

GRUNDY COUNTY

Bridge-Unspecified
BRFN-014-6(44)--39-38

LETTING DATE
11-19-2024



PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
GRUNDY COUNTY
Bridge-Unspecified
Wolf Creek 0.8 mi N fo Co Rd D67

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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



REVISIONS

TOTAL

15

PROJECT IDENTIFICATION NUMBER

20-38-014-010

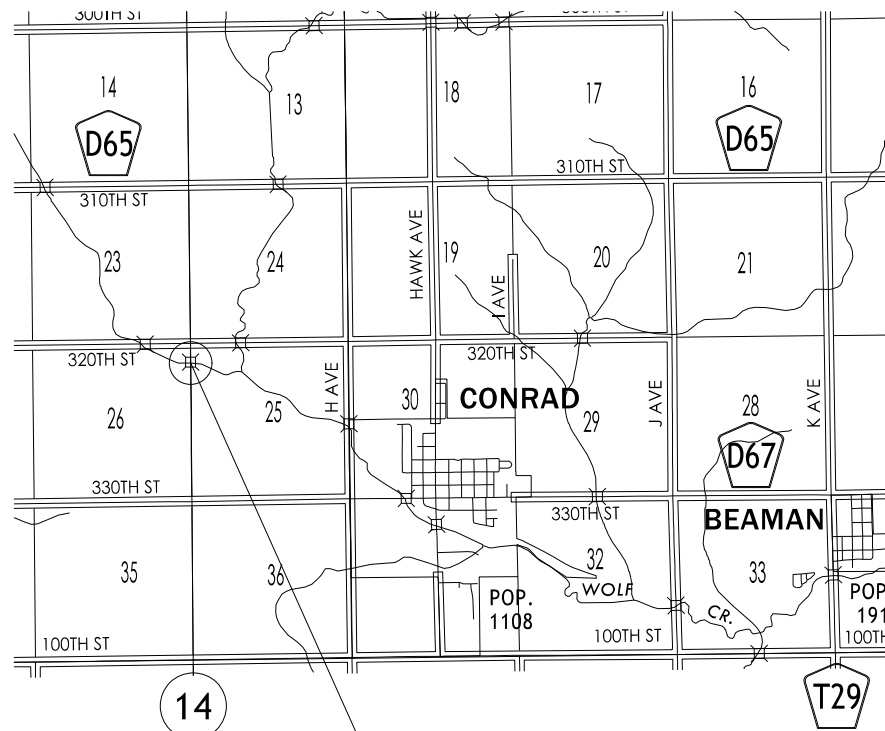
PROJECT NUMBER

BRFN-014-6(44)--39-38

R.O.W. PROJECT NUMBER

NHSN-014-6(45)--2R-38

No.	DESCRIPTION
INDEX OF SHEETS	
A Sheets	Title Sheets
* A.1	Title Sheet/Location Map
B Sheets	Typical Cross Sections and Details
B.1 - 3	Typical Cross Sections and Details
D Sheets	Mainline Plan and Profile Sheets
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 14 Plan & Profile
J Sheets	Traffic Control and Staging Sheets
* J.1	Traffic Control Plan
* J.2	Detour Map
V Sheets	Bridge and Culvert Situation Plans
V.1 - 3	Bridge and Culvert Situation Plans
W Sheets	Mainline Cross Sections
W.1 - 4	Mainline Cross Sections
	* Color Plan Sheets



Project Location
MP 115.44
Maintenance No. 3815.45014
FHWA No. 25830

D4 PLAN - Date: 7-23-2024

PRELIMINARY PLANS

Subject to change by final design.

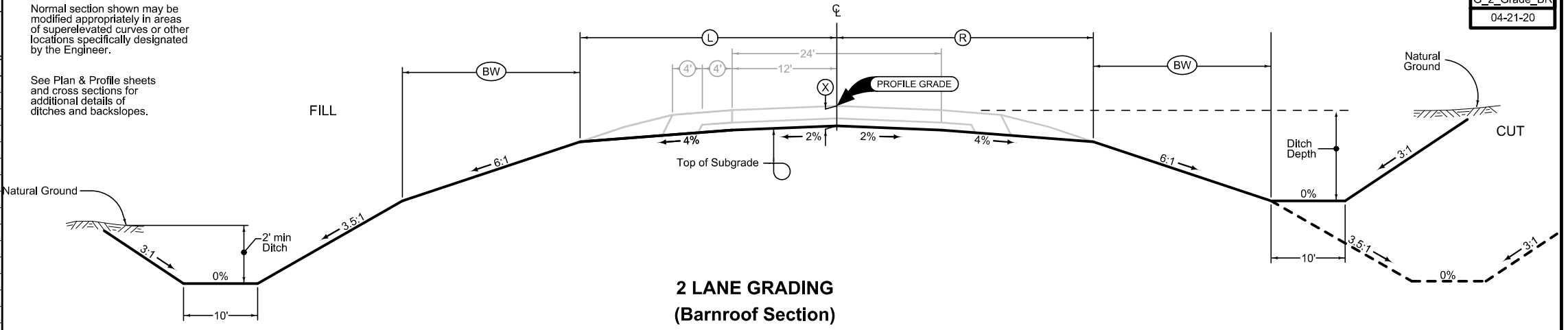
D5 PLAN - Date: 3-17-2023

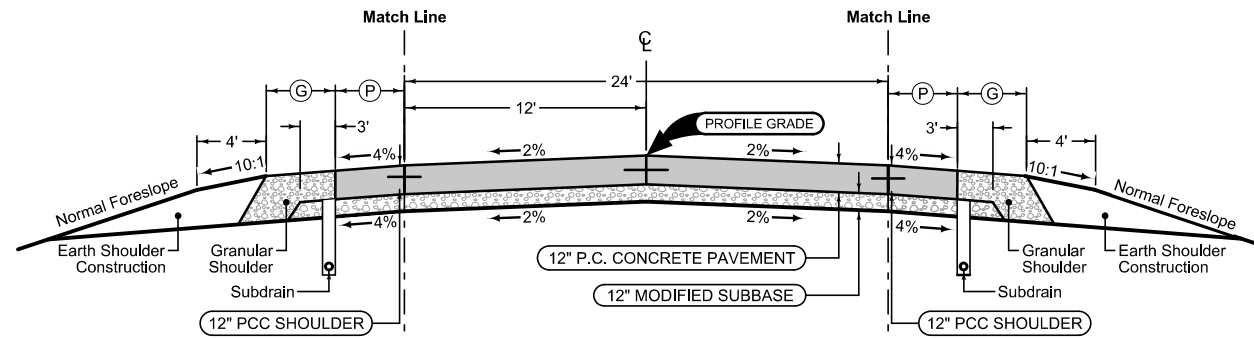
INDEX OF SEALS		
SHEET NO.	NAME	TYPE
A.1	Allison Smyth	Primary Signature Block

LOCATION			DIMENSIONS			
ROAD IDENTIFICATION	STATION TO STATION		(L)	(R)	(X)	(BW)
			Feet	Feet	Inches	Feet
IA 14	96+87.66	97+85.80	36	36	24	7.04
IA 14	100+29.84	101+19.99	36	36	24	7.04

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

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





Mainline Jointing:
 Transverse joints: CD at 17' spacing
 Longitudinal joint: L-2

2P_04-21-20	
STATION TO STATION	
96+87.66	97+86.01
100+27.32	101+19.99

Full Depth PCC Combination Shoulder

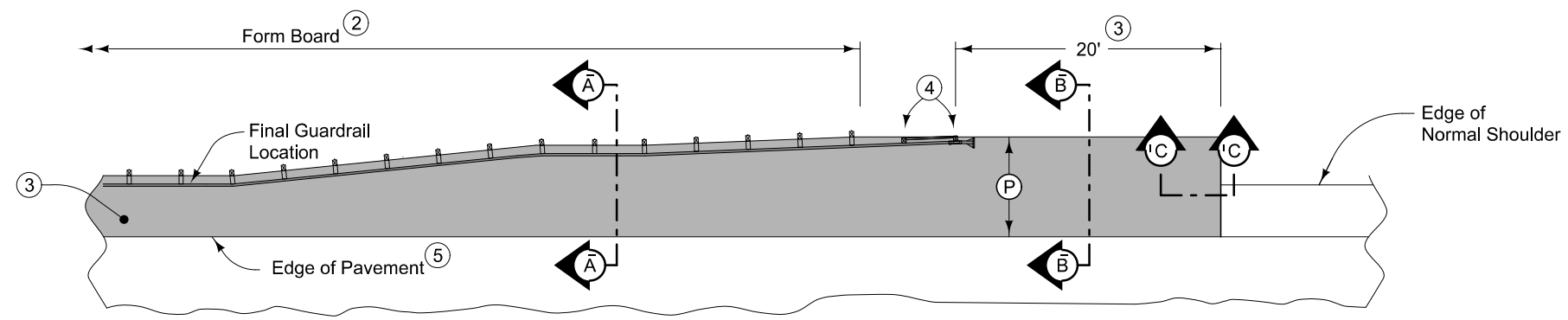
Shoulder Jointing:
 Longitudinal joint: L-2 or KT-2
 Transverse joints: C at 17' spacing

2_C_FullPCC_04-21-20			
STATION TO STATION		(P) Feet	(G) Feet
96+87.66	97+47.71	4	4
100+90.45	101+99.19	4	4

Full Depth PCC Combination Shoulder

Shoulder Jointing:
 Longitudinal joint: L-2 or KT-2
 Transverse joints: C at 17' spacing

2_C_FullPCC_04-21-20			
STATION TO STATION		(P) Feet	(G) Feet
96+87.66	97+23.20	4	4
100+65.27	101+19.99	4	4



PLAN VIEW

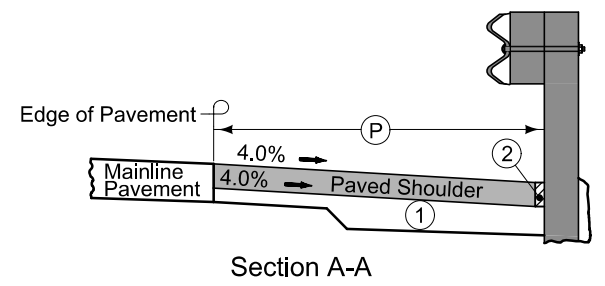
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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.

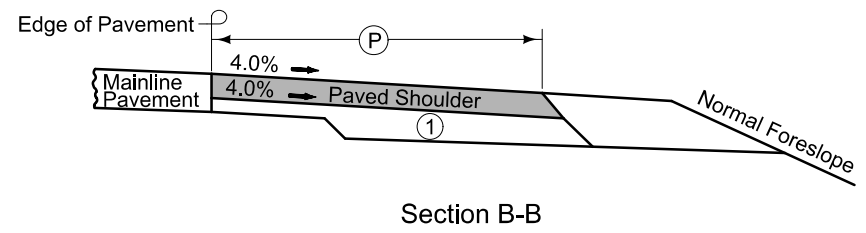
Compaction of HMA is required to face of guardrail post. Hand compaction will be allowed under guardrail. Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

- ① For subgrade treatment, refer to other details in the plan.
- ② 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. Refer to note 4 for final 2 posts.
- ③ Continue paved shoulder to existing paved shoulder or 20 feet beyond the center of the first post.
- ④ Shoulder may be notched for final 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.
- ⑤ 'KT-1 joint for PCC shoulder. 'B' joint for HMA shoulder.

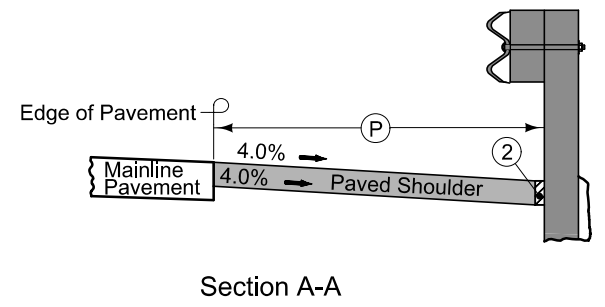


Section A-A

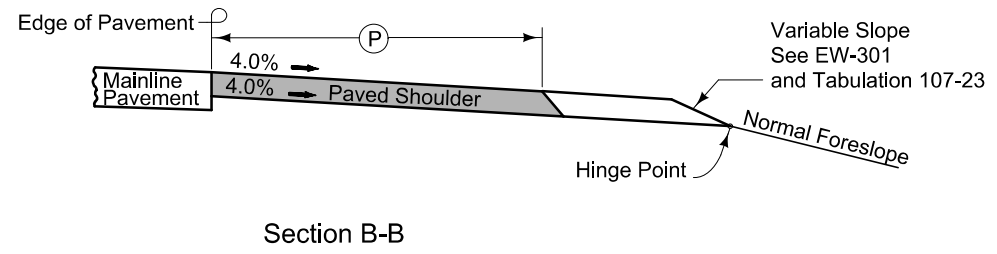


Section B-B

NEW CONSTRUCTION

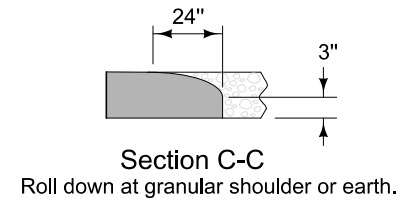


Section A-A



Section B-B

EXISTING SHOULDER



Section C-C

Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL

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
- Water Hydrant (Rural)
- Septic Tank
- Cistern
- L.P. Gas Tank (No Footing)
- Underground Storage Tank
- Latrine
- Satellite TV Dish
- Water Hook Up
- Radio Tower
- Tower Anchor
- Guardrail (Beam or Cable)
- Guard Post (one or two)
- Guard Post (over two)
- Filler Pipe
- Gas Valve
- Water Valve
- Speed Limit Sign
- Mile Marker Post
- Sign
- Traffic Signal Control Box
- Rail Road Signal Control Box
- Telephone Switch Box
- Electric Box

UTILITY LEGEND

- FO** Jay Duncan
Plant Manager
Heart of Iowa Communications Cooperative
502 Main Street
Union, IA 50258-0130
(641) 486-2211
jduncan@heartofiowa.coop
- Mary Montgomery
Real Estate and Right of Way Representative II
Alliant Energy
PO Box 351
Cedar Rapids, IA 52406-9874
(319) 786-4768
MaryMontgomery@alliantenergy.com
- W** Michael Madren
CADD Technician
Iowa Regional Utilities Association
3801 Iowa Speedway Drive
Newton, IA 50208
(641) 792-7011
mmadren@irua.net
- E** David Gross
Permitting Specialist
ITC Midwest LLC
100 E. Grand Avenue - Suite 230
Des Moines, IA 50309
(515) 639-3325 Cell: (507) 320-2422

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

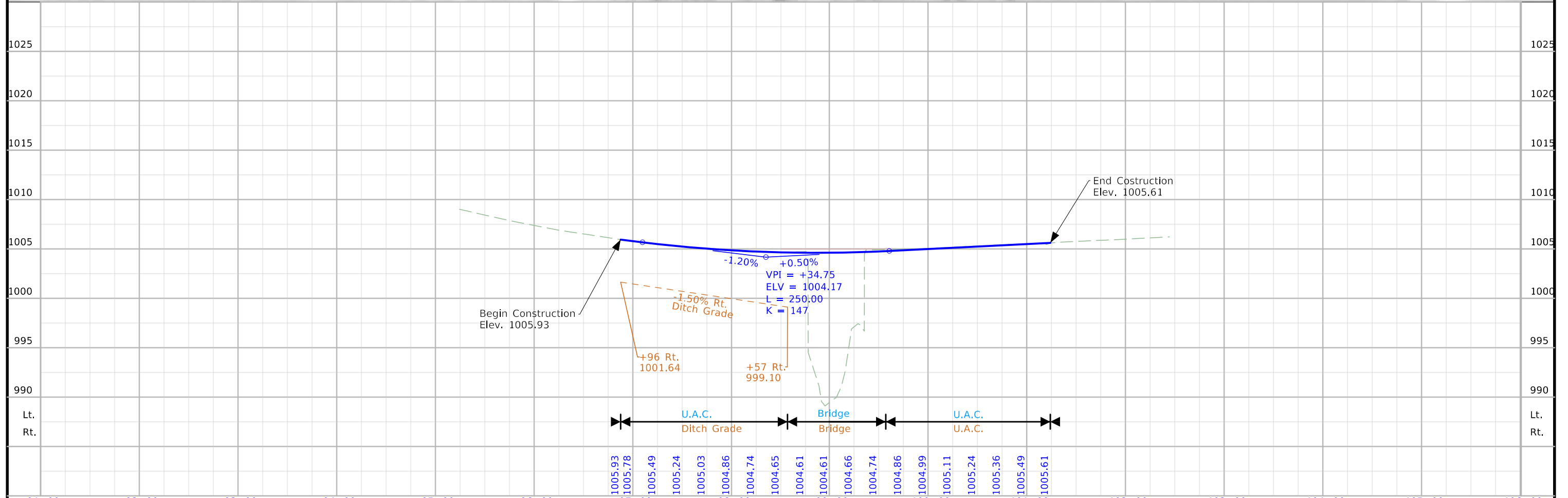
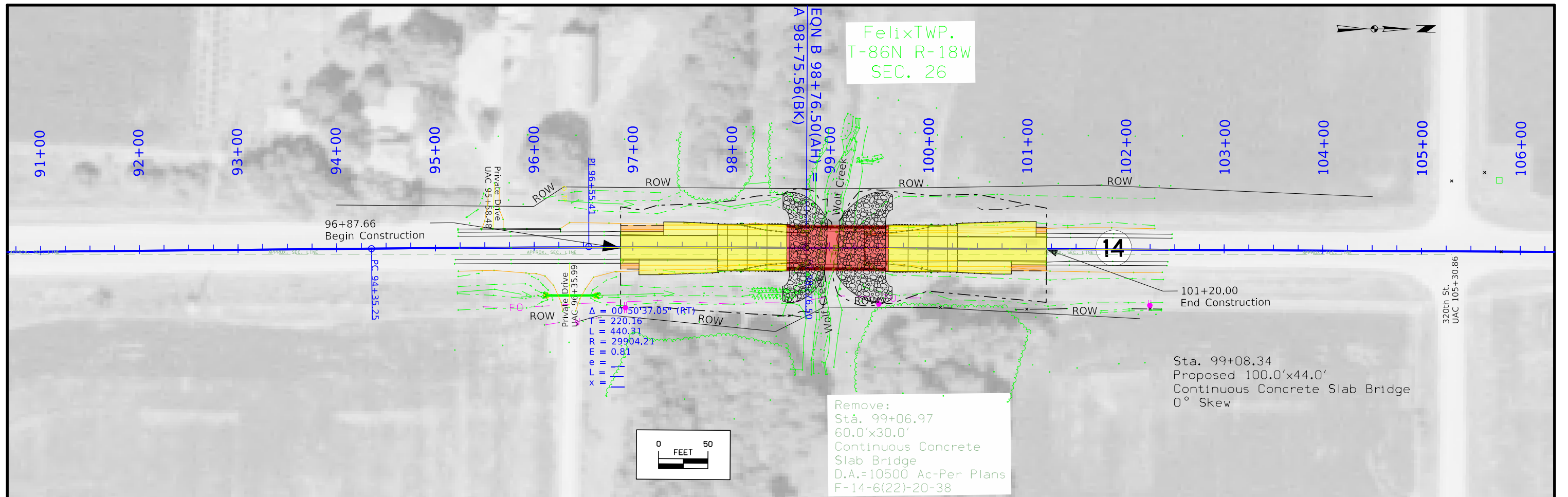
- Reference Point
- Station
- Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

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
- Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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



91+00	92+00	93+00	94+00	95+00	96+00	97+00	98+00	99+00	100+00	101+00	102+00	103+00	104+00	105+00	106+00			
FILE NO.	ENGLISH	DESIGN TEAM Smyth/Adey/Vais					GRUNDY COUNTY					PROJECT NUMBER	BRFN-014-6(44)--39-38			SHEET NUMBER	D.2	

NO ACCESS RIGHTS ARE TO BE ACQUIRED ON THIS PROJECT.



1

J. PATRICK NEUROTH &
PATRICIA A. MEANS NEUROTH

2

BUSCH FARM
PROPERTIES LLC

3

JOANN R. KLEIN (LE)
MARY L. CHADWICK
KEVIN P. KLEIN

TEMPORARY EASEMENT
TO SHAPE

TEMPORARY EASEMENT
TO SHAPE

TEMPORARY EASEMENT
TO SHAPE

STA 98+00
C 70'

STA 99+08±P
C 70'

STA 99+92
C 70'

STA 98+45
C 85'

STA 99+86
C 60'

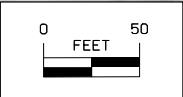
95+00

100+00

105+00

14

Right of Way Design Information	
THIS SHEET INCLUDED FOR INFORMATION ONLY	
ROW Team:	ATINKEN / JLARSON
ROW #:	NHSN-014-6(45)-2R-38
Plan Date:	4/25/2023
Color Legend:	
	Property Lines
	Temporary Easement
	Permanent Acquisition



108-23A
08-01-08

TRAFFIC CONTROL PLAN

Iowa 14 will be closed to traffic during construction. See detour map on sheet J.2. The detour will be placed and maintained by the contractor.

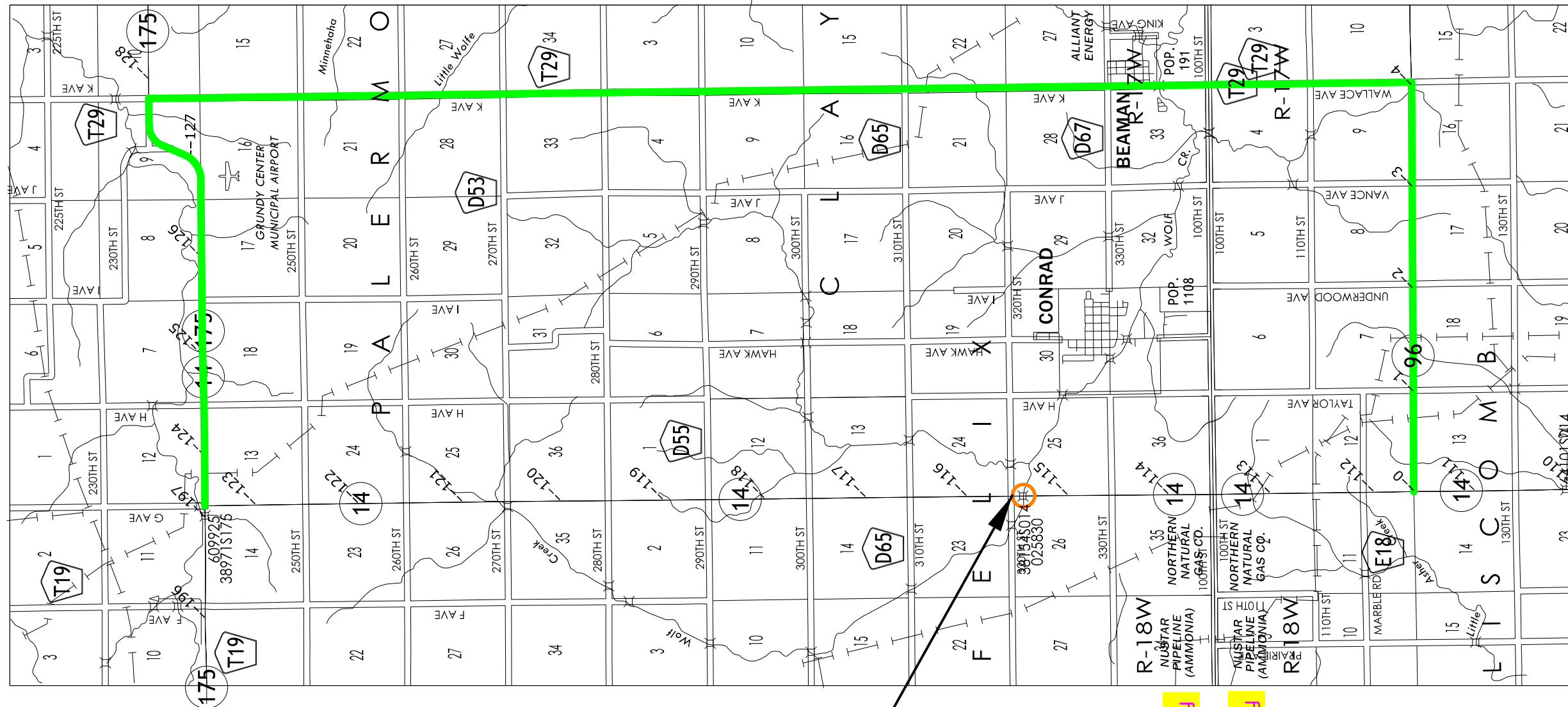
108-25
10-21-14

511 TRAVEL RESTRICTIONS

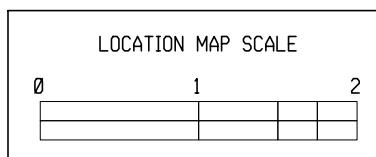
Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
			No restrictions expected.									



- County Border
- Detour Route
- Construction Area



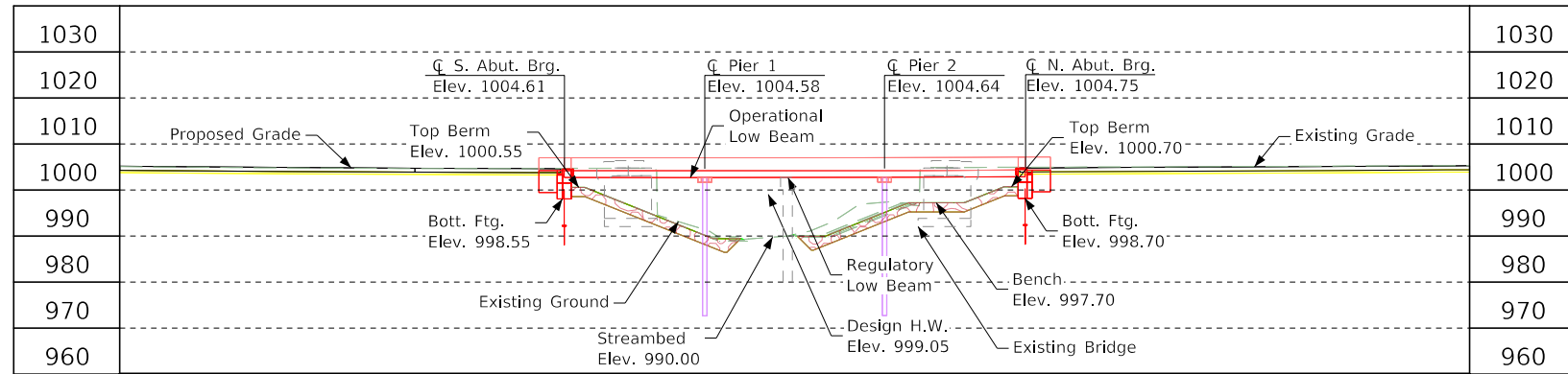
Project Location
 MP 115.44
 FHWA No. 25830
 Maintenance No. 3815.4S014



Grundy County

Marshall County

Grundy County
 Project Location Map
 Proposed Detour Map
 for BRFN-014-6(66)--39-38



LONGITUDINAL SECTION ALONG CL APPROACH ROADWAY

Curve Data

PI Sta. 96+55.41
 $\Delta = 00^{\circ}50'37.05''$ (RT)
 T = 220.16
 L = 440.31
 R = 29904.21
 E = 0.81
 PC Sta. 94+35.25
 PT Sta. 98+76.50

-1.20% $+0.50\%$
 VPI Sta. = 98+34.75
 VPI Elev. = 1004.17
 VC = 250'

Proposed Profile
 Grade IA 14

Plan Notes:

1. Top of bridge deck crown 0.03' below profile grade.
2. Class E Revetment stone is embedded.

General Notes:

1. This design is for the replacement of the existing 62'-0 x 30'-0 Continuous Concrete Slab bridge, Design No. 356. FHWA 25830, Maint. No. 3815.4S014.

Design Notes:

1. Standard J44-14 Continuous Concrete Slab Bridge
2. TL-4 Bridge Railing
3. Final Designer may consider full encasement of pile bents to reduce the design unbraced length.
4. There is a horizontal curve on a portion of the proposed bridge. The difference between the curve and chord at the back of the bridge at near abutment is 0.005'. Bridge to be built on chord.
5. There is a vertical sag located on the bridge that cannot be moved due to constraints from new road pavement constructed at the north and south of bridge location. Verify that bridge deck will have sufficient drainage.

Hydraulic Data

RIDB: WolfC_Black_61.9
 Drainage Area = 16.1 Sq. Mi.
 Stream Slope = 7.92 Ft./Mi.
 Avg. Low Water Stage = 991.07

$Q_{25} = 3,536$ CFS
 Stage = 998.53

$Q_{50} = 4,300$ CFS
 Stage = 999.05
 Regulatory Low Beam = 1002.73
 Avg. Bridge Velocity = 7.98 FPS

$Q_{100} = 5,061$ CFS
 Stage = 999.47
 Operational Low Beam = 1002.73
 Backwater = 0.78 Ft.
 Avg. Bridge Velocity = 8.66 FPS

$Q_{200} = 6,523$ CFS
 Stage = 1000.72
 Calculated Design Scour = 980.46

Q Overtop = 7,076.6 cfs
 Avg. Bridge Velocity = 8.40 fps
 Calculated Check Scour = 979.73

$Q_{500} = 7,077$ cfs

Roadway Overtop 1004.37
 Sta. 98+86.25

Utilities Legend

--F0-- Fiber Optic Line

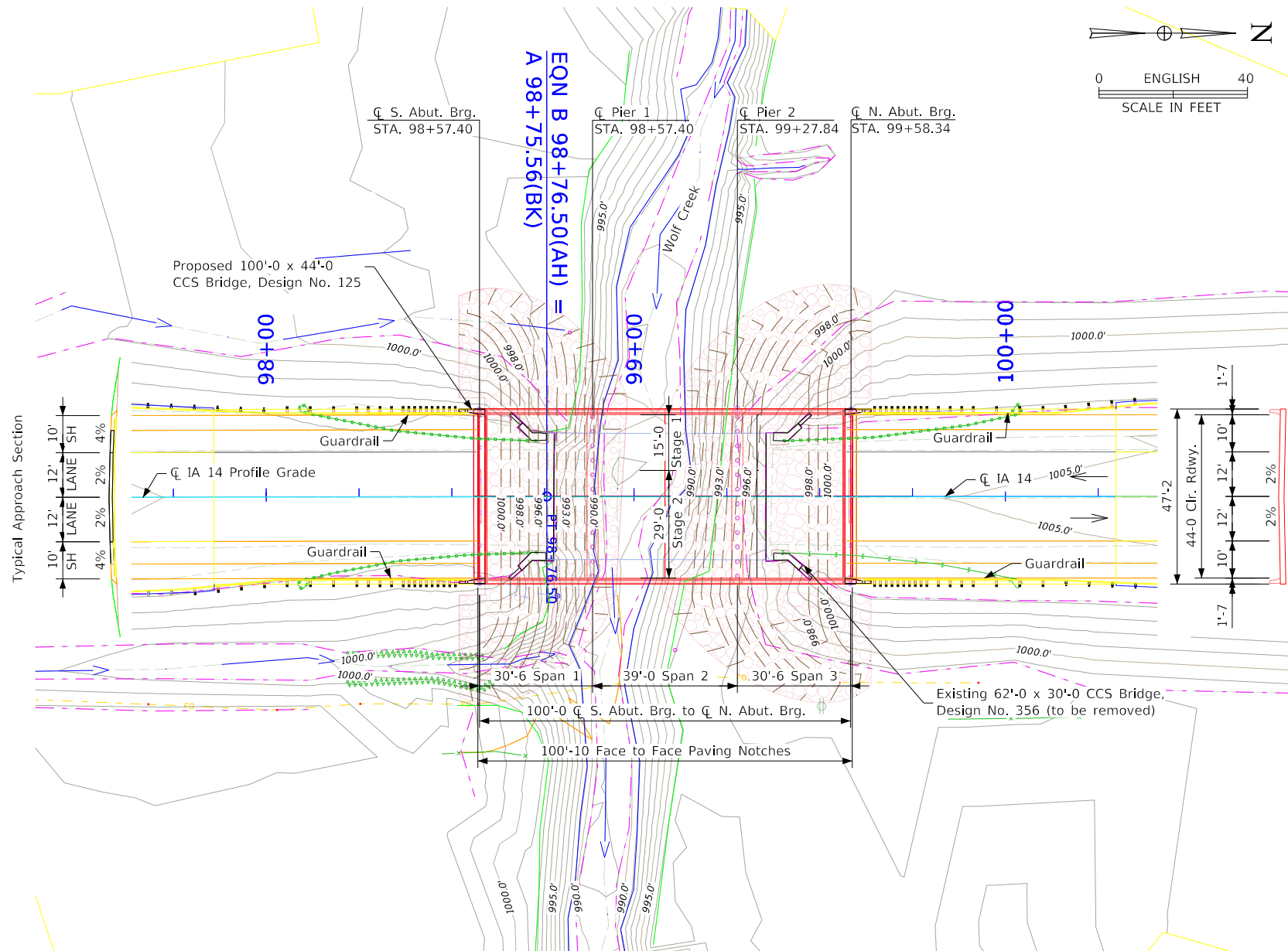
Utilities shown on this sheet are for information only, see road design sheets for final utility information.

Location

IA 14 Over Wolf Creek
 T-86N R-18W
 Sections 25 & 26
 Felix Township
 Grundy County
 FHWA No. 25831
 Bridge Maint. No. 3815.4S014
 Latitude 42.237075°
 Longitude -92.904589°

Traffic Estimate

2019 AADT	2,710	V.P.D.
2039 AADT	3,762	V.P.D.
2036 DHV	????	V.P.H.
Trucks	19.19	%
Total		
Design ESALs	1,961,125	



SITUATION PLAN

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.

Signature: Linda Su Date: 02-15-2023
 Printed or Typed Name: Linda Su
 My license renewal date is December 31, 2023

Pages or sheets covered by this seal: V.1, V.2

Design For 0° Skew

100'-0 x 44'-0 CONTINUOUS CONCRETE SLAB BRIDGE

30'-6 End Spans 39'-0 Interior Span

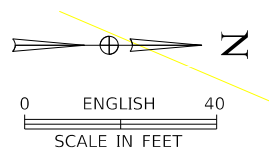
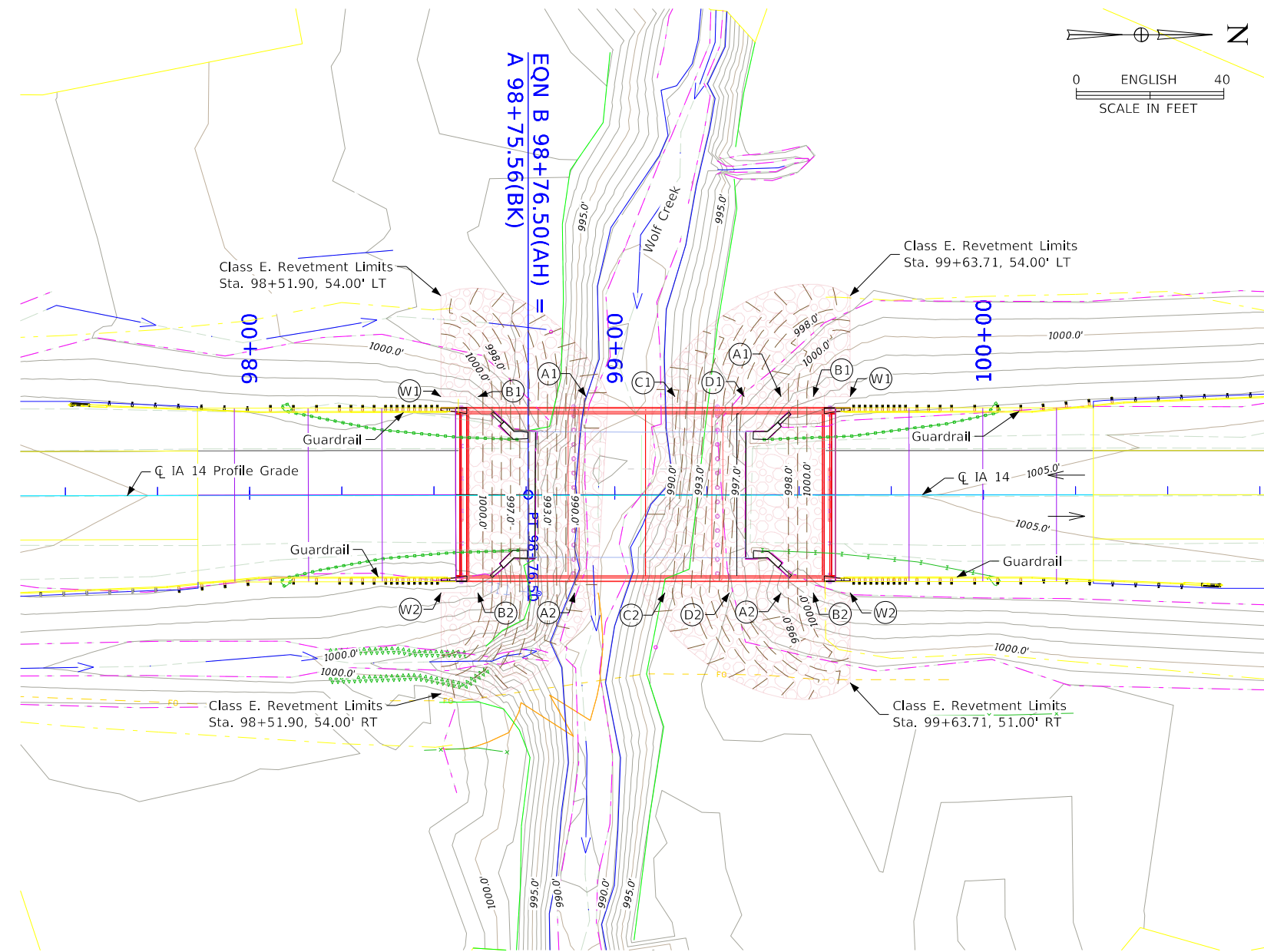
SITUATION PLAN

STA. 99+08.34 (IA 14) January 2023

Grundy County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 0125 Design Sheet No. 1 of 3 FHWA No. 25831



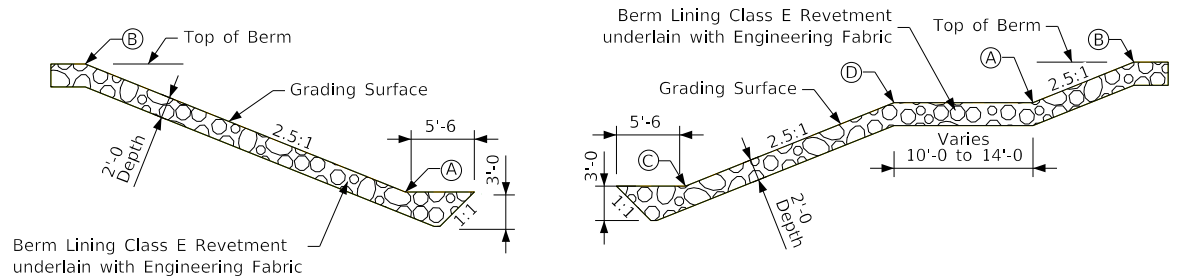
SITE PLAN

Points	South Abutment			North Abutment		
	Station	Offset	Elev.	Station	Offset	Elev.
A1	98+92.19	26.58' LT	988.80	99+45.09	26.58' LT	997.20
A2	98+89.10	26.58' RT	990.05	99+45.09	26.58' RT	997.20
B1	98+61.90	26.58' LT	1000.55	99+53.84	26.58' LT	1000.70
B2	98+61.90	26.58' RT	1000.55	99+53.84	26.58' RT	1000.70
C1	-	-	-	99+16.34	26.58' LT	989.70
C2	-	-	-	99+13.59	26.58' RT	990.20
D1	-	-	-	99+35.09	26.58' LT	997.70
D2	-	-	-	99+31.09	26.58' RT	997.70
W1	98+51.90	26.58' LT	1004.06	99+63.84	26.58' LT	1004.22
W2	98+51.90	26.58' RT	1004.06	99+63.84	26.58' RT	1004.22

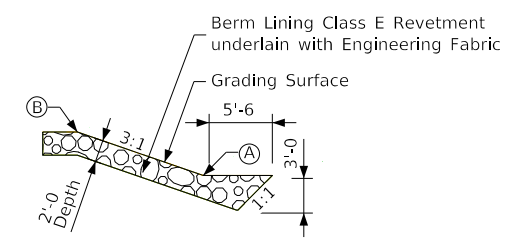
Berm slope elevations reflect the grading surface.

Estimated Berm Armoring Quantities			
Location	Revetment CL. E (Ton)	Engineering Fabric (SY)	Cl. 10 Channel Excavation (CY)
Berm Lining - N. Abut.	430.7	477.4	287.2
Berm Lining - S. Abut.	338.1	390.8	225.4
Totals	768.9	868.2	512.6

Excavation quantity calculated from grading surface. Excavation quantity is for embedded revetment core out only, and does not include excavation to the grading surface. Excavation quantity to the grading surface is determined by Road Design and included in the Road Plans.

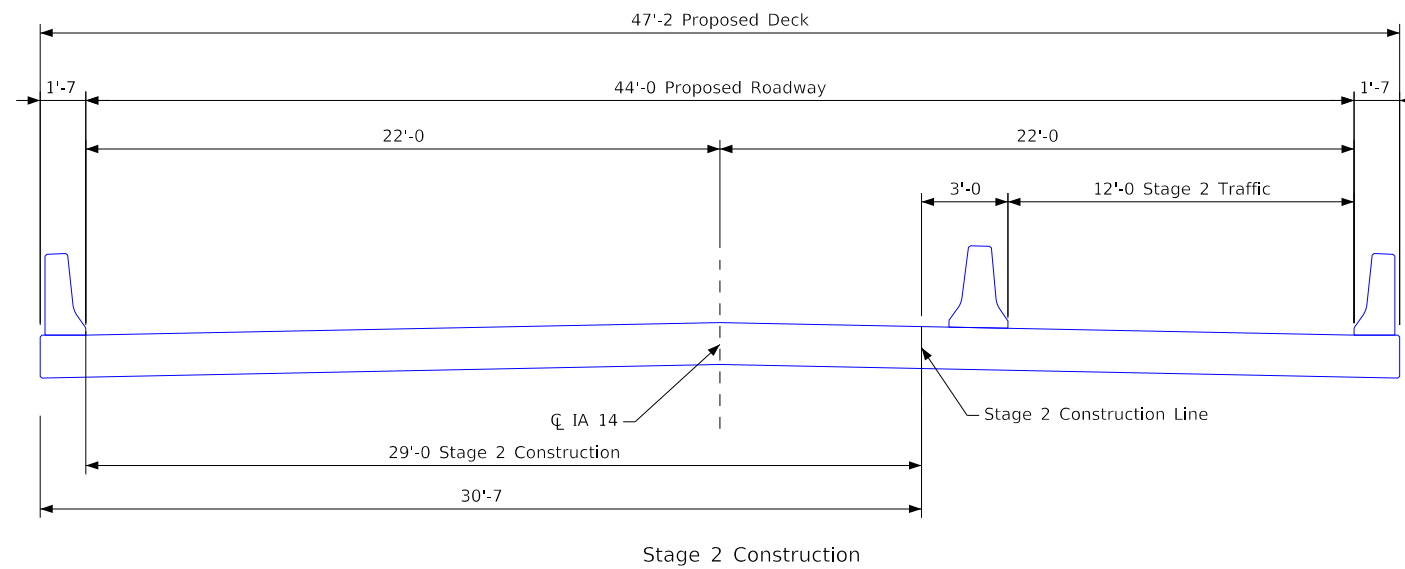
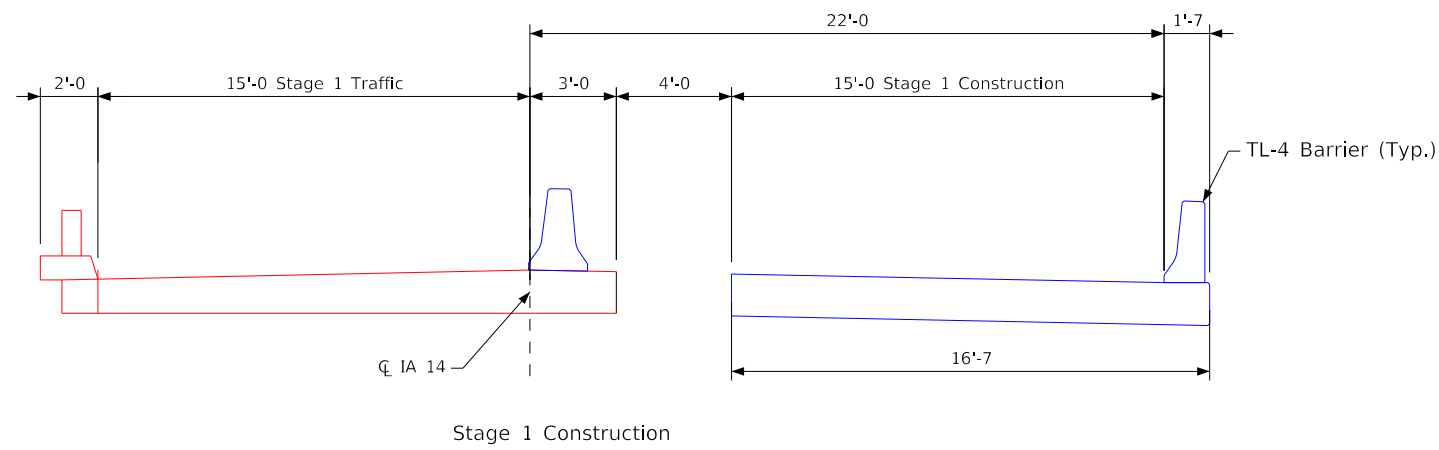
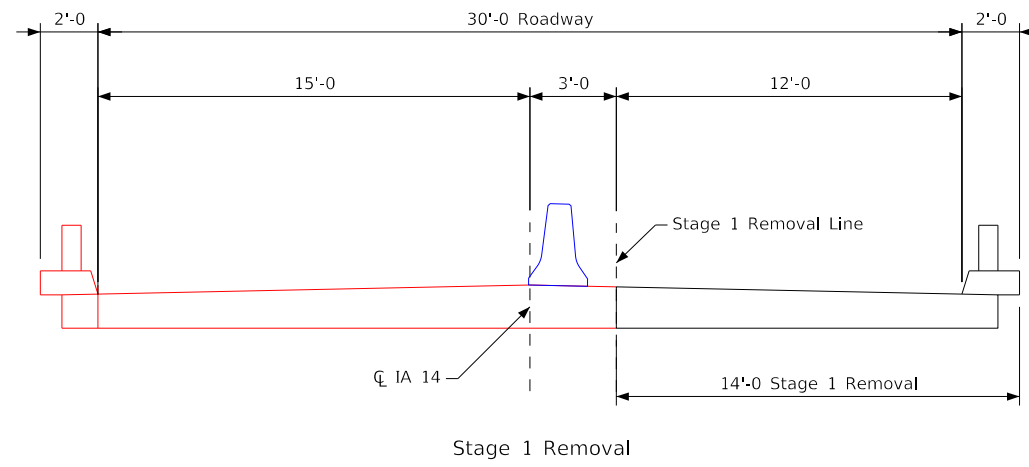


Section Thru Embedded Revetment Berm



Section Thru Embedded Revetment Normal to Bridge Wing

Design For 0° Skew
100'-0 x 44'-0 CONTINUOUS CONCRETE SLAB BRIDGE
 30'-6 End Spans 39'-0 Interior Span
SITE PLAN
 STA. 99+08.34 (IA 14) January 2023
Grundy County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 0125 Design Sheet No. 2 of 3 FHWA No. 25831



Design For 0° Skew
**100'-0" x 44'-0" CONTINUOUS
 CONCRETE SLAB BRIDGE**
 30'-6" End Spans 39'-0" Interior Span
STAGING PLAN
 STA. 99+08.34 (IA 14) January 2023
 Grundy County
 IOWA DEPARTMENT OF TRANSPORTATION
 Design No. 0125 Design Sheet No. 3 of 3 FHWA No. 25831

