INVITATION TO BID

Roadway Improvement Project

The Eddyville Riverport and Industrial Development Authority (hereinafter “Riverport”) is seeking bids for a Roadway Improvement Project. The Project is to 1) remove approximately 620 SY of existing asphalt surface and chip and seal on the river side of the building, reconfigure the existing road, and replace with heavy duty asphalt pavement (1-1/4” asphalt surface over 6-1/2” asphalt base, over 6” compacted dense grade aggregate), 2) overlay 1” of asphalt surface over the existing loop road behind the building 3) remove a 74 LF, 15” CMP culvert and replace with 74 LF, 15” ADS N-12 culvert, with adjusted inverts, and 4) regrade a ditch that drains to a culvert under the roadway.

Those desiring to bid are encouraged to request an electronic copy of the Specification and Bid Document package during normal business hours, Monday –Friday 7:00am to 4:00 pm. Contact BFW Engineers at (270) 443-1995.

Bidder must be a Pre-Qualified Contractor with the Commonwealth of Kentucky Transportation Cabinet. To obtain Pre-Qualification status, bidder may contact KYTC-Construction Procurement at (502) 564-3500.

A required site and specification meeting will be held on January 13, 2020 at 2:00 PM at the Riverport Board Office, located at 978 Port Authority Road, Eddyville KY 42038.

Sealed Bids will be received until 2:00 pm, January 20, 2020, at the Riverport Board Office, at which time all bids will be publicly open and read aloud. Any bid received after that time will be rejected and returned unopened.

Prospective bidders shall examine the “Specifications and Bid Documents” and shall comply and conform strictly to the conditions and instructions contained therein. Questions regarding this project should be raised at the required site and specification meeting mentioned above.

Bid Security: A satisfactory Bid Bond executed by the bidder and acceptable sureties in an amount equal to five percent (5%) of the bid shall be submitted with each bid. Failure to submit a bid bond will result in disqualification of the bid. This Security is furnished to the Owner as a guarantee that the agreement will be executed, and all bonds required shall be furnished within ten (10) days after award of the Contract to the undersigned.

Bonds: A Performance and a Labor and Material Payment Bond each in the amount of 100% of the Contract will be required in accordance with the Specifications.

The Riverport reserves the right to reject any and all bids in whole or in part or to waive any informality in bidding if it is determined to be in the best interest of the Riverport.

Eddyville Riverport and Industrial Development Authority
978 Port Authority Road
Eddyville, KY 42038
(270) 338-9671
SPECIFICATIONS

AND

BID DOCUMENTS

ROADWAY IMPROVEMENT PROJECT

EDDYVILLE RIVERPORT AND INDUSTRIAL DEVELOPMENT AUTHORITY

978 PORT AUTHORITY ROAD

EDDYVILLE, KY

DECEMBER 2019
INFORMATION FOR BIDDERS

1. PROJECT

The Eddyville Riverport and Industrial Development Authority (hereinafter “Riverport”) is seeking bids for a Roadway Improvement Project. The Project is to 1) remove approximately 620 SY of existing asphalt surface and chip and seal on the river side of the building, reconfigure the existing road, and replace with heavy duty asphalt pavement (1-1/4” asphalt surface over 6-1/2” asphalt base, over 6” compacted dense grade aggregate), 2) overlay 1” of asphalt surface over the existing loop road behind the building 3) remove a 74 LF, 15” CMP culvert and replace with 74 LF, 15” ADS N-12 culvert, with adjusted inverts, and 4) regrade a ditch that drains to a culvert under the roadway.

2. REQUIRED SITE AND SPECIFICATION MEETING / RECEIPT AND OPENING OF BIDS

A required Site and Specification meeting will be held on January 13, 2020 at 2:00 PM at the Riverport Board Office, located at 978 Port Authority Road, Eddyville KY 42038. Separate seal bids shall be received at Riverport Board Office, until the time and date stated in the INVITATION TO BID. Bids that are received in the Riverport office prior to the time and date stated in the INVITATION to BID will be publicly opened and read aloud.

All bids shall be submitted in a sealed, opaque envelope clearly labeled with the name of the bidder, the address, and the words “BID DOCUMENTS - ROADWAY IMPROVEMENT PROJECT” to guard against opening prior to the prescribed time set forth in the INVITATION TO BID.

3. BID SECURITY

A properly completed Satisfactory Bid Bond in an amount equal to Five Percent (5%) of the bid shall be submitted with each bid. No other forms of security will be accepted. A satisfactory Bid Bond shall be issued by an authorized representative of a Surety Company and shall be accompanied by a certified power of attorney dated on or before the date of bid. The Bid Bond shall include language, which assures that the bidder/principal shall give a bond or bonds as may be specified in the bidding or contract documents, with good and sufficient surety for the faithful performance of the contract.

Failure to submit a Bid Bond will result in disqualification of the bid. The successful bidder’s security will be retained until a contract has been signed and the required Labor and Materials Payment and Performance Bond submitted as specified. If any bidder refuses to enter into a contract, the owner will retain the Bid Bond as liquidated damages, but not as a penalty. The Bid Security of the remaining bidders will be returned as soon as practical. However, the Owner reserves the right to retain the security of the remaining bidders until 60 days after the bid opening.
4. **BONDS**

A Performance Bond and a Labor and Material Payment Bond each in the amount of 100% of the Contract as awarded. The bonds shall be used as security for the faithful performance of the Contract and shall be in the form included in the specifications.

The failure of the successful bidder to supply the required Bonds within ten (10) days after the prescribed forms are presented for signature or within such extended period as the Owner may grant, based upon reasons determined sufficient by the Owner, shall constitute a default, and the Owner may either award the contract to the next lowest responsible bidder or re-advertise for bids, and may charge against the bidder the difference between the amount of the bid and the amount for which a contract for the work is subsequently executed provided that the amount thus due shall be limited to the amount of the Bid Bond. If a more favorable bid is received by re-advertising, the defaulting bidder shall have no claim against the Owner for any refund of the bid security or expense the Bidder incurred to develop the bid.

5. **PREPARATION OF PROPOSAL**

Each bid must be submitted description of work for the bid prices must be filled in by handwritten in ink or type written, in both words and figures. Bid prices shall include all labor, materials, removal of debris, and equipment necessary to complete the work in accordance with the bid documents. In addition, each Bidder must submit similar completed projects of the same size and job scope of this project. Bidders must provide work experience history in performing in the project in the USA.

6. **FAMILIARITY WITH LAWS, SITE CONDITIONS AND DOCUMENTS**

Each bidder shall be familiarized with and comply with the terms and conditions of the bid documents and specifications before preparing their proposal. The submission of a proposal shall be construed as an assurance that such examination has been made and the failure of the bidder to familiarize themselves with the conditions relating to the specifications shall in no way relieve any bidder from any obligation in respect to the bid. All work for this project must follow KYTC’s Standard Specifications for Roadway and Bridge Construction (Spec Book). Where applicable, all products and materials utilized on this project must be found on the Commonwealth of Kentucky Transportation Cabinet List of Approved Materials. Any special provisions, project notes, or deadlines indicating a deviation from the standards contained in the Spec Book must also be included in the Bid proposal.
7. **TAX EXEMPTION**

The Riverport is exempt from taxes and, for that reason; the bid price shall not include any taxes.

8. **QUALIFICATIONS OF BIDDER**

The Bidder’s qualifications, along with all proposed sub-contractors, shall include, but not be limited to, being pre-qualified with the Kentucky Transportation Cabinet. A copy of the certificate of eligibility for the bidder and all proposed sub-contractors shall be included with the bid proposal for proof of qualification. To obtain Pre-Qualification status, bidder may contact KYTC-Construction Procurement at (502) 564-3500.

Bidders must be regular full-time contractors in the type of service specified. The Riverport may investigate as it deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish all information and data for this purpose as requested by the Riverport. The Riverport reserves the right to reject any bid that such evidence submitted by, or investigation of such bidder fails to satisfy the Riverport that such bidder is properly qualified to carry out the obligations of the Bid and complete the project. Conditional bids will not be accepted.

9. **ERRORS, INTERPRETATIONS AND ADDENDA**

Should a bidder find any omissions, discrepancies or errors in the specifications or other Bid Documents or have doubt as to the meaning of a Specifications or other Bid Documents, the bidder should immediately notify the Riverport who may correct, amend or clarify such documents by a written interpretation or addendum. No oral interpretations shall be made to any bidder and no oral statement of the Riverport or Riverport employee shall be effective to modify any provisions of the Bid Documents.

10. **METHOD OF AWARD – LOWEST QUALIFIED BIDDER**

The Riverport reserves the right to reject any or all bids and may waive any informality. Award of work under this bid shall be on a non-exclusive basis and the Riverport reserves the right to make a separate award for any item of work, a group of items or all items, and to make an award either in whole or in part or to make multiple awards, whichever is deemed in the best interest of the Riverport. No provision of this Bid shall prevent the Riverport from bidding or awarding individual or separate contracts for the projects containing identical or similar items of work as contained in this Bid. The award(s) will be made to the lowest responsive and responsible bidder(s) as determined by the Riverport.

The Bid will be awarded that results in the (1) lowest net cost and best value to the Riverport. The Bidder’s efficiency, experience, and timeline may be considered in the awarding of the Bid and may result in an award to a vendor other than the bidder quoting the lowest price. In the event that there is a discrepancy between price written in words and in figures, the price written in words shall govern.
11. **SUBCONTRACTORS**

The bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this Bid must be acceptable to the Riverport and pre-qualified by KYTC. The approval of the proposed subcontract award cannot be given by the Riverport unless and until the successful bidder submits all information and evidence requested by the Riverport regarding the proposed Subcontractor. The bidder is required to attach such information and evidence to the bid.

12. **RIGHT OF THE RIVERPORT TO TERMINATE PROJECT**

In the event that any of the provisions of this Bid are violated by the Contractor, or by any of their Subcontractors, the Riverport may serve written notice of its intention to terminate the Work. Such notice to contain the reason(s) for such intention to terminate, and unless within five (5) calendar days after the serving of notice the violation or delay shall cease and satisfactory arrangement of correction have been made. The project shall upon expiration of said five (5) days, cease and terminate. In the event of any such termination, the Riverport shall immediately serve notice thereof upon the Contractor. In the event of such termination, the Riverport may take over the work or any portion thereof, and prosecute the same, by contract or any other method, for the account and at the expense of the Contractor, and the Contractor shall be liable to the Riverport for any excess cost incurred by the Riverport as a result of such termination.

13. **PAYMENTS**

Invoices shall be furnished to the Riverport for verification and approval of the amount due to the Contractor. Invoices are to be supported for materials, equipment, and supplies with the manufacturers cost less any and all discounts afforded to the Contractor or Subcontractor. Payments of invoices will follow KYTC procedures. Final payment will not be made until final acceptance by the Riverport of the entire portion of the Contractor’s work is completed. The Contractor agrees to indemnify and hold harmless the Riverport for any and all claims growing out of the lawful demands of subcontractors, laborers, suppliers, and assignees.

14. **SAFETY AND ENVIRONMENTAL**

The Contractor shall perform all work in accordance with any and all U.S. Federal, State of Kentucky, Local (Eddyville and Lyon County) safety and environmental laws and regulations including but not limited to Department of Labor, Office of Safety and Health Administration, U.S. Coast Guard, and Environmental Protection Agency. The Contractor will hold the Riverport harmless for any and all fines for non-compliance whatsoever.
15. **WARRANTIES**

Contractor shall extend all manufacturers’ warranties on materials, equipment, and supplies to the Riverport. In addition, the Contractor must provide a workmanship warranty on work conducted under the supervision of the Contractor. Should inadequate workmanship under the supervision of the Contractor result in damage to Riverport property including but not limited to equipment, and/or materials, or supplies of the work, the Contractor shall be held liable for restoring said damage to a workable condition acceptable by the Riverport.

16. **AFFIDAVITS**

Bidders are required to complete the following affidavits and submit those with their bids:

1. Annual Affidavit for Bidders, Offerors, and Contractors
2. Affidavit for Bidders Claiming Resident Bidder Status OR Affidavit for Bidders Claiming Qualified Bidder Status
3. Affidavit Regarding Subcontractors
4. Affidavit Regarding Illegal Immigrants
General Conditions

The Riverport Director or assigned designee shall be the Contractor’s direct contact during the work progress.

The Contractor shall employ legal, honest and responsible employees, skilled in the task(s) assigned to them. The Contractor is required to check in with the Sr. Port Manager on a daily basis to discuss work area and ensure the section assigned for work is properly tagged and “Locked Out” for safety. Contractor’s personnel under its supervision, direct or indirect, are only allowed in the assigned work area of the Riverport property.

All work shall be completed in a professional workmanlike manner in strict accordance with the Bid Document.

The Riverport reserves the right to establish the order of priority for the project and delete any portion of the work upon notification to the Contractor.

The Contractor agrees to indemnify the Riverport against and save the Riverport harmless from any and all liability and loss from any claim, suit, or action based upon any alleged injury or death of any person including any employee of the Contractor or Subcontractor, and for damage to any property that may occur or that may be alleged to have occurred in the course of performance of the work, or failure to guard the same, whether such act of failure to act is by the Contractor or any Subcontractor or anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable. Contractor agrees at its own expense to pay all charges for attorneys in connection with the defense against any such claim, and if any judgement should be rendered against the Riverport, the Contractor will satisfy and discharge the same without cost or expense to the Riverport.

1. All insurance policies must name the Riverport as an additional insured and loss payee, as the Riverport interest may appear and such insurance shall be primary, non-contributory, and shall provide a waiver of subrogation in favor of the Riverport.

2. The insurance required herein shall be no less protective of the Riverport than it is of the Contractor or Subcontractor. Any and all subcontractors must maintain insurance in compliance with the Riverport Insurance requirements including but not limited to naming and waiver provision.

3. Before commencing work, the Contractor and Subcontractor(s) shall obtain and deliver Certificates of Insurance to the Riverport Director’s office. The Contractor and Subcontractor(s) shall maintain insurance of the kinds and in at least the amounts specified in U.S. Dollars hereunder in a form satisfactory to the Riverport; such certificates shall contain a provision that the Riverport shall be given a minimum thirty (30) days advance written notice by registered mail of, modification, change, termination, cancellation or expiration of coverage. Renewal certificates shall be provided at least sixty (60) days prior to expiration of the policy. The cost of such insurance shall be the sole responsibility of the Contractor. The Contract shall require each Subcontractor directly or indirectly employed on the Project to maintain the coverage listed below unless the Contractor’s insurance covers activities of the Subcontractor on the Project.
A. Worker’s Compensation Coverage and Employer’s Liability Coverage A at Statutory Limits in accordance with Kentucky Law and Coverage B at limits of one hundred thousand/ five hundred thousand / one hundred thousand ($100,000 / $500,000 / $100,000).

B. Broad Form Commercial General Liability including premises and operations, products, completed operations, contractual liability, independent contractors, and broad form property damage coverage, written on a “per occurrence” basis with minimum combined coverage for bodily injury, personnel injury, and property damage liability of two million ($2,000,000) general annual aggregate, one million ($1,000,000) per occurrence and two million ($2,000,000) Products/ Completed Operations Aggregate.

C. Comprehensive Automobile Liability insurance against claims for injury or death to person and damage to property occurring in or about the Riverport with a minimum coverage of one million ($1,000,000) combined single limit for each occurrence. Such insurance shall include but not be limited to bodily injury liability, personal injury liability, property damage liability, hired car liability, and non-owned auto liability.

D. Pollution Legal Liability insurance to include pollution clean-up, bodily injury, and property damage with a minimum limit of liability of three million ($3,000,000) for each occurrence.

E. Excess/ Umbrella/Bumbershoot coverages in excess of the aforesaid coverages, on the following forms, with a limit of not less than five million ($5,000,000).

All Coverage is to be provided on a primary noncontributory basis.

The Insure shall agree to waive all rights of subrogation against the Eddyville Riverport and Industrial Development Authority, its Board of Directors, its’ officers, and employees for losses arising from work performed by the Contractor for the Riverport.

No insurance required or furnished hereunder shall in any way relieve the Contractor or Subcontractors of or diminish any of their responsibilities, obligations and liabilities under this Contract.
1. **SCOPE OF THE PROJECT**

The work to be completed under this Bid shall include but not limited to the following:

The Eddyville Riverport and Industrial Development Authority (hereinafter “Riverport”) is seeking bids for a Roadway Improvement Project. The Project is to 1) remove approximately 620 SY of existing asphalt surface and chip and seal on the river side of the building, reconfigure the existing road, and replace with heavy duty asphalt pavement (1-1/4” asphalt surface over 6-1/2” asphalt base, over 6” compacted dense grade aggregate), 2) overlay 1” of asphalt surface over the existing loop road behind the building 3) remove a 74 LF, 15” CMP culvert and replace with 74 LF, 15” ADS N-12 culvert, with adjusted inverts, and 4) regrade a ditch that drains to a culvert under the roadway.

Contractor shall protect all surrounding areas during the course of construction. Contractor shall conduct demolition and debris removal with minimum interference and shall not allow demolished materials to accumulate on site. All demolition and construction debris shall be hauled off-site and disposed on in a legal matter, all hauling and disposal fees shall be the responsibility of the contractor with no additional to the owner. **A full set of site plans can be viewed at BFW's office, located at 500 South 17th Street, Paducah KY 42001.**

It is intended that this Project be completed as directed by the Riverport Director or a Designee in accordance with the unit price bid.

2. **PROJECT BID PRICES**

It is the intent of this bid proposal to establish unit prices for the various components of the Project which unit prices shall include full compensation for all administrative cost, overhead, insurance and bonding cost, labor supervision, materials, supplies, transportation, tools, equipment, and for performing all work in connection with and reasonably associated with the designated item of work, complete in place, as directed and as described in the specifications.

The Project shall be under the care and control of the Contractor during any part of the operation until such time as it is completed and accepted by the Riverport Director or a designee. The Contractor shall be responsible for well and faithfully performing all work assignments as directed; for the means and method of the project, all cost arising from the nature of work or for any unforeseen difficulties which may be encountered during the performance of the work; and for all losses or damage from the action of the elements during the performance of the work. The various unit prices shall be full compensation or all cost of the project while under the care and control of the Contractor.
3. **BONDS**

Bid, Performance and Payment Bonds and other instruments of security, furnished by the Contractor and his surety in accordance with the Contract Documents.

4. **DURATION OF THE BID PRICES**

It is specifically understood that the bid prices established in this proposal shall remain in full force until the completion of the project.

5. **SCHEDULE AND TIME OF COMPLETION**

Commencement of the Project shall be no later than April 1, 2020 with the completion of the project by June 1, 2020, subject to weather conditions.

6. **LIQUIDATED DAMAGES**

The Contractor will proceed with the work at a rate of progress to fully complete the assignment within the established allowable period time by both parties. It is expressly understood and agreed by the Riverport and Contractor that the established time for completion of work is reasonable, taking into consideration the climatic and economic conditions and other factors prevailing in the locality of the work.

If the Contractor or Subcontractor(s) fails to complete the work within the established time of completion, or extension of time granted by the Riverport, then the Contractor and their sureties shall be liable for and pay to the Riverport for each and every calendar day in default until full completion of the assignment a sum of Seven Hundred and Fifty U.S. Dollars ($750.00). This sum is hereby agreed upon, not as a penalty, but as fixed liquidated damages, which the Riverport will suffer by reason of such default. Time being of the essence of this Project, and a material consideration thereof is required.

The Riverport shall have the right to deduct the amount of any such damages from any monies due to Contractor.

7. **INDEMNITY CLAUSE**

The Contractor and Subcontractor(s) shall, at all times, indemnify and save harmless the Riverport, the Riverport Board of Directors, officers, employees, and agents from and against all loss and expense (including attorney’s fees) by reason of liability imposed by law upon the Riverport or the Riverport Board of Directors, officers, employees and agents because of bodily injury, including death at any time resulting from, sustained by any person or persons or on account of damage to property, including loss of use thereof, arising out of or in consequence of the performance of the work on the Project, whether such injury to person or persons or damage to property is due or claimed to be due to the negligence of the
Contractor, their Subcontractor, the Riverport, the Riverport Board of Directors, officers, employees and agents, except only such injury or damage as be determined by a court of law to been cause by the sole negligence of the Riverport, Riverport Board of Directors, officers, employees or agent.

8. **DRAWINGS**

The drawings furnished by BFW Engineers are for reference only.

9. **SAFETY**

The Contractor shall perform all work in accordance with U.S. Federal, State of Kentucky, Local (Eddyville and Lyon County) safety and environmental laws and regulations including but not limited to Department of Labor, Office of Safety and Health Administration, Army Corp of Engineers, U.S. Coast Guard, and Environmental Protection Agency. The Contractor will hold the Riverport harmless for any and all fines for non-compliance whatsoever.

10. **PERMITS and FEES**

Contractor shall, at their sole expense, secure or obtain all necessary State, Local, and Federal permits or licenses required to operate and contract as a Contractor. The Riverport warrants that all necessary permits for the local Planning, Zoning and/or Inland Wetlands Agencies have been obtained.

11. **OFF-SITE DISPOSAL**

The Contractor or Subcontractor that removes any and all material must properly dispose of said materials from the Riverport property during each assignment. The Contractor or Subcontractor must obtain a written agreement from the property owner at the disposal site. This written agreement shall contain a clause specifically stating that the Eddyville Riverport and Industrial Development Authority is not a party in the agreement and is not liable to insure that its provisions are fulfilled and said agreement shall be submitted to the Riverport for approval and save the Riverport harmless from any and all liability and loss from any claims, suit, or action from said agreement.
ANNUAL AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS

Affidavit Effective Date: __________________________
Affidavit Expiration Date: __________________________
Maximum Length One-Year

REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS PAGE 1 OF 2

FOR BIDS AND CONTRACTS IN GENERAL:

I. Each bidder or offeror swears and affirms under penalty of perjury, that to the best of their knowledge:

   a. In accordance with KRS 45A.110 and KRS 45A.115, neither the bidder or offeror as defined in KRS 45A.070(6), nor the entity which he/she represents, has knowingly violated any provisions of the campaign finance laws of the Commonwealth of Kentucky; and the award of a contract to the bidder or offeror or the entity which he/she represents will not violate any provisions of the campaign finance laws of the Commonwealth.

   b. The bidder or offeror swears and affirms under penalty of perjury that, to the extent required by Kentucky law, the entity bidding, and all subcontractors therein, are aware of the requirements and penalties outlined in KRS 45A.485; have properly disclosed all information required by this statute; and will continue to comply with such requirements for the duration of any contract awarded.

   c. The bidder or offeror swears and affirms under penalty of perjury that, to the extent required by Kentucky law, the entity bidding, and its affiliates, are duly registered with the Kentucky Department of Revenue to collect and remit the sales and use tax imposed by KRS Chapter 139, and will remain registered for the duration of any contract awarded.

   d. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding is not delinquent on any state taxes or fees owed to the Commonwealth of Kentucky and will remain in good standing for the duration of any contract awarded.

   e. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding, is 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, as defined in Executive Order No. 2018-905.

   f. The bidder or offeror swears and affirms that the entity bidding, and all subcontractors therein, have not violated any of the prohibitions set forth in KRS 11A.236 during the previous ten (10) years, and further pledge to abide by the restrictions set forth in such statute for the duration of the contract awarded.

FOR “NON-BID” CONTRACTS (I.E. SOLE-SOURCE; NOT-PRACTICAL OR FEASIBLE TO BID; OR EMERGENCY CONTRACTS, ETC):

II. Each contractor further swears and affirms under penalty of perjury, that to the best of their knowledge:

   a. In accordance with KRS 121.056, and if this is a non-bid contract, neither the contractor, nor any member of his/her immediate family having an interest of 10% or more in any business entity involved in the performance of any contract awarded, have contributed more than the amount specified in KRS 121.150 to the campaign of the gubernatorial slate elected in the election last preceding the date of contract award.
b. In accordance with KRS 121.330(1) and (2), and if this is a non-bid contract, neither the contractor, nor officers or employees of the contractor or any entity affiliated with the contractor, nor the spouses of officers or employees of the contractor or any entity affiliated with the contractor, have knowingly contributed more than $5,000 in aggregate to the campaign of a candidate elected in the election last preceding the date of contract award that has jurisdiction over this contract award.

c. In accordance with KRS 121.330(3) and (4), and if this is a non-bid contract, to the best of his/her knowledge, neither the contractor, nor any member of his/her immediate family, his/her employer, or his/her employees, or any entity affiliated with any of these entities or individuals, have directly solicited contributions in excess of $30,000 in the aggregate for the campaign of a candidate elected in the election last preceding the date of contract award that has jurisdiction over this contract.

As a duly authorized representative for the bidder, offeror, or contractor, I have fully informed myself regarding the accuracy of all statements made in this affidavit, and acknowledge that the Commonwealth is reasonably relying upon these statements, in making a decision for contract award and any failure to accurately disclose such information may result in contract termination, repayment of funds and other available remedies under law. If the bidder, offeror, or contractor becomes non-compliant with any statements during the affidavit effective period, I will notify the Finance and Administration Cabinet, Office of Procurement Services immediately. I understand that the Commonwealth retains the right to request an updated affidavit at any time.

Signature
Printed Name

Title
Date

Company Name
Address

Commonwealth of Kentucky Vendor Code (if known)

Subscribed and sworn to before me by
(Affiant) (Title)
of this ______ day of ________, 20___.

(Company Name)

Notary Public
[seal of notary] My commission expires: _________
REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS
CLAIMING RESIDENT BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:
The bidder or offeror hereby swears and affirms under penalty of perjury that, in accordance with KRS 45A.494(2), the entity bidding is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:

1. Is authorized to transact business in the Commonwealth;
2. Has for one year prior to and through the date of advertisement
   a. Filed Kentucky income taxes;
   b. Made payments to the Kentucky unemployment insurance fund established in KRS 341.49; and
   c. Maintained a Kentucky workers’ compensation policy in effect.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

Signature ____________________________________________ Printed Name ____________________________________________

Title ____________________________________________ Date ____________________________________________

Company Name ____________________________________________
Address ____________________________________________
________________________________________________________
Subscribed and sworn to before me by ____________________________ ____________________________
(Affiant) (Title)
of ____________________________________________ this _____day of _____________, 20___.
(Company Name)

Notary Public
[seal of notary]
My commission expires: ____________
REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS CLAIMING QUALIFIED BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:

I. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding, and all subcontractors therein, meets the requirements to be considered a “qualified bidder” in accordance with 200 KAR 5:410(3); and will continue to comply with such requirements for the duration of any contract awarded. Please identify below the particular “qualified bidder” status claimed by the bidding entity.

_______ A nonprofit corporation that furthers the purposes of KRS Chapter 163

_______ Per KRS 45A.465(3), a "Qualified nonprofit agency for individuals with severe disabilities" means an organization that:
(a) Is organized and operated in the interest of individuals with severe disabilities; and
(b) Complies with any applicable occupational health and safety law of the United States and the Commonwealth; and
(c) In the manufacture or provision of products or services listed or purchased under KRS 45A.470, during the fiscal year employs individuals with severe disabilities for not less than seventy-five percent (75%) of the man hours of direct labor required for the manufacture or provision of the products or services; and
(d) Is registered and in good standing as a nonprofit organization with the Secretary of State.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder’s claim of qualified bidder status. Failure to provide such documentation upon request may result in disqualification of the bidder or contract termination.

_________________________________________  __________________________________________
Signature                                      Printed Name

Title_______________________________________  Date________________________

Company Name______________________________
Address____________________________________

Subscribed and sworn to before me by

_________________________________________  ________________________________
(Affiant)                             (Title)

of________________________________________ this ___ day of ____________, 20__.

________________________________________
(Company Name)

Notary Public
[seal of notary]                          My commission expires: __________
Attachment C  REQUIRED AFFIDAVIT REGARDING SUBCONTRACTORS

I agree to fully provide any and all subcontracts used throughout the duration of any resulting contract a full copy of applicable prevailing wage rates and a copy of the contract terms and conditions. Furthermore, I understand that as the primary contractor I am fully responsible for any and all actions taken by my subcontractors.

_________________________________  _______________________________
SIGNATURE                         Printed Name
Title                Date

Company Name

Address

Phone Number                  Email Address

List planned subcontractors and their contact information below. If more space is needed you may provide the information on a separate sheet. If subcontractors are not known prior to bid closing, but are utilized after award, the contractor shall provide the subcontractor's information to the contract’s buyer of record prior to use of the subcontractor. Failure to do so may result in cancellation of the contract.

**Subcontractor 1:**

Company Name

Address

Phone Number                  Email Address

**Subcontractor 2:**

Company Name

Address

Phone Number                  Email Address

Subscribed and sworn to before me by _________________________, ______________________
(Affiant)             (Title)
of _________________________ this ____ day of __________, 20____.

(Company Name)

________________________________________
Notary Public

[seal of notary]      My commission expires: ________________
REQUIRED AFFIDAVIT REGARDING CONTRACTOR & SUBCONTRACTOR EMPLOYEES

Illegal Immigrants

1. The Commonwealth of Kentucky prohibits contracting with firms that utilize the services of illegal immigrants in the performance of a contract for goods or services in the performance of a contract with the Commonwealth. Additionally, such firms may not contract with any sub-contractor who utilizes the services of illegal immigrants.

2. By signing below the bidder agrees that:
   
a. The firm does not utilize the services of illegal immigrants in the performance of contracts,

b. The firm agrees that the Commonwealth may conduct random checks of personnel records as it pertains to this issue, and

c. Violation of this requirement shall be grounds for monetary and other penalties, up to and including termination of the contract. Additionally, violation of this requirement may result in the firm being prohibited from submitting bids for a period of one year.

I have fully informed myself regarding the accuracy of the statements made above.

_________________________________  _______________________________
SIGNATURE      Printed Name

_________________________________  _______________________________
Title       Date

Company Name _________________________________________________________

Address _________________________________________________________

Phone Number _________________________________________________________

Email Address _________________________________________________________

Subscribed and sworn to before me by _________________________, ______________________
(Affiant)             (Title)
of ___________________________________ this ____ day of ___________, 20____.
(Company Name)

________________________________________
Notary Public

[seal of notary]      My commission expires: ___________
EDDYVILLE RIVERPORT AND INDUSTRIAL DEVELOPMENT AUTHORITY

BID PROPOSAL FOR THE ROADWAY IMPROVEMENT PROJECT

Proposal of ________________________________
(hereinafter called Bidder), organized and existing under the laws of ______________
(state) and doing business as ________________________________ *

applicable to the Eddyville Riverport and Industrial Development Authority (hereinafter referred
to as Owner.)

*Insert “A Corporation”, A Partnership” or “An Individual”

In compliance with your Invitation for Bid, Bidder hereby proposes to furnish all the necessary
labor, materials, equipment, tools and services necessary for the construction of the ROADWAY
IMPROVEMENT PROJECT in accordance with the plans, specifications, any addendas issued, and other
contract documents prepared by the Owner for the Project, at the prices stated below.

By submission of this Bid, each Bidder certifies that this Bid has been arrived at independently,
without consultation, communication or agreement as to any matter relating to this Bid with any other
Bidder or with any other competitor.

The Bidder further understands the quantities shown herein are estimates only and the Owner
reserves the unlimited right to add to or delete from same at its discretion. In case of a discrepancy in
the extension of a bid price, the unit price shall govern over the total price for all items.

Security in the sum of $ ___________________________, in the form of a Bid Bond or cashier’s
check, said amount being equal to Five Percent (5%) of the Total Bid Amount, is submitted herewith in
accordance with the Specifications. This Security is furnished to the Owner as a guarantee that the
agreement will be executed, and all bonds required shall be furnished within ten (10) days after award of
the Contract to the undersigned. Additionally, the Bidder has submitted with this Bid Proposal the
required signed and notarized Certifications as required by the laws of the Commonwealth of Kentucky.
Failure of the Bidder to comply with these provisions will make the Bid Non-Responsive and shall
result in disqualification of the submitted Bid Proposal.

After reasonable consideration of all bids received, a Notice of Award will be given to the
Responsible Bidder who submits the lowest responsive bid in accordance with the specifications.
The responsible Bidder shall have the capability in all respects to perform fully the contracts
requirements, and the moral integrity and reliability of which to assure good faith performance. The
responsive Bidder shall submit a bid that conforms in all material respects to the specifications without
any deviations of the invitation for bids. Additionally, verification will be made to ensure that the lowest
responsive bidder is not on the “Excluded Parties List” (www/eplsp.gov) prior to Notice of Award.

If Notice of Award is given to the Bidder within Sixty (60) days after the time of receipt of Bids, the
Bidder agrees to execute and deliver a Contract in the prescribed form and furnish the required bonds
and insurance within ten (10) days after the Contract is presented for signature.

Bidder hereby agrees to commence work under this contract on or before a date to be specified
in the Notice to Proceed and to fully complete the project within Sixty (60) consecutive calendar days
thereafter. Bidder further agrees to pay as liquidated damages, the sum of Five Hundred Dollars
($500.00) for each consecutive calendar day thereafter until project completion as provided in accordance
with Specifications. Payments for Work Completed will be made in accordance with the Specifications. In
submitting this Bid, it is understood that the right is reserved by the Owner to reject any and all Bids in
accordance with the Specifications.
# BID PROPOSAL:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITY</th>
<th>UNIT</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
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<td>Sawcut Pavement</td>
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<td>SQYD</td>
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<td>Excavation and Backfill</td>
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<td>CL2 ASPH SURF 0.38B PG64-22</td>
<td>230</td>
<td>TON</td>
<td>$________</td>
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</tbody>
</table>
BID PROPOSAL NOTES:

1. The amount for “Mobilization-Demobilization” item may not exceed 3% of the Base Bid Total.

ADDENDUM

The undersigned hereby acknowledges receipt of the following Addenda:

Addendum No. ___  Dated __________
Addendum No. ___  Dated __________
Addendum No. ___  Dated __________

ATTACHMENTS TO THE BID PROPOSAL REQUIRED

Failure of the Bidder to attach the following listed items with the Bid Proposal will make the Bid Non-Responsive and shall result in disqualification of the submitted Bid Proposal. The items to be attached are:

1. Bid Bond in the amount of 5% of the bid.
2. Bidder’s Certifications Section 00325 - Signed and Notarized.
3. Bidder and all Subcontractors KYTC Certification(s)
4. All additional information as required within the Technical Specifications.
**SUBCONTRACTORS:**
Subcontractors (if any) who the Bidder proposes to use on the project shall be listed. Once the bidder's proposal has been accepted, there shall be no deviations from the list, except as requested by, or upon approval of, the Owner.

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>CONTACT</th>
<th>PHONE</th>
<th>WORK PROPOSED</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**BID DOCUMENTS:**
Bid Documents including the Bid Guaranty, shall be enclosed in an envelope clearly labeled with the words "**Bid Documents, Name of Project, Name of Bidder, and Date and Time of Bid Opening**," in order to guard against premature opening of the bid.

The Bidder herein certifies that all specifications have been reviewed and that any variations to the said specifications, including exceptions to or enhancements to same, are clearly indicated as an attachment to this bid.

THE ABOVE PROPOSAL IS HEREBY RESPECTFULLY SUBMITTED BY:

BIDDER: _______________________________________________________
BY: ____________________________ DATE: ___________________
TITLE: _______________________________________________________
ADDRESS: ____________________________________________________
_________________________________________ ____________
PHONE: _________________________ FAX: _________________________
CELL PHONE: __________________ E-MAIL: _______________________
FEDERAL TAXPAYER IDENTIFICATION NUMBER: ___________________
KENTUCKY TAXPAYER IDENTIFICATION NUMBER: __________________
CITY OF EDDYVILLE BUSINESS LICENSE NUMBER: ________________
THIS AGREEMENT, made this ________ day of XXXX, 2020, by and between Eddyville Riverport and Industrial Development Authority, hereinafter called “OWNER” and XXXXXXX, doing business as (an individual) or (a partnership) or (a corporation) hereinafter called “CONTRACTOR”,

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR will commence and complete the construction of Water and Sewer main extension.

2. The CONTRACTOR will furnish all of the material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the PROJECT described herein.

3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within 10 calendar days after the date of the NOTICE TO PROCEED and will complete the same by XXXXXX, 2020, unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.

4. The CONTRACTOR agrees to perform all of the WORK described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of $XXXXX XX.

5. The term “CONTRACT DOCUMENTS” means and includes the following:
   (A) Advertisement For BIDS
   (B) Information For BIDDERS
   (C) BID
   (D) Agreement
   (E) Performance BOND
   (F) Labor and Material BOND
   (G) NOTICE OF AWARD
   (H) NOTICE TO PROCEED
   (I) DRAWINGS prepared by Bacon Farmer Workman Engineering & Testing, Inc., numbered C1.0 through C3.0, and dated December 26th, 2019.
   (M) SPECIFICATIONS AND BID DOCUMENTS, prepared by Eddyville Riverport and Industrial Development Authority, dated November 13th, 2019.
   (N) ADDENDA:
6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the General Conditions such amounts as required by the CONTRACT DOCUMENTS.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in (_______________) each of which shall be deemed and original on the date first above written.

OWNER:
Eddyville Riverport and Industrial Development Authority
BY ______________________________
Name XXXXX
(SEAL)

ATTEST:
______________________________
Name __________________________
Title __________________________

CONTRACTOR:
XXXXXXXXXXXXXXXXXXXX
BY ______________________________
Name: XXXXXXXX, Title
(SEAL)

ATTEST:
______________________________
Name __________________________
Title __________________________
KNOW ALL MEN BY THESE PRESENTS, that we
_____________________________ as Principal, and the
_____________________________ INSURANCE COMPANY, a
_____________________________________________ corporation, as surey, and held and firmly
bound unto ____________________________________ as Obligee, in
the sum of __________ Dollars and __________ Cents ($________) DOLLARS, for
which sum, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly
and severally, by these presents.

WHEREAS, on the ____ day of ______________, 2020, the Principal entered into a contract with
the Obligee or ________________________________ which contract is by reference made a
part hereof and is hereafter referred to as the Contract:

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, That, if the
Principal shall faithfully perform said contract according to its terms, covenants, and conditions,
then this obligation shall be void; otherwise it shall remain in full force and effect.

Dated this _____ of ______________, 2020.

By ______________________________
Insurance Company

By ______________________________
Attorney-in-Fact
KNOW ALL MEN BY THESE PRESENTS, that we, as Principal, and the
_________ INSURANCE COMPANY, A ____________________________ corporation, as Surety, and held
and firmly bound unto ________________________________ as Obligee, in the sum of
__________________ ($__________) DOLLARS for which sum, we bind ourselves, our
heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

WHEREAS, on the ____ day of ____________, 2020, the Principal entered into a contract with the
Obligee for ________________________________ which contract is by reference made a part
hereof and is hereafter referred to as the Contract:

NOW, THEREFORE, THE CONDITIONS OF THIS OBLIGATION IS SUCH, That if the
Principal shall pay all laborers, mechanics, subcontractors, materialmen and all persons who shall
supply said Principal or said subcontractors with provisions and supplies for the carrying on of such
work, then this obligation shall be null and void; otherwise to remain in full force and effect.

Dated this ____ of ____________, 2020

By
Insurance Company

By
Attorney-in-Fact
Date:       XXXXXXXX, 2020

To:         XXXXXXXX
            XXXXXXXX
            XXXXXXXX

Project:    Eddyville Riverport and Industrial Development Authority
            Roadway Improvement Project

The OWNER as considered the BID submitted by you for the above described WORK in response to its Advertisement for Bids and Information for Bidders for the bid date of XXXXXXX, 2020.

You are hereby notified that your BID has been accepted for the items in the amount of $XXXXXXX.XX.

You are required to execute the Agreement and Furnish the required CONTRACTOR’S Performance BOND, Payment BOND, and certificates of insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said BONDS within ten (10) days from the date of this Notice, said OWNER will be entitled to consider all your rights arising out of the OWNER’S acceptance of your BID as abandoned and as a forfeiture of your BID BOND. The OWNER will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the OWNER.

Dated this ____________ day of XXXXXX, 2020

EDDYVILLE RIVERPORT AND INDUSTRIAL DEVELOPMENT AUTHORITY
Owner

Signature:  __________________________________________

By         XXXX

Title      XXXXXXX
ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO AWARD is hereby acknowledged by XXXXXXX. This the ________ day of XXXXXXXX, 2020.

Signature _________________________________

Title XXXXXXXXXX
Date:  _________________, XXXXXX ________, 2020

To:  XXXXXXXXXXX
     XXXXXXXX
     XXXXXXXX

Project:  Eddyville Riverport and Industrial Development Authority
          Roadway Improvement Project

You are hereby notified to commence work in accordance with the Agreement dated
XXXXXXX, 2020, on or before by XXXXXXX, 2020.

EDDYVILLE RIVERPORT AND INDUSTRIAL DEVELOPMENT AUTHORITY
Owner

Signature  _________________________________

By  XXXXXXXX

Title  XXXXXXXX

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by XXXXXXX.

This the ____ day of XXXXX, 2020.

Signature:  _________________________________

Title  XXXXXXXX
SECTION 201 — STAKING

201.01 DESCRIPTION. When listed as a bid item, furnish all personnel, equipment, stakes, and hubs necessary to construct the roadway and appurtenant structures to the grade and alignment specified in the Contract. When no bid item is listed, the Department will perform staking.

201.02 MATERIALS AND EQUIPMENT. Reserved.

201.03 CONSTRUCTION.

201.03.01 Contractor Staking. Perform all necessary surveying under the general supervision of a Professional Engineer or Land Surveyor licensed in the Commonwealth of Kentucky.

The Department’s Engineer will perform the following:

1) Provide adequate control points to allow prompt re-establishment of the survey centerline, right-of-way, temporary easements, ramps, crossroads, frontage roads, and all other surveying needs during construction.
2) Take “check sections” to verify that construction is to grade and alignment as specified in the Contract.

The Contractor will perform the following:

1) Re-establish the centerline and set such additional points as may be necessary for construction of the project. Verify the accuracy of the horizontal and vertical control as established by the Department’s Engineer before beginning construction. Set permanent or temporary bench marks. Run a level loop through all control points and bench marks and provide copies of the supporting documentation to the Cabinet verify the accuracy of each reference point prior to any work beginning on the project.
2) Establish clearing lines so that the project may be cleared without violating the limits of the right of way.
3) Set slope stakes right and left of the survey centerline at 50-foot to 100-foot intervals to guide the contractor in constructing the cuts and fills. These stakes are generally set to shoulder grade for fills and ditch grade for cuts. The cut or fill information, slope, and distance from centerline should be on the front face of the stake; the station number should be on the back of the stake. This stake should be guarded with a lath that has the station number written on the side facing the centerline.
4) Grade Stakes (Bluetops). Fine grade control will be set by the Contractor to establish sub-grade sections by setting hubs (referred to as blue tops) every 50 feet. These blue tops are set to the hundredth of a foot in elevation and are located left and right of pavement centerline, usually at the edge of metal. Bluetops will be set for the top of sub-grade and the top of aggregate base or drainage blanket material. Refer to Section 204.03.10 and Section 302.03.06 for construction tolerances of sub-grade and aggregate base or drainage blanket.
5) Stake all structures (bridges, culverts, pipe, and other appurtenances) so that they can be built to the proper line and grade as shown on the plans and to perform the function for which they were designed.

201.03.02 Department Staking. The Department’s Engineer will set all stakes necessary for the construction of the roadway and appurtenant structures to the proper grade and alignment in accordance with the contract.
201.03.03 **Electronic Surveying.** The Department encourages the use of new and advanced technology in the construction of its roads and structures. However, the following restrictions apply:

1) Tolerances are unchanged. Refer to Section 204.03.10 and Section 302.03.06.  
2) The contractor will create a DTM based upon the plans provided by the Department.  
3) The contractor will perform a site calibration using initial project control that was established by the Department and verified utilizing level loops by the Contractor.  
4) Sub-grade check sections are to be done every 500 feet in tangent sections and every 250 feet in curves using conventional or approved electronic survey methods to verify the accuracy of the electronic grade control devices. Define the check section locations by approved means which may be a hub and stake, paint marks, pin flags or other methods approved by the engineer. Check stations should be identified with centerline station, offset, if any, and elevation plainly marked. At the Engineer’s discretion, electronic methods may be used to establish locations and verify vertical and horizontal grades for check stations at the same frequency and may be checked concurrently by contractor and Department personnel in lieu of setting the physical stakes.  
5) The Contractor will submit his electronic data files, including the project DTM, to the Department’s Engineer as they are developed so that the Engineer can reference the data for verification of the field work.  
6) While work is ongoing, if there is any doubt as to the accuracy of the surveying work in relation to slopes, horizontal or vertical alignment, the Department reserves the right to require more traditional means of alignment verification such as installation/reinstallation of slope stakes, bench marks, or temporary bench marks as needed for proper project reference points. Provide electronic field book reports that clearly define survey numbers with x, y, z coordinates, horizontal and vertical roadway alignments, templates, digital terrain models (DTMs) and any other digital background files used.

201.04 **MEASUREMENT.**

201.04.01 **Contractor Staking.** When listed as a bid item, the Department will measure staking as lump sum. The Department will not measure surveying required to correct any errors or inaccuracies resulting from construction operations for payment. Complete the general layout of the project under the supervision of a Professional Engineer or Land Surveyor licensed in the Commonwealth of Kentucky.

201.04.02 **Department Staking.** The Department will not measure quantities for payment. When any stakes are disturbed due to unwarranted negligence of the Contractor, the Department will measure the work required to reset the stakes and deduct the cost from monies due the Contractor.

201.05 **PAYMENT.** The Department will make payment for the completed and accepted quantities under the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>02726</td>
<td>Staking</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>

The Department will consider payment as full compensation for all work required under this section.
SECTION 207 — SUBGRADE

207.01 DESCRIPTION. Grade, shape, and compact the subgrade to the required density.

207.02 MATERIALS AND EQUIPMENT. Use water conforming to Section 803.

207.03 CONSTRUCTION. Prepare a smooth subgrade without indentations to the full width of the widest course of the pavement system plus one foot additional width beyond each edge.

Shape the subgrade to conform to the lines, grades, and cross sections specified in the Contract or as directed. Remove all high areas of the roadbed and fill all low areas with approved material and compact.

Compact the subgrade to a uniform density throughout according to the density and moisture control requirements of Section 206.03.03. Should the subgrade subsequently lose its density due to exposure to severe weather conditions, after having been previously compacted to the required density during the construction of the grade, recompact it to the required density.

Excavate and backfill areas of yielding or unstable material with approved material as the Engineer directs.

When excess dust is present on the subgrade, either wet the material or completely remove and replace it with suitable material before any aggregate is placed thereon, at no additional expense to the Department.

Prepare all subgrades before the base course or pavement construction to allow the required testing and checking of the subgrade before placing any aggregate. Furnish templates and labor required for checking the subgrade.

207.03.01 Reshaping and Compacting. Scarify the existing road surface to a depth not exceeding 6 inches, and uniformly distribute the material so loosened over the surface of the road. Compact the subgrade according to Section 206.

207.03.02 Construction Tolerances. On grade and drain projects, complete the subgrade to the tolerance specified in Subsection 204.03.10.

When reshaping and compacting is not a bid item, the Engineer may allow minor adjustments in plan grades as he deems necessary.

Before placing base or surface courses on rock subgrade constructed with a 0.2 foot tolerance, level it to meet the specified 1/2 inch tolerance for base or surface course preparation with materials from the pavement quantities.

207.03.03 Protection and Maintenance. Complete all ditches and drains in order to drain the roadbed. Protect the subgrade. Repair all damage, and restore the subgrade to the required template.

When hauling materials over the completed subgrade, use equipment with pneumatic tires. Do not operate equipment of such weight as to cause rutting on the subgrade.

Do not allow the compaction equipment to cross any bridge deck within the limits of the project without permission of the Engineer.

Do not store or stockpile materials on a completed subgrade.

207.04 MEASUREMENT. The Department will not measure preparation of the subgrade when the construction of the grade is a part of the Contract.

The Department will not measure the repair of yielding or unstable areas for payment when construction of the base course or pavement is included in the same contract as construction of the grade. When the base and grade are in separate contracts, the Department will measure the removal and disposal of such material as Roadway Excavation and measure the backfill material as either Roadway Excavation or Borrow Excavation, as applicable. When the earthwork bid item is Embankment-in-Place, the Department will measure removal and replacement of yielding or unstable material in cut areas as Special
Excavation.

The Department will not measure protection and repair of the subgrade for payment and will consider it incidental to the earthwork bid items.

The Department will not measure water used for maintaining moisture for subgrade compaction and water used for conditioning the subgrade immediately in advance of base or pavement construction and will consider it incidental to the earthwork bid items.

207.04.01 Reshaping and Compacting. When included as a bid item, the Department will measure the quantity horizontally along the centerline of the roadway in linear feet, exclusive of ramps, road approaches, cross roads, and frontage roads. When the project is a multiple-lane, divided highway, the Department will measure the quantity along the centerline of each roadway. When moisture and density control requirements, as provided in Subsection 206.03.03, have been waived, the Department will measure only the portion, or portions, of the project on which the work is actually done.

Where it is necessary to excavate to a depth of more than 6 inches in reshaping the existing road surface or where it is necessary to pick up the material so loosened and move it longitudinally, the Department will measure the entire work as roadway excavation.

207.04.02 Roadway Excavation. The Department will measure the quantity according to Subsection 204.04.

207.04.03 Borrow Excavation. The Department will measure the quantity according to Subsection 205.04.

207.04.04 Embankment-in-Place. The Department will measure the quantity according to Subsection 206.04.

207.04.05 Dense Grade Aggregate and Crushed Stone Base. The Department will measure quantities used to level rock subgrade constructed from a 0.2 foot tolerance to a 1/2 inch tolerance as pavement quantities according to Subsection 302.04.

207.05 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
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<td>Linear Foot</td>
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<td>02200</td>
<td>Roadway Excavition</td>
<td>See Subsection 204.05</td>
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<td>02210</td>
<td>Borrow Excavition</td>
<td>See Subsection 205.05</td>
</tr>
<tr>
<td>02230</td>
<td>Embankment-in-Place</td>
<td>See Subsection 206.05</td>
</tr>
<tr>
<td>02204</td>
<td>Special Excavition</td>
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<td>DGA</td>
<td>See Subsection 302.05</td>
</tr>
<tr>
<td>00003</td>
<td>Crushed Stone Base</td>
<td>See Subsection 302.05</td>
</tr>
</tbody>
</table>

The Department will consider payment as full compensation for all work required under this section.
SECTION 212 — EROSION CONTROL

212.01 DESCRIPTION. Construct brush barriers, prepare the soil for seeding, apply materials, and mulch areas seeded or sodded.

212.02 MATERIALS. Conform to Section 827.

212.03 CONSTRUCTION. Progressively incorporate erosion control measures with the grading operations throughout the duration of the project according to Section 213.

212.03.01 Brush Barriers. Construct barriers that are dense, 2 to 5 feet in height and 4 to 10 feet wide. Do not locate barriers where diverted drainage will create erosion problems.

Do not use brush barriers at sites where the adjacent private property has been residentially or commercially developed. Do not construct the barriers at sites easily and routinely seen that will detract from the appearance of either the adjacent property or the completed highway.

212.03.02 Topsoil. When included in the Contract as a bid item, either furnish and place topsoil or place stockpiled topsoil.

A) Furnish and Place Topsoil. When the bid item is furnish and place topsoil, obtain topsoil conforming to Section 827 from source outside the right-of-way limits. Avoid injury to existing planted growths, structures, and paved surfaces during topsoil operations.

Provide equipment and methods of operation that prevent the loading of subsoil or other unsuitable material with the topsoil. During hauling operations, keep pavement surfaces clean. Promptly and completely remove any topsoil or other substances dropped on the surfaces before it is compacted by traffic.

Prepare areas designated to receive topsoil. Then place and spread topsoil to a sufficient loose depth so that after natural settlement and rolling, the completed work conforms to the required line, grades, and elevations. Compact the topsoil and prepare the area for seeding according to Subsection 212.03.03.

B) Spreading Stockpiled Topsoil. When the bid item is spreading stockpiled topsoil, obtain the material from existing stockpile on or near the project.

Do not spread topsoil until grading and shaping of the area to receive the topsoil has been completed and seeding and protection operations are ready to begin. Spread and lightly compact the topsoil to a uniform depth of approximately 6 inches over areas specified in the Plans or as the Engineer directs. Do not place topsoil on slopes steeper than 3:1.

Prepare the area for seeding according to Subsection 212.03.03.

212.03.03 Permanent Seeding and Protection. Grade exposed earth and any other erodible areas to a uniform cross section or slope as soon as practical in the judgment of the Engineer and then perform permanent seeding and protection at the earliest practical time.

Prepare all areas within the construction limits and right of way limits that can be expected to sustain plant growth and are not covered by satisfactory vegetation for permanent seeding. The Engineer will designate areas to be seeded.

A) Seed Mixtures for Permanent Seeding.

For all projects within urban areas the seed mix will be modified to only include Fescue and Ryegrass.

Seed Mix Type I: 90% Kentucky 31 Tall Fescue (Festuca arundinacea)
10% White Dutch Clover (Trifolium repens)
Seed Mix Type II: 90% Kentucky 31 Tall Fescue (Festuca arundinacea) 
10% Partridge Pea (Cassia fasciculate)

Seed Mix Type III: 70% Kentucky 31 Tall Fescue (Festuca arundinacea) 
30% Partridge Pea (Cassia fasciculate)

Seed Mix Type IV: 95% Turf Type Tall Fescue Blend 
5% White Dutch Clover (Trifolium repens)

Pollinator Seed Mix: See Special Note if applicable.

1) Permanent Seeding on Slopes 3:1 or Less. Apply seed mix Type I at a minimum application rate of 100 pounds per acre.

2) Permanent Seeding on Slopes Greater than 3:1 in Highway Districts 4, 5, 6, and 7. Apply seed mix Type II at a minimum application rate of 100 pounds per acre.

3) Permanent Seeding on Slopes Greater than 3:1 in Highway Districts 1, 2, 3, 8, 9, 10, 11, and 12. Apply seed mix Type III at a minimum application rate of 100 pounds per acre. If adjacent to crop land or golf course, replace the Partridge Pea with Kentucky 31 Fescue.

4) Permanent seeding in residential and urban areas use Seed Mix Type IV at a rate of 275 pounds per acre.

5) When Pollinator Seed Mix is specified in the contract, apply as per the Special Note at the rate and location as directed.

B) Procedures for Permanent Seeding. Include a seeding plan in the Best Management Practices Plan (BMP) according to Section 213. For areas at final grade, prepare a seedbed and apply Initial Fertilizer at a minimum of 500 pounds per acre of 20-10-10. When required, place agricultural limestone at a rate of 3 tons per acre. Do not apply dry agricultural Limestone when it may generate a traffic hazard. Remove all rock and dirt clods over 4 inches in diameter from the surface of the seedbed. Unless the Engineer directs otherwise, track all slopes 3:1 or greater. Ensure that tracking is performed up and down and not across. Native Grass seed should be calculated figuring seed on a pure live seed basis (PLS), using the least amount of inert matter available. Seed and mulch to produce a uniform vegetation cover using the seeding rates as indicated to each application. Mulch with clean, weed free straw. Place straw to an approximate 2-inch loose depth (2 tons per acre) and anchor it into the soil by mechanically crimping it into the soil surface or applying tackifier to provide a protective cover. For the periods of March 1 through May 15 and from September 1 through November 1, the Department may allow the option of using hydromulch at minimum rate of 1,500 pounds per acre in place of straw with tackifier. Regardless of materials used, ensure the protective cover holds until seeding is acceptably established according to part G) of this subsection.

C) Crown Vetch. When Seed Mix Type II is specified, sow crown vetch seed on all areas having a slope 3:1 or steeper and consisting of soil or mixtures of broken rock and soil. Also, sow crown vetch on soil seams and crevices within or adjacent to rock cuts and flat areas of benched slopes. Sow crown vetch seed uniformly at a rate that will provide 9 live seedlings per square yard and at a rate of no less than 30 pounds per acre. If adjacent to a golf course replace the crown vetch with Kentucky 31 Tall Fescue.

D) Fertilizer. Apply Initial Fertilizer to all areas prior to the seeding or sodding.
operation at the application rate specified in 212.03.03 B). When directed by the engineer, apply 20-10-10 Maintenance Fertilizer to the areas after vegetation has been established at a rate of 300 pounds per acre. Obtain approval from the Engineer prior to the Maintenance fertilizer application. Use fertilizer delivered to the project in bags or bulk.

I) Reapply fertilizer to any area that has a streaked appearance. The reapplication shall be at no additional cost to the Department. Re-establish any vegetation severely damaged or destroyed because of an excessive application of fertilizer at no cost to the Department.

E) Erosion Control Blanket. Install erosion control blankets in ditches, except those to be paved or rock lined, to a flow depth of 1.5 feet. Install erosion control blankets on final soil-like slopes as designated on the Erosion Control Plan and as the Engineer directs. Prepare the bed by loosening the soil to a depth of 2 to 3 inches. Apply fertilizer, limestone, and seed at the permanent seeding rate. Cover with the erosion control blanket. Roll out the blanket in the direction of the anticipated run-off flow. Anchor the blanket at the top and toe of slopes and at the top, toe, and edges of channels and ditches as the “Anchoring Edges and Ends” figure shows, including burying the blanket. Secure the blanket by stapling as the “Stapling Pattern” figure shows. At seams, overlap the blanket as the “Seam Overlaps” figure shows. Rework areas that become unstable or do not establish vegetation.
F) Maintenance of Seeded Areas. From the time seeding and protection work begins until the date the project is declared complete, keep all seeded areas in good condition at all times. Promptly repair any damage to seeded areas or to mulch materials as directed. Mow when the Engineer directs.

G) Acceptance of Seeding. The Engineer will make an inspection to determine the acceptability of the seeding between 3 and 6 months after completion of the project. The Engineer may delay the inspection when conditions are such that the acceptability of the seeding cannot be determined at the end of the 6-month period.
Ensure the seeded areas have a soil pH level of 6.0 or greater. Ensure that at least 90 percent of each seeded area has a minimum of 1,350 live seedlings per square yard at the time of inspection, representative of the specified seed mixture with no vacant areas larger than 25 square yards. Also, ensure that all applicable areas have a minimum of 9 live area seedlings per square yard of crown vetch. Conform to this requirement for all permanent seeding performed in conjunction with the project regardless of the type of protection used or the season in which the seeding is performed.

When seeding does not conform to the live seedling requirements at the time of inspection, submit a corrective work plan to the Engineer for approval and perform the additional work necessary to conform to the original requirements. The Department reserves the right to specify application rates for agricultural lime, fertilizer, seed, and mulch for corrective seeding.

212.03.04 Sodding. At locations specified in the Contract or by the Engineer, prepare the sod bed, incorporate fertilizer and agricultural limestone as needed and place sod flush with any adjacent seeded or turfed area, pavement, curb, or other structures.

The Engineer will make an inspection to determine the acceptability of the sod between 3 and 6 months after completion of the project. Ensure that at least 90 percent is alive with no area of dead sod larger than one square yard.

212.04 MEASUREMENT.

212.04.01 Brush Barriers. The Department will not measure the quantity of brush barriers for payment and will consider construction of brush barriers incidental to Clearing and Grubbing.

212.04.02 Topsoil Furnished and Placed. The Department will measure the quantity in cubic yards in the vehicle at the point of delivery.

212.04.03 Spreading Stockpiled Topsoil. The Department will measure the quantity in cubic yards by taking cross sections of stockpiles immediately before spreading operations, and taking final cross sections of the stockpile area after spreading has been completed and the area neatly dressed.

When elective to place the topsoil directly without stockpiling, according to Subsection 204.03.07 B), then the Engineer will not separately measure the topsoil not stockpiled.

212.04.04 Agricultural Limestone. The Department will measure the quantity of agricultural limestone in tons.

212.04.05 Fertilizer. The Department will measure fertilizer used in the seeding or sodding operations for payment. The Department will measure the quantity by tons.

212.04.06 Seeding and Protection. The Department will measure the quantity in square yards as the design quantity specified in the Plans, increased or decreased by authorized adjustments. When it can be shown actual quantities vary from the design quantity by more than 10 percent, the Department will measure the actual quantity in square yards.

The Department will include in the authorized adjustments any seeding and protection necessary due to catastrophic events that are beyond the control of the Contractor.

The Department will not measure any corrective work required to conform to Subsection 212.03.03 F).

The Department will not measure seeding and protection of areas unnecessarily disturbed or disturbed areas outside the limits of construction.

212.04.07 Erosion Control Blanket. The Department will measure the quantity of Erosion Control Blanket by the square yard of surface covered. The Department will not measure seeding for payment and will consider it incidental to the Erosion Control Blanket.
The Department will not measure any reworking of slopes, channels, or ditches for payment as it is considered corrective work and incidental to the Erosion Control Blanket.

**212.04.08 Sodding.** The Department will measure the quantity in square yards. The Department will not measure any additional sod necessary to restore areas that fail to conform to the original requirements.

**212.04.09 Crown Vetch.** The Department will measure the quantity in square yards.

**212.04.10 Mowing.** When mowing is required, the Department will measure and pay for the quantities under a supplemental agreement.

**212.05 PAYMENT.** The Department will pay for the completed and accepted quantities under the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>05997</td>
<td>Topsoil Furnished and Placed</td>
<td>Cubic Yard</td>
</tr>
<tr>
<td>05998</td>
<td>Spreading Stockpiled Topsoil</td>
<td>Cubic Yard</td>
</tr>
<tr>
<td>05985</td>
<td>Seeding and Protection</td>
<td>Square Yard</td>
</tr>
<tr>
<td>05950</td>
<td>Erosion Control Blanket</td>
<td>Square Yard</td>
</tr>
<tr>
<td>05989</td>
<td>Special Seeding Crown Vetch</td>
<td>Square Yard</td>
</tr>
<tr>
<td>05990</td>
<td>Sodding</td>
<td>Square Yard</td>
</tr>
<tr>
<td>05963</td>
<td>Initial Fertilizer</td>
<td>Ton</td>
</tr>
<tr>
<td>05964</td>
<td>Maintenance Fertilizer</td>
<td>Ton</td>
</tr>
<tr>
<td>05992</td>
<td>Agricultural Limestone</td>
<td>Ton</td>
</tr>
</tbody>
</table>

The Department will consider payment as full compensation for all work required under this section.
SECTION 302 — DENSE GRADED AGGREGATE BASE (DGA) AND CRUSHED STONE BASE (CSB)

302.01 DESCRIPTION. Construct the base on a prepared subgrade.

302.02 MATERIALS.

302.02.01 Aggregate. Conform to Section 805.

302.02.02 Water. Conform to Section 803.

302.02.03 Mixer. Equip the mixer with a water flow system with a positive cut-off control that will stop the flow of water simultaneously with any stoppage in the flow of aggregate and with valves or other devices that can be easily reset when a change in the rate of flow is desired.

302.03 CONSTRUCTION. Prepare the subgrade according to Section 207, and keep it free from irregularities.

When reshaping and compacting or scarifying and reshaping is not specified for existing traffic-bound surfaces, grade and shape to the grade and cross section required.

Construct shoulders according to Section 209.

302.03.01 Mixing. Thoroughly mix the aggregate and water in a pugmill type mixer, unless another type mixer is approved. Add water as needed to compact to the specified in-place density. Material cannot be stockpiled and must be transported within 48 hours.

302.03.02 Transporting. Transport the plant-mixed material to the project without loss or segregation. Cover each truck load with a heavy canvas sheet to reduce the loss of moisture during transit. Load all tri-axle or larger trucks with a minimum of three drops, utilizing the three drop method to prevent segregation.

302.03.03 Placing and Spreading. Immediately place and shape the mixture by use of approved power equipment to the specified lines, grades, cross sections and depths without segregation. A widener may be used to place shoulders only. A spreader box or paver shall be used except when placing material close to bridge ends, structures, directly over fabric, or when placing shoulders. In such instances where it is impractical to use the approved power equipment, approval by the engineer must be obtained prior to placement of the material.

Place, spread, shape, and compact in a manner that is as continuous as practical during each day’s run. Wet the base as directed during shaping and compaction operations to maintain the moisture content at the level necessary to ensure proper compaction. Placement of aggregate base courses is not allowed from December 15th to March 31st without the permission of the Engineer.

When the required thickness of base is no more than 8 inches for CSB and 6 1/2 inches for DGA and the Engineer is satisfied that acceptable compaction can be achieved throughout the full depth, place the material in one layer. Otherwise, place the material in 2 or more layers of no less than 3 inches.

Wet the subgrade or previous base layer as directed before placing the base material.

302.03.04 Compacting.

A) Control Strips. Before constructing the base, complete a control strip to determine the level of compaction necessary to achieve the target density for the remaining base course. Construct additional control strips whenever a change is
made in the source, gradation, type of subgrade, type of base aggregate, layer thickness, or as the Engineer requires.

Compact with an effort greater than or equal to that produced by a 16-ton pneumatic roller, or an 8-ton steel-wheel vibratory roller. Operate vibratory rollers according to the manufacturer’s instructions.

Leave each control strip in place to become part of the project. Complete at least one control strip for each layer of base material. Unless the Engineer approves otherwise, construct the control strip to a minimum length of 500 feet and to the full lane width of the aggregate base course being placed at that time. Use the same equipment and procedures intended for the construction of the remainder of the base course. After 2 passes of the compaction equipment the Department will mark and take 3 density measurements at randomly selected sites, at least 2 feet from the edge of the base. The Department will take density measurements at the same 3 locations after subsequent passes of the compaction equipment. Compact the control strip until no further increase in density can be obtained from additional passes.

The Engineer will visually inspect the base material after each pass to determine if the aggregate is being crushed into fine material. If the aggregate is being crushed, cracked, shoved, or shows other signs of distress, cease compaction efforts. If compaction of the base is not satisfactory, use other methods to achieve satisfactory results.

Regardless of lift thickness, the Department will require a control strip to establish a roller pattern.

B) Target Density. After completing compaction of the control strip, the Engineer will conduct 10 field density measurements at random locations in the control strip and average the 10 measurements to obtain the target density for the compaction of the base.

C) Field Density Measurement. When the total compacted thickness is 4 inches or more, the Engineer will determine the field density with nuclear gauges. When the total compacted thickness is less than 4 inches, the Engineer will determine compaction by nuclear gauge or make acceptance by visual inspection.

D) Test Sections. The Engineer will divide the remaining tonnage of base after the control strip into lots of 500 tons of material. Each lot will be tested at five random locations determined by random number generator. The average of the 5 tests must be at least 98 percent of the target density with no individual measurement less than 95 percent of the target density.

When the average density of a test section does not meet the density required above, cease laydown operations, and either provide additional compaction effort or rework the entire test section to obtain the required average density. When an individual density measurement does not meet the required density, provide additional compaction efforts or rework the area represented by that measurement to meet the required density.

E) General. Maintain the initial layers of base to a uniform grade and cross section during compaction. Shape the final layer with additional material when necessary.

When trimming the final layer to the final grade with an automatic grading machine, provide a layer approximately 1/2 to one inch above grade for continuous cutting. After making the final pass with the grading machine, wet and roll the base with a static roller. The Engineer will recheck density to ensure the material still conforms to the density requirements. Reuse excess material removed by the grading machine in shoulders, islands, or other areas where aggregate stone base is specified, but not under roadway pavement.

Use manually operated mechanical tampers in areas inaccessible to power equipment.

Do not add fines to meet target density.

302.03.05 Maintenance and Protection. Restrict traffic on the completed base to the minimum necessary to complete the work, and maintain public traffic. Moisten areas
subjected to traffic, as directed, to avoid the loss of fine materials. If desired, use a diluted emulsified asphalt for dust control. Placement of materials on the aggregate base is to be limited until the base has cured to proper strength.

Before constructing succeeding courses, check for damage, such as raveling and lost density, and recheck the grade and cross section. Make corrections as necessary.

Make every reasonable effort to completely cover the aggregate base course with a minimum of 1 course of pavement before suspending work for the winter months. When the aggregate base course is not completely covered with the specified pavement courses, determine and perform all work necessary to protect and maintain the uncompleted work during the winter months. Perform all work necessary to acceptably repair or restore the uncompleted work before the beginning of spring paving operations. Obtain the Engineer’s approval for all work necessary to protect, maintain, and repair the base.

302.03.06 Surface Tolerances. Ensure that the surface of the top course of the base is smooth and uniform. When performing final grading, trim the base to within ± 1/2 inch of the specified cross section and ± 3/8 inch in 10 feet from the specified longitudinal grade at any location or to an accuracy allowing the succeeding courses to meet their specified surface and thickness tolerances, whichever is stricter.

Furnish all devices and labor necessary to check the surface.

302.04 MEASUREMENT. The Department will not measure water used to moisten the subgrade, for mixing the base material, and to maintain moisture during compaction and maintenance of the base for payment.

The Department will measure the quantity of plant-mixed materials according to Section 109. The Department will not make deductions for water in the mixture.

The Department will not measure construction of control strips, any necessary reworking of control strips, or test sections for additional payment.

The Department will not measure dust control for payment.

The Department will not measure any work necessary to check the final surface tolerances for payment.

The Department will not measure for payment any extra materials, methods, or construction techniques, the Engineer determines not to be a part of the specified construction, to protect, maintain, or repair any portion of the uncompleted work during the winter months.

The Department will measure and deduct material wasted from trimming the final grade.

302.04.01 Dense Aggregate Base. The Department will measure the quantity in tons.

302.04.02 Crushed Stone Base. The Department will measure the quantity in tons.

302.05 PAYMENT. The Department will pay for the completed and accepted quantities under the following:

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<tr>
<th>Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
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<tr>
<td>00001</td>
<td>DGA Base</td>
<td>Ton</td>
</tr>
<tr>
<td>00003</td>
<td>Crushed Stone Base</td>
<td>Ton</td>
</tr>
</tbody>
</table>

The Department will consider payment as full compensation for all work required under this section.
SECTION 403 — PRODUCTION AND PLACEMENT OF ASPHALT MIXTURES

403.01 DESCRIPTION. This section includes general requirements that are applicable to all types of asphalt mixtures. Deviations from these general requirements are indicated in the specific requirements for each type mixture. Provide a Superpave Plant Technologist (SPT) or Superpave Mix Design Technician (SMDT) qualified by the Laboratories’ Quality Acceptance program. Be available to address all Quality Control concerns arising during work performed under section 403. Construct one or more courses of asphalt mixture on the prepared foundation according to these Specifications and the requirements of the type specified in the Contract.

403.02 MATERIALS AND EQUIPMENT.

403.02.01 Fine Aggregate. Conform to Section 804.

403.02.02 Coarse Aggregate. Conform to Section 805.

403.02.03 Asphalt Binder. Conform to Section 806.

403.02.04 Self-Leveling Silicone Rubber Sealant. Conform to Section 807.

403.02.05 Asphalt Release Agent. Provide materials conforming to KM 64-422. Ensure each shipment is accompanied by a certification of conformance.

403.02.06 Transport Equipment. Provide trucks for transporting asphalt mixtures that have tight, clean, and smooth metal beds that have been sprayed with a minimum amount of release agent. Drain excess release agents from truck beds. Do not load trucks that are contaminated with an unapproved release agent. When such contamination is identified after loading, reject the load. In either case, remove the truck and respective driver from the project for the duration of the project. Equip all trucks with covers made of heavy canvas, or similar material suitable for protecting the mixture from the weather, that completely cover the loaded material.

403.02.07 Asphalt Pavers. Use asphalt pavers that are self-propelled and capable of spreading and finishing all courses to the indicated widths and depths, line, grade, and cross section, with a smooth finish, uniform in density and texture, without requiring an undue amount of back-dressing for correcting irregularities. Equip the paver with the following:

1) a screed or strike-off assembly that easily adjusts to the required crown and will place the asphalt mixture in variable widths;
2) an auger and vibrator that operates along the full width of the screed;
3) a level that is attached to the screed and in full view of the operator;
4) automatic screed controls, with sensors for both sides of the paver, capable of sensing grade from an outside reference, sensing the transverse slope of the screed, and providing the automatic signals that operate the screed to maintain the desired grade and transverse slope;
5) a transverse slope controller that is capable of maintaining the screed at the desired slope within ± 0.1 percent; and
6) automatic feeder controls that properly adjust to maintain a uniform depth of material ahead of the screed.
7) Utilize a Durable Pavement Edge that produces material that is confined at the end gate and extrudes the asphalt material in such a way that results in a consolidated wedge-shape pavement edge of approximately 29-40 degrees as it leaves the paver (measured from a line parallel to the pavement surface). The device shall maintain contact to the graded material adjacent to the pavement and must be adjustable to allow for transition to cross roads, driveways, and obstructions without requiring
the paver to be stopped routinely. The device shall constrain the asphalt head and increase the density of the extruded profile. To achieve desired results, rolling is not required on the wedge. The desired pavement edge angle is 30 degrees. A listing of approved commercially manufactured Durable Pavement Edge systems will be available on the Department internet website (http://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx). If electing to not use a commercially manufactured Durable Pavement Edge system, proof shall be demonstrated that the device has been used on previous projects with acceptable results, or a test section shall be constructed prior to the beginning of work which demonstrates that the wedge is capable of producing consolidation to the satisfaction of the Engineer. The finished angle of the Durable Pavement Edge shall be between 29 to 40 degrees. A single-plate strike-off method shall not be allowed for bituminous paving.

403.02.08 Rollers. Provide self-propelled rollers that are capable of reversing smoothly. Equip steel-wheel rollers with adjustable scrapers, spray bars, and wetting pads to keep the wheels clean at all times.

403.02.09 Small Tools and Portable Equipment. Provide all necessary small tools and portable equipment required for satisfactory execution of the work and devices necessary for routine checks of finishing requirements. Do not use an unapproved release agent on any small tools or equipment incidental to the paving operation.

Provide standard 10-foot long straightedges. Have straightedges available on the project before the work is started and all times thereafter until completion of the work.

403.02.10 Material Transfer Vehicle (MTV). In addition to the equipment specified above, provide a MTV with the following minimum characteristics:

1) A system to independently deliver asphalt mixtures from the hauling equipment to the paving equipment;
2) A high capacity truck unloading system, capable of 600 tons per hour, that will receive asphalt mixtures from the hauling equipment;
3) A minimum combined capacity, including the MTV storage bin and paver hopper, of 25 tons of asphalt mixture;
4) An auger system in the storage bin to continuously blend the asphalt mixture prior to discharge to the conveyor system; and
5) A discharge conveyor, with the ability to swivel, to deliver the mixture to the paving spreader while allowing the MTV to operate from an adjacent lane.

403.03 CONSTRUCTION.

403.03.01 Seasonal and Weather Limitations. Do not load trucks with asphalt mixtures when the ambient air temperature is below 35 °F. Do not place asphalt mixtures on any wet surface, when the ambient air and existing surface temperatures on the project are less than those specified in the table below, or when weather conditions otherwise prevent the proper handling or finishing of the asphalt mixtures.

Between November 30 and April 1, do not place asphalt mixture courses that will become a permanent part of the work without obtaining the written approval from the Engineer. Make every effort to have all asphalt base and binder courses covered before November 30.

If all asphalt mixture courses are not completed before November 30, perform all further work necessary to protect and maintain the uncompleted work during the winter months. Perform any work necessary to repair or restore the uncompleted work before the beginning of spring paving operations. Perform all work necessary to protect, maintain, or repair the base subject to the Engineer’s approval.
TEMPERATURE LIMITATIONS
Minimum Ambient Air Temperature and Minimum Temperature of the Existing Surface for Placing Asphalt Mixtures (°F)

- Open-Graded Friction Course (OGFC) 60
- SMA Base and Surface 50
- Asphalt Mixture, Surface (PG76-22) 45
- Asphalt Mixture, No. 4 Surface 50
- Asphalt Mixture, Surface (one inch thick or less) 45
- Leveling and Wedging and Scratch Course 45
- Asphalt Mixture, Surface (thicker than one inch) 40
- Asphalt Mixture for Pavement Wedge 40
- Asphalt Mixture, Base and Binder 35
- Asphalt-Treated Drainage Blanket 35

403.03.02 Preparation of Base. Prepare the foundation before placing the asphalt mixture courses. The preparation may include fine grading and recompaction of earth or blasted rock subgrades, or crushed or natural aggregate bases.

Maintain prepared subgrades and/or granular bases until placing the initial course of asphalt mixture to ensure that the foundation is true to the required grade and cross section.

Grade and shape existing traffic bound base to the required grade and cross section before applying any asphalt mixture course. Wet and roll any salvable floater material into the existing traffic bound base.

When required, apply curing seal, prime, or tack coat, or a combination, according to Section 406.

When applying the initial asphalt mixture surfacing on the traffic bound base, excavate as necessary at both ends of all bridges within the limits of the project. Excavate deep enough to apply the total thickness of the asphalt mixture courses being constructed. The excavation should be wide enough to accommodate the width of the course, or wider when directed, and as long as necessary, up to 100 feet, for smooth transitions from the top surface course to the bridge deck.

Sweep existing or previously placed asphalt mixture or concrete courses clean of all foreign material. Apply tack coat according to Section 406.

Remove existing markers installed in grooves, and fill the recess with the compacted asphalt mixture. The Department will not require filling of the grooves when milling of the existing pavement is included in the Contract and the milling operation removes the grooves.

Remove and dispose of the existing Type V markers off of the right-of-way. Fill the recess and any additional damaged area with compacted asphalt mixture within 24 hours of removal. Fill the damaged areas, even when the Contract includes milling, unless the Engineer determines the damaged areas are not hazardous to public traffic.

Adjust small drainage structures such as catch basins as required to match the finished pavement, or to provide proper drainage, according to Subsection 710.03.

Only when the Engineer directs, adjust manholes according to Subsection 710.03. Return manhole adjusting rings that are removed and not reused to the utility owner.

403.03.03 Preparation of Mixture.

A) Mixture Composition. Provide the appropriate mixture composition for the specified asphalt mixture, or substitute a higher aggregate type. When substituting a mixture of a higher AADTT class, provide a mixture of no more than one AADTT class higher than the specified asphalt mixture. Conform to the gradation requirements (control points) of AASHTO M 323 for the Superpave mixture. Unless the Engineer authorizes otherwise in writing, use the same type and source of ingredient aggregates and asphalt binder throughout the entire project for each type of mixture. For asphalt surface courses containing 100 percent polish-
resistant coarse aggregate, limit the portion of non-polish-resistant fine aggregate retained on the No. 4 sieve to 5 percent of the total combined aggregates.

When using a porous aggregate, increase the asphalt binder content (AC) as needed for asphalt binder absorption by the aggregate.

The following aggregate requirements are listed in order of the highest, Type A, to the lowest, Type D:

1) **Type A.** Provide 100 percent of the coarse aggregate from Class A sources. Ensure that 20 percent of the total combined aggregate is Class A polish-resistant fine aggregate. The Department will permit a maximum of 15 percent natural sand by weight of the total combined aggregate unless prior approval is obtained from the Division of Materials for greater amounts.

   - For No. 4A mixes provide 100 percent of the total combined aggregate from Class A sources.

2) **Type B.** The Department will permit a maximum of 15 percent natural sand by weight of the total combined aggregate unless prior approval is obtained from the Division of Materials for greater amounts.

   Select either of the 2 following options:

   a) Provide 100 percent of the coarse aggregate from Class B sources.

   b) Provide a combined aggregate, retained on the No. 4 sieve, that is a minimum of 50 percent from any Class A polish-resistant aggregate source except those identified as “Not permitted as the polish-resistant portion of Class B blends.” Submit all Class B blends to the Department for review.

   For Option a) or b) above, ensure one of the following:

   - 20 percent or more of the total combined aggregate is Class A polish-resistant fine aggregate.
   - 30 percent or more of the total combined aggregate is Class B polish-resistant fine aggregate

   For No. 4B mixes provide one of the following:

   - 85 percent or more of the total combined aggregate is a combination of Class A and Class B polish-resistant aggregate.
   - 85 percent or more of the total combined aggregate is Class B polish-resistant aggregate.

3) **Type D.** The Department will permit a maximum of 15 percent natural sand by weight of the total combined aggregate unless prior approval is obtained from the Division of Materials for greater amounts.

**B) Moisture Content of Mix.** Determine the moisture content of the coated mixture according to AASHTO T 329 each time an asphalt content determination is performed. When moisture contents are greater than 0.25 percent, take corrective action to lower the moisture content. When moisture contents are 0.10 percent or greater, adjust the AC determination made on plant-produced mixture to reflect the actual AC as KM 64-434 directs.

**C) Mix Design Criteria.** Conform to the gradation requirements (control points) of AASHTO M 323 for the Superpave mixture type the Contract specifies.

403-4
1) Preliminary Mix Design. Perform the volumetric mix design according to AASHTO R 35 and conforming to AASHTO M 323. The Department will require a dust-to-binder ratio range of 0.6 to 1.4 for surface mixtures, 0.6 to 1.6 for base mixtures, and 1.0 to 2.0 for all No. 4 mixtures. Contrary to AASHTO M 323, the relative density at Nmax is ≤ 98.5 percent. Complete the volumetric mix design at the appropriate number of gyrations as given in the table below for the construction year AADTT. The Department will define the relationship between AADTT Classes, as given in the bid items for Superpave mixtures, and AADTT ranges as follows:

<table>
<thead>
<tr>
<th>Class</th>
<th>AADTT</th>
<th>Number of Gyrations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N&lt;sub&gt;initial&lt;/sub&gt;</td>
<td>N&lt;sub&gt;design&lt;/sub&gt;</td>
</tr>
<tr>
<td>2</td>
<td>&lt; 600</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>600 to 2999</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>≥ 3000</td>
<td>7</td>
</tr>
</tbody>
</table>

2) Selection of Optimum AC. Normally, the Department will approve the AC at an air-void content of 3.5 percent. The Engineer may assign an AC corresponding to other air-void levels as deemed appropriate. Ensure the optimum AC is a minimum of 5.3 percent by weight of the total mixture for all 0.5-inch nominal surface mixtures and 5.6 percent by weight of the total mixture for all 0.38-inch nominal surface mixtures.

3) Tensile Strength Ratio (TSR). Analyze the mixture for TSR according to ASTM D 4867 with one freeze/thaw cycle, 150-mm specimens compacted with a Superpave gyratory compactor, and a target degree of saturation of the conditioned specimens of 65 ± 5 percent.

4) Aggregate Consensus Properties. Ensure all mixtures satisfy the fine aggregate angularity (FAA), sand equivalent (SE), course aggregate angularity (CAA), and flat and elongated particles (F&E) values listed in the table below.

<table>
<thead>
<tr>
<th>Aggregate Consensus Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

1 One crushed face / Two or more crushed faces.

Note: The Department will require a minimum of 45 percent for FAA for No. 4 mixtures and will not apply CAA and F&E requirements to No. 4 mixtures.

403.03.04 Transporting Material. For all types of sizes of HMA and WMA, load all tri-axle or larger trucks with a minimum of three drops, utilizing the three drop method to prevent segregation of the asphalt mixture. Securely fasten all covers in place on the truck before leaving the plant. During cool weather, or when an unexpected delay occurs, keep the loads covered until just before unloading. Insulate truck beds, when necessary, to maintain the specified temperature to the point of delivery. Do not use any truck that causes excessive segregation of mixture or that leaks.

403.03.05 Spreading and Finishing. Prevent segregation of the fine and coarse
aggregates during all phases of construction. Spread the mixtures with a paver. Heat the
screed uniformly throughout its length. Do not allow flames to directly contact the mixture.
Adjust the paver speed to provide the best results for the mixture being used and to
coordinate with the rate of delivery of the mixture to the paver to provide a uniform
placement rate without intermittent operation. Operate the screed or strike-off assembly
without tearing, shoving, or gouging the mixture when laying the mixture. Operate
vibrating screeds or other compacting features of the paver according to the manufacturer’s
recommendations during the placement of the pavement.

Use automatic screed and slope controls. However, if the Engineer determines that
under certain conditions better results may be obtained without using the controls, then the
Engineer may waive using either the grade control or slope control requirements, or both.

Notify the plant to stop shipment whenever the automatic screed controls break down
or malfunction. Obtain the Engineer’s approval to manually operate the equipment, or
operate it by other methods, to place the remainder of material already in transit, provided
the method of operation produces results otherwise conforming to this section.

Obtain vertical control for the outer edges of each mainline roadway from reference
lines or by using a ski arrangement. The Department will allow obtaining horizontal control
from the reference line. Automatically control the grade and slope for intermediate lines
using reference lines, or a ski and a slope control device, or a dual ski arrangement.

Immediately after striking off and before rolling, visually inspect each course for
irregularities, and correct if necessary. Keep hand raking of the mixtures to the absolute
minimum. Ensure that the finished surface has a uniform appearance, free from segregated
areas. Immediately remove and replace, as directed, all portions of a pavement course that
are defective in mixture composition, show excessive segregation, or do not otherwise
comply with the Contract.

Correct irregularities in alignment of the outside edge or edges of longitudinal joints
by adding or removing material before compacting the edges.

Over uniform, narrow areas, such as widening or narrow, paved shoulders where the
use of pavers would be impractical, spread by a mechanical spreader. Ensure that the
material is placed to the required lines, grades, and cross section without segregation of the
mixture.

Over areas where machine spreading is impractical due to irregularities or obstructions,
spread the mixture by approved methods. Place the material to avoid segregation and to
reduce to a minimum the amount of patching required during compaction. Discard all
course aggregate particles brought to the surface by raking. Do not scatter or broadcast
excess mixture or particles across the surface of the uncompacted mat.

Spread all surface courses with allowances made for compacting to finish
approximately 3/8 inch above forms, gutters, or similar construction.

The Department may allow shoulders and Asphalt Mixture for Pavement Wedge to be
paved monolithically with the mainline if it is in the best interest of the Department. Obtain
the Engineer’s approval before doing so.

Do not place or compact asphalt mixture when the natural light is insufficient without
providing artificial lighting satisfactory to the Engineer. Unless the Contract specifies
nighttime paving, do not place binder, surface, or other asphalt mixture wearing courses at
night, without first obtaining the Engineer’s permission. The Engineer may require daytime
paving if the Engineer deems the nighttime work unsatisfactory.

A) Use a MTV to place the asphalt mixture for all layers of pavement excluding
drainage blanket in the driving lanes for all interstates and parkways. Use a MTV
on other routes when required by the contract or proposal. The MTV is not
required on ramps and/or shoulders unless specified in the contract. When the
Engineer determines the use of the MTV is not practical for a portion of the
project, the Engineer may waive its requirement for that portion of pavement.

**403.03.06 Thickness Tolerances.** Place asphalt mixtures at the lift thickness specified
in the Contract. When lift thickness is not specified in the contract or when deviations to the
pavement thickness is approved by the Engineer, use the following table for application of asphalt mixture thickness.

<table>
<thead>
<tr>
<th>Nominal Maximum Aggregate Size (Inches)</th>
<th>Lift Thickness (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.50</td>
<td>4.50 - 5.00</td>
</tr>
<tr>
<td>1.00</td>
<td>3.00 - 4.50</td>
</tr>
<tr>
<td>0.75</td>
<td>2.25 - 3.50</td>
</tr>
</tbody>
</table>

A) **Initial Treatment and Resurfacing Projects.** Ensure that the total combined thickness of each class of asphalt base conforms to the Contract. Control the thickness by the rate of application. Place the mixture at the Contract-specified weight per square yard. Do not exceed the rate of application by more than 5 percent.

B) **New Construction.** Under the Engineer’s supervision, perform coring for thickness checks according to KM 64-420, as soon as practical after completion of all, or a major portion, of the asphalt base. The Engineer will measure the cores. Fill all core holes either with compacted asphalt mixture or non-shrink grout. Complete all remedial overlay work before placing the final course. When constructing an overlay, match the grades of the adjacent work such as storage lanes, approaches, entrances, etc., to the overlay section, whether these adjacent areas are deficient in thickness or not.

Ensure the total combined thickness of all layers is within \(\pm 1/2\) inch of the compacted plan thickness.

When there is an asphalt binder course, consider it as asphalt base for the purpose of determining compliance with thickness tolerances.

When the top layer of a new pavement is OGFC, sand seal surface, or sand asphalt surface, consider all asphalt mixtures beneath that course as asphalt base for the purpose of determining compliance with thickness tolerances.

When the Engineer determines the asphalt base is deficient in total thickness by more than 1/2 inch from the compacted plan thickness, overlay the full width of the pavement to bring the pavement to the required plan thickness. When placing additional material is not feasible due to structures, drainage, or other engineering reasons, the Engineer may waive the requirement for overlaying.

**403.03.07 Joints.** When curbs, gutters, pavement, and other structures adjoin the new construction, coat all contact surfaces of the existing construction and joints of previously placed new construction, both longitudinal and transverse, with tack.

When the pavement construction consists of 2 or more courses, offset the longitudinal joint a minimum of 6 inches. Place the longitudinal joint in the final surface course along the dividing line between the lanes. Clean adjacent surfaces of all loose materials so the joint shall receive full compaction from the rollers.

Place and spread all courses as continuously as possible, keeping the number of joints to a minimum. When a transverse joint is necessary, complete the spreading of the material by the finishing machine, and adjust the course to a straight line, square with the pavement. Before work is resumed, cut back the joint on the previous run, exposing the full depth of the course. Remove all excess material. Check the joint with a 10-foot straightedge at intervals of 2 feet or less immediately after initial rolling. Immediately correct any irregularities not conforming to Subsection 403.03.11 either by additional raking or adding hot material, or both. Discard all coarse aggregate particles brought to the surface by raking. Do not scatter or broadcast excess mixture or particles across the surface of the uncompacted mat. Roll joints to compress the material and to produce as tight a joint as possible.

Avoid cold longitudinal joints when practical by either placing the full width of the course in one pass, operating pavers in echelon, or moving pavers back each day after placing sufficient tonnage in each traffic lane so the course placed will be the full width of...
the pavement at the end of each day. Obtain the Engineer’s approval for the method of paving.

Comply with Subsection 402.03.02 D) for density of joint cores obtained from surface mixtures when Option A applies.

403.08 Shoulder Rumble Strips and Pavement Texturing.

Unless directed otherwise by the Engineer, DO NOT install centerline, edgeline, and/or shoulder rumble strips where the posted speed limit is 45 MPH or less. Before sawing centerline and/or edgeline rumble strips, pre-mark the pavement surface and obtain the Engineer’s approval for the proposed location, alignment, and control guides. After sawing the centerline and/or edgeline rumble strips, apply permanent centerline and/or edgeline striping, according to Section 713, on the sawed rumble strip locations approved by the Engineer. Before sawing shoulder rumble strips, obtain the Engineer’s approval of the proposed layout, location and alignment. Notify the Engineer if questions arise regarding changes in striping and/or rumble patterns. If necessary, the Engineer may obtain guidance from the District Traffic Engineer and/or the Division of Traffic Operations.

403.09 Leveling and Wedging, and Scratch Course.

A) Leveling and Wedging. Conform to the gradation requirements (control points) of AASHTO M 323 for base, binder, or surface as the Engineer directs. Submit a JMF to the engineer for AC approval according to KM 64-421. The Engineer may adjust the gradation requirements of the asphalt mixture being used for leveling and wedging in order to provide smooth transitions.

Upon completing each course of asphalt mixture and before spreading the next course, check the surface of that course by a stringline for deviations from a uniform grade. Correct any such deviations from the required uniformity by applying additional material, spreading, and rolling as directed.

When construction of the previous course is included in the same Contract, mill any high joints or other high areas as required in addition to leveling and wedging.

When leveling and wedging is included on resurfacing projects, check the existing surface by stringline for deviations from a uniform grade. Correct the courses in the same manner with an application of the type mixture specified by the Engineer.

When an asphalt mixture has been included in the proposal for leveling and wedging, perform this work at the locations designated before starting the normal paving operations. Thoroughly clean the areas to receive the corrective work, and apply the same tack material as specified for the courses being constructed. Do not apply the material as a scratch course over the entire area of the existing pavement. Do not apply the material monolithically with the surface course.

Spread the asphalt mixture for leveling and wedging with a motor-patrol grader or paver. After spreading, thoroughly compact the mixture.

B) Scratch Course. When required by the Contract, place an asphalt mixture as a scratch course. Conform to the gradation requirements (control points) of AASHTO M 323 for base, binder, or surface as the Engineer directs. Submit a JMF to the Engineer for AC approval according to KM 64-421. Apply the mixture over the entire area of the existing pavement before constructing the final surface course; do not apply material monolithically with the surface course. Set the paver to a minimum thickness as directed to correct rutting, adverse warping, dipping, and other imperfections in the existing pavement and to provide a smooth, level surface for the final surface course.

Compact with a pneumatic-tired roller to ensure proper compaction in rutted
and warped areas in the existing pavement.

When required by conditions on the project, the Engineer may adjust the gradation requirements of the specified mixture.

**403.03.10 Compaction.** Compact asphalt mixtures by Option A or B, as specified in the Contract.

Operate the rollers to eliminate all roller marks and obtain the specified compaction. Operate vibratory rollers of a design, weight, and frequency that produces the specified compaction without damaging the mat.

During the initial rolling of each course, visually inspect its surface for any irregularities that may develop. Remove and replace areas in which the material is not in compliance as specified in Subsection 403.03.05.

Do not allow the rollers at any time to stand on the material being placed immediately behind the paver. When rolling is temporarily suspended, stop the rollers as far behind the paver as practical.

Move the rollers at a slow but uniform speed with the drive roll or wheels nearest the paver. Immediately correct any displacement due to reversing the direction of a roller, or from other causes, using rakes and adding fresh mixture when required. While rolling, do not displace the line and grade of the edges of the asphalt mixture. When the Engineer allows, use a pneumatic-tired roller for final rolling on base courses.

To prevent adhesion of the material to the wheels of steel-wheeled rollers, keep the wheels moistened with water, but do not use excess water. Do not use kerosene, oil, or other harmful liquids. The Department will allow a small quantity of detergent to be mixed with the water.

Compact areas adjacent to manholes, curbs, narrow widening, and other small areas inaccessible to a roller, by mechanical tampers.

A) **Compaction Under Option A.** Develop the rolling pattern during the first sublot.

B) **Compaction Under Option B.** Provide initial or breakdown rolling consisting of one complete coverage by a 3-wheel roller or tandem roller weighing at least 10 tons and having a compressive capability on the rear wheels of at least 325 pounds per linear inch of wheel width. Ensure that 3-axle, steel-wheeled rollers weigh at least 12 tons. Ensure that 2-axle, steel-wheeled, tandem rollers weigh at least 10 tons. For initial or breakdown rolling, provide rollers that are equipped with wheels having a diameter of 40 inches or more. Perform the rolling immediately after spreading and finishing the mixture.

Provide intermediate rolling consisting of at least 3 complete coverages with a tandem roller weighing at least 10 tons. Start intermediate rolling after completing the breakdown rolling as closely as possible without causing undue displacement, cracking, or shoving of the material.

For intermediate rolling of 1 1/2-inch and 1-inch nominal size mixes, a pneumatic-tired roller may be used. Use pneumatic-tired rollers that weigh at least 12 tons and have 7 to 9 tires capable of inflation pressures up to 125 psi. Maintain an inflation pressure in all tires within ± 5 psi of the manufacturer’s recommended pressure. Arrange the tires so that the gap between the tires of the front axle is covered by the tires of the rear axle. Mount wheels to provide equal contact pressure under each wheel. Use a tire tread that is satisfactory to the Engineer. Maintain tire size and inflation pressure such that the contact pressure is at least 80 psi.

Perform final rolling of the uppermost layer or surface course with a tandem roller. Operate the roller, at all times, parallel to the centerline. When the Engineer allows, use a pneumatic-tired roller for final rolling on base courses.

Begin rolling at the sides and progress to the center on crowned surfaces. Begin rolling at the low side and progress to the high side on superelevated sections. Operate the rollers parallel to the centerline, and lap successive trips of each roller uniformly to the previous trip. During breakdown rolling, the Engineer
may allow the course to be rolled without the required lap of the wheels on successive trips. End alternate trips of the rollers on transverse lines at least 3 feet apart. Regulate starting and stopping of the rollers to avoid distorting the surface.

403.03.11 Surface Tolerances. Check the surface of each course with templates, straightedges, or stringlines. Check the surfaces of the finished courses longitudinally with a 10-foot straightedge placed parallel to the centerline over the width of the surface. Ensure the following:

1) The finished surfaces of the base and binder courses do not deviate more than 1/4 inch from the 10-foot straightedge.
2) The finished surface of the final surface course does not deviate more than 1/8 inch from the 10-foot straightedge.
3) The cross slope of all courses does not deviate more than 1/4 inch in 5 feet from the required cross slope.
4) The asphalt surface conforms to all requirements for a final surface course when the top portion of a new pavement consists of a wearing course underlain by asphalt surface.

Correct all irregularities exceeding the allowable tolerances. Correct surface course irregularities by removing and replacing the entire lift thickness or by overlaying. Do not remove the irregular areas of the surface course by surface grinders.

On resurfacing projects, when no provisions are made for constructing leveling and wedging courses, scratch courses, or milling, the Engineer will waive the specified requirements for surface tolerances.

403.03.12 Transverse Joints. When specified in the Contract, cut transverse joints in overlays of JPC pavement, base, and shoulders. Seal with self-leveling silicone rubber sealant.

403.03.13 Pavement Marking. Apply and maintain pavement marking as specified in Section 112.

403.03.14 Durable Pavement Edge. The contractor will have the option to pave roadway shoulders monolithically with mainline pavement or by separate operation. However, if the shoulder is placed monolithically, with mainline material, the Durable Pavement Edge shoe shall be used for the placement of the asphalt. For divided highways, the Durable Pavement Edge must be added to both median and outside bituminous shoulders when the paved shoulder width is 6 feet or narrower.

Construct the edge to the depth width and slope the contract specifies where existing conditions permit. Remove the sod or perform trench excavation only when necessary to obtain the specified depth and width. Do not remove solid rock. Provide enough area to construction the Durable Pavement Edge so that the Durable Pavement Edge will be placed on solid material, free of debris such as loose material, grass, weeds or mud. The edge should be compacted such that there is no loose material. Short sections of handwork will be allowed for pavement transitions and turnouts.

Durable Pavement Edge is not intended for the following:
1) Centerline pavement joint.
2) Joint between paved side road and mainline.
3) Bridge decks.
4) Adjacent to concrete barrier.
5) Adjacent to curb and gutter.
6) Edges between adjoining pavements.
7) Centerline pavement joints. Mainline and taper joint.

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8) Mainline and turning joints.

The Durable Pavement Edge shall be applied when all of the following criteria are met, unless otherwise directed by the Engineer:
1) New bituminous pavement/shoulder or bituminous overlay is being construction with at least 1-(one) inch of paving depth.
2) The posted speed limit is 40 mph or higher.
3) Pavements/shoulders that are not adjacent to curbing; and
4) Pavements/shoulders that are not adjacent to barrier wall.

The Durable Pavement Edge may be omitted in the following situations with the approval of the Engineer:
1) Areas where existing drop-offs at the edge of existing pavement exceed 5 inches.
2) Areas where the distance from the pavement to the Durable Pavement Edge catch point exceeds 9 inches or where slopes are steeper than 3:1.

403.04 MEASUREMENT.

403.04.01 Removing Type V Pavement Markers. The Department will measure the quantity by each individual unit. The Department will determine the quantity by dividing the length of each run of markers by the markers’ average spacing, plus one. The Department will not measure other marker types for removal, disposal, or filling of their grooves for payment. The Department will consider all of this work incidental to the surfacing items in the Contract.

403.04.02 Adjust Manhole. The Department will measure the quantity by each individual unit.

403.04.03 Asphalt Mixtures. The Department will measure the quantity according to Subsection 402.04. The Department will not measure rolled rumble strips or pavement wedge texturing for payment and will consider them incidental to this bid item.

403.04.04 Leveling and Wedging. For resurfacing projects, when leveling and wedging is listed as a bid item, the Department will measure the quantity in tons according to Subsection 402.04. For reconstruction and new construction, the Department will measure the quantity of leveling and wedging placed on the first base course in tons as base material. The Department will not measure leveling and wedging used to correct irregularities in subsequent courses for payment and will consider it incidental to placing the course.

403.04.05 Asphalt Scratch Course. The Department will measure the quantity according to Section 402.04.

403.04.06 Protective and Restorative Work. The Department will not measure for payment any extra materials, methods, or construction techniques, determined by the Engineer not to be a part of the specified construction, used to protect, maintain, or repair any portion of the uncompleted work during the winter months.

403.04.07 Centerline, Edgeline, and Shoulder Rumble Strips. The Department will measure the quantity of sawed rumble strips in linear feet. The Department will measure permanent striping in accordance with Section 713. The Department will measure temporary striping, when required, by Section 112, the Traffic Control Plan, and/or when directed by the Engineer. When bicycle gaps are required in the rumble pattern, the Department will include the length of the bicycle gaps in the measurement of the rumble.

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The Department will not measure the areas where rumble strips are omitted, such as at intersections, crosswalks, bridges, railroad crossings, etc. The Department will not measure temporary striping that is only used for pre-marking centerline and/or edgeline rumble strips. The Department will not measure the removal of existing pavement markings, pre-marking and layout, surface preparation, corrective work, labor, equipment, and any incidentals necessary to construct rumble strips, and will consider these items incidental to the installation of the rumble strips.

403.04.08 Asphalt Placement with MTV. The Department will not measure the MTV for payment and will consider its use incidental to the asphalt mixture.

403.04.09 Durable Pavement Edge. The Department will not consider the Durable Pavement Edge for payment and will consider its use incidental to the asphalt mixture.

403.05 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

403.05.01 Adjust Manhole. The Department will make payment for the completed and accepted quantities according to Subsection 408.05.02.

403.05.02 Asphalt Mixtures. The Department will make payment for the completed and accepted quantities according to Section 402.

403.05.03 Leveling and Wedging. The Department will make payment for the completed and accepted quantities according to the Lot Pay Adjustment Schedule for Specialty Mixtures in Section 402.

403.05.04 Asphalt Scratch Course. The Department will make payment for the completed and accepted quantities according to the Lot Pay Adjustment Schedule for Specialty Mixtures in Section 402.

403.05.05 Adjust Manhole Frame to Grade. The Department will make payment for the completed and accepted quantities according to Subsection 408.05.02.

<table>
<thead>
<tr>
<th>Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>06600</td>
<td>Remove Pavement Marker Type V</td>
<td>Each</td>
</tr>
<tr>
<td>01791</td>
<td>Adjust Manhole Frame to Grade</td>
<td>Each</td>
</tr>
<tr>
<td>02697</td>
<td>Edgeline Rumble Strips</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>20458ES403</td>
<td>Centerline Rumble Strips</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>02696</td>
<td>Shoulder Rumble Strips</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>-----</td>
<td>Asphalt Mixture, Type</td>
<td>Ton</td>
</tr>
</tbody>
</table>

The Department will consider payment as full compensation for all work required under this section.
SECTION 701 — CULVERT PIPE, ENTRANCE PIPE, STORM SEWER PIPE, AND EQUIVALENTS

701.01 DESCRIPTION. Furnish and install culvert pipe, entrance pipe, and storm sewer pipe. Use units conforming to the dimensions, fabrication, material, and strength requirements for the type (culvert, entrance, or storm sewer), diameter, cover height, and pH level the Contract specifies. This work may include removing pipe, and relaying pipe.

701.02 MATERIALS.

701.02.01 Pipe. Use reinforced concrete pipe, corrugated metal pipe, polyvinyl chloride (PVC) pipe, high density polyethylene (HDPE) pipe, or corrugated polypropylene (PP) pipe conforming to Section 810.

701.02.02 Structural Plate Pipe. Conform to Section 809 for the following:
1) Corrugated Aluminum Alloy Circular Pipe with Longitudinal Seam with Aluminum or Steel Bolts.
2) Corrugated Aluminum Alloy Circular Pipe Arch with Longitudinal Seams with Aluminum or Steel Bolts.
3) Corrugated Steel Pipe Arch with Longitudinal Seams with Steel Bolts.
4) Corrugated Steel Pipe with Longitudinal Seams with Steel Bolts.

701.02.03 Joint Materials
A) Mortar Joints. Conform to Section 801 for cement and Section 804 for mortar sand.
B) Asphalt Mastic Joint Sealing Compound. Conform to Subsection 807.03.04.
C) Rubber Gaskets. Conform to Subsection 807.03.04.
D) Butyl Rubber Sealants. Conform to Subsection 807.03.04.
F) Couplings for Thermoplastic Pipe. Conform to Section 810.
G) Cleated and Non-Cleated, Integral Welded Bell Coupler with Gaskets. Conform to Section 810.
H) Coupling Bands. Conform to Section 810.04.04

701.02.04 Bedding Materials. Use No. 8 aggregate, No. 9-M aggregate, or a fine aggregate conforming to Subsection 804.08 for bedding material. Do not use a DGA or gravel base material for bedding material.

701.02.05 Backfill Materials.
A) Granular Backfill.

1) For Reinforced Concrete Pipe. Use size No. 2, 23, 3, 357, 4, 467, 5, 57, 67, 68, 78, 8, or 9M aggregate or material conforming to AASHTO M 145 Al or A3 material with a maximum plasticity index of 10 (see table below). Limit rock fragments to a 3-inch maximum size.
2) For Corrugated Metal Pipe. Use size No. 2, 23, 3, 357, 4, 467, 5, 57, 67, 68, 78, 8, or 9M aggregate or material conforming to AASHTO M 145 Al or A3 material with a maximum plasticity index of 10 (see table below). Limit rock fragments to a size that does not exceed the corrugation width.
3) For Thermoplastic Pipe. Use size No. 5, 57, 67, 68, 78, 8, or 9M aggregate or material conforming to AASHTO M 145 Al or A3 material (see table below).
Limit rock fragments to a 1.5-inch maximum size. For corrugated pipe, limit rock fragments to a size that does not exceed the corrugation width or 1.5 inches, whichever is least.

4) For Structural Plate Pipe. Use Structure Granular Backfill conforming to Section 805.

<table>
<thead>
<tr>
<th>A1 and A3 Characteristics&lt;sup&gt;a&lt;/sup&gt;</th>
<th>A1</th>
<th>A3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sieve Analysis: Percent passing No. 10</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Percent passing No. 40</td>
<td>50 max</td>
<td>51 min</td>
</tr>
<tr>
<td>Percent passing No. 200</td>
<td>25 max</td>
<td>10 max</td>
</tr>
<tr>
<td>Plasticity index of material passing No. 40</td>
<td>6 max</td>
<td>—</td>
</tr>
</tbody>
</table>

<sup>a</sup> For a complete description see AASHTO M 145

B) Flowable Fill. Conform to Subsection 601.03.03 B).

701.02.06 Embankment. Conform to Subsection 206.

701.02.07 Geotextile Fabric Material. Use fabric with a minimum width of 36 inches conforming to Section 843, fabric for subsurface drainage and separation.

701.02.08 Asphalt Material for Coating. Conform to Section 806.

701.03 CONSTRUCTION.

701.03.01 Pipe Foundations. Take soundings for the pipe foundation design at the inlet and outlet, and along the grade line of each culvert on 20 foot intervals. Take the soundings to a depth of 1/2 inch per foot of embankment height (measured from the crown of the pipe to the maximum fill height) or 24 inches, whichever is greater.

Where rock foundations (ledge rock, gravel, hardpan or other unyielding material) are encountered or known to exist within the limits specified, prepare the foundation according to the Standard Drawings.

Where unstable (soft) foundations are encountered at the established grade line, remove the material that the Engineer determines is unstable and replace with a material conforming to Subsection 701.02.04. The Department will determine the depth of the over excavation by a soils investigation for the specific structure. Wrap the replacement material in geotextile fabric when backfilling.

701.03.02 Trench Conditions. Install all pipe in excavated trenches. Where an embankment condition exists, excavate the trench only after constructing the embankment according to Section 206 to an elevation equal to, or greater than, the minimum cover height of the pipe.

701.03.03 Pipe Bedding.

A) Reinforced Concrete Pipe. Construct bedding according to the Standard Drawings and this section.

1) Type 1 Installation. When working on a rock foundation, place bedding to a depth of 6 inches or equal to Bc/12, the pipe diameter in inches divided by 12, whichever is greater. For all other foundations, place a minimum of 4 inches of bedding. Shape the bedding to conform to the invert shape...
throughout the entire width and length of the proposed structure. Compact the bedding, but leave the center third of the pipe diameter (Bc/3) uncompacted. Place and compact additional bedding material in lifts 6 inches or less to an elevation of 0.30 the culvert diameter.

2) Type 4 Installation. When working on a rock foundation, place bedding to a depth of 6 inches or equal to Bc/12, the pipe diameter in inches divided by 12, whichever is greater. For all other foundations, place a minimum of 4 inches of bedding.

B) Corrugated Metal, Thermoplastic, and Structural Plate Pipe. Place and compact bedding to provide 4 inches of bedding below the outside invert of the pipe after shaping. Shape the bedding to conform to the invert shape throughout the entire width and length of the proposed structure. Place and compact additional bedding material in lifts 6 inches or less to an elevation of 0.30 the culvert diameter.

701.03.04 Pipe Hauling, Handling, and Installation. Furnish a copy of the manufacturer’s handling and installation procedures to the Engineer before beginning work. Ensure that pipe structures do not sustain damage during loading, unloading, placement on the bedding, compaction of the backfill, by movement of excessively heavy equipment over the fill, or by any other forces that may cause damage. Repair or replace damaged structures as the Engineer directs. Remove and replace any structure that is not constructed to true alignment or shows undue settlement after installation, or is otherwise damaged, without additional compensation.

A) Reinforced Concrete Pipe. Install the pipe beginning at the outlet end of the culvert, with the bell or groove end laid upgrade. Extend successive spigot or tongue ends fully into each adjoining bell or groove. When the pipe includes markings to designate the top and bottom, lay the pipe so the mark is less than 5 degrees from the vertical plane throughout the longitudinal axis of the pipe. Cover all lift holes after installing the pipe by the following:

1) Coat an area 8 inches or wider than the holes on the outside of the pipe with an asphalt coating material;
2) Place a piece of sheet metal 4 inches or wider than the holes and shaped to conform to the outer pipe diameter over each hole; and
3) Apply an additional coating of asphalt material over the entire area of previously applied metal. When desired, use precast lift hole plugs instead of the asphalt and sheet metal.

B) Corrugated Metal Pipe.

1) Asphalt Coating. Apply according to AASHTO M-190.
2) Transporting and Handling. Transport and handle coated pipe using equipment and methods that prevent damage to the coating. When storing pipe on the project, keep it supported above the ground using wooden timbers or pallets. Repair minor damage to exterior and interior coating with asphalt coating material according to AASHTO M 243 or as the Engineer directs before installing the pipe. Repair significant damage and coating deficiencies at the pipe fabrication site as the Engineer directs. Significant damages include spalled coating on the interior of the pipe, uncoated areas due to manufacturing error, and insufficient coating thickness on the interior or exterior of the pipe.

At all times during construction, use every precaution to prevent damage to the protective coating. Do not allow any metal tools or heavy objects to unnecessarily come in contact with the finished coating. Repair any damage
to the protective coating from any cause during installation and before final acceptance as the Engineer directs.

3) Installing. Assemble according to the manufacturer’s instructions. Install in the bed starting at the downstream end. When using corrugated metal pipe with paving material, install the pipe with paving material along the bottom centerline or flowline. Construct struts and vertical elongation of corrugated metal pipe as specified in the Plans. Remove the struts only after completing the embankment over the structure.

C) Thermoplastic Pipe. Handle thermoplastic pipe according to the manufacturer’s recommendations. Provide a manufacturer’s technical representative to assist in the installation of the pipe when the Engineer requests.

D) Structural Plate Pipe. Install the pipe according to the manufacturer's specifications and installation procedures. When the Engineer requests, provide a manufacturer's technical representative to assist in pipe construction. Do not place backfill until all plates in a ring are complete and all bolts in the structure are tightened.

701.03.05 Joints. Provide soil tight joints. Wrap all pipe joints with a geotextile fabric. The Department will require remediation for pipe sections that do not meet the requirements of the specifications in accordance with the joint separation table in Section 701.05.

A) Reinforced Concrete Pipe. Use only one type of jointing materials system throughout each single structure. Construct joints for reinforced concrete pipe with one of the following options.

1) Mortar Joints. Use a mixture containing one part cement and 2 parts sand. Use enough water, not exceeding 5 1/2 gallons per sack of cement, to produce a stiff, workable mortar. Thoroughly clean and wet the ends of the pipe before joining them. Place the mortar in the lower half of the bell or groove section that has been laid, and apply mortar to the upper half of the spigot or tongue of the pipe that is being laid. Insert the spigot or tongue in the bell or groove of the pipe already laid, pull the joint tight, and ensure that the inner surfaces of the abutting sections are flush and even. After laying a section of the pipe and before laying the succeeding section, thoroughly plaster the lower portion of the bell or groove of the preceding section on the inside with mortar to such a depth to ensure a smooth joint between the abutting sections. Fill the remainder of the joint flush with mortar. Finish the inside of the joint and wipe smooth around the full circumference. After the initial set, protect the mortar from air and sun with a burlap cover, or permanently backfill.

2) Asphalt Mastic Joints. Immediately before installation, apply the asphalt mastic joint sealing compound to the ends of the pipe section in the same manner as mortar joints except precoat all joining surfaces. Precoat with the manufacturer’s recommended primer or an approved emulsified asphalt. Complete installation as per manufacturer’s recommendations.

3) Rubber Gaskets. In addition to the requirements of Subsection 701.02, use a pipe section conforming to AASHTO M 315. Use the gasket manufacturer’s recommended cement and lubricant. Snugly fit the rubber gasket in the beveled surface of the tongue and groove ends of the sections to form a flexible seal under all conditions of service. Complete installation as per manufacturer’s recommendations.

4) Butyl Rubber Sealants. In addition to the requirements of Subsection 701.02, use pipe with a joint design conforming to AASHTO M 198.
When a joint is located 12 feet or less from the outlet on a 3:1 or steeper slope, provide a tied joint according to the Standard Drawings.

B) **Corrugated Metal Pipe.** Construct joints using a band with annular corrugations and a bolt, bar and strap connection. Use a minimum nominal band width of 12 inches for all pipe diameters 54 inches and smaller. Use a two-piece band with a minimum nominal width of 20 inches for all pipe diameters greater than 54 inches. Manufacture the band from the same base materials as the pipe. The pipe bands may be up to two gauges lighter than the pipe it is joining, with a minimum gauge thickness of 16. The Department may allow dimple band connections for field cut pipe. Install the connecting bands according to the manufacturer’s written recommendations.

C) **Thermoplastic Pipe.** Use an integral bell and spigot type with elastomeric seal joints. When a joint is located 12 feet or less from the outlet on a 3:1 or steeper slope, use a cleated integral bell locking joint or a standard coupling aided by two #14 by 2-inch galvanized sheet metal screws inserted through the coupling into the corrugation crest 2 inches apart circumferentially at the bell and spigot coupler’s quarter points.

701.03.06 Initial Backfill. Locate a suitable backfill source for each project. For backfill containing soils, have an AASHTO accredited lab classify the material, run a standard proctor, and certify that the material conforms to the specified granular material. Keep the material certification on file and available to the Engineer upon request. Place the backfill material in a trench condition as the Contract specifies. Use 6-inch lifts and ensure the backfill is compacted to not less than 95 percent of the maximum density as determined according to KM 64-511.

When the top of the pipe is within one pipe diameter of the subgrade, backfill with flowable fill to an elevation of one foot above the pipe from the outside edge of shoulder or back of curb to outside edge of shoulder or back of curb as applicable. When installing under existing pavement, backfill with flowable fill to the subgrade elevation. When granular backfill is used, the surrounding conditions are not similar in gradation, and the pipe is located within the area bounded by the centerline and a distance 25 feet outside the edge of shoulder or back of curb, as applicable, wrap the bedding and granular backfill in geotextile fabric. The Department will not require geotextile fabric for entrance pipe. When geotextile fabric is required according to this section or the Engineer’s direction, install according to Section 214.

When the Contract specifies, perform quality control testing to verify compaction according to KM 64-512. The Department may verify the density results at any time of the duration of the project.

A) **Reinforced Concrete Pipe.**

1) Type 1 Installation. When the top of the pipe is not within one pipe diameter of the subgrade, backfill with granular backfill, additional bedding material, or flowable fill from the top of the bedding to an elevation equal to 1/2 the pipe diameter, and either granular backfill, flowable fill, or embankment material in 6-inch lifts to an elevation of one-foot above the pipe.

2) Type 4 Installation. Backfill from the top of the bedding with granular backfill, flowable fill, or embankment material in 6-inch lifts to an elevation of one-foot above the pipe. The Department will allow Type 4 installations for median drains and pipe installations located 35 feet or more from the edge of shoulder, back of curb, or any paved surface.

B) **Corrugated Metal, Thermoplastic, and Structural Plate Pipe.** When the top of the pipe is not within one pipe diameter of the subgrade, backfill with either
granular backfill or flowable fill to an elevation at least one foot above the top of the pipe.

701.03.07 Construction Loads. Do not allow construction equipment or traffic to travel over the top of the structure material until the fill is compacted to a minimum depth of 48 inches over the top of the structure. The Engineer may require temporary cover where the final grade is less than 48 inches. The Engineer may raise but will not lower the minimum cover based on the pipe manufacturer’s recommendations.

701.03.08 Inspection of Pipe. The engineer will visually inspect all pipe.

The Department will require camera/video inspection on projects that have more than 250 linear feet of storm sewer and/or culvert pipe and on routes with an ADT of greater than 1,000 vehicles. Conduct camera/video inspections in accordance with KM 64-114 on 100 percent of the pipes that are located under the road and 50 percent of the pipes that are not under the road. Storm sewer runs and outfall pipes not under the roadway take precedence over rural entrance pipes. Camera/video and laser deflection inspection must be completed by a prequalified contractor that has been certified according to KM 64-114. Contractors performing this item of work must be prequalified with the Department in the work type J51 (Video Pipe Inspection and Cleaning). Testing performed by a company failing to meet these requirements will result in non-payment of the pipeline video inspection and non-certification of the pipe tested.

Deflection testing using the laser deflection method shall be limited to pipe up to 48 inches in diameter. Deflection testing using physical measurements is limited to pipes where adequate access is available and to pipes 48 inches and larger in diameter. Mandrel or physical measuring will be used for pipes larger than 48 inches in diameter. Deflection testing is not required for concrete pipe. The pipe to be tested will be selected in complete runs (junction-junction or headwall-headwall). Provide a pipe inspection summarization report in accordance with KM 64-114.

Unless the Engineer directs otherwise, schedule the inspections no sooner than 30 days after completing the installation and completion of earthwork to within 1 foot of the finished subgrade. When final surfacing conflicts with the 30-day minimum, conduct the inspections prior to placement of the final surface. The contractor must ensure that all pipes are free, clear of any debris, and as dry as possible so that a complete inspection can be performed.

Notify the Engineer a minimum of 24 hours in advance of inspection and notify the engineer immediately if distresses or locations of improper installation are discovered. When camera testing shows distresses or improper installation in the installed pipe, the Engineer may require additional sections to be tested. Provide the video and report to the Engineer when testing is complete in accordance with KM 64-114.

Pipes that exhibit distress or signs of improper installation may necessitate repair or removal as the Engineer directs. These signs include, but are not limited to: deflection, cracking, joint separation, sagging or other interior damage. If flexible pipes exceed the deflection and installation thresholds indicated in the Flexible Pipe Deduction Table in Section 701.05, provide the Department with an evaluation of each location conducted by a Professional Engineer addressing the severity of the deflection, structural integrity, environmental conditions, design service life, and an evaluation of the factor of safety using Section 12, “Buried Structures and Tunnel Liners,” of the AASHTO LRFD Bridge Design Specifications. Based on the evaluation, the Department may allow the pipe to remain in place at a reduced unit price as shown in the Flexible Pipe Deduction Table in Section 701.05. Provide 10 business days for the Department to review the evaluation. When the pipe shows deflection of 10 percent or greater, remove and replace the pipe. When laser deflection results are called into question, the Department may require direct measurements and/or mandrel testing. If rigid pipes exceed the cracking and installation thresholds
indicated in the Rigid Pipe Remediation Table in Section 701.05, provide the Department with an evaluation of each location conducted by a Professional Engineer addressing the severity of the cracking, structural integrity, environmental conditions, design service life, and an evaluation of the factor of safety using Section 12, “Buried Structures and Tunnel Liners,” of the AASHTO LRFD Bridge Design Specifications. Based on the evaluation, the Department may allow the pipe to remain in place if the cracking is remediated according to an approved remediation plan submitted in writing to the Engineer by the Contractor as shown in the Rigid Pipe Remediation Table in Section 701.05. Provide 10 business days for the Department to review the evaluation. When the pipe shows cracking of .1 inches or greater, remediate or replace the pipe as directed by the Engineer. When the camera/video cracking results are called into question, the Department may require direct measurements.

The Cabinet may elect to conduct Quality Assurance verifications of any pipe inspections. These verification inspections will be performed by the Kentucky Transportation Center. The Division of Construction shall be contacted by the Engineer when verification testing is needed.

701.03.09  **End Structures.** Construct anchors, concrete headwalls, and other end structures specified in the Plans according to Section 610, Section 710, and the Standard Drawings.

701.03.10  **Extensions to Existing Culvert Pipe and Entrance Pipe.** Construct pipe extensions for culvert pipe, entrance pipe, and equivalent pipe arches according to this section and the Contract. Remove the necessary portions of the existing structure to provide a neat junction with the extension. Do not damage the portion that is to remain in service. Remove all silt and debris that has accumulated in the remaining portion of the structure for a distance back equal to twice the pipe diameter or as the Engineer directs.

701.03.11  **Removing Pipe, Removing and Relaying Pipe.** Remove all pipe designated for removal in the Contract. Safely store all reusable pipe. Restore or replace in kind, any pipe designated for reuse that incurs damage or destruction through faulty handling. Relay all removed pipe the Contract designates to be relayed. Where pipe is not to be relayed, fill the area to the existing ground line according to subsection 207.03.

The Department will retain ownership of reusable pipe that is not to be re-laid in areas on the project. Unless the Engineer directs otherwise, deliver all reusable pipe not relayed on the project to the designated maintenance facility in the county where the project is located. Take ownership of and remove from the project all pipe that is not designated for reuse or salvage.

701.04  **MEASUREMENT.**

701.04.01  **Culvert Pipe.** The Department will measure the quantity in linear feet from end-to-end along the bottom or pipe invert of the installed structure. The Department will include bends, elbows, crosses, tees, reducers, laterals, wyes, and other shapes in the pipe lengths measured. The Department will not measure joint materials and bedding materials for payment and will consider them incidental to this item of work. The Department will not measure replacement of damaged pipe for payment and will consider it incidental to this item of work. The Department will not measure for payment the providing of a manufacturer’s technical representative to assist in the construction of the pipe and will consider it incidental to this item of work.

701.04.02  **Culvert Pipe Equivalent.** Culvert Pipe Equivalent includes elliptical culvert pipe and culvert pipe arches. The Department will measure the quantity in linear feet according to Subsection 701.04.01.

701.04.03  **Entrance Pipe.** The Department will measure the quantity in linear feet according to Subsection 701.04.01.
**701.04.04 Entrance Pipe Equivalent.** Entrance Pipe Equivalent includes elliptical entrance pipe and pipe arches. The Department will measure the quantity in linear feet according to Subsection 701.04.01.

**701.04.05 Storm Sewer Pipe.** The Department will measure the quantity in linear feet according to Subsection 701.04.01.

**701.04.06 Storm Sewer Pipe Equivalent.** Storm Sewer Pipe Equivalent includes elliptical storm sewer pipe and storm sewer pipe arches. The Department will measure the quantity in linear feet according to Subsection 701.04.01.

**701.04.07 Pipeline Video Inspection.** The Department will measure the quantity in linear feet along the pipe invert of the structure inspected. When inspection above the quantity specified in the Contract is performed due to a disagreement or suspicion of additional distresses and the Department is found in error, the Department will measure the quantity as Extra Work according to Subsection 104.03. However, if additional distresses or non-conformance is found, the Department will not measure the additional inspection for payment.

**701.04.08 Geotextile Fabric.** The Department will measure the quantity in square yards.

**701.04.09 Flowable Fill.** The Department will not measure the quantity for payment and will consider it incidental to the pipe bid item. When the Engineer determines that it is necessary and to the Department’s benefit to excavate beyond the typical excavation limits shown in the Standard Drawings, the Department will measure the quantity of flowable fill required for backfill outside the typical excavation limits as Extra Work.

**701.04.10 Embankment-In-Place.** The Department will measure the quantity where there is unstable foundation material in excess of 3 times the width of outside diameter of the pipe or the width of the outside diameter plus 4 feet, whichever is less, in cubic yards according to Subsection 206.04.

**701.04.11 Roadway Excavation.** The Department will measure the quantity for removal of unstable foundation material in excess of 3 times the width of outside diameter of the pipe or the width of the outside diameter plus 4 feet, whichever is less, in cubic yards according to Subsection 204.04.

When using Special Design, the Department will measure the quantity by the length of the trench the Contract specifies or as the Engineer directs. The Department will not measure backfilling the trench with bedding material for payment and will consider it incidental to this item of work.

The Department will not measure any other excavation and will consider it incidental to Culvert Pipe, Entrance Pipe, and Storm Sewer Pipe.

**701.04.12 Pipe Undercut.** The Department will measure the quantity for removal of unstable foundation material or bedded rock in cubic yards up to a maximum of 3 times the width of the outside diameter of the pipe or the width of the outside diameter of the pipe plus 3 feet, whichever is less, and to a depth of up to 2 feet. The Department will measure the quantity at a depth of greater than 2 feet as Extra Work according to Subsection 109.04.

**701.04.13 Structure Excavation Unclassified.** When the Engineer changes the pipe’s plan length or location and causes the required excavation to increase more than 10 percent above the original average excavation per yard, the Department will measure the quantity in cubic yards according to Subsection 603.04. When the Department requires a substantial increase in excavation, submit verification to the Engineer before starting excavation. The Engineer will then measure the quantity of excess volume. The Department will not
consider the excavation of unstable material from the foundation when determining the percentage of material increase.

**701.04.14 Removing Pipe.** The Department will measure the quantity in linear feet of net laying length per section. The Department will measure bends, elbows, crosses, tees, reducers, laterals, wyes, and other shapes in linear feet along the central axis of the unit. The Department will not measure furnishing and placing any borrow material necessary to refill the area to the original ground line for payment and will consider it incidental to this item of work. When the Department retains ownership, the delivery of the pipe to the designated maintenance facility will not be measured for payment and is considered incidental to this item of work.

Unless design quantities are included in the Contract, the Department will not measure pipe within the typical section for payment and will consider it incidental to roadway excavation.

**701.04.15 Removing and Relaying Pipe.** The Department will measure the quantity according to Subsection 701.04.01. The Department will not measure sections that are damaged or broken for payment and will consider them incidental to this item of work. The Department will not measure furnishing and placing any borrow material necessary to refill the area to the original ground line for payment and will consider them incidental to this item of work. When the Department retains ownership, the delivery of the pipe to the designated maintenance facility will not be measured for payment and is considered incidental to this item of work.

**701.04.16 Deduction for Pipe Deflection.** The Department will determine the quantity of deflected pipe using the pipe inspection summarization report in accordance with KM 64-114. The Department will make deductions for pipe sections that do not meet the requirements of the specifications in accordance with the tables in Section 701.05. The section length is determined by the length of the pipe between joints where the failure occurred.

**701.05 PAYMENT.** The Department will make payment for the completed and accepted quantities under the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>00460-00482</td>
<td>Culvert Pipe, Size</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>00490-00512</td>
<td>Culvert Pipe Equivalent, Size</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>00439-00445</td>
<td>Entrance Pipe, Size</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>00450-00454</td>
<td>Entrance Pipe Equivalent, Size</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>00520-00542</td>
<td>Storm Sewer Pipe, Size</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>00551-00572</td>
<td>Storm Sewer Pipe Equivalent, Size</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>02600</td>
<td>Fabric-Geotextile Type IV for Pipe</td>
<td>Square Yard$^{(2)}$</td>
</tr>
<tr>
<td>02230</td>
<td>Embankment-In-Place</td>
<td>See Subsection 206.05</td>
</tr>
<tr>
<td>02200</td>
<td>Roadway Excavation</td>
<td>See Subsection 204.05</td>
</tr>
<tr>
<td>02219</td>
<td>Pipe Undercut</td>
<td>Cubic Yard$^{(2)}$</td>
</tr>
<tr>
<td>02203</td>
<td>Structure Excavation, Unclassified</td>
<td>See Subsection 603.05</td>
</tr>
<tr>
<td>01310</td>
<td>Remove Pipe</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>01312</td>
<td>Remove and Relay Pipe</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>23131ER701</td>
<td>Pipeline Video Inspection</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>10065NS</td>
<td>Pipe Deflection Deduction</td>
<td>Dollars</td>
</tr>
</tbody>
</table>

$^{(2)}$ The unit price is $2.00 per square yard for Fabric-Geotextile Type IV for Pipe.
### RIGID PIPE REMEDIATION TABLE

<table>
<thead>
<tr>
<th>Crack Width (inches)</th>
<th>Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 0.1</td>
<td>100% of the Unit Bid Price</td>
</tr>
<tr>
<td>Greater than 0.1</td>
<td>Remediate or Replace (^{(1)})</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Provide the Department in writing a method for repairing the observed cracking. Do not begin work until the method has been approved.

### FLEXIBLE PIPE DEDUCTION TABLE\(^{(1)}\)

<table>
<thead>
<tr>
<th>Amount of Deflection (%)</th>
<th>Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 to 7.5</td>
<td>100% of the Unit Bid Price</td>
</tr>
<tr>
<td>7.6 to 9.9</td>
<td>50% of the Unit Bid Price (^{(2)})</td>
</tr>
<tr>
<td>10 or greater</td>
<td>Remove and Replace (^{(3)})</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Assume 0.5 inch thick paved.  
\(^{(2)}\) Provide Structural Analysis for HDPE and metal pipe. Based on the structural analysis, pipe may be allowed to remain in place at the reduced unit price.  
\(^{(3)}\) The Department may allow the pipe to remain in place with no pay to the Contractor in instances where it is in the best interest to the public and where the structural analysis demonstrates that the pipe should function adequately.

### JOINT SEPARATION REMEDIATION TABLE FOR PIPE

<table>
<thead>
<tr>
<th>Joint Separation Width (inches)</th>
<th>Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 0.5</td>
<td>100% of the Unit Bid Price</td>
</tr>
<tr>
<td>Greater than 0.5</td>
<td>Remediate or Replace (^{(1)})</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Provide the Department in writing a method for repairing the observed joint separation. Do not begin work until the method has been approved.

The Department will consider payment as full compensation for all work required under this section.
SECTION 713 — PERMANENT PAVEMENT STRIPING

713.01 DESCRIPTION. Furnish and apply waterborne striping paint to provide lane lines, edgelines, and gore markings as specified in the Contract.

713.02 MATERIALS AND EQUIPMENT.

713.02.01 Paint. Conform to Section 842 and Section 846.

713.02.02 Drop On Glass Beads. Use beads that will ensure the pavement marking material will meet retroreflectivity requirements. The Department will evaluate the beads as part of the marking system through retroreflectivity readings.

713.02.03 Application Equipment. Use a self-propelled striper capable of heating the paint to provide uniform flow. Ensure that the striper has a guide boom or optical pointer to attain smooth and straight lines. Ensure that the equipment maintains proper application pressures for paint and beads at all times. Provide equipment capable of applying a single line or parallel lines of the specified width and in any combination of a skip line and a solid line in one pass.

Provide equipment with a paint cutoff device to provide clean, square marking ends of the paint lines.

Equip the paint pots or tanks with an agitator that will keep the paint thoroughly mixed.

Provide equipment with bead dispensers, minimum of one for each paint spray gun, placed such that the beads are applied to the paint almost instantly as the paint is being placed on the roadway surface. Design and align the bead dispensers so that beads are applied under air pressure uniformly to the entire surface of the paint lines. Equip the bead dispensers with cutoff controls synchronized with the cutoff controls for the paint spray guns.

713.03 CONSTRUCTION. Provide yellow centerline markings, which are defined as those separating traffic moving in opposite directions. Provide white lane line markings, which are defined as those separating traffic moving in the same direction. Ensure that these markings are skip lines and solid lines as required by Part 3 of the MUTCD. Ensure that edge lines are solid lines, and determine the color from Part 3 of the MUTCD.

On interstates and parkways, and other routes approved by the State Highway Engineer, install pavement striping that is 6 inches in width. On other routes, install pavement striping that is 4 inches in width. When centerline markings consist of a double yellow line (either a one-direction or two-direction no passing zone marking), the spacing between the two lines shall be the same as the width of one line marking. Ensure that all lines have clean edges with a width tolerance of plus 1/2 inch. The Engineer may waive the tolerances when deviations are caused by undulation in the pavement surface.

Construct skip lines with a stripe-to-gap ratio of a 10-foot paint stripe to a 30-foot gap. Ensure that the length of the stripe is between 10 and 10 1/2 feet. Ensure that the stripe-gap cycle is between 40 and 40 1/2 feet. Offset longitudinal lines at least 2 inches from longitudinal pavement construction joints. Offset longitudinal lane lines on multi-lane highways 2 inches towards the median.

On resurfacing, pavement restoration, and pavement rehabilitation projects, reinstall the recorded existing pavement markings as modified by the Engineer. On new construction, place the markings as the Contract specifies or as the Engineer directs.

Do not apply pavement marking materials to the reflector of a plowable pavement marker. Interrupt the application of the pavement marking line at each pavement marker where marking material would otherwise be applied to the marker’s prismatic reflector. Provide a maximum gap in the marked line of 18 inches at each marker. Remove pavement marking material applied to a prismatic reflector surface, or replace the reflector that same workday. If material must be removed from the reflector, restore the reflector’s brightness to its prior condition.
713.03.01 Records. On resurfacing, pavement restoration, and pavement rehabilitation projects, prepare and keep a written record of the locations of existing pavement markings, and furnish a copy to the Engineer at least 15 days before removing or obliterating the markings.

713.03.02 Pavement Surface Preparation. Clean grease, oil, mud, dust, dirt, grass, loose gravel, or other deleterious material from the surface where pavement markings are to be applied. On new concrete pavement surfaces, remove the curing compound from the pavement surface before applying the pavement marking material. Use only Engineer approved cleaning methods.

713.03.03 Paint Application. Apply permanent striping to new pavements when the final surface course has been placed and subsequent paving operations will not adversely impact the permanent striping. When subsequent paving operations will adversely impact the permanent striping, apply temporary striping according to Section 112.03.11 and apply the permanent striping as soon as conditions permit. Apply striping before sunset on new pavement that is to be driven over by the public.

Comply with the following application rates.

<table>
<thead>
<tr>
<th>Material</th>
<th>Paint Application Rate</th>
<th>Glass Bead Application Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 inch waterborne paint</td>
<td>Min. of 16.5 gallons/mile</td>
<td>Min. of 6 pounds/gallon</td>
</tr>
<tr>
<td>4 inch durable waterborne paint</td>
<td>Min. of 24 gal/mile</td>
<td>Min. of 6 pounds/gallon</td>
</tr>
<tr>
<td>6 in waterborne paint</td>
<td>Min. of 24.8 gallons/mile</td>
<td>Min. of 6 pounds/gallon</td>
</tr>
<tr>
<td>6 in durable waterborne paint</td>
<td>Min. of 36 gallons/mile</td>
<td>Min. of 6 pounds/gallon</td>
</tr>
</tbody>
</table>

713.03.04 Marking Removal. Remove all markings made in error or not conforming to the traffic operation in use. Do not paint with asphalt binder or other material to obliterate the markings. Remove pavement striping, temporary or permanent, from asphalt or concrete pavement using ultra-high pressure water. Marking removal totaling 1,000 linear feet or less may be removed by an abrasive method to the satisfaction of the Engineer. Vacuum all marking material and removal debris concurrently with the marking removal operation.

Do not damage the pavement in any way and protect all joint seals. If damage is observed, stop the removal process until the operation can provide an acceptable marking removal. Repair any damage to the pavement as a result of the marking removal. Removal of marking will not be measured for payment. Waterblast to remove temporary or permanent striping completely as the Engineer directs.

713.03.05 Proving Period. A proving period will follow the application of the permanent pavement striping. During this period, the Engineer will make such observations as are necessary to determine if the markings are acceptable. The proving period begins when the facility is opened to traffic.

A) Requirements. The minimum retroreflectivity requirements at the end of the proving period, as measured with a Department approved 30 meter geometry handheld or mobile retroreflectometer, are as follows:

- White: 300 mcd/lux/square meter
- Yellow: 225 mcd/lux/square meter

The Department will take these measurements between 30 and 60 days after the start of the proving period, with acceptance based on KM 202 or KM 203 as
applicable. If the Department determines that the markings are acceptable, the installation of the markings will be considered complete.

B) Failure. For any one-mile section and each gore area during the proving period, the Department will consider the section defective when the retroreflectivity falls below the minimum required. The Department will consider each edge line, centerline, lane line and gore area marking separately.

C) Corrective Work. If a line is found to be defective, repair or remove and replace the line. Perform pavement marking replacement according to the requirements specified in this subsection for the initial application. The corrective work will be subject to a proving period as listed above.

713.03.06 Acceptance of Non-Specification Markings. If weather conditions allow, perform corrective work to bring striping retroreflectivity into conformance. If corrective work has been performed and the work meets all requirements except for minimum retroreflectivity, the Department may accept the work according to Subsection 105.04. When the Engineer determines that the markings may be left in place, the Department will accept them at a reduction in the Contract unit bid price according to the Acceptance Pay Schedule. Additionally, the Engineer may remove the striping crew for the remainder of the project according to Subsection 108.06 Part A).

The Engineer may also apply this section when corrective work cannot be performed due to weather.

<table>
<thead>
<tr>
<th>ACCEPTANCE PAY SCHEDULE FOR PERMANENT STRIPING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay Value</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>1.00</td>
</tr>
<tr>
<td>0.50</td>
</tr>
<tr>
<td>0.25</td>
</tr>
<tr>
<td>0.00</td>
</tr>
<tr>
<td>Remove and Replace</td>
</tr>
</tbody>
</table>

713.04 MEASUREMENT.

713.04.01 Pavement Striping. The Department will measure the quantity in linear feet. When a bid item is not included for gore markings, the Department will measure the quantity by converting the actual length and width of line installed to an equivalent length of the normal width line on that section of roadway. The Department will measure temporary striping according to 112.04.07 when subsequent paving operations will adversely impact the permanent striping.

713.05 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Pay Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>06514-06517</td>
<td>Pavement Striping - Permanent Paint, Width</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>24189ER</td>
<td>Durable Waterborne Marking – 6 IN W</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>24190ER</td>
<td>Durable Waterborne Marking – 6 IN Y</td>
<td>Linear Foot</td>
</tr>
<tr>
<td>24191ER</td>
<td>Durable Waterborne Marking – 12 IN W</td>
<td>Linear Foot</td>
</tr>
</tbody>
</table>

The Department will consider payment as full compensation for all work required under this section.