

# **ROCKDALE COUNTY, GEORGIA**

## **INVITATION TO BID #20-10**

### **2017 SPLOST #3A ROADWAY REHABILITATION**

**16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County**

For



**Rockdale County Department of Transportation**

**February 2020**

**ROCKDALE COUNTY, GEORGIA**

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**Rockdale County Department of Transportation**

**CONSTRUCTION DOCUMENTS**

**February 2020**

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# **ROCKDALE COUNTY, GEORGIA**

## **INVITATION TO BID #20-10**

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## **BIDDING DOCUMENTS**

**For**

**Rockdale County Department of Transportation (RDOT)**

**CONTRACT # C-2020-\_\_\_\_\_**

## INVITATION TO BID #20-10

ROCKDALE COUNTY, GEORGIA

The Rockdale County Board of Commissioners is soliciting sealed bids to furnish all labor, material, and equipment for **16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County.**

Bids will be accepted until the bid opening date and time on **Thursday, April 16, 2020 at 2:00 p.m., local time** in the Department of Finance, 958 Milstead Avenue, Conyers, Georgia 30012. The bid package and specifications are available on the Rockdale County website, [www.rockdalecountyga.gov](http://www.rockdalecountyga.gov).

The 2017 SPLOST rehabilitation contracts goals include several objectives from the Rockdale County Board of Commission, their selected Road Committee members and RDOT engineering staff that will enhance the safety, ride, longevity and drainage of our network of roadways in the County. One of the prime objectives of this contract is to reestablish the correct cross slopes and drainage patterns by utilizing variable depth milling (VDM) open graded interlayer (OGI) and leveling where directed in this resurfacing contract. Special attention should therefore be given to the entirety of the scope of the enclosed ITB during the bidding stages of this project. Further note that all variable depth milling to be performed in advance of any and all patching operations in areas where both are required. The contractors bidding this ITB are encouraged to visit the individual sites prior to submittal of their bid.

*A Mandatory Pre-Bid Conference* will be held on **Monday, March 23, 2020, at 9:00 a.m.** at The Rockdale County Department of Transportation, 2570 Old Covington Highway SW, Conyers, Ga. 30012. Submit questions and/or requests for clarifications regarding this bid no later than **Thursday, April 2, 2020 by 2:00 p.m.** Written responses from the County to the questions it receives will be issued in an addendum. Any questions and/or misunderstandings that may arise from this BID must be submitted in writing and forwarded to the Department of Finance at the above address or by email. It shall be the Bidders responsibility to seek clarification as early as possible prior to the due date and time. A 5% Bid Bond will be required. A Payment and Performance Bond in the amount of 100% will be required from the awarded vendor.

## **NOTICE: LIQUIDATED DAMAGES**

### **Per GDOT Definition 101.35 Liquidated Damages:**

**The fixed charges assessed against the successful Bidder or the Contractor for failure to execute the Contract or to complete the Contract within the Contract Time.**

**As such please note the following two types of Liquidated Damages for this ITB and subsequent contract:**

- A. Since time is an essential element of the Contract and delay in the prosecution of the Work may inconvenience the public, obstruct traffic or interfere with business, charges shall be assessed as liquidated damages not as a penalty, to the Contractor in the amount of \$500.00 per available day for failure to pave (typically OGI) any reclaimed (FDR) road within a maximum of 7 days of its accepted cure date. The accepted cure date shall be the date when the geotechnical engineering consultant has confirmed an average compressive strength of 300 PSI or as directed by the Engineer, at which point, the road will be ready to pave. Rain days shall not be counted as part of the 7 - day window for paving.
- B. For each day after the allotted time frame in the contract that the work is not competed in full with the punch list finished to the satisfaction of the RDOT Director and the County (i.e. 28 weeks) a penalty of \$391.00 per calendar day will be deducted from the payment to the Contractor per GDOT table on page 54 of the 2013 edition of the Standard Specifications. Please refer to Section 108 In the 2013 GDOT Specifications for further details.

## NOTICE TO CONTRACTORS

Sealed bids will be received by the Rockdale County Board of Commissioners until **Thursday, April 16, 2020 at 2:00 PM**, at the Rockdale County Department of Finance, located at 958 Milstead Avenue, Conyers, Georgia 30012. The **Bids** will be publicly opened and read aloud. No submitted **Bid** may be withdrawn after the scheduled closing time or receipt of **Bids** for a period of ninety (90) days.

The **Work** to be done consists of the following:

### **16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County**

The **Bidder** is required to submit only the **Bid Proposal** with each part signed accordingly, which includes:

1. Completed **Bid Proposal Form Page**
2. **Bid Bond or Certified Check**
3. Certification by Contractor Regarding Non-Segregated Facilities
4. Non-collusion Affidavit of Prime **Bidder**
5. Non-collusion Affidavit of Subcontractor
6. Affidavit Verifying Status for County Public Benefit Application
7. Certifications
8. Contractor Affidavit under O.C.G.A. §13-10-91(b) (1)
9. Subcontractor Affidavit under O.C.G.A. §13-10-91(b) (3) S
10. Subcontractor Affidavit under O.C.G.A. §13-10-91(b) (4)
11. Subcontractor Notification List
12. Completed **Bid Schedule of Items**

**Four (4) hard copies and one (1) USB Flash Drive with a copy of the Bid in Adobe PDF format will be required for review purposes.**

All **Work** performed for this project will be in accordance with the Georgia Department of Transportation Standard Specifications for Construction of Transportation Systems, 2013 Edition, and any modifications identified in the **Bid** documents.

The **Bidder** shall be responsible for performing with his own organization at least fifty percent (50%) of the **Work** in this contract. The **Bidder** shall not subcontract, transfer, assign, or otherwise dispose of the contract or any portion thereof, without the written consent of the County.

The successful **Bidder** shall secure and pay for necessary approvals, permits, assessments, and changes required for the construction and installation of this project as required by local, state, and federal regulations.

**Bidders** must comply with Title VI of the Civil Rights Act of 1964, the Anti-Kickback Act, the Contract Work Hour Standard Act, and the National Occupational Safety and Health Act of 1970.

**Bidders** must certify that they do not and will not maintain or provide for their employees any facilities that are segregated on a basis of race, color, creed, or national origin.

The Rockdale County Board of Commissioners reserves the right to reject all **Bids** and to waive formalities. Any claims for cost incurred by any **Bidder** in preparation of any part of or total package for this project will not be considered for reimbursement by Rockdale County.

The Construction Documents consist of the following, including all addenda issued therewith and forms referenced therein:

**Bidding Documents, Sample Contract Agreement, General Conditions, Special Provisions, Appendices.**

As part of the **Construction Documents**, Appendices are provided for the **Bidder's** use, which consist of an individual roadway bid schedules indicating estimated quantities for each road segment and typical details. These are for bidding purposes only and do not have to be filled out and submitted. Only the two-page Bid Schedule on pages B20-22 are required for submittal with this ITB package. The **Bidder** is responsible for locating the various project sites based on the termini provided for each roadway in Appendix A. The individual itemized quantity sheets in Appendix A are not, nor are intended to be, an exact measurement of each quantity for each roadway of the **Work**, rather, they are merely included as information to assist the **Bidder** in understanding the probable estimated quantities used to determine the pay quantities for the **Bid Schedule of Items (B20-22)**. **The County may decrease or increase the quantities of work based on the unit prices in the awarded contract and the allocated SPLOST budget for funding this project.**

All questions concerning this invitation and all questions arising subsequent to award are to be addressed to the Procurement Officer at the following address:

**Rockdale County Finance Department Purchasing Division**

**Attn: Meagan Porch, Buyer**

**958 Milstead Avenue**

**Conyers, GA 30012**

**Phone: (770) 278-7557, Fax (770) 278-8910**

**E-mail: [meagan.porch@rockdalecountyga.gov](mailto:meagan.porch@rockdalecountyga.gov)**

**TORT IMMUNITY:**

No officer, employee, or agent of the County acting within the scope of his/her employment or function shall be held personally liable in tort or named as a defendant in any action for injury or damage suffered because of any act, event, or failure to act.

**SILENCE OF SPECIFICATIONS**

The apparent silence of these specifications and any supplemental specifications as to any details, or the omission from it of a detailed description concerning any point, shall be regarded as meaning that only the best commercial practices are to prevail and that only materials of first quality and correct type, size and design are to be used. All workmanship is to be first quality. All interpretations of this specification shall be made upon the basis of this statement, with County interpretation to prevail.

**OPTION TO AUDIT**

Successful bidder will be required to maintain complete records during the life of the contract and for a period of one year after completion of the contract. Such records are to be made available to the County if officially requested, to be audited by a designated County auditing staff. In such audits reveal overcharges and/or undercharges, such will be adjusted and compensation made by either party to correct charges.

**BID PROPOSAL**, page 1 of 3

Proposal of \_\_\_\_\_ (hereinafter called "**Bidder**"), a contractor organized and existing under the laws of the State of Georgia, \*an individual, a corporation, a partnership doing business as: \_\_\_\_\_.

TO: Rockdale County  
(Hereinafter called "**County**")

Gentlemen:

The **Bidder** in compliance with your Notice to Contractors and all Bidding Documents for the following work:

**16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County.**

Having examined the plans and specifications with related documents and the site of the proposed **Work**, and being familiar with all of the conditions surrounding the construction of the proposed projects, including the availability of materials and supplies to construct the projects in accordance with the contract documents, within the time set forth herein, and at the prices stated below, proposes to enter into a Contract with Rockdale County to provide the necessary machinery, tools, apparatus, all materials and labor, and other means of construction necessary to complete the **Work**. The undersigned proposes to furnish and construct the items listed in the attached Schedule of Items for the unit prices stated.

**Bidder** agrees that the cost of any **Work** performed, materials furnished, services provided or expenses incurred, which are not specifically delineated in the Contract Documents, but which are incidental to the scope, intent, and completion of the Contract, shall be deemed to have been included in the prices **Bid** for the various items scheduled.

**Bidder** further proposes and agrees hereby to promptly commence the **Work** with adequate force and equipment within ten (10) calendar days from receipt of Notice to Proceed, or as may be specified by Special Provision, and to complete the **Work in 28 weeks from Notice to Proceed**, or as may be specified by Special Provisions.

\*Strike Out Inapplicable Terms.

**BID PROPOSAL**, page 2 of 3

**Bidder** assumes the responsibility to download all addenda published on the Rockdale County website prior to submittal of his **Bid**, and accepts that failure to acknowledge receipt of each and every addendum individually is grounds for finding the **Bid** non-responsive. **Bidder** hereby acknowledges receipt of the following addenda:

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The undersigned further agrees that in case of failure on his part to execute said contract and bond, or provide satisfactory proof of carriage of the insurance required, within ten (10) calendar days after the award thereof, the **Bid Bond** or certified check accompanying his **Bid** and the money payable thereon shall be forfeited to the **County** as liquidated damages; otherwise, the check or Bond accompanying this proposal shall be returned to the **Bidder**.

The **Bidder** declares that he understands that the quantities shown on the proposal are subject to adjustment by either increase or decrease, and that should the quantities of any of the items of **Work** be increased, the undersigned proposes to do the additional **Work** at the unit prices stated herein; and should the quantities be decreased, he also understands that payment will be made on actual quantities at the unit price **Bid** and will make no claim for anticipated profits for any decrease in the quantities, and that actual completed, final quantities will be determined upon completion of **Work** and acceptance by the **County**, at which time adjustment will be made to the Contract amount by direct increase or decrease.

Attached hereto is a **Bid** bond or certified check on the (Bank) \_\_\_\_\_ in the amount of \_\_\_\_\_, (Five percent (5%) of \_\_\_\_\_

Total Amount **Bid**).

The full name and residence of persons or parties interested in the foregoing **Bid** as contractors are named as follows:

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**BID PROPOSAL**, page 3 of 3

Rockdale County, Georgia

Signed, sealed, and dated this \_\_\_\_\_ day of \_\_\_\_\_, 2020.

**Bidder:** \_\_\_\_\_ (SEAL)  
(Company Name)

**By:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Mailing Address:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**BID BOND**, page 1 of 2

Five Percent (5%) of **Bid**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

\_\_\_\_\_, as **Contractor**, and

\_\_\_\_\_, as **Surety**, are

hereby held and firmly bound unto ROCKDALE COUNTY, GEORGIA, as **County**, in the penal sum of \_\_\_\_\_ Dollars

(\$ \_\_\_\_\_) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Signed this \_\_\_\_\_ day of \_\_\_\_\_, 2020.

The condition of the above obligation is such that whereas the **Contractor** has submitted to ROCKDALE COUNTY, GEORGIA a certain **Bid** attached hereto and hereby made a part hereof to enter into a contract in writing for the following work:

**Furnish all labor, materials, and equipment for 16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County.**

NOW, THEREFORE,

- (a) If said **Bid** shall be rejected or in the alternate,
- (b) If said **Bid** shall be accepted and the **Contractor** shall execute and deliver a Contract in the Form of Contract attached hereto (properly complete in accordance with said **Bid**) and shall furnish a bond for his faithful performance of said Contract and for the payment of all persons performing labor or furnishing material in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said **Bid**, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the **Surety** for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The **Surety**, for value received, hereby stipulates and agrees that the obligations of said **Surety** and its bond shall be in no way impaired or affected by any extension of the time within which the **County** may accept such **Bids**, and said **Surety** does hereby waive notice of any such extension.

**BID BOND**, page 2 of 2

IN WITNESS WHEREOF, the **Contractor** and the **Surety** have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

\_\_\_\_\_  
**Contractor** (SEAL)

By: \_\_\_\_\_

\_\_\_\_\_  
**Surety** (SEAL)

By: \_\_\_\_\_  
Georgia Representative

**CERTIFICATION BY CONTRACTOR**  
**Regarding**  
**NON-SEGREGATED FACILITIES**

The **Bidder** certifies that he does not, and will not, provide and maintain segregated facilities for his employees at his establishments and, further that he does not, and will not, permit his employees to perform their services at those locations, under his control, where segregated facilities are provided and maintained. Segregated facilities include, but are not necessarily limited to, drinking fountains, transportation, parking, entertainment, recreation, and housing facilities; waiting, rest, wash, dressing, and locker rooms, and time clock, **Work**, storage, restaurant, and other eating areas which are set apart in fact, or by explicit directive, habit, local custom, or otherwise, on the basis of color, creed, national origin, and race. The **Bidder** agrees that, except where he has obtained identical certifications from proposed subcontractors for specific time periods, he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000.00 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

The **Bidder** agrees that a breach of this certification is a violation of the Equal Opportunity clause in this Contract. The penalty for making false statements is prescribed in 18 U.S.C. 1001.

\_\_\_\_\_  
**Bidder (Print)**

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
Name of Signer (Print)

\_\_\_\_\_  
Title of Signer

\_\_\_\_\_  
Date

# NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of \_\_\_\_\_ )

County of \_\_\_\_\_ )

\_\_\_\_\_, being first duly sworn,  
deposes and says that:

1. He is \_\_\_\_\_ (Owner, Partner, Officer, Representative, or Agent) of the **Bidder** that has submitted the attached **Bid**;
2. He is fully informed respecting the preparation and contents of the attached **Bid** and of all pertinent circumstances respecting such **Bid**;
3. Such **Bid** is genuine and is not a collusive or sham **Bid**;
4. Neither the said **Bidder** nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly, with any other **Bidder**, firm or person to submit a collusive or sham **Bid** in connection with the Contract for which the attached **Bid** has been submitted to or refrain from bidding in connection with such Contract, or has in any collusion or communication or conference with any other **Bidder**, firm or person to fix the price or prices in the attached **Bid** or of any other **Bidder**, or to fix any overhead, profit or cost element of the **Bid** price or the **Bid** price of any other **Bidder**, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against Rockdale County or any person interested in the proposed Contract; and,
5. The price or prices quoted in the attached **Bid** are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the **Bidder** or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) \_\_\_\_\_

Name \_\_\_\_\_ (Print)

Title \_\_\_\_\_ (Print)

Subscribed and Sworn to before me

this \_\_\_\_\_ day of \_\_\_\_\_ 2020.

\_\_\_\_\_  
(SEAL)

\_\_\_\_\_  
Title

# NON-COLLUSION AFFIDAVIT OF SUB-CONTRACTOR

State of \_\_\_\_\_ )

County of \_\_\_\_\_ )

\_\_\_\_\_, being first duly sworn,  
deposes and says that:

1. He is \_\_\_\_\_ (Owner, Partner, Officer, Representative, or Agent) of the **Bidder** that has submitted the attached **Bid**;
2. He is fully informed respecting the preparation and contents of the attached **Bid** and of all pertinent circumstances respecting such **Bid**;
3. Such **Bid** is genuine and is not a collusive or sham **Bid**;
4. Neither the said **Bidder** nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly, with any other **Bidder**, firm or person to submit a collusive or sham **Bid** in connection with the Contract for which the attached **Bid** has been submitted to or refrain from bidding in connection with such Contract, or has in any collusion or communication or conference with any other **Bidder**, firm or person to fix the price or prices in the attached **Bid** or of any other **Bidder**, or to fix any overhead, profit or cost element of the **Bid** price or the **Bid** price of any other **Bidder**, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against Rockdale County or any person interested in the proposed Contract; and,
5. The price or prices quoted in the attached **Bid** are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the **Bidder** or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) \_\_\_\_\_

Name \_\_\_\_\_ (Print)

Title \_\_\_\_\_ (Print)

Subscribed and Sworn to before me

this \_\_\_\_\_ day of \_\_\_\_\_ 2020.

(SEAL)

\_\_\_\_\_  
Title

**Affidavit Verifying Status  
for County Public Benefit Application**

By executing this affidavit under oath, as an applicant for the award of a contract with Rockdale, County Georgia, I \_\_\_\_\_. [Name of natural person applying on behalf of individual, business, corporation, partnership, or other private entity] am stating the following as required by O.C.G.A. Section 50-36-1:

1) \_\_\_\_\_ I am a United States citizen

**OR**

2) \_\_\_\_\_ I am a legal permanent resident 18 years of age or older or I am an otherwise qualified alien or non-immigrant under the Federal Immigration and Nationality Act 18 years of age or older and lawfully present in the United States.\*

In making the above representation under oath, I understand that any person who knowingly and willfully makes a false, fictitious, or fraudulent statement or representation in an affidavit shall be guilty of a violation of Code Section 16-10-20 of the Official Code of Georgia.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Applicant:

\_\_\_\_\_  
Printed Name:

\* \_\_\_\_\_  
Alien Registration number for non-citizens

SUBSCRIBED AND SWORN  
BEFORE ME ON THIS THE

\_\_\_\_\_ DAY OF \_\_\_\_\_, 2020.

\_\_\_\_\_  
Notary Public  
My commission Expires:

**\*Note:** O.C.G.A. § 50-36-1(e)(2) requires that aliens under the federal Immigration and Nationality Act, Title 8 U.S.C., as amended, provide their registration number. Because legal permanent residents are included in the federal definition of "alien", legal permanent residents must also provide their alien registration number. Qualified aliens that do not have an alien registration number may supply another identifying number below.

\_\_\_\_\_

# CERTIFICATIONS

Page 1 of 2

Failure to complete appropriate certification requirements identified below or submission of a false certification shall render the **Bid** non-responsive.

## EXAMINATION OF PLANS AND SPECIFICATIONS

I certify that I have carefully examined the Construction Documents for this project and the Georgia Department of Transportation Standard Specifications, 2013 Edition, and the Supplemental Specifications and Special Provisions included in and made a part of this Proposal, and have also personally examined the sites of the **Work**. On the basis of the said Specifications and Documents, I proposed to furnish all necessary labor, machinery, tools, apparatus and other means of construction, and do all the **Work** and furnish all the materials in the manner specified.

I understand that any quantities mentioned or provided are approximate only and are subject to either increase or decrease and hereby propose to perform any increased or decreased quantities of **Work** or extra **Work** on the basis provided for in the specifications.

I also hereby agree that Rockdale County would suffer damages in a sum equal to at least the amount of the enclosed Proposal Guaranty, in the event my Proposal should be accepted and a Contract tendered me thereunder and I should refuse to execute same and furnish bond as herein required, in consideration of which I hereby agree that, in the event of such failure on my part to execute said Contract and furnish bond within ten (10) days after the date of the letter transmitting the Contract to me, the amount of said Proposal Guaranty shall be and is hereby, forfeited to Rockdale County as liquidated damages as the result of such failure on my part.

I further propose to execute the Contract agreement described in the Specifications as soon as the **Work** is awarded to me, and to begin and complete the **Work** within the time limit provided. I also propose to furnish a Contract Bond, approved by the Rockdale County Board of Commissioners as required by the laws of the State of Georgia. This bond shall not only service to guarantee the excellence of both workmanship and materials until the **Work** is finally accepted, as well as to fully comply with all the laws of the State of Georgia.

# CERTIFICATIONS

page 2 of 2

## CONFLICT OF INTEREST

By signing and submitting this Contract I hereby certify that employees of this company or employees of any company supplying material or subcontracting to do **Work** on this Contract will not engage in business ventures with employees of Rockdale County or Consulting Engineers nor shall they provide gifts, gratuities, favors, entertainment, loans or other items of value to employees of this Department.

Also, by signing and submitting this Contract, I hereby certify that I will notify Rockdale County of through its Director of Transportation of any business ventures entered into between employees of this company or employees of any company supplying material or subcontracting to do **Work** on this Contract with a family member of Rockdale County employees.

\_\_\_\_\_  
**Contractor**

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
Name of Signer

\_\_\_\_\_  
Title of Signer

\_\_\_\_\_  
Date

## Contractor Affidavit under O.C.G.A. §13-10-91(b) (1)

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. §13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services on behalf of (name of public employer) has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. §13-10-91. Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. §13-10-91(b). Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

\_\_\_\_\_  
Federal Work Authorization User Identification Number

\_\_\_\_\_  
Date of Authorization

\_\_\_\_\_  
Name of Contractor

\_\_\_\_\_  
Name of Project

\_\_\_\_\_  
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on \_\_\_\_\_, \_\_\_, 2020 in \_\_\_\_\_ (city), \_\_\_\_\_ (state).

\_\_\_\_\_  
Signature of Authorized Officer or Agent

\_\_\_\_\_  
Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME

ON THIS THE \_\_\_\_\_ DAY OF \_\_\_\_\_, 2020.

\_\_\_\_\_  
NOTARY PUBLIC

My Commission Expires:  
  
\_\_\_\_\_

### Subcontractor Affidavit under O.C.G.A. § 13-10-91(b) (3)

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with (name of contractor) on behalf of (name of public employer) has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the subcontractor with the information required by O.C.G.A. § 13-10-91(b). Additionally, the undersigned subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor to the contractor within five business days of receipt. If the undersigned subcontractor receives notice that a sub-subcontractor has received an affidavit from any other contracted sub-subcontractor, the undersigned subcontractor must forward, within five business days of receipt, a copy of the notice to the contractor. Subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

\_\_\_\_\_  
Federal Work Authorization User Identification Number

\_\_\_\_\_  
Date of Authorization

\_\_\_\_\_  
Name of Subcontractor

\_\_\_\_\_  
Name of Project

\_\_\_\_\_  
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on \_\_\_\_\_, \_\_, 2020 in \_\_\_\_\_ (city), \_\_\_\_\_ (state).

\_\_\_\_\_  
Signature of Authorized Officer or Agent

\_\_\_\_\_  
Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME  
ON THIS THE \_\_\_\_\_ DAY OF \_\_\_\_\_, 2020.

\_\_\_\_\_  
NOTARY PUBLIC  
My Commission Expires: \_\_\_\_\_

## Sub-subcontractor Affidavit under O.C.G.A. §13-10-91(b) (4)

By executing this affidavit, the undersigned sub-subcontractor verifies its compliance with O.C.G.A. §13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract for (name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract) and (name of contractor) on behalf of (name of public employer) has registered with, is authorized to use and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. §13-10-91. Furthermore, the undersigned sub-subcontractor will continue to use the federal work authorization program throughout the contract period and the undersigned sub-subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the sub-subcontractor with the information required by O.C.G.A. §13-10-91(b). The undersigned sub-subcontractor shall submit, at the time of such contract, this affidavit to (name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract). Additionally, the undersigned sub-subcontractor will forward notice of the receipt of any affidavit from a sub-subcontractor to (name of subcontractor or sub-subcontractor with whom such sub-subcontractor has privity of contract). Sub-subcontractors hereby attest that its federal work authorization user identification number and date of authorization are as follows:

\_\_\_\_\_  
Federal Work Authorization User Identification Number

\_\_\_\_\_  
Date of Authorization

\_\_\_\_\_  
Name of Sub-Subcontractor

\_\_\_\_\_  
Name of Project

\_\_\_\_\_  
Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.

Executed on \_\_\_\_\_, \_\_\_\_, 2020 in \_\_\_\_\_ (city), \_\_\_\_\_ (state).

\_\_\_\_\_  
Signature of Authorized Officer or Agent

\_\_\_\_\_  
Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME  
ON THIS THE \_\_\_\_\_ DAY OF \_\_\_\_\_, 2020.

\_\_\_\_\_  
NOTARY PUBLIC

My Commission Expires: \_\_\_\_\_

## SUBCONTRACTOR NOTIFICATION LIST

Required information on Subcontractors doing work in Rockdale County:

Please list any Subcontractors, their address, Business License number, scope of work and start date, and percent of work assigned for each Subcontractor who may be doing work in the County.

General Contractor/Developer: \_\_\_\_\_

License Number: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

License Number: \_\_\_\_\_ Start Date: \_\_\_\_\_

Scope of Work: \_\_\_\_\_ Percent of Work: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

License Number: \_\_\_\_\_ Start Date: \_\_\_\_\_

Scope of Work: \_\_\_\_\_ Percent of Work: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

License Number: \_\_\_\_\_ Start Date: \_\_\_\_\_

Scope of Work: \_\_\_\_\_ Percent of Work: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

License Number: \_\_\_\_\_ Start Date: \_\_\_\_\_

Scope of Work: \_\_\_\_\_ Percent of Work: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

License Number: \_\_\_\_\_ Start Date: \_\_\_\_\_

Scope of Work: \_\_\_\_\_ Percent of Work: \_\_\_\_\_

cc: Rockdale County Department of Transportation  
Rockdale County Department of Finance

## 2017 SPLOST #3A Roadway Rehabilitation

**Contract Scope: Furnish all labor, materials and equipment necessary for 16.3 miles of roadway rehabilitation. All surplus material gets delivered to RDOT at 2570 Old Covington Hwy SW, Conyers, GA**

**Vendor:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

### **BID SCHEDULE OF ITEMS (rounded to zero on each quantity except grading)**

Line No.	Pay Item No.	Item	Approx QTY	Unit	Unit Price	Amount
1	150-1000	Traffic Control, Incl. Temporary Striping	1	LS		
2	205-0081	Excavation, Unstable Matl & Backfill	300	CY		
3	210-0200	Grading, Adjust Shoulder to Grade (2' min. width incl. cutting down high shoulders, grassing in kind)	5.94	LM		
4	301-5000	Type I or II Portland Cement	1764	TN		
5	301-6000	10" Cement Treated Base Course	64136	SY		
6	310-1101	GR AGG Base CRS INCL MATL	300	TN		
7	402-1801	3" Recycled Asph Conc Patching, Incl Milling, Tack, Bitum Matl & H Lime	2358	TN		
8	402-1802	4" Recycled Asph Conc Patching, Incl Milling, Tack, Bitum Matl & H Lime	545	TN		
9	402-1812	Recycled Asph Leveling Incl Bitum Matl & H Lime (OGI may be used for leveling)	850	TN		
10	402-3103	Recycled Asph 9.5 mm Superpave Type 2, GP or Blend 1, Incl Bitum Matl & H Lime	4535	TN		
11	402-3130	Recycled Asph. 12.5 mm Superpave, GP 1 or 2 incl. Bituminous Mat'l and H Lime	4526	TN		
12	402-3190	19.0 MM SP (contingency item)	1000	TN		
13	402-3121	25.0 MM SP (contingency item)	1000	TN		
14	413-1000	Bitum Tack Coat	12059	GA		
15	415-5000	Open Graded Crack Relief Interlayer, GP 2 Only, Incl. Bitum Matl & H Lime	5427	TN		
16	428-0001	Continuous Only Double Microsurfacing Type II	38,529	SY		
17	432-0206	Mill Asph Conc Pvmnt, 1 1/2 In Depth (contingency item)	3000	SY		
18	432-5010	Mill Asph Conc Pvmnt, Variable Depth	10043	SY		

19	610-0355	Remove Conc Curb & Gutter (rollover curb)	2382	LF		
20	N/A	Install Conc Roll Curb Special Design - Match Existing Conditions In Kind	2382	LF		
21	611-3020	Reconstruct San Sew Manhole (contingency item)	1	EA		
22	611-3030	Reconstruct Storm Sew Manhole (contingency item)	1	EA		
23	611-8140	Adjust Manhole to Grade	53	EA		
24	611-8140	Adjust Watervlve Box to Grade	37	EA		
25	647-6090	Loop Detectors 6' x 40' (contingency item)	4	EA		
26	653-0120	Thermoplastic Solid Traffic Arrow Type 2	18	EA		
27	653-0130	Thermoplastic Solid Traffic Arrow Type 3 (contingency item)	1	EA		
28	653-0220	Thermoplastic Pavement Marking Word, TYPE 2 (STOP) (contingency item)	1	EA		
29	653-0230	Thermoplastic Pavement Marking Word, TP3A (SCHOOL) (contingency item)	1	EA		
30	653-0235	Thermoplastic Pavement Marking Word, TYPE 3Z (XING) (contingency item)	1	EA		
31	653-0240	Thermoplastic Pavement Marking Word, TYPE 4 (AHEAD) (contingency item)	1	EA		
32	653-0280	Thermo Word Type 8 (contingency item)	1	EA		
33	653-8025	Wet Weather Thermoplastic Solid Traffic Stripe 5" White (see appendix for specifications)	84029	LF		
34	653-8030	Wet Weather Thermoplastic Solid Traffic Stripe 5" Yellow	72094	LF		
35	653-1704	Wet Weather Thermoplastic Solid Traffic Stripe 24" White	374	LF		
36	653-1804	Wet Weather Thermoplastsic Solid Traffic Stripe 8"	888	LF		
37	653-3501	Wet Weather Thermoplastic Skip Traffic Stripe, 5" White	100	GLF		
38	653-3502	Wet Weather Thermoplastic Skip Traffic Stripe, 5" Yellow	9035	GLF		
39	653-6004	Wet Weather Thermoplastic Traffic Striping White (Gore)	550	SY		

40	653-6006	Wet Weather Thermoplastic Traffic Striping Yellow (Gore)	878	SY		
41	654-1003	Raised Pavement Markers, Type 1,2 or 3	2234	EA		
42	N/A	HA5 HD Mineral Bond (see appendix for specifications)	68700	SY		
43	N/A	R & R In Kind Driveway Entrances as Directed	50	SY		
44	N/A	R&R SW Inlet Cover (contingency)	1	EA		
	N/A	R&R DW Inlet Cover (contingency)	1	EA		
	N/A	FDR Coring	2	EA		
	N/A	R&R Concrete DWY Aprons 6"	5395	SF		
	N/A	Speed Tables (ITE up 6 ft. across 10 ft. down 6 ft.)	4	EA		
47	N/A	Thermo Shark Teeth for Speed Table	16	EA		
48	N/A	R&R SW 4"	1448	SF		
49	N/A	Sodding for Curb and SW Repairs	6239	SY		
					TOTAL	

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Signature/Firm

# **ROCKDALE COUNTY, GEORGIA**

## **INVITATION TO BID # 20-10**

### **2017 SPLOST #3A ROADWAY REHABILITATION**

**16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County**

## **CONTRACT AGREEMENT**

**For**

**Rockdale County Department of Transportation (RDOT)**

**CONTRACT # C-2020 - \_\_\_\_\_**

## CONTRACT AGREEMENT

**THIS AGREEMENT** made by and between ROCKDALE COUNTY, GEORGIA, hereinafter called "**County**", and \_\_\_\_\_ a contractor doing business as a corporation of the City of \_\_\_\_\_, County of \_\_\_\_\_, and State of \_\_\_\_\_, hereinafter called "**Contractor**".

**WITNESSETH:** that for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the **County**, the **Contractor** hereby agrees to commence and complete the construction described as follows:

### **16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County**

hereinafter called the "Project", for the sum of **\$XXX,XXX.XX (XXX, XX, and XX Cents)** and all extra work in connection therewith, under the terms as stated in the General Conditions, Special Provisions, Appendices and Detailed Specifications of the Contract, and at **Contractor's** own cost and expense necessary to furnish all materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services to complete the said project in accordance with the conditions and prices stated in the proposal, the General Conditions, Special Provisions, Appendices, and Detailed Specifications of the Contract, the plans, which include all explanatory matter thereof, as prepared by Rockdale County, the specifications and contract documents as enumerated in Section 105.04 of the General Conditions, hereinafter called the "**Work**", all of which are made a part hereof and collectively constitute the Contract.

The **Contractor** shall promptly commence the Work with adequate force and equipment within ten (10) calendar days from receipt of Notice to Proceed, or as may be specified by Special Provision, and to complete the Work by **28 Weeks from Notice to Proceed** or as may be specified by Special Provision.

The **County** agrees to pay the **Contractor** in current funds for the performance of the Contract subject to additions and deductions as provided in the General Conditions of the Contract, and to make payments on account thereof as provided in Section 109 of the Specifications, as modified in the General Conditions and Special Provisions.

**CONTRACT**  
**page 2 of 2**

**IN WITNESS WHEREOF**, the parties to those presents have executed this Contract in two (2) counterparts, each of which shall be deemed an original.

Executed this \_\_\_ day of \_\_\_\_\_, 202\_\_.

**ROCKDALE COUNTY, GEORGIA**

ATTEST: \_\_\_\_\_ By: \_\_\_\_\_ (Seal)  
Ex-Officio Clerk Oz Nesbitt, Sr.  
Chairman, Board of Commissioners

**CONTRACTOR**

ATTEST: \_\_\_\_\_ By: \_\_\_\_\_ (Seal)  
Secretary or Assistant  
\_\_\_\_\_  
(Print)  
President or Vice President

Approved as to Form:

\_\_\_\_\_  
County Attorney

**100% PERFORMANCE BOND**  
**page 1 of 2**

**KNOW ALL MEN BY THESE PRESENTS:** that, \_\_\_\_\_, as Principal, hereinafter called **Contractor**, and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, hereinafter called **Surety**, are held and firmly bound unto ROCKDALE COUNTY, GEORGIA, as obligee, hereinafter called **County**, in the amount of **\$XXX,XXX.XX (XXX, XXX, XXX and XX Cents)** for the payment whereof **Contractor** and **Surety** bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, **Contractor** has by written agreement dated \_\_\_\_\_, 202\_\_, entered into a contract with the **County** to:

**Furnish all labor, materials, and equipment for 16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Interlayer, Leveling, Resurfacing & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County.**

in accordance with drawings and specifications prepared by Rockdale County, which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

**NOW, THEREFORE**, the condition of this obligation is such that, if **Contractor** shall promptly and faithfully perform said Contract, then this obligation shall be null and void, otherwise it will remain in full force and effect.

The **Surety** hereby waives notice of any alteration or extension of time made by the **County**.

Whenever **Contractor** shall be, and declared by **County** to be, in default under the Contract, the **County** having performed **County's** obligation thereunder, the **Surety** may promptly remedy the default, or shall promptly:

1. Complete the Contract in accordance with its terms and conditions; or,
2. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by **Surety** of the lowest bidder, or, if the **County** elects, upon determination by the **County** and **Surety** jointly of the lowest responsible bidder, arrange for a Contract between such Bidder and the **County**, and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contract of Completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which the **Surety** may be liable hereunder, the amount set forth in the first paragraph hereof. The term "Balance of the Contract Price", as used in this paragraph shall mean the total amount payable by **County** to **Contractor** under the Contract and any amendments hereto, less the amount properly paid by **County** to **Contractor**.

**100% PERFORMANCE BOND**  
**page 2 of 2**

No action can be instituted on this bond after one year from the completion of the Contract and the acceptance by the **County** of the work thereunder.

Signed and sealed this \_\_\_ day of \_\_\_\_\_, 202\_\_.

in the presence of:

**Contractor**

\_\_\_\_\_ By: \_\_\_\_\_ (SEAL)  
Witness

**Surety**

\_\_\_\_\_ By: \_\_\_\_\_ (SEAL)  
Witness

**100% LABOR AND MATERIAL PAYMENT BOND**  
**page 1 of 2**

**KNOW ALL MEN BY THESE PRESENTS:** that, \_\_\_\_\_, as Principal, hereinafter called **Contractor**, and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, hereinafter called **Surety**, are held and firmly bound unto ROCKDALE COUNTY, GEORGIA, as obligee, hereinafter called **County**, in the amount of **\$XXX,XXX.XX (XXX, XXX, XXX, XXX, and XX cents)** for the payment whereof **Contractor** and **Surety** bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor as by written agreement dated \_\_\_\_\_, 202\_\_, entered into a Contract with County to:

**16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County**

in accordance with drawings and specifications prepared by Rockdale County, 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 Contractor shall promptly make payment to all claimants as is herein below defined, for all labor and materials used or reasonably required for use in the performance of the Contract, this obligation shall be null and void; otherwise, it shall remain in full force and effect subject, however, to the following conditions:

1. A claimant is defined as one having a direct contract with the Contractor or with a Subcontractor of the Contractor for labor, material, or both, used or reasonably required for use in the performance of the Contract; labor and material being construed to include that part of water, gas, power, light, heating oil, gasoline, telephone service, rental of equipment, or repair of equipment directly applicable to the Contract.
2. The above-named Contractor and Surety hereby jointly and severally agree with the County that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The County shall not be liable for the payment of any costs or expenses of any such suit.
3. No suit or action shall be commenced hereunder by any claimant:
  - A. Unless claimant, other than one having a direct contract with the Contractor, shall have given written notice to any two of the following: the Contractor, the County, or the Surety above-

**100% LABOR AND MATERIAL PAYMENT BOND**  
**page 2 of 2**

- named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Contractor, the County, or the Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State in which the aforesaid project is located, save that such service need not be made by a public officer.
- B. After one year from the completion of the Contract and the acceptance by County of the Work thereunder; it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof, such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.
- C. Other than in a state court of competent jurisdiction in and for the County or other political subdivision of the State in which the Project, or any part thereof, is situated, or in the United States District Court for the district in which the Project, or any part thereof, is situated and not elsewhere.
4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety for mechanics' liens which may be filed on record against improvement, whether or not claim for the amount of such lien be presented under and against this bond.

Signed and sealed this \_\_\_\_ day of \_\_\_\_\_, 202\_\_.

\_\_\_\_\_  
**Contractor**

Witness

By: \_\_\_\_\_ (Seal)

**Surety**

Witness

By: \_\_\_\_\_ (Seal)

Georgia Representative

This bond is issued simultaneously with Performance Bond in favor of the County.

**SUBCONTRACTOR NOTIFICATION LIST**

Required information on Subcontractors doing work in Rockdale County:

Please list any Subcontractors, the address, Business License number, scope of work and start date, and percent of work assigned for each Subcontractor who may be doing work in the County.

General Contractor/Developer: \_\_\_\_\_

License Number: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

License Number: \_\_\_\_\_ Start Date: \_\_\_\_\_

Scope of Work: \_\_\_\_\_ Percent of Work: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

License Number: \_\_\_\_\_ Start Date: \_\_\_\_\_

Scope of Work: \_\_\_\_\_ Percent of Work: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

License Number: \_\_\_\_\_ Start Date: \_\_\_\_\_

Scope of Work: \_\_\_\_\_ Percent of Work: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

License Number: \_\_\_\_\_ Start Date: \_\_\_\_\_

Scope of Work: \_\_\_\_\_ Percent of Work: \_\_\_\_\_

Subcontractor: \_\_\_\_\_

License Number: \_\_\_\_\_ Start Date: \_\_\_\_\_

Scope of Work: \_\_\_\_\_ Percent of Work: \_\_\_\_\_

cc: Rockdale County Department of Transportation  
Rockdale County Department of Finance

**NON-COLLUSION AFFIDAVIT OF SUBCONTRACTOR**

State of \_\_\_\_\_ )

County of \_\_\_\_\_ )

\_\_\_\_\_, being first duly sworn, deposes, and says that:

1. He is \_\_\_\_\_ (Owner, Partner, Officer, Representative, or Agent) of \_\_\_\_\_, hereinafter referred to as the "Subcontractor";
2. He is fully informed respecting the preparation and contents of the Subcontractor's Proposal submitted by the Subcontractor to \_\_\_\_\_, the Contractor, for certain work in connection with the \_\_\_\_\_ Contract pertaining to the Project in Rockdale County, Georgia;
3. Such Subcontractor's Proposal is genuine and is not a collusive or sham Proposal;
4. Neither the Subcontractor nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Proposal in connection with such Contract or to refrain from submitting a Proposal in connection with such Contract or has in any manner, directly or indirectly, sought by unlawful agreement or connivance with any other Bidder, firm, or person to fix the price or prices in said Subcontractor's Proposal, or to secure through collusion, conspiracy, connivance, or unlawful agreement any advantage against Rockdale County or any person interested in the proposed Contract; and,
5. The price or prices quoted in the Subcontractor's Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) \_\_\_\_\_

Name \_\_\_\_\_ (Print)

Title \_\_\_\_\_

Subscribed and Sworn to before me

this \_\_\_\_ day of \_\_\_\_\_, 202\_\_.

\_\_\_\_\_ (SEAL)

\_\_\_\_\_  
Title

**FINAL AFFIDAVIT**

TO: ROCKDALE COUNTY, GEORGIA

I, \_\_\_\_\_, hereby certify that all suppliers of materials, equipment and service, Subcontractors, mechanics, and laborers employed by \_\_\_\_\_ or any of his Subcontractors in connection with the construction of

**16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County**

in ROCKDALE COUNTY have been paid and satisfied in full as of \_\_\_\_\_, 202\_\_, and that there are no outstanding obligations or claims of any kind for the payment of which Rockdale County on the above named project might be liable, or subject to, in any lawful proceeding at law or in equity.

Signature \_\_\_\_\_

Title \_\_\_\_\_

Personally appeared before me this \_\_\_\_\_ day of \_\_\_\_\_, 202\_\_.

\_\_\_\_\_, who under oath deposes and says that he is of the firm of \_\_\_\_\_ that he has read the above statement and that to the best of his knowledge and belief same is an exact true statement.

Notary Public \_\_\_\_\_

My Commission Expires \_\_\_\_\_

Date \_\_\_\_\_

**2017 SPLOST Contract #3A**

**CONTRACT SCHEDULE OF ITEMS**

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**16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County**

**Contract Scope:**

**Vendor:**

\_\_\_\_\_

**Signature:**

\_\_\_\_\_

**A COPY OF THE BID SCHEDULE WILL BE DUPLICATED AS PART OF  
THE CONTRACT.**

**END OF SECTION**

# **ROCKDALE COUNTY, GEORGIA**

## **INVITATION TO BID #20-10**

### **2017 SPLOST #3A ROADWAY REHABILITATION**

**16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County**

### **GENERAL CONDITIONS**

**For**

**Rockdale County Department of Transportation (RDOT)**

**CONTRACT # C-2020-\_\_\_\_\_**

## GENERAL CONDITIONS

Unless otherwise directed, all work performed under this contract shall be in accordance with the Georgia Department of Transportation Standard Specifications, Construction of Transportation Systems, 2013 Edition, and any Supplemental Specifications modifying them, except as noted below and in the Special Provisions.

Modification of Standard Specifications

### SECTION 101 - DEFINITION AND TERMS

Section 101.10 BOARD

*Delete as written and substitute the following:*

"BOARD OF COMMISSIONERS OF ROCKDALE COUNTY, GEORGIA";

Section 101.13 CHIEF ENGINEER

*Delete as written and substitute the following:*

"THE ROCKDALE COUNTY DIRECTOR OF TRANSPORTATION"

Section 101.14 COMMISSIONER

*Delete as written and substitute the following:*

"THE CHAIRMAN OF THE BOARD OF COMMISSIONERS OF ROCKDALE COUNTY"

Section 101.16 CONTRACT

*Delete the second paragraph and substitute the following:*

"The Contract Documents shall be composed of the Advertisement for Bid; Notice to **Contractors**; Form of Bid Proposal; General Conditions; Special Provisions; Detail Specifications, as identified in Section 105.04; Form of Contract; Form of Bond(s); Addenda; the drawings, including all changes incorporated herein before their execution; and also any Change Orders and Supplemental Agreements that are required to complete the construction of The Work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument. No oral agreement or orders are to be considered as valid or as a part of the Contract."

Section 101.22 DEPARTMENT

*Delete as written and substitute the following:*

"THE ROCKDALE COUNTY DEPARTMENT OF TRANSPORTATION"

Section 101.24 ENGINEER

*Delete as written and substitute the following:*

"THE ROCKDALE COUNTY DIRECTOR OF TRANSPORTATION, ACTING DIRECTLY OR THROUGH HIS DULY AUTHORIZED REPRESENTATIVES."

Section 101.62 STATE HIGHWAY ENGINEER

*Delete as written and substitute the following:*

"THE ROCKDALE COUNTY DIRECTOR OF TRANSPORTATION, ACTING DIRECTLY OR THROUGH HIS DULY AUTHORIZED REPRESENTATIVES."

Section 101.74 SUPPLEMENTAL AGREEMENT

*Retain as written and add the following:*

"Any Supplemental Agreement that has a dollar value amount that is less than \$25,000.00 shall not require the assent of the Surety."

Section 101.81 TREASURER

*Delete as written and substitute the following:*

"THE ROCKDALE COUNTY DIRECTOR OF FINANCE"

*Add Section 101.84:*

Section 101.84 "COUNTY: THE ROCKDALE COUNTY BOARD OF COMMISSIONERS"

**SECTION 102 - BIDDING REQUIREMENTS AND CONDITIONS**

Section 102.01 PREQUALIFICATION OF BIDDERS

*Delete in its entirety and substitute the following:*

"Proposals will be considered only from experienced and well-equipped Contractors engaged in work of this type and magnitude. Contractors must be presently prequalified to do this type of work with the Georgia Department of Transportation and have received a Certificate of Qualification in accordance with the Rules and Regulations approved and adopted by the State Transportation Board.

Bidders may be required to submit evidence setting forth qualifications which entitle him to considerations as a responsible Contractor. A list of work of similar character successfully completed within the last two years may be required giving the location, size and listing equipment available for use on this work. Before accepting any bid, the **County** may require evidence of the Contractor's financial ability to successfully perform the work to be accomplished under the contract.

The **County** may make such investigations as it deems necessary to determine the ability of the **Bidder** to perform the work, and the **Bidder** shall furnish to the **County** all such information and data for this purpose as the **County** may request. The **County** reserves the right to reject any bid if the evidence submitted by, or investigation of, such **Bidder** fails to satisfy the **County** that such **Bidder** is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. Conditional bids will not be accepted."

Section 102.03 CONTENTS OF PROPOSAL FORMS

*Delete in its entirety and add the following:*

"Upon request, the **County** will furnish the prospective **Bidder** with a Proposal Form. This form will state the location and description of the contemplated construction and will show the approximate estimate of the various quantities and kinds of work to be performed or materials to be furnished, and will have a Schedule of Items for which Unit Bid prices are invited. The Proposal Form will state the time in which The Work must be completed, the amount of the Proposal Guaranty, and the date of the opening of Proposals. The form

will also include any Special Provisions or requirements which vary from or are not contained in the Standard Specifications. All papers which are required to be submitted as part of the Proposal are identified in the Proposal Form, and those papers must not be altered except as directed by Addendum. The Plans, Specifications, and other documents designated in the Proposal Form will be considered a part of the Proposal whether attached or not. The prospective **Bidder** will be required to pay the sum stated in the Notice to Contractors for each copy of the Proposal Form and each set of Plans."

Section 102.05 EXAMINATION OF PLANS, SPECIFICATIONS, SPECIAL PROVISIONS, AND SITE OF THE WORK

*Add the following:*

"Each **Bidder** must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful **Bidder** of his obligation to furnish all material and labor necessary to carry out the provisions of his Contract. Insofar as possible the **CONTRACTOR**, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor. Bidders, before making proposals, shall examine the plans and specifications and make such examinations on the ground as are necessary to thoroughly familiarize themselves with the nature and extent of the proposed construction and all local conditions affecting the same, as the **County** will not be responsible for **Bidder's** errors or misjudgment, nor for any information on local conditions or general laws or regulations.

No interpretation of the meaning of the plans and specifications or other pre-bid documents will be made to any bidder orally. Every request for such interpretations should be in writing and addressed to:

Rockdale County Finance Department Purchasing Division  
Attn: Meagan Porch, Buyer  
958 Milstead Avenue  
Conyers, GA 30012  
Phone: (770) 278-7557, Fax (770) 278-8910  
E-mail: [meagan.porch@rockdalecountyga.gov](mailto:meagan.porch@rockdalecountyga.gov)

and to be given consideration must be received at least six (6) calendar days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the Specifications which, if issued, will be mailed by registered mail, with return receipt requested, to all prospective **Bidders**, at the respective addresses furnished for such purposes, not later than three days prior to the date fixed for the opening of bids. Failure of any bidder to receive any such addendum or interpretation shall not relieve such **Bidder** from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

At the time of the opening of bids, each **Bidder** will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and Contract Documents (including all addenda). The failure or omission of any **Bidder** to examine any form, instruments or documents shall in no way relieve any bidder from any obligation in respect to his bid."

Section 102.06 PREPARATION OF PROPOSAL

*Retain as written except delete the sixth and seventh paragraphs, and add the following:*

"If a proposal is made by an individual, his name and post office address must be shown. If made by a firm or partnership, the name and post office address of each member of the firm or partnership must be shown. If made by a corporation, the person or persons signing the proposal must show the name of the state under which the laws of the corporation are chartered and his or their authority for signing same; the names, titles, and address of their President, Secretary, and Treasurer, and the corporate authority for doing business in Georgia."

Section 102.07 REJECTION OF PROPOSALS

*Add the following subparagraphs:*

I. The **County** reserves the right to reject any and all bids, to waive formalities and to re-advertise. It is understood that all bids are made subject to this Contract Agreement, that the **County** reserves the right to award the bid to the lowest, responsible Bidder, and in arriving at this decision, full consideration will be given to the reputation of the Bidder, his financial responsibility, and work of this type successfully completed.

J. The **County** also reserves the right to reject any and all bids from any person, firm, or corporation who is in arrears in any debt or obligation to Rockdale County, Georgia."

Section 102.08 PROPOSAL GUARANTY

*Delete and substitute the following:*

"No proposal will be considered unless it is accompanied by a certified check or acceptable Bid Bond in an amount not less than five percent (5%) of the amount bid and made payable to the Board of Commissioners of Rockdale County. Such Bid Bond shall be on the forms provided by the **County**.

Each bid must be accompanied by a Bid Bond prepared on the form of Bid Bond attached hereto, duly executed by the **Bidder** as **Contractor**, and having as surety thereon a surety company approved by the **County** and accepted by the U. S. Department of the Treasury and listed in Department Circular 570. The surety must be licensed to conduct business in the State of Georgia. The Bid Bond must be in the amount of 5% of the bid. No Proposal Guaranty will be considered to cover any Bid except the one to which it is attached.

Attorneys-in-fact who sign Bid Bonds must file a certified and effectively dated copy of their power of attorney."

Section 102.09 DELIVERY OF PROPOSALS

*Delete in its entirety and substitute the following:*

"All bids must be on forms in conformity with the proposal form included herein and must be for labor and materials called for in the Specifications, shown on the plans and bulletins issued prior to bidding. Bids must be submitted in a sealed envelope of sufficient size with the following clearly typed or printed on the outside:

**Rockdale County Department of Finance**  
**Proposal for Construction**  
**Project Name**  
**Date and Hour of Bid Opening**  
**Company Name**

If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed as specified in the bid form.

The entire proposal package as designated in the Proposal Form must be submitted with the bid. Failure to do so could result in the omission of pertinent documents and the rejection of the apparent low bid."

**Four (4) hard copies and one (1) USB flash drive with a copy of the Bid in Adobe PDF format will be required for review purposes.**

Section 102.10 WITHDRAWAL OR REVISION OF PROPOSALS

*Add the following:*

"Any **Bidder** may modify his bid by telegram, letter or facsimile transmission at any time prior to the scheduled closing time for receipt of bids, provided such communication is received by the **County** prior to the closing time and provided, further, the **County** is satisfied that a written confirmation of the transmitted modification over the signature of the bidder was mailed prior to the closing time. If written confirmation is not received within two days from the closing time, no consideration will be given to the transmitted modification."

### SECTION 103 - AWARD AND EXECUTION OF CONTRACT

#### Section 103.01 CONSIDERATION OF PROPOSALS

*Delete the third sentence in its entirety and substitute the following:*

"In determining Unit Bid Prices, fractional parts of a cent less than one cent (\$0.01) will not be considered significant and will be dropped."

#### Section 103.02 AWARD OF CONTRACT

*Delete in its entirety and substitute the following:*

If a Contract is awarded, it will be awarded to the lowest responsible **Bidder**. The **County** will determine that **Bidder**, and, in so doing, the following elements will be considered: whether the **Bidder** involved (a) maintains permanent place of business; (b) has adequate plant equipment to do the work properly and expeditiously; (c) has a suitable financial status to meet obligations incident to the work; and (d) has appropriate technical experience (e) past performance on county contracts (i.e.: scheduling, coordination, cooperation, etc.) (f) past, pending, or threatened litigation, arbitration, or mediation with the County. The Contract will be awarded on the base bid only. Rockdale County reserves the right to exercise its discretion as to the responsibility of any **Bidder**.

When notified by and of the Department's recommendation for award of this Contract, the **Contractor** shall immediately secure Performance and Payment Bonds as per the Contract, properly execute two (2) original Contract Documents and submit them to the **County**, with proof of insurance in accordance with the Special Provision in the Proposal, within five (5) calendar days of notification.

The Board shall have the right to hold bids after bid opening for a period of ninety (90) days."

#### Section 103.04 RETURN OF PROPOSAL GUARANTY

*Delete in its entirety and add the following:*

"All Proposal Guaranties (Bid Bonds) will be returned to all except the three lowest **Bidders** within three days after the opening of the bids, and the remaining Bid Bonds will be returned promptly after the **County** and the accepted **Bidder** have executed the Contract, or, if no award has been made within ninety (90) days after the date of the opening of bids, upon demand of the **Bidder** at any time thereafter, so long as he has not been notified of the acceptance of this bid.

The **County** reserves the right to return all Proposal Guaranties by registered or certified mail and its responsibility pertaining to them will end when they are mailed."

#### Section 103.05 REQUIREMENTS OF PERFORMANCE AND PAYMENT BONDS

*Delete in its entirety and substitute the following:*

"Simultaneously with his delivery of the executed Contract, the **Contractor** shall furnish a surety bond or bonds, in a sum equal to the full amount of the Contract, as security for faithful performance of the Contract and for the payment of all persons performing labor on the project under this Contract, and furnishing material in connection with this Contract. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the **County** and be countersigned by the State of Georgia's representative/agent. The surety

issuing the bonds must be accepted by the U.S. Department of the Treasury and listed in Department Circular 570 and approved by the **County**.

Attorneys-in-fact who sign performance and payment bonds must file a certified and effectively dated copy of their power of attorney."

#### Section 103.06 EXECUTION AND APPROVAL OF CONTRACT

*Add the following:*

"Execution of the Contract by **Contractor** shall not be considered complete unless **Contractor** submits proper proof of coverage of Insurance in compliance with the following requirements:

- A. **Contractor's Liability Insurance:** **Contractor** shall purchase and maintain such comprehensive general liability and other insurance as will provide protection from claims set forth below which may arise out of or result from **Contractor's** performance or non-performance of the work and **Contractor's** other obligations under the Contract Documents, whether such performance is by the **Contractor's** own organization, its subcontractors or suppliers, or any individual directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

The Contractor, at all times that this Contract is in force, agrees to provide, as a minimum, insurance coverages in accordance with the attached insurance requirements. The **County**, its subcontractors, and affiliated companies, their officers, directors, employees and agents shall be named on the Certificates of Insurance as additional insured and endorsed onto the policies for Comprehensive General Liability, Automobile Liability, Contractor's Pollution Liability and Umbrella Liability Insurance maintained pursuant to this Contract in connection with liability of the **County** and their officers, directors, employees and agents arising out of Contractor's operations. Copies of the endorsements shall be furnished to the **County** prior to execution of the contract. Such insurance is primary insurance and shall contain a severability of interest clause as respects each insured.

- 1) Claims under workers' or workmen's compensation, disability benefits and other similar employees benefit acts;
- 2) Claims for damages because of bodily injury, occupational sickness or disease, or death of **Contractor's** employees;
- 3) Claims for damages because of bodily injury, sickness or disease, or death of any person other than **Contractor's** employees;
- 4) Claims for damages insured by personnel injury liability coverage which are sustained a) by any person as a result of an offense directly or indirectly related to the employment of such person by **Contractor**, or b) by any other person for any other reason;
- 5) Claims for damages, other than to work itself because of injury to or destruction of tangible property, including loss of use resulting therefrom; and,
- 6) Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle.

The insurance required by this paragraph shall include the specific coverages and be written for not less than the limits of liability and coverages provided in these specifications, or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All such insurance shall contain a provision that the coverage afforded will not be canceled, materially changed, or renewal refused until at least thirty (30) days prior written notice has been given to **County**. All such insurance shall remain in effect until final payment and at all times thereafter when **Contractor** may be correcting, removing, or replacing defective work. In addition, **Contractor** shall maintain such completed

operations insurance for at least one year after final payment and furnish **County** with evidence of continuation of such insurance at final payment.

- B. **County** shall not be responsible for purchasing and maintaining any property insurance to protect the interests of **Contractor** or subcontractors in the work to the extent of any deductible amounts that are provided in the supplemental conditions. If **Contractor** wishes property insurance coverage within the limits of such amounts **Contractor** may purchase and maintain it at his own expense.
- C. If **County** has any objection to the coverage afforded by or other provisions of the insurance required to be purchased and maintained by **Contractor** in accordance with subparagraphs A through E, **County** will notify **Contractor** thereof within ten (10) days of the date of the delivery of such certificates to **County**. **Contractor** will provide to the **County** such additional information in respect of insurance provided by him as **County** may reasonably request. The right of the **County** to review and comment on Certificates of Insurance is not intended to relieve the **Contractor** of his responsibility to provide insurance coverage as specified nor to relieve the **Contractor** of his liability for any claims which might arise.
- D. The limits of liability for the insurance required by paragraph A of these General Conditions shall provide coverage for not less than the following amounts or greater where required by law.

For Claims under paragraphs A.1 and A.2, Workmen's Compensation

State	Statutory
Applicable Federal (e.g.) Longshoremen's Employer's Liability	Statutory \$1,000,000/person \$1,000,000/occurrence

For Claims under A.2 through A.5,

Commercial General Liability

\$1,000,000	Each Occurrence Limit
\$1,000,000	Personal & Advertising Injury Limit
\$2,000,000 (per project)	General Aggregate Limit
\$2,000,000	Products / Completed Ops Aggregate Limit

Bodily Injury:

\$1,000,000	Each Person
\$1,000,000	Each Occurrence
\$1,000,000 Operations	Annual Aggregate Products and Completed

Property Damage Liability Insurance will provide explosion, collapse, and underground coverage where applicable.

Property Coverage or Builders Risk Policy:

\$1,000,000	Each Person
\$1,000,000	Each Occurrence

Personal injury with employment exclusion deleted.

\$1,000,000	Annual Aggregate
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For Claims under A.6, Comprehensive Automobile Liability:

Bodily Injury:

\$1,000,000	Each Person
\$1,000,000	Each Accident

Property Damage:

\$1,000,000	Each Occurrence
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The Contractual Liability required by paragraph B shall provide coverage for not less than the following amounts:

Contractual Liability Insurance:

Bodily Injury:

\$1,000,000	Each Occurrence
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Property Damage:

\$1,000,000	Each Occurrence
\$1,000,000	Annual Aggregate

E. Scope of Insurance and Special Hazards

The amounts of insurance in subparagraph "D" above are minimum amounts of insurance to be carried. The **Contractor** shall carry such additional insurance as may be required to provide adequate protection of the **Contractor** and his subcontractors, respectively, against any and all damage claims which may arise from operations under this Contract, whether such operations may be by the insured or by anyone directly or indirectly employed by him and, also, against any of the special hazards which may be encountered in the performance of this Contract.

The **Contractor's** and subcontractors' Public Liability and Property Damage Insurance shall provide adequate protection against the following special hazards: excavation, shoring, underpinning, blasting and explosion to the extent to which such risks are present."

Contractor's Pollution Liability (with 1 year extended reporting period)

\$1,000,000	Each Occurrence
\$2,000,000	Each Aggregate

Excess Umbrella Liability:

\$3,000,000	Excess Umbrella Liability
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Section 103.07 FAILURE TO EXECUTE CONTRACT

*Delete in its entirety and substitute the following:*

"Failure or refusal to execute and deliver the Contract, Contract Performance and Payment Bond, or furnish satisfactory proof of insurance coverage required within ten (10) days after the date of notice of the Department's recommendation for award shall be just cause for the annulment of the award and for the

forfeiture of the Proposal Guaranty to Rockdale County, not as a penalty, but as liquidation of damages sustained for such failure or refusal. At the discretion of the **County**, the award may then be made to the next lowest responsible Bidder, or the Work may be re-advertised or constructed by County forces.

If the **County** re-advertises the project, the **County** may, at its discretion, not allow the Bidder who refused or failed to execute a contract, or who requested to withdraw any bid, to perform work on that contract or project as a contractor, subcontractor or in any other capacity for any function of construction. The Contract and Contract bonds shall be executed in two (2) original counterparts."

## **SECTION 105 - CONTROL OF WORK**

### Section 105.02 PLANS AND WORKING DRAWINGS

*Add the following paragraphs:*

"If, in the process of the Contract, discrepancies arise, the **Contractor** will be furnished additional instructions and detail drawings as necessary to carry out the work included in the Contract. The additional drawings and instructions thus supplied to the **Contractor** will coordinate with the Contract Documents and will be so prepared that they can be reasonably interpreted as part thereof.

The **Contractor** shall submit promptly to the Engineer six (6) copies of each shop or setting drawing prepared in accordance with the schedule predetermined as aforesaid. After examination of such drawings by the Engineer and the return thereof, the **Contractor** shall make such corrections to the drawings as have been indicated and shall furnish the Engineer with two (2) corrected copies. If requested by the Engineer, the **Contractor** must furnish additional copies. Regardless of corrections made in or approval given to such drawings by the Engineer, the **Contractor** shall nevertheless be responsible for the accuracy of such drawings and for their conformity to the Plans and Specifications at the time he furnishes such drawings."

### Section 105.14 MAINTENANCE DURING CONSTRUCTION

*Retain in its entirety, but insert the following after the first paragraph:*

"At all times, the **Contractor** shall perform work as may be required to protect the entire site, including both existing conditions and performed work, from damage. Furthermore, the **Contractor** shall be responsible for all damages to all persons and property due to the non-maintenance of the project site."

## **SECTION 106 - CONTROL OF MATERIALS**

### Section 106.03.A.3 SAMPLES, TESTS, CITED SPECIFICATIONS

*Add the following paragraphs:*

"The costs of any initial tests shall be borne by the **County**. Retesting due to failure of the initial test shall be billed to the **Contractor** by the County to include a ten percent (10%) administrative fee."

"Whenever a material, article, or piece of equipment is identified on the Plans or in the Specifications by reference to manufacturer's or vendor's names, catalog number, etc., it is intended merely to establish a standard; and any material, article, or equipment of the other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion of the Engineer, of equal substance and function. It shall not be purchased or installed by the **Contractor** without the Engineer's written approval."

## **SECTION 107 - LEGAL REGULATIONS AND RESPONSIBILITY TO THE PUBLIC**

### Section 107.02 PERMITS AND LICENSES

*Add the following paragraphs:*

"The **Contractor** shall provide the **County**, on the proper form, proof of being licensed to do business within Rockdale County; proof of proper business licenses shall also be provided by the prime **Contractor** for any and all subcontractors coming under the jurisdiction of this Contract. (See Subcontractors' Notification List.)

Before any work proceeds along areas adjacent to a State Highway, the **Contractor** shall assure that a permit showing that the project is approved by the Georgia Department of Transportation is posted. **The Contractor shall notify both the Engineer and the local Georgia Department of Transportation's representative 48 hours before moving into a new area to begin construction."**

#### Section 107.07 PUBLIC CONVENIENCE AND SAFETY

*Retain as written and add the following:*

"The **Inspector** shall distribute a notice to each residence or business adjacent to the roadway *within the limits* of the project. The **County** will provide this notice to the **Inspector**, and it will be the responsibility of the **Inspector** to deliver the notices. To ensure that these notices will be timely, they shall be distributed by individual road segment (project site), and they shall be distributed at least 24 hours prior to beginning construction activities on the respective road segment.

The notices will be used to inform the affected parties of the activities that will be occurring and will identify the **Contractor**.

The notice will be in the form of a letter and are not to be placed in or on the mailboxes. The **Inspector** will notify the **Contractor** upon completion of this work so that the **Contractor** can perform the work on the roadway. The **Contractor** may not work on a street without the letters being distributed.

#### Section 107.13 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE

*Retain subparagraph C. and add the following paragraph:*

"All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant, or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions."

*Delete subparagraph F in its entirety and substitute the following:*

"The **Contractor** shall have the responsibility for removing and relocating all mailboxes to an area outside of the construction limits but still accessible for mail deliveries and convenient to the mail carrier and the patron during the entire time of construction. It may be necessary for the **Contractor** to confer with the Post Office serving the area.

As soon as construction has progressed to the stage that the mailbox may be erected in its permanent position, the **Contractor** shall coordinate the erection with the patron and the Post Office serving the area. Any damages to the posts or mailboxes due to the removal and/or relocations by the **Contractor** will remain the responsibility of the **Contractor**, all damaged posts and/or mailboxes shall be replaced and installed by the **Contractor** at his expense, including mailbox enclosures of masonry construction.

Any cost or costs to the **Contractor** for removing, relocating or installations of mailboxes as stated above shall be included in the overall bid price. Masonry mail boxes will not be relocated; however, if removed, a standard mail box will be installed."

#### Section 107.15 RESPONSIBILITY FOR DAMAGE CLAIMS

*Add the following paragraph:*

"**Contractor** shall indemnify and hold harmless the **County** and its agents, employees, successors, and assigns from and against all loss, cost, damage, claim, suit, and judgment, including attorney's fees, arising out of or resulting from the performance or non-performance of the work. **Contractor's** duty to indemnify applies in connection with, but is not limited to, injury to or death of any person or persons, loss of or damage to property caused by or in any way connected with **Contractor's** performance or non-performance of the work, whether such injury, death, loss, or damage results from any cause whatsoever. The **Contractor's** duty to indemnify shall extend to all claims, damage, loss, or expense caused in whole or in part by any act or omission of the **Contractor**, any subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. The duty of the **Contractor** to indemnify, contained herein, shall not extend to any claim, damage, loss, or expense which results solely from the negligence of a party indemnified hereunder."

#### Section 107.17 CONTRACTOR'S RESPONSIBILITY FOR THE WORK

*Retain in its entirety and add the following new paragraph:*

"In case of an emergency which threatens loss or injury of property and/or safety of life, the **Contractor** will be allowed to act, without previous instruction from the Engineer, in a diligent manner. He shall notify the Engineer immediately thereafter. Any claim for compensation by the **Contractor** due to such extra work shall be promptly submitted to the Engineer for approval.

Where the **Contractor** has not taken action but has notified the Engineer of an emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the Engineer."

#### Section 107.18 ACQUISITION OF RIGHT OF WAY

*Delete in its entirety and substitute the following:*

"The **County** shall furnish all land and right-of-way necessary for the carrying out of this Contract and the completion of the Work herein contemplated and will use due diligence in acquiring said land and rights-of-way as speedily as possible. But it is possible that all lands and rights-of-way as herein contemplated may not be completely secured before construction begins, in which event the **Contractor** shall begin his Work upon such land and rights-of-way as the **County** may have previously acquired, and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining land and rights-of-way. Should the **County** be prevented or enjoined from proceeding with the Work, or from authorizing its prosecution, either before or after the commencement, by reason of any litigation, or by reason of its inability to procure any lands or rights-of-way for the said Work, the **Contractor** shall not be entitled to make or assert claim for damage by reason of said delay, or, to withdraw from the Contract except by consent of the **County**, but time for completion of the Work will be extended to such time as the **County** determines will compensate for the time lost by such delay, such determination to be set forth in writing."

#### Section 107.20 NO WAIVER OF LEGAL RIGHTS

*Retain in its entirety and add the following:*

"The **Contractor** shall guarantee the work accomplished under this Contract for a period of twelve (12) months from the date of final acceptance. The **Contractor** shall remedy, at his own expense, and without additional cost to the **County**, all defects arising from either workmanship or materials, as determined by the Engineer. The guarantee shall not cover any accidental or deliberate damage to the work, or any defects occurring due to normal wear and tear during the twelve (12) months.

All equipment of whatever nature incorporated in the work covered by this Contract shall carry the same guarantee as outlined above for construction. Failure of any equipment or part thereof within the specified

time shall be corrected to the satisfaction of the **County**, at the **Contractor's** expense. This guarantee does not apply to manufacturing defects of equipment furnished by the **County**.

The Performance Bond shall remain in full force and effect through the guarantee period."

## 107.23 ENVIRONMENTAL CONSIDERATIONS

*Delete Subsection 107.23.A and replace with the following:*

All environmental considerations and clearances shall be the responsibility of the County or municipality to meet, including the requirements of Section 404 of the Clean Water Act (33 USC 1344).

After July 1, 1991, State funded projects must comply with the requirements of Chapter 16 of Title 12 of the Official Code of Georgia Annotated, the Georgia Environmental Policy Act (GEPA), of 1991. In the compliance with GEPA, those projects for which Federal funding sought, and NEPA compliance is accomplished, are exempt from the requirements of GEPA.

GEPA requires that environmental documentation be accomplished for County or City projects if more than 50 percent of the total project cost is funded by a grant of a State Agency or a grant or more that \$250,000.00 is made by the State Agency to the municipality or County. The "responsible official of the government agency shall determine if a proposed governmental action is a proposed governmental action which may significantly adversely affect the quality of the environment."

### **A. The Following Project Would Not Significantly Adversely Affect The Quality Of The Environment:**

Non-land disturbing activities and minor land disturbing activities that would not be anticipated to significantly affect the quality of the environment include the following list. These types of projects funded with state money would not be able to subject to environmental assessment of any kind. Hearing procedures outline in GEPA would not be applicable.

1. Minor roadway and non-historic bridge projects.
  - a. Modernization of an existing highway by resurfacing, restoration, rehabilitation, adding shoulders, widening a single lane or less in each direction and the addition of a median within previously disturbed existing right-of-way.
  - b. Adding auxiliary lanes for localized purposes (weaving, climbing, speed changes, etc.) and correction substandard curves and intersections within previously disturbed existing right-of-way.
  - c. Non-historic bridge replacement projects in existing alignment with no detour bridge.
2. Lighting, signing, pavement marking, signalization, freeway surveillance and control systems, and railroad protective devices.
3. Safety projects such as grooving, glazed screen, safety barriers, energy attenuators, median barriers, etc.
4. Highway landscaping and landscaping modification, rest area projects and truck weigh stations within previously disturbed existing right-of-way.
5. Construction of bus shelters and bays within existing right-of-way.
6. Temporary replacement of a highway facility that is commenced immediately after the occurrence of a natural disaster of catastrophic failure to restore the highway for the health, welfare, and safety of the public.

### **B. The Following Projects May Not Significantly Adversely Affect The Quality of The Environment:**

For projects that will cause land disturbance and for which there is no anticipation that the project may significantly adversely affect the quality of the environment, certain studies will be undertaken. These studies would serve to

document whether or not the County or municipality should anticipate that a project might significantly adversely affect the quality of the environment. Documentation of the studies will be accomplished through the use of the "GEPA Investigation Studies" checklist.

The types of projects that would fall under the category would include:

1. Bridge replacement projects on new location or with a detour bridge, where there are no significant adverse impacts to historic or archaeological resources, no involvement with Federally listed threatened and endangered species and no significant adverse impact to wetlands.
2. Passing lanes, median additions and widening projects, where there are no significant adverse impacts to historic or archaeological resources, no involvement with Federally listed threatened and endangered species and no significant adverse impact to wetlands.
3. Safety and intersection improvements where there are no significant adverse impacts to historic or archaeological resources, no involvement with Federally listed threatened and endangered species and no significant adverse impact to wetlands.
4. Rest area projects and truck weigh stations with no purchase of additional right-of-way.
5. New location projects where there are no significant adverse impacts to historic or archaeological resources, no involvement with Federally listed threatened and endangered species and no significant adverse impact to wetlands.

If studies demonstrate that the project will not significantly adversely affect the quality of the environment, project files will be documented. If studies demonstrate that the project may significantly adversely affect the quality of the environment, development of an environmental effects report (EER) will be undertaken along with full GEPA compliance.

**C. The Following Projects May Not Significantly Adversely Affect The Quality of The Environment:**

This category of projects may include major widening and new location projects. If such projects result in a significant adverse effect, an EER shall be prepared.

**D. EER Procedure:**

GEPA calls for consideration of the "cumulative effect of the proposed government actions on the environment...if a series of proposed government actions are related to either geographically or as logical parts in a chain of contemplated actions." Therefore, EER's for sections of roadways to be widened or built as new location facilities will include all projects that are connected geographically or as logical parts in a chain of contemplated actions.

1. During preparation of an environmental effect report, the County or Municipality will consult with and solicit comments from agencies that have jurisdiction by law, special expertise, or other interest with respect to environmental impacts.
2. In compliance with GEPA the following shall be contained in the EER, at a minimum:
  - a. Cover sheet;
  - b. Executive summary;
  - c. Alternatives, including the no-build;
  - d. Relevant environmental setting; Geology, soils, water supply and wetlands, floral fauna, archaeology/history, economic environment, energy, cultural resources;

- e. The environmental impact of the proposed action of the relevant setting and mitigation measures proposed to avoid or minimize adverse impact;
  - f. Unavoidable adverse environmental effects;
  - g. Value of short-term uses of the environment and maintenance and enhancement of its long-term value;
  - h. Beneficial aspects, both long term and short term and its economic advantages and disadvantages;
  - i. Comments of agencies which have jurisdiction by law, special expertise, or other interest with respect to any environmental impact or resource;
3. At least 45 days prior to making a decision as to whether to proceed with the undertaking, publish in the “legal organ of each County in which the proposed governmental action or any part thereof is to occur, notice that an environmental effects report has been prepared”.
  4. The County or Municipality shall send a copy of the EER and all other comments to the Director, EPD.
  5. The County or Municipality shall make the document available to the public and agencies, upon request.
  6. A public hearing will be held in each affected county if at least 100 residents of the State of Georgia request on within 30 days of publication in the legal organ of an affected County. The responsible official or his designee may hold a public hearing if less than 100 requests are received. (The county or municipality is not relieved of other State legal requirements of public hearings, however.)
  7. Following the public notice period and/or public hearing, a summary of the document, comments received and recommendation as to whether to proceed with the action as originally prepared, to proceed with changes, or not to proceed will be prepared (Notice of Decision).
  8. This decision document, when signed by the responsible official, will be sent to the director, EPD, and an abbreviated notice of the decision will be published in the legal organ of each County in which the proposed governmental action or any part thereof is to occur.
  9. A copy of the decision document, the EER and public hearing comments (if any) will be sent to Rockdale County Department of Transportation, Georgia Department of Transportation, Office of Environment and Location and the Department of Natural Resources, Environmental Protection Division for their files.

**Department of Transportation  
Office of Environment and Location  
3933 Aviation Circle  
Atlanta, Georgia 30336**

**Department of Natural Resources  
Environmental Protection Division  
205 Butler Street, SE  
Suite 1152  
Atlanta, Georgia 30334**

**SECTION 108 - PROSECUTION AND PROGRESS**

Section 108.01 SUBLETTING OF CONTRACT

*Retain as written except as follows:*

*Delete the second and third paragraph and substitute the following:*

In case such consent is given, the Contractor will be permitted to sublet a portion thereof, but shall perform, with his own organization, work amounting to not less than fifty percent (50%) of the total contract cost, including materials, equipment and labor.

All Subcontractors approved by the Engineer must submit a "Noncollusion Affidavit for Subcontractors, before any work by that Subcontractor may proceed."

*Add the following:*

"In accordance with the provisions stated above, the following items are designated Specialty Items whenever they appear in the Contract:

- All Grassing Items
- All Fencing Items
- All Highway Lighting Items
- All Highway Sign Items
- All Guardrail Items (Except Bridge Handrail)
- All Utility Items
- All Comfort and Convenience Facilities in Rest Areas
- All Landscaping Items
- All Pressure Grouting, Slab Removal and Replacement
- All Permanent Traffic Markings
- All Signal Systems
- All Railroad Trackwork above Sub-ballast
- Construction Layout

The cost of the above items will be subtracted from the original Contract Amount and the subsequent balance used to determine the percent limitation mentioned above.

If the **Contractor** elects to sublet a Specialty Item, no work on any such Specialty Items shall be begun without prior approval of the necessary Subcontract.

The **Contractor's** cost for Construction Layout shall be fully documented prior to deduction from the original Contract amount."

### 108.03 PROSECUTION AND PROGRESS

***Retain Subsection 108.03 except as modified below:***

For this Project, the Progress Schedule required by Subsection 108.03 need not be submitted.

### 108.11 SCHEDULING

**Every effort shall be made to meet project schedules submitted and approved by the County. If scheduling changes are necessary, the Contractor shall notify the County 24 hours in advance to allow for rescheduling of field and material testing contractors contracted by the County. The**

**Contractor shall be liable for costs accrued by the field and material testing contractor for work cancellations resulting from insufficient notification.**

**The County requires five (5) working days to process requests to trim trees, shrubs, or bushes from the right-of-way to accommodate resurfacing operations.**

**Notify Rockdale County Water Resources two (2) weeks in advance for requests to verify existing utilities which may require lowering of water lines or laterals that may interfere with operations.**

**The County shall not be liable for delays to schedules as a result of insufficient notice regarding the items above.**

## **SECTION 109 - MEASUREMENT AND PAYMENT**

### **Section 109.07 PARTIAL PAYMENTS**

*Delete Subsection 109.07.A in its entirety and substitute the following:*

**"A. General:**

The Contractor shall on the first Business Day of each calendar month submit the estimated total value of items complete in place for the previous calendar month to the Engineer for verification for only the roads in which work has been completed. If discrepancies are discovered by the Engineer, he will contact the Contractor to make any necessary corrections as soon as possible. Such estimate is approximate only, and may not necessarily be based on detailed measurements. Value will be computed on the basis of Contract Unit Prices or on percentage of completion of any Lump Sum Item."

*Add Subsection 109.07.I to read as follows:*

**"I. Retainage**

Retainage will not be withheld from payments under this Contract"

### **Section 109.08 FINAL PAYMENT**

*Delete in its entirety and substitute the following:*

"Upon completion by the **Contractor** of The Work, including the receipt of any final written submission of the **Contractor** and the approval thereof by the Department, the **County** will pay the **Contractor** a sum equal to 100 percent (100%) of the compensation set forth herein, less the total of all previous partial payments, paid or in the process of payment.

The **Contractor** agrees that acceptance of this final payment shall be in full and final settlement of all claims arising against the **County** for work done, materials furnished, costs incurred, or otherwise arising out of this Contract Agreement and shall release the **County** from any and all further claims of whatever nature, whether known or unknown for and on account of said Contract Agreement, and for any and all work done, and labor and materials furnished, in connection with same.

No final payment shall be made until the **Contractor AND his Subcontractors** furnish to the **County** a sworn affidavit to the effect that all bills are paid and no suits and/or liens are pending in connection with the work done or labor and materials furnished under this Contract. Final payment will be made within sixty (60) days after approval by the Engineer.

The **Contractor** will be required to maintain all work done by him in a first-class condition for sixty (60) days after the same has been completed as a whole, and the Engineer has notified the **Contractor** in writing that

the work has been finished to his satisfaction. The retained percentage will not be due or payable to the Contractor until the 60-day maintenance period has ended."

## **SECTION 149 - CONSTRUCTION LAYOUT**

### Section 149.3.05 CONSTRUCTION

*Delete Subsection K, paragraph 2, which begins, "For new bridges ..." in its entirety.*

## **SECTION 150 - TRAFFIC CONTROL**

*Add the following:*

### **150.01 General**

This section as supplemented by the Plans, Specifications, and Manual on Uniform Traffic Control Devices (MUTCD) shall be considered the Traffic Control Plan. Activities shall consist of furnishing, installing, maintaining, and removing necessary traffic signs, barricades, lights, signals, cones, pavement markings and other traffic control devices and shall include flagging and other means for guidance and protection of and vehicular pedestrian traffic through the Work Zone. This Work shall include both maintaining existing devices and installing additional devices as necessary in construction work zones.

When any provisions of this Specification or the Plans do not meet the minimum requirements of the MUTCD, the MUTCD shall control. The 2009 with 2012 Revisions 1 and 2 Edition of the MUTCD shall be in effect for the duration of the project.

The Worksite Traffic Control Supervisor (WTCS) shall have a copy of Part VI of the MUTCD on the job site. Copies of the current MUTCD may be obtained from the FHWA web page at <https://mutcd.fhwa.dot.gov/pdfs/2009r1r2/mutcd2009r1r2edition.pdf>

#### **A. WORKER SAFETY APPAREL**

All workers exposed to the risks of moving roadway traffic or construction equipment shall wear high-visibility safety apparel meeting the requirements of International Safety Equipment Association (ISEA) American National Standard for High-Visibility Safety Apparel, or equivalent revisions, and labeled as ANSI-2004 Class 2 or 3 risk exposure.

#### **B. Worksite Traffic Control Supervisor**

ALL HIGHWAYS (ADDITIONAL REQUIREMENTS BELOW FOR INTERSTATES): The Contractor shall designate a qualified individual as the Worksite Traffic Control Supervisor (WTCS) who shall be responsible for selecting, installing and maintaining all traffic control devices in accordance with the Plans, Specifications, Special Provisions and the MUTCD. A written resume documenting the experience and credentials of the WTCS shall be submitted and accepted by the Engineer prior to beginning any work that involves traffic control.

The WTCS shall be available on a twenty-four (24) hour basis to perform his duties. If the work requires traffic control activities to be performed during the daylight and nighttime hours it may be necessary for the Contractor to designate an alternate WTCS. An alternate WTCS must meet the same requirements and qualifications as the primary WTCS and be accepted by the Engineer prior to beginning any traffic control duties. The Worksite Traffic Control Supervisor's traffic control responsibilities shall have priority over all other assigned duties.

As the representative of the Contractor, the WTCS shall have full authority to act on behalf of the Contractor in administering the Traffic Control Plan. The WTCS shall have appropriate training in safe traffic control practices in accordance with Part VI of the MUTCD. In addition to the WTCS all other individuals making decisions regarding traffic control shall meet the training requirements of the Part VI of the MUTCD.

The WTCS shall supervise the initial installation of traffic control devices. The Engineer prior to the beginning of construction will review the initial installation. Modifications to traffic control devices as required by sequence of operations or staged construction shall be reviewed by the WTCS.

The WTCS shall be available on a full-time basis to maintain traffic control devices with access to all personnel, materials, and equipment necessary to respond effectively to an emergency situation within forty-five (45) minutes of notification of the emergency.

The WTCS shall regularly perform inspections to ensure that traffic control is maintained. Unless modified by the special conditions or by the Engineer, routine deficiencies shall be corrected within a twenty-four (24) hour period. Failure to comply with these provisions shall be grounds for dismissal from the duties of WTCS and/or removal of the WTCS from the project. Failure of the WTCS to execute his duties shall be considered as non-performance under Subsection 150.08.

The Engineer will periodically review the work for compliance with the requirements of the traffic control plan. On projects where traffic control duties will not require full time supervision, the Engineer may allow the Contractor's Project Superintendent to serve as the WTCS as long as satisfactory results are obtained.

#### **CERTIFIED WORKSITE TRAFFIC CONTROL SUPERVISOR**

**ADDITIONAL REQUIREMENTS FOR INTERSTATE AND LIMITED ACCESS HIGHWAYS:** In addition to the requirements above, the WTCS shall have a minimum of one year's experience directly related to work site traffic control in a supervisory or responsible capacity. The WTCS shall be currently certified by the American Traffic Safety Services Association (ATSSA) Work Site Traffic Supervisor Certification program, the National Safety Council Certification program or an equal approved by the Department.

Any work performed on the interstate or limited access highway right-of-way that requires traffic control shall be supervised by the Certified Worksite Traffic Control Supervisor. No work requiring traffic control shall be performed unless the certified WTCS is on the worksite. Failure to maintain a Certified Worksite Traffic Control Supervisor on the work will be considered as non-performance under Subsection 150.08.

The WTCS shall perform, as a minimum, weekly traffic control inspections on all interstate and limited access highways. The inspection shall be reported to the Engineer on a TC-1 report. The Engineer will furnish a blank copy of the TC-1 report to the Contractor prior to the beginning of any work on the interstate or limited access right-of-way.

#### **C. Traffic Control Devices**

All traffic control devices used during the construction of a project shall meet the Standards utilized in the MUTCD, and shall comply with the requirements of these Specifications, Project Plans, and Special Provisions. All devices shall be tested at NCHRP Test Level III. Reference is made to Subsections 104.05, 107.07, and 107.09.

#### **D. Reflectorization Requirements**

All rigid fluorescent orange construction warning signs (black on fluorescent orange) shall meet the reflectorization and color requirements of ASTM Type VII, VIII, IX or X regardless of the mounting height.

Portable signs which have flexible sign blanks shall meet the reflectorization and color requirements of ASTM Type VI.

Warning signs (W3-1a) for stop conditions that have rumble strips located in the travel way shall be reflectorized with ASTM Type IX fluorescent yellow sheeting.

All other signs shall meet the requirements of ASTM Type III or IV except for “Pass With Care” and “Do Not Pass” signs which may be ASTM Type I unless otherwise specified.

CHANNELIZATION DEVICES: Channelization devices shall meet the requirements of ASTM Type III or IV high intensity sheeting.

**E. Implementation Requirements**

No work shall be started on any project phase until the appropriate traffic control devices have been placed in accordance with the Project requirements. Changes to traffic flow shall not commence unless all labor, materials, and equipment necessary to make the changes are available on the Project.

When any shift or change is made to the location of traffic or to the flow patterns of traffic, the permanent safety features shall be installed and fully operational before making the change. If staging or site conditions prevent the installation of permanent features then the equivalent interim devices shall be utilized.

Any section of the work that is on new location shall have all permanent safety features installed and fully operational before the work is opened to traffic. Safety features shall include but are not limited to the following items:

- Guardrail including anchors and delineation
- Impact attenuators
- Traffic signals
- Warning devices
- Pavement markings including words, symbols, stop bars, and crosswalks
- Roadway signs including regulatory, warning, and guide

Outdoor lighting shall be considered as a safety feature for welcome centers, rest areas, and weigh station projects. For typical roadway type projects new street lighting is not considered a safety feature unless specifically noted in the plans or in the special conditions.

**F. Maintenance of Traffic Control devices**

Traffic control devices shall be in acceptable condition when first erected on the project and shall be maintained in accordance with Subsection 104.05 throughout the construction period. All unacceptable traffic control devices shall be replaced within 24 hours. When not in use, all traffic control devices shall be removed, placed or covered so as not to be visible to traffic. All construction warning signs shall be removed within seven calendar days after time charges are stopped or pay items are complete. If traffic control devices are left in place for more than ten days after completion of the Work, the Department shall have the right to remove such devices, claim possession thereof, and deduct the cost of such removal from any monies due, or which may become due, the Contractor.

**G. Traffic Interruption Restrictions**

The Department reserves the right to restrict construction operations when, in the opinion of the Engineer, the continuance of the Work would seriously hinder traffic flow, be needlessly disruptive or unnecessarily inconvenience the traveling public. The Contractor shall suspend and/or reschedule any work when the Engineer deems that conditions are unfavorable for continuing the Work.

Advanced notification requirements to the Contractor to suspend work will be according to the events and the time restrictions outlined below:

- |   |                             |
|---|-----------------------------|
| Incident management                               | No advanced notice required |
| Threatening/Inclement weather                     | 24 hours                    |
| Holidays, sporting events, unfavorable conditions | Three (3) calendar days     |

If the work is suspended, the Contractor may submit a request for additional contract time as allowed under Section 108. The Department will review the request and may grant additional contract time as justified by the impact to the Contractor's schedule. Compensation for loss of productivity, rescheduling of crews, rental of equipment or delays to the Contractor's schedule will not be considered for payment. Additional contract time will be the only consideration granted to the Contractor.

#### **H. Sequence of Operations**

Any Sequence of Operations provided in this Contract in conjunction with any staging details which may be shown in the plans, is a suggested sequence for performing the Work. It is intended as a general staging plan for the orderly execution of the work while minimizing the impact on the mainline, cross-streets and side streets. The Contractor shall develop detailed staging and traffic control plans for performing specific areas of the Work including but not limited to all traffic shifts, detours, bridge widenings, paces, or other activities that disrupt traffic flow. The Engineer may require detailed staging and traffic control plans for lane closures. These plans shall be submitted for approval at least two weeks prior to the scheduled date of the activity. Activities that have not been approved at least seven (7) days prior to the scheduled date shall be rescheduled.

Where traffic is permitted through the work area under stage construction, the Contractor may choose to construct, at no additional expense to the Department, temporary on-site bypasses or detours in order to expedite the work. Plans for such temporary bypasses or detours shall be submitted to the Engineer for review and approval 30 calendar days prior to the proposed construction. Such bypasses or detours shall be removed promptly when in the opinion of the Engineer; they are not longer necessary for the satisfactory progress of the Work. Bypasses and detours shall meet the minimum requirements of Subsection 150.02.B.4.

As an option to the Sequence of Operations in the Contract, the Contractor may submit an alternative Sequence of Operations for review and approval. A twenty calendar day lead time for the Department's review shall be given to this submission so that a decision on its acceptability can be made and presented at the Preconstruction Conference. Insufficient lead time or no submission by the Contractor shall be construed as acceptance of the Sequence of Operations outlined in the Contract and the willingness of the Contractor to execute this as-bid plan.

The Department will not pay, or in any way reimburse the Contractor for claims arising from the Contractor's inability to perform the Work in accordance with the Sequence of Operations provided in the Contract or from an approved Contractor alternate.

The Contractor shall secure the Engineer's approval of the Contractor's proposed plan of operation, sequence of work and methods of providing for the safe passage of vehicular and pedestrian traffic before it is placed in operation. The proposed plan of operation shall supplement the approved traffic control plan. Any major changes to the approved traffic control plan, proposed by the Contractor, shall be submitted to the Department for approval.

Some additional traffic control details will be required prior to any major shifts or changes in traffic. The traffic control details shall include, but not be limited to, the following:

1. A detailed drawing showing traffic locations and laneage for each step of the change.
  - a. The location, size, and message of all signs required by the MUTCD, Plan, Special Provisions and other signs as required to fit conditions. Any portable changeable message signs used shall be included in the details.
  - b. The method to be used in, and the limits of, the obliteration of conflicting lines and markings.
4. Type, location, and extent of new lines and markings.
5. Horizontal and vertical alignment and superelevation rates for detours, including cross-section and profile grades along each edge of existing pavement.
6. Drainage details for temporary and permanent alignments.

7. Location, length, and/or spacing of channelization and protective devices (temporary barrier, guardrail, barricades, etc.)
8. Starting time, duration and date of planned change.
9. For each traffic shift, a paving plan, erection plan, or work site plan, as appropriate, detailing workforce, materials, and equipment necessary to accomplish the proposed work. This will be the minimum resource allocation required in order to start the work.

A minimum of three copies of the above details shall be submitted to the Engineer for approval at least 14 days prior to the anticipated traffic shift. The Contractor shall have traffic control details for a traffic shift which has been approved by the Engineer prior to commencement of the physical shift. All preparatory work relative to the traffic shift, which does not interfere with traffic, shall be accomplished prior to the designated starting time. The Engineer and the Contractor's representative will verify that all conditions have been met prior to the Contractor obtaining materials for the actual traffic shift.

#### **I. Compliance dates for provisions of the MUTCD**

Federal law requires that traffic control devices (temporary or permanent) installed on new highway or bikeway construction or reconstruction shall be compliant with the latest version of the MUTCD before the road is opened to the public for unrestricted travel. The latest version of the MUTCD is the 2009 Edition with 2012 Revisions 1 and 2, which the Georgia Department of Transportation has adopted. However, the FHWA, in the introduction to the MUTCD has established alternate compliance dates for some of the new provisions of the 2009 MUTCD. Below is a list of those compliance dates.

The Department may decide to require contractors to implement some or all of these provisions at an earlier date than the compliance dates noted below. However notice will be given in advance of the letting date if these provisions are to be implemented prior to the compliance dates. The contractor may also decide to implement the new provisions in the 2009 MUTCD earlier than required by the compliance dates below.

The target dates established by the FHWA shall be as follows:

Section 6D.03 Worker Safety Considerations – high-visibility apparel requirements – December 31, 2011

Section 6E.02 High-Visibility Safety Apparel – high-visibility apparel requirements for flaggers – December 31, 2011.

### **150.02 Temporary Traffic Control Zones**

#### **A. Devices and Materials**

In addition to the other provisions contained herein, work zone traffic control shall be accomplished using the following means and materials:

##### **1. Portable Advance Warning Signs**

Portable advance warning signs shall be utilized as per the requirements of the traffic control plans. All signs shall meet the requirements of the MUTCD and shall be NCHRP 350 crashworthy compliant.

##### **2. Arrow Panels**

Portable sequential or flashing arrow panels as shown in the Plans or Specifications for use on Interstate or multi-lane highway lane closure only, shall be a minimum size of 48" high by 96" wide with not less than 15 lamps used for the arrow. The arrow shall occupy virtually the entire size of the arrow panel and shall have a minimum legibility distance of one mile. The minimum legibility distance is that distance at which the arrow panel can be comprehended by an observer on a sunny day, or clear night.

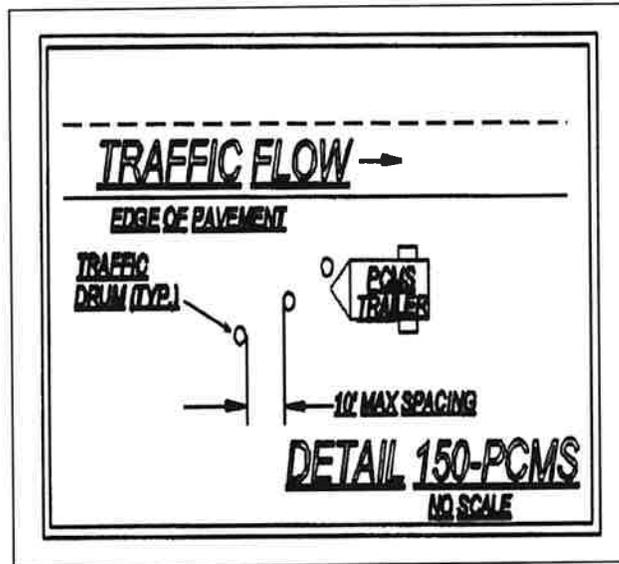
Arrow panels shall be equipped with automatic dimming features for use during hours of darkness. The arrow panels shall also meet the requirements for a Type C panel as shown in the MUTCD. The sequential or flashing arrow panels shall not be used for lane closure on two-lane, two-way highways when traffic is restricted to one-lane operations in which case, appropriate signing, flaggers and when required, pilot vehicles will be deemed sufficient.

The sequential or flashing arrow panels shall be placed on the shoulder at or near the point where the lane closing transition begins. The panels shall be mounted on a vehicle, trailer, or other suitable support. Vehicle mounted panels shall be provided with remote controls. Minimum mounting height shall be seven feet above the roadway to the bottom of the panel, except on vehicle mounted panels which should be as high as practical.

For emergency situations, arrow display panels that meet the MUTCD requirements for Type A or Type B panels may be used until Type C panels can be located and placed at the site. The use of Type A and Type B panels shall be held to the minimum length of time possible before having the Type C panel(s) in operation. The Engineer shall determine when conditions and circumstances are considered to be emergencies. The Contractor shall notify the Engineer, in writing, when any non-specification arrow display panel(s) is being used in the work.

**3. Portable Changeable Message Signs**

Portable changeable message signs meeting the requirements of [Section 632](#) and the MUTCD. Any PCMS in use that is not protected by positive barrier protection shall be delineated by a minimum of three drums that meet the requirement of Subsection 150.05.A.1. The drum spacing shall not exceed a maximum of ten (10') feet as shown in [Detail 150-PCMS](#). When the PCMS is within twenty (20') feet of the opposing traffic flow, the trailing end of the PCMS shall be delineated with a minimum of three drums spaced in the same manner as the approach side of the PCMS.



When not in use the PCMS shall be removed from the roadway unless protected by positive barrier protection. If the PCMS is protected by positive barrier protection the sign panel shall be turned away from traffic when not in use.

**4. Channelization Devices**

Channelization devices shall meet the standards of the MUTCD and [Subsection 150.05](#).

**5. Temporary Barrier**

Temporary barrier shall meet the requirements of [Sections 620](#).

**6. Temporary Traffic Signals**

Temporary traffic signals shall meet the requirements of Section 647 and the MUTCD.

**7. Pavement Marking**

Pavement marking incorporated into the work shall comply with Subsections 150.04.A and 150.04.B.

**8. Portable Temporary Traffic Control Signals**

The use off Portable Temporary Traffic Control Signals shall meet the following minimum requirements:

Only two-lane two-way roadways will be allowed to utilize Portable Temporary Traffic Control Signals.

All portable traffic control signals shall meet the physical display and operational requirements of conventional traffic signals described in the MUTCD.

Each signal face shall have at least three lenses. The lenses shall be red, yellow, or green in color and shall give a circular type of indication. All lenses shall be twelve (12") inches nominal in diameter.

A minimum of two signal faces shall face each direction of traffic. A minimum of one signal head shall be suspended over the roadway travel lane in a manner that will allow the bottom of the signal head housing to be not less than seventeen (17') feet above and not more than nineteen (19') feet above the pavement grade at the center of the travel lane. The second signal head may be located over the travel lane with the same height requirements or the second signal head may be located on the shoulder. When the signal head is located on the shoulder the bottom of the signal head housing shall be at least eight (8') feet but not more than (15') feet above the pavement grade at the center of highway.

Advance warning signage and appropriate pavement markings shall be installed as part of the temporary signal operation.

The signals shall be operated in a manner consistent with traffic requirements. The signals may be operated in timed-mode or in a vehicle-actuated mode. The signals shall be interconnected in a manner to ensure that conflicting movements can not occur. To assure that the appropriate operating pattern including timing is displayed to the traveling public, regular inspections including the use of accurate timing devices shall be made by the Worksite Traffic Control Supervisor. If at any time any part of the system fails to operate within these requirements then the use of the signal shall be suspended and the appropriate flagging operation shall begin immediately.

The Worksite Traffic Control Supervisor (WTCS) shall continuously monitor the portable traffic control signal to insure compliance with the requirements for maintenance under the MUTCD. The signal shall be maintained in a manner consistent with the intention of the MUTCD, with emphasis on cleaning of the optical system. Timing changes shall be made only by the WTCS. The WTCS shall keep a written record of all timing changes.

The portable temporary signal shall have two power sources and shall be capable of running for seven calendar days continuously.

The Contractor shall have an alternate traffic control plan in the event of failure of the signal.

**9. Rumble Strips**

Rumble strips incorporated into the work shall meet the requirements of Section 429 and the MUTCD. Existing rumble strips that are positioned in the traveled way to warn traffic of a stop condition shall be reinstalled based on the following requirements:

**INTERMEDIATE SURFACES:** Intermediate surfaces that will be in use for more than forty-five (45) calendar days shall have rumble strips reinstalled on the traveled way in the area of a stop condition. Non-refundable deductions in accordance with Subsection 150.08 will be assessed for any intermediate surface in place for greater than 45 days without rumble strips.

**FINAL SURFACES:** Rumble strips shall be installed on the final surface within fourteen (14) calendar days of the placement of the final surface in the area of the stop condition. Failure to install within fourteen (14) calendar days will result in assessment of non-refundable deductions in accordance with Subsection 150.08.

Prior to the removal of any rumble strips located in the travel way, stop ahead (W3-1a) warning signs shall be double indicated ahead of the stop condition. These warning signs shall be a minimum of 48 inches by 48 inches. The reflectorization of the warning signs shall be as required by Subsection 150.01.C. These warning signs shall remain in place until the rumble strips have been reinstalled on the traveled way. Any existing warning signs for the stop ahead condition shall be removed or covered while the 48" X 48" (W3-1a) signs are in place. When the rumble strips have been reinstalled these warning signs should be promptly removed and any existing signage placed back in service.

#### **10. Guardrail**

When the removal and installation of guardrail is required as a part of the work the following time restrictions shall apply unless modified by the special conditions:

**MULTI-LANE HIGHWAYS:** From the time that the existing guardrail or temporary positive barrier protection is removed the Contractor has fourteen (14) calendar days to install the new guardrail and anchors. During the interim, the location without guardrail shall be protected with drums spaced at a maximum spacing of twenty (20') feet. The maximum length of rail that can be removed at any time without being replaced with positive barrier protection is a total of 2000 linear feet of existing rail or the total length of one run of existing rail, whichever is greater.

**ALL OTHER HIGHWAYS:** From the time that the existing guardrail is removed or from the time that temporary positive barrier protection is removed the Contractor has thirty (30) calendar days to install the new guardrail and anchors. During the interim, the location without guardrail shall be protected with drums spaced at a maximum spacing of twenty (20') feet. The maximum length of rail that can be removed at any time without being replaced with positive barrier protection is a total of 1000 linear feet of existing rail or the total length of one run of existing rail, whichever is greater.

Based on existing field conditions, the Engineer may review the work and require that the guardrail be installed earlier than the maximum time allowed above by giving written notification to the Contractor via the TC-1 traffic control report. Failure to comply with the above time and quantity restrictions shall be considered as non-compliance under Subsection 150.08.

#### **11. Stop sign regulated intersections**

For intersections that utilize stop sign(s) to control the flow of traffic and to restrict the movement of vehicles, the stop sign(s) shall be maintained for the duration of the work or until such time that the stop condition is eliminated or until an interim or permanent traffic signal can be installed to provide proper traffic control. The traffic signal shall be installed and properly functioning before the removal of the existing stop sign(s) is permitted. If the existing intersection is enhanced traffic control features such as stop bars, double indicated stop signs, oversized signs, advanced warning stop ahead signs, rumble strips on the approaches or flashing beacons located overhead or on the

shoulders then these features shall be maintained for the duration of the project or until the permanent traffic control plan has been implemented.

Whenever the staging of the work requires that the traveled-way be relocated or realigned the Contractor shall reinstall all enhanced traffic control features noted above on the newly constructed sections of the work. The cost of relocating the stop bars, stop signs, advanced warning signs, the rumble strips and the flashing beacons shall be included in the price bid for Lump-Sum-Traffic Control unless individual pay items are included in the contract for rumble strips and/or flashing beacons. When pay items are included in the contract for rumble strips or flashing beacons then these items will be paid per each.

When staging requires the relocation or realignment of an existing stop condition it may be necessary to consider the addition of enhanced traffic control features even though none existed at the original location. As a guide for enhanced traffic control features that may be considered, the Engineer or the WTCS may refer to the Department's guidelines for "Opening of New Roadways to Traffic" (Document #6635-2). Horizontal and vertical alignment changes at a new location may have decreased or restricted sight distance or the stop condition may occur sooner than in the previous alignment. If these conditions occur then the Engineer and/or the WTCS should consider additional measures to enhance the motorist's awareness of the changes even though the staging plans may not address enhanced features. Stop signs should be a minimum of 36 inches for interim situations. The use of 48 inch stop signs may be warranted under project specific conditions.

Flags may be used on interim/permanent stop signs that are mounted at seven (7') feet in height for a short duration in order to direct additional attention to a new or relocated stop sign(s). Flags should not be used for durations exceeding two weeks unless unusual or site specific conditions warrant a longer period of time. The use of Type "A" flashing red light(s) attached to the stop sign(s) may be appropriate during the same period that the flags are in use to increase attention.

The use of rumble strips and/or portable changeable message signs may be considered. The use of new rumble strips, where none previously existed, shall have the prior approval of District Traffic Operations before being included as part of the traffic control plan. The message(s) displayed on any PCMS shall have the prior approval of the Engineer and the message(s) shall be included as part of the traffic control plan for the interim staging.

The placement of any additional interim ground-mounted signs and posts or stop bars shall be considered as incidental to the price bid for Lump Sum-Traffic Control. The installation of rumble strips, flashing beacons or the use of Portable Changeable Message Signs (PCMS) shall be considered as Extra Work unless pay items are included in the contract.

## **B. Work zone restrictions**

### **1. Interstate**

The Contractor shall not simultaneously perform work on both the inside shoulder and outside shoulder on either direction of traffic flow when the Work is within 12 feet of the travel-way, unless such areas are separated by at least one-half mile of distance.

### **2. Non-Interstate Divided Highways**

The Contractor shall not simultaneously perform work on both the inside shoulder and outside shoulder on either direction of traffic flow when the Work is within 12 feet of the travel-way, unless such areas are separated by at least one-half mile distance in rural areas or at least 500 feet of distance in urban areas.

### **3. Non-Divided Highways**

The Contractor shall not simultaneously perform work on opposite sides of the roadway when the work is within 12 feet of the travel-way, unless such areas are separated by at least one-half mile of distance in rural areas or at least 500 feet of distance in urban areas.

On two-lane projects where full width sections of the existing subgrade, base or surfacing are to be removed, and new base, subgrade, or surfacing are to be constructed, the Contractor shall maintain one-lane traffic through the construction area by removing and replacing the undesirable material for half the width of the existing roadway at a time. Replacement shall be made such that paving is completed to the level of the existing pavement in the adjacent lane by the end of the workday or before opening all the roadway to traffic.

**4. All Highways:**

- a. There shall be no reduction in the total number of available traffic lanes that existed prior to construction except as specifically allowed by the Contract and as approved by the Engineer.
- b. Travel way Clearances: All portions of the work shall maintain the following minimum requirements:

Horizontal: The combined dimensions of the paved shoulder and the roadway surface remaining outside the Work Zone shall be no less than sixteen (16) feet in width at any location.

Vertical: The overhead clearance shall not be reduced to less than fifteen (15) feet at any location.

The restrictions above apply to all shifts, lane closures, on-site detours and off site detours whether shown in the contract or proposed by the Contractor. It shall be the responsibility of the Contractor to verify that these minimum requirements have been met before proceeding with any phase of the Work.

Two-lane two-way roadways may have temporary horizontal restrictions of less than sixteen (16) feet provided a flagger operation for one-way traffic is utilized to restrict access to the work area by over-width loads. The minimum horizontal clearance shall be restored before the flagging operation is removed.

- c. Highway Work Zone: All sections or segments of the roadway under construction or reconstruction shall be signed as a Highway Work Zone except non-state highway two-lane two-way resurfacing projects. Two conditions can be applied to a Highway Work Zone. Condition 1 is when no reduction in the existing speed limit is required. Condition 2 is when worksite conditions require a reduction of the speed limit through the designated Work Zone. Properly marking a Highway Work Zone shall include the following minimum requirements:
  - 1) NO REDUCTION IN THE EXISTING POSTED SPEED LIMIT IN HIGHWAY WORK ZONE:
    - a) Signage (Detail 150-HWZ-2) shall be posted at the beginning point of the Highway Work Zone warning the traveling public that increased penalties for speeding violations are in effect. The HWZ-2 sign shall be placed a minimum of six hundred (600') feet in advance of the Highway Work Zone and shall not be placed more than one thousand (1000') feet in advance of the Work Zone. If no speed reduction is required it is recommended that the HWZ-2 be placed at 750 feet from the work area between the ROAD WORK 500 FT. and the ROAD WORK 1000 FT. signs. HWZ-2 signs shall be placed at intervals not to exceed one mile for the length of the project. HWZ-2 signs should be placed on the mainline after all major intersections except State Routes. State Routes shall be signed as per the requirements for intersecting roadways below.
    - b) The existing speed limit shall be posted at the beginning of the Work Zone. Existing Speed Limit signs (R2-1) shall be maintained.

- c) INTERSECTING ROADWAYS: Intersecting state routes shall be signed in advance of each intersection with the Work Zone with a HWZ-2 sign to warn motorists that increased fines are in effect. All other intersecting roadways that enter into a designated Highway Work Zone may be signed in advance of each intersection with the Work Zone. When construction equipment and personnel are present in the intersection on the mainline of a multi-lane roadway, the intersecting side roads shall be signed in advance with HWZ-2 signs. As soon as the work operation clears the intersection the signage may be removed.
  - d) Signage (Detail 150-HWZ-3) shall be posted at the end of the Highway Work Zone indicating the end of the zone and indicating that increased penalties for speeding violations are no longer in effect.
  - e) When a designated Highway Work Zone is no longer necessary all signs shall be removed immediately.
2. REDUCING THE SPEED LIMIT IN A HIGHWAY WORK ZONE:  
Highway Work Zone signs shall be posted as required in Condition 1 above.

For limited access (interstate) highways and controlled access multi-lane divided highways the posted speed limit shall be reduced as required below.

Speed Limit signage (R2-1) for the reduced speed limit shall be erected at the beginning of the work zone. Additional signs shall be placed to ensure that the maximum spacing of the reduced speed limit signs shall be no greater than one (1) mile apart. Existing speed limit signs shall be covered or removed. On multi-lane divided highways the speed limit signs shall be double indicated when the reduced speed is in use.

When any one or more of the following conditions exist and the existing speed limit is 65 mph or 70 mph, the speed limit shall be reduced by 10 mph. If the existing speed limit is 60 mph, the speed limit should be reduced by 5 mph. If the existing speed limit is 55 mph or less, the Contractor can only reduce the speed limit with the prior approval of the Engineer. The reduction in the speed limit shall be no greater than 10 mph:

- a) Lane closure(s) of any type and any duration.
- b) The difference in elevation exceeds two inches adjacent to a travel lane as shown in Subsection 150.06, Detail 150-B, 150-C.
- c) Any areas where equipment or workers are within ten feet of a travel lane.
- d) Temporary portable concrete barriers located less than two (2') feet from the traveled way.
- e) As directed by the Engineer for conditions distinctive to this project.

When the above conditions are not present the speed limit shall be immediately returned to the existing posted speed limit. A speed reduction shall not be put in place for the entire length of the project unless conditions warranting the speed reduction are present for the entire project length. All existing speed limit signs within the temporary speed reduction zone shall be covered or removed while the temporary reduction in the speed limit is in effect. All signs shall be erected to comply with the minimum requirements of the MUTCD. As a minimum the following records shall be kept by the WTCS:

- a) Identify the need for the reduction.
- b) Record the time of the installation and removal of the temporary reduction.
- c) Fully describe the location and limits of the reduced speed zone.
- d) Document any accident that occurs during the time of the reduction.

A copy of the weekly records for reduced speed zones shall be submitted to the Engineer.

Reduced speed zones shall, as a minimum, be signed as per Detail 150-HWZ-1. Interim signs shall meet the requirements of Subsection 150.03.D. Additional signs may be necessary to adjust for actual field conditions. When a pilot vehicle is used on a two-lane two-way roadway the speed limit should not be reduced. For special conditions specific to the work, on two-lane two-way roadways or multi-lane highways, the contractor may reduce the posted speed limit with the prior approval of the Engineer.

**5. Milled surface restrictions:**

Unless modified by the special conditions, a milled surface on any asphaltic concrete surface shall not be allowed to remain open to traffic for a period of time that exceeds thirty (30) calendar days. Severely potholed milled surfaces that pose a damage threat to vehicular traffic must be repaired immediately by contractor to the satisfaction of the Engineer. Milled Surface signage shall be placed on roads where milling is not resurfaced within a 7 day period. All variable depth milling shall take place prior to deep patching where both line items occur within the same area.

**6. Installation/Removal of work area signage:**

No payment will be made for Traffic Control-Lump Sum until the Work has actually started on the project. The installation of traffic control signage does not qualify as the start of work. Advanced warning signs shall not be installed until the actual beginning of work activities. Any permanent mount height signs installed as the work is preparing to start shall be covered until all signs are installed unless all signs are installed within seven (7) calendar days after beginning installation.

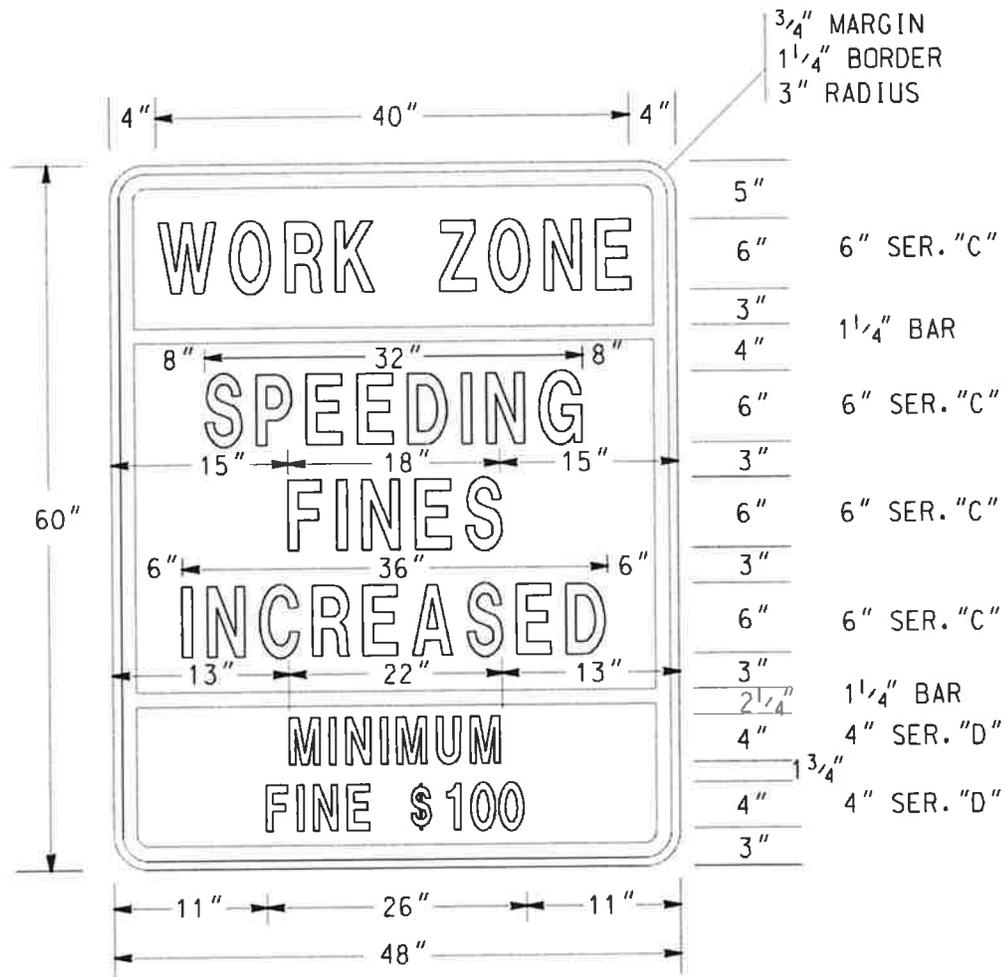
All temporary traffic control devices shall be removed as soon as practical when these devices are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate shall be removed or covered.

All construction warning signs shall be removed within seven (7) calendar days after time charges are stopped or pay items are complete. If traffic control devices are left in place for more than ten (10) calendar days after completion of the Work, the Department shall have the right to remove such devices, claim possession thereof, and deduct the cost of such removal from any monies due, or which may become due, the Contractor.

**PUNCHLIST WORK:** Portable signs shall be utilized to accomplish the completion of all punch list items. The portable signs shall be removed daily. All permanent mount height signs shall be removed prior to the beginning of the punch list work except "Low/Soft Shoulder" signs and any signs that have the prior written approval of the Engineer to remain in place while the punch list work is in progress.

Failure to promptly remove the construction warning signs within the seven (7) calendar days after the completion of the Work or failure to remove or cover signs when work is suspended for short periods of time shall be considered as non-performance under Subsection 150.08.





HWZ-2

COLORS

TOP PANEL

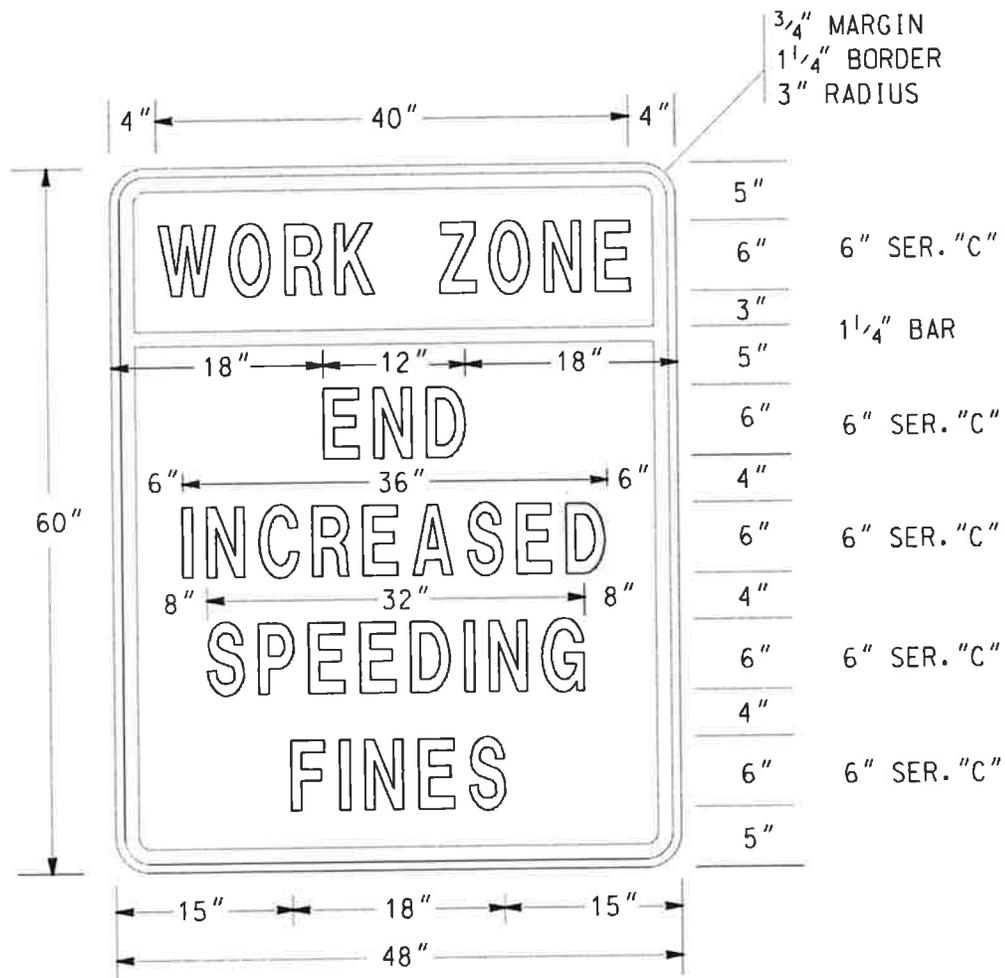
- LEGEND & BORDER - BLACK (NON-REFL)
- BACKGROUND - FLUORESENT ORANGE  
(ASTM TYPE VII, VIII, IX or X)

MIDDLE & BOTTOM PANELS

- LEGEND & BORDER - BLACK (NON-REFL)
- BACKGROUND - WHITE (ASTM TYPE III OR IV REFL SHEETING)

NOTES:

1. ALL HWZ-2 SIGN PANELS SHALL BE RIGID.
2. THE SIZE OF THE HWZ-2 SIGN SHALL NOT BE REDUCED FOR USE ON TWO-LANE ROADWAYS.



HWZ-3

COLORS

TOP PANEL

LEGEND & BORDER - BLACK (NON-REFL)

BACKGROUND - FLUORESENT ORANGE

(ASTM TYPE VII, VIII, IX or X)

BOTTOM PANEL

LEGEND & BORDER - BLACK (NON-REFL)

BACKGROUND - WHITE (ASTM TYPE III OR IV REFL SHEETING)

NOTES:

1. ALL HWZ-3 SIGN PANELS SHALL BE RIGID.
2. THE SIZE OF THE HWZ-3 SIGN SHALL NOT BE REDUCED FOR USE ON TWO-LANE ROADWAYS.

## C. Lane closures

### 1. Approval/Restrictions

All lane closures of any type or duration shall have the prior approval of the Engineer.

- a. The length of a lane closure shall not exceed two (2) miles in length excluding the length of the tapers unless the prior approval of the Engineer has been obtained. The Engineer may extend the length of a lane closure based upon field conditions however the length of a work zone should be held to the minimum length required to accomplish the Work. Lane closures shall not be spaced closer than one mile. The advanced warning signs for the project should not overlap with the advanced warning signs for lane shifts, lane closures, etc.
- b. Lane closures that require same direction traffic to be split around the Work Area will not be approved for roadways with posted speeds of 35 mph or greater, excluding turn lanes.

### 2. Removal Of Lane Closures

To provide the greatest possible convenience to the public in accordance with Subsection 107.07, the Contractor shall remove all signs, lane closure markings, and devices immediately when lane closure work is completed or temporarily suspended for any length of time or as directed by the Engineer. All portable signs and portable sign mounting devices shall be removed from the roadway to an area which will not allow the sign to be visible and will not allow the sign or sign mounting device to be impacted by traffic.

### 3. Exit And Entrance Ramps

On multilane highways where traffic has been shifted to the inside lanes, the exit and entrance ramps shall have channelization devices placed on both sides of the ramp. The temporary ramp taper length shall be greater than, or equal to, the existing taper length. Interim EXIT gore signs shall be placed at the ramp divergence. The "EXIT OPEN" sign shown in Figure TA-42 of the MUTCD shall be utilized. Channelization device spacing shall be 10 feet for 200 feet in advance of the temporary gore, and 10 feet for the first 100 feet of the temporary gore.

### 4. Lane Drop/Lane Closure

The first seven (7) calendar days of any lane closure shall be signed and marked as per Standard 9106 or 9107. However, lane closures that exist for a duration longer than seven (7) calendar days may be signed and marked as per the details in Standard 9121, provided the prior approval of the Engineer is obtained. The approved lane drop shall utilize only the signs and markings shown for the termination end of the lane drop in Standard 9121. All warning signs in the lane drop sequence shall be used. Drums may be substituted for the Type I Crystal Delineators at the same spacing.

### 5. Termination Area

The transition to normal or full width highway at the end of a lane closure shall be a maximum of 150 feet.

## D. Traffic pacing method

### 1. Pacing Of Traffic

With prior approval from the Engineer, traffic may be paced allowing the Contractor up to ten (10) minutes maximum to work in or above all lanes of traffic for the following purposes:

- a. Placing bridge members or other bridge work.
- b. Placing overhead sign structures.
- c. Other work items requiring interruption of traffic.

The Contractor shall provide a uniformed police officer with patrol vehicle and blue flashing light for each direction of pacing. The police officer, Engineer, and flaggers at ramps shall be provided with a radio which will provide continuous contact with the Contractor.

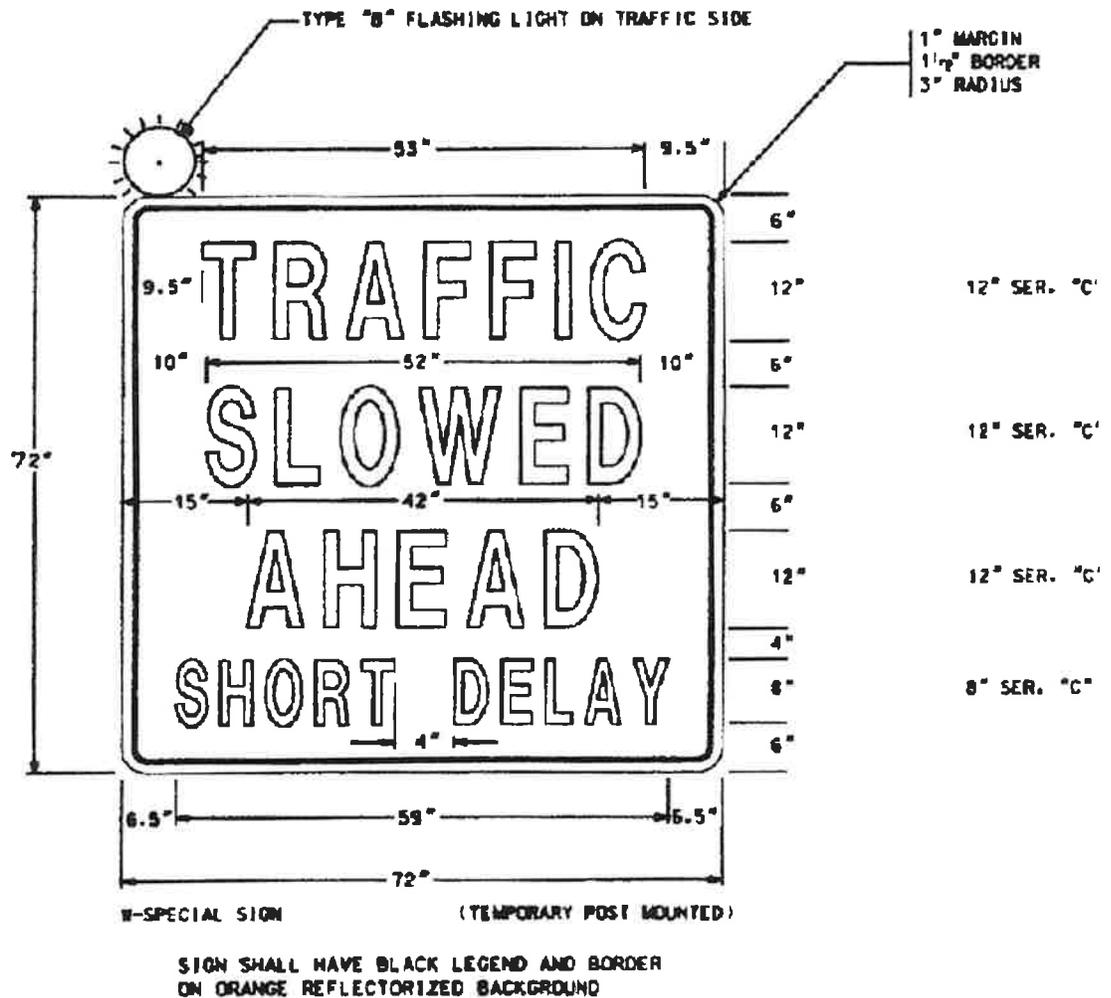
When ready to start the work activity, the police vehicle will act as a pilot vehicle slowing the traffic thereby providing a gap in traffic allowing the Contractor to perform the Work. Any on-ramps between the pace and the work area shall be blocked during pacing of traffic, with a flagger properly dressed and equipped with a Stop/Slow paddle. Each ramp should be opened after the police vehicle has passed.

Pilot vehicles shall travel at a safe pace speed, desirably not less than 20 mph interstate and 10 mph non-interstate. The Contractor shall provide a vehicle to proceed in front of the police vehicle and behind the other traffic in order to inform the Contractor's work force when all vehicles have cleared the area.

Traffic will not be permitted to stop during pacing except in extreme cases as approved by the Engineer.

## **2. Methods Of Signing For Traffic Pacing**

At a point not less than 1,000 feet in advance of the beginning point of the pace, the Contractor shall erect and cover a W-special sign (72 inch x 72 inch) with a Type "B" flashing light, with the legend "TRAFFIC SLOWED AHEAD SHORT DELAY" (See Detail 150-A). A portable changeable message sign may be used in lieu of the W-special sign. On divided highways this sign shall be double indicated. A worker with a two-way radio shall be posted at the sign, and upon notice that the traffic is to be paced shall turn on the flashing light and reveal the sign. When traffic is not being paced, the flashing light shall be turned off and the sign covered or removed. W-special signs are reflectorized black on orange, Series "C" letter and border of the size specified.



DETAIL 150-A

**E. Construction vehicle traffic**

The Contractor's vehicles shall travel in the direction of normal roadway traffic and shall not reverse direction except at intersections, interchanges, or approved temporary crossings. The Contractor may submit a plan requesting that construction traffic be allowed to travel in the opposite direction of normal traffic when it would be desirable to modify traffic patterns to accommodate specific construction activities.

Prior approval of the Engineer shall be obtained before any construction traffic is allowed to travel in a reverse direction. If the Contractor's submittal is approved the construction traffic shall be separated from normal traffic by appropriate traffic control devices.

**F. Environmental impacts to the traffic control plan**

The Contractor shall ensure that dust, mud, and other debris from construction activities do not interfere with normal traffic operations or adjacent properties. All outfall ditches, special ditches, critical storm drain structures, erosion control structures, retention basins, etc. shall be constructed, where possible, prior to the beginning of grading operations so that the best possible drainage and erosion control will be in effect during the grading operations, thereby keeping the roadway areas as dry as possible.

Areas within the limits of the project which are determined by the Engineer to be disturbed or damaged due either directly or indirectly from the progress or the lack of progress of the work shall be cleaned up, redressed, and regressed. All surplus materials shall be removed and disposed of as required. Surplus materials shall be disposed of in accordance with Subsection 201.02.E.3 of the Specifications.

**G. Existing street lights**

Existing street lighting shall remain lighted as long as practical and until removal is approved by the Engineer.

**H. Night work**

Adequate temporary lighting shall be provided at all nighttime work sites where workers will be immediately adjacent to traffic. For their own protection, workers in or adjacent to traffic during nighttime operation shall wear reflectorized vests that meet the requirements of the MUTCD.

**I. Construction vehicles in the work zone**

The parking of Contractor's and/or workers personal vehicles within the work area or adjacent to traffic is prohibited. It shall be the responsibility of the Worksite Traffic Control Supervisor to ensure that any vehicle present at the worksite is necessary for the completion of the work.

**J. Encroachments on the traveled-way**

The Worksite Traffic Control Supervisor (WTCS) shall monitor the work to ensure that all the rocks, boulders, construction debris, stockpiled materials, equipment, tools and other potential hazards are kept clear of the travel way. These items shall be stored in a location, in so far as practical, where they will not be subject to a vehicle running off the road and striking them.

**K. Pedestrian access to the work**

All existing pedestrian walkways shall be maintained. Whenever changes to the worksite necessitate changes to existing walkways, temporary walkways shall be provided and maintained, with appropriate signs as necessary, to allow safe passage of pedestrian traffic.

**L. Traffic Signals**

If the sequence of operations, staging, or the traffic control plan requires the relocation or shifting of any components of an existing traffic signal system then any work on these traffic signals will be considered as part of Lump Sum- Traffic Control. The contractor becomes responsible for the maintenance of these traffic signals from the time that the system is modified until final acceptance. The maintenance of traffic signals that are not a part of the work and are not in conflict with any portion of the work shall not be the responsibility of the contractor.

When construction operations necessitate an existing traffic signal to be out of service, the Contractor shall furnish off-duty police officers to regulate and maintain traffic control at the site.

**M. Removal/Reinstallation of miscellaneous items**

In the prosecution of the Work, if it becomes necessary to remove any existing signs, markers, guardrail, etc. not covered by specific pay item, they shall be removed, stored and reinstalled, when directed by the Engineer, to line and grade, and in the same condition as when removed.

**150.03 Signs**

**A. Signing requirements of the traffic control plan**

When existing regulatory, warning or guide signs are required for proper traffic control the Contractor shall maintain these signs in accordance with the traffic control plan. The Contractor shall review the status of all existing signs, interim signs added to the work, and permanent sign installations that are part of the work to eliminate any conflicting or non-applicable signage in the Traffic Control Plan. The Contractor's review of all signs in the Traffic Control Plan shall establish compliance with the requirements of the most recent version of the MUTCD and Section 150. Any conflicts shall be

reported to the Engineer immediately and the WTCS shall take the necessary measures to eliminate the conflict.

The Contractor shall make every effort to eliminate the use of interim signs as soon as the Work allows for the installation of permanent signs.

All existing illuminated signs shall remain lighted and be maintained by the Contractor.

Existing street name signs shall be maintained at street intersections.

**B. Conflicting or non-applicable signs**

Any sign(s) or portions of a sign(s) that are not applicable to the traffic control plan shall be covered so as not to be visible to traffic or shall be removed from the roadway when not in use. The WTCS shall review all traffic shifts and changes in the traffic patterns to ensure that all conflicting signs have been removed. The review shall confirm that the highest priority signs have been installed and that signs of lesser significance are not interfering with the visibility of the high priority signs. High priority signs include signs for road closures, shifts, detours, lane closures and curves. Any signs, such as speed zones and speed limits, passing zones, littering fines and litter pick up, that reference activities that are not applicable due to the presence of the Work shall be removed, stored and reinstalled when the Work is completed.

Failure to promptly eliminate conflicting or non-applicable signs shall be considered as non-performance under Subsection 150.08.

**C. Removal of existing signs and supports**

The Contractor shall not remove any existing signs and supports without prior approval from the Engineer. All existing signs and supports which are to be removed shall be stored and protected if this material will be required later in the work as part of the traffic control plan. If the signs are not to be utilized in the work then the signs will become the property of the Contractor unless otherwise specified in the contract documents.

**D. Interim guide, warning and regulatory signs**

Interim guide, warning, or regulatory signs required to direct traffic shall be furnished, installed, reused, and maintained by the Contractor in accordance with the MUTCD, the Plans, Special Provisions, Special Conditions, or as directed by the Engineer. These signs shall remain the property of the Contractor. The bottom of all interim signs shall be mounted at least seven (7') feet above the level of the pavement edge when the signs are used for long-term stationary operations as defined by Section 6G.02 of the most recent version of the MUTCD. Special Conditions under Subsection 150.11 may modify this requirement.

Portable signs may be used when the duration of the work is less than three (3) days or as allowed by the special conditions in Subsection 150.11. Portable signs shall be used for all punch list work. All portable signs and sign mounting devices utilized in work shall be NCHRP 350 compliant. Portable interim signs shall be mounted a minimum of one (1') foot above the level of the pavement edge for directional traffic of two (2) lanes or less and a minimum of seven (7') feet for directional traffic of three (3) or more lanes. Signs shall be mounted at the height recommended by the manufacturer's crashworthy testing requirements. Portable interim signs which are mounted at less than seven (7') feet in height may have two 18 inch x 18 inch fluorescent red-orange or orange-red warning flags mounted on each sign.

All regulatory sign blanks shall be rigid whether the sign is mounted as a portable sign, on a Type III barricade or as a permanent mount height sign.

Any permanent mount height interim sign that is designed to fold in half to cover a non-applicable message on the sign shall have reflectorized material on the folded over portion of the sign. The reflectorized material shall be orange in color with a minimum of ASTM Type I engineering grade

sheeting with a minimum area of six inches by six inches (6" x 6") facing the direction of traffic at all times when the sign is folded.

Interim signs may be either English or metric dimensions.

**E. Existing special guide signs**

Existing special guide signs on the Project shall be maintained until conditions require a change in location or legend content. When change is required, existing signs shall be modified and continued in use if the required modification can be made within existing sign borders using design requirements (legend, letter size, spacing, border, etc.) equal to that of the existing signs, or of Sub-Section 150.03.E.2. Differing legend designs shall not be mixed in the same sign.

**1. Special Guide Signs**

Special guide signs are those expressway or freeway guide signs that are designed with a message content (legend) that applies to a particular roadway location. When an existing special guide sign is in conflict with work to be performed, the Contractor shall remove the conflicting sign and reset it in a new, non-conflicting location which has been approved by the Engineer.

**2. Interim Special Guide Signs**

When it is not possible to utilize existing signs, either in place or relocated, the Contractor shall furnish, erect, maintain, modify, relocate, and remove new interim special guide signs in accordance with the Plans or as directed by the Engineer. Interim special guide signs that may be required in addition to, or a replacement for, existing expressway and freeway (interstate) signs shall be designed and fabricated in compliance with the minimum requirements for guide signing contained in Part 2E "Guide Signs Expressway" and Part 2F "Guide Signs Freeways" of the MUTCD, except that the minimum size of all letters and numerals in the names and places, streets and highways on all signs shall be 16 inches Series "E" initial upper-case and 12 inches lower-case. All interstate shields on these signs shall be 48 inches and 60 inches for two-numeral and three-numeral routes, respectively.

The road name of the exit or route shield shall be placed on the exit gore sign.

**3. Interim Overhead Guide Sign Structures**

Interim overhead special guide sign structures are not required to be lighted unless specifically required by the Plans. If lighting is required the sign shall be lighted as soon as erected and shall remain lighted, during the hours of darkness, until the interim sign is no longer required. The Contractor shall notify the Power Company at least thirty (30) days prior to desired connection to the power source.

**4. Permanent Special Guide Signs**

The installation of new permanent special guide signs and the permanent modification or resetting of existing special guide signs, when included in the contract, shall be accomplished as soon as practical to minimize the use of interim special guide signs. If lighting is required by the Plans, all new permanent overhead special guide signs shall be lighted as soon as erected.

**F. Materials-Interim signs**

**1. Posts**

Permanent mounting height of seven (7') feet- Posts for all interim signs shall meet the requirements of Section 911 except that green or silver paint may be used in lieu of galvanization for steel posts or structural shape posts. Within the limits of a single project, all metal posts shall be the same color. Wood posts are not required to be pressure treated.

Interim posts may be either metric or English in dimensions.

Posts for all interim signs shall be constructed to yield upon impact unless the posts are protected by guardrail, portable barrier, impact attenuator or other type of positive barrier protection.

Unprotected posts shall meet the breakaway requirements of the “1994 AASHTO Standard Specifications for Structural Support for Highway Signs, Luminaries and Traffic Signals”. Unprotected interim posts shall be spliced as shown in Detail 150-F unless full length unspliced posts are used.

Unprotected post splices will not be permitted any higher than four inches above the ground line to lessen the possibility of affecting the undercarriage of a vehicle. Installation of posts may require establishment of openings in existing pavements, islands, shoulders etc.

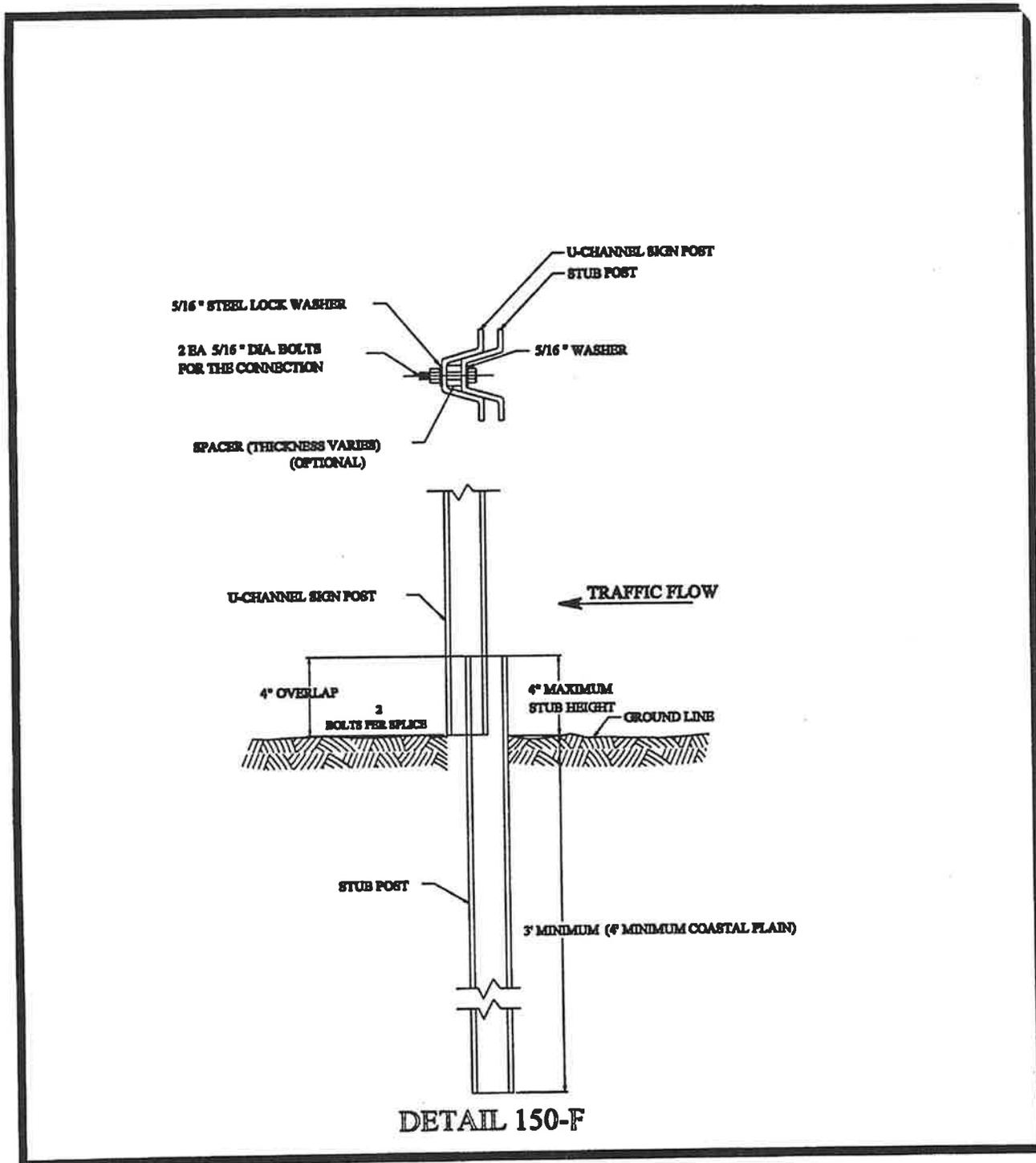
**2. Sign Blanks And Panels- Permanent mounting height of seven (7') feet-**

All sign blanks and panels shall conform to Section 912 of the Specifications except that blanks and panels may be ferrous based or other metal alloys. Type 1 and Type 2 sign blanks shall have a minimum thickness of 0.08 inches regardless of the sign type used. Alternative sign blank materials (composites, poly carbonates, fiberglass reinforced plastics, recycled plastics, etc.) shall have a letter of approval from the Office of Materials and Research for use as interim construction signs before these materials are allowed to be incorporated into the work unless these rigid sign blanks are currently approved as a crashworthy sign blank material under QPL 34. The back side of sign panels shall be painted orange to prevent rust if other metals are used in lieu of aluminum. Plywood blanks or panels will not be permitted. The use of flexible signs will not be permitted for permanent mount height signs.

Interim blanks and panels may be either metric or English in dimensions.

**3. Portable Sign Mounting Devices, Portable Sign Blanks-**

All portable sign mounting devices and sign blanks utilized in the work shall be NCHRP 350 Test Level III compliant. All portable sign mounting devices and sign blanks shall be from the Qualified Products List. Any sign or sign mounting device shall have an identifying decal, logo, or manufacturer's stamping that clearly identifies the device as NCHRP 350 compliant. The Contractor may be required to provide certification from the Manufacturer as proof of NCHRP 350 compliance. All portable signs shall be mounted according to height requirements of Subsection 150.03.D.



**G. Sign visibility and offsets**

All existing, interim and new permanent signs shall be installed so as to be completely visible for an advance distance in compliance with the MUTCD. Any clearing required for maintaining the line of sight to existing, interim or permanent signs shall be done as part of the requirements of the traffic control plan. The clearing shall include any advance warning signs, both interim and permanent, that are installed as a part of the work including advance warning signs that are installed outside the limits of the project. Any sign installed behind W-beam or T-beam guardrail with non-breakaway posts shall

be installed with the leading edge of the sign a minimum of four feet and three inches (4'3") behind the face of the guardrail with five feet (5') of clearance being desirable. Limbs, brush, construction equipment and materials shall be kept clear of the driver's line of sight to all signs that are part of the traffic control plan.

## **H. Advance warning signs**

### **1. All Type Of Highways**

Advance warning signs shall be placed ahead of the work area in accordance with Part VI of the most recent version of the MUTCD and shall include a series of at least three advance road work (W20-1) signs placed at the termini of the project. The series shall have the legend ROAD WORK (1500 FEET, 1000 FEET, AND 500 FEET).

At grade intersecting roadways and on-ramps shall be signed with a minimum of one ROAD WORK AHEAD sign.

When work terminates at a "T" intersection, a minimum of one "ROAD WORK AHEAD" sign shall be placed in advance of the intersection and one "END ROAD WORK" sign shall be placed at the termination end of the intersection. Field conditions may require the use of additional warning signage.

Advanced Warning Signs on State Routes shall be a minimum dimension of 48 inches x 48 inches. When a State Route intersects a project which consists of adding travel lanes, reconstructing an existing roadway or new location work, the State Route approaches shall have a minimum of three (W20-1) advanced warning signs (1500 ft., 1000 ft., 500 ft.). The termination end of an intersecting State Route shall have END ROAD WORK signage.

The W20-1 signs shall be placed at the termini of the project or sufficiently in advance of the termini to allow for lane shifts, lane closures and other activities which may also require advanced warning signs. The advanced warning signs for the project should not overlap with the advanced warning signs for lane shifts, lane closures, etc.

The length of a work zone should be held to the minimum length required to accomplish the work. If a project has multiple individual worksites within the overall limits of the project, each site should be signed individually if the advance warning signs for each site can be installed without overlapping an adjacent worksite. As soon as the work is completed at any individual site the warning signs shall be removed from that site. Clean-up work and punch list work shall be performed with portable signage.

Project mileage indicated on the G20-1 sign shall be the actual project mileage rounded up to the nearest whole mile. Projects less than two (2) miles in length or individual worksites that are part of a multiple worksite project may delete this sign. The G20-1 sign shall be 60" X 36" and the G20-2 sign shall be 48" X 24".

### **2. Interstate, Limited Access And Multilane Divided Highways**

In addition to the W20-1 signs required at 500 ft., 1000 ft. and 1500 ft., multi-lane divided highways shall also have additional advanced warning signs installed with the legend "ROAD WORK (2 MILES, 1 MILE and 1/2 MILE). All construction warning signs on divided highways shall be double indicated (i.e., on the left and right sides of the roadway.) If the use of the 1/2 mile, 1 mile and 2 mile advanced warning signs cause an overlap with other work or do not benefit field conditions then the Engineer may review the use of these signs and eliminate their installation. When the posted speed limit is 50 MPH or less, the 1/2 mile, 1 mile and 2 mile signs should be eliminated especially in urban areas.

The W20-1 advance warning signs for ROAD WORK 500 FEET; 1000 FEET; and 1500 FEET shall be temporarily covered when work involving the advanced warning signs for lane shifts and

lane closures overlap these signs. The ROAD WORK ½ MILE, ROAD WORK 1 MILE, and ROAD WORK 2 MILES shall be in place when the 500, 1000 and 1500 feet signs are temporarily covered.

When the temporary traffic control zone already has advanced warning (W20-1) signs installed the W20-1 signs required for lane closures under Standard 9106 should be eliminated.

**RAMP WORK ON LIMITED ACCESS HIGHWAYS:** The work zone shall not be signed for the entire length of the mainline of a limited access highway when only short individual worksites, interchange or ramp work is being performed.

When work is restricted to ramp reconstruction or widening activities, the advance warning signs on the mainline section of the limited access highway shall be limited to the use of portable advance warning signs. These portable advance warning signs shall only be utilized when work activity is within the gore point of the ramp and the mainline traveled way or work is active in the acceleration/deceleration lane adjacent to the mainline traveled way. Portable advance warning signs (W20-1; 1500 ft./1000 ft./500ft.) shall be installed on the traveled way of the limited access highway when the above conditions are present. The advance warning signs shall be installed only in one direction where work is active. All portable signs shall be double indicated. When work is not active, the ramp work shall be advanced warned by the use of a single 48 inch X 48 inch "RAMP WORK AHEAD" sign along the right shoulder of the mainline traveled way prior to the beginning of the taper for the deceleration lane. The "RAMP WORK AHEAD" sign shall be mounted at seven (7') feet in height. Differences in elevation shall be in compliance with the requirements of Subsection 150.06 prior to the removal of the portable (W20-1) advanced warning signs from the mainline.

The G20-1 sign shall be eliminated on limited access highways when the work involves only ramp work, bridge reconstruction, bridge painting, bridge joint repairs, guardrail and anchor replacement or other site specific work which is confined to a short section of limited access highway.

**I. Portable changeable message sign**

Unless specified as a paid item in the contract the use of a portable changeable message sign will not be required. When specified, a portable changeable message sign (PCMS) shall meet the minimum requirements of Section 632 and the most recent version of the MUTCD. The maximum amount of messages allowed to be flashed on one PCMS is two phases (flashes). The language and the timing of the messages shall comply with the MUTCD and Section 632. When used as an advanced device the PCMS should typically be placed ahead of the construction activities. If the PCMS is used as a substitute for another device then the requirements for the other device apply.

**J. Flashing Beacon**

The flashing beacon assembly, when specified, shall be used in conjunction with construction warning signs, regulatory, or guide signs to inform traffic of special road conditions which require additional driver attention. The flashing beacon assembly shall be installed in accordance with the requirements of Section 647.

**K. Rumble strip signage**

Signage for rumble strips located in the travel way shall be as required in Subsection 150.01.C and Subsection 150.02.A.9.

**L. Low/soft shoulder signage**

Low or soft shoulder signs shall be utilized in accordance with the following conditions:

**CONSTRUCTION/RECONSTRUCTION PROJECTS:**

“LOW/SOFT SHOULDER” signs shall be erected when a difference in elevation exceeds one (1”) inch but does not exceed three (3”) inches between the travel way and any type of shoulder unless the difference in elevation is four (4’) feet or greater from the edge of the traveled way.

The spacing of the signs shall not exceed one (1) mile and the signs shall be placed immediately past each crossroad intersection. The “Low/Soft” signs shall remain in place until the difference in elevation is eliminated and the shoulder has been dressed and permanently grassed for a minimum of thirty (30) calendar days. These signs shall be furnished, installed, maintained and removed by the Contractor as part of Traffic Control-Lump Sum. These signs shall be orange with black borders and meet the reflectorization requirements of Subsection 150.01.C.

“SHOULDER DROP-OFF” (W8-9a) signs shall be used when a difference in elevation, less than four (4’) feet from the traveled way, exceeds three (3”) inches and is not protected by positive barrier protection. These warning signs shall be placed in advance of the drop-off. For a continuous drop-off condition, the W8-9a) signs shall, as a minimum, be spaced in accordance with the above requirements for “Low/soft shoulder” signs.

#### **PROJECTS CONSISTING PRIMARILY OF ASPHALTIC CONCRETE RESURFACING ITEMS:**

“LOW/SOFT SHOULDER” signs shall be erected when a difference in elevation exceeds one (1”) inch but does not exceed three (3”) inches between the travel way and any type of shoulder unless the difference in elevation is four (4’) feet or greater from the edge of the traveled way.

SHOULDER BUILDING INCLUDED IN THE CONTRACT: “Low/Soft Shoulder” signs shall be erected as per the requirement of Standards 9102, 9106, and 9107. “Shoulder Drop-off” signs (W8-9a) shall be erected as per the requirements of the most recent version of the MUTCD. These signs shall be maintained until the conditions requiring their installation have been eliminated. The Contractor shall remove all interim warning signs before final acceptance.

SHOULDER BUILDING NOT INCLUDED IN THE CONTRACT: The Department will furnish the “Low/Soft Shoulder” signs, “Shoulder Drop-off” signs and the posts. The signs shall be erected to meet the minimum requirements of Subsection 150.03. The Contractor shall include the cost of furnishing installation hardware (bolts, nuts, and washers), erection and maintenance of the signs in the bid price for Traffic Control- Lump Sum. The Contractor shall maintain the signs until final acceptance. The Department will remove the signs.

LAU/LAR PROJECTS SHOULDER BUILDING NOT INCLUDED IN THE CONTRACT: The Contractor will furnish, install and maintain LOW/SOFT SHOULDER signs (yellow with black borders, ASTM Type III or IV) at the appropriate spacing, until Final Acceptance of the project by the Department. After Final Acceptance by the Department the signs will become the property and responsibility of the local government.

#### **M. Bump signage**

MULTI-LANE DIVIDED HIGHWAYS: A bump sign (W8-1) shall be utilized when a transverse joint in the pavement structure has a vertical difference in elevation of three quarters (3/4”) of an inch or greater in depth with no horizontal taper to ramp the traffic from one elevation to the other. This condition typically occurs at approach slabs during pavement milling operations and at transverse joints in asphaltic pavement lifts.

TWO-LANE TWO-WAY HIGHWAYS: A bump sign (W8-1) shall be utilized when a transverse joint in the pavement structure has a vertical difference in elevation that exceeds one and three quarters (1-3/4”) inches in depth with no horizontal taper to ramp the traffic from one elevation to the other. This includes utility and storm drainage repairs that require concrete placement for patching and/or steel plating.

The (W8-1) sign shall be placed sufficiently in advance to warn the motorist of the condition.

#### 150.04 Pavement Markings

##### A. General

Full pattern pavement markings in accordance with Section 652 and in conformance with Section 3A and 3B, except 3B.02, of the MUTCD are required on all courses before the roadway is opened to traffic. No passing zones shall be marked to conform to Subsection 150.04.E. During construction and maintenance activities on all highways open to traffic, both existing markings and markings applied under this Section shall be fully maintained until Final Acceptance. If the pavement markings are, or become, unsatisfactory in the judgment of the Engineer due to wear, weathering, or construction activities, they shall be restored immediately.

##### 1. Resurfacing Projects

Pavement markings shall be provided on all surfaces that are placed over existing markings. Interim and final markings shall conform in type and location to the markings that existed prior to resurfacing unless changes or additions are noted in the Contract. The replacement of parking spaces will not be required unless a specific item or note has been included in the Contract. Any work to make additions to the markings that existed prior to resurfacing is to be considered as extra work.

##### 2. Widening And Reconstruction Projects

If the lane configuration is altered from the preconstruction layout then pavement markings will be as required by the plans or the Engineer.

##### 3. New Location Construction Projects

Pavement marking plans will be provided.

##### B. Materials

All traffic striping applied under this Section shall be a minimum five inches in width or as shown in plans and shall conform to the requirements of Section 652 and 653 and utilize Wet Weather Thermoplastic 3M Starmark Series AW380 WR per the bid schedule, except as modified herein. Raised pavement markers (RPMs) shall meet the requirements of Section 654. Markings on the final surface course, which must be removed, shall be a removable type. The Contractor will be permitted to use paint, thermoplastic, or tape on pavement which is to be overlaid as part of the project, unless otherwise directed by the Engineer. Partial (skip) reflectorization (i.e. reflectorizing only a portion of a stripe) will not be allowed.

##### C. Installation and removal of pavement markings

INSTALLATION: ***All pavement markings, both interim and permanent, shall be applied to a clean surface.*** The Contractor shall furnish the layout and preline the roadway surface for the placement of pavement markings applied as part of the traffic control plan. All interim marking tape and RPM's on the final surface shall be removed prior to the placement of the final markings.

The Contractor shall sequence the work in such a manner as to allow the installation of markings in the final lane configuration at the earliest possible stage of the work.

REMOVAL: Markings no longer applicable shall be removed in accordance with Subsection 656.2.

THE ELIMINATION OF CONFLICTING PAVEMENT MARKINGS BY OVERPAINTING WITH PAINT OR LIQUID ASPHALT IS NOT ACCEPTABLE.

INTERMEDIATE SURFACE: Interim markings shall be removed by methods that will cause minimal damage to the pavement surface while also ensuring that traveling public will not be confused or

misdirected by any residual markings remaining on the intermediate surface. The use of approved black-out tape and black-out paint may be permitted on some interim surfaces, provided the results are satisfactory to the Engineer.

**FINAL SURFACE:** No interim paint or thermoplastic markings will be permitted on any final surface unless the interim markings are in alignment with the location of the permanent markings and the interim marking will not interfere or adversely affect placement of the permanent markings. The proposed method of removal for layout errors that require markings to be removed from the final surface shall have the prior approval of the Engineer. Any damage to the final pavement surface caused by the pavement marking removal process shall be repaired at the Contractor's expense by methods acceptable and approved by the Engineer. Subsection 400.3.06.C shall apply when corrective measures are required. The use of black-out tape or black-out paint will not be permitted to correct layout errors on any final surface.

Traffic shifts that are done on the final surface shall be accomplished using interim traffic marking tape that can be removed without any blemishing of the final surface. Interim traffic marking tape shall be used on any of the following final surfaces; asphaltic concrete, Portland cement concrete, and bridge deck surfaces. Exceptions to the requirements for interim traffic marking tape shall have the written prior approval of the Engineer before the application of any other method is permitted.

**PAY FACTOR REDUCTION FOR ASPHALTIC CONCRETE FINAL SURFACES:** When the correction of an error in the layout of the final pavement markings requires the final surface to be grounded, blemished, scarred, or polished the pay factor shall be reduced to 0.95 for the entire surface area of the final topping that has a blemish, polished or a scarred surface. The reduced pay factor shall not be confined to only the width and length of the stripe or the dimensions of the blemished areas, the whole roadway surface shall have the reduced pay factor applied. The area of the reduced pay factor shall be determined by the total length and the total width of the roadway affected. If the affected area is not corrected, the reduction in pay shall be deducted from the final payment for the topping layer of asphaltic concrete. ***The Engineer shall make the final determination whether correction or a reduced pay factor is acceptable.***

The eradication of pavement markings on intermediate and final concrete surfaces shall be accomplished by a method that does not grind, polish, or blemish the surface of the concrete. The method used for the removal of the interim markings shall not chip the joints in the concrete and shall not damage the sealant in the joints. Any joint or sealant repairs shall be included in the bid price for Traffic Control-Lump Sum. The proposed method of removal shall have the prior approval of the Engineer.

Failure to promptly remove conflicting or non-applicable pavement markings shall be considered as non-performance under Subsection 150.08.

**PREPARATION AND PLANNING FOR TRAFFIC SHIFTS:** When shifting of traffic necessitates removal of centerline, lane lines, or edge lines, all such lines shall be removed prior to, during, or immediately after any change so as to present the least interference with traffic. Interim traffic marking tape shall be used as a temporary substitute for the traffic markings being removed.

Before any change in traffic lane(s) alignment, marking removal equipment shall be present on the project for immediate use. If marking removal equipment failures occur, the equipment shall be repaired or replaced (including leasing equipment if necessary), so that the removal can be accomplished without delay.

Except for the final surface, markings on asphaltic concrete may be obliterated by an overlay course, when approved by the Engineer. When an asphaltic concrete overlay is placed for the sole purpose of eliminating conflicting markings and the in place asphaltic concrete section will allow, said overlay will be eligible for payment only if designated in the Plans. Overlays to obliterate lines will be paid for only once and further traffic shifts in the same area shall be accomplished with removable markings.

Only the minimum asphaltic concrete thickness required to cover lines will be allowed. Excessive build-up will not be permitted. When an overlay for the sole purpose of eliminating conflicting markings is not allowed, the markings no longer applicable shall be removed in accordance with Subsection 656.2.

**D. Raised pavement markers**

Raised pavement markers (RPMs) are required as listed below for all asphaltic concrete pavements before the roadway is open to traffic. On the final surface, RPM's shall be placed according to the timeframes specified in Subsection 150.04 E. for full pattern pavement markings except Interstate Highways where RPM's shall be placed and/or maintained when the roadway is open to traffic. When Portland Cement Concrete is an intermediate or final surface and is open to traffic, one calendar day is allowed for cleaning and drying before the installation of RPMs is required.

Raised pavement markers are not allowed on the right edge lines under any situation.

**1. Interstate Highways**

Retro-reflective raised pavement markers (RPM's) shall be placed and/or maintained on intermediate pavement surfaces on all interstate highways that are open to traffic. This includes all resurfacing projects along with widening and reconstruction projects. The spacing and placement shall be as required for MULTI-LANE DIVIDED HIGHWAYS.

**2. Multi-Lane Divided Highways**

Retro-reflective raised pavement markers (RPMs) shall be placed and/or maintained on intermediate pavement surfaces on all multi-lane divided highways that are opened to traffic when these roadways are being widened or reconstructed. Two lane-two way roadways that are being widened to a multi-lane facility, whether divided or undivided, are included in this provision. Projects consisting primarily of asphalt resurfacing items or shoulder widening items are excluded from this requirement. The RPMs shall be placed as follows:

a. SUPPLEMENTING LANE LINES

80 foot center on skip lines with curvature less than three degrees. (Includes tangents)

40 foot centers on solid lines and all lines with curvature between three degrees and six degrees.

20 foot centers on curves over six degrees.

20 foot centers on lane transitions or shifts.

b. SUPPLEMENTING RAMP GORE LINES

20 foot centers, two each, placed side by side.

c. OTHER LINES

As shown on the plans or directed by the Engineer.

**3. Other Highways**

On other highways under construction RPMs shall be used and/or maintained on intermediate pavement surfaces as follows:

a. SUPPLEMENTING LANE LINES AND SOLID LINES

40 foot centers except on lane shifts. (When required in the Plans or Contract.)

20 foot centers on lane shifts. (Required in all cases.)

b. SUPPLEMENTING DOUBLE SOLID LINES

40 foot centers (one each beside each line) except on lane shifts. (When required in the Plans or Contract.)

20 foot centers on lane shifts. (Required in all cases.)

**E. Exceptions for interim markings**

Some exceptions to the time of placement and pattern of markings are permitted as noted below, however, full pattern pavement markings are required for the completed project.

**1. Two-Lane, Two-Way Roadways**

a. SKIP LINES

All interim skip (broken) stripe shall conform to Section 652 except that stripes shall be at least two feet long with a maximum gap of 38 feet. On curves greater than six degrees, a one-foot stripe with a maximum gap of 19 feet shall be used. In lane shift areas solid lines will be required. Interim skip lines shall be replaced with markings in full compliance with Section 652 prior to expiration of the 14 calendar day period.

Interim raised pavement markers may be substituted for the interim skip (broken) stripes. If raised pavement markers are substituted for the two foot interim skip stripe, three markers spaced at equal intervals over a two foot distance will be required. No separate payment will be made if the interim raised pavement markers are substituted for interim skip lines.

Interim raised pavement markers shall be retro-reflective, shall be the same color as the pavement markers for which they are substituted, and shall be visible during daytime.

The type of interim marker and method of attachment to the pavement shall be approved by the Office of Materials and Research but in no case will the markers be attached by the use of nails. Flexible reflective markers, Type 14 or Type 15, may be used for a maximum of fourteen (14) calendar days as an interim marker. Any flexible reflective markers in use shall be from the GDOT qualified products list (QPL).

The interim raised pavement markers shall be maintained until the full pattern pavement markings are applied. At the time full pattern markings are applied the interim raised markers shall be removed in a manner that will not interfere with application of the full pattern pavement markings.

b. NO PASSING ZONES-TWO-LANE, TWO-WAY ROADWAYS

Passing zones shall be re-established in the locations existing prior to resurfacing. No changes to the location of passing zones shall be done without the written approval of the Engineer. For periods not to exceed three calendar days where interim skip centerlines are in place, no-passing zones shall be identified by using post or portable mounted DO NOT PASS regulatory signs (R4-1 24" x 30") at the beginning and at intervals not to exceed ½ mile within each no-passing zone. A post or portable mounted PASS WITH CARE regulatory sign (R4-1 24" x 30") shall be placed at the end of each no-passing zone. Post mounted signs shall be placed in accordance with the MUTCD. Portable signs shall conform to the requirements of the MUTCD and shall be NCHRP 350 compliant. Portable signs shall be secured in such a manner to prevent misalignment and minimize the possibility of being blown over by weather conditions or traffic.

On new location projects and on projects where either horizontal or vertical alignments has been modified, the location of No-Passing Zones will be identified by the Engineer.

c. EDGELINES

- 1) Bituminous Surface Treatment Paving  
Edge lines will not be required on intermediate surfaces (including asphaltic concrete leveling for bituminous surface treatment paving) that are in use for a period of less than 60 calendar days except at bridge approaches, on lane transitions, lane shifts, and in such other areas as determined by the Engineer. On the final surface, edge lines shall be placed within 30 calendar days of the time that the final surface was placed.
  - 2) All Other Types of Pavement  
Edge lines will not be required on intermediate surfaces that are in use for a period of less than 30 calendar days except at bridge approaches, on lane transitions, lane shifts, and in such other areas as determined by the Engineer. On the final surface, edge lines shall be placed within 14 calendar days of the time that the surface was placed.
- 2. Multi-Lane Highways – With No Paved Shoulder(S) Or Paved Shoulder(S) Four Feet Or Less**
- a. UNDIVIDED HIGHWAYS (INCLUDES PAVED CENTER TURN LANE)
    - 1) Centerlines and No-Passing Barrier-Full Pattern centerlines and no-passing barriers shall be restored before opening to traffic.
    - 2) Landlines- Interim skip (broken) stripe as described in Subsection 150.04E.1.a. may be used for periods not to exceed three calendar days. Skip lines are not permitted in lane shift areas. Solid lines shall be used.
    - 3) Edge lines- Edge lines shall be placed on intermediate and final surfaces within three calendar days of obliteration.
  - b. DIVIDED HIGHWAYS (GRASS OR RAISED MEDIAN)
    - 1) Landlines- Full pattern skip stripe shall be restored before opening to traffic. Skip lines are not permitted in lane shift areas. Solid lines shall be required.
    - 2) Centerline/Edge line- Solid lines shall be placed on intermediate and final surfaces within three calendar days of obliteration.
- 3. Limited Access Roadways And Roadways With Paved Shoulders Greater Than Four Feet**
- a. Same as Subsection 150.04.E.2 except as noted in (b) below.
  - b. EDGELINES-
    - 1) Asphaltic Concrete Pavement- Edge lines shall be placed on intermediate and final surfaces prior to opening to traffic.
    - 2) Portland Cement Concrete Pavement- Edge lines shall be placed on any surface open to traffic no later than one calendar day after work is completed on a section of roadway. All water and residue shall be removed prior to daily striping.
- 4. Ramps For Multi-Lane Divided Highways**  
A minimum of one solid line edge stripe shall be placed on any intermediate surface of a ramp prior to opening the ramp to traffic. The other edge stripe may be omitted for a maximum period of three (3) calendar days on an intermediate surface.  
Appropriate channelization devices shall be spaced at a maximum of twenty-five (25') feet intervals until the other stripe has been installed.
- The final surface shall have both stripes placed prior to opening the ramp to traffic.
- 5. Miscellaneous pavement markings**

FINAL SURFACE: School zones, railroads, stop bars, symbols, words and other similar markings shall be placed on final surfaces conforming to Section 652 and Section 653 utilizing 3M Wet Weather Thermoplastic Starmark Series AW380WR per the bid schedule within fourteen (14) calendar days of completion of the final surface. Final markings shall conform to the type of pay item in the plans. When no pay item exists in the plans the final markings shall conform to Section 652 and 653 for painted markings.

INTERMEDIATE SURFACE: Intermediate surfaces that will be in use for more than forty-five (45) calendar days shall have the miscellaneous pavement markings installed to conform to the requirement of Section 652. Under Subsection 150.11, Special Conditions, or as directed by the Engineer these markings may be eliminated.

#### **F. Mobile operations**

When pavement markings (centerlines, lane lines, and edge lines) are applied in a continuous operation by moving vehicles and equipment, the following minimum equipment and warning devices shall be required. These devices and equipment are in addition to the minimum requirements of the most current version of the MUTCD.

##### **1. All Roadways**

All vehicles shall be equipped with the official slow moving vehicle symbol sign. All vehicles shall have a minimum of two flashing or rotating beacons visible in all directions. All protection vehicles shall have an arrow panel mounted on the rear. All vehicles requiring an arrow panel shall have, as a minimum, a Type B panel. All vehicle mounted signs shall be mounted with the bottom of the sign a minimum height of forty-eight inches (48") above the pavement. All sign legends shall be covered or removed from view when work is not in progress.

##### **2. Two-Lane Two-Way Roadways**

###### **a. Lead Vehicles**

The lead vehicle may be a separate vehicle or the work vehicle applying the pavement markings may be used as the lead vehicle. The lead vehicle shall have an arrow panel mounted so that the panel is easily visible to oncoming (approaching) traffic. The arrow panel should typically operate in the caution mode.

###### **b. Work Vehicles**

The work vehicle(s) applying markings shall have an arrow panel mounted on the rear. The arrow panel should typically operate in the caution mode. The work vehicle placing cones shall follow directly behind the work vehicle applying the markings.

###### **c. Protection Vehicles**

A protection vehicle may follow the cone work vehicle when the cones are being placed and may follow when the cones are being removed.

##### **3. Multi-Lane roadways**

A lead vehicle may be used but is not required. The work vehicle placing cones shall follow directly behind the work vehicle applying the markings. A protection vehicle that does not function as a work vehicle should follow the cone work vehicle when traffic cones are being placed. A protection vehicle should follow the cone work vehicle when the cones are being removed from the roadway. Protection vehicles shall display a sign on the rear of the vehicle with the legend PASS ON LEFT(RIGHT).

INTERSTATES AND LIMITED ACCESS ROADWAYS: A protection vehicle shall follow the last work vehicle at all times and shall be equipped with a truck mounted attenuator (TMA) that is certified for impacts not less than 62 mph in accordance with NCHRP350 Test Level Three (3).

#### **150.05 Channelization**

**A. General**

Channelization shall clearly delineate the travel way through the work zone and alert drivers and pedestrians to conditions created by work activities in or near the travel way. Channelization shall be done in accordance with the plans and specifications, the MUTCD, and the following requirements.

All Channelization Devices utilized on any project shall be NCHRP 350 compliant. Any device used on the Work shall be from the Qualified Products List. All devices utilized on the work shall have a decal, logo, or manufacturer’s stamping that clearly identifies the device as NCHRP 350 compliant. The Contractor may be required to furnish certification from the Manufacturer for any device to prove NCHRP 350 compliance.

**1. Types of Devices Permitted for Channelization in Construction Work Zones:**

a. DRUMS:

- 1) DESIGN: Drums shall meet the minimum requirement of the MUTCD and shall be reflectorized as required in Subsection 150.01.C. The upper edge of the top reflectorized stripe on the drum shall be located a minimum of 33 inches above the surface of the roadway. A minimum drum diameter of 18 inches shall be maintained for a minimum of 34 inches above the roadway.
- 2) APPLICATION: Drums shall be used as the required channelizing device to delineate the full length of a lane closure, shift, or encroachment, except as modified by this Subsection.
- 3) TRANSITION TAPERS FOR LANE CLOSURES: Drums shall be used on all transition tapers. The minimum length for a merging taper for a lane closure on the travel way shall be as shown in Table 150-1:

TABLE 150-1

Posted Speed Limit, MPH	Lane Width 9 Feet	Lane Width 10 Feet	Lane Width 11 Feet	Lane Width 12 Feet	Maximum Drum Spacing in Tapers, (Feet)
	Minimum Taper Length (L) in Feet				
20	60	70	75	80	20
25	95	105	115	125	25
30	135	150	165	180	30
35	185	205	225	245	35
40	240	270	295	320	40
45	405	450	495	540	45
50	450	500	550	600	50
55	495	550	605	660	55
60	540	600	660	720	60
65	585	650	715	780	65
70	630	700	770	840	70
75	675	750	825	900	75

If site conditions require a longer taper then the taper shall be lengthened to fit particular individual situations.

The length of shifting tapers should be at least ½ L.

The length of a closed lane or lanes, excluding the transition taper(s), shall be limited to a total of two (2) miles. Prior approval must be obtained from the Engineer before this length can be increased.

Night time conditions: When a merge taper exists into the night all drums located in the taper shall have, for the length of the taper only, a six (6") inch fluorescent orange (ASTM Type VII, VIII, IX or X) reflectorized top stripe on each drum. The top six-inch stripe may be temporarily attached to the drum while in use in a taper. All drums that have the six-inch top stripe permanently attached shall not be used for any other conditions.

Multiple Lane Closures:

- (a) A maximum of one lane at a time shall be closed with each merge taper.
- (b) A minimum tangent length of 2 L shall be installed between each individual lane closure taper.

- 4) LONGITUDINAL CHANNELIZATION: Drums shall be spaced as listed below for various roadside work conditions except as modified by Subsection 150.06. Spacing shall be used for situations meeting any of the conditions listed as follows:
  - (a) 40 FOOT SPACING MAXIMUM
    - (1) For difference in elevation exceeding two inches.
    - (2) For healed sections no steeper than 4:1 as shown in Subsection 150.06, Detail 150-E.
  - (b) 80 FOOT SPACING MAXIMUM
    - (1) For difference in elevation of two inches or less.
    - (2) Flush areas where equipment or workers are within ten feet of the travel lane.
  - (c) 200 FOOT SPACING MAXIMUM: Where equipment or workers are more than ten feet from travel lane. Lateral offset clearance to be four feet from the travel lane.
    - (1) For paved areas eight feet or greater in width that are paved flush with a standard width travel lane.
    - (2) For disturbed shoulder areas not completed to typical section that are flush to the travel lane and considered a usable shoulder.

REMOVAL OF DRUMS: Drums may be removed after shoulders are completed to typical section and grassed. Guardrail and other safety devices shall be installed and appropriate signs advising of conditions such as soft or low shoulder shall be posted before the drums are removed.

b. VERTICAL PANELS

- 1) DESIGN: All vertical panels shall meet the minimum requirements of the MUTCD. All vertical panels shall have a minimum of 270 square inches of retro-reflective area facing the traffic and shall be mounted with the top of the reflective panel a minimum of 36" above the roadway.
- 2) APPLICATION: Lane encroachment by the drum on the travel way should permit a remaining lane width of ten feet. When encroachment reduces the travel way to less than ten feet, vertical panels shall be used to restore the travel way to ten feet or greater. No other application of vertical panels will be permitted.

c. CONES

- 1) DESIGN: All cones shall be a minimum of 28 inches in height regardless of application and shall meet the requirement of the most current version of the MUTCD. Reflectorization may be deleted from all cones.
- 2) APPLICATION: For longitudinal channelizing only, cones will be permitted for daylight closures or minor shifts. (Drums are required for all tapers.) The use of cones for

nighttime work will not be permitted. Cones shall not be stored or allowed to be visible on the worksite during nighttime hours.

d. BARRICADES

DESIGN: Type III barricades shall meet the minimum requirements of the MUTCD and shall be reflectorized as required in Subsection 150.01.C.

The Contractor has the option of choosing Type III barricades from the Qualified Products List or the Contractor may utilize generic barricades that are approved by the Federal Highway Administration (FHWA). When barricades have been specifically crash tested with signs attached, the contractor has the responsibility to attach the signs as per the manufacturer's recommendations to ensure crashworthiness. If signs are attached to generic barricades or to barricades from the Qualified Products List (QPL) that have not been crash tested with signs attached then the responsibility for crashworthiness and the liability for mounting these signs to the barricades are assumed by the Contractor and the Contractor shall certify that the barricades are crashworthy under FHWA work zone guidelines for NCHRP 350 crashworthy compliance. Any generic barricades used in the work shall be stamped or stenciled to show compliance with NCHRP 350. The use of Type I and Type II barricades will not be permitted.

- 1) APPLICATION: Type III barricades shall be placed as required by the plans, the Standards, and as directed by the Engineer. All signs mounted on barricades shall be mounted to comply with the requirements of the MUTCD and NCHRP 350 Test Level III. NCHRP 350 crashworthy compliance may require that rigid signs be mounted separate from the Type III barricade.

When a barricade is placed so that it is subject to side impact from a vehicle, a drum shall be placed at the side of the barricade to add target value to the barricade.

e. WARNING LIGHTS:

- 1) DESIGN: All warning lights shall meet the requirements of the MUTCD.
- 2) APPLICATION
  - (a) Type A low-intensity flashing lights shall be used as shown in the Plans, the Standards, and as directed by the Engineer. Flashing lights are not required for advance warning signs in Subsection 150.03.H.
  - (b) Type C Steady-Burn lights shall be used as shown in the Plans, the Standards, and as directed by the Engineer. Steady-burn lights are not required on drums for merging tapers that exist into the night.

f. TEMPORARY BARRIERS

- 1) DESIGN: Temporary barriers shall meet the requirements of Sections 620.
- 2) APPLICATION: Temporary barriers shall be placed as required by the plans, standards, and as directed by the Engineer. When Temporary barrier is located 20 feet or less from a travel lane, yellow reflectors shall be fixed to the top of the barrier at intervals not greater than 40 feet in the longitudinal section and 20 feet in the taper section and shall be mounted approximately two inches above the barrier. If both lanes of a two-lane two-way roadway are within 20 feet or less of the barrier then the reflectors shall be installed for both directions of traffic.

The reflectors shall be 100 square inches (ASTM Type VII or VIII) reflective sheeting mounted on flat-sheet blanks. The reflectors shall be mounted approximately two inches above the top of the barrier. The reflectors shall be attached to the barrier with adhesive

or by a drilled-in anchor type device. The reflectors shall not be attached to a post or board that is placed between the gap in the barrier sections.

Approach end of Temporary barrier shall be flared or protected by an impact attenuator (crash cushion) or other approved treatment in accordance with Georgia Standard 4960, Construction Details and Standard Specifications.

On interstate or other controlled access highways where lane shifts or crossovers cause opposing traffic to be separated by less than 40 ft., portable barrier shall be used as a separator.

## **B. Portable impact attenuators**

### **1. Description**

This work consists of the furnishing (including spare parts), installation, maintenance, relocation, reuse as required, and removal of Portable Impact Attenuator Unit/Arrays.

### **2. Materials**

Materials used in the Attenuator/Array shall meet the requirements of Section 648 for Portable Impact Attenuators.

### **3. Construction**

Portable Impact Attenuator Unit/Array installation shall conform to the requirements of Section 648, Manufacturer's recommendations, and/or Georgia Standards 4960 & 4962 and shall be installed at locations designated by the Engineer, and/or as shown on the plans.

## **C. Temporary guardrail anchorage –Type 12**

### **1. Description**

This work consists of the furnishing, installation, maintenance and removal of Temporary Guardrail Anchorage- Type 12 used for Portable Barrier or temporary guardrail end treatment.

### **2. Materials**

Materials used in the Temporary Guardrail Anchorage- Type 12 shall meet the requirements of Subsection 641.2 of the Specifications and current Georgia Standards and may be new or used. Materials salvaged from the Project which meet the requirements of Standards may be utilized if available. The use of any salvaged materials will require prior approval of the Engineer.

### **3. Construction**

Installation of the Temporary Guardrail Anchorage- Type 12 shall conform to the requirements of the Plans, current Georgia Standards and Subsection 641.3 of the Specifications. Installation shall also include sufficient additional guardrail and appurtenances to effect the transition and connection to Temporary Concrete Barrier as required by the details in Georgia Standard 4960.

## **150.06 Differences in elevation between travel lanes and shoulders (See Subsection 150.06G for projects consisting primarily of asphaltic concrete resurfacing items)**

Any type of work such as paving, grinding, trenching, or excavation that creates a difference in elevation between travel lanes or between the travel way and the shoulder shall not begin until the Contractor is prepared and able to continuously place the required typical section to within two inches (2") of the existing pavement elevation. For any areas that the two inches minimum difference in elevation cannot be accomplished the section shall be healed as shown in Detail 150-E. If crushed stone materials are used to provide a healed section no separate payment will be made for the material used to heal any section. The Contractor may submit a plan to utilize existing pay items for crushed stone provided the plan clearly demonstrates that the materials used to heal an area will be incorporated into the work with minimal waste. Handling and hauling of any crushed stone used to heal shall be kept to a minimum. The Engineer shall

determine if the crushed stone used to heal meets the specifications for gradation and quality when the material is placed in the final location.

A maximum of sixty (60) calendar days shall be allowed for conditions to exist that require any section or segment of the roadway or ramp to continue to require a healed section as described by Detail 150-E. Failure to meet this requirement shall be considered as non-performance of Work under Subsection 150.08.

When trenching or excavation for minor roadway or shoulder widening is required, all operations at one site shall be completed to the level of the existing pavement in the same work day.

Any channelization devices utilized in the work shall conform to the requirements of Subsection 150.05 and to the placement and spacing requirements in Details 150-B, 150-C, 150-D, and 150-E shown in this section.

Any construction activity that reduces the width of a travel lane shall require the use of a W-20 sign with the legend "LEFT/RIGHT LANE NARROWS". Two 24" x 24" red or red/orange flags may be mounted above the W-20 sign. The W-20 sign shall be located on the side of the travel way that has been reduced in width just off the travel way edge of pavement. The W-20 sign shall be a minimum of 500 feet in advance of any channelization devices that encroach on the surface of travel way. A portable changeable message sign may be used in lieu of the W-20 sign.

## **General/time restrictions**

### **A. Stone Bases, Soil Aggregate Base and Soil Bases**

#### **1. All Highways**

Differences in elevation of more than two inches between surfaces carrying or adjacent to traffic will not be allowed for more than a 24-hour period. A single length of excavated area that does not exceed 1000 feet in total length may be left open as a start up area for periods not to exceed 48 hours provided the Contractor can demonstrate the ability to continuously excavate and backfill in a proficient manner. Prior approval of the Engineer shall be obtained before any startup area may be allowed.

#### **2. Limited Access Highway Ramps (Interstates)**

On projects that include ramp rehabilitation work, one ramp at a time may be excavated for the entire length of the ramp from the gore point of the ramp with the interstate mainline to the intersection with the crossing highway. This single ramp may remain excavated with a vertical difference in elevation greater than two (2") inches for a maximum of fourteen (14) calendar days with drums spaced at twenty (20') feet intervals as shown in Detail 150-B and a buffer space accepted under Section 150.06.F. After fourteen (14) calendar days the section shall be healed as required for all other highways. This area will be allowed in addition to the 1000 feet allowed for all other highways.

### **B. Asphalt Bases, Binders and Toppings**

#### **1. Differences in elevation between the surfaces of adjacent**

Travel lanes shall be paved with a plan that minimizes any difference in elevation between adjacent travel lanes. The following limitations will be required on all work:

- a. Differences of two inches (2") or less may remain for a maximum period of fourteen (14) calendar days.
- b. Differences of greater than two inches (2") shall be permitted for continuous operations only.

EMERGENCY SITUATIONS: Inclement weather, traffic accidents, and other events beyond the control of the Contractor may prevent the work from being completed as required above. The

Contractor shall notify the Engineer in writing stating the conditions and reasons that have prevented the Contractor from complying with the time limitations. The Contractor shall also outline a plan detailing immediate steps to complete the work. Failure to correct these conditions on the first calendar day that conditions will allow corrective work shall be considered as non-performance of Work under Subsection 150.08.

**2. Differences in elevation between asphalt travel way and paved**

Differences in elevation between the asphalt travel way and asphalt paved shoulders shall not be allowed to exist beyond the maximum durations outlined below for the conditions shown in Details 150-B, 150-C, 150-D, and 150-E:

Detail 150-B conditions shall not be allowed for more than 24 hours. A single length that does not exceed 1000 feet in total length may be left open for periods not to exceed 48 hours provided the Contractor can demonstrate the ability to continuously pave in a proficient manner. Prior approval of the Engineer shall be obtained before any section is allowed to exceed 24 hours. Any other disturbed shoulder areas shall be healed as in Detail 150-E.

Detail 150-C conditions will not be allowed for more than 48 hours.

Detail 150-D conditions will not be allowed for more than 30 calendar days.

Detail 150-E conditions will not be allowed for more than 60 calendar days.

Failure to meet these requirements shall be considered as non-performance of Work under Subsection 150.08.

**C. Portland Cement concrete**

Work adjacent to a Portland Cement Concrete traveled way which involves the following types of base and shoulders shall be accomplished according to the time restrictions outlined for each type of base or shoulder. Traffic control devices shall be in accordance with Subsection 150.05.

**1. Cement stabilized base**

Work adjacent to the traveled way shall be healed as per Detail 150-E within forty-eight (48) hours after the seven (7) calendar day curing period is complete for each section placed. During the placement and curing period, traffic control shall be in accordance Detail 150-B.

**2. Asphaltic concrete base**

When an asphaltic concrete base is utilized in lieu of a cement stabilized base the asphaltic concrete base shall be healed as per Detail 150-E within forty-eight (48) hours after the placement of each section of asphaltic concrete base. For the first forty eight hours traffic control shall be in compliance with Detail 150-B.

**3. Concrete paved shoulders**

Concrete paved shoulders shall be placed within sixty (60) calendar days after the removal of each section of existing shoulder regardless of the type of base materials being placed on the shoulders. During the placement period, traffic control devices shall be in accordance with the appropriate detail based on the depth of the change in elevation.

**4. Asphaltic concrete shoulders**

A difference in elevation that meets the requirements of Detail 150-B shall not be allowed to exist for a period greater than forty-eight (48) hours. After the removal of the existing shoulder the section or segment of travel way may be healed with stone as per Detail 150-E for a maximum of fourteen (14) calendar days. Asphaltic concrete shoulders shall be placed within two (2") inches or less of the traveled way surface within fourteen (14) calendar days after the removal of the stone healed section or the removal of each section of the existing shoulder. The two (2") inches or less difference in elevation shall not remain in existence for a period that exceeds thirty (30) calendar

days unless the paved shoulder is utilized as a detour for the traveled way. During the placement period, traffic control shall be in accordance with the appropriate detail based on the depth of the change in elevation.

The Contractor may propose an alternate plan based on Subsection 150.06.F. Failure to meet the above requirements and time restrictions shall be considered as non-performance of Work under Subsection 150.08.

**D. Miscellaneous elevation differentials for excavations adjacent to the travel way**

Drainage structures, utility facilities, or any other work which results in a difference in elevation adjacent to the travel way shall be planned and coordinated to be performed in such a manner to minimize the time traffic is exposed to this condition. The excavation should be back filled to the minimum requirements of Detail 150-E as soon as practical. Stage construction such as plating or backfilling the incomplete work may be required. The difference in elevation shall not be allowed to exist for more than five (5) calendar days under any circumstances. Failure to correct this condition shall be considered as non-performance of Work under Subsection 150.08.

**E. Conduit Installation in paved and dirt shoulders**

The installation of conduit and conduit systems along the shoulders of a traveled way shall be planned and installed in a manner to minimize the length of time that traffic is exposed to a difference in elevation condition. The following restrictions and limitations shall apply:

**1. Differences in elevation of Two (2") Inches or less**

The shoulder may remain open when workers are not present. When workers are present the shoulder shall be closed and the channelization devices shall meet the requirements of Subsection 150.05. The difference in elevation on the shoulder shall remain for a maximum period of fourteen (14) calendar days.

**2. Differences in elevation greater than Two (2") Inches**

The shoulder shall be closed. The shoulder closure shall not exceed twenty-four (24) hours in duration unless the Special Conditions in Subsection 150.11 modifies this restriction or the Engineer allows the work to be considered as a continuous operation.

Failure to meet these requirements shall be considered as non-performance of Work under Subsection 150.08.

**F. Modifications to Details 150-B, 150-C, 150-D AND 150-E**

The Contractor may propose any alternate traffic control plan that utilizes a portion of the travel lane as a "buffer space". This buffer space may allow for an enhanced work area that will allow for the placement of materials to proceed at a pace that could not be achieved with the time restriction requirements outlined in Section 150.06.A, 150.06.B, and 150.06.C. The Contractor may propose modified time restrictions based on the use of the buffer space. Any proposed modifications in the time duration allowed for the differences in elevations to exist shall be reviewed by the Engineer as a component of the overall traffic control plan. No modifications shall be made until the proposed plan is accepted by the Engineer. The Engineer shall have no obligation to consider any proposal which results in an increase in cost to the Department.

For the travel lane described in each of the details 150-B, 150-C, 150-D and 150-E it is presumed that the pavement marking edge line (yellow or white solid stripe) is located at the very edge of the travel lane surface. A buffer space (temporary paved shoulder) that utilizes a portion of the travel lane should be six (6') feet in width desirable but shall not be less than four (4') feet in width. Any remaining travel lane(s) shall not be less than ten (10') feet in width.

If the proposed shifting of the traffic to obtain a buffer space and maintain a minimum travel lane(s) of ten (10') feet requires the use of any existing paved shoulders then the cost of maintenance and repair of the existing paved shoulder(s) shall be the responsibility of the Contractor. The Contractor is

responsible for the costs of maintenance and repairs even if the existing paved shoulder(s) is to be removed in a later stage of the work. Existing shoulders that have rumble strips shall have the rumble strips removed before the shoulder can be utilized as part of the travel lane. The cost of the removal of the rumble strips shall be done at no cost to the Department even if the shoulder is to be removed in a later stage of the work.

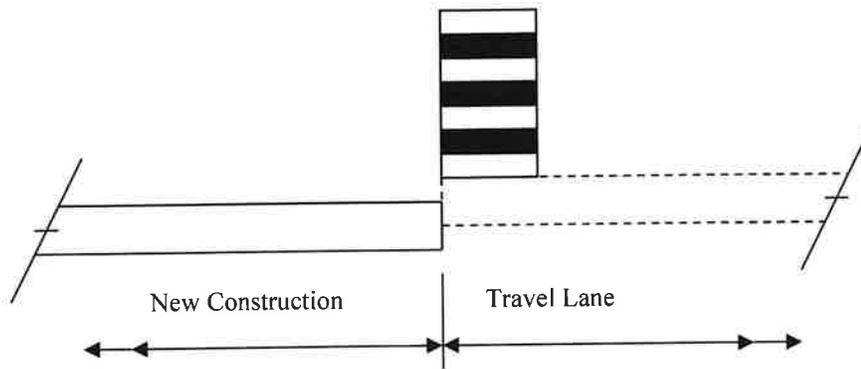
Any modifications to the staging and time restrictions that are approved as part of the traffic control plan shall be agreed to in writing. Failure to meet these modifications shall be considered as non-performance of the Work under Subsection 150.08.

**G. Asphaltic Concrete Resurfacing Projects**

**SHOULDER CONSTRUCTION INCLUDED AS A PART OF THE CONTRACT:** When the placement of asphaltic concrete materials creates a difference in elevation greater than two (2") inches between the earth shoulder (grassed or un-grassed) and the edge of travel way or between the earth shoulder and a paved shoulder that is less than four (4') feet in width, the Contractor shall place and maintain drums in accordance with the requirements of Subsection 150.05A.1.a.4). When the edge of the paved surface is tapered with a 30-45 degree wedge, drums may be spaced at 2.0 times the speed limit in MPH. Drums shall remain in place and be maintained until the difference in elevation has been eliminated by the placement of the appropriate shoulder materials.

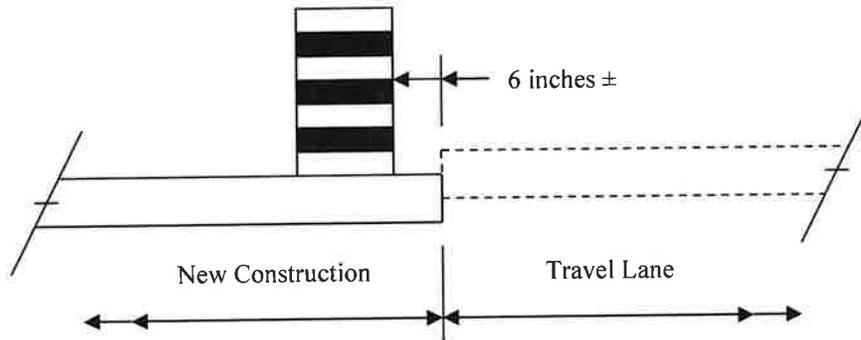
**SHOULDER CONSTRUCTION NOT INCLUDED AS A PART OF THE CONTRACT:** When the placement of asphaltic concrete materials creates a difference in elevation greater than two (2") inches between the earth shoulder (grassed or un-grassed) and the edge of travel way or between the earth shoulder and a paved shoulder that is less than four (4') feet in width, the Contractor shall notify the Engineer, in writing, when the resurfacing work including all punch list items has been completed. See Subsection 150.03.L for the requirements for "LOW/SOFT SHOULDERS" and "SHOULDER DROP-OFF" signage.

Location of drums when Elevation Difference exceeds 4 inches. Drums spaced at 20 foot intervals. Note: If the travel way width is reduced to less than 10 feet by the use of drums, vertical panels shall be used in lieu of drums.
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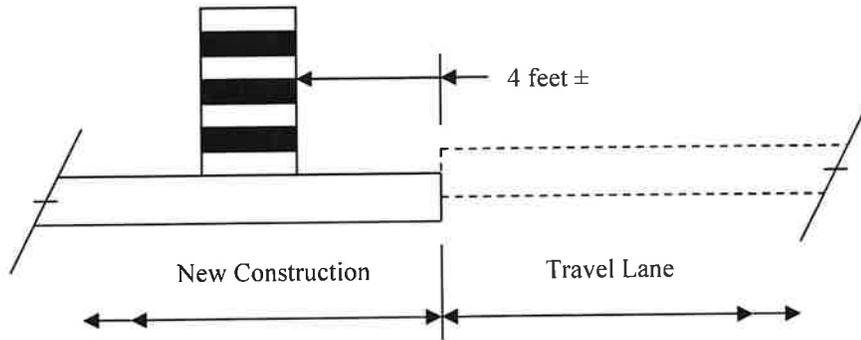
ELEVATION DIFFERENCE GREATER THAN 4 INCHES  
**DETAIL 150-B**

Drums spaced at 40 foot intervals.	Location of drums when Elevation Difference is 2+ inches to 4 inches.
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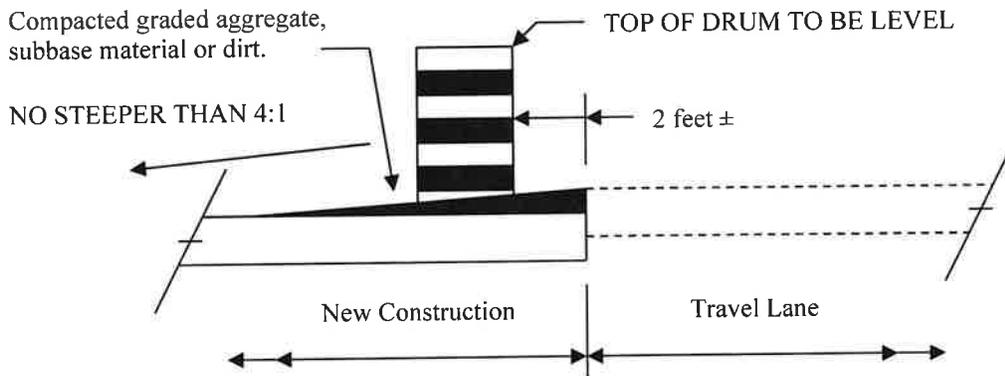
ELEVATION DIFFERENCE 2+ TO 4 INCHES  
**DETAIL 150-C**

Drums spaced at 80 foot intervals.	Location of drums when Elevation Difference is 2 inches or less.
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ELEVATION DIFFERENCE OF 2 INCHES OR LESS  
**DETAIL 150-D**

	Location of drums immediately after completion of healed sections spaced at 40 foot intervals.
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HEALED SECTION  
**DETAIL 150-E**

**150.07 Flagging and Pilot cars**

**A. Flaggers**

Flaggers shall be provided as required to handle traffic, as specified in the Plans or Special Provisions, and as required by the Engineer.

**B. Flagger Certification**

All flaggers shall meet the requirements of the MUTCD and shall have received training and a certificate upon completion of the training from a Department approved training program. Failure to provide certified flaggers as required above shall be reason for the Engineer suspending work involving the flagger(s) until the Contractor provides the certified flagger(s). Flaggers shall have proof of certification and valid identification (photo I.D.) available any time they are performing flagger duties.

**C. Flagger Appearance and equipment**

Flaggers shall wear high-visibility clothing in compliance with the most current version of the MUTCD and shall use a Stop/Slow paddle meeting the requirements of the MUTCD for controlling traffic. The Stop/Slow paddles shall have a shaft length of seven (7) feet minimum. The Stop/Slow paddle shall be retro-reflectorized for both day and night usage. In addition to the Stop/Slow paddle, a flagger may use a flag as an additional device to attract attention. This flag shall meet the minimum requirements of the MUTCD. The flag shall, as a minimum, be 24" inches square and red or red/orange in color. For night work, the vest shall have reflectorized stripes which meet the requirements of the MUTCD.

**D. Flagger warning signs**

Signs for flagger traffic control shall be placed in advance of the flagging operation in accordance with the MUTCD. In addition to the signs required by the MUTCD, signs at regular intervals, warning of the presence of the flagger shall be placed beyond the point where traffic can reasonably be expected to stop under the most severe conditions for that day's work.

**E. Pilot vehicle requirements**

Pilot vehicles will be required during placement of bituminous surface treatment or asphaltic concrete on two-lane roadways unless otherwise specified. Pilot vehicles shall meet the requirements of the MUTCD.

**F. Portable temporary traffic control signals**

The Contractor may request, in writing, the substitution of portable temporary traffic control signals for flaggers on two-lane two-way roadways provided the temporary signals meets the requirements of the MUTCD, Section 647, and Subsection 150.02.A.8. As a part of this request, the Contractor shall also submit an alternate traffic control plan in the event of a failure of the signals. Any alternate plan that requires the use of flaggers shall include the use of certified flaggers. The Contractor shall obtain the approval of the Engineer before the use of any portable temporary traffic control signals will be permitted.

**150.08 Enforcement**

The safe passage of pedestrians and traffic through and around the temporary traffic control zone, while minimizing confusion and disruption to traffic flow, shall have priority over all other Contractor activities. Continued failure of the Contractor to comply with the requirements of Section 150 (TRAFFIC CONTROL) will result in non-refundable deductions of monies from the Contract as shown in this Subsection for non-performance of Work.

Failure of the Contractor to comply with this Specification shall be reason for the Engineer suspending all other work on the Project, except erosion control and traffic control, taking corrective action as specified in Subsection 105.15, and/or withholding payment of monies due to the Contractor for any work on the Project until traffic control deficiencies are corrected. These other actions shall be in addition to the deductions for non-performance of traffic control.

SCHEDULE OF DEDUCTIONS FOR EACH CALENDAR DAY OF DEFICIENCIES OF TRAFFIC CONTROL INSTALLATION AND/OR MAINTENANCE		
ORIGINAL TOTAL CONTRACT AMOUNT		
From More Than	To and Including	Daily Charge
\$0	\$100,000	\$200
\$100,000	\$1,000,000	\$500
\$1,000,000	\$5,000,000	\$1,000
\$5,000,000	\$20,000,000	\$1,500
\$20,000,000	\$40,000,000	\$2,000
\$40,000,000	\$-----	\$3,000

**150.09 Measurement**

**A. Traffic Control**

When listed as a pay item in the Proposal, payment will be made at the Lump Sum price bid, which will include all traffic control not paid for separately, and will be paid as follows:

When the first Construction Report is submitted, a payment of 25 (twenty-five) percent of the Lump Sum price will be made. For each progress payment thereafter, the total of the Project percent complete shown on the last pay statement plus 25 (twenty-five) percent will be paid (less previous payments), not to exceed one hundred (100) percent.

When no payment item for Traffic Control-Lump Sum is shown in the Proposal, all of the requirements of Section 150 and the Traffic Control Plan shall be in full force and effect. The cost of complying with these requirements will not be paid for separately, but shall be included in the overall bid submittal.

**B. Signs**

When shown as a pay item in the contract, interim special guide signs will be paid for as listed below. All other regulatory, warning, and guide signs, as required by the Contract, will be paid for under Traffic Control Lump Sum or included in the overall bid submitted.

1. Interim ground mounted or interim overhead special guide signs will be measured for payment by the square foot. This payment shall be full compensation for furnishing the signs, including supports as required, erecting, illuminating overhead signs, maintaining, removing, re-erecting, and final removal from the Project. Payment will be made only one time regardless of the number of moves required.
2. Remove and reset existing special guide signs, ground mount or overhead, complete, in place, will be measured for payment per each. Payment will be made only one time regardless of the number of moves required.
3. Modify special guide signs, ground mount or overhead, will be measured for payment by the square foot. The area measured shall include only that portion of the sign modified. Payment shall include materials, removal from posts or supports when necessary, and remounting as required.

**C. Temporary Barrier**

Temporary Barrier shall be measured as specified in Section 620.

**D. Changeable message sign, portable**

Changeable Message Sign, Portable will be measured as specified in Section 632.

**E. Temporary Guardrail anchorage, Type 12**

Temporary Guardrail Anchorage- Type 12 will be measured by each assembly, complete in place and accepted according to the details shown in the plans, which shall also include the additional guardrail and appurtenances necessary for transition and connection to Temporary Concrete Barrier. Payment shall include all necessary materials, equipment, labor, site preparation, maintenance and removal.

**F. Traffic signal installation – Temporary**

Traffic Signal Installation- Temporary will be measured as specified in Section 647.

**G. Flashing Beacon assembly**

Flashing Beacon Assemblies will be measured as specified in Section 647.

**H. Portable impact attenuators**

Each Portable Impact Attenuator will be measured by the unit/array which shall include all material components, hardware, incidentals, labor, site preparation, and maintenance, including spare parts recommended by the manufacturer for repairing accident damage. Each unit will be measured only once regardless of the number of locations installed, moves required, or number of repairs necessary because of traffic damage. Upon completion of the project, the units shall be removed and retained by the Contractor.

**I. Pavement Markings**

Pavement markings will be measured as specified in Section 150.

**150.10 Payment**

When shown in the Schedule of Items in the Proposal, the following items will be paid for separately.

Item No. 150. Traffic Control.....Lump Sum

**SECTION 161 CONTROL OF SOIL EROSION AND SEDIMENTATION**

**The Contractor shall provide sufficient erosion and sedimentation controls as necessary or as directed by the County to prevent stormwater pollution or illicit discharges.**

**END OF SECTION**

# **ROCKDALE COUNTY, GEORGIA**

## **INVITATION TO BID #20-10**

### **2017 SPLOST #3A ROADWAY REHABILITATION**

**16.3 Miles of Roadway Rehabilitation, including Full Depth Reclamation, Asphaltic Concrete Patching, Variable Depth Milling, Open Graded Interlayer, Leveling, Resurfacing, Microsurfacing, HA5 & Wet Continuous Reflective Striping on Numerous Roadways in Rockdale County**

### **SPECIAL PROVISIONS**

**For**

**Rockdale County Department of Transportation (RDOT)**

**CONTRACT # C-2020\_\_\_\_\_**

# **1. Modifications of Standard Specifications**

## **Section 400—Hot Mix Asphaltic Concrete Construction**

*Delete Section 400 and substitute the following:*

### **400.1 General Description**

This work includes constructing one or more courses of bituminous plant mixture on the prepared foundation or existing roadway surface. The mixture shall conform with lines, grades, thicknesses, and typical cross sections shown on the Plans or established by the Engineer.

This section includes the requirements for all bituminous plant mixtures regardless of the gradation of the aggregates, type and amount of bituminous material, or pavement use.

Acceptance of work is on a lot-to-lot basis according to the requirements of this Section and **Section 106**.

#### **400.1.01 Definitions**

**Segregated Mixture:** Mixture lacking homogeneity in HMA constituents of such a magnitude that there is a reasonable expectation of accelerated pavement distress or performance problems. May be quantified by measurable changes in temperature, gradation, asphalt content, air voids, or surface texture.

**New Construction:** A roadway section more than 0.5 mile (800 m) long that is not longitudinally adjacent to the existing roadway. If more than one lane is added, and if any of the lanes are longitudinally adjacent to the existing lane, the lanes shall be tested under the criteria for a resurfacing project.

**Trench Widening:** Widening no more than 4 ft. (1.2 m) in width.

**Comparison sample:** Opposite quarter of material sampled by the **Contractor**.

**Quality assurance sample:** Independent sample taken by the Department.

**Referee sample:** A sample of the material remaining after quartering which is used for evaluation if a comparison of **Contractor** and Departmental test results is outside allowable tolerances.

#### **400.1.02 Related References**

##### **A. Standard Specifications**

Section 106—Control of Materials

Section 109—Measurement and Payment

Section 152—Field Laboratory Building

Section 413—Bituminous Tack Coat

Section 424—Bituminous Surface Treatment

Section 802—Coarse Aggregate for Asphaltic Concrete

Section 828—Hot Mix Asphaltic Concrete Mixtures

##### **B. Referenced Documents**

AASHTO T 209

AASHTO T 202

AASHTO T 49

Laboratory Standard Operating Procedure (SOP) 27, "Quality Assurance for Hot Mix Asphaltic Concrete Plants in Georgia"

Department of Transportation Standard Operating Procedure (SOP) 15

GDT 38

GDT 73

GDT 78

GDT 83

GDT 93

GDT 119

GDT 125

GDT 134

GSP 15

GSP 21

QPL 1

QPL 2

QPL 7

QPL 26

QPL 30

QPL 39

QPL 41

QPL 45

QPL 65

QPL 67

QPL 70

QPL 77

#### **400.1.03 Submittals**

##### **A. Invoices**

When the Department requests, furnish formal written invoices from a supplier for all materials used in production of HMA. Show the following on the Bill of Lading:

- Date shipped
- Quantity in tons (megagrams)
- Included with or without additives (for asphalt cement)  
Purchase asphaltic cement from a supplier who will provide copies of Bill of Lading upon the Department's request.

##### **B. Paving Plan**

Before starting asphaltic concrete construction, submit a written paving plan to the Engineer for approval. Include the following on the paving plan:

- Proposed starting date
- Location of plant(s)
- Rate of production
- Average haul distance(s)
- Number of haul trucks
- Paver speed feet (meter)/minute for each placement operation

- Mat width for each placement operation
- Number and type of rollers for each placement operation
- Sketch of the typical section showing the paving sequence for each placement operation
- Electronic controls used for each placement operation
- Temporary pavement marking plan

If staged construction is designated in the Plans or contract, provide a paving plan for each construction stage.

If segregation is detected, submit a written plan of measures and actions to prevent segregation. Work will not continue until the plan is submitted to and approved by the Department.

### C. Job Mix Formula

After the Contract has been awarded, submit to the Engineer a written job mix formula proposed for each mixture type to be used based on an approved mix design. Furnish the following information for each mix:

- Specific project for which the mixture will be used
- Source and description of the materials to be used
- Mixture I.D. Number
- Proportions of the raw materials to be combined in the paving mixture
- Single percentage of the combined mineral aggregates passing each specified sieve
- Single percentage of asphalt by weight of the total mix to be incorporated in the completed mixture
- Single temperature at which to discharge the mixture from the plant
- Theoretical specific gravity of the mixture at the designated asphalt content
- Name of the person or agency responsible for quality control of the mixture during production

Do the following to have the formulas approved and to ensure their quality:

1. Submit proposed job mix formulas for review at least two weeks before beginning the mixing operations.
2. Do not start hot mix asphaltic concrete work until the Engineer has approved a job mix formula for the mixture to be used. No mixture will be accepted until the Engineer has given approval.
3. Provide mix designs for all Superpave and 4.75 mm mixes to be used. The Department will provide mix design results for other mixes to be used.
4. After a job mix formula has been approved, assume responsibility for the quality control of the mixtures supplied to the Department according to Subsection 106.01, "Source of Supply and Quantity of Materials."

### D. Quality Control Program

Submit a Quality Control Plan to the Office of Materials and Research for approval. The Quality Control Program will be included as part of the certification in the annual plant inspection report.

## 400.2 Materials

Ensure that materials comply with the specifications listed in Table 1.

**Table 1—Materials Specifications**

Material	Subsection
Asphalt Cement, Grade Specified	<u>820.2</u>
Coarse Aggregates for Asphaltic Concrete	<u>802.2.02</u>
Fine Aggregates for Asphaltic Concrete	<u>802.2.01</u>
Mineral Filler	<u>883.1</u>
Heat Stable Anti-Stripping Additive	<u>831.2.04</u>
Hydrated Lime	<u>882.2.03</u>

Silicone Fluid	<u>831.2.05</u>
Bituminous Tack Coat: PG 58-22, PG 64-22, PG 67-22	<u>820.2</u>
Hot Mix Asphaltic Concrete Mixtures	<u>828</u>

#### 400.2.01 Delivery, Storage, and Handling

Storage of material is allowed in a properly sealed and insulated system for up to 24 hours except that Stone Matrix Asphalt (SMA), Open-Graded Friction Course (OGFC), or Porous European Mix (PEM) mixtures shall not be stored more than 12 hours. Mixtures other than SMA, OGFC, or PEM may be stored up to 72 hours in a sealed and insulated system, equipped with an auxiliary inert gas system, with the Engineer's approval. Segregation, lumpiness, drain-down, or stiffness of stored mixture is cause for rejection of the mixture. The Engineer will not approve using a storage or surge bin if the mixture segregates, loses excessive heat, or oxidizes during storage.

The Engineer may obtain mixture samples or recover asphalt cement according to GDT 119. AASHTO T 202 and T 49 will be used to perform viscosity and penetration tests to determine how much asphalt hardening has occurred.

##### A. Vehicles for Transporting and Delivering Mixtures

Ensure that trucks used for hauling bituminous mixtures have tight, clean, smooth beds.

Follow these guidelines when preparing vehicles to transport bituminous mixtures:

1. Use an approved releasing agent from QPL 39 in the transporting vehicle beds, if necessary, to prevent the mixture from sticking to the bed. Ensure that the releasing agent is not detrimental to the mixture. When applying the agent, drain the excess agent from the bed before loading. Remove from the project any transporting vehicles determined to contain unapproved releasing agents.
2. Protect the mixture with a waterproof cover large enough to extend over the sides and ends of the bed. Securely fasten the waterproof cover before the vehicle begins moving.
3. Insulate the front end and sides of each bed with an insulating material with the following specifications:
  - Consists of builders insulating board or equivalent
  - Has a minimum "R" value of 4.0
  - Can withstand approximately 400 °F (200 °C) temperatures

Install the insulating material so it is protected from loss and contamination. A "Heat Dump Body" may be used in lieu of insulation of the bed. "Heat Dump Body" refers to any approved transport vehicle that is capable of diverting engine exhaust and transmitting heat evenly throughout the dump body to keep asphalt at required temperature. Mark the "Heat Dump Body" clearly with "OPEN" and "CLOSE" position at the exhaust diverter. Install a padlock and lock it in the "OPEN" position when the "Heat Dump Body" is used to transport bituminous mixtures.
4. Mark each transporting vehicle with a clearly visible identification number.
5. Create a hole in each side of the bed so that the temperature of the loaded mixture can be checked. The placement of these holes shall be located to assure that the thermometer is being placed in the hot mix asphaltic concrete.

Ensure that the mixture is delivered to the roadway at a temperature within  $\pm 20$  °F ( $\pm 11$  °C) of the temperature on the job mix formula.

If the Engineer determines that a truck may be hazardous to the Project or adversely affect the quality of the work, remove the truck from the project.

##### B. Containers for Transporting, Conveying, and Storing Bituminous Material

To transport, convey, and store bituminous material, use containers free of foreign material and equipped with sample valves. Bituminous material will not be accepted from conveying vehicles if material has leaked or spilled from the containers.

## 400.3 Construction Requirements

### 400.3.01 Personnel

General Provisions 101 through 150.

### 400.3.02 Equipment

Hot mix asphaltic concrete plants that produce mix for Department use are governed by Quality Assurance for Hot Mix Asphaltic Concrete Plants in Georgia, Laboratory Standard Operating Procedure No. 27.

The Engineer will approve the equipment used to transport and construct hot mix asphaltic concrete. Ensure that the equipment is in satisfactory mechanical condition and can function properly during production and placement operations. Place the following equipment at the plant or project site:

#### A. Field Laboratory

Provide a field laboratory according to Section 152.

#### B. Plant Equipment

##### 1. Scales

Provide scales as follows:

- a. Furnish (at the Contractor's expense) scales to weigh bituminous plant mixtures, regardless of the measurement method for payment.
- b. Ensure that the weight measuring devices that provide documentation comply with Subsection 109.01, "Measurement and Quantities."
- c. When not using platform scales, provide weight devices that record the mixture net weights delivered to the truck. A net weight system will include, but is not limited to:
  - Hopper or batcher-type weight systems that deliver asphaltic mixture directly to the truck
  - Fully automatic batching equipment with a digital recording device
- d. Use a net weight printing system only with automatic batching and mixing systems approved by the Engineer.
- e. Ensure that the net weight scale mechanism or device manufacturer, installation, performance, and operation meets the requirements in Subsection 109.01, "Measurement and Quantities"
- f. Provide information on the Project tickets according to Department of Transportation SOP-15.

##### 2. Time-Locking Devices

Furnish batch type asphalt plants with automatic time-locking devices that control the mixing time automatically. Construct these devices so that the operator cannot shorten or eliminate any portion of the mixing cycle.

##### 3. Surge- and Storage-Systems

Provide surge and storage bins as follows:

- a. Ensure that bins for mixture storage are insulated and have a working seal, top and bottom, to prevent outside air infiltration and to maintain an inert atmosphere during storage. Bins not intended as storage bins may be used as surge bins to hold hot mixtures for part of the working day. However, empty these surge bins completely at the end of the working day.
- b. Ensure that surge and storage bins can retain a predetermined minimum level of mixture in the bin when the trucks are loaded.
- c. Ensure that surge and storage systems do not contribute to mix segregation, lumpiness, drain-down, or stiffness.

##### 4 Controls for Dust Collector Fines

Control dust collection as follows:

- a. When collecting airborne aggregate particles and returning them to the mixture, have the return system meter all or part of the collected dust uniformly into the aggregate mixture and waste the excess. The collected dust percentage returned to the mixture is subject to the Engineer's approval.

- b. When the collected dust is returned directly to the hot aggregate flow, interlock the dust feeder with the hot aggregate flow and meter the flow to maintain a flow that is constant, proportioned, and uniform.
5. Hydrated Lime Treatment System

When hydrated lime is required as a mixture ingredient:

- a. Use a separate bin and feed system to store and proportion the required quantity into the mixture.
  - b. Ensure that the aggregate is uniformly coated with hydrated lime aggregate before adding the bituminous material to the mixture. Add the hydrated lime so that it will not become entrained in the exhaust system of the drier or plant.
  - c. Control the feeder system with a proportioning device that meets these specifications:
    - Is accurate to within  $\pm 10$  percent of the amount required
    - Has a convenient and accurate means of calibration
    - Interlocks with the aggregate feed or weigh system to maintain the correct proportions for all rates of production and batch sizes and to ensure that mixture produced is properly treated with lime
  - d. Provide flow indicators or sensing devices for the hydrated lime system and interlock them with the plant controls to interrupt mixture production if hydrated lime introduction fails to meet the required target value after no longer than 60 seconds.
6. Net Weight Weighing Mechanisms

Certify the accuracy of the net weight weighing mechanisms by an approved registered scale serviceperson at least once every 6 months. Check the accuracy of net weight weighing mechanisms at the beginning of Project production and thereafter as directed by the Engineer. Check mechanism accuracy as follows:

- a. Weigh a load on a set of certified commercial truck scales. Ensure that the difference between the printed total net weight and that obtained from the commercial scales is no greater than 4 lbs/1,000 lbs (4 kg/Mg) of load.

Check the accuracy of the bitumen scales as follows:

- Use standard test weights.
  - If the checks indicate that printed weights are out of tolerance, have a registered scale serviceperson check the batch scales and certify the accuracy of the printer.
  - While the printer system is out of tolerance and before its adjustment, continue production only if using a set of certified truck scales to determine the truck weights.
- d. Have plants that use batch scales maintain ten 50 lb. (25 kg) standard test weights at the plant site to check batching scale accuracy.

Ensure that plant scales that are used only to proportion mixture ingredients, not to determine pay quantities, are within two percent throughout the range.

### C. Equipment at Project Site

#### 1. Cleaning Equipment

Provide sufficient hand tools and power equipment to clean the roadway surface before placing the bituminous tack coat. Use power equipment that complies with Subsection 424.3.02.F, "Power Broom and Power Blower."

#### 2. Pressure Distributor

To apply the bituminous tack coat, use a pressure distributor that complies with Subsection 424.3.02.B, "Pressure Distributor."

#### 3. Bituminous Pavers

To place hot mix asphaltic concrete, use bituminous pavers that can spread and finish courses that are:

- As wide and deep as indicated on the Plans
- True to line, grade, and cross section
- Smooth

- Uniform in density and texture
- a. Continuous Line and Grade Reference Control. Furnish, place, and maintain the supports, wires, devices, and materials required to provide continuous line and grade reference control to the automatic paver control system.
- b. Automatic Screed Control System. Equip the bituminous pavers with an automatic screed control system actuated from sensor-directed mechanisms or devices that will maintain the paver screed at a pre-determined transverse slope and elevation to obtain the required surface.
- c. Transverse Slope Controller. Use a transverse slope controller capable of maintaining the screed at the desired slope within  $\pm 0.1$  percent. Do not use continuous paving set-ups that result in unbalanced screed widths or off-center breaks in the main screed cross section unless approved by the Engineer.
- d. Screed Control. Equip the paver to permit the following four modes of screed control. The method used shall be approved by the Engineer. ***Milling crew and paving crew must have a fully calibrated and functional 4 ft digital smart level on site at all times to ensure correct cross slope and profile.***
  - Automatic grade sensing and slope control
  - Automatic dual grade sensing
  - Combination automatic and manual control
  - Total manual control

Ensure that the controls are referenced with a taut string or wire set to grade, or with a ski-type device or mobile reference at least 30 ft (9 m) long when using a conventional ski. A non-contacting laser or sonar-type ski with at least four referencing mobile stations may be used with a reference at least 24 ft (7.3 m) long. Under limited conditions, a short ski or shoe may be substituted for a long ski on the second paver operating in tandem, or when the reference plane is a newly placed adjacent lane.

Automatic screed control is required on all Projects; however, when the Engineer determines that Project conditions prohibit the use of such controls, the Engineer may waive the grade control, or slope control requirements, or both.

- e. Paver Screed Extension. When the laydown width requires a paver screed extension, use bolt-on screed extensions to extend the screeds, or use an approved mechanical screed extension device. When the screed is extended, add auger extensions to assure a length of no more than 18 inches from the auger to the end gate of the paver. Auger extensions may be omitted when paving variable widths. Ensure the paver is equipped with tunnel extensions when the screed and augers are extended.
- f. 30 - 45 Degree Wedge. When shown on/required by the plans, equip the paver to ensure a 30 degree minimum up to a 45 degree maximum wedge along the outside edge of the roadway (measured from the horizontal plane) is in place after final compaction on the final surface course. Use an approved mechanical device that will:
  - Apply compactive effort to the asphalt mixture to eliminate objectionable voids as the mixture passes through the wedge device
  - Produce a wedge with a uniform texture, shape, and density while automatically adjusting to varying heights encountered along the roadway shoulder.

**NOTE: Do not use extendible strike-off devices instead of approved screed extensions. Only use a strike-off device in areas that would normally be luted in by hand labor.**

#### 4. Compaction Equipment

Ensure that the compaction equipment is in good mechanical condition and can compact the mixture to the required density. The compaction equipment number, type, size, operation, and condition is subject to the Engineer's approval

**400.3.03 Preparation**

**A. Prepare Existing Surface**

Prepare the existing surface as follows:

1. Clean the Existing Surface. Before applying hot mix asphaltic concrete pavement, clean the existing surface to the Engineer’s satisfaction.
2. Patch and Repair Minor Defects

Before placing leveling course:

- a. Correct potholes and broken areas that require patching in the existing surface and base as directed by the Engineer.
- b. Cut out, trim to vertical sides, and remove loose material from the areas to be patched.
- e. Prime or tack coat the area after it has been cleaned. Compact patches to the Engineer’s satisfaction. Material for patches does not require a job mix formula, but shall meet the gradation range shown in Section 828. The Engineer must approve the asphalt content to be used.

3. Apply Bituminous Tack Coat

Apply the tack coat according to Section 413. The Engineer will determine the application rate, which must be within the limitations Table 2.

**Table 2—Application Rates for Bituminous Tack, gal/yd<sup>2</sup> (L/m<sup>2</sup>)**

	Minimum	Maximum
All Mixes *	0.04 (0.180)	0.06(0.270)
*On thin leveling courses and freshly placed asphaltic concrete mixes, reduce the application rate to 0.02 to 0.04 gal/yd <sup>2</sup> (0.09 to 0.18 L/m <sup>2</sup> ).		

**B. Place Patching and Leveling Course**

1. When the existing surface is irregular, bring it to the proper cross section and grade with a leveling course of hot mix asphaltic concrete materials.
2. Place leveling at the locations and in the amounts directed by the Engineer.
3. Use leveling course mixtures that meet the requirements of the job mix formulas defined in:
  - Subsection 400.3.05.A. “Observe Composition of Mixtures”
  - Section 828
4. If the leveling and patching mix type is undesignated, determine the mix type by the thickness or spread rate according to Table 3.

**Table 3—Leveling and Patching Mix Types**

Thickness	Rate of Spread	Type of Mix
Up to 0.75 in (19 mm)	Up to 85 lbs/yd <sup>2</sup> (45 kg/m <sup>2</sup> )	4.75 mm Mix or 9.5 mm Superpave Type I
0.75 to 1.5 in (19 to 38 mm)	85 to 165 lbs/yd <sup>2</sup> (45 to 90 kg/m <sup>2</sup> )	9.5 mm Superpave Type II
1.5 to 2 in (38 to 50 mm)	165 to 220 lbs/yd <sup>2</sup> (90 to 120 kg/m <sup>2</sup> )	12.5 mm Superpave *
2 to 2.5 in (50 to 64 mm)	220 to 275 lbs/yd <sup>2</sup> (120 to 150 kg/m <sup>2</sup> )	19 mm Superpave *
Over 2.5 in (64 mm)	Over 275 lbs/yd <sup>2</sup> (150 kg/m <sup>2</sup> )	25 mm Superpave

\* These mixtures may be used for isolated patches no more than 6 in. (150 mm) deep and no more than 4 ft. (1.2 m) in diameter or length.

#### **400.3.04 Fabrication**

General Provisions 101 through 150.

#### **400.3.05 Construction**

Provide the Engineer at least one day's notice prior to beginning construction or prior to resuming production if operations have been temporarily suspended.

##### **A. Observe Composition of Mixtures**

###### **1. Calibration of plant equipment**

If the material changes, or if a component affecting the ingredient proportions has been repaired, replaced, or adjusted, check and recalibrate the proportions.

Calibrate as follows:

- a. Before producing mixture for the Project, calibrate by scale weight the electronic sensors or settings for proportioning mixture ingredients.
- b. Calibrate ingredient proportioning for all rates of production.

###### **2. Mixture control**

Compose hot mix asphaltic concrete from a uniform mixture of aggregates, bituminous material, and if required, hydrated lime, mineral filler, or other approved additive.

Make the constituents proportional to produce mixtures that meet the requirements in Section 828. The general composition limits prescribed are extreme ranges within which the job mix formula must be established. Base mixtures on a design analysis that meets the requirements of Section 828. Ensure that the field performance of the in-place mixtures meet the requirements of Subsection 828.2.B for Permeability, Moisture Susceptibility, Rutting, Susceptibility and Fatigue. The in-place mixtures will be subject to testing for compliance with requirements of Section 828.2.B under the following conditions:

- Deviates greater than 10 percent on gradation on the mixture control sieves from the approved job mix formula based on acceptance or assurance samples.
- Deviates greater than 0.7 percent in asphalt content from the job mix formula based on acceptance or assurance samples.
- The calculated mean pavement air voids result in an adjusted pay factor greater than 0.80 or any single sub-lot results in mean pavement air voids exceeding 10.5%.
- Mix produced using an unapproved mix design or job mix formula.

Remove and replace (at the Contractor's expense) any areas determined to not meet the requirements of Section 828.2.B.

If control test results show that the characteristic tested does not conform to the job mix formula control tolerances given in Section 828, take immediate action to ensure that the quality control methods are effective.

Control the materials to ensure that extreme variations do not occur. Maintain the gradation within the composition limits in Section 828.

##### **B. Prepare Bituminous Material**

Uniformly heat the bituminous material to the temperature specified in the job mix formula with a tolerance of  $\pm 20$  °F ( $\pm 10$  °C).

##### **C. Prepare the Aggregate**

Prepare the aggregate as follows:

1. Heat the aggregate for the mixture, and ensure a mix temperature within the limits of the job mix formula.
2. Do not contaminate the aggregate with fuel during heating.

3. Reduce the absorbed moisture in the aggregate until the asphalt does not separate from the aggregate in the prepared mixture. If this problem occurs, the Engineer will establish a maximum limit for moisture content in the aggregates. When this limit is established, maintain the moisture content below this limit.

#### **D. Prepare the Mixture**

Proportion the mixture ingredients as necessary to meet the required job mix formula. Mix until a homogenous mixture is produced.

##### **1. Add Hydrated Lime**

When hydrated lime is included in the mixture, add it at a rate specified in Section 828 and the job mix formula. Use methods and equipment for adding hydrated lime according to Subsection 400.3.02.B.6, "Hydrated Lime Treatment System."

Add hydrated lime to the aggregate by using Method A or B as follows:

Method A—Dry Form—Add hydrated lime in its dry form to the mixture as follows, according to the type of plant:

- a. Batch Type Asphalt Plant: Add hydrated lime to the mixture in the weigh hopper or as approved and directed by the Engineer.
- b. Continuous Plant Using Pugmill Mixer: Feed hydrated lime into the hot aggregate before it is introduced into the mixer so that dry mixing is complete before the bituminous material is added.
- c. Continuous Plant Using Drier-Drum Mixer: Add hydrated lime so that the lime will not become entrained into the air stream of the drier and so that thorough dry mixing will be complete before the bituminous material is added.

Method B—Lime/Water Slurry—Add the required quantity of hydrated lime (based on dry weight) in lime/water slurry form to the aggregate. This solution consists of lime and water in concentrations as directed by the Engineer.

Equip the plant to blend and maintain the hydrated lime in suspension and to mix it with the aggregates uniformly in the proportions specified.

##### **2. Add Gilsonite Modifier**

When required, add the Gilsonite modifier to the mixture at a rate such that eight percent by weight of the asphalt cement is replaced by Gilsonite. Use either PG 64-22 or PG 67-22 asphalt cement as specified in Subsection 820.2.01. Provide suitable means to calibrate and check the rate of Gilsonite being added. Introduce Gilsonite modifier by either of the following methods.

- a. For batch type plants, incorporate Gilsonite into the pugmill at the beginning of the dry mixing cycle. Increase the dry mix cycle by a minimum of 10 seconds after the Gilsonite is added and prior to introduction of the asphalt cement. For this method, supply Gilsonite in plastic bags to protect the material during shipment and handling and store the modifier in a waterproof environment. The bags shall be capable of being completely melted and uniformly blended into the combined mixture. Gilsonite may also be added through a mineral filler supply system as described in Subsection 400.3.02.B.5, "Mineral Filler Supply System." The system shall be capable of injecting the modifier into the weigh hopper near the center of the aggregate batching cycle so the material can be accurately weighed.
- b. For drum drier plants, add Gilsonite through the recycle ring or through an acceptable means which will introduce the Gilsonite prior to the asphalt cement injection point. The modifier shall be proportionately fed into the drum mixer at the required rate by a proportioning device which shall be accurate within  $\pm 10$  percent of the amount required. The entry point shall be away from flames and ensure the Gilsonite will not be caught up in the air stream and exhaust system.

##### **3. Materials from Different Sources**

Do not use mixtures prepared from aggregates from different sources intermittently. This will cause the color of the finished pavement to vary.

#### **E. Observe Weather Limitations**

Do not mix and place asphaltic concrete if the existing surface is wet or frozen. Follow the temperature guidelines in the following table:

**Table 4—Lift Thickness Table**

Lift Thickness	Minimum Temperature
1 in (25 mm) or less	55 °F (13 °C)
1.1 to 2 in (26 mm to 50 mm)	45 °F (8 °C)
2.1 to 3 in (51 mm to 75 mm)	40 °F (4 °C)
3.1 to 4 in (76 mm to 100 mm)	35 °F (2 °C)
4.1 to 8 in (101 mm to 200 mm)	32 °F (0 °C) and rising. Base Material must not be frozen.

**F. Perform Spreading and Finishing**

Spread and finish the course as follows:

- Determine the course’s maximum compacted layer thickness by the type mix being used according to Table 5.

**Table 5—Maximum Layer Thickness**

Mix Type	Minimum Layer Thickness	Maximum Layer Thickness	Maximum Total Thickness
25 mm Superpave	2 1/2 in (64 mm)	4 in (100 mm) *	—
19 mm Superpave	1 3/4 in (44 mm)	3 in (75 mm) *	—
12.5 mm Superpave	1 3/8 in (35 mm)	2 1/2 in (64 mm)*	8 in (200 mm)
9.5 mm Superpave Type II	1 1/8 in.(28 mm)	1 1/2 in (38 mm)	4 in (100 mm)
9.5 mm Superpave Type I	7/8 in (22 mm)	1 1/4 in (32 mm)	4 in (100 mm)
4.75 mm Mix	3/4 in (19 mm)	1 1/8 in (28 mm)	2 in (50 mm)
* Allow up to 6 in (150 mm) per lift on trench widening. Place 9.5 mm Superpave and 12.5 mm Superpave up to 4 in (100 mm) thick for driveway and side road transition.			

- Unload the mixture into the paver hopper or into a device designed to receive the mixture from delivery vehicles.
- Except for leveling courses, spread the mixture to the loose depth for the compacted thickness or the spread rate. Use a mechanical spreader true to the line, grade, and cross section specified.
- For leveling courses, use a motor grader equipped with a spreader box and smooth tires to spread the material or use a mechanical spreader meeting the requirements in Subsection 400.3.02.C, “Equipment at Project Site.”
- Obtain the Engineer’s approval for the sequence of paving operations, including paving the adjoining lanes. Minimize tracking tack onto surrounding surfaces.
- Ensure that the outside edges of the pavement being laid are aligned and parallel to the roadway center line.
- For New Construction or Resurfacing Contracts that contain multiple lifts or courses, arrange the width of the individual lifts so that the longitudinal joints of each successive lift are offset from the previous lift at least 1 ft (300 mm). This requirement does not apply to the lift immediately over thin lift leveling courses. Ensure that the longitudinal joint(s) in the surface course and the mix immediately underneath asphaltic concrete OGFC or PEM are at the lane line(s).

**NOTE: Perform night work with artificial light provided by the Contractor and approved by the Engineer.**

8. Where mechanical equipment cannot be used, spread and rake the mixture by hand. Obtain the Engineer's approval of the operation sequence, including compactive methods, in these areas.
9. Keep small hand raking tools clean and free from asphalt build up. Do not use fuel oil or other harmful solvents to clean tools during the work.
10. Do not use mixture with any of these characteristics:
  - Segregated
  - Nonconforming temperature
  - Deficient or excessive asphalt cement content
  - Otherwise unsuitable to place on the roadway in the work
11. Remove and replace mixture placed on the roadway that the Engineer determines has unacceptable blemish levels from segregation, streaking, pulling and tearing, or other characteristics. Replace with acceptable mixture at the **Contractor's** expense. Do not continually place mixtures with deficiencies.  
Do not place subsequent course lifts over another lift or courses placed on the same day while the temperature of the previously placed mix is 140 °F (60 °C) or greater.
12. Obtain the Engineer's approval of the material compaction equipment. Perform the rolling as follows:
  - a. Begin the rolling as close behind the spreader as possible without causing excessive distortion of the asphaltic concrete surface.
  - b. Continue rolling until roller marks are no longer visible.
  - c. Use pneumatic-tired rollers with breakdown rollers on all courses except asphaltic concrete OGFC, PEM and SMA or other mixes designated by the Engineer.
13. If applicable, taper or "feather" asphaltic concrete from full depth to a depth no greater than 0.5 in (13 mm) along curbs, gutters, raised pavement edges, and areas where drainage characteristics of the road must be retained. The Engineer will determine the location and extent of tapering.

#### **G. Maintain Continuity of Operations**

Coordinate plant production, transportation, and paving operations to maintain a continuous operation. If the spreading operations are interrupted, construct a transverse joint if the mixture immediately behind the paver screed cools to less than 250 °F (120 °C).

#### **H. Construct the Joints**

1. Construct Transverse Joints
  - a. Construct transverse joints to facilitate full depth exposure of the course before resuming placement of the affected course.
  - b. Properly clean and tack the vertical face of the transverse joint before placing additional material.

**NOTE: Never burn or heat the joint by applying fuel oil or other volatile materials.**

- c. Straightedge transverse joints immediately after forming the joint.
  - d. Immediately correct any irregularity that exceeds 3/16 in. in 10 ft (5 mm in 3 m).
2. Construct Longitudinal Joints

Clean and tack the vertical face of the longitudinal joint before placing adjoining material. Construct longitudinal joints so that the joint is smooth, well-sealed, and bonded.

#### **I. Protect the Pavement**

Protect sections of the newly finished pavement from traffic until the traffic will not mar the surface or alter the surface texture. If directed by the Engineer, use artificial methods to cool the newly finished pavement to open the pavement to traffic more quickly.

## J. Modify the Job Mix Formula

If the Engineer determines that undesirable mixture or mat characteristics are being obtained, the job mix formula may require immediate adjustment.

### 400.3.06 Quality Acceptance

#### A. Acceptance Plans for Gradation and Asphalt Cement Content

The **Contractor** will randomly sample and test mixtures for acceptance on a lot basis. The Department will monitor the **Contractor** testing program and perform comparison and quality assurance testing.

##### 1. Determine Lot Amount

A lot consists of the tons (megagrams) of asphaltic concrete produced and placed each production day. If this production is less than 500 tons (500 Mg), or its square yard (meter) equivalent, production may be incorporated into the next working day. The Engineer may terminate a lot when a pay adjustment is imminent if a plant or materials adjustment resulting in a probable correction has been made. Terminate all open lots at the end of the month, except for materials produced and placed during the adjustment period. The lot will be terminated as described in Subsection 400.5.01, "Adjustments".

If the final day's production does not constitute a lot, the production may be included in the lot for the previous day's run; or, the Engineer may treat the production as a separate lot with a corresponding lower number of tests.

##### 2. Determine Lot Acceptance

If the Engineer determines that the material is not acceptable to leave in place, the materials shall be removed and replaced at the Contractor's expense.

##### 3. Provide Quality Control Program

Provide a Quality Control Program as established in SOP 27 which includes:

- Assignment of quality control responsibilities to specifically named individuals who have been certified by the Office of Materials and Research
- Provisions for prompt implementation of control and corrective measures
- Provisions for communication with Project Manager, Bituminous Technical Services Engineer, and Testing Management Operations Supervisor at all times
- Provisions for reporting all test results daily through the Office of Materials and Research computerized Field Data Collection System; other checks, calibrations and records will be reported on a form developed by the **Contractor** and will be included as part of the project records
- Notification in writing of any change in quality control personnel

##### a. Certification Requirements:

- Use laboratory and testing equipment certified by the Department. (Laboratories which participate in and maintain AASHTO accreditation for testing asphaltic concrete mixtures will be acceptable in lieu of Departmental certification.)
- Provide certified quality control personnel to perform the sampling and testing. A Quality Control Technician (QCT) may be certified at three levels:
  - 1) Temporary Certification – must be a technician trainee who shall be given direct oversight by a certified Level 1 or Level 2 QCT while performing acceptance testing duties during the first 5 days of training. The trainee must complete qualification requirements within 30 production days after being granted temporary certification. A trainee who does not become qualified within 30 production days will not be re-eligible for temporary certification. A certified Level 1 or Level 2 QCT shall be at the plant at all times during production and shipment of mixture to monitor work of the temporarily certified technician.
  - 2) Level 1 – must demonstrate they are competent in performing the process control and acceptance tests and procedures related to hot mix asphalt production and successfully pass a written exam.

- 3) Level 2 – must meet Level 1 requirements and must be capable of and responsible for making process control adjustments, and successfully pass a written exam.
  - Technician certification is valid for 3 years from the date on the technician’s certificate unless revoked or suspended. Eligible technicians may become certified through special training and testing approved by the Office of Materials and Research. Technicians who lose their certification due to falsification of test data will not be eligible for recertification in the future unless approved by the State Materials and Research Engineer.

b. Quality Control Management

- 1) Designate at least one Level 2 QCT as manager of the quality control operation. The Quality Control Manager shall meet the following requirements:
  - Be accountable for actions of other QCT personnel
  - Ensure that all applicable sampling requirements and frequencies, test procedures, and Standard Operating Procedures are adhered to
  - Ensure that all reports, charts, and other documentation is completed as required
- 2) Provide QCT personnel at the plant as follows:
  - If daily production for all mix types is to be greater than 250 tons (megagrams), have a QCT person at the plant at all times during production and shipment of mixture until all required acceptance tests have been completed
  - If daily production for all mix types will not be greater than 250 tons (megagrams) a QCT may be responsible for conducting tests at up to two plants, subject to random number sample selection
  - Have available at the plant or within immediate contact by phone or radio a Level 2 QCT responsible for making prompt process control adjustments as necessary to correct the mix
- 3) Sampling, Testing, and Inspection Requirements.

Provide all sample containers, extractants, forms, diaries, and other supplies subject to approval of the Engineer.

Perform daily sampling, testing, and inspection of mixture production that meets the following requirements:

- (a) Randomly sample mixtures according to GSP 15, and GDT 73 (Method C) and test on a lot basis. In the event less than the specified number of samples are taken, obtain representative 6 in (150 mm) cores from the roadway at a location where the load not sampled was placed. Take enough cores to ensure minimum sample size requirements are met for each sample needed.
- (b) Maintain a printed copy of the computer generated random sampling data as a part of the project records.
- (c) Perform sampling, testing, and inspection duties of GSP 21.
- (d) Perform extraction or ignition test (GDT 83 or GDT 125) and extraction analysis (GDT 38). If the ignition oven is used, a printout of sample data including weights shall become a part of the project records. For asphalt cement content only, digital printouts of liquid asphalt cement weights may be substituted in lieu of an extraction test for plants with digital recorders. Calculate the asphalt content from the ticket representing the mixture tested for gradation.
- (e) Save extracted aggregate, opposite quarters, and remaining material (for possible referee testing) of each sample as follows:
  - Store in properly labeled, suitable containers
  - Secure in a protected environment
  - a. Store for three working days. If not obtained by the Department, within three days they may be discarded.

- (f) Add the following information on load tickets from which a sample or temperature check is taken:
  - Mixture temperature
  - Signature of the QCT person performing the testing
- (g) Calibrate the lime system when hydrated lime is included in the mixture:
  - Perform a minimum of twice weekly during production
  - Post results at the plant for review
  - Provide records of materials invoices upon request (including asphalt cement, aggregate, hydrated lime, etc.)
- (h) Take action if acceptance test results are outside Mixture Control Tolerances of Section 828.
  - One sample out of tolerance
    - (1) Contact Level 2 - QCT to determine if a plant adjustment is needed
    - (2) Immediately run a process control sample. Make immediate plant adjustments if this sample is also out of tolerance
    - (3) Test additional process control samples as needed to ensure corrective action taken appropriately controls the mixture
  - Two consecutive acceptance samples of the same mix type out of tolerance regardless of Lot or mix design level, or three consecutive acceptance samples out of tolerance regardless of mix type
    - (1) Stop plant production immediately
    - (2) Reject any mixture already in storage that:
      - Deviates more than 10 percent in gradation from the job mix formula based on the acceptance sample
      - Deviates more than 0.7 percent in asphalt content from the job mix formula based on the acceptance sample
    - (3) Make a plant correction to any mix type out of tolerance prior to resuming production
      - Do not send any mixture to the project before test results of a process control sample meets Mixture Control Tolerances
      - Reject any mixture produced at initial restarting that does not meet Mixture Control Tolerances

4) Comparison Testing and Quality Assurance Program

Periodic comparison testing by the Department will be required of each QCT to monitor consistency of equipment and test procedures. The Department will take independent samples to monitor the **Contractor's** quality control program.

a) Comparison Sampling and Testing

Retain samples for comparison testing and referee testing if needed as described in Subsection 400.3.06.A.3.b.3. Discard these samples only if the **Contractor's** acceptance test results meet a 1.00 pay factor and the Department does not procure the samples within three working days.

The Department will test comparison samples on a random basis. Results will be compared to the respective **Contractor** acceptance tests and the maximum difference shall be as follows:

**Table 6—Allowable Percent Difference Between Department and Contractor Acceptance Tests**

<u>SIEVE SIZE</u>	<u>SURFACE</u>	<u>SUB-SURFACE</u>
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1/2 in. (12.5 mm)		4.0%
3/8 in. (9.5 mm)	3.5%	4.0%
No. 4 (4.75 mm)	3.5%	3.5%
No. 8 (2.36 mm)	2.5%	3.0%
No. 200 (75 μm)	2.0%	2.0%
A.C.	0.4%	0.5%

(1) If test comparisons are within these tolerances:

- Continue production
- Use the **Contractor's** tests for acceptance of the lot

(2) If test comparisons are not within these tolerances:

- Another Departmental technician will test the corresponding referee sample
- Results of the referee sample will be compared to the respective **Contractor** and Departmental tests using the tolerance for comparison samples given above.
  - (a) If referee test results are within the above tolerances when compared to the **Contractor** acceptance test, use the **Contractor's** test for acceptance of the effected lot.
  - (b) If referee test results are not within the above tolerances when compared to the **Contractor** acceptance test, the Department will review the **Contractor's** quality control methods and determine if a thorough investigation is needed.

b) Quality Assurance Sampling and Testing

- (1) Randomly take a minimum of two quality assurance samples from the lesser of five days or five lots of production regardless of mix type or number of projects.
- (2) Compare test deviation from job mix formula to Mixture Control Tolerances in Section 828. If results are outside these tolerances, another sample from the respective mix may be taken.

**NOTE: For leveling courses less than 110 lb/yd<sup>2</sup> (60 kg/m<sup>2</sup>) that have quality assurance test results outside the Mixture Control Tolerances of Section 828, use the Department's test results only and applicable pay factors will apply.**

If test results of the additional sample are not within Mixture Control Tolerances, the Department will take the following action:

- Take random samples from throughout the lot as in Subsection 400.3.06.A.3.b.3 and use these test results for acceptance and in calculations for the monthly plant rating. Applicable pay factors will apply and the **Contractor** QCT test results will not be included in pay factor calculations nor in the monthly plant rating.
- Determine if the QCT has not followed Departmental procedures or has provided erroneous information.
- Take samples of any in-place mixture represented by unacceptable QCT tests and use the additional sample results for acceptance and in calculations for the monthly plant rating. The **Contractor** QCT tests will not be included in the monthly plant rating.

## B. Compaction

Determine the mixture compaction using either GDT 39 or GDT 59. The compaction is accepted in lots defined in Subsection 400.3.06. A "Acceptance Plans for Gradation and Asphalt Cement Content" and is within the same lot boundaries as the mixture acceptance.

### 1. Calculate Pavement Mean Air Voids

The Department will calculate the pavement air voids placed within each lot as follows:

- a. One test per sub-lot.
  - Lots  $\geq$  500 tons of mix should be divided into 5 sub-lots of equal distance.
  - Lots  $<$  500 tons of mix should be comprised of a sub-lot or sub-lots consisting of up to 100 tons of mix each. There may be less than 5 sub-lots.
- b. Average the results of all tests run on randomly selected sites in that lot.
- c. Select the random sites using GDT 73.

Density tests are not required for asphaltic concrete placed at 90 lbs/yd<sup>2</sup> (50 kg/m<sup>2</sup>) or less, 4.75 mm mix, and asphaltic concrete OGFC, PEM and mixes placed as variable depth or width leveling. Compact these courses to the Engineer's satisfaction. Density tests will not be performed on turn-outs and driveways.

The targeted maximum Pavement Mean Air Void content for all Superpave and Stone Matrix Asphalt mixtures is 5.0 percent. Ensure that the maximum Pavement Mean Air Voids for all Superpave and Stone Matrix Asphalt mixtures does not exceed 7.0 percent. The maximum Pavement Mean Air Voids for 2 foot shoulder widening is 9.0 percent. The adjustment period for density shall be four lots or four production days, whichever is less, in order for the **Contractor** to ensure maximum compactive effort has been achieved which will yield no more than the specified maximum allowed Mean Air Voids. If the **Contractor** needs to adjust the mixture to improve density results, a change in the job mix formula may be requested for approval during the adjustment period so long as the following values are not exceeded:

- Coarse pay sieve  $\pm$  4%
- No. 8 (2.36 mm) sieve  $\pm$  2%
- No. 200 (75  $\mu$ m) sieve  $\pm$  1%
- Asphalt Content  $\pm$  0.2%
- All value changes must still be within specification limits

If the Office of Materials and Research is satisfied that the **Contractor** has exerted the maximum compactive effort and is not able to maintain Pavement Mean Air Voids at no more than 7.0%, the Engineer may establish a maximum target for Pavement Mean Air Voids.

If the Pavement Mean Air Voids within a Lot exceeds 7.8 (or 100% of the maximum target air voids, if established is not maintained); the Engineer may stop the paving operation until appropriate steps are taken by the Contractor to correct the deficiency. Upon approval of the Engineer, the paving operation may be restarted but will be limited to a 1000 ft. (300 m) test section to verify that the corrective action taken will result in a satisfactory density. Continued operation may not be permitted if the Pavement Mean Air Voids fail to meet the specified density requirements.

### 2. Obtain Uniform Compaction

For a lot to be accepted for compaction, the air void range cannot exceed 4 percent for new construction or 5 percent for resurfacing projects. The range is the difference between the highest and lowest acceptance test results within the affected lot.

## C. Surface Tolerance

In this Specification, pavement courses to be overlaid with an Open-Graded Friction Course or PEM are considered surface courses. All Open-Graded Friction Courses or PEM are to be evaluated after the roadway has been opened to traffic for a minimum of 5 days and a maximum of 15 days. Other asphalt paving is subject to straightedge and visual inspection and irregularity correction as shown below:

### 1. Visual and Straightedge Inspection

Paving is subject to visual and straightedge inspection during and after construction operations until Final Acceptance. Locate surface irregularities as follows:

- a. Keep a 10 ft (3 m) straightedge near the milling and paving operations to measure surface irregularities on courses. Provide the straightedge and the labor for its use.
- b. Inspect the base, intermediate, and surface course surfaces with the straightedge to detect irregularities.
- c. Correct irregularities that exceed 3/16 in. in 10 ft (5 mm in 3 m) for base and intermediate courses, and 1/8 in. in 10 ft (3 mm in 3 m) for surface courses.

Mixture or operating techniques will be stopped if irregularities such as rippling, tearing, or pulling occur and the Engineer suspects a continuing equipment problem. Stop the paving operation and correct the problem. Correct surface course evaluations on individual Laser Road Profiler test sections, normally 1 mile (1 km) long.

#### D. Reevaluation of Lots

Reevaluation of lots and acceptance will be based on Department evaluations. The Department will be reimbursed by the Contractor for all costs of these evaluations. Request for reevaluation shall be made within 5 working days of notification of the lot results.

#### E. Segregated Mixture

Prevent mixture placement that yields a segregated mat by following production, storage, loading, placing, and handling procedures. Also, make needed plant modifications and provide necessary auxiliary equipment. (See Subsection 400.1.01, "Definitions.")

If the mixture is segregated in the finished mat, the Department will take actions based on the degree of segregation. The actions are described below.

##### 1. Unquestionably Unacceptable Segregation

When the Engineer determines that the segregation in the finished mat is unquestionably unacceptable, follow these measures:

- a. Suspend Work and require the **Contractor** to take positive corrective action. The Department will evaluate the segregated areas to determine the extent of the corrective work to the in-place mat as follows:
  - Perform extraction and gradation analysis by taking 6 in (150 mm) cores from typical, visually unacceptable segregated areas.
  - Determine the corrective work according to Subsection 400.3.06.E.3.
- b. Require the **Contractor** to submit a written plan of measures and actions to prevent further segregation. Work will not continue until the plan is submitted to and approved by the Department.
- c. When work resumes, place a test section not to exceed 500 tons (500 Mg) of the affected mixture for the Department to evaluate. If a few loads show that corrective actions were not adequate, follow the measures above beginning with step 1.a. above. If the problem is solved, Work may continue.

##### 2. Unacceptable Segregation Suspected

When the Engineer observes segregation in the finished mat and suspects that it may be unacceptable, follow these measures:

- a. Allow work to continue at **Contractor's** risk.
- b. Require **Contractor** to immediately and continually adjust operation until the visually apparent segregated areas are eliminated from the finished mat. The Department will immediately investigate to determine the severity of the apparent segregation as follows:
  - Take 6 in (150 mm) cores from typical areas of suspect segregation.
  - Test the cores for compliance with the mixture control tolerances in Section 828.

When these tolerances are exceeded, suspend work for corrective action as outlined in Subsection 400.3.06.E.3.

3. Corrective Work

- a. Remove and replace (at the **Contractor's** expense) any segregated area where the gradation on the control sieves is found to vary 10 percent or more from the approved job mix formula, the asphalt cement varies 1.0% or more from the approved job mix formula, or if in-place air voids exceed 13.5% based on GDT 39. The control sieves for each mix type are shown in Subsection 400.5.01.B "Determine Lot Acceptance."
- b. Subsurface mixes. For subsurface mixes, limit removal and replacement to the full lane width and no less than 10 ft. (3 m) long and as approved by the Engineer.
- c. Surface Mixes. For surface mixes, ensure that removal and replacement is not less than the full width of the affected lane and no less than the length of the affected areas as determined by the Engineer. Surface tolerance requirements apply to the corrected areas for both subsurface and surface mixes.

### 400.3.07 Contractor Warranty and Maintenance

#### A. Contractor's Record

Maintain a dated, written record of the most recent plant calibration. Keep this record available for the Engineer's inspection at all times. Maintain records in the form of:

- Graphs
- Tables
- Charts
- Mechanically prepared data

### 400.4 Measurement

Thickness and spread rate tolerances for the various mixtures are specified in Subsection 400.4.A.2.b, Table 11, Thickness and Spread Rate Tolerance at Any Given Location. These tolerances are applied as outlined below:

#### A. Hot Mix Asphaltic Concrete Paid for by Weight

1. Plans Designate a Spread Rate

- a. Thickness Determinations. Thickness determinations are not required when the Plans designate a spread rate per square yard (meter).

If the spread rate exceeds the upper limits outlined in the Subsection 400.4.A.2.b, Table 11, "Thickness and Spread Rate Tolerance at Any Given Location", the mix in excess will not be paid for.

If the rate of spread is less than the lower limit, correct the deficient course by overlaying the entire lot. The mixture used for correcting deficient areas is paid for at the Contract Unit Price of the course being corrected and is subject to the Mixture Acceptance Schedule—Table 9 or 10.

- a. Recalculate the Total Spread Rate. After the deficient hot mix course has been corrected, the total spread rate for that lot is recalculated, and mix in excess of the upper tolerance limit as outlined in the Subsection 400.4.A.2.b, Table 11, "Thickness and Spread Rate Tolerance at Any Given Location" is not paid for.

The quantity of material placed on irregular areas such as driveways, turnouts, intersections, feather edge section, etc., is deducted from the final spread determination for each lot.

2. Plans Designate Thickness

If the average thickness exceeds the tolerances specified in the Subsection 400.4.A.2.b, Table 11, "Thickness and Spread Rate Tolerance at Any Given Location", the Engineer shall take cores to determine the area of excess thickness. Excess quantity will not be paid for.

If the average thickness is deficient by more than the tolerances specified in the Thickness and Spread Rate Tolerance at Any Given Location table below, the Engineer shall take additional cores to determine the area of deficient thickness. Correct areas with thickness deficiencies as follows:

- a. Overlay the deficient area with the same mixture type being corrected or with an approved surface mixture. The overlay shall extend for a minimum of 300 ft (90 m) for the full width of the course.
- b. Ensure that the corrected surface course complies with Subsection 400.3.06.C.1, “Visual and Straightedge Inspection.” The mixture required to correct a deficient area is paid for at the Contract Unit Price of the course being corrected.

The mixture is subject to the Mixture Acceptance Schedule—Table 9 or 10 . The quantity of the additional mixture shall not exceed the required calculated quantity used to increase the average thickness of the overlaid section to the maximum tolerance allowed under the following table.

**Table 11—Thickness and Spread Rate Tolerance at Any Given Location**

Course	Thickness Specified	Spread Rate Specified
Asphaltic concrete base course	± 0.5 in (±13 mm)	+40 lbs, -50 lbs (+20 kg, -30 kg)
Intermediate and/or wearing course	± 0.25 in (± 6 mm)	+20 lbs, -25 lbs (+10 kg, -15 kg)
Overall of any combination of 1 and 2	± 0.5 in (±13 mm)	+40 lbs, -50 lbs (+20 kg, -30 kg)

**Note 2: Thickness and spread rate tolerances are provided to allow normal variations within a given lot. Do not continuously operate at a thickness of spread rate not specified.**

When the Plans specify a thickness, the Engineer may take as many cores as necessary to determine the average thickness of the intermediate or surface course. The Engineer shall take a minimum of one core per 1,000 ft (300 m) per two lanes of roadway. Thickness will be determined by average measurements of each core according to GDT 42.

If the average exceeds the tolerances specified in the Subsection 400.4.A.2.b, Table 11, “Thickness and Spread Rate Tolerance at Any Given Location”, additional cores will be taken to determine the area of excess thickness and excess tonnage will not be paid for.

**B. Hot Mix Asphaltic Concrete Paid for by Square Yard (Meter)**

1. The thickness of the base course or the intermediate or surface course will be determined by the Department by cutting cores and the thickness will be determined by averaging the measurements of each core.
2. If any measurement is deficient in thickness more than the tolerances given in the table above, additional cores will be taken by the Department to determine the area of thickness deficiency. Correct thickness deficiency areas as follows:
  - a. Overlay the deficient area with the same type mixtures being corrected or with surface mixture. Extend the overlay at least 300 ft (90 m) for the full width of the course.
  - b. Ensure that the corrected surface course complies with Subsection 400.3.06.C.1, Visual and Straightedge Inspection” .
  - c. The mixture is subject to the Mixture Acceptance Schedule—Table 9 or 10.
3. No extra payment is made for mixtures used for correction.
4. No extra payment is made for thickness in excess of that specified.

**NOTE: Thickness tolerances are provided to allow normal variations within a given lot. Do not continuously operate at a thickness not specified.**

**C. Asphaltic Concrete**

Hot mix asphaltic concrete, complete in place and accepted, is measured in tons (megagrams) or square yards (meters) as indicated in the Proposal. If payment is by the ton (megagram), the actual weight is determined by

weighing each loaded vehicle on the required motor truck scale as the material is hauled to the roadway, or by using recorded weights if a digital recording device is used.

The weight measured includes all materials. No deductions are made for the weight of the individual ingredients. The actual weight is the pay weight except when the aggregates used have a combined bulk specific gravity greater than 2.75. In this case the pay weight is determined according to the following formula:

$$T1 = T \times \left\{ \frac{\% AC + \left( \frac{\% \text{ Aggregate} \times 2.75}{\text{combined bulk Specific Gravity}} \right) + \% Y}{100} \right\}$$

Where:

T1	Pay weight, tonnage (Mg)
T=	Actual weight
% AC=	Percent asphalt cement by weight of total mixture
% Aggregate =	Percent aggregate by weight of total mixture
Combined Bulk Sp. Gr.=	Calculated combined bulk specific gravity of various mineral aggregates used in the mixture
% Y=	Percent hydrated lime by weight of mineral aggregate

**D. Bituminous Material**

Bituminous material is not measured for separate payment.

**E. Hydrated Lime**

When hydrated lime is used as an anti-stripping additive, it is not measured for separate payment.

**F. Field Laboratory**

The field laboratory required in this Specification is not measured for separate payment.

**G. Asphaltic Concrete Leveling**

Payment of hot mix asphaltic concrete leveling, regardless of the type mix, is full compensation for furnishing materials, bituminous materials, and hydrated lime (when required) for patching and repair of minor defects, surface preparation, cleaning, hauling, mixing, spreading, and rolling.

Mixture for leveling courses is subject to the acceptance schedule as stated in Subsection 400.3.06.A and Subsection 400.3.06.B.

**H. Asphaltic Concrete Patching**

Hot mix asphaltic concrete patching, regardless of the type mix, is paid for at the Contract Unit Price per ton (Megagram), complete in place and accepted. Payment is full compensation for:

- Furnishing materials such as bituminous material and hydrated lime (when required)
- Preparing surface to be patched
- Cutting areas to be patched, trimmed, and cleaned
- Hauling, mixing, placing, and compacting the materials

#### 400.4.01 Limits

When the asphaltic concrete is paid for by the square yard (meter) and multiple lifts are used, the number and thickness of the lifts are subject to the Engineer's approval and are used to prorate the pay factor for the affected roadway section.

#### 400.5 Payment

Hot mix asphaltic concrete of the various types are paid for at the Contract Unit Price per ton (megagram) or per square yard (meter). Payment is full compensation for furnishing and placing materials including asphalt cement, hydrated lime when required, approved additives, and for cleaning and repairing, preparing surfaces, hauling, mixing, spreading, rolling, and performing other operations to complete the Contract Item.

Payment will be made under:

Item No. 400	Asphaltic concrete <u>type</u> Superpave, <u>group-blend</u> , Including polymer-modified bituminous materials and hydrated lime	Per ton (megagram)
Item No. 400	Asphaltic concrete <u>type</u> , Superpave, <u>group-blend</u> , including bituminous materials and hydrated lime	Per ton (megagram)
Item No. 400	Asphaltic concrete <u>type</u> Superpave, <u>group-blend</u> , Including bituminous materials, Gilsonite modifier, and hydrated lime	Per ton (megagram)

Item No. 400	_____ inches asphaltic concrete, <u>type</u> Superpave, <u>group-blend</u> including bituminous materials, Gilsonite modifier and hydrated lime	Per square yard (meter)
Item No. 400	Asphaltic concrete <u>type</u> Stone Matrix Asphalt, <u>group-blend</u> , including polymer-modified bituminous materials and hydrated lime	Per ton (megagram)
Item No. 400	Asphaltic concrete <u>type</u> OGFC, <u>group 2</u> only, including bituminous materials and hydrated lime	Per ton (megagram)
Item No. 400	Asphaltic concrete <u>type</u> OGFC, <u>group 2</u> only, including polymer-modified bituminous materials and hydrated lime	Per ton (megagram)
Item No. 400	Asphaltic concrete <u>type</u> Porous European Mix, <u>group 2</u> only, including polymer-modified bituminous materials and hydrated lime	Per ton (megagram)

#### 400.5.01 Adjustments

##### A. Determine Lot Acceptance

The control sieves used in the mixture acceptance schedule for the various types of mix are indicated below:

Control Sieves Used in the Mixture Acceptance Schedule	
Asphaltic concrete 25 mm Superpave	1/2 in., No. 8 (12.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 19 mm Superpave	3/8 in., No. 8 (9.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 12.5 mm Superpave	3/8 in., No. 8 (9.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 9.5 mm Superpave	No. 4, No. 8 (4.75 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 4.75 mm Mix	No. 8 (2.36 mm) sieve and asphalt cement

The Department will perform the following tasks:

1. Determine the mean of the deviations from the job mix formula per test results per lot.
2. Determine this mean by averaging the actual numeric value of the individual deviations from the job mix formula; disregard whether the deviations are positive or negative amounts.

**C. Calculate Pavement Mean Air Voids**

The Department will determine the percent of maximum air voids for each lot by dividing the pavement mean air voids by the maximum pavement mean air voids acceptable.

**D. Asphaltic Concrete For Temporary Detours**

Hot mix asphaltic concrete placed on temporary detours that will not remain in place as part of the permanent pavement does not require hydrated lime. Hot mix used for this purpose is paid for at an adjusted Contract Price.

Where the Contract Price of the asphaltic concrete for permanent pavement is let by the ton (megagram), the Contract Price for the asphaltic concrete placed on temporary detours is adjusted by subtracting \$0.75/ton (\$0.85/mg) of mix used.

Where the Contract price of the mix in the permanent pavement is based on the square yard (meter), obtain the adjusted price for the same mix used on the temporary detour by subtracting \$0.04/yd<sup>2</sup> (\$0.05/ m<sup>2</sup>) per 1-in (25-mm) plan depth.

Further price adjustments required in Subsection 400.3.06, "Quality Acceptance." are based on the appropriate adjusted Contract Price for mix used in the temporary detour work.

**E. Determine Lot Payment**

If the Engineer determines that the material is not acceptable to leave in place, remove and replace the materials at the Contractor's expense.

## SECTION 402 – HOT MIX RECYCLED ASPHALTIC CONCRETE

Delete Subsection 402.5 and substitute the following:

### 402.5 Payment

The Work performed and the materials furnished as described in this Specification will be paid for at the Contract Unit Price per ton (megagram). Payment is full compensation for providing materials, hauling, and necessary crushing, processing, placing, rolling, and finishing the recycled mixture, and providing labor, tools, equipment, and incidentals necessary to complete the work, including hauling and stockpiling RAP or RAS material.

Payment will be made under:

Item No. 402	Recycled asphaltic concrete <u>type</u> Superpave, group-blend, including bituminous materials	Per ton (mega gram)
Item No. 402	Recycled asphaltic concrete <u>type</u> Superpave, group-blend, including bituminous materials and hydrated lime	Per ton (mega gram)
Item No. 402	Recycled asphaltic concrete <u>type</u> Superpave, group-blend, including polymer-modified bituminous materials and hydrated lime	Per ton (mega gram)
Item No. 402	_____ in (mm) recycled asphaltic concrete <u>type</u> Superpave, group-blend, including bituminous materials	Per square yard (meter)
Item No. 402	_____ in (mm) recycled asphaltic concrete <u>type</u> Superpave, group-blend, including bituminous materials and hydrated lime	Per square yard (meter)
Item No. 402	_____ in (mm) recycled asphaltic concrete <u>type</u> Superpave, group-blend, including polymer-modified bituminous materials and hydrated lime	Per square yard (meter)
Item No. 402	Recycled asphaltic concrete patching including bituminous materials	Per ton (mega gram)
Item No. 402	Recycled asphaltic concrete patching including bituminous materials and hydrated lime	Per ton (mega gram)
Item No. 402	Recycled asphaltic concrete leveling including bituminous materials	Per ton (mega gram)
Item No. 402	Recycled asphaltic concrete leveling including bituminous materials and hydrated lime	Per ton (mega gram)

### 400.5.01 Adjustments

#### A. Determine Lot Acceptance

The control sieves used in the mixture acceptance schedule for the various types of mix are indicated below:

<b>Control Sieves Used in the Mixture Acceptance Schedule</b>	
Asphaltic concrete 25 mm Superpave	1/2 in., No. 8 (12.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 19 mm Superpave	3/8 in., No. 8 (9.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 12.5 mm Superpave	3/8 in., No. 8 (9.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 9.5 mm Superpave	No. 4, No. 8 (4.75 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 4.75 mm Mix	No. 8 (2.36 mm) sieve and asphalt cement

The Department will perform the following tasks:

1. Determine the mean of the deviations from the job mix formula per test results per lot.
3. Determine this mean by averaging the actual numeric value of the individual deviations from the job mix formula; disregard whether the deviations are positive or negative amounts.

**C. Calculate Pavement Mean Air Voids**

The Department will determine the percent of maximum air voids for each lot by dividing the pavement mean air voids by the maximum pavement mean air voids acceptable.

**D. Asphaltic Concrete For Temporary Detours**

Hot mix asphaltic concrete placed on temporary detours that will not remain in place as part of the permanent pavement does not require hydrated lime. Hot mix used for this purpose is paid for at an adjusted Contract Price.

Where the Contract Price of the asphaltic concrete for permanent pavement is let by the ton (megagram), the Contract Price for the asphaltic concrete placed on temporary detours is adjusted by subtracting \$0.75/ton (\$0.85/mg) of mix used.

Where the Contract price of the mix in the permanent pavement is based on the square yard (meter), obtain the adjusted price for the same mix used on the temporary detour by subtracting \$0.04/yd<sup>2</sup> (\$0.05/ m<sup>2</sup>) per 1-in (25-mm) plan depth.

Further price adjustments required in Subsection 400.3.06, "Quality Acceptance," are based on the appropriate adjusted Contract Price for mix used in the temporary detour work.

**E. Determine Lot Payment**

If the Engineer determines that the material is not acceptable to leave in place, remove and replace the materials at the Contractor's expense.

## **SECTION 611 – RELAYING, RECONSTRUCTING, OR ADJUSTING TO GRADE OF MISCELLANEOUS ROADWAY STRUCTURES**

*Retain Standard Specification 611.3.05 as written and add the following paragraphs:*

### F. Manhole Rings and Cover Rebuilding Standard Special Provision 611.3.05.F

1. **Contractor** shall be responsible for the removal and resetting of the existing manhole ring and covers. The existing ring and covers shall be utilized, if not broken or cracked. If the ring and/or cover cannot be utilized, Rockdale Water Resources (RWR) will supply a new ring and cover to be set by the **Contractor**. These can be scheduled to be picked up by calling 770-278-7500. The RWR Central Maintenance/Warehouse facility is located at 2420 Tatum Road.
  - a. The cast iron frame for the manhole cover shall be set at the required finished elevation and properly anchored to the masonry brick.
  - b. The top surface of the frame and cover shall conform to the crown and grade of the existing adjacent pavement.
  - c. Brick and Mortar: Brick shall be whole and hard burned, conforming to ASTM C 32 Grade MS. Mortar shall be made of One (1) part Portland cement and Two (2) parts clean sharp sand. Cement shall be Type One (1) and shall conform to ASTM C 150. Sand shall meet ASTM C 53.
  - d. Bricks shall be installed by using common brick Portland cement-type joints and stucco/skim coated on the inside of the bricks to provide a smooth continuous surface.
  - e. Rebuilding manhole described herein is considered “Reconstruct Manhole.”
  - f. Rebuilding manhole is from the bottom of the reconstructed subbase to the top of the ring and cover.
2. **Contractor** shall be responsible for removing any brick, debris and/or materials that may fall into any manhole that is worked on and/or in the area of the project.

### G. Water Valve Box and Cover

1. **Contractor** shall be responsible for the removal and resetting of the existing water valve box and covers. The existing water valve box and covers shall be utilized, if not broken or cracked. If the water valve box and/or cover cannot be utilized, it must be replaced with a new box and cover to be set by the **Contractor**. Water valve box and covers shall be equal to the following: Cast Iron Water Valves Boxes, two piece, accommodates 4” through 12” water valves, 5-1/4” shafts, screw or slip type Tyler Pipe 6850 or 6855 Series or equivalent. All water valve lids shall be marked with “WATER”.
  - a. The cast iron water valve box and cover shall be set at the required finished elevation and properly anchored to the masonry brick.
  - b. The top surface of the water valve box and cover shall conform to the crown and grade of the existing adjacent pavement.
2. **Contractor** shall be responsible for removing debris and/or materials that may fall into any valve box that is worked on and/or in the area of the project.
3. Roadways only requiring resurfacing and not reconstructing may need a riser on the existing water

valve box. The **Contractor** is responsible for supplying and installation of risers. Water valve box risers shall be to the following Tyler Pipe cast iron risers for 5-1/4" shaft water valve boxes 6850, 6855, 6860 or 6865 series boxes or equivalent.

- a. The cast iron water valve box and cover shall be set at the required finished elevation and properly anchored to the masonry brick.
  - b. The top surface of the water valve box and cover shall conform to the crown and grade of the existing adjacent pavement.
4. The **Contractor** will be responsible for referencing the location of each valve box so that water valve box can be adjusted to the finished grade after the paving operations are complete.

## **SECTION 802 – AGGREGATES FOR ASPHALTIC CONCRETE**

*Delete Subsection 802.2.01.A.5. in its entirety.*

## **SECTION 819 – FIBER STABILIZING ADDITIVES**

*Delete Section 819 in its entirety.*

## **SECTION 828 – HOT MIX ASPHALTIC CONCRETE MIXTURES**

*Delete Subsection 828 and substitute the following:*

### **828.1 General Description**

This specification includes the requirements for hot mix asphaltic concrete mixtures, including:

- Open-graded surface mixtures (OGFC and PEM)
- Stone Matrix Asphalt mixtures (SMA)
- Superpave mixtures
- Fine-graded (4.75 mm) mixtures

#### **828.1.01 Definitions**

The Nominal Maximum Sieve Size is one standard sieve size larger than the first sieve to retain more than ten percent of the aggregate, per AASHTO PP28. Mixture types in this section are identified according to Nominal Sieve Size.

#### **828.1.02 Related References**

##### **A. Standard Specifications**

Section 400 – Hot Mix Asphaltic Concrete Construction

Section 800 – Course Aggregate

Section 802–Aggregates for Asphaltic Concrete

Section 819 Fiber Stabilizing Additives

Section 820–Asphalt Cement

Section 831–Admixtures

Section 882 – Lime

Section 883 – Mineral Filler

##### **B. Referenced Documents**

PP 2

PP28  
TP 8-94  
T 112  
T 209  
T 305  
T 312  
T-245  
PS-129  
SOP-36  
SOP-2 SP  
GDT 56  
GDT 66  
GDT 115  
GDT 123  
QPL 1  
QPL 2  
QPL 7  
QPL 26  
QPL 41  
QPL 77  
QPL 81

## **828.2 Materials**

### **A. Requirements**

Use approved hot mix asphaltic concrete mixtures that meet the following requirements:

1. Produce each asphalt mixture according to a Job Mix Formula and Asphalt Mix Design approved by the Department. For submittal and approval of Job Mix Formulas, see Subsection 400.1.
2. Ensure that individual acceptance test results meet the Mixture Control Tolerances specified in the appropriate table below, Subsections 828.2.01 through 828.2.04.
3. Ensure that the Engineer approves all materials used to prepare and place the mixtures before incorporating them into the Work. Use only the ingredients listed in the approved Asphalt Mix Design and Job Mix Formula. For virgin aggregates use sources which meet the requirements of Section 802 and are listed in QPL 1 or QPL 2; for mixes in which local sand is permitted, use the approved sand source identified in the mix design. For mixtures containing Reclaimed Asphalt Pavement (RAP), use only RAP from the approved stockpile identified in the mix design. Use asphalt cement meeting the requirements of Section 820, from a source listed in QPL 7.
4. Obtain approved Superpave mix designs and 4.75 mm mix designs from a mix design laboratory certified by the Department. Obtain approved mix designs for types PEM, OGFC and SMA mixtures from the Department's Office of Materials and Research., which produces and furnishes these mix designs.
5. Ensure that Superpave and 4.75 mm mix designs are designed in accordance with SOP-2SP ("Control of Superpave Bituminous Mixture Designs") and are approved by the Department as provided herein. Ensure that these mixes are designed by a laboratory and technician certified in accordance with SOP-36,

(“Certification of Laboratories and Personnel for Design of Superpave Asphalt Mixtures”).

6. Use only mixtures composed of the aggregate groups and blends indicated in the Proposal and Plans by their pay item designations, defined as follows:

<b>Pay Item Designation</b>	<b>Allowable Aggregate Groups</b>
Group I or II	Group I, Group II, or Blend I
Group II only	Group II only
Blend I	Either 100% Group II material or a blend of Group I and Group II. Do not use Group I material for more than 60%, by weight, of the total aggregate nor more than 50%, by weight, of the coarse aggregate fraction.

7. For patching or leveling use Group I, Group II, or Blend I. Mix types for patching and leveling are specified in Subsection 400.3.03.B.
8. Include lime (hydrated lime) from an approved source and meeting the requirements of Subsection 882.2.03 in all paving courses except as otherwise provided in the Contract. For a list of approved sources of lime, see QPL 41.
- a. Add lime to each mixture at the rate prescribed in the approved mix design.
  - b. Mix designs using only virgin aggregate shall include lime at a minimum rate of 1.00 % of the total dry aggregate weight. Mix designs using RAP shall include lime at a minimum rate equal to 1.00% of the virgin aggregate fraction plus 0.50 % of the aggregate in the RAP fraction.
  - c. If necessary to meet requirements for mixture properties, and pursuant to an approved mix design, add more lime or add lime plus an approved Heat-Stable Anti-Stripping Additive that meets the requirements of Subsection 831.2.04. However, the Department will not make additional payment for these materials. For a list of sources of Heat-Stable Anti-Stripping Additives, see QPL 26.
  - d. Where specifically allowed in the contract on LARP, airport, and parking lot projects, an approved Heat-Stable Anti-Stripping Additive that meets the requirements of Subsection 831.2.04 may be substituted for hydrated lime. In this case the mix gradation shall be adjusted as necessary to replace the lime with an equivalent volume of fines passing the 0.075 mm sieve. Add Heat-Stable Anti-stripping Additive at a minimum rate of 0.5 percent of the asphalt cement portion.
9. Use performance grade PG 67-22 asphalt cement in all mix designs and mixtures except as follows:
- a. For mixtures containing 25% or greater RAP, the Engineer will determine the performance grade to be used.
  - b. On PR, LARP, airport, and parking lot projects, PG 64-22 may be substituted for PG 67-22, with approval of the Office of Materials and Research, on roads having current ADT less than 2,000.
  - c. Use only grade PG 76-22 in the following mixes: SMA, 12.5 mm PEM, 12.5 mm and 9.5 mm OGFC, 12.5 mm Superpave, excluding shoulder construction, on projects with ADT greater than 25,000; and in all mixtures for which polymer-modified asphalt is specified in the pay item.
10. Use of local sand is restricted as follows:
- a. Do not place mixtures containing local sand on the traveled way of the mainline or ramps of the Interstate System. Mixtures with local sand may be used for shoulder construction on these facilities.

- b. Local sand shall not constitute more than 20 % of the total aggregate weight of any mix design or production mix.
- c. Subject to the above limits, 19 mm, 12.5 mm, and 9.5 mm Superpave mix designs and 4.75 mm mix designs containing local sand may be used on projects with a current ADT not exceeding 2,000.
- d. 25 mm Superpave mix designs containing not more than 20 % local sand may be used on all facilities except the main line and ramps of the Interstate System.
- e. Obtain local sand for use in asphalt mixtures from a source approved by the Department.
- f. Approval of local sand sources: The Department will sample, test, and approve sources of local sand. Local sand shall not contain more than 7.0 % clay by weight and shall be free of foreign substances, roots, twigs, and other organic matter. It shall be free of clay lumps, as determined by AASHTO T 112, and shall have a sand equivalent value exceeding 25%, as determined by GDT 63.

## **B. Design Requirements and limits – all mix types**

1. Design procedures: For all Superpave and 4.75 mm mixes, designers shall adhere to the Superpave System for Volumetric Design (AASHTO T 312 and AASHTO PP 2), as adapted in SOP-2SP. The Department will design open-graded mixes and Stone Matrix Asphalt (SMA) mixes according to GDT 114 and GDT 123, respectively. In all cases, the procedure for measuring Maximum Specific Gravity ( $G_{mm}$ ) shall be AASHTO T 209. In addition to gradation and volumetric analysis, mix designs shall include the following performance tests, as applicable.
  - **9.5 mm Superpave**  
9.5mm Superpave mixes should specify “Type I” or “Type II” mix design in the plans or contract documents. If “Mix Design Level A” is specified, ensure the Asphaltic Concrete meets the requirements of a “Type I” mix. If a “Mix Design Level B, C, or D” is specified, ensure the Asphaltic Concrete meets the requirements of a “Type II” mix.
  - **Other Superpave mixes**  
No “Type” is required for other Superpave Asphaltic Concrete mixes (12.5 mm, 19 mm, or 25 mm). Any “Mix Design Levels A, B, C, or D” specified in the plans or contract documents do not affect the current asphalt mix designs.
2. Permeability test: Superpave and Stone Matrix mix designs shall include testing according to ASTM PS-129. Specimen air voids for this test shall be  $6.0 \pm 1.0$  %. The average permeability of three specimens may not exceed 3.60 ft per day ( $125 \times 10^{-5}$  cm per sec).
3. Moisture susceptibility test: Mix designs of all types except open-graded surface mixes shall include testing for moisture susceptibility according to GDT 66. Specimen air voids for this test shall be  $7.0 \pm 1.0$ %. The minimum tensile splitting ratio is 0.80, except that a tensile splitting ratio of no less than 0.70 may be acceptable if all individual strength values exceed 100 psi (690 kPa). Average splitting strength of the three conditioned and three controlled samples shall be not less than 60 psi (415 kPa) for either group. Retention of coating as determined by GDT 56 shall be not less than 95%.
4. Rutting susceptibility test. Mix designs of all types except Open-graded Surface Mixes (OGFC and PEM), and mixtures designed exclusively for trench widening shall include testing according to GDT 115. Design limits for this test are as follows: Specimen air voids for this test shall be  $5.0 \pm 1.0$ % for all mix types. Testing temperature shall be  $64^{\circ}\text{C}$  ( $147^{\circ}\text{F}$ ) for all mix types except 25 mm Superpave mixes, which shall be tested at  $49^{\circ}\text{C}$  ( $120^{\circ}\text{F}$ ). Maximum deformation shall be 5.0 mm for all mixes except 4.75 mm mix, 9.5 mm Type I and 9.5 mm Type II Superpave mixes. Maximum deformation for the 9.5 mm Type II Superpave

mix shall be 6.0 mm at 64°C (147°F) and 8.0 mm at 64°C (147°F) for the 4.75 mm and 9.5 mm Type I Superpave mix.

5. Fatigue testing: The Department may verify Superpave designs by fatigue testing according to AASHTO TP 8-94 or other procedure approved by the Department.

### 828.2.01 Open-Graded Surface Mixtures

#### A. Requirements

Use approved mixtures that meet the following mixture control tolerances and design criteria:

Sieve Size	Mixture Control Tolerance, %	Design Gradation Limits, % Passing		
		9.5 mm OGFC	12.5 mm OGFC	12.5 mm PEM
3/4 in (19 mm) sieve	+/- 0.0		100	100
1/2 in (12.5 mm) sieve	+/- 6.1	100*	85-100	80-100
3/8 in (9.5 mm) sieve	+/- 5.6	85-100	55-75	35-60
No. 4 (4.75 mm) sieve	+/- 5.7	20-40	15-25	10-25
No. 8 (2.36 mm) sieve	+/- 4.6	5-10	5-10	5-10
No. 200 (75 µm) sieve	+/- 2.0	2-4	2-4	1-4
Range for % AC	+/-0.4	6.0-7.25	5.75-7.25	5.5-7.0
Class of Stone (Section 800)		"A" only	"A" only	"A" only
Drain-down (ASSHTO T305) %		<0.3	<0.3	<0.3

\* Mixture control tolerance is not applicable to this sieve for this mix.

1. In 12.5 mm and 9.5 mm OGFC and 12.5 mm PEM mixes, use only PG 76-22 asphalt cement (specified in Section 820).
2. All OGFC and PEM mixes shall include a stabilizing fiber of the type (cellulose or mineral) specified in the mix design and meeting the requirements of Section 819. The dosage rate shall be as specified in the mix design and shall be sufficient to prevent drain-down exceeding the above tolerance.

### 828.2.02 Stone Matrix Asphalt Mixtures

#### A. Requirements

Use approved mixtures that meet the following mixture control tolerances and design criteria:

Sieve Size	Mixture Control Tolerance, %	Design Gradation Limits, % Passing		
		9.5 mm SMA	12.5 mm SMA	19mm mm SMA
1-in (25 mm) sieve	+/- 0.0			100
3/4 in (19 mm) sieve	+/- 7.0	100*	100*	90-100
1/2 in (12.5 mm) sieve	+/- 6.1	98-100**	85-100	44-70
3/8 in (9.5 mm) sieve	+/- 5.6	70-100	50-75	25-60
No. 4 (4.75 mm) sieve	+/- 5.7	28-50	20-28	20-28
No. 8 (2.36 mm) sieve	+/- 4.6	15-30	16-24	15-22
No. 50 (300 µm) sieve	+/-3.8	10-17	10-20	10-20
No. 200 (75 µm) sieve	+/- 2.0	8-13	8-12	8-12
Range for % AC	+/-0.4	6.0-7.5	5.8-7.5	5.5-7.5
Design optimum air voids (%)		3.5 +/-0.5	3.5 +/-0.5	3.5 +/-0.5
% aggregate voids filled with AC (VFA)		70-90	70-90	70-90
Tensile splitting ratio after freeze-thaw cycle GDT-66		80%	80%	80%

Drain-down (ASSHTO T305) %	<0.3	<0.3	<0.3
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\* Mixture control tolerance is not applicable to this sieve for this mix.

\*\* Mixture control tolerance shall be  $\pm 2.0\%$  for this sieve for 9.5 mm SMA mixes placed at spread rates greater than 135 lb./yd<sup>2</sup>. For 9.5 mm SMA mixes placed at spread rates of 135 lb./yd<sup>2</sup> or less, 100 % passing is required on this sieve.

1. SMA mixtures shall be compacted at 50 gyrations with the Superpave Gyrotory compactor or 50 blows with the Marshall compactor.
2. All SMA mixtures shall contain mineral filler and fiber stabilizing additives and shall meet the following requirements:
  - a. Asphalt cement grade PG-76-22 (specified in Section 820) is required in all SMA mixtures.
  - b. Aggregates for SMA shall meet the requirements of Subsection 802.2.02.A.3.
  - c. Use mineral filler that meets requirements of Section 883 and is approved by the Department. Approved sources of mineral filler are listed in QPL 81.
  - d. Do not use local sand in lieu of mineral filler.
  - e. Use an approved Fiber Stabilizing Additive of the type (cellulose or mineral) specified in the mix design and meeting the requirements of Section 819. Approved sources of Fiber Stabilizing Additive are listed in QPL 77. The dosage rate will be as specified in the mix design and shall be sufficient to prevent drain-down exceeding the above tolerance.

### 828.2.03 Superpave Asphalt Concrete Mixtures

#### A. Requirements

Ensure that Superpave mixtures meet the following mixture control tolerances and design limits:

1. All mixes are to be designed at a design gyration number ( $N_{des}$ ) of 65 gyrations and an initial gyration number ( $N_{ini}$ ) of 6 gyrations.
2. Gradation limits for Superpave mixtures are as follows:

Sieve Size	Mixture Control Tolerance, %	Design Gradation Limits, % Passing				
		9.5 mm Superpave Type I	9.5 mm Superpave Type II	12.5 mm Superpave Note 1	19 mm Superpave	25 mm Superpave
1-1/2 in (37.5 mm) sieve						100
1-in (25 mm) sieve	+/- 8.0			100*	100*	90-100
3/4 in (19 mm) sieve	+/- 8.0**	100*	100*	98-100****	90-100	55-89**
1/2 in (12.5 mm) sieve	+/- 6.0***	98-100***	98-100***	90-100	60-89	50-70
3/8 in (9.5 mm) sieve	+/- 5.6	90-100	90-100	70-89	55-75	
No. 4 (4.75 mm) sieve	+/- 5.6	65-85	55-75			
No. 8 (2.36 mm) sieve	+/- 4.6	48-55	42-47	38-46	32-36	30-36
No. 200 (75 $\mu$ m)	+/- 2.0	5.0-7.0	5.0-7.0	4.5-7.0	4.0-6.0	3.5-6.0

sieve						
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\* Mixture control tolerance is not applicable to this sieve for this mix.

\*\* Mixture control tolerance shall be  $\pm 10.0\%$  for this sieve for 25 mm Superpave.

\*\*\*Mixture control tolerance shall be  $\pm 8.0\%$  for this sieve for 19 mm Superpave.

\*\*\*\*Mixture control tolerance shall be  $\pm 2.0\%$  for this sieve for 12.5 mm and 9.5 mm mixes.

Note 1: Use PG 76-22 in 12.5 mm Superpave, excluding shoulder construction, on all projects

3. The Mixture Control Tolerance for asphalt cement shall be  $\pm 0.4\%$  for all mix types.

4. Volumetric limits are as follows:

Design Parameter	Mix Type	Limits
% of Max. Specific Gravity ( $G_{mm}$ ) at design gyrations, $N_{des}$	All	96%
% $G_{mm}$ at the initial number of gyrations, $N_i$	All	91.5% maximum
% voids filled with asphalt (VFA) at $N_{des}$	9.5 mm Type I	Min 72; Max 80
	All other types	Min 72; Max 76
Fines to effective asphalt binder ratio ( $F/P_{bc}$ )	9.5 mm Type I	0.6 to 1.4
	All other types	0.8 to 1.6
Minimum % Voids in Mineral Aggregate (VMA) Note: VMA shall be calculated using the effective specific gravity of the aggregate ( $G_{se}$ ). See SOP-2SP.	25 mm	13.0
	19 mm	14.0
	12.5 mm	15.0
	9.5 mm Type I	16.0
	9.5 mm Type II	16.0

\*VMA shall be calculated using the effective specific gravity of the aggregate ( $G_{se}$ ). See SOP-2SP.

## 828.2.04 Fine Graded Mixtures

### A. Requirements

Design gyrations ( $N_{des}$ ) for fine-graded mixes shall be 50 gyrations. Ensure that fine-graded mixtures meet the following mixture control tolerances and design limits:

ASPHALTIC CONCRETE – 4.75 mm MIX		
Sieve Size	Mixture Control Tolerance, %	Design Gradation Limits, % Passing
1/2 in (12.5 mm) sieve	+/- 0.0	100*
3/8 in (9.5 mm) sieve	+/- 5.6	90-100
No. 4 (4.75 mm) sieve	+/- 5.7	75-95
No. 8 (2.36 mm) sieve	+/- 4.6	60-65
No. 50 (300 $\mu$ m) sieve	+/- 3.8	20-50
No. 200 (75 $\mu$ m) sieve	+/- 2.0	4-12
Range for % AC	+/- 0.4	6.00-7.50
Design optimum air voids (%)		4.0-7.0
% aggregate voids filled with AC (VFA)		60-80

\* Mixture control tolerance is not applicable to this sieve for this mix.

### B. Fabrication

See Section 400.

**C. Acceptance**

See Subsection 106.03 and Section 400. Ensure that individual test results meet the Mixture Control Tolerances listed in Subsections 828.2.01, 828.2.02, 828.2.03, or 828.04, whichever applies.

**D. Materials Warranty**

See General Provisions 101 through 150.

**SECTION 883 – MINERAL FILLER**

*Delete Section 883 in its entirety.*

## 2. SCOPE OF WORK

### I. ROADWAYS:

- A. The loop and pulse detectors specified in the Bid Schedule will be replaced as necessary. While the plan is not to mill thru the existing loops and replace all, but should a loop need to be replaced due to construction operations, it will be as directed by Engineer or Inspector.
- B. The specific typical sections to be used on each roadway segment can be discussed at the Mandatory Pre-Bid Meeting. The individual sheets in Appendix Section depict estimated quantities for FDR. Portland cement, HA5, microsurfacing, leveling, patching, VDM, milling, OGI, 9.5 mm and 12.5 mm overlays. Excessive leveling may be accomplished with 19 mm, 12.5 mm and or OGI as directed by Engineer of Inspection Consultant. The overarching goal of this resurfacing contract is to provide smooth, safe, well-draining roadways for the County. As such special emphasis will be placed on brining the insitu grade back to a 2% cross slope with center crown wherever possible. The successful bidder of this contract will always be required to have a 4-foot digital smart level on the project to ensure that the variable depth milling, leveling and final riding surface are performed in a consistent manner to achieve this overarching goal for the County and its ratepayers. All variable depth milling shall occur in advance of the deep patching operations in all areas where both treatments are required. Deep patching shall occur in advance of leveling operations in all areas where both treatments are required.
- C. Georgia Department of Transportation standard details are to be used as applicable, or as directed by Engineer. Milling and paving crew shall always have a fully functional calibrated 4-foot digital smart level on the project to rehabilitate the roadway sections to the proper cross slope and super elevation. Please refer to the Appendix Section for additional specification information on the treatments called out in this ITB.
- D. A complete listing of the road segments to be repaved or reconstructed under this **Contract** can be found in the Appendix. The list, in spreadsheet format, includes the road number designation; the name of the roadway; the subdivision, if any, it is in; and the approximate termini of the segment to be rehabilitated. Total quantities of each pay item have been included for information only and require that the **Contractor** verify the quantities.
- E. The **Contractor** is responsible for visiting the actual proposed construction sites where the roadways are to be rehabilitated and or preserved in advance of this ITB to familiarize themselves with the logistics that will be required to perform this subsequent contract.
- F. The **Contractor** is responsible for building at minimum 2-foot-wide shoulders and clipping high shoulders up to 4-foot-wide or more to allow positive drainage off the new roadway. Please see SP 39-40 for details on shoulder building and berm clipping. Complete earth and shoulder filling work within thirty (30) days, after completion of the final roadway.
- G. All shoulder building and clipping operations must be completed prior to the thermoplastic striping operations.
- H. FDR operations must utilize the entire insitu pavement structure, no pre-milling will be allowed in advance of FDR operations. The surplus mixture shall be loaded and trucked at the Contractor's expense to an acceptable offsite location. Only clean asphalt millings will be received at the RDOT yard. Dirty millings if any from patching operations are to be trucked to an appropriate offsite location at the Contractor's expense.
- I. FDR to be completed per the enclosed SP 316 in the Appendices section. The **Contractor** will submit their proposed job mix formula for the FDR projects.
- J. Depth of FDR shall be 10" and will be tested for conformance.
- K. Contractor will sweep and paint any adjoining bridge decks during striping operations.

- L. Temporary striping is required in accordance with section 150.04 of the GDOT specifications. Placement of permanent pavement markings shall not begin until final surface course has been completed for more than fifteen (15) days and will be completed within forty-five (45) calendar days after the final surface course has been completed.
- M. Notify utility companies a minimum of 60 days in advance of any proposed work for utility companies to begin clearing conflicts with scheduled work.
- N. The **Contractor** shall be responsible for all erosion control measures to ensure all compliance with all state and federal laws and guidelines, the cost to be considered incidental and be included in the overall bid price. No additional payments shall be made to the contractor for erosion control.
- O. The **Contractor** shall be responsible for removing, relocating and maintaining the property owner's mailbox to an area outside the construction limits during the life of the contract where necessary. The location should be convenient to both the mail carrier and the resident or business owner. The move should not interfere with the proposed work. It may be necessary for the **Contractor** to confer with the post office serving the area. All costs incurred for the compliance to these requirements shall be incidental to the work being bid on.
- P. All primary entrances into properties will always be maintained as accessible .

## II. SPECIAL CONSTRUCTION METHODS:

It is the intent of this contract to pay for the removal of unsuitable material below the subbase to the depth necessary and as directed by the Engineer. The undercut areas will be replaced with GAB, pay item 310-1101 or on-site millings if directed by Engineer or Inspection Consultant. No payment will be made for millings in lieu of GAB above.

**It is the intent of this contract to pay for existing GAB, soil cement, or soil, which is identified as undercut to include the removal, hauling and disposal of the material and be paid for as unclassified material.**

**NOTE:** *All CLEAN RAP MILLINGS are to be trucked to the rear of 2570 Old Covington Hwy. SW at the contractor's expense (RDOT will provide excavator and/or loader to push up stockpiles). All dirt and dirt/RAP combo mixtures will need to be trucked offsite to a suitable location at the Contractor's expense.*

All unclassified excavation shall be paid for as "Unclassified Excavation", pay item 205-0081; unit is cubic yards (CY), which is reflected in the bid list herein attached.

## 3. SEQUENCE OF OPERATIONS

### I. GENERAL:

- A. The purpose of this Special Provision is to provide a Sequence of Operations for construction of this project. This Special Provision also provides specific procedures that will permit vehicular and pedestrian traffic to pass area safely and with minimum inconvenience.
- B. This Special Provision sets forth specific procedures and does not relieve the **Contractor** of any responsibilities required by Specification Section 150, other Specifications, Plans, or the MUTCD.
- C. Planned off-site detours are not required for this Project.
- D. Where traffic is permitted through the work area under stage construction, the **Contractor** may choose to construct, at no additional expense to the **County**, temporary on-site bypasses or detours in order to expedite

the **Work**. Plans for such temporary bypasses or detours shall be submitted to the Engineer for approval a minimum of at least fourteen (14) calendar days prior to proposed construction. Such bypasses or detours shall be removed promptly when in the opinion of the Engineer are no longer necessary for the satisfactory progress of the **Work**.

- E. The **Contractor's** trucks and other vehicles shall travel in the direction of normal roadway traffic unless separated from the through traffic by positive construction barriers approved by the Engineer.
- F. When construction operations necessitate an existing traffic signal to be out of service, the **Contractor** shall furnish off-duty police officers to regulate and maintain traffic control at the site.
- G. **There shall be no reduction in the total number of available traffic lanes except as specifically allowed by the Contract and as approved by the Engineer. The Contractor shall not perform work or move equipment or materials on the traveled way that visibly interferes with traffic flow on the roadways listed below between the hours of 6:00 to 8:30 AM and 4:00 to 6:00 PM, Monday through Friday unless authorized by the Engineer prior to Work being performed. Equipment or materials moved on or across the traveled way at other times shall be done in a manner as not to unduly interfere with traffic. Be aware that if RDOT receives numerous complaints about early work in subdivisions interfering with the school bus traffic an 8:00 am start date may be imposed for that area of work.**
- H. The **Contractor** shall schedule and arrange the Work to ensure the least inconvenience and the utmost in safety for the traveling public and to the **Contractor's** and the Department's forces. The Engineer shall have discretion to further limit the hours of construction activities within or near school zones or residences in order to provide the safest possible facilities for the traveling public. The Contractor shall not Work in residential areas from dusk to dawn.
- I. The **Contractor** shall submit to the Engineer at the preconstruction meeting a list identifying the priority order in which the project will be completed. A schedule shall be submitted to the Engineer every week thereafter showing which roads will be completed for that week. Every effort to complete the roads/streets in the order of the list should be made. The Engineer shall be notified immediately if the order of the roads/streets changes. The Engineer will be notified 24 hours in advance when the **Contractor** moves to a new road/street to Work. The schedule as a minimum show the time line for milling, pulverizing, mixing, paving, grading of shoulders and striping operations as these items may relate to the respective roadway. **Please refer to Section 108.11 for more information regarding scheduling and cancelations.**
- J. In the prosecution of the **Work**, if it becomes necessary to remove any existing signs, markers, guardrail, etc. not covered by a specific pay item, they shall be removed, stored, and reinstalled, when directed by the Engineer, to line and grade, and in the same condition as when removed. Separate payment will not be made for this Work. All costs associated with the removal and resetting of incidental items shall be included in the overall price bid.
- K. The **Contractor** shall develop a detailed staging and traffic control plan, if deemed necessary, for performing **Work** in specific areas of the **Work**, including but not limited to all traffic shifts, detours, pacing, lane closures or other activities that disrupt traffic flow. When required by the Engineer, the **Contractor** shall submit his staging and traffic control plan to the Department at least seven (7) business days prior to commencing **Work** in a specific area so that a decision on its acceptability can be made. The Department shall review and issue its decision within three (3) business days of receipt and, if approved, shall give the **Contractor** a written Notice to Proceed (NTP) for that portion of the Work. The **Contractor** shall not commence Work prior to issuance of the NTP.
- L. **Contractor** shall construct a 30 or 45 degree safety wedge, as required by GDOT, at the edge of all new asphalt overlays. This is to insure that vehicular traffic will have a traversable edge that will allow for a smooth transition if the vehicle should leave the road unexpectedly and over-correct. See Section 400 for more details.

## II. **ORDER OF WORK:**

A. Non-Interstate Divided Highways

1. The **Contractor** shall not simultaneously perform Work on both the inside shoulder and outside shoulder on either direction of traffic flow when the Work is within 12 feet of the traveled way, unless such areas are separated by at least 3000 feet of distance in rural areas or at least 500 feet of distance in urban areas.

B. Non-Divided Highways

1. The **Contractor** shall not simultaneously perform Work on opposite sides of the roadway when the Work is within 12 feet of the traveled way, unless such areas are separated by at least 3000 feet of distance in rural areas or at least 500 feet of distance in urban areas.
2. Pilot vehicles will be required during foaming operations, placement of bituminous surface treatment or asphaltic concrete on two-lane roadways unless otherwise specified.
3. On two-lane projects where full-width sections of the existing subgrade, base or surfacing are to be removed, and new base subgrade or surfacing is to be constructed, the **Contractor** shall maintain one-lane traffic through the construction areas by removing and replacing the undesirable material for half the width of the existing roadway at a time. Replacement shall be made such that paving is completed to the level of the existing pavement in the adjacent lane by the end of the Workday.

C. Excavation

1. All areas within the limits of the Project, which are determined by the Engineer to be damaged, due either directly or indirectly to the process of construction, shall be cleaned up, redressed and grassed. All surplus materials shall be removed and disposed of as required. Materials to be wasted shall be disposed of in accordance with Subsection 201.3.05.E of the current Specifications.
2. When trenching is required for minor roadway or shoulder widening, all operations at one site shall be completed to the level of the existing pavement in the same Workday.

### III. SPECIAL CONDITIONS

The special conditions contained herein are Project Specific. When there is a conflict between the General Conditions of the Contract Documents and these Special Conditions, the Special Conditions will govern the Work.

- A. The roads and streets impacted by this construction may require restriction to one-lane traffic and/or temporary closure. The Department prior to start of construction for such restriction MUST approve all restrictions to normal traffic flow patterns.
- B. The **Contractor** shall provide off-road parking areas within the construction area and away from the intersecting streets or roads. The unauthorized parking of employees' vehicles and/or equipment will not be permitted along the shoulders or adjacent to the active traffic on any road or street in Rockdale County. It will be the **Contractor's** responsibility to prevent the violation of this provision. Failure to comply with the terms of this provision will result in the suspension of the Work.

The **Contractor** shall provide staging areas for equipment, materials and personnel which do not hinder public access or traffic movements. Debris and trash will be cleaned up in these areas to the acceptance of the inspector prior to vacating the area. Any soil contaminated by fuel or oil spills will be excavated and disposed of in accordance with EPA and State requirements for hazardous materials. The **Contractor** shall make every effort to prevent fuel and oil spills.

- C. The **Contractor** shall notify the **County** three business days prior to beginning Work and 24 hours in advance when moving resurfacing/repaving operations from one location to another.
- D. When construction begins on this project, the **Contractor** will be required to continuously pursue the Work

without interruption to the completion of each stage of Work. The time duration between reconstruction of the base and paving operation shall be kept a minimum to maintain a safe surface for motorists and shall be at the direction of the Engineer. Shoulder rehabilitation, including seeding of grass, shall be completed within two (2) weeks of main line paving. Cessation of Work without authorization will be considered as justification to deny the **Contractor's** request for an extension of time. Payment of asphalt will be authorized when all Work is complete on a section of roadway.

- E. Wherever the proposed Work calls for excavation of portions of the existing graded aggregate base (GAB), soil cement, and or soil, the material that is retained shall be compacted to meet the requirements set forth in the Construction and Preparation subsections of the applicable section of the Standard Specifications relating to the particular material, and/or structure, to be implemented immediately upon the retained material
- F. The Contract completion date shall be **28 Weeks from Notice to Proceed**, or as approved by **Rockdale County Department of Transportation**. If additional streets or emergency work is added to the contract the **Contractor** will be granted an additional time extension.
- G. The Work performed under Pay Item 205-0081: EXCAVATION, UNSTABLE MATL & BACKFILL shall cover only the excavation, removal and replacement of unsuitable material encountered during patching and/or base repair. The quantity given in the Bid and Contract Schedules of Items is an approximate estimate of quantities required by the engineer based on observed field conditions; thus, the actual quantity placed may deviate significantly from the given quantity.
- H. The Work performed under Pay Item 210-0020: GRADING – ADJUST SHOULDER TO GRADE shall cover only that Work required to add and grade any additional material required to bring the shoulder up to the finished grade at the edge of pavement and includes the material. By definition, this Work will apply only to those rural-section roadways where the proposed grade at the edge of pavement is higher than that of the existing roadway or as directed by the Inspector or Engineer. This item also includes CUTTING BERMS DOWN to proper elevation to allow surface water on road to drain to ditches. Contractor is responsible for utility locates.

As no roadway grade is expected to be raised in excess of approximately 3 inches, the intent of this Work is not to rehabilitate the shoulders; rather the intent is simply to fill and feather the shoulder at the edge of pavement to tie as quickly to the existing as possible. The feathering could extend horizontally up to 48 inches, but not past the existing shoulder break point. Measurement for payment will be measured by the lane mile. Any areas contiguous with the pavement where there is a drop-off will require shoulder grading. This will be as directed by the Inspector. This Work shall also include the establishment of permanent grassing on the newly placed material (sod where sodded). Payment for sodding, seeding/grassing, mulching, etc. is considered subsidiary to the grading.

At times the **Contractor** may have to cut the high shoulders down to allow water to move off the roadway and up to four (4) feet out on the shoulder. There may be limited occasions where the motor grader will have to extend their moldboard out past four feet in order to provide positive drainage across the profile of the insitu roadway. Care must also be exercised to avoid damage to the new pavement edges with heavy equipment. If new roadway edge is damaged to due heavy equipment the **Contractor** will be required to cut and patch and restripe any of these areas.

In conjunction with the grading operations, any erosion control devices or measures that need to be installed to protect adjacent properties is the responsibility of the **Contractor** and is considered subsidiary to the cost of the grading. Special care shall be taken to prevent the edge of pavement from breaking while shouldering.

This work shall also include the establishment of permanent grassing on the newly placed material. Payment for in-kind seeding/grassing, mulching, etc. is considered subsidiary to the grading. In conjunction with the grading operations, any erosion control devices or measures that need to be installed to protect adjacent properties is the responsibility of the **Contractor** and is considered incidental to the cost of grading.

- I. Where directed by the Engineer, transitions for driveways will be constructed to improve the driveway slope and break-over. The cost of this Work will be measured and paid for based on the top course of asphaltic

concrete pavement per ton. Where complete removal and replacement of driveways in-kind is required it will be paid for under that line item in the contract.

- J. Along rural areas where mail boxes have been setback from the edge of pavement and the mail truck is required to pull off the pavement to deposit mail, these areas shall be covered with the respective surface and base course depths of new pavement in order to prevent the edge of pavement to ravel off by the mail truck. This additional pavement shall be included in the pay items for asphaltic concrete.
- K. The **Contractor** shall notify the Engineer 48 hours in advance if the **Contractor** intends to Work on the Saturday or Sunday so that the Engineer can provide adequate inspection staff to oversee the **Work**. **Failure to provide notice as required may result in denial of weekend work.**
- L. The **Contractor** shall notify the Engineer 72 hours in advance regarding the roadway project on which resurfacing and/or reconstruction will occur so that the Engineer in writing can notify occupants.
- M. Nominal quantities for the several items have been included in order to provide anticipated Work to be performed and these quantities are found on the itemized quantity Schedule under "As Directed By the Engineer" and are listed below:

Reconstruct SSMH	Adjust WV Boxes	Adjust SSMH
Patching Asphalt	Leveling Asphalt	Several Items under Thermoplastic Pavement Markings
Excavation	Loop & Pulse Detectors	Graded Aggregate Base
Curb Milling	Shoulder Grading	12.5 mm Superpave Asphalt
9.5 mm Superpave asphalt	Bituminous Tack	Raised Pavement Markers
R/R Driveway Entrances	R/R Roll Curb	GAB

**IV. EQUIPMENT NOISE AND OPERATION:**

All equipment used on the **Work** shall come equipped with factory installed mufflers or manufacturer's recommended equivalent in good condition. These mufflers shall be maintained in good condition throughout the life of the Contract. The equipment should be in good Working order without fuel leaks, damages, worn parts or broken parts which might create a hazard to the environment or personnel. Any equipment noted by the Inspector to the **Contractor** shall be fixed or removed immediately and any spills should be dealt with in accordance to EPA standards

**V. UTILITY CONFLICTS**

Utility companies having known facilities that conflict with the construction of this project will be directed by the **County** to adjust or relocate their facilities and will be notified of the Contract award. It is the **Contractor's** duty to notify the **County** of known conflicts.

It will be the **Contractor's** responsibility to conform with all the requirements of the Specifications as they relate to cooperation with utility owners and the protection of utility installations that exist on the Project. The **Contractor's** attention is directed to the requirement of Section 107, LEGAL REGULATIONS AND RESPONSIBILITY TO THE PUBLIC, with particular attention to Article 107.21. F

It shall be the responsibility of the **Contractor** to coordinate his Work with any Work to be performed by others in a Right-of-Way clearance and arrange a schedule of operations that will allow for completion of the Project without undue delay. Where stage construction is required it shall be the **Contractor's** responsibility to notify the utility owner when each stage of **Work** is completed and the site is available for utility Work to proceed.

It shall be the responsibility of the **Contractor** to determine the estimated time for relocation and adjustment of facilities of all utility companies and to consider in his bid all such relocations and adjustments.

In accordance with Article 105.6 of the specifications, the **County** shall not be liable for payment of any costs due to utility delays, inconvenience or damage sustained by the **Contractor** due to interference of any utilities or appurtenances, or the operation of moving them. Delays by utilities will continue to be considered by the **County** in charging Contract time in accordance with Article 107.21.G.

The **Contractor** will not be paid for any delays or extra expense caused by utility facilities, obstructions, or any other items not being removed or relocated to clear construction in advance of his Work.

Georgia law requires that a telephone call or adequate notice must be given to the Utilities Protection Center (UPC) at 770-623-4344 a minimum of three (3) days before **Work** is to begin. The notice will remain in effect for 10 Working days from the date the Utilities Protection Center is notified. **Any milling, pulverizing, or excavation Work on the roadways requires that UPC be notified prior to Work being performed.** If emergencies occur it is the responsibility of the **Contractor** the respective utility company immediately and then the inspector.

## **VI. ADDENDA**

The contents of Addendums will be incorporated into the respective sections of the final CONTRACT AGREEMENT, GENERAL CONDITIONS, and/or SPECIAL PROVISIONS. The **Contractor's** submitted Bid Proposal at the time of bid opening will also be incorporated into the Special Provisions as Appendix C, which will be part of the Contract. **The Contractor shall include as part of his/her Bid Proposal the completed form on page BD.6 of the Bid Documents verifying that he/she has included all addendums as part of the Bid Proposal.**

**2017 SPLOST #3A**

**APPENDIX A**

**ROADWAY NAMES**

# Road Names

## 2017 SPLOST #3A

Parr Road - 10	30	West Hightower Trail - 10
Frontier Drive - 30	31	West Hightower Trail - 20
Crossland Drive - 10	32	West Hightower Trail - 30
Crossland Drive - 20	33	West Hightower Trail - 40
Elcar Way - 10	34	West Hightower Trail - 50
Elcar Way - 20	35	West Hightower Trail - 60
Lakeshore Drive - Lakeview	36	Griffin Mountain Trail - 10
Magnolia Drive - 10	37	Griffin Mountain Trail - 20
Magnolia Drive - 20	38	Somerset Court - 10
Pinelake Drive	39	Haverhill Court - 10
Presidential Circle - 20	40	Westover Way - 10
South Lakeshore Drive	41	Hamrick Court - 10
Fountaincrest Drive - 10	42	Underwood Drive - 10
Aughton Court - 10	43	Underwood Court - 10
Brolington Court - 10	44	Salem Woods Drive - 10
Northholt Court - 10	45	Salem Mill Trail - 10
St. Mario Court - 10	46	Salem Mill Court - 10
Olde Ivey Lane - 10	47	Southgate Trail - 10
Trellis Court - 10	48	Southgate Way - 10
Union Grove Road - 20 W-E	49	Southgate Lane - 10
Oglesby Bridge Road - 10	50	Lancaster Drive - 10
Boar Tusk Road - 20	51	Royal Annisbrooke Drive - 10
Boar Tusk Road - 30	52	Battenburg Lane - 10
Boar Tusk road - 40	53	Chantilly Court - 10
Carrington Way - 10	54	Victoria Walk - 10
Marcer Walk - 10	55	Oglesby Bridge Road - 30
New Haven Place - 10		
Sagemore Court - 10		
Westport Lane - 10		

**2017 SPLOST #3A**

**APPENDIX B**

**ITEMIZED QUANTITIES**

No.	Road	Functional Class Code	Subdivision	From	To	Length (FT)	Mileage	Area (Sq)	Traffic Control	Excavation Contingency	Grading	TP for B	10' CTB	GAB	RAC Patching	RAC Patching	RAC Patching	9.8 mm	12.5 mm SF
									LS	CY	LM	Portland TN	SY	TN	3 INCH TN	4 INCH TN	TN	TN	TN
1	Parr Road 10	R		Honey Creek Rd	Shannon Rd	1,645	0.31	4,476			0.31								
2	Frontier Drive 30	R	Lakewood Estates	S. Lakewood Dr	W. Lakewood Dr	4,574	0.87	11,180											
3	Crossland Drive 10	R	Lakewood Estates	Frontier Dr	Frontier Dr	1,777	0.34	3,971											
4	Crossland Drive 20	R	Lakewood Estates	Frontier Dr	Frontier Dr	593	0.11	1,273											
5	Ecor Way 10	R	Lakewood Estates	Presidential Circle	Presidential Circle	819	0.16	1,816											
6	Ecor Way 20	R	Lakewood Estates	Presidential Circle	Presidential Circle	1,084	0.21	2,301											
7	Edgar Way 20	R	Lakewood Estates	Frontier Drive	Frontier Drive	2,902	0.53	7,427											
8	Manacola Drive 10	R	Lakewood Estates	Frontier Drive	Frontier Drive	1,770	0.34	3,419											
9	Manacola Drive 20	R	Lakewood Estates	Frontier Drive	Frontier Drive	2,250	0.43	4,119											
10	Pinelake Drive	R	Lakewood Estates	Star Drive	Star Drive	1,188	0.22	2,820											
11	Presidential Circle	R	Lakewood Estates	Star Drive	Star Drive	1,330	0.25	3,148											
12	South Lakeshore Dr	R	Lakewood Estates	Star Drive	Star Drive	1,330	0.25	3,148											
13	Fountaincrest Drive 10	R	Lakewood Estates	Star Drive	Star Drive	495	0.09	1,150											
14	Fountaincrest Drive 10	R	Lakewood Estates	Star Drive	Star Drive	630	0.12	1,450											
15	Fountaincrest Drive 10	R	Lakewood Estates	Star Drive	Star Drive	531	0.10	1,450											
16	Fountaincrest Drive 10	R	Lakewood Estates	Star Drive	Star Drive	181	0.04	1,842											
17	St. Marco Ct. 10	R	Lakewood Estates	Star Drive	Star Drive	208	0.04	6,291											
18	Old Way Lane	R	Lakewood Estates	Star Drive	Star Drive	305	0.06	1,400											
19	Trillis Ct. 10	R	Lakewood Estates	Star Drive	Star Drive	550	0.10	1,222											
20	Union Grove Road	R	Lakewood Estates	Star Drive	Star Drive	2,670	0.51	6,227											
21	Onley Bridge Road 10	A	Lakewood Estates	Star Drive	Star Drive	930	0.18	2,837											
22	Boar Lark Road 20	R	Lakewood Estates	Star Drive	Star Drive	2,419	0.46	6,451											
23	Boar Lark Road 20	R	Lakewood Estates	Star Drive	Star Drive	1,255	0.24	3,083											
24	Boar Lark Road 20	R	Lakewood Estates	Star Drive	Star Drive	516	0.10	3,216											
25	Boar Lark Road 20	R	Lakewood Estates	Star Drive	Star Drive	1,537	0.30	4,038											
26	Merrett Walk 10	R	Lakewood Estates	Star Drive	Star Drive	607	0.11	1,971											
27	New Haven Place 10	R	Lakewood Estates	Star Drive	Star Drive	1,181	0.22	3,780											
28	Sagamore Ct. 10	R	Lakewood Estates	Star Drive	Star Drive	814	0.15	2,054											
29	Westport Lane	R	Lakewood Estates	Star Drive	Star Drive	2,569	0.49	6,388											
30	West Highower Trail 10	M/A	Lakewood Estates	Star Drive	Star Drive	1,634	0.31	3,894											
31	West Highower Trail 20	M/A	Lakewood Estates	Star Drive	Star Drive	4,772	0.90	11,958											
32	West Highower Trail 40	M/A	Lakewood Estates	Star Drive	Star Drive	8,728	1.68	35,933											
33	West Highower Trail 40	M/A	Lakewood Estates	Star Drive	Star Drive	1,422	0.27	3,403											
34	West Highower Trail 60	M/A	Lakewood Estates	Star Drive	Star Drive	1,640	0.32	5,013											
35	West Highower Trail 60	M/A	Lakewood Estates	Star Drive	Star Drive	230	0.04	1,216											
36	Griffin Mountain Trail 10	R	Lakewood Estates	Star Drive	Star Drive	270	0.05	1,323											
37	Griffin Mountain Trail 20	R	Lakewood Estates	Star Drive	Star Drive	228	0.04	1,205											
38	Sommeret Court 10	R	Lakewood Estates	Star Drive	Star Drive	140	0.03	976											
39	Haverhill Court 10	R	Lakewood Estates	Star Drive	Star Drive	1,159	0.22	3,135											
40	Wastover Way 10	R	Lakewood Estates	Star Drive	Star Drive	685	0.13	3,068											
41	Hannick Ct. 10	R	Lakewood Estates	Star Drive	Star Drive	1,346	0.25	3,079											
42	Hannick Ct. 10	R	Lakewood Estates	Star Drive	Star Drive	275	0.05	1,203											
43	Woods Court 10	R	Lakewood Estates	Star Drive	Star Drive	673	0.13	1,820											
44	Salam Woods Drive 10	R	Lakewood Estates	Star Drive	Star Drive	105	0.02	883											
45	Salam Mill Court 10	R	Lakewood Estates	Star Drive	Star Drive	2,024	0.38	5,447											
46	Salam Mill Court 10	R	Lakewood Estates	Star Drive	Star Drive	1,024	0.19	3,356											
47	Southgate Way 10	R	Lakewood Estates	Star Drive	Star Drive	1,187	0.22	3,356											
48	Southgate Way 10	R	Lakewood Estates	Star Drive	Star Drive	1,187	0.22	3,356											
49	Southgate Way 10	R	Lakewood Estates	Star Drive	Star Drive	730	0.14	2,465											
50	Southgate Way 10	R	Lakewood Estates	Star Drive	Star Drive	10,150	1.92	30,428											
51	Southgate Way 10	R	Lakewood Estates	Star Drive	Star Drive														
52	Southgate Way 10	R	Lakewood Estates	Star Drive	Star Drive														
53	Charlton Lane 10	R	Lakewood Estates	Star Drive	Star Drive														
54	Victoria Walk 10	R	Lakewood Estates	Star Drive	Star Drive														
55	Onley Bridge Road 30	R	Lakewood Estates	Star Drive	Star Drive														
LS	Lump Sum/Contingency Items	A																	
						TOTAL	65,966	16,28	220,915	1	300	6,94	64,118	300	2,355	845	850	4,515	4,510



Prepared by Blair Blamhardt,  
Deputy Director  
February 2018

No.	Road	653-0220		653-0230		653-0235	
		Thermo (STOP) TYPE 3 EA	Thermo (SCHOOL) TYPE JA EA	Thermo (STOP) TYPE 3 EA	Thermo (SCHOOL) TYPE JA EA	Thermo (MINS) TYPE 3Z EA	Thermo (MINS) TYPE 3Z EA
1	Parr Road 10						
2	Frontier Drive 30						
3	Crossland Drive 10						
4	Crossland Drive 20						
5	Elcar Way 10						
6	Elcar Way 20						
7	Lakeshore Dr. Lakewood						
8	Algonquin Drive 10						
9	Algonquin Drive 20						
10	Algonquin Drive 30						
11	Presidential Circle						
12	South Lakeshore Dr.						
13	Fourbancreef Drive 10						
14	Aughlin Ct. 10						
15	Berlington Ct. 10						
16	Northolt Ct. 10						
17	Northolt Ct. 20						
18	Orde Lane						
19	Orde Lane 10						
20	Orde Lane 20						
21	Orde Lane 30						
22	Orde Lane 40						
23	Orde Lane 50						
24	Orde Lane 60						
25	Orde Lane 70						
26	Orde Lane 80						
27	Orde Lane 90						
28	Orde Lane 100						
29	Orde Lane 110						
30	Orde Lane 120						
31	Orde Lane 130						
32	Orde Lane 140						
33	Orde Lane 150						
34	Orde Lane 160						
35	Orde Lane 170						
36	Orde Lane 180						
37	Orde Lane 190						
38	Orde Lane 200						
39	Orde Lane 210						
40	Orde Lane 220						
41	Orde Lane 230						
42	Orde Lane 240						
43	Orde Lane 250						
44	Orde Lane 260						
45	Orde Lane 270						
46	Orde Lane 280						
47	Orde Lane 290						
48	Orde Lane 300						
49	Orde Lane 310						
50	Orde Lane 320						
51	Orde Lane 330						
52	Orde Lane 340						
53	Orde Lane 350						
54	Orde Lane 360						
55	Orde Lane 370						
56	Orde Lane 380						
57	Orde Lane 390						
58	Orde Lane 400						
59	Orde Lane 410						
60	Orde Lane 420						
61	Orde Lane 430						
62	Orde Lane 440						
63	Orde Lane 450						
64	Orde Lane 460						
65	Orde Lane 470						
66	Orde Lane 480						
67	Orde Lane 490						
68	Orde Lane 500						
69	Orde Lane 510						
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83	Orde Lane 650						
84	Orde Lane 660						
85	Orde Lane 670						
86	Orde Lane 680						
87	Orde Lane 690						
88	Orde Lane 700						
89	Orde Lane 710						
90	Orde Lane 720						
91	Orde Lane 730						
92	Orde Lane 740						
93	Orde Lane 750						
94	Orde Lane 760						
95	Orde Lane 770						
96	Orde Lane 780						
97	Orde Lane 790						
98	Orde Lane 800						
99	Orde Lane 810						
100	Orde Lane 820						
101	Orde Lane 830						
102	Orde Lane 840						
103	Orde Lane 850						
104	Orde Lane 860						
105	Orde Lane 870						
106	Orde Lane 880						
107	Orde Lane 890						
108	Orde Lane 900						
109	Orde Lane 910						
110	Orde Lane 920						
111	Orde Lane 930						
112	Orde Lane 940						
113	Orde Lane 950						
114	Orde Lane 960						
115	Orde Lane 970						
116	Orde Lane 980						
117	Orde Lane 990						
118	Orde Lane 1000						
119	Orde Lane 1010						
120	Orde Lane 1020						
121	Orde Lane 1030						
122	Orde Lane 1040						
123	Orde Lane 1050						
124	Orde Lane 1060						
125	Orde Lane 1070						
126	Orde Lane 1080						
127	Orde Lane 1090						
128	Orde Lane 1100						
129	Orde Lane 1110						
130	Orde Lane 1120						
131	Orde Lane 1130						
132	Orde Lane 1140						
133	Orde Lane 1150						
134	Orde Lane 1160						
135	Orde Lane 1170						
136	Orde Lane 1180						
137	Orde Lane 1190						
138	Orde Lane 1200						
139	Orde Lane 1210						
140	Orde Lane 1220						
141	Orde Lane 1230						
142	Orde Lane 1240						
143	Orde Lane 1250						
144	Orde Lane 1260						
145	Orde Lane 1270						
146	Orde Lane 1280						
147	Orde Lane 1290						
148	Orde Lane 1300						
149	Orde Lane 1310						
150	Orde Lane 1320						
151	Orde Lane 1330						
152	Orde Lane 1340						
153	Orde Lane 1350						
154	Orde Lane 1360						
155	Orde Lane 1370						
156	Orde Lane 1380						
157	Orde Lane 1390						
158	Orde Lane 1400						
159	Orde Lane 1410						
160	Orde Lane 1420						
161	Orde Lane 1430						
162	Orde Lane 1440						
163	Orde Lane 1450						
164	Orde Lane 1460						
165	Orde Lane 1470						
166	Orde Lane 1480						
167	Orde Lane 1490						
168	Orde Lane 1500						
169	Orde Lane 1510						
170	Orde Lane 1520						
171	Orde Lane 1530						
172	Orde Lane 1540						
173	Orde Lane 1550						
174	Orde Lane 1560						
175	Orde Lane 1570						
176	Orde Lane 1580						
177	Orde Lane 1590						
178	Orde Lane 1600						
179	Orde Lane 1610						
180	Orde Lane 1620						
181	Orde Lane 1630						
182	Orde Lane 1640						
183	Orde Lane 1650						
184	Orde Lane 1660						
185	Orde Lane 1670						
186	Orde Lane 1680						
187	Orde Lane 1690						
188	Orde Lane 1700						
189	Orde Lane 1710						
190	Orde Lane 1720						
191	Orde Lane 1730						
192	Orde Lane 1740						
193	Orde Lane 1750						
194	Orde Lane 1760						
195	Orde Lane 1770						
196	Orde Lane 1780						
197	Orde Lane 1790						
198	Orde Lane 1800						
199	Orde Lane 1810						
200	Orde Lane 1820						
201	Orde Lane 1830						
202	Orde Lane 1840						
203	Orde Lane 1850						
204	Orde Lane 1860						
205	Orde Lane 1870						
206	Orde Lane 1880						
207	Orde Lane 1890						
208	Orde Lane 1900						
209	Orde Lane 1910						
210	Orde Lane 1920						
211	Orde Lane 1930						
212	Orde Lane 1940						
213	Orde Lane 1950						
214	Orde Lane 1960						
215	Orde Lane 1970						
216	Orde Lane 1980						
217	Orde Lane 1990						
218	Orde Lane 2000						
219	Orde Lane 2010						
220	Orde Lane 2020						
221	Orde Lane 2030						
222	Orde Lane 2040						
223	Orde Lane 2050						
224	Orde Lane 2060						
225	Orde Lane 2070						
226	Orde Lane 2080						
227	Orde Lane 2090						
228	Orde Lane 2100						
229	Orde Lane 2110						
230	Orde Lane 2120						
231	Orde Lane 2130						
232	Orde Lane 2140						
233	Orde Lane 2150						
234	Orde Lane 2160						
235	Orde Lane 2170						
236	Orde Lane 2180						
237	Orde Lane 2190						
238	Orde Lane 2200						
239	Orde Lane 2210						
240	Orde Lane 2220						
241	Orde Lane 2230						
242	Orde Lane 2240						
243	Orde Lane 2250						
244	Orde Lane 2260						
245	Orde Lane 2270						
246							

Prepared by Blair Barnhardt  
 Deputy Director  
 February 2019

No.	Road	653-0240 Thermo (AHEAD) TYPE 4 EA	653-0280 Thermo Word 1P 8 EA	653-1691 Thermo Stripe 5" White LF 3,045	653-1692 Thermo Stripe 6" Yellow LF 2,692	653-1704 Thermo Stripe 24" White LF 37	653-1804 Thermo Stripe 8" White LF 128	653-3691 Thermo Strip 5" White GLF	653-3692 Thermo Strip 8" Yellow GLF	653-4004 Thermo Core White SY	653-4008 Thermo Core Yellow SY	RPM's EA	HAS HD Minimal Bond SY	N/A	N/A	N/A	R & R SW Inlet Cover EA	R & R DW Inlet Cover EA	Contingency EA	
1	Pair Road 10												11,160							
2	Fletcher Drive 30												3,971							
3	Crossland Drive 10												1,818							
4	Crossland Drive 20												2,301							
5	Elcar Way 10												7,427							
6	Elcar Way 20												3,169							
7	Lakeshore Dr. Lakeview												4,412							
8	Lakeshore Drive 10												2,820							
9	Maple Drive 10												3,185							
10	Maple Drive 20												3,148							
11	Presidential Circle												1,150							
12	South Lakeshore Dr.												1,450							
13	Fountaincrest Drive 10												1,842							
14	Aughton Ct. 10												1,018							
15	Burlington Ct. 10																			
16	Northport Ct. 10																			
17	St. Marks Ct. 10																			
18	Maple Drive																			
19	Trilla Ct. 10																			
20	Union Grove Road			1,100	1,100	12						28	1,222							
21	Queasy Bridge Road 10			5,340	5,340	12						134								
22	Boar Turk Road 20			2,078	4,157	24					128	60								
23	Boar Turk Road 30			4,157	4,157	24						69								
24	Boar Turk Road 40			2,510	2,772	12	250	120		200		69								
25	Carrington Way 10																			
26	North Haven Pkwy 10																			
27	Maple Drive																			
28	Shannon Ct. 10																			
29	Westport Lane			1,698	1,698	12						82								
30	West Hillower Trail 10			3,275	3,275	12						130								
31	West Hillower Trail 20			3,288	6,577	12						82								
32	West Hillower Trail 30			9,800	6,437			60				260								
33	West Hillower Trail 40			12,450	10,866							300								
34	West Hillower Trail 50			5,568	5,568							140								
35	West Hillower Trail 60			2,444	2,444							62								
36	Griffin Mountain Trail 10			3,760	3,760							94								
37	Griffin Mountain Trail 20																			
38	Somerset Court 10																			
39	Haverhill Court 10																			
40	Westleyer Way 10																			
41	Hannick Court 10																			
42	Underwood Drive 10																			
43	Underwood Court 10																			
44	Underwood Court 20																			
45	Salem Mill Trail 10																			
46	Salem Mill Court 10																			
47	Scouting Trail 10																			
48	Scouting Way 10																			
49	Scouting Lane 10																			
50	Lanaster Drive 10																			
51	Royal Annabrook Dr. 10																			
52	Chancellor Court 10																			
53	Chancellor Court 20																			
54	Orkney Walk 10			21,000	16,700			707	3,800	50	450	510							1	
55	Orkney Bridge Road 30							1	1	300	300								1	
LS	Lump Sum/Contingency Items	1	1	84,039	72,094	181	374	888	9,035	550	878	2,234	88,700						1	
		1	1																	1

Prepared by Blair Barnhardt  
 Deputy Director  
 February 2019

No.	Road	Combignoz/ In-Kind DWY R & R as Directed BY	N/A	FDR Coring EA	Loop Detector 5'x40' (EA)	N/A	R & R Concrete DWY Aprons @ SF	Spread Tables ITE Byls EA	Thermo Shank Teeth for Spade Tables EA	R & R SW 4" SF SF	N/A	Stodding for Concrete DWY Months BY
1	Parr Road 10											204
2	Frontier Drive 30											
3	Crossland Drive 10											
4	Crossland Drive 20											
5	Elcan Way 10											
6	Edgar Way Dr Lakewood											
7	Edgar Way Dr Lakewood											
8	Manopola Drive 10											
9	Manopola Drive 20											
10	Pinelake Drive											
11	Prudential Circle											
12	South Lakeshore Dr											
13	Fourbaincrest Drive 10						773			344	1,032	
14	Aughton Ct. 10											
15	Brookside Ct. 10											
16	Brookside Ct. 10											
17	St. Marco Ct. 10						666			252	756	
18	Olea Way Lane						126			65	169	
19	Trellis Ct. 10											
20	Union Grove Road											
21	Oglesby Bridge Road 10											
22	Boar Truk Road 20			1			240			100	100	
23	Boar Truk Road 30						120			100	100	
24	Boar Truk Road 40						120			87	174	
25	Boar Truk Way 10						200			87	301	
26	Mercer Walk 10						353			152	546	
27	New haven Place 10						340			79	270	
28	Stagmore Ct. 10									151	340	
29	Westport Lane											
30	West Highblower Trail 10											
31	West Highblower Trail 20											
32	West Highblower Trail 30											
33	West Highblower Trail 40											
34	West Highblower Trail 50											
35	West Highblower Trail 60											
36	Griffin Mountain Trail 10											
37	Griffin Mountain Trail 20							2				
38	Somerset Court 100						109					120
39	Haverhill Court 100						120					126
40	Westley Way 10						89					116
41	Lincoln Court 10											39
42	Lincoln Court 10											
43	Linwood Court 10											
44	Salem Woods Drive 10											
45	Salem Hill Trail 10											
46	Salem Hill Court 10						164					173
47	Southgate Trail 10						79					90
48	Southgate Way 10						165					176
49	Southgate Lane 10						760					953
50	Southgate Lane 10											
51	Southgate Lane 10											
52	Brinsburg Lane 10						348					338
53	Chanally Court 10						202					214
54	Victoria Walk 10						224					237
55	Oglesby Bridge Road 30		50	1	4			2	8			
LS	Lump Sum/Contingency Items											
			50	2	4		5,395	4	16		1,448	6,238

**2017 SPLOST #3A**

**APPENDIX C**

**AWARDED CONTRACTOR'S BID PROPOSAL**

**2017 SPLOST #3A**

**APPENDIX D**

**ADDITIONAL SPECIAL PROVISIONS, STANDARD  
DRAWINGS & DETAILS**

# 2017 SPLOST 3A REHABILITATION

## DEPARTMENT OF TRANSPORTATION

### STATE OF GEORGIA

#### SPECIAL PROVISION

#### **Section 415—Asphaltic Concrete Open Graded Crack Relief Interlayer**

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*Delete Section 415 and substitute the following:*

##### **415.1 General Description**

This work includes constructing a bituminous plant produced Asphaltic Concrete Open Graded Crack Relief Interlayer (OGI) over the existing roadway surface. The mixture shall serve as asphaltic concrete leveling over irregular surfaces and provide mitigation for reflective cracking prior to the placement of the final surface pavement. The mixture shall conform to the lines, grades, thicknesses, typical sections and cross sections shown on the Plans or established by the Engineer.

This section includes the requirements for Asphaltic Concrete Open Graded Crack Relief Interlayer mixtures regardless of the gradation of the aggregates, type and amount of bituminous material, or pavement use. Follow the requirements in Section 400, Section 402 and Section 828 for production and placement, materials, equipment, and acceptance plans except as noted or modified in this Specification.

Acceptance of work is on a lot-to-lot basis according to the requirements of this Section, Section 400, Section 402 and Section 106.

##### **415.1.01 Definitions**

**Asphaltic Concrete Open Graded Crack Relief Interlayer:** an open graded mixture placed at a lift thickness that yields stone on stone contact that provides in-place air void content of 18 to 23 percent to mitigate existing cracking within asphaltic concrete pavements.

##### **415.1.02 Related References**

###### **A. Standard Specifications**

Section 106—Control of Materials

Section 109—Measurement and Payment

Section 152—Field Laboratory Building

Section 400 – Hot Mix Asphaltic Concrete Construction

Section 402 – Hot Mix Recycled Asphaltic Concrete

Section 413—Bituminous Tack Coat

Section 800 – Coarse Aggregate

Section 802—Coarse Aggregate for Asphaltic Concrete

Section 820 – Asphalt Cement

Section 828—Hot Mix Asphaltic Concrete Mixtures

Section 831 – Admixtures

Section 882 – Lime

Section 883 – Mineral Filler

###### **B. Referenced Documents**

AASHTO T 209

AASHTO T 202

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## **Section 415—Asphaltic Concrete Open Graded Crack Relief Interlayer**

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AASHTO T 49

AASHTO T 315

Department of Transportation Standard Operating Procedure (SOP) 27

Department of Transportation Standard Operating Procedure (SOP) 15

Department of Transportation Standard Operation Procedure (SOP) 40

GDT 38

GDT 73

GDT 83

GDT 119

GDT 125

GDT 126

GSP 15

GSP 21

QPL 1

QPL 2

QPL 7

QPL 26

QPL 39

QPL 41

QPL 45

### **415.1.03 Submittals**

#### **A. Invoices**

Furnish formal written invoices from a supplier for all materials used in production of HMA when requested by Department. Show the following on the Bill of Lading:

- Date shipped
- Quantity in tons (megagrams)
- Included with or without additives (for asphalt cement)

Purchase asphaltic cement directly from a supplier listed on Qualified Products List 7 and provide copies of Bill of Lading at the Department's request.

#### **B. Paving Plan**

Before starting asphaltic concrete construction, submit a written paving plan to the Engineer for approval. Include the following on the paving plan:

- Proposed starting date
- Location of plant(s)
- Rate of production
- Average haul distance(s)
- Number of haul trucks
- Paver speed feet (meter)/minute for each placement operation
- Mat width for each placement operation
- Number and type of rollers for each placement operation

## **Section 415—Asphaltic Concrete Open Graded Crack Relief Interlayer**

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- Sketch of the typical section showing the paving sequence for each placement operation
- Electronic controls used for each placement operation
- Temporary pavement marking plan

If staged construction is designated in the Plans or contract, provide a paving plan for each construction stage.

If segregation is detected, submit a written plan of measures and actions to prevent segregation. Work will not continue until the plan is submitted to and approved by the Department.

### **C. Job Mix Formula**

Submit to the Engineer a written job mix formula proposed for each mixture type to be used based on an approved mix design. Furnish the following information for each mix:

- Specific project for which the mixture will be used
- Source and description of the materials to be used
- Mixture I.D. Number
- Proportions of the raw materials to be combined in the paving mixture
- Single percentage of the combined mineral aggregates passing each specified sieve
- Single percentage of asphalt by weight of the total mix to be incorporated in the completed mixture
- Single temperature at which to discharge the mixture from the plant
- Theoretical specific gravity of the mixture at the designated asphalt content
- Name of the person or agency responsible for quality control of the mixture during production

Do the following to have the formulas approved in accordance with SOP 40 "Approval of Contractor Job Mix Formulas" and to ensure their quality:

1. Submit proposed job mix formulas for review at least two weeks before beginning the mixing operations.
2. Do not start hot mix asphaltic concrete work until the Engineer has approved a job mix formula for the mixture to be used. No mixture will be accepted until the Engineer has given approval.
3. Provide mix designs for all Asphaltic Concrete Open Graded Crack Relief Interlayer mixtures to be used.
4. After a job mix formula has been approved, assume responsibility for the quality control of the mixtures supplied to the Department according to Subsection 106.01, "Source of Supply and Quantity of Materials."

### **D. Quality Control Program**

Submit a Quality Control Plan to the Office of Materials and Testing for approval. The Quality Control Program will be included as part of the certification in the annual plant inspection report.

## **415.2 Materials**

The requirements established in Section 400 are to be followed for Asphaltic Concrete Open Crack Relief Interlayer production and placement, materials, equipment, and acceptance plans except as noted or modified in this Specification.

Ensure that materials comply with the specifications listed in Table 1.

**Section 415—Asphaltic Concrete Open Graded Crack Relief Interlayer**

**Table 1—Materials Specifications**

Material	Subsection
Asphalt Cement, Grade Specified	820.2
Coarse Aggregates for Asphaltic Concrete	802.2.02
Fine Aggregates for Asphaltic Concrete	802.2.01
Mineral Filler	883.1
Heat Stable Anti-Stripping Additive	831.2.04
Hydrated Lime	882.2.03
Silicone Fluid (When approved by the Office of Materials and Testing)	831.2.05
Bituminous Tack Coat: PG 58-22, PG 64-22, PG 67-22	820.2
Hot Mix Asphaltic Concrete Mixtures	828

**415.2.01 Mix Design Requirements**

The Open Graded Crack Relief Interlayer Mixture shall be formulated to contain approximately 18 to 23 percent in-place air voids after compaction. Use approved mixtures that meet the following mixture control tolerances and design criteria:

**Table 2 – Asphaltic Concrete Open Graded Crack Relief Interlayer Mixture**

Sieve Size	Mixture Control Tolerance, %	Design Gradation Limits, % Passing
		Open Graded Crack Relief Interlayer
3/4 in (19 mm) sieve	±0.0	100
1/2 in (12.5 mm) sieve	±6.1	80 - 100
3/8 in (9.5 mm) sieve	±5.6	40 - 65
No. 4 (4.75 mm) sieve	±5.7	10 - 25
No. 8 (2.36 mm) sieve	±4.6	2 - 8
No. 200 (75 µm) sieve	±2.0	1 - 4
Range for % AC	±0.4	4.50 - 5.25
Class of stone (Section 800)		"A" only
Drain-down (AASHTO T305), %		<0.3
Design optimum air voids (%)		22% ±1
Control Sieves used in Acceptance Schedule		3/8 in., No. 8 (9.5 mm, 2.36 mm ) and Asphalt Cement

**Notes:**

1. Use only PG 64-22 or PG 67-22 asphalt cement (specified in Section 820).
2. Use no less than 1.0% hydrated lime regardless of aggregates group or source(s) used.
3. Ensure no more than 10 percent Recycled Asphalt Pavement (RAP) is used in Asphaltic Concrete Open Graded Interlayer mixtures.
4. Quality Acceptance Test Results for AC content deviating > ± 0.3 % from the approved Job Mix Formula (JMF) consistently over three Lots may subject the mix to a revised AC content on the project JMF at the discretion of the State Materials Engineer based on statistical trend.
5. Range for % AC is Original Optimum AC (OOAC) at 50 blow Marshall or 50 gyrations prior to the Corrected Optimum

## Section 415—Asphaltic Concrete Open Graded Crack Relief Interlayer

AC (COAC) calculation detailed in SOP 2 (Appendix D).

### 415.3 Construction Requirements

The requirements established in Section 400 are to be followed for asphaltic concrete mixture production and placement, materials, equipment, and acceptance plans except as noted or modified in this Specification.

#### 415.3.01 Personnel

General Provisions 101 through 150.

#### 415.3.02 Construction

Asphaltic concrete plants that produce mix for Department use are governed by Quality Assurance for Hot Mix Asphaltic Concrete Plants in Georgia, Laboratory Standard Operating Procedure No. 27.

Follow requirements established in Section 400 for production and placement, materials, equipment, acceptance plans and adjustments except as noted or modified in this Specification.

- A. Apply the bituminous tack coat according to Section 413. The Engineer will determine the application rate, which must be within the limits of 0.07 gal/yd<sup>2</sup> to 0.10 gal/yd<sup>2</sup> (0.32 L/m<sup>2</sup> to 0.45 L/m<sup>2</sup>) (residual asphalt cement).
- B. The mix shall be produced and placed at a temperature of 250°F with a tolerance of ± 20°F.
- C. Place the mix to a compacted lift thickness of 1-inch (25 mm). For construction purposes, the target thickness will be converted to spread rate based on the bulk specific gravity of the asphaltic concrete mixture being used as shown in the following equation:  
$$\text{Spread rate (lbs/yd}^2\text{)} = t * G_{mb} * 46.8 \quad (\text{Spread rate (kg/m}^2\text{)} = t * G_{mb})$$

Where: t = Compacted lift thickness (inches, mm)  
G<sub>mb</sub> = bulk specific gravity of the mix from the approved mix design

The spread rate shall be controlled within 10 lbs/yd<sup>2</sup> (6 kg/m<sup>2</sup>).

- D. Do not place mix at air temperatures below 50 °F (10 °C).
- E. The mix shall be compacted in a manner to achieve 18 to 23 percent in-place air voids. Steel wheel rollers operating in static mode *only* will be used to seat the lift of Asphaltic Concrete Open Graded mixture. Pneumatic tire rollers shall not be allowed on the Asphaltic Concrete Open Graded Crack Relief Interlayer mat.

### 415.4. Measurement

Asphaltic Concrete Open Graded Crack Relief Interlayer mixture, complete, in place and accepted, is measured in tons (megagrams). If the spread rate exceeds the upper limits outlined in Subsection 415.3.02.C, the mix in excess will not be paid for. If the rate of the spread is less than the lower limit, the deficient course is subject to correction by overlaying the entire lot. The mixture used for correcting deficient areas is paid for at the Contract Unit Price of the course being corrected and is subject to mixture control requirements established in Table 1 – Asphaltic Concrete Open Graded Crack Relief Interlayer Mixture Design and Control. After the deficient course has been corrected, the total spread rate for that lot is recalculated, and the mix in excess of the upper limits outlined in Subsection 415.3.02.C will not be paid for.

### 415.5 Payment

Asphaltic Concrete Open Graded Crack Relief-Interlayer mix is paid for at the Contract Unit Price per ton (megagram). Payment is full compensation for furnishing and placing materials including asphalt cement, hydrated lime, approved additives, and for cleaning and repairing, preparing surfaces, hauling, mixing, spreading, rolling, and performing other operations to complete the Contract Item.

Payment will be made under:

Item No. 415	Asphaltic Concrete Open Graded Crack Relief Interlayer, group-blend, including bituminous materials and hydrated lime	Per ton (megagram)
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## **Section 415—Asphaltic Concrete Open Graded Crack Relief Interlayer**

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### **415.5.01 Adjustments**

#### **A. Materials Produced and Placed During the Adjustment Period**

Follow requirements established in Section 400 for production and placement, materials, equipment, acceptance plans and adjustments except as noted or modified in this Specification.

Asphaltic Concrete Open Graded Crack Relief Interlayer shall be granted an adjustment period for the first Lot or day, whichever is less, produced for the Contract. A new adjustment period shall not be granted for a change of producer, mix design or asphalt plant location. The adjustment period is provided to adjust or correct the mix and to establish the construction procedures and sequence of operations. Test the mixture in accordance with Section 400.3.06. Maintain the asphalt cement content and gradation within the limits provided in Table 1 – Asphaltic Concrete Open Graded Interlayer Mixture Design and Control. The Engineer will not use these test results in the acceptance for payment decision but production and placement operations shall cease for failure to meet mixture control tolerances established in Table 1 – Asphaltic Concrete Open Graded Interlayer Mixture Design and Control.

### **415.5.02 Determine Lot Acceptance**

The Engineer will accept the mixture based on visual inspection. The mixture shall be inspected for texture, segregation, bleeding, fat spots, raveling, delamination, tearing, targeted in-place air void content and slippage areas. Remove and replace any areas determined to be unacceptable to the Engineer.

Office of Materials and Testing

**RDOT**  
**DEPARTMENT OF TRANSPORTATION**  
**STATE OF GEORGIA**

**SPECIAL PROVISION**

**Section 802—Aggregates for Asphaltic Concrete**

Delete Subsection 802.2.02 and substitute the following:

**802.2.02 Coarse Aggregate for Asphaltic Concrete**

**A. Requirements**

**1. Types**

Ensure coarse aggregate meets the following requirements:

- Class A or B crushed stone, gravel, slag, or synthetic aggregate as in Subsection 800.2.
- Have uniform quality throughout without any deleterious substances.
- Meet the required performance characteristics when combined into a mixture.

**NOTE:** Do not use alluvial gravel as virgin aggregate.

**2. Groups**

Coarse aggregate shall be one of either group below as specified in the composition Table in Subsection 828.2.A.2:

- Group I—Limestone, dolomite, marble, or combination thereof
- Group II—Gravel, slag, granite and gneissic rocks, quartzite, or combination thereof

**3. Aggregate for Stone Matrix Asphalt**

Use coarse aggregate that meets requirements of this Section and Section 800 except as follows:

- Use Class A aggregate only with percent wear of each individual size not to exceed 45 percent based on the B grading of AASHTO T 96
- Use aggregate that meets section 828.2.02 (Stone Matrix Asphalt Mixtures).
- Do not blend aggregates meeting abrasion requirements with aggregates not meeting requirements.

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

Test as follows:

Test	Method
Coarse Aggregate	Subsection 800.2.01.C

**D. Materials Warranty**

General Provisions 101 through 150.

Office of Materials and Testing

November 17, 2006  
Revised: May 30, 2012  
Revised: November 16, 2012  
July 10, 2013  
Revised: June 22, 2016

**RDOT**  
**DEPARTMENT OF TRANSPORTATION**  
**STATE OF GEORGIA**

**SUPPLEMENTAL SPECIFICATION**

**Section 812—Backfill Materials**

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*Delete Section 812 and substitute the following:*

**812.1 General Description**

This section includes the requirements for four types of material used as backfill: foundation backfill, Types I and II, imperfect trench backfill, Type III, and mechanically stabilized wall backfill.

**812.1.01 Related References**

**A. Standard Specifications**

Section 810—Roadway Materials

**B. Referenced Documents**

AASHTO T 11

AASHTO T 27

AASHTO T 96

AASHTO T 104

GDT 4

GDT 6

GDT 7

GDT 24a

GDT 24b

GDT 67

GDT 75

GDT 98

SOP 1

**812.2 Materials**

**812.2.01 Foundation Backfill, Type I**

**A. Requirements**

1. Use natural or artificial mixtures of materials consisting of hard, durable particles of sand or stone, mixed with silt, clay and/or humus material for Type I backfill.
2. Have the final blend of material meet the requirements of Class I or II soils in Subsection 810.2.01.

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

Test as follows:

Test	Method
Soil gradation	GDT 4
Volume change	GDT 8
Maximum density	GDT 7 or GDT 67

**D. Materials Warranty**

General Provisions 101 through 150.

**812.2.02 Foundation Backfill, Type II**

**A. Requirements**

**1. Type**

Use material meeting the requirements of Section 800, Class A or B aggregate, and SOP 1. Crushed concrete may be used provided it meets the requirements of Section 800 that are applicable to Group 2 Aggregates.

Do not use backfill aggregate containing soil or decomposed rock.

**2. Gradation**

Use material meeting the following gradation requirements:

Sieve Size	% Passing by Weight
1-1/2 in (37.5 mm)	100
1 in (25 mm)	80-100
No. 8 (2.36 mm)	0-5

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

Test as follows:

Test	Method
Sieve analysis	AASHTO T 27

**D. Materials Warranty**

General Provisions 101 through 150.

**812.2.03 Imperfect Trench Backfill, Type III**

**A. Requirements**

**1. Type**

Use material made from either of the following for Type III backfill:

- A natural soil with a density of less than 95 lb/ft<sup>3</sup> (1520 kg/m<sup>3</sup>) when tested with GDT 7
- An artificial mixture of soil and organic material, such as hay, leaves, or straw

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

The laboratory will:

1. Test the soil density with GDT 7.
2. Review the mixture and the percentages of each material, and approve a mixture suitable for the Project.

**D. Materials Warranty**

General Provisions 101 through 150.

**812.2.04 Mechanically Stabilized Embankment Backfill**

**A. Requirements**

Use material comprised of crushed stone, natural sand, or a blend of crushed stone and natural sand free of soils, organic or any other deleterious substances meeting the following additional requirements:

**1. Crushed Stone**

Use a material manufactured from Class A or B stone that is free of soil overburden, has a soundness loss of not more than 15 percent, and conforms to the requirements of SOP 1.

**2. Natural Sand**

May be used in conjunction with an approved, non-corrodible, extensible reinforcement. Use non-plastic material consisting of strong, hard, durable particles having a durability index of at least 70. Use Natural Sand from an approved source on Qualified Products List - 1 or from a source approved by the Office of Materials and Testing. Requirements for approval will be provided by the Geotechnical Bureau.

**3. Gradation**

Sieve Size	% Passing by Weight
4 in (100 mm)	100
2 in (50 mm)	80 -100
No. 10 (2 mm)	20 - 90*
No 200 (75 μm)	0 - 15
* Natural Sand may be 20 - 100	

**4. Chemical**

Ensure the material meets the following chemical requirements:

Test Method	Requirement
pH	*5.0 – 9.5
Resistivity	>3000 ohms/cm
Chlorides	<100 ppm
Sulfates	<200 ppm
Note: These chemical requirements are not applicable to MSE walls stabilized with an approved, non-corrodible, extensible reinforcement.	

\*Sources of select backfill material having a pH between 4.5 and 5.0 may be used provided the interior face of the MSE wall panels have 3 inches of concrete cover over the reinforcement and the concrete used in the panels contains the following ingredients and proportions:

Material	% by Weight	
	Minimum	Maximum
Cement	30	--
Type F Fly Ash	10	20
Slag	50	60
Type F Fly Ash and Slag	--	70

5. Maximum Dry Density

Use backfill material with a maximum dry density equal to or greater than the design unit weight shown on the plans.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test the material as follows:

Test Method	Requirement
Percent Wear	AASHTO T96 ("A" Grading)
Sieve Analysis	AASHTO T 27
Material Passing No. 200 (75 µm) Sieve	AASHTO T 11
Durability Index	GDT 75
Maximum Dry Density	GDT 7 or GDT 24a, GDT 24b
Soundness (Magnesium Sulfate)	AASHTO T 104
pH	GDT 98
Resistivity	GDT 98
Chlorides	GDT 98
Sulfates	GDT 98

**RDOT**  
**DEPARTMENT OF TRANSPORTATION**  
**STATE OF GEORGIA**

**SUPPLEMENTAL SPECIFICATION**

**Section 828—Hot Mix Asphaltic Concrete Mixtures**

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*Delete Section 828 and substitute the following:*

**828.1 General Description**

This specification includes the requirements for hot mix asphaltic concrete mixtures, including:

- Open-graded surface mixtures (OGFC and PEM)
- Stone Matrix Asphalt mixtures (SMA)
- Superpave mixtures
- Fine-graded (4.75 mm) mixtures

**828.1.01 Definitions**

The Nominal Maximum Sieve Size is one standard sieve size larger than the first sieve to retain more than ten percent of the aggregate, per AASHTO R35. Mixture types in this section are identified according to Nominal Maximum Sieve Size.

**828.1.02 Related References**

**A. Standard Specifications**

Section 400—Hot Mix Asphaltic Concrete Construction

Section 800—Coarse Aggregate

Section 802—Aggregates for Asphaltic Concrete

Section 819—Fiber Stabilizing Additives

Section 820—Asphalt Cement

Section 831—Admixtures

Section 882—Lime

Section 883—Mineral Filler

**B. Referenced Documents**

AASHTO R30

AASHTO R35

AASHTO T 321

AASHTO T 112

AASHTO T 209

AASHTO T 312

AASHTO T 245

AASHTO T 340

SOP-36

SOP-2

GDT 1

GDT 56

GDT 63

GDT 66

GDT 114

GDT 115

GDT 123

GDT 127

QPL 1

QPL 2

QPL 7

QPL 26

QPL 41

QPL 77

QPL 81

## **828.2 Materials**

### **A. Requirements**

Use approved hot mix asphalt concrete mixtures that meet the following requirements:

1. Produce each asphalt mixture according to a Department approved Job Mix Formula and Asphalt Mix Design, see Subsection 400.1 for submittal and approval of Job Mix Formulas.
2. Ensure individual acceptance test results meet the Mixture Control Tolerances specified in the appropriate table below, Subsections 828.2.01 through 828.2.04.
3. Ensure the Engineer approves all materials used to prepare and place the mixtures before incorporating them into the Work. Use only the ingredients listed in the approved Asphalt Mix Design and Job Mix Formula. For virgin aggregates use sources meeting the requirements of Section 802 and are listed in QPL 1 or QPL 2; for mixes in which local sand is permitted, use the approved sand source identified in the mix design. For mixtures containing Reclaimed Asphalt Pavement (RAP), use only RAP from the approved stockpile identified in the mix design. Use asphalt cement meeting the requirements of Section 820, from a source listed in QPL 7.
4. Obtain approved SMA mix designs, Superpave mix designs and 4.75 mm mix designs from a mix design laboratory certified by the Department. Obtain approved mix designs for types PEM and OGFC mixtures from the Department's Office of Materials, which produces and furnishes these mix designs.
5. Ensure all SMA mix designs are designed in accordance with GDT-123 ("Determining the Design Proportions of Stone Matrix Asphalt Mixtures"). Ensure SMA mix designs are verified and approved by the Department prior to use. Ensure Superpave and 4.75 mm mix designs are designed in accordance with SOP-2, ("Control of Superpave Bituminous Mixture Designs") and are approved by the Department as provided therein. Ensure these mixes are designed by a laboratory and technician certified in accordance with SOP-16, ("Certification of Laboratories and Personnel for Design of SMA and Superpave Asphalt Mixtures").
6. Use only mixtures composed of the aggregate groups and blends indicated in the Proposal and Plans by their pay item designations, defined as follows:

<b>Pay Item Designation</b>	<b>Allowable Aggregate Groups</b>
Group I or II	Group I, Group II, or Blend I
Group II only	Group II only
Blend I	Either 100% Group II material or a blend of Group I and Group II. Do not use Group I material for more than 60%, by weight, of the total aggregate nor

more than 50%, by weight, of the coarse aggregate fraction.

7. For patching or leveling use Group I, Group II, or Blend I. Mix types for patching and leveling are specified in Subsection 400.3.03.B.
8. Include lime (hydrated lime) from an approved source and meeting the requirements of Section 882 in all paving courses except as otherwise provided in the Contract. For a list of approved sources of lime, see QPL 41.
  - a. Add lime to each mixture at the rate prescribed in the approved mix design.
  - b. Ensure mix designs using only virgin aggregate include lime at a minimum rate of 1.00 % of the total dry aggregate weight. Ensure mix designs using RAP include lime at a minimum rate equal to 1.00 % of the virgin aggregate fraction plus 0.50 % of the aggregate in the RAP fraction.
  - c. Add more lime or add lime plus an approved Heat-Stable Anti-Stripping Additive meeting the requirements of Section 831, if necessary to meet requirements for mixture properties, and pursuant to an approved mix design. However, the Department will not make additional payment for these materials. For a list of sources of Heat-Stable Anti-Stripping Additives, see QPL 26.
  - d. Where specifically allowed in the contract on LARP, airport, and parking lot projects, an approved Heat-Stable Anti-Stripping Additive meeting the requirements of Section 831 may be substituted for hydrated lime. Ensure the mix gradation is adjusted to replace the lime with an equivalent volume of fines passing the 0.075 mm sieve. Add Heat-Stable Anti-stripping Additive at a minimum rate of 0.5 percent of the asphalt cement portion.
9. Use performance grade PG 64-22 or PG 67-22 asphalt cement in all mix designs and mixtures except as follows:
  - a. The State Materials Engineer will determine the performance grade to be used, based on Table 2 – Binders Selection Guideline for Reclaimed Asphalt Pavement (RAP) Mixtures, AASHTO M323 and laboratory testing results as required in Section 828.2.B for mixtures containing  $\geq 25\%$  equivalent binder replacement for RAP/RAS mixtures.
  - b. Use only grade PG 76-22, excluding shoulder construction in the following mixes: all SMA, 12.5 mm PEM, 9.5 mm and 12.5 mm OGFC, 12.5 mm Superpave, on projects with ADT greater than 25,000; and in all mixtures for which polymer-modified asphalt is specified in the pay item.
10. Use of local sand is restricted as follows:
  - a. Do not place mixtures containing local sand on the traveled way of the mainline or ramps of the Interstate System. Mixtures with local sand may be used for shoulder construction on these facilities.
  - b. Ensure local sand will not constitute more than 20 % of the total aggregate weight of any mix design or production mix.
  - c. Subject to the above limits, 19 mm, 12.5 mm, and 9.5 mm Superpave mix designs and 4.75 mm mix designs containing local sand may be used on projects with a current ADT not exceeding 2,000.
  - d. 25 mm Superpave mix designs containing not more than 20 % local sand may be used on all facilities except the main line and ramps of the Interstate System.
  - e. Obtain local sand for use in asphalt mixtures from a source approved by the Department.
  - f. Approval of local sand sources: The Department will sample, test, and approve sources of local sand. Ensure local sand contains no more than 7.0 % clay by weight and is free of foreign substances, roots, twigs, and other organic matter. Ensure sand is free of clay lumps, as determined by AASHTO T 112, and has a sand equivalent value exceeding 25%, as determined by GDT 63.

#### B. Fabrication

1. Design procedures: For all Superpave and 4.75 mm mixes, ensure conformance with the Superpave System for Volumetric Design (AASHTO T 312 and AASHTO R30), as adapted in SOP-2. Ensure Superpave mixes are designed at a design gyration number ( $N_{des}$ ) of 65 gyrations and initial gyration number ( $N_{ini}$ ) of 6 gyrations. Ensure 4.75 mm mixes, ( $N_{des}$ ) are designed at 50 gyrations, and ( $N_{ini}$ ) at 6 gyrations. Open-graded mix designs will be designed by the Department in accordance with GDT 114. In all cases, the procedure for measuring Maximum Specific Gravity ( $G_{mm}$ ) is AASHTO T 209. In addition to gradation and volumetric analysis, ensure mix designs include the following performance tests, as applicable.
  2. Performance Test:
    - a. Permeability test: Ensure Superpave and Stone Matrix mix designs include testing according to GDT -1 Measurement of Water Permeability of Compacted Asphalt Paving Mixtures. Ensure specimen air voids for this test are  $6.0 \pm 1.0\%$ . The average permeability of three specimens may not exceed 3.60 ft per day ( $125 \times 10^{-5}$  cm per sec).

- b. **Moisture susceptibility test:** Ensure mix designs of all types except open-graded surface mixes include testing for moisture susceptibility according to GDT 66. Ensure specimen air voids for this test are  $7.0 \pm 1.0\%$  for all mixes excluding Stone Matrix mixes. Ensure specimen air voids for this test are  $6.0 \pm 1.0\%$  for Stone Matrix mixes. The minimum tensile splitting ratio is 0.80, except a tensile splitting ratio of no less than 0.70 may be acceptable if all individual strength values exceed 100 psi (690 kPa). Ensure average splitting strength of the three conditioned and three controlled samples are not less than 60 psi (415 kPa) for either group. Ensure retention of coating as determined by GDT 56 is not less than 95%.
- c. **Rutting susceptibility test:** Ensure mix designs of all types except Open-graded Surface Mixes (OGFC and PEM), and mixtures designed exclusively for trench widening include testing according to GDT 115 or AASHTO T 340. Design limits for this test are as follows: Ensure specimen air voids for this test are  $5.0 \pm 1.0\%$  for all mix types excluding SMA mixtures incorporating  $\geq 15$  percent RAP. Ensure specimen air voids for this test are  $6.0 \pm 1.0\%$  for all mix types excluding SMA mixtures incorporating  $< 15$  percent RAP. Ensure specimen air voids for this test are  $6.0 \pm 1\%$  for all SMA mixtures. Ensure testing temperature is  $64^\circ\text{C}$  ( $147^\circ\text{F}$ ) for all mix types except 19 mm and 25 mm Superpave mixes, which are to be tested at  $49^\circ\text{C}$  ( $120^\circ\text{F}$ ). Ensure maximum deformation is 5.0 mm for all mixes except 4.75 mm mix, 9.5 mm Types I and II Superpave mixes. Ensure maximum deformation for the 9.5 mm Type II Superpave mix is 6.0 mm at  $64^\circ\text{C}$  ( $147^\circ\text{F}$ ) and 8.0 mm at  $64^\circ\text{C}$  ( $147^\circ\text{F}$ ) for the 4.75 mm and 9.5 mm Type I Superpave mix.
- d. **Fatigue testing:** The Department may verify dense-graded mix designs by fatigue testing according to AASHTO T 321 or other procedure approved by the Department.
- e. **Hamburg Wheel-Tracking Test:** The Department may verify Warm Mix Asphalt dense-graded mix designs or mix designs incorporating Polyphosphoric Acid (PPA) modified binders by Hamburg Wheel-tracking testing according to AASHTO T 324.

**C. Acceptance**

See Subsection 106.03 and Section 400. Ensure individual test results meet the Mixture Control Tolerances listed in Subsections 828.2, 828.2.01, 828.2.02, 828.2.03, or 828.2.04, whichever applies with the following exception. Ensure field verification results for rutting susceptibility tests performed on laboratory fabricated and/or roadway cores obtained from asphalt plant produced mixtures meet specified requirements with a tolerance of  $\pm 2.0$  mm.

**D. Materials Warranty**

See General Provisions 101 through 150.

**828.2.01 Open-Graded Surface Mixtures**

**A. Requirements**

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure Open-Graded Surface Mixtures meet the following mixture control tolerances and mix design criteria:

Sieve Size	Mixture Control Tolerance, %	Design Gradation Limits, % Passing		
		9.5 mm OGFC	12.5 mm OGFC	12.5 mm PEM
3/4 in (19 mm) sieve	$\pm 0.0$		100*	100*
1/2 in (12.5 mm) sieve	$\pm 6.1$	100*	85-100	80-100
3/8 in (9.5 mm) sieve	$\pm 5.6$	85-100	55-75	35-60
No. 4 (4.75 mm) sieve	$\pm 5.7$	20-40	15-25	10-25
No. 8 (2.36 mm) sieve	$\pm 4.6$	5-10	5-10	5-10
No. 200 (75 $\mu\text{m}$ ) sieve	$\pm 2.0$	2-4	2-4	1-4
Range for % AC	$\pm 0.4$	6.0-7.25	5.75-7.25	5.5-7.0
Class of stone (Section 800)		"A" only	"A" only	"A" only
Drain-down (GDT 127), %		<0.3	<0.3	<0.3

\* Mixture control tolerance is not applicable to this sieve for this mix.

- 1. In 12.5 mm and 9.5 mm OGFC and 12.5 mm PEM mixes, use only PG 76-22 asphalt cement (specified in Section 820).

2. Ensure all OGFC and PEM mixes include a stabilizing fiber of the type (cellulose or mineral) specified in the mix design and meeting the requirements of Section 819. Ensure the dosage rate is as specified in the mix design and sufficient to prevent drain-down exceeding the above tolerance.

**B. Fabrication**

See Section 400.

**828.2.02 Stone Matrix Asphalt Mixtures**

**A. Requirements**

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure Stone Matrix Asphalt mixtures meet the following mixture control tolerances and mix design criteria:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		9.5 mm SMA	12.5 mm SMA	19 mm SMA
1-in (25 mm) sieve	±0.0			100*
3/4 in (19 mm) sieve	±7.0	100*	100*	90-100
1/2 in (12.5 mm) sieve	±6.1	98-100**	85-100	44-70
3/8 in (9.5 mm) sieve	±5.6	70-100	50-75	25-60
No. 4 (4.75 mm) sieve	±5.7	28-50	20-28	20-28
No. 8 (2.36 mm) sieve	±4.6	15-30	16-24	15-22
No. 50 (300 µm) sieve	±3.8	10-17	10-20	10-20
No. 200 (75 µm) sieve	±2.0	8-13	8-12	8-12
Range for % AC (Note 1)	±0.4 (Note 2)	6.0-7.5	5.8-7.5	5.5-7.5
Design optimum air voids (%)		3.5 ±0.5	3.5 ±0.5	3.5 ±0.5
% aggregate voids filled with AC (VFA)		70-90	70-90	70-90
Tensile splitting ratio after freeze-thaw cycle GDT-66		80%	80%	80%
Drain-down (GDT 127), %		<0.3	<0.3	<0.3

\*Mixture control tolerance is not applicable to this sieve for this mix.

\*\*Mixture control tolerance is ± 2.0% for this sieve for 9.5 mm SMA mixes placed at spread rates greater than 135 lb/yd<sup>2</sup>. For 9.5 mm SMA mixes placed at spread rates of 135 lb/yd<sup>2</sup> or less, 100 % passing is required on this sieve.

Note 1: Range for % AC is Original Optimum AC (OOAC) at 35 gyrations (Gyratory compactor) or 50 blows (Marshall compactor) prior to Corrected Optimum AC (COAC) calculation detailed in GDT 123 (Appendix A)

Note 2: Quality Acceptance Test Results for AC content that deviate > ± 0.3% from the approved Job Mix Formula (JMF) consistently over three lots may subject the mix to a revised AC content on project JMF at the discretion of the State Materials Engineer based on statistical trend.

1. Ensure SMA mixtures are compacted at 35 gyrations with the Superpave Gyratory compactor or 50 blows with the Marshall compactor.
2. Ensure SMA mixtures contain mineral filler and fiber stabilizing additives and meet the following requirements:
  - a. Asphalt cement grade PG-76-22 (specified in Section 820) is required in all SMA mixtures.
  - b. Aggregates for SMA meet the requirements of Subsection 802.2.02.A.3.
  - c. Use the approved mineral filler specified in the mix design and meeting the requirements of Section 881. Approved sources of mineral filler are listed in QPL 81.

Use the approved Fiber Stabilizing Additive of the type (cellulose or mineral) specified in the mix design and meeting the requirements of Section 819. Approved sources of Fiber Stabilizing Additive are listed in QPL 77. The dosage rate will be as specified in the mix design and sufficient to prevent drain-down exceeding the above tolerance.

**B. Fabrication**

See Section 400.

**828.2.03 Superpave Asphalt Concrete Mixtures**

**A. Requirements for Superpave Mixtures (except Parking Lot Mixtures)**

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure Superpave Asphalt Concrete mixtures meet the following mixture control tolerances and mix design limits:

1. Gradation limits for Superpave mixtures are as follows:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing				
		9.5 mm Superpave Type I	9.5 mm Superpave Type II	12.5 mm Superpave (Note 1)	19 mm Superpave	25 mm Superpave
1½ in (37.5 mm)						100*
1- in (25.0 mm)	± 8.0			100*	100*	90-100
¾ in (19.0 mm)	±8.0**	100*	100*	98-100****	90-100	55-89**
½ in (12.5 mm)	±6.0***	98-100****	98-100****	90-100	80-89***	50-70
⅜ in (9.5 mm)	±5.6	90-100	90-100	70-89	55-75	
No. 4 (4.75 mm) s	±5.6	65-85	55-75			
No. 8 (2.36 mm)	±4.6	48-55	42-47	38-46	32-36	30-36
No. 200 (75 µm)	±2.0	5.0-7.0	5.0-7.0	4.5-7.0	4.0-6.0	3.5-6.0
Range for % AC (Note 3)	± 0.4 (Note 2)	5.50-7.25	5.25-7.00	5.00-6.25	4.25-5.50	4.00-5.25

\* Mixture control tolerance is not applicable to this sieve for this mix.

\*\* Ensure mixture control tolerance is within ± 10.0% for this sieve for 25 mm Superpave.

\*\*\*Ensure mixture control tolerance is within ± 8.0% for this sieve for 19 mm Superpave.

\*\*\*\*Ensure mixture control tolerance is within ± 2.0% for this sieve for 12.5 mm and 9.5 mm mixes.

Note 1: Use PG 76-22 in 12.5 mm Superpave, excluding shoulder construction, on all projects with ADT greater than 25,000 as detailed in the Contract Pay Item.

Note 2: Quality Acceptance Test Results for AC content deviating > ± 0.3 % from the approved Job Mix Formula (JMF) consistently over three Lots may subject the mix to a revised AC content on the project JMF at the discretion of the State Materials Engineer based on statistical trend.

Note 3: Range for % AC is Original Optimum AC (OOAC) at 65 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

2. Volumetric limits are as follows:

Design Parameter	Mix Type	Limits
% of Max. Specific Gravity (Gmm) at design gyrations, (Ndes)	All	96%
% Gmm at the initial number of gyrations, Ni	All	91.5% maximum
% voids filled with asphalt (VFA) at Ndes	9.5 mm Type I	Min. 72; Max. 80
	9.5 Type II and 12.5 mm	Min. 72; Max. 76
	19 mm	Min. 71; Max. 76
	25 mm	Min. 69; Max. 76
Fines to effective asphalt binder ratio (F/Pbe)	9.5 mm Type I	0.8 to 1.4
	All other types	0.8 to 1.6
Minimum Film Thickness (microns)*	All	> 7.00
Minimum % Voids in Mineral Aggregate (VMA) Note: VMA shall be calculated using the effective specific gravity of the aggregate (Gse). See SOP-2SP.	25 mm	13.0
	19 mm	14.0
	12.5 mm	15.0
	9.5 Type I	16.0
	9.5 Type II	16.0

\*Superpave Mixtures approved prior to January 31, 2012, may be adjusted to meet Minimum Film Thickness requirements by the State Materials Engineer.

**B. Requirements for Superpave Parking Lot Mixes (NOT FOR STANDARD HIGHWAY/STREET PAVING)**

1. Surface Layers for parking facilities:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		4.75 mm Mix	9.5 mm Superpave Type I	9.5 mm Superpave Type II
1- in (25.0 mm) sieve	± 8.0			
3/4 in (19.0 mm) sieve	±8.0**		100*	100*
1/2 in (12.5 mm) sieve	±6.0	100*	98-100****	98-100****
3/8 in (9.5 mm) sieve	±5.6	90-100	90-100	90-100
No. 4 (4.75 mm) sieve	±5.6	75-95	65-85	55-75
No. 8 (2.36 mm) sieve	±4.6	60-65	48-55	42-47
No. 50 (300 µm) sieve	+3.8	20-50		
No. 200 (75 µm) sieve	±2.0	4-12	5.0-7.0	5.0-7.0
Range for Total AC (Note 1)	+ 0.4 (Note 2)	6.00 - 7.50	5.50 - 7.25	5.25 - 7.00

\* Mixture control tolerance is not applicable to this sieve for this mix.

\*\*\*\*Ensure mixture control tolerance is within ± 2.0% for this sieve for 12.5 mm and 9.5 mm mixes.

Note 1: Range for % AC is Original Optimum AC (OOAC) at 65 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

Note 2: Quality Acceptance Test Results for AC content that deviate  $> \pm 0.3\%$  from the approved Job Mix Formula (JMF) consistently over three lots may subject the mix to a revised AC content on project JMF at the discretion of the State Materials Engineer based on statistical trend.

2. Subsurface Layers for parking facilities:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		12.5 mm Superpave	19 mm Superpave	25 mm Superpave
				100*
1- in (25.0 mm) sieve	$\pm 8.0$	100*	100*	90-100
3/4 in (19.0 mm) sieve	$\pm 8.0^{**}$	98-100****	90-100	55-89**
1/2 in (12.5 mm) sieve	$\pm 6.0^{***}$	90-100	60-89***	50-70
3/8 in (9.5 mm) sieve	$\pm 5.6$	70-89	55-75	
No. 8 (2.36 mm) sieve	$\pm 4.6$	38-46	32-36	30-36
No. 200 (75 $\mu$ m) sieve	$\pm 2.0$	4.5-7.0	4.0-6.0	3.5-6.0
Range for Total AC (Note 1)	+ 0.4 (Note 2)	5.00 - 6.25	4.25 - 5.50	4.00 - 5.25

\*Mixture control tolerance is not applicable to this sieve for this mix.

\*\*Ensure mixture control tolerance is within  $\pm 10.0\%$  for this sieve for 25 mm Superpave mixes.

\*\*\* Ensure mixture control tolerance is within  $\pm 8.0\%$  for this sieve for 19 mm Superpave mixes.

\*\*\*\*Ensure mixture control tolerance is within  $\pm 2.0\%$  for this sieve for 12.5 mm and 9.5 mm Superpave mixes.

Note 1: Range for % AC is Original Optimum AC (OAC) at 65 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

Note 2: Quality Acceptance Test Results for AC content that deviate  $> \pm 0.3\%$  from the approved Job Mix Formula (JMF) consistently over three lots may subject the mix to a revised AC content on project JMF at the discretion of the State Materials Engineer based on statistical trend.

3. Volumetric limits for parking facilities are as follows:

Design Parameter	Mix Type	Limits
% of Max. Specific Gravity (Gmm) at design gyrations, Ndes	All	96%
% Gmm at the initial number of gyrations, Ni	All	91.5 % maximum
% voids filled with asphalt (VFA) at Ndes	9.5 mm Type I	Min. 72; Max. 80
	9.5 Type II and 12.5 mm	Min. 72; Max. 78
	19 and 25 mm	Min. 71; Max 76
Fines to effective asphalt binder ratio (F/Pbe)	9.5 mm Type I	0.8 to 1.4
	All other types	0.8 to 1.6
Minimum Film Thickness (microns)*	4.75 mm	$> 6.00$
	All other types	$> 7.00$
Minimum % Voids in Mineral Aggregate (VMA)	25 mm	13.0
	19 mm	14.0

Note: VMA shall be calculated using the effective specific gravity of the aggregate (G <sub>se</sub> ). See SOP-2	12.5 mm	15.0
	9.5 mm Types I, II	16.0

\* Mixtures approved prior to January 31, 2012, may be adjusted to meet Minimum Film Thickness requirements by the State Materials Engineer.

**C. Fabrication**

See Section 400.

**828.2.04 Fine-Graded Mixtures**

**A. Requirements**

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure that fine-graded mixtures meet the following mixture control tolerances and design limits:

ASPHALTIC CONCRETE - 4.75 mm Mix		
Sieve Size	Mixture Control Tolerance	Design Gradation Limits, % passing
1/2 in (12.5 mm) sieve*	±0.0	100*
3/8 in (9.5 mm) sieve	±5.6	90-100
No. 4 (4.75 mm) sieve	±5.7	75-95
No. 8 (2.36 mm) sieve	±4.6	60-65
No. 50 (300 µm) sieve	±3.8	20-50
No. 200 (75 µm) sieve	±2.0	4-12
Range for % AC (Note 2)	±0.4 (Note 3)	6.00 – 7.50
Design optimum air voids (%)		4.0 – 7.0
% Aggregate voids filled with AC		60 - 80
Minimum Film Thickness (microns) (Note 1)		> 6.00

\* Mixture control tolerance is not applicable to this sieve for this mix.

Note 1: 4.75 mm Mixtures approved prior to January 31, 2012, may be adjusted to meet Minimum Film Thickness requirements by the State Materials Engineer.

Note 2: Range for % AC is Original Optimum AC (OOAC) at 65 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

Note 3: Quality Acceptance Test Results for AC content that deviate > ± 0.3% from the approved Job Mix Formula (JMF) consistently over three lots may subject the mix to a revised AC content on project JMF at the discretion of the State Materials Engineer based on statistical trend.

**B. Fabrication**

See Section 400.

**C. Acceptance**

See Subsection 106.3 and Section 400. Ensure individual test results meet the Mixture Control Tolerances listed in Subsections 828.2, 828.2.01, 828.2.02, 828.2.03, 828.2.04, whichever applies.

**D. Materials Warranty**

See General Provisions 101 through 150.

Office of Materials and Testing

21

# RDOT

DEPARTMENT OF TRANSPORTATION

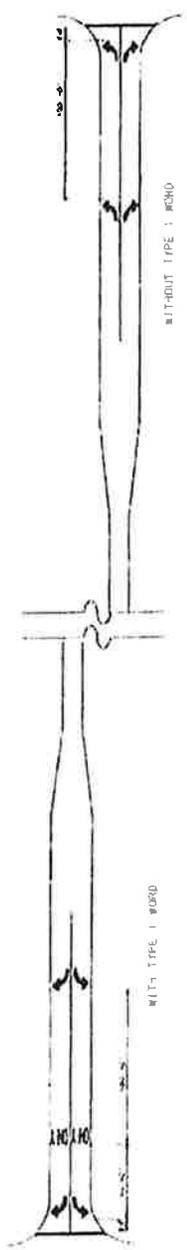
UNIVERSITY OF MARYLAND  
SYSTEM  
BOWEN CENTER FOR TRANSPORTATION

T-1A

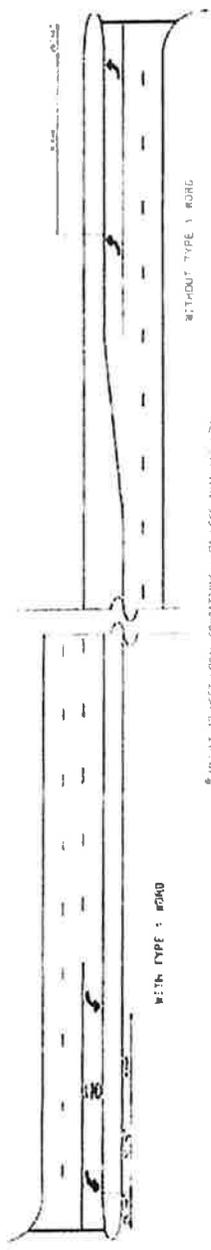
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 CHECKED BY: \_\_\_\_\_

# RDOT

## EXIT RAMP

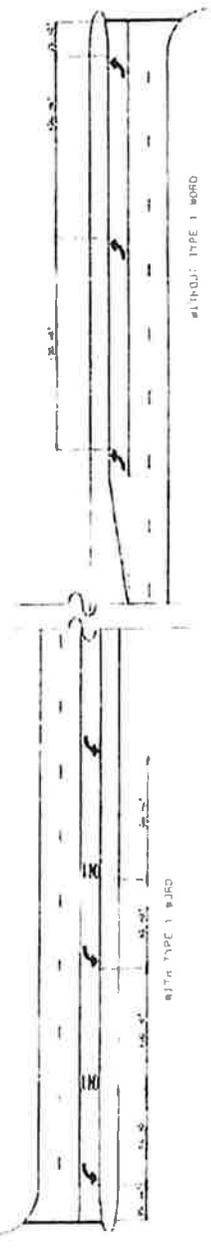


## SHORT TURN LANES



\* ADJUST TO MEET LOCAL CONDITIONS, NOT LESS THAN 20' AND MORE THAN 100'

## LONG TURN LANES



### GENERAL NOTES:

1. SPEC. OF TYPE 2 ROAD IS REPRESENTATIVE OF SPALING FOR USE IN TYPE 3, TYPE 4 & TYPE 5 RAMP.
2. ALL TURNING LANES SHALL HAVE A MINIMUM OF 2 ARCHES.
3. UNIFORM MARKING OR OVERHEAD SIGNING SHALL BE SUPPLEMENTED BY TYPE 1 ROAD.

DATE	REVISIONS	DESIGN DEPARTMENT

DETAILS OF STANDARD MARKING (SEE SPEC.)

NO SCALE

JANUARY 2008



# RDOT

DETAIL "A" (YELLOW)



DETAIL "B" (YELLOW)



DETAIL "C" (YELLOW)



DETAIL "D" (YELLOW)



DETAIL "A" (WHITE)



DETAIL "B" (WHITE)



DETAIL "C" (WHITE)



DETAIL "D" (WHITE)

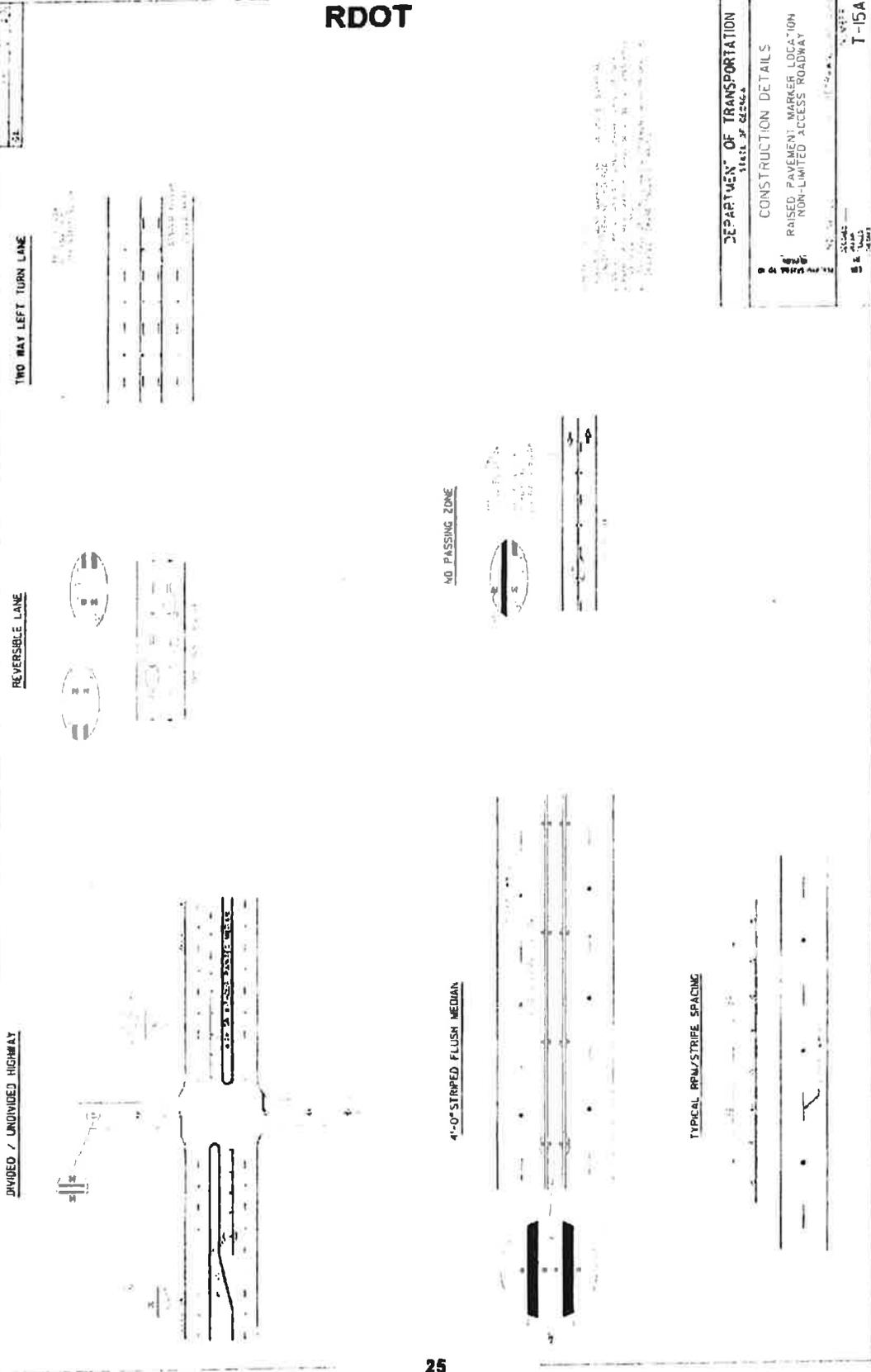


RDOT  
 ROADWAY  
 MARKING  
 PLAN  
 1/4\"/>

**GEORGIA**  
 DEPARTMENT  
 OF  
 TRANSPORTATION

STYLING AND MARKING PLANS

REVISIONS  
 NO. 1  
 DATE 1/1/16



DEPARTMENT OF TRANSPORTATION  
 ROAD & BRIDGE DIVISION  
 CONSTRUCTION DETAILS  
 RAISED PAVEMENT MARKER LOCATION  
 NON-LIMITED ACCESS ROADWAY  
 T-15A







# RDOT

First Use Date 2013 Specifications: November 1, 2013

## DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

### SPECIAL PROVISION

#### Construction Details for Resurfacing and Widening Projects

##### A. General

Perform patching, according to Plan details and the applicable portions of Section 400.

The provisions of Sections 104 and 105 apply when patching operations necessitate traffic control in construction areas.

##### B. Spot Patching and Replacement of Existing Base

1. Complete all removal and patching operations at any one site within the same day.
2. Hand spreading and compaction using mechanical tampers will be required in areas inaccessible to conventional equipment.
3. Patching is paid for according to the Plans and Proposal. Payment includes all removal and replacement work necessary to complete the Item.

##### C. Shoulders

No shoulder construction will be required on Projects that have no widening or new shoulder paving, except where additional shoulder work is shown on the Plans.

For Projects involving pavement widening or paved shoulder construction, the cost of trenching and shoulder construction or reconstruction of the existing shoulders is included in the overall bid submitted.

Ensure trenching and shoulder construction conforms to the following requirements:

1. Trenching consists of the removal, satisfactory disposal and replacement of existing shoulder materials. Ensure trench dimensions are according with Plan details.  
Remove and dispose of all materials excavated from the trench widening operation. Excess material is to be disposed of at an approved soil disposal site. Compact subgrade under widening sections to 95% of the theoretical density as determined by GDT 7, GDT 67, or GDT 24.
2. Where trenching is necessary for widening or paved shoulder construction, complete all operations at any one site to the level of the existing pavement in the same working day.
3. Perform widening operations on only one side of the existing traveled roadway at a time within any one-half-mile (800 m) stretch.

##### D. Other Work

The Department reserves the right to perform, with its own forces, any maintenance or construction work as may be necessary on or near The Work covered by the Contract.

##### E. Enforcement

If the requirements of this Specification are not achieved, the Engineer will cease all Work being performed and may withhold any monies due, or which may become due until the above requirements have been met.

**Department of Transportation  
State of Georgia  
Special Provision  
County: FULTON  
PI No.: M005405**

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**Section 316 – Cement Stabilized Reclaimed Base Construction (CSRB)**

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**316.1 General Description**

This work includes constructing a cement stabilized base course by pulverizing the existing flexible pavement and a predetermined depth of the underlying base course with Portland cement. Construct according to these Specifications and to the lines, grades, thickness, and typical cross-sections shown on the Plans or established by the Engineer.

**316.1.01 Related References**

General Provisions 101 through 150

**A. Standard Specifications**

Section 109—Measurement and Payment

Section 301—Soil Cement Construction

Section 412—Bituminous Prime

Section 814—Soil Base Materials

Section 821—Cutback Asphalt

Section 824-Cationic Asphalt Emulsion

Section 830—Portland Cement

Section 880—Water

**B. Referenced Documents**

GDT 19 – Determining Maximum Density of Soil-Cement mixtures

GDT 20 – Determining Field Density of soils with <45% retained on the No. 10 sieve and < 10% retained on the 1 inch sieve

GDT 21 - Determining Field Density of soils containing >45% retained on the No.10 sieve or >10% retained on the 1 inch sieve

GDT 59 - Testing Density of roadway materials with Nuclear Gauge

GDT 65 – Laboratory Design of Soil-Cement and Cement Stabilized Graded Aggregate

GDT 67 – Family of Curves Method for determining Maximum Density of soils

GDT 86 – Determining the compressive strength of Cement Stabilized Base cores taken from the roadway

## Section 316 – Cement Stabilized Reclaimed Base Construction (CSRB)

### 316.1.02 Submittals

Prior to construction, submit a Construction Work Plan to the Engineer consisting of the proposed equipment, materials, and operation procedures. If the Engineer determines that the Work Plan is not satisfactory, revise the procedures and augment or replace equipment, as necessary, to complete the Work.

### 316.1.03 Mix Design

The Contractor shall submit a mix design to **RDOT Consultant** for approval at least three weeks prior to construction. The Mix Design process shall be completed in accordance with GDOT Test Method/GDT 65 by an accredited materials laboratory. The sampling, testing, proportioning, and documentation shall be completed by an accredited materials laboratory. The Contractor will be responsible for ensuring that appropriate traffic control measures are in place during the sampling operations. In-place samples of the road structure shall be taken at a minimum frequency of 1000 feet per two lanes; alternating the sample locations to achieve a sample every 500 lane-feet. Additional samples may be needed to represent material changes and/or problem areas. Each sample shall contain at least 30lbs of proportionally blended materials to be reclaimed. The Portland cement used in the design process must be from an approved source listed on GDOT's Qualified Products List/QPL3 and representative of the same material to be used in construction.

The mix design submittal to the **RDOT Consultant** shall include the following:

1. Approximately 100lbs of proportionally blended material from all in-place samples taken from the roadway.
2. A one gallon sample (plastic container) of the stabilizer used in the mix design.
3. All Test Data (charts, graphs, spreadsheets, etc.) along with design parameters. Test data should include the target gradation of the blended material, optimum moisture content of mixing, and application rate of the stabilizer to meet the design requirements.

*Note: Since the Mix Design is based on source specific materials, any changes to materials or sources will render the design invalid.*

### 316.2 Materials

Ensure that materials meet the requirements of the following GDOT Standard Specifications:

Material	Section
Blotter material (sand)	<u>412.3.05.G.3</u>
Soil Base Material	<u>814.2.02</u>
Cutback asphalt, RC-30, RC-70, RC-250 or MC-30, MC-70, MC-250, CSS-1h, AE-P, CRS-2	<u>821.2.01</u>
Portland Cement (Type I or Type II)	<u>830.2.01</u>
Water	<u>880.2.01</u>

## **Section 316 – Cement Stabilized Reclaimed Base Construction (CSRB)**

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### **316.3 Construction Requirements**

#### **316.3.01 Personnel**

Ensure that only experienced and capable personnel operate equipment.

#### **316.3.02 Equipment**

Equipment used in CSRB construction must meet the following requirements and be approved by the Engineer prior to the beginning of construction. All equipment shall be in satisfactory condition and capable of its intended purpose. The Engineer may at any time reject any equipment that is deemed unsafe, erratic, or produces an inadequate performance.

*Note: Equipment type, size, operation and condition are subject to the Engineer's approval and must be adjusted and/or replaced upon their request.*

#### **A. Reclaimer**

CSRB will require a reclaimer unit that meets the following requirements:

1. Designed expressly for reclamation capable of pulverizing and mixing through asphaltic pavement, granular/soil base, Subbases, and subgrade down to depths of at least 12 inches.
2. Having a cutting drum with a minimum width of 8ft.
3. Capable of continuously mixing materials to a homogenous blend and at a consistent depth.
4. Powered by an engine of at least 500 horsepower with steerable front and rear wheels.
5. Controlled by an electronic metering system capable of injecting mix water directly into the mixing chamber and has automatic sensors to monitor water application and mixing depth.

#### **B. Spreader**

For CSRB construction, use a cyclone-type mechanical spreader or its equivalent that will spread Portland cement in a relatively dust-free process. Spreader must have an electronic or mechanical metering system which monitors the application rate.

*Note: The use of pneumatic tubes to transfer cement or lime directly onto the roadway will not be allowed.*

#### **C. Additional Equipment (Water Truck, Compaction and Grading equipment, and Prime Distributer)**

Additional equipment necessary to complete the work must be in satisfactory condition and proper for its intended purpose. Compactive equipment includes a sheep's foot roller, vibratory steel wheel roller and a pneumatic rubber tire roller. Use the correct size/type rollers or combination thereof that is capable of achieving the required density. A pressure distributor that complies with GDOT Standard Specifications/Subsection 424.3.02.B will be required to apply the bituminous prime coat.

*Note: Equipment type, size, operation and condition are subject to the Engineer's approval and must be adjusted and/or replaced upon their request.*

#### **316.3.03 Preparation**

Prior to commencing reclaiming operations, blade grass and excess soil a minimum of 12 inches from the edge of pavement. Locate mark and preserve existing centerline, manholes, and utilities (gas, water, and electric lines). Relocate mailboxes and other appurtenances within such proximity to the roadway as to risk damage or

## **Section 316 – Cement Stabilized Reclaimed Base Construction (CSRB)**

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interfere with the work. Remove sections of driveway aprons in the right-of-way where necessary to permit the reclaimer to operate without damaging the machinery or driveway pavement. If necessary, saw-cut a neat parallel line to the proposed edge of pavement and remove the concrete along the road. After all work is complete, replace appurtenances to their original location as nearly as possible.

### **316.3.04 Construction**

#### **A. Weather Limitations**

1. Mix only when the weather permits the course to be finished without interruption and within the time specified.
2. Mix materials only when the moisture of the materials to be used in the mixture meets the specified limits.
3. Begin mixing only when the air temperature is above 40°F in the shade and rising.

#### **B. Moisture Adjustment**

Adjust the moisture content of the roadway materials to within 100 to 120 percent of the optimum moisture immediately before spreading the cement. The optimum moisture content is determined by the Job Mix Design and can be adjusted by the Engineer.

#### **C. Cement Application**

1. Apply cement on days when wind will not interfere with spreading.
2. Apply cement at the rate specified on the Job Mix Design (as established by GDT-65) and mix to the depth shown on the Plans. The Engineer may alter the spread rate during the progress of construction if necessary. Maintain the application rate within  $\pm 10$  percent of that specified by the Engineer.
3. Provide both equipment and personnel to measure the application rate of cement placed. Each tanker of cement shall be checked by using a square yard cloth/certified scales and by determining the overall coverage area of each tanker. Multiple checks may be necessary to ensure that the spread rate is maintained within the  $\pm 10$  percent limit.
4. If the cement content falls below the 10 percent limit in the mixing area, add additional cement to bring the affected area within the tolerance specified, make necessary adjustments to the spreader, and perform additional checks to ensure the problem is corrected. If the cement content is more than the 10 percent limit in the mixing area, the excess quantity will be deducted from the Contractor's pay for cement.
5. Regulate operations to limit the application of cement to sections small enough so that all of the mixing, compacting, and finishing operations can be completed within the required time limits.
6. Pass only spreading and mixing equipment over the spread cement and operate this equipment so that it does not displace cement.
7. Replace damaged cement at no cost to the Department when damage is caused by:
  - a. Hydration due to rain, before or during mixing operations.
  - b. Spreading procedures are contrary to the requirements stated above.
  - c. Displacement by the Contractor's equipment or other traffic.

## **Section 316 – Cement Stabilized Reclaimed Base Construction (CSRB)**

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### **D. Mixing**

1. Begin mixing as soon as possible after the cement is spread, and continue until a homogeneous and uniform mixture is produced. The Engineer at any time may require adjustments or replacement of equipment if a homogeneous and uniform mixture conforming to these Specifications is not achieved.
2. Continue pulverizing until the base mixture is uniform in color and conforms to the following gradation requirements:
  - a. 100 percent passing the 3 inch sieve
  - b. 55 percent of the roadway material, excluding gravel, passes the No. 4 sieve.
3. Add water as needed to maintain or bring the moisture content to within the moisture requirements immediately after the preliminary mixing of the cement and roadway material.
4. Mix the additional water homogeneously into the full depth of the mixture.

### **E. Compaction and Finishing**

1. Test Section
    - a. A test section shall be constructed with the first tanker of cement delivered to the project. The length of the test section will be determined by area in which the entire tanker of cement will cover.
    - b. The Engineer will evaluate compaction, moisture, homogeneity of mixture, thickness of stabilization, and finished base surface. And if the Engineer deems necessary, revise the compaction procedure or replace equipment.
  2. Time Limits
    - a. Complete compaction within 2 hours after the cement has been applied.
    - b. Do not perform vibratory compaction on materials more than 90 minutes old, measured from the time cement was added to the mixture.
    - c. Complete all operations within 4 hours from adding cement to finishing the surface.
  3. Moisture Control
    - a. During compaction, ensure that the moisture is uniformly distributed throughout the mixture at a level of between 100 and 120 percent of the optimum moisture content.
  4. Compaction Requirements
    - a. Use a sheep's foot roller, steel wheel roller or pneumatic-tired roller for initial compactive effort unless an alternate method is approved by the Engineer.
    - b. Compact the cement-stabilized base course to at least 98 percent of the maximum dry density established on the Job Mix Design.
    - c. Uniformly compact the mixture and then shape to the grade, line, and cross-section shown on the Plans.
    - d. Remove all loosened material accumulated during the shaping process. Do not use additional layers of cement-treated materials in order to conform to cross-sectional or grade requirements.
-

## **Section 316 – Cement Stabilized Reclaimed Base Construction (CSRB)**

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- e. Use a pneumatic-tired roller to roll the finished surface until it is smooth, closely knit, and free from cracks or deformations, and conforming to the proper line, grade, and cross-section.
- f. In places inaccessible to the roller, obtain the required compaction with mechanical tampers approved by the Engineer. Apply the same compaction requirements as stated above in Subsection 316.3.04.E.4.
- g. Perform grading operations immediately after the placement and compaction operations. Roll the stabilized base course again with a pneumatic-tired roller.

### **F. Construction Joints**

1. Form a straight transverse joint at the end of each day's construction or whenever the work is interrupted.
2. Create the straight transverse joint by cutting back into the completed work to form a true vertical face free of loose or shattered material.
3. Form the joint at least 2ft from the point where the spreader strike-off plate comes to rest at the end of the day's work, or at the point of interruption.
4. Form a longitudinal joint as described above if cement-stabilized mixture is placed over a large area where it is impractical to complete the full width during one day's work. Use the procedure for forming a straight transverse joint. Remove all waste material from the compacted base.

### **G. Priming the Base**

1. The surface of the completed base course must be moist cured until the bituminous prime is applied.
2. Apply prime only to an entirely moist surface. If weather delays prime application, apply prime as soon as the surface moisture is adequate
3. Apply bituminous prime according to GDOT Standard Specifications/Section 412 as soon as possible and in no case later than 24 hours after completion of the finishing operations.
4. Protect finished portions of the cement-stabilized base course that are used by equipment in the construction of an adjoining section to prevent marring or damaging of the completed work. Protect the stabilized area from freezing during the curing period.

### **H. Opening to Traffic**

1. Correct any failures caused by traffic at no additional cost to the Department. Make repairs specified in GDOT Standard Specifications/Subsection 300.3.06.B, whenever defects appear. This preservation action does not relieve the Contractor of his responsibility to maintain the work until final acceptance as specified in GDOT Standard Specifications/Section 105.

## **316.3.05 Quality Acceptance**

### **A. Compaction Tests**

1. Determine the maximum dry density from representative samples of compacted material, according to GDOT Test Method/GDT 19 or GDT 67.
2. Determine the in-place density of finished courses according to GDOT Test Method/GDT 20, GDT 21 or GDT 59, as soon as possible after compaction, but before the cement sets.

## **Section 316 – Cement Stabilized Reclaimed Base Construction (CSRB)**

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### **B. Gradation Tests**

1. Ensure that the gradation of the completely mixed cement-stabilized base course meets the requirements as stated above in Subsection 316.3.04.D.2.

### **C. Finished Surface Tests**

1. Check the finished surface of the cement-stabilized base course transversely using one of the following tools:
  - a. A template, cut true to the required cross-section and set with a spirit level on non-superelevated sections
  - b. A system of ordinates measured from a stringline
  - c. A surveyor' level
2. Ensure the ordinates measured from the bottom of the template, stringline, or straightedge, to the surface do not exceed  $\frac{1}{2}$  inch at any point.

### **D. Thickness Tolerances**

1. Determine the thickness of the cement-stabilized base course, by making as many checks as necessary to determine the average thickness, but not less than one check per 1000 feet per 2 lanes. Checks shall be taken after the completion of the base course and prior to priming.
2. If any measurement is deficient in thickness by more than  $\frac{1}{2}$  inch, make additional measurements to isolate the affected area. Correct any area deficient by more than  $\frac{1}{2}$  inch to the design thickness by using one of the following methods:
  - a. Apply GDOT approved asphaltic concrete 9.5mm Superpave.
  - b. Reconstruct to the required thickness.

No payment will be made for any Asphaltic Concrete 9.5mm Superpave used to correct deficiencies nor will pavement be made for removing and reconstructing the deficient work.

3. If any measurement is excesses thickness by more than  $\frac{1}{2}$  inch, make additional measurements to isolate the affected area. If the basis of payment is per cubic yard and the average thickness for any mile increment exceeds the allowable  $\frac{1}{2}$  inch tolerance. The excess quantity in that increment will be deducted from the Contractor's payments. The excess quantity is calculated by multiplying the average thickness that exceeds the allowable  $\frac{1}{2}$  inch tolerance by the surface area of the base, as applicable.

## **316.4 Measurement**

### **A. Cement-Stabilized Base Course**

Measure the surface length along the centerline when payment is specified by the square yard. The width is specified on the Plans. Measure irregular areas, such as turnouts and intersections, by the square yard.

### **B. Portland Cement**

Measure Portland cement by the ton.

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**Section 316 – Cement Stabilized Reclaimed Base Construction (CSRB)**

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**C. Bituminous Prime**

Bituminous prime is not measured for separate payment. Include the cost of furnishing and applying bituminous prime according to the provisions of GDOT Standard Specifications/Section 412 in the Unit Price Bid for each individual base item.

**316.5 Payment**

**A. Cement-Stabilized Base Course**

Cement-stabilized base, in-place and accepted, will be paid for at the Contract Unit Price per square yard. Payment will be full compensation for roadbed preparation, mixing on the road, shaping, pulverizing, watering, compaction, defect repair, bituminous prime and maintenance.

**B. Portland Cement**

Portland cement will be paid for at the Contract Unit Price per ton. Payment is full compensation for furnishing, hauling, and applying the material. Only Type I or II Portland cement incorporated into the finished course will be paid for and no payment will be made for cement used to correct defects due to the Contractor's negligence, faulty equipment, or error.

Payment will be made under:

Item No. 301-5000	Cement Treated Base Course	Per square yard
Item No. 301-5000	Portland Cement	Per ton

Office of Materials and Testing

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**2017 SPLOST #3A**

**APPENDIX E**

**Thermoplastic Striping Specifications**



Office of Materials and Testing  
Qualified Products List

Source	Source # / Location	Address	Contact	Product	Acceptance for use for Dry (ASTM E 1710) / Wet (ASTM E 2177)	Trade Name	Color	C.T.T. No.	Material Code
3M Company Traffic Control Materials Div.	24/ St. Paul, MN	3M Center Bldg. 225-55008 P. O. Box 33225 St. Paul, MN 55133-3225 <a href="http://www.mmm.com">www.mmm.com</a>	800-553-1380 651-737-9644	Polyurea	Dry	LPM 1200	Y	----	TRAF65801
				Polyurea	Dry	LPM 1201	W	----	TRAF65802
				Polyurea	Dry	LPM 5000	W	----	TRAF65802
				Polyurea	Dry	LPM 5001	Y	----	TRAF65801
3M Company	74-01/ USA	Traffic Control Materials Division 3M Center Bldg. 225-55008 P.O. Box 33225 St. Paul, MN 55133-3225 <a href="http://www.mmm.com/tcm">www.mmm.com/tcm</a>	651-733-0582 800-553-1380	Tape (PB)	Dry	Stamark Series 380 IES	Y	----	TRAF65706
				Tape (PB)	Dry	Stamark Series 380 IES	W	----	TRAF65702
				Tape (PB-WR)	Dry & Wet	Stamark Series AW380	Y	----	TRAF65708
				Tape (PB-WR)	Wet	WR	W	----	TRAF65707
				Tape (PB-WR)	Dry & Wet	Stamark Series AW380	W	----	TRAF65710
				Tape (TR)	Dry	Stamark Series 710	Y	----	TRAF65704
Advance Traffic Markings	74-02/ USA	P.O. Box H Becker Farms Industrial Park Roanoke Rapids, NC 27870 <a href="http://www.trafficmarking.com">www.trafficmarking.com</a>	252- 536-2574	Tape (TR)	Dry	ATM-200	Y		TRAF65710
				Tape (TR)	Dry	ATM200	W		TRAF65704
				Tape (PA)	Dry	ATM-300	Y		TRAF65705
				Tape (PA)	Dry	ATM-300	W		TRAF65701
				Tape (PA)	Dry	ATM-400	Y		TRAF65705
				Tape (PA)	Dry	ATM-400	W		TRAF65701

**2017 SPLOST #3A**

**APPENDIX F**

**High Density Mineral Bond (HA5®) Specifications**

**SECTION 32 01 13.68**  
**HIGH DENSITY MINERAL BOND SEAL**

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**PART 1 GENERAL**

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**1.1. SECTION INCLUDES**

- A. Application of an asphalt-aggregate *bond* seal coat as a high density roadway surface preservation treatment.

**1.2 REFERENCES**

A. AASHTO Standards:

- T 59 Standard Method of Test for Emulsified Asphalts.  
T 111 Standard Method of Test for Mineral Matter or Ash in Asphalt Materials.

B. ANSI Standards:

- B74.8 Ball Mill Test for Friability of Abrasive Grain.

C. ASTM Standards:

- C 128 Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate.  
C 170 Compressive Strength of Dimension Stone.  
C 1326 Knoop Indentation Hardness of Advanced Ceramics.  
D 1644 Nonvolatile Content (Solids by weight).  
D 2172 Quantitative Extraction of Bitumen From Bituminous Paving Mixtures.  
D 2196 Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield type) Viscometer.  
D 2486 Determining Wear Resistance in Cycles.  
D 2939 Emulsified Bitumens Used as Protective Coatings.  
D 3740 Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.  
D 6937 Determining Density of Emulsified Asphalt.  
D 3960 Determining Volatile Organic Compound Content of Paints and Related Coatings.  
E 70 pH of Aqueous Solutions with the Glass Electrode.

**1.3 SUBMITTALS**

- A. Mix Design: Provide the following. Allow ENGINEER 10 days to evaluate the submittal.
1. Date of mix design. If older than 60 days from date of submission, recertify mix design.
  2. Proportions of aggregate, filler, water, polymer, and emulsion in the mix.

3. Residual in-place bitumen content, in *pounds per square yard*.
4. Residual in-place aggregate or mineral solids content, in *pounds per square yard*.
5. Thickness target for each application coat, in *gallons per square yard*.

High Density Mineral Bond Seal

32 01 13.68 - 1

6. Total minimum thickness, in *gallons per square yard*.
  7. Results of a wear resistance test current within one (1) calendar year of the proposed mix design.
- B. Before Placement: Submit at least 48 hours before delivery.
1. Traffic control plan, Section 01 55 26.
  2. List of construction equipment to be used.
  3. Certificate from emulsion supplier stating emulsion meets requirements in this section.
  4. Names, certification levels, and years of experience of testing agency's field technicians that are assigned to the Work. Verify laboratory complies with ASTM standards.
  5. Warranty.
- C. Reports: If requested by ENGINEER, submit the following.
1. List of five (5) projects that have successful product applications on bituminous surfaces. Provide names of project contacts.
  2. Source and field quality control testing reports performed by CONTRACTOR and Suppliers.

#### 1.4 QUALITY ASSURANCE

- A. Foreman of CONTRACTOR's crew or Supplier's representative has completed at least three (3) projects of similar scope. If crew foreman does not have such experience, Supplier must provide a full-time representative on site during application.
- B. Use a laboratory that complies with ASTM D 3740 and follows Section 01 45 00 requirements.
- C. Verify mixture delivered to site contains the same emulsion specified in the mix design.
- D. Do not change source of the asphalt emulsion or aggregate without supporting changes in the mix design.
- E. Reject product that does not meet requirements.

#### 1.5 WEATHER

- A. Temperature:
  1. Apply surface treatment material if air and pavement surface temperatures in the shade are 55 deg F. and rising.
  2. Cease application if air or pavement surface temperatures are projected to fall below 45 deg F. within 48 hours.
- B. Moisture and Wind:
  1. Do not apply surface treatment material to a wet surface (no visible standing water or high sheen), during rain, 24 hours prior to forecast rain, or in unsuitable windy weather.
  2. Cease work if weather or other conditions prolong opening pavement surface to traffic.

#### 1.6 NOTICE

- A. Follow Laws and Regulations concerning when and to whom notices are to be given at least three (3) days before applying surface treatment material.

- B. Indicate application time and when the surface can be used. If necessary, include a map showing closed-off areas.
- C. Provide phone numbers of at least two (2) individuals who represent the CONTRACTOR who can be reached at any time during the work.
- D. Warn of potential vehicle tow away and other construction issues affecting neighborhood.
- E. Should work not occur on specified day, issue an updated notice.

**1.7 ACCEPTANCE**

**A. General:**

- 1. Acceptance is by Lot.
- 2. If non-complying material has been installed and no price for the material is specified, apply price adjustment against cost of work requiring complying material as part of its installation, Section 01 29 00.
- 3. Dispute resolution, Section 01 35 10.
- 4. Opening surface treatment to vehicular traffic does not constitute acceptance.
- 5. Observation of CONTRACTOR's field quality control testing does not constitute acceptance. Such testing, however, may be used by ENGINEER for acceptance if requirements of Section 01 35 10 are met.

**B. Asphalt Binder:**

- 1. Lot size is total contracted product placement. Sub-lot size is one (1) day's production.
- 2. Of all sub-lot samples collected, randomly select one and test it for the physical properties in this section. The lot is acceptable if this single test meets requirements. If the test does not meet requirements, continue testing other samples for compliance.
- 3. At ENGINEER's discretion, a lot with deficient sub-lot properties may be accepted if pay for the lot is reduced using one of the following applicable pay factors, or lot may be accepted at 50 percent pay if lot is in Reject.

<b><u>Pay Factor</u></b>	<b><u>Number of Non-complying Tests</u></b>
1.00	0
0.90	1
0.80	2
0.70	3
Reject	4

**C. Placement:**

- 1. Mat appearance.
  - a. No runoff onto concrete curbs, gutter pans, and shoulders.
  - b. No streaking, drilling, drag marks, or squeegee marks.
  - c. No light spots.
  - d. No de-bonding.
  - e. Straight longitudinal edges with proper joints.
- 2. Mat thickness, bitumen content and aggregate content.

- a. Lot size is one (1) day's production. Sub-lot size is 0.5 lane mile.
  - b. Collect and test five (5) equally spaced samples from the initial sub-lot. Upon review of the initial sub-lot test results and at ENGINEER's discretion, acceptance of subsequent sub-lots may be based upon one or less samples from each subsequent sub-lot.
3. Pay Adjustment: Not applicable. Correct mat deficiencies at no additional cost to OWNER.

**1.8 WARRANTY**

- A. Both the CONTRACTOR and Supplier shall provide a two (2) year minimum written warranty when the existing pavement is in an appropriate condition (CONTRACTOR and Supplier to determine condition). Warranty covers delaminating, peeling and premature surface wear.
  - 1. Before placement notify ENGINEER if pavement condition or application condition voids the warranty.
  - 2. ENGINEER may allow or cancel product application at no cost to OWNER if warranty cannot be given.
- B. Acceptable performance after two (2) year period is no delaminating, peeling, or inter-aggregate loss in surface wear. Mechanical disturbances by snow plow chatter, studded tires, etc. are excluded from warranty. Repair defective coverage at no additional cost to OWNER.

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**PART 2 PRODUCTS**

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**2.1 ASPHALT BINDER**

- A. Crack Pouring Asphalt: Rubberized asphalt or asphalt rubber hot pour, Section 32 01 17.
- B. Tack Coat: SS or CSS grade, Section 32 12 13.13. Use a tack coat that is compatible with seal coat application.
- C. Emulsified Asphalt: Inorganic, non-ionic, thixotropic mineral colloid at 25 deg C that meets the following requirements. Inorganic is defined as a non-carbon based emulsifier.

<b>Table 1 – Emulsion Properties</b>			
<b>Criterion</b>	<b>Standard</b>	<b>Min</b>	<b>Max</b>
Brookfield Viscosity at 77 deg F (Spindle 5, 20 rpm), cPs	D 2196	11,000	20,000
pH	E 70	5.0	7.5
Density, lbs/gal	T 59	8.5	9.0
Asphalt Cement Content, percent by weight	D 2172	45	50
Solids Content, percent by weight	T 59	50	54
Ash Content, percent by weight	T 111	4.0	6.0

## 2.2 AGGREGATE

A. Clean and free from organic matter or other detrimental substances. Composed of sand, clay, slate and corundum. Properties of slate and corundum as follows.

### 1. Slate

**Table 2 – Slate**

**Physical Properties**

Criterion	Standard	Min	Max
Specific Gravity	C 128		2.7
Compression, psi	C 170	11,000	

### 2. Refined Corundum:

**Table 3 – Corundum**

**Physical Properties**

Criterion	Standard	Min	Max
Specific Gravity	C 128	3.9	
Knoop 100 Hardness	D 1326	2,000	
Ball Mill Friability (14 grit)	B74.8		50

## 2.3 ADDITIVES

A. Water is clean, non-detrimental, and free from salts and contaminant.

B. Polymers and other additives as necessary to achieve mix design performance.

## 2.4 MIX DESIGN

A. Completed high density mineral bond material, prior to being loaded for install, must meet the following requirements.

**Table 4 – Mix Properties**

Criterion	Standard	Min	Max
Asphalt Content, percent by weight	D 2172	17	20
Solids Content, percent by weight	D 1644	55	63
Initial Brookfield Viscosity at 77°F (Spindle 4, 20 rpm), cPs	D 2196	5,500	9,000
Ash Content, percent by weight	T 111	38	
Ash Content of Solids, percent by weight (a)	T 111	65	
Density, lbs/gal	T 59	11	
pH	E 70	6.0	8.0
Total Inorganic Aggregate Content, percent by weight (b)	T 111	37	
Total Sand Content, percent by weight			6.0
Maximum VOC, g/L	D 3960		5
Resistance to Re-emulsification	D 2939	No re-emulsification	
Wear Resistance, percent loss by weight (c)	D 2486		4
NOTES:			

- (a) Ash content as a percentage of solids content.
- (b) Ash content of completed mix minus ash content of base non-ionic emulsion. Total inorganic aggregate content is defined as slate, refined corundum, and sand.
- (c) ASTM D 2486 (Modified): Prepare sample at 48 wet mils on glass panel. Dry at 77 deg F for three (3) days. Immerse in water for 24 hours at 77°F. Test scrub resistance with 1,000-gram brass brush for 12,000 cycles. Report percent of dry film lost.

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## **PART 3 EXECUTION**

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### **3.1 CONSTRUCTION EQUIPMENT**

- A. Paver: Use a continuous flow mixing unit.
  - 1. Capable of applying at least 15,000 square yards of material per day.
  - 2. Equipped with full sweep agitation system to assure proper suspension of fine aggregates.
  - 3. Equipped with an operator control station that adjusts material spread rate in accordance with project calibration process.
  - 4. Equipped with a filtering system to catch particles that plug nozzles.
  - 5. Equipped with a retractable spray bar capable of applying mixture without drilling. The bar should be positioned to meet calibration requirements.
- B. Storage Tanks:
  - 1. When delivering mix from the central mixing plant to a job site storage tank, use only storage tanks with a capacity to contain the entire transport load.
  - 2. Ensure that all site storage tanks have internal full sweep mixing mechanisms and mixing capability that can provide at any given point in the tank a homogenous mix.

### **3.2 PREPARATION**

- A. Paver Calibration: On a test strip at least 300 feet long, determine the correct pump settings, spray bar height, and ground speed for the application equipment. Apply material with pump settings at 80 percent of maximum output (plus or minus 5 percent) and a ground speed of 300 to 400 feet per minute.
  - 1. Do not begin or continue application without ENGINEER's knowledge of the calibration process and equipment settings.
  - 2. Do not deviate from calibration settings without ENGINEER's knowledge.
- B. Surface Repair: Method of payment to be determined by ENGINEER if any of the following repairs are required.
  - 1. Raising low areas to grade, lowering high areas to grade, hole patching, inlays.
  - 2. Providing tack coat on highly absorbent, polished, oxidized, or raveled asphalt surfaces or on brick and concrete surfaces.
  - 3. Crack sealing and crack repairing, Section 32 01 17.
  - 4. Pushing or shoving pavement repairs.
    - a. Mill damaged area at least three (3) inches below required surface elevation.

- b. Install and compact three (3) inches of PG64-22-DM-3/4 asphalt concrete, Section 32 12 16.19.
- C. Masking: Mask-off Street Fixtures, end of streets, intersections.
- D. Traffic Control:
  - 1. Implement traffic control plan requirements. Provide safe passage for pedestrians and vehicles. Do not proceed without flaggers if work requires maintaining two-way vehicular traffic.
  - 2. Grind off existing pavement markings and lane stripes. If existing markings and stripes are to be reestablished, use reflective tabs to mark existing locations before applying surface treatment material. Unless specified otherwise, cost is included in the work of this section.
- E. Cleaning:
  - 1. Remove loose material, mud spots, sand, dust, oil, vegetation and other objectionable material.
  - 2. Do not flush water, or apply pressurized water over cracked pavement unless ENGINEER allows its' use and a sufficient time is allowed for drying.

### 3.3 PROTECTION

- A. Trees, Plants, Ground Cover:
  - 1. Protect trees, plants and other ground cover from damage.
  - 2. Prune trees to allow equipment passage underneath, Section 32 01 93. Repair tree damage at no additional cost to OWNER.
- B. Protect structures, curb, gutter, sidewalks, guard rails, guide posts, etc. from physical damage.

### 3.4 APPLICATION

- A. General: Two separate applications coats are required. The first application must be thoroughly set and free of any damp areas before the second application begins.
- B. Spreading:
  - 1. Keep material delivery at a constant rate even if forward speed of lay-down machine varies.
  - 2. Do not reduce application rate along edges or around manhole covers.
  - 3. Apply both applications right to the edge of the pavement. Do not leave uncovered areas near curbs, Street Fixtures, or edges on either application.
  - 4. Make straight lines at all locations.
  - 5. Place product out to right-of-way line on side streets and intersections.
  - 6. Use hand squeegees to spread mix in areas that cannot be reached with distribution spray bar.
    - a. Provide complete and uniform coverage.
    - b. Avoid unsightly appearance from hand work.
- C. Joints:
  - 1. Make transverse joints straight-cut butt type, not over-lap type.
  - 2. Place longitudinal joints on lane lines. Limit overlap to three (3) inches maximum.
  - 3. Stop and correct paving operation if longitudinal or transverse joints have uncovered

areas or unsightly appearance.

D. Lines:

1. Make straight lines along lip of gutters, shoulders, end of streets, and in street intersections. No runoff on these areas will be permitted.
2. Vary edge lines no more than one (1) inch per 100 feet.

**3.5 TOLERANCES**

- A. First application = *0.20 gallons per square yard minimum.*
- B. Second application = *0.16 gallons per square yard minimum.*

**3.6 FIELD QUALITY CONTROL**

- A. Emulsion density testing, AASHTO T 59. If testing shows material non-compliance, remove installed product and halt operations until new material is delivered and is known to be in compliance.
- B. Measure the total amounts of material installed, and verify it meets the application rate.

**3.7 AFTER APPLICATION**

- A. Raise reflective tabs that were covered over by application.
- B. Clean Street Fixtures.
- C. Do not apply permanent pavement markings or striping material until layout and method of payment has been determined by ENGINEER, and final application of surface treatment material has been in place at least 10 days, or as permitted by ENGINEER. Layout must be verified by ENGINEER prior to application.

**3.8 REPAIR**

- A. Remove delaminated or non-compliant product found after installation and apply acceptable product.
- B. Remove spatter, mar and overcoat from curb, gutter, sidewalk, guard rails, guide posts, etc.
- C. Remove overcoat from Street Fixtures.
- D. Make edge and end lines straight. Provide a good appearance.
- E. Leave no streaks, holes, bare spots, or cracks through which liquids or foreign matter could penetrate to the underlying pavement.
- F. Repair collateral damage caused by construction.

**3.9 OPENING TO TRAFFIC**

- A. Cure time depends on type of asphalt, mixture characteristics and weather. Keep traffic off surface until material does not track out.

END OF  
SECTION

**SECTION 32 01 13.68**  
**HIGH DENSITY MINERAL BOND SEAL**

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**PART 1 GENERAL**

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**1.1. SECTION INCLUDES**

- A. Application of an asphalt-aggregate *bond seal* coat as a high density roadway surface preservation treatment.

**1.2 REFERENCES**

A. AASHTO Standards:

- T 59 Standard Method of Test for Emulsified Asphalts.  
T 111 Standard Method of Test for Mineral Matter or Ash in Asphalt Materials.

B. ANSI Standards:

- B74.8 Ball Mill Test for Friability of Abrasive Grain.

C. ASTM Standards:

- C 128 Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate.  
C 170 Compressive Strength of Dimension Stone.  
C 1326 Knoop Indentation Hardness of Advanced Ceramics.  
D 1644 Nonvolatile Content (Solids by weight).  
D 2172 Quantitative Extraction of Bitumen From Bituminous Paving Mixtures.  
D 2196 Rheological Properties of Non-Newtonian Materials by Rotational (Brookfield type) Viscometer.  
D 2486 Determining Wear Resistance in Cycles.  
D 2939 Emulsified Bitumens Used as Protective Coatings.  
D 3740 Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.  
D 6937 Determining Density of Emulsified Asphalt.  
D 3960 Determining Volatile Organic Compound Content of Paints and Related Coatings.  
E 70 pH of Aqueous Solutions with the Glass Electrode.

**1.3 SUBMITTALS**

- A. Mix Design: Provide the following. Allow ENGINEER 10 days to evaluate the submittal.
1. Date of mix design. If older than 60 days from date of submission, recertify mix design.
  2. Proportions of aggregate, filler, water, polymer, and emulsion in the mix.
  3. Residual in-place bitumen content, in *pounds per square yard*.
  4. Residual in-place aggregate or mineral solids content, in *pounds per square yard*.
  5. Thickness target for each application coat, in *gallons per square yard*.

6. Total minimum thickness, in *gallons per square yard*.
  7. Results of a wear resistance test current within one (1) calendar year of the proposed mix design.
- B. Before Placement: Submit at least 48 hours before delivery.
1. Traffic control plan, Section 01 55 26.
  2. List of construction equipment to be used.
  3. Certificate from emulsion supplier stating emulsion meets requirements in this section.
  4. Names, certification levels, and years of experience of testing agency's field technicians that are assigned to the Work. Verify laboratory complies with ASTM standards.
  5. Warranty.
- C. Reports: If requested by ENGINEER, submit the following.
1. List of five (5) projects that have successful product applications on bituminous surfaces. Provide names of project contacts.
  2. Source and field quality control testing reports performed by CONTRACTOR and Suppliers.

#### 1.4 QUALITY ASSURANCE

- A. Foreman of CONTRACTOR's crew or Supplier's representative has completed at least three (3) projects of similar scope. If crew foreman does not have such experience, Supplier must provide a full-time representative on site during application.
- B. Use a laboratory that complies with ASTM D 3740 and follows Section 01 45 00 requirements.
- C. Verify mixture delivered to site contains the same emulsion specified in the mix design.
- D. Do not change source of the asphalt emulsion or aggregate without supporting changes in the mix design.
- E. Reject product that does not meet requirements.

#### 1.5 WEATHER

- A. Temperature:
  1. Apply surface treatment material if air and pavement surface temperatures in the shade are 55 deg F. and rising.
  2. Cease application if air or pavement surface temperatures are projected to fall below 45 deg F. within 48 hours.
- B. Moisture and Wind:
  1. Do not apply surface treatment material to a wet surface (no visible standing water or high sheen), during rain, 24 hours prior to forecast rain, or in unsuitable windy weather.
  2. Cease work if weather or other conditions prolong opening pavement surface to traffic.

#### 1.6 NOTICE

- A. Follow Laws and Regulations concerning when and to whom notices are to be given at least three (3) days before applying surface treatment material.

- B. Indicate application time and when the surface can be used. If necessary, include a map showing closed-off areas.
- C. Provide phone numbers of at least two (2) individuals who represent the CONTRACTOR who can be reached at any time during the work.
- D. Warn of potential vehicle tow away and other construction issues affecting neighborhood.
- E. Should work not occur on specified day, issue an updated notice.

**1.7 ACCEPTANCE**

**A. General:**

- 1. Acceptance is by Lot.
- 2. If non-complying material has been installed and no price for the material is specified, apply price adjustment against cost of work requiring complying material as part of its installation, Section 01 29 00.
- 3. Dispute resolution, Section 01 35 10.
- 4. Opening surface treatment to vehicular traffic does not constitute acceptance.
- 5. Observation of CONTRACTOR's field quality control testing does not constitute acceptance. Such testing, however, may be used by ENGINEER for acceptance if requirements of Section 01 35 10 are met.

**B. Asphalt Binder:**

- 1. Lot size is total contracted product placement. Sub-lot size is one (1) day's production.
- 2. Of all sub-lot samples collected, randomly select one and test it for the physical properties in this section. The lot is acceptable if this single test meets requirements. If the test does not meet requirements, continue testing other samples for compliance.
- 3. At ENGINEER's discretion, a lot with deficient sub-lot properties may be accepted if pay for the lot is reduced using one of the following applicable pay factors, or lot may be accepted at 50 percent pay if lot is in Reject.

<b><u>Pay Factor</u></b>	<b><u>Number of Non-complying Tests</u></b>
1.00	0
0.90	1
0.80	2
0.70	3
Reject	4

**C. Placement:**

- 1. Mat appearance.
  - a. No runoff onto concrete curbs, gutter pans, and shoulders.
  - b. No streaking, drilling, drag marks, or squeegee marks.
  - c. No light spots.
  - d. No de-bonding.
  - e. Straight longitudinal edges with proper joints.
- 2. Mat thickness, bitumen content and aggregate content.

- a. Lot size is one (1) day's production. Sub-lot size is 0.5 lane mile.
  - b. Collect and test five (5) equally spaced samples from the initial sub-lot. Upon review of the initial sub-lot test results and at ENGINEER's discretion, acceptance of subsequent sub-lots may be based upon one or less samples from each subsequent sub-lot.
3. Pay Adjustment: Not applicable. Correct mat deficiencies at no additional cost to OWNER.

**1.8 WARRANTY**

- A. Both the CONTRACTOR and Supplier shall provide a two (2) year minimum written warranty when the existing pavement is in an appropriate condition (CONTRACTOR and Supplier to determine condition). Warranty covers delaminating, peeling and pre-mature surface wear.
  - 1. Before placement notify ENGINEER if pavement condition or application condition voids the warranty.
  - 2. ENGINEER may allow or cancel product application at no cost to OWNER if warranty cannot be given.
- B. Acceptable performance after two (2) year period is no delaminating, peeling, or inter-aggregate loss in surface wear. Mechanical disturbances by snow plow chatter, studded tires, etc. are excluded from warranty. Repair defective coverage at no additional cost to OWNER.

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**PART 2 PRODUCTS**

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**2.1 ASPHALT BINDER**

- A. Crack Pouring Asphalt: Rubberized asphalt or asphalt rubber hot pour, Section 32 01 17.
- B. Tack Coat: SS or CSS grade, Section 32 12 13.13. Use a tack coat that is compatible with seal coat application.
- C. Emulsified Asphalt: Inorganic, non-ionic, thixotropic mineral colloid at 25 deg C that meets the following requirements. Inorganic is defined as a non-carbon based emulsifier.

<b>Table 1 – Emulsion Properties</b>			
<b>Criterion</b>	<b>Standard</b>	<b>Min</b>	<b>Max</b>
Brookfield Viscosity at 77 deg F (Spindle 5, 20 rpm), cPs	D 2196	11,000	20,000
pH	E 70	5.0	7.5
Density, lbs/gal	T 59	8.5	9.0
Asphalt Cement Content, percent by weight	D 2172	45	50
Solids Content, percent by weight	T 59	50	54
Ash Content, percent by weight	T 111	4.0	6.0

## 2.2 AGGREGATE

A. Clean and free from organic matter or other detrimental substances. Composed of sand, clay, slate and corundum. Properties of slate and corundum as follows.

### 1. Slate

Table 2 – Slate			
Physical Properties			
Criterion	Standard	Min	Max
Specific Gravity	C 128		2.7
Compression, psi	C 170	11,000	

### 2. Refined Corundum:

Table 3 – Corundum			
Physical Properties			
Criterion	Standard	Min	Max
Specific Gravity	C 128	3.9	
Knoop 100 Hardness	D 1326	2,000	
Ball Mill Friability (14 grit)	B74.8		50

## 2.3 ADDITIVES

- A. Water is clean, non-detrimental, and free from salts and contaminant.  
 B. Polymers and other additives as necessary to achieve mix design performance.

## 2.4 MIX DESIGN

A. Completed high density mineral bond material, prior to being loaded for install, must meet the following requirements.

Table 4 – Mix Properties			
Criterion	Standard	Min	Max
Asphalt Content, percent by weight	D 2172	17	20
Solids Content, percent by weight	D 1644	55	63
Initial Brookfield Viscosity at 77°F (Spindle 4, 20 rpm), cPs	D 2196	5,500	9,000
Ash Content, percent by weight	T 111	38	
Ash Content of Solids, percent by weight (a)	T 111	65	
Density, lbs/gal	T 59	11	
pH	E 70	6.0	8.0
Total Inorganic Aggregate Content, percent by weight (b)	T 111	37	
Total Sand Content, percent by weight			6.0
Maximum VOC, g/L	D 3960		5
Resistance to Re-emulsification	D 2939	No re-emulsification	
Wear Resistance, percent loss by weight (c)	D 2486		4
NOTES:			

- (a) Ash content as a percentage of solids content.
- (b) Ash content of completed mix minus ash content of base non-ionic emulsion.  
Total inorganic aggregate content is defined as slate, refined corundum, and sand.
- (c) ASTM D 2486 (Modified): Prepare sample at 48 wet mils on glass panel. Dry at 77 deg F for three (3) days. Immerse in water for 24 hours at 77°F. Test scrub resistance with 1,000 gram brass brush for 12,000 cycles. Report percent of dry film lost.

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## **PART 3 EXECUTION**

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### **3.1 CONSTRUCTION EQUIPMENT**

- A. Paver: Use a continuous flow mixing unit.
  - 1. Capable of applying at least 15,000 square yards of material per day.
  - 2. Equipped with full sweep agitation system to assure proper suspension of fine aggregates.
  - 3. Equipped with an operator control station that adjusts material spread rate in accordance with project calibration process.
  - 4. Equipped with a filtering system to catch particles that plug nozzles.
  - 5. Equipped with a retractable spray bar capable of applying mixture without drilling. The bar should be positioned to meet calibration requirements.
- B. Storage Tanks:
  - 1. When delivering mix from the central mixing plant to a job site storage tank, use only storage tanks with a capacity to contain the entire transport load.
  - 2. Ensure that all site storage tanks have internal full sweep mixing mechanisms and mixing capability that can provide at any given point in the tank a homogenous mix.

### **3.2 PREPARATION**

- A. Paver Calibration: On a test strip at least 300 feet long, determine the correct pump settings, spray bar height, and ground speed for the application equipment. Apply material with pump settings at 80 percent of maximum output (plus or minus 5 percent) and a ground speed of 300 to 400 feet per minute.
  - 1. Do not begin or continue application without ENGINEER's knowledge of the calibration process and equipment settings.
  - 2. Do not deviate from calibration settings without ENGINEER's knowledge.
- B. Surface Repair: Method of payment to be determined by ENGINEER if any of the following repairs are required.
  - 1. Raising low areas to grade, lowering high areas to grade, hole patching, inlays.
  - 2. Providing tack coat on highly absorbent, polished, oxidized, or raveled asphalt surfaces or on brick and concrete surfaces.
  - 3. Crack sealing and crack repairing, Section 32 01 17.
  - 4. Pushing or shoving pavement repairs.
    - a. Mill damaged area at least three (3) inches below required surface elevation.

- b. Install and compact three (3) inches of PG64-22-DM-3/4 asphalt concrete, Section 32 12 16.19.
- C. Masking: Mask-off Street Fixtures, end of streets, intersections.
- D. Traffic Control:
  - 1. Implement traffic control plan requirements. Provide safe passage for pedestrians and vehicles. Do not proceed without flaggers if work requires maintaining two-way vehicular traffic.
  - 2. Grind off existing pavement markings and lane stripes. If existing markings and stripes are to be reestablished, use reflective tabs to mark existing locations before applying surface treatment material. Unless specified otherwise, cost is included in the work of this section.
- E. Cleaning:
  - 1. Remove loose material, mud spots, sand, dust, oil, vegetation and other objectionable material.
  - 2. Do not flush water, or apply pressurized water over cracked pavement unless ENGINEER allows its' use and a sufficient time is allowed for drying.

### 3.3 PROTECTION

- A. Trees, Plants, Ground Cover:
  - 1. Protect trees, plants and other ground cover from damage.
  - 2. Prune trees to allow equipment passage underneath, Section 32 01 93. Repair tree damage at no additional cost to OWNER.
- B. Protect structures, curb, gutter, sidewalks, guard rails, guide posts, etc. from physical damage.

### 3.4 APPLICATION

- A. General: Two separate applications coats are required. The first application must be thoroughly set and free of any damp areas before the second application begins.
- B. Spreading:
  - 1. Keep material delivery at a constant rate even if forward speed of lay-down machine varies.
  - 2. Do not reduce application rate along edges or around manhole covers.
  - 3. Apply both applications right to the edge of the pavement. Do not leave uncovered areas near curbs, Street Fixtures, or edges on either application.
  - 4. Make straight lines at all locations.
  - 5. Place product out to right-of-way line on side streets and intersections.
  - 6. Use hand squeegees to spread mix in areas that cannot be reached with distribution spray bar.
    - a. Provide complete and uniform coverage.
    - b. Avoid unsightly appearance from hand work.
- C. Joints:
  - 1. Make transverse joints straight-cut butt type, not over-lap type.
  - 2. Place longitudinal joints on lane lines. Limit overlap to three (3) inches maximum.
  - 3. Stop and correct paving operation if longitudinal or transverse joints have uncovered

areas or unsightly appearance.

D. Lines:

1. Make straight lines along lip of gutters, shoulders, end of streets, and in street intersections. No runoff on these areas will be permitted.
2. Vary edge lines no more than one (1) inch per 100 feet.

**3.5 TOLERANCES**

- A. First application = *0.20 gallons per square yard minimum.*
- B. Second application = *0.16 gallons per square yard minimum.*

**3.6 FIELD QUALITY CONTROL**

- A. Emulsion density testing, AASHTO T 59. If testing shows material non-compliance, remove installed product and halt operations until new material is delivered and is known to be in compliance.
- B. Measure the total amounts of material installed, and verify it meets the application rate.

**3.7 AFTER APPLICATION**

- A. Raise reflective tabs that were covered over by application.
- B. Clean Street Fixtures.
- C. Do not apply permanent pavement markings or striping material until layout and method of payment has been determined by ENGINEER, and final application of surface treatment material has been in place at least 10 days, or as permitted by ENGINEER. Layout must be verified by ENGINEER prior to application.

**3.8 REPAIR**

- A. Remove delaminated or non-compliant product found after installation and apply acceptable product.
- B. Remove spatter, mar and overcoat from curb, gutter, sidewalk, guard rails, guide posts, etc.
- C. Remove overcoat from Street Fixtures.
- D. Make edge and end lines straight. Provide a good appearance.
- E. Leave no streaks, holes, bare spots, or cracks through which liquids or foreign matter could penetrate to the underlying pavement.
- F. Repair collateral damage caused by construction.

**3.9 OPENING TO TRAFFIC**

- A. Cure time depends on type of asphalt, mixture characteristics and weather. Keep traffic off surface until material does not track out.

END OF SECTION