

BRIDGE REPLACEMENT-CCS
Proj. No. BROSCHBP-C085(189)--GA-85

STORY COUNTY
Letting Date NOV. 17, 2026

PROJECT 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, LAYOUTS, SIGNING, AND PAVEMENT MARKINGS INSTALLED WITHIN THE LIMITS OF THIS PROJECT SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AS ADOPTED BY THE DEPARTMENT PER 761 OF THE IOWA ADMINISTRATIVE CODE (IAC) CHAPTER 130.

ALL TRAFFIC CONTROL DEVICES SHALL BE FURNISHED, ERECTED, AND MAINTAINED BY THE CONTRACTOR.

UTILITIES INFORMATION

UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THESE PLANS OR SHOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE AND SUBSEQUENT WORK IN THE AREA.

IOWA REGIONAL UTILITY ASSOC.: 641-792-7011
MIDLAND POWER COOPERATIVE: 515-386-4111
STRATFORD MUTUAL TELEPHONE: 515-838-2390
WINSTREAM COMMUNICATIONS: 800-289-1901

THE CONTRACTOR SHALL CALL ONE CALL AT LEAST 48 HOURS PRIOR TO BEGINNING WORK. UTILITY COMPANIES FOUND TO BE LOCATED WITHIN THE CONSTRUCTION AREA ARE LISTED ON THE TITLE SHEET OF THESE PLANS. SEE SECTION 1107.15 OF THE IOWA DOT STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, REGARDING UTILITY RELATED RESPONSIBILITIES.

IOWA
DEPARTMENT OF TRANSPORTATION

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

FARM-TO-MARKET ROAD SYSTEM
STORY COUNTY
BRIDGE REPLACEMENT-CCS

ON 115TH ST., OVER BEAR CREEK, S11 T85 R23

Refer to Proposal Form for a list of applicable specifications.

Scales: As Noted

CORPS OF ENGINEERS PERMIT

CONSTRUCT THIS PROJECT ACCORDING TO THE REQUIREMENTS OF U.S. ARMY CORPS OF ENGINEERS Nationwide Permit No. 3. A COPY OF THIS PERMIT IS AVAILABLE FROM THE IOWA DOT WEBSITE (<http://envpermits.iowadot.gov/CMEPortalENV/Home.aspx>). THE U.S. ARMY CORPS OF ENGINEERS RESERVES THE RIGHT TO VISIT THE SITE WITHOUT PRIOR NOTICE.



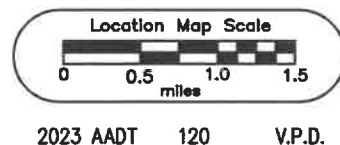
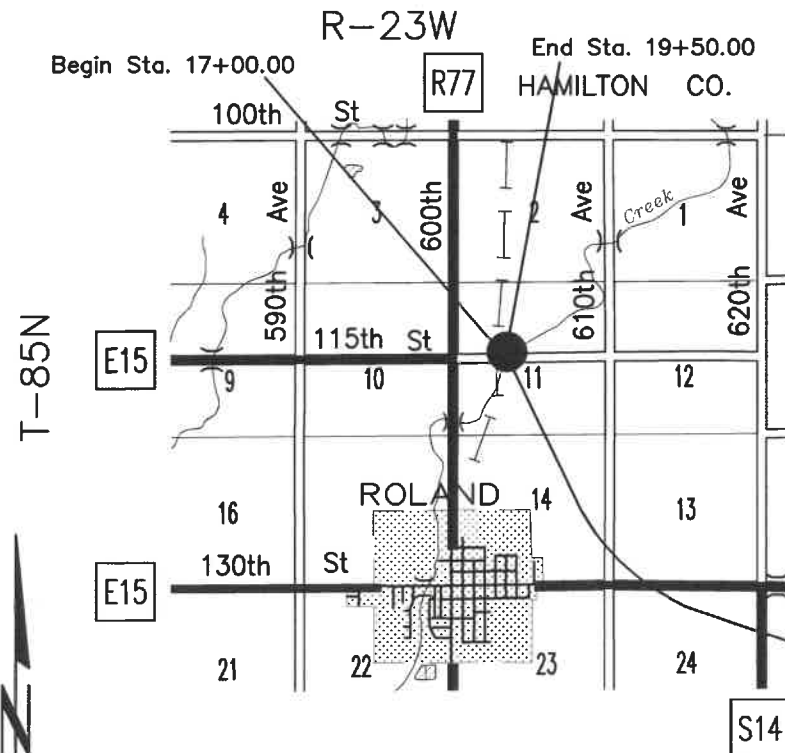
DESIGN FOR:
THREE SPAN 80'-0" x 30'-6"
CONTINUOUS CONCRETE
SLAB BRIDGE ON 15° SKEW

SEND SHOP DRAWINGS TO:

STORY COUNTY ENGINEER
837 N AVE.
NEVADA, IOWA 50201
TEL: 515-382-7355
FAX: 515-382-7369

PROJECT LOCATION

STA 18+24.00; ON 115TH ST.,
OVER BEAR CREEK, S11 T85
R23



Accepted by

[Signature] 8-14-26
Story County Engineer Date



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.

Signed: *[Signature]* Date: 8-13-26
My license renewal date is December 31, 2026

Pages or sheets covered by this seal:
(Entire submission unless specified here)

SHEETS A.01, B.01, C.01-C.04, D.01, R.01, V.01, V.02, W.01-W.04

Approved Story County
Board of Supervisors

Project No. BROSCHBP-C085(189)--GA-85
FHWA No.: 316170

INDEX OF SHEETS

No.	Description
A.01	TITLE SHEET
B.01	TYPICAL SECTIONS SHEET
C.01	QUANTITY INFORMATION SHEET
C.02	GENERAL NOTES SHEET
C.03	TABULATIONS SHEET
C.04	SOUNDING DATA SHEET
D.01	PLAN AND PROFILE SHEET
R.01	EARTHWORK TABULATION SHEET
V.01	SITUATION PLAN SHEET
V.02	SUPERSTRUCTURE DATA SHEET
V.03-V.04	PIER DETAILS
W.01-W.04	MAINLINE CROSS SECTIONS

MILEAGE SUMMARY

Div.	Location	Lin. Ft.	Miles
I	STA. 17+00.00 TO STA. 19+50.00	250.00	0.047
Total		250.00	0.047

STANDARD ROAD PLANS

The following Standard Road Plans apply to construction work on this project.

Number	Date	Title
EC-201	04-20-21	SILT FENCE
EC-204	10-19-21	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICES
EW-101	10-17-17	EMBANKMENT AND REBUILDING EMBANKMENTS
EW-102	10-20-15	ALLOWABLE PLACEMENT OF UNSUITABLE SOILS IN EMBANKMENTS
EW-202	04-19-16	BRIDGE BERM GRADING WITHOUT RECOVERABLE SLOPES (NON-BARN ROOF SECTION)
EW-401	10-20-15	TEMPORARY STREAM CROSSING, CAUSEWAY, OR EQUIPMENT PAD
TC-252	10-20-2026	ROUTES CLOSED TO TRAFFIC

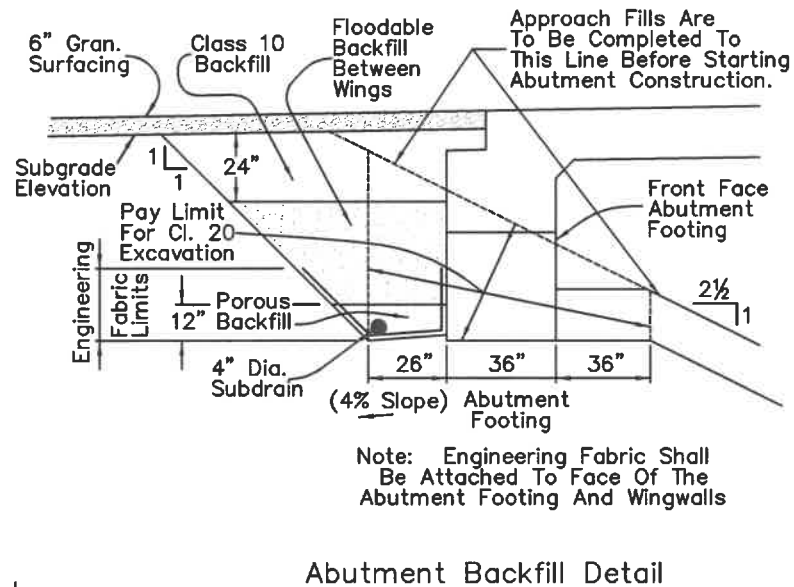
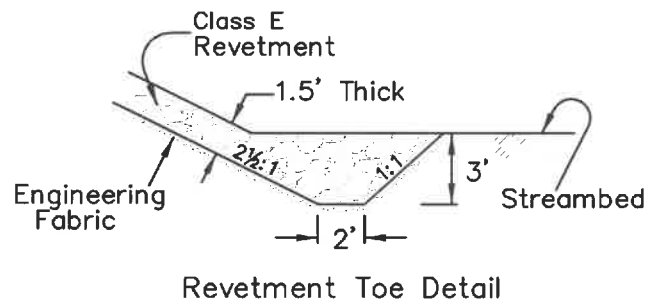
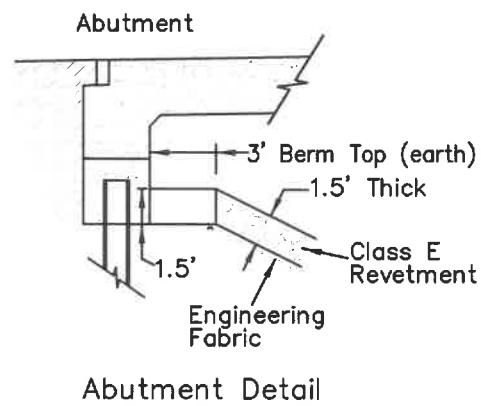
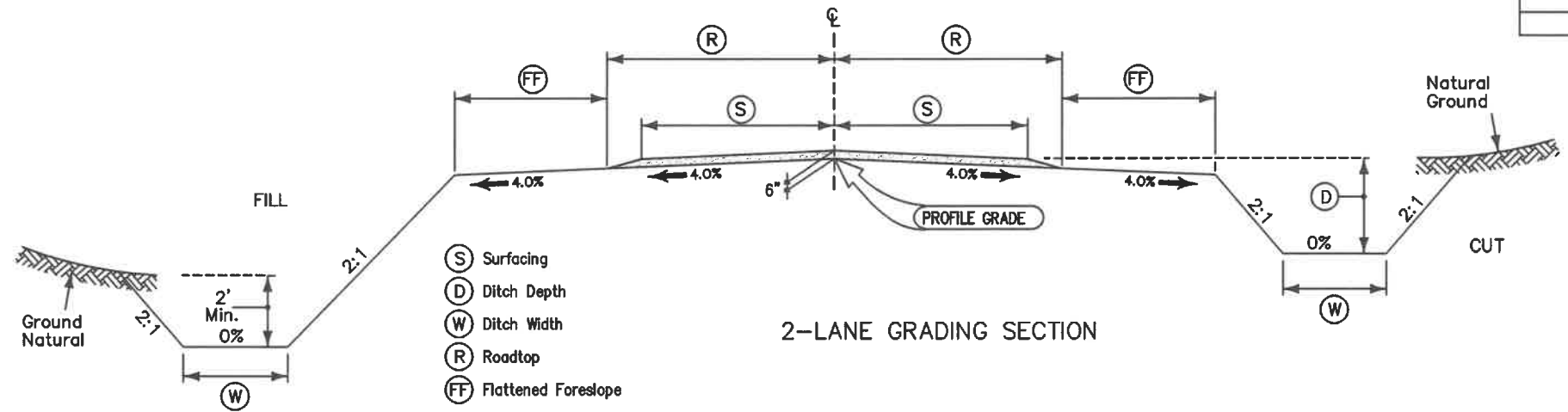
STANDARD BRIDGE PLANS

Sheet	Revised	Sheet	Revised	Sheet	Revised	Sheet	Revised
J30-01-06	09-20	J30-20-06	09-20	J30-43-06	09-20	J30-48-06	09-20
J30-01A-06	09-20	J30-21-06	09-20	J30-44-06	09-20		
J30-04E-06	09-20	J30-35-06	09-20	J30-45-06	09-20		
J30-05E-06	09-20	J30-39-06	09-20	J30-46-06	09-20		

Normal section shown may be modified appropriately in areas of superelevated curves or other locations specifically designated by the Engineer.

See Plan & Profile sheets and cross sections for additional details of ditches and backslopes.

LOCATION				DIMENSIONS				
ROAD IDENTIFICATION	SIDE	STATION TO STATION		FF* Feet	D Feet	W Feet	R Feet	S Feet
115th St.	Lt.	17+00.0	17+51.7	0	var.	4	13	11
115th St.	Lt.	17+51.7	17+84.6	var.	var.	4	13	11
115th St.	Lt.	17+84.6	18+73.9	8	var.	4	13	11
115th St.	Lt.	18+73.9	19+06.8	var.	var.	4	13	11
115th St.	Lt.	19+06.8	19+50.0	0	var.	4	13	11
115th St.	Rt.	17+00.0	17+41.2	0	var.	4	13	11
115th St.	Rt.	17+41.2	17+74.1	var.	var.	4	13	11
115th St.	Rt.	17+74.1	18+63.4	8	var.	4	13	11
115th St.	Rt.	18+63.4	18+96.3	var.	var.	4	13	11
115th St.	Rt.	18+96.3	19+50.0	0	var.	4	13	11



ESTIMATED PROJECT QUANTITIES OF QUANTITIES
(1 DIVISION PROJECT)

ITEM	ITEM CODE	ITEM	UNIT	TOTAL
1	2101-0850001	CLEARING AND GRUBBING	ACRE	0.5
2	2102-2710070	EXCAVATION, CL 10, ROADWAY AND BORROW	CY	1223.1
3	2102-2710090	EXCAVATION, CL 10, WASTE	CY	1008.0
4	2104-2710020	EXCAVATION, CL 10, CHANNEL	CY	116.1
5	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	125.0
6	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1.0
7	2401-6745650	REMOVAL OF EXISTING STRUCTURES	LS	1.0
8	2402-2720000	EXCAVATION, CLASS 20	CY	93.7
9	2402-2721000	EXCAVATION, CLASS 21	CY	52.5
10	2402-2722000	EXCAVATION, CLASS 22	CY	225.9
11	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	324.8
12	2404-7775000	REINFORCING STEEL	LB	21,796
13	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	42,281
14	2414-6424124	CONCRETE OPEN RAILING, TL-4	LF	182.2
15	2417-1040018	CULVERT, CORRUGATED METAL ENTRANCE PIPE, 18 IN. DIA.	LF	50.0
16	2501-0201042	PILES, STEEL, HP 10 X 42	LF	250.0
17	2501-6335010	PREBORED HOLES	LF	53.0
18	2507-3250005	ENGINEER FABRIC	SY	299.9
19	2507-6800061	REVTMENT, CLASS E	TON	233.0
20	2528-2518000	SAFETY CLOSURE	EACH	4.0
21	2528-8445110	TRAFFIC CONTROL	LS	1.0
22	2533-4980005	MOBILIZATION	LS	1.0
23	2599-9999003	REVTMENT, REMOVE STOCKPILE AND DISPOSE	CY	31.9
24	2599-9999009	CORING ROCK SOCKET	LF	107.0
25	2602-0000030	SILT FENCE FOR DITCH CHECKS	LF	160.0
26	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	240.0

GENERAL NOTES

Story County to stake bridge control and right-of-way, furnish and maintain detour signing, furnish and place granular surfacing, and perform seeding and mulching.

Contractor shall maintain access to individual properties during construction. This work shall be considered incidental to this project.

Concrete and Steel Quantities

Concrete		Reinforcing Epoxy Coated Steel	Reinforcing Steel
Superstructure	147.8 cy	42,281 #	-
Abutments (2@11.5)	23.0 cy	-	(2 @ 1,579) 3,158 #
Piers	154.0 cy	-	(9,644 & 8,994) 18,638 #
Open Rail	(incidental)	(included in Superstructure)	-
324.8 cy		42,281 #	21,796 #

ESTIMATE REFERENCE INFORMATION

ITEM NO.	DESCRIPTION
1.	The entire project shall be cleared and grubbed from BOP to EOP and from ROW line to ROW line.
2.	Plan quantity is based on approximately 80.9 CY of fill (30% shrink factor) and 1088.9 CY of cut and 1008.0 CY of waste (SEE Item #3 below). Type A compaction required. No payment for overhaul will be made. See Earthwork Table on Sheet R.01 for station-by-station dirt quantities.
3.	Contractor to waste 1008.0 CY of material to achieve dirt balance. Material shall become the property of the Contractor and removed from site.
4.	Item for excavation below the classification line (streambed) for shaping the channel. Excavated material may be drained and used on roadway foreslopes. Quantity was estimated using proposed channel width from ROW line to ROW line. See situation plan and section on Sheet V.01 for dimensions.
5.	Contractor shall meet requirements for topsoil conservation practices. Topsoil to be spread smooth to a minimum of 4" on all disturbed areas from catch points to edge of road within project limits. Slopes to be finished smooth to allow for seeding. See tabulation on Sheet C.03 for details.
6.	Contractor to remove an existing single span 32'x24' steel beam bridge with timber deck, piling, and wingwalls. Materials from the old structure shall become the property of the Contractor according to article 1104.08 of the Standard Specifications, and removed from site.
7.	Item includes two existing structures: one is a 24"x36' metal roadway pipe culvert at Sta. 18+20, and the other is a concrete bridge abutment footing that remains from an earlier bridge removal. This footing is situated approximately where the west pier pile bent will be. Plans for this earlier bridge do not exist, so its depth and thickness are unknown.
8.	Item for abutment footings excavation. Roadway Contractor shall have abutment berms built to the construction limits and dimensions shown in these plans prior to excavating for abutments. Excavated material may be used to supplement Class 10 roadway fill.
9.	Quantity is based on the volume within vertical planes 36 inches outside the pier footings from streambed to presumed top of sandstone elevation. Item will be measured and paid based on plan quantity.
10.	Quantity is based on the volume within vertical planes 36 inches outside the pier footings from presumed top of sandstone elevation to the bottom of footing.
11.	Certified Plant Inspection (CPI) shall be included in bid price for Structural Concrete. Bridge deck concrete shall be Class C; substitution of Class D concrete is not allowed. Article 2428 deck smoothness requirements do not apply on this project. No additional payment will be allowed for heating and protecting of concrete, if necessary.
14.	CPI is required. Open rail concrete shall be Class C; no substitutions allowed.
16.	See Pile Notes on Sheet C.02 and situation view on Sheet V.01 for details. Piling points are required.
17.	Quantity is estimated based on predrilling 6.5 feet into soil for each pile in the West Abutment and 4 feet into soil for each pile in the East Abutment. The number of lineal feet of soil prebore will be measured in the field and paid for at the contract unit price bid per lineal foot. The price bid includes the cost of predrilling 18 inch diameter holes and filling with bentonite slurry.
18.	Item for placing fabric under revetment. All fabric laps should have upslope lap on top.
19.	Item for placing revetment stone on abutment berms. See situation plan on Sheet V.01 for details. Quantity includes 116.5 Tons on the west bridge berm, and 116.5 Tons on the east bridge berm (all 1½ feet thick).
20.	See tabulation on Sheet C.03 for Safety Closure stationing and quantities.
22.	See Standard Road Plan TC-252 for details.
23.	Item for the removal, stockpiling, and offsite disposal of existing broken concrete, stone revetment, and poured concrete. Preliminary survey shows numerous rocks and concrete in the project area. Quantity is an estimate only. Contractor shall be paid actual quantity by measuring the stockpile and computing its volume. Basis of Payment shall be in cubic yards as computed by measurements. Payment includes all materials, labor, and equipment necessary for the removal, stockpiling and disposal of existing revetment.
24.	The quantity of "Coring Rock Socket" is estimated based on coring 9.5 feet into rock for each pile in the West Abutment and 12 feet into rock for each pile in the East Abutment. The number of lineal feet of rock coring will be measured in the field and paid for at the contract unit price bid per lineal foot. The price bid shall include the cost of predrilling 18 inch diameter cored rock prebore in weathered sandstone above elevation 1018.5' and 16 inch diameter rock sockets a minimum 3 feet into bedrock. This item includes the cost of disposal of excavated material and furnishing and placing 3' thick Class "C" Structural Concrete to backfill the rock socket. Apply the provisions of Section 2403 of the Standard Specifications for concrete backfill. CPI is required. Payment is full compensation for furnishing materials, equipment, and labor and for performance of work necessary to complete the rock sockets in conformance with the contract documents.
25.-26.	Erosion control measures shall be placed at the earliest practicable time. See tabulations on Sheet C.03 and Standard Road Plans EC-201 and EC-204 for details. The tabulation includes estimated locations for placement of sediment logs to address possible erosion during construction.

SPECIFICATIONS:

Design: AASHTO LRFD, Series 2004 with Interim 2005.

Construction: Iowa Department of Transportation Standard Specifications For Highway and Bridge Construction, Series 2026, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions shall apply to construction work on this project.

GENERAL NOTES:

Contractor to construct a three-span 80'x30' reinforced concrete slab bridge on a 15' skew on 115th St. over Bear Creek and grade the approaches. The bridge is an Iowa DOT standard J-Series. Standard Bridge Plans and Standard Road plans are available from the Iowa Department of Transportation website at <http://www.iowadot.gov/eri/index.html>

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. These areas shall not impact wetlands or "Waters Of The U.S." 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.

The prime Contractor shall be responsible for all erosion control measures and shall employ controls to reduce the erosiveness of the soils in the construction area adjacent to surface waters and wetlands, including placing and maintaining erosion control measures during and after construction.

CONTRACTOR'S WORK AREA:

The Contractor's work and material storage area shall be defined by the Contractor and noted to the Engineer. Upon project completion, the Contractor shall restore these areas to their original condition. Payment for any restorative work shall be included in the "Class 10 Excavation" bid item. Areas outside the Contractor's defined work and material storage areas that are disturbed by the Contractor shall be restored to their original condition by the Contractor and no additional payment shall be made for this work.

STREAM CROSSING NOTES:

The Contractor is encouraged to conduct construction activities during periods of low flow. Any temporary stream crossings shall include enough culverts to accommodate low flows and must be removed after completion of work on this project. Temporary stream crossings shall be constructed in accordance with Standard Road Plan EW-401. The cost of installation, maintenance, and removal of any temporary stream crossings (including culverts) shall be included in the price bid for "Mobilization".

Construction of any necessary stream crossing shall be done to prevent the dumping or spilling of material into streams, wetlands, or other bodies of water except as approved herein.

The Contractor shall employ measures to ensure that no petroleum products, chemicals, or other deleterious materials enter streams, wetlands, or other bodies of water.

Construction activities, equipment, and materials shall be kept out of the streams, wetlands, or other bodies of water to the maximum extent practicable.

UTILITY NOTES:

It shall be the responsibility of the Contractor to notify the owners of utilities in the project area prior to the beginning of any construction. The contractor shall grant access to these facilities for necessary modifications. Underground facilities, structures and utilities have been plotted from available surveys and records, and their locations are only approximate. It is possible there may be other utilities, the existence of which is presently not known or shown. It is the Contractor's responsibility to determine all utilities in the project area and their exact location and to avoid damage to them. No claims for additional compensation will be allowed to the Contractor for any interference or delay caused by such work.

EMERALD ASH BORER NOTE:

Dispose of all wood material generated as a result of clearing and/or grubbing according to the Iowa Department of Agriculture and Land Stewardship's Emerald Ash Borer (EAB) Quarantine Order. For more information refer to http://www.iowatreepests.com/eab_regulations.html.

INDIANA BAT HABITAT:

See Iowa DOT Specification Section 2101.01 for tree removal.

ABUTMENT PILE NOTES:

The contract length of 25 feet for the abutment piles is based on a total factored axial load per pile (Pu) of 81 kips and a geotechnical resistance factor (phi) of 0.55 for soil and 0.7 for rock end bearing.

The nominal axial bearing resistance for construction control was determined from a geotechnical resistance factor (phi) of 0.55 for soil and 0.7 for rock end bearing. Piles are assumed to be driven from a start elevation at the bottom of cored rock socket.

The required nominal axial bearing resistance for abutment piles is 59 tons at End of Drive or retap. The pile contract length shall be driven as per plan unless piles reach refusal. Construction control requires a WEAP analysis with bearing graph, supplied by the County.

The bridge contractor shall prebore holes for abutment piles. The 18 inch diameter prebored hole in the soil shall extend from the bottom of the abutment footing to the top of the weathered sandstone layer as shown on the boring logs which is anticipated at elevation 1025.0' to 1027.0'. The 18 inch diameter cored rock prebore in weathered sandstone shall extend from the bottom of soil prebore to top of beckrock which is anticipated at elevation 1018.5'. The 16 inch diameter rock socket shall be cored to elevation 1015.5' or lower such that the bottom of the socket shall be at least 3 feet into the bedrock. The contractor shall clean the bottom of the rock socket before inserting piles or placing concrete. Seat the piling in the bedrock by driving it to the target driving resistance. The number of hammer blows shall be limited to prevent damage to the piling. The socket shall be backfilled with 3 feet of Class "C" Structural Concrete before or after driving piles. Concrete placed before piles are driven shall remain plastic until pile driving is complete. Retarder may be required as directed by the engineer. Piles shall be braced in the correct position until concrete has reached 4 ksi compressive strength.

Predrilled holes shall be filled with bentonite above the top of rock socket (elevation 1018.5'). If the top of bedrock (top of rock socket) encountered is lower than anticipated, the 18" diameter predrilled holes shall be filled with saturated sand meeting the requirements of Standard Specifications 4110 (Gradation 1) below elevation 1016.5'.

HAZARDOUS MATERIALS NOTES:

A scrape sample was taken from one area of this bridge to get an indication of the existence of the level of total Chromium and total Lead. Analysis of total Lead on this sample was 232,000 parts per million (PPM). Analysis of total Chromium on this sample was 4,500 PPM. These analyses show the existence of these two toxic constituents. Levels indicated by these tests could create conditions above regulatory limits for health and safety requirements. No other constituents were analyzed. The bidder should not rely on the Department's testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

The Contractor shall exercise care during the removal of existing structures to prevent any paint from coming off of painted surfaces. Should any paint come off, the Contractor shall collect and dispose of the paint according to Section 2508 of the Standard Specifications.

Before delivery of any salvaged materials that may contain toxic constituents, the Contractor shall provide a written notice to the receiving facility. This written notice shall contain at least:

- a copy of the lab results of the scrape sample
- a signature block for the receiving facility to confirm their receipt of this information
- notification that salvaged materials include paint that may contain toxic constituents at levels that may be hazardous to employees or the environment

A copy of this notice, signed by the receiving facility, shall be returned to the Engineer before any hazardous material is removed from the site.

All costs associated with removal and disposal of hazardous materials shall be incidental to the "Removal of Existing Bridge" bid item.

An asbestos survey was conducted and found no asbestos at this site. However, should the occasion arise that asbestos is still found at the time of bridge demolition, the the County will contract with a licensed asbestos contractor to remove any remaining asbestos during the bridge's demolition.

INDIANA BAT HABITAT:

See Iowa DOT Specification Section 2101.01 on tree removal.

108-13A
08-01-08

TABULATION OF SILT FENCES FOR DITCH CHECKS

100-18
04-20-10

232_03C
8/28/24

232_11
6/11/23

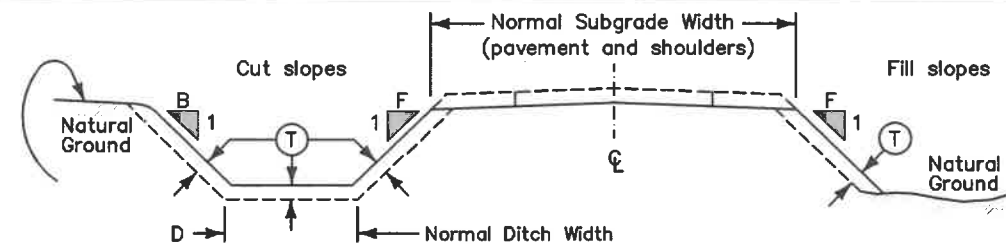
232_03A
9/28/22

Preparing the seedbed, furnishing and applying seed, fertilizer, and mulch are all incidental to mobilization and will not be paid for separately

100-19
10-16-12

LOCATION			6 IN. DIA.	9 IN. DIA.	12 IN. DIA.	20 IN. DIA.	REMARKS
BEGIN STATION	END STATION	SIDE	LF	LF	LF	LF	
18+05	18+25	Lt.			60		Temp NW streambank controls (prior to rip rap placement)
18+20	18+45	Rt.			60		Temp NE streambank controls (prior to rip rap placement)
18+05	18+15	Rt.			60		Temp SE streambank controls (prior to rip rap placement)
18+20	18+40	Lt.			60		Temp SW streambank controls (prior to rip rap placement)
TOTALS					240.0		

103-4
04-19-11



Appropriate adjustments have been made in the template quantities to reflect the placement of topsoil on foreslope, backslope and ditch bottom as detailed herein.

Placement Description							Topsoil Excavation Available From					
Area	Quantity	Location		Side	Slope	Ⓣ	Remarks	Amount Reserved			Ⓣ	Remarks
No.	CY	Station to Station		L or R.	B. or F.	In.		CY	Station to Station		In.	
1	31.7	17+00	18+20	L	B, F, D	4	NW Corner	31.7	17+00	18+20	4	From Stockpile
2	32.3	18+30	19+50	R	B, F, D	4	NE Corner	32.3	18+30	19+50	4	From Stockpile
3	34.5	18+22	19+50	R	B, F, D	4	SE Corner	34.5	18+22	19+50	4	From Stockpile
4	26.4	17+00	18+03	L	B, F, D	4	SW Corner	26.4	17+00	18+03	4	From Stockpile

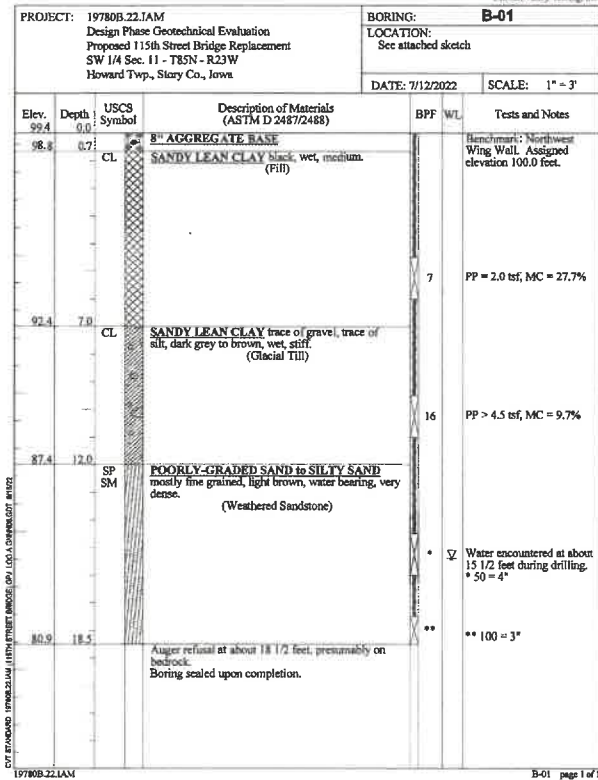
Refer to Cross-Sections

* Length of unclassified pipe calculated is based on using Reinforced Concrete Pipe.

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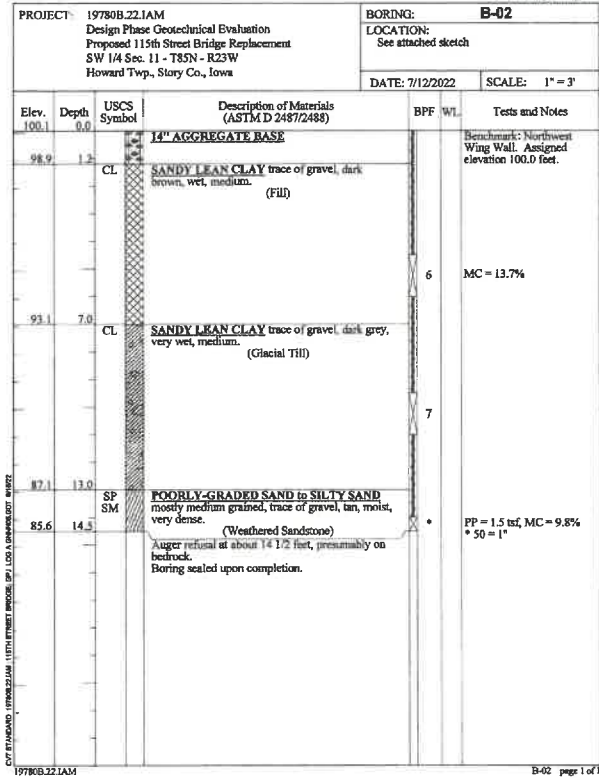
LOG OF BORING

CHOSEN VALLEY TESTING



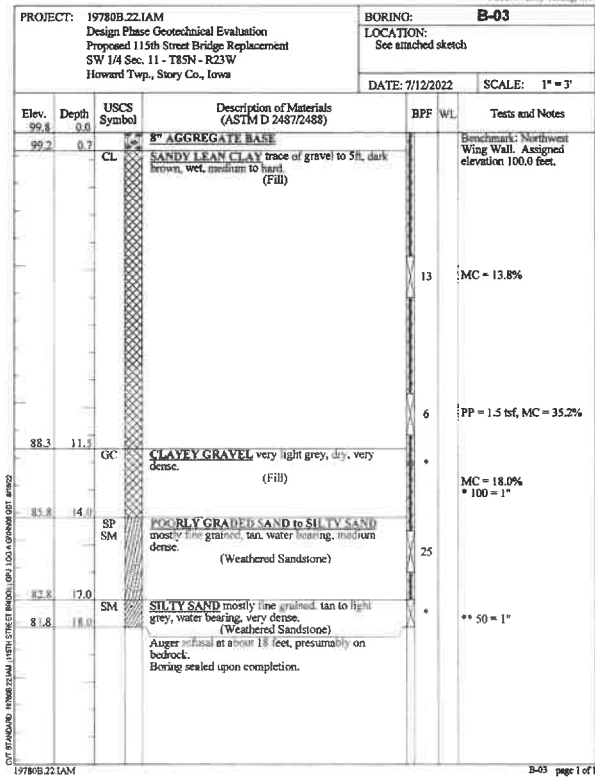
LOG OF BORING

CHOSEN VALLEY TESTING



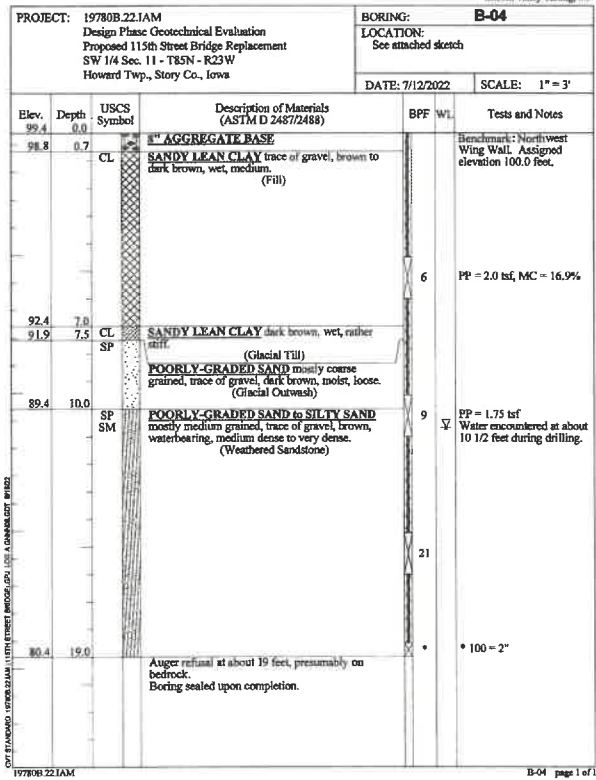
LOG OF BORING

CHOSEN VALLEY TESTING



LOG OF BORING

CHOSEN VALLEY TESTING



115th ST. BRIDGE REPLACEMENT
PROJECT #: 19780B.22.IAM

AUGUST 16, 2022
PAGE: 7

Boring	Soil Type	Elevation, surface datum (feet)	Unit Weight (pcf)	Skin Friction (kips/ft)	End Bearing (kts)
B-1	CL, Clay Fill	98.8-92.4	120	1.2	N/A
	CL, Lean Clay	92.4-87.4	120	2.8	N/A
	SP-SM, Weathered Sandstone	87.4-80.9	120	4.0	4
	Bedrock	Below 80.9	130	4.0	12
B-2	CL, Clay Fill	98.9-93.1	120	1.2	N/A
	CL, Lean Clay	93.1-87.1	120	2.8	N/A
	SP-SM, Weathered Sandstone	87.1-85.6	120	4.0	4
	Bedrock	Below 85.6	130	4.0	12
B-3	CL, Clay Fill	99.2-88.3	120	2.0	N/A
	GC, Clayey Gravel	88.3-85.8	120	2.8	N/A
	SP-SM, Weathered Sandstone	85.8-81.8	120	2.8	4
	Bedrock	Below 81.8	130	4.0	12
B-4	CL, Clay Fill	98.8-92.4	120	1.2	N/A
	CL, Lean Clay	92.4-91.9	120	2.8	N/A
	SP, Sand	91.9-89.4	120	2.0	N/A
	SP-SM, Weathered Sandstone	89.4-80.4	120	2.8	4
	Bedrock	Below 80.4	130	4.0	12

The values included in the table above are based on the penetration test data and the recommended skin friction and end bearing values from the IADOT LRFD Bridge Design Manual, Table 6.2.7-1 (LRFD driven pile nominal unit geotechnical resistances for end bearing) and Table 6.2.7-2 (LRFD driven pile nominal unit geotechnical resistances for friction bearing).

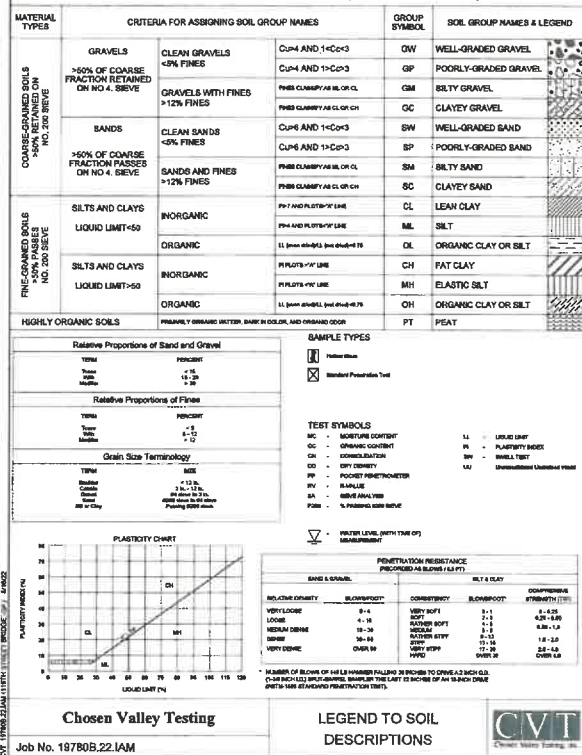
F.2. Installation

The piling is expected to encounter bedrock materials. For this reason, tip protection on the piling is recommended in an effort to prevent damage. Ideally, pile capacities should be evaluated in the field using a dynamic pile analyzer, ENR pile driving criteria or other approved procedures.

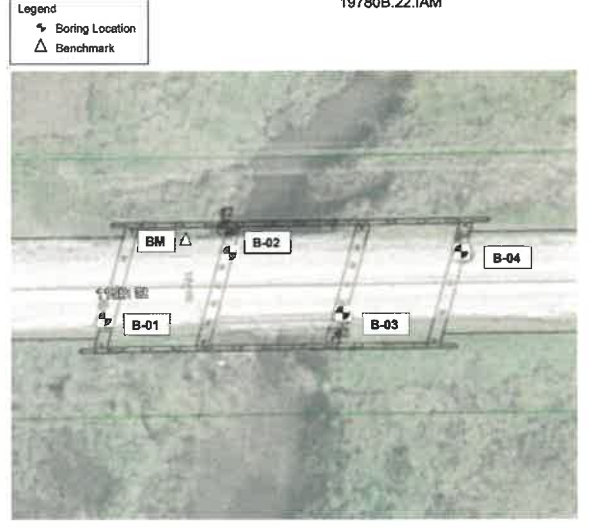
F.3. Lateral Earth Pressures

Lateral support values are provided for design of below-grade walls. Backfill should be compacted to at least 95% of its maximum standard Proctor density (ASTM D 698). Lateral pressures will depend on the materials used. We recommend using clean sands having less than 10% particles passing a number 200 sieve as backfill against below-grade walls.

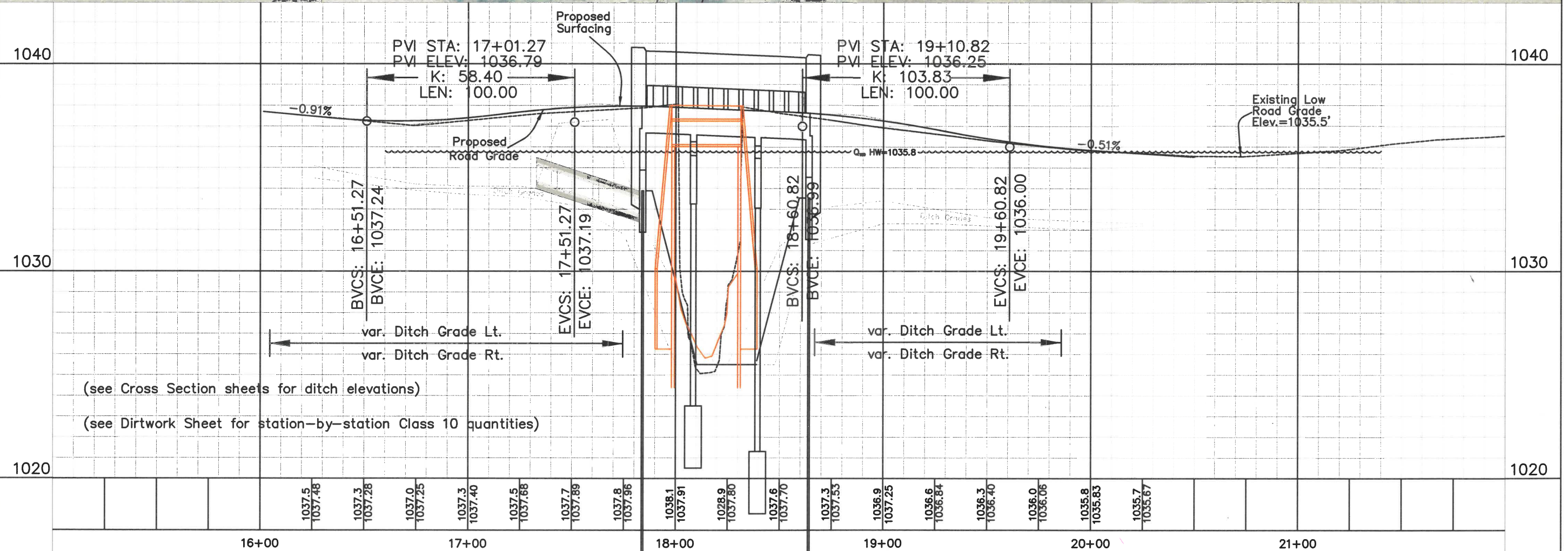
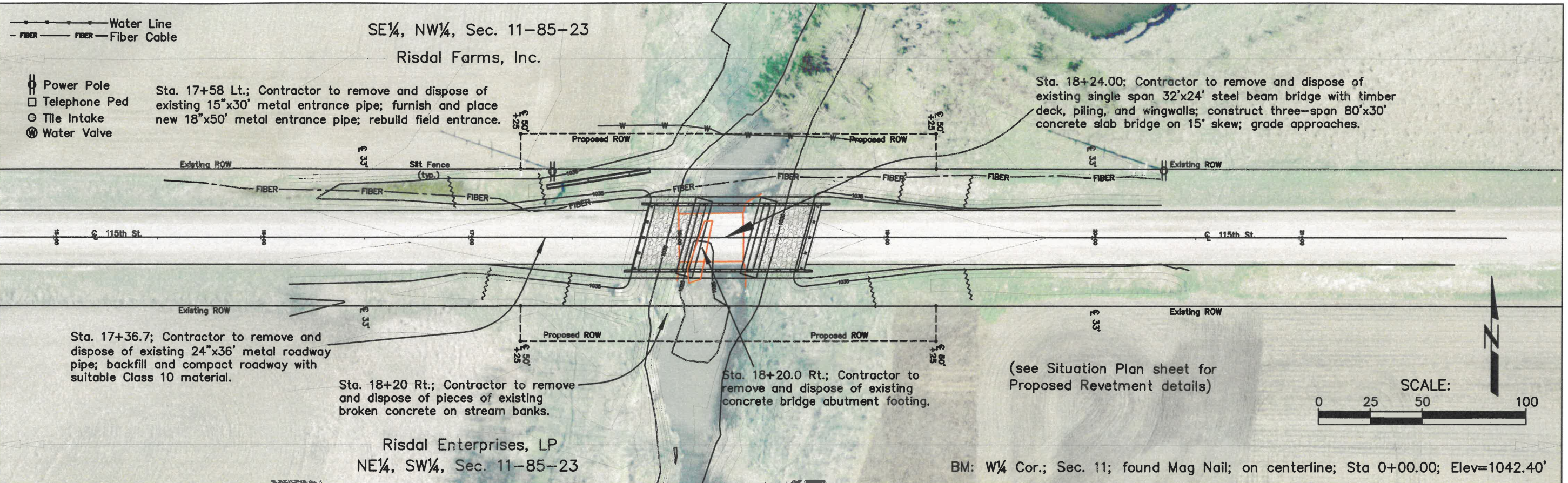
UNIFIED SOIL CLASSIFICATION (ASTM D-2487/2488)



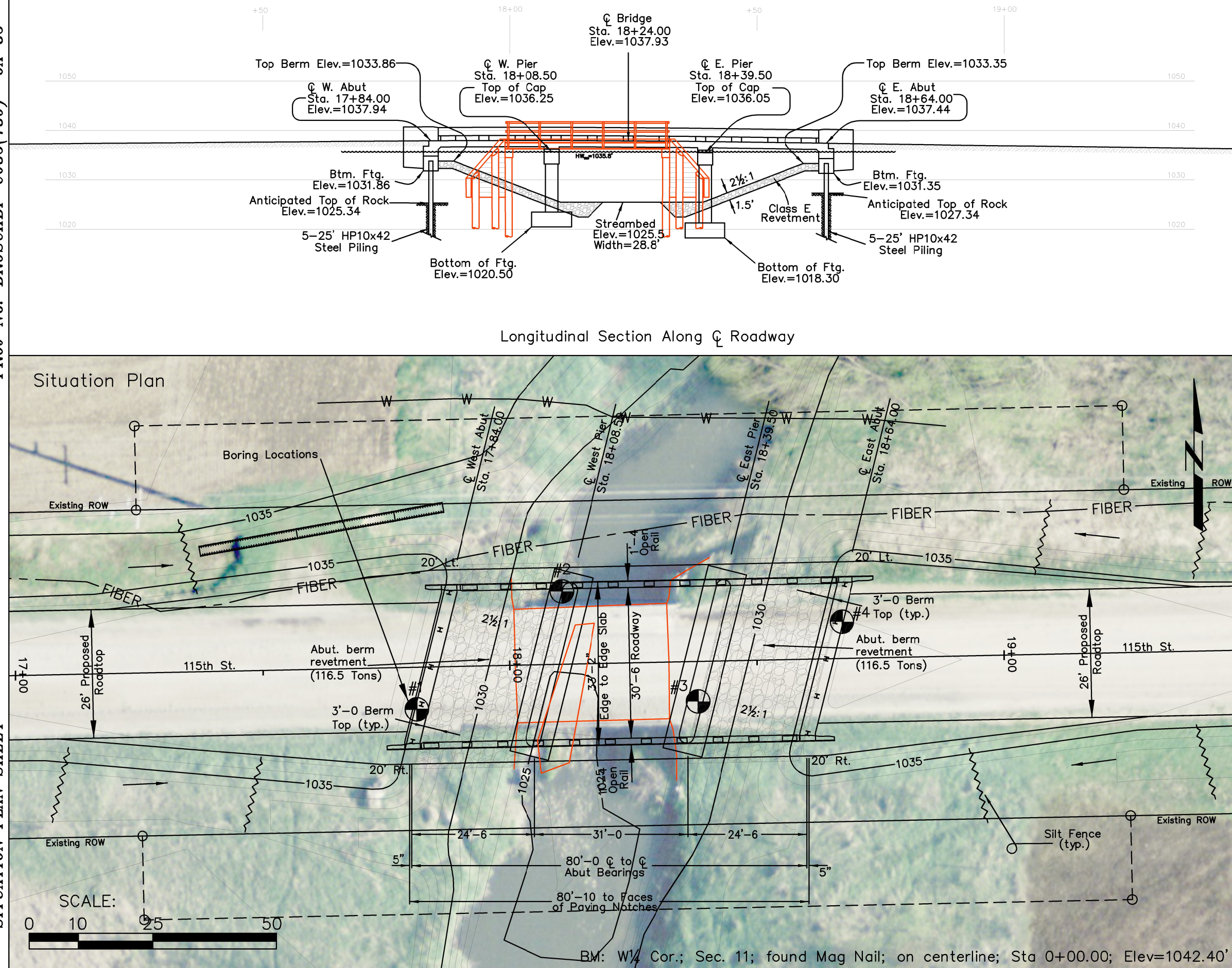
Boring Location Sketch
Proposed 115th St Bridge Replacement
SW 1/4 Sec. 11 - T85N - R23W
Howard Twp., Story Co., Iowa
19780B.22.IAM



*Elev. 100.0=1036.8'



Total Volume Table



STRUCTURE

80'-0 x 30'-6" Three-Span
Continuous Concrete Slab
Bridge on 15' skew.

LOCATION

Sta. 18+24.00; on 115th St.;
0.35 mi. East of the W $\frac{1}{4}$
Corner of Section 11-85-23.
Over Bear Creek, in Story
County, Iowa

HYDRAULIC DATA (StreamStats Version 4.0)

Drainage Area = 13.3 sq. mi.
Main Channel Slope = 12.8 ft./mi.
Site Stream Slope = 0.00362 ft./ft.

Q₂₅ = 2,040 cfs
Natural Stage = 1034.2'
Backwater = 0.09'
Stage w/Backwater = 1034.3'
Bridge Velocity = 4.63 fps
Bridge Waterway Opening = 456.1^m

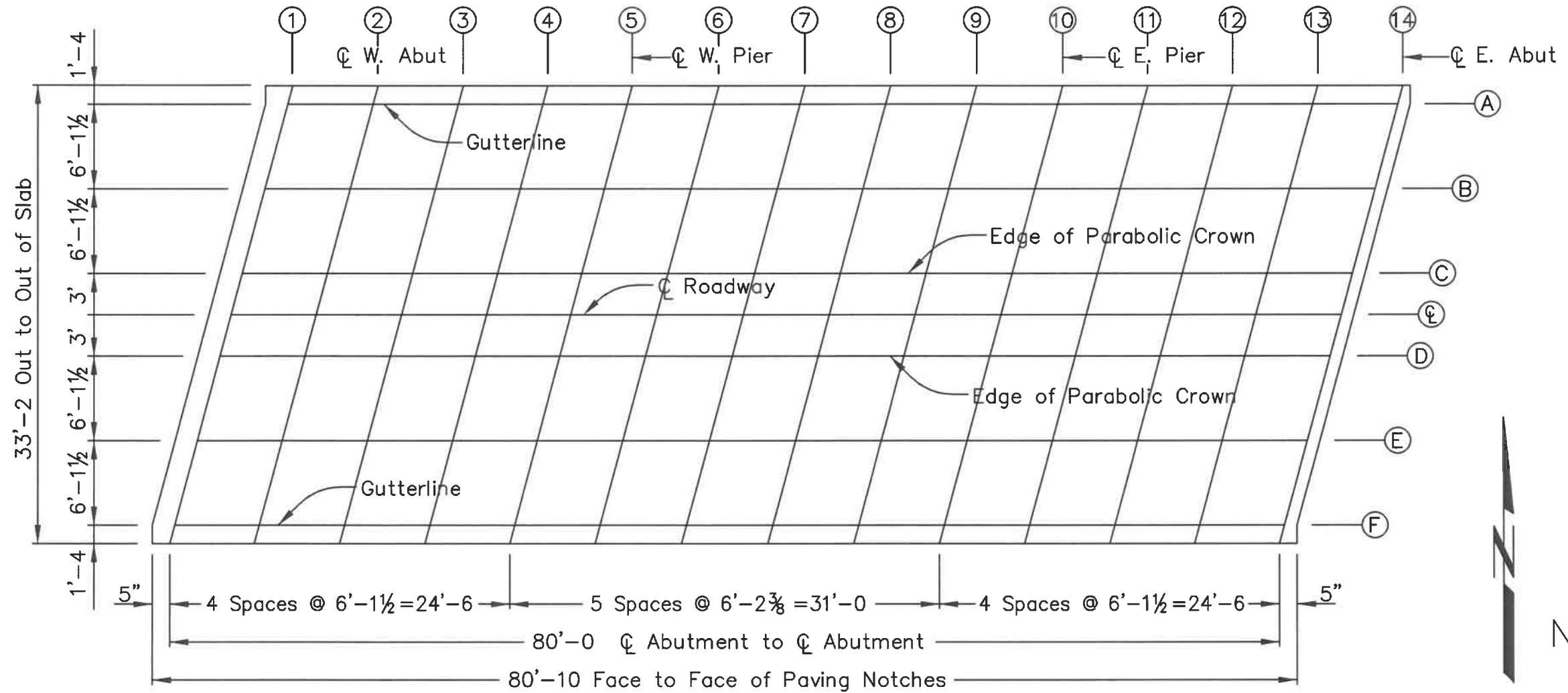
Q₅₀ = 2,550 cfs
Natural Stage = 1035.0'
Backwater = 0.13'
Stage w/Backwater = 1035.1'
Bridge Velocity = 5.18 fps
Bridge Waterway Opening = 515.3^m

Q₁₀₀ = 3,100 cfs
Natural Stage = 1035.6'
Backwater = 0.16'
Stage w/Backwater = 1035.8'
Bridge Velocity = 5.58 fps
Bridge Waterway Opening = 573.2^m
Est. Q₁₀₀ Pier Scour Elev. = 1021.5'

Begin Overtopping Flow = 2,715 cfs
Begin Overtopping Elev. = 1035.5'
Recorded Highwater = unknown
Observed Low Water = unknown

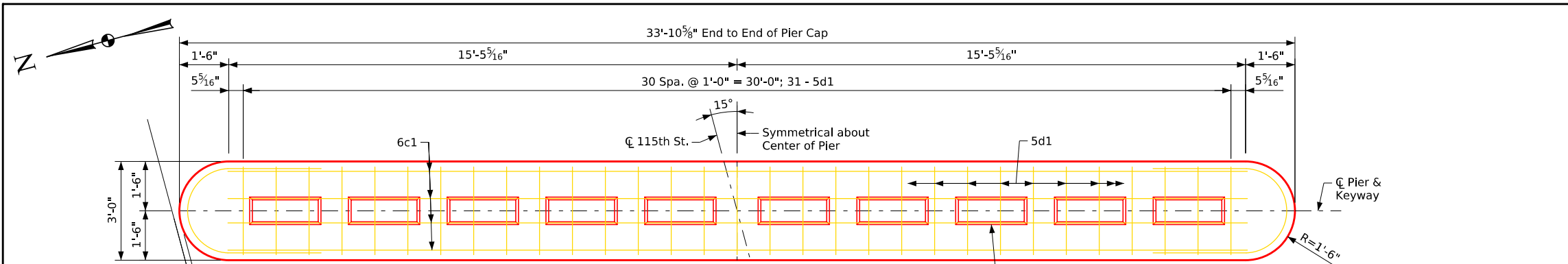
(see Plan and Profile
sheet for broken
concrete removal details)

BM: W¼ Cor.; Sec. 11; found Mag Nail; on centerline; Sta 0+00.00; Elev=1042.40'

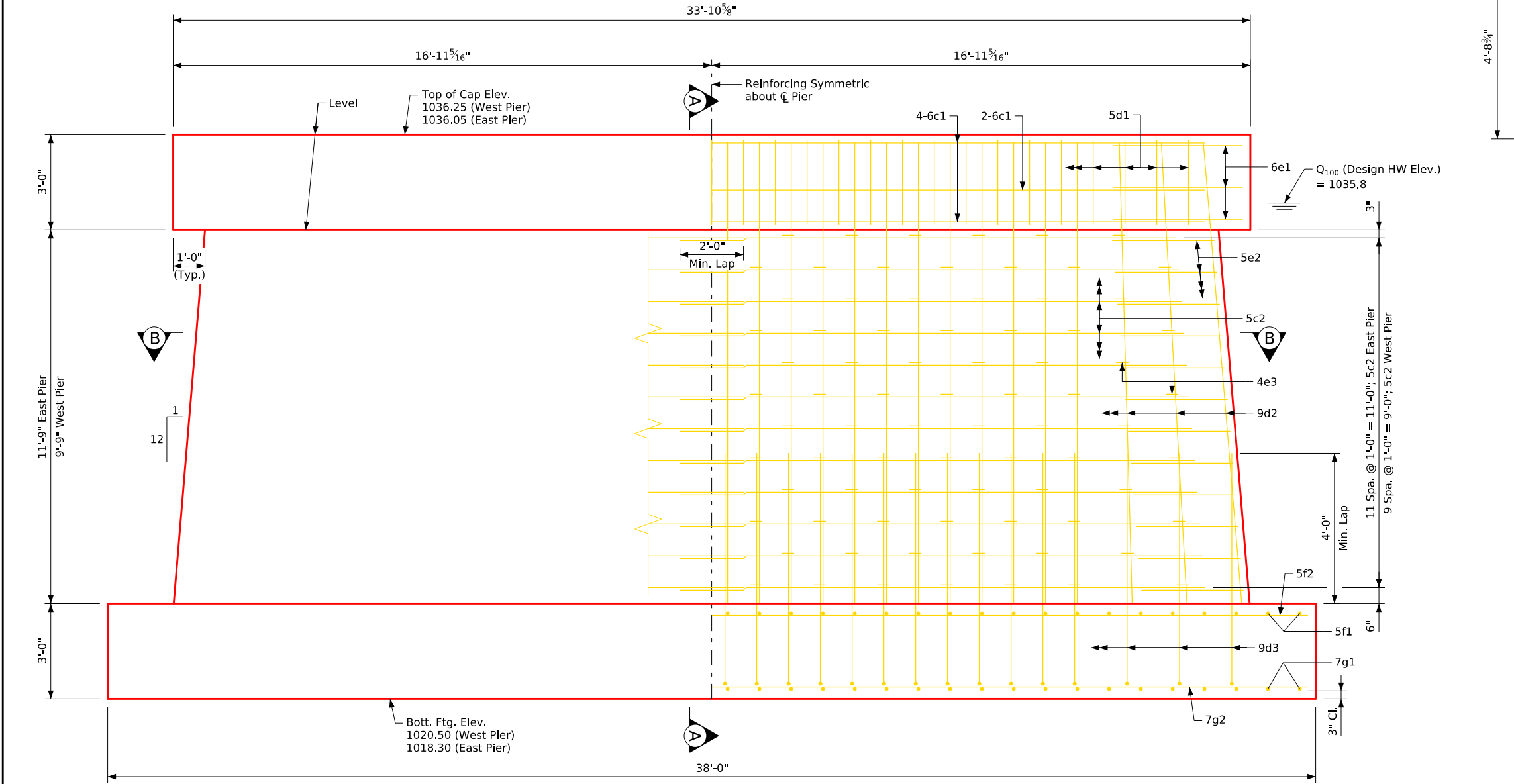


	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Elevation Table	1037.68	1037.70	1037.71	1037.71	1037.69	1037.67	1037.63	1037.58	1037.52	1037.45	1037.37	1037.28	1037.19	1037.10	A
	1037.80	1037.82	1037.83	1037.83	1037.82	1037.80	1037.77	1037.72	1037.66	1037.59	1037.52	1037.43	1037.34	1037.25	B
	1037.91	1037.94	1037.95	1037.96	1037.95	1037.93	1037.90	1037.86	1037.80	1037.74	1037.66	1037.57	1037.48	1037.39	C
	1037.94	1037.96	1037.98	1037.99	1037.98	1037.96	1037.93	1037.89	1037.84	1037.78	1037.70	1037.62	1037.53	1037.44	Q
	1037.90	1037.93	1037.95	1037.96	1037.95	1037.93	1037.91	1037.87	1037.82	1037.75	1037.68	1037.60	1037.51	1037.42	D
	1037.77	1037.80	1037.82	1037.83	1037.83	1037.82	1037.79	1037.76	1037.71	1037.65	1037.58	1037.50	1037.41	1037.32	E
	1037.64	1037.67	1037.70	1037.71	1037.71	1037.70	1037.68	1037.65	1037.60	1037.54	1037.48	1037.40	1037.31	1037.22	F

Top of Slab Elevations



Pier Cap Plan



Pier Elevation

STRUCTURAL DESIGN

BRADLEY J. FLEMING

25337

IOWA

8/14/2026

Date

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

Bradley J. Fleming

Printed or Typed Name

Bradley J. Fleming

My license renewal date is December 31,

2026

Pages or sheets covered by this seal:

Sheets V.3-V.4

Section A-A view showing dimensions and reinforcement details. The section is 8'-0" wide and 3'-0" high. Reinforcement includes 5d1, 6c1, 9d2, 5c2, 4e3 (Typ.) - Alternate ties end for end at each row, 5f1, 7g1, 5f2, and 7g2. The section also shows the keyway formed by 3x10 dressed and beveled strip (Typ.).

Section A-A

Note: See Design Sheet 2 for Section B-B and Pier Notes.

Design For 15° Skew L.A.

80'-0" x 30'-6" Continuous Concrete Slab Bridge

24'-6" End Spans31'-0" Interior Span

Pier Details

STA. 18+24.00 (115th St.)Turn-in Date: Sept. 2026

Story County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. Design Sheet No. 1 of 2FHWA No. 316170

10:33:03 AM7/14/2026barkerpw:\\whks-pw.bentley.com:whks-pw-01\Documents\Projects\IA\10481\41 CAD\Bridge\BRG_10481_Story Co. Howard 11_ORD23_Final.dgn	ENGLISHDESIGN TEAM JRS\BJFWDB	STORY COUNTYPROJECT NUMBER BROSCBHP-C085(189)--GA-85	SHEET NUMBER V.3
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Specifications:

Design: AASHTO LRFD 10th Ed, Series of 2024, except as noted in the current Iowa Bridge Design Manual.

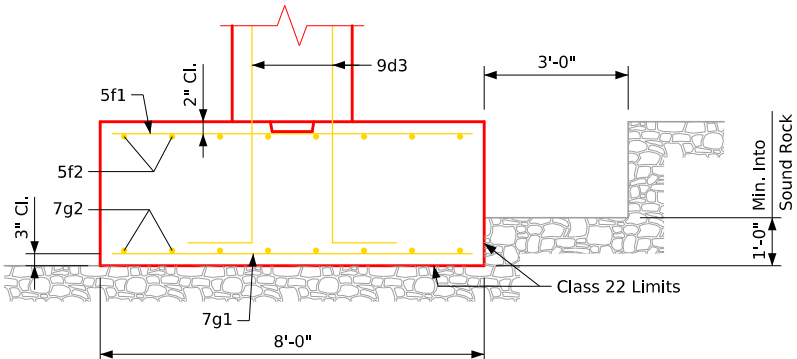
Construction: Iowa Department of Transportation Standard Specifications for Highway and Bridge Construction, Series 2023, plus applicable General Supplemental Specifications, Developmental Specifications, Supplemental Specifications and Special Provisions shall apply to construction work on this project.

Design Stresses:

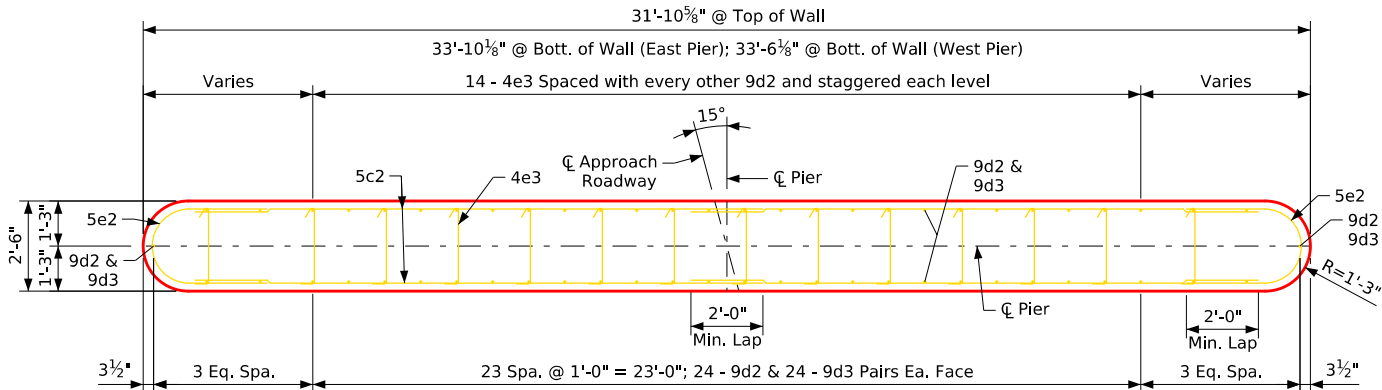
Design stresses for the following materials are in accordance with the AASHTO LRFD Bridge Design Specifications, 10th Ed, Series of 2024, except as noted in the current Iowa Bridge Design Manual.

Reinforcing steel in accordance with AASHTO LRFD Section 5, Grade 60.

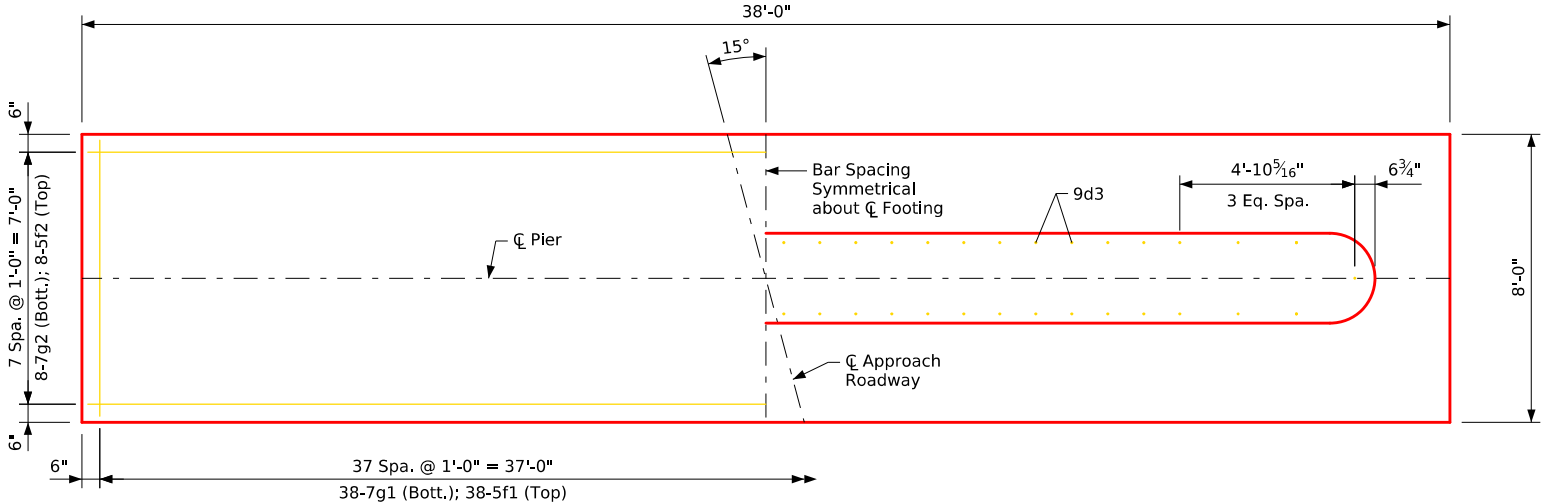
Concrete in accordance with AASHTO LRFD Section 5, f'c = 4.0 ksi.



Footing End Elevation

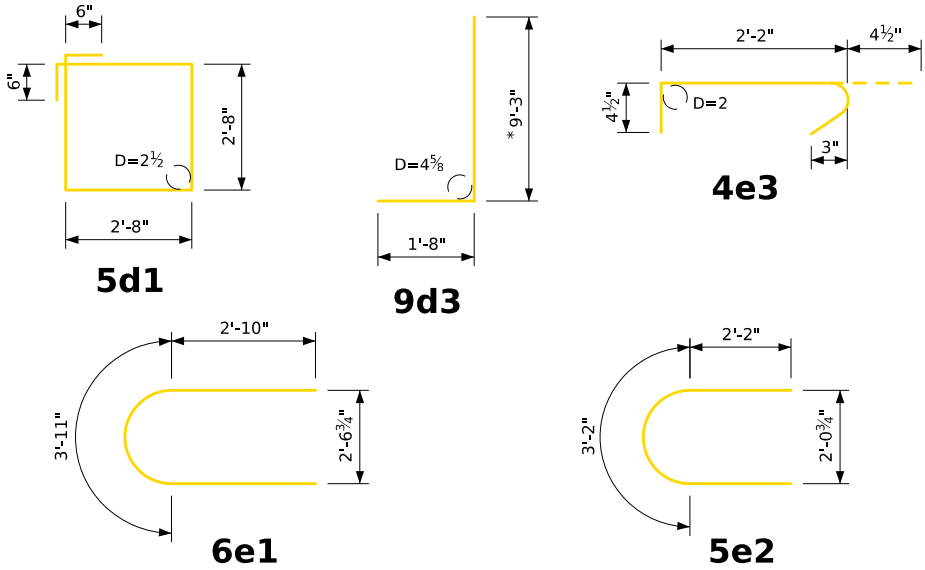


Section B-B



Pier Footing Plan

Bent Bar Details



Note: All dimensions are out to out. D= Pin diameter

* Note: 2'-6" extra length was added to 9d3 dowels in case rock is encountered deeper than anticipated elevations.

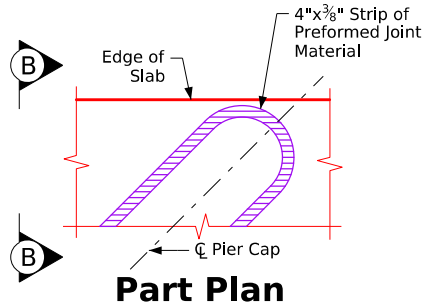
Pier Notes:

Minimum clear distance from the face of concrete to near reinforcing bar is to be 2 inches unless otherwise noted or shown.

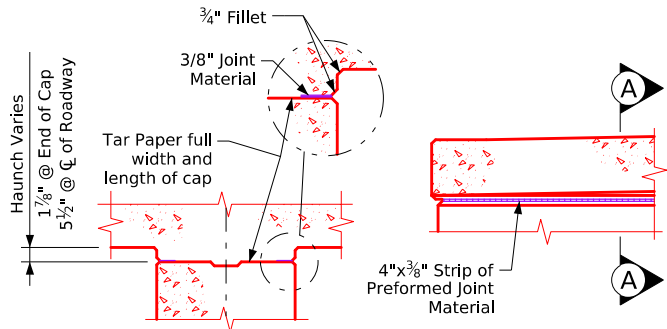
Construction joints are to be formed with a 3" x 10" x 25' dressed and beveled strip. Keyway dimensions shown on the plans are based on nominal dimensions unless stated otherwise. In addition, the bevel used on the keyway shall be limited to a maximum of 10 degrees from vertical.

Piers were designed for HL-93 loading with an allowance fro 20 lbs. per sq. ft. future wearing surface.

Spread footings shall extend at least 12 inches into suitable rock (weathered sandstone) and the last 12 inches of rock excavation shall be to neat lines of masonry. The foundation rock shall have a minimum LRFD nominal bearing resistance of 30 kips per square foot.



Showing treatment of 4"x3/8" strip of preformed joint material at ends of pier cap. Note that joint material is to go all the way around pier cap for square and skewed bridges.



Part Sect A-A

Part Sect B-B

Reinforcing Steel Bar List - West Pier

Bar	Location	Shape	No.	Length	Weight
6c1	Pier Cap, Horizontal		10	30'-10"	463
5c2	Pier Wall, Horizontal		48	16'-1"	805
5d1	Pier Cap, Hoops		31	11'-8"	377
9d2	Pier Wall, Vertical		62	12'-5"	2,617
*9d3	Pier Wall Dowels		62	10'-11"	2,301
6e1	Pier Cap, Ends		6	9'-7"	86
5e2	Pier Wall, Ends		24	7'-6"	188
4e3	Pier Wall Ties		180	2'-11"	351
5f1	Footing, Top		38	7'-6"	297
5f2	Footing, Top		8	37'-6"	313
7g1	Footing, Bottom		38	7'-6"	583
7g2	Footing, Bottom		8	37'-6"	613
Reinforcing Steel - Total Weight (lbs.)					8,994

Reinforcing Steel Bar List - East Pier

Bar	Location	Shape	No.	Length	Weight
6c1	Pier Cap, Horizontal		10	30'-10"	463
5c2	Pier Wall, Horizontal		56	16'-2"	944
5d1	Pier Cap, Hoops		31	11'-8"	377
9d2	Pier Wall, Vertical		62	14'-5"	3,039
*9d3	Pier Wall Dowels		62	10'-11"	2,301
6e1	Pier Cap, Ends		6	9'-7"	86
5e2	Pier Wall, Ends		28	7'-6"	219
4e3	Pier Wall Ties		210	2'-11"	409
5f1	Footing, Top		38	7'-6"	297
5f2	Footing, Top		8	37'-6"	313
7g1	Footing, Bottom		38	7'-6"	583
7g2	Footing, Bottom		8	37'-6"	613
Reinforcing Steel - Total Weight (lbs.)					9,644

Concrete Placement Quantities

Location	Quantity
Pier Cap, 2 @ 11.1 CY	22.2
West Pier Wall	29.0
East Pier Wall	35.2
Pier Footing, 2 @ 33.8 CY	67.6
Total (cu. yds.)	154.0

80'-0" x 30'-6" Continuous Concrete Slab Bridge

24'-6" End Spans 31'-0" Interior Span

Pier Details

STA. 18+24.00 (115th St.) Turn-in Date: Sept. 2026

Story County

IOWA DEPARTMENT OF TRANSPORTATION
Design No. Design Sheet No. 2 of 2 FHWA No. 316170



