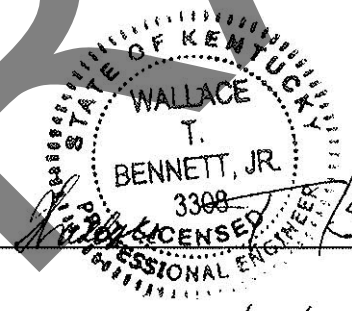
CAMPBELL COUNTY I-471

PROJECT NUMBERS
FD52 019 0471 000-005
IMNH 4714(034)

ITEM NUMBER
6-2021.00

BRIDGE REHABILITATION
(16 LOCATIONS)

STATION 15+09.42
TO
STATE OF KENTUCKY



DATE 12/27/11

PREPARED BY

WMB, INC. CONSULTING ENGINEERS
1950 HAGGARD COURT
LEXINGTON, KY. 40505
PHONE 859/299-5226

CAMPBELL COUNTY I-471

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BRIDGE REHABILITATION
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STATION 15+09.42
TO
STATION 314+45.00

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SUMMARY OF BRIDGE QUANTITIES FOR I-471 PROJECT
PROJECT NO. FD52 019 0471 000-005
ITEM NO. 6-2021.00
CAMPBELL COUNTY

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3294	EXPANSION JT. REPLACEMENT 1 1/2"	432.0	LIN FT
3295	EXPANSION JT. REPLACEMENT 2"	124.0	LIN FT
3298	EXPANSION JOINT REPLACEMENT 4"	475.0	LIN FT
3300	ELIMINATE TRANSVERSE JOINT	415.0	LIN FT
8016	REINF CONC SLOPEWALL-6 IN	283	SQ YD
8504	EPOXY SAND SLURRY	5445	SQ YD
8526	CONC. CLASS M FULL DEPTH PATCH	156.0	CU YD
8534	CONCRETE OVERLAY-LATEX	1680.0	CU YD
8549	BLAST CLEANING	37052	SQ YD
8550	HYDRODEMOLITION	32515	SQ YD
23622EC	CLEANING DEBRIS FROM LOWER CHORD	1	LS
23386EC	JOINT SEAL REPLACEMENT	1031.0	LIN FT
24094ED	PARTIAL DEPTH PATCHING	335.6	CU YD
24424EC	REM AND REP BRIDGE CHAIN LINK FENCE	604.0	LIN FT
24438EC	SEAL CRACKS BRIDGE DECK	1	LS
24439EC	SEAL BRIDGE DECK	1	LS
24456EC	EXPANSION JOINT REPLACEMENT 5 1/2"	102.0	LIN FT

REFERENCES

THE SUPPLEMENTAL SPECIFICATIONS TO THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2008 EDITION AND THE FOLLOWING SPECIAL NOTES THAT APPLY TO ALL BRIDGES ARE FOUND IN THE ROADWAY PLANS FOR THIS PROJECT:

- **SPECIAL NOTE FOR CONTRACT COMPLETION DATE AND LIQUIDATED DAMAGES**
- **SPECIAL NOTE FOR COORDINATION WITH I-275 CONSTRUCTION**
- **PROJECT PHASING AND MAINTENANCE OF TRAFFIC PLAN**

SPECIAL NOTE FOR REPLACING EXPANSION DAMS AND/OR INSTALLING ARMORED EDGES FOR CONCRETE ON BRIDGES

1. **DESCRIPTION.** Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's 2008 Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings, this Note, and the attached detail drawings. Section references are to the Standard Specifications.

This work consists of the following: (1) Furnish all labor, materials, tools, and equipment; (2) Remove existing concrete and expansion device(s) and/or bridge ends; (3) Install armored edges and new concrete as specified and in accordance with the attached detail drawings; (4) Install new joint seals (where required); (5) Maintain and control traffic; and (6) Any other work specified as part of this contract.

2. **MATERIALS.**
   - A. **Class "M" Concrete.** Use either "M1" or "M2". See Section 601.
   - B. **Structural Steel.** Use new, commercial grade steel suitable for welding. The Engineer will base acceptance on visual inspection. See Standard Drawing BJE-001, current edition.
   - C. **Stud Anchors.** The armored edge stud anchors are ¾" x 6" embedded stud shear connectors conforming to ASTM A108, Grade 1015 (Nelson Studs or equal).
   - D. **Steel Reinforcement.** Use Grade 60. See Section 602.
   - E. **Epoxy Bond Coat.** See Section 511.
   - F. **Neoprene Joint Sealers (Compression Seals).** See Section 807.
   - G. **Silicone Rubber Sealant.** See Section 807.
   - H. **Neoprene Strip Seals.** See attached detail drawings and Section 807.

3. **EQUIPMENT.**
   - A. **Hammer.** Provide Power driven Hammers lighter than nominal 45 lb. class.
   - B. **Sawing Equipment.** Sawing equipment shall be a concrete saw capable of sawing concrete to the specified depth.
   - C. **Hydraulic Impact Equipment.** Hydraulic Impact/Skid Steer Type Equipment with a maximum rated striking Energy of 360 ft-lbs are permitted only in areas of concrete removal more than 1 foot away from existing beams, girders or other supporting structures that are to remain in service, or more than 6 inches away from boundaries of surface areas to remain in service. The Contractor is to provide data information to the engineer on the equipment they wish to utilize to ensure compliance with this note.

4. **CONSTRUCTION.**
   - A. **Remove Existing Materials.** Remove existing Expansion Dam, Bridge End, Armored Edges and specified areas of concrete as shown on the attached sketches. Remove debris and/or expansion joint filler as directed by the Engineer. . Clean and leave all existing steel reinforcement encountered in place. Damaged steel reinforcement will be repaired/replaced as directed by the Engineer at no additional cost to the Department. Dispose of all removed material entirely away from the job site. This work is incidental to the contract unit price for "Expansion Joint Replacement" or "Armored Edge for Concrete".

B. **Place New Concrete and Armored Edges.** After all specified existing materials have been removed; place new armored edges to match the grade of the proposed overlay or to match the original grade (See attached detail drawings). Place the new Class "M" concrete to the scarified grade and finish to receive the new overlay or place the new Class "M" concrete to the original grade and finish with broom strokes drawn transversely from curb to curb.

All new structural steel shall be cleaned and painted in accordance with requirements of Section 607.03.23, except that surfaces to come in contact with concrete are not to be painted.

Blast clean all areas of existing concrete and structural steel to come in contact with new concrete until free of all laitance and deleterious substances immediately prior to the placement of the Class "M" Concrete. The surface areas of existing concrete to come in contact with the new Class "M" Concrete are to be coated with an epoxy bond coat immediately prior to placing new concrete in accordance with Section 511. The interfaces of the new and old concrete shall be as nearly vertical and horizontal as possible.

C. **Additional Steel Reinforcement.** Furnish for replacement, as directed by the Engineer, _____ linear feet of #4 steel reinforcing bars in 20' lengths. Place these bars in areas deemed by the Engineer to require additional reinforcement. Field cutting and bending is permitted. Do not place any additional steel reinforcement above the height of the top row of Nelson Studs on the armored edges. Ensure that all exposed steel reinforcement is tied in accordance with Section 602.03.04 prior to pouring the new Class "M" concrete. Deliver unused bars to the Local County Maintenance Barn. Payment will be made in accordance with Section 602.

D. **Stage Construction.** Installation of concrete and armored edges in two (or more if specified) stages is necessary. Join the armored edges at or near the centerline of the roadway or lane line, field weld and grind smooth.

E. **Preformed Neoprene Joint Seal.** Place the preformed joint seal in one continuous, unbroken length. Place neoprene compression seals as recommended by the manufacturer and in accordance with Section 609.03.04 (D). Place neoprene strip seals as recommended by the manufacturer and in accordance with Section 609.03.04 (E), except that shop drawings will not be required.

F. **Silicone Rubber Sealant.** Place the silicone sealant as recommended by the manufacturer and in accordance with Section 609.03.04 (C).

G. **Shop Plans.** Shop plans will <u>not</u> be required. The Contractor is responsible for obtaining field measurements and supplying properly sized materials to complete the work.

IV MEASUREMENT.

A. **Expansion Joint Replacement - 1 ½", 2", 2 ½", 4".** The Department will measure the quantity in linear feet from gutterline to gutterline along the centerline of the joint.

B. **Armored Edge for Concrete.** The Department will measure the quantity in linear feet from gutterline to gutterline along the face of the bridge end.

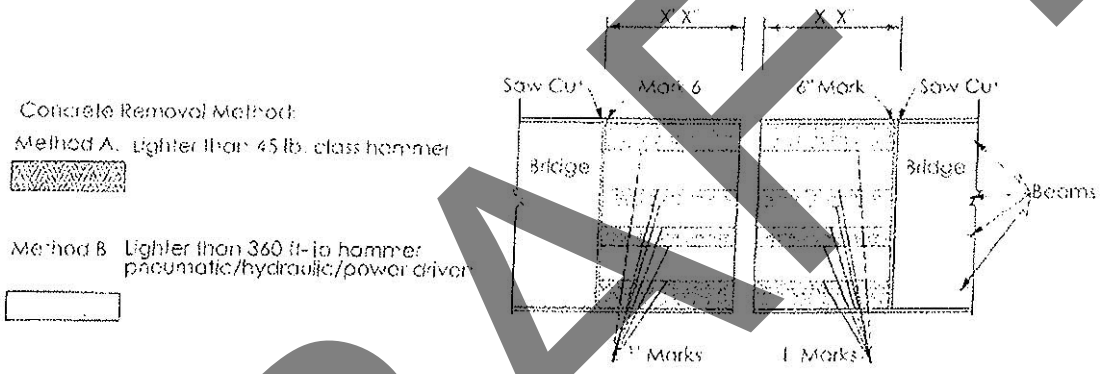
C. **Steel Reinforcement.** See Section 602.

V. PAYMENT.

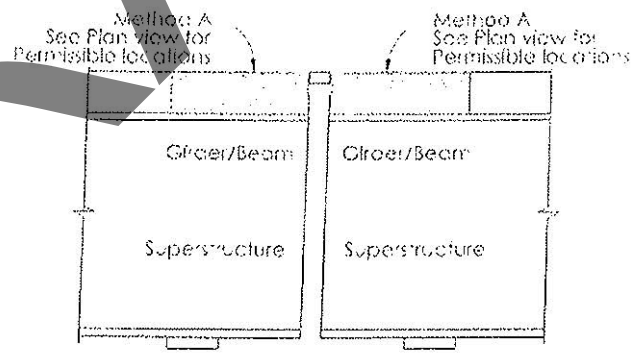
A. **Expansion Joint Replacement - 1 ½", 2", 2 ½", 4".** Payment at the contract unit price per linear foot is full compensation for removing specified existing materials, furnishing and installing the new armored edges, concrete, neoprene joint seal, and all incidental items necessary to complete the work (except the overlay material) within the specified pay limits as specified by this note and as shown on the attached detail drawings.

B. **Armored Edge for Concrete.** Payment at the contract unit price per linear foot is full compensation for removing specified existing materials, furnishing and installing the new armored edges, concrete and all incidental items necessary to complete the work (except the overlay material) within the specified pay limits as specified by this note and as shown on the attached detail drawings.

C. **Steel Reinforcement.** See Section 602.



PLAN VIEW



CROSS SECTION

SPECIAL NOTE FOR ELIMINATING TRANSVERSE JOINTS ON BRIDGES

I. DESCRIPTION. Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's 2008 Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings, this Note, and the attached detail drawings. Section references are to the Standard Specifications.

This work consists of the following: (1) Furnish all labor, materials, tools, and equipment; (2) Remove existing concrete to eliminate the transverse joint; (3) Install additional steel reinforcement, new armored edge and new concrete as specified and in accordance with the attached detail drawings; (4) Maintain and control traffic; and (5) Any other work specified as part of this contract.

II. MATERIALS.

A. Class "M" Concrete. Use either "M1" or "M2". See Section 601.

B. Steel Reinforcement. Use Grade 60. See Section 602.

C. Epoxy Bond Coat. See Section 511.

III. CONSTRUCTION.

A. Remove Existing Materials. Remove the existing transverse joints, joint filler, and specified areas of concrete as shown on the attached detail drawings or as directed by the Engineer. Dispose of all removed material entirely away from the job site. This work is incidental to the contract unit price for "Eliminate Transverse Joint".

Clean and leave all existing steel reinforcement encountered in place. Damaged steel reinforcement will be repaired/replaced as directed by the Engineer at no additional cost to the Department.

B. Place New Concrete and Armored Edges. After all specified existing materials have been removed; place new armored edges to match the original grade (See attached detail drawings). Place the new Class "M" concrete to the original grade and finish with broom strokes drawn transversely from gutterline to gutterline. No accelerants are to be added to Class "M" Concrete as specified in Section 601 of the Standard Specifications.

All new structural steel shall be cleaned and painted with two coats of commercial primer paint red orange in color, except that surfaces to come in contact with concrete are not to be painted.

Blast clean all areas of existing concrete and structural steel to come in contact with new concrete until free of all laitance and deleterious substances immediately prior to the placement of the Class "M" Concrete. The surface areas of existing concrete to

come in contact with the new Class "M" Concrete are to be coated with an epoxy bond coat immediately prior to placing new concrete in accordance with Section 511. The interfaces of the new and old concrete shall be as nearly vertical and horizontal as possible.

C. **Steel Reinforcement.** Furnish for this work steel reinforcement as shown in the individual bridge packages. Splice these bars to the existing reinforcement in the deck and backwall in the areas of removed concrete as shown on the attached detail drawings or directed by the Engineer. Ensure that all exposed steel reinforcement is tied in accordance with Section 602.03.04 prior to pouring the new Class "M" concrete. Reinforcement is incidental to the contract unit price for "Eliminate Transverse Joint".

IV MEASUREMENT.

A. **Eliminate Transverse Joint.** The Department will measure the quantity in linear feet from gutterline to gutterline along the centerline of the joint.

V. PAYMENT.

A. **Eliminate Transverse Joint.** Payment at the contract unit price per linear foot is full compensation for removing and disposing of the specified existing materials, furnishing and installing the concrete, steel reinforcement, armored edge and all incidental items necessary to complete the work within the specified pay limits as specified by this note and as shown on the attached detail drawings.

The Department will consider payment as full compensation for all work required by this note and the attached detail drawings.

SPECIAL NOTE FOR USE OF HYDRODEMOLITION METHOD

Description

This work consists of bridge surface deck preparation using Hydrodemolition to provide a uniform depth, highly bondable surface and to remove all variable depth, unsound material. This item also includes the removal and disposal of all concrete and debris, vacuuming, shielding, water control, additional jack hammering and all other aspects of work necessary to prepare the deck for the placement of the new latex modified concrete overlay.

Equipment

Sawing Equipment. Sawing equipment shall be a concrete saw capable of sawing concrete to the specified depth.

Mechanical Scarifying Equipment. The scarifying equipment shall be a power operated mechanical scarifier capable of uniformly scarifying or removing the old concrete or asphalt wearing surface from the bridge deck to the depths required in the plans or as directed by the Engineer. The equipment shall be self-propelled with sufficient power, traction and stability to maintain accurate depth of cut and slope. The equipment shall be capable of accurately and automatically establishing profile grades along each edge of the machine by referencing the existing bridge deck by means of a ski or matching shoe, or from an independent grade control; in addition, it shall be equipped with an integral loading means to remove the material being cut from the bridge deck and to discharge the cuttings into a truck all in a single operation.

Hydro-Demolition Equipment. The Hydrodemolition equipment shall consist of a filtering and pumping unit operating with a self-propelled computerized robot that utilizes a high pressure water jet capable of removing concrete to the depth specified on the plans or as directed by the Engineer and be capable of removing rust and concrete particles from reinforcing steel. The equipment shall provide a rough and bondable surface and remove all unsound concrete during the initial pass. The minimum water usage shall be 43 gal/min operating at 13,000 psi minimum.

Vacuum Cleanup Equipment. The vacuum cleanup equipment shall be equipped with fugitive dust control devices and be capable of removing wet debris and water all in the same pass. Provide equipment capable of washing the deck with pressurized water prior to the vacuum operation to dislodge all debris and slurry from the deck surface.

Hand Held Blast Cleaning Equipment. Hand held blast shall be either sand or water as necessary to expose fine and coarse aggregates; thoroughly clean all exposed reinforcing steel; and remove any unsound concrete or laitance layers from the proposed concrete overlay surface. If sand blasting equipment is utilized, the equipment shall have oil traps. If water blasting equipment is utilized, the equipment must be capable of delivering a minimum of 5,000 psi.

Power Driven Hand Tools. Power driven hand tools and jackhammers will be permitted, but shall not be heavier than the nominal 35 lb class. Chipping hammers shall not be heavier than the nominal 15 lb class. Only hand chipping tools shall be used when removing concrete within 1 in. of reinforcing steel. Mechanically driven tools shall be operated at a maximum angle of 45 degrees from the bridge floor surface.

Construction Methods

General: Perform Hydrodemolition surface preparation over the entire top surface of the reinforced concrete bridge deck to provide a rough and bondable surface and to remove all unsound concrete during the initial Hydrodemolition surface preparation pass. The use of hand chipping tools, either hand or mechanically driven, shall be limited to trim work and areas inaccessible or inconvenient for the hydro-demolition equipment.

Description: This work shall consist of furnishing the necessary labor, materials and equipment to completely remove the top surface of the Portland cement concrete bridge deck surface in accordance with these Specifications and in reasonably close conformity with the grades, thickness, or sections shown on the Plans or as directed by the Engineer. This work shall include the removal of patches other than sound Portland cement concrete and all loose and unsound concrete by Hydrodemolition; preparation of the sound existing concrete surface; removal, forming and concrete for full depth repairs; blast cleaning or high pressure water cleaning the existing deck prior to placement of the modified concrete overlay; and all other operations necessary to complete this work according to these specifications and to the satisfaction of the Engineer.

Preparation of Existing Deck

No operations without reasonably available engineering controls that limit fugitive dust will be acceptable.

The Contractor shall be aware that there are federal, state, regional, and local government agencies that have requirements regarding the control of fugitive dust generated by concrete removal and blasting operations.

The Contractor is responsible for protecting traffic traveling adjacent to and under the work zone while removing bridge deck concrete.

Where the deck is sound for less than one third of its original depth, the concrete shall be removed full depth for limited areas as designated by the Engineer. Full depth repairs shall be completed as specified for Full Depth Repair.

Removal of Existing Asphaltic Concrete Overlays

If an existing asphaltic concrete overlay is present upon the original bridge deck surface to be prepared by Hydrodemolition, the overlay and any waterproofing material that was part of the deck must be removed by mechanical means, and the bridge deck cleaned, prior to commencement of the Hydrodemolition operation. The Contractor may utilize conventional scarifying equipment conforming to these specifications to remove the existing bituminous overlay and waterproofing material from the original bridge deck. Acceptable depth of scarification shall be the overlay and waterproofing material thickness plus ¼" below the original bridge deck surface. Additional removal depth of existing deck concrete is permitted by mechanical scarification, provided approved by the resident. Total surface Hydrodemolition is used to provide a highly bondable surface and to remove partial depth deteriorated concrete.

If the use of mechanical scarifying equipment results in the snagging of the top mat of steel reinforcement, the scarifying equipment shall be immediately stopped and the depth of removal adjusted. Damaged or dislodged reinforcing steel shall be repaired or replaced at the Contractor's expense. Replacement shall include the removal of any additional concrete required to position the new reinforcing steel at the correct height and required lap splice lengths.

Removal of Existing Modified Concrete Overlays

Use conventional methods to remove any and all existing concrete overlay prior to commencement of the Hydrodemolition operation. Clean the bridge deck. Use "Total Surface Hydrodemolition" method to provide a rough & highly bondable surface and to remove partial depth deteriorated concrete with a minimum depth of ¼" below the original deck elevation. If Hydrodemolition does not leave a bondable surface resident can require mechanical scarification to his satisfaction at no additional cost to the Cabinet.

Existing overlay material which is sound and bonded may be left in patch areas with approval of the Project Engineer. If determined the existing patches are to be removed, jackhammers, not to be heavier than the nominal 35 lb class shall be used to remove debonded areas.

If the use of mechanical scarifying equipment results in the snagging of the top mat of steel reinforcement, the scarifying equipment shall be immediately stopped and the depth of removal adjusted. Damaged or dislodged reinforcing steel shall be repaired or replaced at the Contractor's expense. Replacement shall include the removal of any additional concrete.

Bridge Decks with No Existing Concrete Overlay

If Hydrodemolition is to be performed on an original bridge deck surface without a bituminous or concrete bridge deck overlay, the Contractor may use mechanical scarification equipment conforming to these specifications to remove an initial portion of the hydro-demolition depth. The scarification depth shall be ¼". Total surface Hydrodemolition is used to provide a highly bondable surface and to remove partial depth deteriorated concrete.

Cost of the scarification shall be included as a portion of the pay item for Hydrodemolition.

If the use of mechanical scarifying equipment results in the snagging of the top mat of steel reinforcement, the scarifying equipment shall be immediately stopped and the depth of removal adjusted. Damaged or dislodged reinforcing steel shall be repaired or replaced at the Contractor's expense. Replacement shall include the removal of any additional concrete required to position the new reinforcing steel at the correct height and required lap splice lengths.

Concrete Removal by Hydro-Demolition

General: The total surface area of the reinforced concrete bridge deck shall be completely prepared by Hydrodemolition as necessary to provide a highly roughened and bondable surface prior to placement of the proposed bridge deck overlay while removing any deteriorated and unsound concrete in the initial pass. Unsound concrete is defined as existing bridge deck concrete that is deteriorated, spalled, or determined by the engineer to be unsound.

With the use of Hydrodemolition surface preparation, the requirement to provide a minimum ¾" clearance around all reinforcing bars that are more than 50% diameter exposed is waived, providing that the existing concrete is sound. The amount of steel exposed shall be kept to a minimum.

Damaged or dislodged reinforcing steel shall be repaired or replaced at the Contractor's expense. Replacement shall include the removal of any additional concrete required to position the new reinforcing steel at the correct height and to provide the required lap splice lengths as required.

Calibration: Prior to commencement of the Hydrodemolition removal operation, the Hydrodemolition equipment shall be calibrated on an existing ***sound*** concrete surface as designated by the Engineer. The calibration area shall be a minimum of 7 feet wide by 7 feet long to demonstrate the desired result of this specification.

Move the Hydrodemolition equipment to a second area (7'x7') that is unsound as designated by the Engineer to demonstrate the desired result of this specification which is providing a highly rough and bondable surface and removing all unsound concrete during the initial pass is being achieved.

The Engineer shall verify the following settings:

1. Water pressure gauge (13,000 psi minimum)
2. Machine staging control (step)
3. Nozzle size
4. Nozzle speed (travel)
5. Depth of removal
6. Minimum water usage (43 gallons per minute)

During the Hydrodemolition operations, any or all of the above settings may be modified in order to achieve removal of all unsound concrete and to provide a highly bondable surface. The settings may be changed by the Contractor to achieve total removal of unsound concrete, but the Engineer must be notified of all changes. The Engineer may change any or all of the settings in order to achieve the desired results with Hydrodemolition. The removals and depth shall be verified, as necessary, and at least every

30 feet along the cutting path. The readings shall be documented and, if necessary, the equipment re-calibrated to insure the Hydrodemolition process achieves the desired results and removal of unsound concrete.

Calibration shall be required on each structure; each time Hydrodemolition is performed and as required to achieve the results specified by the plan.

Debris and Fluid Containment: Prior to commencement of the Hydrodemolition operation, the Contractor shall submit a plan for approval to the engineer for control and filtering of all water discharged during operation. The Contractor, at a minimum, shall block all drains on the deck and install aggregate dams every 150 feet; 6 inches high by 1 foot wide minimum, to strain runoff. The deck shall be used as a settlement basin within itself unless an alternate method of water control, satisfactory to the Engineer and meeting the environmental requirements of any associated Regulatory Agency, is required.

The Contractor shall provide shielding, as necessary, to insure containment of all dislodged concrete within the removal area in order to protect the public from flying debris both on and under the work site.

Cleaning

Cleaning shall be performed with a vacuum system capable of removing wet debris and water all in the same pass. The vacuum equipment shall be capable of washing the deck with pressurized water prior to the vacuum operation to dislodge all debris and slurry from the deck surface. Cleaning shall be done in a timely manner, before debris and water is allowed to dry on the deck surface.

Resounding

After the Hydrodemolition operation has completed the removal, and the deck is cleaned and allowed to dry, the deck shall be resounded to assure that the all unsound concrete deck material has been removed. The final sounding of the deck shall be done by the Engineer and shall only be performed when the deck is completely dry and frost-free. Final sounding shall consist of as many successive resounding as required to ensure that all deteriorated and fractured concrete has been removed. Additional removal shall be performed with 35 lb maximum weight jackhammers operated at an angle of no more than 45 degrees from horizontal. Aerosol spray paint for outlining and sounding chains shall be provided by the Contractor.

Full Depth Repair

Where the deck is sound for less than one third of its original depth, the concrete shall be removed full depth except for limited areas as may be designated by the Engineer. Forms shall be provided to support concrete placed in full depth repair areas. The forms for areas of up to 4 square feet may be suspended from wires from the reinforcing steel. For areas greater than 4 square feet, the forms shall be suspended from the primary members of the superstructure or by shoring below. Areas of full depth repair shall have the concrete faces and reinforcing steel cleaned. Only those areas marked in the field by the Engineer as full depth repair will be paid for as full depth repair.

Preparation Prior to Overlay Placement

Vehicles other than approved construction equipment will not be permitted on those sections of the deck where Hydrodemolition has begun. Contamination of the deck by construction equipment or from any other source shall be prevented.

Method of Measurement

Wearing Course Removed Asphalt shall be measured as the actual square yards of the existing asphalt wearing course and waterproofing material removed and shall include all labor, materials and equipment required to complete the work.

Existing Modified Concrete Overlay Removed shall be measured as the actual square yards of the existing concrete overlay removed and shall include all labor, materials and equipment required to complete the work.

Surface Preparation Using Hydrodemolition shall be measured as the actual deck area in square yards overlaid and shall include the costs of surface preparation, Hydrodemolition, ¼" (min.) milling into the original concrete bridge deck surface, removal of the surface preparation debris, cleaning, any incidental materials, and all labor and equipment as necessary to complete the work as described in this specification, but not specifically included in other items for payment.

Full Depth Repair when encountered on a bridge deck and marked in the field by the Engineer, full depth repair shall be paid for per Cubic Yard of Class M Concrete used.

Basis of Payment

Payment for completed and accepted quantities as measured above will be made at the contract price for:

Item	Unit	Description
08550	Square yard	Hydrodemolition

Removal of existing flexible (asphalt) concrete overlays and rigid modified concrete overlays are included as parts of this work if the above bid items are part of the project plans:

SPECIAL NOTE FOR BRIDGE RESTORATION AND WATERPROOFING WITH CONCRETE OVERLAYS

I. **DESCRIPTION.** Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's 2008 Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings, and this Note. Section references are to the Standard Specifications.

This work consists of the following: (1) Furnish all labor, materials, tools, and equipment; (2) Machine preparation of existing slab; (3) Complete full-depth and partial depth repairs as directed by the Engineer; (4) Place new concrete overlay and epoxy-sand slurry in accordance with Section 606; (5) Maintain and control traffic; and (6) Any other work specified as part of this contract.

All construction will be in accordance with Section 606 unless otherwise specified.

II. **MATERIALS.**

A. **Latex Concrete.** See Section 606.03.17.

B. **Class "M" Concrete.** Use either "M1" or "M2". See Section 601.

C. **Epoxy-Sand Slurry.** See Section 606.03.10.

D. **Bituminous asphalt.** See special note for placing bridge overlay approach pavement.

III. **CONSTRUCTION.**

A. **Surface Preparation.** Remove concrete (and all patches) from existing slab to a depth of at least ¼" below the existing surface in accordance with the requirements of Section 606.03.03. See Special Note for Use of Hydrodemolition Method.

B. **Remove of Existing Overlay.** In addition to Section 606.03.03, totally remove the existing concrete overlay by grinding or scarifying the deck to a depth slightly below or equal to the original bridge slab surface. Machine preparation of the existing slab to a depth of at least ¼" below the existing surface is NOT required. When removal of an existing overlay is a pay item, no payment will be allowed for "Machine Preparation of Existing Slab". This work is incidental to the pay item "Removal of Existing Overlay – Square Yard". See Special Note for Use of Hydrodemolition Method.

C. **Full Depth Slab Repair.** After the existing slab has been machine prepared in accordance to Section 606.03.03, perform full depth patching in accordance with section 606.03.05. The Department will not measure material removal, forming, blast cleaning, or retying steel reinforcement in the patches and will consider this work incidental to the pay item "Concrete Class M Full Depth Patch."

D. **Partial Depth Slab Repair.** Perform partial depth patching in accordance with section 606.03.06. The pay item "PARTIAL DEPTH PATCHING" measured in cubic yards of material placed and accepted will include removal of existing material by any means including Hydrodemolition, forming, blast cleaning, retying steel reinforcement in the patches, and disposal of waste off of construction site.

E. **Surface Texturing.** Texture the concrete surface of the overlay in accordance with Section 609.03.10.

F. **Asphalt Approach Pavement.** See special note for placing bridge overlay approach pavement.

G. EQUIPMENT.

A. **Hammer.** Provide Power driven Hammers lighter than nominal 45 lb. class.

B. **Sawing Equipment.** Sawing equipment shall be a concrete saw capable of sawing concrete to the specified depth.

C. **Hydraulic Impact Equipment.** Hydraulic Impact/Skid Steer Type Equipment with a maximum rated striking Energy of 360 ft-lbs are permitted only in areas of concrete removal more than 6 inches away from boundaries of surface areas to remain in service. The Contractor is to provide data information to the engineer on the equipment they wish to utilize to ensure compliance with this note.

IV. MEASUREMENT. See Section 606 and the following:

A. **Concrete Overlay- Latex.** The Department will measure the quantity in cubic yards using the theoretical volume required for the overlay shown in the Plans.

B. **Partial Depth Patching.** The Department will measure the quantity in cubic yards by deducting the theoretical volume of bridge deck overlay (LMC) from the total volume (as indicated by the batch quantity tickets) of Concrete required to obtain the finished grade shown on the Plans or established by the Engineer.

C. **Concrete Class M for Full Depth Patching.** See Section 606.

D. **Asphalt Approach Pavement.** See special note for bridge overlay approach pavement.

V. PAYMENT. See Section 606 and the following:

A. **Concrete Overlay- Latex.** See Section 606.

B. **Partial Depth Patching.** The Department will pay for accepted quantities of partial depth patching at the contract unit price in cubic yard for bid item "PARTIAL DEPTH PATCHING".

C. **Concrete Class M for Full Depth Patching.** See Section 606.

D. **Asphalt Approach Pavement.** See special note for bridge overlay approach pavement.

SPECIAL NOTE FOR REPLACING COMPRESSION SEAL IN EXISTING EXPANSION JOINT

I. DESCRIPTION.

Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's 2008 Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings, this Note, and the attached detail drawings. Section references are to the Standard Specifications.

This work consists of the following: (1) Furnish all labor, materials, tools, and equipment; (2) Remove existing compression seal; (3) Install new compression seal; (4) Maintain and control traffic; and (5) Any other work specified as part of this contract.

II. MATERIALS.

A. Neoprene Joint Sealers (Compression Seals). See Section 807.

B. Silicone Rubber Sealant. See Section 807.

III. CONSTRUCTION.

A. Remove Existing Materials. Remove the existing compression seal as shown on the attached sketches. Remove debris and/or expansion joint filler as directed by the Engineer. Dispose of all removed material entirely away from the job site. This work is incidental to the contract unit price for "Expansion Joint Seal Replacement".

B. Blast Clean Armored Edges. Blast clean all areas of existing armored edges until free of all laitance and deleterious substances immediately prior to the placement of the Compression Seal.

C. Preformed Neoprene Joint Seal. Place the preformed joint seal in one continuous, unbroken length. Place neoprene compression seals as recommended by the manufacturer and in accordance with Section 609.03.04 (D).

D. Silicone Rubber Sealant. Place the silicone sealant as recommended by the manufacturer and in accordance with Section 609.03.04 (C).

E. Shop Plans. Shop plans will <u>not</u> be required. The Contractor is responsible for obtaining field measurements and supplying properly sized materials to complete the work.

IV. MEASUREMENT.

A. **Expansion Joint Seal Replacement** - The Department will measure the quantity in linear feet from gutterline to gutterline along the centerline of the joint.

V. PAYMENT.

A. **Expansion Joint Seal Replacement** - Payment at the contract unit price per linear foot is full compensation for removing specified existing materials, furnishing and installing the neoprene compression joint seal, and all incidental items necessary to complete the work within the specified pay limits as specified by this note and as shown on the attached detail drawings.

The Department will consider payment as full compensation for all work required by this note and the attached detail drawings.

Special Note for Experimental Bridge Deck Sealants on I-471 bridge over 6th Street in Newport, Ky.

For the purpose of this experimental crack and deck sealant project, the bridge will be divided into five Test Areas as described in the following;

Test Area 1 I-471 Northbound from End Bent 1 to Pier 13. Include the off ramp (Ramp L) up to Pier 13.

Test Area 2 I-471 Southbound from End Bent 1 to Pier 13.

Test Area 3 I-471 Northbound from Pier 13 to Pier 26.

Test Area 4 I-471 Southbound from Pier 13 to Pier 26. Include the Southbound on ramp (Ramp K) from Pier 24 into the Southbound lanes.

Test Area 5 Both Northbound and Southbound I-471 from Pier 26 to End Bent 2. Test Area 5 is a control area and will not receive crack or deck sealing.

Cleaning Cracks	Clean all visible cracks, extending across the width of the deck, to remove debris by pressure washing (2,000 to 3,000 psi rated capacity) with fan tips to remove all debris.
Crack Sealing	The crack must be dry (no water is visible) when applying sealer. Seal all visible cracks with one product on the project List of Approved Materials-Crack Sealer. A manufacturers' representative must be present and approve surface preparation and application for a minimum of 10% the total crack length for the project.
Cleaning Deck	Clean all visible hydrocarbons from the deck surface (Test Areas 1 through 4) with a detergent approved by the manufacturer of chosen deck sealer for each Test Area. Clean all deck surface to be sealed by pressure washing (2,000 to 3,000 psi rated capacity) with fan tips to remove all debris.
Sealing Deck	The deck must be dry (no water is visible) when applying sealer. Apply a sealer from the project List of Approved Materials – Deck Sealer to Test Area 1. Apply a second sealer (different from the Test Area 1 sealer) to Test Area 2. Apply a third sealer (different from Test Areas 1 or 2) to Test Area 3. Apply a fourth sealer (different from Test Areas 1, 2, or 3) to Test Area 4. A manufacturers' representative for each product applied must be present and approve surface preparation and application for the project.

All crack sealing, cleaning, and deck sealing will be conducted in compliance with the traffic control requirements, including lane closure times, for this project.

The Contractor will submit a list of the products chosen for crack and deck sealing at the Pre-construction Conference.

All costs for work and materials for cleaning and sealing cracks are incidental to the lump sum bid for "cleaning and sealing cracks". The approximate total length of cracks is 17,000 ft. but the contractor is responsible for determining quantities for bidding. All costs for work and materials for cleaning and sealing decks are incidental to the lump sum bid for "cleaning and sealing deck". The approximate deck area to be cleaned and sealed is 225,000 ft^2 but the contractor is responsible for determining quantities for bidding.

Project List of Approved Materials - Crack Sealer

Sikasil 728 SI	SIKA Corp.
Sonalastic 150	BASF Construction Chemicals

Project List of Approved Materials - Deck Sealer

Product name	**Supplier**
Enviroseal 40	BASF
Hydrozo Silane 40	BASF
PowerSeal 40	Vexcon Chemicals Inc.
Pavix CCC100	Chem-Crete
BMS 5122 Clear Cladding	Belzona
Aquinil Plus 40	ChemMasters
TK-590-1-MS-Tri-Silane	TK Products

SPECIAL NOTE FOR DEBRIS CLEANING

I. DESCRIPTION. Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's 2008 Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings, and this Note. Section references are to the Standard Specifications.

This work consists of the following: (1) Furnish all labor, materials, tools, and equipment; (2) Bag and remove large debris; (3) Power wash the lower chord, truss members, drainage system on each side of the structure, joints, floor beams adjacent to joints, pile/pier caps, and bearing devices; (4) Remove stratified rust and apply lubricant to the bearings.

II. PREPARATION. Prior to any other cleaning work, confirm that the bridge drainage system is not blocked by un-removable debris by rodding with a sewer rod or similar tool. A blocked drainage system is considered to be one from which debris cannot be removed using the means specified below in Section III below. If the Engineer has been notified, and concurs that the drainage system is blocked prior to performing other cleaning work, then proceed at the direction of the engineer. If the Contractor does not inspect the bridge drainage system and notify the Engineer prior to beginning work, any blocked drains will be considered to be the result of the Contractor's operations, and all clearing and cleaning of the drainage system shall be done as part of the work of this specification

III. CLEANING.

A. REMOVAL OF TRASH AND DEBRIS FROM LOWER CHORD, DRAINAGE SYSTEM, JOINTS, FLOOR BEAMS, BEARINGS, AND PILE/PIER CAPS. All loose trash and debris shall be collected by sweeping, shoveling, vacuuming and other suitable methods. Equipment for collecting trash and other debris from bridge decks shall be determined by the Contractor, subject to the approval of the Engineer, and will normally consist of, but not be limited to, industrial vacuums, brushes, brooms, and shovels. Plastic shovels shall be used when other shovels are damaging coated surfaces. The contractor shall not cause or allow trash and/or debris from the bridge to be deposited into a wetland, stream, other water body, bridge drainage system, or active traffic lanes during the cleaning of the bridge. Debris and trash collected shall be disposed of in a suitable off-site disposal facility.

B. POWER WASHING. Wash the lower chord, truss members, drainage system, joints, floor beams adjacent to the joint, bearings, and pile/pier caps on each side of the structure. Wash the truss members to a height of eight (8) feet above the top of deck elevation. The equipment for pressure washing shall be operated at a maximum pressure of 1,000 psi and with a minimum flow rate of 3.5 gal/minute provided that these pressures do not damage the paint or other coatings on the bridge or undercut the grout or harm the masonry plates beneath the bearings. If these pressures and flow rates cause such damage, then the Contractor shall reduce either or both to a level satisfactory to the Engineer. The pressure washer shall be operated at a distance of 6 inches to one foot from the surface.

Lower Chord Washing – Wash the top and sides of the lower chord until all foreign material has been removed.

Truss Member Washing – Wash each side of the vertical, diagonal, and horizontal truss members until all foreign material has been removed. The extent of the washing shall be from the lower chord to a height of 8 feet above the deck.

Drainage System – All debris and foreign material shall be removed including material in the gutter line, grate, drain casting / coupling / funneling system, and drains / scuppers / downspouts. If the drain is blocked prior to cleaning operation and the debris cannot be removed by methods described above, proceed at the direction of the engineer.

Joints – Remove all debris from and wash the top and bottom of each joint. If the entire top of the joint is not accessible due to traffic control restrictions, then clean the available portions and proceed at the direction of the engineer. If the joint has a trough, then wash the through until all foreign material has been removed.

Floor Beams – Wash each floor beam adjacent to a joint. Wash the side nearest to the joint until all foreign material has been removed.

Bearings – Prior to washing the bearings, remove the stratified rust from the bearing surface using a wire brush or equivalent method. Wash each bearing until all foreign material and debris has been removed. See Section C for further instruction on bearing cleaning.

Pile / Pier Caps – wash the entire top and the top 3 feet of the sides of the pile/pier caps until all foreign material has been removed.

C. **BEARING CLEANING / LUBRICATING.** Remove the stratified rust from the bearing surface using a wire brush or equivalent method. After washing the bearings, allow the bearings to dry. Apply lubricant to all exposed surfaces of the bearing in accordance with the manufacturer's recommendations (minimum 1mm thickness). Disassembly of the bearing will not be required. The lubricant used shall be 'NEVER-SEEZ – MARINER'S CHOICE' produced by Bostik, Inc. or approved equivalent.

D. **DAMAGES.** Any damage to the system or structure that occurs during cleaning operations shall be repaired by the Contractor to the satisfaction of the Engineer at no additional expense to the State.

E. **SITE VISIT.** We encourage all contractors to visit each site prior to bidding in order to become familiar with the requirements of this work.

IV. **MEASUREMENT.** 'CLEAN DEBRIS FROM LOWER CHORD'. The Cabinet shall measure this item as a lump sum.

V. **PAYMENT.** 'CLEAN DEBRIS FROM LOWER CHORD'. The contract price for this item will be paid as a lump sum. The payment for this bid item at the contract unit price of Lump Sum shall be considered full compensation for complete and accepted work which includes all labor, materials, equipment needed for debris removal, power washing, cleaning and lubricating bearing devices for "CLEAN DEBRIS FROM LOWER CHORD".

SPECIAL NOTE FOR REMOVING AND REPLACING BRIDGE CHAIN LINK FENCE

I. DESCRIPTION

Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's 2008 Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings, this note and the attached detail drawings. Section references are to the Standard Specifications.

This work consists of the following: (1) Furnish all labor, materials, tools, and equipment; (2) Remove existing chain link fence; (3) Install new galvanized chain link fence; (4) Maintain and control traffic; and (5) Any other work specified as part of this contract.

II. MATERIALS

A. Chain Link Fencing Materials. See Section 817 of the Specifications.

III. CONSTRUCTION

A. Remove Existing Materials. Remove the existing chain link as shown on the attached drawings. Dispose of all removed materials entirely away from the job site. This work is incidental to the contract unit price for "Remove and Replace Bridge Chain Link Fence".

B. Galvanized Chain Link Fence. Erect the new galvanized chain link fence in accordance with the attached drawings and Section 722 of the Specifications.

C. Shop Plans. Shop plans will not be required. The Contractor is responsible for obtaining field measurements and supplying properly sized materials to complete the work.

IV. MEASUREMENT

A. Remove and Replace Bridge Chain Link Fence. The Department will measure the quantity in linear feet from end to end of the existing fence on each side of the bridge.

V. PAYMENT

A. Remove and Replace Bridge Chain Link Fence. Payment at the contract unit price per linear foot is full compensation for removing specified existing materials, furnishing and installing the galvanized chain link fence, and all incidental items necessary to complete the work within the specified pay limits by this note and as shown in the attached detail drawings.

The Department will consider payment as full compensation for all work required by this note and the attached detail drawings.

SPECIAL NOTE FOR PROTECTING NESTING BIRDS AND BATS

Should an active nest of an osprey or peregrine falcon be located or suspected during bridge work, the KYTC-DEA biologist should be notified. The biologist will notify Kentucky Department of Fish and Wildlife Resources (KDFWR). If an osprey or peregrine falcon is observed diving at bridge personnel or circling the immediate area of bridge work, it can be assumed that a raptor nest is on the bridge. Once contacted, KDFWR can conduct a site visit to confirm the species and nest location. Osprey nests are conspicuous- a few feet wide and made of sticks and vegetation. However, peregrine falcon nests are inconspicuous. Peregrine falcons nest directly on the bridge structure itself, either inside a beam or in a protected area. Bridge workers should be alerted to the possibility of nesting raptors from Mid-February to August 15. Once the nest location is known, bridge workers shall not work within 300 hundred feet of the nest until August 15 or until after the chicks have fledged. KDFWR can monitor the nest and notify the Kentucky Transportation Cabinet once young have fledged.

All nests of other protected migratory birds on bridges should be presumed to be active and occupied between April 15 and August 15. In order to avoid disturbance/destruction of songbird nests (cliff swallow, eastern phoebe, etc.) on bridges the areas within 10 feet laterally of the nest should not be cleaned or washed; pressure washing should start at the 10 feet line and progress away from the nest. Nestlings will fledge within a matter of weeks.

If a roosting bat is encountered, cease cleaning operations in that area, contact the KYTC-DEA biologist and do not disturb the site until they can evaluate the area and make recommendations.

CAMPBELL COUNTY

019B00049L
I-471 SOUTHBOUND OVER US 27

Approximate Location Information
Latitude: 36° 03' 59"
Longitude: 84° 27' 56"

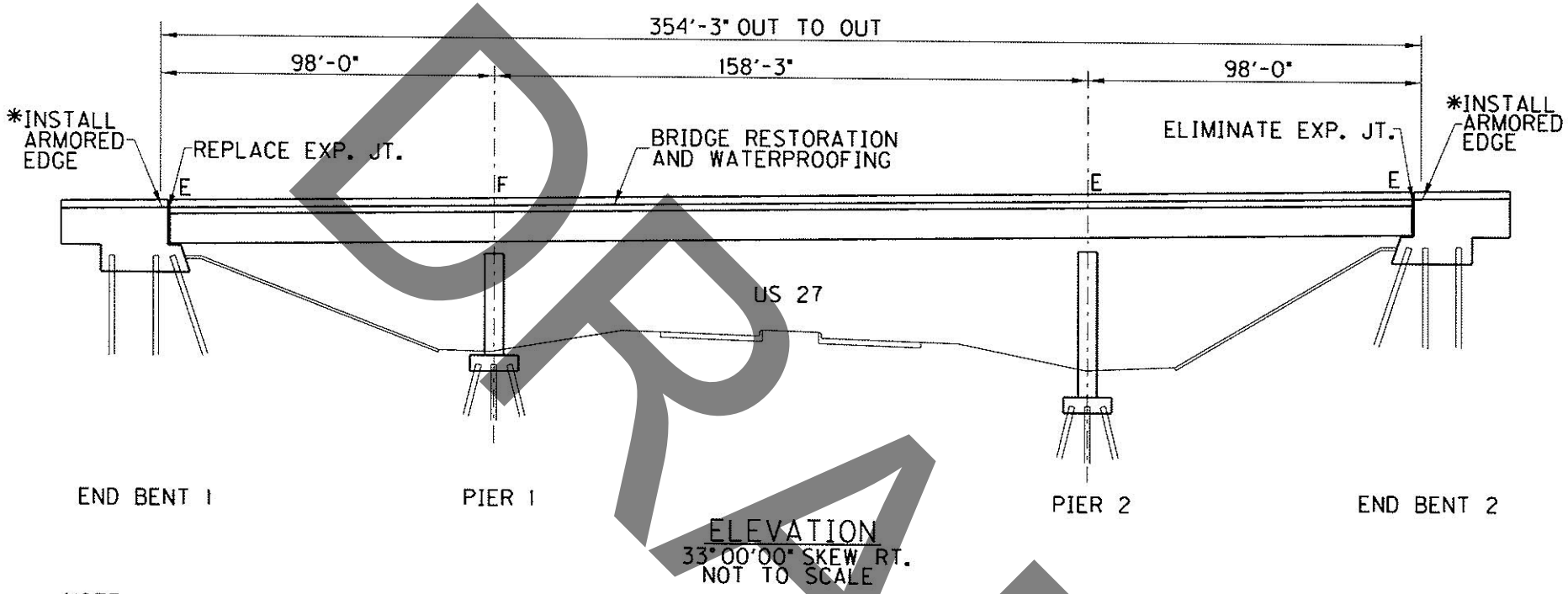
BRIDGE #1 (019B00049L) SUMMARY OF QUANTITIES

1. DISTRICT:	6				
2. COUNTY:	CAMPBELL				
3. ROUTE:	I-471				
52 019 0471 000-005	FD52 019 0471 000-005				
5. ROAD NAME:	I-471				
6. DESCRIPTION:	I-471 SOUTHBOUND OVER ALEXANDRIA DRIVE (US 27) BRIDGE DECK RESTORATION AND WATERPROOFING:ELIMINATE EXPANSION JOINT REPLACE EXPANSION JOINT				
8. LENGTH (FT.):	354.25	**BRIDGE WIDTH (FT.):**	56.0	**SURFACE AREA (SQ. YD.):**	2204
SKEW (DEGREES):	33	**DECK THICKNESS (INCHES):**		9	

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3298	EXPANSION JT REPLACEMENT 4 IN	67.0	LIN FT
3300	ELIMINATE TRANSVERSE JOINT	67.0	LIN FT
8504	EPOXY SAND SLURRY	354.0	SQ YD
8526	CONC CLASS M FULL DEPTH PATCH	8.0	CU YD
8534	CONCRETE OVERLAY-LATEX	77.0	CU YD
8549	BLAST CLEANING	2504	SQ YD
8550	HYDRODEMOLITION	2204	SQ YD
24094ED	PARTIAL DEPTH PATCHING	15.4	CUYD

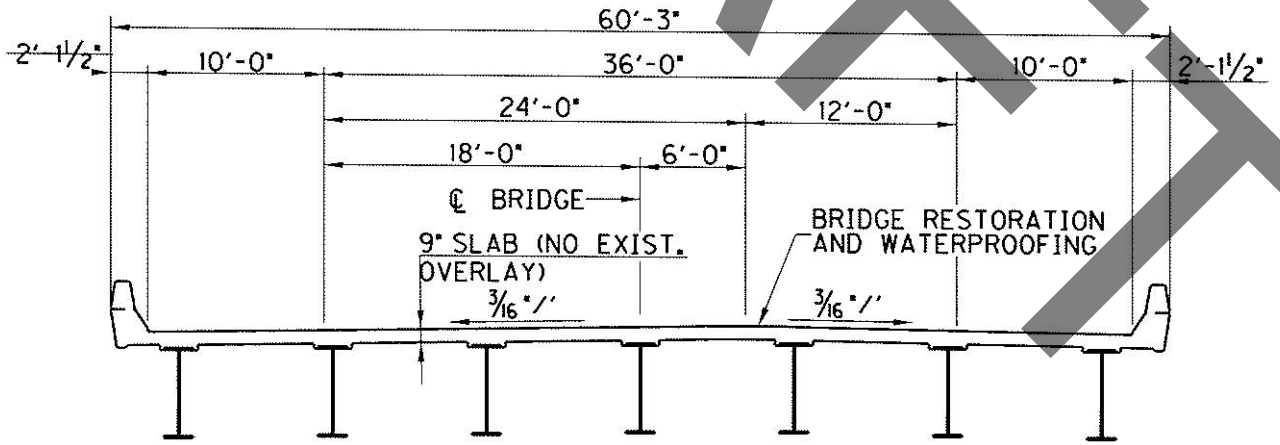
I-471 SOUTHBOUND OVER ALEXANDRIA PIKE (US 27)
BRIDGE MAINTENANCE NUMBER 019B00049L



ELEVATION
33°00'00" SKEW RT.
NOT TO SCALE

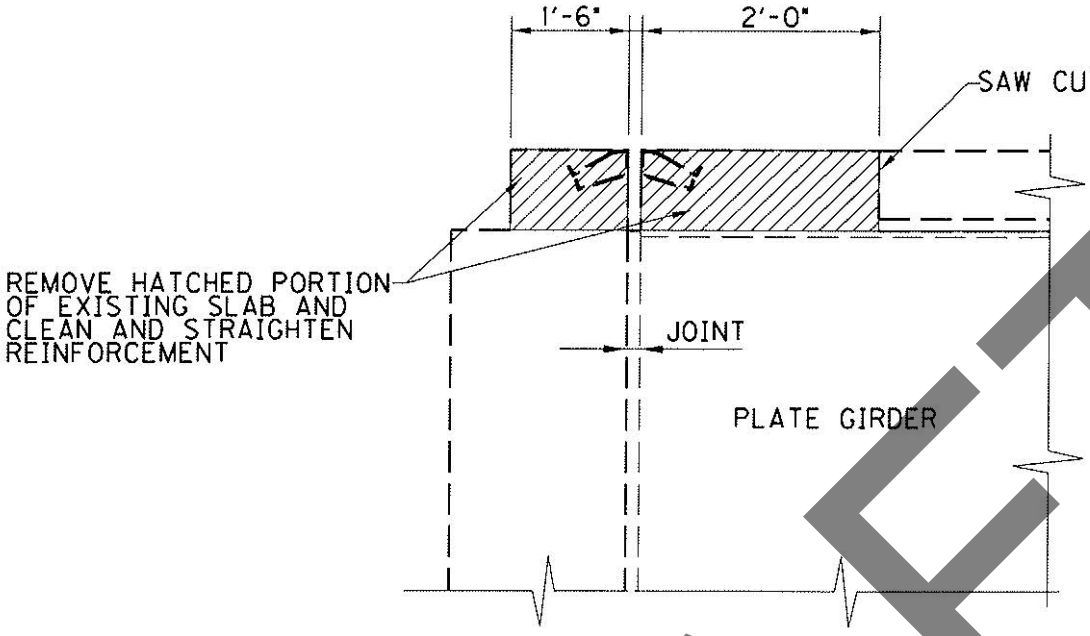
NOTE:
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

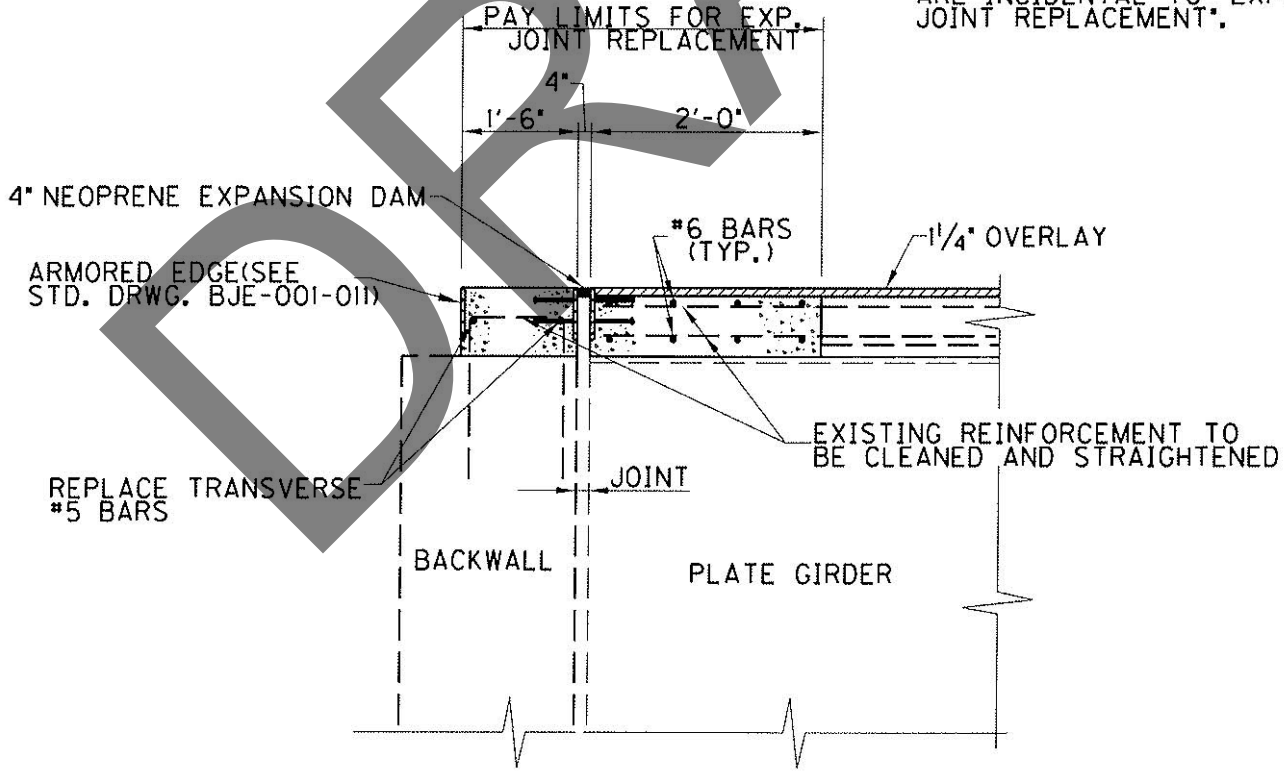
REPLACE JOINT @ END BENT 1



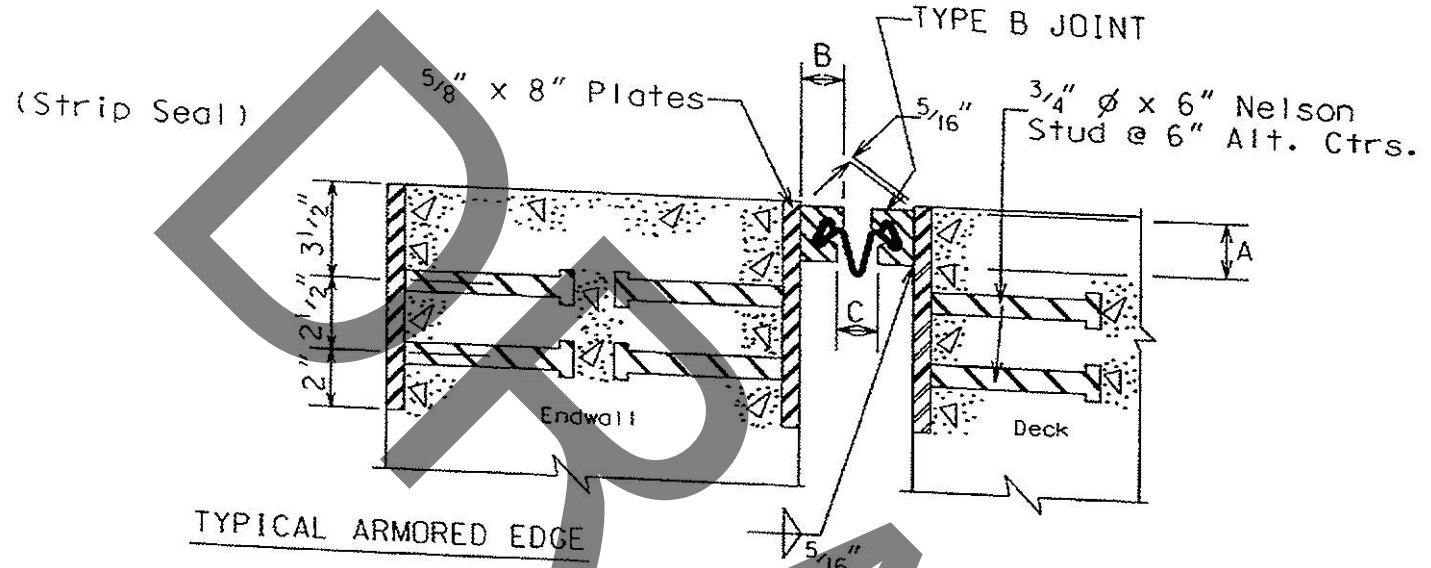
EXISTING SECTION @ END BENT

NOTE:
REMOVE 6' OF ROADWAY PAVEMENT. PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)

NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".



PROPOSED SECTION @ END BENT



TYPICAL ARMORED EDGE

TYPICAL 4" JOINT

NOTE: Joint openings shall be adjusted for each 10 above or below 60° f. Decrease or increase respectively by increment shown.

4" - Joint Opening @ 60° F.

INCREMENT FOR 10° TEMPERATURE CHANGE - STEEL SPAN -							
THRU 60'	61'-100'	101'-140'	141'-180'	181'-240'	241'-320'	321'-365'	
1/32"	1/16"	3/32"	1/8"	3/16"	1/4"	5/16"	

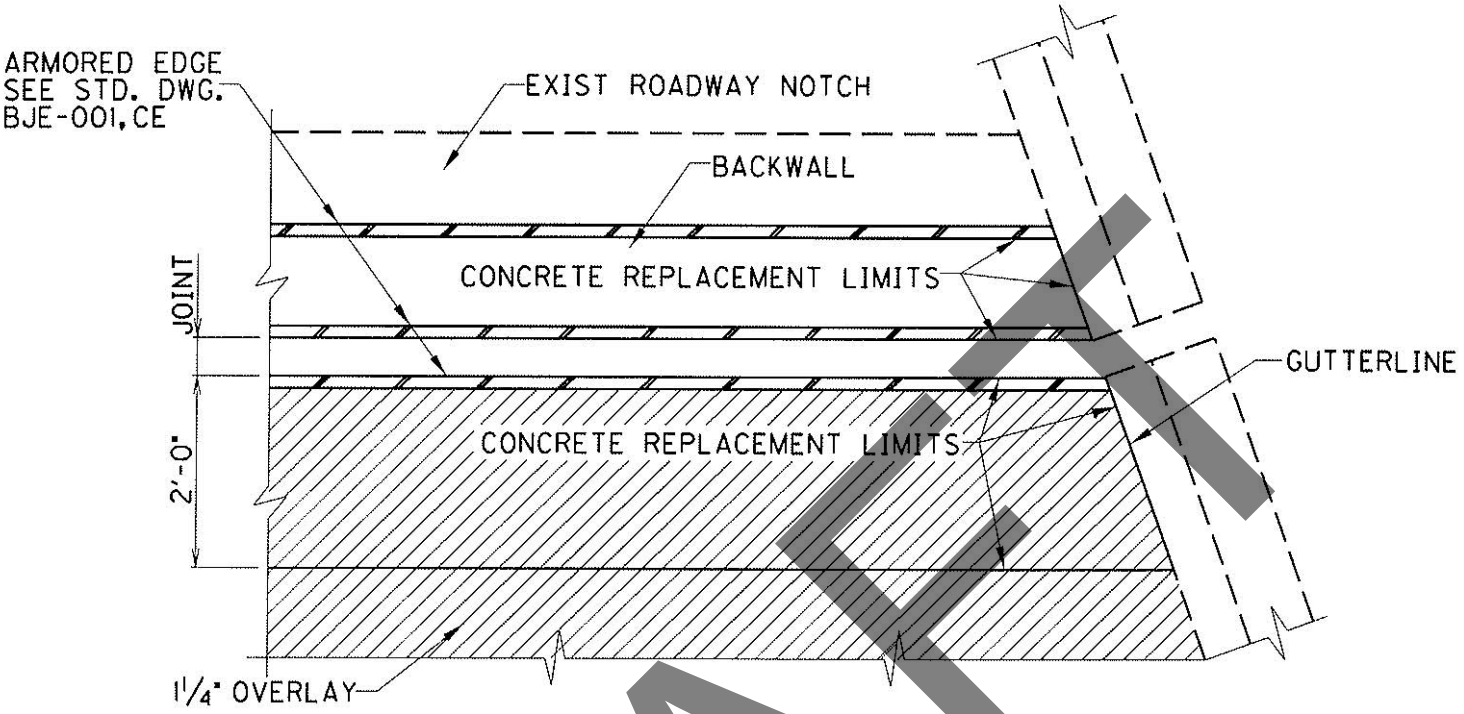
Not to Scale

ALTERNATE NEOPRENE EXPANSION DAMS - 4"

			A	B	C
B	WABO STRIP SEAL Type A Extrusion with S-400 Seal	Watson Bowman Associates Inc.	2"	1 1/2"	2"
B	STEEL FLEX Type SSA with 400 Seal	D. S. Brown Co.	2"	1 1/2"	2 1/2"
B	GENERAL STRIP CD Profile A Steel Extrusion with Gen Strip CD Seal	General Tire Co.	2"	1 3/8"	2 1/4"
B	ONFLEX Type AM2 Extrusion with 40SEQ Sal	Structural Accessories Inc.	2"	1 1/4"	2"

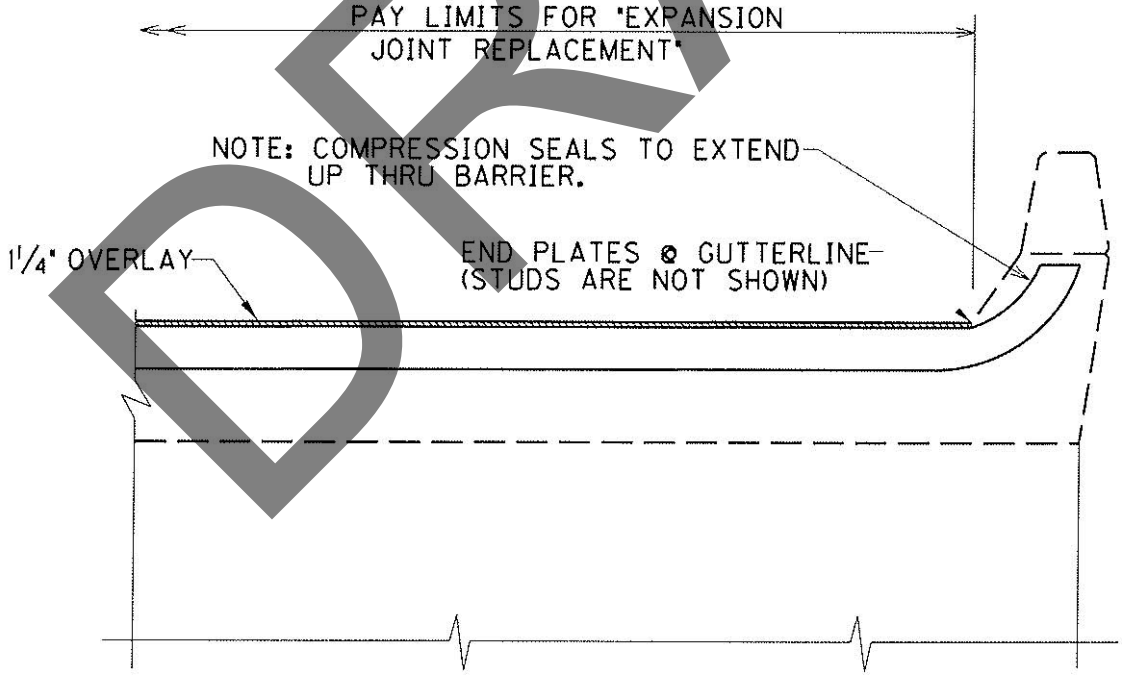
Not to Scale

REPLACE EXPANSION JOINT
END BENT 1 CURB SECTION



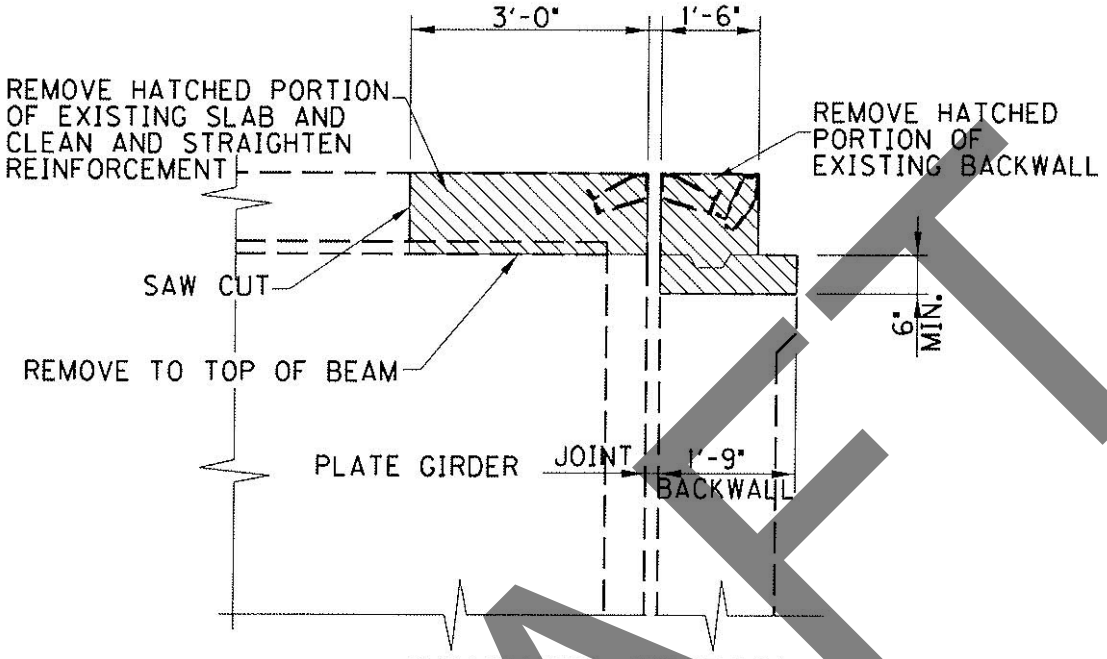
PLAN VIEW @ CURB

REPLACE EXPANSION JOINT



PROPOSED SECTION @ END BENT

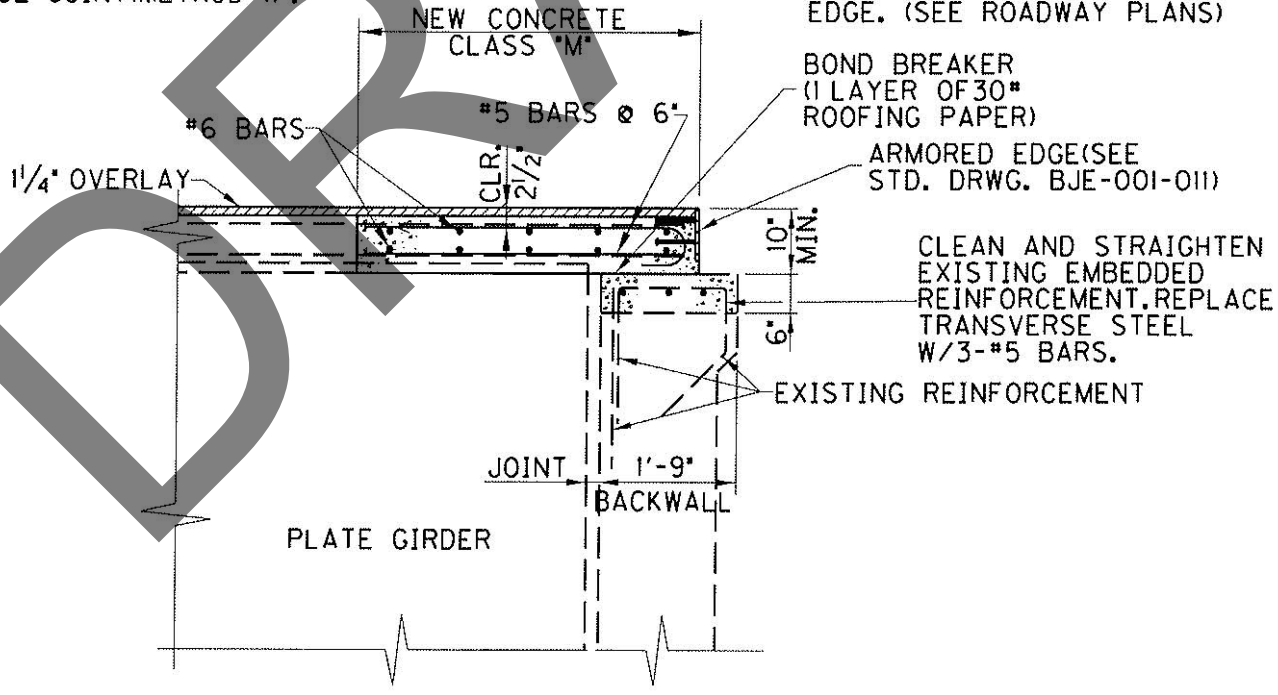
ELIMINATE JOINT @ END BENT 2



EXISTING SECTION
@ END BENT

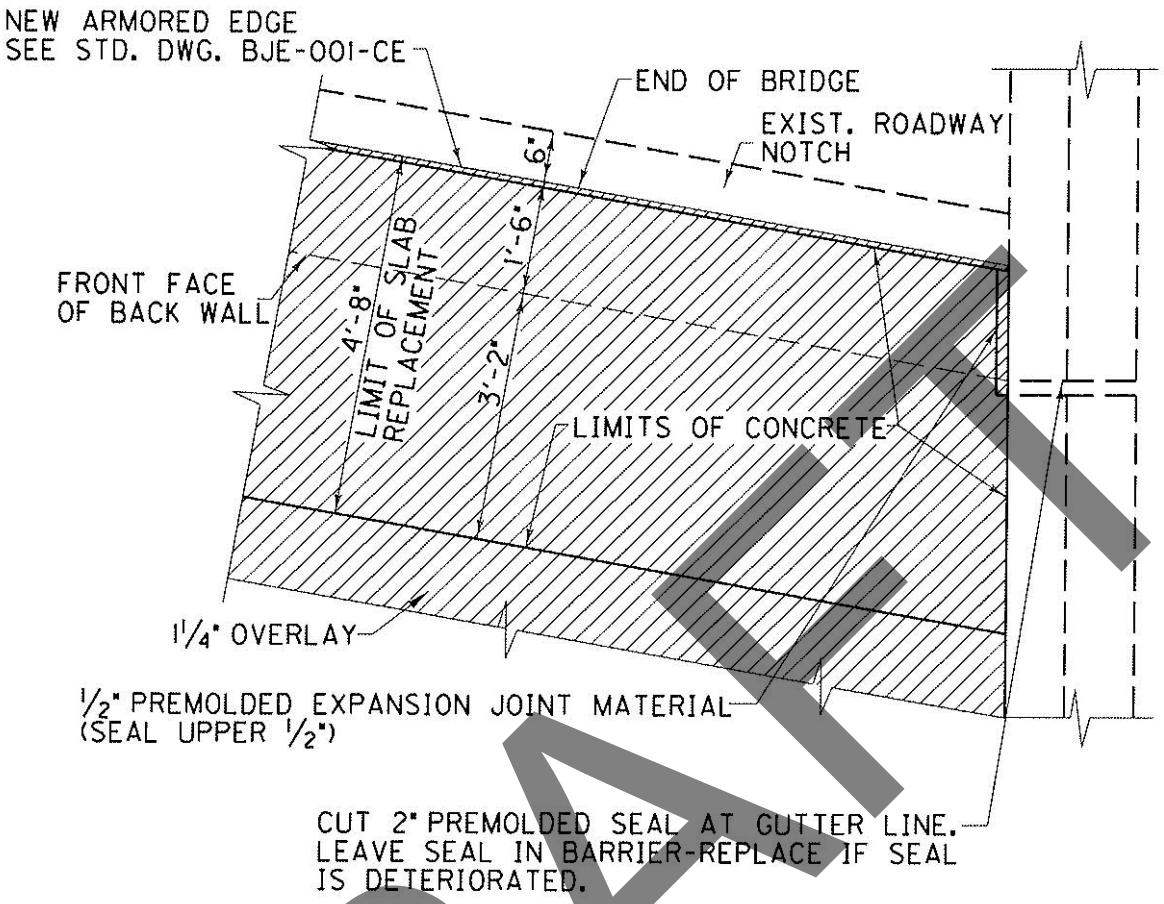
NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "ELIMINATE TRANSVERSE JOINT(METHOD 1)".

NOTE:
REMOVE 6' OF ROADWAY PAVEMENT. PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)

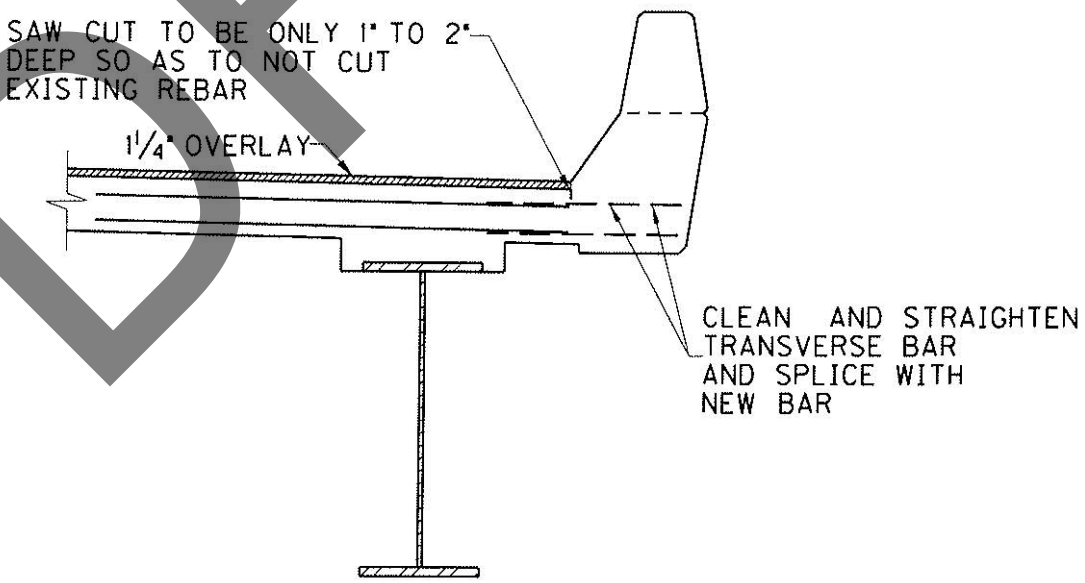


PROPOSED SECTION
@ END BENT

CURB SECTION @ END BENT 2

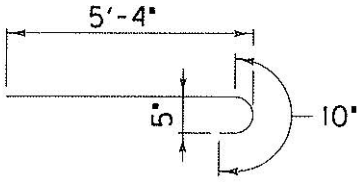


PROPOSED PLAN @ END BENT

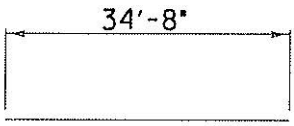


PROPOSED SECTION @ END BENT

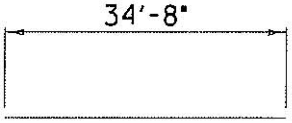
REINFORCEMENT



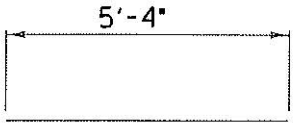
#5 BENT BAR
112 REQ'D END BENT 2



#5 STRAIGHT BAR
4 REQ'D END BENT 1
6 REQ'D END BENT 2



#6 STRAIGHT BAR
16 REQ'D END BENT 1
20 REQ'D END BENT 2



#5 STRAIGHT BAR
112 REQ'D END BENT 2

978 LBS END BENT 1
2,577 LBS END BENT 2

END BENT REINFORCEMENT

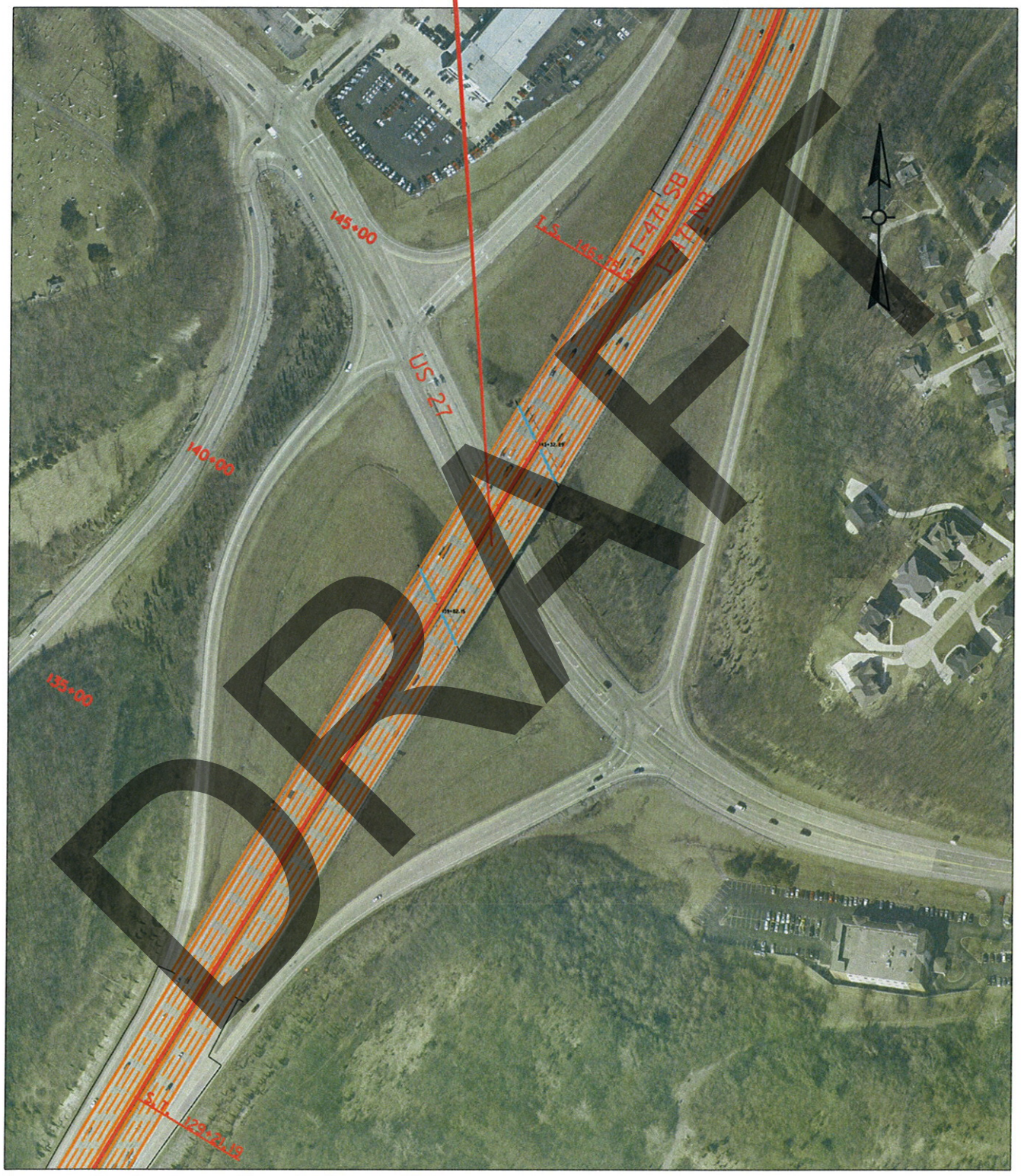
300 LIN. FT. #4 BARS IN 20'-0" LENGTHS
200 LBS. EACH END BENT

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 3,955 LBS.

CAMPBELL COUNTY

019B00049R
I-471 NORTHBOUND OVER US 27



Approximate Location Information
Latitude: 39° 03' 59"
Longitude: 84° 27' 55"

BRIDGE #2 (019B00049R) SUMMARY OF QUANTITIES

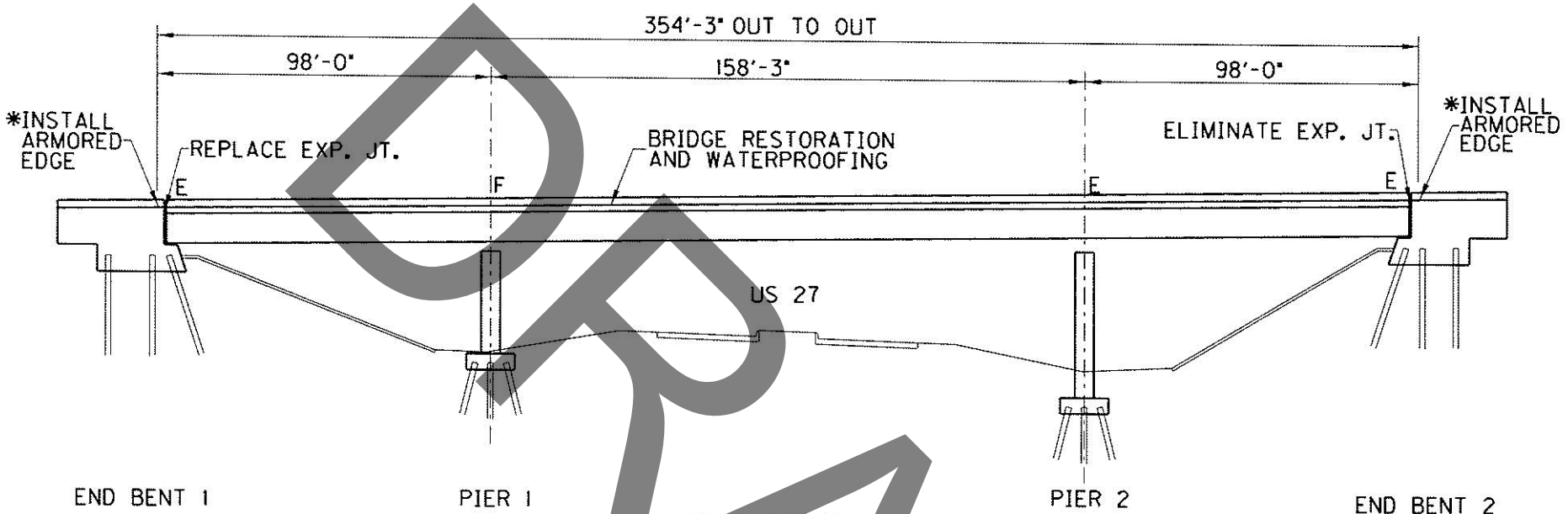
1. DISTRICT: 6
2. COUNTY: CAMPBELL
3. ROUTE: I-471
4. PROJECT NUMBER: FD52 019 0471 000-005
5. ROAD NAME: I-471
6. DESCRIPTION: I-471 NORTHHBOUND OVER ALEXANDRIA DRIVE (US 27)
BRIDGE DECK RESTORATION AND WATERPROOFING:ELIMINATE EXPANSION JOINT
REPLACE EXPANSION JOINT

8. LENGTH (FT.):	354.25	**BRIDGE WIDTH (FT.):**	56.0	**SURFACE AREA (SQ. YD.):**	2204
SKEW (DEGREES):	33	**DECK THICKNESS (INCHES):**		9	

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3298	EXPANSION JT REPLACEMENT 4 IN	67.0	LIN FT
3300	ELIMINATE TRANSVERSE JOINT	67.0	LIN FT
8504	EPOXY SAND SLURRY	354.0	SQ YD
8526	CONC CLASS M FULL DEPTH PATCH	8.0	CU YD
8534	CONCRETE OVERLAY-LATEX	77.0	SQ YD
8549	BLAST CLEANING	2504	SQ YD
8550	HYDRODEMOLITION	2204	CU YD
24094ED	PARTIAL DEPTH PATCHING	15.4	CU YD

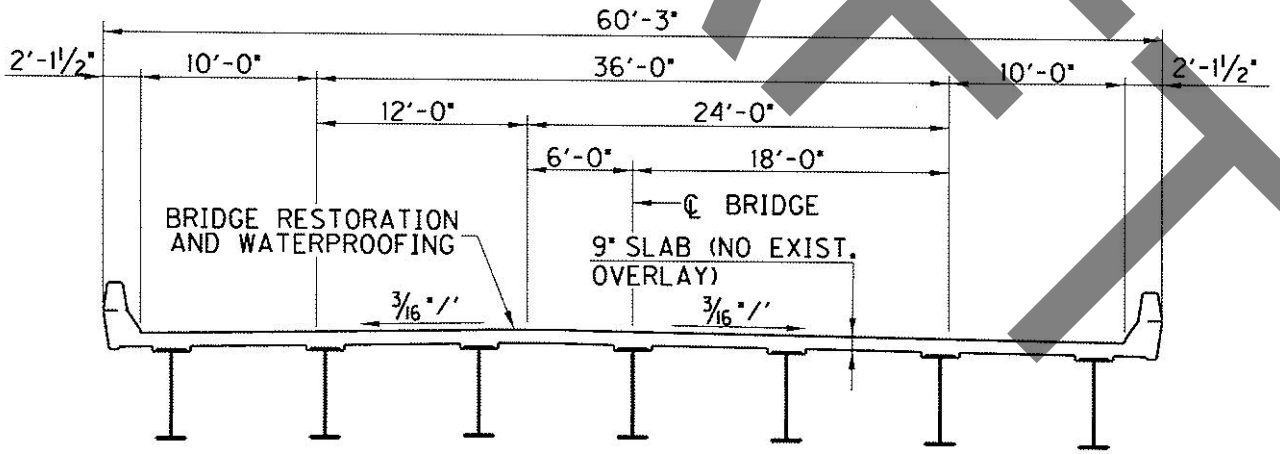
I-471 NORTHBOUND OVER ALEXANDRIA PIKE (US 27)
BRIDGE MAINTENANCE NUMBER 019B00049R



ELEVATION
33°00'00" SKEW RT.
NOT TO SCALE

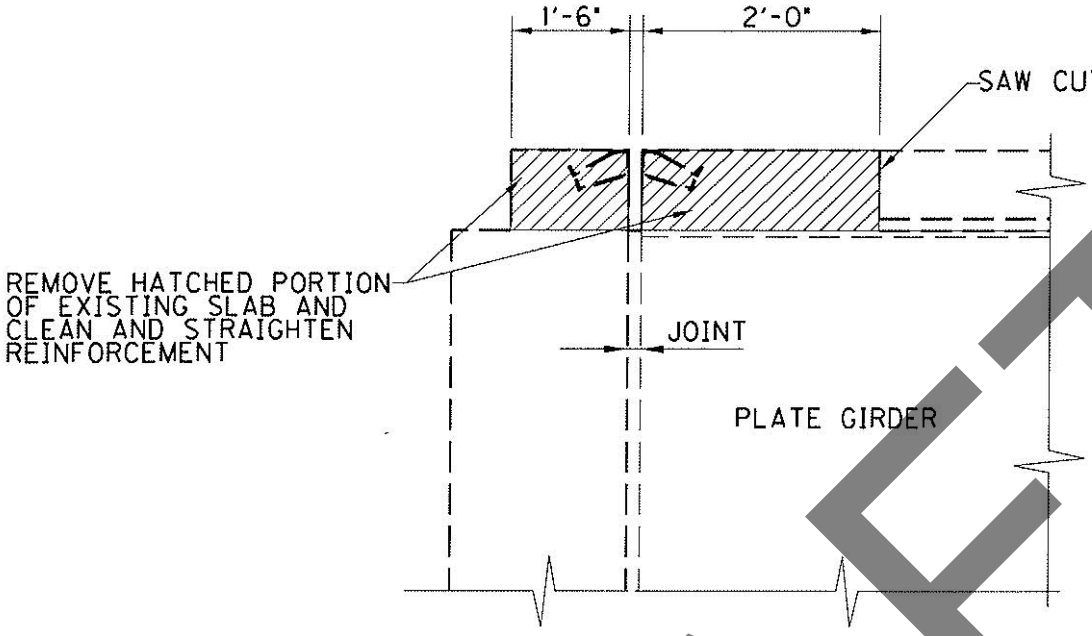
NOTE:
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

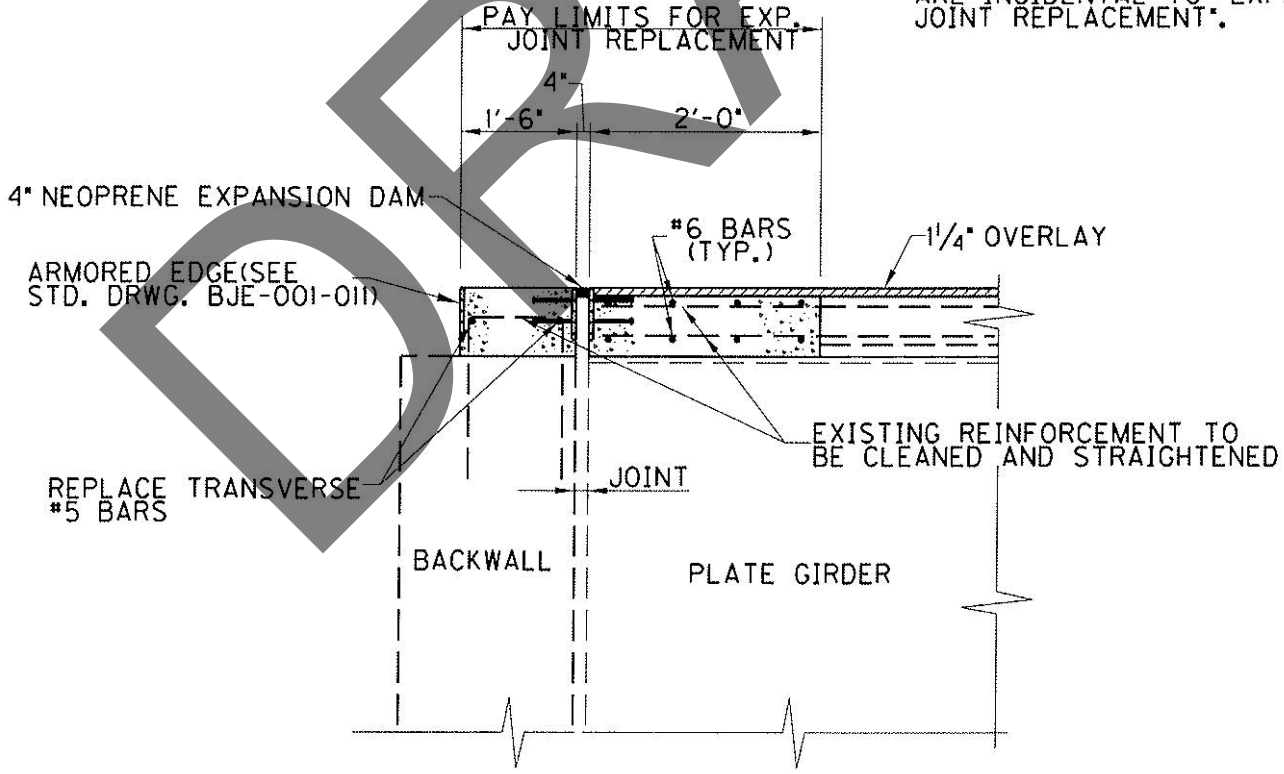
REPLACE JOINT @ END BENT 1



EXISTING SECTION @ END BENT

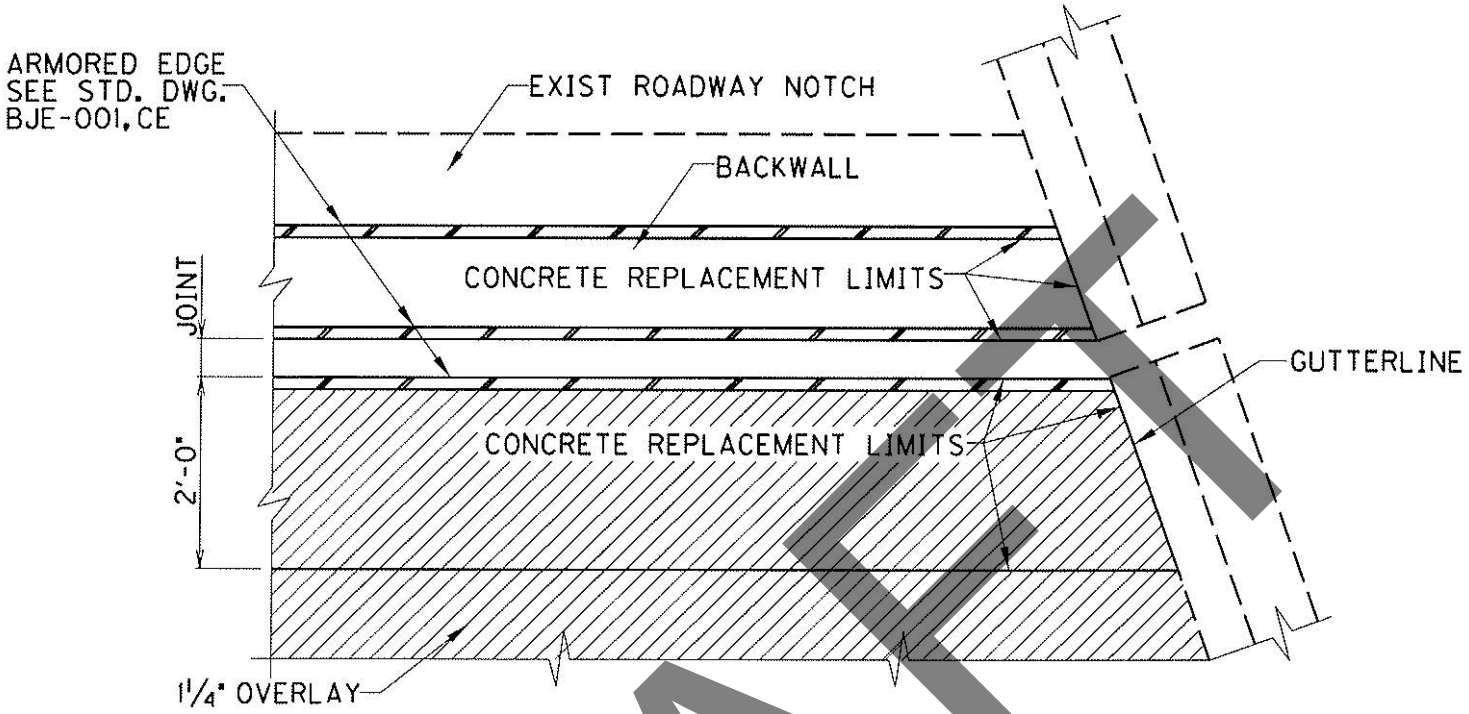
NOTE:
REMOVE 6' OF ROADWAY PAVEMENT. PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)

NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".

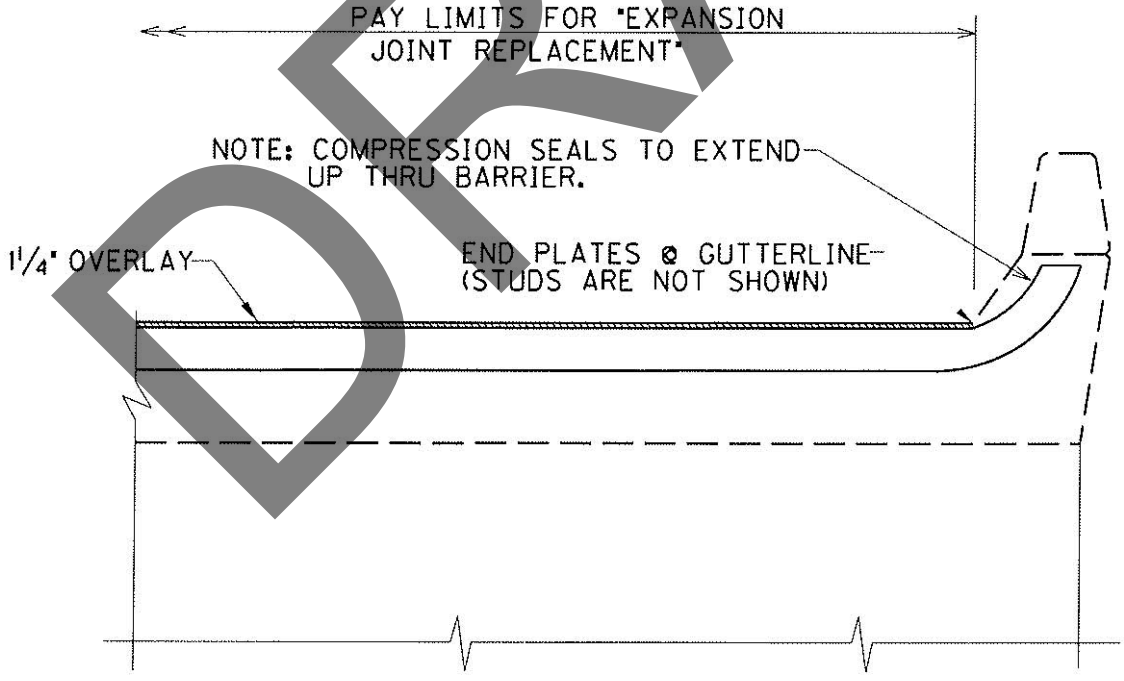


PROPOSED SECTION @ END BENT

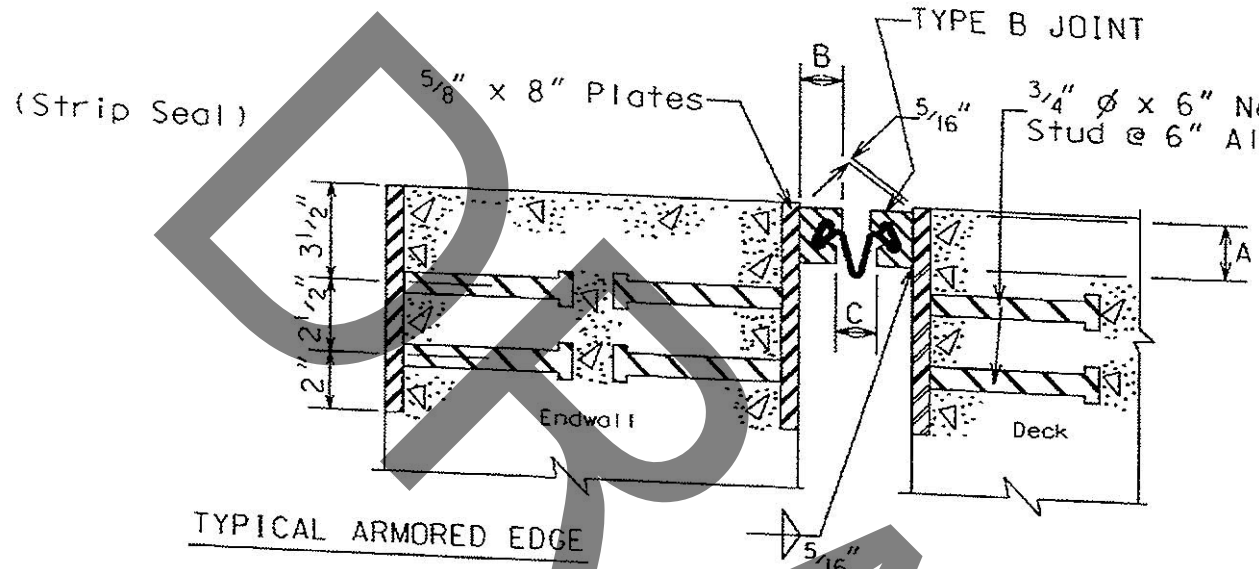
REPLACE EXPANSION JOINT
END BENT 1 CURB SECTION



PLAN VIEW @ CURB
REPLACE EXPANSION JOINT



PROPOSED SECTION @ END BENT



TYPICAL ARMORED EDGE

TYPICAL 4" JOINT

NOTE: Joint openings shall be adjusted for each 10 above or below 60° f. Decrease or increase respectively by increment shown.

4" - Joint Opening @°60 F.

INCREMENT FOR 10° TEMPERATURE CHANGE - STEEL SPAN -							
THRU 60'	61'-100'	101'-140'	141'-180'	181'-240'	241'-320'	321'-365'	
1/32"	1/16"	3/32"	1/8"	3/16"	1/4"	5/16"	

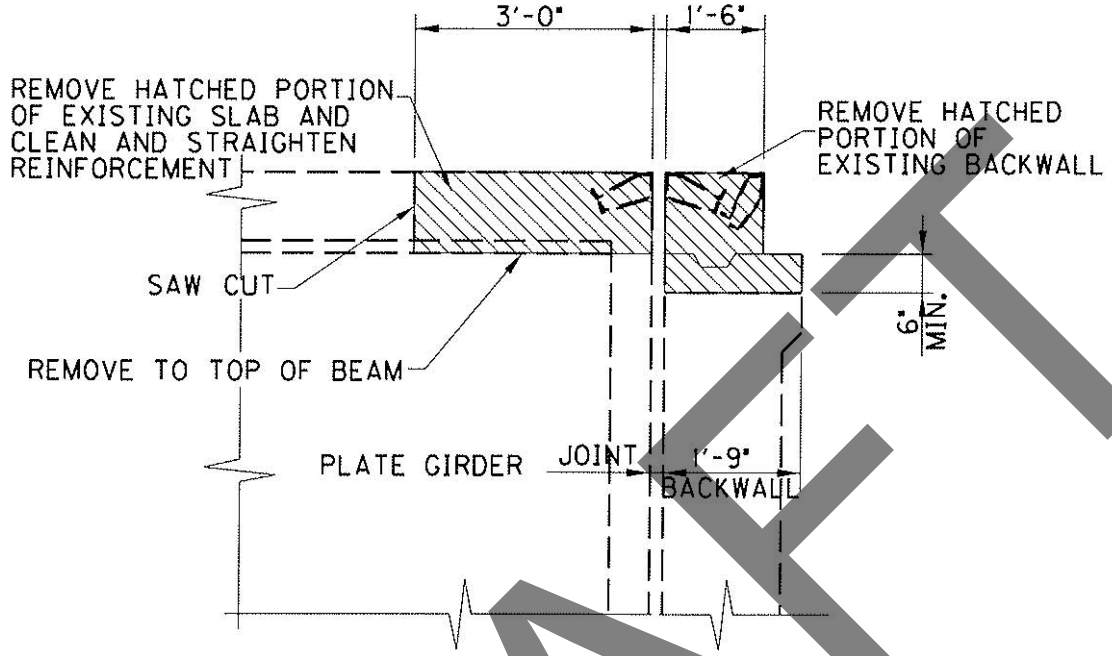
Not to Scale

ALTERNATE NEOPRENE EXPANSION DAMS - 4"

			A	B	C
B	WABO STRIP SEAL Type A Extrusion with S-400 Seal	Watson Bowman Associates Inc.	2"	1 1/2"	2"
B	STEEL FLEX Type SSA with 400 Seal	D. S. Brown Co.	2"	1 1/2"	2 1/2"
B	GENERAL STRIP CD Profile A Steel Extrusion with Gen Strip CD Seal	General Tire Co.	2"	1 3/8"	2 1/4"
B	ONFLEX Type AM2 Extrusion with 40SEQ Sal	Structural Accessories Inc.	2"	1 1/4"	2"

Not to Scale

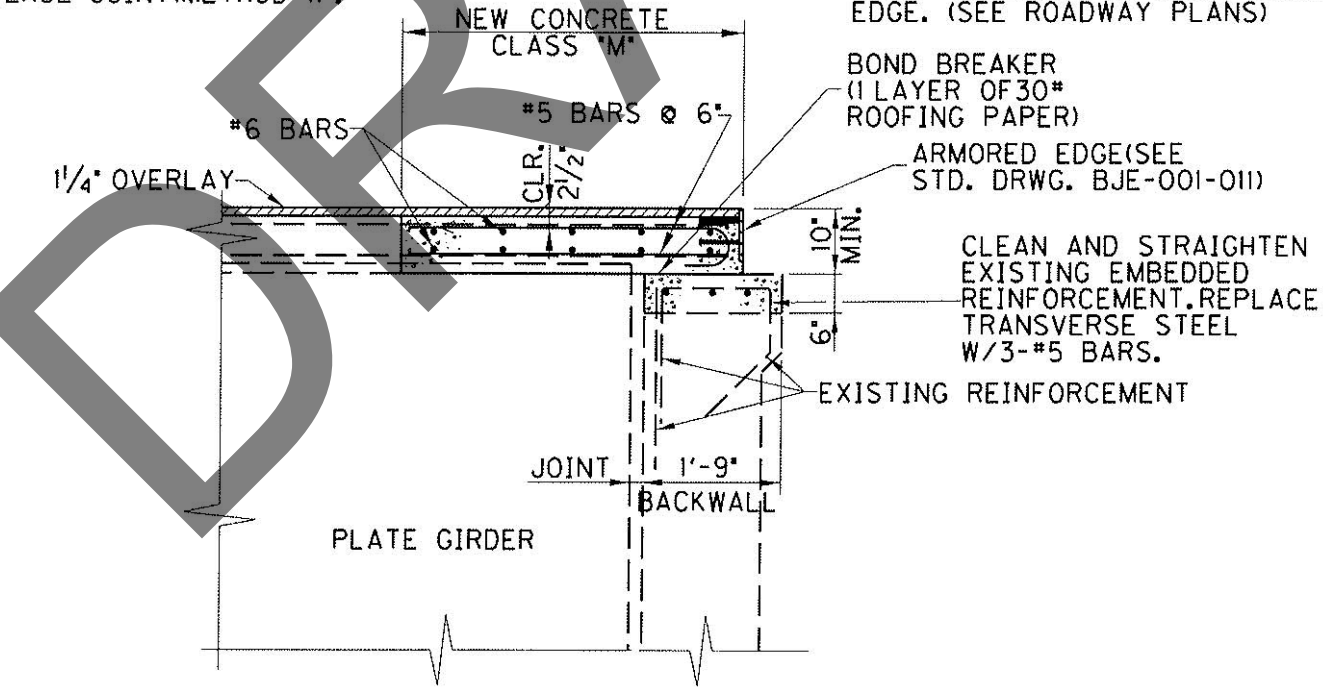
ELIMINATE JOINT @ END BENT 2



EXISTING SECTION
@ END BENT

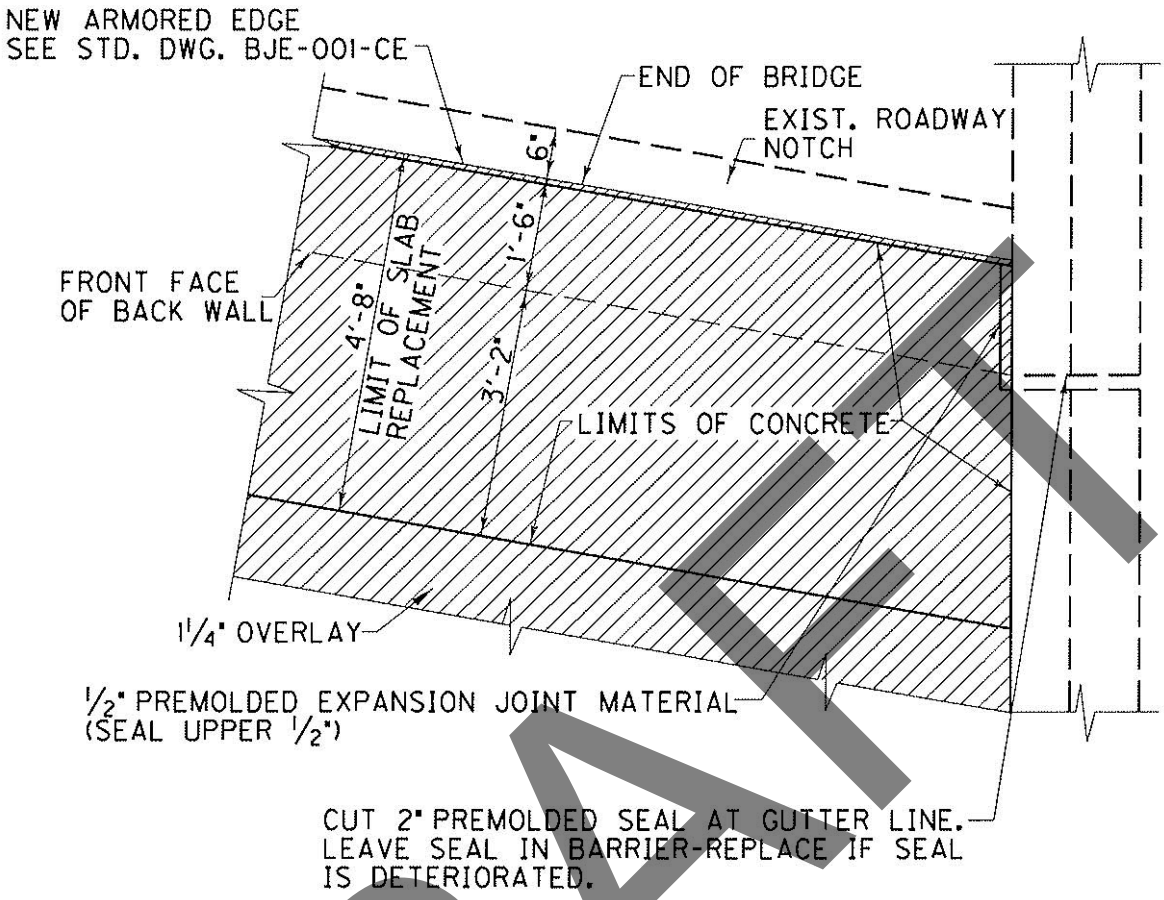
NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "ELIMINATE TRANSVERSE JOINT(METHOD 1)".

NOTE:
REMOVE 6' OF ROADWAY PAVEMENT, PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)

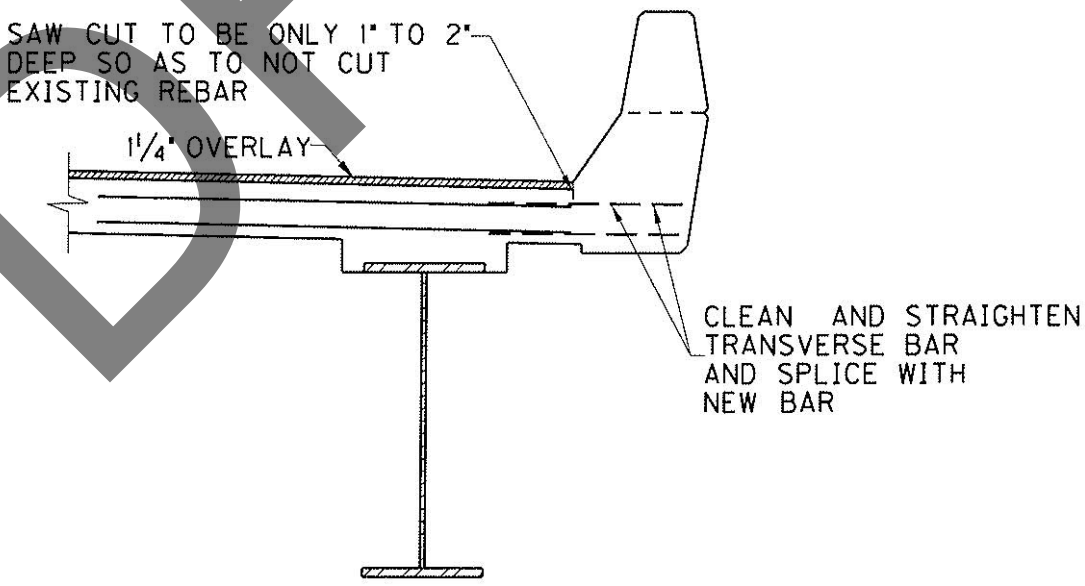


PROPOSED SECTION
@ END BENT

CURB SECTION @ END BENT 2

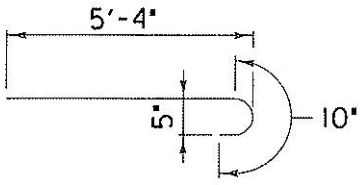


PROPOSED PLAN @ END BENT

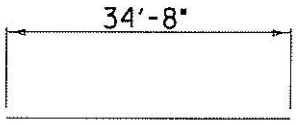


PROPOSED SECTION @ END BENT

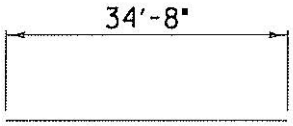
REINFORCEMENT



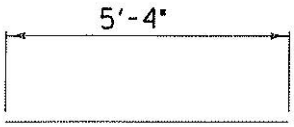
#5 BENT BAR
112 REQ'D END BENT 2



#5 STRAIGHT BAR
4 REQ'D END BENT 1
6 REQ'D END BENT 2



#6 STRAIGHT BAR
16 REQ'D END BENT 1
20 REQ'D END BENT 2



#5 STRAIGHT BAR
112 REQ'D END BENT 2

978 LBS END BENT 1
2,577 LBS END BENT 2

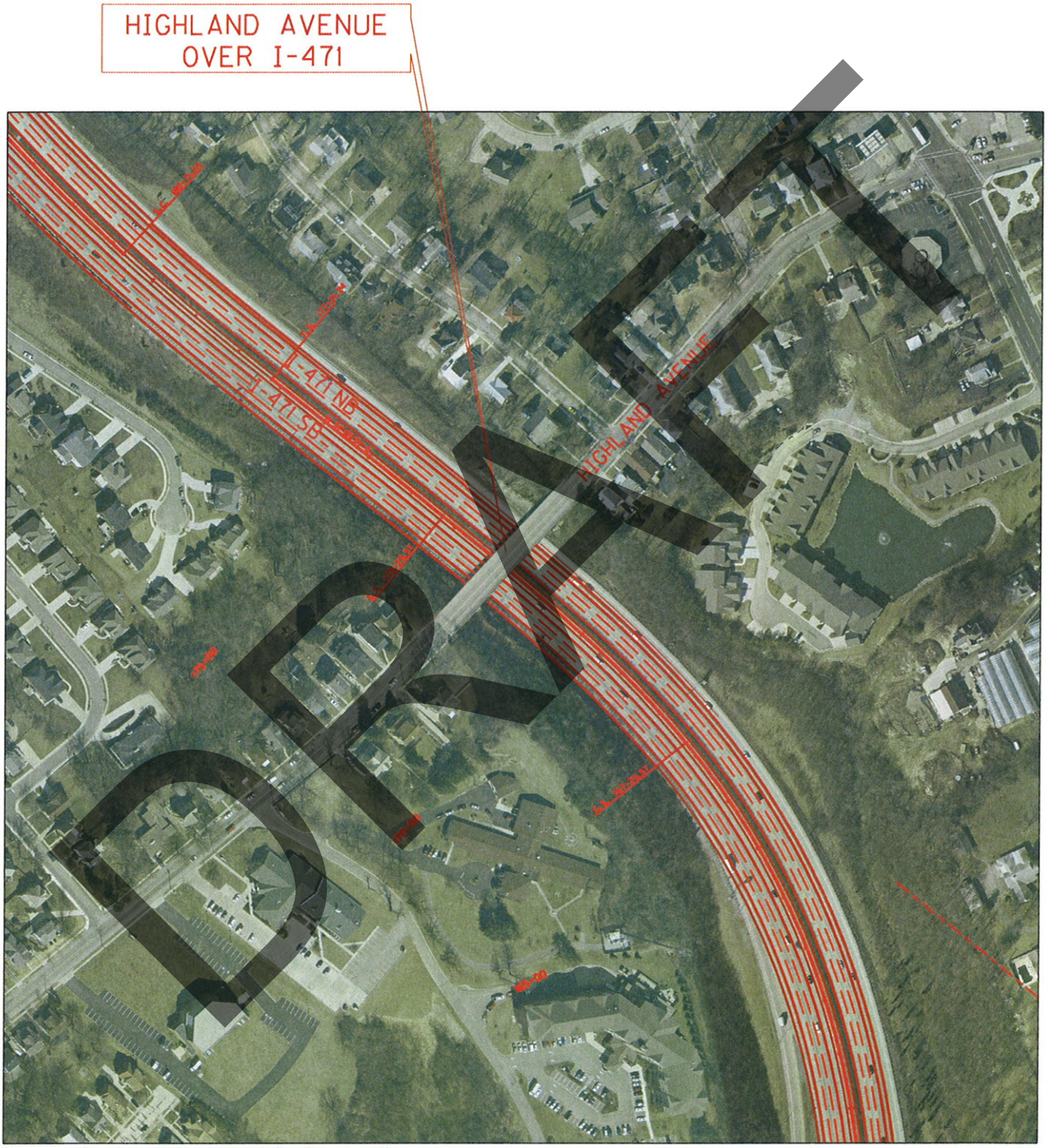
END BENT REINFORCEMENT

300 LIN. FT. #4 BARS IN 20'-0" LENGTHS
200 LBS. EACH END BENT

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 3,955 LBS.

CAMPBELL COUNTY



Approximate Location Information
Latitude:
Longitude:

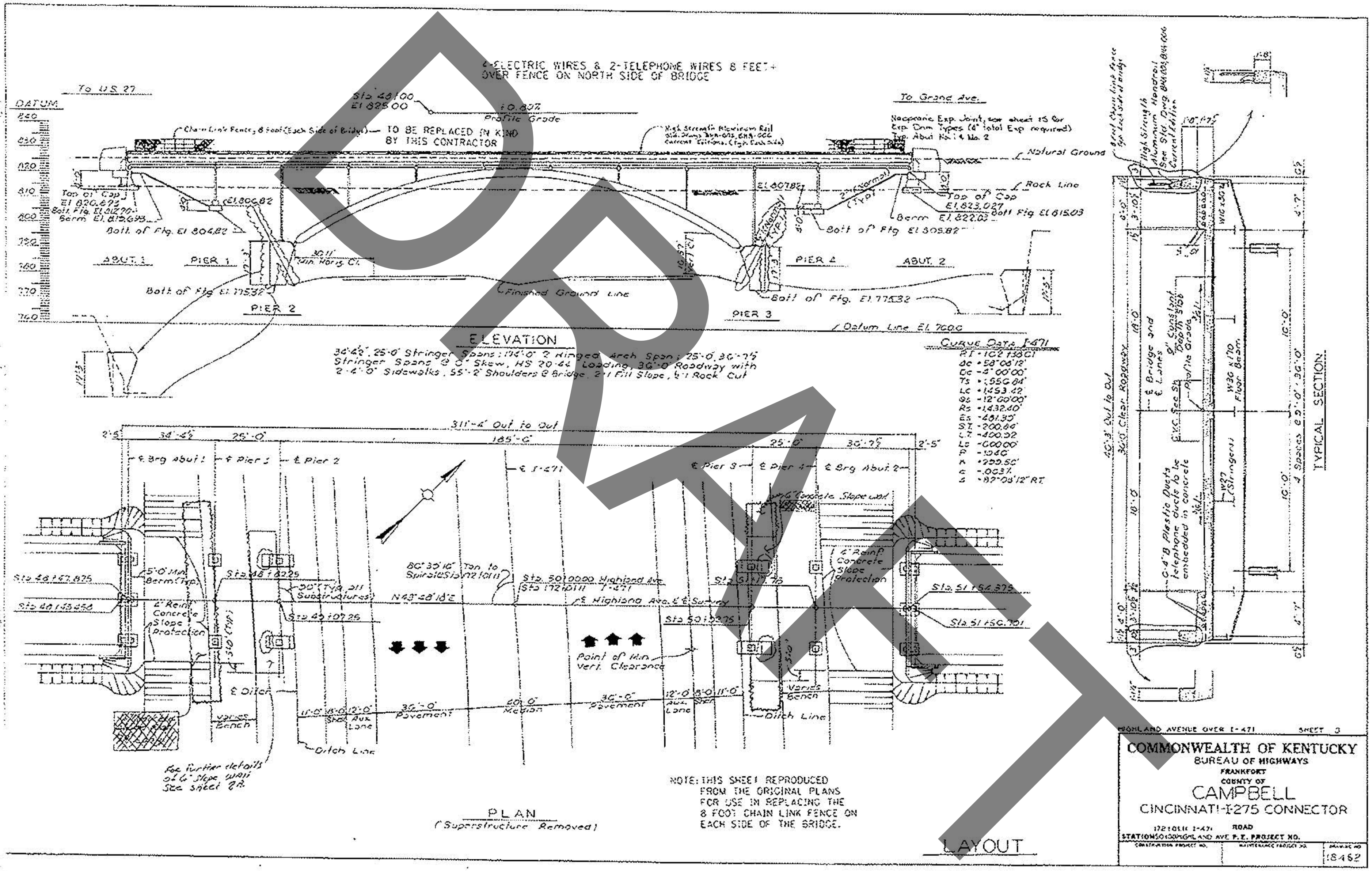
BRIDGE #2A (019B00050N) SUMMARY OF QUANTITIES

1. DISTRICT: 6
2. COUNTY: CAMPBELL
3. ROUTE: HIGHLAND AVENUE
52 019 0471 000-005 FD52 019 0471 000-005
5. ROAD NAME: HIGHLAND AVENUE
6. DESCRIPTION: HIGHLAND AVENUE OVER I-471
REMOVE AND REPLACE BRIDGE CHAIN LINK FENCE

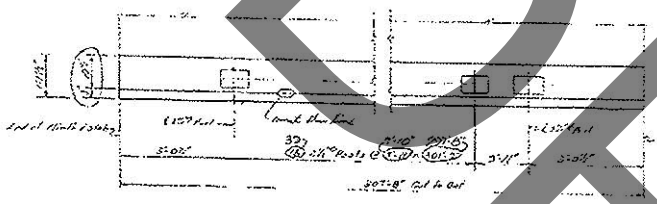
8. LENGTH (FT.):	311.33	**BRIDGE WIDTH (FT.):**	36.0	**SURFACE AREA (SQ. YD.):**	1245
SKEW (DEGREES):	0	**DECK THICKNESS (INCHES):**		9	

ESTIMATED QUANTITIES REQUIRED

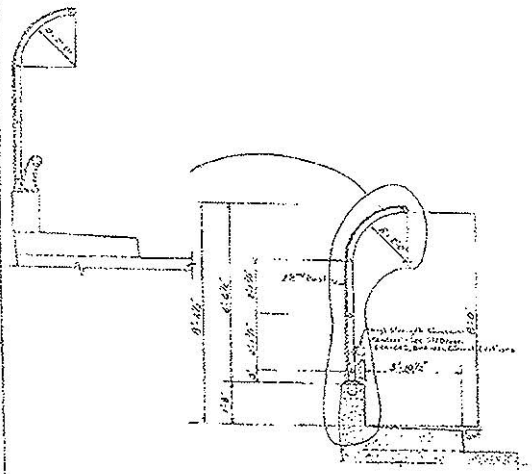
ITEM CODE	DESCRIPTION	QUANTITY	UNIT
24424EC	REM AND REP BRIDGE CHAIN LINK FENCE	604.0	LIN FT


4-ELECTRIC WIRES & 2-TELEPHONE WIRES 8 FEET+ OVER FENCE ON NORTH SIDE OF BRIDGE
To U.S. 27
DATUM
Sta 48+00 El 825.00
+0.80% Profile Grade
Chain Link Fence, 8 Foot (Each Side of Bridge)
TO BE REPLACED IN KIND BY THIS CONTRACTOR
To Grand Ave.
Natural Ground
Rock Line
ABUT. 1
PIER 1
PIER 2
PIER 3
PIER 4
ABUT. 2
Finished Ground Line
Datum Line El. 760.0
ELEVATION
34'-4½", 25'-0" Stringer Spans; 174'-0" 2 Hinged Arch Span; 25'-0", 30'-7½" Stringer Spans @ 0° Skew, HS 20-44 Loading, 36'-0" Roadway with 2-4'-0" Sidewalks, 55'-2" Shoulders @ Bridge, 2:1 Fill Slope, ½:1 Rock Cut
Curve Data I-471
311'-4" Out to Out
185'-0"
N43°48'18"E
℄ Highland Ave. & ℄ Survey
Point of Min. Vert. Clearance
36'-0" Pavement
60'-0" Median
Ditch Line
Varies Bench
PLAN
(Superstructure Removed)
NOTE: THIS SHEET REPRODUCED FROM THE ORIGINAL PLANS FOR USE IN REPLACING THE 8 FOOT CHAIN LINK FENCE ON EACH SIDE OF THE BRIDGE.
LAYOUT
TYPICAL SECTION
40'-8" Out to Out
36'-0" Clear Roadway
4 Spaces @ 9'-0" = 36'-0"
W36 x 170 Floor Beam
W27 (Stringers)
C-4-8 Plastic Ducts telephone ducts to be embedded in concrete
HIGHLAND AVENUE OVER I-471
SHEET 3
COMMONWEALTH OF KENTUCKY
BUREAU OF HIGHWAYS
FRANKFORT
COUNTY OF
CAMPBELL
CINCINNATI-I-275 CONNECTOR
ROAD
18462

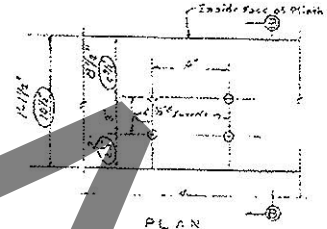
NOTE: THIS SHEET REPRODUCED FROM THE ORIGINAL PLANS FOR USE IN REPLACING THE 8 FOOT CHAIN LINK FENCE ON EACH SIDE OF THE BRIDGE.



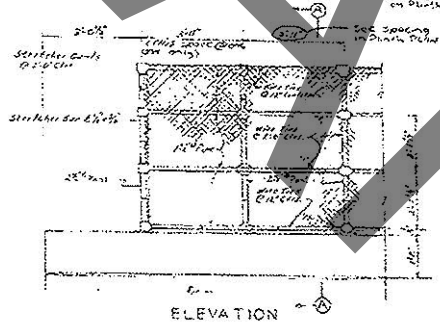
PLINTH PLAN
Post Spacing for Chain Link Fence
Typical Each Side with Plinth



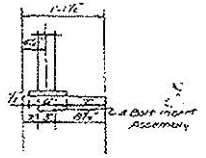
SECTION A-A



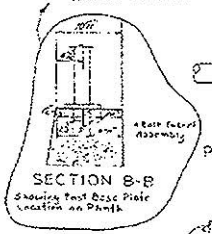
PLAN
Showing Insert Location on Plinth



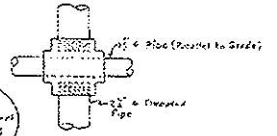
ELEVATION



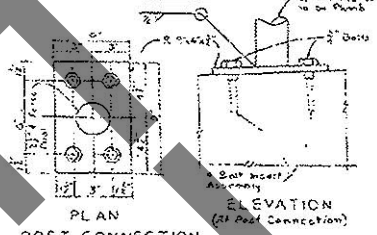
SECTION B-B
Showing Post Base Plate Location on Plinth



SECTION B-B
Showing Post Base Plate Location on Plinth



PIPE CONNECTION
Showing Longitudinal Pipe Connection

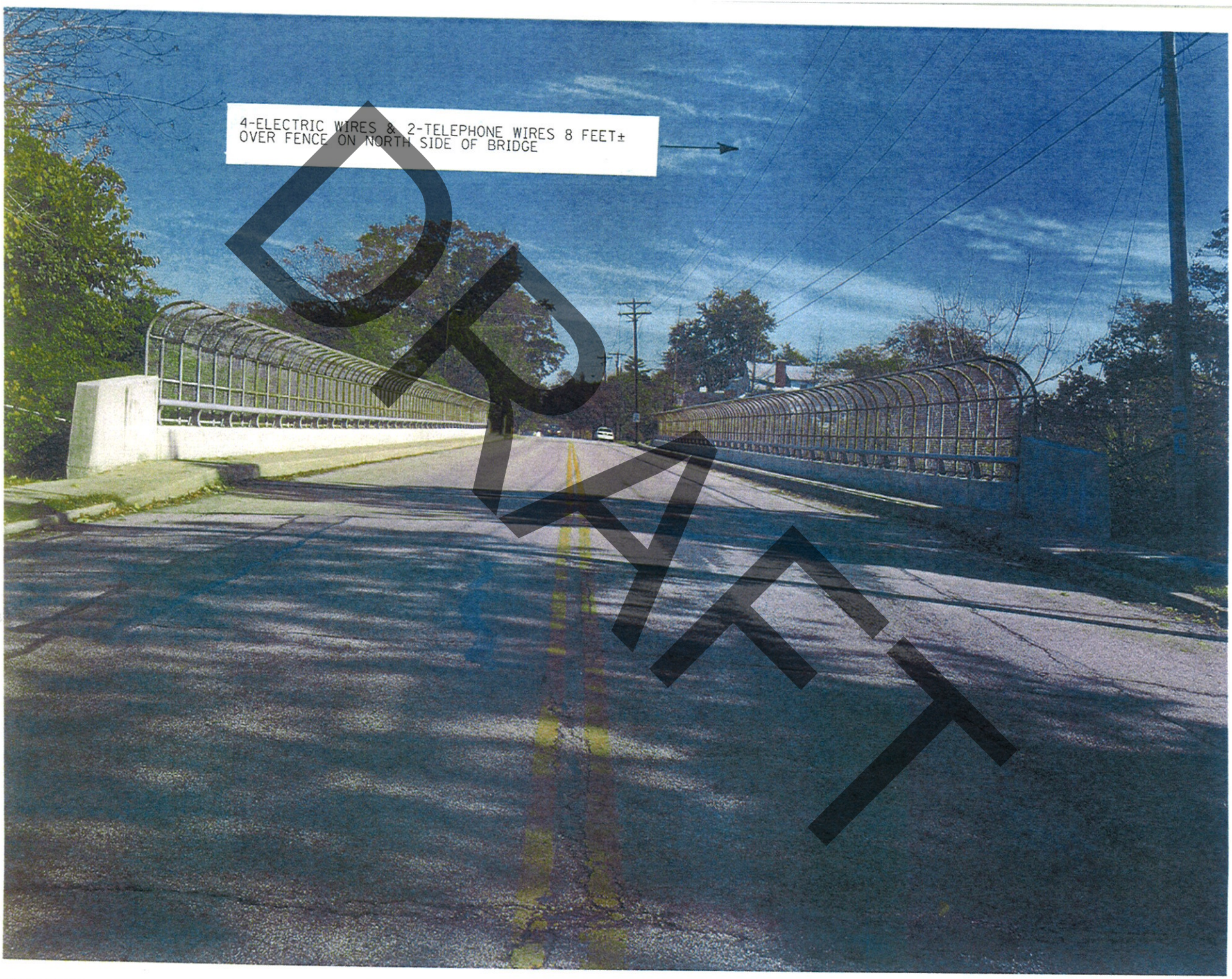


PLAN
POST CONNECTION

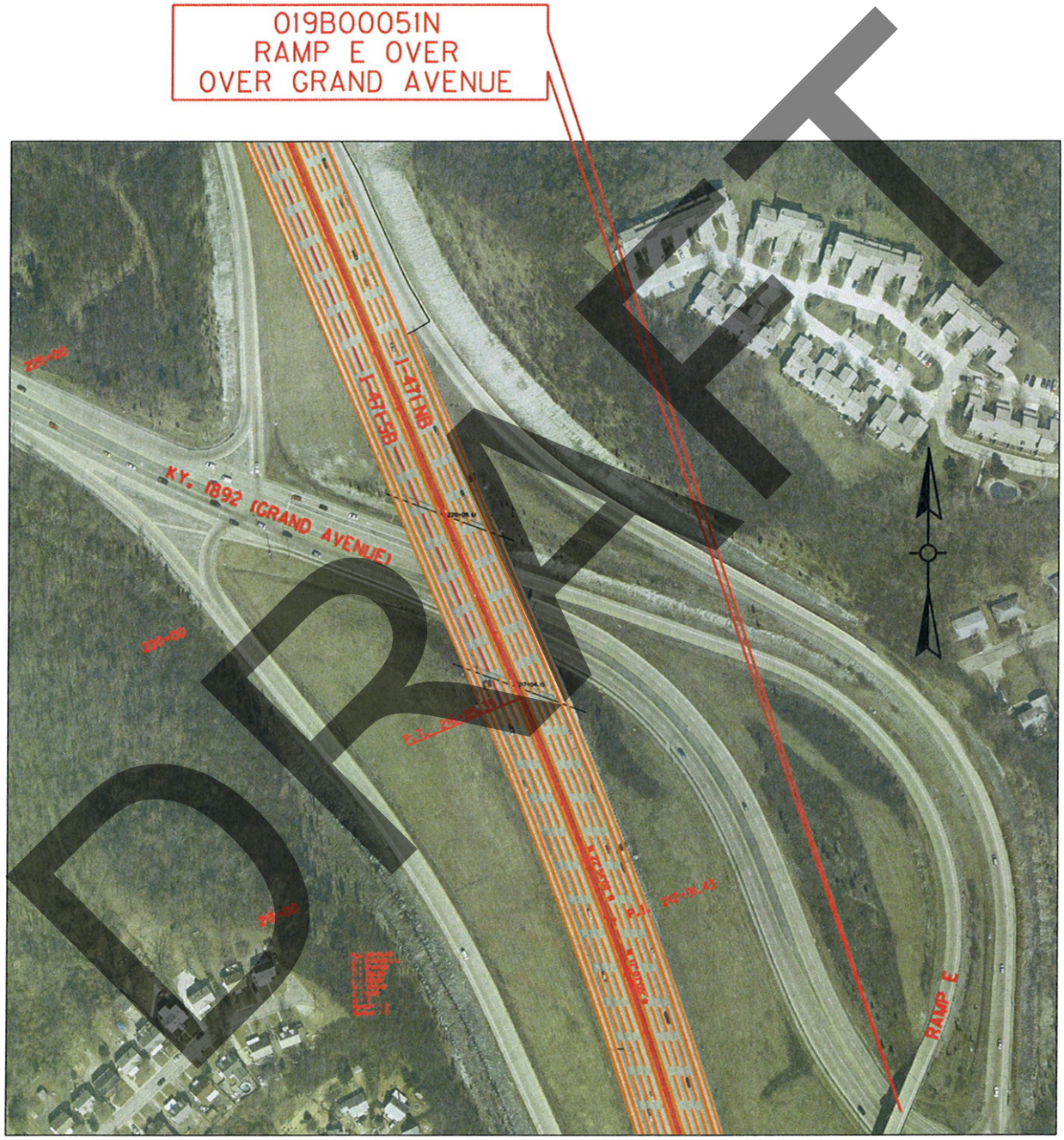
ELEVATION
(At Post Connection)

CHAIN LINK FENCE DETAILS

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF HIGHWAYS
FRANKFORT
COUNTY OF
CAMPBELL
CINCINNATI - I 275 CONNECTOR
ROAD
STATION
PROJECT NO.
18462


4-ELECTRIC WIRES & 2-TELEPHONE WIRES 8 FEET±
OVER FENCE ON NORTH SIDE OF BRIDGE

CAMPBELL COUNTY



Approximate Location Information
Latitude: 39° 05' 05"
Longitude: 84° 28' 23"

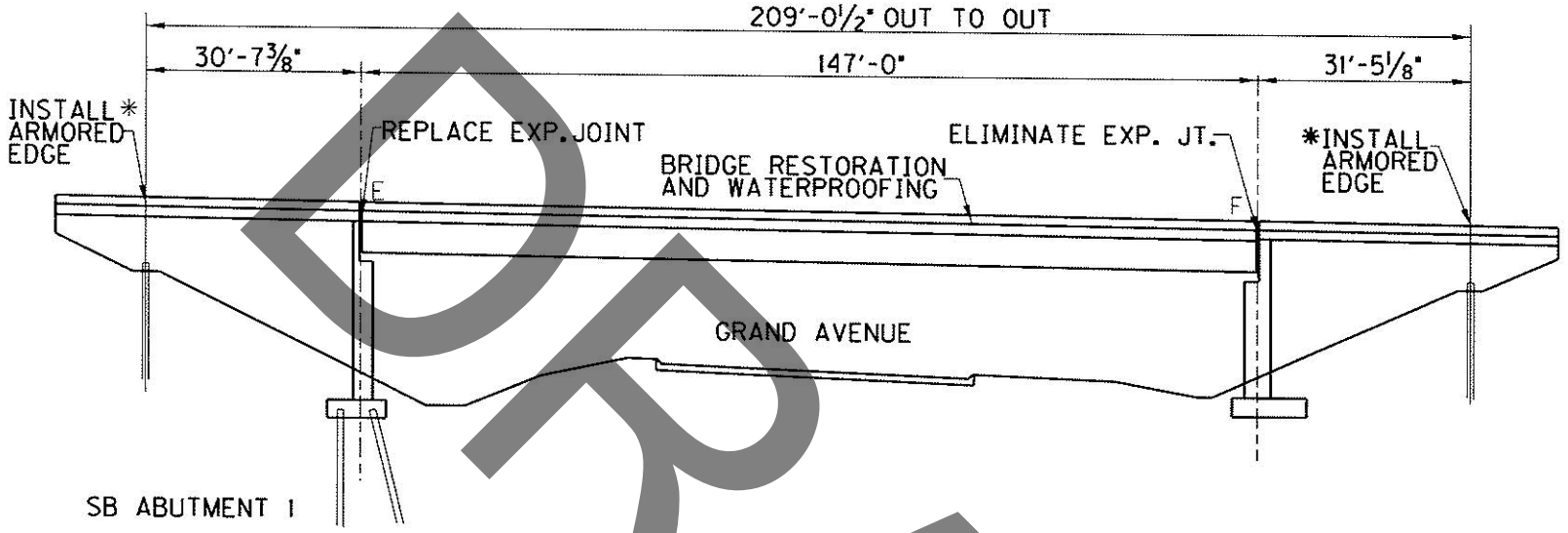
BRIDGE #3 (019B00051N) SUMMARY OF QUANTITIES

1. DISTRICT:	6				
2. COUNTY:	CAMPBELL				
3. ROUTE:	I-471				
4. PROJECT NUMBER:	FD52 019 0471 000-005				
5. ROAD NAME:	I-471				
6. DESCRIPTION:	RAMP E OVER GRAND AVENUE				
7. TYPE OF WORK:	BRIDGE DECK WATERPROOFING AND RESTORATION:ELIMINATE EXPANSION JOINT EXPANSION JOINT REPLACEMENT				
8. LENGTH (FT.):	209.04	**BRIDGE WIDTH (FT.):**	23.5	**SURFACE AREA (SQ. YD.):**	
SKEW (DEGREES):	22	**DECK THICKNESS (INCHES):**		9	

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3298	REPLACE EXPANSION JT 4 IN	26.0	LIN FT
3300	ELIMINATE TRANSVERSE JOINT	26.0	LIN FT
8504	EPOXY SAND SLURRY	209.0	SQ YD
8526	CONC CLASS M FULL DEPTH PATCH	2.0	CU YD
8534	CONCRETE OVERLAY-LATEX	19.0	CU YD
8549	BLAST CLEANING	721	SQ YD
8550	HYDRODEMOLITION	546	SQ YD
24094ED	PARTIAL DEPTH PATCHING	3.8	CU YD

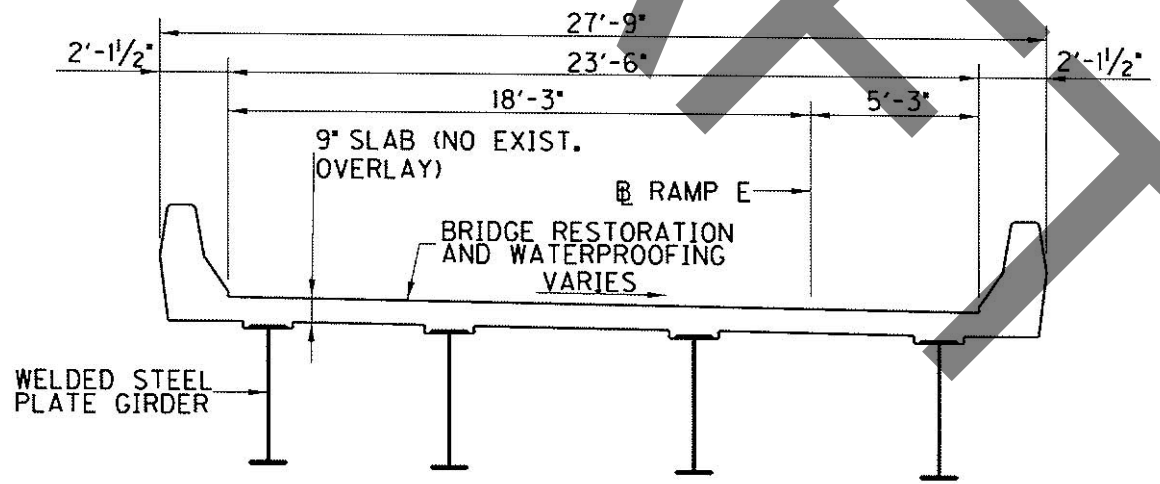
RAMP E OVER GRAND AVENUE
BRIDGE MAINTENANCE NUMBER 019B0005IN



*SEE STD. DRWG. BJE-001-11

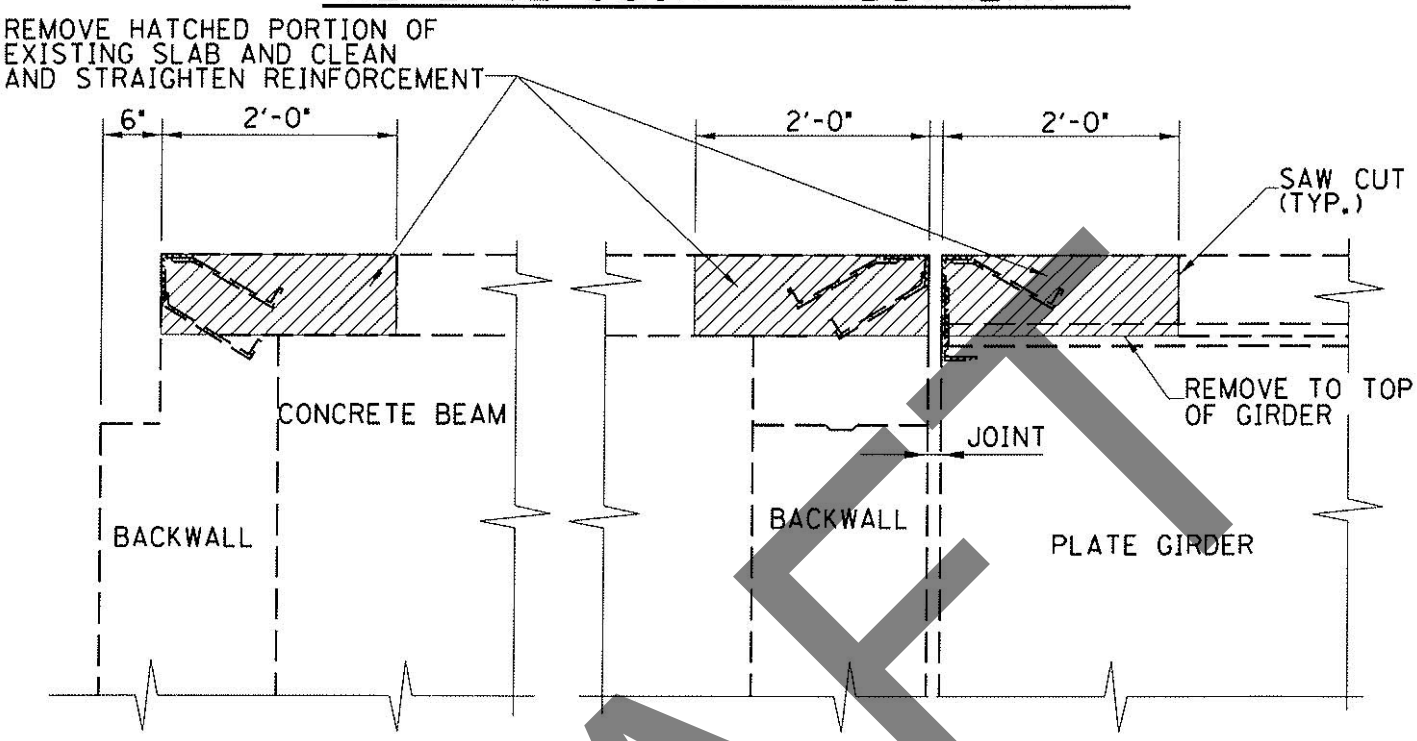
ELEVATION
22°00'00" SKEW RT.
NOT TO SCALE

NOTE:
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.

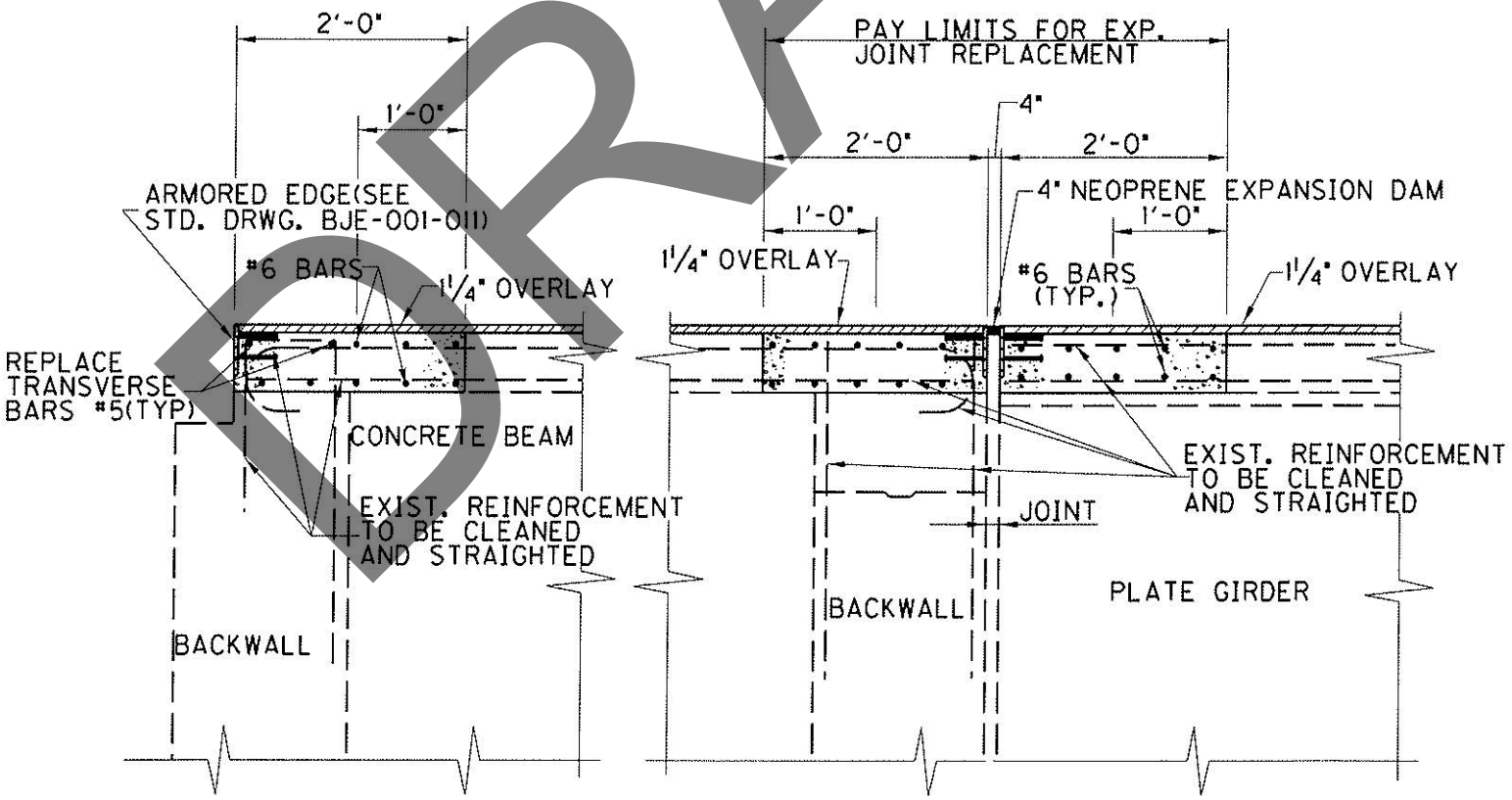


TYPICAL SECTION

REPLACE JOINT @ ABUTMENT 1

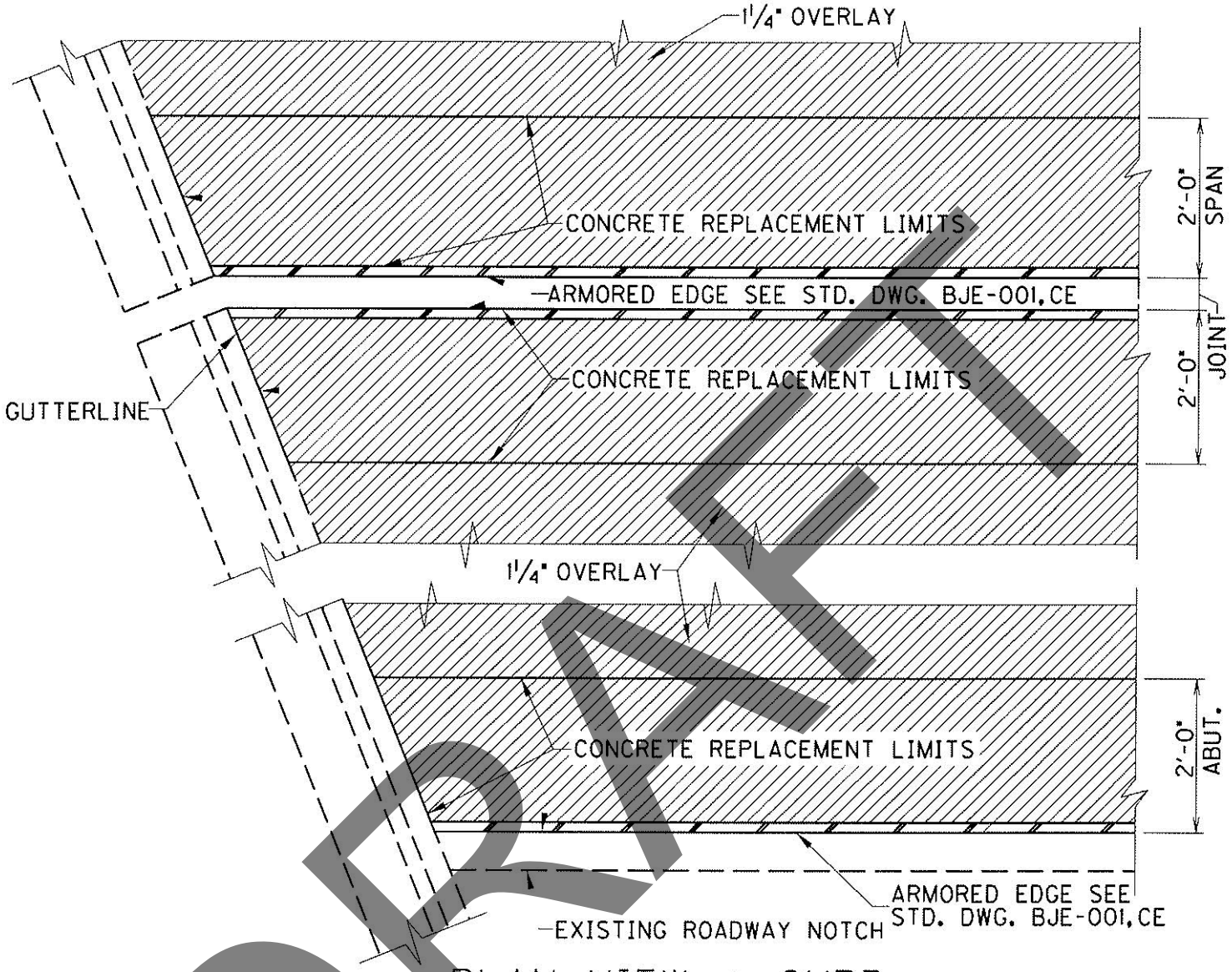


EXISTING SECTION @ ABUTMENT



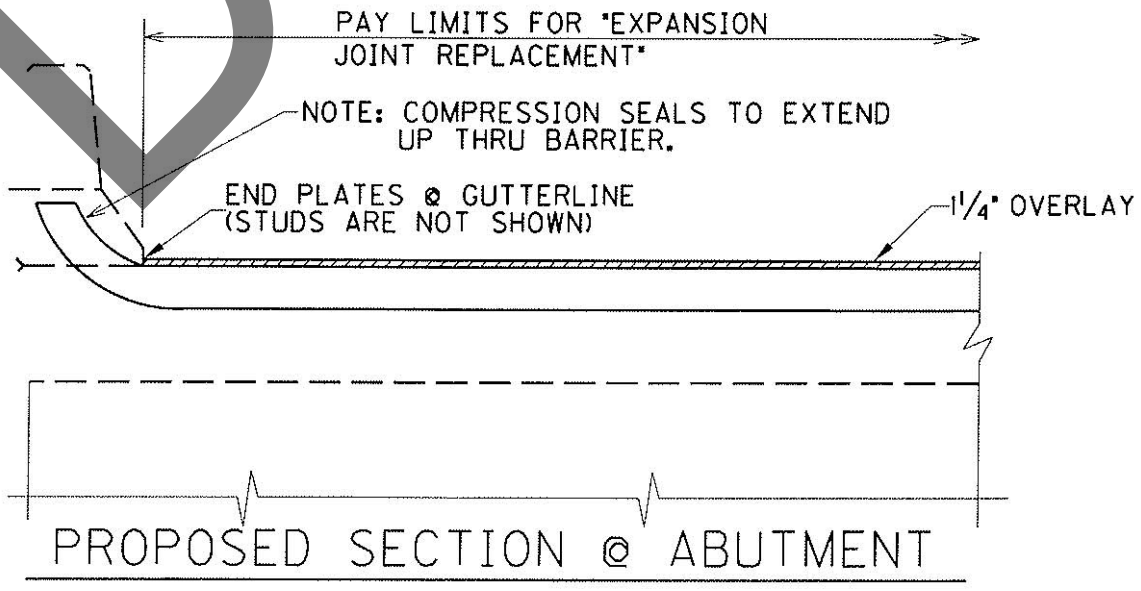
PROPOSED SECTION @ ABUTMENT

REPLACE EXPANSION JOINT
ABUTMENT 1 CURB SECTION

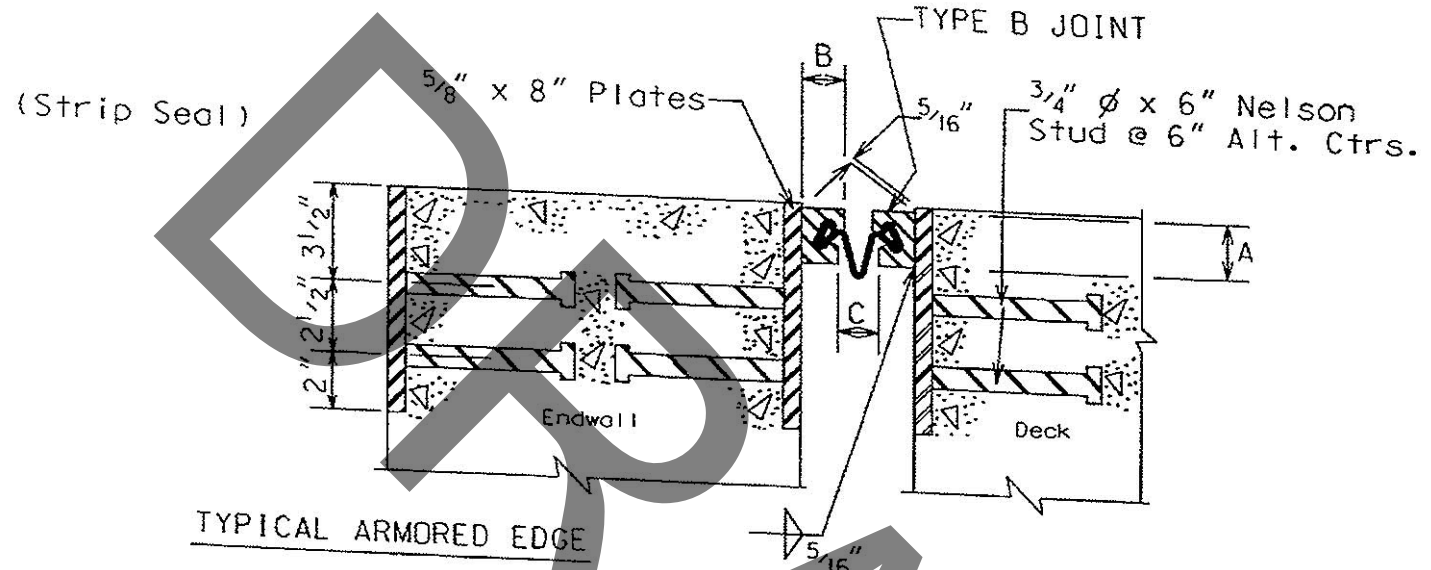


PLAN VIEW @ CURB

REPLACE EXPANSION JOINT & ARMORED EDGE



PROPOSED SECTION @ ABUTMENT



TYPICAL ARMORED EDGE

TYPICAL 4" JOINT

NOTE: Joint openings shall be adjusted for each 10 above or below 60° f. Decrease or increase respectively by increment shown.

4" - Joint Opening @°60 F.

INCREMENT FOR 10° TEMPERATURE CHANGE - STEEL SPAN -							
THRU 60'	61'-100'	101'-140'	141'-180'	181'-240'	241'-320'	321'-365'	
1/32"	1/16"	3/32"	1/8"	3/16"	1/4"	5/16"	

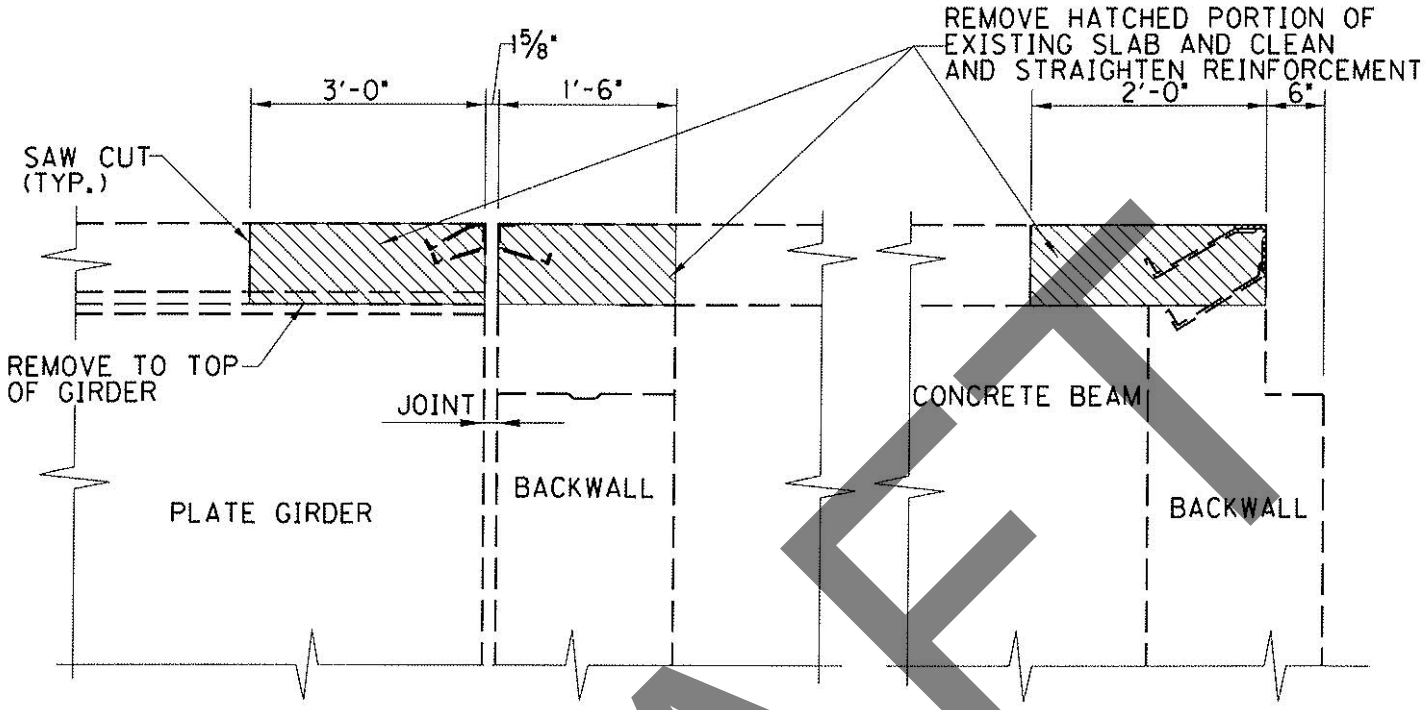
Not to Scale

ALTERNATE NEOPRENE EXPANSION DAMS - 4"

			A	B	C
B	WABO STRIP SEAL Type A Extrusion with S-400 Seal	Watson Bowman Associates Inc.	2"	1 1/2"	2"
B	STEEL FLEX Type SSA with 400 Seal	D. S. Brown Co.	2"	1 1/2"	2 1/2"
B	GENERAL STRIP CD Profile A Steel Extrusion with Gen Strip CD Seal	General Tire Co.	2"	1 3/8"	2 1/4"
B	ONFLEX Type AM2 Extrusion with 40SEQ Sal	Structural Accessories Inc.	2"	1 1/4"	2"

Not to Scale

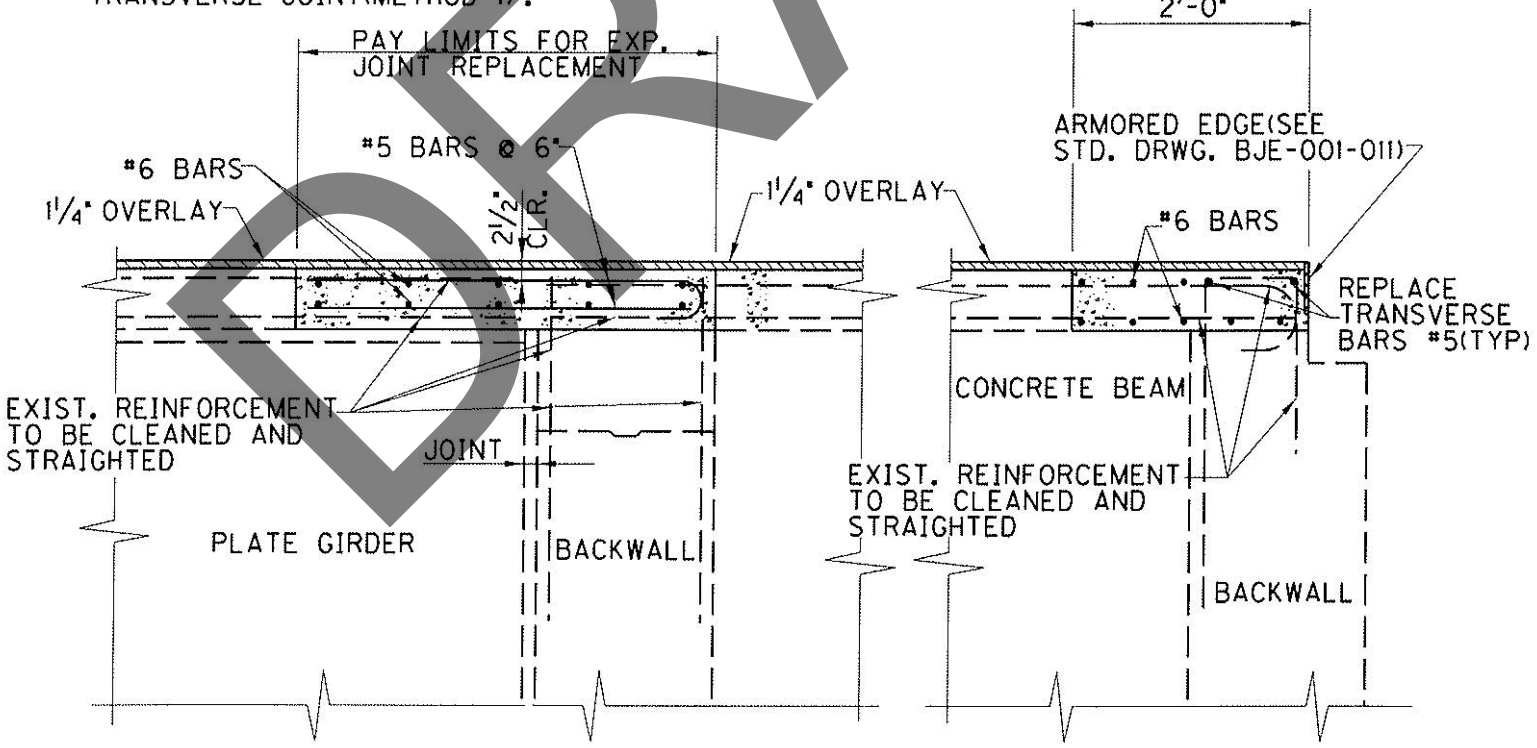
ELIMINATE JOINT @ ABUTMENT 2



EXISTING SECTION @ ABUTMENT 2

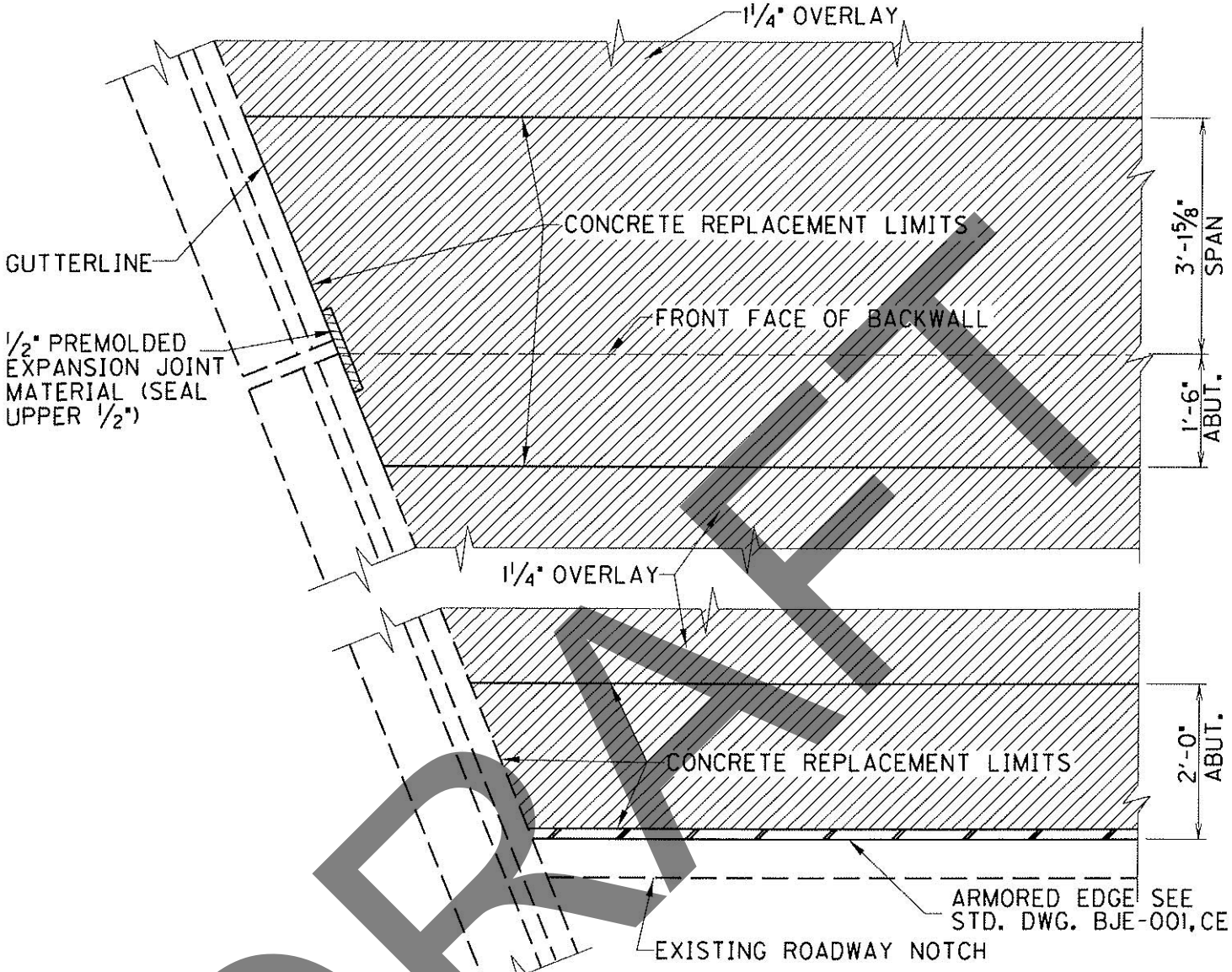
NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "ELIMINATE TRANSVERSE JOINT(METHOD 1)".

NOTE:
REMOVE 6' OF ROADWAY PAVEMENT, PLACE ½" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)



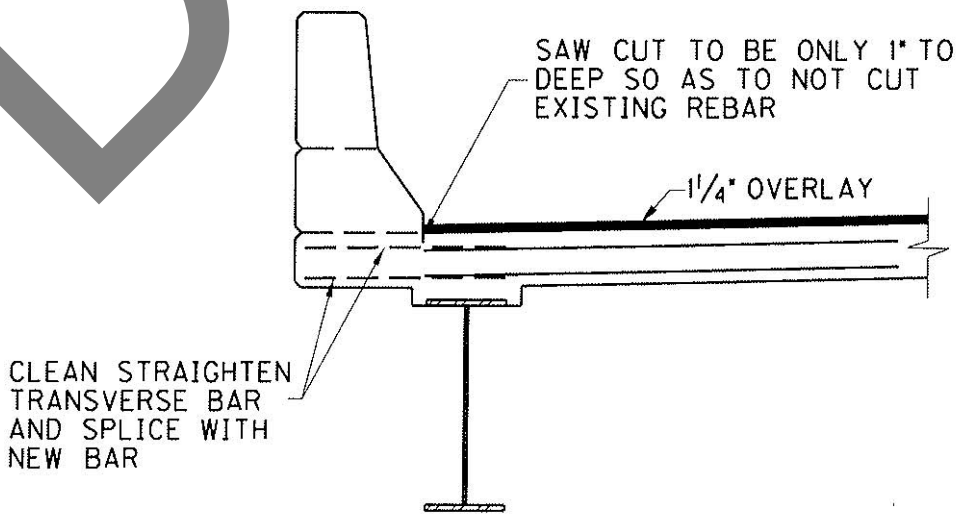
PROPOSED SECTION @ ABUTMENT 2

ABUTMENT 2 CURB SECTION



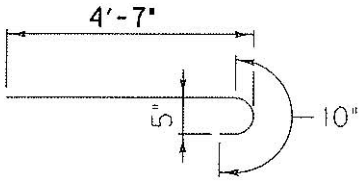
PROPOSED PLAN @ ABUTMENT 2

ELIMINATE EXPANSION JOINT & REPLACE ARMORED EDGE

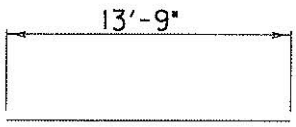


PROPOSED SECTION @ ABUTMENT 2

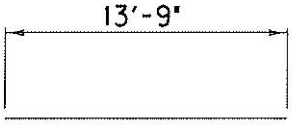
REINFORCEMENT



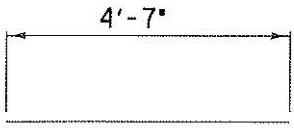
#5 BENT BAR
47 REQ'D END BENT 2



#5 STRAIGHT BAR
20 REQ'D END BENT 1
4 REQ'D END BENT 2



#6 STRAIGHT BAR
40 REQ'D END BENT 1
40 REQ'D END BENT 2



#5 STRAIGHT BAR
47 REQ'D END BENT 2

1,113 LBS END BENT 1
1,363 LBS END BENT 2

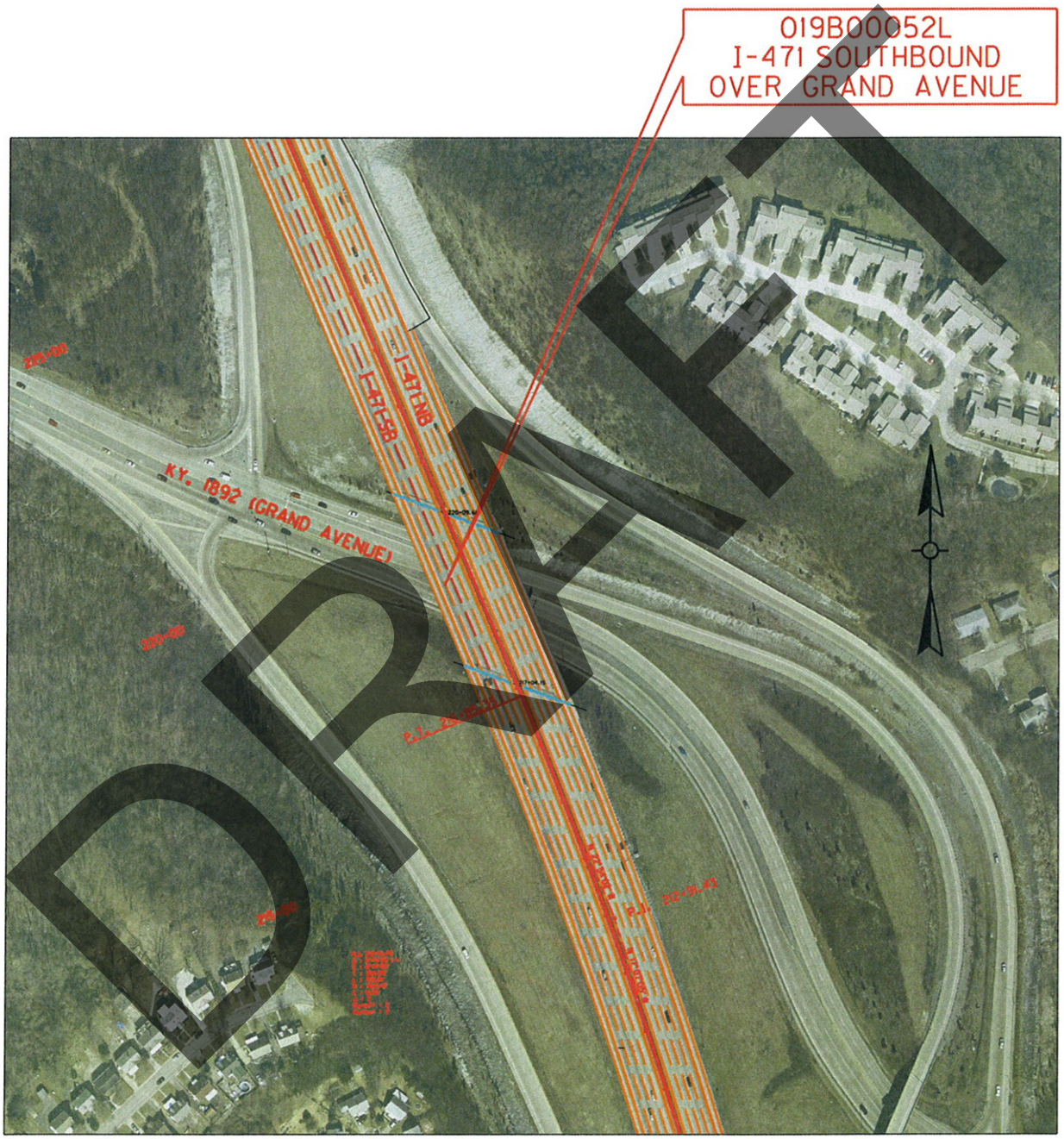
END BENT REINFORCEMENT

300 LIN. FT. #4 BARS IN 20'-0" LENGTHS
200 LBS. EACH END BENT

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 2,876 LBS.

CAMPBELL COUNTY



Approximate Location Information
Latitude: 39° 5' 5"
Longitude: 84° 28' 23"

BRIDGE #4 (019B00052L) SUMMARY OF QUANTITIES

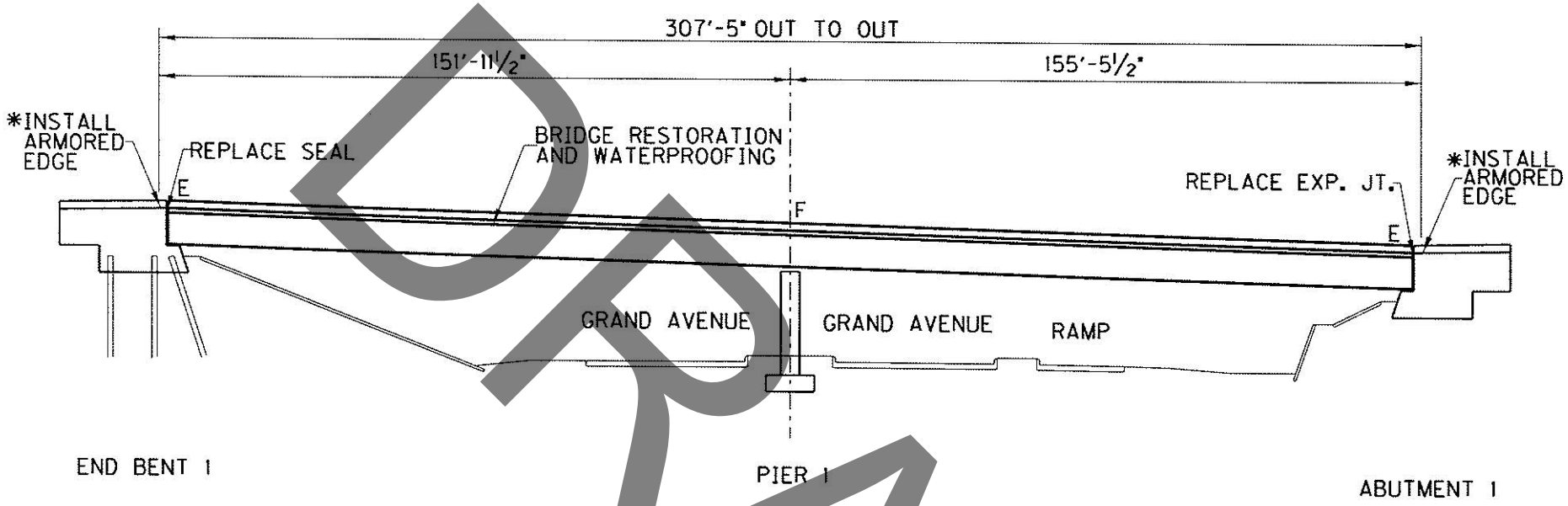
1. DISTRICT: 6
2. COUNTY: CAMPBELL
3. ROUTE: I-471
4. PROJECT NUMBER: FD52 019 0471 000-005
5. ROAD NAME: I-471
6. DESCRIPTION: I-471 SOUTHBOUND OVER GRAND AVENUE
BRIDGE DECK RESTORATION AND WATERPROOFING:JOINT SEAL REPLACEMENT
REPLACE EXPANSION JOINT

8. LENGTH (FT.):	307.42	**BRIDGE WIDTH (FT.):**	56.0	**SURFACE AREA (SQ. YD.):**	1913
SKEW (DEGREES):	43.72	**DECK THICKNESS (INCHES):**		9	

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3298	EXPANSION JT REPLACEMENT 4 IN	79.0	LIN FT.
8504	EPOXY SAND SLURRY	307.0	SQ YD
8526	CONC CLASS M FULL DEPTH PATCH	7.0	CU YD
8534	CONCRETE OVERLAY-LATEX	67.0	CU YD
8549	BLAST CLEANING	2168	SQ YD
8550	HYDRODEMOLITION	1913	SQ YD
23386EC	JOINT SEAL REPLACEMENT	79.0	LIN FT.
24094ED	PARTIAL DEPTH PATCHING	13.4	CU YD

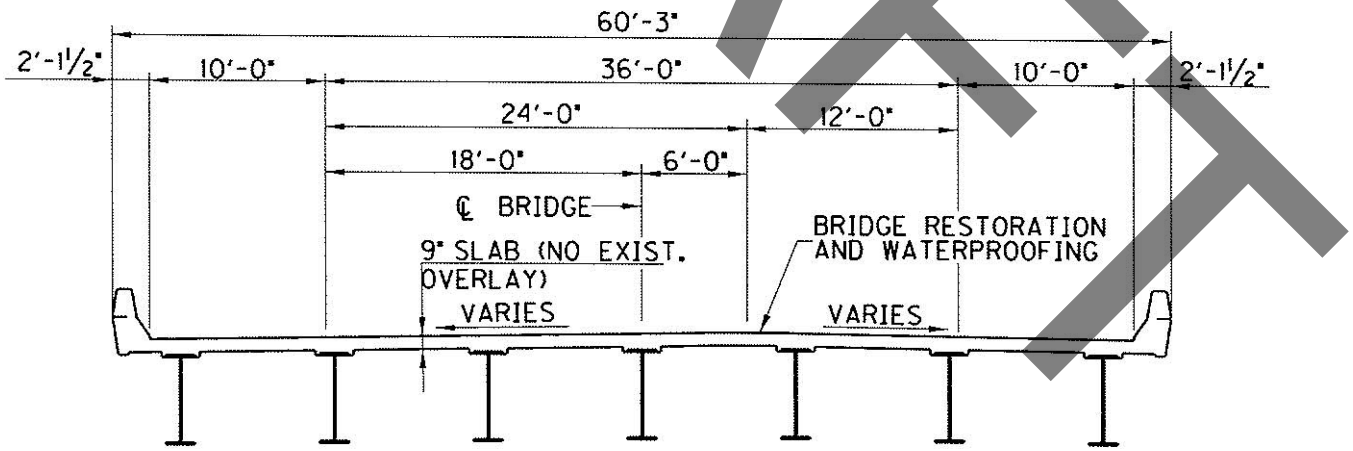
I-471 SOUTHBOUND OVER GRAND AVENUE
BRIDGE MAINTENANCE NUMBER 019B00052L



ELEVATION
43° 43'00" SKEW RT.
NOT TO SCALE

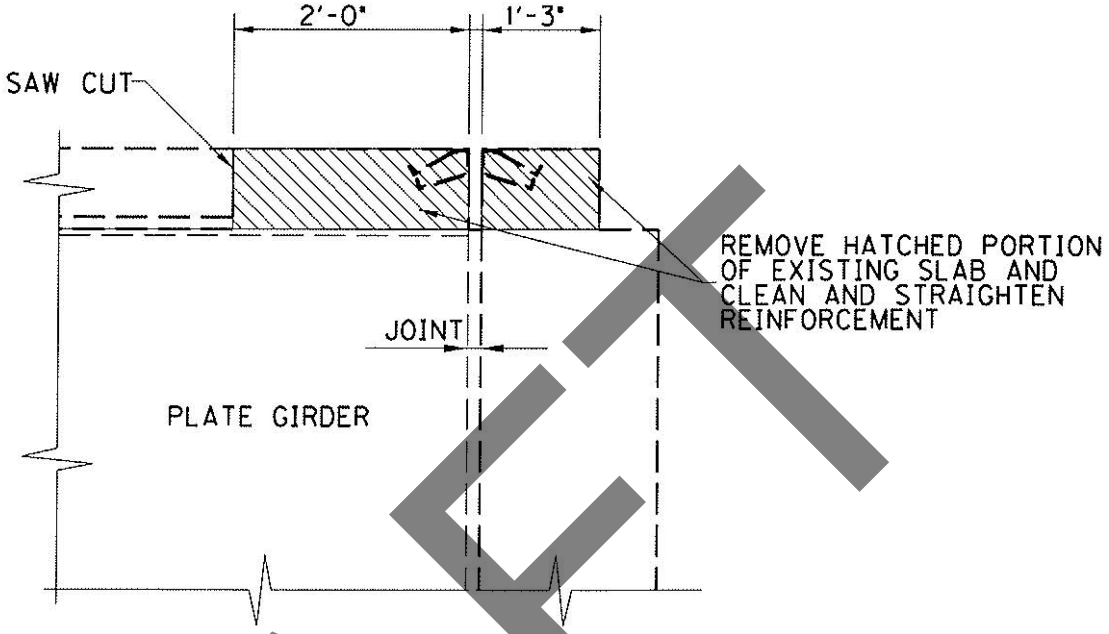
NOTES:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

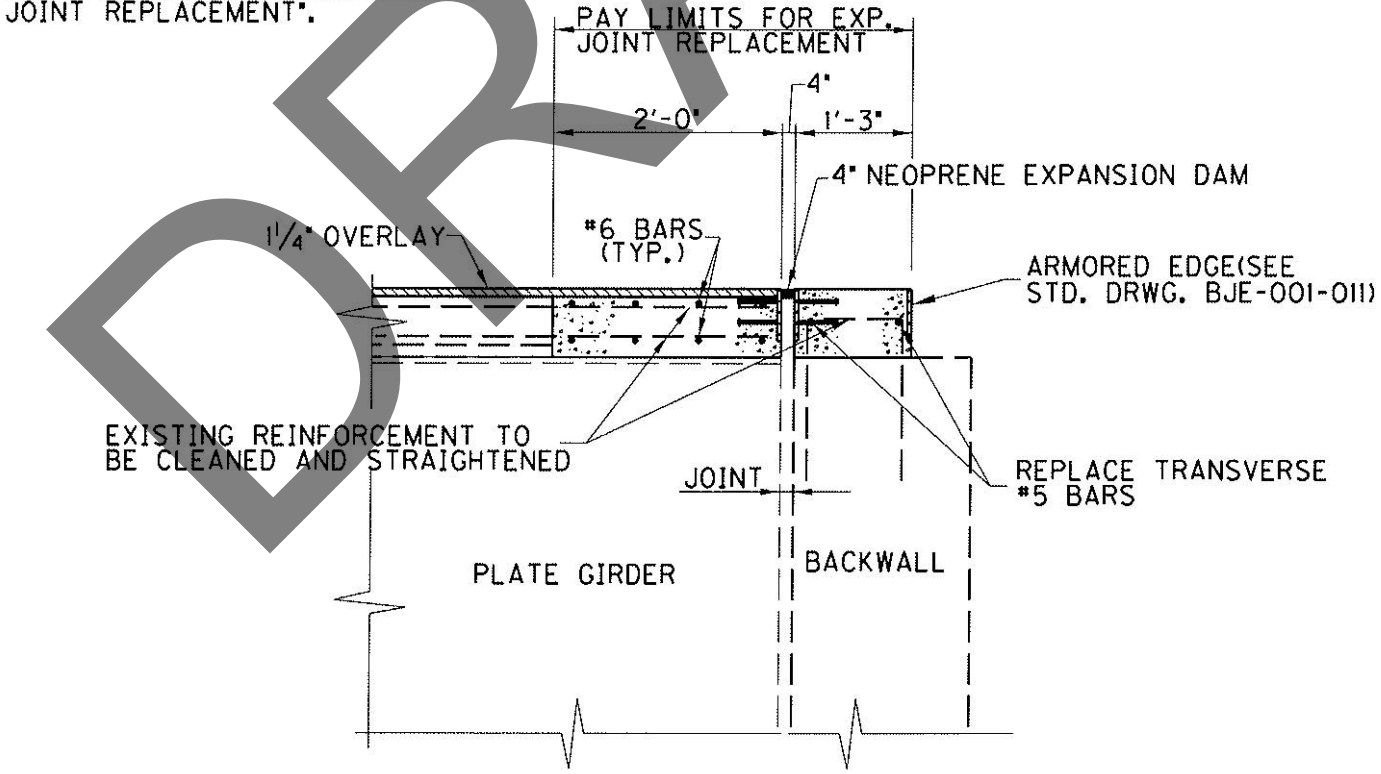
REPLACE JOINT @ ABUTMENT 1



EXISTING SECTION @ ABUTMENT

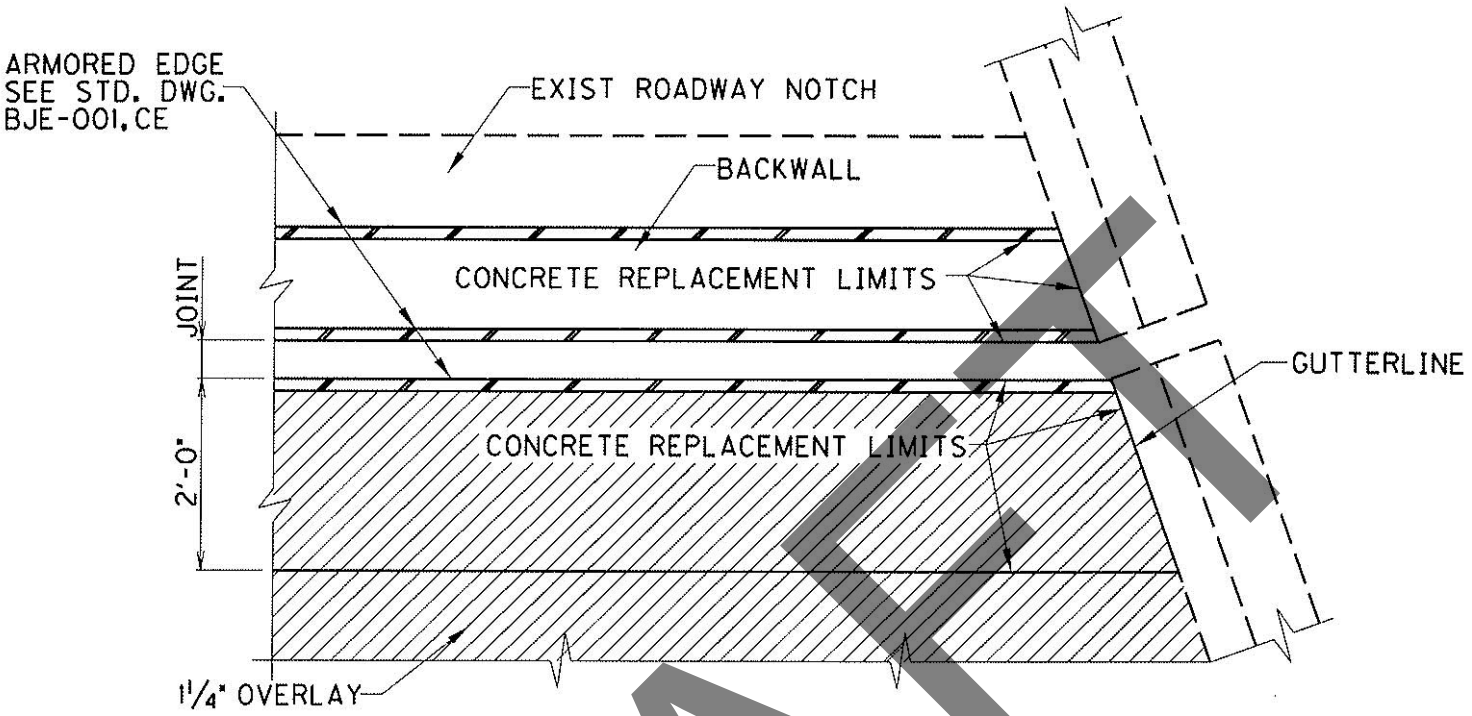
NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".

NOTE:
REMOVE 6' OF ROADWAY PAVEMENT. PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)

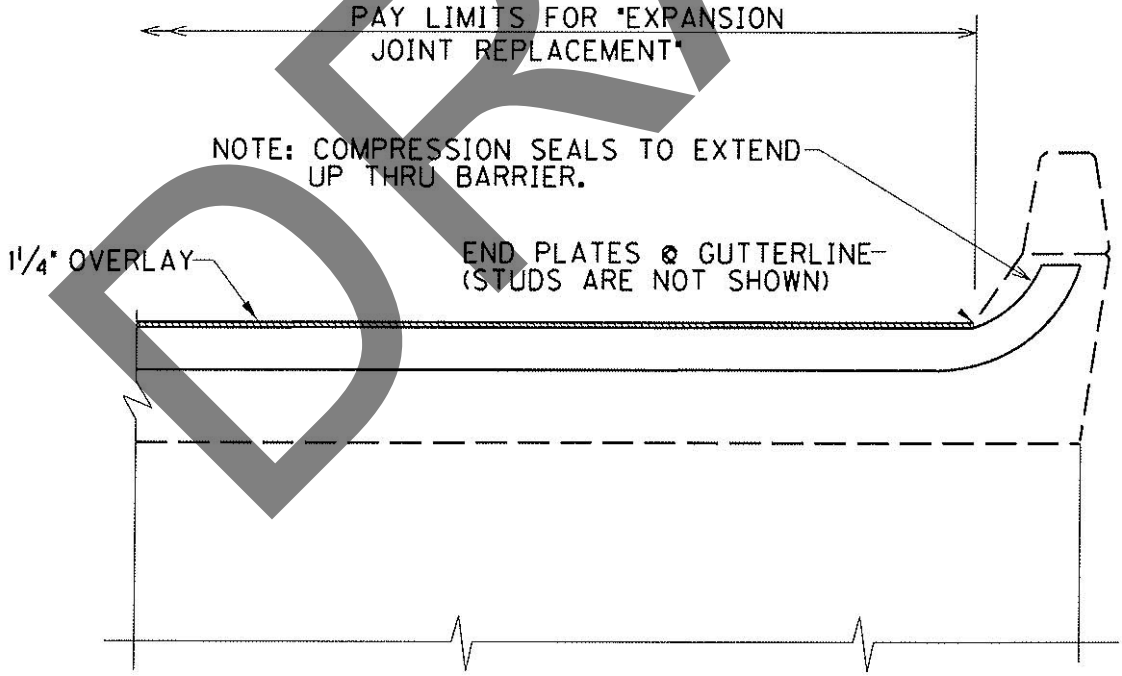


PROPOSED SECTION @ ABUTMENT

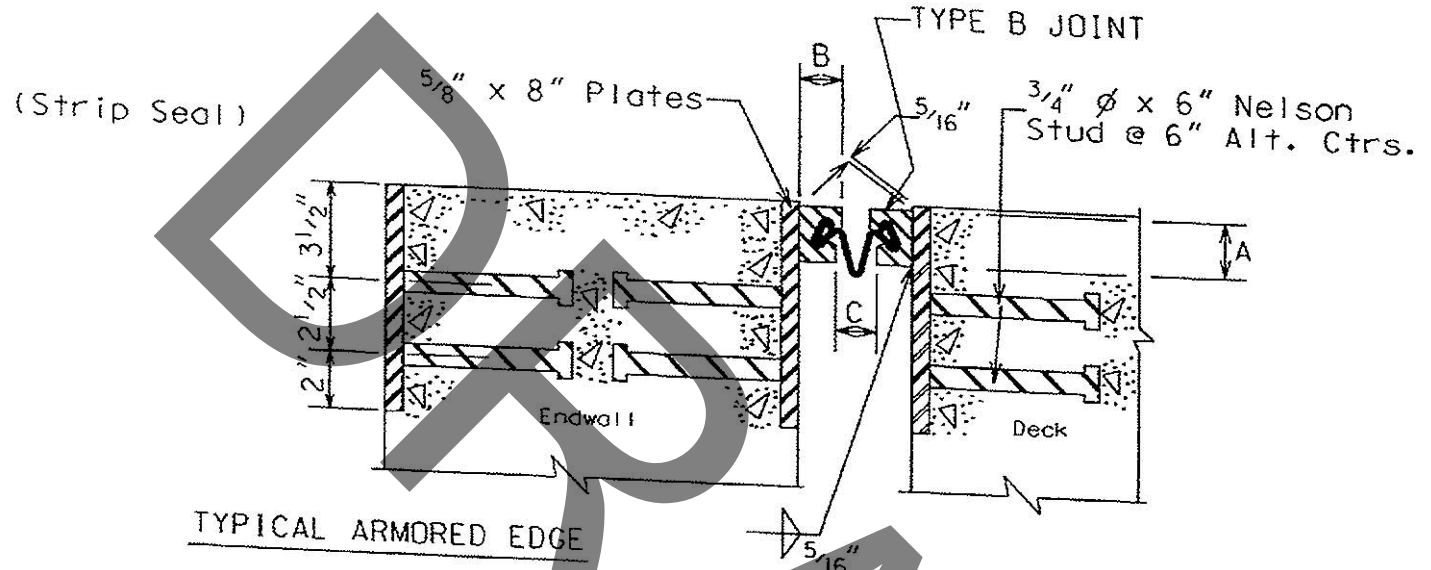
REPLACE EXPANSION JOINT
ABUTMENT 1 CURB SECTION



PLAN VIEW @ CURB
REPLACE EXPANSION JOINT



PROPOSED SECTION @ ABUTMENT



TYPICAL ARMORED EDGE

TYPICAL 4" JOINT

NOTE: Joint openings shall be adjusted for each 10 above or below 60° f. Decrease or increase respectively by increment shown.

4" - Joint Opening @ 60° F.

INCREMENT FOR 10° TEMPERATURE CHANGE - STEEL SPAN -							
THRU 60'	61'-100'	101'-140'	141'-180'	181'-240'	241'-320'	321'-365'	
1/32"	1/16"	3/32"	1/8"	3/16"	1/4"	5/16"	

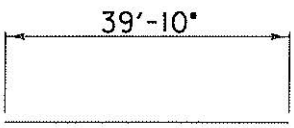
Not to Scale

ALTERNATE NEOPRENE EXPANSION DAMS - 4"

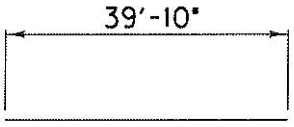
			A	B	C
B	WABO STRIP SEAL Type A Extrusion with S-400 Seal	Watson Bowman Associates Inc.	2"	1 1/2"	2"
B	STEEL FLEX Type SSA with 400 Seal	D. S. Brown Co.	2"	1 1/2"	2 1/2"
B	GENERAL STRIP CD Profile A Steel Extrusion with Gen Strip CD Seal	General Tire Co.	2"	1 3/8"	2 1/4"
B	ONFLEX Type AM2 Extrusion with 40SEO Sal	Structural Accessories Inc.	2"	1 1/4"	2"

Not to Scale

REINFORCEMENT



#5 STRAIGHT BAR
4 REQ'D ABUTMENT 1



#6 STRAIGHT BAR
16 REQ'D ABUTMENT 1

1,123 LBS ABUTMENT 1

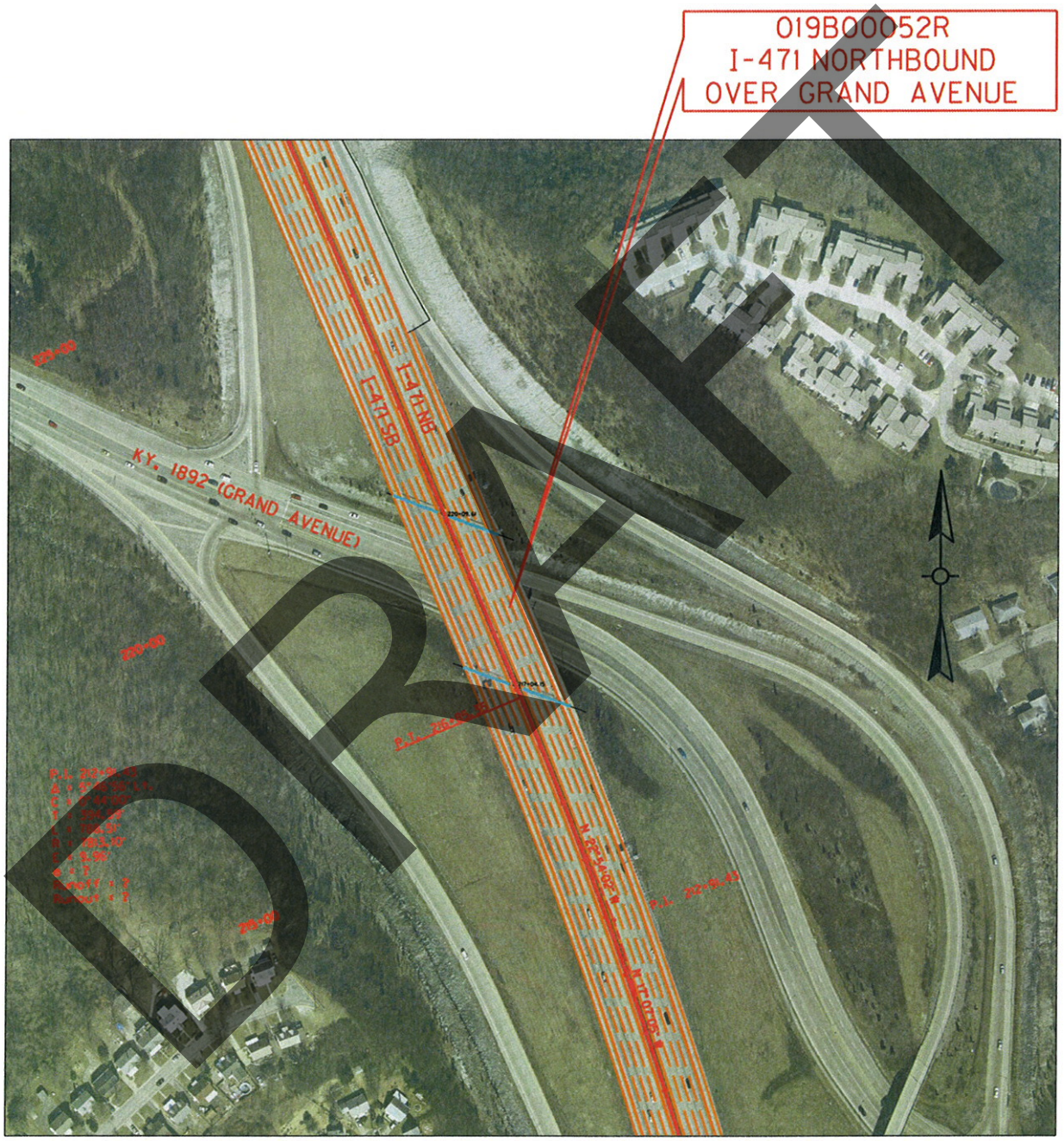
ABUTMENT 1 REINFORCEMENT

300 LIN. FT. #4 BARS IN 20'-0" LENGTHS
200 LBS. ABUTMENT 1

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 1,323 LBS.

CAMPBELL COUNTY



Approximate Location Information
Latitude: 39° 5' 5"
Longitude: 84° 28' 22"

BRIDGE #5 (019B00052R) SUMMARY OF QUANTITIES

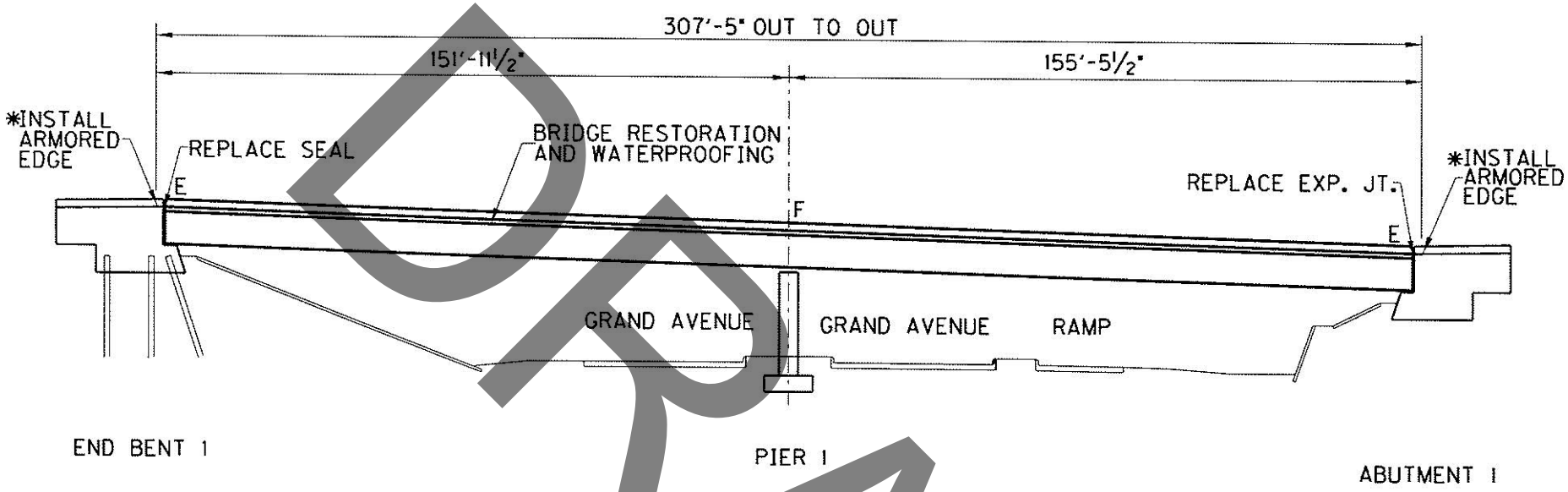
1. DISTRICT: 6
2. COUNTY: CAMPBELL
3. ROUTE: I-471
4. PROJECT NUMBER: FD52 019 0471 000-005
5. ROAD NAME: I-471
6. DESCRIPTION: I-471 NORTHBOUND OVER GRAND AVENUE
BRIDGE DECK RESTORATION AND WATERPROOFING:JOINT SEAL REPLACEMENT
REPLACE EXPANSION JOINT

8. LENGTH (FT.):	307.42	**BRIDGE WIDTH (FT.):**	56.0	**SURFACE AREA (SQ. YD.):**	1913
SKEW (DEGREES):	43.72	**DECK THICKNESS (INCHES):**		9	

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3298	EXPANSION JT REPLACEMENT 4 IN	79.0	LIN FT.
8504	EPOXY SAND SLURRY	307.0	SQ YD
8526	CONC CLASS M FULL DEPTH PATCH	7.0	CU YD
8534	CONCRETE OVERLAY-LATEX	67.0	CU YD
8549	BLAST CLEANING	2168	SQ YD
8550	HYDRODEMOLITION	1913	SQ YD
23386EC	JOINT SEAL REPLACEMENT	79.0	LIN FT.
24094ED	PARTIAL DEPTH PATCHING	13.4	CU YD

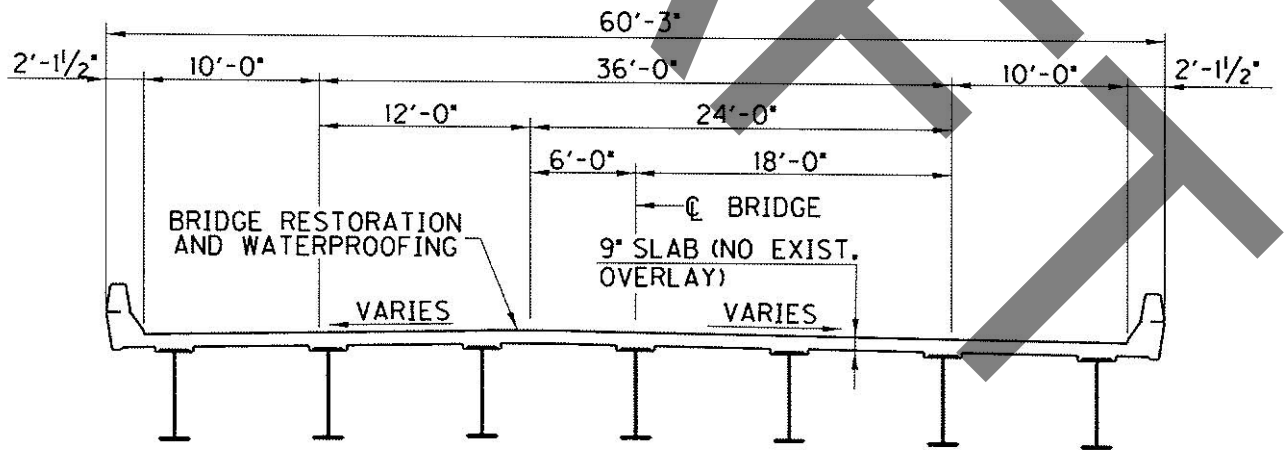
I-471 NORTHBOUND OVER GRAND AVENUE
BRIDGE MAINTENANCE NUMBER 019B00052R



ELEVATION
43°43'00" SKEW RT.
NOT TO SCALE

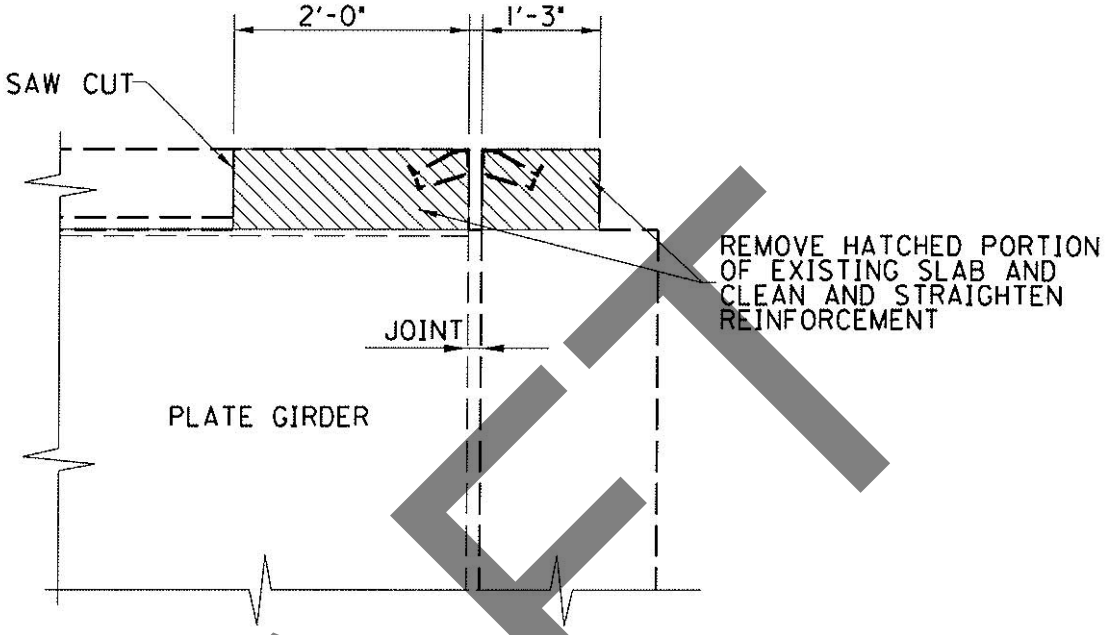
NOTES:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

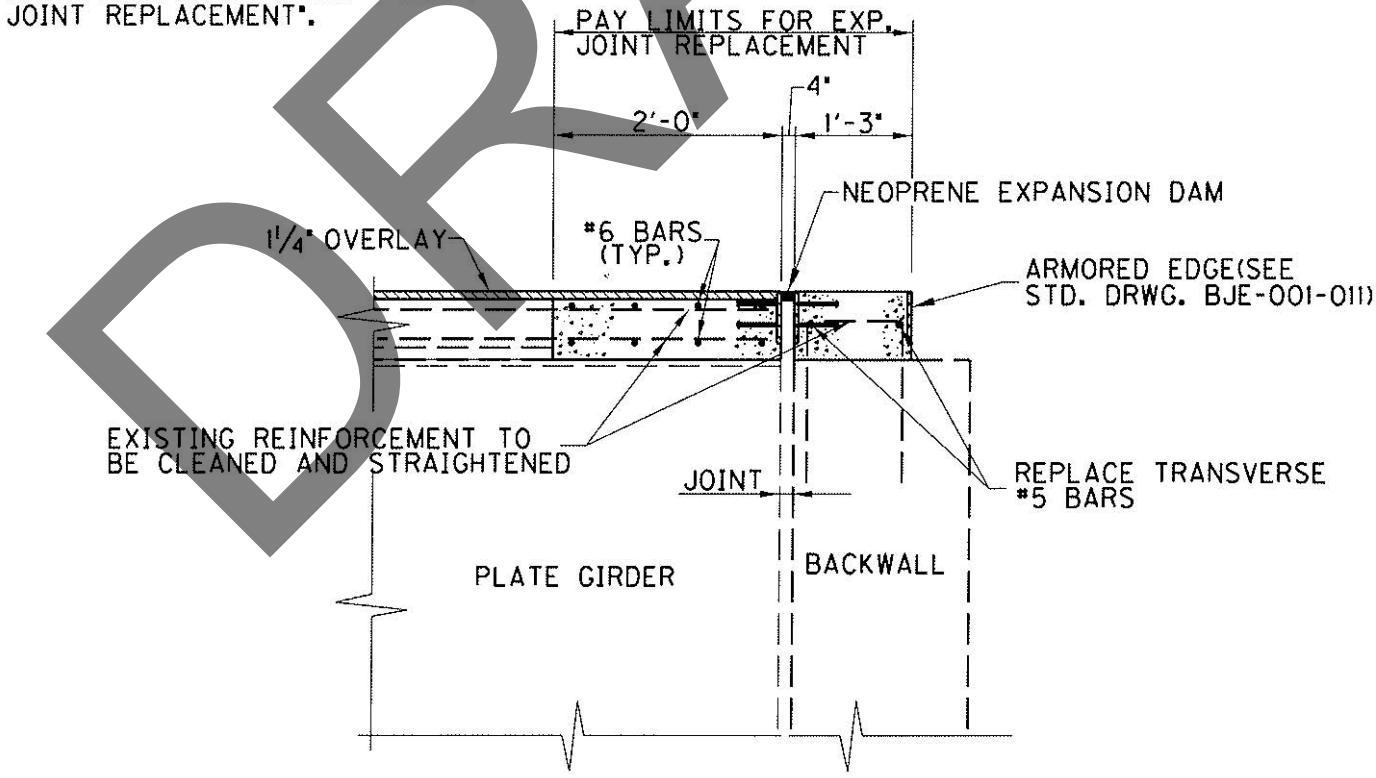
REPLACE JOINT @ ABUTMENT 1



EXISTING SECTION @ ABUTMENT

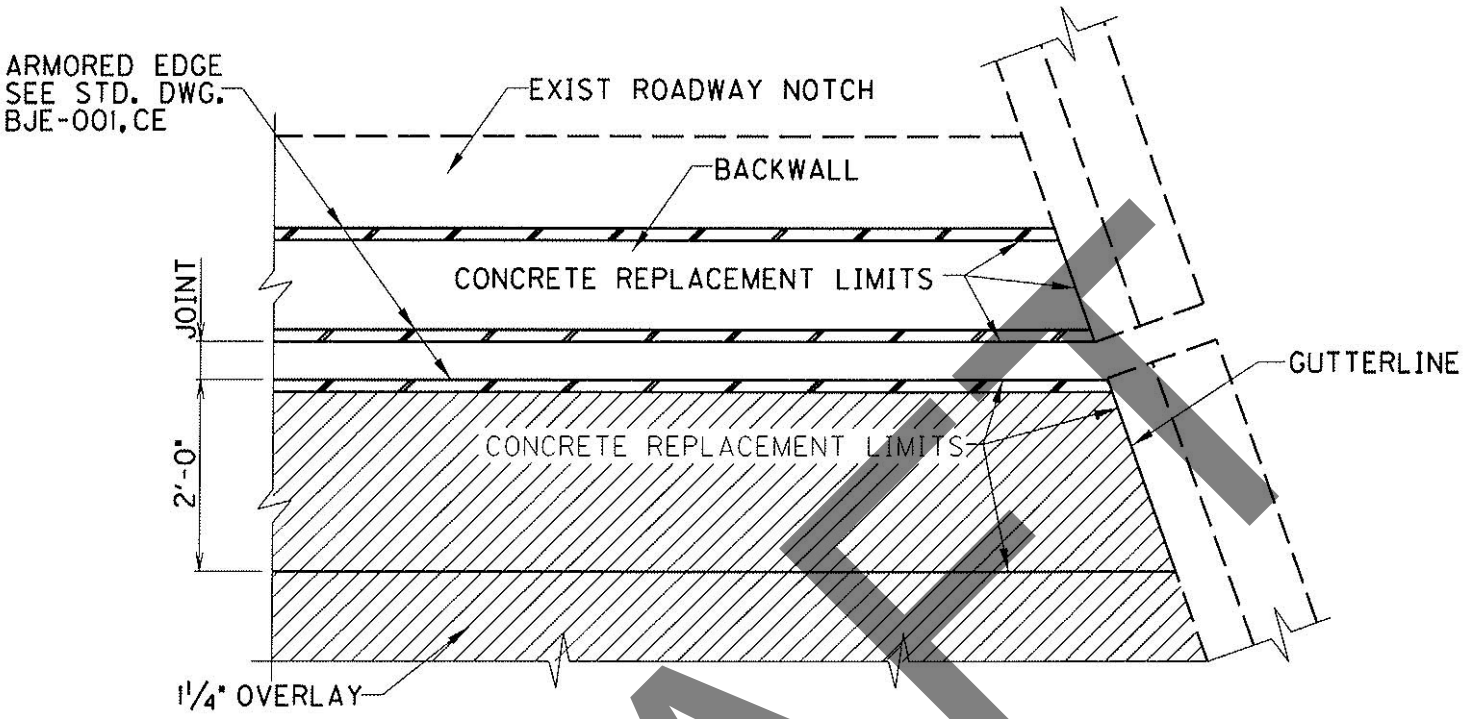
NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".

NOTE:
REMOVE 6' OF ROADWAY PAVEMENT. PLACE ½" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)

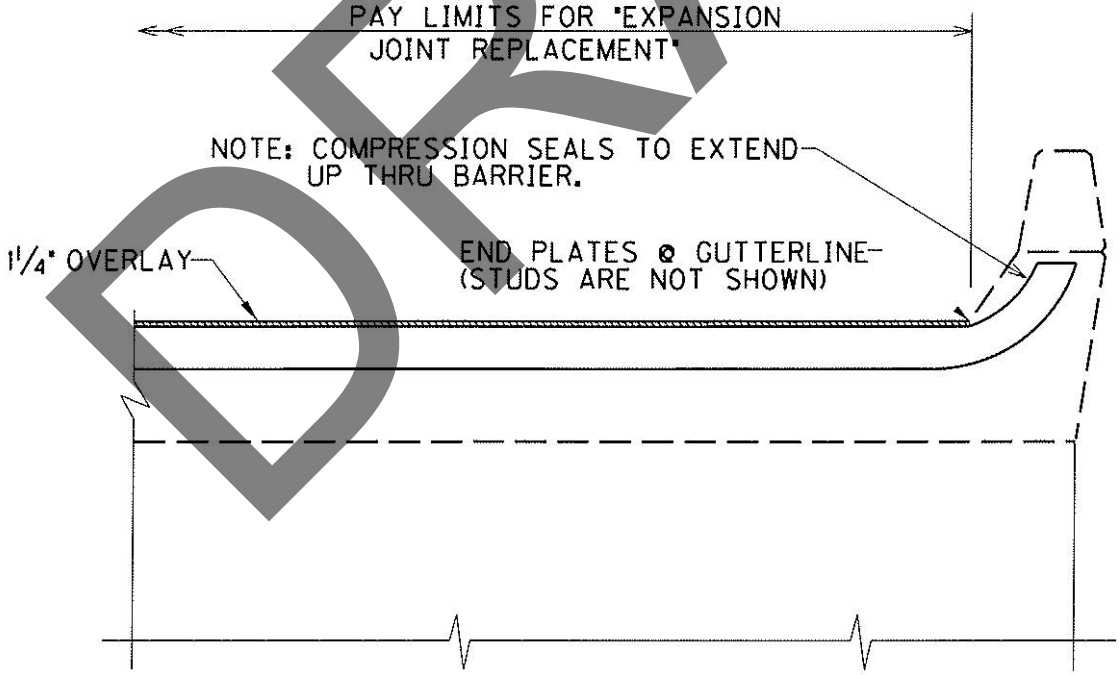


PROPOSED SECTION @ ABUTMENT

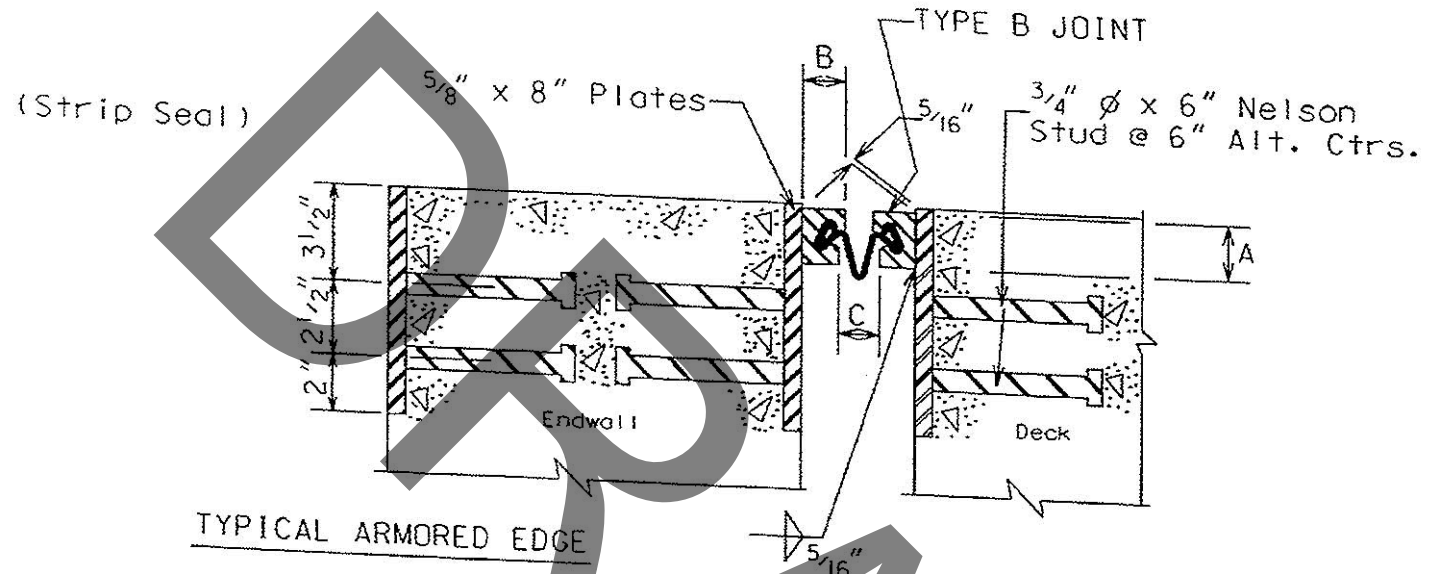
REPLACE EXPANSION JOINT
ABUTMENT 1 CURB SECTION



PLAN VIEW @ CURB
REPLACE EXPANSION JOINT



PROPOSED SECTION @ ABUTMENT



TYPICAL ARMORED EDGE

TYPICAL 4" JOINT

NOTE: Joint openings shall be adjusted for each 10 above or below 60° f. Decrease or increase respectively by increment shown.

4" - Joint Opening @°60 F.

INCREMENT FOR 10° TEMPERATURE CHANGE - STEEL SPAN -							
THRU 60'	61'-100'	101'-140'	141'-180'	181'-240'	241'-320'	321'-365'	
1/32"	1/16"	3/32"	1/8"	3/16"	1/4"	5/16"	

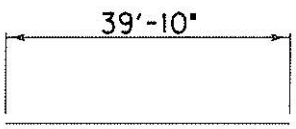
Not to Scale

ALTERNATE NEOPRENE EXPANSION DAMS - 4"

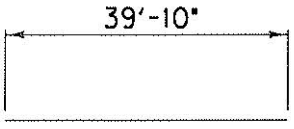
			A	B	C
B	WABO STRIP SEAL Type A Extrusion with S-400 Seal	Watson Bowman Associates Inc.	2"	1 1/2"	2"
B	STEEL FLEX Type SSA with 400 Seal	D. S. Brown Co.	2"	1 1/2"	2 1/2"
B	GENERAL STRIP CD Profile A Steel Extrusion with Gen Strip CD Seal	General Tire Co.	2"	1 3/8"	2 1/4"
B	ONFLEX Type AM2 Extrusion with 40SEQ Sal	Structural Accessories Inc.	2"	1 1/4"	2"

Not to Scale

REINFORCEMENT



#5 STRAIGHT BAR
4 REQ'D ABUTMENT 1



#6 STRAIGHT BAR
16 REQ'D ABUTMENT 1

1,123 LBS ABUTMENT 1

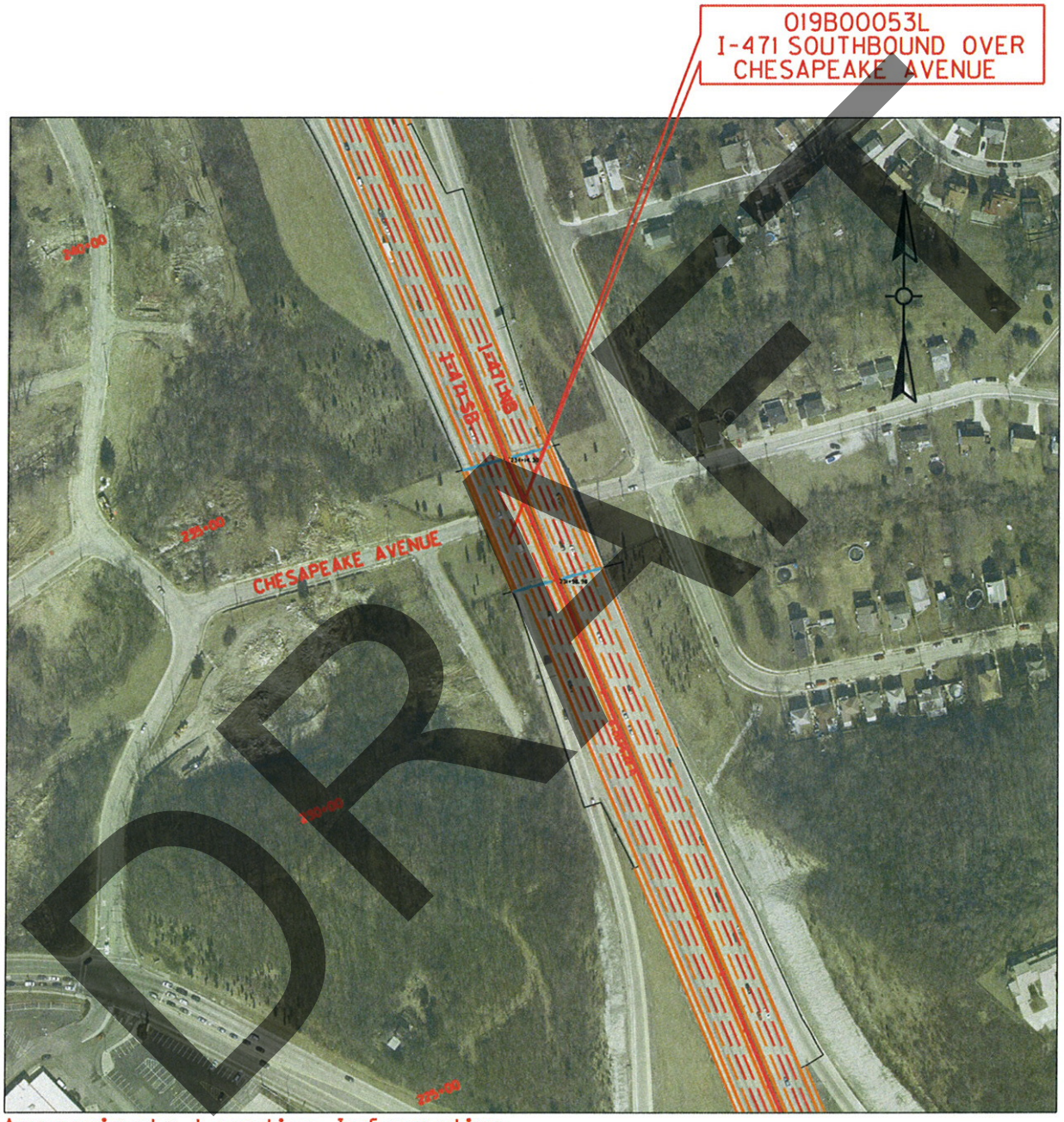
ABUTMENT 1 REINFORCEMENT

300 LIN. FT. #4 BARS IN 20'-0" LENGTHS
200 LBS. ABUTMENT 1

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 1,323 LBS.

CAMPBELL COUNTY



Approximate Location Information
Latitude: 39°5'18"
Longitude: 84°28'30"

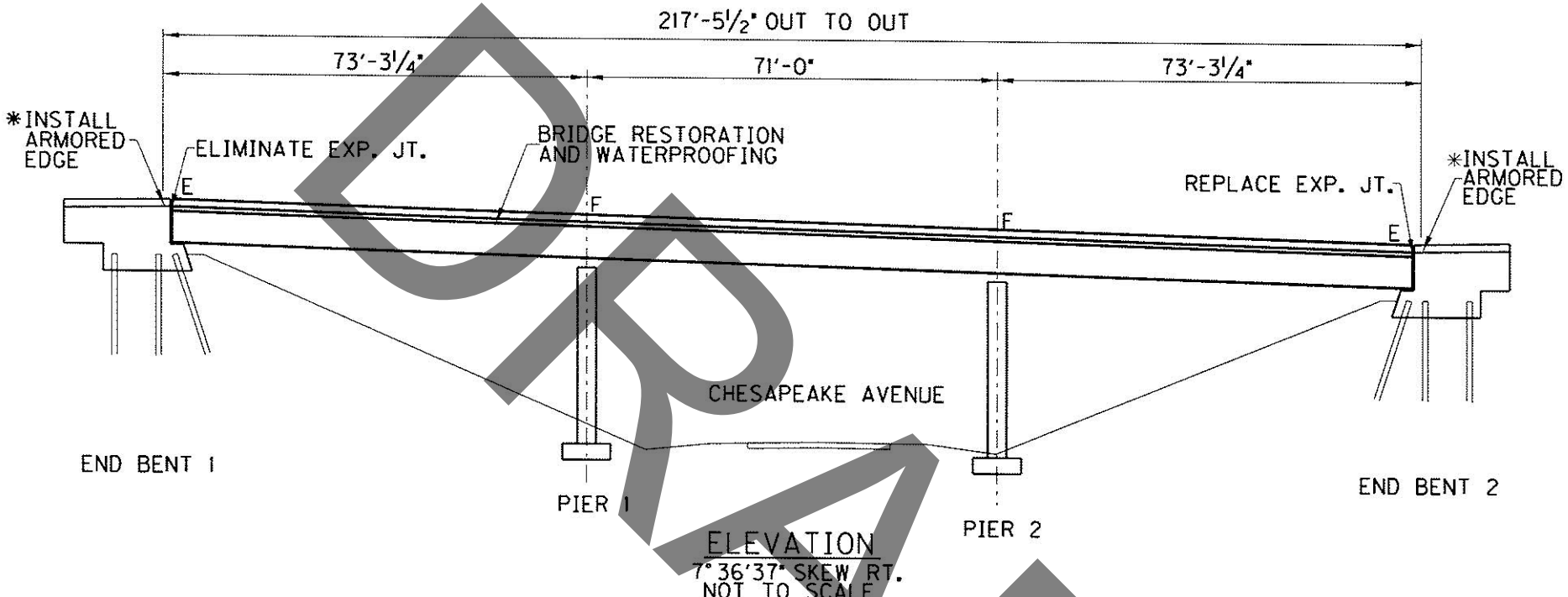
BRIDGE #6 (019B00053L) SUMMARY OF QUANTITIES

1. DISTRICT:	6				
2. COUNTY:	CAMPBELL				
3. ROUTE:	I-471				
4. PROJECT NUMBER:	FD52 019 0471 000-005				
5. ROAD NAME:	I-471				
6. DESCRIPTION:	I-471 SOUTHBOUND OVER CHESAPEAKE AVENUE BRIDGE DECK RESTORATION AND WATERPROOFING: ELIMINATE EXPANSION JOINT EXPANSION JOINT REPLACEMENT				
8. LENGTH (FT.):	217.45	**BRIDGE WIDTH (FT.):**	63.7	**SURFACE AREA (SQ. YD.):**	
SKEW (DEGREES):	7.61	**DECK THICKNESS (INCHES):**		9.0	

ESTIMATED QUANTITIES REQUIRED

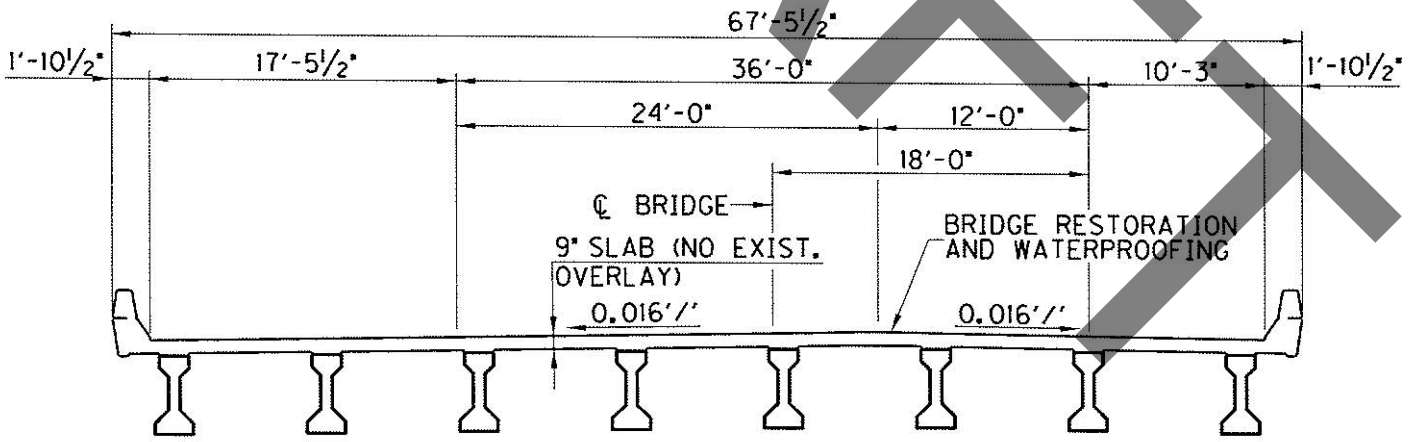
ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3295	EXPANSION JOINT REPLACEMENT 2 IN	62.0	LIN FT
3300	ELIMINATE TRANSVERSE JOINT	62.0	LIN FT
8504	EPOXY SAND SLURRY	217.0	SQ YD
8526	CONC CLASS M FULL DEPTH PATCH	5.0	CU YD
8534	CONCRETE OVERLAY-LATEX	53.5	CU YD
8549	BLAST CLEANING	1720	SQ YD
8550	HYDRODEMOLITION	1539	SQ YD
24094ED	PARTIAL DEPTH PATCHING	10.7	CU YD

I-471 SOUTHBOUND OVER CHESAPEAKE AVENUE
BRIDGE MAINTENANCE NUMBER 019B00053L



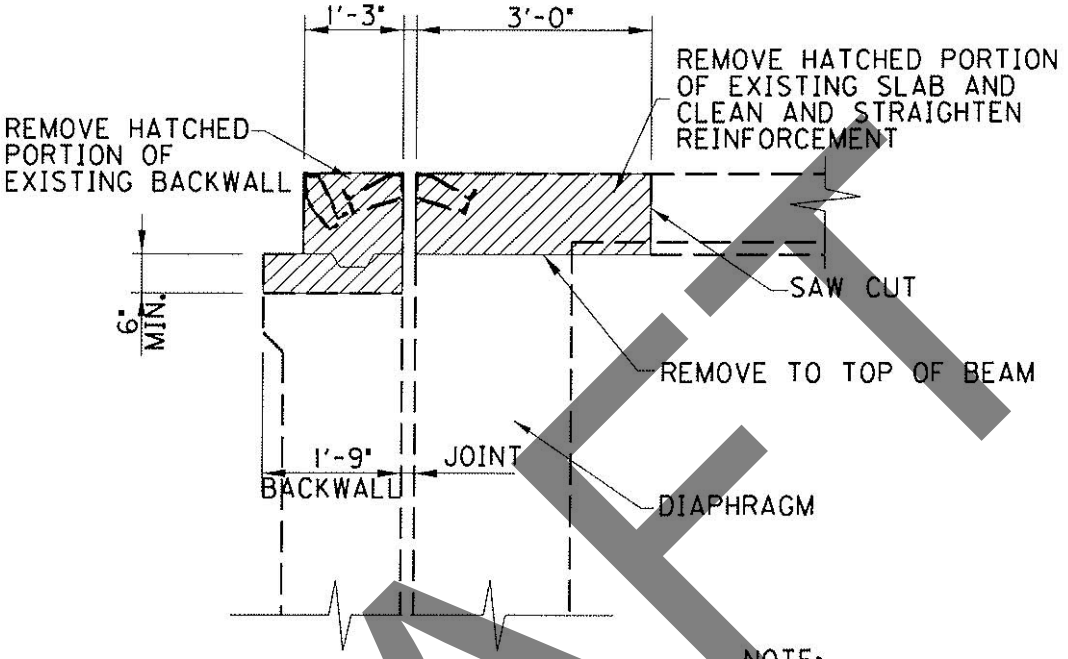
ELEVATION
7° 36' 37" SKEW RT.
NOT TO SCALE

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

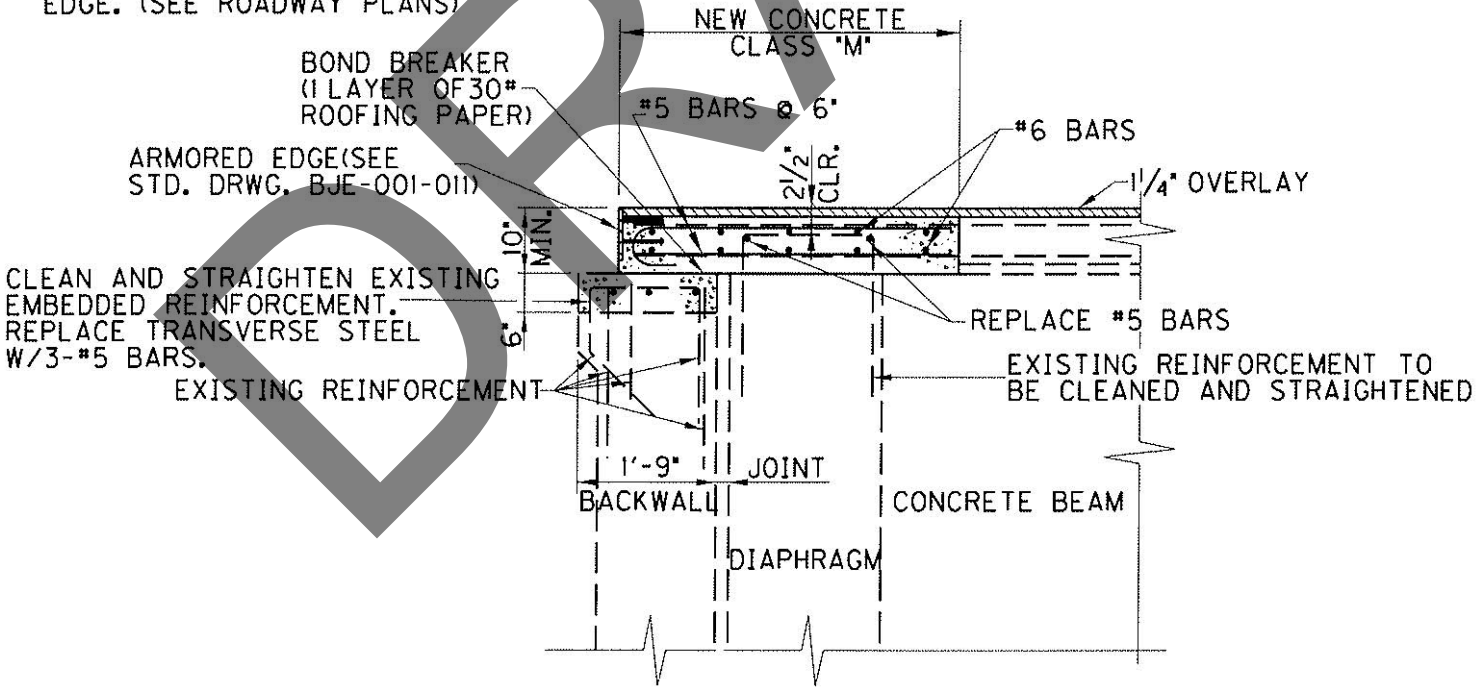
ELIMINATE JOINT @ END BENT 1



EXISTING SECTION
@ END BENT

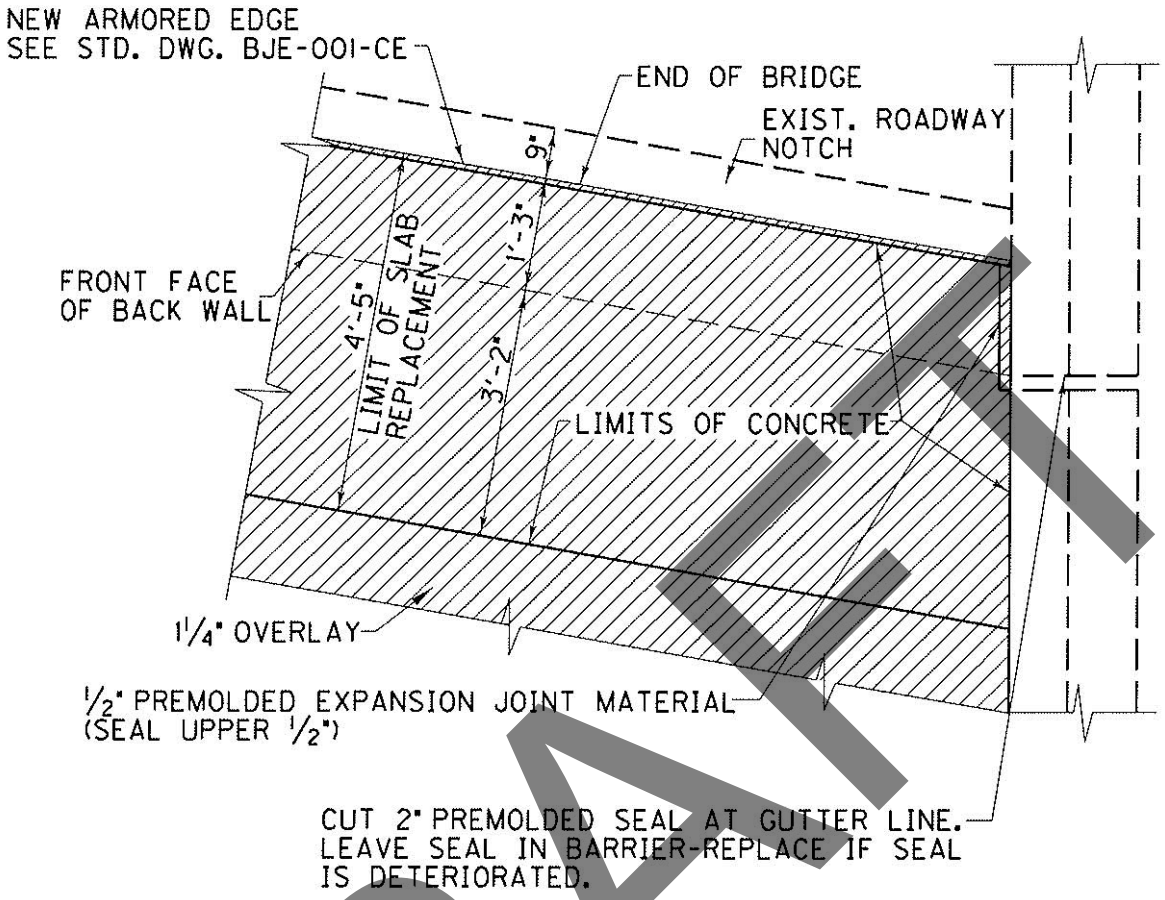
NOTE:
REMOVE 6' OF ROADWAY PAVEMENT, PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)

NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "ELIMINATE TRANSVERSE JOINT(METHOD 1)".

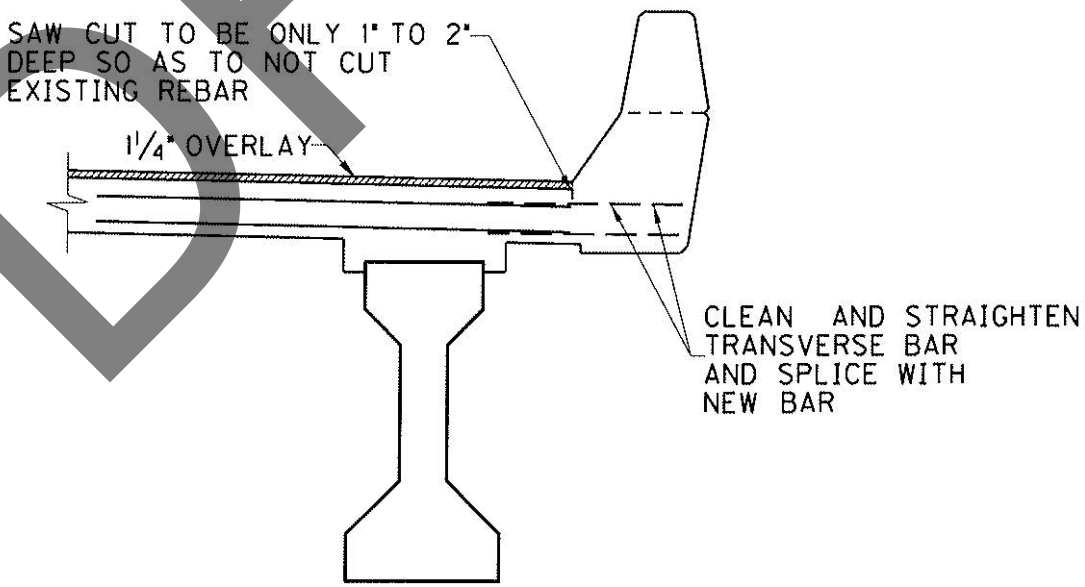


PROPOSED SECTION
@ END BENT

CURB SECTION @ END BENT 1

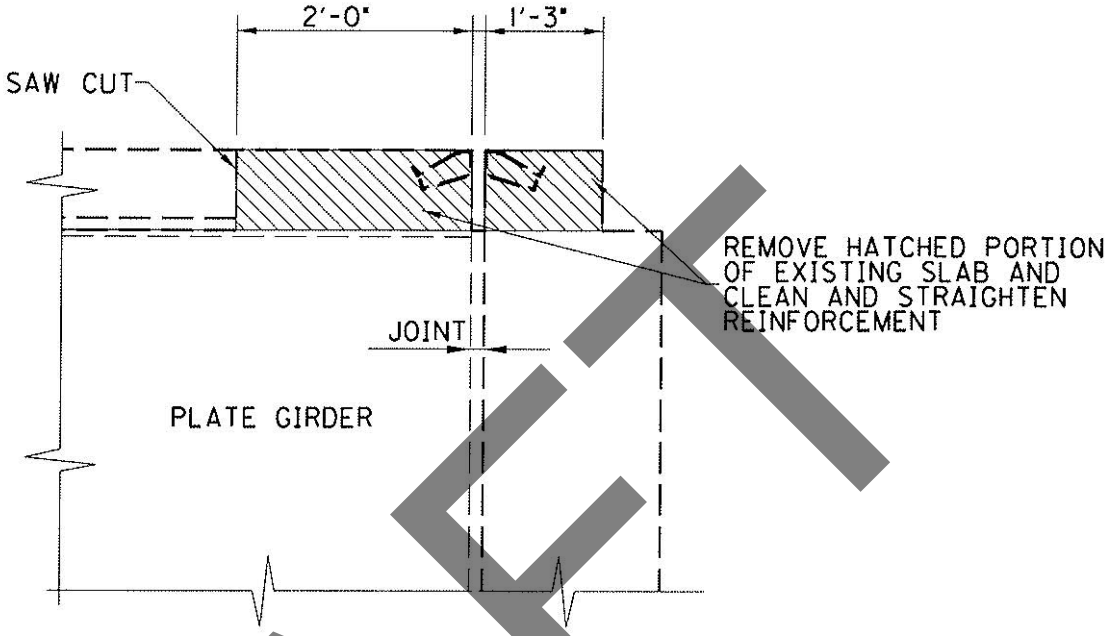


PROPOSED PLAN @ END BENT



PROPOSED SECTION @ END BENT

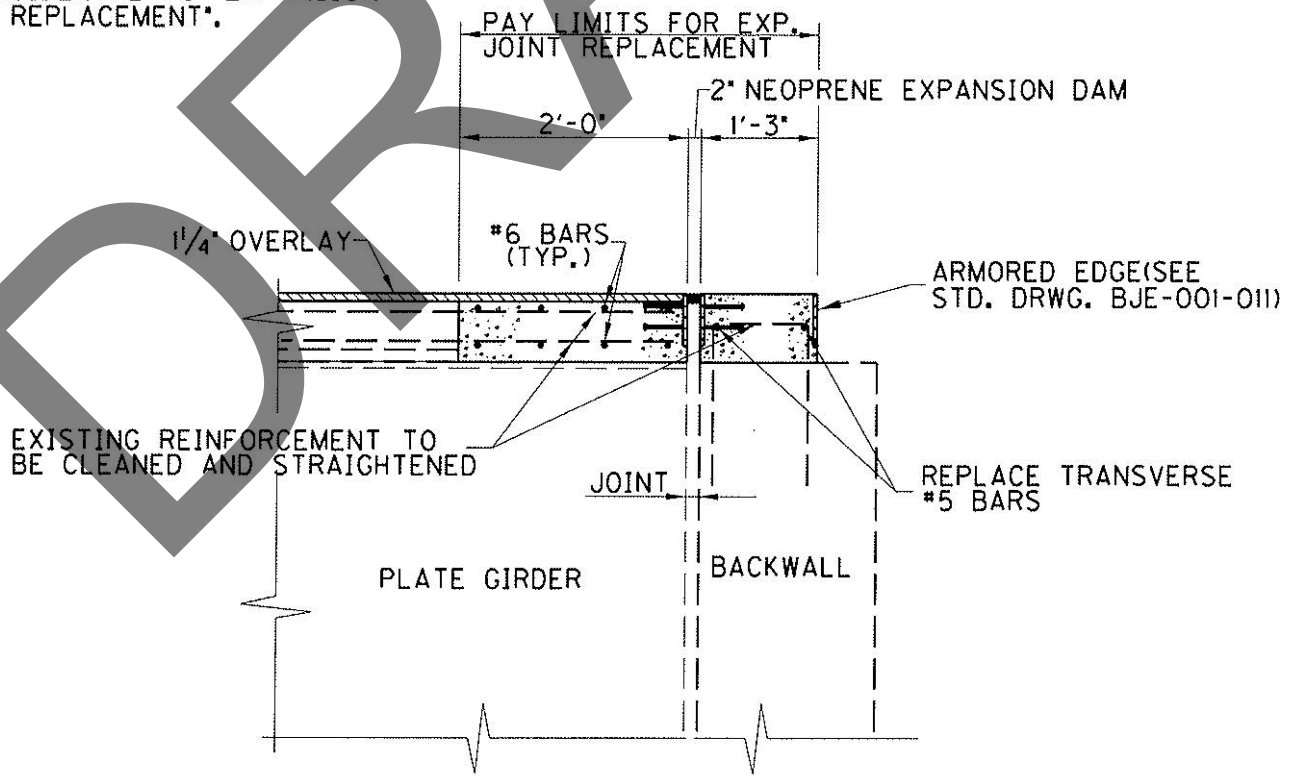
REPLACE JOINT @ END BENT 2



EXISTING SECTION @ END BENT

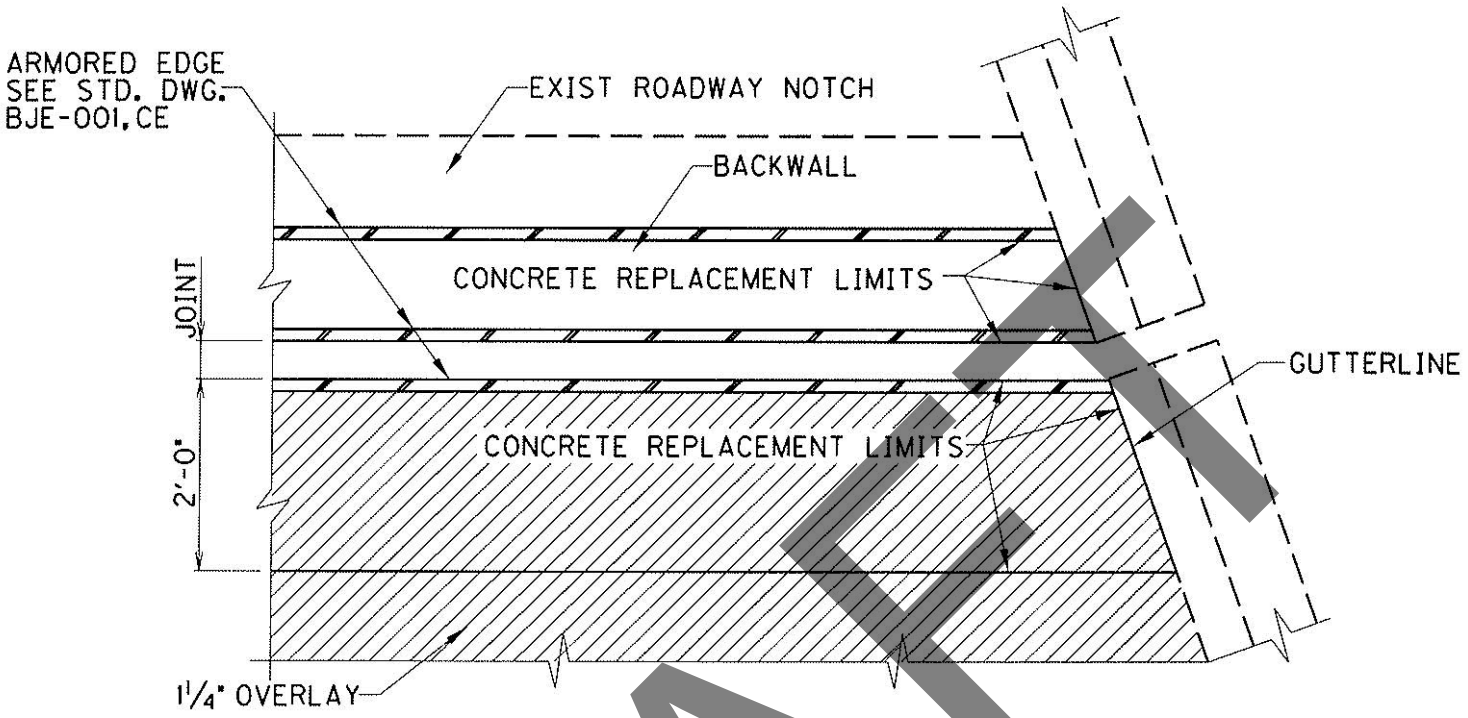
NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".

NOTE:
REMOVE 6' OF ROADWAY PAVEMENT. PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)



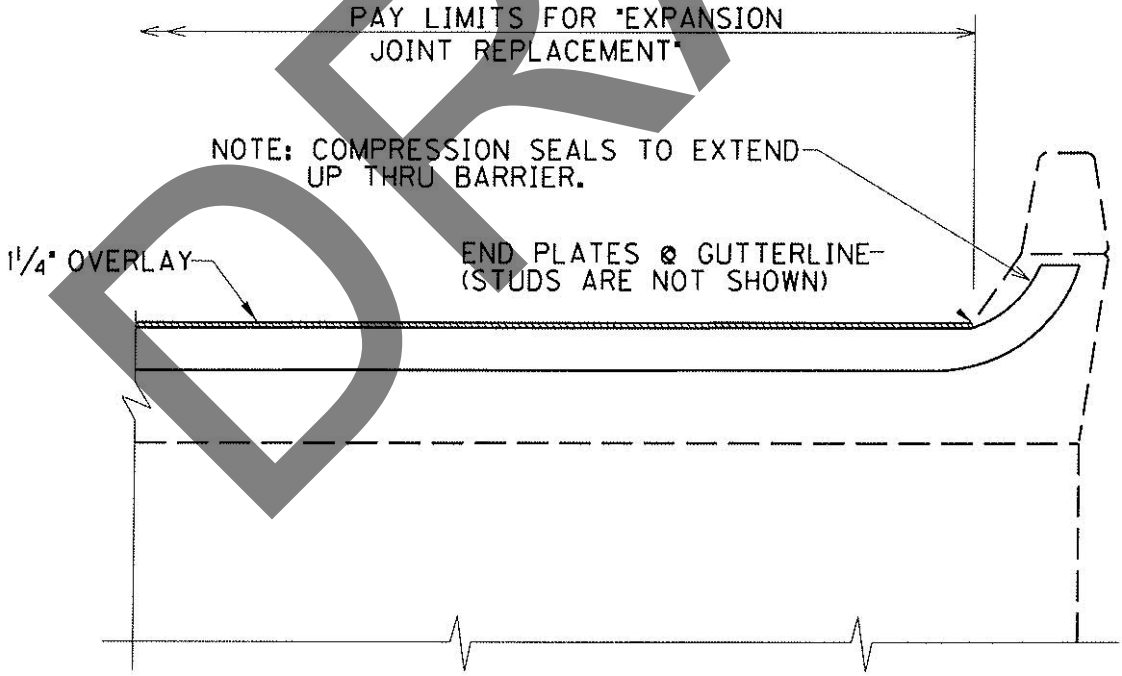
PROPOSED SECTION @ END BENT

REPLACE EXPANSION JOINT
END BENT 2 CURB SECTION



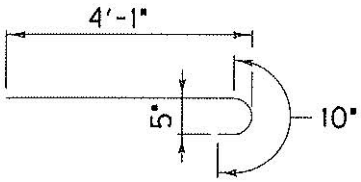
PLAN VIEW @ CURB

REPLACE EXPANSION JOINT

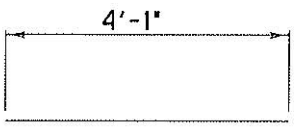


PROPOSED SECTION @ END BENT

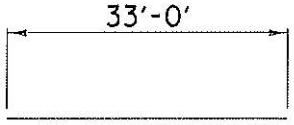
REINFORCEMENT



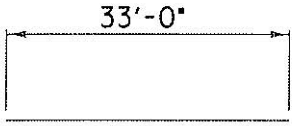
#5 BENT BAR
127 REQ'D END BENT 1



#5 STRAIGHT BAR
127 REQ'D END BENT 1



#6 STRAIGHT BAR
20 REQ'D END BENT 1
16 REQ'D END BENT 2



#5 STRAIGHT BAR
6 REQ.D END BENT 1
4 REQ'D END BENT 2

2,362 LBS END BENT 1
931 LBS END BENT 2

END BENT REINFORCEMENT

300 LIN. FT. #4 BARS IN 20'-0" LENGTHS
200 LBS. EACH END BENT

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 3,693 LBS.

CAMPBELL COUNTY

Approximate Location Information
Latitude: 39°5'18"
Longitude: 84°28'29"

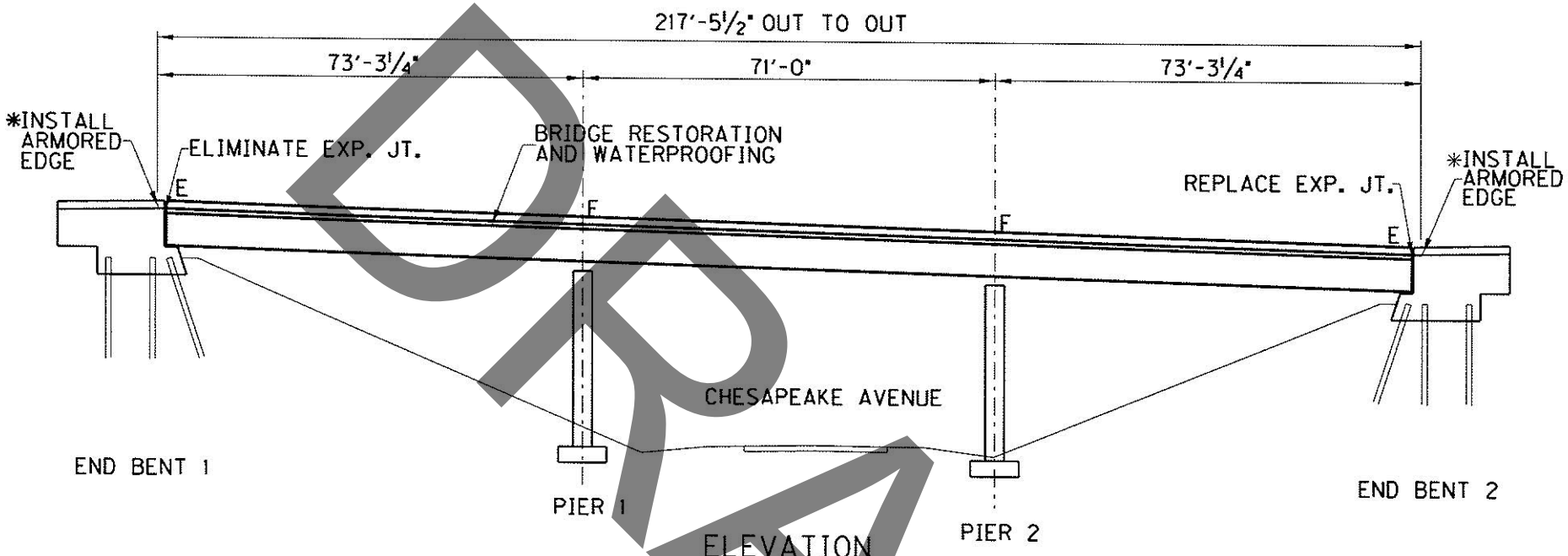
BRIDGE #7 (019B00053R) SUMMARY OF QUANTITIES

1. DISTRICT:	6				
2. COUNTY:	CAMPBELL				
3. ROUTE:	I-471				
4. PROJECT NUMBER:	FD52 019 0471 000-005				
5. ROAD NAME:	I-471				
6. DESCRIPTION:	I-471 NORTHBOUND OVER CHESAPEAKE AVENUE BRIDGE DECK RESTORATION AND WATERPROOFING: ELIMINATE EXPANSION JOINT EXPANSION JOINT REPLACEMENT				
8. LENGTH (FT.):	217.45	**BRIDGE WIDTH (FT.):**	63.7	**SURFACE AREA (SQ. YD.):**	
SKEW (DEGREES):	7.61	**DECK THICKNESS (INCHES):**		9.0	

ESTIMATED QUANTITIES REQUIRED

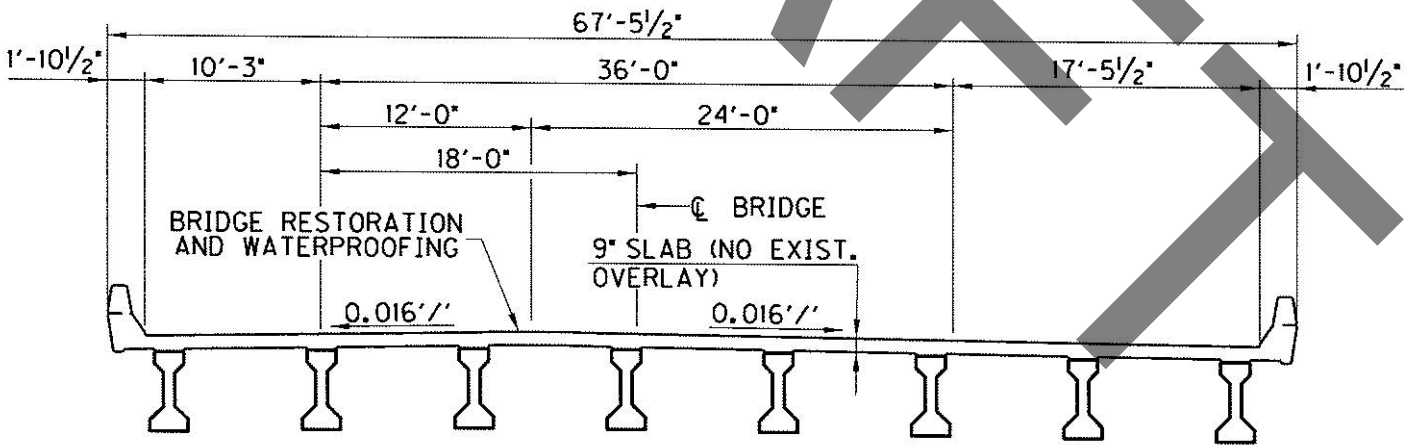
ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3295	EXPANSION JOINT REPLACEMENT 2 IN	62.0	LIN FT
3300	ELIMINATE TRANSVERSE JOINT	62.0	LIN FT
8504	EPOXY SAND SLURRY	217.0	SQ YD
8526	CONC CLASS M FULL DEPTH PATCH	5.0	CU YD
8534	CONCRETE OVERLAY-LATEX	53.5	CU YD
8549	BLAST CLEANING	1720	SQ YD
8550	HYDRODEMOLITION	1539	CU YD
24094ED	PARTIAL DEPTH PATCHING	10.7	CU YD

I-471 NORTHBOUND OVER CHESAPEAKE AVENUE
BRIDGE MAINTENANCE NUMBER 019B00053R



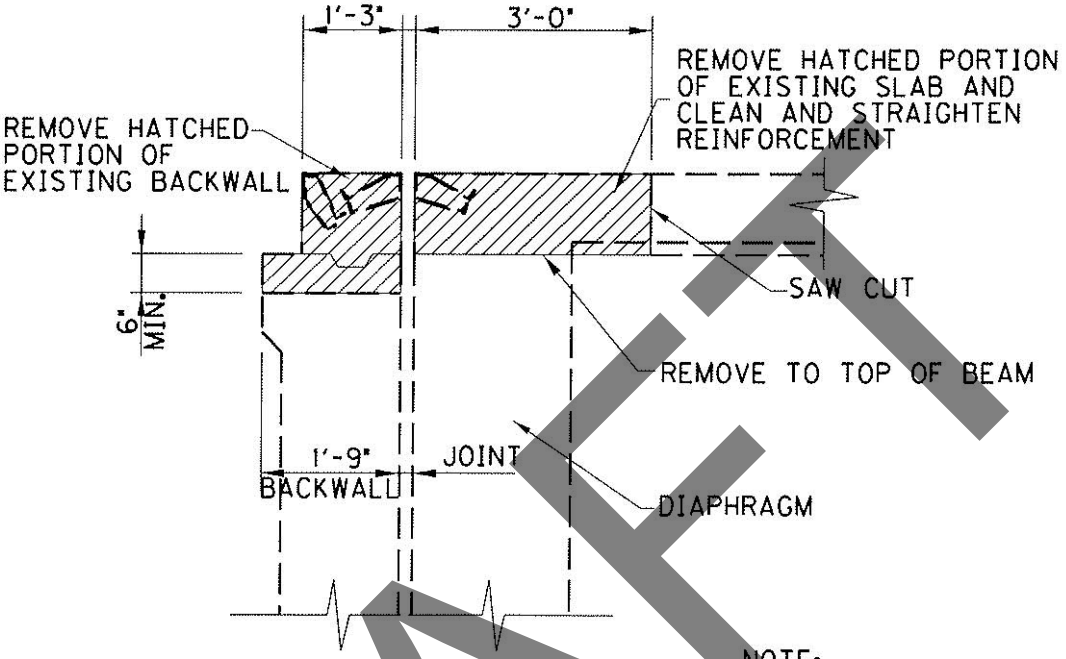
ELEVATION
7°36'37" SKEW RT.
NOT TO SCALE

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

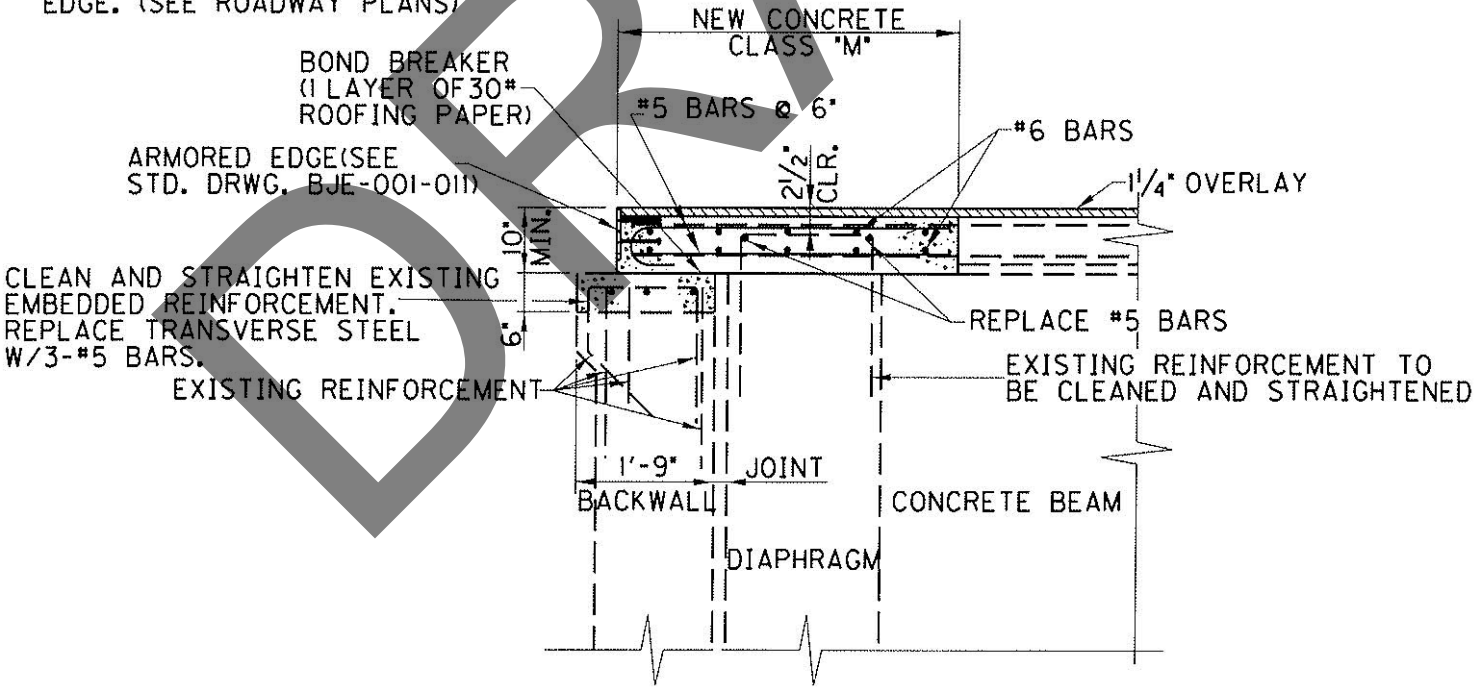
ELIMINATE JOINT @ END BENT 1



EXISTING SECTION
@ END BENT

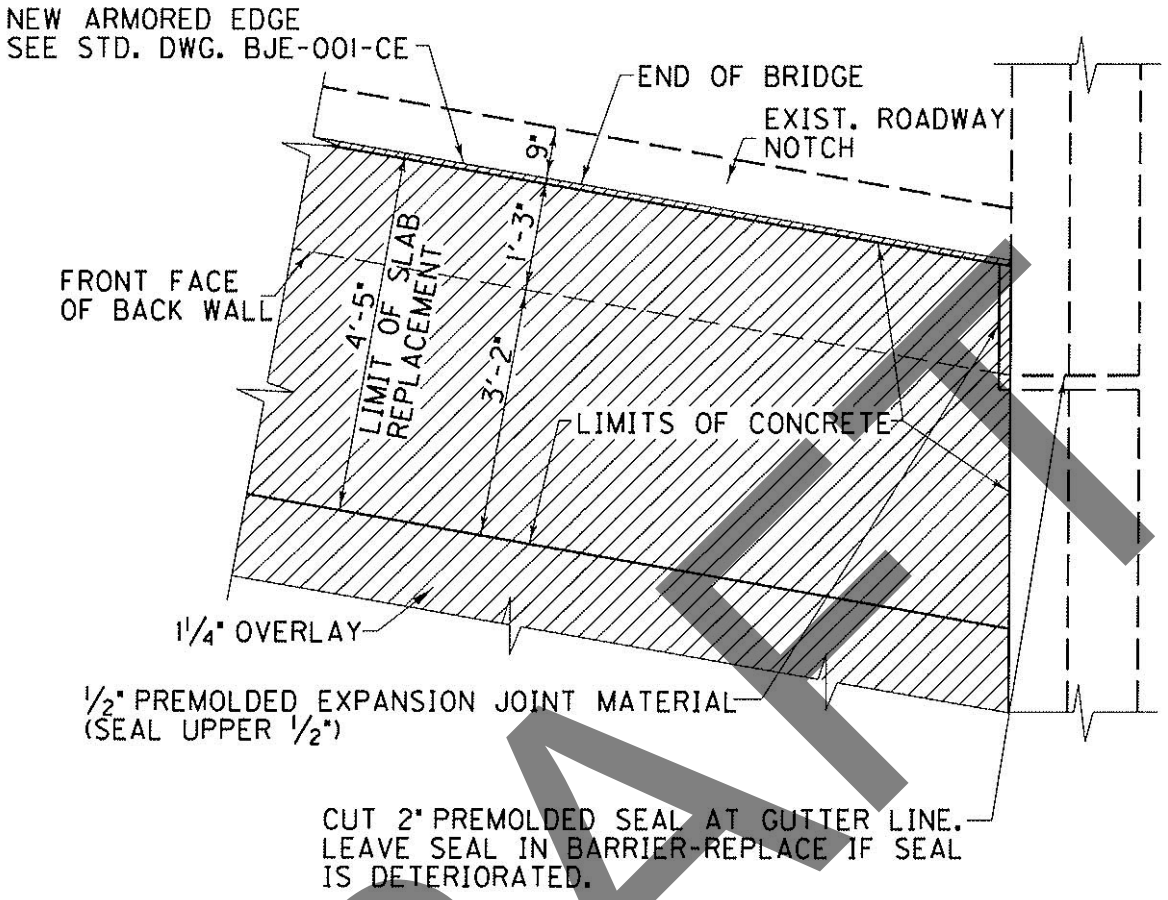
NOTE:
REMOVE 6' OF ROADWAY PAVEMENT. PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)

NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "ELIMINATE TRANSVERSE JOINT(METHOD 1)".

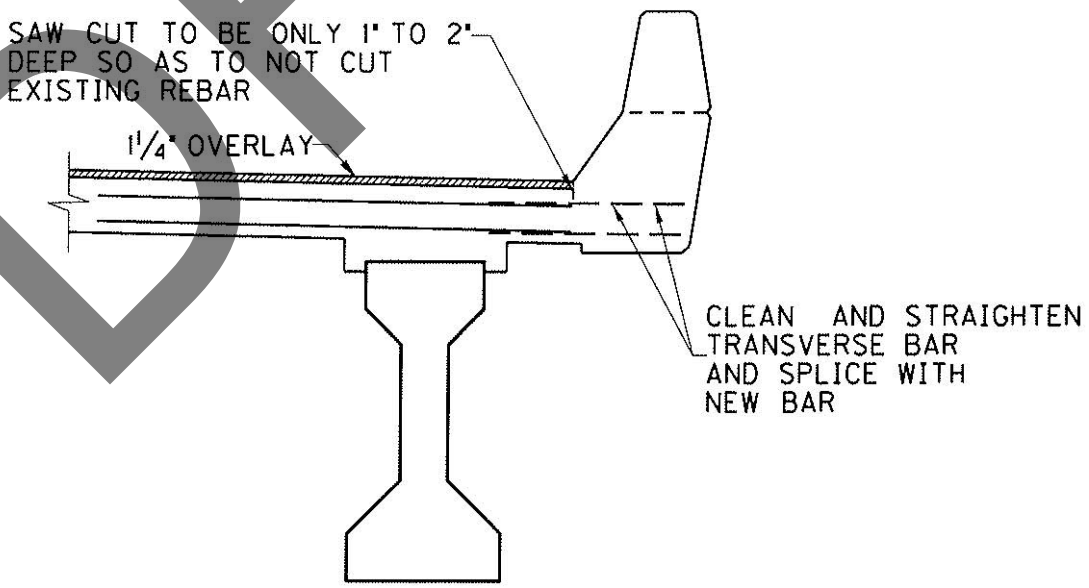


PROPOSED SECTION
@ END BENT

CURB SECTION @ END BENT 1

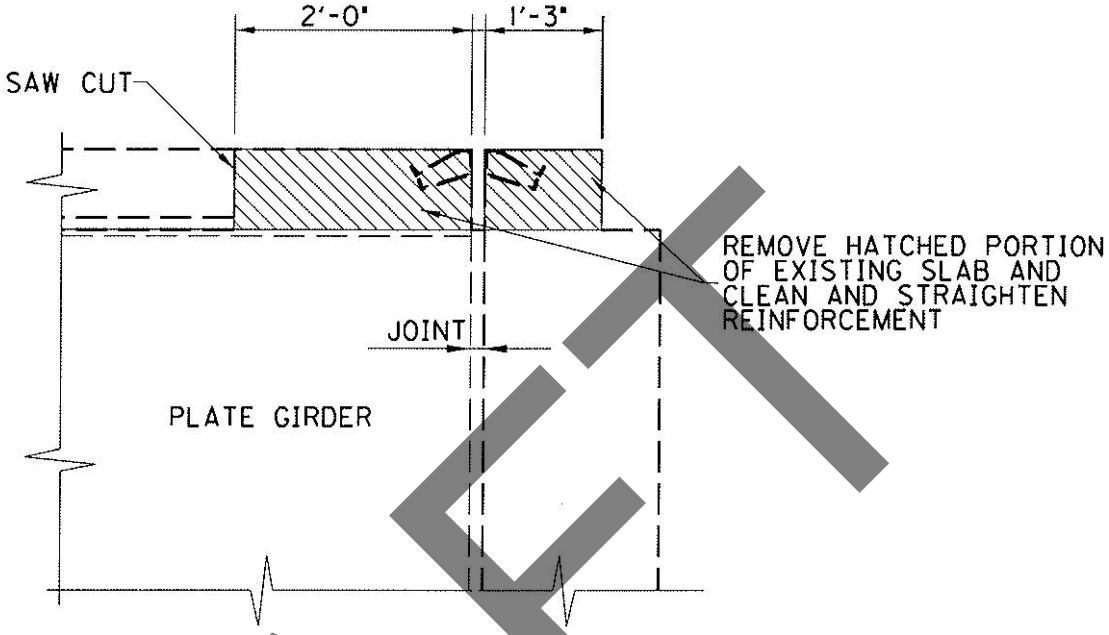


PROPOSED PLAN @ END BENT



PROPOSED SECTION @ END BENT

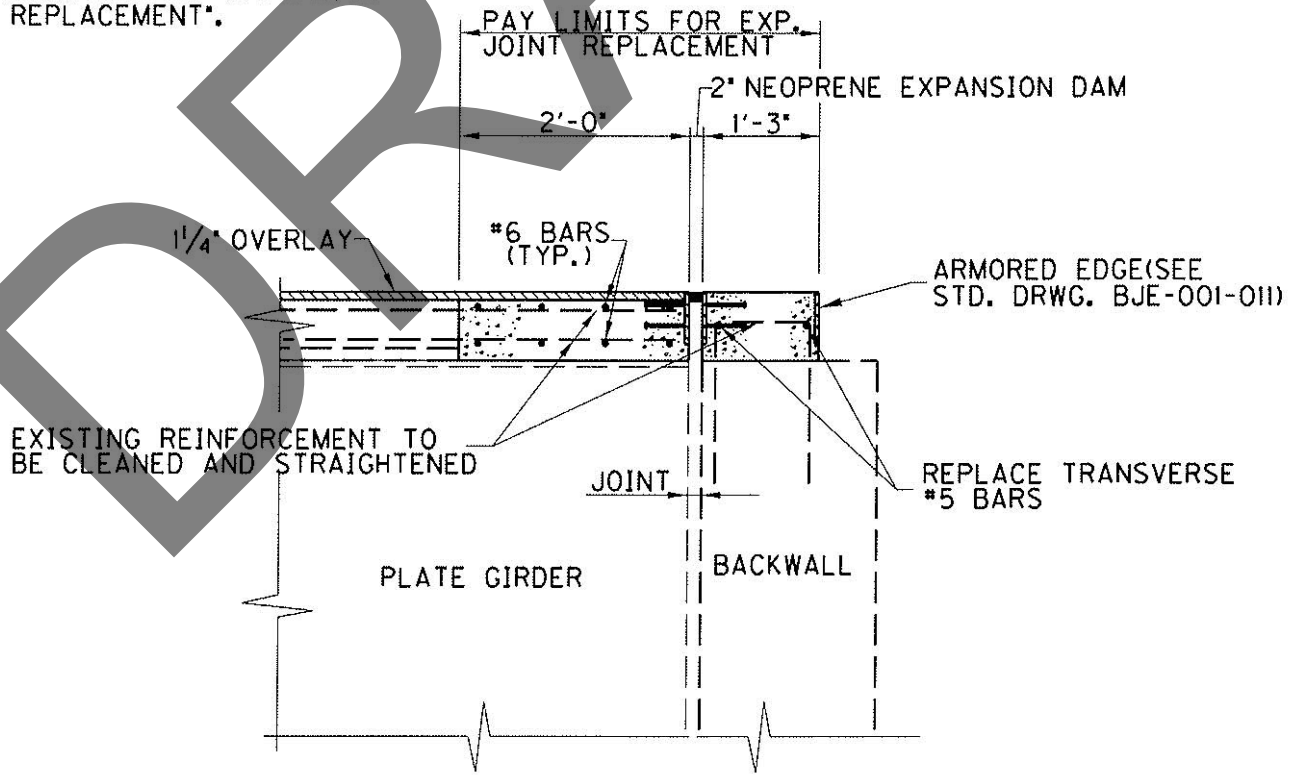
REPLACE JOINT @ END BENT 2



EXISTING SECTION @ END BENT

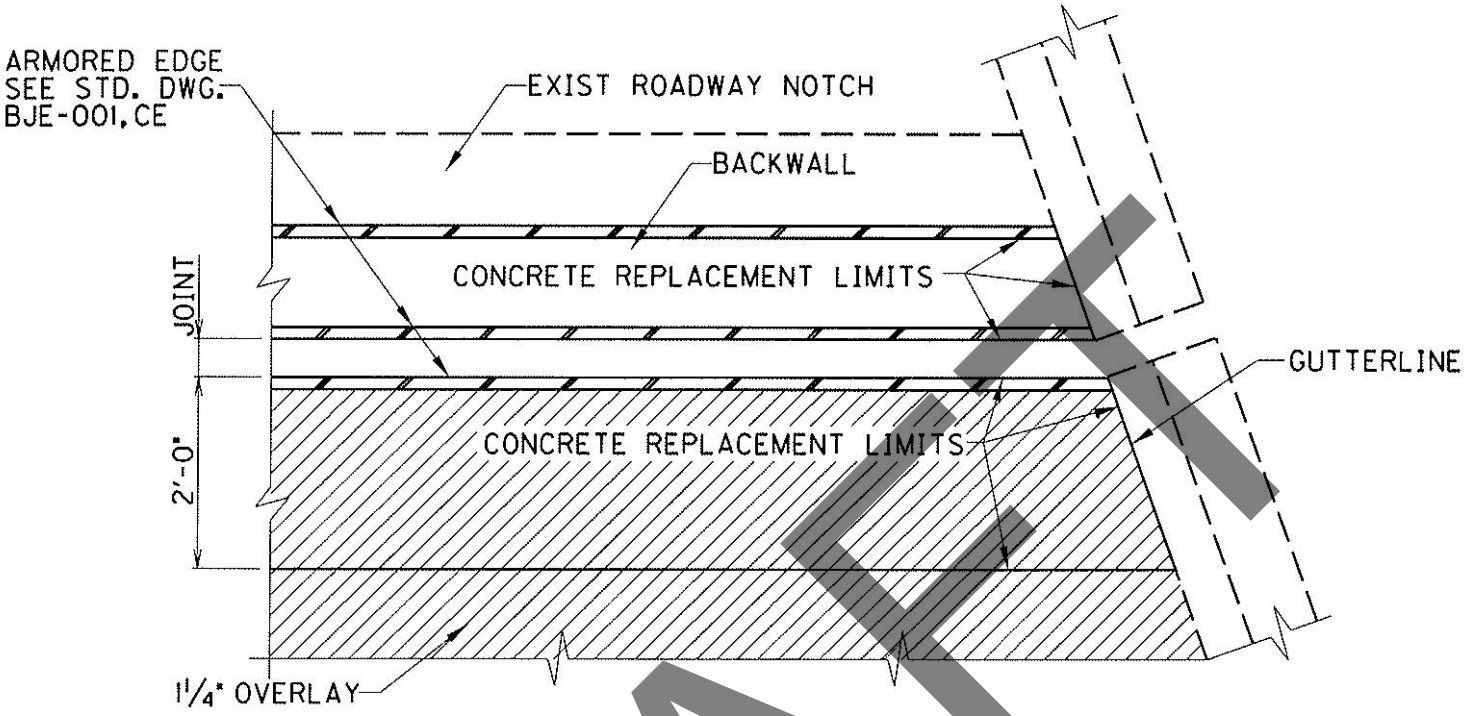
NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".

NOTE:
REMOVE 6' OF ROADWAY PAVEMENT, PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)



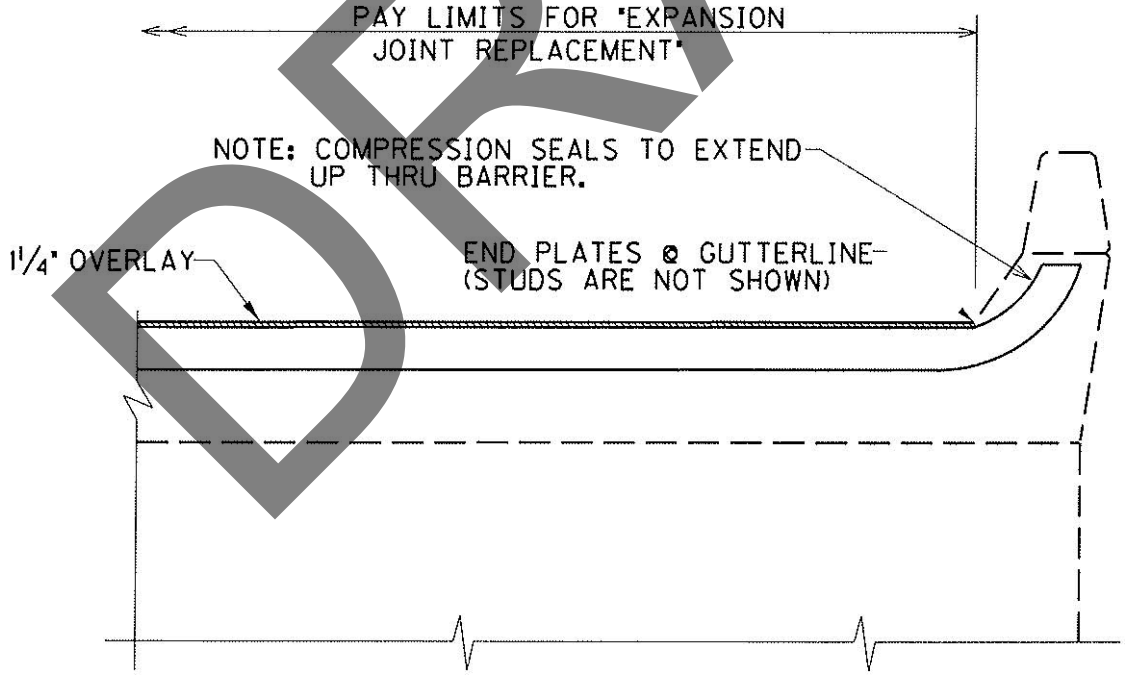
PROPOSED SECTION @ END BENT

REPLACE EXPANSION JOINT
END BENT 2 CURB SECTION



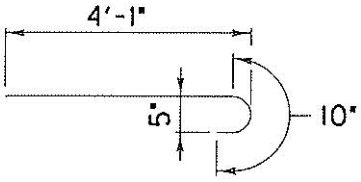
PLAN VIEW @ CURB

REPLACE EXPANSION JOINT

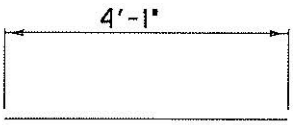


PROPOSED SECTION @ END BENT

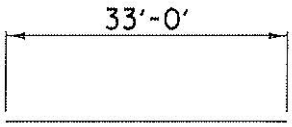
REINFORCEMENT



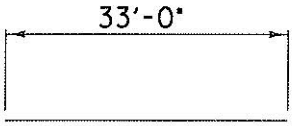
#5 BENT BAR
127 REQ'D END BENT 1



#5 STRAIGHT BAR
127 REQ'D END BENT 1



#6 STRAIGHT BAR
20 REQ'D END BENT 1
16 REQ'D END BENT 2



#5 STRAIGHT BAR
6 REQ'D END BENT 1
4 REQ'D END BENT 2

2,362 LBS END BENT 1
931 LBS END BENT 2

END BENT REINFORCEMENT

300 LIN. FT. #4 BARS IN 20'-0" LENGTHS
200 LBS. EACH END BENT

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 3,693 LBS.

CAMPBELL COUNTY

Approximate Location Information
Latitude: 39° 5' 49"
Longitude: 84° 29' 3"

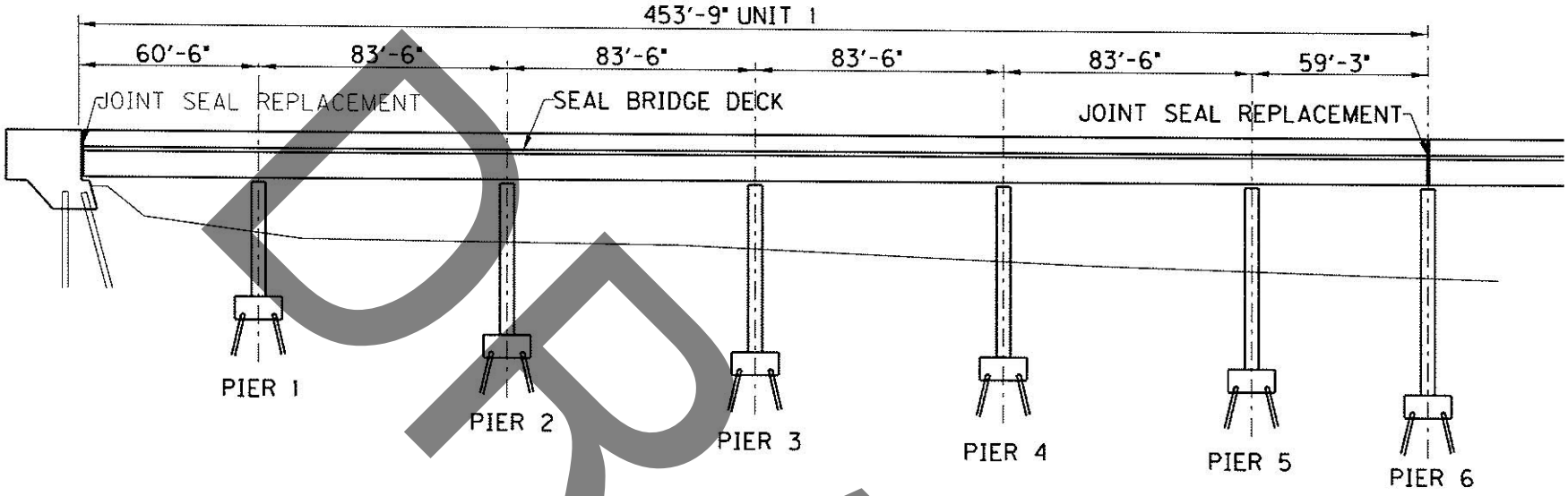
BRIDGE #8 (019B00056L) SUMMARY OF QUANTITIES

1. DISTRICT:	6				
2. COUNTY:	CAMPBELL				
3. ROUTE:	I-471				
4. PROJECT NUMBER:	FD52 019 0471 000-005				
5. ROAD NAME:	I-471				
6. DESCRIPTION:	I-471 SOUTHBOUND OVER SIXTH STREET JOINT SEAL REPLACEMENT:SEAL BRIDGE DECK				
8. LENGTH (FT.):	2164	**BRIDGE WIDTH (FT.):**	56.5	**SURFACE AREA (SQ. YD.):**	
SKEW (DEGREES):	VARIES	**DECK THICKNESS (INCHES):**		9.0	

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY	UNIT
23386EC	JOINT SEAL REPLACEMENT	339.0	LIN FT
24438EC	SEAL CRACKS BRIDGE DECK	1	LS
24439EC	SEAL BRIDGE DECK	1	LS

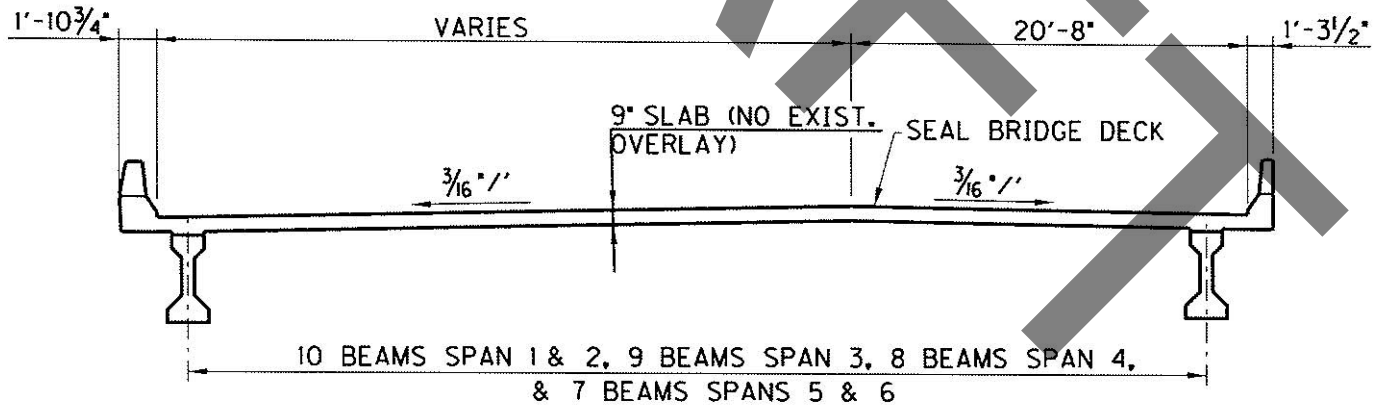
I-471 SOUTHBOUND OVER SIXTH STREET
BRIDGE MAINTENANCE NUMBER 019B00056L



ELEVATION-UNIT 1
0° SKEW
NOT TO SCALE

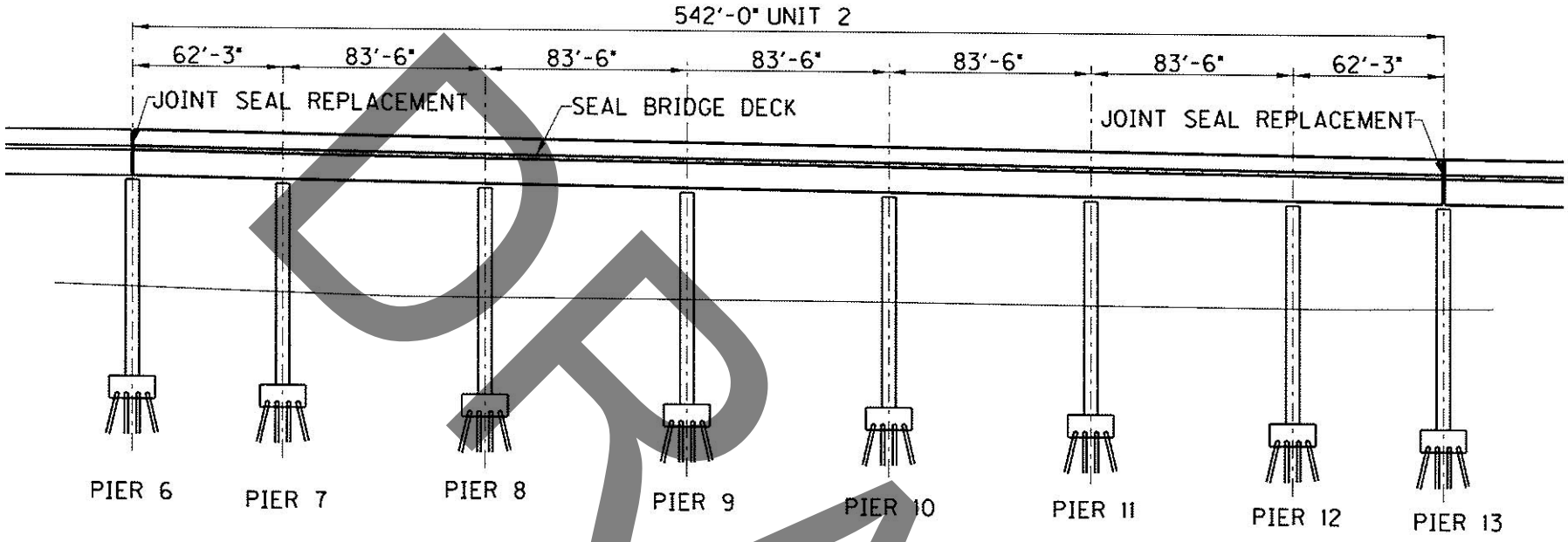
NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

I-471 SOUTHBOUND OVER SIXTH STREET
BRIDGE MAINTENANCE NUMBER 019B00056L



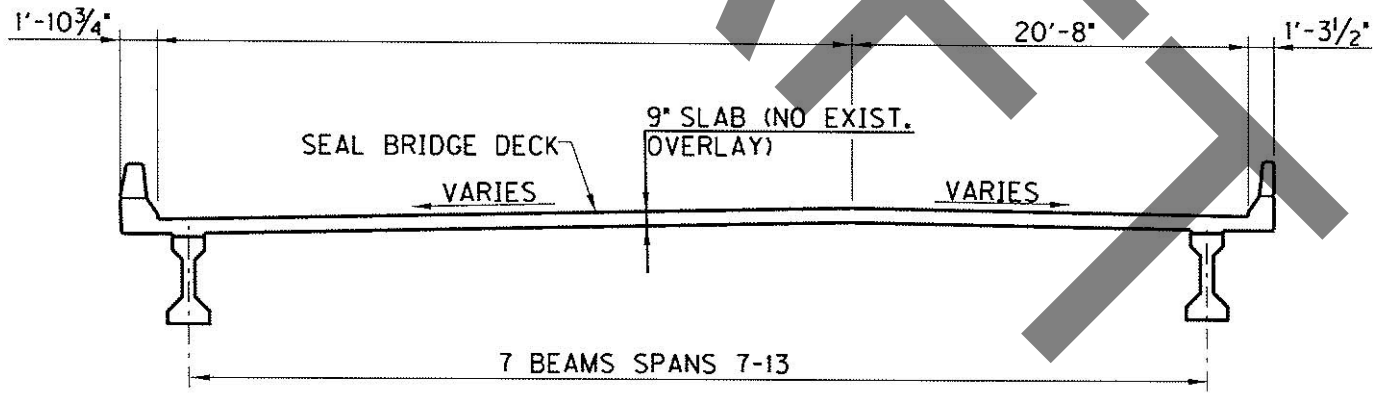
ELEVATION-UNIT 2

0° SKEW

NOT TO SCALE

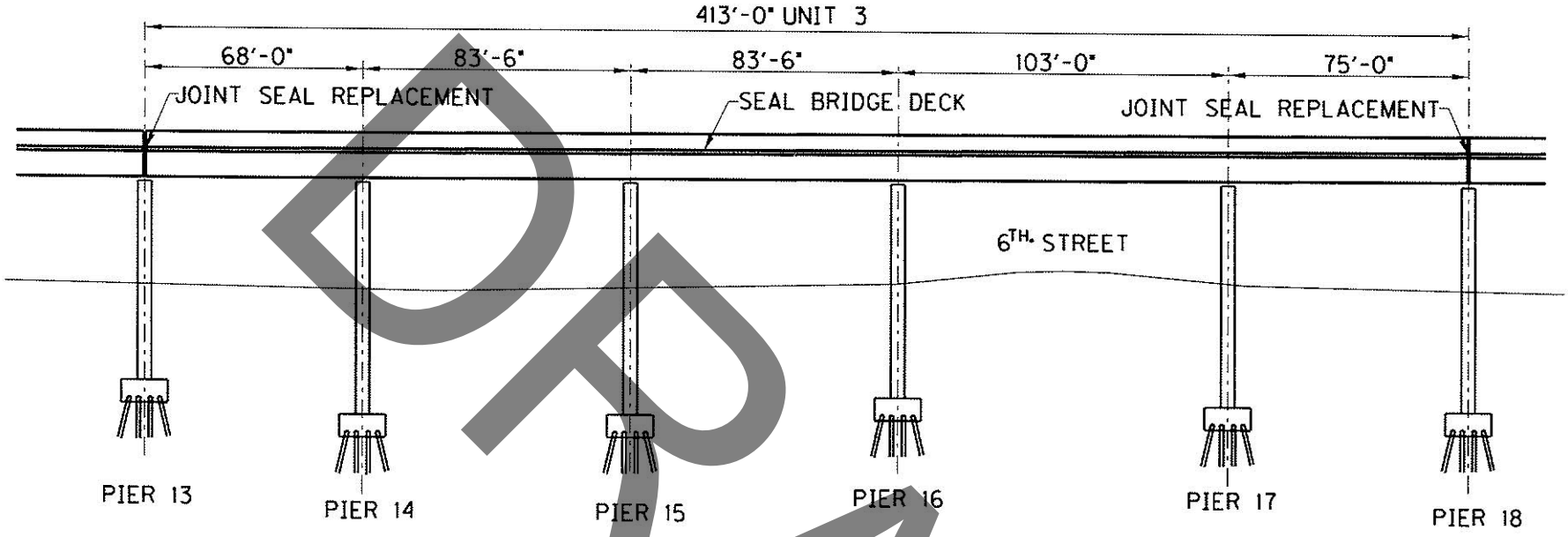
*SEE STD. DRWG. BJE-001-11

NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.



TYPICAL SECTION

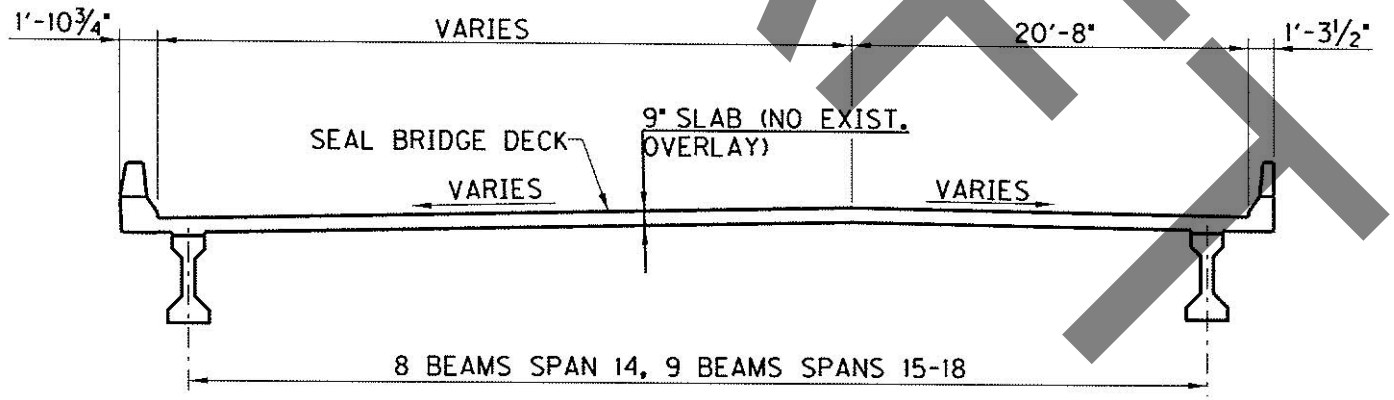
I-471 SOUTHBOUND OVER SIXTH STREET
BRIDGE MAINTENANCE NUMBER 019B00056L



ELEVATION-UNIT 3
0° & 15° SKEW RT.
NOT TO SCALE

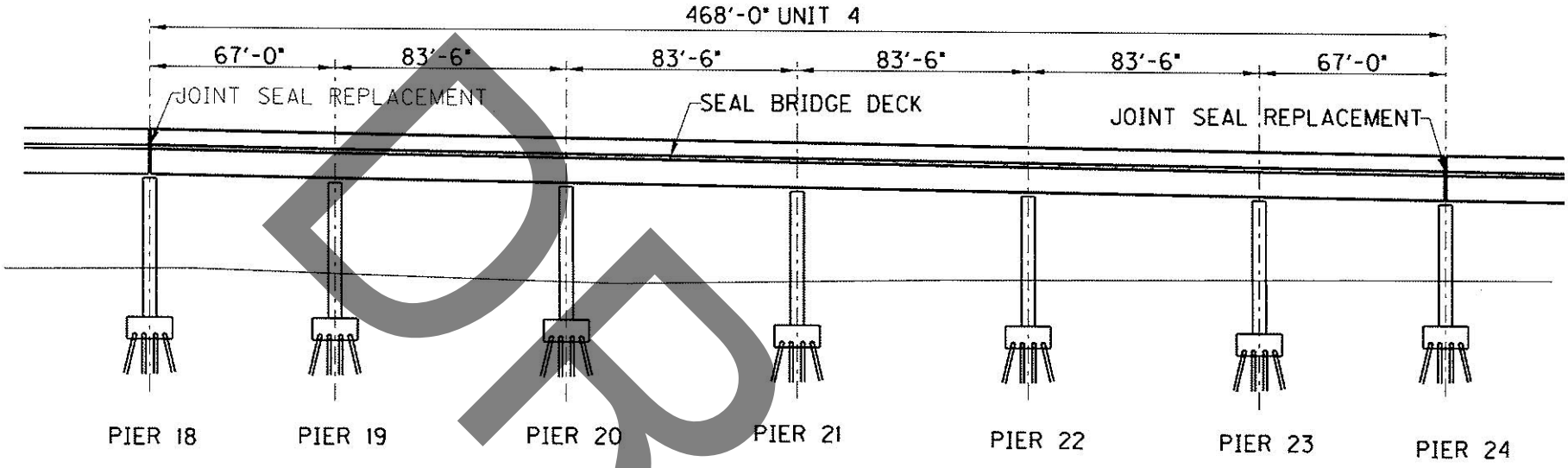
*SEE STD. DRWG. BJE-001-11

NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.



TYPICAL SECTION

I-471 SOUTHBOUND OVER SIXTH STREET
BRIDGE MAINTENANCE NUMBER 019B00056L

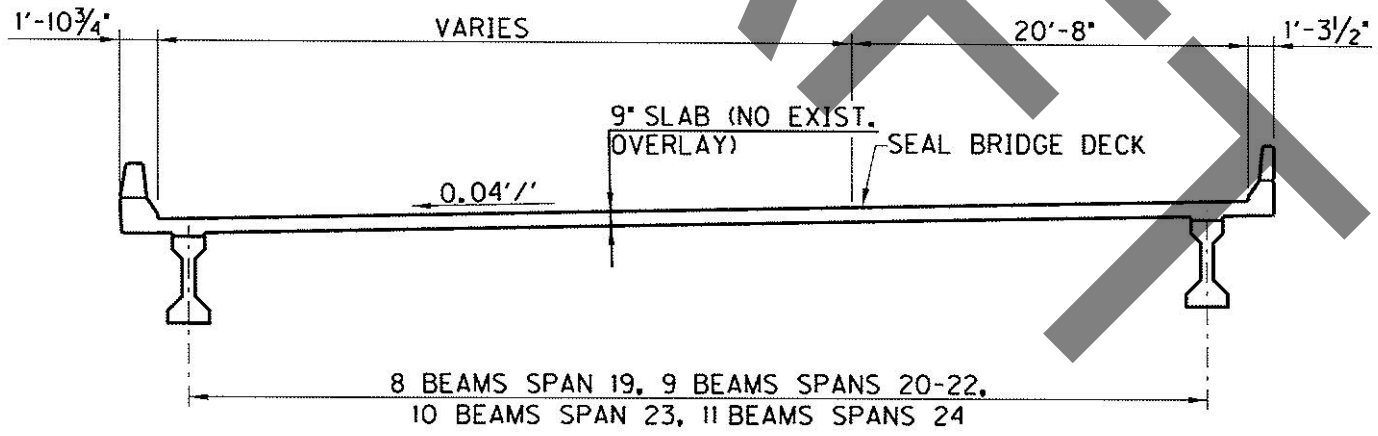


ELEVATION-UNIT 4

0° SKEW
NOT TO SCALE

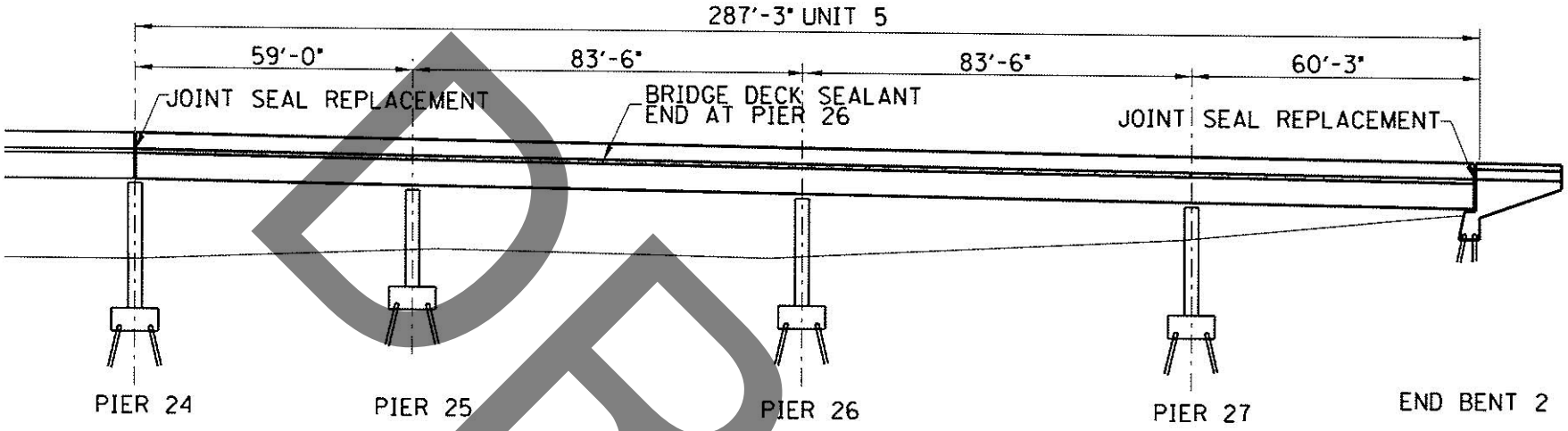
NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

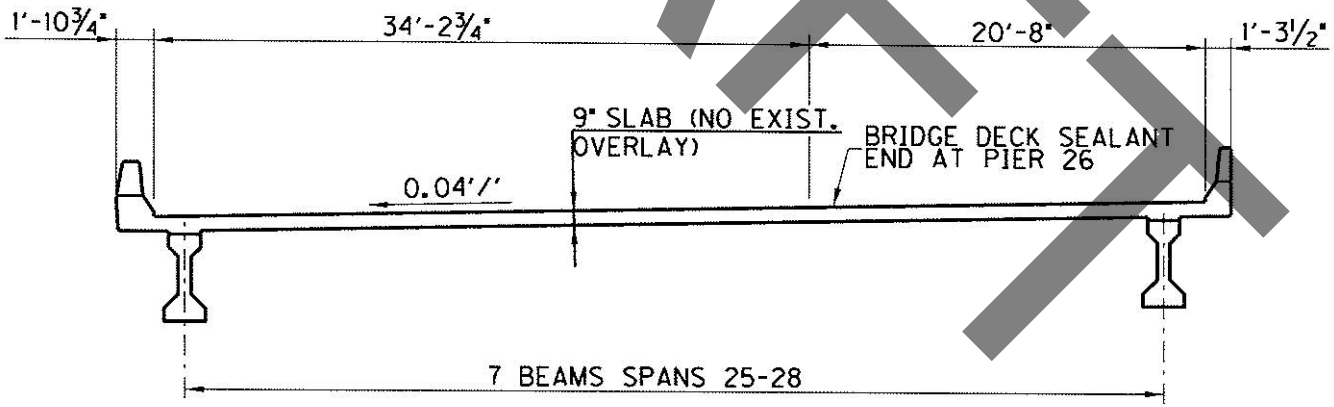
I-471 SOUTHBOUND OVER SIXTH STREET
BRIDGE MAINTENANCE NUMBER 019B00056L



ELEVATION-UNIT 5
0° SKEW
NOT TO SCALE

NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

CAMPBELL COUNTY

Approximate Location Information
Latitude: 39° 5' 50"
Longitude: 84° 29' 3"

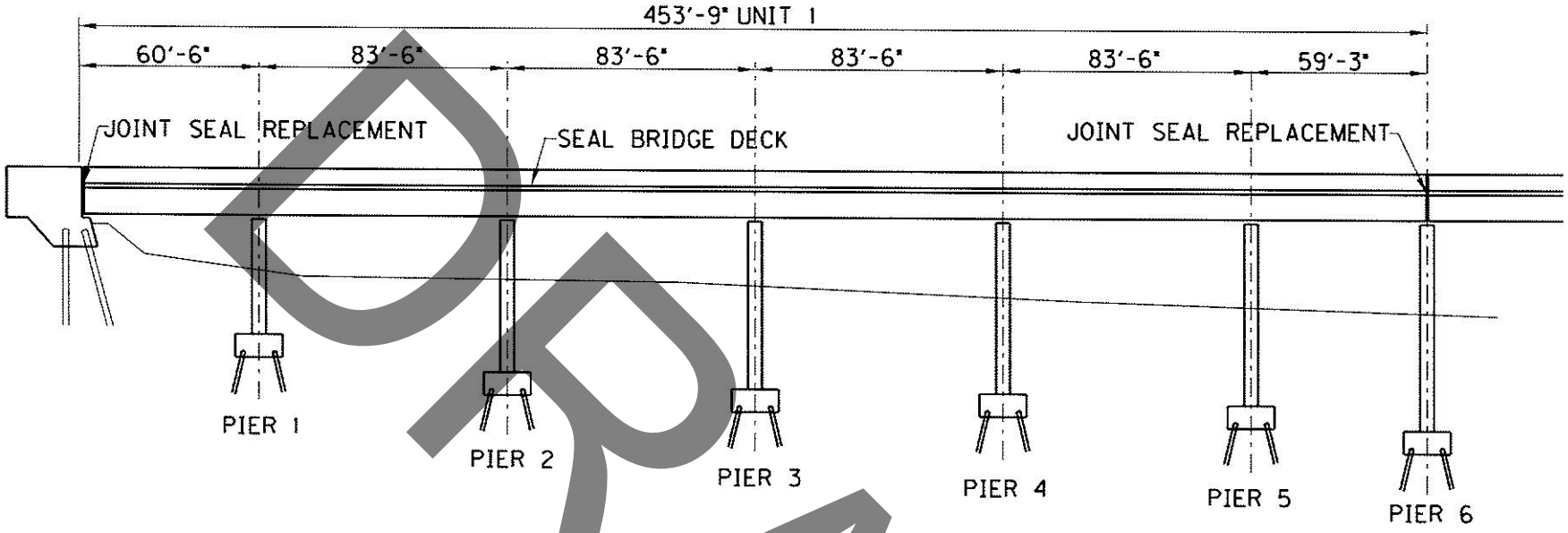
BRIDGE #9 (019B00056R) SUMMARY OF QUANTITIES

1. DISTRICT:	6		
2. COUNTY:	CAMPBELL		
3. ROUTE:	I-471		
4. PROJECT NUMBER:	FD52 019 0471 000-005		
5. ROAD NAME:	I-471		
6. DESCRIPTION:	I-471 NORTHBOUND OVER SIXTH STREET JOINT SEAL REPLACEMENT:SEAL BRIDGE DECK		
8. LENGTH (FT.):	2164	**BRIDGE WIDTH (FT.):**	**SURFACE AREA (SQ. YD.):**
SKEW (DEGREES):	VARIES	**DECK THICKNESS (INCHES):**	9.0

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY	UNIT
23386EC	JOINT SEAL REPLACEMENT	432.0	LIN FT
24438EC	SEAL CRACKS BRIDGE DECK	1	LS
24439EC	SEAL BRIDGE DECK	1	LS

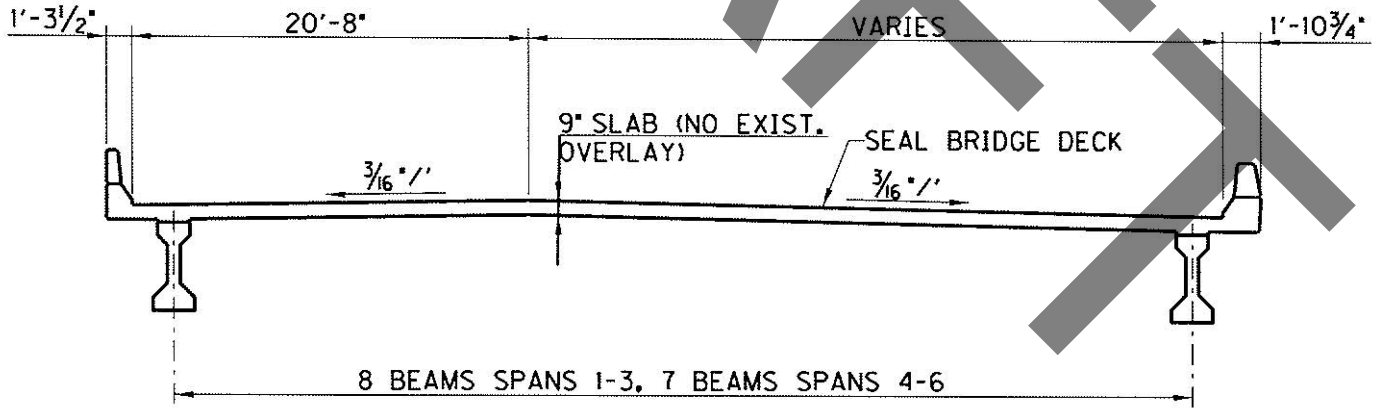
I-471 NORTHBOUND OVER SIXTH STREET
BRIDGE MAINTENANCE NUMBER 019B00056R



ELEVATION-UNIT 1
0° SKEW
NOT TO SCALE

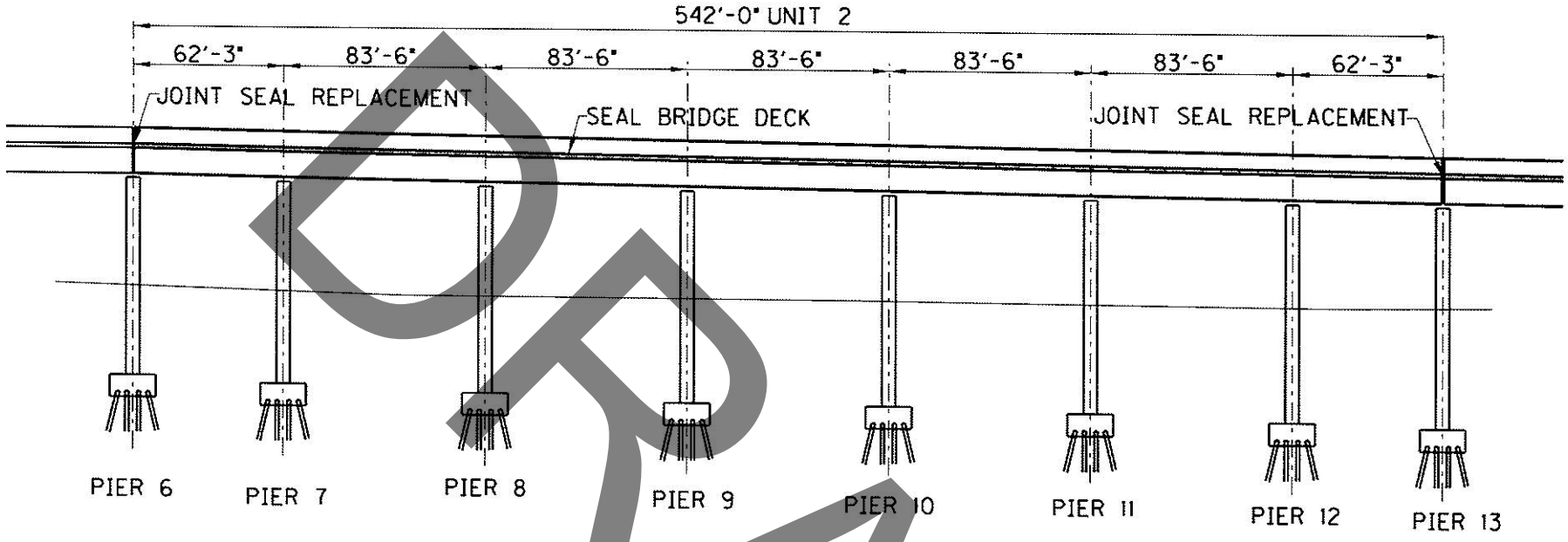
*SEE STD. DRWG. BJE-001-11

NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.



TYPICAL SECTION

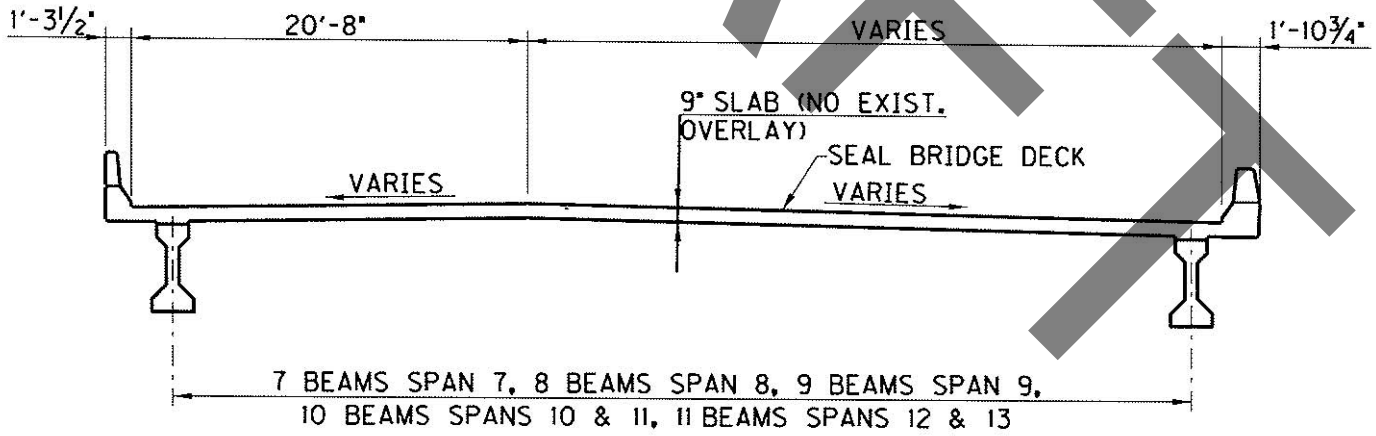
I-471 NORTHBOUND OVER SIXTH STREET
BRIDGE MAINTENANCE NUMBER 019B00056R



ELEVATION-UNIT 2
0° SKEW
NOT TO SCALE

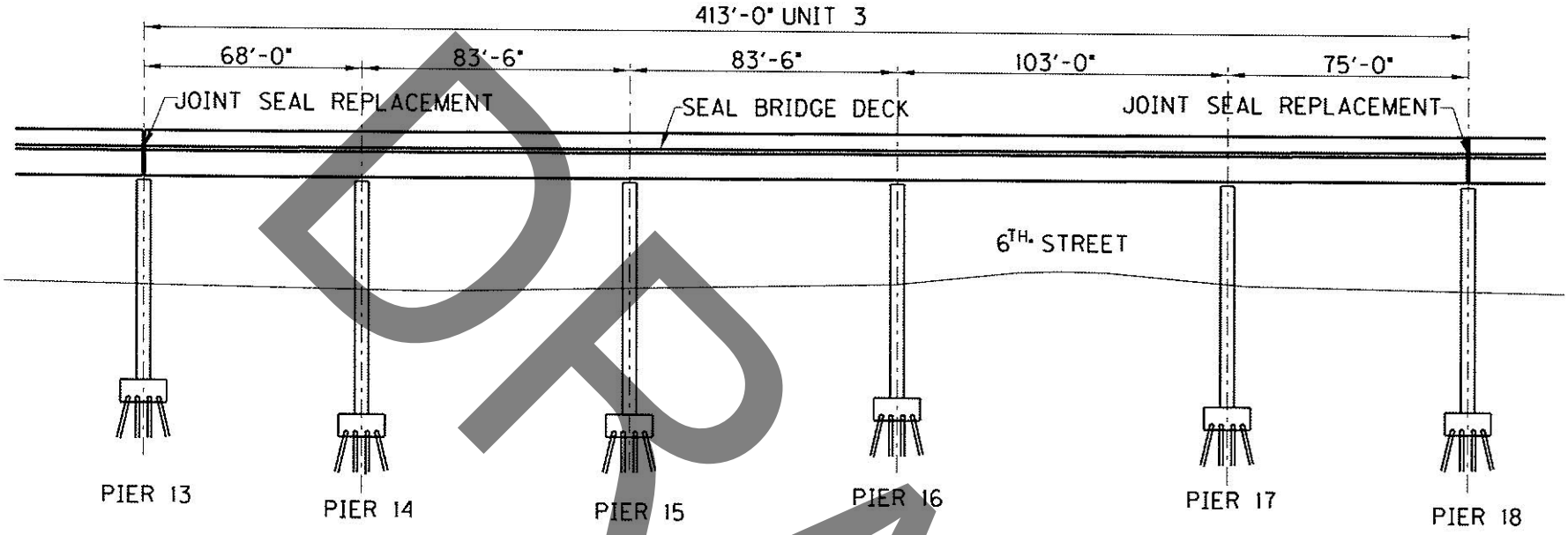
*SEE STD. DRWG. BJE-001-11

NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.



TYPICAL SECTION

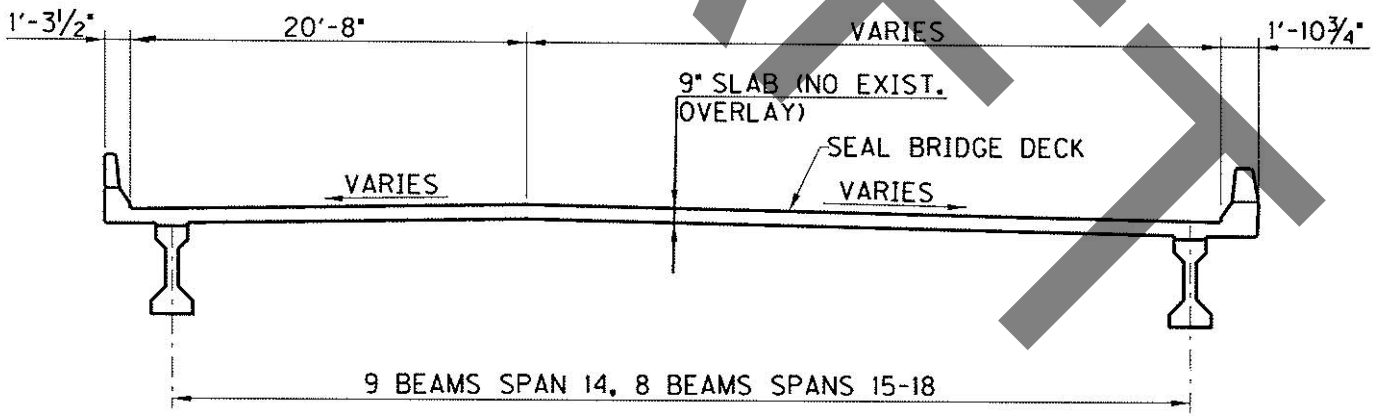
I-471 NORTHBOUND OVER SIXTH STREET
BRIDGE MAINTENANCE NUMBER 019B00056R



ELEVATION-UNIT 3
0° & 15° SKEW RT.
NOT TO SCALE

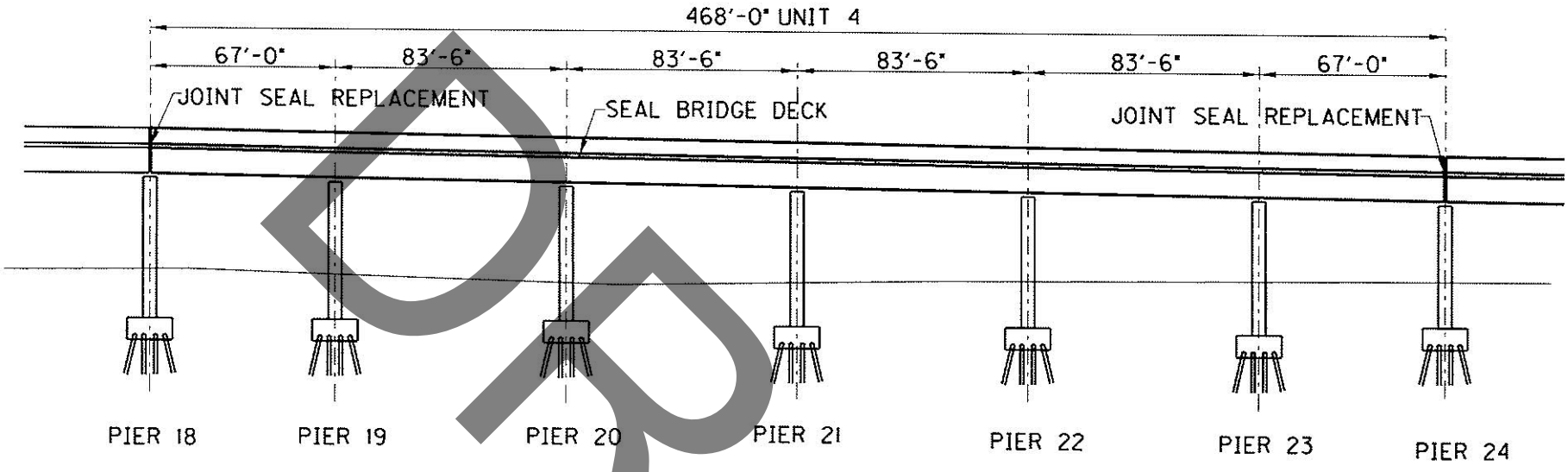
*SEE STD. DRWG. BJE-001-11

NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.



TYPICAL SECTION

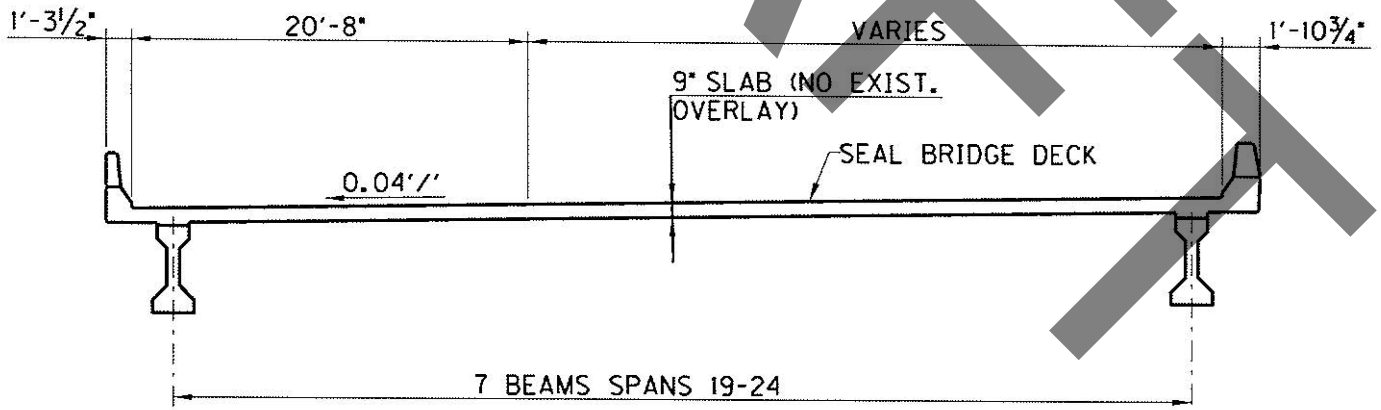
I-471 NORTHBOUND OVER SIXTH STREET
BRIDGE MAINTENANCE NUMBER 019B00056R



ELEVATION-UNIT 4
0° SKEW
NOT TO SCALE

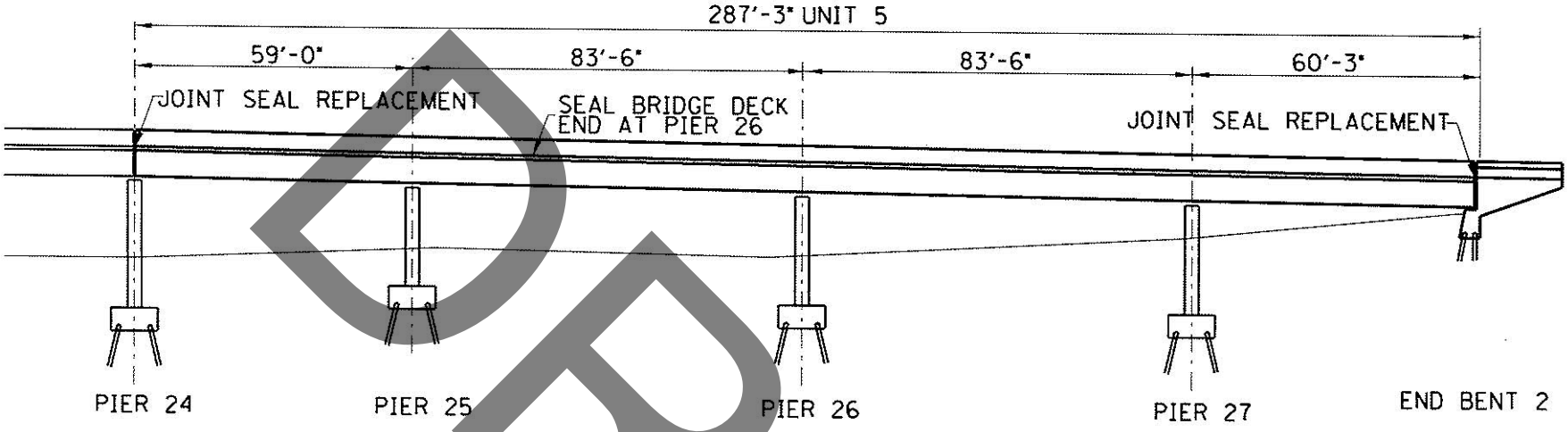
NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

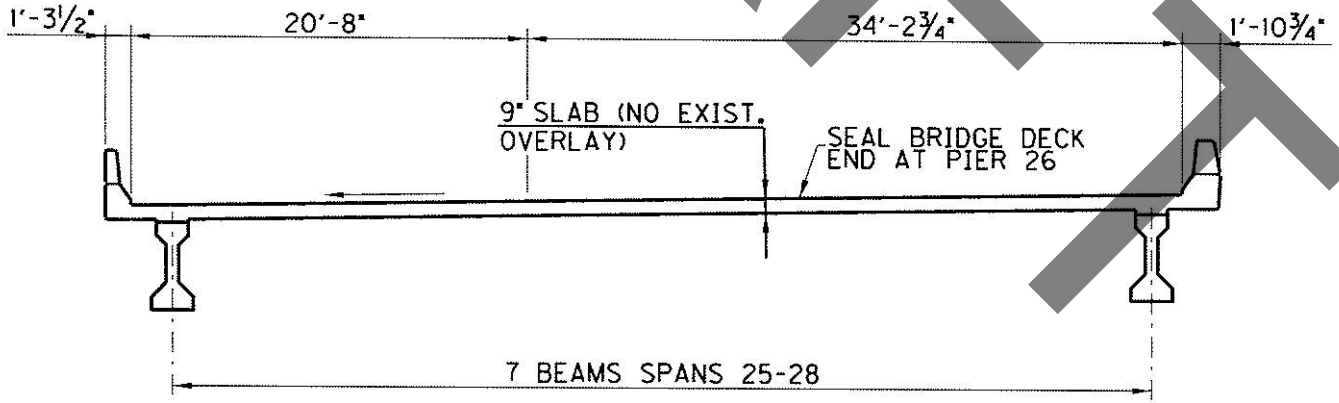
I-471 NORTHBOUND OVER STREET STREET
BRIDGE MAINTENANCE NUMBER 019B00056R



ELEVATION-UNIT 5
0° SKEW
NOT TO SCALE

NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

CAMPBELL COUNTY

019B00065N
I-471 NORTHBOUND RAMP TO KY. 8

Approximate Location Information
Latitude: 39°5'52"
Longitude: 84°29'5"

BRIDGE #10 (019B00065N) SUMMARY OF QUANTITIES

1. DISTRICT: 6
2. COUNTY: CAMPBELL
3. ROUTE: I-471
4. PROJECT NUMBER: FD52 019 0471 000-005
5. ROAD NAME: I-471
6. DESCRIPTION: I-471 NORTHBOUND RAMP TO KY 8
JOINT SEAL REPLACEMENT:EXPANSION JOINT REPLACEMENT

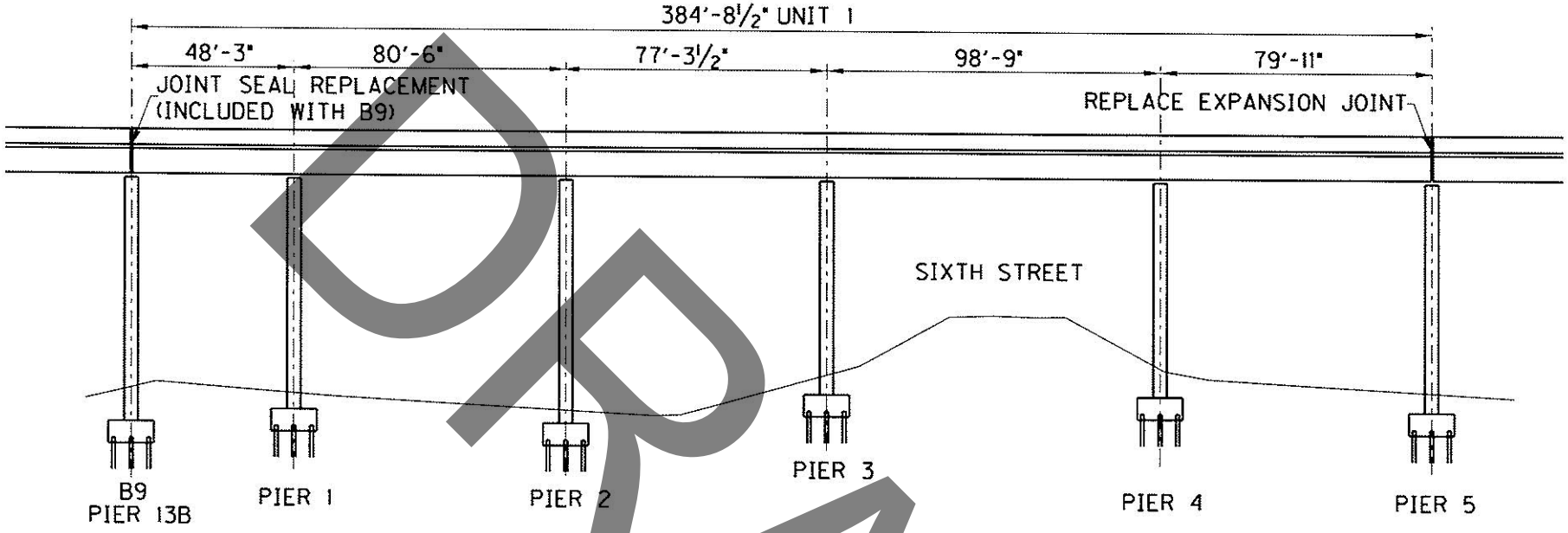
8. LENGTH (FT.): 752.71 **BRIDGE WIDTH (FT.):** 24.0 **SURFACE AREA (SQ. YD.):**
SKEW (DEGREES): VARIES **DECK THICKNESS (INCHES):** 9

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3298	EXPANSION JOINT REPLACEMENT 4 IN	48.0	LIN FT
23386EC	JOINT SEAL REPLACEMENT	24.0	LIN FT

I-471 NORTHBOUND RAMP TO KY. 8
BRIDGE MAINTENANCE NUMBER 019B00065N

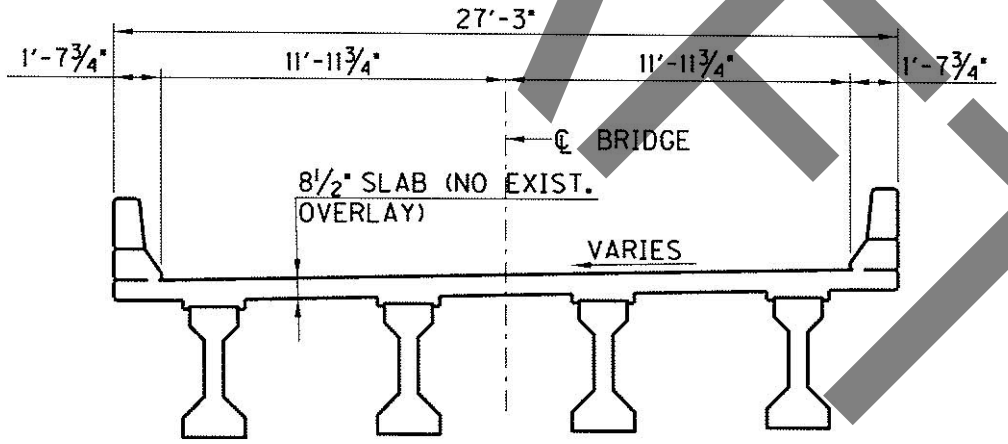
B10



ELEVATION-UNIT 1
SKEW VARIES
NOT TO SCALE

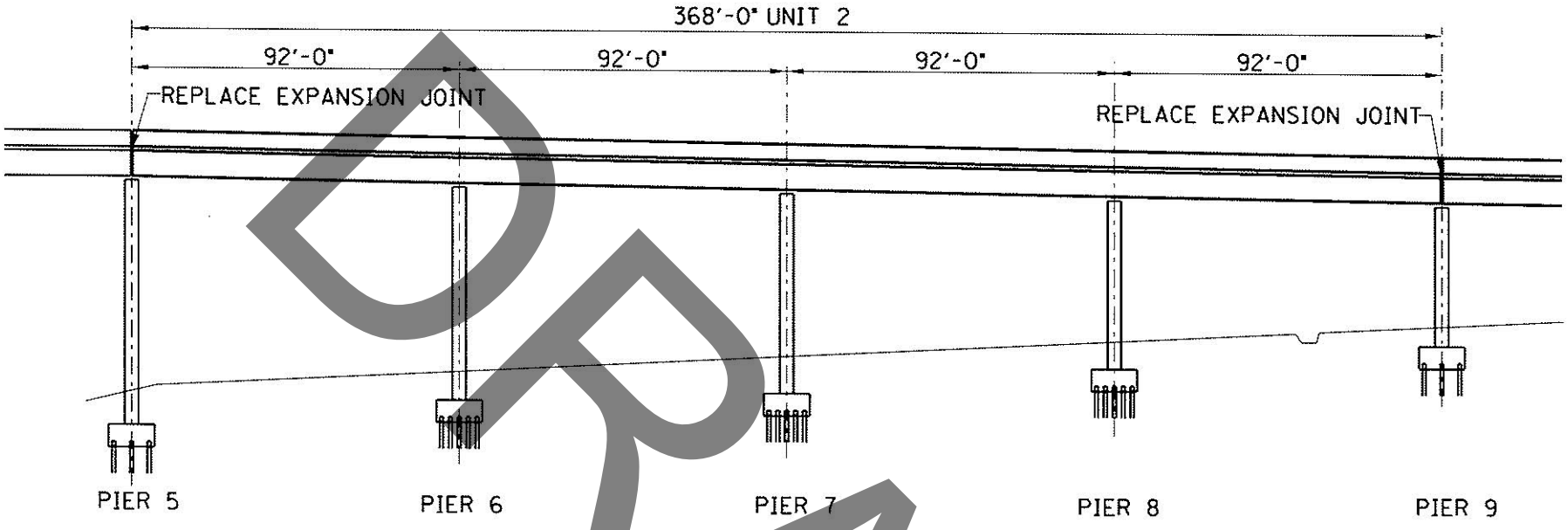
NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.

*SEE STD. DRWG. BJE-001-11



TYPICAL SECTION

I-471 NORTHBOUND RAMP TO KY. 8
BRIDGE MAINTENANCE NUMBER 019B00065N



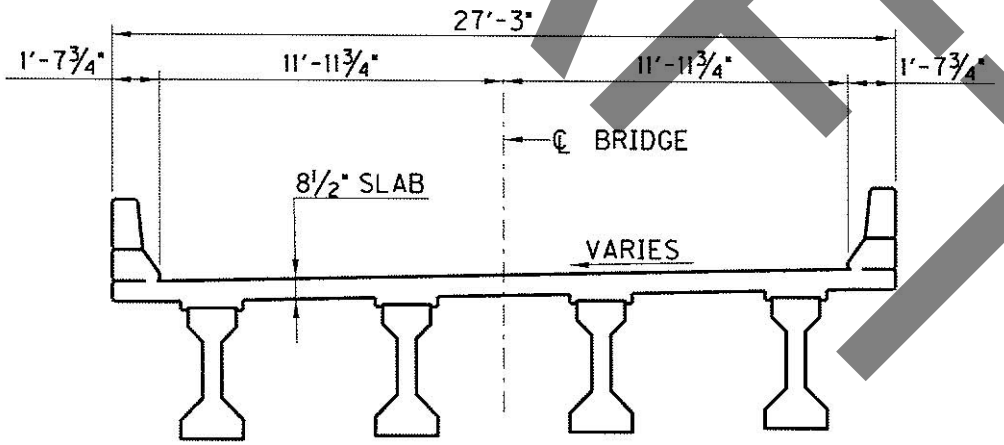
ELEVATION-UNIT 2

0° SKEW

NOT TO SCALE

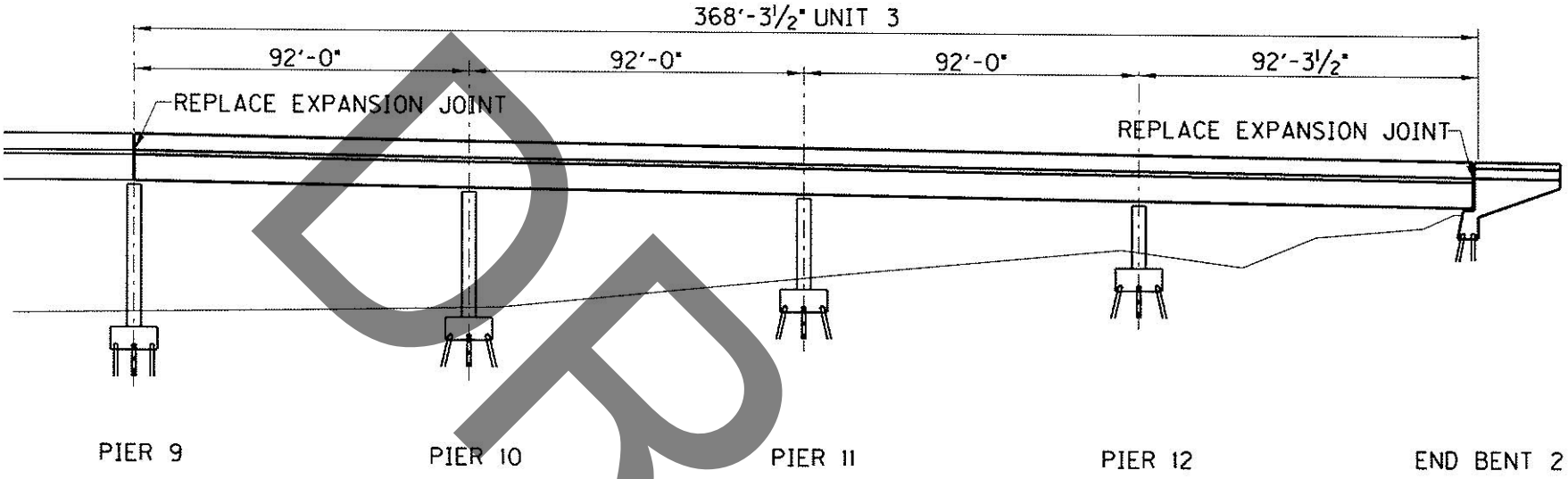
*SEE STD. DRWG. BJE-001-11

NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.



TYPICAL SECTION

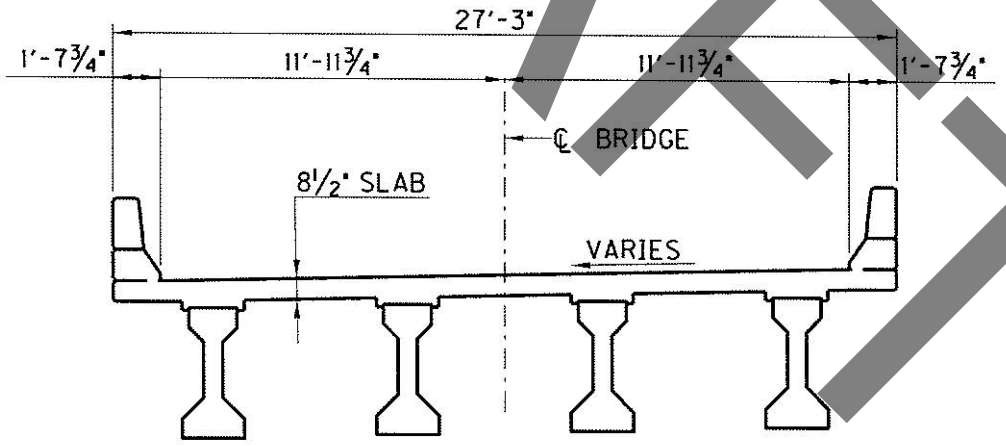
I-471 NORTHBOUND RAMP TO KY. 8
BRIDGE MAINTENANCE NUMBER 019B00065N



ELEVATION-UNIT 3
0° SKEW
NOT TO SCALE

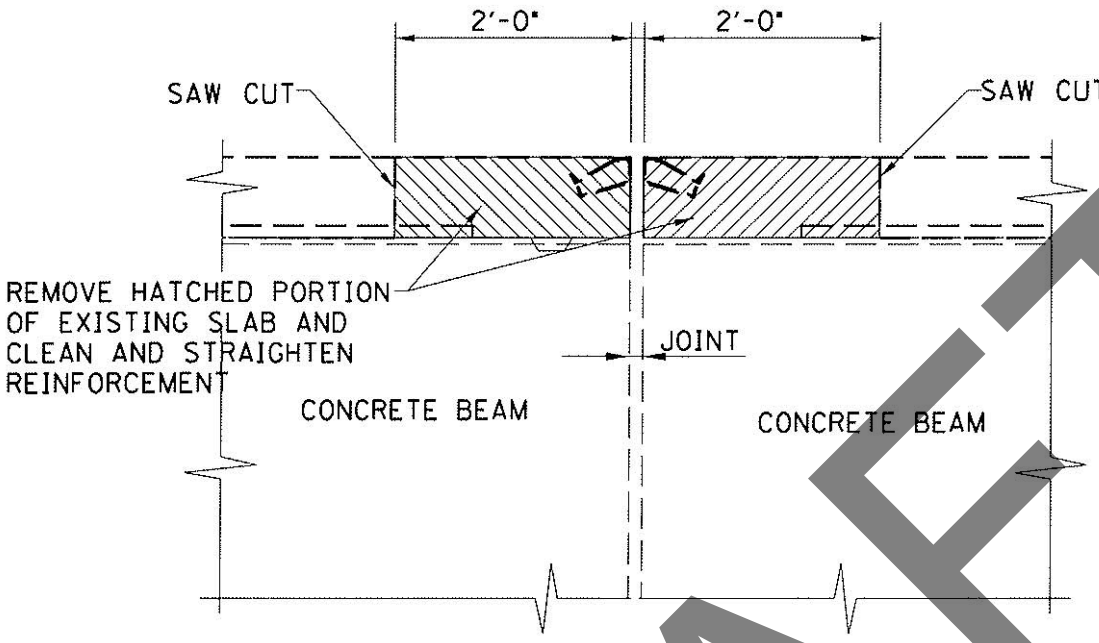
NOTE:
CONTRACTOR RESPONSIBLE FOR VERIFYING SIZE OF SEAL.

*SEE STD. DRWG. BJE-001-11

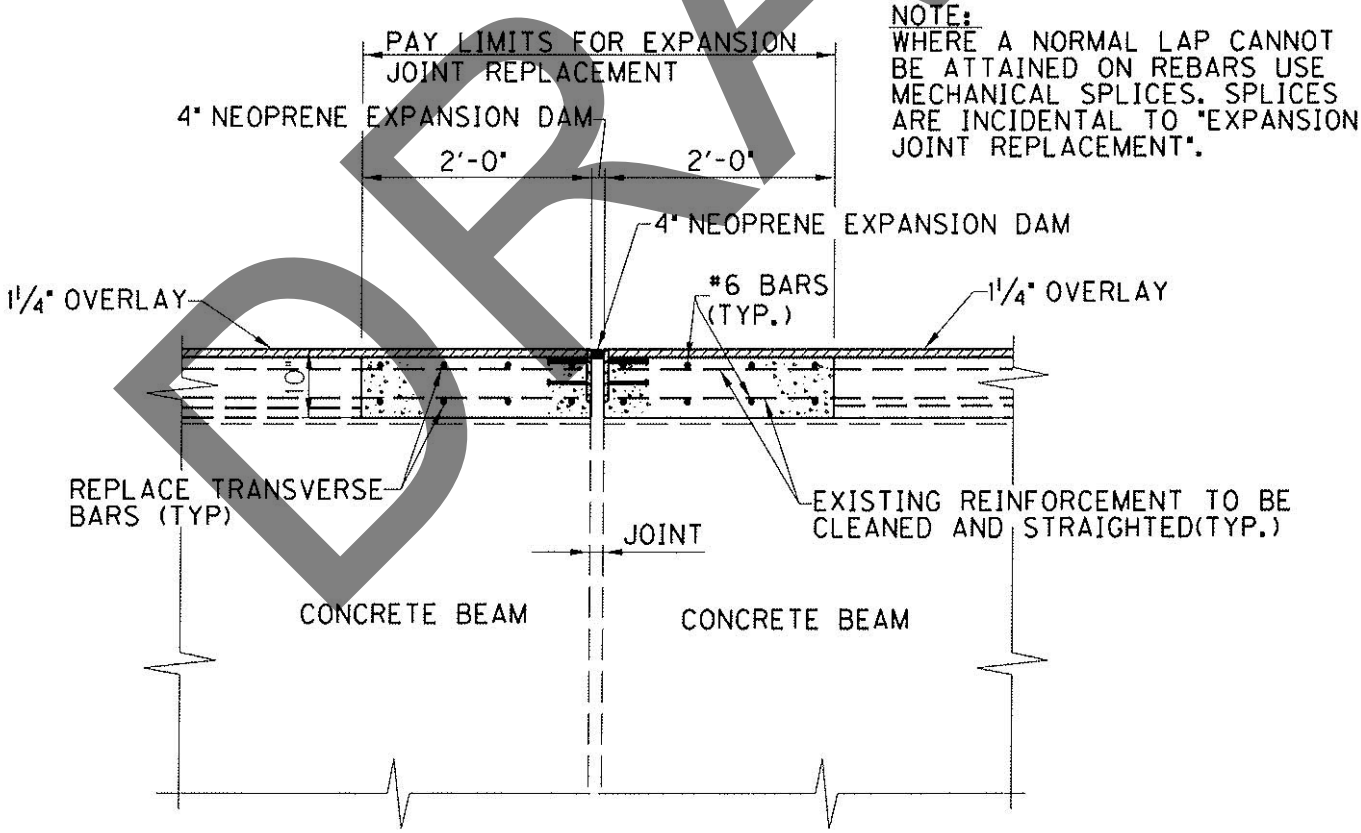


TYPICAL SECTION

REPLACE JOINT @ PIER 5 & 9



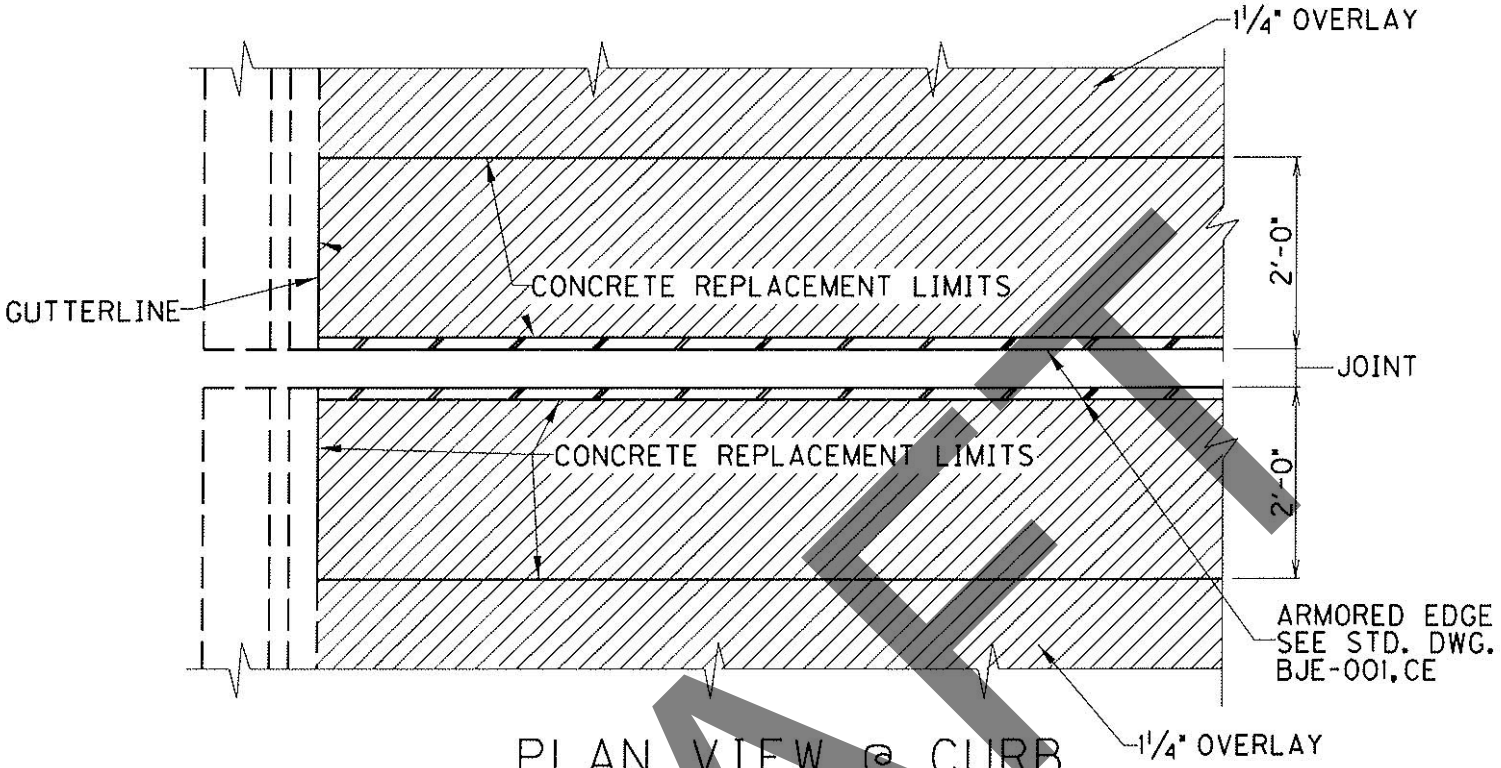
EXISTING SECTION @ PIER



NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".

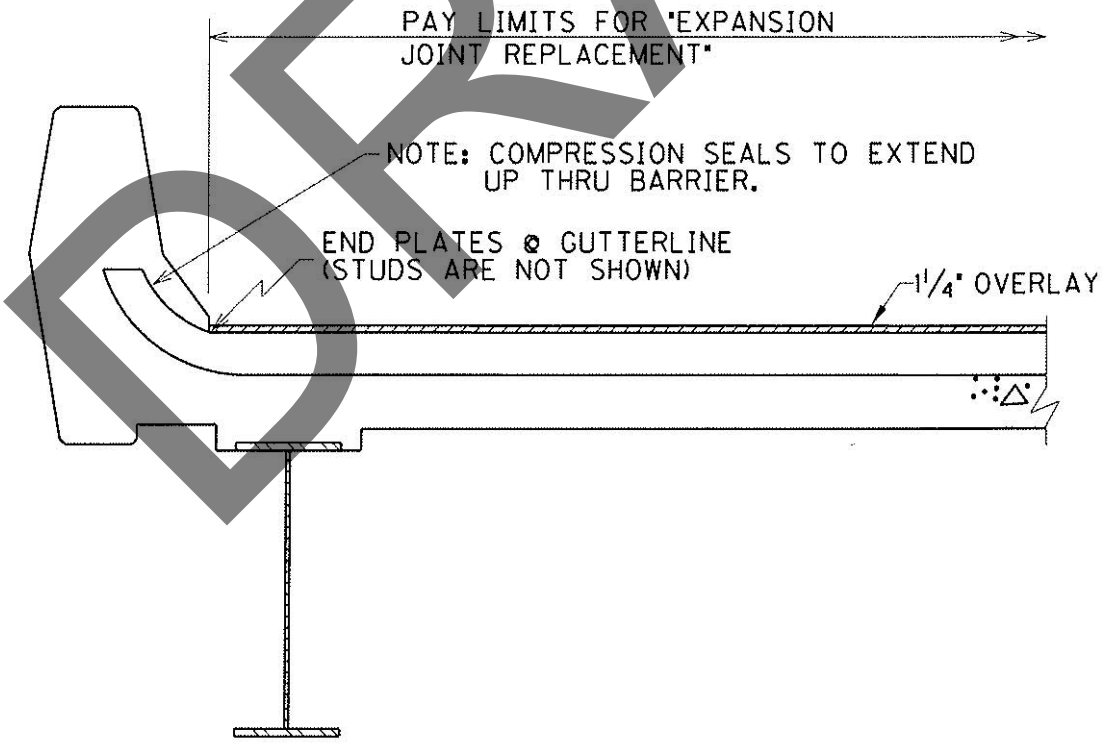
PROPOSED SECTION @ PIER

REPLACE EXPANSION JOINT
PIER 5 & 9 CURB SECTION

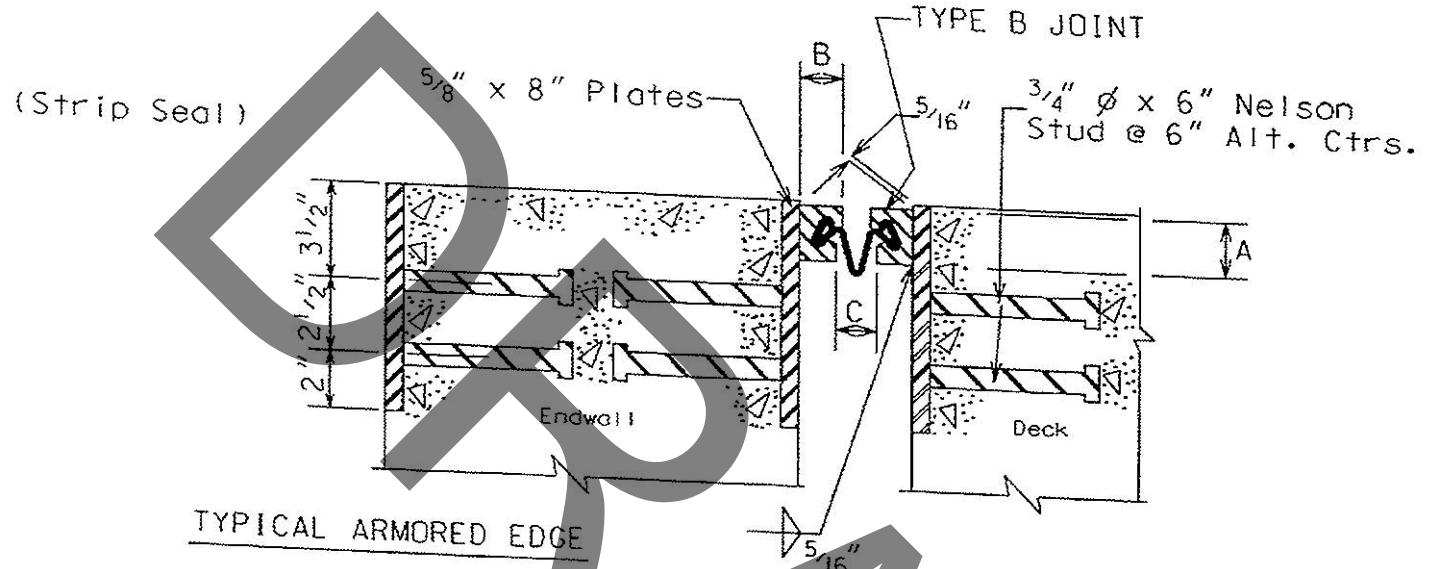


PLAN VIEW @ CURB

REPLACE EXPANSION JOINT



PROPOSED SECTION @ CURB



TYPICAL ARMORED EDGE

TYPICAL 4" JOINT

NOTE: Joint openings shall be adjusted for each 10 above or below 60° f. Decrease or increase respectively by increment shown.

4" - Joint Opening @ 60° F.

INCREMENT FOR 10° TEMPERATURE CHANGE - STEEL SPAN -							
THRU 60'	61'-100'	101'-140'	141'-180'	181'-240'	241'-320'	321'-365'	
1/32"	1/16"	3/32"	1/8"	3/16"	1/4"	5/16"	

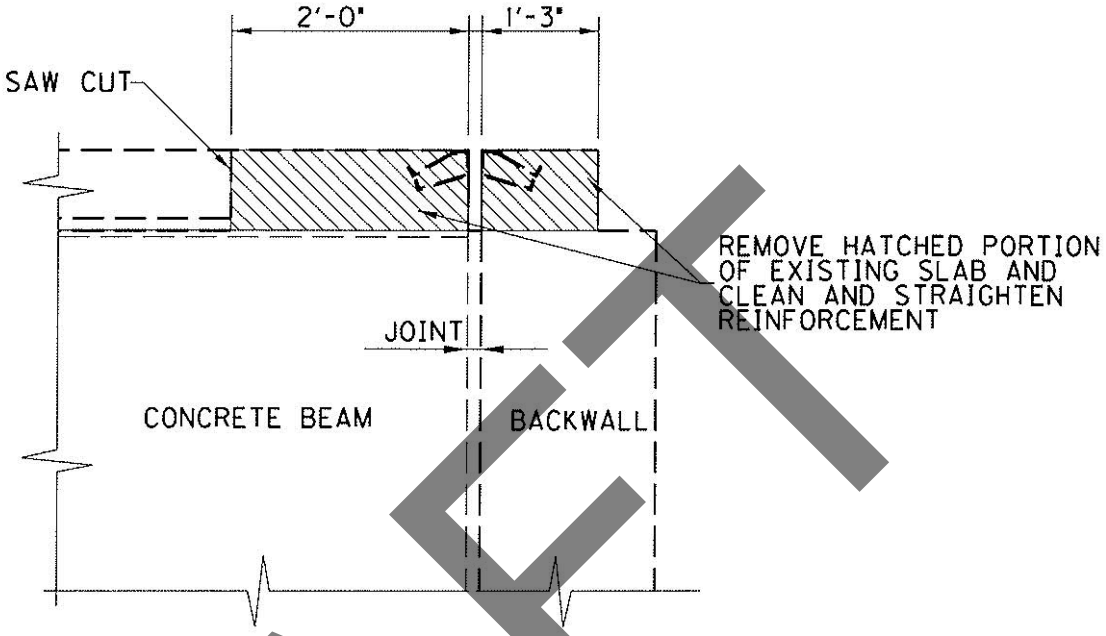
Not to Scale

ALTERNATE NEOPRENE EXPANSION DAMS - 4"

			A	B	C
B	WABO STRIP SEAL Type A Extrusion with S-400 Seal	Watson Bowman Associates Inc.	2"	1 1/2"	2"
B	STEEL FLEX Type SSA with 400 Seal	D. S. Brown Co.	2"	1 1/2"	2 1/2"
B	GENERAL STRIP CD Profile A Steel Extrusion with Gen Strip CD Seal	General Tire Co.	2"	1 3/8"	2 1/4"
B	ONFLEX Type AM2 Extrusion with 40SEO Sal	Structural Accessories Inc.	2"	1 1/4"	2"

Not to Scale

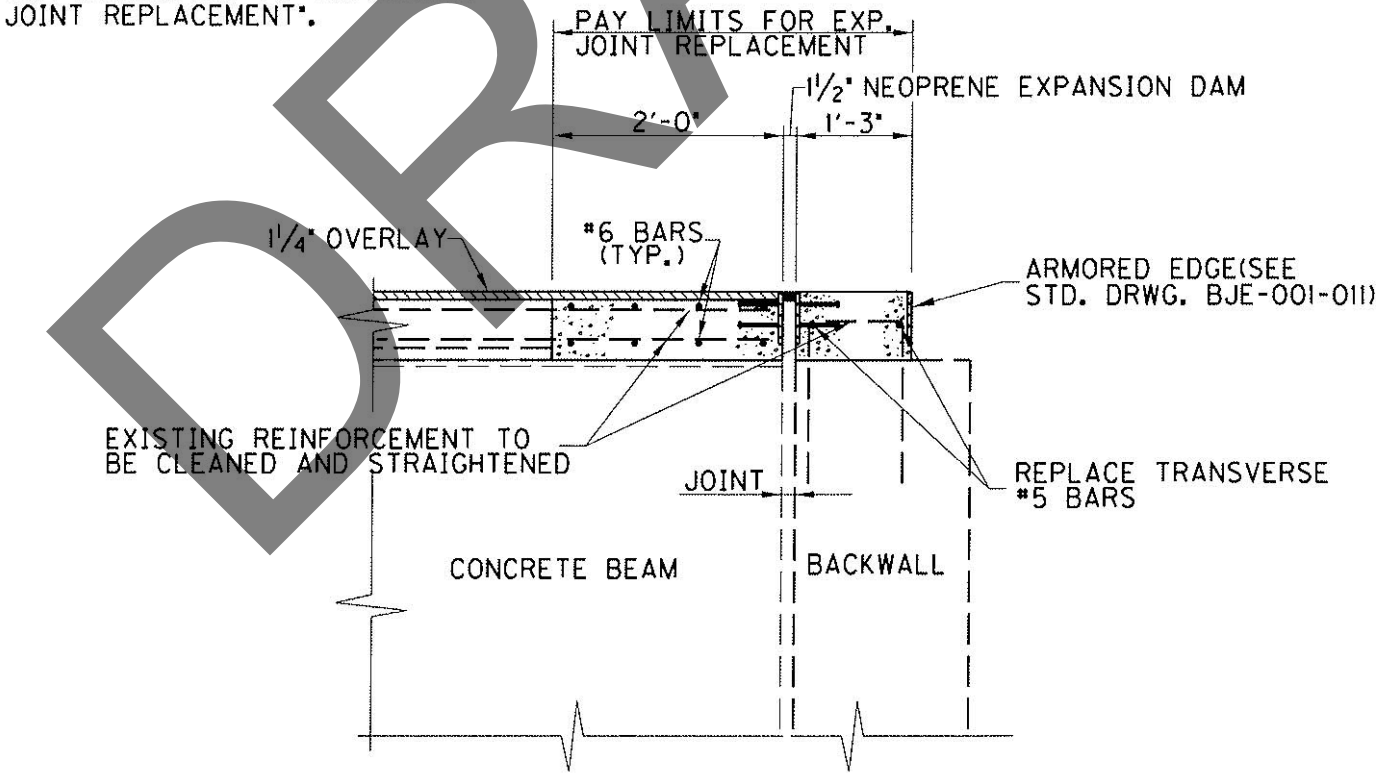
REPLACE JOINT @ END BENT 2



EXISTING SECTION @ END BENT

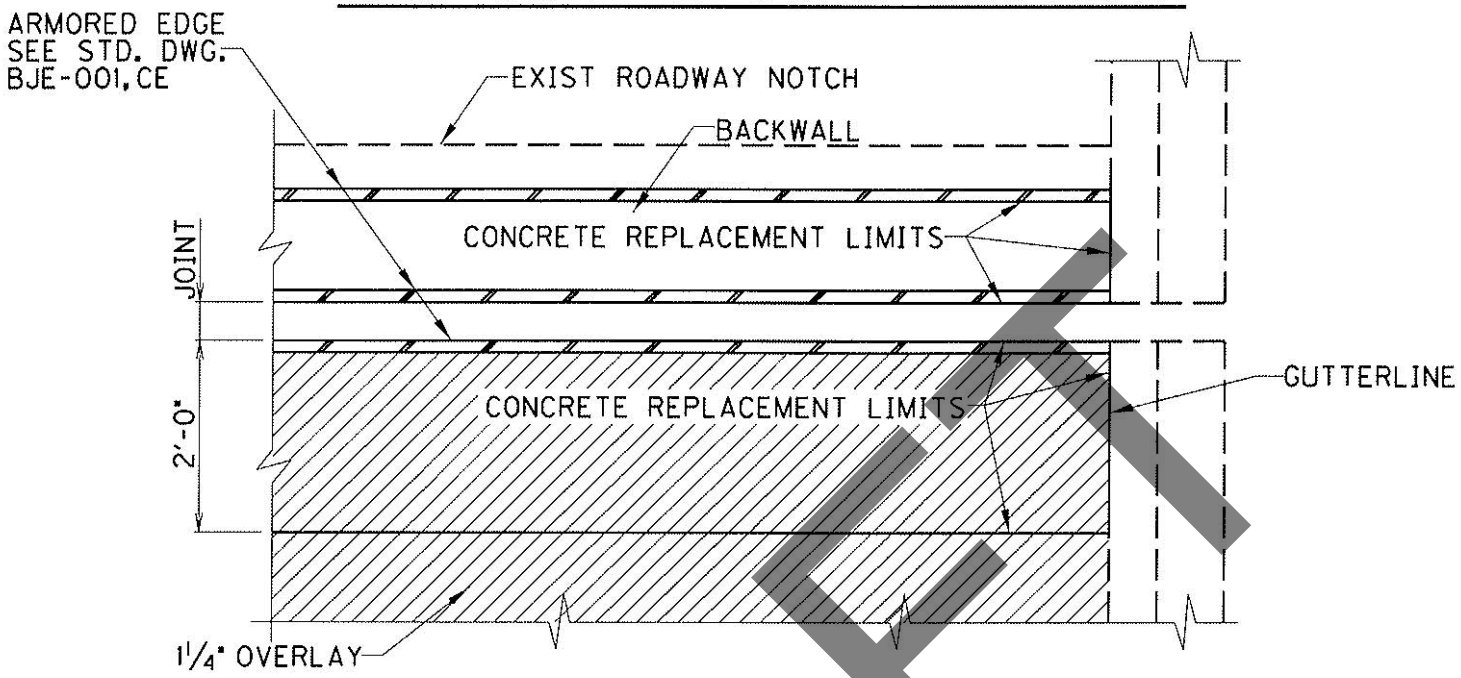
NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".

NOTE:
REMOVE 6' OF ROADWAY PAVEMENT. PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)



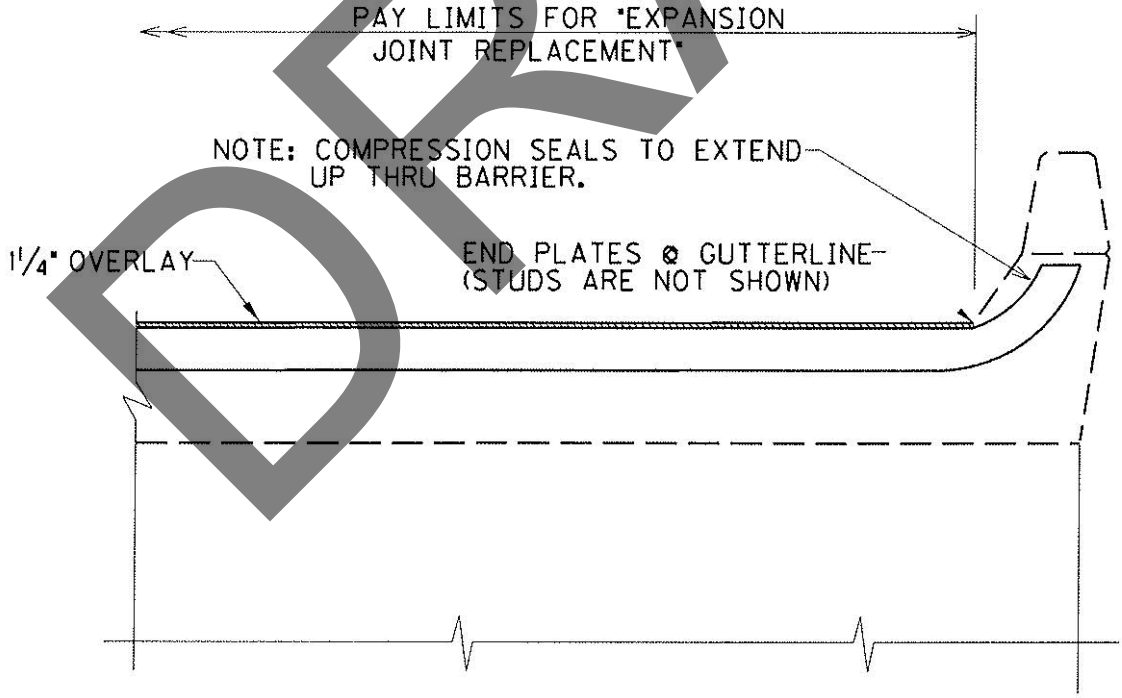
PROPOSED SECTION @ END BENT

REPLACE EXPANSION JOINT
END BENT 2 CURB SECTION



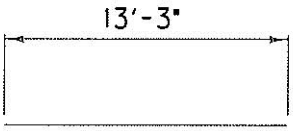
PLAN VIEW @ CURB

REPLACE EXPANSION JOINT

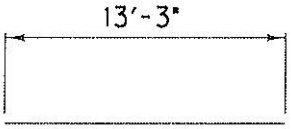


PROPOSED SECTION @ END BENT

REINFORCEMENT



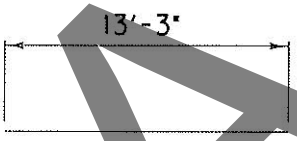
#5 STRAIGHT BAR
4 REQ'D END BENT 2



#6 STRAIGHT BAR
16 REQ'D END BENT 2

374 LBS END BENT 2

END BENT REINFORCEMENT



#6 STRAIGHT BAR
16 REQ'D PIER 5
16 REQ'D PIER 9

637 LBS. PIER 5
637 LBS. PIER 9

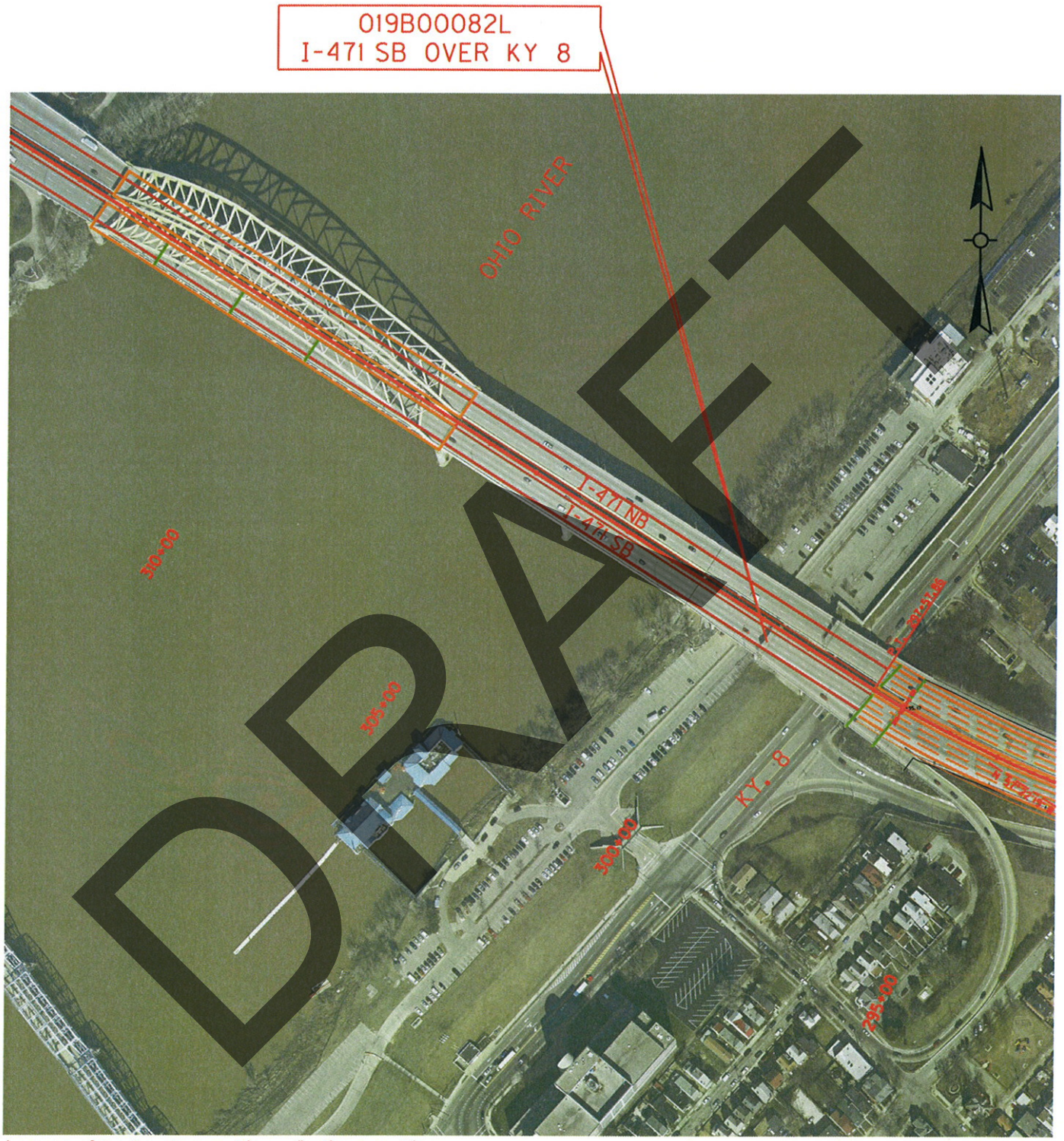
PIER REINFORCEMENT

300 LIN. FT. #4 BARS IN 20'-0" LENGTHS
200 LBS. END BENT 2, PIERS 5 & 9

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 2,248 LBS.

CAMPBELL COUNTY



Approximate Location Information
Latitude: 39° 5' 57"
Longitude: 84° 29' 32"

BRIDGE #11 (019B00082L) SUMMARY OF QUANTITIES

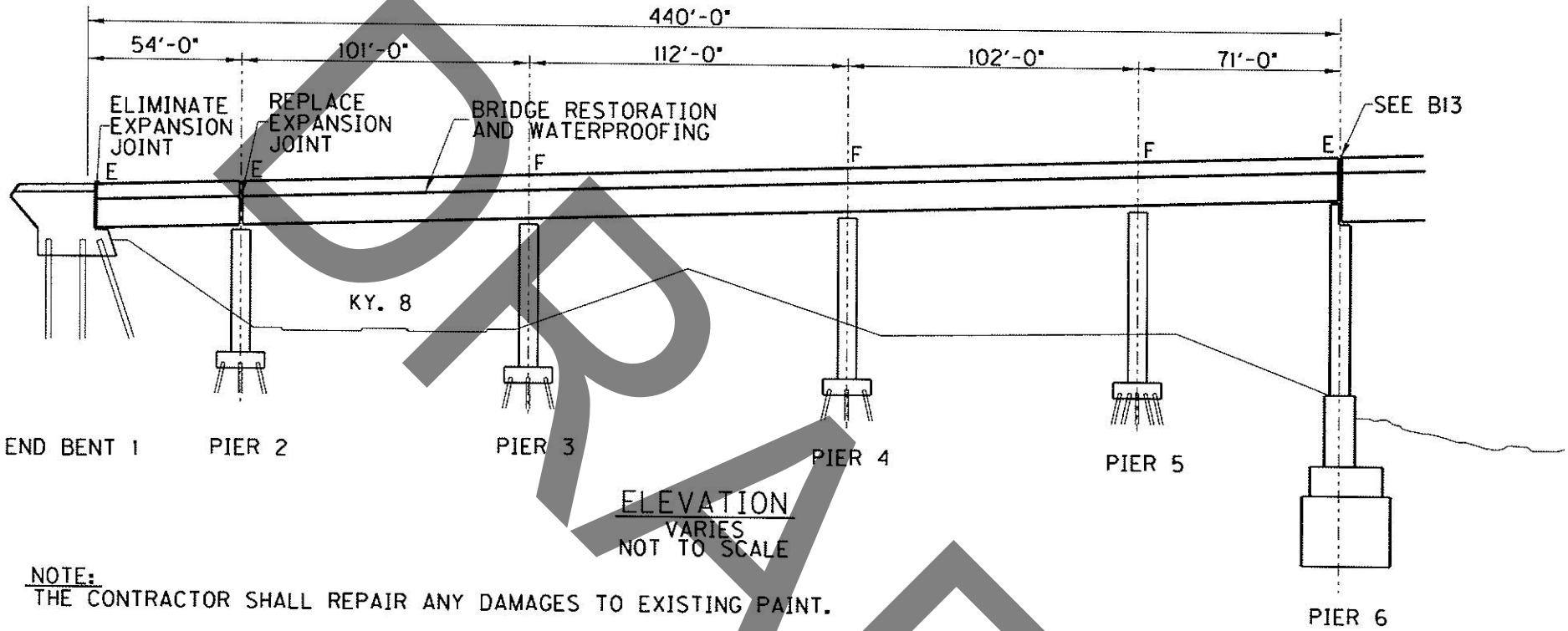
1. DISTRICT: 6
2. COUNTY: CAMPBELL
3. ROUTE: I-471
4. PROJECT NUMBER: FD52 0471 019 000-005
5. ROAD NAME: I-471
6. DESCRIPTION: I-471 SOUTHBOUND OVER KY 8
BRIDGE DECK RESTORATION AND WATERPROOFING:EXPANSION JOINT REPLACEMEN
ELIMINATE EXPANSION JOINT

8. LENGTH (FT.): 440 **BRIDGE WIDTH (FT.):** 66.3 AVG. **SURFACE AREA (SQ. YD.):**
SKEW (DEGREES): VARIES **DECK THICKNESS (INCHES):** 9.0

ESTIMATED QUANTITIES REQUIRED

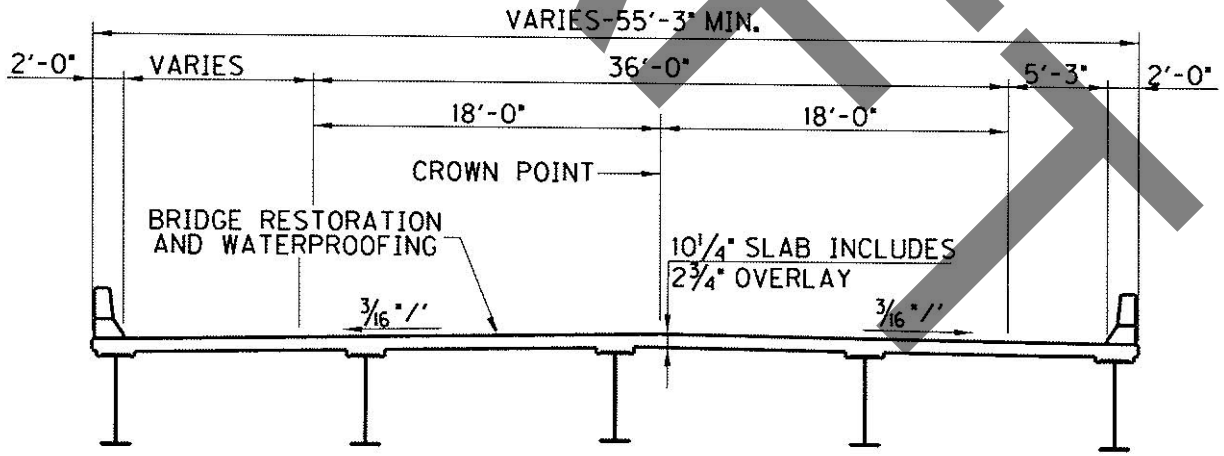
ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3298	EXPANSION JT REPLACEMENT 4 IN	53.0	LIN FT
3300	ELIMINATE TRANSVERSE JOINT	76.0	LIN FT
8504	EPOXY SAND SLURRY	440.0	SQ YD
8526	CONC CLASS M FULL DEPTH PATCH	18.0	CU YD
8534	CONCRETE OVERLAY-LATEX	248.0	CU YD
8549	BLAST CLEANING	3609	SQ YD
8550	HYDRODEMOLITION	3244	SQ YD
24094ED	PARTIAL DEPTH PATCHING	49.6	CU YD

I-471 SOUTHBOUND OVER KY. 8
BRIDGE MAINTENANCE NUMBER 019B00082L



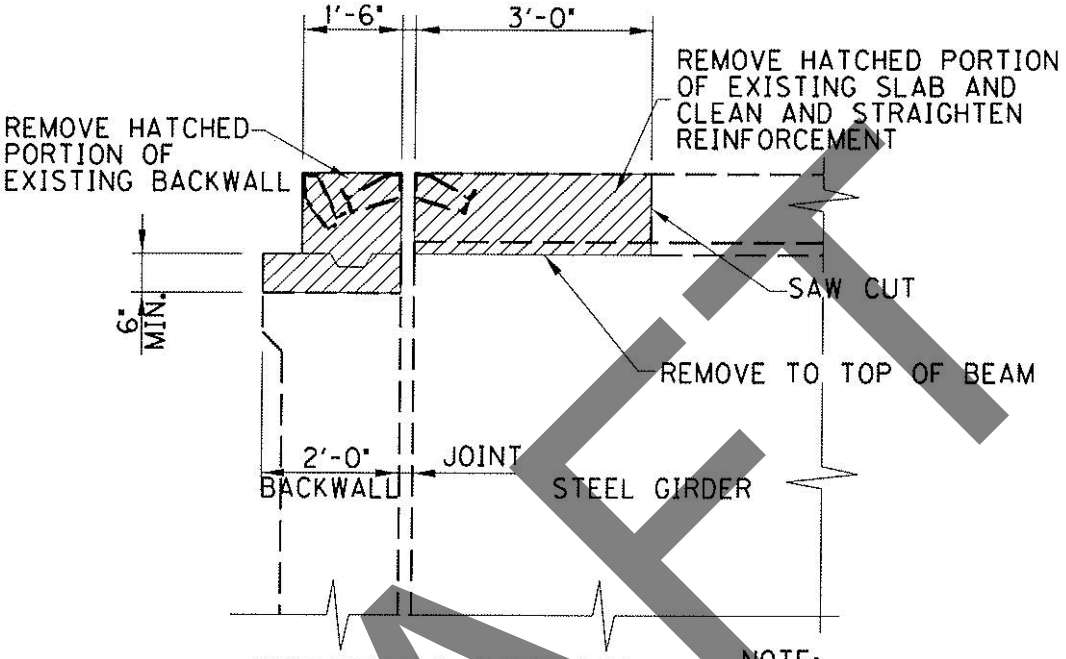
ELEVATION
VARIES
NOT TO SCALE

NOTE:
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.



TYPICAL SECTION

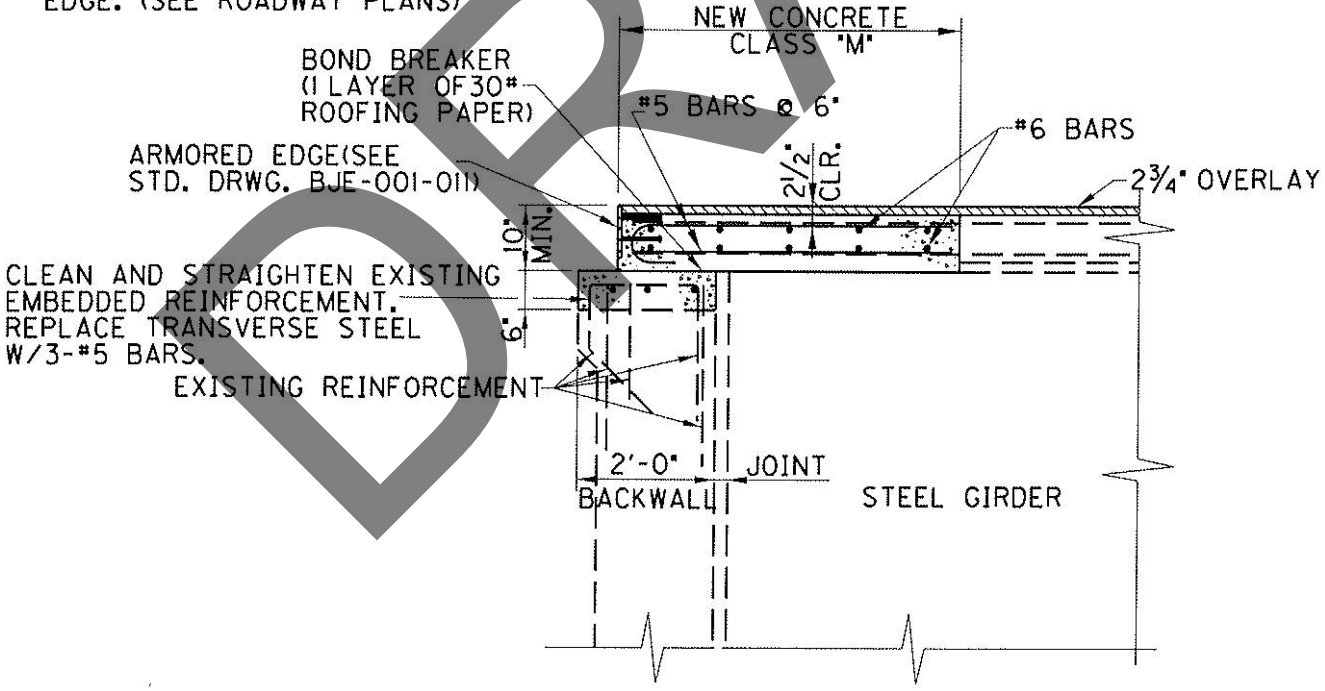
ELIMINATE JOINT @ END BENT 1



EXISTING SECTION
@ END BENT

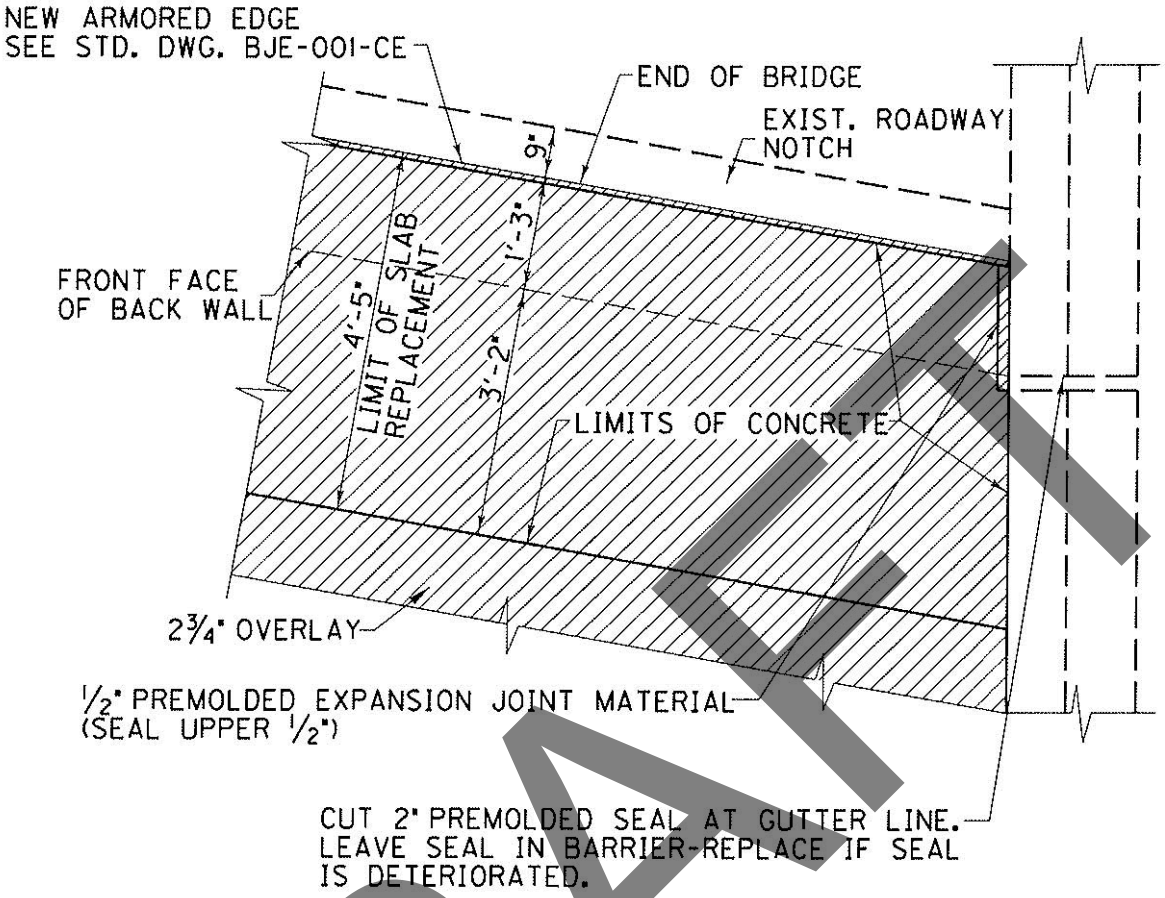
NOTE:
REMOVE 6' OF ROADWAY PAVEMENT, PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)

NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "ELIMINATE TRANSVERSE JOINT(METHOD 1)".

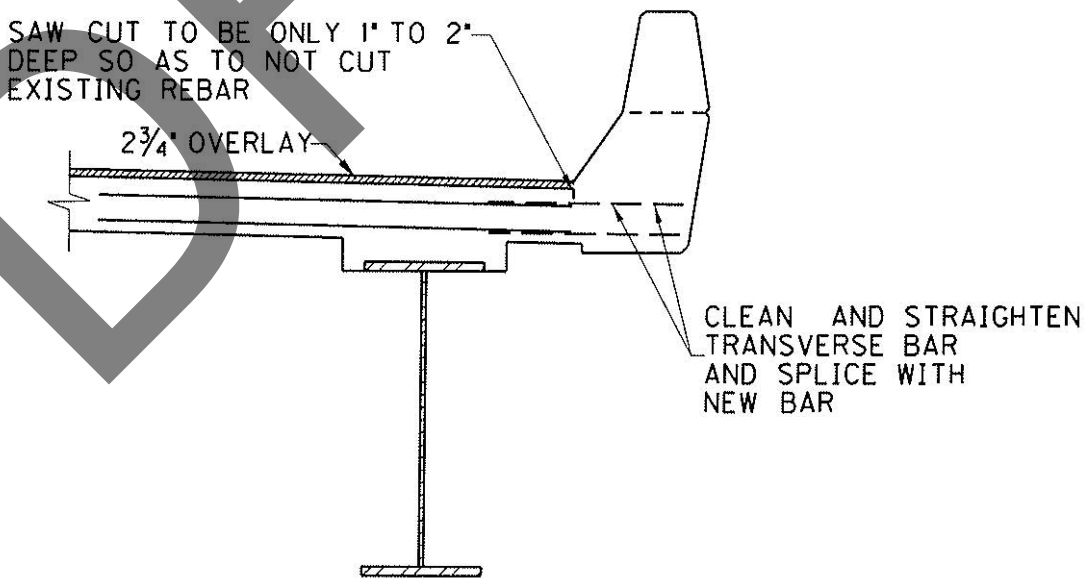


PROPOSED SECTION
@ END BENT

CURB SECTION @ END BENT 1

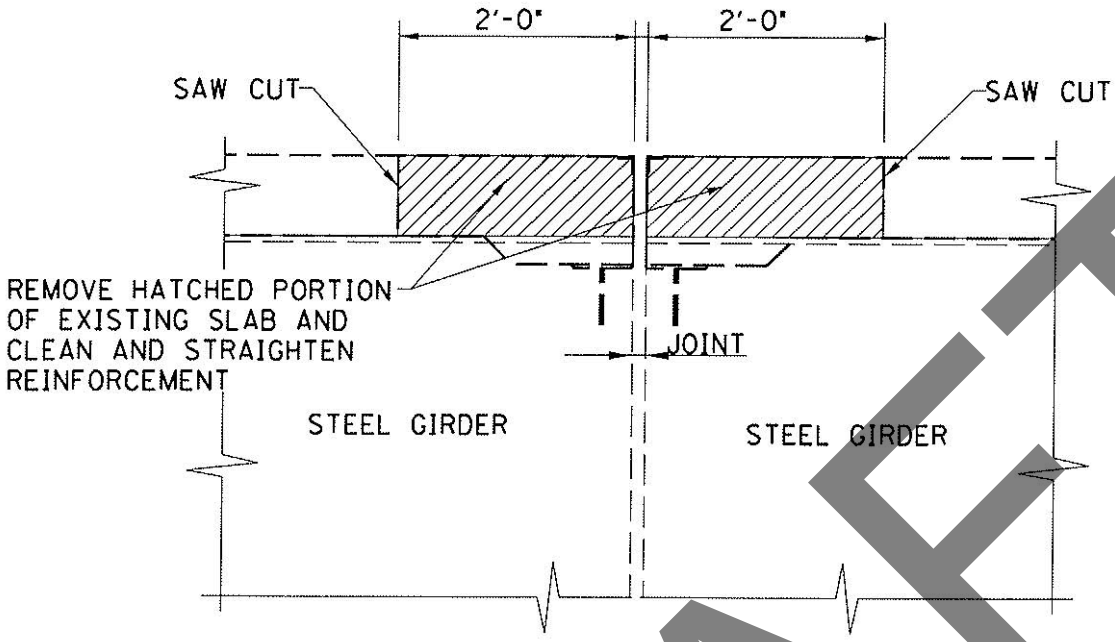


PROPOSED PLAN @ END BENT



PROPOSED SECTION @ END BENT

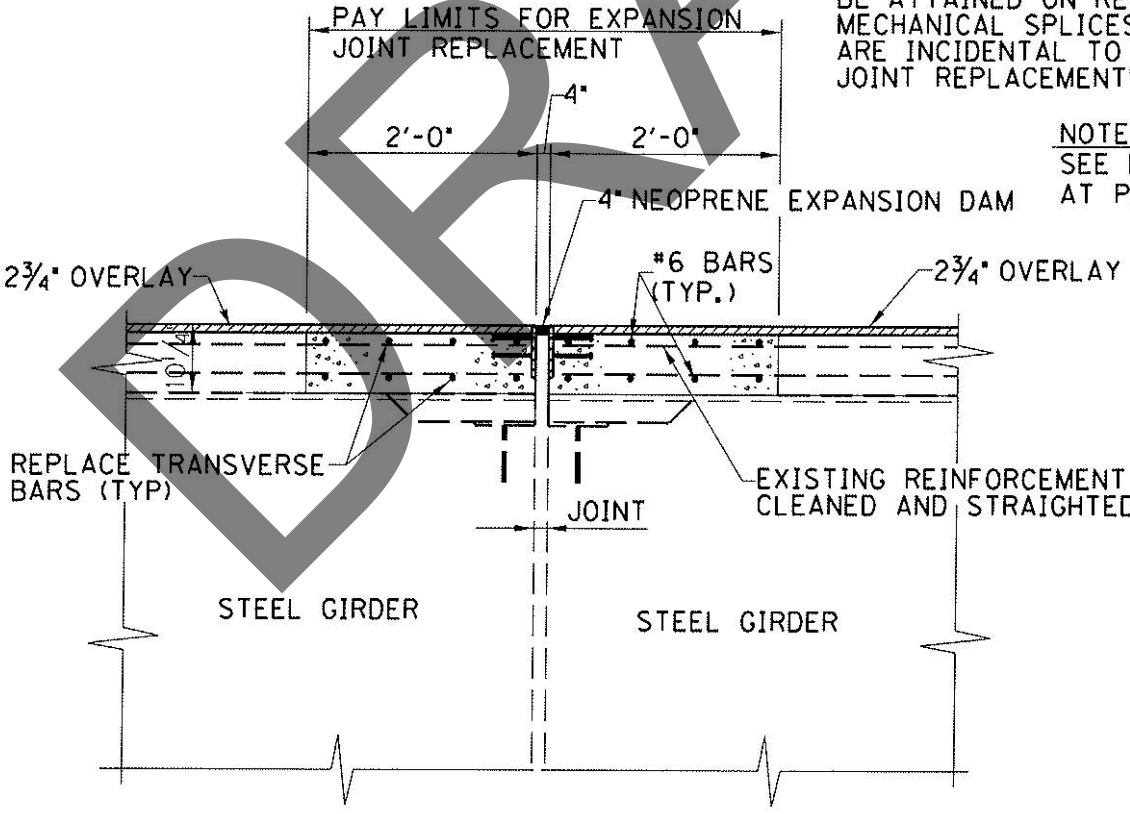
REPLACE JOINT @ PIER 2



EXISTING SECTION

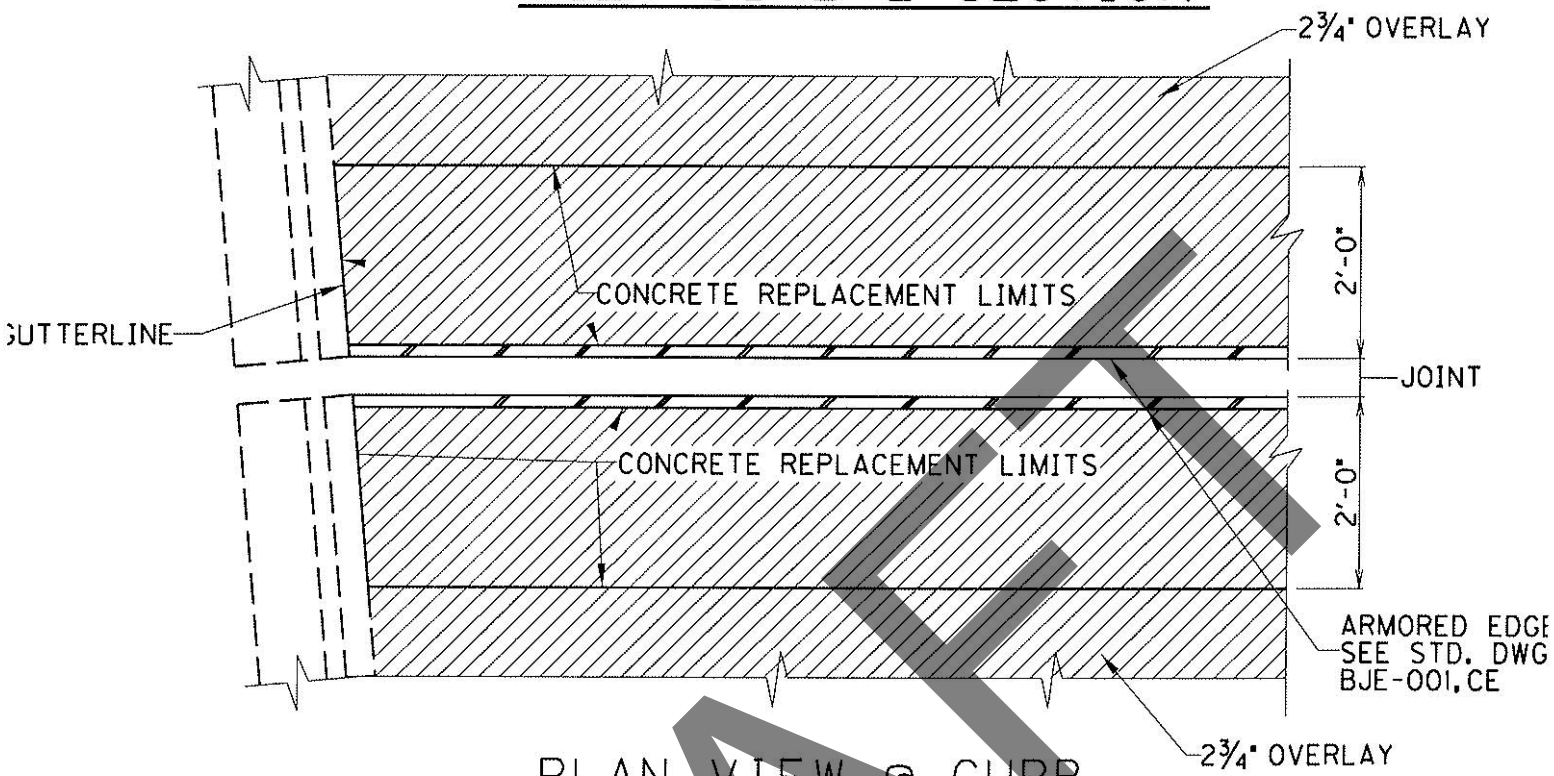
NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".

NOTE:
SEE B13 FOR JOINT AT PIER 6



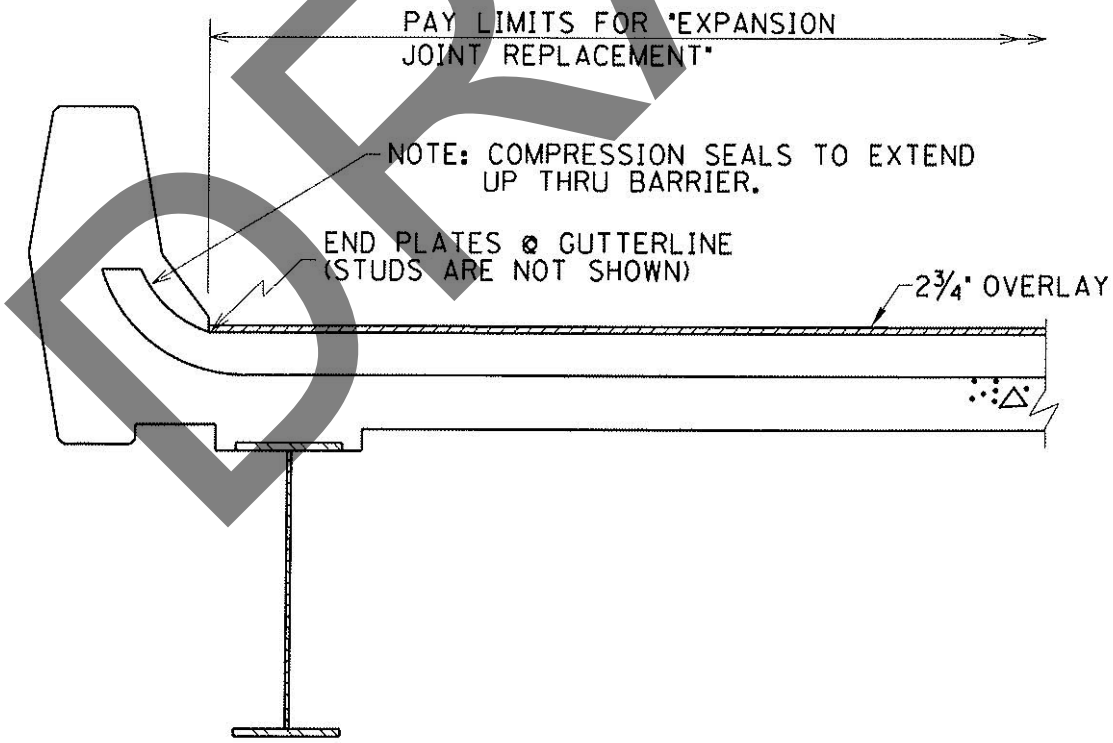
PROPOSED SECTION

REPLACE EXPANSION JOINT
PIER CURB 2 SECTION

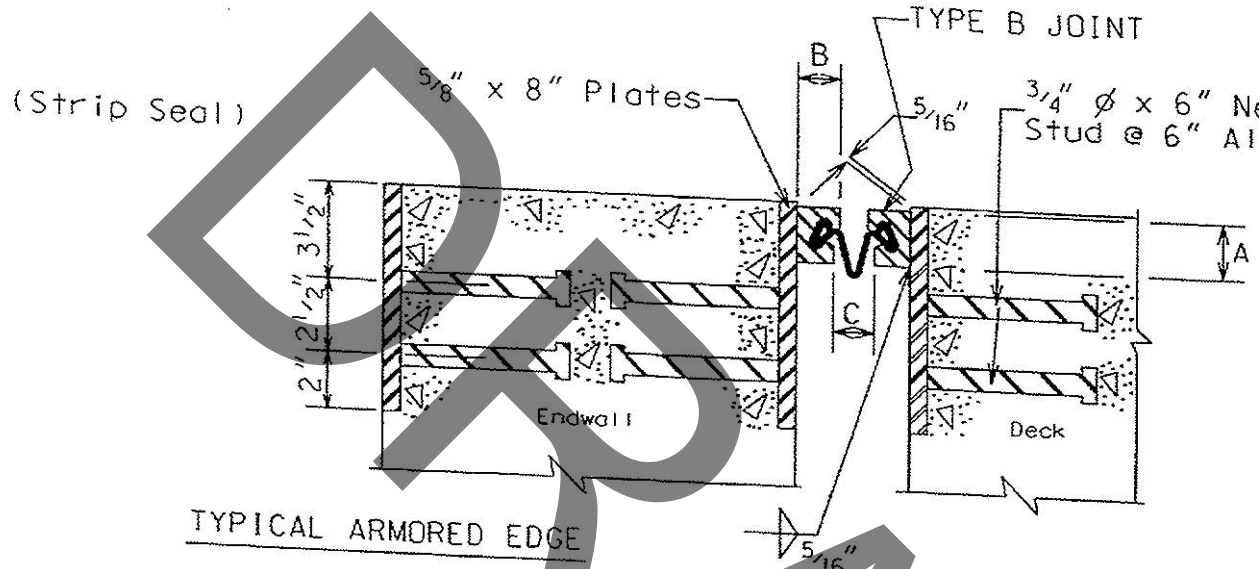


PLAN VIEW @ CURB

REPLACE EXPANSION JOINT



PROPOSED SECTION @ CURB



TYPICAL ARMORED EDGE

TYPICAL 4" JOINT

NOTE: Joint openings shall be adjusted for each 10 above or below 60° f. Decrease or increase respectively by increment shown.

4" - Joint Opening @°60 F.

INCREMENT FOR 10° TEMPERATURE CHANGE - STEEL SPAN -							
THRU 60'	61'-100'	101'-140'	141'-180'	181'-240'	241'-320'	321'-365'	
1/32"	1/16"	3/32"	1/8"	3/16"	1/4"	5/16"	

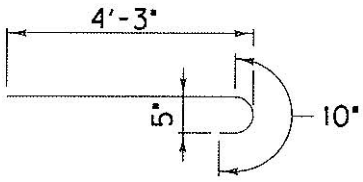
Not to Scale

ALTERNATE NEOPRENE EXPANSION DAMS - 4"

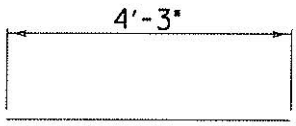
			A	B	C
B	WABO STRIP SEAL Type A Extrusion with S-400 Seal	Watson Bowman Associates Inc.	2"	1 1/2"	2"
B	STEEL FLEX Type SSA with 400 Seal	D. S. Brown Co.	2"	1 1/2"	2 1/2"
B	GENERAL STRIP CD Profile A Steel Extrusion with Gen Strip CD Seal	General Tire Co.	2"	1 3/8"	2 1/4"
B	ONFLEX Type AM2 Extrusion with 40SEO Sal	Structural Accessories Inc.	2"	1 1/4"	2"

Not to Scale

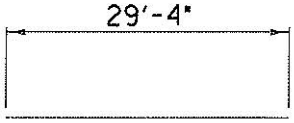
REINFORCEMENT



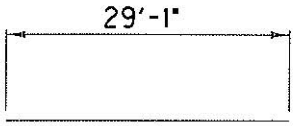
#5 BENT BAR
165 REQ'D END BENT 1



#5 STRAIGHT BAR
165 REQ'D END BENT 1



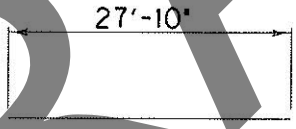
#6 STRAIGHT BAR
30 REQ'D EACH END BENT 1



#5 STRAIGHT BAR
9 REQ'D END BENT 1

3,165 LBS END BENT 1

END BENT 1 REINFORCEMENT



#6 STRAIGHT BAR
48 REQ'D PIER 2

2,007 LBS. PIER 2

PIER 2 REINFORCEMENT

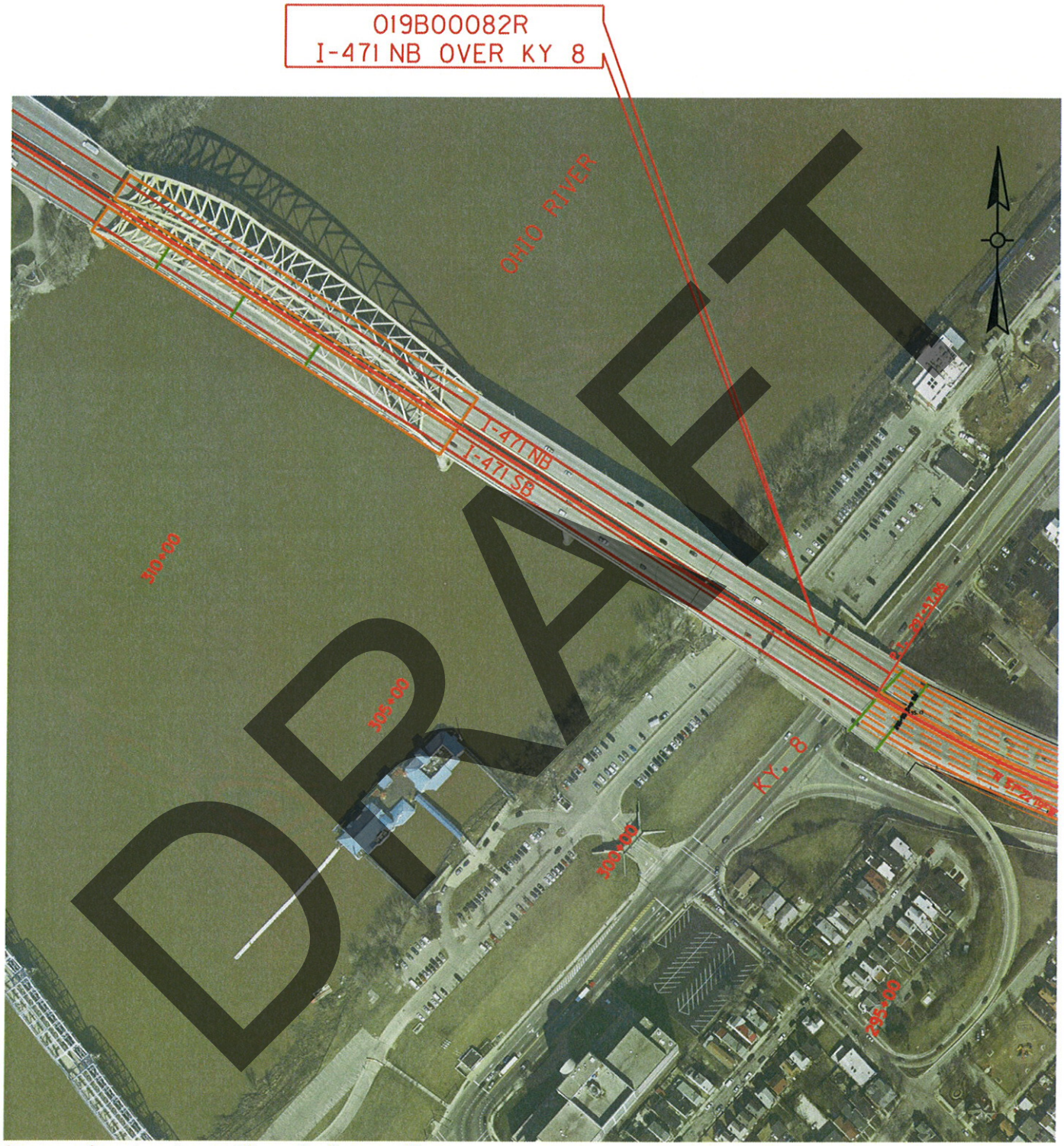
300 LIN. FT. #4 BARS IN 20'-0" LENGTHS

200 LBS. EACH END BENT 1 & PIER 2

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 5,572 LBS.

CAMPBELL COUNTY



Approximate Location Information
Latitude: 39° 5' 57"
Longitude: 84° 29' 31"

BRIDGE #12 (019B00082R) SUMMARY OF QUANTITIES

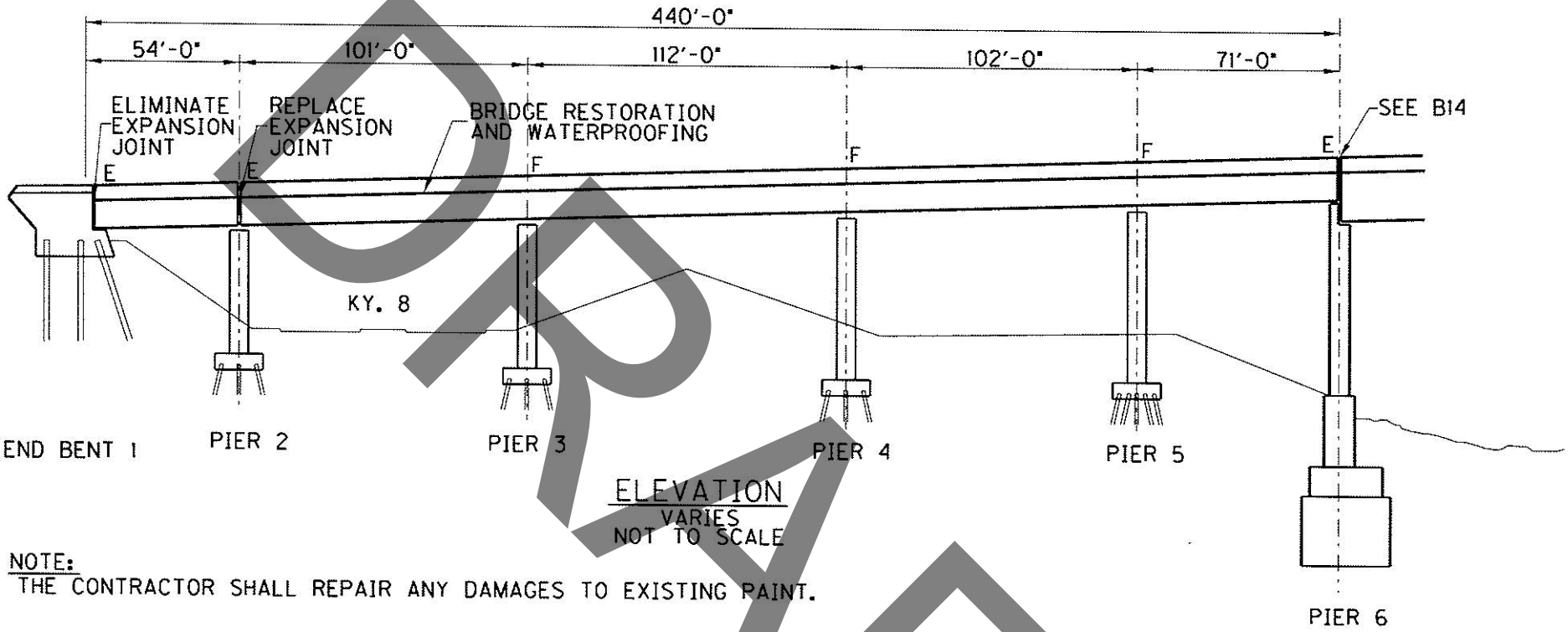
1. DISTRICT: 6
2. COUNTY: CAMPBELL
3. ROUTE: I-471
4. PROJECT NUMBER: FD52 019 0471 000-005
5. ROAD NAME: I-471
6. DESCRIPTION: I-471 NORTHBOUND OVER KY 8
BRIDGE DECK RESTORATION AND WATERPROOFING:EXPANSION JOINT REPLACEMEN
ELIMINATE EXPANSION JOINT

8. LENGTH (FT.): 440 **BRIDGE WIDTH (FT.):** 53.3 AVG. **SURFACE AREA (SQ. YD.):**
SKEW (DEGREES): VARIES **DECK THICKNESS (INCHES):** 9.0

ESTIMATED QUANTITIES REQUIRED

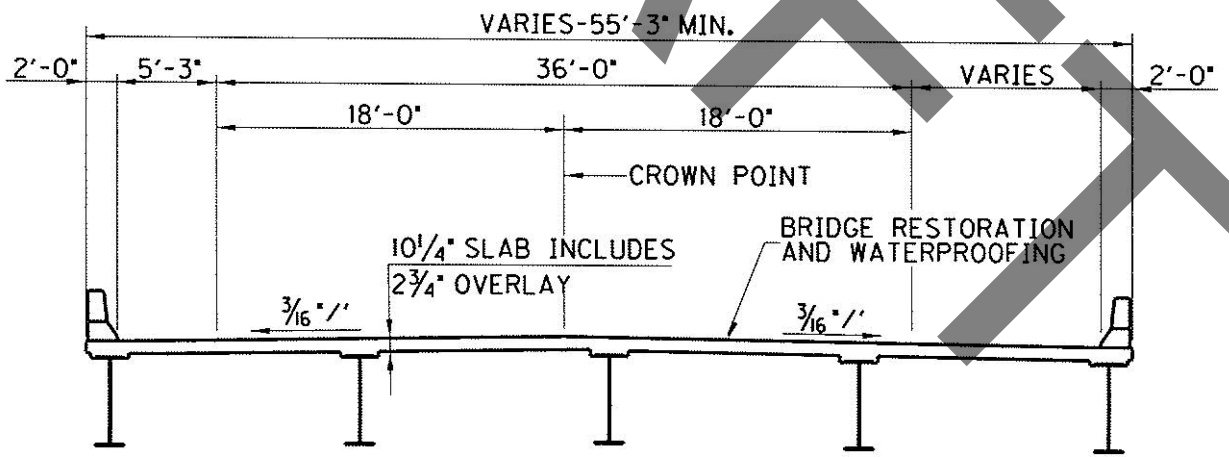
ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3298	EXPANSION JT REPLACEMENT 4 IN	56.0	LIN FT
3300	ELIMINATE TRANSVERSE JOINT	55.0	LIN FT
8504	EPOXY SAND SLURRY	440.0	SQ YD
8526	CONC CLASS M FULL DEPTH PATCH	14.0	CU YD
8534	CONCRETE OVERLAY-LATEX	199.0	CU YD
8549	BLAST CLEANING	2972	SQ YD
8550	HYDRODEMOLITION	2607	SQ YD
24094ED	PARTIAL DEPTH PATCHING	39.8	CU YD

I-471 NORTHBOUND OVER KY. 8
BRIDGE MAINTENANCE NUMBER 019B00082R



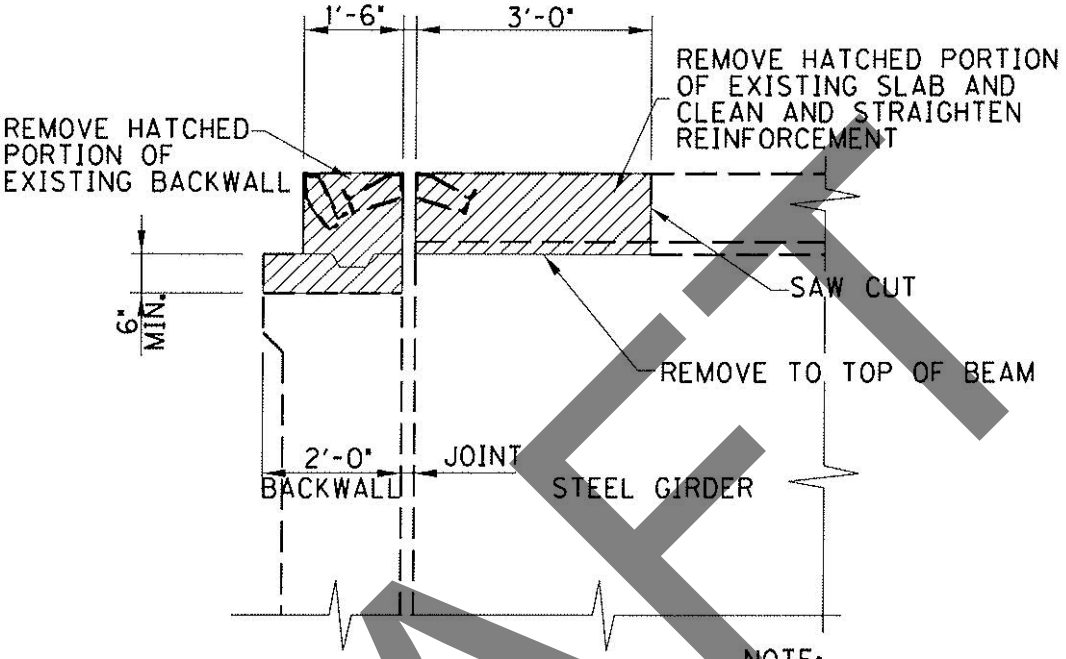
ELEVATION
VARIES
NOT TO SCALE

NOTE:
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.



TYPICAL SECTION

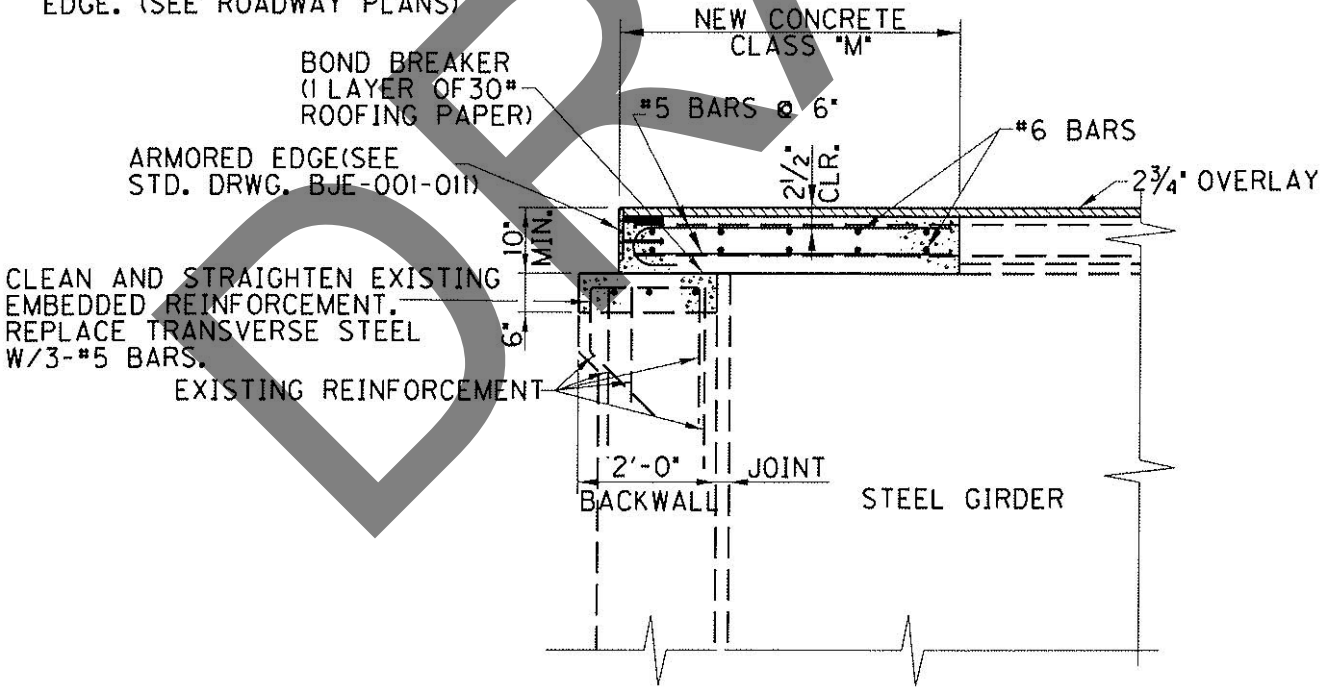
ELIMINATE JOINT @ END BENT 1



EXISTING SECTION
@ END BENT

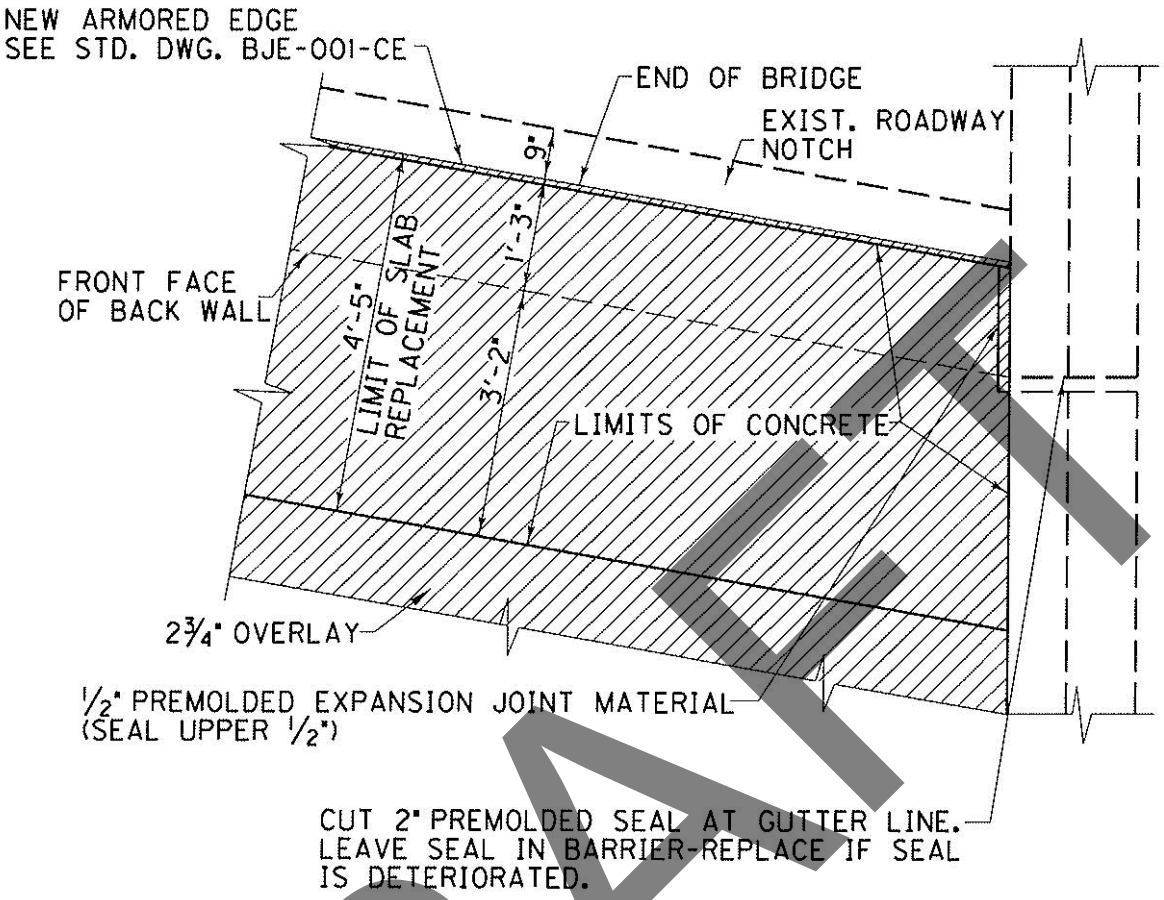
NOTE:
REMOVE 6' OF ROADWAY PAVEMENT. PLACE 1/2" PREMOLDED EXPANSION JOINT MATERIAL AGAINST ARMORED EDGE. (SEE ROADWAY PLANS)

NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "ELIMINATE TRANSVERSE JOINT(METHOD 1)".

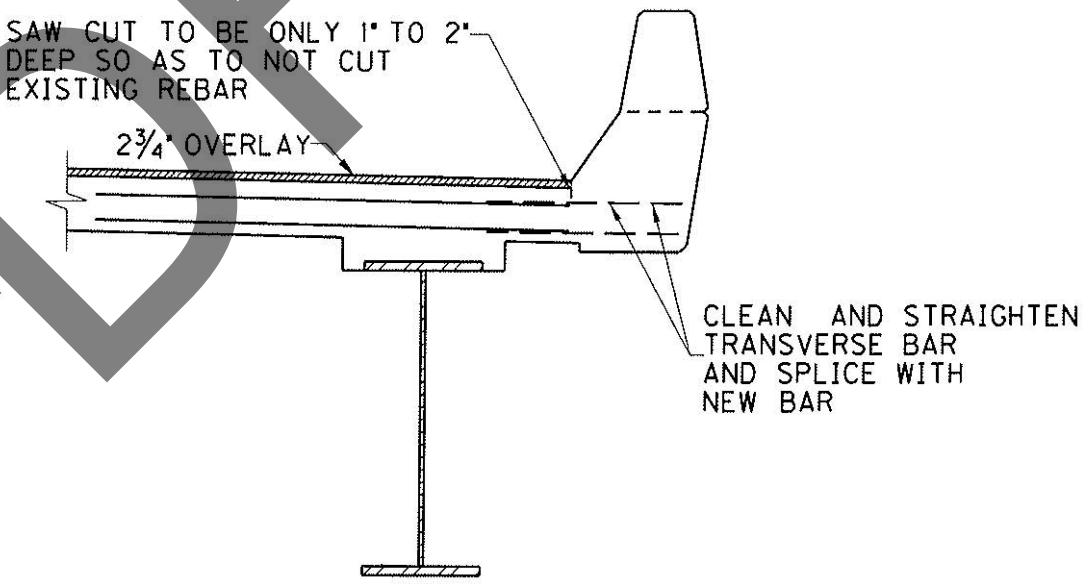


PROPOSED SECTION
@ END BENT

CURB SECTION @ END BENT 1

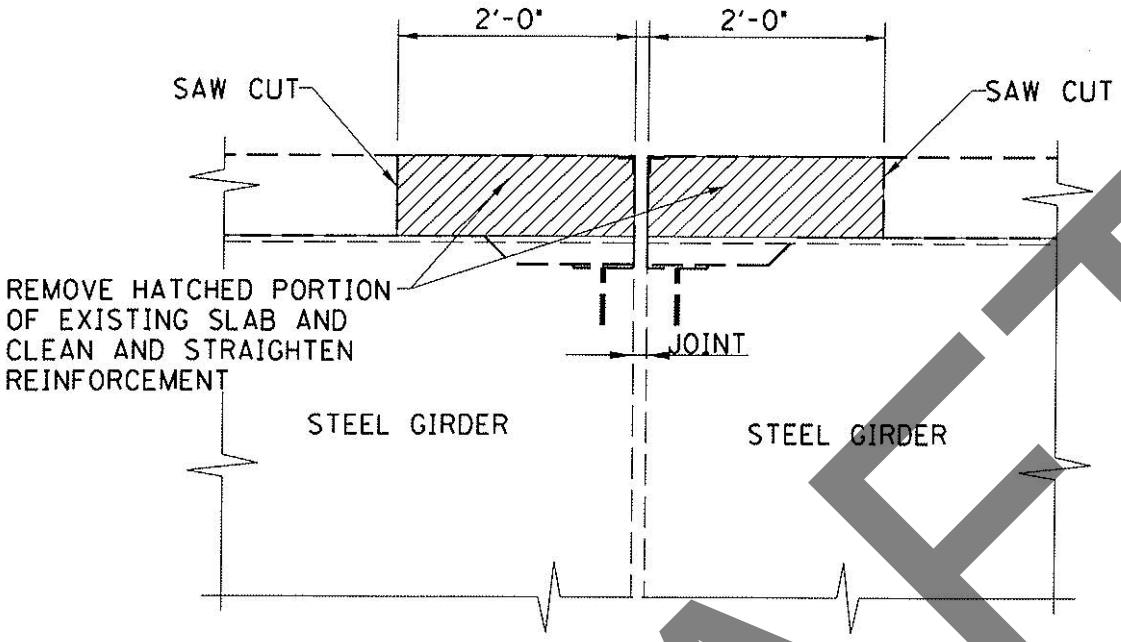


PROPOSED PLAN @ END BENT

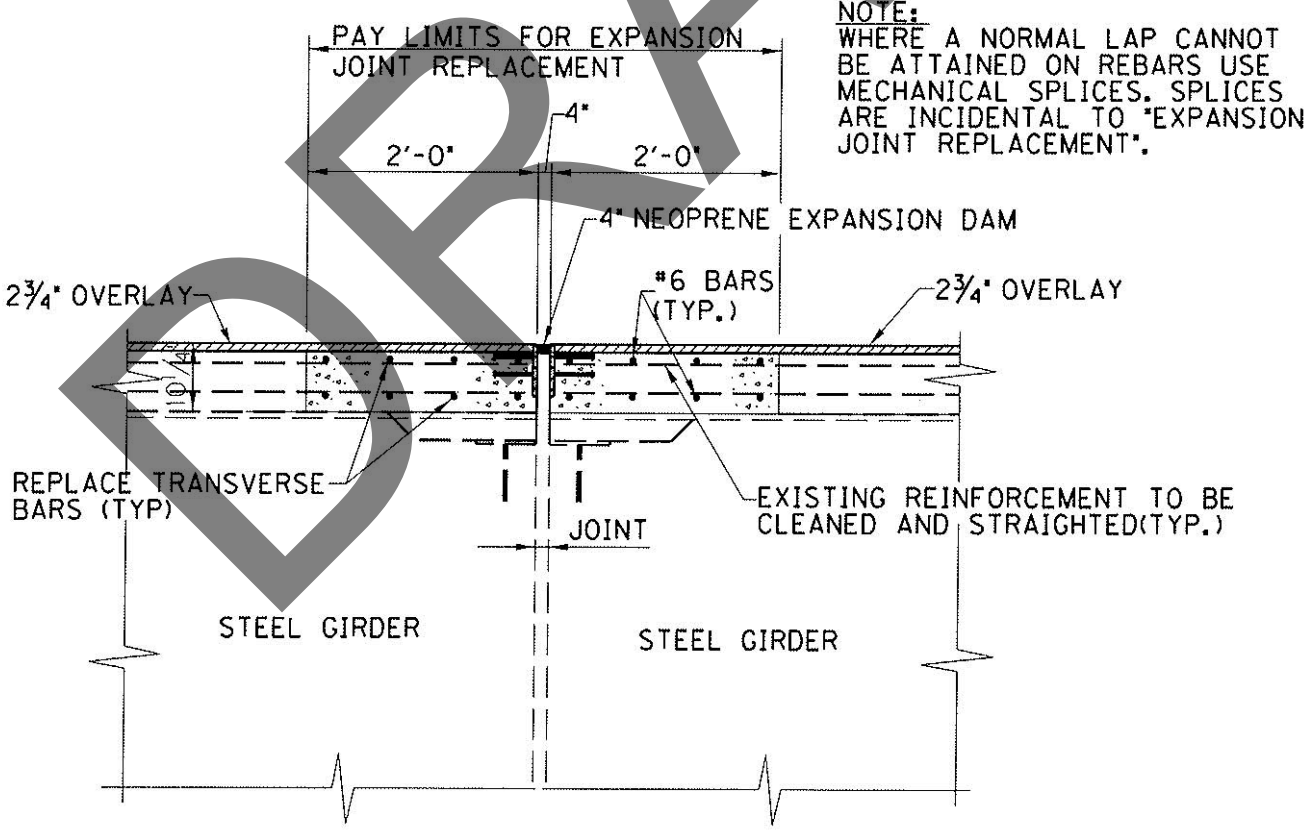


PROPOSED SECTION @ END BENT

REPLACE JOINT @ PIER 2



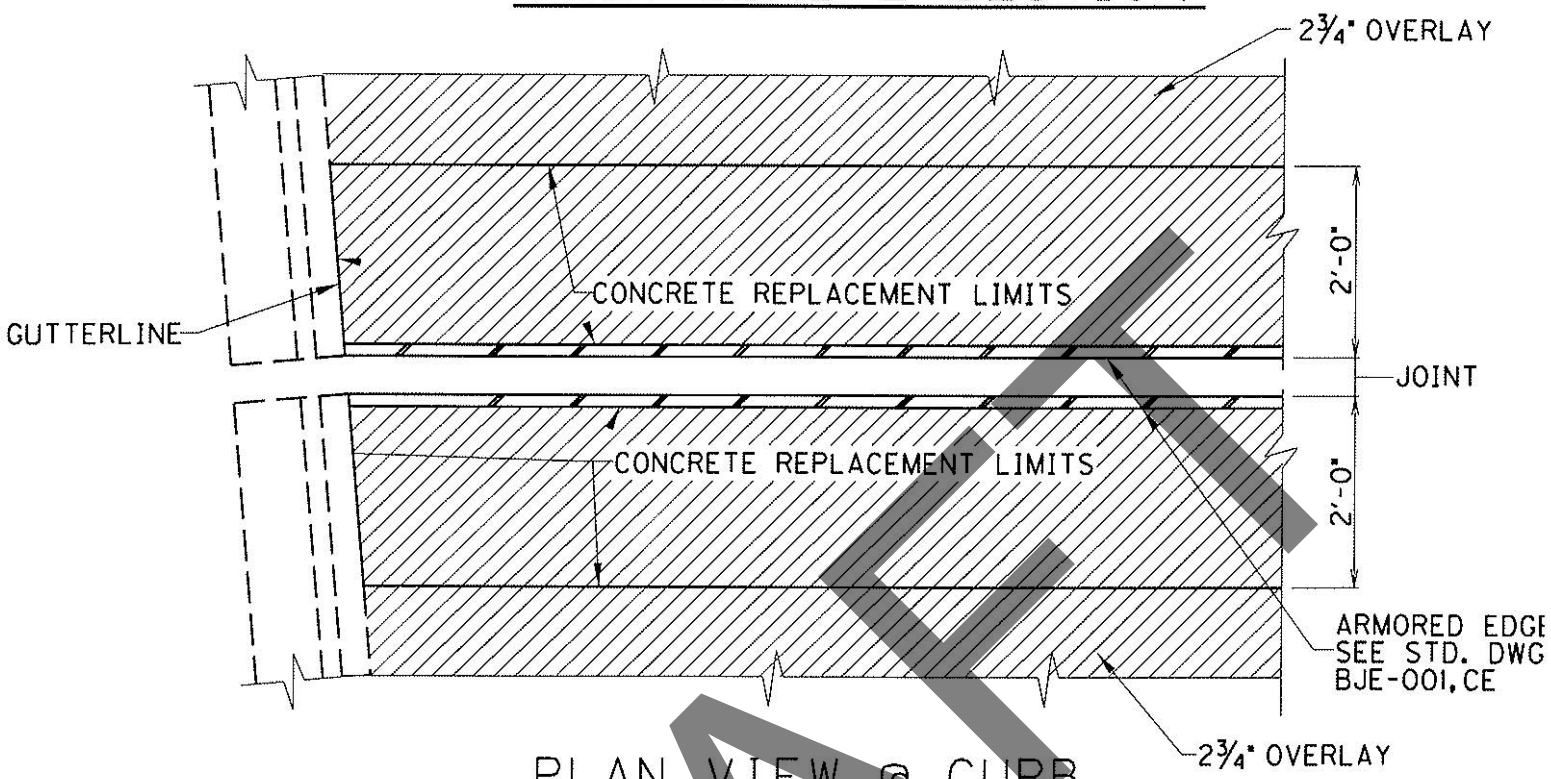
EXISTING SECTION



NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".

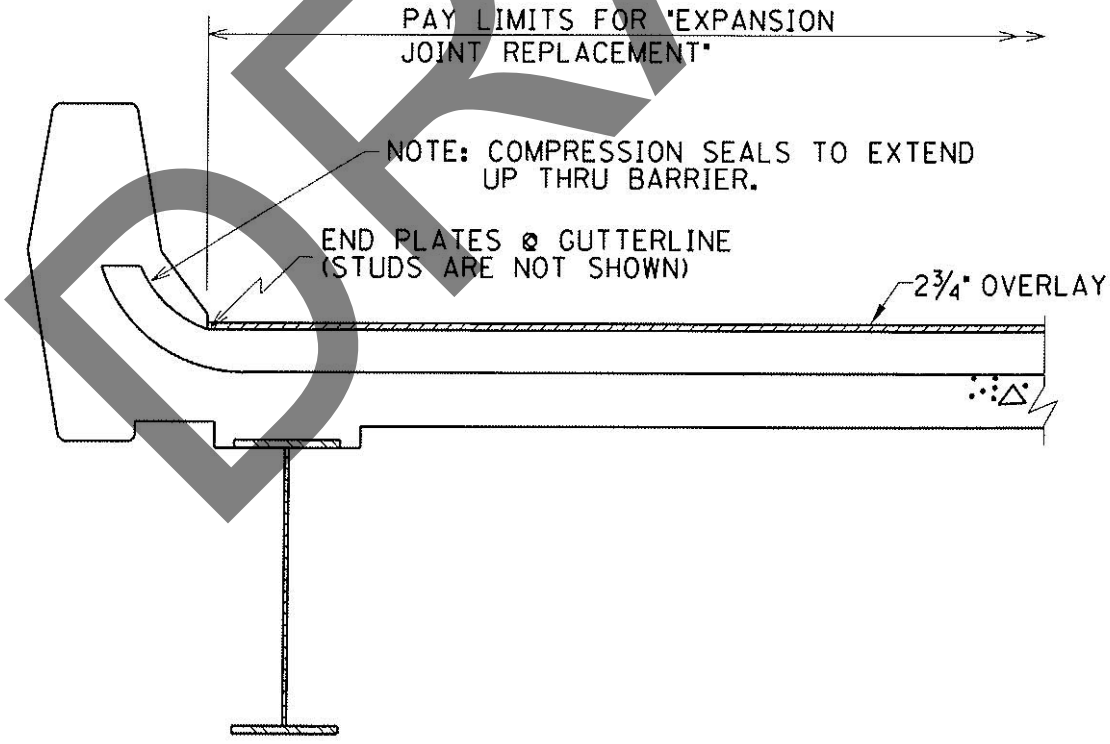
PROPOSED SECTION

REPLACE EXPANSION JOINT
PIER CURB 2 SECTION

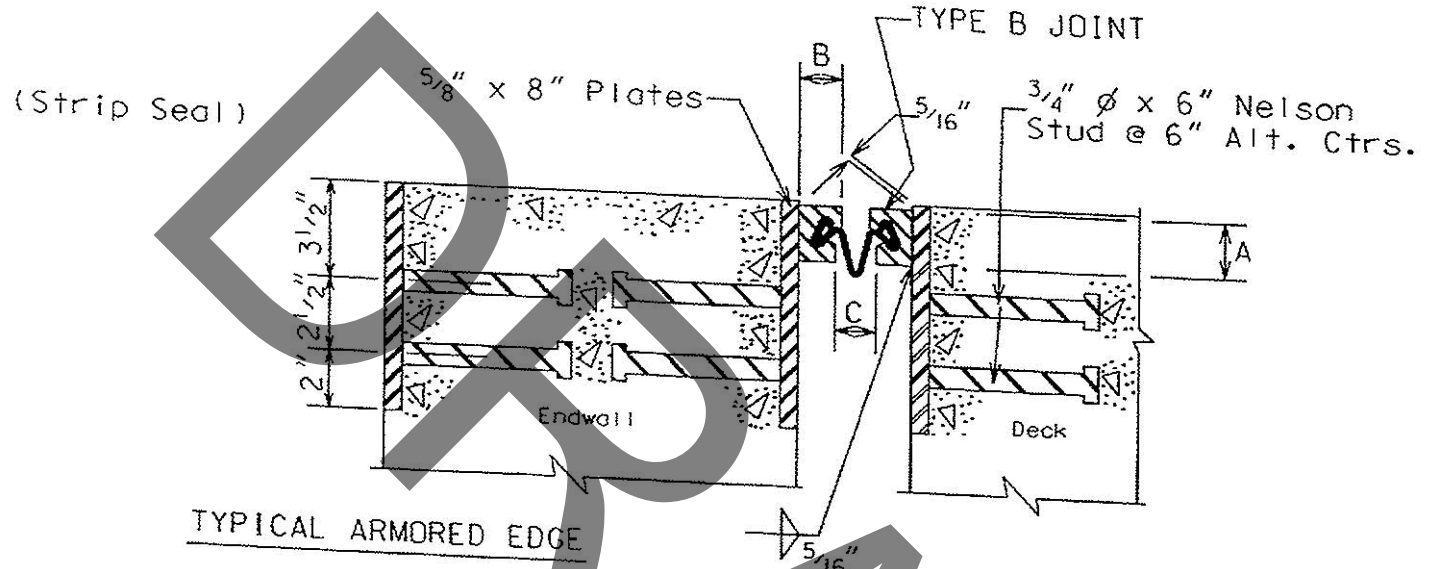


PLAN VIEW @ CURB

REPLACE EXPANSION JOINT



PROPOSED SECTION @ CURB



TYPICAL ARMORED EDGE

TYPICAL 4" JOINT

NOTE: Joint openings shall be adjusted for each 10 above or below 60° f. Decrease or increase respectively by increment shown.

4" - Joint Opening @ 60° F.

INCREMENT FOR 10° TEMPERATURE CHANGE - STEEL SPAN -							
THRU 60'	61'-100'	101'-140'	141'-180'	181'-240'	241'-320'	321'-365'	
1/32"	1/16"	3/32"	1/8"	3/16"	1/4"	5/16"	

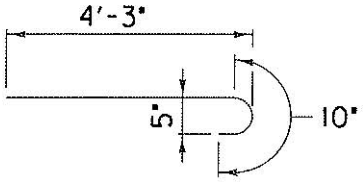
Not to Scale

ALTERNATE NEOPRENE EXPANSION DAMS - 4"

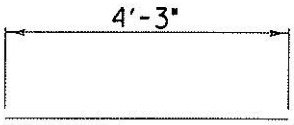
			A	B	C
B	WABO STRIP SEAL Type A Extrusion with S-400 Seal	Watson Bowman Associates Inc.	2"	1 1/2"	2"
B	STEEL FLEX Type SSA with 400 Seal	D. S. Brown Co.	2"	1 1/2"	2 1/2"
B	GENERAL STRIP CD Profile A Steel Extrusion with Gen Strip CD Seal	General Tire Co.	2"	1 3/8"	2 1/4"
B	ONFLEX Type AM2 Extrusion with 40SEQ Sal	Structural Accessories Inc.	2"	1 1/4"	2"

Not to Scale

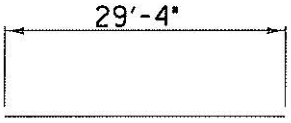
REINFORCEMENT



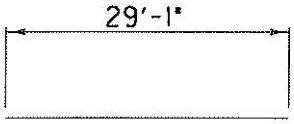
#5 BENT BAR
112 REQ'D END BENT 1



#5 STRAIGHT BAR
112 REQ'D END BENT 1



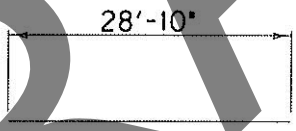
#6 STRAIGHT BAR
20 REQ'D EACH END BENT 1



#5 STRAIGHT BAR
6 REQ'D END BENT 1

2,129 LBS END BENT 1

END BENT 1 REINFORCEMENT



#6 STRAIGHT BAR
32 REQ'D PIER 2

1386 LBS. PIER 2

PIER 2 REINFORCEMENT

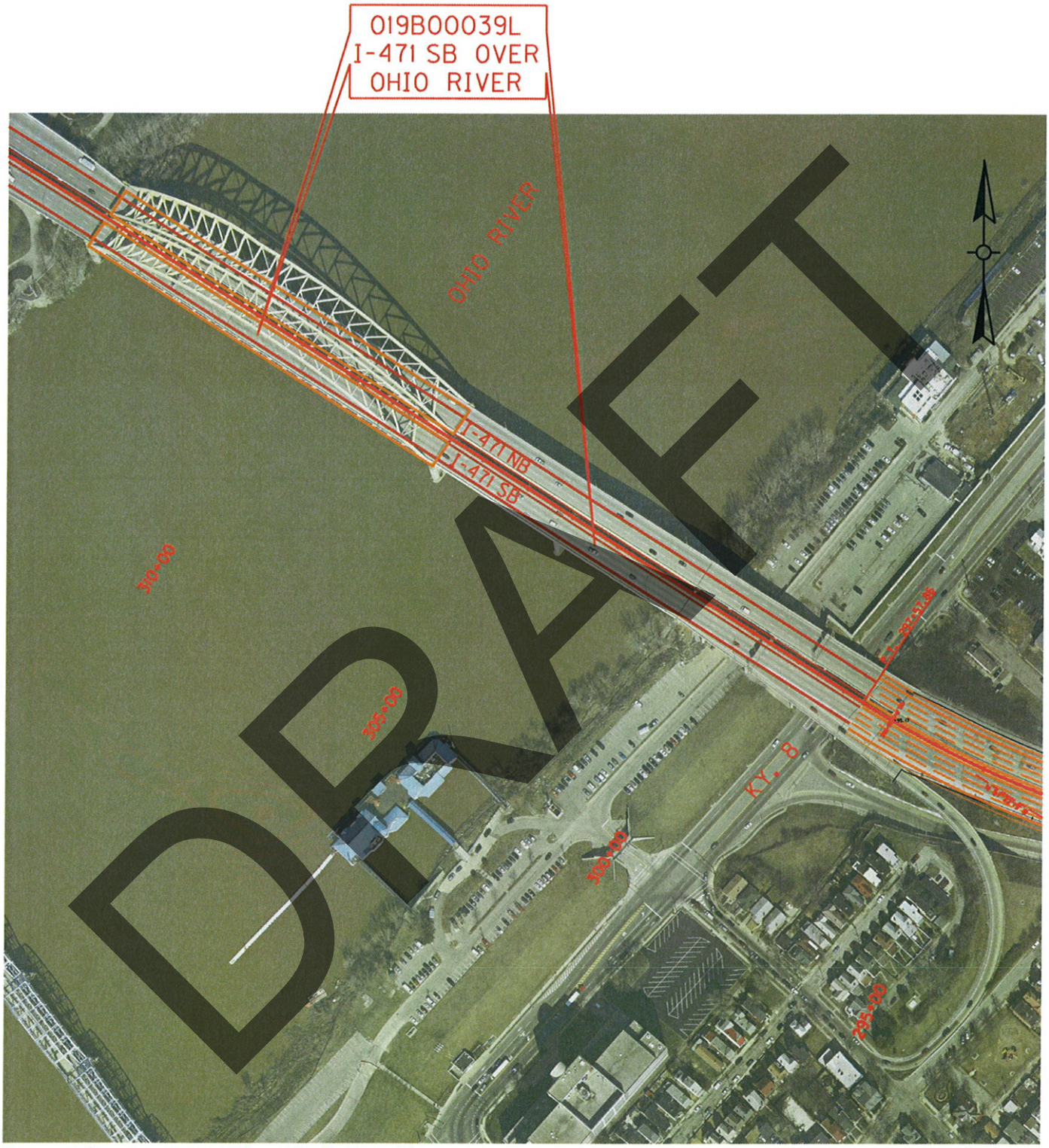
300 LIN. FT. #4 BARS IN 20'-0" LENGTHS

200 LBS. EACH END BENT 1 & PIER 2

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 3,915 LBS.

CAMPBELL COUNTY



Approximate Location Information
Latitude: 39° 6' 1"
Longitude: 84° 29' 39"

BRIDGE #13 (019B00039L) SUMMARY OF QUANTITIES

1. DISTRICT: 6
2. COUNTY: CAMPBELL
3. ROUTE: I-471
4. PROJECT NUMBER: FD52 019 0471 000-005
5. ROAD NAME: I-471
6. DESCRIPTION: I-471 SOUTHBOUND OVER OHIO RIVER
BRIDGE DECK RESTORATION AND WATERPROOFING

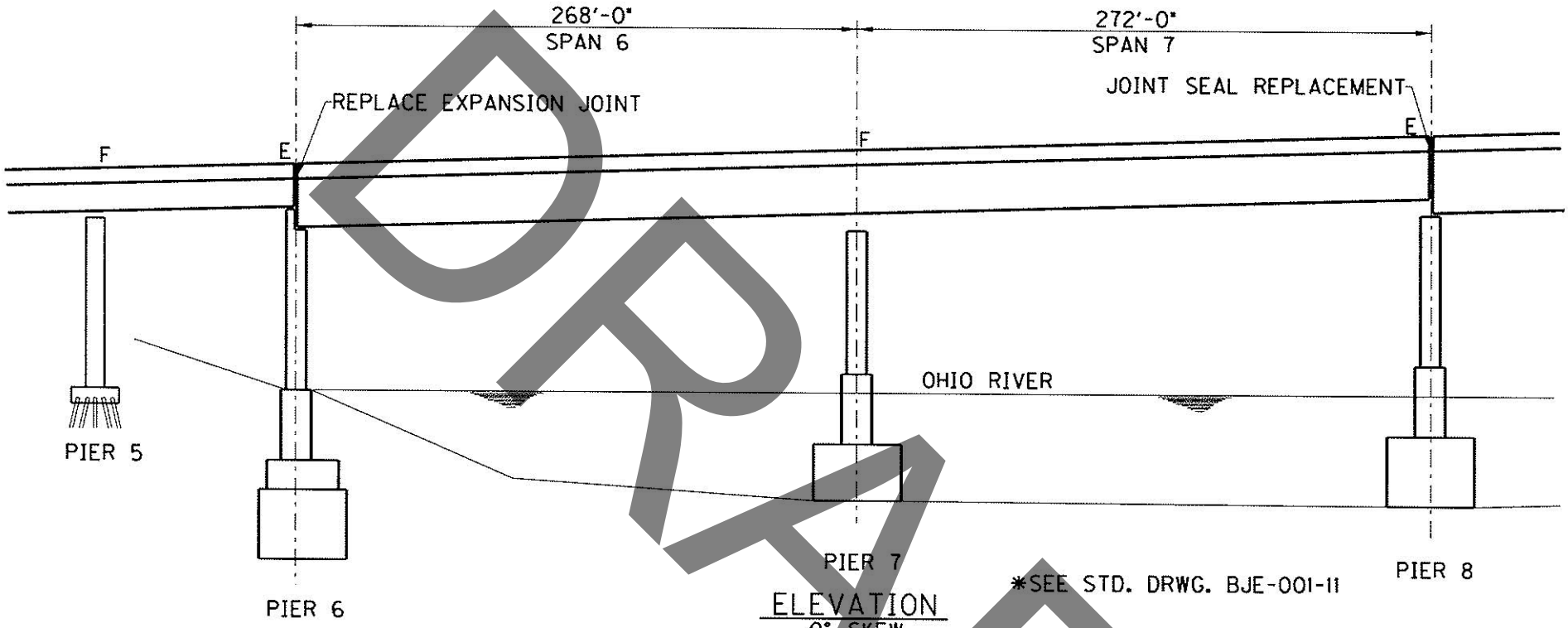
8. LENGTH (FT.): 1300.0 **BRIDGE WIDTH (FT.):** 51.25 **SURFACE AREA (SQ. YD.):** 7403
SKEW (DEGREES): 0 **DECK THICKNESS (INCHES):** 9

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY
3294	EXPANSION JT REPLACEMENT 1 1/2 IN	204.0
8504	EPOXY SAND SLURRY	1300.0
8526	CONC CLASS M FULL DEPTH PATCH	41.0
8534	CONCRETE OVERLAY-LATEX	411.0
8549	BLAST CLEANING	8483
8550	HYDRODEMOLITION	7403
23386EC	JOINT SEAL REPLACEMENT	51.0
23622EC	CLEAN DEBRIS FROM LOWER CHORD	1
24094ED	PARTIAL DEPTH PATCHING	82.0
24456EC	EXPANSION JT REPLACEMENT 5 1/2 IN	51.0

I-471 SOUTHBOUND OVER OHIO RIVER
BRIDGE MAINTENANCE NUMBER 019B00039L

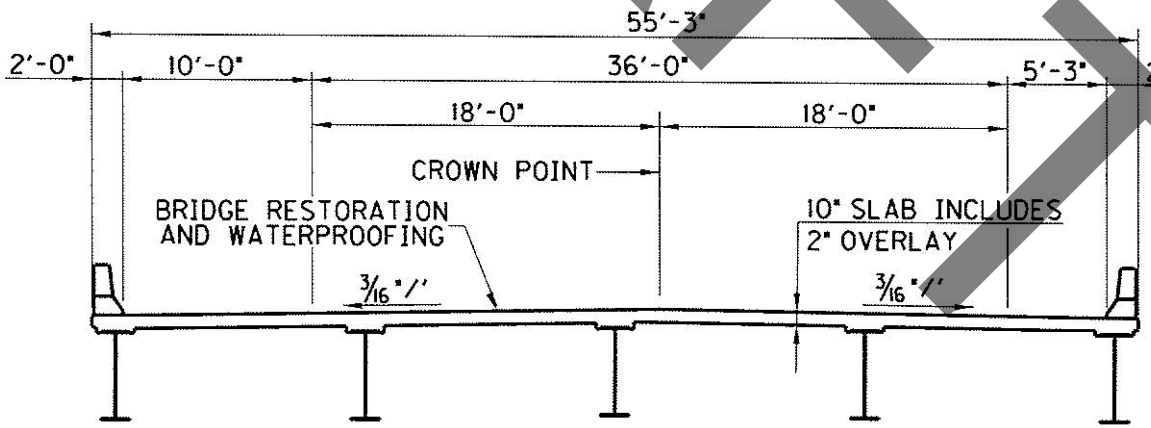
B13



ELEVATION
0° SKEW
NOT TO SCALE

*SEE STD. DRWG. BJE-001-11

NOTE:
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.

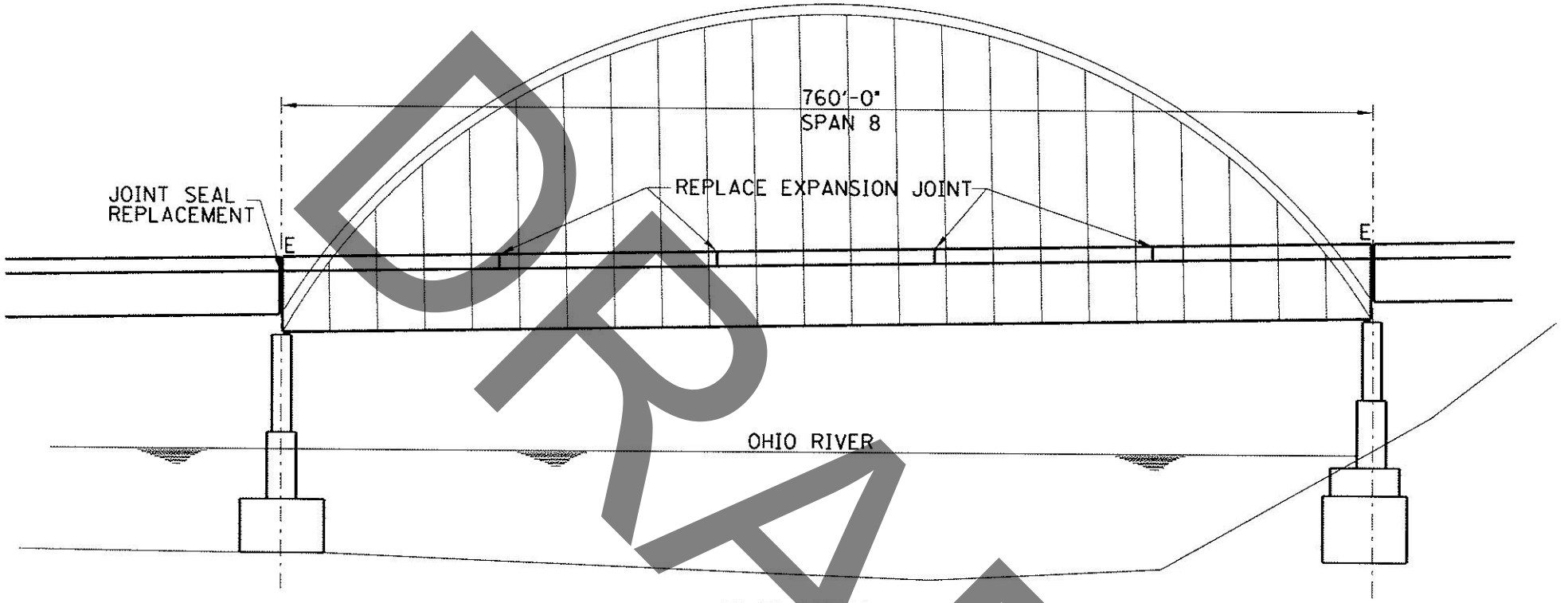


THIS DECK HAS AN EXISTING OVERLAY WITH AN AVERAGE DEPTH OF 1.5 INCHES WHICH IS TO BE REMOVED PER THE HYDRODEMOLITION SPECIAL NOTE.

TYPICAL SECTION

I-471 SOUTHBOUND OVER OHIO RIVER
BRIDGE MAINTENANCE NUMBER 019B00039L

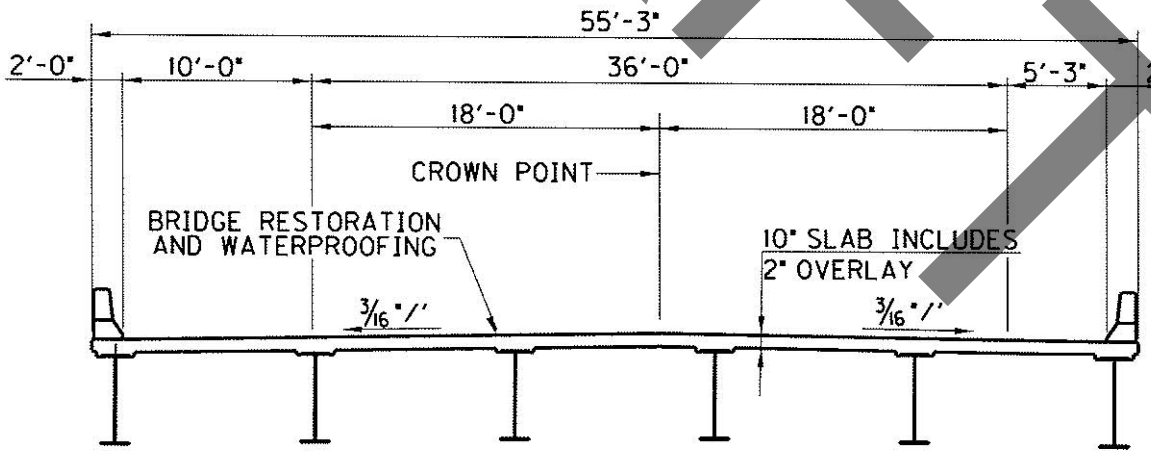
B13



ELEVATION
0° SKEW
NOT TO SCALE

*SEE STD. DRWG. BJE-001-11

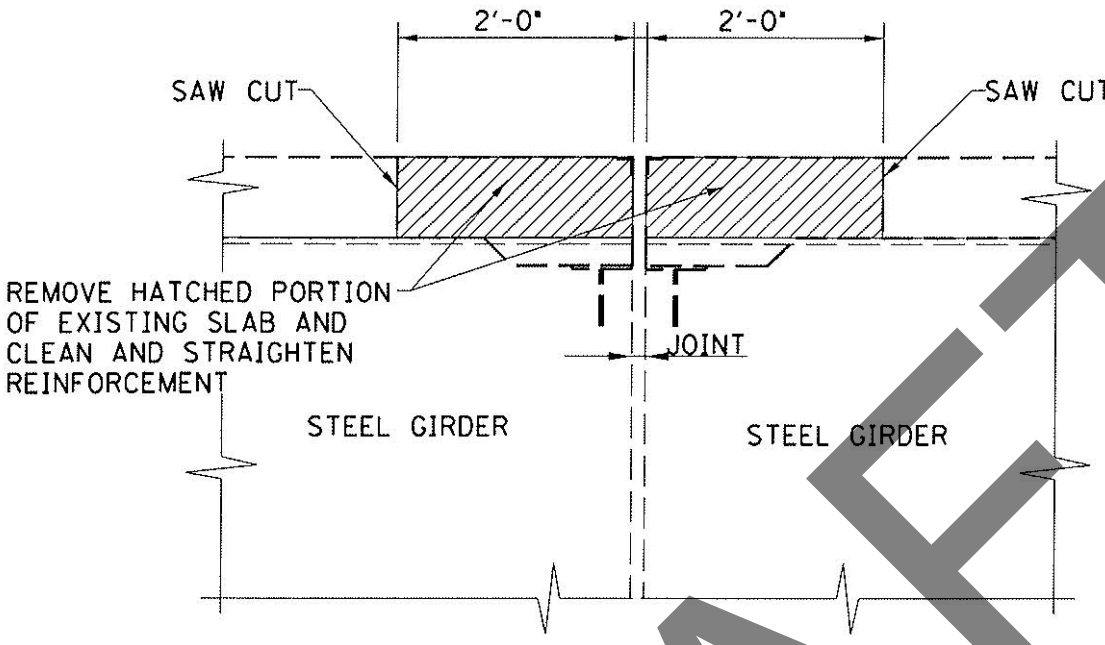
NOTE:
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.



THIS DECK HAS AN EXISTING OVERLAY WITH AN AVERAGE DEPTH OF 1.5 INCHES WHICH IS TO BE REMOVED PER THE HYDRODEMOLITION SPECIAL NOTE.

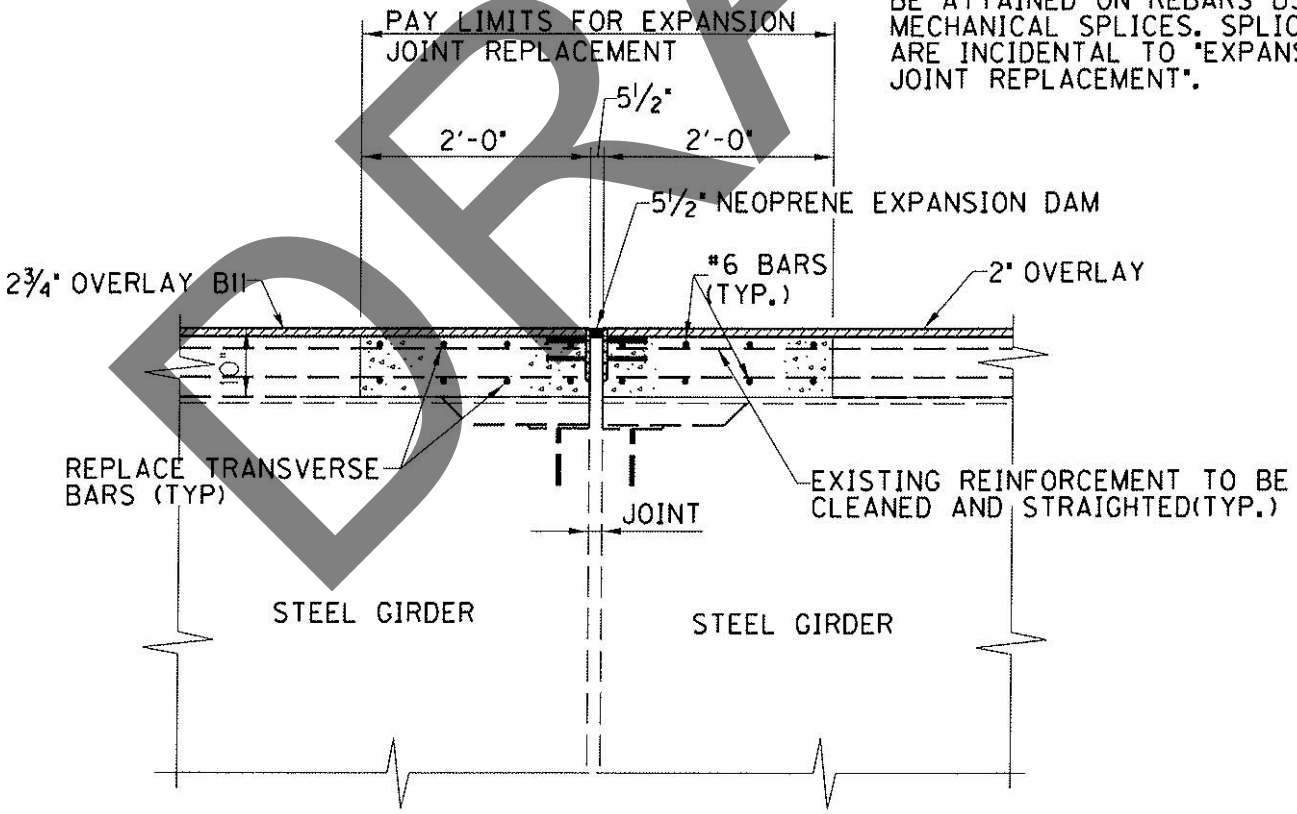
TYPICAL SECTION

REPLACE JOINT @ PIER 6



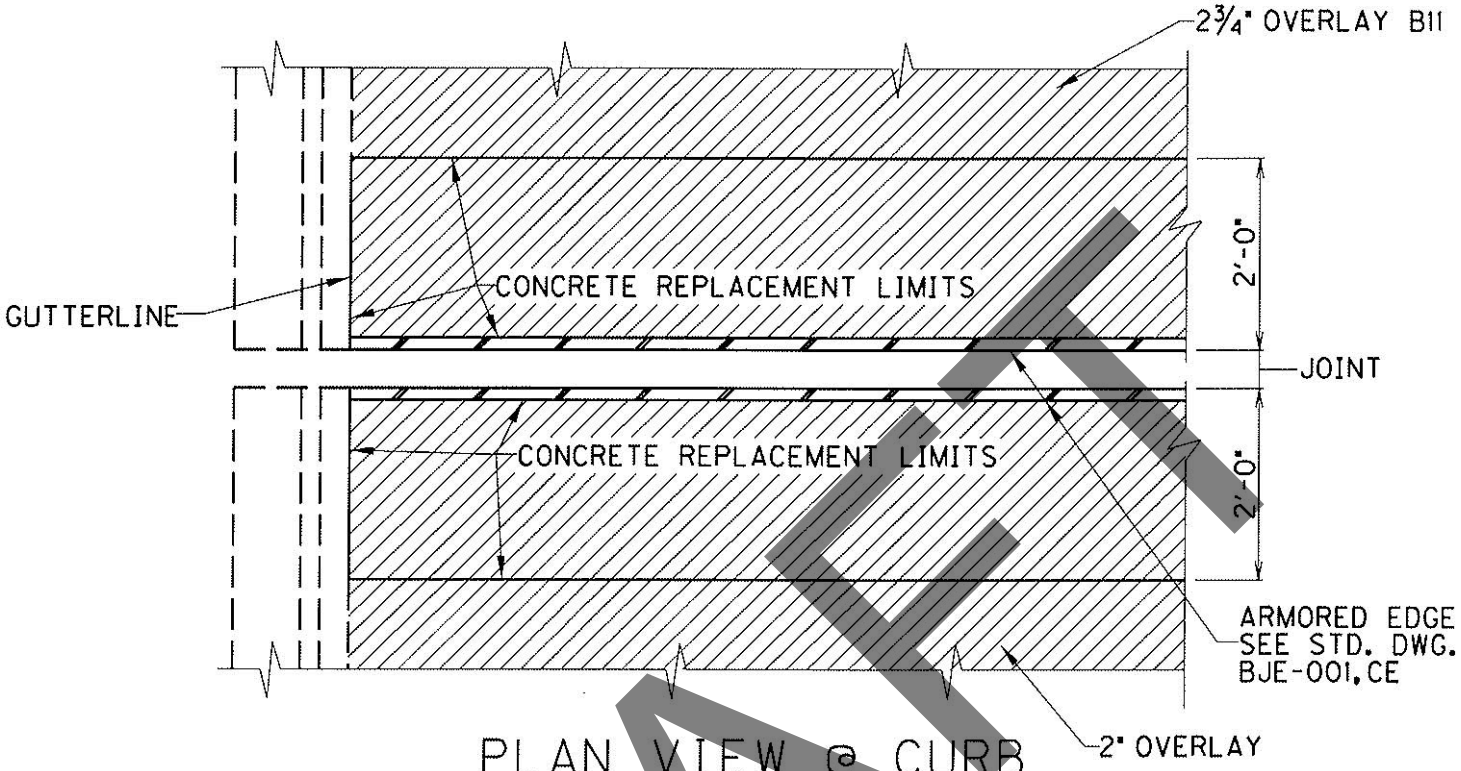
EXISTING SECTION

NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".



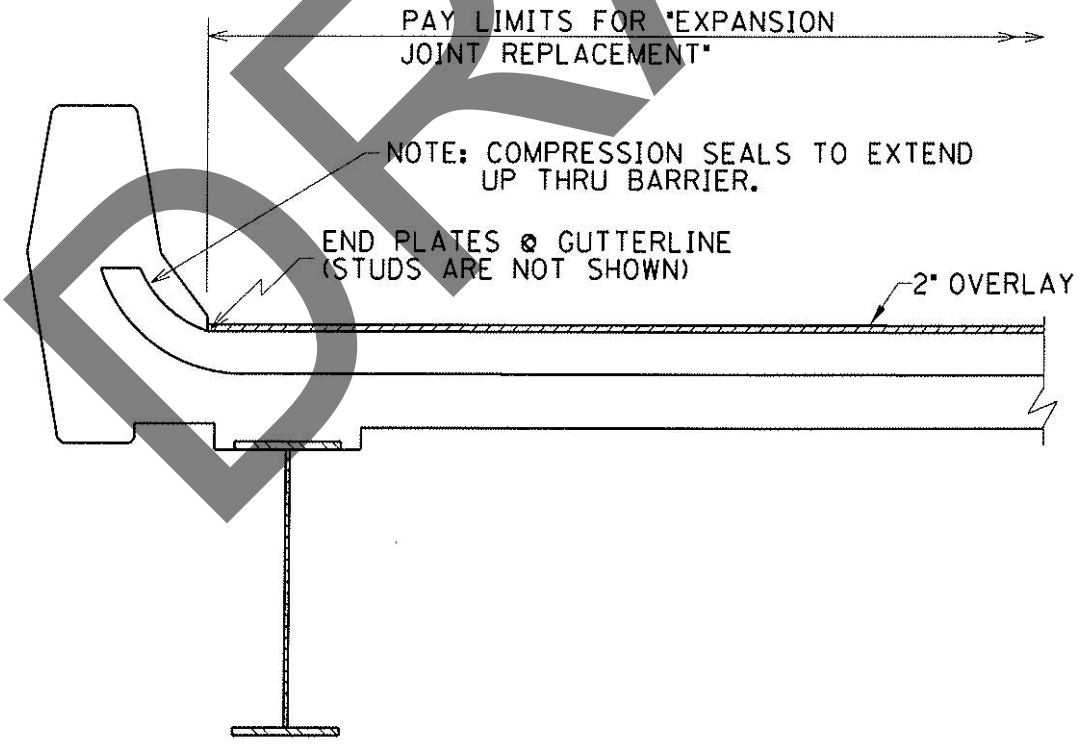
PROPOSED SECTION

REPLACE EXPANSION JOINT
PIER 6 CURB SECTION



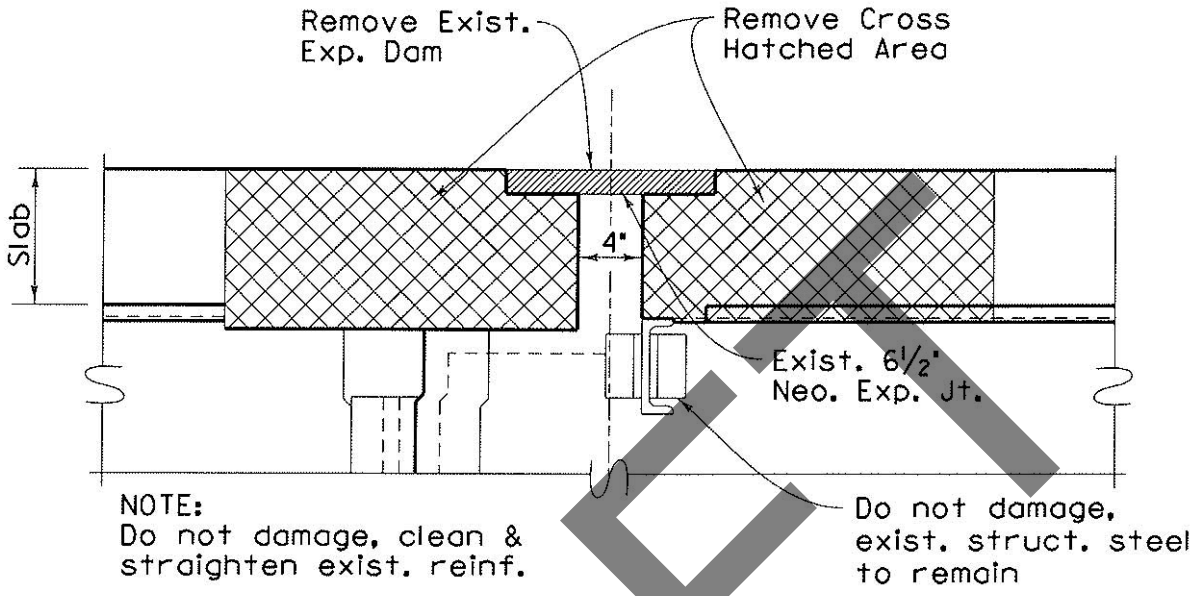
PLAN VIEW @ CURB

REPLACE EXPANSION JOINT

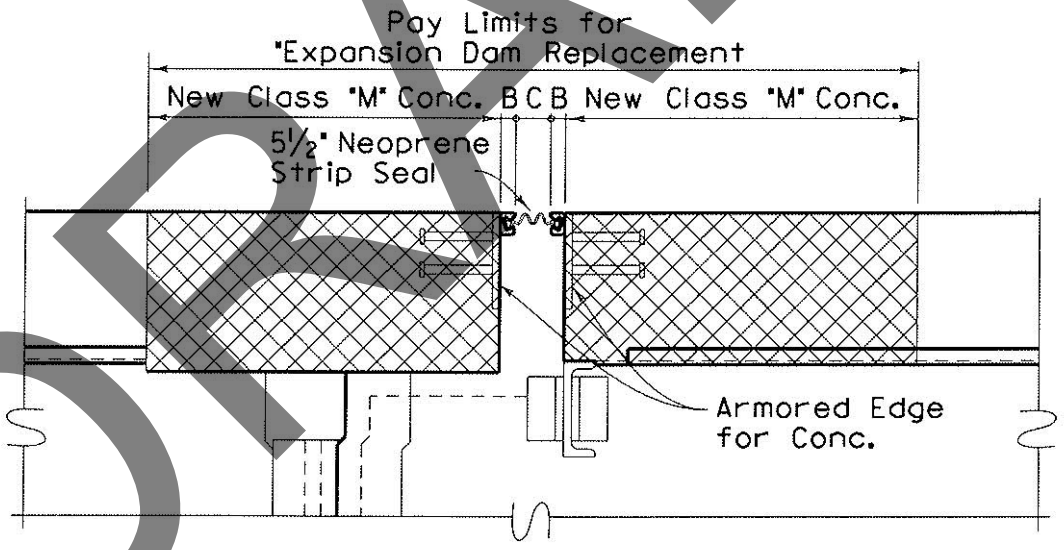


PROPOSED SECTION @ CURB

5½" EXPANSION DAM DETAIL



EXISTING SECTION



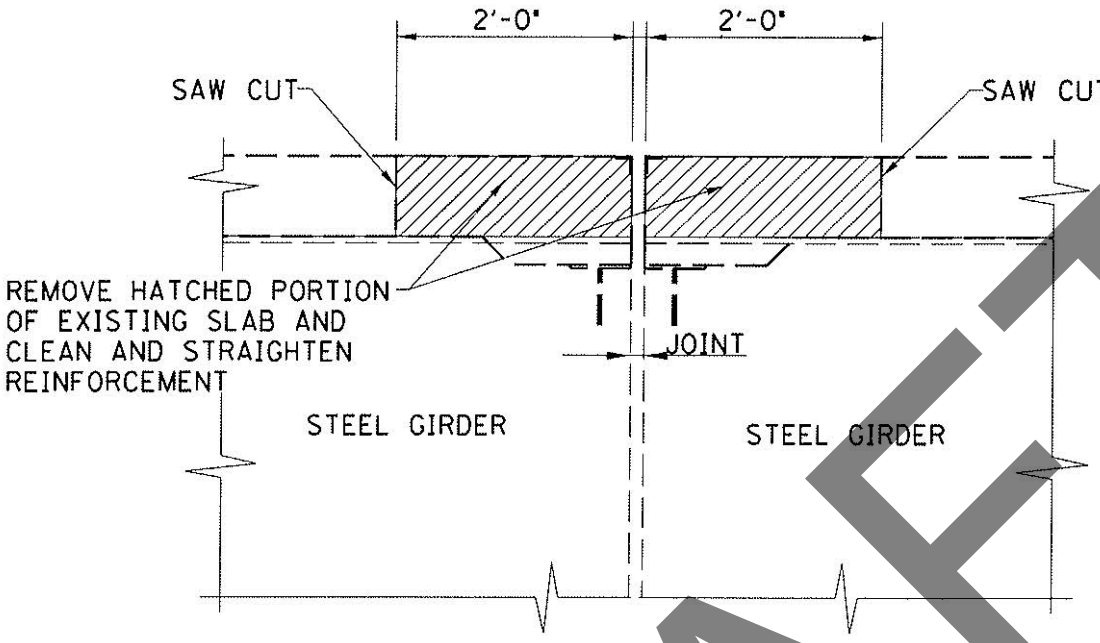
ALTERNATE NEOPRENE EXPANSION DAMS				
MODEL	SUPPLIER	A	B	C*
WABO STRIP SEAL PS-175	Watson Bowman Associates Inc.	2"	1¼"	2½
STEEL FLEX Type SSA2 With A2R XTRA Seal	D. S. Brown Co.	2"	1¼"	2½"

Note: Temperature Change Increment per 10°F = 5/16"

*Joint Opening At 60 °F

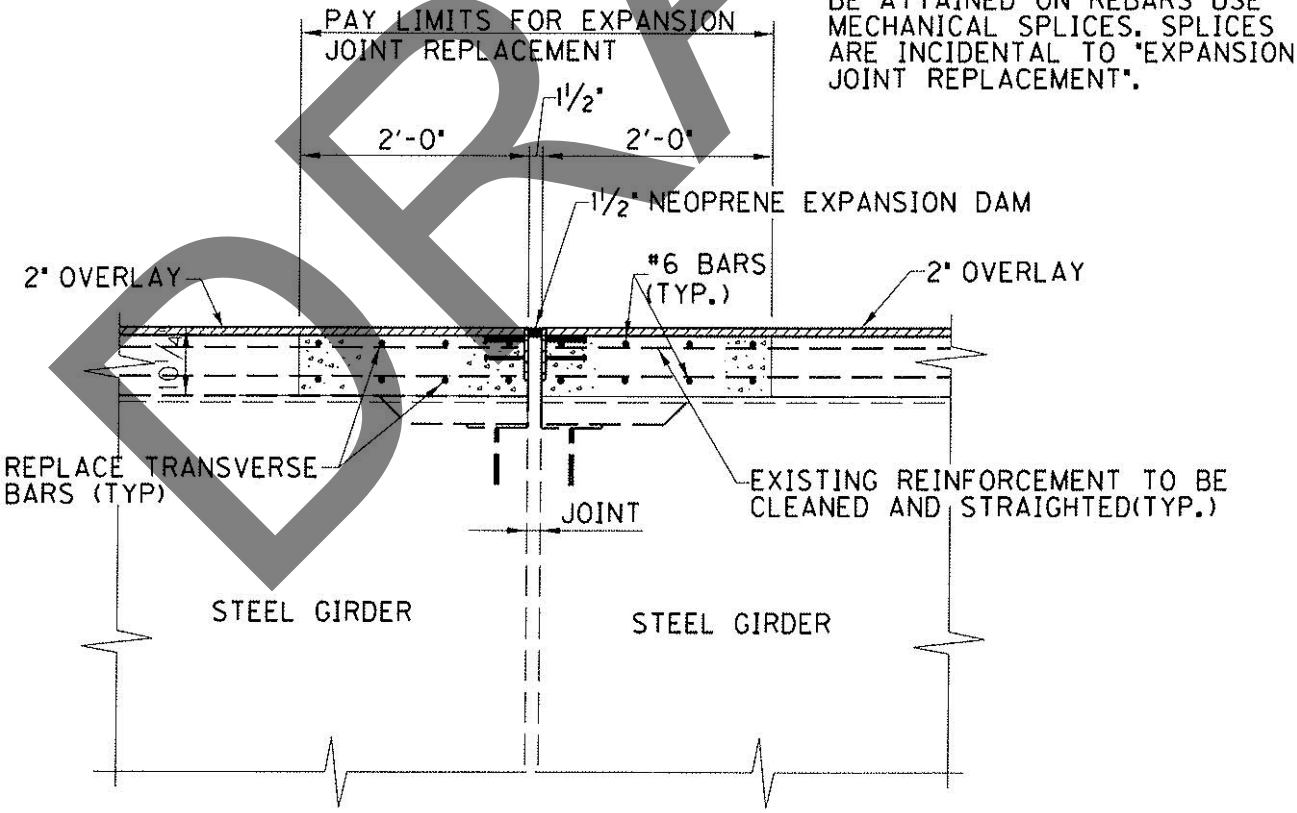
PROPOSED SECTION

REPLACE JOINTS IN SPAN 8



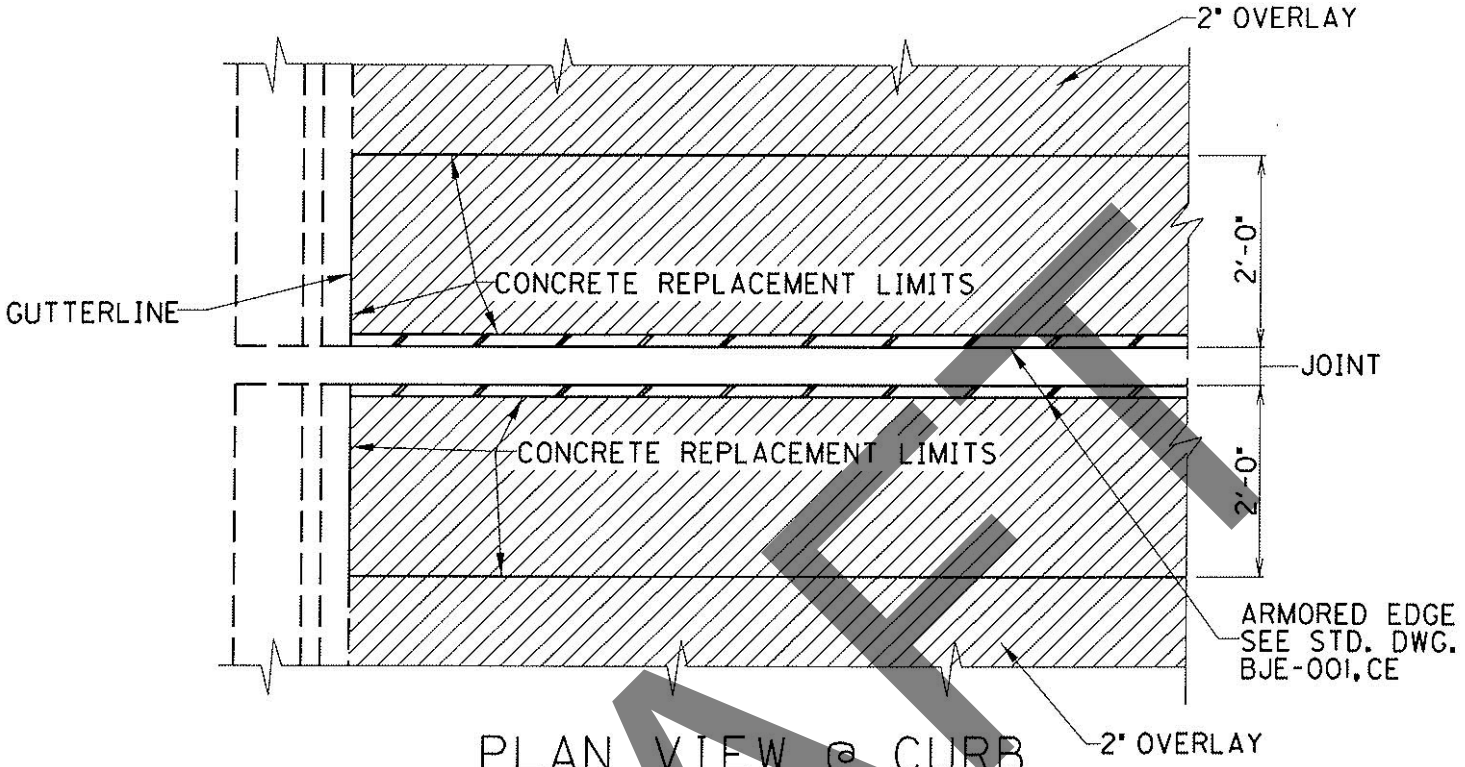
EXISTING SECTION

NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".



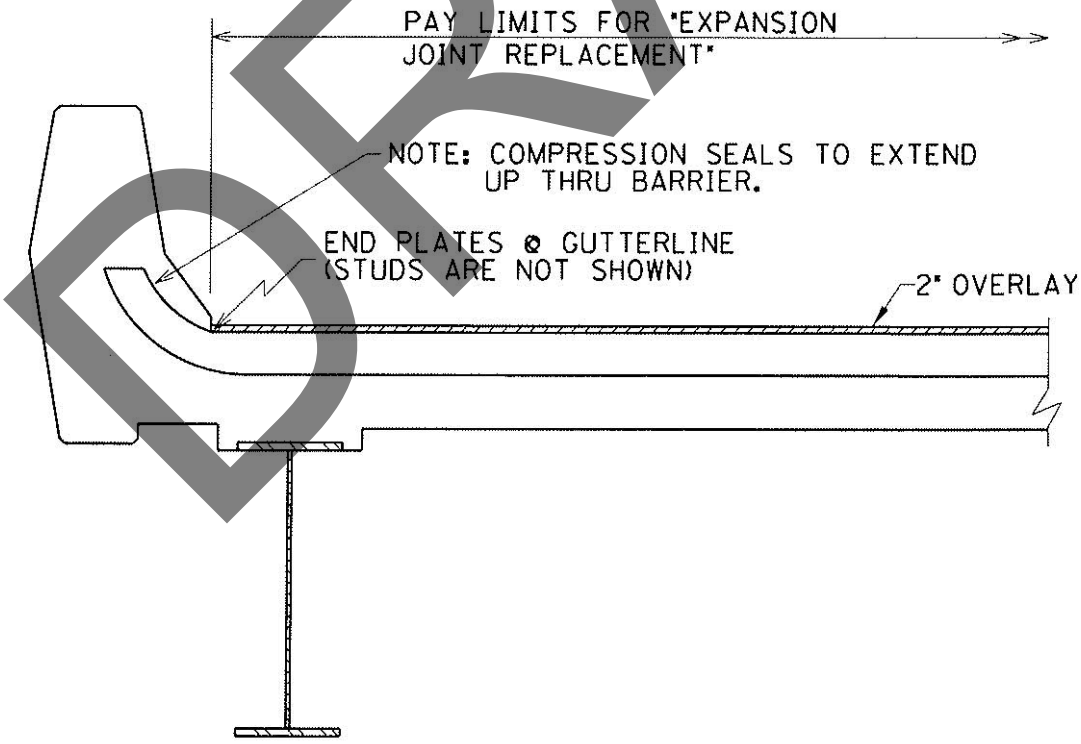
PROPOSED SECTION

REPLACE EXPANSION JOINT
RIVER SPAN CURB SECTION



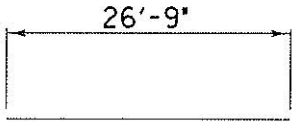
PLAN VIEW @ CURB

REPLACE EXPANSION JOINT



PROPOSED SECTION @ CURB

REINFORCEMENT



#6 STRAIGHT BAR
32 REQ'D PIER 6
32 REQ'D EACH JOINT IN SPAN 8

1286 LBS. PIER 6
1286 LBS. AT EACH OF 4 JOINTS IN SPAN 8

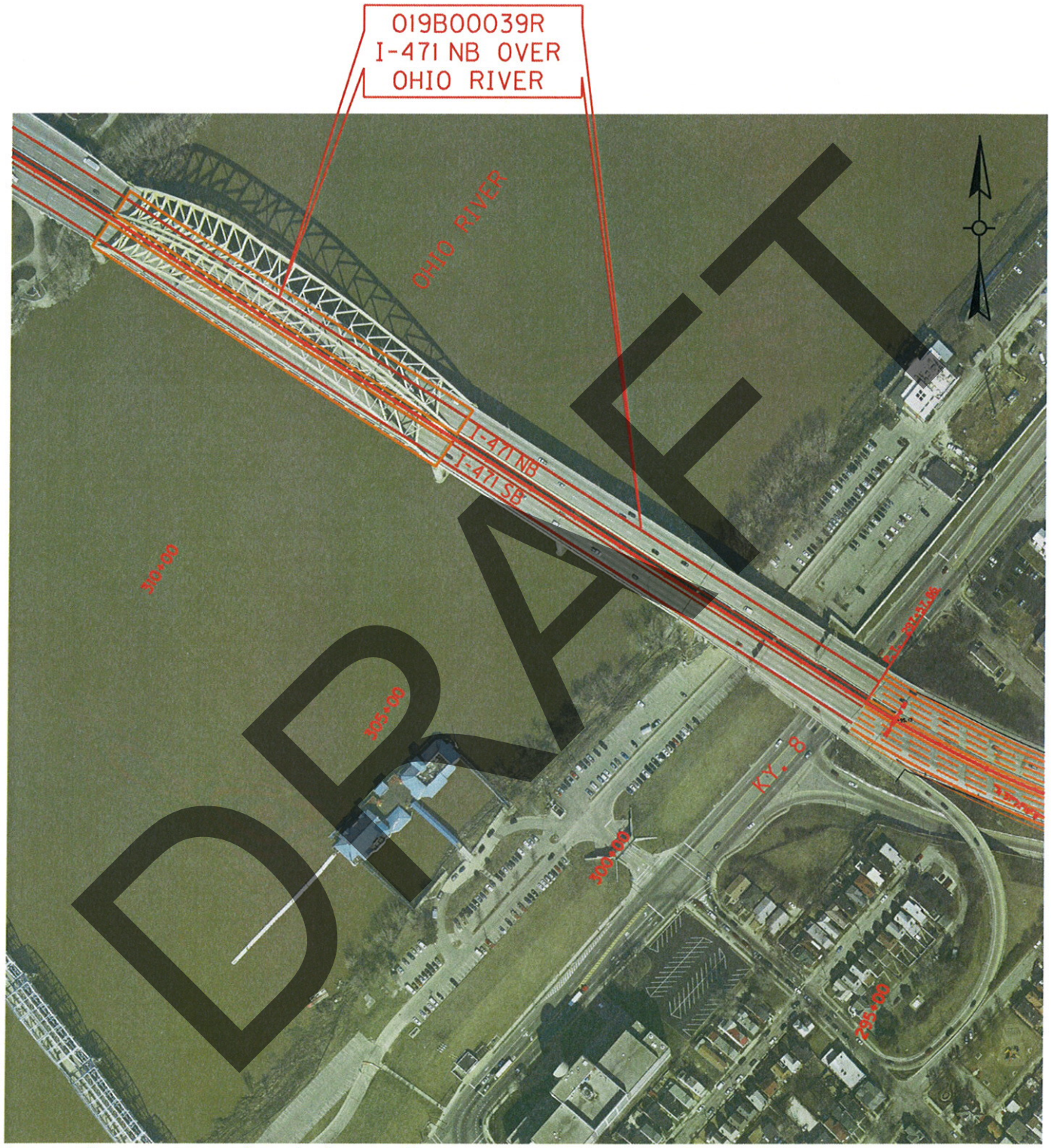
PIER REINFORCEMENT

300 LIN. FT. #4 BARS IN 20'-0" LENGTHS
200 LBS. PIER 6 & AT EACH OF 4 JOINTS IN SPAN 8

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 7,430 LBS.

CAMPBELL COUNTY



Approximate Location Information
Latitude: 39° 6' 1"
Longitude: 84° 29' 39"

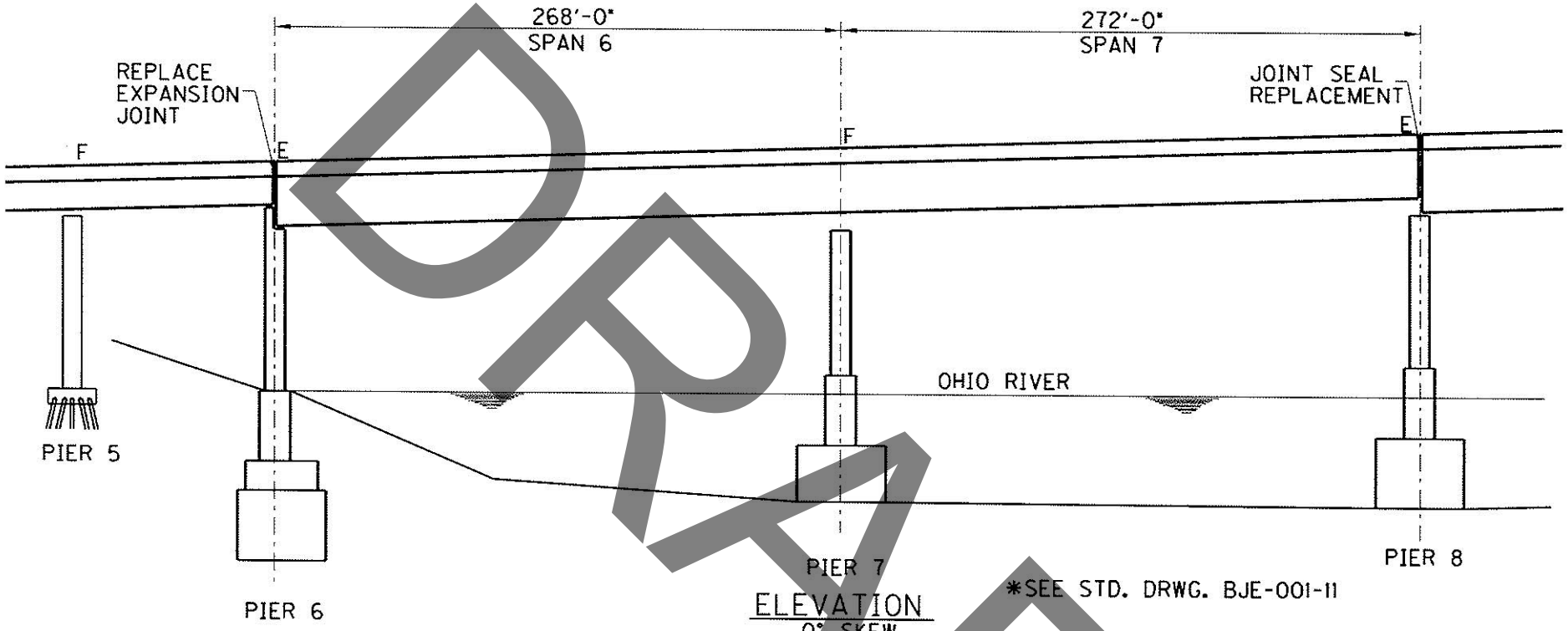
BRIDGE #14 (019B00039R) SUMMARY OF QUANTITIES

1. DISTRICT:	6				
2. COUNTY:	CAMPBELL				
3. ROUTE:	I-471				
4. PROJECT NUMBER:	FD52 019 0471 000-005				
5. ROAD NAME:	I-471				
6. DESCRIPTION:	I-471 NORTHBOUND OVER OHIO RIVER BRIDGE DECK RESTORATION AND WATERPROOFING				
8. LENGTH (FT.):	1300.0	**BRIDGE WIDTH (FT.):**	51.25	**SURFACE AREA (SQ. YD.):**	7403
SKEW (DEGREES):	0	**DECK THICKNESS (INCHES):**		9	

ESTIMATED QUANTITIES REQUIRED

ITEM CODE	DESCRIPTION	QUANTITY	UNIT
3294	EXPANSION JT REPLACEMENT 1 1/2 IN	204.0	LIN FT
8504	EPOXY SAND SLURRY	1300.0	SQ YD
8526	CONC CLASS M FULL DEPTH PATCH	41.0	CU YD
8534	CONCRETE OVERLAY-LATEX	411.0	CU YD
8549	BLAST CLEANING	8483	SQ YD
8550	HYDRODEMOLITION	7403	SQ YD
23386EC	JOINT SEAL REPLACEMENT	51.0	LIN FT
23622EC	CLEAN DEBRIS FROM LOWER CHORD	1	LS
24094ED	PARTIAL DEPTH PATCHING	82.0	CU YD
24456EC	EXPANSION JT REPLACEMENT 5 1/2 IN	51.0	LIN FT

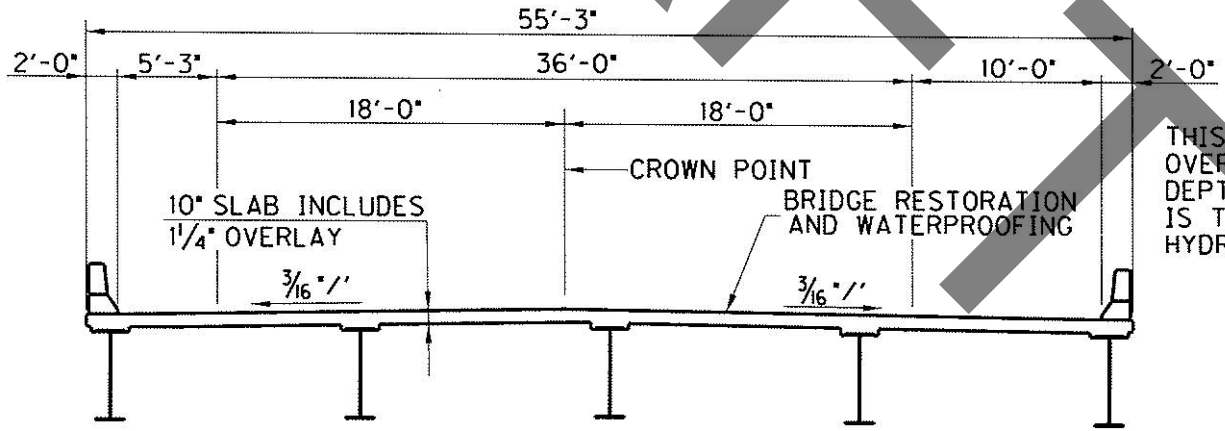
I-471 NORTHBOUND OVER OHIO RIVER
BRIDGE MAINTENANCE NUMBER 019B00039R



ELEVATION
0° SKEW
NOT TO SCALE

*SEE STD. DRWG. BJE-001-11

NOTE:
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.

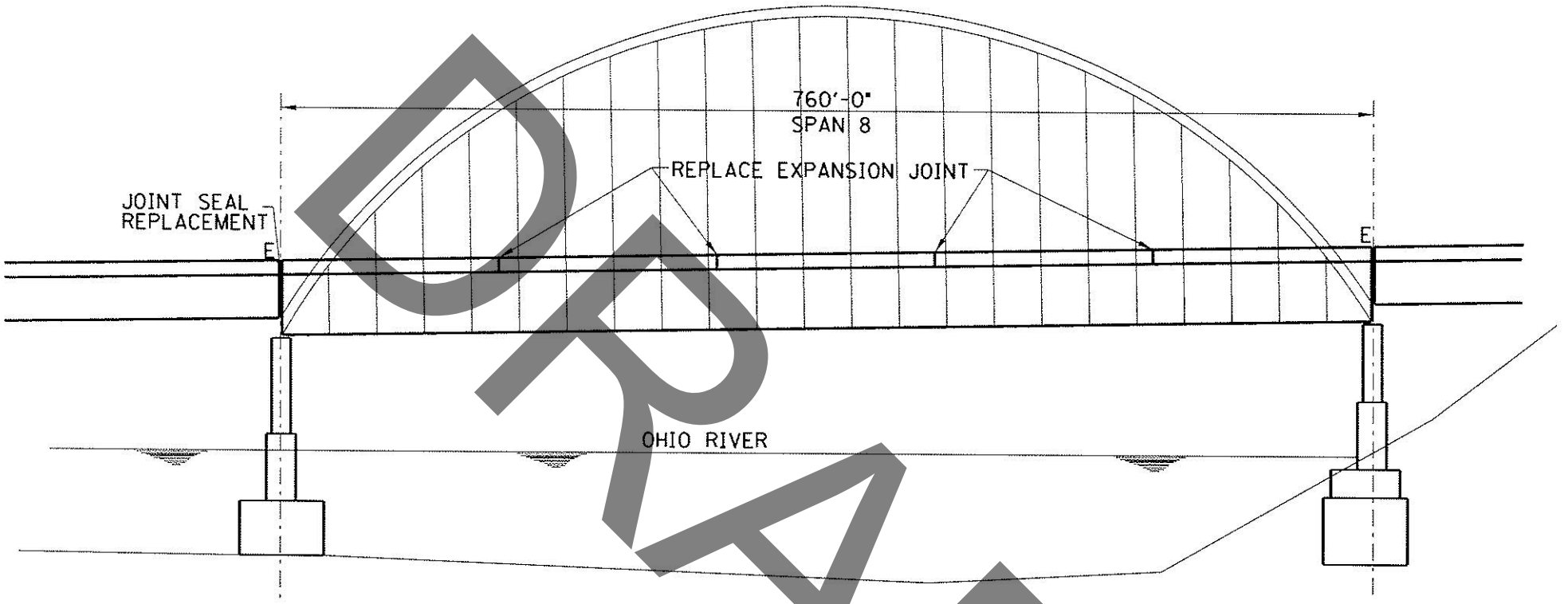


THIS DECK HAS AN EXISTING OVERLAY WITH AN AVERAGE DEPTH OF 1.5 INCHES WHICH IS TO BE REMOVED PER THE HYDRODEMOLITION SPECIAL NOTE.

TYPICAL SECTION

I-471 NORTHBOUND OVER OHIO RIVER
BRIDGE MAINTENANCE NUMBER 019B00039R

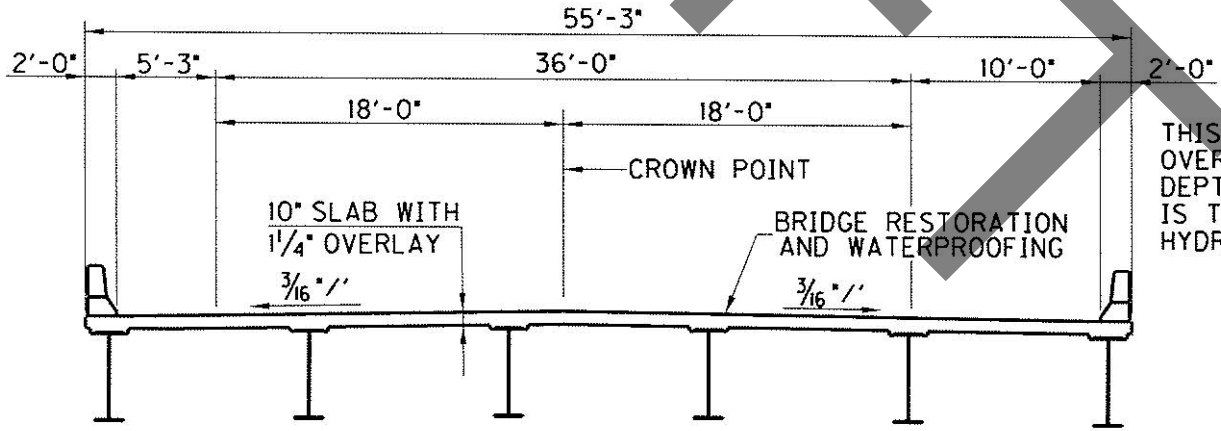
B14



ELEVATION
0° SKEW
NOT TO SCALE

*SEE STD. DRWG. BJE-001-11

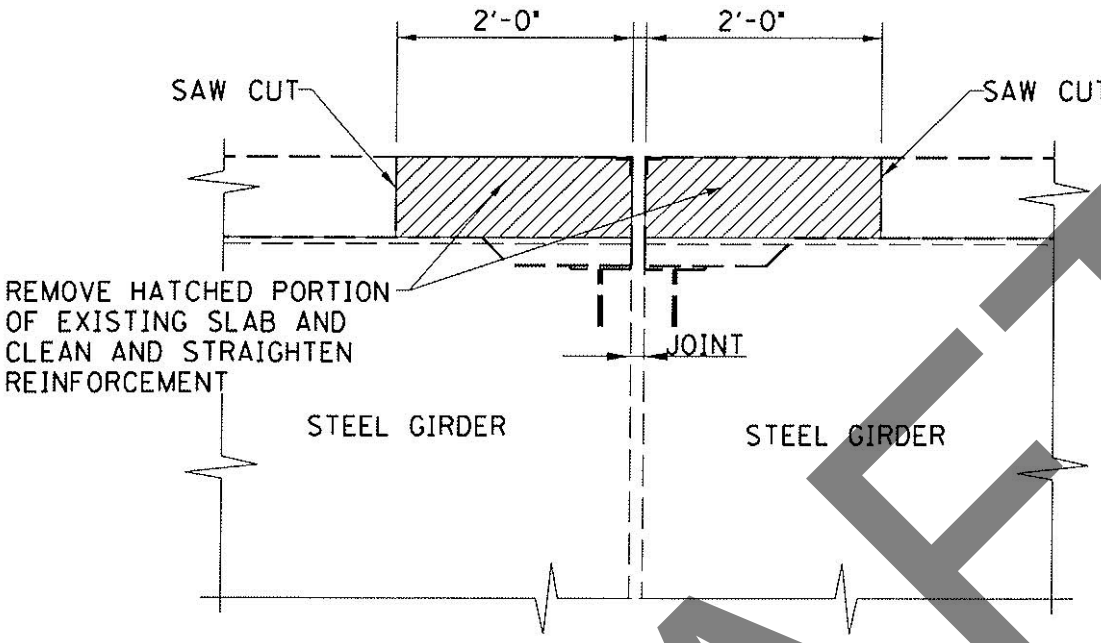
NOTE:
THE CONTRACTOR SHALL REPAIR ANY DAMAGES TO EXISTING PAINT.



THIS DECK HAS AN EXISTING OVERLAY WITH AN AVERAGE DEPTH OF 1.5 INCHES WHICH IS TO BE REMOVED PER THE HYDRODEMOLITION SPECIAL NOTE.

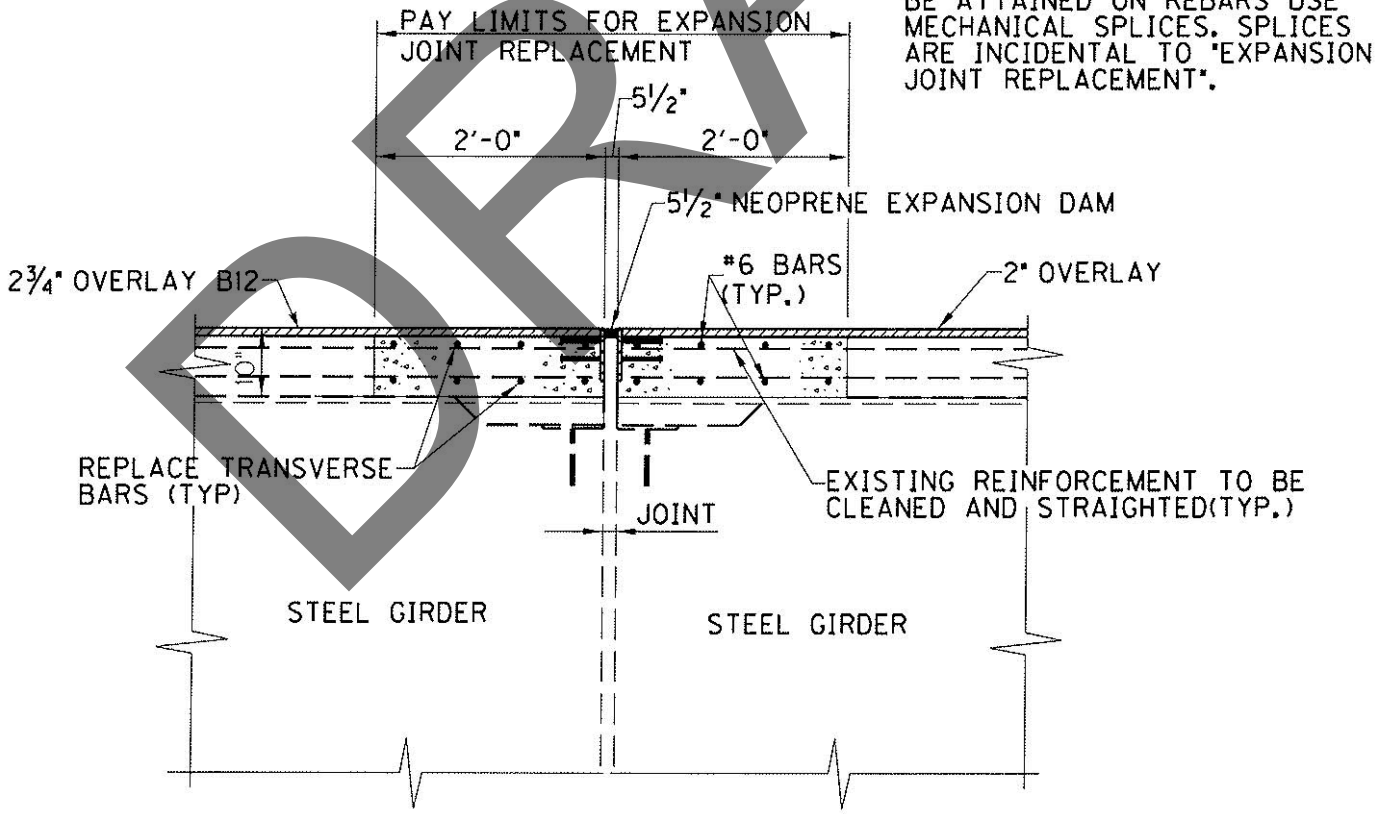
TYPICAL SECTION

REPLACE JOINT @ PIER 6



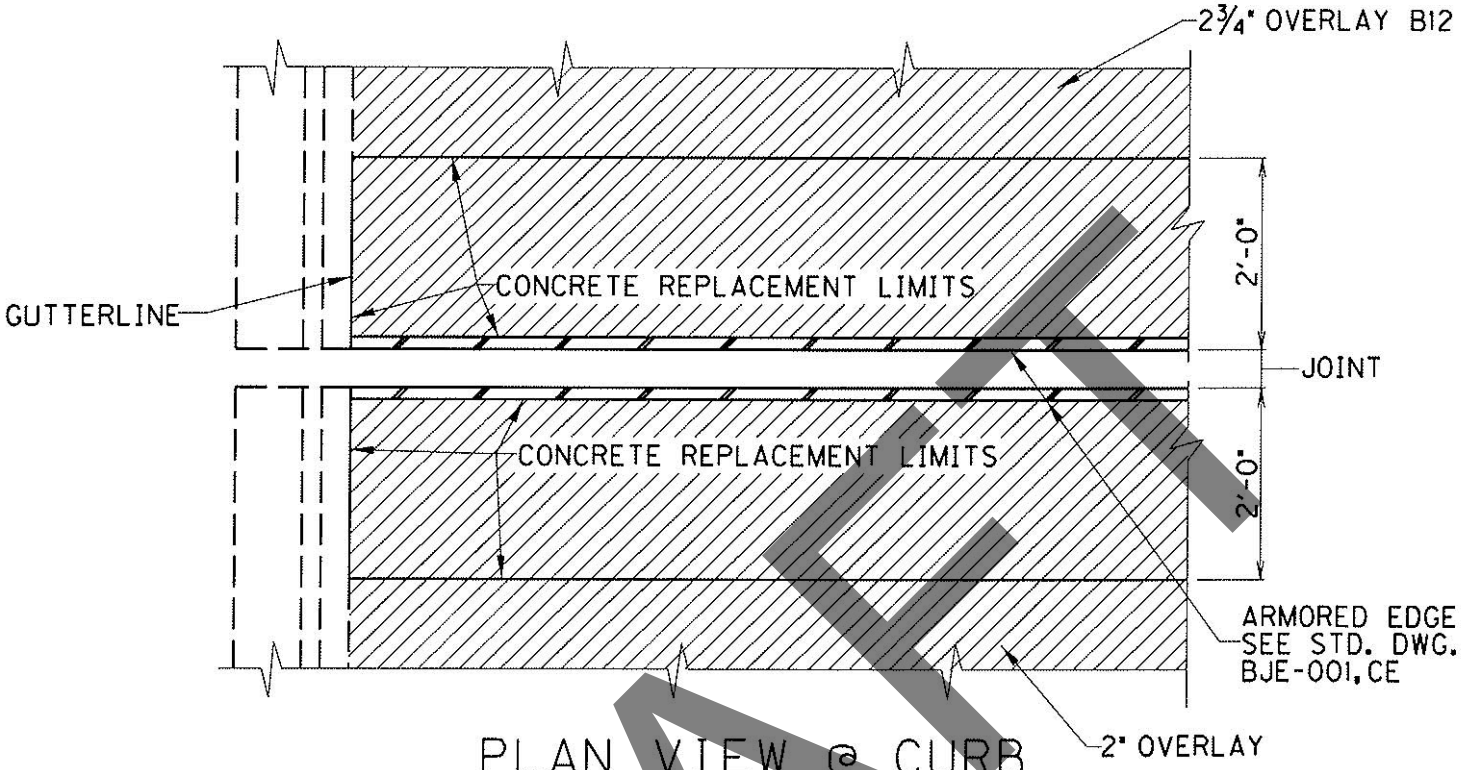
EXISTING SECTION

NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".



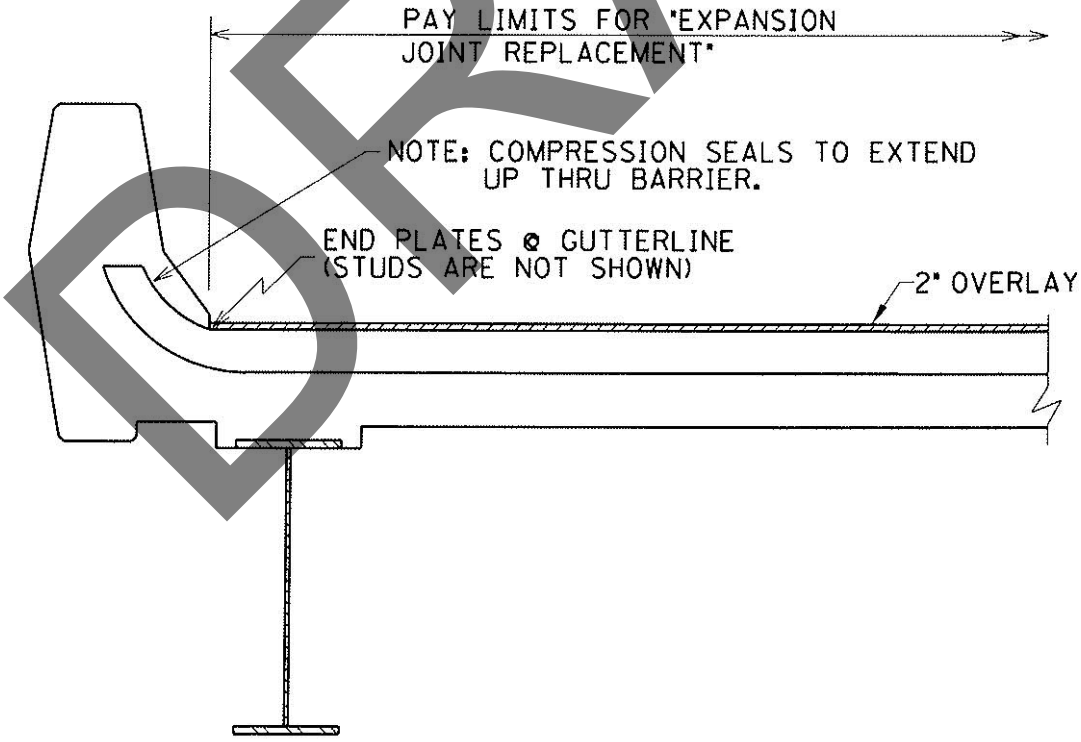
PROPOSED SECTION

REPLACE EXPANSION JOINT
PIER 6 CURB SECTION



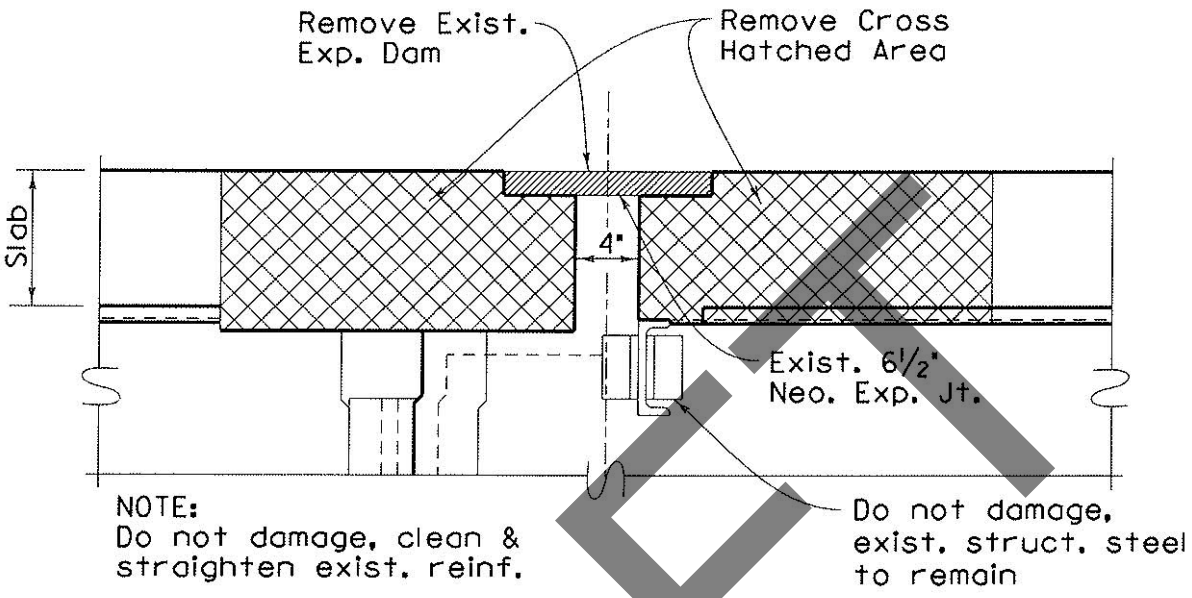
PLAN VIEW @ CURB

REPLACE EXPANSION JOINT

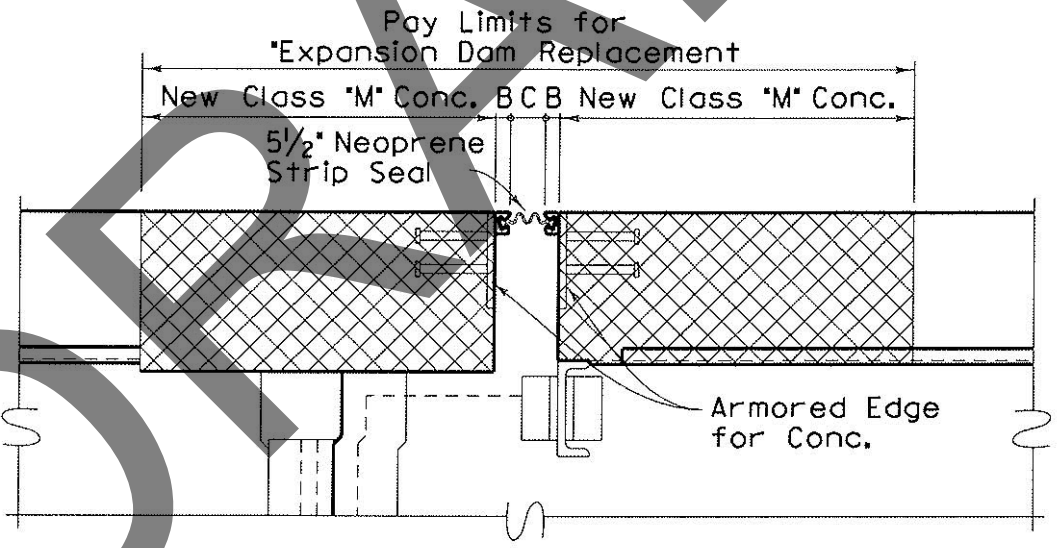


PROPOSED SECTION @ CURB

5½" EXPANSION DAM DETAIL



EXISTING SECTION



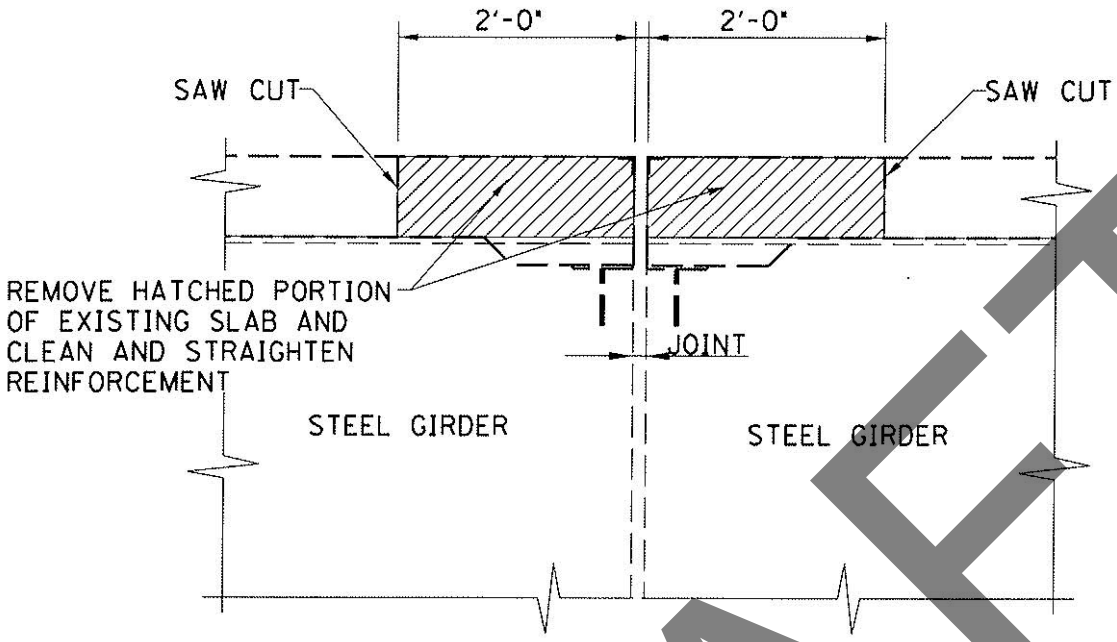
ALTERNATE NEOPRENE EXPANSION DAMS				
MODEL	SUPPLIER	A	B	C*
WABO STRIP SEAL PS-175	Watson Bowman Associates Inc.	2"	1¼"	2½
STEEL FLEX Type SSA2 With A2R XTRA Seal	D. S. Brown Co.	2"	1¼"	2½"

Note: Temperature Change Increment per 10°F = 5/16"

*Joint Opening At 60 °F

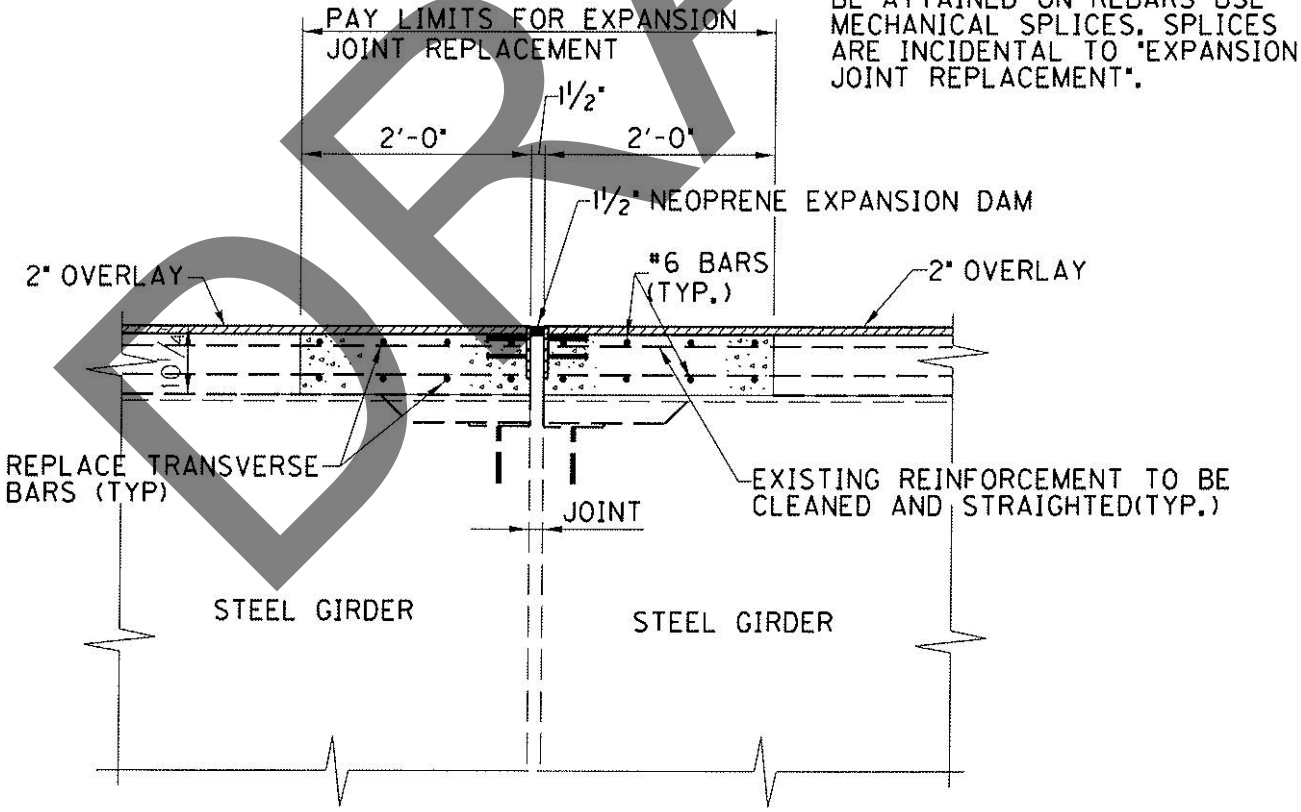
PROPOSED SECTION

REPLACE JOINTS IN SPAN 8



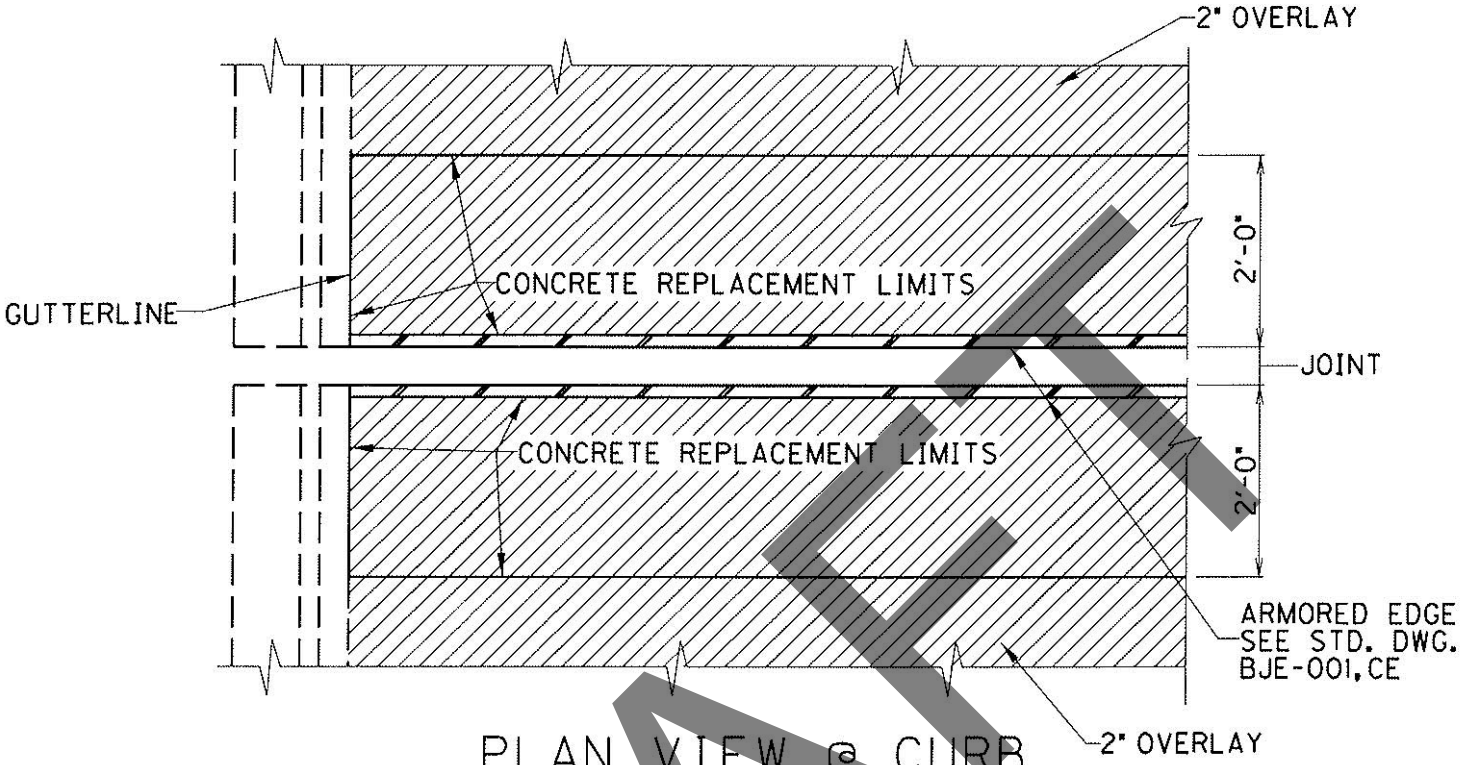
EXISTING SECTION

NOTE:
WHERE A NORMAL LAP CANNOT BE ATTAINED ON REBARS USE MECHANICAL SPLICES. SPLICES ARE INCIDENTAL TO "EXPANSION JOINT REPLACEMENT".



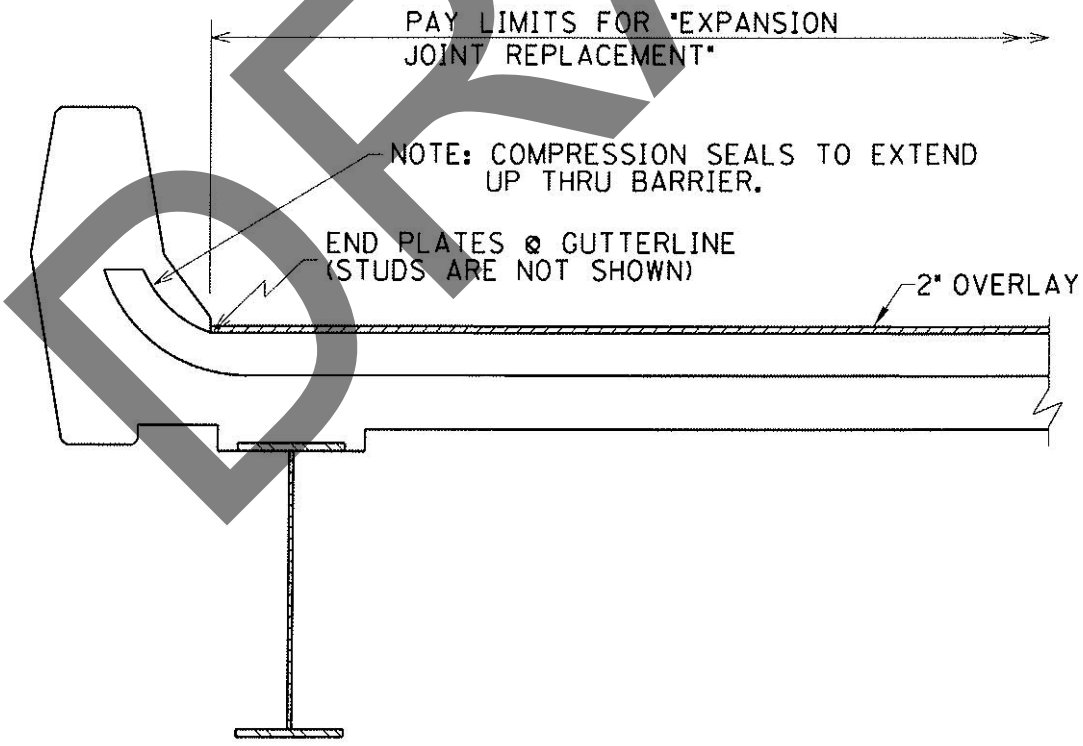
PROPOSED SECTION

REPLACE EXPANSION JOINT
RIVER SPAN CURB SECTION



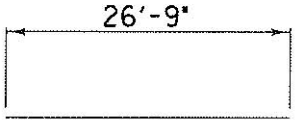
PLAN VIEW @ CURB

REPLACE EXPANSION JOINT



PROPOSED SECTION @ CURB

REINFORCEMENT



#6 STRAIGHT BAR
32 REQ'D PIER 6
32 REQ'D EACH JOINT IN SPAN 8

1286 LBS. PIER 6
1286 LBS. AT EACH OF 4 JOINTS IN SPAN 8

PIER REINFORCEMENT

300 LIN. FT. #4 BARS IN 20'-0" LENGTHS
200 LBS. PIER 6 & AT EACH OF 4 JOINTS IN SPAN 8

MISCELLANEOUS REINFORCEMENT

TOTAL REINFORCEMENT 7,430 LBS.

CAMPBELL COUNTY

019B00044R
I-275 EASTBOUND OVER
I-471 SOUTHBOUND

Approximate Location Information
Latitude: 39°02'45"
Longitude: 84°27'39"

BRIDGE #15 (019B00044R) SUMMARY OF QUANTITIES

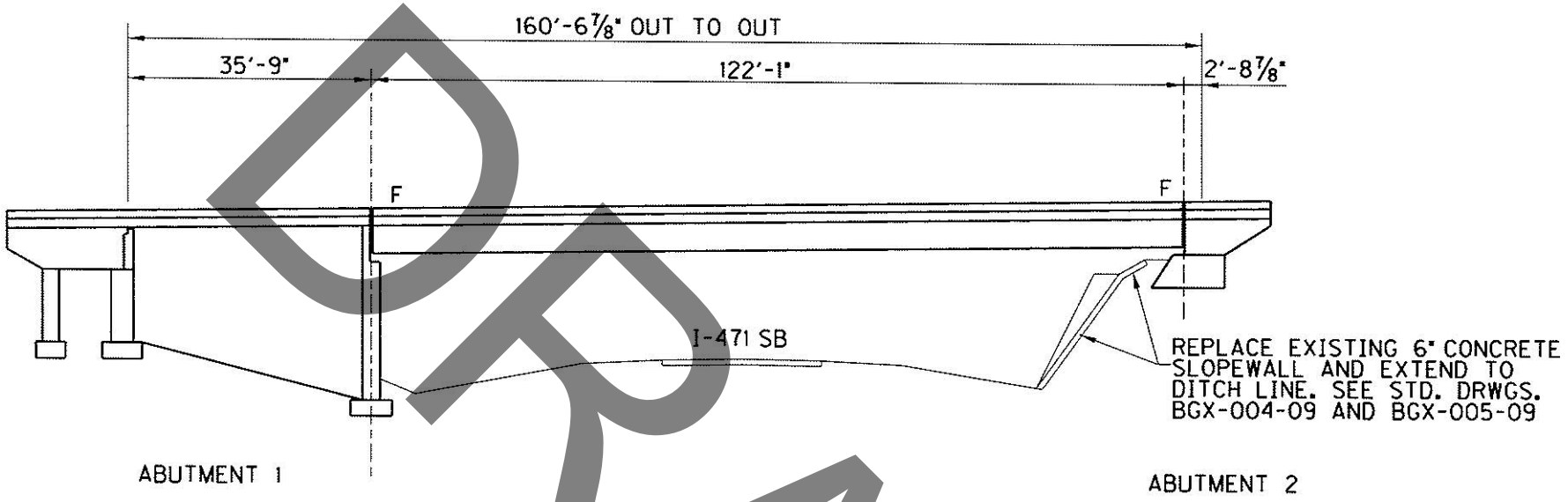
1. DISTRICT: 6
2. COUNTY: CAMPBELL
3. ROUTE: I-275
52 019 0471 000-005 FD52 019 0471 000-005
5. ROAD NAME: I-275
6. DESCRIPTION: I-275 EASTBOUND OVER I-471 SOUTHBOUND
REPLACE EXISTING SLOPEWALL AND EXTEND TO DITCH LINE

8. LENGTH (FT.):	160.57	**BRIDGE WIDTH (FT.):**	56.0	**SURFACE AREA (SQ. YD.):**	999
SKEW (DEGREES):	24.0	**DECK THICKNESS (INCHES):**		8.75	

ESTIMATED QUANTITIES REQUIRED

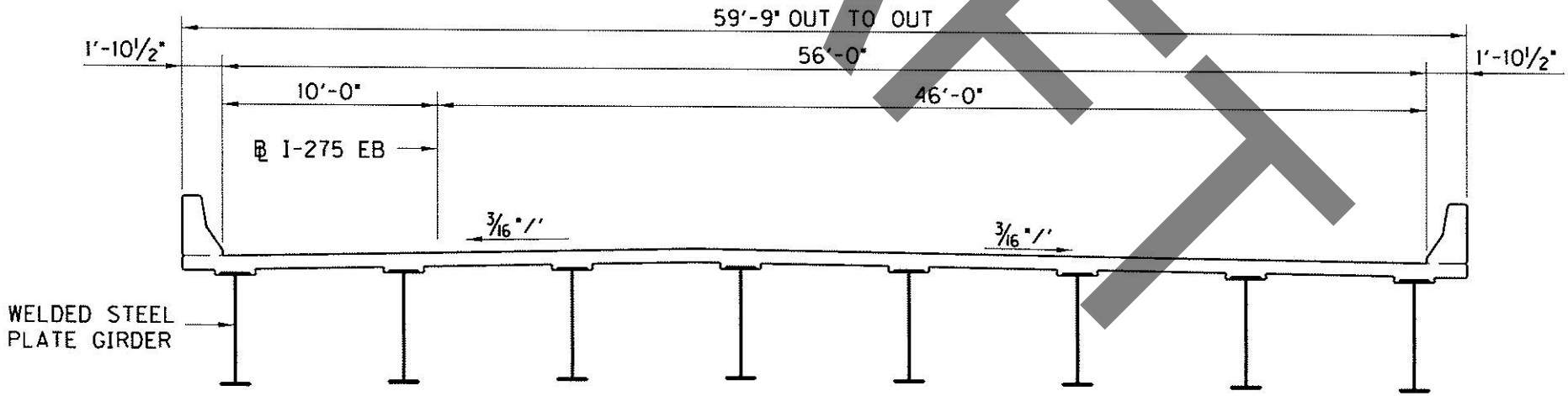
ITEM CODE	DESCRIPTION	QUANTITY	UNIT
8016	REINF CONC SLOPE WALL-6 IN	283.0	SQ YD

I-275 EASTBOUND OVER I-471 SOUTHBOUND
BRIDGE MAINTENANCE NUMBER 019B00044R



ELEVATION

24°01'00"SKEW LT.
NOT TO SCALE



TYPICAL SECTION