LETTING DATE
Dec. 15, 2026

Deck Joint Repair

MB-022-5(500)46--77-52

JOHNSON COUNTY

Index of Sheets

No.	Description
Sheets	Bridge Plan
A.1	Title Sheet
A.2	Location Map Sheet
V.1	Estimated Quantities - Design 727
V.1 - V.7	Design 727
Road Sheets	Road Plan
A.3 - U.2	Road Plans
C.1 - C.2	Estimated Quantities - Road
C.3	Standard Plans - Road
RC.1	Estimated Quantities - Roadside
RC.2	Standard Plans - Roadside

IOWA DOT

Revisions

TOTAL
32
PROJECT IDENTIFICATION NUMBER
26-52-022-010
PROJECT NUMBER
MB-022-5(500)46--77-52
R.O.W. PROJECT NUMBER
PROJECT DIRECTORY NUMBER
5202201026

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

JOHNSON COUNTY

Deck Joint Repair

IA 22 over Iowa River
0.4 Mi. W. of Co. Rd. W66

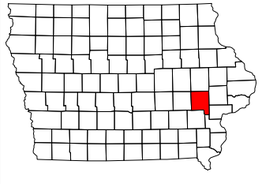
Refer to the Plan Sheets for list of applicable specifications.

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

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Design QR Feedback Link



Standard Road Plans

Standard Road Plans are listed on Sheet C.3 & RC.2

Design Data Rural

2024 AADT	4,360 V.P.D.
TRUCKS	13 %

Iowa DOT Bridges and Structures Consultant Coordinator Contact:
Bryant Thelen

Index of Seals

Sheet No.	Name	Type
A.1	Steven W. Arens	Structural Design
A.3	Cory D. Tap	Hydraulic Design

Structural Design

LICENSED PROFESSIONAL ENGINEER
Steven W. Arens
22493
IOWA

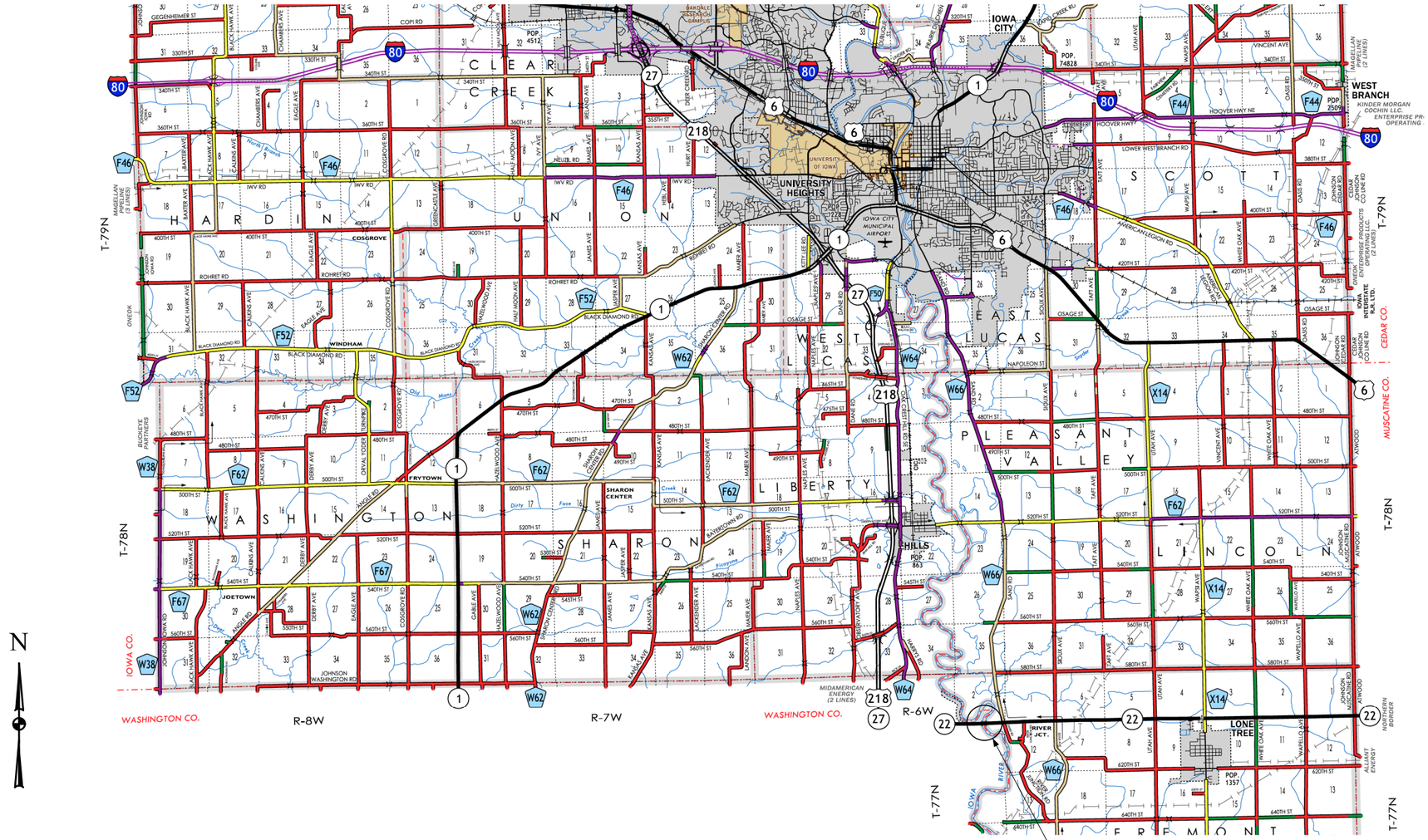
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature 10/01/2026 Date

Steven W. Arens
Printed or Typed Name

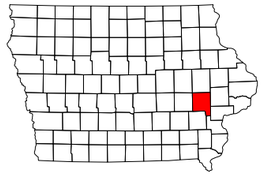
My license renewal date is December 31, 2027

Pages or sheets covered by this seal: A.1 - A.2, V.1 - V.7



Johnson County Location Map

Not To Scale



Design No. 727
FHWA No. 31861

LEGEND

- INTERSTATE HIGHWAY
- PRIMARY HIGHWAY-DIVIDED
- PRIMARY HIGHWAY
- PORTLAND CEMENT CONCRETE ROAD
- ASPHALT ROAD
- BITUMINOUS ROAD
- GRAVEL ROAD
- EARTHEN ROAD
- INTERSTATE HIGHWAY
- UNITED STATES HIGHWAY
- STATE HIGHWAY
- COUNTY HIGHWAY
- RAILROAD
- PIPELINE
- AIRPORT
- HYDROLOGY
- BRIDGE
- STATE BOUNDARY
- COUNTY BOUNDARY
- CORPORATE BOUNDARY
- TOWNSHIP LINE
- SECTION LINE
- ROAD NAMES
- UNINCORPORATED PLACE
- STATE PARKS
- STATE INSTITUTIONS
- FEDERAL LAND

ABBEY ROAD
ELWOOD

FILE NO. 32830	ENGLISH	DESIGN TEAM JEO Consulting Group	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46–77-52	SHEET NUMBER A.2	

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Estimated Bridge Repair Quantities and Reference Notes - Design 727

Item No.	Item Code	Item	Unit	Quantities Estimated	Estimate Reference Notes
1	2401-6750001	REMOVALS, AS PER PLAN	LS	1	Includes all work for removal and off-site disposal of the existing expansion joints, portions of deck, barriers, barrier plates, abutment backwalls, and wingwalls. Removal of scheduled items shall be in accordance with Section 2401, of the Standard Specifications. Any damage to material not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the state.
2	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	16.6	Includes all resilient joint filler required. Includes furnishing and installing 'E' joints at both abutments.
3	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	1,496	Includes all mechanical splices required.
4	2413-1200000	STEEL EXTRUSION JOINT WITH NEOPRENE	LF	82.5	Includes all necessary hardware and accessories including the anchorage system, temporary erection material and the $\frac{3}{8}$" barrier plates with their anchorage system. Excludes installation of neoprene gland.
5	2413-1200100	NEOPRENE GLAND INSTALLATION AND TESTING	LF	82.5	Includes installation of neoprene gland and water testing of joint.
6	2533-4980005	MOBILIZATION	LS	1	- -

Working Drawing and Calculation Submittals

Working drawings and calculations shall be submitted for the following items shown in the table below. (Note additional working drawings and calculations may be required in accordance with Article 1105.03 of the Standard Specifications.)

Submittal requirements for working drawings and calculations shall be in accordance with 1105.03 of the Standard Specifications for Highway and Bridge Construction of the Iowa Department of Transportation. The absence of a certification requirement for a submittal does not relieve the Contractor of the responsibility to attain certification.

Calculation submittals in this table which are associated with working drawing submittals shall be submitted on the same day. Review time for calculation submittals shall be of the same duration as and run concurrently with review time for associated working drawings. The calculation submittals listed in the table are not meant to be an exhaustive list and do not relieve the Contractor from providing additional calculation submittals if requested by the Engineer.

No.	Working Drawing Description	Working Drawing File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)
1	Steel Extrusion Joints & Barrier Plates	(500)_Johnson_Design727_SteelExtrusionJoints&BarrierPlates.pdf	No

No.	Calculation Description	Calculation File Name Convention For Submittal	Certified by Iowa P.E. (Yes/No)

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.

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 Section 8, Grade 60.

Concrete in accordance with AASHTO LRFD Section 8, f'c = 4.0 ksi.

Structural steel in accordance with Section 10. ASTM A709 Grade 36 (AASHTO M270 Grade 36).

General Notes:

This design is for repairs to the existing 441'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge on IA 22 over the Iowa River in Johnson County. 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 (Design No. 287). The Bridge Contractor shall field verify these details 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.

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

These bridge plans label all reinforcing steel with english notation (5a1 is $\frac{5}{8}$ inch diameter bar). English reinforcing steel recieved in the field may display the following "bar designation". The "bar designation" is the stamped impression on the reinforcing bars, and is equivalent to the bar diameter in millimeters.

English Size	3	4	5	6	7	8	9	10	11
Bar Designation	10	13	16	19	22	25	29	32	36

All reinforcing bars and bars noted as dowels supplied for this structure shall be deformed reinforcment unless otherwise noted or shown.

All new or existing epoxy reinforcing that is field trimmed shall be repaired with an approved repair/patch compound per Materials I.M. 451.03B, Appendix B.

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

Construction Stages 1 & 2 as detailed on these plans may be reversed at the Contractor's option subject to the Engineer's approval.

The lump sum bid for "Removals, as Per Plan" shall include all costs associated with removing the existing expansion joints, portions of the deck, barriers, barrier plates, abutment backwalls, and wingwalls.

Removals shall be in accordance with Section 2401 of the Standard Specifications. Any damage to other portions of the existing structure not noted for removal shall be the responsibility of the Bridge Contractor and shall be repaired at no extra cost to the State.

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

It is the intent of this design to reuse the existing pretensioned prestressed concrete beams in the new construction. The Bridge Contractor is to use extreme care when removing the deck concrete to avoid damage to the existing beams.

Concrete removal shall be initiated with a $\frac{3}{4}$" saw cut wherever possible.

The Bridge Contractor is to provide a method of removal that will prevent feather edging at the bottom of existing deck. Care shall be taken when exposing existing reinforcing so the bond to existing concrete is not broken at the concrete break lines.

The tops of the abutment backwalls as shown shall be constructed using structural concrete Class C. Promptly after the concrete has been placed and vibrated as provided in Articles 2403.03, C, and 2403.03, D of the Standard Specifications, it shall be hand finished to provide a smooth surface with the proper crown. The Contractor may elect to use formwork which is marked or trimmed to the correct elevation and crown to provide the limits for the hand finishing.

Keyway dimensions shown on the plans are based on nominal dimensions unless stated otherwise. In addition, the bevel used on the keyway shall be limited to a maximum of 10 degrees from vertical.

A scrape sample was taken from the abutment bearings on this bridge to get an indication of the existence of and level of total lead and total chromium. Analysis of total lead on this sample was 2440 parts per million (ppm). Analysis of total chromium on this sample was 40 ppm. These analyses show the existence of these two toxic constituents. Levels indicated by these tests could create conditions above regulatory limits for health and safety requirements. No other constituents were analyzed. The bidder should not rely on the Iowa DOT's testing and analysis for any purpose other than as an indication of the existence of these two toxic constituents.

Removal Notes:

Refer to Design Sheet No. 3 for details of the partial superstructure removal on the existing bridge. All partial removals shall be in accordance with Section 2401 of the Standard Specifications. All such removals shall be to neat saw cuts to provide clean straight surfaces at interfaces between new concrete and remaining concrete. The removal shall be done in a manner which will prevent any damage to the existing structure to remain. The Contractor shall assume full responsibility for any damage caused, and shall repair any damaged area to its original condition, as directed by the Engineer, at the Contractor's expense. Any existing reinforcing steel which is to be "saved" that is exposed during removal operations is to be carefully protected, cleaned and incorporated into new construction unless noted otherwise.

Start all removals with $\frac{3}{4}$" saw cut.

Design History at this Site

(Includes this Design)

Des. No.	Type of Work
287	Original Design
727	Deck Joint 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 0° Skew

441'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-9" End Spans 96'-6" Interior Spans

General Notes and Estimated Quantities

STA. 227+05.00 (IA 22) Turn-in Date: October 2026

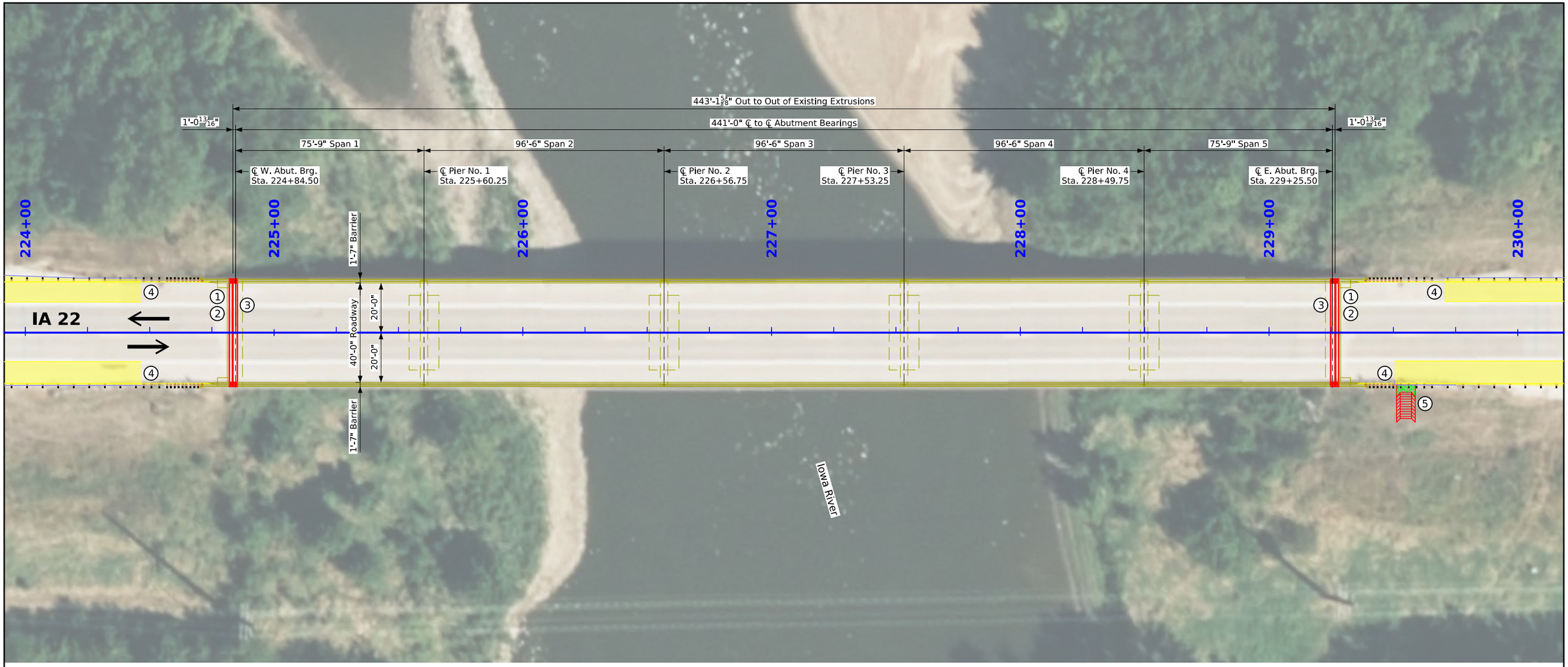
Johnson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 727 Design Sheet No. 1 of 7 FHWA No. 31861

FILE NO. 32830	ENGLISH	DESIGN TEAM JEO Consulting Group	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46--77-52	SHEET NUMBER V.1	

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Repairs Shall Consist Of:

1. Remove and replace steel extrusion and neoprene gland joint at both abutments.
2. Remove and reconstruct top of abutment backwall at both abutments.
3. Remove and reconstruct end of deck, abutment diaphragm, and portions of barrier rail at both abutments.

∗ 4. Replace guardrail at all four corners. Construct paved shoulder next to guardrails.

∗ 5. Install rock flume at southeast corner of bridge.

∗ Refer to Roadway Plans for additional information.

Location

IA 22 over Iowa River
T-77N R-6W
Section 2/11
Iowa/Fremont Township
Johnson County
FHWA No. 31861
Bridge Maint. No. 5246.3S022
Latitude 41.496148°
Longitude -91.511759°

N

Traffic Estimate

IA 22

2024 AADT	4,360 V.P.D.
TRUCKS	13 %

Design For Repairs to 0° Skew

441'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-9" End Spans — 96'-6" Interior Spans

Situation Plan

STA. 227+05.00 (IA 22)

Turn-in Date: October 2026

Johnson County

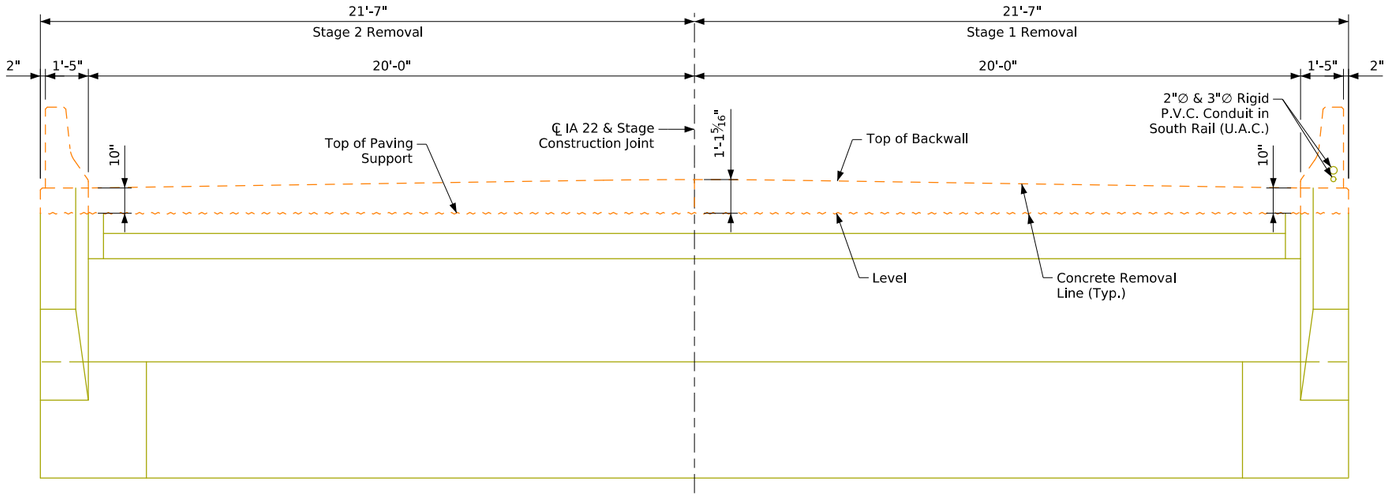
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 727 — Design Sheet No. 2 of 7 — FHWA No. 31861

FILE NO. 32830	ENGLISH	DESIGN TEAM JEO Consulting Group	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46--77-52	SHEET NUMBER V.2	

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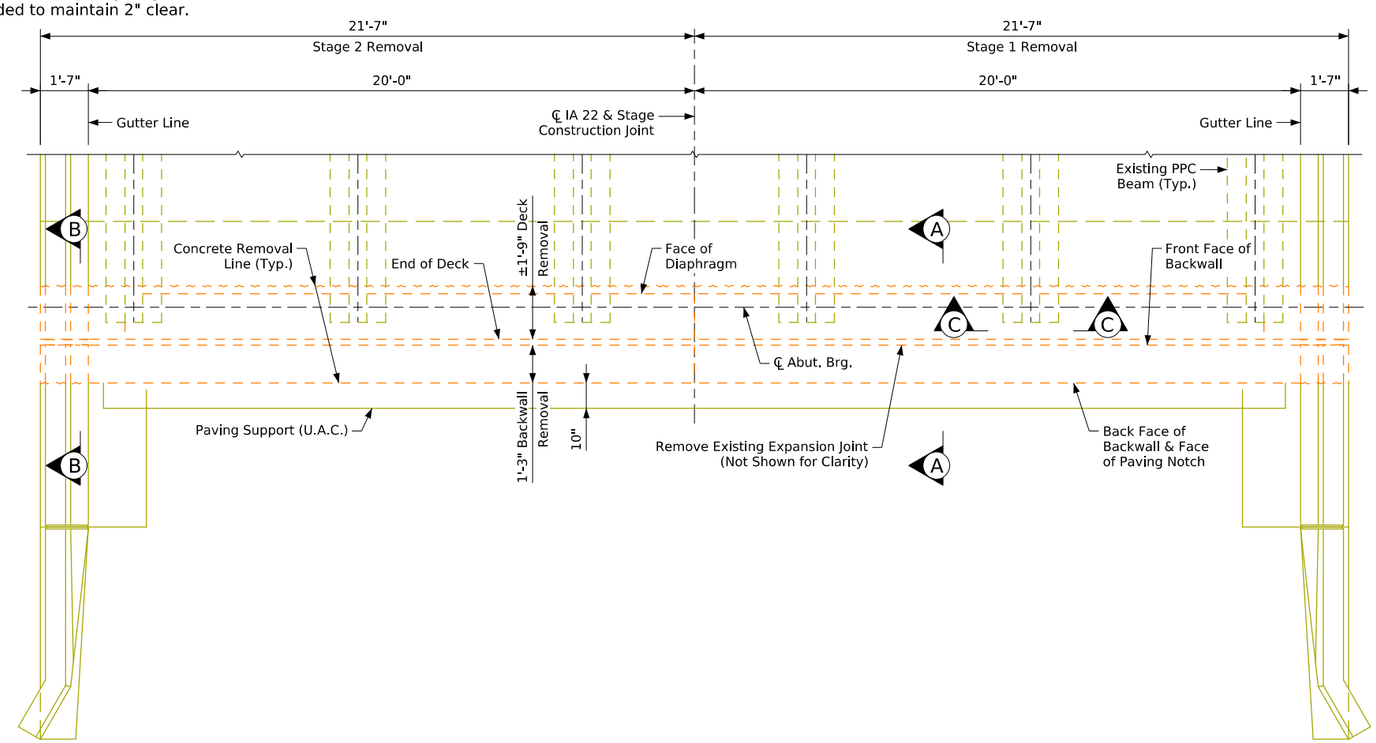
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Rear Elevation of Abutment

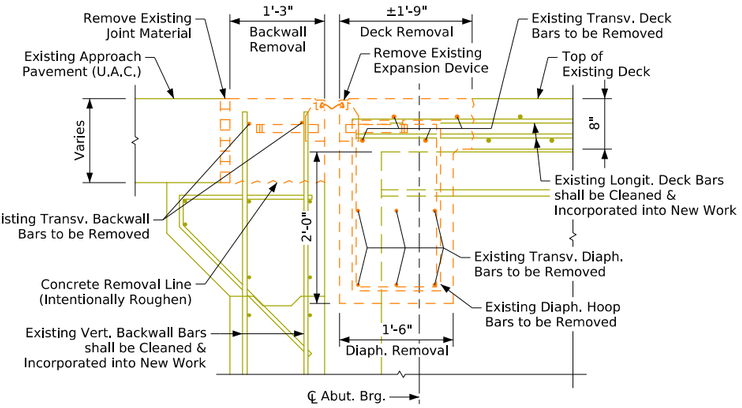
(Reinforcing Not Shown for Clarity)

Removal Notes:
Existing longitudinal bars in deck and vertical bars in backwall shall be cleaned and incorporated into new work. Cut existing longitudinal bars in deck as needed to maintain 2" clear.

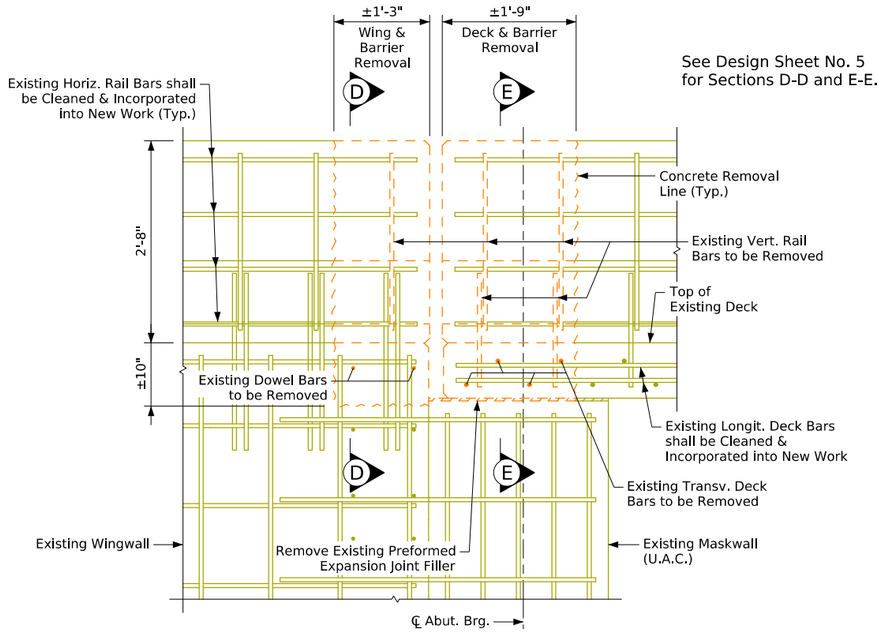


Removal Plan at Abutment

(West Abutment Shown, East Abutment Similar)
(Reinforcing Not Shown for Clarity)

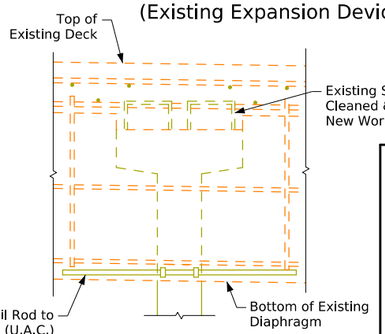


Section A-A



Section B-B

(Existing Expansion Device & Conduit Not Shown for Clarity)



Section C-C

See Design Sheet No. 5 for Sections D-D and E-E.

Note:
See Design Sheet No. 1 for removal notes.

Design For Repairs to 0° Skew

441'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-9" End Spans — 96'-6" Interior Spans

Abutment Removal Details

STA. 227+05.00 (IA 22)

Turn-in Date: October 2026

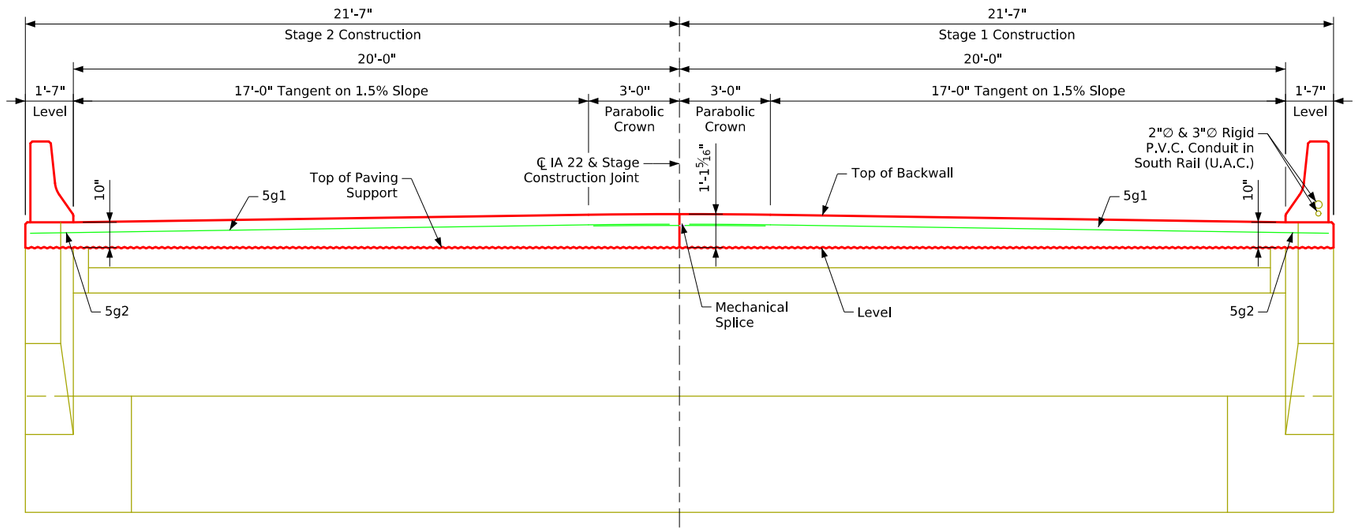
Johnson County

IOWA DEPARTMENT OF TRANSPORTATION

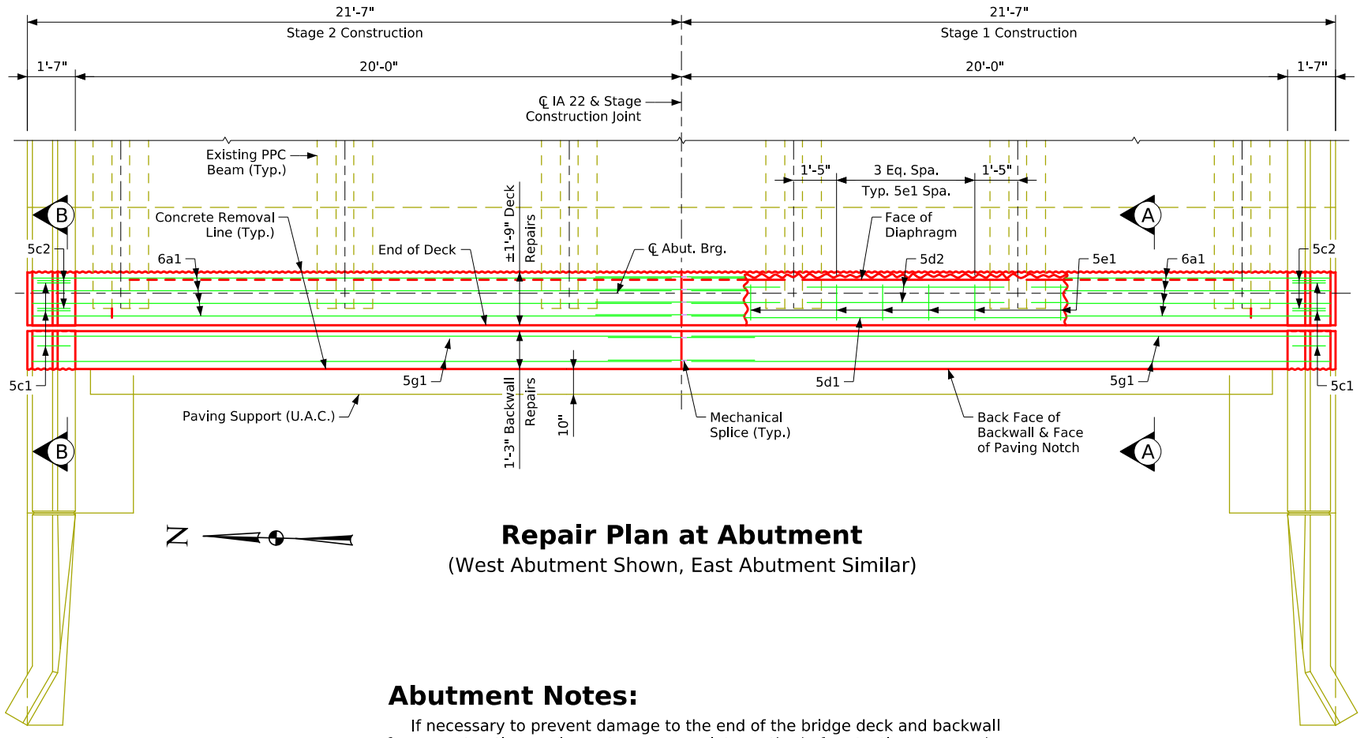
Design No. 727 | Design Sheet No. 3 of 7 | FHWA No. 31861

FILE NO. 32830	ENGLISH	DESIGN TEAM JEO Consulting Group	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46–77-52	SHEET NUMBER V.3

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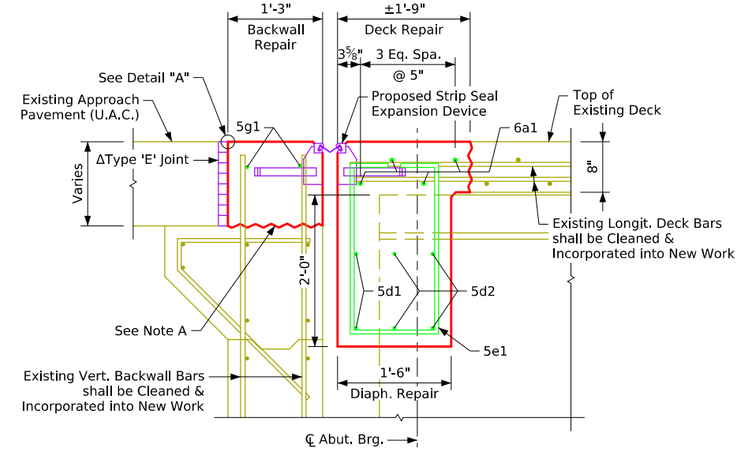


Rear Elevation of Abutment



Repair Plan at Abutment

(West Abutment Shown, East Abutment Similar)

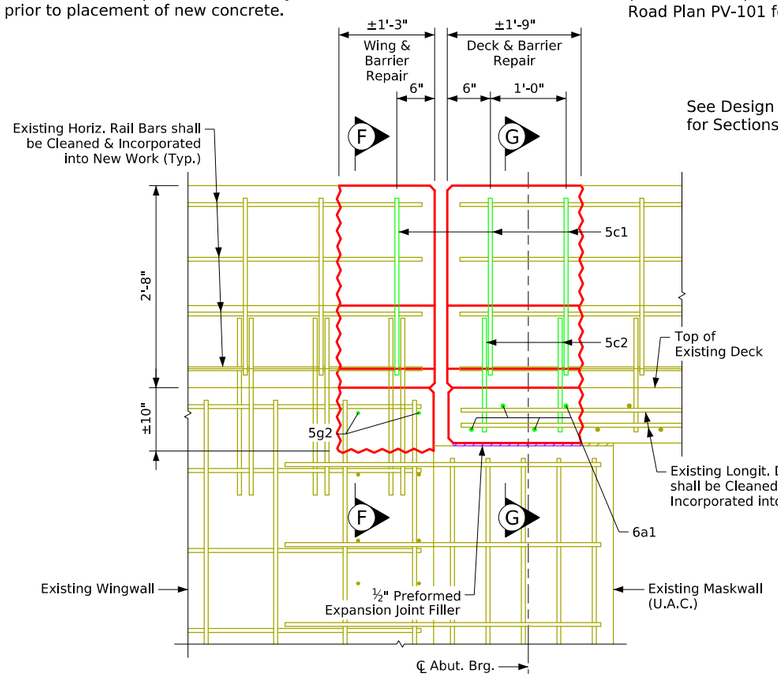


Section A-A

Note A:
Intentionally roughen interface to ¼" min. amplitude. Surface shall be cleaned with compressed air and dry prior to placement of new concrete.

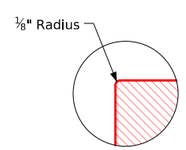
Δ 'E' joint material is incidental to price bid for "Structural Concrete (Miscellaneous)". See Standard Road Plan PV-101 for details.

See Design Sheet No. 5 for Sections F-F and G-G.



Section B-B

(Proposed Expansion Device Not Shown for Clarity)



Detail A

Abutment Notes:

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

Design For Repairs to 0° Skew

441'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-9" End Spans — 96'-6" Interior Spans

Abutment Repair Details

STA. 227+05.00 (IA 22)

Turn-in Date: October 2026

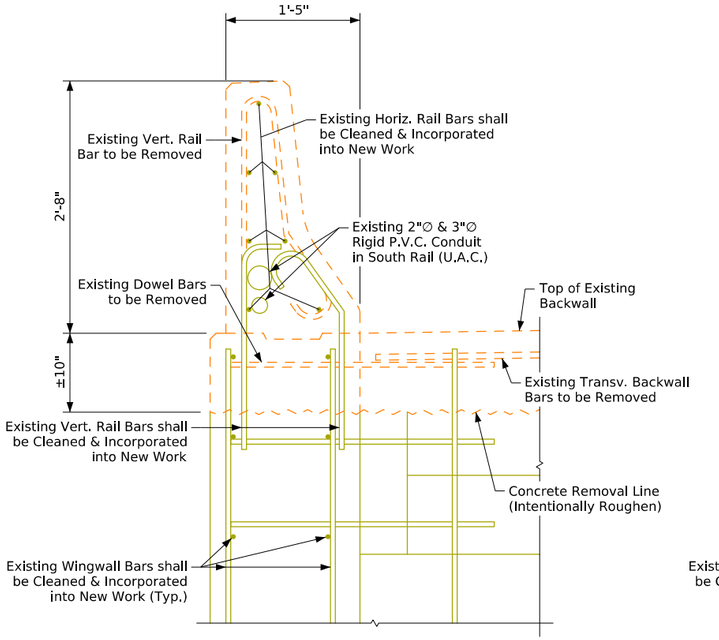
Johnson County

IOWA DEPARTMENT OF TRANSPORTATION

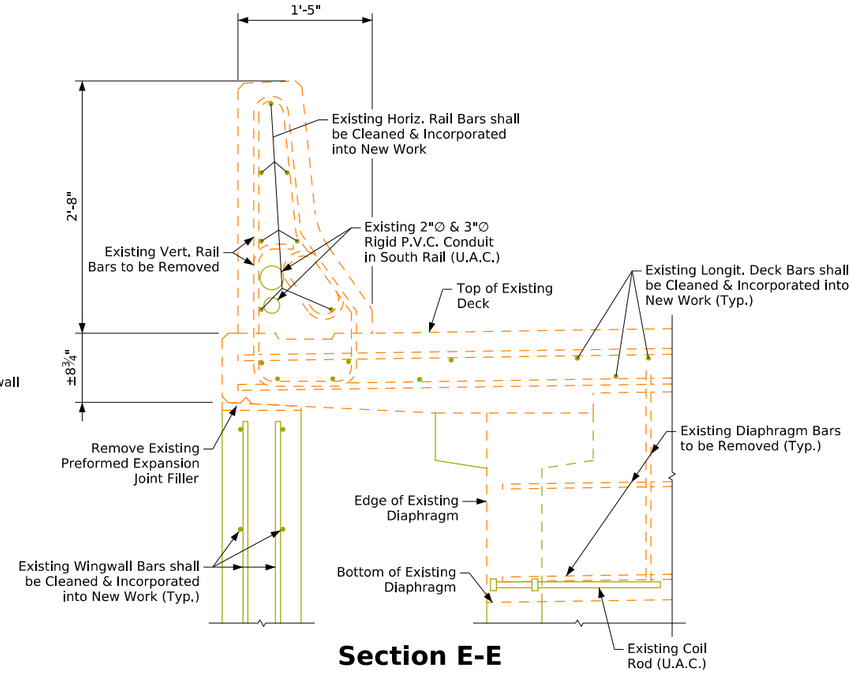
Design No. 727 | Design Sheet No. 4 of 7 | FHWA No. 31861

FILE NO. 32830	ENGLISH	DESIGN TEAM JEO Consulting Group	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46–77-52	SHEET NUMBER V.4

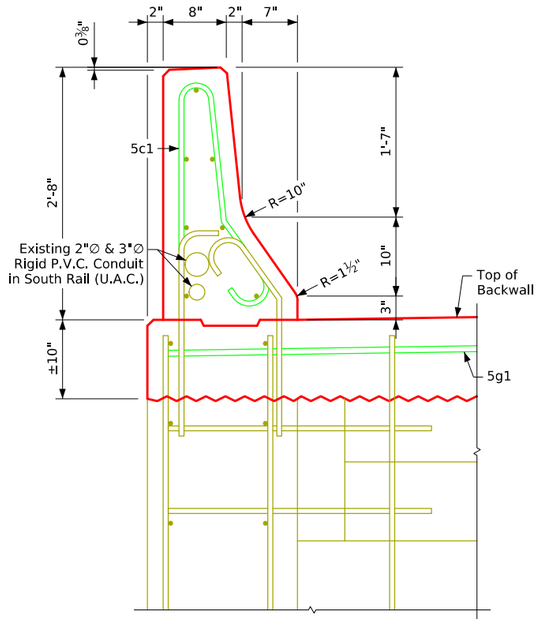
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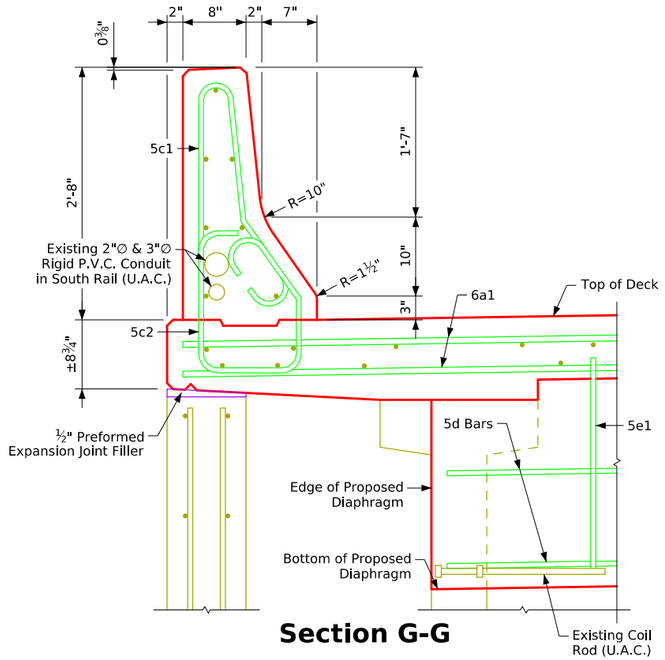
Section D-D



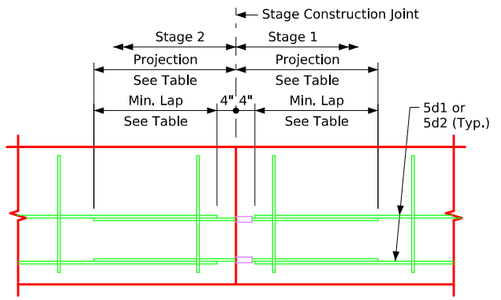
Section E-E



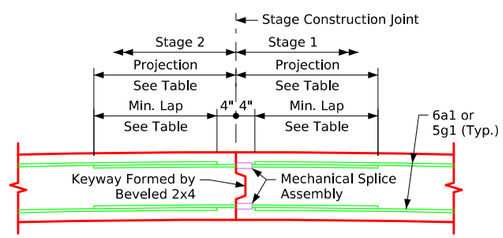
Section F-F



Section G-G



Mechanical Splice Detail Diaphragm



Mechanical Splice Detail Backwall & Deck

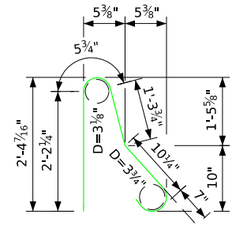
Epoxy Coated Reinforcing Steel - Both Abut.

Bar	Location	Shape	No.	Length	Weight
6a1	Deck, Transverse, Top & Bottom		16	21'-1"	507
5c1	Rail, Vertical		12	5'-5"	68
5c2	Rail, Vertical		8	5'-3"	44
5d1	Diaphragm, Transverse		8	18'-3"	152
5d2	Diaphragm, Transverse, Between Girders		40	6'-6"	271
5e1	Diaphragm, Hoops		40	6'-8"	278
5g1	Backwall, Longitudinal		8	21'-1"	176
				Epoxy Reinforcing Total Weight (lbs.)	1,496

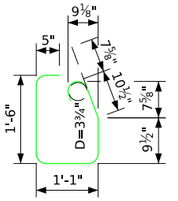
Concrete Placement Summary - Both Abut.

Location	Total
Abutment Backwall	3.9
Deck and Diaphram	11.6
Barrier Rails	1.1
Total (CY)	16.6

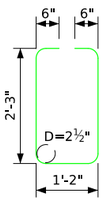
Bent Bar Details



5c1



5c2



5e1

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

Mechanical Splice Assemblies:

The 6a1, 5d1, 5d2, and 5g1 bars shall be spliced at the locations shown using mechanical splice assemblies. Mechanical splice assemblies consist of mechanical splicers and reinforcing splice bars as required to facilitate the use of the mechanical splicer. The mechanical splice assembly used shall meet the requirements of Materials IM 451 Appendix E. Reinforcing splice bars shall be a minimum of ¾" diameter for the 6a1 bars and a minimum of ⅝" diameter for the 5d1, 5d2, and 5g1 bars.

All mechanical splice assemblies to be used shall be epoxy coated.

The cost of all splice assemblies is to be included in the price bid for "Reinforcing Steel, Epoxy Coated" and no separate payment will be made. The weight of mechanical splice assemblies is not included in the quantity shown for "Reinforcing Steel, Epoxy Coated". A total of 24 epoxy coated splice assemblies will be required.

Mechanical Splice Dimension Table

Bar	Projection	Min. Lap
6a1	3'-2"	2'-10"
5d	2'-9"	2'-5"
5g1	2'-9"	2'-5"

Design For Repairs to 0° Skew

441'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-9" End Spans — 96'-6" Interior Spans

Abutment & Barrier Details

STA. 227+05.00 (IA 22) — Turn-in Date: October 2026

Johnson County

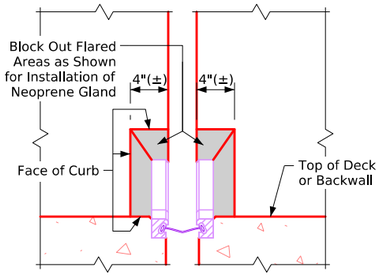
IOWA DEPARTMENT OF TRANSPORTATION

Design No. 727 — Design Sheet No. 5 of 7 — FHWA No. 31861

FILE NO. 32830	ENGLISH	DESIGN TEAM JEO Consulting Group	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46--77-52	SHEET NUMBER V.5

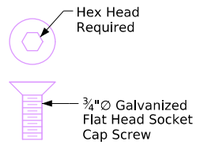
11:50:30 AM 10/1/2026 ssibenaller pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5202201026\Bridge\(500)_Deck Joint Repair\SHT_52022500_727_31861_Z10.dgn

Control Point:

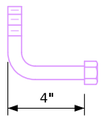


Blockout Detail

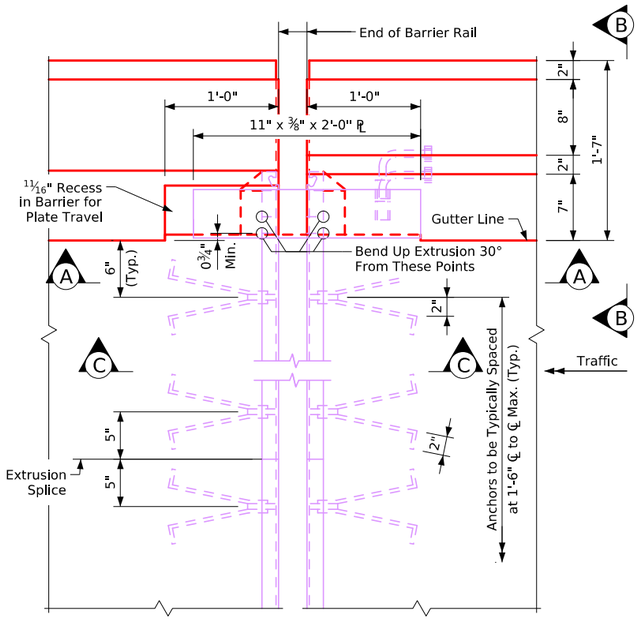
Contractor to note that the cap screw anchorage system for the ⅜" barrier plates are always to be placed on the oncoming traffic side.



Cap Screw Detail



Bent Bolt Detail

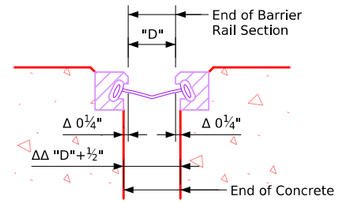


Part Plan View of Expansion Device

Note: It is intended that the 11/16" recessed area be formed so that when the ⅜" bent plate is installed the plate will be able to move freely in this recessed area.

Barrier Plate Note:

The material used for the barrier plates is to be ASTM A36 steel. The bolts shall meet the requirements of ASTM A307. The plates, bolts, nuts and cap screws are to be galvanized in accordance with Article 4100.07 of the Standard Specifications.



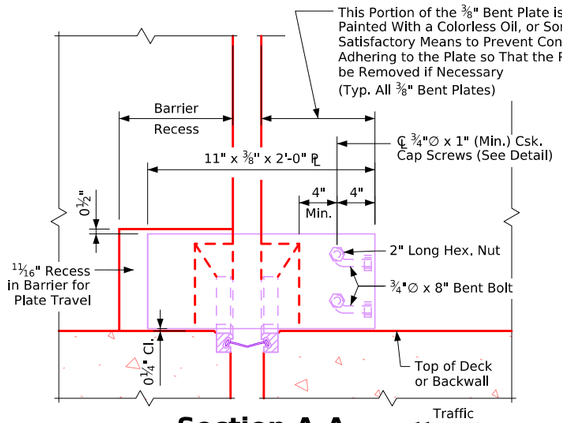
Expansion Opening Detail

Δ This dimension may vary slightly depending on manufacturer furnishing the joint.

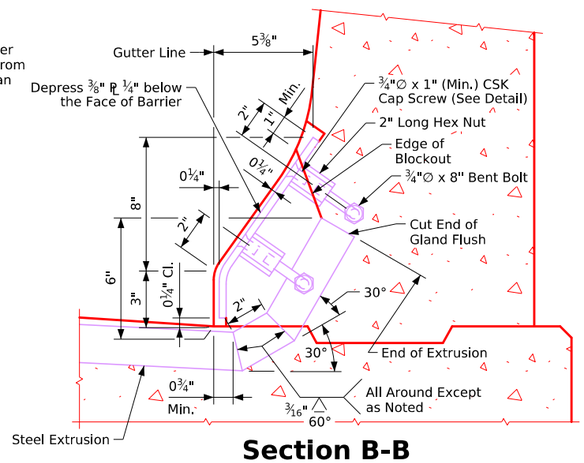
ΔΔ Used for all out to out dimensions of deck. The dimensions may vary slightly depending manufacturer furnishing the joint.

Table of Approved Expansion Devices

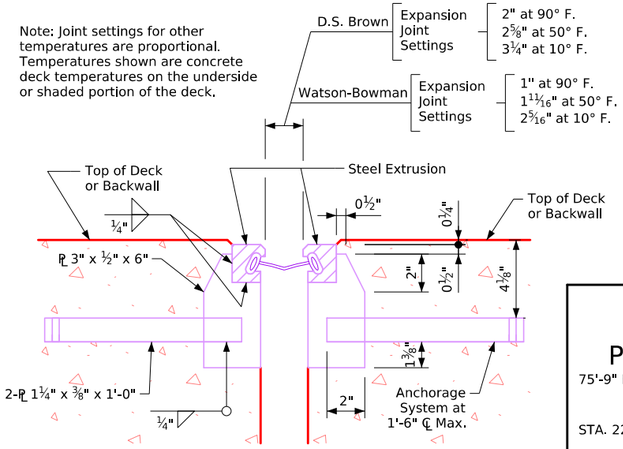
Manufacturer	Type of Steel Extrusion	Neoprene Gland	Minimum Opening for Gland Installation	Corresponding Maximum Deck Temperature
Watson–Bowman & Acme Corp.	A	SE-300	1½"	60°F
D.S. Brown Co.	SSA2	A2R–400	2"	90°F
Approved Equal				



Section A-A



Section B-B



Section C-C

Note:
See Design Sheet No. 7 for expansion device notes containing the steel extrusion notes, neoprene gland notes, and watertight integrity testing and repair notes.

Design For Repairs to 0° Skew

441'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-9" End Spans — 96'-6" Interior Spans

Expansion Device Details

STA. 227+05.00 (IA 22) — Turn-in Date: October 2026

Johnson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 727 — Design Sheet No. 6 of 7 — FHWA No. 31861

Steel Extrusion Notes:

The Contractor shall submit for approval shop drawings of the expansion devices showing layout, material to be used, and provisions for the holding device during placement of concrete.

The expansion device shall be galvanized after welding. All curb plates including their anchorages shall be galvanized.

The expansion device is to be parallel to grade.

Cap screws shall be countersunk $\frac{1}{16}$" below top of the plate. The minimum grade of structural steel for the expansion device shall be ASTM A36.

Blockout details may be altered from those shown provided the gland may be installed and removed if necessary and the curb area remains watertight.

Shop splices of the steel extrusion will be permitted. Prior to making shop splices steel extrusion pieces shall have a minimum length of 15 feet. The individual length of pieces shall be chosen so that a minimum number of splices is required. All pieces shall be joined with a prequalified partial penetration single groove weld detailed on the shop drawing. All surfaces not in contact with concrete are to be ground flush. No weld shall be permitted in the internal section of the extrusion where the neoprene gland is to be installed.

The number of feet of steel extrusion installed shall be paid for at the contract price per foot based on plan quantities. The price bid for "Steel Extrusion Joint w/Neoprene" shall include the cost of furnishing but not the cost of installing the neoprene gland. The contract price bid for "Steel Extrusion Joint w/Neoprene" shall be full compensation for furnishing and installing steel extrusions. This work will consist of furnishing all required materials, (including the $\frac{3}{8}$" plates at the curbs and their anchorage systems), and the installation and adjustment of the expansion joints in accordance with the details shown on the plans and as directed by the Engineer. The furnishing and installation of all necessary hardware and accessories as supplied by the Expansion Joint Manufacturer are to be included in this work, including the anchorage system and any temporary erection material. All work and materials for the installation of the expansion joints are to comply with the written recommendations of the Expansion Joint Manufacturer.

Neoprene Gland Notes:

The neoprene gland is to be placed as one continuous piece from end to end of the steel extrusion.

The neoprene gland shall conform to ASTM-2628 modified to exclude recover test and compression set.

The Contractor shall install the gland above the minimum temperature of 45° and the minimum joint opening and corresponding maximum deck temperature shown in these plans. The deck temperature shall be measured by recording the surface temperatures on the underside of the deck adjacent to the joints. If the deck temperature does not fall within the specified temperature range before the Contractor has completed all other required work, it will be necessary for the Contractor to return to the project site to complete installation and testing of the neoprene gland. If the Contractor is required to return to the project site after all other required work has been completed, the Contractor shall complete installation and testing of neoprene gland at no extra charge to the State.

The number of feet of neoprene gland installed shall be paid for at the contract price per foot based on plan quantities. The price for "Neoprene Gland Installation and Testing" shall be full compensation for installing and testing of the new neoprene gland. This work will consist of cleaning the extrusion, installation of the neoprene gland and water tight testing of the expansion joint system. All work and materials necessary for the installation of the neoprene gland shall comply with the recommendations of the Expansion Joint Manufacturer. The price bid for "Neoprene Gland Installation and Testing" shall include all watertight integrity testing, leak repairs as directed by the Engineer, and subsequent watertight testing until a leak free installation is achieved.

Watertight Integrity Testing And Repair Notes:

After installation of each neoprene gland, the Contractor shall perform watertight integrity tests at the deck level to detect any leakage. The tests are to check for leakage at the upturned ends of the expansion device and for leakage along the expansion device across the deck and any medians or sidewalks. The Contractor may conduct a single test of the entire device including upturned ends or may conduct separate tests of upturned ends and one or more tests of overlapping lengths between the upturned ends.

At each upturned end of the expansion device, the Contractor shall block out on the deck at least 3 feet of the expansion device leading to the upturned end and flood the area. A minimum water depth of 3" shall be maintained at the gutter line for at least 30 minutes. During the test, the Inspector shall observe for any overflow at the upturned end. At the conclusion of the test the Inspector will examine the underside of the joint for leakage. The expansion device is considered watertight if the Inspector observes no overflow during the test and if no dripping water or water droplets are visible in the under deck areas near the upturned end.

The Contractor shall test the expansion device between upturned ends by blocking out and covering the device with ponded or flowing water to a depth of at least 1" at all points, for at least 30 minutes. Vertical curb surfaces may be tested with an unnozzled hose delivering approximately one gallon per minute directed to flow over the entire curb height for 30 minutes. At the conclusion of the test, the inspector will examine the underside of the joint for leakage. The expansion device is considered watertight if no dripping water or water droplets are visible in the under deck areas along the full length of the expansion joint. Damp concrete that does not show dripping water or water droplets is not considered a sign of leakage.

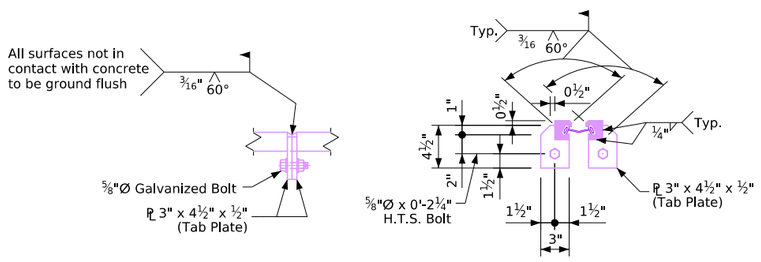
If the expansion device leaks at an upturned end or along its length, the Contractor shall locate the leak(s) and take repair measures to stop the leakage. The repair measures shall be as recommended by the Manufacturer and approved by the Engineer prior to beginning corrective work.

If measures to eliminate leakage are taken, the Contractor shall perform subsequent watertight integrity tests subject to the same conditions as the original test.

Field Construction Notes:

If the steel extrusion is spliced in the field, the splice location shall be detailed on the shop drawings. The connection details shall include tab plates and prepared ends to accommodate the necessary welding. See details in these plans.

Galvanized coating damage by field welding shall be repaired in accordance with Construction and Materials I.M. 410.



End View Section Thru Extrusion

Field Splice Detail

Design For Repairs to 0° Skew

441'-0" x 40'-0" Pretensioned Prestressed Concrete Beam Bridge

75'-9" End Spans 96'-6" Interior Spans

Expansion Device Notes

STA. 227+05.00 (IA 22) Turn-in Date: October 2026

Johnson County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 727 Design Sheet No. 7 of 7 FHWA No. 31861

FILE NO. 32830	ENGLISH	DESIGN TEAM JEO Consulting Group	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46–77-52	SHEET NUMBER V.7	

11:50:35 AM 10/1/2026 ssibenaller pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5202201026\Bridge\(500)_Deck Joint Repair\SHT_52022500_727_31861_Z10.dgn

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	**Title Sheets**
A.3	Title Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 3	Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1 - 2	Estimated Project Quantities and Reference Notes
C.3	Standard Road Plans
C.3	Index of Tabulations
C.4 - 8	Tabulations
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2	IA 22
J Sheets	**Traffic Control and Staging Sheets**
* J.1	Traffic Control Plan
* J.2 - 4	Traffic Control and Staging Sheets
* J.5	Staging Cross Sections
R Sheets	**Erosion Control Sheets**
RC.1 - 2	Est. Quantities, General Notes and Tabulations
U Sheets	**500 Series, Mod.Stds. and Detail Sheets**
U.1	Pinned to Unpinned TBR Layout
U.2	RF-38

* Color Plan Sheets

ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER
Cory D. Tap
28046
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.

Cory Tap

Signature

8-11-2026
Date

Cory D. Tap
Printed or Typed Name

My license renewal date is December 31, 20 26

Pages or sheets covered by this seal: A.3, B.1-B.3, C.1-C.8, D.1-D.2, J.1-J.5 RC.1-RC.2, U.1-U.2

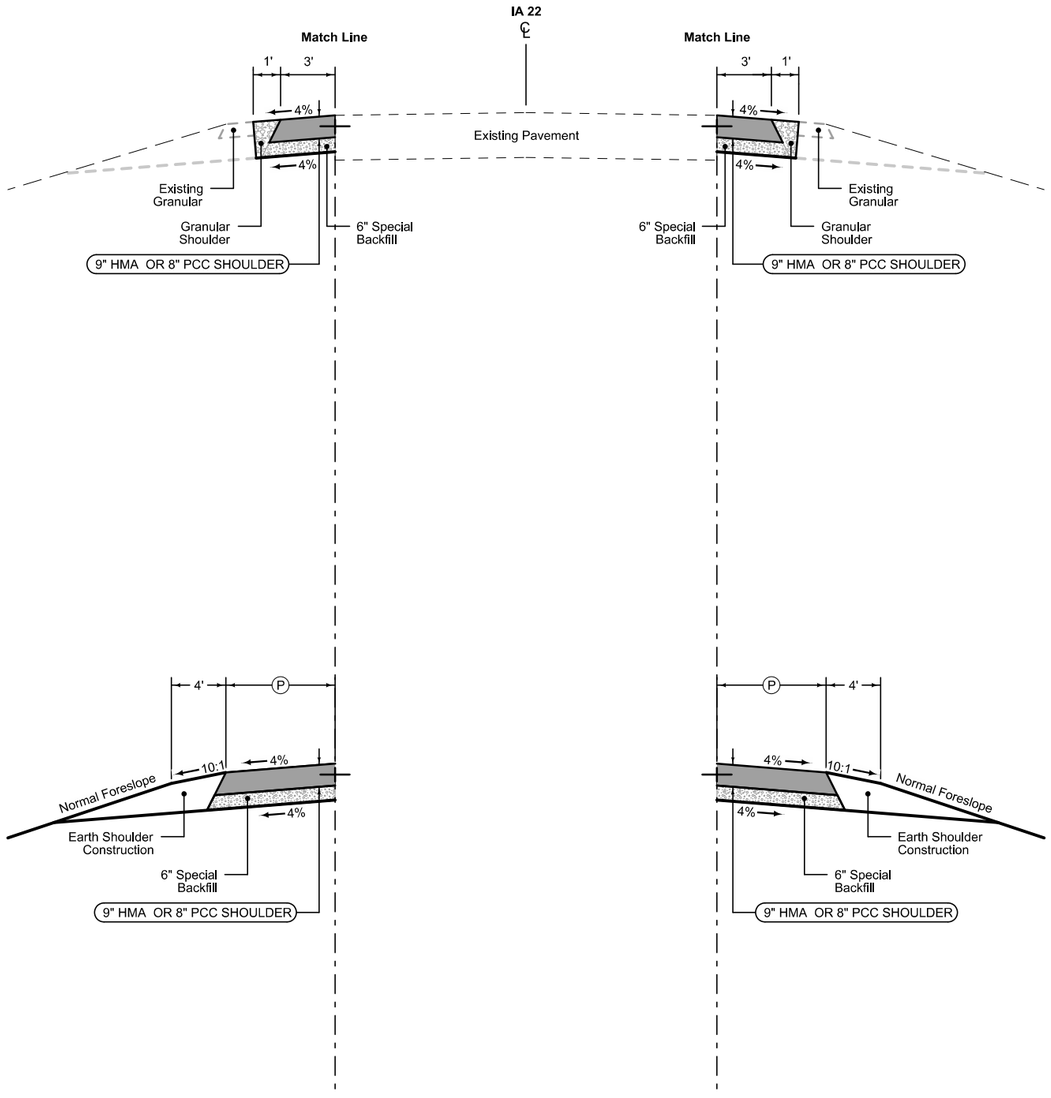
FILE NO.	ENGLISH	DESIGN TEAM TAP\ENM-CAD	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46--77-52	SHEET NUMBER A.3	

SYSTEMTIME SYSTEMDATE USERNAME DGNSPEC

Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

	2_C_ Modified
STATION TO STATION	
220+85.00	223+51.00
Bridge and Approaches	
231+15.00	233+25.00



Combination Shoulder

Shoulder Jointing:
Longitudinal joint: B

	2_C_ Modified
STATION TO STATION	
220+85.00	225+95.00
Bridge and Approaches	
230+59.00	233+25.00

Paved Shoulder at Guardrail

PCC Shoulder Jointing:
Longitudinal joint: B
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

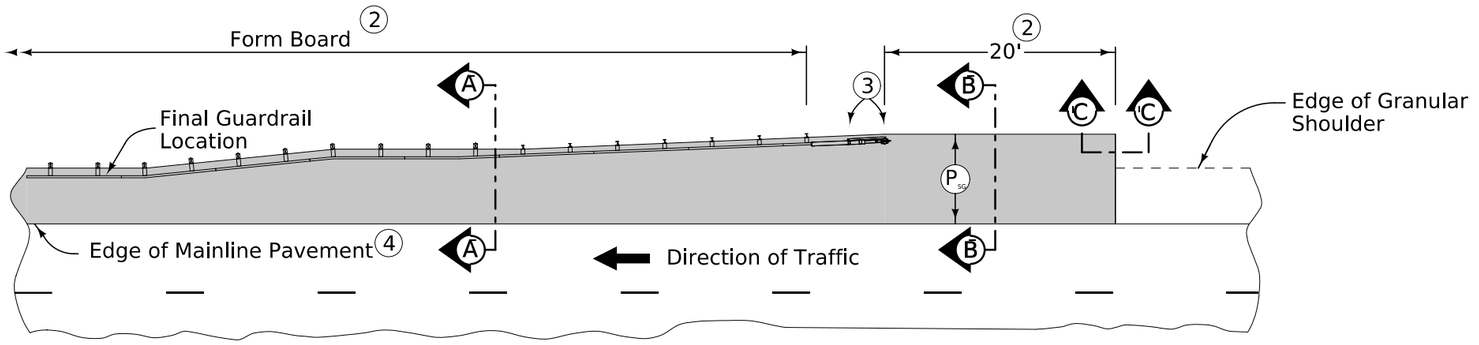
		2_P_Guard_ 04-21-20
STATION TO STATION		(P) Feet
223+51.00	224+43.00	11.4-9.6
Bridge and Approaches		
229+67.00	231+15.00	9.6-11.4

Paved Shoulder at Guardrail

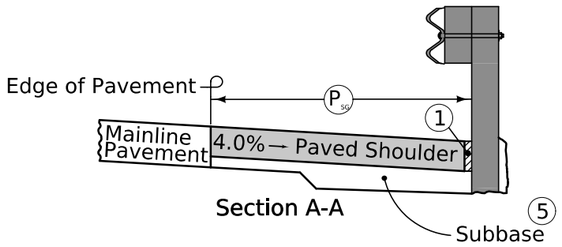
PCC Shoulder Jointing:
Longitudinal joint: B
Transverse joints: C at mainline spacing
HMA Shoulder Jointing:
Longitudinal joint: B

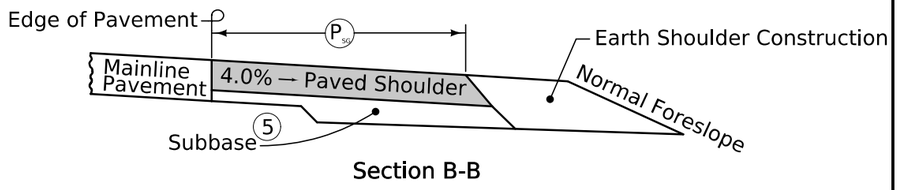
		2_P_Guard_ 04-21-20
STATION TO STATION		(P) Feet
222+95.00	224+43.00	11.4-9.6
Bridge and Approaches		
229+47.00	230+59.00	9.6-11.4

See Tab 112-9 for shoulder quantities.

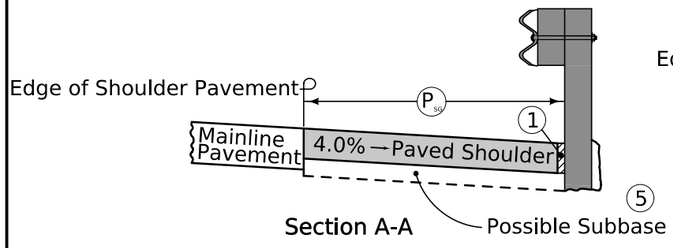


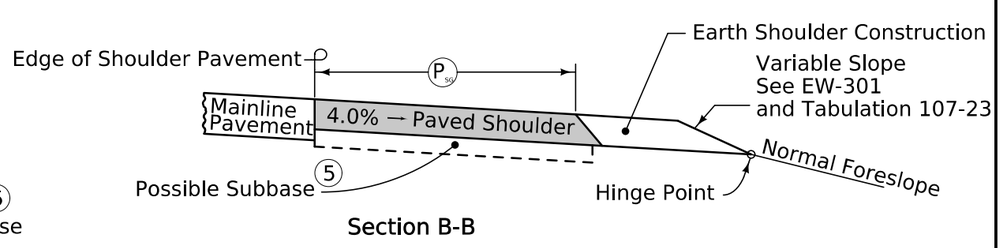
PLAN VIEW





NEW CONSTRUCTION





EXISTING SHOULDER

7156
Modified

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

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

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

Refer to Tabulation 112-9 for shoulder quantities.

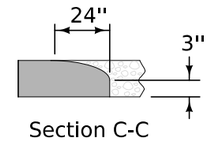
(1) PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.

(2) Continue paved shoulder 20 feet beyond the center of the first post.

(3) Shoulder may be notched for first 2 posts or post sleeves may be installed through pavement. Do not drive posts through pavement.

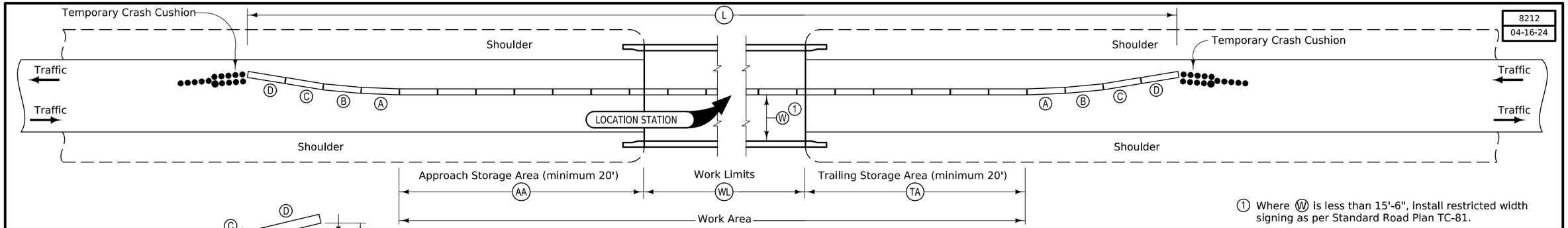
(4) 'BT' joint (per PV-101) for PCC shoulder.
'B' joint (per PV-101) for HMA shoulder.

(5) 6" Special Backfill.



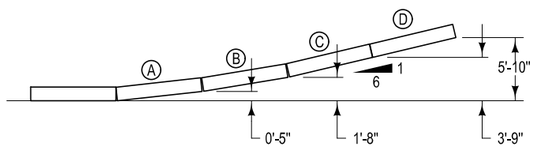
Roll down at granular shoulder or earth.

PAVED SHOULDER AT GUARDRAIL
(GRANULAR SHOULDER ADJACENT TO MAINLINE)



8212
04-16-24

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



BARRIER OFFSETS FOR FLARE SECTIONS

Station	Side	AA	WL	TA	L	Anchored	W (1)	Remarks
		Feet	Feet	Feet	Feet	X	Ft-Inches	
224+09 - 230+01	RT	20	450	20	592	No	17'7.5"	Stage 2
224+09 - 230+01	LT	20	450	20	592	No	17'7.5"	Stage 3

TEMPORARY CONCRETE BARRIER LAYOUT
for Two-Way Traffic

FILE NO.	ENGLISH	DESIGN TEAM TAP\ENM-CAD	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46--77-52	SHEET NUMBER B.3	

5:39:16 PM 8/10/2026 emcdona pw:\\NTPwint1.dot.int.lan:PWMain\Documents\Projects\5202201026\Design\CADD_Files\Sheet_Files\B01_52022500Z10.dgn

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadway Items : Roadway Items

Item no.	Item Code	Item	Unit	Quantities Estimated Roadway Items	Estimate Reference Notes
1	2102-0425070	SPECIAL BACKFILL	TON	340.328	Refer to Tab. 112-9 in the C Sheets for details.
2	2102-2625001	EMBANKMENT-IN-PLACE, CONTRACTOR FURNISHED	CY	50	Refer to Tab. 107-23 in the C Sheets for details.
3	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	413.4	Refer to Tab. 112-9 in the C Sheets for details. Dispose of excess material according to Article 1106.07 of the current specifications.
4	2121-7425020	GRANULAR SHOULDERS, TYPE B	TON	83.3	Refer to Tab. 112-9 in the C Sheets for details.
5	2123-7450000	SHOULDER CONSTRUCTION, EARTH	STA	5	Refer to Tab. 112-9 in the C Sheets for details. Requires a minimum of 4 inches of topsoil. Place according to Article 2105.03,B of the Standard Specifications.
6	2304-0100000	DETOUR PAVEMENT	SY	887.1	Refer to B Sheets and Tab. 112-9 in the C Sheets for details.
7	2401-6745650	REMOVAL OF EXISTING STRUCTURES	LS	1	Refer to U Sheets and Tab. 110-2 in the C Sheets for details. Measurement: Lump Sum; The entire removal of RF-38 end drain and necessary earthwork and grading to return surface to existing conditions. Payment: The Contractor shall be paid the lump sum contract price for all RF-38 end drains removed and any associated earthwork and grading performed for removal and returning embankments to existing conditions or as otherwise approved by the Engineer. This payment shall be full compensation for furnishing all material, equipment, and labor for the performance of all work necessary for removal of all existing RF-38 end drains as described.
8	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	250	Refer to Tab. 110-7A in the C Sheets for details.
9	2505-4008300	STEEL BEAM GUARDRAIL	LF	150	Refer to Tab. 108-8A in the C Sheets for details.
10	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	4	
11	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	4	
12	2505-4021020	STEEL BEAM GUARDRAIL END ANCHOR, W-BEAM	EACH	4	
13	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	4	
14	2510-6745850	REMOVAL OF PAVEMENT	SY	17.8	Refer to Tab. 110-1 and Tab. 102-5 in the C Sheets for details.
15	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	59.81	Refer to Tab. 108-22 in the C Sheets for details.
16	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED	STA	37.5	

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadway Items	
17	2527-9263216	PAINTED PAVEMENT MARKINGS, MULTI-COMPONENT LIQUID	STA	93.15	
18	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	45.6	
19	2527-9270112	GROOVES CUT FOR PAVEMENT MARKINGS	STA	79.56	
20	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	1,184	Refer to B Sheets and Tab. 108-33 in the C Sheets for details. All temporary barrier rail shall be nominal 12'-6 long concrete units.
21	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	1	Refer to Tab. 108-28 in the C Sheets for details.
22	2528-8445110	TRAFFIC CONTROL	LS	1	Refer to Traffic Control Plan in the J Sheets for details.
23	2551-0000110	TEMP CRASH CUSHION	EACH	4	Refer to Tab. 108-30 in the C Sheets for details.

STANDARD ROAD PLANS

Number	Date	Title
BA-200	10-20-26	Steel Beam Guardrail Components
BA-201	10-18-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	10-20-26	Steel Beam Guardrail Bolted End Anchor
BA-205	10-17-23	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-250	10-20-26	Steel Beam Guardrail Installation at Concrete Barrier or Bridge Rail End Section (MASH TL-3)
BA-401	04-20-21	Temporary Barrier Rail (Precast Concrete)
BA-500	10-18-22	Temporary Crash Cushions Sand Barrel
EW-301	10-20-26	Guardrail Grading
PM-110	10-15-24	Line Types
PM-115	10-20-26	Grooving for Line Types
PV-101	10-20-26	Joints
PV-121	10-21-25	Jointing PCC Pavement Widening
TC-1	10-15-19	Work Not Affecting Traffic (TWO-LANE OR MULTI-LANE)
TC-202	04-18-23	Work Within 15 FT of Traveled Way
TC-213	04-18-23	Lane Closure With Flaggers
TC-217	04-18-25	Lane Closure With Signals and TBR

INDEX OF TABULATIONS

Tabulation	Tabulation Title	Sheet No.
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EXISTING PAVEMENT

No.	Location					Year	Type	Project Number	Surface		Base		Subbase		Removal		Coarse Aggregate			Reinforcement	Remarks
	County	Route	Dir. of Travel	Begin Ref. Loc. Sign	End Ref. Loc. Sign				Type	Depth IN	Type	Depth IN	Type	Depth IN	Type	Depth IN	Source	Type	Durability Class	Type	
	52	IA-22	1	46.44	50.82	2021	M	MP-022-5(707)35--76-92													PCC patching
	52	IA-22	1	46.44	50.82	1988		F-22-2(32)--20-92	PCC	10							CONKLIN	C.LST.	I		

110-1
04-16-13

REMOVAL OF PAVEMENT

Refer to Tabulation 102-5

* Not a Bid Item

Begin Station	End Station	Side	Pavement Type	Area SY	Saw Cut* LF	Remarks
Stage 2						
229+47.00	229+67.00	RT	PCC	17.8		IA 22
Total				**17.8**		

110-7A
04-17-12

REMOVAL OF STEEL BEAM GUARDRAIL

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

Location					Removal of Guardrail (2)
No.	Direction (1) of Traffic	Station to Station		Side	LF
Stage 1					
	EB	224+11.16	224+73.66	LT	62.5
	EB	229+36.34	229+98.84	LT	62.5
Stage 2					
	EB	224+11.16	224+73.66	RT	62.5
	EB	229+36.34	229+98.84	RT	62.5
Total					**250.0**

108-33
10-15-19

TEMPORARY BARRIER RAIL

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

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

No.	Station to Station		Length	(Select One) Concrete BA-401	(Select One) Steel 560-7	Anchored*	Modular Glare Screen System	Remarks
			LF			(Y/N)	(Y/N)	
1	224+09.00	230+01.00	592.0	X		Yes		Stage 2; See U Sheet for Details
2	224+09.00	230+01.00	592.0	X		Yes		Stage 3; See U Sheet for Details
		Total=	**1184.0**					

108-28
08-01-08

TEMPORARY TRAFFIC SIGNALS

No.	Location Station	Type: One Lane Traffic	Type: Haul Road	Type: Intersection	Remarks
1.1	222+05.00	X			EB Signal
1.2	232+05.00	X			WB Signal
	Total=	**2**			

108-30
04-16-13

CRASH CUSHIONS

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

No.	(1) Direction of Traffic	Location Station	Side	Obstacle Width	Crash Cushion (Select One)* Temporary	Temporary Redirective	Temporary Severe Use	Permanent	Permanent Severe Use	Sand Barrel Details (2) V Length	W Length	X Length	Y Length	Z Length	Earthwork* Excavation Class 10	Embankment in Place	Spare Parts Kit (Select One)* Permanent	Permanent Severe Use	Obstacle Description	Remarks
				FT						FT	FT	FT	FT	FT	CY	CY	EACH	EACH		
		Stage 2																		
	EB	224+09.00	RT	2.00	1														TBR	
	EB	230+01.00	RT	2.00	1														TBR	
		Stage 3																		
	EB	224+09.00	LT	2.00	1														TBR	
	EB	230+01.00	LT	2.00	1														TBR	
		TOTAL=			**4**															

110-2
04-16-13

REMOVAL OF EXISTING STRUCTURES

Location	Description	Remarks
Sta. 229+54.80	RF-38 End Drain	Entire end drain to be removed including pipes, inlet, well, aprons, etc. Earthwork required for backfilling embankment where the end drain is removed shall be incidental to this removal bid item.

SHOULDERS

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

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

Location					Quantities																			
Road Identification	(1) Direction Of Traffic	Station to Station		Side	(P) Width	(P_{SG}) Width	(G) Width	(L) Length	Class 13 (4) Excavation	Hot Mix Asphalt		Binder	Paved Shoulder	Paved Shoulder at Guardrail	Reinforced Paved Shoulder	Special Backfill				Subbase	Granular Shoulder		Earth Shoulder Construction Alternates			Remarks
																HMA Alternate		PCC Alternate					STA (3)	HMA	PCC	
					FT	(2)	FT	FT	CY (3)	TON	TON/STA	TONS	SY (3)	SY (5)	SY (3)	TON (3)	TON/STA	TON (3)	TON/STA	CY (3)	TON (3)	TON/STA		CY (6)	CY (6)	
Stage 1																										
Temp pavement	WB	220+85.00	223+51.00	LT	3.0		See Note 1	266.0	49.3	43.391	16.313	2.603	89.0			27.930	10.500	32.585	12.250		23.275	8.750				
Temp pavement	WB	231+15.00	233+25.00	LT	3.0		See Note 1	210.0	38.9	34.256	16.313	2.055	70.0			22.050	10.500	25.725	12.250		18.375	8.750				
Guardrail	WB	223+51.00	224+43.00	LT		11.4 to 9.6		92.0	44.6	52.526	57.094	3.152		107.0		33.810	36.750	39.445	42.875				0.9			
Guardrail	WB	229+67.00	231+15.00	LT		9.6 to 11.4		148.0	69.6	84.499	57.094	5.070		166.9		54.390	36.750	63.455	42.875				1.5			
Stage 2																										
Temp pavement	EB	220+85.00	222+95.00	RT	3.0		See Note 1	210.0	38.9	34.256	16.313	2.055	70.0			22.050	10.500	25.725	12.250		18.375	8.750				
Temp pavement	EB	230+59.00	233+25.00	RT	3.0		See Note 1	266.0	49.3	43.391	16.313	2.603	89.0			27.930	10.500	32.585	12.250		23.275	8.750				
Guardrail	EB	222+95.00	224+43.00	RT		11.4 to 9.6		148.0	69.5	84.499	57.094	5.070		166.9		54.390	36.750	63.455	42.875				1.5			
Guardrail	EB	229+47.00	230+59.00	RT		9.6 to 11.4		112.0	53.5	63.945	57.094	3.837		128.3		49.560	36.750	57.353	42.875				1.1			
																See Note 2										
TOTAL=									**413.4**				**318.0**	**569.1**		**292.110**		**340.328**			**83.300**		**5.0**			

Note 1: Granular shoulder quantity is for replacement of excavated material adjacent to temporary pavement.

Note 2: Special backfill quantity provides additional fill material for RF-38 removal.

107-23
10-18-11

GRADING FOR GUARDRAIL INSTALLATIONS

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

Location				Foreslope at Guardrail	Dimensions (Feet)									Earthwork		Remarks
No.	(1) Direction of Traffic	Station	Side		X1	Y1	X2	Y2	X3	Y3	X4	Y4	Z	Excavation Class 10	Embankment In Place	
														CY	CY	
Stage 1																
	EB	224+73.66	LT		53.1	1.3					100.8	3.1			5.0	
	EB	229+36.34	LT		103.1	1.3					150.8	3.1			20.0	
Stage 2																
	EB	224+73.66	RT		103.1	1.3					150.8	3.1			20.0	
	EB	229+36.34	RT		53.1	1.3					100.8	3.1			5.0	
		Total =													**50.0**	

108-8A
10-16-18

STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION

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

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

Location					Layout Lengths				Long-Span System		Delineators and Object Markers (2)					Bid Items											Remarks
					BA-250, BA-260, LS-630, or LS-635														BA-250 or LS-630					BA-260 or LS-635			
No.	(1) Direction of Traffic	Side O = Outside M = Median	Station	Offset	VT1	VF	VT2	ET			SI-211	Delineator SI-172	Object Marker SI-173			Bolted End Anchor		Post Adapter	Steel Beam Guardrail	Barrier Transition Section	End Terminal				Barrier Transition Section	End Terminal	
												Type 1	Type 2	Type 3							Tangent	Flared	Tangent	Flared		Tangent	
									BA-211			White	OM2-2	OM3-L	OM3-R	BA-202		BA-210	BA-200	BA-201	BA-205	BA-206	LS-625	LS-626	BA-221	BA-225	
				FT	LF	LF	LF	LF	STATION	TYPE	TYPE	EACH	EACH	EACH	EACH	TYPE	EACH	EACH	LF	EACH	EACH	EACH	EACH	EACH	EACH	EACH	
Stage 1																											
1	EB	LT	224+73.66	20.0	53.125			47.7			3			1		C	1		12.5	1	1						
2	EB	LT	229+36.34	20.0	103.125			47.7			3				1	C	1		62.5	1	1						
Stage 2																											
3	EB	RT	224+73.66	20.0	103.125			47.7			3				1	C	1		62.5	1	1						
4	EB	RT	229+36.34	20.0	53.125			47.7			3			1		C	1		12.5	1	1						
			Total =														**4**		**150.0**	**4**	**4**						

PAVEMENT MARKING LINE TYPES

See PM-110

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

ELW4: Edge Line Right (White) @ 0.67
ELW6: Edge Line Right (White) @ 1.00
BCY4: Broken Centerline (Yellow) @ 0.17
BCY6: Broken Centerline (Yellow) @ 0.25
NPY6: No Passing Zone Line (Yellow) @ 1.25
SLW2: Stop Line (White) @ 4.00
CHW8: Channelizing Line (White) @ 1.33

Location								Length by Line Type (Unfactored)														Remarks
Road ID	Station to Station		Dir. of Travel	Marking Type	Side			ELW4	BCY4*	NPY6	SLW2	CHW8	ELW6	BCY6								
					L	C	R	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	STA	
Stage 1																						
IA 22	206+35.00	221+35.00	EB	PAVEMENT MARKINGS REMOVED		X			15.00													
IA 22	232+75.00	247+75.00	EB	PAVEMENT MARKINGS REMOVED		X			15.00													
IA 22	206+35.00	221+35.00	EB	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED		X				15.00												
IA 22	232+75.00	247+75.00	EB	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED		X				15.00												
Stage 2																						
IA 22	221+35.00	232+75.00	EB	PAVEMENT MARKINGS REMOVED	X	X	X	22.80	11.40													
IA 22	221+35.00	232+75.00	EB	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS		X	X						22.80									
Stage 3																						
IA 22	221+35.00	232+75.00	EB	INCIDENTAL REMOVAL OF TAPE MARKINGS		X	X						22.80									
IA 22	221+35.00	232+75.00	EB	WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS	X	X							22.80									
Final																						
IA 22	221+35.00	232+75.00	EB	INCIDENTAL REMOVAL OF TAPE MARKINGS	X	X							22.80									
IA 22	206+35.00	221+35.00	EB	PAVEMENT MARKINGS REMOVED		X				15.00												
IA 22	232+75.00	247+75.00	EB	PAVEMENT MARKINGS REMOVED		X				15.00												
IA 22	206+35.00	224+03.00	EB	GROOVES CUT FOR PAVEMENT MARKINGS	X	X	X						35.36	17.68								
IA 22	230+07.00	247+75.00	EB	GROOVES CUT FOR PAVEMENT MARKINGS	X	X	X						35.36	17.68								
IA 22	206+35.00	247+75.00	EB	PAINTED PAVEMENT MARKING, MULTI-COMPONENT LIQUID	X	X	X						82.80	41.40								
				Factored Total: PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED				-	-	37.50	-	-	-	-	-	-	-	-	-	-	-	-	
				Factored Total: PAINTED PAVEMENT MARKING, MULTI-COMPONENT LIQUID				-	-	-	-	-	82.80	10.35	-	-	-	-	-	-	-	-	
				Factored Total: INCIDENTAL REMOVAL OF TAPE MARKINGS				-	-	-	-	-	45.60	-	-	-	-	-	-	-	-	-	
				Factored Total: WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS				-	-	-	-	-	45.60	-	-	-	-	-	-	-	-	-	
				Factored Total: PAVEMENT MARKINGS REMOVED				15.28	7.04	37.50	-	-	-	-	-	-	-	-	-	-	-	-	
				Factored Total: GROOVES CUT FOR PAVEMENT MARKINGS				-	-	-	-	-	70.72	8.84	-	-	-	-	-	-	-	-	
				Bid Quantity: 2527-9263209 - PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED							37.50											
				Bid Quantity: 2527-9263216 - PAINTED PAVEMENT MARKING, MULTI-COMPONENT LIQUID							93.15											
				Bid Quantity: 2527-9263231 - WET RETROREFLECTIVE REMOVABLE TAPE MARKINGS							45.60											
				Bid Quantity: 2527-9263181 - PAVEMENT MARKINGS REMOVED							59.81											
				Bid Quantity: 2527-9270112 - GROOVES CUT FOR PAVEMENT MARKINGS							79.56											

SURVEY SYMBOLS

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

UTILITY LEGEND

Sub-Surface Utility Mapping Quality Level is in accordance with CI/ASCE 38-02 Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data.

Remark Abbreviations
QLA Quality Level A Highest guideline quality level
QLD Quality Level D Lowest guideline quality level

Not Marked	Windstream Enterprise
Not Marked	Eastern Iowa Light & Power
Not Marked	Sharon Telephone Company
Not Marked	Mediacom Iowa City
Not Marked	Windstream Communications

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.		
Green	(2)	Existing Topographic Features and Labels	
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation	
Magenta	(5)	Existing Utilities	
SHADING	**Design Color No.**		**Transparency**
Pink, Dark	(13)	Temporary Pavement Shading	50%
Yellow	(4)	Proposed Pavement Shading	50%
Orange	(6)	Proposed Granular Shading	50%
Orange	(70)	Proposed Shoulder Granular Shading	50%
Yellow	(68)	Proposed Shoulder Paved Full Depth Shading	50%
Yellow	(132)	Proposed Shoulder Paved Partial Depth Shading	50%
Brown, Light	(236)	Grading Shading	50%
Orange, Light	(134)	Proposed Granular Entrance Shading	50%
Yellow	(220)	Proposed Paved Entrance Shading	50%
Tan	(8)	Proposed Sidewalk Shading	50%
Blue, Light	(230)	Proposed Sidewalk Landing Shading	50%
Pink	(11)	Proposed Sidewalk Ramp Shading	50%
Red	(3)	Proposed Structure Shading	50%
Red	(3)	Delineates Restricted Areas	0%

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

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

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

RIGHT-OF-WAY LEGEND

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

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

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

FILE NO.	ENGLISH	DESIGN TEAM TAP\ENM-CAD	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46--77-52	SHEET NUMBER D.1

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Iowa River

Iowa TWP.
T-77 R-6W
Sec. No. 2

Fremont TWP.
T-77 R-6W
Sec. No. 2

Station: 227+05.00 (ML022)
Skew 45°0'0" LT AH
441.0'x40.0' Pretensioned
Prestressed Conc Beam Bridge
Stage 2: Remove Existing Expansion Joint EB
Stage 2: Replace New Strip Seal Joints EB
Stage 3: Remove Existing Expansion Joint WB
Stage 3: Replace New Strip Seal Joints WB

220+00

225+00

230+00

Sta. 220+85.00 (ML022)
Begin WB Shoulder Construction

Sta. 224+43.00 (ML022)
Stop WB Shoulder Construction

STA 229+67.00 (ML022)
Resume WB Shoulder Construction

Sta. 233+25.00 (ML022)
End WB Shoulder Construction

22

22

UAC

Sta. 224+43.00 (ML022)
Stop EB Shoulder Construction

Sta. 229+47.00 (ML022)
Resume EB Shoulder Construction

Sta. 220+85.00 (ML022)
Begin EB Shoulder Construction

Stage 2: Remove
Sta: 229+54.80 RT (ML022)
RE-38
12" C.M.P
12" Apron
Stage 2: Install
Sta: 229+72.00 RT (ML022)
DR-402

Sta. 233+25.00 (ML022)
End EB Shoulder Construction

Iowa TWP.
T-77 R-6W
Sec. No. 11

Fremont TWP.
T-77 R-6W
Sec. No. 11

Johnson County
Washington County

Iowa River

Existing Pavement
& Alignment Shown
For Information Only

0 50
FEET

IA 22

FILE NO.	ENGLISH	DESIGN TEAM TAP\ENM-CAD	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46--77-52	SHEET NUMBER D.2	

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108-23A
08-01-08

TRAFFIC CONTROL PLAN

IA 22 traffic will be maintained with one lane two way traffic operations on the bridge, which will require two stages of construction. Traffic control will involve TC-202, TC-213, TC-217.

111-01
04-17-12

COORDINATED OPERATIONS

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

Project	Type of Work
None provided.	

108-26A
08-01-08

STAGING NOTES

Stage 1:
Traffic:
Both directions of traffic shall operate in EB lane through the use of flaggers.

Construction:
Remove and replace WB guardrail.
Pave the WB shoulders in front of the guardrail from Sta. 223+51.00-224+43.00 and 229+67.00-231+15.00
Place temporary pavement on outside WB lane from Sta. 220+85.00-223+51.00 and Sta. 231+15.00-233+25.00

Stage 2:
Traffic:
Both directions of traffic shall operate on existing WB lane and previously constructed shoulders using traffic signals.

Construction:
Remove RE 38, 12" CMP and Apron Sta. 229+54.80 RT
Remove and replace EB guardrail.
Install DR-402 Rock flume at southeast corner Sta 229+72.00, Offset 20.00 RT
Pave the EB shoulders in front of the guardrail from Sta. 222+95.00-224+43.00 and 229+47.00-230+59.00
Place temporary pavement on outside EB lane from Sta. 220+85.00-230+59.00-231+15.00 and Sta. 230+59.00-233.25.00
Remove EB existing expansion joints and replace with new strip seal joints.

Stage 3:
Traffic:
Both directions of traffic shall operate on existing EB lane and previously constructed shoulders using traffic signals.

Construction:
Remove existing WB sliding plate joint and replace with new strip seal joints.
Remove WB existing expansion joints and replace with new strip seal joints.

Stage Final:
Traffic:
IA 22 traffic in normal lanes.

Construction:
Construction complete.

108-25
10-21-14

511 TRAVEL RESTRICTIONS

Route	Direction	County	Location Description	Feature Crossed	Object Type	Maint. Bridge No., Structure ID, or FHWA No.	Type of Restriction	Existing Measurement	Construction Measurement	Construction Measurement as Signed	Projected As Built Measurement	Remarks
			None provided.									

LEGEND

- Single White Delineator
- Channelizing Device
- Drum
- Traffic Signal
- Traffic Sign
- Type III Barricade
- Direction of Traffic
- Safety Closure
- Vehicle Detection Area
- Temporary Crash Cushion
- Work Area

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

Iowa River

Iowa TWP.
T-77 R-6W
Sec. No. 2

Fremont TWP.
T-77 R-6W
Sec. No. 2

Station: 227+05.00 (ML022)
Skew 45°0'0" LT AH
441.0'x40.0' Pretensioned
Prestressed Conc Beam Bridge
Stage 2: Remove Existing Expansion Joint EB
Stage 2: Replace New Strip Seal Joints EB

220+00

225+00

230+00

Advanced Signing
Per TC-217

STOP HERE ON RED

R10-6
24" x 36"

STA: 232+05.00

STA: 232+75.00

22

22

Advanced Signing
Per TC-217

STOP HERE ON RED

R10-6
24" x 36"

STA: 221+35.00

STA: 222+05.00

UAC

STA: 222+75.00

STA: 223+75.00

Stage 2: Remove
Sta: 229+54.80 RT (ML022)
RE-38
12" C.M.P
12" Apron
Stage 2: Install
Sta: 229+72.00 RT (ML022)
DR-402

STA: 230+35.00

STA: 231+35.00

Iowa TWP.
T-77 R-6W
Sec. No. 11

Fremont TWP.
T-77 R-6W
Sec. No. 11

Johnson County
Washington County

Iowa River

Existing Pavement
& Alignment Shown
For Information Only

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Existing Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned
SHADING	**Design Color No.**	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Blue, Light	(230)	Proposed Pavement Shading
Pink, Dark	(13)	Temporary Pavement Shading

0 50
FEET

Stage 2
IA 22

FILE NO.	ENGLISH	DESIGN TEAM TAP\ENM-CAD	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46--77-52	SHEET NUMBER J.2

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LEGEND

- Single White Delineator
- Channelizing Device
- Drum
- Traffic Signal
- Traffic Sign
- Type III Barricade
- Direction of Traffic
- Safety Closure
- Vehicle Detection Area
- Temporary Crash Cushion
- Work Area

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

Iowa River

Iowa TWP.
T-77 R-6W
Sec. No. 2

Fremont TWP.
T-77 R-6W
Sec. No. 2

Station: 227+05.00 (ML022)
Skew 45°0'0" LT AH
441.0'x40.0' Pretensioned
Prestressed Conc Beam Bridge
Stage 3: Remove Existing Expansion Joint WB
Stage 3: Replace New Strip Seal Joints WB

220+00

225+00

230+00

STA: 222+75.00

STA: 223+75.00

STA: 230+15.00

STA: 231+35.00

STA: 232+05.00

Advanced Signing
Per TC-217

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

STA: 232+75.00

22

22

Advanced Signing
Per TC-217

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

UAC

STA: 221+35.00

STA: 222+05.00

Iowa TWP.
T-77 R-6W
Sec. No. 11

Fremont TWP.
T-77 R-6W
Sec. No. 11

Johnson County
Washington County

Iowa River

Existing Pavement
& Alignment Shown
For Information Only

0 50
FEET

Stage 3
IA 22

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Existing Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned
SHADING	**Design Color No.**	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Blue, Light	(230)	Proposed Pavement Shading
Pink, Dark	(13)	Temporary Pavement Shading

FILE NO.	ENGLISH	DESIGN TEAM TAP\ENM-CAD	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46--77-52	SHEET NUMBER J.3

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Iowa River

Iowa TWP.
T-77 R-6W
Sec. No. 2

Fremont TWP.
T-77 R-6W
Sec. No. 2

220+00

225+00

230+00

ELW6

ELW6

22

22

UAC

ELW6

BCY6

BCY6

ELW6

Iowa TWP.
T-77 R-6W
Sec. No. 11

Fremont TWP.
T-77 R-6W
Sec. No. 11

Johnson County
Washington County

Iowa River

Existing Pavement
& Alignment Shown
For Information Only

0 50
FEET

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Existing Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned
SHADING	**Design Color No.**	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Blue, Light	(230)	Proposed Pavement Shading
Pink, Dark	(13)	Temporary Pavement Shading

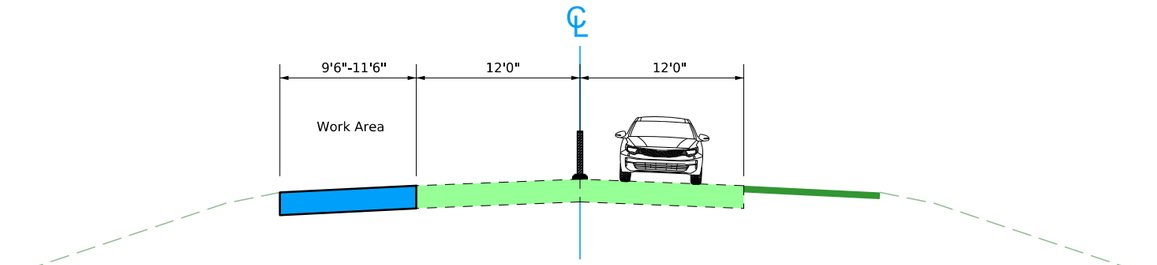
Pavement Marking IA 22

FILE NO.	ENGLISH	DESIGN TEAM TAP\ENM-CAD	JOHNSON COUNTY	PROJECT NUMBER MB-022-5(500)46--77-52	SHEET NUMBER J.4

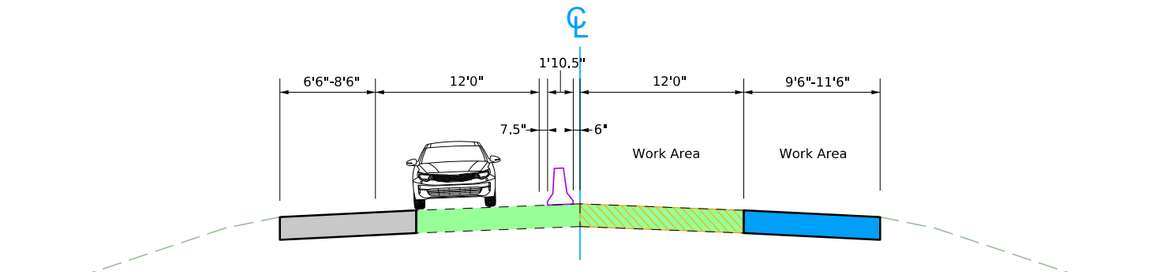
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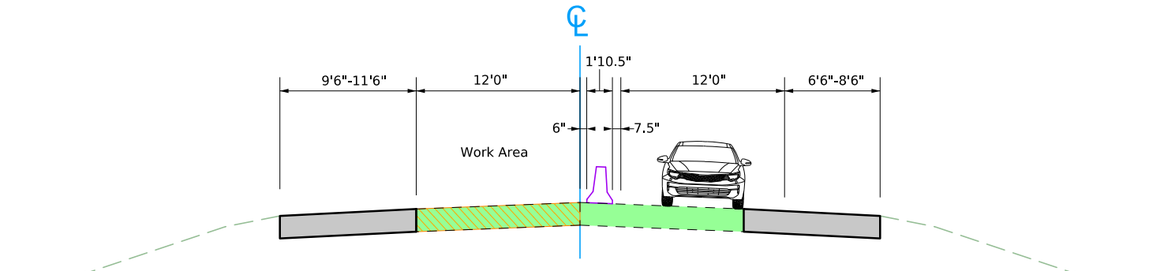
Stage 1



Stage 2



Stage 3



PLAN VIEW COLOR LEGEND OF STAGING SHEETS		
SHADING	**Design Color No.**	
Green, Light	(225)	Existing Pavement Shading
Green, Dark	(233)	Existing Granular Shoulder Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Blue, Light	(230)	Proposed Pavement Shading
Pink, Dark	(13)	Temporary Pavement Shading

IA 22

ESTIMATED PROJECT QUANTITIES AND REFERENCE NOTES

Roadside :

Item no.	Item Code	Item	Unit	Quantities	Estimate Reference Notes
				Estimated	
				Roadside	
1	2503-0500402	BRIDGE END DRAIN, DR-402	EACH	1	Refer to Tab. 104-8A for details. Drain installation shall be performed after completion of RF-38 removal and guardrail work.
2	2602-0000020	SILT FENCE	LF	825	Refer to Tab. 100-17 for details. The tabulation includes estimated locations for placement of "Silt Fence" to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements.
3	2602-0000071	REMOVAL OF SILT FENCE OR SILT FENCE FOR DITCH CHECKS	LF	825	This item is included for silt fence removal required for removal to allow for replacement (replacement to be paid separately) or for areas that have achieved 70% permanent growth. Remove silt fence and posts after mulching or vegetation is established and approved by the engineer.
4	2602-0000101	MAINTENANCE OF SILT FENCE OR SILT FENCE FOR DITCH CHECK	LF	82.5	This item is included for clean-out and repair of the silt fence and silt fence for ditch checks during the project. Bid at 10% of total silt fence quantity.
5	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.	LF	830	Refer to Tab. 100-19 for details. The tabulation includes estimated locations for placement of "Perimeter and Slope Sediment Control Device, 12 in. dia." to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements.
6	2602-0000320	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 20 IN. DIA.	LF	830	Refer to Tab. 100-19 for details. The tabulation includes estimated locations for placement of "Perimeter and Slope Sediment Control Device, 20 in. dia." to address erosion to be encountered during construction. Verify the specific locations with the Engineer prior to beginning placement. Bid item includes 25% additional quantity for field adjustments and replacements.
7	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE	LF	1,660	Contractor will remove sediment control devices once 70% growth is achieved or as otherwise instructed by the Engineer.

105-4
10-18-11

STANDARD ROAD PLANS

Number	Date	Title
DR-402	04-16-24	Rock Flume for Bridge End Drain
EC-201	04-20-21	Silt Fence
EC-204	10-19-21	Perimeter, Slope and Ditch Check Sediment Control Devices
EC-502	04-21-15	Seeding in Rural Areas

104-8A
04-19-22

SCOUR PROTECTION OR ROCK FLUME FOR BRIDGE END DRAIN

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

Location			Bid Items	Scour Protection (DR-401)			Rock Flume (DR-402)			Remarks
Bridge Station	Bridge Corner	Distance DI-1 or DI-2	Bridge End Drain	Special Ditch Control, Wood Excelsior Mat	Turf Reinforced Mat (TRM), Type 2	Transition Mat	Macadam Stone Base	Engineering Fabric	Erosion Stone	
				EC-101	EC-104	EC-105				
		FT	TYPE	SQ	SQ	SF	TONS	SY	TONS	
227+05.00	SE	45.0	DR-402				1.463	53.4	31.950	
Total=			**1**				**1.463**	**53.4**	**31.950**	

100-19
10-19-21

PERIMETER, SLOPE AND DITCH CHECK SEDIMENT CONTROL DEVICES

Possible Standards: EC-204

Location			Perimeter and Slope Length of Installation			Ditch Check Length of Installation		Remarks
Begin Station	End Station	Side	9 inch Dia	12 inch Dia	20 inch Dia	12 inch Dia	20 inch Dia	
			LF	LF	LF	LF	LF	
223+32.00	224+62.00	LT		130	130.0			Place near foreslope break
229+46.00	231+36.00	LT		190	190.0			Place mid-foreslope
222+74.00	224+64.00	RT		190	190.0			Place near foreslope break
229+28.00	230+78.00	RT		150	150.0			Place mid-foreslope
	Tab Total=			660	660.0			
	Bid Total (x25%)=			**830**	**830.0**			
					1660			

100-17
04-20-10

TABULATION OF SILT FENCES

Refer to EC-201

Location			Length	Remarks
Begin Station	End Station	Side	LF	
223+31.00	224+63.00	LT	132.0	For Foreslope tie
229+47.00	231+35.00	LT	188.0	For Foreslope tie
222+75.00	224+63.00	RT	188.0	For Foreslope tie
229+27.00	230+79.00	RT	152.0	For Foreslope tie
	Tab Total=		660.0	
	Bid Total (x25%)=		**825.0**	
	Maintenance (10% total)=		**82.5**	

232-3A
10-19-21

EROSION CONTROL (RURAL SEEDING)

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

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

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

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

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

232-3C
10-19-21

EROSION CONTROL (NATIVE GRASS SEEDING)

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

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

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

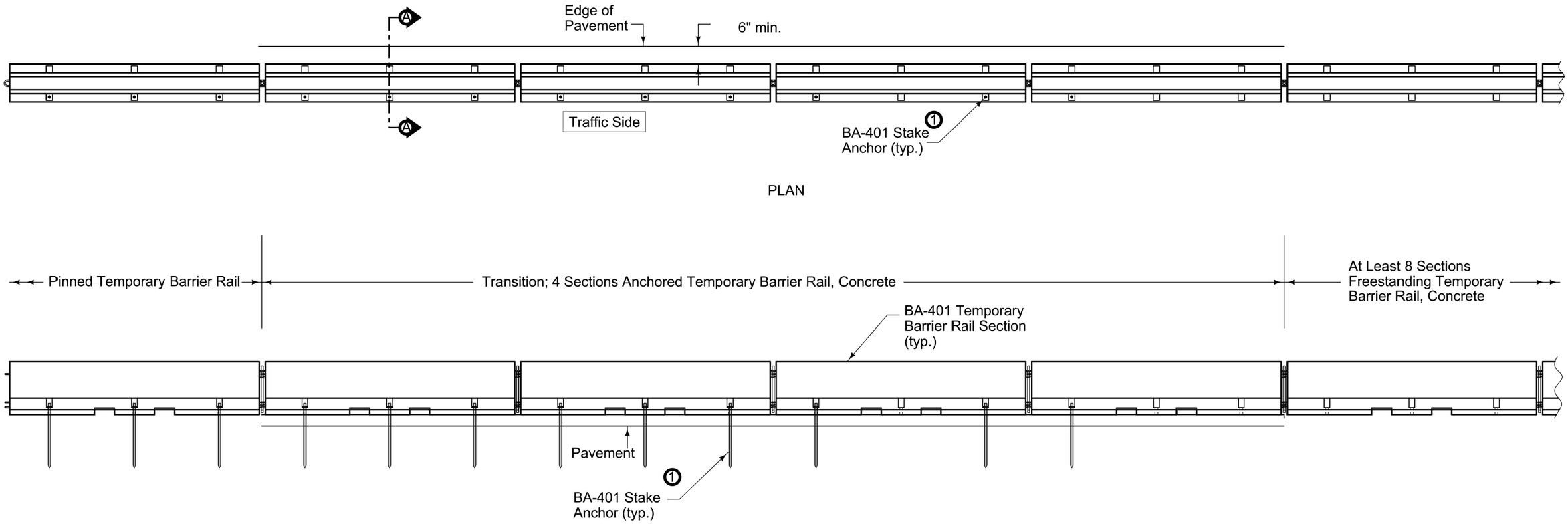
Furnish Big bluestem, Indiangrass, Canada wildrye and Little bluestem that is debearded or equal to facilitate the application of seed.

Furnish seed certified as Source Identified Class (Yellow Tag) Source G0-Iowa. Oats are excluded from this requirement.

Place seed according to the requirements of Article 4169.02 of the Standard Specifications.

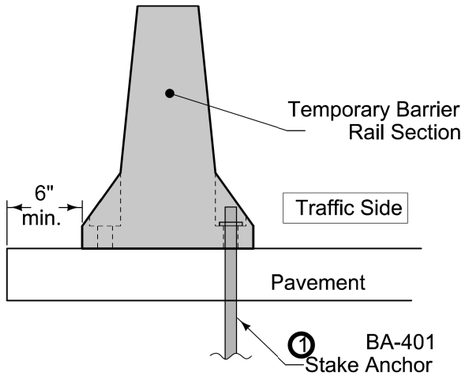
Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.

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



PLAN

ELEVATION



SECTION A-A

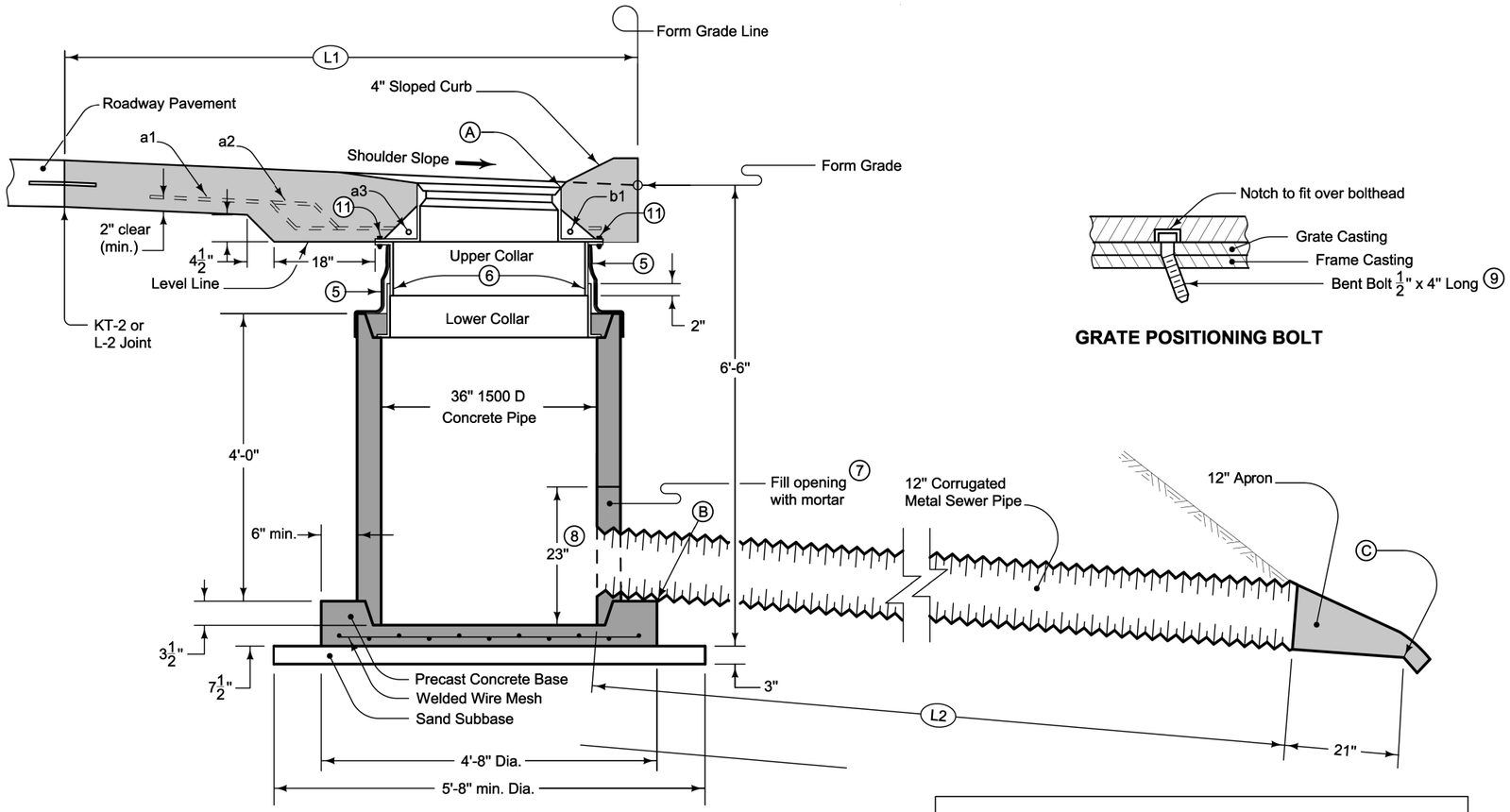
Install temporary barrier rail on a flat, level surface. Where anchored TBR sections are not located on existing pavement, construct a 2 inch minimum thickness HMA pad.

1 Each transition requires nine (9) BA-401 stake anchors as shown. Use of the strap anchorage is not allowed in transition. When transition is placed on Composite or PCC Pavement pre-drill holes for stakes with 1⅝ inch core bit.

Transition from Pinned TBR to Unpinned TBR

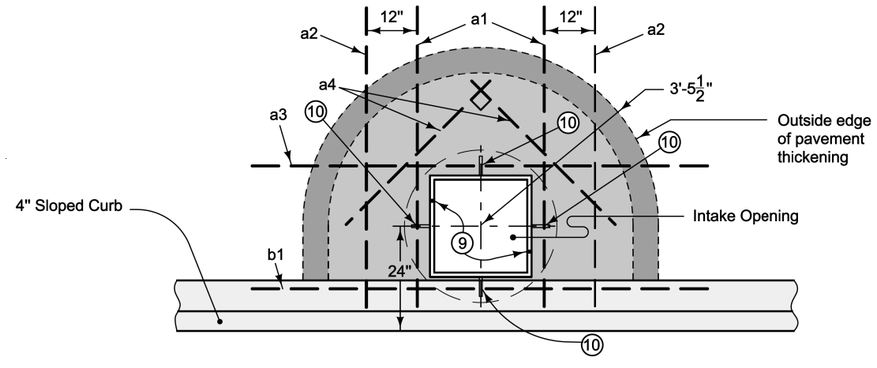
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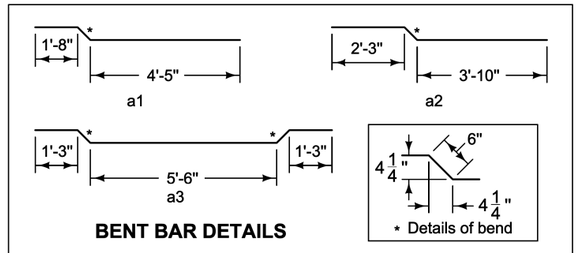
SECTION B-B THROUGH INTAKE

GRATE POSITIONING BOLT



REINFORCING LAYOUT

Note: Place bars a1, a3, & b1 through holes in intake casting.



BENT BAR DETAILS

All dimensions are out to out. All bends may be made in the field.

REINFORCING BAR LIST						
MARK	SIZE	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
a1 (10)	4	Shoulder		2	6'-7"	9
a2	4	Shoulder		2	6'-7"	9
a3 (10)	4	Shoulder		1	9'-0"	6
a4	4	Shoulder		2	4'-0"	5
b1 (10)	4	Curb		1	8'-9"	6
					Total	35 lbs.

Construct precast base using 4 in. x 4 in. No. 6 steel wire mesh reinforcing or equivalent.

Install all joints in corrugated metal pipe made with connecting bands with approved asphaltic sealer to ensure a water-tight joint.

Flow line (A) elevation is 0.10 feet below Form Grade Elevation.

Flow line (B) elevation is 5.75 feet below flow line (A).

Flow line (C) elevation is 0 - 0.5 feet above ditch grade.

Refer to project plans for actual flow line elevations of (A), (B), (C), and dimensions L1 and L2.

(5) Before backfilling around the intake assembly, wrap two thicknesses of engineering fabric around the settlement collar. Tape all the way around with 2 inch duct tape immediately below the flange of upper section and 4 inches below the top of well pipe.

(6) Fasten Slip joint temporarily with four ½ inch cap screws during pavement construction. Remove cap screws after pavement is hardened.

(7) Refer to Materials I.M. 491.13.

(8) 23 in. x 15 in. slot for insertion of 12 inch corrugated metal pipe.

(9) Field place ½ in. x 4 in. long bolt in upstream side and bend underside to prevent removal.

(10) Place reinforcing through the appropriate holes in the intake casting.

(11) Fasten frame casting to Upper Collar casting at four locations using ½ in. x 2 in. long hex bolts and ½ inch nuts.

Iowa Department of Transportation

STANDARD ROAD PLAN

REVISION	
11	04-20-10

RF-38

SHEET 2 of 5

REVISIONS: Added possible tabulation. Updated materials reference in circle note 7. Changed reference by bolt pattern on sheet 1. Added grate and collar info.

Deanna Maifield
APPROVED BY DESIGN METHODS ENGINEER

INTAKE FOR BRIDGE END DRAIN