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C.1	Standard Plans - Road



PLANS OF PROPOSED IMPROVEMENT ON THE

INTERSTATE ROAD SYSTEM

POLK COUNTY

Reconstruction - Bridge Widening

I-80 EB over Fourmile Creek
1.4 MI. E of NE I-35/235 Interchange (EB)

Refer to the Plan Sheets for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.



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811
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Revisions

	TOTAL
	64
PROJECT IDENTIFICATION NUMBER	
10-77-035-010-05	
Contract ID NUMBER	
PROJECT NUMBER	
IM-NHS-080-4(088)139--03-77	
R.O.W. PROJECT NUMBER	
PROJECT DIRECTORY NUMBER	
7703501010	

Standard Road Plans

Standard Road Plans are listed on Sheet Number C.1.

Design Data Urban

(I-80 E.B.)		
2024 AADT	48,946	V.P.D.
2044 AADT	60,270	V.P.D.
2044 DHV	6,230	V.P.H.
TRUCKS	17	%
Total Design ESALs	-	

Index Of Seals

Sheet No.	Name	Type
A.1	Dusten L. Olds	Structural Design
V.6	Brice E. Stafne	Hydraulic Design
SPS.1	Brian T. Havens	Geotechnical Design
A.3	Benett J. Batenhorst	Roadway Design

Structural Design

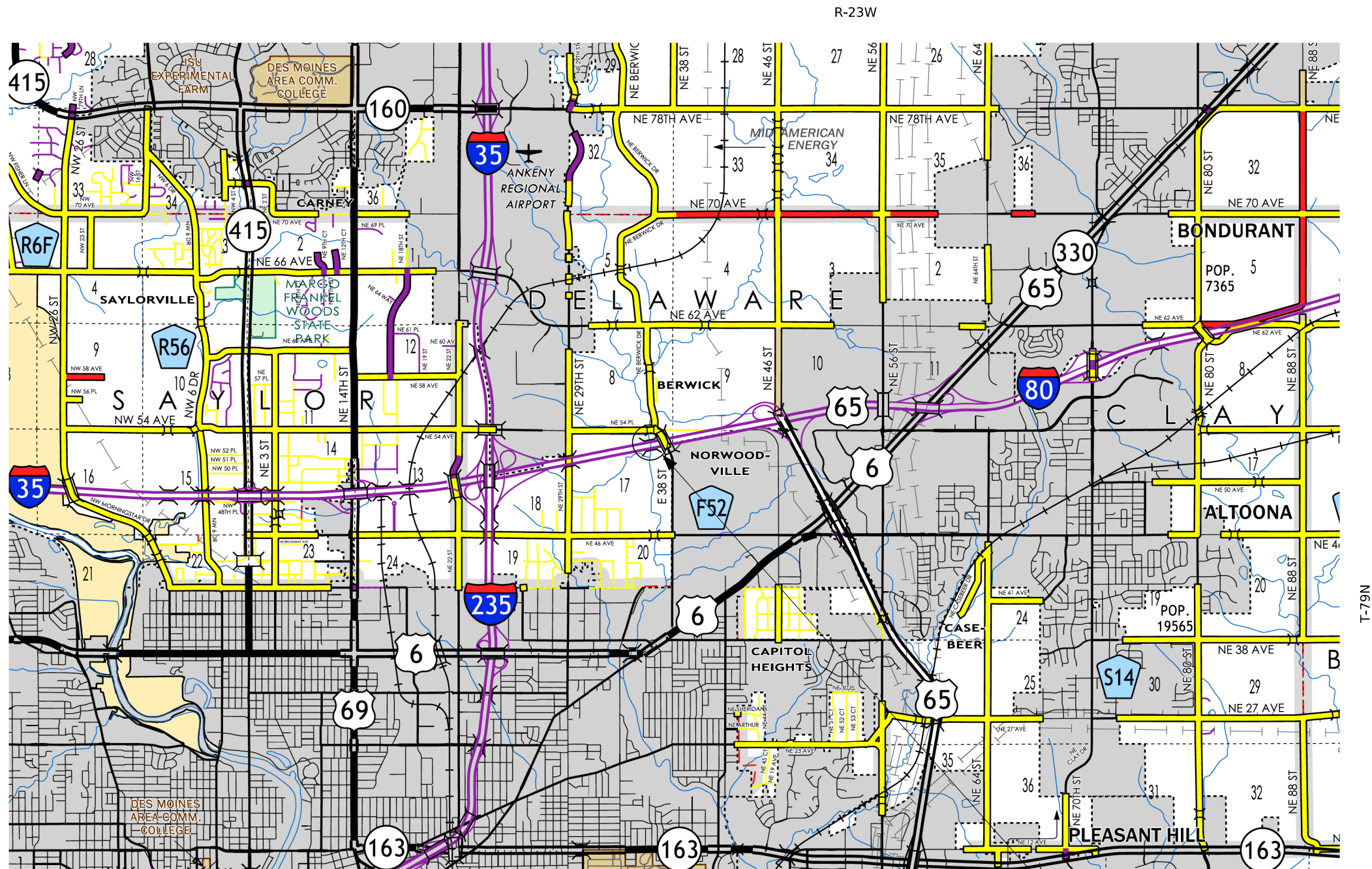


I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature DLOlds Date 9/17/25
Printed or Typed Name Dusten L. Olds

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: Sheets A.1, A.2, V.1 Thru V.47



LEGEND

INTERSTATE HIGHWAY

PRIMARY HIGHWAY-DIVIDED

PRIMARY HIGHWAY

PORTLAND CEMENT CONCRETE ROAD

ASPHALT ROAD

BITUMINOUS ROAD

GRAVEL ROAD

EARTHEN ROAD

INTERSTATE HIGHWAY

UNITED STATES HIGHWAY

STATE HIGHWAY

COUNTY HIGHWAY

RAILROAD

PIPELINE

AIRPORT

HYDROLOGY

BRIDGE

STATE BOUNDARY

COUNTY BOUNDARY

CORPORATE BOUNDARY

TOWNSHIP LINE

SECTION LINE

ROAD NAMES

UNINCORPORATED PLACE

STATE PARKS

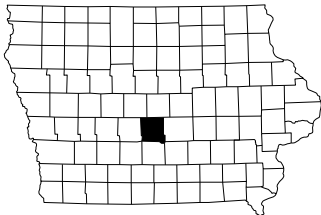
STATE INSTITUTIONS

FEDERAL LAND

Polk County Location Map

Not To Scale

Design No. 326
FHWA No. 041970



Specifications:

Design: AASHTO LRFD 8th Ed, Series of 2017, 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, including the following shall apply to construction work on this project:

- Developmental Specifications for "High Performance Concrete for Structures",
- Developmental Specifications for "Fiber Reinforcement for Structural Concrete".

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO LRFD Bridge Design Specifications, 8th ed, Series of 2017, except as noted in the current Iowa Bridge Design Manual.

- Reinforcing steel in accordance with AASHTO LRFD Section 5, Grade 60 for Epoxy Coated and Non-Coated, and Grade 60 or 75 for stainless.
- Concrete in accordance with LRFD AASHTO Section 5, f'c = 4.0 ksi, except Prestressed Beam Concrete as noted.
- Prestressed Concrete Beams, see Design Sheet 24.
- Structural Steel in accordance with AASHTO LRFD Section 6, ASTM A709 Grade 50 (AASHTO M270 Grade 50), except as noted.

General Notes:

This design is for the widening and redecking of the existing 188'-4" x 56'-0" PPCB E.B. Bridge, Design Nos. 758 & 1491.

The deck, widened piers and widened abutments are designed for HL-93 loading, plus 20 lbs. per square foot of roadway for future wearing surface.

The City and utility companies whose facilities are shown on the plans or known to be within the construction limits shall be notified by the Bridge Contractor of the starting date.

Electronic copies of original design plans are available to the Contractor as part of the E-Files supplied with the contract documents. Dimensions shown on these plans are based on design plans (Original Design No. 758) and widening plans (Design No. 1491).

Faint lines on plans indicate the existing structure.

It shall be the Bridge Contractor's responsibility to provide sites for excess excavated material. No payment for overhaul will be allowed for material hauled to these sites.

The approach fills are not a part of this project, but it will be included in the tied road project associated with this contract. The approach fill as shown are to be in place before abutment piles are driven.

Concrete barrier rails placed using the slipform method will require the use of a Class BR concrete in accordance with Article 2513.03, A, 2 of the Standard Specifications. Cast-in-place barrier rails shall use Class C mix. Class D concrete is not permitted for concrete barrier rails (cast-in-place or slipformed method).

All reinforcing is to be securely wired in place before concrete is poured.

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

All exposed concrete corners, 90 degrees or sharper to be filleted with a ¾" dressed and beveled strip, unless noted otherwise.

All alignment, stationing, connecting dimensions, and elevations used in the new details in these plans were developed based on the existing bridge plans and field survey. The Bridge Contractor shall field verify these details before starting construction.

Temporary shoring (sheet pile or other) shall be required as necessary to prevent the earth under the traffic lane from sloughing in during construction.

The Contractor shall submit a Temporary Shoring Plan for review. The Temporary Shoring Plan shall be designed and certified by a professional Engineer licensed in the State of Iowa. When determining slope stability to support structures such as bridges, culverts and retaining walls, a global stability analysis shall be included in Design of the Temporary shoring in accordance with Chapter 200F-1 in the Design Manual of the Iowa Dot, Design Bureau. The Contractor shall not proceed with installation of the temporary shoring without notice to proceed from the Engineer.



All plan dimensions are horizontal unless noted otherwise.

404 Permit information and the pollution prevention plan are included in the tied road plans, project No. IM-NHS-080-4(85)138--03-77

Temporary shoring submittal shall include:

- Design calculations (including a global stability analysis)
- Soil properties
- Shoring material properties
- Shoring plan layout (showing location of traffic)
- Shoring details

Temporary shoring shall be paid for as a lump sum including all cost for designing, furnishing, installing and removal. All material used for shoring shall remain the property of the Contractor. Shoring is to be removed only after backfilling has been completed. In addition to the requirements noted above, Article 1107.07 of the Standard Specifications, still applies.

These bridge plans label all reinforcing steel with English notation (5a1 is ⅝" inch diameter bar). English reinforcing steel received in the field may display the following "Bar Designation". The "Bar Designation" is the stamped impression on the reinforcing bars, and is equivalent to the bar diameter in millimeters.

English size	3	4	5	6	7	8	9	10	11
Bar Designation	10	13	16	19	22	25	29	32	36

All reinforcing bars and bars noted as dowels supplied for this structure shall be deformed reinforcement unless otherwise noted or shown.

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.

During construction of this project the Bridge Contractor will be required to coordinate operations with those of other Contractors working within the same area. Other work in progress during the same period of time is shown in the tied roadway plans, Project No. IM-NHS-080-4(85)138--03-77.

The Contractor shall be responsible for ensuring stability of prestressed concrete beams during erection and construction up through the concrete bridge deck reaching its full 28-day strength. The Contractor shall provide sufficient temporary anchor bracing at beam ends and temporary intermediate bracing as needed to ensure prestressed beam stability. Partially or fully installed permanent bracing as shown in these design plans shall not be assumed sufficient to brace prestressed beams during erection and construction. Temporary bracing shall not be welded to prestressed beam stirrups.

Guardrail is to be placed under tied project IM-NHS-080-4(85)138--03-77.

Working Drawing and Calculation Submittals

Working drawings and calculations shall be submitted for the following items shown in the table below. (Note additional working drawings and calculations may be required in accordance with Article 1105.03 of the Standard Specifications.)

Submittal Requirements for working drawings and calculations shall be in accordance with 1105.03 of the Standard Specifications for Highway and Bridge Construction of the Iowa Department of Transportation. The absence of a certification requirement for a submittal does not relieve the contractor of the responsibility to attain certification.

Calculation submittals in the table which are associated with working drawing submittals shall be submitted on the same day. Review time for calculation submittals shall be of the same duration as and run concurrently with review time for associated working drawings. The calculation submittals listed in the table are not meant to be an exhaustive list and do not relieve the Contractor from providing additional calculation submittals if requested by the Engineer.

No.	Working Drawing Description	Working Drawing File Name Convention for Submittal	Certified by Iowa P.E. (Yes/No)
1	Steel Diaphragms	(088)_Polk_Design326_SteelDiaphragms.pdf	No
2	Deck Drains	(088)_Polk_Design326_DeckDrains.pdf	No
3	Deck Removal Plan	(088)_Polk_Design326_DeckRemovalPlan.pdf	Yes
4	Barrier Cover Plates	(088)_Polk_Design326_BarrierCoverPlates.pdf	No
5	Bearing Anchor Bars	(088)_Polk_Design326_BearingAnchorBars.pdf	No
6	Temporary Shoring Plan	(088)_Polk_Design326_TemporaryShoringPlan.pdf	Yes
No.	Calculation Description	Calculation File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
7	Deck Removal Plan	(088)_Polk_Design326_DeckRemovalPlan.pdf	Yes
8	Temporary Shoring Plan	(088)_Polk_Design326_TemporaryShoringPlan.pdf	Yes

Containment and disposal of waste shall be in accordance with Section 2508, of the Standard Specifications. All costs associated with hauling and depositing of waste at the designated site/facility shall be the responsibility of the Contractor and included in the contract price bid for the "Containment" item.

Abutment bearings (sole plates and masonry plates) are to be cleaned and painted. Cleaning by vacuum blasting or by a non-blasting method is required. Surface to be painted shall be prepared in accordance with Steel Structures Painting Council (SSPC) SP3. Surfaces of the abutment bearings are to be given one coat of both a rust inhibitor type primer and final coat as approved by the Engineer. The color of the dry paint should approximate the color of concrete. This work shall be measured and paid for at the contract unit price per lump sum for the bid item, "Painting of Structural Steel".

Bridge Deck Dimensions Table

	Item	Units	Quantity
1	Deck Length	L.F.	191.3
2	Minimum Deck Width	L.F.	73.2
3	Maximum Deck Width	L.F.	73.2
4	Deck Area	S.F.	14,003

1. Deck length is measured from face-to-face of paving notches along the centerline of the roadway.
- 2, 3. Deck widths are measured from out-to-out of deck perpendicular to the centerline of the roadway.
4. Deck area is to be based on the face-to-face paving notch distance and out-to-out deck dimensions.

A scrape sample was taken from an abutment bearing of this bridge to get an indication of the existence of and level of total lead and total chromium. Analysis of total lead on this sample was 1200 Parts Per Million (PPM.) Analysis of total chromium on this sample was <29 PPM. These analysis 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 Iowa DOT's testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

The lump sum bid for "Removals as Per Plan" shall include all costs associated with removing the bridge deck, barriers, abutment diaphragms and portions of the pier diaphragms and abutments to the limits shown in these plans. Removals shall be in accordance with Section 2401 of the Standard Specifications. Any damage to other portions of the existing structure not noted for removal shall be the responsibility of the Bridge Contractor and shall be repaired at no extra cost to the State.

Design History
at this Site

(Includes this Design)	
Des. No.	Type of Work
758	Original Design - PPCB
1178	Overlay
1491	Bridge Widening - PPCB
1392	Remodel Abutments, Reoverlay
2813	Raise Paving Notches & Replace Approaches
1717	Erosion Repair
2318	Erosion Repair
326	Bridge Widening and Redecking

Traffic control plan:
The roadway will be open to thru traffic. Refer to the traffic control plan included in the tied road plans, Project No. IM-NHS-080-4(85)138--03-77.

Design For Widening & Redecking of 16°54'00" Skew (LA)

188'-4" x 70'-0" Pretensioned
Prestressed Concrete Beam Bridge

59'-9 1/2" End Spans68'-9" Interior Span

General Notes

STA. 1173+91.29, 42.00' Rt. (☐ I-80 Existing)Turn-in Date: October 2025

Polk County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 326Design Sheet No. 3 of 47FHWA No. 041970

General Notes (Cont.):

In addition to the requirements of Article 2413.03, G, of the Standard Specifications, both exposed abutment bridge seats and wash surfaces shall have an application of concrete sealer in accordance with Article 2403.03, P, 3, of the Standard Specifications.

- Forms for pier caps on Pier Nos. 1 and 2 may be removed with the approval of the Engineer when the following two conditions have been met:
- Pier cap concrete has been in place for a minimum of 2 calendar days excluding days that the concrete surface is subjected to temperatures at or below 40°F and
 - The pier cap concrete strength is at least 2500 psi.

Minimum concrete compressive strength of 2500 psi shall be verified by flexural strength according to Materials I.M. 316 with a minimum flexural strength of 450 psi or by the maturity method according to Materials I.M. 383. Curing of pier cap concrete shall be in accordance with the Standard Specifications. Pier cap concrete shall be subjected to exterior loads in accordance with Article 2403.03, N, 2, of the Standard Specifications.

This project will impact City of Des Moines stream gauge ATN14, Fourmile Creek (central Iowa) near Altoona I-80, IA (DMX). Contact City of Des Moines 30 days prior to construction that will impact the gage. City of Des Moines Engineering Department Contact:
Dan Pritchard (515) 323-8163

Bridge repairs shall consist of:

- ① Remove the existing PC deck, barrier curbs, abutment diaphragms, and partially remove the pier diaphragms. Construct widened abutments, piers and two new beam lines N & O. Construct a new 8½" bridge deck and new 44" single slope barrier rails.
- ② Remove and replace approaches with full length standard approaches including new BE joints. Incorporate new joints between the bridge and approach slabs.
- ③ Replace existing expansion joints and abutment backwalls at both abutments with semi-integral abutment construction. Clean and seal the abutment seats. Include new abutment backfill and subdrains.
- ④ Clean, repair and paint abutment bearings.
- ⑤ Remove and replace existing slope protection.
- ⑥ Repair concrete area on East Abutment.
- ⑦ Repair existing beam ends.

Concrete Removal Notes:

The Bridge Contractor is to use extreme care when removing the deck concrete at the beam locations to avoid damaging the top flange and ½" diameter hoop bars of the beam. Prior to commencing any deck removal work, the Contractor shall notify the Engineer of the start date for deck removal work in order to demonstrate the removal procedure on a small portion of the deck while the Inspector is present. Damage may require the Contractor to modify the removal process prior to approval to proceed.

Concrete removal shall be initiated with a ¾" saw cut wherever possible.

Removals shall be in accordance with Section 2401 of the Standard Specifications. Any damage to other portions of the existing structure not noted for removal shall be the responsibility of the Contractor and shall be repaired at no extra cost to the State.

Once the deck concrete over the beam is removed, all remaining debris shall be cleaned from the beams to provide a suitable bond between the beam and concrete deck.

The existing ½" diameter hoop bars are an integral part of the existing beam top flange. All damage sustained to the top flange and/or ½" diameter hoop bars shall be identified and repaired.

If one or more of the existing beams or hoop bars are damaged during removals, the Contractor shall repair or replace the damaged beam or beams. Adjacent bearings shall also be replaced. The Engineer will determine what repairs and/or replacements are required.

All material, equipment, and labor associated with removal of the deck, repair of any damage, or beam and bearing replacement shall be considered incidental to the bid item "Removals, as Per Plan".

All partial removals (e.g. - at pier and abutment diaphragms) shall be in accordance with Section 2401 of the Standard Specifications. All such removals shall be to neat sawcuts to provide clean straight surfaces at interfaces between new concrete and remaining concrete. The removal shall be done in a manner which will prevent any damage to the existing structure to remain. The Contractor shall assume full responsibility for any damage caused, and shall repair any damaged area to its original condition, as directed by the Engineer, at the Contractor's expense. Any existing reinforcing steel which is to be "preserved" that is exposed during removal operation is to be carefully protected, cleaned and incorporated into new construction unless noted otherwise.

General Notes for Concrete Rustication:

Strips and panels used as inserts within concrete forms to create the rustication features may be made of wood, steel, plastic or other nonporous material capable of withstanding anticipated concrete pour pressures without physical defects. Wood inserts, if used, shall be free of warp, twist, checks or cracks, and shall be presoaked prior to placement of concrete in the forms.

Rustication inserts shall easily attach to forms and shall not allow leakage of concrete between the form and the insert. When steel forms are used, rustication strips may be rigidly attached to the inside surfaces of the forms. When steel forms are not used, rustication strips and other inserts for small recesses on exposed concrete surfaces shall be fastened to the forms in a manner that will permit them to remain in place when the forms are removed. Leave inserts in place until they can be removed without damage to the surrounding concrete.

The inserts shall be designed to form surfaces and features conforming to the design intent including the shape, lines, depths and dimensions shown in the plans. Create inserts using a minimum number of splice joints in their length. Splices, if used, shall be tightly joined so as not to allow gaps or leaks, and shall not create any change in alignment or shape of the rustication feature. Do not locate form ties within concrete rustications.

For rustication features following the perimeter of rounded surfaces, it may be necessary to use multiple layers of insert material in order to achieve the radius curve. This is acceptable, provided that the final shape, line, depth, and dimension of the features are maintained in the final result.

During loading of forms with concrete, take extra care to ensure proper consolidation of concrete around all rustication inserts to preserve the shape, line and depth of all intended features in the final concrete surface. Following removal of forms, repair all defects to achieve the rustication features as specified in the plans. Patch voids, honeycomb areas, etc., in accordance with the Standard Specifications. If surfaces will not receive a colored sealer coating, add white cement to the patching mortar to lighten it in order to match or be slightly lighter than surrounding concrete when dry. Completed surface shall be free from blemishes, surface voids and conspicuous form marks to the satisfaction of the Engineer. The Contractor shall correct any surface defects to the satisfaction of the Engineer at no additional cost to the project.

All costs associated with concrete rustication are to be included in the bid item "High Performance Structural Concrete".



Design For Widening & Redecking of 16°54'00" Skew (LA)

188'-4" x 70'-0" Pretensioned Prestressed Concrete Beam Bridge

59'-9 1/2" End Spans68'-9" Interior Span

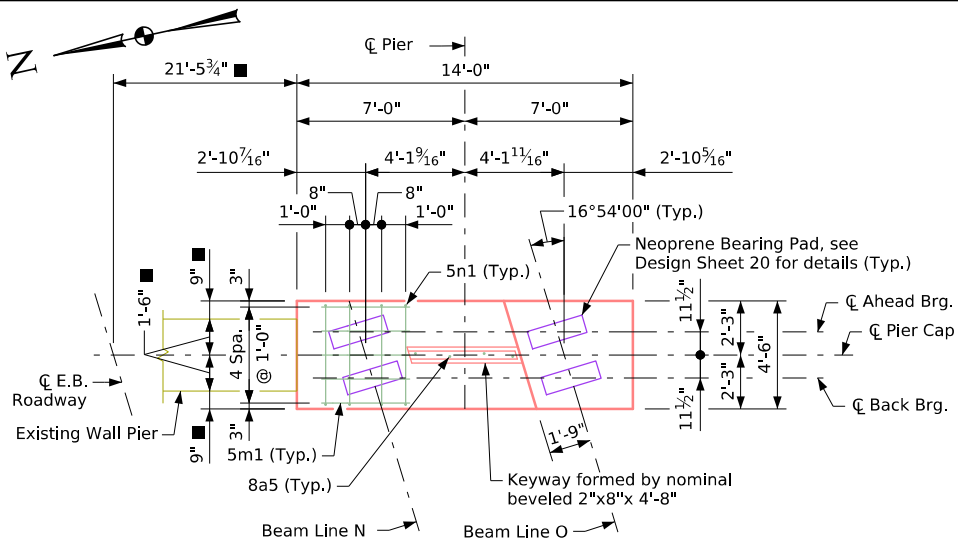
General Notes

STA. 1173+91.29, 42.00' Rt. (☒ I-80 Existing)Turn-in Date: October 2025

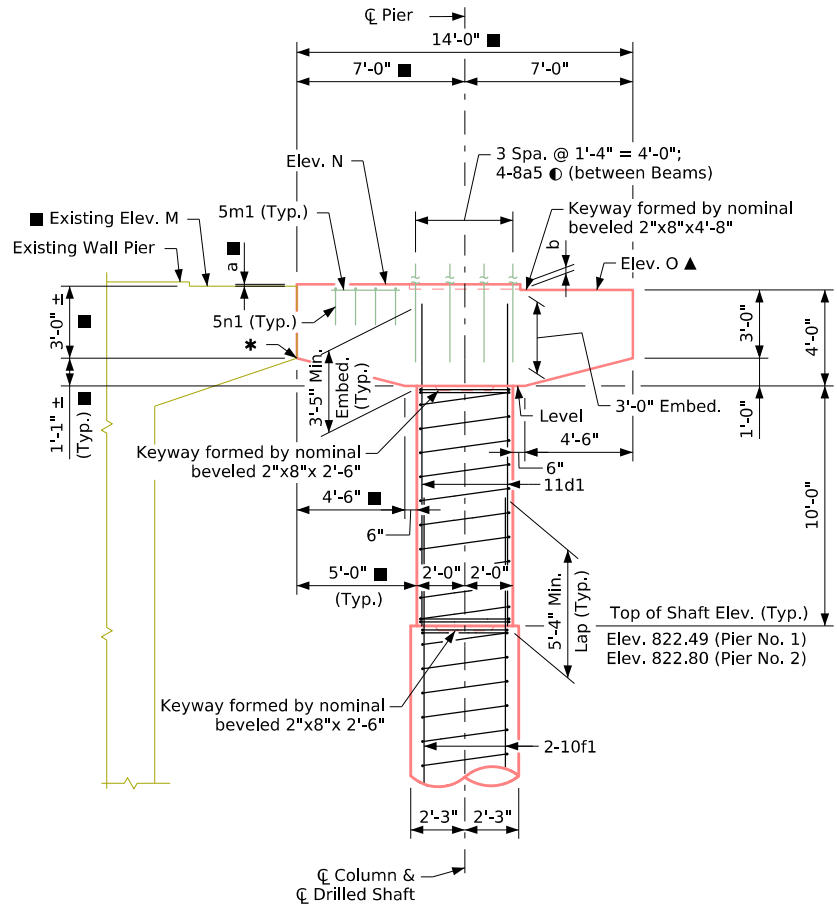
Polk County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 326Design Sheet No. 4 of 47FHWA No. 041970

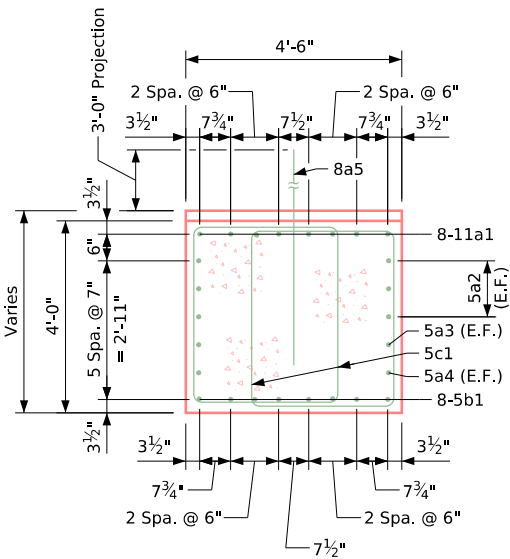


Plan of Pier Cap

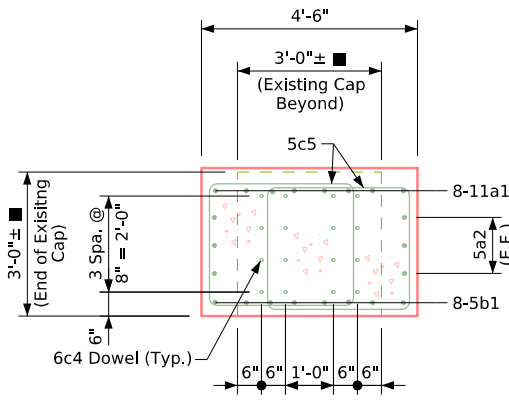


Pier Elevation
(Looking East)

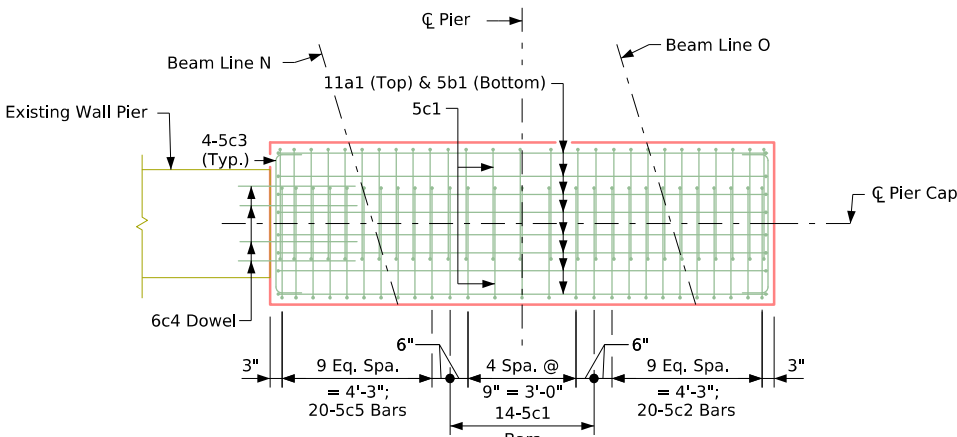
- Notes:
- Place 5m1 and 5n1 bars under Beam N only.
 - Shift 8a5 bars as required to avoid longitudinal cap reinforcing and cap stirrups.
 - * Match bottom of Cap with bottom of Cap of Existing Pier.
 - Field verify



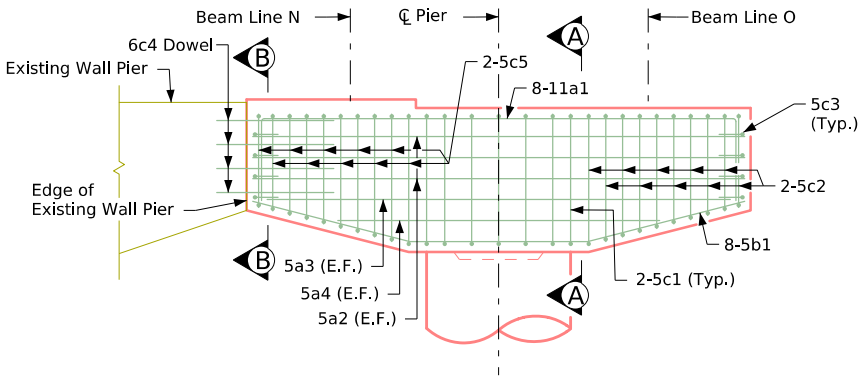
Section A-A



Section B-B



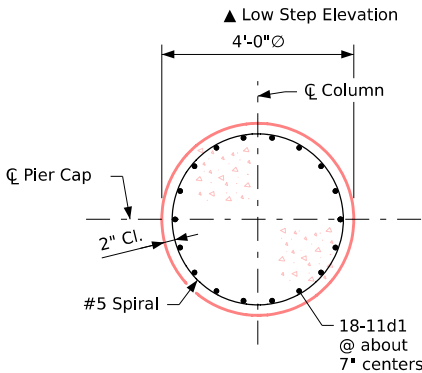
Pier Cap Reinforcing Plan
(8a5, 5m1 and 5n1 bars not shown for clarity)



Pier Cap Reinforcing Elevation
(8a5, 5m1, and 5n1 bars not shown for clarity)

Table of Pier Steps		
Step	Pier No. 1	Pier No. 2
a	2 1/4" ±	2 1/16" ±
b	3"	3"

Table of Pier Elevations		
Elevation	Pier No. 1	Pier No. 2
Exist. Elev. M	836.55	836.88
Elev. N	836.74	837.05
Elev. O	836.49	836.80



Typical Section
Thru Column

Note:
Column reinforcing cage shall be oriented with respect to C Pier Cap and C Column/ Drilled Shaft as shown to avoid conflict with longitudinal cap reinforcing and cap stirrups.

Pier Notes:

- Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.
- Spiral reinforcing is to be No. 5 bar with 3'-8" outside diameter for column and 3'-6" outside diameter for shaft, 12" pitch with 4 equally spaced $L\frac{7}{8} \times \frac{7}{8} \times \frac{1}{8}$ spacers punched to hold spirals. Spirals are to have $1\frac{1}{2}$ extra turns at top and bottom of columns and shafts.
- The spiral reinforcing may be spliced by lapping 32". The length of the spiral shown does not include the lapped length of the splices. The cost of the laps at splices is to be included in the price bid for other reinforcement.
- Column and shaft ties spaced at 12" centers may be substituted for the spiral reinforcement. Payment will be based on the weight of the spiral reinforcement. No adjustments in reinforcing steel pay weight will be allowed. See bent bar details for splice lap length.
- All reinforcing steel is to be securely wired in place before concrete is poured.
- All exposed corners 90° or sharper to be filleted with $\frac{3}{4}$ " dressed and beveled strip.
- For pier cap early form work removal notes, see General Notes on Design sheet 4.
- Contractor shall locate reinforcing in existing pier cap prior to drilling holes for dowel bars. Bars may be shifted up to 2" from locations shown in these details to avoid existing pier reinforcing.
- All existing concrete surfaces that are to be in contact with new construction shall be thoroughly cleaned before placing any new concrete.
- The 6c4 bars shall be set as dowels in drilled holes. Holes are to be 10" deep. The dowels shall be installed in accordance with the manufacturer's recommendations and shall use a polymer grout system in accordance with Article 2301.03, E, of the Standard Specifications.
- The price bid for "Structural Concrete (Bridge)" shall include the costs of setting bars as dowels in the pier cap. Locate existing reinforcing prior to installation of dowel bars. Dowel bars may be shifted slightly to avoid existing reinforcing as needed and shall meet minimum clearance and cover requirements.

Design For Widening & Redecking of 16°54'00" Skew (LA)

188'-4" x 70'-0" Pretensioned
Prestressed Concrete Beam Bridge

59'-9 1/2" End Spans68'-9" Interior Span

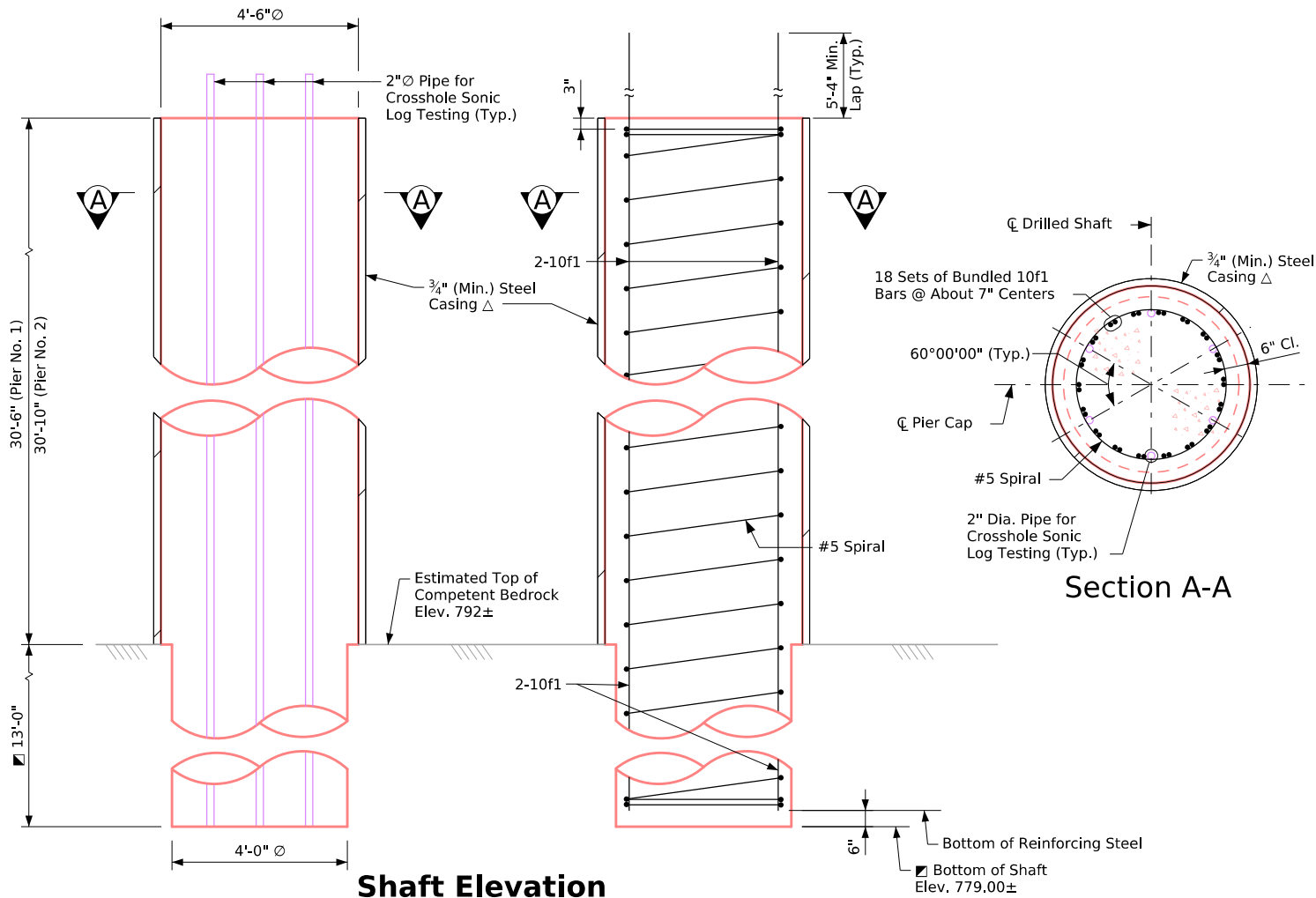
Pier Details

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Polk County

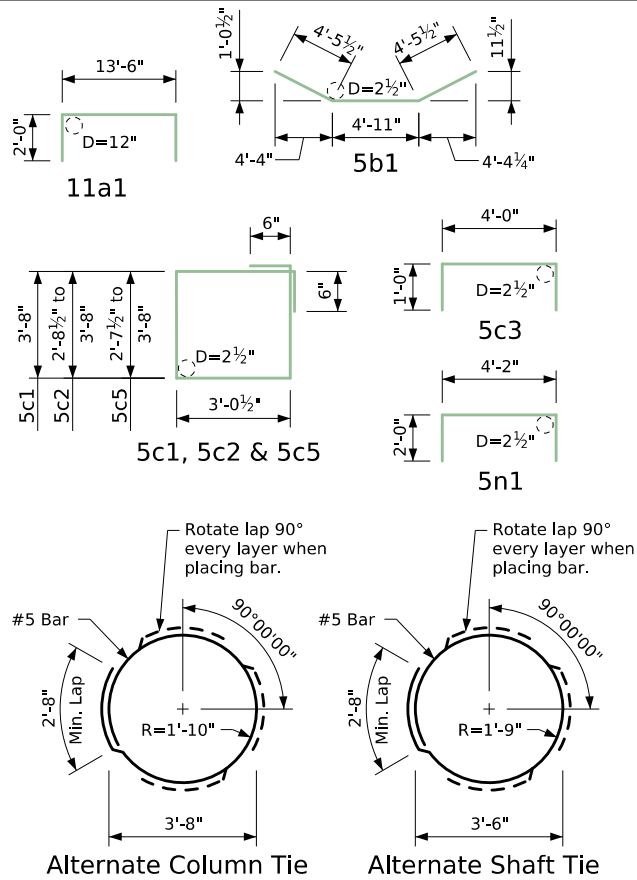
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 326Design Sheet No. 8 of 47FHWA No. 041970



Shaft Elevation

Bent Bar Details



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

Notes:
For Pier Notes, see Design Sheet 8.
The total required design bearing for each shaft is 348 tons.
Shaft construction shall be in accordance with Section 2433 of the Standard Specifications.
Drilled shaft rock sockets shall be brushed but shall not be grooved.
The Contractor is responsible for the design of all Drilled Shaft temporary casing and permanent casing as needed for this project.
Permanent steel casing shall be according to ASTM A 252, Grade 3, produced by electric seam, butt or spiral welding. Inside diameter of casing shall be 4'-6".
After the C.S.L. testing is complete, cut C.S.L. pipes to the top of drilled shaft concrete surface before placing column reinforcement.
The contract length of the drilled shafts is based on an as-constructed shaft diameter not exceeding 4'-6". If the excavation diameter exceeds this value during construction, the Engineer must be contacted to determine if modifications to the drilled shaft design are necessary. The Contractor shall be responsible for all costs associated with modifying the drilled shaft design to account for shaft diameter exceeding the maximum value noted in the plans.
Bottom of shaft elevations, shaft lengths and shaft quantities are based on 13'-0" embedment below elevation 792. Final bottom of shaft elevations, shaft lengths and shaft quantities are dependent on rock elevations determined in the field.
The permanent steel casing shall have a minimum wall thickness of 3/4" and any additional thickness needed shall be determined by the Contractor depending on the selected methods of transporting, handling and installing the casing. No additional payment will be made for an increased casing thickness.

Reinforcing Bar List - One Pier

Bar	Location	Shape	No.	Length	Weight
11a1	Cap, Top, Longitudinal		8	17'-6"	744
5a2	Cap, Side, Longitudinal		6	13'-8"	86
5a3	Cap, Top, Longitudinal		2	13'-4"	28
5a4	Cap, Top, Longitudinal		2	10'-11"	23
8a5	Cap to Diaphragm Dowel		4	6'-0"	64
5b1	Cap, Bottom, Longitudinal		8	13'-10"	115
5c1	Cap, Hoops		14	14'-5"	211
5c2	Cap, Hoops, Ends		20	Varies	281
5c3	Cap, Ends		8	6'-0"	50
6c4	Cap to Existing Cap Dowel		16	3'-6"	84
5c5	Cap, Hoops, Ends		20	Varies	279
11d1	Column, Vertical		18	13'-5"	1,283
10f1	Shaft, Vertical		36	48'-8"	7,539
5m1	Cap, Beam Seat, Longitudinal		5	3'-8"	19
5n1	Cap, Beam Seat, Transverse		4	8'-2"	34
#5	Column Spiral		1	144'-6"	151
	Column Spiral Spacers L 1/8" x 1/8" x 1/8"		4	9'-8"	27
#5	Shaft Spiral		1	501'-6"	523
	Shaft Spiral Spacers L 1/8" x 1/8" x 1/8"		4	42'-9"	120
Reinforcing Steel - Total (LB)					11,661

Concrete Placement Quantities - One Pier

Location	Pier No. 1	Pier No. 2	Quantity
Cap	8.5	8.5	17.0
Column	4.7	4.7	9.4
Total (CY)	13.2	13.2	26.4



Design For Widening & Redecking of 16°54'00" Skew (LA)
188'-4" x 70'-0" Pretensioned Prestressed Concrete Beam Bridge
59'-9 1/2" End Spans 68'-9" Interior Span
Pier Details
STA. 1173+91.29, 42.00' Rt. (C/L-80 Existing) Turn-in Date: October 2025
Polk County
IOWA DEPARTMENT OF TRANSPORTATION
Design No. 326 Design Sheet No. 9 of 47 FHWA No. 041970