

**INVITATION TO BID**

**FOR THE  
COMPLETION OF THE**

**PTC 20-03 FY 2021 Resurfacing  
Peachtree Corners City Streets**

**Bid Advertised:  
May 22, 2020**

**Bid Due Date  
June 26, 2020 @ 2:00PM**

**Questions must be directed to:  
City of Peachtree Corners,  
James Nguyen, Transportation Engineer  
Via e-mail to: [jnguyen@peachtreecornersga.gov](mailto:jnguyen@peachtreecornersga.gov)**

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# CITY OF PEACHTREE CORNERS

## PTC 20-03

### FY 2021 Resurfacing Peachtree Corners City Streets

The City of Peachtree Corners is accepting sealed Bids from qualified contractors for the **FY 2021 Resurfacing Peachtree Corners City Streets**. Sealed Bids will be received no later than **2:00 PM EDT on June 26, 2020** at the City of Peachtree Corners:

City Hall  
310 Technology Parkway  
Peachtree Corners, GA 30092

Any sealed bids received after the above time or in any location other than the City Hall **will not** be accepted. Deadline for submission of questions is **June 17, 2020**.

The City of Peachtree Corners, in accordance with Title VI of the Civil Rights Act of 1964 and 78 Stat. 252, 42 USC 2000d—42 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, part 21, Nondiscrimination in federally assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, sex, or national origin in consideration for an award.

A copy of the Invitation to Bid is available on the City of Peachtree Corners website at ([www.peachtreecornersga.gov](http://www.peachtreecornersga.gov)). Additional information may be obtained by contacting the Public Works Department at (470) 395-7020. All responses to the Invitation to Bid shall be presented in a sealed envelope with the ITB number and name clearly marked on the outside of the envelope. The name of the company or firm submitting a response should also be clearly marked on the outside of the envelope. **One (1) original and one (1) electronic copy of the response on a flash drive must be submitted. Responses to the ITB will not be accepted verbally, by fax or email.** All offerors must comply with all general and special requirements of the ITB and instructions enclosed herein.

The City of Peachtree Corners reserves the right to reject any or all bids and to waive technicalities and informalities, and to make award in the best interest of the City of Peachtree Corners. The City of Peachtree Corners reserves the right to reduce the project's scope or list of roads based on the funding or best interest of the City.

# BID FORM

**TO:  
CITY OF PEACHTREE CORNERS  
310 TECHNOLOGY PARKWAY  
PEACHTREE CORNERS, GEORGIA 30092  
ATTENTION: JAMES NGUYEN**

In compliance with your Invitation To Bid (ITB), the undersigned, hereinafter termed the Bidder, proposes to enter into a Contract with the City of Peachtree Corners, Georgia, to provide the necessary machinery, tools, apparatus, other means of construction, and all materials and labor specified in the Contract Documents or as necessary to complete the Work in the manner therein specified within the time specified, as therein set forth, for:

## **FY 2021 Resurfacing Peachtree Corners City Streets**

The Bidder has carefully examined and fully understands the Contract, Specifications, and other documents hereto attached, has made a personal examination of the Site of the proposed Work, has satisfied himself as to the actual conditions and requirements of the Work, and hereby proposes and agrees that if his bid is accepted, he will contract with the City of Peachtree Corners in full conformance with the Contract Documents.

Unless otherwise directed, all work performed shall be in accordance with the Georgia Department of Transportation *Standard Specifications, Construction of Transportation Systems* (current edition). All materials used in the process of completion of the work included in the Contract will be furnished from Georgia Department of Transportation certified suppliers only.

It is the intent of this Bid to include all items of construction and all Work called for in the Specifications, or otherwise a part of the Contract Documents.

In accordance with the foregoing, the undersigned proposes to furnish and construct the items listed in the attached Bid Schedule for the unit prices stated.

The 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 acknowledges receipt of the following addenda:

Addendum No.	Date Received
_____	_____
_____	_____
_____	_____

Bidder further declares that the full name and resident address of Bidder's Principal is as follows:  
Signed, sealed, and dated this \_\_\_\_\_ day of \_\_\_\_\_

Bidder \_\_\_\_\_ (Seal)  
Company Name

Bidder Mailing Address:

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

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

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

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

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

## BIDDING INSTRUCTIONS

FAILURE TO RETURN THE FOLLOWING BID DOCUMENTS WILL RESULT IN THE BID BEING DEEMED NON-RESPONSIVE AND AUTOMATIC REJECTION:

1. City Bid Schedule,
2. Applicable Compliance Specifications Sheets, and
3. Applicable Addenda Acknowledgement, Page 4.

### BIDDING REQUIREMENTS

GDOT Specification – Section 104.05, 106, 107.09, & 150 - Bidding Requirements and Conditions will be followed for this bid package.

Interested parties shall submit their completed bid by the date and time designated on the cover sheet to the City of Peachtree Corners Purchasing Office. The completed bid shall be delivered either by fax/email with the name of firm submitting, address, phone, and primary point of contact. Any bids received after the deadline will be returned to the bidder. It is understood and agreed that this bid shall be valid and held open for a period of sixty (60) days from bid opening date.

The following items will be included in the bid response package.

1. Completed BID TAB Sheet
2. Bid bond
3. SAVE Affidavit
4. The bidder shall provide project references to verify experience completing projects of similar scope.

Omission of any of the above items may disqualify the bidder from competition.

## **INSURANCE REQUIREMENTS**

Within 10 days of Notice of Award, and at all times that this Contract is in force, the Contractor shall obtain, maintain and furnish the City Certificates of Insurance from licensed companies doing business in the State of Georgia with an A.M. Best Rating A-6 or higher and acceptable to the City covering:

1. Statutory Workers' Compensation Insurance
  - (a) Employers Liability:
    - Bodily Injury by Accident - \$100,000 each accident
    - Bodily Injury by Disease - \$500,000 policy limit
    - Bodily Injury by Disease - \$100,000 each employee
2. Comprehensive General Liability Insurance
  - (a) \$1,000,000 limit of liability per occurrence for bodily injury and property damage  
Owner's and Contractor's Protective
  - (b) Blanket Contractual Liability
  - (c) Blanket "X", "C", and "U"
  - (d) Products/Completed Operations Insurance
  - (e) Broad Form Property Damage
  - (f) Personal Injury Coverage
3. Automobile Liability
  - (a) \$1,000,000 limit of liability
  - (b) Comprehensive form covering all owned, non-owned and hired vehicles
4. Umbrella Liability Insurance
  - (a) \$1,000,000 limit of liability
  - (b) Coverage at least as broad as primary coverage as outlined under Items 1, 2, and 3 above
5. The City of Peachtree Corners, Georgia, and its subcontractors and affiliated companies, their officers, directors, employees shall be named on the Certificates of Insurance as additional insured and endorsed onto the policies for Comprehensive General Liability, Automobile Liability and Umbrella Liability insurance maintained pursuant to this Contract in connection with liability of the City of Peachtree Corners and their affiliated companies and their officers, directors and employees arising out of Contractor's operations. Copies of the endorsements shall be furnished to the City prior to execution of the contract. Such insurance is primary insurance and shall contain a Severability of Interest clause as respects each insured. Such policies shall be non-cancelable except on thirty (30) days written notice to the City. Any separate insurance maintained in force by the additional insured named above shall not contribute to the insurance extended by Contractor's insurer(s) under this additional insured provision.

Certificate Holder should read:

The City of Peachtree Corners, Georgia, 310 Technology Parkway, Peachtree Corners, GA 30092.

## **BONDING REQUIREMENTS**

Each bid must be accompanied with a BID BOND (bond only: certified checks or other forms are not acceptable) in an amount equal to five percent (5%) of the base bid, payable to the City of Peachtree Corners. Said bid bond guarantees the bidder will enter into a contract to construct the project strictly within the terms and conditions stated in this bid and in the bidding and contract documents, should the construction contract be awarded.

The Successful Bidder shall be required to furnish a bond for the faithful performance on the contract and a bond to secure payment of all claims for materials furnished and/or labor performed in performance of the project, both in amounts equal to one hundred percent (100%) of the contract price.

Bonds shall be issued by a corporate surety appearing on the Treasury Department's most current list (Circular 570 as amended) and be authorized to do business in the State of Georgia.

Date of Bond must be prior to date of Contract.

If Contractor is a Partnership, all partners shall execute Bond.

**BID BOND**

KNOW ALL MEN BY THESE PRESENTS, THAT \_\_\_\_\_

(Name of Contractor) \_\_\_\_\_

(Address of Contractor) at \_\_\_\_\_

(Corporation, Partnership and or Individual) hereinafter called Principal, and

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

A corporation of the State of \_\_\_\_\_, and a surety authorized by law to do business in the State of Georgia, hereinafter called Surety, are held and firmly bound unto

City of Peachtree Corners, Georgia

(Name of Obligee)

310 Technology Parkway, Peachtree Corners, GA 30092

(Address of Obligee)

herein after referred to as Obligee, in the penal sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

WHEREAS, the Principal is about to submit, or has submitted, to the City of Peachtree Corners, Georgia, a proposal for furnishing materials, labor and equipment for:

**FY 2021 Resurfacing Peachtree Corners City Streets**

WHEREAS, the Principal desires to file this Bond in accordance with law in lieu of a certified Bidder’s check otherwise required to accompany this Proposal.

NOW, THEREFORE, the conditions of this obligation are such that if the bid is accepted, the Principal shall within ten days after receipt of notification of the acceptance execute a Contract in accordance with the Bid and upon the terms, conditions, and prices set forth in the form and manner required by the City of Peachtree Corners, Georgia, and execute a sufficient and satisfactory Performance Bond and Payment Bond payable to the City of Peachtree Corners, Georgia, each in an amount of 100% of the total Contract Price, in form and with security satisfactory to said the City of Peachtree Corners, Georgia, and otherwise, to be and remain in full force and virtue in law; and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to the City of Peachtree Corners, Georgia, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

PROVIDED, FURTHER, that Principal and Surety agree and represent that this bond is executed pursuant, to and in accordance with the applicable provisions of the Official Code of Georgia Annotated, as Amended, including, but not limited to, O.C.G.A. SS 13-10-1, et. Seg. and SS 36-86-101, et. Seg. and is intended to be and shall be constructed as a bond in compliance with the requirements thereof. Signed, sealed, and dated this \_\_\_\_\_ day of \_\_\_\_\_ A.D., 20\_\_\_\_

ATTEST:

\_\_\_\_\_  
(Principal Secretary)

\_\_\_\_\_  
(Principal)

(SEAL)

BY: \_\_\_\_\_

\_\_\_\_\_  
(Witness to Principal)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Surety)

ATTEST

BY: \_\_\_\_\_  
(Attorney-in-Fact) and Resident Agent

\_\_\_\_\_  
(Attorney-in-Fact)

(Seal)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Witness as to Surety)

\_\_\_\_\_  
(Address)

**PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENTS: THAT

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_  
(Corporation, Partnership or Individual)

Hereinafter called Principal, and

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

A Corporation of the State of \_\_\_\_\_ and a surety authorized by law to do business in the State of Georgia, hereinafter called Surety, are held and firmly bound unto

The City of Peachtree Corners, Georgia  
(Name of Obligee)  
310 Technology Parkway, Peachtree Corners, GA 30092  
(Address of Obligee)

hereinafter referred to as Obligee; are held firmly bound unto said Obligee and all persons doing work or furnishing skill, tools, machinery, supplies, or material under or for the purpose of the Contract hereinafter referred to, in the penal sum of:

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_ ) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such, as whereas the Principal entered into a certain contract, hereto attached, with the Obligee, dated \_\_\_\_\_ for: \_\_\_\_\_.

NOW THEREFORE, the conditions of this obligation are such that if the above bound Principal shall well, truly, fully and faithfully perform said contract according to its terms, covenants, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the obligee, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions and agreement of any and all duly authorized modifications of said contract that may hereafter be made, then his obligation shall be void, otherwise to remain in full force and effect.

PROVIDED FURTHER, that said Surety to this Bond, for value received, hereby stipulates and agrees that no change, extension of time, alterations, or additions to the terms of the Contract or to the Work to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alterations, or additions to the terms of the Contract or to the work to be performed thereunder.

PROVIDED, FURTHER, that Principal and Surety agree and represent that this bond is executed pursuant to and in accordance with the applicable provisions of the Official Code of Georgia Annotated, as Amended, including but not limited to, O.C.G.A. SS 13-10-1 et. Eq. and SS 36-86-101, et. Seg., and is intended to be and shall be construed as a bond in compliance with the requirements thereof.

Signed, sealed, and dated this \_\_\_\_\_ day of \_\_\_\_\_ A.D., 20\_\_\_\_\_

ATTEST:

\_\_\_\_\_  
(Principal Secretary)

\_\_\_\_\_  
(Principal)

(SEAL)

BY: \_\_\_\_\_

\_\_\_\_\_  
(Witness to Principal)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Surety)

ATTEST BY: \_\_\_\_\_  
(Attorney-in-Fact) and Resident Agent

\_\_\_\_\_  
(Attorney-in-Fact)

(Seal)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Witness as to Surety)

\_\_\_\_\_  
(Address)

**PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS: THAT

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_  
(Corporation, Partnership or Individual)

\_\_\_\_\_  
Hereinafter called Principal, and

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

a Corporation of the State of \_\_\_\_\_ and a surety authorized by law to do business in the State of Georgia, hereinafter called Surety, are held and firmly bound unto

The City of Peachtree Corners Georgia  
(Name of Obligee)  
310 Technology Parkway, Peachtree Corners, GA 30092  
(Address of Obligee)

hereinafter referred to as Obligee; for the use and protection of all subcontractors and all persons supplying labor, services, skill, tools, machinery, materials and/or equipment in the prosecution of the work provided for in the contract herein after referred to in the full and just sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made, the Principal and Surety bind themselves, their, and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such, as whereas the Principal entered into a certain contract. Hereto attached, with the Obligee, dated \_\_\_\_\_ for \_\_\_\_\_.

NOW, THEREFORE, the conditions of this obligation are such that if the Principal shall well, truly, and faithfully perform said Contract in accordance to its terms, covenants, and conditions, and shall promptly pay all persons furnishing labor, materials, services, skill, tools, machinery and/or equipment for use in the performance of said Contract, then this obligation shall be void; otherwise, it shall remain in full force and effect.

All persons who have furnished labor, materials, services, skill, tools, machinery and/or equipment for use in the performance of said Contract shall have a direct right of action on this Bond, provided payment has not been made in full within ninety (90) days after the last day on which labor was performed,

materials, services, skill, tools, machinery, and equipment furnished or the subcontract completed.

PROVIDED FURTHER, that said Surety to this Bond, for value received, hereby stipulates and agrees that no change, extension of time, alterations, or additions to the terms of the Contract or to the Work to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alterations, or additions to the terms of the Contract or to the work to be performed thereunder.

PROVIDED, HOWEVER, that no suit or action shall be commenced hereunder by any person furnishing labor, materials, services, skill, tools, machinery, and/or equipment having a direct contractual relationship with a subcontractor, but no contractual relationship express or implied with the Principal:

Unless such person shall have given notice to the Principal within One Hundred and Twenty (120) days after such person did, or performed the last of the work or labor, or furnished the last of the materials, services, skill, tools, machinery and/or equipment for which claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials, services, skill, tools, machinery and/or equipment were furnished, or for whom the work or labor was done or performed. Such a notice shall be served by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Principal, 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, and a copy of such notice shall be delivered to the Obligee, to the person and at the address provided for in the Contract, within five (5) days of the mailing of the notice to the Principal.

PROVIDED, FURTHER, that any suit under this bond must be instituted before the expiration of one (1) year after the acceptance of the public works covered by the Contract by the proper authorities.

PROVIDED, FURTHER, that Principal and Surety agree and represent that this bond is executed pursuant to and in accordance with the applicable provisions of the Official Code of Georgia Annotated, as Amended, including, but not limited to, O.C.G.A. SS 13-10-1, et. Eq. and SS 36-86-101, et. Seg. and is intended to be and shall be construed as a bond in compliance with the requirements thereof.

Signed, sealed, and dated this \_\_\_\_\_ day of \_\_\_\_\_ A.D., 20\_\_\_\_\_

ATTEST:

\_\_\_\_\_  
(Principal Secretary)

\_\_\_\_\_  
(Principal)

(SEAL)

BY: \_\_\_\_\_

\_\_\_\_\_  
(Witness to Principal)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Surety)

ATTEST

\_\_\_\_\_  
(Attorney-in-Fact) and Resident Agent)

BY: \_\_\_\_\_

\_\_\_\_\_  
(Attorney-in-Fact)

(Seal)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Witness as to Surety)

\_\_\_\_\_  
(Address)

**QUALIFICATIONS SIGNATURE AND CERTIFICATION**  
**(Bidder to sign and return)**

I certify that this offer is made without prior understanding, agreement, or connection with any corporation, firm, or person submitting a proposal for the same materials, supplies, equipment, or services and is in all respects fair and without collusion or fraud. I understand collusive bidding is a violation of State and Federal Law and can result in fines, prison sentences, and civil damage awards. I agree to abide by all conditions of the proposal and certify that I am authorized to sign this proposal for the proposer. I further certify that the provisions of the Official Code of Georgia Annotated, Sections 45-10-20 etc. Seq. have not been violated and will not be violated in any respect.

Authorized Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Print/Type Name: \_\_\_\_\_

Print/Type Company Name Here: \_\_\_\_\_

**CORPORATE CERTIFICATE**

I, \_\_\_\_\_, certify that I am the Secretary of the Corporation named as Contractor in the foregoing bid; that \_\_\_\_\_ who signed said bid in behalf of the Contractor, was then (title) \_\_\_\_\_ of said Corporation; that said bid was duly signed for and in behalf of said Corporation by authority of its Board of Directors, and is within the scope of its corporate powers; that said Corporation is organized under the laws of the State of \_\_\_\_\_.

This \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_

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

**LIST OF SUBCONTRACTORS**

I do \_\_\_\_\_, do not \_\_\_\_\_, propose to subcontract some of the work on this project. I propose to Subcontract work to the following subcontractors:

Company Name: \_\_\_\_\_

**The City of Peachtree Corners requires at least 51% participation by  
the Prime Contractor on all projects.**

## EXHIBIT A SPECIFICATIONS

### FY 2021 Resurfacing Peachtree Corners City Streets PTC 20-03

#### PURPOSE, INTENT AND PROJECT DESCRIPTION

The City of Peachtree Corners Public Works Department (City), requests that interested parties submit formal sealed bids/proposals for the plant mix resurfacing of the following Peachtree Corners Subdivisions & Streets:

Street Name	From Street	To Street	Neighborhood Name	Pave Width	Pave Length	Area (SF)	Estimated Patching (SY)
SCIENTIFIC DRIVE			TPA	40	1434	57,360	3,059
WESTECH DRIVE	PEACHTREE PKWY - NB	NORFOLK CHASE DR	TPA	42	1093	45,906	2,754
WESTECH DRIVE	NORFOLK CHASE DR	TECHNOLOGY PKWY	TPA	38	755	28,690	1,658
SCIENTIFIC DRIVE			TPA	40	200	8,000	684
SCIENTIFIC DRIVE			TPA	40	339	13,560	618
RESEARCH DRIVE			TPA	38	599	22,762	101
RESEARCH DRIVE			TPA	40	286	11,440	178
TECHNOLOGY PKWY S.			TPA	40	2340	93,600	5,408
BAKER COURT	MORAN WAY	CUL-DE-SAC	SPALDING BRIDGE	30	557	16,710	873
BAKER COURT	HOLCOMB BRIDGE RD	MORAN WAY	SPALDING BRIDGE	26	905	23,530	1,412
MORAN WAY			SPALDING BRIDGE	28	541	15,148	741
MORAN WAY			SPALDING BRIDGE	33	234	7,722	257
DILLARDS MILL WAY	SCOTTS MILL RUN	CUL-DE-SAC	SCOTTS MILL	27	729	19,683	1,072
MILLERS TRACE			SCOTTS MILL	27	638	17,226	766
SCOTTS CREEK TRAIL			SCOTTS MILL	28	597	16,716	836
SCOTTS MILL RUN			SCOTTS MILL	24	227	5,448	157
SCOTTS MILL RUN			SCOTTS MILL	24	198	4,752	222
SCOTTS MILL RUN			SCOTTS MILL	24	407	9,768	532
SCOTTS MILL RUN			SCOTTS MILL	24	1372	32,928	1,463
SCOTTS MILL RUN			SCOTTS MILL	24	502	12,048	522
SCOTTS MILL WAY			SCOTTS MILL	29	524	15,196	912
FARMINGTON LANE	CUL-DE-SAC	WILDWOOD FARMS DR	WILDWOOD FARMS	26	951	24,726	1,401
ROSEWOOD COURT			WILDWOOD FARMS	74	98	7,252	451
WILDWOOD FARMS DRIVE			WILDWOOD FARMS	36	144	5,184	259
WILDWOOD FARMS DRIVE			WILDWOOD FARMS	26	1113	28,938	1,254
WILDWOOD FARMS DRIVE			WILDWOOD FARMS	26	179	4,654	124
DEER MOSS WAY	SCOTTS MILL RUN	Cul-de-sac	IVY MILL	29	424	12,296	369
MOSSY RIDGE COURT			IVY MILL	36	211	7,596	506
SCOTTS MILL RUN			IVY MILL	24	556	13,344	474
SCOTTS MILL RUN			IVY MILL	24	409	9,816	469
SCOTTS MILL RUN			IVY MILL	24	374	8,976	249
SCOTTS MILL RUN			IVY MILL	24	382	9,168	265
WATERPORT WAY	SCOTTS MILL RUN	Cul-de-sac	IVY MILL	28	1526	42,728	2,659

All roads within the Subdivisions are to be resurfaced with 1.25" of 9.5mm asphalt, 0.75" crack relief leveling course, and edge milling of the entire roadway.

## **GENERAL CONDITIONS**

The contractor shall execute the work according to and meet the requirements of the following:

- Georgia Department of Transportation (GDOT) Specifications, Standards, and Details;
- The Contract Documents including but not limited to the scope of work, and specifications;
- City of Peachtree Corners ordinances and regulations;
- OSHA standards and guidelines
- Any other applicable codes, laws and regulations including but not limited to Section 45-10-20 through 45-10-28 of the Official Code of Georgia Annotated, Title VI of the Civil Rights Act, Drug-Free Workplace Act, and all applicable requirements of the Americans with Disabilities Act of 1990.

In case of discrepancy between the unit price and the total price on the completed Bid Schedule, the unit price will prevail, and the total price will be corrected.

The contractor will be responsible for providing all labor, materials, and equipment necessary to perform the work. This is a unit price bid and the estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids. Payment will be made based on actual work completed as shown in the pay request, which is to include quantities and man hours.

The contractor is responsible for inspecting the jobsite prior to submitting a bid. No change orders will be issued for differing site conditions.

Materials must come from GDOT approved sources. The contractor will be required to submit in writing a list of proposed sources of materials. When required representative samples will be taken for examination and testing prior to approval. The materials used in the work shall meet all quality requirements of the contract. Materials will not be considered as finally accepted until all tests, including any to be taken from the finished work have been completed and evaluated. Standard Specification 106 – Control of Materials will be used as a guide. All materials will be tested according to the GDOT Sampling, Testing, and Inspection Manual by an approved consultant/lab hired by the City.

The successful bidder must have verifiable experience at construction of similar projects in accordance with these specifications. **Bidder shall provide references demonstrating experience-completing at least 5 projects of similar scope.**

10% retainage will be withheld from the total amount due the contractor until Final Acceptance of work is issued by the City. The City will inspect the work as it progresses.

### **PROCUREMENT SCHEDULE:**

Bid Advertised	May 22, 2020
Deadline to Submit Questions	June 17, 2020
Deadline to Submit Bid	June 26, 2020 (By 2:00 PM)
Anticipated NTP	July 6, 2020
Completion Date	December 18, 2020

### **Resurfacing Budget:**

The budget for this year's resurfacing is \$2 million.

## **PROSECUTION AND PROGRESS**

The Contractor will mobilize with sufficient forces such that all construction identified as part of this contract shall be substantially completed by **December 18, 2020**. The contractor will be considered substantially complete when all work required by this contract has been completed (excluding final striping and punch list work).

Upon Notice of Award, the Contractor will be required to submit a Progress Schedule.

Normal workday for this project shall be 9:00AM to 4:00PM and the normal workweek shall be Monday through Friday. The City will consider extended workdays or workweeks upon written request by the Contractor on a case by case basis. No work will be allowed on national holidays (i.e. Veterans Day, Thanksgiving Day, Christmas Day, New Year's Day, Martin Luther King, Jr. Day etc.)

The work will require bidder to provide all labor, administrative forces, equipment, materials and other incidental items to complete all required work. The City shall perform a Final Inspection upon substantial completion of the work. The contractor will be allowed to participate in the Final Inspection. All repairs shall be completed by the contractor at his expense prior to issuance of Final Acceptance.

The contractor shall be assessed liquidated damages in the amount of \$200.00 per calendar day for any contract work (excluding punch list and permanent striping) that is not completed by December 18, 2020. Liquidated damages shall be deducted from the 10% retainage held by the City. The contractor will also be assessed liquidated damages for not completing any required Punch List within 45 calendar days.

The contractor shall provide all material, labor, and equipment necessary to perform the work without delay unto completion. The standard order of operations shall be as follows:

- Milling
- Patching
- D-Mix Leveling
- Resurfacing
- Thermoplastic Striping

The contractor shall provide a project progress schedule by subdivision prior to or at the preconstruction meeting. The contractor is encouraged but not required to work on multiple locations at a time. The contractor shall submit a one-week look-ahead schedule every Thursday detailing scheduled activities for the following week. This schedule should accurately represent the intended work and cannot be vague or broad such as listing every road in the contract.

## **PERMITS AND LICENSES**

The contractor shall procure all permits and licenses, pay all charges, taxes and fees, and give all notices necessary and incidental to the due and lawful prosecution of the work.

## **MATERIALS**

All materials will meet appropriate GDOT specifications. Materials quality control test types will meet GDOT specifications at a frequency equal to or exceeding that set by those specifications. Contractor will be responsible for replacing any work performed with material from rejected sample lot at no cost to the City.

## **PUBLIC NOTIFICATION**

The contractor shall be responsible for installing notification signs at all entrances to subdivisions that are to be resurfaced. The notifications are to be installed at least twenty four (24) hours prior to commencement of work. The signs will be furnished by the Contractor. Signs shall be installed on temporary metal stakes driven in the ground or on metal tripods. Signs are to remain in place until contracted work (except punch list) has been completed and accepted. No separate payment will be made for this work.

## **EXISTING CONDITIONS / DEVIATION OF QUANTITIES**

All information given in this ITB concerning quantities, scope of work, existing conditions, etc. is for information purposes only. It is the Contractor's responsibility to inspect the project site to verify existing conditions and quantities prior to submitting their bid. This is a Unit Price bid and no payment will be made for additional work without prior written approval from the City. At no time will Contractor proceed with work outside the prescribed scope of services for which additional payment will be requested without the written authorization of the City.

The City reserves the right to add, modify, or delete quantities. The City may also elect to add or eliminate certain work locations at its discretion. The Contractor will not be entitled to any adjustment of unit prices or any other form of additional compensation because of adjustments made to quantities and/or work locations. Contractor will be paid for actual in-place quantities completed and accepted for pay items listed in the Bid Schedule. All other work required by this ITB, plans, specs, standards, etc. but not specifically listed in the Bid Schedule shall be considered "incidental work" and included in the bid prices for items on the Bid Schedule.

## **TRAFFIC CONTROL**

The contractor shall, at all times, conduct his work so as to assure the least possible obstruction of traffic. The safety and convenience of the general public and the residents along the roadway and the protection of persons and property shall be provided for by the contractor as specified in the State of Georgia, Department of Transportation Standard Specifications Sections 104.05, 107.09 and 150.

Traffic whose origin and destination is within the limits of the project shall be provided ingress and egress at all times unless otherwise specified by the City. The ingress and egress include entrances and exits VIA driveways at various properties, and access to the intersecting roads and streets. The contractor shall maintain sufficient personnel and equipment (including flaggers and traffic control signing) on the project at all times, particularly during inclement weather, to ensure that ingress and egress are safely provided when and where needed.

Two-way traffic shall be maintained at all times, utilizing pilot vehicles, unless otherwise specified or approved by the City. In the event of an emergency situation, the Contractor shall provide access to emergency vehicles and/or emergency personnel through or around the construction area. Any pavement damaged by such an occurrence will be repaired by the Contractor at no additional cost to the City.

The contractor shall furnish, install and maintain all necessary and required barricades, signs and other traffic control devices (including suitable lighting for night work) in accordance with the MUTCD and DOT specifications, and take all necessary precautions for the protection of the workers and safety of the public. Advanced Warning signs can be placed on tripods. Night work will only be allowed on non-residential streets, and the night work hours are restricted to 9:00 PM to 5:00 AM.

All existing signs, markers and other traffic control devices removed or damaged during construction operations will be reinstalled or replaced at the contractor's expense. At no time will contractor remove regulatory signing which may cause a hazard to the public. The Contractor shall, within 24 hours, place temporary pavement markings (paint or removable tape) to match existing pavement markings. No additional payment will be made for this work.

Pricing for personnel and equipment required for maintaining temporary traffic control, public convenience and safety are to be included in the topping item (9.5mm).

No separate line item will be included for traffic control.

### **PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE**

The contractor shall be responsible for the preservation of all public and private property, crops, fish ponds, trees, monuments, highway signs and markers, fences, grassed and sodded areas, etc. along and adjacent to the highway, road or street, and shall use every precaution necessary to prevent damage or injury thereto, unless the removal, alteration, or destruction of such property is provided for under the contract.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the work, or in consequence of the non-execution thereof by the contractor, he shall restore, at his/her own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding or otherwise restoring as may be directed, or she/he shall make good such damage or injury in an acceptable manner. The contractor shall correct all disturbed areas before retainage will be released.

### **EDGE MILLING**

Resurfacing shall be constructed so as to tie into existing streets, gutters and driveways with the best possible ride and aesthetic result. A milled paving notch, with a minimum 10 feet transition, shall be provided at each end of the overlay and at intersections, driveways, and side streets. Tie-ins shall be marked on the ground and approved by the City prior to paving.

#### **Speed humps:**

Contractor shall mill a butt joint at the ends of each speed hump transitioning approximately 10 ft. from the speed hump from 2.25" depth at speed hump to 0" at the tie-in 10 ft. away from the speed hump.

Contractor shall provide edge milling at curb lines. The minimum width for edge milling shall be based on the size of the machine used to excavate but shall not exceed 7 ft. in width. The milling will be variable depth. The final surface of the pavement after all paving has been completed shall be flush with the existing curb and up to a maximum height of 0.75 inch above the edge of the existing curb and gutter.

The contractor shall also edge mill any pavement areas without curb and gutter. The final pavement surface shall match the adjacent shoulder elevations.

The City may elect to increase the milling area on severely cracked roadways. When directed by the City, the contractor shall mill the whole roadway (curb to curb) up to a depth of 2" at the centerline of the road.

The contractor will be paid for milling at the unit price bid for "Milling, Variable Depth" (sy) regardless to depth or extent of milling (edge or entire roadway).

## **REPAIR OF EXISTING PAVEMENT**

This work shall consist of repairing existing pavement areas that have failed or showing signs of distress. The contractor and the City's inspector shall jointly inspect the roadway and mark all areas to be patched.

Areas marked for patching shall be cut out in a rectangular shape 4 inches below the surface of the existing asphalt pavement, trimmed to vertical sides, and all loose material removed. After the area has been cleaned, it shall be tack coated. The contractor will be allowed to use a milling machine to excavate for patches. The minimum width for the patches will be based on the size of the machine used to excavate but shall not exceed 7 ft. in width.

Asphaltic concrete patching will be paid for at the Contract Unit Price per ton and shall include milling/pavement removal, trimming, cleaning and all other incidental work. The contractor shall replace at his expense all patches, which are determined inadequate after inspection. The City reserves the right to change the depth of patching as needed.

## **BITUMINOUS TACK COAT**

This work shall consist of the placement of bituminous tack. AC-20 or AC-30 shall be used. All surfaces shall be cleaned completely and thoroughly dry before any tack is applied. Tack shall not be applied when the pavement is wet. Bituminous tack coat shall be applied between .04 and .06 gallons per square yard. The cost for this item is incidental and shall be included in the unit price for the asphalt items.

## **CRACK RELIEF LEVELING COURSE**

Contractor shall install 0.75" (82.5 lbs./sy.) of D-Mix, Perma-flex, Perma-pave, or approved equivalent on all streets within the subdivisions.

## **ASPHALT CONCRETE PAVING**

Topping course shall be 9.5mm Superpave, Type I, GP 2 only, including bituminous material & H lime. The subdivisions shall be topped with 1.25" (138 lbs. /sy.) of topping.

The plant mix materials from which the asphaltic pavement is manufactured and the plant at which it is manufactured shall meet the requirements of the State of Georgia Department of Transportation (GDOT), Standard specifications, Articles 820; 802; 883; 831; 828; and 882. Please see Exhibits D, E & F for additional GDOT specifications required as part of this contract. Load tickets that meet Georgia Department of Transportation Specifications must accompany all delivered materials. The Contractor must supply copies of all asphalt tickets to the City.

## **ADJUSTING UTILITY STRUCTURES TO GRADE**

All manholes and water valves are to be adjusted to grade prior to placement of asphalt. The contractor shall be held responsible for property damage due to unsafe adjusted manholes. Payment for this work will be for each manhole adjusted. Riser rings may be used for manholes. The contractor will also be responsible for the adjustment of all water valves at no additional cost to the city.

The contractor shall elect to adjust all utilities after asphalt placement. Contractor shall cut a 4' by 4' square (manholes) to a depth of 4" and replace with Class B concrete containing black dye to match the adjacent topping (9.5mm). There will be no additional cost to the City for this work.

## **THERMOPLASTIC PAVEMENT MARKINGS**

This work shall consist of placement of Thermoplastic Pavement Markings. Final (thermoplastic) pavement markings shall be placed at least 20 calendar days but no more than 60 calendar days after placement of final asphalt lift. These final pavement markings shall match the original pavement markings including center lines, lane lines, turn arrows, crosswalks, stop bars, etc. unless specifically directed otherwise by the City. Final pedestrian crosswalk markings shall adhere to the latest standards. Pavement marking materials shall meet GDOT standard specifications and be on the qualified products list. This will consist of a solid line to the beginning of tapers with mini skips through the length of the taper followed by a 5-inch solid line.

Four cross walks will be required, and installation shall meet GDOT standard specifications.

## **SOLID TRAFFIC STRIPE, 24 IN, WHITE**

24-inch white permanent solid stripe is to be installed as a stop bar at every stop sign in each contracted subdivision.

## **SOLID TRAFFIC STRIPE, 5 IN, YELLOW**

5-inch yellow permanent traffic paint is to be installed at each stop sign of each subdivision for a total length of 50 linear feet at each location.

## **SIGNAL SYSTEM REPAIR**

This work shall consist of repair and installation of loop detectors damaged as a result of the pulverizing, milling, and paving operations. When operations damage existing traffic signal loops, the Contractor shall replace the loops not more than 7 calendar days after final asphalt lift is placed. Contractor shall immediately notify the Field Services Manager at (770) 609-8815 when loops are damaged. When loop replacements at an intersection are complete, the contractor shall again notify the Field Services Manager.

Location of replacement loop detectors and lead-in wire, where practical, shall coincide with original location. If, at the splice location a pull box does not exist, a traffic signal pull box (PB-1) conduit and loop lead-in shall be installed per GDOT specifications and as directed by the Field Services Manager. Pull boxes installed shall be on the GDOT qualified products list. Testing of the replacement loop detectors shall be performed at the point where the loop wire is spliced to the existing shielded lead-in wire. There shall be no work or testing required beyond this splice point.

## **CLEANUP**

All restoration and clean-up work shall be performed daily. Operations shall be suspended if the contractor fails to accomplish restoration and clean-up within an acceptable period of time. Asphalt and other debris shall be removed from gutters, sidewalks, yards, driveways, etc. Failure to perform clean-up activities may result in suspension of the work. Milling operation shall be followed immediately by clean-up at which the contractor is to provide power brooms, vacuum sweepers, power blowers, or other means to remove loose debris or dust. Do not allow dust control to restrict visibility of passing traffic or to disrupt adjacent property owners. All pavement areas shall be clean and dry prior to placing tack coat, asphaltic concrete or other materials. **SAFETY.**

Beginning with mobilization and ending with acceptance of work, the contractor shall be responsible for providing a clean and safe work environment at the project site. The contractor shall comply with all OSHA regulations as they pertain to this project.

## EXHIBIT B

### Bid Schedule

FY 2021 Resurfacing Peachtree Corners City Streets  
PTC 20-03

ITEM NO.	DESCRIPTION	UNIT	Estimated Quantity	Unit Cost	TOTAL
100-1001	ADJUST MANHOLES TO GRADE	EA	25		
402-1802	RECYCLED ASPH CONC PATCHING INCL BITUM MATL & H LIME	TN	7,200		
402-4510	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, TP1, GP 2 ONLY, INCL BITUM MATL & H LIME (1.25") (see exhibit D for specification)	TN	5,000		
402-3190	RECYCLED ASPH CONC - D.Mix (.75")	TN	3,000		
432-0206	MILLING ASPH CONC PVMT, VARIABLE DEPTH	SY	32,500		
441-6012	CONCRETE CURB & GUTTER, 6 IN X 24 IN	LF	5,000		
653-0120	THERMOPLASTIC PVMT MARKING, ARROW, TP 2	EA	19		
653-1501	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, WHITE	LF	675		
653-1502	THERMOPLASTIC SOLID TRAF STRIPE, 5 IN, YELLOW	LF	14,000		
653-1704	THERMOPLASTIC SOLID TRAF STRIPE, 24 IN, WHITE	LF	200		
653-1804	THERMOPLASTIC SOLID TRAF STRIPE, 8 IN, WHITE	LF	900		
N/A	TRAFFIC SIGNAL LOOP (6'x50')	EA	1		
<b>TOTAL BID:</b>				<b>\$</b>	

## EXHIBIT C

### Contractor E-Verify Affidavit

By executing this affidavit, the undersigned contractor verifies its compliance with *The Illegal Reform Enhancements for 2013*, stating affirmatively that the individual, firm, or corporation which is contracting with the City of Peachtree Corners has registered with and is participating in a federal work authorization program\* [any of the electronic verification of work authorization programs operated by the United States Department of Homeland Security or any equivalent federal work authorization program operated by the United States Department of Homeland Security to verify information of newly hired employees, pursuant to the Immigration Reform and Control Act, in accordance with the applicability provisions and deadlines established therein.

The undersigned further agrees that, should it employ or contract with any subcontractor(s) in connection with the physical performance of services or the performance of labor pursuant to this contract with the City of Peachtree Corners, contractor will secure from such subcontractor(s) similar verification of compliance with the Illegal Immigration Reform and Enforcement Act on the Subcontractor Affidavit provided in Rule 300-10-01-.08 or a substantially similar form. Contractor further agrees to maintain records of such compliance and provide a copy of each such verification to the City of Peachtree Corners at the time the subcontractor(s) is retained to perform such service.

\_\_\_\_\_  
E-Verify \* User Identification Number

\_\_\_\_\_  
Date Registered

\_\_\_\_\_  
Legal Company Name

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City/State/Zip Code

\_\_\_\_\_  
BY: Authorized Officer or Agent  
(Contractor Signature)

\_\_\_\_\_  
Date

\_\_\_\_\_  
Title of Authorized Officer or Agent of Contractor

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

SUBSCRIBED AND SWORN BEFORE ME ON THIS THE

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

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

Notary Public

\* As of the effective date of O.C.G.A. § 13-10-91, the applicable federal work authorization program is "E-Verify" operated by the U.S. Citizenship and Immigration Services Bureau of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration (SSA).

**Georgia Department of Transportation  
Office of Materials and Testing**

**Standard Operating Procedure (SOP) 2  
Control of Superpave Bituminous Mixture Designs**

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## **I. General**

Monitoring the quality of Bituminous Mixtures used on Georgia Department of Transportation work is a responsibility of the Bituminous Construction Branch of the Office of Materials and Testing. This branch is under the direction of the State Bituminous Construction Engineer. The Bituminous Construction Branch comprises the Asphalt Design Unit, the Bituminous Control Unit, and the Bituminous Technical Services Unit.

The Asphalt Design Unit performs, verifies, and recommends approval of designs for Superpave mixtures, Open-Graded Friction Course (OGFC), Porous European Mix (PEM) mixtures, Stone Matrix Asphalt (SMA), slurry seals, sand-bituminous bases, micro-surfacing, and other asphalt mixtures as assigned.

The Asphalt Design Engineer oversees design activities statewide, including designs and verifications performed by the Office of Materials and Testing and Branch Laboratories. The Asphalt Design Engineer reviews and recommends approval of designs made in commercial laboratories which have been certified in accordance with SOP 36. Designs submitted by certified laboratories shall be prepared, verified and approved in accordance with this Standard Operating Procedure. The Asphalt Design Engineer forwards acceptable designs to the State Bituminous Construction Engineer with recommendation for approval or approval for provisional use, as appropriate. Once approved, a design shall be published and transmitted to the certified laboratory which performed the design. Designs found to be incorrect or deficient shall be referred back to the designer within two weeks of receipt. Designers may resubmit their designs for approval when appropriate changes or corrections have been made. The State Bituminous Construction Engineer may make field adjustments of the Job Mix formula and may require field verification of mix designs, as discussed below.

## **II. Approval Process**

### **A. Governing Documents**

Commercial laboratories wishing to perform mix designs for use in GDOT projects shall comply with SOP 36, *Certification of Laboratory and Personnel for the Design of Asphaltic Concrete Mixtures*.

All mix designs shall meet current contract specifications and shall be prepared in accordance with applicable standard methods, described below. Mix designs from commercial laboratories shall be approved only for work covered under state funded contracts, and designs for mix types and levels not specified for state work are not eligible for approval.

Aggregates used in Asphaltic Concrete mixes must meet the requirements of Sections 800 and 802 of the Specifications. Asphalt Cement used in the mixture shall meet the requirements of Section 820 for Superpave Asphalt Binder. All designs for publication must meet the requirements of Section 828, "Hot Mix Asphaltic Concrete Mixtures". All ingredients of asphalt mixtures shall be from sources approved by the Department. Approved aggregate sources, except proprietary RAP stockpiles and sand pits, are listed in Qualified Products Lists 1 and 2. Other approved sources are listed in their respective Qualified Products Lists.

Mix designs must be submitted using the GDOT approved mix design software. Completed design studies shall be submitted to the Asphalt Design Engineer by letter request, including the technician's certification required under SOP 36. The letter request should also identify any entity, other than the firm which produced the design, which is authorized to use it. Other required information is as follows:

## Standard Operating Procedure (SOP) 2

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1. Types and sources of aggregate ingredients
2. Asphalt binder grade and source
3. Gyrotory compaction sheets
4. Results of ignition calibration tests, including worksheet and print-out
5. Test results required for the Superpave mix design study
6. RAP stockpile number, if RAP is included
7. Results of permeability test plus sample, as required

Test results for the mix design study shall be entered into the GDOT Mix Design Software and submitted as an Asphaltic Concrete Mix Design Report. Mix designs shall be approved which are correct and complete and which conform to the design criteria set forth in Section 828 of the Specifications.

Approved asphalt mix designs shall be identified by a mix identification number which will identify the designer, aggregate sources, mix type, and design level.

### B. Verification of Designs

Mix designs shall be verified by the Office of Materials and Testing at a minimum frequency of ten percent of the designs submitted by each certified laboratory, or at the discretion of the State Bituminous Construction Engineer. These verifications shall be performed by a GDOT laboratory designated by the Asphalt Design Engineer. A verification will consist of replicating all or part of the design test procedures, as the Asphalt Design Engineer may require. Samples shall be tested at the asphalt and air void contents required for certain design tests or at optimum asphalt content, as appropriate. Sufficient quantities of stockpile samples shall be retained for at least two weeks after submittal of a design, or until approval of design is granted, whichever comes first. Results of the verification must match the design results within the tolerances below. In addition, when design volumetrics are verified by gyrating a full set of new samples, the resulting VMA and VFA must also fall within the tolerances specified in Section 828.

Test	Verification Tolerance
G <sub>mb</sub> - AASHTO T-166	±0.03
G <sub>se</sub> - AASHTO T-209 and T-308	±0.03
% VTM - AASHTO T-312	4% ± 1.0%
% G <sub>mm</sub> @ N <sub>ini</sub> - AASHTO T-312	± 1.0%
% G <sub>mm</sub> @ N <sub>des</sub> - AASHTO T-312	± 1.0%
VMA - AASHTO R 35	- 0.5% to +0.8%
VFA - AASHTO R 35	± 5%
Dust/AC Ratio - AASHTO T-312	± 0.2
Gradation:	
Upper Control Sieve - % Passing	± 3.5 %
No. 8 (2.36 mm) Sieve – % Passing	± 2.5 %
No 200 (75 µm) Sieve –% Passing	± 1.6 %
LWT - GDT-115	±2.0 mm, but not to exceed design limit
Retained Tensile Strength - GDT- 66	(average of three) ± 10 % must also meet design minima for strength and % retained
Calibration Factor for ignition tests	± 0.12 %

## Standard Operating Procedure (SOP) 2

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Where  $G_{mb}$  is the bulk specific gravity of the mix,  $G_{se}$  is the effective specific gravity of the aggregate, and  $N_{ini}$  and  $N_{des}$  are the numbers of initial gyrations and design gyrations, respectively. VTM and VMA are the percent air voids and percent voids in the mineral aggregate, respectively, and VFA is percent voids filled with asphalt. LWT refers to the loaded wheel test result using the Asphalt Pavement Analyzer (APA).

In applying the tolerances above for percent of  $G_{mm}$  at  $N_{ini}$  and percent of  $G_{mm}$  at  $N_{des}$ , the  $G_{mm}$  shall be re-calculated using the  $G_{se}$  determined in the verification.

If the verification result does not match the design values within the above tolerances, an investigation shall be initiated by the State Bituminous Construction Engineer. The investigation may include a review of design procedures and equipment calibrations as well as the results of a field verification. If the cause for the discrepancy cannot be resolved, approval of the design may be withdrawn.

### C. Field Verification

All mix designs shall be subject to one or more field verifications during production at the discretion of the State Bituminous Construction Engineer. Verification shall consist of replicating certain mix design tests on samples of the mixture delivered to a state project, normally when the design is first used and subsequently in some cases, at the discretion of the State Bituminous Construction Engineer. Field verification tests shall normally include AASHTO T-209, AASHTO T-166, and AASHTO T-312 to verify design volumetrics and may include , GDT 115, GDT-66, and other tests as the State Bituminous Construction Engineer may require. A field verification shall be acceptable when results fall within the tolerances in the table below. Designs which fail field verification shall be invalid unless an approved revision is made to correct the deficiency, or unless it is shown that the production sample was deficient and that the deficiency has been corrected.

Test	Field Verification Tolerance
$G_{mb}$ - AASHTO T-166	$\pm 0.03$
$G_{se}$ - AASHTO T-209 (and GDT-125)	$\pm 0.03$
GDT-66	not to exceed specified design limits
Design Volumetrics - AASHTO R 35:	
VMA	not to exceed specified design limits
VTM (air voids) @ optimum AC	not to exceed specified design limits

### D. Continuity and Cancellation of Mix Designs

An approved and field verified mix design may be used from project to project as long as the design meets current specifications, provided that satisfactory performance of the mixture is obtained, that the properties of the mixture remain consistent with the design values, and that no significant change occurs in the properties or approval status of the ingredients. The State Bituminous Construction Engineer may withdraw approval of a mix design on the basis of unsatisfactory or erratic test results, poor performance of the mixture in place, or evidence that the properties of the mixture differ substantially from the properties predicted in the design. In the case of RAP mixtures, approval will be withdrawn if the RAP stockpile is depleted or if the average gradation of the RAP, based on five random samples, varies to the extent that the combined gradation of the design is altered by more than one-half the mixture control tolerance.

### E. Ownership, Use, and Disclosure of Mix Designs

Mix designs shall be made available only to the designer and to users authorized by the designer. Mix designs are considered to be proprietary information. They are not subject to public disclosure under the Georgia Open Records Act by virtue of O.C.G.A. 50-18-72(b)(1), which protects the confidentiality of trade secrets obtained from a business entity that are confidential and required to be submitted to a government agency.

### III. Design Process

The object of an Asphaltic Concrete Design is to produce a combination of the proposed ingredients that will perform satisfactorily throughout the design life of the pavement. Such a mixture must contain sufficient asphalt cement to provide a thick film and limited air voids so the mix can resist stripping and weathering due to intrusion of water and air. The mix must also be stable enough to resist permanent deformation, flushing, excessive densification, and loss of friction properties. The volumetric design process is complicated by the facts that asphalt is thermoplastic and that specific elevated temperatures must be maintained in the design work. Superpave Mixtures are to be designed in accordance with AASHTO R 35 except as altered by Georgia Department of Transportation's specifications including but not limited to SOPs, GDTs and GSPs. Many design details are difficult to remember; therefore a ready reference entitled "Asphalt Hot Mix Design Reference Guide" can be found in Appendix A.

#### A. Sampling and Grading

Sampling of aggregates proposed for use in bituminous mix designs may be initiated by the Contractor, commercial laboratory, or materials supplier. The requesting party should submit the samples to the design laboratory. Materials sampled for design work must be representative of quarry production intended for use on the project. The average ingredient characteristics should be represented in the design. The designer shall resolve any discrepancies in the ingredient properties before beginning any design work.

Each aggregate sample submitted for design is initially dried, and sieve analysis is performed to determine its gradation. Grading of coarse aggregate samples is done using the appropriate sieves for the specific mix type involved. These sieve sizes can be found in Section 828 of the Specifications. In addition, appropriate "breaker" sieves must be used to prevent overloading the sieves. Each ingredient shall be batched individually. Bulk batching of aggregates is prohibited.

Aggregate used for batching Superpave specimens is not separated below the No. 8 (2.36 mm) sieve, with the exception that a washed gradation is performed on minus 2.36 mm portion by washing over the No 200 (75  $\mu$ m) sieve.

If the coarse or fine aggregate is excessively dusty, soft, easily broken, or shows other signs of potential problems, the Asphalt Design Engineer should be consulted for investigation of the source, stockpiles, and operations. The Revised decision in such matters will rest with the State Materials and Research Engineer.

Once the appropriate blend, meeting requirements established in Section 828 and Appendix B, has been established, batches of Superpave design specimens to determine optimum asphalt content shall be prepared to produce a compacted Superpave specimen  $115.0 \pm 5.0$  mm high and 150 mm in diameter for density testing. The height of test samples should be  $95.0 \pm 5.0$  mm for tensile splitting specimens and  $75.0 \pm 1.0$  mm for loaded wheel test specimens. Designers should ensure that all samples, including those for gradation and specific gravities, will meet the minimum sample size requirements for their respective tests.

#### B. Preparing Superpave Specimens

##### 1. Asphalt Cement

Samples shall be heated to the appropriate temperature for the asphalt binder being used. Temperatures for preparing Superpave specimens are based on the viscosity of the asphalt cement involved. These values are very important; they can be found in the Asphalt Mixture Control Temperature Chart which is available from the Asphalt Design Engineer.

##### 2. Short term Aging

The short term aging procedure applies to laboratory-prepared loose mix only. The laboratory aging process is necessary to simulate mixture aging during typical plant production and placement. All samples for testing shall be aged by placing the mixture in a pan and spreading it to an even thickness of approximately  $55 \pm 5$  lbs/yd<sup>2</sup> ( $30 \pm 2$  kg/m<sup>2</sup>) immediately after sample mixing. Place the mixture and pan in a forced draft oven for 2 hours at compaction temperature.

#### C. Superpave Gyrotory Compactor

A gyrotory compactor meeting the requirements of AASHTO T-312 shall be used to compact density specimens for testing. The gyrotory compactor may also be used for preparing samples for performance testing as detailed in Section 828. The gyrotory compactor shall be calibrated and the operation of the data acquisition device shall be checked based on the interval established in AASHTO R18. The compaction pressure should be checked and set to the proper value;  $600 \pm 18$  kPa, and the rate of revolution should be set at 30 gyrations per minute. The internal angle is to be set at  $1.16 \pm$

## Standard Operating Procedure (SOP) 2

0.02 degrees. It is recommended that the calibration be done for the internal angle using the Dynamic Angle Validator (DAV) if different brands or models of the gyratory compactor are being used.

Samples shall be gyrated to the number specified for the  $N_{des}$  level required in Section 828.

### D. Testing Superpave Specimens

All testing shall be in accordance with the appropriate AASHTO or GDT procedure, as follows:

Test	Test Method
Volumetric Properties	<b>AASHTO T-312</b> , "Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of Superpave Gyratory Compactor" AASHTO R 35, "Superpave Volumetric Design for Hot Mix Asphalt (HMA)"
Bulk Density	<b>AASHTO T-166</b> , "Bulk Specific Gravity of Compacted Bituminous Mixtures Using Saturated Surface-Dry Specimens"
Short Term Aging	<b>AASHTO R-30</b> , "Mixture Conditioning of Hot Mix Asphalt (HMA)" Note: The procedure is modified for GDOT mix designs to require only two hours aging.
Maximum Density and Effective gravity	<b>AASHTO T-209</b> "Maximum Specific Gravity of Bituminous Paving Mixtures"
Aggregate Gravities	<b>AASHTO T-84</b> "Specific Gravity and Absorption of Fine Aggregate" and <b>AASHTO T-85</b> , "Specific Gravity and absorption of Coarse Aggregate" (The designer may obtain coarse aggregate gravities from GDOT or perform this test.)
Moisture Susceptibility	<b>GDT-66</b> "Method of Test for Evaluating the Moisture Susceptibility of Bituminous Mixtures by Diametral Tensile Splitting"
Rutting Susceptibility	<b>GDT-115</b> "Determining Rutting Susceptibility of Asphalt Paving Mixtures Using the Asphalt Pavement Analyzer (APA)"
Permeability	<b>GDT-1</b> Measurement of Water Permeability of Compacted Paving Mixtures

Use the design calculations as outlined in AASHTO R 35 and T-312. However, replace  $G_{sb}$  with  $G_{se}$  when calculating VMA. When designing a Superpave mix containing RAP materials, the effective specific gravity ( $G_{se}$ ) of the RAP shall be used in place of the bulk specific gravity ( $G_{sb}$ ) in determining the combined aggregate bulk specific gravity for the blend. A method of calculating batch weights for RAP mixes is presented in Appendix C. Additionally, when designing Superpave mixtures containing RAP and/or RAS; a Corrected Optimum AC Content (COAC) is to be calculated and used as detailed in Appendix D.

### E. Moisture Susceptibility

Moisture susceptibility will be determined by the tensile splitting method according to GDT 66. For these tests, the specimens will be fabricated at optimum asphalt cement content. All mixtures containing RAP and/or RAS shall be fabricated at the corrected optimum asphalt cement content (**COAC**). The compactive effort for the specimens is to be reduced such that the air voids fall in a range required in Section 828. Specimens prepared for this test will include hydrated lime, or anti-stripping additive, or both, as specified for the ingredients proposed. For gyratory specimens that fail moisture susceptibility, Marshall specimens (4 inch) may be substituted.

### F. Rutting Susceptibility Testing

Results of tests with the Asphalt Pavement Analyzer shall be provided for all Superpave mixtures. The rutting susceptibility test will be conducted according to GDT-115. For these tests, the specimens will be fabricated at optimum asphalt cement content. All mixtures containing RAP and/or RAS shall be fabricated at the corrected optimum asphalt cement content (**COAC**). Three beam specimens or six gyratory specimens should be tested for each mix design. If the average rut depth for the three specimens exceeds specified limits, the asphaltic concrete mixture shall not be used in the

## Standard Operating Procedure (SOP) 2

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work. The compactive effort for the specimens is reduced such that the air voids fall in a range required in Section 828. Test temperature for this test shall be 149 °F (64 °C), except for 19 mm and 25 mm Superpave mixes, for which it shall be 120 °F (49 °C).

### G. Fatigue Testing

The Office of Materials and Testing may conduct a fatigue test on any Superpave asphalt mixture design or Superpave asphalt mixture used in construction to determine acceptability of the materials. The test shall be performed according to test procedure AASHTO T 321, or other procedure approved by the Office of Materials and Testing. All mixtures containing RAP and/or RAS; shall be fabricated at the corrected optimum asphalt cement content (COAC).

### H. Calibration Factor for Ignition Test

The designer shall, as part of the design process, perform calibration tests for use when testing the mixture in the ignition furnace, according to GDT 125. All results, including the worksheet and the print-out from the ignition furnace, shall be submitted with the design study and request for approval. All mixtures containing RAP and/or RAS shall be fabricated at the corrected optimum asphalt cement content (COAC).

Verification. The approved calibration factor shall remain in use unless, in the judgment of the State Bituminous Construction Engineer, the accuracy of the testing technique, calibration, or apparatus is found to be invalid or unreliable.

The contractor shall provide samples of the mix ingredients to the Department for verification of the CF on request. On receiving evidence that invalid or unreliable test results have been obtained, the State Bituminous Construction Engineer may suspend use of the ignition test on the mixture being produced until a correct calibration is obtained and until all other discrepancies involving calibration, apparatus and technique have been resolved. Where an incorrect CF has been applied in acceptance testing, results shall be corrected by applying a valid CF.

When a Job Mix Formula is submitted for approval prior to beginning production, the calibration factor of the mixture shall be included in the submittal. (This shall apply in all cases, regardless of the test method to be used for quality control testing.)

## IV. Changes in Established Design Procedures, Criteria, or Mix Requirements

Changes in established procedures, criteria, and mix requirements are the prerogative of the State Materials and Research Engineer. Specifications, procedures, and other changes may apply to all bituminous mixtures, or only to a particular mixture. Any certified laboratory designing mixes for use in GDOT work will be placed on a list to receive information on revisions pertaining to bituminous mix design specifications and procedures.

## V. Revisions of Approved Designs

Generally, when a particular ingredient of a mix design becomes unavailable, the contractor must provide a different design in order to continue work on a project. While the contractor is always responsible for the supply of materials, it is recognized that certain aggregate sizes may become unavailable due to unforeseeable causes. Often this interrupts paving work in progress, causing inconvenience to the public. In some instances, it may be possible to substitute one coarse aggregate ingredient for a similar material from a different source without affecting the quality of the mixture. In these cases only, the laboratory which designed the mix may submit a design revision for consideration. Design revisions will be subject to the following conditions:

### A. Actual Shortage Required

The revision must be necessitated by an actual shortage, sufficient to delay work in progress, of a coarse aggregate ingredient of an approved design.

## Standard Operating Procedure (SOP) 2

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### **B. Similar Substitute Ingredient**

The substitute ingredient must be similar to the replaced ingredient in mineralogy, particle size and shape, specific gravity, and abrasion resistance.

### **C. Revised Design Support Requirements**

The proposed revised design shall be supported by volumetric tests on a minimum of two pairs of specimens, at asphalt content checkpoints above and below the optimum asphalt content of the original design. The State Bituminous Construction Engineer may require verification of previous tests for susceptibility to rutting, fatigue, and moisture when these properties of the design are marginal.

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State Materials Engineer

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Director of Construction

## Appendix A

### Hot Mix Asphalt Design Reference Guide

(Note: Preparation and Testing requires the use of metric units only)

Sequence

<u>No.</u>	<u>Description</u>
1	Dry incoming aggregate as described in AASHTO: T 27-93.
2	Grade aggregates as described in AASHTO: T 27-93. Use Gilson shaker and shake at least 10 minutes.
3	Calculate gradation of each aggregate type. Carry calculations to the nearest 0.1%. Compare to source average values and consider plant breakdown.
4	Calculate blend, keeping within control limits. Use AASHTO R 35 as a reference.
5	Batch aggregates as described in AASHTO 312 and AASHTO R 35. The design specimens must be $115 \pm 5$ mm high (95 mm for moisture susceptibility and 75 mm for LWT). Thoroughly mix the minus 2.36 mm aggregate during batching. Sample weights for AASHTO T-209 (maximum theoretical specific gravity) and gradation must be 2000 grams, except samples for 25 mm mixtures, which shall weigh at least 2500 g.
6	Heat the pans of aggregate to temperature specified on Mixing and Compaction Temperature Control Chart for the source of asphalt cement being used.
7	Heat the asphalt cement to temperature specified on Mixing and Compaction Temperature Control Chart for the source of asphalt cement being used. Heat only a half day's run. Never overheat or reheat AC.
8	Add and mix RAP material, if required, with the hot aggregates. Mix only until the RAP material is blended with the aggregate.
9	Add and mix hydrated lime. Add 1.0% by weight of the aggregate for virgin mixes or as calculated in Appendix C for RAP mixes. Add hydrated lime to the heated aggregate and mix until the aggregate is coated with lime.
10	Mix the heated AC and aggregate in a preheated bowl. The temperature at the time of mixing is very important. Care should be exercised to thoroughly coat the aggregate with AC.
11	When sample has been thoroughly mixed, place the mixture in a pan and spread it uniformly to approximately $55 \pm 5$ lbs/yd <sup>2</sup> ( $30 \pm 2$ kg/m <sup>2</sup> ). Place the mixture and pan in a forced draft oven for 2 hours at the upper limit of the compaction temperature range. All samples for testing (with the exception of moisture susceptibility samples) shall be aged.
12	At least 30 minutes before compaction of the first specimen, place the compaction molds and base plates in an oven at compaction temperature.
13	At the end of the aging process, remove a mold and base plate from the oven. Assemble base plate and mold. Place a paper disk on top of the base plate. Place the aged mixture in the mold (do not spade). Be extremely careful to keep segregation to a minimum when transferring the sample to the heated mold. Place a paper disk on top of the sample.
14	Compact specimen using the Superpave Gyratory Compactor in accordance with AASHTO 312.
15	Remove the mold containing the compacted specimen from the compactor and extrude the specimen from the mold. A short cooling period is allowable to facilitate specimen removal to minimize sample damage. Remove the paper disks from the top and bottom of the specimen. Place the specimen on a flat, well supported surface where it will not be disturbed during cooling. A fan can be used to accelerate cooling, if necessary. Repeat this procedure for each specimen.
16	Determine $G_{mb}$ in accordance with AASHTO T-166. Use balance accurate to 1.0 g. Be sure the water is clean and at correct temperature. Beware of specimens that release excessive bubbles when submerged. Such samples may prove misleading density values. Be sure the basket and suspension wire do not contact anything.

**Appendix B**

Ensure that Superpave Asphalt Concrete Mixtures Designs meet the following mix design limits:

Sieve Size	Design Gradation Limits, Percent Passing				
	9.5 mm Superpave Type I	9.5 mm Superpave Type II	12.5 mm Superpave	19 mm Superpave	25 mm Superpave
1½ in (37.5 mm)					100*
1- in (25.0 mm)			100*	100*	90-100
¾ in (19.0 mm)	100*	100*	98-100****	90-100	55-89** (85 – 89) <sub>1</sub>
½ in (12.5 mm)	98-100****	98-100****	90-100	60-89*** (85 – 89) <sub>1</sub>	50-70
⅜ in (9.5 mm)	90-100	90-100	70-89 (85 – 89) <sub>1</sub>	55-75	
No. 4 (4.75 mm) s	65-85	55-75			
No. 8 (2.36 mm)	48-55	42-47	38-46 (42 – 45) <sub>1</sub>	32-36 (33 – 35) <sub>1</sub>	30-36 (33 – 35) <sub>1</sub>
No. 200 (75 µm)	5.0-7.0 (5.5 – 6.5) <sub>1</sub>	5.0-7.0 (5.5 – 6.5) <sub>1</sub>	4.5-7.0 (5.0 – 6.0) <sub>1</sub>	4.0-6.0 (4.5 – 5.2) <sub>1</sub>	3.5-6.0 (4.5 – 5.2) <sub>1</sub>
Range for % AC (Note 4)	5.4-7.25	5.25-7.00	5.00-6.25	4.25-5.50	4.00-5.25

**Note 1 details the desired Mix Design combined gradation for each referenced sieve**

**Appendix C**  
**Method of Calculating Batch Weights for Mix Designs**  
**With Recycled Asphalt**

PURPOSE: To calculate the weights of reclaimed asphalt pavement (RAP), virgin aggregate, and liquid asphalt cement (AC) for preparing volumetric samples of asphalt mixtures.

Example calculations are for an aggregate batch weight of 4800 g. Assume mix will contain 30% RAP and RAP contains 6.3% AC by extraction. For this example, assume one point of the design will use 5.5% total AC.

1. Total weight of mix =  $\frac{\text{Agg. Wt.}}{100 - \% \text{ AC}}$

Example:  $\frac{4800\text{g}}{100\% - 5.5\%} = 5079\text{g}$

2. Grams of RAP to batch = (Total Wt of mix)(% RAP)

Example:  $(5079)(30\%) = 1524 \text{ grams RAP}$

3.  $(2)(\% \text{ AC in RAP}) = \text{Grams of old AC from RAP}$

Example:  $(1524 \text{ grams})(6.4\%) = 97.5 \text{ grams old AC}$

4.  $(1) - \text{Agg. Wt.} - (3) = \text{Grams of new AC to add}$

Example:  $5079 - 4800 - 97.5 = 181.5 \text{ grams of new AC to add}$

5.  $(2) - (3) = \text{Grams of aggregate in RAP}$

Example:  $1524 - 97.5 = 1426.5 \text{ grams}$

6.  $\% \text{ Aggregate contributed by RAP} = \frac{(5)}{\text{Agg. Batch}}$

Example:  $\frac{1426.5}{4800} = 29.7\% \text{ total aggregate from RAP}$

7.  $\% \text{ lime in mix} = [100\% - (6)][1.0\%] + [(6)][0.5\%]$

Example:  $(1.0\%)(100\% - 29.7\%) + (0.5\%)(29.7\%) = 0.9\% \text{ Lime}$

NOTE: This step assumes 50% of RAP will have fractured faces which need to be treated with hydrated lime.

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8. % Aggregate available for other sizes = 100 – (6) – (7)

Example:  $100 - 29.7 - 0.9 = 69.4\%$  available for virgin aggregate

9. Calculate Blend

Example: For this example, assume the following blend will be used:

29.7% - RAP aggregate  
20.0% - 89 stone  
25.0% - 810 screenings  
24.4% - 777 (manufactured sand)  
0.9% - hydrated lime  
100% - Total aggregate

10. Calculate Batch Weights

Batch wt. of virgin agg. = agg. batch wt. times % of blend

RAP = (2) = 1524 grams

#89 = 4800 X 20% = 960

#810 = 4800 X 25% = 1200

#777 = 4800 X 24.4% = 1171

Lime = 4800 X 0.9% = 43

New AC (for 5.5%) = (4) = 181.5

Total Wt. = 5,079.5 grams (Differs from (1) above due to round-off error.)

NOTE: As the total weight for each point of the design changes (Step 1), the grams of RAP to batch up in Step 2 will also change slightly, as will the available aggregate in Step 8. Therefore, use the AC content nearest the anticipated optimum (usually the third point of the design) as the value to use in Step 1 and on which the blend percentages and batch weights are to be calculated.

Steps 1 through 4 should be repeated for each point in the design to determine the amount of new AC.

NOTE: Use the extracted gradation (or gradation after burning in the ignition oven) of the RAP to calculate the mix blends; use the gradation of the RAP “as is” (from the Gilson shaker) to determine individual sizes for the batch weight. (See pages 1 and 3 of the design software.)

### Appendix D

#### Method of Calculating Credited Asphalt Cement Content for Corrected Optimum AC Content for Asphaltic Concrete Mixtures Incorporating Reclaimed Asphalt Pavement (RAP) or Post-Consumer Recycled Asphalt Shingles (RAS)

Purpose: To calculate the Credited AC Content (**CAC**) and Not Credited AC Content (**NCAC**) to be used to determine the Corrected Optimum AC Content **COAC** of Asphaltic Concrete Mixtures incorporating RAP and/or Recycled Asphalt Shingles (RAS) for all mixtures. The **CAC** and **NCAC** shall be used to determine the amount of additional new AC required to be added to an Asphaltic Concrete Mix Design's Original Optimum AC Content (**OOAC** as determined in AASHTO R 35-09 Section 10.5 at VTM = 4.0% air voids. **OOAC must meet the requirements of Section 828.2.03.A.** The **CAC** and **NCAC** shall be calculated using an applied factor as follows: **CAC** shall be calculated using a factor of 0.75 while the **NCAC** is equivalent to 0.25 where  $1.0 - 0.75$  equals 0.25.

The **COAC**, as determined using this procedure, shall be used in fabricating samples for all performance tests established in Section 828.2.B.2. Additionally, the **COAC** is to be listed on the Mix Design Summary Sheet (**as a note**) and used for JMF purposes.

Example calculations detailed are for a 12.5 mm Superpave Mix Type. Assume mix will contain 25% RAP and RAP contains 5.75% AC (RAP Stockpile Specific) determined using GDT-83 or GDT-125. For this example, assume the **OOAC**, as determined in AASHTO R 35-09 Section 10.5 is 5.10% total AC.

12.5 mm Superpave Mix with 5.10% **OOAC** (AASHTO R 35-09 Section 10.5 @ VTM 4% Air Voids). RAP = 25 % with 5.75% AC in RAP

1. Using Standard Mix Design Procedure RAP contributes  $5.75 \% \times 0.25 = 1.44 \%$  AC to the blended total AC of mix
2. Using factor to calculate **CAC** =  $1.44 \% \times 0.75 = 1.08\%$  AC
3. Using factor to calculate **NCAC** =  $1.44 \% - 1.08 \% = 0.36 \%$  AC
4. Add the 0.36 % **NCAC** to 5.10 % **OOAC** = 5.46 %
5. The **COAC** = 5.46 %
6. 5.46 % **COAC** shall be used for specimen fabrication for all performance test required in Section 828.2.B.2
7. **COAC** of 5.46 % will be listed as Corrected Optimum on Mix Design Summary Sheet as a note at the bottom.

<p><b>Note: All Required Performance Test as specified in Section 828.2.B.2 shall be conducted at the Corrected Optimum AC Content (COAC). Mix Design Summary Sheet will list the COAC as the Corrected Optimum AC Content.</b></p>
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# EXHIBIT E

Keith Golden, P.E., Commissioner



GEORGIA DEPARTMENT OF TRANSPORTATION

One Georgia Center, 600 West Peachtree Street, NW  
Atlanta, Georgia 30308  
Telephone: (404) 631-1000

October 27, 2014

Ms. Lisa Myers, P.E, State Project Review Engineer  
Georgia Department of Transportation  
600 West Peachtree St.  
Engineering Services, Room 510  
Atlanta, Georgia 30308

Attn: Christy Lovett, Design Review Engineer Manager

RE: GPTQ Specification Review Process  
Review No. 252  
Section 828—Hot Mix Asphaltic Concrete Mixtures  
Supplemental Specification 828

The GPTQ Specification Review Process for the proposed Supplemental Specification has been completed. Since there were no requested changes received, the subject Supplemental Specification, which is attached for your ready reference, is considered acceptable to the Stakeholders.

If you need any additional information, you may call me at 404-631-1499.

Sincerely,

A handwritten signature in blue ink, appearing to read "Chet Welch".

Chet Welch, P.E  
GPTQ Specification Review Team Leader

Attachment

Copy: Julio Nuñez, FHWA, GPTQ Specification Review Team Member  
Jeff Shropshire, C.W. Matthews, GPTQ Specification Review Team Member  
Brad Young, GDOT, GPTQ Specification Review Team Member  
Steven Davis, Georgia Concrete Paving Association, Executive Director  
John Cardosa, Georgia Construction Aggregate Association, Executive Director  
Peter Finsen, Georgia/Carolina Precast Concrete Institute  
Scott Jordan, PE, American Concrete Pipe Association  
Mr. David J. Moellering, Georgia Highway Contractors Association, Inc.

Revised: April 11, 2012  
Revised: April 30, 2012  
Revised: November 8, 2012  
Revised: November 16, 2012  
Revised: June 25, 2013  
Revised: August 14, 2014

## DEPARTMENT OF TRANSPORTATION STATE OF GEORGIA

### Special Provision

### Section 828—Hot Mix Asphaltic Concrete Mixtures

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*Delete Section 828 and substitute the following:*

#### **828.1 General Description**

This specification includes the requirements for hot mix asphaltic concrete mixtures, including:

- Open-graded surface mixtures (OGFC and PEM)
- Stone Matrix Asphalt mixtures (SMA)
- Superpave mixtures
- Fine-graded (4.75 mm) mixtures

#### **828.1.01 Definitions**

The Nominal Maximum Sieve Size is one standard sieve size larger than the first sieve to retain more than ten percent of the aggregate, per AASHTO R35. Mixture types in this section are identified according to Nominal Maximum Sieve Size.

#### **828.1.02 Related References**

##### **A. Standard Specifications**

Section 400-Hot Mix Asphaltic Concrete Construction

Section 800-Coarse Aggregate

Section 802-Aggregates for Asphaltic Concrete

Section 819-Fiber Stabilizing Additives

Section 820-Asphalt Cement

Section 831-Admixtures

Section 882-Lime

Section 883-Mineral Filler

##### **B. Referenced Documents**

AASHTO R30

AASHTO R35

AASHTO T 321

AASHTO T 112

AASHTO T 209

AASHTO T 312

AASHTO T 245

AASHTO T 340

- SOP-36
- SOP-2
- GDT 1
- GDT 56
- GDT 63
- GDT 66
- GDT 114
- GDT 115
- GDT 123
- GDT 127
- QPL 1
- QPL 2
- QPL 7
- QPL 26
- QPL 41
- QPL 77
- QPL 81

## 828.2 Materials

### A. Requirements

Use approved hot mix asphalt concrete mixtures that meet the following requirements:

1. Produce each asphalt mixture according to a Department approved Job Mix Formula and Asphalt Mix Design, see Subsection 400.1 for submittal and approval of Job Mix Formulas.
2. Ensure individual acceptance test results meet the Mixture Control Tolerances specified in the appropriate table below, Subsections 828.2.01 through 828.2.04.
3. Ensure the Engineer approves all materials used to prepare and place the mixtures before incorporating them into the Work. Use only the ingredients listed in the approved Asphalt Mix Design and Job Mix Formula. For virgin aggregates use sources meeting the requirements of Section 802 and are listed in QPL 1 or QPL 2; for mixes in which local sand is permitted, use the approved sand source identified in the mix design. For mixtures containing Reclaimed Asphalt Pavement (RAP), use only RAP from the approved stockpile identified in the mix design. Use asphalt cement meeting the requirements of Section 820, from a source listed in QPL 7.
4. Obtain approved SMA mix designs, Superpave mix designs and 4.75 mm mix designs from a mix design laboratory certified by the Department. Obtain approved mix designs for types PEM and OGFC mixtures from the Department's Office of Materials, which produces and furnishes these mix designs.
5. Ensure all SMA mix designs are designed in accordance with GDT-123 ("Determining the Design Proportions of Stone Matrix Asphalt Mixtures"). Ensure SMA mix designs are verified and approved by the Department prior to use. Ensure Superpave and 4.75 mm mix designs are designed in accordance with SOP-2 ("Control of Superpave Bituminous Mixture Designs") and are approved by the Department as provided therein. Ensure these mixes are designed by a laboratory and technician certified in accordance with SOP-36, ("Certification of Laboratories and Personnel for Design of SMA and Superpave Asphalt Mixtures").
6. Use only mixtures composed of the aggregate groups and blends indicated in the Proposal and Plans by their pay item designations, defined as follows:

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.
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7. For patching or leveling use Group I, Group II, or Blend I. Mix types for patching and leveling are specified in Subsection 400.3.03.B.
8. Include lime (hydrated lime) from an approved source and meeting the requirements of Section 882 in all paving courses except as otherwise provided in the Contract. For a list of approved sources of lime, see QPL 41.
  - a. Add lime to each mixture at the rate prescribed in the approved mix design.
  - b. Ensure mix designs using only virgin aggregate include lime at a minimum rate of 1.00 % of the total dry aggregate weight. Ensure mix designs using RAP include lime at a minimum rate equal to 1.00 % of the virgin aggregate fraction plus 0.50 % of the aggregate in the RAP fraction.
  - c. Add more lime or add lime plus an approved Heat-Stable Anti-Stripping Additive meeting the requirements of Section 831, if necessary to meet requirements for mixture properties, and pursuant to an approved mix design. However, the Department will not make additional payment for these materials. For a list of sources of Heat-Stable Anti-Stripping Additives, see QPL 26.
  - d. Where specifically allowed in the contract on LARP, airport, and parking lot projects, an approved Heat-Stable Anti-Stripping Additive meeting the requirements of Section 831 may be substituted for hydrated lime. Ensure the mix gradation is adjusted to replace the lime with an equivalent volume of fines passing the 0.075 mm sieve. Add Heat-Stable Anti-stripping Additive at a minimum rate of 0.5 percent of the asphalt cement portion.
9. Use performance grade PG 64-22 or PG 67-22 asphalt cement in all mix designs and mixtures except as follows:
  - a. The State Materials Engineer will determine the performance grade to be used, based on Table 2 – Binders Selection Guideline for Reclaimed Asphalt Pavement (RAP) Mixtures, AASHTO M323 and laboratory testing results as required in Section 828.2.B for mixtures containing  $\geq 25\%$  equivalent binder replacement for RAP/RAS mixtures.
  - b. Use only grade PG 76-22, excluding shoulder construction in the following mixes: all SMA, 12.5 mm PEM, 9.5 mm and 12.5 mm OGFC, 12.5 mm Superpave, on projects with ADT greater than 25,000; and in all mixtures for which polymer-modified asphalt is specified in the pay item.
10. Use of local sand is restricted as follows:
  - a. Do not place mixtures containing local sand on the traveled way of the mainline or ramps of the Interstate System. Mixtures with local sand may be used for shoulder construction on these facilities.
  - b. Ensure local sand will not constitute more than 20 % of the total aggregate weight of any mix design or production mix.
  - c. Subject to the above limits, 19 mm, 12.5 mm, and 9.5 mm Superpave mix designs and 4.75 mm mix designs containing local sand may be used on projects with a current ADT not exceeding 2,000.
  - d. 25 mm Superpave mix designs containing not more than 20 % local sand may be used on all facilities except the main line and ramps of the Interstate System.
  - e. Obtain local sand for use in asphalt mixtures from a source approved by the Department.
  - f. Approval of local sand sources: The Department will sample, test, and approve sources of local sand. Ensure local sand contains no more than 7.0 % clay by weight and is free of foreign substances, roots, twigs, and other organic matter. Ensure sand is free of clay lumps, as determined by AASHTO T 112, and has a sand equivalent value exceeding 25%, as determined by GDT 63.

## B. Fabrication

1. Design procedures: For all Superpave and 4.75 mm mixes, ensure conformance with the Superpave System for Volumetric Design (AASHTO T 312 and AASHTO R30), as adapted in SOP-2. Ensure Superpave mixes are designed at a design gyration number ( $N_{des}$ ) of 65 gyrations and initial gyration number ( $N_{ini}$ ) of 6 gyrations. Ensure 4.75 mm mixes, ( $N_{des}$ ) are designed at 50 gyrations, and ( $N_{ini}$ ) at 6 gyrations. Open-graded mix designs will be designed by the Department in accordance with GDT 114. In all cases, the procedure for measuring Maximum Specific Gravity ( $G_{mm}$ ) is AASHTO T 209. In addition to gradation and volumetric analysis, ensure mix designs include the following performance tests, as applicable.
2. Performance Test:
  - a. Permeability test: Ensure Superpave and Stone Matrix mix designs include testing according to GDT -1 Measurement of Water Permeability of Compacted Asphalt Paving Mixtures. Ensure specimen air voids for this test are  $6.0 \pm 1.0\%$ . The average permeability of three specimens may not exceed 3.60 ft per day ( $125 \times 10^{-5}$  cm per sec).

- b. Moisture susceptibility test: Ensure mix designs of all types except open-graded surface mixes include testing for moisture susceptibility according to GDT 66. Ensure specimen air voids for this test are  $7.0 \pm 1.0\%$  for all mixes excluding Stone Matrix mixes. Ensure specimen air voids for this test are  $6.0 \pm 1.0\%$  for Stone Matrix mixes. The minimum tensile splitting ratio is 0.80, except a tensile splitting ratio of no less than 0.70 may be acceptable if all individual strength values exceed 100 psi (690 kPa). Ensure average splitting strength of the three conditioned and three controlled samples are not less than 60 psi (415 kPa) for either group. Ensure retention of coating as determined by GDT 56 is not less than 95%.
- c. Rutting susceptibility test: Ensure mix designs of all types except Open-graded Surface Mixes (OGFC and PEM), and mixtures designed exclusively for trench widening include testing according to GDT 115 or AASHTO T 340. Design limits for this test are as follows: Ensure specimen air voids for this test are  $5.0 \pm 1.0\%$  for all mix types excluding SMA mixtures incorporating  $\geq 15$  percent RAP. Ensure specimen air voids for this test are  $6.0 \pm 1.0\%$  for all mix types excluding SMA mixtures incorporating  $< 15$  percent RAP. Ensure specimen air voids for this test are  $6.0 \pm 1\%$  for all SMA mixtures. Ensure testing temperature is  $64^\circ\text{C}$  ( $147^\circ\text{F}$ ) for all mix types except 19 mm and 25 mm Superpave mixes, which are to be tested at  $49^\circ\text{C}$  ( $120^\circ\text{F}$ ). Ensure maximum deformation is 5.0 mm for all mixes except 4.75 mm mix, 9.5 mm Types I and II Superpave mixes. Ensure maximum deformation for the 9.5 mm Type II Superpave mix is 6.0 mm at  $64^\circ\text{C}$  ( $147^\circ\text{F}$ ) and 8.0 mm at  $64^\circ\text{C}$  ( $147^\circ\text{F}$ ) for the 4.75 mm and 9.5 mm Type I Superpave mix.
- d. Fatigue testing: The Department may verify dense-graded mix designs by fatigue testing according to AASHTO T 321 or other procedure approved by the Department.
- e. Hamburg Wheel-Tracking Test: The Department may verify Warm Mix Asphalt dense-graded mix designs or mix designs incorporating Polyphosphoric Acid (PPA) modified binders by Hamburg Wheel-tracking testing according to AASHTO T 324.

**C. Acceptance**

See Subsection 106.03 and Section 400. Ensure individual test results meet the Mixture Control Tolerances listed in Subsections 828.2, 828.2.01, 828.2.02, 828.2.03, or 828.2.04, whichever applies with the following exception. Ensure field verification results for rutting susceptibility tests performed on laboratory fabricated and/or roadway cores obtained from asphalt plant produced mixtures meet specified requirements with a tolerance of +2.0 mm.

**D. Materials Warranty**

See General Provisions 101 through 150.

**828.2.01 Open-Graded Surface Mixtures**

**A. Requirements**

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure Open-Graded Surface Mixtures meet the following mixture control tolerances and mix design criteria:

Sieve Size	Mixture Control Tolerance, %	Design Gradation Limits, % Passing		
		9.5 mm OGFC	12.5 mm OGFC	12.5 mm PEM
3/4 in (19 mm) sieve	$\pm 0.0$		100*	100*
1/2 in (12.5 mm) sieve	$\pm 6.1$	100*	85-100	80-100
3/8 in (9.5 mm) sieve	$\pm 5.6$	85-100	55-75	35-60
No. 4 (4.75 mm) sieve	$\pm 5.7$	20-40	15-25	10-25
No. 8 (2.36 mm) sieve	$\pm 4.6$	5-10	5-10	5-10
No. 200 (75 $\mu\text{m}$ ) sieve	$\pm 2.0$	2-4	2-4	1-4
Range for % AC	$\pm 0.4$	6.0-7.25	5.75-7.25	5.5-7.0
Class of stone (Section 800)		"A" only	"A" only	"A" only
Drain-down (GDT 127), %		<0.3	<0.3	<0.3

\* Mixture control tolerance is not applicable to this sieve for this mix.

- 1. In 12.5 mm and 9.5 mm OGFC and 12.5 mm PEM mixes, use only PG 76-22 asphalt cement (specified in Section 820).

2. Ensure all OGFC and PEM mixes include a stabilizing fiber of the type (cellulose or mineral) specified in the mix design and meeting the requirements of Section 819. Ensure the dosage rate is as specified in the mix design and sufficient to prevent drain-down exceeding the above tolerance.

**B. Fabrication**

See Section 400.

**828.2.02 Stone Matrix Asphalt Mixtures**

**A. Requirements**

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure Stone Matrix Asphalt mixtures meet the following mixture control tolerances and mix design criteria:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		9.5 mm SMA	12.5 mm SMA	19 mm SMA
1- in (25 mm) sieve	±0.0			100*
3/4 in (19 mm) sieve	±7.0	100*	100*	90-100
1/2 in (12.5 mm) sieve	±6.1	98-100**	85-100	44-70
3/8 in (9.5 mm) sieve	±5.6	70-100	50-75	25-60
No. 4 (4.75 mm) sieve	±5.7	28-50	20-28	20-28
No. 8 (2.36 mm) sieve	±4.6	15-30	16-24	15-22
No. 50 (300 µm) sieve	±3.8	10-17	10-20	10-20
No. 200 (75 µm) sieve	±2.0	8-13	8-12	8-12
Range for % AC (Note 1)	±0.4 (Note 2)	6.0-7.5	5.8-7.5	5.5-7.5
Design optimum air voids (%)		3.5 ±0.5	3.5 ±0.5	3.5 ±0.5
% aggregate voids filled with AC (VFA)		70-90	70-90	70-90
Tensile splitting ratio after freeze-thaw cycle GDT-66		80%	80%	80%
Drain-down (GDT 127), %		<0.3	<0.3	<0.3

\*Mixture control tolerance is not applicable to this sieve for this mix.

\*\*Mixture control tolerance is ± 2.0% for this sieve for 9.5 mm SMA mixes placed at spread rates greater than 135 lb/yd<sup>2</sup>. For 9.5 mm SMA mixes placed at spread rates of 135 lb/yd<sup>2</sup> or less, 100 % passing is required on this sieve.

Note 1: Range for % AC is Original Optimum AC (OOAC) at 35 gyrations (Gyratory compactor) or 50 blows (Marshall compactor) prior to Corrected Optimum AC (COAC) calculation detailed in GDT 123 (Appendix A)

Note 2: Quality Acceptance Test Results for AC content that deviate > ± 0.3% from the approved Job Mix Formula (JMF) consistently over three lots may subject the mix to a revised AC content on project JMF at the discretion of the State Materials Engineer based on statistical trend.

1. Ensure SMA mixtures are compacted at 35 gyrations with the Superpave Gyratory compactor or 50 blows with the Marshall compactor.
2. Ensure SMA mixtures contain mineral filler and fiber stabilizing additives and meet the following requirements:
  - a. Asphalt cement grade PG-76-22 (specified in Section 820) is required in all SMA mixtures.
  - b. Aggregates for SMA meet the requirements of Subsection 802.2.02.A.3.
  - c. Use the approved mineral filler specified in the mix design and meeting the requirements of Section 883 Approved sources of mineral filler are listed in QPL 81.

Use the approved Fiber Stabilizing Additive of the type (cellulose or mineral) specified in the mix design and meeting the requirements of Section 819. Approved sources of Fiber Stabilizing Additive are listed in QPL 77. The dosage rate will be as specified in the mix design and sufficient to prevent drain-down exceeding the above tolerance.

**B. Fabrication**

See Section 400.

**828.2.03 Superpave Asphalt Concrete Mixtures**

**A. Requirements for Superpave Mixtures (except Parking Lot Mixtures)**

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure Superpave Asphalt Concrete mixtures meet the following mixture control tolerances and mix design limits:

1. Gradation limits for Superpave mixtures are as follows:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing				
		9.5 mm Superpave Type I	9.5 mm Superpave Type II	12.5 mm Superpave (Note 1)	19 mm Superpave	25 mm Superpave
1½ in (37.5 mm)						100*
1- in (25.0 mm)	± 8.0			100*	100*	90-100
¾ in (19.0 mm)	±8.0**	100*	100*	98-100****	90-100	55-89**
½ in (12.5 mm)	±6.0***	98-100****	98-100****	90-100	60-89***	50-70
¾ in (9.5 mm)	±5.6	90-100	90-100	70-89	55-75	
No. 4 (4.75 mm) s	±5.6	65-85	55-75			
No. 8 (2.36 mm)	±4.6	48-55	42-47	38-46	32-36	30-36
No. 200 (75 µm)	±2.0	5.0-7.0	5.0-7.0	4.5-7.0	4.0-6.0	3.5-6.0
Range for % AC (Note 3)	± 0.4 (Note 2)	5.50-7.25	5.25-7.00	5.00-6.25	4.25-5.50	4.00-5.25

\* Mixture control tolerance is not applicable to this sieve for this mix.

\*\* Ensure mixture control tolerance is within ± 10.0% for this sieve for 25 mm Superpave.

\*\*\*Ensure mixture control tolerance is within ± 8.0% for this sieve for 19 mm Superpave.

\*\*\*\*Ensure mixture control tolerance is within ± 2.0% for this sieve for 12.5 mm and 9.5 mm mixes.

Note 1: Use PG 76-22 in 12.5 mm Superpave, excluding shoulder construction, on all projects with ADT greater than 25,000 as detailed in the Contract Pay Item.

Note 2: Quality Acceptance Test Results for AC content deviating > ± 0.3 % from the approved Job Mix Formula (JMF) consistently over three Lots may subject the mix to a revised AC content on the project JMF at the discretion of the State Materials Engineer based on statistical trend.

Note 3: Range for % AC is Original Optimum AC (OOAC) at 65 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

2. Volumetric limits are as follows:

Design Parameter	Mix Type	Limits
% of Max. Specific Gravity (Gmm) at design gyrations, (Ndes)	All	96%
% Gmm at the initial number of gyrations, Ni	All	91.5% maximum
% voids filled with asphalt (VFA) at Ndes	9.5 mm Type I	Min. 72; Max. 80
	9.5 Type II and 12.5 mm	Min. 72; Max. 76
	19 mm	Min. 71; Max 76
	25 mm	Min. 69; Max 76
Fines to effective asphalt binder ratio (F/Pbe)	9.5 mm Type I	0.6 to 1.4
	All other types	0.8 to 1.6
Minimum Film Thickness (microns)*	All	> 7.00
Minimum % Voids in Mineral Aggregate (VMA) Note: VMA shall be calculated using the effective specific gravity of the aggregate (Gse). See SOP-2SP.	25 mm	13.0
	19 mm	14.0
	12.5 mm	15.0
	9.5 Type I	16.0
	9.5 Type II	16.0

\*Superpave Mixtures approved prior to January 31, 2012, may be adjusted to meet Minimum Film Thickness requirements by the State Materials Engineer.

**B. Requirements for Superpave Parking Lot Mixes (NOT FOR STANDARD HIGHWAY/STREET PAVING)**

1. Surface Layers for parking facilities:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		4.75 mm Mix	9.5 mm Superpave Type I	9.5 mm Superpave Type II
1- in (25.0 mm) sieve	± 8.0			
3/4 in (19.0 mm) sieve	±8.0**		100*	100*
1/2 in (12.5 mm) sieve	±6.0	100*	98-100****	98-100****
3/8 in (9.5 mm) sieve	±5.6	90-100	90-100	90-100
No. 4 (4.75 mm) sieve	±5.6	75-95	65-85	55-75
No. 8 (2.36 mm) sieve	±4.6	60-65	48-55	42-47
No. 50 (300 µm) sieve	+3.8	20-50		
No. 200 (75 µm) sieve	±2.0	4-12	5.0-7.0	5.0-7.0
Range for Total AC (Note 1)	+ 0.4 (Note 2)	6.00 - 7.50	5.50 - 7.25	5.25 - 7.00

\* Mixture control tolerance is not applicable to this sieve for this mix.

\*\*\*\*Ensure mixture control tolerance is within ± 2.0% for this sieve for 12.5 mm and 9.5 mm mixes.

Note 1: Range for % AC is Original Optimum AC (OOAC) at 65 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

Note 2: Quality Acceptance Test Results for AC content that deviate  $> \pm 0.3\%$  from the approved Job Mix Formula (JMF) consistently over three lots may subject the mix to a revised AC content on project JMF at the discretion of the State Materials Engineer based on statistical trend.

2. Subsurface Layers for parking facilities:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		12.5 mm Superpave	19 mm Superpave	25 mm Superpave
				100*
1- in (25.0 mm) sieve	$\pm 8.0$	100*	100*	90-100
3/4 in (19.0 mm) sieve	$\pm 8.0^{**}$	98-100****	90-100	55-89**
1/2 in (12.5 mm) sieve	$\pm 6.0^{***}$	90-100	60-89***	50-70
3/8 in (9.5 mm) sieve	$\pm 5.6$	70-89	55-75	
No. 8 (2.36 mm) sieve	$\pm 4.6$	38-46	32-36	30-36
No. 200 (75 $\mu$ m) sieve	$\pm 2.0$	4.5-7.0	4.0-6.0	3.5-6.0
Range for Total AC (Note 1)	+ 0.4 (Note 2)	5.00 - 6.25	4.25 - 5.50	4.00 - 5.25

\*Mixture control tolerance is not applicable to this sieve for this mix.

\*\*Ensure mixture control tolerance is within  $\pm 10.0\%$  for this sieve for 25 mm Superpave mixes.

\*\*\* Ensure mixture control tolerance is within  $\pm 8.0\%$  for this sieve for 19 mm Superpave mixes.

\*\*\*\*Ensure mixture control tolerance is within  $\pm 2.0\%$  for this sieve for 12.5 mm and 9.5 mm Superpave mixes.

Note 1: Range for % AC is Original Optimum AC (OOAC) at 65 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

Note 2: Quality Acceptance Test Results for AC content that deviate  $> \pm 0.3\%$  from the approved Job Mix Formula (JMF) consistently over three lots may subject the mix to a revised AC content on project JMF at the discretion of the State Materials Engineer based on statistical trend.

3. Volumetric limits for parking facilities are as follows:

Design Parameter	Mix Type	Limits
% of Max. Specific Gravity (Gmm) at design gyrations, Ndes	All	96%
% Gmm at the initial number of gyrations, Ni	All	91.5 % maximum
% voids filled with asphalt (VFA) at Ndes	9.5 mm Type I	Min. 72; Max. 80
	9.5 Type II and 12.5 mm	Min. 72; Max. 78
	19 and 25 mm	Min. 71; Max 76
Fines to effective asphalt binder ration (F/Pbe)	9.5 mm Type I	0.6 to 1.4
	All other types	0.8 to 1.6
Minimum Film Thickness (microns)*	4.75 mm	$> 6.00$
	All other types	$> 7.00$
Minimum % Voids in Mineral Aggregate (VMA)	25 mm	13.0
	19 mm	14.0

Note: VMA shall be calculated using the effective specific gravity of the aggregate (Gse). See SOP-2	12.5 mm	15.0
	9.5 mm Types I, II	16.0

\* Mixtures approved prior to January 31, 2012, may be adjusted to meet Minimum Film Thickness requirements by the State Materials Engineer.

**C. Fabrication**

See Section 400.

**828.2.04 Fine-Graded Mixtures**

**A. Requirements**

Produce the mixture according to an approved mix design and Job Mix Formula. Ensure that fine-graded mixtures meet the following mixture control tolerances and design limits:

ASPHALTIC CONCRETE - 4.75 mm Mix		
Sieve Size	Mixture Control Tolerance	Design Gradation Limits, % passing
1/2 in (12.5 mm) sieve*	±0.0	100*
3/8 in (9.5 mm) sieve	±5.6	90-100
No. 4 (4.75 mm) sieve	±5.7	75-95
No. 8 (2.36 mm) sieve	±4.6	60-65
No. 50 (300 µm) sieve	±3.8	20-50
No. 200 (75 µm) sieve	±2.0	4-12
Range for % AC (Note 2)	±0.4 (Note 3)	6.00 – 7.50
Design optimum air voids (%)		4.0 – 7.0
% Aggregate voids filled with AC		60 - 80
Minimum Film Thickness (microns) (Note 1)		> 6.00

\* Mixture control tolerance is not applicable to this sieve for this mix.

Note 1: 4.75 mm Mixtures approved prior to January 31, 2012, may be adjusted to meet Minimum Film Thickness requirements by the State Materials Engineer.

Note 2: Range for % AC is Original Optimum AC (OOAC) at 65 gyrations prior to the Corrected Optimum AC (COAC) calculation detailed in SOP 2 (Appendix D).

Note 3: Quality Acceptance Test Results for AC content that deviate > ± 0.3% from the approved Job Mix Formula (JMF) consistently over three lots may subject the mix to a revised AC content on project JMF at the discretion of the State Materials Engineer based on statistical trend.

**B. Fabrication**

See Section 400.

**C. Acceptance**

See Subsection 106.3 and Section 400. Ensure individual test results meet the Mixture Control Tolerances listed in Subsections 828.2, 828.2.01, 828.2.02, 828.2.03, 828.2.04, whichever applies.

**D. Materials Warranty**

See General Provisions 101 through 150.



September 9, 2014

**BITUMINOUS CONSTRUCTION BULLETIN****TO****ALL ASPHALTIC CONCRETE PRODUCERS FOR  
GEORGIA DEPARTMENT OF TRANSPORTATION PROJECTS****RE: Implementation of COAC for 9.5 mm Superpave Type I and 4.75 mm Mixtures Containing Recycled Asphalt Pavement (RAP)**

In April 2012, GDOT revised mix design requirements specified in Section 828 to include the Corrected Optimum Asphalt Cement Content (COAC) for all mix types incorporating RAP other than 9.5 mm Type 1 Superpave and 4.75 mm mixtures. Additionally, mixtures placed on parking lots were not required to include the COAC. Over the last several months, we have been evaluating the mixtures placed incorporating the COAC via field mix design verification and inspection. The compiled data indicates that the increased AC content has generally improved mat texture and moisture susceptibility testing results while not compromising the rut resistance of those mixes. It is believed that the additional AC will contribute to the overall durability of the Asphaltic Concrete mixtures being placed on GDOT projects.

Recently, in conjunction with GAPA and members of the technical committee for asphaltic concrete issues, GDOT has concluded that incorporating the COAC for all mix types containing RAP is warranted. As such, Section 828 has been revised to include the COAC for 9.5 mm Type I Superpave, 4.75 mm and all parking lot mixtures. Implementation for COAC for this mixtures is similar to that used for the original implementation of COAC and is detailed below.

- A. For Currently Approved 4.75 mm mix and 9.5 mm Type I Superpave Mix Designs the following guidelines are given:
1. The Contractor or Mix Design Laboratory may submit a currently approved mix design revised with the Corrected Optimum Asphalt Cement Content (COAC) for approval and the revised mix design using a new Mix Design ID number will be issued. The COAC will be listed on the Mix Design Summary Page as a note at the bottom of the design (example attached) and shall be used on the Job Mix Formula for future Let Contracts. The original Mix Design ID number will also be noted.
  2. The RAP AC content listed in the original mix design data will be used to calculate the COAC as detailed in SOP 2 and GDT 123.
  3. Mix designs adjusted to include the COAC, may be verified for final approval via field verification of asphalt plant produced mix within the first two lots of mix production by GDOT.
  4. Field verification results must meet requirements specified in Section 828.2.B.2 with the following exception. Rutting susceptibility tests results for all verified mix must meet specified requirements with a tolerance of + 2 mm. As example, for a 9.5 mm Type I Superpave mix design, maximum deformation for currently approved mix designs evaluated using the COAC shall be 10.0 mm (8 mm + 2 mm). If a COAC revised mix fails to meet specified requirements as detailed, full mix design verification will be performed. Failure to meet specified mix design verification requirements may

result in mix design revision or invalidation with a new design required. For in place mixtures complying with Section 400.3.05.A.2; pavement removal at the contractor's expense will not be required based on the failure of this verification testing.

B. For New 4.75 mm and 9.5 mm Type I Superpave Mix Design (Submitted after December 31, 2014) the following guidelines are provided:

1. The RAP AC content listed in the mix design data will be used to calculate the Corrected Optimum Asphalt Cement Content (COAC) as detailed in SOP 2 and GDT 123.
2. All performance tests required in Section 828.2.B.2 shall be performed using the COAC as detailed in SOP 2 and GDT 123.
3. The COAC will be listed on the Mix Design Summary Page as a note at the bottom of the design and shall be used on the Job Mix Formula for Let Contracts.
4. Specimens for all required performance tests will be fabricated using the COAC for mix designs submitted as check point designs after December 31, 2014. Verification results must meet all requirements specified in Section 828.2.B.2 with the following exception. Rutting susceptibility results for all field produced verified mix shall be given the tolerance of + 2 mm as detailed in A.4.

Your cooperation and assistance in making this transitional effort towards improving the overall quality of the asphaltic concrete placed on GDOT roads is greatly appreciated! Contractors who elect to use COAC calculated 9.5 mm Type I Superpave and 4.75 mm mix designs on projects that are not contractually required, may do so at their discretion with no additional cost to the Department.

Please contact Sheila Hines at (404) 608-4856 if you have any additional questions in regards to this matter.

Sincerely,



Charles A. Hasty, P.E.,  
State Materials Engineer

cc: Jeff Baker, P.E., Director of Construction  
Marc Mastronardi, P.E., State Construction Engineer  
GHCA  
GAPA