



**CALL NO. 301**

**CONTRACT ID. 232359**

**JEFFERSON COUNTY**

**FED/STATE PROJECT NUMBER FD05 056 1447 001-006**

**DESCRIPTION WESTPORT ROAD (KY 1447)**

**WORK TYPE ASPHALT RESURFACING**

**PRIMARY COMPLETION DATE 11/15/2023**

**LETTING DATE: June 22,2023**

Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN DAYLIGHT TIME June 22,2023. Bids will be publicly announced at 10:00 AM EASTERN DAYLIGHT TIME.

**NO PLANS ASSOCIATED WITH THIS PROJECT.**

**DEFERRED PAYMENT**

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

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**PART I**

**SCOPE OF WORK**

**ADMINISTRATIVE DISTRICT - 05**

**CONTRACT ID - 232359**  
**FD05 056 1447 001-006**  
**COUNTY - JEFFERSON**  
**PCN - MP056144723W1**  
**FD05 056 1447 001-006**

WESTPORT ROAD (KY 1447) (MP 1.980) BEGIN AT RAISED CENTER MEDIAN 105 FEET EAST OF I-264  
OVERPASS EXTENDING EAST TO EAST SIDE OF INTERSECTION WITH KY 1747 AT BEGINING OF RAISED  
CENTER MEDIAN (MP 5.257), A DISTANCE OF 03.27 MILES.ASPHALT RESURFACING  
GEOGRAPHIC COORDINATES LATITUDE 38:16:39.00 LONGITUDE 85:35:55.00  
ADT 34,639

**COMPLETION DATE(S):**  
COMPLETED BY 11/15/2023                      APPLIES TO ENTIRE CONTRACT

## **CONTRACT NOTES**

### **PROPOSAL ADDENDA**

All addenda to this proposal must be applied when calculating bid and certified in the bid packet submitted to the Kentucky Department of Highways. Failure to use the correct and most recent addenda may result in the bid being rejected.

### **BID SUBMITTAL**

Bidder must use the Department's electronic bidding software. The Bidder must download the bid file located on the Bid Express website ([www.bidx.com](http://www.bidx.com)) to prepare a bid packet for submission to the Department. The bidder must submit electronically using Bid Express.

### **JOINT VENTURE BIDDING**

Joint venture bidding is permissible. All companies in the joint venture must be prequalified in one of the work types in the Qualifications for Bidders for the project. The bidders must get a vendor ID for the joint venture from the Division of Construction Procurement and register the joint venture as a bidder on the project. Also, the joint venture must obtain a digital ID from Bid Express to submit a bid. A joint bid bond of 5% may be submitted for both companies or each company may submit a separate bond of 5%.

### **UNDERGROUND FACILITY DAMAGE PROTECTION**

The contractor shall make every effort to protect underground facilities from damage as prescribed in the Underground Facility Damage Protection Act of 1994, Kentucky Revised Statute KRS 367.4901 to 367.4917. It is the contractor's responsibility to determine and take steps necessary to be in compliance with federal and state damage prevention directives. When prescribed in said directives, the contractor shall submit Excavation Locate Requests to the Kentucky Contact Center (KY811) via web ticket entry. The submission of this request does not relieve the contractor from the responsibility of contacting non-member facility owners, whom shall be contacted through their individual Protection Notification Center. Non-compliance with these directives can result in the enforcement of penalties.

### **REGISTRATION WITH THE SECRETARY OF STATE BY A FOREIGN ENTITY**

Pursuant to KRS 176.085(1)(b), an agency, department, office, or political subdivision of the Commonwealth of Kentucky shall not award a state contract to a person that is a foreign entity required by [KRS 14A.9-010](#) to obtain a certificate of authority to transact business in the Commonwealth ("certificate") from the Secretary of State under [KRS 14A.9-030](#) unless the person produces the certificate within fourteen (14) days of the bid or proposal opening. If the foreign entity is not required to obtain a certificate as provided in [KRS 14A.9-010](#), the foreign entity should identify the applicable exception. Foreign entity is defined within [KRS 14A.1-070](#).

**For all foreign entities required to obtain a certificate of authority to transact business in the Commonwealth, if a copy of the certificate is not received by the contracting agency within the time frame identified above, the foreign entity's solicitation response shall be deemed non-responsive or the awarded contract shall be cancelled.**

Businesses can register with the Secretary of State at <https://secure.kentucky.gov/sos/ftbr/welcome.aspx>.

### **SPECIAL NOTE FOR PROJECT QUESTIONS DURING ADVERTISEMENT**

Questions about projects during the advertisement should be submitted in writing to the Division of Construction Procurement. This may be done by fax (502) 564-7299 or email to [kytc.projectquestions@ky.gov](mailto:kytc.projectquestions@ky.gov). The Department will attempt to answer all submitted questions. The Department reserves the right not to answer if the question is not pertinent or does not aid in clarifying the project intent.

The deadline for posting answers will be 3:00 pm Eastern Daylight Time, the day preceding the Letting. Questions may be submitted until this deadline with the understanding that the later a question is submitted, the less likely an answer will be able to be provided.

The questions and answers will be posted for each Letting under the heading "Questions & Answers" on the Construction Procurement website ([www.transportation.ky.gov/contract](http://www.transportation.ky.gov/contract)). The answers provided shall be considered part of this Special Note and, in case of a discrepancy, will govern over all other bidding documents.

### **HARDWOOD REMOVAL RESTRICTIONS**

The US Department of Agriculture has imposed a quarantine in Kentucky and several surrounding states, to prevent the spread of an invasive insect, the emerald ash borer. Hardwood cut in conjunction with the project may not be removed from the state. Chipping or burning on site is the preferred method of disposal.

### **INSTRUCTIONS FOR EXCESS MATERIAL SITES AND BORROW SITES**

Identification of excess material sites and borrow sites shall be the responsibility of the Contractor. The Contractor shall be responsible for compliance with all applicable state and federal laws and may wish to consult with the US Fish and Wildlife Service to seek protection under Section 10 of the Endangered Species Act for these activities.

### **ACCESS TO RECORDS**

The contractor, as defined in KRS 45A.030 (9) agrees that the contracting agency, the Finance and Administration Cabinet, the Auditor of Public Accounts, and the Legislative Research Commission, or their duly authorized representatives, shall have access to any books, documents, papers, records, or other evidence, which are directly pertinent to this contract for the purpose of financial audit or program review. Records and other prequalification information confidentially

disclosed as part of the bid process shall not be deemed as directly pertinent to the contract and shall be exempt from disclosure as provided in KRS 61.878(1)(c). The contractor also recognizes that any books, documents, papers, records, or other evidence, received during a financial audit or program review shall be subject to the Kentucky Open Records Act, KRS 61.870 to 61.884.

In the event of a dispute between the contractor and the contracting agency, Attorney General, or the Auditor of Public Accounts over documents that are eligible for production and review, the Finance and Administration Cabinet shall review the dispute and issue a determination, in accordance with Secretary's Order 11-004.

### **BUILD AMERICA, BUY AMERICA ACT (BABA)**

On November 15, 2021, President Biden signed into law the Infrastructure Investment and Jobs Act (IIJA), Pub. L. No. 117-58, includes the Build America, Buy America Act (“the Act”). Pub. L. No. 117-58, §§70901-52. The Act strengthens the Buy America preference to include “construction materials.” The current temporary waiver for **“construction materials”** will expire on November 10, 2022.

The Act will apply to construction materials as outlined in the guidance issued in OMB [M-22-11](#).

Construction Materials – Includes an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives – that is or consists primarily of:

- Non-ferrous metals
- Plastic/polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
- Glass (including optic glass);
- Lumber; or
- Drywall.

Construction Materials only applies to items, materials, and supplies that are consumed in, incorporated into, or affixed to an infrastructure project.

Construction Materials does not apply to tools, equipment or supplies brought to the jobsite and removed before completion.

### **BOYCOTT PROVISIONS**

If applicable, the contractor represents that, pursuant to [KRS 45A.607](#), they are not currently engaged in, and will not for the duration of the contract engage in, the boycott of a person or an entity based in or doing business with a jurisdiction with which Kentucky can enjoy open trade.

**Note:** The term Boycott does not include actions taken for bona fide business or economic reasons, or actions specifically required by federal or state law.

If applicable, the contractor verifies that, pursuant to KRS 41.480, they do not engage in, and will not for the duration of the contract engage in, in energy company boycotts as defined by KRS 41.472.

### **LOBBYING PROHIBITIONS**

The contractor represents that they, and any subcontractor performing work under the contract, have not violated the agency restrictions contained in [KRS 11A.236](#) during the previous ten (10) years, and pledges to abide by the restrictions set forth in such statute for the duration of the contract awarded.

The contractor further represents that, pursuant to [KRS 45A.328](#), they have not procured an original, subsequent, or similar contract while employing an executive agency lobbyist who was convicted of a crime related to the original, subsequent, or similar contract within five (5) years of the conviction of the lobbyist.

February 1, 2023



## **SPECIAL NOTE FOR RECIPROCAL PREFERENCE**

### **RECIPROCAL PREFERENCE TO BE GIVEN BY PUBLIC AGENCIES TO RESIDENT BIDDERS**

By reference, KRS 45A.490 to 45A.494 are incorporated herein and in compliance regarding the bidders residency. Bidders who want to claim resident bidder status should complete the Affidavit for Claiming Resident Bidder Status along with their bid in the electronic bidding software. Submittal of the Affidavit should be done along the bid in Bid Express.

April 30, 2018

### **NATIONAL HIGHWAY**

Be advised this project is on the NATIONAL HIGHWAY SYSTEM.

### **SURFACING AREAS**

The Department estimates the mainline surfacing width to be varied 58 to 208 feet.

The Department estimates the total mainline area to be surfaced to be 199,300 square yards.

The Department estimates the shoulder width to be N/A foot on each side.

The Department estimates the total shoulder area to be surfaced to be N/A square yards.

### **ASPHALT MIXTURE**

Unless otherwise noted, the Department estimates the rate of application for all asphalt mixtures to be 110 lbs/sy per inch of depth.

### **INCIDENTAL SURFACING**

The Department has included in the quantities of asphalt mixtures established in the proposal estimated quantities required for resurfacing or surfacing mailbox turnouts, farm field entrances, residential and commercial entrances, curve widening, ramp gores and tapers, and road and street approaches, as applicable. Pave these areas to the limits as shown on Standard Drawing RPM-110-06 or as directed by the Engineer. In the event signal detectors are present in the intersecting streets or roads, pave the crossroads to the right of way limit or back of the signal detector, whichever is the farthest back of the mainline. Surface or resurface these areas as directed by the Engineer. The Department will not measure placing and compacting for separate payment but shall be incidental to the Contract unit price for the asphalt mixtures.

### **FUEL AND ASPHALT PAY ADJUSTMENT**

The Department has included the Contract items Asphalt Adjustment and Fuel Adjustment for possible future payments at an established Contract unit price of \$1.00. The Department will calculate actual adjustment quantities after work is completed. If existing Contract amount is insufficient to pay all items on the contract with the adjustments, the Department will establish additional monies with a change order.

### **OPTION A**

Be advised that the Department will accept compaction of asphalt mixtures furnished for driving lanes and ramps, at 1 inch (25mm) or greater, on this project according to OPTION A in accordance with Section 402 and Section 403 of the current Standard Specifications. The Department will require joint cores as described in Section 402.03.02 for surface mixtures only. The Department will accept compaction of all other asphalt mixtures according to OPTION B.

## **SPECIAL NOTE FOR CONCRETE MEDIAN REMOVAL & INSTALLATION**

### **FD05 056 1447 001-006**

#### **GENERAL**

A portion of the existing concrete median on Westport Road, on east side of the intersection with Hurstbourne Parkway (KY 1747) is to be removed (from nose of median to first joint, approximately 21'x4'), to allow for an unobstructed pedestrian crosswalk. The median removal shall occur prior to the placement of the final surface. The method of removal shall be determined by the Contractor but may include, but not limited to, milling with the adjacent asphalt or saw-cutting and excavation.

If excavation is performed and the void created is deeper than 4 inches below the asphalt surface, the excavated area shall be filled using 3,500 psi minimum mass concrete. Otherwise, any resulting drop-offs greater than 1.5 inches shall be wedged with asphalt surface. If milling of the median is performed, the milled tonnage of the concrete shall not be included for payment as Asphalt Pave Milling & Texturing.

Following median removal and prior to final surface, a new Type 4 standard barrier median nose shall be constructed. Install the 5' long, sloped nose per Standard Drawing RPM-010-06, matching the width of the existing median. Prior to pouring, drill horizontally into the existing median to allow for installation of three, #4 deformed bars on approximate 12" spacing across the width of the median, with the holes centered vertically in the median. The dowel bars shall be 24" in length and epoxied approximately 12" into the existing median.

#### **MEASUREMENT & PAYMENT**

Removal of the concrete median will be measured and included for payment by the square yard under the contract bid item for REMOVE NON-MOUNTABLE MEDIAN. This item shall include the removal and disposal of the existing material and installation of asphalt wedging as required.

If mass concrete is required, the Department will measure and make payment in accordance with Sections 601.04 & 601.05 of the current Standard Specifications. The change order bid item for MASS CONCRETE shall include all work necessary to pour & finish the concrete 1.5 inches below the final asphalt surface.

Construction of the new median nose shall be included for payment by the square yard under the contract bid item STANDARD BARRIER MEDIAN TYPE 4. This item shall include all work noted above, including dowel bar installation.

## **INSTALL RADAR PRESENCE DETECTOR TYPE A**

*Install Radar Presence Detector Type A* shall consist of installation of a pole mounted radar presence sensor, sensor mounting bracket, sensor cables, interface boxes, lead-in cable, connectors (furnished by contractor), and controller interface assembly. Radar Presence Detector Type A bid item shall include all labor required to provide a functional detection system. Radar Presence Detector Type A shall be installed and wired in accordance with the manufacturer's instructions. After the detector is installed and before the detector is powered on, the contractor shall coordinate with District Traffic Division's representatives to schedule a time to perform the detector setup. The contractor shall double check to verify that all wiring is correctly installed and connected before scheduling the setup work. Representatives from KYTC and/or the manufacturer or sales representative will assist with setup and calibration. The contractor shall provide a bucket truck and operators at this time for final aiming of the sensors. The contractor shall provide individuals capable of operating the setup software and learning the setup process so that future installations may be completed without assistance from others.

## **SPECIAL NOTE FOR PAVEMENT MARKING MODIFICATIONS**

This Proposal may include drawings depicting anticipated pavement marking modifications along the route to be resurfaced. However, per Section 713.03.01 of the Standard Specifications, the Contractor shall still be required to submit a record of existing pavement markings prior to beginning resurfacing activities. The Department requests these records be submitted at least two weeks prior to milling or paving in order to coordinate all desired changes between the District Traffic Engineer and the Contractor. All changes will be returned to the Contractor to ensure the desired modifications can be performed during final surfacing. As the Contractor is responsible for implementing any pavement marking changes, it is highly recommended any questions are addressed to the Project Engineer prior to striping. Any incorrect markings will be removed and replaced with the proper markings at the Contractor's expense and in a manner approved by the Engineer.

## **SPECIAL PROVISION FOR WASTE AND BORROW SITES**

Obtain U.S. Army Corps of Engineer's approval before utilizing a waste or borrow site that involves "Waters of the United States". The Corps of Engineers defines "Waters of the United States" as perennial or intermittent streams, ponds or wetlands. The Corps of Engineers also considers ephemeral streams, typically dry except during rainfall but having a defined drainage channel, to be jurisdictional waters. Direct questions concerning any potential impacts to "Waters of the United States" to the attention of the appropriate District Office for the Corps of Engineers for a determination prior to disturbance. Be responsible for any fees associated with obtaining approval for waste and borrow sites from the U.S. Army Corps of Engineer or other appropriate regulatory agencies.

1-296 Waste & Borrow Sites  
01/02/2012

**SPECIAL NOTE FOR NON-TRACKING TACK COAT**

1. DESCRIPTION AND USEAGE. This specification covers the requirements and practices for applying a non-tracking tack asphalt coating. Place this material on the existing pavement course, prior to placement of a new asphalt pavement layer. Use when expedited paving is necessary or when asphalt tracking would negatively impact the surrounding area. This material is not suitable for other uses. Ensure material can “break” within 15 minutes under conditions listed in 3.2.
2. MATERIALS, EQUIPMENT, AND PERSONNEL.

- 2.1 Non-Tracking Tack. Provide material conforming to Subsection 2.1.1.
- 2.1.1 Provide a tack conforming to the following material requirements:

| Property                                  | Specification | Test Procedure |
|---|---------------|----------------|
| Viscosity, SFS, 77 ° F                    | 20 – 100      | AASHTO T 72    |
| Sieve, %                                  | 0.3 max.      | AASHTO T 59    |
| Asphalt Residue <sup>1</sup> , %          | 50 min.       | AASHTO T 59    |
| Oil Distillate, %                         | 1.0 max.      | AASHTO T 59    |
| Residue Penetration, 77 ° F               | 0 - 30        | AASHTO T 49    |
| Original Dynamic Shear (G*/sin δ), 82 ° C | 1.0 min.      | AASHTO T 315   |
| Softening Point, ° F                      | 149 min.      | AASHTO T 53    |
| Solubility, %                             | 97.5 min.     | AASHTO T 44    |

- <sup>1</sup> Bring sample to 212 °F over a 10-15 minute period. Maintain 212 °F for 15-20 minutes or until 30-40 mL of water has distilled. Continue distillation as specified in T59.
- 2.2. Equipment. Provide a distributor truck capable of heating, circulating, and spraying the tack between 170 °F and 180 °F. Do not exceed 180 °F. Circulate the material while heating. Provide the correct nozzles that is recommend by the producer to ensure proper coverage of tack is obtained. Ensure the bar can be raised to between 14” and 18” from the roadway.
- 2.3. Personnel. Ensure the tack supplier has provided training to the contractor on the installation procedures for this product. Make a technical representative from the supplier available at the request of the Engineer.

3. CONSTRUCTION.

- 3.1 Surface Preparation. Prior to the application of the non-tracking tack, ensure the pavement surface is thoroughly dry and free from dust or any other debris that would inhibit adhesion. Clean the surface by scraping, sweeping, and the use of compressed air. Ensure this preparation process occurs shortly before application to prevent the return of debris on to the pavement. If rain is expected within one hour after application, do not apply material. Apply material only when the surface is dry, and no precipitation is expected.

3.2 Non-tracking Tack Application. Placement of non-tracking tack is not permitted from October 1<sup>st</sup> to May 15<sup>th</sup>. When applying material, ensure the roadway temperature is a minimum of 40°F and rising. Prior to application, demonstrate competence in applying the tack according to this note to the satisfaction of the Engineer. Heat the tack in the distributor to between 170 – 180 °F. After the initial heating, between 170 – 180 °F, the material may be sprayed between 165 °F and 180 °F. Do not apply outside this temperature range. Apply material at a minimum rate of 0.70 pounds (0.08 gallons) per square yard. Ensure full coverage of the material on the pavement surface. Full coverage of this material is critical. Increase material application rate if needed to achieve full coverage. Schedule the work so that, at the end of the day's production, all non-tracking tack is covered with the asphalt mixture. If for some reason the non-tracking tack cannot be covered by an asphalt mixture, ensure the non-tracking tack material is clean and reapply the non-tracking tack prior to placing the asphalt mixture. Do not heat material more than twice in one day.

3.3 Non-tracking Tack Certification. Furnish the tack certification to the Engineer stating the material conforms to all requirements herein prior to use.

3.4 Sampling and Testing. The Department will require a sample of non-tracking tack be taken from the distributor at a rate of one sample per 15,000 tons of mix. Take two 1 gallon samples of the heated material and forward the sample to the Division of Materials for testing within 7 days. Ensure the product temperature is between 170 and 180 °F at the time of sampling.

4. MEASUREMENT. The Department will measure the quantity of non-tracking tack in tons. The Department will not measure for payment any extra materials, labor, methods, equipment, or construction techniques used to satisfy the requirements of this note. The Department will not measure for payment any trial applications of non-tracking tack, the cleaning of the pavement surface, or furnishing and placing the non-tracking tack. The Department will consider all such items incidental to the non-tracking tack.
5. PAYMENT. The Department will pay for the non-tracking tack at the Contract unit bid price and apply an adjustment for each manufacturer's lot of material based on the degree of compliance as defined in the following schedule. Non-tracking tack will not be permitted for use from October 1<sup>st</sup> to May 15<sup>th</sup>. During this timeframe, the department will allow the use of an approved asphalt emulsion in lieu of a non-tracking tack product but will not adjust the unit bid price of the material. When a sample fails on two or more tests, the Department may add the deductions, but the total deduction will not exceed 100 percent.

| Non-Tracking Tack Price Adjustment Schedule |               |          |             |             |             |        |
|---|---------------|----------|-------------|-------------|-------------|--------|
| Test  | Specification | 100% Pay | 90% Pay     | 80% Pay     | 50% Pay     | 0% Pay |
| Viscosity, SFS, 77 ° F                      | 20 – 100      | 19 - 102 | 17 - 18     | 15 - 16     | 14          | ≤13    |
|   |               |          | 103 - 105   | 106 - 107   | 108 - 109   | ≥ 110  |
| Sieve, %                                    | 0.30 max.     | ≤ 0.40   | 0.41 - 0.50 | 0.51 - 0.60 | 0.61 - 0.70 | ≥ 0.71 |
| Asphalt Residue, %                          | 50 min.       | ≥49.0    | 48.5 – 48.9 | 48.0 – 48.4 | 47.5-47.9   | ≤ 47.4 |
| Oil Distillate, %                           | 1.0 max.      | ≤1.0     | 1.1-1.5     | 1.6 - 1.7   | 1.8-1.9     | >2.0   |
| Residue Penetration, 77 ° F.                | 30 max.       | ≤ 31     | 32 - 33     | 34 - 35     | 36 - 37     | ≥ 38   |
| Original Dynamic Shear (G*/sin δ), 82 ° C   | 1.0 min.      | ≥0.95    | 0.92 – 0.94 | 0.90 – 0.91 | 0.85 - 0.89 | ≤ 0.84 |
| Softening Point, ° F                        | 149 min.      | ≥145     | 142 - 144   | 140 - 141   | 138 - 139   | ≤ 137  |
| Solubility, %                               | 97.5 min.     | ≥ 97.0   | 96.8 – 96.9 | 96.6 – 96.7 | 96.4 – 96.5 | ≤ 96.3 |

Code  
24970EC

Pay Item  
Asphalt Material for Tack Non-Tracking

Pay Unit  
Ton

Revised: May 23, 2022



## **SPECIAL NOTE FOR EXPERIMENTAL KYCT AND HAMBURG TESTING**

### **1.0 General**

**1.1 Description.** The KYCT (Kentucky Method for Cracking Test) and the Hamburg test results will help determine if the mixture is susceptible to cracking and rutting. During the experimental phase, data will be gathered and analyzed by the Department to determine the durability of the bituminous mixes. Additionally, the data will help the Department to create future performance-based specifications which will include the KYCT and Hamburg test methods.

### **2.0 Equipment**

**2.1 KYCT Testing Equipment.** The Department will require a Marshall Test Press with digital recordation capabilities. Other CT testing equipment may be used for testing with prior approval by the Department.

**2.2 Water Baths.** One or more water baths will be required that can maintain a temperature of 77° +/- 1.8° F with a digital thermometer showing the water bath temperature. Also, one water bath shall have the ability to suspend gyratory specimen fully submerged in water in accordance with AASHTO T-166, current edition.

**2.3 Hamburg Wheel Track Testing.** The department encourages the use of the PTI APA/Hamburg Jr. test equipment to perform the loaded wheel testing. The Department will allow different equipment for the Hamburg testing, but the testing device must be approved by the Department prior to testing.

**2.4 Gyratory Molds.** Gyratory molds will be required to assist in the production of gyratory specimens in accordance with AASHTO T-312, current edition.

**2.5 Ovens.** Adequate (minimum of two ovens) will be required to accommodate the additional molds and asphalt mixture necessary to perform the acceptance testing as outlined in Section 402 of the Kentucky Standard Specifications for Road and Bridge Construction, current edition.

**2.6 Department Equipment.** The Department will provide gyratory molds, PINE 850 Test Press with digital recordation, and CT testing equipment to assist during this experimental phase so data can be gathered. Hamburg test specimens will be submitted to the Division of Materials for testing on the PTI APA/Hamburg Jr if the asphalt contractor or district materials office does not have an approved Hamburg testing device.

### **3.0 Testing Requirements**

**3.1 Acceptance Testing.** Perform all acceptance testing and aggregate gradation as according with Section 402 and Section 403 of the Kentucky Standard Specifications for Road and Bridge Construction, current edition.

**3.2 KYCT Testing.** Perform crack resistance analysis (KYCT) in accordance with the current Kentucky Method for KYCT Index Testing during the mix design phase and during the plant production of all surface mixtures. For mix design approvals, submit KYCT results on the Department MixPack. For Class 4 mixtures, submit ingredient materials to the Division of Materials for verification.

**3.2.1 KYCT Frequency.** Obtain an adequate sample of hot mix asphalt to ensure the acceptance testing, gradation, and KYCT gyratory samples can be fabricated and is representative of the bituminous mixture. Acceptance specimens shall be fabricated first, then immediately after, fabricate the KYCT samples with the gyratory compactor in accordance with Section 2.4 of this Special Note. Analysis of the KYCT specimens and gradation will be required one per subplot produced from the same asphalt material and at the same time as the acceptance specimen is sampled and tested.

**3.2.2 Number of Specimens and Conditioning.** Fabricate specimens in accordance with the Kentucky Method for KYCT Index Testing. Contrary to the method, for field specimens, fabricate a minimum of 3 and up to 6 test specimens. The specimens shall be compacted at the temperature in accordance with KM 64-411. KYCT mix design specimens shall be short-term conditioned uncovered for four hours at compaction temperature in accordance with KM 64-411. Contrary to the Kentucky Method, plant produced bituminous material shall be short-term conditioned immediately after sampling for two hours uncovered in the oven at compaction temperature in accordance with KM 64-411. Additionally, fabricated specimens shall be allowed to cool in air (fan is permissible) for 30 minutes +/- 5 minutes and conditioned in a 77 °F water bath for 30 minutes +/- 5 minutes. To ensure confidence and reliability of the test results provided by KYCT testing and Hamburg testing, reheating of the asphalt mixture is prohibited.

**3.2.3 Record Times.** For each subplot, record the time required between drying aggregates in the plant to KYCT specimen fabrication. The production time may vary due to the time that the bituminous material is held in the silo. Record the preconditioning time when the time exceeds the one-hour specimen cool down time as required in accordance with The Kentucky Method for KYCT Index Testing. The preconditioning time may exceed an hour if the technician is unable to complete the test on the same day or within the specified times as outlined in The Kentucky Method for KYCT Index Testing. The production time and the preconditioning time shall be recorded on the AMAW.

**3.2.4 File Name.** As according to section 7.12 of The Kentucky Method for KYCT Index Testing, save the filename with the following format: "CID\_Approved Mix Number\_Lot Number\_Sublot Number\_Date"

**3.3 Hamburg Testing.** Perform the rut resistance analysis (Hamburg) in accordance with AASTHO T-324, not to exceed 20,000 passes for all bituminous mixtures during the mix design phase and production. For mix design approvals, submit Hamburg results on the Department MixPack. For Class 4 mixtures, submit ingredient materials to the Division of Materials for informational verification.

**3.3.1 Hamburg Testing Frequency.** Perform testing and analysis per lot of material. The plant produced bituminous material sampled for the Hamburg test does not have to be obtained at the same time as the acceptance and KYCT sample. If the Hamburg test sample is not obtained at the same time as the KYCT sample, determine the Maximum Specific Gravity of the KYCT sample in accordance with AASHTO T-209 coinciding with the Hamburg specimens.

**3.3.2 Record Times.** Record the production time as according to section 3.2.3 in this special note. Also record the time that the specimens were fabricated and the time the Hamburg testing was started. All times shall be recorded on the AMAW.

**3.3.3 File Name.** Save the Excel spreadsheet with the following file name; “Hamburg\_CID\_Approved Mix Number\_Lot Number\_Sublot Number\_Date” and upload the file into the AMAW.

#### **4.0 Data**

Submit the AMAW and all test data that was obtained for acceptance, gradation, KYCT, and Hamburg testing within five working days once all testing has been completed for a lot to Central Materials Lab and the District Materials Engineer. Also, any data and or comments that the asphalt contractor or district personnel deem informational during this experimental phase, shall also be submitted to the Central Materials Lab and the District Materials Engineer. Any questions or comments regarding any item in this Special Note can be directed to the Central Office, Division of Materials, Asphalt Branch.

#### **5.0 Payment**

Any additional labor and testing equipment that is required to fabricate and test the KYCT and Hamburg specimens shall be considered incidental to the asphalt surface line item. The Department will perform the testing for the KYCT and Hamburg specimens if a producer does not possess the proper equipment.

June 15<sup>th</sup>, 2022

**SPECIAL NOTE FOR DOLOMITIC POLISH-RESISTANT AGGREGATE IN CLASS A 0.38-IN. AND 0.50-IN. NOMINAL ASPHALT MIXTURES**

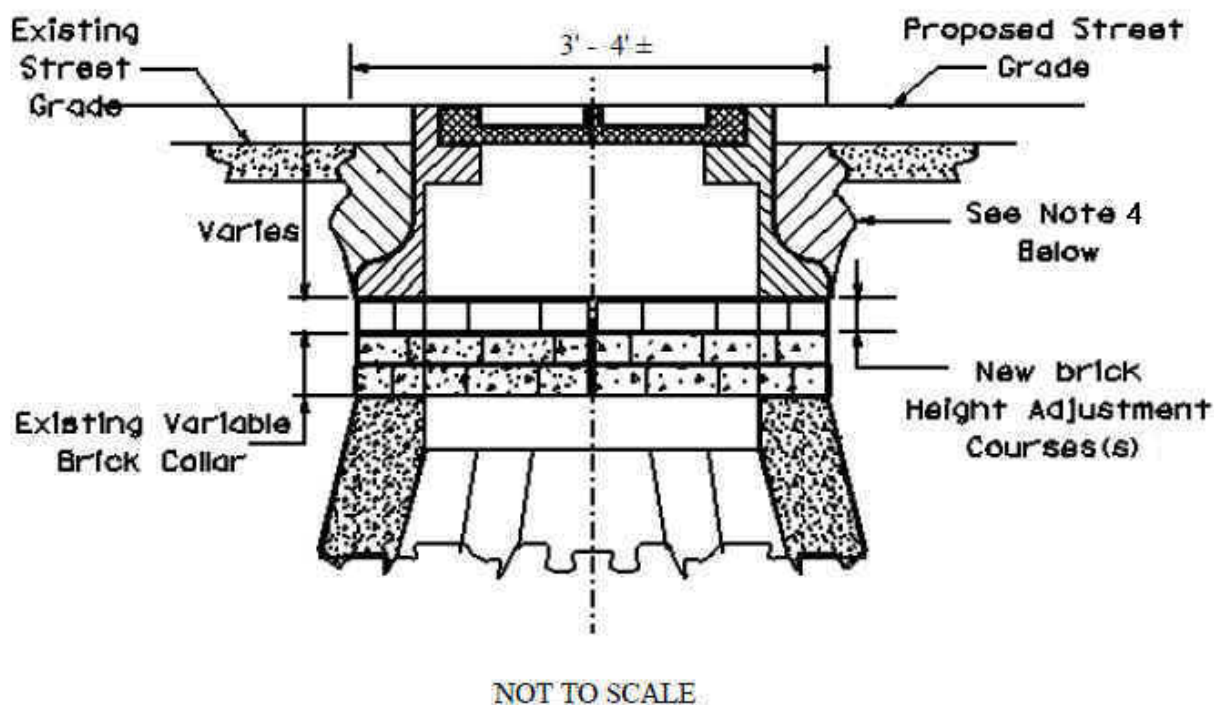
**Contrary to Subsection 403.03.03**, when utilizing a dolomitic polish-resistant aggregate as the coarse portion of the Class A 0.38-in. or 0.50-in.-nominal asphalt surface mixture, provide an asphalt mixture conforming to the following requirements:

- 70 percent of total combined aggregate is Class A polish-resistant aggregate.
- Any coarse aggregate utilized in the mixture shall be classified as Class A polish-resistant.
- Non-dolomitic substitutes from other Class A sources may be used as direct substitutes
- All mixes must have DFT testing/results submitted to Division of Materials with any supporting documentation prior to completion of the project.

*Dynamic Friction Testing Procedure.* Prepare samples for DFT analysis in accordance with PP 104. Friction testing shall be conducted by an AASHTO-accredited facility and data shall be provided in accordance with ASTM E1911 conforming to the following three-wheel polishing schedule. Variations to the testing frequency or methodology shall be coordinated with Division of Materials prior to testing.

| <i>Polishing Cycles</i> |
|-------------------------|
| 5,000                   |
| 25,000                  |
| 75,000                  |
| 150,000                 |

**SPECIAL NOTE FOR MANHOLE ADJUSTMENT  
LOUISVILLE METROPOLITAN SEWER DISTRICT (MSD)**



**CONSTRUCTION NOTES:**

1. The Engineer will determine whether manhole adjustments are to be made prior to or after milling and/or resurfacing.
2. Reuse existing frames, grates, and covers. Use other materials conforming to MSD's Technical Specifications. Obtain these specifications from MSD's Engineering Division Office, 400 South Sixth Street, Louisville, KY 40202.
3. Report any missing or damaged frame, grate, or cover discovered by the Contractor to MSD's inspector. Obtain replacement hardware items from MSD's Storage Yard, 151 Cabel Street, Louisville, KY, upon presentation of an MSD inspector's validated Stores Requisition and exchange for the damaged hardware items.
4. Adjust manhole frame and grates with brick and mortar as shown on the drawing or as directed by the Engineer. Do not use wood shims or blocks to adjust or reset the frame height. Fill cross-hatched area with concrete having a minimum 28-day compressive strength of 2000 psi. Use first class workmanship in conformity with MSD's Technical Specifications.
5. Adjust catch basin frames and grates in similar manner as manhole adjustments as approved by the Engineer.
6. Louisville MSD and/or the Engineer may inspect manhole and/or catch basin frame height adjustments. Make corrections as directed by the Engineer at no additional cost to the Department.
7. The Department will measure and pay Adjust Manhole Frame to Grade according to Sections 403.04.02 and 403.05.01 or Sections 408.04.04 and 408.05.02 as applicable.

## **COORDINATION OF WORK WITH OTHERS**

### **FD05 056 1447 001-006**

Be advised, there are active project(s) adjacent to or within this project. These may be KYTC administered contracts or work being performed as part of a KYTC issued encroachment permit. The Engineer will help coordinate the work of any other Contractors or permit holders within the limits of this project. See Sections 105.06, 107.06 and 107.14 of the Standard Specifications.

Coordination with Others D-5

### **SPECIAL NOTE FOR ASPHALT MILLING AND TEXTURING**

Begin paving operations within **48 hours** of commencement of the milling operation. Continue paving operations continuously until completed. If paving operations are not begun within this time period, the Department will assess liquidated damages at the rate prescribed by Section 108.09 until such time as paving operations are begun.

Take possession of the millings and recycle the millings or dispose of the millings off the Right-of-Way at sites obtained by the Contractor at no additional cost to the Department.

1-3520 48 hours Contractor keeps millings  
01/2/2012

**SPECIAL NOTE FOR BASE FAILURE REPAIR**  
**FD05 056 1447 001-006**

Repair locations listed on the summary are approximate only. The Engineer will determine actual repair locations and dimensions at the time of construction. Prior to overall milling and/or leveling and wedging, excavate the designated base failure areas to a depth 12 inches below the existing asphalt pavement surface level. Dispose of the excavated materials at waste sites off the Right-of-Way obtained by the Contractor at no additional cost to the Department. See Special Note for Waste and Borrow.

Backfill the excavated areas with Class 3 Asphalt Base 1.00D PG64-22. Compact the asphalt base to the compaction required in Section 403.03.10 in 4 inch maximum courses. Perform all base failure repairs in such a manner that removal and replacement are completed during the same work shift. Do this work as one of the Contractor's first operations in order to allow further compaction by traffic. Do not mill or place new asphalt surface over repaired base failure areas until a minimum of 14 calendar days have elapsed after placement of the asphalt base. After a minimum of 14 calendar days and when the Engineer determines the base failure repair areas have sufficiently stabilized, milling and/or resurfacing operations can begin in this area. Prior to milling and/or constructing the new asphalt surface, level and wedge any settlement of the repair areas.

The bidder must draw conclusions as to the conditions encountered. The Department does not give any guarantee as to the accuracy of the data and will not consider any claim for additional compensation if the materials encountered that are not in accord with the classification shown.

Accept payment at the Contract unit prices per square yard for Base Failure repair as full compensation for all labor, materials, equipment, and incidentals for removing pavement and disposing of the materials, furnishing and placing asphalt base, leveling and wedging, and all other items necessary to complete the work according to these notes to the satisfaction of the Engineer.



### **SPECIAL NOTE FOR TYPICAL SECTION DIMENSIONS**

Consider the dimensions shown on the typical sections for pavement and shoulder widths and thickness' to be nominal or typical dimensions. The Engineer may direct or approve varying the actual dimensions to be constructed to fit existing conditions. Do not widen existing pavement or shoulders unless specified elsewhere in this proposal or directed by the engineer.

1-3725 Typical Section Dimensions  
01/02/2012

## **TRAFFIC CONTROL PLAN**

### **FD05 056 1447 001 006**

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#### **TRAFFIC CONTROL GENERAL**

Except as provided herein, maintain and control traffic in accordance with the Standard and Supplemental Specifications and the Standard and Sepia Drawings, current editions. Except for the roadway and traffic control bid items listed, all items of work necessary to maintain and control traffic will be paid at the lump sum bid price to "Maintain and Control Traffic".

Contrary to Section 106.01, furnish new, or used in like new condition, traffic control devices at the beginning of the work and maintain in like new condition until completion of the work.

#### **PROJECT PHASING & CONSTRUCTION PROCEDURES**

##### **WORKING HOURS ARE AS FOLLOWS: SUNDAY THROUGH SATURDAY 8:00 P.M. TO 5:00 A.M.**

The Engineer may specify days and hours when lane closures will not be allowed.

Maintain alternating one way traffic during construction. Provide a minimum clear lane width of 10 feet; however, provide for passage of vehicles of up to 16 feet in width. If traffic should be stopped due to construction operations, and a school bus on an official run arrives on the scene, make provisions for the passage of the bus as quickly as possible.

#### **LANE CLOSURES**

Do not leave lane closures in place during non-working hours.

#### **SIGNS**

Sign posts and splices shall be compliant with NCHRP 350 or MASH. Manufacturer's documentation validating this compliance shall be provided to the Engineer prior to installation. Signs, including any splices, shall be installed according to manufacturer's specifications and installation recommendations. Contrary to section 112.04.02, only long-term signs (signs intended to be continuously in place for more than 3 days) will be measured for payment. Short-term signs (signs intended to be left in place for 3 days or less) will not be measured for payment but will be incidental to Maintain and Control Traffic.

Traffic Control Plan  
Page 2 of 10

## **CHANGEABLE MESSAGE SIGNS**

Provide changeable message signs in advance of and within the project at locations determined by the Engineer. If work is in progress concurrently in both directions or if more than one lane closure is in place in the same direction of travel, provide additional changeable message signs as directed by the Engineer. Place changeable message signs one mile in advance of the anticipated queue at each lane closure. As the actual queue lengthens and/or shortens, relocate or provide additional changeable message signs so that traffic has warning of slowed or stopped traffic at least one mile but not more than two miles before reaching the end of the actual queue. The Engineer may vary the designated locations as the work progresses. The Engineer will determine the messages to be displayed. In the event of damage or mechanical/electrical failure, repair or replace the Changeable Message Sign within 24 hours. The Department will measure for payment the maximum number of Changeable Message Signs in concurrent use at the same time on a single day on all sections of the contract. The Department will measure individual Changeable Message Signs only once for payment, regardless of how many times they are set, reset, removed, and relocated during the duration of the project. The Department will not measure replacements for damaged Changeable Message Signs or for signs the Engineer directs be replaced due to poor condition or readability. Retain possession of the Changeable Message Signs upon completion of the work.

## **ARROW PANELS**

Use arrow panels as shown on the Standard Drawings or as directed by the Engineer. The Department will measure for payment the maximum number of arrow panels in concurrent use at the same time on a single day on all sections of the contract. The Department will measure for payment the maximum number of Arrow Panels in concurrent use at the same time on a single day on all sections of the contract. The Department will measure individual Arrow Panels only once for payment, regardless of how many times they are set, reset, removed, and relocated during the duration of the project. The Department will not measure replacements for damaged Arrow Panels or for panels signs the Engineer directs be replaced due to poor condition or readability for payment. Retain possession of the Arrow Panels upon completion of the work.

## **BARRICADES**

The Department will not measure barricades used in lieu of barrels and cones for channelization or delineation, but shall be incidental to Maintain and Control Traffic according to Section 112.04.01.

The Department will measure barricades used to protect pavement removal areas in individual units Each. The Department will measure for payment the maximum number of barricades in concurrent use at the same time on a single day on all sections of the contract. The Department

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will measure individual barricades only once for payment, regardless of how many times they are set, reset, removed, and relocated during the duration of the project. The Department will not measure replacements for damaged barricades the Engineer directs to be replaced due to poor condition or reflectivity. Retain possession of the Barricades upon completion of construction.

## **THERMOPLASTIC INTERSECTION MARKINGS**

Consider the locations listed on the summary as approximate only. Prior to milling and/or resurfacing, locate and document the locations of the existing markings. After resurfacing, replace the markings at their approximate existing locations or as directed by Engineer. Place markings not existing prior to resurfacing as directed by the Engineer.

## **PAVEMENT MARKINGS**

If there is to be a deviation from the existing striping plan, the Engineer will furnish the Contractor a striping plan prior to placement of the final surface course.

Install Temporary Striping according to Section 112 with the following exception:

If the Contractor's operations or phasing requires temporary markings that must subsequently be removed from the final surface course, use an approved removable lane tape; however, the Department will not measure removable lane tape for separate payment, but will measure and pay for removable lane tape as temporary striping.

## **PAVEMENT EDGE DROP-OFFS**

Do not allow a pavement edge between opposing directions of traffic or lanes that traffic is expected to cross in a lane change situation with an elevation difference greater than 1½". Place Warning signs (MUTCD W8-11 or W8-9A) in advance of and at 1500' intervals throughout the drop-off area. Dual post the signs on both sides of the traveled way. Wedge all transverse transitions between resurfaced and unresurfaced areas which traffic may cross with asphalt mixture for leveling and wedging. Remove the wedges prior to placement of the final surface course.

Protect pavement edges that traffic is not expected to cross, except accidentally, as follows:

Less than 2" - No protection required.

2" to 4" - Place plastic drums, vertical panels, or barricades every 50 feet. During daylight working hours only, the Engineer will allow the Contractor to use cones in

Traffic Control Plan  
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lieu of plastic drums, panels, and barricades. Wedge the drop-off with DGA or asphalt mixture for leveling and wedging with a 1:1 or flatter slope in daylight hours, or 3:1 or flatter slope during nighttime hours, when work is not active in the drop-off area.

Greater than 4' - Protect drop-offs greater than 4 inches within 10 feet of traffic by placing drums, vertical panels, or barricades every 25 feet. The Engineer will not allow the use of cones in lieu of drums, vertical panels, or barricades for drop-offs greater than 4". Place Type III Barricades directly in front of the drop-off facing on coming traffic in both directions of travel. Provide warning signs as shown on the Standard Drawings or as directed by the Engineer

Pedestrians & Bicycles - Protect pedestrian and bicycle traffic as directed by the engineer.

## **USE AND PLACEMENT OF CHANGEABLE MESSAGE SIGNS**

The following policy is based upon current Changeable Message Signs (CMS) standards and practice from many sources, including the Federal Highway Administration (FHWA), other State Departments of Transportation, and Traffic Safety Associations. It is understood that each CMS installation or use requires individual consideration due to the specific location or purpose. However, there will be elements that are constant in nearly all applications. Accordingly these recommended guidelines bring a level of uniformity, while still being open to regional experience and engineering judgment.

### **Application**

The primary purpose of CMS is to advise the driver of unexpected traffic and routing situations. Examples of applications where CMS can be effective include:

- Closures (road, lane, bridge, ramp, shoulder, interstate)
- Changes in alignment or surface conditions
- Significant delays, congestion
- Construction/maintenance activities (delays, future activities)
- Detours/alternative routes
- Special events with traffic and safety implications
- Crash/incidents
- Vehicle restrictions (width, height, weight, flammable)
- Advance notice of new traffic control devices
- Real-time traffic conditions (must be kept up to date)
- Weather /driving conditions, environmental conditions, Roadway Weather Information Systems
- Emergency Situations
- Referral to Highway Advisory Radio (if available)

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- Messages as approved by the County Engineer's Office

**CMS should not be used for:**

- Replacement of static signs (e.g. road work ahead), regulatory signage (e.g. speed limits), pavement markings, standard traffic control devices, conventional warning or guide signs.
- Replacement of lighted arrow board
- Advertising (Don't advertise the event unless clarifying "action" to be taken by driver – e.g. Speedway traffic next exit)
- Generic messages
- Test messages (portable signs only)
- Describe recurrent congestion (e.g. rush hour)
- Public service announcements (not traffic related)

**Messages**

Basic principles that are important to providing proper messages and ensuring the proper operation of a CMS are:

- Visible for at least ½ mile under ideal daytime and nighttime conditions
- Legible from all lanes a minimum of 650 feet
- Entire message readable twice while traveling at the posted speed
- Nor more than two message panels should be used (three panels may be used on roadways where vehicles are traveling less than 45 mph). A panel is the message that fits on the face of the sign without flipping or scrolling.
- Each panel should convey a single thought; short and concise
- Do not use two unrelated panels on a sign
- Do not use the sign for two unrelated messages
- Should not scroll text horizontally or vertically
- Should not contain both the words left and right
- Use standardized abbreviations and messages
- Should be accurate and timely
- Avoid filler/unnecessary words and periods (hazardous, a, an, the)
- Avoid use of speed limits
- Use words (not numbers) for dates

**Placement**

Placement of the CMS is important to insure that the signs is visible to the driver and provides ample time to take any necessary action. Some of the following principles may only be applicable to controlled access roadways. The basic principles of placement for a CMS are:

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- When 2 signs are needed, place on same side of roadway and at least 1,000 feet apart
- Place behind semi-rigid/rigid protection (guardrail, barrier) or outside of the clear zone
- Place 1,000 feet in advance of work zone; at least one mile ahead of decision point
- Normally place on right side of roadway; but should be placed closest to the affected lane so that either side is acceptable
- Signs should not be dual mounted (one on each side of roadway facing same direction)
- Point trailer hitch downstream
- Secure to immovable object to prevent thief (if necessary)
- Do not place in sags or just beyond crest
- Check for reflection of sun to prevent the blinding of motorist
- Should be turned ~3 degrees outward from perpendicular to the edge of pavement
- Bottom of sign should be 7 feet above the elevation of edge of roadway
- Should be removed when not in use
- 

**Standard Abbreviations**

The following is a list of standard abbreviations to be used on CMS.

| <b><u>Word</u></b>  | <b><u>Abbrev.</u></b> | <b><u>Example</u></b>                    |
|---------------------|-----------------------|--|
| Access              | ACCS                  | ACCIDENT AHEAD/USE ACCS RD<br>NEXT RIGHT |
| Alternate           | ALT                   | ACCIDENT AHEAD/USE ALT RTE<br>NEXT RIGHT |
| Avenue              | AVE                   | FIFTH AVE CLOSED/DETOUR<br>NEXT LEFT     |
| Blocked             | BLKD                  | FIFTH AVE BLKD/MERGE LEFT                |
| Boulevard           | BLVD                  | MAIN BLVD CLOSED/USE ALT RTE             |
| Bridge              | BRDG                  | SMITH BRDG CLOSED/USE ALT<br>RTE         |
| Cardinal Directions | N, S, E, W            | N I75 CLOSED/ DETOUR EXIT 30             |
| Center              | CNTR                  | CNTR LANE CLOSED/MERGE LEFT              |
| Commercial          | COMM                  | OVRSZ COMM VEH/USE I275                  |
| Condition           | COND                  | ICY COND POSSIBLE                        |
| Congested           | CONG                  | HVY CONG NEXT 3 MI                       |
| Construction        | CONST                 | CONST WORK AHEAD/EXPECT<br>DELAYS        |
| Downtown            | DWNTN                 | DWNTN TRAF USE EX 40                     |
| Eastbound           | E-BND                 | E-BND I64 CLOSED/DETOUR<br>EXIT 20       |
| Emergency           | EMER                  | EMER VEH AHEAD/PREPARE TO<br>STOP        |
| Entrance, Enter     | EX, EXT               | DWNTN TRAF USE EX 40                     |

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|                     |           |                                       |
|---------------------|-----------|---------------------------------------|
| Expressway          | EXPWY     | WTRSN EXPWY CLOSED/DETOUR<br>EXIT 10  |
| Freeway             | FRWY, FWY | GN SYNDR FWY CLOSED/DETOUR<br>EXIT 15 |
| Hazardous Materials | HAZMAT    | HAZMAT IN ROADWAY/ALL TRAF<br>EXIT 25 |
| Highway             | HWY       | ACCIDENT ON AA HWY/EXPECT<br>DELAYS   |
| Hour                | HR        | ACCIDENT ON AA HWY/2 HR<br>DELAY      |
| Information         | INFO      | TRAF INFO TUNE TO 1240 AM             |
| Interstate          | I         | E-BND I64 CLOSED/DETOUR<br>EXIT 20    |
| Lane                | LN        | LN CLOSED/MERGE LEFT                  |
| Left                | LFT       | LANE CLOSED/MERGE LFT                 |
| Local               | LOC       | LOC TRAF USE ALT RTE                  |
| Maintenance         | MAINT     | MAINT WRK ON BRDG/SLOW                |
| Major               | MAJ       | MAJ DELWAYS I75/USE ALT RTE           |
| Mile                | MI        | ACCIDENT 3 MI AHEAD/ USE<br>ALT RTE   |
| Minor               | MNR       | ACCIDENT 3 MI MNR DELAY               |
| Minutes             | MIN       | ACCIDENT 3 MI/30 MIN DELAY            |
| Northbound          | N-BND     | N-BND I75 CLOSED/ DETOUR<br>EXIT 50   |
| Oversized           | OVRSZ     | OVRSZ COMM VEH/USE I275<br>NEXT RIGHT |
| Parking             | PKING     | EVENT PKING NEXT RGT                  |
| Parkway             | PKWY      | CUM PKWAY TRAF/DETOUR<br>EXIT 60      |
| Prepare             | PREP      | ACCIDENT 3 MIL/PREP TO STOP           |
| Right               | RGT       | EVENT PKING NEXT RGT                  |
| Road                | RD        | HAZMAT IN RD/ALL TRAF EXIT 25         |
| Roadwork            | RDWK      | RDWK NEXT 4 MI/POSSIBLE<br>DELAYS     |
| Route               | RTE       | MAJ DELAYS I75/USE ALT RTE            |
| Shoulder            | SHLDR     | SHLDR CLOSED NEXT 5 MI                |
| Slippery            | SLIP      | SLIP COND POSSIBLE/ SLOW SPD          |
| Southbound          | S-BND     | S-BND I75 CLOSED/DETOUR<br>EXIT 50    |
| Speed               | SPD       | SLIP COND POSSIBLE/ SLOW SPD          |
| Street              | ST        | MAIN ST CLOSED/USE ALT RTE            |
| Traffic             | TRAF      | CUM PKWAY TRAF/DETOUR<br>EXIT 60      |
| Vehicle             | VEH       | OVRSZ COMM VEH/USE I275<br>NEXT RIGHT |
| Westbound           | W-BND     | W-BND I64 CLOSED/DETOUR<br>EXIT 50    |



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|      |     |                               |
|------|-----|-------------------------------|
| Work | WRK | CONST WRK 2MI/POSSIBLE DELAYS |
|------|-----|-------------------------------|

Certain abbreviations are prone to inviting confusion because another word is abbreviated or could be abbreviated in the same way. **DO NOT USE THESE ABBREVIATIONS.**

| <u>Abbrev.</u> | <u>Intended Word</u> | <u>Word Erroneously Given</u> |
|----------------|----------------------|-------------------------------|
| ACC            | Accident             | Access (Road)                 |
| CLRS           | Clears               | Colors                        |
| DLY            | Delay                | Daily                         |
| FDR            | Feeder               | Federal                       |
| L              | Left                 | Lane (merge)                  |
| LOC            | Local                | Location                      |
| LT             | Light (traffic)      | Left                          |
| PARK           | Parking              | Park                          |
| POLL           | Pollution (index)    | Poll                          |
| RED            | Reduce               | Red                           |
| STAD           | Stadium              | Standard                      |
| TEMP           | Temporary            | Temperature                   |
| WRNG           | Warning              | Wrong                         |

## TYPICAL MESSAGES

The following is a list of typical messages used on CMS. The list consists of the reason or problem that you want the driver to be aware of and the action that you want the driver to take.

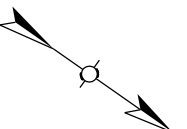
| <u>Reason/Problem</u>        | Action              |
|------------------------------|---------------------|
| ACCIDENT                     | ALL TRAFFIC EXIT RT |
| ACCIDENT/XX MILES            | AVOID DELAY USE XX  |
| XX ROAD CLOSED               | CONSIDER ALT ROUTE  |
| XX EXIT CLOSED               | DETOUR              |
| BRIDGE CLOSED                | DETOUR XX MILES     |
| BRIDGE/(SLIPPERY, ICE, ETC.) | DO NOT PASS         |
| CENTER/LANE/CLOSED           | EXPECT DELAYS       |
| DELAY(S), MAJOR/DELAYS       | FOLLOW ALT ROUTE    |
| DEBRIS AHEAD                 | KEEP LEFT           |
| DENSE FOG                    | KEEP RIGHT          |
| DISABLED/VEHICLE             | MERGE XX MILES      |
| EMER/VEHICLES/ONLY           | MERGE LEFT          |
| EVENT PARKING                | MERGE RIGHT         |
| EXIT XX CLOSED               | ONE-WAY TRAFFIC     |
| FLAGGER XX MILES             | PASS TO LEFT        |
| FOG XX MILES                 | PASS TO RIGHT       |

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|  |                    |
|--|--------------------|
| FREEWAY CLOSED   | PREPARE TO STOP    |
| FRESH OIL  | REDUCE SPEED       |
| HAZMAT SPILL   | SLOW               |
| ICE  | SLOW DOWN          |
| INCIDENT AHEAD   | STAY IN LANE       |
| LANES (NARROW, SHIFT, MERGE, ETC.)                           | STOP AHEAD         |
| LEFT LANE CLOSED   | STOP XX MILES      |
| LEFT LANE NARROWS  | TUNE RADIO 1610 AM |
| LEFT 2 LANES CLOSED  | USE NN ROAD        |
| LEFT SHOULDER CLOSED   | USE CENTER LANE    |
| LOOSE GRAVEL   | USE DETOUR ROUTE   |
| MEDIAN WORK XX MILES   | USE LEFT TURN LANE |
| MOVING WORK ZONE, WORKERS IN ROADWAY                         | USE NEXT EXIT      |
| NEXT EXIT CLOSED   | USE RIGHT LANE     |
| NO OVERSIZED LOADS   | WATCH FOR FLAGGER  |
| NO PASSING   |                    |
| NO SHOULDER  |                    |
| ONE LANE BRIDGE  |                    |
| PEOPLE CROSSING  |                    |
| RAMP CLOSED  |                    |
| RAMP (SLIPPERY, ICE, ETC.)                                   |                    |
| RIGHT LANE CLOSED  |                    |
| RIGHT LANE NARROWS   |                    |
| RIGHT SHOULDER CLOSED  |                    |
| ROAD CLOSED  |                    |
| ROAD CLOSED XX MILES   |                    |
| ROAD (SLIPPERY, ICE, ETC.)                                   |                    |
| ROAD WORK  |                    |
| ROAD WORK (OR CONSTRUCTION) (TONIGHT, TODAY, TOMORROW, DATE) |                    |
| ROAD WORK XX MILES   |                    |
| SHOULDER (SLIPPERY, ICE, SOFT, BLOCKED, ETC.)                |                    |
| NEW SIGNAL XX MILES  |                    |
| SLOW 1 (OR 2) - WAY TRAFFIC                                  |                    |
| SOFT SHOULDER  |                    |
| STALLED VEHICLES AHEAD                                       |                    |
| TRAFFIC BACKUP   |                    |
| TRAFFIC SLOWS  |                    |
| TRUCK CROSSING   |                    |
| TRUCKS ENTERING  |                    |
| TOW TRUCK AHEAD  |                    |
| UNEVEN LANES   |                    |
| WATER ON ROAD  |                    |
| WET PAINT  |                    |
| WORK ZONE XX MILES   |                    |
| WORKERS AHEAD  |                    |

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JEFFERSON CO. KY 1447 ~m.p. 2.19  
~LAT/LONG N 38.26740, W 85.62054  
STATION 176

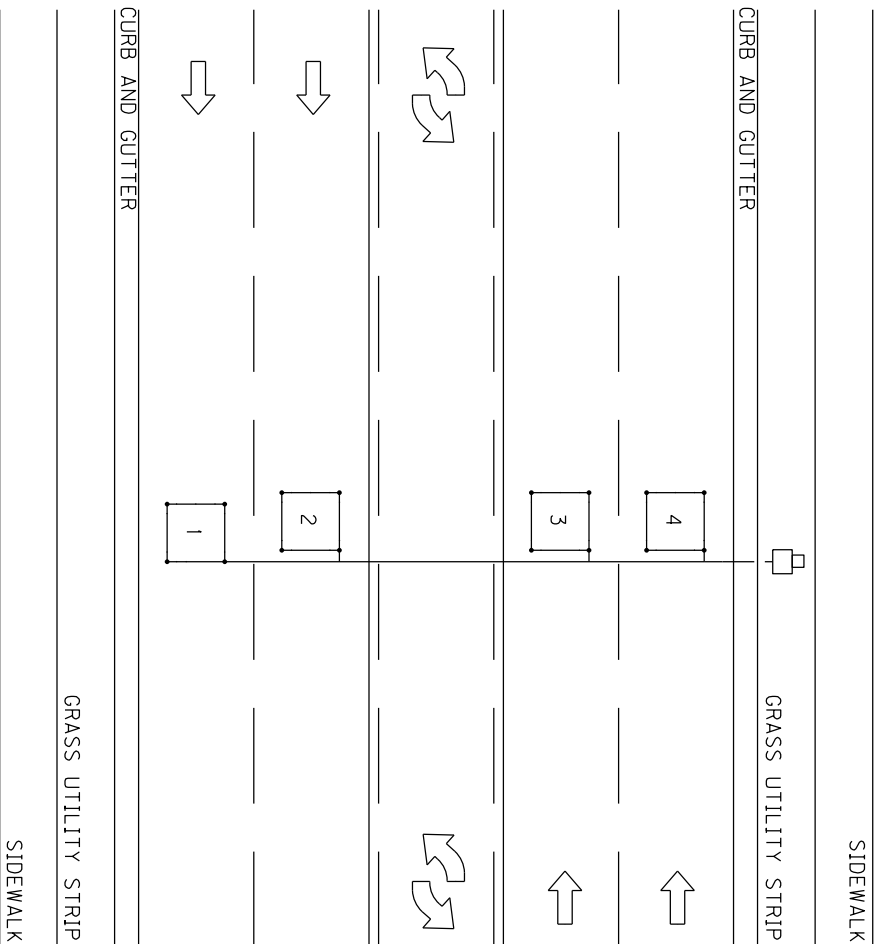


SITE LOCATION IS APPROXIMATE AND WILL BE DETERMINED IN THE FIELD AND APPROVED BY DIVISION OF PLANNING PERSONNEL PRIOR TO ANY CONSTRUCTION.

INSTALL ONE (1) 10"x8"x4" BOX ON ONE (1) WOOD POST.

ALL LOOPS SHALL BE 6'x6' SQUARE AND SHALL BE INSTALLED SPlice-FREE TO THE BOX. A MINIMUM OF 2' OF WIRE FOR EACH SENSOR SHALL BE COILED AND LABELED INSIDE THE BOX. DIVISION OF PLANNING PERSONNEL WILL CONNECT THE LOOPS AND PIEZOS INSIDE THE BOX.

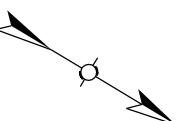
INSTALL ONE (1) 1 1/4" CONDUIT FROM SAW SLOT TO BOX.



JEFFERSON CO. US 68 ~m.p. 4.41

~LAT/LONG N 38.28258, W 85.58546

STATION 192



SITE LOCATION IS APPROXIMATE AND WILL BE DETERMINED IN THE FIELD AND APPROVED BY DIVISION OF PLANNING PERSONNEL PRIOR TO ANY CONSTRUCTION.

ALL LOOPS SHALL BE 6'X6' SQUARE AND SHALL BE INSTALLED 16' FROM LEADING EDGE TO LEADING EDGE AS SHOWN. PIEZOELECTRIC SENSORS (PIEZOS) SHALL BE INSTALLED 5' FROM THE EDGE OF LOOPS WITH THE EDGE OF EACH PIEZO FLUSH WITH THE EDGE OF THE CORRESPONDING DRIVING LANE. LOOPS AND PIEZOS SHALL BE INSTALLED SPlice-FREE TO THE CABINET AND A MINIMUM OF 2' OF WIRE FOR EACH SENSOR SHALL BE COILED INSIDE EACH JUNCTION BOX AND CABINET. ALL LOOPS AND PIEZOS SHALL BE LABELED IN ALL JUNCTION BOXES AND CABINETS. DIVISION OF PLANNING PERSONNEL WILL CONNECT THE LOOPS AND PIEZOS INSIDE THE CABINETS.

INSTALL ONE (1) 1 1/4" CONDUIT FROM EACH SAW SLOT TO NEAREST JUNCTION BOX.

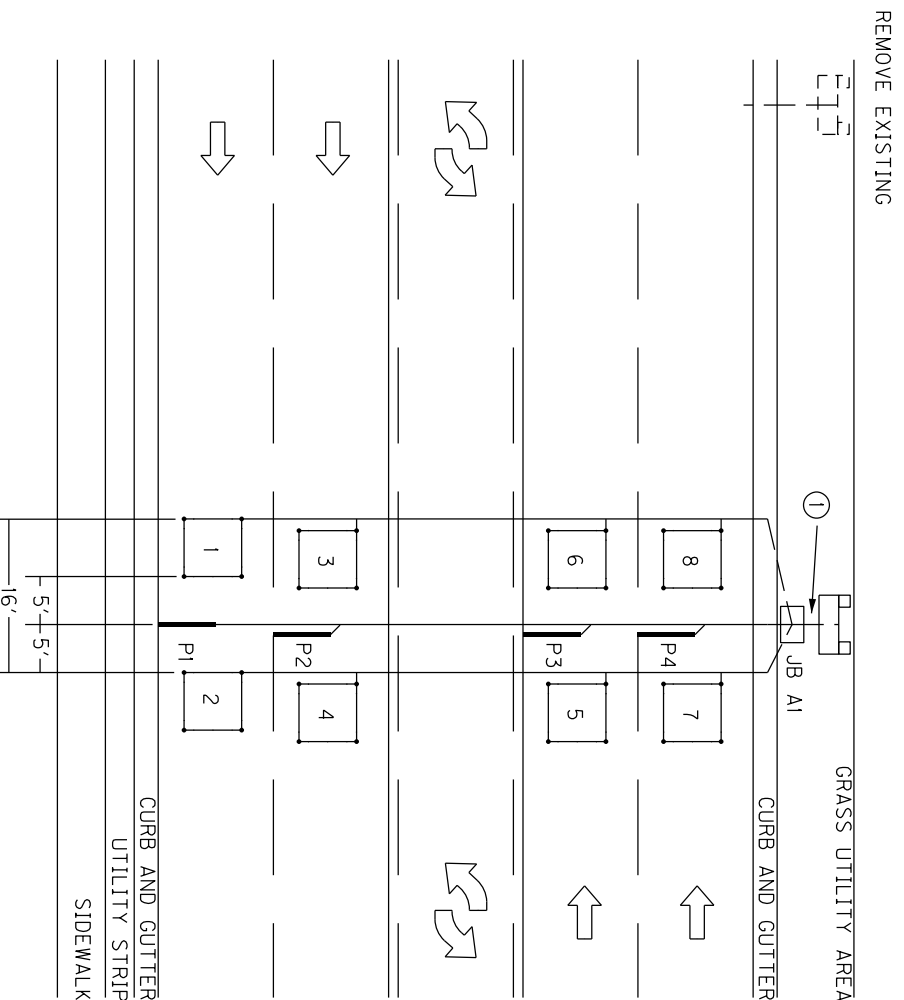
INSTALL ONE (1) TYPE A JUNCTION BOX (JB A1).

INSTALL ONE (1) 20"X20"X8" CABINET MOUNTED TO TWO (2) WOOD POSTS.

REMOVE OLD CABINET, POSTS, WIRE, JUNCTION BOX AND CONDUIT AND DISPOSE OF OFF THE JOB SITE.

CODED NOTE:

① INSTALL ONE (1) 2" CONDUIT.



Permanent Traffic Data Acquisition Station  
Estimate Of Quantities

Revised January 2023

**PERMANENT TRAFFIC DATA ACQUISITION STATIONS**  
**ESTIMATE OF QUANTITIES**

| Bid Item Code | Description                    | Unit   | Quantity |
|---------------|--------------------------------|--------|----------|
| 4793          | CONDUIT 1 ¼ INCH               | LIN FT | 45       |
| 4795          | CONDUIT 2 INCH                 | LIN FT | 10       |
| 4811          | ELECTRICAL JUNCTION BOX TYPE B | EACH   |          |
| 4820          | TRENCHING AND BACKFILLING      | LIN FT | 45       |
| 4821          | OPEN CUT ROADWAY               | LIN FT |          |
| 4829          | PIEZOELECTRIC SENSOR           | EACH   | 4        |
| 4830          | LOOP WIRE                      | LIN FT | 2500     |
| 4833          | WIRE – NO. 8                   | LIN FT |          |
| 4834          | WIRE – NO. 6                   | LIN FT |          |
| 4850          | CABLE NO. 14/1 PAIR            | LIN FT |          |
| 4871          | POLE – 35’ WOODEN              | EACH   |          |
| 4895          | LOOP SAW SLOT AND FILL         | LIN FT | 540      |
| 4899          | ELECTRICAL SERVICE             | EACH   |          |
| 4960          | REMOVE AND REPLACE SIDEWALK    | SQYD   |          |
| 20213EC       | INSTALL PAD MOUNT ENCLOSURE    | EACH   |          |
| 20359NN       | GALVANIZED STEEL CABINET       | EACH   | 1        |
| 20360ES818    | WOOD POST                      | EACH   | 3        |
| 20391NS835    | ELECTRICAL JUNCTION BOX TYPE A | EACH   | 1        |
| 20392NS835    | ELECTRICAL JUNCTION BOX TYPE C | EACH   |          |
| 20468EC       | ELECTRICAL JUNCTION BOX 10x8x4 | EACH   | 1        |
| 21543EN       | BORE AND JACK CONDUIT          | LIN FT |          |
| 23206EC       | INSTALL CONTROLLER CABINET     | EACH   |          |
| 24963ED       | LOOP TEST                      | EACH   |          |

## **MATERIAL, INSTALLATION, AND BID ITEM NOTES FOR PERMANENT TRAFFIC DATA ACQUISITION STATIONS**

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### **1. DESCRIPTION**

Except as specified in these notes, all work shall consist of furnishing and installing all materials necessary for permanent data acquisition station equipment installation(s) and shall be performed in accordance with the current editions of:

- The Contract
- Division of Planning Standard Detail Sheets
- Kentucky Transportation Cabinet, Department of Highways, *Standard Specifications for Road and Bridge Construction*
- Kentucky Transportation Cabinet, Department of Highways, Standard Drawings
- National Fire Protection Association (NFPA) 70: *National Electrical Code*
- Institute of Electrical and Electronic Engineers (IEEE), *National Electrical Safety Code*
- Federal Highway Administration, *Manual on Uniform Traffic Control Devices*
- American Association of State Highway and Transportation Officials (AASHTO), *Roadside Design Guide*.
- Standards of the utility company serving the installation, if applicable

The permanent traffic data acquisition station layout(s) indicate the extent and general arrangement of the proposed installation and are for general guidance. Any omission or commission shown or implied shall not be cause for deviation from the intent of the plans and specifications. Information shown on the plans and in this proposal and the types and quantities of work listed are not to be taken as an accurate or complete evaluation of the material and conditions to be encountered during construction. The bidder must draw his own conclusion as to the conditions encountered. The Department of Highways (Department) does not give any guarantee as to the accuracy of the data and no claim will be considered for additional compensation if the conditions encountered are not in accordance with the information shown. If any modifications of the plans or specifications are considered necessary by the Contractor, details of such modifications and the reasons, therefore, shall be submitted in writing to the Engineer for written approval prior to beginning such modified work.

The Contractor shall contact all utility companies and the district utility agent prior to beginning construction to insure proper clearance and shielding from existing and proposed utilities. The Contractor shall use all possible care in excavating on this project so as not to disturb any existing utilities whether shown on the plans or not shown on the plans. Any utilities disturbed or damaged by the Contractor during construction shall be replaced or repaired to original condition by the Contractor at no cost to the department. If necessary, to avoid existing utilities, the Contractor shall hand dig areas where poles or conduit cross utilities.

Material, Installation, and Bid Item Notes for  
Permanent Traffic Data Acquisition Stations

Revised January 2023

The Contractor shall be responsible for all damage to public and/or private property resulting from his work.

The Contractor shall inspect the project site prior to submitting a bid and shall be thoroughly familiarized with existing conditions. Submission of a bid will be considered an affirmation of this inspection having been completed. The Department will not honor any claims resulting from site conditions.



## **2. MATERIALS**

All proposed materials shall be approved prior to being utilized. The Contractor shall submit for material approval an electronic file of descriptive literature, drawings and any requested design data for the proposed materials. After approval, no substitutions of any approved materials may be made without the written approval of the Engineer.

Materials requiring sampling shall be made available a sufficient time in advance of their use to allow for necessary testing.

### **2.1. Anchoring**

#### **2.1.1. Anchor and Anchor Rod**

Anchor, except rock anchor, shall be expanding type, with a minimum area of 135 square inches.

Anchor rod shall be galvanized steel, double-eye, have a minimum diameter of 5/8 inches, and a minimum length of 84 inches. Minimum holding capacity shall be 15,400 lbs.

Rock anchor shall be galvanized steel, triple-eye, expanding type, with a minimum diameter of 3/4 inch, a minimum 53 inches long, and a minimum tensile strength of 23,000 lb.

#### **2.1.2. Guy Wire and Guy Guard**

Guy wire shall be Class A, Zinc-coated, 3/8 inch diameter, high strength grade steel (minimum 10,800 lb.) and galvanized per ASTM A475. Guy guard shall be 8' long, fully-rounded, yellow, and able to be securely attached to the guy wire.

#### **2.1.3. Strandwise for Guy Wire**

Strandwise for guy wire shall be 3/8 inch and rated to hold a minimum of 90% of the rated breaking strength (RBS) of the strand used.

### **2.2. Asphalt**

Asphalt shall be a minimum CL2 Asph Surf 0.38B PG64-22 and conform to the *Standard Specifications for Road and Bridge Construction*.

### **2.3. Backer Rod**

Backer rod shall be 1/2 inch diameter, closed cell polyethylene foam and shall meet or exceed the following physical properties:

- Density (average): 2.0 lbs/cu.ft. (minimum): ASTM D 1622 test method
- Tensile Strength: 50 PSI (minimum): ASTM D 1623 test method
- Compression Recovery: 90% (minimum): ASTM D 5249 test method
- Water Absorption: 0.03 gm/cc (maximum): ASTM C 1016 test method

2.4. Cabinets

2.4.1. Galvanized Steel Cabinet

Galvanized Steel Cabinet shall be constructed of 16 or 14 gauge galvanized steel and shall meet or exceed the industry standards set forth by UL 50 and NEMA 3R. The finish shall be an ANSI 61 gray polyester powder finish inside and out over the galvanized steel. Cabinet shall have minimum inside dimensions of 20 inches high by 20 inches wide by 8 inches deep.

The cabinet shall be equipped with the following:

- Drip shield top
- Seam-free sides, front, and back, to provide protection in outdoor installations against rain, sleet, and snow
- Hinged cover with 16 gauge galvanized steel continuous stainless steel pin.
- Cover fastened with captive plated steel screws, knob or latch
- Hasp and staple for padlocking
- No gaskets or knockouts
- Back panel for terminal block installation
- Post mounting hardware
- Terminal Blocks

2.4.2. Anchor Bolt for Pad Mounted Cabinet

Anchor bolt for pad mounted cabinet shall be galvanized steel with minimum dimensions of 3/8 inch by 6 inches.

2.5. Concrete

Concrete shall be Class A and conform to the *Standard Specifications for Road and Bridge Construction*.

2.6. Conduit and Conduit Fittings

Conduit and conduit fittings shall be rigid steel unless otherwise specified.

Conduit shall be zinc galvanized inside and out and conform to the NEC, UL Standard 6, and ANSI C-80.1.

Rigid Steel Conduit Fittings shall be galvanized inside and out and conform to the NEC, UL Standard 514B, and ANSI C-80.4. Intermediate Metal Conduit (IMC) will not be approved as an acceptable alternative to rigid steel conduit.

2.7. Conduit sealant

Conduit sealant shall be weather-, mold-, and mildew-resistant and chemically resistant to gasoline, oil, dilute acids and bases. Conduit sealant shall be closed cell type and shall meet or exceed the following properties:

- |                                    |                          |
|------------------------------------|--------------------------|
| • Cure Time                        | 20 minutes max.          |
| • Density                          | 64.4 kg/m3; 6 lbs/ft3    |
| • Compressive Strength (ASTM 1691) | 13.8 MPa; 330 or 300 psi |

- Tensile Strength (ASTM 1623) 15.9 MPa; 270 or 250 psi
- Flexural Strength (ASTM D790) 14.5 MPa; 460 or 450 psi
- Service Temperature -20 to 200 F

## **2.8. Electrical Service Meter Base**

Electrical service meter base shall meet or exceed all requirements of the National Electrical Code and the local utility providing the electrical service.

## **2.9. Electrical Service Disconnect**

Electrical service disconnect shall meet or exceed all requirements of the National Electrical Code and the local utility providing the electrical service.

## **2.10. Flashing Arrow**

Flashing Arrow shall conform to the *Standard Specifications for Road and Bridge Construction*.

## **2.11. Ground Fault Circuit Interrupter (GFCI) Receptacle**

Ground Fault Circuit Interrupter Receptacle shall be 2-pole, 3-wire, 20 Amp, 125 Volt, 60 Hz, NEMA 5-20R configuration and meet or exceed the following standards and certifications:

- NEMA WD-1 and WD-6
- UL 498 and 943
- NOM 057
- ANSI C-73

This item shall include a UL listed, 4 inch x4 inch x 2<sup>1</sup>/<sub>8</sub> inch box with <sup>3</sup>/<sub>4</sub> inch side and end knockouts and a 1<sup>1</sup>/<sub>2</sub> inches deep, single-receptacle cover to house the GFCI receptacle. Box and cover shall be hot rolled, galvanized steel with a minimum thickness of 0.62 inches.

## **2.12. Grounding**

### **2.12.1. Ground Rod**

Ground Rod shall be composite shaft consisting of a pure copper exterior (5 mil minimum) that has been inseparably molten welded to a steel core. Ground Rod shall have a minimum diameter of 5/8 inch, a minimum length of 8 feet and shall be manufactured for the sole purpose of providing electrical grounding.

### **2.12.2. Ground Rod Clamp**

Ground rod shall be equipped with a one piece cast copper or bronze body with a non-ferrous hexagonal head set screw and designed to accommodate a 10 AWG solid through 2 AWG stranded grounding conductor.

## **2.13. Grout**

### **2.13.1. Grout for Inductive Loop Installation**

Grout for inductive loop installation shall be non-shrink, shall meet the requirements of the *Standard Specifications for Road and Bridge Construction*,

and shall be included on the KYTC Division of Materials, *List of Approved Materials*.

### **2.13.2. Grout for Piezoelectric Sensor Installation**

Grout for piezoelectric sensor installation shall be per the piezoelectric sensor manufacturer's recommendation. Grout shall be suitable for installation in both asphalt and Portland cement pavements. Grout shall have a short curing time (tack free in ten minutes; open to traffic in forty minutes; and fully cured within sixty minutes) to prevent unnecessary lane closure time and should be of sufficient consistency to prevent running when applied on road surfaces with a drainage cross slope. Particulate matter within the grout shall not separate or settle and the grout shall not shrink during the curing process.

## **2.14. Hardware**

Except where specified otherwise, all hardware such as nuts, bolts, washers, threaded ends of fastening devices, etc. with a diameter less than 5/8 inch shall be passivated stainless steel, alloy type 316 or type 304. Stainless steel hardware shall meet ASTM F593 and F594 for corrosion resistance. All other nuts and bolts shall meet ASTM A307 and shall be galvanized.

### **2.14.1. Conduit Strap**

Conduit strap shall be double-hole, stainless steel, and sized to support specified conduit. Conduit strap shall attach to wood pole or post with two 2 1/4 inch wood screws.

### **2.14.2. Mounting Strap for Pole Mount Cabinet**

Mounting strap for pole mount cabinet shall be 3/4 inch x 0.03 inch stainless steel; equipped with clips or buckles to securely hold strap.

### **2.14.3. Metal Framing Channel and Fittings**

Metal framing channel shall be 1 5/8 inches wide galvanized steel that conforms to ASTM A1011 and ASTM A653. One side of the channel shall have a continuous slot with in-turned edges to accommodate toothed fittings.

Fittings shall be punch pressed from steel plates and conform to ASTM A575 and the physical requirements of ASTM A1011.

## **2.15. Junction Box**

### **2.15.1. Junction Box Type A, B, or C**

Junction Box Type A, B, or C shall meet or exceed ANSI/SCTE 77-2007, Tier 15. Box shall have an open bottom. A removable, non-slip cover marked "PLANNING" shall be equipped with a lifting slot and attached with a minimum of two 3/8 inch stainless steel hex bolts and washers. Type A Box shall have nominal inside dimensions of 13 inches wide by 24 inches long by 18 inches deep. Type B Box shall have nominal inside dimensions of 11 inches wide by 18 inches long by 12

inches deep. Type C Box shall have nominal inside dimensions of 24 inches wide by 36 inches long by 30 inches deep.

**2.15.2. Aggregate for Junction Box Type A, B, or C**

Aggregate for junction box type A, B, or C shall be gradation size no. 57 and conform to the *Standard Specifications for Road and Bridge Construction*.

**2.15.3. Junction Box 10x8x4**

Junction Box Type 10x8x4 shall be constructed of a UV-stabilized, nonmetallic material or non-rusting metal and be weatherproof in accordance with NEMA 4X. Box shall be equipped with an overhanging door with a continuous durable weatherproof gasket between the body and door. Door shall be hinged with screws, hinge(s) and pin(s) and shall be equipped with a padlockable latch on the side opposite the hinge(s). Junction Box 10x8x4 shall have minimum inside dimensions of 10 inches high by 8 inches wide by 4 inches deep.

**2.16. Maintain and Control Traffic**

Materials for the bid item Maintain and Control Traffic shall conform to the *Standard Specifications for Road and Bridge Construction*, and the KYTC Department of Highways *Standard Drawings*.

**2.17. Piezoelectric Sensor**

Piezoelectric sensor (piezo) shall provide a consistent level voltage output signal when a vehicle axle passes over it, shall have a shielded transmission cable attached, and shall meet the following requirements:

- Dimensions: such that sensor will fit in a ¾ inch wide by 1 inch deep saw cut. Total length shall be 6 feet unless specified otherwise.
- Output uniformity: ± 7% (maximum)
- Typical output level range: 250mV (minimum) from a wheel load of 400 lbs.
- Working temperature range: -40° to 160° F.
- Sensor life: 30 million Equivalent Single Axle Loadings (minimum)

Shielded transmission cable shall be coaxial and shall meet the following requirements:

- RG 58C/U with a high density polyethylene outer jacket rated for direct burial
- Length shall be a minimum of 100 feet. Installations may exceed 100 feet so the piezo shall be supplied with a lead-in of appropriate length so that the cable can be installed splice-free from the piezo to the cabinet.
- Soldered, water resistant connection to the sensor.

One installation bracket for every 6 inches of sensor length shall also be supplied. Piezo shall be a RoadTrax BL Class I or approved equal.

**2.18. Saw Slot Sealant**

Saw Slot Sealant shall be non-shrink, non-stringing, moisture cure, polyurethane

encapsulant suitable for use in both asphalt and concrete pavements. It shall provide a void-free encapsulation for detector loop cables and adequate compressive yield strength and flexibility to withstand heavy vehicular traffic and normal pavement movement.

The cured encapsulant shall meet or exceed the following:

- Hardness (Indentation): 35-65 Shore A, ASTM D2240
- Tensile Strength: 150 psi minimum, ASTM D412
- Elongation: 125% minimum 2 inch/minute pull, ASTM D412
- Tack-free Drying Time: 24 hours maximum, ASTM C679
- Complete Drying Time: 30 hours maximum, KM 64-447
- Chemical Interactions (seven day cure at room temperature, 24-hour immersion, KM 64-446):
  - Motor Oil: No effect
  - Deicing Chemicals: No effect
  - Gasoline: Slight swell
  - Hydraulic Brake Fluid: No effect
  - Calcium Chloride (5%): No effect

## **2.19. Seeding and Protection**

Material for Seeding and Protection shall be Seed Mixture Type I and conform to the *Standard Specifications for Road and Bridge Construction*.

## **2.20. Signs**

Materials for signs shall conform to the *Standard Specifications for Road and Bridge Construction*.

## **2.21. Splicing Materials**

### **2.21.1. Electrical Tape**

Electrical tape shall be a premium grade, UL-listed, all-weather, vinyl-insulating tape with a minimum thickness of 7 mil. Tape shall be flame retardant and resistant to abrasion, moisture, alkalis, acids, corrosion, and weather (including ultraviolet exposure).

### **2.21.2. Splice Kit**

Splice kit shall be inline resin-type and rated for a minimum of 600V. Resin shall be electrical insulating-type and shall provide complete moisture and insulation resistance.

## **2.22. Steel Reinforcing Bar**

Steel reinforcing bar shall be #5 and shall conform to the *Standard Specifications for Road and Bridge Construction*.

## **2.23. Terminal Block**

Terminal block shall be rated for a minimum of 300 V and have a minimum of six

terminal pairs with 9/16-inch nominal spacing (center to center) for connecting loop and piezoelectric sensor wires to cable assemblies. Terminal block shall have screw type terminal strips to accommodate wire with spade-tongue ends.

## **2.24. Warning Tape**

Warning tape shall be acid and alkali resistant formulated for direct burial. Tape shall be a minimum of 3 inches wide by 4.0 mils (nominal) thick, and shall be permanently imprinted with a minimum 1 inch black legend on a red background warning of an electric line. Tape shall meet or exceed the following industry specifications:

- American Gas Association (AGA) 72-D-56
- American Petroleum Institute (API) RP 1109
- American Public Works Association (APWA) Uniform Color Code
- Department of Transportation (DOT) Office of Pipeline Safety USAS B31.8
- Federal Gas Safety Regulations S 192-321 (e)
- General Services Administration (GSA) Public Buildings Service Guide: PBS 4-1501, Amendment 2
- National Transportation Safety Board (NTSB) PSS 73-1
- Occupational Safety and Health Administration (OSHA) 1926.956 (c) (1)

## **2.25. Wire and Cable**

All cable and wire shall be plainly marked in accordance with the National Electrical Code (NEC).

### **2.25.1. Loop Wire**

Loop wire shall be 14 AWG, stranded, copper, single conductor, and shall conform to the International Municipal Signal Association (IMSA) Specification No. 51-7.

### **2.25.2. Cable No. 14/1 Pair**

Cable No. 14/1 pair loop lead-in cable shall be 14 AWG, stranded, copper paired, electrically shielded conductors, and shall conform to IMSA 19-2.

### **2.25.3. Grounding conductor**

Grounding conductor and bonding jumper shall be solid or stranded, 4 AWG bare copper.

### **2.25.4. Service Entrance Conductor**

Service entrance conductor shall be stranded, copper, Type USE-2, sized as required to comply with the NEC.

### **2.25.5. Terminal for electrical wire or cable**

Terminal for electrical wires or cables shall be insulated, solderless, spade tongue terminals of correct wire and stud size. Terminal for electrical wires or cables shall be incidental to the wire or cable (including piezoelectric sensor transmission cable) to be connected to terminal strips.

**2.26. Wood Post**

Wood post shall be Southern Pine pretreated to conform to the American Wood Preservers' Association (AWPA) C-14 or UC4B and shall have minimum dimensions of 4 inches by 4 inches by 8 feet long (for Galvanized Steel Cabinet) or 4 feet long (for Junction Box 10x8x4), sawed on all four sides with both ends square.

**2.27. Wooden Pole**

Wooden pole shall be a Class IV wood pole of the length specified and shall conform to the *Standard Specifications for Road and Bridge Construction* except the pole shall be treated in accordance with AWPA P9 Type A.



### 3. CONSTRUCTION METHODS

The plans indicate the extent and general arrangement of the installation and are for guidance. When the Contractor deems any modifications to the plans or specifications necessary, details of such changes and the reasons shall be submitted in writing to the engineer for written approval prior to beginning the modified work.

After the project has been let and awarded, the Division of Construction shall notify the Division of Planning of the scheduled date for a Pre-Construction meeting so that prior arrangements can be made to attend. This will allow the Division of Planning an opportunity to address any concerns and answer any questions that the Contractor may have before beginning the work.

The Division of Planning Equipment Management Team (502-564-7183) shall be notified a minimum of seven days before any work pertaining to these specifications begins to allow their personnel the option to be present during installation.

Unless otherwise specified, installed materials shall be new.

Construction involving the installation of loops or piezoelectric sensors shall not be performed when the temperature of the pavement is less than 38°F.

A final inspection will be performed by a member of the Central Office Division of Planning equipment staff after the installation is complete to verify that the installation is in compliance with the plans and specifications.

Any required corrective work shall be performed per the *Standard Specifications for Road and Bridge Construction*.

#### 3.1. Anchoring

Furnish: Anchor, anchor rod, guy wire, strand vise, guy guard.

Anchor shall be installed in relatively dry and solid soil. Rock anchor shall be installed in solid rock. Excavate the hole at a 45° to 60° angle in line with the guy (hole size shall be slightly larger than the expanded anchor – see manufacturer's recommendation). Attach rod to anchor, install assembly into hole, and expand anchor. Backfill and tamp entire disturbed area. The effectiveness of the anchor is dependent upon the thoroughness of backfill tamping. Attach guy to strand vise on pole and anchor rod and tighten to required tension. Install guy guard on guy.

#### 3.2. Bore and Jack Pipe – 2"

Furnish: Steel Encasement Pipe, 2"

Bore and jack pipe – 2" shall conform to the Section 706 of the *Standard Specifications for Road and Bridge Construction*.

### **3.3. Cleanup and Restoration**

Furnish: Seed Mix Type 1 (as required); fertilizer (as required); agricultural limestone (as required); mulch or hydromulch (as required); tackifier (as required).

The Contractor shall be responsible for repairing any damage to public and/or private property resulting from his work. Upon completion of the work, restore all disturbed highway features in like kind design and materials. This shall include filling any ruts and leveling ground appropriately. Contractor shall dispose of all waste and debris off the project. Sow all disturbed earthen areas with Seed Mix Type 1 per Section 212 of the *Standard Specifications for Road and Bridge Construction*. All materials and labor necessary for cleanup and restoration shall be considered incidental to other bid items.

### **3.4. Conduit**

Furnish: Conduit; conduit fittings; bushings (grounding where required); LB condulets (as required); weatherheads (as required); conduit straps; hardware; conduit sealant.

Conduit that may be subject to regular pressure from traffic shall be laid to a minimum depth of 24 inches below grade. Conduit that will not be subject to regular pressure from traffic shall be laid to a minimum depth of 18 inches below grade.

Conduit ends shall be reamed to remove burrs and sharp edges. Cuts shall be square and true so that the ends will butt together for the full circumference of the conduit. Tighten couplings until the ends of the conduit are brought together. Do not leave exposed threads. Damaged portions of the galvanized surfaces and untreated threads resulting from field cuts shall be painted with an Engineer-approved, rust inhibitive paint. Conduit bends shall have a radius of no less than 12 times the nominal diameter of the conduit, unless otherwise shown on the plans.

Contractor shall install a bushing (grounding bushing where required) on both ends of all conduits. Cap spare conduits on both ends with caps or conduit sealant.

Conduit openings in junction boxes and cabinets shall be waterproofed with a flexible, removable conduit sealant, working it around the wires, and extending it a minimum 1 inch into the end of the conduit.

After the conduit has been installed and prior to backfilling, the conduit installation shall be inspected and approved by the Engineer.

### **3.5. Electrical Service**

Furnish: Meter base, service disconnect, wire, GFCI AC duplex receptacle with box and cover; conduit, conduit fittings, bushings (grounding where required); LB condulets (as required); weatherhead; conduit straps; hardware; conduit sealant; ground rod with clamp; grounding conductor.

Prior to any construction, the Contractor shall initiate a work order with the local power

company for the installation of electrical service to the site. A representative from the Division of Planning and the local power company shall be consulted prior to choosing an exact location for the pole. The Contractor shall clear the right-of-way for the electrical service drop.

Contractor shall obtain electrical inspections, memberships, meter base, service disconnect and any other requirements by the utility serving the installation and pay all fees as required.

Install meter-base and disconnect panel with a 30-ampere, fused, circuit breaker inside. Install a manufactured weatherproof hub connector to connect the conduit to the top of the meter base and service disconnect.

Install a rigid  $\frac{3}{4}$  inch conduit with three 8 AWG service conductors from the cabinet, through the service disconnect to the meter base and a  $1\frac{1}{4}$ " conduit with three 8 AWG service conductors from the meter base to a weatherhead two feet from the top of the electrical service pole. Install conduit straps 30 inches on center and provide a drip loop where the wire enters the weatherhead. Splice electric drop with service entrance conductors at the top of the pole.

The limit of conduit incidental to "Install Electrical Service" for a pad mounted cabinet is 24 inches beyond face of service pole.

Install a 120-volt, 20-amp GFCI AC duplex receptacle with box and cover in the automatic data recorder (ADR) cabinet.

Install a ground rod with clamp. Install a grounding conductor wire from the meter base, through the disconnect panel, to the ground rod clamp. Install grounding conductor in  $1\frac{3}{4}$ " conduit from service disconnect to ground rod.

After completing the installation and before the electrical service is connected, obtain a certificate of compliance from the Kentucky Department of Housing, Buildings and Construction, Electrical Inspection Division.

### **3.6. Flashing Arrow**

Furnish: Arrow Panel

Construction of Flashing Arrow shall conform to the *Standard Specifications for Road and Bridge Construction*.

### **3.7. Galvanized Steel Cabinet**

Furnish: Cabinet; wood posts; concrete; conduit fittings; metal framing channel; pipe clamp; terminal block(s); spade tongue wire terminals; wire labels; hardware.

Where right-of-way allows, locate the cabinet such that it is outside the clear zone in accordance with the *Roadside Design Guide*. Install Cabinet such that the door of the

cabinet faces the roadway.

Excavate as required and install wood posts to a depth of 36 inches and place concrete around posts as shown on the standard detail sheets. Install metal framing channel with pipe clamp between posts.

Install Cabinet on wood posts 38 inches above the finished grade as shown on the standard detail sheets. Install a unistrut between posts when two posts are specified.

Install the required number of terminal blocks on the cabinet back plate. Install a spade tongue terminal on each loop and piezo sensor wire entering the cabinet and connect wires to terminal block(s). Wiring shall be neat and orderly. Label all wires and cables inside cabinet.

Install conduit from ground to cabinet and attach to pipe clamp. Install locknuts to attach conduit to cabinet and install a conduit bushing as shown on the standard detail sheets.

### **3.8. Grounding**

Furnish: Ground rod with clamp; grounding conductor.

At sites with electrical or solar service, all conduits, poles, and cabinets shall be bonded to ground rods and the electrical system ground to form a complete grounded system.

Install such that top of ground rod is a minimum of 3 inches below finished grade.

Grounding systems shall have a maximum 25 ohms resistance to ground. If the resistance to ground is greater than 25 ohms, two or more ground rods connected in parallel shall be installed. Adjacent ground rods shall be separated by a minimum of 6 feet.

### **3.9. Install Pad Mount Enclosure**

Furnish: Concrete; anchor bolts with washers and nuts; conduit; conduit fittings; conduit grounding bushings; ground rod with clamp; grounding conductor; conduit sealant; wooden stakes (where required); wire labels; hardware.

The Contractor shall be responsible for securing the enclosure from the Central Office Division of Planning Warehouse in Frankfort and transporting it to the installation site.

Where right-of-way allows, locate the enclosure such that it is outside the clear zone in accordance with the *Roadside Design Guide*.

Excavate as required, and place concrete to construct the enclosure foundation as specified on the standard detail sheets. Install enclosure on the concrete base such that the door(s) of the enclosure opens away from traffic (hinges away from traffic). Install anchor bolts, washers, and nuts to secure the enclosure to the foundation.

Install ground rod with clamp and install one  $\frac{3}{4}$  inch rigid conduit from enclosure base to

ground rod. Install a grounding conductor from ground rod to enclosure base and bond to each conduit bushing in the base.

Install one  $\frac{3}{4}$  inch rigid steel conduit for electrical service from the base of the enclosure to 24 inches beyond the concrete base. Make all field wiring connections to the electrical service, as applicable.

If electrical service is not provided as a bid item in the contract, plug conduit on both ends with a cap, conduit sealant, or electrical tape. Mark the location of the buried conduit end with a wooden stake labeled "3/4 in. conduit."

Install specified rigid steel conduit(s) into the base of the enclosure for sensor wire entry. Install one spare 2-inch conduit from the enclosure base to 2 feet beyond the concrete base. Plug spare conduit on both ends with a cap, conduit sealant or electrical tape.

The limit of all conduits incidental to "Install Pad Mount Enclosure" is 24 inches beyond the edge of the concrete base.

Wiring in enclosure shall be neat and orderly. Label all wires and cables inside enclosure. KYTC personnel will furnish and install terminal blocks and connect sensors to terminal blocks.

### **3.10. Install Controller Cabinet**

Furnish: Mounting brackets; mounting straps; conduit; LB condulets; conduit fittings; conduit grounding bushings; ground rod with clamp; grounding conductor; cable staples; conduit sealant; wooden stakes (where required); wire labels; hardware.

The Contractor shall be responsible for securing the cabinet from the Central Office Division of Planning Warehouse in Frankfort and transporting it to the installation site. Any existing holes in the cabinet not to be reused shall be covered or plugged to meet NEC requirements.

Install mounting brackets and secure cabinet to pole with mounting straps.

Install a ground rod with clamp. Install grounding conductor in 1- $\frac{3}{4}$ " conduit from cabinet to ground rod.

Install one  $\frac{3}{4}$  inch rigid steel conduit with two lb. condulets from cabinet to electrical service disconnect box. Make all field wiring connections to the electrical service, as applicable.

If electrical service is not provided as a bid item in the contract, plug conduit on both ends with cap, plumbers putty, conduit sealant, or electrical tape. Mark the location of the buried conduit end with a wooden stake labeled "3/4 in. conduit".

Install specified rigid steel conduit(s) and type LB conduit(s) into the bottom of the

cabinet for sensor wire entry. The limit of conduits incidental to "Install Controller Cabinet" is 24 inches beyond the face of the pole.

Wiring in cabinet shall be neat and orderly. Label all wires and cables inside cabinet. KYTC personnel will furnish and install terminal blocks and connect sensors to terminal blocks.

### **3.11. Junction Box Type 10x8x4**

Furnish: Junction box; wood post; conduit fittings; wire labels; hardware.

Where right-of-way allows, locate the junction box such that it is outside the clear zone in accordance with the Roadside Design Guide.

Excavate as required and install wood post(s) to a depth of 18 inches. Install junction box on wood post such that the bottom of the box is 18 inches above the finished grade as shown on the standard detail sheets. Box shall be installed with four (4) 2½ inch wood screws and washers.

Install locknuts to attach conduit to junction box and install a conduit bushing as shown on the standard detail sheets.

Wiring inside box shall be neat and orderly. Label all wires and cables inside box.

### **3.12. Junction Box Type A, B, or C**

Furnish: Junction box, No. 57 aggregate; grounding conductor

Excavate as required and place approximately 12 inches of No. 57 aggregate beneath the proposed junction box to allow for drainage. Install specified junction box type A, B, or C near the edge of pavement, flush with finished grade per the detail sheets. Where required, orient the box so that the dimensions comply with the National Electrical Code. Stub conduits with grounding bushings into junction box at its base to accommodate wires and connect grounding conductor to all grounding bushings. Backfill to existing grade, and restore disturbed area to the satisfaction of the Engineer.

Wiring inside box shall be neat and orderly. Label all wires and cables inside box.

### **3.13. Loops - Proposed**

Furnish: Wire; saw slot sealant; backer rod; grout; conduit sealant.

The plans and notes specify the approximate location for loop installations. Prior to sawing slots or drilling cores, the Contractor shall meet with a representative of the Division of Planning to verify the precise layout locations on site. Avoid expansion joints and pavement sections where potholes, cracks, or other roadway flaws exist.

Upon completion of this meeting, the Contractor shall measure out and mark the proposed loop locations with spray paint or chalk such that the saw slots will be parallel

and perpendicular to the direction of traffic. Marked lines shall be straight and exact to the locations determined and sized as shown on the plans. Unless indicated otherwise, loops shall be 6 feet by 6 feet square and loops in the same lane shall be spaced 16 feet from leading edge to leading edge.

On resurfacing, rehabilitation, and new construction projects that include new asphalt pavement, the Contractor shall install loops prior to laying the final surface course. On projects with milling and texturing, the Contractor may install the loops prior to or after the milling operation; however, if installed prior to milling, the Contractor shall be responsible for ensuring that the loops are installed at a depth such that the milling operation will not disturb the newly installed loops. The Contractor shall correct damage caused by the milling operations to newly installed loops prior to placement of the final surface course at no additional cost to the Cabinet.

For projects that include the installation of new asphalt and piezoelectric sensors, the Contractor shall mark or otherwise reference all loops installed prior to the final surface course such that the loops can be accurately located when the piezoelectric sensors are installed after placement of the final surface course.

For projects that do not have asphalt surfacing, the Contractor shall install the loops in the surface of the pavement.

The Prime Contractor shall coordinate the installation of loops with the electrical sub-Contractor and the Engineer to ensure correct operation of the completed installation.

The following is a typical step by step procedure for the installation of a loop.

- Carefully mark the slot to be cut, perpendicular to the flow of traffic and centered in the lane.
- Make each saw-cut 3/8-inch wide and at a depth such that the top of the backer rod is a minimum of 2 inches below the surface of rigid (PCC/Concrete) pavement or 4 inches below the surface of asphalt pavement.
- Drill a 1½ inch core hole at each corner and use a chisel to smooth corners to prevent sharp bends in the wire.
- Clean ALL foreign and loose matter out of the slots and drilled cores and within 1 foot on all sides of the slots using a high-pressure washer.
- Completely dry the slots and drilled cores and within 1 foot on all sides of the slots using oil-free forced air, torpedo heaters, electric heaters, or natural evaporation, depending on weather conditions. Be very careful not to burn the asphalt if heat is used.
- Measure 9-12 inches from the edge of the paved surface (shoulder break or face of curb) and drill a 1½ inch hole on a 45° angle to the conduit adjacent to the roadway.
- Closely inspect all cuts, cores, and slots for jagged edges or protrusions prior to the placement of the wire. All jagged edges and protrusions shall be ground or re-cut and cleaned again.

- Place the loop wire splice-free from the termination point (cabinet or junction box) to the loop, continue around the loop for four turns, and return to the termination point.
- Push the wire into the saw slot with a blunt object such as a wooden stick. Make sure that the loop wire is pushed fully to the bottom of the saw slot.
- Install conduit sealant to a minimum of 1" deep into the cored 1½ inch hole.
- Apply loop sealant from the bottom up and fully encapsulate the loop wires in the saw slot. The wire should not be able to move when the sealant has set.
- Cover the encapsulated loop wire with a continuous layer of backer rod along the entire loop and home run saw slots such that no voids are present between the loop sealant and backer rod.
- Finish filling the saw cut with non-shrinkable grout per manufacturer's instructions. Alleviate all air pockets and refill low spaces. There shall be no concave portion to the grout in the saw slot. Any excess grout shall be cleaned from the roadway to alleviate tracking.
- Clean up the site and dispose of all waste off the project.
- Ensure that the grout has completely cured prior to subjecting the loop to traffic. Curing time varies with temperature and humidity.

Exceptions to installing loop wire splice-free to the junction box or cabinet may be considered on a case-by-case basis and must be pre-approved by the Engineer. If splices are allowed, they shall be located in a junction box and shall conform to the construction note for Splicing.

If loop lead-in cable (Cable No. 14/1 Pair) is specified, cable shall be installed splice free to the cabinet ensuring that extra cable is left in each junction box or cabinet. All wires and cables shall be labeled in each junction box and cabinet.

Loop inductance readings shall be between 100 and 300 microhenries. The difference of the loop inductance between two loops in the same lane shall be  $\pm 20$  microhenries. Inductance loop conductors shall test free of shorts and grounds. Upon completion of the project, all loops must pass an insulation resistance test of a minimum of 100 million ohms to ground when tested with a 500 Volt direct current potential in a reasonably dry atmosphere between conductors and ground.

### **3.14. Loop Test**

When noted on a data collection station layout sheet that there are existing inductive loops within the limits of the project, notify the Engineer in writing, a minimum of 14 calendar days prior to beginning milling operations. After milling and prior to placing asphalt inlay, conduct an operating test on the existing inductance loops at the control cabinet in the presence of the Engineer to determine if the inductance loop conductors have an insulating resistance of a minimum of 100 megohms when tested with a 500-volt direct current potential in a reasonably dry atmosphere between conductors and ground. The Department may also conduct its own tests with its own equipment.



If the tests indicate the loop resistances are above the specified limit and the Engineer determines the system is operable, proceed with the asphalt inlay. If the test indicates the loop resistance is not within the specified limits or if the Engineer determines the system is otherwise not operable, prior to placing the asphalt inlay install and test new loop detectors according to the station layout, notes, and Detail Drawings.

The Engineer will contact and maintain liaison with the District Planning Engineer and the Division of Planning in order to coordinate any necessary work.

### **3.15. Maintain and Control Traffic**

Furnish (all as required): Drums, traffic cones, barricades used for channelization purposes, delineators, and object markers.

Maintain and Control Traffic shall conform to the plans, the Standard Specifications for Road and Bridge Construction, and the KYTC Department of Highways Standard Drawings.

### **3.16. Open Cut Roadway**

Furnish: Concrete, reinforcing bars.

Excavate trench by sawing and chipping away roadway to dimensions as indicated on the detail sheets. After placing conduit, install concrete and steel reinforcing bars per the *Standard Specifications for Road and Bridge Construction*. Restore any disturbed sidewalk to its original condition.

### **3.17. Piezoelectric Sensor**

Furnish: Piezoelectric sensor and cable; sensor support brackets; saw slot sealant; backer rod; grout; conduit sealant.

The plans and notes specify the approximate location for piezoelectric sensor (piezo) installations. Prior to sawing slots or drilling cores, the Contractor shall meet with a representative of the Division of Planning to verify the final layout on site. Avoid expansion joints and pavement sections where potholes, cracks, or other roadway flaws exist. Roadway ruts at the proposed piezo location shall not be in excess of ½ inch under a 4-foot straight edge.

Install the piezo perpendicular to traffic in the final surface course of the pavement. Locate the sensor in the lane as shown on the site layout drawing. Eleven-foot length sensors shall be centered in the lane.

The following is a typical step by step procedure for the installation of a piezo. Refer specifically to the manufacturer's instructions provided with the sensor prior to installation.

- Carefully mark the slot to be cut, perpendicular to the flow of traffic and properly positioned in the lane.

Material, Installation, and Bid Item Notes for  
Permanent Traffic Data Acquisition Stations

Revised January 2023

- It is strongly recommended that a ¾ inch wide diamond blade be used for cutting the slot, or that blades be ganged together to provide a single ¾ inch wide cut. The slot shall be wet cut to minimize damage to the pavement.
- Cut a slot ¾ inch wide ( $\pm 1/16$  inch) by 1 inch minimum deep. The slot should be a minimum of 2 inches longer than the sensor (including the lead attachment). Drop the saw blade an extra ½ inch down on both ends of the sensor. The lead out of the passive cable should be centered on the slot.
- Cut the slot for the passive cable ¼ inch wide and at a depth so that the top of the backer rod is a minimum of 2 inches below the road surface.
- Clean ALL foreign and loose matter out of the slot and within 1 foot on all sides of the slot using a high-pressure washer.
- Completely dry the slot and within 1 foot on all sides of the slot using oil-free forced air, torpedo heaters, electric heaters, or natural evaporation, depending on weather conditions. Be very careful not to burn the asphalt if heat is used.
- Measure 9-12 inches from the edge of the paved surface (shoulder break or face of curb) and drill a 1½ inch hole on a 45° angle to the conduit adjacent to the roadway.
- Place strips of 2-4-inch-wide tape strips on the pavement along the lengths of both sides of the sensor slot, 1/8 inch away from the slot.
- Wear clean, protective latex (or equivalent) gloves at all times when handling sensors. Visually inspect sensor to ensure it is straight. Check lead attachment and passive cable for cuts, gaps, cracks and/or bare wire. Verify that the correct sensor type and length is being installed by checking the data sheet. Verify there is sufficient cable to reach the cabinet. Piezo lead-in cable shall not be spliced.
- Test the sensor for capacitance, dissipation factor and resistance, according to the directions enclosed with the sensor. Capacitance and dissipation should be within  $\pm 20\%$  of the piezo data sheet. Resistance (using the 20M setting) should be infinite. Record the sensor serial number and the test results and label “pre-installation.” This information should be stored in the counter cabinet and/or returned to Department Planning personnel.
- Lay the sensor next to the slot and ensure that it is straight and flat.
- Clean the sensor with steel wool or an emery pad and wipe with alcohol and a clean, lint-free cloth.
- Place the installation bracket clips every 6 inches along the length of the sensor.
- Bend the tip of the sensor downward at a 30° angle. Bend the lead attachment end down at a 15° angle and then 15° back up until level (forming a lazy Z).
- Place the sensor in the slot, with the brass element 3/8 inch below the road surface along the entire length. The tip of the sensor should be a minimum of 2 inches from the end of the slot and should not touch the bottom of the slot. The top of the plastic installation bracket clips should be 1/8 inch below the surface of the road. The lead attachment should not touch the bottom or sides of the slot. Ensure the sensor ends are pushed down per the manufacturer’s instructions.
- Visually inspect the length of the sensor to ensure it is at uniform depth along its length and it is level (not twisted, canted or bent).

- On the passive cable end, block the end of the slot approximately 3-5 inches beyond the end of the lead attachment area creating an adequate “dam” so that the sensor grout does not flow out.
- Use one bucket of sensor grout per piezo installation. Overfill the slot with sensor grout and allow to cure for a minimum of 10 minutes before continuing with the installation. Ensure that sensor grout fills around and beneath the sensor completely and that there is not a trough on top.
- Remove the tape along the sides of the saw slot when the adhesive starts to cure.
- Carefully remove the dam from the end of the sensor.
- Route the lead-in cable through the saw slot
- Install conduit sealant to a minimum of 1” deep into the cored 1½ inch hole.
- Cover the lead-in cable with encapsulant, backer rod, and grout.
- If necessary, after the grout has hardened, grind with an angle grinder until the profile is a 1/16-inch mound. There shall be no concave portion to the mound.
- Clean up the site and dispose of all waste off the project.
- Ensure that the sensor grout has completely cured prior to subjecting the sensor to traffic. Curing time will vary with temperature and humidity.

Upon installation, test the sensor for capacitance, dissipation factor and resistance, according to the directions enclosed with the sensor. Capacitance and dissipation should be within  $\pm 20\%$  of the piezo data sheet. Resistance (using the 20M setting) should be infinite. Perform a functional test of the piezo with an oscilloscope to ensure that the sensor is generating a proper response to the passage of vehicles.

Record the sensor serial number and the test results and label “post-installation.” This information should be stored in the counter cabinet and/or returned to Department Planning personnel.

### **3.18. Pole – Wooden**

Furnish: Pole; anchoring equipment (as required); hardware (as required).

Excavate and install wood pole to a minimum depth of one-sixth the total pole height. Place backfill material in hole and compact until flush with existing grade. Install guy wire, guy guard, anchor, anchor rod, and strand vise, if necessary. Anchor shall be a minimum of one-third the pole height from the face of the pole. Provide temporary erosion control, seeding, protection and restoration of disturbed areas to the satisfaction of the Engineer.

### **3.19. Removal of Existing Equipment**

The Contractor shall remove existing materials (including but not limited to: poles, anchors, cabinets, junction boxes, conduit and wire) not to be reused. Contractor shall dispose of all removed materials off the project. All materials and labor necessary for the removal of existing equipment shall be considered incidental to other bid items.

### **3.20. Signs**

Furnish: Signs; sign standards; hardware.

Construction of signs shall conform to the *Standard Specifications for Road and Bridge Construction*.

### **3.21. Splicing**

Furnish: Splice kit; solder.

These notes describe the splicing process (if permitted) and are not intended to grant permission to splice. Permission to splice shall be determined by the Division of Planning and the locations shall be shown on the layout sheet. If splicing is needed but not shown on the layout sheet, the Contractor shall receive prior written approval from the Division of Planning.

All splices shall conform to the provisions of the NEC.

Splices for loop and loop lead-in wire shall be twisted and soldered. Abrade the outer jacket of both wires to promote good adhesion and prevent capillary leak paths. Seal the splice with an electrical sealing resin. Spliced loop conductors shall test free of shorts and unauthorized grounds and shall have an insulating resistance of at least 100 megohms when tested with a 500-volt direct current potential in a reasonably dry atmosphere between conductors and ground.

For piezos, the same type coax cable, supplied by the manufacturer, shall be used to splice to the sensor's lead-in cable. Cables shall be soldered. Abrade the outer jacket of both cables to promote good adhesion and prevent capillary leak paths. Seal the splice with an electrical sealing resin. Spliced piezo cables shall be tested and have a minimum resistance of 20 megohms, a maximum dissipation factor of 0.03, a capacitance within the manufacturer's recommended range based upon the length of additional cable. A functional test of the piezo shall be performed to ensure that the sensor is generating a proper response to the passage of vehicles.

### **3.22. Trenching and Backfilling**

Furnish: Warning tape; seed mix type I; cereal rye or German foxtail-millet; mulch; concrete (as required); asphalt (as required).

Excavate trench and provide required cover as shown on the standard detail sheets. After placing conduit, backfill material shall be placed and compacted in lifts of 9 inches or less. Install warning tape as shown on the detail sheet. Provide temporary erosion control, seeding, protection and restoration of disturbed areas to the satisfaction of the Engineer.

### **3.23. Wiring**

Furnish: Wire; wire labels; spade tongue wire terminals (as required).

Installation of all wiring shall conform to the NEC. Permanent identification numbers

shall be affixed to all wires in all junction boxes and cabinets (see Layout(s) for loop and piezo numbers).

Additional lengths of each loop and piezo sensor wire shall be neatly coiled in all cabinets and junction boxes as follows:

| Enclosure Type               | Additional length of each wire |
|------------------------------|--------------------------------|
| Galvanized Steel Cabinet     | 2' – 3'                        |
| Pad Mount Cabinet (332)      | 6' - 8'                        |
| Pole Mount Cabinet (336)     | 3' - 4'                        |
| Junction Box Type 10x8x4     | 2' – 3'                        |
| Junction Box Type A, B, or C | 2' – 3'                        |

**3.24. Wood Post**

Furnish: Wood post; concrete (as required); seed mix type I; cereal rye or German foxtail-millet; mulch.

Excavate hole to specified depth and place concrete, if required. Install post, backfill to existing grade, and tamp backfill. Provide temporary erosion control, seeding, protection and restoration of disturbed areas to the satisfaction of the Engineer.

**3.25. Remove and Replace Sidewalk**

Furnish: Lumber, stakes, nails or screws, and concrete.

Remove existing sidewalk to install rigid conduit from edge of roadway to nearest junction box or cabinet. Form, pour and finish concrete in place of old existing sidewalk making sure to replace the expansion joints in their respective locations. Concrete shall conform to the *Kentucky Standard Specifications for Road and Bridge Construction* for sidewalks.

#### **4. BID ITEM NOTES AND METHOD OF MEASUREMENT FOR PAYMENT**

Only the bid items listed will be measured for payment. All other items required to complete the vehicle detection installation shall be incidental to other items of work. Payment at the contract unit price shall be full compensation for all materials, labor, equipment and incidentals to furnish and install these items.

##### **4.1. Bore and Jack Pipe – 2”**

Bore and jack pipe – 2” shall be furnished, installed, and measured for payment per the *Standard Specifications for Road and Bridge Construction*.

##### **4.2. Conduit**

Conduit shall include furnishing and installing specified conduit in accordance with the specifications. This item shall include conduit fittings, bodies, boxes, weatherheads, expansion joints, couplings, caps, conduit sealant, electrical tape, clamps, bonding straps and any other necessary hardware. Conduit will be measured in linear feet.

##### **4.3. Electrical Service**

Electrical Service shall include furnishing and installing all necessary materials and payment of all fees toward the complete installation of an electrical service which has passed all required inspections. Incidental to this item shall be furnishing and installing:

- Meter-base per utility company’s specifications
- Service disconnect panel per utility company’s specifications
- Meter base and service disconnect entrance hubs, waterproof
- Service entrance conductors
- Rigid steel conduit
- Rigid steel conduit fittings
- Conduit straps
- Weatherhead
- Duplex GFCI receptacle, 120-volt, 20-amp
- Ground rod with clamp
- Grounding conductor

Also incidental to this item shall be any necessary clearing of right of way for the electrical service drop.

Electrical service will be measured in individual units each.

##### **4.4. Flashing Arrow**

Flashing Arrow shall be furnished, installed, and measured for payment per the *Standard Specifications for Road and Bridge Construction*.

##### **4.5. Galvanized Steel Cabinet**

Galvanized Steel Cabinet shall include furnishing and installing galvanized steel cabinet on post as specified. Incidental to this item shall be furnishing and installing grounding hardware, and any necessary post/pole mounting hardware. Also incidental to this item shall be furnishing and installing the required number of terminal blocks and connection of all

sensors to the terminal blocks. Galvanized Steel Cabinet will be measured in individual units each.

#### **4.6. Install Pad Mount Enclosure**

Install Pad Mount Enclosure shall include installing a Department-furnished enclosure as specified on the detail sheets.

This item shall include obtaining the enclosure from KYTC and transporting it to the installation site and furnishing and installing the following:

- Concrete foundation (including any excavation necessary)
- Anchor bolts, lock washers, and nuts
- Conduit
- Conduit fittings (including grounding bushings)
- Weatherhead
- Terminal Strip(s)
- Ground rod with clamp
- Grounding conductor

Install Pad Mount Enclosure will be measured in individual units each.

#### **4.7. Install Controller Cabinet**

Install Controller Cabinet shall include installing a Department-furnished cabinet as specified on the detail sheets.

This item shall include obtaining the cabinet from KYTC and transporting it to the installation site and furnishing and installing the following:

- Conduit
- Conduit Fittings
- Terminal Strip(s)
- Ground rod with clamp
- Grounding conductor

Install Controller Cabinet will be measured in individual units each.

#### **4.8. Junction Box Type 10" x 8" x 4"**

Junction Box Type 10"x8"x4" shall include furnishing and installing specified junction box in accordance with the specifications. This item shall include connectors, splice sleeves, conduit fittings, mounting materials and any other items required to complete the installation. Incidental to this item shall be furnishing and installing specified post (wood, channel, metal, etc.) as required for the installation. Junction Box Type 10"x8"x4" will be measured in individual units each.

#### **4.9. Junction Box Type A, B, or C**

Junction Box Type A, B, or C shall include furnishing and installing specified junction box in accordance with the specifications. This item shall include excavation, furnishing and installing #57 aggregate, backfilling around the box, and restoration of disturbed areas to the satisfaction of the Engineer. Incidental to this item shall be furnishing and installing a

grounding conductor bonding all conduit grounding bushings in the box. Junction Box Type A, B, or C will be measured in individual units each.

#### **4.10. Loop Saw Slot and Fill**

Loop Saw Slot and Fill shall include sawing and cleaning saw slots and furnishing and installing conduit sealant, loop sealant, backer rod, grout, or other specified material. Loop Saw Slot and Fill will be measured in linear feet of sawed slot.

#### **4.11. Maintain and Control Traffic**

Maintain and Control Traffic shall be measured for payment per the *Standard Specifications for Road and Bridge Construction*.

#### **4.12. Open Cut Roadway**

Open Cut Roadway shall include excavating trench (sawing and chipping roadway) to dimensions as indicated on the detail sheets and furnishing and placing concrete, steel reinforcing bars, and asphalt. This item also includes restoring any disturbed sidewalk to its original condition. Open Cut Roadway will be measured in linear feet.

#### **4.13. Piezoelectric Sensor**

Piezoelectric sensor (piezo) shall include sawing and cleaning saw slots and furnishing and installing piezo in accordance with the specifications. This item shall include furnishing and installing lead-in wire, conduit sealant, encapsulation material, backer rod, grout, testing, and accessories. Piezo will be measured in individual units each.

#### **4.14. Pole – 35' Wooden**

Pole – 35' Wooden shall include excavation, furnishing and installing specified wood pole, backfilling and restoring disturbed areas to the satisfaction of the Engineer. Incidental to this item shall be furnishing and installing guy wire, anchor and anchor rod, strand vise, and guy guard, if specified.

Pole – 35' Wooden will be measured in individual units each.

#### **4.15. Signs**

Signs shall be furnished, installed, and measured for payment per the *Standard Specifications for Road and Bridge Construction*.

#### **4.16. Trenching and Backfilling**

Trenching and Backfilling shall include excavation, warning tape, backfilling, temporary erosion control, seeding, protection and restoration of disturbed areas to original condition. This item shall include concrete, asphalt or approved replacement material for sidewalks, curbs, roadways, etc. (if required). Trenching and backfilling will be measured in linear feet.

#### **4.17. Wire or Cable**

Wire or cable shall include furnishing and installing specified wire or cable within saw slot, conduit, junction box, cabinet, or overhead as indicated on the detail sheets. Incidental to this item shall be the labeling of all wires and cables in each junction box, cabinet and splice



box, and furnishing and installing other hardware required for installing cable. Wire or Cable will be measured in linear feet.

**4.18. Wood Post**

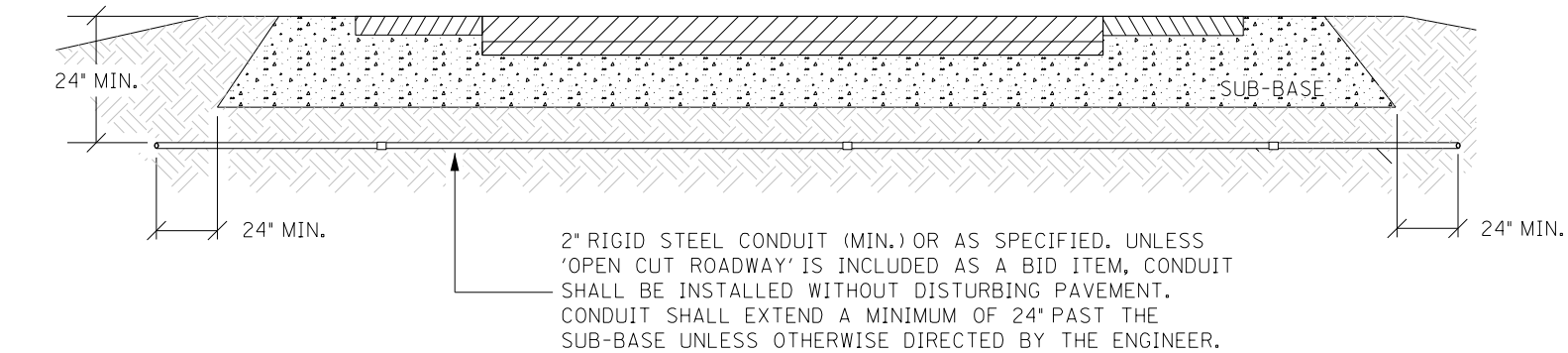
Wood Post shall include furnishing and installing wood post as specified. This item shall include excavation, furnishing and placing concrete (if required), backfilling around the post, and restoration of disturbed areas to the satisfaction of the engineer. Wood Post will be measured in individual units each.

**4.19. Remove and Replace Sidewalk**

Remove and Replace Sidewalk shall include removing existing sidewalk to install conduit and/or junction box (if required) and replacing old existing sidewalk with new sidewalk after installation of required items. This item includes removing old sidewalk and disposing of off the project and forming, pouring and finishing the new sidewalk after installation of required items.

**4.20. Loop Test**

Loop Test includes conducting an operating test on the existing inductance loops at the control cabinet in the presence of the Engineer to determine if the inductance loop conductors have an insulating resistance of a minimum of 100 megohms when tested with a 500-volt direct current potential in a reasonably dry atmosphere between conductors and ground.

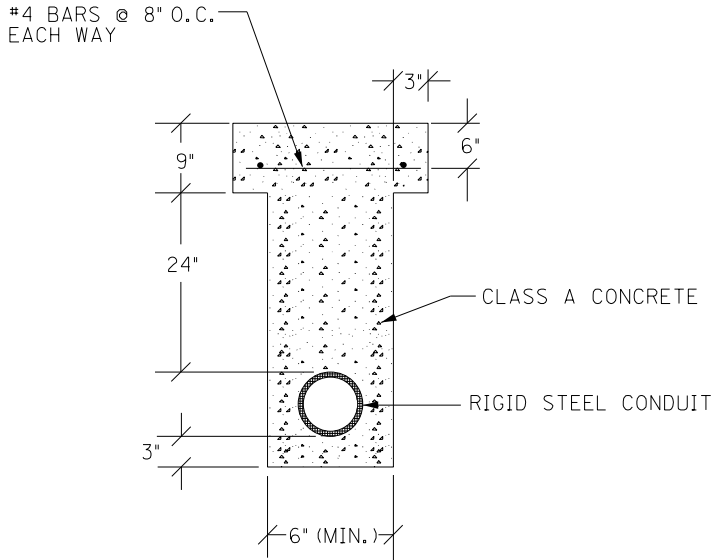
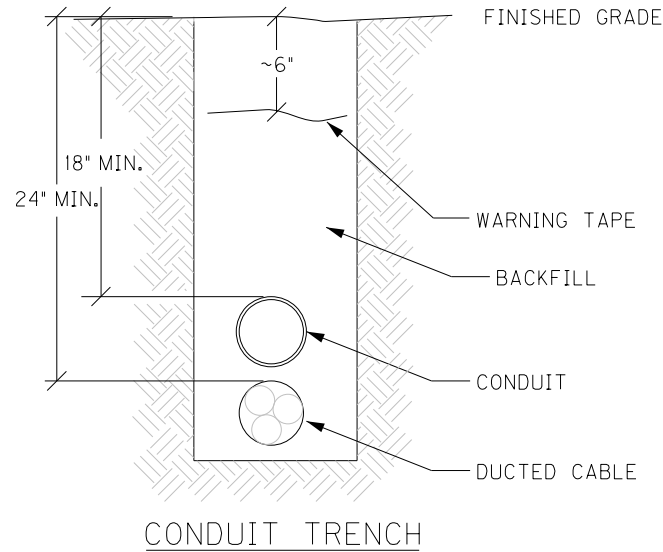


CONDUIT UNDER PAVEMENT

TOTAL TRENCH WIDTH SHALL BE 3" (NOM.) WIDER THAN THE SUM OF THE OUTSIDE DIAMETER(S) OF THE CONDUIT(S) INSTALLED. CONDUIT(S) SHALL BE CENTERED IN TRENCH.

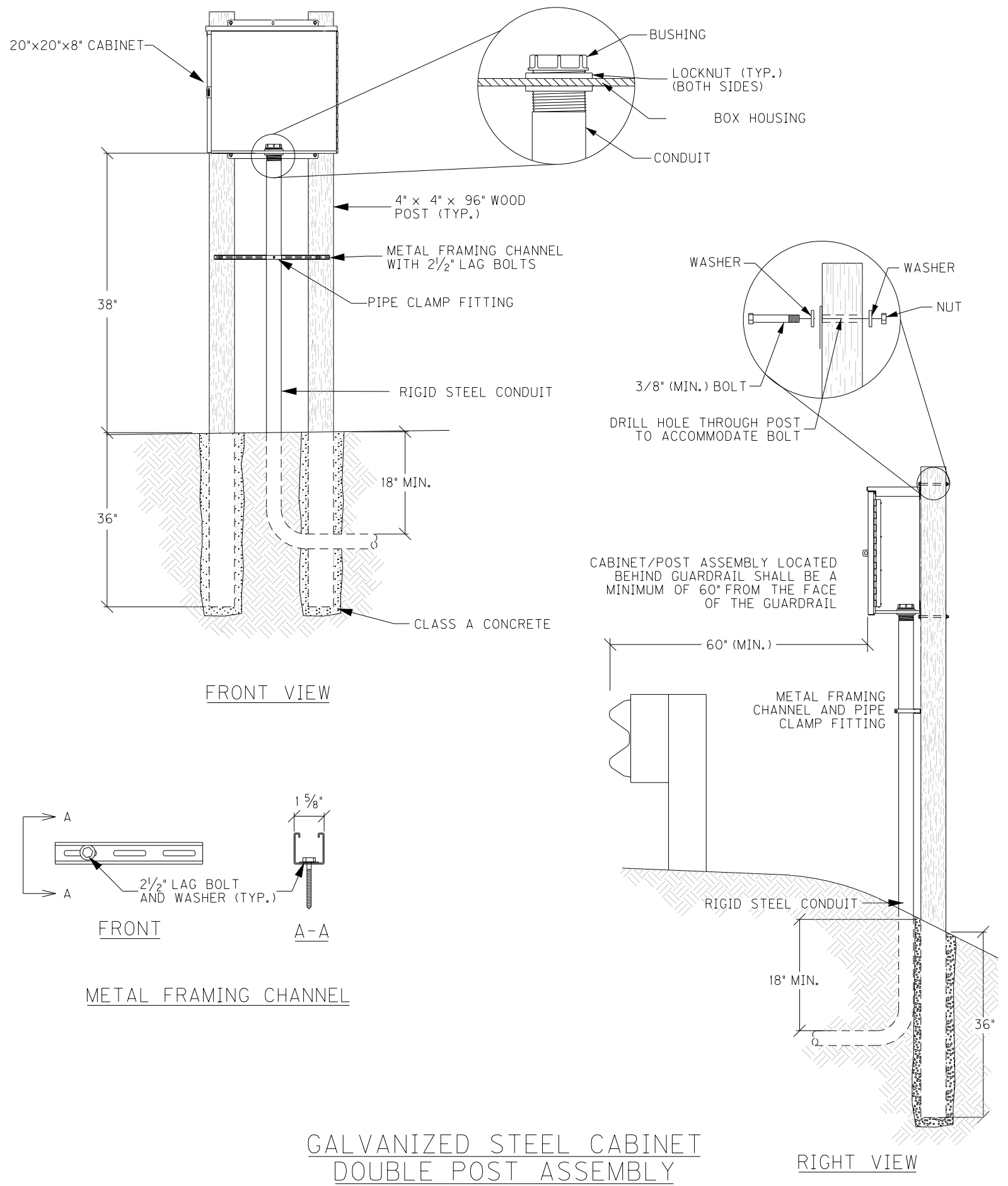
CONTRACTOR SHALL PLACE BACKFILL IN LIFTS (9" MAX.) COMPACT BACKFILL, AND RESTORE DISTURBED AREA TO THE SATISFACTION OF THE ENGINEER

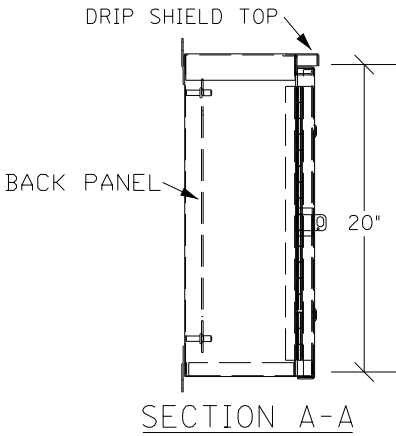
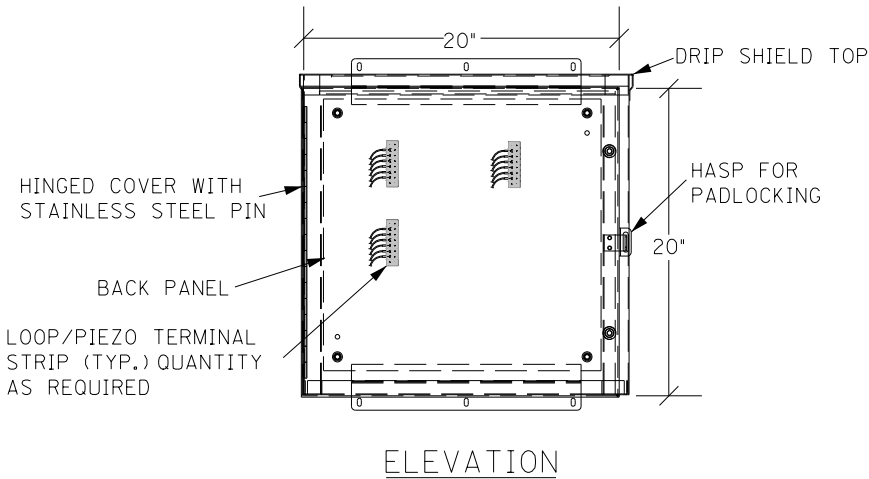
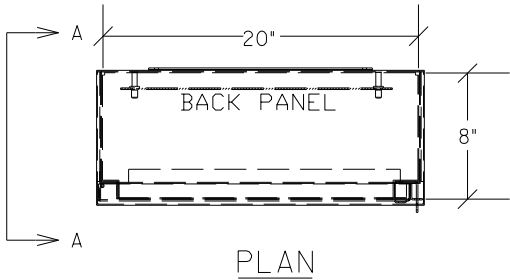
CONTRACTOR SHALL INSTALL UNDERGROUND UTILITY WARNING TAPE ABOVE CONDUIT AS SHOWN.



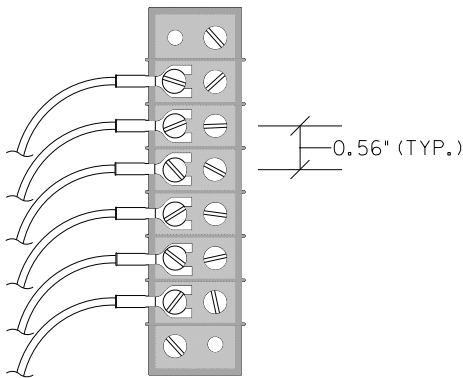
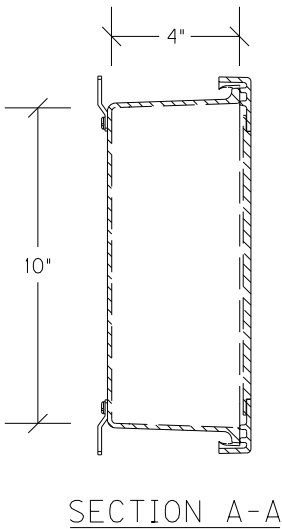
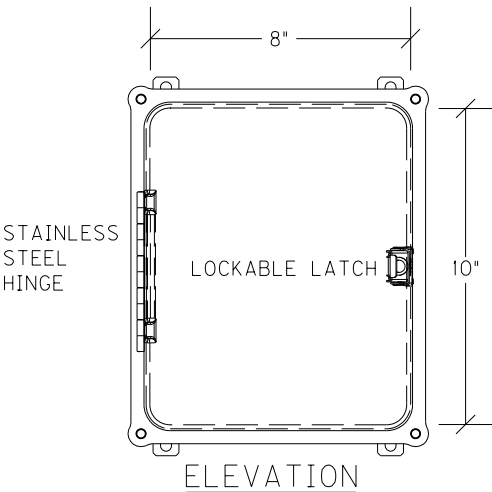
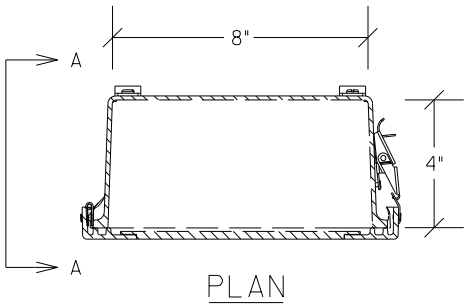
OPEN CUT PAVEMENT DETAIL

CONDUIT INSTALLATION



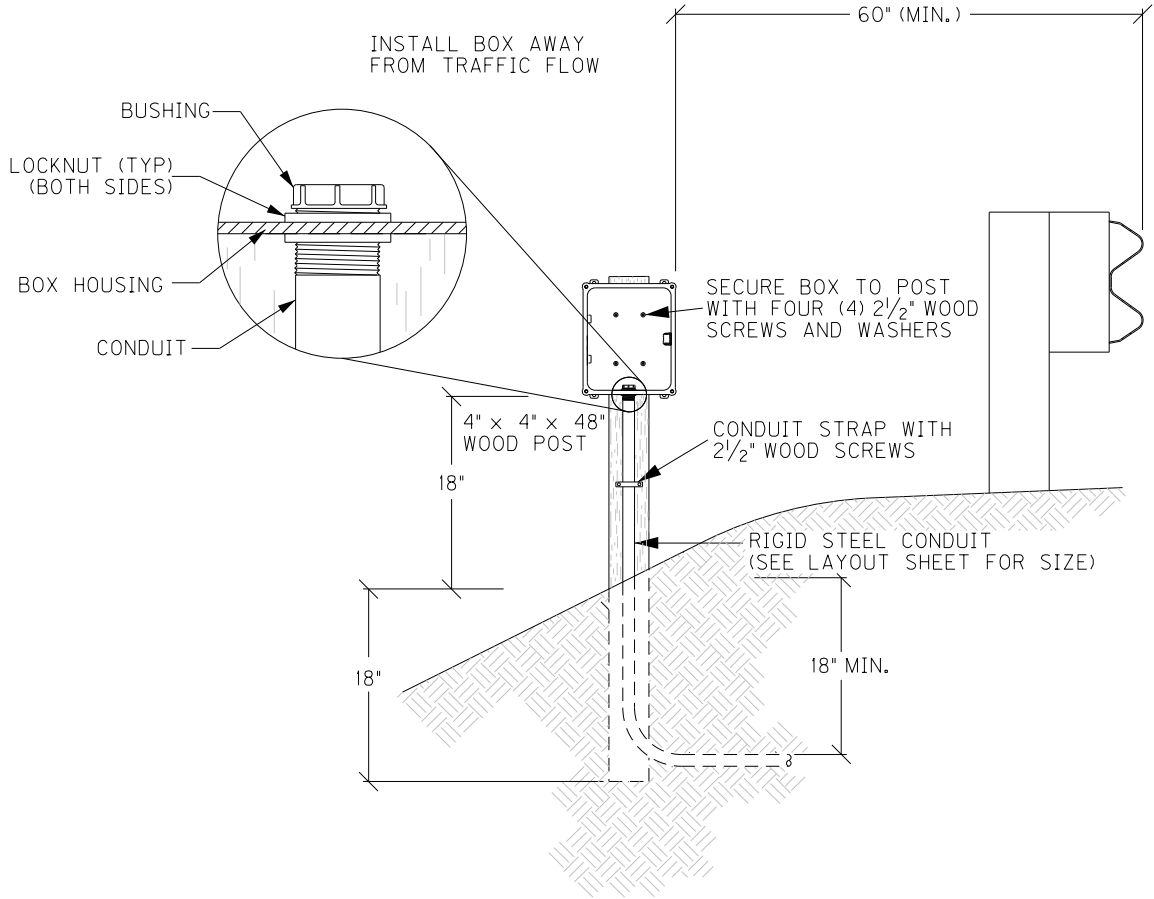


GALVANIZED STEEL CABINET

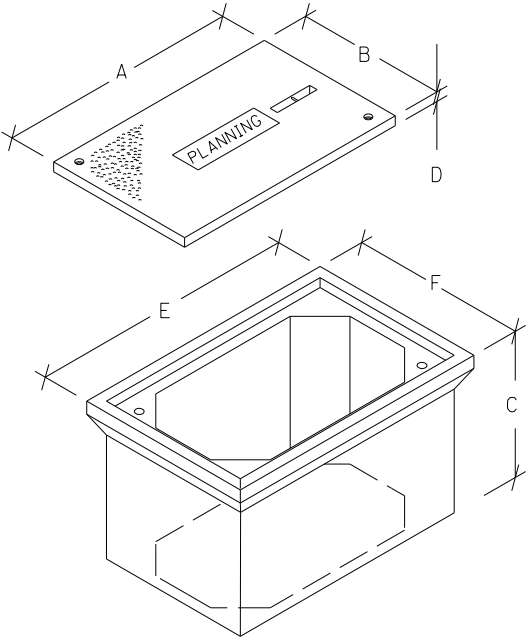


JUNCTION BOX 10"X8"X4"

JUNCTION BOX/POST ASSEMBLY LOCATED BEHIND  
GUARDRAIL SHALL BE A MINIMUM OF 60" FROM  
THE FACE OF THE GUARDRAIL

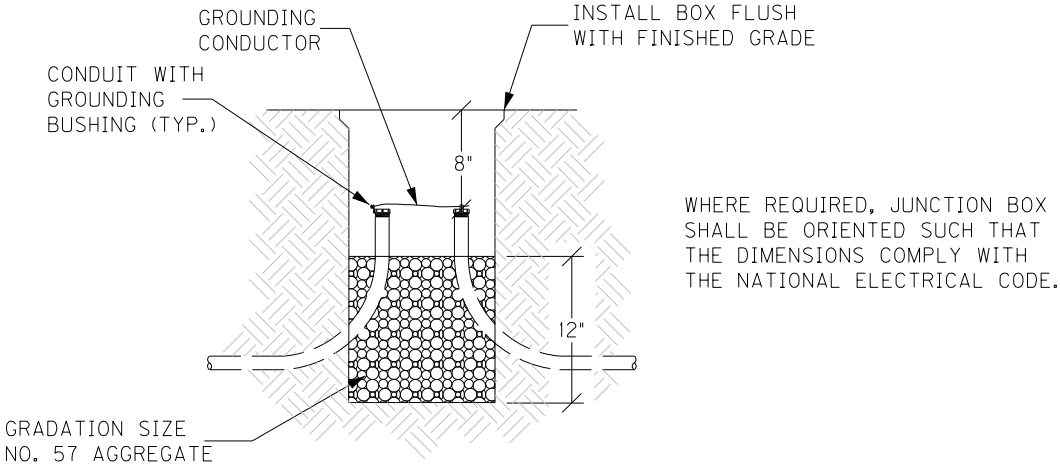


JUNCTION BOX 10"×8"×4"  
AND POST ASSEMBLY

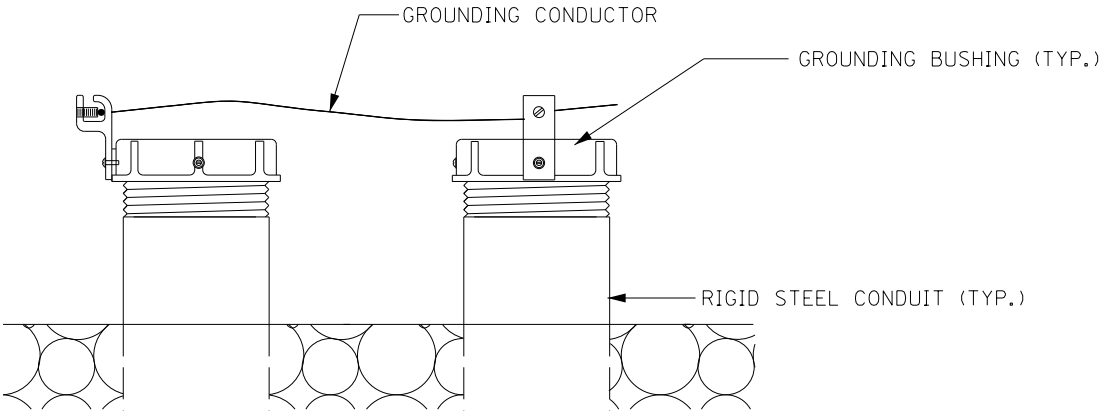


| JUNCTION BOX DIMENSIONS (NOMINAL) |     |     |     |     |     |     |
|-----------------------------------|-----|-----|-----|-----|-----|-----|
|                                   | A   | B   | C   | D*  | E   | F   |
| TYPE A                            | 23" | 14" | 18" | 2"  | 25" | 16" |
| TYPE B                            | 18" | 11" | 12" | 1¾" | 20" | 13" |
| TYPE C                            | 36" | 24" | 30" | 3"  | 38" | 26" |

\* MINIMUM  
STACKABLE BOXES ARE PERMITTED



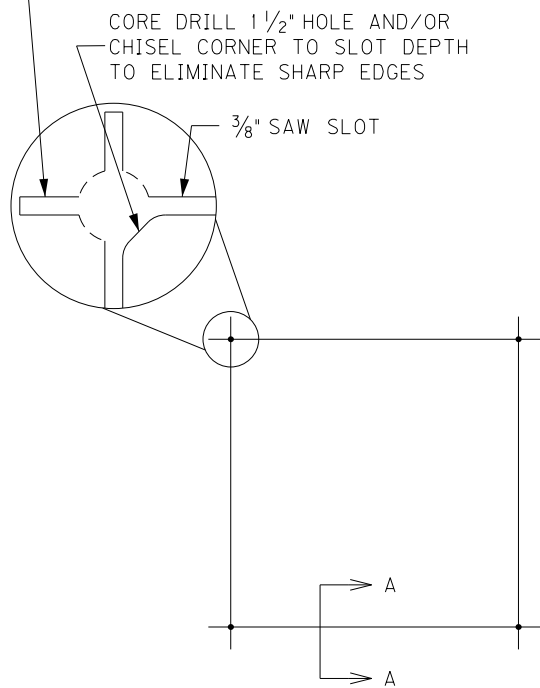
ELEVATION



GROUNDING DETAIL

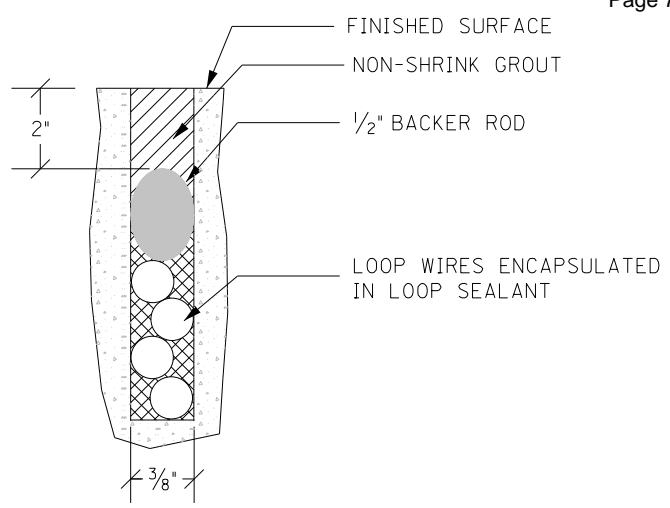
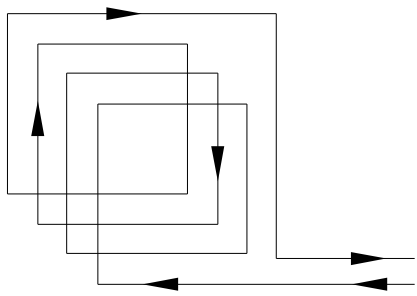
JUNCTION BOX - TYPE A, TYPE B, TYPE C

JEFFERSON COUNTY  
FD05 056 147 004-008

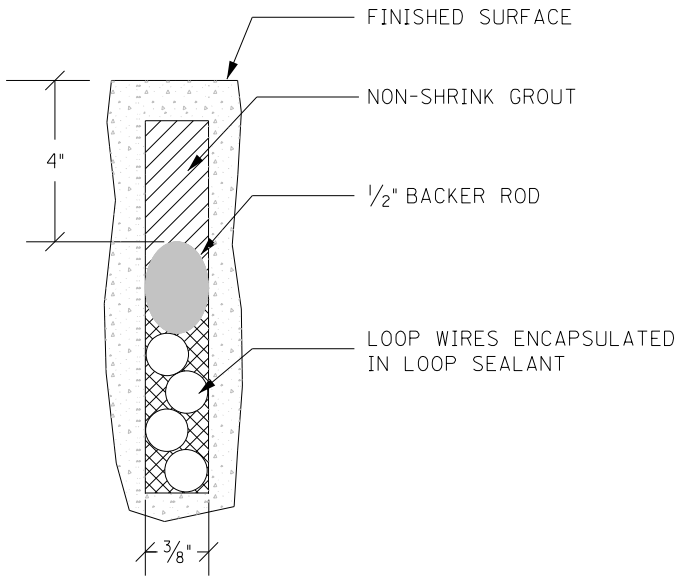


UNLESS SPECIFIED OTHERWISE, ALL LOOPS SHALL BE 6' x 6' SQUARE, CENTERED IN EACH LANE, WITH FOUR TURNS OF 14 AWG LOOP WIRE.

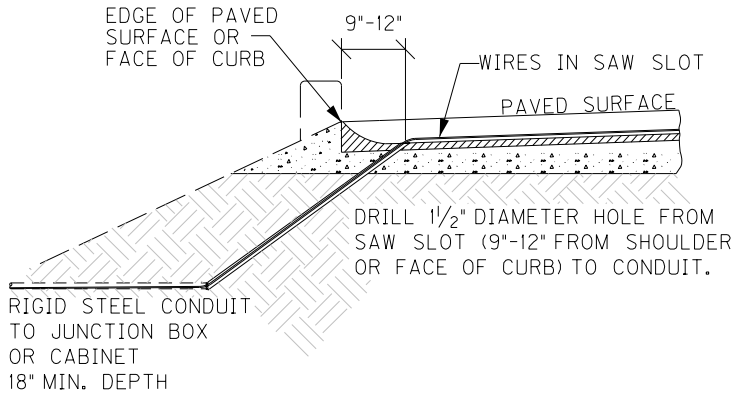
ADJACENT SAW SLOTS SHALL BE A MINIMUM OF 12" APART.



SECTION A-A (CONCRETE)

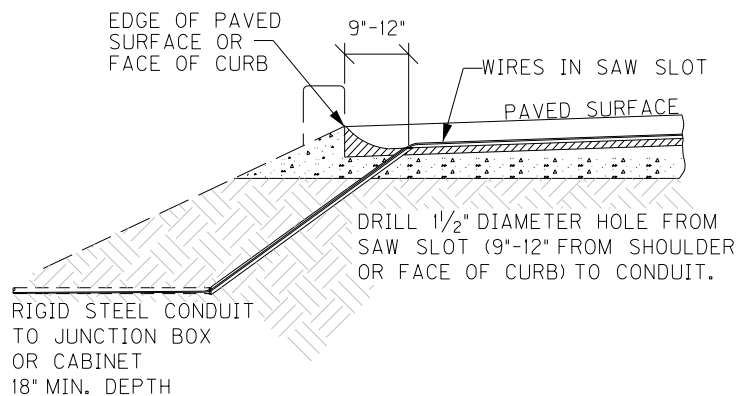
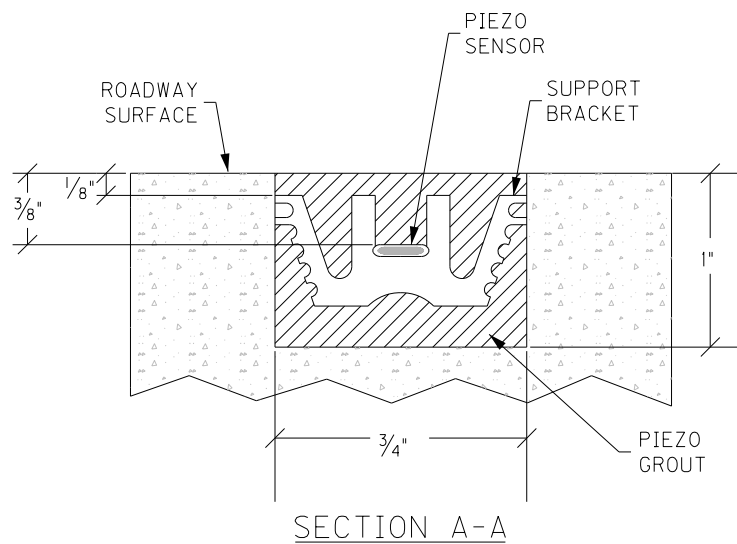
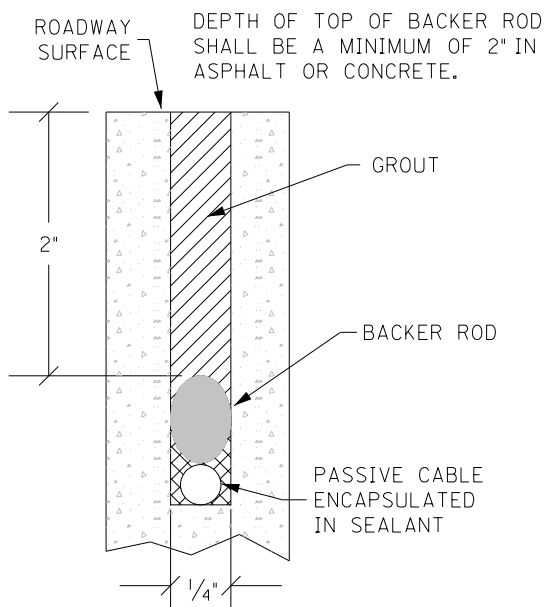
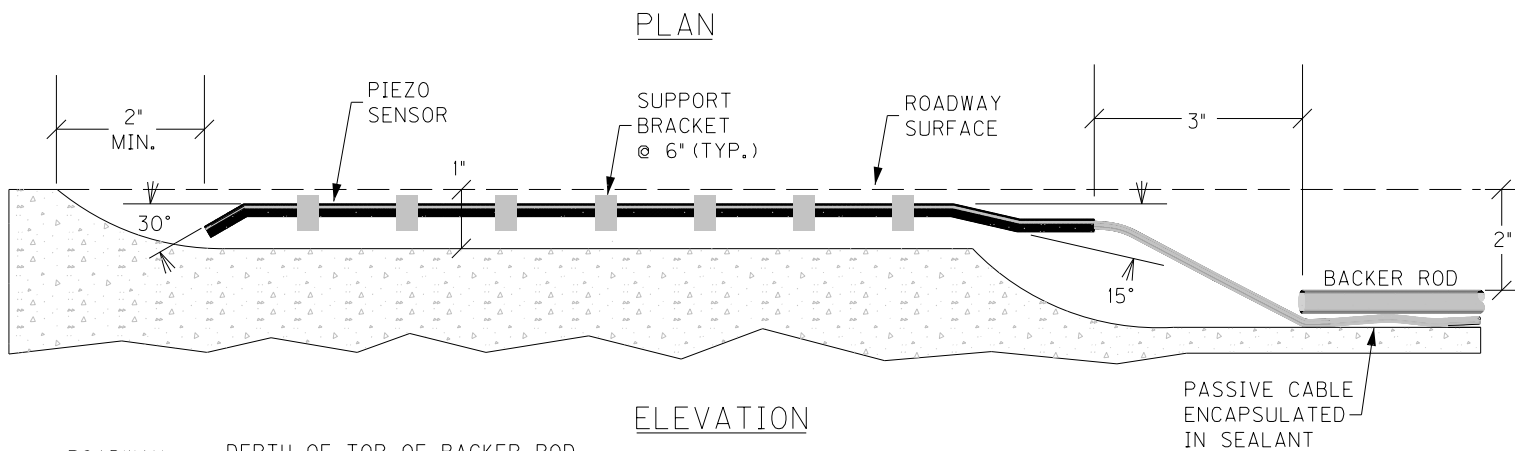
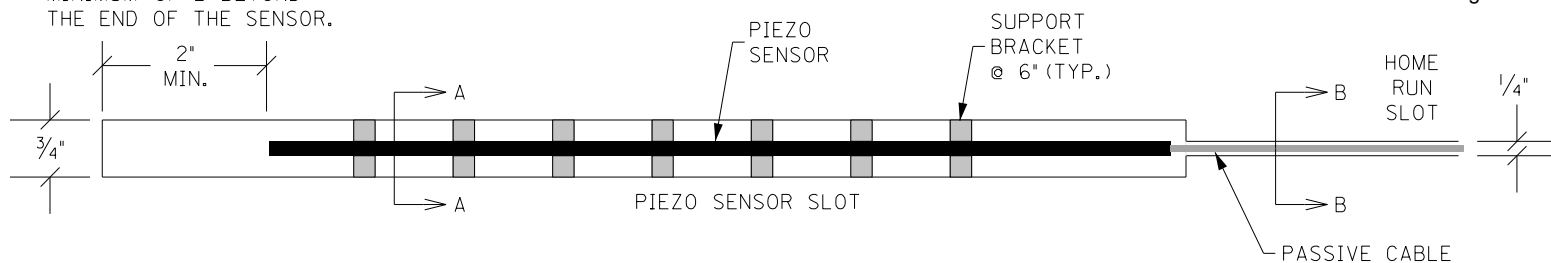


SECTION A-A (ASPHALT)



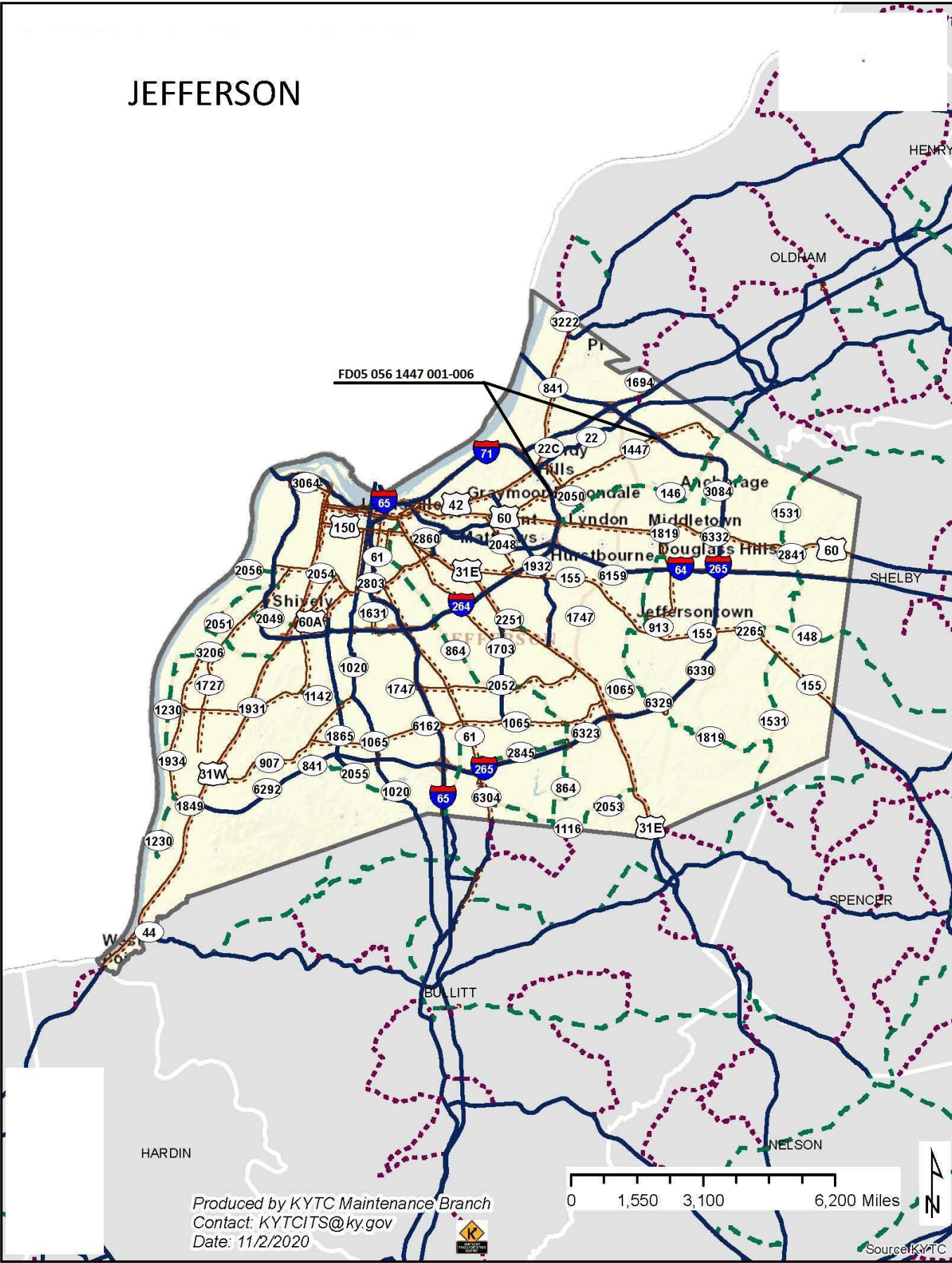
SAW SLOT EDGE OF PAVEMENT TRANSITION

INDUCTIVE LOOP DETECTOR



## PIEZOELECTRIC SENSOR INSTALLATION





JEFFERSON COUNTY  
THERMOPLASTIC INTERSECTION PAVEMENT MARKINGS SUMMARY  
FD05 056 1447 001-006

| MILE<br>POINT  | INTERSECTION                  | CROSSWALK    |               | STOP BARS     |               | YELLOW        |               | ARROWS        |                  |     | DOTTED LN<br>EXTENSION<br>LF | CROSS<br>HATCH<br>SQFT | GORE<br>CHEVRON<br>SQFT | CONE<br>CAP<br>SQFT | BIKE<br>SYMBOL<br>EACH | BIKE LANE<br>ARROW<br>EACH |
|----------------|-------------------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|------------------|-----|------------------------------|------------------------|-------------------------|---------------------|------------------------|----------------------------|
|                |                               | 6 INCH<br>LF | 24 INCH<br>LF | 24 INCH<br>LF | 12 INCH<br>LF | 12 INCH<br>LF | CURVE<br>EACH | COMBO<br>EACH | STRAIGHT<br>EACH |     |                              |                        |                         |                     |                        |                            |
| 1.980          | I-264                         | 100          | 50            | 74            | 15            | 15            | 11            |               |                  | 160 |                              |                        |                         | 3                   | 3                      |                            |
| 2.088          | Washburn Ave                  | 450          |               | 112           | 25            | 25            | 6             |               |                  |     |                              | 150                    |                         | 4                   | 4                      |                            |
|                | Washburn Ave to Herr Ln       |              |               |               |               |               | 8             |               |                  |     |                              |                        |                         | 15                  | 15                     |                            |
| 2.574          | KY 2050 - Herr Lane           | 310          | 360           | 82            |               |               | 9             |               |                  |     |                              |                        |                         |                     |                        |                            |
|                | Herr Ln to Ormsby Ln          |              |               |               |               |               | 6             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 3.039          | Ormsby Lane                   | 260          | 280           | 92            |               |               | 3             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 3.130          | TWLTL                         |              |               |               |               |               | 2             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 3.269          | W Creek Way                   |              |               |               |               |               | 4             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 3.370          | TWLTL                         |              |               |               |               |               | 2             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 3.457          | Westport Middle School        |              |               |               |               |               | 2             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 3.640          | TWLTL                         |              |               |               |               |               | 2             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 3.680          | KYTC D5 Entrance              |              |               | 24            |               |               | 2             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 3.733          | Fire Station                  | 125          | 150           | 70            |               |               |               |               |                  |     |                              |                        |                         |                     |                        |                            |
|                | Fire Station to Hermitage Way |              |               |               |               |               | 6             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 4.199          | Hermitage Way                 | 610          |               | 122           |               |               | 4             |               |                  |     |                              |                        |                         |                     |                        |                            |
|                | Hermitage Way to Goose Creek  |              |               |               |               |               | 8             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 4.942          | Goose Creek Rd                | 570          | 670           | 136           |               |               | 7             | 1             | 1                |     |                              |                        |                         |                     |                        |                            |
| 5.093          | Shopping Center Signal        | 465          |               | 128           |               |               | 8             |               |                  | 90  |                              |                        |                         |                     |                        |                            |
| 5.110          | Zachary Taylor Elementary     |              |               |               |               |               | 2             |               |                  |     |                              |                        |                         |                     |                        |                            |
| 5.245          | KY 1747 - Hurstbourne Pkwy    | 950          |               | 184           | 30            |               | 19            |               |                  | 160 | 180                          |                        | 30                      |                     |                        |                            |
| PROJECT TOTALS |                               | 3840         | 1510          | 1024          | 70            | 70            | 111           | 1             | 1                | 410 | 180                          | 150                    | 30                      | 22                  | 22                     |                            |

FD05 056 1447 001-006

Water, Gas & Manhole Locations

| Eastbound Lane |       |                                | Westbound Lane |       |                                |
|----------------|-------|--------------------------------|----------------|-------|--------------------------------|
| Type           | MP    | Cross Street<br>(if available) | Type           | MP    | Cross Street<br>(if available) |
| 2 WATER        | 2.665 | LYNDON LANE                    | 1 MH, 2 WATER  | 5.245 | KY 1747                        |
| 1 MANHOLE      | 2.795 | RIGHT LANE                     | 1 MANHOLE      | 4.942 | GOOSE CREEK                    |
| 1 MANHOLE      | 2.924 | CENTER                         | 3 WATER        | 4.65  | LANGDON PLACE                  |
| 1 MANHOLE      | 2.940 | RIGHT LANE                     | 1 WATER        | 4.458 | KENNERSLEY DRIVE               |
| 10 MANHOLES    | 3.039 | ORMSBY LANE                    | 6 WATER        | 4.312 | STONEHURST DRIVE               |
| 1 WATER        | 3.039 | CENTER                         | 2 WATER        | 4.199 | HERMITAGE WAY                  |
| 1 MANHOLE      | 3.689 | KYTC ENT.                      | 1 MANHOLE      | 3.865 | SCHOOL ENTRANCE                |
| 2 MANHOLES     | 3.756 | FIRE STATION                   | 2 GAS          | 2.891 | DEVONDALE DRIVE                |
| 1 MANHOLE      | 3.790 | JAPONICA WAY                   | 1 MANHOLE      | 2.693 | LYNN WAY                       |
| 2 MH, 1 WATER  | 4.061 | RIGHT LANE                     | 1 MANHOLE      | 2.478 | RIGHT LANE                     |
| 1 MANHOLE      | 4.072 | RIGHT LANE                     | 1 MH, 2 GAS    | 2.418 | ABBNEYWOOD ROAD                |
| 1 MANHOLE      | 4.117 | RIGHT LANE                     | 2 MANHOLES     | 2.37  | RIGHT LANE                     |
| 1 MH, 1 GAS    | 4.189 | RIGHT LANE                     | 1 MANHOLE      | 2.3   | GIRARD DRIVE                   |
| 1 MANHOLE      | 4.266 | RIGHT LANE                     | 1 MH, 1 GAS    | 2.248 | FENLEY AVENUE                  |
| 2 MH, 4 WATER  | 4.312 | STONEHURST                     | 1 MANHOLE      | 2.153 | RIGHT LANE                     |
| 3 MANHOLES     | 4.408 | EB LANES                       | 1 MANHOLE      | 2.088 | WASHBURN AVE                   |
| 2 MANHOLES     | 4.453 | EB LANES                       |                |       |                                |
| 1 MANHOLE      | 4.650 | LANGDON DR.                    |                |       |                                |
| 1 MANHOLE      | 4.942 | GOOSE CREEK                    |                |       |                                |
| 1 MANHOLE      | 4.998 | RIGHT LANE                     |                |       |                                |
| 1 MH, 1 WATER  | 5.245 | KY 1747                        |                |       |                                |
|                |       |                                |                |       |                                |
|                |       |                                |                |       |                                |

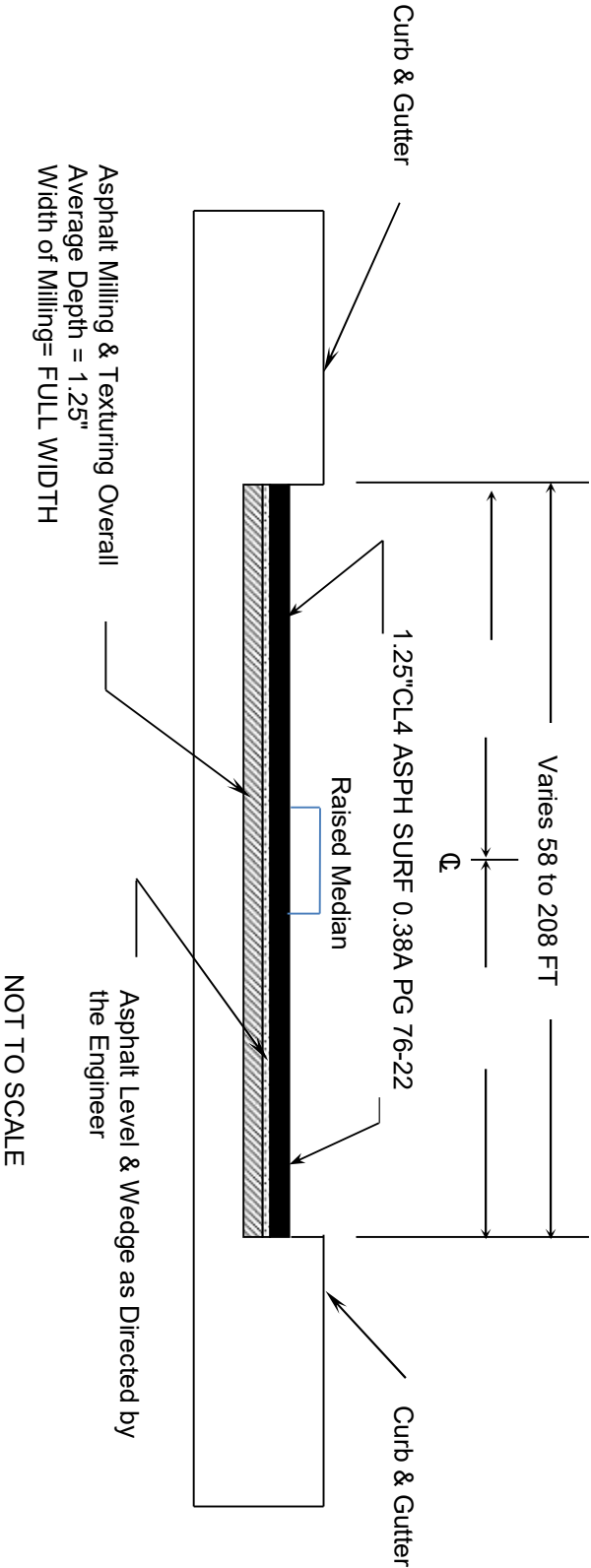


LOCATION SHEET FOR RADAR CAMERAS TYPE A

FD05-056-1447-001-006

| MAIN STREET | CROSS STREET     | RADAR UNITS                     | TOTAL |
|-------------|------------------|---------------------------------|-------|
| KY 1447     | WASHBURN AVE     | 2- MAIN LIN<br>2-SIDE STREETS   | 4     |
| KY 1447     | HERR LANE        | 2- MAIN LINE<br>2- SIDE STREETS | 4     |
| KY 1447     | HERMITAGE WAY    | 2-MAIN LINE<br>2- SIDE STREETS  | 4     |
| KY 1447     | GOOSE CREEK      | 2-MAIN LINE<br>2-SIDE STREETS   | 4     |
| KY 1447     | WESTPORT PLAZA   | 2-MAIN LINE<br>2-SIDE STREETS   | 4     |
| KY 1447     | HURSTBOURNE LANE | 2-MAAIN LINE<br>2-SIDE STREETS  | 4     |
| TOTAL = 24  |                  |                                 |       |

**TYPICAL SECTION**  
**FD05-056-1447-001-006**  
**JEFFERSON COUNTY**  
**MP's 1.980 to 2.079**  
**MP's 2.45 to 2.521**



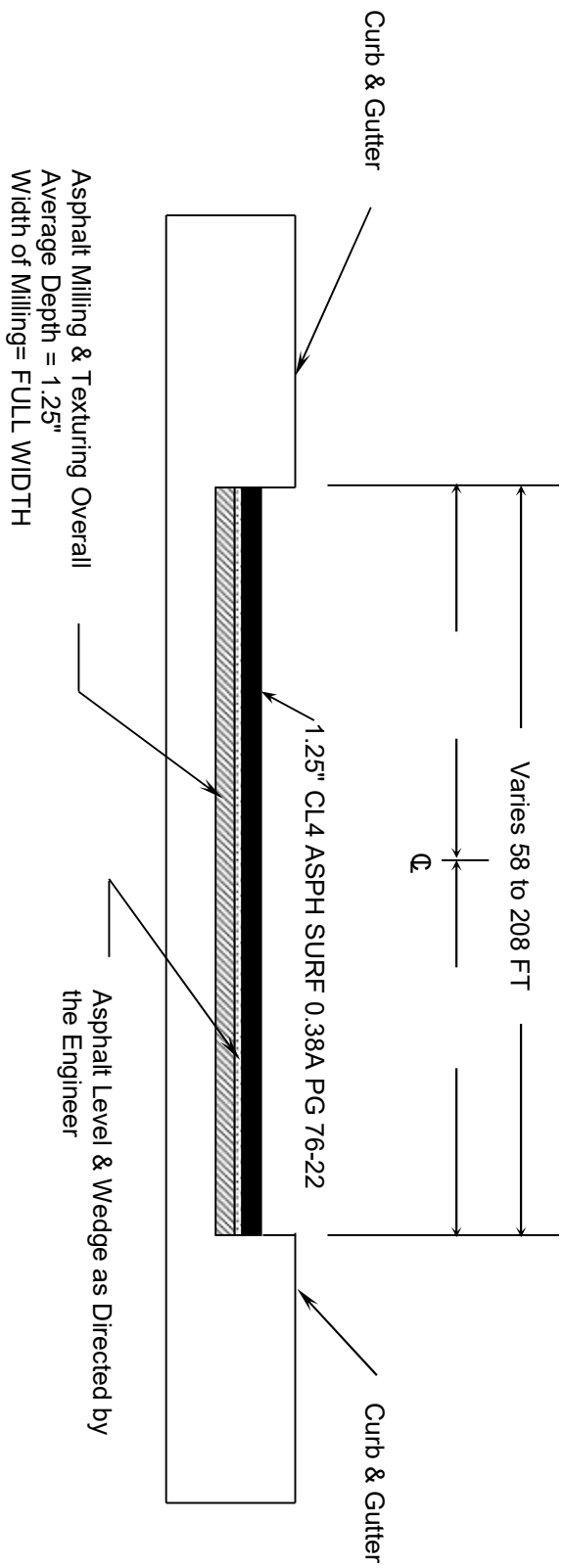
## TYPICAL SECTION

FD05 056 1747 001-006

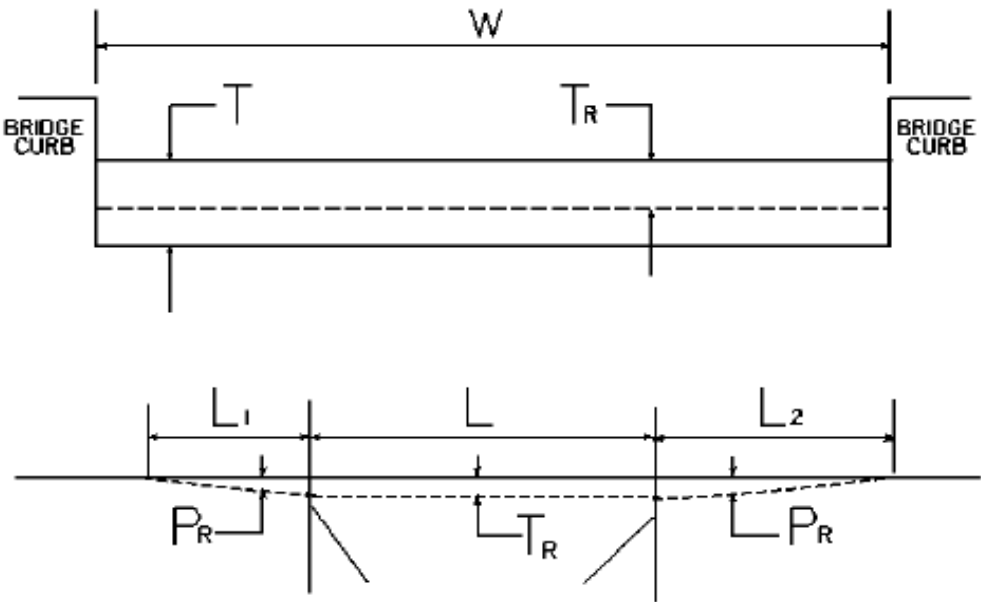
**JEFFERSON COUNTY**

**MP's 2.079 to 2.450**

**MP's 2.521 to 5.257**



BRIDGE DETAIL FOR PAVING PROJECT  
FD05 056 1447 001-006



W = bridge width curb to curb  
T = thickness of existing asphalt overlay  
L = length of bridge  
L<sub>1</sub> & L<sub>2</sub> = length of approach pavement to be removed  
T<sub>R</sub> = thickness to be removed and replaced on bridge  
P<sub>R</sub> = thickness to be removed and replaced on pavement  
Note: L<sub>1</sub> & L<sub>2</sub> lengths shall be determined by using a transition rate of 100 ft/in of thickness

| Route   | Bridge No. | MP    | W (ft) | T (in) | L <sub>1</sub> (ft) | L <sub>2</sub> (ft) | T <sub>R</sub> (in) | L (ft) | P <sub>R</sub> (in) |
|---------|------------|-------|--------|--------|---------------------|---------------------|---------------------|--------|---------------------|
| KY 1447 | B00485N    | 3.219 | 58.00  |        |                     |                     |                     | 38.30  | 1.25                |
|         |            |       |        |        |                     |                     |                     |        |                     |
|         |            |       |        |        |                     |                     |                     |        |                     |
|         |            |       |        |        |                     |                     |                     |        |                     |
|         |            |       |        |        |                     |                     |                     |        |                     |
|         |            |       |        |        |                     |                     |                     |        |                     |
|         |            |       |        |        |                     |                     |                     |        |                     |
|         |            |       |        |        |                     |                     |                     |        |                     |
|         |            |       |        |        |                     |                     |                     |        |                     |

PROJECT IS A COMPLETE MILL AND FILL



**PART II**

**SPECIFICATIONS AND STANDARD DRAWINGS**

### **STANDARD SPECIFICATIONS**

Any reference in the plans or proposal to previous editions of the *Standard Specifications for Road and Bridge Construction* and *Standard Drawings* are superseded by *Standard Specifications for Road and Bridge Construction, Edition of 2019* and *Standard Drawings, Edition of 2020*.

### **SUPPLEMENTAL SPECIFICATIONS**

The contractor shall use the Supplemental Specifications that are effective at the time of letting. The Supplemental Specifications can be found at the following link:  
<http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx>

2020 KENTUCKY STANDARD DRAWINGS

CURVE WIDENING AND SUPERELEVATION TRANSITIONS .....RGS-001-07

SUPERELEVATION FOR MULTILANE PAVEMENT .....RGS-002-06

MISCELLANEOUS STANDARDS .....RGX-001-06

APPROACHES, ENTRANCES, AND MAIL BOX TURNOUT .....RPM-110-07

LANE CLOSURE TWO-LANE HIGHWAY .....TTC-100-04

LANE CLOSURE MULTI-LANE HIGHWAY CASE I.....TTC-115-04

LANE CLOSURE MULTI-LANE HIGHWAY CASE II .....TTC-120-04

SHOULDER CLOSURE .....TTC-135-02

PAVEMENT CONDITION WARNING SIGNS.....TTD-125-02

MOBILE OPERATION FOR PAINT STRIPING CASE I .....TTS-100-02

MOBILE OPERATION FOR PAINT STRIPING CASE II.....TTS-105-02

MOBILE OPERATION FOR PAINT STRIPING CASE III.....TTS-110-02

MOBILE OPERATION FOR PAINT STRIPING CASE IV .....TTS-115-02

CURB AND GUTTER, CURBS AND VALLEY GUTTER .....RPM-100-11

## **PART III**

### **EMPLOYMENT, WAGE AND RECORD REQUIREMENTS**

**TRANSPORTATION CABINET  
DEPARTMENT OF HIGHWAYS**

**LABOR AND WAGE REQUIREMENTS  
APPLICABLE TO OTHER THAN FEDERAL-AID SYSTEM PROJECTS**

- I. Application
- II. Nondiscrimination of Employees (KRS 344)

**I. APPLICATION**

1. These contract provisions shall apply to all work performed on the contract by the contractor with his own organization and with the assistance of workmen under his immediate superintendence and to all work performed on the contract by piecework, station work or by subcontract. The contractor's organization shall be construed to include only workmen employed and paid directly by the contractor and equipment owned or rented by him, with or without operators.

2. The contractor shall insert in each of his subcontracts all of the stipulations contained in these Required Provisions and such other stipulations as may be required.

3. A breach of any of the stipulations contained in these Required Provisions may be grounds for termination of the contract.

3. If the contractor is in control of apprenticeship or other training or retraining, including on-the-job training programs, he shall not discriminate against an individual because of his race, color, religion, national origin, sex, disability or age forty (40) and over, in admission to, or employment in any program established to provide apprenticeship or other training.

4. The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for non-compliance.

Revised: January 25, 2017

**II. NONDISCRIMINATION OF EMPLOYEES**

**AN ACT OF THE KENTUCKY  
GENERAL ASSEMBLY TO PREVENT  
DISCRIMINATION IN EMPLOYMENT  
KRS CHAPTER 344  
EFFECTIVE JUNE 16, 1972**

The contract on this project, in accordance with KRS Chapter 344, provides that during the performance of this contract, the contractor agrees as follows:

1. The contractor shall not fail or refuse to hire, or shall not discharge any individual, or otherwise discriminate against an individual with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, national origin, sex, disability or age (forty and above); or limit, segregate, or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, national origin, sex, disability or age forty (40) and over. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

2. The contractor shall not print or publish or cause to be printed or published a notice or advertisement relating to employment by such an employer or membership in or any classification or referral for employment by the employment agency, indicating any preference, limitation, specification, or discrimination, based on race, color, religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, except that such a notice or advertisement may indicate a preference, limitation, or specification based on religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, when religion, national origin, sex, or age forty (40) and over, or because the person is a qualified individual with a disability, is a bona fide occupational qualification for employment.

## EXECUTIVE BRANCH CODE OF ETHICS

In the 1992 regular legislative session, the General Assembly passed and Governor Brereton Jones signed Senate Bill 63 (codified as KRS 11A), the Executive Branch Code of Ethics, which states, in part:

KRS 11A.040 (7) provides:

No present or former public servant shall, within six (6) months following termination of his office or employment, accept employment, compensation, or other economic benefit from any person or business that contracts or does business with, or is regulated by, the state in matters in which he was directly involved during the last thirty-six (36) months of his tenure. This provision shall not prohibit an individual from returning to the same business, firm, occupation, or profession in which he was involved prior to taking office or beginning his term of employment, or for which he received, prior to his state employment, a professional degree or license, provided that, for a period of six (6) months, he personally refrains from working on any matter in which he was directly involved during the last thirty-six (36) months of his tenure in state government. This subsection shall not prohibit the performance of ministerial functions, including but not limited to filing tax returns, filing applications for permits or licenses, or filing incorporation papers, nor shall it prohibit the former officer or public servant from receiving public funds disbursed through entitlement programs.

KRS 11A.040 (9) states:

A former public servant shall not represent a person or business before a state agency in a matter in which the former public servant was directly involved during the last thirty-six (36) months of his tenure, for a period of one (1) year after the latter of:

- a) The date of leaving office or termination of employment; or
- b) The date the term of office expires to which the public servant was elected.

This law is intended to promote public confidence in the integrity of state government and to declare as public policy the idea that state employees should view their work as a public trust and not as a way to obtain private benefits.

If you have worked for the executive branch of state government within the past six months, you may be subject to the law's prohibitions. The law's applicability may be different if you hold elected office or are contemplating representation of another before a state agency.

Also, if you are affiliated with a firm which does business with the state and which employs former state executive-branch employees, you should be aware that the law may apply to them.

In case of doubt, the law permits you to request an advisory opinion from the Executive Branch Ethics Commission, 1025 Capital Center Drive, Suite 104, Frankfort, Kentucky 40601; telephone (502) 564-7954.

Revised: May 23, 2022

### **Kentucky Equal Employment Opportunity Act of 1978**

The requirements of the Kentucky Equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) shall apply to this Contract. The apparent low Bidder will be required to submit EEO forms to the Division of Construction Procurement, which will then forward to the Finance and Administration Cabinet for review and approval. No award will become effective until all forms are submitted and EEO/CC has certified compliance. The required EEO forms are as follows:

- EEO-1: Employer Information Report
- Affidavit of Intent to Comply
- Employee Data Sheet
- Subcontractor Report

These forms are available on the Finance and Administration's web page under ***Vendor Information, Standard Attachments and General Terms*** at the following address:  
**<https://www.eProcurement.ky.gov>**.

Bidders currently certified as being in compliance by the Finance and Administration Cabinet may submit a copy of their approval letter in lieu of the referenced EEO forms.

For questions or assistance please contact the Finance and Administration Cabinet by email at **[finance.contractcompliance@ky.gov](mailto:finance.contractcompliance@ky.gov)** or by phone at 502-564-2874.

# EMPLOYEE RIGHTS UNDER THE FAIR LABOR STANDARDS ACT

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

## FEDERAL MINIMUM WAGE

**\$7.25** PER HOUR

BEGINNING JULY 24, 2009

### OVERTIME PAY

At least 1½ times your regular rate of pay for all hours worked over 40 in a workweek.

### CHILD LABOR

An employee must be at least **16** years old to work in most non-farm jobs and at least **18** to work in non-farm jobs declared hazardous by the Secretary of Labor.

Youths **14** and **15** years old may work outside school hours in various non-manufacturing, non-mining, non-hazardous jobs under the following conditions:

**No more than**

- **3** hours on a school day or **18** hours in a school week;
- **8** hours on a non-school day or **40** hours in a non-school week.

Also, work may not begin before **7 a.m.** or end after **7 p.m.**, except from June 1 through Labor Day, when evening hours are extended to **9 p.m.** Different rules apply in agricultural employment.

### TIP CREDIT

Employers of “tipped employees” must pay a cash wage of at least \$2.13 per hour if they claim a tip credit against their minimum wage obligation. If an employee’s tips combined with the employer’s cash wage of at least \$2.13 per hour do not equal the minimum hourly wage, the employer must make up the difference. Certain other conditions must also be met.

### ENFORCEMENT

The Department of Labor may recover back wages either administratively or through court action, for the employees that have been underpaid in violation of the law. Violations may result in civil or criminal action.

Employers may be assessed civil money penalties of up to \$1,100 for each willful or repeated violation of the minimum wage or overtime pay provisions of the law and up to \$11,000 for each employee who is the subject of a violation of the Act’s child labor provisions. In addition, a civil money penalty of up to \$50,000 may be assessed for each child labor violation that causes the death or serious injury of any minor employee, and such assessments may be doubled, up to \$100,000, when the violations are determined to be willful or repeated. The law also prohibits discriminating against or discharging workers who file a complaint or participate in any proceeding under the Act.

### ADDITIONAL INFORMATION

- Certain occupations and establishments are exempt from the minimum wage and/or overtime pay provisions.
- Special provisions apply to workers in American Samoa and the Commonwealth of the Northern Mariana Islands.
- Some state laws provide greater employee protections; employers must comply with both.
- The law requires employers to display this poster where employees can readily see it.
- Employees under 20 years of age may be paid \$4.25 per hour during their first 90 consecutive calendar days of employment with an employer.
- Certain full-time students, student learners, apprentices, and workers with disabilities may be paid less than the minimum wage under special certificates issued by the Department of Labor.

For additional information:



**1-866-4-USWAGE**

(1-866-487-9243)

TTY: 1-877-889-5627



**WWW.WAGEHOUR.DOL.GOV**



## **PART IV**

## **INSURANCE**

Refer to  
*Kentucky Standard Specifications for Road and Bridge Construction,*  
current edition

**PART V**

**BID ITEMS**

Report Date 5/18/23

Section: 0001 - PAVING

| LINE | BID CODE   | ALT | DESCRIPTION  | QUANTITY  | UNIT | UNIT PRIC | FP | AMOUNT      |
|------|------------|-----|--|-----------|------|-----------|----|-------------|
| 0010 | 00190      |     | LEVELING & WEDGING PG64-22                             | 752.00    | TON  |           | \$ |             |
| 0020 | 00342      |     | CL4 ASPH SURF 0.38A PG76-22                            | 13,705.00 | TON  |           | \$ |             |
| 0030 | 01791      |     | ADJUST MANHOLE FRAME TO GRADE                          | 46.00     | EACH |           | \$ |             |
| 0040 | 01921      |     | STANDARD BARRIER MEDIAN TYPE 4                         | 2.50      | SQYD |           | \$ |             |
| 0050 | 02562      |     | TEMPORARY SIGNS  | 1,010.00  | SQFT |           | \$ |             |
| 0060 | 02650      |     | MAINTAIN & CONTROL TRAFFIC                             | 1.00      | LS   |           | \$ |             |
| 0070 | 02671      |     | PORTABLE CHANGEABLE MESSAGE SIGN                       | 4.00      | EACH |           | \$ |             |
| 0080 | 02676      |     | MOBILIZATION FOR MILL & TEXT                           | 1.00      | LS   |           | \$ |             |
| 0090 | 02677      |     | ASPHALT PAVE MILLING & TEXTURING                       | 13,705.00 | TON  |           | \$ |             |
| 0100 | 02775      |     | ARROW PANEL  | 4.00      | EACH |           | \$ |             |
| 0110 | 03240      |     | BASE FAILURE REPAIR                                    | 800.00    | SQYD |           | \$ |             |
| 0120 | 03425      |     | ADJUST WATER VALVE                                     | 23.00     | EACH |           | \$ |             |
| 0130 | 04793      |     | CONDUIT-1 1/4 IN<br>(PLANNING LOOPS)                   | 45.00     | LF   |           | \$ |             |
| 0140 | 04795      |     | CONDUIT-2 IN<br>(PLANNING LOOPS)                       | 10.00     | LF   |           | \$ |             |
| 0150 | 04820      |     | TRENCHING AND BACKFILLING                              | 45.00     | LF   |           | \$ |             |
| 0160 | 04829      |     | PIEZOELECTRIC SENSOR<br>(PLANNING LOOPS)               | 4.00      | EACH |           | \$ |             |
| 0170 | 04830      |     | LOOP WIRE  | 2,500.00  | LF   |           | \$ |             |
| 0180 | 04895      |     | LOOP SAW SLOT AND FILL<br>(PLANNING LOOPS)             | 540.00    | LF   |           | \$ |             |
| 0190 | 06510      |     | PAVE STRIPING-TEMP PAINT-4 IN                          | 80,900.00 | LF   |           | \$ |             |
| 0200 | 06514      |     | PAVE STRIPING-PERM PAINT-4 IN                          | 700.00    | LF   |           | \$ |             |
| 0210 | 06542      |     | PAVE STRIPING-THERMO-6 IN W                            | 36,500.00 | LF   |           | \$ |             |
| 0220 | 06543      |     | PAVE STRIPING-THERMO-6 IN Y                            | 44,400.00 | LF   |           | \$ |             |
| 0230 | 06547      |     | PAVE STRIPING-THERMO-12 IN Y                           | 3,462.00  | LF   |           | \$ |             |
| 0240 | 06565      |     | PAVE MARKING-THERMO X-WALK-6 IN                        | 3,020.00  | LF   |           | \$ |             |
| 0250 | 06568      |     | PAVE MARKING-THERMO STOP BAR-24IN                      | 1,188.00  | LF   |           | \$ |             |
| 0260 | 06569      |     | PAVE MARKING-THERMO CROSS-HATCH                        | 180.00    | SQFT |           | \$ |             |
| 0270 | 06573      |     | PAVE MARKING-THERMO STR ARROW                          | 1.00      | EACH |           | \$ |             |
| 0280 | 06574      |     | PAVE MARKING-THERMO CURV ARROW                         | 111.00    | EACH |           | \$ |             |
| 0290 | 06575      |     | PAVE MARKING-THERMO COMB ARROW                         | 1.00      | EACH |           | \$ |             |
| 0300 | 06600      |     | REMOVE PAVEMENT MARKER TYPE V                          | 790.00    | EACH |           | \$ |             |
| 0310 | 10020NS    |     | FUEL ADJUSTMENT  | 22,503.00 | DOLL | \$1.00    | \$ | \$22,503.00 |
| 0320 | 10030NS    |     | ASPHALT ADJUSTMENT                                     | 56,521.00 | DOLL | \$1.00    | \$ | \$56,521.00 |
| 0330 | 20359NN    |     | GALVANIZED STEEL CABINET<br>(PLANNING LOOPS)           | 1.00      | EACH |           | \$ |             |
| 0340 | 20360ES818 |     | WOOD POST<br>(PLANNING LOOPS)                          | 3.00      | EACH |           | \$ |             |
| 0350 | 20391NS835 |     | ELECTRICAL JUNCTION BOX TYPE A<br>(PLANNING LOOPS)     | 1.00      | EACH |           | \$ |             |
| 0360 | 20468EC    |     | ELECTRICAL JUNCTION BOX-10 X 8 X 4<br>(PLANNING LOOPS) | 1.00      | EACH |           | \$ |             |
| 0370 | 20782NS714 |     | PAVE MARKING THERMO-BIKE                               | 22.00     | EACH |           | \$ |             |
| 0380 | 21417ES717 |     | PAVE MARK THERMO CONE CAP-SOLID<br>YELLOW              | 30.00     | SQFT |           | \$ |             |
| 0390 | 22665EN    |     | REMOVE NON-MOUNTABLE MEDIAN                            | 9.50      | SQYD |           | \$ |             |
| 0400 | 23261EC    |     | PAVE MARK-THERMO-X-WALK-24 IN                          | 1,510.00  | LF   |           | \$ |             |

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|------|----------|-----|--|----------|------|-----------|----|--------|
| 0410 | 24386EC  |     | PAVE MARKING THERMO-BIKE LANE ARROW    | 22.00    | EACH |           | \$ |        |
| 0420 | 24679ED  |     | PAVE MARK THERMO CHEVRON               | 150.00   | SQFT |           | \$ |        |
| 0430 | 24683ED  |     | PAVE MARKING-THERMO DOTTED LANE EXTEN  | 410.00   | LF   |           | \$ |        |
| 0440 | 24970EC  |     | ASPHALT MATERIAL FOR TACK NON-TRACKING | 76.00    | TON  |           | \$ |        |
| 0450 | 26119EC  |     | INSTALL RADAR PRESENCE DETECTOR TYPE A | 24.00    | EACH |           | \$ |        |

Section: 0002 - DEMOBILIZATION

| LINE | BID CODE | ALT | DESCRIPTION    | QUANTITY | UNIT | UNIT PRIC | FP | AMOUNT |
|------|----------|-----|----------------|----------|------|-----------|----|--------|
| 0460 | 02569    |     | DEMOBILIZATION | 1.00     | LS   |           | \$ |        |