A.C.C. RESURFACING
STPN-12-2(13)--2J-75
LETTING DATE 7-9-96

PLYMOUTH-SIOUX CO.

IOWA
DEPARTMENT OF TRANSPORTATION
Project Development Division
PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
PLYMOUTH-SIOUX COUNTY
A.C.C. RESURFACING

On Ia. 12, from North Junction Ia. 3 to Junction Ia. 10 in Sioux County, including Ia. 403, from the South Dakota State Line to East Junction of Ia. 12

SCALES: As Noted

TOTAL SHEETS
42
PROJECT NUMBER
STPN-12-2(13)--2J-75
R.O.W. PROJECT NUMBER
PROJECT IDENTIFICATION NUMBER
94-75030-1

INDEX OF SHEETS
105-3
09-27-94

NO.	DESCRIPTION
A.01	Title Sheet
A.02	Location Map
B.01-B.06	Typical Cross Sections
C.01-C.09	Estimate of Quantities and General Information
D.01	Plan and Profile of Rt. Turn Lane at Intersection of Ia. 403
D.02	Plan and Profile of Rt. Turn Lane at Intersection of Co. Rd. C-16
G.01-G.02	Bench Marks and Reference Information
J.01-J.06	500 Series Traffic Control
U.01-U.05	500 Series, Modified Standards and Special Details
V.01-V.06	Bridge Retrofit Barrier Rail Details
W.01-W.04	Cross Sections

PROJECT LENGTH SUMMARY
105-1
09-27-94

DIV.	LOCATION	m	km
1	URBAN: City of Akron Sta. 0+00.00 to Sta. 21+57.99	2157.99	
	City of Chatsworth Sta. 107+49.69 to Sta. 123+54.19	1604.50	
	City of Havarden Sta. 24+00.91 to Sta. 36+42.37	1241.46	
	Deduct Bridge & Approaches at Sta. 30+98 in Havarden	50.71	
	Net Length of Div. 1	4953.24	4.953
2	RURAL: Sta. 21+57.99 to Sta. 107+49.69 Sta. 123+54.19 to Sta. 174+23.52	8591.70 5069.33	
	Equation Sta. 174+23.52(Bck) = Sta. 0+00.00(Ahd)		
	Sta. 0+00.00 to Sta. 24+00.91	2400.91	
	Deduct Bridge & Approaches at Sta. 29+35 Deduct Bridge & One Approach at Sta. 87+01 Deduct Bridge at Sta. 126+44	85.74 55.99 46.73	
	Net Length of Div. 2	15873.48	15.873
3	Ia. 403: Sta. 1+48.60 to Sta. 3+77.76	229.16	
	Net Length of Div. 3	229.16	0.229
	Total Length of Project	21055.88	21.055

The Iowa Department of Transporation Metric Standard Specifications for Highway and Bridge Construction, series of 1995, plus current supplemental specifications and special provisions shall apply to construction work on this project.

Value Engineering Saves. Refer to Standard Notation 203-4 on Sheet C.04

CONSTRUCTION "AS BUILT" PLANS

As-Built Preparation Supervised By: Darwin L Bishop
(Project Engineer)

Date: 1/10/01

REGISTERED PROFESSIONAL ENGINEER DARWIN L. BISHOP 12844 IOWA

REVIEWED AND FORWARDED TO AMES

Todd E. Hujik
(Transportation Center Construction Engineer) Date: 5-1-06

AFTER MICROFILMING RETURN ORIGINAL,
One 50% Reduced Print, and Two Full-Size Prints To:
District 3 Iowa Transportation Center

10-31-95 | Ia. 12 | Ia. 403 | 101-6

DESIGN DATA

RURAL			RURAL		
1996 AADT	1560	V.P.D.	1996 AADT	1570	V.P.D.
2016 AADT	1880	V.P.D.	2016 AADT	1870	V.P.D.
2016 DHV	190	V.P.H.	2016 DHV	190	V.P.H.
TRUCKS	17	%	TRUCKS	10	%
ESALs per day	96		ESALs per day	56	

33 kcats

See sheet A.02 for location maps

THIS AS BUILT PLAN INCLUDES

YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1997-98	Acc Resurfacing	Brower Constr. Co.	Dwight Jenkins

METRIC STANDARD ROAD PLANS
105-4
09-27-94

The following Standard Road Plans shall be considered applicable to construction work on this project.

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
RA-41	03-26-96	RE-70(3)	10-31-95	RG-6	03-26-96
RC-16	10-31-95	RF-1	03-28-95	RH-50	04-30-96
RE-2A	10-31-95	RF-2	06-06-95	RH-51	04-30-96
RE-2B	10-31-95	RF-3	03-28-95	RH-52	03-26-96
RE-7	12-08-95	RF-5	10-31-95	RK-19A	09-27-94
RE-12A	06-06-95	RF-14	03-26-96	RL-7	12-13-94
RE-12B	06-06-95	RF-19E	03-28-95	RL-14	10-31-95
RE-47	06-06-95	RF-30A	03-28-95	RS-2	04-30-96
RE-48A	12-08-95	RF-30B	03-28-95	RS-3	06-06-95
RE-65	10-31-95	RF-31	03-28-95	RS-4	06-06-95
RE-70(1)	03-26-96	RF-32	03-28-95	RS-5C	04-30-96
RE-70(2)	03-26-96	RG-2	03-26-96		

REVISIONS

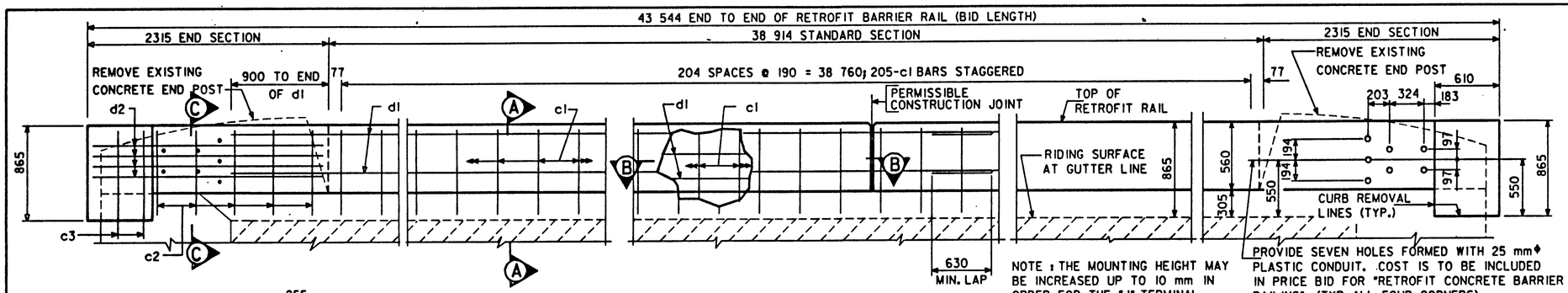
Iowa Department of Transportation
Project Development Division
AUTHORIZED FOR LETTING
Donald L. Parks
DESIGN ENGINEER
Iowa Registration No. 5545 Date 4/3/96

REGISTERED PROFESSIONAL ENGINEER JOHN R. ABRAMS 7229 IOWA

I hereby certify that this plan was prepared under my supervision and that engineering decisions with regard to the design were made by me or by other duly Registered Professional Engineers under the laws of the State of Iowa.
Name
Iowa Registration No. 7229 Date 04/3/96

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

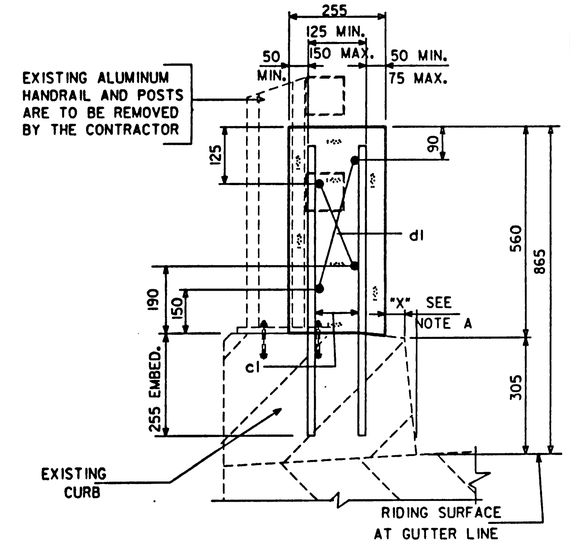
A3A/RLN



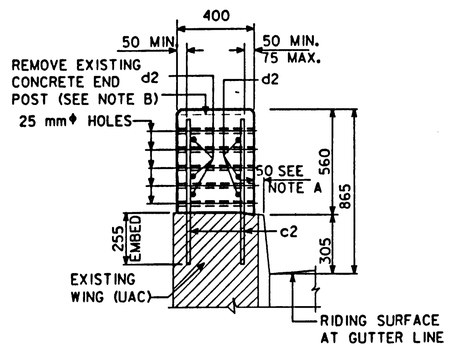
ELEVATION OF RETROFIT BARRIER RAIL

NOTE : THE MOUNTING HEIGHT MAY BE INCREASED UP TO 10 mm IN ORDER FOR THE "J" TERMINAL SECTION TO FIT PROPERLY.

PROVIDE SEVEN HOLES FORMED WITH 25 mm♦ PLASTIC CONDUIT. COST IS TO BE INCLUDED IN PRICE BID FOR "RETROFIT CONCRETE BARRIER RAILING". (TYP. ALL FOUR CORNERS)



PART SECTION A - A



PART SECTION C-C

NOTE:
d2 BARS ARE TO BE CENTERED BETWEEN 25 mm ♦ HOLES

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 THE END SECTION AS SHOWN IN SECTION C-C.

NOTE B:
EXISTING RAIL IS TO BE REMOVED. ANY ANCHOR BOLTS THAT WILL HAVE AT LEAST 50 mm OF CONCRETE COVER WHEN ENCOMPASSED BY THE NEW BARRIER RAIL MAY BE LEFT IN PLACE AT THE CONTRACTORS OPTION SUBJECT TO THE APPROVAL OF THE ENGINEER. ANY ANCHOR BOLTS NOT HAVING THE 50 mm MIN. COVER SHALL BE CUT OFF FLUSH WITH OR SLIGHTLY BELOW THE TOP OF CURB AND ENDS OF NON STAINLESS STEEL BOLTS PAINTED WITH TWO COATS OF ZINC RICH PAINT.
STAINLESS STEEL ANCHOR BOLTS OUTSIDE THE AREA OF NEW BARRIER RAIL MAY BE LEFT IN PLACE AT CONTRACTORS OPTION SUBJECT TO APPROVAL OF THE ENGINEER. STAINLESS STEEL BOLTS NEED NOT BE PAINTED.
NON STAINLESS STEEL ANCHOR BOLTS OUTSIDE THE AREA OF NEW BARRIER RAIL SHALL BE CUT OFF FLUSH WITH OR SLIGHTLY BELOW TOP OF CURB SURFACE AND THE REMAINING EXPOSED ENDS PAINTED WITH TWO COATS OF ZINC RICH PAINT.

RETROFIT BARRIER RAILING 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 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 METRIC 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 ALUMINUM HANDRAIL (APPROX. 78.3 METERS AND 32 POSTS). THE RAILS AND POSTS ARE TO BECOME THE PROPERTY OF THE CONTRACTOR AND REMOVED FROM THE SITE BY THE CONTRACTOR. THE BID ITEM SHALL ALSO INCLUDE ALL COSTS ASSOCIATED WITH THE REMOVAL OF THE EXISTING CONCRETE END POSTS AND THE CUTTING OFF AND PAINTING OF THE EXISTING RAIL POST ANCHOR BOLTS IF REQUIRED.
ANY REMOVALS 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 THE CONTRACTOR AT NO COST TO THE STATE.
EXISTING BRIDGE RAIL IS NOT TO BE REMOVED UNTIL AUTHORIZED BY THE ENGINEER.
ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED OR SHOWN.

EPOXY REINFORCING STEEL - TWO RAILS

MARK	SIZE	LOCATION	SHAPE	N°	LENGTH	MASS
c1	20	STANDARD RAIL, VERTICAL	—	410	765	739
c2	20	END SECTION, VERTICAL	—	40	765	72
c3	20	END SECTION, VERTICAL	—	16	1070	40
d1	15	RAIL, LONGIT.	—	32	10 700	538
d2	15	END SECTION, LONGIT.	—	24	2215	83
					TOTAL (kg)	1472

CONCRETE PLACEMENT QUANTITIES

CONCRETE		TOTAL
STANDARD RAIL SECTION	77.8 m @ 0.143 m³ PER m	11.1
END SECTIONS	4 @ 0.64 m³ EACH	2.56
	TOTAL m³	13.66

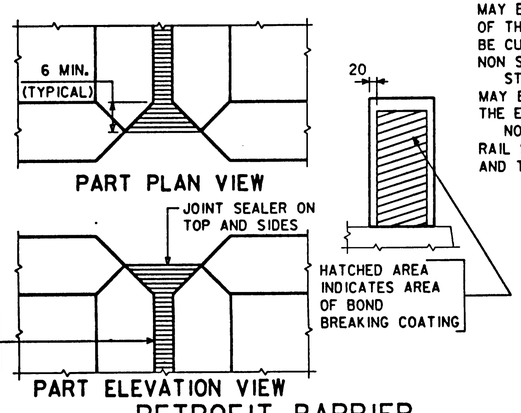
ESTIMATED QUANTITIES-TWO RAILS

ITEM CODE	ITEM	UNITS	QUANTITY
2401-204010	REMOVAL OF EXISTING HANDRAIL	LS	1.000
2414-001100	RETROFIT CONCRETE BARRIER RAILING	m	87.1

ITEM CODE — ESTIMATE REFERENCE INFORMATION :

2414-001100 INCLUDES 13.66 m³ OF CLASS D STRUCTURAL CONCRETE AND 1472 kg OF EPOXY COATED REINFORCING STEEL.

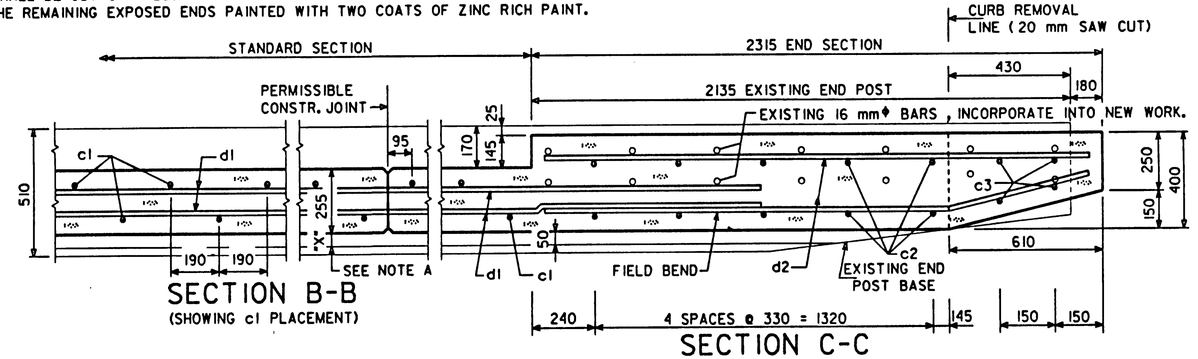
DOWEL SETTING NOTE :
THE "c" BARS SHALL BE SET AS DOWELS IN DRILLED HOLES. HOLES ARE TO BE 255 mm DEEP. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ONE OF THE FOLLOWING SYSTEMS SHALL BE USED AS A BONDING AGENT FOR THE DOWELS :
A. EPOXY GROUT SYSTEM IN ACCORDANCE WITH STANDARD METRIC SPECIFICATIONS ARTICLE 2301.12 AND CURRENT SUPPLEMENTAL SPECIFICATIONS OF THE IOWA D.O.T. PROJECT DEVELOPMENT DIVISION.
B. HYDRAULIC CEMENT GROUT SYSTEMS. 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.



PART PLAN VIEW

PART ELEVATION VIEW

RETROFIT BARRIER RAIL JOINT DETAILS



SECTION B-B
(SHOWING c1 PLACEMENT)

SECTION C-C
(SHOWING c2 PLACEMENT)

LOCATION

PLYMOUTH COUNTY
T 93N R 48W
PORTLAND TWP.
SECTION 29
IOWA NO. 12 OVER BEAVER CREEK

MAINT. NO. 7535.45012

DESIGN HISTORY AT THIS SITE

DES. NO.	TYPE OF WORK
774	ORIGINAL DESIGN
196	RETROFIT RAIL

Bench Mark : DOT Brass plug in top of S.E. Barrier rail sta. 95+75± / 29+18.472
Elevation = 351.224 metric or 1152.31 english

SPECIFICATIONS:
DESIGN: AASHTO SERIES OF 1992.
ALLOWABLE STRESSES AND LOADING INFORMATION HAVE BEEN CONVERTED TO METRIC.
CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION METRIC STANDARD SPECIFICATIONS, SERIES OF 1995, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

DESIGN STRESSES:
DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1992. DESIGN STRESS INFORMATION HAS BEEN CONVERTED TO A METRIC VERSION.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 400.
CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 24 MPa .

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
4/15/96 DATE — GARY NOVEY — REG. NO. 8704

DESIGN FOR RETROFIT RAIL TO 35° SKEW R.A.

39.6 m x 13.4 m CONTINUOUS CONCRETE SLAB BRIDGE

12.04 m END SPANS — 15.55 m CENTER SPAN

RETROFIT BARRIER RAIL DETAILS

STATION: 29+35.23
STATION: 96+30.00 AS BUILT (℄ IA. NO. 12) — APRIL, 1996

PLYMOUTH COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION

DESIGN SHEET NO. 1 OF 1 — FILE NO. 28987 — DESIGN NO. 196

DESIGNED BY C.E.COLE — CHECKED BY H.B.McPHAIL
DETAILED BY C.E.COLE — CADD FILE H75196M.C01

PLYMOUTH COUNTY

PROJECT NUMBER	STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
STPN-12-2(13)--2J-75	IOWA	7		V.01	