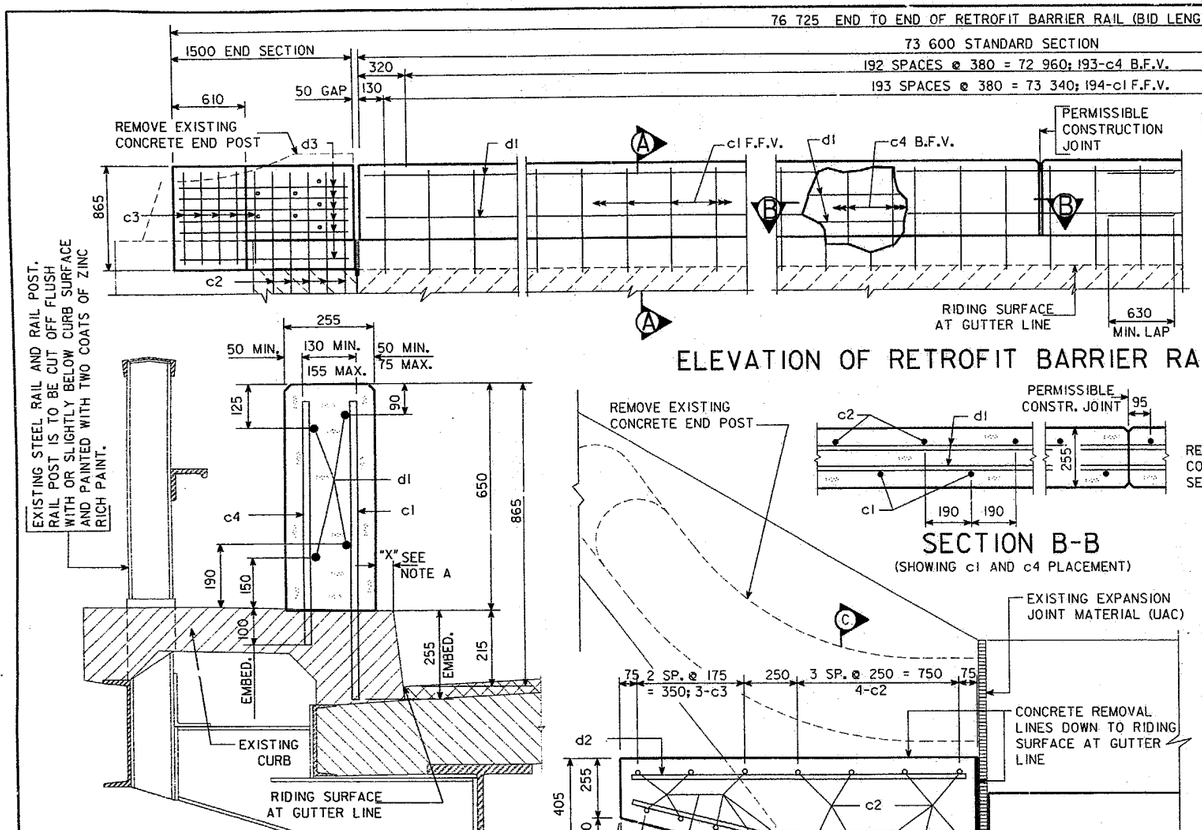
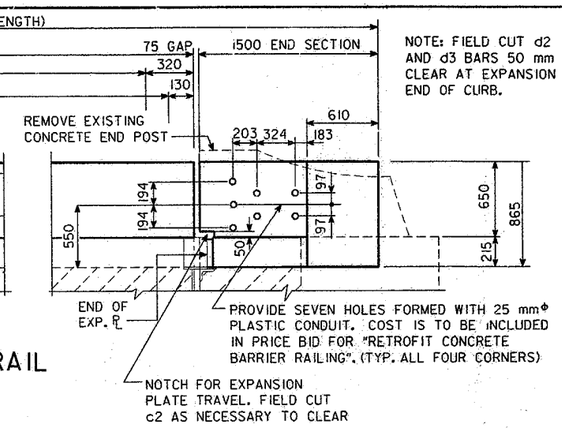
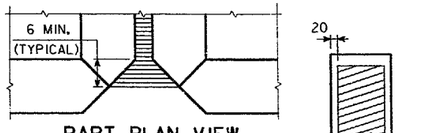


ELEVATION OF RETROFIT BARRIER RAIL

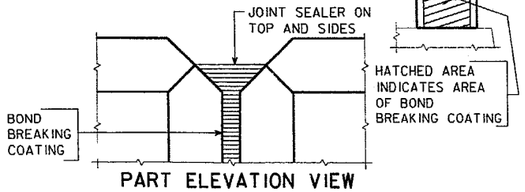


NOTE A :
ON EACH SIDE OF BRIDGE, DIMENSION "X" SHALL BE A MINIMUM OF 25 mm AND A MAXIMUM OF 75 mm, BUT MUST BE CONSTANT FOR FULL LENGTH OF BRIDGE. HOWEVER, APPROXIMATELY 3050 mm AT EITHER END OF STANDARD RAIL SECTION SHALL BE TRANSITIONED TO 50 mm AT END SECTION AS SHOWN.

PART SECTION A - A



PART PLAN VIEW



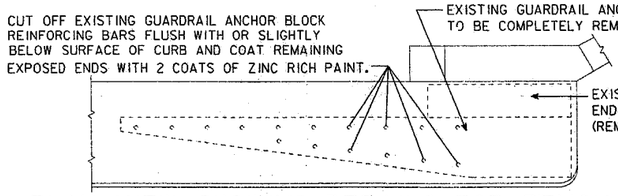
PART ELEVATION VIEW

RETROFIT BARRIER RAIL JOINT DETAILS

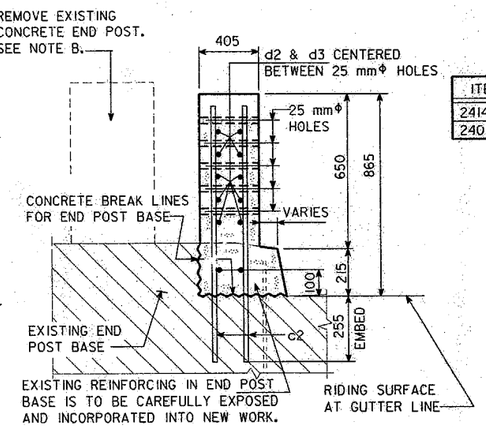
SECTION B-B
(SHOWING c1 AND c4 PLACEMENT)

PLAN OF END SECTION

A SCRAPE SAMPLE WAS TAKEN FROM ONE AREA OF THE BRIDGE RAILING TO GET AN INDICATION OF THE EXISTENCE OF THE LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 668 mg./kg. ANALYSIS OF THE TOTAL CHROMIUM ON THIS SAMPLE WAS 109 mg./kg. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALIZED. THE BIDDER SHOULD NOT RELY ON THE DEPARTMENT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO CONSTITUENTS.



PLAN VIEW SHOWING DETAILS FOR REMOVAL OF EXISTING CONCRETE ANCHOR BLOCKS
(REQUIRED AT 4 CORNERS)



PART SECTION C-C

DOWEL SETTING NOTE :

THE c1, c2 & c4 BARS ARE TO BE SET AS DOWELS IN DRILLED HOLES. HOLES ARE TO BE 100 mm AND 255 mm DEEP. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ONE OF THE FOLLOWING SYSTEMS SHALL BE USED AS A BONDING AGENT FOR THE DOWELS:

A. EPOXY GROUT SYSTEM IN ACCORDANCE WITH STANDARD SPECIFICATIONS ARTICLE 2301.12 AND THE CURRENT SUPPLEMENTAL SPECIFICATIONS OF THE IOWA D.O.T. - PROJECT DEVELOPMENT DIVISION.

B. HYDRAULIC CEMENT SYSTEM. DRILLED HOLES ARE TO BE 2.5 TIMES THE DOWEL DIAMETER AND ARE TO BE BLOWN CLEAN WITH COMPRESSED AIR IMMEDIATELY PRIOR TO PLACING GROUT. THE HYDRAULIC CEMENT GROUT SHALL BE ONE OF THOSE APPROVED IN MATERIALS I.M. 491.13 AND SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

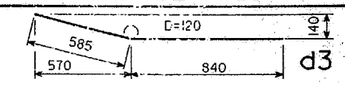
ORIGINAL

NOTE B:
EXISTING VERTICAL REINFORCING SHALL BE CUT OFF FLUSH WITH OR SLIGHTLY BELOW CONCRETE SURFACE AND THE REMAINING EXPOSED ENDS PAINTED WITH TWO COATS OF ZINC RICH PAINT. THE COST OF REMOVALS AND CUTTING OFF AND PAINTING OF REINFORCING SHALL BE INCLUDED IN BID ITEM "REMOVAL OF EXISTING HANDRAIL".

EPOXY REINFORCING STEEL - T

BAR MARK	BAR SIZE	LOCATION	SHAPE	NO.	LE
c1	20	RAIL, FRONT FACE VERTICAL	—	388	85
c2	20	END SECTION, VERTICAL	—	36	1070
c3	20	END SECTION, VERTICAL	—	32	765
c4	20	RAIL, BACK FACE VERTICAL	—	386	700
d1	15	RAIL, LONGIT.	—	56	11 040
d2	20	END SECTION, LONGIT.	—	24	1400
d3	20	END SECTION, LONGIT.	⟋	24	1425
				TOTAL (kg)	2(

BENT BAR DETAILS



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

CONCRETE PLACEMENT QUANTITIES

CONCRETE		TOTAL
STANDARD RAIL SECTION	147.2 m @ 0.166 m³ PER m	24.4
END SECTIONS	4 @ 0.49 m³ EACH	2.0
	TOTAL m³	26.4

TOTAL ESTIMATED QUANTITIES-TWO RAILS

ITEM CODE	ITEM	UNITS	QUANTITY
2414-001100	RETROFIT CONCRETE BARRIER RAILING	m	153.4
2401-204010	REMOVAL OF EXISTING HANDRAIL	L.S.	LUMP SUM

ESTIMATE REFERENCE INFORMATION
INCLUDES 26.4 m³ OF CLASS D STRUCTURAL CONCRETE AND 2697 kg OF EPOXY COATED REINFORCING STEEL.

RETROFIT BARRIER RAIL NOTES:

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

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

THE RETROFIT BARRIER RAIL IS TO BE BID ON A PER METER BASIS MEASURED FROM END TO END OF RAIL. THE NUMBER OF METERS OF RETROFIT BARRIER RAIL INSTALLED WILL BE PAID FOR AT THE CONTRACT PRICE PER METER BASED ON PLAN QUANTITIES. PRICE BID FOR "RETROFIT CONCRETE BARRIER RAILING" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL (INCLUDING REINF. STEEL & 25 mm DIA. PLASTIC CONDUIT) PLUS ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.

ALL RETROFIT BARRIER RAIL CONCRETE IS TO BE CLASS D.

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

THE JOINT SEALER SHALL CONFORM TO FED. SPEC. TT-S00230 OR TT-S00227 FOR TYPE II, CLASS A OR B.

THE PRICE BID FOR "REMOVAL OF EXISTING HANDRAIL" SHALL INCLUDE ALL COSTS ASSOCIATED WITH DISMANTLING THE EXISTING STEEL HANDRAIL (APPROX. 147.1 m AND 60 POSTS), REMOVAL OF EXISTING CONCRETE END POSTS AND EXISTING CONCRETE ANCHOR BLOCKS. THE RAILS AND POSTS ARE TO BECOME THE PROPERTY OF THE CONTRACTOR AND REMOVED FROM THE SITE BY HIM.

ANY REMOVALS AND DISPOSALS REQUIRED SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO OTHER PORTIONS OF THE EXISTING STRUCTURE NOT NOTED FOR REMOVAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPAIRED BY HIM AT NO COST TO THE STATE.

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

LOCATION

PLYMOUTH COUNTY
T 91N R46W
PLYMOUTH TWP.
SECTION 2
U.S. NO. 75 OVER W. FORK FLOYD RIVER
MAINT. NO. 7512.65075

DESIGN HISTORY AT THIS SITE

DES. NO.	TYPE OF WORK
255	ORIGINAL DESIGN
482	OVERLAY AND REPAIR
396	RETROFIT RAIL

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA
10/3/95 DATE — GARY LOVEY — REG. NO. 8704

DESIGNED BY C.E.COLE — CHECKED BY R. A. RYSAVY
DETAILED BY C.E.COLE — CADD FILE H75396M.C01

DESIGN FOR RETROFIT TO 0° SKEW

73.2 m x 15.9 m CONTINUOUS I-BEAM BRIDGE

22.33 m END SPANS — 28.50 m CENTER SPAN

RETROFIT BARRIER RAIL DETAILS

STATION: 199+70.536 (℄ U.S. NO. 75) — OCTOBER, 1995

PLYMOUTH COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION

DESIGN SHEET NO. 1 OF 1 — FILE NO. 28988 — DESIGN NO. 396

PLYMOUTH COUNTY

PROJECT NUMBER	STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NHSN-75-2(47)--2R-75	IOWA	7			