COMMONWEALTH OF KENTUCKY
TRANSPORTATION CABINET
www.transportation.ky.gov/

Andy Beshear
GOVERNOR

Jim Gray
SECRETARY

CALL NO. 103
CONTRACT ID NO. 201007
ADDENDUM # 2

Subject: **JEFFERSON COUNTY, NHPP IM 2652 (026)**
Letting September 25, 2020

(1)Revised – Cover Page – Page 1 of 189
(2)Revised – Page 4 of 189
(3)Revised – Stationing Information Sheet – Page 31 of 189
(4)Revised – General Summary Sheet – Page 34 of 189
(5)Revised – Special Notes for Delineators – Page 53 of 189
(6)Revised – Special Notes for Project Phasing and Construction Procedures – Page 55 of 189
(7)Revised - Special Note for Fixed Completion Date and Liquidated Damages – Page 84 of 189
(8)Revised – Proposal Bid Items – Pages 187-189 of 189
(9)Added - Special Notes for Bridge Rehabilitation – Pages 1-20 of 189

Proposal revisions are available at http://transportation.ky.gov/Construction-Procurement/.

If you have any questions, please contact us at 502-564-3500.

Sincerely,

Rachel Mills

Rachel Mills, P.E.
Director
Division of Construction Procurement

RM:mr
Enclosures

CALL NO. 103

CONTRACT ID. 201007

JEFFERSON COUNTY

FED/STATE PROJECT NUMBER NHPP IM 2652 (026)

DESCRIPTION I-265

WORK TYPE JPC PAVEMENT REPAIRS PRIMARY

COMPLETION DATE 8/31/2021

LETTING DATE: September 25,2020

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 am EASTERN DAYLIGHT TIME September 25,2020. Bids will be publicly announced at 10:00 am EASTERN DAYLIGHT TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

DBE CERTIFICATION REQUIRED - 20%

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

ADMINISTRATIVE DISTRICT - 05

CONTRACT ID - 201007

NHPP IM 2652 (026)

COUNTY - JEFFERSON

PCN - DE05602652007
NHPP IM 2652 (026)

I-265 (MP 18.8) ADDRESS PAVEMENT CONDITION OF JPC PAVEMENT ON I-265 BOTH DIRECTIONS FROM MP 18.8 TO MP 23.364 (MP 23.342), A DISTANCE OF 04.54 MILES.JPC PAVEMENT REPAIRS SYP NO. 05-20020.00.

GEOGRAPHIC COORDINATES LATITUDE 38:10:13.00 LONGITUDE 85:31:06.00

COMPLETION DATE(S):

COMPLETED BY 08/31/2021 APPLIES TO ENTIRE CONTRACT

JEFFERSON COUNTY
NHPP IM 2652 (026)

COUNTY OF	ITEM NO.
JEFFERSON	5-20020.00

I-265
STATIONING INFORMATION SHEETS
PLAN SHEET 13 OF 13

I-265 PAVEMENT REHABILITATION
JEFFERSON COUNTY MILEPOST M.P. 18.8- M.P. 23.342
ITEM NUMBER: 5-20020.00
GENERAL SUMMARY

ITEM NUMBER	ITEM	NOTE	QUANTITY	UNIT
0001	DGA BASE	(1)	222	TON
0078	CRUSHED AGGREGATE SIZE NO. 2	(1)	100	TON
1000	PERFORATED PIPE - 4 IN	(1)	100	LF
1010	NON-PERFORATED PIPE - 4 IN	(1)	100	LF
1020	PERF PIPE HEADWALL TY-1 4 INCH	(1)	10	EACH
1028	PERF PIPE HEADWALL TY-3 4 INCH	(1)	10	EACH
1032	PERF PIPE HEADWALL TY-4 4 INCH	(1)	10	EACH
1820	LIP CURB AND GUTTER	(2)	16	LF
1904	REMOVE CURB	(2)	16	LF
2704	SILT TRAP TYPE B		2	EACH
2707	CLEAN SILT TRAP TYPE B		2	EACH
2058	REMOVE PCC PAVEMENT	(3)	8,581	SQ YD
2069	JPC PAVEMENT - 10 IN	(3)	8,581	SQ YD
2115	SAW-CLEAN-RESEAL TVERSE JOINT		171,051	LF
2116	SAW-CLEAN-RESEAL LONGIT JOINT		181,016	LF
2237	DITCHING	(4)	1,542	LF
2562	TEMPORARY SIGNS	(6)	750	SQ FT
2568	MOBILIZATION		1	LS
2569	DEMOBILIZATION		1	LS
2602	FABRIC-GEOTEXTILE CLASS 1	(1)	500	SQYD
2604	FABRIC-GEOTEXTILE CLASS 1A	(1)	500	SQYD
2650	MAINTAIN AND CONTROL TRAFFIC		1	LS
2671	PORTABLE CHANGEABLE MESSAGE SIGN	(6)	4	EACH
2714	SHOULDERING	(7)	9,334	LF
2775	ARROW PANEL	(6)	2	EACH
5950	EROSION CONTROL BLANKET		5,116	SQYD
5963	INITIAL FERTILIZER		0.16	TON
5964	20-10-10 FERTILIZER		0.27	TON
5985	SEEDING AND PROTECTION		4,149	SQYD
6412	STEEL POST MILE MARKERS		10	EACH
6511	PAVE STRIPING-TEMP PAINT-6 IN		261,534	LF
6542	PAVE STRIPING-THERMO-6 IN W		1,180	LF
6543	PAVE STRIPING- THERMO-6 IN Y		943	LF
6556	PAVE STRIPING-DUR TY 1-6 IN W		72,515	LF
6557	PAVE STRIPING-DUR TY 1-6 IN Y		58,251	LF
6561	PAVE STRIPING-DUR TY 1-12 IN Y		9,010	LF
6592	PAVEMENT MARKER TYPE V-B W/R	(5)	100	EACH
10020NS	FUEL ADJUSTMENT		2,493	DOLL
20411ED	LAW ENFORCEMENT OFFICER		600	HOURS
21173EC	SAW-CLEAN-RESEAL RANDOM CRACKS		4,043	LF
21554EN	EXCAVATION	(1)	100	CUYD
23252ES717	PAVE MARK TY 1 TAPE STOP BAR-12 IN		135	LF
23270ES717	PAVE MARK TY 1 TAPE-CURV ARROW		15	EACH
24997EC	PARTIAL DEPTH PATCHING - POLYMER MOD		88	CU FT

(1)	Includes quantity to be used as directed by the Engineer
(2)	Replace damaged Lip Curb and Gutter located at Ramp 3 median island approximatly 15ft. Left of sta. 312+80.
(3)	Additional 10% was added to the total for continued pavement deterioration prior to construction.
(4)	Ditching is needed Right of Ramp 3 of Taylorsville Rd / I-265 Interchange from 120+00 to 133+00 for approximatly 1542ft. and additionaly Right of I-265 SB 1843+00 to 1848+00 for 500ft. for ditching.
(5)	100 Type V markers have been quantified to be used as directed by the Engineer
(6)	Includes initial placement. Any relocation required will not be paid for directly, but will be considered incidental to maintain and control traffic
(7)	Quantity includes 7,656 ft. for mainline I-265, 1542 ft. for Ramp 3 of Taylorsville Rd / I-265, and 136 ft. Ramp 1 of Biltown Rd / I-265
NOTE:	Quantities from all summaries have been carried over and included in this General Summary

4. Any delineator posts or roadway signs that are damaged during construction are to be replaced at the contractor's expense. Signs that appear to have no visible damage but that are leaning are to be reset as directed by the Engineer. Payment for this work will be considered incidental to the contract.

5. All “green” milepost signs shall be replaced with this project. Payment for these signs will be made by “each” for the bid item “Steel Post Mile Markers”.

6. The proposed striping for this project shall be as directed and/or approved by the Engineer. The existing striping layout may be modified in several locations according to the current MUTCD manual. The contractor is to provide a diagram of existing striping layout.

7. Several areas throughout the project have slopes that are beginning to fail or slip due to poor drainage. These areas shall be ditched as directed by the Engineer. The degrading slopes shall be regraded and dressed as directed by the Engineer. Payment for this work will be measured by linear foot of “Ditching”, and square yard of “Erosion Control Blanket”.

8. Delineators shall meet the requirements of Section 830 and 838 of the Standard Specifications. Delineators shall be placed in accordance with Section 3F of the MUTCD.

9. Any light poles damaged during construction are to be replaced at the Contractor’s expense.

10. The existing cable median barrier is not to be disturbed with this project. In accordance with Section 107.12 of the Standard Specifications for Road and Bridge Construction, 2019 Edition, the Contractor will be responsible for the cost to repair any cable barrier that is damaged due to the operations of the Contractor. The Department will make any necessary repairs at the Contractor’s expense.

11. Shouldering shall be provided. The Shouldering operation shall be performed as outlined in the Standard Specifications, and shall be paid for by unit bid item Shouldering.

12. Type III Barricades must be used at Ramp closures to prevent traffic from entering the work zone. Pavement is considered incidental to “Maintenance of Traffic.”

13. Damage to adjacent slabs during full depth or partial depth patching will be at contractors expense.

14. It is intended to not disturb the underlying soil; however, a quantity of DGA, Crushed Aggregate Size No. 2, Geotextile Fabric Class 1, Geotextile Fabric Type Class 1A, 4" Perforated pipe and 4" Non- perforated pipe (to drain the aggregate), and Perforated Pipe Headwalls is included for undercutting very poor, soft, wet soils - to be used sparingly and only as directed by the Engineer. Undercutting will not be measured as a bid item and will be considered incidental to the bid item, “JPC Pavement – 10 in”.

PROJECT PHASING & CONSTRUCTION PROCEDURES

No lane closures will be allowed during the following days:

November 26-29, 2020	Thanksgiving Weekend
December 24-27, 2020	Christmas Weekend
January 1-3, 2021	New Year's Day Weekend
January 16-18, 2021	Martin Luther King Jr. Day Weekend
February 13-15, 2021	President's Day Weekend
April 3-5, 2021	Easter Weekend
May 28-31, 2021	Memorial Day Weekend
July 2-5,2021	Independence Day Weekend
August 5-8, 2021	Street Rod Nationals
August 19-29,2021	Kentucky State Fair
5:00 a.m. to 8:00 p.m.	**Monday - Friday**

In the event construction extends past the specified contract completion date, additional dates restricting lane closures may apply; the Department will determine these dates.

Traffic may be reduced to one lane in each direction during the following times:

Weeknights from 8 PM until 5 AM the following morning
Weekends from 8 PM Friday night until 5 AM the following Monday morning

The normal two-lane traffic configuration must be maintained at all other times unless otherwise directed by the Engineer.

Use only one lane closure in each direction of travel at the same time during the hours specified. Lane closures may only be in the active work area. The minimum allowable clear lane width will be 11 feet; however, make provisions for the passage of wide loads up to 16 feet in width, with approval of the Engineer. Use a lane closure all times work is being performed in the lane or adjacent shoulder. Remove existing striping, by water blasting, throughout the project as directed and/or approved by the Engineer. Paint temporary edge lines through the lane closure as directed and/or approved by the Engineer. Payment for water blasting existing striping will be considered incidental to the bid item "Maintain and Control Traffic".

Approximate full depth pavement repair locations are listed in the proposal. The Engineer will determine the exact location at the time of construction. Once removal of pavement at a particular repair location has begun, work continuously within the parameters outlined above to complete the work and eliminate the "hole". Place Type III Barricades immediately in front of each pavement removal area until the new JPC Pavement achieves 3000 PSI compressive strength. Payment for Type III Barricades will be considered incidental to the bid item "Maintain and Control Traffic".

The Contractor will only be allowed to have traffic utilizing a portion of the shoulders as a

Special Note for Fixed Completion Date and Liquidated Damages
I-265
Jefferson County
Item No. 5-20020.00

Contrary to Section 108.09, Liquidated Damages of $5,000 per calendar day will be assessed for each day or fraction thereof work remains uncompleted beyond the Specified Project Completion Date. This project has a Fixed Project Completion Date of **August 31, 2021**.

In addition to the Liquidated Damages specified above, Liquidated Damages in the following amounts will be charged when a lane closure remains in place during the prohibited period outlined in the Traffic Control Plan:

Mainline & Ramps:	$25,000 for the first hour or fraction thereof $50,000 for any additional hour or fraction thereof

These hourly disincentives will still be in effect after the Fixed Completion Date and will be charged in addition to the $5,000 per calender day if warranted. The Contractor is expected to make every effort to complete the work in order to open the mainline lane closure within a specified timeframe.

Contrary to Section 108.09 of the Standard Specifications, **the disincentive fee will be charged during those periods when seasonal limitations of the Contract prohibit the Contractor from working on a controlling item or operation. This includes the months from December through March.**

All liquidated damages will be applied cumulatively.

All other applicable portions of Section 108 apply.

PROPOSAL BID ITEMS

Report Date 9/22/20

Section: 0001 - PAVING

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0010	00001		DGA BASE	222.00	TON		$	
0020	01820		LIP CURB AND GUTTER	16.00	LF		$	
0030	01904		REMOVE CURB	16.00	LF		$	
0040	02058		REMOVE PCC PAVEMENT	8,581.00	SQYD		$	
0050	02069		JPC PAVEMENT-10 IN	8,581.00	SQYD		$	
0060	02115		SAW-CLEAN-RESEAL TVERSE JOINT	171,051.00	LF		$	
0070	02116		SAW-CLEAN-RESEAL LONGIT JOINT	181,016.00	LF		$	
0080	21173EC		SAW-CLEAN-RESEAL RANDOM CRACKS	4,043.00	LF		$	

Section: 0002 - ROADWAY

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0090	00078		CRUSHED AGGREGATE SIZE NO 2	100.00	TON		$	
0092	01020		PERF PIPE HEADWALL TY 1-4 IN (ADDED: 9-22-20)	10.00	EACH		$	
0094	01028		PERF PIPE HEADWALL TY 3-4 IN (ADDED: 9-22-20)	10.00	EACH		$	
0096	01032		PERF PIPE HEADWALL TY 4-4 IN (ADDED: 9-22-20)	10.00	EACH		$	
0110	02237		DITCHING	1,542.00	LF		$	
0120	02562		TEMPORARY SIGNS	750.00	SQFT		$	
0125	02602		FABRIC-GEOTEXTILE CLASS 1 (ADDED: 9-22-20)	500.00	SQYD		$	
0126	02604		FABRIC-GEOTEXTILE CLASS 1A (ADDED: 9-22-20)	500.00	SQYD		$	
0130	02650		MAINTAIN & CONTROL TRAFFIC	1.00	LS		$	
0140	02671		PORTABLE CHANGEABLE MESSAGE SIGN	4.00	EACH		$	
0150	02704		SILT TRAP TYPE B	2.00	EACH		$	
0160	02707		CLEAN SILT TRAP TYPE B	2.00	EACH		$	
0170	02714		SHOULDERING	9,334.00	LF		$	
0180	02775		ARROW PANEL	2.00	EACH		$	
0190	05950		EROSION CONTROL BLANKET	5,116.00	SQYD		$	
0200	05963		INITIAL FERTILIZER	.16	TON		$	
0210	05964		MAINTENANCE FERTILIZER	.27	TON		$	
0220	05985		SEEDING AND PROTECTION	4,149.00	SQYD		$	
0230	06412		STEEL POST MILE MARKERS	10.00	EACH		$	
0240	06511		PAVE STRIPING-TEMP PAINT-6 IN	261,534.00	LF		$	
0250	06542		PAVE STRIPING-THERMO-6 IN W	1,180.00	LF		$	
0260	06543		PAVE STRIPING-THERMO-6 IN Y	943.00	LF		$	
0270	06556		PAVE STRIPING-DUR TY 1-6 IN W	72,515.00	LF		$	
0280	06557		PAVE STRIPING-DUR TY 1-6 IN Y	58,251.00	LF		$	
0290	06561		PAVE STRIPING-DUR TY 1-12 IN Y	9,010.00	LF		$	
0300	06592		PAVEMENT MARKER TYPE V-B W/R	100.00	EACH		$	
0310	10020NS		FUEL ADJUSTMENT	2,493.00	DOLL	$1.00	$	$2,493.00
0320	20411ED		LAW ENFORCEMENT OFFICER	600.00	HOUR		$	
0330	21554EN		EXCAVATION	100.00	CUYD		$	
0340	23252ES717		PAVE MARK TY 1 TAPE STOP BAR-12 IN	135.00	LF		$	

PROPOSAL BID ITEMS

Report Date 9/22/20

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0350	23270ES717		PAVE MARK TY 1 TAPE-CURV ARROW	15.00	EACH		$	
0360	24997EC		PARTIAL DEPTH PATCHING-POLYMER MOD	88.00	CUFT		$	

Section: 0003 - DRAINAGE

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0370	01000		PERFORATED PIPE-4 IN	100.00	LF		$	
0380	01010		NON-PERFORATED PIPE-4 IN	100.00	LF		$	

Section: 0004 - BRIDGE-056B00378L

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0390	08151		STEEL REINFORCEMENT-EPOXY COATED	100.00	LB		$	
0400	08526		CONC CLASS M FULL DEPTH PATCH	3.00	CUYD		$	
0410	08549		BLAST CLEANING	1,280.00	SQYD		$	
0420	22146EN		CONCRETE PATCHING REPAIR	95.00	SQFT		$	
0430	23331EC		EPOXY-URETHANE WATERPROOFING	11,515.00	SQFT		$	

Section: 0005 - BRIDGE-056B00378R

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0450	08151		STEEL REINFORCEMENT-EPOXY COATED	100.00	LB		$	
0460	08526		CONC CLASS M FULL DEPTH PATCH	3.00	CUYD		$	
0470	08549		BLAST CLEANING	1,280.00	SQYD		$	
0480	22146EN		CONCRETE PATCHING REPAIR	95.00	SQFT		$	
0490	23331EC		EPOXY-URETHANE WATERPROOFING	11,515.00	SQFT		$	

Section: 0006 - TRAFFIC LOOPS-SIGNAL LOOPS

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0510	04792		CONDUIT-1 IN	10.00	LF		$	
0520	04793		CONDUIT-1 1/4 IN	60.00	LF		$	
0530	04795		CONDUIT-2 IN	20.00	LF		$	
0540	04811		ELECTRICAL JUNCTION BOX TYPE B	3.00	EACH		$	
0550	04820		TRENCHING AND BACKFILLING	90.00	LF		$	
0560	04829		PIEZOELECTRIC SENSOR	4.00	EACH		$	
0570	04830		LOOP WIRE	1,650.00	LF		$	
0580	04850		CABLE-NO. 14/1 PAIR	200.00	LF		$	
0590	04894		PREFORMED LOOP/LEAD-IN	70.00	LF		$	
0600	04895		LOOP SAW SLOT AND FILL	400.00	LF		$	
0610	20359NN		GALVANIZED STEEL CABINET	2.00	EACH		$	
0620	20360ES818		WOOD POST	4.00	EACH		$	
0630	20453ES835		PREFORMED QUADRAPOLE LOOPS	102.00	LF		$	
0640	24900EC		PVC CONDUIT-1 1/4 IN-SCHEDULE 80	20.00	LF		$	
0650	24955ED		REMOVE SIGNAL EQUIPMENT	1.00	EACH		$	

PROPOSAL BID ITEMS

Report Date 9/22/20

Section: 0007 - DEMOBILIZATION &/OR MOBILIZATION

LINE	BID CODE	ALT	DESCRIPTION	QUANTITY	UNIT	UNIT PRIC	FP	AMOUNT
0660	02568		MOBILIZATION	1.00	LS		$	
0670	02569		DEMOBILIZATION	1.00	LS		$	

JEFFERSON COUNTY, INTERSTATE I-265

ITEM NO. 5-20020

BRIDGE REHABILITATION
(TWO LOCATIONS)

MILE POINT 18.8 TO 23.364

SPECIAL NOTE INDEX

BRIDGE INDEX

I. DESCRIPTION

Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's current 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) Provide safe access to the bridge substructure (piers) in accordance with Section 107.01.01, for the Engineer to sound possible repair areas and for workers to complete the construction
(3) Remove the deteriorated concrete
(4) Blast clean and prepare the surfaces for patching
(5) Prime the areas immediately prior to patching
(6) Apply the Vertical and Overhead Patch or Class "M" Concrete
(7) Finish the patched surface
(8) Maintain and control traffic
(9) Any other work specified as part of this Contract

II. MATERIALS

A. Vertical and Overhead Patching Material. Conform to Manufacturer's Technical Guidance.

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

III. CONSTRUCTION

A. Remove Deteriorated Concrete. Prior to beginning the concrete repairs, provide safe access to the substructure, in accordance with Section 107.01.01, for the Engineer to sound possible repair areas. The Engineer will sound the concrete with a hammer and mark the areas of concrete to be removed and patched. All areas of deteriorated concrete found should be repaired as part of this work. Final payment for "Concrete Patching Repair" will be the field measured quantity of patching completed in accordance with this Note and as designated by the Engineer.

Remove specified areas of deteriorated concrete as directed by the Engineer. The removal of unsound material shall be accomplished with hand tools or pneumatic hammers that do not exceed twenty (20) pounds. Precautions shall be exercised to protect the underlying sound material. Saw, route, or otherwise manipulate the sides of the patch so that the interface between the old concrete and patch area are perpendicular. Remove all deteriorated loose concrete to a minimum depth of 2" for repairs using vertical and overhead patching material and 4" for repairs using Class "M" Concrete. Also ensure concrete removal in the patch area extends at least three-quarters (3/4) inch beyond any steel reinforcement more than 50 percent exposed. Dispose of all removed material entirely away from the job site or as directed by the Engineer.

Extreme care shall be taken when removing the existing spalled or delaminated concrete so as not to damage the existing reinforcing steel. Completely clean all existing steel reinforcement encountered free of rust and leave in place. Wire brushing may be required to thoroughly clean exposed steel reinforcement. Repair or replace any damaged steel reinforcement as directed by the Engineer at no additional cost to the Department. Ensure that all exposed steel reinforcement is tied in accordance with Section 602.03.04.

B. Prepare Concrete Surfaces for Patching. Prepare concrete surfaces to be patched in accordance with Section 510.03.01. Final blast cleaning shall be completed within twelve (12) hours prior to placement of the epoxy mortar patch. Concrete must be sound, dry, and clean prior to placement of epoxy resin prime coat.

C. Apply Vertical and Overhead Patching Material or Class "M" Concrete. The Engineer shall have the option of designating a spalled or delaminated area to be repaired using Class "M" high early strength concrete or a Vertical and Overhead Patching Material. Any material used must be approved by the Engineer. Refer to the Transportation Cabinet, Division of Materials' List of Approved Materials for currently approved materials for vertical and overhead patching. Place either the Class "M" Concrete or Vertical and Overhead Patching Material as approved by the Engineer. Place the epoxy resin primer in accordance with the standard specifications and Manufacturer's recommendations. Place the Vertical and Overhead Patching Material in accordance with the Manufacturer's specifications to restore the deteriorated areas to their original dimensions as directed by the Engineer. Place Class "M" Concrete according to the Standard Specifications.

IV. MEASUREMENT

A. Concrete Patching Repair. The Department will measure the quantity in square feet.

V. PAYMENT

A. Concrete Patching Repair. Payment at the Contract unit price per square foot is full compensation for removal of deteriorated concrete, preparation of the concrete surface, application of the Vertical and Overhead Patching Material or Class "M" Concrete, application of the epoxy resin seal coat, and all incidental items necessary to complete the work in accordance with this Note.

The Department will consider payment as full compensation for all work required by this Note.

SPECIAL NOTE FOR 3/8" EPOXY-URETHANE WATERPROOFING OVERLAY FOR BRIDGE DECKS

1. DESCRIPTION

1.1 This specification describes the Pre-treatment and Overlay consisting of multiple layers of hybrid polymer systems and a special blend of extremely hard aggregate designed to provide a minimum of a 3/8" thick application for the purpose of complete waterproofing as well as providing a non-skid surface to withstand continuous heavy traffic and extreme changes in weather conditions.

1.2 Unless otherwise noted, Section references herein are to the Department's *Standard Specifications for Road and Bridge Construction*. All applicable portions of the Department's *Standard Specifications* apply unless specifically modified herein.

2. MATERIALS

Pre-treatment:

2.1 Hairline cracks

This two part hybrid polymer shall be free of any fillers, volatile solvents and shall be formulated to provide simple volumetric ratio of two components such as one to one or two to one by volume.

This hybrid polymer system shall be formulated to provide a unique combination of extremely low viscosity and low surface tension coupled with a built in affinity for concrete and steel.

Overlay:

2.2 The two-part epoxy-urethane co-polymer system shall be free of any fillers volatile solvents and shall be formulated to provide simple volumetric mixing ratio of two components such as one to one or two to one by volume.

The epoxy-urethane co-polymer system shall be formulated to provide flexibility in the system without any sacrifice of the hardness, chemical resistance or strength of the epoxy-urethane co-polymer system. Use of external/conventional flexibilizers are not acceptable. Flexibility shall be introduced by interaction of elastomers to chemically link in the process of curing so that the flexibility of the molecule is least affected during the low temperature conditions that are confronted in actual use.

2.3 Material Requirements

2.3.1 Physical Requirements of Cured *Pretreatment for Cracks* System. When Components A and B are mixed in the appropriate ratio, the cured resin shall conform to the requirements of Table 1. (Test methods are discussed in detail in Item 3 of this specification.)

TABLE 1
PHYSICAL PROPERTIES OF THE CURED PRETREATMENT SYSTEM

Property	Value
Compressive Strength, min. psi	5000
Tensile Strength, min. psi	2500
Elongation at Break, min percent	30
Water Absorption, percent by wt. max.	0.5%
Shore D hardness, min., 25°C (77°F)	65
Gel Time, min, minutes	15 (100gms)
Adhesion to Concrete	100% failure in concrete
Percent Solids	100

2.3.2 Physical requirements of Epoxy-Urethane Copolymer Overlay System. When Components A and B are mixed in the appropriate ratio, the cured resin shall conform to the requirements of Table 2. (Test methods are discussed in detail in Item 3 of this specification.)

TABLE 2
PHYSICAL PROPERTIES OF THE CURED OVERLAY SYSTEM

Property	Value
Compressive Strength, min. psi	5000
Tensile Strength, min. psi	2000
Elongation at Break, min. percent	30
Water Absorption, percent by wt. max.	1.0%
Shore D hardness, min, 25°C (77°F)	65
Gel Time, min, minutes	15
LA Abrasion, max. percent	35
Adhesion to Concrete	100% failure in concrete
Flexural Yield Strength, min. psi	5000
Percent Solids	100
Thermal Compatibility	Visual – No Delamination/Cracking
Permeability to Chloride Ion at 28 days	100 Coulombs

2.4 Aggregate

2.4.1 Aggregate used for all layers shall be non-friable, non-polishing, clean and free from surface moisture. It shall be durable and sound and have a proven record of performance in applications of this type. The aggregate shall be 100 percent fractured, thoroughly washed and kiln dried to a maximum moisture content of 0.2 percent by weight, measured in accordance with ASTM C566. The recommended sources of aggregate are **Washington Stone** or **Oklahoma Flint or an approved equivalent**

2.4.2 Aggregate for all layers shall have a minimum Mohs scale hardness of 7.

2.4.3 The grading of the aggregate shall conform to the requirements of Table 3

TABLE 3
AGGREGATE GRADATION

Sieve Size	Percent Passing
No. 4	60 - 100
No. 8	0 - 40
No. 16	0 - 10

3. METHOD OF TESTING

3.1 Tests shall be conducted in accordance with the following methods:

3.1.1 **Compressive Strength:** ASTM C579 Method B, *Compressive Strength of Chemical Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.* The two components of the resin are to be thoroughly mixed in their appropriate ratios specified by the manufacturer. The samples shall then be prepared according to the conditioning requirements of ASTM C579 and allowed to cure for 7 days at 23 ± 2°C.

3.1.2 **Tensile Strength and Elongation:** ASTM D638, *Tensile Properties of Plastics,* Specimen Type I or Type II. Samples shall be cured at 23 ± 2°C (73.4 ± 3.6°F) and 50 ± 5% relative humidity. Speed of testing shall be at 0.5 in/min.

3.1.3 **Water Absorption:** ASTM D570, *Water Absorption of Plastics.* Sample specimens shall be prepared according to section 4.1 and allowed to cure at 23 ± 2°C (73.4 ± 3.6°F) and 50 ± 5% relative humidity. Tests are then to be carried out as per section 6.1.

3.1.4 Shore D Hardness: ASTM D2240, *Rubber Property – Durometer Hardness.* Specimen shall be prepared as per ASTM D570 section 4.1 and allowed to cure at 23 ± 2°C (73.4 ± 3.6°F).

3.1.5 Gel Time: The following procedure shall be used to determine gel time. Measure 4 oz. of Part A and 2 oz. of Part B each at 25°C (77°F), into an unwaxed paper cup and record the time and mix immediately. 100 gms of this mixture shall be poured into a 6 oz. unwaxed paper cup and placed on a wooden bench top. Starting twenty minutes from the time recorded above, the mixture shall be probed every two minutes with a small stick until a small ball forms in the center of the container. The total time, including mixing, required for the ball to form shall be regarded as the gel time. The test shall be performed in a room or enclosed area maintained at 25 ± 2°C (77 ± 3.6°F) and 50 ± 5% relative humidity.

3.1.6 LA Abrasion, AASHTO T96 35% Max

3.1.7 Adhesion to Concrete: ACI-503-R; Pull Out Test.

3.1.8 Flexural Yield Strength: ASTM D-790.

3.1.9 Thermal Compatibility: ASTM C884, Determination if specimens are susceptible to debonding when subjected to temperature changes.

4. CONSTRUCTION PRACTICE

4.1 Surface Preparation

4.1.1 Perform full depth patching in accordance with the requirements of Section 606.03.05. All patching materials shall be in accordance with the requirements of Section 601 and be free of Magnesium Phosphate.

4.1.2 Patching shall be scheduled so that the bridge can be open to traffic during all non-working hours.

4.1.3 Partial depth patching system shall be approved by resin manufacturer and be completed prior to the polymer overlay. . Completion of Partial Depth Patching including removal of concrete, cleaning, and placing the material will not be measured for payment and shall be considered incidental to "Epoxy-Urethane Waterproofing Overlay". The pay item includes additional quantity for partial depth patching.

4.1.4 The entire concrete deck shall be cleaned by shot blasting to remove any oil, dirt, rubber or any other potentially detrimental material such as curing compound and laitances which, in the manufacturer and engineer's opinion, would prevent proper bonding to and curing of the material. Ensure the shot blasting has obliterated all pavement markings.

Produce a surface relief that meets the International Concrete Repair Institute (ICRI) Surface Preparation CSP 5-7.

4.1.5 In areas that the shot blasting equipment cannot reach (i.e., along curbs and median walls) or cannot remove (pavement marking, asphalt, etc.), sandblasting and walk behind grinders are permitted to an extent satisfactory to the manufacturer and engineer. This should be performed prior to the shotblasting whenever applicable and practical.

4.1.6 Protect the bridge deck expansion joints, armored edges, drains, etc… with a bond breaker that can adequately seal the joints from the epoxy.

4.1.7 The overlay application equipment is allowed to drive on the deck surface during application provided precautions have been taken to insure that the deck surface will not become contaminated. For any reason traffic is to be allowed on the deck after surface preparation, or between layers, a visual inspection by the manufacturer and state engineer will be required to determine if additional surface preparation is needed before applying material.

4.1.8 All surfaces to be treated shall be dry at the time of application. Immediately before the application of any liquids, all prepared surfaces shall be cleaned with compressed air (or vacuumed) to remove dust and debris.

4.1.9 The application of the system shall not be made when it has rained 24 hours before application or rain is forecast (greater than 50%) within eight hours after application or as determined by the manufacturer (fog and high humidity will not impede the application of or affect the performance of the overlay). If waiting for 24 hours is impractical, then the moisture content in concrete substrate shall not exceed 4.5% when measured by an electronic moisture meter. Any exception shall be determined by the moisture content present in the deck which shall not exceed 75% of air entrainment in the mix design.

4.1.10 Materials shall be placed when the ambient air and bridge deck surface temperatures are greater than 55 deg F and less than 90 deg F.

4.2 Application of Overlay System

4.2.1 **The manufacturer of the epoxy-urethane overlay material shall have a representative on the jobsite at all times who has proven experience with the resin system and with guiding and assisting installers in the polymer overlay system installation.** Who, upon consultation with the engineer, may suspend any item of work that is suspect and does not meet the requirements of this specification. Resumption of work will occur only after the manufacturer's

representative and the engineer are satisfied that appropriate remedial action has been taken by the contractor.

4.2.2 The overlay shall be applied on all deck areas using metering, mixing and distribution machinery **approved by the manufacturer of the epoxy-urethane overlay system.** Ratio check verification at the pump outlets as well as cycle counting capabilities to monitor output will be standard features.

4.2.3 The number of layers (a minimum of two), excluding the pre-treatment if required and the application rates of the liquid in the various layers shall be as recommended by the manufacturer in order to achieve an average overlay thickness of 3/8**".**

4.2.4 Hand mixing of material is not permitted.

4.2.5 Application of Pre-treatment

Crack Filling (Pre-treatment as required)

Application of the Liquid: After mechanically measuring and mixing of the components, the liquid shall be evenly distributed on the clean, dry deck surface at the rate/process recommended by the manufacturer. The overlay application equipment may drive on this layer (prior to being cured) when applying the overlay system. If the overlay application is going to be applied after 6-8 hours of the pretreatments application, a medium size coarse silica sand shall be broadcasted evenly into the pre-treatment system (prior to it curing) as directed by the manufacturer.

4.2.6 Overlay (First and Second Layers)

Application of Liquid: Prior to the application, if there exists any excess or loose aggregate from the previous coat, such excess aggregate shall be completely removed by vacuum or with compressed air. After mixing of the components via the mechanical application equipment, the liquid shall be evenly distributed on the clean, dry deck surface at the rate recommended by the manufacturer.

4.2.7 After the application of the liquid in the first and second coats, the maximum time allowed before broadcasting of the aggregate is as follows:

Above 90°F	. . . . .	10 minutes
80°F to 90°F	. . . . .	15 minutes
70°F to 80°F	. . . . .	20 minutes
60°F to 70°F	. . . . .	25 minutes
55°F to 60°F	. . . . .	35 minutes

4.2.8 **No vehicle shall be allowed on the overlay during the curing period.**

4.2.9 Broadcasting on decks shall be by truck-mounted equipment capable of dispensing the aggregate onto the deck in a uniform manner as directed or otherwise approved by the manufacturer of the epoxy-urethane overlay.

4.2.10 The aggregate shall be broadcast as described below in a manner to cover the surface so that no wet spots appear and before the co-polymer begins to gel (see section 3.1.5). The aggregate must be dropped vertically in such a manner that the level of the liquid is not disturbed. Reclaimed aggregate is prohibited.

4.2.10.1 In the first and second layers of **the polymer overlay system, the** aggregate conforming to table 3 shall be broadcast to saturation.

4.2.11 **Removal of Excess Aggregate:** After the overlay has hardened, removal of all loose and excess aggregate with a power vacuum or other method shall be made prior to the application of subsequent coats.

4.2.12 **Joints in the Overlay:** (i.e., between two adjacent lanes) shall be staggered 6 to 12 inches and overlapped between successive coats so that no ridges will appear. Prior to applying the first or second layer, duct tape shall be used to ensure a straight edge is created. The use of chalk lines can be used when applying the first layer only.

4.2.13 **Traffic may be allowed** on the final layer (or in between layers) after the resin has cured (as determined by the manufacturer) and after removal of all excess, loose aggregate.

4.2.14 The prepared surface may be opened to traffic for no more than 24 hours. A light shot blast will be required prior to applying the pretreatment or first layer. A visual inspection by the inspector and manufacturer shall occur to ensure no additional prep is necessary to remove oil, tar, brake/tire residue, etc. After 24 hours, prep shall be per section 4.1.4.

4.2.15 The pretreatment with aggregate or first layer may be opened to traffic for no more than 24 hours. Prior to application of second layer, the inspector and manufacturer rep shall inspect the pretreatment with aggregate or first layer to ensure no additional surface prep is required to remove oil, brake/tire residue, etc. After 24 hours, prep shall be per section 4.1.4.

4.2.16 Seams in the Overlay shall not be present between lanes. Driving lanes next to shoulders must be done in the same application pass so no additional seams/joints in overlay are created.

5. STORAGE AND HANDLING

5.1 Liquid Material: All material shall be transported and stored in their original containers inside a dry, temperature controlled facility and maintained at a manufacturer recommended temperature.

5.2 Job Site Storage: The materials shall be stored on the jobsite in a dry, weather protected facility away from moisture and within the temperature range of 60°F to 90°F. When the materials are transported or stored on the job in the application machine tanks, the material must also be maintained at a temperature of 60°F to 90°F. Outdoor storage is permitted with manufacturer's approval.

5.3 Handling of Liquid Materials on the Job: Protective gloves, clothing, and goggles shall be provided to workers and inspectors directly exposed to the material if required. Product safety data sheets shall be provided to all workers and inspectors as obtained from the manufacturer.

5.4 Packing Requirement: All materials must be packaged in strong, substantial containers. The containers shall be identified as Part A and Part B and shall be plainly marked with the name and address of the manufacturer, name of the product, mixing proportions and instructions, lot and batch numbers, date of manufacture, and quantity contained therein.

5.5 Aggregate: All aggregate shall be stored in a dry, moisture-free atmosphere. The aggregate shall be fully protected from any contaminants on the jobsite and shall be stored so as not to be exposed to rain or other moisture sources.

6. SAMPLING AND ACCEPTANCE

6.1 Product Acceptance: The manufacturer of the system shall provide evidence of field performance, lab performance with infrared spectra in order to obtain state approval of the overlay system for use on the project:

6.1.1 Independent Lab Performance

A nationally recognized independent lab must verify that the material:

1. Has the capability of preventing the ingress of essentially all the chloride ions into the concrete at 1" depth when tested according to NCHRP-244 method.

2. Has the capability to de-activate the existing chloride ions present in the concrete specimen so that the corrosion of steel rebars embedded in the concrete stop corroding.
3. When tested as per Tables 1 and 2 fully comply with the test results specified for cured system.

6.1.2 Infrared Spectrograph: In addition to the initial certification process each manufacturer shall furnish the state an infrared spectra of each component of system for its permanent record and for individual installation verification.

6.1.3 Field Performance: The selected polymer overly system must have at least two years of satisfactory performance for non-interstate use and four years of satisfactory performance for interstate use in similar environmental conditions as the project in which it will be used.

6.2 Certification for Compliance: At the pre-construction conference, the contractor shall notify the state project engineer of the source of material.

6.2.1 Independent Test Lab Report: Test results certified and verified by a nationally recognized independent testing laboratory verifying properties of the cured system as per Table 1 & 2 shall be submitted to the engineer for approval prior to the pre-construction conference. This certification shall be provided on each lot number to be used on the project.

6.2.2 Infrared Spectra: Infrared spectra of each component from each lot/batch number (to be used on the project) shall be submitted with the independent lab certification.

6.2.3 Test Sample for DOT Laboratory: The manufacturer shall furnish at least a one-quart sample of each component from each lot/batch to the DOT laboratory to verify material supplied by the manufacturer. Material shall be taken at job site.

6.3 Performance Acceptance

6.3.1 Thickness Verification: At the end of each day, the contractor will submit to the inspector/project engineer a signed project report stating the number of square yards applied, number of gallons used (for pretreatment and overlay) and number of pounds of aggregate estimated to have been used. In addition, the contractor shall verify to the State that the overlay is an average of at least 3/8" thick at three random locations agreed upon by the state engineer and material manufacturer representative. If 3/8" average is not achieved, a retest shall be performed in adjoining areas. Thin areas shall be re-coated as described above by the contractor and re-verified at no additional cost to the State. This verification may consist of cores, holes, etc., but in all cases, any

destructively tested areas shall be repaired by the contractor before final acceptance by the engineer.

7. MEASUREMENT

7.1 Epoxy-Urethane Waterproofing Overlay. The Department will measure the overlay application in Square Feet.

7.2 Shotblasting. The Department will measure "Blast Cleaning" in Square Yard. The Department will only measure this quantity once for any area to be shotblast. Additional blast cleaning to meet the requirements of this note shall be performed at the Contractor's expense.

7.3 Full Depth Patching. The Department will measure "Concrete Class M Full Depth Patching" in Cubic Yard.

8. PAYMENT

8.1 Epoxy-Urethane Waterproofing Overlay. The Department will pay for the measured quantities at the Contract unit bid price for "Epoxy-Urethane Waterproofing".

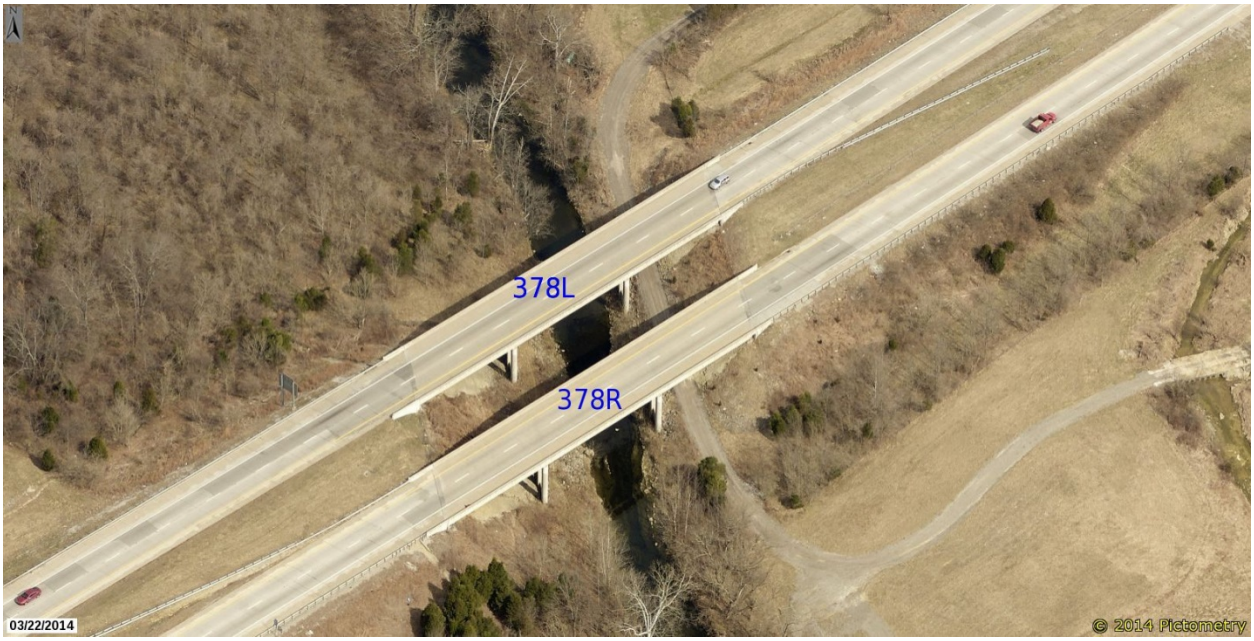
8.2 Shotblasting. The payment at the contract unit price for the pay item "Blast Cleaning" shall include all labor, equipment and material needed to complete the task as described in paragraphs 4.1.4 and 4.1.5.

8.3 Full Depth Patching. The payment at the contract unit price shall include all labor, equipment and material needed to complete this task. 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 Patching".

Code	Pay Item	Pay Unit
23331EC	Epoxy-Urethane Waterproofing	SQFT
08549	Blast Cleaning	SQYD
08526	CONC Class M Full Depth Patch	CUYD

I-265 (SB/NB) over Chenoweth Run (056B00378L/R)

(MP 20.1)



SUMMARY OF QUANTITIES – 056B00378L			
ITEM CODE	**DESCRIPTION**	**QUANTITY**	**UNIT**
22146EN	CONCRETE PATCHING REPAIR	95	SF
23331EC	EPOXY-URETHANE WATERPROOFING	11,515	SF
08526	CONCRETE CLASS M FULL DEPTH PATCH	3	CY
08549	BLAST CLEANING	1,280	SY
08151	STEEL REINFORCEMENT-EPOXY COATED	100	LB

SUMMARY OF QUANTITIES – 056B00378R			
ITEM CODE	**DESCRIPTION**	**QUANTITY**	**UNIT**
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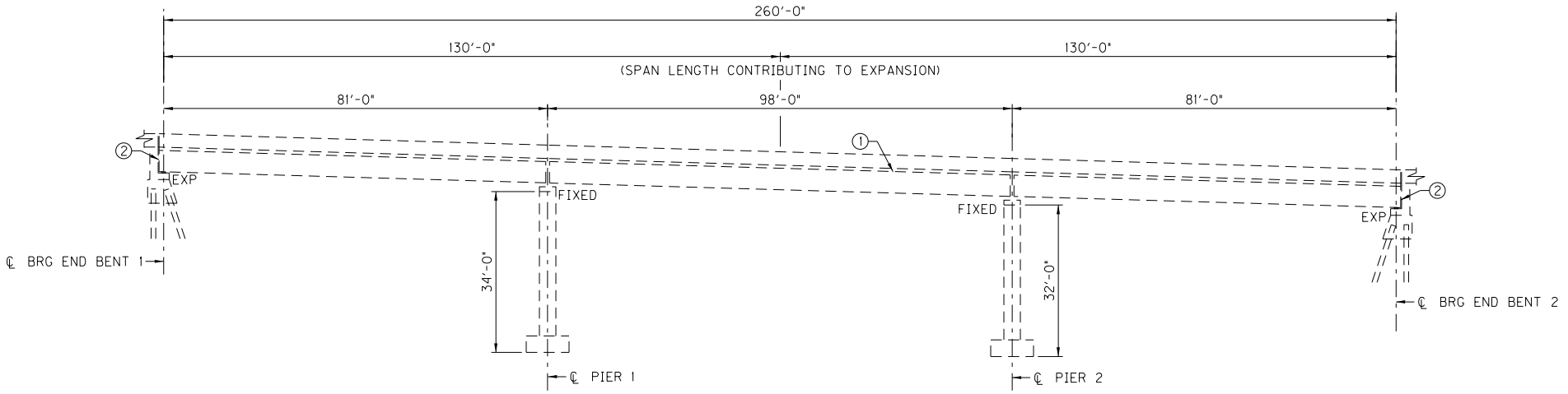
08526	CONCRETE CLASS M FULL DEPTH PATCH	3	CY
08549	BLAST CLEANING	1,280	SY
08151	STEEL REINFORCEMENT-EPOXY COATED	100	LB

NOTES:

- CONCRETE PATCHING QUANTITY IS AN APPROXIMATE ESTIMATE BASED ON VISUAL INSPECTION +10%.
- FULL DEPTH PATCHING QUANTITIES ARE APPROXIMATE ESTIMATES ASSUMED TO BE 1% OF TOTAL DECK AREA X FULL DECK THICKNESS.



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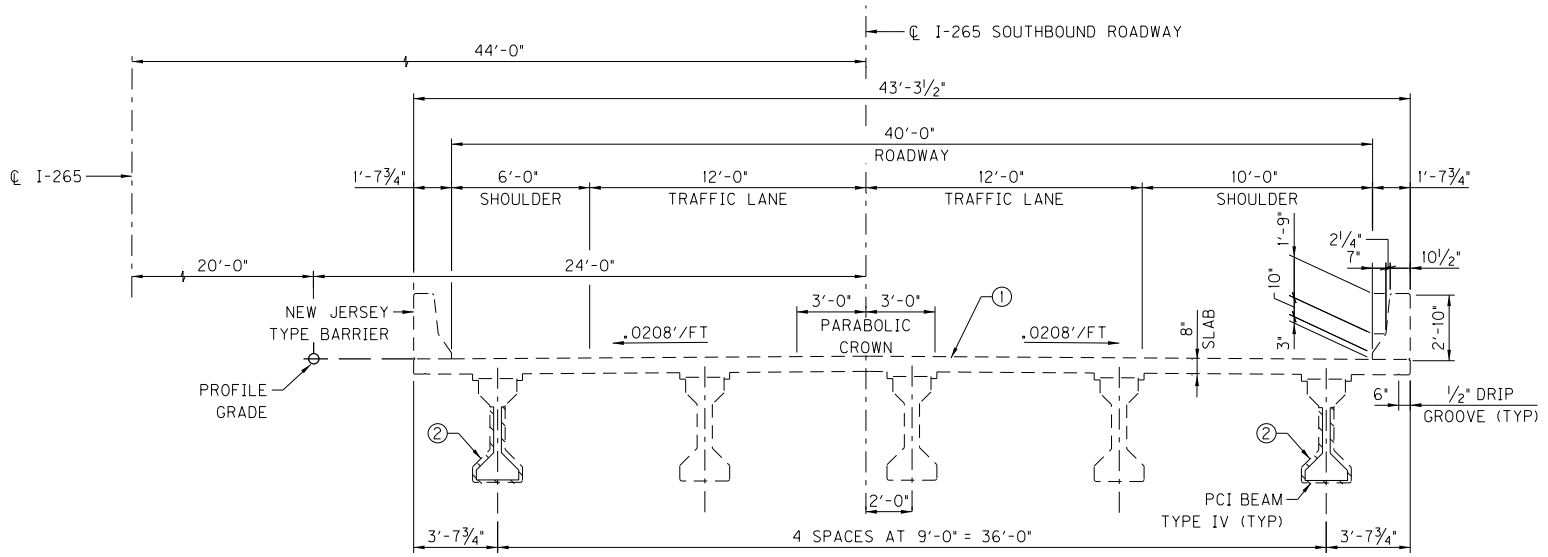


TYPICAL SECTION

NOTES:

1 DETAILS SHOWN ARE BASED ON EXISTING PLANS (DWG NO 19734). FEATURES AND DIMENSIONS SHOWN ARE APPROXIMATE.

2 CONTRACTOR SHALL FIELD VERIFY THE EXISTING CONDITIONS, PROFILE GRADE, AND CROSS-SLOPES WITH THE EXISTING PLANS AND ROADWAY PAVEMENT REHABILITATION PLANS.

CONCRETE PATCHING REPAIRS

NOTATIONS:

① INSTALL EPOXY OVERLAY

② REPAIR THE BEAM ENDS, AS REQUIRED (SEE BEAM DETAILS SHEETS)

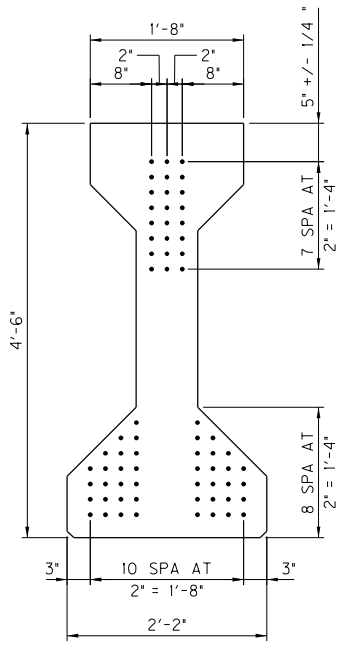
BRIDGE: 056B00378L

SHEET NO. OF

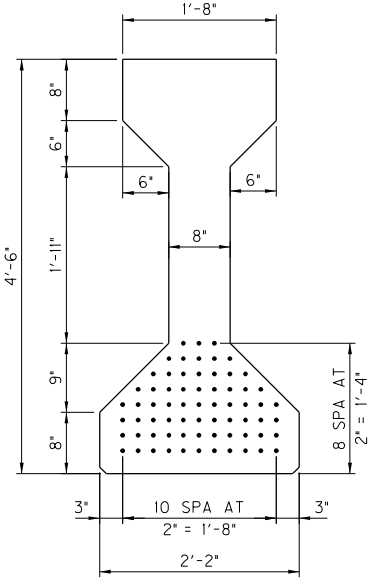
Stantec

ELEVATION & TYPICAL SECTION

COUNTY: JEFFERSON
ROUTE: I-265 SB
CROSSING: CHENOWETH RUN



PRESTRESSED STRANDS
(END OF BEAM SHOWN)



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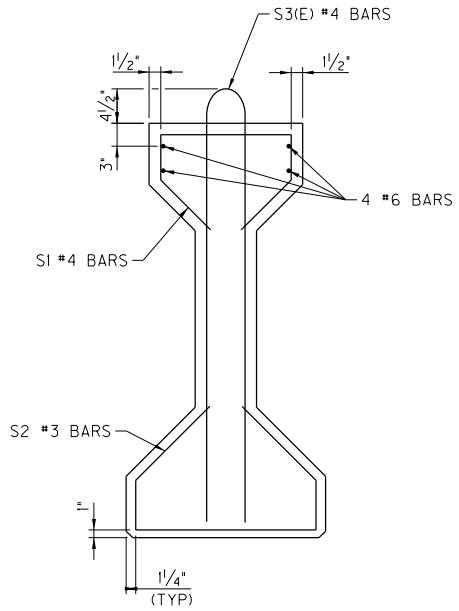
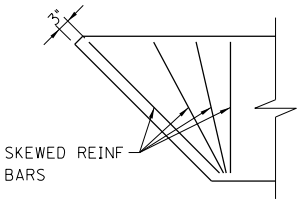


STEEL REINFORCEMENT
(TYP)

BEAM SECTIONS – TYPE IV 54"



PART PLAN

(SHOWING SKEWED END)
(15° OR GREATER)

NOTES:

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FOR INFORMATION ONLY

BRIDGE:
056B00378L

SHEET 3 OF 3

Stantec

BEAM DETAILS (1 of 2)

COUNTY: JEFFERSON
ROUTE: I-265 SB
CROSSING: CHENOWETH RUN

BEAM 1 AT END BENT 1

BEAM 1 AT END BENT 2

BEAM 3 AT END BENT 1
(TYP INTERIOR BEAM CONDITION)

BEAM 5 AT END BENT 1

BEAM 5 AT END BENT 2

BEAM DETAILS

NOTE:

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3 THE TOTAL CONCRETE PATCHING REPAIR QUANTITY REFLECTS A 3-FT LONG x 2-FT HIGH AREA OF REPAIR WORK ON A GIVEN FACE OF A BEAM. BOTH FACES OF THE EXTERIOR BEAMS WERE ASSUMED TO NEED REPAIR WORK, WHILE ONLY 1 FACE OF THE INTERIOR BEAM WAS ASSUMED TO NEED REPAIR WORK.

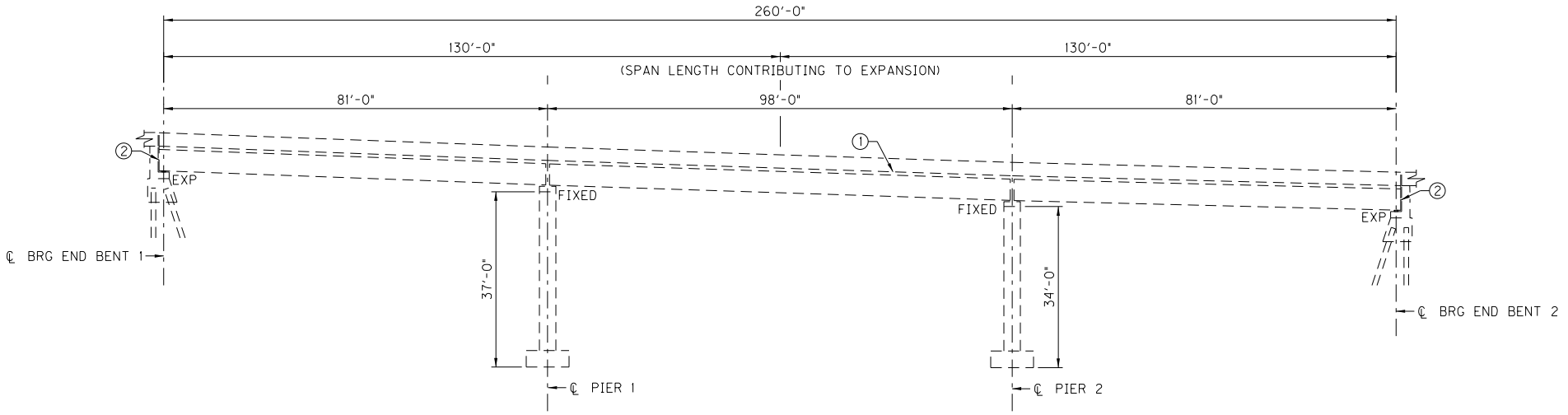
BRIDGE:
056B00378L

SHEET 3 OF 3

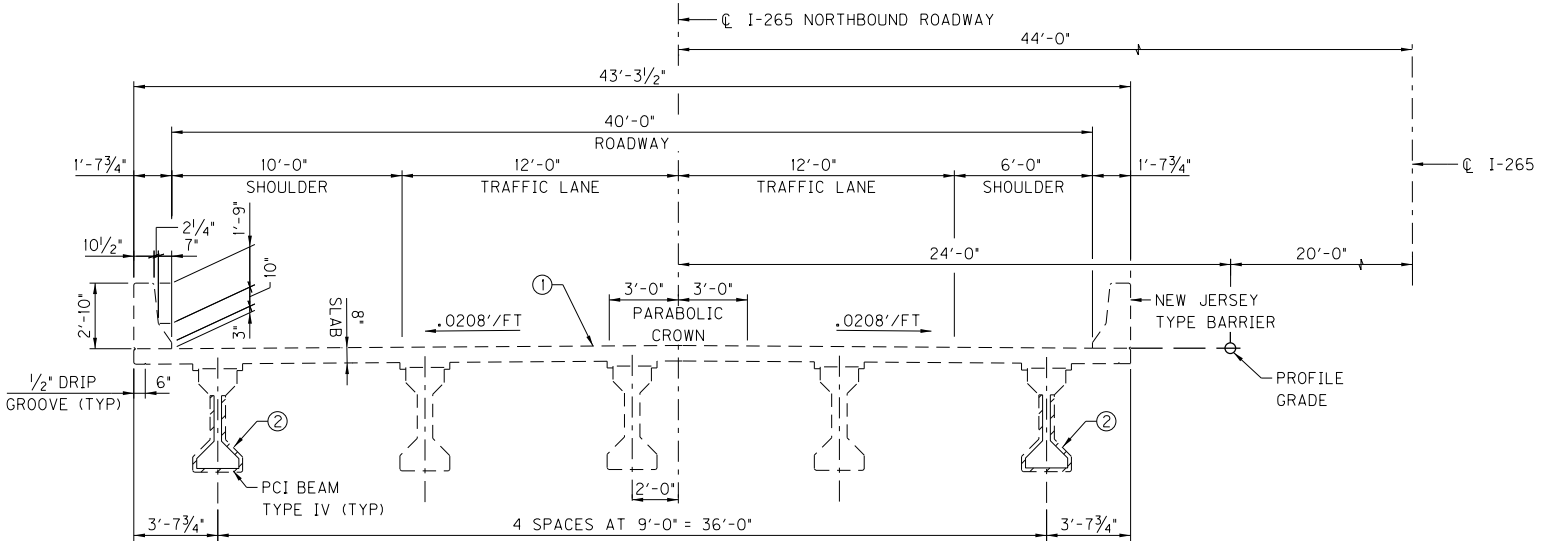
Stantec

BEAM DETAILS (2 of 2)

COUNTY:	JEFFERSON
ROUTE:	I-265 SB
CROSSING:	CHENOWETH RUN



ELEVATION



TYPICAL SECTION

NOTES:

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▨ CONCRETE PATCHING REPAIRS

NOTATIONS:

① INSTALL EPOXY OVERLAY

② REPAIR THE BEAM ENDS, AS REQUIRED (SEE BEAM DETAILS SHEETS)

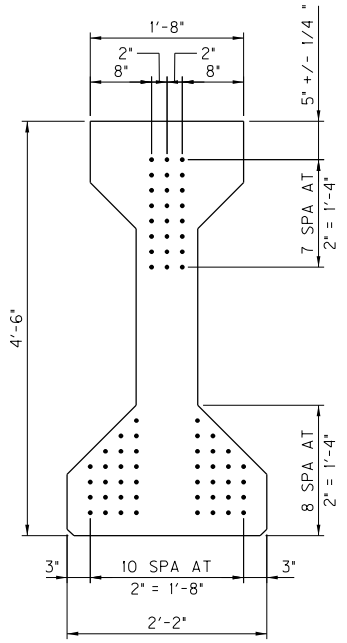
BRIDGE: 056B00378R

SHEET NO. OF

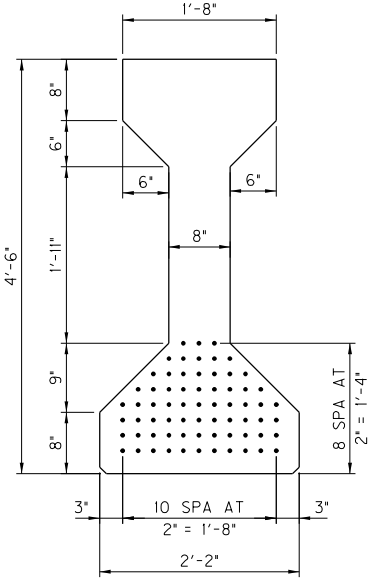
Stantec

ELEVATION & TYPICAL SECTION

COUNTY:	JEFFERSON
ROUTE:	I-265 NB
CROSSING:	CHENOWETH RUN



PRESTRESSED STRANDS
(END OF BEAM SHOWN)



PRESTRESSED STRANDS
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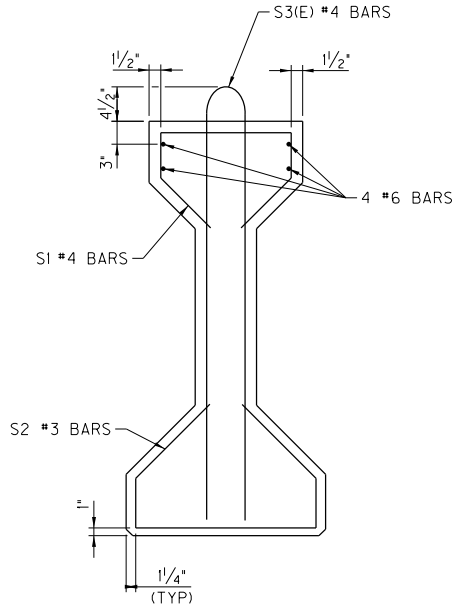
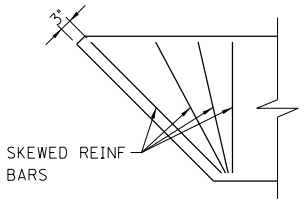


STEEL REINFORCEMENT
(TYP)

BEAM SECTIONS – TYPE IV 54"



PART PLAN
(SHOWING SKEWED END)
(15° OR GREATER)

NOTES:

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FOR INFORMATION ONLY

BRIDGE:
056B00378R

SHEET 3 OF 3

Stantec

BEAM DETAILS (1 of 2)

COUNTY:	JEFFERSON
ROUTE:	I-265 NB
CROSSING:	CHENOWETH RUN

BEAM 1 AT END BENT 2

BEAM 5 AT END BENT 1

BEAM 5 AT ABUT 2

BEAM 5 AT END BENT 2
(BOTTOM FLANGE SHOWN)

BEAM DETAILS

NOTE:

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BRIDGE:
056B00378R

SHEET 3 OF 3

Stantec

BEAM DETAILS (2 of 2)

COUNTY: JEFFERSON
ROUTE: I-265 NB
CROSSING: CHENOWETH RUN