



TRANSPORTATION CABINET

Frankfort, Kentucky 40622
www.transportation.ky.gov/

Steven L. Beshear
Governor

Michael W. Hancock, P.E.
Secretary

January 9, 2014

CALL NO. 300
CONTRACT ID NO. 141009
ADDENDUM # 2

Subject: Bell County, FD04 SPP 007 025E 000-001
Letting January 10, 2014

- (1) Revised - Notes - Pages 11-14 of 84
- (2) Deleted - Page 15
- (3) Revised - Notes - Pages 16-49 of 84

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

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

Sincerely,

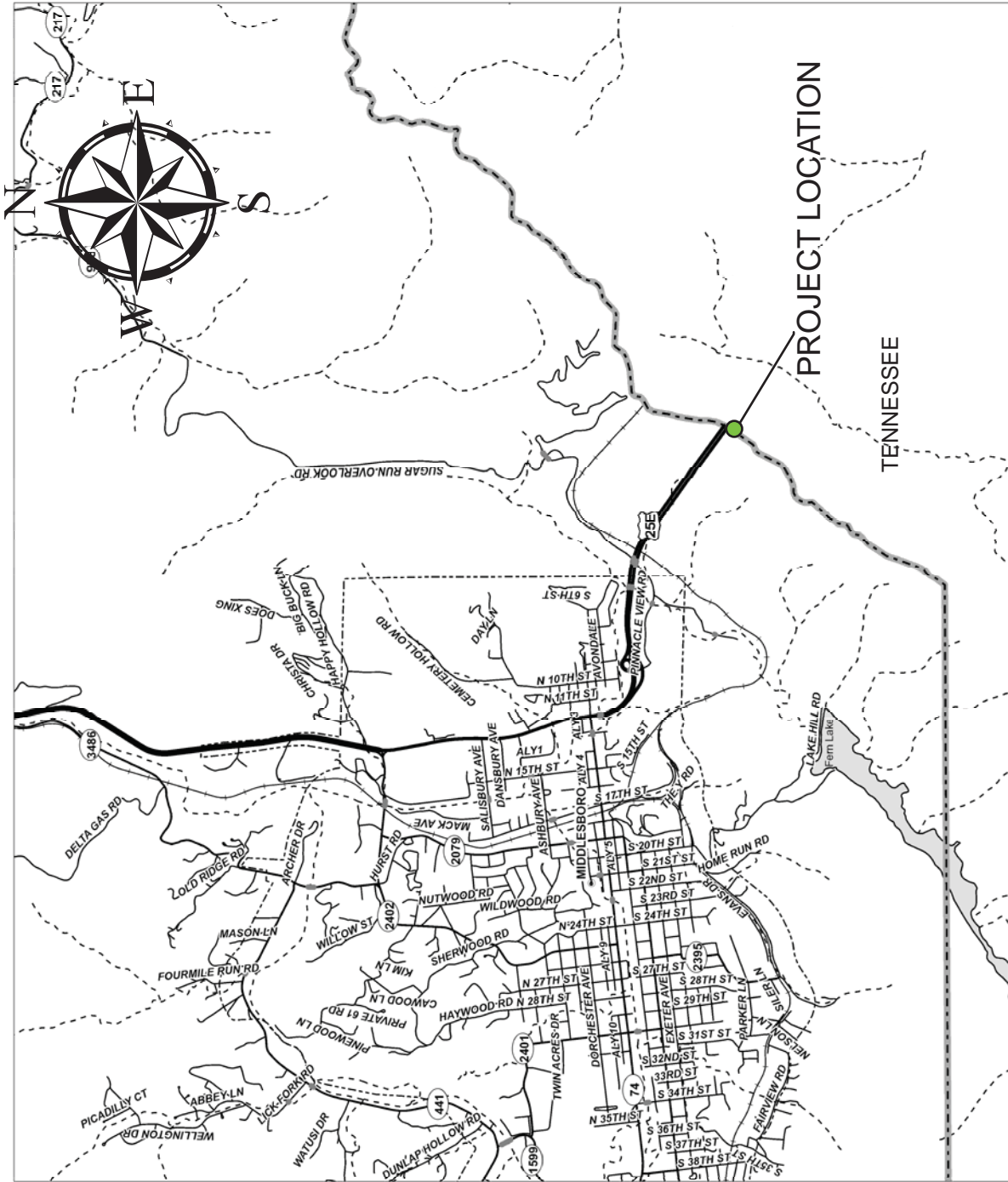
A handwritten signature in blue ink that reads "Ryan Griffith".

Ryan Griffith
Acting Director
Division of Construction Procurement

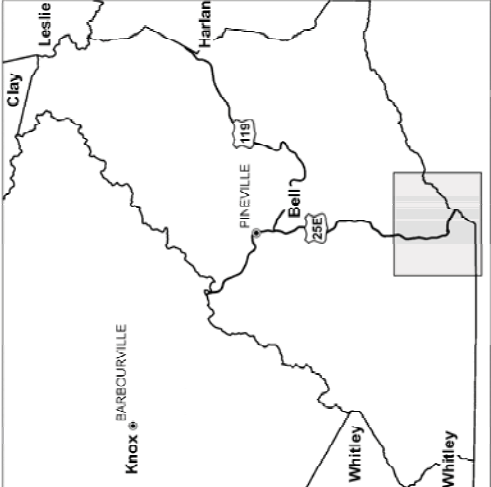
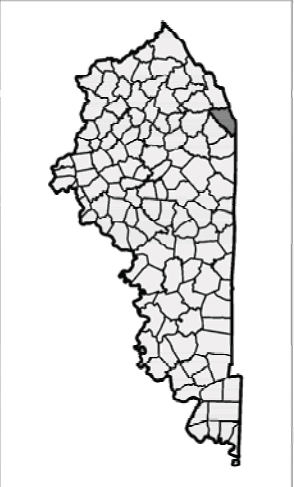
RG:ks
Enclosures



An Equal Opportunity Employer M/F/D



CUMBERLAND GAP TUNNEL - US25E
FD04 SPP 007 025E 000-001

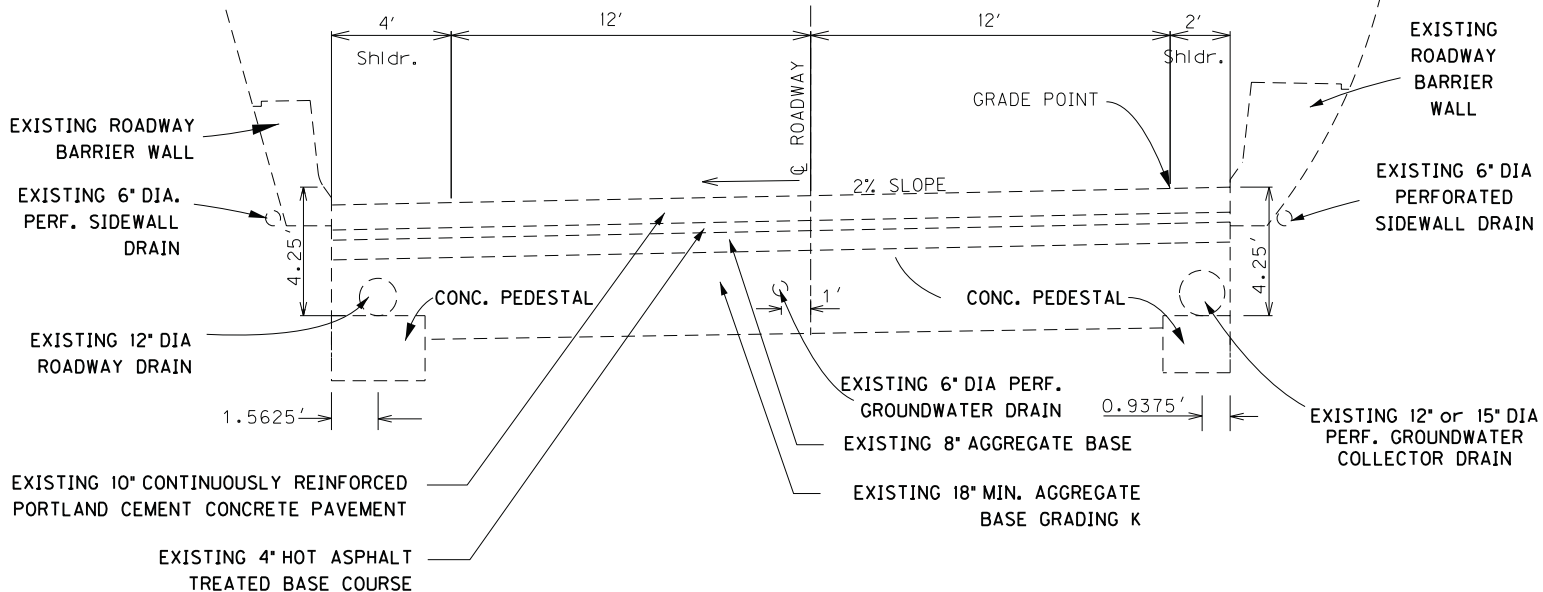


PROJECT LOCATION

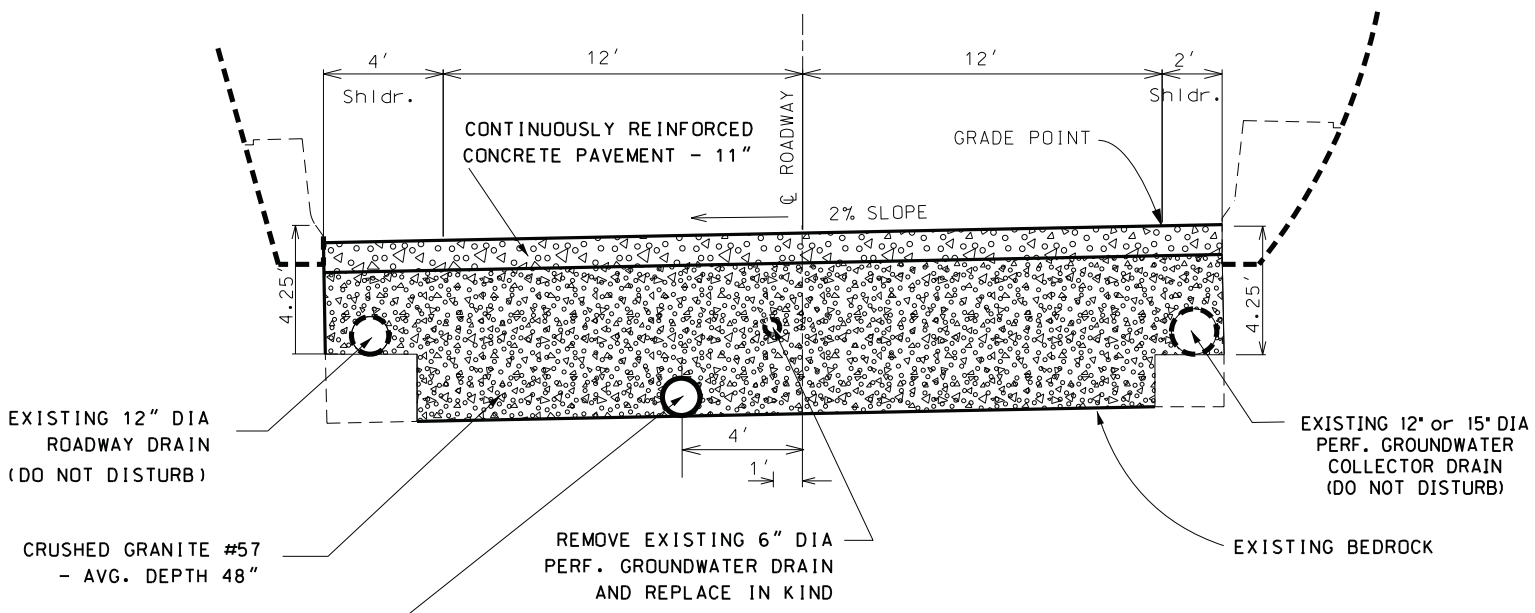
TENNESSEE

COUNTY OF	ITEM NO.	Page 12 of 34
BELL	11-2032.10	

CUMBERLAND GAP TUNNEL TYPICAL SECTION NORTHBOUND



**EXISTING SECTION - BEFORE 2011
NORTHBOUND**



**PROPOSED SECTION
NORTHBOUND**

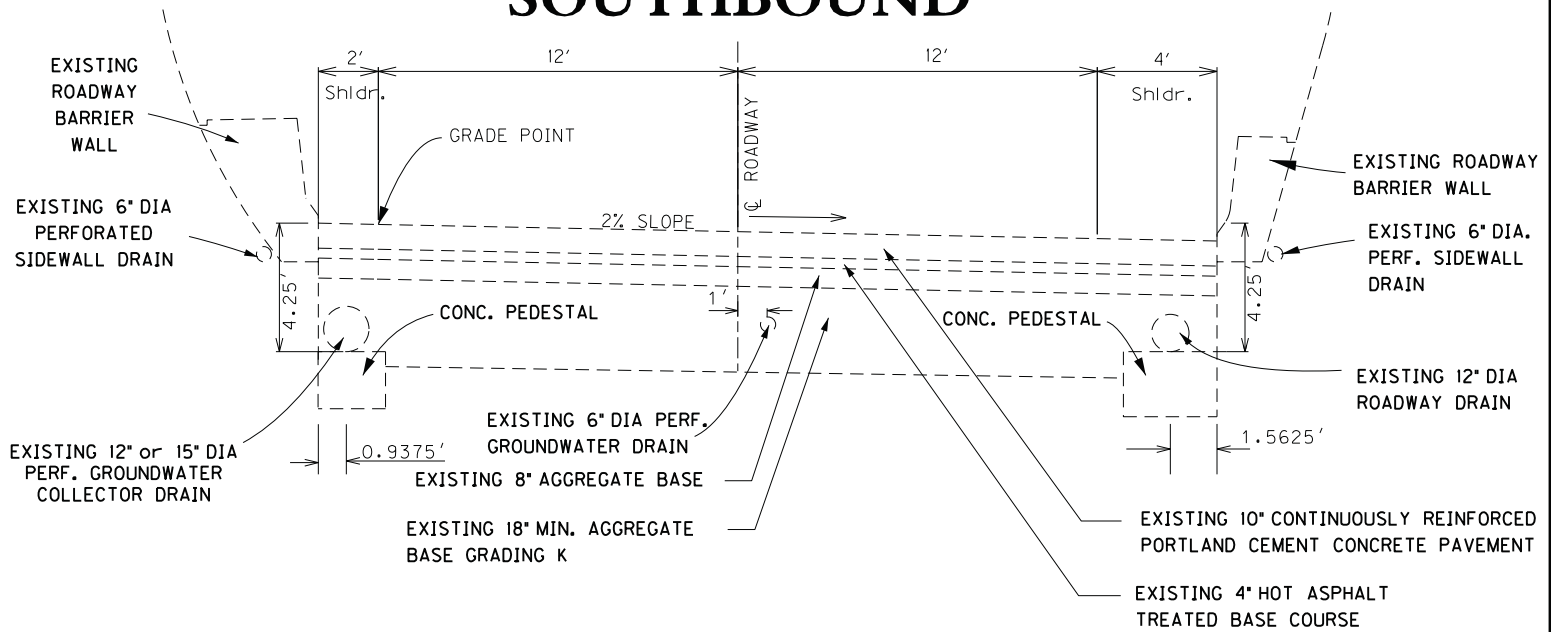
Note: Contractor is allowed to use a finer graded Granite material in the top 2 to 3 inches of the 48 inch depth Crushed Granite Granular sub grade. Granite Material used in the top 2 to 3 inches will conform in gradation to KDOT size No 78, 8's, or 9-M.

**CUMBERLAND GAP TUNNEL
US 25 E NORTHBOUND
TYPICAL SECTION**

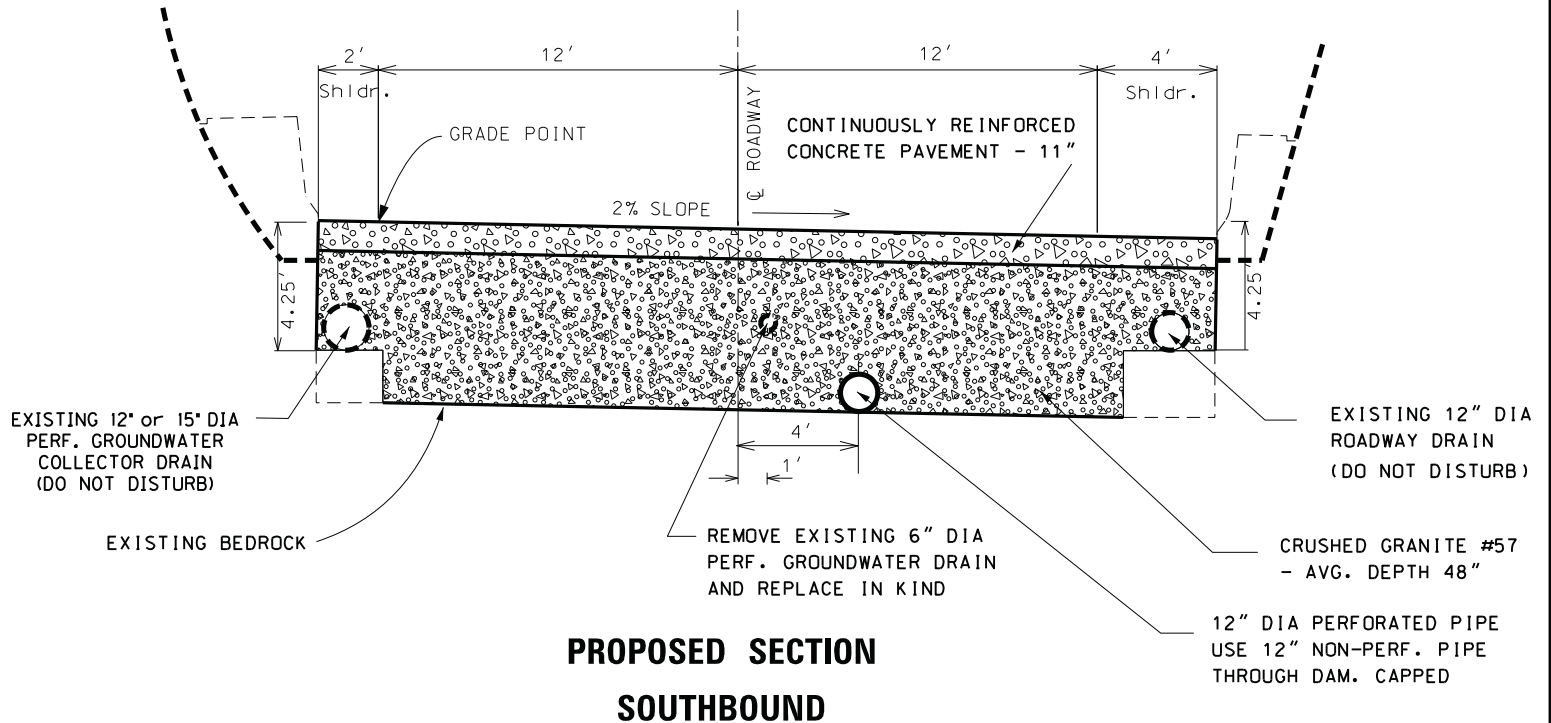
NOT TO SCALE

COUNTY OF	ITEM No.
BELL	11-2032.10

CUMBERLAND GAP TUNNEL TYPICAL SECTION SOUTHBOUND



**EXISTING SECTION - BEFORE 2011
SOUTHBOUND**



**PROPOSED SECTION
SOUTHBOUND**

Note: Contractor is allowed to use a finer graded Granite material in the top 2 to 3 inches of the 48 inch depth Crushed Granite Granular sub grade. Granite Material used in the top 2 to 3 inches will conform in gradation to KDOT size No 78, 8's, or 9-M.

NOT TO SCALE

**CUMBERLAND GAP TUNNEL
US 25 E SOUTHBOUND
TYPICAL SECTION**

**CUMBERLAND GAP TUNNEL
US 25E
FD04 SPP 007 025E 000-001**

GENERAL SUMMARY

ITEM CODE	NOTE	ITEM	UNIT	QUANTITY
2058	1	REMOVE PCC PAVEMENT	SQ. YD.	10,670
2060	8	PCC PAVEMENT DIAMOND GRINDING	SQ. YD.	33,290
2200		ROADWAY EXCAVATION	CU. YD.	14,550
8540	10	JOINT SEALING	L.F.	33,781
20072ES805	5	GRANULAR EMBANKMENT (CRUSHED GRANITE)	TON	24,100
20550ND	7	SAWCUT PAVEMENT	L.F.	616
22531EN	3,4	CONTINUOUSLY REINFORCED CONCRETE PAVEMENT (11")	SQ. YD.	10,670
2570		PROJECT CPM SCHEDULE	L.S.	1
2671	11	PORTABLE CHANGEABLE MESSAGE SIGN	EACH	4
2775		ARROW PANEL	EACH	2
4902	9	WIRE AND CABLE	L.F.	30
6510		PAVEMENT STRIPING - TEMPORARY PAINT - 4 INCH	L.F.	2,400
6580	6	PAVEMENT MARKERS TYPE IV - MW	EACH	20
6589		PAVEMENT MARKERS TYPE V - MW	EACH	40
8104	2	CONCRETE - CLASS AA	CU. YD.	4.26
8151	2	STEEL REINFORCEMENT - EPOXY COATED	LBS.	519
8908	15	CRASH CUSHION TYPE VII - CLASS C (TL3)	EACH	4
20432ES112	15	REMOVE CRASH CUSHION	EACH	4
24189ER		DURABLE WATERBORNE MARKING - 6 IN W	L.F.	19,148
24190ER		DURABLE WATERBORNE MARKING - 6 IN Y	L.F.	9,472
24247EC	12	DEWATERING	L.S.	1
1001		PERFORATED PIPE 6 IN	L.F.	4,402
1004		PERFORATED PIPE 12 IN	L.F.	2,851
1014		NON-PERFORATED PIPE 12 IN	L.F.	350
1015	13	INSPECT AND CERTIFY EDGE DRAIN SYSTEM	L.S.	1
3554		BEND 45 DEG-6 IN	EACH	52
3556		BEND 45 DEG-12 IN	EACH	4
22532NN	2,14	MANHOLE FRAME AND LID	EACH	3
23822EC		CORED HOLE DRAINAGE BOX CON 15 IN	EACH	2
24655EC		CONCRETE DAM CORE	EACH	3
2568		MOBILIZATION	L.S.	1
2569		DEMOBILIZATION	L.S.	1

NOTES

- 1 INCLUDES PCC 10" OR 11" ONLY
- 2 QUANTITIES ARE FOR GROUNDWATER COLLECTOR CLEANOUTS ONLY
- 3 STEEL REINFORCEMENT SHALL BE INCIDENTAL TO THE CONSTRUCTION OF CONTINUOUSLY REINFORCED CONCRETE PAVEMENT
- 4 CONCRETE SHALL BE CLASS AA
- 5 ESTIMATED AT 95 LBS. PER SQ. YD PER INCH OF DEPTH
- 6 FOR REPAIR AND REPLACEMENT OF EXISTING MARKERS
- 7 120 L.F. ADDED; SEE SPECIAL NOTE FOR PAVEMENT REMOVAL FOR 12-IN PIPE NB STA. 114+95
- 8 SEE SPECIAL NOTE FOR CRCP DIAMOND GRINDING
- 9 SEE PROJECT NOTE #10
- 10 ADDED 2,500 L.F. FOR SEALING APRONS AND HAZMAT LANES
- 11 SEE SPECIAL NOTE FOR PORTABLE CHANGEABLE MESSAGE SIGNS
- 12 SEE SPECIAL NOTE FOR WATER QUALITY AND DEWATERING
- 13 WILL INCLUDE 6 INCH AND 12 INCH PIPES
- 14 NEENAH R1878 FRAME & HEAVY DUTY LID OR EQUIVILANT
- 15 LOCATED ON THE KY PORTAL SIDE

CUMBERLAND GAP TUNNEL US 25E

CGT REPAIR LOCATION

LOCATION	STATION		REPAIR		QUANTITY	
	FROM	TO	LENGTH (FT)	WIDTH (FT)	AREA (SF)	AREA (SY)
NB 1	114+95	118+98	170.00	30.00	5,100	567
NB 2	118+99	120+56	157.00	30.00	4,710	523
NB 3	123+26	126+88	362.00	30.00	10,860	1,207
NB 4	128+93	134+86	593.00	30.00	17,790	1,977
SB 1	114+40	118+53	180.00	30.00	5,400	600
SB 2	118+54	121+93	339.00	30.00	10,170	1,130
SB 3	122+17	127+47	530.00	30.00	15,900	1,767
SB 4	129+22	137+92	870.00	30.00	26,100	2,900

TOTAL REPAIR LENGTH (FEET)	3,201
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TOTAL REPAIR AREA (SQUARE YARDS)	10,670
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NOTE:

Areas do include overlapping previously constructed repairs in order to access pipe underdrain systems and to replace mixed areas of mixed limestone/granite aggregate.

Area from a 2007 repair, which did not construct the pipe underdrain system, is included.

Areas do include sections to "daylight" 12" pipe.

Station Equation 116+00 = 118+33.19 as per original plans

DAM LOCATIONS

NORTHBOUND		SOUTHBOUND	
STA. 118+98	ORIGINAL DAM	STA. 118+53	ORIGINAL DAM
STA. 120+56	BUILT IN 2011 REPAIR	STA. 121+93	BUILT IN 2011 REPAIR
STA. 126+88	BUILT IN 2011 REPAIR	STA. 122+17	BUILT IN 2011 REPAIR
STA. 134+86	BUILT IN 2011 REPAIR	STA. 127+47	BUILT IN 2011 REPAIR
		STA. 137+92	BUILT IN 2011 REPAIR

US 25 E
CUMBERLAND GAP TUNNEL
Item No. 11- 2032.1
FD04 SPP 007 025E 000-001

PROJECT NOTES

SCOPE OF WORK - This project shall include the removal of existing concrete pavement, existing asphalt pavement, and existing aggregate base. This material shall be removed down to the existing bedrock throughout the limits of the project as indicated in the proposal. The roadway will be reconstructed with Crushed Granite aggregate and 11-inch Continuous Reinforced Concrete Pavement (CRCP).

1. The contractor shall provide a CPM schedule for this project. This schedule shall include a completion date for the project. The contractor shall have the option of a "24/7" schedule, if desired.
2. Excavate the existing rock invert. Soft or fractured rock below the repair area shall be removed and refilled with material as shown on the typical section.
3. Asphalt disposal shall be in accordance with the Kentucky Standard Specifications for Road and Bridge Construction, current edition.
4. During excavation, locate and tie to the existing 12" pipe installed with the 2012 project. Bore through the dam constructed during the 2007 project and the original dams to continue the 12" pipe. The Southbound 12" pipe will outlet to a new groundwater collector box at Sta. 114+40. The Northbound 12" pipe will outlet to an existing groundwater collector at Sta. 115+01. However, the grades of the existing collector pipe may allow tying the new pipe at approximately Sta. 115+60± with the construction of a new collector box. Excavation and removal of existing JPC pavement and excavation should progress in 25 foot increments beginning from Sta. 116+00 toward Sta. 114+95. As excavation progresses, check grades as existing pipe is uncovered in order to possibly reduce JPC pavement replacement quantities. Install 12" pipe on a minimum 0.5% grade. Additional quantities, (saw cut, etc.) have been included.
5. The Contractor shall not disturb the existing Groundwater collection and roadway drainage system as indicated on the plans. Any damage to the existing drainage system shall be repaired by the contractor at his own expense.
6. The Contractor shall support the existing groundwater collector and roadway drains during construction as directed by the Engineer. If necessary the Contractor may divert ground water from wall drains to the roadway drain inlets during construction. No direct payment will be made for this work, but will be considered incidental to Dewatering.
7. The Contractor is responsible for collection and disposal of any groundwater accumulation in the pavement removal area during construction. Water shall be disposed in a manner satisfactory to the Engineer and the Cumberland Gap Historic Park. See special note for Water Quality and Dewatering. Payment for this work shall be made lump sum as Dewatering.

Project Notes, Bell County 11-2032.1, Page 2 of 3

8. The Bid Item 1015-Inspect and Certify Edge Drain System, paid as lump sum, shall include inspecting and certifying all 6" and 12" pipe, perforated and non-perforated.
9. The Contractor shall protect the existing overhead appendages (fans, lights, signs, etc.) during construction. The Contractor must supply a spotter to unload all dump trucks and for overhead lifting operation. Spotter is to be available to ensure damages to overhead lighting, fans, signs, and tunnel appurtenances are prevented. Also applies to offloading outside tunnel bore in apron or Hazmat lanes. Any damage to the appendages shall be repaired at the expense of the Contractor. No direct payment for the spotter will be made, but shall be considered incidental to other items of work.
10. Grounding cables may be present at Station 118+75 and 133+25 in the northbound bore underneath the existing JPC pavement. Repair and splice any cables broken during excavation using exothermic welding. Repairs shall be made by a certified electrician. Repairs shall conform to current electrical codes. Any repair or replacement will be paid per linear foot as Wire and Cable.
11. The Contractor will be allowed to remove and store the handrail along the walkway to facilitate setting rails for the finishing machine. The handrail is to be reinstalled at the conclusion of work. Any damage to the handrail will be repaired at the Contractor's expense. No payment will be made for removing and resetting the handrail.
12. Any hand box should be removed and given to the Cumberland Gap Tunnel Authority for return to the National Park Service. The Contractor should avoid damage to the hand box. Any damage caused by the Contractor will be repaired at the Contractor's expense.
13. The existing profile grade of both tunnels is 0.5% from Sta. 121+08.19 to Sta. 137+92. There is a vertical curve at the beginning of the tunnel with a PVI at Sta. 114+25. The Contractor is to reconstruct all repair areas from beginning to end, matching existing grade. See Detail Sheet US 25E profile.
14. The apron areas of the Kentucky and Tennessee portals shall not be used as a staging area for construction vehicles or equipment. If desired, the Kentucky HazMat lane and the Tennessee Parking Lot can be utilized for construction staging areas.
15. The Contractor shall limit deliveries of material, equipment, or any other construction related items associated with this project to days and times only when the contractor's personnel are on site to receive such deliveries. CUGA Tunnel personnel will not be available to accept deliveries or advise drivers of proper location to unload.
16. Both the Northbound and Southbound tunnels will receive new pavement striping full length after all repairs and diamond grinding have been completed. Removal of any striping will be incidental to painting the permanent striping.
17. Longitudinal expansion material shall be required at existing barrier walls and shall be considered incidental to continuously reinforced concrete pavement.
18. Any excavation necessary to construct core hole through dam is incidental to Concrete Dam Core.
19. The existing 6" perforated pipe groundwater drains at the centerline will be removed within the repair areas. Removal of the existing 6" perforated pipe shall be incidental to removing PCC Pavement. Positive drainage of the 6" perforated pipe, outside of the repair areas should be maintained, to the groundwater collection boxes. The existing 6" cross drains shall also be removed and considered incidental to removing PCC Pavement.
20. Following completion of all new CRCP repair work in this project and prior to opening to traffic and diamond grinding, install temporary seals as outlined in Section 501.03.18 of the

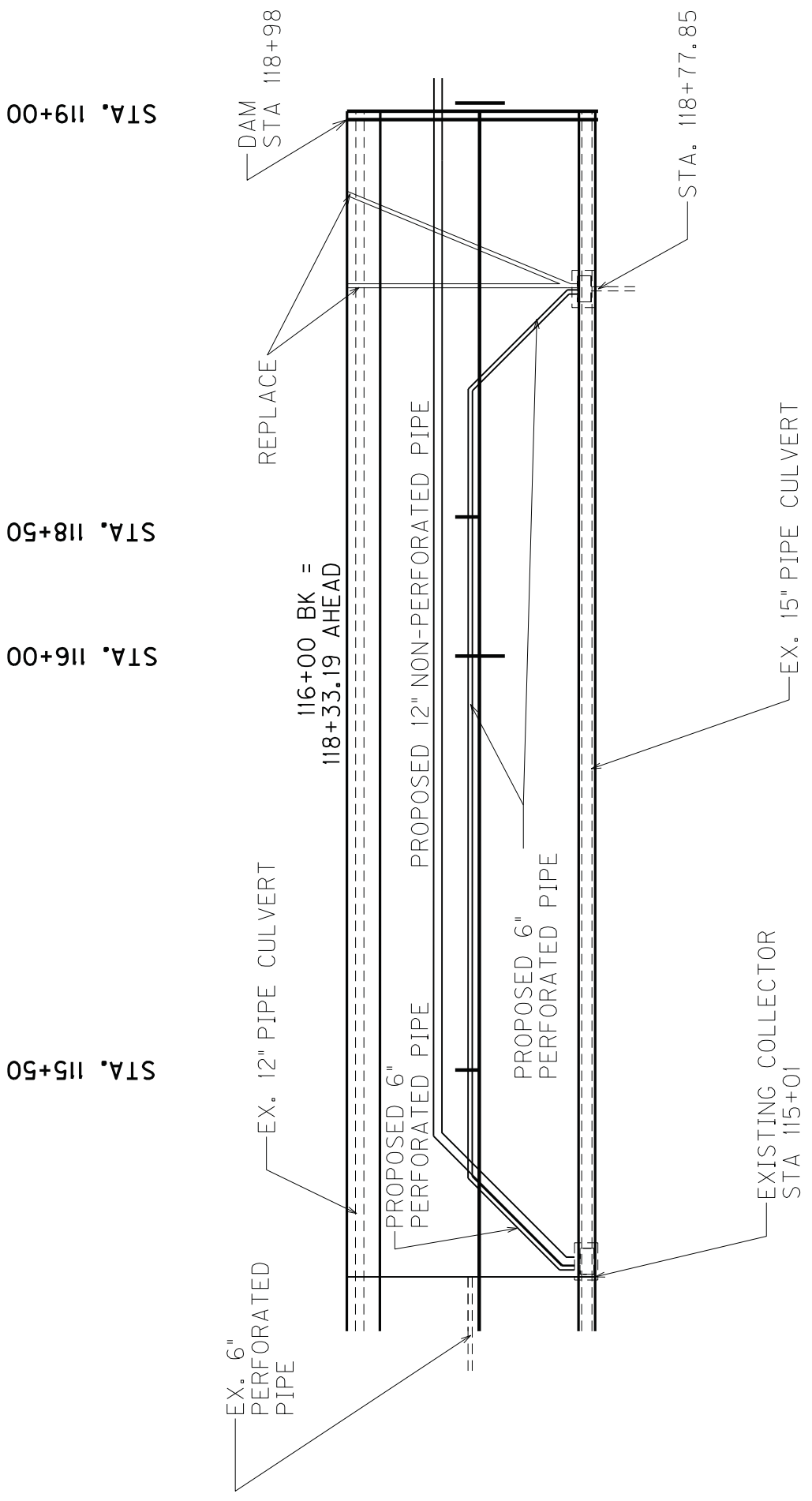
Project Notes, Bell County 11-2032.1, Page **3** of **3**

Specifications. Temporary seals shall be considered incidental to CRCP. Permanent sealing may be used in lieu of temporary seals if diamond grinding is performed prior to opening to traffic.

21. Clean pavement surface prior to opening tunnel bores temporarily to traffic. Clean tunnel walls and pavement surface prior to opening tunnel bores permanently to traffic. A power broom will not be permitted for the cleaning operation, and use of vacuum truck may be required. Tunnel cleaning is incidental to CRCP. Upon completion of project all tunnel walls, floors, and traffic barriers must be cleaned of any concrete splatters, mud, debris, sealers, etc. Any deleterious materials must be completely removed and tunnel restored to its present luster in new or like new condition.
22. All 6 in. perforated pipe removed shall be replaced in kind.

COUNTY OF	ITEM NO.	SHEET NO.
BELL	11-2032.1	11-2032.1

BEGINNING DETAIL - NORTHBOUND



CUMBERLAND GAP TUNNEL
 US 25E
 BEGINNING DETAIL - NORTHBOUND

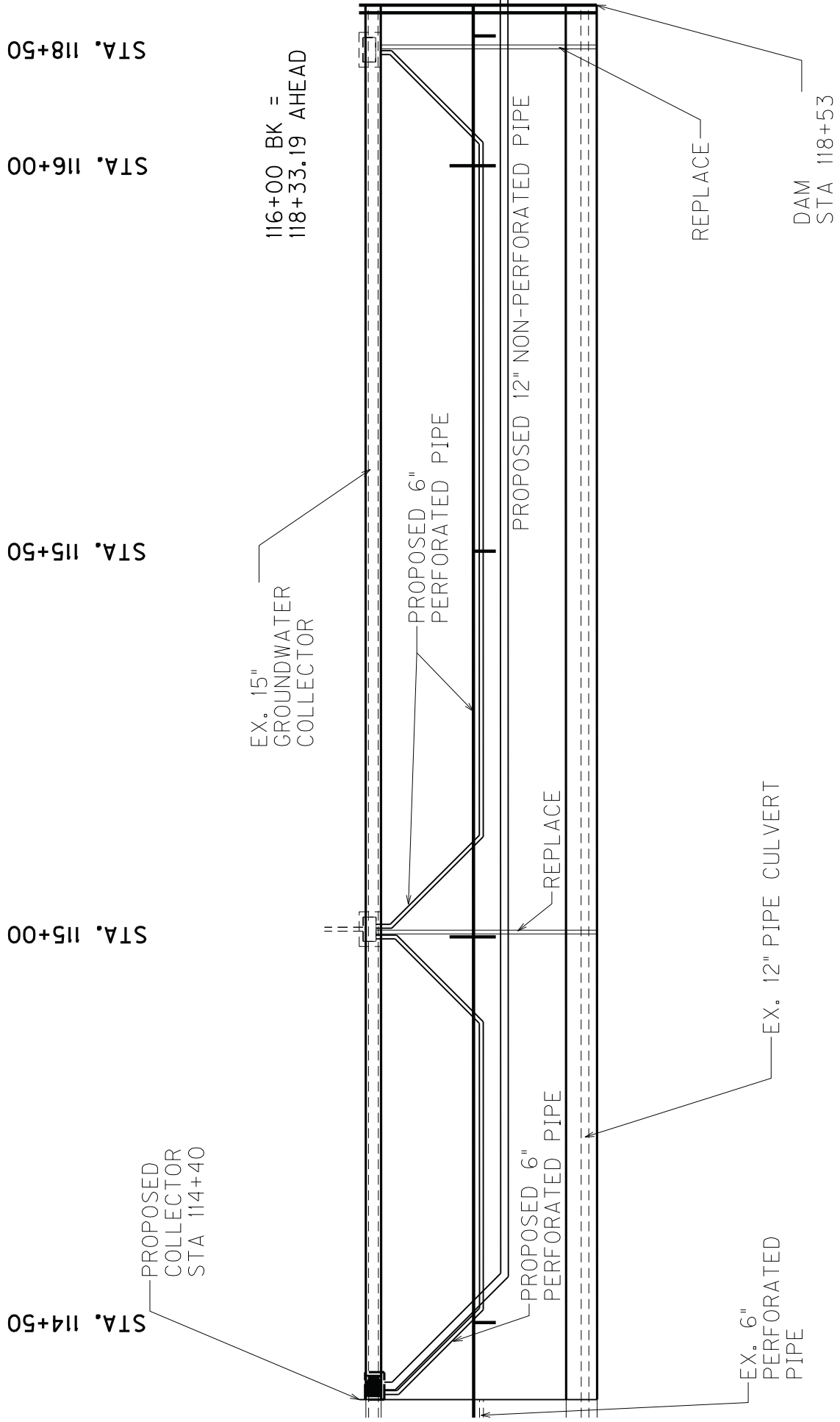
NOT TO SCALE

COUNTY OF	ITEM NO.	SHEET NO.
BELL	11-2032.1	04

BEGINNING DETAIL - SOUTHBOUND

STA. 114+50
 STA. 115+00
 STA. 115+50
 STA. 116+00
 STA. 118+50

116+00 BK =
 118+33.19 AHEAD



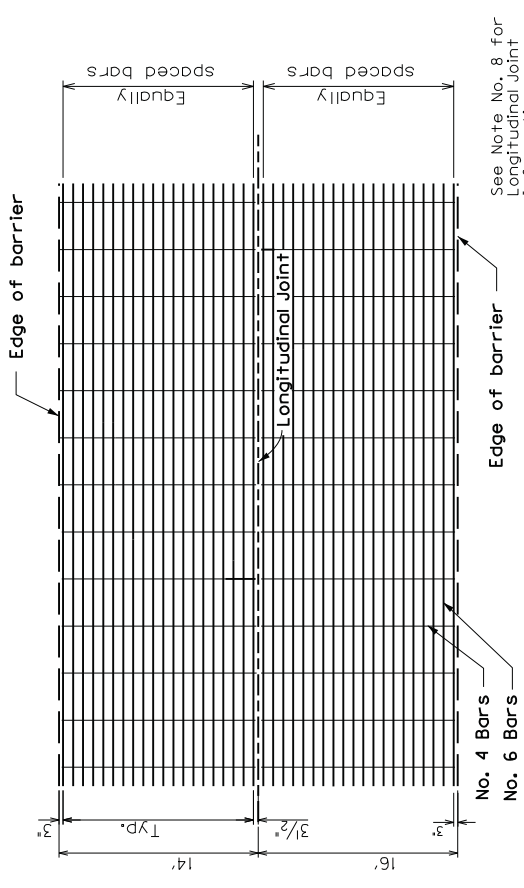
REPLACE

DAM
 STA 118+53

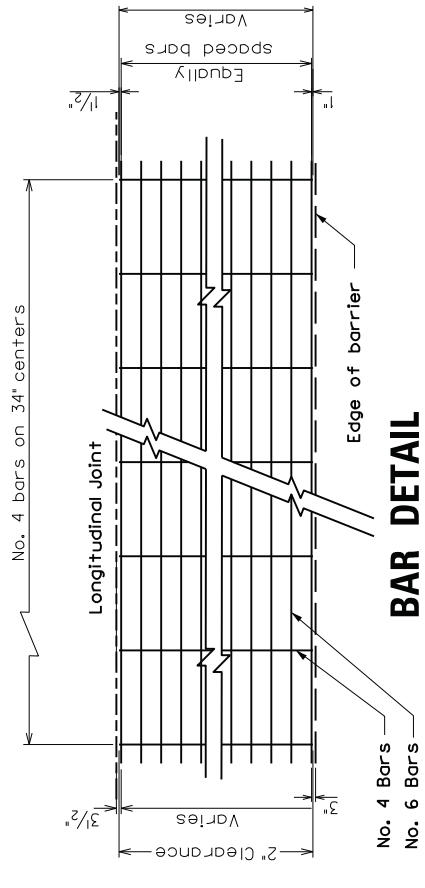
CUMBERLAND GAP TUNNEL
 US 25E
 BEGINNING DETAIL - SOUTHBOUND

NOT TO SCALE

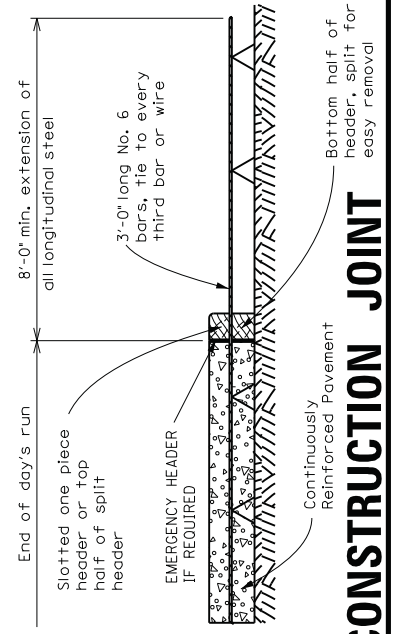
PAVEMENT REINF. DETAILS



PLAN



BAR DETAIL



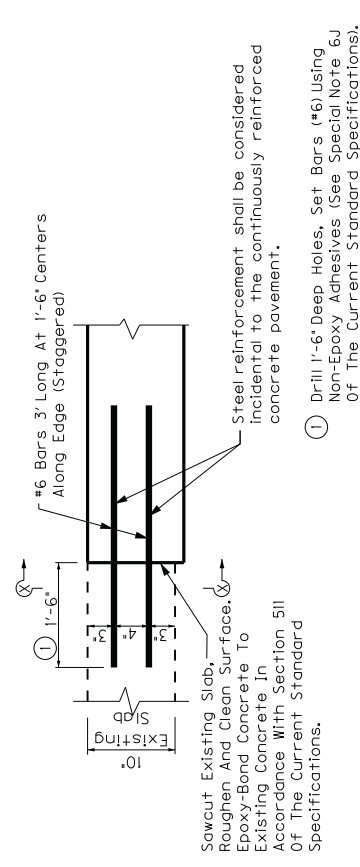
CONSTRUCTION JOINT

NOTES

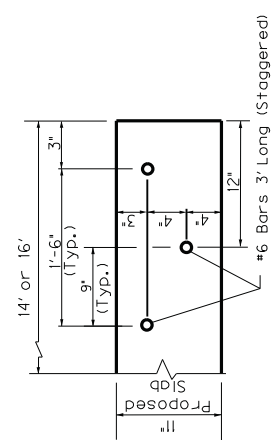
1. Place ALL REINFORCING STEEL in the concrete so that the longitudinal steel is located a maximum depth of T/2.
2. Tie ALL LONGITUDINAL LAPS so as to provide continuous longitudinal reinforcing.
3. Set ALL BARS on chairs ahead of paving operation.
4. No lap shall occur within 8' ahead or 3' behind a construction joint in the direction of paving. All laps should be staggered such that they do not occur at the same location.
5. All reinforcing steel - epoxy coated.
6. Slab bolsters are required in lieu of chair to support reinforcing steel on top of crushed granite # 57.
7. Steel Reinforcement shall be incidental to the construction of the continuously reinforced concrete pavement.
8. The Slab is to be placed continuously with an emergency header on hand in the event of an equipment breakdown.
9. The Contractor is to install Longitudinal Joint as per Standard Drawing No. RPS-010-10.

STEEL REQUIREMENTS	
T (ft.)	No. Bars / 14' Lane
11	23
T (ft.)	No. Bars / 16' Lane
11	26

MINIMUM BAR LAP SPLICE	
# 4 REBAR	1' - 9"
# 6 REBAR	2' - 7"



SAWCUT DETAIL



SECTION X-X

CONTINUOUSLY REINFORCED PAVEMENT

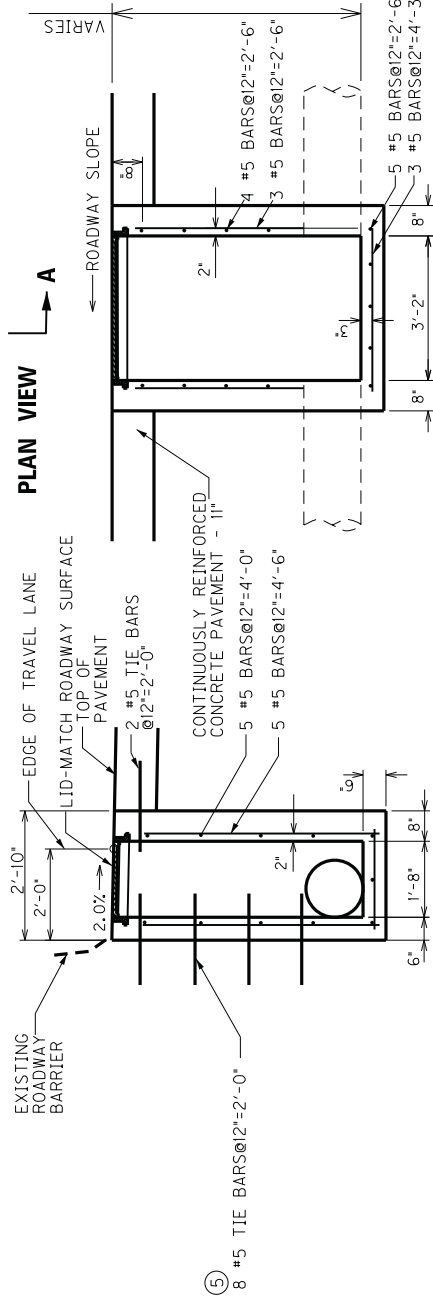
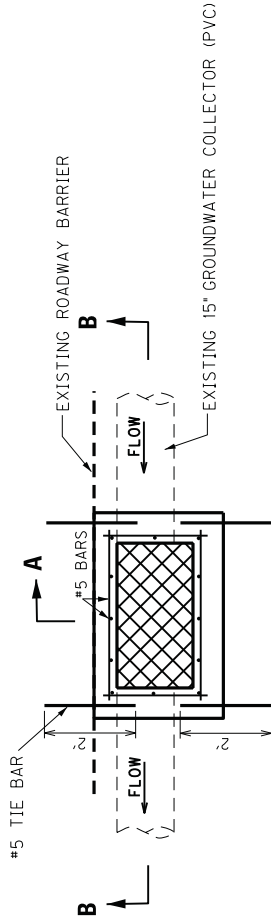
CUMBERLAND GAP TUNNEL
 US 25 E
 PAVEMENT REINF. DETAILS

NOT TO SCALE

COUNTY OF	ITEM NO.	SHEET NO.
BELL	11-2032.10	

DETAILS

GROUNDWATER COLLECTOR CLEANOUT



- NOTES:**
- LIDS SHALL BE NEENAH R1878 SERIES FRAMES AND HEAVY DUTY SOLID LIDS OR APPROVED EQUAL.
 - SET CLEANOUT FRAME AND LID TO MATCH ROADWAY SURFACE.
 - CUT REINFORCING STEEL AS REQUIRED TO CLEAR PIPE OPENINGS.
 - PIPES SHALL BE PLACED THROUGH FORMS AND CONCRETE POURED AROUND THE PIPES.
 - THESE TIE BARS SHALL BE DOWELLED INTO THE CONCRETE WALL. THIS IS INCIDENTAL TO THE UNIT BID PRICE OF CONCRETE.

GROUNDWATER COLLECTOR CLEANOUT DETAIL

DESCRIPTION	UNITS	QUANTITY
CONCRETE CLASS "AA"	CU. YD.	4.26
57-#5 BARS (2'-6")	LBS.	149
9-#5 BARS (4'-3")	LBS.	40
30-#5 BARS (4'-6")	LBS.	141
30-#5 BARS (4'-0")	LBS.	126
30-#5 BARS (2'-0")	LBS.	63
NEENAH R1878 SERIES FRAME & HEAVY DUTY LIDS	EACH	3

CUMBERLAND GAP TUNNEL
 US 25 E
 GROUNDWATER COLLECTOR DETAIL

NOT TO SCALE

Detail
New Groundwater Collection Drainage

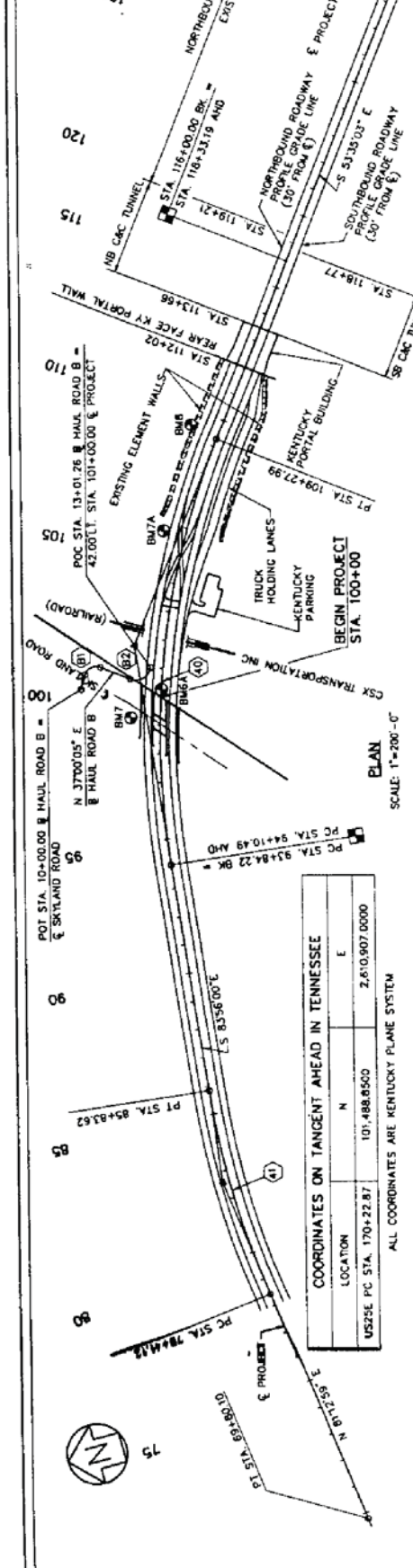
Historical repair areas for the pavement structure in the Cumberland Gap Tunnel are listed in the following chart:

Historical Repair Locations						
Location	Station		Dimensions			
	From	To	Length (FT)	Width (FT)	Area (SQ FT)	Area (SQ YD)
<i>Completed in 2012</i>						
SB	121+83	122+27	44	30	1320	147
SB	127+37	129+32	195	30	5850	650
SB	137+82	140+00	218	30	6540	727
NB	120+46	123+36	290	30	8700	967
NB	126+78	129+03	225	30	6750	750
NB	134+76	139+52	476	30	14280	1587
<i>Completed in 2007</i>						
SB	122+17	123+37	120	30	3600	400

To facilitate removal of groundwater from the tunnel subgrade during repairs completed in 2012, a 12" perforated drain was installed at the bottom of the excavation 4 ft RT of each respective tunnel bore centerline. At each dam location, a 12" non-perforated pipe was installed thru the dam and stubbed and capped on the downstream end. The intent of this 12" drain collector was to eliminate /minimize the bathtub effect of the groundwater in the subgrade via tying to this new drain and channeling the water out of the tunnel in the event that future repairs were warranted. Also installed were 3 (three) 8" perforated pipes.

COUNTY OF	BELL
ITEM NO.	II-XXXX
SHEET NO.	X

REC STATE	PROJECT	SHEET	TOTAL
KY TN SE	DPS-0025 (003)	54	837



CURVE TABLE

CURVE NO.	LOCATION	PI STATION	PC STATION	PT STATION	PT COORDINATES NORTH EAST	REMARKS
40	U.S. 25E	101+87.49	710.00	717.00	100.9180, 2.604792	100+00 TO 100+200
41	U.S. 25E	82+14.46	200.00	207.00	105.5963, 2.603896	100+200 TO 100+400
42	HAUL RD B	10+75.00	40.00	47.00	101.9758, 10+03.11	100+400 TO 100+600
B1	HAUL RD B	12477.36	50.00	57.00	12+08.51	100+600 TO 100+800

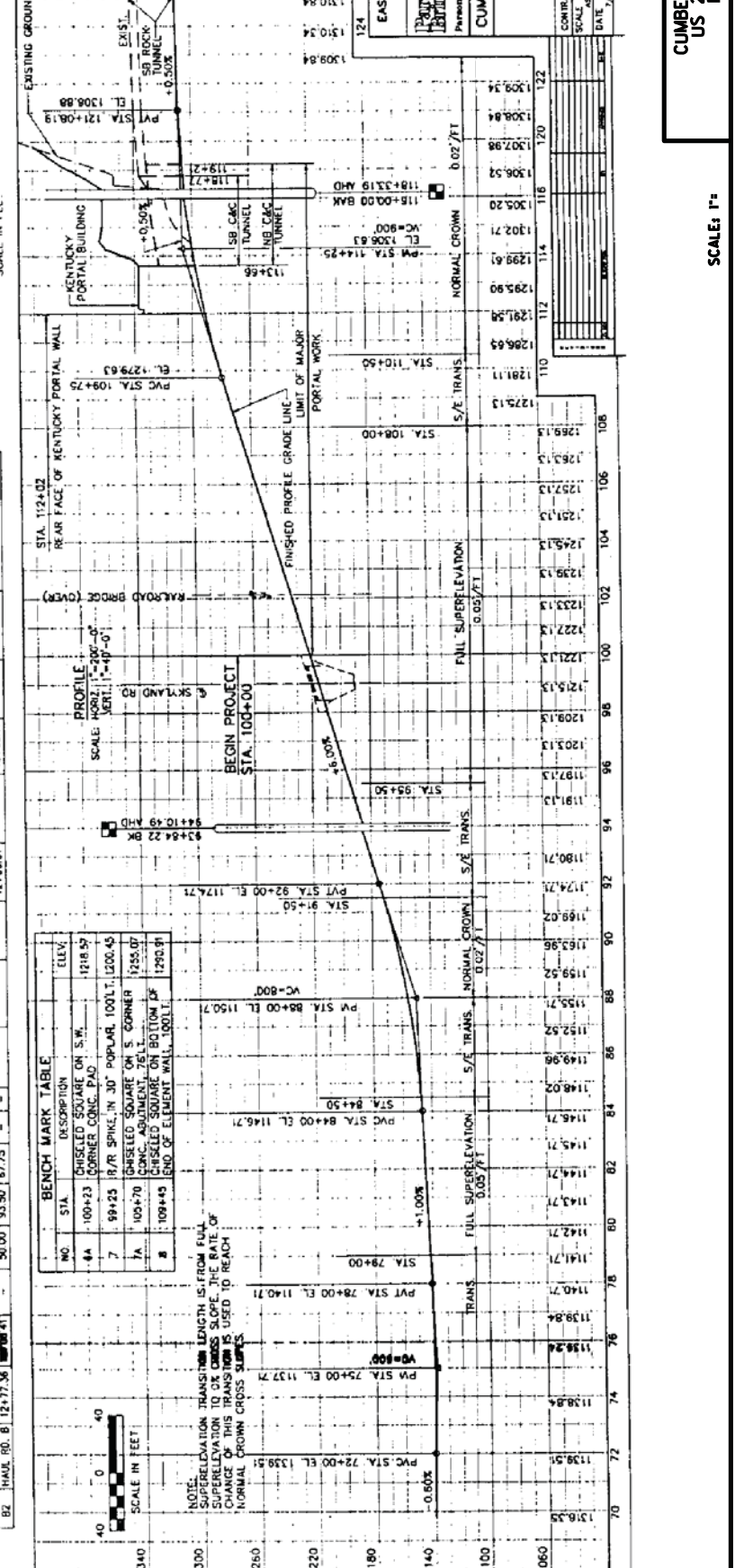
BENCH MARK TABLE

NO.	STA.	DESCRIPTION	ELEV.
4A	100+23	CHISELED SQUARE ON S.W. CORNER CONC. PAV.	1218.57
7	99+23	R/R SPIKE IN 30' POPLAR, 100'L, 1200.45	1200.45
7A	100+70	CHISELED SQUARE ON S. CORNER CONC. ABUTMENT, 75'L	1255.07
8	109+43	CHISELED SQUARE ON BOTTOM OF END OF ELEMENT WALL, 100'L	1280.41

COORDINATES ON TANGENT AHEAD IN TENNESSEE

LOCATION	N	E
US25E PC STA. 170+22.87	101,488,8500	2,610,907,0000

ALL COORDINATES ARE KENTUCKY PLANE SYSTEM



SCALE: 1"=200'-0"

SCALE: 1"=

CUMBERLAND GAP TUNNEL US 25 E SOUTHBOUND PLAN PROFILE

SCALE: 1"=

TRAFFIC CONTROL PLAN

TRAFFIC CONTROL GENERAL

Except for the bid items listed and exceptions outlined in the proposal notes, the Department and the Cumberland Gap Tunnel Authority will be responsible for maintaining and controlling traffic. The Department will close the southbound tunnel to all traffic and maintain one lane of traffic in each direction in the northbound tunnel during construction in the southbound tunnel. The Department will close the northbound tunnel to all traffic and maintain one lane of traffic in each direction in the southbound tunnel during construction in the northbound tunnel. The Engineer will coordinate traffic control with the Kentucky, Tennessee and Virginia Departments of Transportation and the National Park Service.

Submit a proposed work schedule to the Engineer for approval 7 calendar days prior to beginning work. The Department will be responsible for public notification of the work schedule. Contractor is responsible for furnishing, placing, and maintaining a **Portable Changeable Message Sign** at the four (4) locations identified on the Maintenance of Traffic Portable Changeable Message Sign Layout Sheet. The Contractor must place an advance warning message to notify the public of pending traffic impacts to wide loads 5 days prior to beginning construction and throughout the life of the project.

PROJECT PHASING & CONSTRUCTION PROCEDURES

Except in the immediate area of construction, keep the left lane of the respective tunnel open at all times for Tunnel Authority and emergency response vehicles. Do not use the apron areas at the Kentucky and Tennessee Portals as staging areas for construction vehicles or equipment. With prior approval from the Engineer, the Contractor may use the Kentucky Hazmat Lane and the Tennessee Parking Lot for staging areas. For merging construction traffic a **flagger** will be required to ensure safe egress and ingress into the flow of traffic for construction trucks and vehicles. No direct payment will be made for this work, but will be considered incidental to **Project CPM Schedule**.

Unless directed by the Engineer, do not transport any over dimensional loads or slow moving equipment through the northbound tunnel between the hours of 7:00 AM to 9:00 AM and the southbound tunnel between the hours of 3:00 PM to 6:00 PM.

The Contractor can work in multiple locations within a tunnel bore. The Contractor may also be allowed to open individual repair sections once completed and concrete strength is obtained. Opening of individual areas must be approved by the Engineer.

Complete all work in such a manner that the Department can make final inspection and open the tunnel to through traffic on or prior to the specified date of completion.

RESTRICTED WORK DATES

No tunnel or lane closures will be allowed the following dates and times:

- Bristol Spring Race: Thursday, 03/13/2014 8:00 AM thru Monday, 3/17/2014 7:00 PM
- Bristol Fall Race: Wednesday, 08/20/2014 8:00 AM thru Sunday, 08/24/2014 9:00 PM

SIGNS

The Department and Tunnel Authority will be responsible for project signage and changes to the outboard signs regarding construction and wide load restrictions during construction. This also shall include the use of the signs on I-75 and I-81 for control of traffic. Kentucky Transportation Cabinet shall furnish to the Cumberland Gap Tunnel Authority the messages to be displayed. The Department will place a placard on the outboard panel signs in Kentucky, Tennessee and Virginia, prohibiting all loads over **10 feet wide** during tunnel construction. A drawing is included in the proposal for locations of these signs.

PORTABLE CHANGEABLE MESSAGE SIGNS & ARROW PANELS

The Contractor will furnish, install, operate and maintain **Portable Changeable Message Signs**. These signs are to be placed at the four (4) locations identified on the Maintenance of Traffic Portable Changeable Message Sign Layout Sheet. Address requests for non-specific or non-standard messages to the Engineer.

At the conclusion of the project, the four Portable Changeable Message Signs will be **delivered** and turned over to the CUGA Tunnel Authority in **new, or like new** condition.

Portable Flashing **Arrow Panels** will be provided, installed, and maintained by the Contractor for use at the crossovers during the life of the project. These arrow panels will remain the property of the contractor at the conclusion of the project.

SPECIAL Note FOR TRAFFIC CONTROL PLAN

The contractor shall provide a CPM schedule for this project. This schedule shall include a completion date for the project. The contractor shall have the option of a "24/7" schedule, if desired.

The Contractor shall submit a traffic control plan for construction traffic and site deliveries for review and approval to the Engineer. This work will be considered incidental to **Project CPM Schedule**. For merging construction traffic, a flagger will be required to ensure safe egress and ingress into the flow of traffic for construction trucks and vehicles. No direct payment will be made for this work, but will be considered incidental to **Project CPM Schedule**.

PAVEMENT MARKINGS

Temporary or Permanent striping will be required when opening individual sections to traffic prior to completion of all repair areas either the northbound or southbound tunnel. Both the Northbound and Southbound tunnels will receive new pavement striping full length after all repairs have been completed.

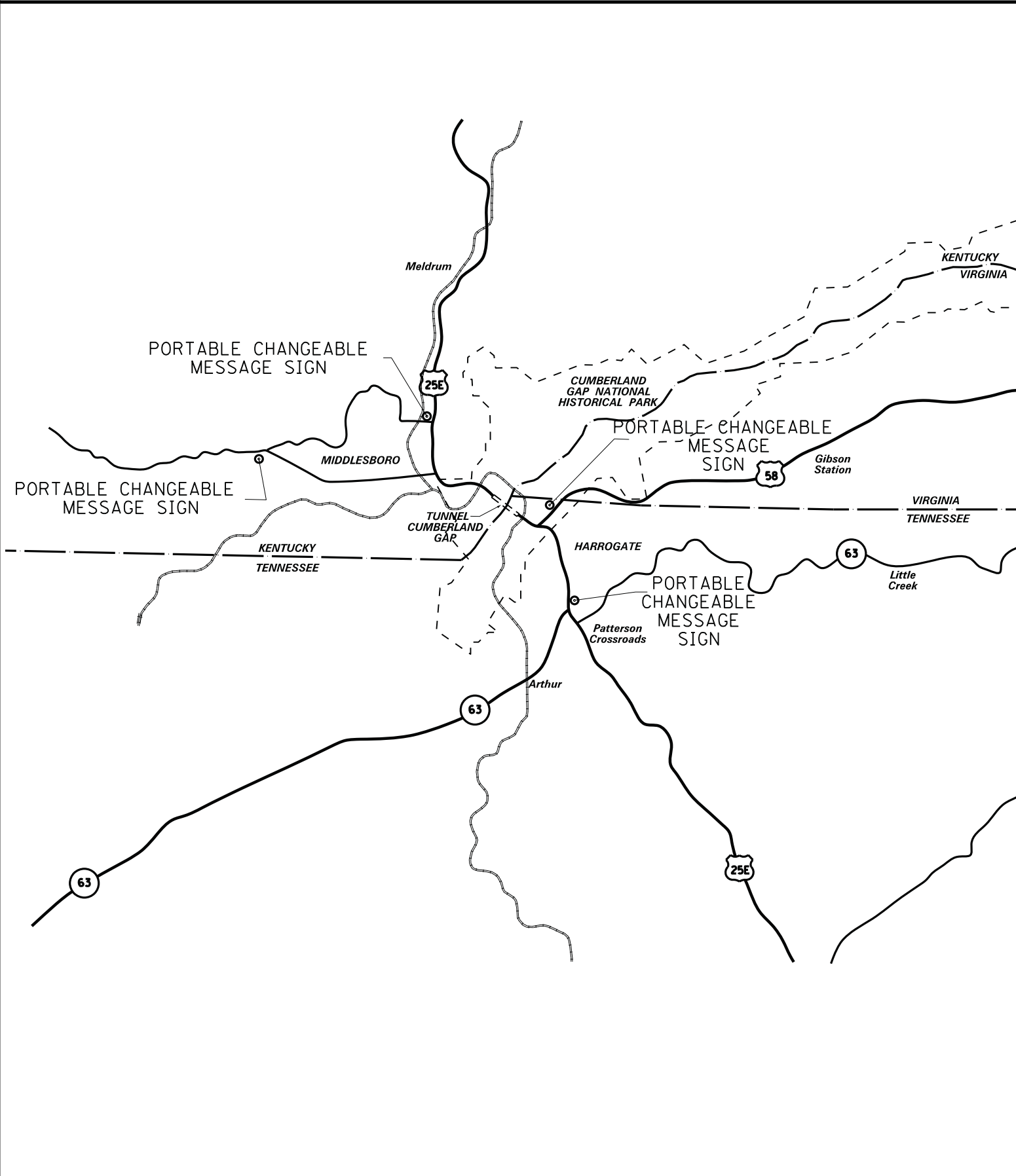
Apply pavement markings in accordance with Section 112 and applicable Standard Drawings, except that:

1. Temporary or Permanent striping shall be in place before a lane is opened to traffic; and
2. Permanent striping shall be **DURABLE WATERBORNE MARKING – 6 IN WHITE** and **DURABLE WATERBORNE MARKING – 6 IN YELLOW**
3. Permanent striping pattern and pavement marking layout shall match existing.

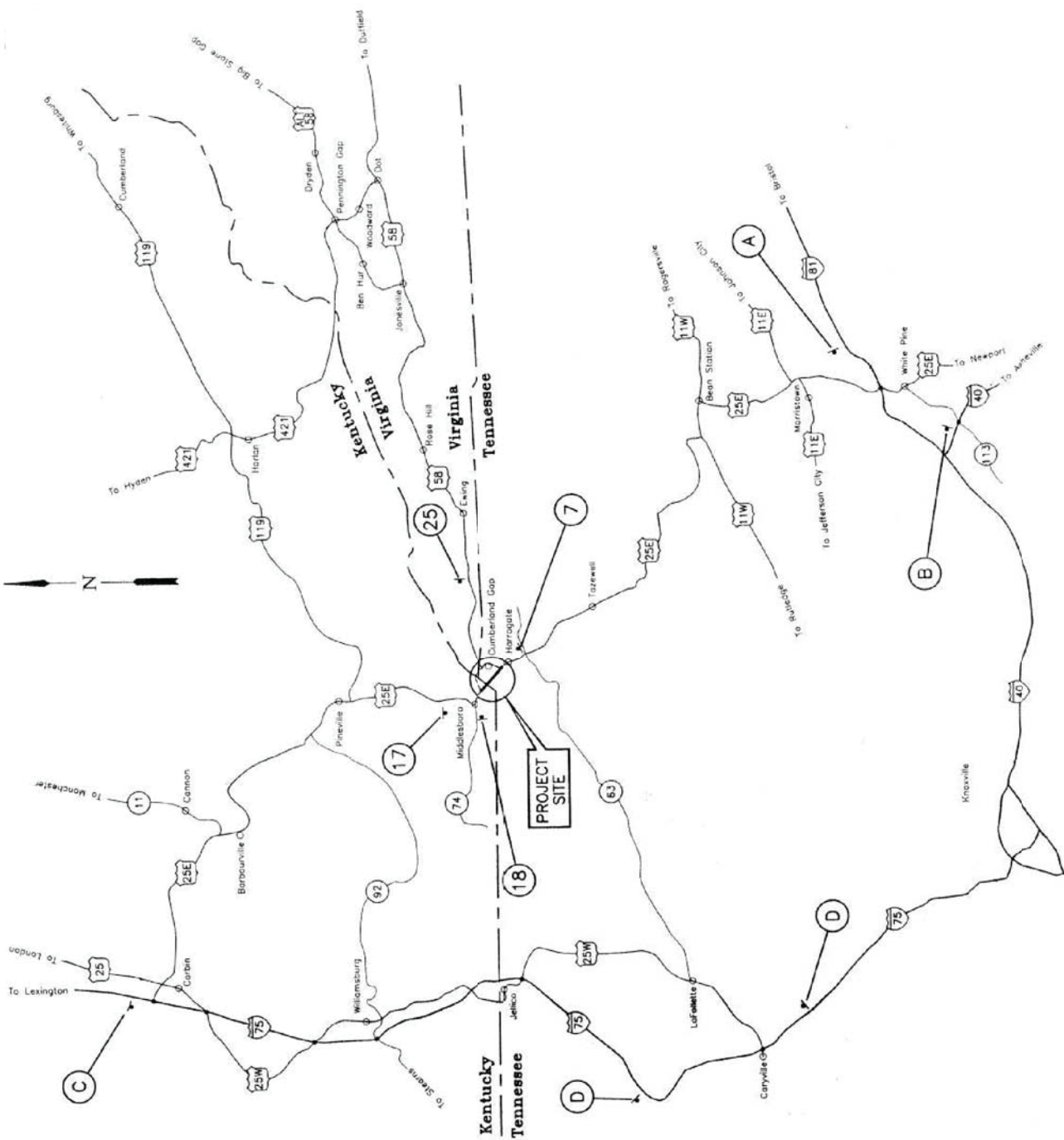
Remove Striping placed in error or not conforming to specifications at no expense to KYTC via Waterblasting. Removal of any striping will be considered incidental to the permanent striping.

CUMBERLAND GAP TUNNEL US 25E

MAINTENANCE OF TRAFFIC PORTABLE CHANGEABLE MESSAGE SIGN LAYOUT



MAINTENANCE OF TRAFFIC
ADVANCE WARNING SIGNS LOCATIONS



ADVANCE WARNING SIGNS

NOTE: LOCATE SMALLER SIGN FIRST WITH LARGER SIGN AT LEAST 300' BEYOND.

SIGN LOCATION
 (7) (17) (18) (25)

NOTE: LOCATE SMALLER SIGN FIRST WITH LARGER SIGN AT LEAST 300' BEYOND.

SIGN LOCATION
 MESSAGE
 EXIT 8
 EXIT 421
 EXIT 29
 EXIT 134 (2 THUS)

SIGN FIG. 18 (4 THUS)

25E Tunnel	
PERMITTED HAZARDOUS MATERIALS CLASS 2 THRU CLASS 8 OVER 6'-0" WIDE	
UNDER ESCORT	

SIGN FIG. 19 (4 THUS)

25E Tunnel	
PROHIBITED CLASS 1 EXPLOSIVES CLASS 9 HAZMAT	

SIGN FIG. 18A (5 THUS)

25E Tunnel	
EXIT []	
PROHIBITED CLASS 1 EXPLOSIVES CLASS 9 HAZMAT	

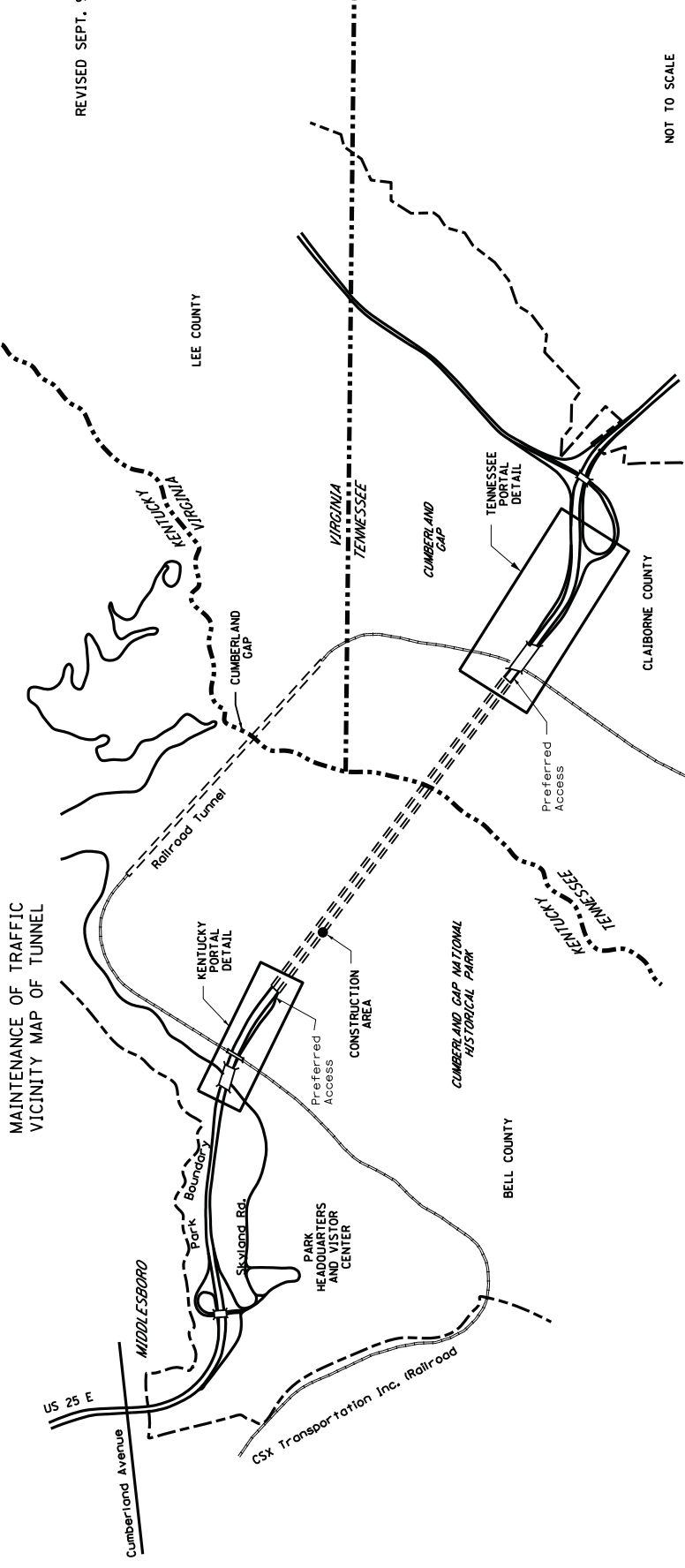
SIGN FIG. 19 (5 THUS)

25E Tunnel	
EXIT []	
PERMITTED HAZARDOUS MATERIALS CLASS 2 THRU CLASS 8 OVER 6'-0" WIDE	
UNDER ESCORT	

COUNTY OF	ITEM NO.	SHEET NO.
BELL	11-2032.10	

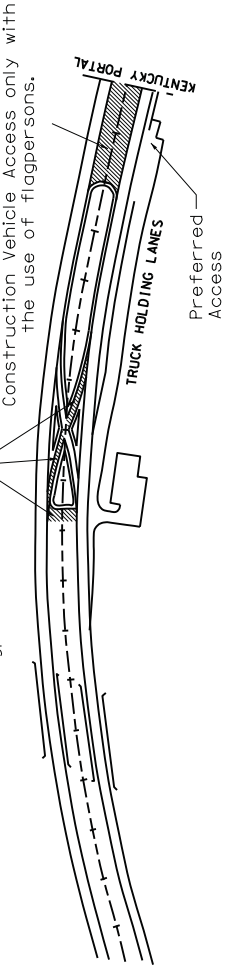
REVISED SEPT. 9, 2011

MAINTENANCE OF TRAFFIC
VICINITY MAP OF TUNNEL



NOT TO SCALE

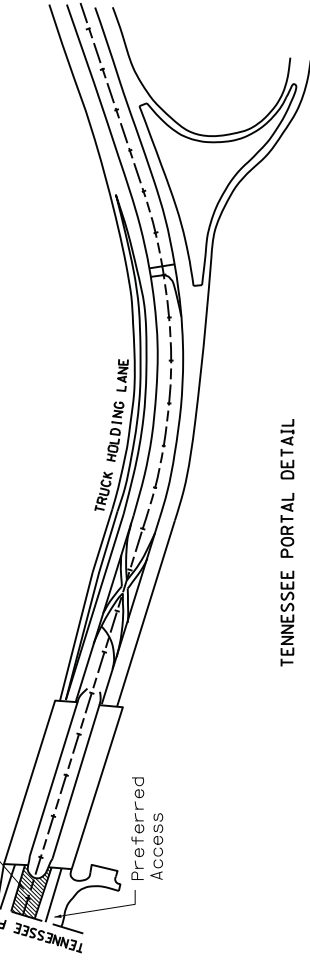
Construction Vehicle Access only with the use of flagpersons.



KENTUCKY PORTAL DETAIL

NOT TO SCALE

Construction Vehicle Access only with the use of flagpersons.



TENNESSEE PORTAL DETAIL

NOT TO SCALE

REFERENCES

1. Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Edition of 2012

2. Kentucky Department of Highways Standard Drawings, current editions, as applicable:

RDP-001-05	PERFORATED PIPE TYPES AND COVER HEIGHTS
RDP-005-04	PERFORATED PIPES FOR SUBGRADE DRAINAGE ON TWO-LANE (CLASS 2) AND MULTILANE ROADS
RDP-006-003	PERFORATED PIPE UNDERDRAINS (LONGITUDINAL AND TRANSVERSE)
RDP-007-03	PERFORATED PIPE DETAILS (SOLID ROCK)
RGX-001-04	MISCELLANEOUS STANDARDS PART 1
RPX-001-03	STATION MARKINGS – CONCRETE PAVEMENT
TPM-100-01	PAVEMENT MARKER ARRANGEMENTS MULTILANE ROADWAYS
RPS-010-10	CONCRETE PAVEMENT JOINT DETAILS

3. Kentucky Transportation Cabinet, Department of Highways, Standard Specifications for Road and Bridge Construction, Edition of 2012 – Supplemental Specifications, as applicable:

Special Note 6J	SPECIAL NOTE FOR NON-EPOXY ADHESIVES
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4. PROPOSAL ATTACHMENTS

- 1 SPECIAL NOTE FOR CRCP DIAMOND GRINDING
- 2 SPECIAL NOTE FOR TUNNEL REPAIR
- 3 SPECIAL NOTE FOR PORTABLE CHANGEABLE MESSAGE SIGNS
- 4 SPECIAL NOTE FOR WASTE AND BORROW SITES
- 5 SPECIAL NOTE FOR WORK WITH OTHER CONTRACTS
- 6 SPECIAL NOTE FOR WATER QUALITY AND DEWATERING
- 7 SPECIAL NOTE FOR DISINCENTIVE A + B
- 8 SPECIAL NOTE FOR PAVEMENT REMOVAL FOR 12-IN PIPE
- 9 NEENAH INFORMATION

SPECIAL NOTE FOR CRCP DIAMOND GRINDING

Following completion of all new CRCP repair work in this project, diamond grind the entire length and width of both NB and SB tunnels driving lanes and shoulders including roadway approaches outside the tunnel. Diamond Grinding shall start at the beginning of the concrete approach slab on the Kentucky side of the tunnel at approximate sta. 112+02 and extend through the tunnel to the bridge end on the Tennessee side of the tunnel approximate sta. 161+72, diamond grinding shall zero out on both ends to ensure a smooth transition. Diamond grinding shall zero out beyond shoulders to ensure positive roadway drainage throughout project. Omit diamond grinding 6" strip at centerline to avoid Type V pavement markers. Both existing CRCP pavement and new CRCP pavement are to be diamond ground. Diamond grinding operation shall conform to section 503 of the current Kentucky Standard Specifications, including Ride Quality. Both existing and new longitudinal and transverse joints shall be resealed. Joint sealing shall conform to subsection 501.03 of the current Kentucky Standard Specifications.

Contain and dispose of all slurry from the diamond grinding operation and dispose of off site. Any water entering the drainage system shall meet the water quality standards established by Cumberland Gap National Park service.

SPECIAL NOTES FOR TUNNEL REPAIR

I. DESCRIPTION

Except as specified herein, perform all work in accordance with the Department's 2012 Standard and Supplemental Specifications, Special Provisions, Standard and Sepia Drawings. Section references are to the Standard Specifications.

Remove existing concrete pavement, existing asphalt pavement, and existing aggregate base down to the existing bedrock throughout the limits of the project as indicated in the proposal. After the excavation is performed to the satisfaction of the Engineer the following reconstruction will be installed:

Total refill of the project limits using coarse granite aggregates and a continuously reinforced concrete pavement.

II. MATERIALS

All materials shall be sampled and tested in accordance with the Department's Sampling Manual and the materials shall be available for sampling a sufficient time in advance of the use of the materials to allow for the necessary time for testing unless otherwise specified in these notes.

- A. **Granular Embankment.** Provide Crushed Granite Aggregate.
- B. **Steel Reinforcement-Epoxy Coated.** Conform to Section 811 of the Standard Specifications.
- C. **Concrete-Class AA.** Provide 4000 psi concrete conforming to Section 601 of the Standard Specifications.
- D. **JPC Pavement-11 inch Continuously Reinforced.** See Details for Continuously Reinforced Concrete Pavement.

III. CONSTRUCTION METHODS

- A. **Maintain and Control Traffic.** See Traffic Control Plan.
- B. **Pavement Repair.** Saw-cut and remove existing concrete pavement, existing asphalt pavement, and existing aggregate base materials down to the existing bedrock throughout the limits of the project as indicated on the plans. Remove soft or fractured rock below the repair area and refill with materials as shown in the detail in the plans. Support the existing groundwater collector and roadway drains. Be responsible for collection and disposal of any groundwater accumulation in the pavement removal area during construction. If necessary, groundwater may be diverted from wall drains to the drain inlets during construction. After removal of all material repair the pavement according to the plans or as directed by the Engineer.
- C. **Site Preparation.** Be responsible for all site preparation, including, but not limited to incidental excavation and backfilling, removal of obstructions or items and disposal of materials. Perform all site preparation only as approved or directed by the Engineer.
- D. **Final Dressing and Clean Up.** After all work is completed, completely remove debris from the construction site.
- E. **On-Site Inspection.** Prior to submitting a bid, make a thorough inspection of the site and become thoroughly familiar with existing conditions so that the work can be expeditiously performed after a contract is awarded. The Department will consider submission of a bid as evidence of this inspection having been made. The Department will not consider any claims resulting from site conditions.

- F. **Right-of-Way Limits.** The entire project is on right-of-way and within Cumberland Gap National Historic Park.
- G. **Damage to Existing Facilities.** Except as shown on the plans, do not disturb any existing groundwater collection, roadway drainage systems or overhead appendages (fans, lights, Signs, etc). Repair any damages in like kind materials and design at no additional cost to the Department.
- H. **Disposal of Waste.** Dispose of all removed debris, excess excavation, and other waste off the right-of-way and outside the Park at approved sites obtained by the Contractor at no additional cost to the Department. No separate payment will be made for the disposal of waste and debris from the project, but shall be incidental to the other items of the work. See Special Note for Waste and Borrowed Sites.
- I. **Caution.** Consider the information in this proposal and the type of work listed herein as approximate only and do not take to be an accurate evaluation of the materials and conditions to be encountered during construction; the bidder must draw his own conclusions. The Department does not give any guarantee as to the accuracy of the data and no claim will be considered if the conditions encountered are not in accordance with the information shown.

IV. METHOD OF MEASUREMENT

Only the bid items listed will be measured for payment. All other items required to complete the work shall be incidental to the items listed.

- A. **Site Preparation.** Other than the bid items listed, site preparation will not be measured for payment, but shall be incidental to other items of work.
- B. **Steel Reinforcement.** Steel Reinforcement for Continuously Reinforced Pavement and the bar connections to existing pavement will not be measured for payment but shall be incidental to Continuously Reinforced Pavement. Steel Reinforcement for the groundwater collectors will be measured according to Section 602.04.

V. METHOD OF PAYMENT

Submit unit prices for all items of work. After the inspection when the work is opened and the Engineer determines the appropriateness and actual area(s) of repair, only the items and quantities actually constructed will be measured for payment. Contrary to Section 109.03, the Department will not enter into a supplemental agreement to adjust unit prices due to decreases or increases in estimated Granular Embankment quantities.

**US 25E
CUBERLAND GAP TUNNEL**

Item No. 11-2032.1

SPECIAL NOTE FOR PORTABLE CHANGEABLE MESSAGE SIGNS

1.0 DESCRIPTION. Furnish, install, operate, and maintain variable message signs at the locations shown on the plans or designated by the Engineer. At the conclusion of this project, the 4 portable changeable message signs will be delivered and turned over to the CUGA Tunnel Authority in new, or like new condition.

2.1 MATERIALS.

2.2 General. Use LED Variable Message Signs Class I, II, or III, as appropriate, from the Department's List of Approved Materials.

Unclassified signs may be submitted for approval by the Engineer. The Engineer may require a daytime and nighttime demonstration. The Engineer will make a final decision within 30 days after all required information is received.

2.3 Sign and Controls. All signs must:

- 1) Provide 3-line messages with each line being 8 characters long and at least 18 inches tall. Each character comprises 35 pixels.
- 2) Provide at least 40 preprogrammed messages available for use at any time. Provide for quick and easy change of the displayed message; editing of the message; and additions of new messages.
- 3) Provide a controller consisting of:
 - a) Keyboard or keypad.
 - b) Readout that mimics the actual sign display. (When LCD or LCD type readout is used, include backlighting and heating or otherwise arrange for viewing in cold temperatures.)
 - c) Non-volatile memory or suitable memory with battery backup for storing pre-programmed messages.
 - d) Logic circuitry to control the sequence of messages and flash rate.
- 4) Provide a serial interface that is capable of supporting complete remote control ability through land line and cellular telephone operation. Include communication software capable of immediately updating the message, providing complete sign status, and allowing message library queries and updates.
- 5) Allow a single person easily to raise the sign to a satisfactory height above the pavement during use, and lower the sign during travel.
- 6) Be Highway Orange on all exterior surfaces of the trailer, supports, and controller cabinet.
- 7) Provide operation in ambient temperatures from -30 to + 120 degrees Fahrenheit during snow, rain and other inclement weather.
- 8) Provide the driver board as part of a module. All modules are interchangeable, and have plug and socket arrangements for disconnection and reconnection. Printed circuit boards associated with driver boards have a conformable coating to protect against moisture.
- 9) Provide a sign case sealed against rain, snow, dust, insects, etc. The lens is UV stabilized clear plastic (polycarbonate, acrylic, or other approved material) angled to prevent glare.
- 10) Provide a flat black UV protected coating on the sign hardware, character PCB, and appropriate lens areas.

- 11) Provide a photocell control to provide automatic dimming.
- 12) Allow an on-off flashing sequence at an adjustable rate.
- 13) Provide a sight to aim the message.
- 14) Provide a LED display color of approximately 590 nm amber.
- 15) Provide a controller that is password protected.
- 16) Provide a security device that prevents unauthorized individuals from accessing the controller.
- 17) Provide the following 3-line messages preprogrammed and available for use when the sign unit begins operation:

/KEEP/RIGHT/=>>>=>/	/MIN/SPEED/**MPH/
/KEEP/LEFT/<<<<</	/ICY/BRIDGE/AHEAD/ /ONE
/LOOSE/GRAVEL/AHEAD/	LANE/BRIDGE/AHEAD/
/RD WORK/NEXT/**MILES/	/ROUGH/ROAD/AHEAD/
/TWO WAY/TRAFFIC/AHEAD/	/MERGING/TRAFFIC/AHEAD/
/PAINT/CREW/AHEAD/	/NEXT/**/MILES/
/REDUCE/SPEED/**MPH/	/HEAVY/TRAFFIC/AHEAD/
/BRIDGE/WORK/***0 FT/	/SPEED/LIMIT/**MPH/
/MAX/SPEED/**MPH/	/BUMP/AHEAD/
/SURVEY/PARTY/AHEAD/	/TWO/WAY/TRAFFIC/

*Insert numerals as directed by the Engineer.
Add other messages during the project when required by the Engineer.

2.4 Power.

- 1) Design solar panels to yield 10 percent or greater additional charge than sign consumption. Provide direct wiring for operation of the sign or arrow board from an external power source to provide energy backup for 21 days without sunlight and an on-board system charger with the ability to recharge completely discharged batteries in 24 hours.

3.0 CONSTRUCTION. Furnish and operate the variable message signs as designated on the plans or by the Engineer. Ensure the bottom of the message panel is a minimum of 7 feet above the roadway in urban areas and 5 feet above in rural areas when operating. Use Class I, II, or III signs on roads with a speed limit less than 55 mph. Use Class I or II signs on roads with speed limits 55 mph or greater.

Maintain the sign in proper working order, including repair of any damage done by others, until completion of the project. When the sign becomes inoperative, immediately repair or replace the sign. Repetitive problems with the same unit will be cause for rejection and replacement.

Use only project related messages and messages directed by the Engineer, unnecessary messages lessen the impact of the sign. Ensure the message is displayed in either one or 2 phases with each phase having no more than 3 lines of text. When no message is needed, but it is necessary to know if the sign is operable, flash only a pixel.

When the sign is not needed, move it outside the clear zone or where the Engineer directs. Variable Message Signs are the property of the Contractor and shall be removed from the project when no longer needed. The Department will not assume ownership of these signs.

4.0 MEASUREMENT. The final quantity of Variable Message Sign will be the actual number of individual signs acceptably furnished and operated during the project. The Department will not measure signs replaced due to damage or rejection.

5.0 PAYMENT. The Department will pay for the Variable Message Signs at the unit price each. The Department will not pay for signs replaced due to damage or rejection. Payment is full compensation for furnishing all materials, labor, equipment, and service necessary to, operate, move, repair, and maintain or replace the variable message signs. The Department will make payment for the completed and accepted quantities under the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
02671	Portable Changeable Message Sign	Each

SPECIAL NOTE FOR WASTE AND BORROW SITES

The Contractor is advised that it is their responsibility to gain U.S. Army Corp of Engineers approval before utilizing a waste or borrow site that involves "Waters of the United States". "Waters of the United States" are defined as perennial or intermittent streams, ponds or wetlands. Ephemeral streams are also considered jurisdictional waters, and are typically dry except during rainfall, but have a defined drainage channel. Questions concerning any potential impacts to "Waters..." should be brought to the attention of the appropriate District Office for the Corps of Engineers for a determination, prior to disturbance. Any fees associated with obtaining approval from the U.S. Army Corp of Engineers or other appropriate regulatory agencies for waste and borrow sites is the responsibility of the Contractor.

COORDINATION OF WORK WITH OTHER CONTRACTS

Be advised that there may be an active project(s) adjacent to or within this project, including projects under the control of the Cumberland Gap Tunnel Authority, the states of Tennessee and Virginia, and the United State Department of the Interior National Park Service. The Engineer will coordinate the work of the Contractor(s). See Section 105.06 of the Standard Specifications.

SPECIAL NOTE FOR WATER QUALITY AND DEWATERING

WATER QUALITY GENERAL

All water leaving the project limits is to meet water quality standards established by the Cumberland Gap National Park Service and Kentucky Division of Water. Submit a **Dewatering Plan** to meet water quality standards to the Project Engineer for approval. **Sand Bags** will be required around all drains and drop box inlets to ensure silt and sediment does not enter drainage system. Contractor must implement measures to ensure drainage system is kept clean and free of sediment from concrete sawing, disposal of groundwater from excavation, and construction operations.

DEWATERING

Dewatering system with sedimentation basins is required for all water leaving project. A **dewatering plan** is required to be submitted for approval prior to construction. The dewatering plan must show method proposed, capacity of sedimentation basin or basins, and the overall plan to remove silt and sediment prior to water entering the storm water or roadway drainage system. The contractor is responsible for collecting and disposing of any groundwater accumulation in the pavement removal areas. All water used to saw pavement, cleanup, or used in any operations inside the tunnel must be captured for disposal. A **concrete truck washout** area must be supplied either on site or off site.

All work associated with this note is to be included in the lump sum price for **Dewatering**.

ROADWAY DRAINAGE TREATMENT PLANT

At the conclusion of the pavement repair operation, the contractor shall clean all components of the **Roadway Drainage Treatment Plant** located north of the southbound hazmat lanes. This will include cleaning and material removal from the 2 inverted pyramid settlement basins and the oil/water separator. Removal of accumulated silt may be accomplished by pumping plant to low water level and then scraping or loosening silt and accumulated sludge using **hand tools**. Silt and sludge will be removed using hand tools and disposed off site at appropriate waste areas. The sludge silt or debris from the oil and water separator may require disposal at an appropriate landfill. All work associated with cleaning of the Roadway Drainage Treatment Plant will be **incidental to Dewatering pay item**.

US 25E
Bell County
FD04 SPP 007 025E 000-001
Item Number 11-2032.10

December 18, 2013

**SPECIAL NOTE FOR
FIXED COMPLETION DATES, DISINCENTIVE FEES AND INCENTIVES
“A+B”**

Fixed Completion Dates and “A+B” Bidding

The procedure for evaluation of bids on this project involves an “A+B” concept.

The “A” component of the bid involves the dollar amount for all work to be performed under the contract.

The “B” component involves the number of calendar days that **both northbound and southbound US25E traffic are diverted into a single tunnel bore.**

This project will have an interim fixed completion date of **August 19, 2014** for completion of all work that requires both directions of traffic to be shifted into a single tunnel bore and a fixed completion date of **October 1, 2014** for completion of all work.

A disincentive fee of **\$2,500 per day** will be charged for each calendar day that all work requiring a tunnel closure is not completed after **August 19, 2014**. A disincentive fee of **\$2,500 per day** will be charged for each calendar day that all work associated with this project is not complete after **October 1, 2014**. These fees will be charged cumulatively and are in addition to contract liquidated damages per the Standard Specifications.

Contrary to Section 108.09 of the Standard Specifications, **the disincentive fees listed in this note including contract liquidated damages will be charged during the months of December through March if all required work is not complete.**

Preparation of Bid Proposal

In addition to the requirements of Section 102 of the Standard Specifications, the bidder shall establish the total number of calendar days that US25E traffic will be diverted into a single tunnel bore to complete the work in accordance with the proposal and specifications and show this number in the bid proposal. The “B” component will have a daily dollar amount that will be used to calculate the total “B” component for bid comparison purposes. The value of each calendar day of work will be the following:

$$\mathbf{B = \$5,000}$$

A maximum of 180 days will be allowed to be bid for this project.

Proposal Guaranty

As a supplement to Section 102 of the 2012 Standard Specifications, it will not be necessary for the Proposal Guaranty to include an amount necessary to cover the product of days bid times the daily cost.

Consideration of Bids

Each bid submitted shall consist of two parts:

- A The dollar amount for all work to be performed under the contract.
- B The number of calendar days of tunnel bore closure

The lowest and best bid will be determined by the Department as the lowest combination of the three parts according to the following formula:

$$BID = A + [B]5,000$$

Disincentive Fees for Work Beyond the Days Bid

Upon the beginning of a tunnel closure and crossover of traffic to place both directions of travel in a single tunnel bore, time will be charged against the B component. A day will be charged for any day or fraction of a day that a tunnel bore is closed. After the number of days bid is reached any subsequent closure of either tunnel bore will result in a disincentive charge to the contractor. A disincentive of **\$5,000** will be applied for every day hour or fraction of a day that any tunnel closure is in place beyond the number of calendar days bid.

The disincentive fees for work beyond the number of calendar days bid will be charged in addition to any other disincentive fees or liquidated damages if the work continues beyond the fixed completion dates listed above.

Contrary to Section 108.09 of the Standard Specifications, **the \$5,000 per day disincentives will be charged during the months of December through March for every day that a tunnel bore is closed to traffic.**

THERE IS NO MAXIMUM OR CAP TO DISINCENTIVE FEES FOR THIS PROJECT.

Disincentive for Restricted Work Dates

There are periods listed in the Traffic Control Plan where no tunnel closures or lane restrictions will be in place. If a lane or tunnel closure is in place during these periods the Contractor will be charged a disincentive fee of **\$5,000** for any day or fraction of a day that a closure is in place.

Incentive for Opening to Traffic on Holiday Periods

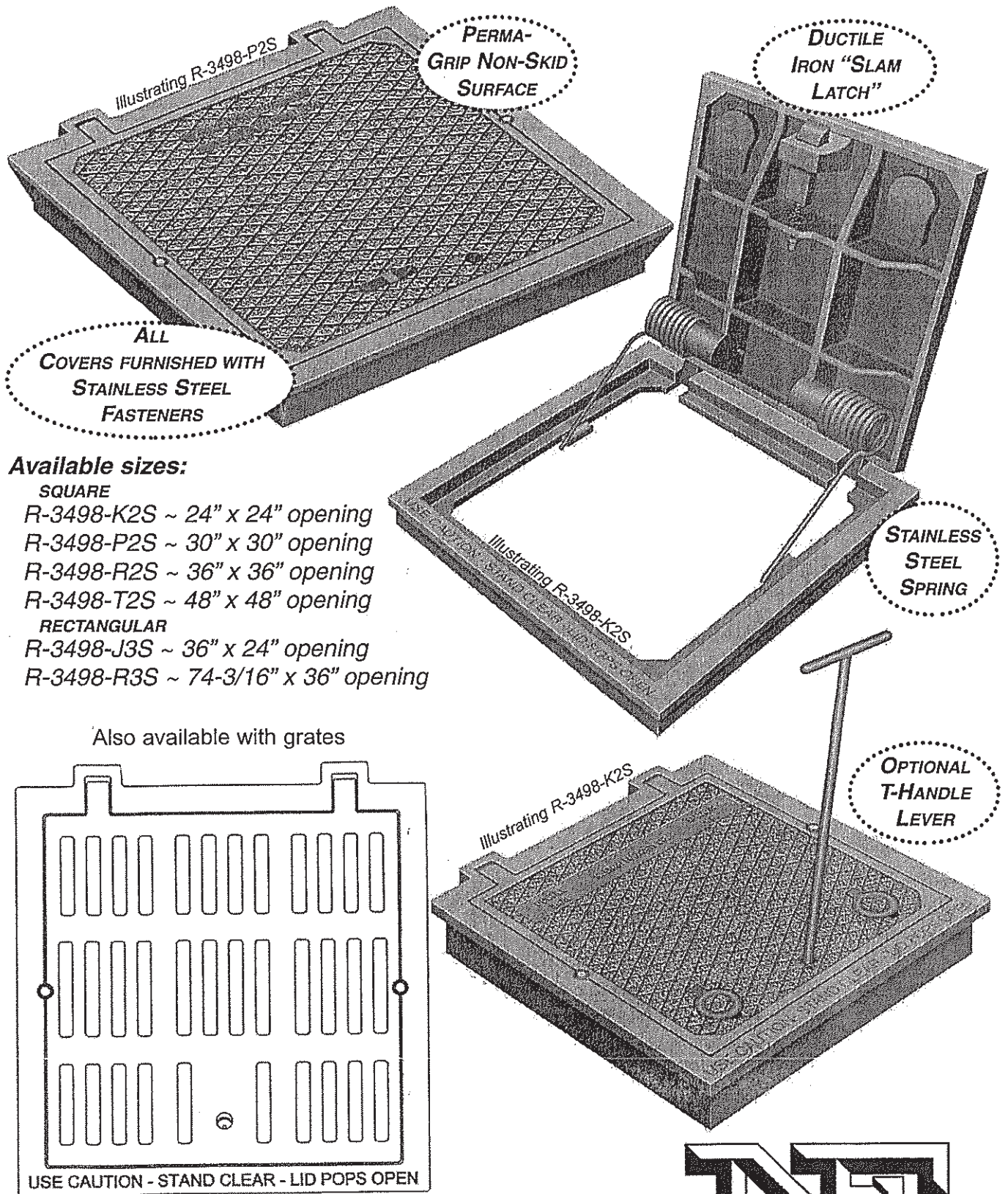
An incentive of **\$5,000** per day will be allowed for opening both tunnels and all lanes to unrestricted traffic for the holiday periods listed below:

- Easter Weekend: Friday, 04/18/2014 7:00 AM thru Sunday, 04/20/2014 10:00 PM
- Memorial Day Weekend: Friday, 05/23/2014 7:00 AM thru Monday, 05/26/2014 10:00 PM
- Independence Day Weekend: Thursday, 07/03/2014 7:00 AM thru Sunday, 07/06/2014 10:00 PM

The incentive to open for holiday periods will be for a maximum of 11 calendar days, or a maximum of \$55,000. **An incentive will only be paid if both tunnels and all lanes are operational for the entire time frame for the three holiday periods listed above.** An incentive may be earned for one or more of these periods listed.

**SPECIAL NOTE PAVEMENT REMOVAL FOR 12 INCH DRAIN PIPE
NORTH BOUND STA. 114+95**

Pavement is being removed and replaced in the northbound tunnel bore from the existing Dam at Sta. 118+98 to the existing DBI for the Groundwater Collection system at Sta. 114+95 in order to tie the 12 inch non-perforated pipe into the DBI. However the grades of the existing 12 inch groundwater collection pipe may allow tying the new pipe to existing at approximately Sta. 115+60 ± with the construction of a new DBI Collector. Excavation and removal of existing CRCP pavement and excavation should progress in 25 foot increments beginning from Sta. 116+00 toward Sta. 114+95. As excavation progresses check grades as existing pipe is uncovered in order to possibly reduce CRCP pavement replacement quantities. Install 12 inch pipe on a minimum 0.5% grade.



ALL
COVERS FURNISHED WITH
STAINLESS STEEL
FASTENERS

Available sizes:

SQUARE

R-3498-K2S ~ 24" x 24" opening

R-3498-P2S ~ 30" x 30" opening

R-3498-R2S ~ 36" x 36" opening

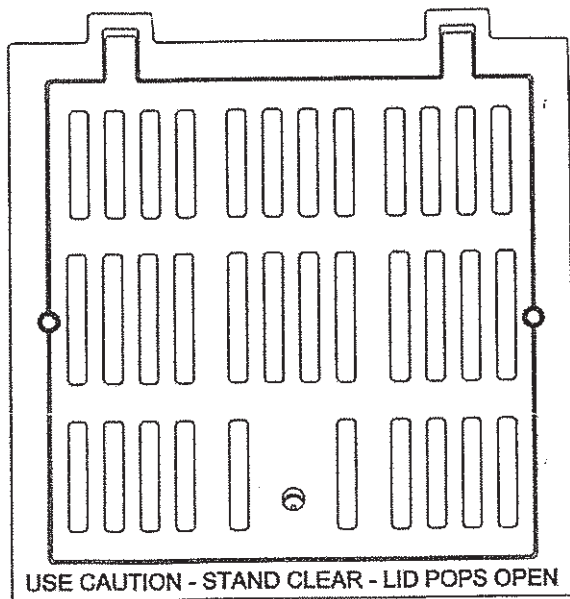
R-3498-T2S ~ 48" x 48" opening

RECTANGULAR

R-3498-J3S ~ 36" x 24" opening

R-3498-R3S ~ 74-3/16" x 36" opening

Also available with grates



Contact your NEENAH representative for details.



NEENAH FOUNDRY COMPANY - 2121 BROOKS AVENUE - NEENAH, WI 54956
Phone: 800-558-5075 - www.NFCO.com - Fax: 920-729-3661

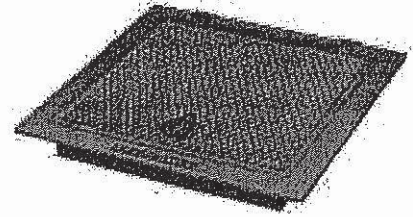
AIRPORT UTILITY FRAMES

R-3498- series castings meet or exceed FAA requirements for manhole covers per Advisory Circular AS150/5320-6D.

Lids are fastened to frames.

Lids are hinged and furnished with hold-open safety device.

Stainless steel torsion spring lift assist available - order as noted.



Illustrating R-3498-K1

The following lids are furnished in Austempered Ductile Iron.

Advantage of Austempered Ductile Iron Lids by Neenah

Meets FAA material requirements per Advisory Circular AS150/5370-10A.

Exceptional strength to weight ratio.

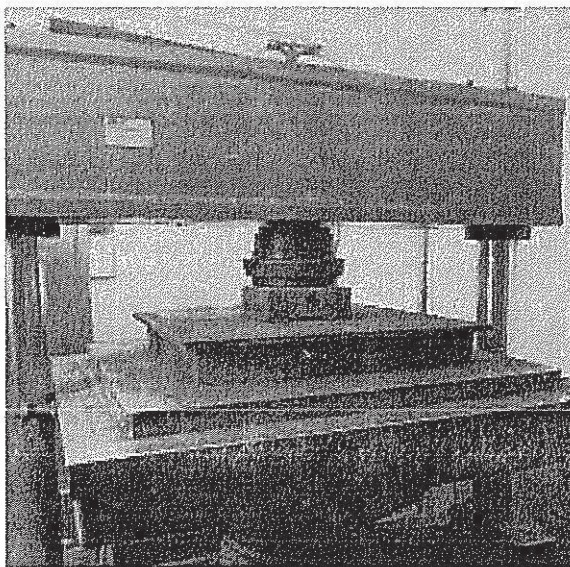
Lighter lids require less effort to open.

Standard Catalog No.	Spring-Assist Catalog No.	Dimensions in Inches					Lid Weight	Proof Load
		A	B	C	E	F		
R-3498-K1	R-3498-K1S	25 ³ / ₄ x 25 ³ / ₄	1 ¹ / ₂	24 x 24	30 x 30	4	145 lbs.	125,000# minimum
R-3498-P1	R-3498-P1S	31 ¹ / ₂ x 31 ¹ / ₂	1 ¹ / ₂	30 x 30	36 x 36	4	220 lbs.	125,000# minimum

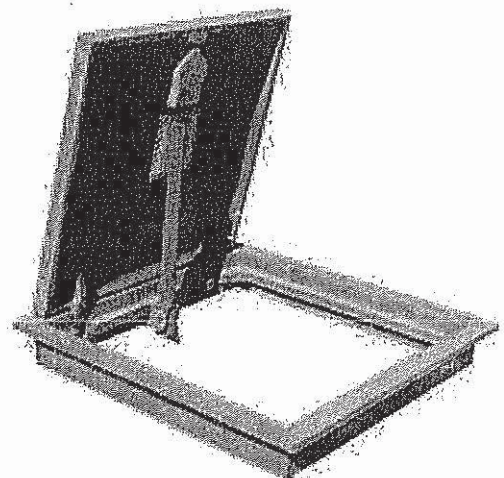
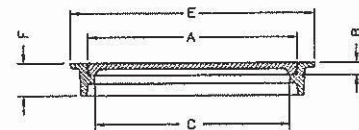
The following lids are furnished in Ductile Iron.

Standard Catalog No.	Spring-Assist Catalog No.	Dimensions in Inches					Lid Weight	Proof Load
		A	B	C	E	F		
R-3498-K2	R-3498-K2S	25 ³ / ₄ x 25 ³ / ₄	1 ¹ / ₂	24 x 24	30 x 30	4	242 lbs.	200,000# minimum
R-3498-P2	R-3498-P2S	31 ¹ / ₂ x 31 ¹ / ₂	1 ¹ / ₂	30 x 30	36 x 36	4	387 lbs.	200,000# minimum
R-3498-R2	R-3498-R2S	38 x 38	1 ¹ / ₂	36 x 36	42 x 42	4	457 lbs.	200,000# minimum

Contact Neenah for further information or for detailed drawings.



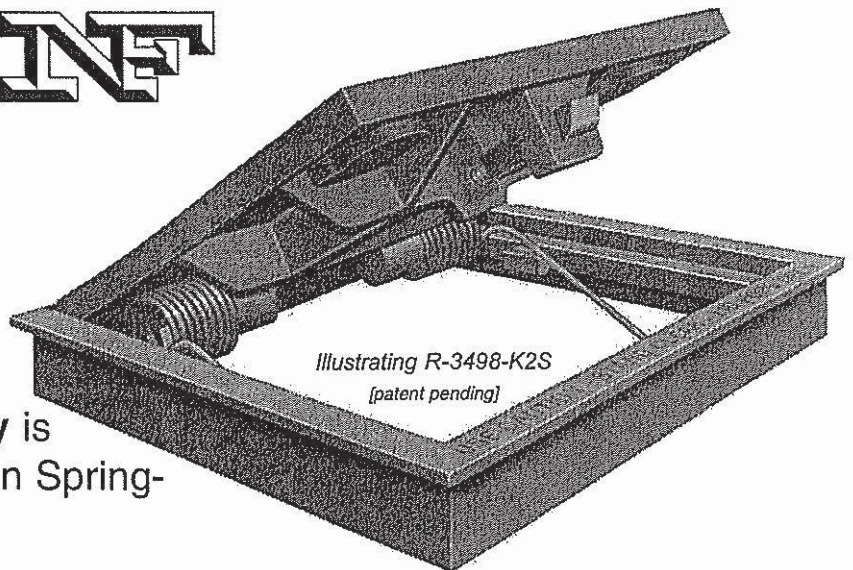
Illustrating Neenah's 200,000 pound load test machine.



Illustrating open lid with hold-open safety device.



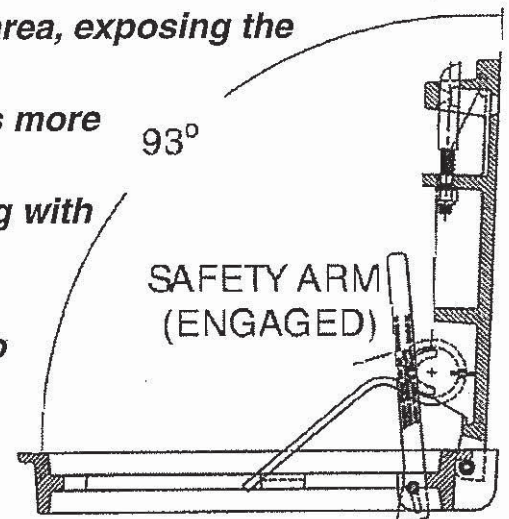
SPRING ASSIST AIRPORT HATCH



Neenah Foundry Company is proud to introduce the best in Spring-Assist airport-rated hatches.

Beneficial Features Only Available on Neenah's Product

- *Lid mounted springs move out of the free open area, exposing the free opening.*
- *Spring position allows more spring rotation, thus more spring power.*
- *Neenah's slam-latch enables opening and closing with ease. Simply pop the lid open and slam it shut.*
- *Self-contained frame, lid and spring assembly pushes on itself not external structure walls. (No external, wear areas.)*
- *Easy spring removal and replacement.*
- *Neenah's Perma-Grip non-skid surface.*



Insist upon Neenah's Features, Benefits and Quality

Sample Specification for Neenah's R-3498 Spring-Assist Hatch Series.

Aircraft-rated hatch covers shall be fitted with spring-assist lift-assist device to allow ready access by maintenance personnel. The units shall consist of ASTM-A48, Class 35B gray iron frames and ASTM-536, Grade 80-55-06 ductile iron lids. Frames and lids shall be fixed by two hinges, which allow the lids to rotate no more than 10-degrees past the 90-degree open position. Lids shall be fitted with a latch device, which engages when the lid is slammed shut and releases for lid opening via the use of a lever. Each unit shall be fitted with two assist-springs, which shall be constructed of corrosion resistant stainless steel per ASTM A693. The springs will provide sufficient assist-power to push the lid open to a minimum of 15 degrees upon release of the latch-device. The lift-assist springs shall be mounted on receptors positioned on the underside of the lid and the spring assist apparatus must move substantially out of the free opening when the lid is in the fully open position. The units shall be provided with a hold-open safety-arm, to be engaged when the lid is in the fully open position prohibiting the lid from accidental closure. It shall be attached to the unit in such a way as to allow engagement of the hold-open safety-arm during all phases of a maintenance event. The lids shall be furnished with a non-skid top surface.

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