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PLANS OF PROPOSED IMPROVEMENT ON THE PRIMARY ROAD SYSTEM JEFFERSON COUNTY PPCB Repair

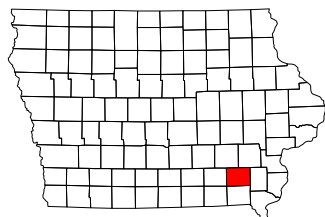
**EB/WB US 34 over Old US 34
3.9 Mi. West of Jct. IA 1**

Refer to the Plan Sheets for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.13 of the Specifications.



Iowa DOT Bridges and Structures
Consultant Coordinator Contact:
Zahrah Alghalibi



Standard Road Plans

Standard Road Plans are listed on Sheet
No. C.3

Design Data Rural

Refer to individual
Situation Plans for
Traffic Data information.

Index of Seals

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Structural Design



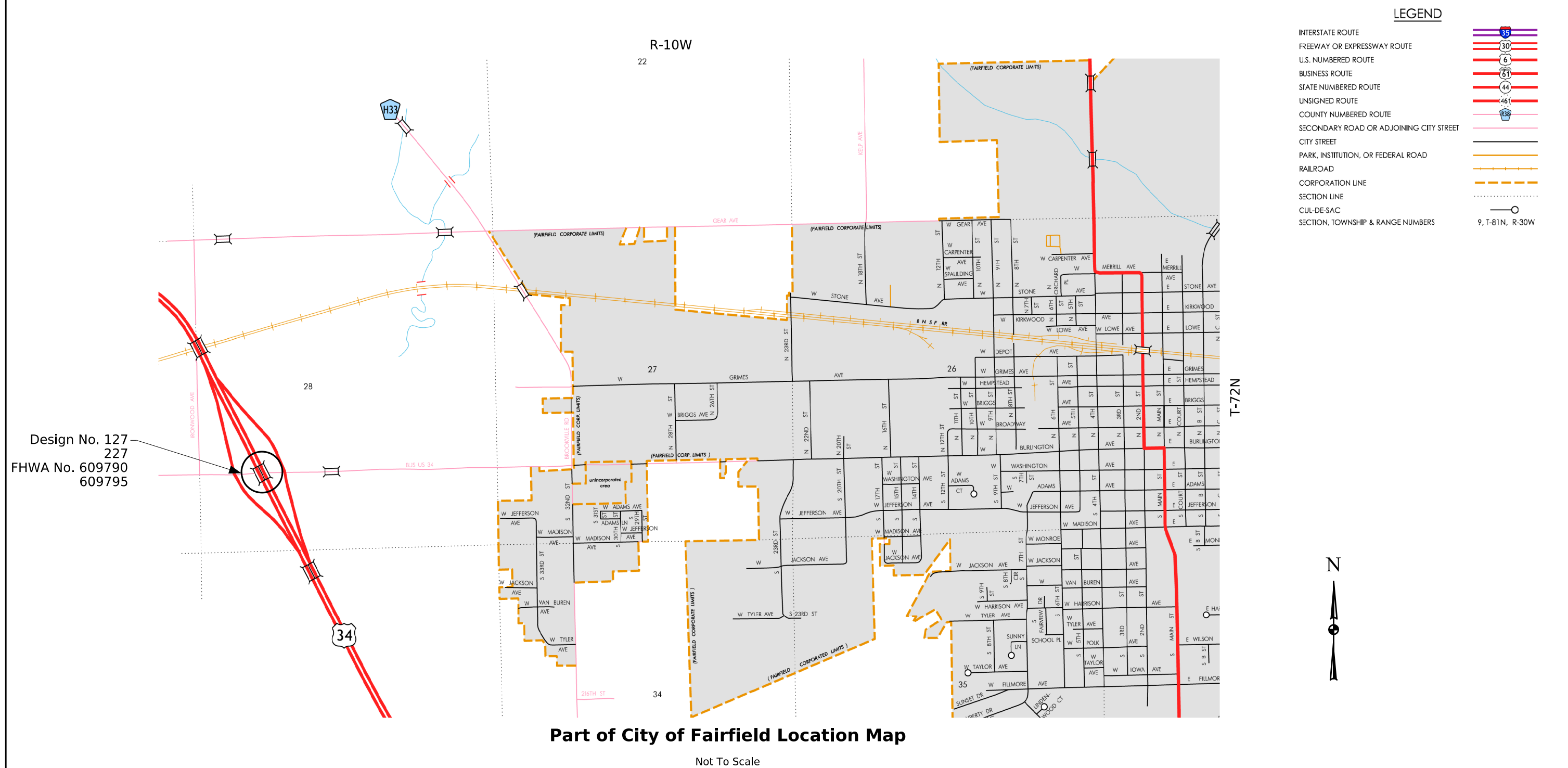
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature Steven W. Arnes Date 08-14-2026

Printed or Typed Name _____

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: All Sheets (A.1 - J.3)



Estimated Bridge Repair Quantities and Reference Notes - Design 127					
Item No.	Item Code	Item	Unit	Quantities Estimated	Estimate Reference Notes
1	2426-6772010	BEAM REPAIR, AS PER PLAN	LS	1	Work shall be completed as specified on Design Sheets 4 and 5. All costs associated with repairing the prestressed concrete beams shall be included in the price bid for "Beam Repair, As Per Plan". Any other areas determined to need repair, if directed by the Engineer, will be paid for as extra work.
2	2533-4980005	MOBILIZATION	LS	1	- -

General Notes:

This design is for repairs to the existing 228'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge on US 34 E.B. over Old US 34. Electronic copies of original design plans will be made available to the contractor as part of the e-files supplied with the contract documents. See Design Sheet No. 2 for list of repair items.

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

All dimensions and details shown on these plans pertinent to new construction shall be verified in the field by the contractor before starting construction.

Faint lines on plans indicate existing structure.

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 road will be open to traffic during construction. See traffic control plan notes on Sheet J.1

Beam Repair Notes:

Refer to Article 2426 of the Standard Specifications for materials and construction methods that are adequate for structural concrete repair of the damaged beams. Bonding grout will not be required.

Refer to Article 2426.03, B of the Standard Specifications for surface preparation requirements when the reinforcing steel has been exposed as a result of concrete spalling or removal of loose and unsound concrete.

Prepare the surface of the old concrete by removing all loose, disintegrated or unsound concrete from the beam, along with the existing concrete stain in the repair area, as shown on these plans and as designated by the Engineer. All concrete removals shall be complete before commencing placement of new concrete. The edge of repair area shall be sawcut ¾" deep.

Utilize fast-setting repair mortar without forms. The mortar must adhere to Materials I.M. 491.20, Appendix B for vertical and overhead use. Follow the concrete surface preparation according to the repair mortar manufacturer's recommendations. Place and cure the repair mortar in line with the manufacturer's guidelines.

Prior to mortar placement, the US 34 E.B. outside shoulder above the beam repair shall be closed to traffic. The shoulder shall be closed above the beam repair for the initial 3 hour minimum set time of the repair mortar. The Contractor may reduce the required minimum initial set time of the repair mortar and shoulder closure time if they are following manufacturer's recommendations and recieve approval from the Engineer.

Specifications for fiber reinforced polymer (FRP) repair of beams are included in the Developmental Specifications for "Fiber Reinforced Polymer Repair for Concrete Containment of Collision Damaged Pretensioned Prestressed Concrete Beams". The manufacturer of FRP laminates should be present to advise the Bridge Contractor on application and placement of FRP laminates.

All costs associated with the following shall be included in the price bid for "Beam Repair, As Per Plan":

- Removal of unsound or loose concrete, preparing, and cleaning repair areas.
- Restoring beam to its original cross sectional dimensions with fast-setting repair mortar as noted and shown in the plans.
- Application of fiber reinforced polymer laminates to the beam as shown in the plans and Developmental Specifications for "Fiber Reinforced Polymer Repair for Concrete Containment of Collision Damaged Pretensioned Prestressed Concrete Beams."
- Prepare (scuff sand) area of beam repair and apply concrete stain to match adjacent concrete stained surface.

The cure time for the repairs shall follow what is recommended by the FRP manufacturer.

Cracks in the beam webs will not be epoxy ejected.

Concrete Stain Notes:

All repaired areas (including the FRP) on the exterior fascia and bottom fascia of the repaired beams as noted and shown in the plans shall be finished with a concrete stain.

The concrete stain shall be one of the following listed products:

1. Sherwin Williams, B97-300 Stain to match the existing stain.
2. Approved Equal; Submit product information to the Iowa DOT, Office of Bridges and Structures, Ames, IA 50010. Do not order materials prior to receiving approval for use on the project.

Prior to concrete stain application, prepare surfaces in accordance with the manufacturer's requirements.

Color shall be a dark red-brown color matching Federal Standard No. 595 B Color Number 30111.

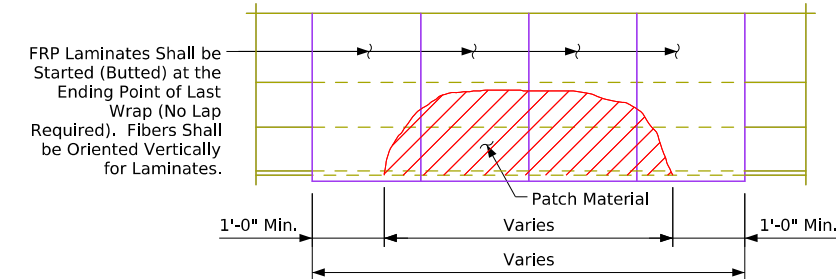
All costs associated with surface preparation and application of concrete stain are to be included in the bid item "Beam Repair, As Per Plan".

Specifications:

Design:
AASHTO series of 2002.

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 including:
-Developmental Specification for Fiber Reinforced Polymer Repair for Concrete Containment of Collision Damage Pretensioned Prestressed Concrete Beams



Impact Area Repair Detail

Design History at this Site

(Includes this Design)

Des. No.	Type of Work
903	Original Design
127	Bridge Repair

Note:
Roadway Quantities are shown elsewhere in these plans.

Note:
The roadway will be open to thru traffic. Refer to the traffic control plan shown elsewhere in these plans.

Design For Repair to 26° Skew (L.A.)

Dual 228'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridges

60'-9", 50'-9" End Spans116'-6" Interior Span

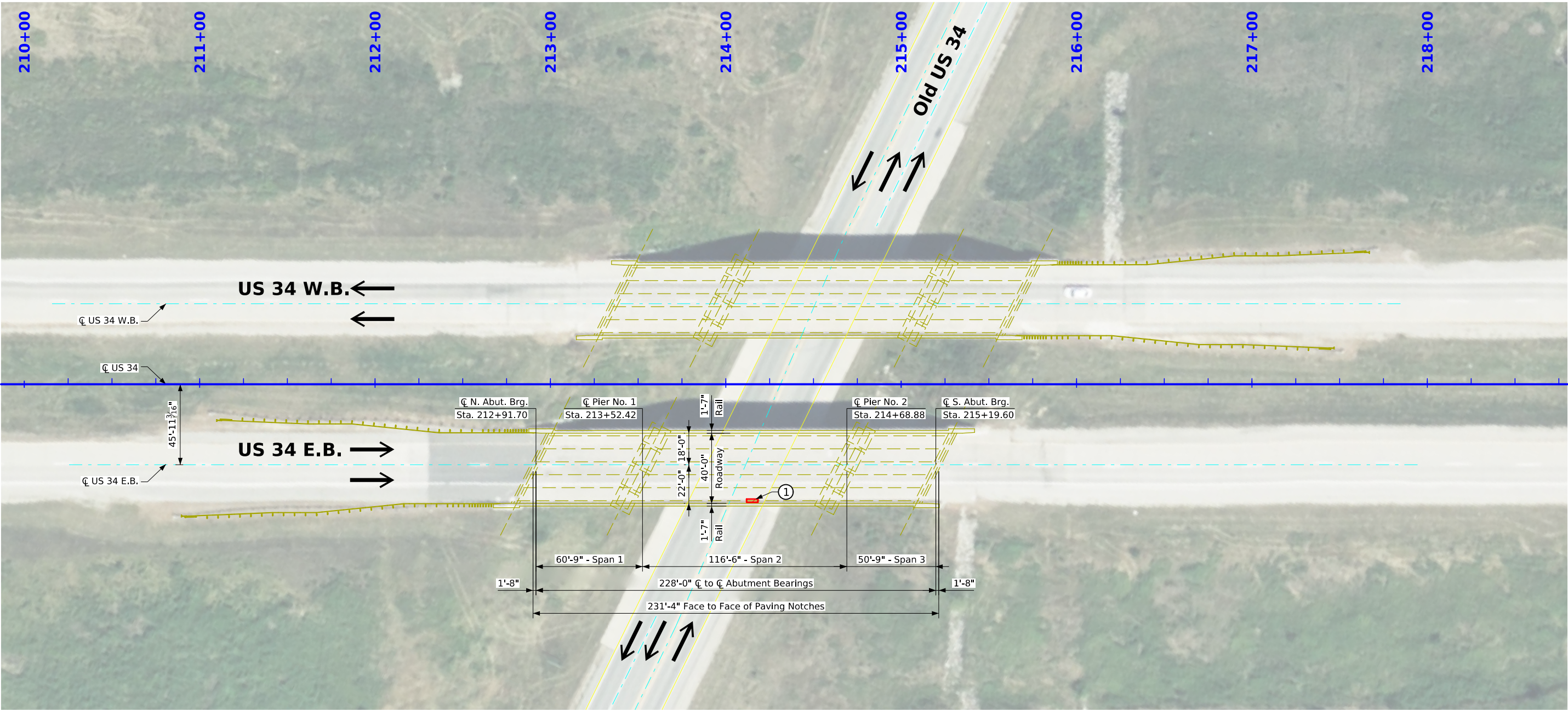
General Notes and Quantities

STA. 214+33.26 (Ç US 34)Turn-In Date: August 2026

Jefferson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127Design Sheet No. 1 of 5FHWA No. 609790



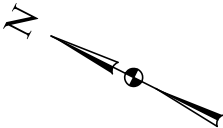
 Estimated Repair.
Actual areas as designated by
the Engineer shall be repaired.

Repairs Shall Consist Of:

1. Patch and FRP wrap Beam 6 over Old US 34. See details on Design Sheet 5.

Location

US 34 E.B. over Old US 34
T-72N R-10W
Section 28
Center Twp.
Jefferson County
FHWA No. 609790
Bridge Maint. No. 5110.0R034
Latitude 41.006554°
Longitude -92.021993°



Traffic Estimate

US 34 E.B.
2024 AADT 2,405 V.P.D.
TRUCKS 26 %

Traffic Estimate

Old US 34
2022 AADT 2,910 V.P.D.
TRUCKS 7 %

Design For Repair to 26° Skew (L.A.)

Dual 228'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridges

60'-9", 50'-9" End Spans 116'-6" Interior Span

Situation Plan

STA. 214+33.26 (C US 34) Turn-in Date: August 2026

Jefferson County

IOWA DEPARTMENT OF TRANSPORTATION
Design No. 127 Design Sheet No. 2 of 5 FHWA No. 609790



Span 2 Beam 6 Damage
(Looking East)



Span 2 Beam 6 Damage
(Looking East)



Span 2 Beam 6 Damage
(Looking Up)



Span 2 Beam 6 Damage
(Looking Up)

Design For Repair to 26° Skew (L.A.)

Dual 228'-0" x 40'-0" Prestensioned
Prestressed Concrete Beam Bridges

60'-9", 50'-9" End Spans116'-6" Interior Span

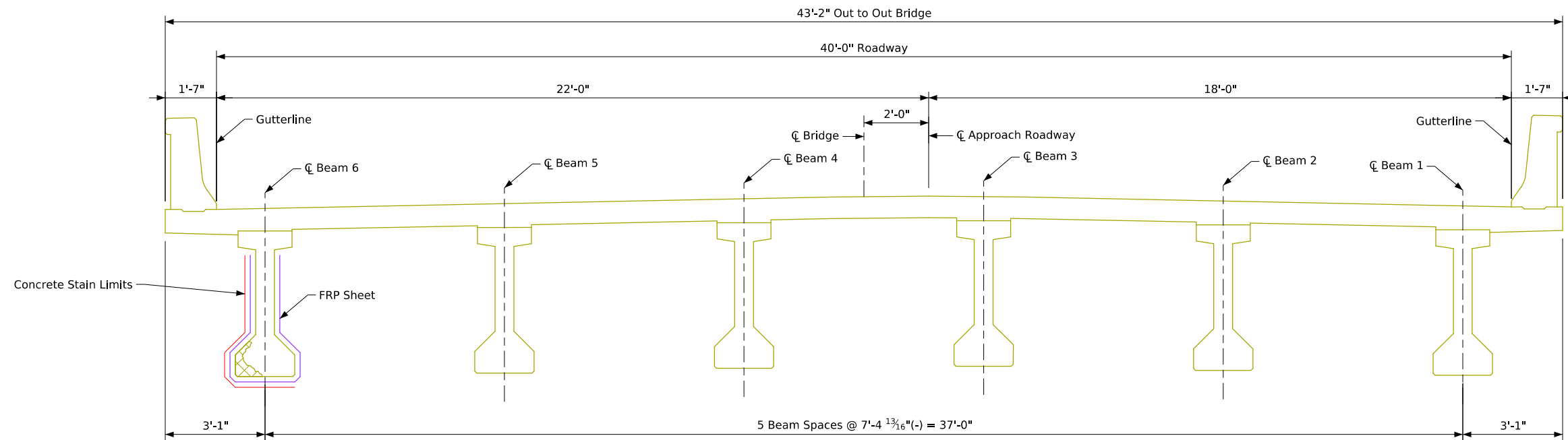
Photo Sheet

STA. 214+33.26 (Ç US 34)Turn-in Date: August 2026

Jefferson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127Design Sheet No. 3 of 5FHWA No. 609790



Typical Section Span 2
(Looking North)

 = Spalled Concrete
FRP = Fiber Reinforced Polymer

Design For Repair to 26° Skew (L.A.)

Dual 228'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridges

60'-9", 50'-9" End Spans 116'-6" Interior Span

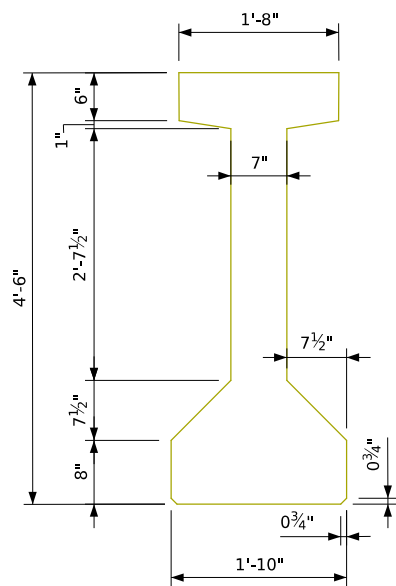
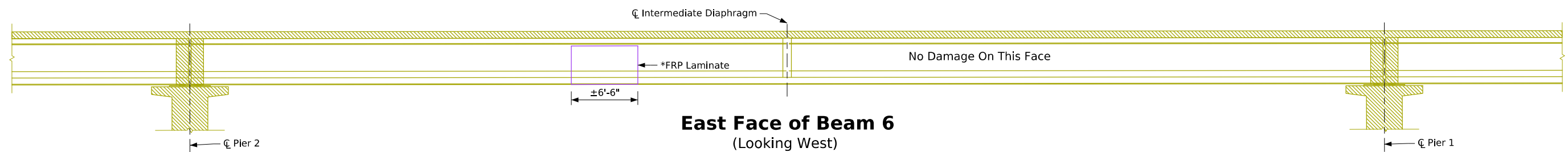
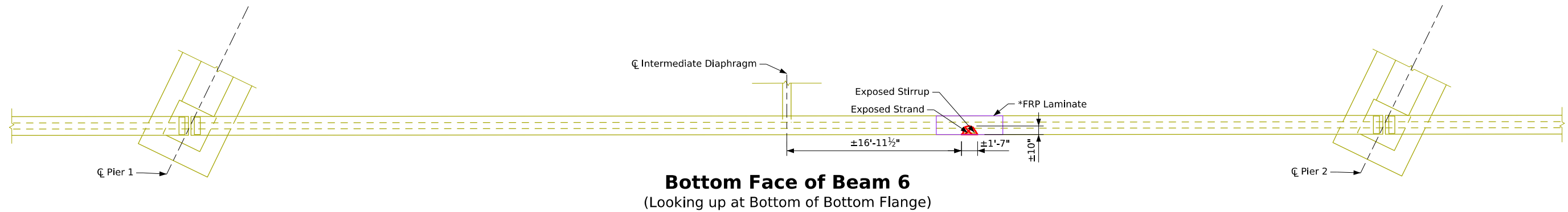
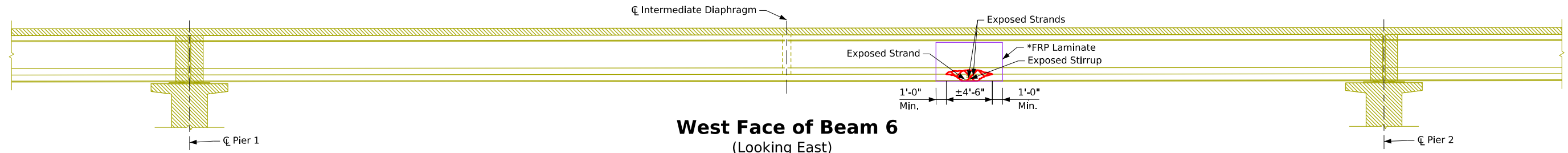
Beam 6 Repair Details

STA. 214+33.26 (CL US 34) Turn-In Date: August 2026

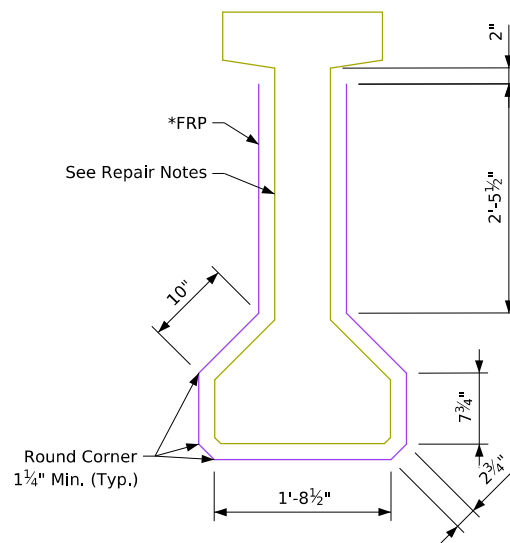
Jefferson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 Design Sheet No. 4 of 5 FHWA No. 609790



Original Beam Dimensions



**Typical Section Thru
Wrapped Beam**

Beam Repairs Notes:

1. Spalled areas shown with hatching shall be repaired to original beam dimensions. The locations and extent of damage are approximate. Actual repair areas shall be as determined by the Engineer in the field.
2. See beam repair notes on Design Sheet No. 1.
3. FRP laminate should be applied according to plan dimensions unless the Engineer designates otherwise.
4. All interior corners shall be ground smooth to ensure proper adhesion between FRP laminate and concrete surface.

*FRP - Fiber-Reinforced Polymer

Legend of Bridge Damage:

 = Concrete Repair

Design For Repair to 26° Skew (L.A.)

Dual 228'-0" x 40'-0" Prestressed Concrete Beam Bridges

60'-9", 50'-9" End Spans 116'-6" Interior Span

Beam 6 Repair Details

STA. 214+33.26 (CL US 34) Turn-in Date: August 2026

Jefferson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 127 Design Sheet No. 5 of 5 FHWA No. 609790

Estimated Bridge Repair Quantities and Reference Notes - Design 227					
Item No.	Item Code	Item	Unit	Quantities Estimated	Estimate Reference Notes
1	2426-6772010	BEAM REPAIR, AS PER PLAN	LS	1	Work shall be completed as specified on Design Sheets 4 and 5. All costs associated with repairing the prestressed concrete beams shall be included in the price bid for "Beam Repair, As Per Plan". Any other areas determined to need repair, if directed by the Engineer, will be paid for as extra work.
2	2533-4980005	MOBILIZATION	LS	1	- -

General Notes:

This design is for repairs to the existing 228'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge on US 34 W.B. over Old US 34. Electronic copies of original design plans will be made available to the contractor as part of the e-files supplied with the contract documents. See Design Sheet No. 2 for list of repair items.

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

All dimensions and details shown on these plans pertinent to new construction shall be verified in the field by the contractor before starting construction.

Faint lines on plans indicate existing structure.

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 road will be open to traffic during construction. See traffic control plan notes on Sheet J.1

Beam Repair Notes:

Refer to Article 2426 of the Standard Specifications for materials and construction methods that are adequate for structural concrete repair of the damaged beams. Bonding grout will not be required.

Refer to Article 2426.03, B of the Standard Specifications for surface preparation requirements when the reinforcing steel has been exposed as a result of concrete spalling or removal of loose and unsound concrete.

Prepare the surface of the old concrete by removing all loose, disintegrated or unsound concrete from the beam, along with the existing concrete stain in the repair area, as shown on these plans and as designated by the Engineer. All concrete removals shall be complete before commencing placement of new concrete. The edge of repair area shall be sawcut ¾" deep.

Utilize fast-setting repair mortar without forms. The mortar must adhere to Materials I.M. 491.20, Appendix B for vertical and overhead use. Follow the concrete surface preparation according to the repair mortar manufacturer's recommendations. Place and cure the repair mortar in line with the manufacturer's guidelines.

Prior to mortar placement, the US 34 W.B. inside shoulder above the beam repair shall be closed to traffic. The shoulder shall be closed above the beam repair for the initial 3 hour minimum set time of the repair mortar. The Contractor may reduce the required minimum initial set time of the repair mortar and shoulder closure time if they are following manufacturer's recommendations and recieve approval from the Engineer.

Specifications for fiber reinforced polymer (FRP) repair of beams are included in the Developmental Specifications for "Fiber Reinforced Polymer Repair for Concrete Containment of Collision Damaged Pretensioned Prestressed Concrete Beams". The manufacturer of FRP laminates should be present to advise the Bridge Contractor on application and placement of FRP laminates.

All costs associated with the following shall be included in the price bid for "Beam Repair, As Per Plan":

- Removal of unsound or loose concrete, preparing, and cleaning repair areas.
- Restoring beam to its original cross sectional dimensions with fast-setting repair mortar as noted and shown in the plans.
- Application of fiber reinforced polymer laminates to the beam as shown in the plans and Developmental Specifications for "Fiber Reinforced Polymer Repair for Concrete Containment of Collision Damaged Pretensioned Prestressed Concrete Beams."
- Prepare (scuff sand) area of beam repair and apply concrete stain to match adjacent concrete stained surface.

The cure time for the repairs shall follow what is recommended by the FRP manufacturer.

Cracks in the beam webs will not be epoxy ejected.

Concrete Stain Notes:

All repaired areas (including the FRP) on the exterior fascia and bottom fascia of the repaired beams as noted and shown in the plans shall be finished with a concrete stain.

The concrete stain shall be one of the following listed products:

1. Sherwin Williams, B97-300 Stain to match the existing stain.
2. Approved Equal; Submit product information to the Iowa DOT, Office of Bridges and Structures, Ames, IA 50010. Do not order materials prior to receiving approval for use on the project.

Prior to concrete stain application, prepare surfaces in accordance with the manufacturer's requirements.

Color shall be a dark red-brown color matching Federal Standard No. 595 B Color Number 30111.

All costs associated with surface preparation and application of concrete stain are to be included in the bid item "Beam Repair, As Per Plan".

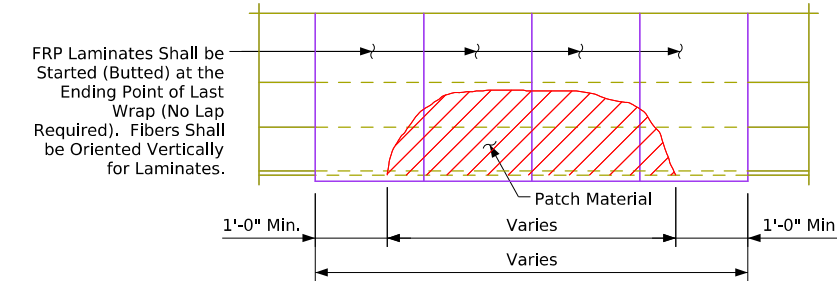
Specifications:

Design:
AASHTO series of 2002.

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 including:

- Developmental Specification for Fiber Reinforced Polymer Repair for Concrete Containment of Collision Damage Pretensioned Prestressed Concrete Beams



Impact Area Repair Detail

Design History at this Site

(Includes this Design)

Des. No.	Type of Work
903	Original Design
227	Bridge Repair

Note:
Roadway Quantities are shown elsewhere in these plans.

Note:
The roadway will be open to thru traffic. Refer to the traffic control plan shown elsewhere in these plans.

Design For Repair to 26° Skew (L.A.)

Dual 228'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridges

60'-9", 50'-9" End Spans116'-6" Interior Span

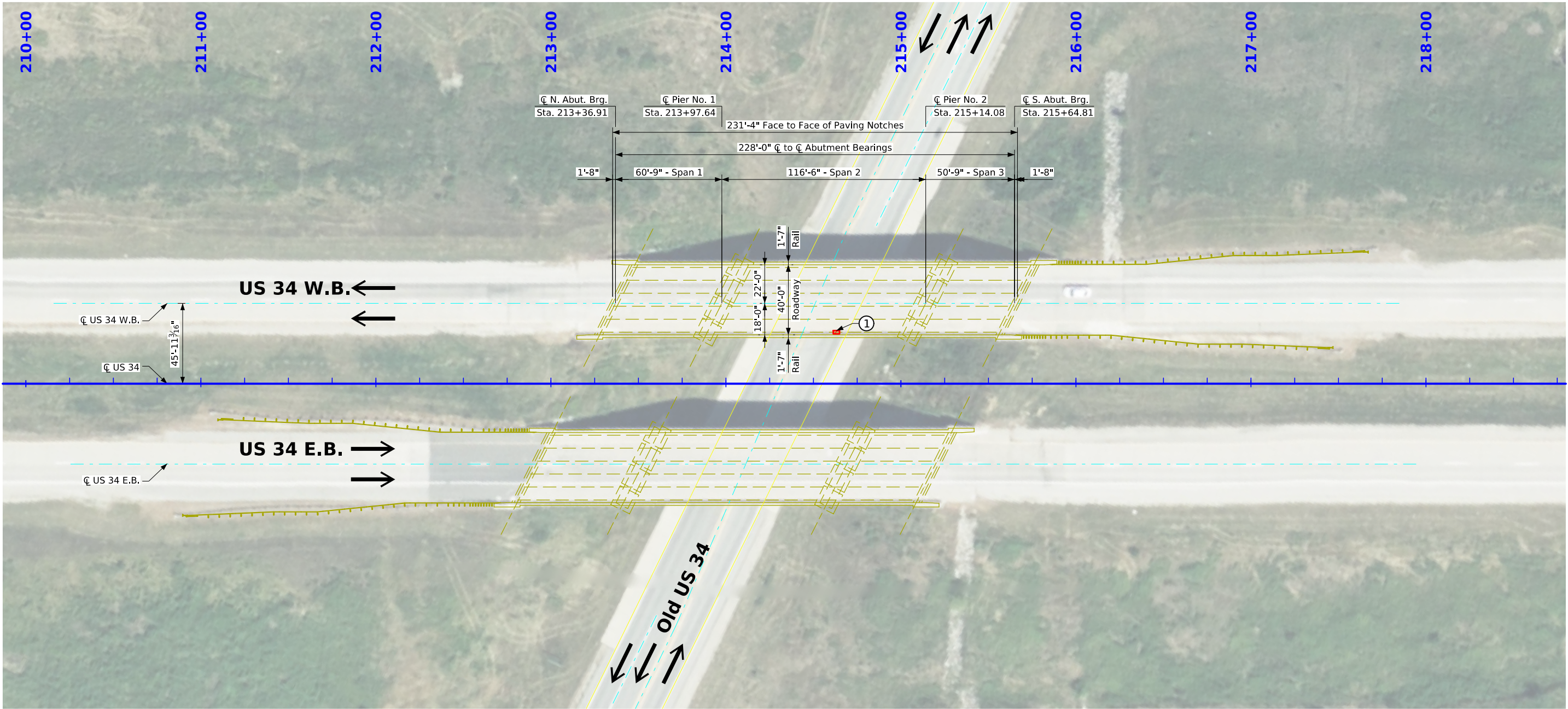
General Notes and Quantities

STA. 214+33.26 (☑ US 34)Turn-In Date: August 2026

Jefferson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 1 of 5FHWA No. 609795



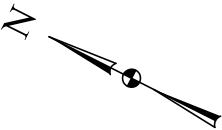
 Estimated Repair.
Actual areas as designated by
the Engineer shall be repaired.

Repairs Shall Consist Of:

- 1. Patch and FRP wrap Beam 6 over Old US 34. See details on Design Sheet 5.

Location

US 34 W.B. Over Old US 34
T-72N R-10W
Section 28
Center Twp.
Jefferson County
FHWA No. 609795
Bridge Maint. No. 5110.0L034
Latitude 41.006093°
Longitude -92.021291°



Traffic Estimate

US 34 W.B.
2024 AADT 2,405 V.P.D.
TRUCKS 26 %

Traffic Estimate

Old US 34
2022 AADT 2,910 V.P.D.
TRUCKS 7 %

Design For Repair to 26° Skew (L.A.)

Dual 228'-0" x 40'-0" Pretensioned
Prestressed Concrete Beam Bridges

60'-9", 50'-9" End Spans 116'-6" Interior Span

Situation Plan

STA. 214+33.26 (C US 34) Turn-in Date: August 2026

Jefferson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 2 of 5 FHWA No. 609795



Span 2 Beam 6 Damage
(Looking East)



Span 2 Beam 6 Damage
(Looking Up)



Span 2 Beam 6 Damage
(Looking Up)



Span 2 Beam 6 Damage
(Looking Up)

Design For Repair to 26° Skew (L.A.)

Dual 228'-0" x 40'-0" Prestensioned
Prestressed Concrete Beam Bridges

60'-9", 50'-9" End Spans116'-6" Interior Span

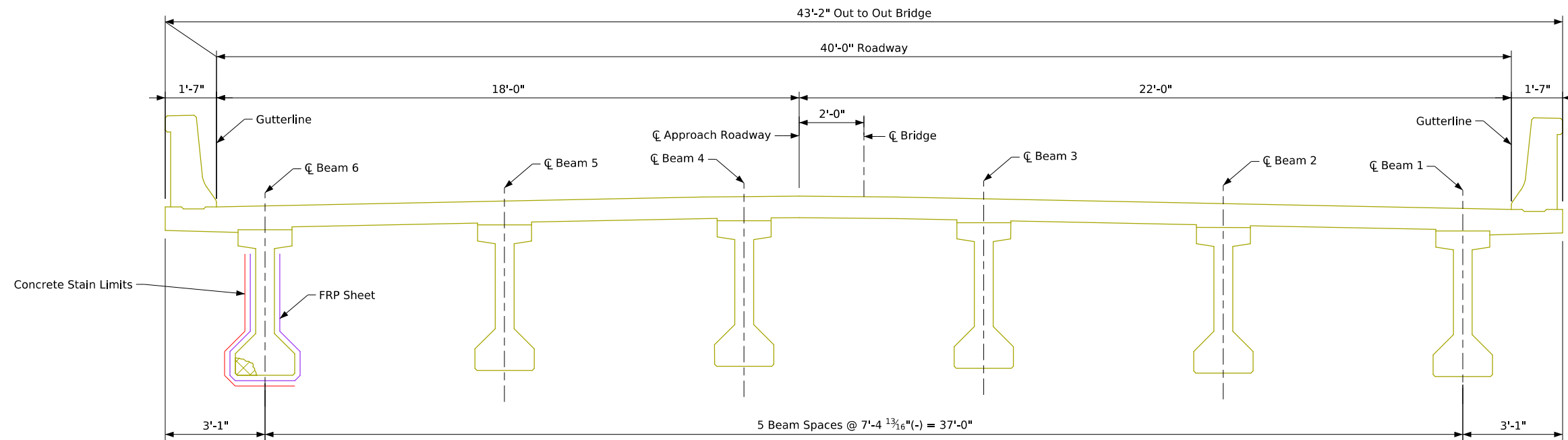
Photo Sheet

STA. 214+33.26 (Ç US 34)Turn-in Date: August 2026

Jefferson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227Design Sheet No. 3 of 5FHWA No. 609795



Typical Section Span 2
(Looking North)

 = Spalled Concrete
FRP = Fiber Reinforced Polymer

Design For Repair to 26° Skew (L.A.)

**Dual 228'-0" x 40'-0" Pretensioned
Prestressed Concrete Beam Bridges**

60'-9", 50'-9" End Spans 116'-6" Interior Span

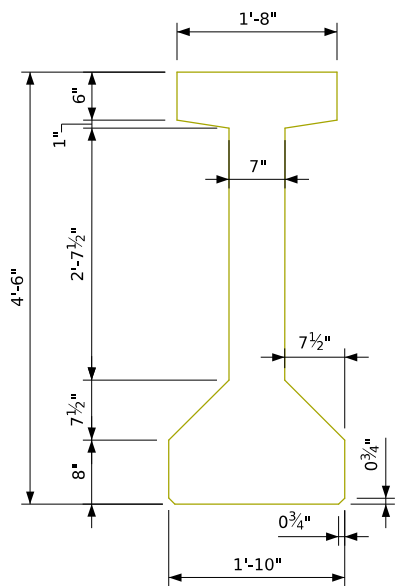
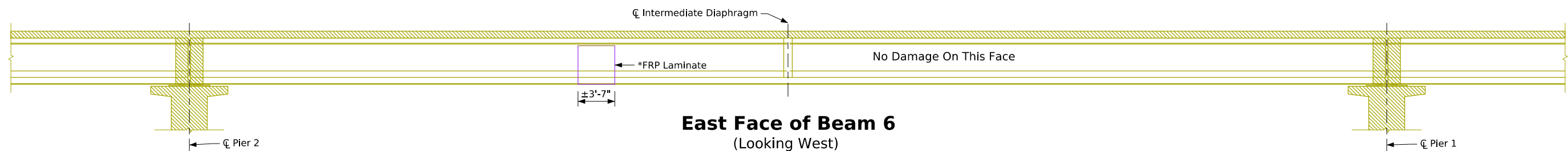
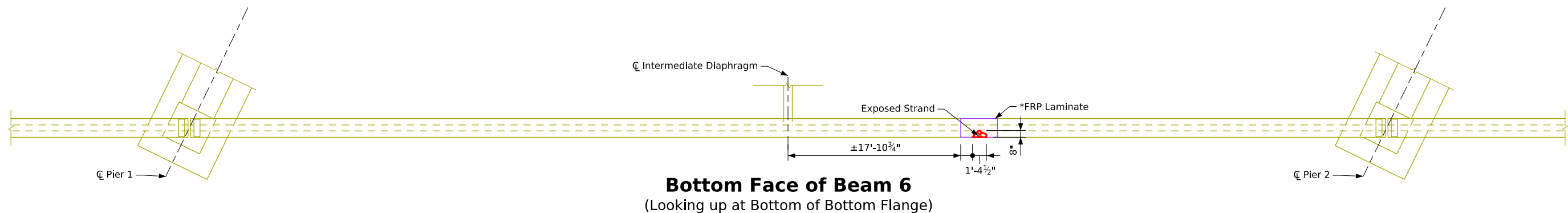
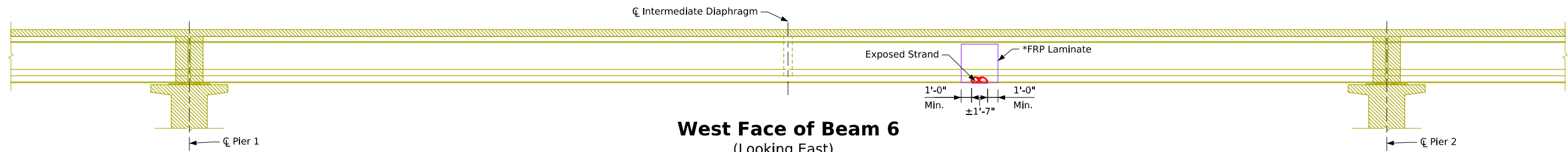
Beam 6 Repair Details

STA. 214+33.26 (C US 34) Turn-In Date: August 2026

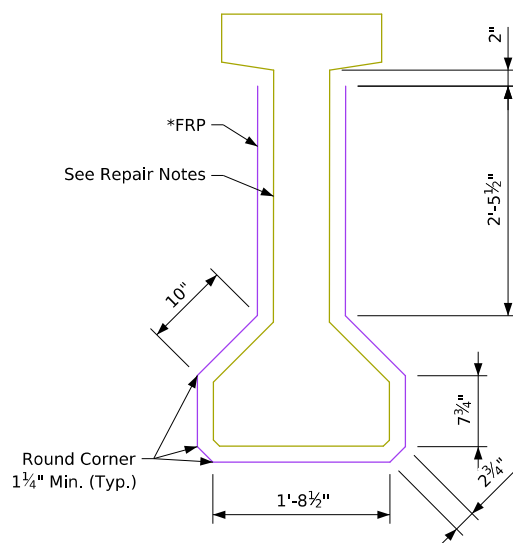
Jefferson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 4 of 5 FHWA No. 609795



Original Beam Dimensions



Typical Section Thru
Wrapped Beam

Beam Repairs Notes:

1. Spalled areas shown with hatching shall be repaired to original beam dimensions. The locations and extent of damage are approximate. Actual repair areas shall be as determined by the Engineer in the field.
2. See beam repair notes on Design Sheet No. 1.
3. FRP laminate should be applied according to plan dimensions unless the Engineer designates otherwise.
4. All interior corners shall be ground smooth to ensure proper adhesion between FRP laminate and concrete surface.

*FRP - Fiber-Reinforced Polymer

Legend of Bridge Damage:

 = Concrete Repair

Design For Repair to 26° Skew (L.A.)

**Dual 228'-0" x 40'-0" Pretensioned
Prestressed Concrete Beam Bridges**

60'-9", 50'-9" End Spans 116'-6" Interior Span

Beam 6 Repair Details

STA. 214+33.26 (C US 34) Turn-In Date: August 2026

Jefferson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 227 Design Sheet No. 5 of 5 FHWA No. 609795

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C.2	Project Description
C.3	Standard Road Plans
J Sheets	Traffic Control Sheets
J.1	Traffic Control Plan
J.2	511 Travel Restrictions
J.3	Coordinated Operations

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadway Items : Roadway Items

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
1	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to Traffic Control Plan on Sheet J.1.
2	2528-8445113	FLAGGERS	EACH	0	Refer to Traffic Control Plan on Sheet J.1. See Proposal for additional information.

100_01D
8/15/22

PROJECT DESCRIPTION

This project is for the repairs to the existing dual 228'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridges (Design 127 & 227) on US 34 over Old US 34, 3.9 Mi. West of Jct. IA 1. The repair work for Design 127 shall include repairing the damage to Beam 6 in Span 2. The repair work for Design 227 shall include repairing the damage to Beam 6 in Span 2.

105_04 10/20/26 STANDARDS The following Standards apply to construction work on this project.		
Number	Date	Title
TC-1	10-15-19	Work Not Affecting Traffic (Two-Lane or Multi-Lane)
TC-212	04-18-23	Spot Location Lane Closure with Flaggers
TC-402	04-18-23	Work Within 15 ft of Traveled Way

TRAFFIC CONTROL PLAN		108_23A 8/15/22
Traffic control on this project shall be in accordance with the Standard Road Plans shown in Tabulation 105-4 and the specific layouts shown in the plans. For additional complementary information, refer to Part 6 of the Manual of Uniform Traffic Control Devices (MUTCD) and the current Standard Specifications and Supplemental Specifications.		
The Contractor shall coordinate traffic control with other projects in the area. These projects include, but are not limited to those shown in Tabulation 111-01.		
Shoulder closures on US 34 are required for the curing of the rapid set mortar. Shoulder closures shall be in accordance with Standard Road Plan TC-402.		
Lane closures on Old US 34 shall be in accordance with a modified Standard Road Plan TC-212. In addition to signs specified in the standard for Old US 34, both exit ramps running from US 34 to Old US 34 will contain signs W20-1 and W20-4. These signs shall be spaced at 500' to warn exiting traffic of flaggers stationed ahead.		
All traffic control devices shall be furnished, erected, maintained, cleaned, and removed by the Contractor. All traffic control will remain the sole responsibility of the Contractor. The Contractor shall check traffic control devices daily and repair or replace damaged devices properly.		
The Contractor shall maintain clean pavement in and out of the work area at all times.		
The Contractor will be responsible for securing a safe storage area for equipment and materials to be used on the project.		

511 TRAVEL RESTRICTIONS

Line No.	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
1.0	US 34	EB	Jefferson	3.9 Mi. West fo Jct. IA 1	Old US 34	Traffic Control Device	5110.0R034	Horizontal	40'	30'	N/A	40'	
2.0	US 34	WB	Jefferson	3.9 Mi. West fo Jct. IA 1	Old US 34	Traffic Control Device	5110.0L034	Horizontal	40'	34'	N/A	40'	
3.0	Old US 34	Both	Jefferson	3.9 Mi. West fo Jct. IA 1	US 34	Traffic Control Device		Horizontal	52'	34'	N/A	52'	

111_01 10/14/22 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
None	