

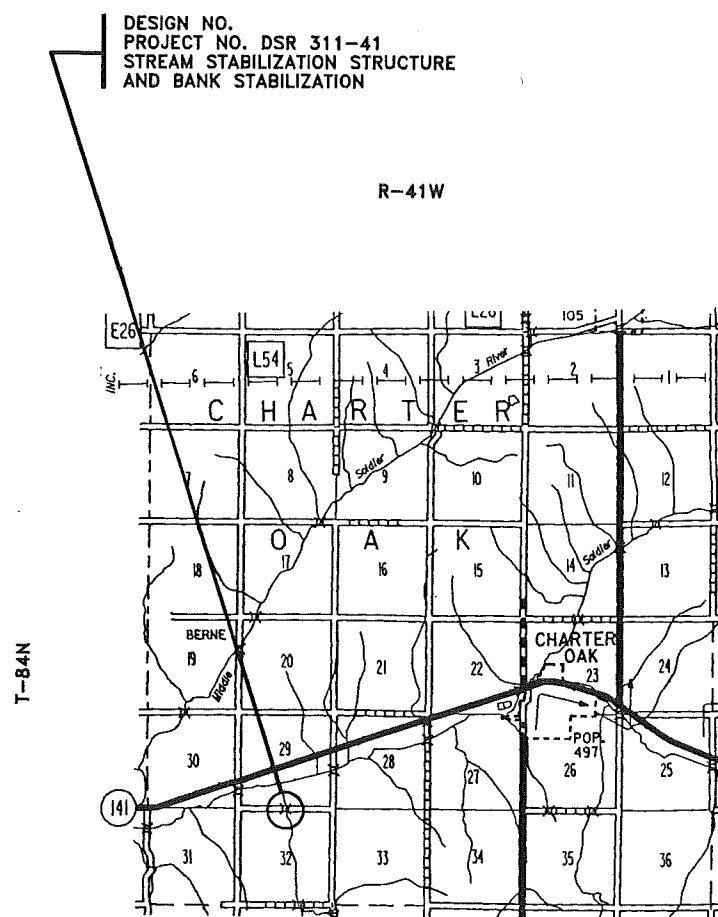
IOWA
DEPARTMENT OF TRANSPORTATION
Project Development Division
PLANS OF PROPOSED IMPROVEMENT ON THE
LOCAL SYSTEM
CRAWFORD COUNTY
STREAM STABILIZATION STRUCTURE
AND BANK STABILIZATION

<p>THE STANDARD SPECIFICATIONS, SERIES OF 1992, OF THE IOWA DEPARTMENT OF TRANSPORTATION SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT</p> <p>PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS</p>
--

[illegible]

TOTAL ESTIMATED QUANTITIES (FOR 311-41 ONLY)					
NO.	ITEM	UNIT	WEIR	BANK STAB.	TOTAL
1	PILING, STEEL SHEET, FURNISH AND DRIVE	S.F.	1,235	—	1,235
2	STEEL, STRUCTURAL	LBS.	2,568	—	2,568
3	EXCAVATION, CLASS 10, CHANNEL	C.Y.	1,247	—	1,247
4	REVETMENT, SPECIAL RIP-RAP	TONS	667	—	667
5	REVETMENT, CLASS 'D' RIP-RAP	TONS	—	290	290
6	FABRIC, ENGINEERING	S.Y.	755	438	1,193
7	TEMPORARY BARRIER RAIL, FURNISH ONLY	L.F.	60	—	60
8	TEMPORARY BARRIER RAIL, PLACE ONLY	L.F.	60	—	60
9	MOBILIZATION	L.S.	0.50	0.50	1
10	BANK STABILIZATION	L.F.	—	140	140
11	CLEARING & GRUBBING	ACRE	0.21	0.05	0.26
12	TRAFFIC CONTROL	L.S.	0.50	0.50	1

ITEM NO.	ESTIMATE REFERENCE INFORMATION
1.	SHEET PILE MAY BE NEW OR USED MATERIAL. SEE WEIR NOTES FOR ADDITIONAL INFORMATION.
2.	INCLUDES WEIGHT OF HP10X42 WALE AND ALL WELDS.
3.	SEE SITUATION PLAN FOR LIMITS.
4.	SEE RIP--RAP NOTES.
5.	REFER TO BANK SECTIONS ON SHEETS FOR TYPICAL DETAILS ON RIP--RAP PLACEMENT.
6.	SEE SITUATION PLAN AND WEIR DETAILS FOR LIMITS. TO CONFORM TO I.D.O.T. MATERIALS I.M. 498.01 APPENDIX A.
7.	SEE NOTES, SHEET 5. MAY BE NEW OR USED.
10.	INCLUDES CUT MATERIAL AND/OR BORROW MATERIAL, AND LABOR REQUIRED TO COMPLETE BANK SHAPING.
11.	INCLUDES COSTS TO REMOVE AND DISPOSE OF DEBRIS, RUBBLE, AND ANY EXISTING RIP--RAP AND ENGINEERING FABRIC AT APPLICABLE SITES. DISPOSAL OF THE RIP--RAP SHALL BE HANDLED AS DESCRIBED IN ARTICLE. 2102.03 OF THE STANDARD SPECIFICATIONS. INCLUDES STRIPPING VEGETATION WITHIN THE BANK STABILIZATION AREA AS DEFINED BY THE LIMITS OF RIP--RAP.



PROJECT LOCATION
SCALE 1" = 1 MILE

PROJECT NO. DSR 311-41

INDEX OF SHEETS

- H.01 TITLE SHEET
H.02 SITUATION PLAN
H.03 WEIR DETAILS
H.04 BANK STABILIZATION PHOTO DETAILS
H.05 BARRIER RAIL DETAILS

THIS PROJECT (COE #296980) IS COVERED BY THE
CORPS OF ENGINEERS NATIONWIDE 404 PERMIT #26.

DRAWING APPROVAL

ALL SHOP DRAWINGS AND FALSEWORK DRAWINGS THAT REQUIRE APPROVAL SHALL BE APPROVED BY CALHOUN-BURNS AND ASSOCIATES, INC.

ADDRESS : 1801 FULLER ROAD, P.O. BOX 65859
WEST DES MOINES, IOWA 50265
TELEPHONE : (515) 224-4344

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

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED

DIVISION ADMINISTRATOR DATE

APPROVED

H. Dale Wright 2-27-95
CRAWFORD COUNTY ENGINEER

John P. Hawley	
Robert D. Lohmann	
Nigel E. Erdmann	
H. Dean Hargens	
Michael J. Gorkin	
BOARD OF SUPERVISORS	DATE

I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT
WAS PREPARED UNDER MY SUPERVISION AND THAT I
AM A DULY REGISTERED PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE STATE OF IOWA.

SIGNATURE: Rodney C. Vance

NAME: RODNEY C. VANCE, P.E.

DATE: 2-23-95 REG. NO. 12995

MY REGISTRATION EXPIRES DECEMBER 31, 1995

 Iowa Department of TransportationProject Development
Division

ACCEPTED FOR LETTING

SECONDARY ROADS ENGINEER DATE

SPECIFICATIONS

DESIGN: ASHTO, SERIES OF 1992, PLUS INTERIM SPECIFICATIONS.
CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION, SERIES OF 1992, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

DESIGN STRESSES

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH ASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1992, PLUS INTERIM NOT EXCEEDING SPECIFICATIONS:
STRUCTURAL STEEL ASSUMING SALVAGED MATERIAL WITH STRESSES NOT EXCEEDING 0.55 FY.
STEEL SHEET PILE ASSUMING SALVAGED MATERIAL WITH STRESSES NOT EXCEEDING 0.65 FY.

GENERAL NOTES

QUANTITY SHOWN FOR STRUCTURAL STEEL IS FOR FURNISHING AND PLACING STEEL I-BEAM WALKER AND ALL WELDING.
THE CONTRACTOR SHALL CLEAR THE CHANNEL AS SHOWN ON THE WEIR DETAIL SHEET AND "SITUATION PLAN". EXCESS MATERIAL SHALL BE DISPOSED AT A SITE FURNISHED BY THE CONTRACTOR.
IF ARCHAEOLOGICAL MATERIALS ARE ENCOUNTERED DURING THE CONSTRUCTION PHASE OF THIS PROJECT, THE OFFICE OF PLANNING AND/OR THE OFFICE OF LOCAL SYSTEMS (IOWA DOT) MUST BE CONTACTED IMMEDIATELY SO THE PROPER AUTHORITIES CAN BE NOTIFIED ACCORDING TO THE EXISTING FEDERAL REGULATIONS AND STATE PROCEDURES. ADDITIONALLY, IT SHOULD BE NOTED THAT FINDINGS AND RECOMMENDATIONS FOR CLEARANCE OR FURTHER TESTING CANNOT BE CONSIDERED FINAL UNTIL CONCURRENCE IS RECEIVED FROM THE STATE HISTORICAL PRESERVATION OFFICER. PHONE: (515)239-1215.
THE CONTRACTOR IS TO CONTACT ALL UTILITY COMPANIES WHO HAVE LINES, CONDUITS OR OTHER FACILITIES WITHIN THE WORK AREA, BEFORE STARTING CONSTRUCTION.
SEEDING, FERTILIZING, AND MULCHING OF ALL DISTURBED AREAS SHALL BE DONE FOLLOWING THE COMPLETION OF WORK ON THIS PROJECT AS PER ARTICLE 2801.04 FOR RURAL AREAS, BY OTHERS.
THE CONTRACTOR IS TO VISIT THE SITE TO ENSURE THAT HE IS FAMILIAR WITH THE EXISTING SITE CONDITIONS. UTILITIES ARE INDICATED ON THE DRAWINGS TO PROVIDE GENERAL LOCATION INFORMATION ONLY. THE CONTRACTOR WILL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. SHOULD ANY UNDERGROUND UTILITIES BE FOUND DIFFERENT THAN SHOWN ON DRAWINGS, THEY SHALL BE PROTECTED IN PLACE AND THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

LOCATION

CRAWFORD COUNTY
T-84N, R-41W
SECTIONS 29 & 32
CHARTER OAK TOWNSHIP
TRIB. TO EAST SOLDIER RIVER

HYDRAULIC DATA

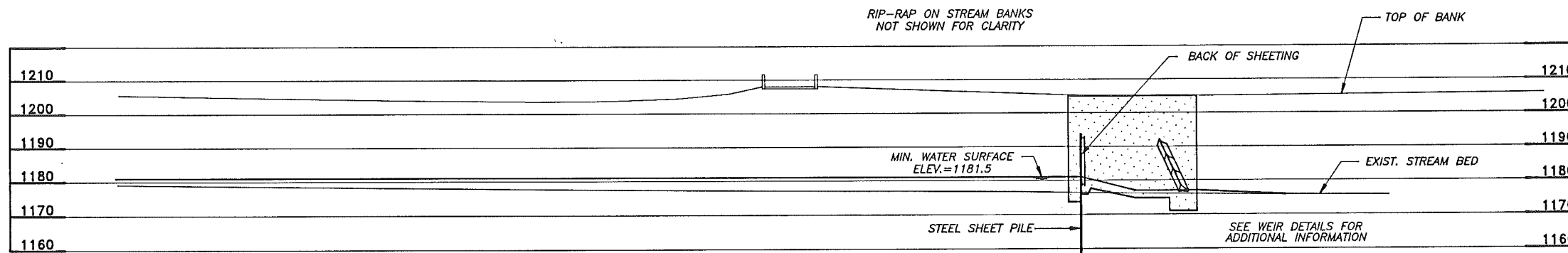
DRAINAGE AREA = 3.89 SQ. MI.
DESIGN DISCHARGE = 2,100 C.F.S.
DESIGN HIGH WATER EL. = 1183.3
MANNING SLOPE = 0.0045 FT./FT.
BRIDGE WATERWAY AREA = 248.2 SQ. FT.
DESIGN VELOCITY = 8.5 F.P.S.
Q25 = 1,725 C.F.S. STAGE EL. = 1184.2
Q50 = 2,100 C.F.S. STAGE EL. = 1185.1 (DESIGN)
Q100 = 2,550 C.F.S. STAGE EL. = 1186.0
Q500 = 3,400 C.F.S. STAGE EL. = 1187.6
EXT. H.W. EL. = UNKNOWN

STREAM STABILIZATION STRUCTURE AND BANK REPAIR

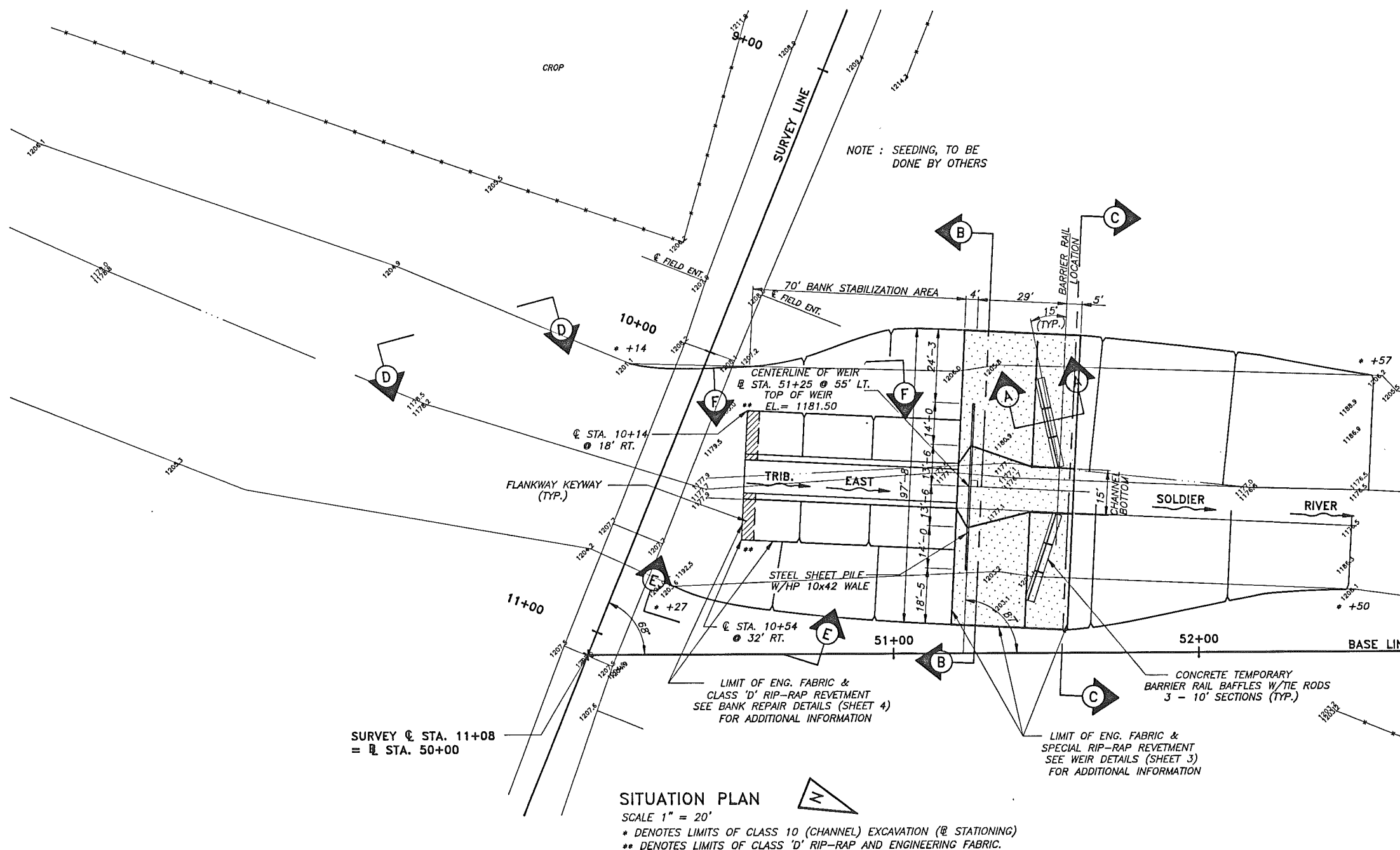
SITUATION PLAN

CRAWFORD COUNTY,

IOWA



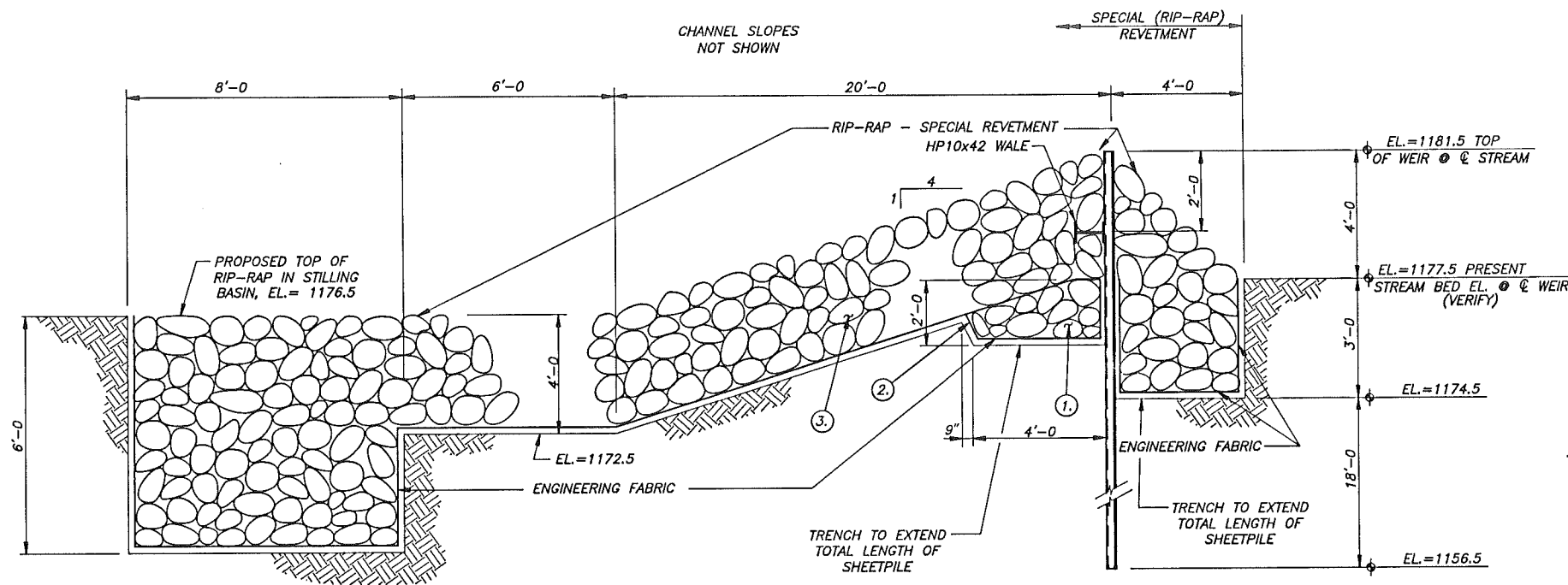
LONGITUDINAL SECTION ALONG C OF STREAM



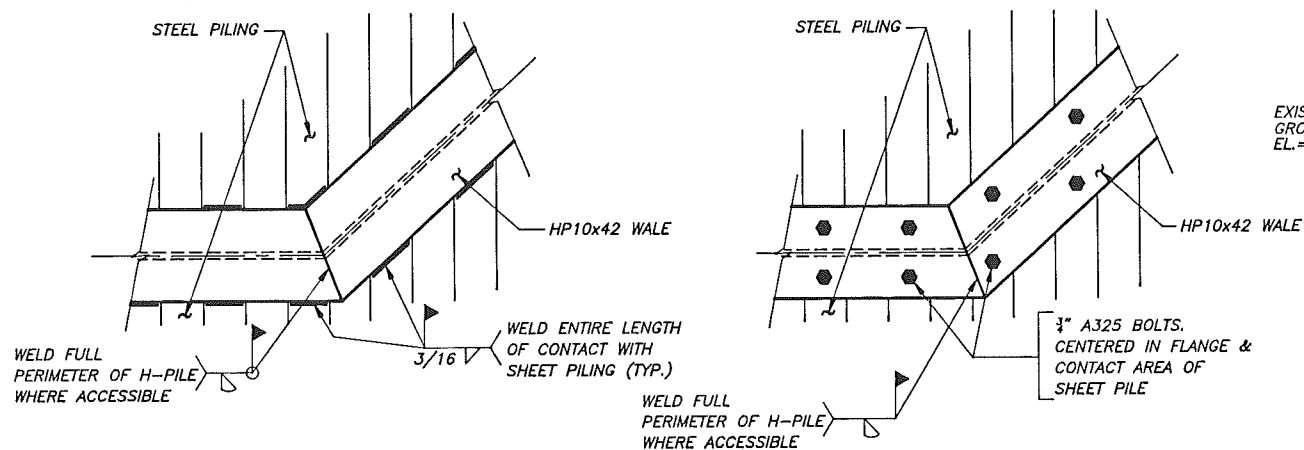
SITUATION PLAN

SCALE 1" = 20'

* DENOTES LIMITS OF CLASS 10 (CHANNEL) EXCAVATION (@ STATIONING)
** DENOTES LIMITS OF CLASS 'D' RIP-RAP AND ENGINEERING FABRIC.

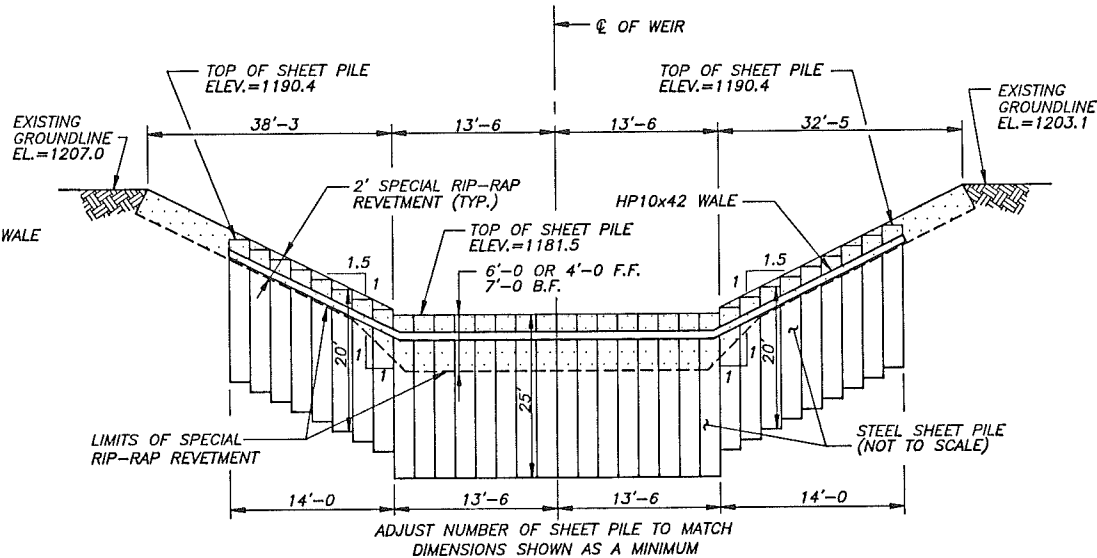


LONGITUDINAL SECTION ALONG CENTERLINE OF STREAM

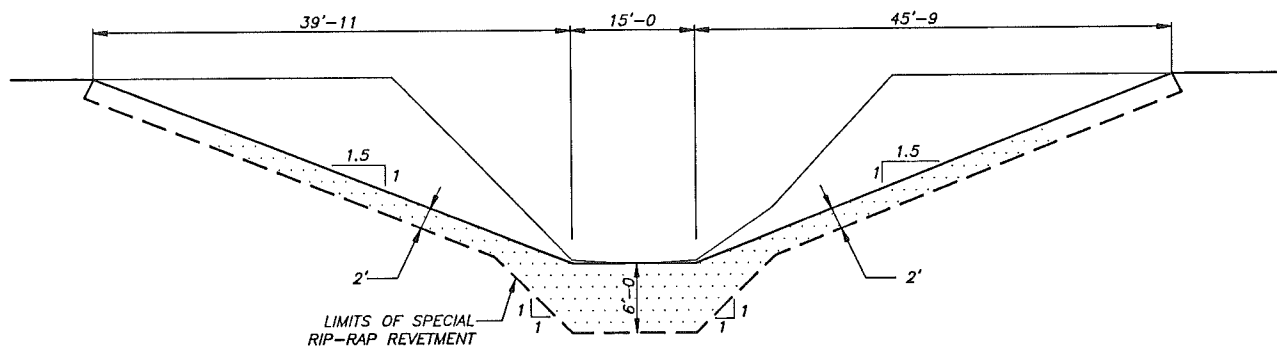


TYPICAL WELDED CONNECTION DETAIL

TYPICAL BOLTED CONNECTION DETAIL



SECTION B-B



SECTION C-C

WEIR NOTES

ENGINEERING FABRIC INSTALLATION SEQUENCE DOWNSTREAM FROM WEIR SHALL BE AS FOLLOWS:

- 1 EXCAVATE TRENCH BELOW HP10x42 WALE.
- 2 PLACE ENGINEERING FABRIC, BEGINNING AT DOWNSTREAM END OF TRENCH, ROLLING FABRIC UP THE FACE OF THE SHEET PILE WALL. ROLL A SUFFICIENT AMOUNT OF FABRIC FREE TO FACILITATE RIP-RAP PLACEMENT WITHIN TRENCH. PLACE RIP-RAP IN THE TRENCH TO LEVELS SHOWN AND COVER WITH FABRIC. ENGINEERING FABRIC SHALL CONFORM TO I.D.O.T. MATERIALS I.M. 496.01.
- 3 PLACE REMAINDER OF FABRIC AND COVER WITH RIP-RAP.

ENGINEERING FABRIC SHALL BE LAPPED 3'-0" MINIMUM IN DIRECTION SHOWN.

STEEL SHEET PILE SECTION SHOWN IS A MINIMUM SIZE AND MAY BE SALVAGED MATERIAL. OTHER SHEET PILE SIZES MAY BE SUBSTITUTED WITH COUNTY ENGINEER'S APPROVAL. ALL SALVAGED MATERIAL SHALL BE APPROVED BY THE ENGINEER PRIOR TO INCORPORATION INTO THE PROJECT. THE WEIR SHEET PILE WALL SHALL CARRY A MOMENT OF 200,000 IN.-LBS./FT. AT A STRESS NOT EXCEEDING .65 FY. MINIMUM SHEET PILE THICKNESS IS 3/8 INCH, MINIMUM SECTION MODULUS WILL BE 5.2 CUBIC INCHES PER FOOT OF WALL USING FY = 38,500 PSI (REGULAR CARBON GRADE STEEL). THE HP10x42 WALE IS A MINIMUM SIZE, ASSUMING SALVAGED MATERIAL, FY = 33,000 PSI. SHEET PILE SHALL BE DRIVEN TO FULL PENETRATION WHERE PRACTICABLE.

ALL EXCAVATION FOR RIP-RAP WEIR INSTALLATION SHALL BE PAID FOR AS CLASS 10, CHANNEL, EXCAVATION.

THE STEEL SHEET PILE WEIR AND RIP-RAP STILLING BASIN ARE DESIGNED AND CONSTRUCTED AS A RESEARCH PROJECT IN CONNECTION WITH EFFORTS TO DEVELOP ECONOMICAL STREAM STABILIZATION FACILITY WHICH PROVIDES A DEGREE OF PROTECTION AND EXTENSION OF EXPECTED LIFE OF BRIDGE STRUCTURES LOCATED IN CLOSE PROXIMITY OF THE FACILITY.

DESIGN TECHNIQUES AND PRINCIPLES USED TO DESIGN THIS PROJECT ARE THOSE GENERALLY ACCEPTED IN THE ENGINEERING PROFESSION, OR REPRESENT THE GENERALLY ACCEPTED EFFORTS OF A COMPETENT ENGINEER. THESE TECHNIQUES AND PRINCIPLES, AND THEIR ASSOCIATED DESIGN CODES, INCLUDE ACCEPTABLE AMOUNTS OF MOVEMENT, DEFLECTION, SETTLEMENT, DEVIATION, CRACKING, BENDING, AND DETERIORATION OVER TIME, AS THE INTENDED LEVEL OF PERFORMANCE OF THE FACILITY.

THE CONTRACTOR WILL ENCOUNTER LOESS SOILS ON THIS PROJECT. LOESS IS A FINE GRAINED, SILTY SOIL HAVING CHARACTERISTICS OF LOW DENSITY AND HIGH PERMEABILITY. IF SATURATED, THE SOIL WILL LOSE ITS STRENGTH (COHESIVENESS) DRAMATICALLY. SATURATED, OR NEAR SATURATED LOESS IS VERY WEAK AND WILL CAUSE FOUNDATION STABILITY PROBLEMS FOR STREAM BANKS AND EQUIPMENT. WHEN THIS CONDITION EXISTS THE CONTRACTOR SHALL NOT WORK. IT IS THE INTENT OF THESE PLANS FOR CONSTRUCTION TO BE PERFORMED DURING RELATIVELY DRY WEATHER CONDITIONS. THE ENGINEER SHALL, IN CONSULTATION WITH THE CONTRACTOR, MAKE A DETERMINATION REGARDING AN EXTENSION OF THE CONTRACT PERIOD, SHOULD SATURATED SOIL CONDITIONS BE ENCOUNTERED DURING CONSTRUCTION OF THE PROJECT.

RIP-RAP NOTES

SPECIAL (RIP-RAP) REVETMENT AROUND WEIR AS SHOWN ON THE PLANS SHALL COMPLY WITH SECTION 2507 OF STANDARD SPECIFICATIONS, 1992 AND THE FOLLOWING:

STONE WT., POUNDS	MINIMUM % LARGER THAN
1500	0
700	20
400	50
70	80

NO MORE THAN 5% PASSING THE 1/2" SIEVE.

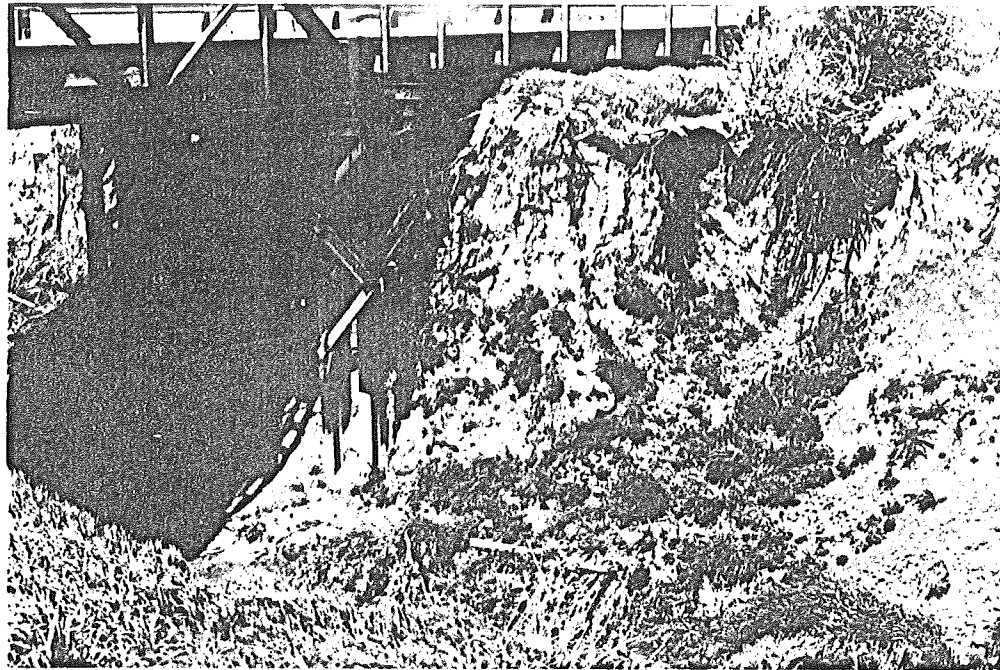
SPECIAL (RIP-RAP) REVETMENT SHALL COMPLY WITH DURABILITY AND FREEZE AND THAW REQUIREMENTS AS PER SECTION 4130.01 FOR CLASS "E" REVETMENT, METHOD A, WITH UP TO 25% VARIANCE.

STREAM STABILIZATION STRUCTURE AND BANK REPAIR

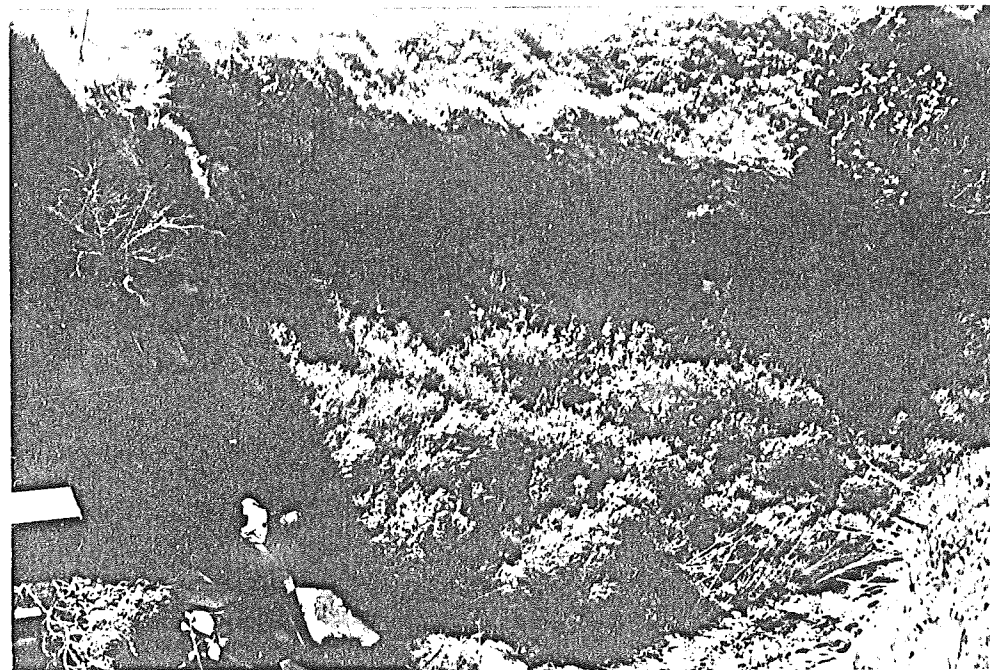
WEIR DETAILS

CRAWFORD COUNTY,

IOWA



VIEW D-D



VIEW E-E



VIEW F-F

SPECIFICATIONS

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION, SERIES OF 1992, PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.

BANK STABILIZATION NOTES

RIPRAP QUANTITIES SHOWN ARE APPROXIMATE ONLY. PAYMENT WILL BE BASED ON FIELD MEASUREMENTS MADE AT THE TIME OF CONSTRUCTION. SECTIONS SHOWN ON THIS SHEET ARE INTENDED TO BE TYPICAL FOR A TYPE OF REPAIR AND MAY NOT EXACTLY MATCH EXISTING SITE CONDITIONS.

THE BANKS ARE TO BE SHAPED TO APPROXIMATE SECTIONS SHOWN. THE SLOPE IS TO BE COVERED WITH ENGINEERING FABRIC AND A UNIFORM 18" THICKNESS OF RIPRAP CLASS "D" REVETMENT.

SUITABLE CHANNEL EXCAVATION MAY BE USED TO SHAPE THE BANKS. THE ENGINEER WILL DETERMINE SUITABLE MATERIAL. THE CONTRACTOR WILL BE RESPONSIBLE FOR OBTAINING HIS OWN BORROW FOR ALL FILL MATERIAL NOT AVAILABLE AT THE SITE. THE CONTRACTOR IS TO FAMILIARIZE HIMSELF WITH THE PROVISIONS OF IOWA LAW AS IT APPLIES TO THE REMOVAL AND REPLACEMENT OF TOPSOIL ON BORROW AREAS.

THE CONTRACTOR WILL BE RESPONSIBLE TO REMOVE ALL REMNANTS OF RIPRAP FROM FARM FIELDS SURROUNDING THE BANK REPAIR SITES. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS CLEAN-UP ACTIVITY.

ALL UNSALVAGEABLE MATERIAL AND RUBBLE GENERATED DURING THIS PROJECT SHALL BE DISPOSED OF OFF THE HIGHWAY RIGHT-OF-WAY ON A WASTE AREA PROVIDED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER OR BURNED IN ACCORDANCE WITH CURRENT REGULATIONS. THE WASTED MATERIAL MUST NOT CREATE AN UNSIGHTLY CONDITION WHEN VIEWED FROM PUBLIC HIGHWAYS. THE COST OF WASTING OR BURNING UNSALVAGEABLE MATERIAL AND RUBBLE IS TO BE INCLUDED IN THE BID ITEM "REMOVALS, AS PER PLAN". NO PAYMENT WILL BE MADE FOR OVERHAUL.

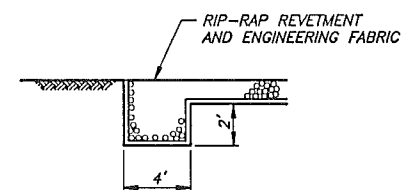
UTILITY COMPANIES WHOSE FACILITIES ARE KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THE CONTRACTOR SHALL VISIT THE CONSTRUCTION SITE TO ENSURE THAT HE IS FAMILIAR WITH THE EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. SHOULD ANY UNDERGROUND UTILITIES BE FOUND, THEY SHALL BE PROTECTED IN PLACE AND THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO OTHER WORK ON THE PROJECT.

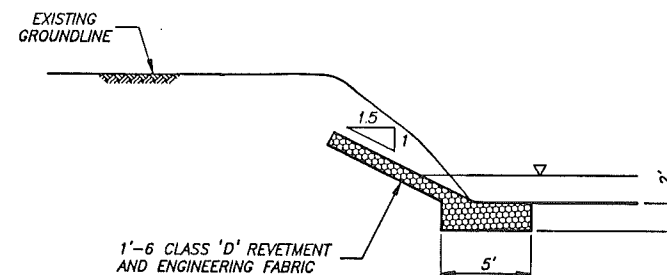
IF ARCHAEOLOGICAL MATERIALS ARE ENCOUNTERED DURING THE CONSTRUCTION PHASE OF THIS PROJECT. THE OFFICE OF PROJECT PLANNING (IDOT) MUST BE CONTACTED IMMEDIATELY SO THE PROPER AUTHORITIES CAN BE NOTIFIED ACCORDING TO THE EXISTING FEDERAL REGULATIONS AND STATE PROCEDURES. ADDITIONALLY, IT SHOULD BE NOTED THAT FINDINGS AND RECOMMENDATIONS FOR CLEARANCE OR FURTHER TESTING CANNOT BE CONSIDERED FINAL UNTIL CONCURRENCE IS RECEIVED FROM THE STATE HISTORICAL PRESERVATION OFFICER. PHONE: OFFICE OF PROJECT PLANNING 515-239-1215.

THE PRICE BID FOR "BANK REPAIR" SHALL INCLUDE ALL MATERIAL (CUT AND/OR BORROW) AND LABOR REQUIRED FOR COMPLETION OF THE BANK SHAPING.

PLACEMENT OF BORROW MATERIAL SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.



FLANK KEYWAY SECTION



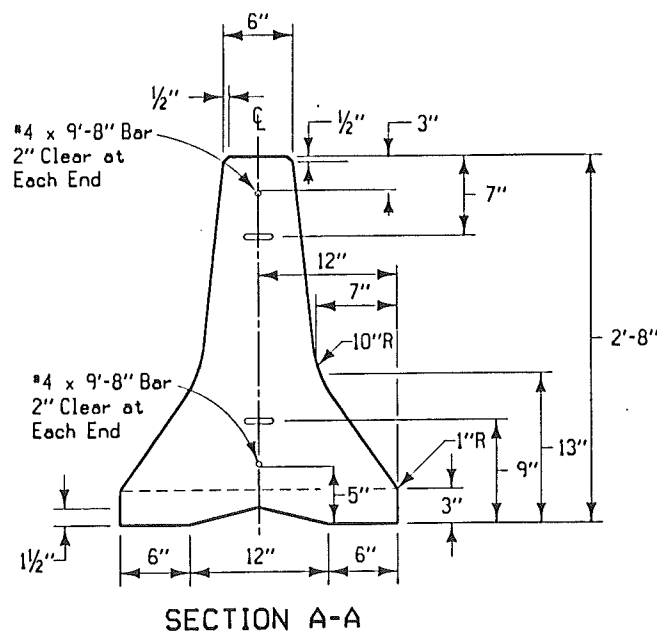
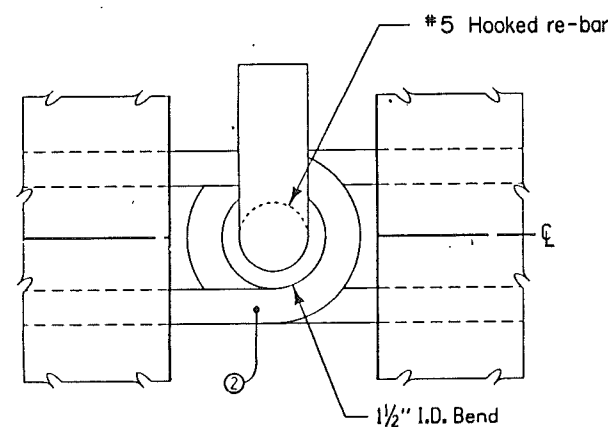
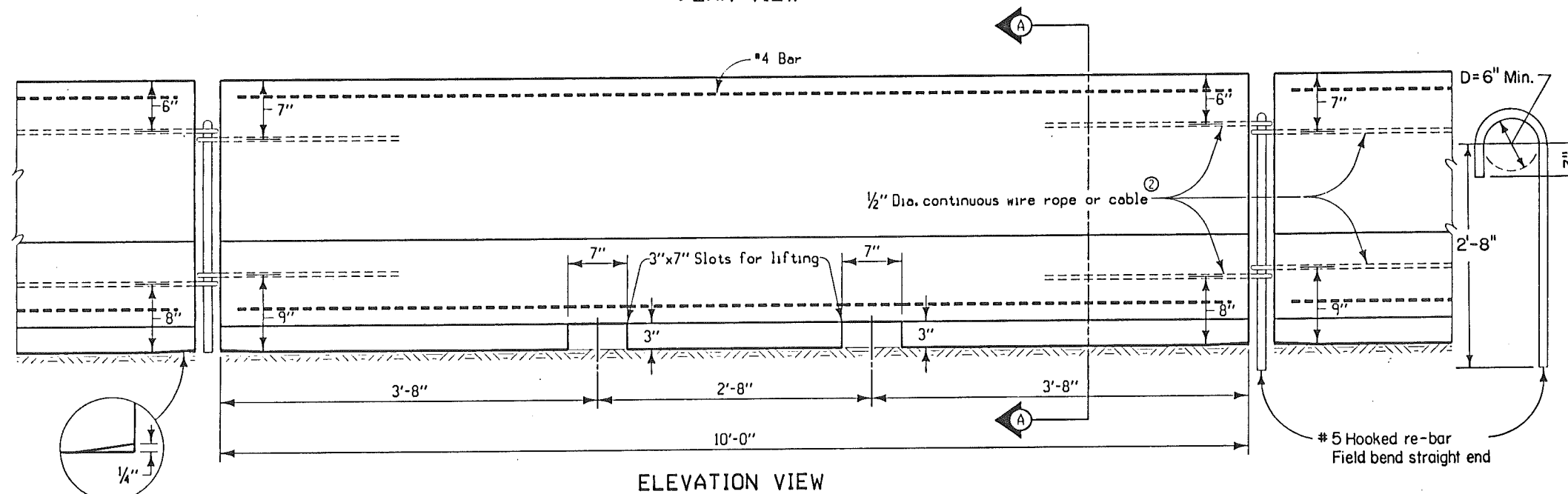
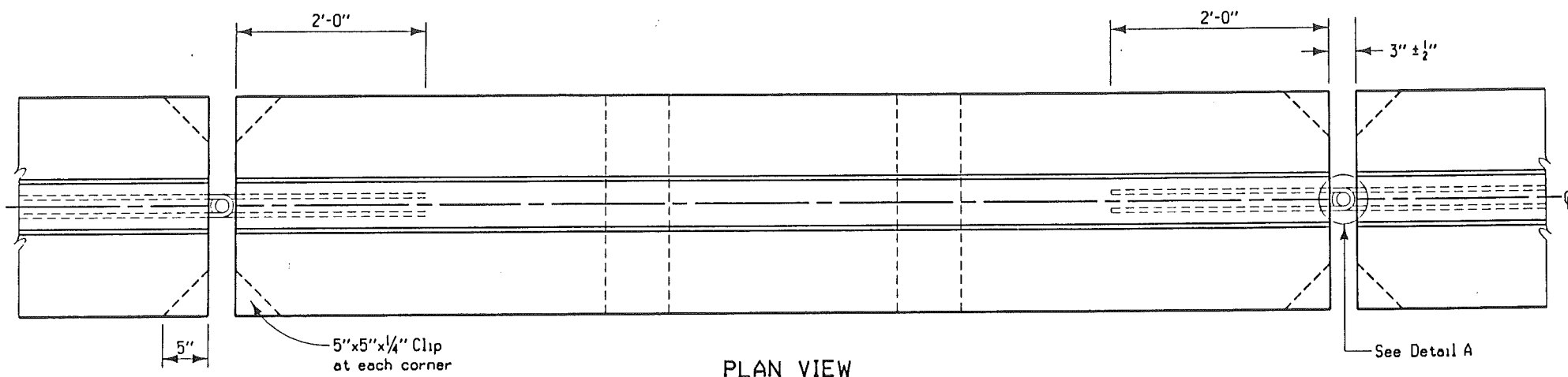
BANK SECTION

STREAM STABILIZATION STRUCTURE
AND BANK STABILIZATION

BANK STABILIZATION PHOTO DETAILS

CRAWFORD COUNTY,

IOWA



GENERAL NOTES:

The details hereon are for the fabrication and installation of temporary concrete barrier rail. The barrier shall be Class "D" structural concrete and finished in conformance with current specifications.

Details shown are typical. Alternate design details may be submitted to the engineer for approval.

* The contractor shall provide for an approved monitoring schedule with a person on call and available 24 hours a day, each day of the week, to realign barrier rail which has been struck. Initiation of service shall be within one hour of notification of need.

* Markers shall be furnished and installed by the contractor. Markers shall be placed on the barrier as recommended by the manufacturer, and as shown in the Marker Placement Detail or as directed by the engineer. The markers shall be installed at 10 ft. spacing and face oncoming traffic. Refer to Details of Barrier Placement. The contractor shall maintain the markers and promptly repair or replace any damaged or missing units. All costs for furnishing, installing and maintaining markers shall be included in the price bid for the temporary barrier rail.

* Unless stated otherwise in the plans, the barrier rail sections shall remain the property of the contractor and at the completion of the work shall be removed from the site by him.

When Temporary Barrier Rail is installed within 2 feet of a drop-off, tie downs as described and shown on Detail Sheet 540-10 shall be required.

The price bid for "Temporary Barrier Rails Furnish Only" in linear feet shall be full compensation for furnishing temporary barrier rail as detailed and measured on this sheet.

△ The price bid for "Temporary Barrier Rails, Place Only" in linear feet of Barrier Rail shall be full compensation for placing temporary barrier rail as detailed on this sheet and elsewhere in the plan.

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

① Color same as adjacent edgeline.

② Wire rope or cable to be 1/2" diameter, with a minimum breaking strength of 20,000 pounds.

* NOTES INDICATED SHALL NOT APPLY TO THIS PROJECT, BARRIER RAIL SECTIONS SHALL BE INCORPORATED INTO THE PROJECT AND SHALL BECOME THE PROPERTY OF COUNTY. TEMPORARY BARRIER RAILS MAY BE NEW OR USED BUT UNDAMAGED SECTIONS.

△ PRICE BID FOR "TEMPORARY BARRIER RAILS, PLACE ONLY" SHALL BE FULL COMPENSATION FOR EXCAVATION, TIE BARS AND ALL LABOR FOR PLACEMENT OF THE RAIL SECTIONS SHOWN ON SHEET

TEMPORARY BARRIER RAIL DETAILS
CRAWFORD COUNTY, IOWA