LETTING DATE
Nov. 17, 2026

Bridge Replacement
BRF-059-3(50)--38-78

Pottawattamie COUNTY

Index of Sheets	
No.	Description
Sheets	Bridge Plan
A.1	Title Sheet
A.2	Location Map Sheet
V.1	Estimated Quantities - Design 1426
V.2 - V.32	Design 1426
SPS Sheets	Bridge Plan Soils Sheets
SPS.1 - SPS.2	Bridge Plan Soils Sheets
Road Sheets	Road Plan
A.3-W.9	Road Plans
C.1-C.3	Estimated Quantities - Road
C.4	Standard Plans - Road
RC.2-RC.3	Estimated Quantities - Landscape

IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

Pottawattamie COUNTY

Bridge Replacement

US 59 over Stream
1.5 mi. S. of Co. Rd. G30

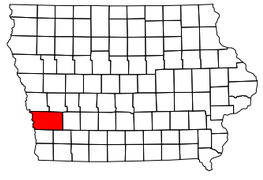
Refer to the Plan Sheets for list of applicable specifications.

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

IOWA ONE CALL
1-800-292-8989
www.iowaonecall.com
811
Know what's below. Call before you dig.

	TOTAL
	106
PROJECT IDENTIFICATION NUMBER	
21-78-059-020	
PROJECT NUMBER	
BRF-059-3(50)--38-78	
R.O.W. PROJECT NUMBER	
-	
PROJECT DIRECTORY NUMBER	
7805902021	

Iowa DOT Bridges and Structures
Consultant Coordinator Contact:
Deborah Peters



Standard Road Plans

Standard Road Plans are listed on Sheet No. C4.

Design Data Rural

2026 AADT	1,800	V.P.D.
2046 AADT	1,900	V.P.D.
20-- DHV	--	V.P.H.
TRUCKS	21	%
Total Design ESALs	1,200,000	

Index of Seals

Sheet No.	Name	Type
A.1	Kevin M. Placzek	Structural Design
V.4	Eric J. Dean	Hydraulic Design
SPS.1	Morgan Lindsey Race	Geotechnical Design
A.3	Jason Strum	Roadway Design
CS.1	Xinyi Jiang	Geotechnical Design
RC.1	Rachel A. Harris	Landscape Design

Structural Design

LICENSED PROFESSIONAL ENGINEER
Kevin M. Placzek
19175
IOWA

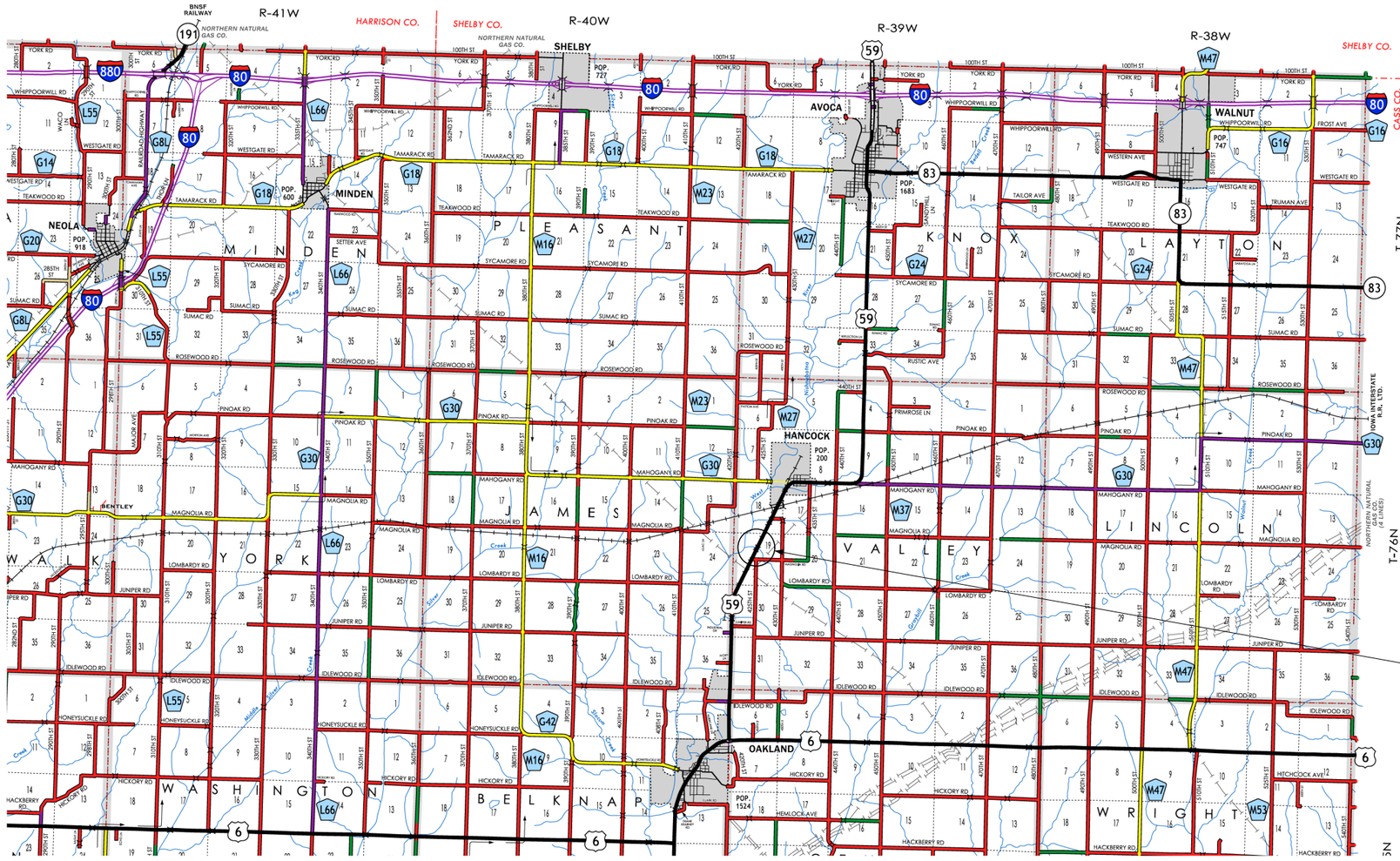
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Kevin M Placzek — 08-24-2026
Signature — Date

Kevin M. Placzek
Printed or Typed Name

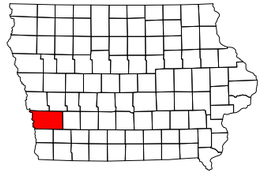
My license renewal date is December 31, 2027

Pages or sheets covered by this seal: Sheets A.1, A.2, V.1 thru V.32



Pottawattamie County Location Map

Not To Scale



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 — ABBEY ROAD
- UNINCORPORATED PLACE — ELWOOD

- STATE PARKS
- STATE INSTITUTIONS
- FEDERAL LAND

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER A.2

9:57:33 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

ESTIMATED BRIDGE QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL
1	2104-2710020	EXCAVATION, CLASS 10, CHANNEL	CY	474
2	2401-6745625	REMOVAL OF EXISTING BRIDGE	LS	1
3	2402-2720000	EXCAVATION, CLASS 20	CY	272.8
4	2403-0100010	STRUCTURAL CONCRETE (BRIDGE)	CY	257.1
5	2403-1000005	FIBER REINFORCEMENT FOR STRUCTURAL CONCRETE	CY	133.6
6	2403-1000010	TRIAL BATCH AND TEST PLACEMENT (FIBER REINFORCED CONCRETE)	LS	1
7	2404-7775000	REINFORCING STEEL	LB	124
8	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	53469
9	2404-7775009	REINFORCING STEEL, STAINLESS STEEL	LB	2362
10	2407-0563075	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC75	EACH	6
11	2408-7800000	STRUCTURAL STEEL	LB	1408
12	2414-6424110	CONCRETE BARRIER RAILING	LF	228
13	2501-0201253	PILES, STEEL, HP 12 X 53	LF	2180
14	2501-6335010	PREBORED HOLES	LF	140
15	2501-8400172	TEMPORARY SHORING	LS	1
16	2507-2638650	BRIDGE WING ARMORING - EROSION STONE	SY	32
17	2507-3250005	ENGINEERING FABRIC	SY	944
18	2507-6800061	REVETMENT, CLASS E	TON	661
19	2507-8029000	EROSION STONE	TON	99
20	2520-3350015	FIELD OFFICE	EACH	1
21	2526-8285040	CONSTRUCTION SURVEY, LOCATION SURVEY	LS	1
22	2533-4980005	MOBILIZATION	LS	1

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	ITEM DESCRIPTION
14	2501-6335010	PREBORED HOLES --
15	2501-8400172	TEMPORARY SHORING - -
16	2507-2638650	BRIDGE WING ARMORING - EROSION STONE Includes furnishing and placing engineering fabric, erosion stone, and all required excavating, shaping and compacting for wing armoring.
17	2507-3250005	ENGINEERING FABRIC Engineering fabric shall be material as specified for embankment erosion control in accordance with Article 4196.01,B,3, of the Standard Specifications. Material shall be measured in sq. yard of actual area covered. Refer to details on Design Sheet No. 6.
18	2507-6800061	REVETMENT, CLASS E Estimated at 1.6 ton/cu yd. Class E revetment shall meet requirements of Article 4130. Broken concrete and granite is not allowed. Refer to details on Design Sheet No. 6.
19	2507-8029000	EROSION STONE Estimated at 120 lb/cu ft. Erosion Stone shall meet the requirements of Article 4130. Broken Concrete and granite is not allowed. Refer to details on Design Sheet No. 6. Includes furnishing and placing erosion stone and all required excavating, shaping, and compacting.
20	2520-3350015	FIELD OFFICE --
21	2526-8285040	CONSTRUCTION SURVEY, LOCATION SURVEY Refer to TC-283 for traffic control layout. Survey information provided in project plans is for reference only and should not be used for purposed related to construction survey. Project plans and associated electronic files are not geo-referenced to a standard coordinate system and should not be used to establish survey baselines. Prior to construction, perform a survey to lay out the proposed grading design per Section 2526.01. The GPS Machine Control Grading data files as listed in the current standard specifications will be made available at contractor's request. No additional files or formats will be provided. After finishing grading and prior to seeding, the Contractor shall prepare a topographic survey, using the established baselines to show conformance to the proposed grades. The survey shall indicate the established baselines and the finished grades shown in 0.5 foot contours. Survey all grading areas. The Contractor shall provide the Engineer and the Office of Location and Environment with the electronic surface files in LandXML format. Provide electronic data and survey copies to Alan Beddow, Mitigation Construction Engineer Iowa Department of Transportation, 800 Lincoln Way, Ames, Iowa, 50010, phone number (515)956-7203, Alan.Beddow@iowadot.us.
22	2533-4980005	MOBILIZATION --

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	ITEM DESCRIPTION
1	2104-2710020	EXCAVATION, CLASS 10, CHANNEL All waste must be removed from the project site.
2	2401-6745625	REMOVAL OF EXISTING BRIDGE Includes all work for removal and off-site disposal of existing bridge. Removal of scheduled items shall be in accordance with Section 2401 of the Standard Specifications. All waste must be removed from the project site. 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. Aesbestos is not present at this location, Name of Asbestos Inspector: Brad AzeltineDate Inspected : 8/8/2022IA License No.: Iowa DOTInspector Phone No.: 515-239-1938
3	2402-2720000	EXCAVATION, CLASS 20 Includes excavation for bridge abutments and wings.
4	2403-0100010	STRUCTURAL CONCRETE (BRIDGE) Includes concrete for the deck, abutments, wingwalls, pier caps, and diaphragms. Includes all resilient joint filler required. Includes furnishing and placing subdrain (including excavation), floodable backfill, porous backfill, geotextile fabric, water flooding, and subdrain outlet at abutments and toe of berm. Refer to Developmental Specifications for "Fiber Reinforcement for Structural Concrete" for deck and diaphragms. Includes furnishing and placing concrete sealer. Includes furnishing and placing concrete sealer on beam ends as well as abutment seats as noted in these plans.
5	2403-1000005	FIBER REINFORCEMENT FOR STRUCTURAL CONCRETE Refer to Developmental Specifications for "Fiber Reinforcement for Structural Concrete" for additional information.
6	2403-1000010	TRIAL BATCH AND TEST PLACEMENT (FIBER REINFORCED CONCRETE) Refer to Developmental Specifications for "Fiber Reinforcement for Structural Concrete" for additional information.
7	2404-7775000	REINFORCING STEEL --
8	2404-7775005	REINFORCING STEEL, EPOXY COATED Includes cost of all splice assemblies.
9	2404-7775009	REINFORCING STEEL, STAINLESS STEEL --
10	2407-0563075	BEAMS, PRETENSIONED PRESTRESSED CONCRETE, BTC75 Includes abutment bearing material. See Materials IM 570 Appendix I for allowable bearing substitutes at integral abutments. Includes Contractor filling out beam numbers by location and beam seat elevations in "PPC Beam Data Spreadsheet" and forwarding electronic spreadsheet to the Engineer.
11	2408-7800000	STRUCTURAL STEEL Includes all cost for furnishing and installing steel intermediate diaphragms.
12	2414-6424110	CONCRETE BARRIER RAILING If placement of concrete is done by the slipforming method, Class BR concrete is required. Cast-in-place barrier rails shall use Class C mix. Price bid for this item shall include the cost of cast-in-place forms if required for placement of the concrete. Includes cost of 1" diameter plastic conduit.
13	2501-0201253	PILES, STEEL, HP 12 X 53 Piles shall be Grade 50. Splices between individual lengths of pile shall consist of full penetration welds in accordance with Section 2501.03, P, 2, of the Standard Specifications. Includes furnishing and installing steel pile points.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Estimated Quantities

STA. 205+57.83 (U.S. 59) Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 1 of 32 FHWA No. 43371

Summary of Concrete Quantities

Location	Structural Concrete	HPC Struct. Concrete
S Abutment (Stage 1)	19.6	
S Abutment (Stage 2)	23.8	
N Abutment (Stage 1)	8.0	
N Abutment (Stage 2)	9.7	
Bridge Deck + Abutment Diaphragms (Stage 1)	60.2(F)	
Bridge Deck + Abutment Diaphragms (Stage 2)	73.0(F)	
Abutment Wings (Stage 1)	31.4	
Abutment Wings (Stage 2)	31.4	
Total (Cu. Yds.)	257.1	

Summary of Reinforcing Steel

Location	Non-Coated Reinforcing Steel	Stainless Steel Reinforcing Steel	Epoxy Coated Reinforcing Steel
Bridge Deck + Abutment Footing (Stage 1) **	62	19,666	
Bridge Deck + Abutment Footing (Stage 2) **	62	22,033	
Abutment Wings (Stage 1)		3,616	
Abutment Wings (Stage 2)		3,616	
Barrier Rails (Stage 1)		1,679	723
Barrier Rails (Stage 2)		1,679	723
Barrier Rail End Section (Stage 1)		590	458
Barrier Rail End Section (Stage 2)		590	458
** Includes Abutment Diaphragms			
Total (Lbs.)	124	53,469	2,362

Summary of Excavation

Location	Class 10 Excavation	Class 20 Excavation
S Abutment	218.0	174.8
N Abutment	256.0	98.0
Total (Cu. Yds.)	474.0	272.8

Summary of Foundations

Location	Substructure Type	Foundation Type	Number	Length (Lin. Ft.)	Total (Lin. Ft.)
S Abutment (Stage 1)	INTEGRAL ABUTMENT	HP 12X53	3	80	240
S Abutment (Stage 2)	INTEGRAL ABUTMENT	HP 12X53	3	80	240
S Wingwall (Stage 1)	WINGWALL	HP 12X53	6	85	510
S Wingwall (Stage 2)	WINGWALL	HP 12X53	6	85	510
N Abutment (Stage 1)	INTEGRAL ABUTMENT	HP 12X53	4	85	340
N Abutment (Stage 2)	INTEGRAL ABUTMENT	HP 12X53	4	85	340

Summary of Structural Steel

Location	Total (Lbs.)
Intermediate Steel Diaphragms	1,408
Total (Lbs.)	1,408

Summary of Bearings

Location	Bearing Type	Number	Associated Bid Item
S Abutment (Stage 1)	3 x 3 BAR	3	INCIDENTAL ITEM
S Abutment (Stage 2)	3 x 3 BAR	3	INCIDENTAL ITEM
N Abutment (Stage 1)	3 x 3 BAR	3	INCIDENTAL ITEM
N Abutment (Stage 2)	3 x 3 BAR	3	INCIDENTAL ITEM

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Summary Quantities Sheet

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 2 of 32 FHWA No. 43371

General Notes:

This design is for the replacement of the existing 32'-0" x 30'-0" Continuous I-Beam Bridge, Design No. 4350, built in 1950. Electronic plans of the existing structure are available to the contractor as part of the E-Files supplied with the contract documents.

The lump sum bid for "Removal of Existing Bridge" shall include the 32'-0" x 30'-0" Continuous I-Beam Bridge.

Removals shall be in accordance with Section 2401, of the Standard Specifications.

Faint lines on plans indicate the existing structure.

These bridge plans label all reinforcing steel with english notation (5a1 is $\frac{5}{8}$ 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

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

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.

Utility Companies whose facilities are shown on the plans or known to be within the construction limits shall be notified by the Contractor of the construction starting date.

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.

The Bridge Contractor is to clear and/or shape the channel within the approximate limits of the areas as shown on the Situation Plan and Longitudinal Section Along Centerline Roadway on Design Sheet No. 5.

The Bridge Contractor shall prebore holes for abutment piles. Holes shall be bored to the elevations shown on the "Longitudinal Section Along Centerline Roadway" on Design Sheet No. 5. Piles shall be driven through the holes to at least the specified design bearing.

Cast in-one-piece steel pile points are required for the abutment piles in accordance with Article 4167.02 of the current Standard Specifications and materials IM 468.

The Bridge Contractor is to retain earth and/or granular material behind the portion of the abutments subjected to traffic during widening by methods approved by the engineer. All costs for retaining the earth and/or granular material shall be included in the price bid for "Class 20 Excavation".

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 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 the design of the temporary shoring in accordance with Chapter 200F-1 in the design manual for the Iowa DOT, Design Bureau. The Contractor shall not proceed with installation of the temporary shoring without notice to proceed from the Engineer.

The 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.

Construction shall be done in stages with at least one lane traffic maintained at all times in accordance with "Traffic Control Plan" note.

Construction stages I & II as detailed on these plans may be reversed at the Contractor's option subject to the Engineer's approval.

The cost of furnishing and placing subdrain (including excavation), floodable backfill and porous backfills is to be included in the price bid for "Structural Concrete (Bridge)".

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.

This bridge is designed for HL-93 loading, plus 20 lbs. per square foot of roadway for future wearing surface.

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 slipform method).

A scrape sample was taken from an area of this bridge to get an indication of the existence of and level of total lead and total chromium. Analysis of total lead on the beam and bearing sample was 570 and 660 parts per million (ppm) respectively. Analysis of total chromium on the beam and bearing sample was 400 and 96 ppm respectively. 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 Iowa DOT's testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

Specifications:

Design:
AASHTO LRFD 10th Edition, 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.

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, 10th Edition, Series of 2024, 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 AASHTO LRFD Section 5, f'c = 4,000 psi, except prestressed beam concrete as noted.

Prestressed concrete beams, see Design Sheet Nos 21 thru 24.

Design History at this Site
(Includes this Design)

Des. No.	Type of Work	Year
4350	Original Design	1950
1494	Bridge Overlay	1995
1426	Bridge Replacement	2026

Roadway Quantities shown elsewhere in these plans.

All plan dimensions are horizontal unless noted otherwise.

Pollution Prevention Plan shown elsewhere in these plans.

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. BRF-059-3(52)--38-78.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

General Notes

STA. 205+57.83 (U.S. 59) Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 3 of 32 FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.3	

9:58:14 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

Bridge Deck Dimensions Table

No.	Item	Unit	Quantity
1	Deck Length	L.F.	78.0
2	Minimum Deck Width	L.F.	43.2
3	Maximum Deck Width	L.F.	43.2
4	Deck Area	S.F.	3,369

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 roadway.
4. Deck area is to be based on the face-to-face paving notch distance and out-to-out deck dimensions.

Bridge Coordinates

Location	℄ S. Abut. Brg.	℄ N. Abut. Brg.
West Gutter Line	E=16598211.180 N=7008774.670	E=16598242.333 N=7008842.894
℄ US 59 & PGL	E=16598229.374 N=7008766.363	E=16598260.420 N=7008834.356
East Gutter Line	E=16598247.567 N=7008758.055	E=16598278.719 N=7008826.280

Note: An electronic file containing the bridge coordinate date is available as part of the E-Files supplied with the contract documents. The contractor shall verify these coordinates with the project horizontal control information provided in the road plans

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 this 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	Intermediate Diaphragms	(050)_Pottawattamie_Design1426_IntermediateDiaphragms.pdf	No
2	Temporary Shoring	(050)_Pottawattamie_Design1426_Temporary Shoring.pdf	Yes
3			
4			

No.	Calculation Description	Calculation File Name Convention for Submittal	Certified by Iowa P.E. (Yes/No)
1	Temporary Shoring	(050)_Pottawattamie_Design1426_TempShoring_Calcs.pdf	Yes
2			
3			
4			

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

General Notes

STA. 205+57.83 (U.S. 59)

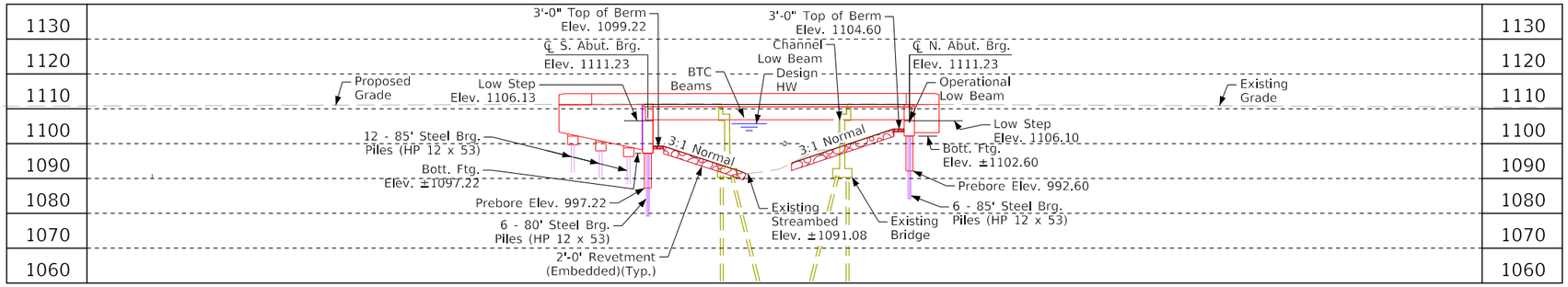
Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 4 of 32 FHWA No. 43371

Control Point: Feno Set Feno monument 3 in. deep near the intersection of Hwy 59 and Magnolia Rd. in Pottawattamie County. Monument is 90 ft. E. of CL Hwy 59 52 ft. S of CL Magnolia Rd. 36 ft. SW of a Cor post and 57 ft. N. of wood fence post. El. 1104.8. Northing: 7007624.69, Easting: 16597808.11.



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.

Eric J. Dean P28149 — Licensed Professional Engineer — Iowa

Signature: Eric Dean — Date: 5-19-2026

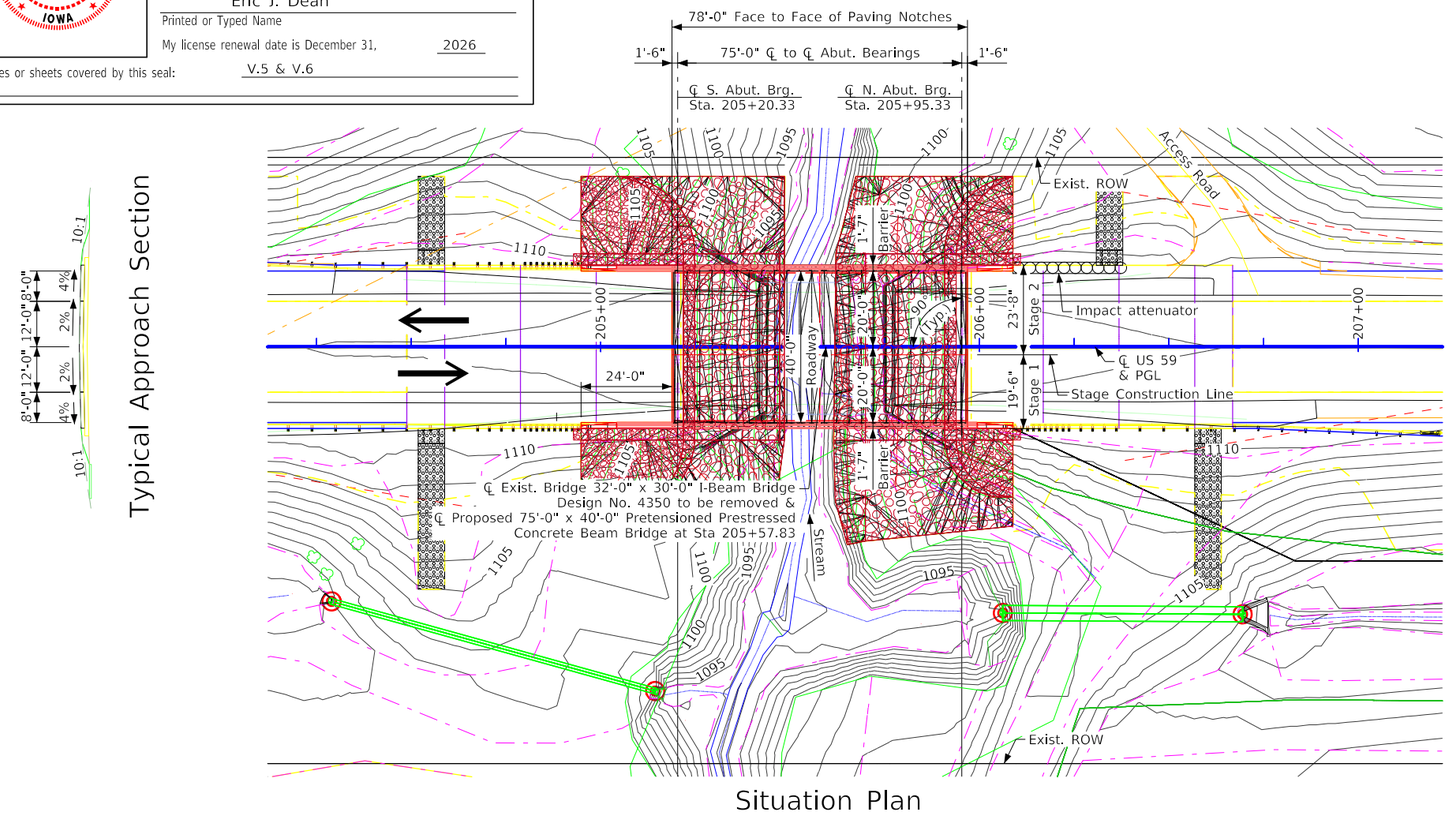
Printed or Typed Name: Eric J. Dean

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: V.5 & V.6

Longitudinal Section Along ℄ Roadway

Plan Notes:
1. Top of bridge deck at centerline roadway is .03' below the profile grade to account for parabolic crown.
2. Class E revetment stone is embedded.



Situation Plan

Typical Approach Section

Typical Bridge Section

Traffic Estimate

2026 AADT	1,800 V.P.D.
2046 AADT	1,900 V.P.D.
TRUCKS	21 %
Total Design ESALs	1,200,000

Hydraulic Data

RIDB: "NishnabotnaR_W_Trib64_.021"
Drainage Area = 1.8 Sq. Mi.
Stream Slope (HGL) = 62.4 ft./Mi.
Avg. Low Water Stage = 1092.0'

Operational Low Beam = 1106.35
Channel Low Beam = 1106.40

Q_{25} = 1297 cfs
Stage = 1098.8

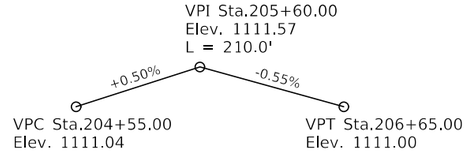
Q_{50} = 1615 cfs
Stage = 1099.6
Operational Freeboard = 6.4 ft.
Avg. Bridge Velocity = 5.1 fps

Q_{100} = 1957 cfs
Stage = 1100.3
Operational Freeboard = 5.7 ft.
Backwater = 0.9 ft.
Avg. Bridge Velocity = 5.4 fps

Q_{200} = 2319 cfs
Stage = 1101.0
Calculated Design Scour = 1085.1

Q_{500} = 2749 cfs
Stage = 1101.7
Channel Freeboard = 4.4 ft.
Avg. Bridge Velocity = 6.0 fps
Calculated Check Scour = 1085.3

Roadway Overtop - 1111.33
Sta. 205+23.67



Proposed Profile
Grade U.S. 59

Utilities Note:

There are no known utilities in the vicinity of the structure per existing survey. To be verified in field.

Location

U.S. 59 over Stream
T-76N R-39W
Section 19
Valley Township
Pottawattamie County
FHWA No. 43371
Bridge Maint. No. 7855.4S059
Latitude 41.371367°
Longitude -95.375475°

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Situation Plan

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 | Design Sheet No. 5 of 32 | FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.5	

9:58:23 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

Control Point: Feno Set Feno monument 3 in. deep near the intersection of Hwy 59 and Magnolia Rd. in Pottawattamie County. Monument is 90 ft. E. of CL Hwy 59 52 ft. S of CL Magnolia Rd. 36 ft. SW of a Cor post and 57 ft. N. of wood fence post. El. 1104.8. Northing: 7007624.69, Easting: 16597808.11.

Berm Slope Location Table

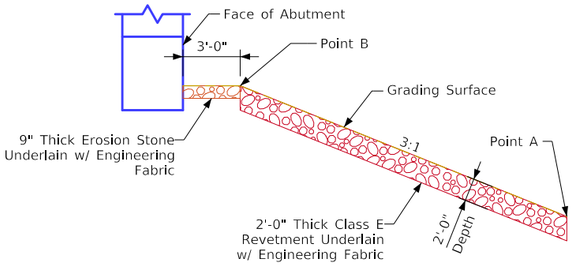
Points	South Abutment			North Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	205+24.83	24.58' Lt.	1091.08	205+61.82	24.58' Lt.	1094.30
A2	205+24.83	24.58' Rt.	1091.08	205+61.82	24.58' Rt.	1095.43
B1	205+48.51	24.58' Lt.	1099.22	205+90.17	24.58' Lt.	1104.60
B2	205+48.51	24.58' Rt.	1099.22	205+90.17	24.58' Rt.	1104.60
W1	204+94.83	24.58' Lt.	1110.80	206+06.00	24.58' Lt.	1110.82
W2	204+94.83	24.58' Rt.	1110.80	206+13.41	24.58' Rt.	1110.82

Berm slope elevations reflect the grading surface.
Offsets are given from the ℄ US 59.
All points are 3'-0" from the edge of the bridge deck.
Point "A" is at toe of berm.

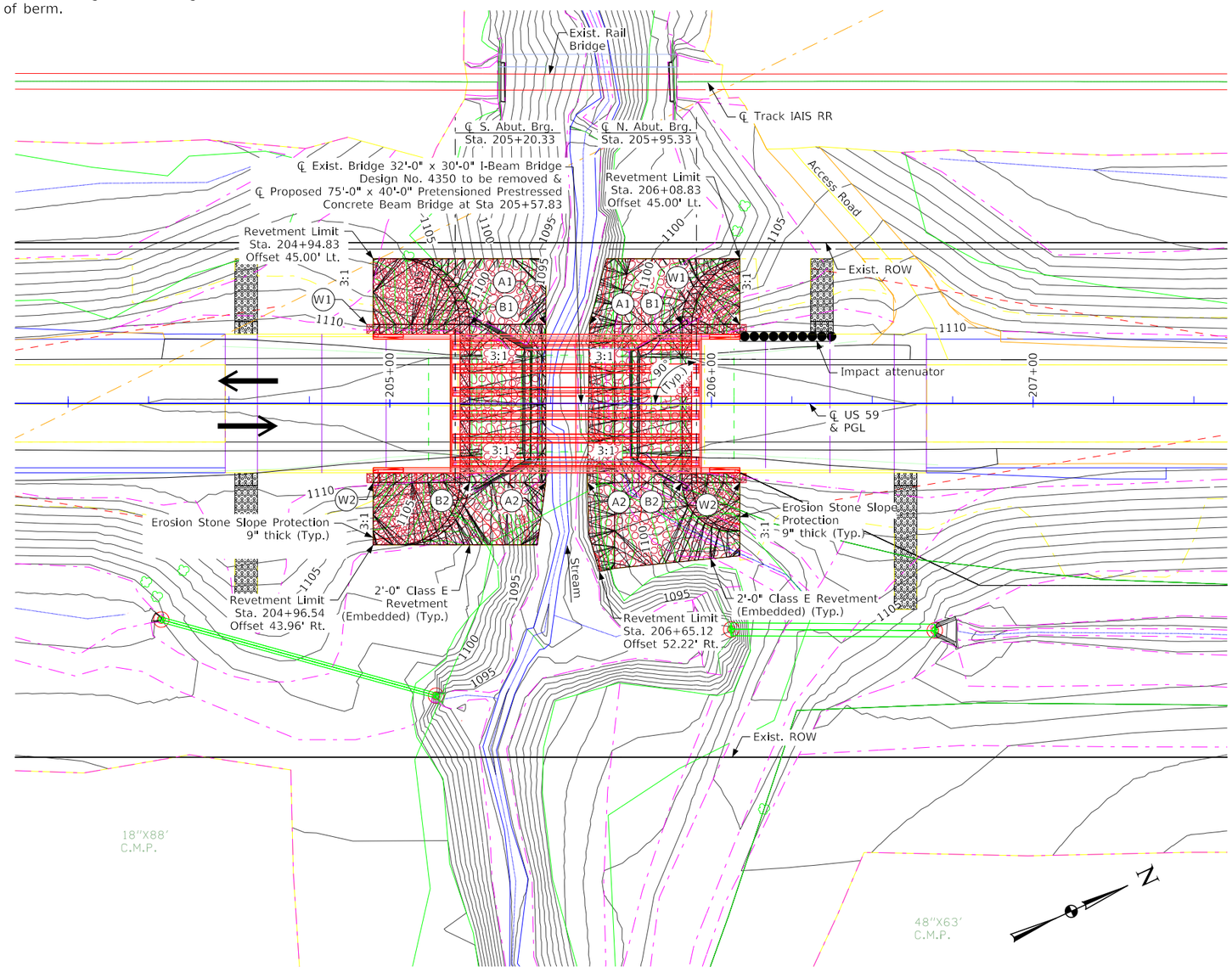
Estimated Berm Armoring Quantities

Location	Revetment CL. E (Ton)	Erosion Stone (Ton)	Engineering Fabric (SY)	CL. 10 Channel Excavation (CY)
Berm Lining - South	286	63	468	218
Berm Lining - North	375	36	476	256
Totals	661	99	944	474

Excavation quantity calculated from grading surface and includes only the excavation required to embed the slope protection.
Revetment based on density of 1.6 ton/CY.
Erosion stone based on a density of 120 lb/CF.



Section Thru Embedded Revetment Berm



Site Plan

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Situation Plan - Site

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

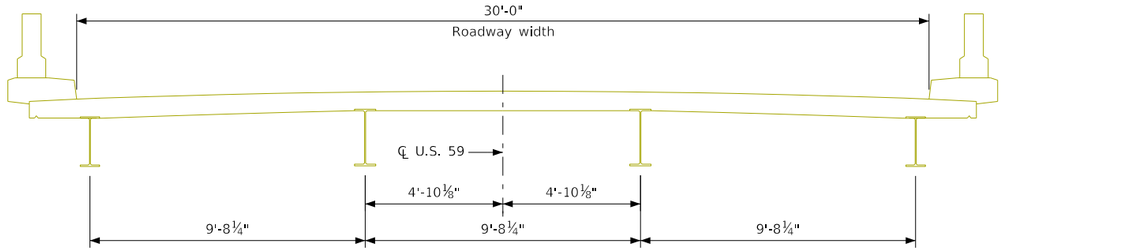
Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

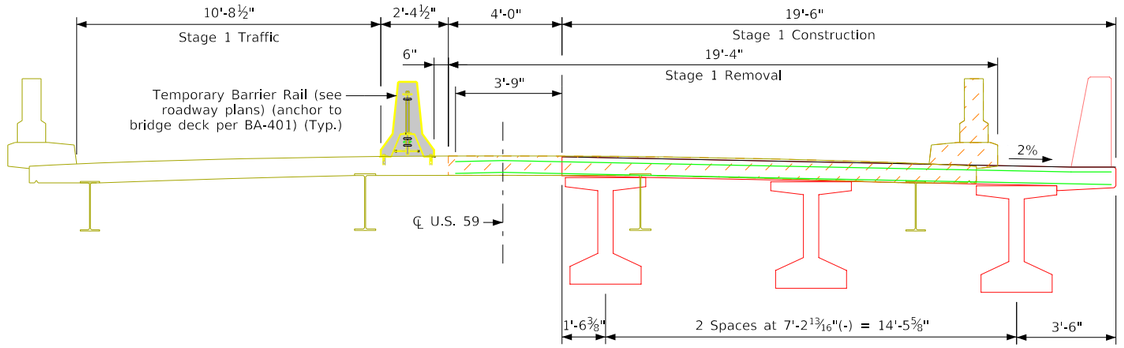
Design No. 1426 Design Sheet No. 6 of 32 FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.6	

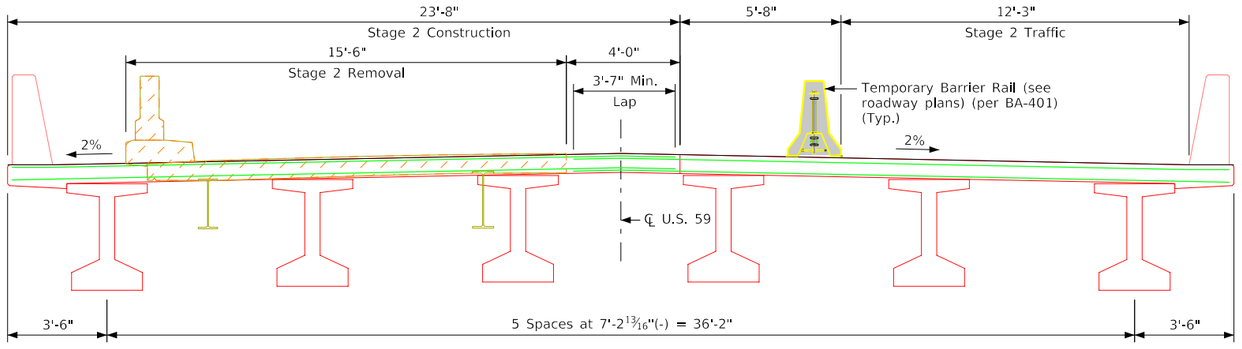
9:58:27 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn



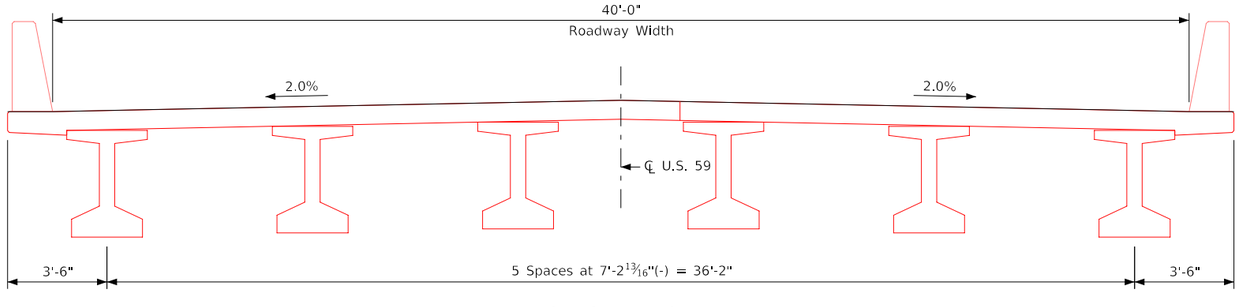
Existing Structure
(Looking North)



Stage 1
(Looking North)



Stage 2
(Looking North)



Final Section
(Looking North)

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Staging Sections

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

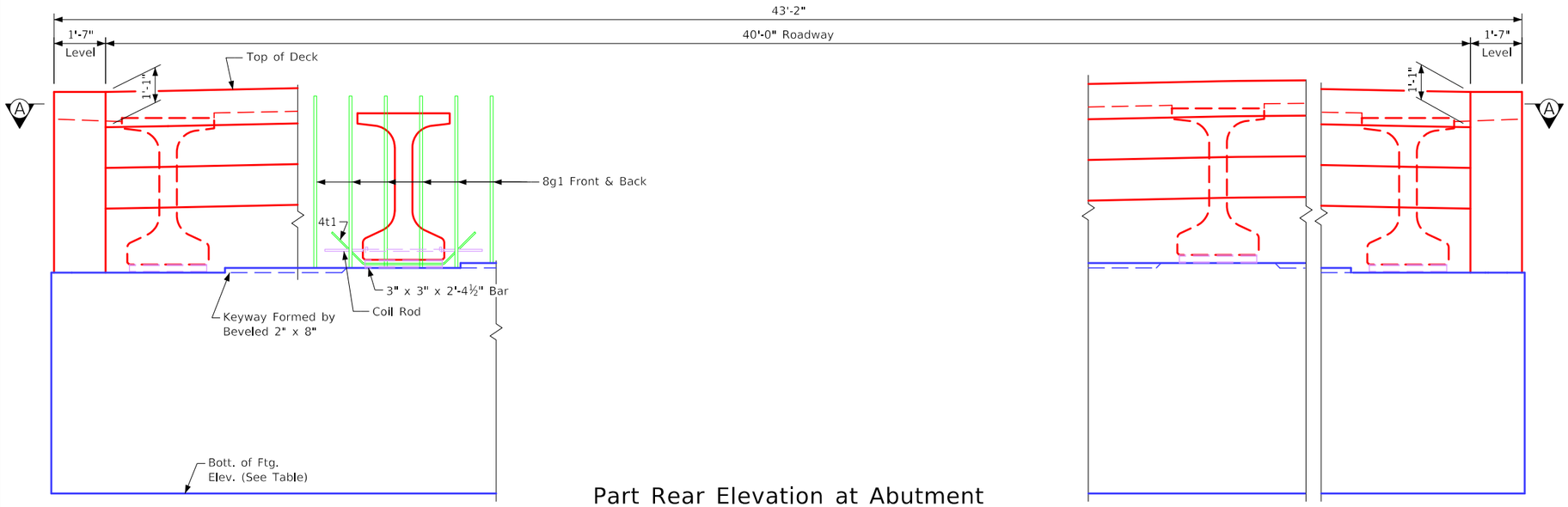
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 | Design Sheet No. 7 of 32 | FHWA No. 43371

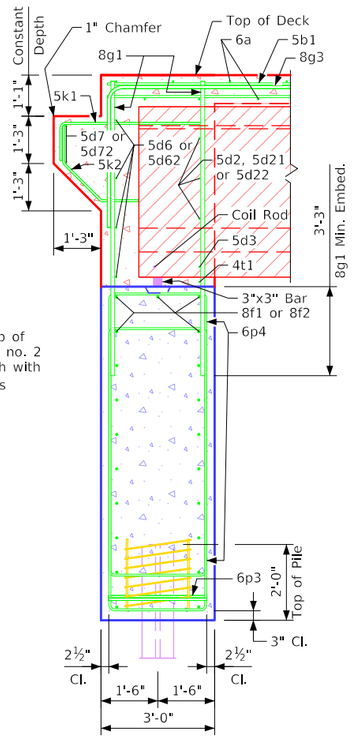
FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.7

9:58:28 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

Control Point: Feno Set Feno monument 3 in. deep near the intersection of Hwy 59 and Magnolia Rd. in Pottawattamie County. Monument is 90 ft. E. of CL Hwy 59 52 ft. S of CL Magnolia Rd. 36 ft. SW of a Cor post and 57 ft. N. of wood fence post. El. 1104.8. Northing: 7007624.69, Easting: 16597808.11.

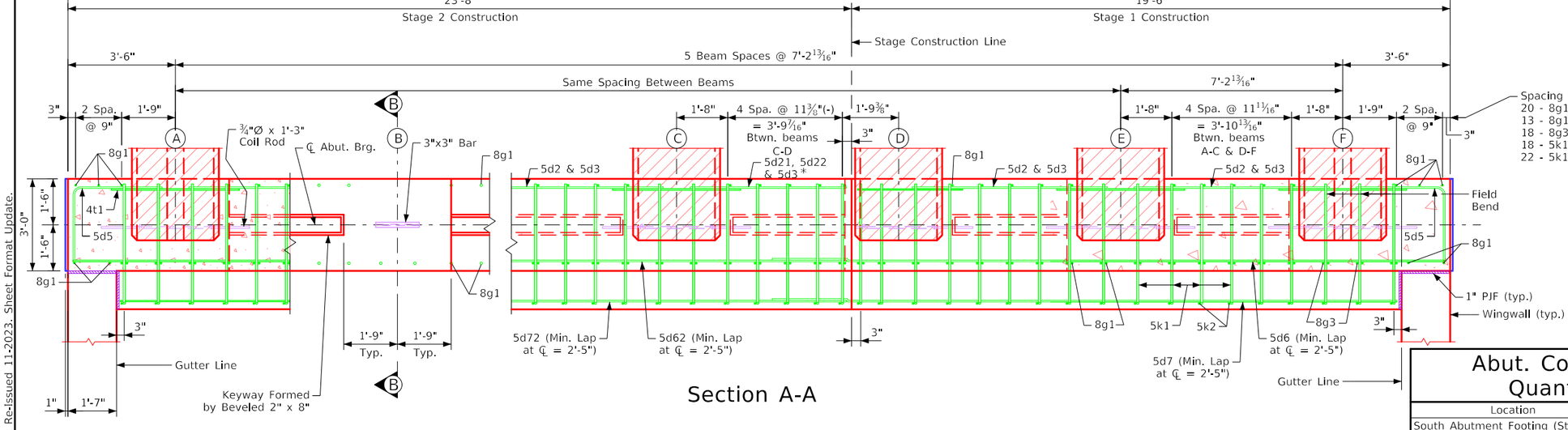


Part Rear Elevation at Abutment
(Wings not Shown)



Part Section B-B

Note: The spiral at the top of each pile to be 7 turns of no. 2 bar, 21" diameter, 3" pitch with 3 - L⅞" x ⅞" x ⅛" spacers punched to hold spiral.



Section A-A

* See Design Sheet No. 14 for additional details.

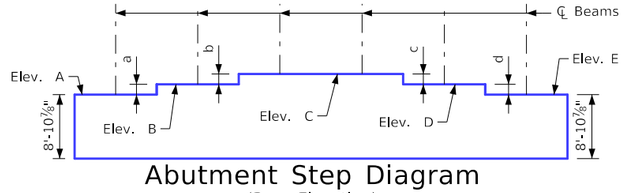
Notes:

See Design Sheet No. 17 for Abutment Piling Notes.
Concrete Quantities are included on the Summary Quantities sheet.
Barrier rail not shown in details.

Abutment Notes:

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

If necessary to prevent damage to the end of the bridge deck and backwall from construction equipment, an appropriate method of protection approved by the Engineer shall be provided by the bridge contractor at no extra cost to the State.



Abutment Step Diagram
(Rear Elevation)

Table of Abut. Elev.

Point	South Abutment
Elev. A	1106.13
Elev. B	1106.28
Elev. C	1106.42
Elev. D	1106.28
Elev. E	1106.13
Bott. Ftg. Elev.	1097.22

Table of Abut. Steps

Step	South Abutment
a	1¾"
b	1¾"
c	1¾"
d	1¾"

Abut. Concrete Quantity

Location	Quantity
South Abutment Footing (Stage 1)	19.6
South Abutment Footing (Stage 2)	23.8
Total (Cu. Yds.)	43.4

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

South Abutment Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

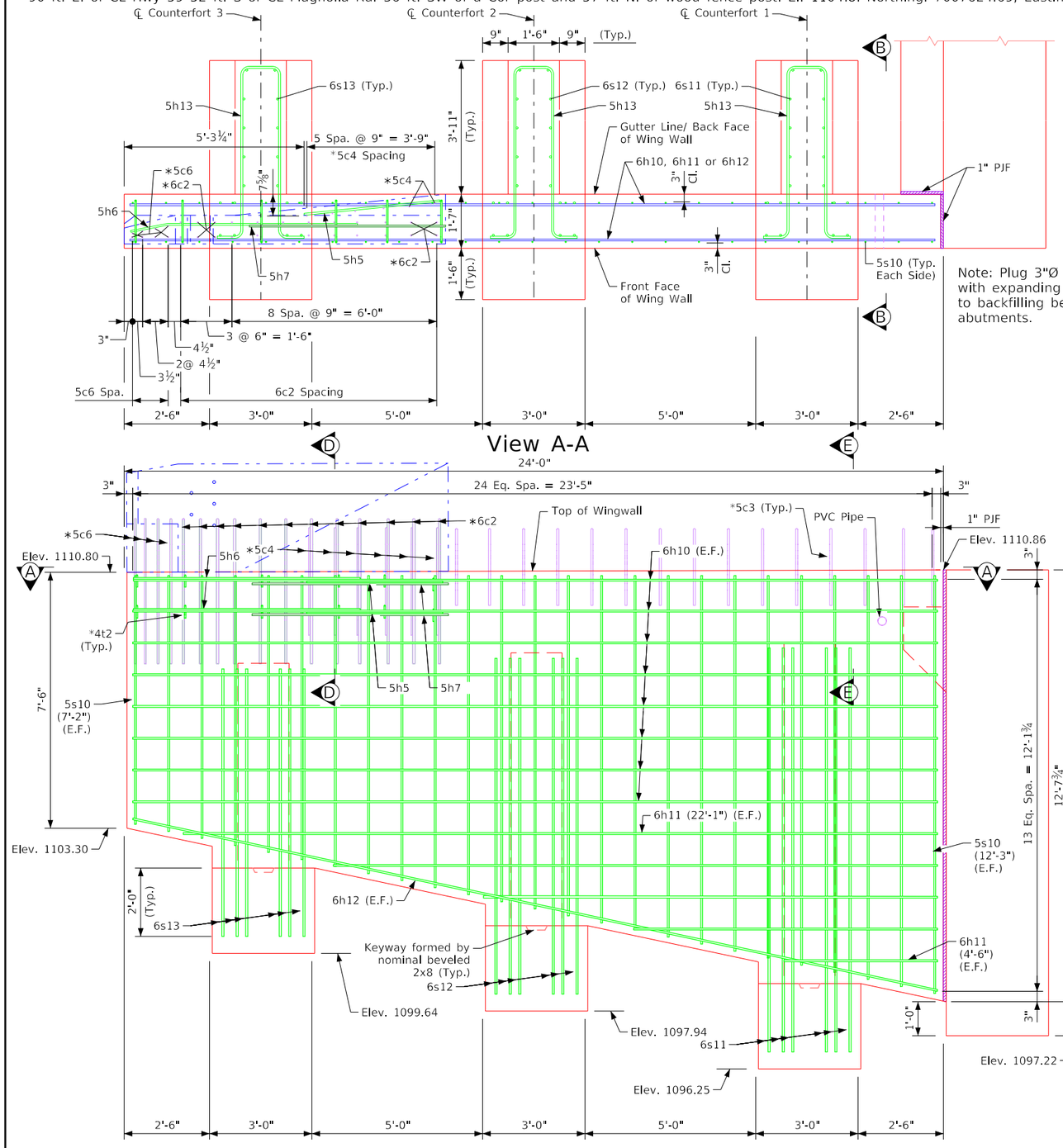
Design No. 1426 | Design Sheet No. 8 of 32 | FHWA No. 43371

Correction 04-14: Added Concrete Quantity Table & Referral Note to Summary Quantity Sheet. Removed Design Bearing Note for Abut. Piling from Abutment Notes.
Issued 02-08.
Revised 08-2024: Added missing 2'-2" vertical dim. in "Part Rear Elevation at Abutment" detail. Corrected misc. detailing errors. Updated "Abutment Step Diagram", removed the text and numbers to make the vertical dimensions neutral.
BTIntegralBridges.dgn - 2085-BTCD - This Sheet Re-Issued 11-2023. Sheet Format Update.

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	"BTC" or "BTD" Bulb Tee Beams - Integral Abutment Details - 0° Skew	Standard Sheet 2085-BTCD (Modified)	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.8

9:58:29 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

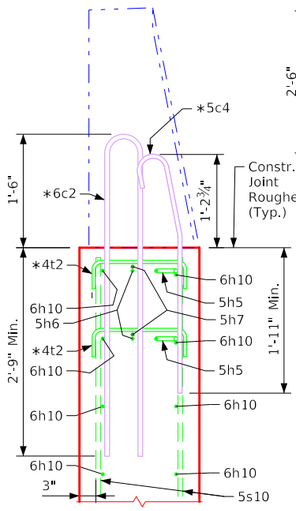
Control Point: Feno Set Feno monument 3 in. deep near the intersection of Hwy 59 and Magnolia Rd. in Pottawattamie County. Monument is 90 ft. E. of CL Hwy 59 52 ft. S of CL Magnolia Rd. 36 ft. SW of a Cor post and 57 ft. N. of wood fence post. El. 1104.8. Northing: 7007624.69, Easting: 16597808.11.



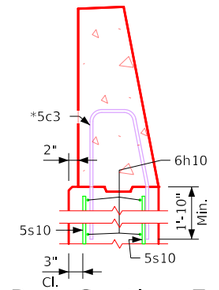
View A-A

Note: Plug 3"Ø PVC pipe with expanding foam prior to backfilling behind abutments.

Wingwall Elevation
(East Wingwall shown, West Wingwall Similar)

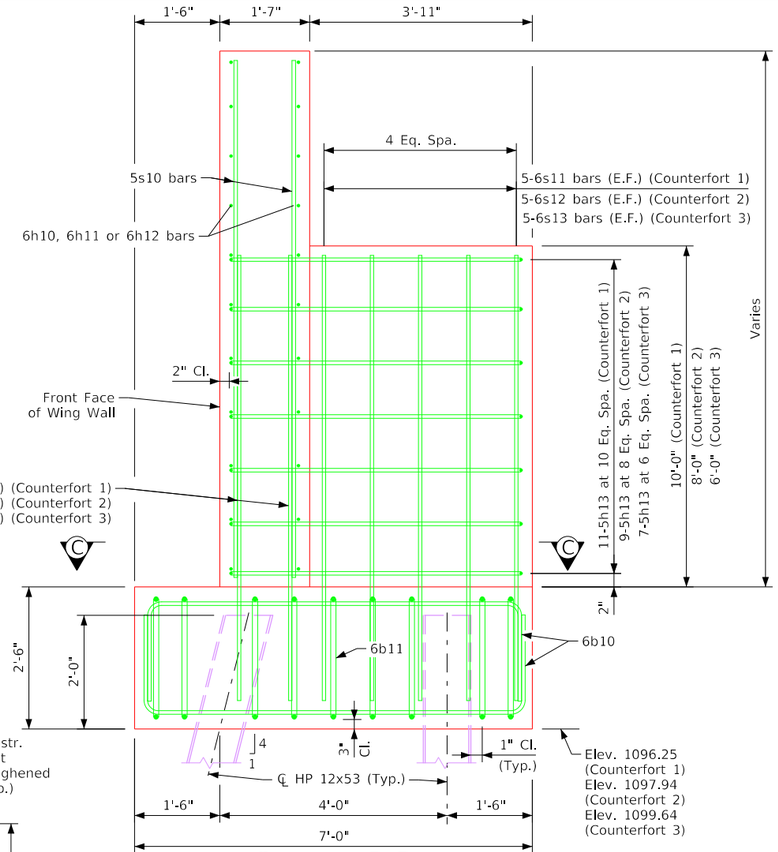


Part Section D-D

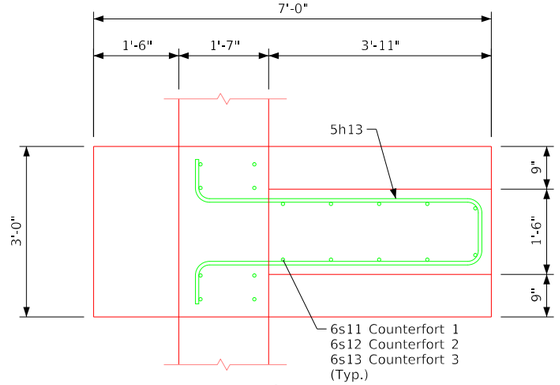


Part Section E-E

*Barrier rail end section bars to be placed with abutment wing.
See Barrier Rail and End Section Sheets on Design Sheet Nos. 25 thru 28 for details of reinforcing bars 6c2, 5c4, 5c6, 4t2 and 5c3.



Section B-B



Section C-C

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

South Abutment Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

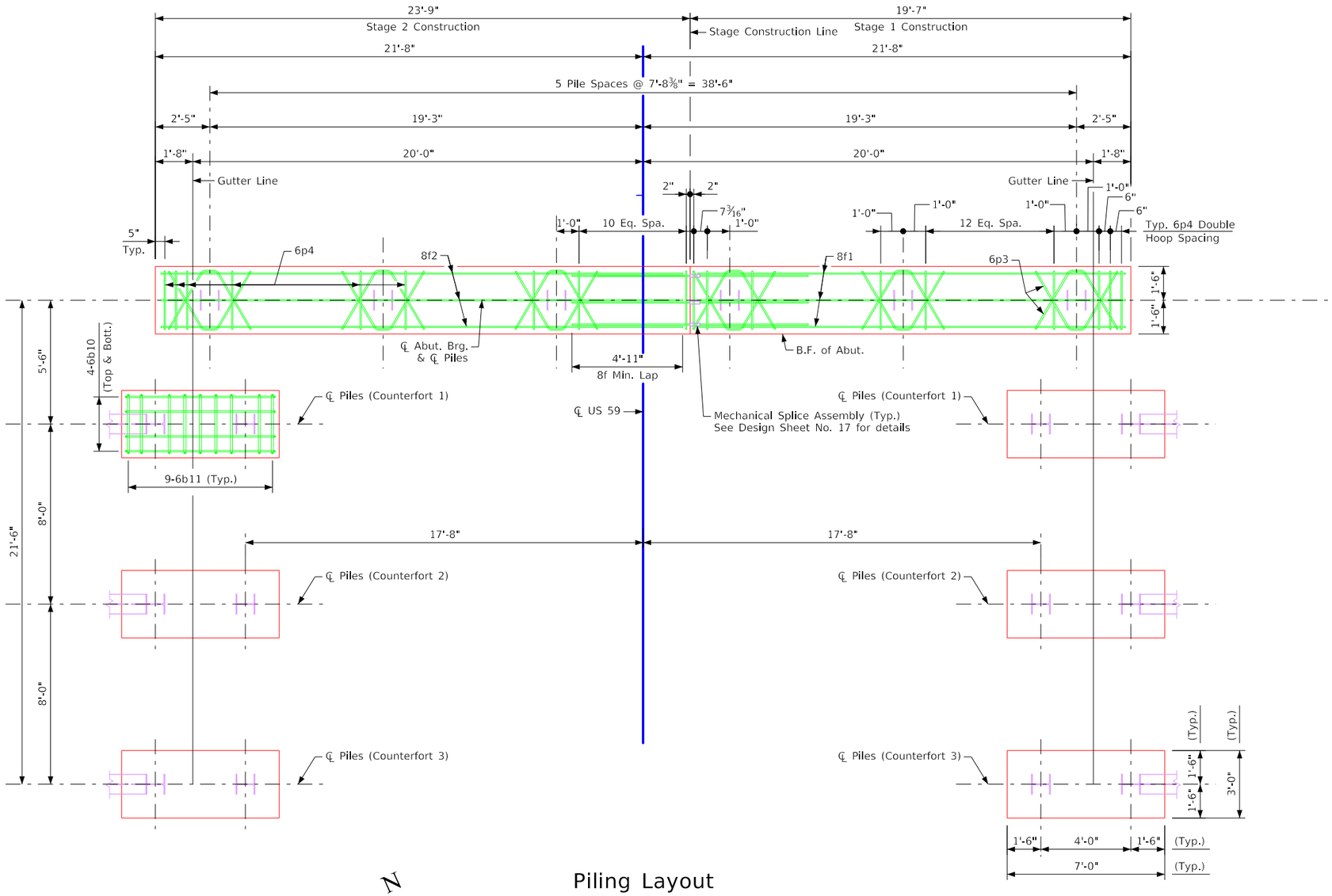
Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 9 of 32 FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	'BTC' & 'C' Beam Integral Abutment Wing Details	Standard Sheet 2112	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.9	

9:58:30 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn



Piling Layout

Notes:

See Design Sheet No. 17 for Abutment Piling Notes.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

South Abutment Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

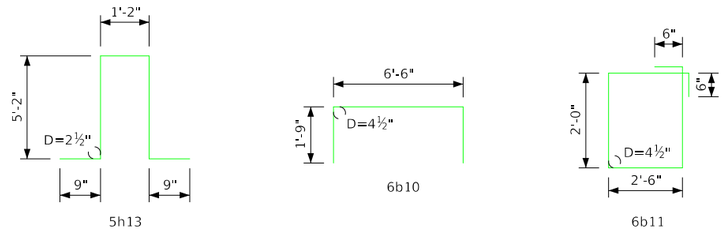
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 10 of 32 FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.10	

9:58:31 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

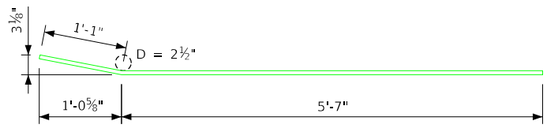
Bent Bar Details



5h13

6b10

6b11



5h6

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

Epoxy Coated Reinforcing Steel - South Abutment Wingwall (Stage 1)

Bar	Location	Shape	No.	Length	Weight
6b10	Counterfort Footing, Longitudinal	⌴	24	10'-0"	360
6b11	Counterfort Footing, Hoops	□	27	10'-0"	406
5h5	Abut. To Wing Anchor	—	2	4'-0"	8
5h6	Horizontal Wingwall	—	2	6'-8"	14
5h7	Abut. To Wing Anchor	—	2	5'-9"	12
6h10	Wingwall, Horizontal	—	16	23'-7"	567
6h11	Wingwall, Horizontal	—	10	Varies	200
6h12	Wingwall, Horizontal	—	2	24'-8"	74
5h13	Counterfort, Horizontal	⊓	27	13'-0"	366
5s10	Wingwall, Vertical	—	50	Varies	506
6s11	Counterfort, Vertical	—	18	11'-10"	320
6s12	Counterfort, Vertical	—	18	9'-10"	266
6s13	Counterfort, Vertical	—	18	7'-10"	212
				Epoxy Reinforcing Steel Total Weight (lbs.)	3311

Epoxy Coated Reinforcing Steel - South Abutment Wingwall (Stage 2)

Bar	Location	Shape	No.	Length	Weight
6b10	Counterfort Footing, Longitudinal	⌴	24	10'-0"	360
6b11	Counterfort Footing, Hoops	□	27	10'-0"	406
5h5	Abut. To Wing Anchor	—	2	4'-0"	8
5h6	Horizontal Wingwall	—	2	6'-8"	14
5h7	Abut. To Wing Anchor	—	2	5'-9"	12
6h10	Wingwall, Horizontal	—	16	23'-7"	567
6h11	Wingwall, Horizontal	—	10	Varies	200
6h12	Wingwall, Horizontal	—	2	24'-8"	74
5h13	Counterfort, Horizontal	⊓	27	13'-0"	366
5s10	Wingwall, Vertical	—	50	Varies	506
6s11	Counterfort, Vertical	—	18	11'-10"	320
6s12	Counterfort, Vertical	—	18	9'-10"	266
6s13	Counterfort, Vertical	—	18	7'-10"	212
				Epoxy Reinforcing Steel Total Weight (lbs.)	3311

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

South Abutment Details

STA. 205+57.83 (U.S. 59)

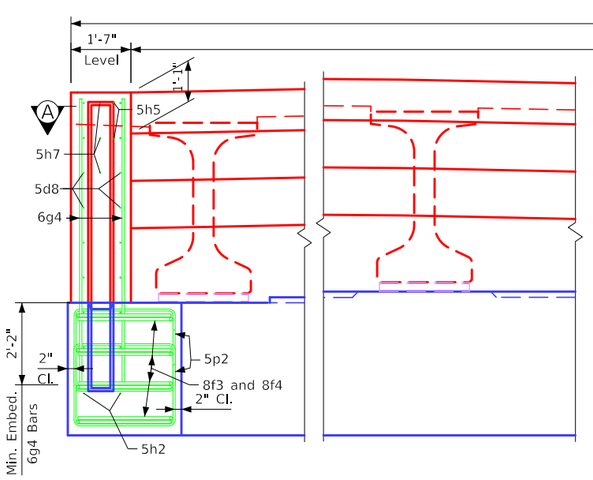
Turn-in Date: August 2026

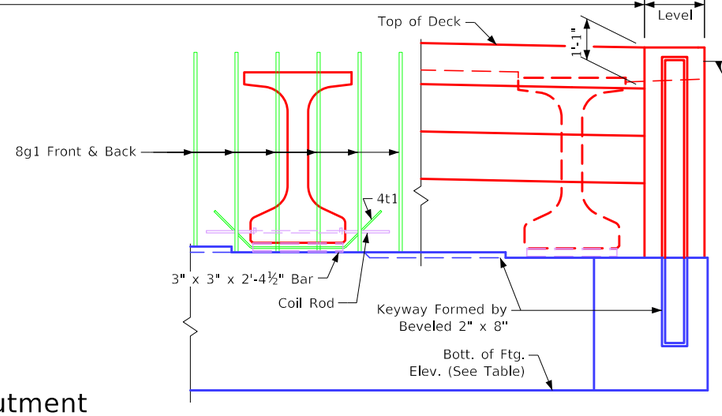
Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

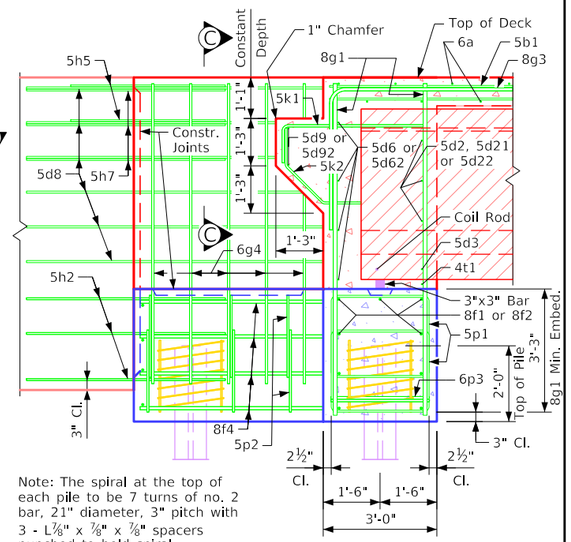
Design No. 1426 Design Sheet No. 11 of 32 FHWA No. 43371

Control Point: Feno Set Feno monument 3 in. deep near the intersection of Hwy 59 and Magnolia Rd. in Pottawattamie County. Monument is 90 ft. E. of CL Hwy 59 52 ft. S of CL Magnolia Rd. 36 ft. SW of a Cor post and 57 ft. N. of wood fence post. El. 1104.8. Northing: 7007624.69, Easting: 16597808.11.





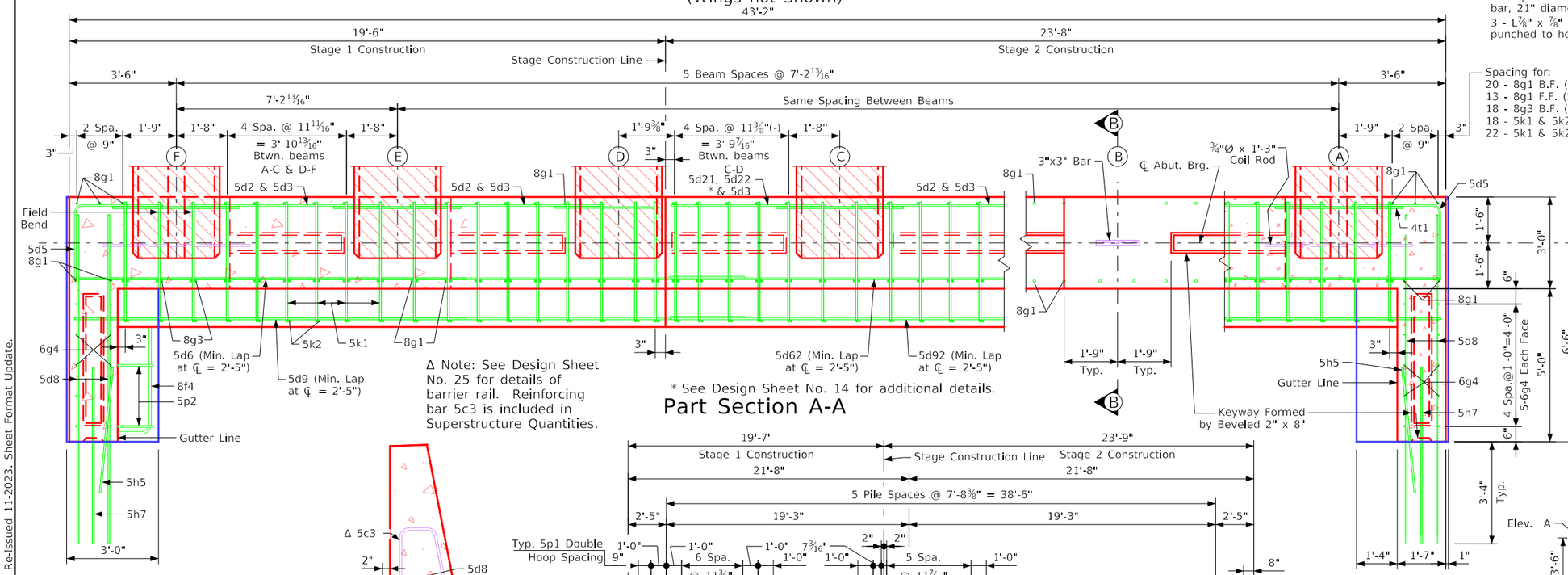
Part Rear Elevation at Abutment
(Wings not Shown)



Note: The spiral at the top of each pile to be 7 turns of no. 2 bar, 21" diameter, 3" pitch with 3 - L⅛" x ⅞" x ⅞" spacers punched to hold spiral.

Part Section B-B

Field bend 5h2 bar as necessary to avoid pile in abutment wing.



Spacing for:
20 - 8g1 B.F. (Stage 1) & 24 - 8g1 B.F. (Stage 2)
13 - 8g1 F.F. (Stage 1) & 18 - 8g1 F.F. (Stage 2)
18 - 8g3 B.F. (Stage 1) & 22 - 8g3 B.F. (Stage 2)
18 - 5k1 & 5k2 B.F. (Stage 1)
22 - 5k1 & 5k2 B.F. (Stage 2)

Part Section A-A

Δ Note: See Design Sheet No. 25 for details of barrier rail. Reinforcing bar 5c3 is included in Superstructure Quantities.

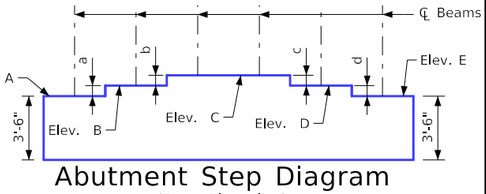
* See Design Sheet No. 14 for additional details.

Table of Abut. Elev.

Point	North Abutment
Elev. A	1106.10
Elev. B	1106.25
Elev. C	1106.39
Elev. D	1105.25
Elev. E	1106.10
Bott. Ftg. Elev.	1102.60

Table of Abut. Steps

Step	North Abutment
a	1¾"
b	1¾"
c	1¾"
d	1¾"



Abutment Step Diagram
(Rear Elevation)

Part Section C-C

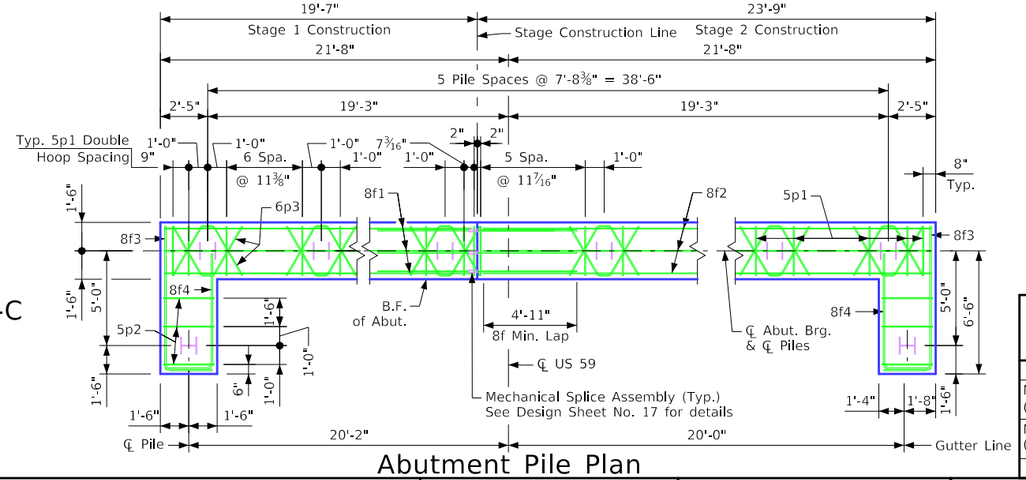
Notes:

See Design Sheet No. 17 for Abutment Piling Notes.
Concrete Quantities are included on the Summary Quantities sheet.
Barrier rail not shown in details.

Abutment Notes:

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

If necessary to prevent damage to the end of the bridge deck and backwall from construction equipment, an appropriate method of protection approved by the Engineer shall be provided by the bridge contractor at no extra cost to the State.



Abutment Pile Plan

Abut. Concrete Quantity

Location	Quantity
N. Abut. Footing (Stage 1)	8.0
N. Abut. Footing (Stage 2)	9.7
Total (Cu. Yds.)	17.7

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

North Abutment Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

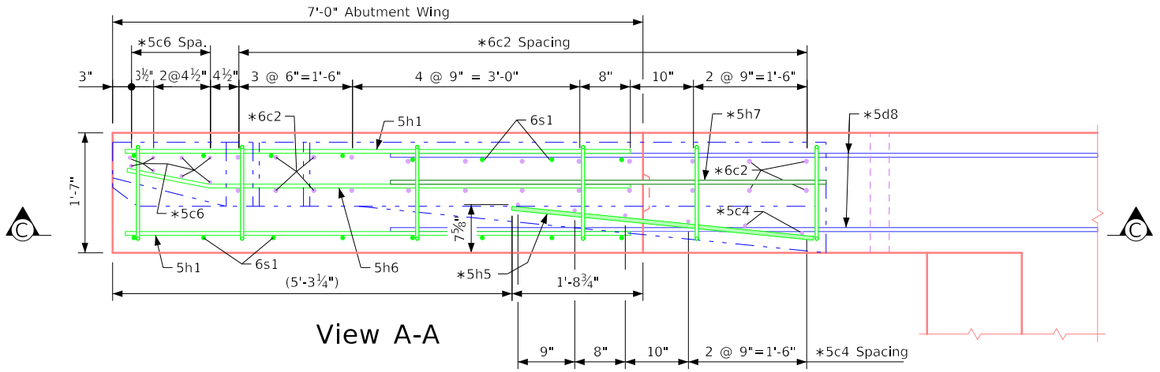
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 | Design Sheet No. 12 of 32 | FHWA No. 43371

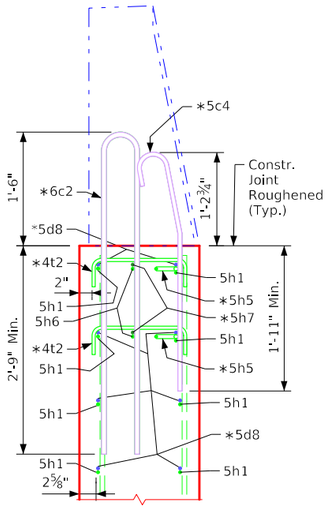
FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	"BTC" or "BTD" Bulb Tee Beams - Integral Abutment Details - 0° Skew	Standard Sheet 2085-BTCD	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.12

9:58:32 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

Correction 04-14: Added Concrete Quantity Table & Referral Note to Summary Quantity Sheet. Removed Design Bearing Note for Abut. Piling from Abutment Notes.
Issued 02-08.
Revised 08-2024: Added missing 2'-2" vertical dim. in "Part Rear Elevation at Abutment" detail. Corrected misc. detailing errors. Updated "Abutment Step Diagram", removed the text and numbers to make the vertical dimensions neutral.
BTIntegralBridges.dgn - 2085-BTCD - This Sheet Re-Issued 11-2023. Sheet Format Update.



View A-A

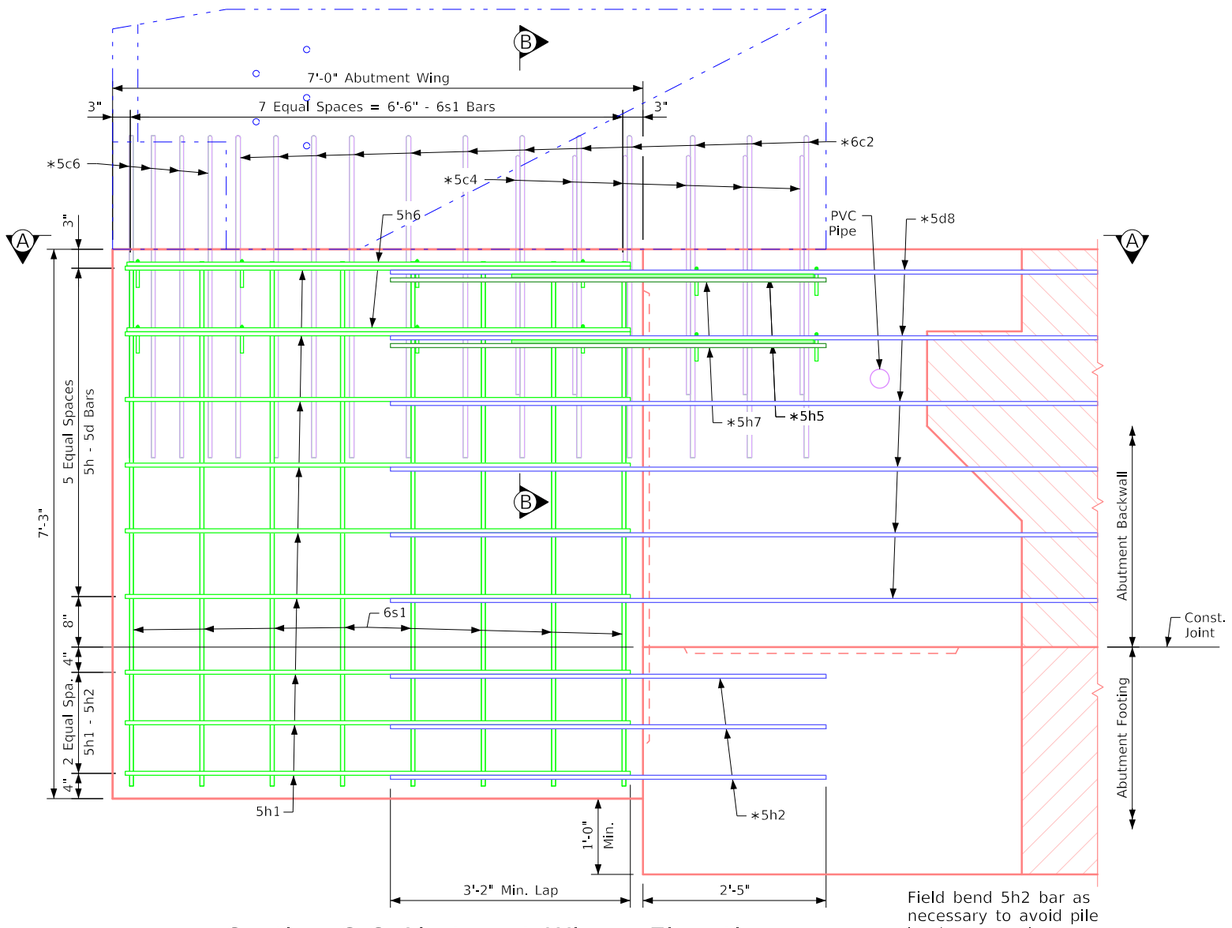


Section B-B

∗Barrier rail end section bars to be placed with abutment wing and abutment.

See Barrier Rail End Section Sheet on Design Sheet Nos. 27 & 28 for details of reinforcing bars 6c2, 5c4, 5c6 and 4t2.

See Abutment Details Sheet on Design Sheet No. 12 for details of reinforcing bars 5d, 5h2, 5h5 and 5h7.



Section C-C Abutment Wing - Elevation

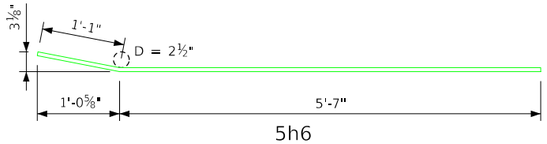
Field bend 5h2 bar as necessary to avoid pile in abutment wing.

Epoxy Coated Reinforcing Steel - North Abutment Wingwall (Stage 1)

Bar	Location	Shape	No.	Length	Weight
5h1	Horizontal Both Faces		18	6'-8"	125
5h6	Horizontal Wingwall		2	6'-8"	14
6s1	Vertical Both Faces		16	6'-11"	166
	Epoxy Reinforcing Total Weight (lbs.)				305

Epoxy Coated Reinforcing Steel - North Abutment Wingwall (Stage 2)

Bar	Location	Shape	No.	Length	Weight
5h1	Horizontal Both Faces		18	6'-8"	125
5h6	Horizontal Wingwall		2	6'-8"	14
6s1	Vertical Both Faces		16	6'-11"	166
	Epoxy Reinforcing Total Weight (lbs.)				305



5h6

Bent Bar Details

Note: All Dimensions are out to out. D = Pin Diameter

Concrete Placement Summary

Section	Total
One Abutment Wing	3.0
Total (cu. yds.)	3.0

Note: Concrete and reinforcing steel quantities are included on the Summary Quantities Sheet.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

North Abutment Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

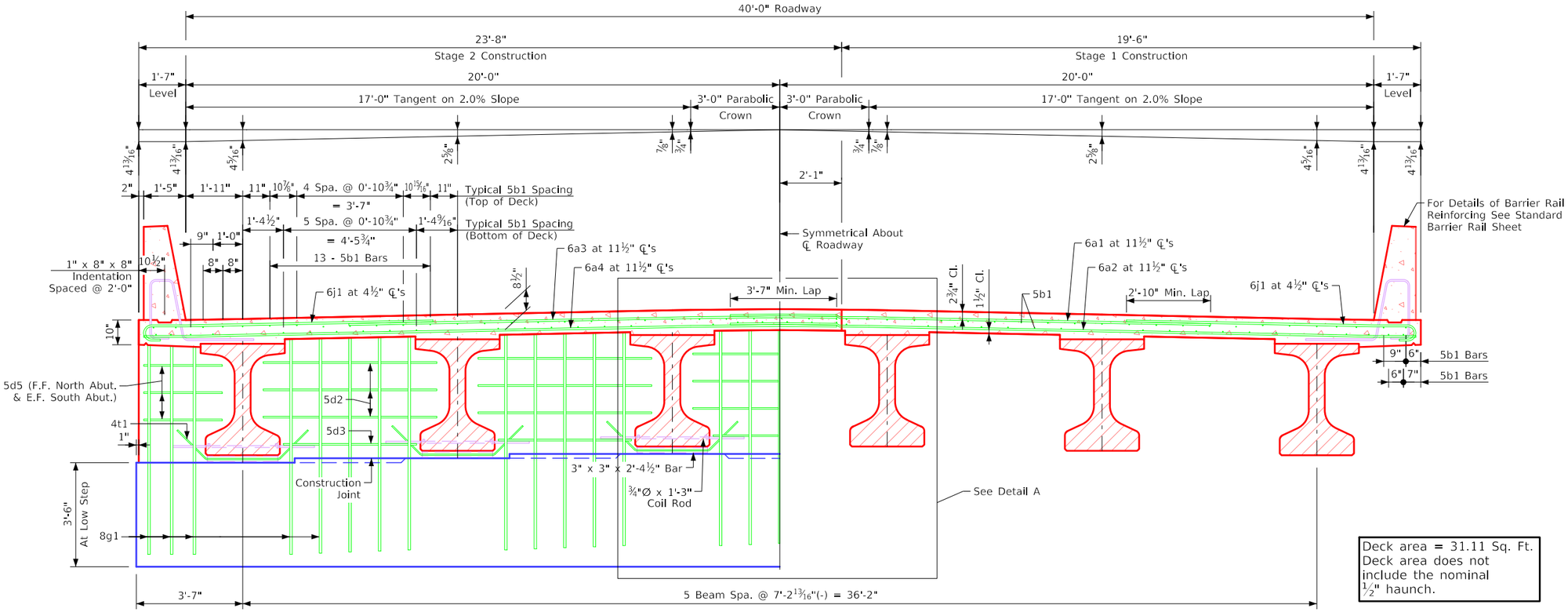
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 13 of 32 FHWA No. 43371

Revised 08-2024: Removed improperly placed bar label 6c1 in "Section B-B" details.
Revised 06-2025: Changed 5h6 bar length and quantity (was 6'-0" and 3 bars). Updated 4t2 bar shape and quantity shown. Flipped/switched orientation of horizontal and vertical bars in outside face of wingwall.
MiscellaneousBridges.dgn - 2112 - This Sheet Re-Issued 11-2023. Sheet Format Update.

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	'BTC' & 'C' Beam Integral Abutment Wing Details	Standard Sheet 2112	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.13	

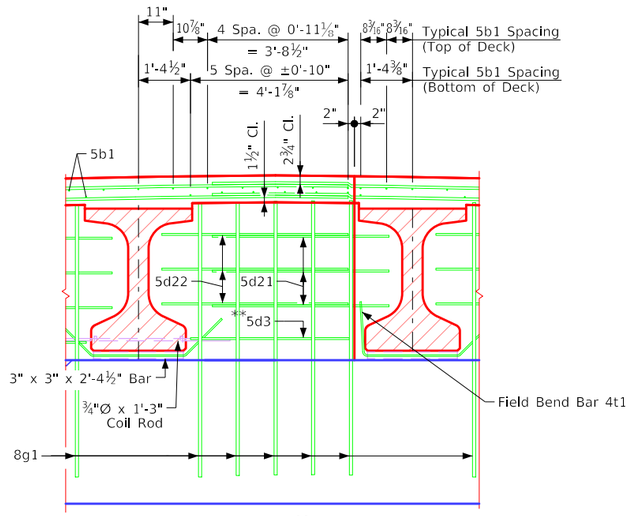
9:58:33 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn



Deck area = 31.11 Sq. Ft.
Deck area does not include the nominal 1/2" haunch.

Half Section Near Abutment

Half Section Near Midspan



** Cut in field as required

Detail A

Superstructure Notes:

The bridge deck as shown includes 3/4" integral wearing surface.

The abutment diaphragm concrete is to be placed monolithically with the bridge deck.

Cost of all resilient joint filler material is to be included in the price bid for "Structural Concrete (Bridge)".

All beams are to be set vertical.

Forms for the deck and barrier rail are to be supported by the prestressed concrete beams.

Clear distance from face of concrete to near reinforcing bar shall be 2" unless otherwise noted or shown.

All deck and diaphragm reinforcing is to be wired in place and adequately supported before concrete is placed.

Top transverse reinforcing steel is to be parallel to and 2 3/4" clear below top of deck. Bottom transverse reinforcing steel is to be parallel to and 1 1/2" clear above bottom of deck. Top and bottom reinforcing steel is to be supported by individual bar chairs spaced at not more than 3'-0" centers longitudinally and transversely, or by continuous rows of bar high chairs or deck bolsters spaced 4'-0" apart. I.M. 451.01 requirements shall apply for bar chairs, bar high chairs, and deck bolsters.

Transverse deck reinforcing may be spliced with one lap located as follows:

Top bar - lap midway between beams (min. lap = 2'-10").

Bottom bars - lap over beams (min. lap = 3'-7").

Payment for reinforcing bars shall be based on no splices and no allowance shall be made for the additional length of bar required for the use of splices.

Cost for bearing material is to be included in the price bid for "Beams, Pretensioned Prestressed Concrete, BTC75".

Note: For details of Intermediate Diaphragm see Design Sheet Nos. 23 and 24.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Bridge Deck Cross Section

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

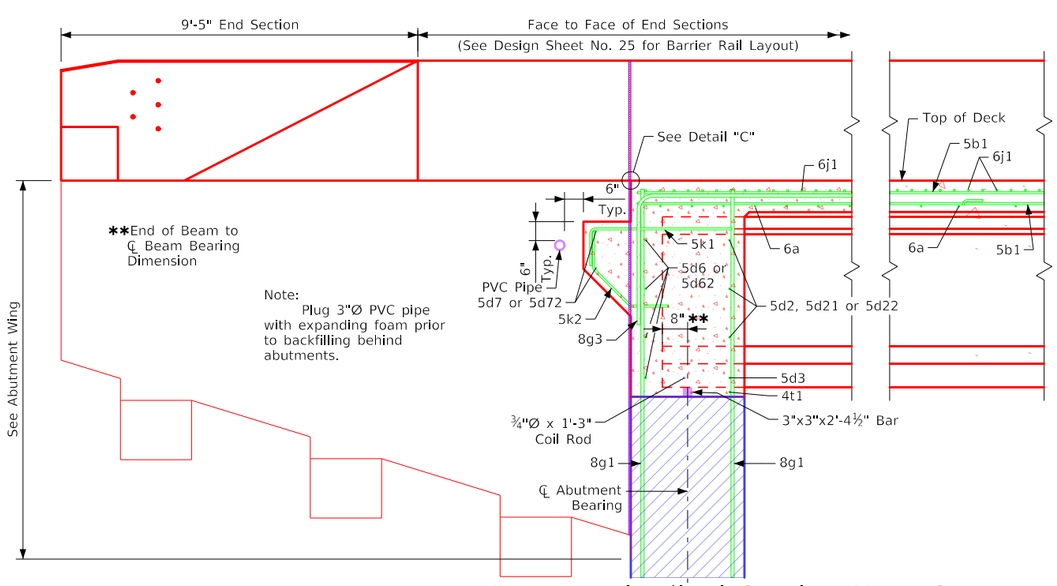
Design No. 1426 Design Sheet No. 14 of 32 FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	40' Roadway PPCB (BTC Beams - Integral Abut.) Cross Section (Symm. Crown) (Span 120')	Standard Sheet 4385-BTC-6	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.14	

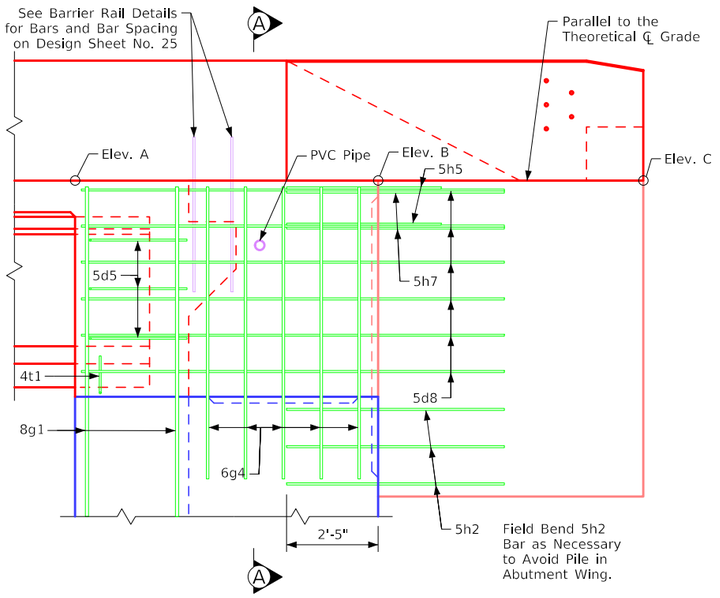
9:58:33 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

Correction 04-14: Added Concrete Quantity Table & Referral Note to Summary Quantity Sheet. Removed Design Bearing Note for Abut. Piling from Abutment Notes.
Issued 02-08.
BTIntegralBridges.dgn - 4385-BTC-6 - This Sheet Re-Issued 11-2023. Sheet Format Update.

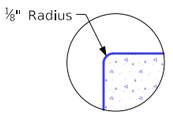
Control Point: Feno Set Feno monument 3 in. deep near the intersection of Hwy 59 and Magnolia Rd. in Pottawattamie County. Monument is 90 ft. E. of CL Hwy 59 52 ft. S of CL Magnolia Rd. 36 ft. SW of a Cor post and 57 ft. N. of wood fence post. El. 1104.8. Northing: 7007624.69, Easting: 16597808.11.



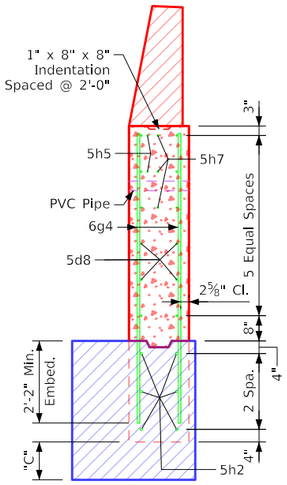
Part Longitudinal Section Near Gutter



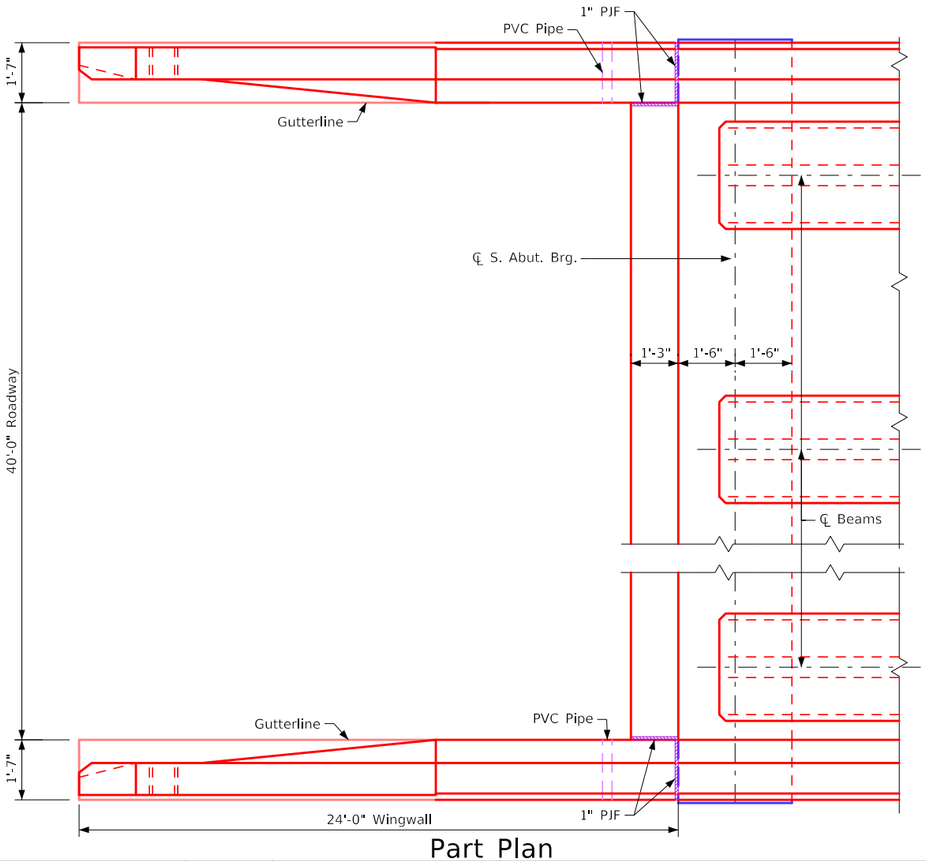
Part End View at Abutment



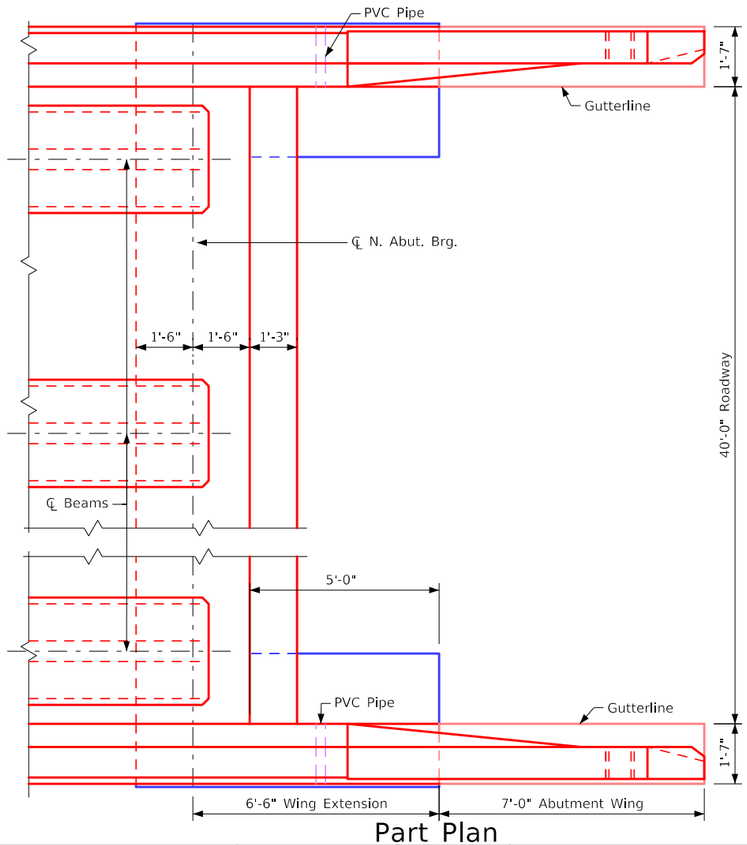
Detail "C"



Section A-A



Part Plan



Part Plan

Table of Wingwall Elevations

Location	Dim "C"	Elev. A	Elev. B	Elev. C
N.W. Corner	1'-0"	1110.86	1110.84	1110.82
N.E. Corner	1'-0"	1110.86	1110.84	1110.82

(See South Abutment Details, Design Sheet Nos. 8 thru 11 for South Wingwall Details)

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Abutment Diaphragm Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

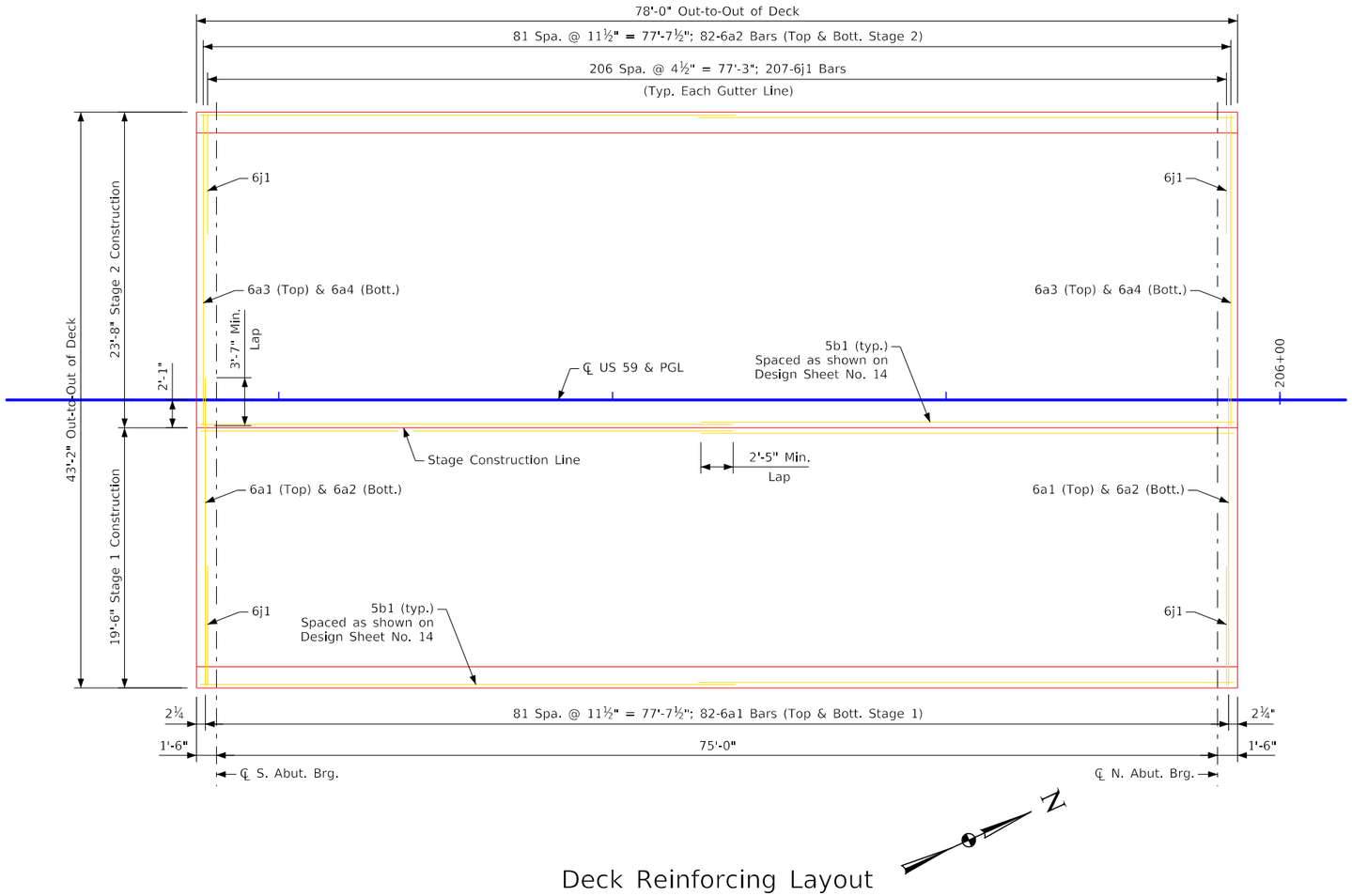
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 | Design Sheet No. 15 of 32 | FHWA No. 43371

Revised 01-12: Added Field Bend 5h4 Bar to Avoid Pile in Abutment Wing Note.
Issued 02-08.
Revised 08-2024: Corrected "Detail X" to show the proper Bulb Tee Beam details. (Was showing the Standa
BTIntegralBridges.dgn - 4507-BTB - This Sheet Re-issued 11-2023. Sheet Format Update.

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	"BTC" or "BTD" Beams - Part Plan & Longitudinal Section - 0 Skew	Standard Sheet 4507-BTCD (Modified)	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.15

9:58:34 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn



Deck Reinforcing Layout

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Superstructure Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

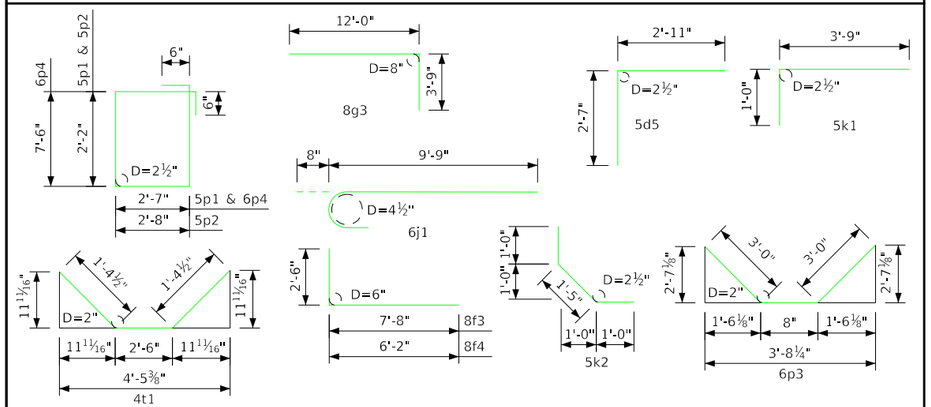
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 | Design Sheet No. 16 of 32 | FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.16

9:58:35 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

Bent Bar Details



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

South Abutment Piling Notes:

The contract length of 80 feet for the South Abutment piles and 85 feet for the South Wingwall piles is based on a cohesive soil classification, a total factored axial load per pile (Pu) of 239 kips, and a geotechnical resistance factor (phi) of 0.65 for soil and 0.7 for rock end bearing.

The nominal axial bearing resistance for construction control was determined from a cohesive soil classification and a geotechnical resistance factor (phi) of 0.65 for soil and 0.7 for rock end bearing. Piles are assumed to be driven from a start elevation at the bottom of footing. Design scour (200-year) was assumed to affect the upper 11 feet of embedded pile length and cause 19 kips of driving resistance.

The required nominal axial bearing resistance for the South Abutment and South Wingwall piles is 189 tons at end of drive or retap. The pile contract length shall be driven as per plan unless piles reach refusal. In no case shall a South Wingwall pile be embedded less than 15 feet. Construction control requires a weap analysis with bearing graph.

Dimensions shown on the piling layout are at the bottom of footing.

All battered piles shall be trimmed to a horizontal line to aid in the placement of reinforcing.

18-HP12x53 steel bearing piling required.

Steel pile points are required for the steel H-piles at the abutment.

North Abutment Piling Notes:

The contract length of 85 feet for the North Abutment piles is based on a cohesive soil classification, a total factored axial load per pile (Pu) of 239 kips, and a geotechnical resistance factor (phi) of 0.65 for soil and 0.7 for rock end bearing.

The nominal axial bearing resistance for construction control was determined from a cohesive soil classification and a geotechnical resistance factor (phi) of 0.65 for soil and 0.7 for rock end bearing. Piles are assumed to be driven from a start elevation at the bottom of footing. Design scour (200-year) was assumed to affect the upper 17 feet of embedded pile length and cause 20 kips of driving resistance.

The required nominal axial bearing resistance for the North Abutment piles is 190 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.

Dimensions shown on the piling layout are at the bottom of footing.

All battered piles shall be trimmed to a horizontal line to aid in the placement of reinforcing.

8-HP12x53 steel bearing piling required.

Steel pile points are required for the steel H-piles at the abutment.

Abutment Mechanical Splice Assemblies:

The 8f1 & 8f2 bars in the abutment footings shall be spliced at the locations shown using mechanical splice assemblies. Mechanical splice assemblies consist of mechanical splicers and reinforcing splice bars as required to facilitate the use of the mechanical splicer. The mechanical splice assembly used shall meet the requirements of materials IM 451 Appendix E. Reinforcing splice bars shall me a minimum of 1 inch dia.

All mechanical splice assemblies to be used in splicing 8f1 & 8f2 bars in the abutment footings shall be epoxy coated.

The cost of all splice assemblies is to be included in the price bid for "Reinforcing Steel Epoxy Coated" and no separate payment will be made. The weight of mechanical splice assemblies is not included in the quantity shown for "Reinforcing Steel Epoxy Coated". A total of 30 epoxy coated splice assemblies will be required.

Epoxy Coated Reinforcing Steel - Deck, Abutment & Diaphragm (Stage 1)

Bar	Location	Shape	No.	Length	Weight
6a1	Deck Transv. Top		82	16'-6"	2032
6a2	Deck Transv. Bott.		82	23'-1"	2843
5b1	Deck Longit, Top & Bott.		80	40'-0"	3338
5d2	Abut. Diaph. Longit.		12	6'-0"	75
5d21	Abut. Diaph. Longit. F.F.		6	4'-8"	29
5d3	Abut. Diaph. Longit.		4	4'-5"	18
5d5	Abut. Diaph. Ends		9	5'-6"	52
5d6	Abut. Diaph. Longit. B.F.		8	21'-11"	183
5d7	Paving Notch Longt.		2	20'-5"	43
5d8	Abut. Diaph. Wing. Longit.		12	10'-8"	134
5d9	Paving Notch Longit		2	21'-11"	46
8f1	Abut. Fooing Longit. Both F.		30	19'-1"	1529
8f3	Abut. Extension Longit.		4	10'-2"	109
8f4	Abut. Extension Longit.		4	8'-8"	93
8g1	Abut. Vert. Both F.		66	7'-8"	1351
8g3	Abut. Diaph. Vert. B.F.		36	15'-9"	1514
6g4	Abut. Diaph. Wing. Ext. Vert.		10	6'-10"	103
5h2	Abut. to Wing Anchor		6	5'-9"	36
5h5	Abut. to Wing Anchor		2	4'-0"	8
5h7	Abut. to Wing Anchor		2	5'-9"	12
6j1	Top of Deck Transv. (at Rail)		207	10'-5"	3239
5k1	Paving Notch		36	4'-9"	178
5k2	Paving Notch		36	3'-5"	128
5p1	Abut. Hoops		36	10'-6"	394
5p2	Abut. Extension Hoops		6	10'-8"	67
6p3	Abut. Bott. of Piles		12	6'-8"	120
6p4	Abut. Hoops		62	21'-2"	1971
4t1	Under Beams at Abutments		6	5'-3"	21
	Epoxy Reinforcing Steel Total Weight (lbs.)				19666

Epoxy Coated Reinforcing Steel - Deck, Abutment & Diaphragm (Stage 2)

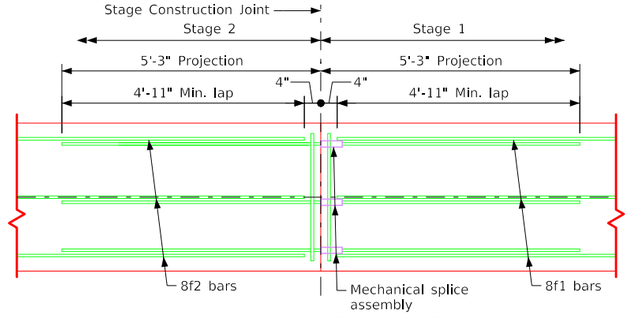
Bar	Location	Shape	No.	Length	Weight
6a3	Deck Transv. Top		82	16'-9"	2063
6a4	Deck Transv. Bott.		82	23'-4"	2874
5b1	Deck Longit, Top & Bott.		98	40'-0"	4089
5d2	Abut. Diaph. Longit.		12	6'-0"	75
5d22	Abut. Diaph. Longit.		6	4'-11"	31
5d3	Abut. Diaph. Longit.		6	4'-5"	28
5d5	Abut. Diaph. Ends		9	5'-6"	52
5d62	Abut. Diaph. Longit. B.F.		8	23'-4"	195
5d72	Paving Notch Longit.		2	21'-9"	45
5d8	Abut. Diaph. Wing. Longit.		12	10'-8"	134
5d92	Paving Notch Longit.		2	23'-4"	49
8f2	Abut. Footing Longit. Both F.		30	23'-3"	1862
8f3	Abut. Extension Longit.		4	10'-2"	109
8f4	Abut. Extension Longit.		4	8'-8"	93
8g1	Abut. Vert. Both F.		84	7'-8"	1719
8g3	Abut. Diaph. Vert. B.F.		44	15'-9"	1850
6g4	Abut. Diaph. Wing. Ext. Vert.		10	6'-10"	103
5h2	Abut. to Wing Anchor		6	5'-9"	36
5h5	Abut. to Wing Anchor		2	4'-0"	8
5h7	Abut. to Wing Anchor		2	5'-9"	12
6j1	Top of Deck Transv. (At Rail)		207	10'-5"	3239
5k1	Paving Notch		44	4'-9"	218
5k2	Paving Notch		44	3'-5"	157
5p1	Abut. Hoops		22	10'-6"	241
5p2	Abut. Extension Hoops		6	10'-8"	67
6p3	Abut. Bott. at Piles		12	6'-8"	120
6p4	Abut. Hoops		80	21'-2"	2543
4t1	Under Beams at Abutments		6	5'-3"	21
	Epoxy Reinforcing Steel Total Weight (lbs.)				22033

Non-Coated Reinforcing Steel - Deck, Abutment & Diaphragm (Stage 1)

Bar	Location	Shape	No.	Length	Weight
#2	Pile Spiral		6	38'-6"	39
	Spiral Spacers, L⅛" x ⅛" x ⅛" x 0.70		18	1'-10"	23
	Non-Coated Reinforcing Steel Total Weight (lbs.)				62

Non-Coated Reinforcing Steel - Deck, Abutment & Diaphragm (Stage 2)

Bar	Location	Shape	No.	Length	Weight
#2	Pile Spiral		6	38'-6"	39
	Spiral Spacers, L⅛" x ⅛" x ⅛" x 0.70		18	1'-10"	23
	Non-Coated Reinforcing Steel Total Weight (lbs.)				62



Mechanical Splice Detail

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Deck, Abut, & Diaph. Quantities

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

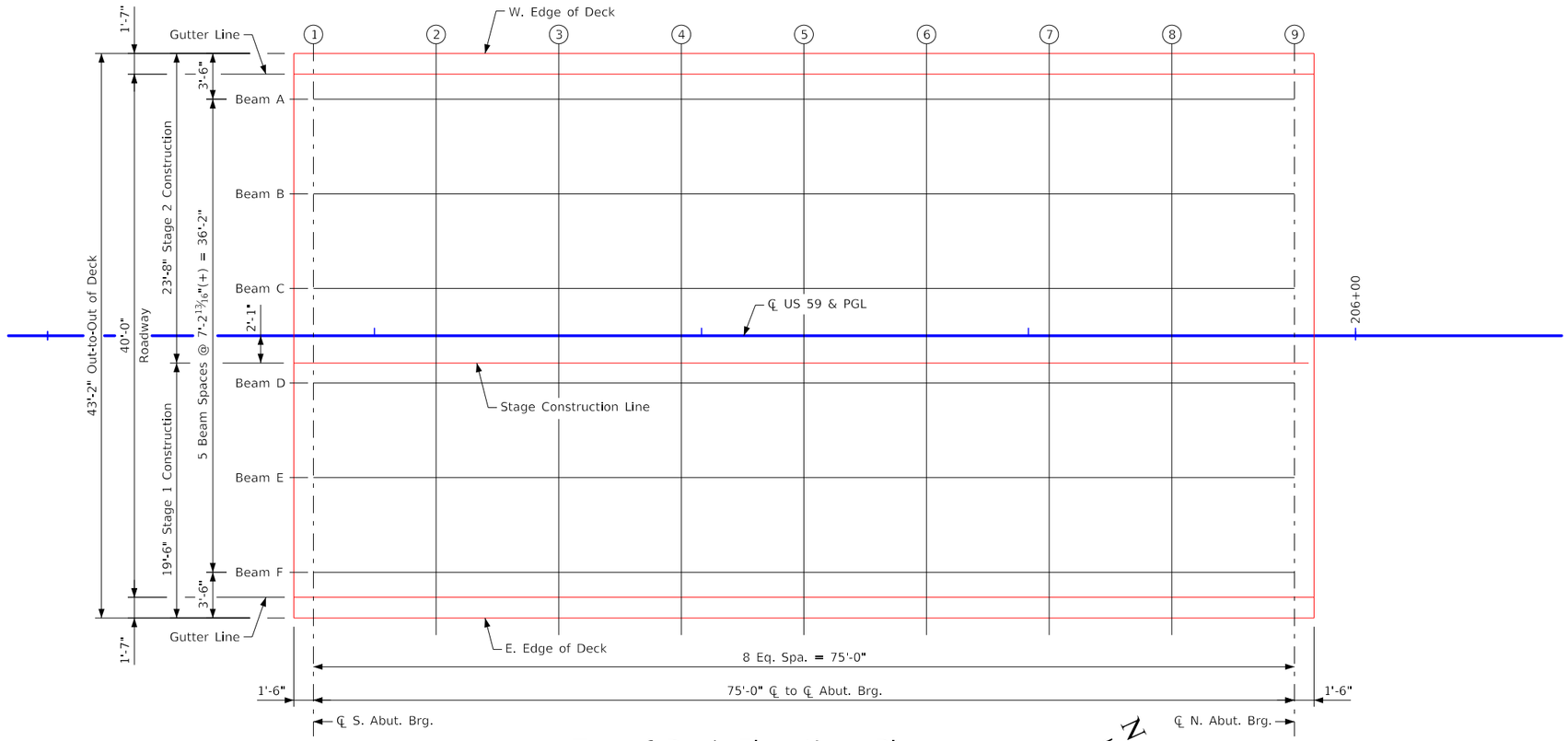
Design No. 1426 Design Sheet No. 17 of 32 FHWA No. 43371

Revised 07-15: Changed Concrete Placement Note to account for the possible addition of a retarding admixture to the concrete.
Issued 02-08.
BTIntegralBridges.dgn - 4518-BTCD - This Sheet Re-Issued 11-2023. Sheet Format Update.

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Integral Abut. "BTC" & "BTD" Beams - Bar List & Super. Details - 0° Skew	Standard Sheet 4518-BTCD	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.17

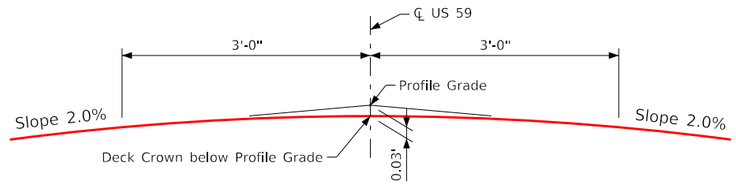
9:58:35 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

Control Point: Feno Set Feno monument 3 in. deep near the intersection of Hwy 59 and Magnolia Rd. in Pottawattamie County. Monument is 90 ft. E. of CL Hwy 59 52 ft. S of CL Magnolia Rd. 36 ft. SW of a Cor post and 57 ft. N. of wood fence post. El. 1104.8. Northing: 7007624.69, Easting: 16597808.11.



Top of Deck Elevations Plan





Crown Template

No Scale

Notes:
Elevations along ℄ US 59 are located at Deck Crown below Profile Grade as shown in the Crown Template Detail.

Top of Deck Elevations

	℄ S. Abut. Bearing								℄ N. Abut. Bearing
	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9
W. Gutter Line	1110.86	1110.88	1110.89	1110.89	1110.89	1110.89	1110.88	1110.87	1110.85
Girder A	1110.90	1110.92	1110.93	1110.93	1110.93	1110.93	1110.92	1110.91	1110.89
Girder B	1111.05	1111.06	1111.07	1111.08	1111.08	1111.07	1111.07	1111.05	1111.04
Girder C	1111.19	1111.21	1111.22	1111.22	1111.22	1111.22	1111.21	1111.20	1111.18
℄ US 59	1111.23	1111.25	1111.26	1111.26	1111.26	1111.26	1111.25	1111.24	1111.22
Stage Construction Line	1111.22	1111.24	1111.25	1111.25	1111.25	1111.25	1111.24	1111.23	1111.21
Girder D	1111.19	1111.21	1111.22	1111.22	1111.22	1111.22	1111.21	1111.20	1111.18
Girder E	1111.05	1111.06	1111.07	1111.08	1111.08	1111.07	1111.07	1111.05	1111.04
Girder F	1110.90	1110.92	1110.93	1110.93	1110.93	1110.93	1110.92	1110.91	1110.89
E. Gutter Line	1110.86	1110.88	1110.89	1110.89	1110.89	1110.89	1110.88	1110.87	1110.85

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Top of Deck Elevations

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 18 of 32 FHWA No. 43371

Control Point: Feno Set Feno monument 3 in. deep near the intersection of Hwy 59 and Magnolia Rd. in Pottawattamie County. Monument is 90 ft. E. of CL Hwy 59 52 ft. S of CL Magnolia Rd. 36 ft. SW of a Cor post and 57 ft. N. of wood fence post. El. 1104.8. Northing: 7007624.69, Easting: 16597808.11.

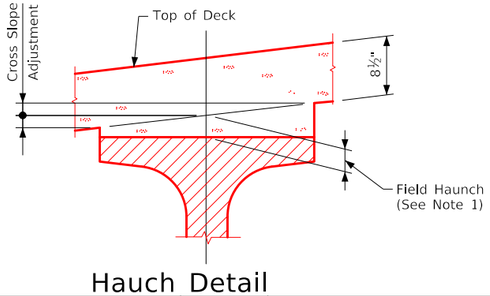
Table of Beam Line Deck Haunch Elevations

Beam Line	℄ S. Abut. Bearing								℄ N. Abut. Bearing
	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9
A	1110.19	1110.24	1110.27	1110.29	1110.30	1110.29	1110.27	1110.23	1110.18
B	1110.34	1110.38	1110.42	1110.44	1110.44	1110.43	1110.41	1110.37	1110.33
C	1110.48	1110.53	1110.56	1110.58	1110.59	1110.58	1110.56	1110.52	1110.47
D	1110.48	1110.53	1110.56	1110.58	1110.59	1110.58	1110.56	1110.52	1110.47
E	1110.34	1110.38	1110.42	1110.44	1110.44	1110.43	1110.41	1110.37	1110.33
F	1110.19	1110.24	1110.27	1110.29	1110.30	1110.29	1110.27	1110.23	1110.18

Note: Haunch locations are at the same location as the encircled numbers shown on Deck Elevations sheet.

Miscellaneous Data Table

	Beam Line		℄ S. Abut. Bearing								℄ S. Abut. Bearing
			Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8	Line 9
Anticipated Deflection Due to Deck (in.)	A - F		0	3/8"	5/8"	13/16"	7/8"	13/16"	5/8"	3/8"	0
Cross Slope Adjustments (in.)	All		5/16"								
Allowable Field Haunch (in. & ft.)	Max.	All	2½" (.208)								
	Min.	All	-3/16 (-.016)								



Hauch Detail

Note: Bridge seat elevations are set based on theoretical camber and beam deflections. These bridge seats will provide a theoretical beam haunch within design parameters. Field haunches are determined using surveyed top of beam elevations and "Beam Line Haunch Elevation" data. Allowable maximum and minimum "Field Haunch" values are given in inches and decimals of feet in the "Miscellaneous Data" table. "Cross slope adjustment" values will aid the Contractor in determining actual formed haunch dimensions at the edges of the top flange.

Note 1: To calculate field haunch required at each location, survey the beam tops consistent with the spacings shown on the "Top of Deck Elevations Layout". Subtract the surveyed beam shot from the "Beam Line Haunch Elevation". This value will be the haunch needed (see "Field Haunch" in haunch detail). The "Beam Line Haunch Elevation" includes adjustments for deck thicknesses and anticipated deflections. No additional calculations are required. If the field haunch exceeds the maximums and minimums shown in inches and decimals of feet in the miscellaneous data table, adjustments to the grade or additional haunch reinforcement will be required.

Note:
See Design Sheet No. 18 for locations of tabulated values.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Deck Haunch Data Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

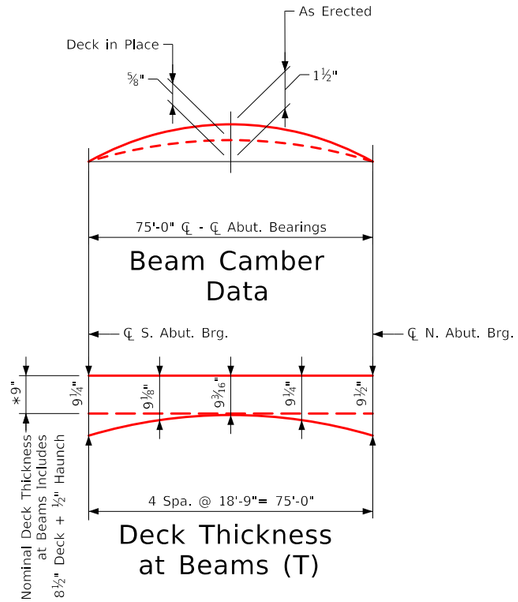
IOWA DEPARTMENT OF TRANSPORTATION

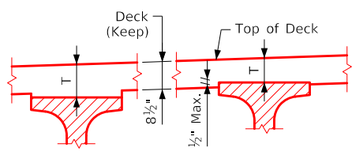
Design No. 1426 Design Sheet No. 19 of 32 FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Deck Haunch Data Details	Standard Sheet 1066	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.19	

Issued 02-2008.
Revised 06-2012: The Allowable Field Haunch Max. & Min. Were Changed to Inches and Decimals of Feet. Note & Note 1 Were Changed.
Revised 07-2019: Changed all References of "Slab" to "Deck".
MiscellaneousBridges.dgn - 1066 - This Sheet Re-Issued 11-2023. Sheet Format Update.
Note 1 Were Changed. The Slab Haunch Locations Example was Replaced With a Note.

9:58:37 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn





Deck Thickness Details

Note: The deck thickness (T) at beams is based on the anticipated beam camber and deflections. These values are used by the Designer to set beam elevations and estimate concrete quantities. Refer to the haunch data details sheet for additional information to aid the Contractor in setting the field haunches required for construction.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Deck Thickness Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

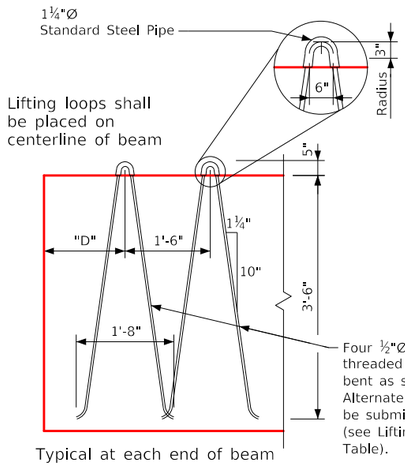
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 | Design Sheet No. 20 of 32 | FHWA No. 43371

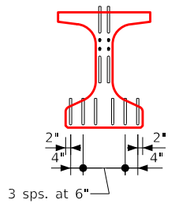
FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Beam Camber and Deck Thickness Details	Standard Sheet 1065	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.20

Revised 07-2019: Changed All References of "Slab" to "Deck".
MiscellaneousBridges.dgn - 1065 - This Sheet Re-Issued 11-2023. Sheet Format Update.

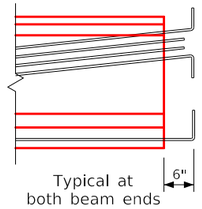
9:58:37 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn



Lifting Loop Detail



The top and bottom rows of the deflected strands are to be cut with 1'-2" projections which are to be shop bent as shown. The remaining top deflected strands are to be cut with 5" projections. Six bottom strands are to be cut with 1'-6" projections which are to be shop bent as shown. The remaining bottom strands are to be cut off reasonably flush with the concrete.



Strand Projection at Beam Ends When Embedded in Concrete End Diaphragms

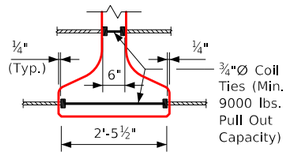
Lifting Loop And Overhang Table

Beams	Lifting Loops Each End	# of Strands Per Loop	D	Beam Overhang (ft.)
BTC30-BTC45	1	4	2'-0"	**
BTC50-BTC75	1	4	2'-0"	**
BTC80-BTC95	2	4	1'-3"	11
BTC100	2	4	3'-9"	12
BTC105	2	4	6'-3"	12
BTC110	2	4	8'-2"	12
BTC115	2	4	8'-3"	14

** In accordance with Article 2407.03, K of the Standard Specifications.

Lifting loops shall carry loads equally.

Number and exact location of coil ties to be as detailed on specific bridge design.



Coil Tie Detail

ΔΔ 5b1 and 6b3 bars to be epoxy coated
✱ 6b3 and 6b4 bars to be used in pairs

Design Stresses:

Design stresses for the following materials are to be in accordance with AASHTO LRFD Bridge Design Specifications, Series of 2017.
Reinforcing steel in accordance with Section 5, Grade 60.
Concrete in accordance with Section 5.
Prestressing steel in accordance with Section 5, Grade 270.

Specifications:

Construction: Standard Specifications of the Iowa Department of Transportation, current series, with current applicable special provisions and supple-mental specifications.
Design: AASHTO LRFD, Series of 2017 with minor modifications.

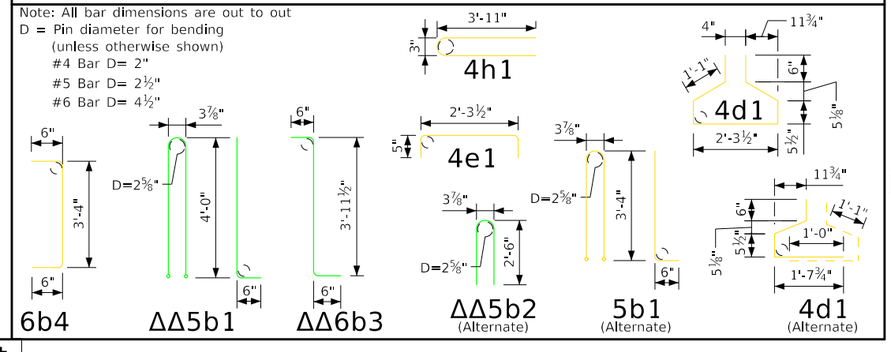
Alternate Bar Notes:

Alternate bars shown in Bent Bar Details may be used in lieu of reinforcing bars shown in bar list. No additional payment shall be made for use of alternate bars.

Note: All mild reinforcing steel can be epoxy coated at Contractor's option without modification to bar length or details at no additional cost to the State.

Bent Bar Details

Note: All bar dimensions are out to out
D = Pin diameter for bending (unless otherwise shown)
#4 Bar D= 2"
#5 Bar D= 2½"
#6 Bar D= 4½"



Reinforcing Bar List

	Beam Bar Shape	BTC75 No.	Length	
	5a1	12	39'-9"	
	5a2	—	—	
ΔΔ	5b1	63	9'-2"	ΔΔ
ΔΔ✱	6b3	36	5'-0"	ΔΔ✱
✱	6b4	16	4'-4"	✱
	4c1	85	2'-7"	
	4d1	85	6'-5"	
	4e1	26	3'-2"	
	4h1	6	8'-0"	

BTC Beam Data

BTC Beam	Span Length ℄ Brg	Overall Beam Length (L)	Concrete Strength f'ci (ksi.)	Concrete Strength f'c (ksi.)	Strand Size Dia. (in.)	Number of Strands Straight	Number of Strands Deflected	③ Total Initial Prestress (kips)	Hold Down Force (kips)	Camber (in.) ⑥ At Release	Camber (in.) ⑥ After Losses	Deflection (in.) Δ_D Immediate ① (elastic) Δ_I Steel Diaphragm	Deflection (in.) Δ_D Time ② (plastic) Δ_T Steel Diaphragm	Permissible Maximum Spacing HL-93 Loading Steel Diaphragm	Weight (tons)	Concrete (cu. yd.)	Reinforcing Steel (weight-lb.)
BTC75	75'-0"	76'-4"	5.00	6.00	0.60"	16	4	851	20.0	0.83"	1.53"	0.91"	0.23"	9'-3"	27.5	13.6	2057

① Deflections at mid-span due to weight of deck and diaphragm. The deflections shown are for a deck (8.5") and haunch (1.5") weight of:
1.04 kips/ft. for 9'-3" beam spacing
1.01 kips/ft. for 9'-0½" beam spacing
And one steel diaphragm (0.500 kips) at ℄ of span. For different deck and diaprагm weights, deflections will be directly proportional.

② Deflections due to the combined effect of creep due to weight of deck and shrinkage of deck.
Total beam deflections at ℄ of span, Δ_D , due to weight of deck and diaphragms for detailing purpose:
(A) $\Delta_D=\Delta_I+\Delta_T$ for simple span.
(B) $\Delta_D=\Delta_I+\frac{3}{4}\Delta_T$ for end spans of continuous bridge.
(C) $\Delta_D=\Delta_I+\frac{1}{2}\Delta_T$ for interior spans of continuous bridge.

③ Total initial prestress is based on 72.6% f's, f's= 270 ksi. and As= 0.217 in.².

④ Requires a 4500 psi., 28 day compressive strength for cast-in-place deck concrete.

⑤ Includes partial length debonded strands, see individual Beam Sheet for locations and details.

⑥ Calculated design cambers are based on multipliers developed from research in Iowa.

Beam Notes: (continued)

If stub abutments are used, all strands at the ends of beams at stub abutments shall be cut off reasonably flush with the concrete.
Minimum concrete f'c (at 28 days) and minimum f'ci at release are located in the BTC Beam Data Table above.
Four 0.60 in. diameter strands stressed to not more than 5000 lbs. each may be used in lieu of bars 5a1 and 5a2 in the top flange.

Beam Notes:

These beams are designed for AASHTO live loads as indicated in above table with an allowance of 20 lbs. per square foot of roadway for future wearing surface.
All PPC beams shall use high performance concrete ('HPC') in accordance with the Standard Specifications.
Hold down points for deflected strands may be moved toward ends of beam a distance of 0.05 L maximum at producer's option.
All prestressing strands except lifting loop strands shall be 0.60 in. nominal diameter (nominal steel area = 0.217 in.²) and conform to ASTM A416 Grade 270 Low Relaxation Strands. Minimum strand breaking strength shall be 58.6 kips.
Tops of beams are to be struck off level and finished as per Materials I.M.570.
Bearings shall be as detailed on other design sheets.
Beams to be used in bridges made continuous by the poured in place deck, are to be at least 28 days old before the deck is placed unless a shorter curing time is approved by the Bridge Engineer.
The portions of the prestressed beams that are to be embedded in the abutment and pier diaphragms shall be roughened for a distance of 10" from the beam end by sandblasting or other approved methods to provide suitable bond between the beam and the diaphragm in accordance with Article 2403.03, I, of the Standard Specifications.
All beams are to be increased in length to compensate for elastic shortening, creep and shrinkage.
For transporting, the allowable overhang is shown in the "Lifting Loop and Overhang Table".
The contractor shall assure the lateral stability of the BTC100 to BTC115 beam during handling, transporting and erection by providing temporary bracing as needed.
Holes must be cast in the web to accommodate the steel diaphragm attachments as detailed on the Steel Diaphragm Detail Sheet.
If sole plate is required for bearing, sole plate is to be set in forms when beam is cast and formed out below to exclude concrete as detailed on the Bearing Sheet.
When expansion joints are used, concrete sealer shall be applied to the prestressed beam end sections. The sealing shall be in accordance with Materials I.M.570 (Fabricator Application) and I.M.491.12 (Contractor Application).

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

BTC75 Beam Details

STA. 205+57.83 (U.S. 59)
Turn-in Date: August 2026

Pottawattamie County

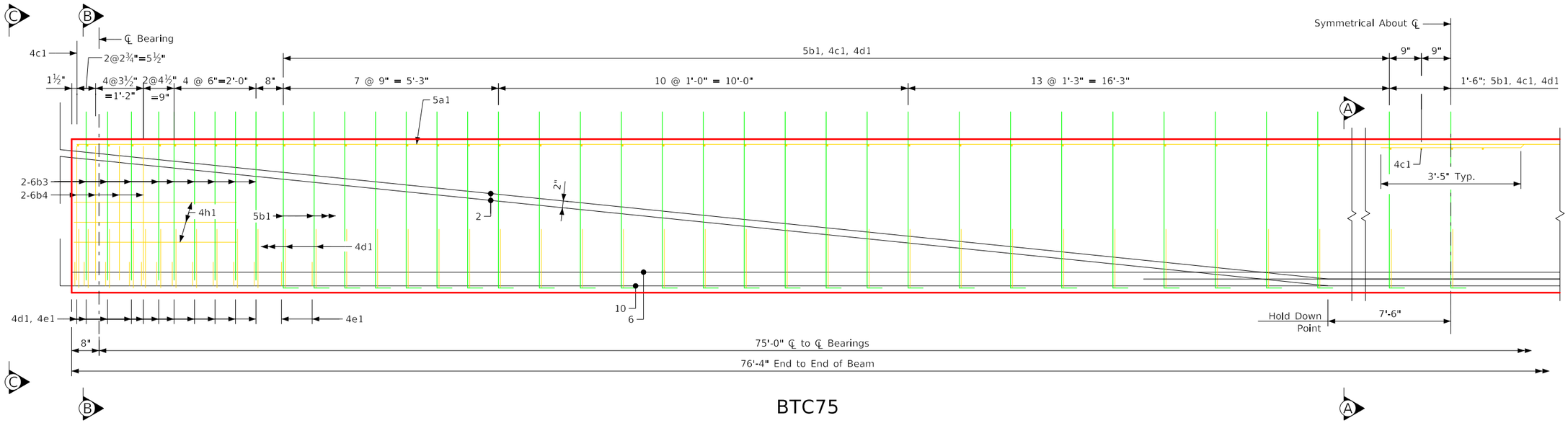
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 | Design Sheet No. 21 of 32 | FHWA No. 43371

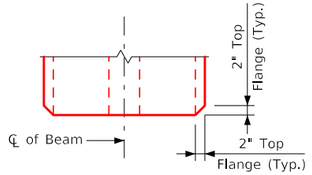
Issued 05-04.
Correction 12-13: Coil Tie Detail was Changed to Reflect the Distance Between Coil Tie Anchors Embedded ¼ inch.
Revised 10-2024: Revised "At Release" and "After Losses" Camber Values for BTC85 to BTC115.
Revised 04-2026: Corrected Bar Quantities for 6b3 Bars to 36 bars on the following beams BTC70, BTC75, BTC80, BTC85, and BTC95 (was 34).
Corrected Bar Quantities for 6b3 Bars to 40 bars on the following beams BTC90 (was 38), and BTC95 (was 44).
Beams.dgn - 4700 - This Sheet Re-Issued 04-2024. Sheet Format Update.

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Bulb Tee "C" Beam – 30'-0" – 115'-0" Spans Data Details	Standard Sheet 4700	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.21	

9:58:38 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

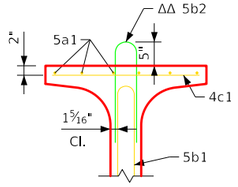


BTC75



Top View

The top flange beam corners are to be chamfered 2" as shown at both ends of the beam.

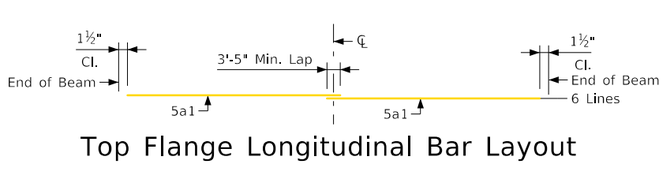


Section A-A (Alternate)

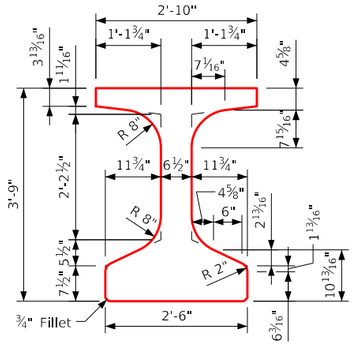
See Alternate Bar Note on Standard Sheet 4700.

Area = 691.8 in.^{2}
$\bar{y}_b$ = 20.74 in.
I = 178,971 in.^{4}

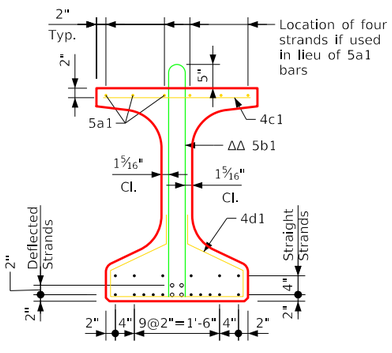
Beam Section Properties



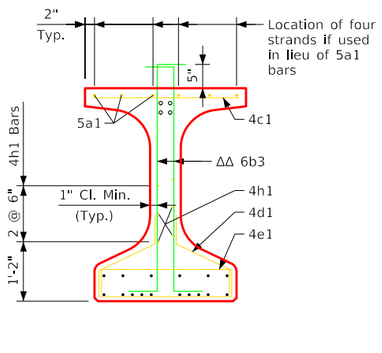
Top Flange Longitudinal Bar Layout



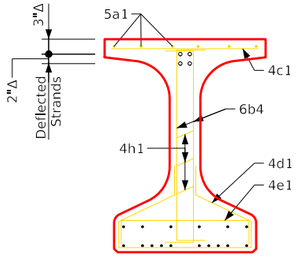
BTC Beam Cross Section



Section A-A



Section B-B



View C-C

- ◦ Deflected Strands
- Δ Dimensions at End of Beam
- ΔΔ Epoxy Coated Bars

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

BTC75 Beam Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 | Design Sheet No. 22 of 32 | FHWA No. 43371

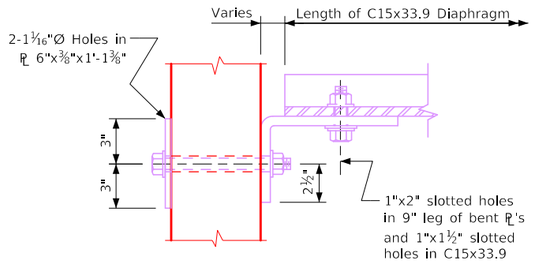
Revision 10-07: 5b2 Bar Deleted. 5b1 Bar Lengthened to Extend 5 Inches Above Beam Top. Alternate Section A-A Added.
Issued 05-04.
Beams.dgn - 4710 - This Sheet Re-Issued 04-2024. Sheet Format Update.

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Bulb Tee "C" Beam - 75'-0" Span	Standard Sheet 4710	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.22

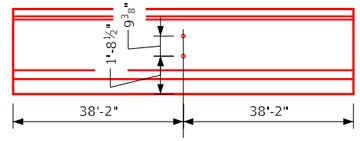
9:58:39 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

Bulb Tee "C" Beam Intermediate Diaphragm Structural Steel

One Beam Connection (Detail "F" and/or Detail "G")		No. of Beam Connections	Weight
Two - 7/8"Ø X 9 1/4" H.S. Bolts with Nuts & Washers = 4.8 Lbs.		6	28.8
One Detail "G"	Two - Bent PL 9" x 6" x 1/2" x 1'-1 3/8" = 57.0 Lbs.	4	228
One Detail "F"	One - Backing PL 6" x 3/8" x 1'-1 3/8" = 8.5 Lbs.	2	17
	One - Bent PL 9" x 6" x 1/2" x 1'-1 3/8" = 28.5 Lbs.	2	57
One Diaphragm			
		Number of Diaphragms	
Eight - 7/8"Ø X 2 3/4" H.S. Bolts with Nuts & Washers = 10.3 Lbs.		5	51.5
	Length of Member		
One - C15 x 33.9 = 33.9 Lbs./Ft.	6'-0 9/16"	5	1025
Intermediate Diaphragm Structural Steel - Total (Lbs.)			1408



Section C-C



(0° to 7°30' skew)

Intermediate Diaphragm Bolt Hole Locations

STRUCTURAL STEEL	
Weight	1408 lbs.

NOTE: Structural Steel weight is included on the Summary Quantities Sheet.

Notes:

All diaphragm materials, including bolts, nuts and washers shall be galvanized.

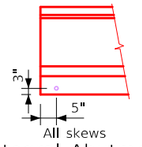
Shop drawings of the steel diaphragms showing layout and details of the diaphragms shall be submitted for approval.

All costs for furnishing and installing steel intermediate diaphragms shall be included in the price bid for Structural Steel.

The 1 1/2"Ø holes for the 7/8"Ø H.S. bolts shall be cast into the web. Drilling is not allowed.

The 7/8"Ø H.S. bolts through the web shall have a thread length of 3" min. and 4" max. and shall meet the requirements of ASTM A449.

All bolts are to be tightened prior to placing bridge deck concrete with the following exception: Bolts in diaphragms located under longitudinal bridge deck construction joints shall not be tightened until stage two of the bridge deck has been placed.



All skews

Integral Abutment

Beam Coil Tie Locations

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Steel Interm. Diaphragm - BTC Beam

STA. 205+57.83 (U.S. 59)

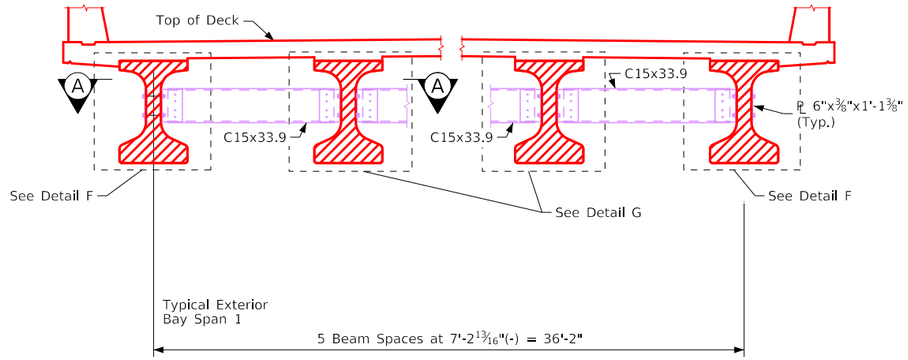
Turn-in Date: August 2026

Pottawattamie County

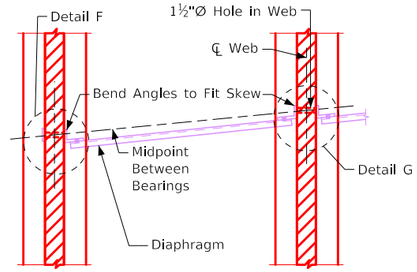
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 23 of 32 FHWA No. 43371

This Sheet Issued 06-14. Sheet 1 of 2.
Beams.dgn - 1036-1-BTC - This Sheet Re-Issued 04-2024. Sheet Format Update.

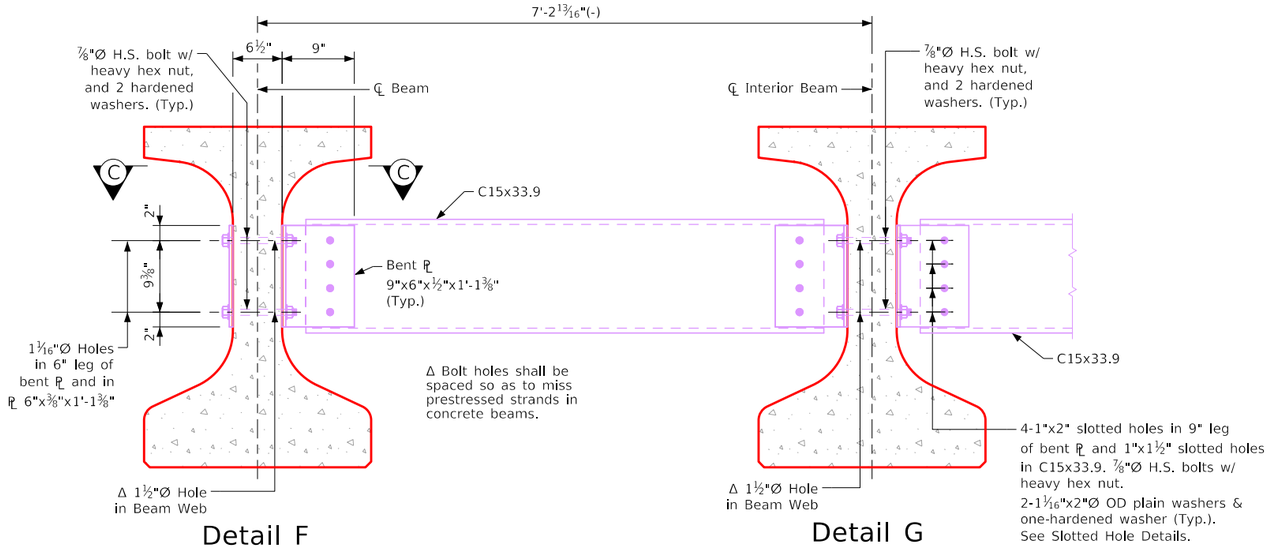


Section Showing Intermediate Diaphragms

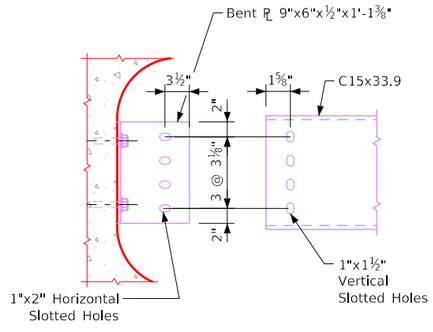


Part Section A-A

For Bridges Skewed Less Than or Equal to 7°30'



Section Showing Intermediate Diaphragms At Exterior Bay



Slotted Hole Details

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Steel Interm. Diaphragm - BTC Beam

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

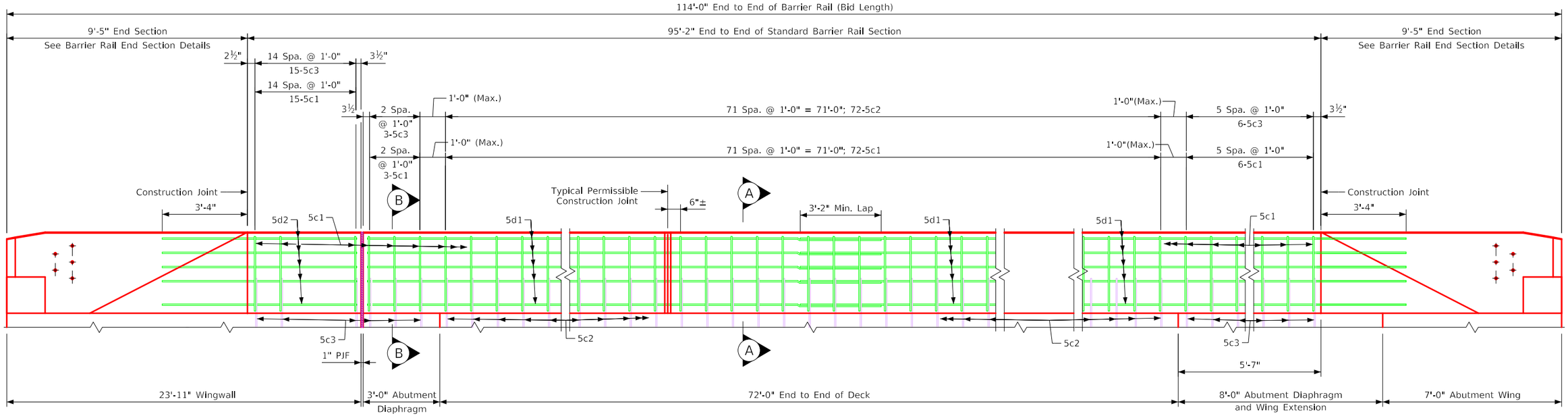
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 | Design Sheet No. 24 of 32 | FHWA No. 43371

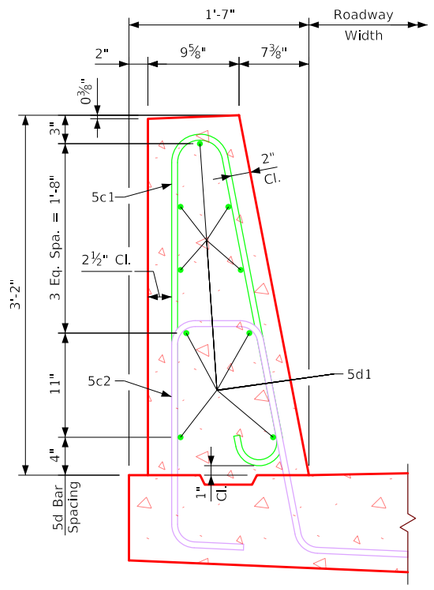
This Sheet Issued 06-14. Sheet 2 of 2.
Beams.dgn - 1036-2-BTC - This Sheet Re-Issued 04-2024. Sheet Format Update.

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Steel Intermediate Diaphragms for "BTC" Beam Bridges - Sheet 2 of 2	Standard Sheet 1036-2-BTC	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.24	

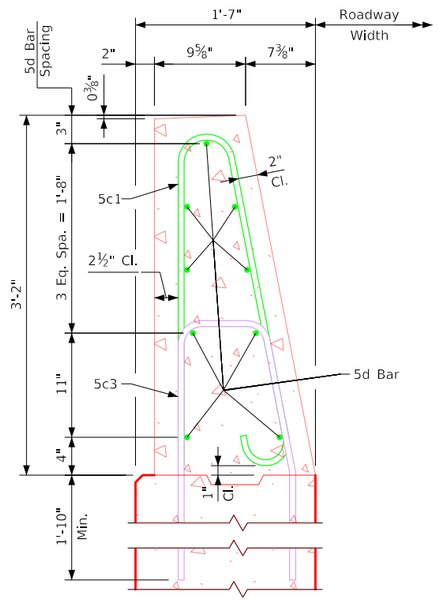
9:58:40 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn



Elevation of Barrier Rail



Part Section A-A



Part Section B-B

See Barrier Rail Details on Design Sheet No. 26
for notes, reinforcing steel details, and quantities.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Single Slope Barrier Rail Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 | Design Sheet No. 25 of 32 | FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Barrier Rail (TSS TL-4) (Stainless) - Integral Abut. w/Wing Ext. (1 of 2)	Standard Sheet 1020SC-1 (Modified)	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.25

9:58:41 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

Issued 04-14. Added Stainless Steel Reinforcing Bar List and Changed 5c2, 5c3, 5c14 Bars to Stainless Steel.
DeckRailBridges.dgn - 1020SC-1 -This Sheet Re-Issued 05-2024. Revised to Single Slope Barrier Shape. Sheet Format Update. (Sheet Number was Originally 1020SC).

Barrier Rail Notes:

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

The permissible construction joints are to be placed between vertical bars at a minimum spacing of 20 feet. Construction joint contact surfaces are to be coated with an approved bond breaker.

Cost of the joint sealer and bond breaker shall be considered incidental to other construction.

All barrier rail reinforcing steel is to be either epoxy coated or stainless steel as shown. The stainless steel reinforcing steel shall be deformed bar grade 60 meeting the requirements of Construction and Materials I.M. 452.

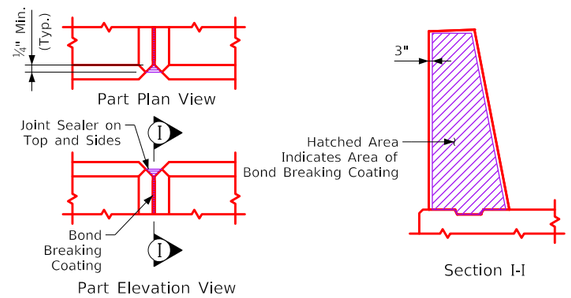
The concrete barrier rail is to be bid on a lineal foot basis. The number of linear feet of barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for concrete barrier railing shall be full compensation for furnishing all material, excluding reinforcing steel, and all of the equipment and labor required to erect the rail in accordance with these plans and current specifications. If conduit is required in this plan the rigid steel conduit, junction boxes and fittings including labor and any additional work to do the installation is considered incidental to the cost of the railing.

The joint sealer shall be light gray nonsag latex caulking sealer marketed for outdoor use. No testing or certification is required.

Top of the barrier rail is to be parallel to the theoretical ℄ grade.

All exposed corners on the top of the barrier and all other corners 90° or sharper to be filleted with a ¾" dressed and beveled strip.

Cross sectional area of the Standard Sections of the barrier rail = 3.50 square feet.



Barrier Rail Joint Details

Concrete Placement Summary (Stage 1)

Section	Total
Standard Section 95'-2" at 0.130 cu. yd. per ft.	12.37
Total (cu. yd.)	12.37

Concrete Barrier Rail Quantities (Stage 1)

Item	Unit	Quantity
Concrete Barrier Railing	L.F.	114

Concrete Placement Summary (Stage 2)

Section	Total
Standard Section 95'-2" at 0.130 cu. yd. per ft.	12.37
Total (cu. yd.)	12.37

Concrete Barrier Rail Quantities (Stage 2)

Item	Unit	Quantity
Concrete Barrier Railing	L.F.	114

Epoxy Coated Reinf. Steel - One Rail (Stage 1)

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c1	Rail, Vertical		96	6'-8"	668
	5d1	Rail, Longitudinal		27	30'-0"	845
	5d2	Rail, Longitudinal		9	17'-8"	166
					Epoxy Reinf. Total Weight (lbs.)	1679

Stainless Steel Reinf. Steel - One Rail (Stage 1)

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c2	Rail, Vertical		72	7'-3"	544
	5c3	Rail, Vertical		24	7'-2"	179
					Stainless Steel Reinf. Total Weight (lbs.)	723

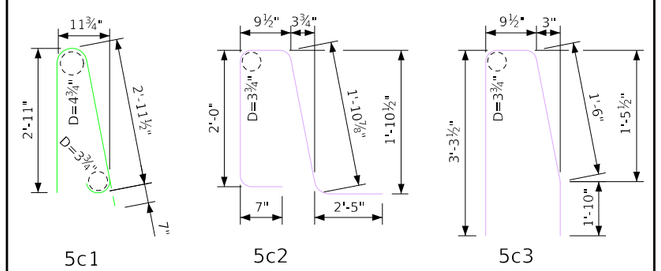
Epoxy Coated Reinf. Steel - One Rail (Stage 2)

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c1	Rail, Vertical		96	6'-8"	668
	5d1	Rail, Longitudinal		27	30'-0"	845
	5d2	Rail, Longitudinal		9	17'-8"	166
					Epoxy Reinf. Total Weight (lbs.)	1679

Stainless Steel Reinf. Steel - One Rail (Stage 2)

Section	Bar	Location	Shape	No.	Length	Weight
Standard Sections	5c2	Rail, Vertical		72	7'-3"	544
	5c3	Rail, Vertical		24	7'-2"	179
					Stainless Steel Reinf. Total Weight (lbs.)	723

Bent Bar Details



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

Note: Reinforcing steel quantities are included on the Summary Quantities Sheet.

See Barrier Rail Details on Design Sheet No. 25 for details and sections.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Single Slope Barrier Rail Details

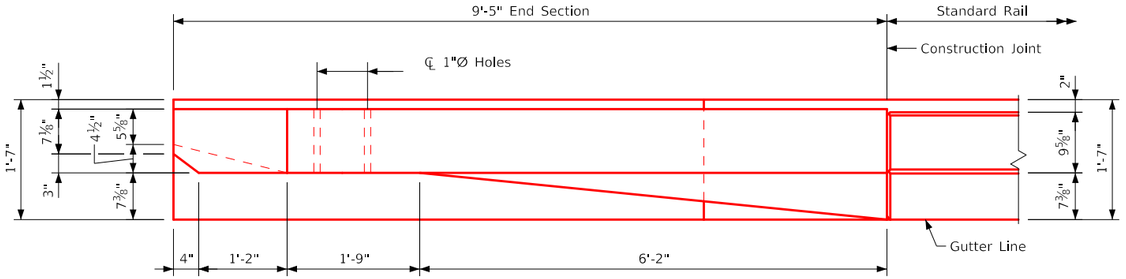
STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

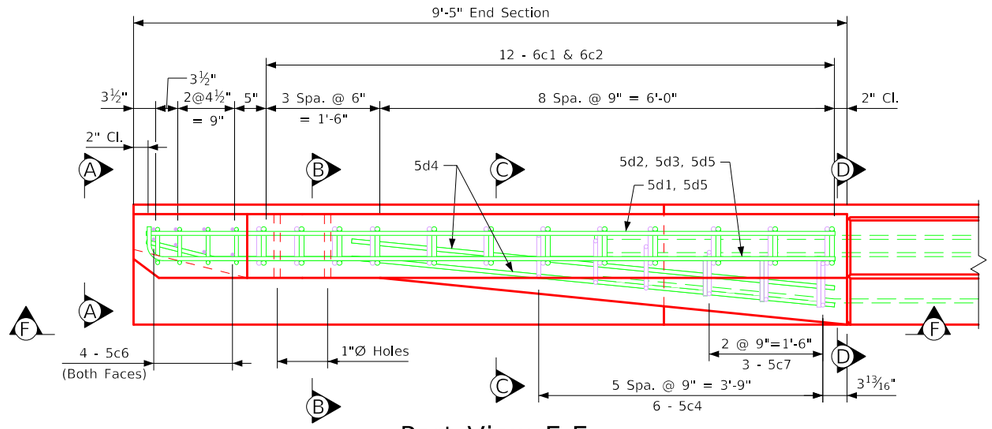
Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

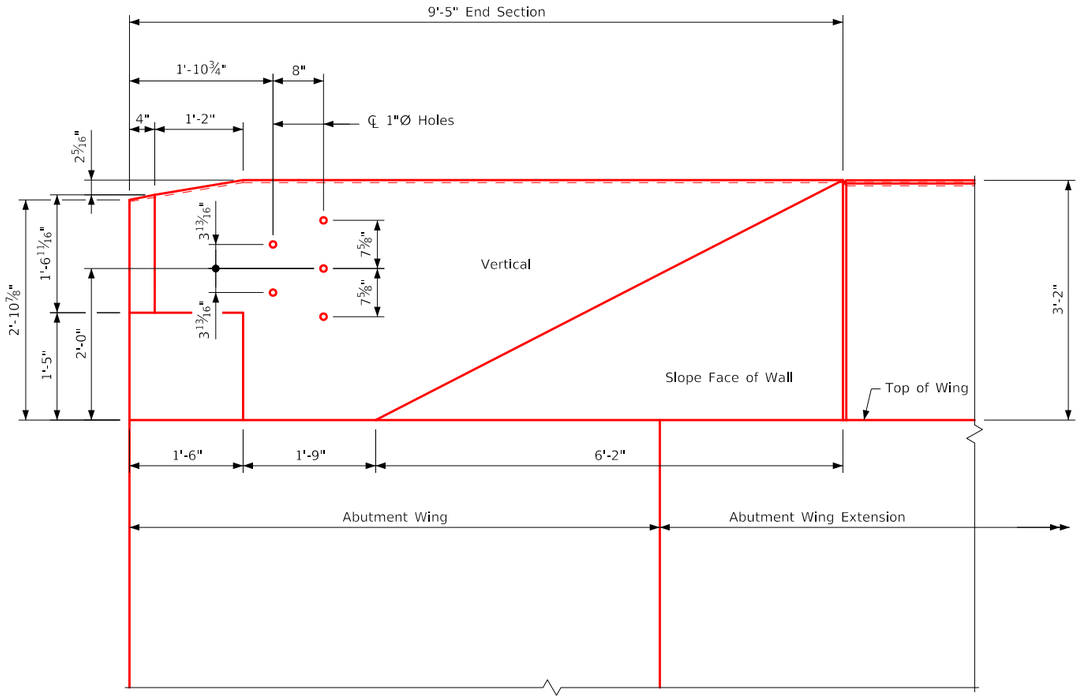
Design No. 1426 | Design Sheet No. 26 of 32 | FHWA No. 43371



Part Plan View

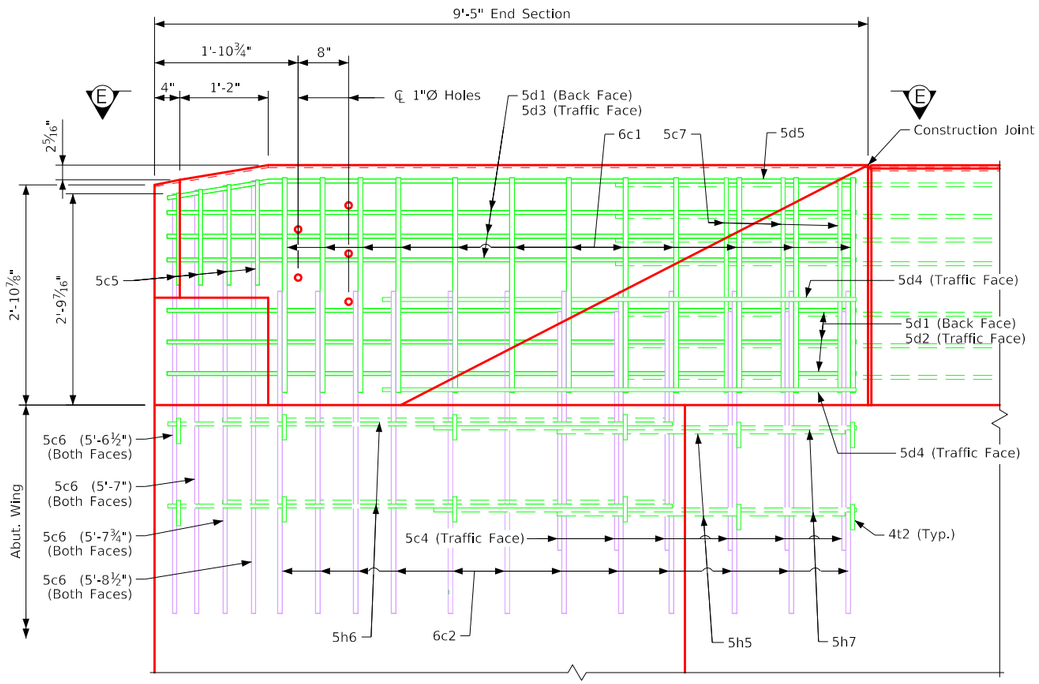


Part View E-E



Part Elevation View

North End Section Shown. South End Section Similar.
Provide 5 holes formed with 1"Ø plastic conduit.
Cost to be included in price of bid for Concrete Barrier Railing.



Part View F-F

North End Section Shown. South End Section Similar.

Notes: 4t2 placement - 3 bars each at top two rows of 5h1/d bars in abutment wing and abutment wing extension (north end) or retaining wall (south end).

Construction joint between barrier rail and top of abutment wing and abutment wing extension (north end) or retaining wall (south end) is roughened concrete.

The 6c2, 5c4, 5c6, and 4t2 bars are to be placed with the abutment wing and abutment wing extension (north end) or retaining wall (south end). The details for placement are shown on the North Abutment Details Sheet or South Abutment Details Sheet.

Dashed lines below the top of wing are the abutment wing (north end) or retaining wall (south end) reinforcing steel. See North Abutment Details Sheet or South Abutment Details Sheet for placement.

For Bar List, Bent Bar Details, View A-A, Sections B-B, C-C, and D-D see Design Sheet No. 28.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Barrier Rail End Section Details

STA. 205+57.83 (U.S. 59) Turn-in Date: August 2026

Pottawattamie County

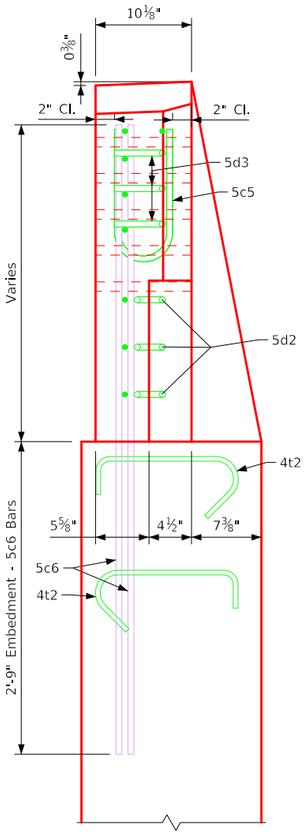
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 27 of 32 FHWA No. 43371

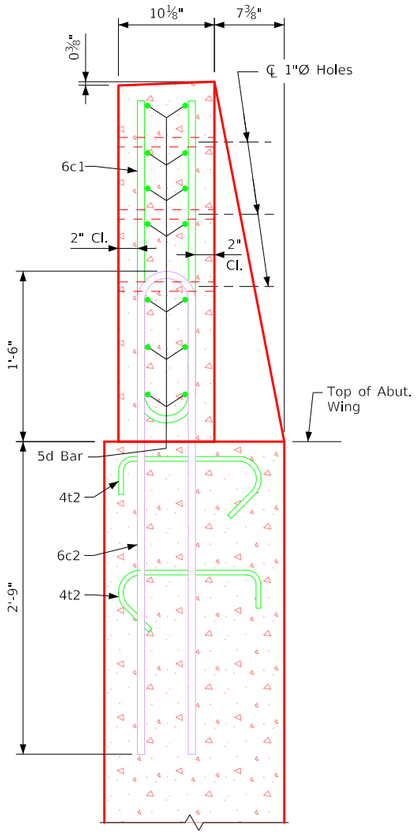
FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Barrier Rail End Section (Stainless) - (1 of 2)	Standard Sheet 1017S-1 (Modified)	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.27	

Revised 04-14: Added Note to Include Reinforcing Steel to the Summary Quantity Sheet.
Issued 09-01.
DeckRailBridges.dgn - 1017-1 - This Sheet Re-Issued 05-2024. Sheet Format Update. (Sheet number was originally 1017).

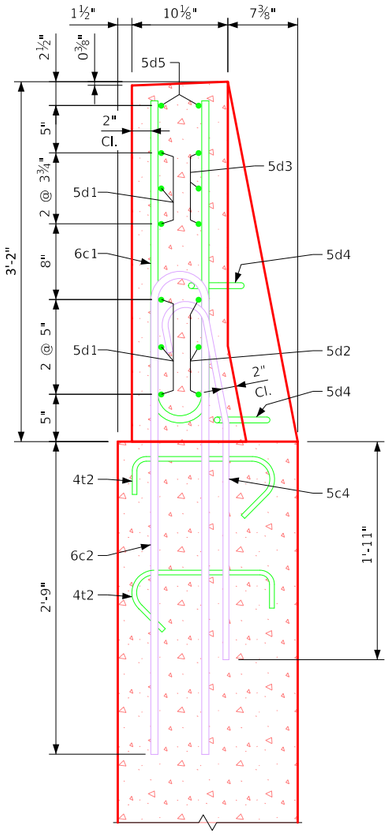
9:58:42 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn



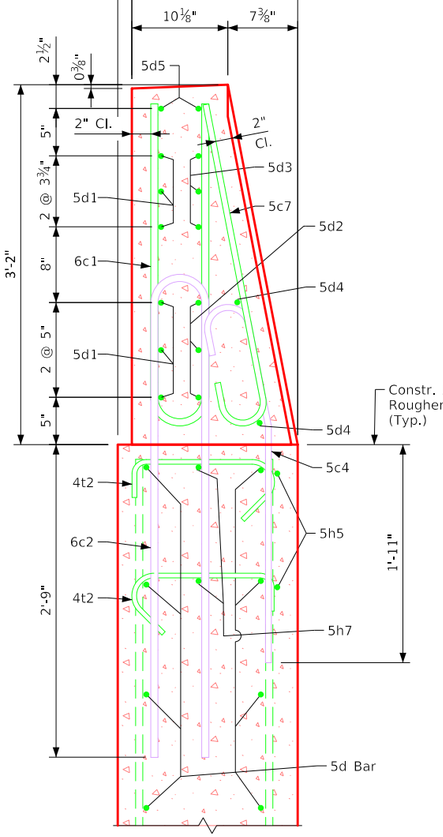
View A-A



Section B-B



Section C-C



Section D-D

Abutment wing bars in View A-A and Sections B-B & C-C are not shown for clarity.
North End Section Shown. South End Section Similar.

Epoxy Coated Reinforcing Steel - One End Section

Bar	Location	Shape	No.	Length	Weight
6c1	Rail, Vertical		12	5'-11"	107
5c5	Rail, Vertical (End)		4	Varies	14
5c7	Rail, Vertical (Traffic Face)		3	3'-5"	11
5d1	Rail, Horizontal (Back Face)		6	9'-1"	57
5d2	Rail, Horizontal (Traffic Face)		3	9'-1"	28
5d3	Rail, Horizontal (Traffic Face)		3	9'-7"	30
5d4	Rail, Horizontal (Traffic Face)		2	6'-3"	13
5d5	Rail, Horizontal (Top)		2	9'-1"	19
4t2	Rail, Abutment Wing Tie Bars		12	2'-0"	16
			Epoxy Reinforcing Total Weight (lbs.)		295

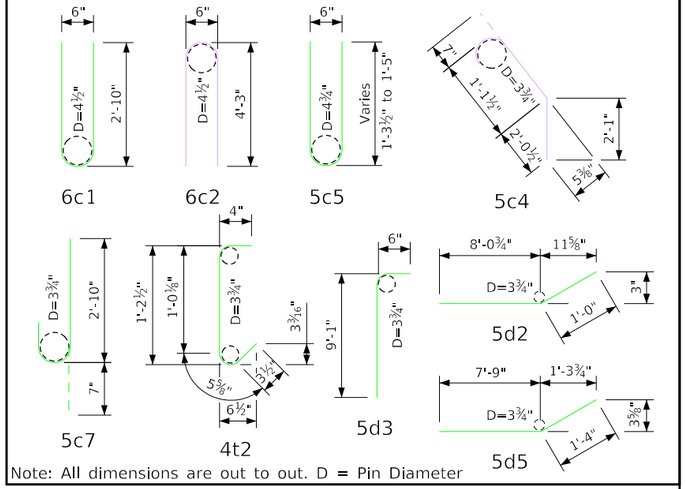
Stainless Steel Reinforcing - One End Section

Bar	Location	Shape	No.	Length	Weight
6c2	Rail, Vertical		12	8'-9"	158
5c4	Rail, Vertical (Traffic Face)		6	3'-10"	24
5c6	Rail, Verical (End)		8	Varies	47
			Stainless Steel Reinforcing Total Weight (lbs.)		229

Concrete Placement Summary

Section	Total
Barrier Rail, One End Section	1.0 cu. yd.

Bent Bar Details



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

Note: Reinforcing steel quantities are included on the Summary Quantities Sheet.

Notes: 4t2 placement - 3 bars each at top two rows of 5h1/d bars in abutment wing and abutment wing extension (north end) or retaining wall (south end).

Construction joint between barrier rail and top of abutment wing and abutment wing extension (north end) or retaining wall (south end) is roughened concrete.

The 6c2, 5c4, 5c6, and 4t2 bars are to be placed with the abutment wing and abutment wing extension (north end) or retaining wall (south end). The details for placement are shown on the North Abutment Details Sheet or South Abutment Details Sheet.

Dashed lines below the top of wing are the abutment wing (north end) or retaining wall (south end) reinforcing steel. See North Abutment Details Sheet or South Abutment Details Sheet for placement.

For Plan and Elevation see Design Sheet No. 27.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Barrier Rail End Section Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

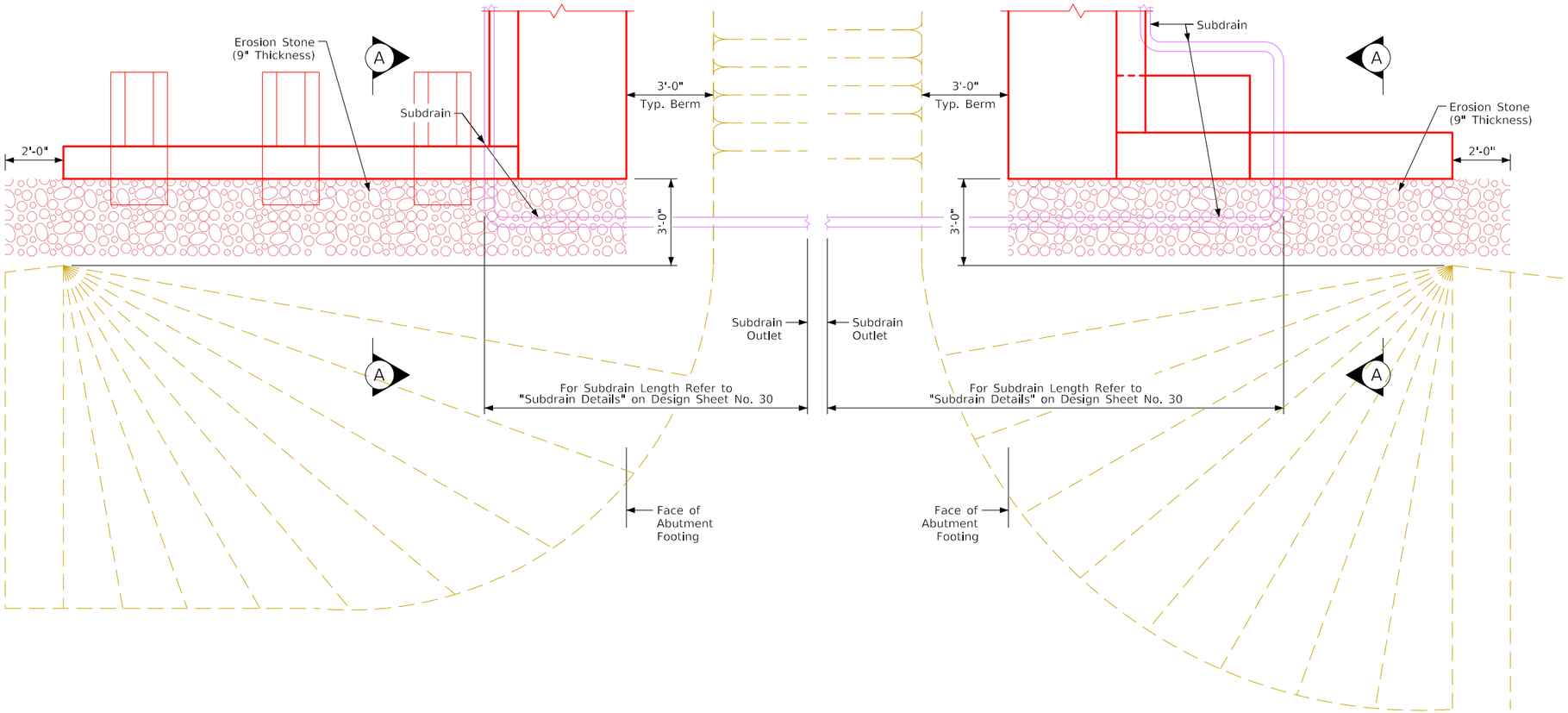
Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 28 of 32 FHWA No. 43371

DeckRailBridges.dgn - 1017-2 - This Sheet Issued 05-2024Additional Sheet for Clarity. (Sheet Number was Originally 1017).

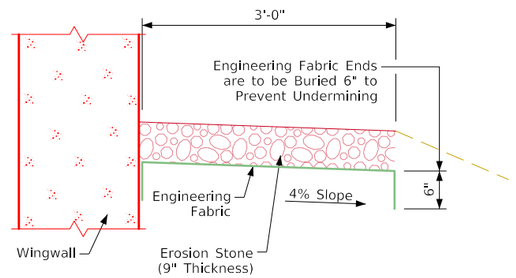
9:58:43 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn



Top View of Wing Armoring
at South Abutment

Top View of Wing Armoring with
Wing Extension at North Abutment

A Check Shall be Made at the Subdrain Outlet to Insure that it is Draining Properly During the Backfill Flooding Process.



Section A-A

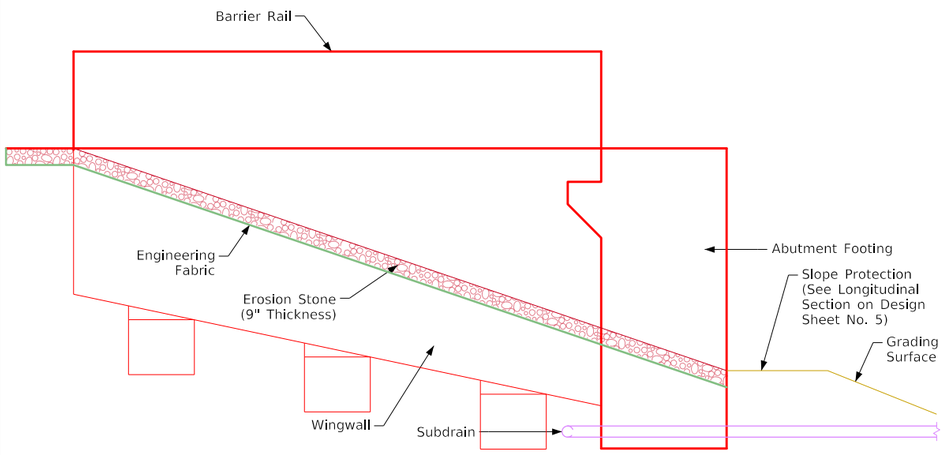
General Notes:

Erosion stone shall be placed along the sides of the wings and abutment footing as shown in Section A-A. This is typical at each corner of the bridge unless otherwise noted in the plans. The erosion stone at these locations shall be underlayed with engineering fabric in accordance with Article 4196.01, B, 3, of the Standard Specifications.

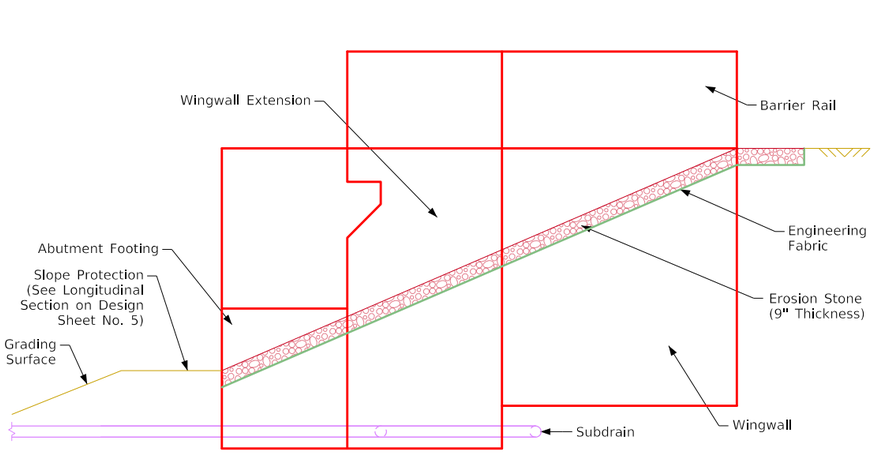
The erosion stone shall be in accordance with Section 4130, of the Standard Specifications. Material passing the 3 inch screen but 100% retained on a 1 inch screen may be used as choke stone.

The erosion stone shall be deposited, spread, consolidated and shaped by mechanical or hand methods that will provide uniform 9 inch depth and density and provide uniform surface appearance.

Payment for the bridge wing armoring will be bid per square yard. Cost will include engineering fabric, erosion stone, excavation, shaping, and compaction to dimensions shown in these plans. Bid item shall be "Bridge Wing Armoring - Erosion Stone".



Profile View of Wing Armoring



Profile View of Wing Armoring with Wing Extension

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned
Prestressed Concrete Beam Bridge

75'-0" Span

Abutment Wing Armoring

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 29 of 32 FHWA No. 43371

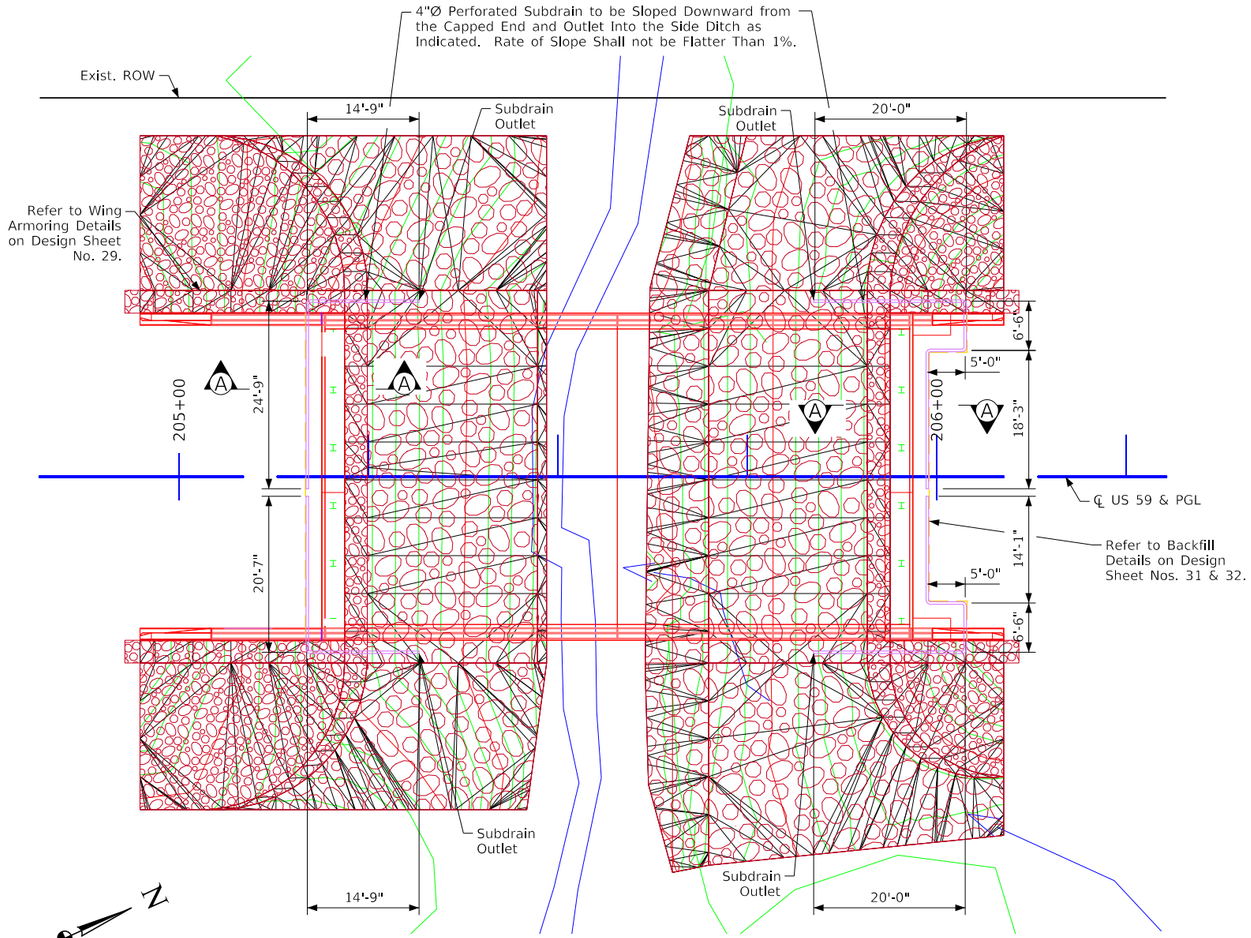
FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Bridge Wing Armoring for Water Crossings	Standard Sheet 1005A	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.29	

9:58:44 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

Revised 06-14 - Added 2 Feet of Length of Erosion Stone in Front of the Bridge Wing.
Revised 09-2023: Changed direction of Section Director Arrows "A-A" to match what section view "Section A-A" is showing.
ForeSlopeProtectionBridges.dgn - 1005A - This Sheet Issued 06-02.
ForeSlopeProtectionBridges.dgn - 1005A - This Sheet Issued 07-23.

Control Point: Feno Set Feno monument 3 in. deep near the intersection of Hwy 59 and Magnolia Rd. in Pottawattamie County. Monument is 90 ft. E. of CL Hwy 59 52 ft. S of CL Magnolia Rd. 36 ft. SW of a Cor post and 57 ft. N. of wood fence post. El. 1104.8. Northing: 7007624.69, Easting: 16597808.11.

Note: Section A-A is shown on Abutment Backfill Details Sheet on Design Sheet Nos. 31 & 32.



Situation Plan

Showing Subdrain Locations

Subdrain Notes:

This plan sheet shows details for placing all subdrains and subdrain outlets required for this structure.

The subdrains shall be 4"Ø and shall be in accordance with Article 4143.01, B, of the Standard Specifications.

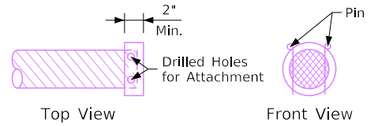
The subdrain outlet shall consist of a length of pipe with a removable rodent guard as detailed on this sheet. The length of the outlet pipe shall be determined by the revetment and it's placement location. The Contractor is to insure the outlet pipe is adequately strong enough and will not be damaged when revetment is placed. A check will be made at the subdrain outlet to insure that the subdrain is not damaged and is draining properly during the backfill flooding process. If a metal outlet pipe is used, it shall be 6"Ø and coupled to the 4"Ø subdrain in one of the two following ways.

-Use an inside fit reducer coupler (coupler must be inserted a minimum of 1'-0" into the metal outlet pipe).

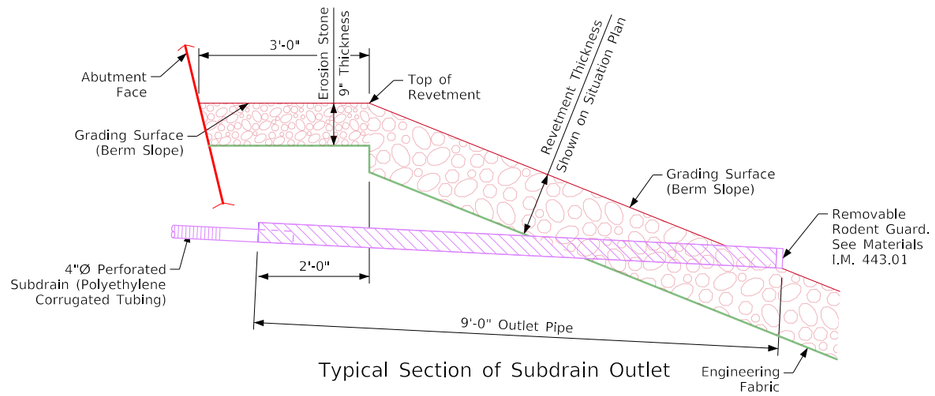
-Insert 1'-0" of the 4"Ø subdrain into the 6"Ø metal outlet pipe, then fully seal the entire opening with grout.

The cost of furnishing and placing subdrain (including excavation), granular backfill, porous backfill, and subdrain outlet is to be included in the price bid for "Structural Concrete (Bridge)". No extra payment will be made.

The dimensions shown for the proposed subdrains are based on the proposed grading layout of bridge berms. The dimensions shown are for estimating only. Required lengths and general locations of subdrains are subject to change due to field adjustments of the grading layout.



Removable Rodent Guard Details



Typical Section of Subdrain Outlet

Revetment Stone (Embedded) Outlet Details

Subdrain Outlet Elevations	
Location	Elevation
South Abutment	1096.98
North Abutment	1102.25

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

Subdrain Details

STA. 205+57.83 (U.S. 59)

Turn-in Date: August 2026

Pottawattamie County

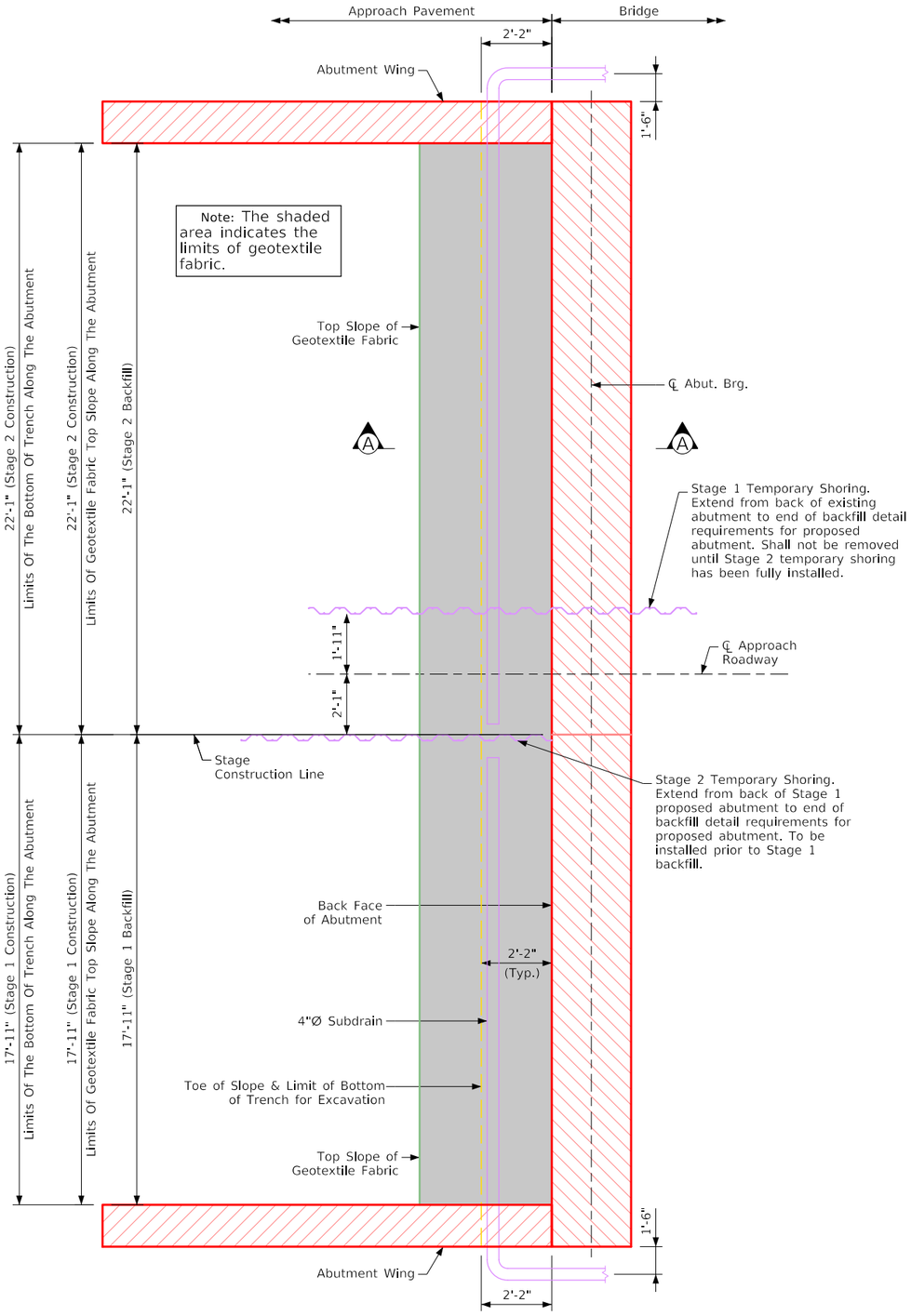
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 30 of 32 FHWA No. 43371

Revised 10-14 - Two Additional Foreslope Protection Details were Added Outside of the Border to Show Revetment up to Back of Abutment Footing.
Revised 06-2024: Changed Control Point text (was Bench Mark).
ForeSlopeProtectionBridges.dgn - 1007C - This Sheet Issued 06-02 for Water Crossings.
ForeSlopeProtectionBridges.dgn - 1007C - This Sheet Redrawn 07-23.

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Subdrain Details for Water Crossings	Standard Sheet 1007C	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.30	

9:58:45 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn



Abutment Plan without Wing Extensions

Abutment Backfill Process:

The base of the excavation subgrade behind the abutment is to be graded with a 4% slope away from the abutment footing and a 2% cross slope in the direction of the subdrain outlet. This excavation shaping is to be done prior to beginning installation of the geotextile and backfill material.

After the subgrade has been shaped, the geotextile fabric shall be installed in accordance with the details shown. The fabric is intended to be installed in the base of the excavation and extended vertically up the abutment backwall, abutment wing walls, and excavation face to a height that will be approximately 1 to 2 ft higher than the height of the porous backfill placement as shown in the "Backfill Details" on this sheet. The strips of the fabric placed shall overlap approximately 1 ft and shall be pinned in place. The fabric shall be attached to the abutment by using lath folded in the fabric and secured to the concrete with shallow concrete nails. The fabric placed against the excavation face shall be pinned.

When the fabric is in place, the subdrain shall be installed directly on the fabric at the toe of the rear excavation slope. A slot will need to be cut in the fabric at the point where the subdrain exits the fabric near the end of the abutment wing wall.

Porous backfill is then placed and leveled, no compaction is required.

The remaining work involves backfilling with floodable backfill, surface flooding, and vibratory compaction. The floodable backfill material shall be in accordance with the Standard Specifications. The floodable backfill shall be placed in individual lifts, surface flooded, and compacted with vibratory compaction to ensure full consolidation. Limit the loose lifts to no more than 2 ft of thickness.

Start surface flooding for each floodable backfill lift at the high point of the subdrain and progress to the low point where the subdrain exits the fabric. To ensure uniform surface flooding, water running full in a 2"Ø hose should be sprayed in successive 6 ft to 8 ft increments for 5 minutes within each increment.

Floodable backfill lift placement, flooding, and compaction shall progress until the required full thickness of the abutment backfill has been completed.

Water required for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric furnished at the bridge abutments will not be measured separately for payment.

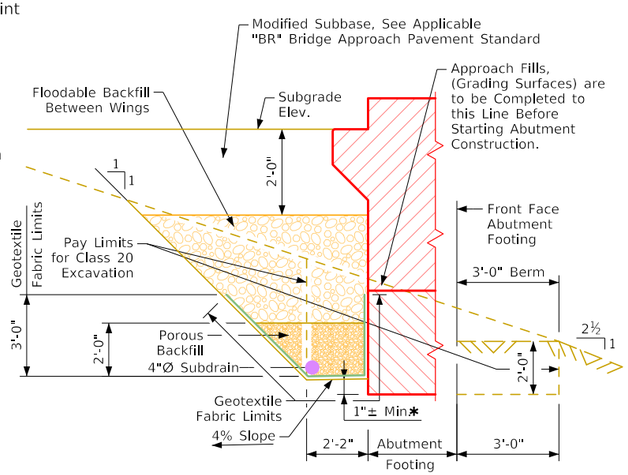
The cost of water required for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric furnished at the bridge abutments shall be included in the contract unit price bid for "Structural Concrete".

Note:

Subdrain shall slope downward 2% from ℄ approach roadway when outletting both sides of the abutment.

Subdrain shall slope downward 2% from high end when outletting at one end of the abutment.

The geotextile fabric shall be in accordance with Article 4196.01, B, 6 of the Standard Specifications. If the engineering fabric is lapped the laps shall be a minimum of 1 ft in length, shingle fashion with up slope lap piece on top and stapled for continuity.



Section A-A

Backfill Details

Note: Geotextile Fabric will be Attached to Face of Abutment Footing and Wings.

✱ Dimension Varies Due to 2% Subdrain Slope.

Note:
For Details not Shown on this Sheet which are Pertinent to this Structure See Subdrain Details Sheet on Design Sheet No. 30.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

South Abutment Backfill Details

STA. 205+57.83 (U.S. 59) Turn-in Date: August 2026

Pottawattamie County

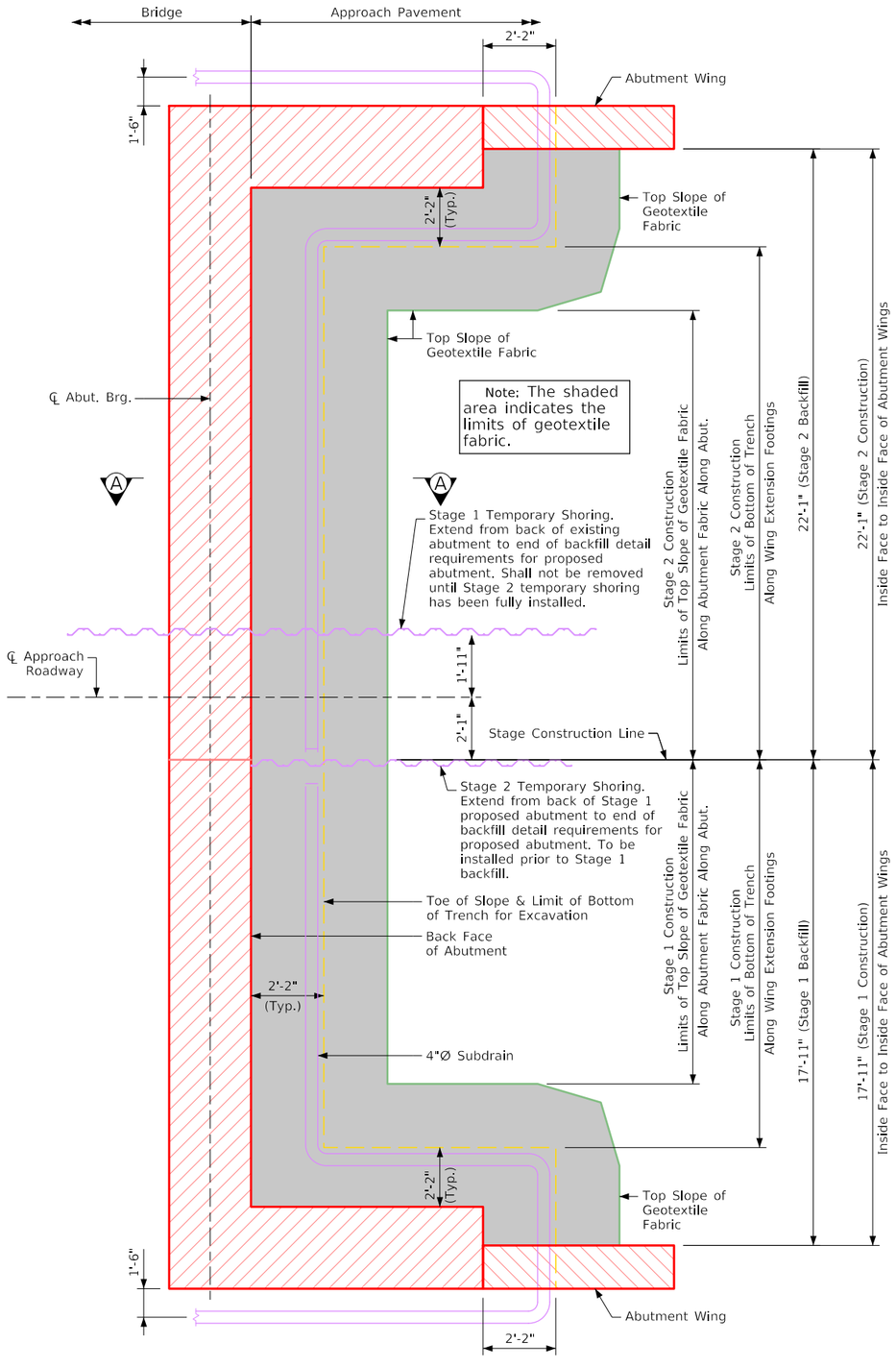
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 31 of 32 FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Granular Backfill Details for Non-Wing Extention Bridges	Standard Sheet 1007D	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.31

Revised 09-14 - The Technical Data Information Table was Removed and is Located in the Standard Specifications, Changed Surface Flooding Time to 5 Minute Increments.
Revised 09-2016 - Changed the Bridge Approach Pavement Standard to "BR" (WAS "RK").
ForeSlopeProtectionBridges.dgn - 1007E - This Sheet Issued 08-07.
ForeSlopeProtectionBridges.dgn - 1007E - This Sheet Redrawn 07-23.

9:58:47 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn



Abutment Plan with Wing Extensions

Abutment Backfill Process:

The base of the excavation subgrade behind the abutment is to be graded with a 4% slope away from the abutment footing and a 2% cross slope in the direction of the subdrain outlet. This excavation shaping is to be done prior to beginning installation of the geotextile and backfill material.

After the subgrade has been shaped, the geotextile fabric shall be installed in accordance with the details shown. The fabric is intended to be installed in the base of the excavation and extended vertically up the abutment backwall, abutment wing walls, and excavation face to a height that will be approximately 1 to 2 ft higher than the height of the porous backfill placement as shown in the "Backfill Details" on this sheet. The strips of the fabric placed shall overlap approximately 1 ft and shall be pinned in place. The fabric shall be attached to the abutment by using lath folded in the fabric and secured to the concrete with shallow concrete nails. The fabric placed against the excavation face shall be pinned.

When the fabric is in place, the subdrain shall be installed directly on the fabric at the toe of the rear excavation slope. A slot will need to be cut in the fabric at the point where the subdrain exits the fabric near the end of the abutment wing wall.

Porous backfill is then placed and leveled, no compaction is required.

The remaining work involves backfilling with floodable backfill, surface flooding, and vibratory compaction. The floodable backfill material shall be in accordance with the Standard Specifications. The floodable backfill shall be placed in individual lifts, surface flooded, and compacted with vibratory compaction to ensure full consolidation. Limit the loose lifts to no more than 2 ft of thickness.

Start surface flooding for each floodable backfill lift at the high point of the subdrain and progress to the low point where the subdrain exits the fabric. To ensure uniform surface flooding, water running full in a 2"Ø hose should be sprayed in successive 6 ft to 8 ft increments for 5 minutes within each increment.

Floodable backfill lift placement, flooding, and compaction shall progress until the required full thickness of the abutment backfill has been completed.

Water required for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric furnished at the bridge abutments will not be measured separately for payment.

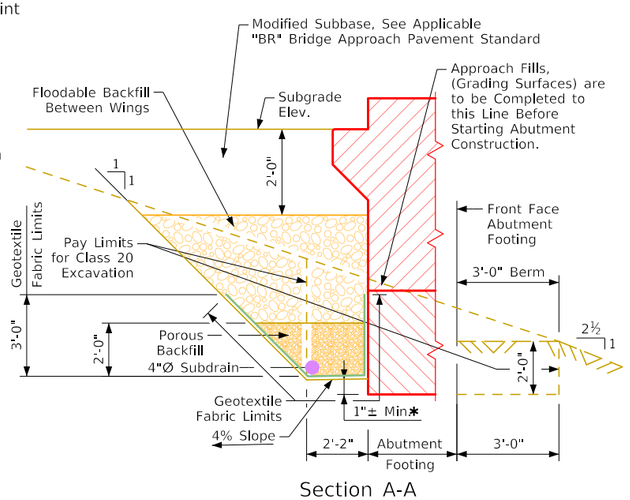
The cost of water required for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric furnished at the bridge abutments shall be included in the contract unit price bid for "Structural Concrete".

Note:

Subdrain shall slope downward 2% from ℄ approach roadway when outletting both sides of the abutment.

Subdrain shall slope downward 2% from high end when outletting at one end of the abutment.

The geotextile fabric shall be in accordance with Article 4196.01, B, 6 of the Standard Specifications. If the engineering fabric is lapped the laps shall be a minimum of 1 ft in length, shingle fashion with up slope lap piece on top and stapled for continuity.



Section A-A

Backfill Details

Note: Geotextile Fabric will be Attached to Face of Abutment Footing and Wings.

✱ Dimension Varies Due to 2% Subdrain Slope.

Note:
For Details not Shown on this Sheet which are Pertinent to this Structure See Subdrain Details Sheet on Design Sheet No. 30.

Design For 0 Degree Skew

75'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-0" Span

North Abutment Backfill Details

STA. 205+57.83 (U.S. 59) Turn-in Date: August 2026

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 1426 Design Sheet No. 32 of 32 FHWA No. 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch	Granular Backfill Details for Wing Extention Bridges	Standard Sheet 1007E	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER V.32	

Revised 09-14 - The Technical Data Information Table was Removed and is Located in the Standard Specifications, Changed Surface Flooding Time to 5 Minute Increments.
Revised 09-2016 - Changed the Bridge Approach Pavement Standard to "BR" (WAS "RK").
ForeSlopeProtectionBridges.dgn - 1007E - This Sheet Issued 08-07.
ForeSlopeProtectionBridges.dgn - 1007E - This Sheet Redrawn 07-23.

9:58:47 AM 8/24/2026 kplaczek c:\pw_work\pwmain\kevin.placzek\d2145377\SHT_78059050_1426_43371_SPN.dgn

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

GEOTECHNICAL DESIGN

LICENSED PROFESSIONAL ENGINEER
MORGAN LINDSEY RACE
26461
IOWA

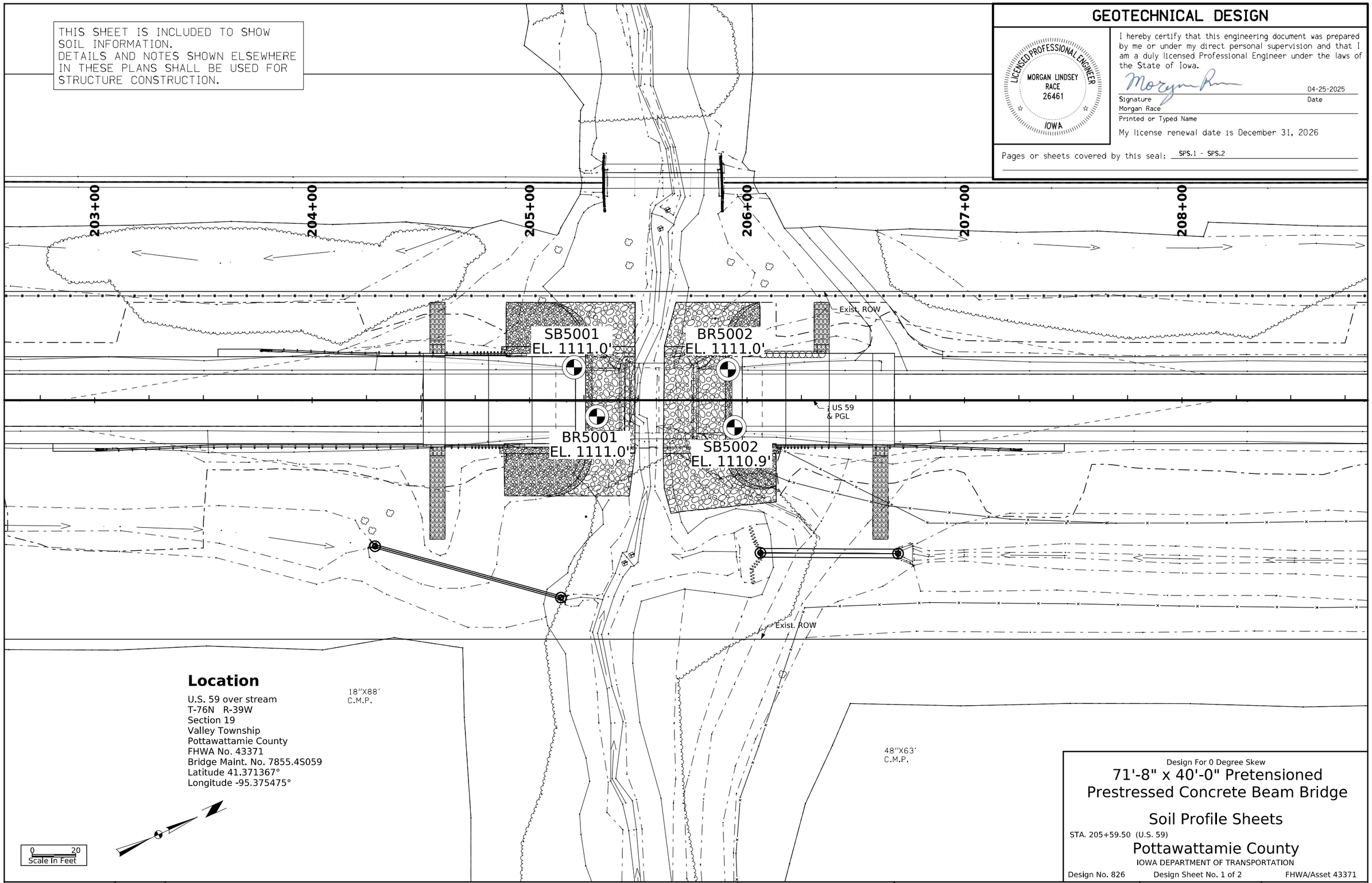
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature 04-25-2025 Date

Morgan Race
Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: SPS.1 - SPS.2



Location

U.S. 59 over stream
T-76N R-39W
Section 19
Valley Township
Pottawattamie County
FHWA No. 43371
Bridge Maint. No. 7855.4S059
Latitude 41.371367°
Longitude -95.375475°

Design For 0 Degree Skew

71'-8" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

Soil Profile Sheets

STA. 205+59.50 (U.S. 59)

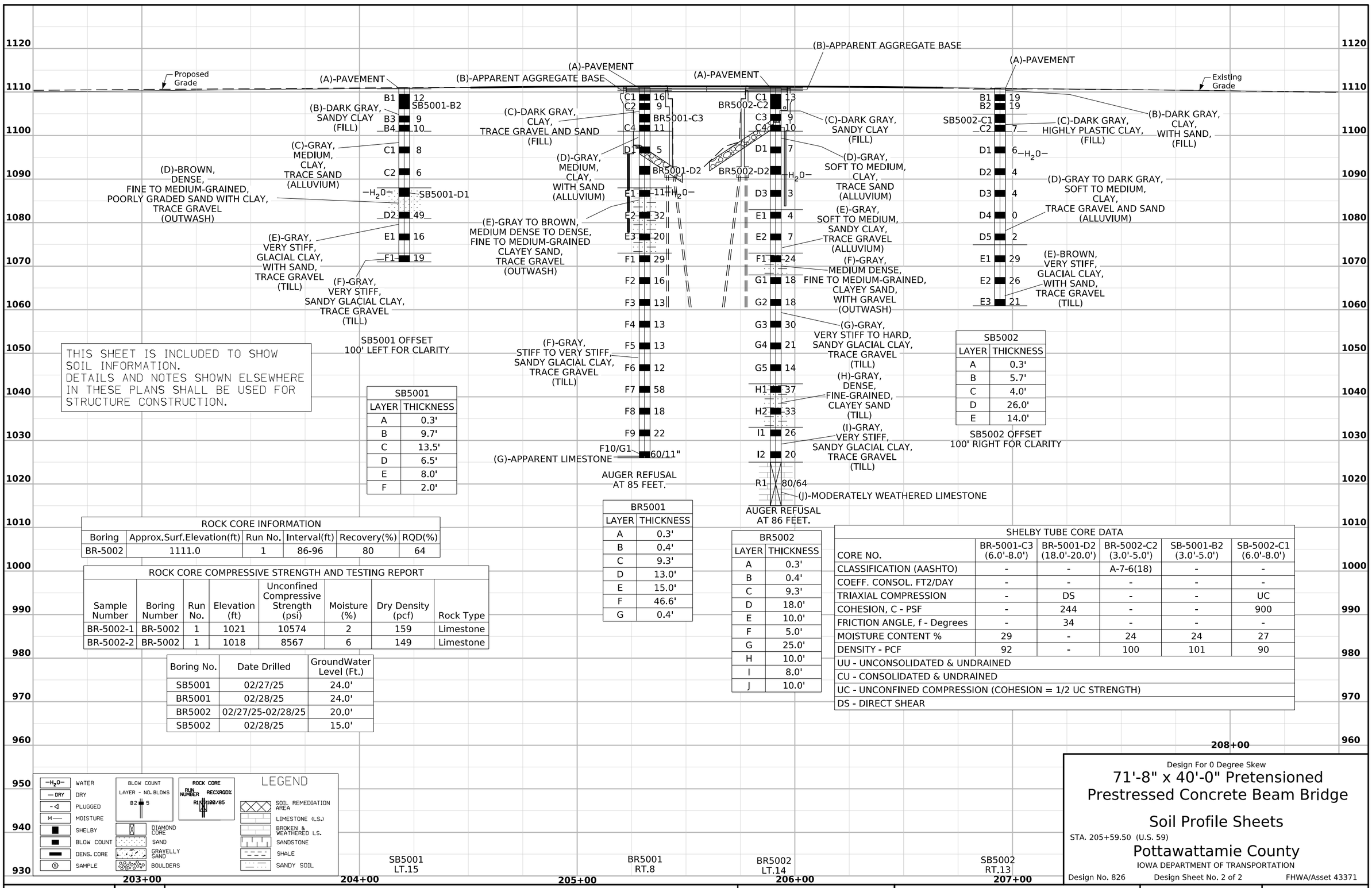
Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 826 | Design Sheet No. 1 of 2 | FHWA/Asset 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch/ Braun Intertec/ Iowa DOT	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(050)--38-78	SHEET NUMBER SPS.1	

2:33:52 PM 4/25/2025 DRivers pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7805902021\Soils\SPS sheets\SPS



SB5001	
LAYER	THICKNESS
A	0.3'
B	9.7'
C	13.5'
D	6.5'
E	8.0'
F	2.0'

BR5001	
LAYER	THICKNESS
A	0.3'
B	0.4'
C	9.3'
D	13.0'
E	15.0'
F	46.6'
G	0.4'

BR5002	
LAYER	THICKNESS
A	0.3'
B	0.4'
C	9.3'
D	18.0'
E	10.0'
F	5.0'
G	25.0'
H	10.0'
I	8.0'
J	10.0'

SB5002	
LAYER	THICKNESS
A	0.3'
B	5.7'
C	4.0'
D	26.0'
E	14.0'

ROCK CORE INFORMATION					
Boring	Approx.Surf.Elevation(ft)	Run No.	Interval(ft)	Recovery(%)	RQD(%)
BR-5002	1111.0	1	86-96	80	64

ROCK CORE COMPRESSIVE STRENGTH AND TESTING REPORT

Sample Number	Boring Number	Run No.	Elevation (ft)	Unconfined Compressive Strength (psi)	Moisture (%)	Dry Density (pcf)	Rock Type
BR-5002-1	BR-5002	1	1021	10574	2	159	Limestone
BR-5002-2	BR-5002	1	1018	8567	6	149	Limestone

Boring No.	Date Drilled	GroundWater Level (Ft.)
SB5001	02/27/25	24.0'
BR5001	02/28/25	24.0'
BR5002	02/27/25-02/28/25	20.0'
SB5002	02/28/25	15.0'

SHELBY TUBE CORE DATA

CORE NO.	BR-5001-C3 (6.0'-8.0')	BR-5001-D2 (18.0'-20.0')	BR-5002-C2 (3.0'-5.0')	SB-5001-B2 (3.0'-5.0')	SB-5002-C1 (6.0'-8.0')
CLASSIFICATION (AASHTO)	-	-	A-7-6(18)	-	-
COEFF. CONSOL. FT2/DAY	-	-	-	-	-
TRIAXIAL COMPRESSION	-	DS	-	-	UC
COHESION, C - PSF	-	244	-	-	900
FRICTION ANGLE, f - Degrees	-	34	-	-	-
MOISTURE CONTENT %	29	-	24	24	27
DENSITY - PCF	92	-	100	101	90

UU - UNCONSOLIDATED & UNDRAINED
CU - CONSOLIDATED & UNDRAINED
UC - UNCONFINED COMPRESSION (COHESION = 1/2 UC STRENGTH)
DS - DIRECT SHEAR

Design For 0 Degree Skew

71'-8" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

Soil Profile Sheets

STA. 205+59.50 (U.S. 59)

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 826 | Design Sheet No. 2 of 2 | FHWA/Asset 43371

FILE NO. 32301	ENGLISH	DESIGN TEAM Benesch/ Braun Intertec/ Iowa DOT	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(050)--38-78	SHEET NUMBER SPS.2

2:33:53 PM 4/25/2025 DRivers pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7805902021\Soils\SPS sheets\SPS

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 3	Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1 - 3	Estimated Project Quantities and Reference Notes
C.4	Standard Road Plans
C.5 - 12	Tabulations
CS Sheets	**Soils Tabulations**
CS.1	Soils Tabulations
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	US 59
G Sheets	**Survey Sheets**
G.1 - 3	Reference Ties and Bench Marks
G.4	Horizontal Control Tab. & Super for all Alignments
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan and Staging Notes
* J.2	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.3 - 13	Staging and Traffic Control Sheets
Q Sheets	**Soils Sheets**
* Q.1	Soils Legend & Symbol Information Sheet
* Q.2 - 3	Soils Sheets "US 59"
R Sheets	**Erosion Control Sheets**
RC.1 - 12	Est. Quantities, PPP, General Notes and Tabulations
* RR.1 - 3	Erosion Control Legend and Symbol Information Sheet
T Sheets	**Earthwork Quantity Sheets**
T.1 - 5	Earthwork Quantity Sheets
U Sheets	**500 Series, Mod.Stds. and Detail Sheets**
* U.1	Grading for Guardrail
* U.2	Clearing and Grubbing
W Sheets	**Mainline Cross Sections**
* W.1 - 9	US 59
	* Color Plan Sheets

ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER
Jason R. Strum
16333
IOWA

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 — Date: 07-15-2026

Jason R. Strum
Printed or Typed Name

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: A.3, B.1-B.3, C.1-C.12, D.1-D.2, G.4, J.1-J.13, T.1-T.5, U.1, W.1-W.9

X

Paved Shoulder at Guardrail

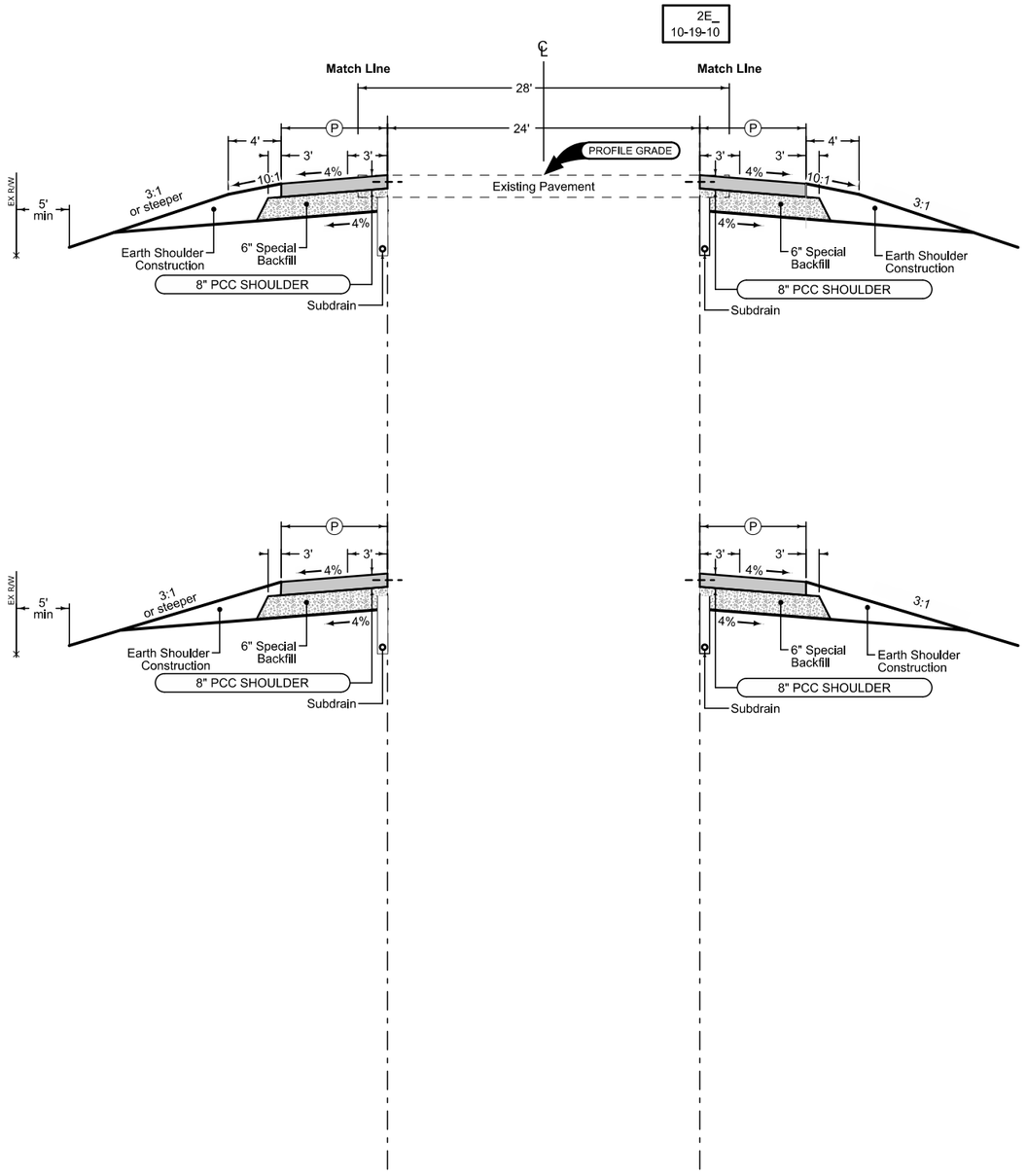
PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing

2_P_Guard_ 04-21-20		
STATION TO STATION		(P) Feet
203+62.28	204+48.83	Vari.

Paved Shoulder

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing

2_P_ Modified		
STATION TO STATION		(P) Feet
201+50.00	203+62.28	8
206+66.83	209+75.00	8



Paved Shoulder at Guardrail

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing

2_P_Guard_ 04-21-20		
STATION TO STATION		(P) Feet
202+87.28	204+48.83	Vari.
206+66.83	207+41.38	Vari.

Paved Shoulder

PCC Shoulder Jointing:
Longitudinal joint: BT-1 or BT-5
Transverse joints: C at mainline spacing

2_P Modified		
STATION TO STATION		(P) Feet
201+50.00	202+87.28	8
207+41.38	209+75.00	8

See Tab 100-24 or 100-25 for pavement quantities.
See Tab 112-9 for shoulder quantities.

US 59

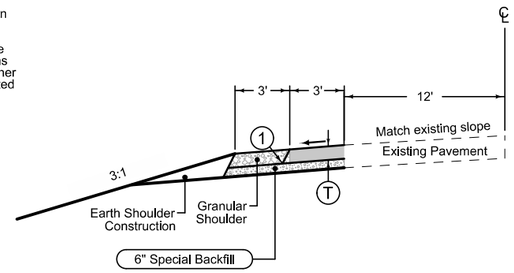
D_Detour
MODIFIED

LOCATION			DIMENSIONS				6" Special Backfill	Earth Shoulder Construction
			HMA		PCC			
ROAD IDENTIFICATION	STATION TO STATION	SIDE	(T) Inches	(SGW) Feet	(T) Inches	(SGW) Feet	Tons/Station	Station
US 59	201+00.00 to 205+15.00	RT	-	-	8	9.0		
US 59	206+10.00 to 210+00.00	RT	-	-	8	9.0		

Quantity calculations based on vertical pavement edges.

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

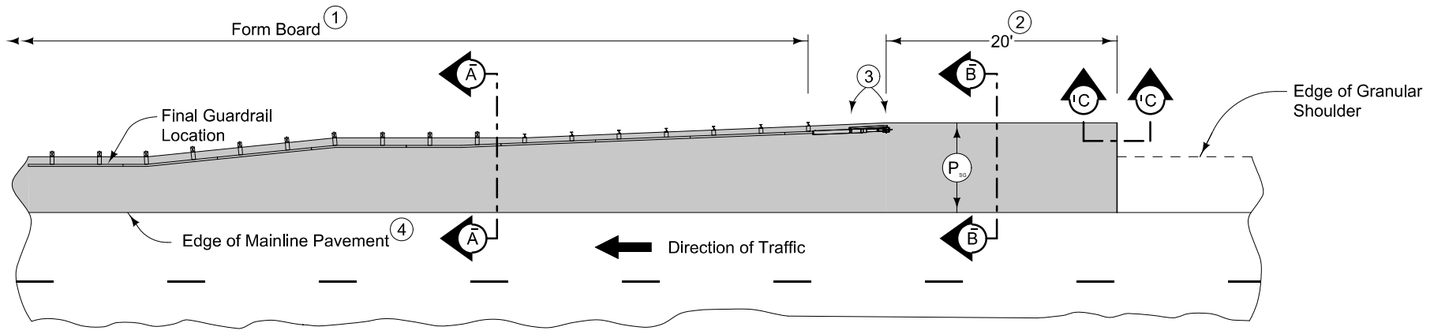
(1) Possible HMA 1:1 slope



FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER B.2	

2:32:44 PM 8/31/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_B01.dgn

7156
MODIFIED



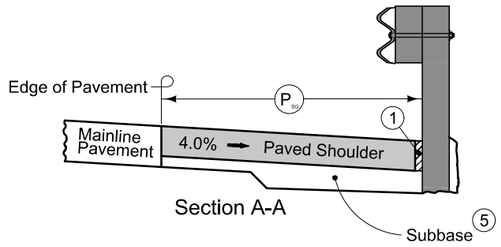
PLAN VIEW

8" PCC Paved Shoulder at guardrail with the following jointing layout:

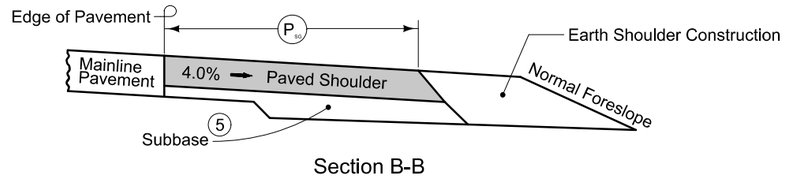
Match mainline pavement joint spacing. When mainline pavement is 8" or greater in thickness, place additional transverse 'C' joints in shoulder at mid-panel of the mainline pavement. Place longitudinal 'C' joint at P/2 from edge of mainline pavement when P is greater than 10' wide. Terminate longitudinal joint at transverse joint less than 10' in length.

Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.



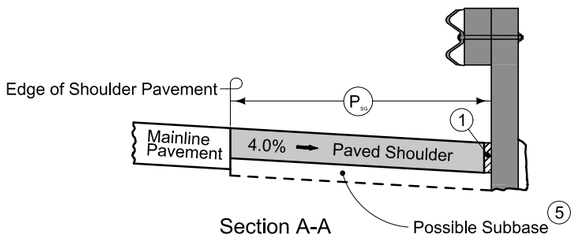
Section A-A



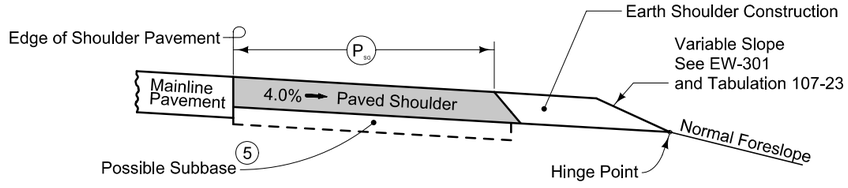
Section B-B

NEW CONSTRUCTION

1. PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
2. Continue paved shoulder 20 feet beyond the center of the first post.
3. Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
4. 'BT' joint (per PV-101) for PCC shoulder.
   'B' joint (per PV-101) for HMA shoulder.
5. Refer to other details in the plan.

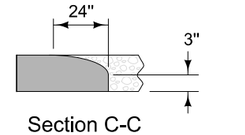


Section A-A



Section B-B

EXISTING SHOULDER



Section C-C
Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadway Items : Roadway Items

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
1	2101-0850001	CLEARING AND GRUBBING	ACRE	0.21	Refer to Sheet U.2.
2	2102-0425071	SPECIAL BACKFILL	CY	364.2	Refer to Tab. 112-9 on Sheet C.6.
3	2102-2710070	EXCAVATION, CLASS 10, ROADWAY AND BORROW	CY	640	Refer to T Sheets.
4	2102-2710090	EXCAVATION, CLASS 10, WASTE	CY	1,544	Refer to T Sheets.
5	2105-8425015	TOPSOIL, STRIP, SALVAGE AND SPREAD	CY	971	Refer to Tab. 103-10 on Sheet CS.1 and the T Sheets.
6	2107-0875100	COMPACTION WITH MOISTURE CONTROL	CY	491	Refer to Tab. 103-6 on Sheet CS.1 and T sheets Cubic yards shown on the contract documents as determined by the template fill volume. Shrinkage will not be included in the moisture control quantity.
7	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	130.4	Refer to Typical D_Detour on Sheet B.2 and Tabulation 112-9 on Sheet C.6.
8	2122-5190008	PAVED SHOULDER, P.C. CONCRETE, 8 IN.	SY	1,430.5	Refer To Tab. 112-9 on Sheet C.6. Includes 385.4 SY of PCC shoulders at guardrail.
9	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	20.2	Refer to Tab. 112-9 on Sheet C.6. Requires 126.6 cu. yds. of Material for Earth Shoulder Fill (105 cu. yds. of topsoil and 21.6 cu. yds. of Class 10).
10	2123-7450020	SHOULDER FINISHING, EARTH	STA	1.42	Material for the earth shoulders is included in the template quantities.
11	2301-0690203	BRIDGE APPROACH, BR-203	SY	658.8	Refer to Tab. 112-6 on Sheet C.5.
12	2315-8275055	SURFACING, DRIVEWAY	TON	11.2	Quantity based on 4" depth.
13	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK AND/OR APPROACHES	SY	983	Refer to Tab. 100-28 on Sheet C.5.
14	2502-8212034	SUBDRAIN, LONGITUDINAL, (SHOULDER) 4 IN. DIA.	LF	1,586.4	Refer to Tab. 104-9 on Sheet CS.1.
15	2502-8221306	SUBDRAIN OUTLET, DR-306	EACH	8	
16	2503-0500401	BRIDGE END DRAIN, DR-401	EACH	4	Refer to Tab.104-8A on sheet C.7.
17	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	494.4	Refer to Tab 110-7A on Sheet C.8.
18	2505-4008300	STEEL BEAM GUARDRAIL	LF	150	Refer to Tab. 107-23 on Sheet C.9.
19	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	3	
20	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	3	

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
21	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	3	
22	2505-6765006	REMOVE AND REINSTALL FORMED STEEL BEAM GUARDRAIL	LF	102.3	Refer to Tab 110-7A on Sheet C.8. The intent of this work is to remove and reinstall only the steel beam guardrail for placement of pavement. Carefully remove and stockpile steel beam guardrail for reinstallation. The Contractor has the option to leave the posts in place, or to remove and reinstall the posts at no additional cost to the Contracting Authority. Replace steel beam rail and posts damaged by the Contractor's operations at no additional cost to the Contracting Authority. Posts, delineators, and object markers are to remain in place. Replace posts, delineators, and object markers damaged by the Contractors operations at no additional cost to the Contracting Authority. Ensure that all posts are firm and plum prior to reinstalling the guardrail. Restore the area disturbed by removal and reinstallation operations to an acceptable condition. Method of Measurement: Measurement will be in linear feet, measured along the front of the rail, of steel beam guardrail (includes W-beam and Thrie-beam guardrail) removed and reinstalled. Basis of Payment: Payment will be at the contract unit price per linear foot of steel beam guardrail removed and reinstalled. Payment includes all labor, equipment, and materials required to remove and reinstall the steel beam guardrail.
23	2510-6745850	REMOVAL OF PAVEMENT	SY	1,090.4	Refer to Tab 110-1 and 102-5 on sheet C.8
24	2519-3280000	FENCE, FIELD	LF	168.7	Refer to Tab. 100-7 on Sheet C.9.
25	2519-3300400	FIELD FENCE BRACE PANELS	EACH	9	
26	2519-3300600	FENCE, SAFETY	LF	805	Refer to D sheet for placement. Method of Measurement: Linear feet constructed measured along the fence at the bottom. Basis of Payment: Per linear foot. Item includes removal at the end of the project
27	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	92.7	Refer to Tab. 108-22 on Sheet C.11-C.12.
28	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	93.21	
29	2527-9263212	PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE	STA	34.71	
30	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	38.44	
31	2527-9270112	GROOVES CUT FOR PAVEMENT MARKINGS	STA	61.91	

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
32	2528-2518000	SAFETY CLOSURE	EACH	4	Refer to Tab. 108-13A on Sheet C.10.
33	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	2,037.5	Refer to Sheet J.6, J.11, and Tab. 108-33 on Sheet C.10.
34	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	2	Refer to Tab. 108-28 on Sheet C.10.
35	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to Traffic Control Plan on sheet J.1.
36	2551-0000110	TEMP CRASH CUSHION	EACH	4	Refer to Tab. 108-30 on Sheet C.10.
37	2551-0000230	PERMANENT CRASH CUSHION, SEVERE USE (SU)	EACH	1	
38	2595-0005135	RAILROAD PROTECTIVE LIABILITY INSURANCE FOR IOWA INTERSTATE RAILROAD LLC	LS	1	

STANDARD ROAD PLANS

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

Number	Date	Title
BA-200	10/20/2026	Steel Beam Guardrail Components
BA-201	10/18/2022	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10/20/2026	Steel Beam Guardrail Bolted End Anchor
BA-203	10/15/2019	Steel Beam Guardrail W-Beam End Anchor
BA-205	10/17/2023	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	10/20/2026	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-3)
BA-401	4/20/2021	Temporary Barrier Rail (Precast Concrete)
BA-500	4/20/2021	Temporary Crash Cushions Sand Barrel
BR-203	10/20/2026	Double Reinforced 12" Approach
BR-213	10/19/2021	Bridge Approach (Abutting Pavement)
DR-303	10/17/2017	Subdrains (Longitudinal)
DR-306	10/17/2023	Precast Concrete Headwall for Subdrain Outlets
DR-401	4/16/2024	Scour Protection for Bridge End Drain
DR-601	4/18/2017	Reinforced Concrete Pipe Culvert
DR-621	4/18/2017	Pipe Extension
EW-301	4/16/2024	Guardrail Grading
PM-110	10/15/2024	Line Types
PM-115	10/20/2026	Grooving for Line Types
PV-101	10/20/2026	Joints
PV-102	10/21/2025	PCC Curb Details
PV-105	10/21/2014	PCC Pavement Widening
PV-121	10/21/2025	Jointing PCC Pavement Widening
SI-211	10/18/2022	Object Marker and Delineator Placement with Guardrail
TC-1	10/15/2019	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-61	10/21/2025	Two-Lane, Two-way Operation
TC-81	4/18/2023	Restricted Width Signing (Less Than 15.5 Feet)
TC-202	4/18/2023	Work Within 15 ft of Traveled Way
TC-217	10/20/2026	Lane Closure with Signals and TBR
TC-233	10/17/2017	Pavement Marking Operations Two-Lane

BRIDGE APPROACH SECTION

Refer to the Series.

* Not a bid item

Location				Approach Pavement					Standard Road Plans BR Series			Subdrain					* Modified Subbase	* Polymer Grid	* Special Backfill	Remarks
Bridge Station	End	Skew Ahead Degrees LEFT	Skew Ahead Degrees RIGHT	(T) Thickness	Pay Length	Non-Reinf. Pavement Area	Single-Reinf. Pavement Area	Double-Reinf. Pavement Area	Approach	Fixed or Movable Abutment	Abutting Pavement	* Perforated Subdrain 4"	* Subdrain Outlet		* Porous Backfill	* Class 'A' Crushed Stone Backfill				
				Inches	FT	SY	SY	SY				LF	STA	Side	CY	CY	TON	SY	TON	
205+57.83	South	--	--	12.0	70.0	143.6	94.4	88.9	BR-203	Movable	BR-213	57.0	204+58.83	RT	1.6	0.0	308.100	347.3		
205+57.83	North	--	--	12.0	70.0	143.6	95.7	92.6	BR-203	Movable	BR-213	57.0	206+56.83	RT	1.6	0.0	318.100	359.0		
				TOTAL:		287.2	190.1	181.5				114.0			3.2		626.200	706.3		

LONGITUDINAL GROOVING

Location	Total SY	Remarks
205+57.83	286.0	approach
205+57.83	411.0	bridge
205+57.83	286.0	approach
	983.0	

PROPOSED POSTED SPEED LIMIT

Road Identification	Begin Station	End Station	Proposed Posted Speed Limit 35 or less	40 - 45	over 45	Remarks
US59	201+50.00	209+75.00			X	

SHOULDERS

(1) Lane(s) to which the shoulder is adjacent.
(2) See Typ. 7156, 7157, or 7158.
(3) Bid Item.
(4) Applies only for Paved Shoulders constructed on project with existing granular shoulders.
(5) Bid Item. Typ. 7156, 7157, or 7158.
(6) Does not include shrink.

Calculations assume a HMA unit weight (lbs/cf) of 145, a Special Backfill unit weight (lbs/cf) of 140, and a Granular Shoulder unit weight (lbs/cf) of 140.

Location					Quantities																					
Road Identification	Direction Of Traffic (1)	Station to Station		Side	P Width	P_{SG} Width	G Width	L Length	Class 13 Excavation (4)	Hot Mix Asphalt		Binder	Paved Shoulder	8" PCC Shoulder at Guardrail	Reinforced Paved Shoulder	Special Backfill				Subbase	Granular Shoulder		Earth Shoulder Construction Alternates			Remarks
																HMA Alternate		PCC Alternate					STA (3)	HMA	PCC	
					FT	FT (2)	FT	FT	CY (3)	TON	TON/STA	TONS	SY (3)	SY (5)	SY (3)	CY (3)	0	CY (3)	TON/STA	CY (3)	TON (3)	TON/STA		CY (6)	CY (6)	
STG 0 8" PCC																										
US59		201+00.00	204+29.14	LT	3.0		3.0	329.1					109.7					42.391	24.342		51.413	15.621	3.3		18.3	
US59		204+29.14	205+15.00	LT	3.0		5 to 3	85.9					28.6					15.228	33.520		18.031	21.000	0.9		4.8	(1)
US59		206+10.00	206+61.75	LT	3.0		3.0	51.8					17.3					6.665	24.342		8.084	15.621	0.5		2.9	
US59		206+61.75	210+00.00	LT	3.0		3.0	338.3					112.8					43.564	24.342		52.836	15.621	3.4		18.8	
STG 1																										
US59		201+50.00	202+87.28	RT	8.0			137.3					122.0					26.948	37.100				1.4		5.4	
US59		202+87.28	203+07.28	RT		11.5		20.0						25.6				5.481	51.800				0.2		3.0	
US59		203+07.28	203+55.04	RT		11.5 to 9.5		47.8						55.7				12.205	48.300				0.5		6.9	
US59		203+55.04	204+48.83	RT		9.5		93.8						99.0				22.232	44.800				0.9		13.2	
US59		206+66.83	206+73.35	RT		9.5		6.5						6.9				1.545	44.800				0.1		0.9	
US59		206+73.35	207+21.38	RT		9.5 to 11.5		48.0						56.0				12.274	48.300				0.5		6.9	
US59		207+21.38	207+41.38	RT		11.5		20.0						25.6				5.481	51.800				0.2		3.0	
US59		207+41.38	209+75.00	RT				233.6					207.7					45.859	37.100				2.3		9.3	
STG 2																										
US59		201+50.00	203+62.28	LT	8.0			212.3					188.7					41.670	37.100				2.1		8.4	
US59		203+62.28	203+82.28	LT		11.5		20.0						25.6				5.481	51.800				0.2		3.0	
US59		203+82.28	204+30.32	LT		11.5 to 9.5		48.0						56.0				12.277	48.300				0.5		6.9	
US59		204+30.32	204+48.83	LT		9.5		18.5						19.5				4.388	44.800				0.2		2.6	
US59		206+66.83	209+75.00	LT	8.0			308.2					273.9					60.493	37.100				3.1		12.2	
(1) Vari width granular shoulders at guardrail																										
								TOTALS:					1060.6	369.9				364.182			130.364		20.2		126.6	

SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN

Refer to Standard Road Plan DR-401 and DR-402

Location			Bid Items	Scour Protection (DR-401)			Rock Flume (DR-402)			Remarks
Bridge Station	Bridge Corner	Distance DI-1 or DI-2	Bridge End Drain	Special Ditch Control, Wood Excelsior Mat	Turf Reinforced Mat (TRM), Type 2	Transition Mat	Macadam Stone Base	Engineering Fabric	Erosion Stone	
				EC-101	EC-104	EC-105				
		FT	TYPE	SQ	SQ	SF	TONS	SY	TONS	
205+57.83	SE	63.5	DR-401	3.2	3.5	33				
205+57.83	SW	63.5	DR-401	1.6	1.9	33				
205+57.83	NE	63.5	DR-401	3.2	3.5	33				
205+57.83	NW	37.5	DR-401	1.6	1.9	33				
			TOTAL:	9.6	10.9	132				

EXISTING PAVEMENT

No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks
	County	Route	Dir. of Travel	Begin Ref. Loc. Sign	End Ref. Loc. Sign				Type	Depth IN	Type	Depth IN	Type	Depth IN	Type	Depth IN	Source	Type	Durability Class	Type	
1	78	59		51.57	58.31	2012	Widen	STP-059-3(30)--2C-78	HMA	1.5	HMA	2	HMA	9							
						2012		STP-059-3(30)--2C-79	HMA	1.5	HMA	2									
						1952		FN-554	PC8	8							SACTON	GRAVEL	3		W. DSM GR.=2

110-1
04-16-13

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area SY	Saw Cut* LF	Remarks
STG 0						
201+00.00	205+15.00	LT	HMA	80.7	417.0	Shoulders
204+29.14	205+00.00	LT		41.9	70.9	Shoulders at guardrail
206+10.00	206+61.75	LT		22.9	51.8	Shoulders at guardrail
206+10.00	208+16.00	LT	HMA	20.5	208.0	Shoulders
STG 1						
204+48.83	205+41.38	RT	PC8/HMA	170.2	106.5	Includes approx. 47 SY reionforced approach pavement
205+77.88	206+66.83	RT	PC8/HMA	162.8	103.0	Includes approx. 54 SY reionforced approach pavement
201+50.00	204+48.83	RT	HMA	77.3	300.8	
203+52.00	205+41.38	RT		136.4	0.0	Shoulders at guardrail
236+90.00	238+00.00	RT		51.8	0.0	Shoulders at guardrail
237+80.00	240+10.00	RT	HMA	79.5	232.0	
STG 2						
201+50.00	205+15.00	LT	PCC	121.7	302.0	Shoulders (STG 0)
204+48.83	205+41.30	LT	PC8/HMA	112.0	10.0	Includes approx. 35 SY reionforced approach pavement
205+77.70	206+66.83	LT	PC8/HMA	112.3	10.0	Includes approx. 39 SY reionforced approach pavement
206+10.00	209+75.00	LT	PCC	121.7	311.2	Shoulders (STG 0)
			TOTAL:	1311.8	2123.1	

110-7A
04-17-12

REMOVAL OF STEEL BEAM GUARDRAIL

(1) Lane(s) to which the installation is adjacent.
(2) Includes length of End Terminals and End Anchors.

Location					Removal of Guardrail (2)
No.	(1) Direction of Traffic	Station to Station		Side	LF
STG0		Remove and reinstall			
1	SB	204+47.96	205+15.00	LT	67.0
2	SB	206+10.00	206+45.30	LT	35.3
		TOTAL Remove and Reinstall			**102.3**
STG 1		Remove			
1	NB	203+98.66	206+70.53	RT	271.9
STG 2					
3	SB	204+47.96	206+70.53	LT	222.6
		TOTAL Remove			494.4

108-8A
10-16-18

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

Possible Standards: BA-200, BA-201, BA-202, BA-205, BA-206, BA-210, BA-211, BA-221, BA-225, BA-250, BA-260, LS-625, LS-626, LS-630, LS-635, SI-172, SI-173 and SI-211.

(1) Lane(s) to which the obstacle is adjacent.
(2) Not a bid item. Incidental to guardrail installation.

Location				Layout Lengths				Long-Span System		Delineators and Object Markers (2)					Bid Items										
				BA-250, BA-260, LS-630, or LS-635															BA-250 or LS-630					BA-260 or LS-635		
No.	Direction of Traffic (1)	Side O = Outside M = Median	Station	Offset	VT1	VF	VT2	ET	BA-211		SI-211	Delineator SI-172	Object Marker SI-173			Bolted End Anchor		Post Adapter	Steel Beam Guardrail	Barrier Transition Section	End Terminal				Barrier Transition Section	End Terminal	Remarks
																					Tangent	Flared	Tangent	Flared		Tangent	
				FT	LF	LF	LF	LF	STATION	TYPE	TYPE	Type 1 White	Type 2 OM2-2	Type 3 OM3-L	Type 3 OM3-R	TYPE	EACH	EACH	LF	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
1	NB		204+94.83	20.9	140.625			47.7			3				1	D	1		100.0	1	1						
2	NB		206+08.83	20.9	65.625			47.7			3			1		D	1		25.0	1	1						
3	SB		204+94.83	20.9	65.625			47.7			3			1		D	1		25.0	1	1						
											TOTAL:						3		150.0	3	3						

107-23
10-18-11

GRADING FOR GUARDRAIL INSTALLATIONS

(1) Lane(s) to which the installation is adjacent. Refer to EW-301

Location				Foreslope at Guardrail	Dimensions (Feet)									Earthwork		Remarks
No.	Direction of Traffic (1)	Station	Side		X1	Y1	X2	Y2	X3	Y3	X4	Y4	Z	Excavation Class 10	Embankment In Place	
														CY	CY	
	NB	204+94.83			139.8	5.5					187.6	7.5	48.1			
	NB	206+08.83			64.8	5.5					112.6	7.5	48.1			
	SB	204+94.83			64.8	5.5					112.6	7.5	48.1			

100-7
10-16-12

FENCING

* Bid Item

Refer to MI-101, MI-102, MI-103, MI-104, 510-3, and 510-5

Location				Side	Chain Link				Deer				Field				Channel Crossing		Remarks
From		To			Fence		Gate				Gate				Gate				
Station	Offset	Station	Offset		Length*	Type	No.*	Type	Fence Length*	Brace Panels*	No.*	Type	Fence Length*	Brace Panels*	No.*	Type	Length*	Type	
					LF		EACH		LF	EACH	EACH		LF	EACH	EACH		LF		
206+08.83	21.5	206+83.48	56.6	RT									82.5	6					
206+83.48	56.6	207+69.68	56.6	RT									86.2	3					
												TOTAL	168.7	9					

108-30
04-16-13

CRASH CUSHIONS

* Bid Item
(1) Lane(s) to which the installation is adjacent.
(2) Complete this section when using the Temporary Crash Cushion bid item and Earthwork is needed for Sand Barrel placement. Refer to BA-500

No.	Direction of Traffic (1)	Location Station	Side	Obstacle Width	Crash Cushion (Select One)*					Sand Barrel Details (2)					Earthwork*		Spare Parts Kit (Select One)*		Obstacle Description	Remarks
					Temporary	Temporary Redirective	Temporary Severe Use	Permanent	Permanent Severe Use	V Length	W Length	X Length	Y Length	Z Length	Excavation Class 10	Embankment in Place	Permanent	Permanent Severe Use		
				FT						FT	FT	FT	FT	FT	CY	CY	EACH	EACH		
		STG 1																		
1		200+49.35		2.00	1														TBR	
2		210+50.65		2.00	1														TBR	
		STG 2																		
3		200+49.35		2.00	1														TBR	
4		210+50.65		2.00	1														TBR	
5		206+08.83		2.00					1										Bridge Rail End Section	
		TOTAL:			4				1											

108-33
10-15-19

TEMPORARY BARRIER RAIL

Possible Standard: BA-401 Possible Detail: 560-7

* Not a bid item. Anchorage requirements are based on TBR locations shown in the plans. TBR alignments that vary from what is shown in the plans may result in additional TBR sections requiring anchorage.

No.	Station to Station		Length	(Select One) Concrete BA-401	(Select One) Steel 560-7	Anchored* (Y/N)	Modular Glare Screen System (Y/N)	Remarks
			LF					
	STG 1							
1	200+49.35	205+00.00	462.5	X		No	No	
2	205+00.00	206+70.00	175.0	X		Yes	No	
3	206+70.00	210+50.65	387.5	X		No	No	
	STG 2							
4	200+49.35	210+50.65	1012.5	X		No	No	
		TOTAL:	2037.5					

108-13A
08-01-08

SAFETY CLOSURES

Refer to Section 2518 of the Standard Specifications

Station	Closure Type Road Qty.	Closure Type Hazard Qty.	Remarks
STG 1			
205+12.00		1	
206+05.00		1	
STG 2			
205+12.00		1	
206+05.00		1	
Total	0	4	

108-28
08-01-08

TEMPORARY TRAFFIC SIGNALS

No.	Location Station	Type: One Lane Traffic	Type: Haul Road	Type: Intersection	Remarks
1	205+57.83	X			STG 1
2	205+57.83	X			STG 2

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

ELW4: Edge Line Right (White) @ 0.67 BCY4: Broken Centerline (Yellow) @ 0.17 ELW6: Edge Line Right (White) @ 1.00 BCY6: Broken Centerline (Yellow) @ 0.25 CHW8: Channelizing Line (White) @ 1.33
NPY6: No Passing Zone Line (Yellow) @ 1.25 DCY6: Double Centerline (Yellow) @ 2.00 CBW6: Crosswalk Bar (White) @ 10.00

Location								Length by Line Type (Unfactored)														Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			ELW4	BCY4*	ELW6	BCY6	CHW8	NPY6	DCY6	CBW6							
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
STG 1																						
US59	198+50.00	212+50.00		PAVEMENT MARKINGS REMOVED	X			14.00														
	183+50.00	212+50.00		PAVEMENT MARKINGS REMOVED		X			29.00													
	198+50.00	204+51.17		PAVEMENT MARKINGS REMOVED			X															
	206+66.83	212+50.00		PAVEMENT MARKINGS REMOVED			X	5.83														
	183+50.00	198+50.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED									15.00									
	198+50.00	200+15.00		WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS			X					1.65										
	200+15.00	201+00.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED			X					0.85										
	201+00.00	204+00.00		WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS			X					3.00										
	204+00.00	207+25.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED			X					3.25										
	207+25.00	210+00.00		WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS			X					2.75										
	210+00.00	212+50.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED			X					2.50										
	198+50.00	201+00.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	X							2.50										
	201+00.00	204+00.00		WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	X							3.00										
	204+00.00	207+25.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	X							3.25										
	207+25.00	210+00.00		WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	X							2.75										
	210+00.00	212+50.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	X							2.50										
	212+50.00	229+75.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED		X								17.25								
	198+50.00			WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS											0.12							
	212+50.00			WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS											0.12							
STG 2																						
	198+50.00	200+15.00		REMOVAL OF REMOVABLE TAPE			X					1.65										
	200+15.00	201+00.00		PAVEMENT MARKINGS REMOVED			X					0.85										
	201+00.00	204+00.00		REMOVAL OF REMOVABLE TAPE			X					3.00										
	204+00.00	204+51.17		PAVEMENT MARKINGS REMOVED			X					0.51										
	206+70.00	207+25.00		PAVEMENT MARKINGS REMOVED			X					0.55										
	207+25.00	210+00.00		REMOVAL OF REMOVABLE TAPE			X					2.75										
	210+00.00	212+50.00		PAVEMENT MARKINGS REMOVED			X					2.50										
	201+00.00	204+00.00		REMOVAL OF REMOVABLE TAPE	X							3.00										
	207+25.00	210+00.00		REMOVAL OF REMOVABLE TAPE	X							2.75										
	198+50.00	201+00.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED			X					2.50										
	201+00.00	204+15.00		WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS			X					3.15										
	204+15.00	207+00.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED			X					2.85										
	207+00.00	210+00.00		WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS			X					3.00										
	210+00.00	212+50.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED			X					2.50										
	201+00.00	204+15.00		WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	X							3.15										
	204+15.00	207+00.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	X							2.85										
	207+00.00	210+00.00		WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	X							3.00										
	210+00.00	210+85.00		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	X							0.85										
	210+85.00	212+50.00		WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	X							1.65										
STG 3 Final																						
	183+50.00	198+50.00		PAVEMENT MARKINGS REMOVED		X							15.00									
	198+50.00	201+00.00		PAVEMENT MARKINGS REMOVED			X					2.50										
	201+00.00	204+15.00		REMOVAL OF REMOVABLE TAPE			X					3.15										
	204+15.00	207+00.00		PAVEMENT MARKINGS REMOVED			X					2.85										
	207+00.00	210+00.00		REMOVAL OF REMOVABLE TAPE			X					3.00										
	210+00.00	212+50.00		PAVEMENT MARKINGS REMOVED			X					2.50										
	201+00.00	204+15.00		REMOVAL OF REMOVABLE TAPE	X							3.15										
	204+15.00	207+00.00		PAVEMENT MARKINGS REMOVED	X							2.85										
	207+00.00	210+00.00		REMOVAL OF REMOVABLE TAPE	X							3.00										
	210+00.00	210+85.00		PAVEMENT MARKINGS REMOVED	X							0.85										
	210+85.00	212+50.00		REMOVAL OF REMOVABLE TAPE	X							1.65										
	212+50.00	229+75.00		PAVEMENT MARKINGS REMOVED		X								17.25								
	198+50.00			REMOVAL OF REMOVABLE TAPE											0.12							
	212+50.00			REMOVAL OF REMOVABLE TAPE											0.12							
	198+50.00	204+51.17		PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE			X			6.01												
	204+51.17	206+66.83		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED			X			2.16												
	206+66.83	212+50.00		PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE			X			5.83												
	198+50.00	204+51.17		PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE	X					6.01												
	204+51.17	206+66.83		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	X					2.16												
	206+66.83	212+50.00		PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE	X					5.83												
	183+50.00	204+51.17		PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE		X					21.01											
	204+51.17	206+66.83		PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED		X					2.16											
	206+66.83	229+75.00		PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE		X					23.08											

PAVEMENT MARKING LINE TYPES

See PM-110

*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - For estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY4 - Factor of 1.00 as value includes number of 4-inch passes to cover median nose area.

ELW4: Edge Line Right (White) @ 0.67 | BCY4: Broken Centerline (Yellow) @ 0.17 | ELW6: Edge Line Right (White) @ 1.00 | BCY6: Broken Centerline (Yellow) @ 0.25 | CHW8: Channelizing Line (White) @ 1.33
NPY6: No Passing Zone Line (Yellow) @ 1.25 | DCY6: Double Centerline (Yellow) @ 2.00 | CBW6: Crosswalk Bar (White) @ 10.00

Location								Length by Line Type (Unfactored)														Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			ELW4	BCY4*	ELW6	BCY6	CHW8	NPY6	DCY6	CBW6							
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
	198+50.00	205+17.00		GROOVES CUT FOR PAVEMENT MARKINGS			X			6.67												
	205+99.00	212+50.00		GROOVES CUT FOR PAVEMENT MARKINGS			X			6.51												
	183+50.00	205+17.00		GROOVES CUT FOR PAVEMENT MARKINGS	X					21.67												
	205+99.00	229+75.00		GROOVES CUT FOR PAVEMENT MARKINGS	X					23.76												
	198+50.00	205+17.00		GROOVES CUT FOR PAVEMENT MARKINGS		X					6.67											
	205+99.00	212+50.00		GROOVES CUT FOR PAVEMENT MARKINGS		X					6.51											
				Factored Total: PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED				-	-	4.31	0.54	35.11	18.75	34.50	-	-	-	-	-	-	-	
				Factored Total: PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE				-	-	23.69	11.02	-	-	-	-	-	-	-	-	-	-	
				Factored Total: WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS				-	-	-	-	36.04	-	-	2.40	-	-	-	-	-	-	
				Factored Total: PAVEMENT MARKINGS REMOVED				13.29	4.93	-	-	21.23	18.75	34.50	-	-	-	-	-	-	-	
				Factored Total: GROOVES CUT FOR PAVEMENT MARKINGS				-	-	58.61	3.30	-	-	-	-	-	-	-	-	-	-	
				Factored Total: REMOVAL OF REMOVABLE TAPE				-	-	-	-	36.04	-	-	2.40	-	-	-	-	-	-	
				Bid Quantity: 2527-9263209 - PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED							93.21											
				Bid Quantity: 2527-9263212 - PAINTED PAVEMENT MARKINGS, HIGH-BUILD WATERBORNE							34.71											
				Bid Quantity: 2527-9263231 - WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS							38.44											
				Bid Quantity: 2527-9263181 - PAVEMENT MARKINGS REMOVED							92.70											
				Bid Quantity: 2527-9270112 - GROOVES CUT FOR PAVEMENT MARKINGS							61.91											
				NOT A BID ITEM: REMOVAL OF REMOVABLE TAPE							38.44											

103-6
10-17-17

EMBANKMENT WITH MOISTURE CONTROL

Moisture Control is required for all Class 10 fill placed in all locations and depths. Stability berms placed outside the normal foreslope template and topsoil will not require Moisture Control.

103-7
08-01-08

SHRINKAGE DATA

Material	%	Remarks
Topsoil	40%	Shrinkage
Unsuitable Type B	35%	Shrinkage
Unsuitable Type C	35%	Shrinkage
Class 10	30%	Shrinkage
Select Loam (Clay)	20%	Shrinkage
Select Sand	15%	Shrinkage

103-10
04-18-17

TOPSOIL STRIPPING AND PLACEMENT

Location				Topsoil Stripping Thickness	Topsoil Placement Thickness	Remarks
Road Identification	Dir. of Traffic	Begin Station	End Station	IN	IN	
US 59 ML	SB	201+50.00	209+75.00	12.0	8.0	
US 59 ML	NB	201+50.00	209+75.00	12.0	8.0	

104-9
10-17-17

LONGITUDINAL SUBDRAIN SHOULDER AND BACKSLOPE

Refer to Soils Sheets

* Not a bid item. Bridge berm quantities assume a trench depth of 24 inches.

Location						Longitudinal Subdrain (DR-303)							Subdrain Outlet		Porous* Backfill	Remarks
Line No.	Road or Lane Identification	Station to Station		Side	Depth D	Shoulder		Backslope		Bridge Berm (EW-203 or EW-204)			DR-303, DR-305 or DR-306			
						Size	Length	Size	Length	Standard Road Plan and Type	Size	Length	Station	Standard Road Plan and Type		
					IN	IN	FT	IN	FT		IN	FT			CY	
1	US 59 ML	201+50.00	204+89.26	LT	48.0	4.0	399.3						201+50.00	DR-306	43.1	
													204+89.26	DR-306		Follow Edge of Paved Shoulder
2	US 59 ML	206+67.83	209+75.00	LT	48.0	4.0	367.2						206+67.83	DR-306	39.7	Follow Edge of Paved Shoulder
													209+75.00	DR-306		
3	US 59 ML	201+50.00	204+88.36	RT	48.0	4.0	398.4						201+50.00	DR-306	43.0	
													204+88.36	DR-306		Follow Edge of Paved Shoulder
4	US 59 ML	206+13.40	209+75.00	RT	48.0	4.0	421.6						206+13.40	DR-306	45.5	Follow Edge of Paved Shoulder
													209+75.00	DR-306		
	Totals						1586.4							DR-306 = 8	171.3	

NOTE: ALL LONGITUDINAL SUBDRAINS ARE TYPE 7 WITH PCC OR TYPE 8 WITH HMA (ACC) UNLESS OTHERWISE NOTED IN REMARKS COLUMN.
NOTE: ALL LONGITUDINAL SUBDRAINS MAY BE ADJUSTED BOTH VERTICALLY AND HORIZONTALLY IN THE FIELD AS NECESSARY

LICENSED PROFESSIONAL ENGINEER
XINYI JIANG
P29458
IOWA

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 — May 15, 2025 Date

Xinyi Jiang
Printed or Typed Name

My license renewal date is December 31, 20 25

Pages or sheets covered by this seal: CS.1, Q.1-Q.3

SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Existing Utility Access (Manhole)
- Fire Hydrant
- WH Water Hydrant (Rural)
- Septic Tank
- C Cistern
- LP L.P. Gas Tank (No Footing)
- UST Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

UTILITY LEGEND

No utilities surveyed

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING	**Design Color No.**	
Lavender	(9)	Temporary Pavement Shading
Yellow	(4)	Proposed Pavement Shading
Orange	(6)	Proposed Granular Shading
Orange	(70)	Proposed Shoulder Granular Shading
Yellow	(68)	Proposed Shoulder Paved Full Depth Shading
Yellow	(132)	Proposed Shoulder Paved Partial Depth Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Orange, Light	(134)	Proposed Granular Entrance Shading
Yellow	(220)	Proposed Paved Entrance Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading
Green, Light	(225)	Existing Pavement Shading
Red	(3)	Proposed Structure Shading
Red	(3)	Delineates Restricted Areas

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(10)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right

- Reference Point
- Station
- Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D, E, F, & K)

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER D.1

2:20:33 PM 7/9/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_D01.dgn

Valley TWP.
T-76N R-39W
SEC. 19

Sta. 205+59.5
32'x30' I Beam Bridge
D.A.=1004Ac R-F (As-Built)
Remove

STA 205+57.83
Proposed
75' 0"x 40' 0" Pretensioned Prestressed
Concrete Beam Bridge

200+00
205+00
210+00
59
59

Begin Safety Fence
STA: 201+50.00
OFF: 48.00' LT

+ 78 Prop. Type "D" ent.

End Safety Fence
STA: 209+75.00
OFF: 48.00' LT

Field Fence
STA: 206+08.83
OFF: 21.46' RT

Field Fence
STA: 207+69.68
OFF: 56.57' RT

STA 201+50.00 (ML059)
BEGIN CONSTRUCTION

STA 204+48.83 (ML059)
BEGIN APPROACH

STA 206+66.83 (ML059)
END APPROACH

STA 209+75.00 (ML059)
END CONSTRUCTION

0 FEET 50

18"X88'
C.M.P.
U.A.C.

48"X63'
C.M.P.
U.A.C.

RR ROW
9.5%
+ 78 Prop. Type "D" ent.

TIE IN
STA 204+48.83
EL 1111.01

VPI = +60.00
EL = 1111.57
L = 210.00'
K = 201

TIE IN
STA 206+66.83
EL 1110.99

+0.50%
-0.55%

-0.33% RT Ditch Grade

RT +60
1099.66

RT +50
1099.36

1111.02 1111.13 1111.22 1111.27 1111.29 1111.29 1111.25 1111.18 1111.07 1110.98

1125 1120 1115 1110 1105 1100 1095 1090 1085 1080

198+00 199+00 200+00 201+00 202+00 203+00 204+00 205+00 206+00 207+00 208+00 209+00 210+00 211+00 212+00

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER D.2

2:59:35 PM 7/9/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_D02.dgn

SURVEY INDEX

County: Pottawattamie
PIN: 21-78-059-020
Project Number: BRF-059-3(50)—38-78
Location: Stream 1.5mi S of Co Rd G30
Type of Work: Bridge Unspecified
Project Directory: 7805902021

Survey Personnel

Paul Harry – Survey Party Chief
Daniel Duncan – Assistant Survey Party Chief

Date(s) of Survey

Begin Date	01/31/2023
End Date	04/30/2023

General Information

This survey is for US Hwy 59 bridge over drainage ditch 1.5mi south of county road G30 in Pottawattamie County. This project is a Full Field DTM survey.

Utility Information

For logging data and other utility details see Utility Survey and Ownership Report in the Utility folder of the PrelimSurvey project directory.

Project Control

Nearby Iowa Real Time Network reference stations were utilized to obtain horizontal and vertical control on primary project control points. Three five-minute observations were taken with a minimum two-hour time span between and used in a weighted average to obtain final coordinate values. For additional details of the control survey, contact the Preliminary Survey department.

PROJECT DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 ADJUSTMENT)
COORDINATE SYSTEM: IOWA REGIONAL COORDINATE SYSTEM ZONE 06 (U.S. SURVEY FOOT)
VERTICAL DATUM: NAVD88
GEOID MODEL: 2018u2

Alignment Information

District 4 ROW office provided the horizontal alignment for U.S. Hwy 59.

CONTROL POINT VICINITY MAP

This map is a guide to the vicinity of the primary project control points. Primary control is for use with RTK base stations and for RTN validation. Future surveys will use primary project control to establish temporary control as needed for construction or other surveying applications.



HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment) - Iowa RCS Zone 06 (U.S. Survey Foot)

VERT. DATUM: NAVD88 - Geoid Model: 2018u2

Coordinate listing from next sheet will be used with IaRTN for monument recovery. No other reference ties are given.

HORIZONTAL AND VERTICAL PROJECT CONTROL COORDINATE LISTING
HORIZ. DATUM: NAD83(2011) for EPOCH 2010.00 (IaRTN 2019 Adjustment)
Ia. Regional Coordinate System Zone 06 (U.S. Survey Foot)
VERT. DATUM: NAVD88
Geoid Model: 2018u2

78059551	7007624.69	16597808.11	1104.8	FENO SET FENO MONUMENT 3IN DEEP NEAR THE INTERSECTION OF HWY 59 AND MAGNOLIA RD IN POTTAWATTAMIE COUNTY MONUMENT IS 90FT E OF CL HWY 59 52FT S OF CL MAGNOLIA RD 36FT SW OF A COR POST AND 57FT N OF WOOD FENCE POST
78430001	7010352.17	16600740.35	1113.85	FENO SET FENO MONUMENT 3IN DEEP 0.5MILES N OF THE INTERSECTION OF MAGNOILA RD AND 430TH ST IN POTTAWATTAMIE COUNTY MONUMENT IS 34FT W OF CL 430TH ST 47FT N OF BRACE POST AND 38FT N OF CL FIELD ENTRANCE
J147	7012760.78	16600173.46	1108.54	CP FD NGS MONUMENT 2IN ABOVE GROUND 0.2MILES N ALONG HWY 59 FROM THE INTERSECTION OF HWY 59 AND 430TH ST IN POTTAWATTAMIE COUNTY MONUMENT IS 109FT E OF CL HWY 59 19FT SE OF CL ROCK DRIVE 2.3FT SW OF A WOOD POST AND 2FT N OF A WOOD POST
T149	7015616.6	16602462.64	1123.89	CP FD NGS MONUMENT 1IN DEEP NEAR THE INTERSECTION OF HWY 59 AND JOSEPH ST IN THE TOWN OF HANCOCK MONUMENT IS 33FT N OF CL HWY 59 24FT E OF CL JOSEPH ST AND 21FT NW OF TELE PED
HANCOCK	7013949.54	16606015.36	1251.25	CP FD NGS MONUMENT 3IN DEEP 0.3MILES S ALONG 440TH ST FROM THE INTERSECTION OF 440TH ST AND HWY 59 IN POTTAWATTAMIE COUNTY MONUMENT IS 29FT W OF CL 440TH ST 19FT N OF CL FIELD ENT AND 9.5FT S OF WOOD FENCE POST

ALIGNMENT COORDINATES

Name	Location	Point on Tangent			Begin Spiral			Begin Curve			Simple Curve PI or Master PI of SCS			End Curve			End Spiral		
		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates		Station	Coordinates	
			Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)		Y (Northing)	X (Easting)
1	ML059	163+46.400	7004969.52	16596495.69															
1	ML059	250+02.785	7012843.86	16600091.21															
1	ENTL206	0+00.000	7008909.79	16598294.86															
2	ENTL206							0+21.360	7008911.48	16598273.57	0+35.834	7008912.62	16598259.14	0+49.957	7008908.32	16598245.32			

3

SPIRAL OR CIRCULAR CURVE DATA

Name	Chain	ΔSCS	Horizontal Alignment Data													Remarks
			Spiral Data								Curve Data					
			θS	Ls	Ts	Es	Xc	Yc	L.T.	S.T.	ΔC	T	L	R	E	
C1	ENTL206										21°50'45.398"	14.474	28.596	75	1.384	

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
US59		Pattawattamie	Stream 1.5 mi S of Co Rd G30		Barrier	N/A	Horizontal	15'	13.62'	12.62'	15'	

108-23A
08-01-08

TRAFFIC CONTROL PLAN

US 59
Maintain at least one lane of traffic on US 59 at all times

111-01
04-17-12

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
BRF-059-3(52)--38-78	Bridge Replacement

108-26A
08-01-08

STAGING NOTES

Stage 0 Traffic
US 59 on existing lanes

Stage 0 Construction
Construct SB shoulder, remove and reinstall SB guardrail

Stage 1 Traffic
US 59 - Close NBL, shift traffic into single lane operation using temporary signals, per J sheets and TC-217

Stage 1 Construction
Construct NB portion of bridge and approaches. Install NB guardrail.

Stage 2 Traffic
US 59 - Close SBL, shift traffic into single lane operation using temporary signals, per J sheets and TC-217

Stage 2 Construction
Construct SB portion of bridge and approaches. Install SB guardrail.

Stage 3 Traffic
US 59 - Return to normal 2-lane operation

Stage 3 Construction
Complete

CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		Permanent Barrier Rail
			Channelizing Device

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Proposed Granular Surface Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Pink, Dark	(13)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

●	Channelizing Device		Crash Cushion (Temp or Perm)
✕	Drum		Traffic Signal
◘	Temporary Lane Separator		Flagger
◆	Tubular Marker		Temporary Floodlighting
♦	Channelizer Marker		Traffic Sign
△	Concrete Barrier Marker		Type III Barricade
⊰	Delineator		Type A Warning Light
	Temporary Barrier Rail		Direction of Traffic
	Pavement Removal		Safety Closure
	Sand Barrel Layout	1	Lane Identification

NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES J)

Valley TWP.
T-76N R-39W
SEC. 19

200+00

205+00

210+00

STA: 201+00.00
OFF: 12.00' LT

STA: 204+29.14
OFF: 13.94' LT

STA: 205+15.00
OFF: 12.00' LT

STA: 206+10.00
OFF: 12.00' LT

STA: 206+61.75
OFF: 13.62' LT

STA: 210+00.00
OFF: 12.00' LT

0 50
FEET

STG 0

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.3	

4:09:31 PM 7/9/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J03.dgn

170+00

175+00

END
ROAD WORK
G20-2A
48" x 24"

180+00

NO
PASSING
ZONE
W14-3
48" X 60" X 60"

59

STA: 183+50.00
OFF: 0.00' RT

500'

DO
NOT
PASS
R4-1
36" x 48"

ROAD
WORK
AHEAD
W20-1
48" x 48"

35
M.P.H.
W13-1
24" x 24"

0 50
FEET

STG 1

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.4

2:48:08 PM 8/20/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J04.dgn

185+00

190+00

195+00

ONE LANE ROAD AHEAD

W20-4
48" x 48"

W3-3
48" x 48"

59

500'

450'

550'

STA: 198+50.00
OFF: 12.00' RT

STOP HERE ON RED

R10-6
24" x 36"

ONE LANE ROAD AHEAD

W20-4
48" x 48"

W3-3
48" x 48"

Magnolia Rd

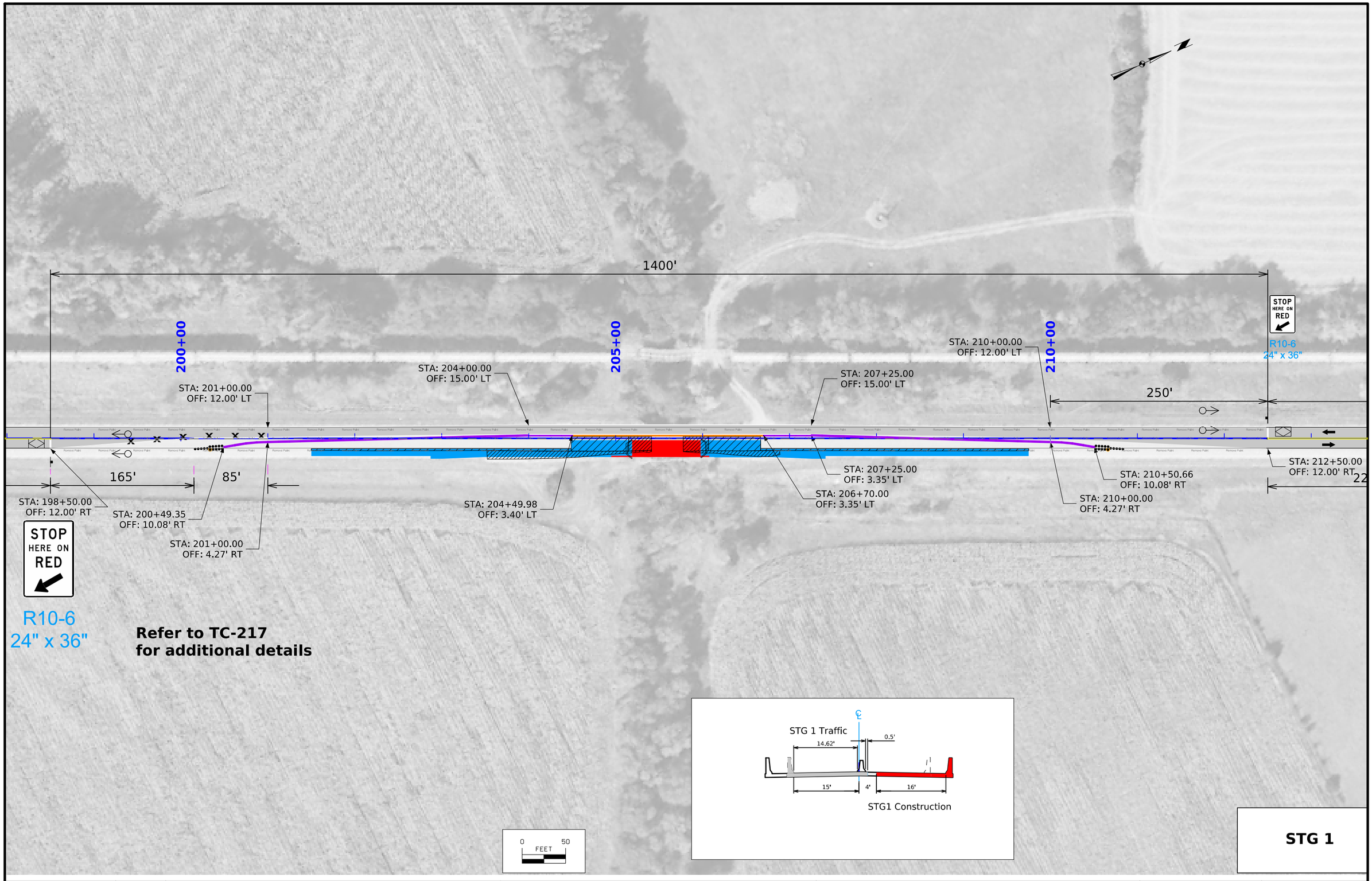
425th St

0 50
FEET

STG 1

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.5	

2:48:22 PM 8/20/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J04.dgn



FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.6

2:48:29 PM 8/20/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J04.dgn



FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.7	

2:48:36 PM 8/20/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J04.dgn



FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.8	

2:48:43 PM 8/20/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J04.dgn

170+00

175+00

END ROAD WORK
G20-2A
48" x 24"

180+00

NO PASSING ZONE
W14-3
48" X 60" X 60"

500'

35 M.P.H.
W13-1
24" x 24"

ROAD WORK AHEAD
W20-1
48" x 48"

DO NOT PASS
R4-1
36" x 48"

0 50
FEET

STG 2

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.9	

2:48:55 PM 8/20/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J05.dgn

185+00

190+00

195+00

ONE LANE ROAD AHEAD

W20-4
48" x 48"

W3-3
48" x 48"

500'

450'

550'

STA: 198+50.00
OFF: 12.00' RT

STOP HERE ON RED

R10-6
24" x 36"

ONE LANE ROAD AHEAD

W20-4
48" x 48"

W3-3
48" x 48"

Magnolia Rd

425th St

0 FEET 50

STG 2

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.10

2:48:57 PM 8/20/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J05.dgn

1400'

200+00

205+00

210+00

STA: 200+49.35
OFF: 9.61' LT

STA: 201+00.00
OFF: 3.80' LT

STA: 201+00.00
OFF: 0.00' RT

STA: 204+15.00
OFF: 6.69' RT

STA: 204+15.00
OFF: 8.12' RT

STA: 207+00.00
OFF: 6.69' RT

STA: 207+00.00
OFF: 8.13' RT

STA: 210+00.00
OFF: 3.31' LT

STA: 210+50.65
OFF: 9.12' LT

STA: 212+50.00
OFF: 12.00' LT

1:30

1:30

85'

165'

250'

STA: 201+00.00
OFF: 12.00' RT

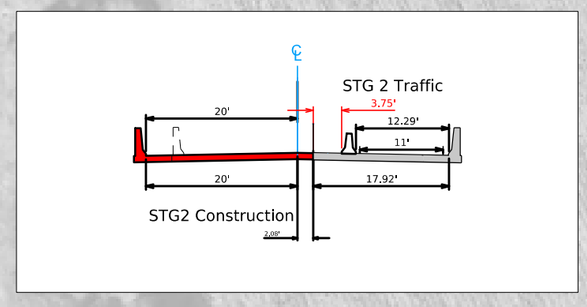
STA: 204+15.00
OFF: 19.13' RT

STA: 207+00.00
OFF: 19.13' RT

STOP HERE ON RED
R10-6
24" x 36"

STOP HERE ON RED
R10-6
24" x 36"

Refer to TC-217



0 50
FEET

STG 2

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.11

2:48:57 PM 8/20/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J05.dgn



FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.12	

2:48:58 PM 8/20/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J05.dgn



FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER J.13	

2:48:58 PM 8/20/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_J05.dgn

SURVEY SYMBOLS

- Interstate Highway Symbol
- U.S. Highway Symbol
- Iowa Highway Symbol
- County Road Highway Symbol
- Evergreen Tree
- Deciduous Tree
- Fruit Tree
- Shrub (Bushes)
- Timber
- Hedge
- Stump
- Swamp
- Rock Outcrop
- Broken Concrete
- Revetment (Rip Rap)
- Cemetery
- Grave
- Cave
- Sink Hole
- Board Fence
- Chain Link or Security Fence
- Wire Fence
- Terrace
- Earth Dam or Dike (Existing)
- Tile Outlet
- Edge of Water
- Existing Drainage
- Right of Way Rail or Lot Corner
- Concrete Monument
- Well
- Windmill
- Beehive Intake
- Existing Intake
- Existing Utility Access (Manhole)
- Fire Hydrant
- WH Water Hydrant (Rural)
- Septic Tank
- Cistern
- L.P. Gas Tank (No Footing)
- Underground Storage Tank
- Latrine
- Satellite TV Dish
- WHU Water Hook Up
- RT Radio Tower
- TA Tower Anchor
- Guardrail (Beam or Cable)
- GP Guard Post (one or two)
- Guard Post (over two)
- FP Filler Pipe
- GV Gas Valve
- WV Water Valve
- SL Speed Limit Sign
- MM Mile Marker Post
- SIGN Sign
- TCB Traffic Signal Control Box
- RRB Rail Road Signal Control Box
- TSB Telephone Switch Box
- EB Electric Box

UTILITY LEGEND

No utilities surveyed

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING	**Design Color No.**	
Lavender	(9)	Temporary Pavement Shading
Yellow	(4)	Proposed Pavement Shading
Orange	(6)	Proposed Granular Shading
Orange	(70)	Proposed Shoulder Granular Shading
Yellow	(68)	Proposed Shoulder Paved Full Depth Shading
Yellow	(132)	Proposed Shoulder Paved Partial Depth Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Orange, Light	(134)	Proposed Granular Entrance Shading
Yellow	(220)	Proposed Paved Entrance Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading
Green, Light	(225)	Existing Pavement Shading
Red	(3)	Proposed Structure Shading
Red	(3)	Delineates Restricted Areas

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(10)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right

PATTERN AND SYMBOL LEGEND OF SOILS SHEETS

Date(s) Drilled 2/27/25-2/28/25

- Drill
- Dig/Core
- Water
- Dry
- Sample
- Plugged
- Moisture
- Shelby
- Blow Count
- Dens. Core
- Treatment
- Sand Blanket
- Soil Remediation Area
- Select Soil
- Select Sand
- Slope Dressing Only
- Broken and Weathered Rock
- Rock
- Sandstone
- Unsuitable A
- Unsuitable B
- Unsuitable C
- Sandy Soil
- Boulders
- Shale

- Reference Point
- Station
- Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- Property Line

NOTE: Sounding and test boring data shown in the plans were accumulated for designing and estimating purposes. Their appearance on the plans does not constitute a guarantee that conditions other than those indicated will be encountered. Details and notes shown elsewhere shall be used for roadway and structure construction.

SOILS LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES Q)

FILE NO. 0826	ENGLISH	DESIGN TEAM Iowa DOT/Braun Intertec	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER Q.1

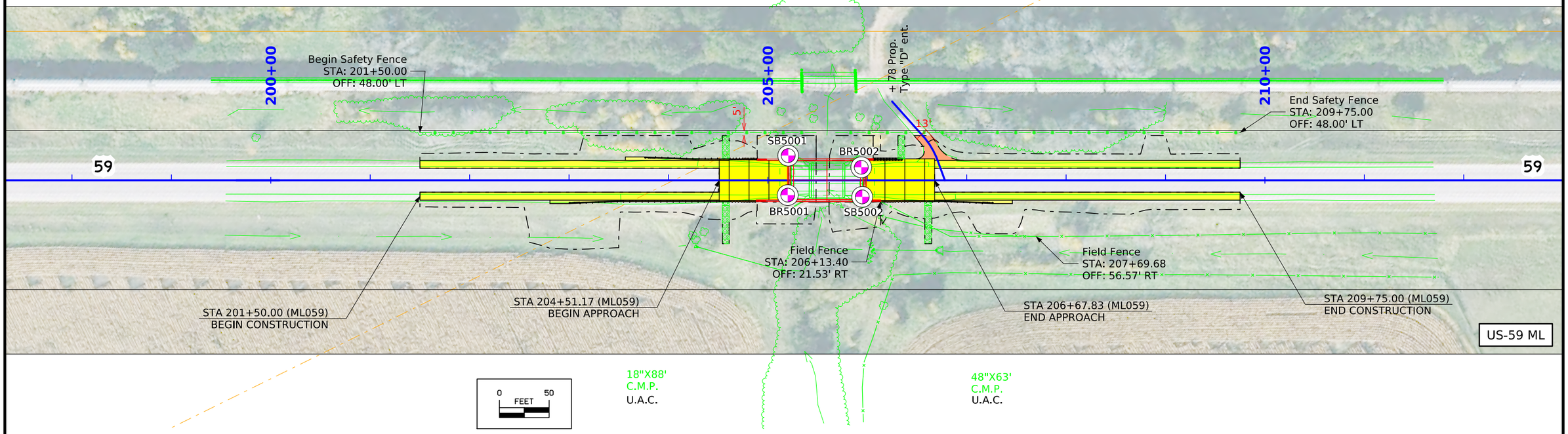
7:50:09 AM 5/13/2025 DRivers pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7805902021\Soils\Qsheets\SHT_78059050_D01.dgn

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.

Valley TWP.
T-76N R-39W
SEC. 19

Sta. 205+59.5
32'x30' I Beam Bridge
D.A.=1004Ac R-F (As-Built)
Remove

Proposed
71'8" x 40' 0" Pretensioned Prestressed
Concrete Beam Bridge



0 50
FEET

18"X88'
C.M.P.
U.A.C.

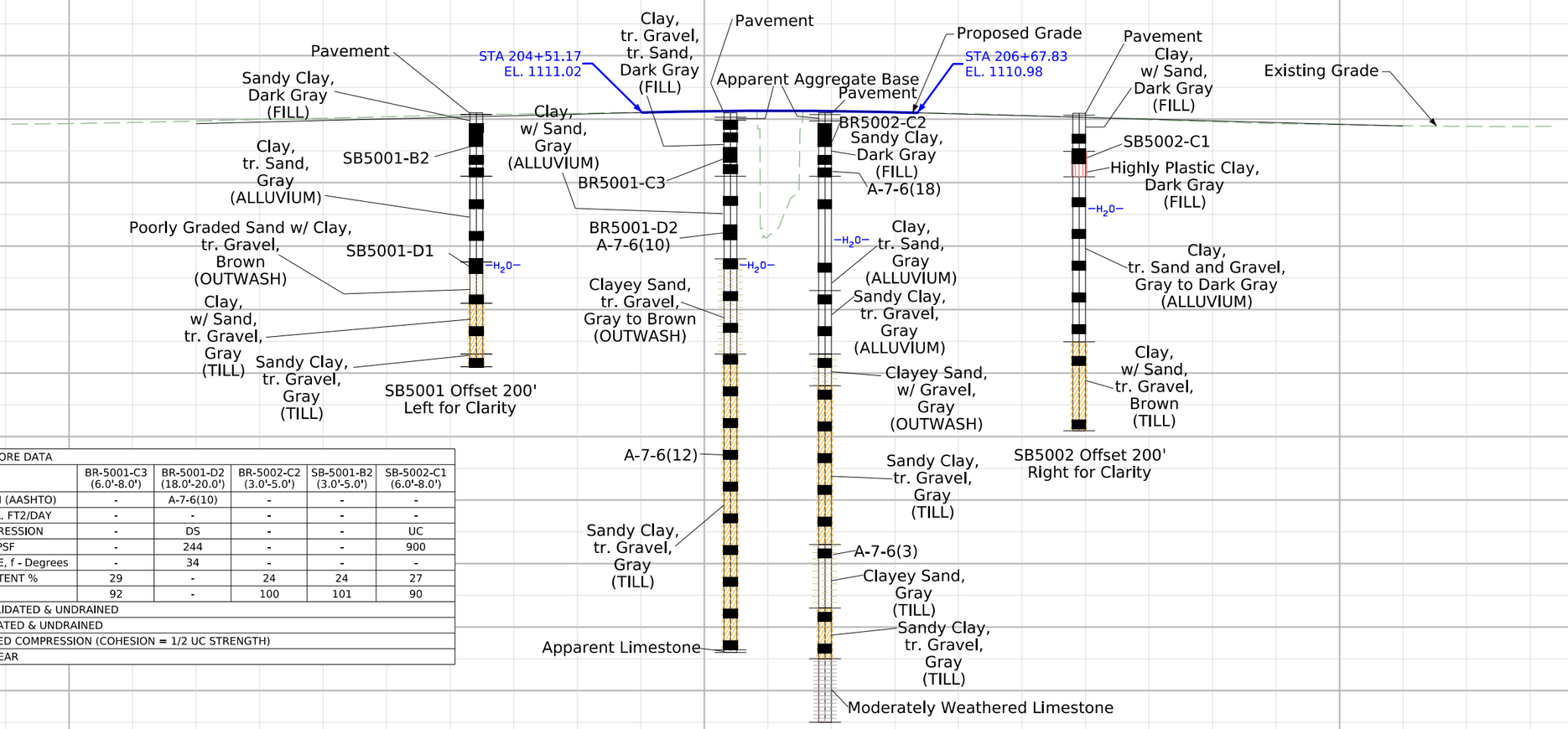
48"X63'
C.M.P.
U.A.C.

FILE NO. 0826	ENGLISH	DESIGN TEAM Iowa DOT/Braun Intertec	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER Q.2	

7:50:23 AM 5/13/2025 DRivers pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7805902021\Soils\Qsheets\SHT_78059050_D02.dgn

Cut Moisture Cut Density (lb/ft3) Plastic Limit	18,24,24,28,29,36,--,16,17,19	20,27,29,27,30,--,25,15,22,17,30,20,20,21,19,23,20,20,20	22,24,22,25,29,40,25,25,19,21,18,19,18,17,19,19,21	21,27,32,37,36,41,38,17,20
	SB5001 --,101,--,--,--,--,--,--,--,-- 17,--,--,--,--,--,21,--,12,--	BR5001 --,--,92,--,--,--,--,--,--,--,--,--,--,--,--,--,--,--,--,-- --,--,--,--,--,--,--,--,--,--,--,13,--,--,--,--,--,--,--	BR5002 --,100,--,--,--,--,--,--,--,--,--,--,--,--,--,--,--,--,-- --,--,20,--,21,--,--,--,--,--,--,--,--,--,--,15,--,--	SB5002 --,90,--,--,--,--,--,--,-- --,--,22,--,--,--,--,--,--

THIS SHEET IS INCLUDED TO SHOW SOIL INFORMATION.
DETAILS AND NOTES SHOWN ELSEWHERE IN THESE PLANS SHALL BE USED FOR STRUCTURE CONSTRUCTION.



SHELBY TUBE CORE DATA

CORE NO.	BR-5001-C3 (6.0'-8.0')	BR-5001-D2 (18.0'-20.0')	BR-5002-C2 (3.0'-5.0')	SB-5001-B2 (3.0'-5.0')	SB-5002-C1 (6.0'-8.0')
CLASSIFICATION (AASHTO)	-	A-7-6(10)	-	-	-
COEFF. CONSOL. FT2/DAY	-	-	-	-	-
TRIAXIAL COMPRESSION	-	DS	-	-	UC
COHESION, C - PSF	-	244	-	-	900
FRICTION ANGLE, f - Degrees	-	34	-	-	-
MOISTURE CONTENT %	29	-	24	24	27
DENSITY - PCF	92	-	100	101	90

UU - UNCONSOLIDATED & UNDRAINED
CU - CONSOLIDATED & UNDRAINED
UC - UNCONFINED COMPRESSION (COHESION = 1/2 UC STRENGTH)
DS - DIRECT SHEAR

SB5002 LT.15 | BR5001 RT.8 | BR5002 LT.14 | SB5002 RT.13

200+00 | 205+00 | 210+00

FILE NO. 0826	ENGLISH	DESIGN TEAM Iowa DOT/Braun Intertec	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER Q.3

7:50:24 AM 5/13/2025 DRivers pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\7805902021\Soils\Qsheets\SHT_78059050_D02.dgn

LANDSCAPE DESIGN

STATE OF IOWA
Rachel
A. Harris
LA000775
PROFESSIONAL LANDSCAPE ARCHITECT

I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly licensed professional landscape architect under the laws of the state of Iowa.

Signature 08/30/2026
Date

Rachel A. Harris
Printed or Typed Name

My license renewal date is June 30, 2028

Pages or sheets covered by this seal: RC.1 - 12; RR.1 - 3

FILE NO. **0826**	ENGLISH	DESIGN TEAM **HARRIS/POHLEN/VAN DUONG**	**Pottawattamie** COUNTY	PROJECT NUMBER **BRF-059-3(50)--38-78**	SHEET NUMBER **RC.1**	

8:33:05 AM 7/1/2026 npohlen pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Roadside\78059050_Sign_RC01.dgn

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadside Items	
1	2601-2638352	SLOPE PROTECTION, WOOD EXCELSIOR MAT	SQ	5.9	Refer to Tab. 100-22 for locations. Refer to Standard Road Plan EC-103. Prepare seedbed according to Article 2601.03, B, 4, of the Standard Specifications prior to seeding and fertilizing under the slope protection.
2	2601-2640350	SPECIAL DITCH CONTROL, WOOD EXCELSIOR MAT	SQ	2.3	Refer to Tab. 100-22 for locations. Refer to Standard Road Plan EC-101. Prepare seedbed according to Article 2601.03, B, 4 of the Standard Specifications. Install Wood Excelsior Mat according to Article 2601.03, H, 2, of the Standard Specifications. Seed according to Article 2601.03, H, 2, of the Standard Specifications.
3	2601-2643110	WATERING FOR SOD, SPECIAL DITCH CONTROL, OR SLOPE PROTECTION	MGAL	1.6	Estimate for watering Special Ditch Control, Slope Protection Areas, Turf Reinforcement Mat, or Transition Mat is based on a total of four waterings at a rate of 50 gallons maximum per square, per watering. The first watering should be done no later than the day following placement of the materials with 3 additional watering at intervals of 5 to 8 calendar days. The amount of water used should be sufficient to saturate the seedbed to a depth of approximately 2 inches.
4	2601-2643300	MOBILIZATION FOR WATERING	EACH	3	
5	2602-0000150	STABILIZED CONSTRUCTION ENTRANCE, EC-303	LF	200	Refer to Standard Road Plan EC-303.
6	2602-0000212	FLOATING SILT CURTAIN (HANGING)	LF	300	Refer to Tab 100-10 for locations. Refer to Standard Road Plan EC-202.
7	2602-0000240	MAINTENANCE OF FLOATING SILT CURTAIN	LF	150	

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadside Items	
8	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	1,830	Refer to Tab. 100-19 for locations. Refer to Standard Road Plan EC-204. The tabulation includes estimated locations for placement of "Perimeter and Slope Sediment Control Device, 12 in. dia." to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements.
9	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	1,830	Refer to Standard Road Plan EC-204. Item is included for temporary perimeter sediment control, inlet protection, and water velocity reduction on slopes or ditches at locations to be determined during construction. Verify specific locations with the Engineer prior to beginning placement. Item may be used in addition to, or as a direct replacement for "Perimeter and Slope Sediment Control Device, 12 in. dia." upon Engineer approval.
10	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	LF	3,660	
11	2602-0010010	MOBILIZATIONS, EROSION CONTROL	EACH	1	
12	2602-0010020	MOBILIZATIONS, EMERGENCY EROSION CONTROL	EACH	1	

232_03A
9/28/22

EROSION CONTROL (RURAL SEEDING)

Area to be seeded is estimated to be less than 1 acre. If the contractor determines the area exceeds 2 acres, notify the Engineer. Approved quantity in excess of 2 acres will be paid for as extra work according to Article 1109.03,B of the Standard Specifications.

Following the completion of work in a disturbed area and according to the seeding dates in Section 2601 of the Standard Specifications, place seed, fertilizer, and mulch on the disturbed area lying 8 feet adjacent to shoulder and median as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,3 and Section 4169 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

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

232_03C
8/28/24

EROSION CONTROL (NATIVE GRASS SEEDING)

Area to be seeded is estimated to be less than 1 acre. If the Contractor determines the area exceeds 2 acres, notify the Engineer. Approved quantity in excess of 2 acres will be paid for as extra work according to Article 1109.03,B of the Standard Specifications.

Following the completion of work in a disturbed area and according to the seeding dates in Section 2601 of the Standard Specifications, place seed and mulch on the disturbed area lying 8 feet or more beyond the shoulder as follows:

SEED MIX:

Big bluestem (Andropogon geradii)	6 lbs. PLS/Acre (7.0 kg/ha)
Indiangrass (Sorghastrum nutans)	6 lbs. PLS/Acre (7.0 kg/ha)
Little bluestem (Schizachyrium scoparium)	6 lbs. PLS/Acre (7.0 kg/ha)
Partridge Pea (Chamaecrista fasciculata)	4 lbs. PLS/Acre (4.5 kg/ha)
Sideoats grama (Bouteloua curtipendula)	4 lbs. PLS/Acre (4.5 kg/ha)
Canada wildrye (Elymus canadensis)	2 lbs. PLS/Acre (2.2 kg/ha)
Switchgrass (Panicum virgatum)	1 lbs. PLS/Acre (1.1 kg/ha)
Oats (Avena sativa)	32 lbs./Acre (36.0 kg/ha)

Furnish Big bluestem, Indiangrass, Canada wildrye and Little bluestem that is debearded or equal to facilitate the application of seed.

Furnish seed certified as Source Identified Class (Yellow Tag) Source G0-Iowa. Oats are excluded from this requirement. Place seed according to the requirements of Article 4169.02 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

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

232_11
6/21/23

EROSION CONTROL (STABILIZING CROP SEEDING)

Area to be seeded is estimated to be less than 1 acre. If the contractor determines the area exceeds 2 acres, notify the Engineer. Approved quantity in excess of 2 acres will be paid for as extra work according to Article 1109.03,B of the Standard Specifications.

If outside of permanent seeding dates in Section 2601 of the Standard Specifications, or if required by a storm water permit, place stabilizing crop, fertilizer, and mulch on the disturbed area as follows:

Place seed and fertilize according to the requirements of Article 2601.03,C,1 and Section 4169 of the Standard Specifications.

Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

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

281_01
9/28/22

SECTION 404 PERMIT AND CONDITIONS

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://www.envpermits.iowadot.gov/). The U.S. Army Corps of Engineers reserves the right to visit the site without prior notice.

281_03
11/9/23

STORM WATER BEST MANAGEMENT PRACTICES

When the following best management practices are used, they are intended to account for disturbed areas where storage volume cannot be provided: Perimeter and Slope Sediment Control Devices, Slope Protection, Special Ditch Control, and Seeding.

282_03
9/28/22

TEMPORARY STREAM CROSSING, CAUSEWAY, OR EQUIPMENT PAD

Standard Road Plan EW-401 is listed in Tabulation 105-4; however, it is included for information purposes only since it is an option. No quantities associated with constructing EW-401 are included in any bid items.

111_25
10/20/26

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
111_25	INDEX OF TABULATIONS	RC.5
105_04	STANDARD ROAD PLANS	RC.6
100_10	FLOATING SILT CURTAINS	RC.7
100_19	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	RC.8
100_22	ROLLED EROSION CONTROL	RC.9
100_34	STORMWATER DRAINAGE BASIN	RC.10
110_12	POLLUTION PREVENTION PLAN	RC.11-RC.12

105_04
10/20/26

STANDARDS

The following Standards apply to construction work on this project.

Number	Date	Title
EC-103	04-21-15	Wood Excelsior Mat for Slope Protection
EC-202	10-21-14	Floating Silt Curtain
EC-204	10-19-21	Perimeter, Slope and Ditch Check Sediment Control Devices
EC-303	10-19-21	Stabilized Construction Entrance
EC-502	04-21-15	Seeding in Rural Areas
EW-401	10-20-15	Temporary Stream Crossing, Causeway, or Equipment Pad
EC-101	04-19-16	Wood Excelsior Mat for Ditch Protection

100_10

8/15/22

FLOATING SILT CURTAINS

Refer to EC-202

Station	Hanging (LF)	Containment (LF)	Clean-out (Containment) (LF)	Maintenance of Floating Silt Curtain (LF)	Remarks
205+51.00	150.0			75.0	
205+58.00	150.0			75.0	
	300.0			150.0	

PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE

Possible Standards: EC-204

Station From	Station To	Side	Sediment Control Device Type	Diameter Size	Length (LF)	Remarks
201+49.00	204+53.00	Left	Perimeter and Slope	12 inch	310.00	
204+62.00	204+89.00	Left	Perimeter and Slope	12 inch	30.00	
201+49.00	204+54.00	Right	Perimeter and Slope	12 inch	310.00	
204+61.00	204+90.00	Right	Perimeter and Slope	12 inch	30.00	
206+09.00	206+29.00	Left	Perimeter and Slope	12 inch	40.00	
206+39.00	206+56.00	Left	Perimeter and Slope	12 inch	30.00	
206+69.00	209+75.00	Left	Perimeter and Slope	12 inch	320.00	
206+12.00	206+58.00	Right	Perimeter and Slope	12 inch	70.00	
206+65.00	209+75.00	Right	Perimeter and Slope	12 inch	320.00	
					1460.00	

ROLLED EROSION CONTROL

Refer to EC-101, EC-103 and EC-104.

Road Identification	Station From	Station To	Side	Length (FT)	Width (FT)	TRM Type (EC-104)	TRM Quantity (Squares)	Slope Protection (EC-103) (Squares)	Special Ditch Control (EC-101) (Squares)	Remarks
US 59	206+07.00	206+29.00	Left	22.5	12.7			2.9		
US 59	206+37.00	206+56.00	Left	20.0	15.0			3.0		
US 59	206+07.00	206+29.00	Left	22.5	10.0				2.3	
Total:								**5.9**	**2.3**	

STORMWATER DRAINAGE BASIN

Refer to EC Standards and 570s Details.

Basin No.	Station From	Station To	Side	Discharge Station	Discharge Direction	Total Disturbed Area (ACRES)	Disturbed Area with Storage Provided (ACRES)	Disturbed Area without Storage Provided (ACRES)	Best Management Practice	Total Storage Volume Provided (CF)	Total Storage Volume Required (CF)	Storage Volume Met	Remarks
1	201+50.00	204+69.00	Left	20548.00	S	0.2	0.2				720.0	No	
2	201+50.00	205+48.00	Right	20548.00	N	0.3	0.3				1080.0	No	
3	204+69.00	205+48.00	Left	20548.00	N	0.1	0.1				360.0	No	
4	205+62.00	206+67.00	Left	20562.00	S	0.1	0.1				360.0	No	
5	206+67.00	209+75.00	Left	20975.00	N	0.1	0.1				360.0	No	
6	205+62.00	209+75.00	Right	20562.00	S	0.3	0.3				1080.0	No	

POLLUTION PREVENTION PLAN

This project is regulated by the requirements of the Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 OR an Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) individual storm water permit. The Contractor shall carry out the terms and conditions of this permit and the Pollution Prevention Plan (PPP).
This Base PPP includes information on Roles and Responsibilities, Project Site Description, Controls, Maintenance Procedures, Inspection Requirements, Non-Storm Water Controls, Potential Sources of Off Right-of-Way Pollution, and Definitions. This plan references other documents rather than repeating the information contained in the documents. A copy of this Base Pollution Prevention Plan, amended as needed during construction, will be readily available for review.
All contractors shall conduct their operations in a manner that controls pollutants, minimizes erosion, and prevents sediments from entering waters of the state and leaving the highway right-of-way. The Contractor shall be responsible for compliance and implementation of the PPP for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

I. ROLES AND RESPONSIBILITES

A. Designer:
1. Prepares Base PPP included in the project plan.
2. Prepares Notice of Intent (NOI) submitted to Iowa DNR.
3. Is signature authority on the Base PPP. If consultant designed, signature from Contracting Authority is also required.

B. Contractor:
1. Signs a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Designates a Water Pollution Control Manager (WPCM), who has the duties and responsibilities as defined in Section 2602 of the Standard Specifications.
3. Submits an Erosion Control Implementation Plan (ECIP) and ECIP updates according to Section 2602 of the Standard Specifications.
4. Installs and maintains appropriate controls. This work may be subcontracted as documented through Subcontractor Request Forms (Form 830231).
5. Supervises and implements good housekeeping practices according to Paragraph III, C, 2.
6. Conducts joint required inspections of the site with inspection staff. When Contractor is not mobilized on site, Contractor may delegate this responsibility to a trained or certified subcontractor. Contracting Authority also may waive joint inspection requirement during winter shutdown. In both circumstances, WPCM (or trained or certified delegate from the Contractor) is still responsible to review and sign inspection reports.
7. Complies with training and certification requirements of Section 2602 of the Standard Specifications.
8. Submits amended PPP site map according to Section 2602 of the Standard Specifications.

C. Subcontractors:
1. Sign a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP if: responsible for sediment or erosion controls; involved in land disturbing activities; or perorming work that is a source of potential pollution as defined in this PPP. Subcontracted work items are identified in Subcontractor Request Forms (Form 830231). All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Implement good housekeeping practices according to Paragraph III, C, 2.

D. RCE/Project Engineer:
1. Is Project Storm Water Manager.
2. On projects where DOT is the Contracting Authority, is current with erosion control training or certification.
3. Takes actions necessary to ensure compliance with storm water requirements including, where appropriate, issuing stop work orders, and directing additional inspections at construction project sites that are experiencing problems with achieving permit compliance.
4. Orders the taking of measures to cease, correct, prevent, or minimize the consequences of non-compliance with the storm water requirements of the Applicable Permit.
5. Supervises all work necessary to meet storm water requirements at the Project, including work performed by contractors and subcontractors.
6. Requires employees, contractors, and subcontractors to take appropriate responsive action to comply with storm water requirements, including requiring any such person to cease or correct a violation of storm water requirements, and to order or recommend such other actions as necessary to meet storm water requirements.
7. Is familiar with the Project PPP and storm water site map.
8. On projects where DOT is Contracting Authority, is responsible for periodically monitoring inspection reports to determine whether deficiencies identified in inspection reports were adequately and timely addressed, and if not, has the authority and responsibility to direct immediate actions to correct the deficiencies.
9. Is the point of contact for the Project for regulatory officials, Inspector, contractors, and subcontractors regarding storm water requirements.
10. Is signature authority on Notice of Discontinuation.
11. Maintains an up-to-date record of contractors, subcontractors, and subcontracted work items through Subcontractor Request Forms (Form 830231).
12. Makes information to determine permit compliance available to the DNR upon their request.

E. Inspector:
1. Updates PPP through fieldbook entries and storm water site inspection reports if there is a change in design, construction, operation, or maintenance which has a significant effect on the discharge of pollutants from the project.
2. Makes information to determine permit compliance available to the DNR upon their request.
3. Conducts joint required inspections of the site with the contractor/subcontractor.
4. Completes an inspection report after each inspection.
5. Is signature authority on storm water inspection reports.

II. PROJECT SITE DESCRIPTION

A. This Pollution Prevention Plan (PPP) is for a Bridge Replacement-PPCB in Pottawattamie County.
B. This PPP covers approximately 5.73 acres with an estimated 2.41 acres being disturbed. The portion of the PPP covered by this contract has 1.05 acres disturbed.
C. The PPP is located in an area of Marshall - Shelby soil association. The estimated weighted average runoff coefficient number for this PPP after completion will be 0.27.

110_12
1/13/23
POLLUTION PREVENTION PLAN

D. Storm Water Site Map is located in the R sheets. Proposed slopes are shown in cross sections, details, or standard road plans. Supplemental information is located in the Tabulations in the C or CE sheets.
E. The base storm water site map is amended by contract modifications and progress payments (fieldbook entries) of completed erosion control work. Also, due to project phasing, erosion and sediment controls shown on project plans may not be installed until needed, based on site conditions. For example, silt fence ditch checks will typically not be installed until the ditch has been installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries and amended PPP site map.
F. Runoff from this work will flow into West Branch East Nishnabotna River, to West Nishnabotna River, to Nishnabotna River, to the Missouri River.

III. CONTROLS

A. The Contractor’s ECIP specified in Article 2602.03 of the Standard Specifications for accomplishment of storm water controls should clearly describe the intended sequence of major activities, and for each activity define the control measure and the timing during the construction process that the measure will be implemented.
B. Preserve vegetation in areas not needed for construction.
C. Sections 2601 and 2602 of the Standard Specifications define requirements to implement erosion and sediment control measures. Actual quantities used and installed locations may vary from the Base PPP and amendment of the plan will be documented via fieldbook entries, amended PPP site map, or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water site inspections. If the work involved is not applicable to any contract items, the work will be paid for according to Article 1109.03 paragraph B of the Standard Specifications.

1. EROSION AND SEDIMENT CONTROLS

a. Stabilization Practices
1) Site plans will ensure that existing vegetation or natural buffers are preserved where attainable and disturbed portions of the site will be stabilized.
2) Initialize stabilization of disturbed areas immediately after clearing, grading, excavating, or other earth disturbing activities have:
a) Permanently ceased on any portion of the site, or
b) Temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days.
3) Staged permanent and/or temporary stabilizing seeding and mulching shall be completed as the disturbed areas are completed. Incomplete areas shall be stabilized according to paragraph III, C, 1, a, 2, b above.
4) Permanent and Temporary Stabilization practices to be used for this project are located in the storm water site map, Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C or R sheets. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation (105-4) in the C or R sheets.
5) Preservation of existing vegetation within right-of-way or easements will act as vegetative buffer strips.
6) Preservation of topsoil: Bid items to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C or R sheets. Additional information may be found in the Tabulations in the C or T Tabulation sheets, or is referenced in Section 2105 of the Standard Specifications.

b. Structural Practices
1) Structural practices will be implemented to divert flows from exposed soils and detain or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Additionally, structural practices may include: silt basins that provide 3600 cubic feet of storage per acre drained or equivalent sediment controls, outlet structures that withdraw water from surface when discharging basins, and controls to direct storm water to vegetated areas.
2) Structural practices to be used for this project are located in the storm water site map, Estimated Project Quantities (100-0A, 100-1A, or 100-1C), and Estimate Reference Information (100-4A) located in the C or R sheets, as well as all other item specific Tabulations. Typical drawings detailing construction of the devices to be used on this project can be found on the B or R sheets or are referenced in the Standard Road Plans Tabulation (105-4) located in the C or R sheets.

c. Storm Water Management
Measures shall be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. This may include velocity dissipation devices at discharge locations and along length of outfall channel as necessary to provide a non-erosion velocity flow from structure to water course. If included with this project, these items are located in the storm water site map and Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located in the C or R sheets, as well as all other item specific Tabulations. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation. The installation of these devices may be subject to Section 404 of the Clean Water Act.

2. OTHER CONTROLS

Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.
a. Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
b. Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
c. Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
d. Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
e. Spill Prevention and Control - Implement chemical spill and leak prevention and response procedures to contain and clean up spills and prevent material discharges to the storm drain system and waters of the state.
f. Concrete Residuals and Washout Wastes - Waste shall not be discharged to a surface water and is not allowed to adversely affect a water of the state. Designate temporary concrete washout facilities for rinsing out concrete trucks. Provide directions to truck drivers where designated washout facilities are located. Designated washout areas should be located at least 50 feet away from storm drains, streams or other water bodies. Care should be taken to ensure these facilities do not overflow during storm events.
g. Concrete Grooving/Grinding Slurry – Do not discharge slurry to a waterbody or storm drain. Slurry may be applied on foreslopes or removed from the project.
h. Vehicle and Equipment Storage and Maintenance Areas - Perform on site fueling and maintenance in accordance with all

POLLUTION PREVENTION PLAN

environment laws such as proper storage of onsite fuels and proper disposal of used engine oil or other fluids on site. Employ washing practices that prevent contamination of surface and ground water from wash water. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge.

i. Litter Management - Ensure employees properly dispose of litter. Minimize exposure of trash if exposure to precipitation or storm water would result in a discharge of pollutants.

j. Dewatering – Properly treat water to remove suspended sediment before it re-enters a waterbody or discharges off-site. Measures are also to be taken to prevent scour erosion at dewatering discharge point.

3. APPROVED STATE OR LOCAL PLANS
During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

IV. MAINTENANCE PROCEDURES
The Contractor is required to maintain all temporary erosion and sediment control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. This shall begin when the features have lost 50% of their capacity.

V. INSPECTION REQUIREMENTS
A. Inspections shall be made jointly by the Contractor and the Contracting Authority's inspector at least once every seven calendar days. Storm water site inspections will include:
1. Date of the inspection.
2. Summary of the scope of the inspection.
3. Name and qualifications of the personnel making the inspection.
5. Review of erosion and sediment control measures within disturbed areas for the effectiveness in preventing impacts to receiving waters.
6. Major observations related to the implementation of the PPP.
7. Identification of corrective actions required to maintain or modify erosion and sediment control measures.

B. Include storm water site inspection reports in the Amended PPP. Incorporate any additional erosion and sediment control measures determined as a result of the inspection. Immediately begin corrective actions on all deficiencies found within 3 calendar days of the inspection and complete within 7 calendar days following the inspection. If it is determined that making the corrections less than 72 hours after the inspection is impracticable, it should be documented why it is impracticable and indicate an estimated date by which the corrections will be made.

VI. NON-STORM WATER DISCHARGES
This includes subsurface drains (i.e. longitudinal and standard subdrains) and slope drains. The velocity of the discharge from these features may be controlled by the use of headwalls or blocks, Class A stone, erosion stone or other appropriate materials. This also includes uncontaminated groundwater from dewatering operations, which will be controlled as discussed in Section III of the PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION
Silts, sediment, and other forms of pollution may be transported onto highway right-of-way (ROW) as a result of a storm event. Potential sources of pollution located outside highway ROW are beyond the control of this PPP. Pollution within highway ROW will be conveyed and controlled per this PPP.

VIII. DEFINITIONS
A. Base PPP - Initial Pollution Prevention Plan.
B. Amended PPP - Base PPP amended during construction. May include Plan Revisions or Contract Modifications for new items, storm water site inspection reports, fieldbook entries made by the inspector, amended PPP site map by the Contractor, ECIP, NOI, co-permittee certifications, and Subcontractor Request Forms. Items amending the PPP are stored electronically and are readily available upon request.
C. Fieldbook Entries – This contains the inspector’s daily diary and bid item postings.
D. Controls - Methods, practices, or measures to minimize or prevent erosion, control sedimentation, control storm water, or minimize contaminants from other types of waste or materials. Also called Best Management Practices (BMPs).
E. Signature Authority - Representative authorized to sign various storm water documents.

CERTIFICATION STATEMENT
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Nathan Pohlen
Signature

Nathan J. Pohlen
Print Name

PLAN VIEW CELL LEGEND

CELL	Design Element
	Clearing & Grubbing

CELL LEGEND OF EROSION CONTROL

CELL	Design Element
	Temporary Sediment Control basin
	Erosion Control for Circular Intake or Manhole Well
	Erosion Control for Rectangular Intake or Manhole Well
	Grate Intake Sediment Filter Bag
	Silt Basin
	Silt Fence Tail
	Stormwater Drainage Basin Discharge Point

CELL LEGEND OF LANDSCAPING

CELL	Design Element	Plant Diameter
Overstory-#	Overstory Tree	30 FT
Evergreen-#	Evergreen Tree	18 FT
Understory-#	Understory Tree	12 FT
Shrub-# Shrub-#	Shrub	6 FT

PLAN VIEW PATTERN LEGEND

PATTERN	Design Element	PATTERN	Design Element
	Seeding and Fertilizing		Turf Reinforcement Mat Type 1
R	Seeding and Fertilizing (Rural)		Turf Reinforcement Mat Type 2
U	Seeding and Fertilizing (Urban)		Turf Reinforcement Mat Type 3
N	Native Grass Seeding		Turf Reinforcement Mat Type 4
ST	Salt Tolerant Seeding		Slope Protection, Wood Excelsior Mat
WL	Wetland Grass Seeding		Transition Mat
WF	Wildflower Seeding		Rock Features, Permanent
SOD	Sodding		Rock Features, Temporary

PLAN VIEW COLOR LEGEND

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Annotation
Magenta	(5)	Existing Utilities
Black	(0)	Permanent Erosion Control Features
Blaze Orange	(222)	Temporary Erosion Control Features

SHADING	Design Color No.		Transparency
Citron	(234)	Mulching, All Types	50%
Light Brown	(238)	Special Ditch Control, Wood Excelsior Mat	0%
Grass Green	(233)	8FT Mow Strip	50%

HATCHING	Design Color No.	
Red	(3)	Delineates Restricted Areas
Yellow	(4)	Brush Clearing
Yellow	(4)	Clearing & Grubbing
Orange	(228)	Spray Area

LINE STYLE LEGEND OF EROSION CONTROL SHEETS

LINESTYLE	Design Element
	Silt Fence
9	Perimeter and Slope Sediment Control Device (9")
12	Perimeter and Slope Sediment Control Device (12")
20	Perimeter and Slope Sediment Control Device (20")
	Open-Throat Curb Intake Sediment Filter
	Concentrated Flow
	Rock Check and Rock Check Dam
	Sheet Flow

LINE STYLE LEGEND OF LANDSCAPE SHEETS

LINESTYLE	Design Element
	Living Snow Fence Single Row
	Living Snow Fence Double Row
	Mechanical Edge

LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES R)



FILE NO. 0826	ENGLISH	DESIGN TEAM HARRIS/POHLEN/VAN DUONG	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER RR.2	

2:13:12 PM 6/29/2026 ovanduo pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Roadside\78059050_Basin_SHT.dgn

© 2026 Microsoft Corporation © 2026 Maxar ©CNES (2026) Distribution Airbus DS © Mapbox

200+00

205+00

210+00

59

Floating Silt Curtain

Floating Silt Curtain

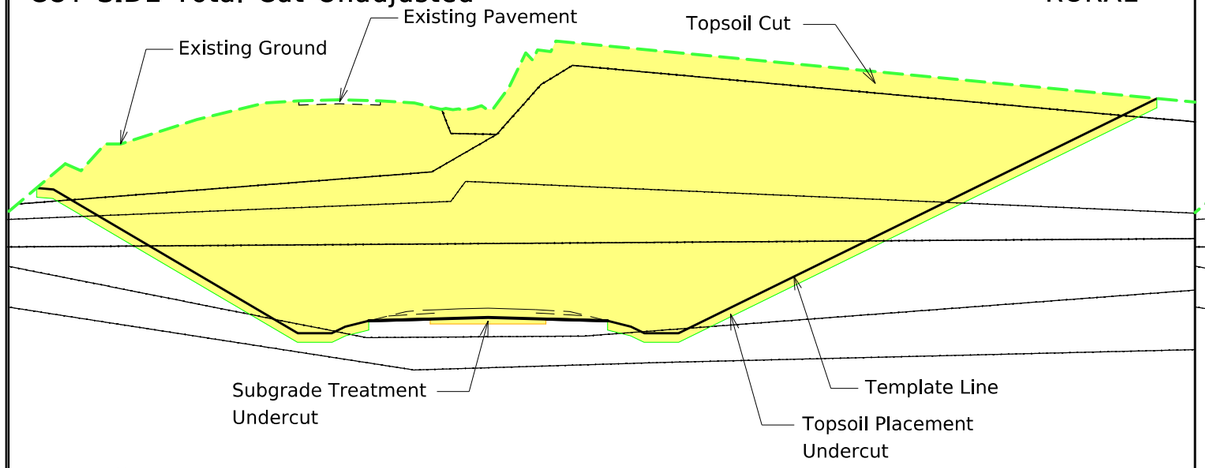
0 50
FEET

FILE NO. 0826	ENGLISH	DESIGN TEAM HARRIS/POHLEN/VAN DUONG	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER RR.3	

3:19:07 PM 6/29/2026 ovanduo pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Roadside\78059050_Siteplan_SHT.dgn

© 2026 Microsoft Corporation © 2026 Maxar ©CNES (2026) Distribution Airbus DS © Mapbox

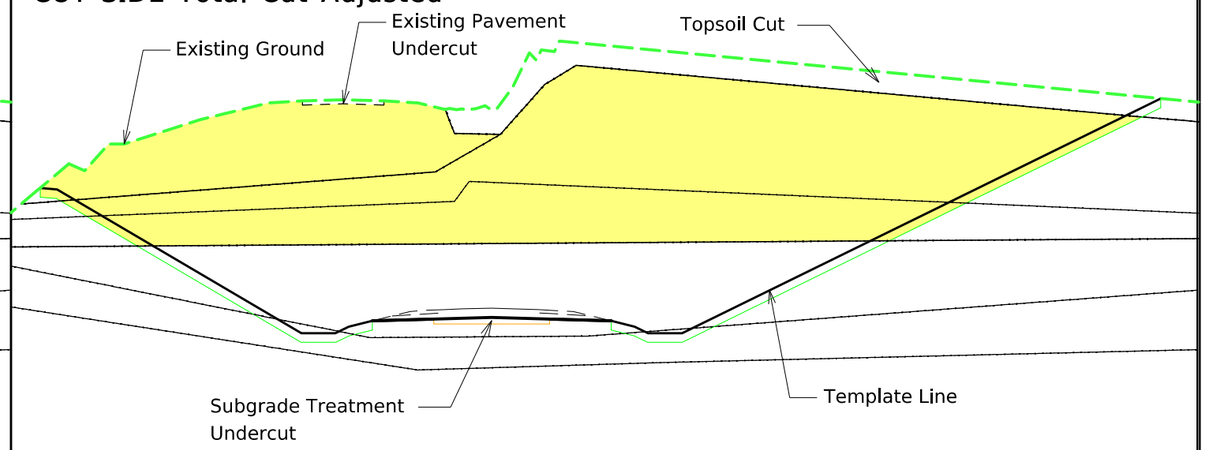
CUT SIDE Total Cut Unadjusted — RURAL



Notes:

1. "Total Cut Unadjusted" Column includes all cut values in the Station Range based on Typical, Topsoil and Subgrade Treatment needs.
2. "Total Cut Unadjusted" does not include and Existing Pavement values inside or outside the cut template as shown on cross sections.
3. Tabulated Plowing and Shaping operations are included in the "Total Cut Unadjusted" values.

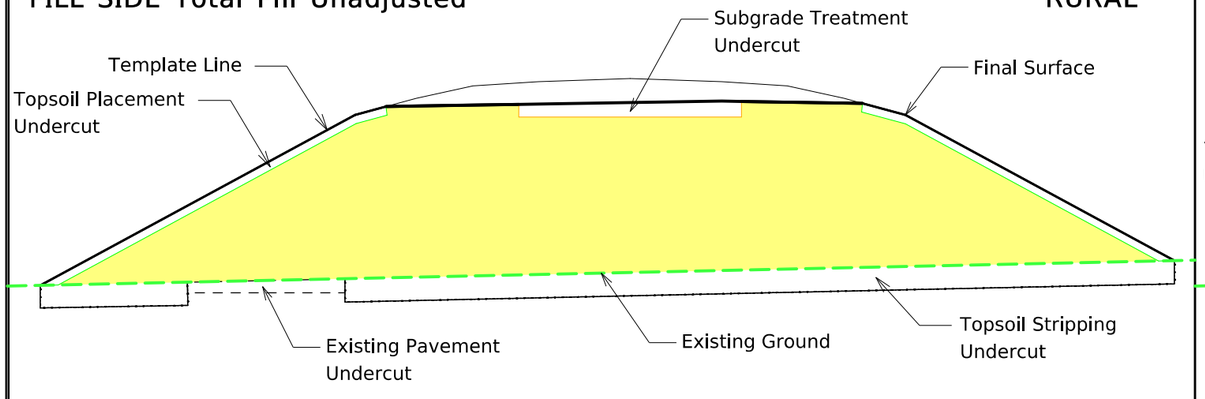
CUT SIDE Total Cut Adjusted



Notes:

1. "Total Cut Adjusted" Column includes all cut values usable as Class 10 material.
2. "Total Cut Adjusted" does not include and Existing Pavement , Existing Topsoil, or material to be wasted.

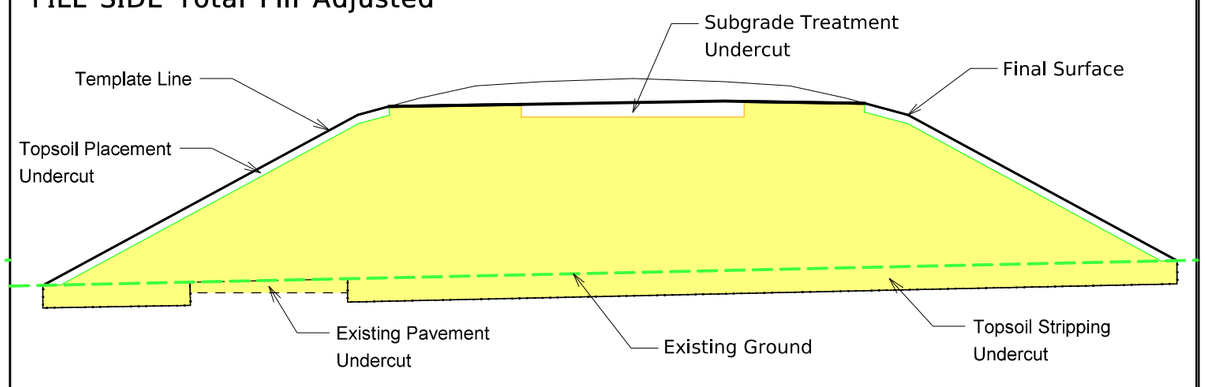
FILL SIDE Total Fill Unadjusted — RURAL



Notes:

1. "Total Fill Unadjusted" Column includes all Class 10, 12, and 13 fill. This excludes the topsoil, subgrade treatment, subbase, new pavement, and shoulder fill needs in that station range.
2. "Total Fill Unadjusted" Column does not include adjustments for additional fill from cuts such as existing pavement removed, plowing and shaping operations, entrances, dikes, or topsoil stripping.

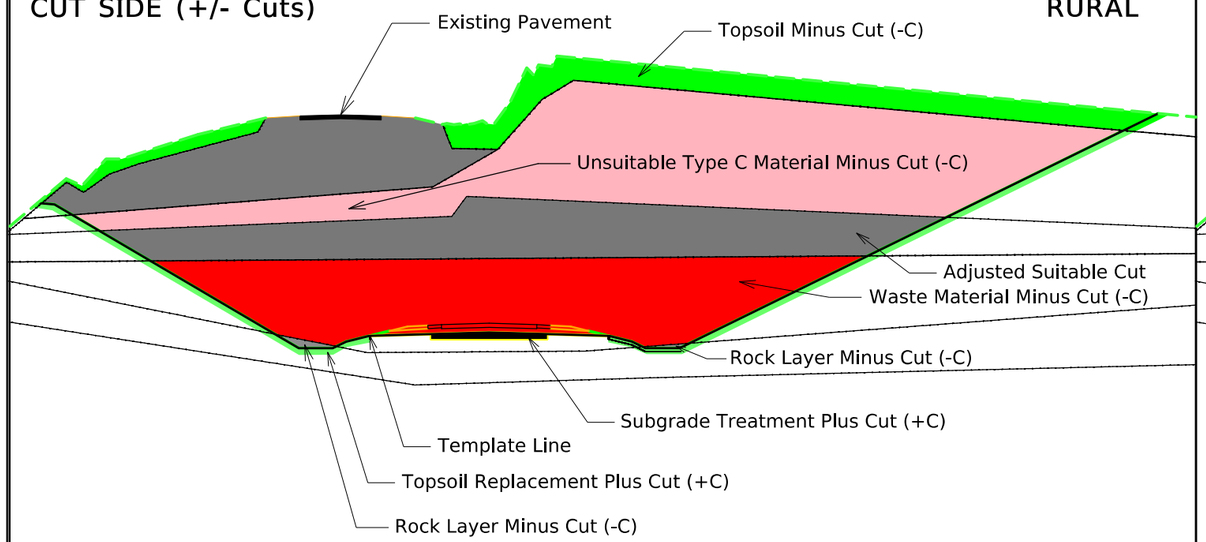
FILL SIDE Total Fill Adjusted



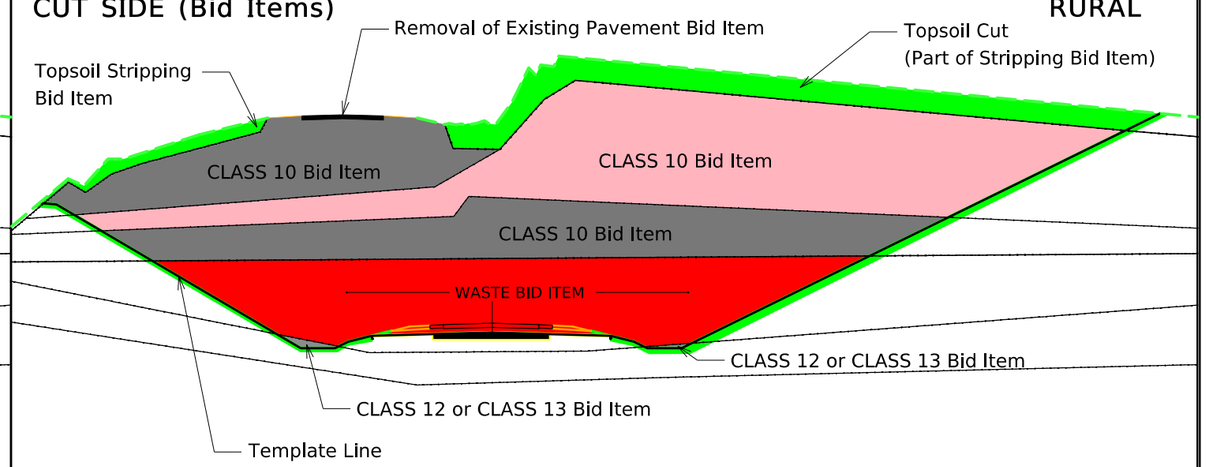
Notes:

1. "Total Fill Adjusted" Column includes all Class 10, 12, and 13 fill and adjustments for additional fill from cuts such as existing pavement, plowing and shaping operations, entrances, dikes, and topsoil stripping.
2. The available area to place unsuitable materials in the T Sheet tabulation does not include the undercut values from the topsoil stripping, existing pavement, or plowing and shaping

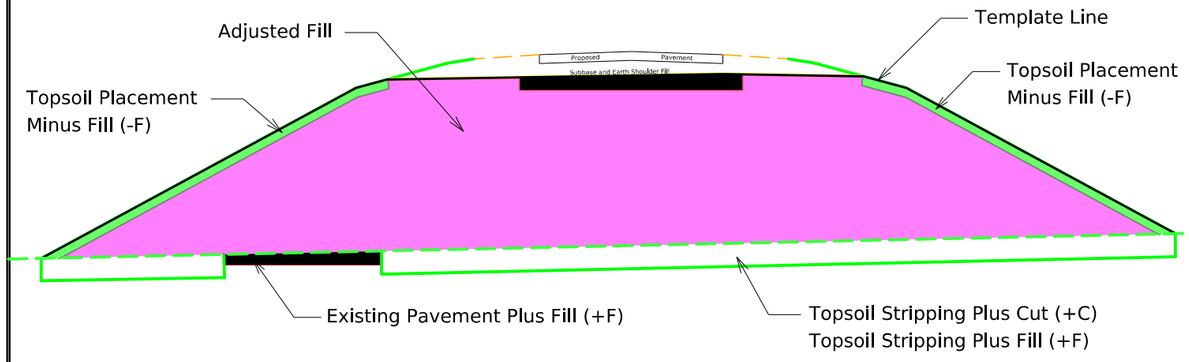
CUT SIDE (+/- Cuts) — RURAL



CUT SIDE (Bid Items) — RURAL



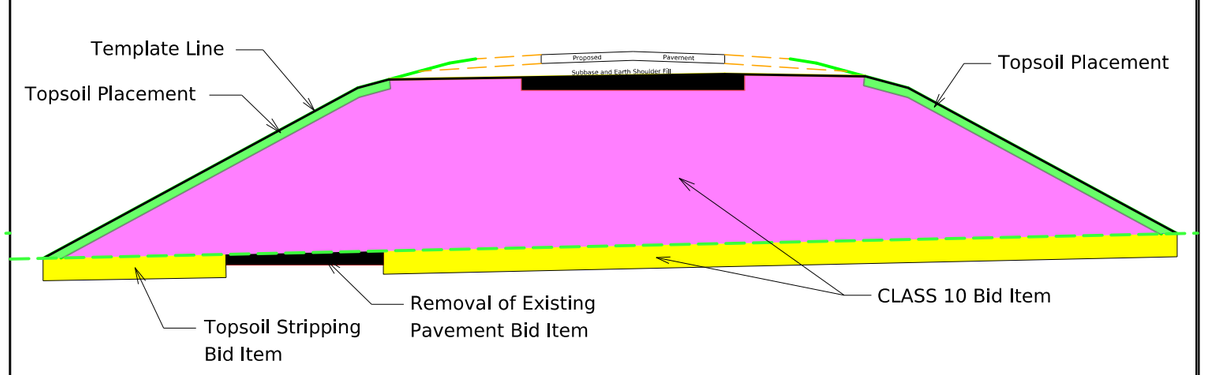
FILL SIDE (+/- Fills) — RURAL



Notes:

1. "Add Quantity +C" columns are additional cut encountered that is not Typical, Topsoil, or Subgrade Treatment Based. (Entrance, Dike, Etc.)
2. "-C" columns are either soil types or Class 10, 12, or 13 designated material that is encountered in the cut station range that is paid for by other bid items.
3. The "(SoilType) Cut" columns are soil types encountered in the cut that are paid by either Class 10, 12, or 13.
4. The "Adjusted Clas (10,12 or 13)" columns are the sum of all various soil types encountered in that station range, that are paid by Class 10, 12, or 13 bid items.
5. Refer to Standard Road Plan EW-102 for placement of unsuitable soil types.

FILL SIDE (Bid Items) — RURAL



Notes:

1. Refer to Standard Road Plan EW-102 for placement of unsuitable soil types.

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER T.2

3:12:08 PM 8/31/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_D01.dgn

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

Station	Cut					Fill				Checks (EW-102)		Topsoil										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink							
US59South																						
201+50.00																						
201+75.00	42	25	13	4	25	3	3	4	21	0	0	13	0	1	12							
202+00.00	42	26	13	4	26	3	3	4	22	0	0	13	0	1	12							
202+25.00	43	26	13	4	26	3	3	4	22	0	0	13	0	1	12							
202+50.00	43	27	12	4	27	3	3	4	23	0	0	12	1	1	12							
202+75.00	59	26	29	4	26	15	15	20	7	0	0	29	11	16	14							
203+00.00	79	27	48	4	27	40	40	52	-25	0	0	48	22	31	17							
203+25.00	90	28	59	3	28	52	52	68	-40	0	0	59	28	40	19							
203+50.00	95	31	61	3	31	51	51	67	-36	0	0	61	22	31	31							
203+75.00	80	31	43	6	31	38	38	49	-19	0	0	43	9	13	30							
204+00.00	68	29	31	8	29	22	22	29	1	0	0	31	9	12	18							
204+25.00	66	33	25	8	33	10	10	14	19	0	0	25	5	8	17							
204+50.00	95	59	27	9	59	3	3	4	55	0	0	27	4	6	22							
204+75.00	130	75	34	21	75	3	3	4	72	0	0	34	4	6	28							
205+00.00	143	72	41	30	72	12	12	15	56	0	0	41	1	2	40							
205+25.00	424	357	38	28	357	11	11	15	342	0	0	38	0	0	38							
205+30.00	145	134	5	5	134	0	0	0	134	0	0	5	0	0	6							
205+40.00	296	274	11	11	274	0	0	0	274	0	0	11	0	0	11							
205+48.51	123	114	5	5	114	0	0	0	113	0	0	5	0	0	5							
US59South																						
Totals:	2,064	1,395	509	161	1,395	271	271	354	1,042	0	0	509	119	166	344							

#

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill				Checks (EW-102)		Topsoil										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink							
US59North																						
205+61.79																						
205+75.00	59	35	23	0	35	18	18	23	12	0	0	23	0	0	24							
205+80.00	66	48	15	3	48	15	15	20	28	0	0	15	0	0	15							
205+90.00	161	126	24	11	126	32	32	41	85	0	0	24	0	0	24							
206+00.00	107	73	23	11	73	24	24	32	41	0	0	23	0	0	23							
206+25.00	148	79	40	29	79	25	25	32	47	0	0	40	0	0	40							
206+50.00	125	66	28	30	66	2	2	2	64	0	0	28	2	3	26							
206+75.00	93	48	26	19	48	3	3	4	44	0	0	26	3	4	22							
207+00.00	60	33	22	5	33	4	4	5	28	0	0	22	2	3	19							
207+25.00	62	27	32	3	27	14	14	19	8	0	0	32	7	10	22							
207+50.00	64	25	36	3	25	20	20	26	-1	0	0	36	6	9	27							
207+75.00	53	25	25	3	25	10	10	13	12	0	0	25	0	1	24							
208+00.00	49	25	20	3	25	4	4	5	20	0	0	20	1	2	18							
208+25.00	49	25	21	3	25	5	5	6	19	0	0	21	2	3	18							
208+50.00	49	25	21	3	25	5	5	7	18	0	0	21	3	4	18							
208+75.00	48	25	20	3	25	5	5	6	19	0	0	20	2	3	17							
209+00.00	55	25	26	3	25	14	14	18	7	0	0	26	1	1	26							
209+25.00	54	25	26	3	25	14	14	18	8	0	0	26	0	0	26							
209+50.00	46	26	17	3	26	3	3	4	21	0	0	17	0	0	17							
209+75.00	45	26	17	3	26	3	3	5	21	0	0	17	0	0	16							
US59North																						
Totals:	1,393	787	462	145	787	220	220	286	502	0	0	462	31	43	420							

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum\Janus	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER T.4

7/14/2026 10:25:41 AM ajanus2 c:\pw_work\pwmain\ajanus2\d1173555\SHT_78059050_T03.xlsm

Refer to Standard Road Plans EW-101 and EW-102.

TABULATION OF TEMPLATE QUANTITIES AND ADJUSTMENTS

107-28
04-21-15

Station	Cut					Fill				Checks (EW-102)		Topsoil										
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]
	Total Cut Unadjusted Volume	Total Class 10 Unadjusted Volume	Topsoil Cut Volume	Template Pavement Removal Volume	Total Cut Adjusted	Total Fill Unadjusted Volume	Total Fill Adjusted	Total Fill Adjusted w/ Weighted Average 1.3 Shrink Factor	Total Cut Adjusted Minus Fill w/ Shrink	Approx. Fill Vol. Below 5' & Above 20' w/ Shrink	Approx. Fill Volume Below 3' w/ Shrink	Topsoil Stripping Undercut Volume	Topsoil Placement Undercut Volume	Topsoil Placement With 1.4 Shrink Factor	Topsoil Stripping Minus Topsoil Placement w/Shrink							
Summary:																						
US59South	2,064	1,395	509	161	1,395	271	271	354	1,042	0	0	509	119	166	344							
US59North	1,393	787	462	145	787	220	220	286	502	0	0	462	31	43	420							
Project Totals:	3,457	2,182	971	306	2,182	491	491	640	1,544	0	0	971	150	209	764							

Excavation Class 10, Roadway and Borrow [8] 640

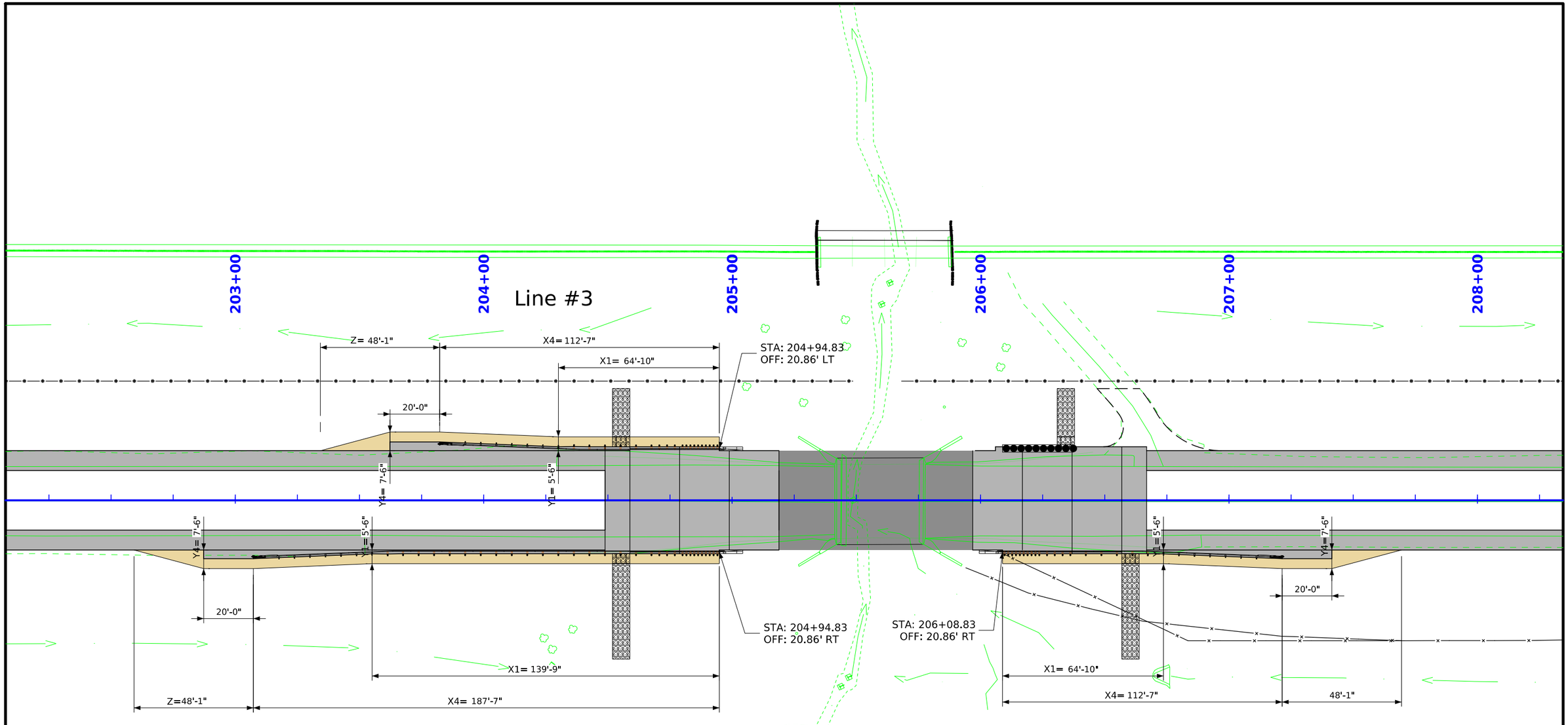
Excavation Class 10 Waste [9] 1,544

Topsoil strip, Salvage and Spread [12] 971

Compaction with Moisture Control [7] 491

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum\Janus	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER T.5

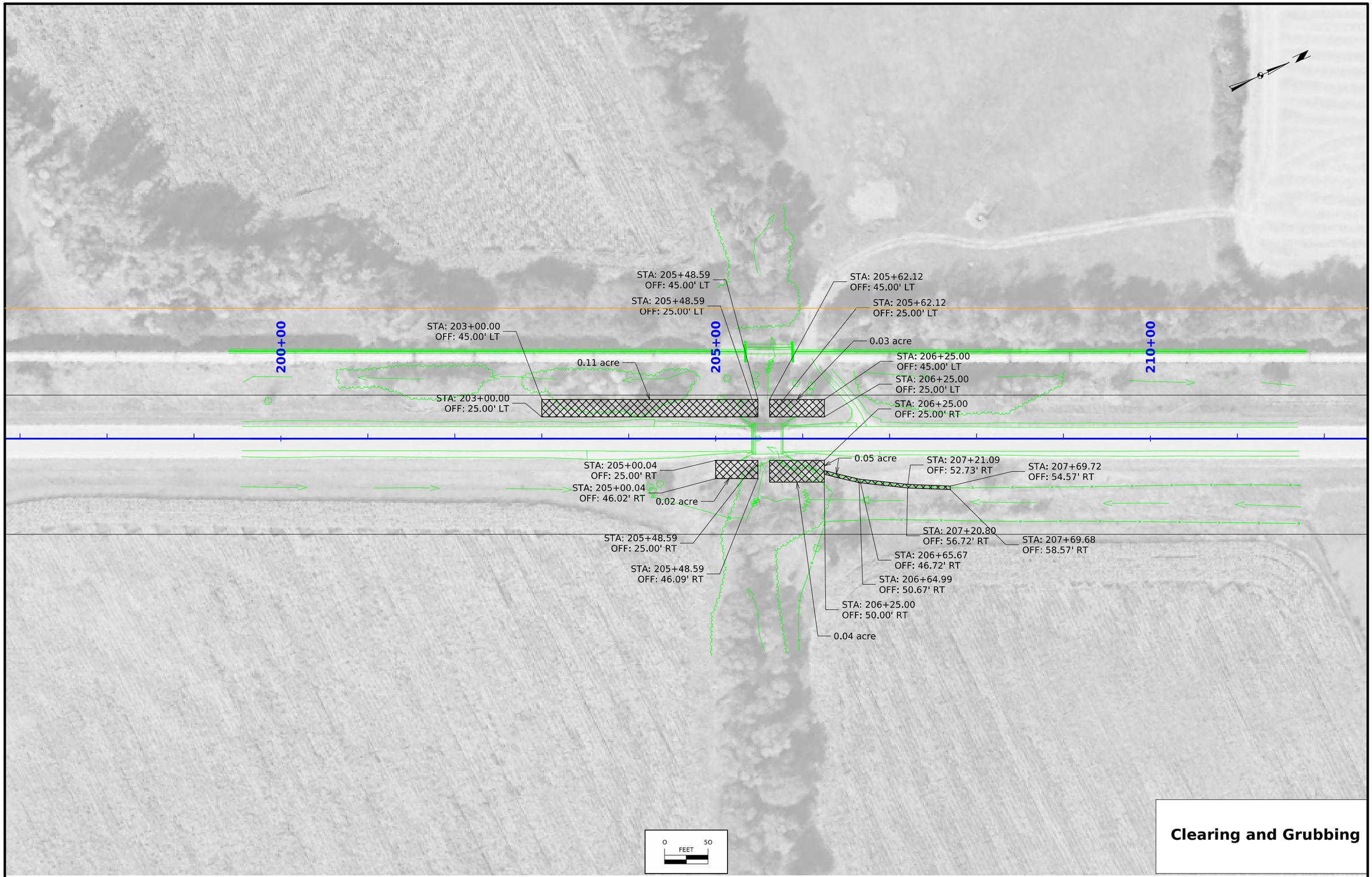
7/14/2026 10:25:41 AM ajanus2 c:\pw_work\pwmain\ajanus2\d1173555\SHT_78059050_T03.xlsm



Grading for Guardrail

	Direction of Travel	Station	Side	X1 FT	Y1 FT	X2 FT	Y2 FT	X3 FT	Y3 FT	X4 FT	Y4 FT	Z FT
1	NB	235+86.21	Out	139.8	5.5	-	-	-	-	187.6	7.5	48.1
2	SB	235+63.12	Out	64.8	5.5	-	-	-	-	112.6	7.5	48.1
3	SB	237+05.59	Out	64.1	5.5	-	-	-	-	112.6	7.5	48.1

X and Y dimensions are for grading only, not for guardrail placement



Clearing and Grubbing

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER U.2	

3:41:03 PM 7/9/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_U02.dgn

CROSS SECTION VIEW COLOR LEGEND

Design Color No.	Feature
Aggregate	
(64)	Choke Stone
(42)	Engineering Fabric
(8)	Flooded Backfill
(92)	Macadam Stone
(20)	Modified
(12)	Plowing Shaping
(14)	Porous Backfill
(8)	Revetment Class A
(6)	Revetment Class B
(62)	Revetment Class C
(188)	Revetment Class D
(28)	Revetment Class E
(12)	Shoulder Special Backfill
(12)	Special Backfill
(20)	Subbase
(20)	Subbase Lower
(20)	Subbase Upper
(118)	Subgrade Treatment
Asphalt	
(207)	HMA Base Course
(207)	HMA Interim Course
(207)	HMA Surface Course
Concrete	
(0)	Barrier Concrete
(0)	Barrier Concrete Footing
(0)	Curb Gutter
(48)	Flowable Mortar
(0)	Median Concrete
(0)	PCC Pavement
(0)	Sidewalk
Shoulder	
(209)	Shoulder HMA
(0)	Shoulder PCC
(6)	Shoulder Granular
Existing	
(0)	Existing Pavement
Structural	
(112)	Noise Wall
(112)	Noise Wall Footing
(112)	Retaining Wall Back
(112)	Retaining Wall Back Excavate
(112)	Retaining Wall Face
(112)	Retaining Wall Front Excavate
(112)	Retaining Wall Front Footing
(112)	Retaining Wall MSE Gutter
(112)	Retaining Wall Reinforced Earth
Grading	
(8)	Behind Curb Cut
(6)	Granular
(13)	Granular Back Fill
(48)	Rock Undercut
(8)	Shoulder Earth Fill
(2)	Side Slopes
(226)	Side Slopes Dressing
Substrata	
(128)	Boulder Substrata
(48)	Broken Weathered Substrata
(3)	Core Out Substrata
(203)	Existing Pavement Substrata
(6)	Loam Substrata
(80)	Rock Substrata
(4)	Select Sand Substrata
(3)	Shale Substrata
(10)	Topsoil Substrata
Unsuitable / Waste	
(3)	Unsuitable Type A
(13)	Unsuitable Type B
(11)	Unsuitable Type C
(3)	Waste

NOTES:

Text

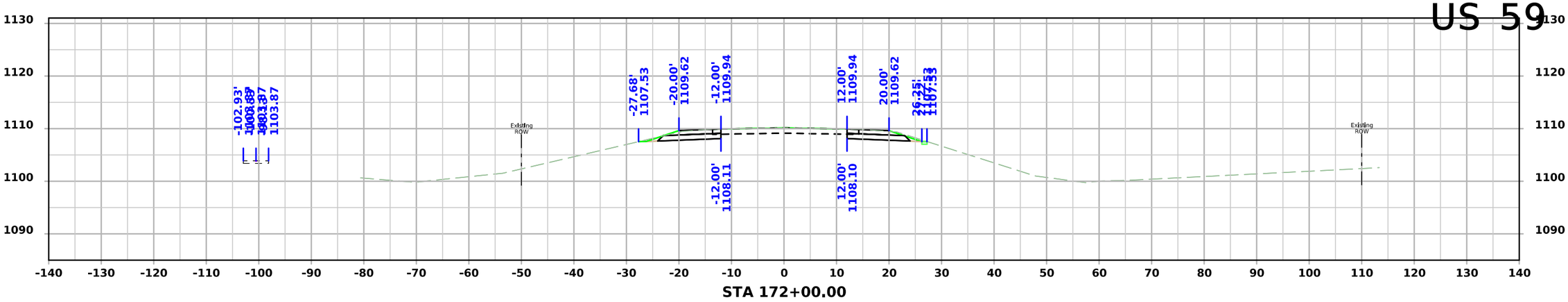
NOTES:

Text

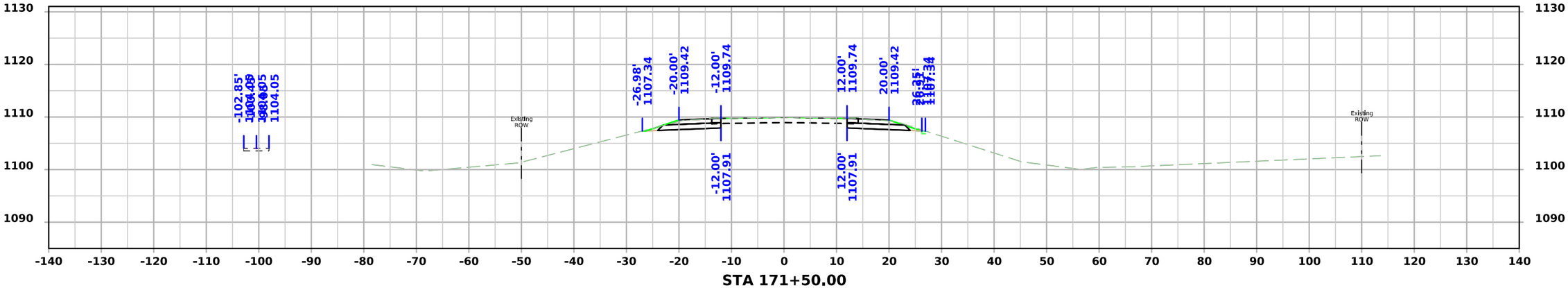
CROSS SECTIONS
LEGEND AND INFORMATION SHEET

(COVERS SHEET SERIES W, X, Y, & Z)

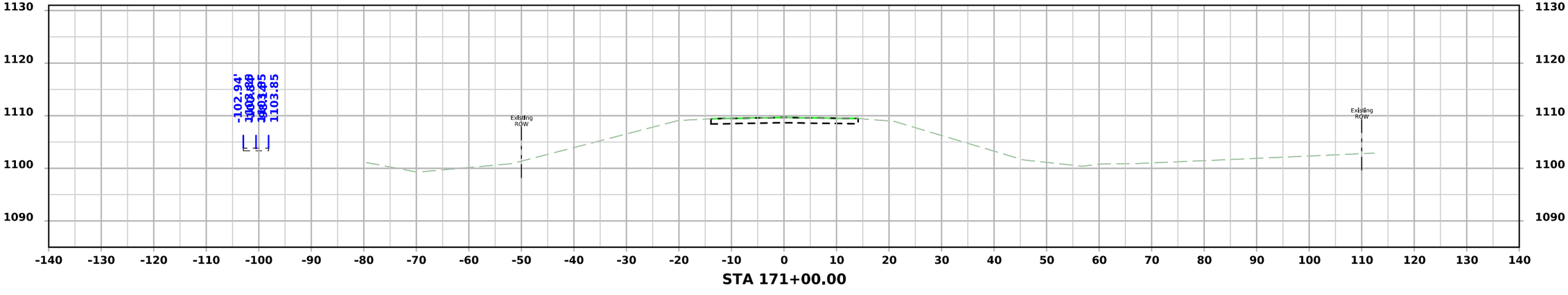
US 59



STA 172+00.00



STA 171+50.00

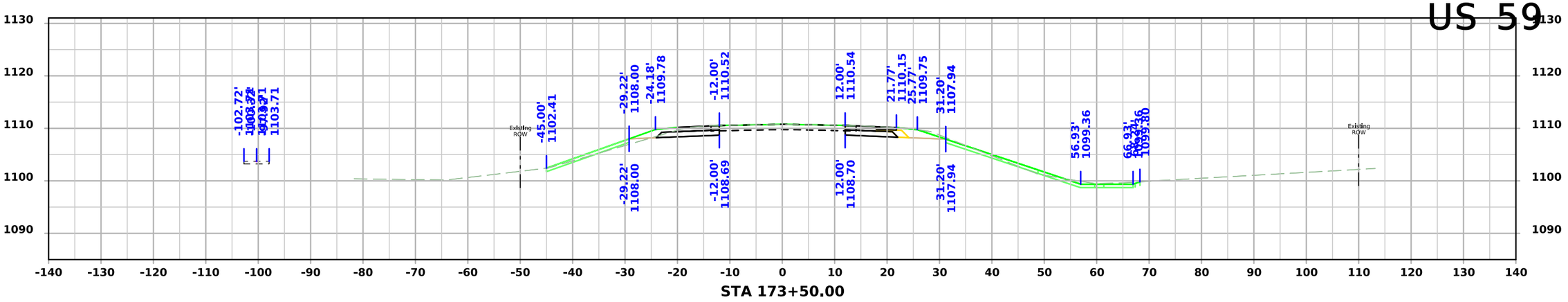


STA 171+00.00

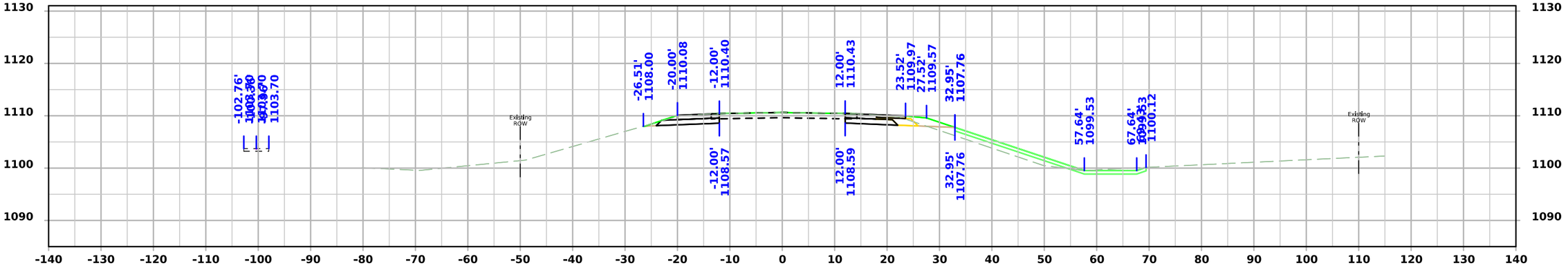
FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER W.2

3:28:23 PM 8/31/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_W01.dgn

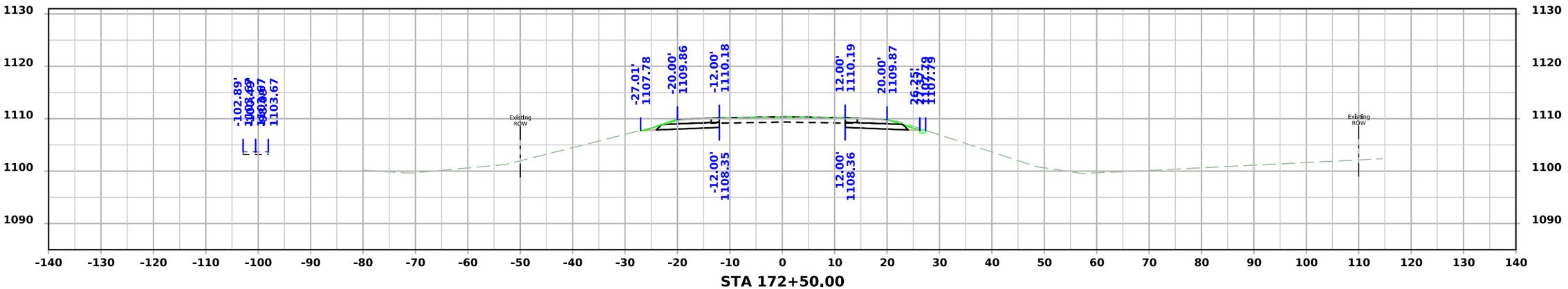
US 59



STA 173+50.00



STA 173+00.00

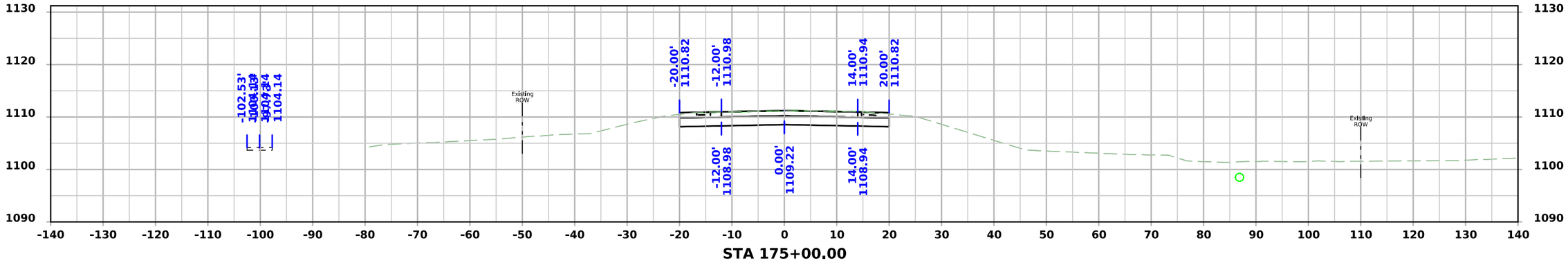


STA 172+50.00

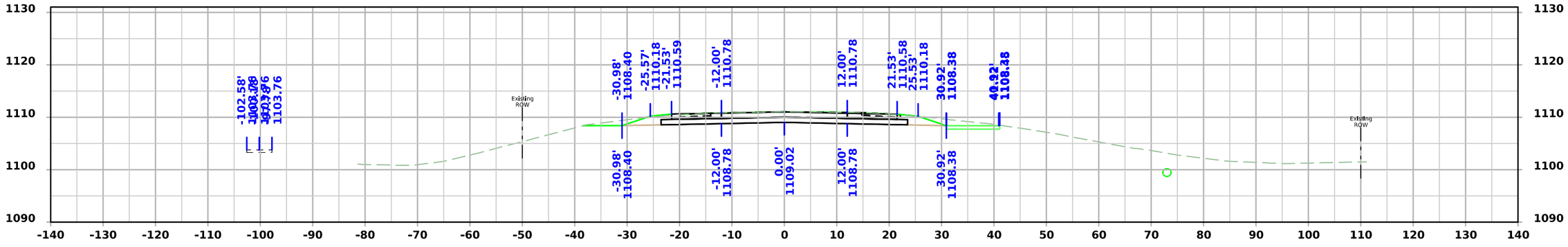
FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER W.3	

3:28:24 PM 8/31/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_W01.dgn

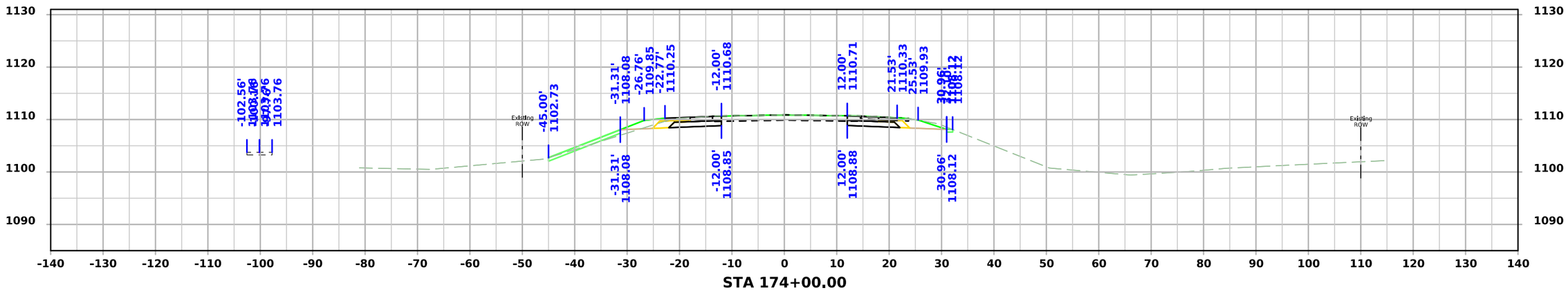
US 59



STA 175+00.00



STA 174+50.00

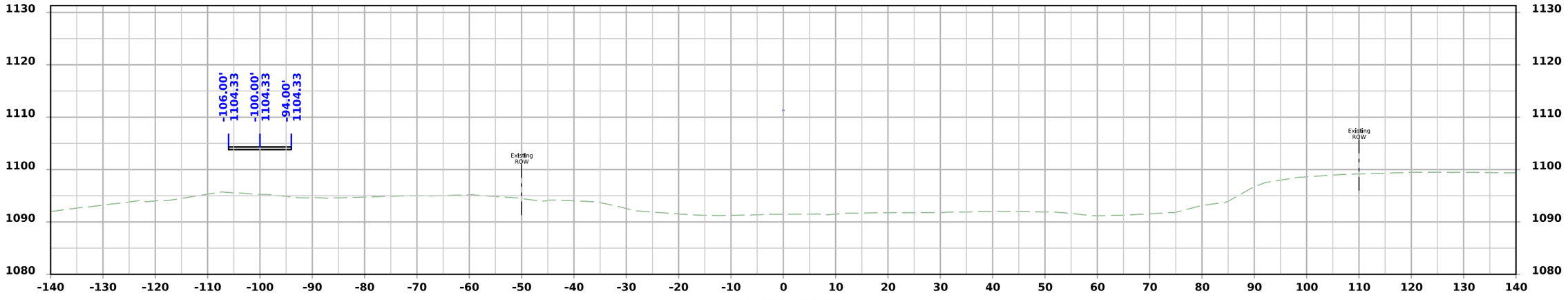


STA 174+00.00

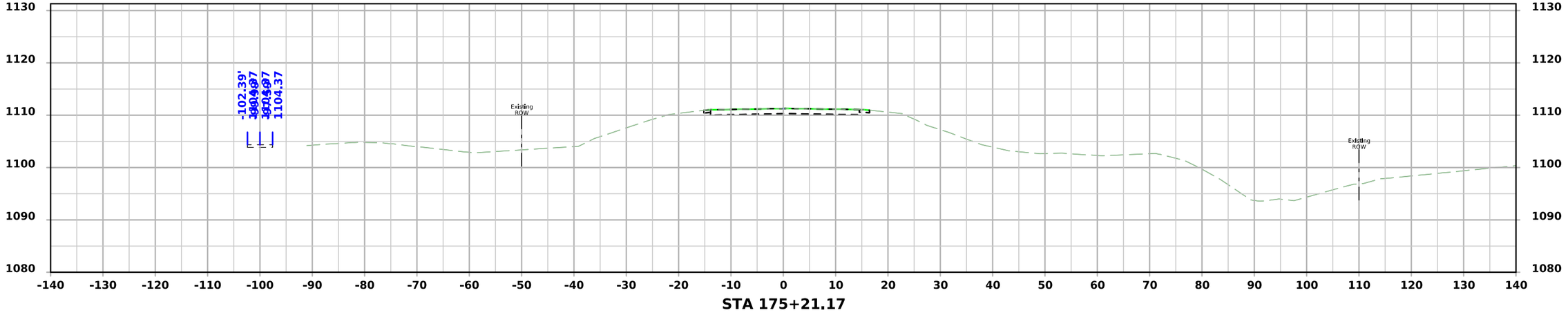
FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER W.4	

3:28:25 PM 8/31/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_W01.dgn

US 59



STA 175+50.00

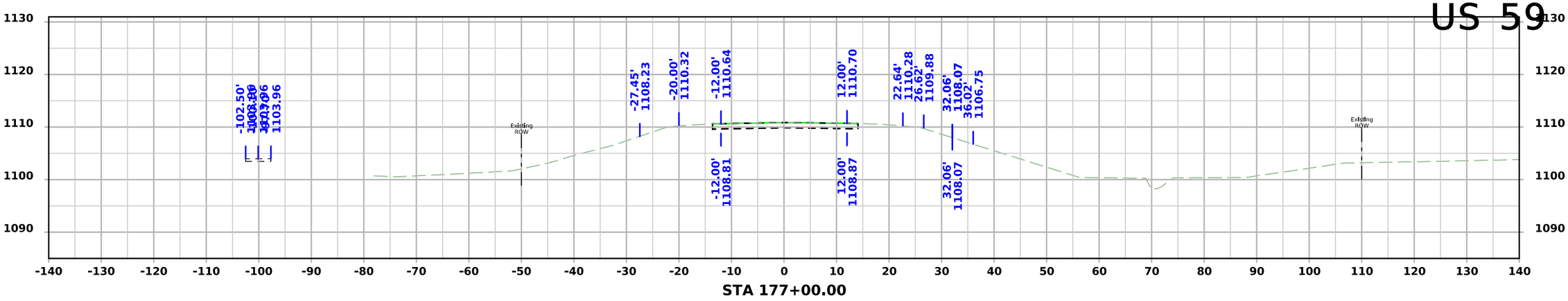


STA 175+21.17

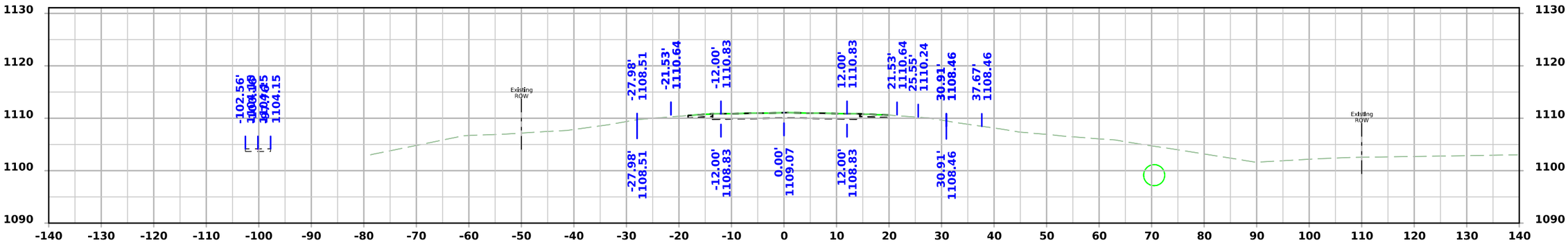
FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER W.5	

3:28:25 PM 8/31/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_W01.dgn

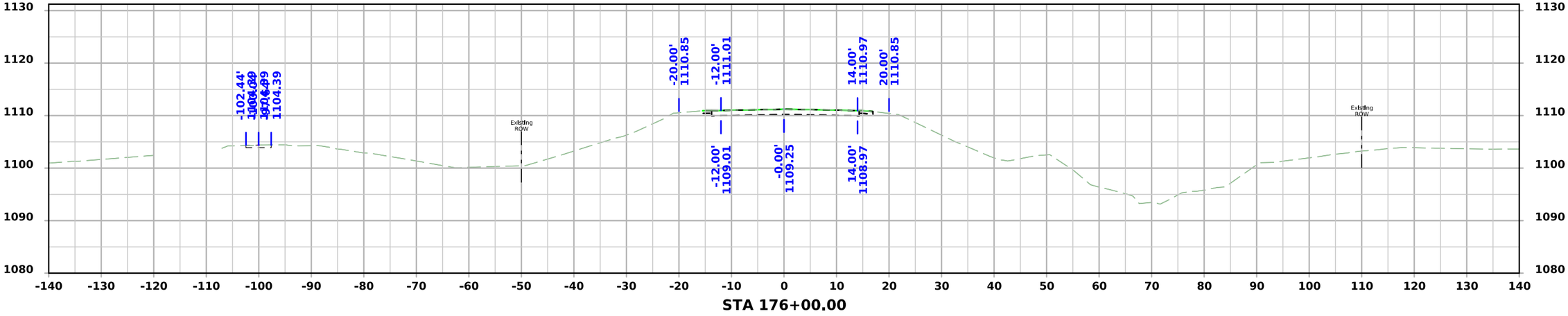
US 59



STA 177+00.00



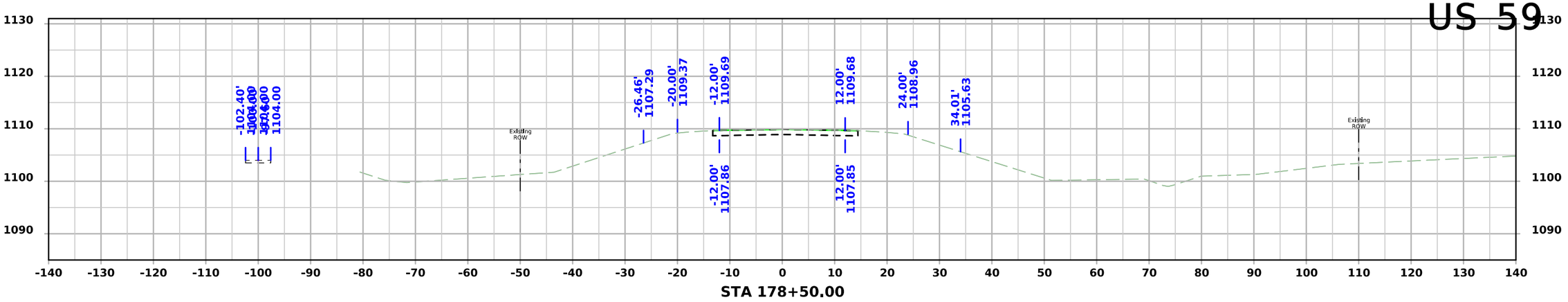
STA 176+50.00



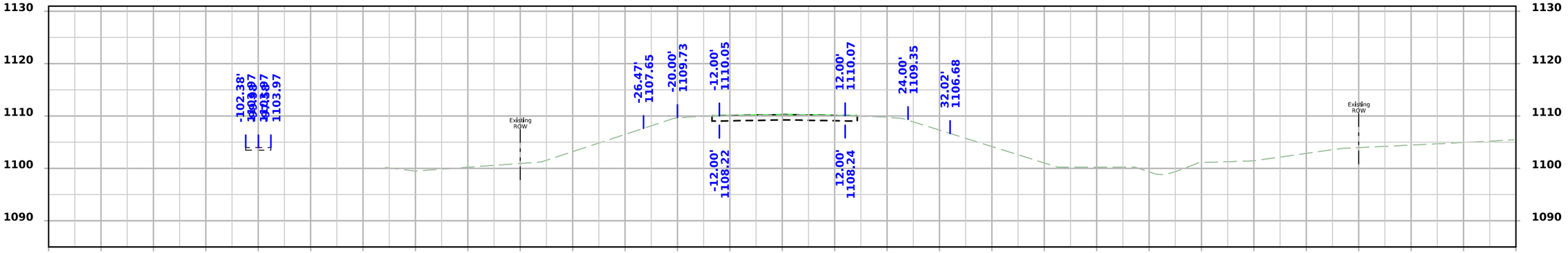
STA 176+00.00

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER W.6	

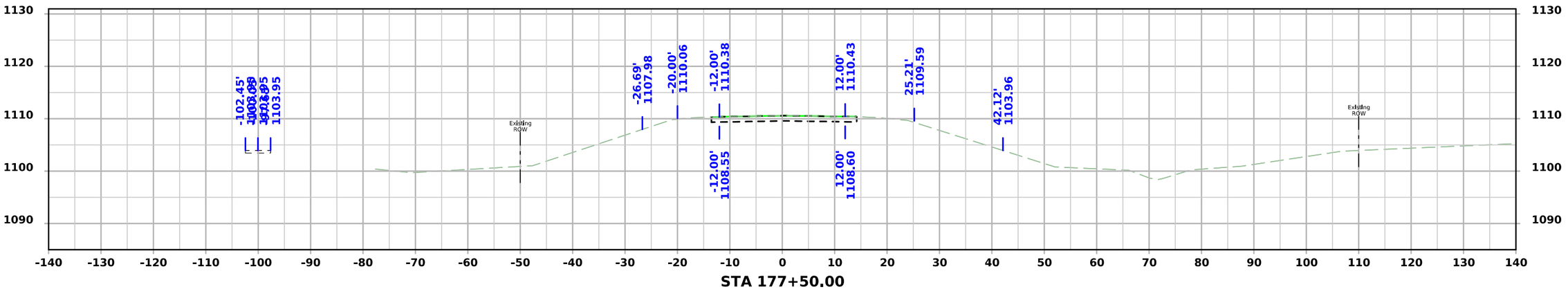
3:28:26 PM 8/31/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_W01.dgn



STA 178+50.00



STA 178+00.00

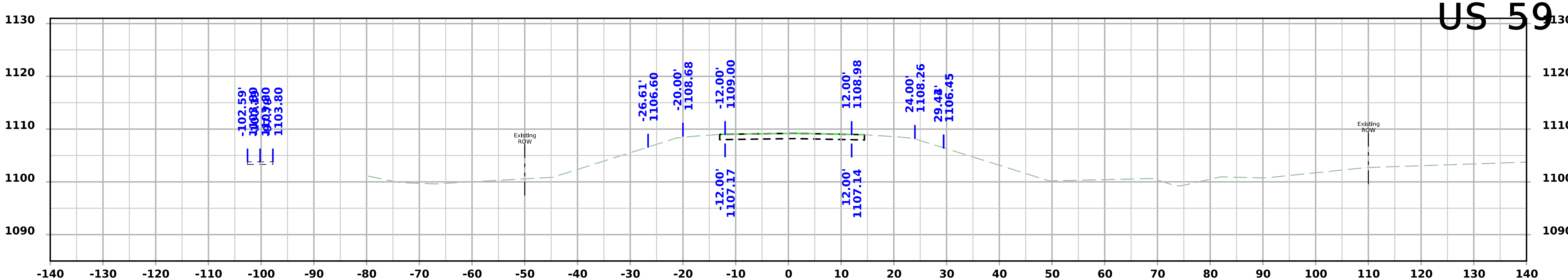


STA 177+50.00

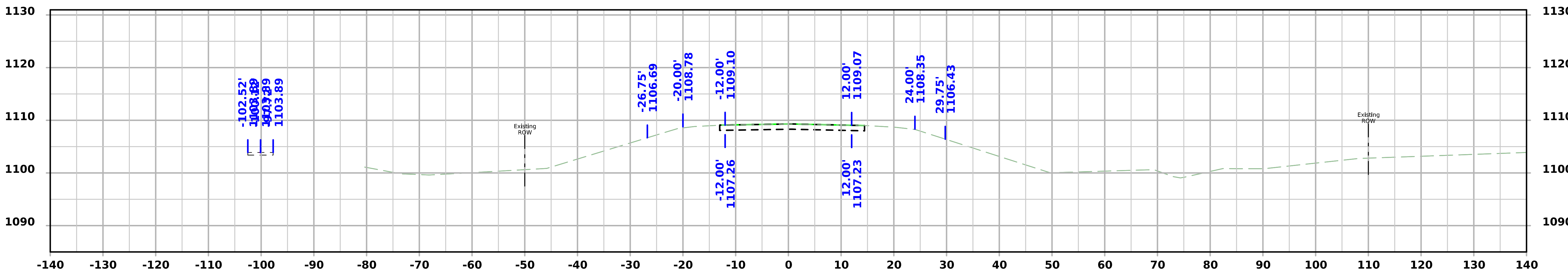
FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER W.7

3:28:26 PM 8/31/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_W01.dgn

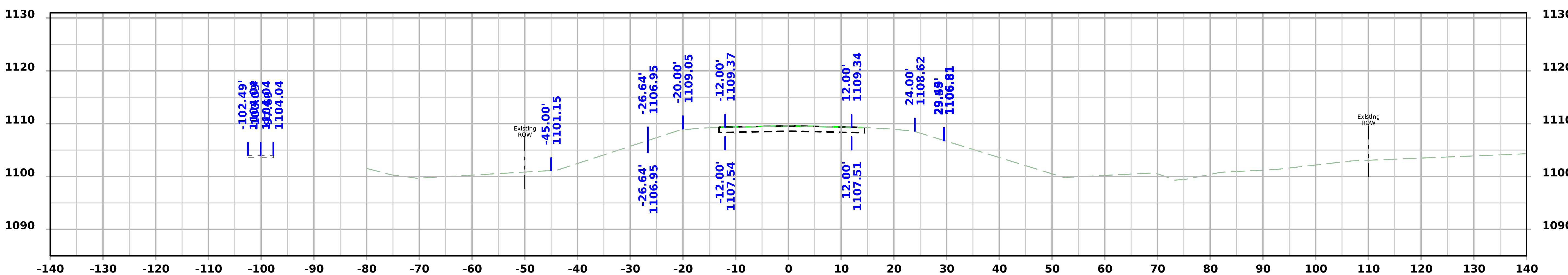
US 59



STA 179+75.00



STA 179+50.00

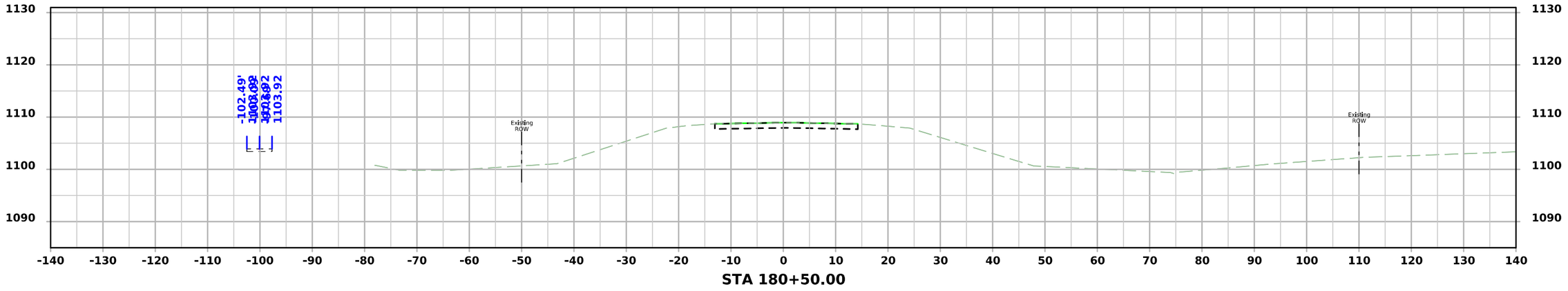


STA 179+00.00

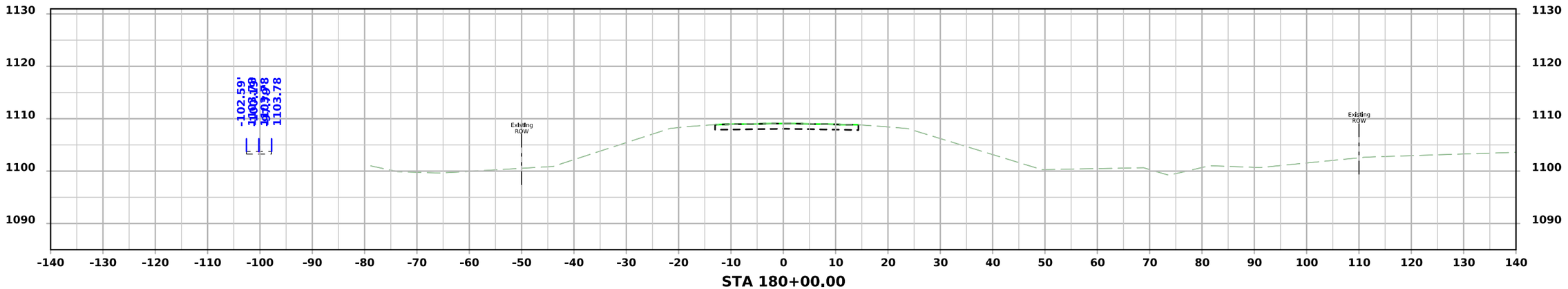
FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER W.8

3:28:27 PM 8/31/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_W01.dgn

US 59



STA 180+50.00



STA 180+00.00

FILE NO. 32301	ENGLISH	DESIGN TEAM Strum/Janus	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(50)--38-78	SHEET NUMBER W.9

3:28:27 PM 8/31/2026 ajanus2 pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\7805902021\Design\CADD_Files\Sheet_Files\SHT_78059050_W01.dgn