTRACTOR
SOUTHWEST ABUTMENT	COORDINATE WITH CIP WALL CONTRACTOR
SOUTHEAST ABUTMENT	COORDINATE WITH CIP WALL CONTRACTOR



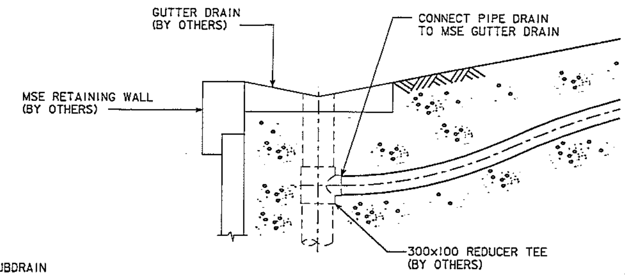
SITUATION PLAN

SHOWING SUBDRAIN LOCATIONS AND LIMITS OF SLOPE PROTECTION



GRANULAR BACKFILL DETAIL & SLOPE PROTECTION DETAIL

NOTE: SPECIAL BACKFILL MAY BE SUBSTITUTED FOR GRANULAR BACKFILL.



MSE GUTTER DRAIN DETAIL

ESTIMATED QUANTITIES		
ITEM	UNIT	TOTAL
SLOPE PROTECTION WASHED GRAVEL	m^2	100.0
ENGINEERING FABRIC	m^2	110.0

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SUBDRAIN & SLOPE PROTECTION

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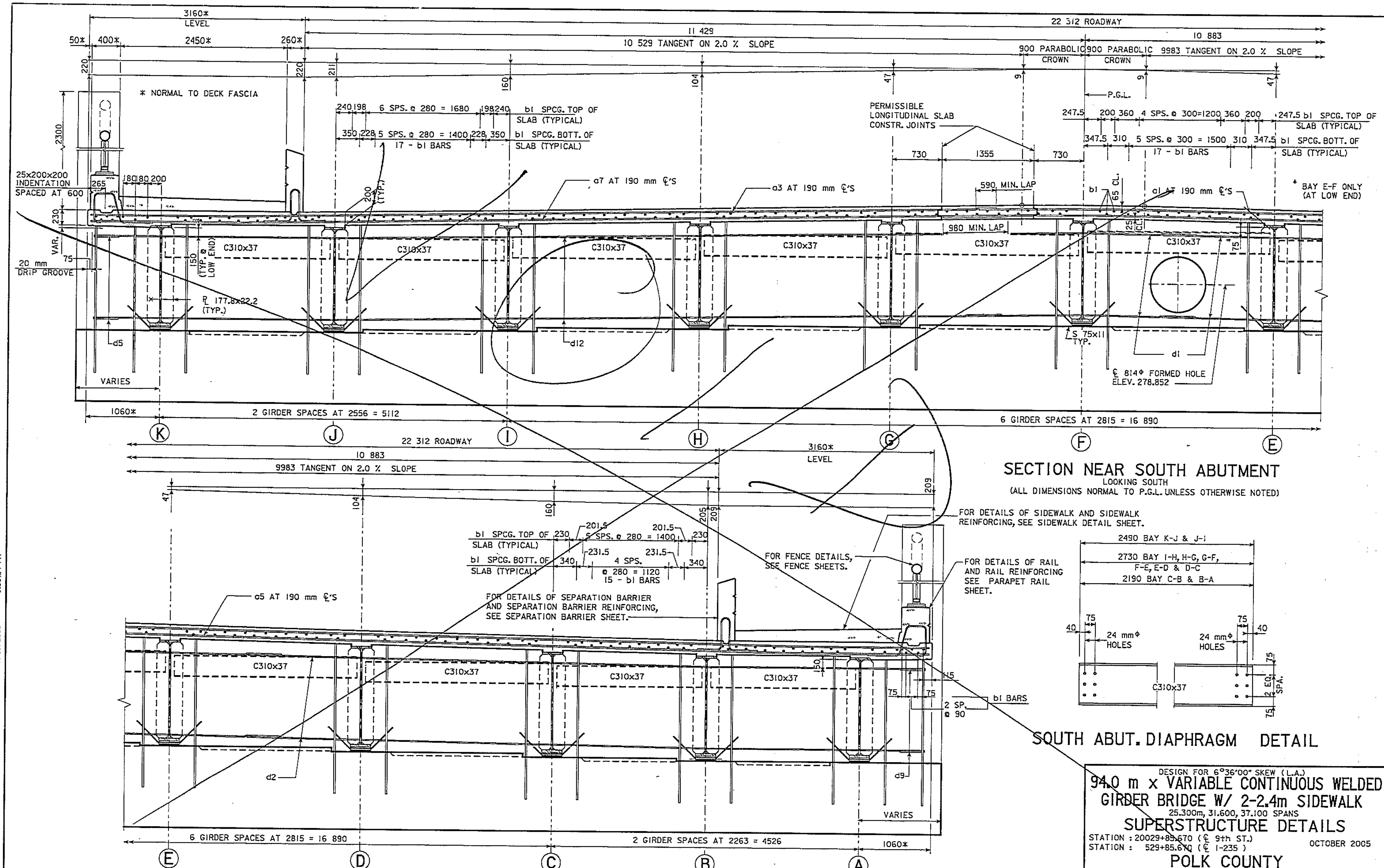
OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 49 FILE NO. 29552 DESIGN NO. 2406



DESIGN FOR 6°36'00" SKEW (L.A.)

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SUPERSTRUCTURE DETAILS

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OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s16

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 17

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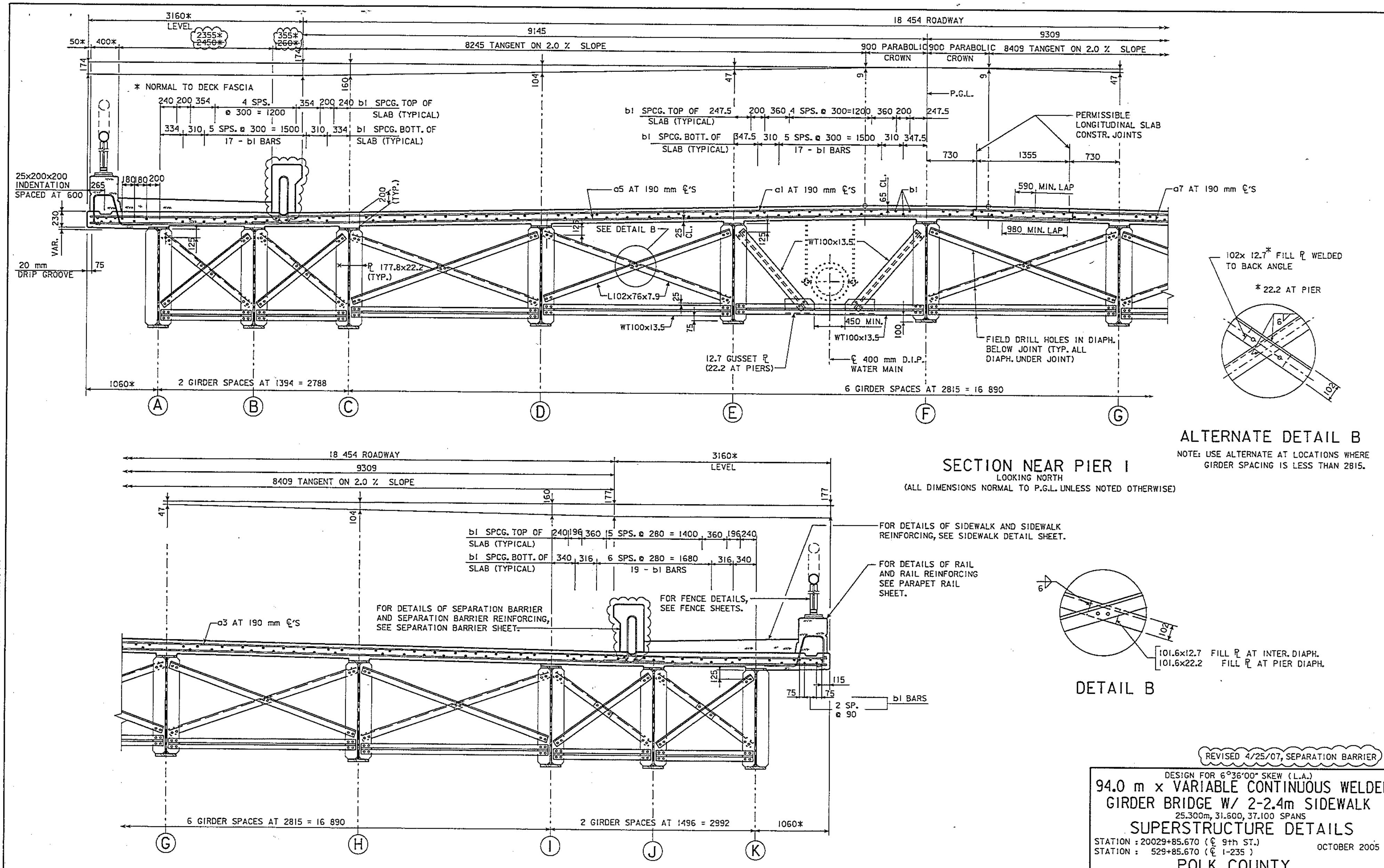

REVISED 4/25/07, SEPARATION BARRIER

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OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ DETAILED BY FTE	CHECKED BY DL CADD FILE h772406.s17	9600 mm RDWY. WELDED GIRDER CROSS SECTION	STANDARD SHEET M4306	POLK COUNTY	PROJECT NUMBER IM-235-2(313)8--13-77	SHEET NUMBER 18

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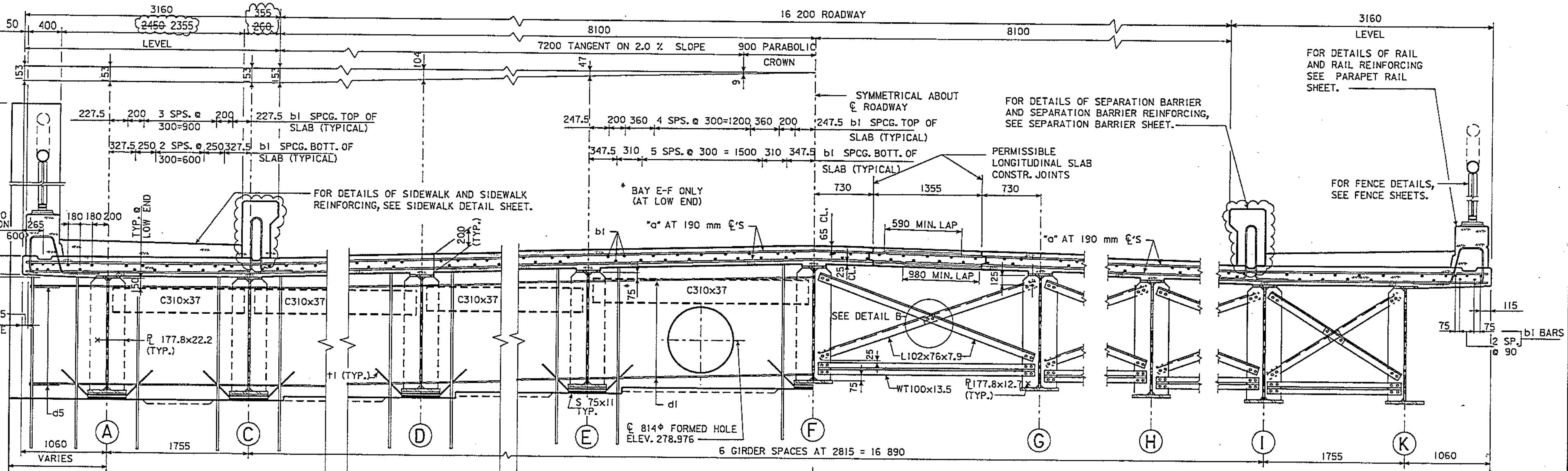
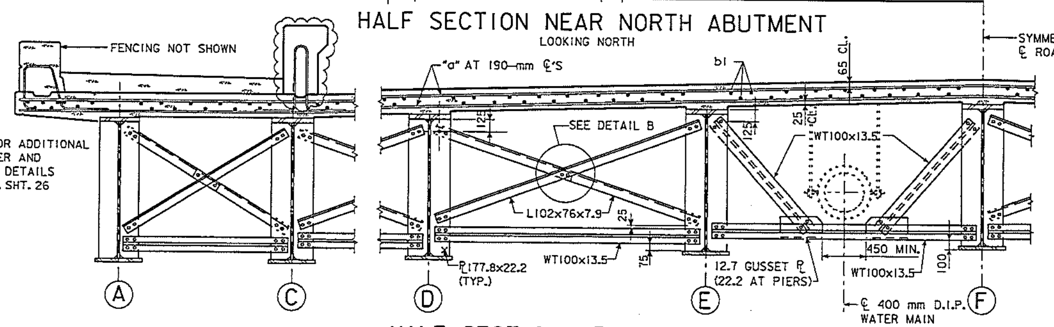


HALF SECTION NEAR NORTH ABUTMENT

LOOKING NORTH

HALF SECTION NEAR INTERMEDIATE DIAPHRAGM

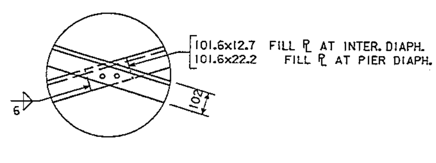
LOOKING NORTH



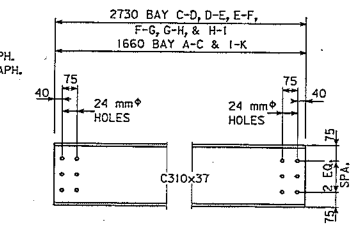
NOTE: FOR ADDITIONAL STIFFENER AND WELDING DETAILS SEE DES. SHT. 26

HALF SECTION NEAR PIER 2

LOOKING NORTH



DETAIL B



NORTH ABUT. DIAPHRAGM DETAIL

SUPERSTRUCTURE NOTES:

THE FLOOR SLAB AS SHOWN INCLUDES 13 mm INTEGRAL WEARING SURFACE.

FORMS FOR THE SLAB AND BARRIER RAIL ARE TO BE SUPPORTED BY THE GIRDERS.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 50 mm UNLESS OTHERWISE NOTED OR SHOWN.

TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 65 mm CLEAR BELOW TOP OF SLAB. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 25 mm CLEAR ABOVE BOTTOM OF SLAB. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL EPOXY COATED METAL BAR CHAIRS SPACED AT NOT MORE THAN 900 mm CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF EPOXY COATED METAL BAR HIGH CHAIRS OR SLAB BOLSTERS SPACED 1200 mm APART.

ALL REINFORCING BARS ARE TO BE EPOXY COATED.

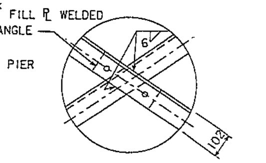
ALL FIELD CONNECTIONS ARE TO BE BOLTED USING "HIGH STRENGTH BOLTS". UNLESS OTHERWISE NOTED, ALL OPEN HOLES ARE TO BE 24 mmΦ AND ALL BOLTS ARE TO BE 22.2 mmΦ.

BOTTOM FLANGES ARE TO BE PERPENDICULAR TO WEBS AT THE REACTION POINTS.

FILL ℞ THICKNESSES SHOWN ON PLANS ARE BASED ON 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 2 mm IN THICKNESS AND SINGLE PLATES ARE REQUIRED AT EACH FILL LOCATION. GIRDERS ARE TO BE TRULY SQUARE AT SPLICE POINTS WITH FLANGES PERPENDICULAR TO WEBS.

THE DESIGN DRAWINGS INDICATE AWS PREQUALIFIED WELDED JOINTS. ALTERNATE JOINT DETAILS MAY BE SUBMITTED FOR APPROVAL.

MAGNETIC PARTICLE INSPECTION OF WELDS, IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, WILL BE REQUIRED.



ALTERNATE DETAIL B

NOTE: USE ALTERNATE AT LOCATIONS WHERE GIRDER SPACING IS LESS THAN 2815.

REVISED 4/25/07, SEPARATION BARRIER

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 18 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s18

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 19

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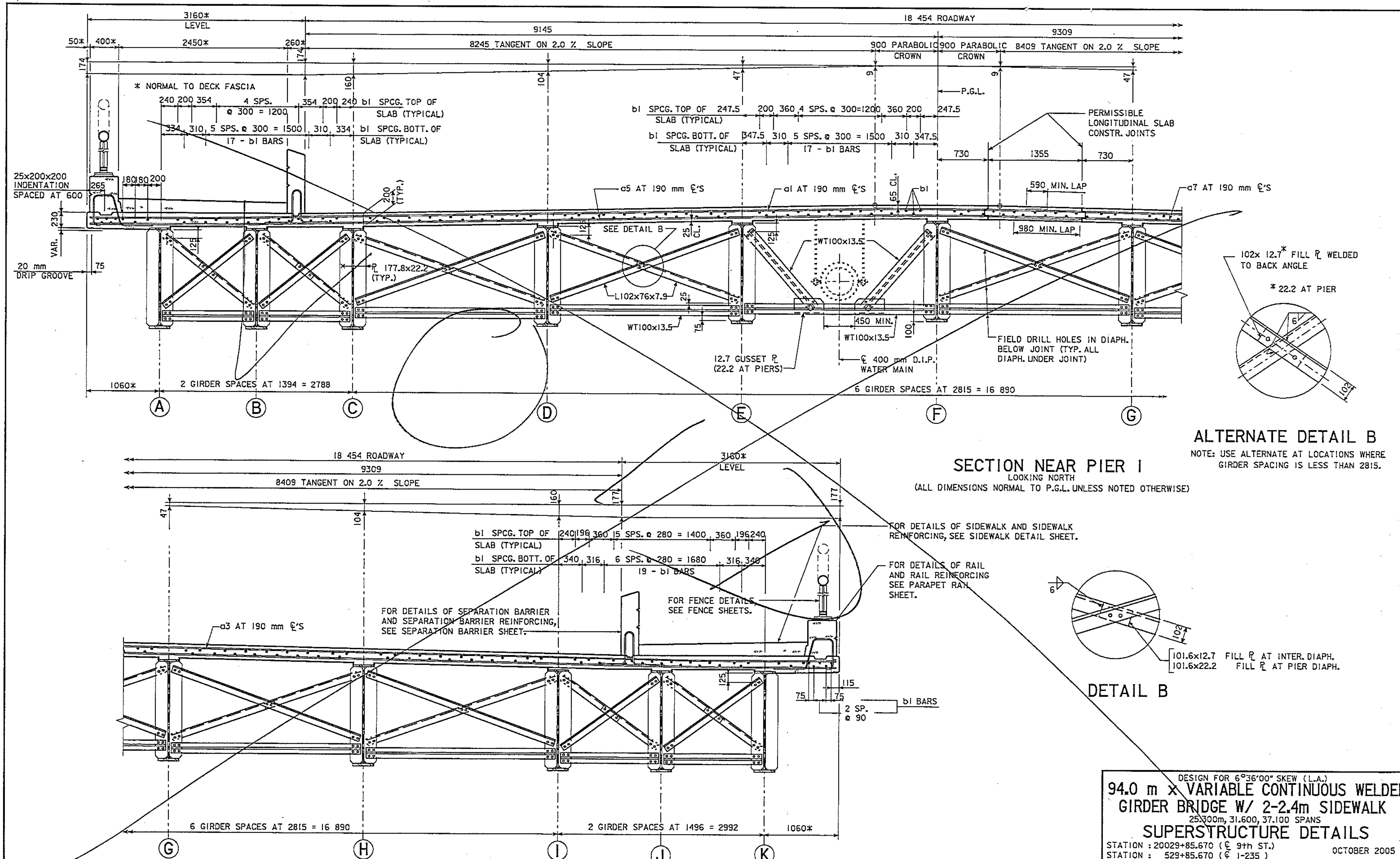

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ	CHECKED BY DL	9600 mm RDWY. WELDED GIRDER CROSS SECTION	STANDARD SHEET M4306	POLK COUNTY	PROJECT NUMBER IM-235-2(313)8--13-77	SHEET NUMBER 18
DETAILED BY FTE	CADD FILE h772406.s17					

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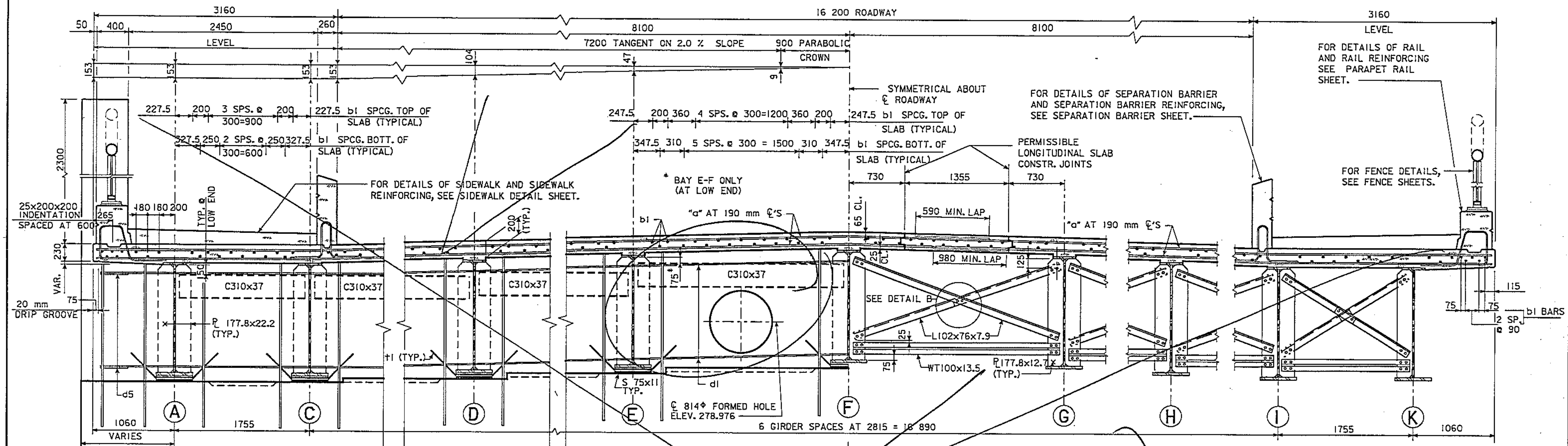
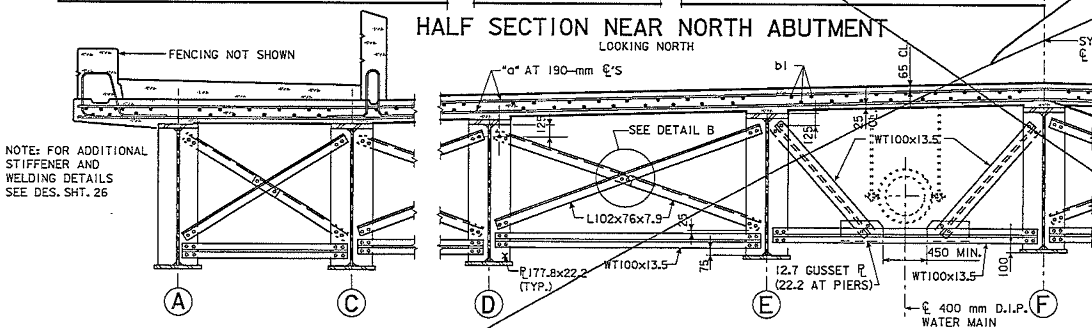
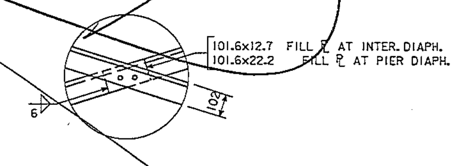


HALF SECTION NEAR NORTH ABUTMENT
LOOKING NORTH

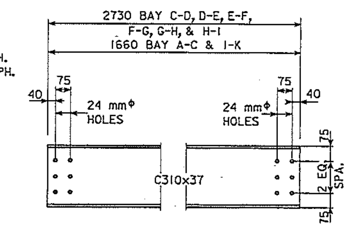
HALF SECTION NEAR INTERMEDIATE DIAPHRAGM
LOOKING NORTH



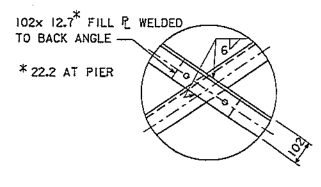
HALF SECTION NEAR PIER 2
LOOKING NORTH



DETAIL B



NORTH ABUT. DIAPHRAGM DETAIL



ALTERNATE DETAIL B

NOTE: USE ALTERNATE AT LOCATIONS WHERE GIRDER SPACING IS LESS THAN 2815.

SUPERSTRUCTURE NOTES:

THE FLOOR SLAB AS SHOWN INCLUDES 13 mm INTEGRAL WEARING SURFACE.

FORMS FOR THE SLAB AND BARRIER RAIL ARE TO BE SUPPORTED BY THE GIRDERS.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR SHALL BE 50 mm UNLESS OTHERWISE NOTED OR SHOWN.

TOP TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 65 mm CLEAR BELOW TOP OF SLAB. BOTTOM TRANSVERSE REINFORCING STEEL IS TO BE PARALLEL TO AND 25 mm CLEAR ABOVE BOTTOM OF SLAB. TOP AND BOTTOM REINFORCING STEEL IS TO BE SUPPORTED BY INDIVIDUAL EPOXY COATED METAL BAR CHAIRS SPACED AT NOT MORE THAN 900 mm CENTERS LONGITUDINALLY AND TRANSVERSELY, OR BY CONTINUOUS ROWS OF EPOXY COATED METAL BAR HIGH CHAIRS OR SLAB BOLSTERS SPACED 1200 mm APART.

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FILL ℘ THICKNESSES SHOWN ON PLANS ARE BASED ON 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 2 mm IN THICKNESS AND SINGLE PLATES ARE REQUIRED AT EACH FILL LOCATION. GIRDERS ARE TO BE TRULY SQUARE AT SPLICE POINTS WITH FLANGES PERPENDICULAR TO WEBS.

THE DESIGN DRAWINGS INDICATE AWS PREQUALIFIED WELDED JOINTS. ALTERNATE JOINT DETAILS MAY BE SUBMITTED FOR APPROVAL.

MAGNETIC PARTICLE INSPECTION OF WELDS, IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, WILL BE REQUIRED.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

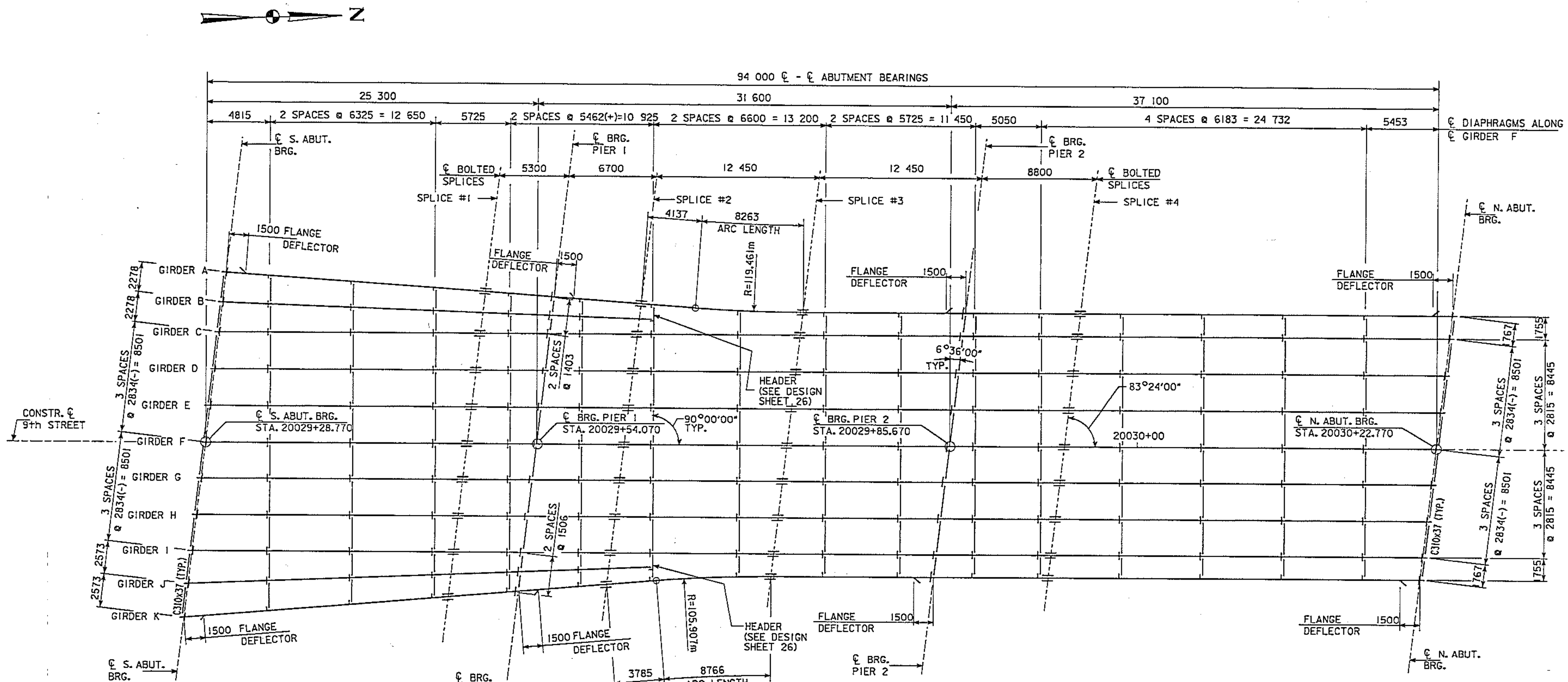
OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 18 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ	CHECKED BY DL	POLK COUNTY	PROJECT NUMBER IM-235-2(313)8--13-77
DETAILED BY FTE	CADD FILE h772406.s18		SHEET NUMBER 19



STRUCTURAL STEEL LAYOUT

NOTE:

CONTRACTOR MAY ELIMINATE ONE OR MORE FIELD SPLICES PROVIDED THAT THE APPROPRIATE SHOP DRAWINGS ARE SUBMITTED FOR APPROVAL AND ALL SHIPPING AND ERECTION CRITERIA ARE MET. PAYMENT WILL BE MADE BASED ON PLATE LENGTHS AND SIZES SHOWN IN THE PLANS AND NO ADDITIONAL COMPENSATION WILL BE PROVIDED.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
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OCTOBER 2005

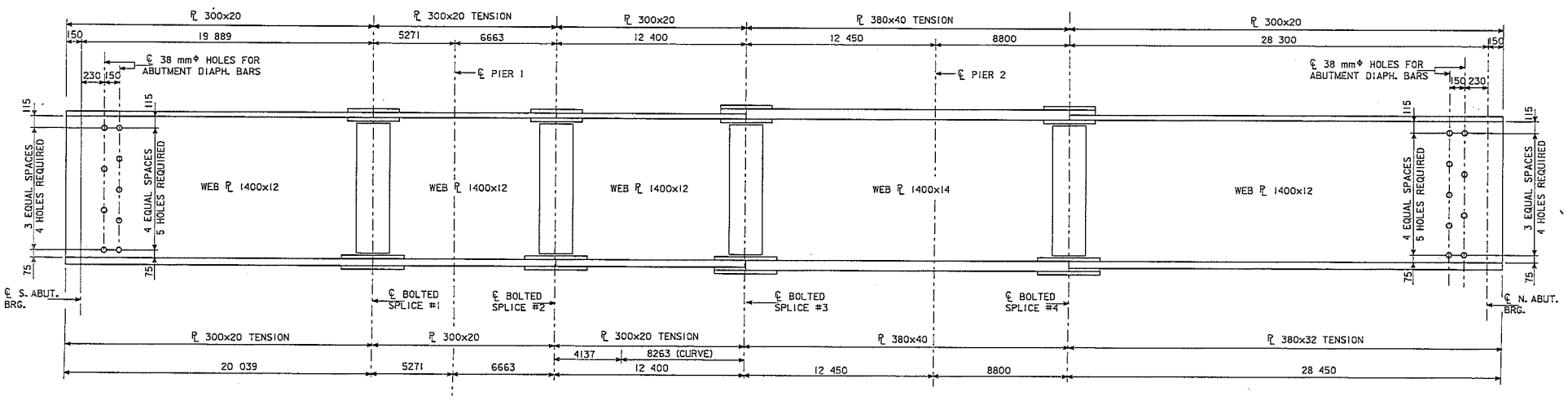
POLK COUNTY

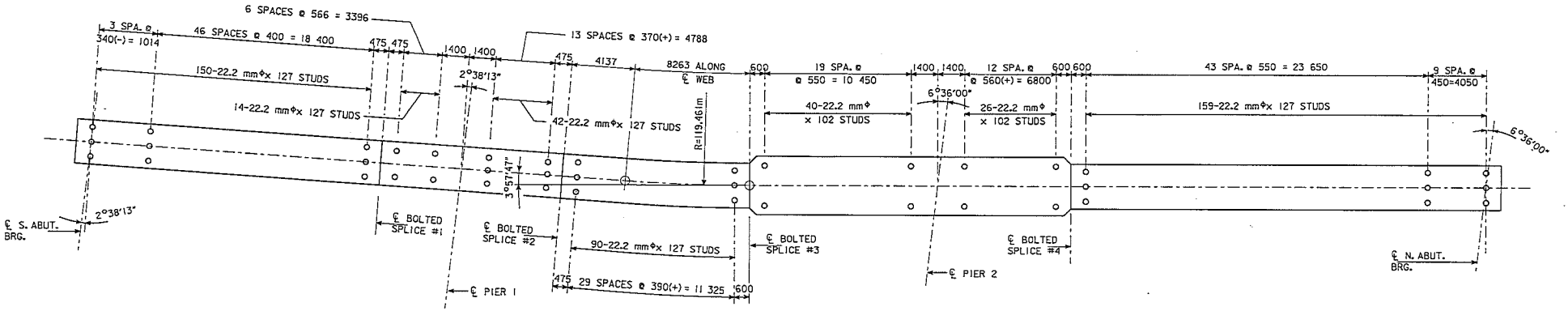
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 19 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY RAM CHECKED BY MBQ
DETAILED BY FTE CADD FILE h772406.s19

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 20





GIRDER A SHEAR STUD SPACING

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 20 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY RAM CHECKED BY MBQ
DETAILED BY FTE CADD FILE h772406.s20

POLK COUNTY | PROJECT NUMBER | IM-235-2(313)8--13-77 | SHEET NUMBER 21

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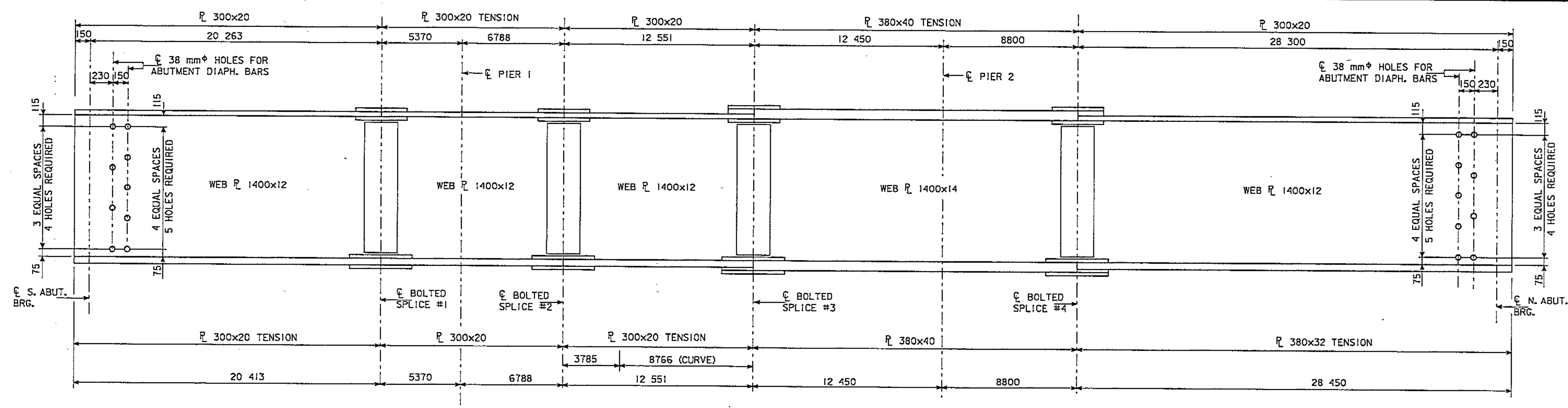
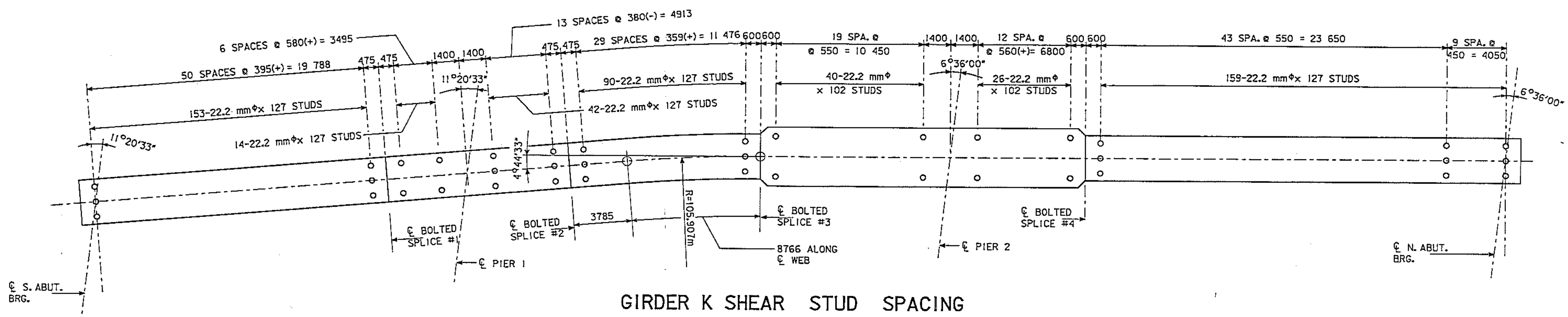


GIRDER K DETAILS



GIRDER K SHEAR STUD SPACING

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 21 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY RAM CHECKED BY MBQ
DETAILED BY FTE CADD FILE h772406.s21

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 22

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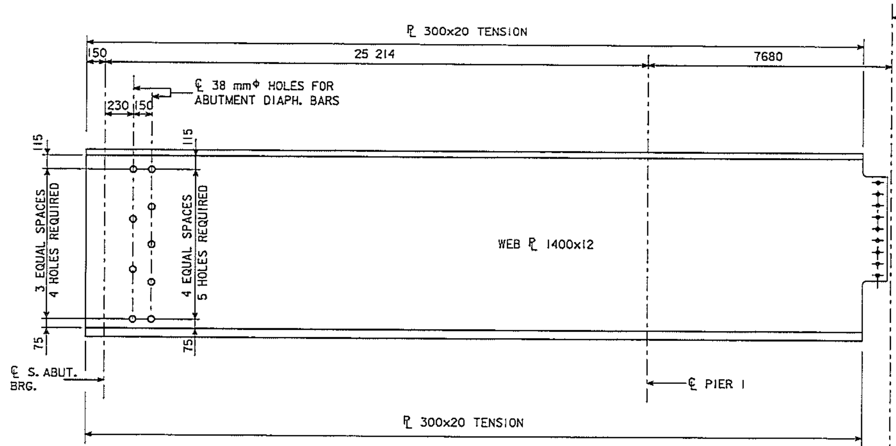
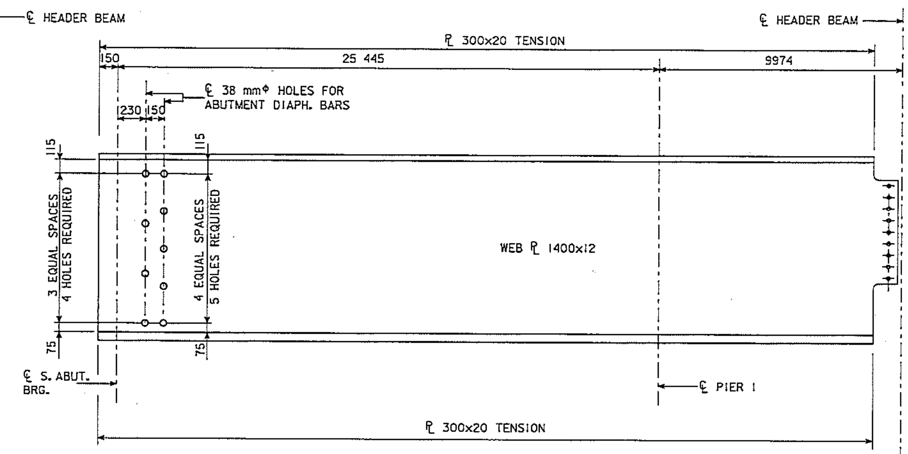
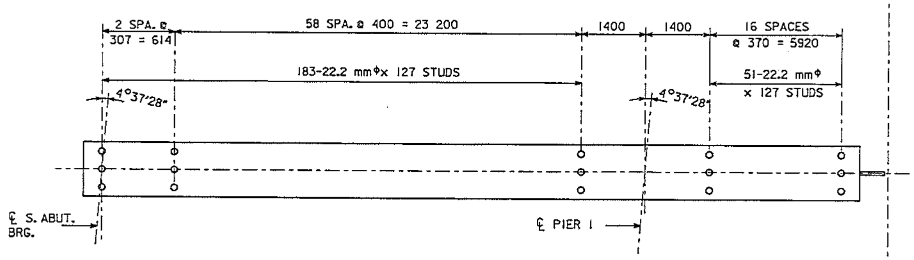


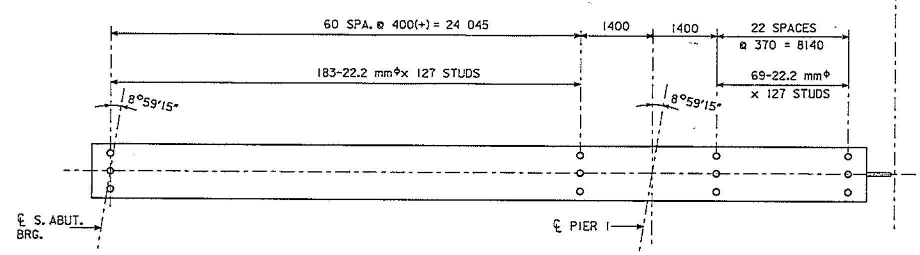
GIRDER B DETAILS



GIRDER J DETAILS



GIRDER B SHEAR STUD SPACING



GIRDER J SHEAR STUD SPACING

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 22 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY RAM CHECKED BY MBQ
DETAILED BY FTE CADD FILE h772406.s22

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 23

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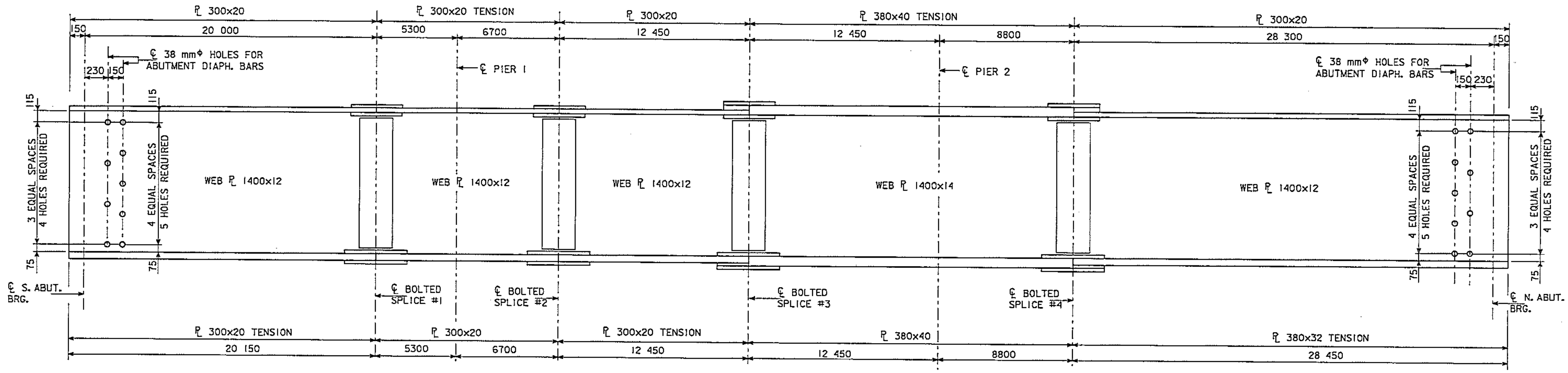
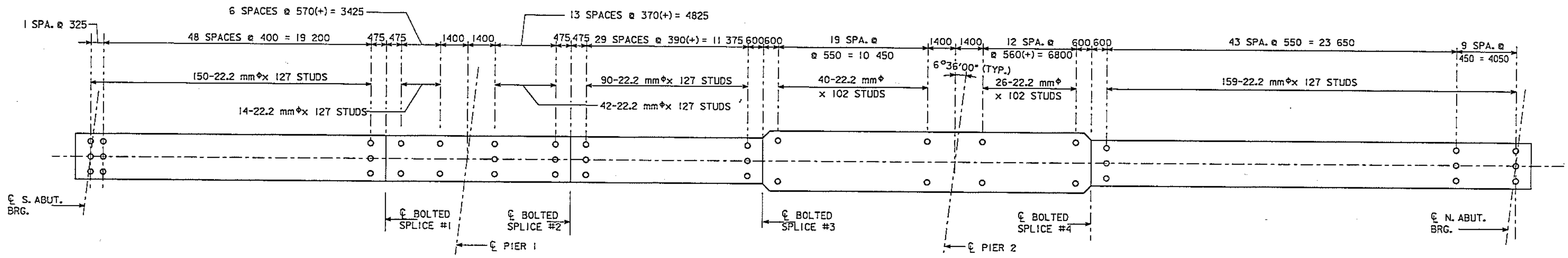
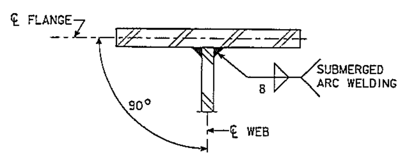


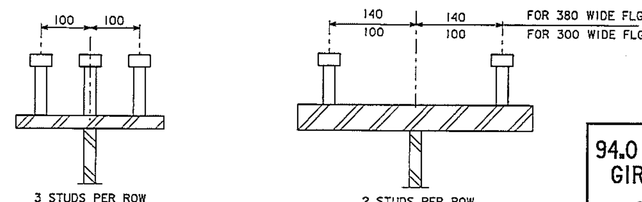
GIRDER DETAILS - C THRU I



SHEAR STUD SPACING - GIRDERS C THRU I



FLANGE TO WEB DETAIL



SHEAR STUD DETAILS

NOTE : ALL STUDS TO BE 22.2 mm$^\Phi$

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 23 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY RAM CHECKED BY MBQ
DETAILED BY FTE CADD FILE h772406.s23

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 24

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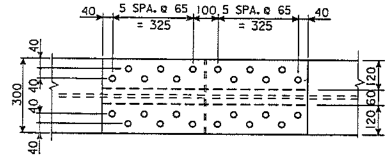
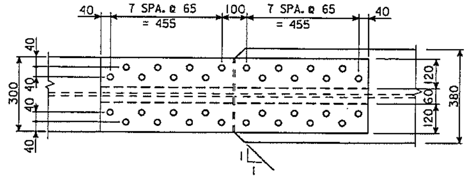
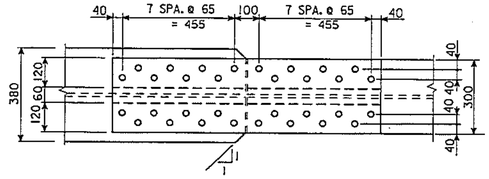


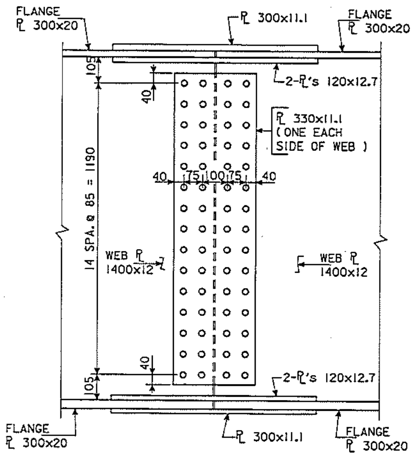
TOP FLANGE

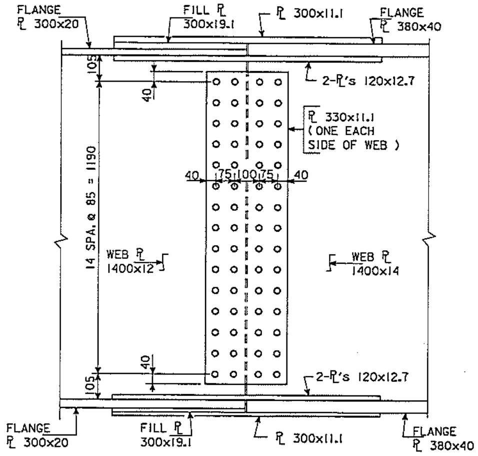


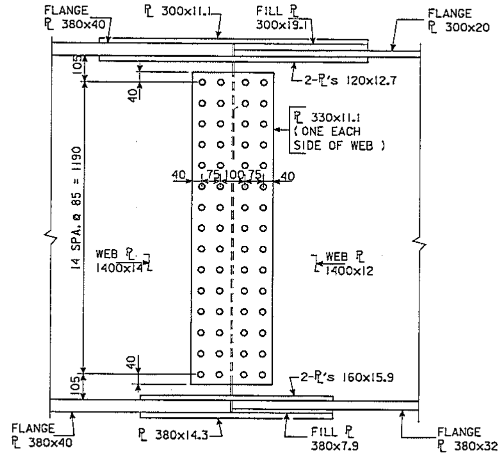
TOP FLANGE

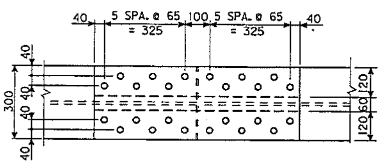


TOP FLANGE



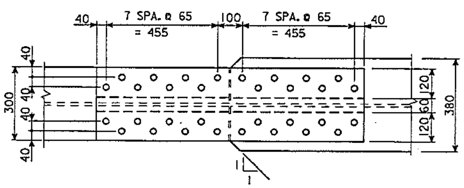






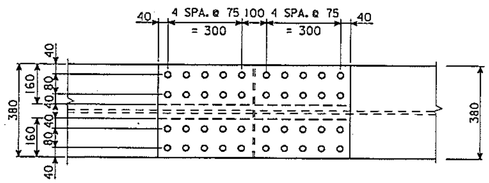
BOTTOM FLANGE

DETAILS OF SPLICES #1 & #2



BOTTOM FLANGE

DETAILS OF SPLICE #3



BOTTOM FLANGE

DETAILS OF SPLICE #4

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 24 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY RAM	CHECKED BY MBQ	POLK COUNTY	PROJECT NUMBER	IM-235-2(313)8--13-77	SHEET NUMBER 25
DETAILED BY FTE	CADD FILE h772406.s24				

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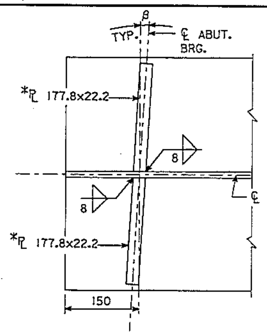
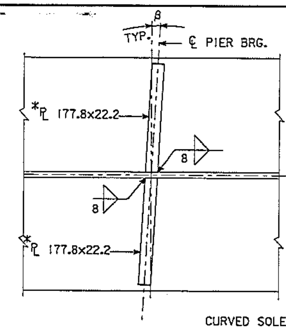


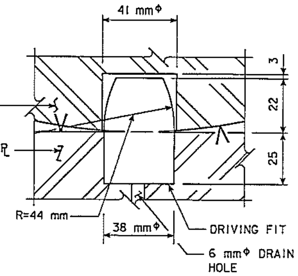
ABUTMENT BEARING STIFFENERS



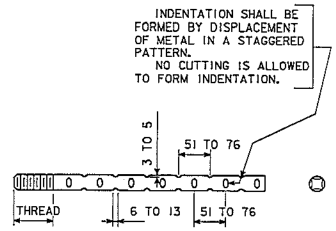
PIER BEARING STIFFENERS

* BEVEL GIRDER J AND GIRDER K BEARING STIFFENER PLATES TO FIT AGAINST WEB AT S. ABUTMENT AND PIER I.

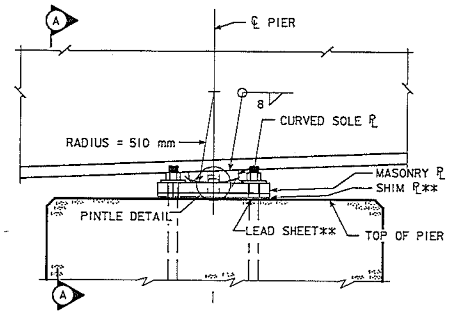
TABLE OF β VALUES				
BEARING LOCATION	S. ABUT	PIER I	PIER 2	N. ABUT.
GIRDER A	2°38'13"	2°38'13"	6°36'00"	6°36'00"
GIRDER B	4°37'28"	4°37'28"	--	--
GIRDER C THRU I	6°36'00"	6°36'00"	6°36'00"	6°36'00"
GIRDER J	8°59'15"	8°59'15"	--	--
GIRDER K	11°20'33"	11°20'33"	6°36'00"	6°36'00"



PINTLE DETAIL

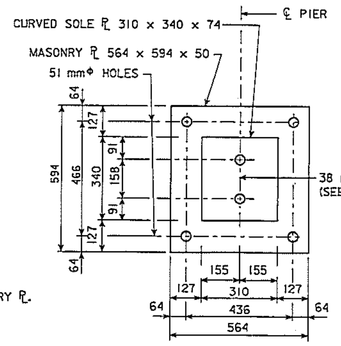


ANCHOR BOLT SWEDGE DETAIL

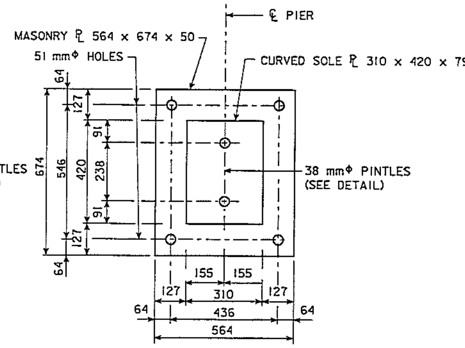


PART ELEVATION AT PIER
(LOOKING WEST)

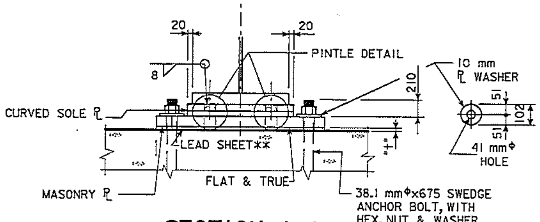
** LEAD SHEET/AND SHIM PLATE SHALL BE SAME PLAN DIMENSION AS MASONRY ℔.
LEAD SHEET SHALL BE 3mm THICK. SEE TABLE FOR SHIM ℔ THICKNESS.



PLAN VIEW OF MASONRY AND SOLE PLATES PIER I



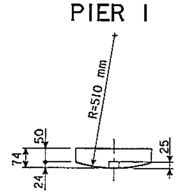
PLAN VIEW OF MASONRY AND SOLE PLATES PIER 2



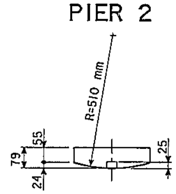
SECTION A-A

TABLE OF SHIM PLATE THICKNESS "t" (mm)

GIRDER	A	B	C	D	E	F	G	H	I	J	K
PIER 1	27	26	39	0	0	0	0	81	22	2	0
PIER 2	0	-	5	57	0	0	0	64	17	-	13



ELEVATION OF CURVED SOLE PLATE PIER I



ELEVATION OF CURVED SOLE PLATE PIER 2

FIXED PIER BEARINGS

WEATHERING STEEL NOTES :

ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM A709M GRADE 345W. THE MINIMUM YIELD POINT FOR GRADE 345W STRUCTURAL STEEL IS 345 MPa FOR PLATES 100 mm AND UNDER IN THICKNESS, AND ALL STRUCTURAL SHAPES. THE GRADE 345W STEEL IS A WEATHERING STEEL AND IS TO REMAIN UNPAINTED, EXCEPT AS NOTED.

FLANGE DEFLECTORS AS DETAILED ON DESIGN SHTS. 19 & 26 ARE TO BE GRADE 250 OR 345W.

ALL PIECES COMPRISING THE ABUTMENT AND PIER BEARINGS SHALL COMPLY WITH THE REQUIREMENTS AS STATED IN THE NOTES ON THIS SHEET.

SHEAR STUDS ARE TO BE OF AN APPROVED TYPE LISTED IN MATERIALS I.M. 453.10, APPENDIX A.

THE FINISH ON BEARINGS, FLANGE DEFLECTORS AND WEATHERING STEEL SHALL BE IN ACCORDANCE WITH THE PLAN NOTES AND STANDARD SPECIFICATION 2408. ALL WEATHERING STEEL EMBEDDED INTO AN INTEGRAL ABUTMENT SHALL BE PAINTED TO A DISTANCE OF 300 mm FROM THE CONCRETE FACE AND SEALED BY CAULKING AT THE ABUTMENT CONCRETE AND STEEL INTERFACE.

THE GRADE 345W STEEL FOR THE WEBS OF THE EXTERIOR GIRDERS OF THE BRIDGE SHALL BE OF THE SAME TYPE AND FROM THE SAME SOURCE.

BOLTS FOR USE WITH WEATHERING STEEL SHALL BE A325 TYPE III WITH A563 GRADE DH3 NUTS AND F436 TYPE III WASHERS.

BOLTS USED TO SPLICE GIRDER SECTIONS ARE TO BE INSTALLED SUCH THAT NUTS ARE ON THE INSIDE FACE OF THE GIRDER WEBS FOR THE EXTERIOR GIRDERS, AND ON THE TOP OF BOTH TOP AND BOTTOM FLANGES OF ALL THE GIRDERS.

THE STEEL SHALL BE KEPT FREE OF OIL, GREASE, DIRT, CRAYON OR CHALK MARKS, CONCRETE SPATTER AND ANY OTHER FOREIGN MATTER THAT MAY AFFECT THE NATURAL OXIDATION OF THE STEEL. ANY FOREIGN MATTER REMAINING ON THE STEEL AFTER COMPLETION OF BRIDGE CONSTRUCTION SHALL BE REMOVED BY THE BRIDGE CONTRACTOR AS DIRECTED BY THE ENGINEER. THE RESULTANT SURFACE SHALL BE FREE OF ALL VISIBLE RESIDUES. ALL COSTS ASSOCIATED WITH CLEANING STEEL SURFACES SHALL BE BORNE BY THE BRIDGE CONTRACTOR.

SEAL MATERIAL FOR CAULKING SHALL BE NEUTRAL CURE AND NON SAG SILICONE. THREE PRODUCTS MEETING THESE CRITERIA ARE DOW 888, CSL342 AND CRAFCO ROADSAVER JOINT SEALANT.

TO ENSURE UNIFORM WEATHERING, ALL UNPAINTED AREAS OF OUTSIDE SURFACES OF THE FACIA GIRDERS SHALL RECEIVE, AFTER BLASTING, AT LEAST THREE UNIFORM APPLICATIONS OF WATER MIST WITH A 24 HOUR INTERVAL BETWEEN APPLICATIONS. EACH APPLICATION SHALL BE APPLIED ON DRY SURFACES. THE WATER MIST APPLICATION SHALL BE PERFORMED WITHIN 48 HOURS AFTER THE PAINTED SURFACES HAVE BEEN PROPERLY CURED. ALL WATER MIST APPLICATIONS SHALL BE WITNESSED BY A REPRESENTATIVE OF THE CONTRACTING AUTHORITY.

PIER BEARING NOTES:

SURFACES MARKED "V" SHALL BE FINISHED 6 μm.

MASONRY PLATES ARE TO BE SET ON A 3 mm LEAD SHEET.

SOLE PLATES, MASONRY PLATES, AND LEAD SHEETS ARE A PART OF THE SUPERSTRUCTURE STRUCTURAL STEEL QUANTITY.

MASONRY PLATES SHALL BE GALVANIZED.

CURVED SOLE PLATES SHALL COMPLY WITH ASTM A 709M GRADE 485W AND PAINTED AS PER STANDARD SPECIFICATIONS.

MASONRY PLATES SHALL COMPLY WITH ASTM A 709M GRADE 485.

ANCHOR BOLTS, NUTS AND WASHERS SHALL MEET THE REQUIREMENTS OF IM 453.08.

THE CONTRACTOR WILL BE ALLOWED TO SUBSTITUTE 1/8 NEOPRENE SHEETS WITH 50 DUROMETER HARDNESS IN PLACE OF THE 1/8 LEAD SHEET ON THE BEARING DETAILS. PAYMENT FOR STRUCTURAL STEEL WILL INCLUDE NO DEDUCTION IN STEEL WEIGHT DUE TO ELIMINATION OF THE LEAD SHEETS AND/OR NO ADDITIONAL COSTS ASSOCIATED WITH THE ADDITION OF THE NEOPRENE SHEETS.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 25 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s25

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 26

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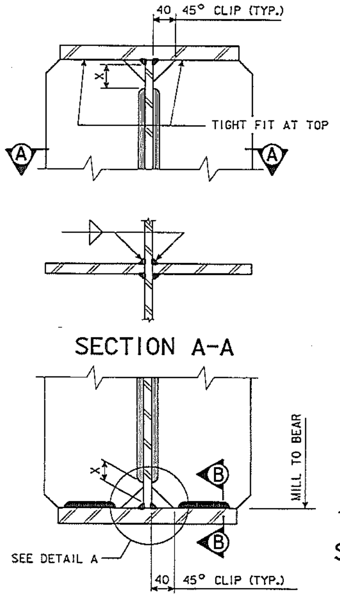
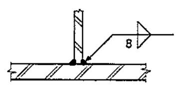


SECTION A-A



SECTION B-B

ABUTMENT AND PIER BEARING STIFFENERS (PARALLEL TO ℄ OF BEARING)

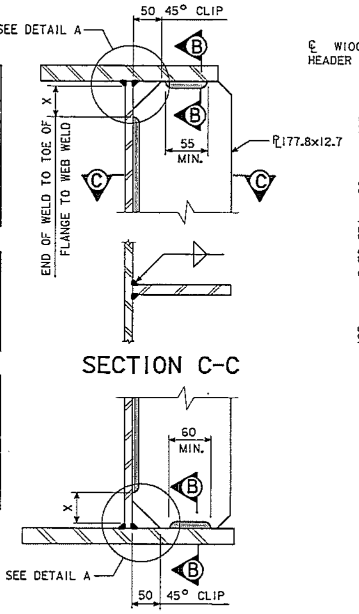
BEARING STIFFENER TABLE

LOCATION	PLATE SIZE
SOUTH ABUTMENT	177.8 x 22.2
PIER 1	177.8 x 22.2
PIER 2	177.8 x 22.2
NORTH ABUTMENT	177.8 x 22.2

FLANGE TO WEB WELD SIZE

SIZE OF FILLET WELD	FLANGE THICKNESS
8	ALL FLANGES

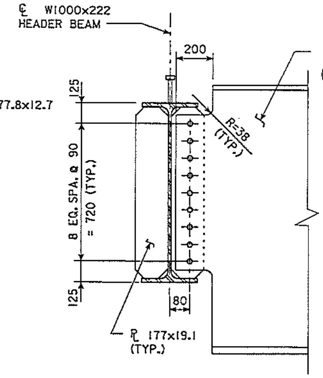
T - WEB THICKNESS	x = 5T WITH 60 mm MIN.
12	60
14	70



SECTION C-C

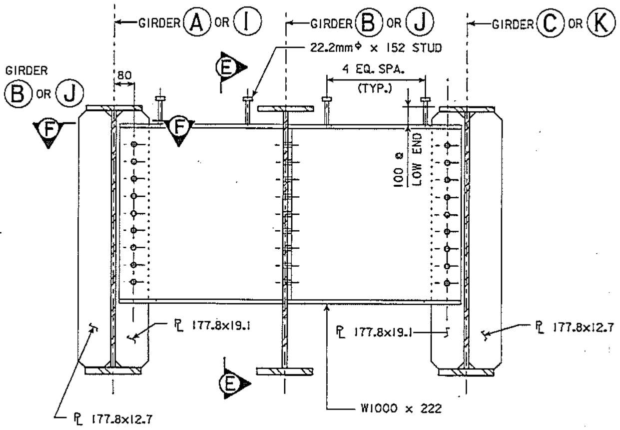
INTERMEDIATE DIAPHRAGM STIFFENER

NOTE: BEVEL GIRDER A, B, J AND K INTERMEDIATE DIAPHRAGM STIFFENER PLATES TO FIT AGAINST THE WEB AT LOCATIONS BETWEEN THE SOUTH ABUTMENT AND THE HEADER.



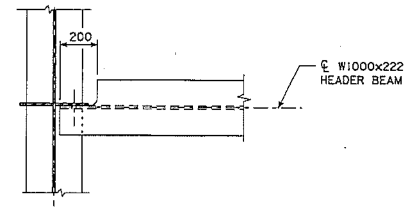
SECTION E-E

(WELDING PER INTERMEDIATE DIAPHRAGM STIFFENER DETAIL)

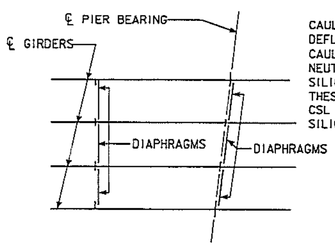


HEADER BEAM ELEVATION

(SEE STRUCTURAL STEEL LAYOUT FOR LOCATIONS)



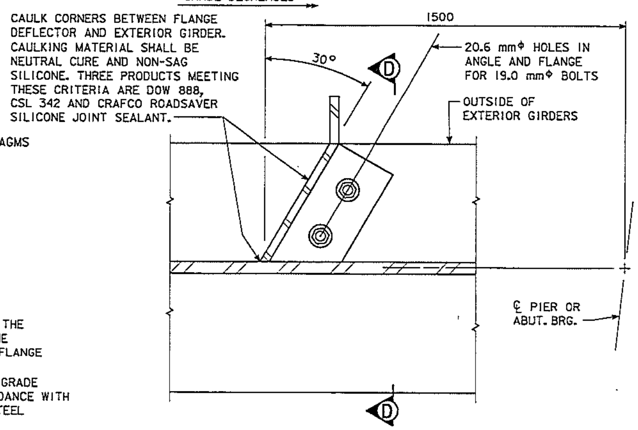
SECTION F-F



DIAPHRAGM FRAMING

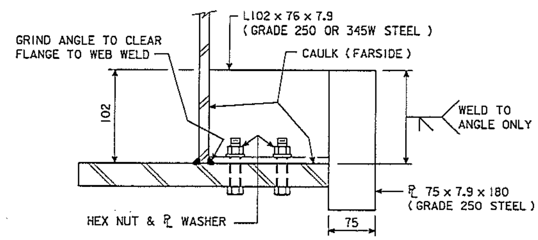
FLANGE DEFLECTORS ARE REQUIRED ON THE OUTSIDE OF THE EXTERIOR GIRDERS AT THE ABUTMENTS AND PIERS. FOR LOCATION OF FLANGE DEFLECTORS SEE DESIGN SHEET 19.

FLANGE DEFLECTOR COMPONENTS WITH GRADE 250 STEEL ARE TO BE PAINTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS. WEATHERING STEEL 345W IS TO REMAIN UNPAINTED.

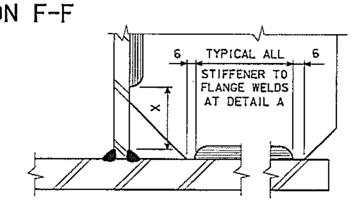


FLANGE DEFLECTOR DETAILS

(8 REQUIRED PER BRIDGE)



SECTION D-D



DETAIL A

NOTE:
THIS SHEET IS PRIMARILY FOR THE USE OF FABRICATOR'S WORKMEN AND IOWA DEPARTMENT OF TRANSPORTATION INSPECTORS IN INTERPRETING PLAN DETAILS. IT COVERS THE LOCATIONS OF WELD TERMINI THAT ARE NOT SPECIFIED BY TYPICAL WELD SYMBOLS.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235).
OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 26 OF 49 FILE NO. 29552 DESIGN NO. 2406

REVISED 10-00 - FLANGE DEFLECTOR DETAIL ADDED. LONGIT. STIFFENER, GUSSET PLATE TO WEB AND SECTION G-G MOVED OUTSIDE OF BORDER. THIS SHEET ISSUED 9-1-95. M1021.SOR 8/15/2005 1:53:30 PM

DESIGNED BY MBQ / DETAILED BY FTE	CHECKED BY DL / CADD FILE h772406.s26	WELDING DETAILS	STANDARD SHEET M1021 (MODIFIED)	POLK COUNTY	PROJECT NUMBER IM-235-2(313)8--13-77	SHEET NUMBER 27

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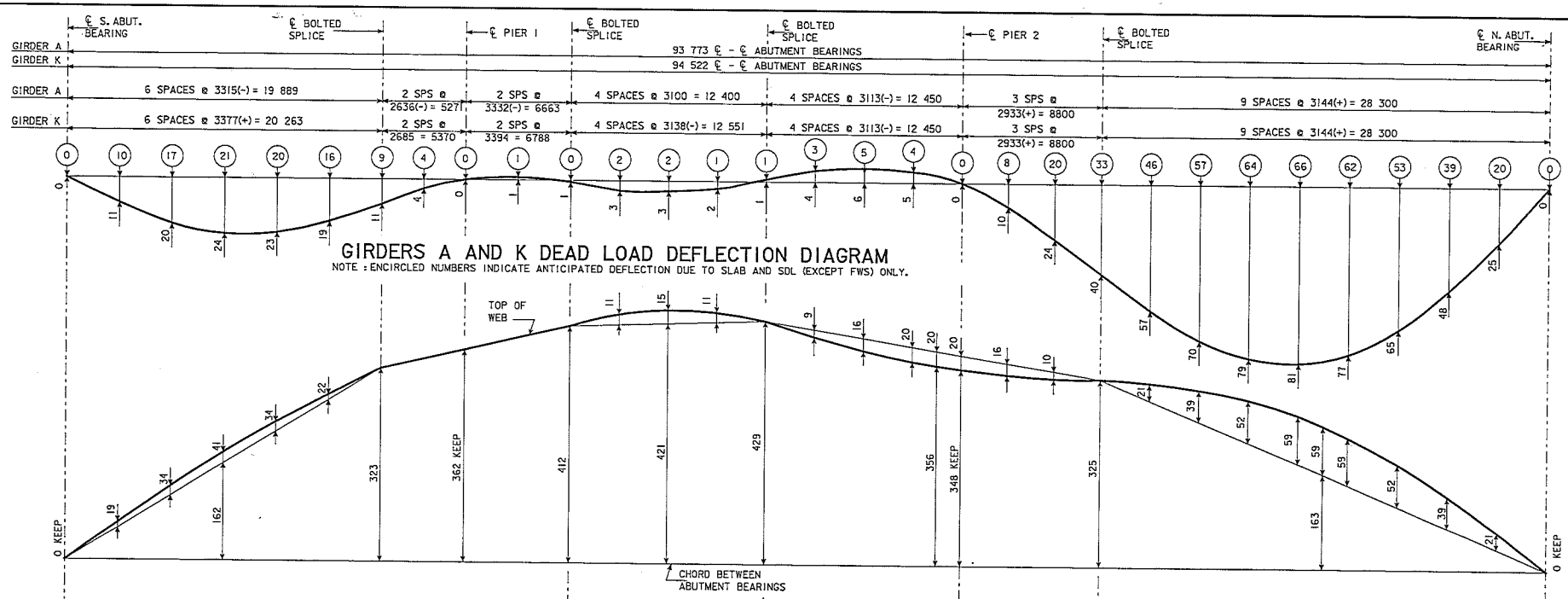


GIRDERS A AND K DEAD LOAD DEFLECTION DIAGRAM

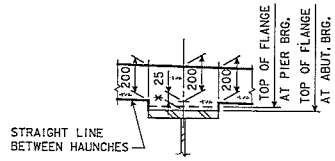
NOTE : ENCIRCLED NUMBERS INDICATE ANTICIPATED DEFLECTION DUE TO SLAB AND SDL (EXCEPT FWS) ONLY.

GIRDERS A AND K AS FABRICATED WITH WEBS HORIZONTAL

NOTE : DOES NOT INCLUDE THE DEFLECTION DUE TO STEEL OR CONCRETE.

GIRDERS A AND K HAUNCH THICKENING DIAGRAM

FOR ESTIMATING PURPOSES ONLY.



TYPICAL SLAB & HAUNCH DETAIL

* THE HAUNCH DIMENSION SHOWN IS THE NOMINAL HAUNCH DIMENSION NEAR THE ABUTMENT BEARINGS, AND IS USED AS A BASIS ALONG WITH THE DEAD LOAD DEFLECTION AND GIRDER PARAMETERS TO DETERMINE THE THEORETICAL HAUNCH THICKENING DIAGRAM. THIS HAUNCH THICKENING DIAGRAM IS USED BY THE DESIGNER TO SET BRIDGE SEAT ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE HAUNCH DATA DETAIL SHEET FOR ADDITIONAL INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.

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SUPERSTRUCTURE DETAILS

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STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 27 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL

DETAILED BY FTE CADD FILE h772406.s27

POLK COUNTY | PROJECT NUMBER | IM-235-2(313)8--13-77 | SHEET NUMBER 28

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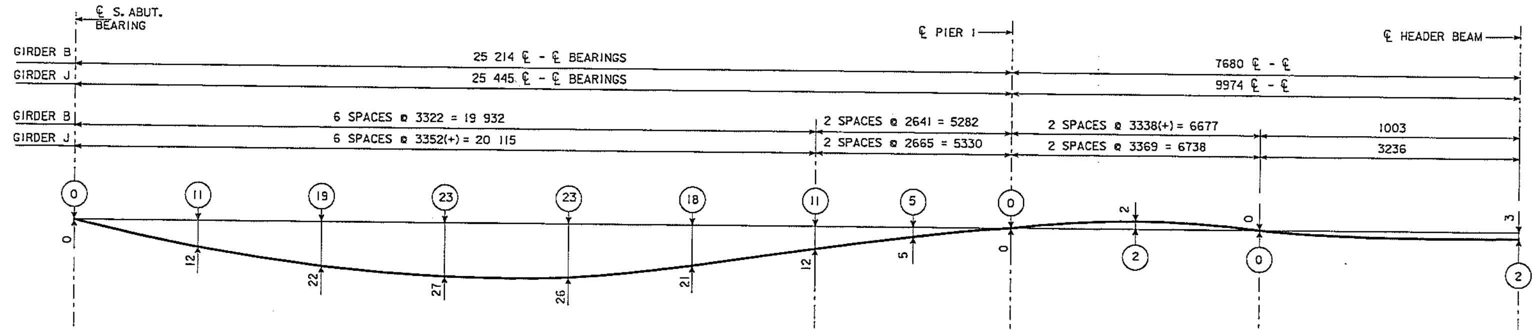
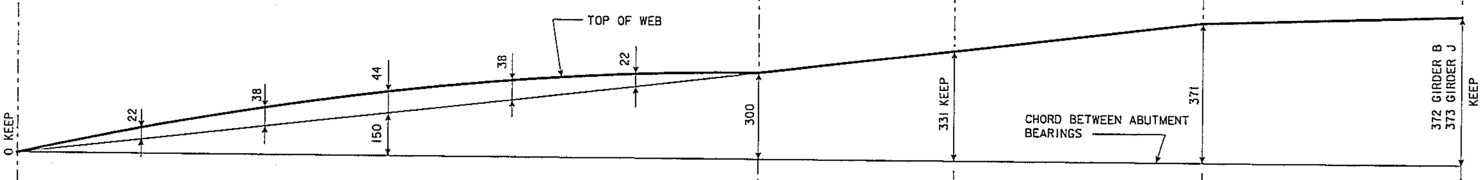


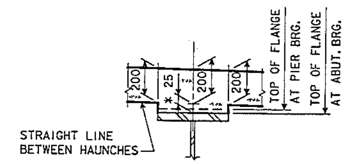
GIRDERS B & J DEAD LOAD DEFLECTION DIAGRAM

NOTE : ENCIRCLED NUMBERS INDICATE ANTICIPATED DEFLECTION DUE TO CONCRETE ONLY. (INCLUDES DEFLECTIONS DUE TO CONCRETE BARRIERS & SIDEWALK)



GIRDERS B & J AS FABRICATED WITH WEBS HORIZONTAL

NOTE : DOES NOT INCLUDE THE DEFLECTION DUE TO STEEL OR CONCRETE.



TYPICAL SLAB & HAUNCH DETAIL

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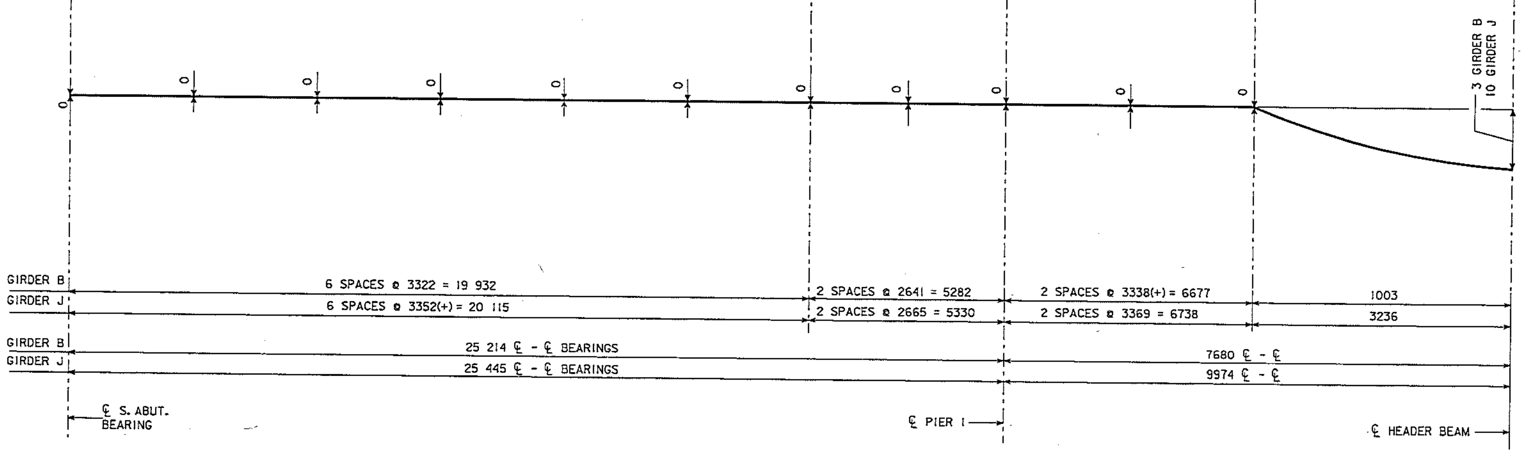

GIRDERS B & J HAUNCH THICKENING DIAGRAM

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25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

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STATION : 529+85.670 (℄ I-235)
OCTOBER 2005

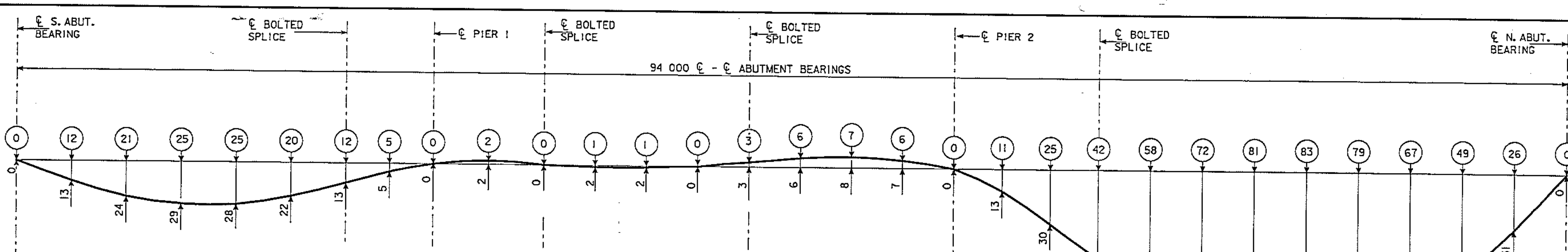
POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 28 OF 49 FILE NO. 29552 DESIGN NO. 2406

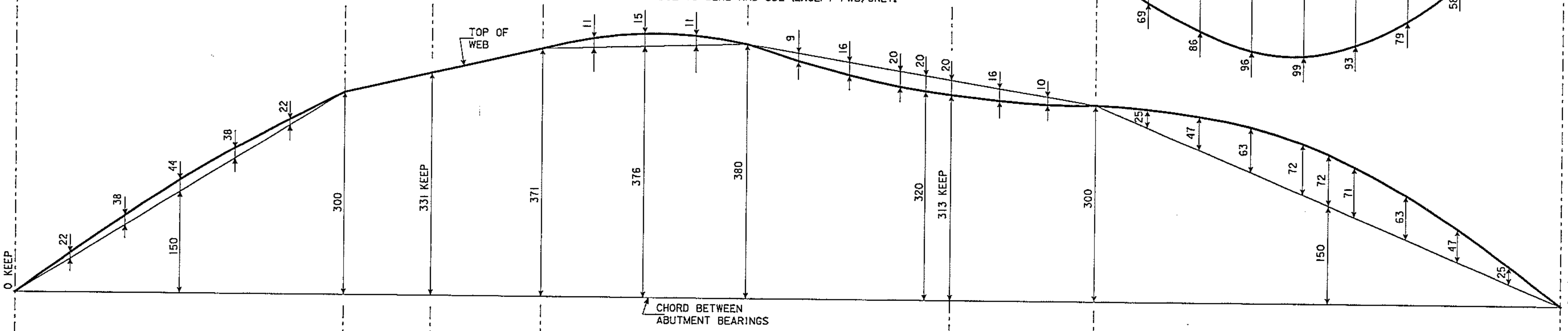
DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s28

POLK COUNTY PROJECT NUMBER IM-235-2(313)8--13-77 SHEET NUMBER 29



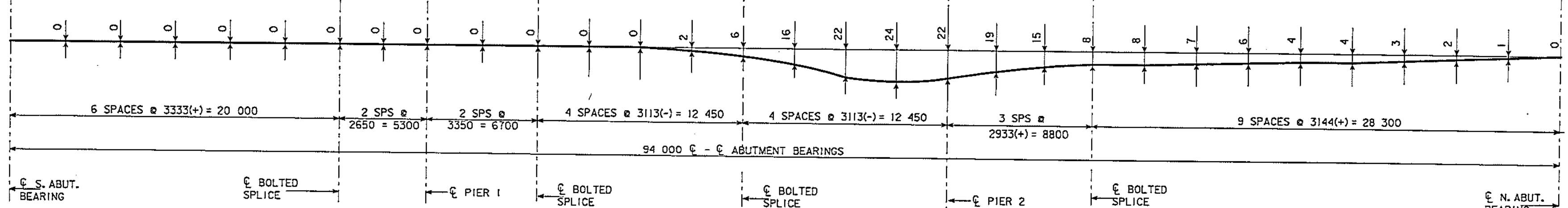
GIRDERS C THRU I DEAD LOAD DEFLECTION DIAGRAM

NOTE : ENCIRCLED NUMBERS INDICATE ANTICIPATED DEFLECTION DUE TO SLAB AND SDL (EXCEPT FWS) ONLY.



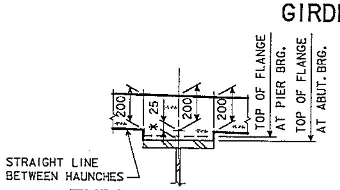
GIRDERS C THRU I AS FABRICATED WITH WEBS HORIZONTAL

NOTE : DOES NOT INCLUDE THE DEFLECTION DUE TO STEEL OR CONCRETE.



GIRDERS C THRU I HAUNCH THICKENING DIAGRAM

FOR ESTIMATING PURPOSES ONLY.



TYPICAL SLAB & HAUNCH DETAIL

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OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 29 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s29

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 30

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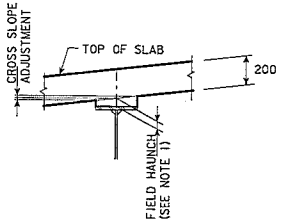
TABLE OF BEAM LINE HAUNCH ELEVATIONS

BEAM LINE	℄ S. ABUT. BRG.								℄ PIER 1										℄ PIER 2											℄ N. ABUT. BRG.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
A	279.593	279.670	279.739	279.800	279.851	279.894	279.929	279.954	279.976	280.004	280.030	280.049	280.061	280.067	280.067	280.061	280.051	280.038	280.025	280.013	280.001	279.991	279.980	279.967	279.949	279.927	279.898	279.865	279.826	279.783	279.739
B	279.591	279.667	279.737	279.798	279.850	279.893	279.928	279.952	279.975	280.003	280.028	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C	279.631	279.707	279.774	279.832	279.880	279.918	279.949	279.969	279.987	280.011	280.032	280.047	280.059	280.065	280.065	280.059	280.049	280.038	280.026	280.017	280.009	280.002	279.994	279.984	279.968	279.946	279.917	279.880	279.838	279.790	279.740
D	279.681	279.757	279.825	279.884	279.932	279.971	280.001	280.022	280.041	280.065	280.087	280.102	280.112	280.116	280.115	280.109	280.100	280.089	280.078	280.069	280.060	280.054	280.046	280.036	280.020	279.998	279.969	279.932	279.890	279.842	279.792
E	279.731	279.807	279.876	279.935	279.984	280.023	280.054	280.075	280.094	280.119	280.141	280.157	280.168	280.172	280.171	280.166	280.157	280.146	280.136	280.127	280.119	280.113	280.105	280.094	280.079	280.057	280.027	279.991	279.949	279.901	279.851
F	279.772	279.848	279.917	279.977	280.026	280.066	280.098	280.119	280.139	280.164	280.187	280.203	280.214	280.219	280.219	280.214	280.205	280.195	280.185	280.177	280.169	280.162	280.155	280.144	280.128	280.106	280.077	280.041	279.998	279.951	279.901
G	279.718	279.795	279.865	279.925	279.974	280.015	280.047	280.069	280.089	280.114	280.137	280.154	280.166	280.171	280.171	280.167	280.159	280.149	280.140	280.132	280.124	280.118	280.110	280.099	280.084	280.062	280.032	279.996	279.954	279.906	279.856
H	279.655	279.732	279.803	279.863	279.913	279.954	279.987	280.009	280.030	280.056	280.079	280.097	280.109	280.115	280.115	280.111	280.103	280.094	280.085	280.078	280.071	280.064	280.056	280.046	280.030	280.008	279.979	279.942	279.900	279.852	279.802
I	279.593	279.670	279.741	279.802	279.852	279.894	279.927	279.949	279.970	279.997	280.021	280.039	280.053	280.062	280.065	280.062	280.055	280.046	280.038	280.031	280.024	280.017	280.009	279.999	279.983	279.961	279.932	279.896	279.853	279.806	279.755
J	279.536	279.615	279.688	279.752	279.809	279.857	279.897	279.925	279.951	279.984	280.014	280.037	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
K	279.521	279.602	279.679	279.746	279.803	279.852	279.893	279.922	279.949	279.983	280.014	280.038	280.054	280.063	280.067	280.064	280.058	280.048	280.039	280.030	280.020	280.010	279.998	279.985	279.968	279.945	279.917	279.883	279.844	279.802	279.757

MISCELLANEOUS DATA TABLE (mm)

	BEAM LINE	℄ S. ABUT. BRG.								℄ PIER 1										℄ PIER 2											℄ N. ABUT. BRG.
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ANTICIPATED DEFLECTION DUE TO SLAB AND SDL (mm)	A,K	0.000	-9.646	-17.023	-20.700	-20.191	-15.937	-9.325	-3.888	0.000	0.959	-0.471	-1.906	-2.302	-1.258	0.920	3.276	4.773	4.208	0.000	-8.409	-19.794	-32.535	-45.845	-56.844	-63.848	-65.777	-62.089	-52.822	-38.536	-20.374	0.000
	B,J	0.000	-10.694	-18.883	-22.985	-22.457	-17.774	-10.452	-4.395	0.000	1.262	-0.071	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	C THRU I	0.000	-11.741	-20.743	-25.270	-24.722	-19.610	-11.579	-4.901	0.000	1.565	0.329	-0.968	-1.103	0.342	2.926	5.522	6.946	5.742	0.000	-10.879	-25.401	-41.558	-58.374	-72.221	-80.993	-83.343	-78.604	-66.830	-48.733	-25.759	0.000
CROSS SLOPE ADJUSTMENTS (mm)	A,K,F	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	B	3.000	VARIES	VARIES	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	J	3.000	3.000	3.000	VARIES	VARIES	0.000	0.000	0.000	0.000	0.000	0.000	0.000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	C	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	VARIES	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	D,E,G,H	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.800	3.800	3.800	3.800	3.800	3.800	3.800	3.800	3.800	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
	I	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	VARIES	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ALLOWABLE FIELD HAUNCH (mm)	MAX.	50.0																														
	MIN.	0.0																														



HAUNCH DETAIL

NOTES:

1. TO CALCULATE FIELD HAUNCH NEEDED AT EACH LOCATION, SURVEY THE BEAM TOPS CONSISTENT WITH THE SPACINGS SHOWN ON THE "TOP OF SLAB AND BEAM LINE HAUNCH ELEVATION LAYOUT" DIAGRAM ON DESIGN SHEET 35. SUBTRACT THE SURVEYED BEAM SHOT FROM THE "BEAM LINE HAUNCH ELEVATION". THIS VALUE WILL BE THE HAUNCH NEEDED (SEE " FIELD HAUNCH" IN HAUNCH DETAIL). THE "BEAM LINE HAUNCH ELEVATION" INCLUDES ADJUSTMENTS FOR SLAB THICKNESSES AND ANTICIPATED DEFLECTIONS. NO ADDITIONAL CALCULATIONS ARE REQUIRED. IF THE FIELD HAUNCH EXCEEDS THE MAXIMUMS AND MINIMUMS INDICATED IN THE MISCELLANEOUS DATA TABLE, ADJUSTMENTS TO THE GRADE OR ADDITIONAL HAUNCH REINFORCEMENT WILL BE REQUIRED.

2. BRIDGE SEAT ELEVATIONS ARE SET BASED ON THEORETICAL CAMBER AND BEAM DEFLECTIONS. THESE BRIDGE SEATS WILL PROVIDE A THEORETICAL BEAM HAUNCH WITHIN DESIGN PARAMETERS. FIELD HAUNCHES ARE DETERMINED USING SURVEYED TOP OF BEAM ELEVATIONS AND "BEAM LINE HAUNCH ELEVATION" DATA. ALLOWABLE MAXIMUM AND MINIMUM "FIELD HAUNCH" VALUES ARE GIVEN IN THE "MISCELLANEOUS DATA" TABLE. "CROSS SLOPE ADJUSTMENT" VALUES WILL AID THE CONTRACTOR IN DETERMINING ACTUAL FORMED HAUNCH DIMENSIONS AT THE EDGES OF THE TOP FLANGE.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 30 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY DL CHECKED BY MBQ
DETAILED BY FTE CADD FILE h772406.s30

POLK COUNTY | PROJECT NUMBER | IM-235-2(313)8--13-77 | SHEET NUMBER 31

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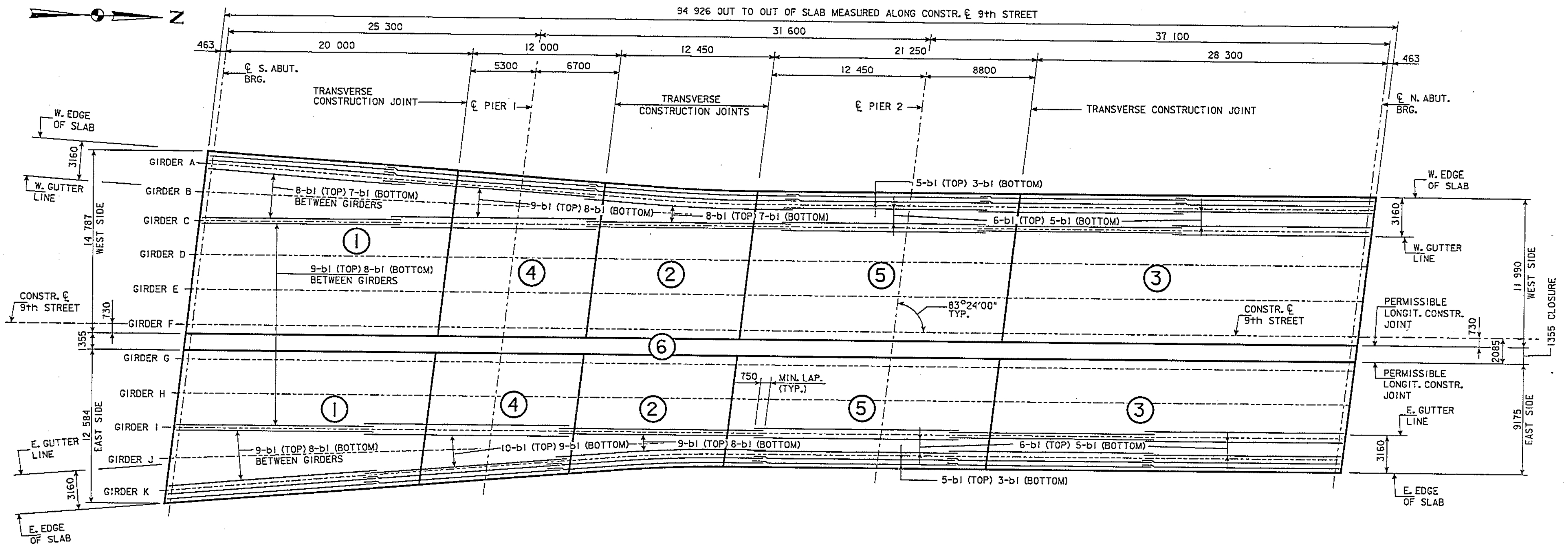
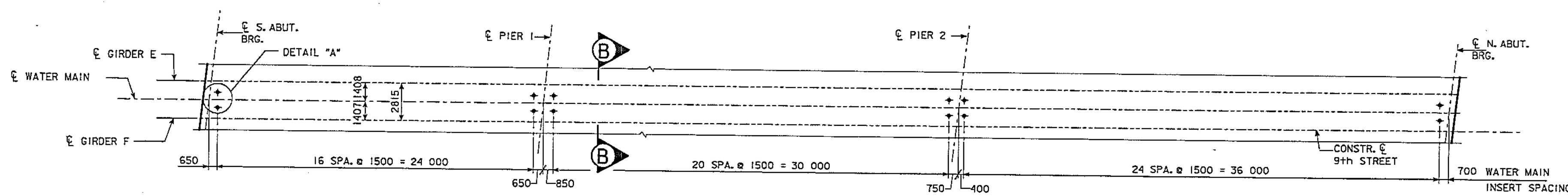
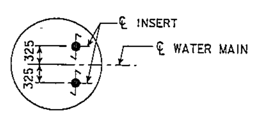


SLAB LONGITUDINAL REINFORCING LAYOUT AND CONCRETE PLACEMENT DIAGRAM



WATER MAIN CONCRETE INSERT LAYOUT



DETAIL A

⌡ DENOTES DIRECTION OF SLOTTED INSERT

NOTES: ROADWAY SLAB SHALL BE PLACED IN THE NUMERICAL SEQUENCE INDICATED.

FOR CONSTRUCTION JOINT DETAILS, SEE DESIGN SHEET 34.

EACH NUMBERED SET SHALL BE PLACED AS FOLLOWS:
A.) EITHER EAST OR WEST SIDE MAY BE PLACED FIRST.
B.) THE CLOSURE SHALL BE PLACED AFTER THE EAST AND WEST SIDES HAVE BEEN PLACED.
C.) CROSSFRAMES BETWEEN GIRDERS F AND G SHALL NOT BE PLACED UNTIL THE CLOSURE HAS BEEN COMPLETED.
D.) THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE POUR SEQUENCE FOR THE ENGINEER'S APPROVAL.

IF THE PERMISSIBLE LONGITUDINAL CONSTRUCTION JOINTS ARE UTILIZED, THE CLOSURE POUR SHALL BE PLACED IN ONE CONTINUOUS POUR AFTER THE EXTERIOR CONCRETE PLACEMENT IS COMPLETE.

ABUTMENT END POSTS NOT SHOWN.

SEE DESIGN SHEET 43 FOR WATER MAIN SECTION B-B.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 31 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s31

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 32

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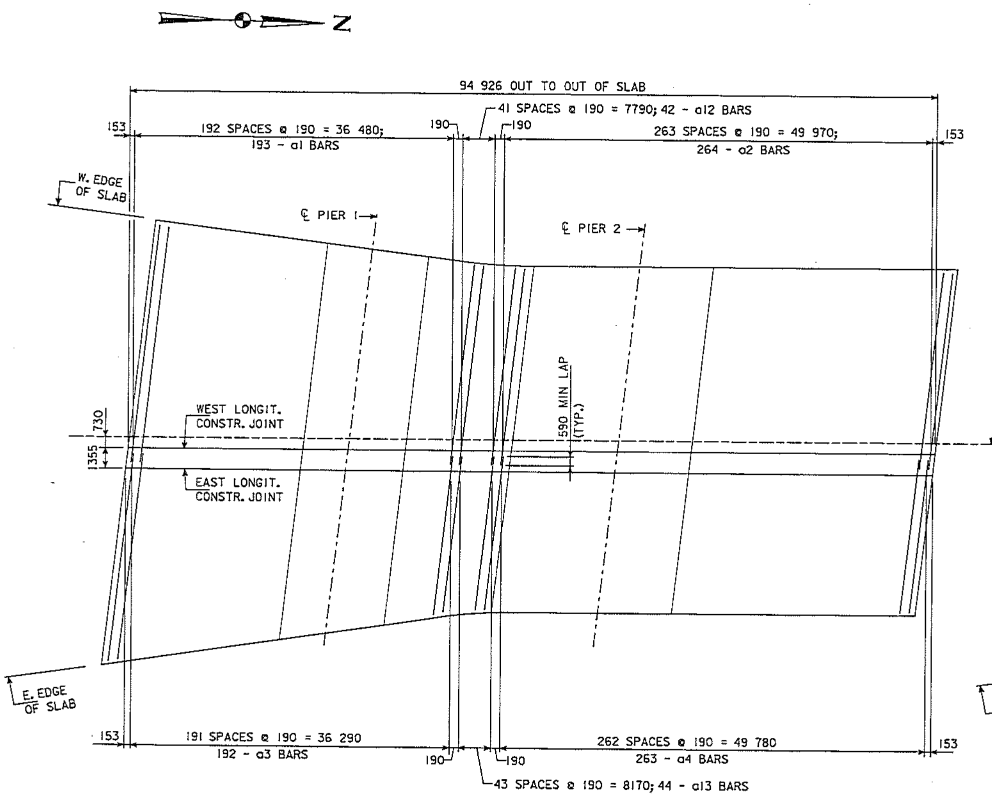
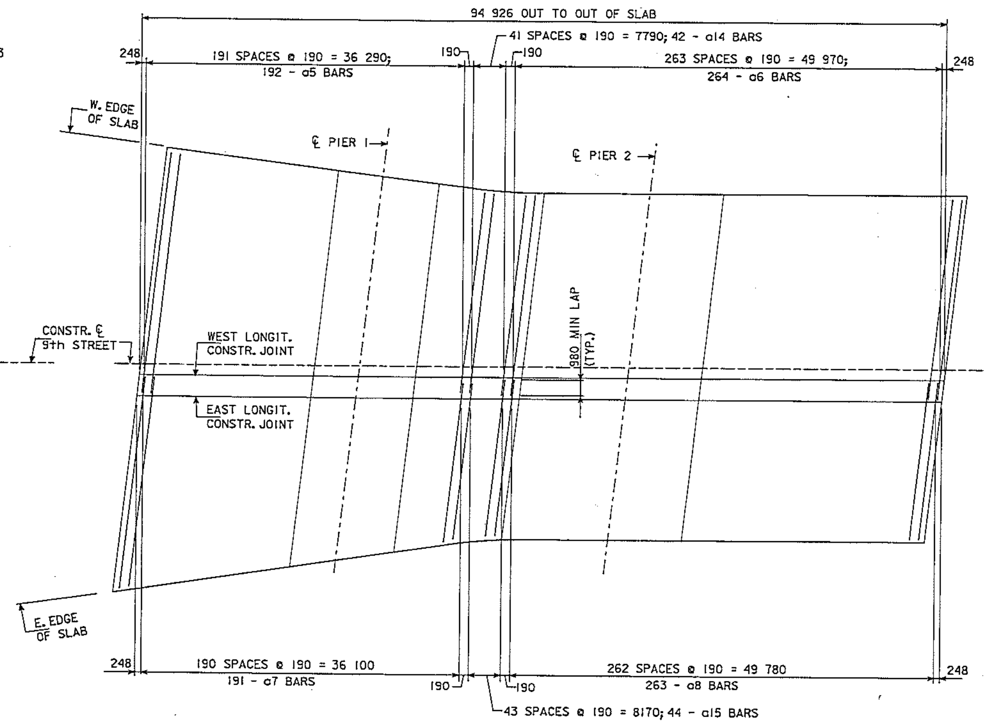
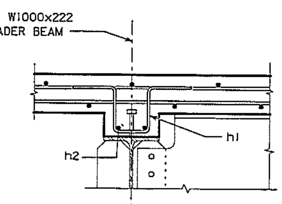


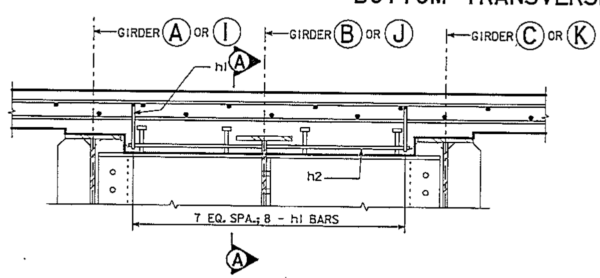
TOP TRANSVERSE REINFORCING LAYOUT



BOTTOM TRANSVERSE REINFORCING LAYOUT



SECTION A-A



HEADER REINFORCEMENT LAYOUT

NOTES:

TRANSVERSE SLAB REINFORCING MAY BE SPLICED WITH ADDITIONAL LAPS LOCATED AS FOLLOWS:
TOP BARS - LAP MIDWAY BETWEEN BEAMS (MIN. LAP = 590 mm).
NO LAPS WILL BE ALLOWED IN THE EXTERIOR BAYS.
BOTTOM BARS - LAP OVER BEAMS (MIN. LAP = 980 mm).
NO LAPS WILL BE ALLOWED OVER THE EXTERIOR BEAMS.
PAYMENT FOR REINFORCING BARS SHALL BE BASED ON NO ADDITIONAL SPLICES, AND NO ALLOWANCE SHALL BE MADE FOR THE ADDITIONAL LENGTH OF BAR REQUIRED FOR THE USE OF ADDITIONAL SPLICES.

ABUTMENT MASK WALLS NOT SHOWN.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 32 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ	CHECKED BY DL		
DETAILED BY FTE	CADD FILE h772406.s32		
POLK COUNTY	PROJECT NUMBER	IM-235-2(313)8--13-77	SHEET NUMBER 33

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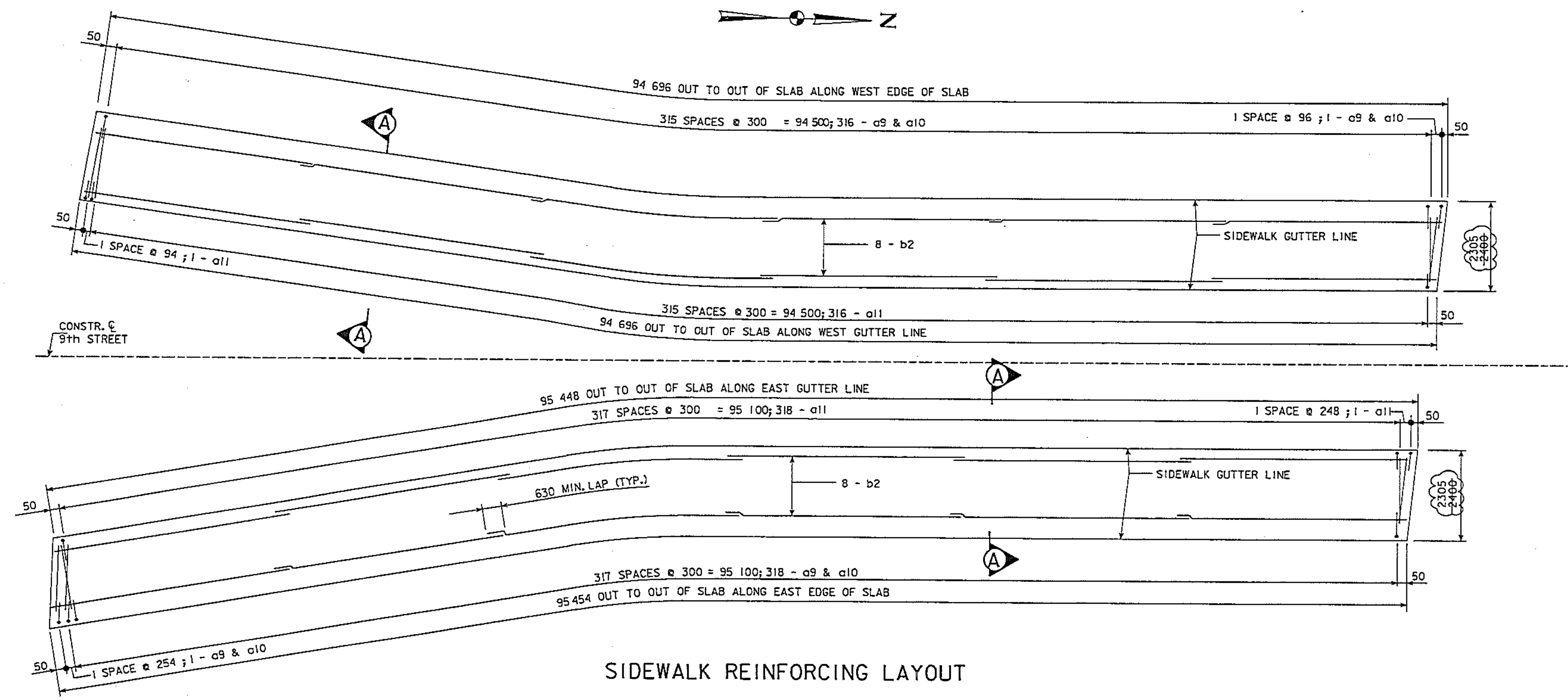
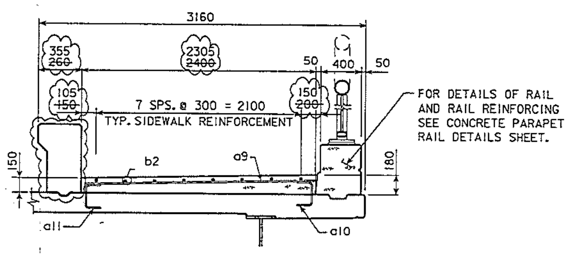


SIDEWALK REINFORCING LAYOUT



PART SECTION A-A

REVISED 4/25/07, SEPARATION BARRIER

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SIDEWALK DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 33 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s33

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 34

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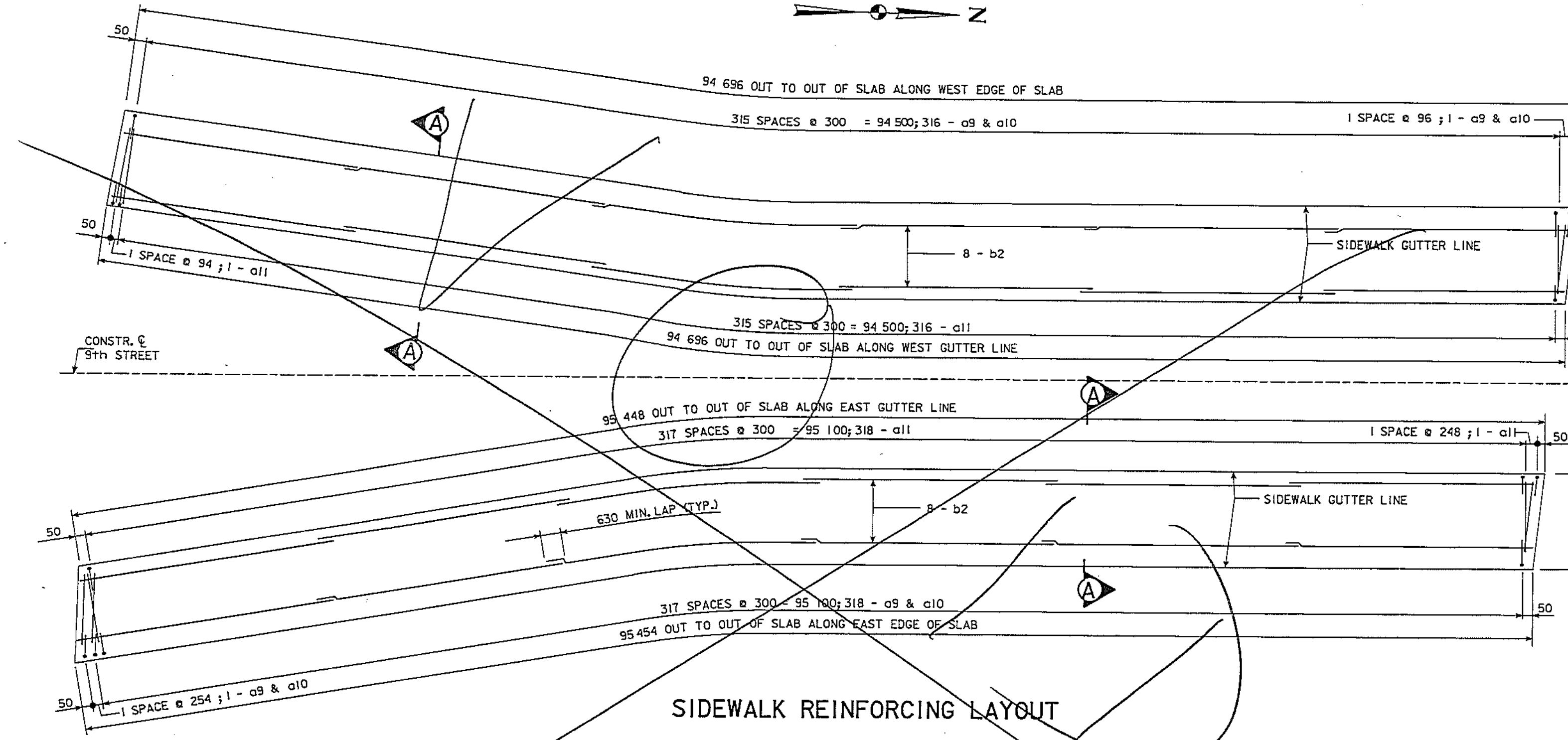
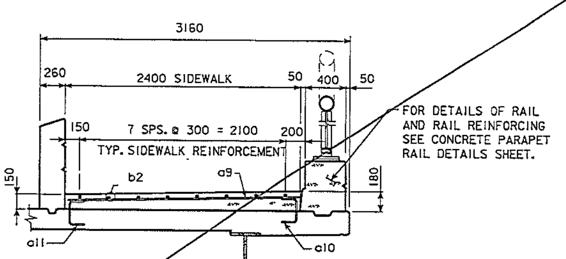


SIDEWALK REINFORCING LAYOUT



PART SECTION A-A

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SIDEWALK DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
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OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 33 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s33

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 34

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REINF.BAR LIST-ONE SUPER.&TWO ABUTS.

EPOXY COATED REINFORCING

	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
*	a1	20	SLAB, TOP TRANSV.	—	193	VARIES	6 636
	a2	20	SLAB, TOP TRANSV.	—	264	13 000	8 082
*	a3	20	SLAB, TOP TRANSV.	—	192	VARIES	5 471
	a4	20	SLAB, TOP TRANSV.	—	263	10 100	6 256
*	a5	20	SLAB, BOTTOM TRANSV.	—	192	VARIES	6 669
	a6	20	SLAB, BOTTOM TRANSV.	—	264	13 200	8 207
*	a7	20	SLAB, BOTTOM TRANSV.	—	191	VARIES	5 533
	a8	20	SLAB, BOTTOM TRANSV.	—	263	10 400	6 441
	a9	15	SIDEWALK, TRANSVERSE	—	636	2 250	2 247
	a10	15	SIDEWALK, TRANSVERSE	⊔	636	1 000	999
	a11	15	SIDEWALK, TRANSVERSE	⊔	636	1 000	999
*	a12	20	SLAB, TOP TRANSV.	—	42	VARIES	1 301
*	a13	20	SLAB, TOP TRANSV.	—	44	VARIES	1 072
*	a14	20	SLAB, BOTTOM TRANSV.	—	42	VARIES	1 320
*	a15	20	SLAB, BOTTOM TRANSV.	—	44	VARIES	1 098
	b1	20	SLAB LONGIT. TOP & BOTTOM	—	906	16 540	35 290
	b2	15	SIDEWALK, LONGITUDINAL	—	96	16 440	2 478
	d4	15	PAVING NOTCH LONGIT.	—	2	15 000	47
	d6	15	ABUT. DIAPHRAGM LONGIT. B.F.	—	5	7 900	62
	d7	15	ABUT. DIAPHRAGM LONGIT. B.F.	—	5	10 600	83
	d9	15	PAVING NOTCH LONGIT.	—	2	11 800	37
	d10	15	ABUT. DIAPH. LONGIT. B.F.	—	20	3 500	110
	d11	15	ABUT. DIAPH. LONGIT. B.F.	—	5	13 900	109
	d13	15	ABUT. DIAPH. LONGIT. B.F.	—	5	10 400	82
	d15	15	ABUT. DIAPH. AT FORMED HOLE	⌵	8	2 430	31
	f1	25	ABUT. FOOTING LONGIT. B.F.	—	8	12 300	386
	f3	25	ABUT. FOOTING LONGIT. B.F.	—	8	15 400	484
	f7	25	ABUT. FOOTING LONGIT.	—	4	16 100	253
	f8	25	ABUT. FOOTING LONGIT.	—	4	10 470	164
	g1	25	ABUT. VERT B.F.	—	163	2 600	1 663
	g3	25	ABUT. DIAPH. VERT B.F.	┌─	148	5 100	2 963
	h1	15	HEADER DIAPH.	⊓⊔⊓	16	900	23
	h2	15	HEADER DIAPH.	—	4	1490	9
	k1	15	PAVING NOTCH TRANSV.	┌─	139	1 500	327
	k2	15	PAVING NOTCH TRANSV.	└	155	1 030	251
	k3	15	PAVING NOTCH TRANSV. AT BAY E-F.	┌╱	16	1 500	38
	p1	15	ABUT. HOOPS	□	294	3 260	1 505
	p3	20	ABUT. BOTT. AT PILES	⌵	42	2 030	201
	t2	15	ABUT. DIAPH. LONGIT. F.F.	⌵	80	2 230	280
	w1	15	ABUT. FOOTING TRANSV.	⊔	90	1 820	257
	BARRIER RAIL - SEE DESIGN SHT. NO. 37						5 860
	SEPARATION BARRIER RAIL - SEE DESIGN SHT. NO. 38						~~7 901~~ 4 381
	LIGHT POLE ANCHOR - SEE DESIGN SHT. NO. 40						82
	REINFORCING STEEL EPOXY COATED - TOTAL (kg)						~~123 307~~ 119 787

REINF.BAR LIST-ONE SUPER.&TWO ABUTS.

NON-COATED REINFORCING

MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
d1	15	ABUT. DIAPHRAGM LONGIT. F.F.	—	20	3 380	106
d2	15	ABUT. DIAPHRAGM LONGIT. F.F.	—	5	10 350	81
d3	15	ABUT. DIAPHRAGM LONGIT. F.F.	—	5	7 500	59
d5	15	ABUT. DIAPHRAGM ENDS	┌─	20	1 450	46
d8	15	ABUT. DIAPH. EXTENSION LONGIT.	—	48	3 060	231
d12	15	ABUT. DIAPH. LONGIT. F.F.	—	5	13 630	107
d14	15	ABUT. DIAPH. LONGIT. F.F.	—	5	10 350	81
e1	15	SHAFT SPIRAL	spiral	25	77530	3043
		L22x22x3.2 SPIRAL SPACER (1.0 Kg/m)	—	100	6 505	651
f2	25	ABUT. FOOTING LONGIT. F.F.	─╲	10	12 100	475
f4	25	ABUT. FOOTING LONGIT. F.F.	─╲	10	15 200	597
f5	25	ABUT. FOOTING EXTENSION LONGIT.	┌─	28	3 880	426
f6	25	ABUT. FOOTING EXTENSION LONGIT.	┌─	4	3 840	60
f9	30	SHAFT LONGITUDINAL	—	250	6 605	9 074
g2	25	ABUT. VERT. F.F.	—	146	2 310	1 324
g4	20	ABUT. WING EXTENSION VERT.	—	88	2 830	586
p2	15	ABUT. FOOTING EXTENSION HOOPS	□	48	3 260	246
t1	15	UNDER GIRDERS AT ABUTMENT	⌵	20	1 300	41
PILE SPIRAL SIZE NO. W5 WIRE (3 kg/SPIRAL)			spiral	25	12 000	75
SPIRAL SP. L22 x 22 x 3.2 (0.6 kg/SPACER)			—	50	560	30
REINFORCING STEEL - TOTAL (kg)						17 339

* a1 VARIES FROM 13 300 TO 15 900

a3 VARIES FROM 10 600 TO 13 600

a5 VARIES FROM 13 500 TO 16 000

a7 VARIES FROM 10 800 TO 13 800

a12 VARIES FROM 13 000 TO 13 300

a13 VARIES FROM 10 100 TO 10 600

a14 VARIES FROM 13 200 TO 13 500

a15 VARIES FROM 10 400 TO 10 800

H. P. STRUCTURAL CONCRETE PLACEMENT QUANTITIES
ONE SUPER.

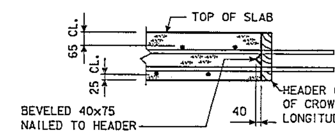
	WEST	EAST	CLOSURE	QUANTITY
SLAB SECTION 1 & ABUT. DIAPH.	84.9	73.4	-	158.3
SLAB SECTION 2	31.4	24.5	-	55.9
SLAB SECTION 3 & ABUT. DIAPH.	92.2	73.2	-	165.4
SLAB SECTION 4	31.8	25.5	-	57.3
SLAB SECTION 5	52.4	40.3	-	92.7
SLAB SECTION 6	-	-	25.7	25.7
SIDEWALKS				~~75.3~~ 72.8
TOTAL (m^3)				~~630.6~~ 628.1

CONC. PLACEMENT QUANTITIES
TWO ABUTMENTS

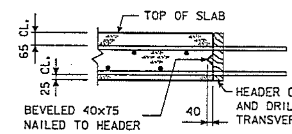
SOUTH ABUTMENT FOOTING	36.4
NORTH ABUTMENT FOOTING	28.3
TOTAL (m^3)	64.7

ESTIMATED QUANTITIES
ONE SUPER. & TWO ABUTS.

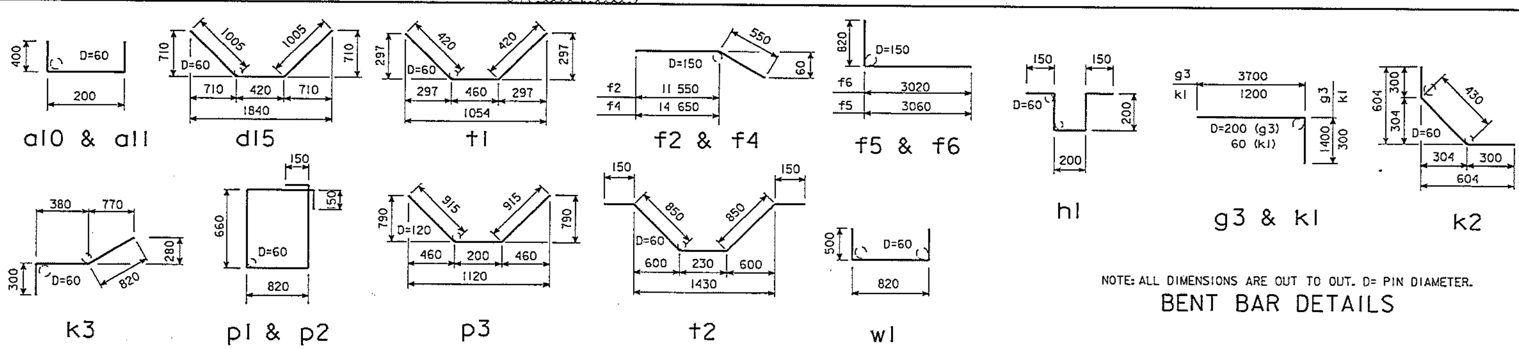
ITEM	UNIT	QUANTITY
HIGH PERFORMANCE STRUCTURAL CONCRETE	m^3	~~630.6~~ 628.1
STRUCTURAL CONCRETE (BRIDGE)	m^3	64.7
STRUCTURAL STEEL	kg	297 876
REINFORCING STEEL	kg	17 339
	kg	~~123 307~~ 119 787
~~CLASS 20 EXCAVATION~~	~~m^3~~	~~128~~
HP310x125 STEEL BEARING PILES — FURNISH 12 @ 8.2 m N.A.; 13 @ 8 m S.A.	m	202.4
PILE CASING, CORRUGATED METAL PIPE, 600 mm	m	142.4
CONCRETE DRILLED SHAFT, 760 DIA.	m	168.3



TRANSVERSE SLAB CONSTRUCTION JOINT



LONGITUDINAL SLAB CONSTRUCTION JOINT



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D= PIN DIAMETER.

BENT BAR DETAILS

REVISED 4/25/07, SEPARATION BARRIER

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 34 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY DL CHECKED BY MBQ
DETAILED BY FTE CADD FILE h772406.s34

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 35

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REINF.BAR LIST-ONE SUPER.&TWO ABUTS.

EPOXY COATED REINFORCING

	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
*	a1	20	SLAB, TOP TRANSV.	—	193	VARIES	6 636
	a2	20	SLAB, TOP TRANSV.	—	264	13 000	8 082
*	a3	20	SLAB, TOP TRANSV.	—	192	VARIES	5 471
	a4	20	SLAB, TOP TRANSV.	—	263	10 100	6 256
*	a5	20	SLAB, BOTTOM TRANSV.	—	192	VARIES	6 669
	a6	20	SLAB, BOTTOM TRANSV.	—	264	13 200	8 207
*	a7	20	SLAB, BOTTOM TRANSV.	—	191	VARIES	5 533
	a8	20	SLAB, BOTTOM TRANSV.	—	263	10 400	6 441
	a9	15	SIDEWALK, TRANSVERSE	—	636	2 250	2 247
	a10	15	SIDEWALK, TRANSVERSE	⊔	636	1 000	999
	a11	15	SIDEWALK, TRANSVERSE	⊔	636	1 000	999
*	a12	20	SLAB, TOP TRANSV.	—	42	VARIES	1 301
*	a13	20	SLAB, TOP TRANSV.	—	44	VARIES	1 072
*	a14	20	SLAB, BOTTOM TRANSV.	—	42	VARIES	1 320
*	a15	20	SLAB, BOTTOM TRANSV.	—	44	VARIES	1 098
	b1	20	SLAB LONGIT. TOP & BOTTOM	—	906	16 540	35 290
	b2	15	SIDEWALK, LONGITUDINAL	—	96	16 440	2 478
	d4	15	PAVING NOTCH LONGIT.	—	2	15 000	47
	d6	15	ABUT. DIAPHRAGM LONGIT. B.F.	—	5	7 900	62
	d7	15	ABUT. DIAPHRAGM LONGIT. B.F.	—	5	10 600	83
	d9	15	PAVING NOTCH LONGIT.	—	2	11 800	37
	d10	15	ABUT. DIAPH. LONGIT. B.F.	—	20	3 500	110
	d11	15	ABUT. DIAPH. LONGIT. B.F.	—	5	13 900	109
	d13	15	ABUT. DIAPH. LONGIT. B.F.	—	5	10 400	82
	d15	15	ABUT. DIAPH. AT FORMED HOLE	◡	8	2 430	31
	f1	25	ABUT. FOOTING LONGIT. B.F.	—	8	12 300	386
	f3	25	ABUT. FOOTING LONGIT. B.F.	—	8	15 400	484
	f7	25	ABUT. FOOTING LONGIT.	—	4	16 100	253
	f8	25	ABUT. FOOTING LONGIT.	—	4	10 470	164
	g1	25	ABUT. VERT B.F.	—	163	2 600	1 663
	g3	25	ABUT. DIAPH. VERT B.F.	⌐	148	5 100	2 863
	h1	15	HEADER DIAPH.	⊓	16	900	23
	h2	15	HEADER DIAPH.	—	4	1490	9
	k1	15	PAVING NOTCH TRANSV.	⌐	139	1 500	327
	k2	15	PAVING NOTCH TRANSV.	⌐	155	1 030	251
	k3	15	PAVING NOTCH TRANSV. AT BAY E-F.	⌐	16	1 500	38
	p1	15	ABUT. HOOPS	□	294	3 260	1 505
	p3	20	ABUT. BOTT. AT PILES	◡	42	2.030	201
	t2	15	ABUT. DIAPH. LONGIT. F.F.	◡	80	2 230	280
	w1	15	ABUT. FOOTING TRANSV.	⊔	90	1 820	257
			BARRIER RAIL - SEE DESIGN SHT. NO. 37				5 860
			SEPARATION BARRIER RAIL - SEE DESIGN SHT. NO. 38				7 901
			LIGHT POLE ANCHOR - SEE DESIGN SHT. NO. 40				82
			REINFORCING STEEL EPOXY COATED - TOTAL (kg)				123 307

REINF.BAR LIST-ONE SUPER.&TWO ABUTS.

NON-COATED REINFORCING

MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
d1	15	ABUT. DIAPHRAGM LONGIT. F.F.	—	20	3 380	106
d2	15	ABUT. DIAPHRAGM LONGIT. F.F.	—	5	10 350	81
d3	15	ABUT. DIAPHRAGM LONGIT. F.F.	—	5	7 500	59
d5	15	ABUT. DIAPHRAGM ENDS	⌐	20	1 450	46
d8	15	ABUT. DIAPH. EXTENSION LONGIT.	—	48	3 060	231
d12	15	ABUT. DIAPH. LONGIT. F.F.	—	5	13 630	107
d14	15	ABUT. DIAPH. LONGIT. F.F.	—	5	10 350	81
e1	15	SHAFT SPIRAL	⌀	25	77530	3043
		L22x22x3.2 SPIRAL SPACER (1.0 Kg/m)	—	100	6 505	651
f2	25	ABUT. FOOTING LONGIT. F.F.	◝	10	12 100	475
f4	25	ABUT. FOOTING LONGIT. F.F.	◝	10	15 200	597
f5	25	ABUT. FOOTING EXTENSION LONGIT.	⌐	28	3 880	426
f6	25	ABUT. FOOTING EXTENSION LONGIT.	⌐	4	3 840	60
f9	30	SHAFT LONGITUDINAL	—	250	6 605	9 074
g2	25	ABUT. VERT. F.F.	—	146	2 310	1 324
g4	20	ABUT. WING EXTENSION VERT.	—	88	2 830	586
p2	15	ABUT. FOOTING EXTENSION HOOPS	□	48	3 260	246
t1	15	UNDER GIRDERS AT ABUTMENT	◡	20	1 300	41
		PILE SPIRAL SIZE NO. W5 WIRE (3 kg/SPIRAL)	⌀	25	12 000	75
		SPIRAL SP. L22 x 22 x 3.2 (0.6 kg/SPACER)	—	50	560	30
		REINFORCING STEEL - TOTAL (kg)				17 339

H. P. STRUCTURAL CONCRETE PLACEMENT QUANTITIES

ONE SUPER.

	WEST	EAST	CLOSURE	QUANTITY
SLAB SECTION 1 & ABUT. DIAPH.	84.9	73.4	-	158.3
SLAB SECTION 2	31.4	24.5	-	55.9
SLAB SECTION 3 & ABUT. DIAPH.	92.2	73.2	-	165.4
SLAB SECTION 4	31.8	25.5	-	57.3
SLAB SECTION 5	52.4	40.3	-	92.7
SLAB SECTION 6	-	-	25.7	25.7
SIDEWALKS				75.3
			TOTAL (m^3)	630.6

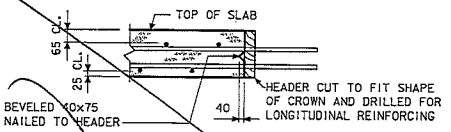
CONC. PLACEMENT QUANTITIES TWO ABUTMENTS

SOUTH ABUTMENT FOOTING	36.4
NORTH ABUTMENT FOOTING	28.3
TOTAL (m^3)	64.7

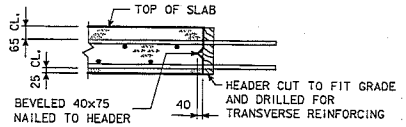
ESTIMATED QUANTITIES ONE SUPER. & TWO ABUTS.

ITEM		UNIT	QUANTITY
HIGH PERFORMANCE STRUCTURAL CONCRETE		m^3	630.6
STRUCTURAL CONCRETE (BRIDGE)		m^3	64.7
STRUCTURAL STEEL		kg	297 876
REINFORCING STEEL		kg	17 339
REINFORCING STEEL EPOXY COATED		kg	123 307
CLASS 20 EXCAVATION		m^3	128
HP310x125 STEEL BEARING PILES	FURNISH 12 @ 8.2 m N.A.; 13 @ 8 m S.A.	m	202.4
PILE CASING, CORRUGATED METAL PIPE, 600 mm		m	142.4
CONCRETE DRILLED SHAFT, 760 DIA.		m	168.3

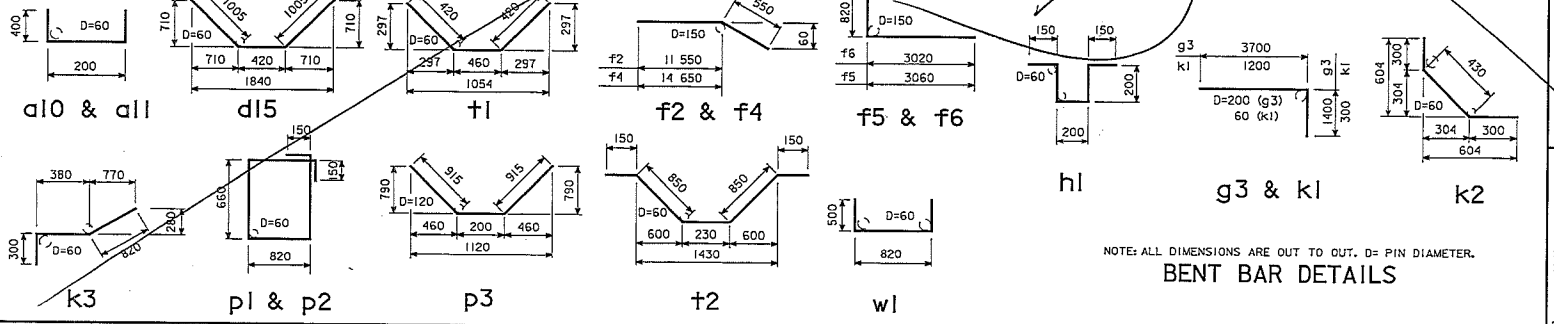
* a1 VARIES FROM 13 300 TO 15 900
a3 VARIES FROM 10 600 TO 13 600
a5 VARIES FROM 13 500 TO 16 000
a7 VARIES FROM 10 800 TO 13 800
a12 VARIES FROM 13 000 TO 13 300
a13 VARIES FROM 10 100 TO 10 600
a14 VARIES FROM 13 200 TO 13 500
a15 VARIES FROM 10 400 TO 10 800



TRANSVERSE SLAB CONSTRUCTION JOINT



LONGITUDINAL SLAB CONSTRUCTION JOINT



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D= PIN DIAMETER.

BENT BAR DETAILS

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.380m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 83th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 34 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY DL CHECKED BY MBQ
DETAILED BY FTE CADD FILE h772406.s34

POLK COUNTY | PROJECT NUMBER | IM-235-2(313)8--13-77 | SHEET NUMBER 35

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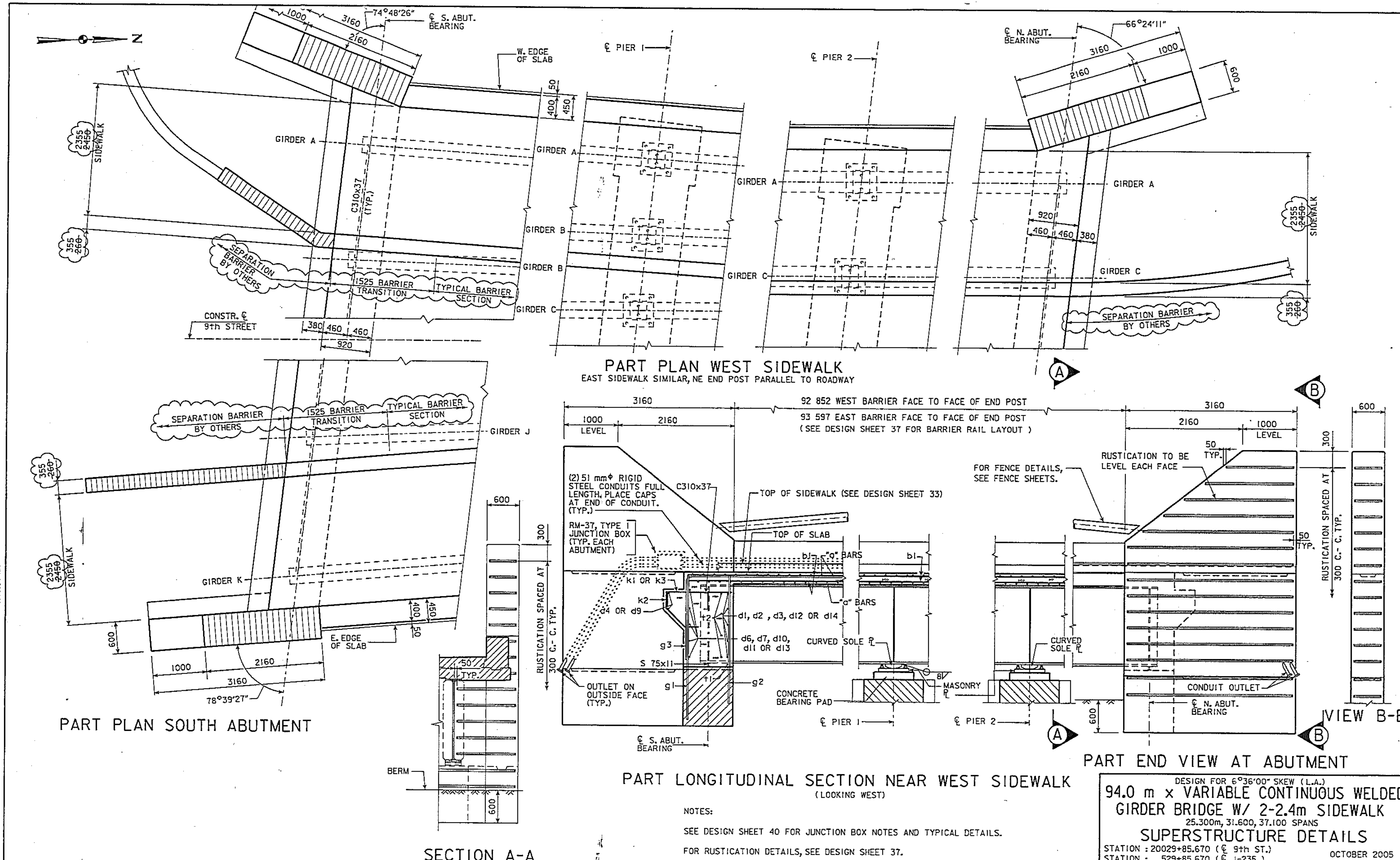

NOTES:

SEE DESIGN SHEET 40 FOR JUNCTION BOX NOTES AND TYPICAL DETAILS.

FOR RUSTICATION DETAILS, SEE DESIGN SHEET 37.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 36 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s36

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 37

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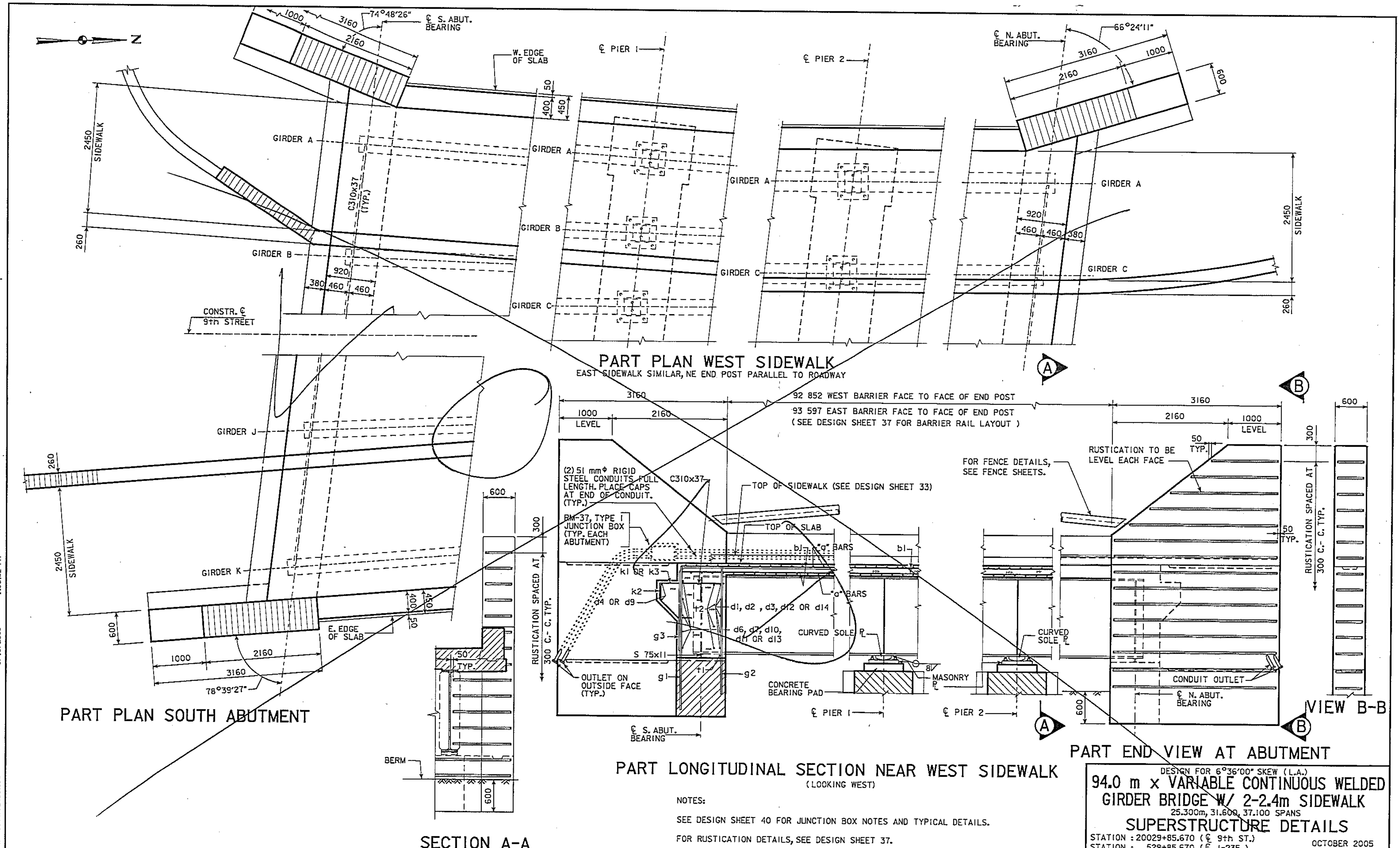

NOTES:

SEE DESIGN SHEET 40 FOR JUNCTION BOX NOTES AND TYPICAL DETAILS.

FOR RUSTICATION DETAILS, SEE DESIGN SHEET 37.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SUPERSTRUCTURE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 36 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s36

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 37

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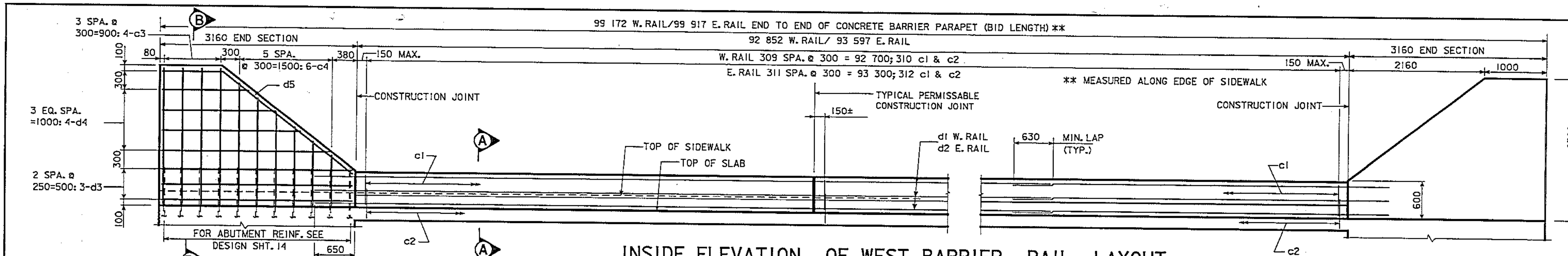
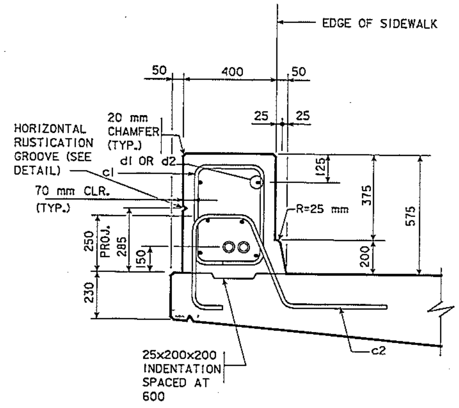


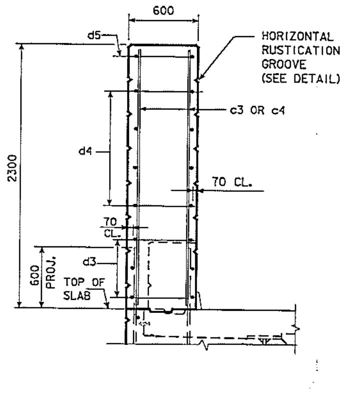
INSIDE ELEVATION OF WEST BARRIER RAIL LAYOUT

EAST BARRIER RAIL-SIMILAR (OPPOSITE HAND)



SECTION A-A

(CONCRETE SIDEWALK NOT SHOWN)



SECTION B-B

(CONCRETE SIDEWALK NOT SHOWN)

CONCRETE BARRIER NOTES:

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 50 mm UNLESS OTHERWISE NOTED OR SHOWN.

ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A 20 mm DRESSED AND BEVELED STRIP.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 6000 mm. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

COST OF THE JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

THE JOINT SEALER SHALL BE WHITE NONSAG LATEX CAULKING SEALER MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED.

ALL BARRIER CONCRETE IS TO BE ACCORDING TO SECTION 2513.03 PARAGRAPH B, SEE GENERAL NOTES AND ESTIMATE REFERENCE INFORMATION FOR ADDITIONAL INFORMATION.

ALL BARRIER REINFORCING STEEL IS TO BE EPOXY COATED.

THE CONCRETE BARRIER IS TO BE BID ON A METRIC BASIS MEASURED FROM END TO END OF CONCRETE BARRIER. THE NUMBER OF METERS OF CONCRETE BARRIER INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER METER BASED ON PLAN QUANTITIES. PRICE BID FOR "CONCRETE BARRIER PARAPET" 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 CONCRETE BARRIER REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.

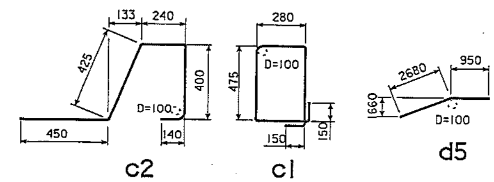
TOP OF CONCRETE BARRIER PARAPET AND CONCRETE END SECTIONS ARE TO BE PARALLEL TO THE THEORETICAL ℄ GRADE.

CROSS SECTIONAL AREA OF THE CONCRETE BARRIER PARAPET = 0.238 m^2

EPOXY REINF. STEEL-TWO BARRIER RAILS

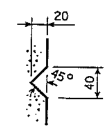
SECTION	MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
STANDARD SECTION	c1	15	VERTICAL		622	1810	1768
	c2	15	VERTICAL		622	1660	1621
	d1	15	LONGITUDINAL		54	11030	935
	d2	15	LONGITUDINAL		54	11120	943
4- 3160 END SECTIONS	c3	20	END POST VERTICAL		32	2200	166
	* c4	20	END POST VERTICAL		48	VARIES	162
	d3	15	END POST LONGITUDINAL		24	3060	115
	* d4	15	END POST LONGITUDINAL		32	VARIES	103
	d5	15	END POST LONGITUDINAL		8	3630	46
(INCLUDE WITH SUPERSTRUCTURE REINFORCING)						TOTAL (kg)	5860

BENT BAR DETAILS



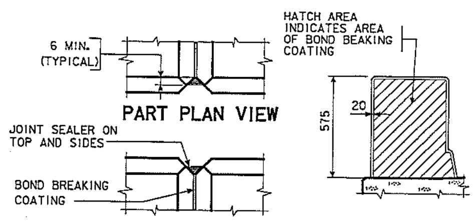
* BAR LENGTH VARIES
c4 830 TO 2010
d4 1400 to 2720

NOTE:
ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.



RUSTICATION GROOVE DETAIL

NOTE: PLACE HORIZONTAL RUSTICATION GROOVE IN BARRIER FACE. (SEE SECTION A-A)



BARRIER RAIL JOINT DETAILS

CONCRETE PLACEMENT SUMMARY

SECTION		TOTAL
BRIDGE BARRIER RAIL	186.449 m AT 0.238 m^3/m	44.4
END SECTIONS	4 EA. AT 2.87 m^3/EA.	11.48
	(FOR INFORMATION ONLY) TOTAL (m^3)	55.88

CONCRETE BARRIER RAIL QUANTITIES

ITEM	UNIT	QUANTITY
CONCRETE PARAPET, FENCE	m	199.089

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

CONCRETE PARAPET RAIL DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)
OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 37 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
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POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 38

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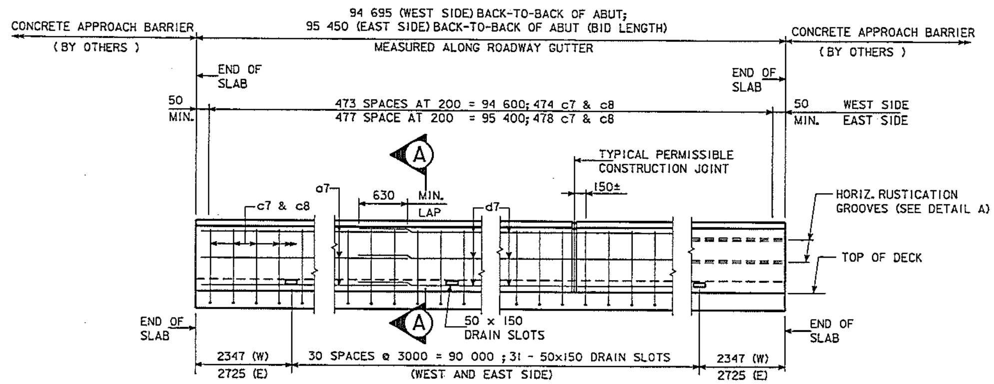
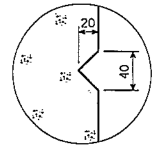


ELEVATION OF WEST SEPARATION BARRIER RAIL

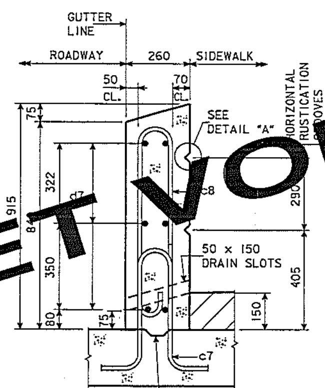
FRONT FACE - LOOKING WEST; EAST SEPARATION BARRIER RAIL - SIMILAR (OPPOSITE HAND)

NOTE :
DRAIN SLOTS ARE TO BE CENTERED BETWEEN c7 & c8 BARS.



DETAIL "A"

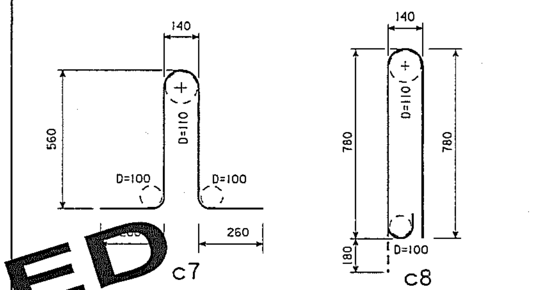
NOTE :
PLACE RUSTICATION GROOVES PARALLEL TO GRADE.



SECTION A-A

EPOXY REINF. STEEL-TWO SEPARATION RAILS						
MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
c7	15	VERTICAL		952	1780	2660
c8	15	VERTICAL		952	1830	2735
d7	15	LONGITUDINAL		128	12 470	2506
(INCLUDE WITH SUPERSTRUCTURE REINFORCING)				TOTAL (kg)		7901

BENT BAR DETAILS



ALL DIMENSIONS ARE OUT TO OUT. D=PIN DIAMETER

CONCRETE PLACEMENT SUMMARY

SECTION		TOTAL
SEPARATION BARRIER RAIL	190.15 @ 0.228 m^3 PER m	43.4
(FOR INFORMATION ONLY)	TOTAL (m^3)	43.4

SEPARATION BARRIER RAIL NOTES:

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 50 mm UNLESS OTHERWISE NOTED OR SHOWN.

ALL EXPOSED CORNERS OF 90° OR SHARPER ARE TO BE FILLETED WITH A 13 mm DRESSED AND BEVELED STRIP.

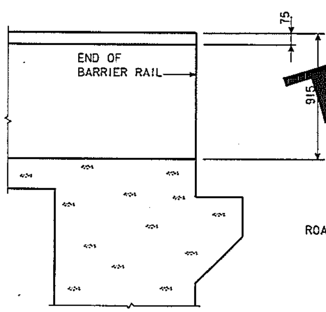
TOP OF THE SEPARATION BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL ℄ GRADE.

ALL BARRIER CONCRETE IS TO BE ACCORDING TO SECTION 2513.03 PARAGRAPH B, SEE GENERAL NOTES AND ESTIMATE REFERENCE INFORMATION FOR ADDITIONAL INFORMATION.

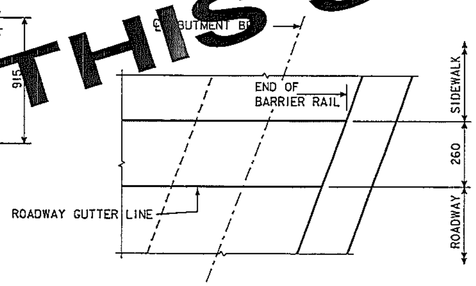
ALL SEPARATION BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.

THE SEPARATION BARRIER RAIL IS TO BE BID ON A METRIC BASIS MEASURED FROM END TO END OF RAIL. THE NUMBER OF METERS OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER METER BASED ON PLAN QUANTITIES. PRICE BID FOR "CONCRETE BARRIER, REINFORCED, SEPARATION" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL AND ALL THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT METRIC SPECIFICATIONS. ALL SEPARATION BARRIER RAIL REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.

CROSS SECTIONAL AREA OF SEPARATION BARRIER RAIL = 0.228 m^2.

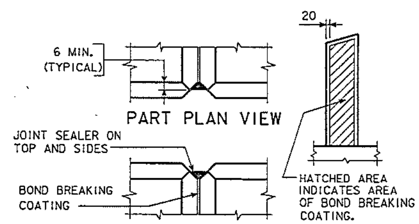


PART ELEVATION VIEW



PART PLAN VIEW AT ABUT.

(NORTH END SHOWN)
(SOUTH END SIMILAR)



SEPARATION BARRIER RAIL JOINT DETAILS

SEPARATION BARRIER RAIL QUANTITY

ITEM	UNIT	QUANTITY
CONCRETE BARRIER, REINFORCED, SEPARATION	m	190.15

THIS SHEET VOIDED

See next sheet.

THIS SHEET VOIDED 4-25-07.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SEPARATION BARRIER RAIL DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 38 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s38

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 39

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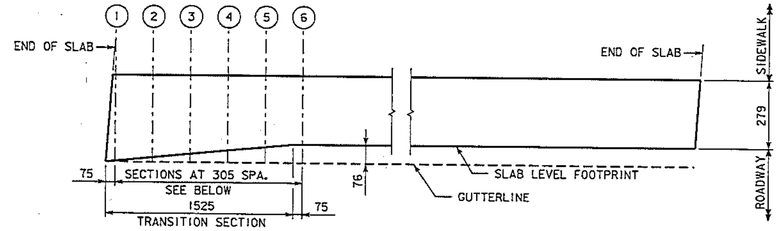
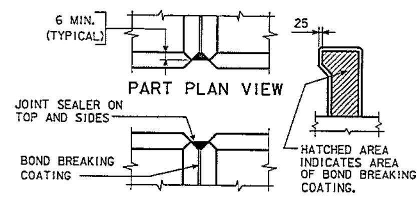


PLAN OF SEPARATION BARRIER RAIL

WEST SEPARATION BARRIER SHOWN, EAST SIMILAR
(REINFORCING BARS NOT SHOWN)



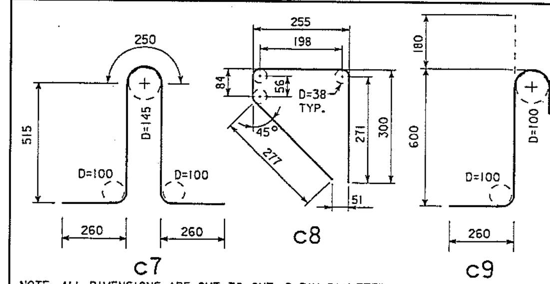
SEPARATION BARRIER RAIL JOINT DETAILS

EPOXY REINF. STEEL-TWO SEPARATION RAILS

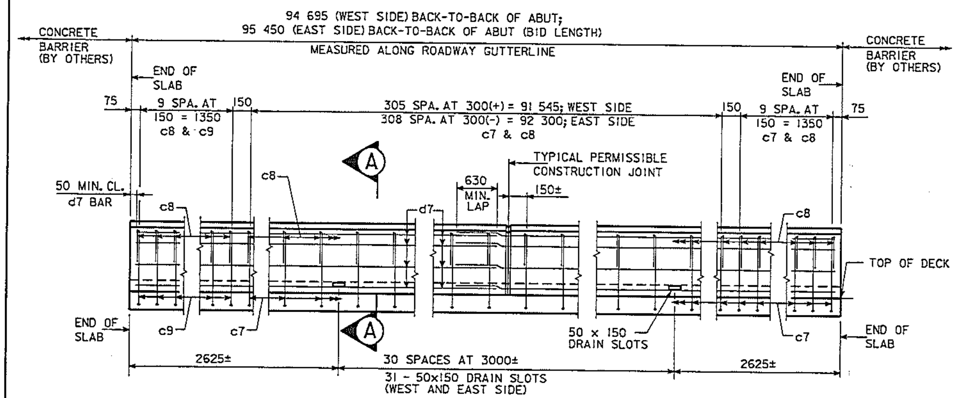
MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
c7	15	VERTICAL		635	1800	1795
c8	10*	VERTICAL		655	916	336
c9	15	VERTICAL		40	1040	65
d7	15	LONGITUDINAL	——	98	14 200	2185
(INCLUDE WITH SUPERSTRUCTURE REINFORCING)					TOTAL (kg)	4381

* 9.5 mm DIAMETER REINFORCING BARS SHALL BE USED FOR SIZE 10 BARS IN THE SEPARATION BARRIER

BENT BAR DETAILS



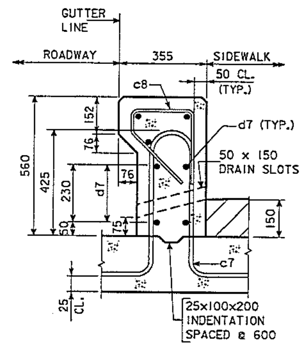
NOTE: ALL DIMENSIONS ARE OUT TO OUT. D=PIN DIAMETER



ELEVATION OF WEST SEPARATION BARRIER RAIL

FRONT FACE - LOOKING WEST; EAST SEPARATION BARRIER RAIL - SIMILAR

NOTE :
DRAIN SLOTS ARE TO BE CENTERED BETWEEN c7 BARS.



SECTION A-A

(TYPICAL SECTION)

CONCRETE PLACEMENT SUMMARY

SECTION		TOTAL
SEPARATION BARRIER TYPICAL SECTION	187.10 @ 0.171 m^3 PER m	32.0
SEPARATION BARRIER TRANSITION	2 @ 0.28 m^3 EACH	0.6
(FOR INFORMATION ONLY)	TOTAL (m^3)	32.6

SEPARATION BARRIER RAIL NOTES:

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 50 mm UNLESS OTHERWISE NOTED OR SHOWN.

ALL EXPOSED CORNERS OF 90° OR SHARPER ARE TO BE FILLETED WITH A 19 mm DRESSED AND BEVELED STRIP.

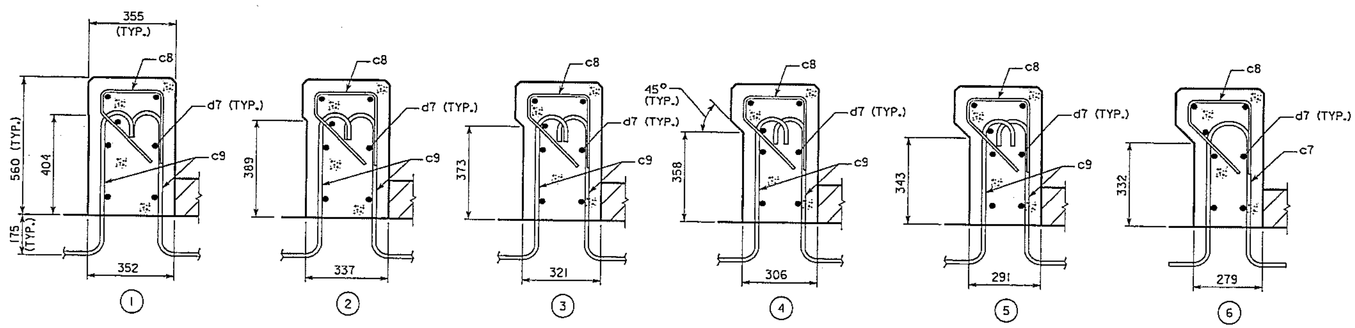
TOP OF THE SEPARATION BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL ℄ GRADE.

ALL BARRIER CONCRETE IS TO BE ACCORDING TO SECTION 2513.03 PARAGRAPH B, SEE GENERAL NOTES AND ESTIMATE REFERENCE INFORMATION FOR ADDITIONAL INFORMATION.

ALL SEPARATION BARRIER RAIL REINFORCING STEEL IS TO BE EPOXY COATED.

THE SEPARATION BARRIER RAIL IS TO BE BID ON A METRIC BASIS MEASURED FROM END TO END OF RAIL. THE NUMBER OF METERS OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER METER BASED ON PLAN QUANTITIES. PRICE BID FOR "CONCRETE BARRIER, REINFORCED, SEPARATION" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL AND ALL THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT METRIC SPECIFICATIONS. ALL SEPARATION BARRIER RAIL REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.

CROSS SECTIONAL AREA OF SEPARATION BARRIER RAIL TYPICAL SECTION = 0.171 m^2.



TRANSITION CROSS SECTIONS

d7 BARS ALONG FRONT FACE ARE FIELD BENT TO MATCH TRANSITION WIDTH

TYPICAL SECTION

SEPARATION BARRIER RAIL QUANTITY

ITEM	UNIT	QUANTITY
CONCRETE BARRIER, REINFORCED, SEPARATION	m	190.15

THIS SHEET ADDED 4-25-07.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SEPARATION BARRIER RAIL DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 38A OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY RAM CHECKED BY KRP
DETAILED BY SBA CADD FILE h772406.s38A

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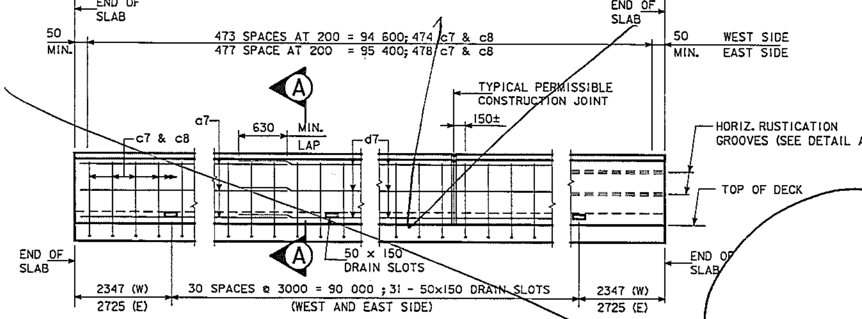
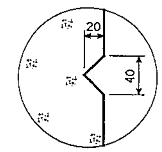
POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 39A



ELEVATION OF WEST SEPARATION BARRIER RAIL

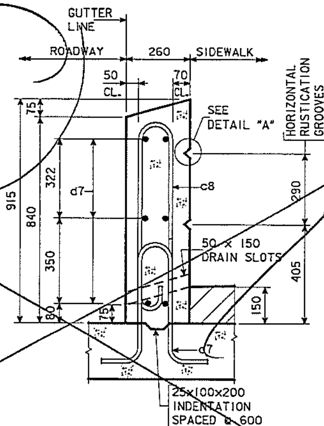
FRONT FACE - LOOKING WEST; EAST SEPARATION BARRIER RAIL - SIMILAR (OPPOSITE HAND)

NOTE :
DRAIN SLOTS ARE TO BE
CENTERED BETWEEN c7 & c8 BARS.



DETAIL "A"

NOTE :
PLACE RUSTICATION GROOVES
PARALLEL TO GRADE.

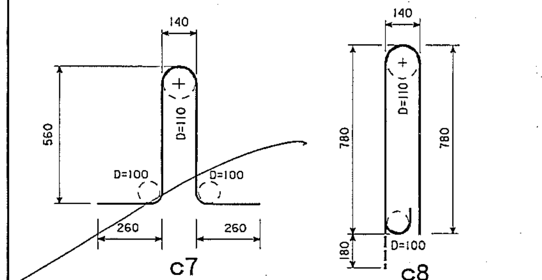


SECTION A-A

EPOXY REINF. STEEL-TWO SEPARATION RAILS

MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
c7	15	VERTICAL	⎍	952	1780	2660
c8	15	VERTICAL	0	952	1830	2735
d7	15	LONGITUDINAL	——	128	12 470	2506
(INCLUDE WITH SUPERSTRUCTURE REINFORCING)				TOTAL (kg)		7901

BENT BAR DETAILS



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D=PIN DIAMETER

CONCRETE PLACEMENT SUMMARY

SECTION		TOTAL
SEPARATION BARRIER RAIL	190.15 @ 0.228 m^3 PER m	43.4
(FOR INFORMATION ONLY)	TOTAL (m^3)	43.4

SEPARATION BARRIER RAIL NOTES:

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 50 mm UNLESS OTHERWISE NOTED OR SHOWN.

ALL EXPOSED CORNERS OF 90° OR SHARPER ARE TO BE FILLETED WITH A 13 mm DRESSED AND BEVELED STRIP.

TOP OF THE SEPARATION BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL ℄ GRADE.

ALL BARRIER CONCRETE IS TO BE ACCORDING TO SECTION 2513.03 PARAGRAPH B, SEE GENERAL NOTES AND ESTIMATE REFERENCE INFORMATION FOR ADDITIONAL INFORMATION.

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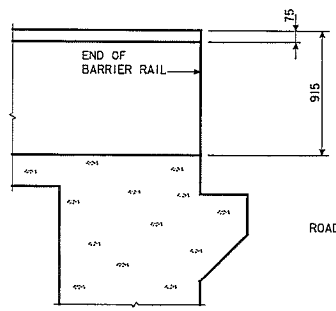
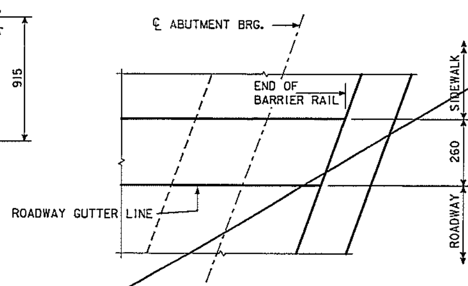
THE SEPARATION BARRIER RAIL IS TO BE BID ON A METRIC BASIS MEASURED FROM END TO END OF RAIL. THE NUMBER OF METERS OF BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER METER BASED ON PLAN QUANTITIES. PRICE BID FOR "CONCRETE BARRIER, REINFORCED, SEPARATION" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, EXCLUDING REINFORCING STEEL AND ALL THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT METRIC SPECIFICATIONS. ALL SEPARATION BARRIER RAIL REINFORCING STEEL IS TO BE INCLUDED WITH THE SUPERSTRUCTURE REINFORCING STEEL.

CROSS SECTIONAL AREA OF SEPARATION BARRIER RAIL = 0.228 m^2.

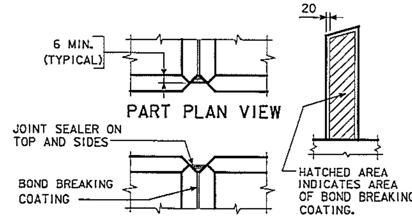


PART ELEVATION VIEW



PART PLAN VIEW AT ABUT.

(NORTH END SHOWN)
(SOUTH END SIMILAR)



SEPARATION BARRIER RAIL JOINT DETAILS

SEPARATION BARRIER RAIL QUANTITY

ITEM	UNIT	QUANTITY
CONCRETE BARRIER, REINFORCED, SEPARATION	m	190.15

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

SEPARATION BARRIER RAIL DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 38 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s38

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 39

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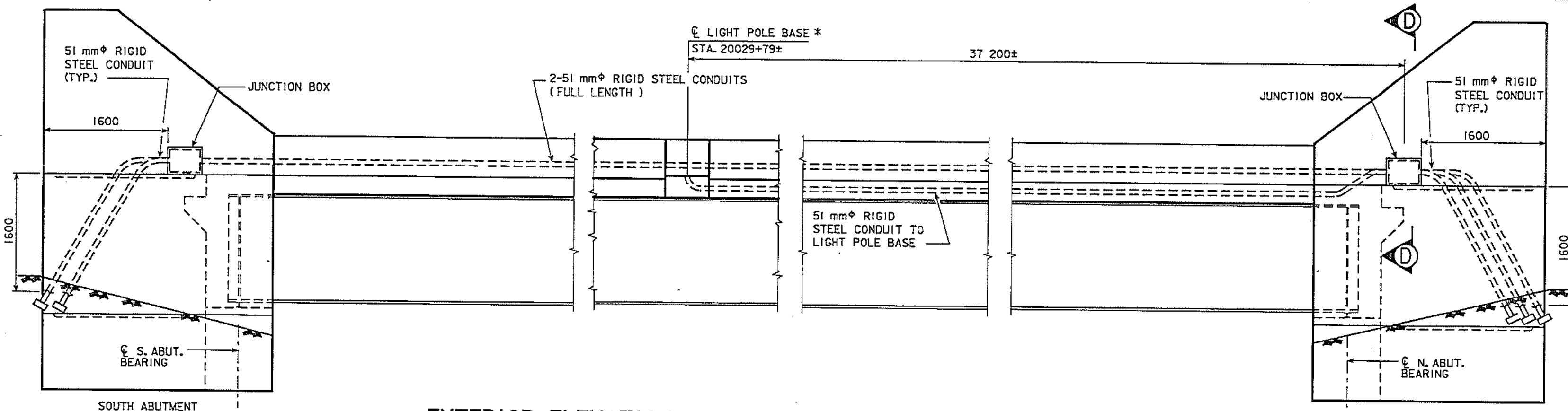
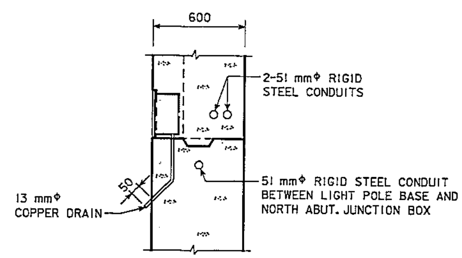
CONDUIT PLACEMENT SUMMARY	
ITEM	AMOUNT
51 mmΦ RIGID STEEL, WEST BARRIER	202 m
51 mmΦ RIGID STEEL, EAST BARRIER	245 m
89 mmΦ RIGID STEEL, PIER 2	6.4 m
38 mmΦ RIGID STEEL, PIER 2	12 m

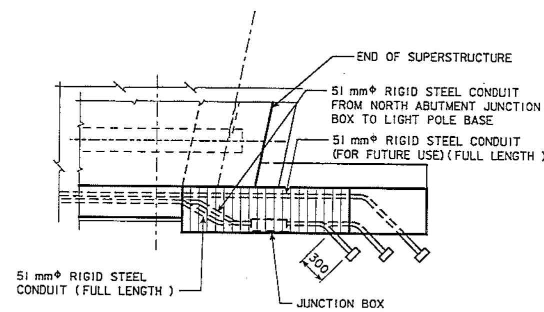
* NOTE:
ADJUST THE GIVEN STATION LOCATION AS NECESSARY TO ALIGN THE LIGHT POLE BASE WITH THE CENTERLINE OF THE PIER BELOW.



EXTERIOR ELEVATION - EAST BARRIER RAIL - LOOKING WEST



PART SECTION D-D



PART PLAN AT END POST

NOTES:

SEE DESIGN SHEET 36 FOR CONDUIT IN WEST BARRIER RAIL.

SEE DESIGN SHEET 40 FOR JUNCTION BOX DETAILS.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

LIGHTING DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 39 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY DL
DETAILED BY FTE CADD FILE h772406.s39

LIGHTING

STANDARD SHEET M1030A (MODIFIED)

POLK COUNTY

PROJECT NUMBER IM-235-2(313)8--13-77

SHEET NUMBER 40

HM1030A.S01 ; THIS SHEET ISSUED 9-1-95.
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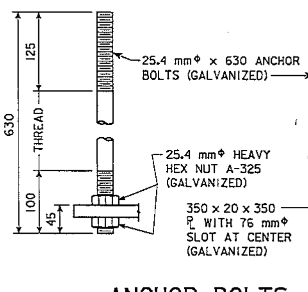
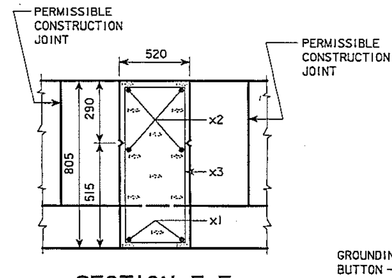
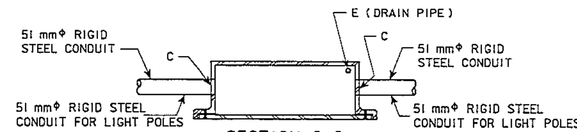


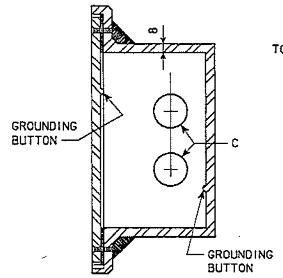
ANCHOR BOLTS



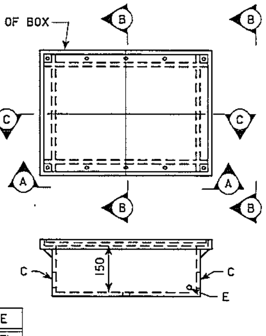
SECTION E-E



SECTION C-C



SECTION/VIEW B-B



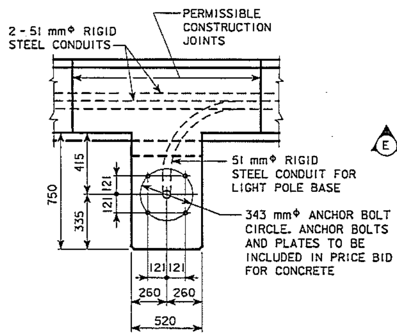
VIEW A-A

BOSSED FOR	HOLE	FOR CONDUIT SIZE
5 THREADS	C	51 mm⌀ RIGID STEEL
NONE	E	13 mm⌀ COPPER PIPE

NOTE:
THE GROUNDING BUTTONS ARE TO BE BLIND DRILLED AND TAPPED FOR 9.5 mm⌀ x 20 mm BOLTS.

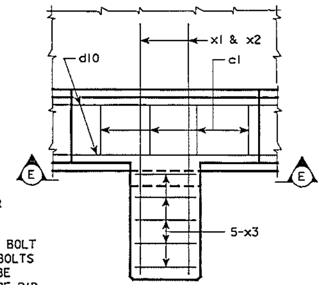
RM-37, TYPE I JUNCTION BOX

WATERTIGHT, CAST IRON - FLUSH MOUNT

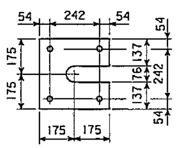


PLAN OF POLE BASE

BASE REINFORCING BARS NOT SHOWN

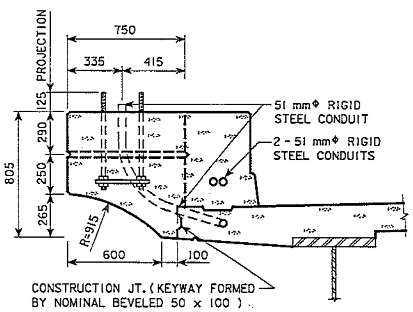


PLAN OF POLE BASE REINFORCING

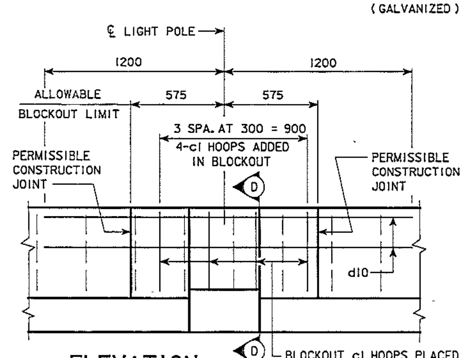


ANCHOR PLATE

(GALVANIZED)

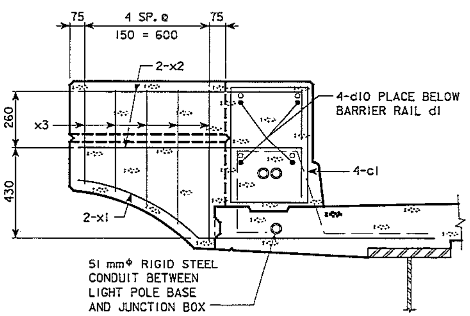


SECTION D-D



ELEVATION

ANCHOR BOLTS AND BASE REINFORCING NOT SHOWN



SECTION THROUGH POLE BASE SHOWING REINFORCING

LIGHTING NOTES:

SEE RM-37 STANDARD ROAD PLAN FOR ADDITIONAL INFORMATION ON JUNCTION BOXES.

CONSTRUCTION SHALL CONFORM TO THE CURRENT IOWA D.O.T. STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS AND CURRENT SUPPLEMENTAL SPECIFICATIONS.

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 6 mm. DRAIN PIPE END SHALL BE FLUSH WITH INSIDE SURFACE OF BOX. GROUNDING BUTTONS SHALL BE LOCATED APPROXIMATELY 75 mm FROM THE INSIDE SURFACE OF THE BOX WALL, AND NOT CLOSER THAN 75 mm 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 25 mm BETWEEN THE EDGE OF THE HOLE AND THE INSIDE SURFACE OF THE BOX WALL. TYPICAL DETAILS ARE SHOWN ON THIS SHEET.

THE RIGID STEEL CONDUIT, JUNCTION BOXES AND FITTINGS INCLUDING LABOR AND ANY ADDITIONAL WORK TO DO THE INSTALLATION IS CONSIDERED INCIDENTAL TO THE COST OF "CONCRETE PARAPET, FENCE".

COST OF FURNISHING AND INSTALLING POLES, LIGHTS AND LIGHTING CONDUCTOR IS NOT A PART OF THIS ESTIMATE.

CONCRETE FOR LIGHT POLE BASE SHALL BE IN ACCORDANCE WITH SECTION 2513.03 PARAGRAPH B, EXCEPT CLASS D CONCRETE SHALL NOT BE USED.

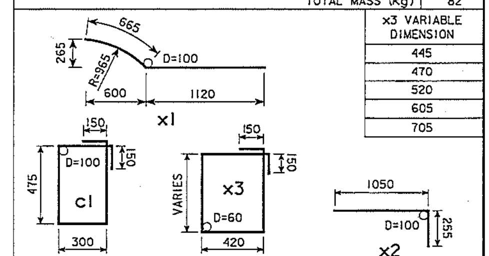
ALL ANCHOR BOLT MATERIAL SHALL COMPLY WITH THE REQUIREMENTS OF IOWA DOT MATERIALS I.M. 453.08.

ALL REINFORCING STEEL IS TO BE EPOXY COATED AND GRADE 400.

EPOXY REINFORCING STEEL-ONE BASE

MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
x1	15	SLAB ANCHORS	⌒	2	1785	6
x2	15	BLISTER ANCHOR	¬	4	1305	8
x3	15	BLISTER HOOP	□	5	VARIES	18
c1	15	BLOCKOUT HOOPS	□	4	1850	12
d10	25	BLOCKOUT LONGITUDINAL	—	4	2400	38
TOTAL MASS (kg)						82

x3 VARIABLE DIMENSION
445
470
520
605
705



NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

LIGHTING QUANTITIES

ITEM	AMOUNT
STRUCTURAL CONCRETE	0.6 m^3
REINFORCING STEEL - EPOXY COATED	82 kg

NOTE:
FOR LOCATION OF CONDUITS NEEDED SEE LIGHTING DETAILS DES. SH. 39. QUANTITIES FOR REINFORCING STEEL FOR POLE BASES ARE INCLUDED IN THE SUPERSTRUCTURE QUANTITIES ON ANOTHER SHEET. CONCRETE QUANTITY INCLUDES RAIL BLOCKOUT AND BASE. COST OF CONCRETE IS INCLUDED IN THE BID ITEM "CONCRETE PARAPET, FENCE".

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

LIGHTING DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

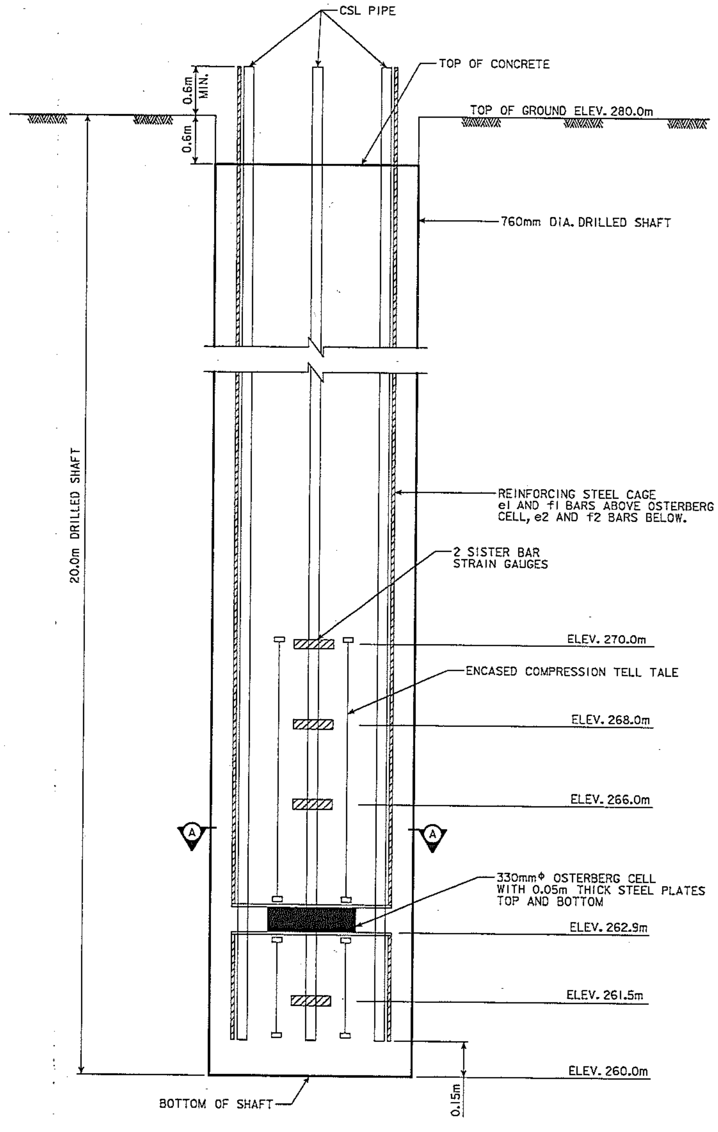
POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

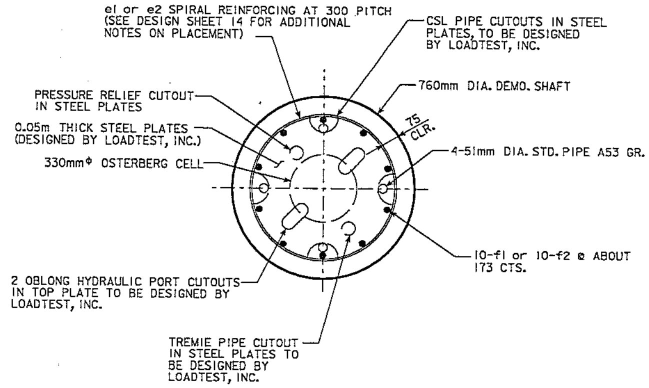
DESIGN SHEET NO. 40 OF 49 FILE NO. 29552 DESIGN NO. 2406

REINFORCING BAR LIST - ONE DEMO. SHAFT

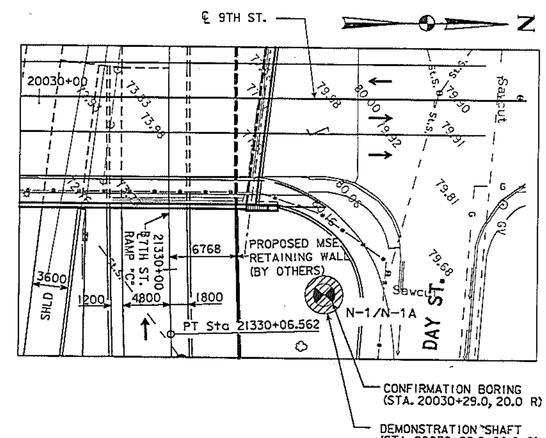
MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	MASS
f1	30	SHAFT LONGITUDINAL	——	10	17350	953
e1	15	SHAFT SPIRAL	(spiral)	1	115285	181
		L22x22x3.2 SPIRAL SPACER (1.0 kg/m)	——	4	17350	69
f2	30	SHAFT LONGITUDINAL	——	10	2700	148
e2	15	SHAFT SPIRAL	(spiral)	1	22684	36
		L22x22x3.2 SPIRAL SPACER (1.0 kg/m)	——	4	2700	11
			TOTAL NON-COATED (kg)			1398



DEMONSTRATION SHAFT ELEVATION



DEMONSTRATION SHAFT PLAN
SECTION A-A



SITUATION PLAN

DEMONSTRATION SHAFT NOTES:

DRAWING IS NOT TO SCALE: FOLLOW DIMENSIONS.

THE NOMINAL CAPACITY OF THE 330mm DIA. OSTERBERG CELL SHALL BE 4350 kN IN EACH DIRECTION.

THE OSTERBERG CELL SHALL HAVE A MINIMUM STROKE OF 100mm.

STRAIN GAUGES AND COMPRESSION TELL TALES ARE REQUIRED TO MONITOR THE PERFORMANCE OF THE LOAD TEST. STRAIN GAUGE AND ENCASED COMPRESSION TELL TALE LOCATIONS ARE PRELIMINARY AND ARE TO BE FINALIZED BY LOADTEST, INC. FINAL LOCATIONS ARE TO BE APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT.

A COMPLETE COPY OF THE BORING LOG AND TEST RESULTS ARE AVAILABLE UPON WRITTEN REQUEST TO THE CONTRACTING AUTHORITY.

THE ILLUSTRATED LOAD TEST DESIGN IS PRELIMINARY.

FINAL DESIGN OF THE DEMONSTRATION SHAFT SHALL BE SUBJECT TO CHANGE BY LOADTEST, INC. WITH THE APPROVAL OF THE ENGINEER.

TREMIE PIPE SHALL BE LOWERED IN THE HOLE AT THE SAME TIME AS THE REINFORCING CAGE AND THE OSTERBERG LOAD CELL TO ENSURE THE TREMIE PIPE WILL EXTEND TO THE BOTTOM OF THE HOLE FOR CONCRETE PLACEMENT.

DESIGN FOR 6°36'00" SKEW (L.A.)
94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK
25.300m, 31.600, 37.100 SPANS
DEMONSTRATION SHAFT
STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235) OCTOBER 2005
POLK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 41 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY RAM
DETAILED BY FTE CADD FILE h772406.s41

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 42

XXXXXXXXXXSYSTEMTIME XXXXXXXUSERNAME XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXDGNSPEC

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ESTIMATED UTILITY QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
1	2598--010400	WATER MAIN, DUCTILE IRON 400 mm DIA.	m	119.0	
2	2599--999901	PIPE INSULATION	m	119.0	
3	2599--999901	STEEL CASING, 762 mm DIA.	m	27.0	
4	2599--999915	PIPE HANGER ASSEMBLY	EACH	63	
5	2599--999916	TEMPERATURE MONITORING SYSTEM	LS	1.0	

ITEM NO.	ESTIMATE REFERENCE INFORMATION
1	INCLUDES ALL COSTS TO FURNISH AND INSTALL EXPANSION COUPLINGS AND LONGITUDINAL WATER MAIN RESTRAINER.
3	INCLUDES ALL COSTS TO FURNISH AND INSTALL STEEL CASING AND STAINLESS STEEL CASING CHOCKS.
4	INCLUDES ALL COSTS TO FURNISH AND INSTALL STAINLESS STEEL CONCRETE-INSERTS, RODS, NUTS, WASHERS, HANGER STRAPS AND SADDLES.
1-5	SEE DEVELOPMENTAL SPECIFICATIONS FOR WATER MAIN AND SPECIAL PROVISIONS FOR WATER MAIN BRIDGE CROSSING.

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DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

UTILITY ESTIMATE QUANTITIES

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)

OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

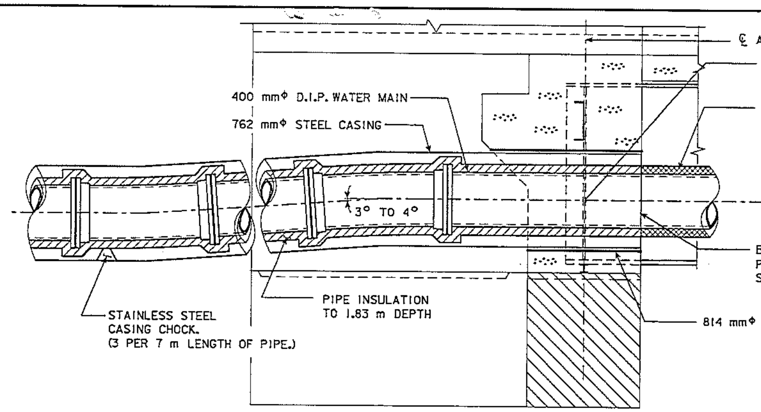
DESIGN SHEET NO. 42 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY XXX
DETAILED BY FTE CADD FILE h772406.s42

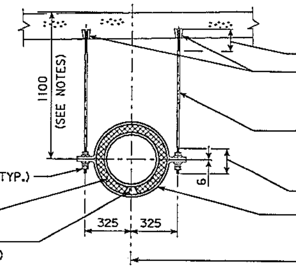
POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 43

XXXXXXXXXXSYSTEMTIME XXXXXXXUSERNAME XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXDGNSPEC

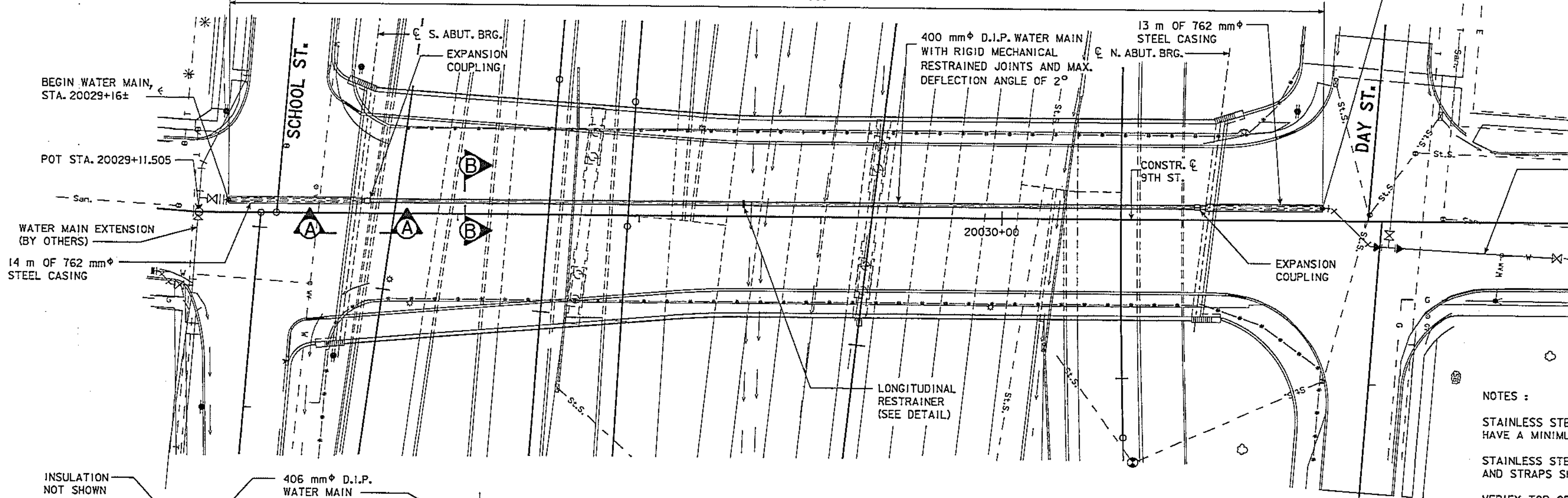
B.M. NO. 549 STA. 529+06.161 12.03 RT. N. LEG OF OVERHEAD SIGN W OF 9TH ST BRG ELEV. 275.015



SECTION A-A
(SIMILAR FOR NORTH ABUTMENT)



SECTION B-B



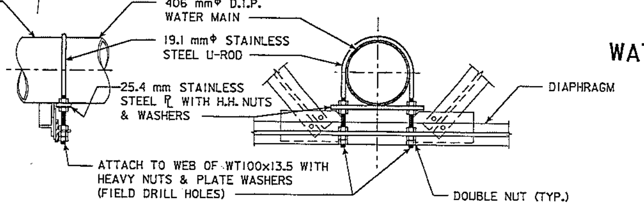
WATER MAIN PLAN

NOTES :

STAINLESS STEEL CONCRETE INSERTS SHALL HAVE A MINIMUM LOAD RATING OF 14.2 kN.

STAINLESS STEEL PLATES, RODS, NUTS, WASHERS AND STRAPS SHALL CONFORM TO ASTM A276, TYPE 316.

VERIFY TOP OF DECK TO ℄ WATER MAIN DIMENSION PRIOR TO ORDERING HANGER ASSEMBLIES AND AFTER BRIDGE DECK IS POURED.



LONGITUDINAL RESTRAINER DETAIL
NOTE: PLACE RETAINER AT DIAPHRAGM DIRECTLY TO THE SOUTH OF GIRDER SPLICE #3.

DESIGN FOR 6°36'00" SKEW (L.A.)

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25.300m, 31.600, 37.100 SPANS

WATER MAIN DETAILS
STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.670 (℄ I-235)
OCTOBER 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 43 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY MBQ CHECKED BY RAM
DETAILED BY FTE CADD FILE h772406.s43

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 44

XXXXXXXXXXSYSTEMTIME XXXXXXXUSERNAME XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXDGNSPEC

8/15/2005 5:00:24 PM

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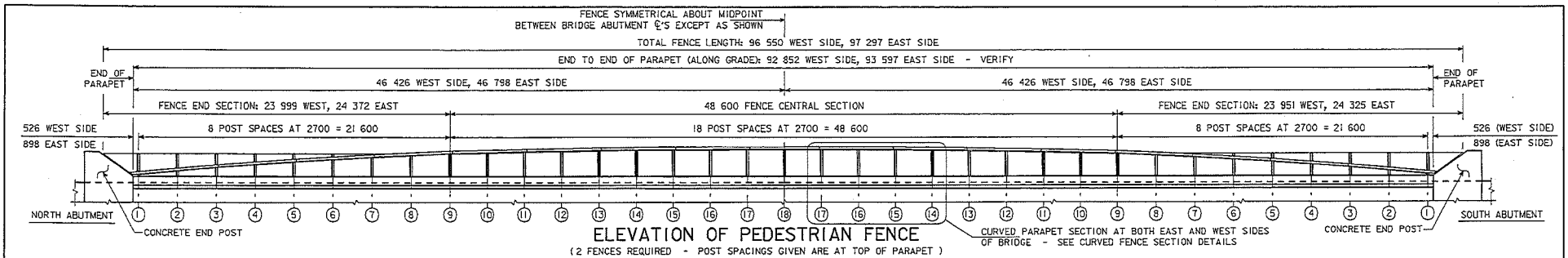
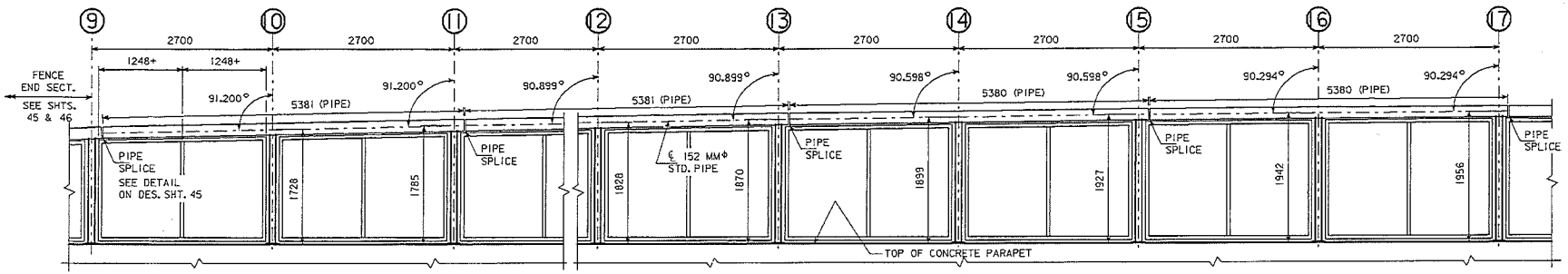


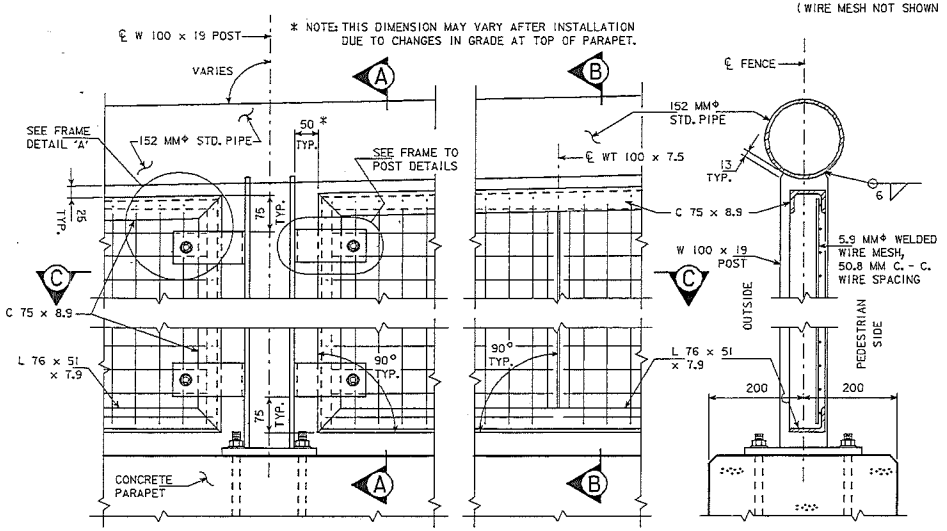
ELEVATION OF PEDESTRIAN FENCE

(2 FENCES REQUIRED - POST SPACINGS GIVEN ARE AT TOP OF PARAPET)



PART ELEVATION OF PEDESTRIAN FENCE CENTRAL SECTION

(WIRE MESH NOT SHOWN - POST SPACINGS GIVEN ARE AT TOP OF PARAPET)

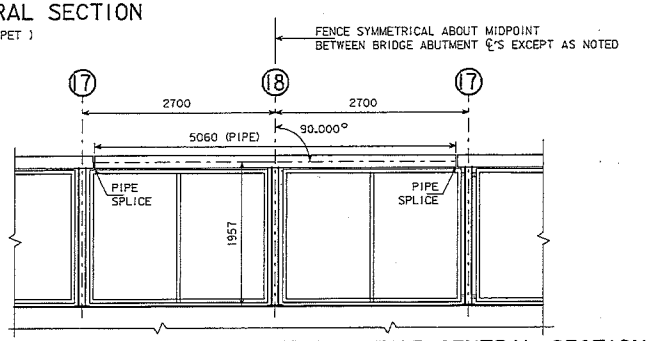


FENCE CENTRAL SECTION - PART ELEVATION DETAIL

(OUTSIDE ELEVATION SHOWN)

PART SECTION A - A

NOTE: FOR SECTION VIEW B-B SEE DESIGN SHEET 45. FOR SECTION VIEW C-C SEE DESIGN SHEET 46. FOR FRAME TO POST DETAILS SEE DESIGN SHEET 47. FOR FENCE NOTES SEE DESIGN SHEET 48.



PART ELEVATION OF PEDESTRIAN FENCE CENTRAL SECTION

(WIRE MESH NOT SHOWN - POST SPACINGS GIVEN ARE AT TOP OF PARAPET)

STRUCTURAL DESIGN

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

William D. Tucker 6-16-2005
Signature Date

William D. Tucker
Printed or Typed Name

My license renewal date is December 31, 2005

Pages or sheets covered by this seal: SHEETS 44 THRU 49 OF 49

LICENSED PROFESSIONAL ENGINEER William D. Tucker 11362 IOWA

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

FENCE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.570 (℄ I-235)

OCTOBER, 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 44 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY JRH	CHECKED BY RDM	POLK COUNTY	PROJECT NUMBER	IM-235-2(313)8--13-77	SHEET NUMBER	45
DETAILED BY KMO	CADD FILE H772406.S44					

16-JUN-2005 13:14 dwrigh2 w:\projects\77235180C96\BRFinal\Section1-3\FENCES\9thStreet\h772406.s44 \\NTPLTSVR1\Bridge1T1f

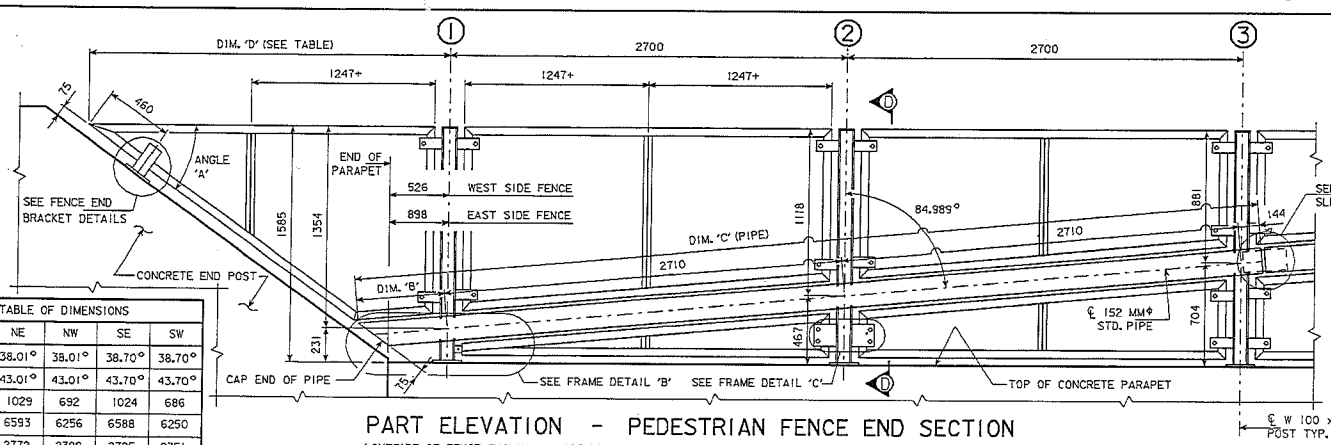
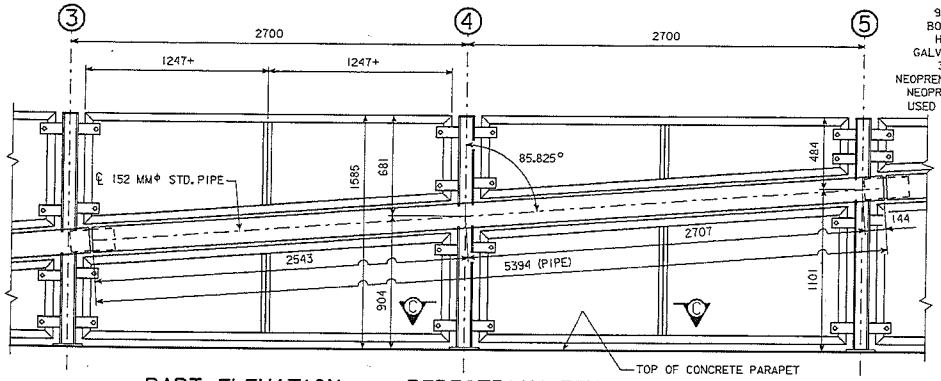


TABLE OF DIMENSIONS				
CORNER	NE	NW	SE	SW
ANGLE 'A'	38.01°	38.01°	38.70°	38.70°
ANGLE 'B'	43.01°	43.01°	43.70°	43.70°
DIM. 'B'	1029	692	1024	686
DIM. 'C'	6593	6256	6588	6250
DIM. 'D'	2772	2399	2725	2351

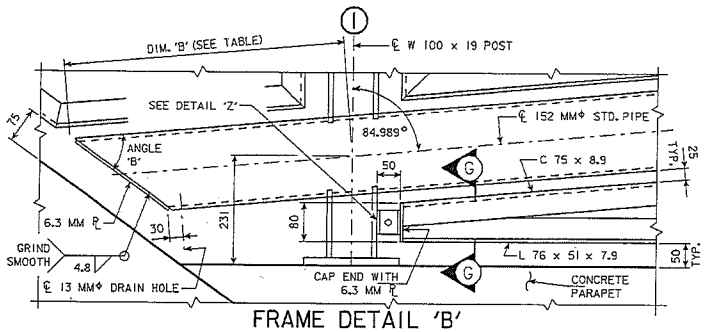
PART ELEVATION - PEDESTRIAN FENCE END SECTION

(OUTSIDE OF FENCE SHOWN - WIRE MESH NOT SHOWN - POST SPACINGS GIVEN ARE AT TOP OF PARAPET)



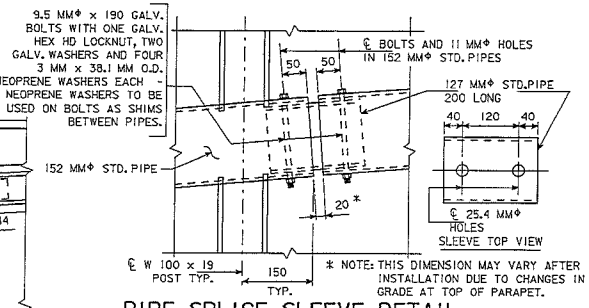
PART ELEVATION - PEDESTRIAN FENCE END SECTION

(OUTSIDE OF FENCE SHOWN - WIRE MESH NOT SHOWN - POST SPACINGS GIVEN ARE AT TOP OF PARAPET)



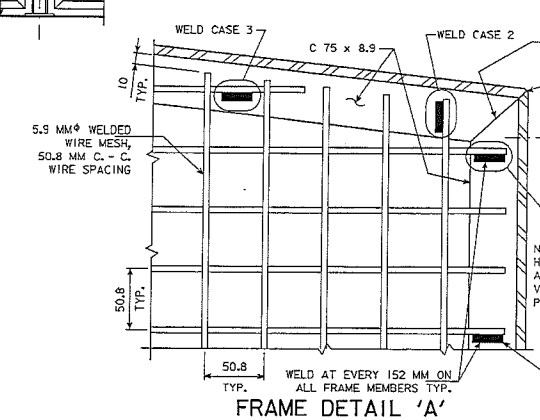
FRAME DETAIL 'B'

(OUTSIDE OF FENCE SHOWN - WIRE MESH NOT SHOWN)



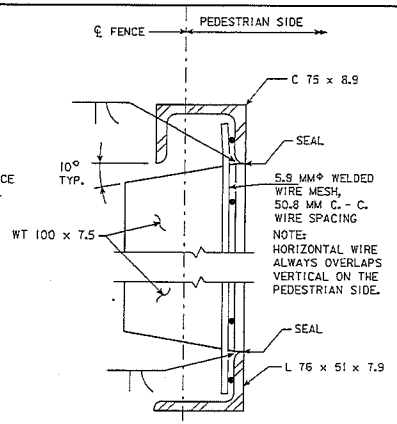
PIPE SPLICE SLEEVE DETAIL

(MESH PANEL FRAMES NOT SHOWN)



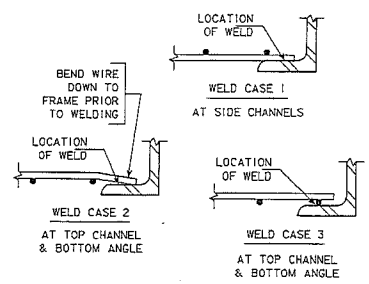
FRAME DETAIL 'A'

(BACK SIDE SHOWN - BACK FLANGE OF CHANNELS NOT SHOWN)



PART SECTION B - B

NOTE: FOR LOCATION OF VIEW SEE SHEETS 1 & 3.



WIRE MESH WELD CASE DETAILS

SEE FRAME DETAIL 'A' FOR LOCATIONS

NOTE: DO NOT WELD BOTH ENDS OF THE SAME WIRE TO THE FRAME.

NOTE: FOR SECTION VIEWS C-C AND D-D SEE DESIGN SHEET 46. FOR LOCATION OF SECTION VIEW B-B SEE DESIGN SHEETS 44 AND 46. FOR VIEW G-G AND FENCE NOTES SEE DESIGN SHEET 48. FOR FRAME DETAIL 'C' AND DETAIL 'Z' SEE DESIGN SHEET 47.

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

FENCE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)

STATION : 529+85.570 (℄ I-235)

OCTOBER, 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 45 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY JRH	CHECKED BY RDM	POLK COUNTY	PROJECT NUMBER IM-235-2(313)8--13-77	SHEET NUMBER 46
DETAILED BY KMD	CADD FILE H772406.S45			

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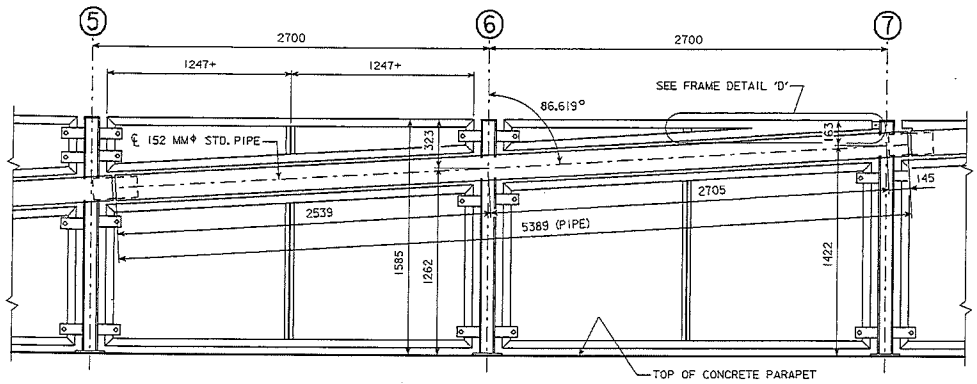
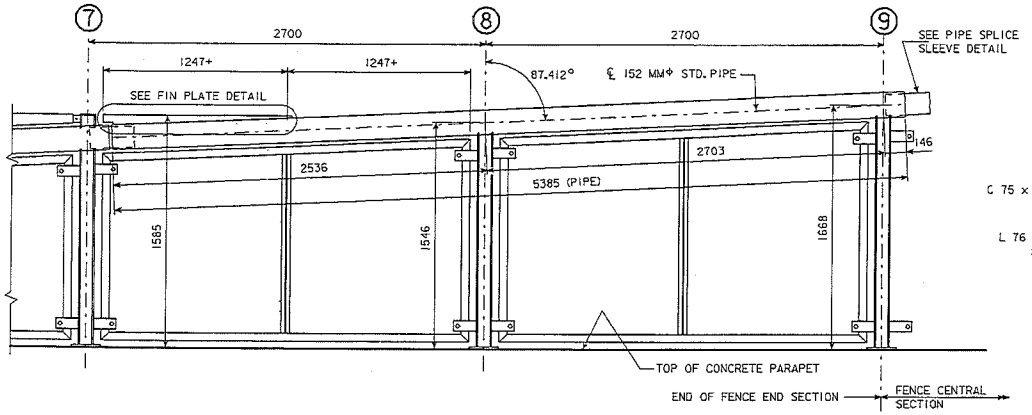


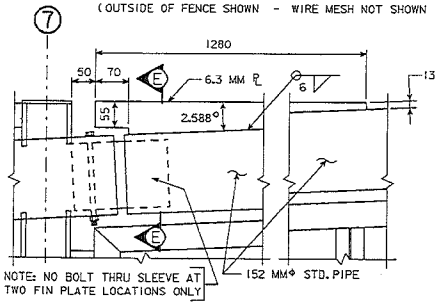
PART ELEVATION - PEDESTRIAN FENCE END SECTION

(OUTSIDE OF FENCE SHOWN - WIRE MESH NOT SHOWN - POST SPACINGS GIVEN ARE AT TOP OF PARAPET)

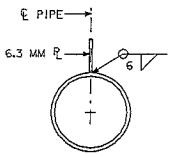


PART ELEVATION - PEDESTRIAN FENCE END SECTION

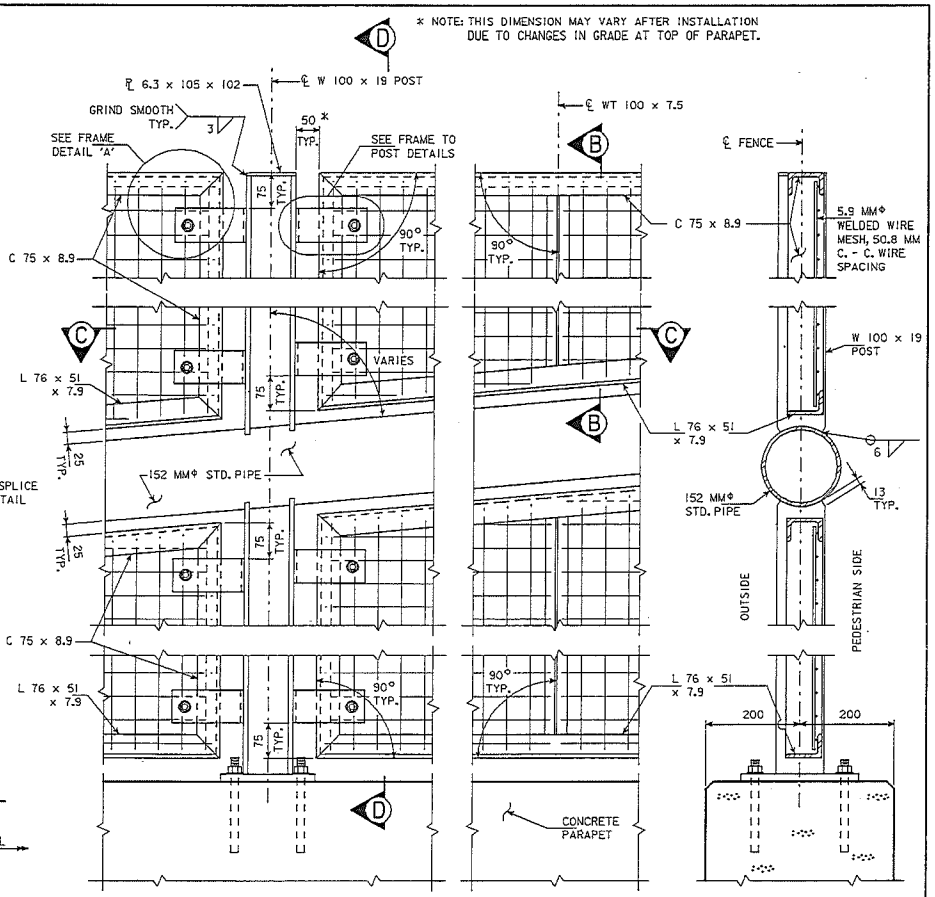
(OUTSIDE OF FENCE SHOWN - WIRE MESH NOT SHOWN - POST SPACINGS GIVEN ARE AT TOP OF PARAPET)



FIN PLATE DETAIL



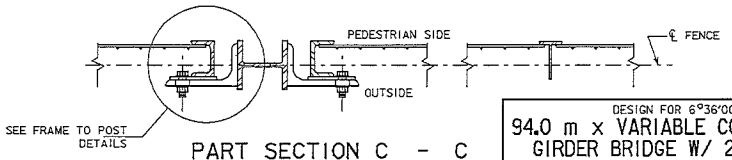
VIEW E - E



FENCE END SECTION - PART ELEVATION DETAIL

(OUTSIDE ELEVATION SHOWN)

PART SECTION D - D



PART SECTION C - C

NOTE: FOR FRAME DETAIL 'D' AND FENCE NOTES SEE DESIGN SHEET 48. FOR 'FRAME TO POST DETAILS SEE DESIGN SHEET 47.

DESIGN FOR 6°36'00" SKEW (L.A.)

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25.300m, 31.600, 37.100 SPANS

FENCE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)
STATION : 529+85.570 (℄ I-235)

OCTOBER, 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 46 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY JRH CHECKED BY RDM
DETAILED BY KMO CADD FILE H772406.S46

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 47

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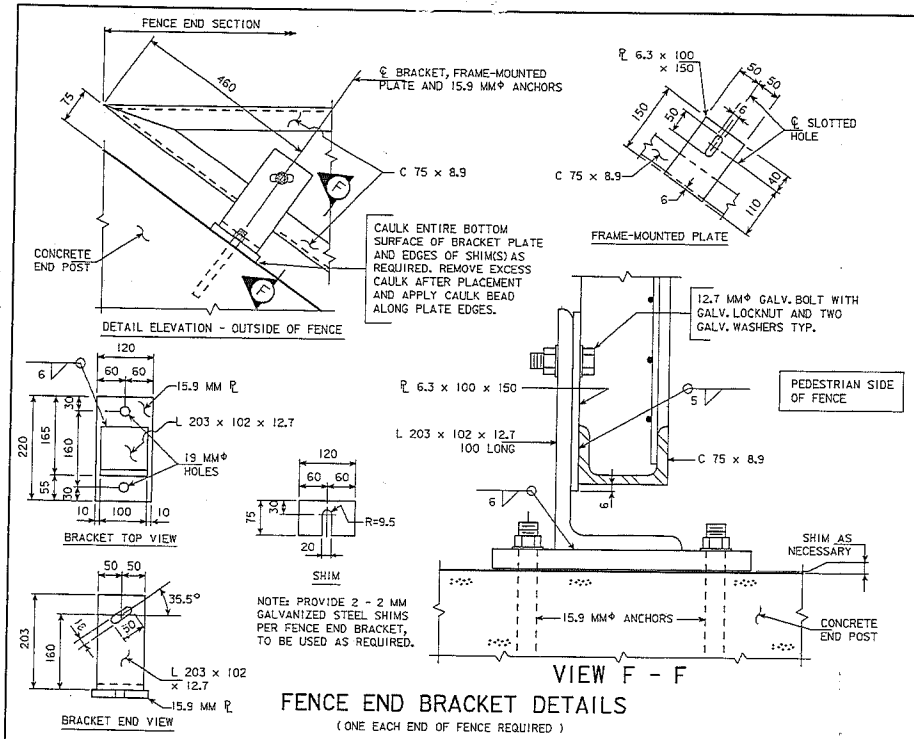
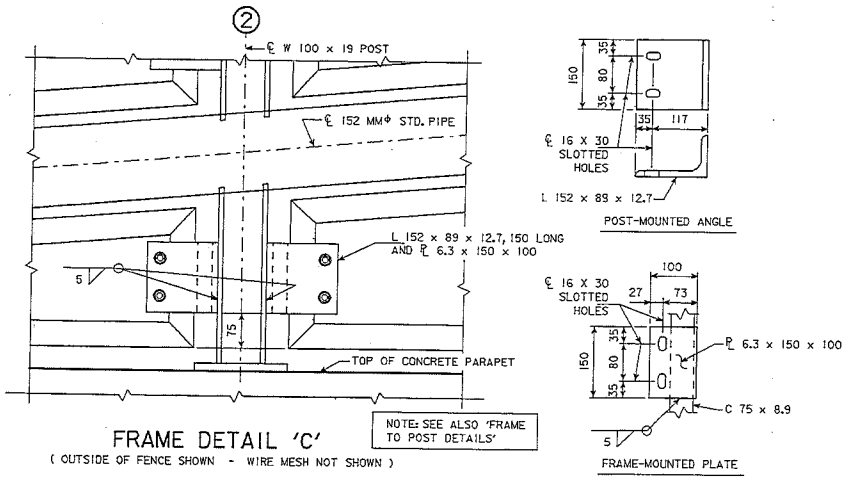


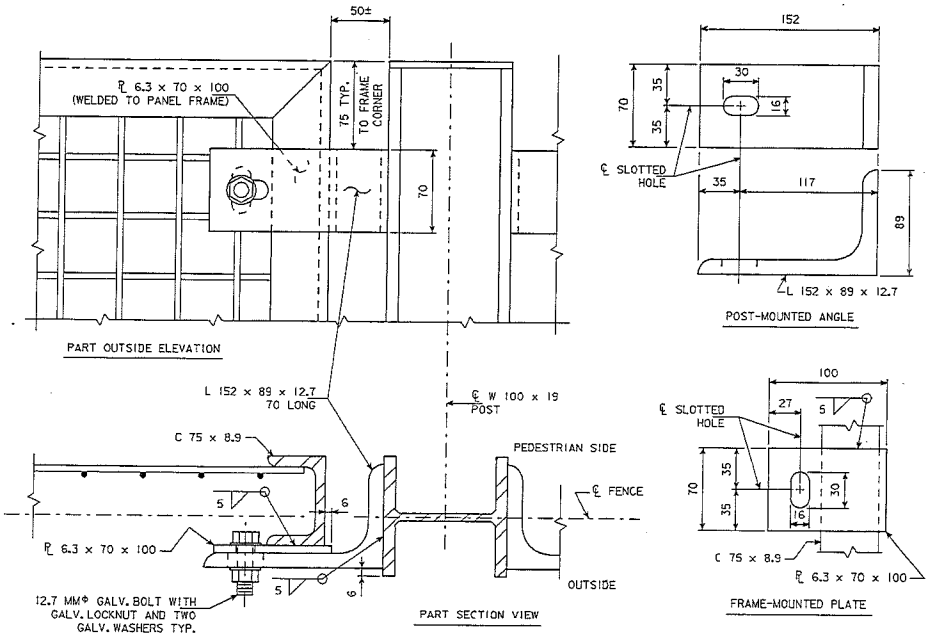
FENCE END BRACKET DETAILS

(ONE EACH END OF FENCE REQUIRED)

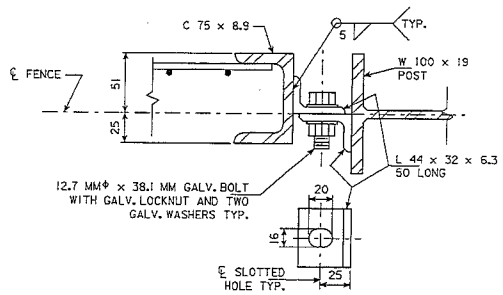


FRAME DETAIL 'C'

(OUTSIDE OF FENCE SHOWN - WIRE MESH NOT SHOWN)



FRAME TO POST DETAILS



DETAIL 'Z'

(AT BOTTOM OF POST 1 AND TOP OF POST 7 TYP.)

NOTE: FOR LOCATION OF FRAME DETAIL 'C' SEE DESIGN SHEET 45. FOR LOCATION OF DETAIL 'Z' SEE DESIGN SHEETS 45 AND 48.

DESIGN FOR 6°36'00" SKEW (L.A.)

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FENCE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)

STATION : 529+85.570 (℄ I-235)

OCTOBER, 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

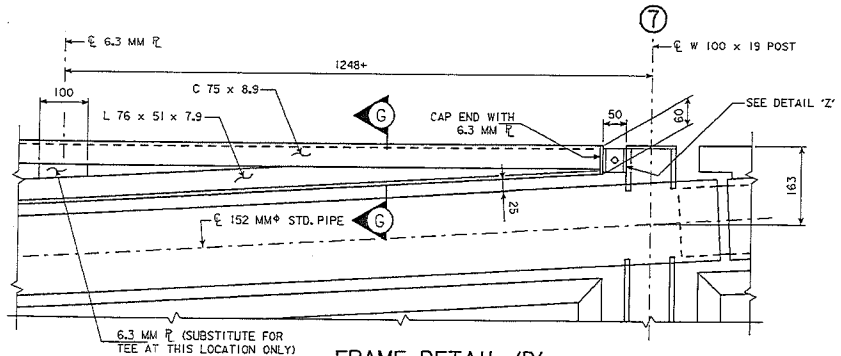
DESIGN SHEET NO. 47 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY JRH CHECKED BY RDM

DETAILED BY KMO CADD FILE H772406.S47

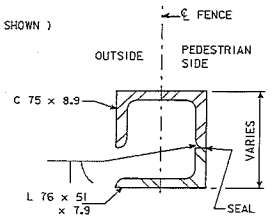
POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 48

16-JUN-2005 13:18 dwrigh2 w:\projects\77235180C96\BRFinal\Section1-3\FENCES\9thStreet\h772406.s47 \\NTPLTSVR1\Bridge1Tif

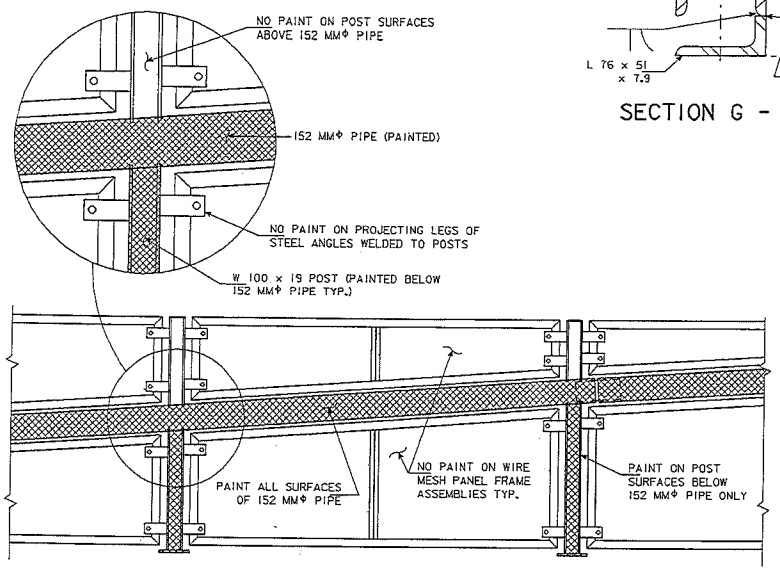


FRAME DETAIL 'D'

(OUTSIDE OF FENCE SHOWN - WIRE MESH NOT SHOWN)



SECTION G - G



PAINTING DETAILS

FENCE NOTES:

ALL FRAME ASSEMBLIES ARE TO BE SET NORMAL TO GRADE.

CONTRACTOR SHALL VERIFY DIMENSIONS OF CONCRETE PARAPET AND END POSTS ON BRIDGE PRIOR TO COMMENCING FINAL LAYOUT AND INSTALLATION OF FENCE. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES IN CONCRETE DIMENSIONS PRIOR TO FENCE INSTALLATION.

ANCHORAGES SHALL BE ACCURATELY PLACED TO PROVIDE CORRECT ALIGNMENT OF FENCE. ANCHORS ARE TO BE 15.9 MM DIAMETER THREADED RODS CONFORMING TO ASTM A 709M, GRADE 250. ANCHORS SHALL USE ONE OF THE FOLLOWING ANCHORING SYSTEMS:

1. HILTI HIT HY150/HIT-ICE WITH 190 MM MINIMUM EMBEDMENT DEPTH
2. SIMPSON STRONG-TIE ACRYLIC-TIE WITH 190 MM MINIMUM EMBEDMENT DEPTH
3. WEJ-IT INJECT-TITE WITH 240 MM MINIMUM EMBEDMENT DEPTH
4. APPROVED EQUAL

ALL ANCHORING HARDWARE IS TO BE GALVANIZED PER THE STANDARD SPECIFICATIONS.

STRUCTURAL STEEL POSTS SHALL COMPLY WITH ASTM A709M, GRADE 345. STANDARD PIPE SHALL COMPLY WITH ASTM A53M GRADE B TYPE E. ALL OTHER STRUCTURAL STEEL MATERIALS SHALL COMPLY WITH ASTM A709M, GRADE 250 MINIMUM.

NO SINGLE WIRE IN THE WELDED WIRE MESH SHALL BE WELDED TO THE FRAME AT BOTH ENDS OF THE WIRE.

ALL BURRS AND SHARP CORNERS OF STEEL FENCE COMPONENTS SHALL BE GROUND SMOOTH PRIOR TO GALVANIZING AND PAINTING.

ALL STRUCTURAL STEEL TUBE, 'W' POST AND BASE PLATE ASSEMBLIES AS SHOWN IN THE PLANS ARE TO BE PAINTED AFTER GALVANIZING IN ACCORDANCE WITH THE SUPPLEMENTAL SPECIFICATION "CLEANING, SURFACE PREPARATION AND PAINTING OF GALVANIZED SURFACES". PAINT COLOR IS TO MATCH FEDERAL STANDARD COLOR NO. 25052 (BLUE). PAINT SHALL BE EXCLUDED FROM SURFACES OF STEEL ANGLE PANEL MOUNTING TABS AND PORTIONS OF POSTS ABOVE THE 152 MM DIA. PIPE AS SHOWN IN THE PLANS BY MEANS OF MASKING. PAINT EDGE SHALL BE ALONG CLEAN, STRAIGHT LINES AT MASKED SURFACES.

WIRE MESH PANELS AND ASSOCIATED CHANNEL AND ANGLE FRAME ASSEMBLIES SHALL NOT BE PAINTED, BUT SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. ALL FENCE HARDWARE SHALL BE GALVANIZED PER THE STANDARD SPECIFICATIONS.

THE WELDED WIRE MESH PANELS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A 123M. GOOD STANDARD PRACTICES SHALL BE FOLLOWED IN ACCORDANCE WITH ASTM A 143 AND ASTM A 384. PREPARE THE FABRICATED PANEL SURFACES BY ABRASIVE BLAST CLEANING TO A MINIMUM OF SSPC-SP 6 "COMMERCIAL BLAST CLEANING" PRIOR TO HOT-DIP GALVANIZING. THE HOT-DIP GALVANIZED PANELS WILL BE PROCESSED UTILIZING A "DRY" KETTLE.

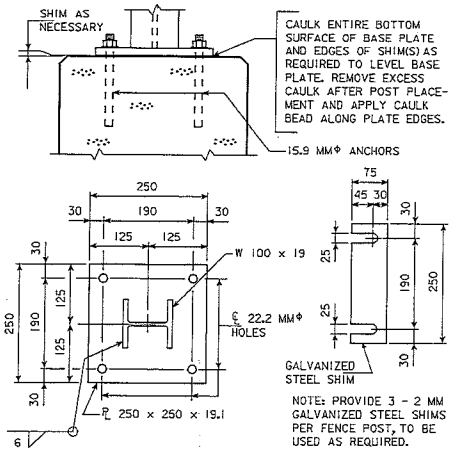
PANELS WILL BE PREFLUXED PRIOR TO THE GALVANIZING BATH USING AN AQUEOUS TANK OF ZINC CHLORIDE/AMMONIUM CHLORIDE. THE USE OF A "TOP FLUX" BLANKET ON THE MOLTEN ZINC BATH WILL NOT BE PERMITTED. WHEN IMMERSING PANELS IN THE GALVANIZING BATH, ONLY A FULL, SINGLE DIP IS ALLOWED, WITH PANELS ORIENTED SUCH THAT ALL SURFACES OF THE ASSEMBLY RECEIVE THE ZINC COATING, WITH NO AIR BUBBLES OR VOIDS AT ANY SURFACE OF THE ASSEMBLY. NO MULTIPLE DIPPING OF PANELS WILL BE ALLOWED. UPON REMOVAL FROM THE GALVANIZING BATH, PANELS SHALL BE MANIPULATED IN ORDER TO PROPERLY DRAIN AWAY ALL EXCESS GALVANIZING SOLUTION. AIR COOL PANELS TO AMBIENT TEMPERATURE BEFORE HANDLING FOR SHIPMENT AND/OR STORAGE. DO NOT QUENCH PANELS OR APPLY ANY POST-GALVANIZING TREATMENTS. CALIBRATE DRY FILM THICKNESS GAGES IN ACCORDANCE WITH SSPC-PA 2 (CURRENT EDITION). WHEN GALVANIZED PANELS ARE TO BE STORED AND OUTDOOR STACKING IS UNAVOIDABLE, THE PANELS SHALL BE RAISED FROM THE GROUND AND PROPERLY SEPARATED TO PROVIDE FREE AIR ACCESS TO ALL PARTS OF THE SURFACE. THEY SHOULD ALSO BE INCLINED IN A MANNER WHICH WILL PROVIDE MAXIMUM DRAINAGE TO PREVENT THE FORMATION OF "WHITE-RUST" OR WET STORAGE STAINING. THE GALVANIZER SHALL PROVIDE TO THE ENGINEER ALL GALVANIZING PROCESS-RELATED QUALITY CONTROL DOCUMENTS INCLUDING, BUT NOT LIMITED TO, COATING MATERIAL CERTIFICATIONS, VISUAL EXAMINATIONS AND COATING THICKNESS EXAMINATIONS PRIOR TO FINAL ACCEPTANCE.

ALL PAINTED SURFACES SHALL BE PROTECTED IMMEDIATELY AFTER PAINT HAS CURED. PROTECTION METHOD SHALL BE ADEQUATE TO PREVENT DAMAGE TO THE PAINT DURING STORAGE, HANDLING, SHIPPING TO THE INSTALLATION SITE AND DURING THE INSTALLATION OF THE FENCE. PROTECTION SHALL NOT BE REMOVED UNTIL POTENTIAL DAMAGE TO THE PAINT IS LIMITED TO ASSEMBLY SURFACES ONLY. TOUCH-UP REPAIR OF DAMAGED PAINT IS TO BE IN ACCCORDANCE WITH THE SUPPLEMENTAL SPECIFICATION "CLEANING, SURFACE PREPARATION AND PAINTING OF GALVANIZED SURFACES".

ALL FENCE MEMBERS SHALL BE FLAT AND STRAIGHT AFTER FABRICATION AND GALVANIZING TO WITHIN 3 MM IN 3 M BY MECHANICAL MEANS WITHOUT DAMAGE TO THE ZINC COATING.

CAULK FOR BASE PLATES SHALL BE WHITE NONSAG LATEX CAULK MARKETED FOR OUTDOOR USE. NO TESTING OR CERTIFICATION IS REQUIRED. EXCESS CAULK SHALL BE COMPLETELY REMOVED FROM SURROUNDING CONCRETE SURFACES.

ALL COSTS ASSOCIATED WITH THE FENCE INCLUDING THE ANCHORAGES AND PAINTING SHALL BE INCLUDED IN THE PRICE BID FOR "STEEL FENCE, WELDED WIRE MESH".



NOTE: PROVIDE 3 - 2 MM GALVANIZED STEEL SHIMS PER FENCE POST, TO BE USED AS REQUIRED.

POST BASE PLATE DETAILS

NOTE: FOR LOCATION OF FRAME DETAIL 'D' SEE DESIGN SHEET 46.

QUANTITIES

ITEM	UNITS	AMOUNT
STEEL FENCE, WELDED WIRE MESH	M	193.8

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

FENCE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)

STATION : 529+85.570 (℄ I-235)

OCTOBER, 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 48 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY JRH CHECKED BY RDM

DETAILED BY KMO CADD FILE H772406.S48

POLK COUNTY | PROJECT NUMBER IM-235-2(313)8--13-77 | SHEET NUMBER 49

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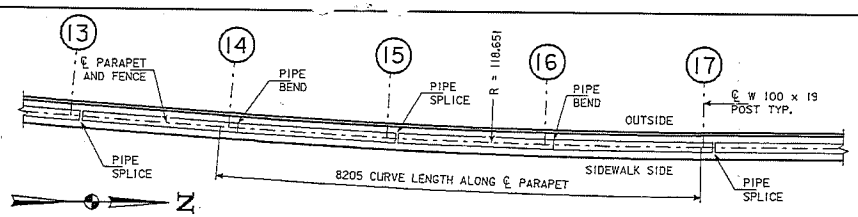
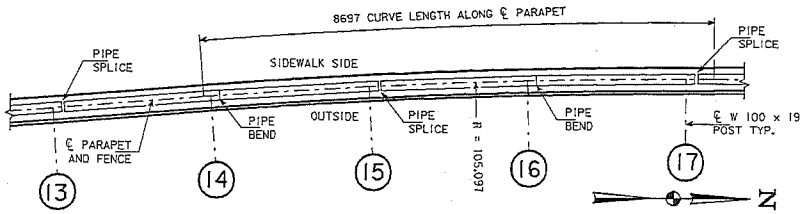


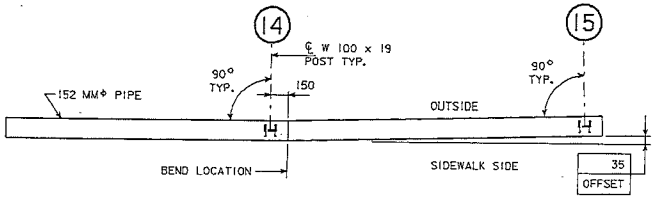
PART PLAN OF WEST FENCE NEAR BRIDGE CENTER

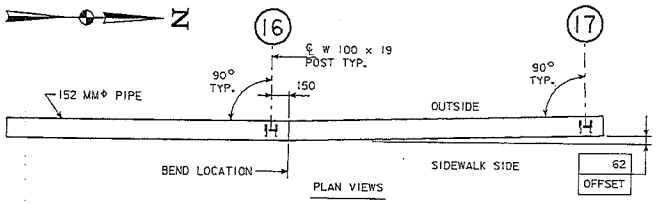
(MESH PANEL FRAMES NOT SHOWN)



PART PLAN OF EAST FENCE NEAR BRIDGE CENTER

(MESH PANEL FRAMES NOT SHOWN)



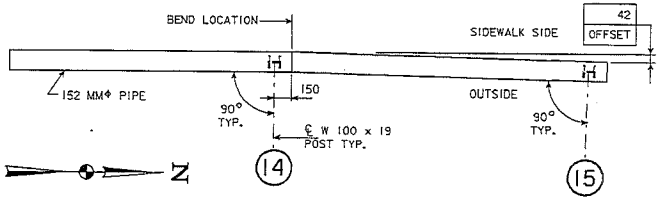


WEST FENCE PIPE BEND DETAILS

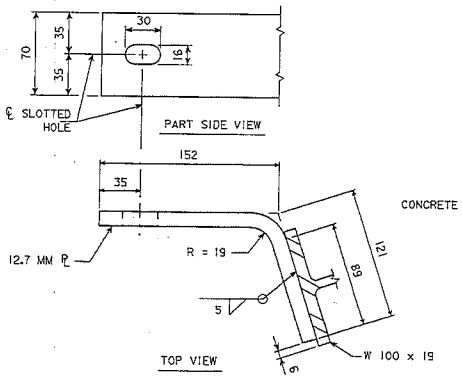
CURVED FENCE SECTION NOTES:

CURVED PARAPET OCCURS JUST SOUTH OF THE BRIDGE CENTER ON BOTH EAST AND WEST SIDES. SEE SITUATION PLAN AND OTHER DETAILS IN THESE PLANS FOR MORE INFORMATION.

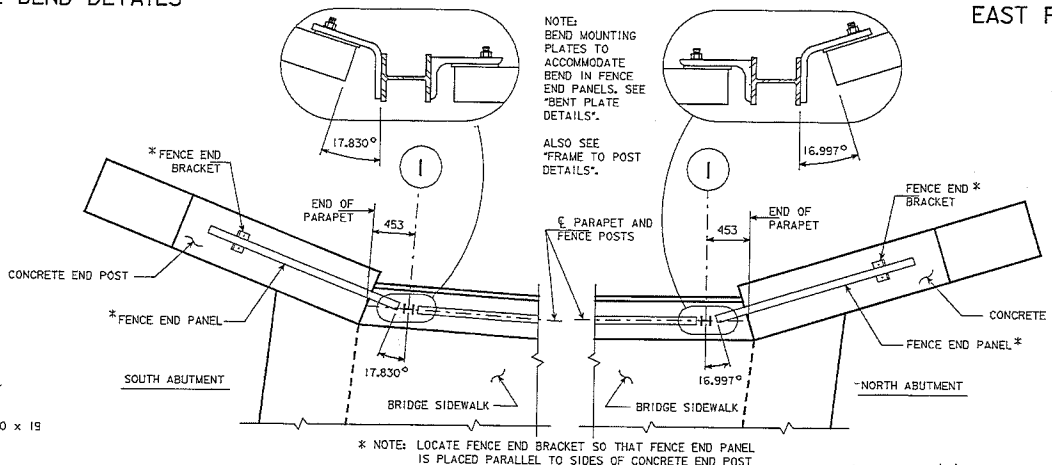
ALL FENCE POSTS SHALL BE MOUNTED ON THE CENTERLINE OF CONCRETE PARAPET. FENCE SHALL HAVE STRAIGHT CHORDS AS SHOWN IN THE DETAILS, WITH CHANGES IN ALIGNMENT OF FENCE CENTERLINE TO OCCUR ONLY AT THE BENDS IN THE 152 MM⌀ PIPE, AT PIPE SPLICE LOCATIONS AND AT MESH FRAME MOUNTING ANGLES AT POSTS.



EAST FENCE PIPE BEND DETAILS



BENT PLATE DETAILS



* NOTE: LOCATE FENCE END BRACKET SO THAT FENCE END PANEL IS PLACED PARALLEL TO SIDES OF CONCRETE END POST

PART PLAN AT WEST FENCE ENDS

(152 MM⌀ FENCE PIPE NOT SHOWN)

DESIGN FOR 6°36'00" SKEW (L.A.)

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

25.300m, 31.600, 37.100 SPANS

FENCE DETAILS

STATION : 20029+85.670 (℄ 9th ST.)

STATION : 529+85.570 (℄ I-235) OCTOBER, 2005

POLK COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 49 OF 49 FILE NO. 29552 DESIGN NO. 2406

DESIGNED BY JRH CHECKED BY RDM

DETAILED BY KMQ CADD FILE H772406.S49

POLK COUNTY | PROJECT NUMBER IM-235-2(313)38--13-77 | SHEET NUMBER 50

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