



Iowa Department of Transportation
Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
DICKINSON COUNTY
PERMANENT SCOUR COUNTERMEASURE

Over W. Fork Little Sioux River 4.9 Miles W. of IA. 86

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

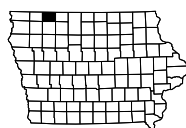
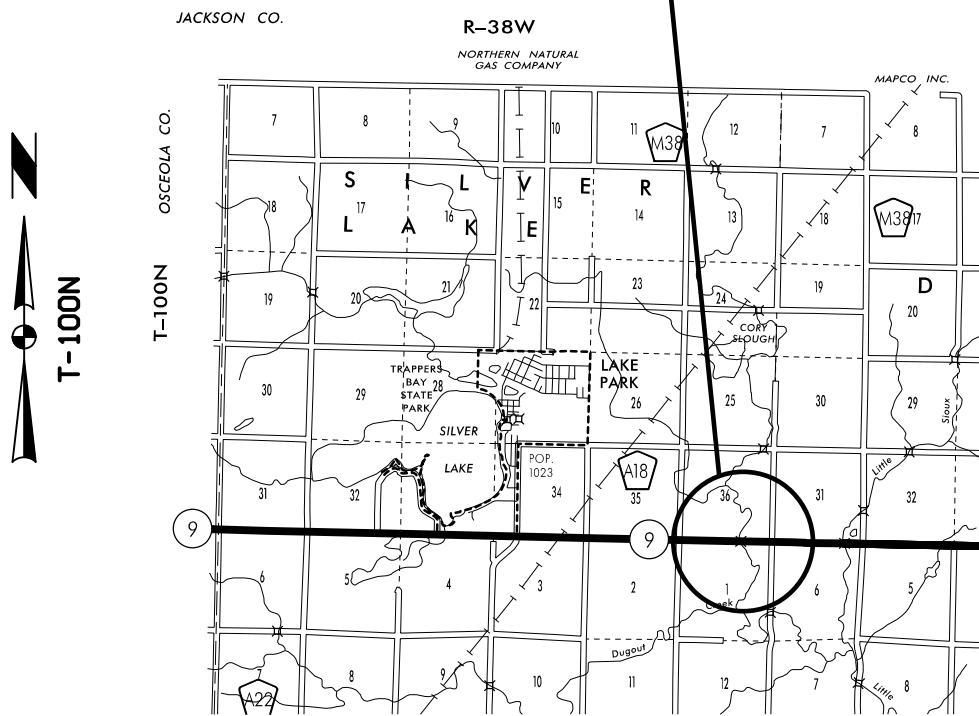
Value Engineering Saves. Refer to Article 1105.15 of the Specifications.

NO MILEAGE SUMMARY

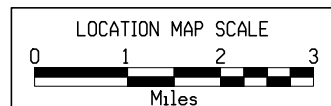


PROJECT LOCATION

Bridge Maint. No. 3065.4S009



R-38W



04-30-02	101-4
DESIGN DATA RURAL	
2009 AADT	3490 V.P.D.
20-- AADT	-- V.P.D.
20-- DHV	-- V.P.H.
TRUCKS	10 %
Total	
Design ESALs	--

INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Robert A. Schoenrock	Primary Signature Block
V.1	David J. Mulholland	Hydraulic Design

REVISIONS

TOTAL

7

PROJECT IDENTIFICATION NUMBER

11-30-009-010

PROJECT NUMBER

BRFN-009-3(27)--39-30

R.O.W. PROJECT NUMBER

INDEX OF SHEETS

105-3

10-18-05

No.	Description
A.1	Title Sheet
C.1-C.3	Estimate and Reference Information
J.1	Tab. 108-23A (Traffic Control Plan)
V.1-V.2	Bridge Sheets

* Color Plan Sheets

ROADWAY DESIGN



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Robert A. Schoenrock 03-31-2011
Printed or Typed Name Date

My license renewal date is December 31, 2011

Pages or sheets covered by this seal: A.1,C.1-C.3,J.1

ESTIMATED BRIDGE QUANTITIES								
ITEM NO.	ITEM CODE	ITEM	UNIT	QUANTITIES				
				ESTIMATED			AS BUILT	
				Design 0111	Division 2	TOTAL	Design 0111	Division 2
1	2402-2723000	EXCAVATION, CLASS 23	CY	211		211		
2	2507-0050005	EARTH SCREW ANCHOR	EACH	12		12		
3	2507-3250005	ENGINEERING FABRIC	SY	340.0		340		
4	2507-6800061	REVETMENT, CLASS E	TON	150.0		150		
5	2507-8500080	FABRIC FORMED CONCRETE REVETMENT, ARTICULATING BLOCK MAT, 8 INCH	SY	206.0		206		
6	2507-8501100	CONCRETE GROUT FOR FABRIC FORMED CONCRETE REVETMENT	CY	45.0		45		
7	2528-8445110	TRAFFIC CONTROL	LS		1.00	1		
8	2528-8445113	FLAGGERS	EACH		See Proposal	See Proposal		
9	2533-4980005	MOBILIZATION	LS		1.00	1		
10	2602-0000020	SILT FENCE	LF		100.0	100		
11	2602-0000060	REMOVAL OF SILT FENCE	LF		100.0	100		
12	2602-0000212	FLOATING SILT CURTAIN (HANGING)	LF		200.0	200		

ESTIMATE REFERENCE INFORMATION		
ITEM NO.	ITEM CODE	DESCRIPTION
1 2 3 4 5 6	2402-2723000 2507-0050005 2507-3250005 2507-6800061 2507-8500080 2507-8501100	EXCAVATION, CLASS 23 EARTH SCREW ANCHOR ENGINEERING FABRIC REVETMENT, CLASS E FABRIC FORMED CONCRETE REVETMENT, ARTICULATING BLOCK MAT, 8 INCH CONCRETE GROUT FOR FABRIC FORMED CONCRETE REVETMENT See "V" sheets for location and details.
7	2528-8445110	TRAFFIC CONTROL Refer to Tab. 108-23A on sheet J.1 for details.
8	2528-8445113	FLAGGERS Refer to Tab. 105-4 on sheet C.2 for details.
9	2533-4980005	MOBILIZATION --
10	2602-0000020	SILT FENCE For placement at each corner of bridge.
11	2602-0000060	REMOVAL OF SILT FENCE --
12	2602-0000212	FLOATING SILT CURTAIN (HANGING) Refer to Tab. 100-10 on sheet C.3 for location and details.

232-3C
MODIFIED

EROSION CONTROL: (Native Grass Seeding/404 Permit)

Following completion of work in a disturbed area, that portion of the area lying 8 feet or more beyond the shoulder shall be seeded, fertilized, and mulched as follows:

SEEDING MIXTURE: Seeding Rate: 2 lb. per 1000 sq. ft.

Canada Wildrye (PLS)	10.0%
Indiangrass (PLS)	7.5%
Big Bluestem (PLS)	7.5%
Switchgrass (PLS)	2.5%
Little Bluestem (PLS)	2.5%
Sideoats Grama (PLS)	2.5%
Grain Rye	17.5%
Fescue, Tall	30.0%
Ryegrass, Perennial	20.0%

FERTILIZER:

5 lbs. of 13-13-13 (or equivalent) commercial fertilizer per 1000 sq. ft.

MULCH:

70 lbs. of dry cereal straw per 1000 sq. ft. All mulch shall be consolidated into the soil with a mulch stabilizer.

The preparation of the seedbed and the furnishing and application of seed, fertilizer, and mulch shall be considered incidental to mobilization and no extra compensation will be allowed.

213-1

04-15-08

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.

It shall be the contractor's responsibility to ensure that areas (including haul roads) selected for waste or disposal not impact 1) culturally sensitive sites or graves or 2) wetlands or "Waters of the U.S.", including streams or stream banks below the "ordinary high water mark", without an approved U.S. Army Corps of Engineers Section 404 Permit.

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.

232-5

01-20-84

The contractor shall not disturb desirable grass areas and desirable trees outside the construction limits. The contractor will not be permitted to park or service vehicles and equipment or use these areas for storage of materials. Storage, parking and service area(s) will be subject to the approval of the resident engineer.

232-10

10-28-97

The contractor is expected to have materials, equipment, and labor available on a daily basis to install and maintain erosion control features on the project. This may involve seeding, silt fence, rock ditch checks, silt basins, or silt dikes.

STANDARD ROAD PLANS		
The following Standard Road Plans shall be considered applicable to construction work on this project.		
Number	Date	Title
EC-201	04-20-10	Silt Fence
EC-202	04-19-11	Floating Silt Curtain
TC-1	10-17-06	Work Not Affecting Traffic
TC-202	04-20-10	Shoulder Closure (One Lane)
TC-213	10-21-08	Lane Closure with Flaggers

203-2

04-03-01

During construction of this project, the contractor will be required to coordinate his operations with those of other contractors working within the same area. Other work in progress during the same period of the time will include construction of the following projects:

Project	Type of Work
NONE PROVIDED	

281-1

04-20-10

This project shall be constructed in accordance with the requirements of U.S. Army Corps of Engineers _____, Permit No. _____. A copy of this permit is available from the Iowa DOT Office of Contracts upon request. The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

ENGLISH

IOWA DOT

DESIGN TEAM

Skogerboe \schoenrock

DICKINSON COUNTY

PROJECT NUMBER

BRFN-009-3(27)--39-30

SHEET NUMBER

C.2

ESTIMATED BRIDGE QUANTITIES					
ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2402-2723000	EXCAVATION, CLASS 23	CY	211	
2	2507-0050005	EARTH SCREW ANCHOR	EACH	12	
3	2507-3250005	ENGINEERING FABRIC	SY	340.0	
4	2507-6800061	REVTMENT, CLASS E	TON	150.0	
5	2507-8500080	FABRIC FORMED CONCRETE REVETMENT, ARTICULATING BLOCK MAT, 8 INCH	SY	206.0	
6	2507-8501100	CONCRETE GROUT FOR FABRIC FORMED CONCRETE REVETMENT	CY	45.0	

ESTIMATE REFERENCE INFORMATION		
ITEM NO.	ITEM CODE	DESCRIPTION
1	2402-2723000	EXCAVATION, CLASS 23 INCLUDES ALL WORK IN PREPARATION OF GRADE FOR PLACEMENT OF REVETMENT INCLUDING EXCAVATION TO THE LIMITS SHOWN ON THE DRAWINGS, BACKFILL UTILIZING EXCAVATED MATERIAL, AND DISPOSAL OF EXCESS EXCAVATED MATERIAL. THE BOUNDING LIMITS OF ARTICLE 2402.04, B, OF THE STANDARD SPECIFICATIONS ARE NOT APPLICABLE. EXCESS EXCAVATED MATERIAL SHALL BE DISPOSED OF BY THE CONTRACTOR OFF OF THE PROJECT SITE. ESTIMATED 211 CY EXCESS EXCAVATED MATERIAL.
2	2507-0050005	EARTH SCREW ANCHOR EARTH SCREW ANCHORS SHALL BE FURNISHED AND PLACED IN CONFORMANCE WITH THE PLAN. MEASUREMENT WILL BE PER EACH. FOR CONSTRUCTION OF EARTH SCREW ANCHORS THE CONTRACTOR WILL BE PAID THE CONTRACT PRICE PER EACH FOR THE QUANTITY OF ANCHORS FURNISHED AND PLACED.
3	2507-3250005	ENGINEERING FABRIC ENGINEERING FABRIC SHALL BE MATERIAL AS SPECIFIED FOR EMBANKMENT EROSION CONTROL, ARTICLE 4196.01,B,3, OF THE STANDARD SPECIFICATIONS.
4	2507-6800061	REVTMENT, CLASS E ESTIMATED AT 1.6 TON/CY.
5	2507-8500080	FABRIC FORMED CONCRETE REVETMENT, ARTICULATING BLOCK MAT, 8 INCH FABRIC FORMED REVETMENT ARTICULATING MAT DIMENSIONS SHOWN ON THE DRAWINGS REFLECT THE FINISHED DIMENSION ALONG GRADE FOLLOWING FILLING WITH CONCRETE GROUT. THE MAT QUANTITY IS BASED ON THE FINISHED MAT DIMENSIONS. THE FABRIC FORMED REVETMENT QUANTITY INCLUDES THE FORM AREA IN TERMINAL TRENCHES SHOWN ON THE DRAWINGS. LABOR, EQUIPMENT AND MATERIALS REQUIRED TO ANCHOR FABRIC FORMS DURING PLACEMENT AND CURING OF GROUT SHALL BE CONSIDERED INCIDENTAL TO THIS WORK. ARTICULATING MAT DIMENSIONS SHOWN ON THE DRAWINGS ARE IN INCREMENTS OF THE SPECIFIED FINISHED BLOCK DIMENSIONS, 20 INCH IN THE MILL WIDTH (MW) DIRECTION X 26 INCH PERPENDICULAR TO THE MILL WIDTH DIRECTION. ANY CABLE PROTRUDING FROM MAT THAT FORMS A CLOSED LOOP SHALL BE CUT FOLLOWING PLACEMENT AND INITIAL SET OF GROUT TO PREVENT SNAGGING OF FLOOD DEBRIS BY THE CABLE LOOP. THE RESULTANT CABLE ENDS PROTRUDING FROM THE MAT SHALL NOT EXCEED 18 INCH IN LENGTH. GROUT SHALL NOT BE DISCHARGED ON THE TOP OF THE MAT THAT WILL FILL THE SEAM 'VALLEY' BETWEEN BLOCKS. A WEAKENED PLANE ALONG THE SEAM LINES IS REQUIRED TO FACILITATE CRACKING AND ARTICULATION. COMPENSATION FOR BANK SHAPING, EXCAVATION AND BACKFILLING WILL BE MADE UNDER THE EXCAVATION ITEM.

GENERAL NOTES:

THIS DESIGN IS FOR REPAIRS TO THE EXISTING 64’X 28’ I-BEAM BRIDGE ON IA 9 OVER THE WEST FORK OF THE LITTLE SIOUX RIVER. COPIES OF THE ORIGINAL DESIGN PLANS WILL BE MADE AVAILABLE TO THE CONTRACTOR. CONTACT THE OFFICE OF CONTRACTS - HIGHWAY DIVISION -IOWA D.O.T. - AMES.

REPAIR SHALL CONSIST OF:

- I. INSTALLATION OF FABRIC FORMED CONCRETE REVETMENT SCOUR COUNTERMEASURE.

ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

EXCESS EXCAVATED MATERIAL SHALL BE DISPOSED OF OFFSITE BY THE CONTRACTOR.

SPECIFICATIONS:

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES OF 2009, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT INCLUDING "DEVELOPMENTAL SPECIFICATIONS FOR FABRIC FORMED CONCRETE STRUCTURE REVETMENT".

HYDRAULIC DATA

DRAINAGE AREA = 158 SQ. MI.
STREAM SLOPE = 8.4 FT./MI.

Q₁₀₀ = 4170 CFS
STAGE = EL. 1410.2
AVG. BRIDGE VELOCITY = 7.3 FPS
CALCULATED SCOUR = EL. 1395.5

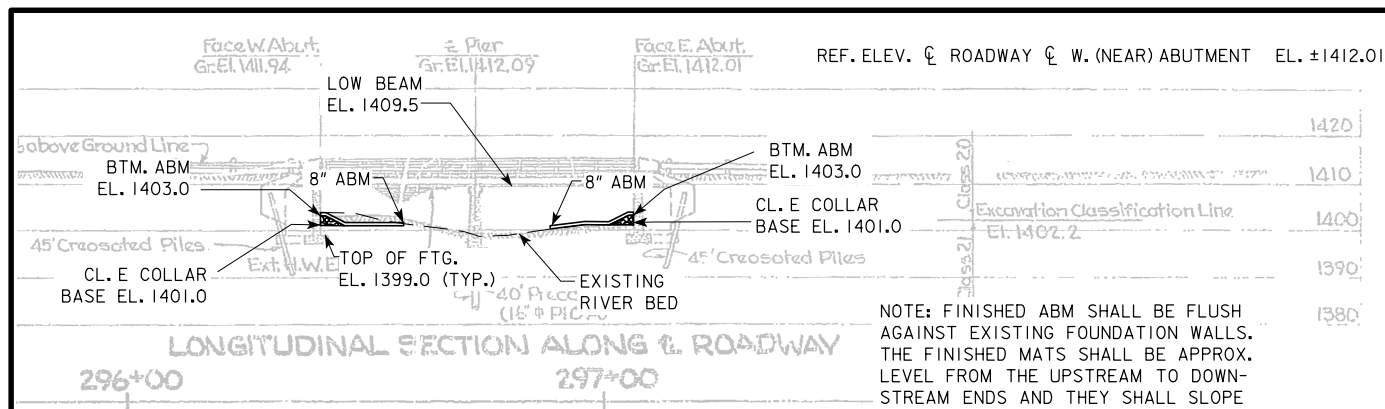
Q OVERTOP= 5350 CFS
STAGE = EL. 1411.1
AVG. BRIDGE VELOCITY = 9.4 FPS
CALCULATED SCOUR = EL. 1392.4

COUNTERMEASURE CLASSIFICATION:
COUNTERMEASURE SPECIFIED IN THIS
PLAN HAS A PERMANENT TARGET
CLASSIFICATION.

DESIGN HISTORY AT THIS SITE	
DES. NO.	TYPE OF WORK
2429	ORIG. DESIGN
159	WIDENING
III	SCOUR COUNTERMEAS.

HYDRAULIC DESIGN	
	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa. <i>David J. Mulholland</i> 1/24/11 Signature Date David J. Mulholland Printed or Typed Name My license renewal date is December 31, 2012 Pages or sheets covered by this seal: V.1 AND V.2

DESIGN FOR REPAIRS TO 0° SKEW 64'-0 X 28'-0 I-BEAM BRIDGE 2-32' SPANS QUANTITIES AND GENERAL NOTES STATION 296+73.40 JANUARY 2011 DICKINSON COUNTY IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION DESIGN SHEET NO. 1 OF 2 FILE NO. 30585 DESIGN NO. III	
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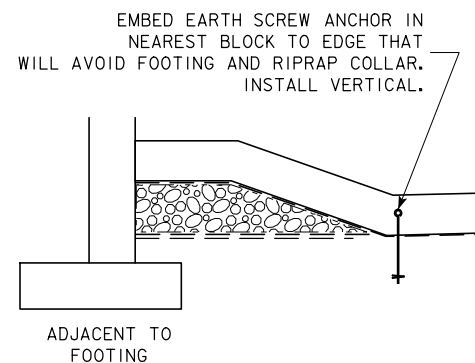


NOTE: FINISHED ABM SHALL BE FLUSH AGAINST EXISTING FOUNDATION WALLS. THE FINISHED MATS SHALL BE APPROX. LEVEL FROM THE UPSTREAM TO DOWN-STREAM ENDS AND THEY SHALL SLOPE TO THE CENTER CHANNEL.

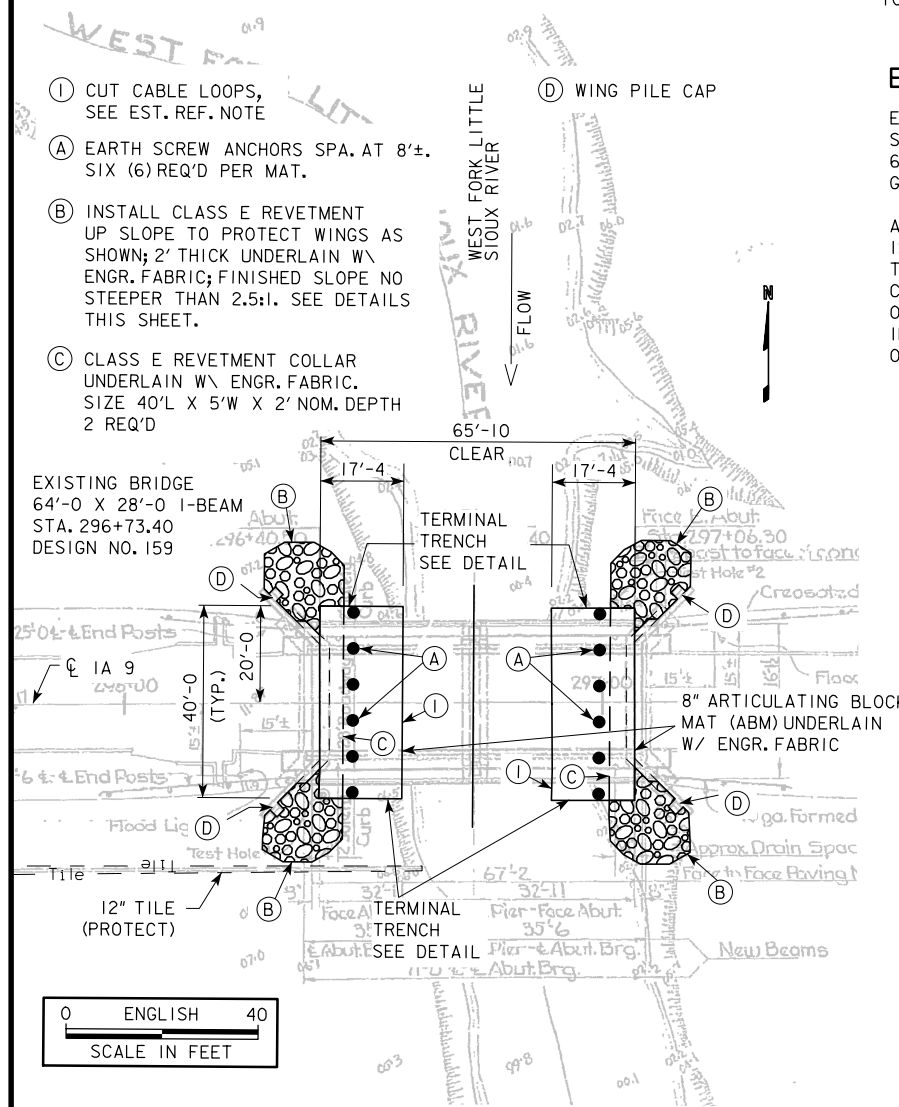
EARTH SCREW ANCHOR NOTES:

EARTH SCREW ANCHORS SHALL BE STEEL HELICAL SCREW ANCHORS, 48" OVERALL LENGTH, $\frac{5}{8}$ " ROD DIA., 6" HELIX DIAMETER. ANCHORS SHALL BE PAINTED OR GALVANIZED.

ANCHORS SHALL BE INSTALLED SO THAT THE EYE IS EMBEDDED IN THE CENTER OF THE FINISHED ABM BLOCK. THE EYE SHALL CONNECT TO AT LEAST ONE OF THE REINFORCING CABLES BY EITHER 1) HOOKING AROUND A CABLE OR 2) USE OF A SHORT LOOP OF CABLE, SPLICED PER THE SPECIFICATIONS. INSTALLATION OF THE ANCHOR MAY BE MADE BY SLITTING OF THE FABRIC AND SEALING OF THE SLIT WITH TAPE.

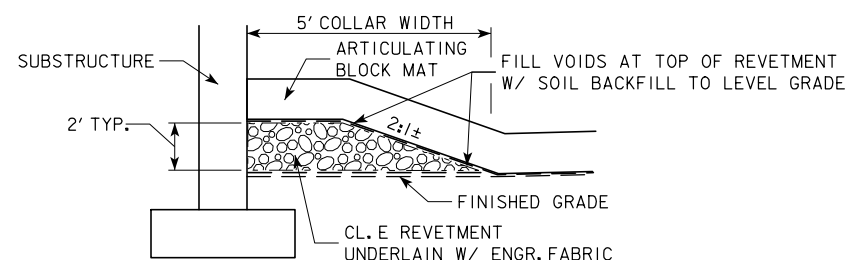


EARTH SCREW ANCHOR DETAIL

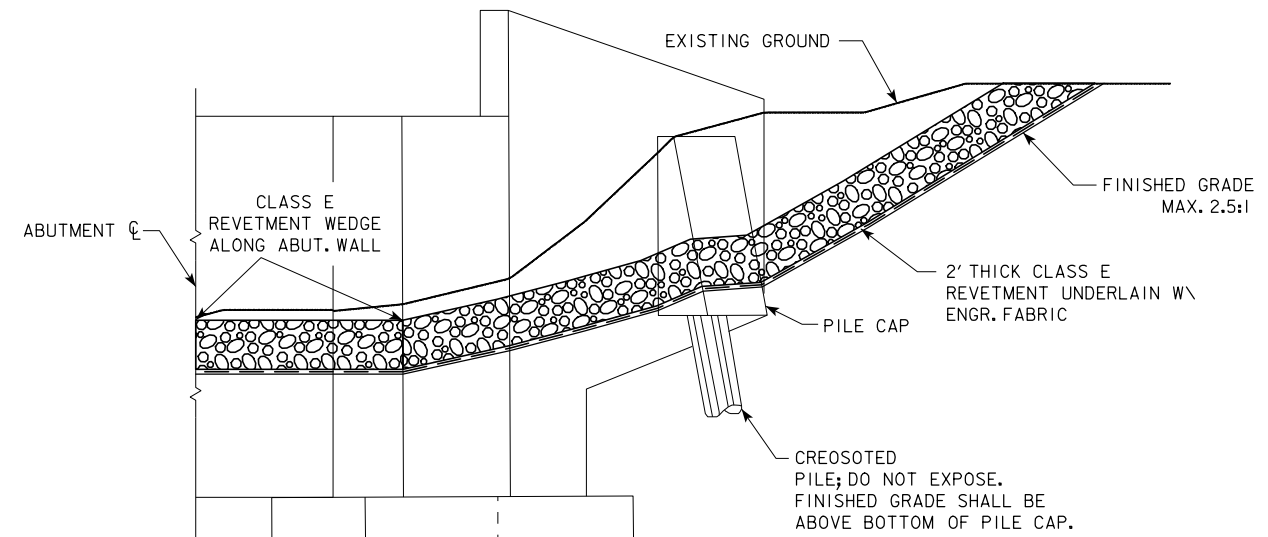
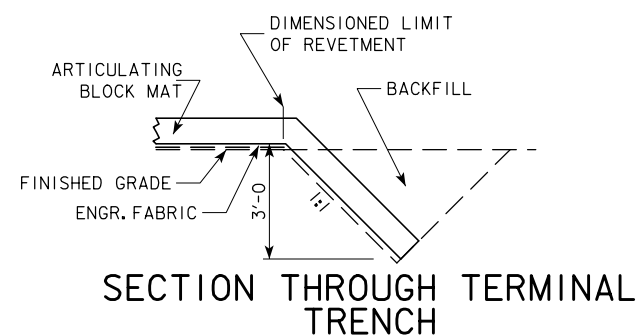


SITUATION PLAN

NOTE: ALL INFORMATION SHOWN FADED BACK IS FROM WIDENING PLAN (DESIGN NO. 159)

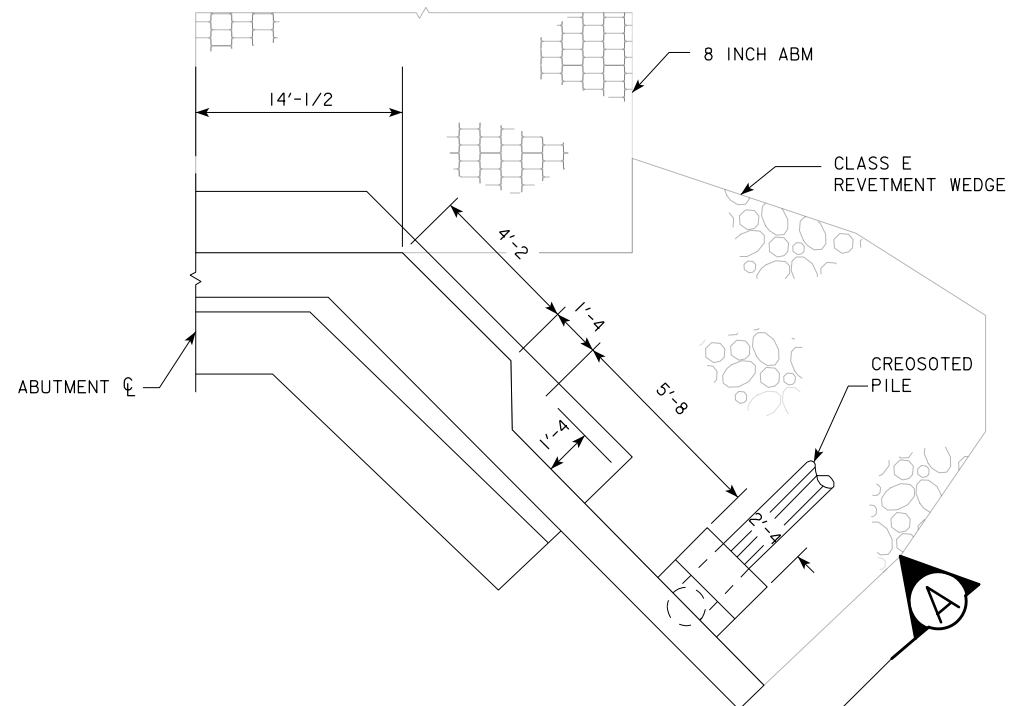


RIPRAP COLLAR DETAIL

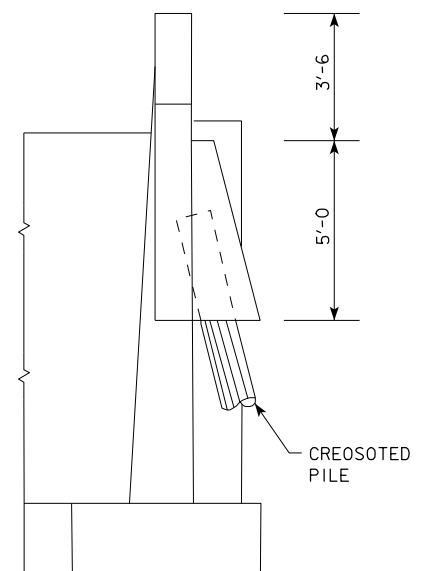


HALF FRONT FACE ABUTMENT ELEVATION

NOTE: ABM NOT SHOWN FOR CLARITY



HALF ABUTMENT PLAN



VIEW A-A

LOCATION

IA 9 OVER WEST FORK LITTLE SIOUX RIVER
T-100N R-38W
SECTION 36
SILVER LAKE TOWNSHIP
DICKINSON COUNTY
BRIDGE MAINT. NO. 3065.4S009

UTILITIES LEGEND:

NO KNOWN UTILITIES

DESIGN FOR REPAIRS TO 0° SKEW
64'-0" X 28'-0" I-BEAM BRIDGE
2-32' SPANS
SITUATION PLAN AND DETAILS
STATION 296+73.40 JANUARY 2011
DICKINSON COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 2 OF 2 FILE NO. 30585 DESIGN NO. 111