LETTING DATE
Dec. 15, 2026

Bridge Repair

MBIN-035-1(510)114--0M-85

STORY COUNTY

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A.2	Location Map Sheet
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V.1 - V.6	Design 427
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IOWA DOT

PLANS OF PROPOSED IMPROVEMENT ON THE

INTERSTATE ROAD SYSTEM

STORY COUNTY

Bridge Repair

I-35 over 13th St.
1.9 mi. N of Jct. US 30

Refer to the Plan Sheets for list of applicable specifications.

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

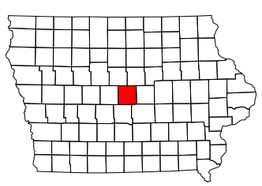
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811 Know what's below. Call before you dig.

Revisions

TOTAL
32
PROJECT IDENTIFICATION NUMBER
26-85-035-020
PROJECT NUMBER
MBIN-035-1(510)114--0M-85
R.O.W. PROJECT NUMBER
PROJECT DIRECTORY NUMBER
8503502026

Scan the QR code or click the link below to leave plan quality feedback and help us improve future projects.

Design QR Feedback Link



Standard Road Plans

Standard Road Plans are listed on Sheet C.2

Design Data Urban

Refer to individual Situation Plans for Traffic Data information.

Iowa DOT Bridges and Structures Consultant Coordinator Contact:
Lili Yang

Index of Seals

Sheet No.	Name	Type
A.1	Steven W. Arens	Structural Design
A.3	Ryan R. Miller	Roadway Design

Structural Design

LICENSED PROFESSIONAL ENGINEER
Steven W. Arens
22493
IOWA

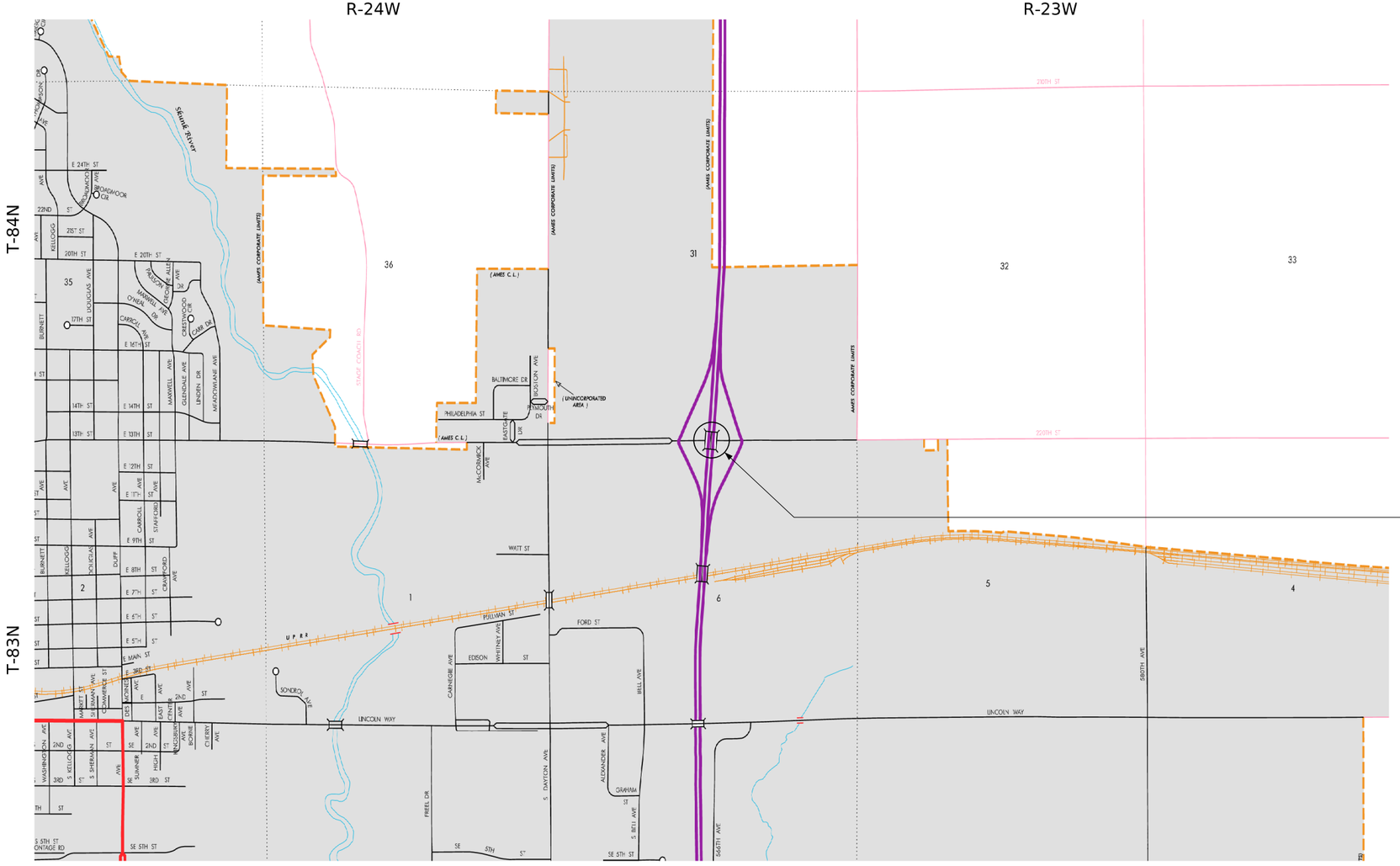
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature 09/15/2026 Date

Steven W. Arens
Printed or Typed Name

My license renewal date is December 31, 2027

Pages or sheets covered by this seal: A.1 - A.2, V.1 - V.17



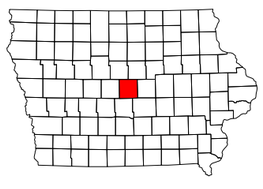
LEGEND

- INTERSTATE ROUTE
- FREEWAY OR EXPRESSWAY ROUTE
- U.S. NUMBERED ROUTE
- BUSINESS ROUTE
- STATE NUMBERED ROUTE
- UNSIGNED ROUTE
- COUNTY NUMBERED ROUTE
- SECONDARY ROAD OR ADJOINING CITY STREET
- CITY STREET
- PARK, INSTITUTION, OR FEDERAL ROAD
- RAILROAD
- CORPORATION LINE
- SECTION LINE
- CUL-DE-SAC
- SECTION, TOWNSHIP & RANGE NUMBERS 9, T-81N, R-30W

Design No. 427
FHWA No. 49280
Design No. 527
FHWA No. 49270

City of Ames Location Map

Not To Scale



FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER A.2	

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Estimated Bridge Repair Quantities and Reference Notes - Design 427

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 5 & 6. All costs associated with repairing the prestressed concrete beams shall be included in the price bid for "Beam Repair, As Per Plan". Includes the cost of the sign panel removal and re-installation on Beam 1. Any other areas determined to need repair, if directed by the Engineer, will be paid for as extra work.
2	2426-6772013	REPAIR BEAM ENDS	EACH	10	- - -
3	2499-6000200	SEALER COAT FOR PRESTRESSED CONCRETE BEAM ENDS	EACH	8	Includes cleaning beam ends and furnishing and placing concrete sealer, excluding beam ends identified to be repaired in these plans.
4	2533-4980005	MOBILIZATION	LS	1	- - -

General Notes:

This design is for repairs to the existing 159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge on Northbound I-35 over 13th Street. 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.

The Contractor shall restore any surfaces disturbed by construction to their original condition. This includes any grading, mulching, seeding, and fertilizing necessary. Seeding shall be rural seeding and shall be in accordance with Section 2601 of the Standard Specifications. Cost for this work shall be included in the "Mobilization" bid item.

Faint lines on plans indicate existing structure.

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 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.

When surface preparation and cleaning is complete the necessary forms are to be installed. Forms shall be positively held in the proper position to restore beam to original dimensions.

Utilize rapid-setting repair mortar. The mortar must adhere to Materials I.M. 491.20, Appendix B. 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, and the repaired surfaces shall be cured by leaving the forms in place and any exposed concrete covered with wet burlap for at least 1 day.

Prior to mortar placement, the I-35 S.B. lanes above the beam repair shall be closed to traffic, refer to traffic control plans in J sheets for additional information. The lane 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 lane closure time if they are following manufacturer's recommendations and receive 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 rapid-setting repair mortar as noted and shown in the plans.
- -Epoxy inject cracks on beam. All epoxy protrusions or fins shall be ground smooth prior to installing the FRP wrap.
- -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."
- -Application of concrete sealer on Beam 7.

Contractor shall epoxy inject beam cracks after the concrete patch has cured and before the application of FRP laminates. The epoxy resin shall be in accordance with Materials IM 491.19, Appendix A.

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

Specifications:

Design:

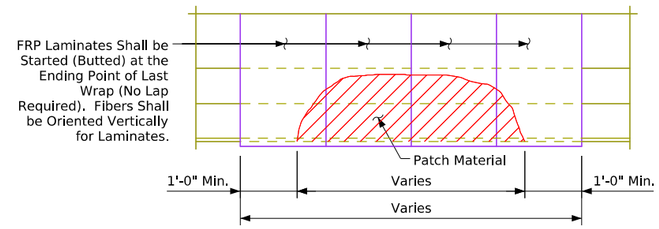
AASHTO series of 2002.

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

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO Standard Specifications For Highway Bridges, Series of 2002:
Reinforcing steel in accordance with AASHTO LRFD Section 8, grade 60.
Concrete in accordance with Section 8, f'c = 4.0 ksi.



Impact Area Repair Detail

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 History at this Site
(Includes this Design)

Des. No.	Type of Work
863	Original Design
378	Deck Overlay
793	Barrier Rail Retrofit
---	Epoxy Injection of Deck
---	Epoxy Injection of Deck
427	Bridge Repair

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans 72'-11" Interior Span

General Notes and Estimated Quantities

STA. 671+80.03 (℄ I-80, LT 37') Turn-in Date: October 2026

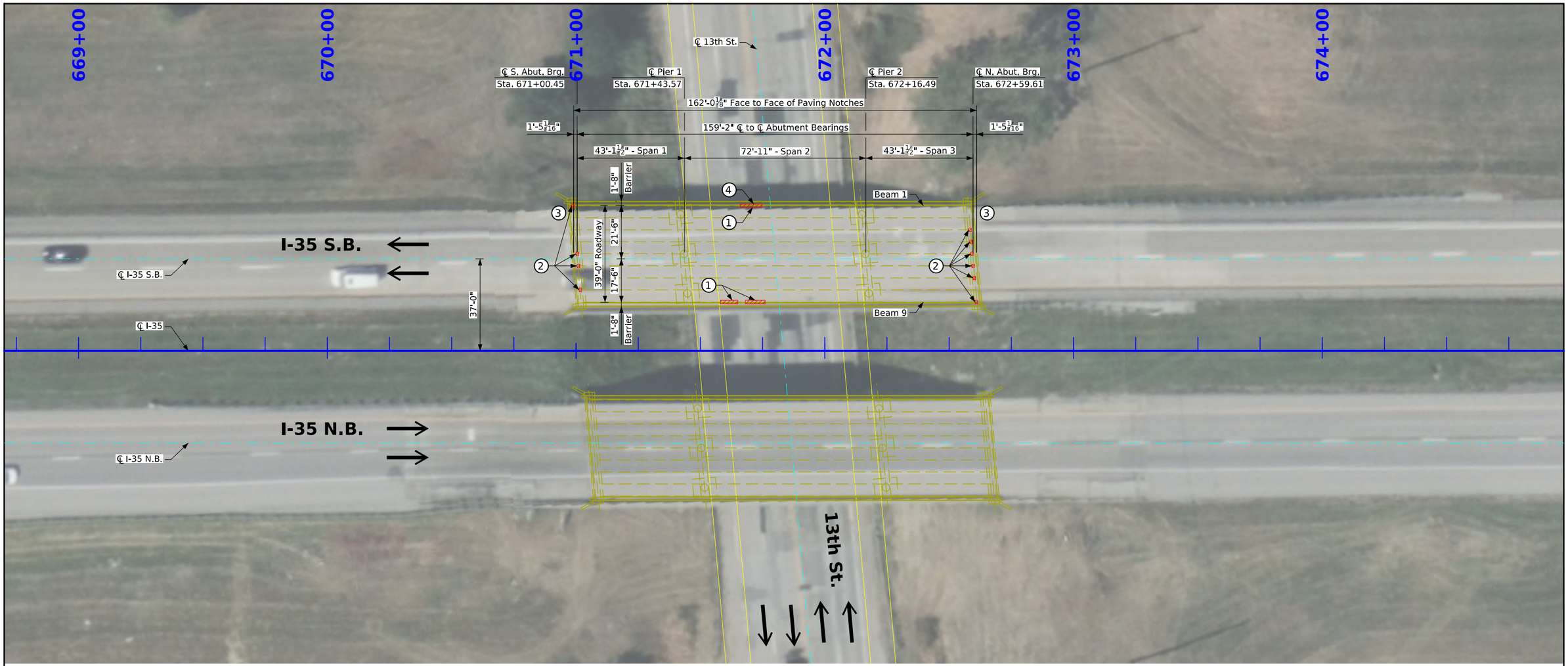
Story County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 427 Design Sheet No. 1 of 6 FHWA No. 49280

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.1	

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

Repairs Shall Consist Of:

1. Patch and FRP wrap Beams 1 and 9 over 13th Street. See details on Design Sheets 5 & 6.
2. Repair beam ends at abutments:
   S. Abut. - Beams 1, 5, 6 & 8
   N. Abut. - Beams 3, 4, 5, 6, 7 & 9
3. Clean and apply sealer to the end of beams at both abutments.
4. Epoxy inject cracks in Beam 1. See details on Design Sheet 5.

Construction Sequence:

1. Set up traffic control as required.
2. Carefully remove the existing permanent vertical clearance sign (on Beam 1 above E.B. 13th St.).
3. Remove unsound concrete from beam ends on 1, 5, 6, & 8 at South Abutment and on Beams 3, 4, 5, 6, 7, & 9 at North Abutment on I-35 S.B. Bridge. Patch and restore beam ends as noted and shown in these plans.
4. Remove unsound concrete from Beams 1 and 9 on I-35 S.B. Bridge. Patch and restore beams to original dimensions as noted and shown in these plans.
5. Before installing FRP laminates or epoxy injecting cracks, the repair areas shall cure per the FRP/epoxy manufacturer's recommendation.
6. Epoxy inject cracks on Beam 1. Adjust traffic as required in traffic control sheets for epoxy injection.
7. Install FRP laminates over repaired section of Beams 1 and 9 of I-35 S.B. Bridge.
8. Reinstall permanent vertical clearance sign at conclusion of repair work (on Beam 1 above E.B. 13th St.).

An alternative construction sequence may be submitted to the Engineer for approval.

Traffic Estimate

I-35 S.B.

2024 AADT	14,000 V.P.D.
TRUCKS	27 %

Traffic Estimate

13th St.

2023 AADT	6,900 V.P.D.
TRUCKS	9 %

Location

I-35 S.B. Over 13th Street
In the City of Ames
T-83N R-23W
Section 6
Grant Township
Story County
FHWA No. 49280
Bridge Maint. No. 8513.6L035
Latitude 42.034783°
Longitude -93.570580°

N

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

Situation Plan

STA. 671+80.03 (℄ I-80, LT 37')

Turn-in Date: October 2026

Story County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 427 | Design Sheet No. 2 of 6 | FHWA No. 49280

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.2

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Beam End Repair Notes:

It is estimated that 10 beam ends will be repaired. The final quantity and limits of beam end areas shall be determined by the Engineer.

The Contractor shall notify the Engineer when concrete removals are complete by each location to allow inspection by the Engineer prior to placement of concrete or repair mortar.

The Contractor shall report tendon or reinforcing bar section loss, exposed during removal work, to the Engineer prior to performing any repair work. The Engineer shall be given adequate time (7 days max.) to determine whether beam reinforcing is required. The Contractor shall incorporate this time into the construction schedule with work in other areas of the project in order to not delay the project.

Removal tools shall be limited to 15 lb chipping hammers and to hand tools without power.

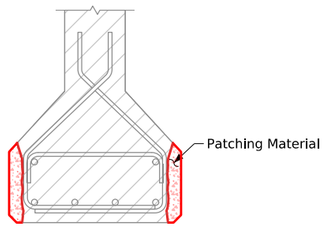
The Contractor shall perform the concrete repair work in accordance with the following procedures and/or as directed by the Engineer:

1. Initiate removal of unsound concrete with ½" saw cuts at perimeter. Do not cross cut at corners. Stop saw cuts short of corners and remove concrete by hand. Adjust depth of saw cut as required to prevent cutting of existing reinforcing steel or strands. Extreme care shall be exercised during concrete removal so that exposed strands and reinforcing bars are not damaged. Any damage done to the strands or bars by the Contractor shall be repaired by the Contractor at no additional cost to the State.
2. Remove deteriorated areas to sound concrete and chip square. Boundaries to be square with no feathered edges. Sandblast concrete surfaces in the repair area and the exposedsteel to bare metal. Remove all dust and debris resulting from chipping and blasting by using clean compressed air.
3. If concrete removal results in more than half the diameter of any reinforcing bar or prestressing strand being exposed, then removal shall continue to a minimum of ¾" behind the first interior strand. If removals could exceed the 5" maximum horizontal depth, contact the Engineer prior to removal.
4. Report to the Engineer, prior to repair, section loss of tendons or reinforcing steel exposed during removals.
5. Apply two coats of protective coating/bonding agent (products are listed in the table on this sheet) to exposed prestressing strands and reinforcing bars according to manufacturer's recommendations.
6. Apply patching material. Type of material and application of material depends upon the extent of concrete removal and the two types of repair are to be as follows:
   A. Shallow repair: Shallow repair areas are those where concrete removal did not result in reinforcing bars or prestressing strands being exposed for more than half their diameters. Patching material shall be as listed in the table on this sheet. Patching materials contain corrosion inhibitors. Apply patching material to match original beam surface. Patch need not be formed. Follow manufacturer's instructions and recommendations for mixing, placing and curing.
   B. Regular repair: Regular repair areas are those where concrete removal extended behind the reinforcing bars and/or prestressing strands. These areas are to be placed using forms to match the original beam surface. Patching material shall be one of the grouts as listed in the table on this sheet. Patching materials contain corrosion inhibitors. Follow manufacturer's instructions and recommendations for mixing, placing and curing. Forms are to remain in place for seven days.
7. Sandblast 6'-0" of the ends of the repaired beams as shown on this sheet. The sandblasting shall be a light blast just enough to expose the fine aggregates. Do not sandblast patching material. All costs associated with sandblasting are to be included in the price bid for "Repair Beam Ends".
8. Apply concrete sealer to sandblasted portions of beams ends. Do not seal patching material.

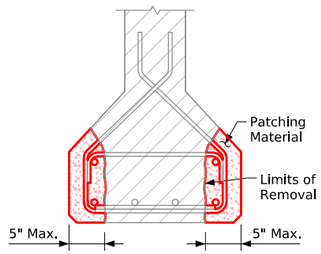
All costs include equipment and materials required to repair deteriorated beam ends as detailed in these plans. These details shall be included in the price bid for "Repair Beam Ends". The Engineer will count each end of each beam properly repaired, and the Contractor will be paid the contract unit price per each repair.

Concrete Sealer for Beam Ends Notes:

The price bid item “Sealer Coat for Prestressed Concrete Beam Ends” shall include all costs including labor and material for preparing and sealing of the prestressed concrete beam ends at each abutment within 6 feet of the end of the beam, excluding beam ends identified to be repaired. The work shall be paid for per “EACH” beam end that is sealed. Sealant material for the beam ends shall be in accordance with Materials IM 491.19, Appendix B. The contractor shall apply the sealant in accordance with the manufacturer’s requirements.

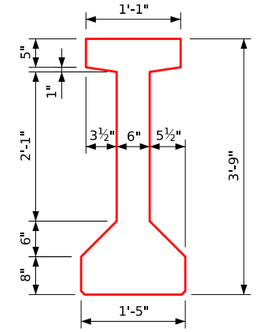


Shallow Repair Areas

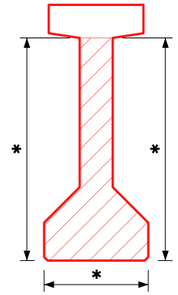


Regular Repair Areas

Note: The repair areas shown are schematic only. The actual area to be repaired will be determined by the Engineer. For location of beam ends to be repaired see beam layout below.

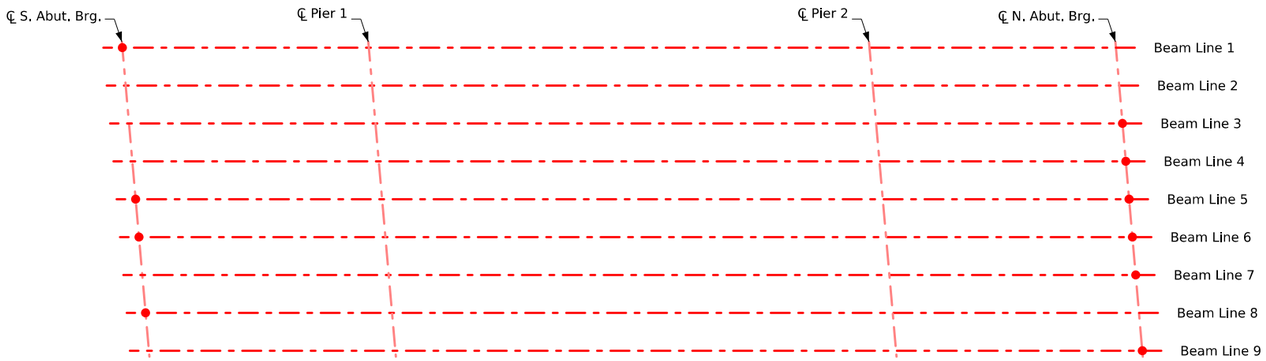


Beam Section



Limits of Sandblasting

✱ Sandblast the surfaces of the bottom flange and web within the limits shown to 6 feet of the beam ends.

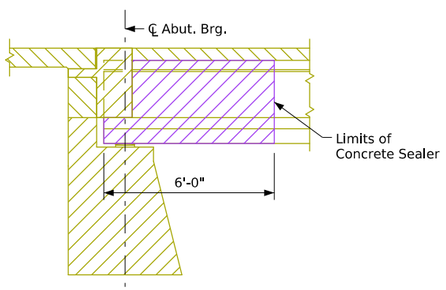




● - Regular Beam End Repair Locations

S - Shallow Beam End Repair Locations

Beam Layout



Concrete Sealer Limits for Prestressed Beam

Table of Manufacturers

Manufacturer	Bonding Agent	Shallow Repair	Regular Repair
BASF	Mastermaco P 124	Masteremaco N 350 CI	Masteremaco S 477CI
Euclid	Duralprep A.C.	Verticoat Supreme	Eucorepair
Sika	Sika Armatec 110 Epocem	Sikatop 123 Plus	Sikatop 111 Plus

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

Beam End Repair

STA. 671+80.03 (℄ I-80, LT 37') — Turn-in Date: October 2026

Story County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 427 — Design Sheet No. 3 of 6 — FHWA No. 49280

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.3

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Span 2 Beam 1 Damage
(Looking East)



Span 2 Beam 1 Damage
(Looking Up)



Span 2 Beam 9 Damage
(Looking East)



Span 2 Beam 9 Damage
(Looking East)

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

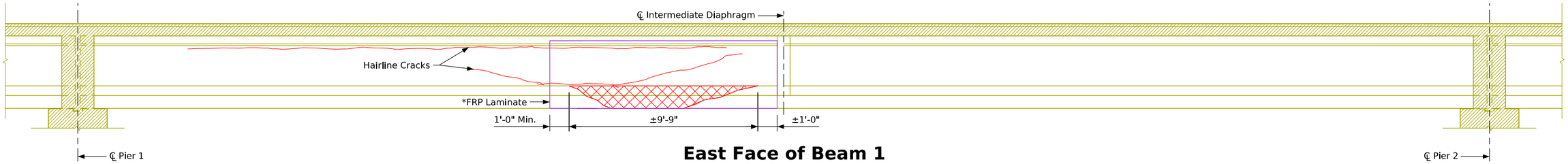
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STA. 671+80.03 (℄ I-80, LT 37') — Turn-in Date: October 2026

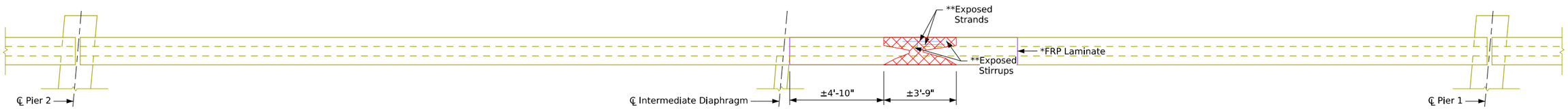
Story County

IOWA DEPARTMENT OF TRANSPORTATION

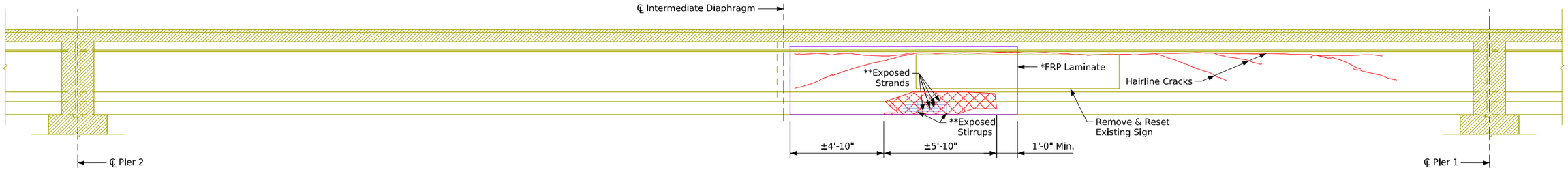
Design No. 427 — Design Sheet No. 4 of 6 — FHWA No. 49280



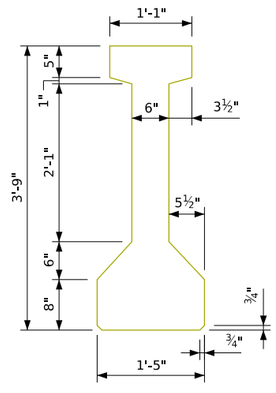
East Face of Beam 1
(Looking West)



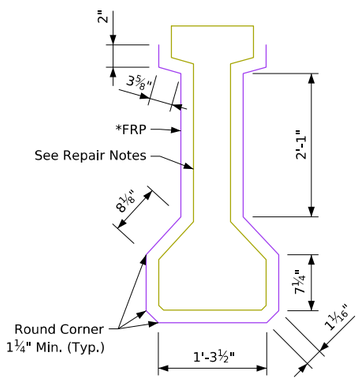
Bottom Face of Beam 1
(Looking up at Bottom of Bottom Flange)



West Face of Beam 1
(Looking East)



Original Beam Dimensions



Typical Section Thru Wrapped Beam

* FRP - Fiber-Reinforced Polymer

** Exposed strands and/or stirrups to be cleaned and incorporated into new work.

Legend of Bridge Damage:

= Concrete Repair

= Concrete Crack

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.

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

Beam 1 Span 2 - Repair Details

STA. 671+80.03 (℄ I-80, LT 37') — Turn-in Date: October 2026

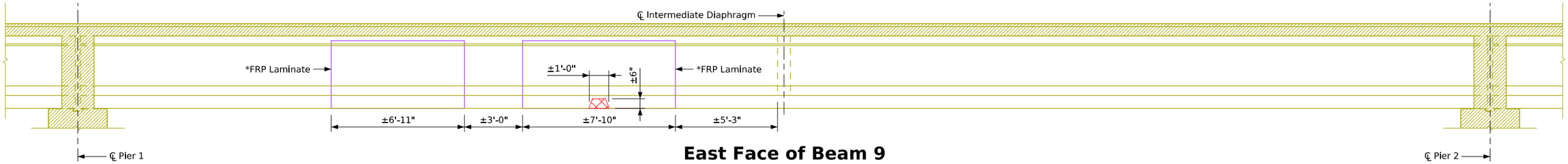
Story County

IOWA DEPARTMENT OF TRANSPORTATION

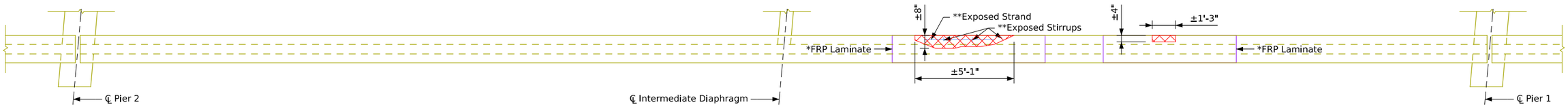
Design No. 427 — Design Sheet No. 5 of 6 — FHWA No. 49280

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.5

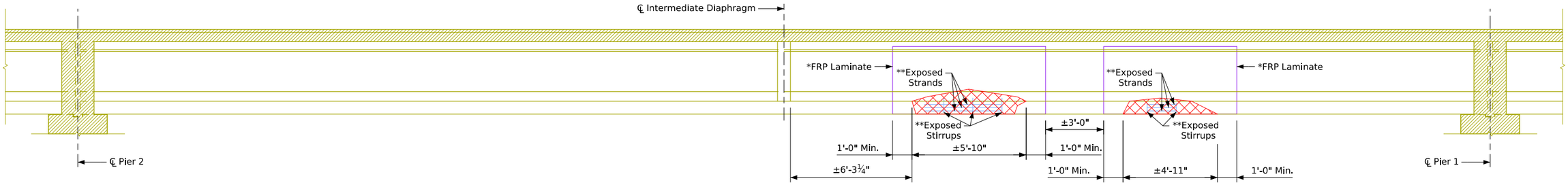
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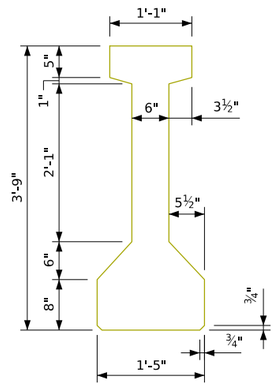
East Face of Beam 9
(Looking West)



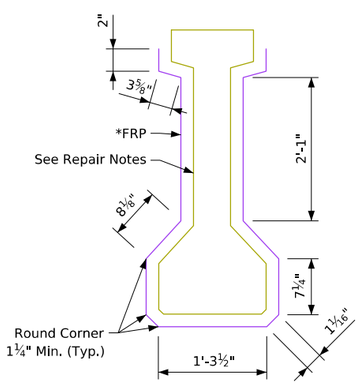
Bottom Face of Beam 9
(Looking up at Bottom of Bottom Flange)



West Face of Beam 9
(Looking East)



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

** Exposed strands and/or stirrups to be cleaned and incorporated into new work.

Legend of Bridge Damage:

= Concrete Repair

= Concrete Crack

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

Beam 9 Span 2 - Repair Details

STA. 671+80.03 (℄ I-80, LT 37') — Turn-in Date: October 2026

Story County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 427 — Design Sheet No. 6 of 6 — FHWA No. 49280

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.6

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Estimated Bridge Repair Quantities and Reference Notes - Design 527

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 5-11. All costs associated with repairing the prestressed concrete beams shall be included in the price bid for "Beam Repair, As Per Plan". Includes the cost of the sign panel removal and re-installation on Beam 9. Any other areas determined to need repair, if directed by the Engineer, will be paid for as extra work.
2	2426-6772013	REPAIR BEAM ENDS	EACH	7	- - -
3	2499-6000200	SEALER COAT FOR PRESTRESSED CONCRETE BEAM ENDS	EACH	11	Includes cleaning beam ends and furnishing and placing concrete sealer, exluding beam ends identified to be repaired in these plans.
4	2533-4980005	MOBILIZATION	LS	1	- - -

General Notes:

This design is for repairs to the existing 159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge on Northbound I-35 over 13th Street. 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.

The Contractor shall restore any surfaces disturbed by construction to their original condition. This includes any grading, mulching, seeding, and fertilizing necessary. Seeding shall be rural seeding and shall be in accordance with Section 2601 of the Standard Specifications. Cost for this work shall be included in the "Mobilization" bid item.

Faint lines on plans indicate existing structure.

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 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.

When surface preparation and cleaning is complete the necessary forms are to be installed. Forms shall be positively held in the proper position to restore beam to original dimensions.

Utilize rapid-setting repair mortar. The mortar must adhere to Materials I.M. 491.20, Appendix B. 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, and the repaired surfaces shall be cured by leaving the forms in place and any exposed concrete covered with wet burlap for at least 1 day.

Prior to mortar placement, the I-35 N.B. lanes above the beam repair shall be closed to traffic, refer to traffic control plans in J sheets for additional information. The lane 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 lane closure time if they are following manufacturer's recommendations and receive 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 rapid-setting repair mortar as noted and shown in the plans.
- -Epoxy inject cracks on beam. All epoxy protrusions or fins shall be ground smooth prior to installing the FRP wrap.
- -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."
- -Application of concrete sealer on Beam 7.

Contractor shall epoxy inject beam cracks after the concrete patch has cured and before the application of FRP laminates. The epoxy resin shall be in accordance with Materials IM 491.19, Appendix A.

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

Specifications:

Design:

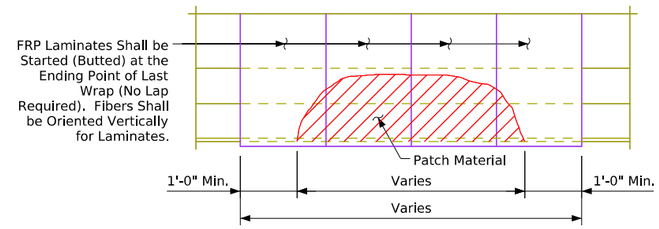
AASHTO series of 2002.

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

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO Standard Specifications For Highway Bridges, Series of 2002:
Reinforcing steel in accordance with AASHTO LRFD Section 8, grade 60.
Concrete in accordance with Section 8, f'c = 4.0 ksi.



Impact Area Repair Detail

Design History at this Site
(Includes this Design)

Des. No.	Type of Work
863	Original Design
693	Deck Overlay & Barrier Rail Retrofit
527	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 Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans 72'-11" Interior Span

General Notes and Estimated Quantities

STA. 671+86.57 (℄ I-80, RT 37') Turn-in Date: October 2026

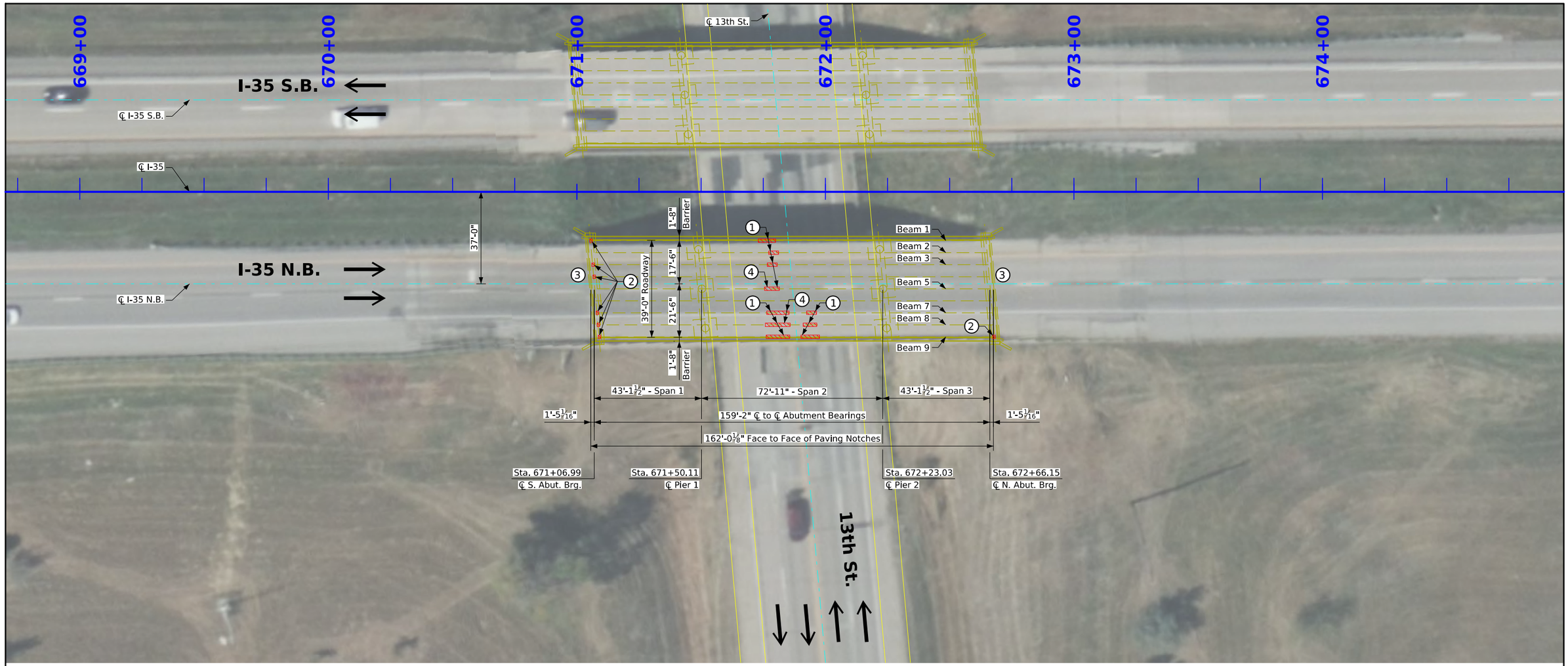
Story County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 527 Design Sheet No. 1 of 11 FHWA No. 49270

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.7	

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

Repairs Shall Consist Of:

1. Patch and FRP wrap Beams 1, 2, 3, 5, 7, 8 & 9 over 13th Street. See details on Design Sheets 5-11.
2. Repair beam ends at abutments:
   S. Abut. - Beams 1, 3, 4, 7, 8 & 9
   N. Abut. - Beam 9
3. Clean and apply sealer to the end of beams at both abutments.
4. Epoxy inject cracks in Beams 5, 7, & 8. See details on Design Sheets 8-10.

Construction Sequence:

1. Set up traffic control as required.
2. Carefully remove the existing permanent vertical clearance sign (on Beam 9 above W.B. 13th St.).
3. Remove unsound concrete from beam ends on 1, 3, 4, 7, 8, & 9 at South Abutment and on Beam 9 at North Abutment on I-35 N.B. Bridge. Patch and restore beam ends as noted and shown in these plans.
4. Remove unsound concrete from Beams 1, 2, 3, 5, 7, 8, & 9 on I-35 N.B. Bridge. Patch and restore beams to original dimensions as noted and shown in these plans.
5. Before installing FRP laminates or epoxy injecting cracks, the repair areas shall cure per the FRP/epoxy manufacturer's recommendation.
6. Epoxy inject cracks on Beams 5, 7, & 8. Adjust traffic as required in traffic control sheets for epoxy injection.
7. Install FRP laminates over repaired section of Beams 1, 2, 3, 5, 7, 8, & 9 of I-35 N.B. Bridge.
8. Reinstall permanent vertical clearance sign at conclusion of repair work (on Beam 9 above W.B. 13th St.).

An alternative construction sequence may be submitted to the Engineer for approval.

Traffic Estimate

I-35 N.B.

2024 AADT	14,000 V.P.D.
TRUCKS	27 %

Traffic Estimate

13th St.

2023 AADT	6,900 V.P.D.
TRUCKS	9 %

Location

I-35 N.B. Over 13th Street
In City of Ames
T-83N R-23W
Section 6
Grant Township
Story County
FHWA No. 49270
Bridge Maint. No. 8513.6R035
Latitude 42.034323°
Longitude -93.570351°

N

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

Situation Plan

STA. 671+86.57 (℄ I-80, RT 37')

Turn-in Date: October 2026

Story County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 527 | Design Sheet No. 2 of 11 | FHWA No. 49270

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.8

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Beam End Repair Notes:

It is estimated that 10 beam ends will be repaired. The final quantity and limits of beam end areas shall be determined by the Engineer.

The Contractor shall notify the Engineer when concrete removals are complete by each location to allow inspection by the Engineer prior to placement of concrete or repair mortar.

The Contractor shall report tendon or reinforcing bar section loss, exposed during removal work, to the Engineer prior to performing any repair work. The Engineer shall be given adequate time (7 days max.) to determine whether beam reinforcing is required. The Contractor shall incorporate this time into the construction schedule with work in other areas of the project in order to not delay the project.

Removal tools shall be limited to 15 lb chipping hammers and to hand tools without power.

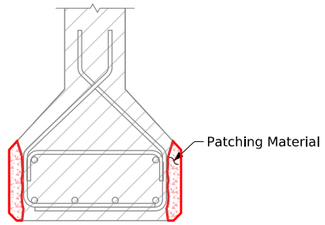
The Contractor shall perform the concrete repair work in accordance with the following procedures and/or as directed by the Engineer:

1. Initiate removal of unsound concrete with ½" saw cuts at perimeter. Do not cross cut at corners. Stop saw cuts short of corners and remove concrete by hand. Adjust depth of saw cut as required to prevent cutting of existing reinforcing steel or strands. Extreme care shall be exercised during concrete removal so that exposed strands and reinforcing bars are not damaged. Any damage done to the strands or bars by the Contractor shall be repaired by the Contractor at no additional cost to the State.
2. Remove deteriorated areas to sound concrete and chip square. Boundaries to be square with no feathered edges. Sandblast concrete surfaces in the repair area and the exposedsteel to bare metal. Remove all dust and debris resulting from chipping and blasting by using clean compressed air.
3. If concrete removal results in more than half the diameter of any reinforcing bar or prestressing strand being exposed, then removal shall continue to a minimum of ¾" behind the first interior strand. If removals could exceed the 5" maximum horizontal depth, contact the Engineer prior to removal.
4. Report to the Engineer, prior to repair, section loss of tendons or reinforcing steel exposed during removals.
5. Apply two coats of protective coating/bonding agent (products are listed in the table on this sheet) to exposed prestressing strands and reinforcing bars according to manufacturer's recommendations.
6. Apply patching material. Type of material and application of material depends upon the extent of concrete removal and the two types of repair are to be as follows:
   A. Shallow repair: Shallow repair areas are those where concrete removal did not result in reinforcing bars or prestressing strands being exposed for more than half their diameters. Patching material shall be as listed in the table on this sheet. Patching materials contain corrosion inhibitors. Apply patching material to match original beam surface. Patch need not be formed. Follow manufacturer's instructions and recommendations for mixing, placing and curing.
   B. Regular repair: Regular repair areas are those where concrete removal extended behind the reinforcing bars and/or prestressing strands. These areas are to be placed using forms to match the original beam surface. Patching material shall be one of the grouts as listed in the table on this sheet. Patching materials contain corrosion inhibitors. Follow manufacturer's instructions and recommendations for mixing, placing and curing. Forms are to remain in place for seven days.
7. Sandblast 6'-0" of the ends of the repaired beams as shown on this sheet. The sandblasting shall be a light blast just enough to expose the fine aggregates. Do not sandblast patching material. All costs associated with sandblasting are to be included in the price bid for "Repair Beam Ends".
8. Apply concrete sealer to sandblasted portions of beams ends. Do not seal patching material.

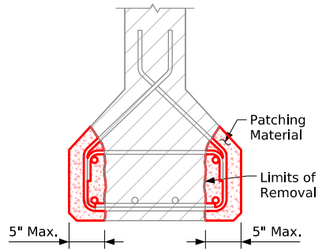
All costs include equipment and materials required to repair deteriorated beam ends as detailed in these plans. These details shall be included in the price bid for "Repair Beam Ends". The Engineer will count each end of each beam properly repaired, and the Contractor will be paid the contract unit price per each repair.

Concrete Sealer for Beam Ends Notes:

The price bid item “Sealer Coat for Prestressed Concrete Beam Ends” shall include all costs including labor and material for preparing and sealing of the prestressed concrete beam ends at each abutment within 6 feet of the end of the beam, excluding beam ends identified to be repaired. The work shall be paid for per “EACH” beam end that is sealed. Sealant material for the beam ends shall be in accordance with Materials IM 491.19, Appendix B. The contractor shall apply the sealant in accordance with the manufacturer’s requirements.

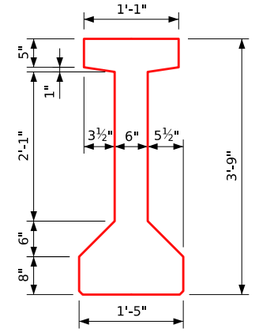


Shallow Repair Areas

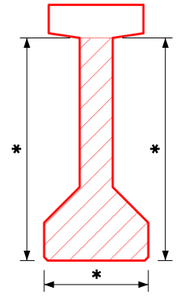


Regular Repair Areas

Note: The repair areas shown are schematic only. The actual area to be repaired will be determined by the Engineer. For location of beam ends to be repaired see beam layout below.

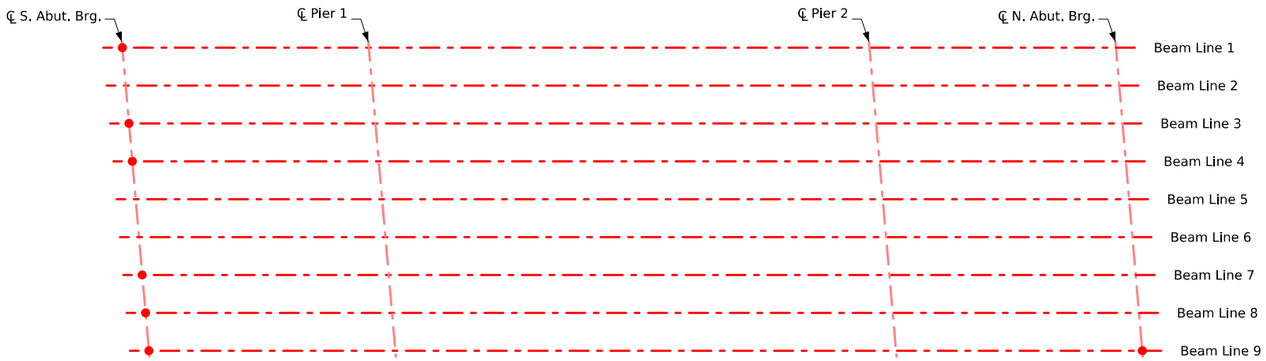


Beam Section



Limits of Sandblasting

✱ Sandblast the surfaces of the bottom flange and web within the limits shown to 6 feet of the beam ends.

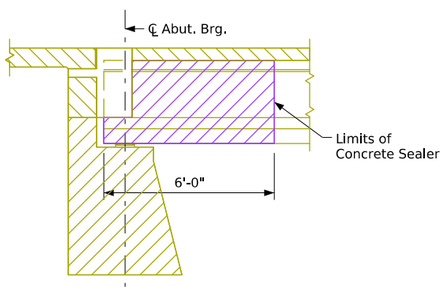




● - Regular Beam End Repair Locations

S - Shallow Beam End Repair Locations

Beam Layout



Concrete Sealer Limits for Prestressed Beam

Table of Manufacturers

Manufacturer	Bonding Agent	Shallow Repair	Regular Repair
BASF	Mastermaco P 124	Masteremaco N 350 CI	Masteremaco S 477CI
Euclid	Duralprep A.C.	Verticoat Supreme	Eucorepair
Sika	Sika Armatec 110 Epocem	Sikatop 123 Plus	Sikatop 111 Plus

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

Beam End Repair

STA. 671+86.57 (℄ I-80, RT 37') — Turn-in Date: October 2026

Story County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 527 — Design Sheet No. 3 of 11 — FHWA No. 49270

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.9

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Span 2 Beam 9 Damage
(Looking West)



Span 2 East Face of Beams Damage
(Looking West)



Span 2 West Face of Beams Damage
(Looking East)



Span 2 West Face of Beams Damage
(Looking East)



Span 2 Beams 1-5 Damage
(Looking North)



Span 2 Beams 5-9 Damage
(Looking North)

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans | 72'-11" Interior Span

Photo Sheet

STA. 671+86.57 (℄ I-80, RT 37')

Turn-in Date: October 2026

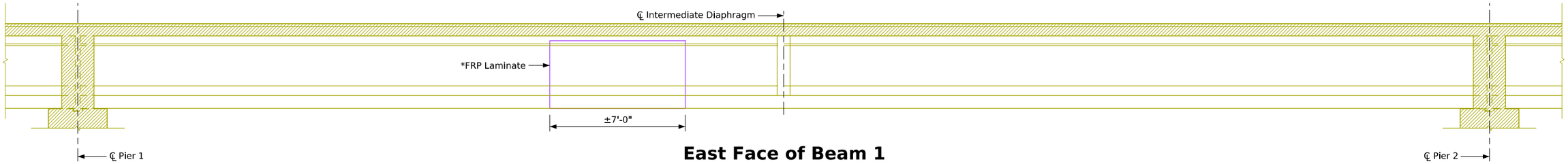
Story County

IOWA DEPARTMENT OF TRANSPORTATION

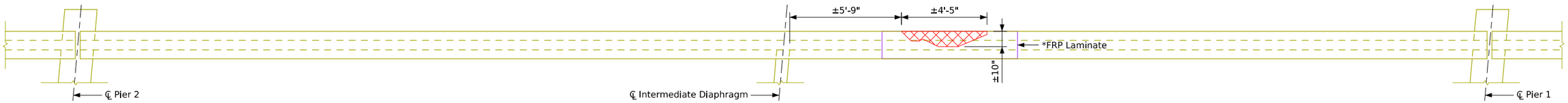
Design No. 527 | Design Sheet No. 4 of 11 | FHWA No. 49270

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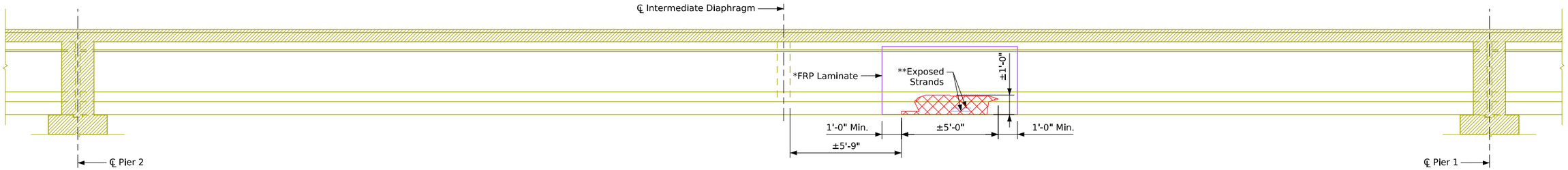
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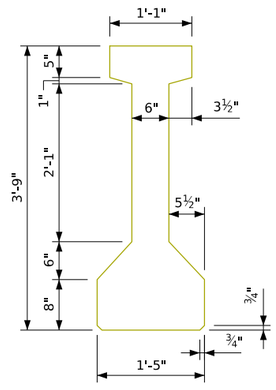
East Face of Beam 1
(Looking West)



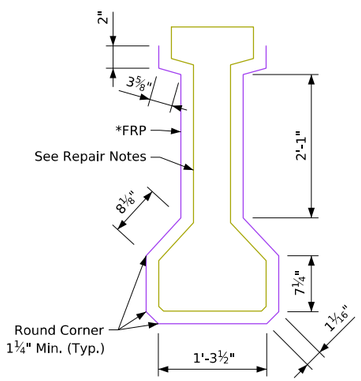
Bottom Face of Beam 1
(Looking up at Bottom of Bottom Flange)



West Face of Beam 1
(Looking East)



Original Beam Dimensions



Typical Section Thru Wrapped Beam

* FRP - Fiber-Reinforced Polymer

** Exposed strands and/or stirrups to be cleaned and incorporated into new work.

Legend of Bridge Damage:

= Concrete Repair

= Concrete Crack

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.

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

Beam 1 Span 2 - Repair Details

STA. 671+86.57 (℄ I-80, RT 37') — Turn-in Date: October 2026

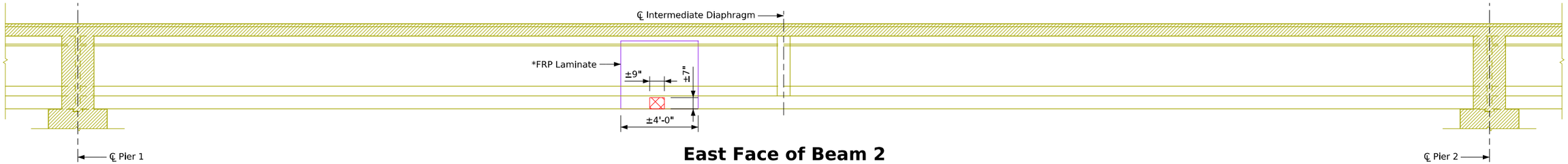
Story County

IOWA DEPARTMENT OF TRANSPORTATION

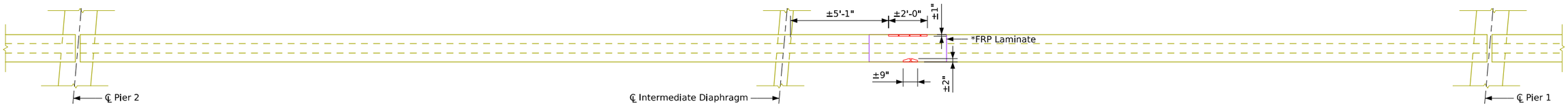
Design No. 527 — Design Sheet No. 5 of 11 — FHWA No. 49270

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.11

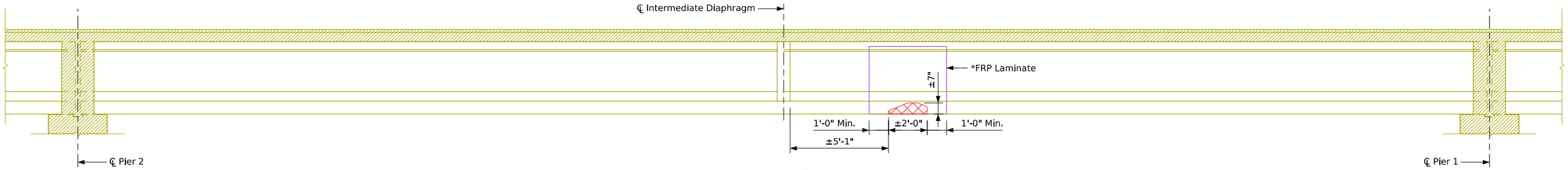
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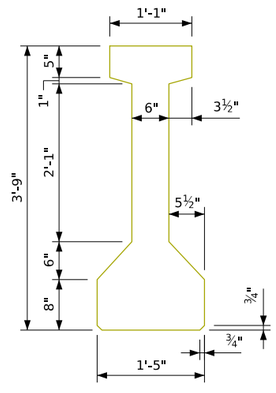
East Face of Beam 2
(Looking West)



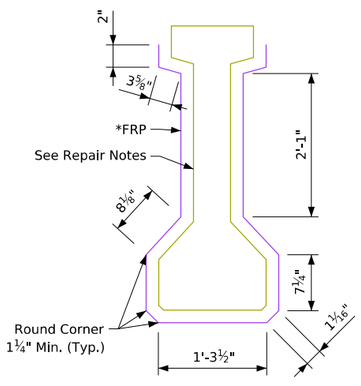
Bottom Face of Beam 2
(Looking up at Bottom of Bottom Flange)



West Face of Beam 2
(Looking East)



Original Beam Dimensions



Typical Section Thru Wrapped Beam

*FRP - Fiber-Reinforced Polymer

Legend of Bridge Damage:

= Concrete Repair

= Concrete Crack

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.

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

Beam 2 Span 2 - Repair Details

STA. 671+86.57 (℄ I-80, RT 37') — Turn-in Date: October 2026

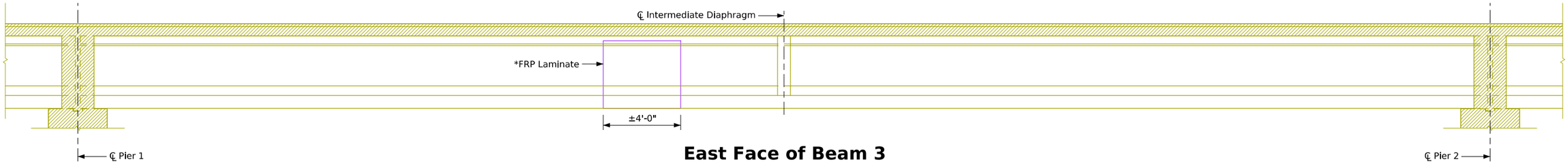
Story County

IOWA DEPARTMENT OF TRANSPORTATION

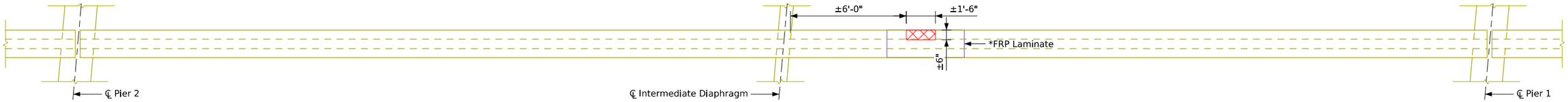
Design No. 527 — Design Sheet No. 6 of 11 — FHWA No. 49270

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.12	

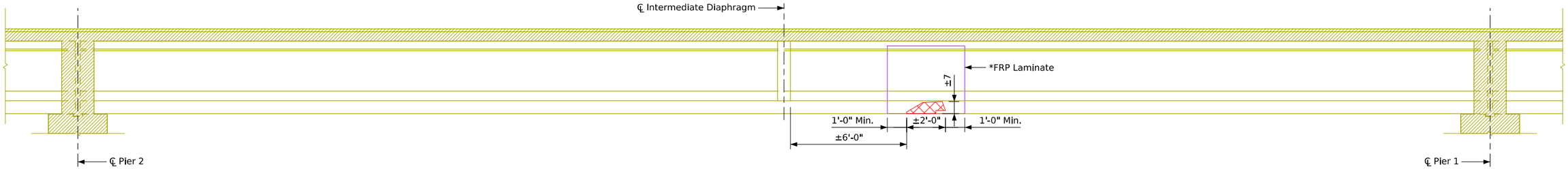
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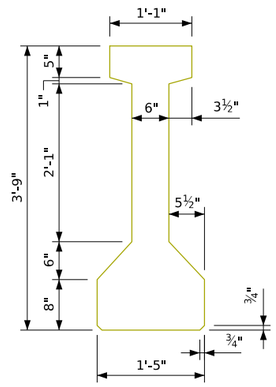
East Face of Beam 3
(Looking West)



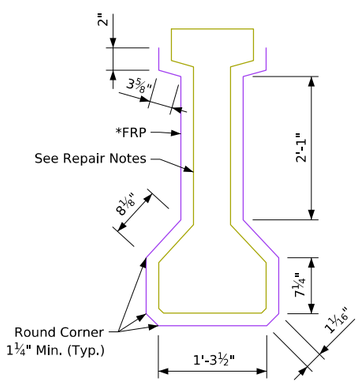
Bottom Face of Beam 3
(Looking up at Bottom of Bottom Flange)



West Face of Beam 3
(Looking East)



Original Beam Dimensions



Typical Section Thru Wrapped Beam

*FRP - Fiber-Reinforced Polymer

Legend of Bridge Damage:

= Concrete Repair

= Concrete Crack

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.

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

Beam 3 Span 2 - Repair Details

STA. 671+86.57 (℄ I-80, RT 37') — Turn-in Date: October 2026

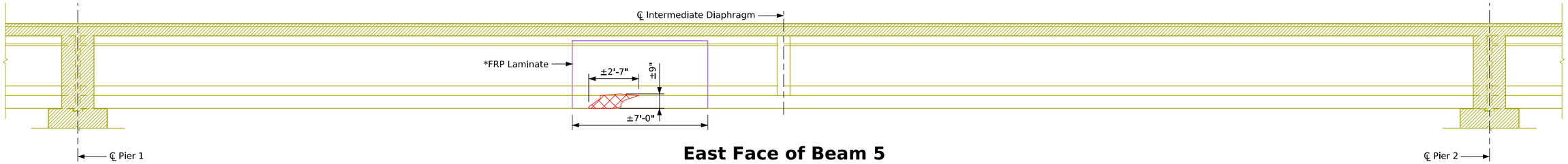
Story County

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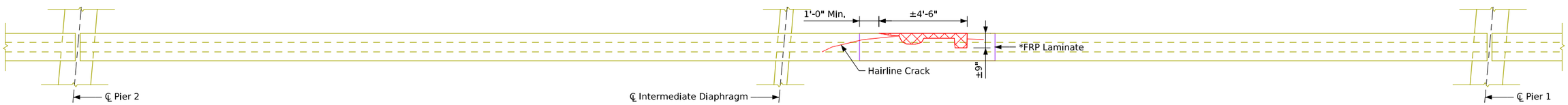
Design No. 527 — Design Sheet No. 7 of 11 — FHWA No. 49270

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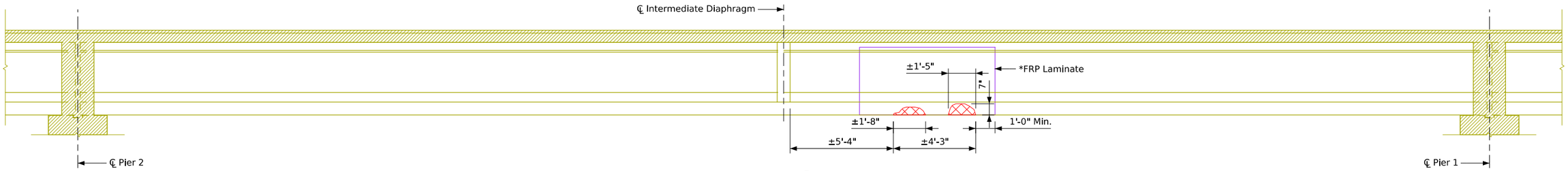
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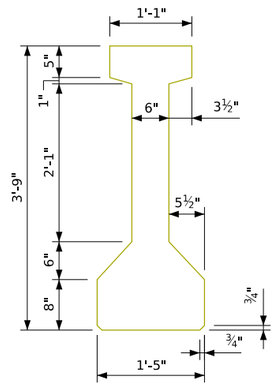
East Face of Beam 5
(Looking West)



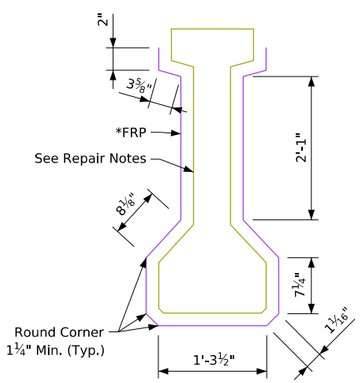
Bottom Face of Beam 5
(Looking up at Bottom of Bottom Flange)



West Face of Beam 5
(Looking East)



Original Beam Dimensions



Typical Section Thru Wrapped Beam

*FRP - Fiber-Reinforced Polymer

Legend of Bridge Damage:

= Concrete Repair

= Concrete Crack

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.

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

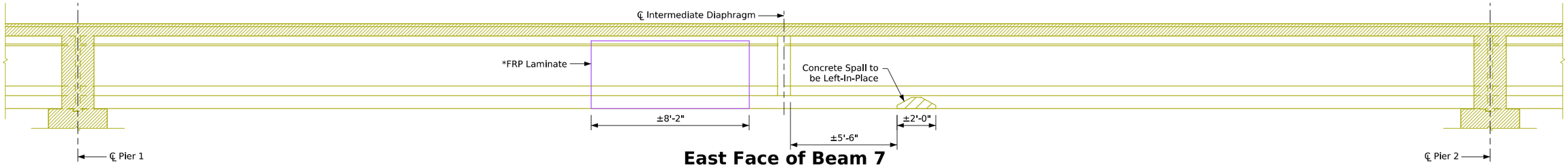
Beam 5 Span 2 - Repair Details

STA. 671+86.57 (℄ I-80, RT 37') — Turn-in Date: October 2026

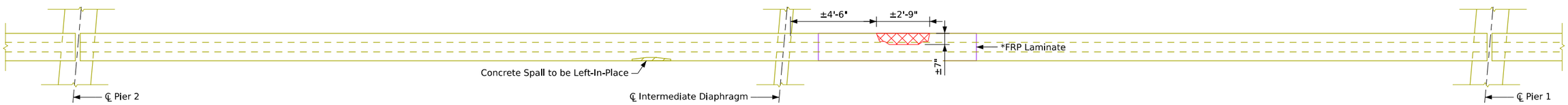
Story County

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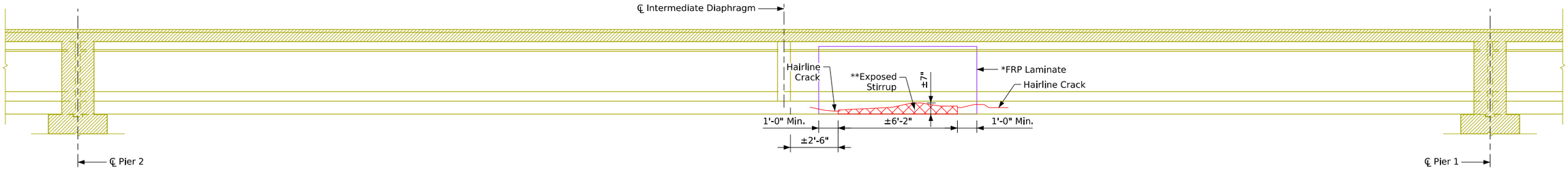
Design No. 527 — Design Sheet No. 8 of 11 — FHWA No. 49270



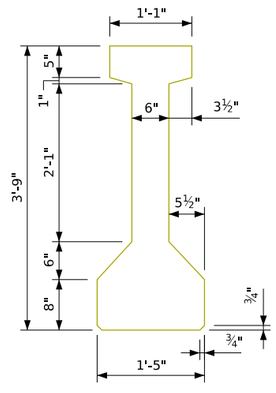
East Face of Beam 7
(Looking West)



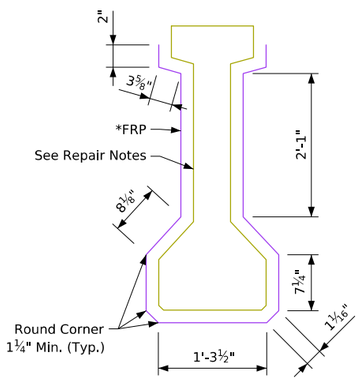
Bottom Face of Beam 7
(Looking up at Bottom of Bottom Flange)



West Face of Beam 7
(Looking East)



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.
5. Sealant material shall be in accordance with Materials IM 491.19, Appendix B. The Contractor shall apply the sealant in accordance with the manufacturer's requirements.

* FRP - Fiber-Reinforced Polymer

** Exposed strands and/or stirrups to be cleaned and incorporated into new work.

Legend of Bridge Damage:

= Concrete Repair

= Concrete Crack

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

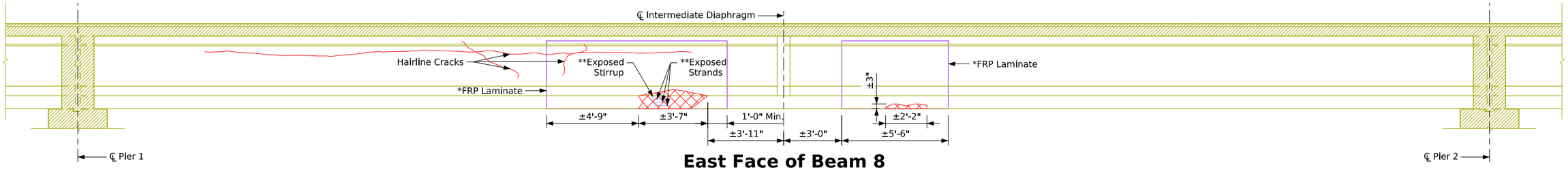
Beam 7 Span 2 - Repair Details

STA. 671+86.57 (℄ I-80, RT 37') — Turn-in Date: October 2026

Story County

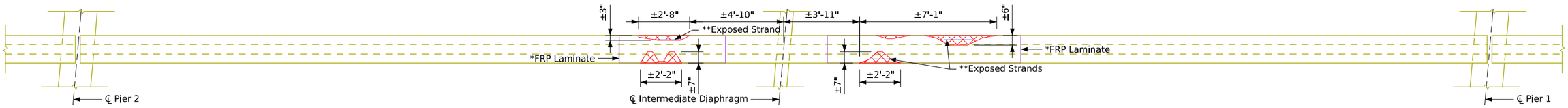
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 527 — Design Sheet No. 9 of 11 — FHWA No. 49270



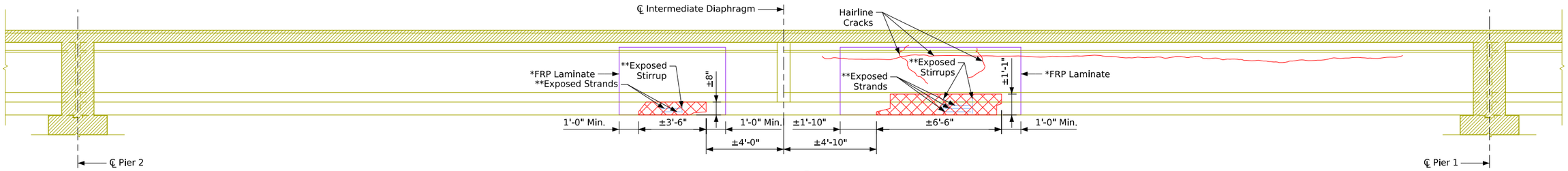
East Face of Beam 8

(Looking West)



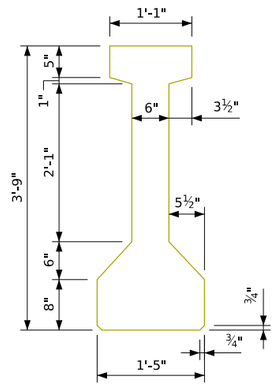
Bottom Face of Beam 8

(Looking up at Bottom of Bottom Flange)

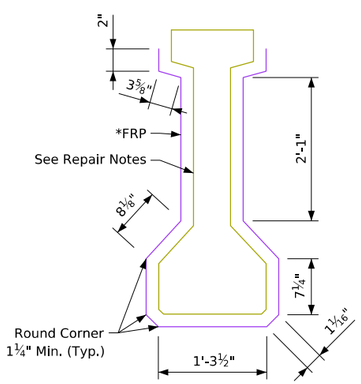


West Face of Beam 8

(Looking East)



Original Beam Dimensions



Typical Section Thru Wrapped Beam

* FRP - Fiber-Reinforced Polymer

** Exposed strands and/or stirrups to be cleaned and incorporated into new work.

Legend of Bridge Damage:

= Concrete Repair

= Concrete Crack

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.
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Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

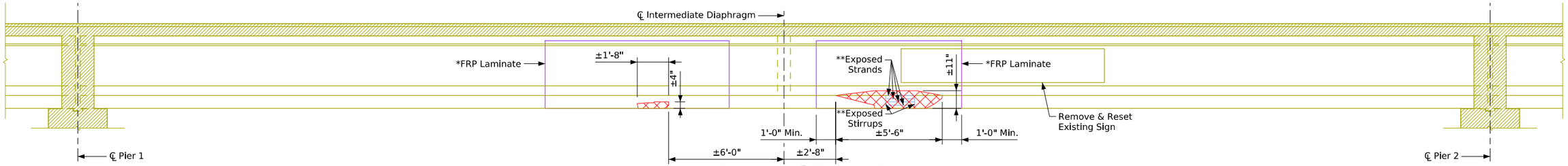
Beam 8 Span 2 - Repair Details

STA. 671+86.57 (℄ I-80, RT 37') — Turn-in Date: October 2026

Story County

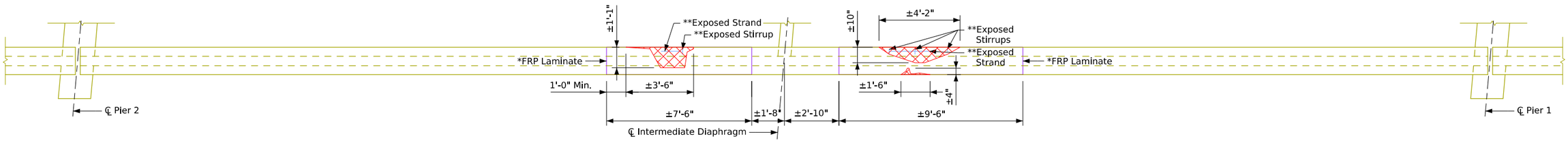
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 527 — Design Sheet No. 10 of 11 — FHWA No. 49270



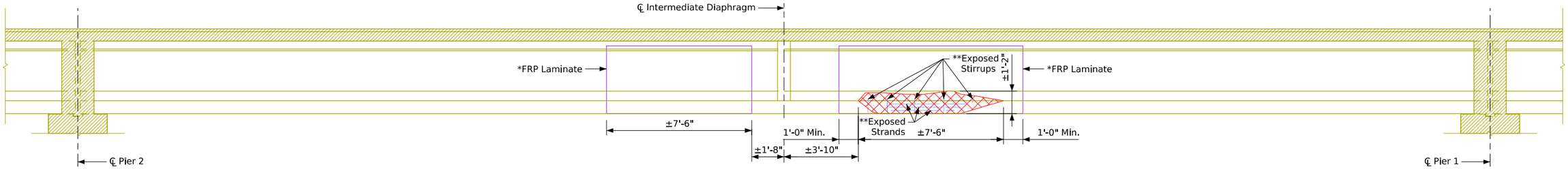
East Face of Beam 9

(Looking West)



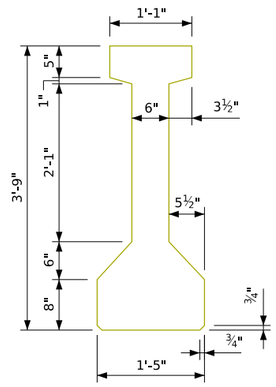
Bottom Face of Beam 9

(Looking up at Bottom of Bottom Flange)

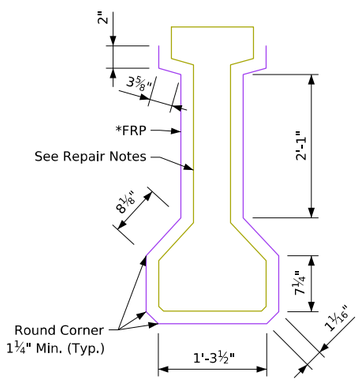


West Face of Beam 9

(Looking East)



Original Beam Dimensions



Typical Section Thru Wrapped Beam

* FRP - Fiber-Reinforced Polymer

** Exposed strands and/or stirrups to be cleaned and incorporated into new work.

Legend of Bridge Damage:

= Concrete Repair

= Concrete Crack

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.

Design For Repairs to 5°03' Skew (R.A.)

159'-2" x 39'-0" Pretensioned Prestressed Concrete Beam Bridge

43'-1½" End Spans — 72'-11" Interior Span

Beam 9 Span 2 - Repair Details

STA. 671+86.57 (℄ I-80, RT 37') — Turn-in Date: October 2026

Story County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 527 — Design Sheet No. 11 of 11 — FHWA No. 49270

FILE NO. 32814	ENGLISH	DESIGN TEAM JEO Consulting Group, Inc.	STORY COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER V.17

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INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	**Title Sheets**
A.3	Title Sheet
C Sheets	**Quantities and General Information**
C.1	Estimated Project Quantities
C.1	Estimate Reference Information
C.2	Standard Road Plans
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan
J.2	Staging Notes
J.3	511 Travel Restrictions
J.4	Allowable Closures Map
J.5 - 10	Staging Sheets

ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER
Ryan R. Miller 18421
IOWA

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

Ryan R. Miller 4-27-2026

Signature Date

Ryan R. Miller

Printed or Typed Name

My license renewal date is December 31, 2026

Pages or sheets covered by this seal: A.3, C.1-2, J.1-10

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	2528-9290050	PORTABLE DYNAMIC MESSAGE SIGN (PDMS)	CDAY	0	See Proposal.

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-402	04-18-23	Work Within 15 ft of Traveled Way
TC-418	04-18-23	Lane Closure on Divided Highway

108_23A
8/15/22

TRAFFIC CONTROL PLAN

I-35:

1. Two lanes of traffic on I-35 shall be maintained in each direction at all times except as noted below.

2. Single lane and shoulder closures will be required at times. Refer to Sheet J.4 for Allowable Closure Times. No lane closure will be allowed on days of Iowa State home football games. Contractor is responsible for identifying the exact dates.

13th St.:

At least one lane of traffic shall be maintained in each direction at all times.

Ramps:

All ramps shall remain open at all times.

108_26A
8/15/22

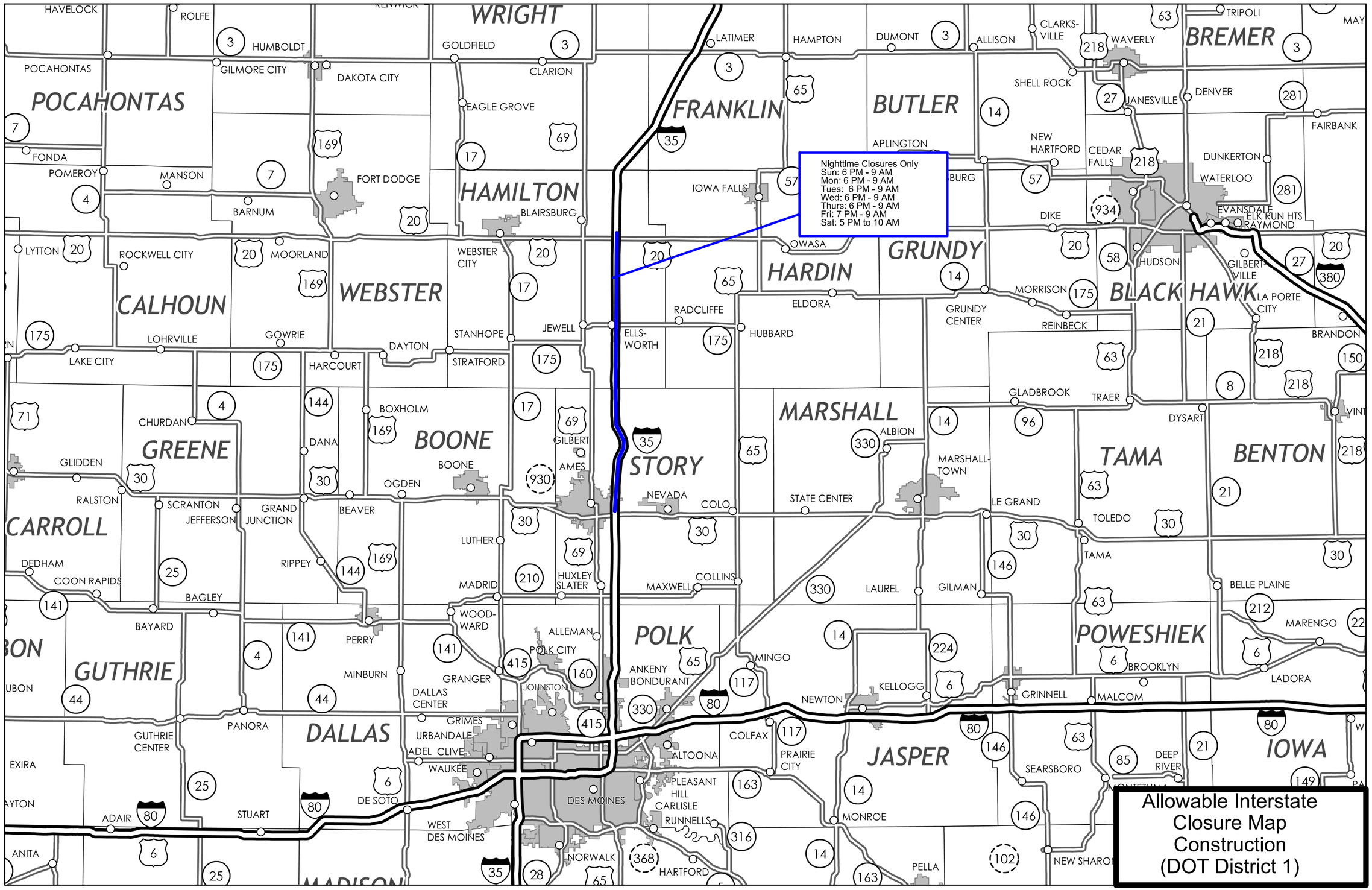
STAGING NOTES

Stage 1: Traffic on 13th Street will be shifted to the inside lanes.

Stage 2: Traffic on 13th Street will be shifted to the outside lanes.

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
								None					No Restrictions Expected



FILE NO. 32814	ENGLISH	DESIGN TEAM Miller/Krug	Story COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER J.4

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LEGEND

- Traffic Sign
- Drum
- 42" Channelizer
- Work Area
- Direction of Traffic
- Arrow Board

(1) When there is no shoulder, place arrow board within the closed lane behind the drums and as close to the beginning of the taper as practical.

Stage 1

FILE NO. 32814	ENGLISH	DESIGN TEAM Miller/Krug	Story COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER J.5

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LEGEND

- Traffic Sign
- Drum
- 42" Channelizer
- Work Area
- Direction of Traffic
- Arrow Board

(1) When there is no shoulder, place arrow board within the closed lane behind the drums and as close to the beginning of the taper as practical.

Stage 1

FILE NO. 32814	ENGLISH	DESIGN TEAM Miller/Krug	Story COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER J.6

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LEGEND

- Traffic Sign
- Drum
- 42" Channelizer
- Work Area
- Direction of Traffic
- Arrow Board

Stage 1

FILE NO. 32814	ENGLISH	DESIGN TEAM Miller/Krug	Story COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER J.7

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LEGEND

- Traffic Sign
- Drum
- 42" Channelizer
- Work Area
- Direction of Traffic
- Arrow Board

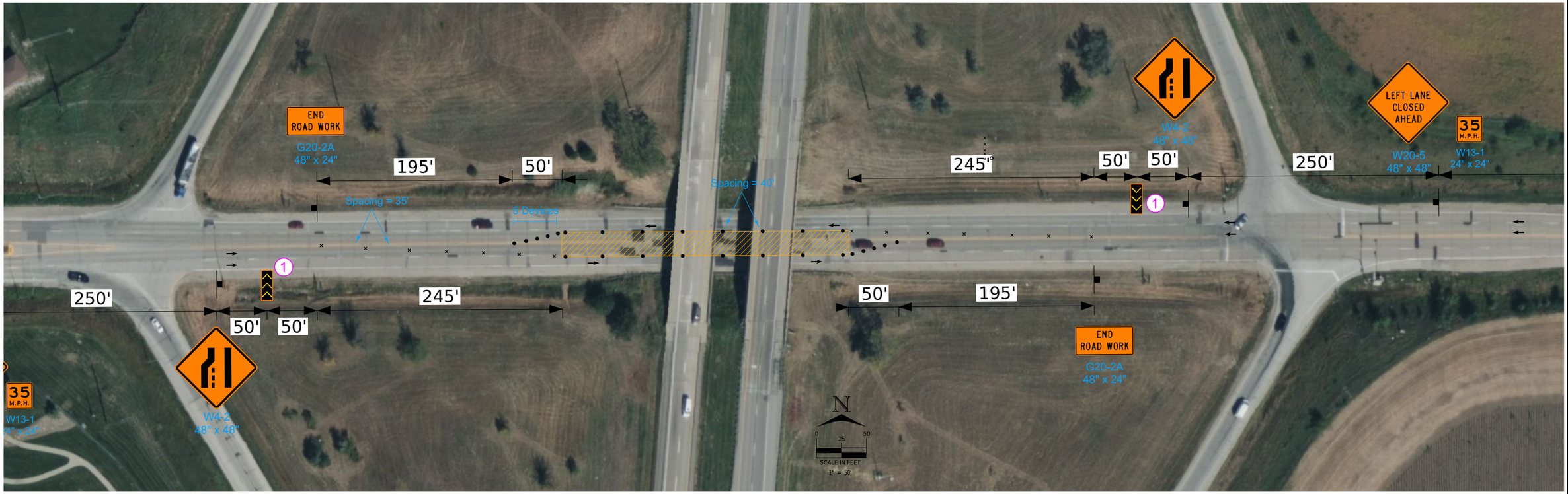
(1) When there is no shoulder, place arrow board within the closed lane behind the drums and as close to the beginning of the taper as practical.

Stage 2

FILE NO. 32814	ENGLISH	DESIGN TEAM Miller/Krug	Story COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER J.8

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LEGEND

- Traffic Sign
- Drum
- 42" Channelizer
- Work Area
- Direction of Traffic
- Arrow Board

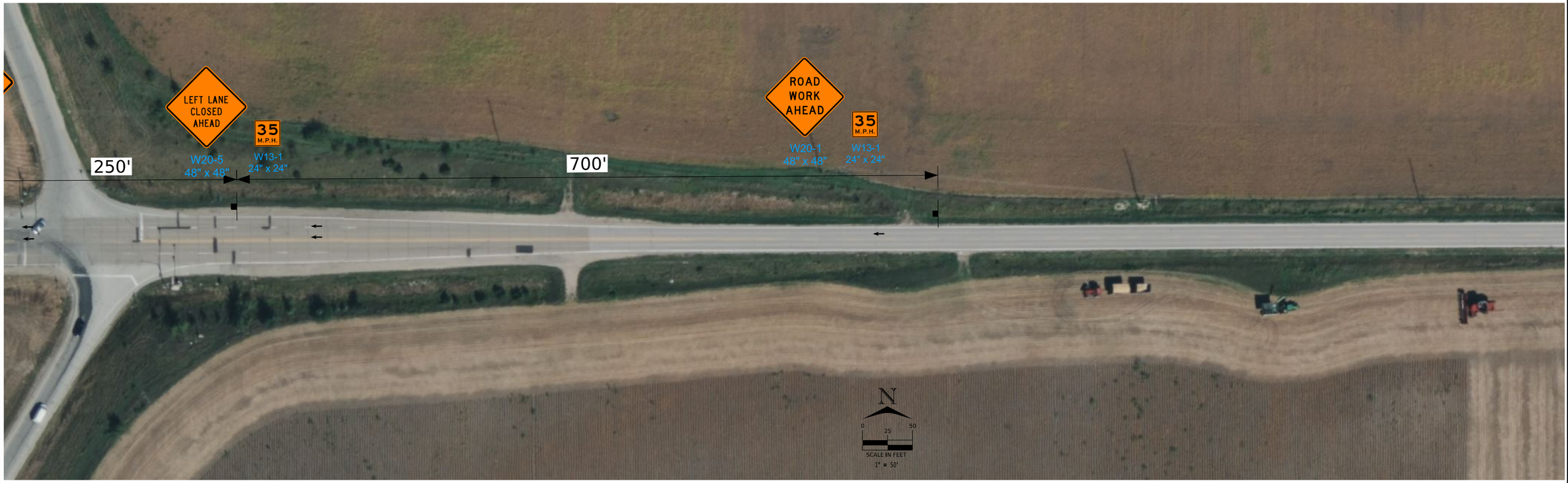
(1) When there is no shoulder, place arrow board within the closed lane behind the drums and as close to the beginning of the taper as practical.

Stage 2

FILE NO. 32814	ENGLISH	DESIGN TEAM Miller/Krug	Story COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER J.9

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LEGEND

- Traffic Sign
- Drum
- 42" Channelizer
- Work Area
- Direction of Traffic
- Arrow Board

Stage 2

FILE NO. 32814	ENGLISH	DESIGN TEAM Miller/Krug	Story COUNTY	PROJECT NUMBER MBIN-035-1(510)114--0M-85	SHEET NUMBER J.10

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