

ROCKDALE COUNTY, GEORGIA

INVITATION TO BID #15-24:

2011 SPLOST RESURFACING CONTRACT #4

**16.11 Miles of Asphaltic Concrete Pavement Resurfacing &
Cement Stabilized Base Reclamation on Numerous Roads/Streets**

For



Rockdale County Department of Transportation

CONSTRUCTION DOCUMENTS

July 2015

TABLE OF CONTENTS
FOR
CONSTRUCTION DOCUMENTS

BIDDING DOCUMENTS

Page

Invitation to Bid	BD.1
Notice to Contractors.....	BD.2
Bid Proposal.....	BD.4
Bid Bond.....	BD.7
Certification by Contractor Regarding Non-Segregated Facilities.....	BD.9
Non-collusion Affidavit of Prime Bidder	BD.10
Non-collusion Affidavit of Subcontractor.....	BD.11
Affidavit Verifying Status for County Public Benefit Application.....	BD.12
Certifications.....	BD.13
Contractor Affidavit under O.C.G.A. §13-10-91(b)(1)	BD.15
Subcontractor Affidavit under O.C.G.A. §13-10-91(b)(3).....	BD.16
Subcontractor Affidavit under O.C.G.A. §13-10-91(b)(4).....	BD.17
Subcontractor Notification List.....	BD.18
Bid Schedule of Items.....	BD.19

CONTRACT DOCUMENTS

CONTRACT AGREEMENT:

Sample Contract Agreement.....	CA.2
100% Performance Bond.....	CA.4
100% Labor and Material Payment Bond.....	CA.6
Subcontractor Notification List.....	CA.8
Non-Collusion Affidavit of Subcontractor.....	CA.9
Final Affidavit.....	CA.10
Contract Schedule of Items.....	CA.11

GENERAL CONDITIONS:

GENERAL PROVISIONS

Section 101	Definition and Terms.....	GC.2
Section 102	Bidding Requirements and Conditions.....	GC.3
Section 103	Award and Execution of Contract.....	GC.6
Section 105	Control of Work.....	GC.10
Section 106	Control of Materials.....	GC.11
Section 107	Legal Regulations and Responsibility to the Public.....	GC.11
Section 108	Prosecution and Progress.....	GC.16
Section 109	Measurement and Payment.....	GC.18
Section 149	Construction Layout.....	GC.19
Section 150	Traffic Control.....	GC.19
Section 161	Control of Soil Erosion & Sedimentation.....	GC.63

SPECIAL PROVISIONS:

1. *MODIFICATIONS OF STANDARD SPECIFICATIONS*

BASES AND SUBBASES

Section 300	General Specifications for all Base and Subbase Courses....	SP.2
Section 301	Soil Cement Construction.....	SP.2
Section 301	Cement Stabilized Reclaimed Base Construction.....	SP.2

PAVEMENTS

Section 400	Hot Mix Asphaltic Concrete Construction.....	SP.9
Section 402	Hot Mix Recycled Asphaltic Concrete.....	SP.30

INCIDENTAL ITEMS

Section 611	Relaying, Reconstructing, or Adjusting to Grade of Miscellaneous Roadway Structures.....	SP.32
-------------	--	-------

MATERIALS

Section 802	Aggregates for Asphaltic Concrete.....	SP.33
Section 819	Fiber Stabilizing Additives.....	SP.33
Section 828	Hot Mix Asphaltic Concrete Mixtures.....	SP.33
Section 883	Mineral Filler.....	SP.39

2. *SCOPE OF WORK*

Roadways.....	SP.40
Special Construction Methods.....	SP.40

3. *SEQUENCE OF OPERATIONS*

General.....	SP.40
Order of Work.....	SP.41
Special Conditions.....	SP.42
Equipment Noise and Operations.....	SP.43
Utility Conflicts.....	SP.44
Addenda.....	SP.44

APPENDICES:

Appendix A – Location Maps	A.1
Appendix B – Typical Sections / Standard Details.....	A.2
Appendix C – Itemized Quantity Sheets.....	A.3
Appendix D – FDR Mix Designs	A.4

ROCKDALE COUNTY, GEORGIA

2011 SPLOST RESURFACING CONTRACT #4

**16.11 Miles of Asphaltic Concrete Pavement Resurfacing &
Cement Stabilized Base Reclamation on Numerous Roads/Streets**

BIDDING DOCUMENTS

For

Rockdale County Department of Transportation (RDOT)

CONTRACT # C-2015-_____

INVITATION TO BID #15-24

ROCKDALE COUNTY, GEORGIA

The Rockdale County Board of Commissioners is soliciting sealed bids to furnish all labor, material, and equipment for **16.11 miles of asphaltic concrete pavement resurfacing and cement stabilized base reclamation on numerous county roads in Rockdale County**. Bids will be accepted until the bid opening date and time on **July 23, 2015** at 2:00 p.m. in the Department of Finance, 958 Milstead Avenue, Conyers, Georgia 30012. A Non-Mandatory Pre-Bid Conference will be held on **July 13, 2015**, at **10:00 a.m.** at The Rockdale County Department of Transportation, 2570 Old Covington Highway, Conyers, Ga. 30012. Submit questions and/or requests for clarifications regarding this bid no later than **July 16, 2015**. 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 TO CONTRACTORS

Sealed proposals will be received by the Rockdale County Board of Commissioners until **July 23, 2015 @ 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:

Furnish all labor, materials, and equipment for 16.11 miles of asphaltic concrete pavement resurfacing and cement stabilized base reclamation on numerous county roads 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)
10. Subcontractor Affidavit under O.C.G.A. §13-10-91(b)(4)
11. Subcontractors Notification List
12. Completed **Bid** Schedule of Items (Sign Each Part Page)

Four (4) hard copies and one (1) CD 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 typical sections, location maps which show the road segments included in this contract, and an itemized quantity schedule indicating for each road segment. The location maps are not, nor are they intended to be, an accurate depiction of the limits of the **Work**; rather, they are merely included as information to assist the **Bidder** in locating the various project sites. The itemized quantity schedule is not, nor is it intended to be, an exact measurement of each quantity for each roadway of the **Work**, rather, it is 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**.

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
Attn: Tina Malone, CPPB, CPPO
Procurement Officer
958 Milstead Avenue
Conyers, GA 30012
Phone: (770) 278-7552, Fax (770) 929-4039
E-mail: tina.malone@rockdalecounty.org

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.

LOCAL VENDOR PREFERENCE POLICY

The Rockdale County Board of Commissioners adopted a Local Vendor Preference Policy on March 26, 2013. The policy will apply to all qualified Invitations to Bids and Request for Proposals after May 1, 2013. The Local Vendor Preference Policy allows Rockdale County vendors to get an extra 5 points on the evaluation criteria scoring for Request for Proposal. The Policy will give the local bidder the opportunity to match the price of a non-local vendor's bid price if they are low and within 5% of the low bidder's price on Invitation to Bids. A copy of the Policy may be downloaded from the County website at www.rockdalecounty.org, Under Finance/Purchasing.

The Local Vendor Preference Policy will _____ will not apply to this ITB.

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:

Furnish all labor, materials, and equipment for 16.11 miles of asphaltic concrete pavement resurfacing and cement stabilized base reclamation on numerous county roads 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 by 18 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:

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:

_____	_____
_____	_____
_____	_____
_____	_____

BID PROPOSAL, page 3 of 3

Rockdale County, Georgia

Signed, sealed, and dated this _____ day of _____, 201__.

Bidder: _____

(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 _____, 201__.

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 16.11 miles of asphaltic concrete pavement resurfacing and cement stabilized base reclamation on numerous county roads 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 _____ 20__.

(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 _____ 20__.

(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 _____, 20____.

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 _____, ____, 201__ 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 _____, 201__.

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 _____, ____, 201__ 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 _____, 201__.

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 it 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 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 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 _____, ____, 201__ 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 _____,201__.

NOTARY PUBLIC
My Commission Expires:_____

SUBCONTRACTORS 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

**2011 SPLOST RESURFACING CONTRACT #4
 BID SCHEDULE OF ITEMS**

Contract Scope: Furnish all labor, materials, and equipment necessary for 16.11 miles of asphaltic concrete pavement resurfacing and cement stabilized base reclamation on numerous county roads in Rockdale County.

Vendor: _____

Signature: _____

Line No.	Pay Item No.	Item	Approx. Quantity	Unit	Unit Price	Amount
1	150-1000	Traffic Control, Incl. Temporary Striping	1.00	LS		
2	205-0081	Excavation, Unstable Matl & Backfill	100.00	CY		
3	210-0200	Grading, Adjust Shoulder to Grade	3.00	LM		
4	301-5000	Cement	4,550.00	TN		
5	301-6000	Cement Treated Base Course	212,700.00	SY		
6	310-1101	Gr Agg Base Crs, Incl Matl	100.00	TN		
7	402-1812	Recycled Asph Conc Leveling, Incl Bitum Mtl & H Lime	250.00	TN		
8	402-3103	Recycled Asph 9.5 MM Superpave, Type II, GP 2 Only, Incl Bitum Matl & H Lime	27,800.00	TN		
9	412-1000	Bituminous Prime Coat incl. Sand	46,582.00	GAL		
10	413-1000	Bitum Tack Coat	1,019.00	GAL		
11	457-1005	Tensar GlasGrid 8511	4,200.00	SY		
12	611-3020	Reconstruct San Sew Manhole	1.00	EA		
13	611-8050	Adjust San Sew Manhole to Grade	82.00	EA		
14	611-8140	Adjust Water Valve Box to Grade	5.00	EA		
15	653-1704	Thermoplastic Solid Traffic Stripe, 24 in. White	210.00	LF		
16	441-6012	Conc Curb & Gutter, 6in x 24in TP 2	100.00	LF		
17	610-0700	Remove Conc Curb & Gutter	100.00	LF		
					TOTAL BID AMOUNT:	

END OF SECTION

ROCKDALE COUNTY, GEORGIA

2011 SPLOST RESURFACING CONTRACT #4

**16.11 Miles of Asphaltic Concrete Pavement Resurfacing &
Cement Stabilized Base Reclamation on Numerous Roads/Streets**

CONTRACT DOCUMENTS

For

Rockdale County Department of Transportation (RDOT)

CONTRACT # C-2015-_____

SAMPLE 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 Georgia, 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:

Furnish all labor, materials, and equipment for 16.11 miles of asphaltic concrete pavement resurfacing and cement stabilized base reclamation on numerous county roads in Rockdale County.

hereinafter called the "Project", for the sum of **\$X,XXX,XXX.XX (XXX Million, XXX Hundred XXX Thousand, XXX Hundred XXX Dollars, and 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 **18 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.

SAMPLE CONTRACT AGREEMENT
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 _____, 201__.

ROCKDALE COUNTY, GEORGIA

ATTEST: _____ By: _____(Seal)
County Clerk Richard A. Oden
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 **\$X,XXX,XXX.XX (XXX Million, XXX Hundred XXX Thousand, XXX Hundred XXX Dollars, 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 _____, 201 __, entered into a contract with **County** for:

Furnish all labor, materials, and equipment for 16.11 miles of asphaltic concrete pavement resurfacing and cement stabilized base reclamation on numerous county roads 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 _____, 201__.

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 **\$X,XXX,XXX.XX (XXX Million, XXX Hundred XXX Thousand, XXX Hundred XXX Dollars, 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 _____, 201 __, entered into a Contract with County for:

Furnish all labor, materials, and equipment for 16.11 miles of asphaltic concrete pavement resurfacing and cement stabilized base reclamation on numerous county roads 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 _____, 201__.

Contractor

Witness By: _____(Seal)

Surety

Witness By: _____(Seal)
Georgia Representative

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

SUBCONTRACTORS 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 _____, 201__.

_____ (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

Furnish all labor, materials, and equipment for 16.11 miles of asphaltic concrete pavement resurfacing and cement stabilized base reclamation on numerous county roads in Rockdale County.

in ROCKDALE COUNTY have been paid and satisfied in full as of _____, 201____, 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 _____, 201____.

_____, 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 _____

2011 SPLOST RESURFACING CONTRACT #4

CONTRACT SCHEDULE OF ITEMS

Contract Scope: Furnish all labor, materials, and equipment necessary for 16.11 miles asphaltic concrete pavement resurfacing and cement stabilized base reclamation on numerous county roads in Rockdale County.

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

END OF SECTION

ROCKDALE COUNTY, GEORGIA

2011 SPLOST RESURFACING CONTRACT #4

**16.11 Miles of Asphaltic Concrete Pavement Resurfacing &
Cement Stabilized Base Reclamation on Numerous Roads/Streets**

GENERAL CONDITIONS

For

Rockdale County Department of Transportation (RDOT)

CONTRACT # C-2015-_____

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
Attn: Tina Malone, CPPB, CPPO
Procurement Officer
958 Milstead Avenue
Conyers, GA 30012
Phone: (770) 278-7552, Fax (770) 929-4039
E-mail: tina.malone@rockdalecounty.org

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) CD 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 (ie: 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 Annual Aggregate Products and Completed
Operations
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

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

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

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

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 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 AQUISITION 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 tem 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.

108.08 FAILURE OR DELAY IN COMPLETING WORK ON TIME

Retain paragraph A and add the following:

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 per available day for failure to pave 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.

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." **For reclaimed roads which have not been paved, payment will be made for the cement treated base course, cement, and bituminous prime coat (if used) for roads which have been tested and accepted by the County, minus retainage (see subsection 109.07.I below).**

Add Subsection 109.07.I to read as follows:

"I. Retainage

A 10% retainage will be withheld from unpaved reclaimed roads submitted for payment which have been tested and accepted by the County. Payment for retainage may be submitted on the following months invoice for reclaimed roads which have been paved, tested, and accepted."

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 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 <http://mutcd.fhwa.dot.gov>.

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.

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, 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

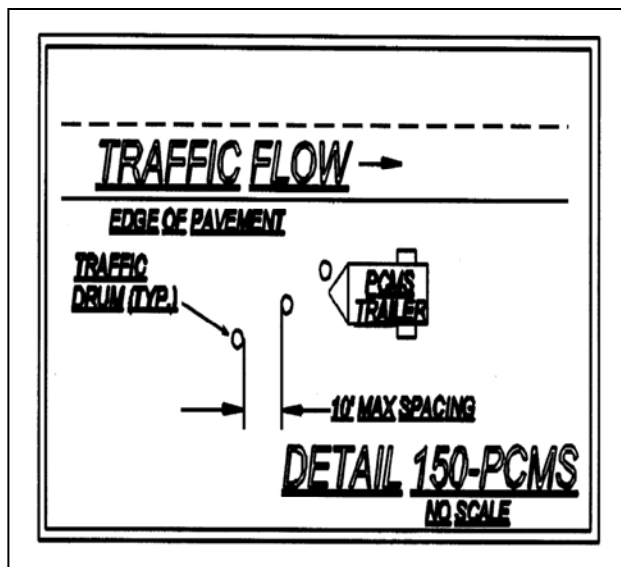
legibility distance is that distance at which the arrow panel can be comprehended by an observer on a sunny day, or clear night. Arrow panels shall be equipped with automatic dimming features for use during hours of darkness. The arrow panels shall also meet the requirements for a Type C panel as shown 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 of 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.

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.

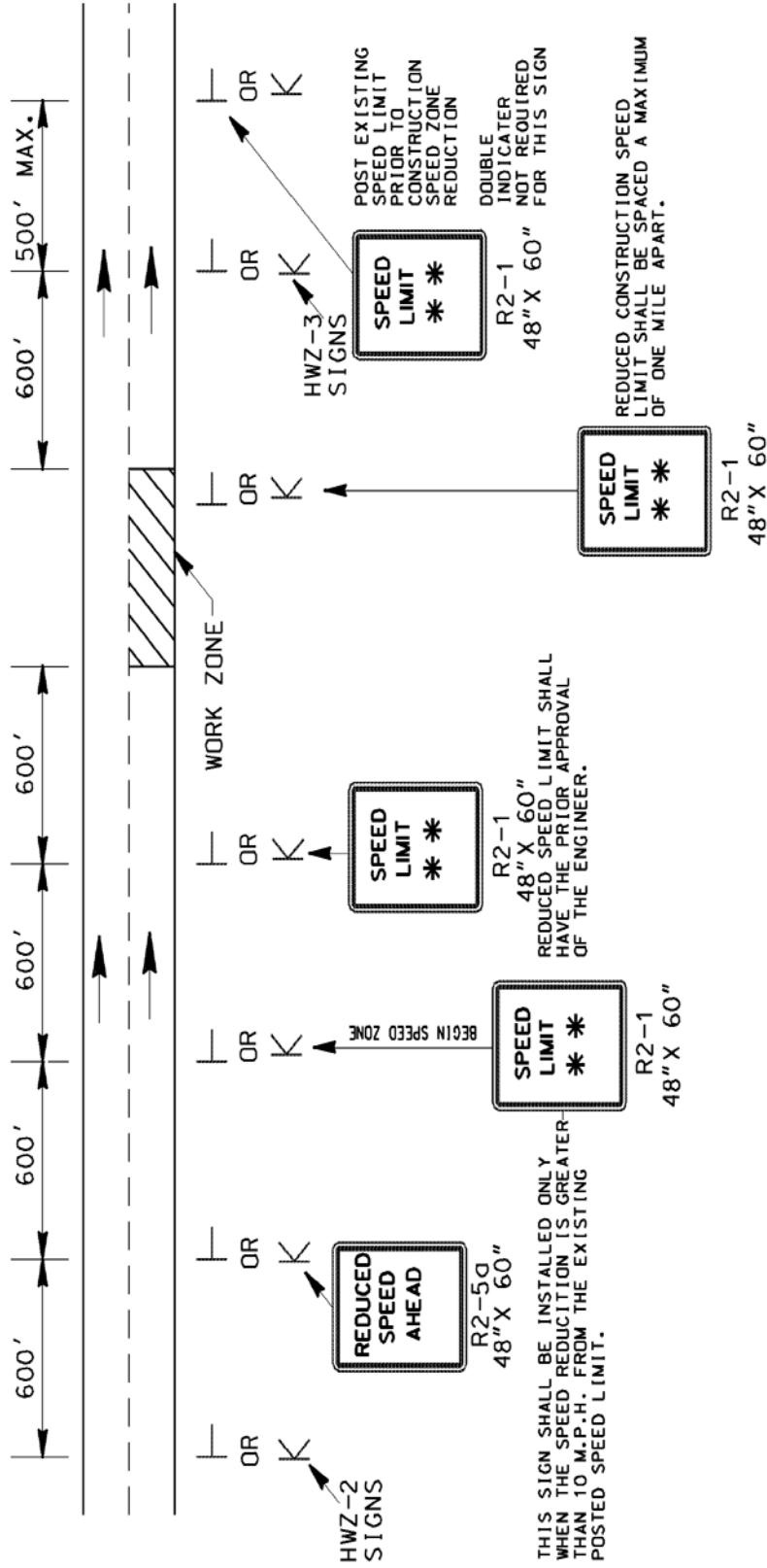
All temporary traffic control devices shall be removed as soon as practical when these devices are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate shall be removed or covered.

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.

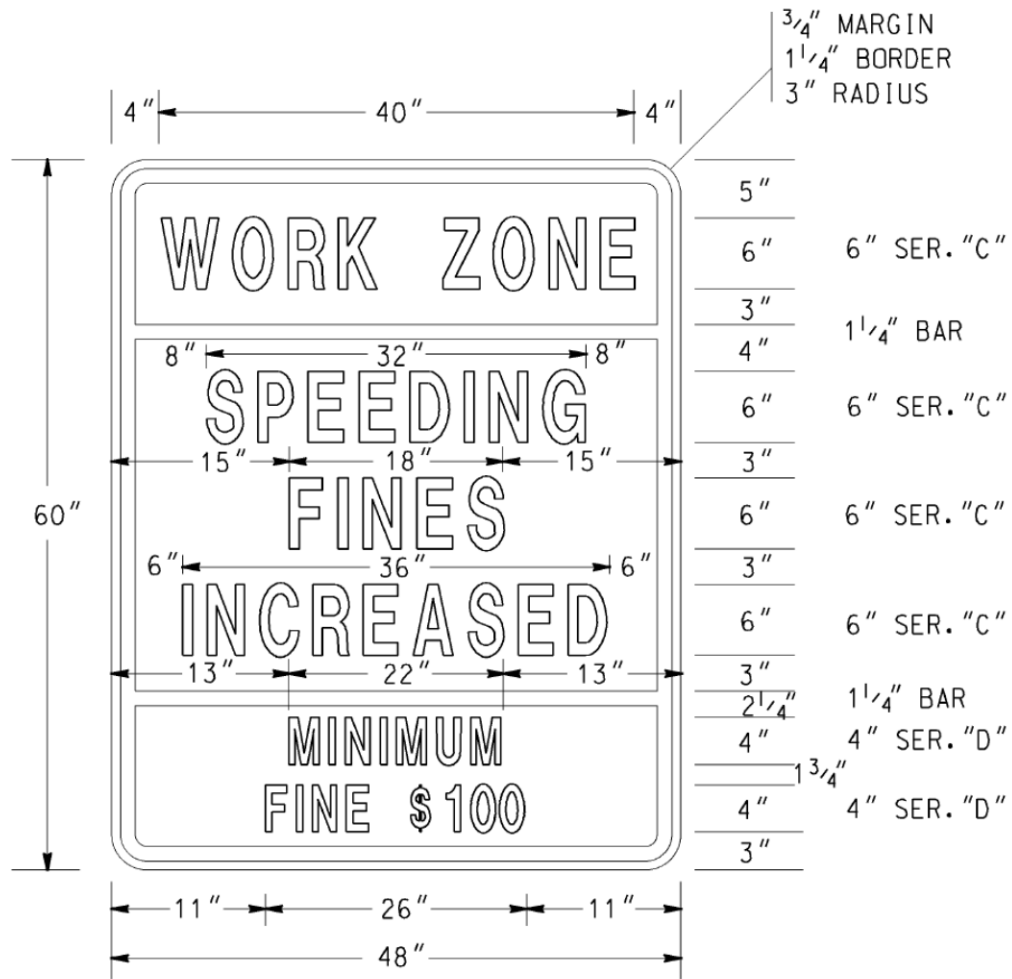
Failure to promptly remove the construction warning signs within the seven (7) calendar days after the completion of the Work or failure to remove or cover signs when work is suspended for short periods of time shall be considered as non-performance under Subsection 150.08.

SPEED LIMIT REDUCTION FOR HIGHWAY WORK ZONE
 INTERSTATE AND MULTI-LANE DIVIDED HIGHWAY SIGNING SHALL BE
 DOUBLE INDICATED (RIGHT SHOULDER AND MEDIAN SHOULDER)



DETAIL 150-HWZ-1

ALL INTERSECTING ROADWAYS SHALL BE SIGNED WITH A HWZ-2 SIGN TO WARN MOTORIST ENTERING THE HIGHWAY WORK ZONE.
 INTERSTATE AND MULTI-LANE HIGHWAY SIGNING SHALL BE DOUBLE INDICATED (RIGHT SHOULDER AND MEDIAN SHOULDER).



HWZ-2

COLORS

TOP PANEL

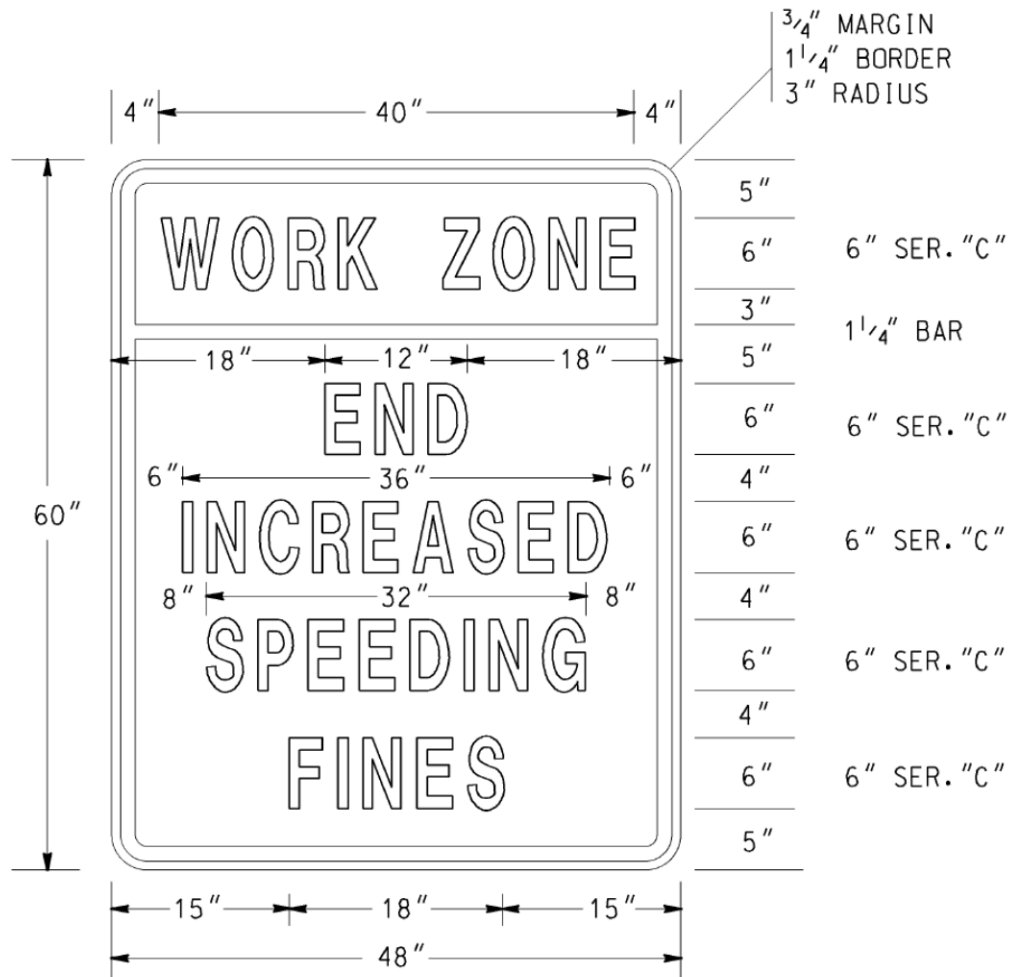
- LEGEND & BORDER - BLACK (NON-REFL)
- BACKGROUND - FLUORESENT ORANGE
(ASTM TYPE VII, VIII, IX or X)

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.

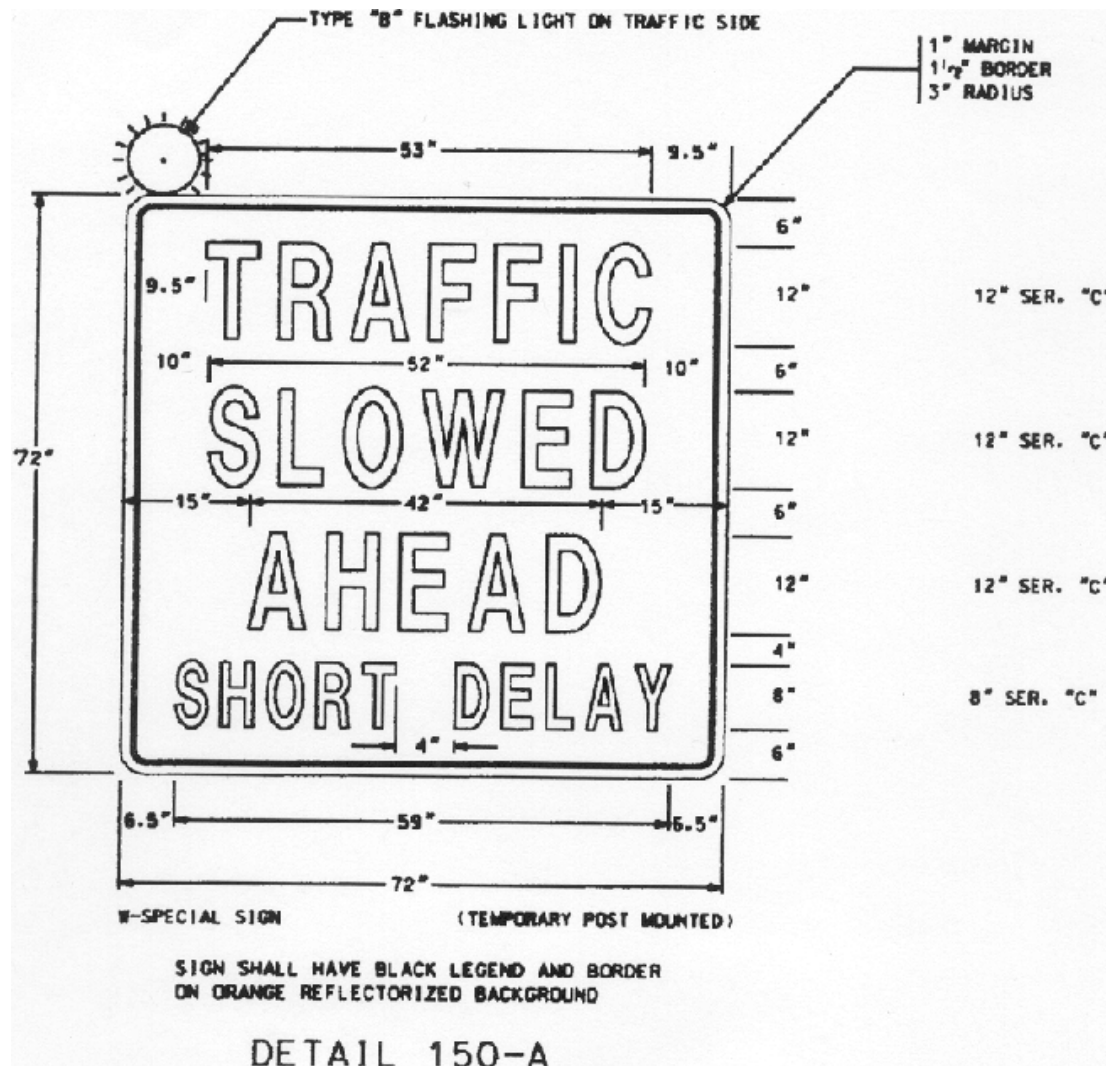
When ready to start the work activity, the police vehicle will act as a pilot vehicle slowing the traffic thereby providing a gap in traffic allowing the Contractor to perform the Work. Any on-ramps between the pace and the work area shall be blocked during pacing of traffic, with a flagger properly 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.



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 regrassed. 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 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 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.

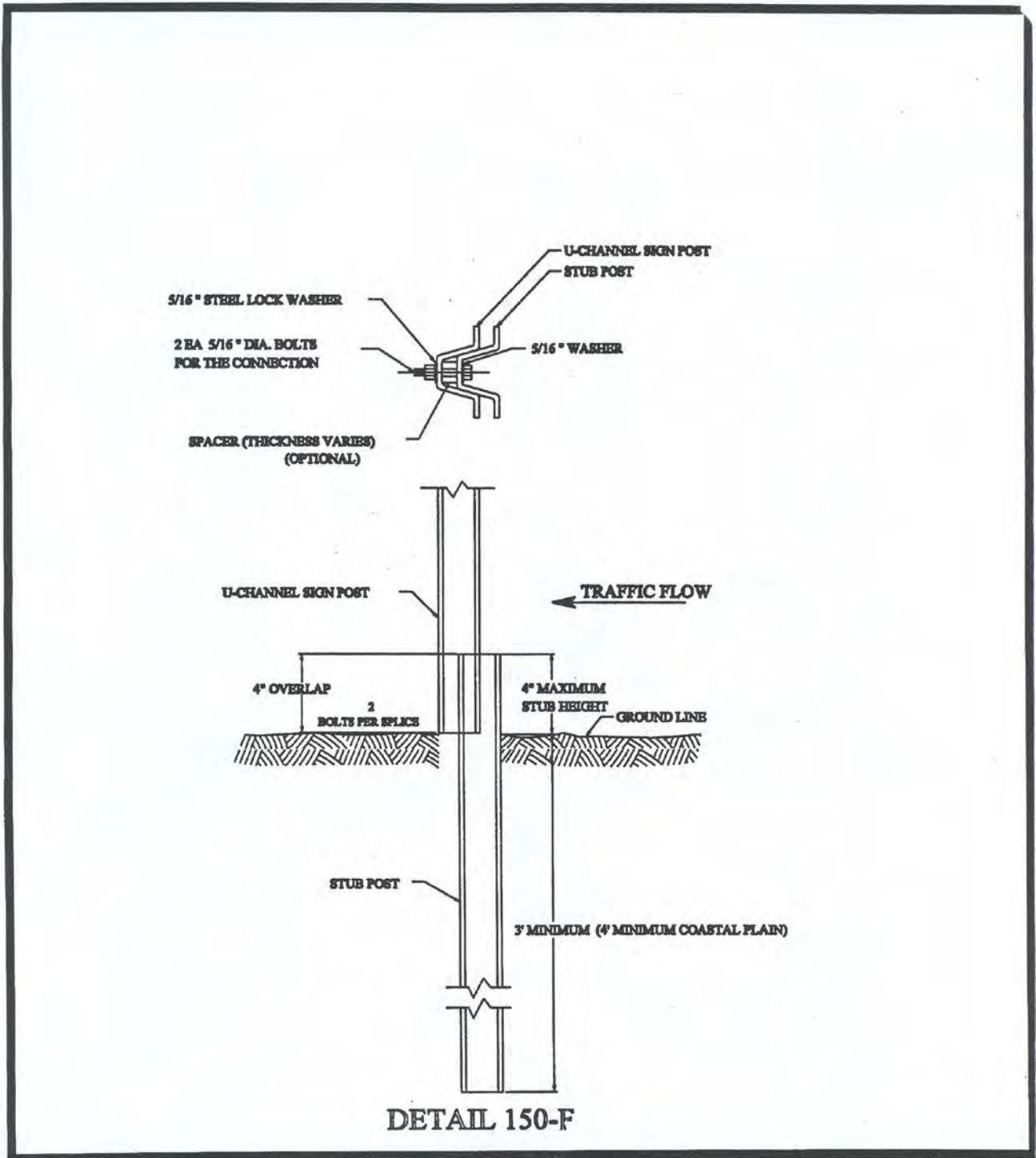
2. Sign Blanks And Panels- Permanent mounting height of seven (7') feet-

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 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 ½ 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 ½ 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 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 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 four inches in width or as shown in plans and shall conform to the requirements of Section 652, 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 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 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 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 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 $\frac{1}{2}$ 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) DESGN: 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 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.

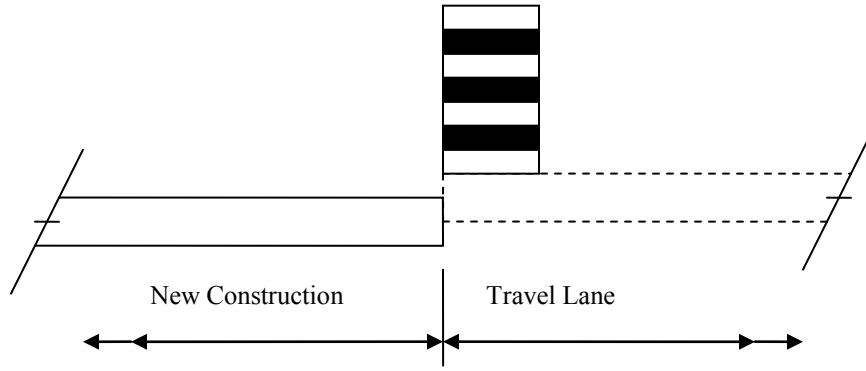
Any modifications to the staging and time restrictions that are approved as part of the traffic control plan shall be agreed to in writing. Failure to meet these modifications shall be considered as non-performance of the Work under Subsection 150.08.

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.

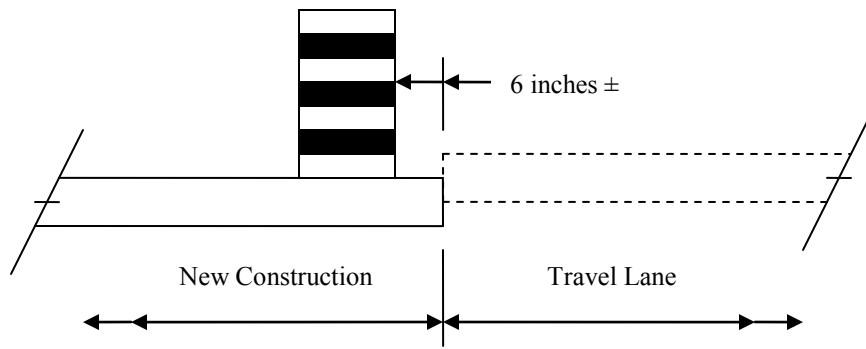
Location of drums when Elevation Difference exceeds 4 inches. Drums spaced at 20 foot intervals.
 Note: If the travel way width is reduced to less than 10 feet by the use of drums, vertical panels shall be used in lieu of drums.



ELEVATION DIFFERENCE GREATER THAN 4 INCHES
DETAIL 150-B

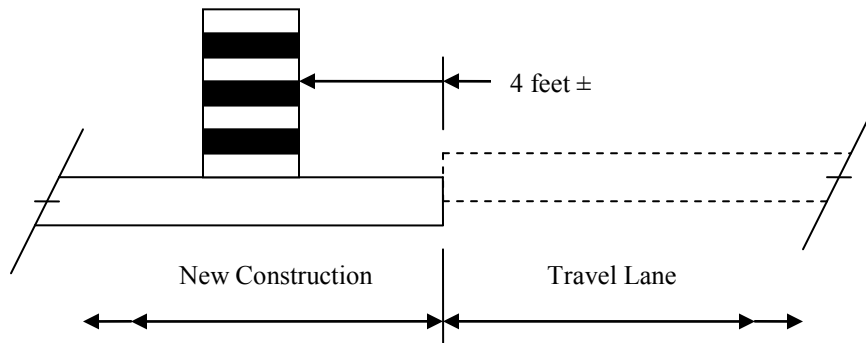
Drums spaced at 40 foot intervals.

Location of drums when Elevation Difference is 2+ inches to 4 inches.



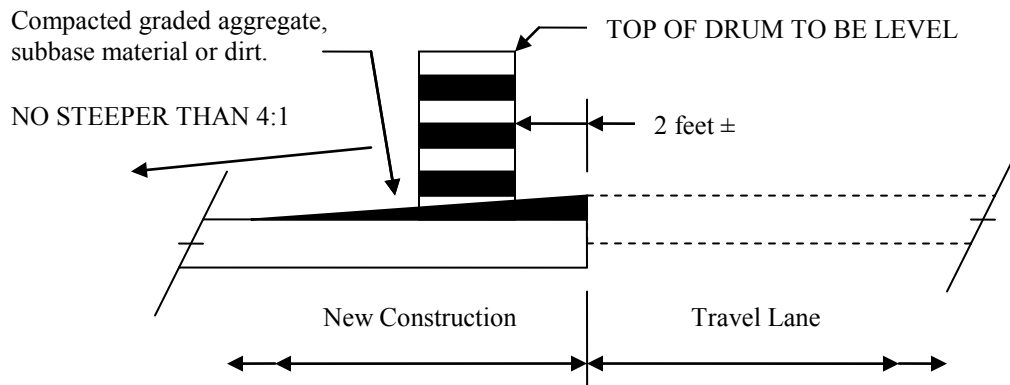
ELEVATION DIFFERENCE 2+ TO 4 INCHES
DETAIL 150-C

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 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

2011 SPLOST RESURFACING CONTRACT #4

**16.11 Miles of Asphaltic Concrete Pavement Resurfacing &
Cement Stabilized Base Reclamation on Numerous Roads/Streets**

SPECIAL PROVISIONS

For

Rockdale County Department of Transportation (RDOT)

CONTRACT # C-2015-_____

1. Modifications of Standard Specifications

SECTION 300 – General Specifications for Base and Subbase Courses

For this project a Fine Grader as specified in Sub-Section 300.03.H. will not be required.

SECTION 301 – Soil Cement Construction

Retain Section 301 and add the following:

SECTION 301 – Cement Stabilized Reclaimed Base Construction

301.1 General Description

This work includes constructing a cement stabilized base course by pulverizing the existing pavement structure and mixing with Portland cement to the depth specified on the plans. Construct according to these Specifications and to the lines, grades, thickness, and typical cross-sections shown on the Plans or established by the Engineer.

301.1.01 Related References

A. Standard Specifications

Section 412—Bituminous Prime

Section 800—Coarse Aggregate

Section 814—Soil Base Materials

Section 821—Cutback Asphalt

Section 830—Portland Cement

Section 880—Water

B. Referenced Documents

General Provisions 101 through 150

GDT Test Methods			
GDT 19	GDT 21	GDT 65	GDT 86
GDT 20	GDT 59	GDT 67	

301.1.01 Submittals

Before constructing a test section according to Subsection 301.3.04.E.1, submit a Construction Work Plan to the Engineer. Include proposed equipment and proposed compaction procedures. If the Engineer determines that the Work Plan is not satisfactory, revise the compaction procedure and augment or replace equipment, as necessary, to complete the Work.

301.2 Materials

Ensure that materials meet the requirements of the following Specifications:

Material	Section
Blotter material (sand)	<u>412.3.05.G.3</u>
Course Aggregate	<u>800</u>
Soil Base Material	<u>814.2.02</u>
Cutback Asphalt, RC-30, RC-250, or MC-30, MC-70, MC-250	<u>821.2.01</u>
Portland Cement (Type I or Type II)	<u>830.2.01</u>
Water	<u>880.2.01</u>

301.3 Construction Requirements

301.3.01 Personnel

Ensure that only experienced and capable personnel operate equipment.

301.3.02 Equipment

Use equipment that has been approved by the Engineer before construction begins. Provide equipment in satisfactory condition capable of continuously mixing materials (pavement structure, soil, water, and cement) to a consistent depth. Use equipment capable of providing a homogenous blend.

301.3.03 Preparation

Potholing of Utilities is not required. However, the County highly encourages the Contractor to pothole all utilities to determine the depth of such utilities. All potholes must be performed within the existing paved road. Potholing outside of the paved road must be approved by the Inspector or Engineer and shall be re-graded to existing or better condition. If the Contractor chooses to pothole, the cost shall be included in item 301-600. No separate payment will be made.

Loosen and pulverize the in-place pavement structure to the width and depth to be stabilized without damaging the underlying materials. Add water to assist pulverization if necessary.

There will be two separate Typical Sections for the cement stabilization:

1. Typical Section 1 will be used on curb and gutter roads. It will require pre-mixing the asphalt and underlying material to a depth of **10 inches**. The material will then be graded and compacted. A milling machine will then mill down to 2 inches below the gutter line and the excess material hauled away. After milling is complete, the cement will then be added and mixing will take place to a depth of 8 inches before final grading and compaction.
2. Typical Section 2 will be on non-curb and gutter roads. It will require premixing the asphalt and underlying material to a minimum depth of **8 inches**. After pre-mixing has taken place the cement will then be placed and mixed to a depth of 8 inches before final grading and compaction. At no time shall a roadway be un-passable to thru traffic. An approved cement spreading truck and an approved reclamation machine (minimum 600 hp) are required.
3. Typical Section 3 will be used on #19 O'Neal Road. It will require premixing the asphalt and underlying material to a minimum depth of **10 inches**. After pre-mixing has taken place the cement will then be placed and mixed to a depth of 10 inches before final grading and compaction. At no time shall a roadway be un-passable to thru traffic. An approved cement spreading truck and an approved reclamation machine (minimum 600 hp) are required.
4. Keys Pointe will require special coordination during reclamation operations. Refer to the FDR mix design provided in Appendix D.

The existing earth shoulder and reclamation material shall be bladed to a smooth and uniform section on shoulders and slopes. Any excess and/or undesirable material will be loaded and hauled away by the contractor to a pre-determined location or can be disposed of by the contractor.

301.3.04 Construction

A. Weather Limitations

1. Mix cement-stabilized base only when the weather permits the course to be finished without interruption 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 (4°C) in the shade and rising.
4. Ensure that the temperature of the pavement course and underlying materials are above 50°F (10°C).
5. If the work is interrupted for more than two hours after cement has been added, or if rain increases the cement's moisture content outside the specified limits, remove and replace the affected portion at no additional cost to the Department.

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. Uniformly spread the required amount of Portland cement with a cyclone-type mechanical spreader or its equivalent. Do not use pneumatic tubes to transfer the cement from the tanker directly onto the material to be stabilized.
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 + 10 percent of that specified by the Engineer.
3. Provide both equipment and personnel to measure the application rate of cement placed.
4. Apply cement on days when wind will not interfere with spreading.
5. If the cement content is below the 10 percent limit in the mixing area, add additional cement to bring the affected area within the tolerance specified and recalibrate the mechanical spreader's spread rate. 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.
6. 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.
7. Pass only spreading and mixing equipment over the spread cement and operate this equipment so that it does not displace cement.
8. Replace damaged cement at no cost to the Department when damage is caused by:
 - Hydration due to rain, before or during mixing operations.
 - Spreading procedures contrary to the requirements stated above.
 - Displacement by the Contractor's equipment or other traffic.
9. Do not spread cement on any areas that "pump" under construction traffic.

D. Mixing

1. Begin mixing as soon as possible after the cement is spread, and continue until a homogeneous and uniform mixture is produced. Make any necessary changes to meet the Engineer's requirements if the equipment does not produce a homogeneous and uniform mixture conforming to these Specifications.
2. Continue pulverizing until the base mixture is uniform in color and conforms to the following gradation requirements
 - 95 percent passing the 2 inch (50mm) sieve
 - 55 percent of the roadway material, excluding gravel, passes the No. 4 (4.75mm) 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. Use the first section of each constructed cement-stabilized base course as a test section.
 - b. Construct a test section between 350 feet (100m) and 500 feet (150m) long at the designated width.
 - c. The Engineer will evaluate compaction, moisture, homogeneity of mixture, thickness of stabilization, and finished base surface. If the Engineer deems necessary, revise the compaction procedure or augment or replace equipment.

2. Time Limits

- a. Begin compaction within 45 minutes from the time water is added to the cement mixture.
- b. Complete compaction within 2 hours.
- c. Complete all operations within 4 hours, from adding cement to finishing the surface.
- d. Do not perform vibratory compaction on materials more than 90 minutes old, measured from the time cement was added to the mixture.

3. Moisture Control

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. **A minimum 10 ton sheep's foot roller will be the only compactor approved for initial compaction efforts. A steel drum roller may be used for intermediate or final compaction at the Engineers discretion.**
- 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.
- 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 301.3.04.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 2 feet (600mm) 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 (This may be waived at the discretion of the Engineer)

1. Apply bituminous prime according to Section 412 as soon as possible and in no case later than 24 hours after completion of the finishing operations.
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. Maintain and protect the curing seal for seven days.
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. Do not permit any traffic or equipment on the finished surface of the base course until the prime has hardened enough so that it does not pick up under traffic. For the first seven days after priming, restrict traffic to lightweight vehicles such as passenger cars and pickup trucks. Do not allow vehicles with an average axle load exceeding 20,000 pounds (9Mg) on the unfinished base at any time.
2. Correct any failures caused by traffic at no additional cost to the Department.

I. Protection of Course

Maintain the base course until the Engineer determines that it has sufficiently cured and is ready to be covered with the pavement course. Make repairs specified in 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 Section 105.

301.3.06 Quality Acceptance

The County will provide an independent testing services firm to perform acceptability testing such as FDR compaction testing, moisture testing, and spread rate testing, etc. Any other tests or requirements to deliver the contract per the Contract Documents will be the responsibility of the Contractor.

A. Compaction Tests

1. Determine the maximum dry density from representative samples of compacted material, according to GDT 19 or GDT 67.
2. Determine the in-place density of finished courses according to GDT 20, GDT 21 or GDT 59, as soon as possible after compaction, but before the cement sets.

B. Gradation Test

Ensure that the gradation of the completely mixed cement-stabilized base course meets the requirements of Subsection 301.3.04.D.2.

C. Finished Surface

Check the finished surface of the cement-stabilized base course transversely.

1. Check the surface using a 15 ft (4.5 m) straightedge parallel to the centerline.

Additionally, use one of the following tools:

- A template, cut true to the required cross-section and set with a spirit level on non-superelevated sections
 - A system of ordinates, measured from a stringline
 - A surveyor's level
2. Ensure that ordinates measured from the bottom of the template, stringline, or straightedge, to the surface do not exceed 1/4 in (6 mm) at any point. Rod readings shall not deviate more than 0.02 ft (6 mm) from required readings.
 3. Correct any variations from these requirements immediately according to Subsection 300.3.06.B, "Repairing Defects."

C. Thickness Tolerances

1. Thickness Measurements

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 (300m) per 2 lanes.

2. Excess Thickness
 - a. Determine the average thickness per linear mile (kilometer) from all measurements within each mile (kilometer) increment.
 - b. Ensure that the average thickness does not exceed the specified thickness by more than 1/2 in (13 mm).

- c. If the basis of payment is per cubic yard (meter), and the average thickness for any mile (kilometer) increment exceeds the allowable ½ in (13 mm) tolerance, the excess quantity in that increment will be deducted from the Contractor’s payments.
- d. The excess quantity is calculated by multiplying the average thickness that exceeds the allowable ½ in (13 mm) tolerance by the surface area of the base, as applicable.

E. Strength

- 1. Ensure that the strength of the completed cement-stabilized base course is at least 300psi (2070kPa), as determined from testing the unconfined compressive strength of cores from the completed course in accordance with GDT 86.
- 2. If a strength test falls below 300psi (2070kPa), do the following:
 - a. Isolate the affected areas by securing additional cores every 75 feet (23m) on each side of the failing area.
 - b. Average all compressive strengths in the affected area to determine the basis for corrective work according to the following table or the Engineer’s directions.

Compressive Strength	Corrective Work
300 psi (2070 kPa) or greater	None
200 psi (1380 kPa) to 299 psi (2069 kPa)	Proofroll and correct deficient areas per direction of the Engineer.
Less than 200 psi (1380 kPa)	Reconstruct affected area at Contractors Cost.
<i>Notes:</i> 1) Ensure that a corrected area requiring asphaltic concrete is at least 150ft (45m) long and covers the full width of the cement-stabilized base surface. 2) Perform corrective work requiring asphaltic concrete or reconstruction at no additional cost to the Department.	

301.4 Measurement

A. Base Material

Measure base material by the cubic yard (meter), loose volume, as specified in Section 109, during mixed-in-place construction when it is necessary to add materials to the roadbed or to build up the base with new material.

B. Cement-Stabilized Base Course

Measure the surface length along the centerline when payment is specified by the square yard (meter). The width is specified on the Plans. Measure irregular areas, such as turnouts and intersections, by the square yard (meter).

C. Portland Cement

Measure Portland cement by the ton (megagram).

D. Bituminous Prime

Bituminous prime is not measured for separate payment. Include the cost of furnishing and applying bituminous prime according to the provisions of Section 412 in the Unit Price Bid for each individual base item.

E. Coarse Aggregate

Measure coarse aggregate by the ton (megagram).

301.5 Payment

A. Base Material

When it is necessary to add other materials to those in the roadbed, or to build up the base with entirely new materials, the added base materials, will be paid for at the Contract Unit Price per square yard (meter), complete, in place, and accepted. Payment will be full compensation for soil-cement material, mixing in the pit, loading, unloading, and spreading.

B. Cement-Stabilized Base Course

Cement-stabilized base, in-place and accepted, will be paid for at the Contract Unit Price per square yard (meter). Payment will be full compensation for roadbed preparation, mixing on the road, shaping, pulverizing, watering, compaction, defect repair, and maintenance.

C. Portland Cement

Portland cement will be paid for at the Contract Unit Price per ton (megagram). Payment is full compensation for furnishing, hauling, and applying the material. Only Type I or Type 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.

D. Coarse Aggregate

Coarse aggregate will be paid for at the Contract Unit Price per ton (megagram). Payment is full compensation for furnishing, hauling, spreading, watering, shaping, and compacting the material.

Payment will be made under:

Item No. 301	Base – including material	Per cubic yard (meter)
Item No. 301	Cement Treated Base Course	Per square yard (meter)
Item No. 301	Type I or Type II Portland Cement	Per ton (megagram)
Item No. 800	Coarse Aggregate – including material	Per ton (megagram)

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 ± 20 °F (± 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 ± 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 ± 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.
 - 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/yd² (L/m²)

	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 ² (0.09 to 0.18 L/m ²).		

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 ² (45 kg/m ²)	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 ² (45 to 90 kg/m ²)	9.5 mm Superpave Type II
1.5 to 2 in (38 to 50 mm)	165 to 220 lbs/yd ² (90 to 120 kg/m ²)	12.5 mm Superpave *
2 to 2.5 in (50 to 64 mm)	220 to 275 lbs/yd ² (120 to 150 kg/m ²)	19 mm Superpave *
Over 2.5 in (64 mm)	Over 275 lbs/yd ² (150 kg/m ²)	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 ± 20 °F (± 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 ± 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.
3. 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.
 4. 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.”
 5. Obtain the Engineer’s approval for the sequence of paving operations, including paving the adjoining lanes. Minimize tracking tack onto surrounding surfaces.
 6. Ensure that the outside edges of the pavement being laid are aligned and parallel to the roadway center line.

7. 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
 - 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>
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/yd² (60 kg/m²) 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/yd² (50 kg/m²) 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 μ 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 paving operation 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

- 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.

- 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:

- 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.
- 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:

$$T1 = T \times \left\{ \frac{\% AC + \left(\frac{\% Aggregate \times 2.75}{\text{combined bulk Specific Gravity}} \right) + \% Y}{100} \right\}$$

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> Suprpave, <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/yd² (\$0.05/ m²) 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:

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.
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/yd² (\$0.05/ m²) 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 Pavment (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:

Pay Item Designation	Allowable Aggregate Groups
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 ± 1.0 %. The average permeability of three specimens may not exceed 3.60 ft per day (125×10 -scm 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 ± 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 ± 1.0 % for all mix types. Testing temperature shall be 64°C (147°F) for all mix types except 25 mm Superpave mixes, which shall be tested at 49°C (120°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

* 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/yd². For 9.5 mm SMA mixes placed at spread rates of 135 lb/yd² or less, 100 % passing is required on this sieve.

1. SMA mixtures shall be compacted at 50 gyrations with the Superpave Gyratory 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 μ m) sieve	+/- 2.0	5.0-7.0	5.0-7.0	4.5-7.0	4.0-6.0	3.5-6.0

* 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_{be})	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 μ m) sieve	+/- 3.8	20-50
No. 200 (75 μ 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. Cement mix designs have been prepared by Construction Materials Services, Inc. and are included in Appendix D.
- B. Do not proceed with resurfacing #22 Grimes Street and #23 Yellow Street in the Milstead Community until RDOT approves. There is another improvement project that is ongoing and will need to be completed before resurfacing operations begin.
- C. Item 457-1005, Geogrid Reinforcement, shall be Tensar GlasGrid 8511. Grid has been specified for use in Lakeview Estates Subdivision on a per road basis; however, this will be as directed by County Engineer or County Inspector. It is expected that areas that are moderately to severely distressed (ie. load-base related failures) will be marked by the County Inspector and that grid will be placed over these areas per manufacturers recommendations. A 1.5" 9.5mm type II overlay shall be applied over the entire road surface.
- D. The specific typical section to be used on each roadway segment is shown in the Appendix.
- E. Georgia Department of Transportation standard details shown in the Appendix are to be used as applicable, or as directed by Engineer.
- F. 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, length, and width of the segment to be rehabilitated. Total quantities of each pay item have been included for information only and requires that the **Contractor** verify the quantities.
- G. General Project Location Maps for roadway segments have been included in the Appendix for information only.

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.

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.

All unclassified excavation shall be paid for as "Unclassified Excavation", pay item 205-0001; 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. 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.
- H. 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.**
- I. 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.
- J. 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.
- K. **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 **18 Weeks from Notice to Proceed, or as approved by Rockdale County Department of Transportation.**
- 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 210-1001: 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.

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 along the centerline of roadway, per linear mile. Any areas contiguous with the pavement where there is a drop-off will require shoulder grading.

This Work shall also include the establishment of permanent grassing on the newly placed material. Payment for 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 subsidiary to the cost of the grading per centerline mile.

- 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.
- 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 REQUESTS** to Work on the weekends so that the Engineer can provide adequate inspection staff to oversee the **Work. Failure to provide 48 hour notice may result in denial of weekend work.**
- L. The **Contractor** shall notify the Engineer 1 week in advance regarding the roadway project on which resurfacing and/or reconstruction will occur so that the Engineer can notify occupants in writing.
- 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
Treated Base	Shoulder Grading	Several Items under Thermoplastic Pavement Markings
Unclassified Excavation	Cement	Graded Aggregate Base
	9.5 mm Superpave Asphalt	

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.

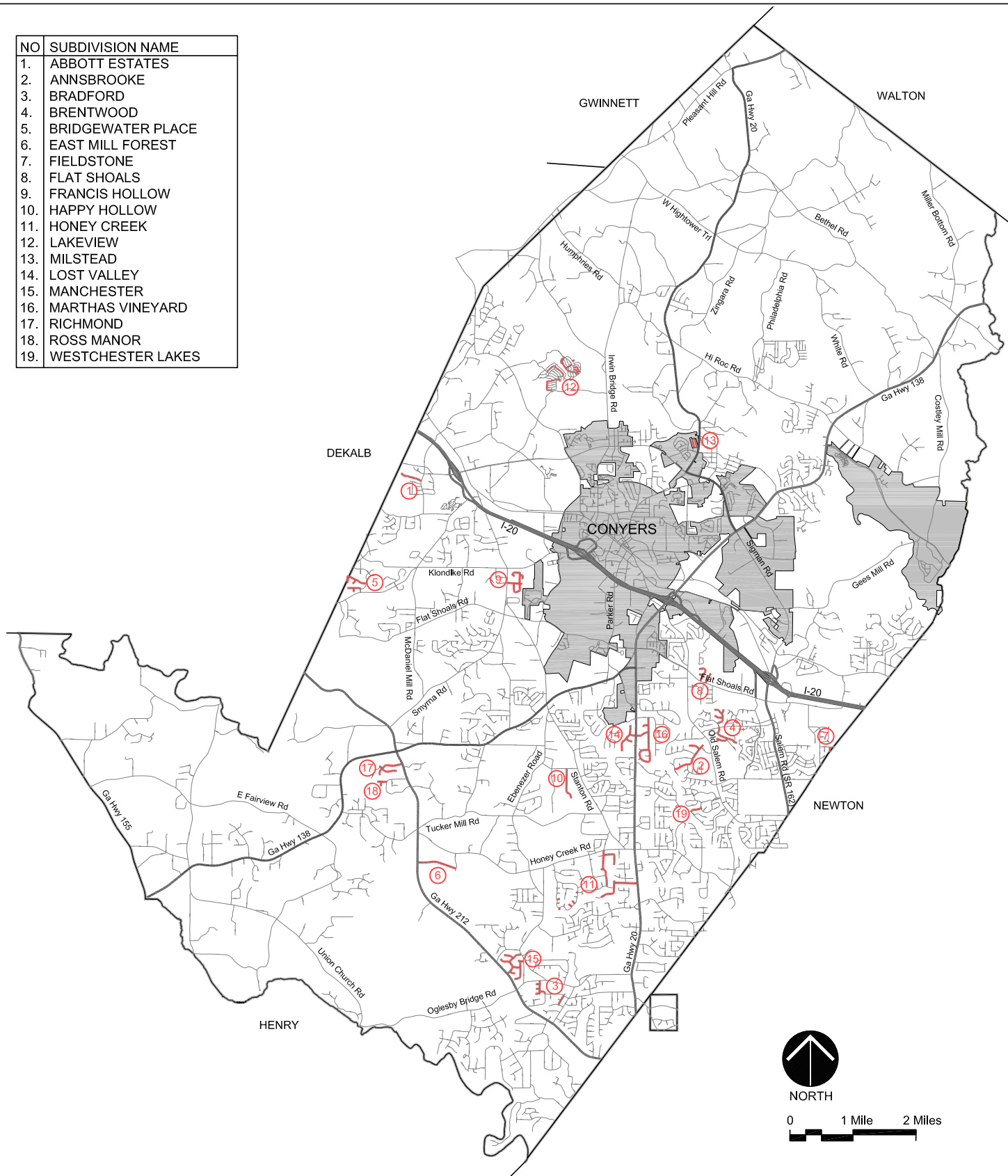
Georgia law requires that a telephone call or adequate notice must be given to the Utilities Protection Center (UPC) at 770-623-4344 a minimum of three (3) days before **Work** is to begin. The notice will remain in effect for 10 Working days from the date the Utilities Protection Center is notified. **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 F, which will be part of the Contract. **The Contractor shall include as part of his/her Bid Proposal the completed form on page BD.5 of the Bid Documents verifying that he/she has included all addendums as part of the Bid Proposal.**

APPENDIX A
LOCATION MAPS

NO	SUBDIVISION NAME
1.	ABBOTT ESTATES
2.	ANNSBROOKE
3.	BRADFORD
4.	BRENTWOOD
5.	BRIDGEWATER PLACE
6.	EAST MILL FOREST
7.	FIELDSTONE
8.	FLAT SHOALS
9.	FRANCIS HOLLOW
10.	HAPPY HOLLOW
11.	HONEY CREEK
12.	LAKEVIEW
13.	MILSTEAD
14.	LOST VALLEY
15.	MANCHESTER
16.	MARTHAS VINEYARD
17.	RICHMOND
18.	ROSS MANOR
19.	WESTCHESTER LAKES



SHEET NUMBER:
R2.0
 1 OF 1

2011 SPLOST RESURFACING
CONTRACT #4



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DEPARTMENT OF TRANSPORTATION

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 PHONE: 770-278-7200 FAX: 770-785-6909

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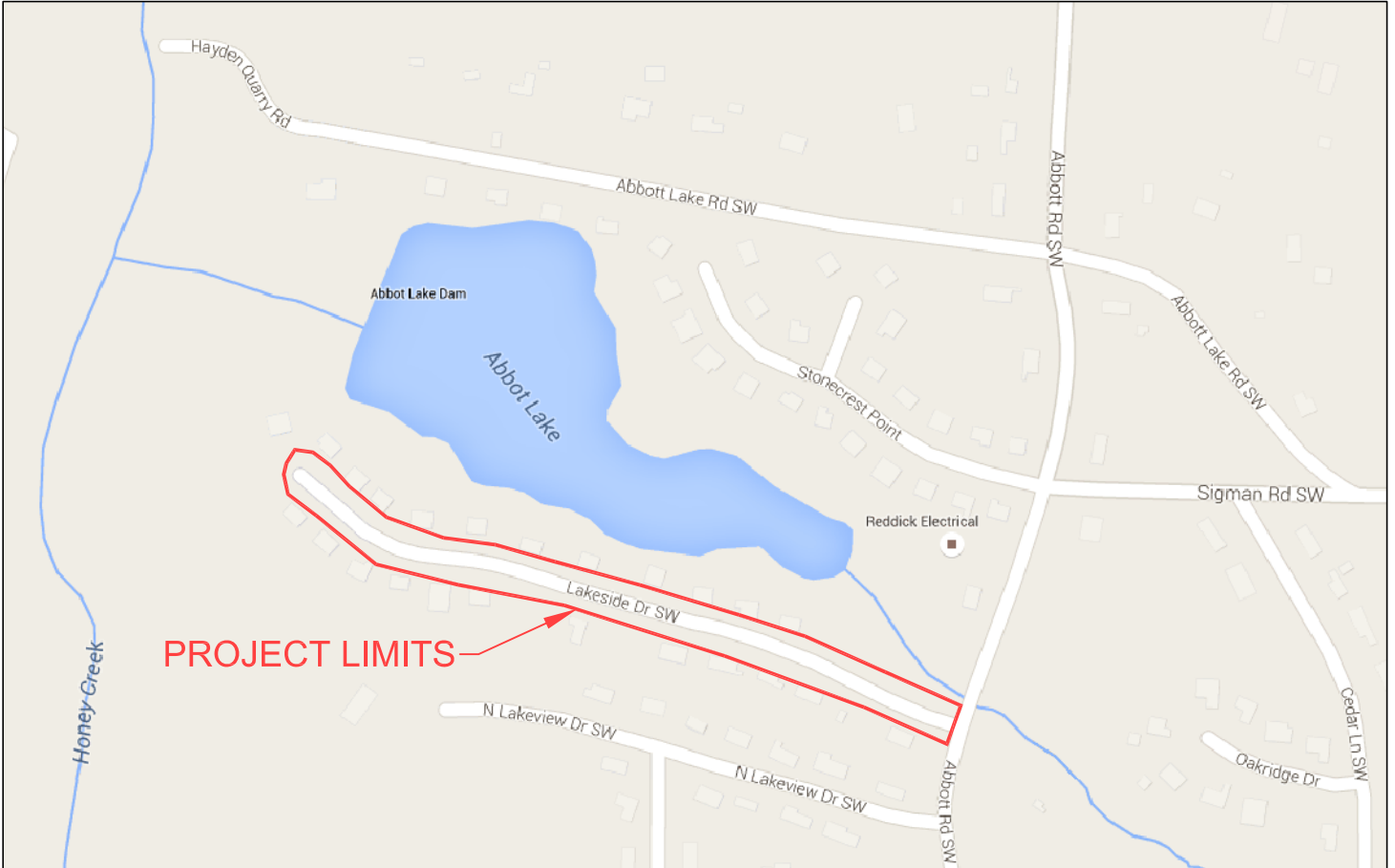
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PROJECT ID NO.: T.B.D.

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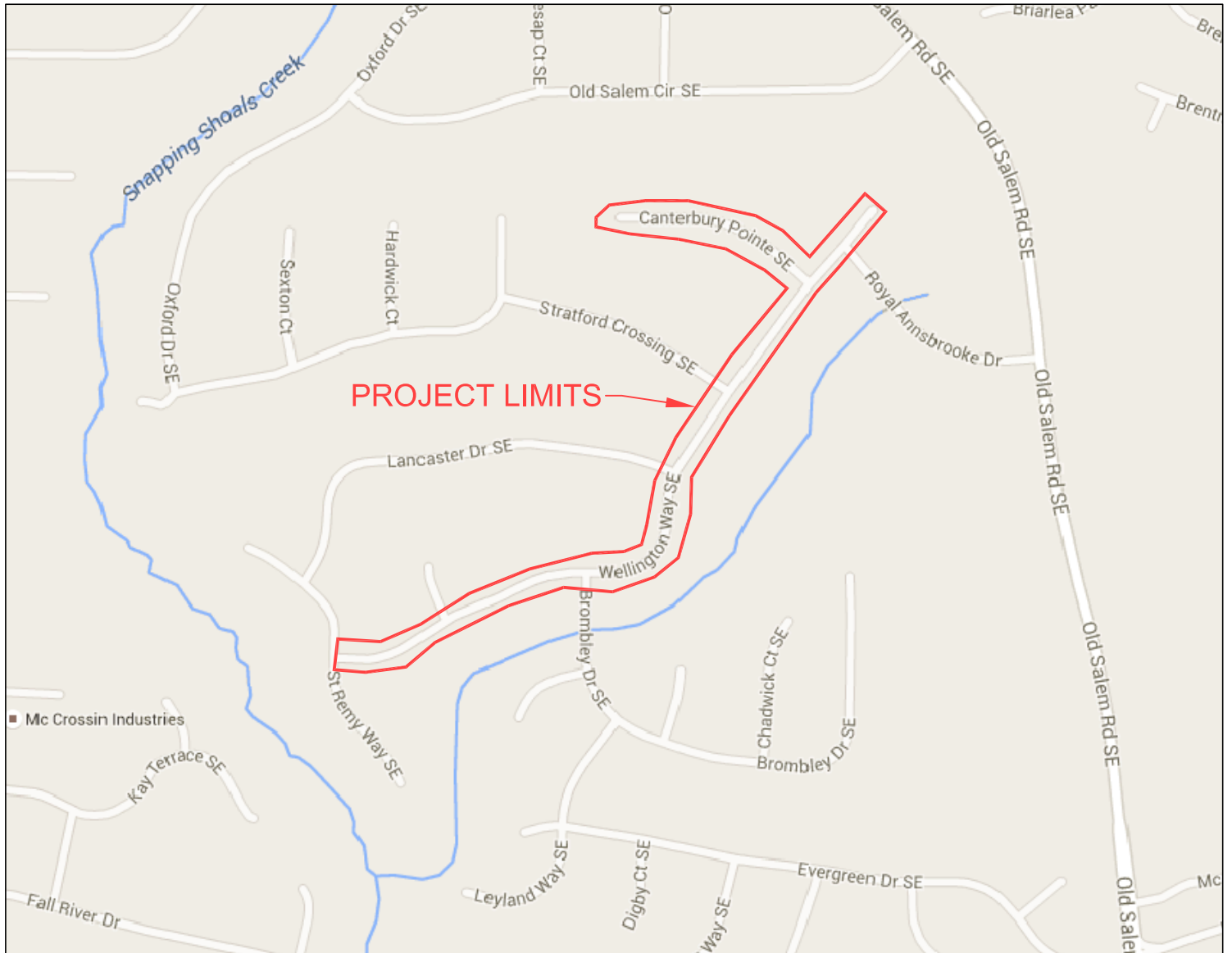


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 2 OF 19

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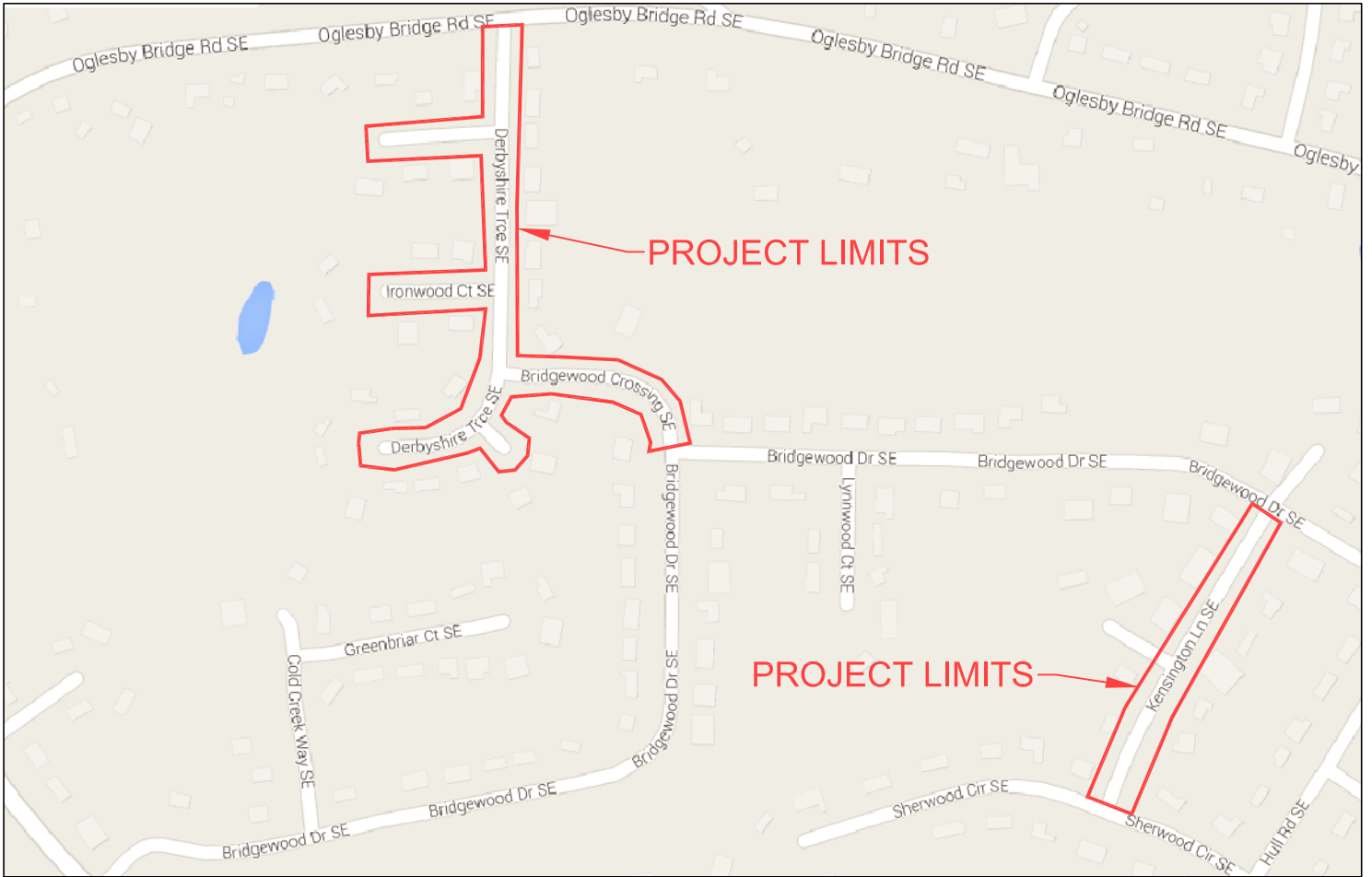


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 3 OF 19

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4 OF 19

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5 OF 19

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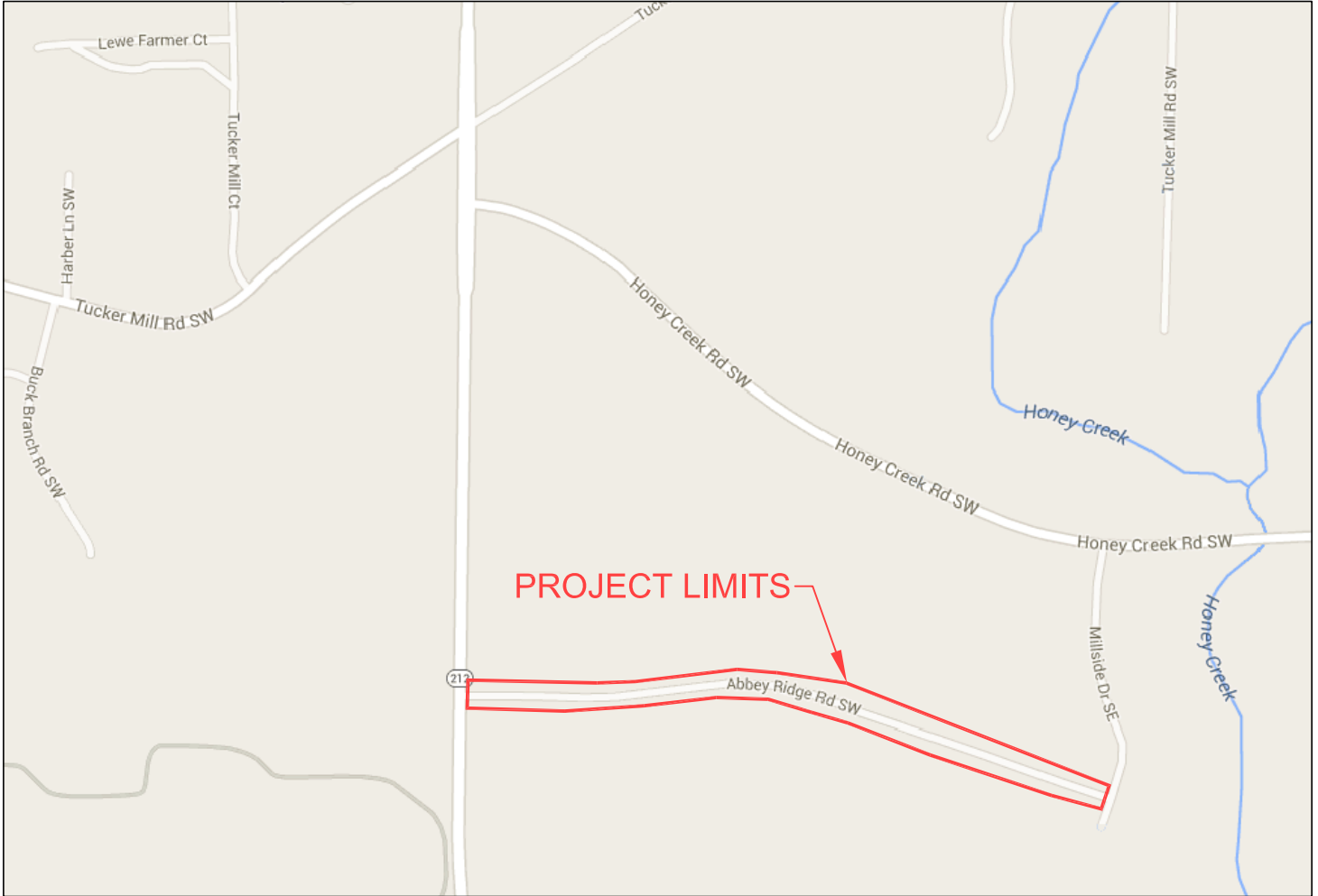


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PROJECT LIMITS

212

Abbey Ridge Rd SW

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CONTRACT #4



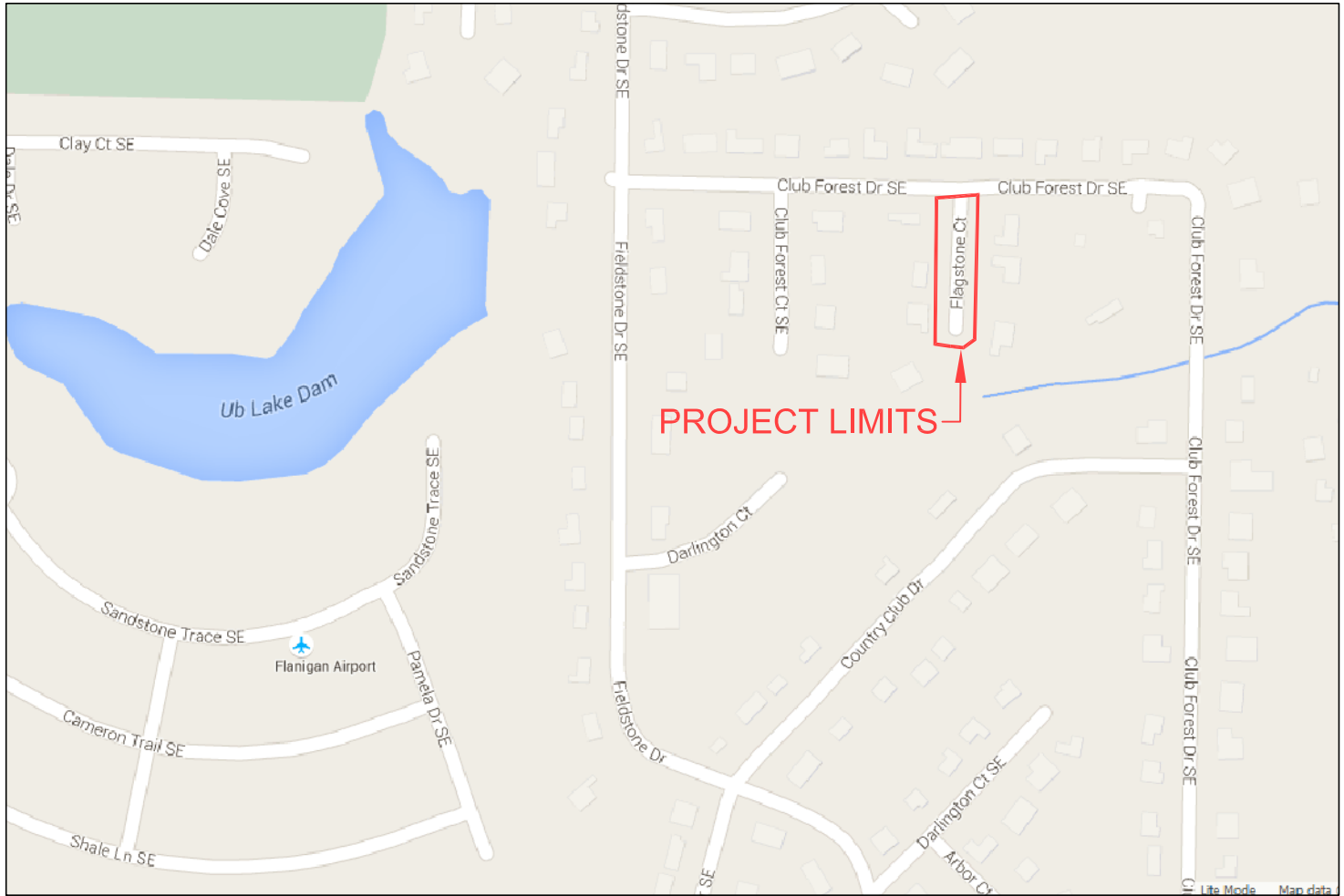
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R2.6
6 OF 19



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 7 OF 19

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 CONTRACT #4



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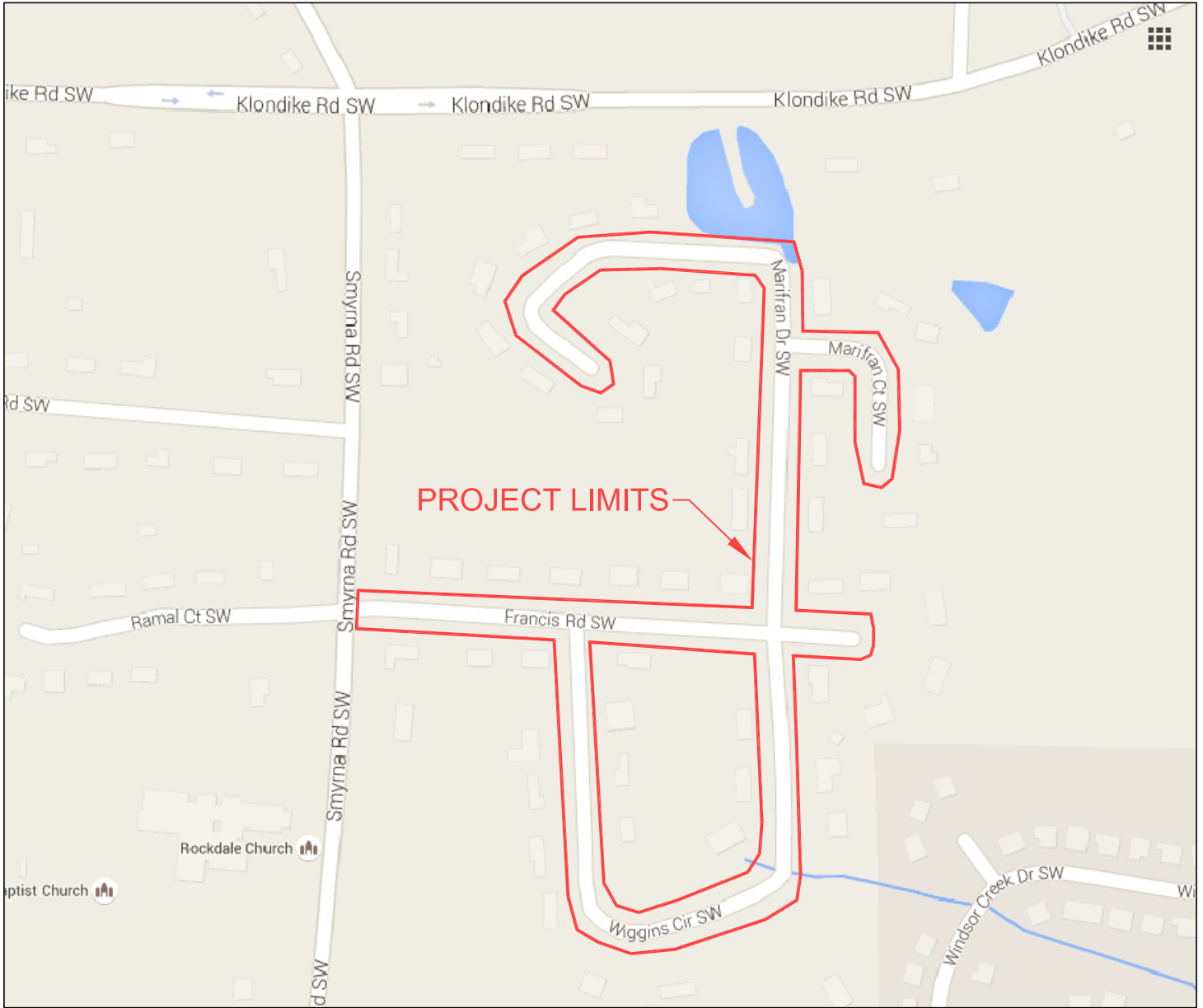


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 9 OF 19

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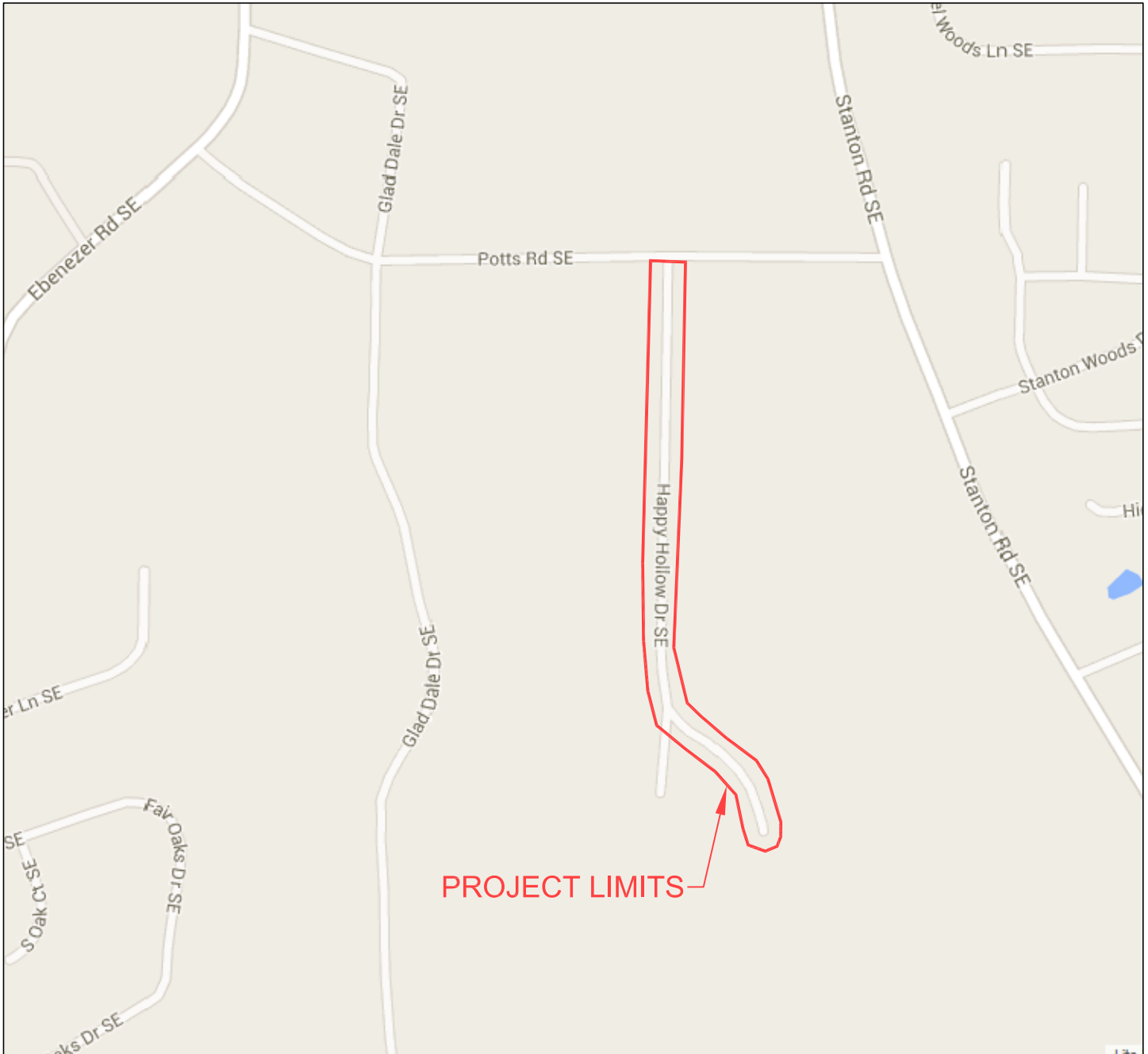


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 10 OF 19

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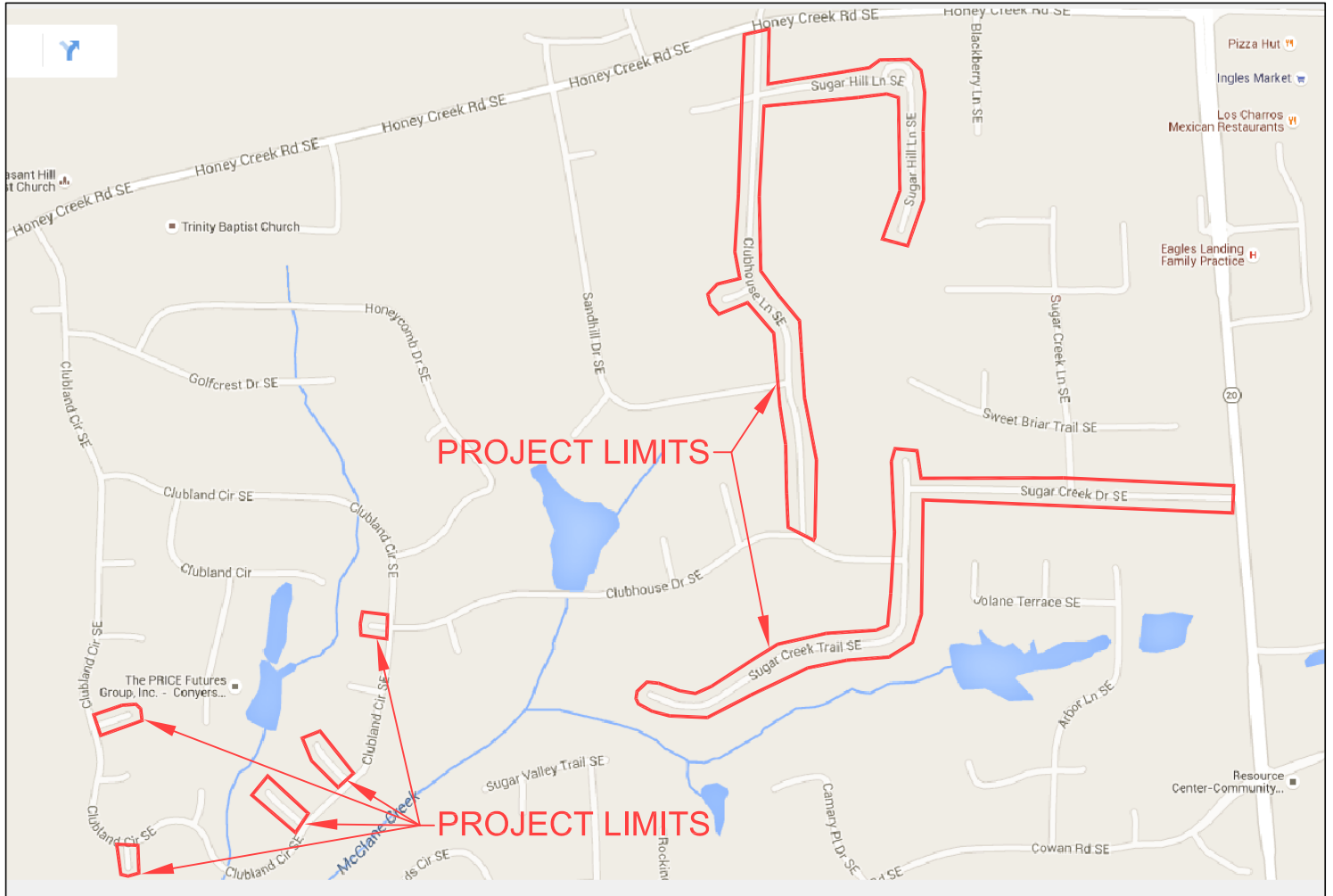


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 11 OF 19

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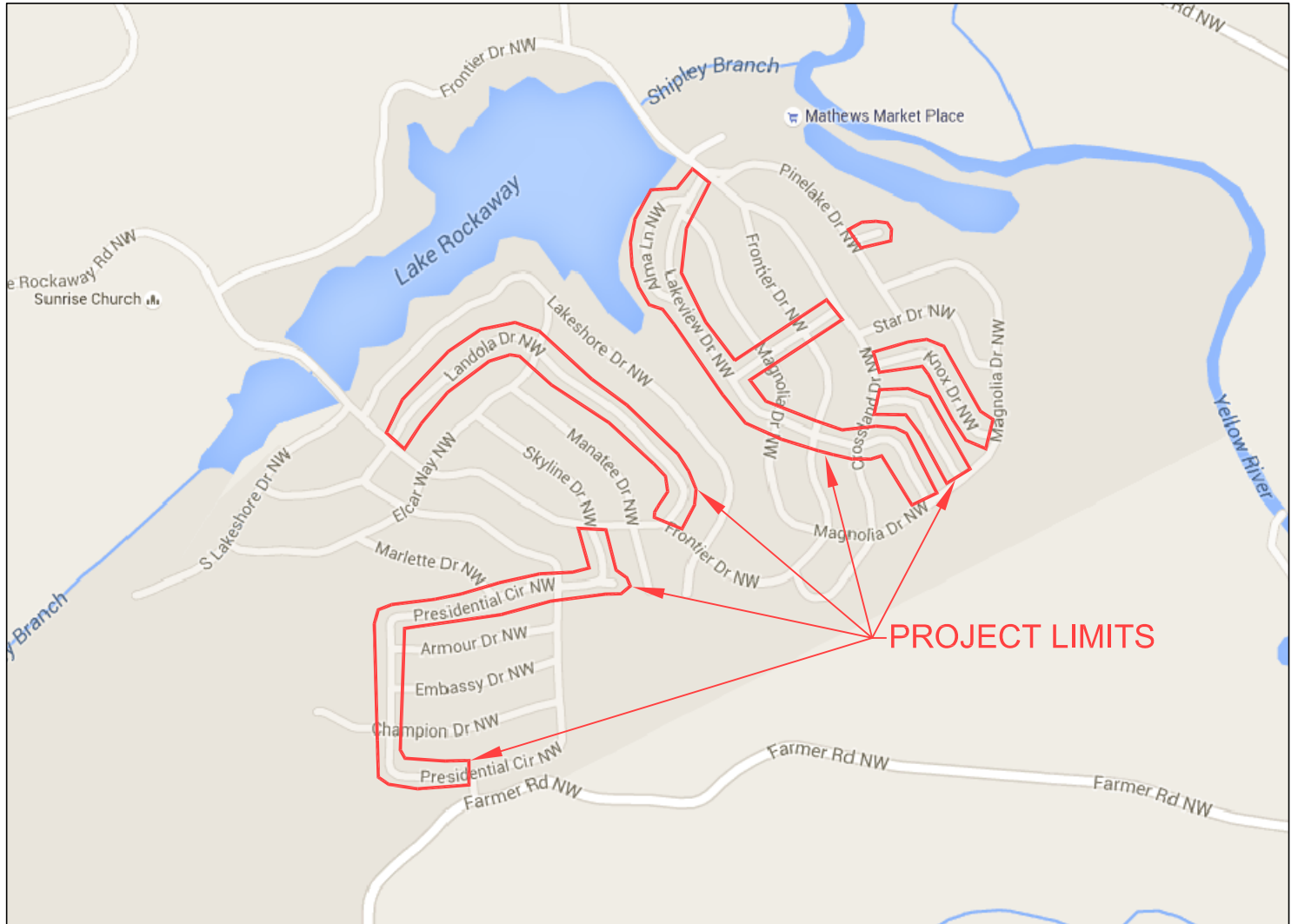


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 12 OF 19

2011 SPLOST RESURFACING
 CONTRACT #4



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 13 OF 19

2011 SPLOST RESURFACING
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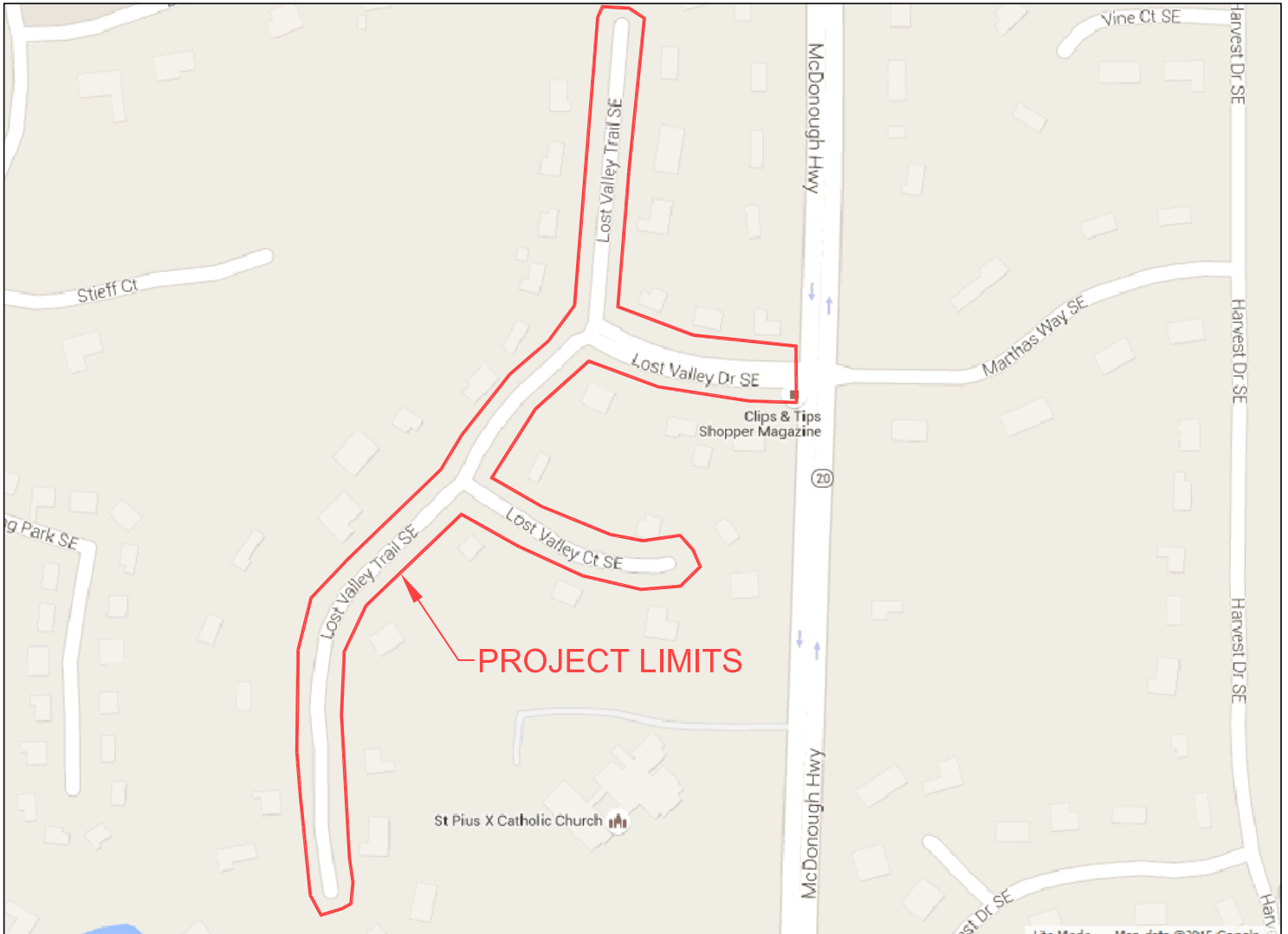


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14 OF 19

2011 SPLOST RESURFACING
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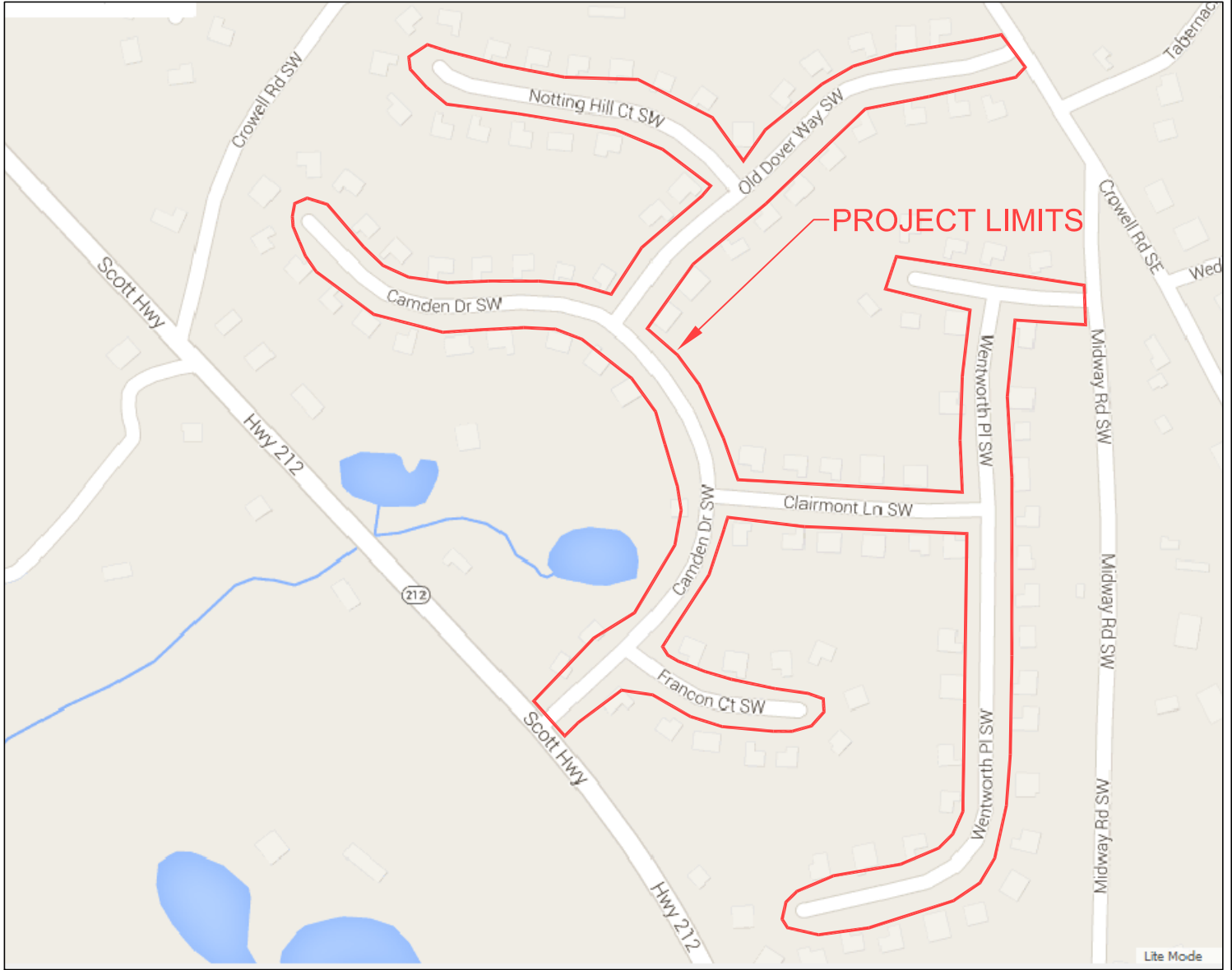


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R2.15
 15 OF 19

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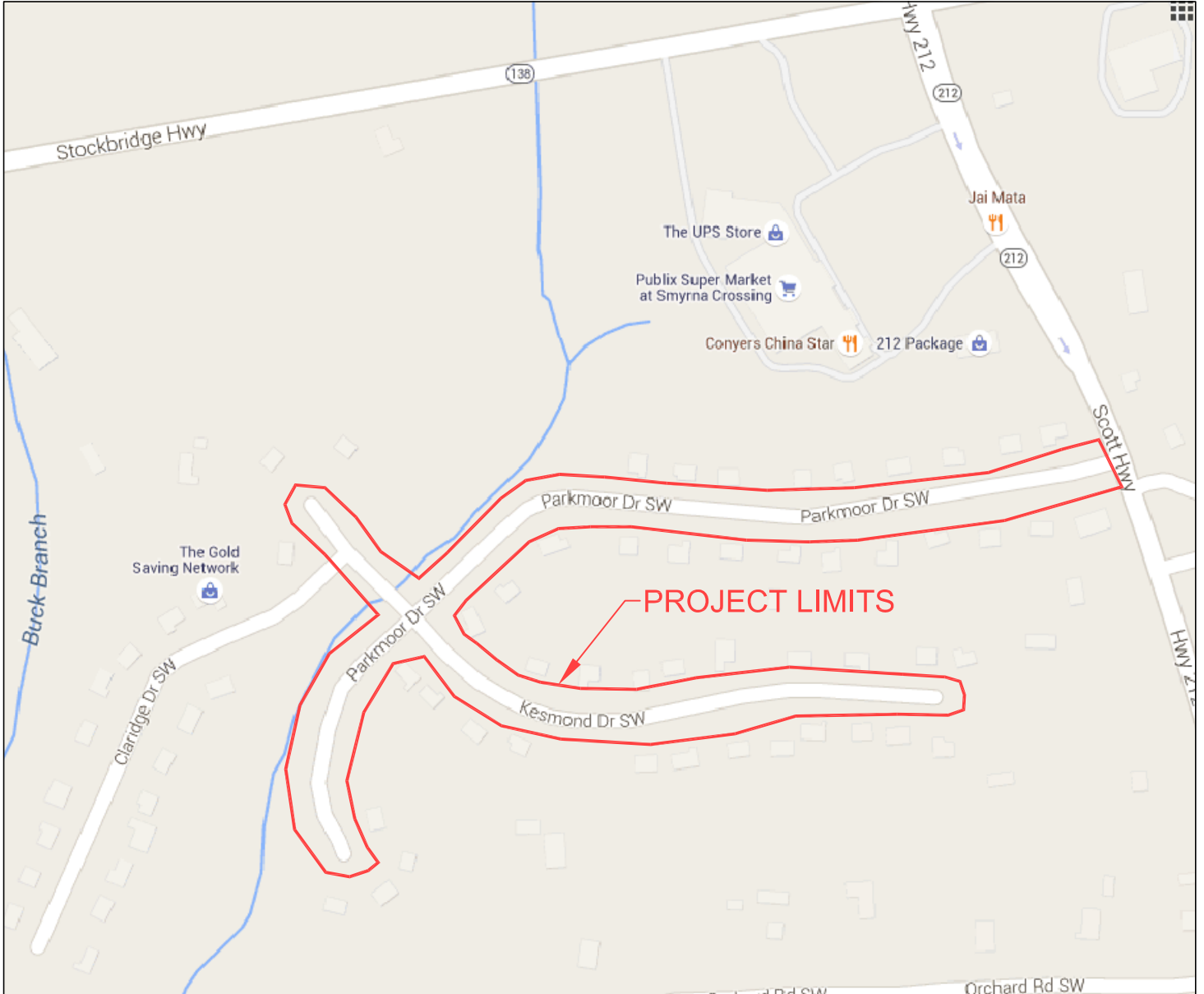


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 17 OF 19

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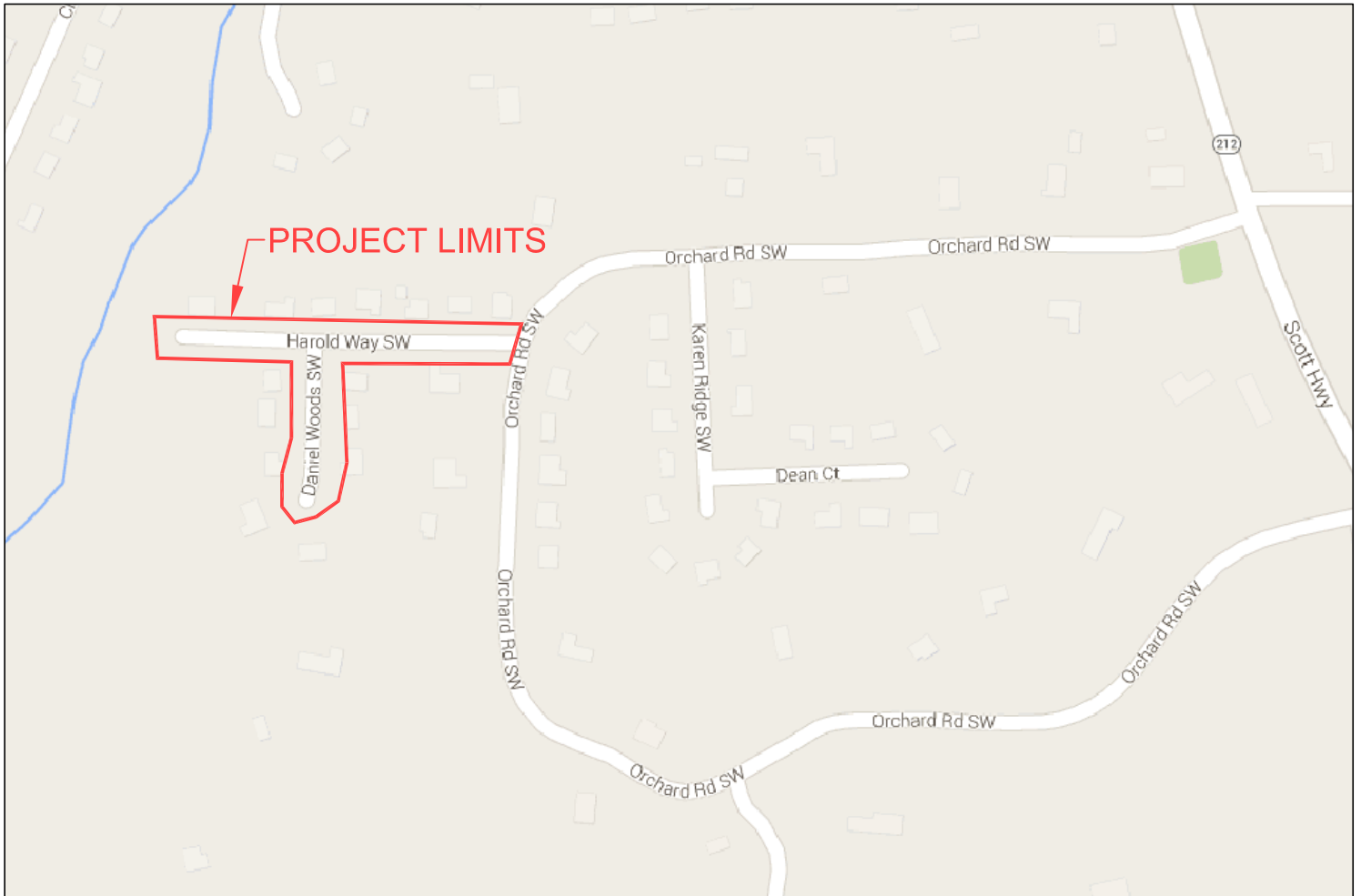


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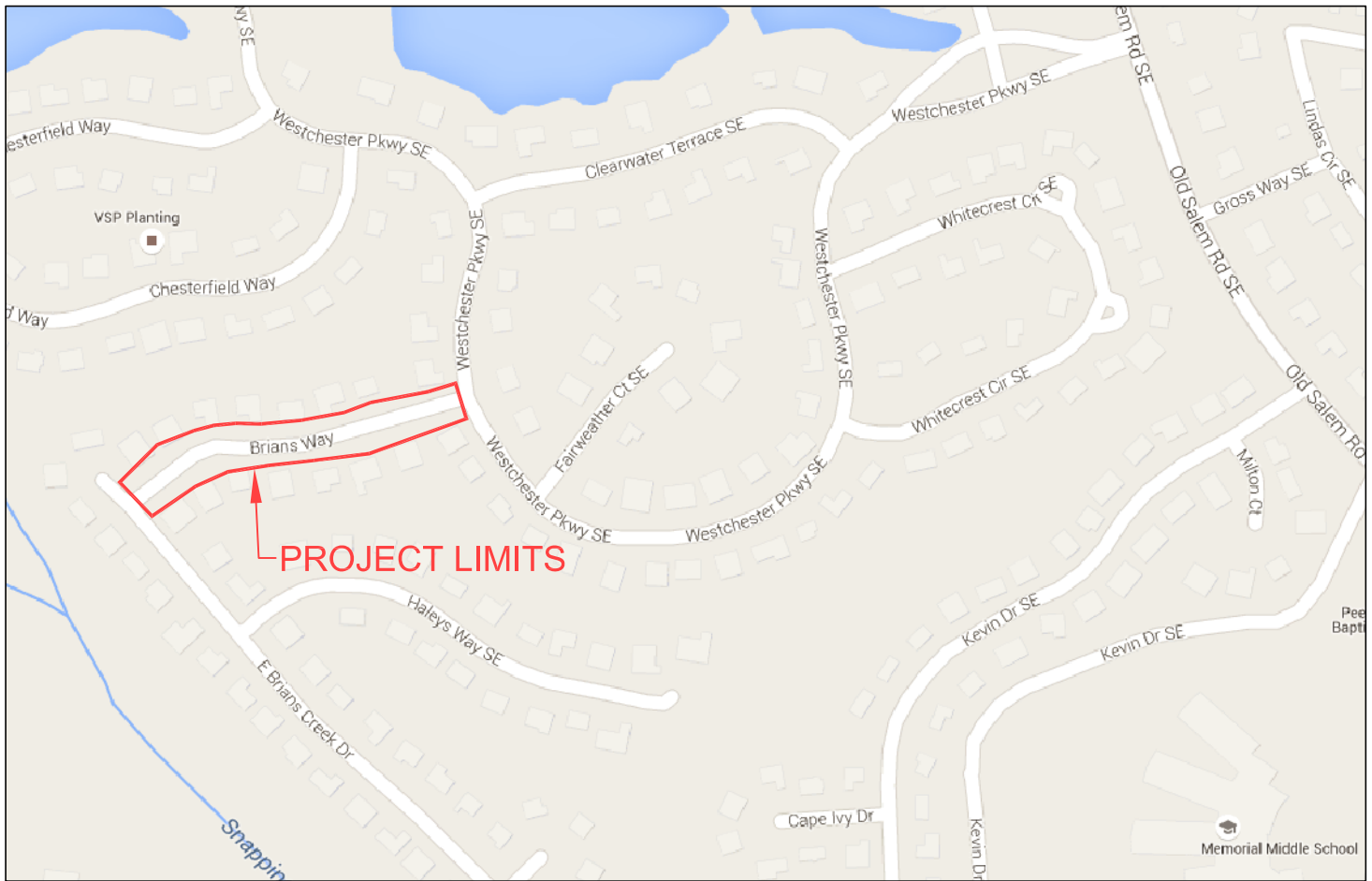


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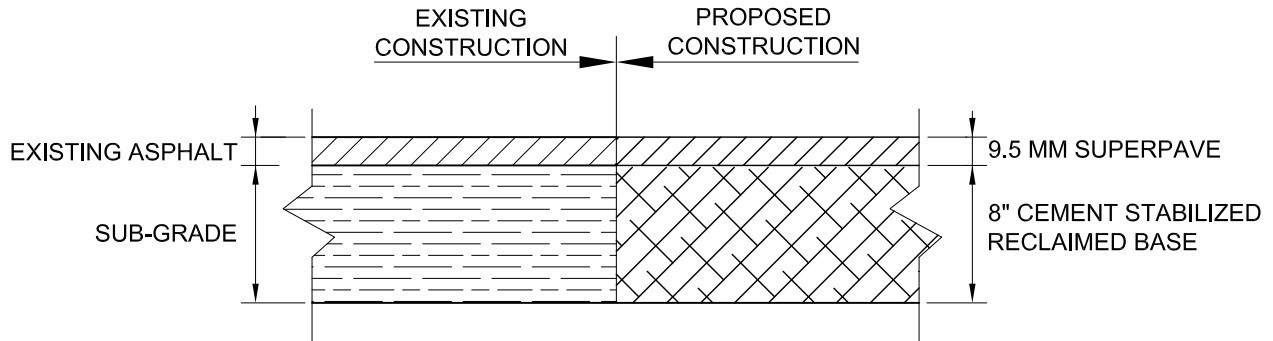
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APPENDIX B

TYPICAL SECTIONS / STANDARD DETAILS

FULL DEPTH RECLAMATION



SUBDIVISION	C&G	SHLDR.	9.5 MM
1. ABBOTT ESTATES	X	X	2.00"
2. ANNSBROOKE	X		2.00"
3. BRADFORD	X		2.00"
4. BRENTWOOD	X		2.00"
5. BRIDGEWATER PLACE	X		2.00"
6. EAST MILL FOREST		X	2.00"
7. FIELDSTONE	X		2.00"
8. FLAT SHOALS		X	2.00"
9. FRANCIS HOLLOW		X	2.00"
10. HAPPY HOLLOW	X		2.00"
11. HONEY CREEK	X		2.00"
13. MILSTEAD	X		2.00"
14. LOST VALLEY	X		2.00"
15. MANCHESTER	X		2.00"
16. MARTHAS VINEYARD	X		2.00"
17. RICHMOND	X		2.00"
18. ROSS MANOR	X		2.00"
19. WESTCHESTER LAKES	X		2.00"

SHEET NUMBER:
R3.1
 1 OF 2

2011 SPLOST RESURFACING
CONTRACT #4



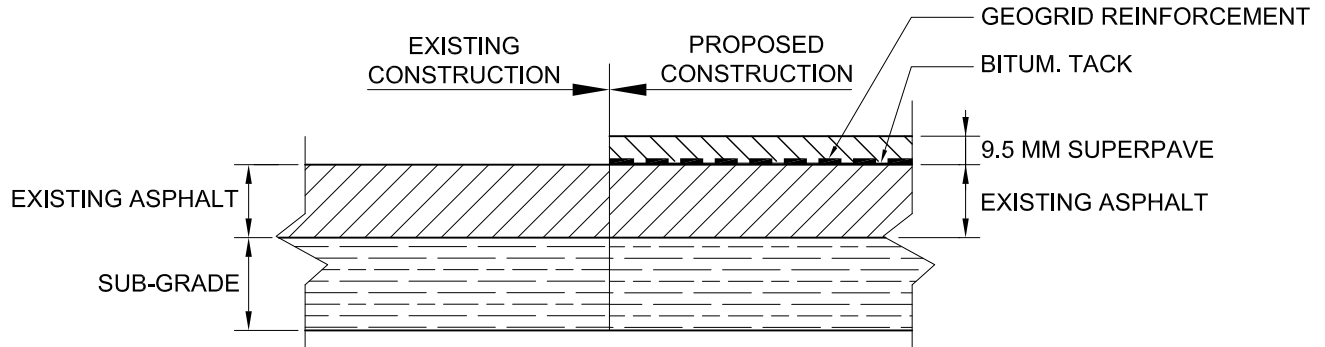
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OVERLAY W/ GEOGRID LAKEVIEW ESTATES



SUBDIVISION	9.5 MM
12. LAKEVIEW	1.50"

SHEET NUMBER:
R3.2
 2 OF 2

2011 SPLOST RESURFACING
CONTRACT #4



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APPENDIX C
ITEMIZED QUANTITY SHEETS

APPENDIX D
FDR MIX DESIGNS



CONSTRUCTION
MATERIALS
SERVICES, INC.
105 Park 42 Drive, Suite A
Locust Grove, GA 30248-2545

Phone (770) 914-1744 Email info@cmsnatl.com
Fax (770) 914-0412 www.cmsnatl.com
Providing Quality Service Since 1998

June 16, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#18 Westchester Lakes – Brian's Way
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at five (5) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 1.75 inches with underlain by a soil cement base. The asphalt was crushed and blended with the base soils for preparation of the Full Depth Reclamation (FDR) Mix Design.

Materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. After premixing, removal of 2 inches will be required. All materials extracted were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	461
7	546
9	589

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 5.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **17.2% and 20.5%**

Design Portland Cement Content range to be **+/- 5.0% (32.3 lbs per square yard)**

Standard Proctor – 107.8 pcf @ 17.2% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

WARRANT: CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers strive to perform all services in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession practicing in the same locality and under similar conditions. No other warranty or representation, express or implied, is included or intended in this agreement, in any report, opinion, document, or otherwise. We carry commercial general liability insurance, including completed operations, and professional liability insurance in aggregate amounts deemed adequate, and we comply with the statutory requirements for workmen's compensation insurance. Accordingly, the liability of CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers, to the client, owner, or any other party, for any loss or damage, resulting from any cause, including professional acts, errors, omissions, negligence, breach of warranty or breach of contract, shall not exceed the total compensation received by us for services related to this project; and the client will defend, settle, and discharge any claims or allegations of liability for the same against us by others. If the client desires higher monetary limits of our liability, we will be pleased to discuss such high limits and the impact on liability and fees. In the event that the client makes a claim against us, at law or otherwise, for any alleged act, error, omission, negligence, breach of warranty or breach of contract, arising from the performance of our services, and the client fails to prove such claim, then the client shall pay all costs accrued by us in defending ourselves.

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If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,

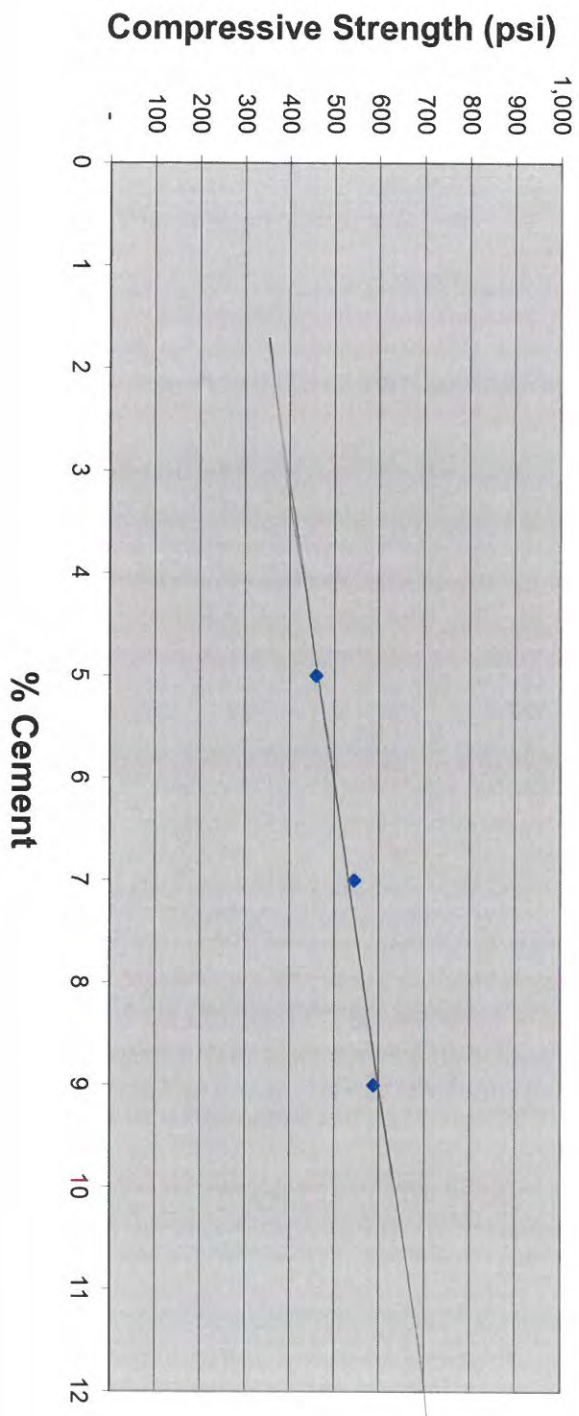


Andrew Johnson, P.E.

President

AJ:ceh

#18 Westchester Lakes Unconfined Compressive Strength vs. % Cement - 06/16/15





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Providing Quality Service Since 1998

June 14, 2015

Rockdale County Department of Transportation
Brian Frix, P. E.
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#11 Honey Creek – Sugar Creek Drive
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at six (6) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 5.7 inches, ranging from 3.5 to 8.0 inches, underlain by a sandy clay base. The asphalt was crushed and blended with the base soils for preparation of the Full Depth Reclamation (FDR) Mix Design.

Materials were recovered to a depth of 13 inches for the proposed 8-inch FDR Mix Design. **Milling of +/- 3 inches** of the asphalt shall be performed prior to any mixing. Pre-mixing of 10 inches should then be performed with a +/- 2-inch removal before the mixing of the cement.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	279
6	313
7	346
9	433

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 8.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **13.6% and 16.2%**

Design Portland Cement Content range to be **+/- 8.0% (54.4 lbs per square yard)**

Standard Proctor – 113.4 pcf @ 13.6% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

WARRANT: CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers strive to perform all services in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession practicing in the same locality and under similar conditions. No other warranty or representation, express or implied, is included or intended in this agreement, in any report, opinion, document, or otherwise. We carry commercial general liability insurance, including completed operations, and professional liability insurance in aggregate amounts deemed adequate, and we comply with the statutory requirements for workmen's compensation insurance. Accordingly, the liability of CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers, to the client, owner, or any other party, for any loss or damage, resulting from any cause, including professional acts, errors, omissions, negligence, breach of warranty or breach of contract, shall not exceed the total compensation received by us for services related to this project; and the client will defend, settle, and discharge any claims or allegations of liability for the same against us by others. If the client desires higher monetary limits of our liability, we will be pleased to discuss such high limits and the impact on liability and fees. In the event that the client makes a claim against us, at law or otherwise, for any alleged act, error, omission, negligence, breach of warranty or breach of contract, arising from the performance of our services, and the client fails to prove such claim, then the client shall pay all costs accrued by us in defending ourselves.

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If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,

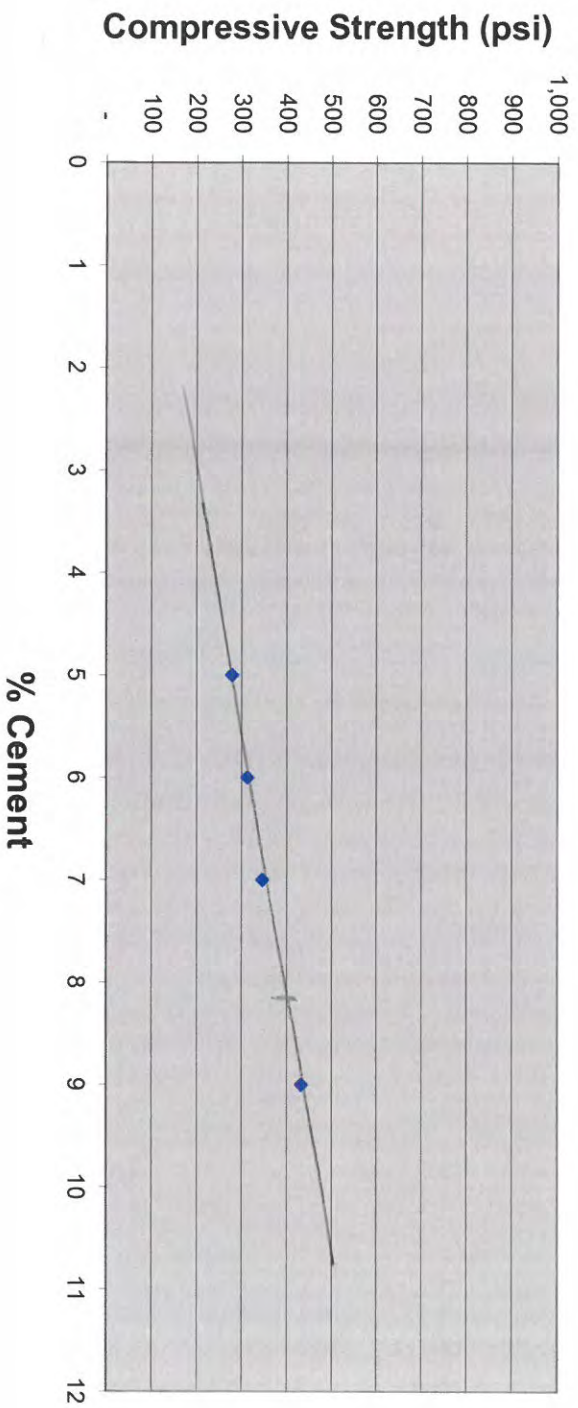


Andrew Johnson, P.E.

President

AJ:ceh

**#11 Honey Creek - Sugar Creek Drive
Unconfined Compressive Strength vs. % Cement - 06/09/14**





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June 18, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#17 Ross Manor
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at five (5) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 2.1 inches underlain by a soil cement base. The asphalt was crushed and blended with the base soils for preparation of the Full Depth Reclamation (FDR) Mix Design.

Materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. After premixing, 2 inch removal will be required. All materials extracted were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	422
7	491
9	522

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 5.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **18.4% and 22.0%**

Design Portland Cement Content range to be **+/- 5.0% (31.5 lbs per square yard)**

Standard Proctor – 104.9 pcf @ 18.4% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

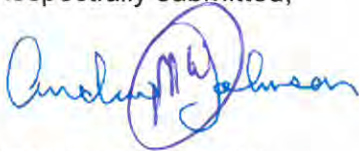
Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

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If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,

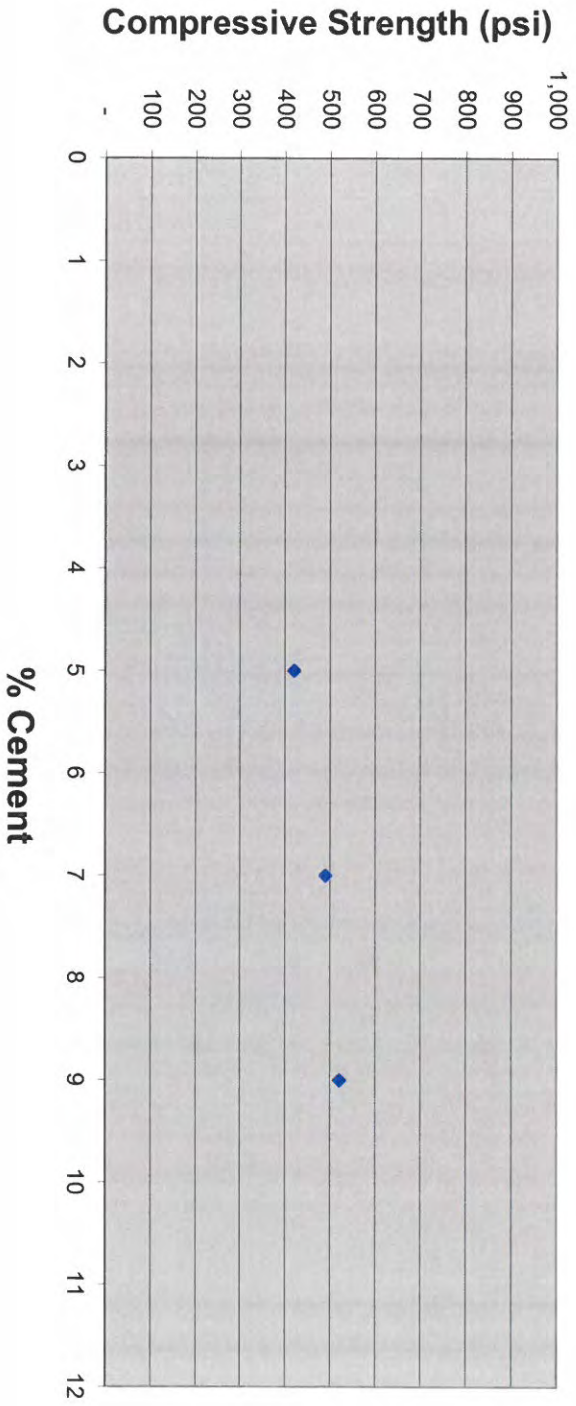


Andrew Johnson, P.E.

President

AJ:ceh

**#17 Ross Manor
Unconfined Compressive Strength vs. % Cement - 06/18/15**





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May 28, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#8 Flat Shoals
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at six (6) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 3.0 inches, with an outlier of 5.5 inches, underlain by a sandy clay base, with the exception of Merle Drive having 3 inches of Graded Aggregate Base. The asphalt was crushed and blended with the base soils for preparation of the Full Depth Reclamation (FDR) Mix Design.

Per instructions, materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. All materials extracted were included the FDR Mix Design. Removal of 2 inches after pre-mixing will be required.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	289
7	345
9	426

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 8.5%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **13.1% and 15.2%**

Design Portland Cement Content range to be **+/- 8.5% (58.4 lbs per square yard)**

Standard Proctor – 114.6pcf @ 13.1% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

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Respectfully submitted,

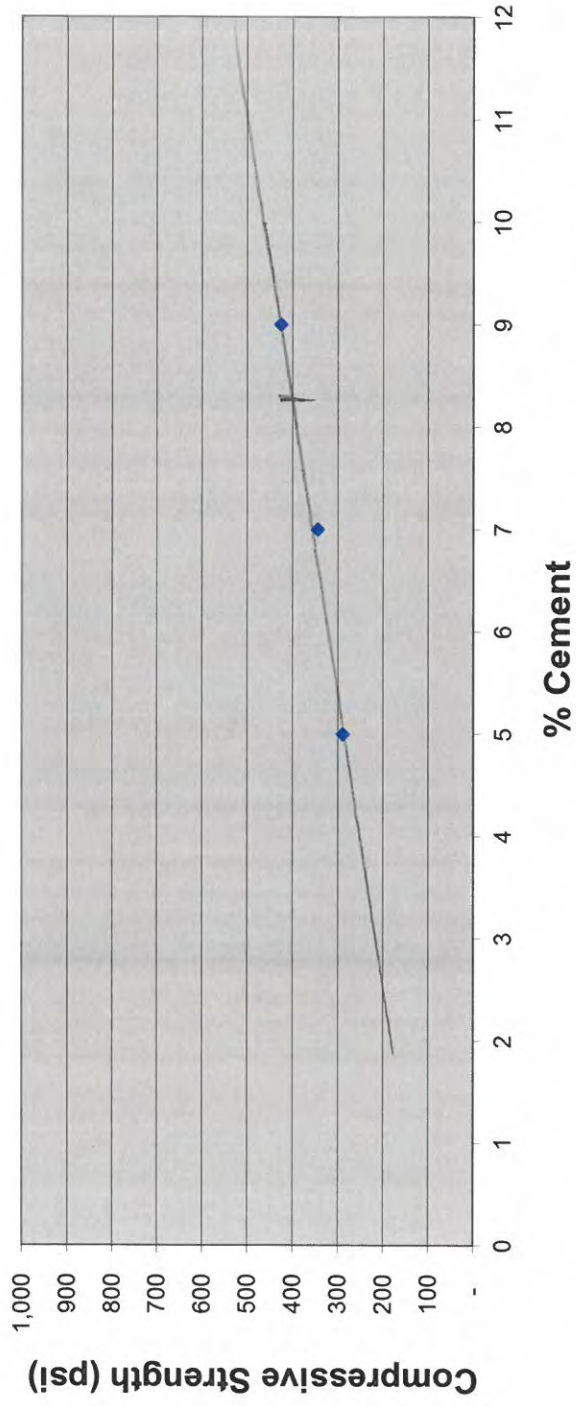


Andrew Johnson, P.E.

President

AJ:ceh

**#8 Flat Shoals
Unconfined Compressive Strength vs. % Cement - 05/26/14**





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May 23, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#16 Richmond Subdivision
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at 10 (10) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 2-inches (1.75 to 2.5 inches) underlain by a Graded Aggregate Base. The asphalt was crushed and blended with the base materials for preparation of the Full Depth Reclamation (FDR) Mix Design.

Per instructions, materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. All materials extracted were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
3	249
4	354
5	411
6	505

Unconfined Compressive Strengths were determined on 6 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 5.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **8.4% and 9.5%**

Design Portland Cement Content range to be **+/- 5.0% (38.1 lbs per square yard)**

Standard Proctor – 127.0pcf @ 8.4% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

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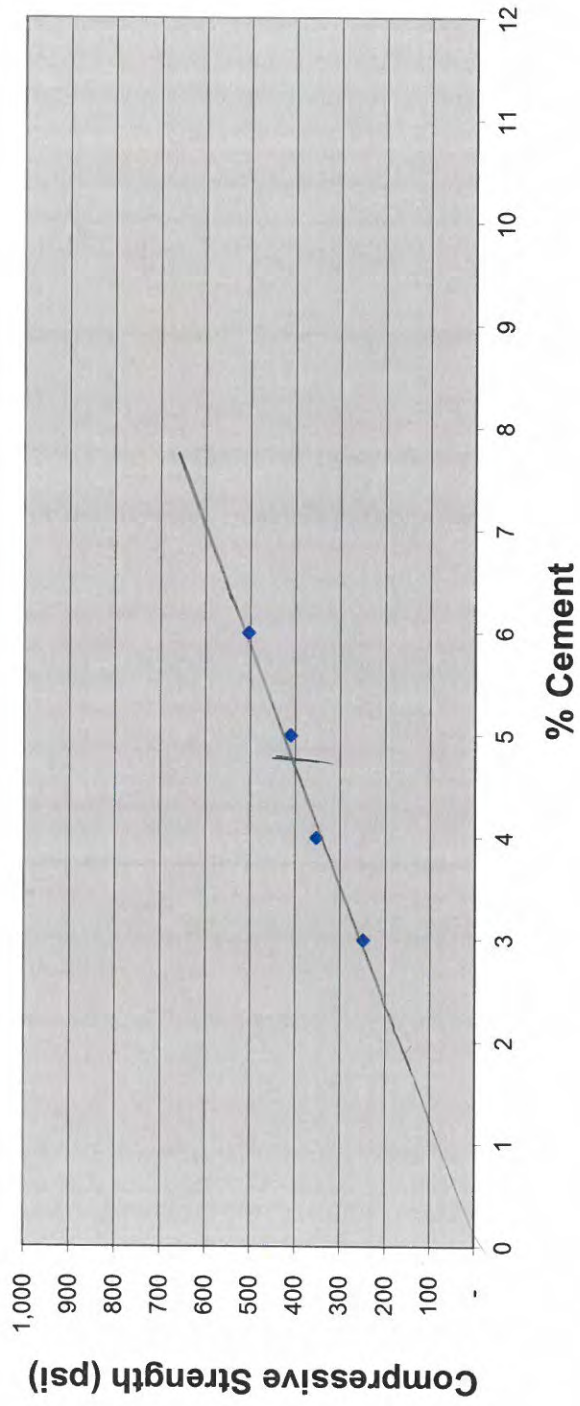
If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,



Andrew Johnson, P.E.
President
AJ:ceh

**#16 Richmond
Unconfined Compressive Strength vs. % Cement - 04/27/14**





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May 23, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#12 Manchester
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at nine (9) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 2- inches underlain by a clay base. An exception was noted on Notting Hill Ct which had Graded Aggregate Base. The asphalt was crushed and blended with the base soils for preparation of the Full Depth Reclamation (FDR) Mix Design.

Per instructions, materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. All materials extracted, with the exception of Notting Hill Ct., were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	299
7	386
9	449

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 8.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **15.5% and 18.1%**
Design Portland Cement Content range to be **+/- 8.0% (52.4 lbs per square yard)**
Standard Proctor – 109.1pcf @ 15.5% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

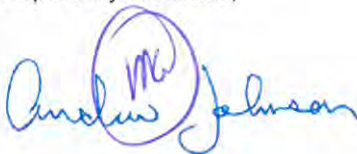
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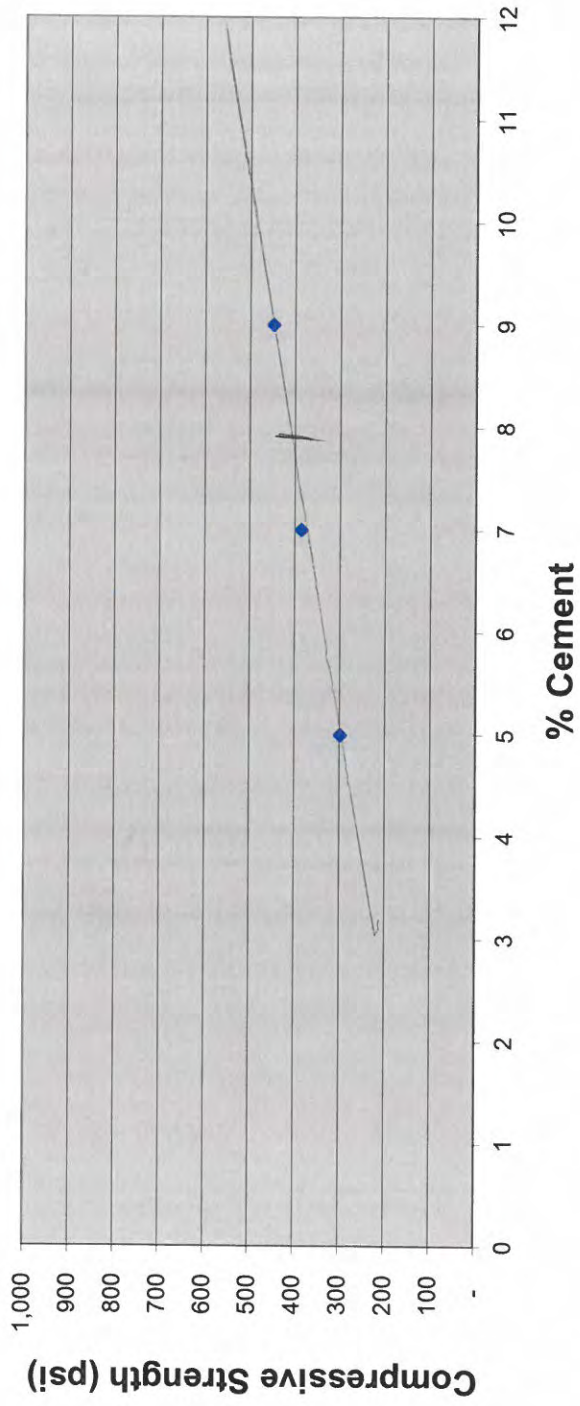
If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,



Andrew Johnson, P.E.
 President
 AJ:ceh

**#14 Manchester
Unconfined Compressive Strength vs. % Cement - 04/27/14**





**CONSTRUCTION
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May 28, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#13 Lost Valley
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at five (5) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 3.0-inches (including a 1-inch overlay) underlain by a micaceous clay sand base. The asphalt was crushed and blended with the base soils for preparation of the Full Depth Reclamation (FDR) Mix Design.

Per instructions, materials were recovered to a depth of 11 inches for the proposed 8-inch FDR Mix Design. All materials extracted were included the FDR Mix Design. Removal of 3 inches after pre-mixing will be required.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	337
7	405
9	521

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 7.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **14.0% and 16.5%**

Design Portland Cement Content range to be **+/- 7.0% (47.7 lbs per square yard)**

Standard Proctor – 113.5pcf @ 14.0% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

WARRANT: CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers strive to perform all services in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession practicing in the same locality and under similar conditions. No other warranty or representation, express or implied, is included or intended in this agreement, in any report, opinion, document, or otherwise. We carry commercial general liability insurance, including completed operations, and professional liability insurance in aggregate amounts deemed adequate, and we comply with the statutory requirements for workmen's compensation insurance. Accordingly, the liability of CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers, to the client, owner, or any other party, for any loss or damage, resulting from any cause, including professional acts, errors, omissions, negligence, breach of warranty or breach of contract, shall not exceed the total compensation received by us for services related to this project; and the client will defend, settle, and discharge any claims or allegations of liability for the same against us by others. If the client desires higher monetary limits of our liability, we will be pleased to discuss such high limits and the impact on liability and fees. In the event that the client makes a claim against us, at law or otherwise, for any alleged act, error, omission, negligence, breach of warranty or breach of contract, arising from the performance of our services, and the client fails to prove such claim, then the client shall pay all costs accrued by us in defending ourselves.

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If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,

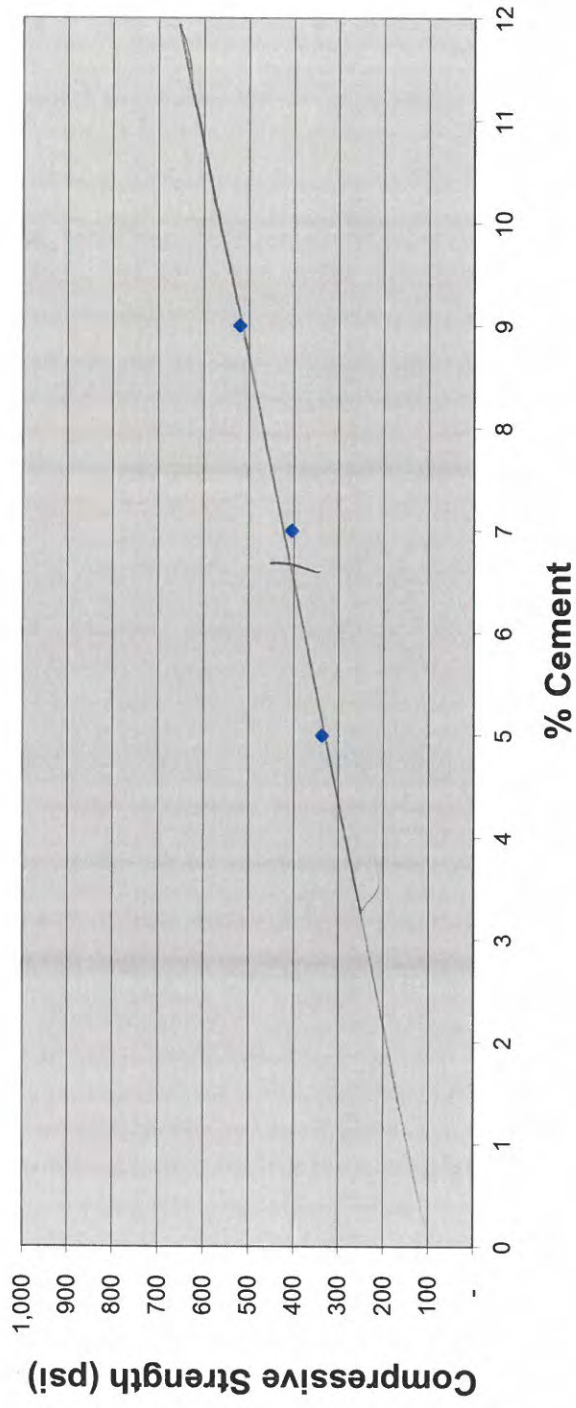


Andrew Johnson, P.E.

President

AJ:ceh

**#13 Lost Valley
Unconfined Compressive Strength vs. % Cement - 05/26/14**





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May 23, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#12 - Lakeview
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at seventeen (17) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt was very inconsistent ranging from 1-inch to 9-inches in thickness. Excluding the cores that ranged from 5 to 9 inches in thickness, the asphalt averaged around 2.0 inches. The asphalt was underlain by primarily a clay sand base. The asphalt was crushed and blended with the base soils for preparation of the FDR Mix Design.

Per instructions, materials were recovered to a depth of 8 inches for the proposed 8-inch FDR Mix Design. All materials extracted, with the exception of the extreme asphalt areas, were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	307
7	385
9	530

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 7.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **10.3% and 11.5%**

Design Portland Cement Content range to be +/- 7.0% (**51.0 lbs per square yard**)

Standard Proctor – 121.5pcf @ 10.3% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

WARRANT: CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers strive to perform all services in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession practicing in the same locality and under similar conditions. No other warranty or representation, express or implied, is included or intended in this agreement, in any report, opinion, document, or otherwise. We carry commercial general liability insurance, including completed operations, and professional liability insurance in aggregate amounts deemed adequate, and we comply with the statutory requirements for workmen's compensation insurance. Accordingly, the liability of CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers, to the client, owner, or any other party, for any loss or damage, resulting from any cause, including professional acts, errors, omissions, negligence, breach of warranty or breach of contract, shall not exceed the total compensation received by us for services related to this project; and the client will defend, settle, and discharge any claims or allegations of liability for the same against us by others. If the client desires higher monetary limits of our liability, we will be pleased to discuss such high limits and the impact on liability and fees. In the event that the client makes a claim against us, at law or otherwise, for any alleged act, error, omission, negligence, breach of warranty or breach of contract, arising from the performance of our services, and the client fails to prove such claim, then the client shall pay all costs accrued by us in defending ourselves.

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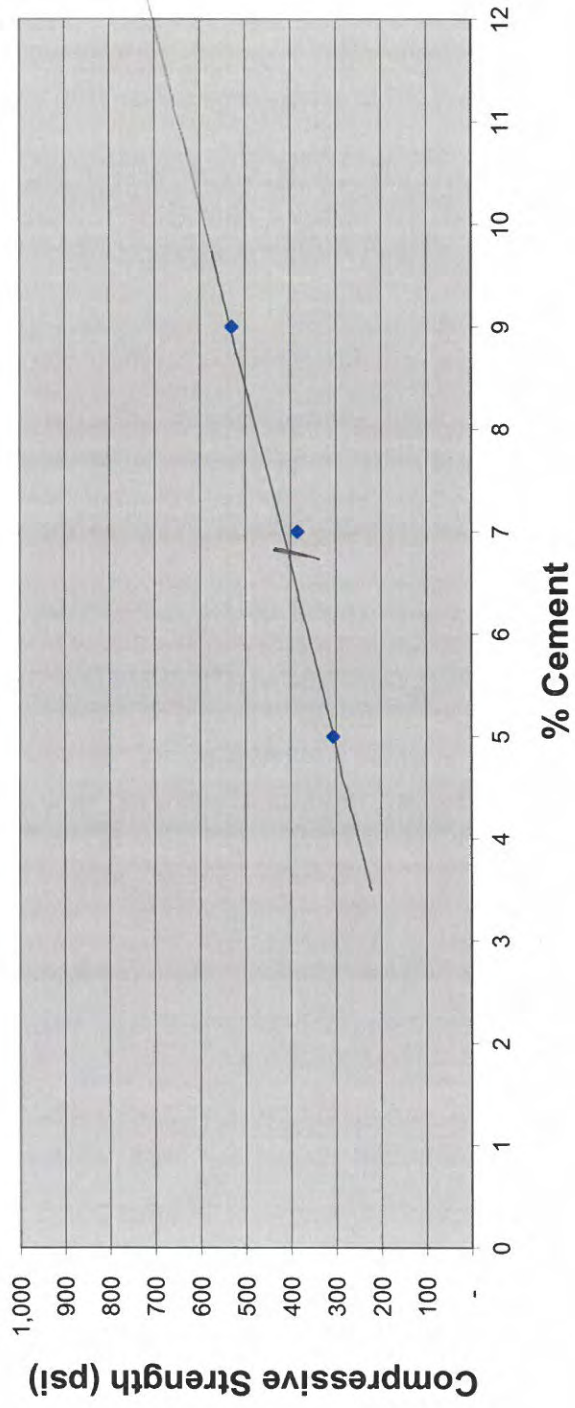
If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,



Andrew Johnson, P.E.
President
AJ:ceh

**#12 Lakeview
Unconfined Compressive Strength vs. % Cement - 04/27/14**





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May 28, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#15 Martha's Vineyard
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at six (6) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 2.75-inches (including a 1-inch overlay) underlain by a micaceous clay sand base. The asphalt was crushed and blended with the base soils for preparation of the Full Depth Reclamation (FDR) Mix Design.

Per instructions, materials were recovered to a depth of 11 inches for the proposed 8-inch FDR Mix Design. All materials extracted were included the FDR Mix Design. Removal of 3 inches after pre-mixing will be required.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	362
6	404
7	440
9	463

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 6.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **14.0% and 16.5%**
Design Portland Cement Content range to be **+/- 6.0% (40.9 lbs per square yard)**
Standard Proctor – 113.5pcf @ 14.0% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

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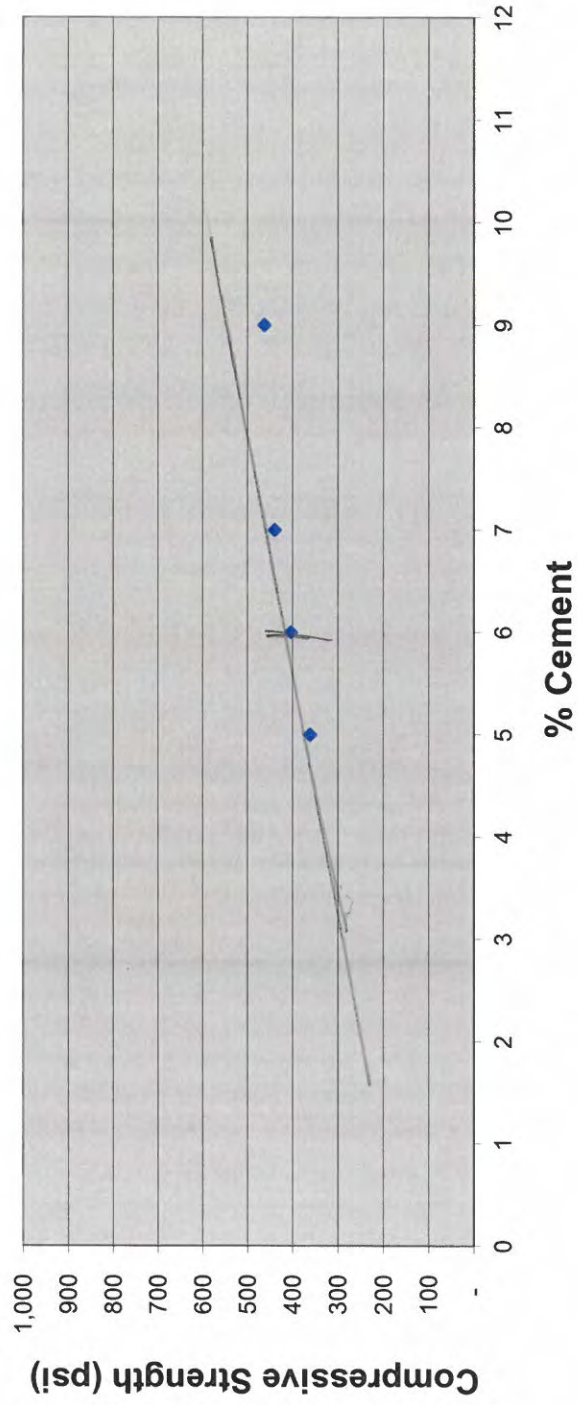
If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,



Andrew Johnson, P.E.
 President

**#15 Marthas Vineyard
Unconfined Compressive Strength vs. % Cement - 05/26/14**





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May 23, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#4 Brentwood
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at eight (8) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of just over 2.0 inches underlain by a Graded Aggregate Base (GAB) averaging 6-inches in thickness. The asphalt was crushed and blended with the GAB for preparation of the Full Depth Reclamation (FDR) Mix Design.

Per instructions, materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. All materials extracted were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
3	298
4	445
5	529
6	637

Unconfined Compressive Strengths were determined on 6 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 4.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **9.5% and 10.5%**

Design Portland Cement Content range to be **+/- 4.0% (30.3 lbs per square yard)**

Standard Proctor – 126.3pcf @ 10.0% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

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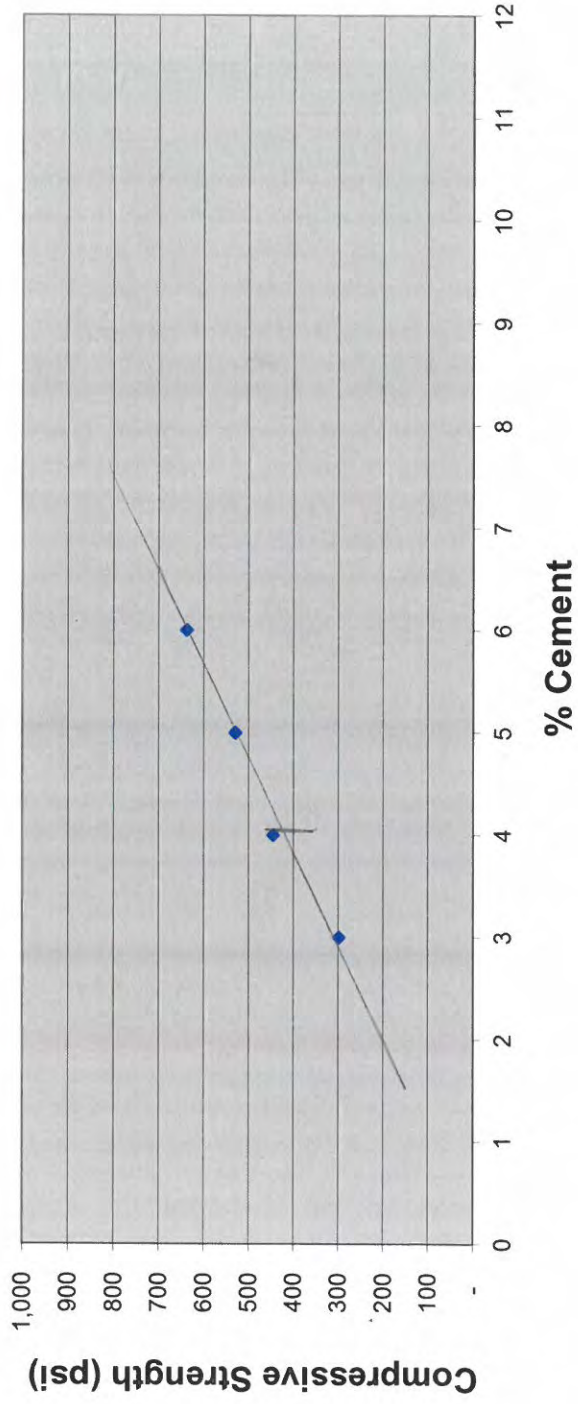
If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,



Andrew Johnson, P.E.
President
AJ:ceh

**#4 Brentwood
Unconfined Compressive Strength vs. % Cement - 05/05/14**





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May 23, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#3 Bradford
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at six (6) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 2.5 inches (Derbyshire had an overlay) underlain by a soft soil, clay silt, base. The asphalt was crushed and blended with the base soils for preparation of the Full Depth Reclamation (FDR) Mix Design.

Per instructions, materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. All materials extracted were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	337
7	394
9	443

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 7.5%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **16.4% and 19.1%**

Design Portland Cement Content range to be **+/- 7.5% (49.2 lbs per square yard)**

Standard Proctor – 109.3pcf @ 16.4% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

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If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,

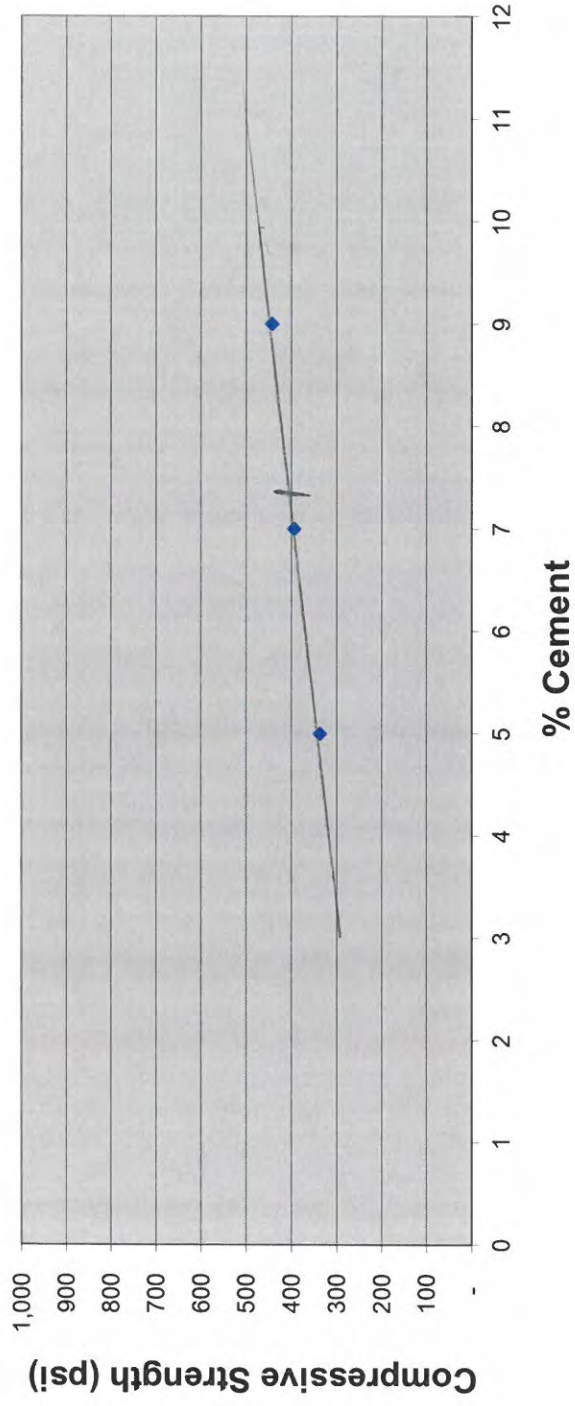


Andrew Johnson, P.E.

President

AJ:ceh

**#3 Bradford
Unconfined Compressive Strength vs. % Cement - 05/05/14**





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May 23, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#2 Annsbrooke
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at seven (7) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 2.0-inches underlain by "Soil Cement" and then a Graded Aggregate Base for the newer portion (+/-1100 feet) of Wellington Way. The asphalt and soil cement was crushed and blended together for preparation of the (FDR) Mix Design. The GAB portion was not included in the Mix Design.

Per instructions, materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. Only the asphalt and soil cement materials extracted were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	312
7	413
9	484

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 7.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **16.5% and 19.1%**

Design Portland Cement Content range to be **+/- 7.0% (44.4 lbs per square yard)**

Standard Proctor – 105.7pcf @ 16.5% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

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If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,

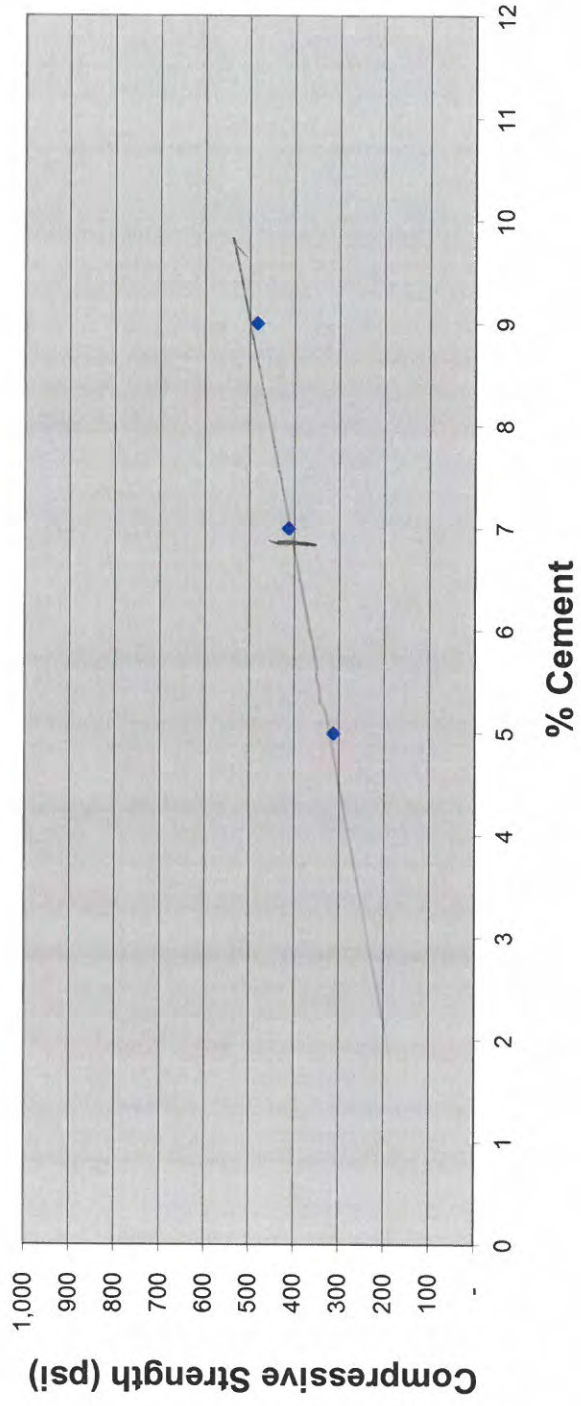


Andrew Johnson, P.E.

President

AJ:ceh

**#1 Annsbrooke
Unconfined Compressive Strength vs. % Cement - 05/06/14**





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May 23, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#1 Abbott Estates
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at eight (8) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 2.25 inches (2.0 to 2.75 inches). The newer rear half of the street was underlain by a Graded Aggregate Base. This asphalt was crushed and blended with the base material for preparation of the Full Depth Reclamation (FDR) Mix Design. Soil Cement, FDR, and Organic materials were recovered along the older, first half of the street. Up to five inches of asphalt was found in patched areas. Special care will be required during construction in this area.

Per instructions, materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. Only materials extracted from the newer rear half of the street were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
3	249
4	354
5	411
6	505

Unconfined Compressive Strengths were determined on 6 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 4.5%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **8.5% and 9.5%**

Design Portland Cement Content range to be +/- 4.5% (**34.1 lbs per square yard**)

Standard Proctor – 124.6pcf @ 8.5% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

WARRANT: CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers strive to perform all services in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession practicing in the same locality and under similar conditions. No other warranty or representation, express or implied, is included or intended in this agreement, in any report, opinion, document, or otherwise. We carry commercial general liability insurance, including completed operations, and professional liability insurance in aggregate amounts deemed adequate, and we comply with the statutory requirements for workmen's compensation insurance. Accordingly, the liability of CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers, to the client, owner, or any other party, for any loss or damage, resulting from any cause, including professional acts, errors, omissions, negligence, breach of warranty or breach of contract, shall not exceed the total compensation received by us for services related to this project; and the client will defend, settle, and discharge any claims or allegations of liability for the same against us by others. If the client desires higher monetary limits of our liability, we will be pleased to discuss such high limits and the impact on liability and fees. In the event that the client makes a claim against us, at law or otherwise, for any alleged act, error, omission, negligence, breach of warranty or breach of contract, arising from the performance of our services, and the client fails to prove such claim, then the client shall pay all costs accrued by us in defending ourselves.

TITLE: The ownership of opinions, technical ideas, methods and means, drawings, calculations, and other data developed by us during the course of preparing proposals or rendering engineering services remains exclusively with us. It is a condition of this report or proposal that the recipient agrees not to use the opinions, technical ideas, methods and means, drawings, calculations or any other data, for project or locations, other than those addressed in the report, without permission of and remuneration to CONSTRUCTION MATERIALS SERVICES, INC.

If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,

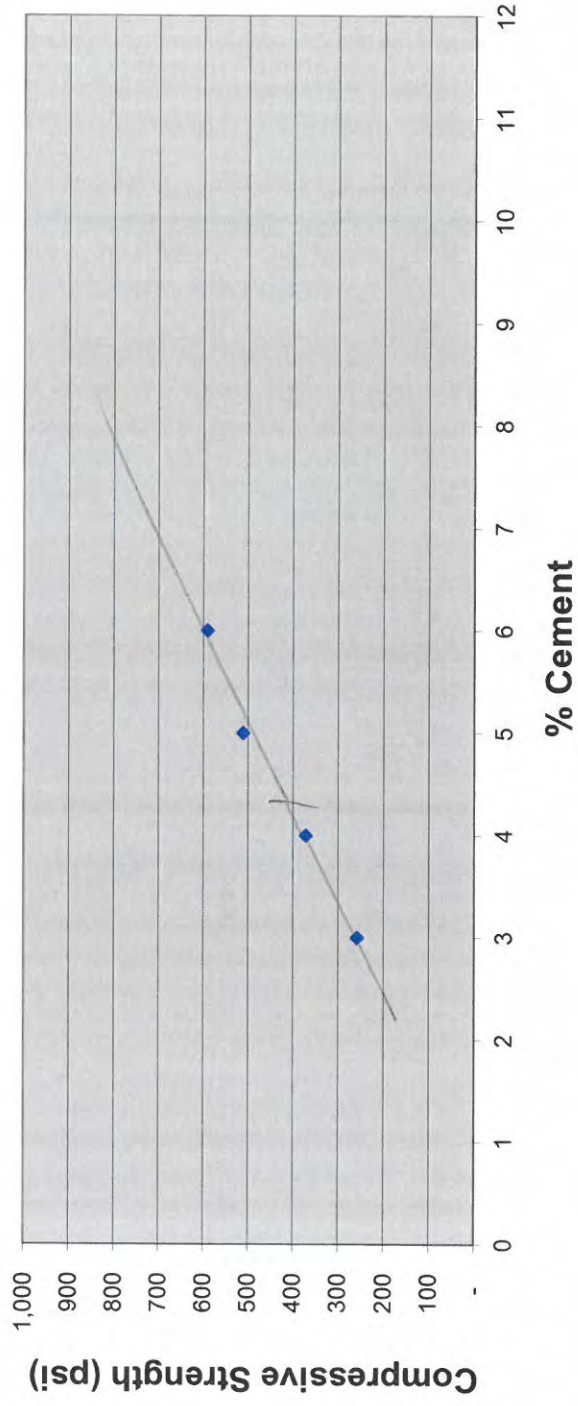


Andrew Johnson, P.E.

President

AJ:ceh

**#1 Abbott Estates
Unconfined Compressive Strength vs. % Cement - 05/05/14**





**CONSTRUCTION
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Providing Quality Service Since 1998

June 18, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#10 Happy Hollow
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at five (5) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 2.3 inches underlain by a soil cement base. The asphalt was crushed and blended with the base soils for preparation of the Full Depth Reclamation (FDR) Mix Design.

Materials were recovered to a depth of 8 inches for the proposed 8-inch FDR Mix Design. All materials extracted were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	272
6	292
7	321
9	392

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 9.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **14.0% and 16.5%**

Design Portland Cement Content range to be **+/- 9.0% (61.6 lbs per square yard)**

Standard Proctor – 114.0 pcf @ 14.0% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

WARRANT: CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers strive to perform all services in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession practicing in the same locality and under similar conditions. No other warranty or representation, express or implied, is included or intended in this agreement, in any report, opinion, document, or otherwise. We carry commercial general liability insurance, including completed operations, and professional liability insurance in aggregate amounts deemed adequate, and we comply with the statutory requirements for workmen's compensation insurance. Accordingly, the liability of CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers, to the client, owner, or any other party, for any loss or damage, resulting from any cause, including professional acts, errors, omissions, negligence, breach of warranty or breach of contract, shall not exceed the total compensation received by us for services related to this project; and the client will defend, settle, and discharge any claims or allegations of liability for the same against us by others. If the client desires higher monetary limits of our liability, we will be pleased to discuss such high limits and the impact on liability and fees. In the event that the client makes a claim against us, at law or otherwise, for any alleged act, error, omission, negligence, breach of warranty or breach of contract, arising from the performance of our services, and the client fails to prove such claim, then the client shall pay all costs accrued by us in defending ourselves.

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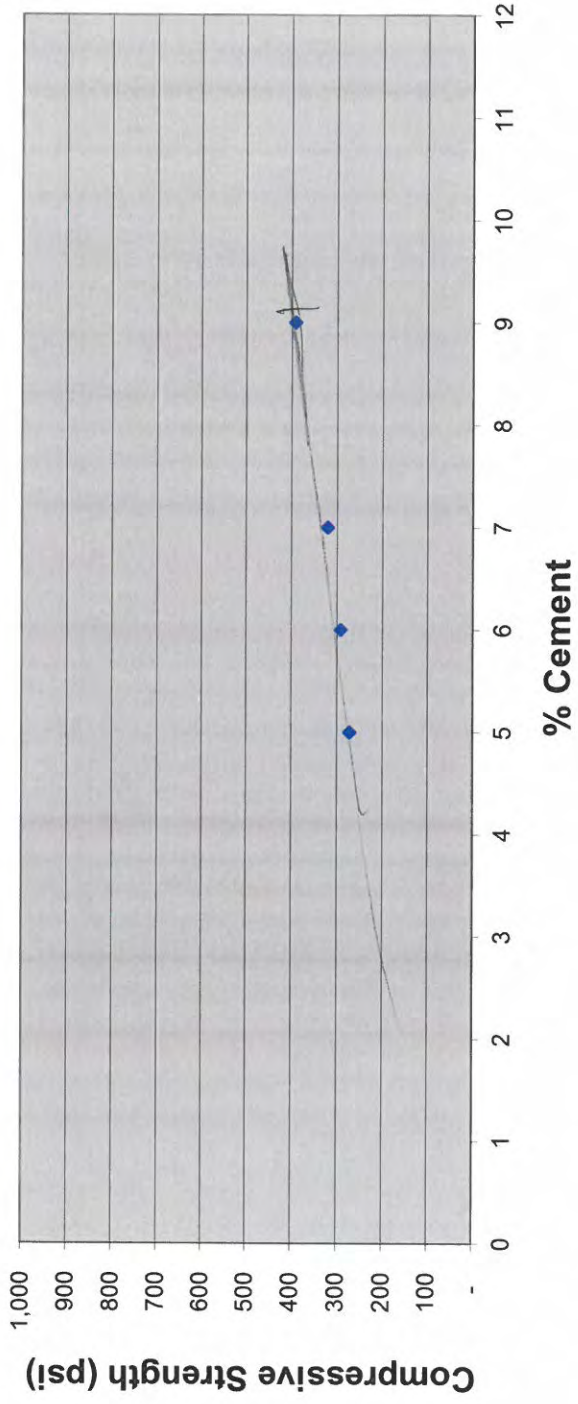
If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,



Andrew Johnson, P.E.
President
AJ:ceh

**#10 Happy Hollow
Unconfined Compressive Strength vs. % Cement - 06/18/15**





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June 14, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#9 Francis Hollow
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at six (6) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 1.8 inches underlain by a 4 to 9 inch layer of a soil cement t base with the exception of the north end of Marifran Drive where 4 inches of loose Graded Aggregate Base (GAB) was encountered. The asphalt and soil cement was crushed and blended for preparation of the Full Depth Reclamation (FDR) Mix Design. The GAB portion was not included in the Mix Design.

Per instructions, materials were recovered to a depth of 8 inches for the proposed 8-inch FDR Mix Design. All materials extracted were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	411
6	431
7	477
9	564

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 5.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **13.4% and 16.1%**

Design Portland Cement Content range to be **+/- 5.0% (33.8 lbs per square yard)**

Standard Proctor – 112.7 pcf @ 13.4% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

WARRANT: CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers strive to perform all services in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession practicing in the same locality and under similar conditions. No other warranty or representation, express or implied, is included or intended in this agreement, in any report, opinion, document, or otherwise. We carry commercial general liability insurance, including completed operations, and professional liability insurance in aggregate amounts deemed adequate, and we comply with the statutory requirements for workmen's compensation insurance. Accordingly, the liability of CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers, to the client, owner, or any other party, for any loss or damage, resulting from any cause, including professional acts, errors, omissions, negligence, breach of warranty or breach of contract, shall not exceed the total compensation received by us for services related to this project; and the client will defend, settle, and discharge any claims or allegations of liability for the same against us by others. If the client desires higher monetary limits of our liability, we will be pleased to discuss such high limits and the impact on liability and fees. In the event that the client makes a claim against us, at law or otherwise, for any alleged act, error, omission, negligence, breach of warranty or breach of contract, arising from the performance of our services, and the client fails to prove such claim, then the client shall pay all costs accrued by us in defending ourselves.

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If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,

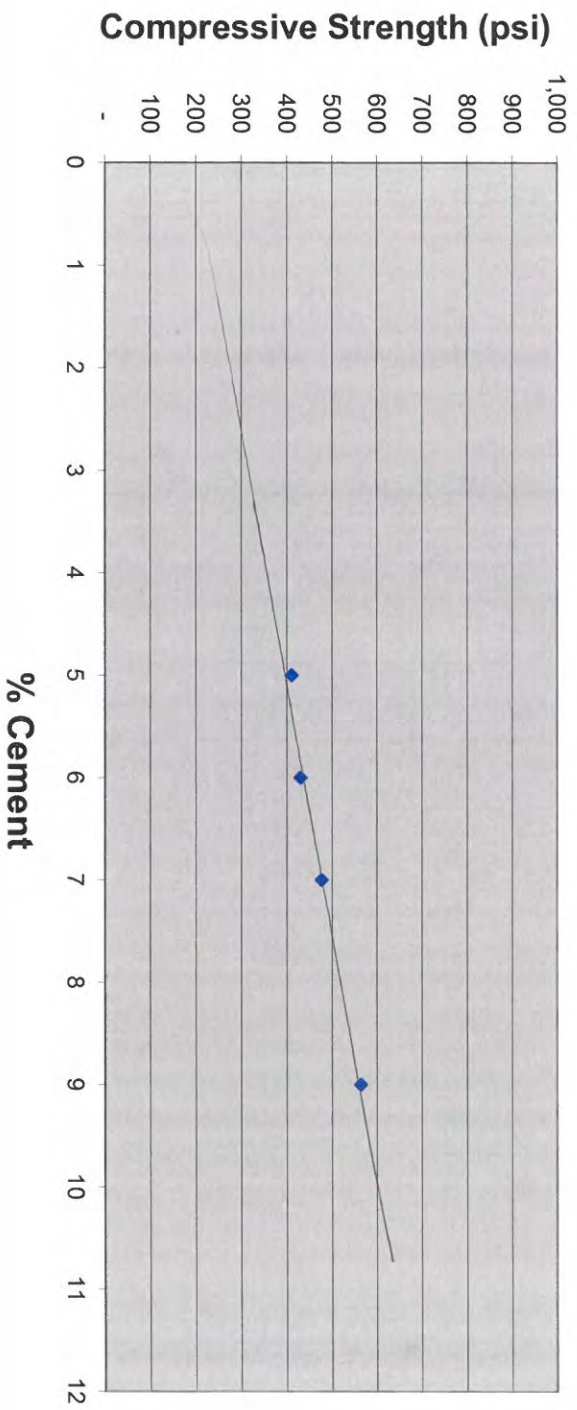


Andrew Johnson, P.E.

President

AJ:ceh

**#9 Francis Hollow
Unconfined Compressive Strength vs. % Cement - 06/09/14**





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June 16, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#7 Flagstone Ct
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at seven (7) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 2.0 inches underlain by a soil cement with the exception of the last 75 to 100 feet which had a Graded Aggregate Base.

Materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. A 2-inch removal will be required after the premixing. All materials extracted, excluding the GAB portion were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	311
6	347
7	397
9	478

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 7.5%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **18.4% and 22.0%**

Design Portland Cement Content range to be **+/- 7.5% (47.5 lbs per square yard)**

Standard Proctor – 105.5pcf @ 18.4% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

WARRANT: CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers strive to perform all services in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession practicing in the same locality and under similar conditions. No other warranty or representation, express or implied, is included or intended in this agreement, in any report, opinion, document, or otherwise. We carry commercial general liability insurance, including completed operations, and professional liability insurance in aggregate amounts deemed adequate, and we comply with the statutory requirements for workmen's compensation insurance. Accordingly, the liability of CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers, to the client, owner, or any other party, for any loss or damage, resulting from any cause, including professional acts, errors, omissions, negligence, breach of warranty or breach of contract, shall not exceed the total compensation received by us for services related to this project; and the client will defend, settle, and discharge any claims or allegations of liability for the same against us by others. If the client desires higher monetary limits of our liability, we will be pleased to discuss such high limits and the impact on liability and fees. In the event that the client makes a claim against us, at law or otherwise, for any alleged act, error, omission, negligence, breach of warranty or breach of contract, arising from the performance of our services, and the client fails to prove such claim, then the client shall pay all costs accrued by us in defending ourselves.

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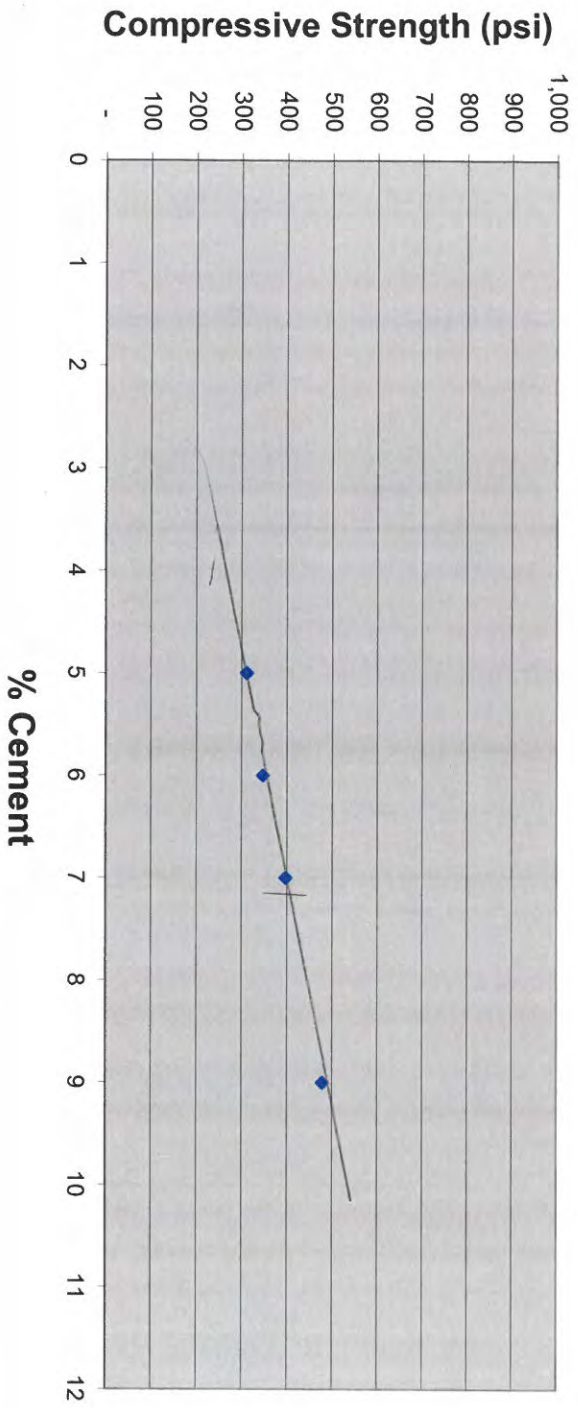
If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,



Andrew Johnson, P.E.
President
AJ:ceh

#7 Flagstone Ct Unconfined Compressive Strength vs. % Cement - 06/16/15





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May 23, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#6 East Mill Forest
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at eight (8) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 2.5 inches with an outlier of 6 inches underlain by a micaceous sandy clay base. The asphalt was crushed and blended with the base soils for preparation of the Full Depth Reclamation (FDR) Mix Design.

Per instructions, materials were recovered to a depth of 8 inches for the proposed 8-inch FDR Mix Design. All materials extracted, excluding the 6 inch asphalt, were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	383
7	459
9	515

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 5.5%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **15.0% and 17.5%**

Design Portland Cement Content range to be **+/- 5.5% (36.0 lbs per square yard)**

Standard Proctor – 109.2pcf @ 15.0% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

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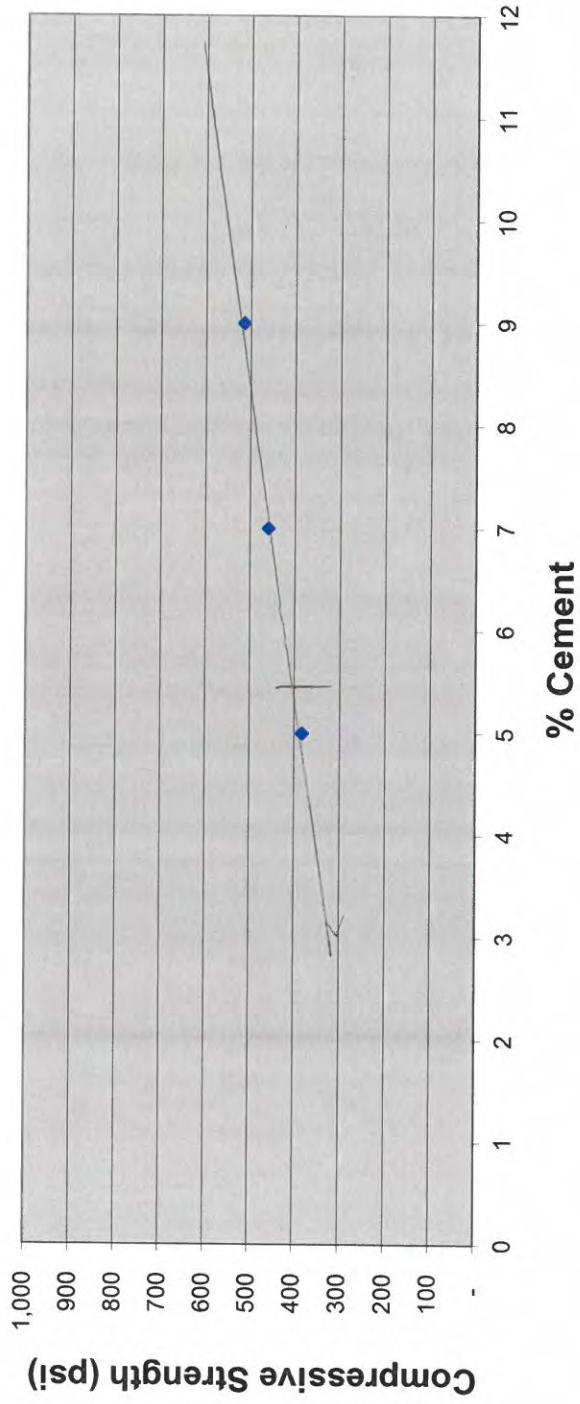
If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,



Andrew Johnson, P.E.
President
AJ:ceh

**#6 East Mill Forest
Unconfined Compressive Strength vs. % Cement - 04/27/14**





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June 14, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
**#11 Honey Creek –
Clubhouse Lane, Sweet Fern and Sugar Creek Trail**
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at six (6) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of just over 3.0 inches underlain by a Graded Aggregate Base (GAB) averaging 6-inches in thickness. The asphalt was crushed and blended with the GAB for preparation of the Full Depth Reclamation (FDR) Mix Design.

Materials were recovered to a depth of 11 inches for the proposed 8-inch FDR Mix Design. All materials extracted were included the FDR Mix Design.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
3	328
4	373
5	453
6	533

Unconfined Compressive Strengths were determined on 6 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 4.5%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **8.3% and 9.8%**
Design Portland Cement Content range to be **+/- 4.5% (34.5 lbs per square yard)**
Standard Proctor – 127.9 pcf @ 8.3% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

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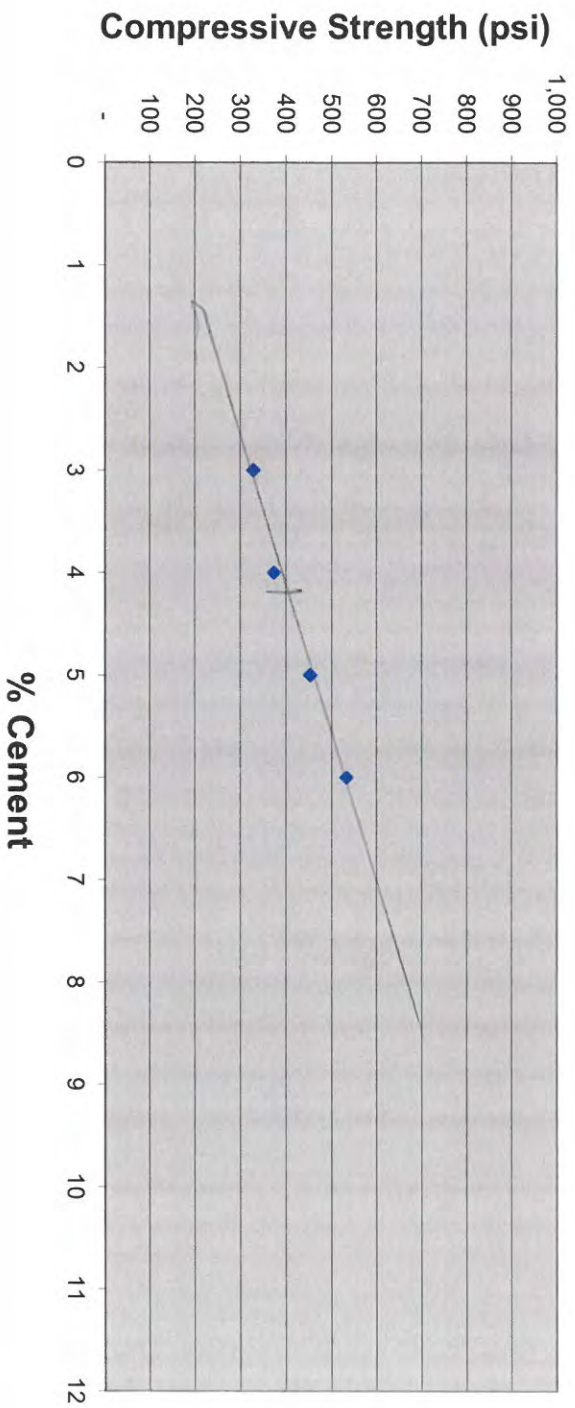
If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,



Andrew Johnson, P.E.
 President
 AJ:ceh

**#11 Honey Creek - Clubhouse Lane
Unconfined Compressive Strength vs. % Cement - 06/10/14**





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June 14, 2015

Rockdale County Department of Transportation
Brian Frix E.I.T
2570 Old Covington Road
Conyers, Georgia 30012

RE: Full Depth Reclamation (FDR) Design for
#5 Bridgewater Place
Rockdale County, Georgia

Dear Brian,

Construction Materials Services submit the following information relating the Mix Design properties for the proposed reclaimed base stabilized with Portland Cement for the above subject project. Extraction of the subject materials was performed at six (6) random locations by personnel from Construction Material Services, Inc. (CMS).

The existing asphalt consisted of an average of 1.8 inches underlain by a 8 to 9 inch layer of a soil cement t base with the exception of the west end of Water Brook Drive where 8 inches of Graded Aggregate Base (GAB) was encountered. The asphalt and soil cement was crushed and blended for preparation of the Full Depth Reclamation (FDR) Mix Design. The GAB portion was not included in the Mix Design.

Per instructions, materials were recovered to a depth of 10 inches for the proposed 8-inch FDR Mix Design. Pre-mixing will be required with 2 inches removed before mixing with the required cement.

The following were the average recorded specimen results of the 12 compressive strength tests and are shown on the attached Unconfined Compressive Strength Graph:

Cement %	7 Day Strength (psi)
5	427
6	487
7	538
9	695

Unconfined Compressive Strengths were determined on 4 inch diameter specimens (Asphalt and Base Soils), fabricated per GDT 65 (Standard Proctor), and moist cured in the Laboratory at ambient temperatures.

Typically, in "Private work (non-DOT)", CMS recommends a laboratory average break of 400 psi to insure 300 psi is achieved in the Field for recommendation of Cement percentage. (GDOT requires 450 psi in Laboratory) As shown on the Unconfined Compressive Strength Graph, the strengths were constantly up with the addition of cement with the specified 400 psi threshold being met at approximately 5.0%.

Eight (8) Inch FDR Mix Design

Design Moisture content range between **16.0% and 19.1%**

Design Portland Cement Content range to be **+/- 5.0% (30.8 lbs per square yard)**

Standard Proctor – 102.7 pcf @ 16.0% moisture content

The previous parameters are from our laboratory testing results of the specific areas sampled. Should additional areas of the roadways, or additional depths be FDR constructed, additional sampling and testing would be required.

QUALIFICATIONS OF REPORT

Any recommendations or opinions offered in this report are based on our interpretation of the data obtained from this investigation. It should be noted that underlying soil conditions can, and do, vary considerably within short lateral distances. Regardless of the thoroughness of any sampling and testing protocol of the nature used to develop our data and conclusions, it is possible that conditions may be revealed between boring locations that are different from those found by our borings and used for our analysis. For this reason, we recommend that the site preparation and base construction for this project be monitored closely. If deviations of the soil conditions from those presented in this report appear, we will be glad to furnish any additional analyses and recommendations that may be required.

WARRANT: CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers strive to perform all services in a manner consistent with that level of care and skill ordinarily exercised by members of the engineering profession practicing in the same locality and under similar conditions. No other warranty or representation, express or implied, is included or intended in this agreement, in any report, opinion, document, or otherwise. We carry commercial general liability insurance, including completed operations, and professional liability insurance in aggregate amounts deemed adequate, and we comply with the statutory requirements for workmen's compensation insurance. Accordingly, the liability of CONSTRUCTION MATERIALS SERVICES, INC. and its professional engineers, to the client, owner, or any other party, for any loss or damage, resulting from any cause, including professional acts, errors, omissions, negligence, breach of warranty or breach of contract, shall not exceed the total compensation received by us for services related to this project; and the client will defend, settle, and discharge any claims or allegations of liability for the same against us by others. If the client desires higher monetary limits of our liability, we will be pleased to discuss such high limits and the impact on liability and fees. In the event that the client makes a claim against us, at law or otherwise, for any alleged act, error, omission, negligence, breach of warranty or breach of contract, arising from the performance of our services, and the client fails to prove such claim, then the client shall pay all costs accrued by us in defending ourselves.

TITLE: The ownership of opinions, technical ideas, methods and means, drawings, calculations, and other data developed by us during the course of preparing proposals or rendering engineering services remains exclusively with us. It is a condition of this report or proposal that the recipient agrees not to use the opinions, technical ideas, methods and means, drawings, calculations or any other data, for project or locations, other than those addressed in the report, without permission of and remuneration to CONSTRUCTION MATERIALS SERVICES, INC.

If you have any questions, please contact me at (770) 914-1744.

Respectfully submitted,



Andrew Johnson, P.E.

President

AJ:ceh

#5 Bridgewater Place Unconfined Compressive Strength vs. % Cement - 06/08/14

