BRIDGES
BRF-F-18-5(28)--2P-17

CERRO GORDO COUNTY

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		1	

PROJECT NUMBER
BRF-F-18-5(28)--2P-17

R.O.W. PROJECT NUMBER

PRELIMINARY ENGINEER NUMBER

IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division

PLANS OF ~~PROPOSED~~ IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

CERRO GORDO COUNTY

BRIDGES

ON U.S. 18 IN MASON CITY FROM ILLINOIS STREET EAST 2.8 MILES

SCALES AS NOTED

THE STANDARD SPECIFICATIONS, SERIES OF 1977
bzd OF THE IOWA DEPARTMENT OF TRANSPORTATION,
~~SHALL~~ APPLY TO CONSTRUCTION WORK ON THIS PROJECT
(PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS)

CONVENTIONAL SIGNS

State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line — Old / New; Sta / Ref Point
Sec. Corner
Profile Grade
Railroad
Field Tile
Underground Lines — Old / New; G Gas / T Tel
Culverts — Old / New
Utility Poles — Power / Tel.
Fences — Barb / Mesh
Trees Or Brush
Stream
Dike — Old / New
County Road No
Primary Road No
U. S. Road No.
Interstate Road No

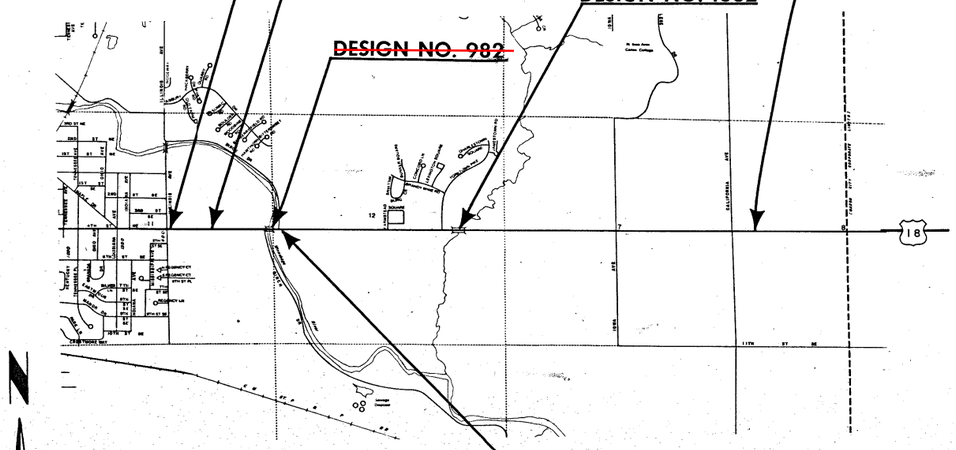
STA. 305+22.00 BEGIN PROJECT
BEGIN DIV. 1 (F)
M.P. 184.77

STA 312+74.00 . STOP DIV. 1 (F)
BEG IN DIV. 2 (BRF)

DESIGN NO. 1082

~~DESIGN NO. 982~~

STA. 453+40.00 END DIV. 1 (F)
END PROJECT M.P. 187.58



STA. 337+00 END DIV. 2 (BRF)
RESUME DIV. 1 (F)

NOT TO SCALE

PART OF THE CITY OF MASON CITY
T-96N R-20W
SECTIONS 11 & 12
MASON TWP.

LOCATION MAP

LOCATION MAP SCALE
0 1 2 3
miles

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
Prepared by John Sommus Date 12/3/87
Res. Const. Engineer
Approved and Forwarded to Ames
_____ Date _____
District Const. Engineer
After Microfilming Return This Copy to:
_____ District Engineer
Prime Contractor: _____
Contract Amount: _____ 1984

165

MILEAGE SUMMARY

105-1

DIV.	LOCATION	LIN. FT.	MILES
1	CERRO GORDO COUNTY - CITY OF MASON CITY		
	STA. 305+22.00 TO STA. 312+74.00	752.00	
	STA. 337+00.00 TO STA. 453+40.00	11640.00	
	DEDUCT BRIDGE AT STA. 371+94.50	45.16	
	NET LENGTH OF ROADWAY - DIV. 1	12346.84	2.338
	NET LENGTH OF BRIDGE	45.16	0.009
	TOTAL LENGTH OF DIV. 1	12392.00	2.347
2	STA. 312+74.00 TO STA. 337+00.00	2426.00	
	DEDUCT BRIDGE AT STA. 328+57.50	196.00	
	NET LENGTH OF ROADWAY - DIV. 2	2230.00	0.422
	NET LENGTH OF BRIDGE	196.00	0.037
	TOTAL LENGTH OF DIV. 2	2426.00	0.459
	NET LENGTH OF ROADWAY IN PROJECT	14576.84	2.760
	NET LENGTH OF BRIDES IN PROJECT	241.16	0.046
	NET LENGTH OF PROJECT	14818.00	2.806

DESIGN DATA URBAN

1984	AADT	9497	V.P.D.
2004	AADT	18518	V.P.D.
2004	DHV	1843	V.P.H.
TRUCKS		12	%
CLASS ___	ACCESS CONTROL		

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	FINAL Quantity ~~ESTIMATE~~ SHEET
~~3-17~~	~~DESIGN NO. 982~~
18-31	DESIGN NO. 1082

C

DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION
STANDARDS REQUIRED (Available at Bridge Design Services)

STANDARD	ISSUED	REVISED

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.
See Sheet 3 & 18 of 31

IOWA REGISTRATION NUMBER DATE

DEPARTMENT OF TRANSPORTATION IOWA — *Highway Division*

AUTHORIZED FOR LETTING 12-20-83
DEPUTY CHIEF ENGINEER DATE

U.S. DEPT. TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED

DIVISION ENGINEER DATE

LETTING DATE MARCH 15, 1984 STATE CONTROL SECTION NUMBER 17-0400 FILE NO. 26200 CERRO GORDO COUNTY PROJECT NO. BRF-F-18-5(28)--2P-17 SHEET NO. 1 OF

See sheet 3 of 31 for certification signature

IN LETTING OF MARCH 15, 1984

DESIGN NO. 982 — OVER WINNEBAGO RIVER — STA. 328+57.5
CERRO GORDO COUNTY
SECTION 11 — T-96N — R-20W — MASON TWP.

DESIGN FOR
193' x 54' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE
WITH TWO 5'-0 SIDEWALKS

FINAL ~~ESTIMATE OF~~ QUANTITIES

NO.	ITEM	UNIT	~~TOTAL~~	TOTAL
1	STRUCTURAL CONCRETE	CU. YDS.	~~278.3~~	776.84
2	REINFORCING STEEL	LBS.	~~92,954~~	93,039
3	PRETENSIONED PRESTRESSED CONC. BEAM-B63R	NO.	~~27~~	27
4	HP10x42 STEEL BEARING PILING - FURNISH	LIN. FT.	~~520~~	469.8
5	HP10x42 STEEL BEARING PILING - DRIVE	LIN. FT.	~~520~~	319
6	CLASS 20 EXCAVATION	CU. YDS.	~~170~~	210.54
7	CLASS 22 EXCAVATION	CU. YDS.	~~104~~	101.84
8	GRANULAR BACKFILL	CU. YDS.	~~200~~	119.44
9	SUBDRAIN, AS PER PLAN	LIN. FT.	~~216~~	263
10	STEEL SIDEWALK RAIL	LIN. FT.	~~391.5~~	391.5
11	CHAIN LINK FENCE, AS PER PLAN	STA.	~~4.18~~	4.18
12	CONCRETE BARRIER RAIL	LIN. FT.	~~392~~	392
13	2" ø RIGID STEEL CONDUIT	LIN. FT.	~~458~~	458
14	REMOVAL OF EXISTING STRUCTURE	L.S.	~~LUMP SUM~~	$20,600.00
15	REINFORCING STEEL - EPOXY COATED	LBS.	~~68,582~~	68,582
16	CLASS 10 CHANNEL EXCAVATION	CU. YDS.	~~150~~	150
17	SURVEY CONSTRUCTION	L.S.		$1,000.00
18	MOBILIZATION	50%		$16,000.00

FINAL QUANTITIES

NO	ITEM	UNIT	TOTAL
8001	PILING MODIFICATION	L.S.	$1,179.79
8002	CLASS 10 EXCAVATION ROADWAY & BORROW	CU.YDS.	169
8003	CLASS 20 EXCAVATION FOR ROADWAY PIPE CULVERT	CU.YDS.	233
8004	ELBOW CORR. METAL PIPE 24 DIA	ONLY	2
8005	DIAPHRAM CORR. METAL TYPE "A" 24 IN. DIA.	ONLY	2
8006	APRON METAL 24 IN. DIA	ONLY	2
8007	CULVERT CORR. METAL ROADWAY PIPE 24 IN. DIA.	LIN. FT	38
8008	ELBOW CORR. METAL PIPE 30 DIA	ONLY	2
8009	DIAPHRAGM CORR. METAL TYPE "A" 30 IN. DIA.	ONLY	4
8010	APRON METAL 30 IN. DIA.	ONLY	4
8011	CULVERT CORR. METAL ROADWAY PIPE 30 IN. DIA.	LIN. FT	140

~~ESTIMATE~~ REFERENCE INFORMATION — 100-4

Data listed below ~~is~~ was for informational purposes only and ~~shall~~ did not constitute a basis for any extra work orders.

ITEM NO.	DESCRIPTION
1	INCLUDES D 466.9 CU. YDS. OF STRUCTURAL CONCRETE CLASS "D" IN SUPERSTRUCTURE AND 311.4 CU. YDS. OF CLASS "C" IN SUBSTRUCTURE.
13	INCLUDES D 18 LIN. FT. OF 1" ø RIGID STEEL CONDUIT.
15	INCLUDES D 23,570.6 LIN. FT. OF #5 BARS, 18,504.7 LIN. FT. OF #6 BARS, 4,556 LIN .FT. OF #8 BARS AND 6,050 LIN. FT. OF #9 BARS.

8001 TO ALLOW SUFFICIENT EXPANSION OF PILING WITHIN THE ABUTMENT. PILES WERE DRIVEN INTO LIMESTONE.

8002 THRU 8011 THESE ITEMS WERE TRANSFERRED FROM GRADE & PAVE CONTRACT TO STRUCTURES CONTRACT BY MUTUAL AGREEMENT. CHANGE MADE TO ALLOW BRIDGE CONTRACTOR MORE WORK AREA.

See sheet 4 of 31 for certification signature

IN LETTING OF FEBRUARY 14, 1984

DESIGN NO. 1082 — ~~OVER~~ IDEAL CREEK — STA. 371+94.5
CERRO GORDO COUNTY
SECTION 12 — ~~T-96N~~ — R-20W — MASON TWP.

DESIGN FOR WIDENING
42'-6 x ~~30'~~ CONCRETE DECK GIRDER BRIDGE
TO
42'-6 x 68' ~~PRE~~STRESSED DOUBLE-TEE BEAM BRIDGE

FINAL ~~ESTIMATE OF~~ QUANTITIES

NO.	ITEM	UNIT	~~TOTAL~~	TOTAL
~~1~~ 19	STRUCTURAL CONCRETE	CU. YDS.	~~229.7~~	229.9
~~2~~ 20	REINFORCING STEEL	LBS.	~~18,810~~	18,810
~~3~~ 21	REINFORCING STEEL - EPOXY COATED	LBS.	~~10,363~~	10,363
~~4~~ 22	BEAMS, PRETEN. PRESTRESS. CONCRETE, DT42	NO.	~~10~~	10
~~5~~ 23	STRUCTURAL STEEL	LBS.	~~2,080~~	2,080
~~6~~ 24	CLASS 10 CHANNEL EXCAVATION	CU. YDS.	~~90~~	90
~~7~~ 25	CLASS 20 EXCAVATION	CU. YDS.	~~400~~	400
~~8~~ 26	CLASS 21 EXCAVATION	CU. YDS.	~~510~~	510
~~9~~ 27	CLASS 22 EXCAVATION	CU. YDS.	~~12~~	36.77
~~10~~ 28	GRANULAR BACKFILL	CU. YDS.	~~1,020~~	956
~~11~~ 29	SUBDRAIN, AS PER PLAN	LIN. FT.	~~168~~	168
~~12~~ 30	ALUMINUM HANDRAIL	LIN. FT.	~~151.5~~	151.5
~~13~~ 31	TEMPORARY BARRIER RAIL - CONCRETE	LIN. FT.	~~461.25~~	379
~~14~~ 32	REMOVAL OF EXISTING STRUCTURE	L.S.	~~LUMP SUM~~	$13,000.00
~~15~~ 33	TRAFFIC CONTROL	L.S.	~~LUMP SUM~~	$ 6,400.00
~~16~~ 34	TRAFFIC CONTROL SIGNALS - FURNISH & INSTALL	L.S.	~~LUMP SUM~~	$ 1,900.00
~~17~~ 35	PAVEMENT MARKING	STA.	~~22.8~~	38.04
~~18~~ 36	FLOODLIGHTING	L.S.	~~LUMP SUM~~	$3,000.00

FINAL QUANTITIES

NO	ITEM	UNIT	TOTAL
37	SURVEY CONSTRUCTION	L.S.	$100.00
38	MOBILIZATION	50%	$9000.00
8015	HEATING CONCRETE	CU.YDS.	56.70
8016	COLD WEATHER PROTECTION	CU.YDS.	60.30
8017	BACKFILL POROUS	TONS	37.50

~~ESTIMATE~~ REFERENCE INFORMATION — 100-4

Data listed below ~~is~~ was for informational purposes only and ~~shall~~ did not constitute a basis for any extra work orders.

ITEM NO.	DESCRIPTION
~~1~~ 19	INCLUDES D 999.8 ~~35.6~~ CU. YDS. OF STRUCTURAL CONCRETE CLASS "D" IN SUPERSTRUCTURE AND ~~134.7~~ 130.1 CU. YDS. OF CLASS "C" IN SUBSTRUCTURE.
~~2~~ 21	INCLUDES D ~~10,327~~ LIN. FT. OF #8 BARS, 3,322 LIN. FT. OF #5 BARS.
~~16~~ 34	INCLUDES D 4 TRAFFIC CONTROL SIGNALS. TRAFFIC CONTROL SIGNALS ~~TO BE~~ were REMOVED AND ~~ARE TO~~ did REMAIN THE PROPERTY OF THE CONTRACTOR.
~~17~~ 35	INCLUDES D PLACING OF ~~12.8~~ 34.02 STATIONS (~~11.2~~ 4.02 STA. OF WHITE, ~~1.6~~ 30.0 STA. OF YELLOW) AND REMOVAL OF ~~10.5~~ 4.02 STATIONS.
~~18~~ 36	INCLUDES D 2 FLOODLIGHTS.

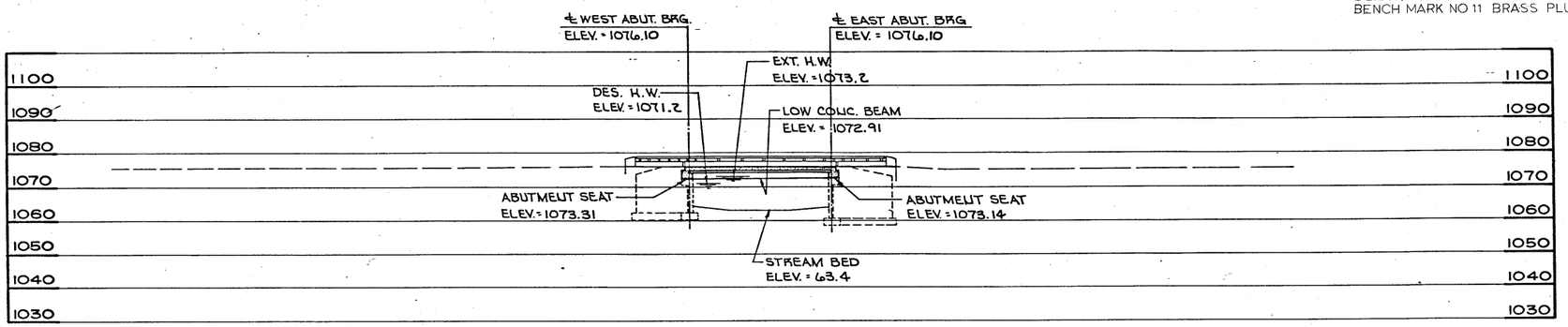
8017 TO COMPLY WITH DESIGN CHANGE

FINAL QUANTITY SHEET
~~ESTIMATE SHEET~~

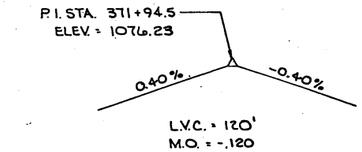
FILE NO. 26200 — CERRO GORDO COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
BRF-F-18-5(28)--2P-17	IOWA	5		2	

~~BENCH MARK No 11: FOUND I.H.C. BM. IN NE. WING OF CONCRETE DECK GIRDER BR. 15'LT. ELEV. = 1076.78~~
BENCH MARK NO 11 BRASS PLUG ON S E BRIDGE END POST STA. 372+32-35 LT. ELEV. 1078.40



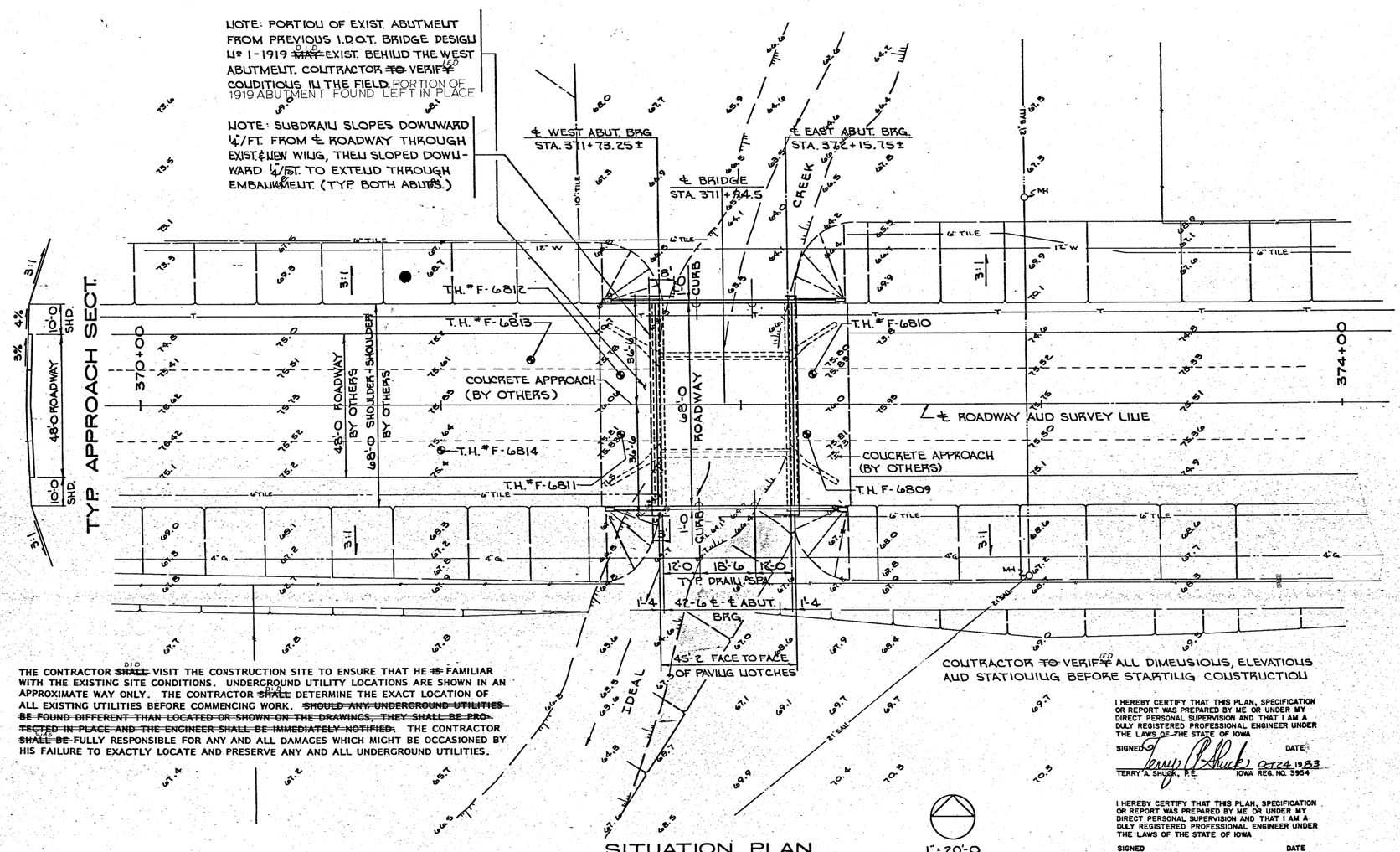
LONGITUDINAL SECTION ALONG ℄ ROADWAY



~~PROPOSED~~ GRADE

NOTE: PORTION OF EXIST. ABUTMENT FROM PREVIOUS I.D.O.T. BRIDGE DESIGN No 1-1919 ~~MAY~~ DID EXIST. BEHIND THE WEST ABUTMENT. CONTRACTOR ~~TO~~ SHALL VERIFY CONDITIONS IN THE FIELD. PORTION OF 1919 ABUTMENT FOUND LEFT IN PLACE

NOTE: SUBDRAIN SLOPES DOWNWARD 1/4"/FT. FROM ℄ ROADWAY THROUGH EXIST. ℄ WING WING, THEN SLOPED DOWNWARD 1/4"/FT. TO EXTEND THROUGH EMBANKMENT. (TYP BOTH ABUTS.)



THE CONTRACTOR ~~SHALL~~ DID VISIT THE CONSTRUCTION SITE TO ENSURE THAT HE ~~IS~~ IS FAMILIAR WITH THE EXISTING SITE CONDITIONS. UNDERGROUND UTILITY LOCATIONS ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR ~~SHALL~~ DID DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. ~~SHOULD ANY UNDERGROUND UTILITIES BE FOUND DIFFERENT THAN LOCATED OR SHOWN ON THE DRAWINGS, THEY SHALL BE PROTECTED IN PLACE AND THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED.~~ THE CONTRACTOR ~~SHALL BE~~ IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

SITUATION PLAN

1" = 20'-0

CONTRACTOR ~~TO~~ SHALL VERIFY ALL DIMENSIONS, ELEVATIONS AND STATIONING BEFORE STARTING CONSTRUCTION

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA

SIGNED Terry A. Shuck DATE 07-24-1983
TERRY A. SHUCK, P.E. IOWA REG. NO. 3954

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA

SIGNED Verle E. Arnold DATE Oct 24 1983
VERLE E. ARNOLD, P.E. IOWA REG. NO. 9954

HYDRAULIC DATA

DRAINAGE AREA = 10.5 SQ. MILES
* Q_{50} = 2,100 CFS
NATURAL STAGE = 1070.7
* Q_{100} = 2,600 CFS
NATURAL STAGE = 1071.2
Q_{500} = 4,100 CFS
NATURAL STAGE = 1072.2
*ASSUMED 60% REGION I AND 40% REGION II

LOCATION

T-96 N R-20 W
SECTION 12
MASON TWP.
CERRO GORDO CO.
OVER IDEAL CREEK

DESIGN FOR WIDENING

42'-6 × 30' CONCRETE DECK GIRDER BRIDGE TO 42'-6 × 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

SITUATION PLAN

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

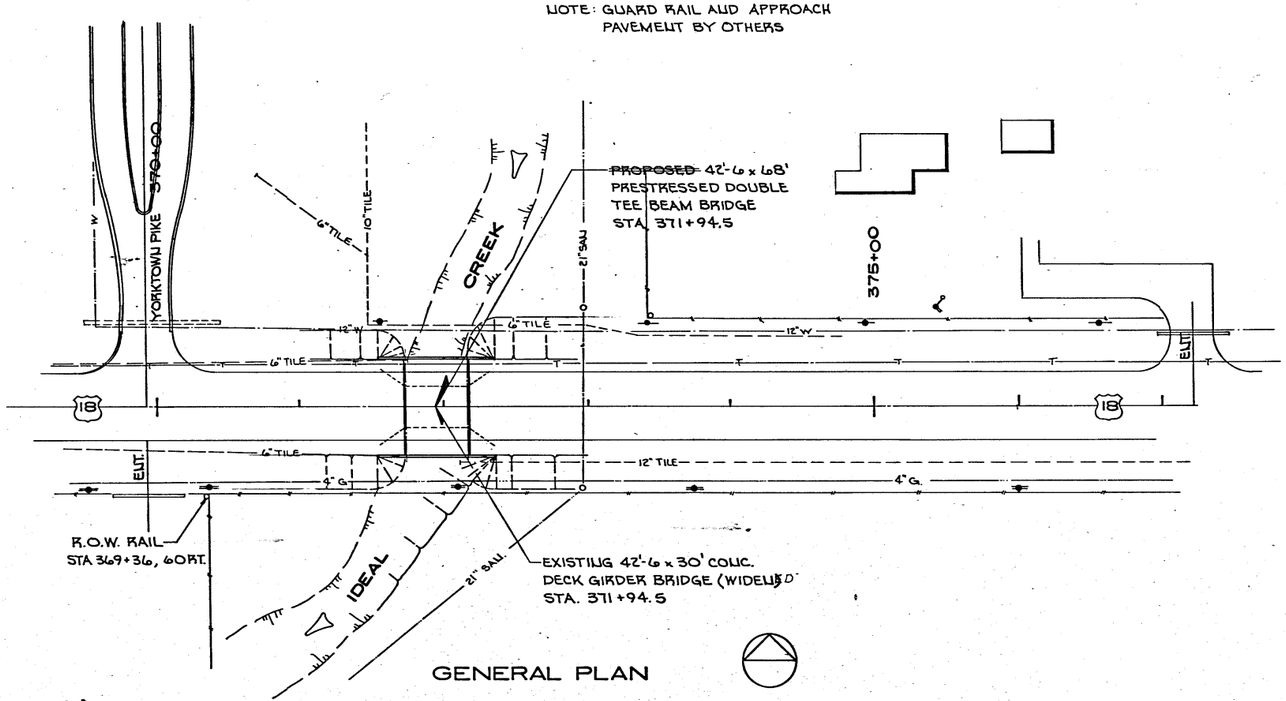
DESIGN SHEET NO. 1 OF 14 FILE NO. 26200 DESIGN NO. 1082

DESIGNED BY:
CHECKED BY:

TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

CERRO GORDO COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		18	31



GENERAL PLAN

1"=50'-0

TOTAL ESTIMATED QUANTITIES

ITEM NO.	ITEM	UNIT	2 - ABUTS	SUPERSTR.	TOTAL
1.	STRUCTURAL CONCRETE	CU. YDS.	134.7	95.0	229.7
2.	REINFORCING STEEL	LBS.	15,148	3,662	18,810
3.	REINFORCING STEEL - EPOXY COATED	LBS.	1,706	8,657	10,363
4.	BEAMS, PRETEN. PRESTRESS. CONC., DT 42	NO.		10	10
5.	STRUCTURAL STEEL	LBS.	2,080		2,080
6.	CLASS 10 CHANNEL EXCAVATION	CU. YDS.			90
7.	CLASS 20 EXCAVATION	CU. YDS.	400		400
8.	CLASS 21 EXCAVATION	CU. YDS.	510		510
9	CLASS 22 EXCAVATION	CU. YDS.	12		12
10.	GRANULAR BACKFILL	CU. YDS.	1020		1,020
11.	SUBDRAIN, AS PER PLAN	LIN. FT.	168		168
12.	ALUMINUM HANDRAIL	LIN. FT.		151.5	151.5
13.	TEMPORARY BARRIER RAIL - CONCRETE	LIN. FT.		461.25	461.25
14.	REMOVAL OF EXISTING STRUCTURE	L.S.			LUMP SUM
15.	TRAFFIC CONTROL	L.S.			LUMP SUM
16.	TRAFFIC CONTROL SIGNALS-FURNISH & INSTALL	L.S.			LUMP SUM
17.	PAVEMENT MARKING	STA.			22.8
18.	FLOODLIGHTING	L.S.			LUMP SUM
	SEE SHEET 2 OF 31 FOR FINAL QUANTITIES				

~~ITEM NO. ESTIMATE REFERENCE INFORMATION~~

~~1. INCLUDES 95.0 CU. YDS. OF STRUCTURAL CONCRETE, CLASS "D" IN SUPERSTRUCTURE AND 134.7 CU. YDS. OF CLASS "C" IN SUBSTRUCTURE.~~

~~3. INCLUDES 10,321 LIN. FT. OF #4 BARS, 3322 LIN. FT. OF #5 BARS.~~

~~16. INCLUDES 4 TRAFFIC CONTROL SIGNALS. TRAFFIC CONTROL SIGNALS TO BE REMOVED AND ARE TO REMAIN PROPERTY OF THE CONTRACTOR.~~

~~17. INCLUDES PLACING OF 12.3 STATIONS. (11.2 STA. OF WHITE, 1.1 STA. OF YELLOW) AND REMOVAL OF 10.5 STATIONS.~~

~~18. INCLUDES 2 FLOODLIGHTS.~~

SPECIFICATIONS

DESIGN: A.A.S.H.T.O. SERIES OF 1977.
CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION, SERIES OF 1977, PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.

DESIGN STRESSES

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH A.A.S.H.T.O. STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1977.
CONCRETE IN ACCORDANCE WITH SECTION 1.5.26(A), f'_c = 3,500 PSI
REINFORCING STEEL IN ACCORDANCE WITH SECTION 1.5.26(B)

ASTM A615-GRADE 60, f_s = 24,000 PSI
PRESTRESSING STEEL — SECTION 1.6.6(A), f'_s = 270,000 PSI
PRESTRESSED CONCRETE — SECTION 1.6.6(B), f'_c = 5,000 PSI
STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 1.7.1 ASTM A36, f_s = 20,000 PSI

GENERAL NOTES

THIS BRIDGE IS DESIGNED FOR HS20-44 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

THE EXISTING BRIDGE IS A CONCRETE DECK GIRDER BRIDGE WITH CONCRETE RETAINING WALL ABUTMENTS. THE LUMP SUM BID FOR "REMOVAL OF EXISTING STRUCTURES" ~~SHALL~~ INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING SUPERSTRUCTURE AND PORTIONS OF THE SUBSTRUCTURE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS, EXCEPT THAT THE EXISTING BRIDGE ~~SHALL~~ BECOME THE PROPERTY OF THE CONTRACTOR. THE ABUTMENTS AND WINGWALLS ~~SHALL~~ REMAIN IN PLACE. THE WINGWALLS ~~SHALL BE~~ REMOVED TO ELEVATION SHOWN ON PLAN.

DIMENSIONS — ALL EXISTING DIMENSIONS AND ELEVATIONS ~~SHALL BE~~ VERIFIED IN THE FIELD BY THE BRIDGE CONTRACTOR. DIMENSIONS AND ELEVATIONS MARKED ± ~~MIGHT~~ VARY DUE TO EXISTING AS-BUILT CONDITIONS. NEW CONCRETE SURFACES ~~SHALL BE~~ FLUSH WITH EXISTING CONCRETE SURFACES AS SHOWN.

UTILITY COMPANIES, WHOSE FACILITIES ARE KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS, ~~SHALL BE~~ NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THE CONTRACTOR ~~IS TO~~ VISIT THE SITE TO ENSURE HE ~~IS~~ FAMILIAR WITH THE EXISTING SITE CONDITIONS. THE CONTRACTOR ~~WILL BE~~ RESPONSIBLE FOR ACCURATELY LOCATING ALL UTILITIES WITHIN HIS WORK AREA. ~~IF UNDERGROUND UTILITIES ARE DISCOVERED IN THE AREA, THE FACILITIES ARE TO BE PROTECTED AND THE ENGINEER NOTIFIED IMMEDIATELY.~~

BRIDGE CONTRACTOR ~~IS TO~~ USE DUE CAUTION IN WORKING OVER AND AROUND ALL TILE LINES. BREAKS IN THE TILE LINE DUE TO THE CONTRACTOR'S CARELESSNESS ARE TO BE REPLACED AT HIS EXPENSE WITHOUT COST TO THE STATE OF IOWA. ANY TILE LINES BROKEN OR DISTURBED BY OUR CUT LINES WILL BE REPLACED AS DIRECTED BY THE ENGINEER IN CHARGE OF CONSTRUCTION AND AT THE STATE OF IOWA'S EXPENSE.

CONSTRUCTION ~~SHALL BE~~ DONE IN STAGES WITH AT LEAST ONE LANE OF TRAFFIC MAINTAINED AT ALL TIMES IN ACCORDANCE WITH "TRAFFIC CONTROL PLAN" NOTES ON DESIGN SHEET 4 OF 14 AND "TRAFFIC CONTROL LAYOUT" ON DESIGN SHEETS 13A, 13B, 13C & 13D of 14.

THE EXISTING BRIDGE IS DESIGN NO. 1352 CERRO GORDO COUNTY DATED JUNE 1952. COPIES OF THE ORIGINAL DESIGN PLANS ~~WILL BE~~ AVAILABLE TO THE CONTRACTOR AT THE IOWA DEPARTMENT OF TRANSPORTATION—HIGHWAY DIVISION OFFICE IN AMES.

FAINT LINES ON PRINTS INDICATE EXISTING STRUCTURE UNLESS OTHERWISE SPECIFIED.

THE EXISTING BRIDGE ~~IS TO BE~~ KEPT OPEN TO TRAFFIC UNTIL THE NEW BRIDGE ~~IS~~ CARRYING TRAFFIC.

THE BRIDGE CONTRACTOR ~~IS TO~~ INSTALL SUBDRAINS BEHIND THE ABUTMENT AS DETAILED. THE SUBDRAINS ~~ARE TO BE~~ 4" Ø CORRUGATED PERFORATED POLYETHYLENE (PE) TUBING WITH THE ENDS MADE OF 6' LENGTHS OF CORRUGATED METAL PIPE (CMP) THAT PROTRUDE A MINIMUM THROUGH THE FORESLOPE. THE CONNECTION BETWEEN THE PE TUBING AND THE CMP ~~CAN BE~~ MADE ~~WITH A REDUCER COUPLING OR~~ BY EXTENDING THE PE TUBING INTO THE CMP A MINIMUM OF ONE FOOT AND PACKING THE OPEN SPACE BETWEEN THE PIPES WITH GROUT. ~~A REMOVABLE 1/2" MESH GALVANIZED SCREEN, OR OTHER~~ APPROVED RODENT GUARD, ~~IS TO BE~~ FASTENED TO THE END OF EACH OUTLET PIPE. THE PRICE BID FOR "SUBDRAIN, AS PER PLAN" ~~IS TO~~ INCLUDE ALL MATERIAL, LABOR AND EXCAVATION NECESSARY FOR THE INSTALLATION.

BOTH ABUTMENTS ~~SHALL BE~~ KEYED INTO ROCK AS DETAILED. ~~ALL BACKFILL BEHIND THE ABUTMENTS BETWEEN THE WINGS SHALL BE GRANULAR BACKFILL. THE REMAINDER OF THE ABUTMENT EXCAVATION BETWEEN THE WINGS SHALL BE BACKFILLED WITH SOIL.~~

THE APPROACH FILLS AS SHOWN BEYOND THE ENDS OF THE WINGWALLS ~~ARE~~ NOT A PART OF THIS CONTRACT. DRESSING OF SLOPES OUTSIDE THE BRIDGE AREA NOT DISTURBED BY THE BRIDGE CONTRACTOR ~~SHALL BE~~ PAID FOR AS EXTRA WORK.

THE BRIDGE CONTRACTOR ~~SHALL~~ CLEAR THE CHANNEL AS SHOWN BY THE SHADED AREA ON THE "SITUATION PLAN." EXCESS CHANNEL EXCAVATION ~~SHALL BE~~ DISPOSED OF NEAR THE JOB SITE AS DIRECTED BY THE ENGINEER. ALL OF THE WORK ~~SHALL BE~~ INCIDENTAL TO "CLASS 10 CHANNEL EXCAVATION."

DOWELS AND ANCHORS — RE-BAR DOWELS ~~SHALL BE~~ SET IN DRILLED HOLES IN ACCORDANCE WITH ARTICLE 2408.07 EXCEPT AS MODIFIED HEREIN. NOMINALLY HORIZONTAL DOWELS ~~SHALL~~ SLOPE ~~DOWNWARD~~ ON 1:6. ALL HOLES ~~SHALL BE~~ THOROUGHLY CLEANED WITH AIR BLAST AND ~~SHALL BE~~ DRY. THE MORTAR ~~SHALL BE~~ MADE WITH EPOXY AND AGGREGATE PRODUCTS OF ~~SIKA CHEMICAL CORP.~~ MIXED AND USED EXACTLY AS RECOMMENDED BY THE MANUFACTURER. * **

COST OF PROVIDING AND INSTALLING ANCHORS ~~WILL~~ NOT ~~BE~~ PAID FOR DIRECTLY BUT ~~SHALL BE~~ INCLUDED WITH OTHER ITEMS: RE-BAR DOWELS ~~WILL BE~~ PAID FOR AS "REINFORCING STEEL."

~~* OR ANY OF THE EPOXY GROUTS LISTED IN MATERIALS I.M. 491.11 MAY BE USED.~~

** CARTER WATERS 602 GRADE C LISTED IN MATERIALS I.M. 491.11

BONDING — FOR BONDING NEW CONCRETE TO OLD, FOLLOW REQUIREMENTS OF ARTICLE 2403.15 WITH THESE MODIFICATIONS: ALL SURFACES OF HARDENED CONCRETE ~~TO BE~~ BONDED AND ALL EXPOSED RE-BARS ~~SHALL BE~~ SAND BLASTED THEN CLEANED BY AIR BLAST. JUST BEFORE PLACING THE NEW CONCRETE THE OLD CONCRETE ~~SHALL BE~~ WETTED, AFTER WHICH THE EXISTING SURFACE ~~SHALL BE~~ GIVEN A COAT OF "SIKADUR HI-MOD" WHICH ~~SHALL BE~~ THOROUGHLY BRUSHED INTO THE OLD SURFACE. "SIKADUR HI-MOD" ~~SHALL BE~~ MIXED AND USED EXACTLY AS RECOMMENDED BY THE MANUFACTURER. *

60 GRADE REINFORCEMENT ~~IS~~ SPECIFIED IN THE SUPERSTRUCTURE AND ABUTMENT, AND THE DESIGN STRESSES ~~ARE TO BE~~ FOR GRADE 60.

* HORIZONTAL DOWELS SLOPE UPWARD ON 1:6 ADBE

DESIGN FOR WIDENING

42'-6 x 30' CONCRETE DECK GIRDER BRIDGE TO 42'-6 x 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

GENERAL PLAN & EST. QUANTITIES

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION—HIGHWAY DIVISION

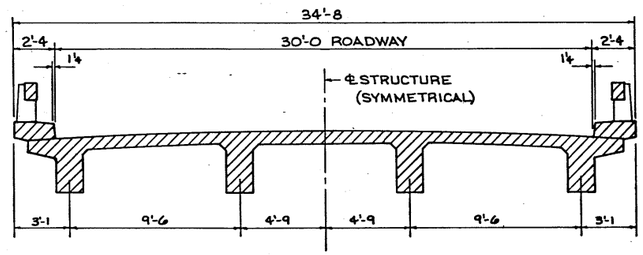
DESIGN SHEET NO. 2 OF 14 FILE NO. 26200 DESIGN NO. 1082

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CHECKED BY:

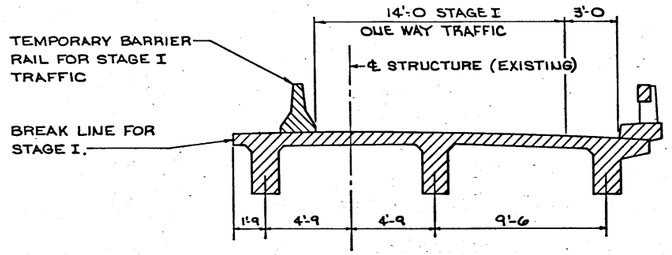
TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

CERRO GORDO COUNTY

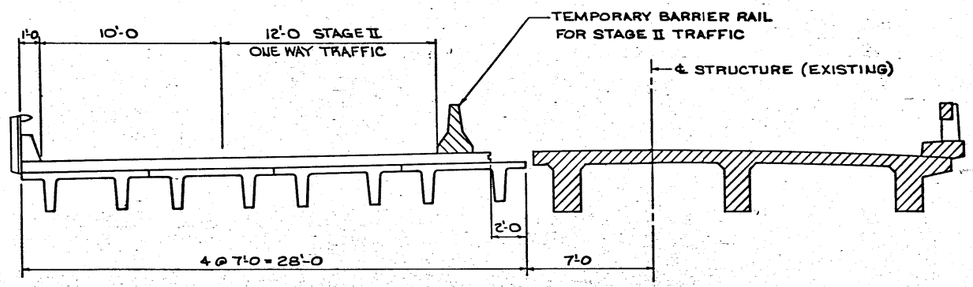
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BRF-F-18-5(28)-2P-17	IOWA	5		19	31



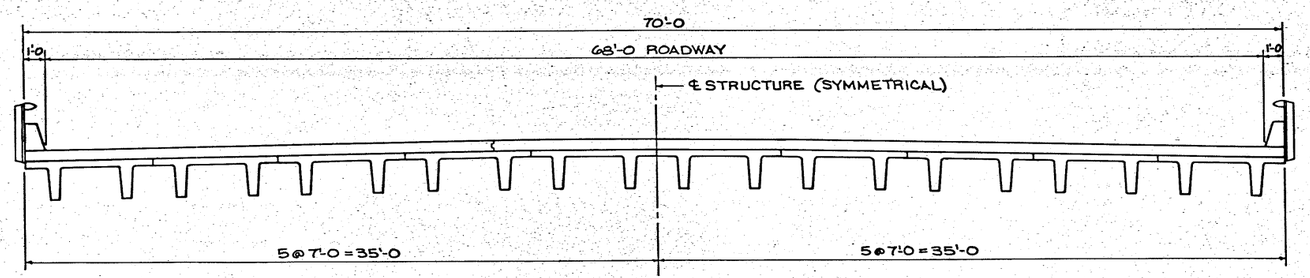
EXISTING CROSS SECTION
LOOKING WEST



STAGE I - SLAB REMOVED
LOOKING WEST



STAGE I - COMPLETE
LOOKING WEST



STAGE II - COMPLETE
FINAL CROSS SECTION

NOTE: THE EXISTING CONCRETE DECK GIRDER BRIDGE IS DESIGN NO. 1352. CERRO GORDO COUNTY PLANS OF THIS STRUCTURE MAY BE OBTAINED FROM THE I.D.O.T. OFFICE IN AMES, IOWA.

ONE-WAY TRAFFIC ~~MUST BE~~ was MAINTAINED BY TWO-STAGE CONSTRUCTION AS SHOWN.

TEMPORARY BARRIER RAIL ~~SHALL~~ did CONFORM TO I.D.O.T. STANDARD SHEET 1033 OR APPROVED EQUAL.

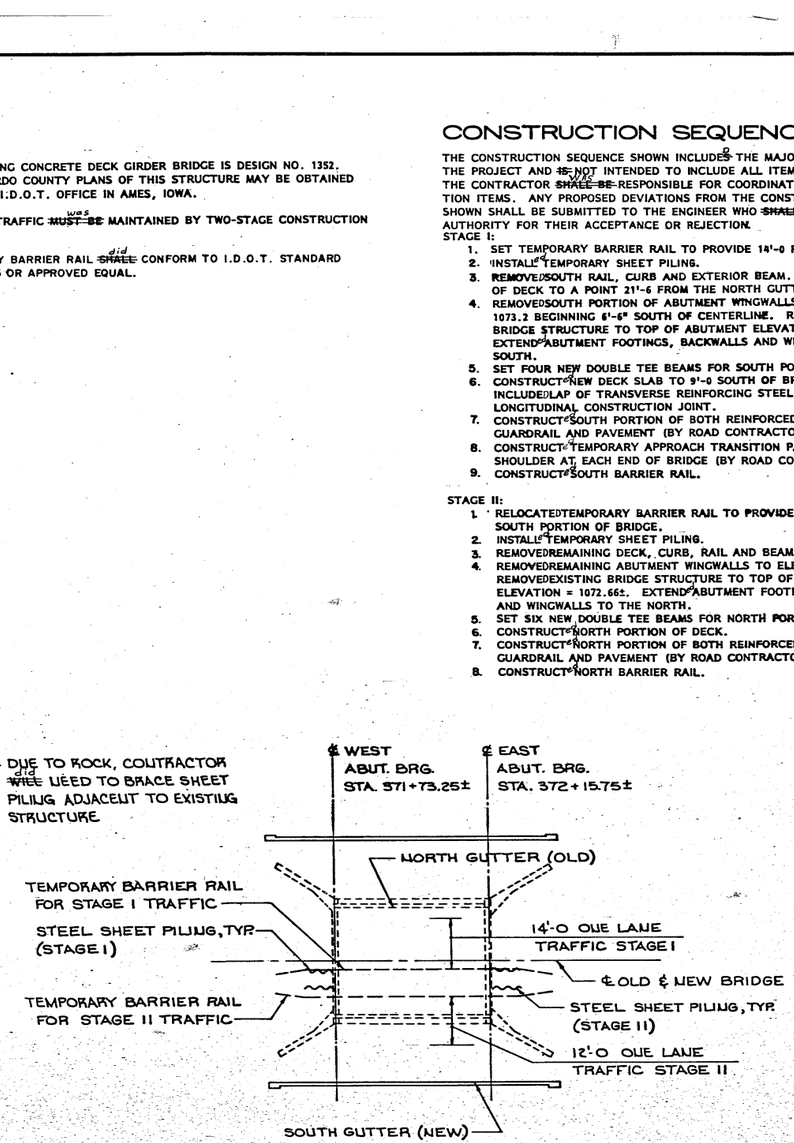
CONSTRUCTION SEQUENCE

THE CONSTRUCTION SEQUENCE SHOWN INCLUDES THE MAJOR TASKS TO COMPLETE THE PROJECT AND ~~IS~~ WAS NOT INTENDED TO INCLUDE ALL ITEMS OF WORK REQUIRED. THE CONTRACTOR ~~SHALL BE~~ RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION ITEMS. ANY PROPOSED DEVIATIONS FROM THE CONSTRUCTION SEQUENCE SHOWN SHALL BE SUBMITTED TO THE ENGINEER WHO ~~SHALL~~ HAS THE SOLE AUTHORITY FOR THEIR ACCEPTANCE OR REJECTION.

STAGE I:
1. SET TEMPORARY BARRIER RAIL TO PROVIDE 14'-0 ROADWAY.
2. INSTALL TEMPORARY SHEET PILING.
3. REMOVED SOUTH RAIL, CURB AND EXTERIOR BEAM. REMOVED SOUTH EDGE OF DECK TO A POINT 21'-6 FROM THE NORTH GUTTER LINE.
4. REMOVED SOUTH PORTION OF ABUTMENT WINGWALLS TO ELEVATION = 1073.2 BEGINNING 6'-6" SOUTH OF CENTERLINE. REMOVED EXISTING BRIDGE STRUCTURE TO TOP OF ABUTMENT ELEVATION = 1072.66±. EXTEND ABUTMENT FOOTINGS, BACKWALLS AND WINGWALLS TO THE SOUTH.
5. SET FOUR NEW DOUBLE TEE BEAMS FOR SOUTH PORTION OF BRIDGE.
6. CONSTRUCT NEW DECK SLAB TO 9'-0 SOUTH OF BRIDGE CENTERLINE. INCLUDED LAP OF TRANSVERSE REINFORCING STEEL EXTENDING PAST LONGITUDINAL CONSTRUCTION JOINT.
7. CONSTRUCT SOUTH PORTION OF BOTH REINFORCED BRIDGE APPROACHES, GUARDRAIL AND PAVEMENT (BY ROAD CONTRACTOR).
8. CONSTRUCT TEMPORARY APPROACH TRANSITION PAVING ON SOUTH SHOULDER AT EACH END OF BRIDGE (BY ROAD CONTRACTOR).
9. CONSTRUCT SOUTH BARRIER RAIL.

STAGE II:
1. RELOCATED TEMPORARY BARRIER RAIL TO PROVIDE 12'-0 ROADWAY ON SOUTH PORTION OF BRIDGE.
2. INSTALL TEMPORARY SHEET PILING.
3. REMOVED REMAINING DECK, CURB, RAIL AND BEAMS.
4. REMOVED REMAINING ABUTMENT WINGWALLS TO ELEVATION = 1073.2. REMOVED EXISTING BRIDGE STRUCTURE TO TOP OF ABUTMENT ELEVATION = 1072.66±. EXTEND ABUTMENT FOOTINGS, BACKWALLS AND WINGWALLS TO THE NORTH.
5. SET SIX NEW DOUBLE TEE BEAMS FOR NORTH PORTION OF BRIDGE.
6. CONSTRUCT NORTH PORTION OF DECK.
7. CONSTRUCT NORTH PORTION OF BOTH REINFORCED BRIDGE APPROACHES, GUARDRAIL AND PAVEMENT (BY ROAD CONTRACTOR).
8. CONSTRUCT NORTH BARRIER RAIL.

NOTE: DUE TO ROCK, CONTRACTOR ~~WILL~~ did NEED TO BRACE SHEET PILING ADJACENT TO EXISTING STRUCTURE



PLAN - STAGES I & II

DESIGN FOR WIDENING

42'-6 × 30' CONCRETE DECK GIRDER BRIDGE
TO
42'-6 × 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

CONSTRUCTION SEQUENCE

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

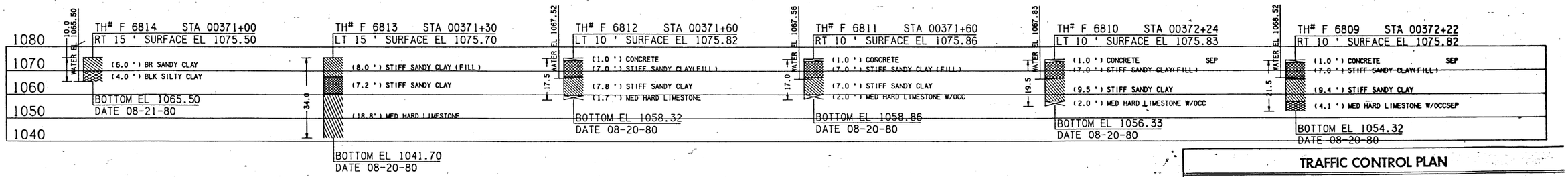
DESIGN SHEET NO. 3 OF 11 FILE NO. 26200 DESIGN NO. 1082

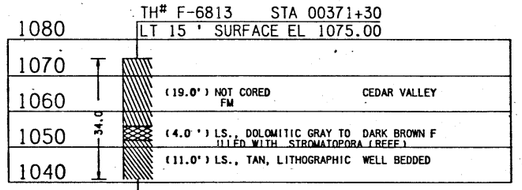
DESIGNED BY:
CHECKED BY:

TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

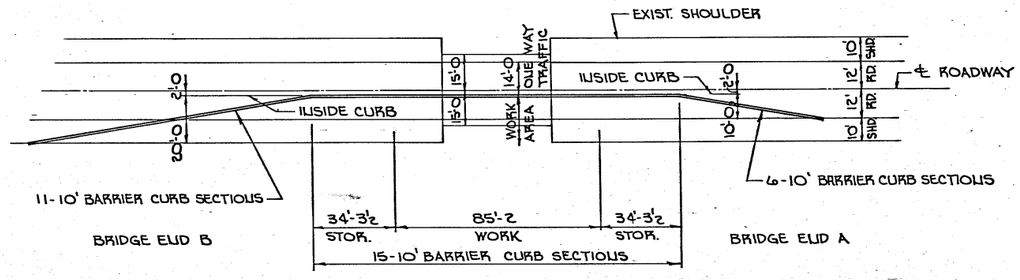
CERRO GORDO COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		20	31

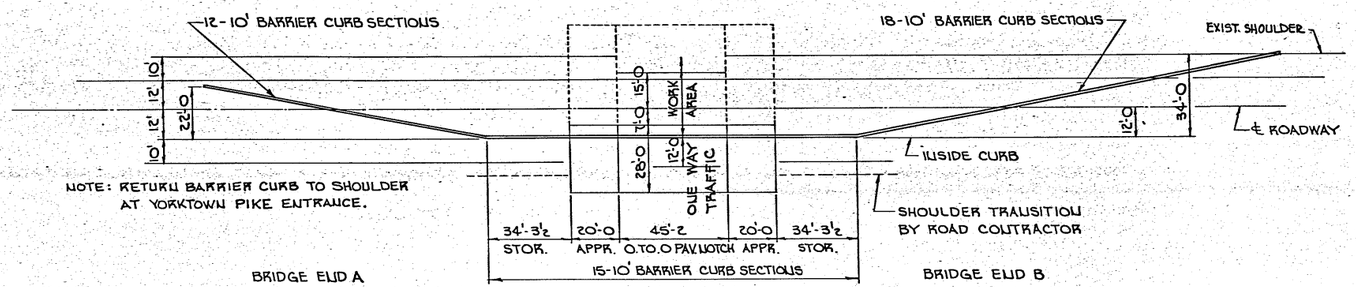




SOUNDING DATA



STAGE I



STAGE II

FOR BARRIER CURB DETAILS SEE "TEMP. BARRIER RAIL-CONC." SHEET. SHEET No. 14

TRAFFIC CONTROL PLAN

1. Through traffic ~~will be~~ was maintained on the project at all times.
2. Traffic control on this project ~~shall be~~ were in accordance with layouts contained in the plans. For additional complementary information, refer to Supplemental Specification 920.
3. When special traffic control sheet entitled, "Traffic Control Layout One-Way Traffic on Bridges" ~~is~~ was not used, Detail Sheet 520-2 ~~shall be~~ were used for unfinished work or work within 12 feet of the traveled way, and Detail Sheet 520-3 for work in progress that encroaches on the traveled way.
4. All traffic control devices ~~shall be~~ were furnished, erected, maintained, and removed by the contractor.
5. Where possible, all post mounted signs ~~shall be~~ were placed a minimum of two feet clear of the shoulder.
6. The location for storage of equipment by the contractor during non-working hours ~~will be~~ was as approved by the engineer in charge of construction.
7. The engineer ~~may~~ did require modification of, or additions to, pavement marking details shown. Conflicting permanent edgelines or centerlines ~~shall be~~ were removed and replaced with appropriate temporary lines. As applicable, permanent edgelines and centerlines ~~shall be~~ were restored before the roadway is returned to normal traffic.
8. Proposed sign spacing ~~may be~~ was modified, as approved by the engineer, to meet existing field restrictions or to prevent obstruction of the motorist's view of permanent signing.
9. ~~Proposed changes in the Traffic Control Plan (includes layout sheets) shall be reviewed with the Office of Construction before changes are made.~~
10. The bid item "Traffic Control" ~~shall~~ did include the cost of all traffic control measures required of the contractor except those which are separate bid items or are incidental to other bid items.

DESIGN FOR WIDENING

42'-6 × 30' CONCRETE DECK GIRDER BRIDGE TO 42'-6 × 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

SOUNDING DATA & STAGING PLANS

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION—HIGHWAY DIVISION

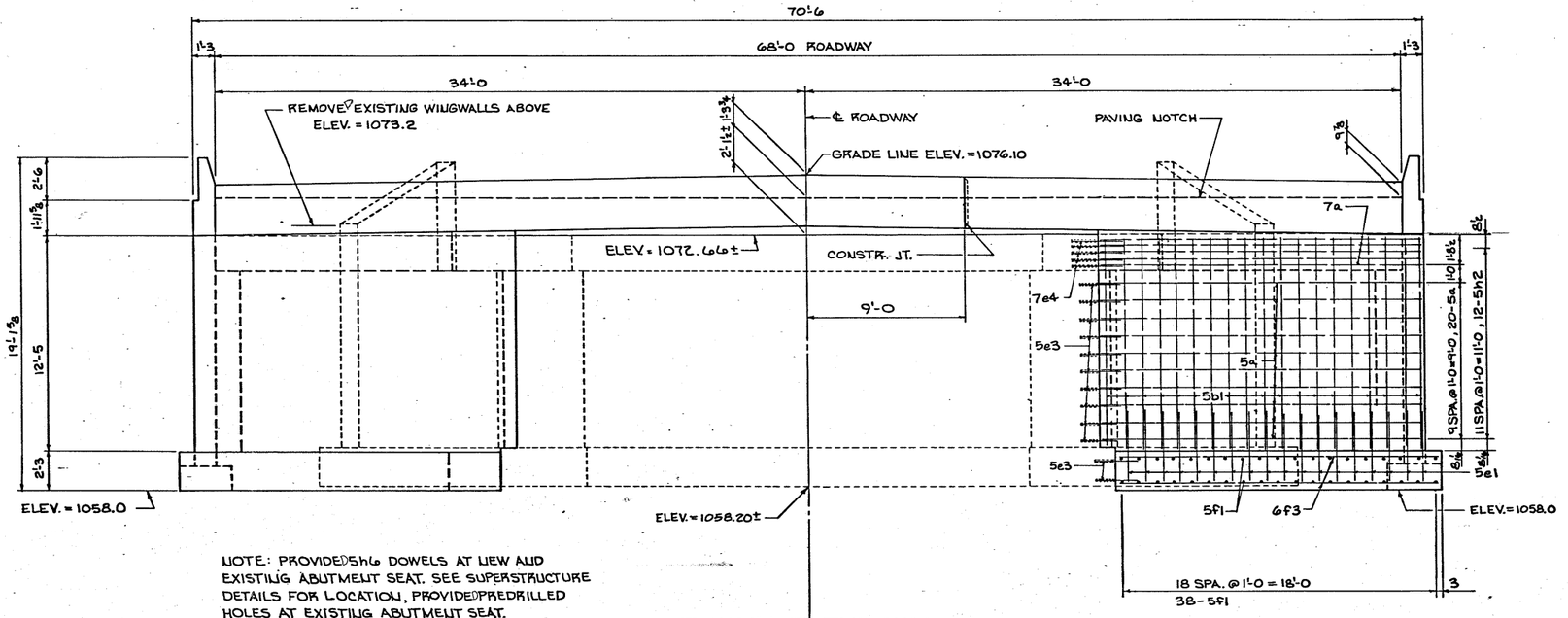
DESIGN SHEET NO. 4 OF 14 FILE NO. 26200 DESIGN NO. 1082

DESIGNED BY:
CHECKED BY:

TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

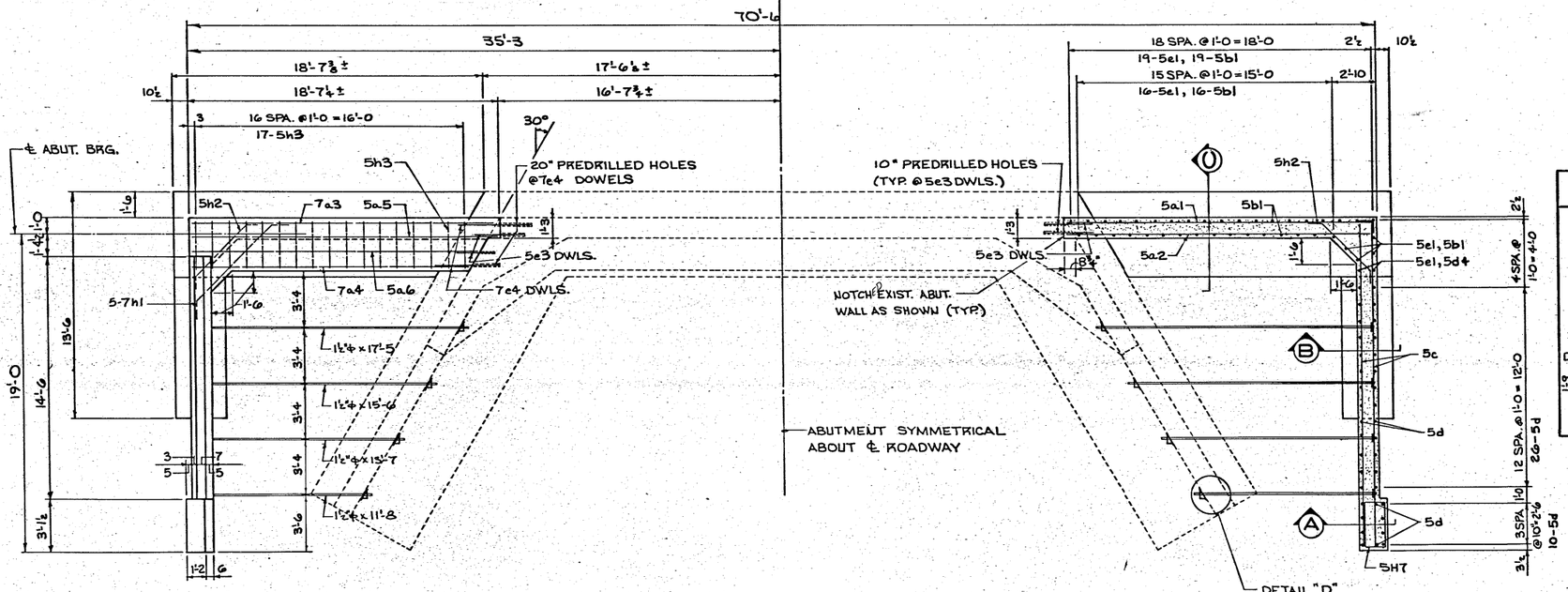
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		21	31

BENCH MARK No 11: ~~FOUND I.H.C. BM. IN NE. WING OF CONCRETE DECK GIRDER BR. 15' LT. ELEV. = 1076.78~~
Brass Plug on SE. Br End Post Sta. 372+32-35' Lt Elev. 1078.40



NOTE: PROVIDED 5h6 DOWELS AT NEW AND EXISTING ABUTMENT SEAT. SEE SUPERSTRUCTURE DETAILS FOR LOCATION, PROVIDED PREDRILLED HOLES AT EXISTING ABUTMENT SEAT.

FRONT ELEVATION
LOOKING EAST



HALF PLAN HALF SECTION

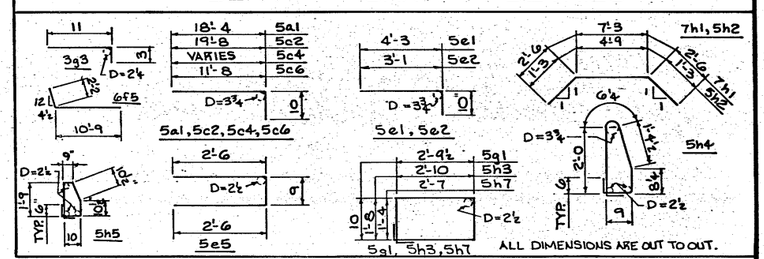
EAST ABUTMENT

NOTE: FOR DETAILS AND SECTIONS SEE SHEET No 7

REINFORCING BAR LIST - EAST ABUTMENT

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	5a1	WALL, HORIZONTAL	⌐	20	19'-2	400
	5a2	WALL, HORIZONTAL	—	20	18'-4	382
	7a3	SEAT, LONGITUDINAL	—	10	18'-4	375
	7a4	SEAT, LONGITUDINAL	—	10	16'-8	341
	5a5	SEAT, LONGITUDINAL	—	4	18'-4	77
	5a6	SEAT, LONGITUDINAL	—	4	17'-1	71
	5b1	WALL, VERTICAL	—	78	12'-3	997
	6c1	WALL WALL, HORIZONTAL	—	8	17'-3	208
	5c2	WING WALL, HORIZONTAL	⌐	8	20'-6	171
	5c3	WING WALL, HORIZONTAL	—	8	19'-8	164
	5c4	WING WALL, HORIZONTAL	⌐	6	13'-4 / 18'-8	100
	5c5	WING WALL, HORIZONTAL	—	6	12'-6 / 17'-10	95
	5c6	WING WALL, HORIZONTAL	⌐	10	12'-6	130
	5c7	WING WALL, HORIZONTAL	—	10	11'-8	122
	5c8	WING WALL, HORIZONTAL	—	4	8'-2	34
	5d1	WING WALL, VERTICAL	—	20	6'-5 / 7'-4	143
	5d2	WING WALL, VERTICAL	—	20	6'-7 / 8'-1	153
	5d3	WING WALL, VERTICAL	—	32	14'-11	498
	5d4	WING WALL, VERTICAL	—	4	14'-2	59
	5e1	FOOTING DOWEL	⌐	82	5'-1	435
	5e2	FOOTING DOWEL	⌐	36	3'-11	147
	5e3	WALL, HORIZONTAL DOWEL	—	64	2'-8	178
	7e4	SEAT, HORIZONTAL DOWEL	—	20	4'-8	191
E.C.	5e5	WALL, CURB DOWEL	⊐	32	5'-9	192
E.C.	5e6	WALL, CURB DOWEL	—	16	4'-7	77
	5f1	FOOTING, TRANSVERSE	—	76	4'-8	370
	5f2	FOOTING, TRANSVERSE	—	18	2'-8	50
	6f3	FOOTING, LONGITUDINAL	—	16	15'-8 / 18'-3	408
	5f4	FOOTING, LONGITUDINAL	—	8	13'-2	110
	6f5	WING WALL, DIAGONAL	◺	4	12'-11	78
	6f6	WING WALL, VERTICAL	—	4	8'-10	53
E.C.	5g1	CURB, HORIZONTAL TIE	▭	8	8'-3	69
E.C.	5g2	CURB, LONGITUDINAL	—	14	17'-4	253
	3g3	BEARING PAD DOWEL	⌐	72	1'-2	32
	3g4	BEARING PAD	—	162	1'-2	71
	7h1	WALL FILLET	◠	10	12'-3	250
	5h2	WALL FILLET	◠	24	7'-3	182
	5h3	SEAT STIRRUP	▭	34	10'-0	355
E.C.	5h4	CURB STIRRUP	▯	32	6'-4	211
E.C.	5h5	CURB STIRRUP	▯	8	6'-1	51
	5h6	ABUTMENT SEAT DOWELS	—	142	2'-6	370
	5h7	WALL, HORIZONTAL TIE	▭	12	8'-10	111
		TOTAL LBS. EPOXY COATED (E.C.)				853
		TOTAL LBS. UNCOATED				7,911

BENT BAR DETAILS



DESIGN FOR WIDENING D = PILE DIAMETER

42'-6 × 30' CONCRETE DECK GIRDER BRIDGE TO 42'-6 × 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

EAST ABUTMENT

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 5 OF 14 FILE NO. 26200 DESIGN NO. 1082

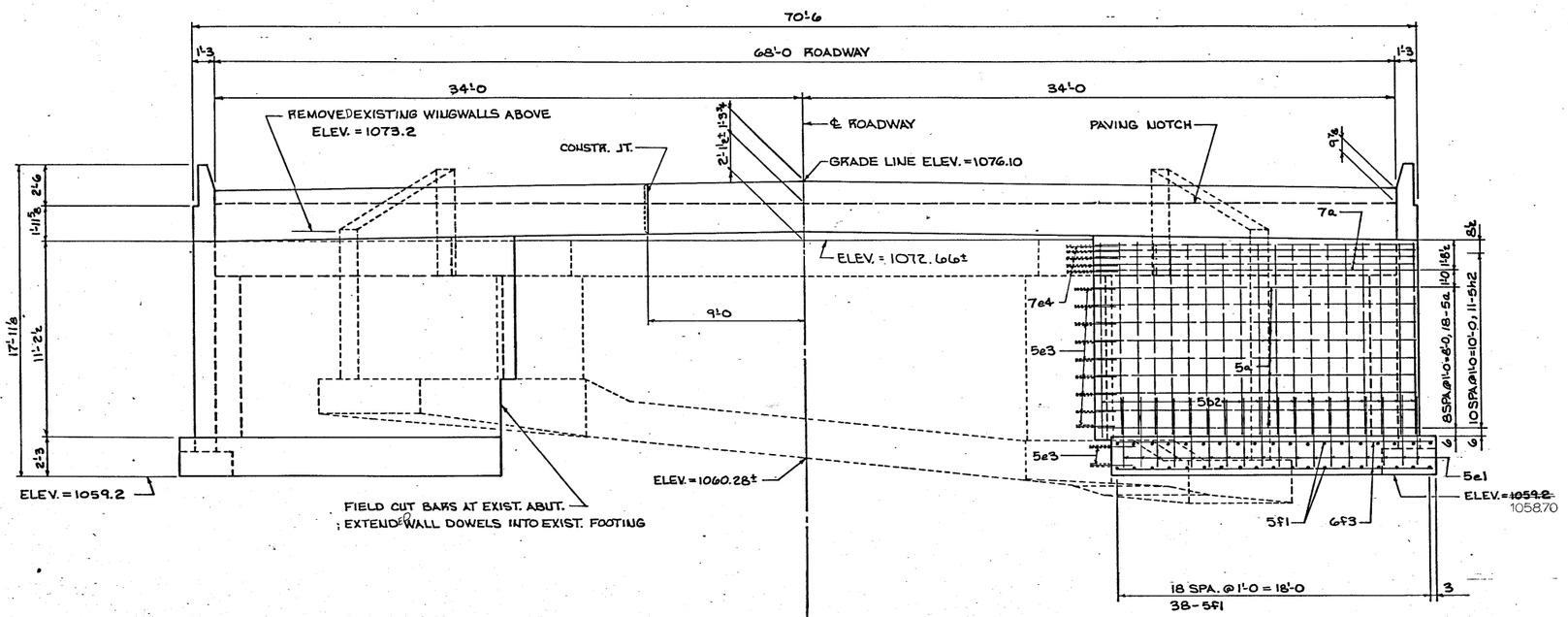
DESIGNED BY:
CHECKED BY:

TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

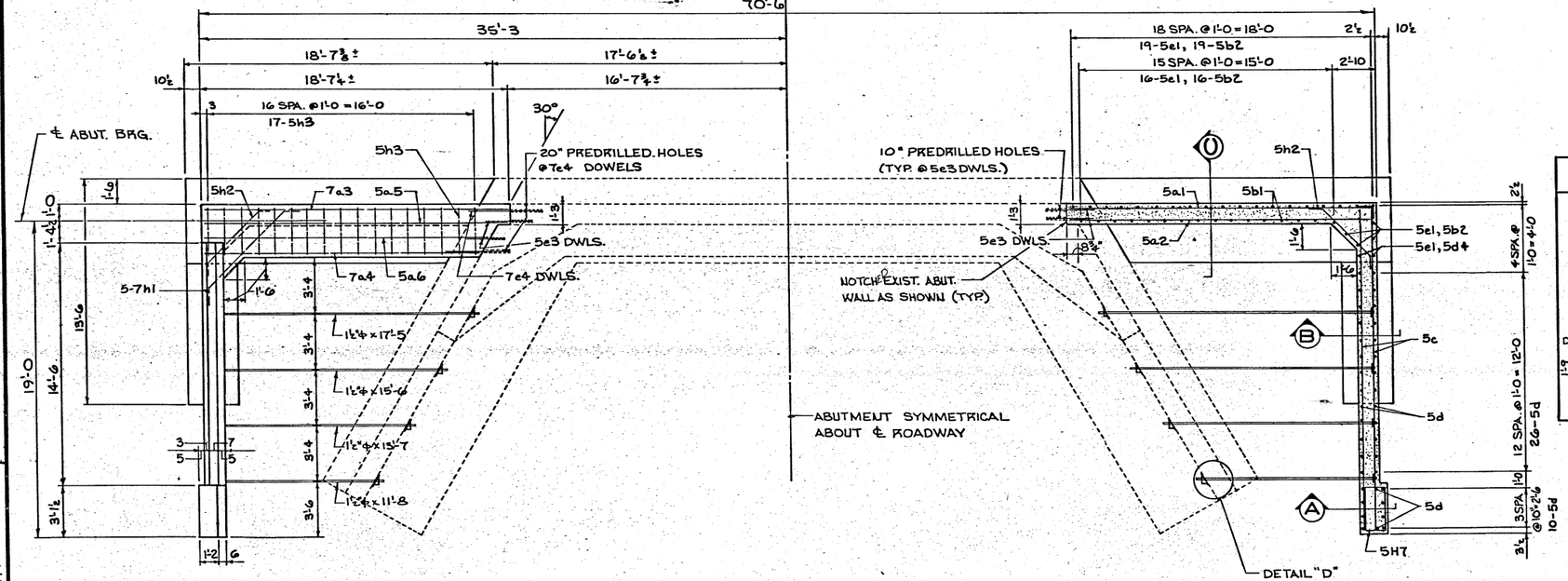
CERRO GORDO COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. No	FISCAL YEAR	SHEET No	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		22	31

BENCH MARK № 11: ~~FOUND I.H.C. BM. IN NE. WING OF CONCRETE DECK GIRDER BR. 15' LT. ELEV. = 1076.78~~
Brass Plug on SE. Br. End Post Sta. 372+32 – 35 Lt. Elev. 1078.40



FRONT ELEVATION
LOOKING WEST



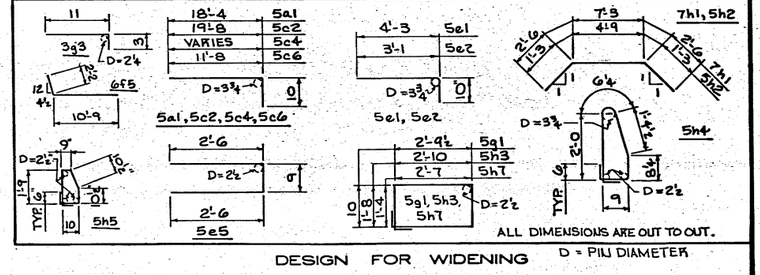
WEST ABUTMENT

NOTE: FOR DETAILS AND SECTIONS SEE SHEET 11-7

REINFORCING BAR LIST-WEST ABUTMENT

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
	5a1	WALL, HORIZONTAL	⌐	18	19'-2	360
	5a2	WALL, HORIZONTAL	—	18	18'-4	344
	7a3	SEAT, LONGITUDINAL	—	10	18'-4	375
	7a4	SEAT, LONGITUDINAL	—	10	16'-8	341
	5a5	SEAT, LONGITUDINAL	—	4	18'-4	77
	5a6	SEAT, LONGITUDINAL	—	4	17'-1	71
	5b2	WALL, VERTICAL	—	78	11'-0	895
	6c1	WALL WALL, HORIZONTAL	⌐	8	17'-3	208
	5c2	WING WALL, HORIZONTAL	⌐	8	20'-6	171
	5c3	WING WALL, HORIZONTAL	—	8	19'-8	164
	5c4	WING WALL, HORIZONTAL	⌐	6	13'-4 / 18'-8	100
	5c5	WING WALL, HORIZONTAL	—	6	12'-6 / 17'-10	95
	5c6	WING WALL, HORIZONTAL	⌐	8	12'-6	104
	5c7	WING WALL, HORIZONTAL	—	8	11'-8	97
	5c8	WING WALL, HORIZONTAL	—	4	8'-2	54
	5d1	WING WALL, VERTICAL	—	20	6'-5 / 7'-4	143
	5d2	WING WALL, VERTICAL	—	20	6'-7 / 8'-1	153
	5d5	WING WALL, VERTICAL	—	32	13'-8	456
	5d6	WING WALL, VERTICAL	—	4	12'-11	54
	5e1	FOOTING DOWEL	⌐	82	5'-1	435
	5e2	FOOTING DOWEL	⌐	36	3'-11	147
	5e3	WALL, HORIZONTAL DOWEL	—	64	2'-8	178
	7e4	SEAT, HORIZONTAL DOWEL	—	20	4'-2	170
E.C.	5e5	WALL, CURB DOWEL	⊐	32	5'-9	192
E.C.	5e6	WALL, CURB DOWEL	—	16	4'-7	77
	5f1	FOOTING, TRANSVERSE	—	76	4'-8	370
	5f2	FOOTING, TRANSVERSE	—	18	2'-8	50
	6f3	FOOTING, LONGITUDINAL	—	16	15'-8 / 18'-3	408
	5f4	FOOTING, LONGITUDINAL	—	8	13'-2	110
	6f5	WING WALL, DIAGONAL	◺	4	12'-11	78
	6f7	WING WALL, VERTICAL	—	4	8'-10	53
E.C.	5g1	CURB, HORIZONTAL TIE	▭	8	8'-3	69
E.C.	5g2	CURB, LONGITUDINAL	—	14	17'-4	253
	3g3	BEARING PAD DOWEL	⌐	80	1'-2	35
	3g4	BEARING PAD	—	180	1'-2	79
	7h1	WALL FILLET	◠	10	12'-3	250
	5h2	WALL FILLET	◠	22	7'-3	166
	5h3	SEAT STIRRUP	▭	34	10'-0	355
E.C.	5h4	CURB STIRRUP	▯	32	6'-4	211
E.C.	5h5	CURB STIRRUP	▯	8	6'-1	51
	5h7	WALL, HORIZONTAL TIE	▭	12	8'-10	111
					TOTAL LBS. EPOXY COATED (E.C.)	853
					TOTAL LBS. UNCOATED	7,237

BENT BAR DETAILS



DESIGN FOR WIDENING

42'-6 × 30' CONCRETE DECK GIRDER BRIDGE TO 42'-6 × 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

WEST ABUTMENT

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION – HIGHWAY DIVISION

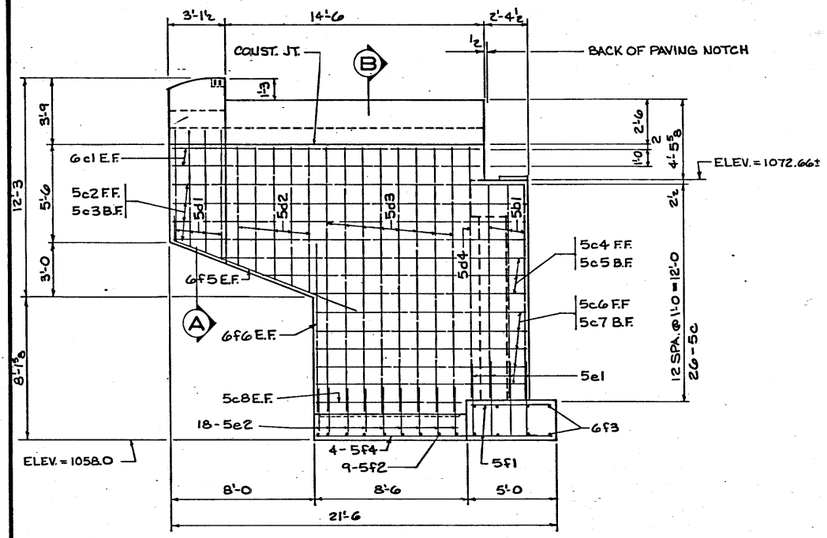
DESIGN SHEET NO. 6 OF 14 FILE NO. 26200 DESIGN NO. 1082

DESIGNED BY:
CHECKED BY:

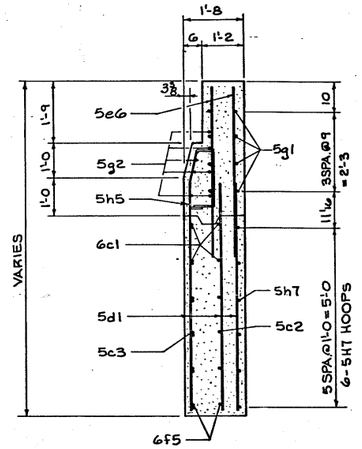
TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

CERRO GORDO COUNTY

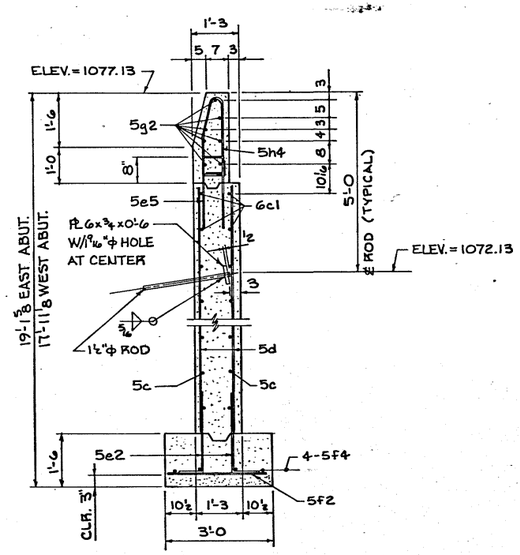
PROJECT NUMBER	STATE	FED ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		23	31



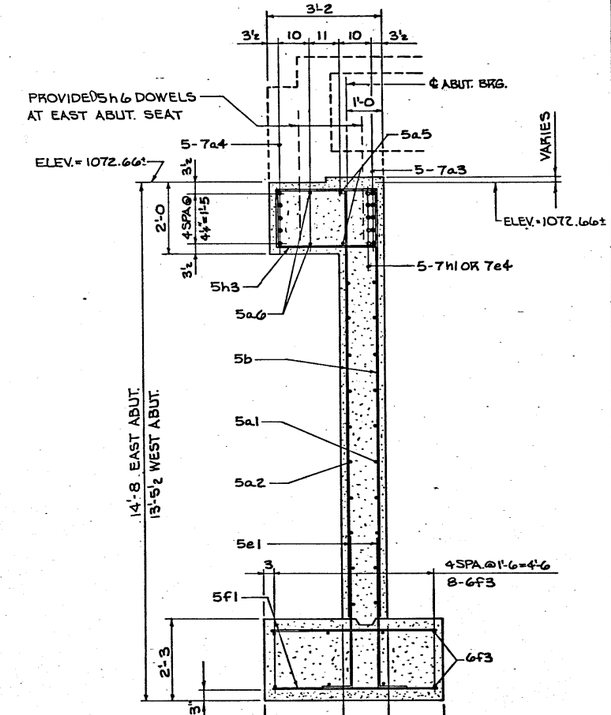
FRONT ELEV. NORTH WING
EAST ABUTMENT
(SOUTH WING OPPOSITE HAND)



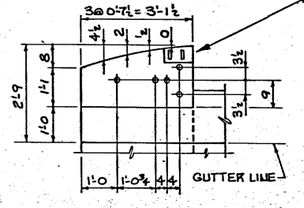
SECTION A



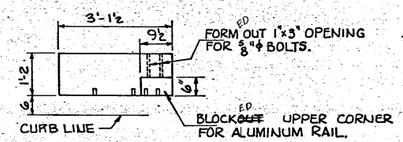
SECTION B



SECTION C

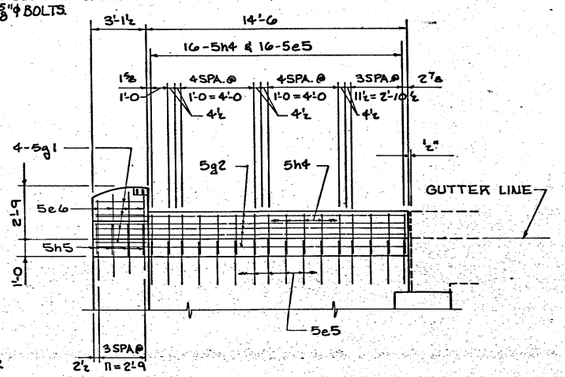


ELEVATION OF WING POST

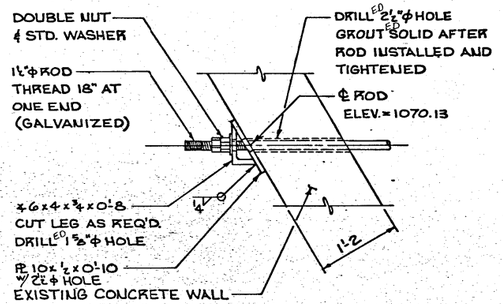


PLAN OF WING POST

WING POST DETAILS



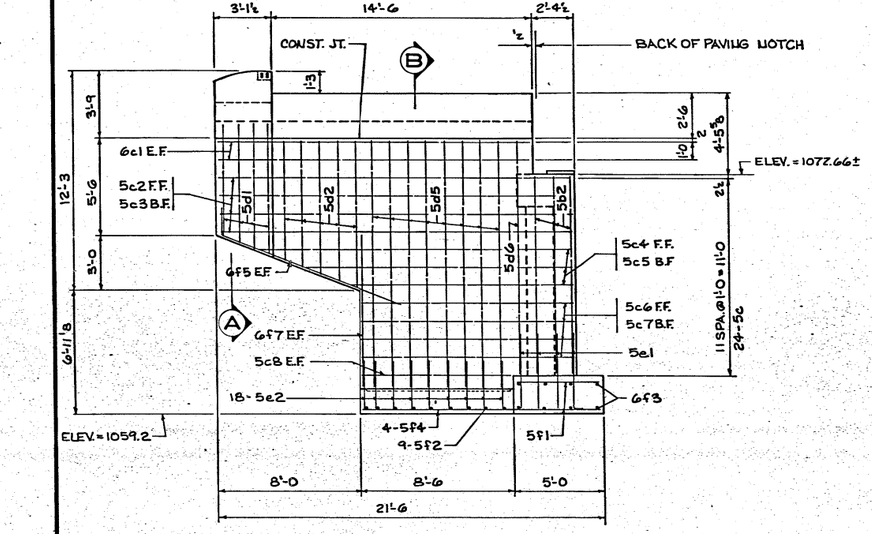
CURB ELEV. AT ABUTMENTS



DETAIL D

WING POST NOTE:

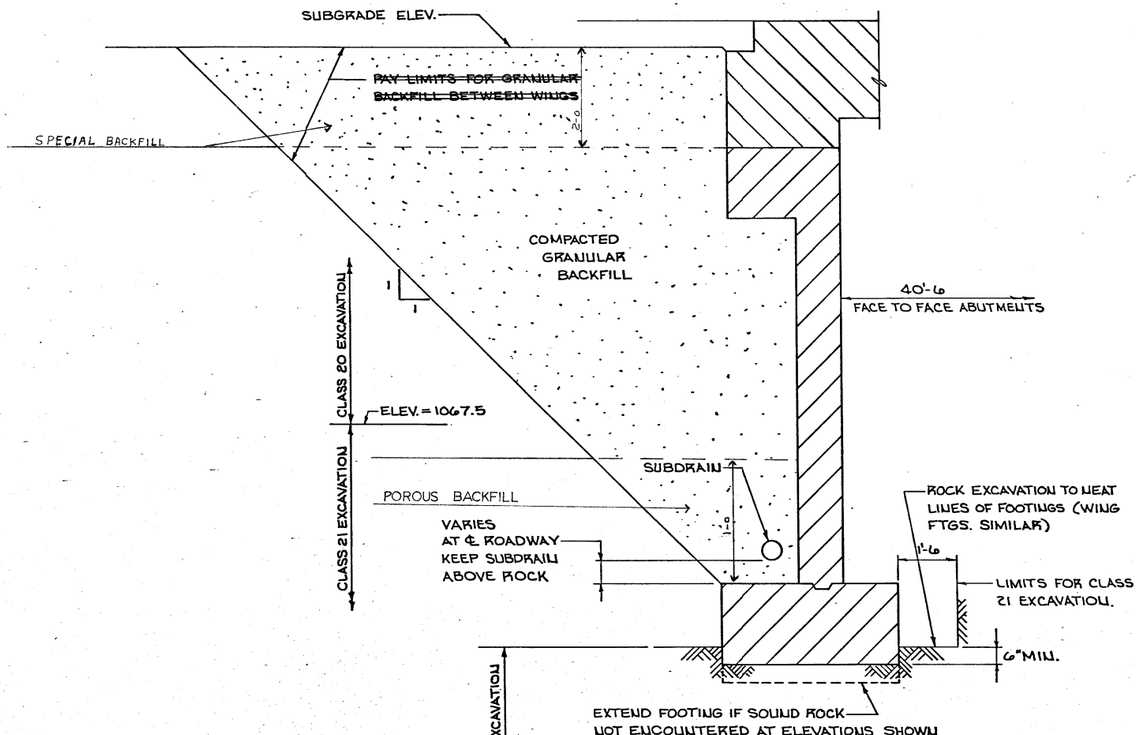
PROVIDE FIVE (5) THREADED STEEL INSERTS WITH SOLID BOTTOMS TO FIT 7/8" X 2 GALVANIZED CAP SCREWS WITH GALVANIZED ROUND WASHERS. INSERTS ~~ARE TO BE~~ WERE INSTALLED ON THE TRAFFIC SIDE, AND AT THE LOCATION SHOWN ON THE WING POST. COST OF INSERTS ~~IS TO BE~~ WAS INCLUDED IN PRICE BID FOR "STRUCTURAL CONCRETE." CAP SCREWS AND WASHERS ~~ARE~~ WERE NOT A PART OF THESE ESTIMATES.



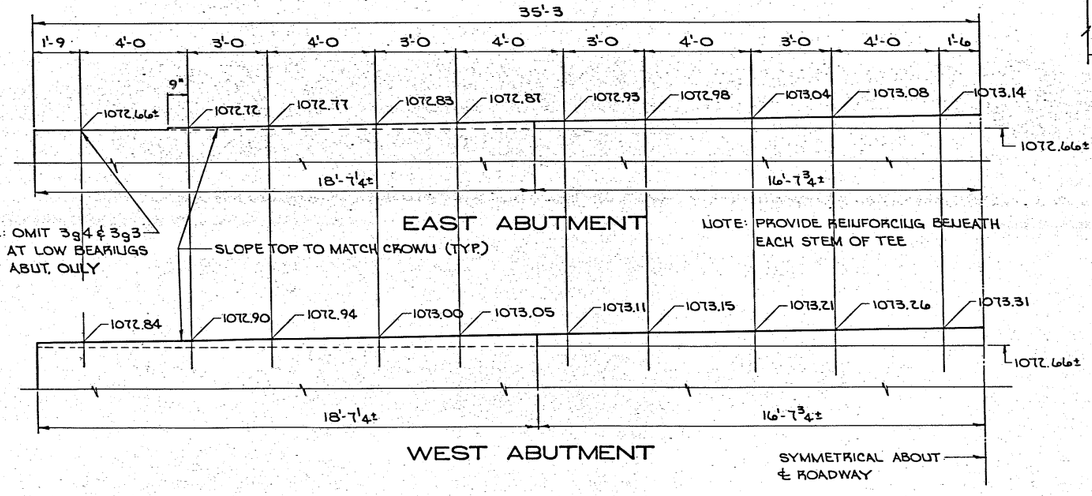
FRONT ELEV. - SOUTH WING
WEST ABUTMENT
(NORTH WING OPPOSITE HAND)

DESIGNED BY:
CHECKED BY:

DESIGN FOR WIDENING
42'-6 × 30' CONCRETE DECK GIRDER BRIDGE
TO
42'-6 × 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE
ABUTMENT DETAILS
STATION 371+94.5
CERRO GORDO COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 7 OF 14 FILE NO. 26200 DESIGN NO. 1082



BACKFILL DETAIL PLACED AS SHOWN ABOVE TO COMPLY WITH DESIGN CHANGE **



TOP OF ABUTMENT WALL DETAILS

ABUTMENT NOTES

ALL EXPOSED CORNERS OF 90° OR SHARPER ~~ARE TO BE~~ WERE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.

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

ALL REINFORCING STEEL ~~IS TO BE~~ WERE SECURELY WIRED IN PLACE BEFORE CONCRETE IS PLACED.

BONDING OF NEW CONCRETE TO EXISTING CONCRETE ~~IS TO BE~~ WAS IN ACCORDANCE WITH SECTION 2403.15 OF THE STANDARD SPECIFICATIONS.

DASHED LINES INDICATE EXISTING STRUCTURE, AND HEAVY LINES INDICATE NEW CONSTRUCTION.

ALL COSTS OF CONCRETE REMOVAL ~~WILL BE~~ WERE INCLUDED IN THE PRICE BID FOR "REMOVAL OF EXISTING STRUCTURES."

ALL COSTS OF INSTALLING DRILLED-IN DOWELS ~~SHALL BE~~ WERE CONSIDERED INCIDENTAL TO "STRUCTURAL CONCRETE" AND NO SEPARATE PAYMENT ~~WILL BE~~ WAS MADE.

REINFORCING STEEL ~~IS TO BE~~ WAS GRADE 60.

CONSTRUCTION JOINTS ~~ARE TO BE~~ WERE FORMED WITH BEVELED 2 X 6'S.

FOOTING ~~IS TO~~ WAS EXTEND ED INTO LIMESTONE TO THE ELEVATIONS SHOWN. MINIMUM EMBEDMENT ~~WAS~~ WAS 0'-6" IN SOUND ROCK. ROCK EXCAVATION ~~SHALL BE~~ WAS NEAT LINES OF THE FOOTING.

~~** ALL BACKFILL BEHIND THE ABUTMENT AND BETWEEN EXISTING WINGWALLS IS TO BE GRANULAR BACKFILL. THE REMAINDER OF THE ABUTMENT EXCAVATION IS TO BE BACKFILLED WITH SUITABLE MATERIAL.~~

~~** BACKFILL BETWEEN EXISTING WINGWALLS AND NEW WINGWALLS TO BE GRANULAR BACKFILL FULL HEIGHT.~~

PLACE D BACKFILL AND FILL MATERIALS EVENLY ADJACENT TO ABUTMENT WINGWALLS. CARRY ~~ON~~ MATERIAL UNIFORMLY AROUND STRUCTURE TO APPROXIMATELY SAME ELEVATION IN EACH LIFT UNTIL FINISH GRADE ~~IS~~ WAS ACHIEVED.

TIE RODS AND END ANCHORAGES ~~ARE TO BE~~ WERE GALVANIZED. TIGHTEN ED ANCHOR RODS AFTER WINGWALL CONCRETE HAS ACHIEVED DESIGN STRENGTH AND PRIOR TO BACKFILLING. SNUG ED UP NUTS AND THEN TIGHTEN ED 1/4 TURN.

STRUCTURAL STEEL ITEM INCLUDES D TIE RODS WITH NUTS, WASHERS AND END ANCHORAGE DEVICES.

CORE D HOLE THROUGH EXISTING WINGWALLS TO PERMIT INSTALLATION OF CONTINUOUS SUBDRAIN. PROVIDE D SIMILAR BLOCKOUT IN NEW WINGWALLS.

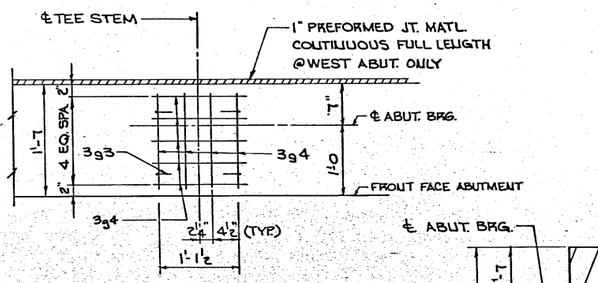
THE ALLOWABLE BEARING PRESSURE FOR FOOTINGS PLACED IN MEDIUM HARD LIMESTONE IS 10 TONS PER SQ. FT.

MAXIMUM FOOTING PRESSURE = 4500 PSF.

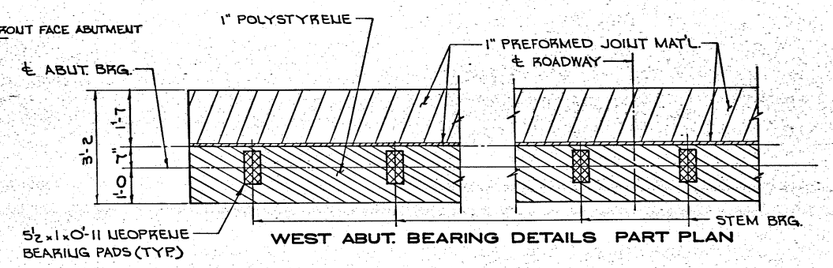
COST OF DRILLED HOLES FOR TIE RODS AND DRAIN TILE ~~TO BE~~ WAS INCLUDED IN PRICE BID FOR "STRUCTURAL CONCRETE."

THE CONTRACTOR ~~SHALL~~ DID EXCAVATE THE EXISTING FOOTINGS TO THE ROCK LINE AT THE NORTH AND SOUTH ENDS OF EXISTING ABUTMENT TO ENSURE FOOTINGS ~~ARE~~ WERE IN CONTACT WITH ROCK.

~~* OR ANY OF THE EPOXY GROUTS LISTED IN MATERIALS I.M. 491.11 MAY BE USED.~~



ABUTMENT BEARING SEAT



WEST ABUT. BEARING DETAILS PART PLAN

~~ESTIMATED~~ QUANTITIES – EAST ABUTMENT

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE – CLASS "C"	CU.YD.	69.0
REINFORCING STEEL (E.C. = 853)	LBS.	8,764
STRUCTURAL STEEL	LBS.	1,040
CLASS 20 EXCAVATION	CU.YD.	220
CLASS 21 EXCAVATION	CU.YD.	300
CLASS 22 EXCAVATION	CU.YD.	5
GRANULAR BACKFILL	CU.YD.	530

CONCRETE PLACEMENT QUANTITIES

LOCATION	UNIT	QUANTITY
CURB & POST (ABOVE CONST. JT.) 2@1.8	CU. YD.	3.6
WALLS 2@23.6	CU. YD.	47.2
FOOTINGS 2@8.6	CU. YD.	17.2
BRG. SEATS 1@0.4, 1@0.6	CU. YD.	1.0
TOTAL	CU.YD.	69.0

~~ESTIMATED~~ QUANTITIES – WEST ABUTMENT

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE – CLASS "C"	CU.YD.	65.7
REINFORCING STEEL (E.C. = 853)	LBS.	8,090
STRUCTURAL STEEL	LBS.	1,040
CLASS 20 EXCAVATION	CU.YD.	180
CLASS 21 EXCAVATION	CU.YD.	210
CLASS 22 EXCAVATION	CU.YD.	7
GRANULAR BACKFILL	CU.YD.	490

CONCRETE PLACEMENT QUANTITIES

LOCATION	UNIT	QUANTITY
CURB & POST (ABOVE CONST. JT.) 2@1.8	CU.YD.	3.6
WALLS 2@21.6	CU.YD.	43.2
FOOTINGS 2@8.6	CU.YD.	17.2
BRG. SEATS 1@0.6, 1@1.1	CU.YD.	1.7
TOTAL	CU.YD.	65.7

PROCEDURE FOR PLACING DRILL-IN DOWELS

* EPOXY ADHESIVE FOR BONDING DOWELS IN DRILLED HOLES ~~SHALL BE SIKA BRAND SIKADUR HI MOD GEL~~ WRC CARTER WATER GOZ GRADE C AND ~~SHALL BE~~ USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ~~THE CONTRACTOR SHALL ARRANGE A MEETING WITH THE SIKA TECHNICAL REPRESENTATIVE AND THE ENGINEER TO REVIEW THE MANUFACTURER'S RECOMMENDATIONS PRIOR TO CONSTRUCTION.~~

DRILLED HOLES FOR DOWELS AND ANCHOR BOLTS ~~SHALL BE~~ ARE 1/8 INCH LARGER IN DIAMETER THAN THE DIAMETER OF THE BAR. MINIMUM EMBEDMENT DEPTH IS 10 TIMES THE BAR OR BOLT DIAMETER UNLESS OTHERWISE NOTED. INSTALLATION PROCEDURE:

1. BLOW HOLE CLEAN USING OIL FREE COMPRESSED AIR.
2. PLACE EPOXY TO PREDETERMINED DEPTH IN HOLE, AND INSERT CLEAN BAR OR BOLT, WORKING BACK AND FORTH, UP AND DOWN, TO ENSURE COMPLETE EMBEDMENT.
3. POSITION BAR IN CENTER OF DRILLED HOLE WITH TEMPLATE UNTIL EPOXY SETS.

DESIGN FOR WIDENING

42'-6 × 30' CONCRETE DECK GIRDER BRIDGE

TO

42'-6 × 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

ABUTMENT DETAILS

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION – HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 14 FILE NO. 26200 DESIGN NO. 1082

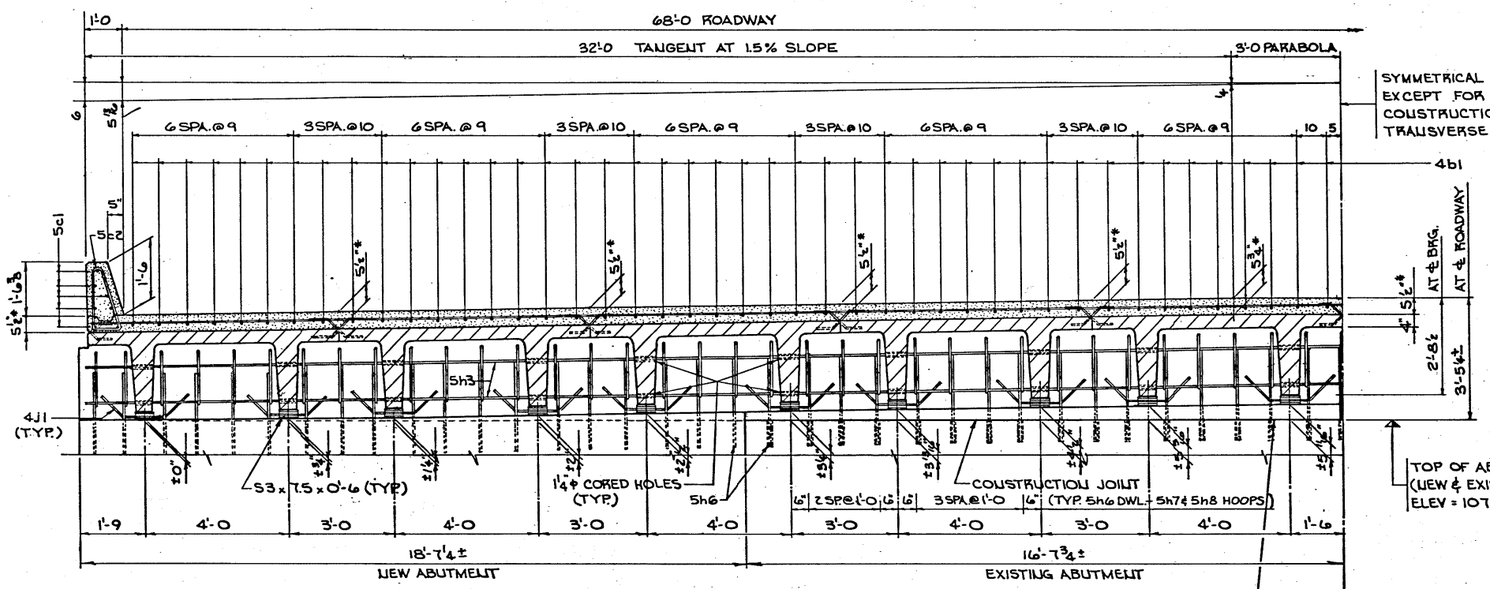
~~BENCH MARK (A) 1" FOUND I.H.C. BM. IN UE. WING OF CONCRETE DECK GIRDER BR. 15' LT. ELEV. = 1076.78~~

DESIGNED BY:
CHECKED BY:

TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

CERRO GORDO COUNTY

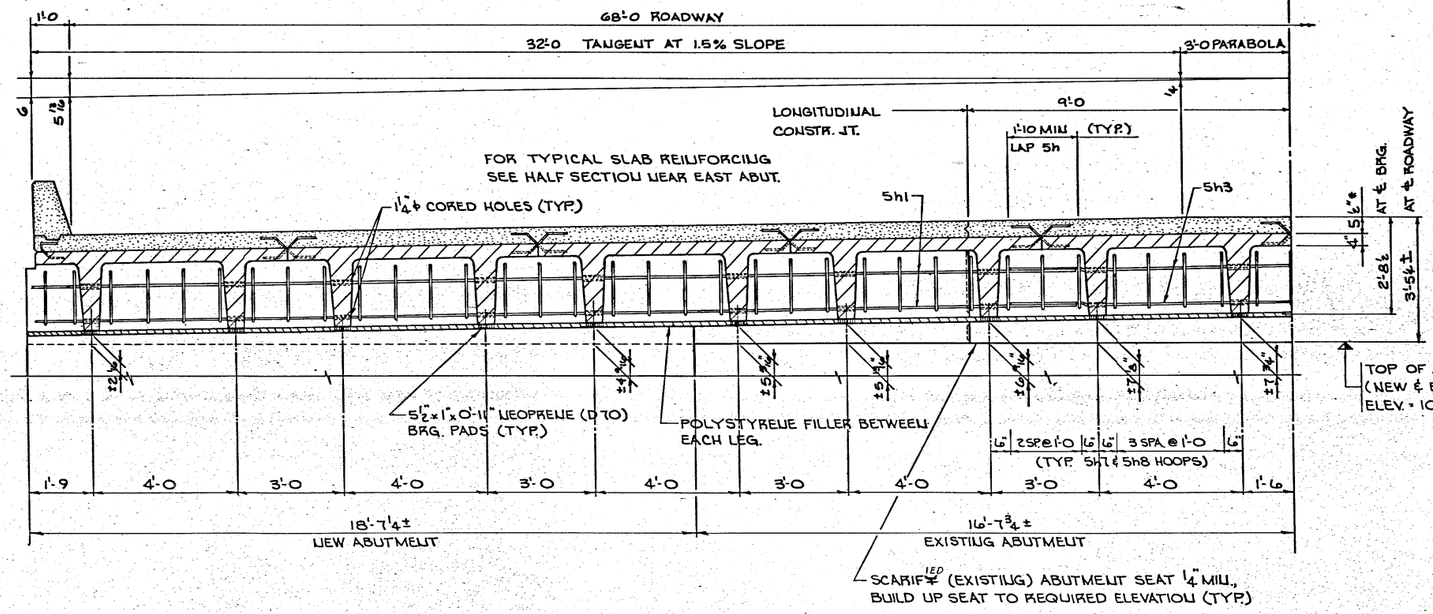
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		25	31



HALF SECTION NEAR EAST ABUTMENT

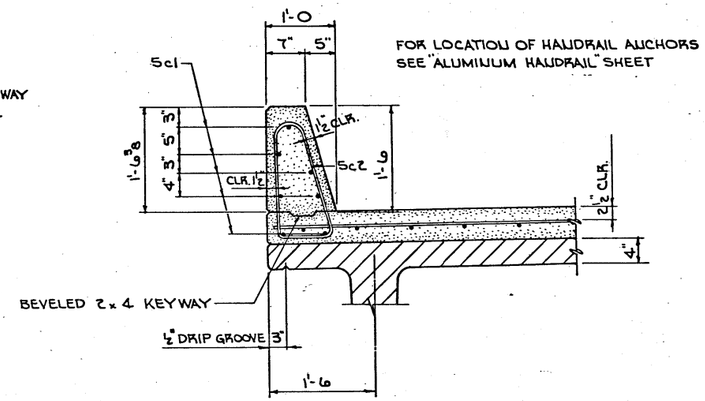
* SEE SLAB THICKENING DIAGRAM
LOOKING EAST

NOTE: TOP OF BEARING SEAT TO CONFORM TO SLOPE OF CROWN.



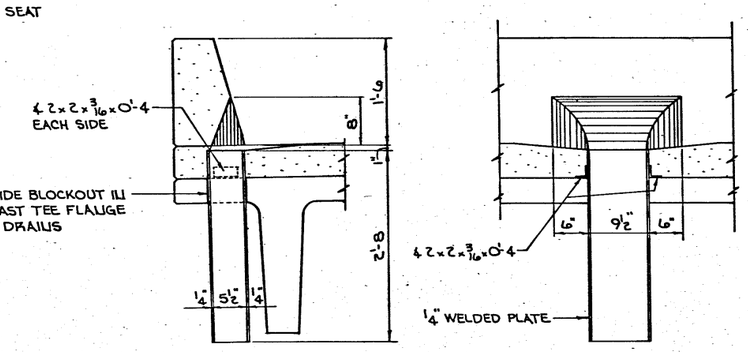
HALF SECTION NEAR WEST ABUTMENT

LOOKING WEST

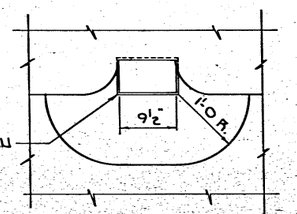


FOR LOCATION OF HANDRAIL ANCHORS SEE "ALUMINUM HANDRAIL" SHEET

CURB DETAIL



NOTE: ~~A 6"x6" OUTSIDE DIMENSION ROLLED TUBE WITH ¼" WALL THICKNESS MAY BE SUBSTITUTED FOR~~ THE WELDED FLOOR DRAIN SHOWN WERE USED.



FLOOR DRAIN DETAILS

NOTE: DRAINS ~~ARE TO BE~~ WERE GALVANIZED. 4 DRAINS ~~ARE~~ WERE REQUIRED, SEE "SITUATION PLAN" FOR LOCATION. WEIGHT = 72 LBS.
INCLUDED COST OF DRAINS IN PRICE BID FOR "STRUCTURAL CONCRETE"

DESIGN FOR WIDENING

42'-6 × 30' CONCRETE DECK GIRDER BRIDGE

TO

42'-6 × 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

SUPERSTRUCTURE DETAILS

STATION 371 + 94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION — HIGHWAY DIVISION

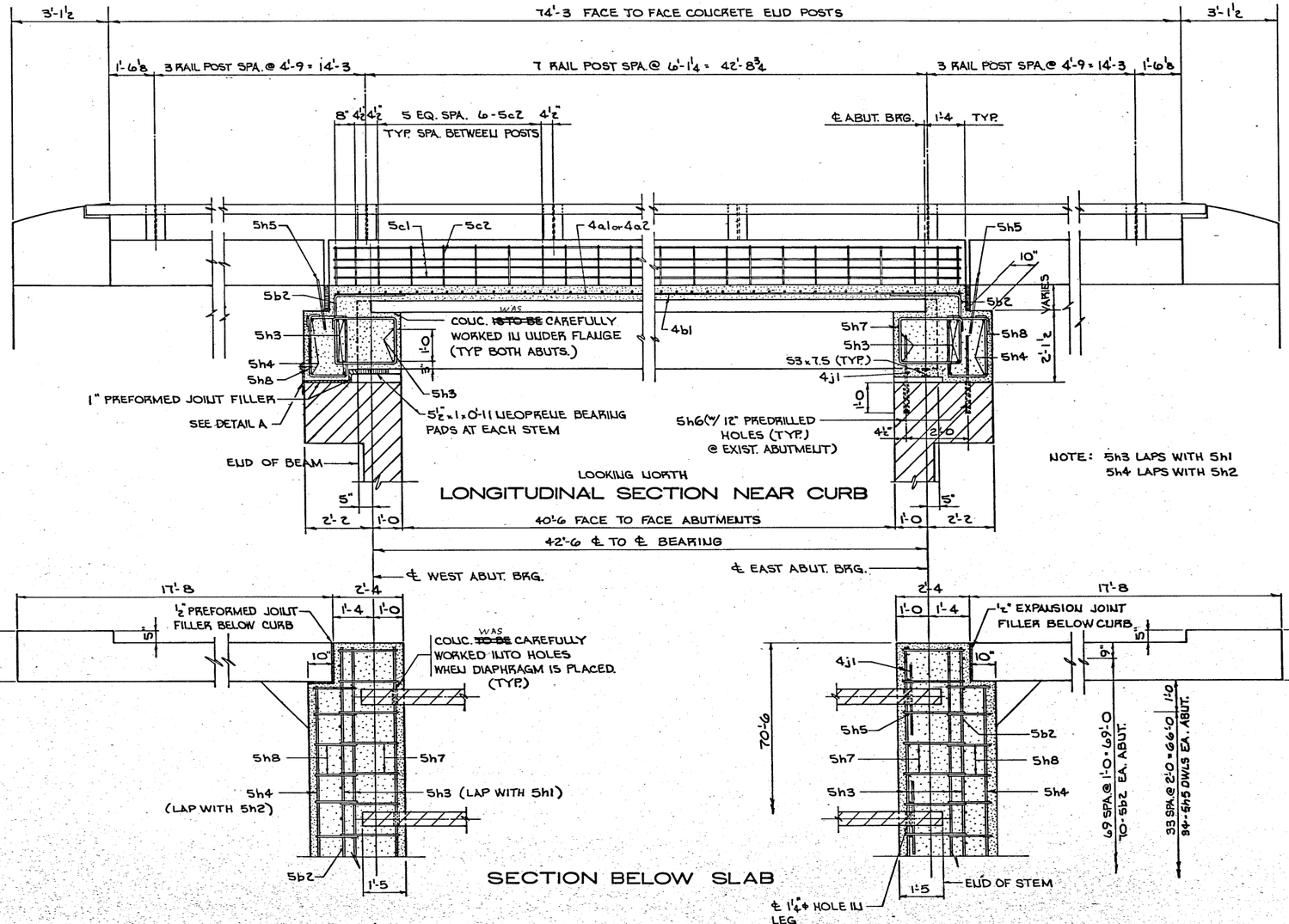
DESIGN SHEET NO. 9 OF 14 FILE NO. 26200 DESIGN NO. 1082

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CHECKED BY:

TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

CERRO GORDO COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		26	31



SUPERSTRUCTURE NOTES

THIS BRIDGE IS DESIGNED FOR HS20 LOADING PLUS 20 LBS. PER SQ. FT. OF ROADWAY FOR FUTURE WEARING SURFACE.

THE ABUTMENT DIAPHRAGM CONCRETE ~~IS TO BE~~ (WAS) PLACED MONOLITHICALLY WITH THE FLOOR SLAB.

COST OF ALL EXPANSION JOINT FILLER MATERIAL ~~IS TO BE~~ (WAS) INCLUDED IN THE PRICE BID FOR "STRUCTURAL CONCRETE."

ALL EXPOSED CORNERS OF 90° OR SHARPER ~~ARE TO BE~~ (WERE) FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.

CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR ~~SHALL BE~~ (WAS) 2" UNLESS OTHERWISE NOTED OR SHOWN. ALL REINFORCING BARS ~~ARE TO BE~~ (WERE) SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED ON BAR CHAIRS BEFORE CONCRETE ~~IS~~ (WAS) PLACED.

COST OF STRUCTURAL STEEL FOR THE DRAINS ~~SHALL BE~~ (WAS) INCLUDED IN PRICE BID FOR "STRUCTURAL STEEL."

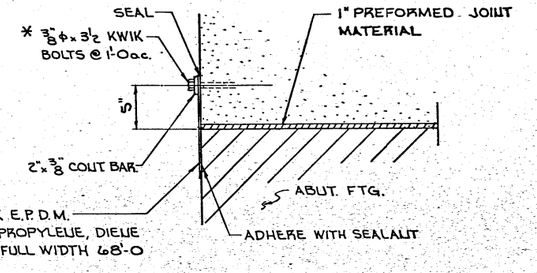
ALL REINFORCING STEEL ~~TO BE~~ (WAS) ASTM A615 GRADE 60.

TOP TRANSVERSE REINFORCING STEEL ~~IS TO BE~~ (WAS) PARALLEL TO AND 2 1/2" CLEAR BELOW TOP OF SLAB. REINFORCING STEEL ~~IS TO BE~~ (WAS) SUPPORTED BY METAL BAR CHAIRS SPACED AT NOT MORE THAN 3'-0 CENTERS LONGITUDINALLY AND TRANSVERSELY.

COST OF NEOPRENE BEARING PADS AND STEEL BOLSTERS AT ABUTMENTS ~~IS TO BE~~ (WAS) INCLUDED IN PRICE BID FOR "PRESTRESSED UNITS."

BONDING OF SLAB TO TOP OF BEAM FLANGES ~~SHALL BE~~ (WAS) IN ACCORDANCE WITH SECTION 2403.15 OF THE STANDARD SPECIFICATION.

* OR ANY OF THE APPROVED MANUFACTURERS AND BRANDS LISTED IN MATERIALS I.M. 453.09 MAY BE USED.



DETAIL A (WEST ABUTMENT ONLY)

INCLUDED COST OF STEEL BAR, BOLTS AND ALL E.P.D.M. MATERIAL IN PRICE BID FOR "STRUCTURAL CONCRETE."

DESIGN FOR WIDENING

42'-6 x 30' CONCRETE DECK GIRDER BRIDGE

TO

42'-6 x 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

SUPERSTRUCTURE DETAILS

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION — HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 14 FILE NO. 26200 DESIGN NO. 1082

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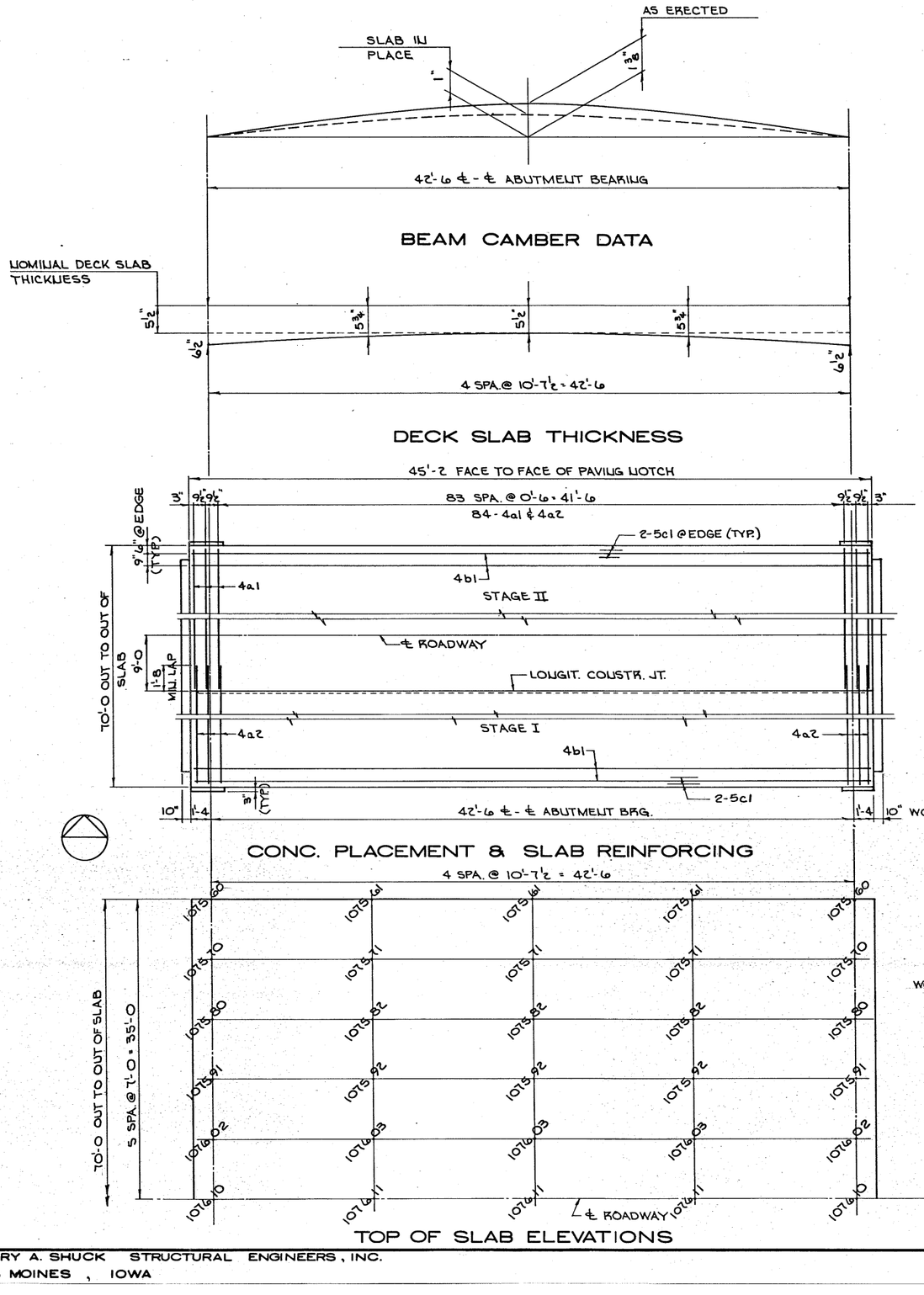
TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

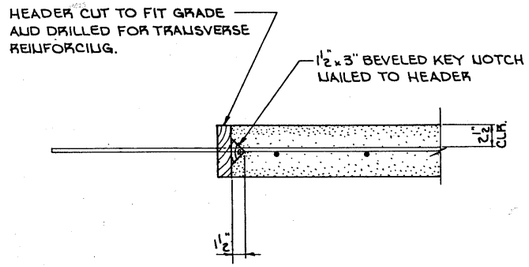
CERRO GORDO COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		27	31

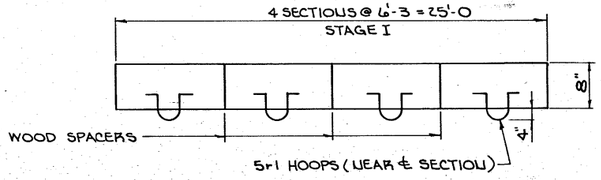
Bench Mark No. 11: Brass Plug on S.E. Br. End Post Sta. 372+32 - 35' Lt. Elev. 1078.40

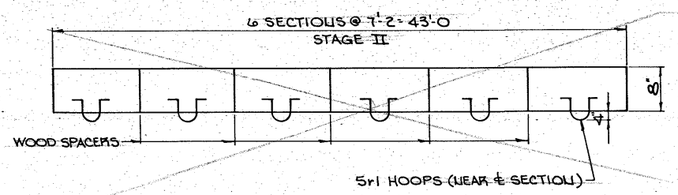
BENCH MARK NO 11: FOUND I.H.C. BM. IN NE. WING OF CONCRETE DECK GIRDER BRIDGE 15' LT ELEV. = 1076.78





LONGITUDINAL SLAB CONSTRUCTION JT.





TEMPORARY PAVING BLOCKS
STAGE I AND STAGE II

NOTE:
BEFORE PLACING THE TEMPORARY PAVING BLOCKS, BEND DOWN ALL 5h5 BARS AND LINE THE NOTCH WITH TAR PAPER TO PREVENT BOND. BLOCKS ARE TO BE REMOVED AND BARS ARE TO BE STRAIGHTENED AS SHOWN BEFORE PAVING IS POURED. PAVING BLOCK MAY BE MADE OF CLASS "C" OR CLASS "D" CONCRETE.

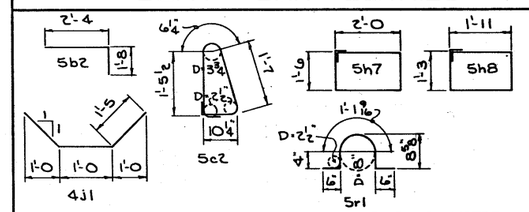
SYMMETRICAL ABOUT ℄ ROADWAY

TOP OF SLAB ELEVATIONS ADJUSTED ABOVE TO PROVIDE REQUIRED SLAB DEPTH

REINFORCING BAR LIST — SUPERSTRUCT.

	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
E.C.	4a1	SLAB, TRANSVERSE	—	88	43'-8	2,567
E.C.	4a2	SLAB, TRANSVERSE	—	88	27'-10	1,636
E.C.	4b1	SLAB, LONGITUDINAL	—	90	44'-10	2,695
E.C.	5b2	SLAB, LONGIT. AT ABUTMENT	⌐	140	4'-0	584
E.C.	5c1	CURB, LONGITUDINAL, SLAB	—	14	44'-10	655
E.C.	5c2	CURB, HOOPS	⌂	92	5'-5	520
	5h1	ABUT. DIAPHRAGM, HORIZONTAL	—	12	29'-2	365
	5h2	ABUT. DIAPH., HORIZ. B.F.	—	4	27'-11	116
	5h3	ABUT. DIAPHRAGM, HORIZONTAL	—	12	43'-0	538
	5h4	ABUT. DIAPH., HORIZ. B.F.	—	4	41'-9	174
	5h5	APPROACH PAVING DOWELS	—	68	1'-8	118
	5h7	ABUT. DIAPH., HOOPS	▭	142	8'-0	1,185
	5h8	ABUT. DIAPH., HOOPS	▭	138	7'-4	1,056
	5r1	PAVING BLOCK LIFTING HOOPS	∪	20	2'-10	59
	4j1	ABUT. DIAPH. HORIZ. B.F., E. ABUT.	◡	20	3'-10	51
					TOTAL LBS. UNCOATED	3,662
					TOTAL LBS. EPOXY COATED	8,657

BENT BAR DETAILS



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

CONCRETE PLACEMENT QUANTITIES

LOCATION	QUANTITY
STAGE I SLAB & DIAPHRAGM (CURB @ 2.2)	34.7 C.Y.
STAGE II SLAB & DIAPHRAGM (CURB @ 2.2)	56.7 C.Y.
STAGE I TEMPORARY PAVING BLOCK 2 @ 0.6	1.2 C.Y.
STAGE II TEMPORARY PAVING BLOCK 2 @ 1.2	2.4 C.Y.
TOTAL (CU. YDS.)	95.0 C.Y.

~~ESTIMATED~~ QUANTITIES — SUPERSTRUCTURE

ITEM	UNIT	QUANTITY
STRUCTURAL CONCRETE CLASS "D"	CU. YDS.	95.0
REINFORCING STEEL - UNCOATED	LBS.	3,662
REINFORCING STEEL - EPOXY COATED	LBS.	8,657
PRESTRESSED CONCRETE DOUBLE TEE	NO	10

EPOXY COATING NOTE

ALL TOP OF SLAB REINFORCING STEEL, BOTH LONGITUDINAL AND TRANSVERSE BARS, SHALL BE EPOXY-COATED IN ACCORDANCE WITH CURRENT SUPPLEMENTAL SPECIFICATIONS. THEREFORE FROM "REINFORCING BAR LIST - SUPERSTRUCTURE" THE ABOVE BARS ARE TO BE EPOXY-COATED (FLAGGED E.C. IN BAR LIST).

DESIGN FOR WIDENING

42'-6 × 30' CONCRETE DECK GIRDER BRIDGE
TO
42'-6 × 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

SUPERSTRUCTURE DETAILS

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION — HIGHWAY DIVISION

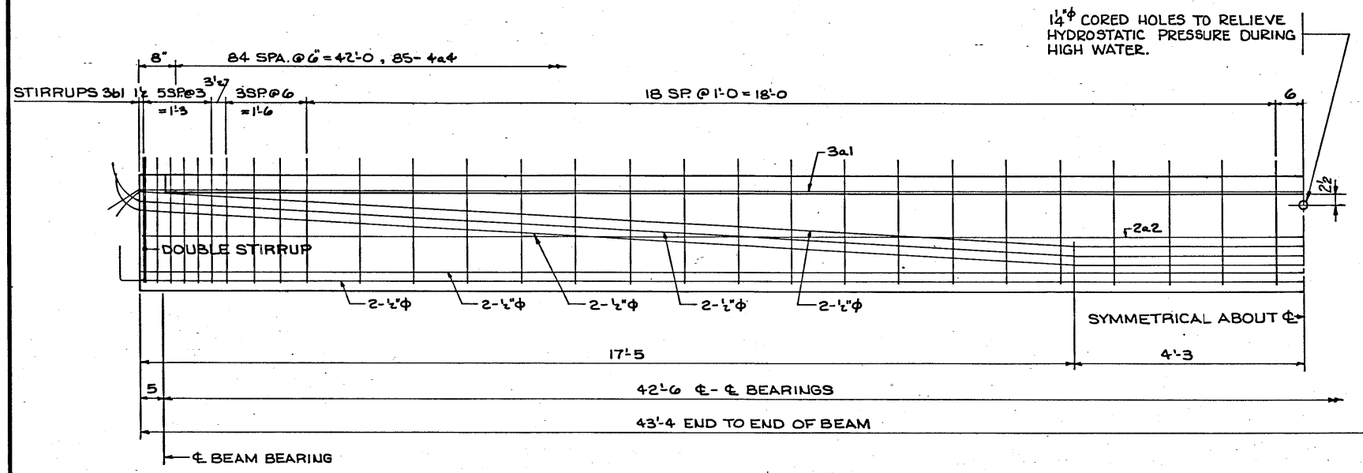
DESIGN SHEET NO. 11 OF 14 FILE NO. 26200 DESIGN NO. 1082

DESIGNED BY:
CHECKED BY:

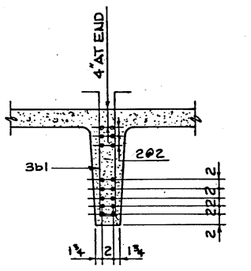
TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

CERRO GORDO COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		28	31



BEAM ELEVATION



STRAND PATTERN

BENT BARS



NOTE: ALL DIMENSIONS ARE OUT TO OUT.

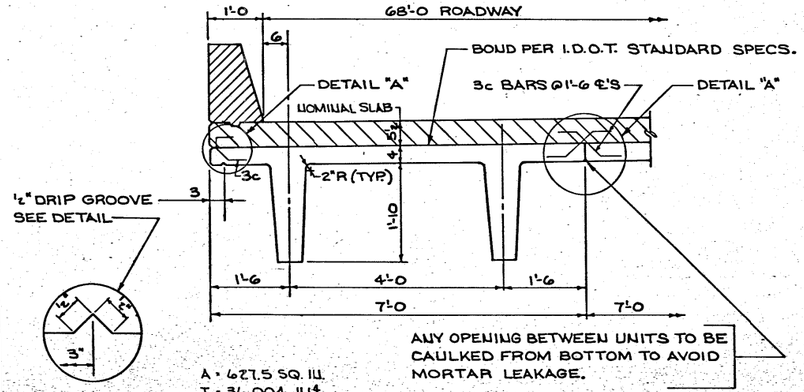
BEAM DATA

SPAN			42'-6
PRESTRESS STRANDS ½"φ 270K	STRAIGHT		8
	HARPED		12
INITIAL PRESTRESS	KIPS.		578
CAMBER ①	INCH.	.96	1.39
DEAD LOAD DEFLECTION ②	INCH.	.23	.13
f'_c BEFORE PRESTRESSING	KSI.		5.0
CONCRETE	CU. YDS.		6.93

REINFORCING STEEL	BAR	SHAPE	NO.	LENGTH	WEIGHT
	3a1	——	4	45'-4	68
	2a2	——	4	43'-1	29
	4a3	——	9	43'-1	259
	4a4	——	85	6'-9	383
	3b1	⊓	116	5'-6	240
	3c	⌐ ⊂	56	1'-5	30
TOTAL		LBS.			1009

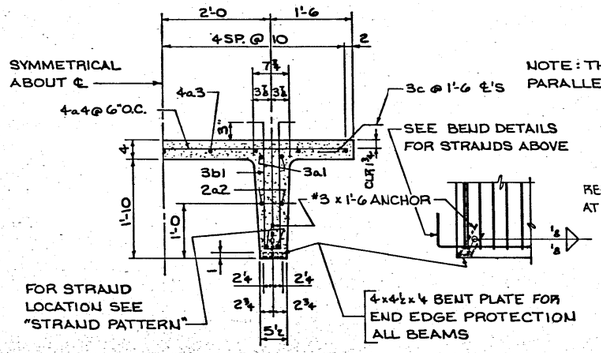
① BEAM CAMBER. UPPER FIGURE IS CAMBER AT RELEASE. LOWER FIGURE IS CAMBER JUST BEFORE SLAB IS POURED.

② UPPER FIGURE IS ELASTIC DEFLECTION OF BEAM DUE TO WEIGHT OF SLAB. LOWER FIGURE IS ADDITIONAL DEFLECTION DUE TO COMBINED EFFECT OF CREEP AND SHRINKAGE. TOTAL DEFLECTION OF BEAM IS THE SUM OF THE UPPER AND LOWER FIGURE FOR SIMPLE SPANS.

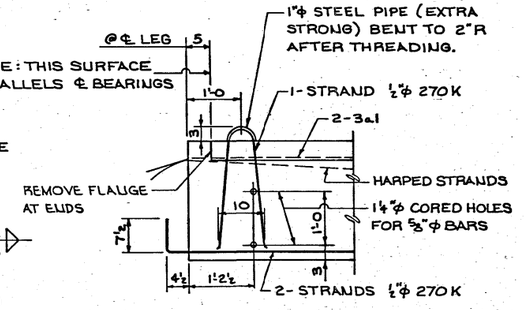


A = 627.5 SQ. IN.
I = 36,004 IN⁴
y_b = 18.25 IN.

DETAILS FOR DOUBLE TEE BEAM



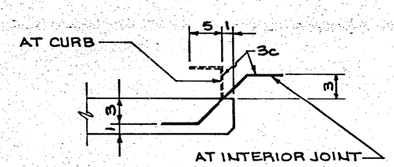
REINFORCING DETAILS FOR DOUBLE TEE BEAM



TWO BOTTOM STRANDS AND ALL HARPED STRANDS TO BE EXTENDED 1'-0 BEYOND AS SHOWN ALSO EXTEND BARS 3a1 - 1'-0. ALL OTHER STRANDS ARE TO BE CUT WITH 1" PROJECTION.

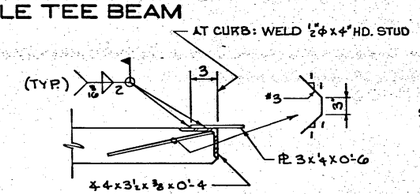
END DETAILS

NOTES:
PRECAST FABRICATOR TO PROVIDE BLOCKOUTS FOR FLOOR DRAINS. SEE SHEET 9 FOR DRAIN DETAILS.
CHAMFER EXPOSED CORNERS AT FLANGE TIPS WITH ¾" DRESSED OR BEVELED STRIP.

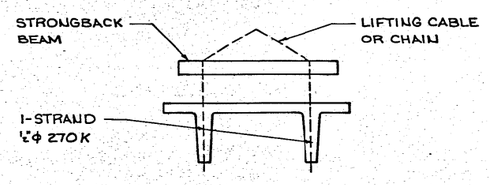


DETAIL "A"

DETAIL "A" @ 1'-6 O.C. (TYPICAL)



DETAIL "A" (ALTERNATE)



LIFTING DETAIL

NOTES:

LENGTH OF ALL BEAMS SHALL BE INCREASED .0005 L TO COMPENSATE FOR ELASTIC SHORTENING, CREEP AND SHRINKAGE.

IN ORDER TO IMPROVE BOND, TOPS OF BEAM FLANGES ARE TO BE ARTIFICIALLY ROUGHENED IN ACCORDANCE WITH I.D.O.T. MATERIALS DEPT. INSTRUCTIONS AND THOSE AREAS OF BEAMS EMBEDDED IN END DIAPHRAGMS ARE TO BE BLAST CLEANED AND ROUGHENED (PER I.D.O.T. STANDARD SPECIFICATIONS).

BEARING DETAILS SHALL BE AS DETAILED ON THE BRIDGE PLANS.

HOLD DOWN POINTS FOR HARPED STRANDS SHALL BE AT .4 L EXCEPT THEY MAY BE MOVED TOWARD THE END NOT MORE THAN .05 L AT PRODUCER'S OPTION.

STRAND RELEASE PROCEDURE:

1. RELEASE HOLD-DOWNS.
2. BURN STRANDS AT BED ENDS IN SYMMETRICAL SEQUENCE.
3. BURN STRANDS BETWEEN UNITS IN SYMMETRICAL SEQUENCE.
4. ALL BURNING OF STRANDS TO BE DONE WITH ACETYLENE TORCH.

BEAM DESIGN INFORMATION:

1. FRACTION OF HS20 TRUCK LOADING PER DOUBLE TEE UNIT = 7/11.
2. TOTAL PRESTRESSED LOSSES = 45,000 PSI PER STRAND.

DESIGN STRESSES FOR P.C. BEAMS:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE TO BE IN ACCORDANCE WITH A.A.S.H.T.O. STANDARD SPECIFICATIONS, SERIES OF 1977.

REINFORCING STEEL IN ACCORDANCE WITH SECTION 1.5.26(B)
f_s = 24,000 PSI.

CONCRETE IN ACCORDANCE WITH SECTION 1.6.6 f'_c = 5,000 PSI.

PRESTRESSING STEEL IN ACCORDANCE WITH SECTION 1.6.6(A)
f'_s = 270,000 PSI.

SPECIFICATIONS:

DESIGN: A.A.S.H.T.O. 1977 EXCEPT AS NOTED.

CONSTRUCTION: CURRENT STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.

DESIGN FOR WIDENING

42'-6 x 30' CONCRETE DECK GIRDER BRIDGE

TO

42'-6 x 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

BEAM DETAILS

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION — HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 14 FILE NO. 26200 DESIGN NO. 1082

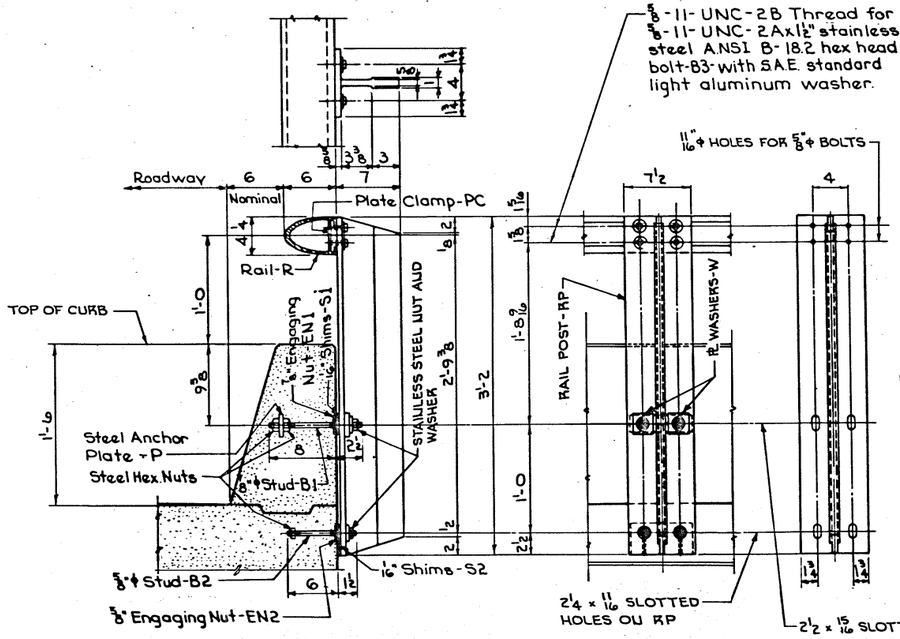
PROJECT CONSTRUCTED ACCORDING TO DETAIL SHEET

DESIGNED BY:
CHECKED BY:

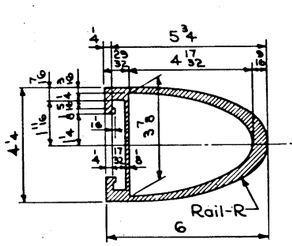
TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

CERRO GORDO COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		29	31



RAIL POST ASSEMBLY
(ALUMINUM RAILING)



RAIL SECTION

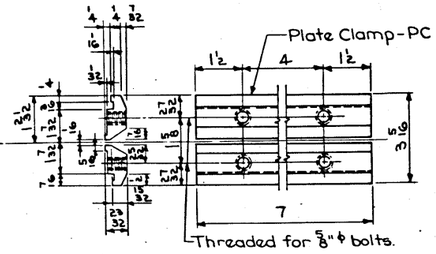
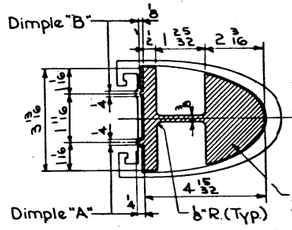
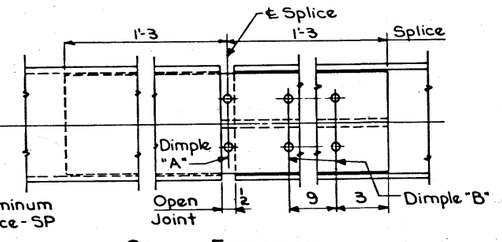


PLATE CLAMP DETAIL-PC



SPLICE DETAIL



SPLICE ELEVATION

HANDRAIL SPLICE DETAIL

ALUMINUM HANDRAIL NOTES

THE ALUMINUM HANDRAIL IS TO BE BID ON A LINEAL FOOT BASIS MEASURED FROM END TO END OF RAIL. THE PRICE BID FOR "ALUMINUM HANDRAIL" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL INCLUDING THE ANCHOR BOLTS AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAILING IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.

EACH RAIL SECTION MUST BE ATTACHED TO AS MANY POSTS AS POSSIBLE BUT TO AT LEAST THREE POSTS BEFORE BEING SPLICED.

MATERIAL FOR RAILS, POSTS, HANDRAIL SPLICE SECTIONS AND PLATE CLAMPS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR ALUMINUM SHIMS SHALL BE EITHER ASTM B-221 ALLOY 6061-T6 OR ASTM B-209 ALLOY 1100-0.

MATERIAL FOR ANCHOR STUDS, B1 AND B2, SHALL BE AN ASTM A-276 STAINLESS STEEL WITH A MINIMUM ULTIMATE STRENGTH OF 100,000 PSI, MINIMUM ELONGATION IN TWO INCHES OF 12% AND A MINIMUM REDUCTION IN AREA OF 40%. STUD THREAD SHALL CONFORM TO ANSI B-1.1 FOR UNC THREADS SERIES, CLASS 2A FIT. THREADS MAY BE ROLLED OR CUT. DIAMETER OF STUD SHALL BE NOT LESS THAN PITCH DIAMETER OF THREADS.

THE MATERIAL FOR THE STAINLESS STEEL NUTS AND WASHERS SHALL BE NON-MAGNETIC STAINLESS STEEL. THE STAINLESS STEEL NUTS SHALL BE HEXAGONAL, FINISHED AND SHALL COMPLY WITH ANSI B-18.2. THREADS SHALL COMPLY WITH ANSI B-1.1 FOR UNC THREAD SERIES, CLASS 2B FIT.

THE ALUMINUM ENGAGING NUTS, EN1 AND EN2, SHALL COMPLY WITH ANSI B-18.2 AND THREADS WITH ANSI B-1.1 FOR UNC THREADS SERIES, CLASS 2B FIT.

MATERIAL FOR STEEL NUTS SHALL BE ASTM A-307 GRADE A, AND SHALL CONFORM TO ANSI B-18.2. THREADS SHALL COMPLY WITH ANSI B-1.1 FOR UNC THREADS SERIES, CLASS 2B FIT.

THE ENTIRE SURFACES OF THE ENGAGING NUTS, EN1 AND EN2, AND SHIMS ARE TO BE GIVEN ONE SHOP COAT OF ZINC CHROMATE SHOP COAT PAINT OR RED LEAD SHOP COAT PAINT.

FOUR SHIMS S1 AND S2 ARE TO BE FURNISHED FOR EACH POST, TO BE USED AS REQUIRED.

MATERIAL FOR PLATE CLAMP BOLTS, B3, SHALL BE STAINLESS STEEL ASTM A-193, GRADE B8 (CARBIDE SOLUTION TREATED) OR ASTM A-276 TYPE 430 (ANNEALED-HOT OR COLD FINISHED).

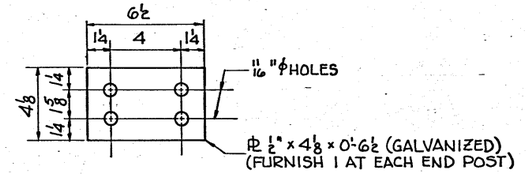
A 1/2" ϕ DRAIN HOLE IS TO BE PROVIDED, 3" FROM THE END, AT THE BOTTOM SIDE OF THE END SECTIONS OF ALL RAILS.

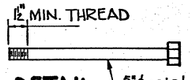
HANDLING, STORAGE AND INSTALLATION OF ALUMINUM HANDRAIL SHALL BE IN ACCORDANCE WITH SECTION 2414.06 OF THE STANDARD SPECIFICATIONS.

MATERIAL FOR ALUMINUM PLATE WASHERS "W", WASHERS AND RAIL END CAPS SHALL BE EITHER ASTM B-221 ALLOY 6061-T6 OR ASTM B-209 ALLOY 2024-T3.

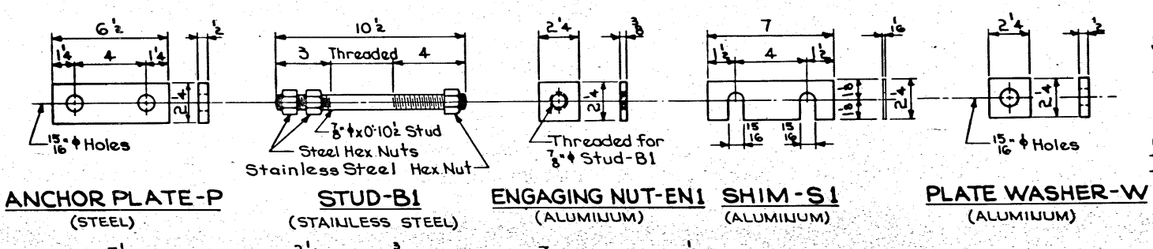
RAIL END CAST CAPS, WITH A DRIVING FIT, MAY BE SUPPLIED AS AN ALTERNATE TO THE DETAILED WELDED CAPS. THE RAIL END CAPS ARE TO BE EITHER ALUMINUM ALLOY PERMANENT MOLD CASTINGS OR SAND MOLD CASTINGS.

ENDS OF RAIL SECTIONS TO BE SAWED OR MILLED. CUT ENDS TO BE TRUE, SMOOTH AND FREE FROM BURRS OR RAGGED EDGES.

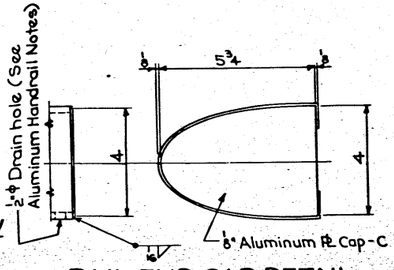




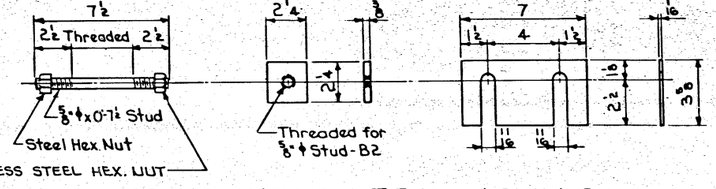
END ANCHORAGE DETAIL



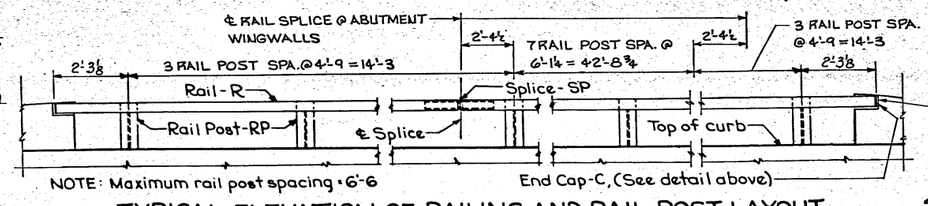
ANCHOR PLATE-P (STEEL) | STUD-B1 (STAINLESS STEEL) | ENGAGING NUT-EN1 (ALUMINUM) | SHIM-S1 (ALUMINUM) | PLATE WASHER-W (ALUMINUM)



RAIL END CAP DETAIL

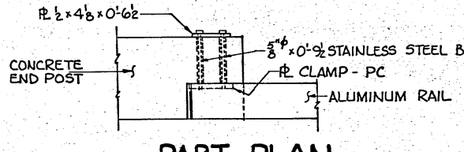


STUD-B2 (STAINLESS STEEL) | ENGAGING NUT-EN2 (ALUMINUM) | SHIM-S2 (ALUMINUM)



TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT

NOTE: RAIL SPLICES NOT SHOWN TO BE LOCATED 2' TO 3' FROM POST CENTERLINE.



PART PLAN

ALUMINUM HANDRAIL QUANTITIES	
ALUMINUM HANDRAIL	151.5 LIN. FT.

DESIGN FOR WIDENING

42'-6 x 30' CONCRETE DECK GIRDER BRIDGE
TO
42'-6 x 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

ALUMINUM HANDRAIL DETAILS

STATION 371+94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 13 OF 14 FILE NO. 26200 DESIGN NO. 1082

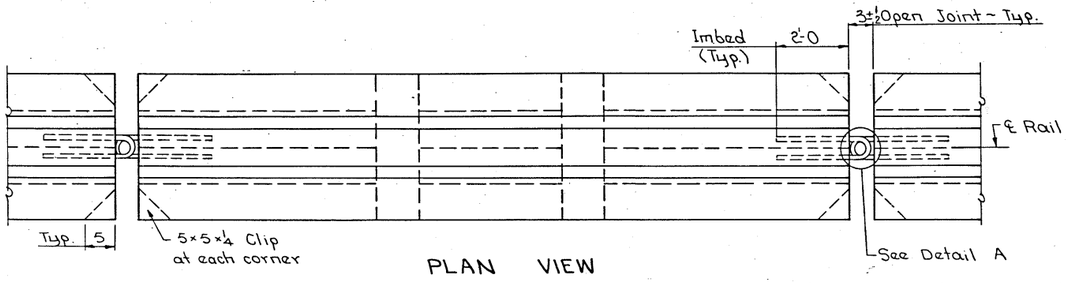
PROJECT CONSTRUCTED ACCORDING TO DETAIL SHEET

DESIGNED BY:
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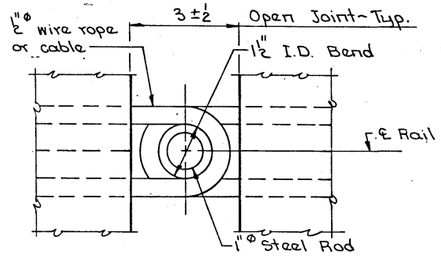
TERRY A. SHUCK STRUCTURAL ENGINEERS, INC.
DES MOINES, IOWA

CERRO GORDO COUNTY

PROJECT NUMBER	STATE	FED ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
BRF-F-18-5(28)-2P-17	IOWA	5		30	31



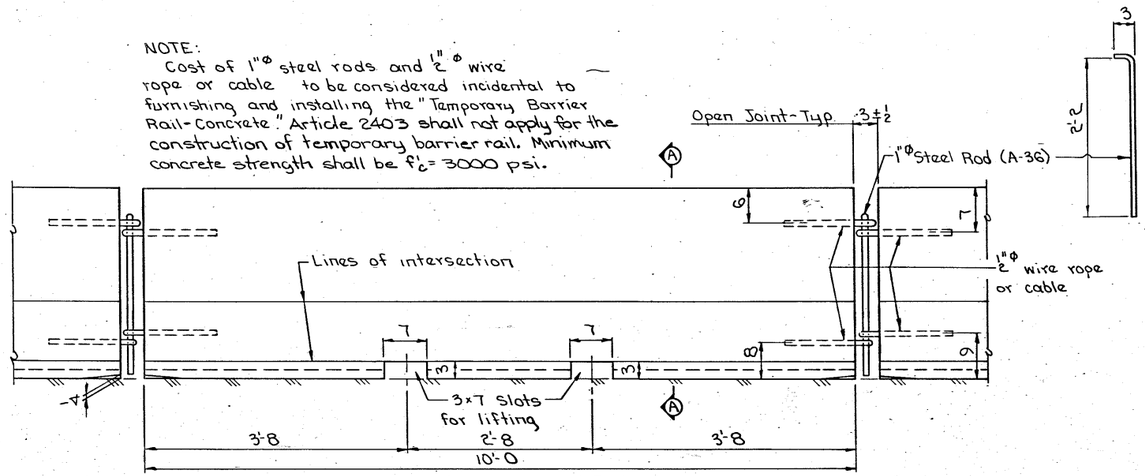
PLAN VIEW



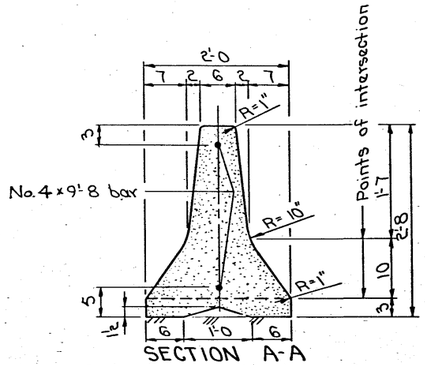
DETAIL A

½" Φ Wire rope or cable to be ½" Φ, with a minimum breaking strength of 20000 pounds.

NOTE:
Cost of 1" Φ steel rods and ½" Φ wire rope or cable to be considered incidental to furnishing and installing the "Temporary Barrier Rail-Concrete". Article 2403 shall not apply for the construction of temporary barrier rail. Minimum concrete strength shall be f'_c = 3000 psi.



ELEVATION VIEW

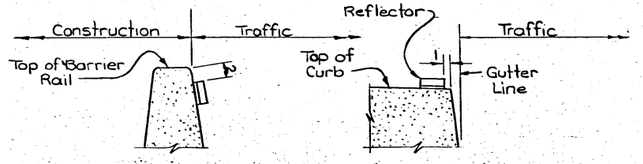


SECTION A-A

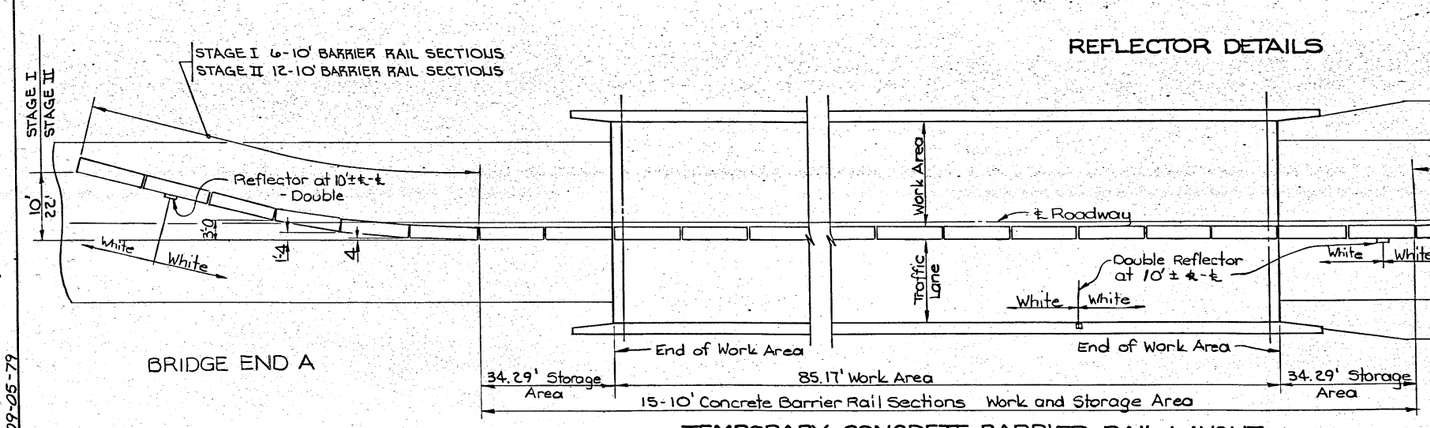
Contractor may add extra reinforcing bars to increase the service life of concrete rail sections.

NOTE:
The temporary barrier rail is to be bid on a lineal foot basis measured from end to end of rail as shown on these plans.
Barrier is to become the property of the contractor at the completion of work and removed from the site by him.
No stationary equipment or construction material is to be placed in front of the temporary barrier at any time.

Traffic reflectors shall be a retro-reflective type, approved by the engineer, and they shall be located as shown on this sheet. The contractor shall maintain the reflectors and shall promptly replace any missing or damaged units. All costs for furnishing, installing and maintaining reflectors shall be included in the price bid for "Temporary Barrier Rail".
Refer to other details, notes and quantity items, elsewhere on these plans, for traffic control to be established in conjunction with the temporary barrier rail.
Shoulder width at this bridge site is 10 feet.



REFLECTOR DETAILS



TEMPORARY CONCRETE BARRIER RAIL LAYOUT

Note: The layout shown is for one stage of construction and would be similar for the other stage by rotating 180°.

ESTIMATED QUANTITIES	
Item	Amount
Temporary Barrier Rail - Concrete	461.25 L.F.

SHOULDER WIDTH (S)	№ of BARRIER RAIL SECTIONS (N)	D
4 ft.	9	2.5 ft.
6 ft.	10	5 ft.
8 ft.	11	7 ft.
10 ft.	12	9.5 ft.

PROJECT CONSTRUCTED ACCORDING TO DETAIL SHEET

42'-6 × 30' CONCRETE DECK GIRDER BRIDGE TO 42'-6 × 68' PRESTRESSED DOUBLE-TEE BEAM BRIDGE

TEMPORARY BARRIER RAIL - CONC.

STATION 371 + 94.5

CERRO GORDO COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

Design Sheet No.: 14 Of 14 File No.: 216200 Design No.: 1082

Revised: 10-13-82: Reflector spacing and notes changed.
Revised: 7-17-81: Reflector requirement changed. Bridge End B Details changed for variable shoulder.
Reworked 09-05-79

TERRY A. SHUCK STRUCTURAL ENGINEERS, INC. DES MOINES, IOWA	TEMPORARY BARRIER RAIL - CONCRETE	STANDARD 1033 (MODIFIED)	CERRO GORDO COUNTY	PROJECT NUMBER BRF-F-18-5(28)--2P-17	STATE IOWA	FED. ROAD DIST. NO. 8	FISCAL YEAR	SHEET NO. 31	TOTAL SHEETS 31