DATE: April 25, 2014

SPECIFICATIONS
Road Improvements Liberty Church Road and Sofkee Road
Macon-Bibb County Georgia

SPECIAL PROVISIONS FOR PROTECTION OF RAILWAY INTERESTS NORFOLK SOUTHERN RAILWAY COMPANY

1. AUTHORITY OF RAILROAD ENGINEER AND DEPARTMENT ENGINEER:

The authorized representative of the Railroad Company, hereinafter referred to as Railroad Engineer, shall have final authority in all matters affecting the safe maintenance of Railroad traffic of his Company including the adequacy of the foundations and structures supporting the Railroad tracks.

The authorized representative of the Department, hereinafter referred to as the Department Engineer, shall have authority over all other matters as prescribed herein and in the Project Specifications.

2. NOTICE OF STARTING WORK:

A. The Department's Prime contractor shall not commence any work on railroad rights-of-way until he has complied with the following conditions:

1. Given the Railroad written notice, with copy to the Department Engineer who has been designated to be in charge of the work, at least ten days in advance of the date he proposes to begin work on Railroad rights-of-way.

Office of Chief Engineer
Bridges & Structures
Norfolk Southern Corporation
1200 Peachtree Street NE
Internal Box #142
Atlanta, Georgia 30309

2. Obtained written approval from the Railroad of Railroad Protective Liability Insurance coverage as required by paragraph 14 herein. It should be noted that Railroad Company does not accept notation of Railroad Protective insurance on a certificate of liability insurance form or Binders as Railroad Company must have the full original countersigned policy. Further, please note that mere receipt of the policy is not the only issue but review for compliance. Due to the number of projects system-wide, it typically takes a minimum of 30-45 days for Railroad Company to review.

3. Obtained Railroad's Flagging Services as required by paragraph 7

herein.

4. Obtained written authorization from the Railroad to begin work on Railroad rights-of-way, such authorization to include an outline of specific conditions with which he must comply.
5. Furnished a schedule for all work within the Railroad rights-of-way as required by paragraph 7,B,1.

B. The Railroad's written authorization to proceed with the work shall include the names, addresses, and telephone numbers of the Railroad's representatives who are to be notified as hereinafter required. Where more than one representative is designated, the area of responsibility of each representative shall be specified.

3. INTERFERENCE WITH RAILROAD OPERATIONS:

A. The Contractor shall so arrange and conduct his work that there will be no interference with Railroad operations, including train, signal, telephone and telegraphic services, or damage to the property of the Railroad Company or to poles, wires, and other facilities of tenants on the rights-of-way of the Railroad Company. Whenever work is liable to affect the operations or safety of trains, the method of doing such work shall first be submitted to the Railroad Engineer for approval, but such approval shall not relieve the Contractor from liability. Any work to be performed by the Contractor which requires flagging service or inspection service shall be deferred by the Contractor until the flagging service or inspection service required by the Railroad is available at the job site.

B. Whenever work within Railroad rights-of-way is of such a nature that impediment to Railroad operations such as use of runaround tracks or necessity for reduced speed is unavoidable, the Contractor shall schedule and conduct his operations so that such impediment is reduced to the absolute minimum.

C. Should conditions arising from, or in connection with the work, require that immediate and unusual provisions be made to protect operations and property of the Railroad, the Contractor shall make such provisions. If in the judgment of the Railroad Engineer, or in his absence, the Railroad's Division Engineer, such provisions is insufficient, either may require or provide such provisions as he deems necessary. In any event, such unusual provisions shall be at the Contractor's expense and without cost to the Railroad or the Department.

4. TRACK CLEARANCES:

A. The minimum track clearances to be maintained by the Contractor during construction are shown on the Project Plans. However, before undertaking any work within Railroad right-of-way, or before placing any obstruction over any track, the Contractor shall:

1. Notify the Railroad's representative at least 72 hours in advance of the work.

2. Receive assurance from the Railroad's representative that arrangements have been made for flagging service as may be necessary.

3. Receive permission from the Railroad's representative to proceed with the work.

4. Ascertain that the Department Engineer has received copies of notice to the Railroad and of the Railroad's response thereto.

5. CONSTRUCTION PROCEDURES:

A. General:

Construction work and operations by the Contractor on Railroad property shall be:

1. Subject to the inspection and approval of the Railroad.

2. In accord with the Railroad's written outline of specific conditions.

3. In accord with the Railroad's general rules, regulations and requirements including those relating to safety, fall protection and personal protective equipment.

4. In accord with these Special Provisions.

B. Excavation:

The subgrade of an operated track shall be maintained with edge of berm at least 10'-0" from centerline of track and not more than 24- inches below top of rail. Contractor will not be required to make existing section meet this specification if substandard, in which case existing section will be maintained.

Additionally, the Railroad Engineer may require installation of orange construction safety fencing for protection of the work area.

C. Excavation for Structures:

The Contractor will be required to take special precaution and care in connection with excavating and shoring pits, and in driving piles or sheeting

for footings adjacent to tracks to provide adequate lateral support for the tracks and the loads which they carry, without disturbance of track alignment and surface, and to avoid obstructing track clearances with working equipment, tools or other material. All plans and calculations for shoring shall be prepared and signed by a Registered Professional Engineer. The Registered Professional Engineer will be responsible for the accuracy for all controlling dimensions as well as the selection of soil design values which will accurately reflect the actual field conditions. The procedure for doing such work, including need of and plans and calculations for shoring, shall first be approved by the Department Engineer and the Railroad Engineer, but such approval shall not relieve the Contractor from liability.

Additionally, walkway with handrail protection may be required as noted in paragraph 11 herein. .

D. Demolition, Erection, Hoisting

1. Railroad tracks and other railroad property must be protected from damage during the procedure.

2. The Contractor is required to submit a plan showing the location of cranes, horizontally and vertically, operating radii, with delivery or disposal locations shown. The location of all tracks and other railroad facilities as well as all obstructions such as wire lines, poles, adjacent structures, etc. must also be shown.

3. Crane rating sheets showing cranes to be adequate for 150% of the actual weight of the pick. A complete set of crane charts, including crane, counterweight, and boom nomenclature is to be submitted.

4. Plans and computations showing the weight of the pick must be submitted. Calculations shall be made from plans of the existing and/or proposed structure showing complete and sufficient details with supporting data for the demolition or erection of the structure. If plans do not exist, lifting weights must be calculated from field measurements. The field measurements are to be made under the supervision of the Registered Professional Engineer submitting the procedure and calculations.

5. A data sheet must be submitted listing the types, size, and arrangements of all rigging and connection equipment.

6. A complete procedure is to be submitted, including the order of lifts, time required for each lift, and any repositioning or re-hitching of the crane or cranes.

7. All erection or demolition plans, procedures, data sheets, etc. submitted must be prepared, signed and sealed by a Registered Professional

Engineer.

8. The Railroad Engineer or his designated representative must be present at the site during the entire demolition and erection procedure period.

9. All procedures, plans and calculations shall first be approved by the Department Engineer and the Railroad Engineer, but such approval does not relieve the Contractor from liability.

E. Blasting:

1. The Contractor shall obtain advance approval of the Railroad Engineer and the Department Engineer for use of explosives on or adjacent to Railroad property. The request for permission to use explosives shall include a detailed blasting plan. If permission for use of explosives is granted, the Contractor will be required to comply with the following:

   (a) Blasting shall be done with light charges under the direct supervision of a responsible officer or employee of the Contractor and a licensed blaster.

   (b) Electric detonating fuses shall not be used because of the possibility of premature explosions resulting from operation of two-way radios.

   (c) No blasting shall be done without the presence of the Railroad Engineer or his authorized representative. At least 72 hours advance notice to the person designated in the Railroad's notice of authorization to proceed (see paragraph 2B) will be required to arrange for the presence of an authorized Railroad representative and such flagging as the Railroad may require.

   (d) Have at the job site adequate equipment, labor and materials and allow sufficient time to clean up debris resulting from the blasting without delay to trains, as well as correcting at his expense any track misalignment or other damage to Railroad property resulting from the blasting as directed by the Railway's authorized representative. If his actions result in delay of trains, the Contractor shall bear the entire cost thereof.

2. The Railroad representative will:

   (a) Determine approximate location of trains and advise the Contractor the appropriate amount of time available for the blasting operation and clean up.

(b) Have the authority to order discontinuance of blasting if, in his opinion, blasting is too hazardous or is not in accord with these special provisions.

F. Maintenance of Railroad Facilities:

1. The Contractor will be required to maintain all ditches and drainage structures free of silt or other obstructions which may result from his operations and provide and maintain any erosion control measures as required. The Contractor will promptly repair eroded areas within Railroad rights-of-way and repair any other damage to the property of the Railroad or its tenants.

2. All such maintenance and repair of damages due to the Contractor's operations shall be done at the Contractor's expense.

G. Storage of Materials and Equipment:

Materials and equipment shall not be stored where they will interfere with Railroad operations, nor on the rights-of-way of the Railroad Company without first having obtained permission from the Railroad Engineer, and such permission will be with the understanding that the Railroad Company will not be liable for damage to such material and equipment from any cause and that the Railroad Engineer may move or require the Contractor to move, at the Contractor's expense, such material and equipment.

All grading or construction machinery that is left parked near the track unattended by a watchman shall be effectively immobilized so that it cannot be moved by unauthorized persons. The Contractor shall protect, defend, indemnify and save Railroad, and any associated, controlled or affiliated corporation, harmless from and against all losses, costs, expenses, claim or liability for loss or damage to property or the loss of life or personal injury, arising out of or incident to the Contractor's failure to immobilize grading or construction machinery.

H. Cleanup:

Upon completion of the work, the Contractor shall remove from within the limits of the Railroad rights-of-way, all machinery, equipment, surplus materials, falsework, rubbish or temporary buildings of the Contractor, and

leave said rights-of-way in a neat condition satisfactory to the Chief Engineer of the Railroad or his authorized representative.

6. DAMAGES:

A. The Contractor shall assume all liability for any and all damages to his work, employees, servants, equipment and materials caused by Railroad traffic.

B. Any cost incurred by the Railroad for repairing damages to its property or to property of its tenants, caused by or resulting from the operations of the Contractor, shall be paid directly to the Railroad by the Contractor.

7. FLAGGING SERVICES:

A. Requirements:

Flagging services will not be provided until the contractor's insurance has been reviewed & approved by the Railroad.

Under the terms of the agreement between the Department and the Railroad, the Railroad has sole authority to determine the need for flagging required to protect its operations. In general, the requirements of such services will be whenever the Contractor's personnel or equipment are or are likely to be, working on the Railroad's right-of-way, or across, over, adjacent to, or under a track, or when such work has disturbed or is likely to disturb a railroad structure or the railroad roadbed or surface and alignment of any track to such extent that the movement of trains must be controlled by flagging.

Normally, the Railroad will assign one flagman to a project; but in some cases, more than one may be necessary, such as yard limits where three (3) flagmen may be required. However, if the Contractor works within distances that violate instructions given by the Railroad's authorized representative or performs work that has not been scheduled with the Railroad's authorized representative, a flagman or flagmen may be required full time until the project has been completed.

B. Scheduling and Notification:

1. The Contractor's work requiring railroad flagging should be scheduled to limit the presence of a flagman at the site to a maximum of 50 hours per week. The Contractor shall receive Railroad approval of work schedules requiring a flagman's presence in excess of 40 hours per week.

2. Not later than the time that approval is initially requested to begin work on Railroad right-of-way, Contractor shall furnish to the Railroad and the Department a schedule for all work required to complete the portion of the

project within Railroad right-of-way and arrange for a job site meeting between the Contractor, the Department, and the Railroad's authorized representative. Flagman or Flagmen may not be provided until the job site meeting has been conducted and the Contractor's work scheduled.

3. The Contractor will be required to give the Railroad representative at least 10 working days of advance written notice of intent to begin work within Railroad right-of-way in accordance with this special provision. Once begun, when such work is then suspended at any time, or for any reason, the Contractor will be required to give the Railroad representative at least 3 working days of advance notice before resuming work on Railroad right-of-way. Such notices shall include sufficient details of the proposed work to enable the Railroad representative to determine if flagging will be required. If such notice is in writing, the Contractor shall furnish the Engineer a copy; if notice is given verbally, it shall be confirmed in writing with copy to the Engineer. If flagging is required, no work shall be undertaken until the flagman, or flagmen are present at the job site. It may take up to 30 days to obtain flagging initially from the Railroad. When flagging begins, the flagman is usually assigned by the Railroad to work at the project site on a continual basis until no longer needed and cannot be called for on a spot basis. If flagging becomes unnecessary and is suspended, it may take up to 30 days to again obtain from the Railroad. Due to Railroad labor agreements, it is necessary to give 5 working day's notice before flagging service may be discontinued and responsibility for payment stopped.

4. If, after the flagman is assigned to the project site, an emergency arises that requires the flagman's presence elsewhere, then the Contractor shall delay work on Railroad right-of-way until such time as the flagman is again available. Any additional costs resulting from such delay shall be borne by the Contractor and not the Department or Railroad.

C. Payment:

1. The Department will be responsible for paying the Railroad directly for any and all costs of flagging which may be required to accomplish the construction.

2. The estimated cost of flagging is current rate per day based on a 10- hour work day. This cost includes the base pay for the flagman, overhead, and includes a per diem charge for travel expenses, meals and lodging. The charge to the Department by the Railroad will be the actual cost based on the rate of pay for the Railroad's employees who are available for flagging service at the time the service is required.

3. Work by a flagman in excess of 8 hours per day or 40 hours per week, but not more than 12 hours a day will result in overtime pay at 1 and 1/2 times the appropriate rate. Work by a flagman in excess of 12 hours per day will result in overtime at 2 times the appropriate rate. If work is

performed on a holiday, the flagging rate is 2 and 1/2 times the normal rate.

4. Railroad work involved in preparing and handling bills will also be charged to the Department. Charges to the Department by the Railroad shall be in accordance with applicable provisions of Subchapter B, Part 140, Subpart I and Subchapter G, Part 646, Subpart B of the Federal-Aid Policy Guide issued by the Federal Highway Administration on December 9, 1991, including all current amendments. Flagging costs are subject to change. *The above estimates of flagging costs are provided for information only and are not binding in any way.*

D. Verification:

1. Railroad's flagman will electronically enter flagging time via Railroad's electronic billing system. Any complaints concerning flagging must be resolved in a timely manner. If need for flagging is questioned, please contact Railroad's System Engineer Public Improvements (404) 529-1641. All verbal complaints will be confirmed in writing by the Contractor within 5 working days with a copy to the Highway Engineer. Address all written correspondence to:

Office of Chief Engineer
Attn: Bridges and Structures Systems Engineer
Norfolk Southern Corporation Public Improvements
1200 Peachtree Street NE,
Internal Box 142
Atlanta, Georgia 30309

2. The Railroad flagman assigned to the project will be responsible for notifying the Department Engineer upon arrival at the job site on the first day (or as soon thereafter as possible) that flagging services begin and on the last day that he performs such services for each separate period that services are provided. The Department Engineer will document such notification in the project records. When requested, the Department Engineer will also sign the flagman's diary showing daily time spent and activity at the project site.

8. <u>HAUL ACROSS RAILROAD:</u>

A. Where the plans show or imply that materials of any nature must be hauled across a Railroad, unless the plans clearly show that the Department has included arrangements for such haul in its agreement with the Railroad, the Contractor will be required to make all necessary arrangements with the Railroad regarding means of transporting such materials across the Railroad. The Contractor will be required to bear all costs incidental to such crossings whether services are performed by his own forces or by Railroad personnel.

B. No crossing may be established for use of the Contractor for transporting materials or equipment across the tracks of the Railroad Company unless specific authority for its installation, maintenance, necessary watching and flagging thereof and removal, until a temporary private crossing agreement has been executed between the Contractor and Railroad. The approval process for an agreement normally takes 90-days.

9. WORK FOR THE BENEFIT OF THE CONTRACTOR:

A. All temporary or permanent changes in wire lines or other facilities which are considered necessary to the project are shown on the plans; included in the force account agreement between the Department and the Railroad or will be covered by appropriate revisions to same which will be initiated and approved by the Department and/or the Railroad.

B. Should the Contractor desire any changes in addition to the above, then he shall make separate arrangements with the Railroad for same to be accomplished at the Contractor's expense.

10. COOPERATION AND DELAYS:

A. It shall be the Contractor's responsibility to arrange a schedule with the Railroad for accomplishing stage construction involving work by the Railroad or tenants of the Railroad. In arranging his schedule he shall ascertain, from the Railroad, the lead time required for assembling crews and materials and shall make due allowance therefore.

B. No charge or claim of the Contractor against either the Department or the Railroad Company will be allowed for hindrance or delay on account of railway traffic; any work done by the Railway Company or other delay incident to or necessary for safe maintenance of railway traffic or for any delays due to compliance with these special provisions.

11. TRAINMAN'S WALKWAYS:

Along the outer side of each exterior track of multiple operated track, and on each side of single operated track, an unobstructed continuous space suitable for trainman's use in walking along trains, extending to a line not less than 10 feet from centerline of track, shall be maintained. Any temporary impediments to walkways and track drainage encroachments or obstructions allowed during work hours while Railway's protective service is provided shall be removed before the close of each work day. If there is any excavation near the walkway, a handrail, with 10'-0" minimum clearance from centerline of track, shall be placed and must conform to AREMA and/or FRA standards.

12. GUIDELINES FOR PERSONNEL ON RAILROAD RIGHT-OF-WAY:

A. All persons shall wear hard hats. Appropriate eye and hearing protection must be used. Working in shorts is prohibited. Shirts must cover shoulders, back and abdomen. Working in tennis or jogging shoes, sandals, boots with high heels, cowboy and other slip-on type boots is prohibited. Hard-sole, lace-up footwear, zippered boots or boots cinched up with straps which fit snugly about the ankle are adequate. Wearing of safety boots is strongly recommended. In the vicinity of at-grade crossings, it is strongly recommended that reflective vests be worn.

B. No one is allowed within 25' of the centerline of track without specific authorization from the flagman.

C. All persons working near track while train is passing are to lookout for dragging bands, chains and protruding or shifted cargo.

D. No one is allowed to cross tracks without specific authorization from the flagman.

E. All welders and cutting torches working within 25' of track must stop when train is passing.

F. No steel tape or chain will be allowed to cross or touch rails without permission.

13. GUIDELINES EQUIPMENT ON RAILROAD RIGHT-OF-WAY:

A. No crane or boom equipment will be allowed to set up to work or park within boom distance plus 15' of centerline of track without specific permission from railroad official and flagman.

B. No crane or boom equipment will be allowed to foul track or lift a load over the track without flag protection and track time.

C. All employees will stay with their machines when crane or boom equipment is pointed toward track.

D. All cranes and boom equipment under load will stop work while train is passing (including pile driving).

E. Swinging loads must be secured to prevent movement while train is passing. F.

No loads will be suspended above a moving train.

G. No equipment will be allowed within 25' of centerline of track without specific authorization of the flagman.

H. Trucks, tractors or any equipment will not touch ballast line without specific

permission from railroad official and flagman.

I. No equipment or load movement within 25' or above a standing train or railroad equipment without specific authorization of the flagman.

J. All operating equipment within 25' of track must halt operations when a train is passing. All other operating equipment may be halted by the flagman if the flagman views the operation to be dangerous to the passing train.

K. All equipment, loads and cables are prohibited from touching rails.

L. While clearing and grubbing, no vegetation will be removed from railroad embankment with heavy equipment without specific permission from the Railroad Engineer and flagman.

M. No equipment or materials will be parked or stored on Railroad's property unless specific authorization is granted from the Railroad Engineer.

N. All unattended equipment that is left parked on Railroad property shall be effectively immobilized so that it cannot be moved by unauthorized persons.

O. All cranes and boom equipment will be turned away from track after each work day or whenever unattended by an operator.

14. INSURANCE:

A. In addition to any other forms of insurance or bonds required under the terms of the contract and specifications, the Prime Contractor will be required to carry insurance of the following kinds and amounts:

1. Commercial General Liability Insurance having a combined single limit of not less than $2,000,000 per occurrence for all loss, damage, cost and expense, including attorneys' fees, arising out of bodily injury liability and property damage liability during the policy period. Said policy shall include explosion, collapse, and underground hazard (XCU) coverage, shall be endorsed to name Railroad specified in item A.2.c. below both as the certificate holder and as an additional insured, and shall include a severability of interests provision.

2. Railroad Protective Liability Insurance having a combined single limit of not less than $2,000,000 each occurrence and $6,000,000 in the aggregate applying separately to each annual period. If the project involves track over which passenger trains operate, the insurance limits required are not less than a combined single limit of $5,000,000 each occurrence and $10,000,000 in the aggregate applying separately to each annual period. Said policy shall provide coverage for all loss, damage or expense arising

from bodily injury and property damage liability, and physical damage to property attributed to acts or omissions at the job site.

The standards for the Railroad Protective Liability Insurance are as follows:

a. The insurer must be rated A- or better by A.M. Best Company, Inc.

b. The policy must be written using one of the following combinations of Insurance Services Office ("ISO") Railroad Protective Liability Insurance Form Numbers:

c.

(1) CG 00 35 01 96 and CG 28 31 10 93; or

(2) CG 00 35 07 98 and CG 28 31 07 98; or

(3) CG 00 35 10 01; or

(4) CG 00 35 12 04.

d. The named insured shall read: Norfolk

Southern Railway Company
Three Commercial Place
Norfolk, Virginia 23510-2191
Attn: Risk Management

e. The description of operations must appear on the Declarations, must match the project description in this agreement, and must include the appropriate Department project and contract identification numbers.

f. The job location must appear on the Declarations and must include the city, state, and appropriate highway name/number. NOTE: Do not include any references to milepost on the insurance policy.

g. The name and address of the prime contractor must appear on the Declarations.

h. The name and address of the Department must be identified on the Declarations as the "Involved Governmental Authority or Other Contracting Party."

i. Other endorsements/forms that will be accepted are:

(1) Broad Form Nuclear Exclusion – Form IL 00 21

(2) 30-day Advance Notice of Non-renewal or cancellation

(3) Required State Cancellation Endorsement

(4) Quick Reference or Index Form CL/IL 240

j. Endorsements/forms that are NOT acceptable are:

(1) Any Pollution Exclusion Endorsement except CG 28 31 (2) Any Punitive or Exemplary Damages Exclusion
(3) Known injury or Damage Exclusion form CG 00 59 (4) Any Common Policy Conditions form
(5) Any other endorsement/form not specifically authorized in item no. 2.h above.

B. If any part of the work is sublet, similar insurance, and evidence thereof as specified in A.1 above, shall be provided by or on behalf of the subcontractor to cover its operations on Railroad's right of way.

C. Prior to entry on Railroad right-of-way, the original Railroad Protective Liability Insurance Policy shall be submitted by the Prime Contractor to the Department at the address below for its review and transmittal to the Railroad. In addition, certificates of insurance evidencing the Prime Contractor's and any subcontractors' Commercial General Liability Insurance shall be issued to the Railroad and the Department at the addresses below, and forwarded to the Department for its review and transmittal to the Railroad. The certificates of insurance shall state that the insurance coverage will not be suspended, voided, canceled, or reduced in coverage or limits without (30) days advance written notice to Railroad and the Department. No work will be permitted by Railroad on its right-of-way until it has reviewed and approved the evidence of insurance required herein.

DEPARTMENT:	RAILROAD:
Macon-Bibb County Government 780 Third St Macon, GA 31201	Risk Management Norfolk Southern Railway Company Three Commercial Place Norfolk, Virginia 23510-2191

D. The insurance required herein shall in no way serve to limit the liability of Department or its Contractors under the terms of this agreement.

15. FAILURE TO COMPLY:

In the event the Contractor violates or fails to comply with any of the requirements of these Special Provisions:

A. The Railroad Engineer may require that the Contractor vacate Railroad property.

B. The Engineer may withhold all monies due the Contractor on monthly statements.

Any such orders shall remain in effect until the Contractor has remedied the situation to the satisfaction of the Railroad Engineer and the Engineer.

16. PAYMENT FOR COST OF COMPLIANCE:

No separate payment will be made for any extra cost incurred on account of compliance

with these special provisions. All such costs shall be included in prices bid for other items of the work as specified in the payment items.

Office of Chief Engineer
Bridges & Structures
Norfolk Southern Corporation
1200 Peachtree Street, N. E.
Internal Box 142
Atlanta, GA 30309

Special Provisions Submittals

Para #	Description	Date Required	Inspector Check Mark
2.A.1, 7.B.3	Notice to Norfolk Southern	10 days prior	_____
2.A.2, 14.C	Approval of Insurance	30-45 days prior	_____
2.A.3, 7	Arrange for flagging service	30 work days prior	_____
2.A.5, 7.B.1	Work Schedule	30 work days prior	_____

01005 - STATEMENT OF WORK

PART 1 - GENERAL

1.01 STATEMENT OF WORK: This is a general overview of the project. Follow details shown by the specifications and drawings, interpreted in accordance with contract clauses.

A. Provide all labor, material, plant, equipment, supplies, and coordination required to Provide base and paving of a portion of Liberty Church Road and Sofkee Rd as shown on the drawings. The subgrade of the road will be prepared to grade by county forces prior to the installation of the base and paving.

B. The project is located near the intersection of the Norfolk Southern railroad and Liberty Church Road east of Georgia Highway 247 (Hawkinsville Rd).

C. Price: Accomplish work shown for the original bid price. This includes special work times for utility outages and repair of damages. The words "at no additional cost to the Government" are implied whether stated or not.

1.02 CONTRACT SITE AND WORK RESTRICTIONS:

A. Work area is restricted to the area at the construction site. The work will be strictly governed by Norfolk Southern Railroad requirements including the use of flagmen. See the Special Provisions for Protection of Railroad Interests for more detail. The contractor also must maintain at least one lane of traffic for the duration of the work since there is no alternative route for residents to access their home.

1.03 HOURS OF WORK:

A. Standard work hours for this project are normal work hours of 8:00 AM to 5:00 PM local time, Monday through Friday. Work must stop on official City-County holidays unless specifically approved in advance.

B. Alternate Work Hours

1. If the Contractor desires to work another set of standard hours submit written request five (5) workdays before the date desired to work the different standard.

2. To work special hours or days such as to continue paving until dark, request verbal approval from the Engineer at least four hours in advance.

3. The Government reserves the right to refuse these requests. In addition, work requiring inspector presence such as placing concrete may not be possible outside normal hours on short notice. Digging outside of normal hours will normally not be approved.

C. All references to days mean calendar days unless otherwise noted.

1.04 SUBMITTALS:

A. General: Provide the following submittals in accordance with instructions found in Section 01300, Submittals and Contractor Furnished Items.

B. Material Submittals: Omitted.

PART 2 - PRODUCTS - OMITTED

PART 3 - EXECUTION

3.01 COORDINATION: The contractor shall coordinate work between different disciplines.

A. Locations shown are approximate and may be moved if approved by the Engineer.

B. Manufacturers' recommendations and/or requirements, if more stringent than the specifications and drawings, shall be followed at no additional cost to the Government.

Section 01005 Submittals

Para #	Description	Date Required	Inspector Check Mark
1.03 B	Alternate Work Hours	5 days prior	_____

<<<<< END OF SECTION >>>>>

01040 – SITE REQUIREMENTS

PART 1 - GENERAL

1.01 UTILITY OUTAGES: Omitted.

1.02 SUBMITTALS: Omitted

1.03 SAFEGUARDING COMMUNICATION FACILITIES: For work that will interfere with buried fiber optics cable, aerial cable, house cable, underground cable, or other communication facilities, notify the utility and the Engineer in writing 14 days before the scheduled construction. Do no work until receiving approval.

PART 2 - PRODUCTS - OMITTED

PART 3 - EXECUTION

3.01 DIGGING/EXCAVATION REQUIREMENTS: The Drawings where applicable show underground utilities and structures as presently shown on the best available record drawings of the site, and these may have some inaccuracies. The information is provided for general bidding purposes only. The contractor shall determine actual locations and quantities at the site by calling the Georgia Utilities Protection Center prior to accomplishing any digging. .

A. Damage: The contractor is responsible for any damage to underground structures and utility lines identified on the drawings and any identified and marked in the field as a result of obtaining the utility location. If any underground utility is damaged, notify the utility and the Engineer immediately.

B. Cutting of Roads, Streets, and Paved Parking Areas:

1. Mark, barricade, and illuminate construction work on or near roads or streets which may present a traffic hazard in accordance with the Manual on Uniform Traffic Control Devices (MUTCD). Closures of streets, parking lots, and other traffic areas will not be permitted unless approved by the Engineer after written request 14 days before the scheduled closure.

2. Road cuts shall be backfilled immediately after completion of associated utility work. When the road is reopened, the cut shall be filled with temporary or permanent materials to a smooth condition, or metal plates or other approved methods shall be employed to prevent discomfort or damage to vehicular traffic. Road cuts shall be permanently closed within 5 working days unless approved otherwise by the Engineer. Provide advance signage warning motorists of the condition in accordance with the MUTCD. Repair streets as shown on the drawings.

3.02 STORAGE AREA: The contractor shall obtain permission for all storage on private property. Materials stored on the county or state right of way must be obtained from the appropriate agency.

3.03 LOCATING AND IDENTIFYING UNDERGROUND LINES AND STRUCTURES: Omitted

3.04 SITE MAINTENANCE, CLEAN UP, AND RESTORATION

A. Maintain the work site in a neat, orderly, and safe manner.

B. Remove scrap, waste, and excess materials promptly. Provide signs, barricades, and lights as required to protect personnel.

C. Do not allow trash and debris to accumulate and become unsightly. Sweep up and collect in contractor-maintained disposal containers daily. Dispose of collected debris weekly as a minimum.

D. Store materials on site in a neat and orderly manner.

E. Restore the project site to its final condition as required by the contract as soon as possible.

F. Do not open trenches or excavations until material is on-hand or scheduled to arrive within three days. Close excavations or ditches as soon as the work has been placed, inspected, and accepted by the government.

Section 1040 Submittals

Para #	Description	Date Required	Inspector Checklist
3.01 B	Road/Parking Closure Request	14 days prior	_____

<<<<< END OF SECTION >>>>>

01300 - SUBMITTALS AND CONTRACTOR FURNISHED ITEMS

PART 1 - GENERAL

1.01 GENERAL:

A. Basic: Provide items requiring drawings, diagrams, certifications, manufacturers' literature, data brochures, technical data, sample requests, forms, and other data as noted under each specification section.

B. Contractor Responsibility: Review, Corrections, or Comments made on the Submittals do not relieve the contractor from compliance with the requirements of the Drawings, Specifications, Addendums, and Contract Documents. By entering into this contract, the contractor agrees that the purpose of submittals is to demonstrate to the Engineer that the contractor understands the design concept and that he demonstrates his understanding by indicating which equipment and material he intends to furnish, install, and use. Review of shop drawing will be general only for basic conformance with the design concept. The Government's review of such drawings, schedules, or cuts shall not relieve the contractor from the responsibility for correcting all errors of any sort contained in the submittals. The contractor is responsible for confirming and correlating all quantities and dimensions; selecting proper fabrication processes, construction methods and installation techniques; coordinating this work with that of all other trades; and performing all work in a safe, workmanlike and satisfactory manner.

1.02 OMITTED:

1.03 SUBMITTAL INSTRUCTIONS: Submittal requirements for each specification section are listed in those respective sections. The following apply to all sections.

A. Material Submittals:

1. Complete Submissions: All items requiring submittals prior to construction activities for each section should be provided at one time unless noted otherwise or logically required. In some instances the specifications may require certain items from one or more specifications sections to be submitted at one time.

2. Submittal Checklist: The contractor shall complete a copy of the checklist provided in the submittals paragraph of each specification section. This checklist shall be provided with each submittal. Submittal information shall be arranged in order to correspond with each checklist.

3. Time: The Contractor shall have approved submittals before ordering any equipment under this contract. If equipment is ordered prior to receiving approval, it will be solely at the Contractor's risk. Under no circumstances will material be installed prior to approval of submittals. There will be no time schedule for providing material submittals unless noted elsewhere in the specifications. The Contractor will be required to manage his materials/equipment lead times and obtain approval in sufficient time to complete the work on schedule. Disapproval of incomplete or unsatisfactory submittals shall not be grounds for contract extensions. Other submittals such as as-builts, test reports, etc., shall be provided as indicated. When the word "prior" is used, it shall generally mean prior to the delivery or installation of the product at the work site or prior to the time in question of the item addressed in the specification.

4. Exceptions: If any material proposed for use on this contract deviates from the specifications, the Contractor shall submit those proposed deviations for approval along with detailed

justification. All exceptions and deviations shall be described in detail with each product submittal. Cost will not be considered a justification for taking exceptions unless a credit is offered to the Government.

5. Substitutions: Products provided by manufacturers other than those specified as the "design basis" shall be considered substitutions.

a. All features of items submitted as substitutions are implied to be in full compliance with Specifications and Drawings if not specifically noted as "Exceptions."

b. Where a design basis is referenced in Specifications and Drawings, substitutions must meet or exceed the salient features of the design basis as determined by the Engineer. Exceptions to design basis characteristics must be clearly noted as "Exceptions." The contractor must demonstrate that the product substituted is clearly equal or superior to the specified product, or else the request for substitution will be denied.

c. Changes required to accommodate approved substitution shall be made at no additional cost to the Government.

B. Other Submittals: Other submittals such as samples, test results, spare parts, and etc. shall be provided as required by each specifications section. Provide 2 copies of each or an electronic copy unless directed otherwise.

1.04 RETURN AND DISAPPROVAL OF SUBMITTALS: The Engineer will return submittals to the Contractor within 14 days after receipt indicating approval or disapproval. Resubmittal of disapproved submittals shall be accomplished within 14 days after receipt of disapproval. Disapproval shall not be cause for time extension.

1.05 SUPERINTENDENT or MANAGER: When requested, provide name and qualifications for review. Provide the name and contact information of the person who will be the primary contact with the Government on this project until project acceptance.

1.06 TURN-IN OF IDENTIFIED EQUIPMENT, SPARE PARTS, TOOLS, AND OTHER MATERIALS: Items indicated in the Submittals section of each specifications and elsewhere, for turn-in to the Government shall be delivered as directed or in the absence of direction, before prefinal inspection. Obtain receipts from Government employees receiving the materials and deliver them to the Engineer before prefinal inspection.

1.07 AS-BUILT DRAWINGS: Omitted

1.08 PROVIDE EQUIPMENT LIST: Omitted

1.09 FINAL INSPECTION ONLY: If the Engineer elects to have only a final inspection, turn in prefinal inspection submittals before the final inspection.

1.10 PRE-AWARD SUBMITTALS: Submit the following items before award, if directed.

A. Experience: Provide documentation on contractor experience relative to this project. After bid opening, the Government may examine contractor experience. The Contractor and/or named subcontractors shall have been

regularly engaged in the type work of this project for at least (2) years. Include for each subcontractor the name of the business and the individual responsible for this project.

B. References: Provide the names, addresses and telephone numbers of at least two customers for whom similar projects were performed in the last two years.

1.11 PROGRESS SCHEDULES AND REPORTS: Omitted

END OF SECTION

01560 – ENVIRONMENTAL REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL:

A. General Scope: This Section provides the requirements necessary to ensure that all construction projects are in environmental compliance. Major environmental program areas which may be affected include natural resources, air quality, underground storage tanks, asbestos, lead-based paint, PCBs, cultural resources, water quality, solid and hazardous wastes, and pollution prevention.

B. Applicable Regulations and Publications: Comply with all applicable Federal, State of Georgia, any laws and regulations from other states where disposal might occur, and local laws and regulations concerning environmental compliance and pollution prevention.

C. Ensure all products produced or generated under contract shall meet all stated performance objectives and shall not violate in any manner the environmental requirements of any applicable local, state, or federal entity. Applicable environmental requirements shall include but are not limited to a substance's toxicity, biodegradability, and volatile organic/inorganic compound content.

D. Macon-Bibb County personnel will conduct no-notice inspections to ensure compliance with all environmental requirements.

E. Definitions:

1. Engineer-Macon-Bibb County Engineer or his or her designated representative.

2. Inspector-The individual from the Macon-Bibb County Engineering Department designated to perform daily inspection of the contractor's work.

3. Dust - Minute solid particles caused to be suspended by natural forces or by mechanical processes such as, but not limited to, crushing, grinding, milling, drilling, demolishing, shoveling, conveying, covering, bagging, mixing, and sweeping.

4. Open Burning - Any outdoor fire from which the products of combustion are emitted directly into the open air without passing through a stack, chimney or duct.

5. Solid Waste - Defined in CFR 261.2. Examples include garbage, refuse, and other discarded solid material including non-hazardous wastes resulting from industrial, commercial, and agricultural operations.

6. GA EPD - Georgia Environmental Protection Division of the Department of Natural Resources.

1.02 OMITTED

1.03 SUBMITTALS:

A. General: Provide the submittals in accordance with instructions found in Section 01300, Submittals and Contractor Furnished Items.

B. Material Submittals: Not required under this section.

1.04 NOTIFICATIONS:

Provide to the Engineer all data specified herein to insure compliance with applicable environmental requirements.

PART 2 - PRODUCTS - OMITTED.

PART 3 - EXECUTION

3.01 DISPOSAL OF WASTE/EXCESS MATERIAL:

A. Omitted.

B. Non-hazardous Solid Waste or Excess Material, except topsoil and suitable fill material, shall be removed from the site daily unless permitted otherwise by the Engineer. Dispose in a manner approved by the US Environmental Protection Agency and the Georgia Department of Natural Resources, Environmental Protection Division (EPD). Also comply with applicable local codes and requirements. Equipment/material to be removed from the project but not turned in to the Government is the property of the contractor.

1. Disposal: Use one or more of the following methods to dispose of non-hazardous solid waste.

a. Sanitary Landfill: All solid waste may be disposed of in a sanitary landfill properly licensed by the State of Georgia. If a landfill other than the Macon, Wolfe Creek, or Houston County sanitary landfill is used, provide a copy of the landfill license. Provide proof that any Georgia municipal solid waste disposal facility to which they propose to bring waste, except Macon, Wolfe Creek, or Houston County, is operated by someone who has obtained the certification required by the Georgia Solid Waste Management Act, O.C.G.A. 12-8-24.1.

b. Inert Waste Landfill: Materials not likely to cause production of lechate of environmental concern may be disposed of in an inert waste landfill. Only earth and earth-like products, concrete, cured asphaltic concrete, rock, bricks, yard trimmings, and land clearing debris such as stumps, limbs, and leaves are acceptable for disposal in an inert waste landfill. This definition excludes industrial and demolition waste not specifically listed above. Provide a copy of the written notice of commencement of operation by the landfill as given to the Georgia EPD. Include the weights of material disposed of in this type of landfill in the disposal and recycling report required in paragraph 3.01.C below.

c. Construction/Demolition Disposal Site: Only wood, metal, wallboard, paper, cardboard, as well as materials that can go in an inert waste landfill may be disposed of in this facility. Provide a copy of the landfill license.

d. Recycling: Recycling of materials is strongly encouraged. Materials destined for recycling must meet the definition of non-hazardous wastes under federal/state solid waste regulations. Materials defined as "recovered materials" by GA EPD regulations are excluded from regulation as solid wastes.

e. All materials to be disposed of in other than a sanitary landfill must be kept segregated at the project site from those materials, which are allowed only in a sanitary landfill.

3. Solid Waste Disposal Outside of Georgia: Dispose of no solid waste outside the state of Georgia without prior written approval of the Engineer. If the contractor desires this, he shall provide sufficient information as

determined by the Engineer to allow verification

3.02 SPECIAL WASTES OR HAZARDOUS MATERIALS: Not applicable.

3.03 PROTECTION OF LAND RESOURCES:

A. General: Do not take any action which shall adversely affect the existing Water Quality Standards classification of any streams, rivers, lakes or reservoirs within or adjacent to the project site or which would otherwise contribute to pollution of these water resources. No fuel, oils, bituminous, calcium chloride, acids, construction waste or otherwise harmful materials shall be permitted to enter these water resources. Preserve the land resources in their present condition or restore to a condition that appears natural and does not detract from the appearance of the surrounding area. If restoration is to be accomplished, the Contractor must submit his restoration plan and receive approval from the County on his proposed procedures.

B. Omitted.

C. Omitted

D. Omitted

E. Spills: Prevent the spill of chemicals, fuels, oils, grease, bituminous materials, waste washings, herbicides, cement drainage or any other hazardous materials. Immediately report all spills to the Macon-Bibb County Fire Department, emergency number 911, giving name, telephone number, location of spill, and type and amount of material spilled. Notify the Engineer of the spill immediately following initial reporting to the Fire Department. Take containment action against any hazardous spills, which threaten storm drains and other environmental areas. Ensure clean up of materials spilled as a result of contractor action, or lack thereof. The contractor is responsible for the clean up of material(s) spilled. No spill residue shall be transported off site without specific approval from the Engineer. The contractor shall provide support, as appropriate, for containment and clean up of spills. If the spill exceeds reportable quantity limits, coordinate notification to the National Response Center with the local office of the Environmental Protection Division (EPD) through the Engineer.

3.04 AIR QUALITY:

A. Open burning operations must be approved by the Macon-Bibb County Fire Department and the Georgia Forestry Commission. Note that a burn ban is in effect from 1 May to 30 September of each year.

3.05 DUST CONTROL: Maintain all excavations, embankments, stockpiles, haul roads, permanent access roads, plant sites, waste areas, borrow areas, and all other work within or without the project boundaries free from dust which could cause a hazard or nuisance to others. Approved temporary methods of stabilization consisting of sprinkling, chemical treatment, light bituminous treatment or similar methods are permitted to control dust. To be approved, sprinkling must be repeated at such intervals as to keep all parts of the disturbed area damp at all times. If sprinkling is used, keep sufficient equipment on the job site at all times. Perform dust control as the work proceeds and whenever a dust nuisance or hazard occurs.

3.06 USING HAZARDOUS MATERIALS IN PERFORMING THE WORK:

A. Written Notification: Comply with all applicable federal, state, and local requirements concerning use of hazardous materials. Provide written notification to the Engineer when hazardous materials/chemicals are to be used or demolished. This must include the following information:

1. A list of each work activity/process required to use/demolish hazardous materials/chemicals.
2. A list of hazardous materials/chemicals used.
3. A Material Safety Data Sheet (MSDS) for each hazardous material/chemical used.
4. Written procedures for disposing of hazardous waste generated.
5. Omitted.
6. For additional hazardous material brought on site during the performance of the contract, the contractor shall provide an updated list and MSDS to the Engineer.

3.07 Omitted

3.08 Omitted

3.09 THREATENED AND ENDANGERED SPECIES:

A. The construction project is not anticipated to have any impact in this area since most plant and animal species of concern exist in wetlands. Any project activities believed to interface with threatened and endangered species shall be coordinated through the Engineer.

3.10 WETLANDS: Comply with water and land protection paragraphs of this Section to prevent construction site sediments and runoff from entering wetlands.

3.11 UNDERGROUND STORAGE TANKS (UST's): Not applicable.

Section 1560 Submittals

Para #	Description	Date Required	Inspector Check Mark
3.06	Use of Hazardous Chem	Prior to Work	_____

---- END OF NARRATIVE SECTION ----

01580 - SAFETY REQUIREMENTS

PART 1 - GENERAL

1.01 CONTRACTOR OPERATIONS: This section establishes requirements to ensure the safety of Government and other personnel not directly or indirectly under the employment of the Contractor. Comply with standards maintained by Occupational Safety and Health Administration (OSHA), identified sections of Corps of Engineers Safety Manual (EM 385-1-1), and National Fire Protection Association (NFPA).

A. CONTRACTOR EMPLOYEES: Compliance with OSHA and other applicable laws and regulations for the protection of Contractor employees is the obligation of the Contractor. This contract is not intended in any way to require persons to work in surroundings or under working conditions that are unsafe or dangerous to their health.

B. Coordinate and perform work so as not to impact the safety of Government or non-Contractor personnel, or cause damage to government property. This requires providing appropriate safety devices to be utilized in and around the work areas to perform the job safely and protect others from hazards generated by the work.

1.02 SUBMITTALS:

A. General: Provide the following submittals in accordance with instructions found in Section 01300, Submittals and Contractor Furnished Items.

B. Material Submittals: None required under this section.

C. Other Submittals: Provide the following submittals as required by the contract or as directed by the Contracting Officer.

Para #	Description	Date Required	Inspector Checklist
3.01.C.	Fire Reporting	If Fire	_____
3.9	Injury/Mishap Reports	By 1 hour after	_____

1.03 OSHA INSPECTIONS: Department of Labor (DOL) OSHA inspectors may arrive at Contractor work sites without formal notification in the event of an employee complaint or a no-notice inspection. The DOL has the right to stop or delay work and/or issue costly fines due to noncompliance with safety requirements. Any costs borne by such actions are the sole responsibility of the Contractor.

PART 2- PRODUCTS: Omitted

PART 3- EXECUTION

3.01 FIRE REPORTING: Report all fires as soon as discovered. The fire reporting number is 911. The caller should give his or her name and location of what is on fire. Also, give any other information that may be requested by the Fire Department dispatcher. Stay on the telephone until the dispatcher has obtained all necessary information.

3.02 OPERATIONS INVOLVING WELDING, CUTTING, BRAZING, AND OPEN FLAME are carefully controlled on the project site due to several fires caused by such operations.

A. Start no such work until the Engineer has been notified, the site has been inspected, and the operation approved by the authorized Fire Inspector. Do not contact the Fire Department directly.

B. Observe caution and provide welding, cutting, brazing, and open flame equipment in accordance with NFPA 51B and OSHA 1926.350 through 1926.354.

C. Perform a fire watch to inspect the work area and adjacent areas for the evidence of fire for at least one-half hour after completion of the welding, cutting, brazing, or open flame.

3.03 FIRE HYDRANTS/HOSES

A. Fire hydrants shall not be used without prior approval of the Macon Water Authority. If permission is granted for use of a fire hydrant, the Contractor must furnish a gate valve to fit the 2 1/2" outlet and a proper hydrant wrench. Each time a hydrant is to be opened or used, it must be opened slowly to prevent a water surge, and it must be opened to the full "open" position. When closing the hydrant, close it slowly to prevent a water surge.

B. The Fire Department will not loan equipment; e.g., fire hoses, nozzles, or hydrant wrenches.

C. No vehicles or equipment shall be parked or stored within 15 feet of a fire hydrant.

3.04 DEBRIS

A. The accumulation of all debris shall be kept to a minimum during construction.

B. Piles of debris awaiting removal outside any facility shall not be placed in fire lanes or within 25 feet of the facility.

C. Walkways, roadways and sidewalks shall be kept clear of building material, equipment, or other obstructions caused by the Contractor operation. Protective barriers and warning signs shall be installed.

3.05 FLAMMABLE AND COMBUSTIBLE LIQUIDS

A. All flammable liquids shall be stored in suitable metal containers only.

B. Store other flammable materials properly.

C. Gasoline or any other low flash point flammable liquid shall not be used for cleaning purposes or to start fires.

D. Static bonding wires shall be properly attached before combustible or flammable liquid is transferred from one vessel to another. This includes vehicles, portable gasoline driven equipment, etc.

E. Smoking or the use of spark or flame producing equipment in areas where flammable liquids are being used or stored is strictly prohibited.

3.06 FIRE EXTINGUISHERS: The Contractor is responsible for providing an adequate number of fire extinguishers. Extinguishers shall be suitably placed, distinctly marked, readily accessible, and maintained in a fully charged and operable condition.

3.07 HAZARD COMMUNICATION: Omitted

3.8 CONFINED SPACE ENTRY: Omitted

3.9 INJURIES/MISHAP REPORTING: The Contractor shall report mishaps or incidents exceeding $1,000 (material + labor) and all injuries requiring medical treatment to any personnel, including Contractor employees, within one (1) hour by phone to the Engineer during normal day shift hours. This report shall contain all available facts. Mishaps/Incidents occurring at other times of the day shall be reported as soon as possible the next normal workday.

3.10 MOTOR VEHICLES: No vehicle shall be stopped, parked, or left standing on any road or adjacent thereto or in any area in such a manner as to endanger the vehicle, other vehicles, equipment, or personnel using or passing that road or area. Roads shall be swept if spillage occurs during hauling. For chemical spills, see the Environmental Requirements section of the specifications. Ensure safe operating condition of all Contractor-owned vehicles. Unsafe and unserviceable vehicles shall be removed from service immediately. Ensure that all Subcontractors comply with these requirements.

3.11 EXCAVATIONS: In all excavations where any personnel may be exposed to danger from moving ground, protection shall be provided by means of a shoring system, sloping of the ground, or some other equivalent means. All trenches over five feet deep in either hard and compact or soft and unstable soil shall be sloped, shored, sheeted braced or otherwise supported. Trenches less than five feet in depth shall also be effectively protected when hazardous ground movement may be expected. Additional information/requirements may be found in 29 CFR 1926 and EM 385-1-1.

3.12 PROTECTIVE BARRIERS/WARNING SIGNS: When it is necessary to barricade an area for excavation, open manholes, overhead work, or the protection of personnel from hazardous operations, moving equipment or cranes, barricades are to be provided by the Contractor. Barricades must be erected before the work begins. If the barricades are in a roadway or walkway, blinking lights must be used during the hours of darkness. Barricades and associated equipment shall be kept neat and orderly at all times. When the work is complete, the barricades must be removed immediately from the job site. Kerosene lamps and open flame pots shall not be used for or with warning signs or devices. Additional information/requirements may be found in 29 CFR 1926 and EM 385-1-1. Provide as required safety signs at job sites, such as MEN WORKING ABOVE, DO NOT WATCH WELDER, and NO SMOKING.

3.13 PROTECTIVE EQUIPMENT: The Contractor is responsible for the use of appropriate personal protective equipment by his and subcontractor employees and guests. The Government recommends voluntary use of the standards in EM 385-1-1.

3.14 TOOLS AND EQUIPMENT

A. LADDERS/SCAFFOLDS: Use standard ladders that are structurally rigid, sound, equipped with approved safety shoes, and free of cracks. Metal ladders shall not be used near or for electric service. All ladders shall be tied off at the top and bottom as necessary. Special purpose job ladders may be constructed if they are properly designed and built IAW 29 CFR 1926. Scaffolds and platforms shall have handrails and toe boards. Additional information/requirements may be found in EM 385-1-1.

B. HAND TOOLS/ELECTRICAL TOOLS, PNEUMATIC TOOLS/COMPRESSED AIR: The Contractor is responsible for ensuring that all hand tools used by his or subcontractor personnel are used IAW applicable safety standards, especially 29 CFR 1910 and 1926.

C. ELECTRICAL WIRING AND EQUIPMENT: All electrical wiring and equipment shall be a type listed by UL or another recognized listing agent. All temporary electrical wiring shall be adequately installed and placed to avoid physical damage from other operations and comply with 29 CFR 1926.405. Temporary wiring shall be removed immediately upon completion of construction or the purpose for which the wiring was installed. All extension cords shall be of the three-wire type and kept in a good state of repair. Splices shall be avoided, but if they are made, they must comply with 29 CFR 1926.405. All portable electrical appliances and equipment shall be unplugged at the end of each workday.

<<<<< END OF SECTION >>>>>

SECTION 200: HOT MIX ASPHALT

A. Omitted

B. Omitted

C. Hot Mix Asphaltic Concrete Construction:

1. General Description

The work includes constructing one or more courses of bituminous plant mixture on the prepared base course. The mixture shall confirm with lines, grades, thickness, and typical cross sections shown on the drawings or in the statement of work established by the engineer.

This section includes the requirements for all bituminous plant mixture regardless of the gradation of the aggregates, type and amount of bituminous material, or pavement use.

2. Preparation

Prepare the existing surface as follows:

Prime the new base course surface

Temperature and Surface Texture
The surface texture and condition of the surface determine the bituminous material grades to be used. The following shows the bituminous material grades and application temperatures as they are applied to various surface textures.

Base Texture
Tight: Materials and grade MC-30 or RC-30
Average: RC-70 or MC-70
Open: RC-250 or MC-250

Application
temperature °F (°C)
Tight: 80–120 (27–49)

Average: 105-180 (41–82)
Open: 145–220 (63–104)

The Engineer will determine the temperature for applying bituminous prime within the limits shown above.

F. Amount and Extent of Prime
The Engineer will determine the exact amount of bituminous material to be used within minimum and maximum rates of
0.15 to 0.30 gal/yd² (0.7 to 1.4 liters/m²).

Apply the specified amount as follows:
1. Apply the determined amount uniformly and accurately. Ensure that the amount applied to any 0.5-mile (800 m) section is within 5 percent of the amount specified.
2. Apply the prime the full width of the proposed wearing surface that will be superimposed plus 6 in (150 mm) more on each side.

G. Protection, Curing, and Maintenance
Do the following after priming the surface:

1. Close to Traffic.
Do not allow traffic on the primed surface. Leave the surface undisturbed until the prime thoroughly cures and does not pick up under traffic.

2. Roll
If the surface becomes soft after it is primed, roll the surface longitudinally with a pneumatic-tired roller at no more than 6 mph (10 kph) until the surface is firmly set.

3. Blot
If necessary to prevent the prime from being picked up, spread clean, dry, sharp sand over the surface by hand or mechanically. Apply sand only to places that are tacky and use the least amount needed to prevent pick up. No extra payment for this work or material will be made.

4. Open to Traffic
After rolling and sanding (if required), open the primed surface to ordinary traffic

5. Curing and Maintenance
The primed surface is properly cured when it has penetrated the base sufficiently to not be picked up or displaced by traffic. Temperature and weather conditions may increase curing time. Insure the primed surface has cured to the satisfaction of the Engineer prior to its being covered by other construction.

Maintain the prime coat and the primed surface course until it is covered by other construction. Repair potholes, scabs, and soft spots prior to covering with other construction. Remove excess bituminous material.

3. Asphalt Paving

d. Install 12.5mm "Superpave" Hot Mix asphalt to a depth of 2".

4. Construction

Provide the Engineering at least one day's notice prior to beginning construction, or prior to resuming production if operations have been temporarily suspended.

5. Observe Weather Condition Limitations

Do not mix and place asphaltic concrete if the existing surface is wet or frozen. Follow the temperature guidelines in the following table:

Table4-Lift Thickness Table

Lift Thickness	Minimum Temperature
1 in (25 mm) or less	55 F (13 C)
1.1 to 2 in (26 mm to 50 mm)	45 F (8 C)
2.1 to 3 in (51 mm to 75 mm)	35 F (2 C)
3.1 to 4 in (76 mm to 100 mm)	30 F (0 C)
4.1 to 8 in (101 mm to 200 mm)	Contractor's discretion

6. Perform Spreading and Finishing

a. 12.5 mm "Superpave" hot mix asphalt is to be spread and finished to a mat thickness of 2 in.

b. Unload the mixture into the paver hopper or into a device designed to receive the mixture from delivery vehicles.

c. Spread the mixture to the loose depth for the compacted thickness or the spread rate, Use a mechanical spreader true to the line, grade, and cross section specified.

d. Obtain the Engineer's approval for the sequence of paving operations, including paving the adjoining lanes. Minimize tracking prime onto surrounding surfaces.

e. Ensure that the outside edges of the pavement being laid are aligned and parallel to the roadway center line.

f. Where mechanical equipment cannot be used, spread and rake the mixture by hand. Obtain the Engineer's approval of the operation sequence, including compactive methods, in these areas.

g. Keep small hand raking tools clean and free from asphalt build-up. Do not use fuel oil or other harmful solvents to clean tools during the work.

h. Do not use a mixture with any of there characteristics:

- Segregated
- Nonconforming temperature
- Deficient or excessive asphalt cement content
- Otherwise unsuitable to place on the roadway in the work

i. Remove and replace the mixture placed on the roadway that the Engineer determines has unacceptable blemish levels from segregation, streaking, pulling and tearing, or other characteristics not meeting industry standards. Replace with acceptable mixture at the Contractor's expense. Do not continuously place mixtures with deficiencies.

Do not place subsequent course lifts over another lift or course placed on the same day while the temperature of the previously placed mix is 140 F or greater.

j. Obtain the Engineer's approval of the material compaction equipment. Perform the rolling as follows:

1. Begin the rolling as close behind the spreader as possible without

causing excessive distortion of the asphalt surface.

2. Continue rolling until roller marks are no longer visible.

k. If applicable, taper or "feather" asphalt from full depth to a depth no greater than 0.5 in along curbs, gutters, raised pavement edges, and areas where drainage characteristics of the road must be retained. The Engineer will determine the location and extent of tapering.

7. Maintain Continuity of Operations

Coordinate plant production, transportation and paving operations to maintain a continuous operation. If the spreading operations are interrupted, construct a transverse joint if the mixture immediately behind the paver screed cools to less than 250 F.

8. Construct the Asphalt Joints

a. Construct Asphalt Joints:

1. Construct asphalt joints to facilitate full depth exposure of the course before resuming placement of the affected course.

2. Properly clean and tack the vertical face of the transverse joint before placing additional material.

3. Straightedge asphalt joints immediately after forming the joint.

4. Immediately correct any irregularity that exceeds 3/16 in. in 10 ft.

5. Never burn or heat the joint by applying fuel oil or other volatile materials.

9. Protect the Pavement

Protect sections of the newly finished pavement from traffic until the traffic will not mar the surface or alter the surface texture. If directed by the Engineer, use artificial methods to cool the newly finished pavement to open the pavement to traffic more quickly.

10. Testing

The Hot Mix Asphalt that is used in any project is subject to random geotechnical testing. The contractor will be required to submit 2 grab samples per day of hot mix asphalt as it is delivered to the project site.

These samples will be tested for graduation and AC content. The contractor must use a certified commercial testing laboratory as directed by the engineer. The engineer will determine when these tests are to be performed. The contractor shall forward the results of random testing to the engineer within 14 days of sampling. Furthermore, a mix design shall be submitted to the engineer 14 calendar days prior to the asphalt being applied.

11. Segregated Mixture

If the mixture is segregated in the finished mat, the Department will take actions based on the degree of segregation. The actions are described below.

Unquestionably Unacceptable Segregation:

When the Engineer determines that the segregation in the finished mat is unquestionable unacceptable, following these measures:

1. Suspend Work and require the Contractor to take positive corrective action. The Engineer will evaluate the segregated areas to determine the extent of the corrective work to complete.

2. If there is a mechanical failure that results in a petroleum spill onto the hot mix asphalt mat then production must cease until the necessary mechanical repairs have been made to the equipment and the areas of the mat that have been affected by the spill have been removed and replaced.

12. Measurement

Hot Mix Asphalt

Hot mix asphaltic concrete, complete in place and accepted, is measured in tons. Since payments will be by the ton of asphalt used, the contractor shall provide a copy of the asphalt load tickets to the inspector at the time of delivery. Prime coat will be measured by the gallon.

13. Payment

Hot Mix Asphalt

Payment for hot mix asphalt of the various types are paid for at the Contract Unit price per ton. Payment for the asphalt prime coat shall be by the gallon. Payment is full compensation for furnishing and placing asphalt, and for cleaning and repairing, preparing surfaces, hauling, mixing, spreading, rolling, and performing other operations to complete the Contract item.

D. Submittals

Para#	Description	Date Required	Inspector Check
C.10	Asphalt Mix Design	14 days prior	_____
C.10	Random Asphalt Testing Results	14 days following	_____
C.12.C	Asphalt Load Tickets	Upon Delivery	_____

Section 300—General Specifications for Base and Subbase Courses

300.1 General Description

This Specification applies to all base and subbase courses, except asphaltic concrete. Additional requirements for each type ofbase and subbase are described in the appropriate Sections for specific base and subbase type construction.

300.1.01 Omitted

300.1.02 Related References

A. Standard Specifications

Section 310—Graded Aggregate Construction
Section 412—Bituminous Prime

B. Omitted

300.2 Materials

Find the Specifications for materials to be used and the references for them under the appropriate Section for each base and subbase type construction. Ensure that each material meets the requirements for the type specified. Incorporate only materials that meet the Engineer's approval.

A. Selecting Local Materials at the Source

The Engineer has the authority to classify materials at the source and require the materials to be excavated in the proper sequence so that each kind will reach its destination at the best location for that material in the finished work. The Engineer has the authority to reject any unsuitable materials.

B. Sources of Local Materials Outside the Right-of-Way

Obtain materials from local sources outside the right-of-way.

300.2.01 Delivery, Storage, and Handling

A. Storing at Central Mix Plants

Store material at a plant site with enough space for separate stockpiles, bins, or stalls for each size of aggregate. Keep aggregates separated until delivery to the plant feeders for proportioning. Keep the storage yard neat and the stockpiles, bins, and stalls accessible for obtaining samples.

300.3 Construction Requirements

300.3.01 Personnel

Supply all personnel and equipment necessary for obtaining samples from base plants and delivering them to the plant laboratory.

300.3.02 Equipment

Ensure that all equipment for constructing base and subbase courses is of an approved design and in satisfactory condition before construction begins. The equipment required for each type of base or subbase will be determined according to the construction method used.

A. Central Mix Plants

Design, coordinate, and operate plants so that the mixture is produced within the specified tolerances. The requirements are as follows.

1. Scales

Before any mixture is delivered to the Project, check all scales with standard weights for accuracy and for agreement with each other. If weight proportioning is used, provide accurate scales so all ingredients of the mixture can be weighed separately. Use scales that are accurate to within 0.5 percent of the measured load. Support scales with rigid supports so that vibration from the plant does not interfere with accurate readings.

a. Weight Box and Hopper Scales

Use springless dial scales of a standard make and design for weight boxes and hopper. Inspect and seal scales when the Engineer determines it necessary to assure accuracy. Ensure that at least ten 50 lb. (25 kg) weights are available for testing the scales.

b. Motor Truck Scales

With each plant, include a motor truck scale with a platform large enough to accommodate the entire length of any vehicle used. Ensure that the scale is certified and is large enough to weigh the largest anticipated load. Do not measure weights greater than the rated capacity of the scales. Ensure that the weights of the aggregate batches in the truck before delivery to the Project are within two percent of the sum of the weights of the batch ingredients.

2. Mixer

Equip each central mix plant with an approved mixer. Any adjustments made to the charge in a batch mixer or the rate of feed to a continuous mixer must ensure a complete mix of all of the material. Correct dead areas in the mixer where the material does not move or is not sufficiently agitated, by reducing the volume of material or by making other adjustments.

3. Mixture Proportioning

Add aggregates, or other ingredients in such a manner that they are uniformly distributed throughout the mixture during the mixing operation.

4. Water Proportioning

In all plants, proportion water by weight. Provide a means for the Engineer to verify the amount of water per batch or the rate of flow for continuous mixing. Use spray bars to evenly distribute moisture throughout the mixture.

5. Sampling

Use sampling equipment approved by the Engineer to obtain samples before combining them with other ingredients or introducing them into the mixer.

Use sampling equipment to provide an accurate representation of the furnished material.

6. Additional Requirements for Continuous-Mixing Plants

a. Feeder System

Continuous mixing plants shall use a feeder system that accurately proportions aggregate from each bin by weight. Equip each feeder with a device that can change the quantity of material being fed. Use a feeder with adjustments that can be securely fastened. Ensure that the plant has an interlocking system of feeders and conveyors that can be synchronized to supply a continuous flow of aggregate, including a positive flow of dry and liquid additives for mixing.

Provide an electronic belt-weighing device to monitor the combined aggregates. Ensure that there are meters for maintaining the aggregates and additives at varying production rates. Use an electronic control package capable of tracking which accepts a signal from the belt-weighing device and signals to continuously vary the dry and liquid additive feeder speed and maintain the feed rate.

Proportion dry additives with a gravimetric (depleting weight) system meeting the following requirements: The dry additive gravimetric (depleting weight) system includes an isolation vessel supported by load cells independent of the fines silo. Use load cells in conjunction with an electronic scale package having remote digital display and the necessary controls. Continuously weigh the material being metered with a positive displacement feeder mounted on the discharge of the isolation vessel.

b. Control System

Use a control package that has a plant interlock shutdown capability. Plants must be able to shut down if actual flow rates differ from desired flow rates excessively. If the flow rate deviates excessively, an alarm shall sound at any of the aggregate, dry additive, or liquid additive metering devices. Provide a monitoring station to control the entire operation that shows continuous quantitative data on the production and proportioning of the mix ingredients.

c. Portable Power Units

Equip plants that use portable electric power generators with a frequency meter (graduated and accurate to one hertz) and a voltmeter (graduated and accurate to two volts), installed in the power circuit.

d. Mixer

Use a mixer equipped with enough paddles or blades to produce a uniform and homogeneous mixture. Replace paddle blades that show more than 25 percent wear in the face area. Use paddles that can be adjusted to angular positions on the shafts and that can be reversed to retard the flow of the mix. Keep the mixer level.

e. Surge Hopper

Equip the mixer with a surge hopper. Use a surge hopper that automatically discharges the mixture when it reaches a predetermined level.

7. Additional Requirements For Batch-Mixing Plants

a. Weigh Box or Hopper

Use weigh boxes and hoppers that are suspended on scales, large enough to hold a full batch without spilling or needing hand raking, and equipped with a device for accurately weighing each size of aggregate. Provide a convenient and accurate means of obtaining samples of aggregates from each bin before the material enters the mixing chamber. Equip each bin compartment with a bin level indicator that automatically stops weighing when a bin is empty.

b. Mixer

Include an approved, leak-proof batch mixer in the plant. Use a mixer fast enough or equipped with enough paddles or blades to produce a properly and uniformly mixed batch. Replace paddles and blades that show more than 25 percent wear in the face area.

c. Omitted

d. Omitted

e. Control of Mixing Time

Use a time-locking device that automatically limits mixing time. Do not mix materials less than 30 seconds.

B. In-Place Mixers

For in-place mixing operations, use mixers that meet the following requirements:

1. Multiple Pass Mixers

Use approved rotary-type multiple pass mixers with sufficient tines that mix cement, soil or soil-aggregate, and water uniformly for the full depth of the course.

2. Traveling Plant Mixers

Use approved traveling mixing plants to pick up the aggregate, soil, or other materials from the windrow or roadway. Use plants equipped with a bottom shell or pan that pick up and mix the material while it is separated from the foundation material during at least 50 percent of the mixing cycle. Use plants that mix the material for the full depth of the section. Ensure that travelling plants move forward with successive increments the length and width of the roadbed so that the roadbed is compacted and finished in one operation. Ensure that none of the materials being mixed are lost or segregated. Use plants mounted on wheels or crawler tracks wide enough so that they will not rut or damage the mixed surface when loaded to capacity. Use plants with a pressurized metering device that introduces water during mixing. Ensure that devices for proportioning water and materials to be mixed accurately measures the specified amounts while the machine is in motion.

C. Omitted

D. Mixture Spreader

Use an approved mechanical spreader that meets the following requirements to uniformly spread the mixture:

A height-adjustable strike-off plate to obtain the specified thickness of the finished base

A self-propelled spreader with rollers to contact the truck tires and push the truck without skewing the spreader or truck

A hopper large enough to prevent spilling or wasting the material

E. Static Rollers

Use static rollers that meet the following requirements.

1. Trench Roller

In this context, "roller" describes a wheel made of a flat metal surface; "wheel" describes a rubber wheel of the automotive type. When base widening is specified, use at least one trench roller. Use a trench roller that has a guiding roller or wheel that operates in tandem with the compression roller on the area to be compacted or with the auxiliary wheel or roller. Ensure that the trench roller is equipped with an auxiliary wheel or roller, mounted

on a height-adjustable axle. The contact surface of the auxiliary wheel or roller must be adjustable to at least 10 in (250 mm) above and 2 in (50 mm) below the rolling plane of the compression roller. If this adjustment is not sufficient to compact the subgrade to the Plan elevation, adjust the contact surface the necessary amount. If the steering roller or wheel operates in tandem with the auxiliary wheel or roller, it does not need to be height adjustable. Ensure that the auxiliary wheel or roller operates on the surface of the pavement adjacent to the area to be compacted, and at a distance from the edge of the pavement that no damage occurs. Keep the height adjustment of the auxiliary wheel or roller such that the compression roller will develop a smooth, compacted surface true to crown. Use gas-propelled trench rollers equipped with reversing, smooth operating friction clutches. Ensure that friction clutches have smooth operating brakes of ample capacity. Use either hand-powered or power-operated steering devices. The compression per inch (25 mm) width of compression roller shall not be less than 300 lbs (545 kg) and not greater than 365 lbs (660 kg). If necessary, use a hollow compression roller and secure the minimum weight with liquid ballast. The trench roller must compact a minimum width of at least 15 in (375 mm). Fit rollers with adjustable spring scrapers that can scrape in both directions.

2. Steel-Wheel Rollers

Use three-wheel or tandem steel-wheel rollers. Use self-propelled rollers equipped with cleaning devices to prevent material from adhering to the wheels. For base or subbase materials, use 3-wheel rollers on base or subbase materials that have a minimum weight of 10 tons (9 Mg) and a minimum compression of 325 pounds per inch (580 kg/100 mm) of width for the rear wheels. Use steel wheel tandem rollers with a minimum weight of 10 tons (9 Mg) and a minimum compression of 225 pounds per inch (400 kg/100 mm) of width for the rear drum.

3. Pneumatic-Tire Rollers

Use pneumatic-tire rollers with a minimum contact pressure of 50 psi (345 kPa) per wheel. Equip rollers to uniformly distribute the load between all wheels. Use multiple axle, multiple wheel rollers with wheels staggered on the axles and spaces between each wheel to provide uniform compaction for the full compacting width of roller. Ensure that the air pressure of any tire does not vary more than 5 psi (35 kPa) from the established pressure. Operate rollers between 3 mph (5 kph) and 8 mph (13 kph), unless otherwise directed by the Engineer.

4. Sheepsfoot Rollers

Use vibratory or static compaction sheepsfoot rollers of sufficient size and weight to obtain the desired compaction.

F. Vibratory Rollers

Use an approved vibratory roller designed to activate the frequency of vibration and the roller movement separately. Ensure that the weight and amplitude of the roller can compact the surface to Specifications with a minimum number of passes.

G. Bituminous Sampling Valve

Use bituminous transfer pumps that include a valve for sampling bituminous materials.

300.3.03 Preparation

A. Alternate Methods

When alternate methods of construction are provided without restriction, the Contractor may select these alternate methods at will, provided the equipment and organization are suited to the method selected. Before starting construction, discuss the proposed method with the Engineer. The method selected must:
Spread base or subbase material uniformly without damaging the subgrade, subbase, or the material being placed. Mix the materials until they are homogeneous. Compact throughout the depth of the course to the density specified. Complete the work within the specified time limits Organize the work and equipment so that spreading, compacting, and finishing the base or subbase is a continuous operation. Do not exceed minimum or maximum time limits where the detailed Specifications require them, except in unusual cases where permitted by the Engineer.

B. Omitted

C. Preparing the Subgrade

The subgrade will be prepared by Macon-Bibb County forces to the finished grades shown on the plan. If the contractor finds defective subgrade area.

D. Preparing the Subbase

If a subbase is required, prepare it according to the requirements for surface and compaction. Ensure that it is stable enough to support the equipment that will place the base material without rutting or pumping. Repair all defective portions and replace any unsuitable material with acceptable material, if the subbase does not meet the requirements of the Specifications.

Section 300- General Specifications for Base and Subbase Course

213

C. Placing Materials

1. Mixture Control

The Engineer will determine the proportions of the materials to be used in compounding the base or subbase. The Engineer will determine the analysis basis of the components. Change the mix, if required by the Engineer, to ensure that the finished base meets the requirements of these Specifications.

2. Moisture Control

Control the moisture content according to the specified requirements for each type of base or subbase. Add water uniformly, allow it to evaporate or aerate, and roll the materials as often as necessary, to control the moisture content within the limits specified.

3. Number of Courses

Because the maximum thickness of base or subbase materials to be mixed or spread in one course varies with the equipment used, it is subject to the Engineer's approval. Ensure that the thickness meets the requirements of Subsection 300.3.05.C.5, "Compaction."

4. Widening Work

When widening in traffic areas, excavate an area that can be completed in the same day. When widening pavement on which there is traffic on both sides, stagger operations to keep the widening trench open in one lane of traffic at a time.

5. Compaction

Compact the entire thickness of all bases and subbases to the specified maximum dry weight per cubic foot (meter), as determined by the method specified in the Section for each base or subbase. If any base or subbase is more than 6 in (150 mm) thick, construct according to the following table for layer thickness:

Material Layer Thickness

Topsoil, Sand-Clay, or Chert Two equal layers, or one layer not to exceed 8 in (200 mm)

Graded Aggregate Two equal layers, or one layer not to exceed 8 in (200 mm)

Cement Stabilized Graded Aggregate Two equal layers, or one layer not to exceed 8 in (200 mm)

Cement Stabilized Soil Aggregate Two equal layers, or one layer not to exceed 8 in (200 mm)

Sand Bituminous Two equal layers, or one layer not to exceed 8 in (200 mm)

Soil-Cement One layer not to exceed 8 in (200 mm)

D. Meeting Surface Requirements

Produce a smooth, uniform surface that complies with these Specifications.

Rebuild any areas that do not meet the requirements or remove or add material to the area until the Engineer approves of the Work.

300.3.06 Quality Acceptance

A. Monitoring Quality Control

Ensure that the mixture and the materials used meet the following quality controls:

Before producing any mixture for the Project, calibrate the electronic sensors, devices, or settings for proportioning all mixture ingredients by scale weight. Maintain a dated, written record of the most recent calibration. Post the calibration at the base plant and make the record available for the Engineer's inspection at all times. Format records as graphs, tables, charts, or mechanically prepared data. If the material changes, the rate of production changes by more than +/- 20%, the plant is not producing base material for more than two weeks, or if a component affecting the ingredient proportions has been repaired, replaced, or adjusted, check and recalibrate the proportions. Verify the moisture of the mixture being produced. Perform checks on ingredient proportioning and verify truck weight as directed by the Engineer. Provide quality control personnel and all necessary equipment to perform and document moisture tests. Perform moisture tests at a frequency of at least one test per hour of base plant production.

B. Repairing Defects

During construction: If materials that do not meet these Specifications are placed on the roadway at any time during construction, remove and replace them with acceptable materials as a part of the Pay Item for the base or subbase being constructed.

After construction: Promptly correct defects discovered in the surface finish, thickness, or compaction of the completed base or subbase before The Work is accepted. If the base, subbase, or shoulders are deficient in thickness and it is determined that the subgrade elevation is high, remove the materials, lower the subgrade, and reconstruct the course, according to these Specifications at no cost to the Department. If job conditions permit and the Engineer mandates, correct areas deficient in thickness by raising the elevation of the surface or adding material to the course. In other cases, the Engineer may determine that the defective portions must be entirely removed. Add, mix, spread, and compact new material according to the Specifications and at no cost to the Department. If a surface is less than 3 in (75 mm) deep, scarify the area to a depth of at least 3 in (75 mm), except in the case of stabilized bases or subbases. Mix and compact the new and old materials.

Repair stabilized bases or subbases according to Section 301, Section 302, Section 310, or Section 316, whichever is applicable.

300.4 Measurement

Base and Subbase courses will be measured in accordance with the Specification Section for the item.

Bituminous prime will not be measured for separate payment under this section.

300.5 Payment

Base and Subbase courses will be paid for in accordance with the Specification Section for the item. Include the cost of furnishing and applying bituminous prime in the Unit Price Bid for each individual Base Item.

No separate payment will be made for adding water or for aerating or rolling for the purpose of adding water. Include the cost of controlling moisture content in the prices bid for the pertinent Pay Items. Separate payment will be made only for clearing and grubbing listed in the Proposal or required in the Plans and designated a Pay Item by the Engineer. No separate payment will be made for stripping excavation unless shown on the Plans and included in the Proposal as a Pay Item.

300.5.01 Adjustments

If the Contractor for the subbase or base is responsible for the subgrade under another Pay Item, no additional payment will be made for any repairs made to the subgrade, except where provided elsewhere. If another party (not the Contractor) is responsible for the subgrade, removing unsuitable materials will be done by Macon-Bibb County forces. Include compaction, scarification, and any other preparation necessary for the subgrade in the Unit Price Bid for the pertinent base course.

Section 301—Omitted

301.1.01 Omitted

301.1.02 Related References

A. Standard Specifications

Section 300—General Specifications for Base and Subbase Courses

Section 412—Bituminous Prime

Section 821—Cutback Asphalt

Section 310—Graded Aggregate Construction

310.1 General Description
This work includes constructing a base, subbase or shoulder course composed of mineral aggregates. Construct according to these Specifications and to the lines, grades, thickness, and typical cross-sections shown on the Plans or established by the Engineer.
The provisions of Section 300 apply to this work.

310.1.01 Omitted

310.1.02 Related References

A. Standard Specifications
Section 300—General Specifications for Base and Subbase Courses
Section 412—Bituminous Prime
Section 815—Graded Aggregate
Section 821—Cutback Asphalt
Section 823—Cutback Asphalt Emulsion

B. Referenced Documents

AASHTO T 180
GDT 21
GDT 59
310.1.03 Submittals

310.2 Materials

Ensure that materials meet the requirements of the following Specifications:

Material Section
Graded aggregate 815
Cutback asphalt, RC-30, RC-70, RC-250 or MC-30, MC-70, MC-250 821.2.01
Cutback Asphalt Emulsion, CBAE-2 823.2.01

310.3 Construction Requirements

310.3.01 Omitted

310.3.02 Equipment
Provide equipment in satisfactory condition for proper construction of the base, subbase or shoulder course. Use any applicable equipment suitable for producing acceptable results.

310.3.03 Preparation

The subgrade or subbase will be prepared by Macon-Bibb County forces to the required line and grade. Place graded aggregate materials only on dry, thawed subgrade or subbase.

310.3.04 Omitted

310.3.05 Construction

A. Placing Material
Use the central plant mix method

Use the following steps to mix base and spread subbase or shoulder course.

1. Mixing
When blending two sizes of aggregate, proportion the aggregate and water, if needed, into the central plant. Mix until producing a homogeneous and uniform mixture.
2. Spreading
To obtain the specified thickness, uniformly spread materials to the proper depth with a mixture spreader. Do not use materials containing frost or frozen particles.

a. One-Course Construction
Lay one course to a maximum thickness of 8 in (200 mm) compacted.

b. Multiple-Course Construction
If the thickness of the base, subbase or shoulder course exceeds 8 in (200 mm), construct it in 2 or more courses of equal thickness.

B. Compacting Material
Use the following steps to compact and finish a base, subbase, or shoulder course.

1. Moisture Content
Ensure that the moisture content of materials is uniformly distributed and allows compaction to the specified density. Unless approved by the Engineer, no graded aggregate will be shipped to a project when the moisture content of the material exceeds two percent of optimum moisture.
2. Compaction
After shaping the spread material to line, grade, and cross-section, roll to uniformly compact the course. If using Group 1 aggregate, roll to at least 98 percent of maximum dry density. If using Group 2 aggregate, roll to at least 100 percent of the maximum dry density.

Regardless of compaction, ensure that the compacted base is sufficiently stable to support construction equipment without pumping. If the base material is unstable from too much moisture, dry and rework the base material. Dry and rework the underlying subgrade, if necessary.

a. One-Course Construction
1) After compaction, shape to the required grade, line, and cross- section.

2) Add water as necessary to develop the proper moisture content.
3) Roll until the surface is smooth, closely knit, and free of cracks.
4) Correct all defects according to Subsection 300.3.06.B, "Repairing Defects."

b. Multiple-Course Construction

1) After compacting the first course, shape the surface again to line, grade, and cross section.
2) Add water as necessary to develop the proper moisture content.
3) Spread and compact the second and any succeeding courses without rolling the first course again.
4) Finish the surface according to the procedure specified for one-course construction.

c. Irregular Areas

In places inaccessible to the roller, obtain the required compaction with mechanical tampers approved by the Engineer. Apply the same density requirements as stated above in Subsection 310.3.05.B.

C. Finishing

Fine grading with motor graders is permitted. Finish immediately after the placing and compacting operations. After finishing, compact the subbase again, according to Subsection 310.3.05.B, "Compacting Material."

D. Protecting the Base, Subbase or Shoulders

Maintain the course until the Engineer determines that it has cured sufficiently and is ready to prime. Maintain by additional wetting, rolling, and blading as necessary. Repair any defects according to Subsection 300.3.06.B, "Repairing Defects." These protection measures do not relieve the Contractor of maintaining the Work until final acceptance.

E. Priming the Base

Apply bituminous prime unless using:
Graded aggregate base under Portland cement concrete pavement
Graded aggregate base under asphaltic concrete 5 in (125 mm) or more in total thickness

310.3.06 Quality Acceptance

A. Compaction Tests

1. Determine the maximum dry density from representative samples of compacted material, according to AASHTO T180, Method D.
2. Determine the in-place density of finished courses according to GDT 21 or GDT 59, where applicable.

B. Finished Surface

Check the finished surface of the base, subbase, or shoulder course as follows:

1. Check the longitudinal surface using a 15 ft (4.5 m) straightedge parallel to the centerline.
2. Check the transverse surface by using one of the following tools:

A template, cut true to the required cross-section and set with a spirit level on non-superelevated sections

A system of ordinates, measured from a stringline

A surveyor's level

3. Ensure that ordinates measured from the bottom of the template, stringline, or straightedge, to the surface do not exceed 1/4 in (6 mm) at any point. Rod readings shall not deviate more than 0.02 ft (6 mm) from required readings.
4. Correct any variations from these requirements immediately according to Subsection 300.3.06.B, "Repairing Defects."

C. Thickness Tolerances

1. Thickness Measurements

a. Thickness requirements apply to shoulder construction where the Plans specify a uniform thickness, or where the shoulders will be surfaced.

b. Determine the thickness of the base, subbase, or shoulder course, by making as many checks as necessary to determine the average thickness.

2. Deficient Thickness

a. If any measurement is deficient in thickness more than 1/2 in (13 mm), make additional measurements to determine the deficient area.

b. Correct any area deficient between 1/2 in (13 mm) and 1 in (25 mm) to the design thickness by using one of the following methods according to these Specifications:

Add additional quantities of the same materials and reconstruct to the required thickness

Leave in place and accept payment for the materials and area at ½ the Contract Unit Price for the deficient area.

c. Correct any area deficient in thickness by more than 1 inch (25 mm) by adding additional quantities of the same material and reconstructing to the required thickness in accordance with these Specifications.

d. If payment is made by the ton (megagram), payment for additional material to correct deficiencies will be made at the Contract Unit Price with no additional cost to the Department for scarification, mixing or compaction.

e. If payment is made by the square yard (meter), no payment will be made for additional material required to correct deficiencies or for reconstructing deficient work.

3. Average Thickness

a. The average thickness per linear mile (kilometer) is determined from all measurements within the mile (kilometer) increments except the areas deficient by more than 1/2 in (13 mm) and not corrected.

b. The average thickness shall not exceed the specified thickness by more than 1/2 in (13 mm).

c. If the basis of payment is per ton (megagram), and the average thickness for any mile (kilometer) increment exceeds the allowable 1/2 in (13 mm) tolerance, the excess quantity in that increment will be deducted from the Contractor's payments.
d. The excess quantity is calculated by multiplying the average thickness that exceeds the allowable 1/2 in (13 mm)
tolerance by the surface area of the base, subbase, or shoulder.
e. If the basis of payment is per square yard (meter), no deduction will be made for excess thickness.

310.4 Measurement

A. Graded Aggregate
Where specified for payment by the ton (megagram), graded aggregate base, subbase or shoulder materials are measured in tons (megagrams), mixed and accepted. When hauling material to the roadway, the actual weight of each loaded vehicle is determined with an approved motor truck scale.
Where specified for payment by the square yard (meter) for a certain thickness, the surface length is measured along the centerline, and the width is specified on the Plans. Measure irregular areas, such as turnouts and intersections, by the square yard (meter).

B. Bituminous Prime
Bituminous prime is not measured for separate payment under this specification.

310.5 Payment

A. Graded Aggregate
Graded aggregate base, subbase, or shoulder course will be paid for at the Contract Unit Price per ton (megagram) or per square yard (meter), complete, in place, and accepted. This payment shall be full compensation for:
Materials
Shaping and compacting the existing roadbed
Loading, hauling, and unloading
Crushing and processing
Mixing
Spreading
Watering
Compacting and shaping
Maintenance
All incidentals necessary to complete The Work
Payment will be made under:
Graded aggregate base— including material Per ton (megagram) or square yard (meter)

Inspector

Para #	Description	Date Required	Checklist
3.06.A	Compaction Tests	7 days after event	_____
3.06.C	Thickness Tests	3 days after event	_____

Section 815—Graded Aggregate

815.1 General Description

This section includes the requirements for material to be used for base, subbase, or shoulder course material, and includes graded aggregate, unconsolidated limerock base, and recycled concrete base.

815.1.01 Related References

A. Standard Specifications

Section 800—Coarse Aggregate

B. Referenced Documents

AASHTO T 11
AASHTO T 27
AASHTO T 193
ASTM C 295
ASTM D 3042
FL DOT Method FM5-515
SOP–1
QPL-2
GDT 63
EPA Method 3050/6010
EPA Method 1311
EPA Polarized Light Microscopy Method
EPA Transmission Electron Microscopy Method

815.2 Materials

815.2.01 Graded Aggregate

A. Requirements

1. Type

Use graded aggregate base, subbase, or shoulder course material of uniform quality.

a. Obtain the graded aggregate from an approved source or deposit that will yield a satisfactory mixture meeting all requirements of this Specification.

b. Use material that is crushed or processed as a part of the mining operations, or, mix two grades of material so that when combined in the central mix plant, the mixture meets the specifications.

2. Retained on the No. 10 (2 mm) sieve

Ensure the material retained on the No. 10 (2 mm) sieve is Class A or B aggregate that meets the requirements of Section 800.

3. Passing the No. 10 (2 mm) sieve

Ensure material passing the No. 10 (2 mm) sieve is relatively free of detrimental substances, such as soil overburden, decomposed rock, and/or swelling silts.

4. Stabilized Mixtures
Ensure mixtures to be stabilized react satisfactorily when mixed with Portland cement. The Engineer will specify the percentage of Portland cement to use.

5. Gradation

Grade the graded aggregate base, subbase, or shoulder material as follows:

Sieve Size	Percent Passing By Weight
Group I Aggregates	
2 in (50mm)	100
1-1/2" (37.5mm)	95-100
¾" (19.0mm)	60-95
No. 10 (2 mm)	25-50 (Note1, 2, and 3)
No. 60 (0.25mm)	10-35
No. 200 (0.75 mm)	7-15
Group II Aggregates	
2 in (50mm)	100
1-1/2" (37.5mm)	95-100
¾" (19.0mm)	60-90
No. 10 (2 mm)	25-45 (Note 2 and 4)
No. 60 (0.25mm)	5-30
No. 200 (0.75 mm)	4-11
Note 1: Group I aggregates having less than 37% passing the No. 10 (2 mm) sieve, shall have at least 9 percent passing the No. 200 (0.075mm) sieve.	
Note 2: For graded aggregate stabilized with Portland cement, 30-50 percent by weight shall pass the No. 10 (2 mm) sieve. All other requirements remain the same.	
Note 3: Materials passing the No. 10 (2 mm) sieve shall have a sand equivalent of at least 20 for Group I aggregates.	
Note 4: Materials passing the No. 10 (2 mm) sieve shall have a sand equivalent of at least 28 for Group II aggregates. Sand Equivalent values as low as 20 will be acceptable provided they are attributed exclusively to rock flour and the percent passing the No. 10 (2 mm) sieve does not exceed 40.	

B. Fabrication
General Provisions 101 through 150.

C. Acceptance
Test as follows:

Test	**Method**
Material that passes a No 200 (0.075 mm) sieve	AASHTO T 11
Gradation	AASHTO T 27

Sand Equivalent	GDT 63

D. Materials Warranty
General Provisions

815.2.02 Unconsolidated Limerock Base
A. Requirements
1. Type

Use limerock base, subbase, or shoulder course material of uniform quality.
a. To ensure uniform quality, the Department may restrict approved sources to specific mining areas, mining processes at a specific mining site, or both.

b. Use a limerock base that yields a mixture to meet these Specifications.

c. Use material that is crushed or processed as a part of the mining operations, or mix two grades of material so that when combined in the central mix plant the mixture meets the specifications.

d. Use limerock base, subbase, or shoulder material that has the following characteristics:

Limerock Bearing Ratio	At least 100
Deleterious Substances	Do not allow chert or other extremely hard pieces that will not pass the 2 in (50 mm) sieve. Do not allow clay, sand, organics, or other materials in quantities that may damage bonding, finishing, or strength. All material passing the no. 40 (4.25 mm) sieve shall be non-plastic.
Carbonate Content (Magnesium or calcium)	At least 80%

2. Gradation

Grade the limerock base so at least 97 percent by weight passes the 3-1/2 in (90 mm) sieve.
a. Grade the material uniformly to dust. The fine portion passing the No. 10 (2 mm) sieve shall all be dust of fracture.

b. Crush or break the limerock base, if necessary to meet size requirements before placing the material on the road.

c. Ensure materials having soundness losses of 20% or less, comply with the following gradation requirements:

Gradation Requirements

Sieve Size	Percent Passing by Weight
2 in (50mm)	**100**
1-1/2" (37.5mm)	**95-100**
¾" (19.0mm)	**60-95**
No. 10 (2 mm)	**25-45**

No. 60 (0.25mm)	**10-30**
No. 200 (0.75 mm)	**7-20**

B. Fabrication
Omitted
C. Acceptance
Test as follows:

Test	Method
Material that passes a No. 200 (0.075 mm) sieve	AASHTO T 11
Gradation	AASHTO T 27
Limerock Bearing Ratio	FL DOT Method FM5-515
Petrographic analysis	ASTM C 295
Total carbonates (insoluble residue)	ASTM D 3042

D. Materials Warranty
General Provisions

815.2.03 Recycled Concrete Base
A. Requirements
1. Sources
Use recycled concrete materials from sources approved by the Office of Materials and Research and listed on Qualified Products List 2. The criteria for approval will be as outlined in Standard Operating Procedure No. 1, —Monitoring the Quality of Coarse and Fine Aggregates‖ except the raw material will be recyclable concrete as specified herein rather than a geological deposit of aggregate.

2. Type

a. Recycled Concrete Base From Known Sources
Use recycled concrete derived exclusively from Portland cement concrete pavement or structural concrete as a base, subbase, or shoulder course.

Contaminants -
Ensure the recycled concrete is free of foreign material such as wood, steel reinforcement, clay balls, soils, epoxy expansion material, delivery unit washout material, miscellaneous paving materials, and non-construction materials.

b. Recycled Concrete Base From Unknown Sources
Use recycled concrete derived from sources of demolition materials that comply with the following requirements as a base, subbase or shoulder course. Due to the condition and type of raw material used to produce this base and the resulting difficulty in producing a consistent product, refer to SOP-1 for environmental requirements and preferred production procedures. Ensure the finished product does not exceed the regulatory limit for asbestos of 1% (based on microscopy) and the regulatory limit for lead of 5 ppm. These determinations must be made prior to shipping.
Ensure the California Bearing Ratio (CBR) of the finished product is not less than 140.

Contaminants –
Ensure the recycled concrete is substantially free of foreign materials such as steel reinforcement, wood, clay balls, soils, epoxy expansion material and non-construction materials.
Note - Substantially free, in the context of this specification, shall mean concentrations of the above mentioned foreign materials individually shall not exceed 0.1percent by weight, nor shall the total concentration of these materials exceed 0.5 percent by weight.

Keep the ancillary materials within these limits

Substance	Maximum Percent by Weight
Brick	3
Asphaltic Concrete	7
Weathered Rock	2
Any combination of Brick, Asphaltic Concrete, or Weathered Rock.	10

3. Gradation
Ensure the finished product meets the quality and gradation requirements of Subsection 815.2.01for Group II aggregates, except the material finer than a #200 (75μm) sieve shall be 2 – 11%.

B. Fabrication
General Provisions

C. Acceptance
Test as follows:

Test	Method
Gradation	AASHTO T 27
Material that passes a #200 (0.075 mm) sieve	AASHTO T 11
Sand Equivalent	GDT 63
California Bearing Ratio	AASHTO T 193
Petrographic Analysis	ASTM C 295
Total Lead	EPA Method 3050/6010
Toxicity Characteristic Leaching Procedure	EPA Method 1311
Asbestos	EPA Polarized Light Microscopy Method or EPA Transmission Electron Microscopy Method

Section 820—Asphalt Cement

820.1 General Description

This section includes the requirements for asphalt cements prepared from crude petroleum.

820.1.01 Related References

A. Standard Specifications

Omitted

B. Referenced Documents

Standard Operating Procedure

(SOP 4) AASHTO R 28

AASHTO T 48

AASHTO T 179

AASHTO T 240

AASHTO T 313

AASHTO T 314

AASHTO T 315

AASHTO T 316

AASHTO TP70 / ASTM D7405

820.2 Materials

820.2.01 Asphalt Cement

A. Requirements

1. Type

   Use a material homogenous and water-free and will not foam when heated to 347 °F (175 °C). Ensure blend used to produce a specified performance grade meets the following requirements:

   Is uniform and homogeneous without separation

   Uses PG 64-22 or PG 67-22 described below for the base asphalt

   Consists of production materials not being "air-blown".

   Contains < 0.5% acid (including Polyphosphoric Acid (PPA) modification, when approved by the Office of Materials and Research).

2. Grade

Use the various grades of asphalt cement meeting the requirements shown in the test requirements for
Petroleum Asphalt Cements.

Add Styrene-Butadiene-Styrene (SBS) or Styrene-Butadiene (SB) to neat asphalt to produce a binder meeting requirements for PG 76-22 when roadway ADT is equal to or greater than 100,000 for Stone Matrix Asphalt and Porous European Mix (PEM) or Open Graded Friction Course (OGFC) Mixtures.

Styrene Butadiene Rubber (SBS) or Crumb rubber modified PG 76-22 is an acceptable alternative to SBS or SB modified asphalt cement at contractor's discretion, when roadway ADT is less than 100,000, provided the SBR or crumb rubber modified asphalt cement meets the tests' requirements of PG 76-22. For SBR modified PG 64-22 or PG 67-22 to meet PG 76-22, use only SBR currently approved on QPL-65 "Georgia's List of Approved Latex Suppliers". For crumb rubber modified PG 64-22 or PG 67-22 to meet PG 76-22, use 30 mesh size ambient or cryogenic ground tire rubber at minimum 10% of weight of total asphalt cement content. Ensure Trans-Polyoctenamer is added at 4.5% of the weight of the crumb rubber to
achieve better particle distribution. Varying percentage blends of crumb rubber and approved additives may be used, at the discretion of the Office of Materials and Research, provided the end product meets all specified requirements of PG76-22 including Phase Angle. Ensure the end product is homogenous and shows no separation or coagulation. Percentage of ambient or cryogenic ground tire rubber is neat asphalt source dependent to meet specification requirements for PG 76-22.

The maximum Phase Angle requirement is not applicable to the crumb rubber modified PG 76-22 incorporating $\geq$ 10% crumb rubber with approved additive equivalent to 4.5% of crumb rubber (see notes f, g, i and j).

Test Requirements for Petroleum Asphalt Cements

Test And Method	Test Temperature				Original Binder	Residue Of Binder After:	
	PG 58-22 (Note e)	PG 64-22	PG 67-22	PG 76-22 (Note d)		Rolling Thin Film Oven, AASHTO:T 240	Pressure Aging AASHTO: R 28
Flash Point, Min., AASHTO T 48					446 °F (230 °C)		
Viscosity, Max., AASHTO T 316, (Note a)	275 °F (135 °C)				3Pa-S (3000CP)		
Mass Loss (%), Max., AASHTO T 240, (Note b)						0.5	
Dynamic Shear, G*/sin , AASHTO T 315, 10 Rad/Sec	136 °F (58 °C)	147 °F (64 °C)	153 °F (67 C)	169 °F (76 °C)	≥ 1.0 kPa	≥ 2.2 kPa	
Dissipated Energy, Dynamic Shear, G*sin , AASHTO T 315, 10 Rad/Sec	72 °F (22 °C)	77 °F (25 °C)	80 °F (26.5 °C)	88 °F (31 °C)			≤ 5000 kPa
Creep Stiffness, 60 sec., AASHTO T 313, (Note c)	10 ° F (- 12 °C)						S ≤ 300 000 kPa m ≥ 0.300
Direct Tension, 1.0 mm/min., AASHTO T314, Failure Strain	10 ° F (- 12 C)						Report
Multiple Stress Creep & Recovery (MSCR) test, ASTM D7405, AASHTO TP70 (proposed), $J_{nr\ 3.2}$ kPa, (Notes f, g, i and j)				64 °C		≤ 1.0	
Polymer Separation Test ASTM D7173 AASHTO T53 Softening Point (°F) (°C) [h]				(≤ 18 °F) (≤ 10 °C) Difference between top and bottom specimens			

Notes

a. The Department may waive this requirement if the supplier warrants the asphalt binder can be adequately pumped and mixed at temperatures meeting all applicable safety standards.

b. Heat loss by AASHTO: T 179 may be accepted in lieu of mass loss by AASHTO: T 240.

c. If the creep stiffness is below 300,000 kPa, the direct tension test is not required. If the creep stiffness is 300,000 kPa, report the Direct Tension Failure Strain value. Satisfy the m-value requirement in either case.

d. Ensure the maximum Phase Angle measured by DSR is $\leq$ 75 degrees.

e. The maximum Mass Loss shall be $\leq$ 1%, when used in conjunction with Bituminous Surface Treatment (Section 424).

f. MSCR requirement is applicable to the SBR, Crumb Rubber & TOR (or other OMR approved additive) combination modified PG 76-22 asphalt cement. Additionally, ensure the materials meet all PG 76-22 requirements except for phase angle as detailed in sub-section 820.2.01.A.2.

g. Ensure MSCR requirement for Average Percent Recovery at 3.2 kPa is $\geq$ 35% for laboratory or terminally blended PG 64-22 or PG 67-22 modified using SBR or GTR to meet PG 76-22 requirements.

h. Polymer Separation Test is performed by the Department for SBR and crumb rubber modified PG 76-22.

i. PG 64-22 or PG 67-22 modified to meet PG 76-22 using crumb rubber, via dry method, will be evaluated using complete analysis for compliance with PG 76-22 requirements prior to mixture production using laboratory blended materials. PG 64-22 or PG 67-22 modified to meet PG 76-22 using crumb rubber via dry method, will be evaluated for compliance with original DSR testing requirements for PG 76-22 during mixture production using abson recovery in accordance with GDT 119 in compliance with AC sampling frequencies established in GSP 21 sub-section A.9.

j. PG 64-22 or PG 67-22 modified to meet PG 76-22 using crumb rubber, via the dry method, will be evaluated for MSCR (Jnr @ 3.2 kPa) requirements, in accordance with GDT 119, on AC samples obtained for project assurance at frequencies established in GSP 21 sub-section A.9.

Thoroughly blend the composite materials at the supply facility prior to being loaded into the transport vehicle if modification is required in accordance with 820.2.01. Ensure all blending procedures, formulation, and operations are approved by the Office of Materials and Research.

3. Certification:

Provide certified test results from an approved, certified laboratory of blends for proposed PG asphalt for each specification characteristic of the asphalt cement proposed for shipment. Provide the certified results to the State Materials and Research Engineer as required in Standard Operating Procedure (SOP 4).

The State Materials and Research Engineer may interrupt production until test results are known in the event there is reason to suspect a sample will be outside specification limits. Mixture placed incorporating modified binders determined to not meet specification requirements may be subject to removal at the recommendation of the State Materials and Research Engineer.

B. Materials Warranty

General Conditions

Section 821—Cutback Asphalt

821.1 General Description

This section includes the requirements for asphalt cements that have been fluxed with petroleum distillates.

821.1.01 Related References

A. Standard Specifications

Omitted

B. Referenced Documents

AASHTO T 44

AASHTO T 48

AASHTO T 49

AASHTO T 51

AASHTO T 55

AASHTO T 78

AASHTO T 79

AASHTO T 201

821.2 Materials

821.2.01 Cutback Asphalt

A. Requirements

1. Type: Use an asphalt cement that is uniformly consistent and shows no separation or curbing.
2. Grade: Use various grades of cutback asphalts that meet the requirements shown in Table 1 and Table 2.

B. Fabrication

Omitted

C. Acceptance

Test as follows:

Test	Method
Water	AASHTO T 55
Flash point	AASHTO T 79 & T 48
Viscosity	AASHTO T 201
Distillation	AASHTO T 78
Ductility	AASHTO T 51
Solubility	AASHTO T 44
Penetration	AASHTO T 49

D. Materials Warranty

General Conditions

Table 1—Properties of Medium Curing Cutback Asphalts

Section 821—Cutback Asphalt

Requirements	Viscosity Grade									
	MC-30		MC-70		MC-250		MC-800		MC-3000	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Water percent		0.2		0.2		0.2		0.2		0.2
Flash point, Cleveland Open Cup, °F (°C)	100 (38)		100 (38)		150 (65)		150 (65)		150 (65)	
Kinematic viscosity at 140 °F, centistokes (60 °C, mPa·s)	30	60	70	140	250	500	800	1600	3000	6000
Distillation test: Distillate, percentage by volume of total distillate to 680 °F (360 °C)										
to 437 °F (225 °C)		25		20		10				
to 500 °F (260 °C)	40	70	20	60	15	55		35		15
to 600 °F (315 °C)	75	93	65	90	60	87	45	80	15	75
Residue from distillation to 680 °F (360 °C) Volume percentages of sample by difference	50		55		67		75		80	
Tests on residue from distillation:										
Penetration, 100g, 5 sec., at 77 °F (25 °C), (dmm)	80	250	80	250	80	250	80	250	80	
Ductility at 77 °F (25 °C), at 5 cm per min., (cm)	100		100		100		100		100	250
Solubility in trichloroethylene, percent by weight	99.5		99.5		99.5		99.5		99.5	

Table 2—Properties of Rapid Curing Cutback Asphalts

Requirements	Viscosity Grade									
	RC-30		RC-70		RC-250		RC-800		RC-3000	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Water percent		0.2		0.2		0.2		0.2		0.2
Flash point, Tagliabue Open Cup, °F (°C)					80 (25)		80 (25)		80 (25)	
Kinematic viscosity at 140 °F (60 °C, mPa·s)	30	60	70	140	250	500	800	1600	3000	6000
Distillation test: Distillate, percentage by volume of total distillate to 680 °F (360 °C)										
to 374 °F (190°C)	15		10							
to 437 °F(225 °C)	55		50		35		15			
to 500 °F (260 °C)	75		70		60		45		25	
to 600 °F (315 °C)	90		85		80		75		70	
Residue from distillation to 680 °F (360°C): Volume percentages of sample by difference	50		55		65		75		80	
Tests on residue from distillation:										
Penetration, 100g, 5 sec., at 77 °F (25 °C), (dmm)	60	120	60	120	60	120	60	120	60	120
Ductility at 77 °F (25 °C), at 5 cm per min., (cm)	100		100		100		100		100	250
Solubility in trichloroethylene, percent by weight	99.5		99.5		99.5		99.5		99.5	

Section 823—Cutback Asphalt Emulsion

823.1 General Description

This section includes the requirements for cutback asphalt emulsions.

823.1.01 Related References

A. Standard Specifications

Section 820–Asphalt Cement

B. Referenced Documents

AASHT

O: T 44

T 49

T 51

T 55

T 72

T 111

GDT 11

823.2 Materials

823.2.01 Cutback Emulsion

A. Requirements

Use the various grades of cutback asphalt emulsions that meet the requirements shown in Table 1.

Table 1—Properties of Cutback Asphalt Emulsions

Requirements	Grade			
	CBAE-2		CBAE-3	
	Min.	Max.	Min.	Max.
Viscosity, Furol at 140° F (60 °C), in seconds	100	350	400	700
Distillation:				
Residue (asphalt cement) percent by weight	67		72	
Water content percent by weight	4	12	4	12
Naphtha content (by difference) percent by weight	12	25	10	20
Tests on residue from distillation:				
Penetration at 77 °F (25 °C), 100 g, 5 seconds	60	150	60	150
Ductility at 77° F (25 °C), 5 cm per min., (cm)	100		100	
Solubility in trichloroethylene, percent by weight	99		99	
Ash, percent by weight		1.0		1.0

B. Fabrication

1. Prepare the cutback asphalt emulsions by compounding a suitable volatile naphtha, emulsifying agent, and water with asphalt cement.
2. Mechanically invert 100 percent of the cutback emulsions before shipping.

C. Acceptance

Test as follows:

Test	Method
Viscosity	AASHTO T 72
Distillation	GDT 11
Water	AASHTO T 55
Penetration	AASHTO T 49
Ductility	AASHTO T 51
Solubility	AASHTO T 44
Ash	AASHTO T 111

D. Materials Warranty

General Conditions