

BRIDGE

BROS-9024(33)--5F-24

CRAWFORD COUNTY

Letting Date MAY 3, 1994

**DRAWING APPROVAL**

ALL SHOP DRAWINGS THAT REQUIRE APPROVAL SHALL BE APPROVED BY SUNDQUIST ENGINEERING, P.C.

ADDRESS: 1417 BROADWAY  
DENISON, IOWA 51442  
TELEPHONE: (712)283-8118

THESE SHOP DRAWINGS SHALL NOT BE SENT TO IOWA D.O.T. OFFICE OF BRIDGE DESIGN.

SCRAPE SAMPLES FROM 3 LOCATIONS OF THIS BRIDGE WERE TAKEN TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. THE ANALYSIS OF TOTAL CHROMIUM IN THESE SAMPLES WAS 3,400 PARTS PER MILLION (PPM). THE ANALYSIS OF TOTAL LEAD IN THESE SAMPLES WAS 140,000 PPM. THE ANALYSIS SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. THE LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER SUBSTANCES WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE CONTRACTING AUTHORITY'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

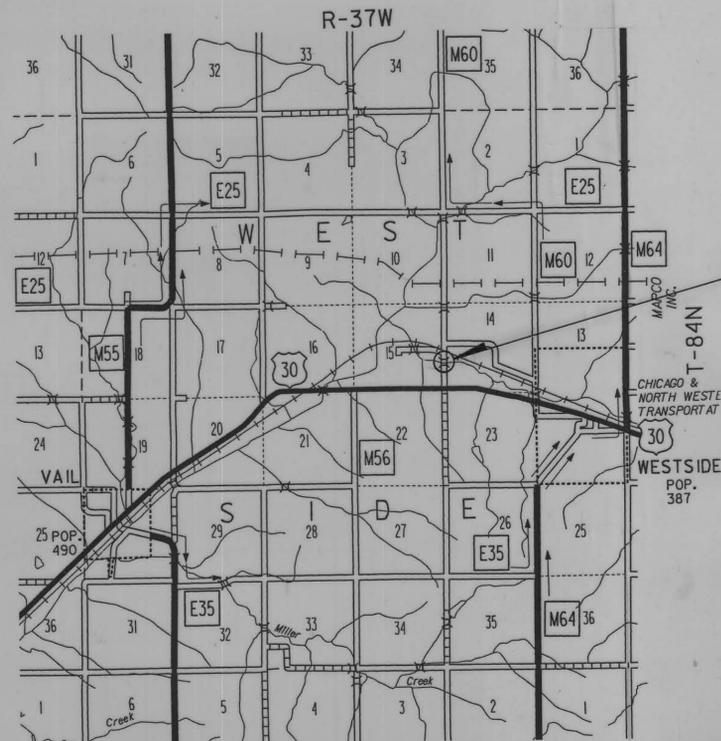
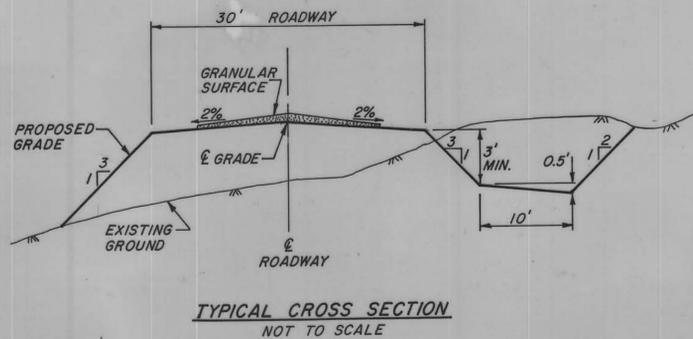
IOWA  
DEPARTMENT OF TRANSPORTATION  
Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE  
**FARM TO MARKET SYSTEM  
CRAWFORD COUNTY  
BRIDGE**  
BROS-9024(33)--5F-24

The Standard Specifications, Series of 1992, of the Iowa Department of Transportation Shall Apply to Construction Work on this Project

Plus Current Special Provisions and Supplemental Specifications

Scales: As Noted



STA. 14+91.25  
DESIGN NO. 5494  
PROP. 112'6 X 24' CCSB

THIS PROJECT IS COVERED BY THE CORPS OF ENGINEERS NATIONWIDE 404 PERMIT #14.

IF ARCHAEOLOGICAL MATERIALS ARE ENCOUNTERED DURING THE CONSTRUCTION PHASE OF THIS PROJECT, THE OFFICE OF PROJECT PLANNING AND/OR THE OFFICE OF LOCAL SYSTEMS (I.D.O.T.) MUST BE CONTACTED IMMEDIATELY SO THE PROPER AUTHORITIES CAN BE NOTIFIED ACCORDING TO THE EXISTING FEDERAL REGULATIONS AND STATE PROCEEDURES, ADDITIONALLY, IT SHOULD BE NOTED THAT FINDINGS AND RECOMMENDATIONS FOR CLEARANCE FOR FURTHER TESTING CANNOT BE CONSIDERED FINAL UNTIL CONCURRENCE IS RECEIVED FROM THE OFFICE OF THE STATE HISTORIC PRESERVATION OFFICER.

OFFICE OF PROJECT PLANNING 515-239-1225  
OFFICE OF LOCAL SYSTEMS 515-239-1528

TRAFFIC CONTROL PLAN

THIS ROAD WILL BE CLOSED TO THROUGH TRAFFIC DURING CONSTRUCTION. LOCAL TRAFFIC TO ADJACENT PROPERTIES WILL BE MAINTAINED AS PROVIDED FOR IN ARTICLE 1107.08, OF THE CURRENT STANDARD SPECIFICATIONS. TRAFFIC CONTROL DEVICES, PROCEDURES AND LAYOUTS SHALL BE AS PER THE CURRENT SUPPLEMENTAL SPECIFICATION FOR 'TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS', THE DETAIL SHEET 'SIGNING FOR TEMPORARY ROAD CLOSURE' INCLUDED IN THIS PLAN, AND THE APPROPRIATE STANDARD ROAD PLANS TABULATED.

1988 AADT 50 V.P.D.

Project Number: BROS-9024(33)--5F-24 FHWA 128540

INDEX OF SHEETS

No.	Description
A.01	TITLE SHEET
C.01	ESTIMATE OF QUANTITIES & GENERAL INFORMATION
D.01	PLAN AND PROFILE - MAIN LINE
U.01	SUBDRAIN DETAILS
U.02	MISCELLANEOUS DETAILS
U.03	DETAIL SHEET 520-26
V.01	BRIDGE SITUATION PLAN
W.01	CROSS SECTIONS - MAIN LINE
W.06	

CROSS SECTIONS AVAILABLE AT COUNTY ENGINEER'S OFFICE

MILEAGE SUMMARY

Div.	Location	Lin. Ft.	Miles
	B.O.P. STA. 10+00 TO E.O.P. STA. 20+00	1000.00	
	DEDUCT FOR BRIDGE @ STA. 14+91.25	112.50	
	NET LENGTH OF ROADWAY IN PROJECT	887.50	
	NET LENGTH OF BRIDGE IN PROJECT	112.50	
	TOTAL LENGTH OF PROJECT	1000.00	0.1894

ROAD STANDARD PLANS

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

Identification	Date	Identification	Date	Identification	Date
RE-2A	2-17-87	RE-47	11-10-87	RF-5	3-31-87
RE-2B	10-22-93	RE-48A	6-15-93	RF-7	11-8-74
RE-7	4-28-92	RE-52	10-22-93	RF-30A	1-9-90
RE-12A	10-11-88	RE-65	1-7-92	RF-32	1-9-90
RE-12B	1-9-90	RE-68	8-8-89	RL-11	10-11-88
		RE-69	10-22-93		

BRIDGE STANDARDS

(May be obtained at Bridge Design Services)

Standard	Date Issued	Latest Revision	Standard	Date Issued	Latest Revision
J24-87	JANUARY, 1987	-	J24-14-87	JANUARY, 1987	-
J24-4-87	JANUARY, 1987	-	J24-19-87	JANUARY, 1987	6-89
J24-6-87	JANUARY, 1987	-	P10A	AUGUST, 1988	3-11-91
J24-7-87	JANUARY, 1987	-			
J24-8-87	JANUARY, 1987	-			

*Signil E. Anderson*

*John P. Lawler*

*LeRoy A. Hansohn*

*Eileen Leiden*

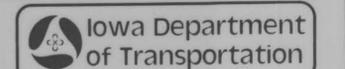
Approved  
Board of Supervisors

APPROVED

*H. Dale Wight* 1-21-94  
CRAWFORD COUNTY ENGINEER

I hereby certify that this engineering document 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.  
*Stephen A. Sundquist*  
Stephen A. Sundquist, P.E.

Date 1-21-94 Reg. No. 5707  
My Registration expires December 31, 1994



Highway Division

Authorized for Letting  
*George F. Sisson* 3-3-94  
Deputy Chief Engineer Date

U.S. Department of Transportation  
Federal Highway Administration  
Approved

Division Engineer Date

**GENERAL NOTES**

ALL CORRUGATED METAL PIPE ON THIS PROJECT SHALL BE RIVETED PIPE. NO "SPIRAL" PIPE WILL BE ALLOWED. ALL BANDS SHALL BE 24" BANDS.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL NECESSARY ARRANGEMENTS WITH ADJACENT PROPERTY OCCUPANTS FOR RESTRAINING LIVESTOCK FROM ENTERING THE RIGHT OF WAY.

ROAD 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 COUNTY. ANY TILE LINES BROKEN OR DISTURBED BY CUT LINES WILL BE REPLACED AS DIRECTED BY THE ENGINEER IN CHARGE OF CONSTRUCTION AND AT THE COUNTY'S EXPENSE.

THE P10A TYPE 3 (HP12X53) FRICTION-BEARING PIER PILES ARE TO BE DRIVEN TO FULL PENETRATION WHERE PRACTICABLE, BUT TO AT LEAST 34 TONS BEARING CAPACITY PER PILE.

THE HP10X42 FRICTION-BEARING ABUTMENT PILES ARE TO BE DRIVEN TO FULL PENETRATION WHERE PRACTICABLE, BUT TO AT LEAST 35 TONS BEARING CAPACITY PER PILE.

MONOLITHIC PIER CAPS SHALL BE USED. CAP STEEL IS REQUIRED.

THE PIER PILES ARE TO BE P10A (HP12X53). SUPERSTRUCTURE CONCRETE QUANTITY HAS BEEN INCREASED BY 0.7 C.Y. OVER QUANTITY SHOWN ON I.D.O.T. STANDARD J24-4 DUE TO SUBSTITUTION OF P10A TYPE 3 PILING IN INTEGRAL PIER BENTS. THE PILING ENCASEMENTS ARE TO EXTEND DOWN TO THE ELEVATIONS SHOWN ON THE PLANS, SHEET V.01. THE UNIT PRICE BID FOR ENCASEMENT SHALL BE FULL PAYMENT FOR FURNISHING AND PLACING ALL MATERIAL AND WHERE NECESSARY, EXCAVATION.

THE DESIGN BEARING FOR THE PIER PILES IS 34 TONS. THE TOTAL DRIVING RESISTANCE FOR THE PILES IS 34 TONS. 11.6 TONS OF THIS DRIVING RESISTANCE IS END BEARING. WAVE EQUATION ANALYSIS WILL BE USED AT THE TIME OF PILE DRIVING TO DETERMINE PILE BEARING. THE CONTRACTOR SHALL SUBMIT ADEQUATE HAMMER INFORMATION SO THAT THE PROPER ANALYSIS CAN BE PERFORMED.

THE DESIGN BEARING FOR THE ABUTMENT PILES IS 35 TONS. THE TOTAL DRIVING RESISTANCE FOR THE PILES IS 35 TONS. 9.2 TONS (NO. ABUT.) & 12.35 TONS (SO. ABUT.) OF THIS DRIVING RESISTANCE IS END BEARING. WAVE EQUATION ANALYSIS WILL BE USED AT THE TIME OF PILE DRIVING TO DETERMINE PILE BEARING. THE CONTRACTOR SHALL SUBMIT ADEQUATE HAMMER INFORMATION SO THAT THE PROPER ANALYSIS CAN BE PERFORMED.

THE BRIDGE CONTRACTOR SHALL EXCAVATE THE STREAM CHANNEL TO THE LINES AND GRADES SHOWN ON THE LONGITUDINAL SECTION AND SITUATION PLAN ON SHEET V.01 AND PLAN AND PROFILE SHEET D.01. ALL SUCH WORK SHALL BE PAID FOR AS "EXCAVATION, CLASS 10 CHANNEL".

212-1  
SOUNDING AND TEST BORING DATA SHOWN ON PLANS WERE ACCUMULATED FOR DESIGNING AND ESTIMATING PURPOSES. THEIR APPEARANCE ON THE PLAN DOES NOT CONSTITUTE A GUARANTEE THAT CONDITIONS OTHER THAN THOSE INDICATED WILL NOT BE ENCOUNTERED.

213-1  
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE WASTE AREAS OR DISPOSAL SITES FOR EXCESS MATERIAL (EXCAVATED MATERIAL OR BROKEN CONCRETE) WHICH IS NOT DESIRABLE TO BE INCORPORATED INTO THE WORK INVOLVED ON THIS PROJECT. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL HAULED TO THESE SITES. NO MATERIAL SHALL BE PLACED WITHIN THE RIGHT OF WAY, UNLESS SPECIFICALLY STATED IN THE PLANS OR APPROVED BY THE ENGINEER.

213-3  
ALL BORROW AREAS, STOCKPILE AREAS, HAUL ROADS AND AREAS USED FOR MANEUVERING EQUIPMENT ON THIS PROJECT WILL REQUIRE SUBSOIL TILLAGE TO AN AVERAGE DEPTH OF 18 TO 20 INCHES PRIOR TO PLACEMENT OF TOPSOIL AND/OR STABILIZING CROP SEEDING. SUCH TILLAGE SHALL BE ACCOMPLISHED ON MAXIMUM OF THREE FOOT CENTERS AND AT RIGHT ANGLES TO THE FINISHED SLOPE OF THE BORROW.

EQUIPMENT USED TO ACCOMPLISH THE TILLAGE SHALL BE EQUIPPED WITH AN ARROWHEAD-TYPE SHOE SO AS TO PROVIDE LATERAL DISPLACEMENT AND LIMIT THE MOVEMENT OF THE SUBSOIL TO THE SURFACE. IT SHALL BE APPROVED BY THE ENGINEER FOR THE USE INTENDED. THIS WORK WILL BE CONSIDERED INCIDENTAL TO OTHER WORK ON THE PROJECT AND NO PAYMENT WILL BE ALLOWED.

IT IS INTENDED THAT FOLLOWING SUBSOIL TILLAGE, THE AREA REMAINS IN A "LOOSENED" CONDITION. ADDITIONAL COMPACTION OR THE OPERATION OF HEAVY EQUIPMENT, OTHER THAN REQUIRED FOR TOPSOIL PLACEMENT AND SHAPING SHALL NOT BE ALLOWED ON AREAS WHICH HAVE RECEIVED SUBSOIL TILLAGE.

251-1  
THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN ACCESS TO INDIVIDUAL PROPERTIES DURING CONSTRUCTION.

RELOCATED ACCESS SHALL BE COMPLETED TO INDIVIDUAL PROPERTIES PRIOR TO REMOVAL OF EXISTING ACCESS.

IF THE PERMANENT ACCESS CANNOT BE COMPLETED PRIOR TO REMOVAL OF THE EXISTING ACCESS, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN AN ALTERNATE ACCESS. TEMPORARY GRANULAR SURFACING WILL BE PAID FOR AS A CONTRACT ITEM OR BY EXTRA WORK.

261-1  
WHERE PUBLIC UTILITY FIXTURES ARE SHOWN AS EXISTING ON THE PLANS OR ENCOUNTERED WITHIN THE CONSTRUCTION AREA, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE OWNERS OF THOSE UTILITIES PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. THE CONTRACTOR SHALL AFFORD ACCESS TO THESE FACILITIES FOR NECESSARY MODIFICATION OF SERVICES. UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. IT IS POSSIBLE THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN OR SHOWN. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THEIR EXISTENCE AND EXACT LOCATION AND TO AVOID DAMAGE THERETO. NO CLAIMS FOR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR ANY INTERFERENCE OR DELAY CAUSED BY SUCH WORK.

**ESTIMATE REFERENCE INFORMATION**

DATA LISTED BELOW IS FOR INFORMATIONAL PURPOSES ONLY AND SHALL NOT CONSTITUTE A BASIS FOR ANY EXTRA WORK ORDERS.

ITEM CODE	DESCRIPTION
2102-2710070	INCLUDES 5191 C.Y. CUT, 4780 C.Y. FILL+35%, 411 C.Y. WASTE. TYPE "A" COMPACTION WILL BE REQUIRED. ALL AREAS TO RECEIVE NEW EMBANKMENT SHALL BE THOROUGHLY CLEAN OF ALL VEGETATION AND OTHER DEBRIS. EXISTING SURFACES SHALL BE PLOWED, STEPPED OR BENCHED PRIOR TO PLACEMENT OF NEW EMBANKMENT FILLS ALL AS DIRECTED BY THE ENGINEER. SUCH WORK SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THIS ITEM. EXCESS MATERIAL AND UNSUITABLE MATERIAL SHALL BE HAULED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR. THE COST OF HAULING AND DISPOSING OF THIS MATERIAL SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR CLASS 10 EXCAVATION, ROADWAY AND BORROW.
2104-2710020	SUITABLE CLASS 10 CHANNEL EXCAVATION MAY BE USED FOR ROADWAY BORROW. EXCESS MATERIAL AND UNSUITABLE MATERIAL SHALL BE HAULED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR. THE COST OF HAULING AND DISPOSING OF THIS MATERIAL SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR CLASS 10 CHANNEL EXCAVATION.
2312-8260201	GRANULAR SURFACE SHALL MEET THE REQUIREMENTS OF CLASS "C" GRAVEL IN ACCORDANCE WITH ARTICLE 4120, GRADATION NO. 10 AND SHALL INCLUDE THE COST OF SPREADING GRANULAR SURFACING ON ROADWAY SURFACE.
2401-6745650	INCLUDES 60' x 16' PONY TRUSS BRIDGE WITH 2 - 20' x 16' APPROACHES, TIMBER PILING AND ABUTMENTS AT STA. 15+00. SEE NOTE ON SHEET V.01.
2402-2720000	INCLUDES EXCAVATION NECESSARY TO CONSTRUCT INTEGRAL ABUTMENTS. SUITABLE CLASS 20 EXCAVATION MAY BE USED FOR ROADWAY BORROW. EXCESS MATERIAL AND UNSUITABLE MATERIAL SHALL BE HAULED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR. THE COST OF HAULING AND DISPOSING OF THIS MATERIAL SHALL BE INCLUDED IN AND CONSIDERED INCIDENTAL TO THE PRICE BID FOR CLASS 20 EXCAVATION.
2403-0900000	TO BE CLASS "C" STRUCTURAL CONCRETE.
2417-2550018 2417-2550024	TO BE 15° ELBOWS.
2501-5425042 2501-5550042	INCLUDES 8 @ 49'.
2501-5425053 2501-5550053	INCLUDES 8 @ 54' & 8 @ 58'. PIER PILE TO BE P10A TYPE 3 PILING.
2501-5475053	INCLUDES 8 @ 23' & 8 @ 22'. PIER PILE TO BE P10A TYPE 3 PILING.
2507-6800060	INCLUDES 318 TONS FOR ROCK JETTIES & 667 TONS FOR BANK PROTECTION. INCLUDES FURNISHING AND PLACING OF CLASS E REVETMENT STONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MAXIMUM STONE SIZE SHALL BE 750 POUNDS AND THE MATERIAL SHALL MEET THE FOLLOWING SIZE LIMITATIONS.
	STONE WT., POUNDS      MINIMUM % LARGER THAN
	250                              80
	5                                 90
2528-8445110	INCLUDES ALL ADVANCED WARNING SIGNS, TYPE III BARRICADES AND OTHER TRAFFIC CONTROL DEVICES FOR THIS PROJECT WHICH SHALL BE LOCATED AT THE BEGINNING AND THE END OF THE PROJECT, AND WHERE THE ROAD FOR CONSTRUCTION INTERSECTS OTHER PUBLIC ROADS. ALSO SHALL INCLUDE ALL OTHER BARRICADES AND WARNING SIGNS NECESSARY TO PROTECT THE CONTRACTOR'S WORK AND EQUIPMENT AND THE SAFETY OF THE TRAVELING PUBLIC. ALL SIGNS, BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" 1988.
	INCLUDES FURNISHING, INSTALLING, MAINTAINING, REPAIRING AND RELOCATING ALL THE SIGNS AND BARRICADES AS SHOWN ON THE TRAFFIC CONTROL PLAN. FULL PAYMENT FOR THIS WORK SHALL BE THE LUMP SUM PRICE IN THE CONTRACT.
2601-2636042	INCLUDES ALL AREAS DISTURBED BY CONSTRUCTION OPERATIONS.

DESIGN NO. 5494  
CRAWFORD COUNTY  
SECTION 15

LETTING DATE: MAY 3, 1994  
FARM TO MARKET ROAD  
OVER BOYER RIVER  
T87N R37W

STA. 14+91.25  
SKEW 0°  
WESTSIDE TWP.

DESIGN FOR:  
112'6" x 24' CONTINUOUS CONCRETE SLAB BRIDGE  
INTEGRAL ABUTMENTS, P10A PIERS

**ESTIMATED PROJECT QUANTITIES**

CONSTRUCTION USE ONLY	ITEM CODE	ITEM	UNIT	QUANTITIES				
				ESTIMATED			AS BUILT	
				2 ABUTS.	SUPERST.	TOTAL	2 ABUTS.	SUPERST.
	2101-0850002	CLEARING AND GRUBBING	UNITS	-	-	341		
	2102-2710070	EXCAVATION, CLASS 10, ROADWAY & BORROW	CY	-	-	5191		
	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	-	-	1485		
	2312-8260201	SURFACING, GRANULAR, CLASS C GRAVEL - ON ROAD	TONS	-	-	277		
	2401-6745650	REMOVAL OF EXISTING STRUCTURES	LUMP SUM	-	-	LS		
	2402-2720000	EXCAVATION, CLASS 20	CY	70	-	70		
	2403-0900000	CONCRETE, STRUCTURAL	CY	18.2	197.3	215.5		
	2404-7775000	STEEL, REINFORCING	LBS	2454	52058	54510		
	2414-8424120	RAIL, CONCRETE, OPEN	LF	-	247	247		
	2417-0225018	APRONS, METAL, 18 IN. DIA.	ONLY	-	-	1		
	2417-0225024	APRONS, METAL, 24 IN. DIA.	ONLY	-	-	1		
	2417-1040018	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 18 IN. DIA.	LF	-	-	48		
	2417-2150018	DIAPHRAGM, CORRUGATED METAL TYPE A, 18 IN.	ONLY	-	-	1		
	2417-2150024	DIAPHRAGM, CORRUGATED METAL TYPE A, 24 IN.	ONLY	-	-	1		
	2417-2550018	ELBOWS, CORRUGATED METAL PIPE, 18 IN. DIA.	ONLY	-	-	1		
	2417-2550024	ELBOWS, CORRUGATED METAL PIPE, 24 IN. DIA.	ONLY	-	-	1		
	2501-5425042	PILING, DRIVE STEEL BEARING HP10X42	LF	392	-	392		
	2501-5425053	PILING, DRIVE STEEL BEARING HP12X53	LF	-	880	880		
	2501-5475053	PILING, ENCASE STEEL BEARING HP12X53	LF	-	360	360		
	2501-5550042	PILING, FURNISH STEEL BEARING HP10X42	LF	392	-	392		
	2501-5550053	PILING, FURNISH STEEL BEARING HP12X53	LF	-	880	880		
	2502-8215118	SUBDRAIN, CORRUGATED METAL PIPE, 18 IN. DIA.	LF	-	-	52		
	2502-8215124	SUBDRAIN, CORRUGATED METAL PIPE, 24 IN. DIA.	LF	-	-	50		
	2505-4020152	GUARDRAIL, END ANCHORAGES, BEAM RE-52	ONLY	-	-	4		
	2505-4020250	GUARDRAIL, FORMED STEEL BEAM	LF	-	-	150		
	2505-4020251	GUARDRAIL, FORMED STEEL THRIE BEAM	LF	-	-	125		
	2505-4020400	GUARDRAIL, POSTS, BEAM	ONLY	-	-	48		
	2505-4021690	GUARDRAIL, END ANCHORAGES, BEAM RE-69	ONLY	-	-	4		
	2507-3250005	FABRIC, ENGINEERING	SY	-	-	1021		
	2507-6800060	REVTMENT, CLASS E, RIP RAP	TONS	-	-	885		
	2518-6910000	SAFETY CLOSURE	ONLY	-	-	2		
	2524-9220020	OBJECT MARKER, TYPE 2	ONLY	-	-	8		
	2524-9220030	OBJECT MARKERS, TYPE 3	ONLY	-	-	4		
	2528-8445110	TRAFFIC CONTROL	LUMP SUM	-	-	LS		
	2533-4980005	MOBILIZATION	LUMP SUM	-	-	LS		
	2601-2636042	SEEDING, FERTILIZING AND MULCHING	ACRES	-	-	1.8		

**TABULATION OF GRADING FOR GUARDRAIL INSTALLATIONS**

\*Refer to Standard Road Plan RL-11 or Typical 4303 and 4306

NO.	STATION	TYPE	DIMENSIONS *			CLASS 10 EXCAV.	EMBANK. IN PLACE	PIPE			REMARKS
			(A)/T	(Y)	(Z)			Size	Type	Length	
			Lin.Ft.	Lin.Ft.	Lin.Ft.			Cu. Yds. **	Cu. Yds.	Inches	
1	14+91.25	2	56.25	5	19	35	-	-	-	-	S. END, RT. SIDE
2	14+91.25	2	56.25	5	19	27	-	-	-	-	S. END, LT. SIDE
3	14+91.25	2	56.25	5	19	34	-	-	-	-	N. END, LT. SIDE
4	14+91.25	2	56.25	5	19	38	-	-	-	-	N. END, RT. SIDE

\*\* INCLUDES 35% SHRINKAGE

**TABULATION OF SAFETY CLOSURES**

REFER TO SECTION 2518 OF THE STANDARD SPECIFICATIONS

NO.	STATION	REMARKS
1	9+00	SOUTH END
2	20+25	NORTH END

**TABULATION OF DELINEATORS AND OBJECT MARKERS**

\*Refer to Standard Plan RE-48A-B\* and RE-29C \*\* Not a Bid Item

LOCATION	STATION	TYPE *	DELINEATOR		OBJECT MARKER			REMARKS
			Type 2	Type 3	Offset Brackets **			
			OM2-3YV	OM-3L	OM-3R	Number		
	14+91.25	1	4	1	1	-	SOUTH END	
	14+91.25	1	4	1	1	-	NORTH END	

**TABULATION OF STEEL BEAM GUARDRAIL FOR STANDARD ROAD PLANS RE-63, RE-65**

\*Includes 2 - 12.5' Thrie Beam Sections and 1 - 6.25' "W" to Thrie Beam Transition Section

NO.	STATION	STANDARD ROAD PLAN	CASE	FORMED STEEL BEAM GUARDRAIL					BEAM GUARDRAIL POSTS				ANCHOR SYSTEM	REMARKS			
				(A)	(H)	(S)	(T)	TOTAL THRIE BEAM	With 8" x 8" Spacer Blocks		Without Spacer Blocks				POST & ADAPTOR RE-37		
				"W" Beam Lin.Ft.	Thrie Beam Lin.Ft.	Thrie Beam Lin.Ft.	Thrie Beam Lin.Ft.	"W" Beam Lin.Ft.	10"x10"x8"	8"x8"x8"	6"x8"x8"	No.				No.	No.
	14+91.25	RE-65	U	37.5	31.25	-	31.25	37.5	75.0	62.5	6	4	4	-	RE-52	2	RT.
		RE-65	U	37.5	31.25	-	31.25	37.5	75.0	62.5	6	4	4	-	RE-69	2	LT.

FILE NO.: 54060

DESIGN NO.: 5494

PROJ. NO.: BROS-9024(33)--5F-24

**SUNDQUIST ENGINEERING, P.C.** CONSULTING ENGINEERS DENISON, IOWA  
Highways Municipal Drainage Surveying

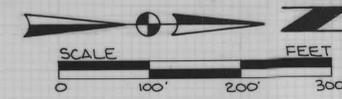
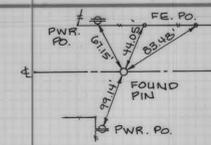
PROJECT NO.: 30860 DATE: 1/94 REV.:  
APPROVED BY: SAS DRAWN BY: TTK DESCRIPTION: ESTIMATE OF QUANTITIES & GENERAL INFORMATION SHEET C.01  
CLIENT: CRAWFORD COUNTY

**PROPERTY OWNERS**

- ① WILBUR GOTTSCH  
LENA GOTTSCH LF. EST.
- ② MARK A. RAGALLER
- ③ DAVID LOHMAN

**WESTSIDE TWP.  
T-84N R-37W**

SEC. 15



DATE	
BY	
SURVEYED	
PLOTTED	
ALIGNMENT CHECKED	
RT. OF WAY CHECKED	
PLAN	
NOTE BOOK	
NO.	

DATE	
BY	
SURVEYED	
GRADES CHECKED	
BM NOTED	
STRUCTURE NOTATIONS CHECKED	
PROFILE	
NOTE BOOK	
NO.	

SE1/4 SE1/4  
15-84-37

SW1/4 SW1/4  
14-84-37

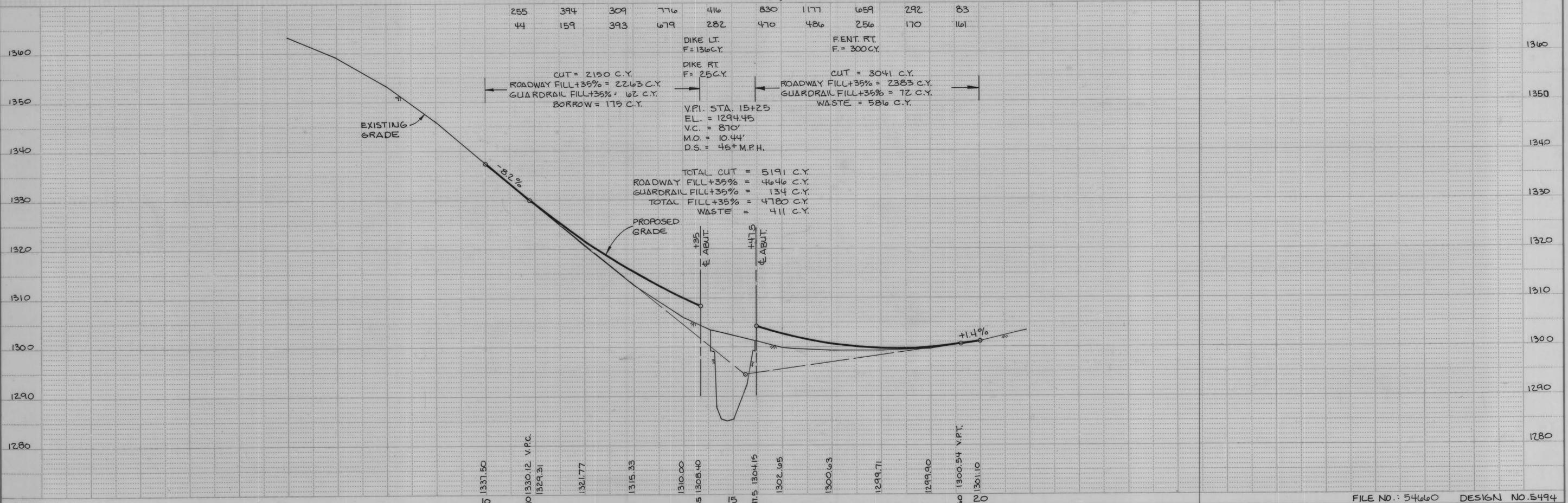
STA. 14+18, 50' RT.  
CONTR. TO FURNISH & PLACE  
18" x 52' C.M.P. SUBDRAIN  
INCL. 1- 15° ELBOW,  
1- STD. RF-5 APRON &  
1-TYPE "A" DIAPHRAGM

STA. 14+19, 50' LT.  
CONTR. TO FURNISH & PLACE  
24" x 50' C.M.P. SUBDRAIN  
INCL. 1- 15° ELBOW,  
1- STD. RF-5 APRON &  
1-TYPE "A" DIAPHRAGM

STA. 15+00  
50' x 16' PONY TRUSS  
W/2- 20' x 16' APPROACHES  
TIMBER PILING & ABUT.  
D.A. = 17.2 S.M. R-H  
CONTR. TO REMOVE EXIST.  
STRUCTURE & CONSTRUCT  
112'-6 x 24' CONTINUOUS CONC.  
SLAB BRIDGE @ STA. 14+91.25

STA. 16+23  
FENT. RT.  
18" x 20' RCP  
CONTR. FURNISH & PLACE  
18" x 48' CMP  
@ STA. 17+00 ±

- B.M. #1 - R.R. SPK. IN PWR. PO. @ STA. 12+98, 33' LT. EL. = 1316.80
- B.M. #2 - R.R. SPK. IN PWR. PO. @ STA. 17+93, 33' LT. EL. = 1298.29
- B.M. #3 - R.R. SPK. IN PWR. PO. @ STA. 20+25, 33' LT. EL. = 1298.77

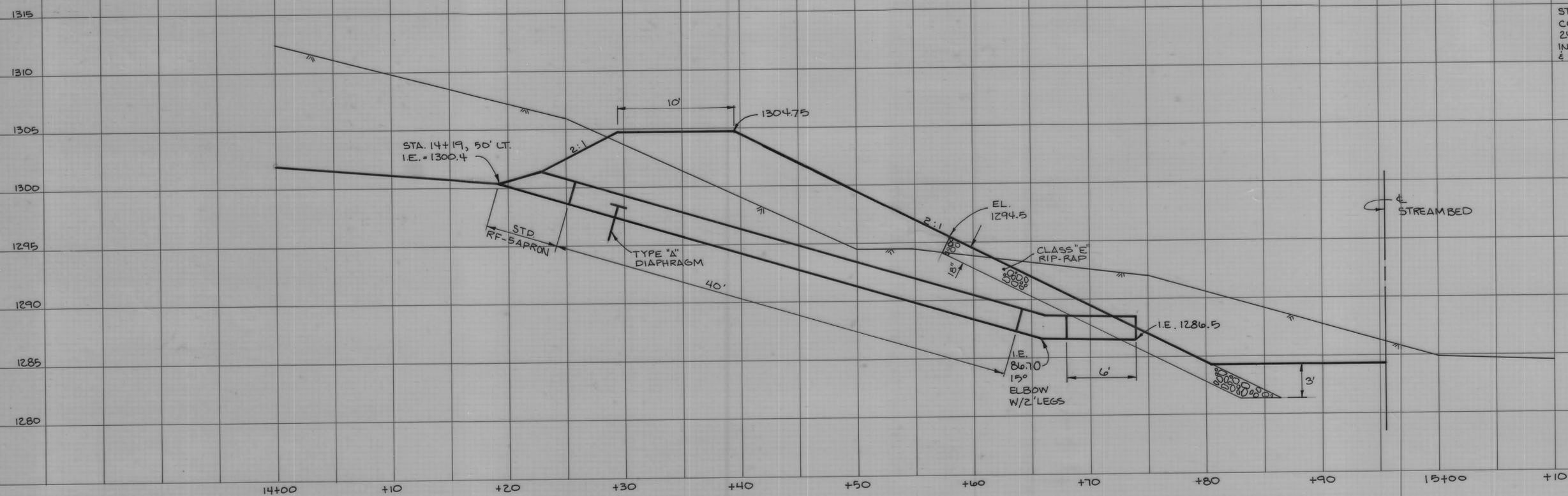


CRAWFORD COUNTY

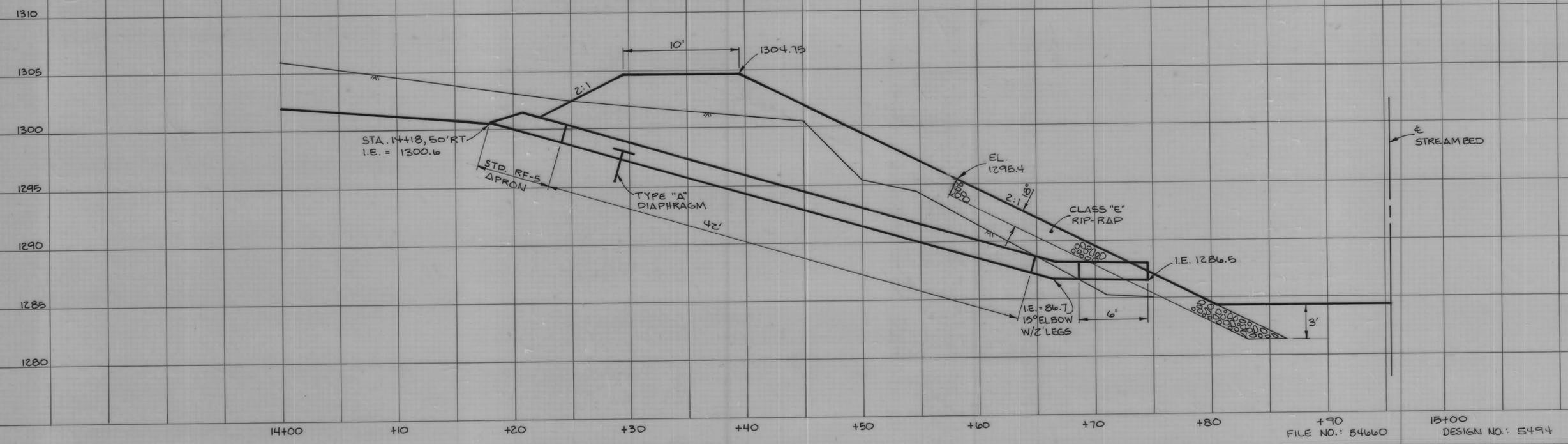
PROJECT NUMBER SE. # 30860  
BROS-9024(33)--5F-24

FILE NO.: 54660 DESIGN NO. 5494

STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IA				D.01



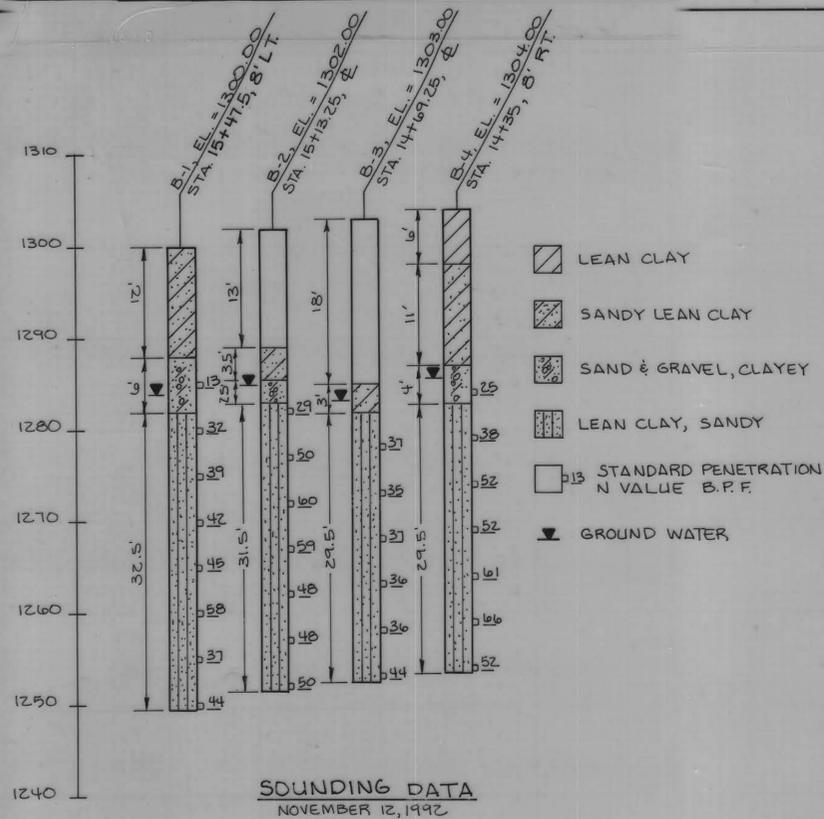
STA. 14+19, 50' LT.  
 CONTRACTOR TO FURNISH & PLACE  
 24" x 50' C.M.P. SUBDRAIN  
 INCL. 1- 15° ELBOW, 1- STD. RF-5 APRON  
 & 1- TYPE "A" DIAPHRAGM



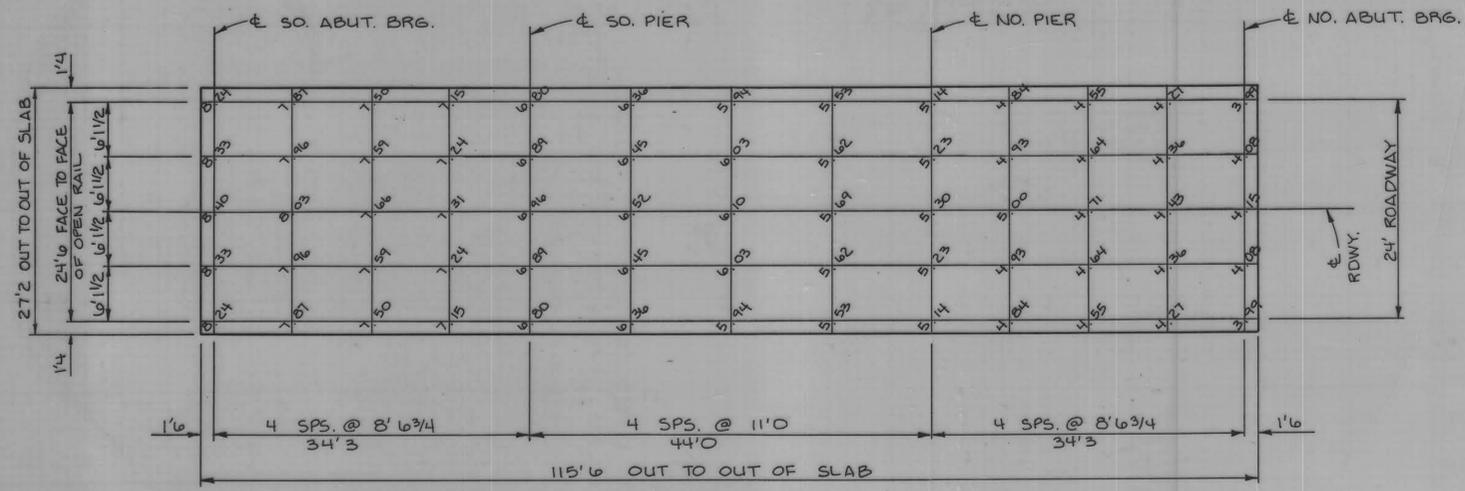
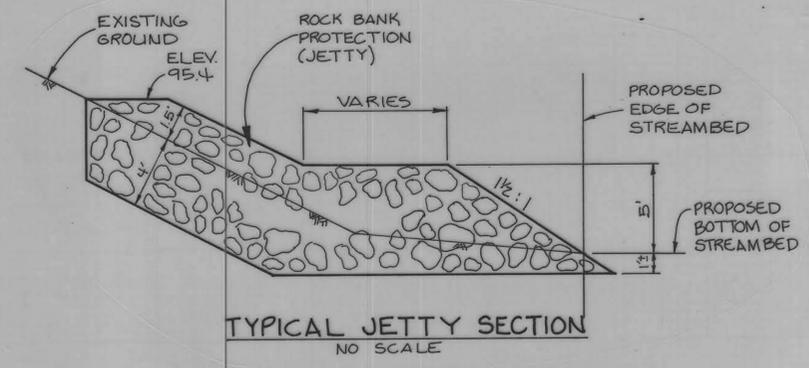
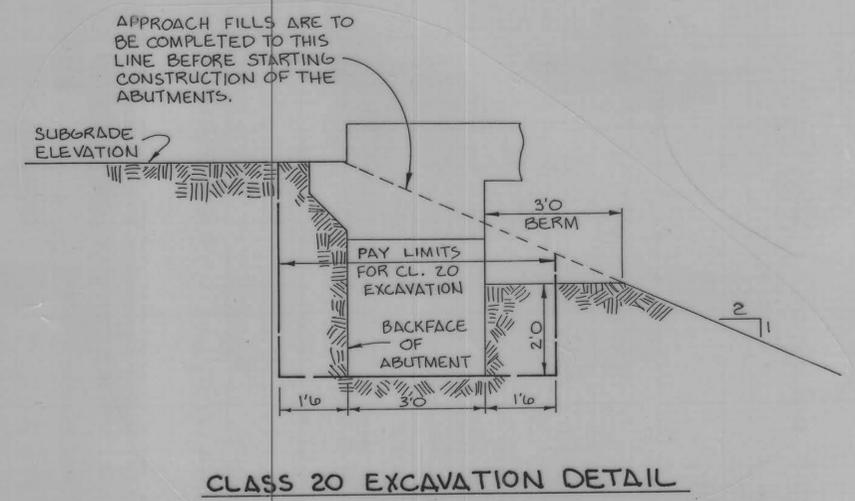
STA. 14+18, 50' RT.  
 CONTRACTOR TO FURNISH & PLACE  
 18" x 52' C.M.P. SUBDRAIN  
 INCL. 1- 15° ELBOW, 1- STD. RF-5 APRON  
 & 1- TYPE "A" DIAPHRAGM

FILE NO.: 54660      DESIGN NO.: 5494      PROJ. NO.: BROS-9024(33)--5F-24

<b>SUNDQUIST ENGINEERING, P.C.</b> Highways		<b>CONSULTING ENGINEERS</b> Municipal		<b>DENISON, IOWA</b> Surveying	
PROJECT NO.: 30860	DATE:	REV.:	DESCRIPTION: SUBDRAIN DETAILS		
APPROVED BY: SAS	DRAWN BY: TTK				
CLIENT: CRAWFORD COUNTY, IOWA					SHEET U.01



SOUNDING DATA  
NOVEMBER 12, 1992

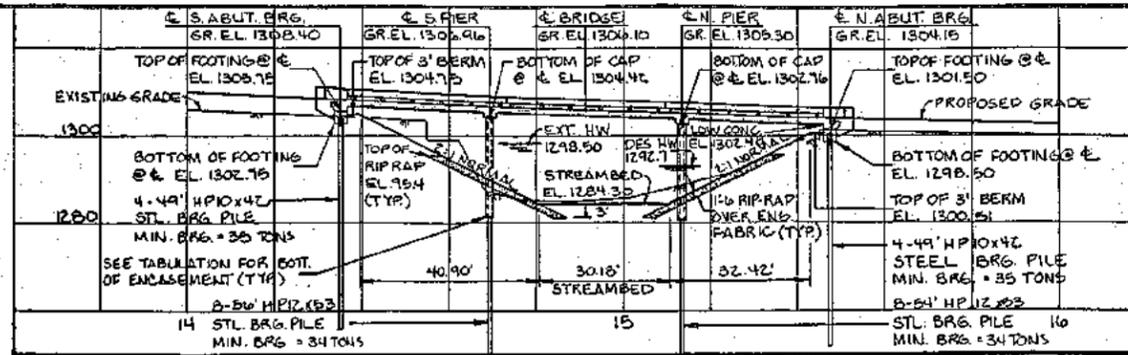


TOP OF SLAB ELEVATIONS  
(ADD 1300' TO ABOVE ELEVATIONS)

FILE NO.: 54660 DESIGN NO.: 5494 PROJ. NO.: BR03-9024(33)--5F-24

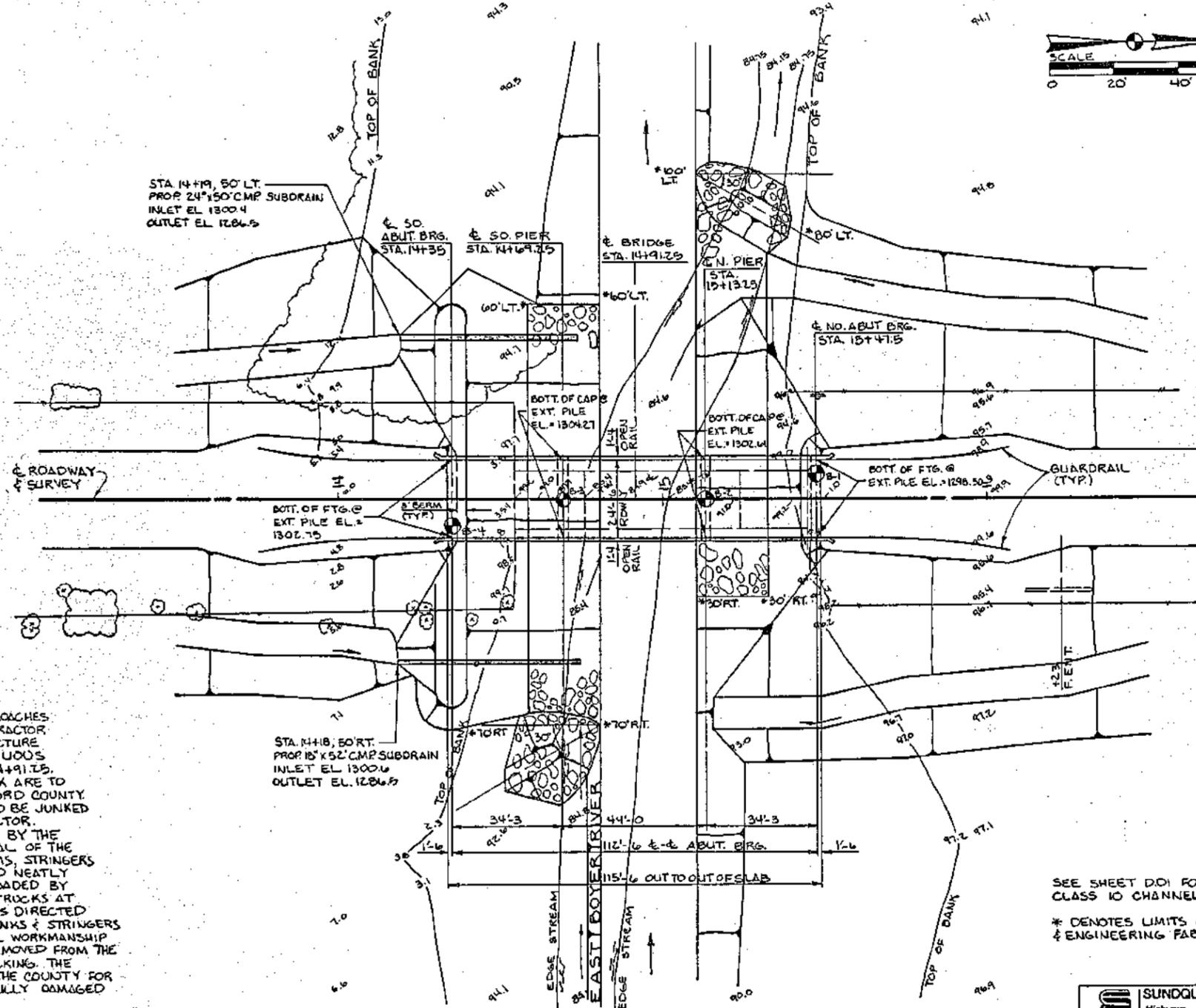
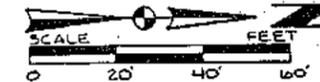
		CONSULTING ENGINEERS DENISON, IOWA	
PROJECT NO.: 30860 APPROVED BY: SAS CLIENT: CRAWFORD COUNTY	DATE: DRAWN BY:	REV.: DESCRIPTION: MISCELLANEOUS DETAILS	MUNICIPAL Drainage Surveying SHEET U.02

BOTTOM OF ENCASEMENT		
LOCATION	ELEVATION	
	SOUTH PIER	NORTH PIER
WEST PILE	1281.27	1280.61
PILE	1281.31	1280.65
PILE	1281.36	1280.70
PILE	1281.40	1280.74
PILE	1281.44	1280.78
PILE	1281.48	1280.82
PILE	1281.52	1280.86
PILE	1281.56	1280.90
PILE	1281.60	1280.94
EAST PILE	1281.27	1280.61



D.M.#1 - R.P. SPK. IN PWA. P.O. @ STA. 12+98, 33' LT., EL. = 1316.80

LONGITUDINAL SECTION ON CENTERLINE  
SCALE: 1" = 20'



SITUATION PLAN

**HYDRAULIC DATA**

Drainage Area 17.2 Sq. Mi.  
 Design Discharge 2655 cfs  
 Design High Water 1292.7  
 Reach Slope (Local) 16.1 ft/mi.  
 Bridge Waterway Area 395 ft<sup>2</sup>  
 Design Velocity 6.7 fps  
 Q25 2655 cfs Stage 1292.7  
 Q50 3230 cfs Stage 1293.4  
 Q100 3845 cfs Stage 1294.1  
 Q500 5055 cfs Stage 1295.1  
 Extreme High Water 13220 cfs  
 Stage 1298.5 Date June 1990

LOCATION  
 NEAR E1/4 CORNER  
 T-84N R-37W  
 SEC. 15  
 WESTSIDE TWP.  
 OVER EAST BOYER RIVER

DESIGN FOR:  
 112'-6" x 24' CONTINUOUS  
 CONCRETE SLAB BRIDGE  
 INTEGRAL ABUTMENTS P10A PIERS  
 OPEN RAILS  
 STA. 14+91.25 SKEW 0°  
 CRAWFORD COUNTY  
 FILE NO.: 54680 DESIGN NO.: 5494  
 PROJECT NO.: BROS-9024(33)-5F-24

SEE SHEET D01 FOR LIMITS OF  
 CLASS 10 CHANNEL EXCAVATION.

\* DENOTES LIMITS OF CLASS "E" RIP-RAP  
 & ENGINEERING FABRIC.

STA. 15+00  
 50' x 16' PONY TRUSS W/2 20' x 16' APPROACHES  
 TIMBER PILING & ABUTMENTS. CONTRACTOR  
 REMOVE & SALVAGE EXISTING STRUCTURE  
 CONSTRUCT NEW 12' x 24' CONTINUOUS  
 CONCRETE SLAB BRIDGE @ STA. 14+91.25.  
 THE I-BEAMS, STRINGERS & PLANK ARE TO  
 REMAIN PROPERTY OF CRAWFORD COUNTY  
 THE REMAINDER OF THE BRIDGE TO BE JUNKED  
 AND DISPOSED OF BY THE CONTRACTOR.  
 DISPOSAL SITE TO BE PROVIDED BY THE  
 CONTRACTOR, WITH THE APPROVAL OF THE  
 COUNTY ENGINEER. THE I-BEAMS, STRINGERS  
 AND PLANK SHALL BE STOCKPILED NEATLY  
 WITHIN 300' OF THE SITE AND LOADED BY  
 THE CONTRACTOR ON COUNTY TRUCKS AT  
 THE COUNTY'S CONVENIENCE AS DIRECTED  
 BY THE COUNTY ENGINEER. PLANKS & STRINGERS  
 SHALL BE REMOVED IN A CAREFUL WORKMANSHIP  
 LIKE MANNER WITH THE SPIKES REMOVED FROM THE  
 PLANKS & STRINGERS BEFORE STACKING. THE  
 CONTRACTOR SHALL REIMBURSE THE COUNTY FOR  
 ANY PLANKS & STRINGERS WILLFULLY DAMAGED  
 DURING THEIR REMOVAL.

SUNDQUIST ENGINEERING, P.C.		CONSULTING ENGINEERS		DENISON, IOWA	
PROJECT NO.: 30860	DATE:	REV.:	DESCRIPTION: SITUATION PLAN	SHEET	
APPROVED BY: SAS	DRAWN BY: TKK			V.01	
CLIENT: CRAWFORD COUNTY					