



Iowa Department of Transportation

Highway Division

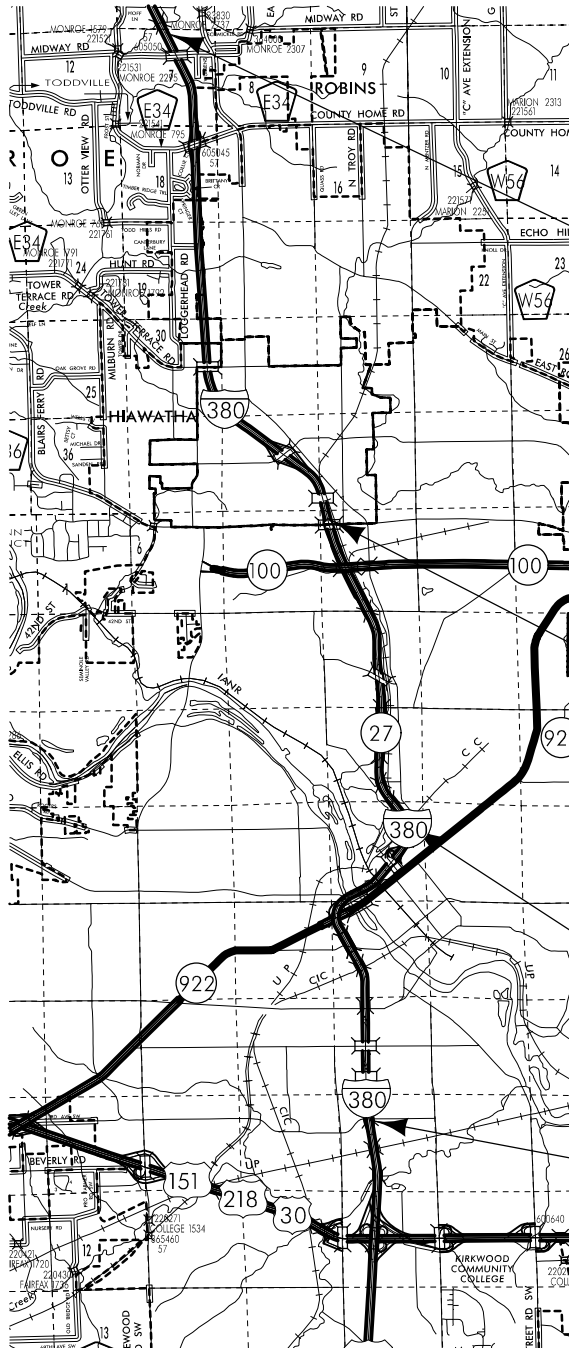
PLANS OF PROPOSED IMPROVEMENT ON THE

INTERSTATE ROAD SYSTEM

LINN COUNTY

HMA RESURFACING/BRIDGE RAIL RETROFIT

From 33rd Ave. Bridge In Cedar Rapids N. To 1.4 Miles N. Of
Co. Rd. E-34(SBL)



STA. 1232+00 (MP 30.2)
END RESURFACING/PROJECT

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.15 of the Specifications.



MILEAGE SUMMARY			
105-1 09-27-94			
Div.	Location	Lin. Ft.	Miles
	Sta. 392+40 to Sta. 568+11.05 Equation: Sta. 568+11.05 (Back) = Sta. 925+67.62 (Ahead)	17571.05	
	Sta. 925+67.62 to Sta. 1232+00	30632.38	
	Deduct Bridge at Sta. 406+20.10	520	
	Deduct Bridge at Sta. 418+54.68	168	
	Deduct Bridge at Sta. 433+33.86	226.67	
	Deduct Bridge at Sta. 460+02.04	173	
	Deduct Bridge at Sta. 514+01.25	188	
	Total Length of Roadway	48203.43	9.13
	Total Length of Bridges	1275.67	0.25
	Total Length of Resurfacing	46927.76	8.89

EQUATION: STA. 568+11.05 (BK) =
STA. 925+67.62 (AH)
(MP 24.4)

STA. 392+40 (MP 21.1)
BEGIN RESURFACING

STA. 207+75 (MP 17.6)
BEGIN PROJECT

DESIGN DATA RURAL				
2012	AADT	64,300	V.P.D.	
2032	AADT	89,300	V.P.D.	
20--	DHV	--	V.P.H.	
TRUCKS		12	%	
Total				
Design ESALs		30M		

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Kelly C. Bell	Primary Signature Block
V.1	David L. Bare	Structural Design

REVISIONS

TOTAL
157
PROJECT IDENTIFICATION NUMBER
10-57-380-030
PROJECT NUMBER
IMX-380-6(271)16--02-57
R.O.W. PROJECT NUMBER

INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.1	Title Sheet
B Sheets	Typical Cross Sections and Details
B.1 - 17	Typical Cross Sections and Details
C Sheets	Quantities and General Information
C.1	Project Description
C.1	Estimated Project Quantities
C.1 - 2	Estimate Reference Information
C.3	Standard Road Plans
C.3	Index of Tabulations
C.3	General Notes
C.4 - 22	Tabulations (beg. with tab. of incidentals if needed)
D Sheets	Mainline Plan and Profile Sheets
* D.1 - 26	Interstate 380
J Sheets	Traffic Control and Staging Sheets
* J.1	Traffic Control Plan
* J.1	Staging Notes Stage
* J.1	Tabulation of Special Events
* J.2	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.3 - 4	Staging Typical
* J.5	Staging and Traffic Control Sheets Stage 1A
* J.6	Staging and Traffic Control Sheets Stage 2A
* J.7	Staging and Traffic Control Sheets Stage 2B
* J.8 - 9	Details of Outside Lane Drop at 8th Avenue
* J.10	Staging and Traffic Control Sheets Stage 1B
* J.11 - 13	Details of Inside Lane Drop at 8th Avenue
* J.14 - 17	Staging and Traffic Control Sheets Stage 3A
* J.18 - 22	Staging and Traffic Control Sheets Stage 3B
* J.23	Interim Standard Road Plan TC-418
K Sheets	Interchange Sheets
* K.1	Boyson Road Interchange Layout Sheet
* K.2	County Home Road Interchange Layout Sheet
U Sheets	500 Series, Mod.Stds. and Detail Sheets
U.1	Traffic Details - Detector Loop Details
U.2	Traffic Details - Junction Box Splices
U.3	High Tension Cable Guardrail Special Anchor Sections
U.4	High Tension Cable Guardrail, End Anchor (Behind Bridge End)
U.5	High Tension Cable Guardrail, End Anchor (Behind Guardrail) At Tower Terrace and Message Board Overhead
U.6	Modified Standard Road Plan BA-202B
U.7	Modified Standard Road Plan BA-202A
V Sheets	Bridge and Culvert Situation Plans
V.1 - 59	Bridge and Culvert Situation Plans
	* Color Plan Sheets

ROADWAY 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.

Signature Kelly C. Bell Date 05-15-2012
Kelly C. Bell
Printed or Typed Name

My license renewal date is December 31, 2013

Pages or sheets covered by this seal: A.1, B.1 - B.17,
C.1 - C.22, D.1 - D.26, J.1 - J.23, K.1 - K.2, U.1 - U.7

ESTIMATED BRIDGE RAIL RETROFIT QUANTITIES - DESIGN #1710

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2401-6745636	REMOVAL OF EXISTING HANDRAIL AND END POSTS	LS	1.00	
2	2401-6750001	REMOVALS, AS PER PLAN	LS	1.00	
3	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	43.9	
4	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	7,271	
5	2413-1200000	STEEL EXTRUSION JOINT WITH NEOPRENE	LF	219.4	
6	2413-1200100	NEOPRENE GLAND INSTALLATION AND TESTING	LF	219.4	
7	2414-6431100	RETROFIT CONCRETE BARRIER RAILING	LF	1,320.3	
8	2533-4980005	MOBILIZATION	LS	1.00	

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2401-6745636	REMOVAL OF EXISTING HANDRAIL AND END POSTS --
2	2401-6750001	REMOVALS, AS PER PLAN INCLUDES ALL WORK FOR REMOVAL AND OFF-SITE DISPOSAL OF DECK SLAB AND ABUTMENT BACKWALL CONCRETE AND EXPANSION JOINT MATERIAL AT JOINTS "A", "B" AND "C". REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.
3	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS) --
4	2404-7775005	REINFORCING STEEL, EPOXY COATED INCLUDES MECHANICAL SPLICERS IN THE ABUTMENT BACKWALL AND DECK.
5	2413-1200000	STEEL EXTRUSION JOINT WITH NEOPRENE INCLUDES ALL NECESSARY HARDWARE AND ACCESSORIES INCLUDING THE ANCHORAGE SYSTEM, TEMPORARY ERECTION MATERIAL AND THE 3/8" BARRIER PLATES WITH THEIR ANCHORAGE SYSTEM. EXCLUDES INSTALLATION OF NEOPRENE GLAND.
6	2413-1200100	NEOPRENE GLAND INSTALLATION AND TESTING INCLUDES INSTALLATION OF NEOPRENE GLAND AND WATER TESTING OF JOINT.
7	2414-6431100	RETROFIT CONCRETE BARRIER RAILING INCLUDES FURNISHING AND INSTALLING 1" DIAMETER PLASTIC CONDUIT. INCLUDES 87.5 CY OF CLASS C OR CLASS BR STRUCTURAL CONCRETE AND 13,739 LBS OF GRADE 60 EPOXY COATED REINFORCING STEEL. IF PLACEMENT OF CONCRETE IS DONE BY THE SLIPFORMING METHOD, CLASS BR CONCRETE IS 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. INCLUDES 1434 LBS OF GALVANIZED STRUCTURAL STEEL FOR JUNCTION BOX COVER PLATES. INCLUDES THE COST OF LOCATING AND VERIFYING USABILITY OF EXISTING CONDUIT IN THE BRIDGE CURB.
8	2533-4980005	MOBILIZATION --

ESTIMATED BRIDGE RAIL RETROFIT QUANTITIES - DESIGN #112

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2401-6750001	REMOVALS, AS PER PLAN	LS	1.00	
2	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	1.4	
3	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	252	

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2401-6750001	REMOVALS, AS PER PLAN INCLUDES ALL WORK FOR REMOVAL AND OFF-SITE DISPOSAL OF EXISTING CONCRETE RAILING END SECTION. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.
2	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS) INCLUDES FURNISHING AND INSTALLING 1 INCH DIAMETER PLASTIC CONDUIT. INCLUDES CLEANING EXISTING CONCRETE RAIL, FURNISHING AND PLACING CONCRETE SEALER.
3	2404-7775005	REINFORCING STEEL, EPOXY COATED --

ESTIMATED BRIDGE RAIL RETROFIT QUANTITIES - DESIGN #212

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2401-6750001	REMOVALS, AS PER PLAN	LS	1.00	
2	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	1.4	
3	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	252	

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2401-6750001	REMOVALS, AS PER PLAN INCLUDES ALL WORK FOR REMOVAL AND OFF-SITE DISPOSAL OF EXISTING CONCRETE RAILING END SECTION. REMOVAL OF SCHEDULED ITEMS SHALL BE IN ACCORDANCE WITH SECTION 2401, OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO MATERIAL NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED AT NO EXTRA COST TO THE STATE.
2	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS) INCLUDES FURNISHING AND INSTALLING 1 INCH DIAMETER PLASTIC CONDUIT. INCLUDES CLEANING EXISTING CONCRETE RAIL, FURNISHING AND PLACING CONCRETE SEALER.
3	2404-7775005	REINFORCING STEEL, EPOXY COATED --

**** = DESIGN NUMBERS 1710, 112, 212.

NOTE:
ROADWAY QUANTITIES SHOWN
ELSEWHERE IN THESE PLANS.

DESIGN FOR REPAIRS TO
DUAL VARIABLE WIDTH
C.W.P.G. BRIDGE - SOUTHBOUND
ESTIMATED QUANTITIES
LINN COUNTY
JANUARY, 2012
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 3 OF 59 FILE NO. 30514 DESIGN NO. ********

DESIGN TEAM DLB / BDK / RDM

LINN COUNTY

PROJECT NUMBER IMX-380-6(271)16--02-57

SHEET NUMBER **V.3**

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RETROFIT BARRIER RAILING NOTES:

IT IS THE INTENT OF THIS DESIGN TO CONSTRUCT TWO (2)RETROFIT BARRIER RAIL END SECTIONS ON THE APPROACH AND DEPARTURE ENDS OF THE EXISTING S.B. 267'-0 x 52'-0 C.W.P.G. BRIDGE WITH A 40°06'27.8" SKEW (L.A.) OVER 5TH AVE. S.W. IN CEDAR RAPIDS, AT STATION 305+12.87.

COPIES OF ORIGINAL DESIGN PLANS WILL BE MADE AVAILABLE TO THE BRIDGE CONTRACTOR. CONTACT THE OFFICE OF CONTRACTS - HIGHWAY DIVISION - IOWA D.O.T. - AMES. DIMENSIONS SHOWN ON THESE PLANS ARE BASED ON DESIGN PLANS (ORIGINAL DESIGN NO. 2170, RETROFIT RAIL AND DECK REPAIR DESIGN NO. 485).

ALL DIMENSIONS AND DETAILS SHOWN IN THESE PLANS PERTINENT TO NEW CONSTRUCTION IN RELATION TO EXISTING PORTIONS OF THE STRUCTURE SHALL BE VERIFIED IN THE FIELD BY THE BRIDGE CONTRACTOR BEFORE STARTING CONSTRUCTION.

FAINT LINES ON PLANS INDICATE EXISTING PORTIONS OF THE BRIDGE.

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

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A ¾" DRESSED AND BEVELED STRIP.

ALL REINFORCING STEEL IS TO BE GRADE 60 AND EPOXY COATED.

ANY REMOVALS REQUIRED SHALL BE IN ACCORDANCE WITH SECTION 240I OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO OTHER PORTIONS OF THE EXISTING STRUCTURE NOT NOTED FOR REMOVAL SHALL BE THE RESPONSIBILITY OF THE BRIDGE CONTRACTOR AND SHALL BE REPAIRED AT NO COST TO THE STATE.

THE PRICE BID FOR "REMOVALS, AS PER PLAN" SHALL INCLUDE ALL COSTS ASSOCIATED WITH REMOVAL OF PORTIONS OF THE EXISTING RAIL END SECTION AS NECESSARY, AND CUTTING THE EXISTING VERTICAL REINFORCING AS NEEDED.

EXISTING BRIDGE RAIL END IS NOT TO BE REMOVED UNTIL AUTHORIZED BY THE ENGINEER.

INITIATE THE CONCRETE REMOVAL LINES WITH A ¾" SAW CUT.

THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION (5a1 IS ⅝ INCH DIAMETER BAR). ENGLISH REINFORCING STEEL RECEIVED IN THE FIELD MAY DISPLAY THE FOLLOWING "BAR DESIGNATION". THE "BAR DESIGNATION" IS THE STAMPED IMPRESSION ON THE REINFORCING BARS, AND IS EQUIVALENT TO THE BAR DIAMETER IN MILLIMETERS.

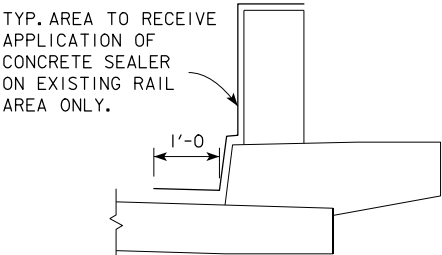
ENGLISH SIZE	3	4	5	6	7	8	9	10	11
BAR DESIGNATION	10	13	16	19	22	25	29	32	36

THE TOP AND INTERIOR FACES OF THE EXISTING CONCRETE RAILING ARE TO BE CLEANED AND SEALED IN ACCORDANCE WITH STANDARD SPECIFICATION 2403.03,P,3. IF NEW SECTIONS OF RAIL ARE CONSTRUCTED, THE NEW SECTIONS SHALL NOT BE SEALED. ALL COSTS ASSOCIATED WITH CLEANING AND SEALING OF THE CONCRETE RAILS SHALL BE INCLUDED IN THE UNIT PRICE BID ITEM "STRUCTURAL CONCRETE".

THE BRIDGE CONTRACTOR SHALL DRESS UP THE SLOPES AROUND THE WINGS WHICH ARE DISTURBED DURING CONSTRUCTION. THIS WORK SHALL BE CONSIDERED INCIDENTAL AND NO EXTRA PAYMENT WILL BE MADE.

DOWEL SETTING NOTE:

THE 6a & 5b BARS SHALL BE SET AS DOWELS IN DRILLED HOLES. THE HOLE DEPTHS SHALL BE AS SHOWN. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE GROUT MANUFACTURER'S RECOMMENDATIONS. THE FOLLOWING SYSTEM SHALL BE USED AS A BONDING AGENT FOR THE DOWELS:
POLYMER GROUT SYSTEM IN ACCORDANCE WITH STANDARD 230I.03,E OF THE STANDARD SPECIFICATIONS AND CURRENT SUPPLEMENTAL SPECIFICATIONS OF THE IOWA D.O.T. HIGHWAY DIVISION.



DETAIL OF CONCRETE SEALER AREA

SPECIFICATIONS:

DESIGN: AASHTO SERIES OF 2002.
CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2009, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

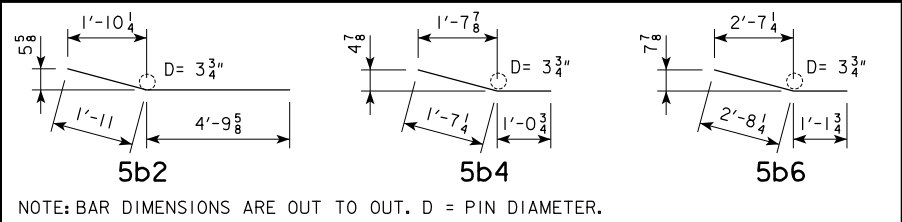
DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 2002. REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60. CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 3,500 PSI.

EPOXY REINF. BAR LIST - 2 END SECT.

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	END SECTION, VERTICAL	—	14	3'-6	74
6a2	END SECTION, VERTICAL	—	10	2'-6	38
6a3	END SECTION, VERTICAL	—	12	2'-4	42
5b1	END SECTION, HORIZONTAL, B.F.	—	6	6'-8	42
5b2	END SECTION, HORIZONTAL, F.F.	—	6	6'-9	42
5b3	END SECTION, HORIZONTAL, B.F.	—	1	2'-8	3
5b4	END SECTION, HORIZONTAL, F.F.	—	1	2'-8	3
5b5	END SECTION, HORIZONTAL, B.F.	—	1	3'-9	4
5b6	END SECTION, HORIZONTAL, F.F.	—	1	3'-10	4
REINF. STEEL EPOXY COATED - TOTAL (LBS)					252

BENT BAR DETAILS

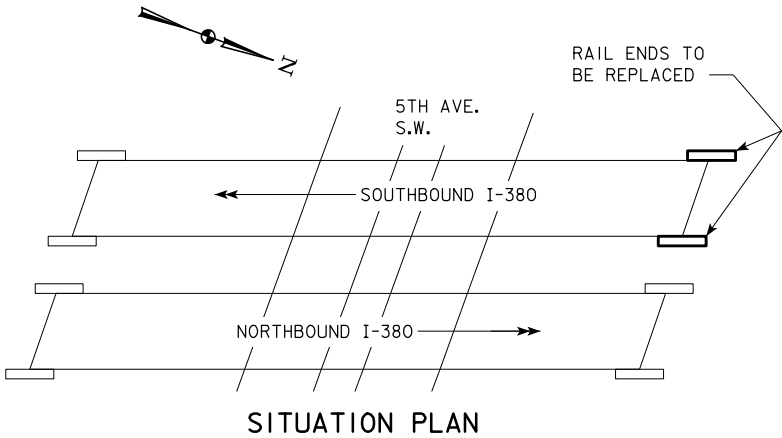


CONCRETE PLACEMENT SUMMARY

SECTION	TOTAL
END SECTION	2 AT 0.7 CU. YDS. PER SECTION
	1.4
TOTAL (CU. YDS.)	1.4

LOCATION:

S.B. I-380 OVER 5TH AVE. S.W.
IN CEDAR RAPIDS
T-83 N R-7 W
SECTION 28
RAPIDS TOWNSHIP
LINN COUNTY
MAINT. NO. 5719.4L380
FHWA NO. 607110
LATITUDE 41.97108255°
LONGITUDE -91.6736881°



DESIGN HISTORY AT THIS SITE

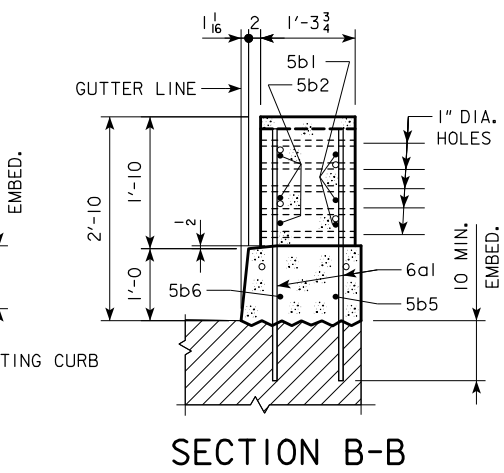
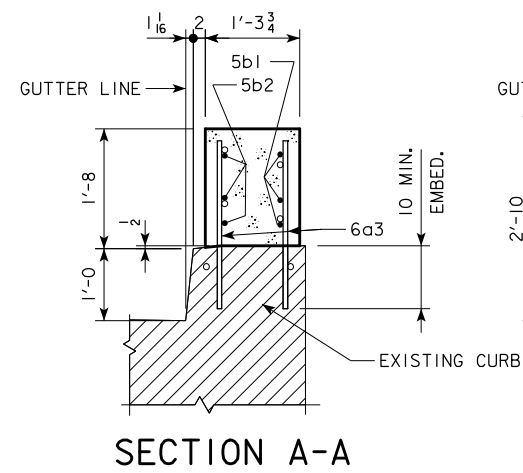
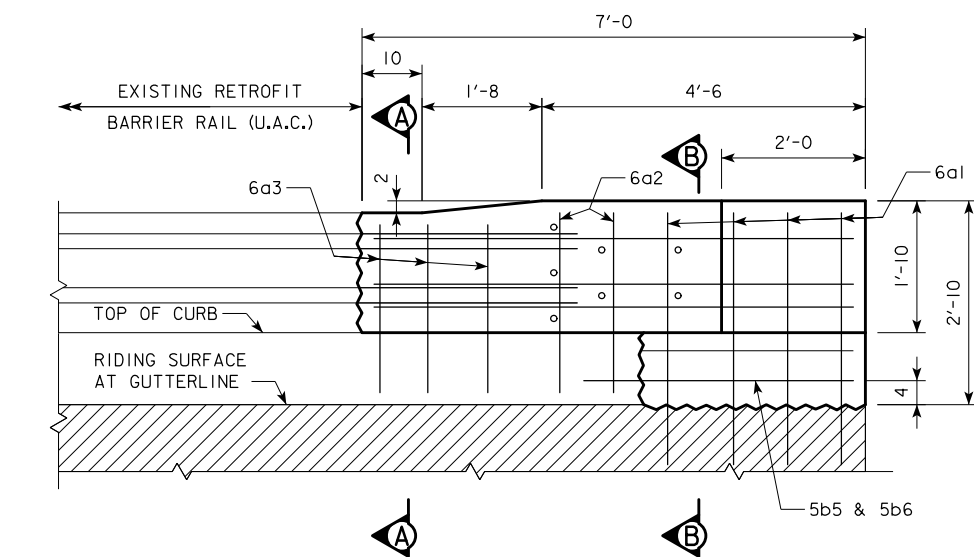
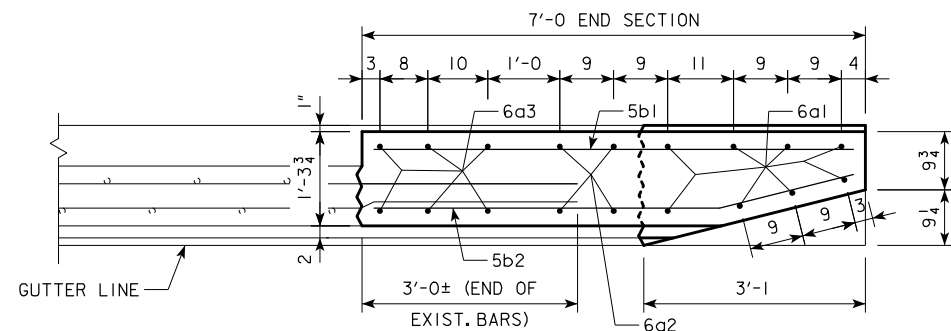
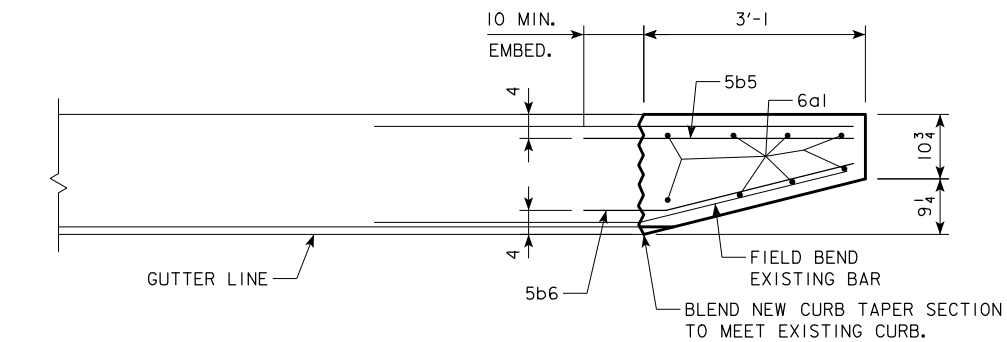
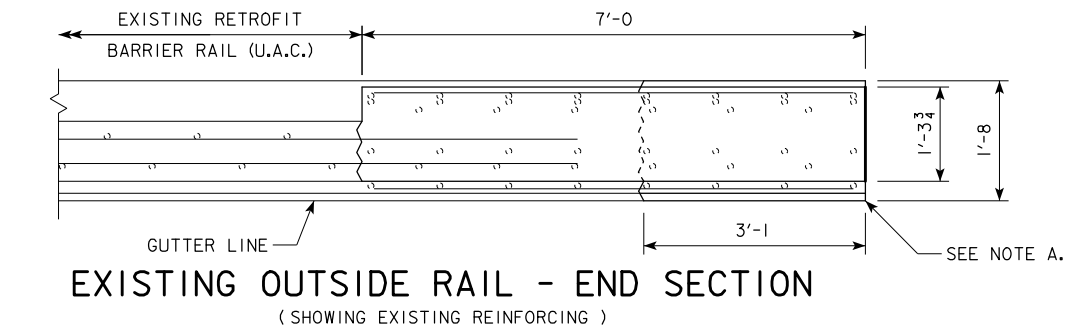
DES. NO.	TYPE OF WORK
2170	ORIGINAL DESIGN
485	RETROFIT RAIL AND DECK REPAIR

DESIGN FOR REPAIRS TO A 40°06'27.8" SKEW (L.A.)

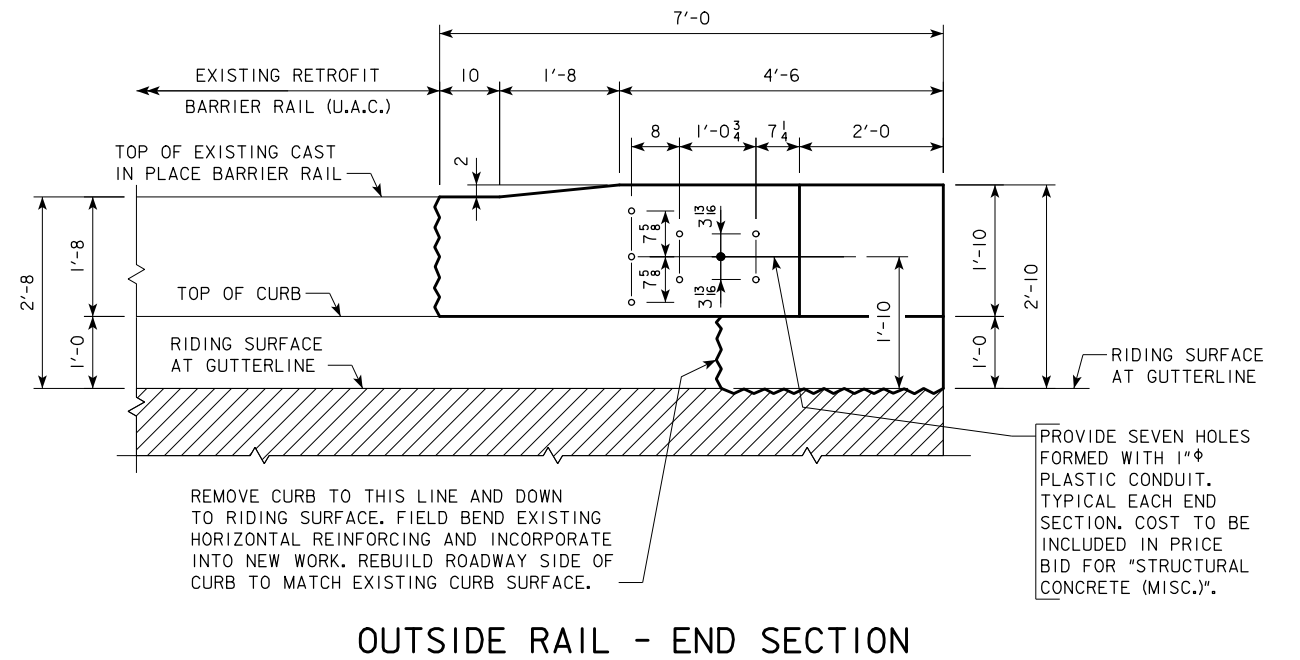
267'-0 X 52'-0
C.W.P.G. BRIDGE - SOUTHBOUND
53'-0 END SPANS 72'-9 & 88'-3 INTERIOR SPANS
GENERAL NOTES & QUANTITIES
STA. 305+12.87 @ I-380 JANUARY, 2012

LINN COUNTY

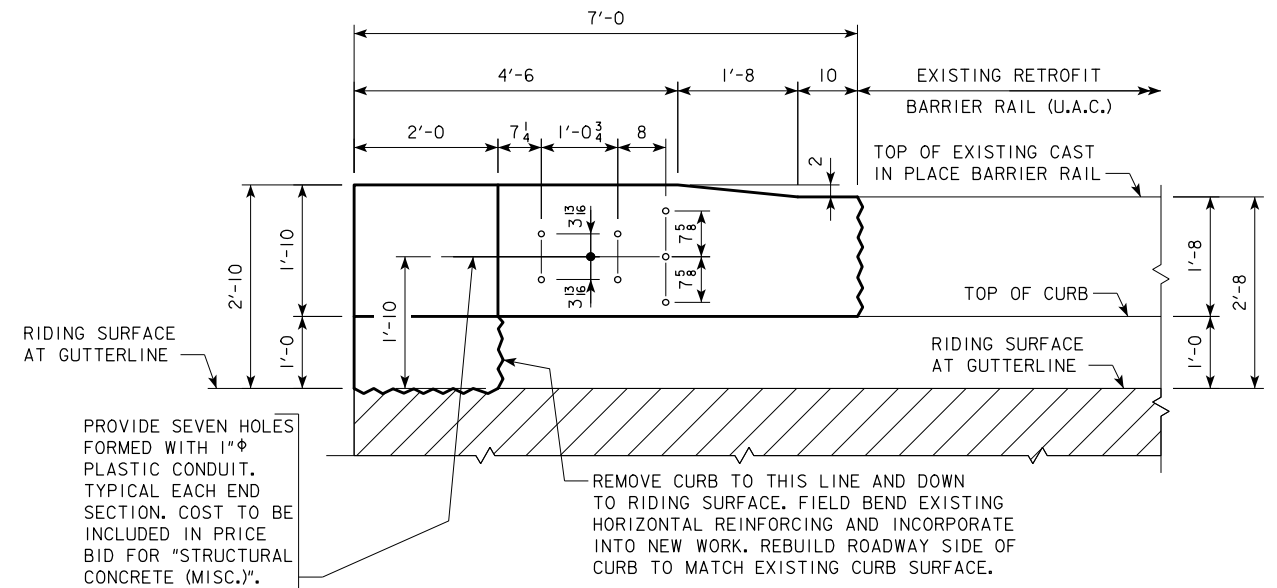
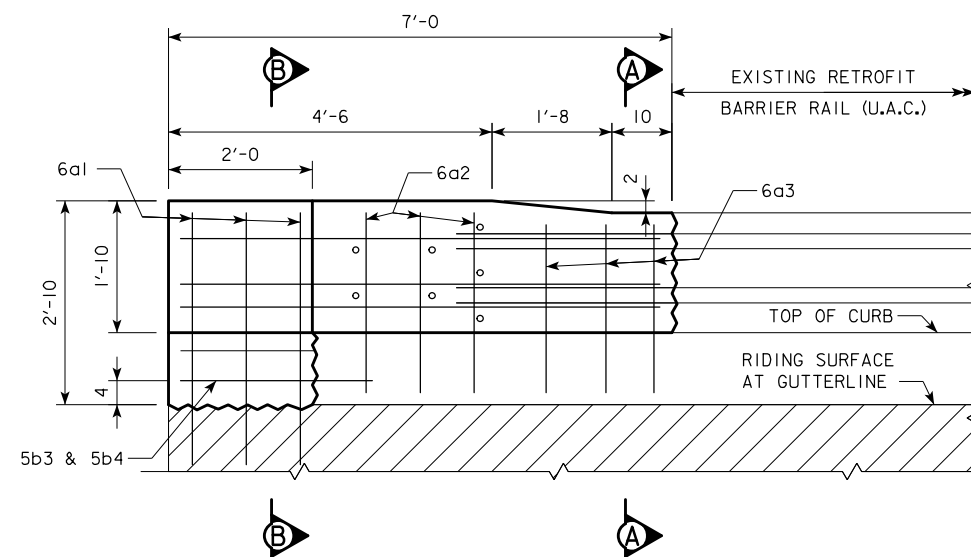
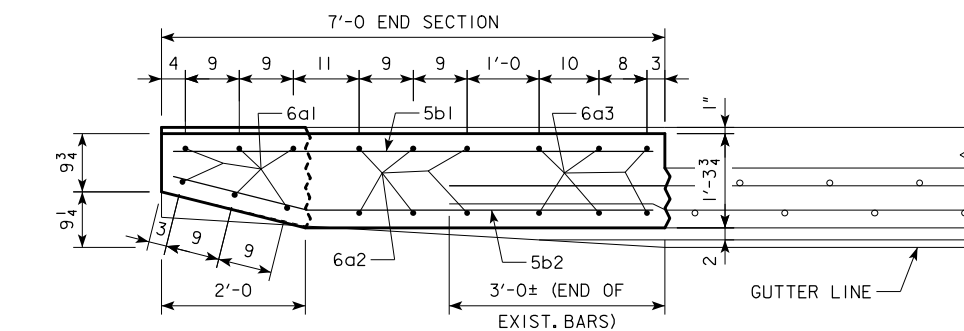
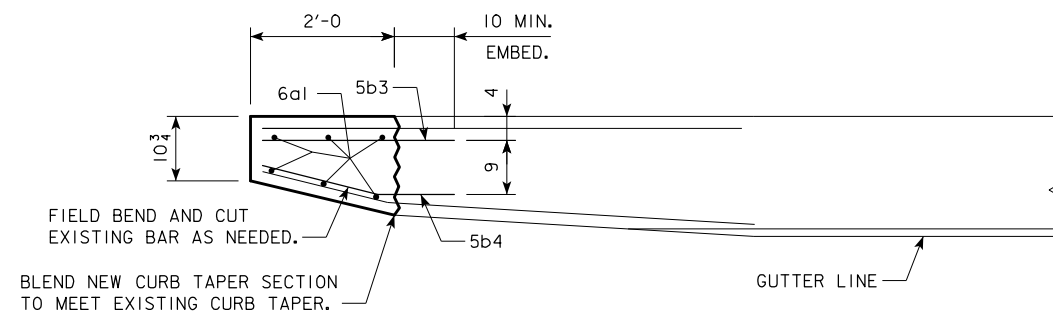
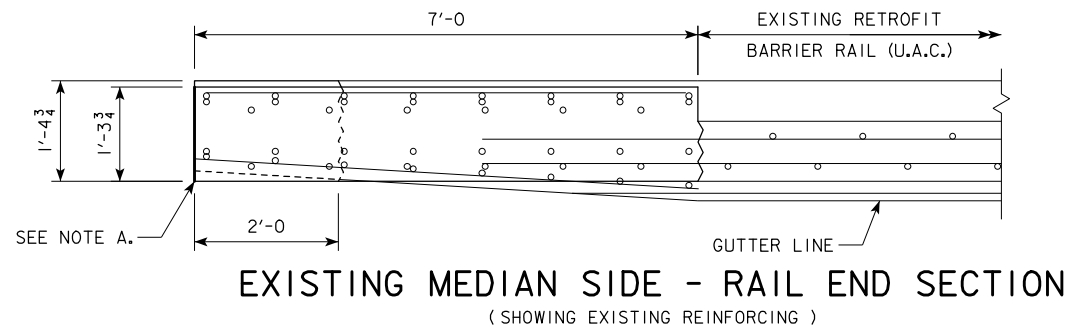
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 57 OF 59 FILE NO. 30514 DESIGN NO. 212



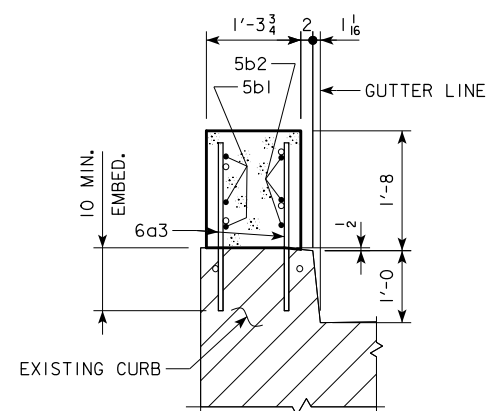
NOTE A:
REMOVE EXISTING END POST AND PART OF CURB DOWN TO EXISTING RIDING SURFACE. ALL VERTICAL REINFORCING IS TO BE CUT FLUSH WITH OR SLIGHTLY BELOW TOP OF CURB AND RIDING SURFACE AND THE REMAINING EXPOSED ENDS PAINTED WITH TWO COATS OF ZINC RICH PAINT. ALL HORIZONTAL REINFORCING IS TO BE CAREFULLY EXPOSED AND INCORPORATED INTO NEW WORK.



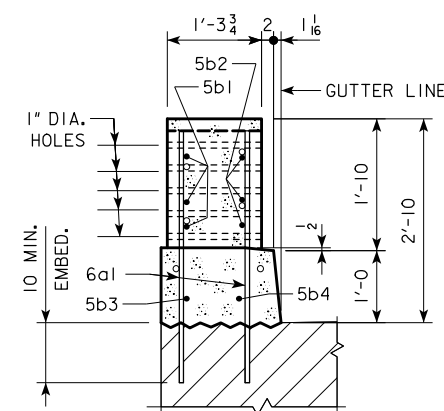
DESIGN FOR REPAIRS TO A 40°06'27.8" SKEW (L.A.)
267'-0 X 52'-0
C.W.P.G. BRIDGE - SOUTHBOUND
53'-0 END SPANS 72'-9 & 88'-3 INTERIOR SPANS
OUTSIDE RAIL - END SECTION
STA. 305+12.87 @ I-380 JANUARY, 2012
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 58 OF 59 FILE NO. 30514 DESIGN NO. 212



MEDIAN SIDE RAIL - END SECTION



SECTION A-A



SECTION B-B

NOTE A:
REMOVE EXISTING END POST AND PART OF CURB DOWN TO EXISTING RIDING SURFACE. ALL VERTICAL REINFORCING IS TO BE CUT FLUSH WITH OR SLIGHTLY BELOW TOP OF CURB AND RIDING SURFACE AND THE REMAINING EXPOSED ENDS PAINTED WITH TWO COATS OF ZINC RICH PAINT. ALL HORIZONTAL REINFORCING IS TO BE CAREFULLY EXPOSED AND INCORPORATED INTO NEW WORK.

DESIGN FOR REPAIRS TO A 40°06'27.8" SKEW (L.A.)
267'-0 X 52'-0
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