LETTING DATE
June 15, 2027

BRIDGE REPLACEMENT
BRF-059-3(060)--38-78

POTTAWATTAMIE COUNTY

IOWA DOT

REVISIONS	TOTAL
	..
	PROJECT IDENTIFICATION NUMBER
	24-78-059-040
	PROJECT NUMBER
	BRF-059-3(060)--38-78
	R.O.W. PROJECT NUMBER

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM
POTTAWATTAMIE COUNTY
BRIDGE REPLACEMENT

US 59 BRIDGE
Over Unnamed Stream
0.6 mi N of S Jct Co Rd G30

SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

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

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Index of Sheets

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*A.2	Location Map Sheet
A.3	Field Review Notes
*A.4 - A.11	D0 Project Concept Statement
B Sheets	**Typical Cross Sections and Details**
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B.3	8212 - Temporary Concrete Barrier Layout for One-Way Traffic
D Sheets	**Mainline Plan and Profile Sheets**
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J Sheets	**Traffic Control and Staging Sheets**
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J.2	511 Travel Restriction
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*J.4	Traffic Control and Staging Legend and Symbol Information Sheet
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INDEX OF SEALS

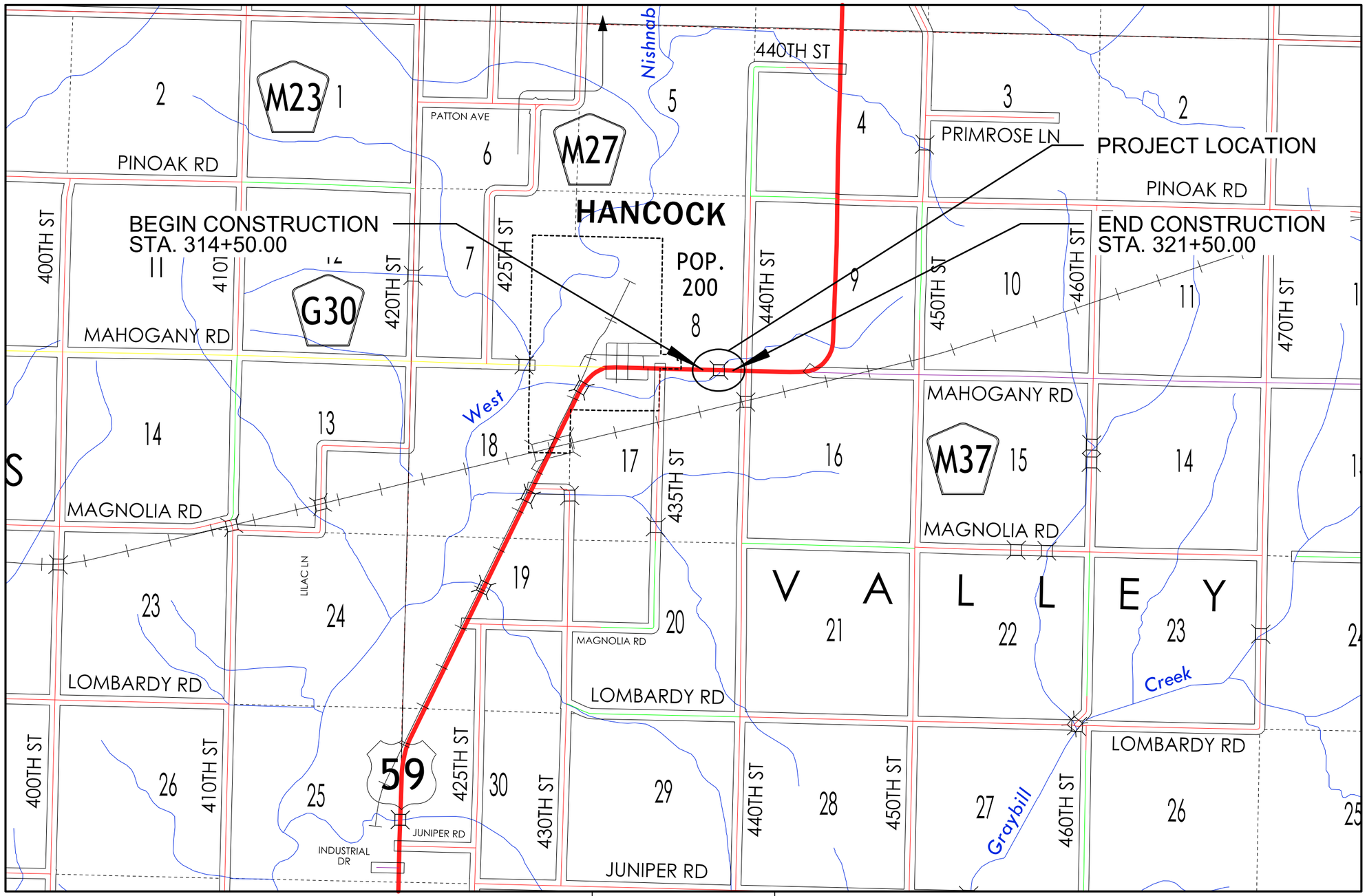
SHEET NO.	NAME	TYPE	BID QUANTITY SHEETS
A.1	X	Primary Signature Block	X
X	X	X	X

PRELIMINARY PLANS

Subject to change by final design.

D2 PLAN - Date: July 18, 2025

FILE NO.	ENGLISH	DESIGN TEAM FOTH	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER A.1



FILE NO.	ENGLISH	DESIGN TEAM **FOTH**	**POTTAWATTAMIE** COUNTY	PROJECT NUMBER **BRF-059-3(060)--38-78**	SHEET NUMBER **A.2**

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FIELD REVIEW NOTES:

FIELD REVIEW NOTES:

IOWA DEPARTMENT OF TRANSPORTATION

TO OFFICE:	District 4	**DATE:**	May 12, 2025
ATTENTION:	Scott Schram	**PROJECT:**	Pottawattamie County BRF-059-3(060)--38-78
FROM:	J. Scott Ingersoll/Foth IE		Project Code: 24-78-059-040
BUREAU:	Design		
SUBJECT:	Project Concept Statement; (Final, D0)		

This project involves the replacement of the US 59 bridge (Maint No. 7857.5S059) over Stream located 0.6 mile north of south junction County Road G30.

A concept review was held on April 10, 2025. Those present included Wes Mayberry and Austin Yates from the District 4 Office; Mohamad Dokmak, Jim Ellis, Christian Kennel and Tom Lovan from the Bridges and Structures Bureau; Claire Asberry, Ken Brink, Nicole Cuva, Chelsea Duncan, Christine Schwienebart and Jacob Woodcock from the Location and Environment Bureau; John Bartholomew and Jeremy Harris from the Design Bureau; Luka Arroyo from the Project Management Bureau and Andy Floy, Scott Ingersoll, Adam Schott, and Tim Sheets from Foth IE.

The three alternatives considered were:

1. Replacement with 140’ x 40’ continuous concrete slab bridge utilizing offsite detour **(Estimated cost $2,309,400)**
2. Replacement with 140’ x 40’ single span pretensioned prestressed concrete beam bridge utilizing offsite detour **(Estimated cost $2,381,400)**
3. Replacement with twin 12’ x 11’ reinforced concrete box culvert constructed utilizing the flowable mortar method **(Estimated cost $1,755,600)**

Alternative 2 is the preferred alternative. Additional right of way/right of entry may be required. Traffic will be maintained by offsite detour.

The Draft Concept Statement was sent out for review and comment with concerns to be resolved by Friday, May 9, 2025. Comments received during the review period have been considered and resolved.

JSI:ADS
Attach.
cc:

K. D. Nicholson
M. Nop
M. A. Swenson
W. A. Sorenson
C. C. Poole
D. E. Sprengeler
M. Dell
B. Smith
D. Heeren
S. Cook
R. Meyer
D. Dorsett
O. Lechnowsky
C. Duncan
C. Schwienebart
S. Sersland
A. A. Welch
D. Johnson
T. Lovan
C. Brakke
J. Ellis
D. Stokes
E. C. Wright
J. W. Laaser-Webb
N. Cuva
R. Harris
D. Ta
G. Cagle
B. Hucker
A. Buss
N. Epperson
J. Kohl
C. Asberry
A. Yates
M. E. Khoda
J. Harris
M. Todsen
L. Narigon
J. S. Nelson
S. Majors
B. Hofer
K. Brink
S. Anderson
J. Bartholomew
N. Pohlen
M. Van Dyke
D. Blue
B. Worrel
W. Mayberry
D. Redmond
J. Woodcock
D. Newell
J. Hauber
M. Gordy
G. Karssen
B. Dolan

FINAL PROJECT CONCEPT STATEMENT

US 59 over Stream

Pottawattamie County
BRF-059-3(060)--38-78
Project Code: 24-78-059-040
Maint. No. 7857.5S059
FHWA No. 43430

Highway Division
Design Bureau

Prepared by Foth Infrastructure and Environment
for the Iowa Department of Transportation

May 12, 2025

I. STUDY AREA

A. Project Description

This project involves the replacement of the US 59 bridge over Stream located 0.6 mile north of south junction County Road G30.

The three alternatives considered were:

1. Replace current structure with a 140’ x 40’ continuous concrete slab bridge utilizing staged construction. The cost estimate for this alternative is **$2,309,400.**
2. Replace current structure with a 140’ x 40’ single span pretensioned prestressed concrete beam bridge utilizing staged construction. The cost estimate for this alternative is **$2,381,400.**
3. Replace current structure with a twin 12’ x 11’ reinforced concrete box culvert utilizing flowable mortar method. The cost estimate for this alternative is **$1,755,600.**

Alternative 2, the single span pretensioned prestressed concrete beam bridge, is the preferred alternative. The box culvert constructed utilizing the flowable mortar method alternative has a high potential for settlement and long-term maintenance issues due to the compressible clay layers at this site. The continuous concrete slab bridge is approaching and might exceed the height limits for P10L pile bent piers and will require berm slopes steeper than the recommend 3:1 slopes for western Iowa counties. Staged construction at this location is preferred by the District over an off-site detour.

B. Need for Project

This is a 110’ x 26’ continuous concrete slab bridge that was built in 1952. In 1987 the bridge was overlaid and retrofit barrier rails were installed. The barrier rail end sections were modified to accept thrie beam guardrail in 2012. The bridge has now reached the end of its service life. The deck has large hollow areas with numerous longitudinal cracks throughout on the top of the deck and many longitudinal and diagonal cracks on the underside. The abutment pile caps have map cracking over most of the exposed surfaces and the exposed portions of the supporting prestressed concrete piles are deteriorating with cracks, rust staining, spalls and hollow areas. Due to the condition of the bridge, a replacement is recommended.

Figure 1: With route n-f, 2024

Figure 3: Against route f-n, 2024

Figure 2: Left profile f-n, 2024

Figure 4: Waterway opening looking upstream, 2024

C. Present Facility

The existing structure is a 110’ x 26’ continuous concrete slab bridge that was built in 1952. US 59 in the project area is 28’ wide PCC pavement with 2’ wide granular

shoulders and 4:1 foreslopes. See below for pavement history from the Mile Post Book:

M.P. 51.57 to M.P. 58.31

Original Pavement:	8” PCC
Year Constructed:	1952
Widened/Resurfaced:	2012, resurfaced with 1.5” of surface course over 2” of base course
Coarse Aggregate Source:	Sacton, Gravel
Project:	STP-059-3(30)--2C-78

D. Traffic Estimates

The 2029 construction year and 2049 design year average daily traffic estimates are 2150 ADT with 21% trucks and 2620 ADT with 21% trucks, respectively.

E. Sufficiency Ratings

US 59 is classified as a “Primary” route on the National Highway System and is a maintenance service level "C” roadway. The Bridge Condition Index for the bridge is 50.7 and the Bridge Condition Rating is "Fair".

F. Access Control

Access rights will not be acquired for this project.

G. Crash History

During the five-year study period from January 1, 2019 through December 31, 2023, there was 1 property damage only crash. The Potential for Crash Reduction values for all crashes (KABCO) is -0.262 crash/mile/year and negligible for severe crashes (KAB).

II. PROJECT CONCEPT

A. Feasible Alternatives

Alternative #1 - Replace with new 140’ x 40’ continuous concrete slab bridge

The existing 110’ x 28’ continuous concrete slab bridge will be replaced with a 140’ x 40’ continuous concrete slab bridge utilizing staged construction.

The typical roadway cross section adjacent to the bridge will consist of a 24’ wide roadway with 6’ paved and 2’ granular shoulders. Foreslope grading beyond the shoulders will be comprised of 10:1 for 4’ then 6:1 slopes to the clear zone and 3.5:1 slopes to the ditch grade with 3:1 backslopes.

The bridge will be constructed on the existing horizontal alignment. New bridge approaches will be constructed. Additional reconstruction of roadway pavement is necessary beyond the bridge approaches in order to achieve minimum preferred grade and K-values for a 60-mph design speed on the vertical alignment. The existing guardrail will be replaced with new guardrail and the shoulders will be paved beyond the ends of the bridge approaches. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Class E revetment will be placed under the bridge for slope protection.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

It appears that right of way will be required for this project.

Bridge Items	Estimated Costs
New Bridge	$ 882,000
Bridge Removal	73,000
Revetment	23,000
Staging – 15%	147,000
Mobilization - 10%	113,000
M & C - 20%	248,000
Bridge Costs	**$ 1,486,000**

Roadway Items	
Bridge Approaches	$ 191,500
Granular Shoulders	1,600
Paved Shoulders	54,000
Removal of Pavement	36,000
PCC Pavement, 9.5”	90,500
Embankment-In-Place, Contractor Furnished	45,000
Removal of Steel Beam Guardrail	5,000

Steel Beam Guardrail	30,500
Bridge End Drains	14,800
Pavement Markings	10,000
Temporary Crash Cushions	5,000
Temporary Barrier Rail, Concrete	35,000
Temporary Traffic Signals	11,000
Clearing and Grubbing	8,000
Erosion Control & Seeding	7,000
Right of Way	15,000
Wetland Mitigation	50,000
Staging - 5%	30,500
Traffic Control - 5%	30,500
Mobilization - 5%	30,500
M & C - 20%	$ 122,000
Roadway costs	**$ 823,400**
Project Total	**$ 2,309,400**

Alternative #2 - Replace with new 140' x 40' pretensioned prestressed concrete beam bridge

The existing 110' x 28' continuous concrete slab bridge will be replaced with a 140' x 40' pretensioned prestressed concrete beam bridge utilizing staged construction.

New granular shoulders will be constructed along with full-depth roadway patching to replace deteriorated areas of roadway pavement. Foreslope grading beyond the shoulders will consist of 10:1 for 4' then 6:1 slopes to the clear zone and 3.5:1 slopes to the ditch grade with 3:1 backslopes. The existing guardrail will be removed and Class 10 will be necessary to flatten the existing foreslopes.

The bridge will be constructed on the existing horizontal alignment. New bridge approaches will be constructed. Additional reconstruction of roadway pavement is necessary beyond the bridge approaches in order to achieve minimum preferred grade and K-values for a 60-mph design speed on the vertical alignment. The existing guardrail will be replaced with new guardrail and the shoulders will be paved beyond the ends of the bridge approaches. Class 10 will be necessary to flatten the existing foreslopes and to construct the new guardrail blisters. Class E revetment will be placed under the bridge for slope protection.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

It appears that right of way will be required for this project.

Bridge Items	Estimated Costs
New Bridge	$ 929,000
Bridge Removal	73,000
Revetment	23,000
Staging – 15%	154,000
Mobilization - 10%	118,000
M & C - 20%	259,000
Bridge Costs	**$ 1,556,000**
Roadway Items	
Bridge Approaches	$ 193,000
Granular Shoulders	1,600
Paved Shoulders	55,000
Removal of Pavement	36,000
PCC Pavement, 9.5"	90,000
Embankment-In-Place, Contractor Furnished	45,000
Removal of Steel Beam Guardrail	5,000
Steel Beam Guardrail	30,500
Bridge End Drains	14,800
Pavement Markings	10,000
Temporary Crash Cushions	5,000
Temporary Barrier Rail, Concrete	35,000
Temporary Traffic Signals	11,000
Clearing and Grubbing	8,000
Erosion Control & Seeding	7,000
Right of Way	15,000
Wetland Mitigation	50,000
Staging - 5%	30,500
Traffic Control - 5%	30,500
Mobilization - 5%	30,500
M & C - 20%	122,000
Roadway costs	**$ 825,400**
Project Total	**$ 2,381,400**

Alternative #3 - Replace with new box culvert

A twin 12' x 11' x 188' reinforced concrete box culvert (RCB) will be constructed under the existing 110' x 28' continuous concrete slab bridge utilizing the flowable mortar method.

The new RCB can be built under the existing bridge without disturbing the bridge. Prior to RCB construction, the top 2' of the existing soils will be cored out and replaced with a granular material. The limits and thickness of this excavated material

may change after further investigation and soil borings have been obtained. After the culvert has been constructed, flooded granular backfill and flowable mortar will be used to fill the void between the RCB and bridge deck. Once the new embankment for the shoulders have been placed adjacent to the bridge, the existing concrete bridge barrier, curb, and guardrail can be removed. Deck patching will be done to address delamination and any cracking. New granular shoulders will be constructed along with full-depth roadway patching to replace deteriorated areas of roadway pavement. Foreslope grading beyond the shoulders will consist of 10:1 for 4' then 6:1 slopes to the clear zone and 3.5:1 slopes to the ditch grade with 3:1 backslopes. The existing guardrail will be removed and Class 10 will be necessary to flatten the existing foreslopes. The flow line of the box will be buried 2' below the existing flow line in the channel. This will allow the bottom of the box to silt in and provide a natural bottom for fish passage. The existing ditches will need to be relocated to meet the inlet and outlet flowlines of the new RCB.

Class E revetment will be placed at the ends of the RCB.

Apply erosion control and rural seeding and fertilizing to all disturbed areas.

Right of way may be required for this project.

Traffic will be maintained at all times. However, it will be necessary to reduce traffic down to one lane via the use of flaggers during the removal of the bridge rail, guardrail, deck patching, and placement of the flowable mortar.

Due to likely settlement of the RCB after initial construction, the contractor will be required to place an additional application of flowable mortar after several months to ensure that contact is maintained between the bottom of the bridge deck floor and the top of the previous flowable mortar application. The amount of settlement and time period in which the settlement is likely to occur will be reviewed after soil borings have been taken and any consolidation tests have been performed.

Bridge Items	Estimated Costs
New Culvert	$ 814,000
Bridge Removal	25,000
Revetment	6,000
Mobilization - 10%	85,000
M & C - 20%	186,000
Bridge Costs	**$ 1,116,000**
Roadway Items	
Granular Shoulder	$ 3,200
Flooded Backfill	53,000
Flowable Mortar	153,000

Temporary Stream Diversion	15,000
Full-Depth Patching	20,000
Embankment-In-Place, Contractor Furnished	150,000
Excavation Class 13 Waste	8,000
Removal of Steel Beam Guardrail	5,000
Temporary Traffic Signals	11,000
Clearing and Grubbing	8,000
Erosion Control and Seeding	7,000
Right of Way	8,000
Wetland Mitigation	50,000
Traffic Control - 5%	24,700
Mobilization - 5%	24,700
M & C - 20%	99,000
Roadway Costs	**$ 639,600**
Project Total	**$ 1,755,600**

B. Staging Analysis

There will be no off-site detour. Traffic will be maintained via staged construction with traffic reduced to one-lane via the use of temporary traffic signals.

C. Recommendations

It is recommended that the present structure be replaced utilizing staged construction, as described in Alternative No. 2.

D. Construction Sequence

It is anticipated that all work on this project will be awarded to one prime contractor. The Bridges and Structures Bureau will coordinate the plan preparation with assistance from the Design Bureau.

E. ADA Accommodations

There are no bike paths or sidewalks adjacent to US 59; therefore, no ADA accommodations are planned in conjunction with this project.

F. Special Considerations

This will not be a traffic critical project.

The ABC Rating Score of 37 is less than the first stage filter threshold of 50, therefore this bridge will be not be considered for accelerated bridge construction unless requested for further evaluation by the district.

No bike path or sidewalk will be required as part of this project.

Right of Way may be required for this project.

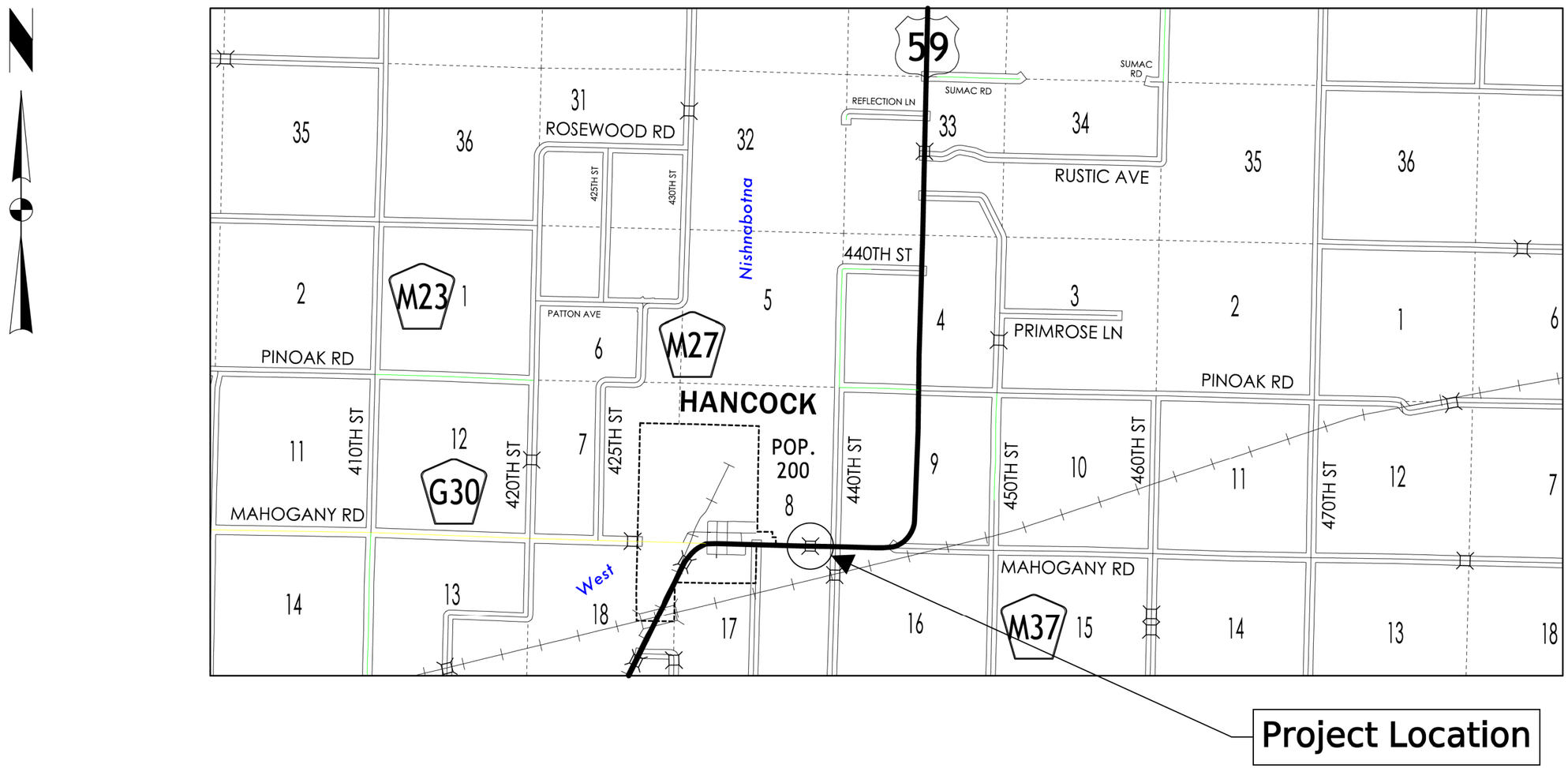
The Location and Environment Bureau has reviewed this project and based on preliminary desktop observations, had determined that a Section 404 Permit will be required. It is expected the permit will be automatically authorized under Nationwide Permit 3 with no mitigation required. Permit requirements will need to be reevaluated if the preferred alternate changes from Alternate 2.

G. Program Status

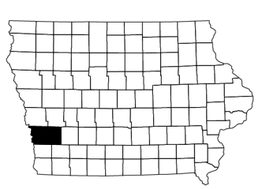
Site data has been developed by the Design Bureau. This project is listed in the 2025-2029 Iowa Transportation Improvement Program, with $10,000 programmed for right of way in FY 2029, and $1,950,000 for replacement in FY 2029. Costs for this project may be eligible for bridge replacement funds. A schedule of events will be developed following approval of the Project Concept.

JSI:ADS

POTTAWATTAMIE COUNTY



U.S. 59 Over Unnamed Stream
0.6 mi N of S Jct Co Rd G30
BRF-059-3(060)--38-78
PIN: 24-78-059-040



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Pottawattamie County
US 59 Over Unnamed Stream
0.6 mi N of S Jct Co Rd G30
BRF-059-3(060)--38-78
PIN: 24-78-059-040

STA 317+35.00
FHWA 43430
Maint. No.: 7857.5S059

FILE NO.	ENGLISH	DESIGN TEAM **FOTH**	**POTTAWATTAMIE** COUNTY	PROJECT NUMBER **BRF-059-3(060)--38-78**	SHEET NUMBER **A.11**

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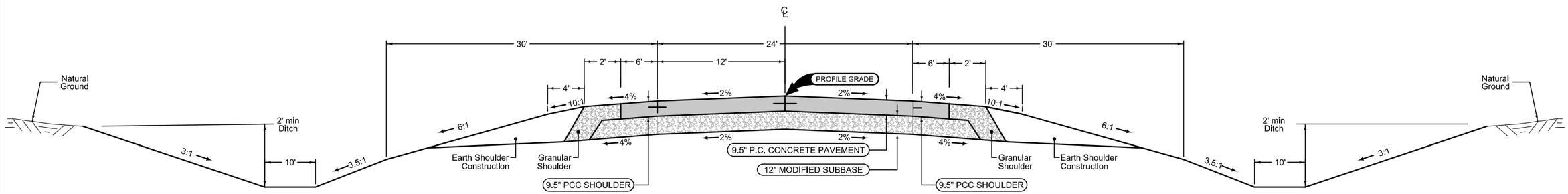
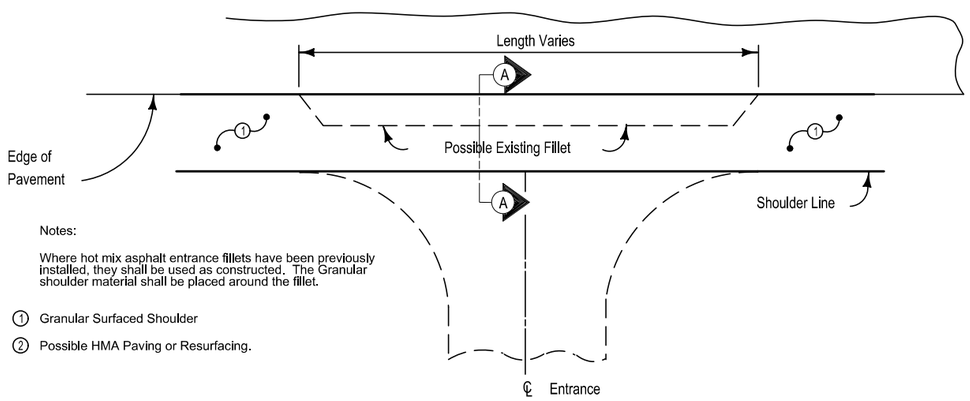


TYPICAL SECTION

7117
10-02-01

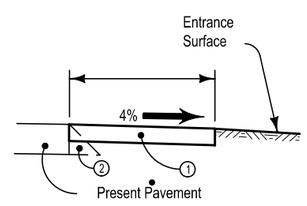


Notes:

Where hot mix asphalt entrance fillets have been previously installed, they shall be used as constructed. The Granular shoulder material shall be placed around the fillet.

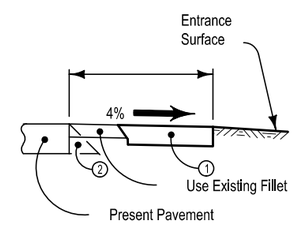
1. Granular Surfaced Shoulder
2. Possible HMA Paving or Resurfacing.

Plan



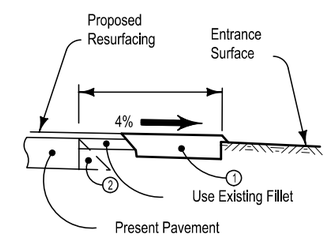
Section A-A

Without Fillet



Section A-A

With Previous Fillet



Section A-A

With Previous Fillet

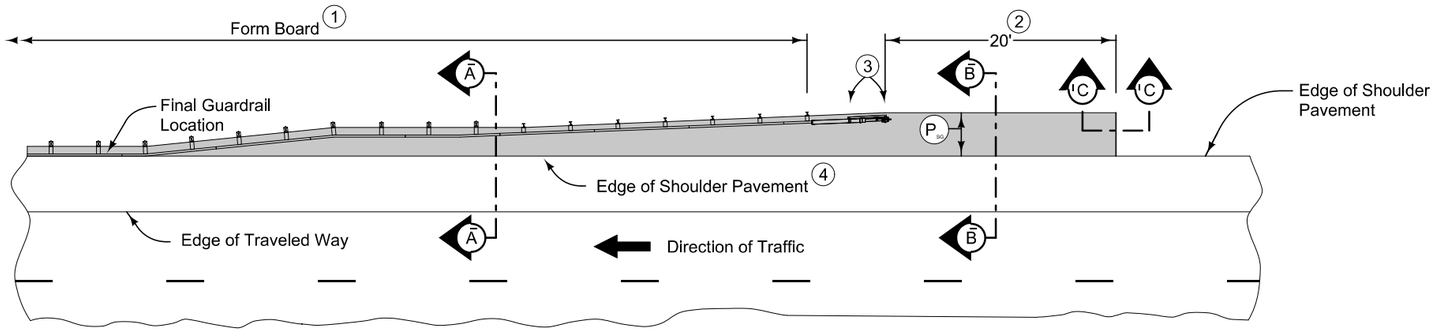
And Resurfacing Less than 1½"

GRANULAR SHOULDER CONSTRUCTION THRU ENTRANCES

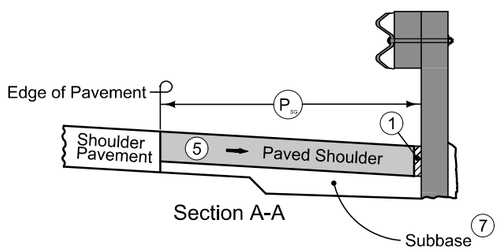
FILE NO.	ENGLISH	DESIGN TEAM **FOTH**	**POTTAWATTAMIE** COUNTY	PROJECT NUMBER **BRF-059-3(060)--38-78**	SHEET NUMBER **B.1**

DESIGNER INFORMATION

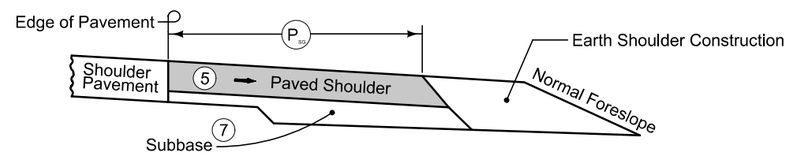
7158
10-21-25



PLAN VIEW

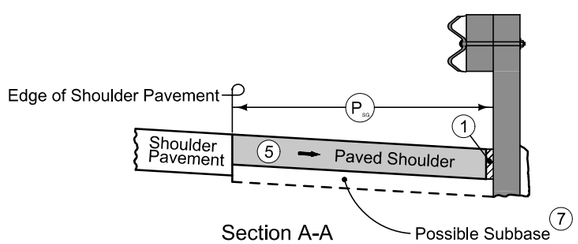


Section A-A

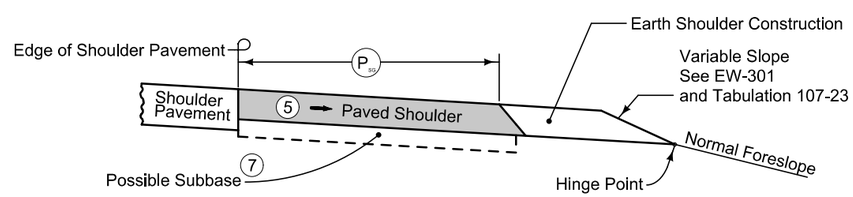


Section B-B

NEW CONSTRUCTION 6



Section A-A



Section B-B

EXISTING SHOULDER

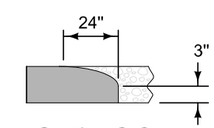
9" HMA Paved Shoulder at guardrail. 8" PCC may be substituted with the following jointing layout:

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.

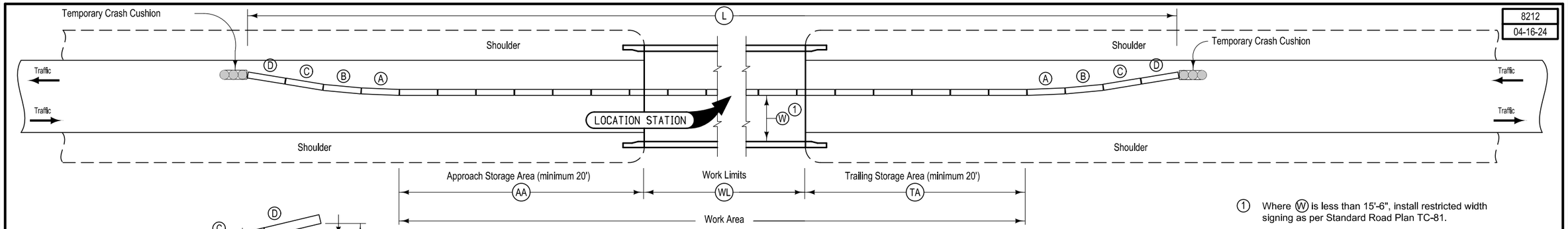
1. PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
2. Continue paved shoulder 20 feet beyond the center of the first post.
3. Shoulder may be notched for first 2 posts or post sleeves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

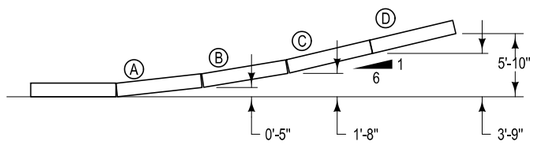


Section C-C
Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL
(ADJACENT TO FULL WIDTH PAVED SHOULDER)

8212
04-16-24





BARRIER OFFSETS FOR FLARE SECTIONS

Station	Side	AA	WL	TA	L	Anchored	W (1)	Remarks
		Feet	Feet	Feet	Feet	X	Ft-Inches	
317+36.25	RT	25	750	25	850	NO	12-3	STAGE 1
317+36.25	LT	25	750	25	850	NO	12-0	STAGE 2

(1) Where (W) is less than 15'-6", install restricted width signing as per Standard Road Plan TC-81.

TEMPORARY CONCRETE BARRIER LAYOUT
for Two-Way Traffic

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

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

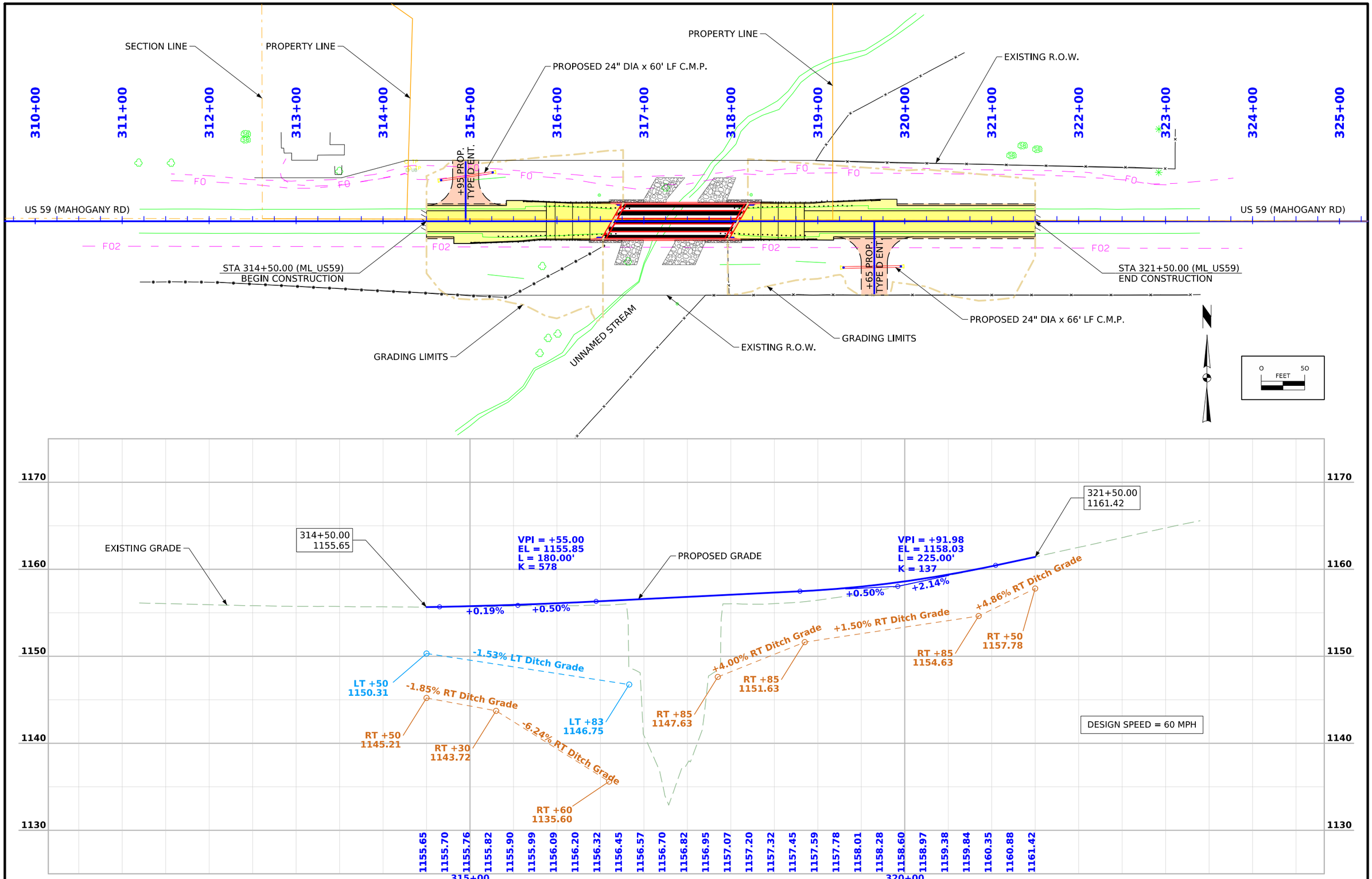
- Reference Point
- Station
- Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

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)



FILE NO.	ENGLISH	DESIGN TEAM FOTH	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER D.2

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TRAFFIC CONTROL PLAN

Traffic on US 59 will remain open for the duration of the project. US 59 will be reduced down to one lane using temporary traffic signals and barriers. Stage 1 will involve construction of temporary shoulder paving along the north edge of US 59. Stage 1 will provide a 12' - 0" traffic lane as well as Stage 2. A full 8-foot paved shoulder is required for Stage 3, and additional shoulder paving beyond the tie-ins should also be expected during this stage.

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No. or Structure ID or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
US 59	Both	Pottawattamie	US 59 over Unnamed Stream		Barrier	7857.5S059	Horizontal	N/A	12'	12'	N/A	TBR, per TC-217

STAGING NOTES

It is not the intent to confine the Contractor's activities to the areas of suggested stages alone. It is understood that some of the various steps may occur simultaneously. The Contractor may conduct several operations concurrently, provided that traffic is maintained and that these operations do not conflict with the staging indicated herein.

It is recognized that as the various activities related to construction progress, certain situations may arise which will preclude adhering to the original construction sequence or which would readily lend themselves to more efficient staging operations. Should the Contractor desire to deviate from the original plan, a written alternative plan shall be submitted to the Project Engineer for approval a minimum of one (2) week prior to the proposed changes.

Coordinate with all public and private projects in the area at all times.

STAGE 1

Install temporary barrier rails (TBR) and traffic signals and shift traffic to one-lane operation on the south half per TC-217. See sheets J.5-J.6, and J.9 for additional information.

Construct north half of bridge deck, bridge approach, and roadway.

Construct granular driveway entrance at Sta. 314+95.00.

Install new guardrail and construct paved shoulders at the NW and NE bridge approaches.

Construct paved shoulder beyond reconstruction limits for Stage 2 traffic.

STAGE 2

Move temporary barrier rails (TBR) and traffic signals and shift traffic to one-lane operation on the north half per TC-217. See sheets J.7-J.9 for additional information.

Construct south half of bridge deck, bridge approach, and roadway.

Construct granular driveway entrance at Sta. 319+65.00.

Install new guardrail and construct paved shoulders at the SW and SE bridge approaches.

STAGE 3

Remove temporary barrier rails (TBR) and signals.

Install permanent pavement markings.

Open US 59 to two-lane traffic.

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

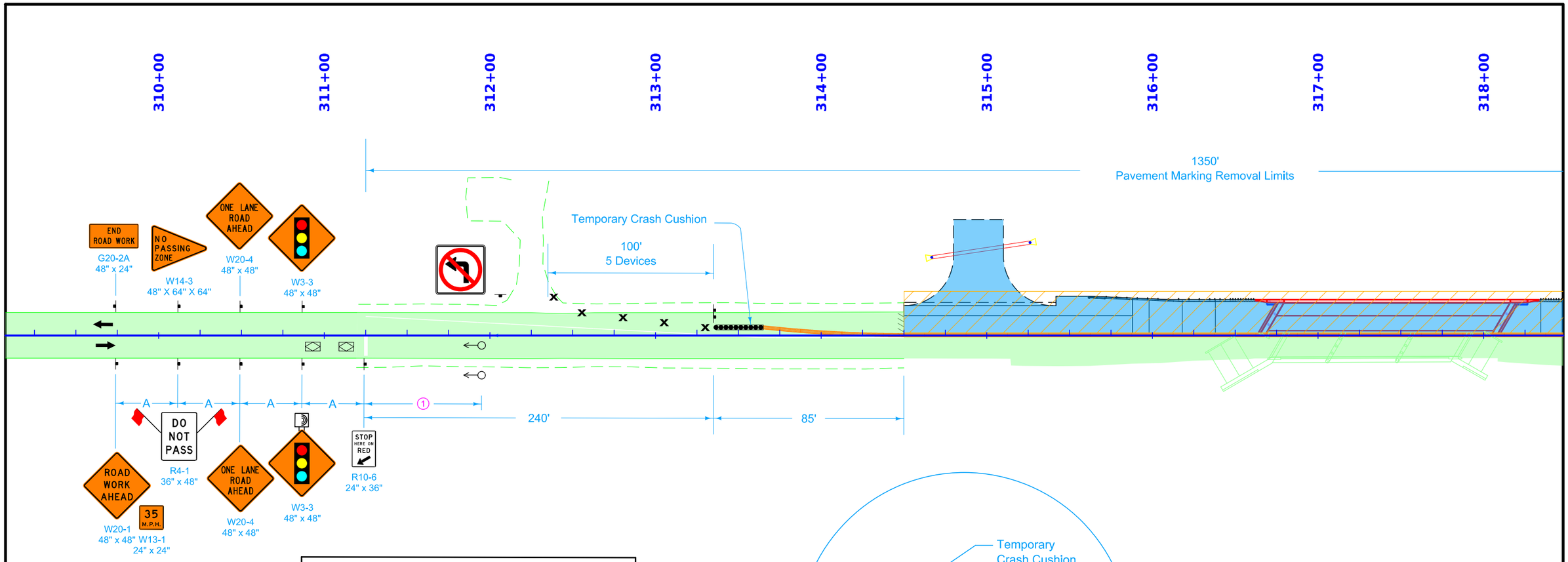
PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

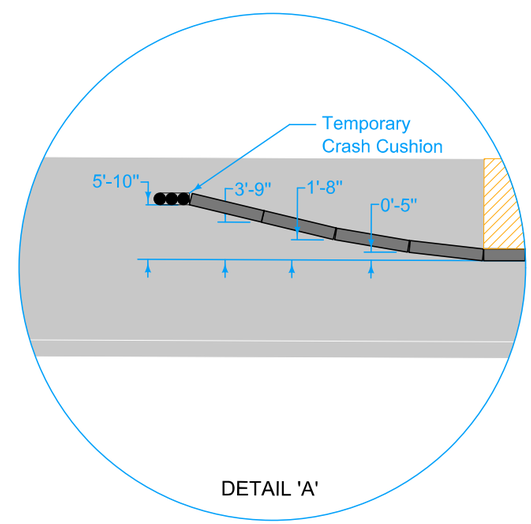
Channelizing Device	Crash Cushion (Temp or Perm)
Drum	Traffic Signal
Temporary Lane Separator	Flagger
Tubular Marker	Temporary Floodlighting
Channelizer Marker	Traffic Sign
Concrete Barrier Marker	Type III Barricade
Delineator	Type A Warning Light
Temporary Barrier Rail	Direction of Traffic
Pavement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





DETAIL 'A'

LEGEND

- Type III Barricade
- Single White Delineators (mount back to back)
- Vehicle Detection Area
- Temporary Crash Cushion
- Direction of Traffic
- Traffic Sign
- Drum
- Type 'B' High-Intensity Flashing Warning Light
- Work Area
- Temporary Traffic Signal

TIMING FOR ACTUATED SIGNALS

Recommended Settings, (secs.)

Initial = 12.0
Extension = 2.5
Maximum Green = 45.0
Yellow = 5.0
All Red = (see table)

Distance Between Stop Lines (ft)	All Red (secs.)
1550	**27-36
1450	**25-33
1350	**23-31
1250	**21-29
1150	**20-26
1050	*21-36
950	*19-33
850	*17-30
750	*15-27
650	*14-23
550	*12-20

* Range of values are based on operating speeds between 20 and 35 mph

** Range of values are basedon operating speeds between 30 and 40 mph

SPEED LIMIT (mph)*	A
35 or less	250'
40 - 45	350'
50 or greater	500'

* Speed Limit refers to regulatory speed limit before road work.

Place Concrete Barrier Markers at 10 ft C/C on bridge rail.

(1) Locate signal heads 70 to 100 feet beyond stop bar. Adjust location of signal heads as field conditions warrant.

0 30 FEET

STAGE 1
LANE CLOSURE WITH SIGNALS AND TBR

FILE NO.	ENGLISH	DESIGN TEAM FOTH	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER J.5

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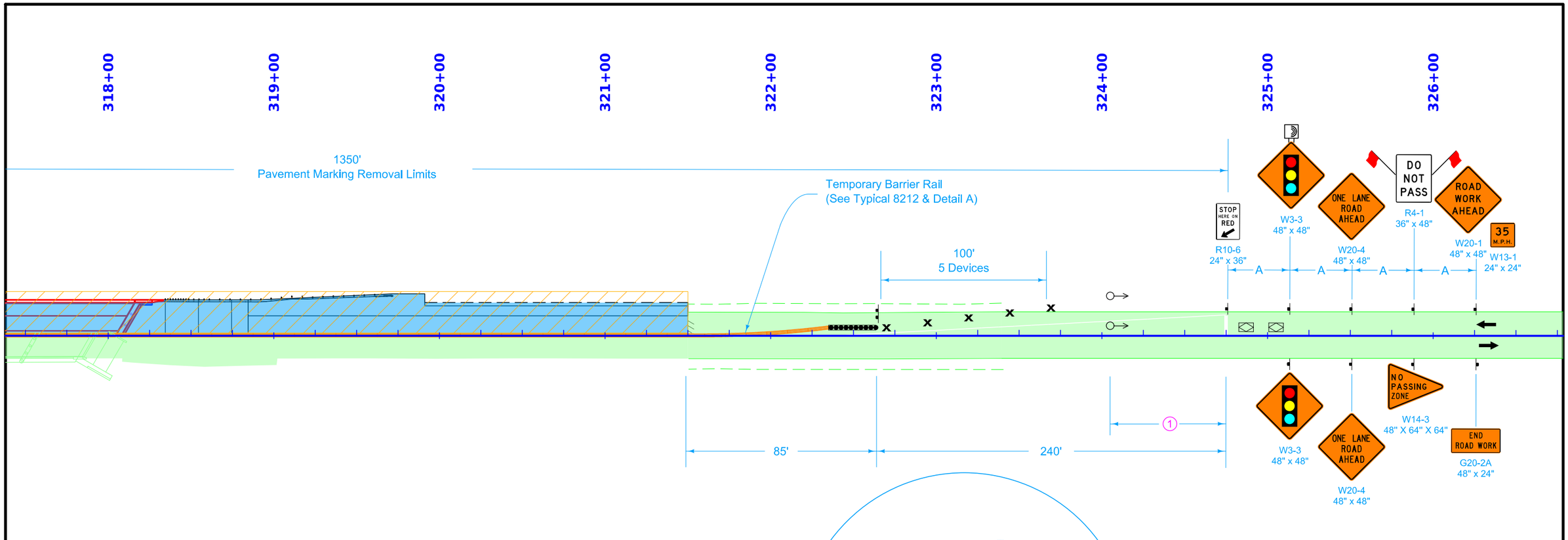

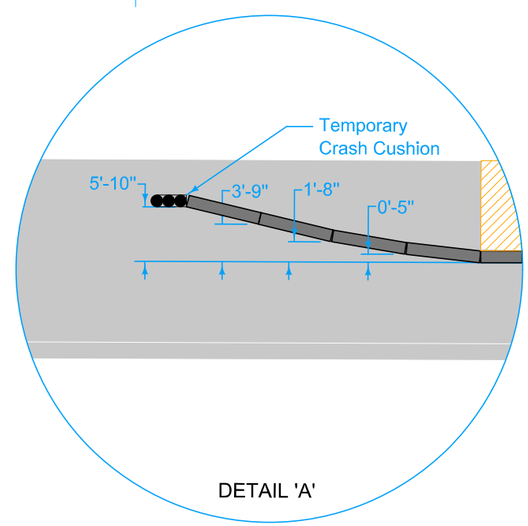

DETAIL 'A'

LEGEND

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- Single White Delineators (mount back to back)
- Vehicle Detection Area
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- Direction of Traffic
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Recommended Settings, (secs.)

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All Red = (see table)

Distance Between Stop Lines (ft)	All Red (secs.)
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1350	**23-31
1250	**21-29
1150	**20-26
1050	*21-36
950	*19-33
850	*17-30
750	*15-27
650	*14-23
550	*12-20

* Range of values are based on operating speeds between 20 and 35 mph

** Range of values are basedon operating speeds between 30 and 40 mph

SPEED LIMIT (mph)*	A
35 or less	250'
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50 or greater	500'

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Place Concrete Barrier Markers at 10 ft C/C on bridge rail.

(1) Locate signal heads 70 to 100 feet beyond stop bar. Adjust location of signal heads as field conditions warrant.

N

0 30
FEET

STAGE 1
LANE CLOSURE WITH SIGNALS AND TBR

FILE NO.	ENGLISH	DESIGN TEAM FOTH	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER J.6

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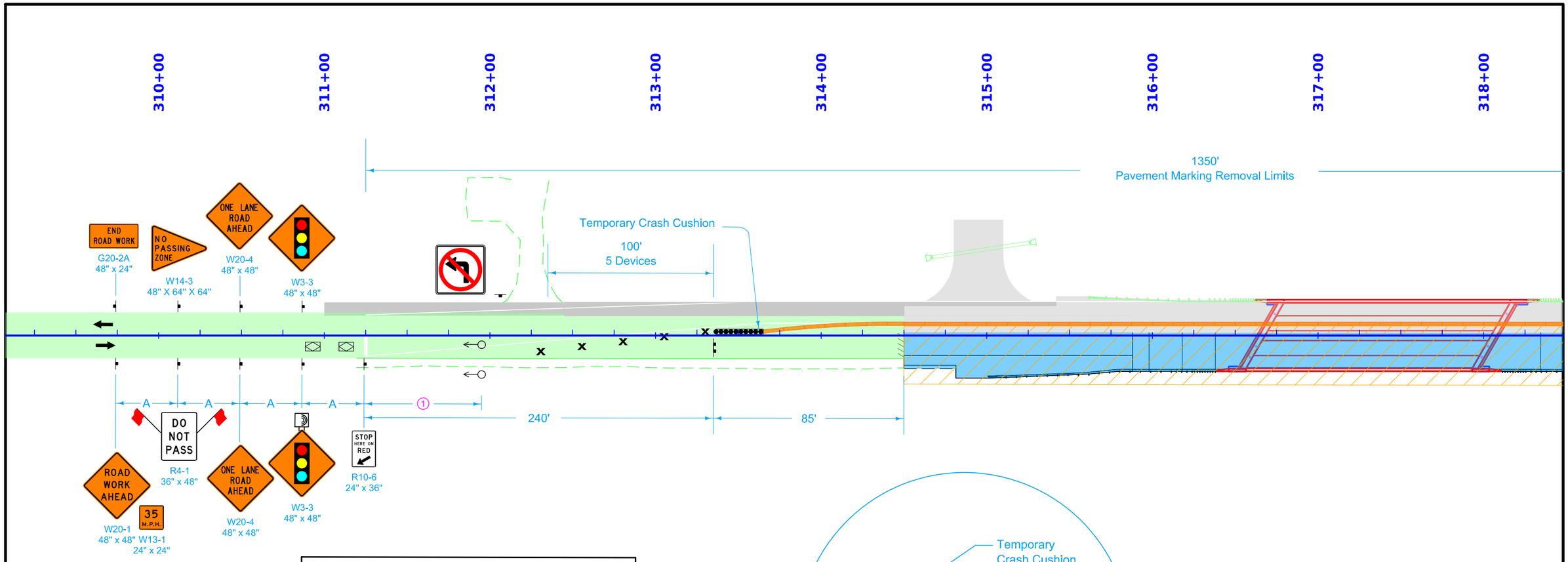

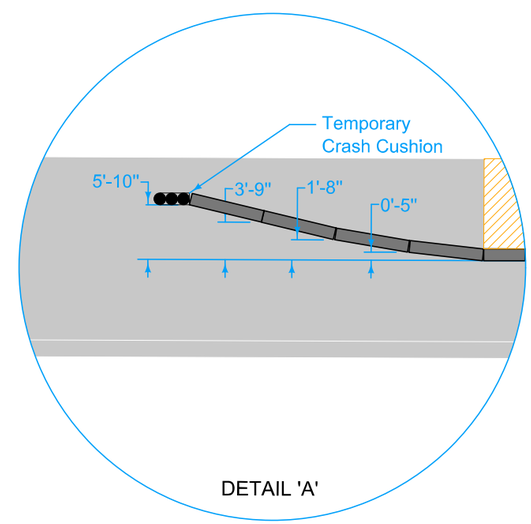

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LEGEND

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- Vehicle Detection Area
- Temporary Crash Cushion
- Direction of Traffic
- Traffic Sign
- Drum
- Type 'B' High-Intensity Flashing Warning Light
- Work Area
- Temporary Traffic Signal

TIMING FOR ACTUATED SIGNALS

Recommended Settings, (secs.)

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Yellow = 5.0
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1450	**25-33
1350	**23-31
1250	**21-29
1150	**20-26
1050	*21-36
950	*19-33
850	*17-30
750	*15-27
650	*14-23
550	*12-20

* Range of values are based on operating speeds between 20 and 35 mph

** Range of values are basedon operating speeds between 30 and 40 mph

SPEED LIMIT (mph)*	A
35 or less	250'
40 - 45	350'
50 or greater	500'

* Speed Limit refers to regulatory speed limit before road work.

Place Concrete Barrier Markers at 10 ft C/C on bridge rail.

(1) Locate signal heads 70 to 100 feet beyond stop bar. Adjust location of signal heads as field conditions warrant.

N

0 30
FEET

STAGE 2
LANE CLOSURE WITH SIGNALS AND TBR

FILE NO.	ENGLISH	DESIGN TEAM FOTH	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER J.7

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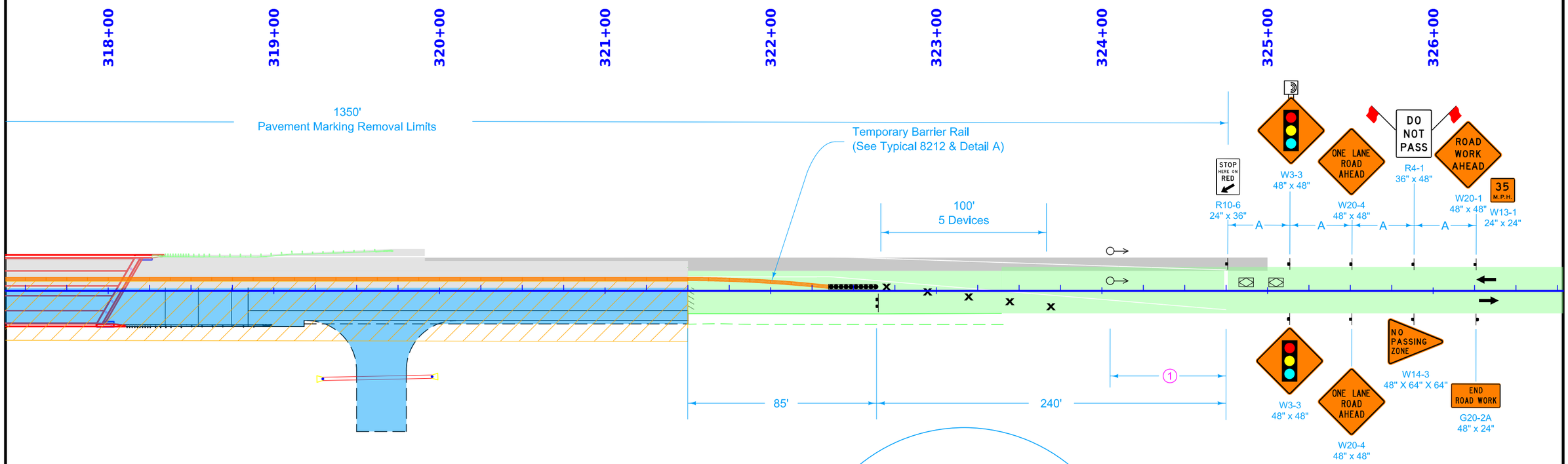

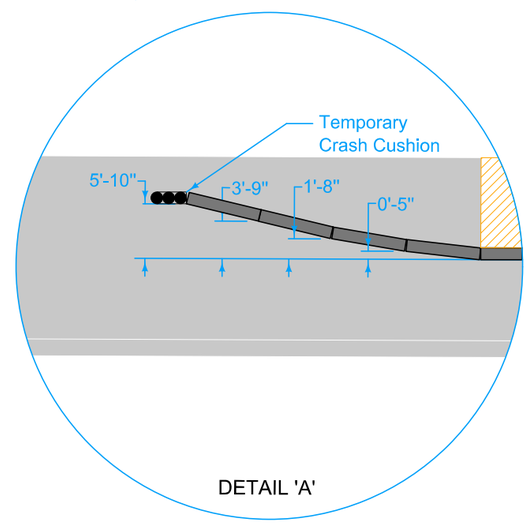

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1150	**20-26
1050	*21-36
950	*19-33
850	*17-30
750	*15-27
650	*14-23
550	*12-20

* Range of values are based on operating speeds between 20 and 35 mph

** Range of values are basedon operating speeds between 30 and 40 mph

SPEED LIMIT (mph)*	A
35 or less	250'
40 - 45	350'
50 or greater	500'

* Speed Limit refers to regulatory speed limit before road work.

Place Concrete Barrier Markers at 10 ft C/C on bridge rail.

(1) Locate signal heads 70 to 100 feet beyond stop bar. Adjust location of signal heads as field conditions warrant.

N

0 30 FEET

STAGE 2
LANE CLOSURE WITH SIGNALS AND TBR

FILE NO.	ENGLISH	DESIGN TEAM FOTH	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER J.8

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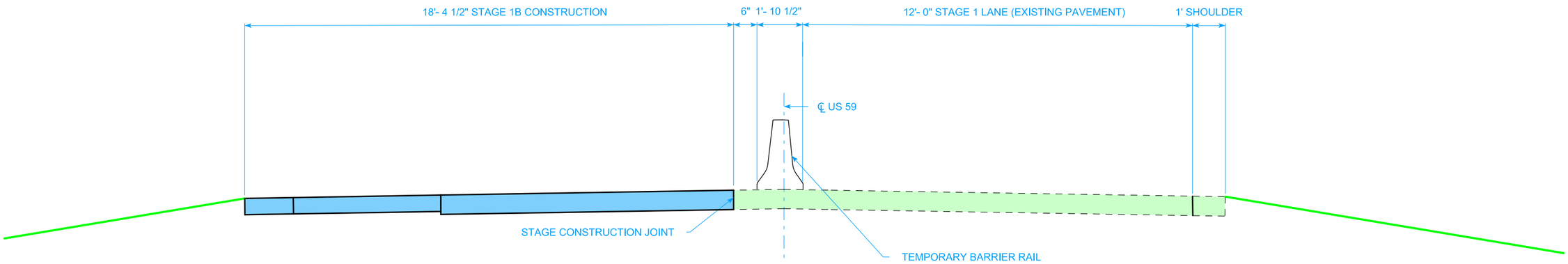
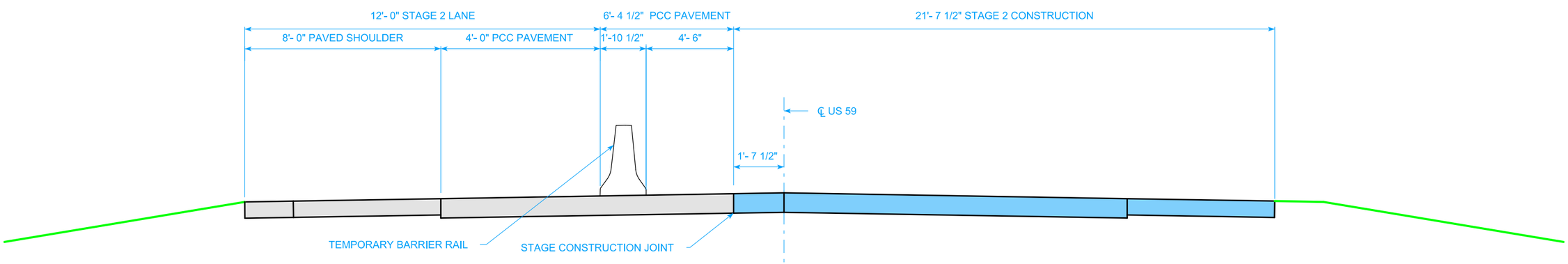
STAGE 1 TYPICAL ROADWAY CROSS SECTION

Looking East



STAGE 2 TYPICAL ROADWAY CROSS SECTION

Looking East



Not to Scale

Control Point 301: 7015555.90 N,16605293.56 E, FENO Set monument South East corner of bridge in grass on South side of US 59, Elev. 1155.15.

Hydraulic Data

RIDB: Not Applicable
Drainage Area = 1.76 Sq. Mi.
Stream Slope (HGL) = 30.57 Ft./Mi.
Avg. Low Water Stage = 1133.88

Operational Low Beam = 1149.87

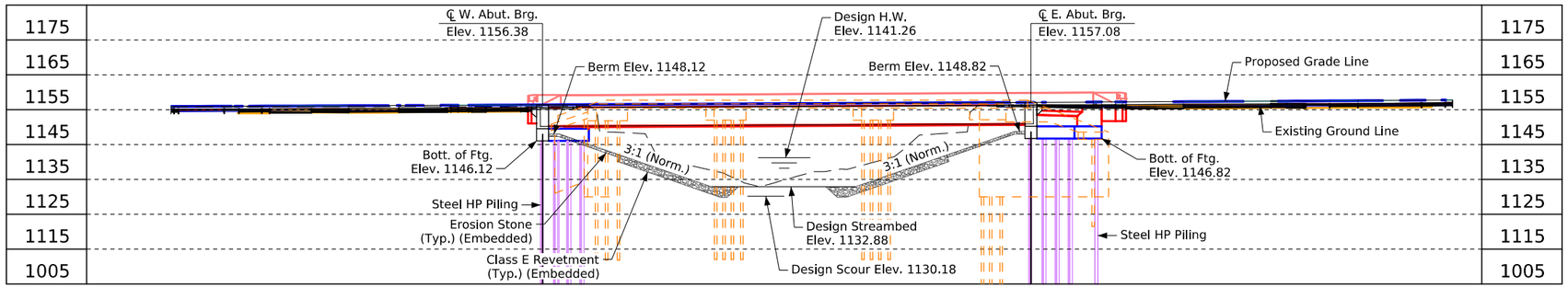
Q_{50} = 1870 cfs
Stage = 1141.26
Operational Freeboard = 8.61 ft
Avg. Bridge Velocity = 3.96 fps

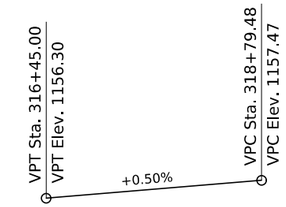
Q_{100} = 2290 cfs
Stage = 1141.98
Operational Freeboard = 7.89 ft
Backwater = 0.86 Ft.
Avg. Bridge Velocity = 3.94 fps

Q_{200} = 2730 cfs
Stage = 1142.66
Calculated Design Scour = 1130.18

Q_{500} = 3320 cfs
Stage = 1143.53
Channel Freeboard = 6.34 ft
Avg. Bridge Velocity = 4.00 fps
Calculated Check Scour = 1130.18

Extreme HW Stage = Unknown
Date = Unknown



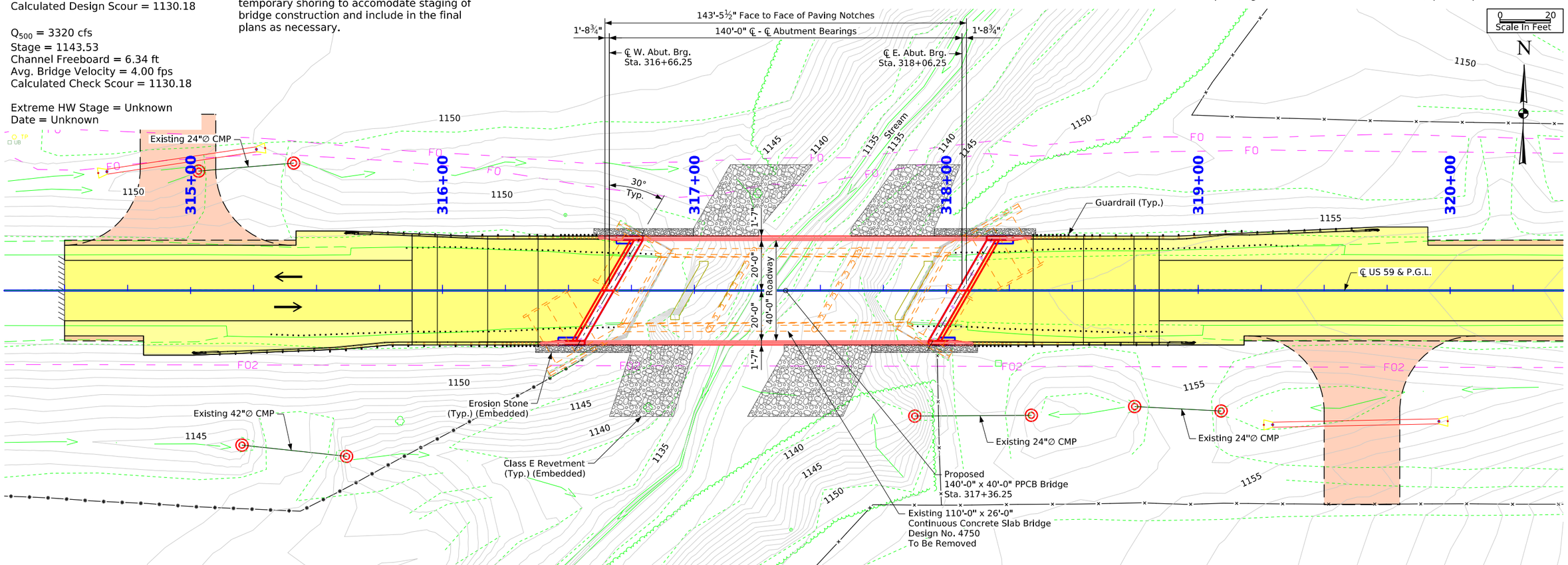


Proposed Profile Grade US 59

Design Notes:
1. TSS TL-4 bridge railing proposed.
2. Final designer shall consider the need for temporary shoring to accomodate staging of bridge construction and include in the final plans as necessary.

BRG TSL Longitudinal Section Along ℄ Approach Roadway

Note:
Top of bridge deck at centerline roadway is 0.03' below the profile grade to account for deck cross slope and parabolic crown.



Situation Plan

Traffic Estimate

2023 AADT	2020 V.P.D.
2049 AADT	2620 V.P.D.
TRUCKS	21 %
Total Design ESALs	???

Note:
This design is for the replacement of the existing 110' x 26' Continuous Concrete Slab Bridge, Pottawattamie Design No. 4750, FHWA No. 43430, Maint. No. 7857.5S059.

Location

US 59 over Stream
T-76N R-39W
Section 8/17
Valley Township
Pottawattamie County
FHWA No. 43431
Bridge Maint. No. 7857.5S059
Latitude 41.389955°
Longitude -95.350136°

Design For 30 Degree Skew LA

140'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

Situation Plan

STA. 317+36.25 (℄ US 59)
Turn-in Date: Apr 2025

Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. xxx | Design Sheet No. 1 of 2 | FHWA No. 43431

FILE NO. xxx	ENGLISH	DESIGN TEAM Foth	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER V.1

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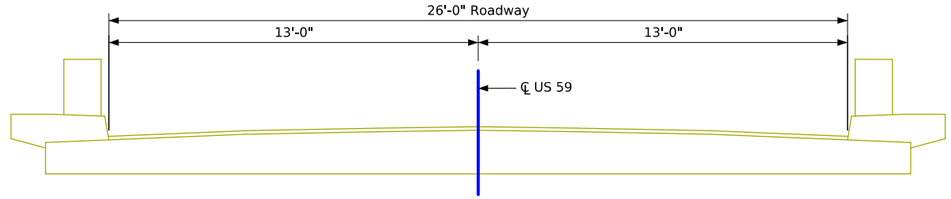
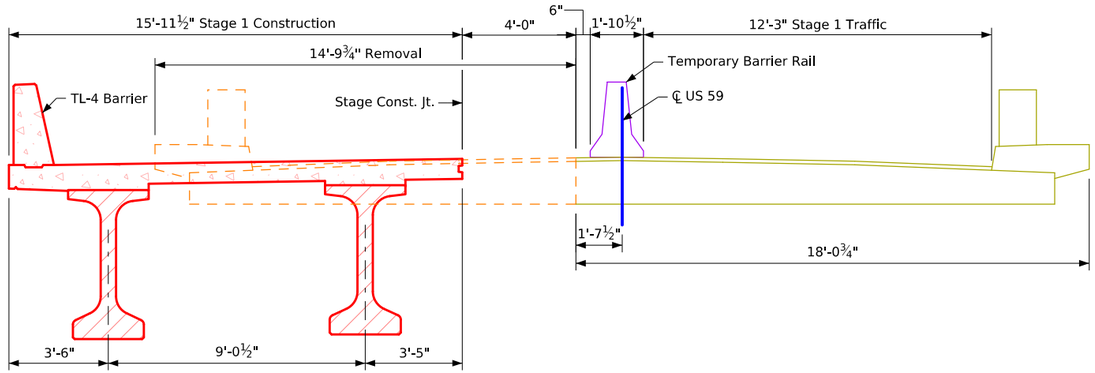
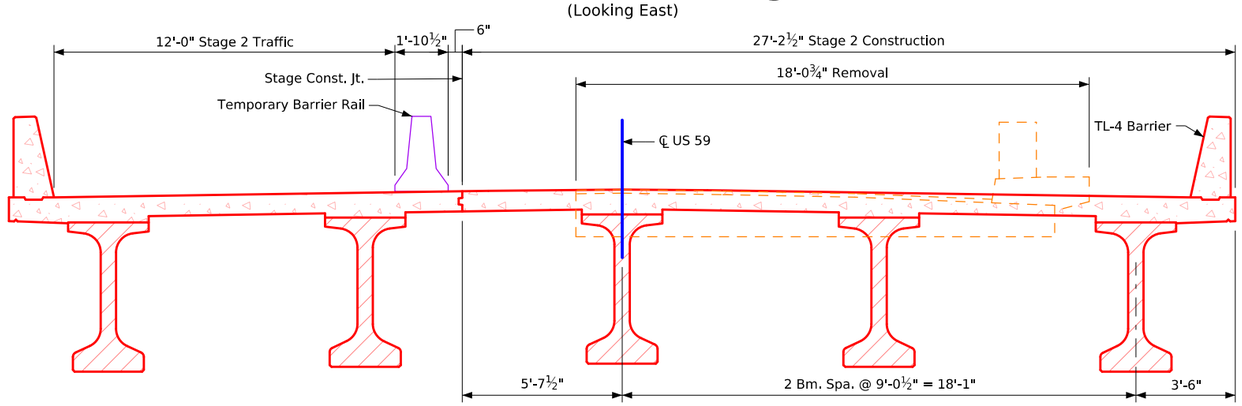


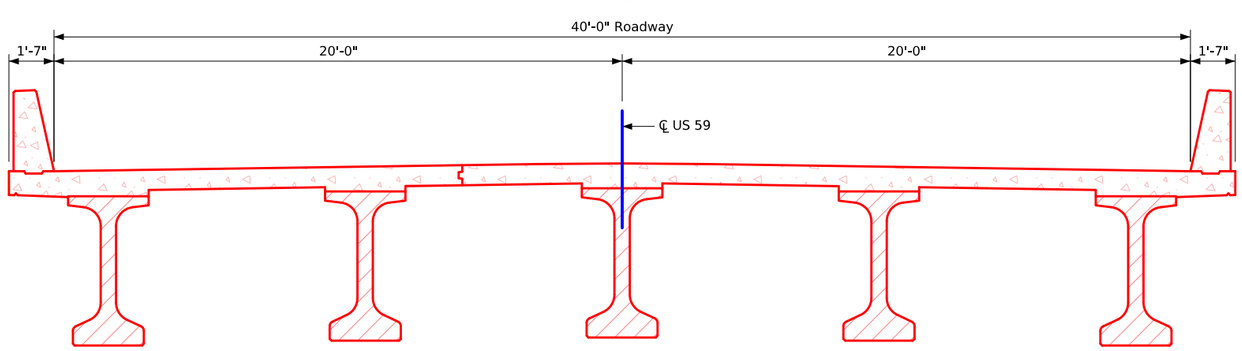
Existing Transverse Section
(Looking East)



Transverse Section- Stage 1
(Looking East)



Transverse Section - Stage 2
(Looking East)



Proposed Transverse Section
(Looking East)

Note:
1. The plans show a layout for TBR for both Stage 1 and Stage 2 construction. The temporary barrier rail sections adjacent to the work area for Stage 1 traffic are to remain in place until traffic is shifted to the Stage 2 traffic lane. The temporary barrier rail sections adjacent to the work area for Stage 2 traffic are to be in place prior to shifting traffic to the Stage 2 traffic lane.
2. The Contractor shall exercise care during installation of the TBR anchors during Stage 1 and 2 to avoid interference with or damage to the deck reinforcing.

Design For 30 Degree Skew LA

140'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

Construction Staging & Notes

STA. 317+36.25 (℄ US 59)

Turn-in Date: Apr 2025

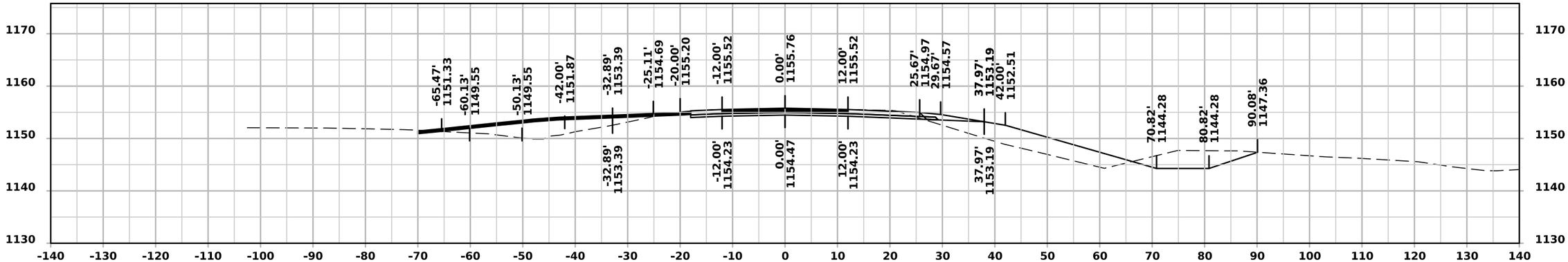
Pottawattamie County

IOWA DEPARTMENT OF TRANSPORTATION

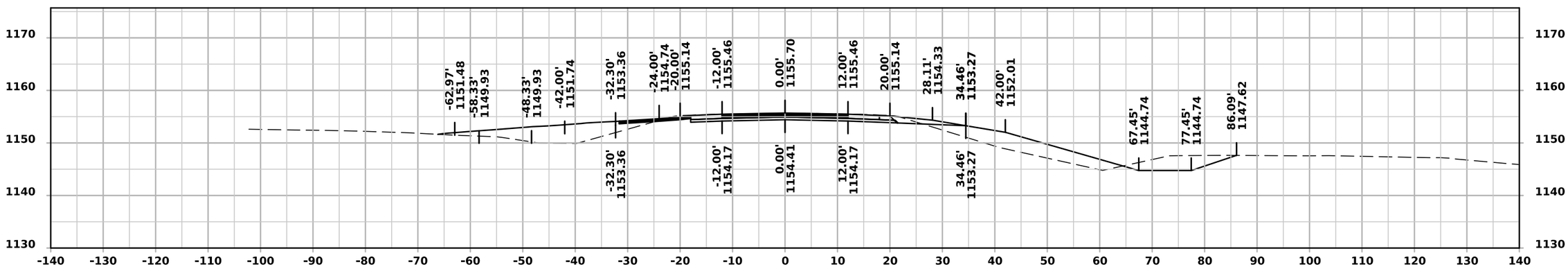
Design No. xxx | Design Sheet No. 2 of 2 | FHWA No. 43431

FILE NO. xxx	ENGLISH	DESIGN TEAM Foth	Pottawattamie COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER V.2

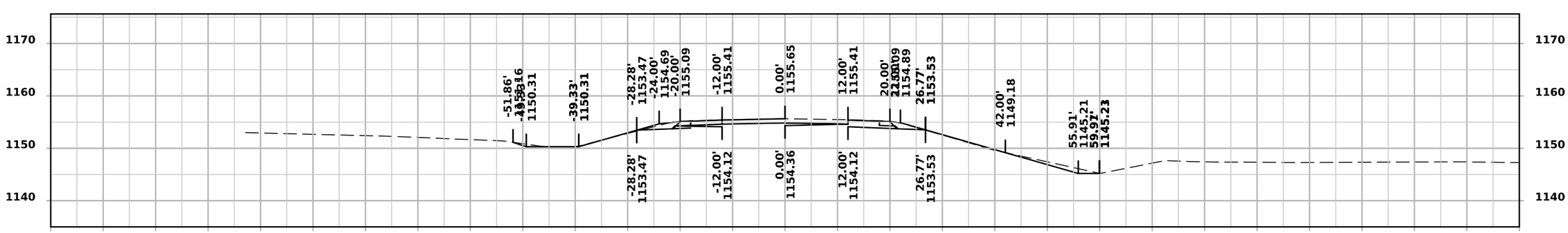
ML - US59



STA 315+00.00



STA 314+75.00



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FILE NO.	ENGLISH	DESIGN TEAM FOTH	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER W.1

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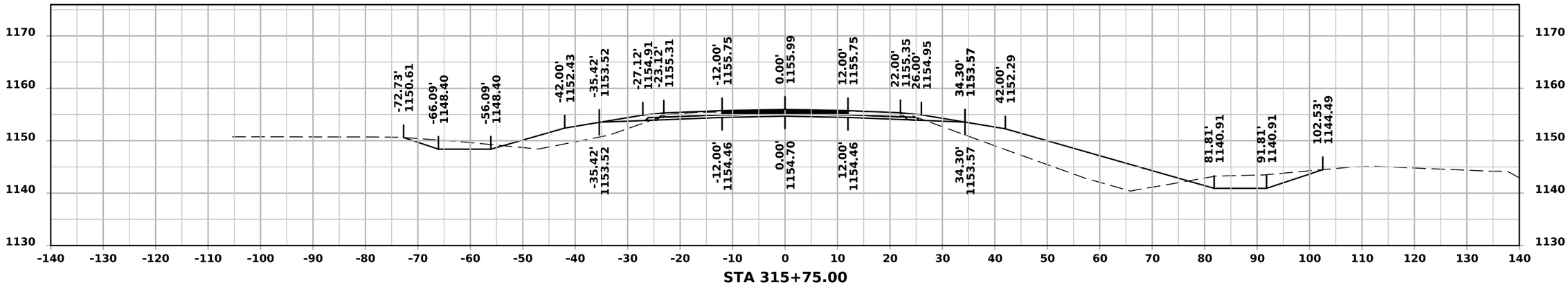
ML - US59



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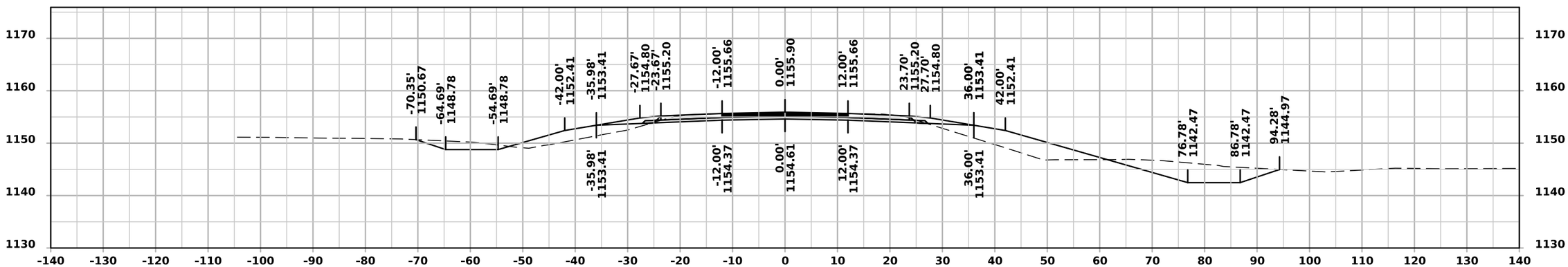

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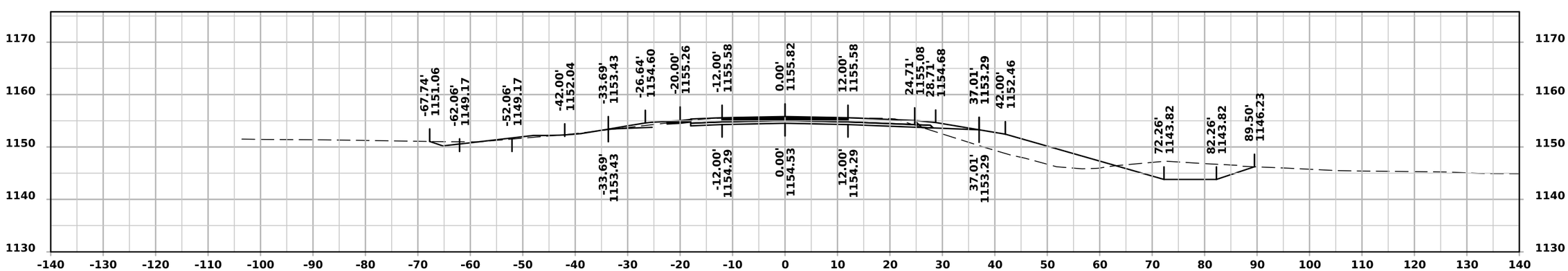
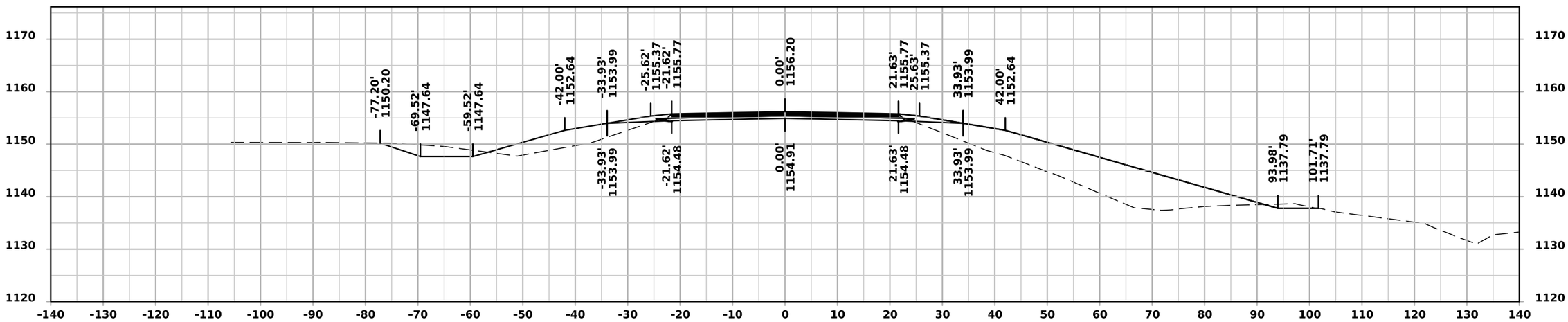


STA 315+25.00

FILE NO.	ENGLISH	DESIGN TEAM FOTH	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER W.2

ML - US59



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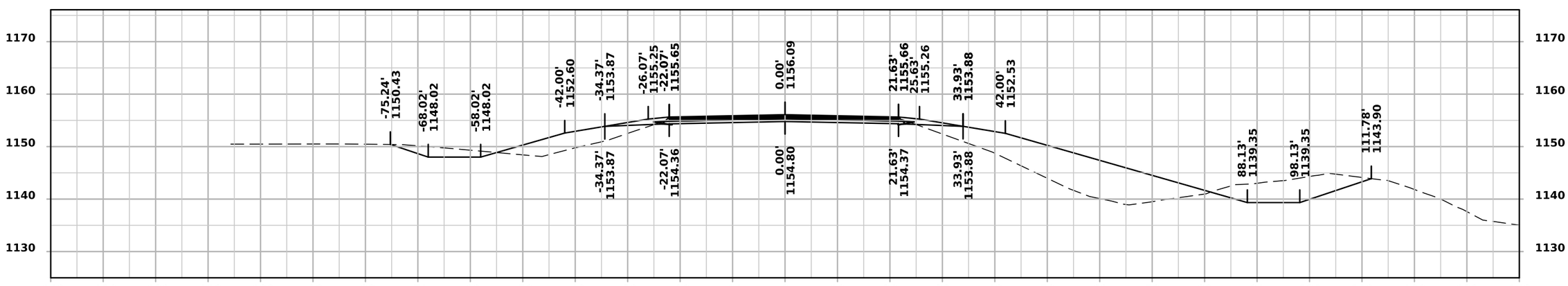

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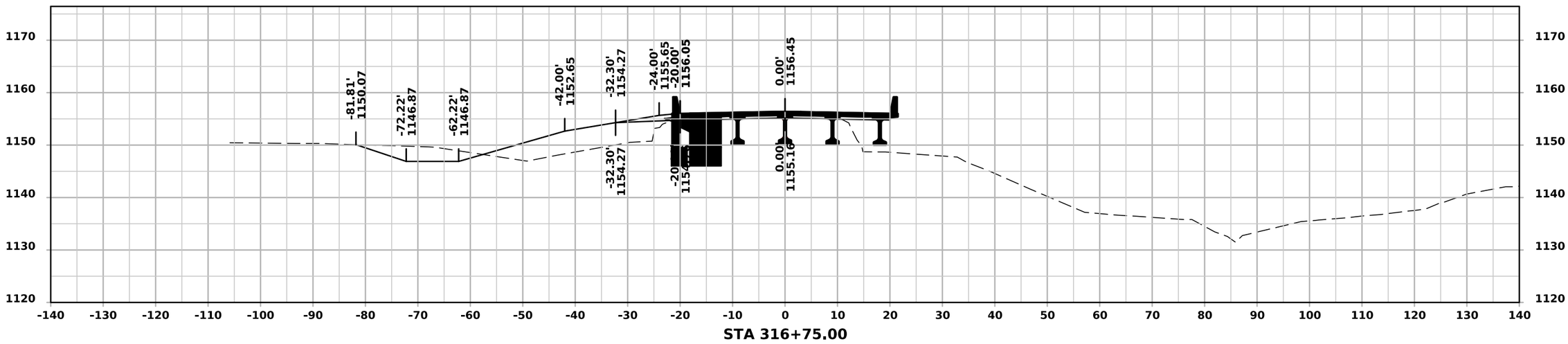
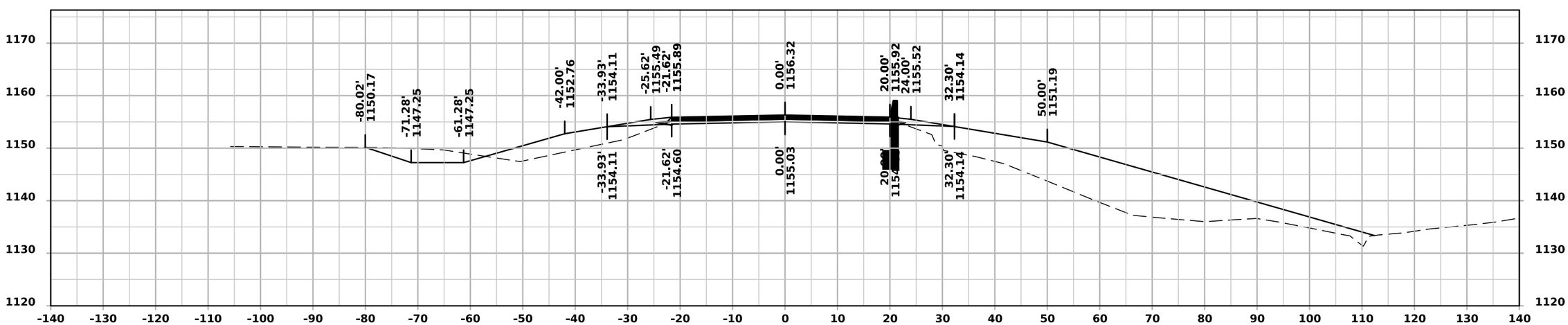
ML - US59



STA 316+75.00



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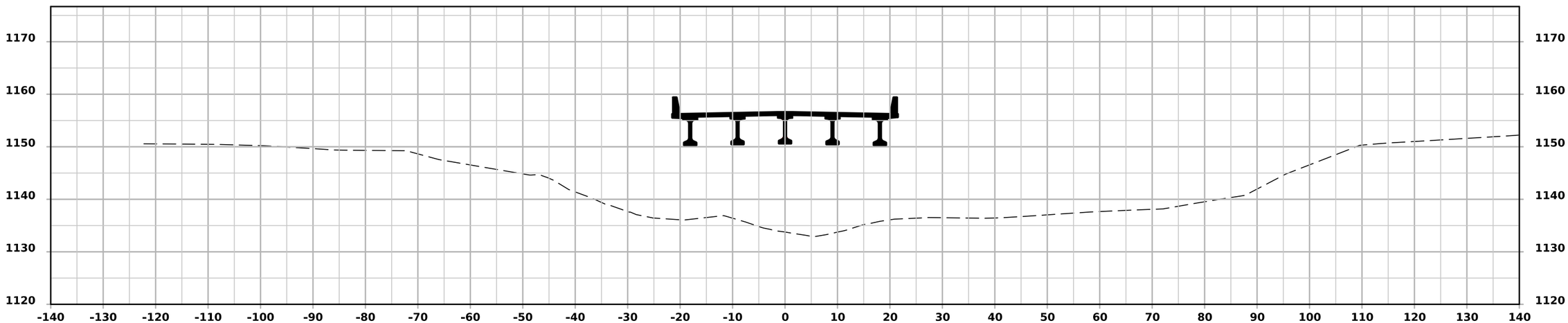
ML - US59



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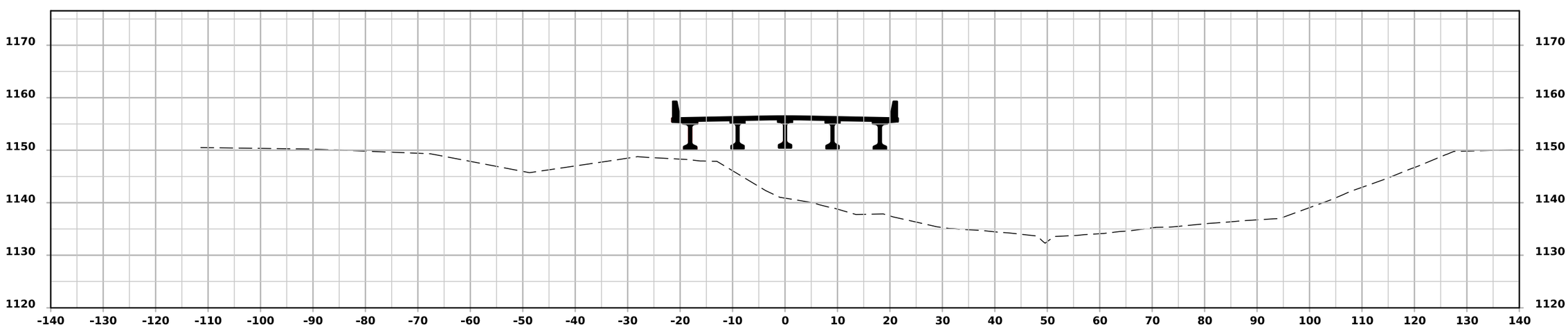

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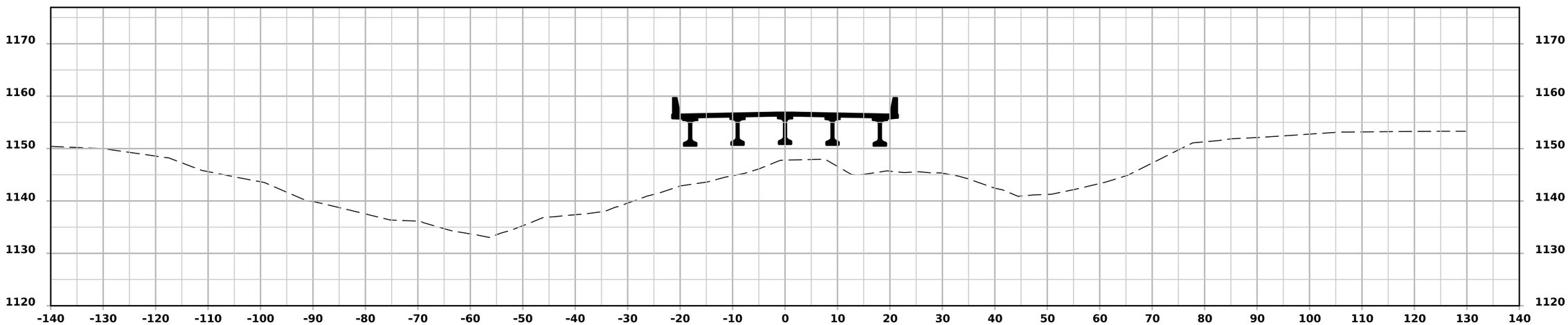
ML - US59



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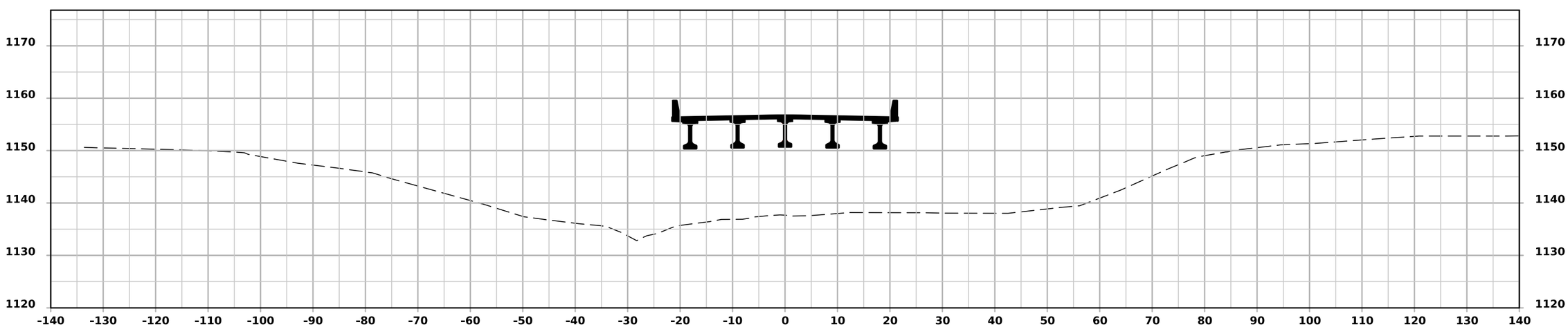

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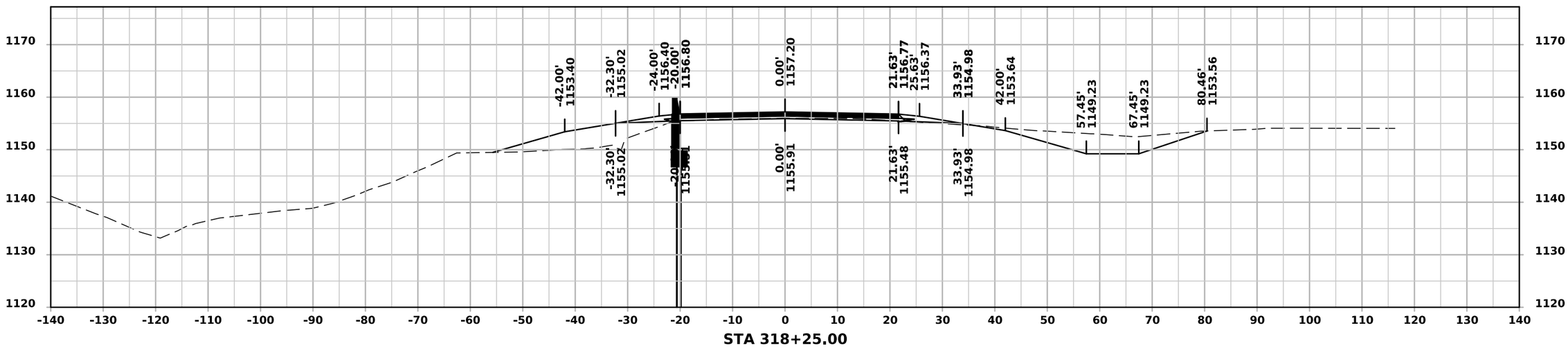
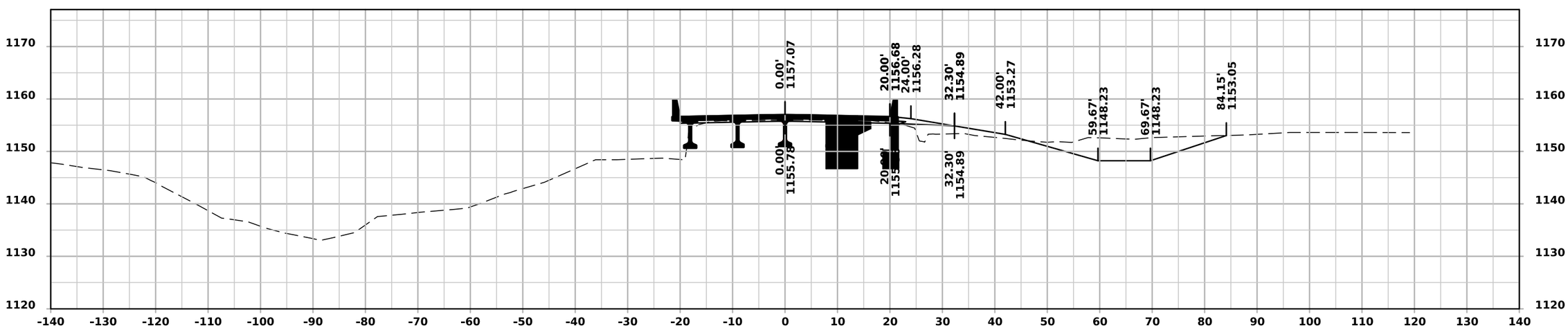
ML - US59



STA 318+25.00



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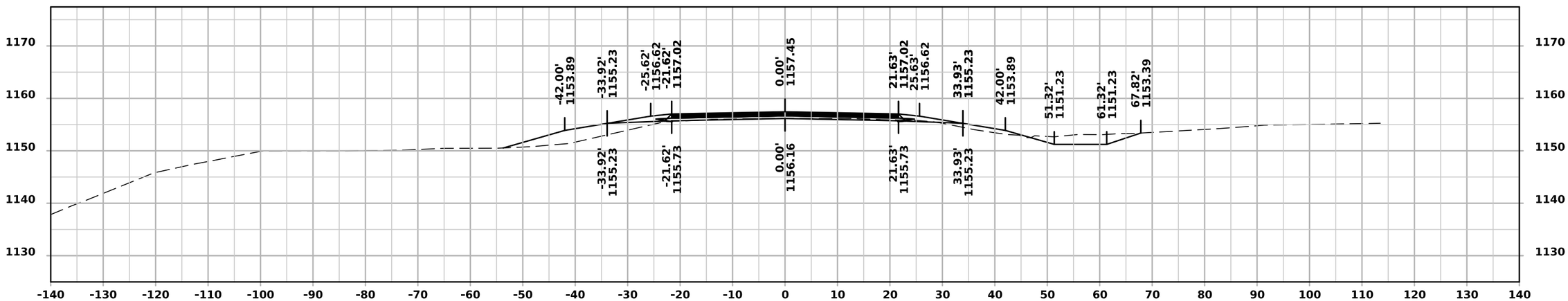
ML - US59



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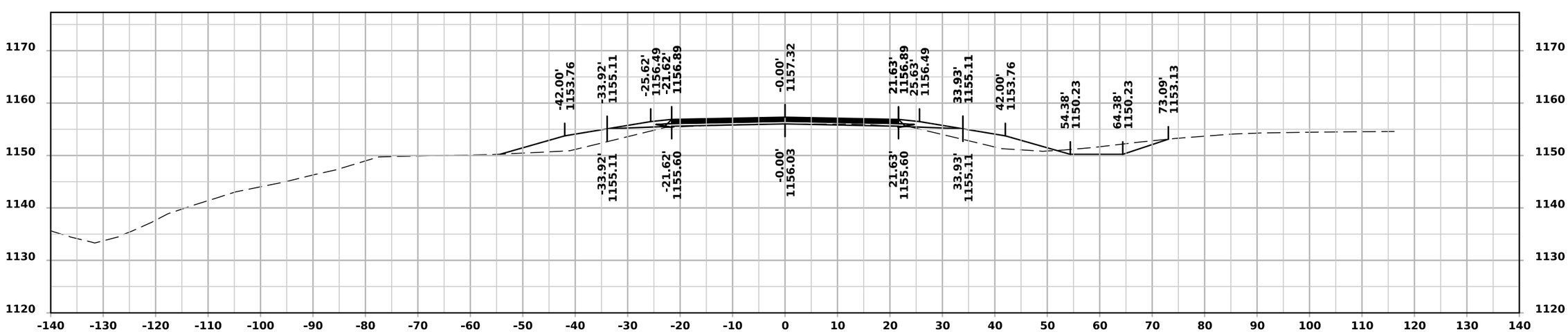

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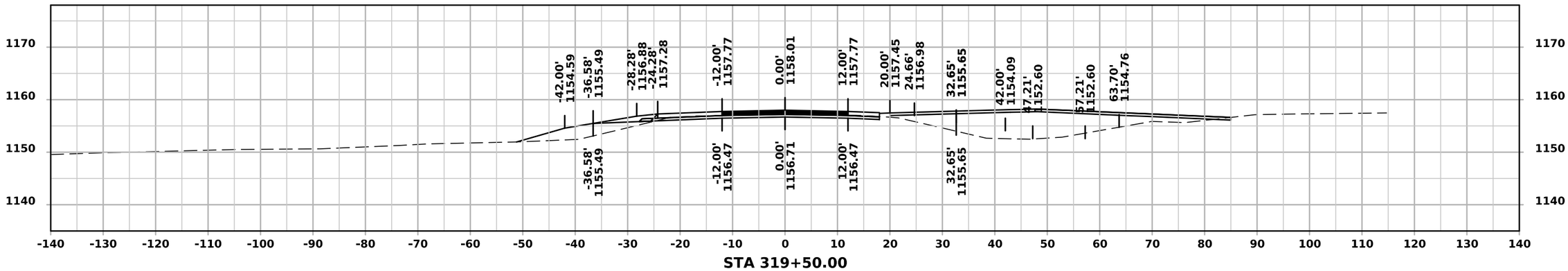
ML - US59



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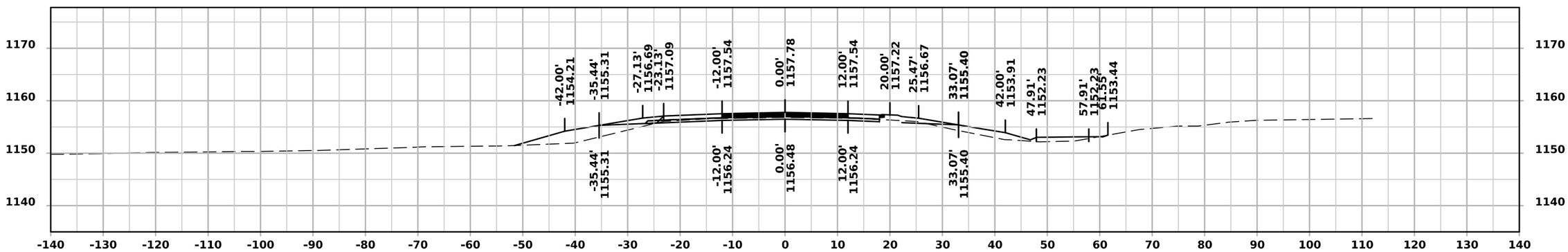

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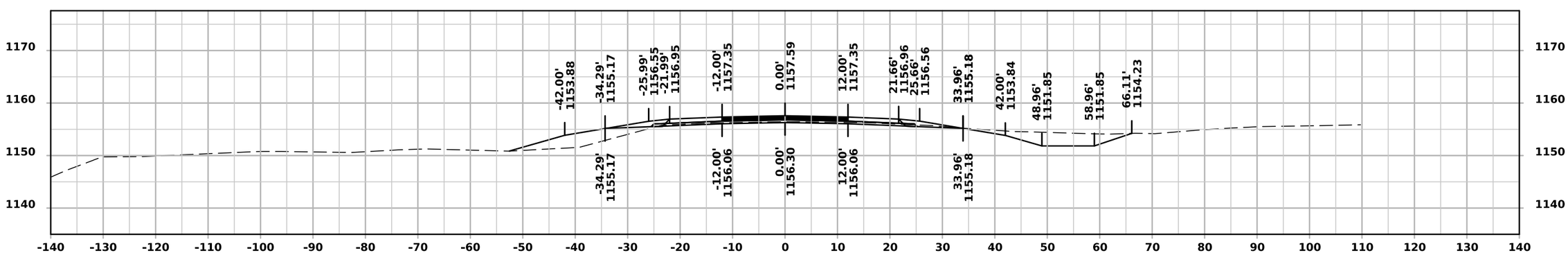

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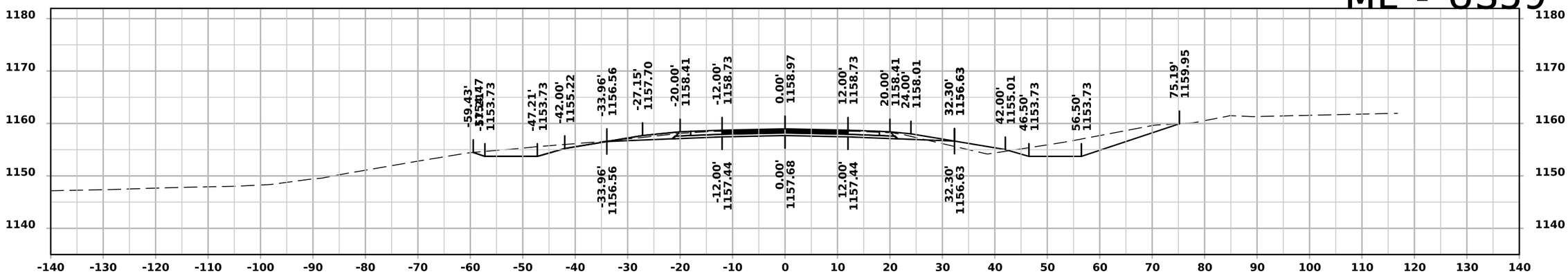
ML - US59



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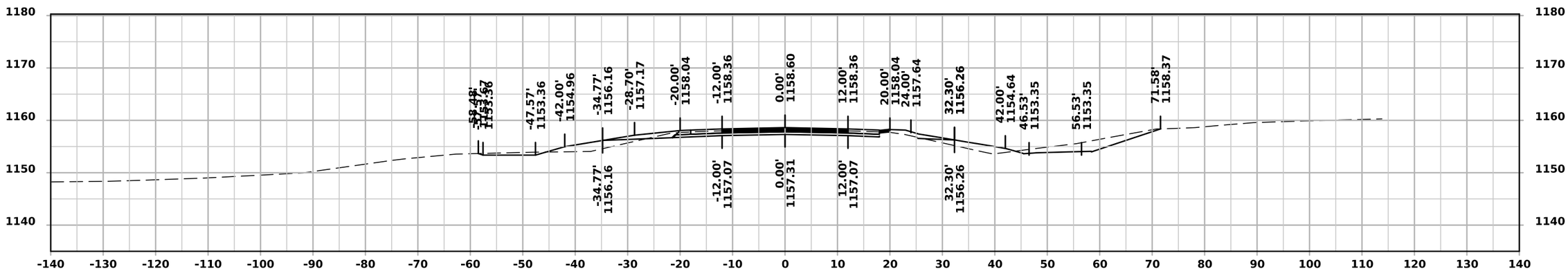

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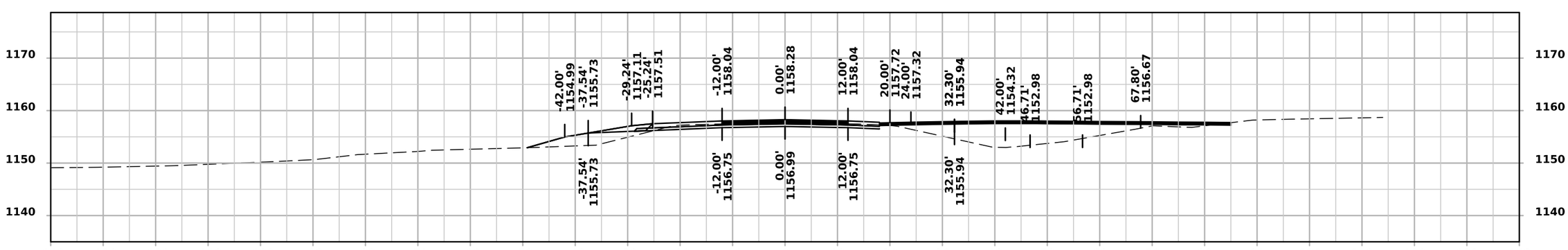

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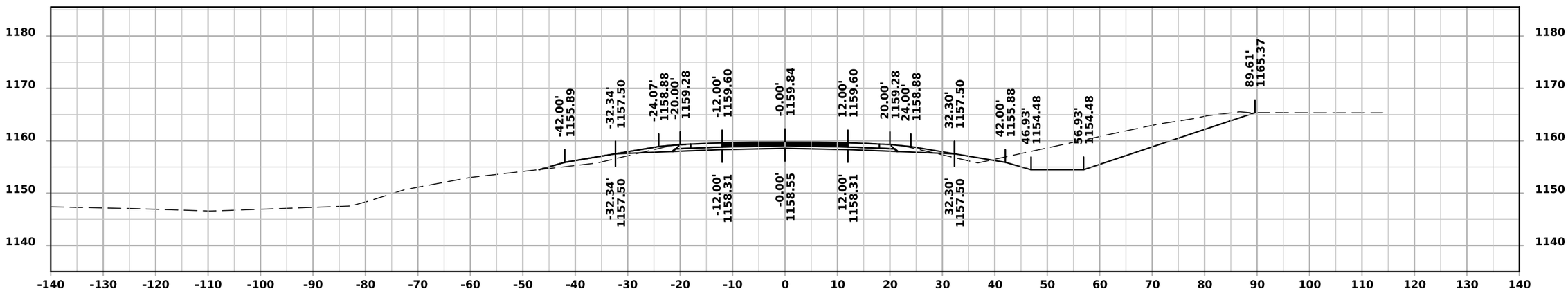

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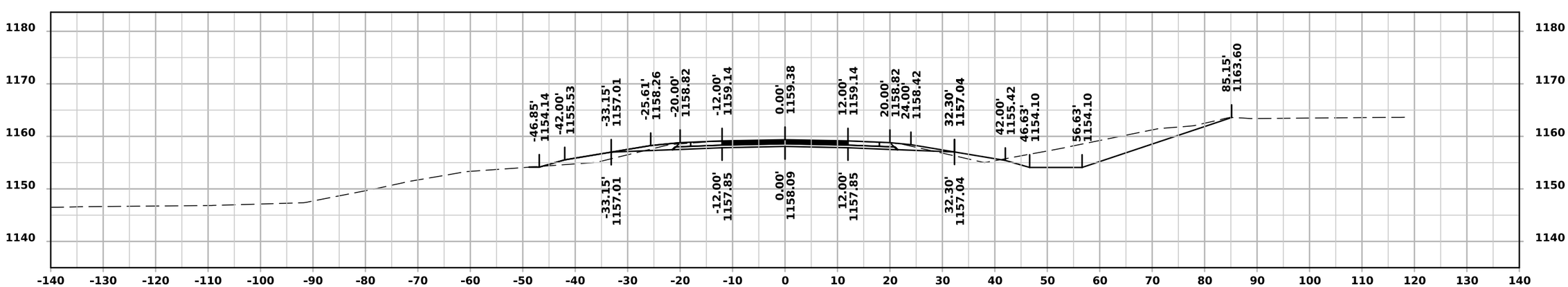

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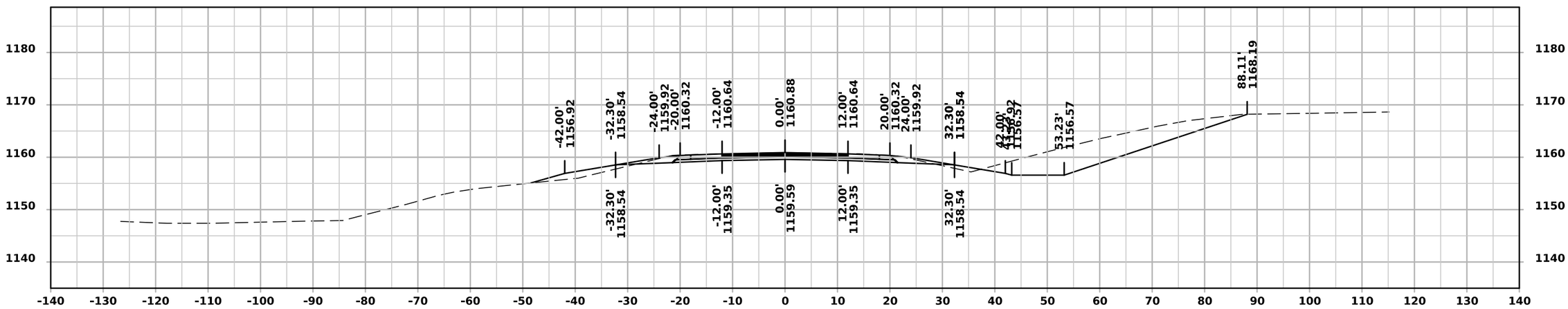
ML - US59



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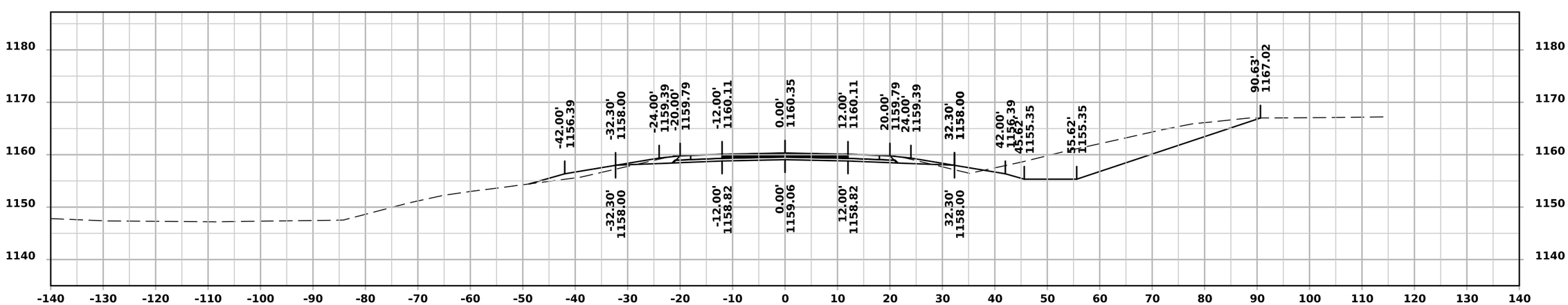

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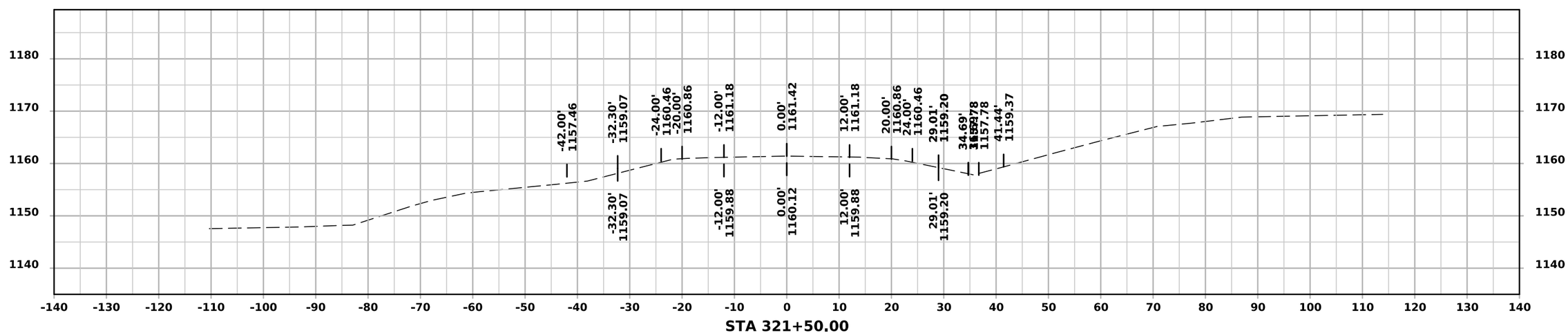
ML - US59



FILE NO.	ENGLISH	DESIGN TEAM FOTH	POTTAWATTAMIE COUNTY	PROJECT NUMBER BRF-059-3(060)--38-78	SHEET NUMBER W.13