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PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM DES MOINES COUNTY

Bridge Deck Overlay

Gear Avenue over US 34
1.6 mi W of US 61 in West Burlington

Refer to the Plan Sheets for list of applicable specifications.

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



Standard Road Plans

Standard Road Plans are listed on Sheet C.4

Design Data Urban	
2023 AADT	9,700 V.P.D.
TRUCKS	3 %

Index of Seals		
Sheet No.	Name	Type
A.1	Matthew J. Cramer	Structural Design
A.3	Donald Demers	Roadway Design

Revisions

	TOTAL
	40
PROJECT IDENTIFICATION NUMBER	
23-29-034-040	
PROJECT NUMBER	
BRFN-034-9(251)--39-29	
R.O.W. NUMBER	
CONTRACT ID NUMBER	
PROJECT DIRECTORY NUMBER	
2903404023	

English Bridge Standards		
Standard	Issued	Revised

Structural Design

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

Signature

Matthew J. Cramer

10-30-2025

Date

Printed or Typed Name

Matthew J. Cramer

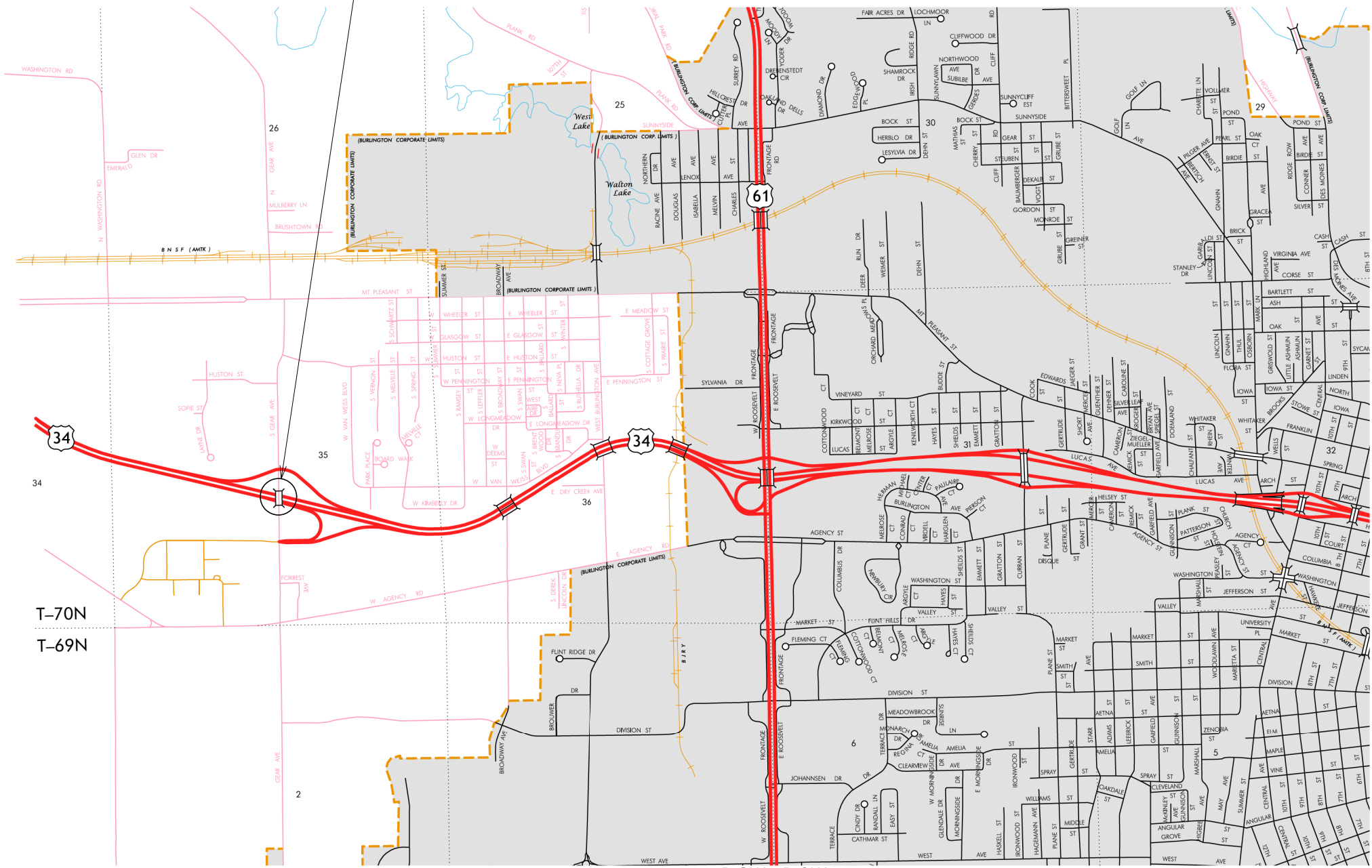
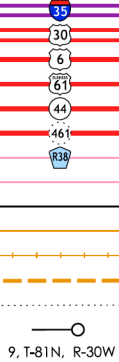
My license renewal date is December 31, 2026

Pages or sheets covered by this seal: A.1, A.2, V.1 - V.9

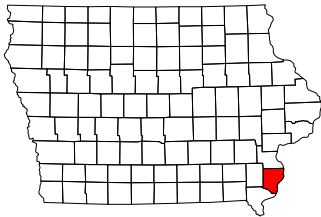
Design No. 128
FHWA No. 023658

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



R-3W R-2W
Location Map
Not To Scale



ESTIMATED BRIDGE QUANTITIES					
ITEM	ITEM CODE	ITEM	UNIT	TOTAL	NOTES
1	2401-6745636	REMOVAL OF EXISTING HANDRAIL AND END POSTS	LS	1	
2	2401-6750001	REMOVALS, AS PER PLAN	LS	1	Includes all work for removal and off-site disposal of existing slope protection. 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. Contractor to add the following information when submitting the Iowa DNR "Notification of Bridge Demolition and Renovation" form: Name of Asbestos Inspector: Brad Azeltine Date Inspected: March 11, 2024 IA License Number: IA DOT Inspector Phone: 515-239-1938 Procedure used to detect the presence of asbestos materials: Polarized Light Microscopy (PLM)
3	2413-0698074	DECK REPAIR, CLASS A	SY	315	
4	2413-0698075	DECK REPAIR, CLASS B	SY	5	
5	2414-6431100	RETROFIT CONCRETE BARRIER RAILING	LF	277.4	Includes 21.1 cu yd of Class C or Class BR structural concrete and 3059 lbs of Grade 60 epoxy coated reinforcing steel. If placement of concrete is done by the slipforming method, Class BR concrete is required. Cast-in-place barrier rails shall use Class C mix. Price bid for this item shall include the cost of cast-in-place forms if required for placement of the concrete.
6	2426-6772016	CONCRETE REPAIR	SF	135	Includes miscellaneous curb, wing walls, and end posts as noted in plans.
7	2499-0800000	PAVING NOTCH REPLACEMENT	LF	130	Includes 9.1 cu yd of structural concrete Class C, 2080 lbs of epoxy-coated reinforcing steel, excavation, removing and disposing of the existing paving notch and concrete removed to form the shear keyways, drilling holes for dowel bars, and polymer grout material.
8	2507-2638620	MACADAM STONE SLOPE PROTECTION	SY	677	Includes furnishing and placing engineering fabric, macadam stone, 4" x 6" treated timbers, 1/2" diameter steel pins (or rebars), porous backfill or granular subbase backfill at front face of abutment footing, and all required excavating, shaping and compacting.
9	2510-6745640	REMOVAL OF EXISTING P.C. OVERLAY	SY	1572	
10	2533-4980005	MOBILIZATION	LS	1	
11	2536-6745045	REMOVAL OF ASBESTOS	LS	1	Includes approximately 280 square feet of lighter gray tar sealant on the joints of the concrete slope protection.
		ALTERNATE AA OPTION 1			
12	2413-0698066	DECK OVERLAY (CLASS O PCC)	SY	1572	
		ALTERNATE AA OPTION 2			
13	2403-1000010	TRIAL BATCH AND TEST PLACEMENT (FIBER REINFORCED CONCRETE)	LS	1	Refer to Developmental Specification for Fiber Reinforcement for Structural Concrete.
14	2413-0698067	DECK OVERLAY (CLASS HPC-O PCC)	SY	1572	
15	2413-1000005	FIBER REINFORCEMENT FOR CONCRETE REPAIR/OVERLAY	SY	1572	Refer to Developmental Specification for Fiber Reinforcement for Structural Concrete.

Roadway Quantities shown elsewhere in these plans.

Design For Repair to 14°08'30" (LA) Skew

249'-6" x 56'-0" Pretensioned
Prestressed Concrete Beam Bridge

35'-9" & 40'-9" End Spans86'-6" Interior Spans

Summary Quantities Sheet

STA. 120+00.00 (GEAR AVE)Turn-In Date: November, 2025

Des Moines County

IOWA DEPARTMENT OF TRANSPORTATION

Design No. 128Design Sheet No. 1 of 9FHWA No. 023658

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.

Developmental Specification for Fiber Reinforcement for Structural Concrete.

Design Stresses:

Design stresses for the following materials are in accordance with the AASHTO LRFD Bridge Design Specifications for Highway Bridges, series of 2002.
Reinforcing steel in accordance with section 8, grade 60.
Concrete in accordance with section 8, f'c = 4.0 ksi.

General Notes:

This design is for staged repairs to the existing 249'-6" x 56'-0" pretensioned prestressed concrete beam bridge on Gear Avenue over US 34 in West Burlington.

See design sheet 3 for list of repairs.

Electronic copies of original design plans are available to the Contractor as part of the e-files supplied with the contract documents. Dimensions shown on these plans are based on design plans (original design no. 975).

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.

Ready mix trucks are not allowed on the prepared portion of the bridge deck.

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 I & II as detailed on these plans may be reversed at the Contractor's option subject to the Engineer's approval.

The city and utility companies whose facilities are shown on the plans or known to be within the construction limits shall be notified by the bridge Contractor of the construction starting date.

Faint lines on plans indicate existing portions of the bridge.

The lump sum bid for "Removals, as per Plan" shall include all costs associated with removal of the existing concrete slope protection. Removal of scheduled items shall be in accordance with section 2401 of the specifications. Any damage to any steel or concrete not to be removed shall be the responsibility of the Contractor and repaired at no extra cost to the state.

The bridge Contractor shall dress up the slopes around the wings which are disturbed during construction. This work shall be considered incidental and no extra payment will be made.

No preliminary deck survey is shown. The plan quantity for "Class A Bridge Deck Repair" is estimated as 20 percent of the total deck area. The actual quantity is determined by the Engineer after the P.C.C. Overlay has been removed. Actual spalled and hollow areas as determined by the Engineer shall be repaired.

Present deck thickness is about 8½ inches. The Contractor shall exercise care in removing concrete in order to prevent unnecessary unbonding of reinforcing steel.

The bridge deck is covered with a 2 inch thick Portland Cement Concrete Overlay. The Contractor shall note the redefining of the classification line (boundary between repair and overlay) for this project due to the existing 2 inch overlay. The classification line will be defined as 2¼ inches below the top of existing overlay. This will necessitate the removal of the existing bridge deck overlay before placing the proposed new bridge deck overlay.

The bridge deck may have been epoxy-injected. The contractor shall remove all exposed epoxy. Removal of epoxy is incidental to "Removal of Existing P.C.C. Overlay" and "Deck Repair, Class A" as appropriate.

All costs associated with the removal of the existing overlay shall be included in the bid item "Removal of Existing P.C.C. Overlay". Removal of existing overlay shall be computed in square yards from the measurement of areas removed. The Contractor will be paid the contract price per square yard for furnishing all equipment and labor necessary to remove the concrete to within ¼ inch above the classification line. All costs, including furnishing equipment and labor, associated with removal of the next ¼ inch of concrete (to the classification line) shall be included in the bid item "Deck Overlay".

Upon completion of the removal of concrete down to the classification line, the Engineer shall determine the areas of bridge deck to be repaired as "Deck Repair, Class A". Actual hollow areas, as determined by the Engineer, shall be repaired.

The top and interior faces of the existing concrete railing are to be cleaned and sealed in accordance with article 2403.03,P, of the standard specifications. If new sections of rail are constructed, the new sections shall not be sealed. All costs associated with cleaning and sealing of the concrete rails shall be included in the unit price bid item "Deck Overlay".

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

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.

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

These bridge plans label all reinforcing steel with english notation (5a1 is 5⁄8 inch diameter bar). English reinforcing steel received 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

Areas of curb indicated on the "Situation Plan" or designated by the Engineer are to be repaired using concrete repair notes and details included in these plans.

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

Laboratory analysis has identified asbestos at this site. Asbestos shall be removed prior to bridge demolition operations. Removal, transport, and disposal shall be in accordance with Section 2536, of the Standard Specifications.

Required DNR information includes:
Year Constructed - 1976
Asbestos Location - Lighter gray tar sealant on the joints of the concrete slope protection pad
FHWA Number (Existing) - Information provided elsewhere in plan
Road/Route (City) - Information provided elsewhere in plan
County - Information provided elsewhere in plan
Direction to Bridge - Information provided elsewhere in plan
Bridge Size - Information provided elsewhere in plan
Number of Decks - 1 (Typ.)
Asbestos Inspector/Amounts - Brad Azeltine/Approx. 280 SQ. FT.

Design History at this Site

(Includes this Design)

Des. No.	Type of Work
975	Original Design
101	Guide Sign Attachment
--	East Barrier, Sidewalk and Fence Replacement
128	Bridge Repair and Deck Overlay

Traffic Control Plan

The roadway will be open to thru traffic. Refer to the Traffic Control Plan and J Sheets.

Design For Repair to 14°08'30" (LA) Skew

249'-6" x 56'-0" Pretensioned Prestressed Concrete Beam Bridge

35'-9" & 40'-9" End Spans86'-6" Interior Spans

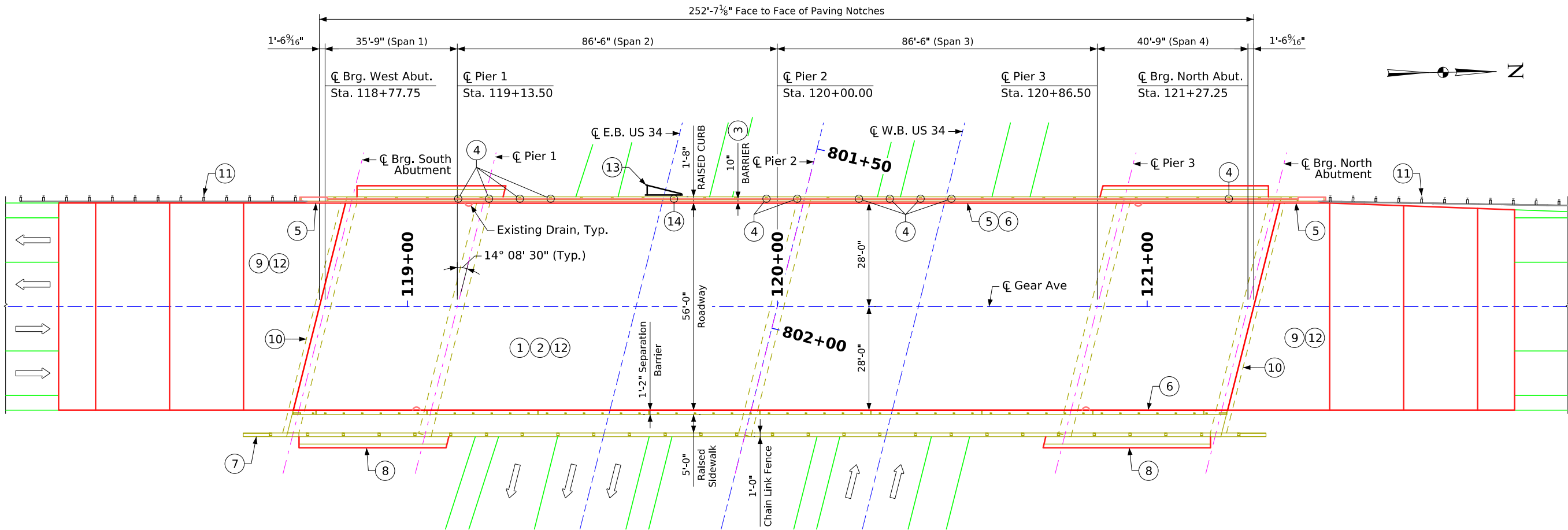
General Notes

STA. 120+00.00 (GEAR AVE)Turn-In Date: November, 2025

Des Moines County

IOWA DEPARTMENT OF TRANSPORTATION

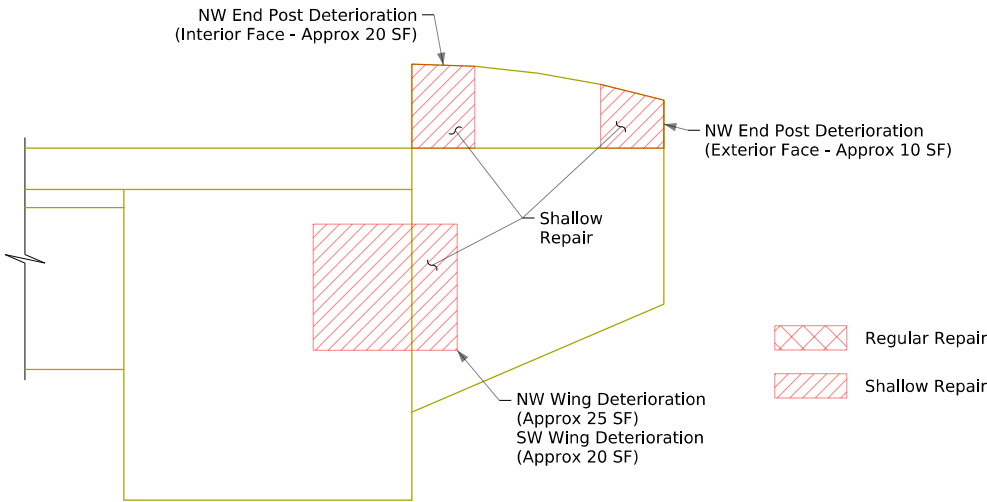
Design No.128Design Sheet No. 2 of 9FHWA No. 023658



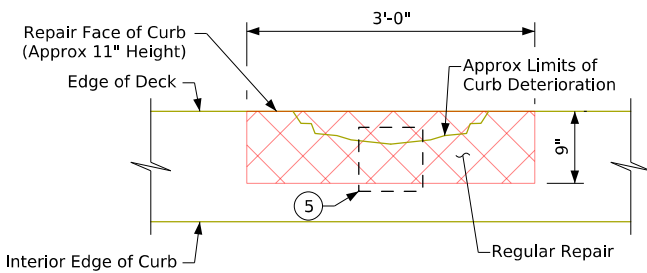
Situation Plan

Repairs shall consist of:

- 1 Remove and replace existing P.C.C. Overlay.
- 2 Bridge deck repair, Class A and Class B.
- 3 Construct new retrofit barrier rail and SW and NW end sections. See note 13.
- 4 Repair top and exterior face of west curb at existing rail post. See note 13.
- 5 Remove and reinstall existing aluminum handrail and concrete endposts including handrail posts and base plates (west side only).
- 6 Clean and seal existing barriers and curb faces.
- 7 Repair concrete at wings (Typ. all locations). Protect conduit at SW and NW wings.
- 8 Remove the Concrete Slope Protection at both Abutments and Replace with Macadam Stone Slope Protection. Existing sealant contains asbestos.
- 9 Remove and replace approach paving. See Roadway Plans. "BE" joint installation is by others.
- 10 Remove and replace paving notches (both abutments).
- 11 Remove and replace existing guardrail (Southwest and Northwest Wings). See Roadway Plans.
- 12 Construct longitudinal grooving in bridge and approach pavement. See Roadway Plans.
- 13 Note bridge mounted signage is connected to both the curb and the exterior beams. This signage may need to be temporarily disconnected and/or protected for concrete repairs.
- 14 Repair top and interior face of west curb at existing rail post. See note 13.



Wing and End Post Repair
NE Wing Shown, Others Similar



West Curb Repair
Exterior Repair Shown, Interior Repair Similar (Looking East)

Note:
Field locate repairs with Engineer based on current condition. Do not scale dimensions on this drawing.

Repair areas shown are approximate. Actual repairs shall be determined by the Engineer at the time of construction.

See design sheet 6 for concrete repair details and quantities.

Traffic Estimate

2022 AADT	9,700 V.P.D.
TRUCKS	3 %

Location

Gear Avenue over US 34
In City of West Burlington
T-70N R-03W
Section 35
Flint River Township
Des Moines County
FHWA No. 023658
Bridge Maint. No. 2959.60034
Latitude 40.816923°
Longitude -91.170084°

Design For Repair to 14°08'30" (LA) Skew

**249'-6" x 56'-0" Pretensioned
Prestressed Concrete Beam Bridge**

35'-9" & 40'-9" End Spans 86'-6" Interior Spans

Situation Plan

STA. 120+00.00 (GEAR AVE) Turn-In Date: November, 2025

Des Moines County

IOWA DEPARTMENT OF TRANSPORTATION

Design No.128 Design Sheet No. 3 of 9 FHWA No. 023658

* Construction joint for notch repair to extend a minimum of 3 inches past construction joint for pavement. Provide 2'-5" minimum lap for reinforcement.

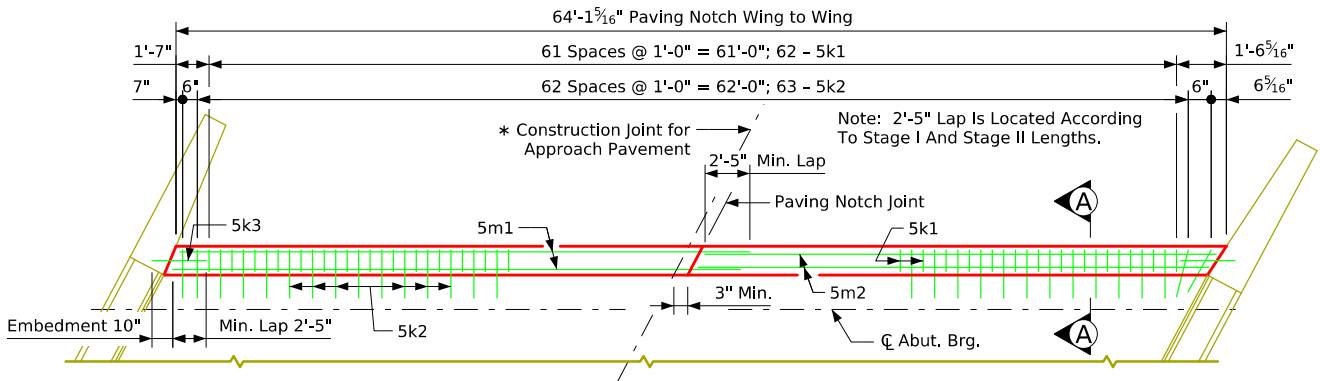
Paving Notch Replacement Notes:

The Paving Notch Replacement is to be Class "C" structural concrete. Minimum clear distance from face of concrete to near reinforcing bar is to be 2", unless otherwise noted or shown. The bid item "Paving Notch Replacement" linear feet, shall include all costs of labor and materials associated with excavation, removing, and disposing of the existing paving notch, granular backfill and compaction as needed, and installing the new paving notch. This work shall include, cutting of the existing #4 bars, removing the concrete for the shear keyways, drilling the holes for the deformed dowels, and constructing the new notch to the dimensions shown. The new notch is estimated at 0.07 cubic yards per foot of structural concrete and 16.0 pounds of epoxy coated reinforcing steel per foot. Removals shall be in accordance with Section 2401, of the Standard Specifications. These bridge plans label all reinforcing steel with English notation (5a1 is 5/8 inch diameter bar). English reinforcing steel received 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

Dowel Setting Note:

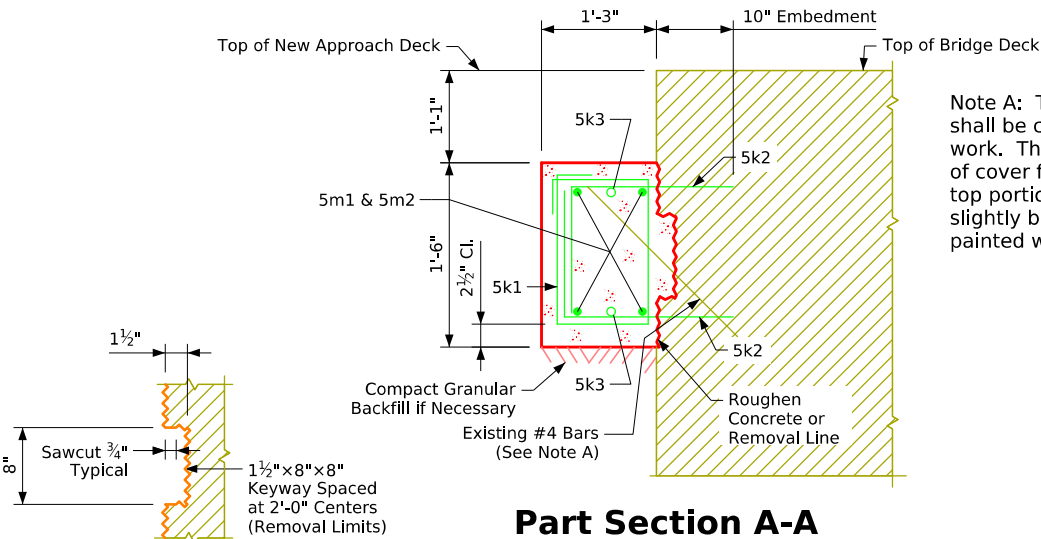
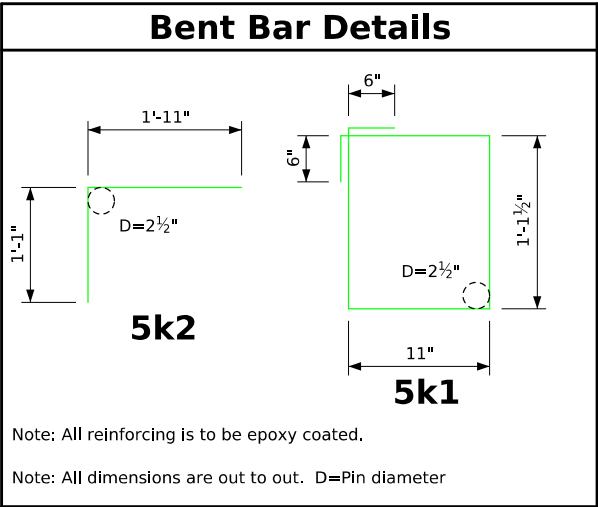
The deformed 5k2 & 5k3 bars shall be set as dowels in drilled holes. Holes are to be 10" deep. Polymer grout system shall be used to install the deformed dowel bars in accordance with Article 2301.03,E, of the Standard Specifications and the Grout Manufacturer's recommendations.



Part Plan View At Abutment
South Abutment Shown, North Abutment Similar

Note: 5k3 bars shall be set as dowels embedding 10 inches minimum into the existing bridge wingwalls and extending a minimum of 2'-5" into the new paving notch replacement.

Note: New Paving Notch Replacement should extend from bridge wingwall to bridge wingwall.



Note A: The bottom portion of the existing #4 bars shall be carefully exposed and incorporated into new work. The bar shall be cut off to provide 2 inches of cover from the top of the new paving notch. The top portion of the bar shall be cut off flush or slightly below the concrete surface and the ends painted with 2 coats of zinc rich paint.

1 1/2"x8" Keyway Detail

Note: Dowels shall be placed to miss any existing reinforcing steel exposed during removals.

Part Section A-A

Design For Repair to 14°08'30" (LA) Skew

249'-6" x 56'-0" Prestensioned
Prestressed Concrete Beam Bridge

35'-9" & 40'-9" End Spans86'-6" Interior Spans

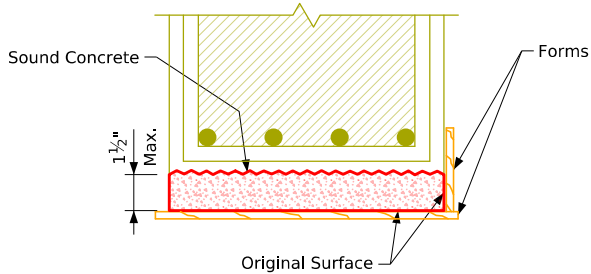
Abutment Paving Notch Replacement

STA. 120+00.00 (GEAR AVE)Turn-in Date: November, 2025

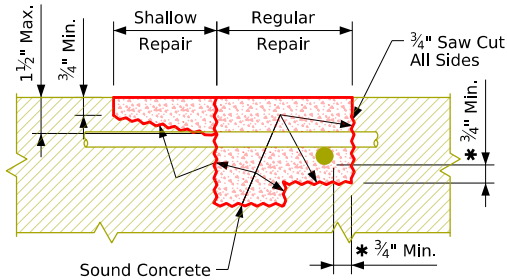
Des Moines County

IOWA DEPARTMENT OF TRANSPORTATION

Design No.128Design Sheet No. 5 of 9FHWA No. 023658

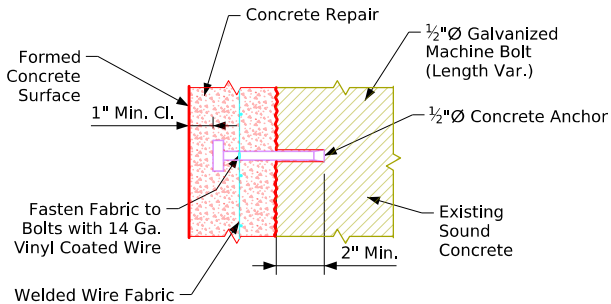


Shallow Repair
Bottom Surface



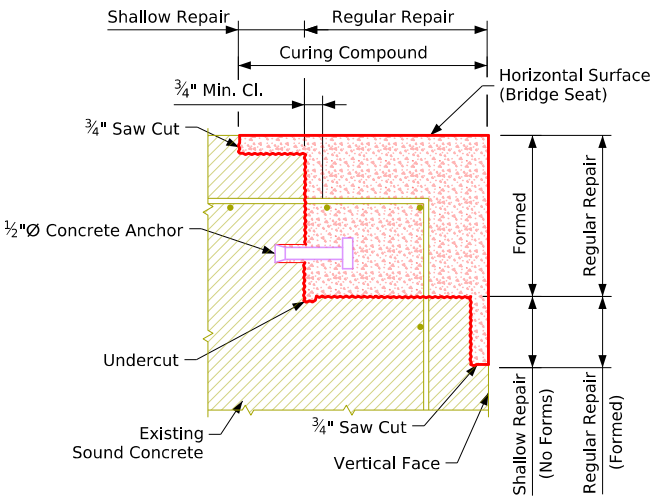
Repair Definition

* Indicates Clearance for an Un-Bonded Rebar.

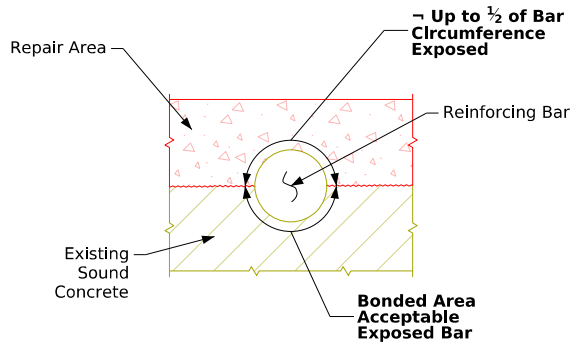


Anchor Detail

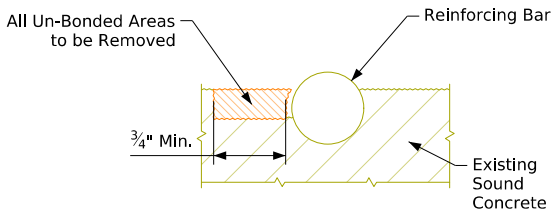
For Spacing and Use of Concrete Anchors and WWF See the Repair Notes.



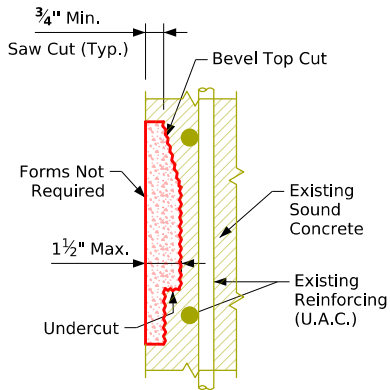
Corner Repair



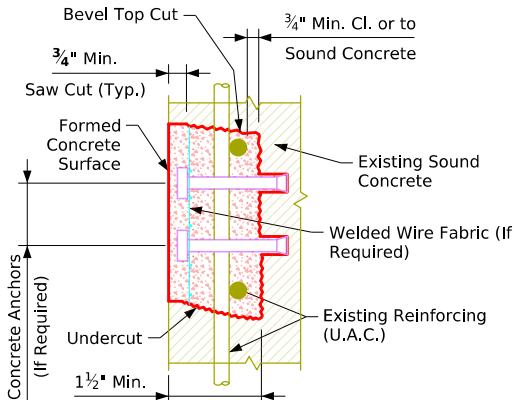
~ If more than 1/2 of the rebar is exposed it shall be treated as an un-bonded rebar.



Concrete Removal
Adjacent to Reinforcing



Shallow Repair
Vertical Face



Regular Repair
Vertical Face

Repair Notes:

- The spalled and hollow areas of this bridge as noted and shown in these plans shall be repaired as follows:
- All the costs of equipment and materials required to repair the spalled and hollow areas of this bridge shall be included in the price bid for "Concrete Repair".
 - The price bid for "Concrete Repair" shall include the cost of all concrete anchors and welded wire fabric required by the plans.
 - The Engineer shall determine and outline by visual and audible inspection the actual areas of the concrete repairs. The Contractor shall be paid for the actual amount of repairs made on a square foot basis based on the price bid per square foot.
 - All existing reinforcing bars that are exposed by the concrete removal shall be cleaned and carefully incorporated into the new work, except badly deteriorated existing reinforcing which shall be replaced as directed by the Engineer.
 - The concrete anchors required shall have a minimum pull out of 5,000 lbs based on 4,000 psi concrete. An anchor meeting the requirements of Iowa D.O.T. Materials I.M. 453.09 and the pull out load above is required. The anchors shall be galvanized and shall be installed according to recommendations of the Manufacturer. The cost of furnishing and installing the concrete anchors shall be included in the price bid for "Concrete Repair".
 - The welded wire fabric shall be ASTM A185 and galvanized as per ASTM A-641. The WWF wires shall be spaced 3x3 or 4x4 and the wires shall have a nominal area of 0.014 to 0.029 sq in inclusive, example "WWF 3x3 - W1.4xW2.9".
- Where reinforcement has been exposed and clearance around the periphery of the existing bar is provided, no supplemental reinforcing is required, except where existing reinforcement density and pattern are such that individual open spaces between bars are of 1.5 sq ft or larger. For this condition 1/2"Ø concrete anchors and welded wire fabric shall be installed at the rate of one concrete anchor with WWF per each 1.5 sq ft of area within each open space.
- Repairing the structural concrete shall be in accordance with Section 2426, of the Standard Specifications.

Concrete Placement Quantities

Mark	Type	Units	Quantity
①	Shallow repair	Sq. Ft.	75
②	Regular repair	Sq. Ft.	60
		Total (Sq. Ft.)	135

Estimated Concrete Repair Quantities

Description	Units	Amount
Concrete Repair	Sq. Ft.	135

Design For Repair to 14°08'30" (LA) Skew

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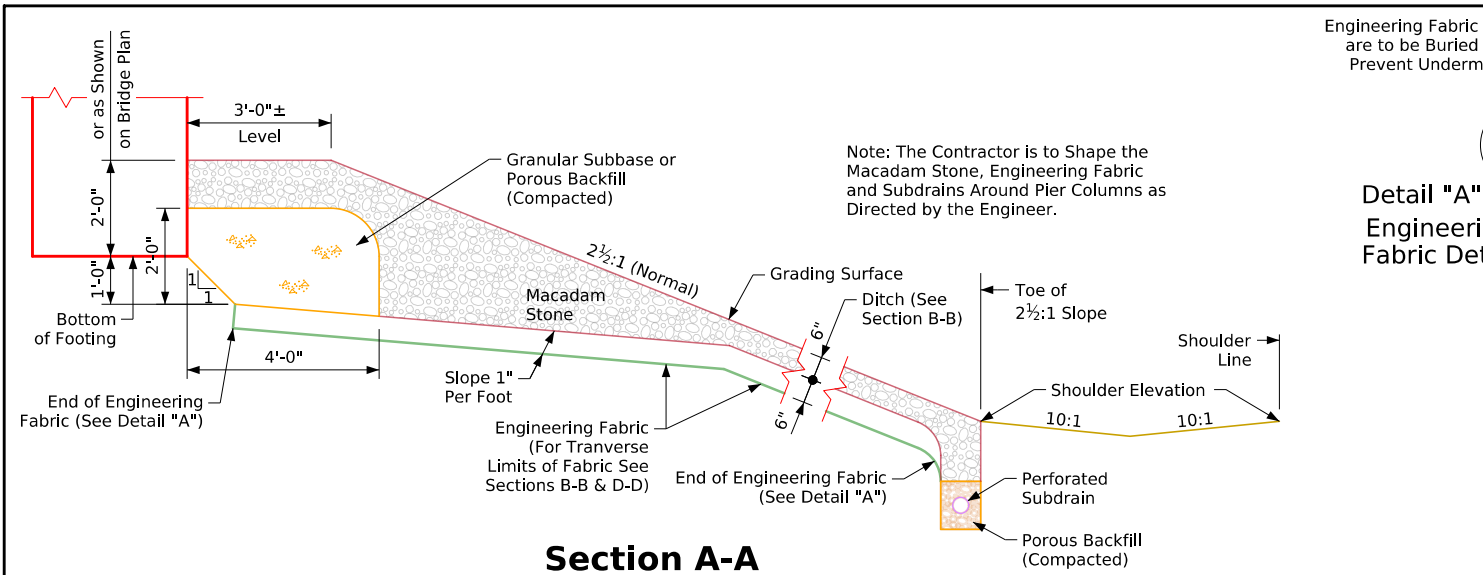
Misc Concrete Repairs

STA. 120+00.00 (GEAR AVE)Turn-in Date: November, 2025

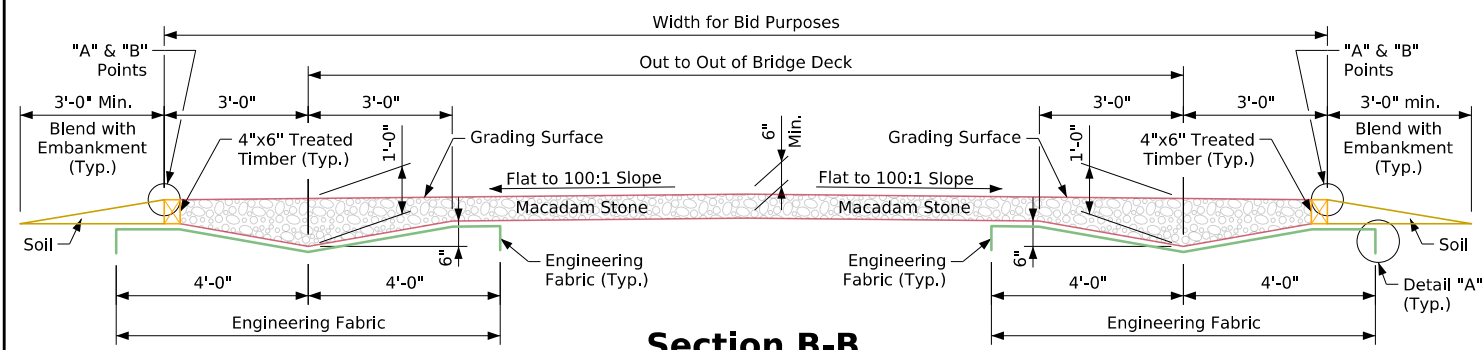
Des Moines County

IOWA DEPARTMENT OF TRANSPORTATION

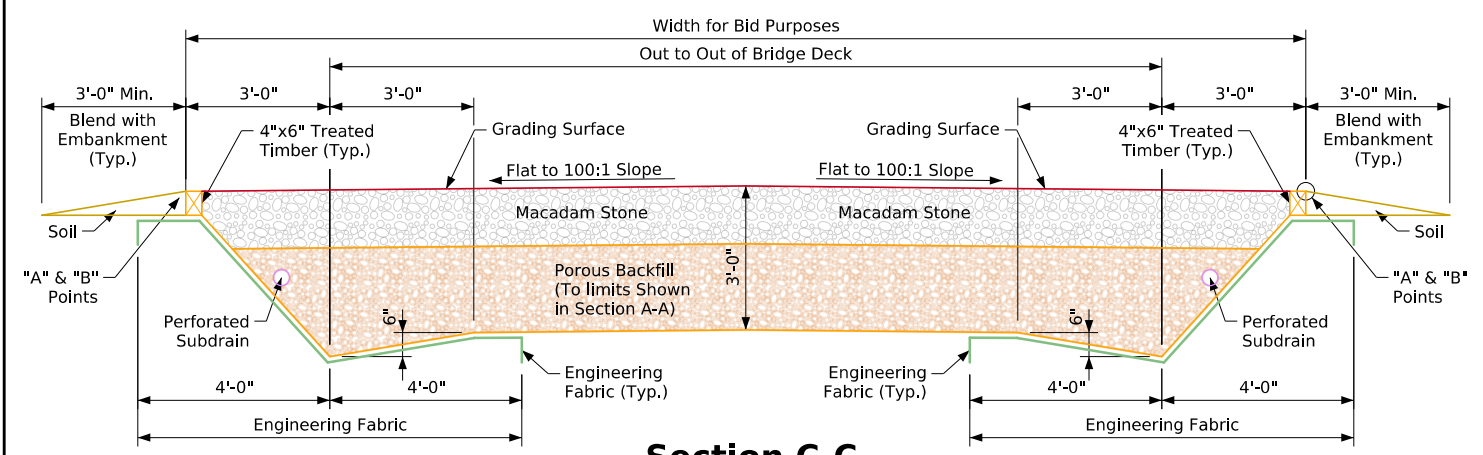
Design No.128Design Sheet No. 6 of 9FHWA No. 023658



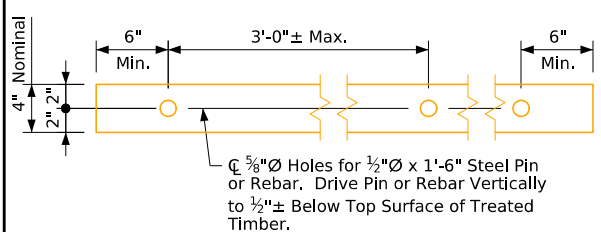
Section A-A



Section B-B

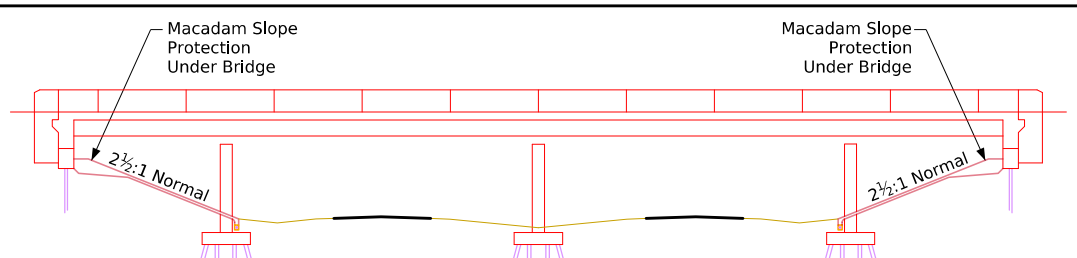


Section C-C

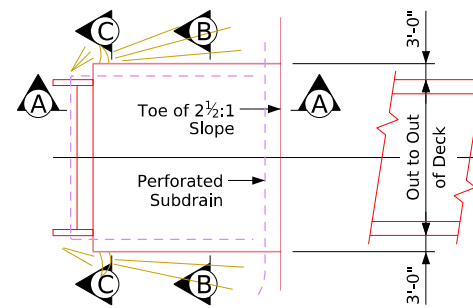


4"x6" Treated Timber Edging Details

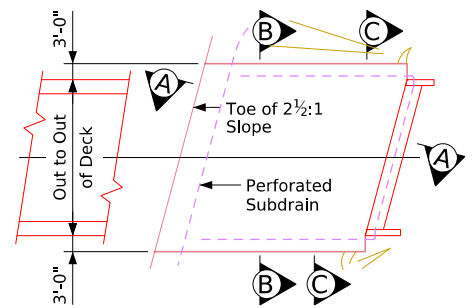
Detail "A"
Engineering Fabric Detail



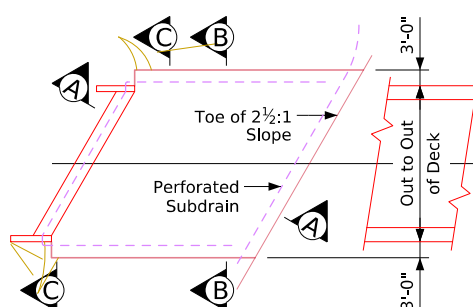
Longitudinal Section Along C Roadway



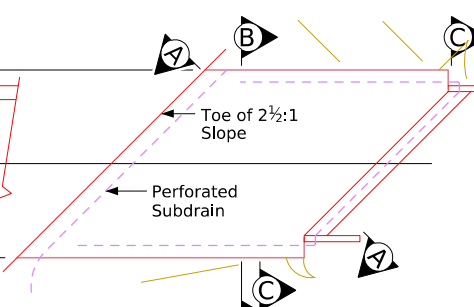
Slope Protection Layout 0° Skew



Slope Protection Layout 15° Skew



Slope Protection Layout 30° Skew



Slope Protection Layout 45° Skew

General Notes:

This plan sheet shows details for placing a macadam stone slope protection under overhead structures.

The bridge berm foreslope shall be compacted and shaped as shown on this sheet. Shaping will include excavation from the grading surface shown on the situation plan and as directed by the Engineer. The berm foreslope shall be firm when the engineering fabric and macadam stone are placed.

The engineering fabric shall be in accordance with Article 4196.01, B, 3, of the Standard Specifications. If the engineering fabric is lapped, the laps shall be a minimum of 1 ft in length, shingle fashion with up slope lap piece on top and stapled for continuity.

The macadam stone shall be in accordance with Section 4122, of the Standard Specifications, coarse material (no choke stone is allowed).

Wood preservative treatment for the timber edging shall meet the requirements for guardrail posts, sawed four sides, in accordance with Section 4161, of the Standard Specifications.

The macadam stone shall be deposited, spread, consolidated and shaped by mechanical or hand methods that will provide uniform depth and density and provide uniform surface appearance.

Payment for bid item "Macadam Stone Slope Protection" will be made on a square yard basis for slope protection constructed. The unit price bid per square yard shall include all costs for material and labor required to construct the slope protection shown on these plans.

The berm foreslope shaping and compacting and the disposal of excess soil from shaping or trenching shall be considered incidental to placing the slope protection.

Where erosion control work is completed, the Contractor shall be responsible for any plant materials destroyed adjacent to the slope protection area. The Contractor shall replant, reseed and remulch all disturbed areas, designated by the Engineer, in accordance with Section 2601, of the Standard Specifications, at the Contractor's expense.

The Bridge Contractor is to install subdrains as detailed on the Subdrain Details Sheet on Design Sheet No. ??.

Estimated Quantities

Description	Location	Quantity
Macadam Slope Protection	North Abut.	340.0 Sq. Yds.
Macadam Slope Protection	South Abut.	337.0 Sq. Yds.
Total		677.0 Sq. Yds.

Items to be included in "Macadam Stone Slope Protection":

- Excavating, Shaping and Compacting
- Engineering Fabric
- Macadam Stone
- 4"x6" Treated Timber Edging
- 1/2"Ø Steel Pins (or Rebar)
- Porous Backfill or Granular Subbase Backfill at Front Face Abutment Footing

Design For Repair to 14°08'30" (LA) Skew

249'-6" x 56'-0" Pretensioned Prestressed Concrete Beam Bridge

35'-9" & 40'-9" End Spans 86'-6" Interior Spans

Macadam Stone Slope Protection

STA. 120+00.00 (GEAR AVE) Turn-in Date: November, 2025

Des Moines County

IOWA DEPARTMENT OF TRANSPORTATION

Design No.128 Design Sheet No. 7 of 9 FHWA No. 023658



Section B-B
(Showing 6c1 Placement)



For the details listed below see
Design Sheet No. 9

- Rail Joint Details
- Dowel Setting Note
- Retrofit Barrier Rail Notes

Design For Repair to 14°08'30" (LA) Skew

**249'-6" x 56'-0" Pretensioned
Prestressed Concrete Beam Bridge**

35'-9" & 40'-9" End Spans 86'-6" Interior Spans

Retrofit Barrier Rail Details

STA. 120+00.00 (GEAR AVE) Turn-in Date: November, 2025

Des Moines County

IOWA DEPARTMENT OF TRANSPORTATION

Design No.128 Design Sheet No. 8 of 9 FHWA No. 023658

Dowel Setting Note:

The 6c1 bars shall be set as dowels in drilled holes. Holes are to be 10" deep. The dowels shall be installed in accordance with the manufacturer's recommendations. Either of the following systems may be used as a bonding agent for vertical dowels, but only system "A" may be used for horizontal dowels:

- Polymer grout system shall be in accordance with Article 2301.03,E, of the Standard Specifications.
- Hydraulic cement grout systems. Drilled holes are to be 2½ times the dowel diameter and are to be blown clean with compressed air immediately prior to placing grout. The hydraulic cement grout shall be one of those approved in Materials I.M. 491.13 and shall be used in accordance with the manufacturer's recommendations.

Retrofit Barrier Railing Notes:

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

The permissible construction joints are to be placed between vertical bars at a minimum spacing of 20'. Construction joint contact surfaces are to be coated with an approved bond breaker.

Cost of joint sealer and bond breaker shall be considered incidental to other construction.

The Retrofit Barrier Rail is to be bid on a lineal foot basis measured from end to end of rail. The number of lineal feet of Retrofit Barrier Rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for Retrofit Concrete Barrier Railing shall be full compensation for furnishing all material (including reinf. steel and 1"Ø PVC pipe) plus all of the equipment and labor required to erect the rail in accordance with these plans and current Specifications.

All Retrofit Barrier Rail concrete is to be either Class BR mix or Class C mix.

Class BR concrete shall be used for the Slip-Forming method.

Class C concrete shall be used for the Cast-In-Place method. The price bid for the Cast-In-Place method shall include the formwork.

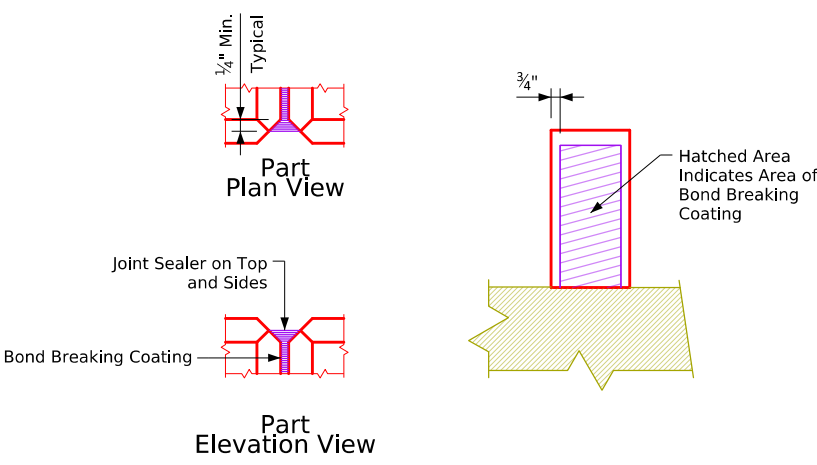
All reinforcing steel is to be Grade 60 and Epoxy Coated.

The joint sealer shall be Light Gray Nonsag Latex Caulking Sealer marketed for outdoor use. No testing or certification is required.

The price bid for "Removal of Existing Handrail and End Posts" shall include all costs associated with dismantling the existing Aluminum Handrail (approx. 262 L.F. and 32 Posts). The rails and posts are to become the property of the Contractor and removed from the site by the Contractor. The bid item shall also include all costs associated with the removal of the existing concrete end posts and the cutting off and painting of the existing rail post anchor bolts if required.

Any removals required 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 repaired by the Contractor at no cost to the State.

Existing bridge rail is not to be removed until authorized by the Engineer.



Retrofit Barrier Rail Joint Details

Design For Repair to 14°08'30" (LA) Skew

249'-6" x 56'-0" Prestensioned
Prestressed Concrete Beam Bridge

35'-9" & 40'-9" End Spans86'-6" Interior Spans

Retrofit Barrier Rail Details

STA. 120+00.00 (GEAR AVE)Turn-in Date: November, 2025

Des Moines County

IOWA DEPARTMENT OF TRANSPORTATION

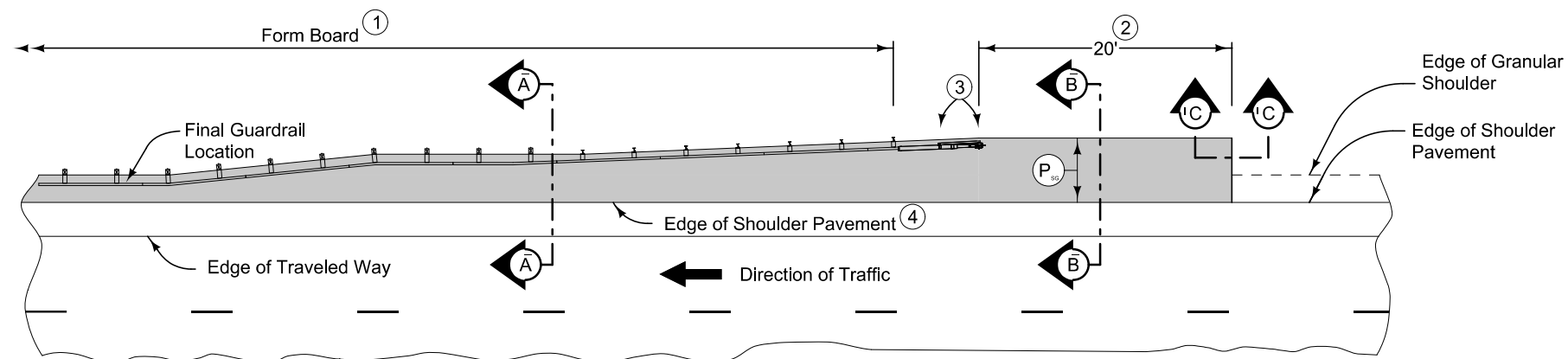
Design No.128Design Sheet No. 9 of 9FHWA No. 023658

FILE NO. 32581	ENGLISH	DESIGN TEAM SRF Consulting Group, Inc. & McClure	DES MOINES COUNTY	PROJECT NUMBER BRFN-034-9(251)--39-29	SHEET NUMBER V.9
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INDEX OF SHEETS	
No.	DESCRIPTION
A Sheets	Title Sheets
A.3	Roadway Title Sheet
B Sheets	Typical Cross Sections and Details
B.1-B.2	Typical Details
C Sheets	Quantities & General Information
C.1	Project Description
C.2	Estimated Project Quantities
C.3	Estimate Reference Information
C.4	Standard Road Plans
C.5	Index of Tabulations
C.6	Bridge Approach Section
C.7	Steel Beam Guardrail at Concrete Barrier or Bridge Rail End Section
C.8	Steel Beam Guardrail for Side Obstacle (One-Way Protection)
C.9	Longitudinal Grooving
C.10	Pavement Marking Line Types
C.11	Pavement Marking Symbols and Legends
C.12	Existing Pavement
C.13	Removal of Pavement
C.14	Removal of Steel Beam Guardrail
C.15	Crash Cushions
C.16	Temporary Barrier Rail
C.17	Tabulation of Silt Fences
C.18	Erosion Control (Urban Seeding)
D Sheets	Mainline Plan and Profile Sheets
D.1	Stage 1 Removals and Construction
D.2	Stage 2 Removals and Construction
J Sheets	Traffic Control and Staging Sheets
J.1	Traffic Control Plan
J.2	Staging Notes
J.3	Coordinated Operations
* J.4-J.5	Modified TC-423
* J.6	Typical Construction Sections

* Color Plan Sheets

ROADWAY DESIGN	
	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.
	<div><div>Donald A Demers</div><div>Signature</div></div> <div><div>11/21/2025</div><div>Date</div></div>
	Donald A. Demers
	Printed or Typed Name
	My license renewal date is December 31, 2026
Pages or sheets covered by this seal: A.3,B.1,B.2,C.1-C.18,D.1,D.2,J.1-J.6	



PLAN VIEW

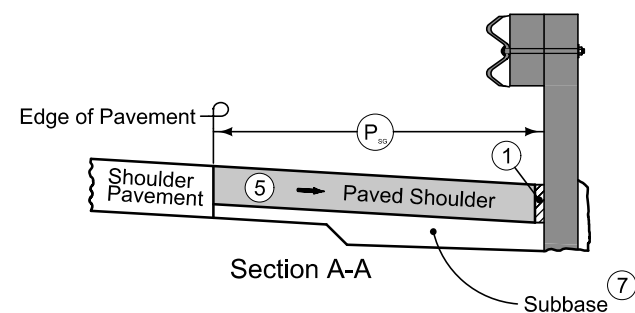
8" PCC may be substituted with the following jointing layout:

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.

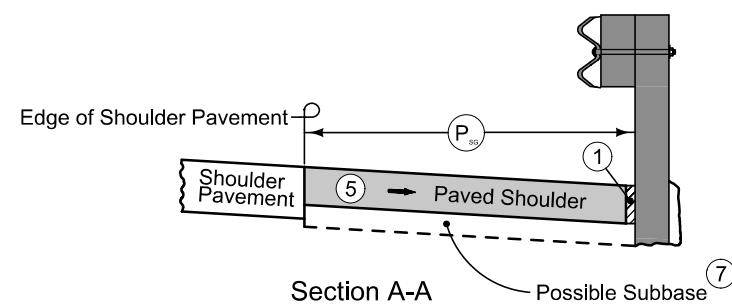
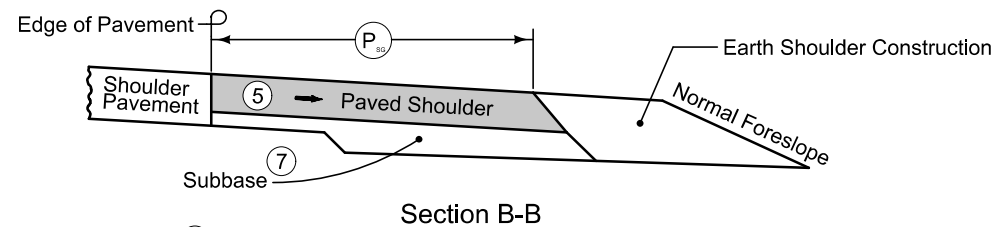
Removal and reinstallation of guardrail will be allowed with no additional payment.

Refer to Tabulation 112-9 for shoulder quantities.

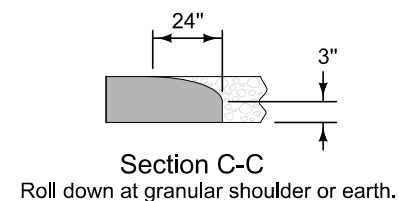
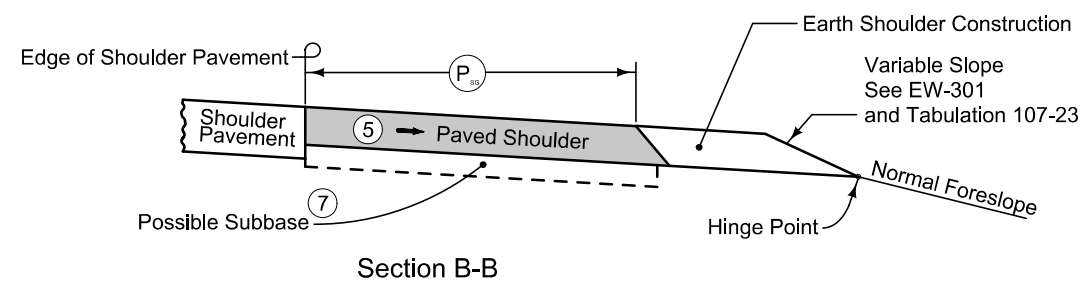
- ① PCC option only: When guardrail posts are installed prior to construction of PCC paved shoulder, fasten form board to the face of guardrail posts for the length shown.
- ② Continue paved shoulder 20 feet beyond the center of the first post.
- ③ Shoulder may be notched for first 2 posts or post sleeves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



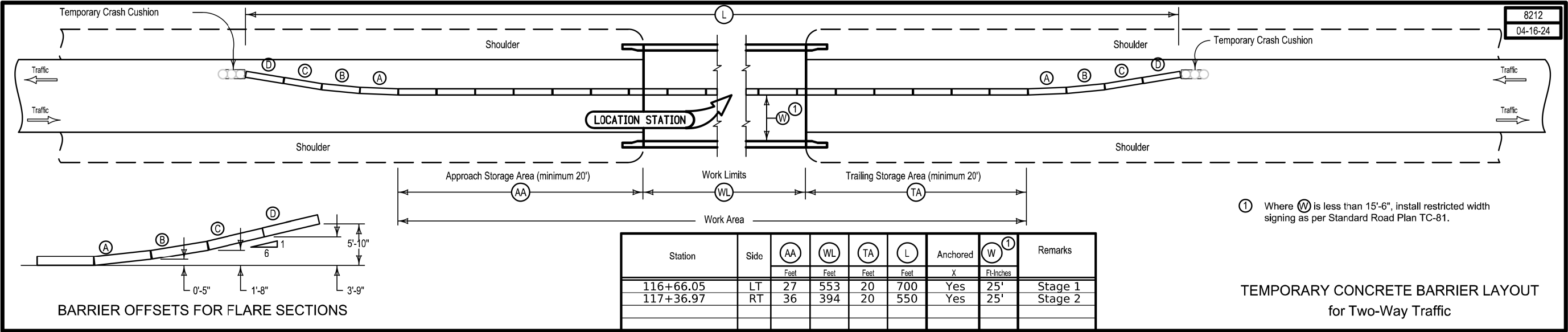
NEW CONSTRUCTION



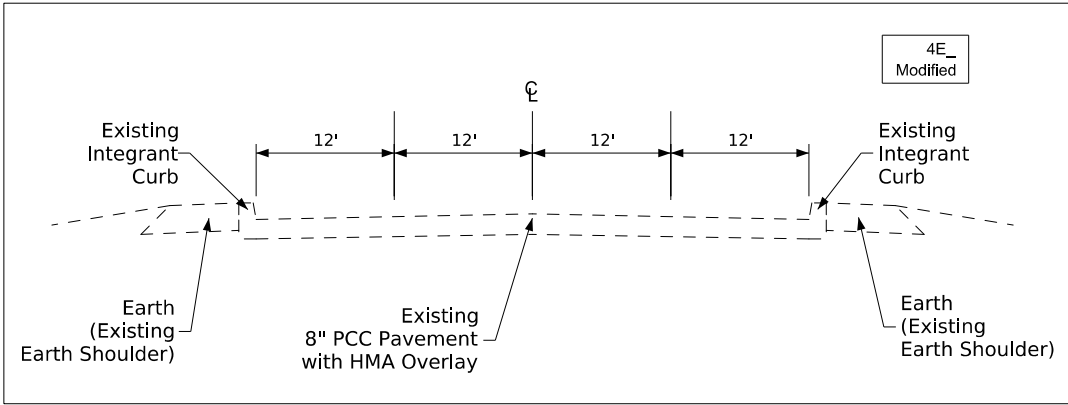
EXISTING SHOULDER

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

DESIGNER INFORMATION



4 LANE EXISTING PAVEMENT



100_01D
8/15/22

PROJECT DESCRIPTION

This project is for partial and full depth deck repairs of the existing Gear Ave bridge over US-34 in West Burlington. Work includes deck overlay, curb repairs, barrier rail and overhang, guardrail, concrete repairs at wings and end posts, slope protection replacement, asbestos removal, paving notches, roadway shoulder strengthening and approach pavement replacement.

The work will be staged to maintain continuous traffic in both directions.

ESTIMATED PROJECT QUANTITIES						100_01A 3/24/25
Item No.	Item Code	Item	Unit	Total	As Built Qty.	
1	2301-0690203	BRIDGE APPROACH, BR-203	SY	824.90		
2	2102-2713090	EXCAVATION, CLASS 13, WASTE	CY	100.00		
3	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK	SY	1572.00		
4	2557-0000100	LONGITUDINAL GROOVING IN CONCRETE, PAVEMENT	SY	784.60		
5	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL	LF	300.40		
6	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201	EACH	2.00		
7	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED	EACH	2.00		
8	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA-205	EACH	14.00		
9	2510-6745850	REMOVAL OF PAVEMENT	SY	871.40		
10	2527-9263209	PAINTED PAVEMENT MARKING, WATERBORNE OR SOLVENT-BASED	STA	52.86		
11	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE	STA	222.68		
12	2527-9263181	PAVEMENT MARKINGS REMOVED	STA	43.00		
13	2527-9263152	PRE-CUT SYMBOLS AND LEGENDS, REGULAR MARKING TAPE	EACH	30.00		
14	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE	LF	1250.00		
15	2528-8445110	TRAFFIC CONTROL	LS	1.00		
16	2551-0000110	TEMP CRASH CUSHION	EACH	4.00		
17	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN DIA.	LF	830.00		
18	2528-9109020	TEMPORARY LANE SEPARATOR SYSTEM	LF	3860.00		

ESTIMATE REFERENCE INFORMATION	
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Item No.	Item Code	Description
1	2301-0690203	BRIDGE APPROACH, BR-203
		Includes placement of full-depth double-reinforced approach pavement per BR-107. Includes reinforcement, joints, drain tile, backfill, and subbase. Grooving paid separately.
2	2412-0000100	LONGITUDINAL GROOVING IN CONCRETE, BRIDGE DECK
		Grooving of the bridge deck pavement for friction improvement. Per spec 2412.03.D.
3	2557-0000100	LONGITUDINAL GROOVING IN CONCRETE, PAVEMENT
		Grooving of the new approach pavement for friction improvement. Per spec 2412.03.D.
4	2505-4008120	REMOVAL OF STEEL BEAM GUARDRAIL
5	2505-4008410	STEEL BEAM GUARDRAIL BARRIER TRANSITION SECTION, BA-201
		Refer to Standard Specification 2505 and Tabulation 110-7A Removal of Steel Beam Guardrail on Sheet C.7. All guardrail materials removed will become the property of the Contractor and shall be removed from the project site.
6	2505-4021010	STEEL BEAM GUARDRAIL END ANCHOR, BOLTED
7	2505-4021720	STEEL BEAM GUARDRAIL TANGENT END TERMINAL, BA 205
		Installation of new guardrail system including standard beam rail, barrier transition sections (BA-201), bolted end anchors, and tangent end terminals (BA-205). Refer to Tab 108-8A.
8	2510-6745850	REMOVAL OF PAVEMENT
		Item includes the removal of existing pavement for bridge approach construction. See Tabulation 110-1 Removal of Pavement and Tabulation 102-5 Existing Pavement and the D sheets for locations and details.
9	2527-9263209	PAINTED PAVEMENT MARKINGS, WATERBORNE OR SOLVENT-BASED
10	2527-9263231	REMOVABLE TAPE MARKINGS, WET RETROREFLECTIVE
11	2527-9263181	PAVEMENT MARKINGS REMOVED
		Includes permanent and temporary pavement marking installation and removals per Tab 108-22. Removal of wet retroreflective removable tape markings is incidental to tape item.
12	2527-9263152	PRE-CUT SYMBOLS AND LEGENDS, REGULAR MARKING TAPE
13	2528-8400048	TEMPORARY BARRIER RAIL, CONCRETE
		Refer to Tabulation 108-33 Temporary Barrier Rail and Typical 8212 for locations.
14	2528-8445110	TRAFFIC CONTROL
		Refer to the traffic control plan on Sheet J.1. Payment for traffic control will be the contract unit price. See Standard Specification 2528.
15	2551-0000110	TEMP CRASH CUSHION
		Item is for providing, installing, maintaining, and removing temporary crash cushions used to protect temporary barrier rail during staged construction. Refer to Tabulation 108-30 Crash Cushions and Typical 8212 for location and details.
16	2602-0000312	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE, 12 IN. DIA.
		Refer to Tabulation 100-19. The tabulation includes estimated locations for placement of Perimeter and Slope Sediment Control Device to address possible erosion during construction. Verify the specific locations with the Engineer prior to beginning placement.
17	2602-0000351	REMOVAL OF PERIMETER AND SLOPE OR DITCH CHECK SEDIMENT CONTROL DEVICE

<div>105_04 4/21/26</div> <div>STANDARDS</div> <div>The following Standards apply to construction work on this project.</div>		
Number	Date	Title
BA-200	04-15-25	Steel Beam Guardrail Components
BA-201	10-18-22	Steel Beam Guardrail Barrier Transition Section (MASH TL-3)
BA-202	04-15-25	Steel Beam Guardrail Bolted End Anchor
BA-205	10-17-23	Steel Beam Guardrail Tangent End Terminal (MASH TL-3)
BA-260	10-21-25	Steel Beam Guardrail Installation at Concrete Barrier or Bridge End Post (MASH TL-2)
BA-401	04-20-21	Temporary Barrier Rail (Precast Concrete)
BA-500	04-20-21	Temporary Crash Cushions Sand Barrel
BR-101	10-21-25	Bridge Approach Section (General Details)
BR-104	10-15-24	Bridge Approach Section (at Existing Bridges, PCC Pavement)
EC-201	04-20-21	Silt Fence
EC-204	10-19-21	Perimeter, Slope and Ditch Check Sediment Control Devices
PM-110	10-15-24	Line Types
PM-111	04-21-20	Symbols and Legends
PV-101	10-21-25	Joints
PV-102	10-21-25	PCC Curb Details
TC-402	04-18-23	Work Within 15 ft of Traveled Way
TC-418	04-18-23	Lane Closure on Divided Highway
TC-420	10-16-18	Lane Closure at Ramps
TC-423	04-18-23	Closure of Two Adjacent Lanes on Undivided Highway
TC-433	10-17-17	Pavement Marking Operations

111_25 4/21/26		
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Tabulation	Tabulation Title	Sheet No.
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100_01A	ESTIMATED PROJECT QUANTITIES	C.2
100_04A	ESTIMATE REFERENCE INFORMATION	C.3
105_04	STANDARD ROAD PLANS	C.4
111_25	INDEX OF TABULATIONS	C.5
112_06	BRIDGE APPROACH SECTION	C.6
108_08A	STEEL BEAM GUARDRAIL AT CONCRETE BARRIER OR BRIDGE RAIL END SECTION	C.7
108_08C	STEEL BEAM GUARDRAIL FOR SIDE OBSTACLE (ONE-WAY PROTECTION)	C.8
100_28	LONGITUDINAL GROOVING	C.9
108_22	PAVEMENT MARKING LINE TYPES	C.10
108_29	PAVEMENT MARKING SYMBOLS AND LEGENDS	C.11
102_05	EXISTING PAVEMENT	C.12
110_01	REMOVAL OF PAVEMENT	C.13
110_07A	REMOVAL OF STEEL BEAM GUARDRAIL	C.14
108_30	CRASH CUSHIONS	C.15
108_33	TEMPORARY BARRIER RAIL	C.16
100_19	PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE	C.17
232_03B	EROSION CONTROL (URBAN SEEDING)	C.18
108_23A	TRAFFIC CONTROL PLAN	J.1
108_26A	STAGING NOTES	J.2
111_01	COORDINATED OPERATIONS	J.3

112_06
2/22/24

BRIDGE APPROACH SECTION																				
Refer to the BR Series.																				
* Not a bid item																				
Bridge Station	End	Skew Ahead Left (Degrees)	Skew Ahead Right (Degrees)	(T) Thickness (IN)	Pay Length (FT)	Non-Reinf. Area (SY)	Single-Reinf. Area (SY)	Double-Reinf. Area (SY)	SRP Approach	SRP Abutment Type	SRP Abutting Pavement	Perforated * 4" Subdrain (LF)	Subdrain * Outlet (STA)	Subdrain * Outlet Side	Porous * Backfill (CY)	Class 'A' * Crushed Stone Backfill (CY)	Modified * Subbase (TON)	Polymer * Grid (SY)	Special * Backfill (TON)	Remarks
118+05.70	S		14.1	12.0	72.1	173.3	115.6	130.3	BR-203	Movable	BR-213						28.000	451.0		
121+27.25	N		14.1	12.0	72.1	167.0	114.9	123.8	BR-203	Movable	BR-213						28.000	446.0		
Total:						340.3	230.5	254.1												

108_08C
3/14/24

STEEL BEAM GUARDRAIL FOR SIDE OBSTACLE (ONE-WAY PROTECTION)

1. Lane(s) to which the obstacle is adjacent.

Line No.	Item No.	Lane (1)	Side	Station	OL (FT)	DO (FT)	ET (LF)	VT2A (LF)	VFA (LF)	VT1A (LF)	VT1T (LF)	EA (LF)	BA-211 Station	BA-211 (Type)	SI-211 (Type)	SI-172 Type 1 White (EA)	SI-173 Type 2 OM2-2 (EA)	SI-173 Type 3 OM3-L (EA)	SI-173 Type 3 OM3-R (EA)	Steel Beam Guardrail BA-200 (LF)	W-Beam End Anchor BA-203 (EA)	Standard End Terminal (Type)	Standard End Terminal Count (EA)	Post Adapter BA-210 (EA)	Remarks
1.0	1	EB	Right																	75.00					
2.0	2	WB	Right																	75.00					

FILE NO. 32582

ENGLISH

DESIGN TEAM

SRF Consulting Group, Inc.

DES MOINES COUNTY

PROJECT NUMBER

BRFN-034-9(251)--39-29

SHEET NUMBER

C.8

11/21/2025 3:40:22 PM

AUSTIN BENSON97@IOWAID

LONGITUDINAL GROOVING		
Location	Total (SY)	Remarks
118+05.70	394.9	South Approach
118+77.75	1572.0	Bridge Deck
121+27.25	389.7	North Approach
Total:	2356.6	

100_28
8/15/22

PAVEMENT MARKING LINE TYPES

108.22
10/21/25

Line factors based on 6-inch wide continuous line.
*BCY4 - Place on the same side of the roadway to match existing markings near the project.
**NPY4 - Estimating purposes only. No Passing Zone Lines will be located in the field.
***MNY6 - Factor of 1.00 includes number of 6-inch passes to cover median nose area.

BCY4: Broken Centerline (Yellow) @ 0.17
CBW6: Crosswalk Bar (White) @ 10.00
CLW6: Crosswalk Line (White) @ 2.00
DLW4: Dotted Line (White) @ 0.22
ELW6: Edge Line Right (White) @ 1.00
MNY6: Median Nose (Yellow) @ 1.00
RLY4: Ramp Edge Line Left (Yellow) @ 0.67
SPW4: Sloped Curb 4" (White) @ 2.16
STY6: Standard Curb 6" (Yellow) @ 2.03

BCY6: Broken Centerline (Yellow) @ 0.25
CHW8: Channelizing Line (White) @ 1.33
DCY4: Double Centerline (Yellow) @ 1.34
DLW6: Dotted Line (White) @ 0.33
ELY4: Edge Line Left (Yellow) @ 0.67
NPY4: No Passing Zone Line (Yellow) @ 0.84
RLY6: Ramp Edge Line Left (Yellow) @ 1.00
SPW6: Sloped Curb 6" (White) @ 2.28
YLW2: Yield Line (White) @ 1.15

BLC6: Broken Line Contrast (White/Black) @ 0.50
CHW10: Channelizing Line (White) @ 1.67
DCY6: Double Centerline (Yellow) @ 2.00
DLY4: Dotted Line (Yellow) @ 0.22
ELY6: Edge Line Left (Yellow) @ 1.00
NPY6: No Passing Zone Line (Yellow) @ 1.25
SLW2: Stop Line (White) @ 4.00
SPY4: Sloped Curb 4" (Yellow) @ 2.16

BLW4: Broken Lane Line (White) @ 0.17
CHY8: Channelizing Line (Yellow) @ 1.33
DDY4: Double Dotted Line (Yellow) @ 0.44
DLY6: Dotted Line (Yellow) @ 0.33
LDW8: Lane Drop (White) @ 0.33
RLW4: Ramp Edge Line Right (White) @ 0.67
SLW4: Solid Lane Line (White) @ 0.67
SPY6: Sloped Curb 6" (Yellow) @ 2.28

BLW6: Broken Lane Line (White) @ 0.25
CHY10: Channelizing Line (Yellow) @ 1.67
DDY6: Double Dotted Line (Yellow) @ 0.67
ELW4: Edge Line Right (White) @ 0.67
LDW10: Lane Drop (White) @ 0.42
RLW6: Ramp Edge Line Right (White) @ 1.00
SLW6: Solid Lane Line (White) @ 1.00
STW6: Standard Curb 6" (Yellow) @ 2.03

Road ID	Station From	Station To	Lane	Marking Type	Left	Center	Right	Groove Marking Needed?	BLW6 (STA)	BLW6 Factored (STA)	DCY6 (STA)	DCY6 Factored (STA)	ELW4 (STA)	ELW4 Factored (STA)	ELY4 (STA)	ELY4 Factored (STA)	Remarks
Removals																	
Gear Ave SB	110+60.70	118+05.70	Center	Removal of Paint		X			7.45	1.86							South SB Dashed White Line
Gear Ave SB	121+99.30	131+74.30	Center	Removal of Paint		X			9.75	2.44							North SB Dashed White Line
Gear Ave	110+60.70	118+05.70	Center	Removal of Paint		X					7.45	14.90					South Centerline
Gear Ave	121+99.30	131+74.30	Center	Removal of Paint		X					9.75	19.50					North Centerline
Gear Ave NB	110+60.70	118+05.70	Center	Removal of Paint		X			7.45	1.86							South NB Dashed White Line
Gear Ave NB	121+99.30	131+74.30	Center	Removal of Paint		X			9.75	2.44							North NB Dashed White Line
Temporary																	
Stage 1																	
Gear Ave NB	110+60.70	131+74.30	NB	Wet Retroreflective Removable Tape	X										21.14	42.28	NB Yellow Line Through Work Zone
Gear Ave SB	110+60.70	131+74.30	SB	Wet Retroreflective Removable Tape	X										21.14	42.28	SB Yellow Line Through Work Zone
Gear Ave SB	116+05.70	131+74.30	SB	Wet Retroreflective Removable Tape			X						15.69	31.38			SB White Line Through Work Zone
																	Removal of Temp. Pavement Markings is Incidental
Stage 2																	
Gear Ave NB	110+80.70	123+69.30	NB	Wet Retroreflective Removable Tape			X								12.89	25.78	NB White Line Through Work Zone
Gear Ave NB	110+80.70	131+04.30	NB	Wet Retroreflective Removable Tape	X								20.24	40.48			NB Yellow Line Through Work Zone
Gear Ave SB	110+80.70	131+04.30	SB	Wet Retroreflective Removable Tape	X										20.24	40.48	SB Yellow Line Through Work Zone
																	Removal of Temp. Pavement Markings is Incidental
Permanent																	
Gear Ave	110+60.70	131+74.30	Center	Waterborne/Solvent Paint		X		Yes			21.14	42.28					Double Yellow Centerline
Gear Ave NB	110+60.70	131+74.30	NB	Waterborne/Solvent Paint		X		Yes	21.14	5.29							NB Dashed White Line
Gear Ave SB	110+60.70	131+74.30	SB	Waterborne/Solvent Paint		X		Yes	21.14	5.29							SB Dashed White Line
Total:									76.68	19.18	38.34	76.68	35.93	71.86	75.41	150.82	

Bid Quantity: Painted Pavement Markings, Multi-Component = 52.86
Bid Quantity: Wet Retroreflective Removable Tape Markings = 222.68
Bid Quantity: Pavement Markings Removed = 43.00
Incidental Removal of Removable Tape = 222.68
* Wet retroreflective removable tape markings are to be 8" wide, consisting of two side-by-side 4" tapes.
** Applied factor of 2 to ELW4 & ELY4

<div>108_29 4/15/25</div> <div>PAVEMENT MARKING SYMBOLS AND LEGENDS</div> <div>Refer to PM-111</div>			
Roadway Identification	Pavement Symbol	Quantity (EA)	Remarks
Gear Ave NB	STAW	6	Stage 1
Gear Ave NB	LLRW	1	Stage 1
Gear Ave SB	STAW	7	Stage 1
Gear Ave SB	RLRW	1	Stage 1
Gear Ave NB	STAW	7	Stage 2
Gear Ave NB	RLRW	1	Stage 2
Gear Ave SB	STAW	6	Stage 2
Gear Ave SB	LLRW	1	Stage 2
Total:		30	

102_05 9/29/23																				
EXISTING PAVEMENT																				
County	Route	Direction of Travel	Begin Ref. Location Sign	End Ref. Location Sign	Year	Type	Project Number	Surface Type	Surface Depth (IN)	Base Type	Base Depth (IN)	Subbase Type	Subbase Depth (IN)	Removal Type	Removal Depth (IN)	Coarse Aggregate Source	Coarse Aggregate Type	Course Aggregate Durability Class	Reinforcement Type	Remarks
Des Moines	Gear Ave	NB								PCC	8.0									
Des Moines	Gear Ave	SB								PCC	8.0									

<div>REMOVAL OF PAVEMENT</div> <div>Refer to Tabulation 102-5.</div>						110_01 4/5/24
* Not a bid item.						
Station From	Station To	Side	Pavement Type	Area (SY)	Saw Cut* (LF)	Remarks
117+34.78	118+05.70	SB	HMA/PPC	5.5	71.6	SW Curb Sawcut- Stage 1
118+05.70	118+80.77	SB	HMA/PCC	206.9	98.1	SW Approach - Stage 1
118+05.70	118+57.42	SB	HMA/PCC	18.4		SW Shoulder (Variable Width) - Stage 1
118+57.42	118+84.26	SB	HMA/PCC	11.9		SW Shoulder (Fixed Width) - Stage 1
121+99.30	122+87.60	SB	HMA/PPC	6.9	88.9	NW Curb Sawcut- Stage 1
121+30.27	121+99.30	SB	HMA/PCC	184.1	95.4	NW Approach - Stage 1
121+33.84	121+99.30	SB	HMA/PCC	14.5		NW Shoulder - Stage 1
121+99.30	122+87.60	SB	HMA/PPC	6.9	88.9	NW Curb Sawcut- Stage 1
118+05.70	118+74.73	NB	HMA/PCC	184.1	26.0	SE Approach - Stage 2
118+05.70	118+71.45	NB	HMA/PCC	14.6		SE Shoulder - Stage 2
121+24.23	121+99.30	NB	HMA/PCC	200.2	28.0	NE Approach - Stage 2
121+20.95	121+99.30	NB	HMA/PCC	17.4		NE Shoulder (Reduced Width) - Stage 2
Total:				871.4	496.9	

110_07A
8/15/22

REMOVAL OF STEEL BEAM GUARDRAIL					
(1) Lane(s) to which the installation is adjacent.					
(2) Includes length of End Terminals and End Anchors.					
No.	Direction of Traffic (1)	Station From	Station To	Side	Removal of Guardrail (2) (LF)
1	SB	117+97.37	118+72.83	Left	75.3
2	SB	121+49.30	122+23.97	Left	75.1
3	EB			Right	75.0
4	WB			Left	75.0
Total:					300.4

108_30
4/16/24

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.

Lane	Side	Obstacle Width (FT)	Crash Cushion Type	Crash Cushion Quantity	V (FT) (2)	W (FT) (2)	X (FT) (2)	Y (FT) (2)	Z (FT) (2)	Obstacle Description	Remarks
SB	Right	2.0	Temporary	2						TBR	Stage 1
NB	Right	2.0	Temporary	2						TBR	Stage 2
Total:				4							

108_33

8/15/22

TEMPORARY BARRIER RAIL

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

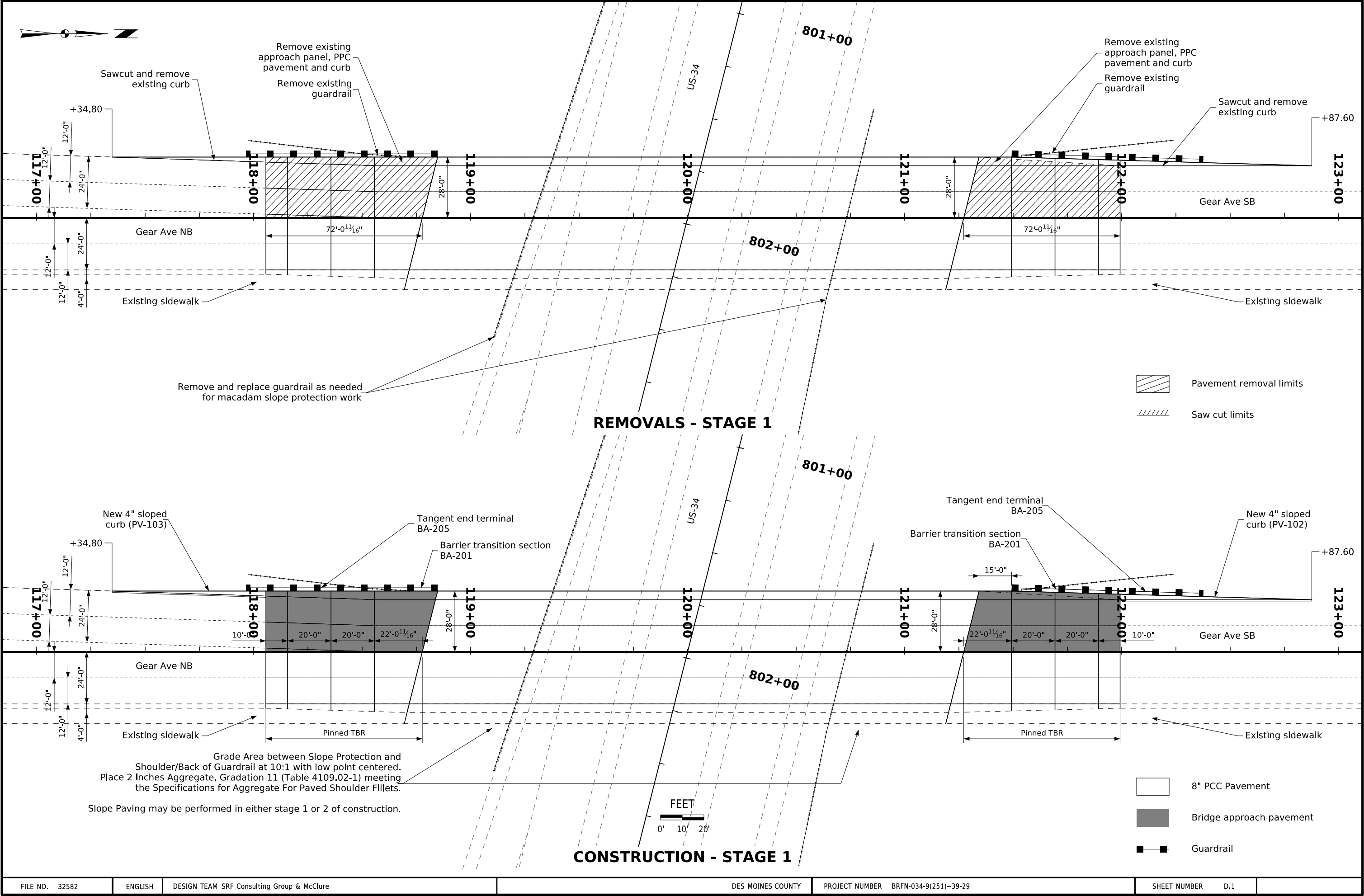
* Not a bid item. Anchorage requirements are based on TBR locations shown in the plans. TBR alignments that vary from what is shown in the plans may result in additional TBR sections requiring anchorage.

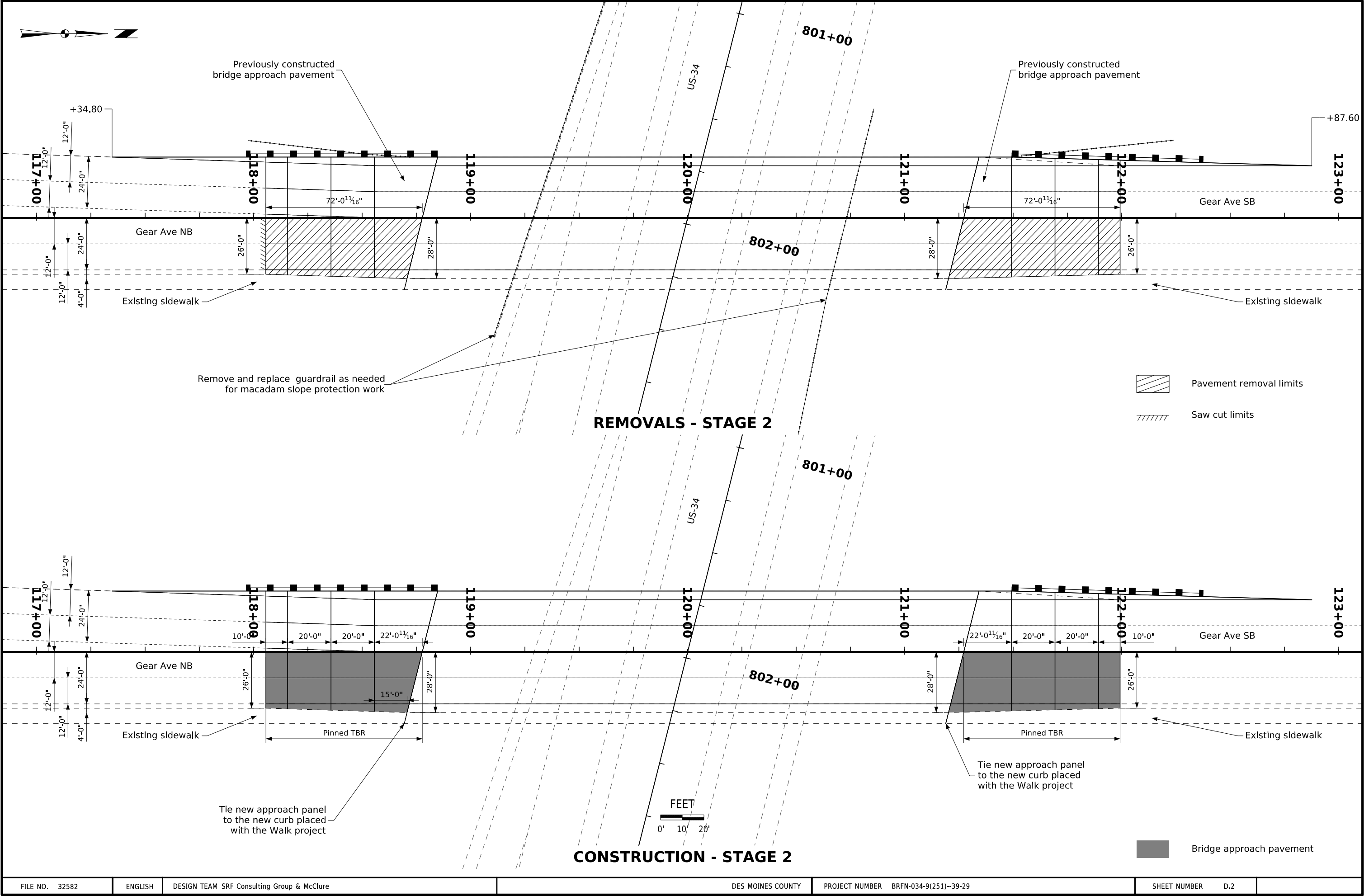
No.	Station From	Station To	Length (FT)	Barrier Rail Type	Anchored*	Modular Glare Screen System	Remarks
1	116+66.05	123+56.33	700.0	Concrete BA-401	Yes	No	Stage 1
2	117+36.97	122+68.03	550.0	Concrete BA-401	Yes	No	Stage 2
Total:			1250				

<div>PERIMETER AND SLOPE SEDIMENT CONTROL DEVICE</div> <div>Possible Standards: EC-204</div>						
Station From	Station To	Side	Sediment Control Device Type	Diameter Size	Length (LF)	Remarks
117+87.34	119+41.81	Left	Perimeter and Slope	12 inch	160.00	SW Quadrant - Stage 1
120+82.67	122+97.34	Left	Perimeter and Slope	12 inch	220.00	NW Quadrant - Stage 1
801+72.98	802+57.00	Right	Perimeter and Slope	12 inch	90.00	South Slope Protection
801+40.31	802+23.18	Left	Perimeter and Slope	12 inch	90.00	North Slope Protection
117+95.94	119+15.42	Right	Perimeter and Slope	12 inch	120.00	SE Quadrant - Stage 2
120+62.75	122+09.53	Right	Perimeter and Slope	12 inch	150.00	NE Quadrant - Stage 2
Total:				830		

100_19
10/15/24

232_038 9/28/22	
EROSION CONTROL (URBAN SEEDING)	
<p>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.</p> <p>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 as follows:</p> <p>Place seed and fertilize according to the requirements of Article 2601.03,C,4 and Section 4169 of the Standard Specifications.</p> <p>Place mulch according to the requirements of Articles 2601.03,E,2,a and 4169.07,A of the Standard Specifications.</p> <p>Preparing the seedbed, furnishing and applying seed, fertilizer, and mulch are incidental to mobilization and will not be paid for separately.</p>	





108_23A
8/15/22

TRAFFIC CONTROL PLAN

- 1. Gear Ave will remain open to traffic in both directions by shifting traffic between lanes using temporary pavement markings and traffic control devices, as shown in the staging plans.
- 2. Traffic control shall be in accordance with Standard Road Plans listed in Tabulation 105-4 on sheet C.4 and the Modified Standard Road Plan TC-423 on sheets J.3 & J.4. For additional information, refer to Part 6 of the Manual on Uniform Traffic Control Devices and the current Standard Specifications.
- 3. Traffic delineators (drums) and temporary pavement markings shall be used to guide traffic through the construction zone.
- 4. Coordinate with City of Burlington for existing traffic signalizations at intersections regarding flashing 4-way stop during construction.

STAGING NOTES

Prior to any work, document existing pavement markings and symbols to ensure all markings are reestablished correctly.

Stage 1:

- Maintain NB & SB traffic on the bridge using temporary pavement markings and traffic control devices per Modified Standard Road Plan TC-423 on sheet J.3.
- Construct west half of the bridge repairs, curbs, and bridge approach pavement.
- Construct barrier replacement on west side of bridge.
- Construct new guardrail and paved shoulders at the SW and NW bridge corners.

Stage 2:

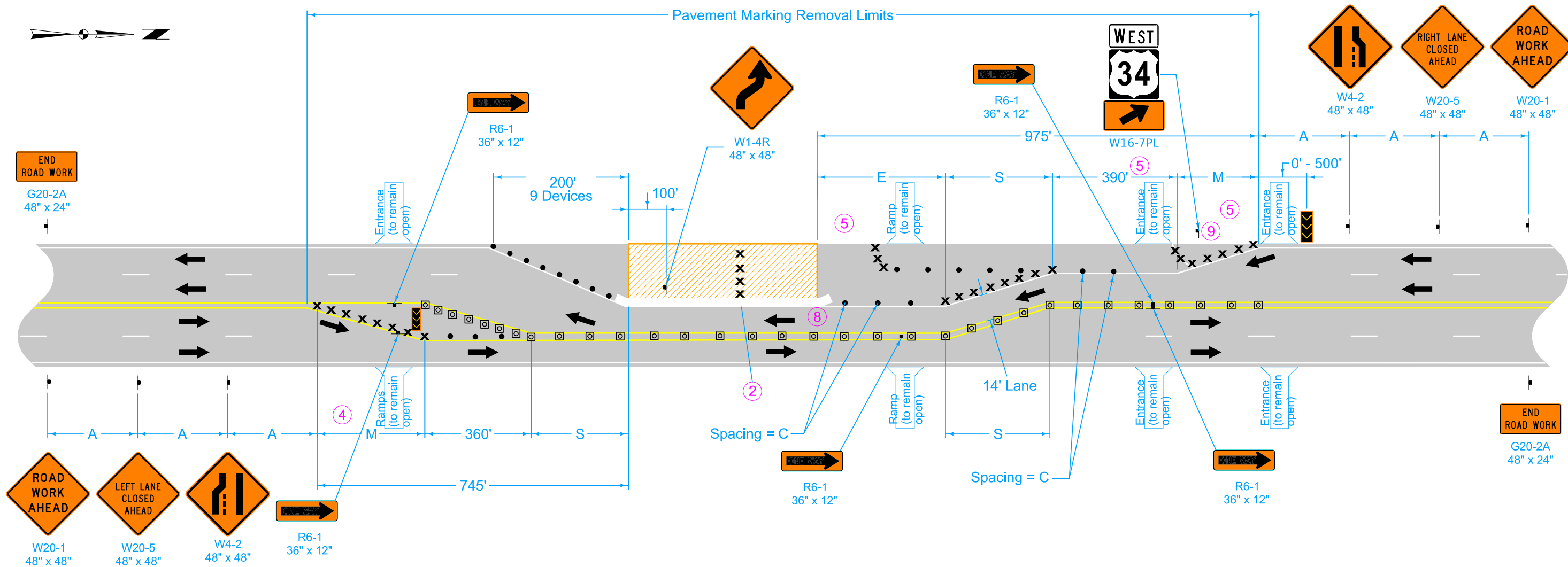
- Shift NB & SB traffic on the bridge to the west lanes of the bridge using temporary pavement markings and traffic control devices per Modified Standard Road Plan TC-423 on sheet J.4.
- Construct remaining east half of the bridge repairs, curbs, and bridge approach pavement. Tie approach panels into new curb placed with Walk project.
- Construct new paved shoulders at the SE and NE bridge corners.

Stage 3:

- Remove temporary traffic control devices, crash cushion, and TBR.
- Install permanent pavement markings as shown in tabulation 108-22 on Sheet C.9 and using Standard Road Plan TC-433.
- Open Gear Ave to normal four-lane traffic.

<div>111_01 10/14/22</div> <div>COORDINATED OPERATIONS</div> <div>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.</div>	
Project	Type of Work
BRFN-034-9(249)--39-29	Bridge Deck Overlay

STAGE 1



For traffic control zones in place for 3 calendar days or less, place arrow boards, devices and signs as shown. For traffic control zones in place for 4 calendar days or more, also remove permanent pavement markings and place temporary pavement markings as shown.

When this layout is used during nighttime hours and the width of existing traffic lanes is 11 feet or less, use tubular markers to separate two-way two-lane traffic.

- ① Spacing = D for drums placed in tapers.
- ② For lanes closed to traffic, place two drums every 1000 feet. For full depth excavations in a closed lane, place two drums in front of each location. Additional drums need not be placed for full depth excavations spaced closer than 150 feet.
- ③ For work zones in place more than 3 calendar days, use TLSS. For work zones in place for 3 calendar days or less, 42" channelizers spaced at 40" c/c may be substituted for TLSS.
- ④ Place the Lane Drop "M" south of the South Ramp Intersection.
- ⑤ Stage 1 extend the E distance to north of the North Ramp Intersection and position the Lane Drop "M" between the two entrances north of the North Ramp Intersection.
- ⑥ Stage 2 use 170' and 8 devices between Work Zone and North Ramp Intersection.
- ⑦ Stage 2 position the Lane Drop "M" and the "S" between the two entrances north of the North Ramp Intersection.
- ⑧ Temporary concrete barrier, see sheet B.2
- ⑨ Place W16-7PL sign at 100' before lane drop M ends.

LEGEND

⬆

Traffic Sign

×

Drum ①

•

42" Channelizer

⬅⬅⬅⬅

Arrow Board

▨

Work Area

➡

Direction of Traffic

⊠

Temporary Lane Separator System ③

SPEED LIMIT (mph)*	A	C	D	E	M	S
35 or less	250'	40'	35'	0'-200'	245'	140'
40	500'	80'	40'	0'-300'	320'	160'
45	700'	80'	45'	0'-400'	630'	315'
50	700'	80'	45'	400'	630'	315'
55 - 60	1000'	100'	55'	600'	770'	385'

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

MODIFIED

STANDARD ROAD PLAN

MODIFICATIONS: Added entrance and ramp locations. Added notes 4 through 7. Added sheet to differentiate Stage 1 & Stage 2 construction.

APPROVED BY DESIGN METHODS ENGINEER

CLOSURE OF TWO ADJACENT LANES ON UNDIVIDED HIGHWAY

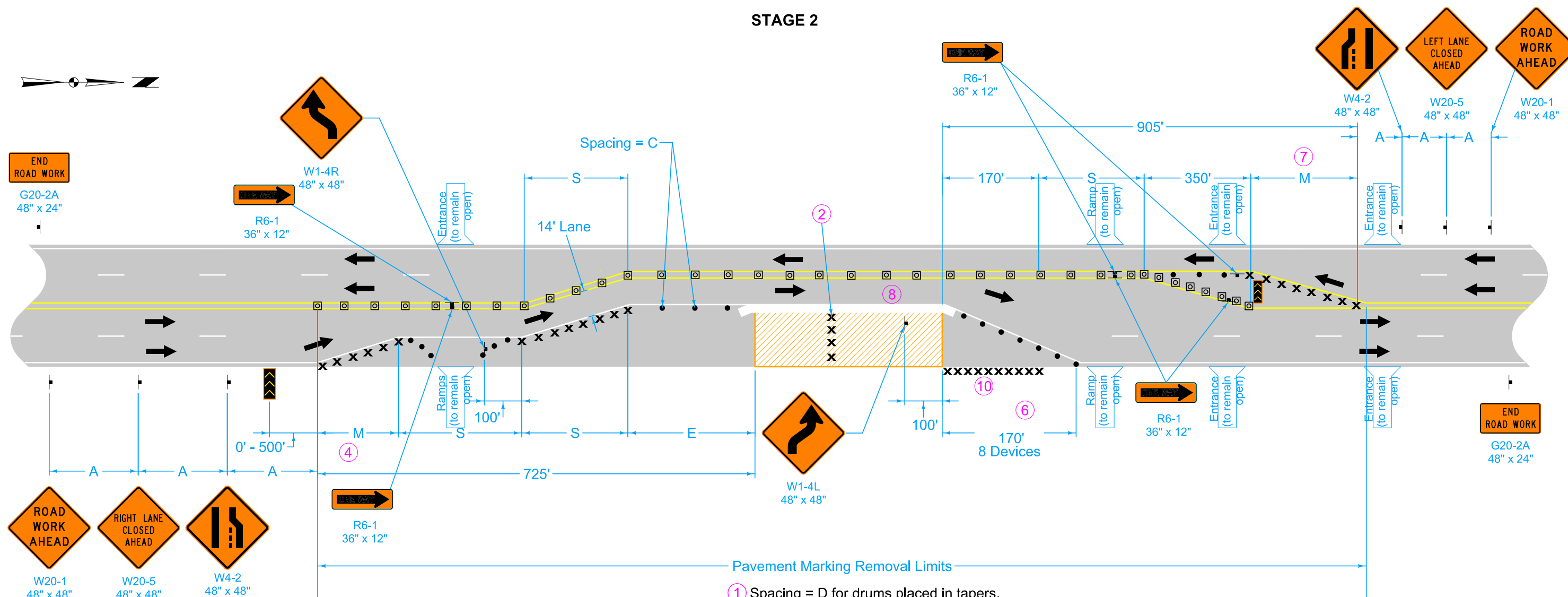
REVISION

16-26-25

TC-423

SHEET 1 of 2

STAGE 2



For traffic control zones in place for 3 calendar days or less, place arrow boards, devices and signs as shown. For traffic control zones in place for 4 calendar days or more, also remove permanent pavement markings and place temporary pavement markings as shown.

When this layout is used during nighttime hours and the width of existing traffic lanes is 11 feet or less, use tubular markers to separate two-way two-lane traffic.

LEGEND

- Traffic Sign
- Drum ①
- 42" Channelizer
- Arrow Board
- Work Area
- Direction of Traffic
- Temporary Lane Separator System ③

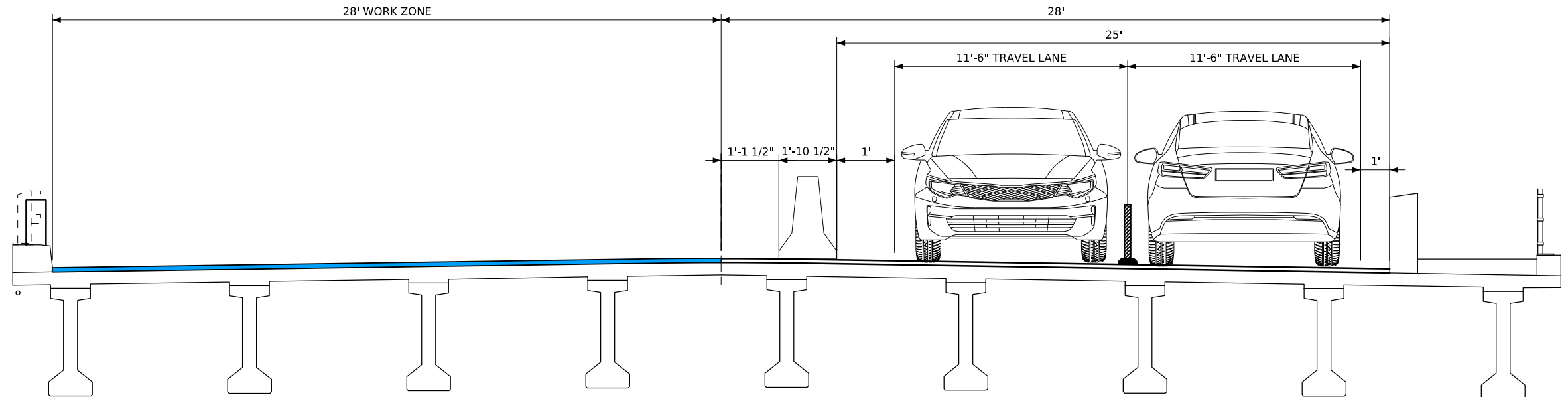
SPEED LIMIT (mph)*	A	C	D	E	M	S
35 or less	250'	40'	35'	0'-200'	245'	140'
40	500'	80'	40'	0'-300'	320'	160'
45	700'	80'	45'	0'-400'	630'	315'
50	700'	80'	45'	400'	630'	315'
55 - 60	1000'	100'	55'	600'	770'	385'

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

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- ⑥ Stage 2 use 170' and 8 devices between Work Zone and North Ramp Intersection.
- ⑦ Stage 2 position the Lane Drop "M" and the "S" between the two entrances north of the North Ramp Intersection.
- ⑧ Temporary concrete barrier, see sheet B.2
- ⑨ Place W16-7PL sign at 100' before lane drop M ends.
- ⑩ Drums at 10' spacing for 100' to protect walk.

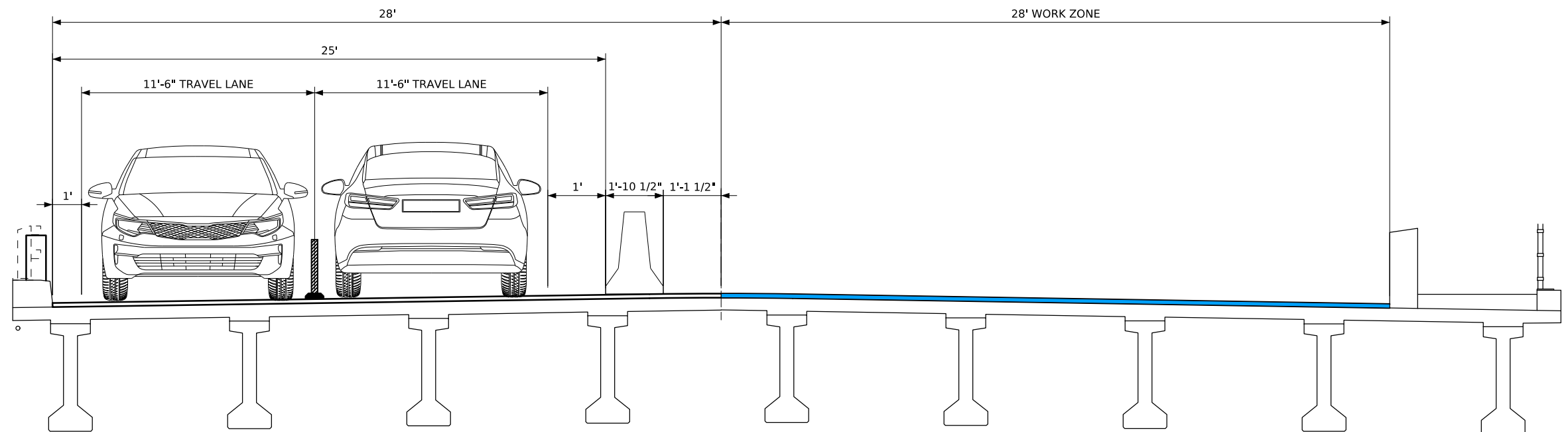
MODIFIED STANDARD ROAD PLAN	REVISION	
	1	6-26-25
	TC-423	
SHEET 2 of 2		
MODIFICATIONS: Added entrance and ramp locations. Added notes 4 through 7. Added sheet to differentiate Stage 1 & Stage 2 construction.		
APPROVED BY DESIGN METHODS ENGINEER		
CLOSURE OF TWO ADJACENT LANES ON UNDIVIDED HIGHWAY		

South Lane Closed



Stage 1
(Looking Ahead Section)

North Lane Closed



Stage 2
(Looking Ahead Section)

Typical Construction Sections