



BARROW COUNTY
Georgia

To: All Vendors

From: Cindy Clack & Misty Landers

Date: 6/15/16

Re: RFB2016-16 -- 2016 L.M.I.G. ROADWAY PATCHING AND RESURFACING
(PROJECT #SR041 & SR042)

RFB2016-16 is attached for your consideration. Anyone accessing this Request for Bid from the Barrow County website www.barrowga.org is responsible to insure the latest documents are in their possession including any addenda. ***All addenda, questions and answers will be posted on this site. This site should be visited frequently to insure your awareness of any updates.***

Please insure bids are submitted exactly as specified in the RFB. If you have any questions, please submit them in writing to the Barrow County Purchasing Agent as called for in the RFB.

Thank you.



**Barrow County Board of Commissioners
30 North Broad Street
Winder, GA 30680**

**REQUEST FOR BIDS
RFB2016-16**

**2016 L.M.I.G.
ROADWAY PATCHING AND RESURFACING
(PROJECT # SR041 & SR042)**

**BARROW COUNTY, GEORGIA
JUNE 15, 2016**

REQUEST FOR BIDS
RFB2016-16
2016 L.M.I.G. ROADWAY PATCHING AND RESURFACING
(PROJECT #SR041 & SR042)
BARROW COUNTY, GEORGIA

Date: June 15, 2016

PURPOSE:

The purposes of this request are: 1) to provide interested contractors with sufficient information to enable them to submit a uniform bid for the County's review; and 2) to set forth a systematic method that will be fair and impartial to all parties concerned and to generate a response that can be equally evaluated by the County. This RFB is complex and requires your immediate and careful attention. *This bid shall be evaluated and governed according to the Barrow County Purchasing Policy.*

GENERAL:

Barrow County, Georgia (Owner) is in the process of securing sealed bids for asphalt patching and resurfacing of various roadways throughout Barrow County. Special attention should be given to the Schedule and Conditions referenced below.

Regular and Uniform Proposal: Each contractor must comply with all requirements for a regular bid as directed or required by this notice. Notice is hereby given to all contractors that if their proposals are defective or irregular, the same may be rejected immediately. To facilitate comparative analysis and evaluation of bids, it is desired that a uniform format be employed in structuring each bid. The required format will coincide with specifications given later in this notice. The contractor's degree of compliance with the requirements of this notice will be a factor in the subsequent evaluation and award of contract for the project. All instructions are to be considered an integral part of this RFB.

Firm Price: Prices quoted by contractor shall be firm prices, and not subject to increase during the schedule hereinafter set-forth and shall not include Federal or State Tax. All prices shall be for delivery, our destination, F.O.B. freight prepaid Winder, Georgia, unless otherwise shown. Firm prices shall include all associated costs as defined in the Specifications.

Liquidated Damages: PROJECT COMPLETION WILL BE SIXTEEN (16) WEEKS FROM DATE OF THE NOTICE TO PROCEED. Liquidated damages of One Hundred Fifty Dollars (\$150.00) per day will be assessed for each day after completion date until project is completed.

Security: Accompany bid with a bid security in the amount of five percent (5%) of the bid. The successful bidder will be required to submit to Barrow County a performance bond and a payment bond in the amount equal to one hundred percent (100%) of the total contract amount. Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in Georgia. Only Barrow County bond forms will be accepted.

INQUIRIES: Contractors **shall not** contact any members, or employees, of the Barrow County Board of Commissioners or any Barrow County Elected Officer, or employees of Barrow County Elected Officers regarding this RFB, bid evaluation, or selection process from the time the RFB is issued until the time a notification of intent to award is announced. **Questions relating to this RFB must be submitted in writing to both: Cindy Clack (email: cclack@barrowga.org) and Misty Landers (email: mlanders@barrowga.org).** The deadline for questions related to this RFB shall be 12:00 p.m., July 6, 2016. All questions submitted in writing, in a timely manner prior to the deadline will be compiled and answered in writing. All questions submitted in writing will be addressed and posted as an Addendum on the Barrow County website (www.barrowga.org).

SEALED BID: An original (un-bound) and two copies of the bid must be submitted in a sealed envelope/package, addressed to Owner. Each sealed envelope/package containing a bid must be plainly marked on the outside as **“RFB2016-16 -- 2016 L.M.I.G. Roadway Patching and Resurfacing”**. If the bid is forwarded by mail, the sealed envelope/package containing the bid must be enclosed in another envelope/package to the attention of the Owner at the address previously given and also marked on the outside as **“RFB2016-16 -- 2016 L.M.I.G. Roadway Patching and Resurfacing”**. The Owner will not be responsible for late mail deliveries, and no bid will be accepted if received after the time as stipulated by this RFB. No bid may be withdrawn or modified in any way after the deadline for the RFB opening. **FAILURE TO COMPLY WITH THE ABOVE INSTRUCTIONS WILL RESULT IN DISQUALIFICATION.**

EVENTS: Sealed bids will be accepted no later than **12:00 Noon, Thursday, July 14, 2016**. Any bid received after said time and date will not be considered by Owner. Bids will be opened in the Conference Room on the Main Floor at 30 North Broad Street at 2:00 p.m., July 14, 2016. Bids will be reviewed and a recommendation will be presented to the Barrow County Board of Commissioners within sixty (60) days of bid opening.

BIDS SHALL BE SUBMITTED TO:
Barrow County Board of Commissioners
Clerks Office
30 North Broad Street
Winder, GA 30680

INSURANCE REQUIREMENTS: The contractor selected for this project will be required to meet the insurance requirements stipulated in the Barrow County Construction Agreement.

CONSTRUCTION AGREEMENT: *All submitting contractors are required to execute the Construction Agreement included in this package to indicate the willingness to comply with all terms of the Construction Agreement and to submit the executed Construction Agreement with the bid.* Upon award of the Project to the winning contractor, the County will execute the Construction Agreement. Please be advised that the contractor's execution of the Construction Agreement prior to the award of the Project does not constitute the acceptance of an offer by the County or otherwise bind the County in any way until such time as the County executes the Construction Agreement. ***Exhibits B, D, E & G to the Construction Agreement must be completed when submitting the bid.***

FORMAT: An original (un-bound) and two copies of the bid are to be submitted. Each should include a cover page which should identify the RFB number, title, and the name of the company submitting the bid.

It is the responsibility of each contractor to ensure that all information in the bid is easily readable by Owner. Owner, at its sole discretion, may reject any bid which is unclear in any way.

DOCUMENTS: The following are included in this Request for Bids:

- Memo (1 Page)
- Request for Bid (5 Pages)
- Specifications (3 Pages)
- GA D.O.T. Special Provisions (123 Pages)
- Typical Resurfacing Section (3 Pages)
- Location Maps (3 Pages)
- Roadway Summaries (21 Pages)
- Bid Form (4 Pages)
- Bid Bond (2 Pages)
- Payment Bond (3 Pages)
- Performance Bond (3 Pages)
- Construction Agreement (34 Pages)
- Notice Of Award (1 Page)
- Notice To Proceed (1 Page)
- Barrow County Ethics Policy (30 Pages)

DELIVERABLES: The following are required in bid submittals:

- Bid Form (Submit One Original and Two Copies)
- Bid Security (Use Barrow County Form Only)
- Executed Construction Agreement (Please Submit as Stated Earlier)

RIGHT TO SUBMITTED MATERIALS: All responses, inquires, or correspondence relating or in reference to this schedule, exhibit, and other documentation by the bidding contractor shall be properly identified with their name and will become the property of the Owner when received.

EVALUATION AND SELECTION: Bids will be reviewed and one bid will be selected that, in the opinion of the Owner, is the lowest responsive and responsible bidder.

Barrow County reserves the right to reject any and all bids submitted, or where it may serve the best interest of the County, to request additional information or clarification from those submitting bids. The County, in its sole discretion, also reserves the right to waive any formalities or technicalities relative to any or all bids. Where two or more contractors are deemed equal, the County reserves the right to make the award to one of the contractors. At the

County's discretion, presentations may be requested as part of the evaluation process. Barrow County reserves the right to retain all bids submitted.

There is no expressed or implied obligation for Barrow County to reimburse any contractor for any expense incurred in preparing or presenting a bid in response to this RFB.

ASSIGNMENT OF CONTRACTUAL RIGHTS: It is agreed that the bidding contractor selected will not assign, transfer, convey, or otherwise dispose of a contract that results from this invitation or his right, title, or interest in or to the same, any part thereof, without written consent by the Owner.

WARRANTY:

The contractor selected for this project will be required to provide the warranty of goods and services stipulated in the Barrow County Construction Agreement attached hereto and incorporated herein by reference.

GDOT REQUIREMENT:

Nondiscrimination: The County, in accordance with Title VI of the Civil Rights Act of 1964, 42 U.S.C. 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Transportation, Subtitle A, Office of the Secretary, Part 21, Nondiscrimination in Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that they will affirmatively ensure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises as defined at 49 CFR Part 23 will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin, sex, age, or handicap/disability in consideration for an award.

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The Contractor is responsible for providing and installing all material and labor necessary to patch, resurface and stripe the asphalt pavement of various roadways throughout Barrow County. The Contractor shall furnish and install all materials in accordance with the attached: Bid Form, eleven (11) Roadway Summaries, one hundred twenty three (123) pages of GDOT Special Provisions, three (3) Location Maps and three (3) pages of Typical Sections. Contractor is responsible for providing and installing asphalt from a GDOT approved plant.

At Midland Avenue and Beaver Dam Road only, the Contractor shall be responsible for providing and installing all material, equipment (to include reclaimer/stabilizer equipment) and labor necessary to recycle in-place the existing crushed stone base, soil and asphalt pavement materials. Recycle depth is 8". This Full Depth Reclamation process with Portland Cement added for stabilization, will become the new roadway base. The existing damaged asphalt and existing subgrade & base materials will be pulverized/reconstructed and mixed with Portland cement and water and compacted. The amount of Portland Cement blended into the pulverized material shall be 40 pounds per square yard. The Work will include reshaping, grading, crowning /sloping to the existing pavement cross slope, compacting, priming and curing before installing the asphalt materials. This Full Depth Reclamation process shall be in accordance with and follow GDOT's section 301 of the current construction Standard Specifications and Special Provisions. Barrow County shall be responsible for loading, hauling and disposing of any excess pulverized material if required, although none is expected. Barrow County will be responsible for relocating any utilities under the road that may be in conflict, although the existing utilities should be well below the 8" depth of the new construction.

The Contractor is responsible for the required patching which is to include milling of and disposal of the alligator cracked asphalt. All material, labor, installations and traffic control shall be in accordance with current GDOT Specifications, Standards and Special Provisions. Barrow County will mark areas to be patched with paint prior to construction. All patching shall be Recycled Asphaltic Concrete 19 MM, except for Patrick Mill Road (patch only) which shall be 12.5 MM Superpave.

The Contractor shall mill at the edge of existing pavement at intersections and project limits so that the new resurfacing will tie in flush at an adequate depth without feathering.

After the asphalt resurfacing is installed by the Contractor and has sufficiently cured to prevent damage, the Contractor shall be responsible for re-constructing, grading and grassing the entire graded shoulders along both sides of the road. All shoulder work shall be according to current GDOT standard specifications and special provisions. The Contractor shall be responsible for providing, hauling and placing the shoulder soil material of the appropriate GDOT class for graded shoulder reconstruction. Any shoulder material

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containing roots, sticks, brush, stones, or other material which would interfere with mixing, planting and maintaining will be considered unsuitable material; and must be removed by the Contractor. The Contractor shall be responsible for constructing and providing the proper shoulder slope grade using the appropriate equipment with an effort sufficient to provide stabilization while allowing penetration and growth of the hydroseeding. All constructed areas shall be hydroseeded with seed, fertilizer and wood fiber mulch and covered with straw mulch in accordance with Current GDOT standard specifications and special provisions and maintained by the Contractor until sufficient growth cover is established, including regrading and reseeded if necessary, at no additional cost to Barrow County. This shoulder work shall consist of providing, hauling, preparing, grading, constructing, hydroseeding and providing turf establishment according to current GDOT standard specifications and special provisions.

The Contractor shall be responsible for providing to Barrow County supporting documentation including material tickets and material specification submittals for the paving and striping items.

Barrow County shall be responsible for erosion and sediment control items and permits if applicable.

The Contractor shall be responsible for furnishing, installing and removing the temporary striping/pavement marking tape (yellow centerline & white stop bars) prior to the temporary paint traffic line striping and pavement markings.

The Contractor shall also install 30' linear feet of 5" inch double yellow centerline traffic striping paint at all subdivision entrances.

The Contractor shall provide the pre-lining for the paint striping and shall provide and install the temporary and permanent striping and pavement marking items as shown on the Bid Form, Roadway Summaries and according to current GDOT Specifications, Standards and Special Provisions. Placement of permanent traffic line striping and pavement markings shall be delayed for a period of 30 days minimum after placement of the final surface course on each roadway.

The Contractor shall be responsible for insuring that all asphalt paving items and materials installed and labor used for this project is in accordance with the current Georgia Department of Transportation Standards and Specifications. Contractor is responsible for providing all labor, satisfactory workmanship and safety precautions associated with this project. Contractor is responsible for insuring that traffic control is provided for this project. Traffic Control shall be in accordance with the current edition of the Manual on Uniform Traffic Control Devices (M.U.T.C.D.) and current GDOT Specifications, Standards and Special Provisions. Traffic Control shall also include any necessary temporary traffic line striping & pavement markings and pavement marking tape if

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required. The Contractor shall be responsible for insuring that all work equipment, heavy equipment, paving equipment/vehicles are not left in or along the shoulder of the road at the end of the work day. Barrow County shall furnish and install the low/soft shoulder signs prior to the resurfacing. Barrow County will provide the construction inspections.

The Contractor shall be paid for work performed based upon satisfactory inspections and completion of items on the bid form and Roadway Summaries which have been installed and at the price shown on the Contractor's Bid Form. Payment will be based upon material tickets and actual quantities installed. Progress payments shall be made for work completed on the Bid Form items and based upon actual quantities installed. Material tickets must be submitted with pay requests supporting charges. Invoices must be submitted to the Barrow County Engineering Department, 30 North Broad Street, Winder, Ga. 30680. For approval, with a copy electronically submitted to payables@barrowga.org. Darrell Greeson will be the Project Manager for Barrow County.

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

SPECIAL PROVISION

Section 150—Traffic Control

150.01 GENERAL

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

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

The needs and control of all road users (motorists, bicyclists and pedestrians within the highway right-of-way and easements, including persons with disabilities in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, Paragraph 35.130) through a Temporary Traffic Control (TTC) zone shall be an essential part of highway construction, utility work, maintenance operations and management of traffic incidents.

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

A. WORKER SAFETY APPAREL

All workers, including emergency responders, within the right-of-way who are exposed either to traffic (vehicles using the highway for purpose of travel) or to work vehicles and construction equipment within the TTC zone shall wear high-visibility safety apparel that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear", or equivalent revisions, and labeled as meeting the ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Emergency and incident responders and law enforcement personnel within the TTC zone may wear high-visibility safety apparel that meets the

performance requirements of the ANSI/ISEA 207-2006 publication entitled "American National Standard for High-Visibility Public Safety Vests", or equivalent revisions, and labeled as ANSI 207-2006, in lieu of ANSI/ISEA 107-2004 apparel. Firefighters or other emergency responders working within the right-of-way and engaged in emergency operations that directly expose them to flame, fire, heat, and/or hazardous material may wear retroreflective turn-out gear that is specified and regulated by other organizations, such as the National Fire Protection Association.

B. WORKSITE TRAFFIC CONTROL SUPERVISOR

ALL HIGHWAYS (ADDITIONAL REQUIREMENTS BELOW FOR INTERSTATES): The Contractor shall designate a qualified individual as the Worksite Traffic Control Supervisor (WTCS) who shall be responsible for selecting, installing and maintaining all traffic control devices in accordance with the Plans, Specifications, Special Provisions and the MUTCD. A written resume documenting the experience and credentials of the WTCS shall be submitted and accepted by the Engineer prior to beginning any work that involves traffic control. The WTCS shall be available on a twenty-four (24) hour basis to perform his duties. If the work requires traffic control activities to be performed during the daylight and nighttime hours it may be necessary for the Contractor to designate an alternate WTCS. An alternate WTCS must meet the same requirements and qualifications as the primary WTCS and be accepted by the Engineer prior to beginning any traffic control duties. The Worksite Traffic Control Supervisor's traffic control responsibilities shall have priority over all other assigned duties.

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

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

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

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

The Engineer will periodically review the work for compliance with the requirements of the TTC plan.

On projects where traffic control duties will not require full time supervision, the Engineer may allow the Contractor's Project Superintendent to serve as the WTCS as long as satisfactory results are obtained.

CERTIFIED WORKSITE TRAFFIC CONTROL SUPERVISOR

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

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

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

C. TRAFFIC CONTROL DEVICES

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

D. REFLECTORIZATION REQUIREMENTS

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

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

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

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

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

E. IMPLEMENTATION REQUIREMENTS

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

When any shift or change is made to the location of traffic or to the flow patterns of traffic, including pedestrian traffic, the permanent safety features shall be installed and fully operational before making the change. If staging or site conditions prevent the installation of permanent features then the equivalent interim devices shall be utilized. This work shall also include any necessary removal and reinstallation of guardrail panels to achieve the required panel lap to accommodate the appropriate shift and traffic flow including the final traffic flow configuration (The cost of performing this work shall be included in Traffic Control-Lump Sum).

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

1. Guardrail including anchors and delineation with properly lapped panels
2. Impact attenuators
3. Traffic signals
4. Warning devices
5. Pavement markings including words, symbols, stop bars, and crosswalks
6. Roadway signs including regulatory, warning, and guide

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

F. MAINTENANCE OF TRAFFIC CONTROL DEVICES

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

G. TRAFFIC INTERRUPTION RESTRICTIONS

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

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

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

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

H. SEQUENCE OF OPERATIONS

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

Where traffic is permitted through the work area under stage construction, the Contractor may choose to construct, at no additional expense to the Department, temporary on-site bypasses or detours in order to expedite the work. Plans for such temporary bypasses or detours shall be submitted to the Engineer for review and approval 30 calendar days prior to the proposed construction. Such bypasses or detours shall be removed promptly when in the opinion of the Engineer; they are no longer necessary for the satisfactory progress of the Work. Bypasses and detours shall meet the minimum requirements of [Subsection 150.02.B.4.](#)

As an option to the Sequence of Operations in the Contract, the Contractor may submit an alternative Sequence of Operations for review and approval. Alternate Sequence of Operations for pedestrian facilities shall be in compliance with the MUTCD and ADA. Pedestrian needs identified in the preconstruction phase shall be included in the proposed alternate plan.

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

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

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

1. A detailed drawing showing traffic locations and laneage for each step of the change.
2. The location, size, and message of all signs required by the MUTCD, Plan, Special Provisions, and other signs as required to fit conditions. Any portable changeable message signs used shall be included in the details.
3. The method to be used in, and the limits of, the obliteration of conflicting lines and markings.
4. Type, location, and extent of new lines and markings.
5. Horizontal and vertical alignment and superelevation rates for detours, including cross-section and profile grades along each edge of existing pavement.
6. Drainage details for temporary and permanent alignments.
7. Location, length, and/or spacing of channelization and protective devices (temporary barrier, guardrail, barricades, etc.)
8. Starting time, duration and date of planned change.
9. For each traffic shift, a paving plan, erection plan, or work site plan, as appropriate, detailing workforce, materials, and equipment necessary to accomplish the proposed work. This will be the minimum resource allocation required in order to start the work.

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

150.02 TEMPORARY TRAFFIC CONTROL (TTC) ZONES:

A. DEVICES AND MATERIALS:

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

1. Portable Advance Warning Signs

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

2. Arrow Panels

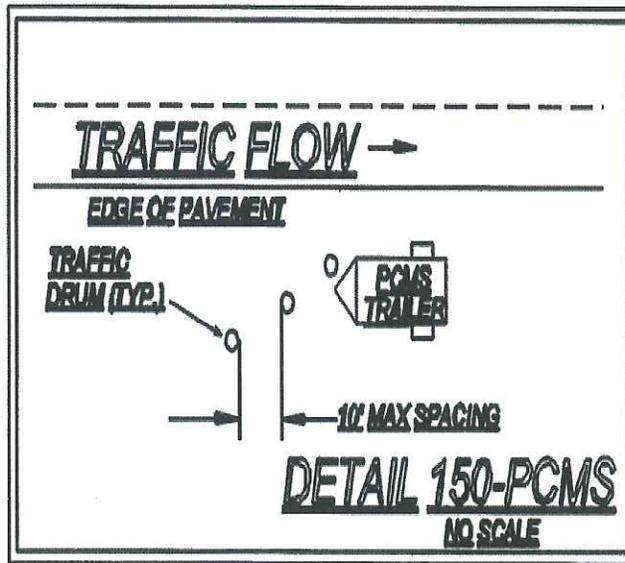
Portable sequential or flashing arrow panels as shown in the Plans or Specifications for use on Interstate or multi-lane highway lane closure only, shall be a minimum size of 48" high by 96" wide with not less than 15 lamps used for the arrow. The arrow shall occupy virtually the entire size of the arrow panel and shall have a minimum legibility distance of one mile. The minimum legibility distance is that distance at which the arrow panel can be comprehended by an observer on a sunny day, or clear night. Arrow panels shall be equipped with automatic dimming features for use during hours of darkness. The arrow panels shall also meet the requirements for a Type C panel as shown in the MUTCD. The sequential or flashing arrow panels shall not be used for lane closure on two-lane, two-way highways when traffic is restricted to one-lane operations in which case, appropriate signing, flaggers and when required, pilot vehicles will be deemed sufficient.

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

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

3. Portable Changeable Message Signs

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



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

4. Channelization Devices

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

5. Temporary Barrier

Temporary barrier shall meet the requirements of [Section 622](#).

6. Temporary Traffic Signals

Temporary traffic signals shall meet the requirements of [Section 647](#) and the MUTCD.

7. Pavement Marking

Pavement marking incorporated into the work shall comply with [Subsections 150.04.A](#) and [150.04.B](#).

8. Portable Temporary Traffic Control Signals

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

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

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

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

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

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

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

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

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

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

9. RUMBLE STRIPS

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

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

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

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

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

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

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

Based on existing field conditions, the Engineer may review the work and require that the guardrail be installed earlier than the maximum time allowed above by giving written notification to the Contractor via the TC-1 traffic control report.

ALL HIGHWAYS: The contractor shall install new guardrail such that traffic exposure to fixed objects is minimized. Within the same work day, temporary attenuators, as defined in [Subsection 150.05.B](#), should be installed on the approach to fixed objects that can't be protected with guardrail. Truck mounted attenuators may be used to shield exposed fixed objects for periods not to exceed forty-eight (48) hours. No separate payment will be made for truck mounted attenuators.

When the roadway is open to traffic, guardrail panels shall be lapped to comply with the directional flow of traffic. Should the staging of the work require that the lap of the guardrail be changed, this work shall be completed before the roadway is opened to traffic. The work to change the lap of any guardrail shall be included in Traffic Control-Lump Sum.

Failure to comply with the above time and quantity restrictions shall be considered as non-compliance under Subsection 150.08.

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

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

When staging requires the relocation or realignment of an existing stop condition it may be necessary to consider the addition of enhanced traffic control features even though none existed at the original location. Horizontal and vertical alignment changes at a new location may have decreased or restricted sight distance or the stop condition may occur sooner than in the previous alignment. If these conditions occur then the Engineer and/or the WTCS should consider additional measures to enhance the motorist's awareness of the changes even though the staging plans may not address enhanced features. Stop signs should be a minimum of 36 inches for interim situations. The use of 48 inch stop signs may be warranted under project specific conditions. Flags may be used on interim/permanent stop signs that are mounted at seven (7') feet in height for a short duration in order to direct additional attention to a new or relocated stop sign(s). Flags should not be used for durations exceeding two weeks unless unusual or site specific conditions warrant a longer period of time. The use of Type "A" flashing red light(s) attached to the stop sign(s) may be appropriate during the same period that the flags are in use to increase attention.

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

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

B. WORK ZONE RESTRICTIONS:

1. Interstate

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

2. Non-Interstate Divided Highways

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

3. Non-Divided Highways

- a. The Contractor shall not simultaneously perform work on opposite sides of the roadway when the work is within 12 feet of the travel-way, unless such areas are separated by at least one-half mile of distance in rural areas or at least 500 feet of distance in urban areas.
- b. On two-lane projects where full width sections of the existing subgrade, base or surfacing are to be removed, and new base, subgrade, or surfacing are to be constructed, the Contractor shall maintain one-lane traffic through the construction area by removing and replacing the undesirable material for half the width of the existing roadway at a time. Replacement shall be made such that paving is completed to the level of the existing pavement in the adjacent lane by the end of the workday or before opening all the roadway to traffic.

4. All Highways:

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

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

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

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

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

- c. Highway Work Zone: All sections or segments of the roadway under construction or reconstruction shall be signed as a Highway Work Zone except non-state highway two-lane two-way resurfacing projects. Two conditions can be applied to a Highway Work Zone. Condition 1 is when no reduction in the existing speed limit is required. Condition 2 is when worksite conditions require a reduction of the speed limit through the designated Work Zone. Properly marking a Highway Work Zone shall include the following minimum requirements:

1. NO REDUCTION IN THE EXISTING POSTED SPEED LIMIT IN HIGHWAY WORK ZONE:

- a) Signage ([Detail 150-HWZ-1](#)) shall be posted at the beginning point of the Highway Work Zone warning the traveling public that increased penalties for speeding violations are in effect. The [HWZ-2](#) sign shall be placed a minimum of six hundred (600') feet in advance of the Highway Work Zone and shall not be placed more than one thousand (1000') feet in advance of the Work Zone. If no speed reduction is required it is recommended that the [HWZ-2](#) be placed at 750 feet from the work area between the ROAD WORK 500 FT. and the ROAD WORK 1000 FT. signs.

[HWZ-2](#) signs shall be placed at intervals not to exceed one mile for the length of the project. [HWZ-2](#) signs should be placed on the mainline after all major intersections except State Routes. State Routes shall be signed as per the requirements for intersecting roadways below.

- b) The existing speed limit shall be posted at the beginning of the Work Zone. Existing Speed Limit signs (R2-1) shall be maintained.
- c) INTERSECTING ROADWAYS: Intersecting state routes shall be signed in advance of each intersection with the Work Zone with a [HWZ-2](#) sign to warn motorists that increased fines are in effect. All other intersecting roadways that enter into a designated Highway Work Zone may be signed in advance of each intersection with the Work Zone. When construction equipment and personnel are present in the intersection on the mainline of a multi-lane roadway, the intersecting side roads shall be signed in advance with [HWZ-2](#) signs. As soon as the work operation clears the intersection the signage may be removed.
- d) Sign [HWZ-3](#) shall be posted at the end of the Highway Work Zone indicating the end of the zone and indicating that increased penalties for speeding violations are no longer in effect.
- e) When a designated Highway Work Zone is no longer necessary all signs shall be removed immediately.

2. REDUCING THE SPEED LIMIT IN A HIGHWAY WORK ZONE:

Highway Work Zone signs shall be posted as required in Condition 1 above.

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

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

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

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

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

As a minimum the following records shall be kept by the WTCS:

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

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

Reduced speed zones shall, as a minimum, be signed as per [Detail 150-HWZ-1](#). Interim signs shall meet the requirements of Subsection 150.03 D. Additional signs may be necessary to adjust for actual field conditions.

When a pilot vehicle is used on a two-lane two-way roadway the speed limit should not be reduced. For special conditions specific to the work, on two-lane two-way roadways or multi-lane highways, the contractor may reduce the posted speed limit with the prior approval of the Engineer.

5. MILLED SURFACE RESTRICTIONS:

Unless modified by the special conditions, a milled surface on any asphaltic concrete surface shall not be allowed to remain open to traffic for a period of time that exceeds thirty (30) calendar days.

6. INSTALLATION/REMOVAL OF WORK AREA SIGNAGE:

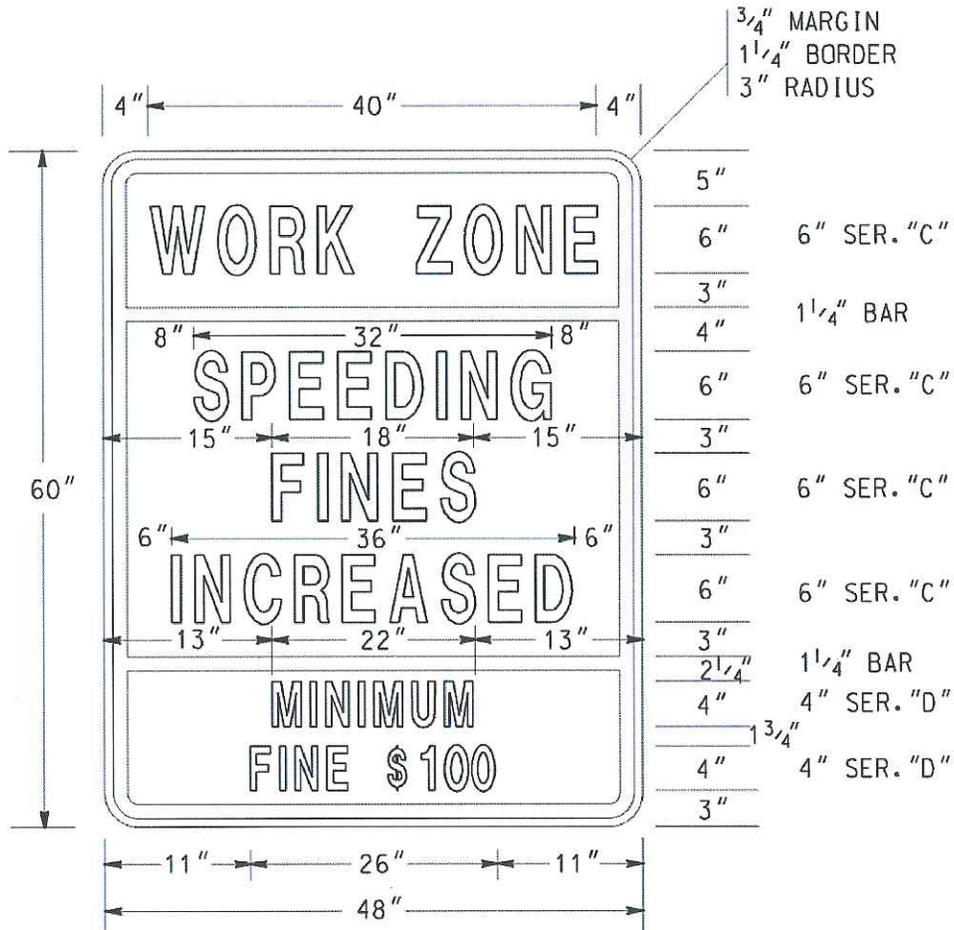
No payment will be made for Traffic Control-Lump Sum until the Work has actually started on the project. The installation of traffic control signage does not qualify as the start of work. Advanced warning signs shall not be installed until the actual beginning of work activities. Any permanent mount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

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

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

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

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



HWZ-2

COLORS

TOP PANEL

LEGEND & BORDER - BLACK (NON-REFL)

BACKGROUND - FLUORESENT ORANGE

(ASTM TYPE VII, VIII, IX or X)

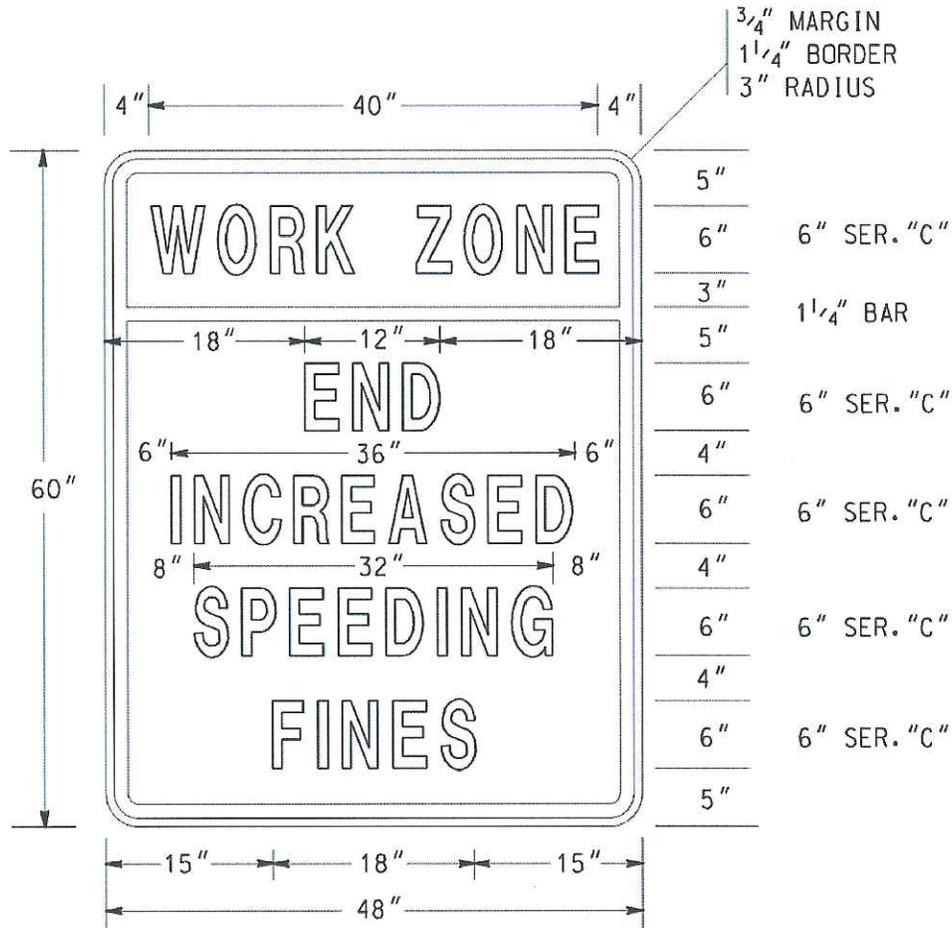
MIDDLE & BOTTOM PANELS

LEGEND & BORDER - BLACK (NON-REFL)

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

NOTES:

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



HWZ-3

COLORS

TOP PANEL

LEGEND & BORDER - BLACK (NON-REFL)

BACKGROUND - FLUORESENT ORANGE

(ASTM TYPE VII, VIII, IX or X)

BOTTOM PANEL

LEGEND & BORDER - BLACK (NON-REFL)

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

NOTES:

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

C. LANE CLOSURES:

1. Approval/Restrictions

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

- a. The length of a lane closure shall not exceed two (2) miles in length excluding the length of the tapers unless the prior approval of the Engineer has been obtained. The Engineer may extend the length of a lane closure based upon field conditions however the length of a workzone should be held to the minimum length required to accomplish the Work. Lane closures shall not be spaced closer than one mile. The advanced warning signs for the project should not overlap with the advanced warning signs for lane shifts, lane closures, etc.
- b. Lane closures that require same direction traffic to be split around the Work Area will not be approved for roadways with posted speeds of 35 mph or greater, excluding turn lanes.
- c. For Interstate, Limited Access and Multi-lane Divided Highways, a Portable Changeable Message Sign (PCMS) shall be placed one (1) mile in advance of a lane closure with a message denoting the appropriate lane closure one mile ahead. The Portable Changeable Message Sign (PCMS) shall be placed on the outside shoulder in accordance with Detail 150-PCMS. This is in addition to the other traffic control devices required by Standard 9106.

2. Removal Of Lane Closures

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

3. Exit And Entrance Ramps

On multilane highways where traffic has been shifted to the inside lanes, the exit and entrance ramps shall have channelization devices placed on both sides of the ramp. This requirement will apply to any situation where traffic is shifted to contra flows or inside staging lanes to facilitate reconstruction work in the vicinity of exit and entrance ramps. The temporary ramp taper length shall be greater than, or equal to, the existing taper length. Interim EXIT gore signs shall be placed at the ramp divergence. The "EXIT OPEN" sign shown in Figure TA-42 of the MUTCD shall be utilized. For exit ramps, channelization device spacing shall be decreased to 10 feet for 200 feet in advance of the temporary gore, and be decreased to 10 feet for the first 100 feet of the temporary gore.

4. Lane Drop/Lane Closure

The first seven (7) calendar days of any lane closure shall be signed and marked as per Standard 9106 or 9107. However, lane closures that exist for a duration longer than seven (7) calendar days may be signed and marked as per the details in Standard 9121, provided the prior approval of the Engineer is obtained. The approved lane drop

shall utilize only the signs and markings shown for the termination end of the lane drop in Standard 9121. All warning signs in the lane drop sequence shall be used. Drums may be substituted for the Type I Crystal Delineators at the same spacing.

5. Termination Area

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

D. TRAFFIC PACING METHOD:

1. Pacing Of Traffic

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

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

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

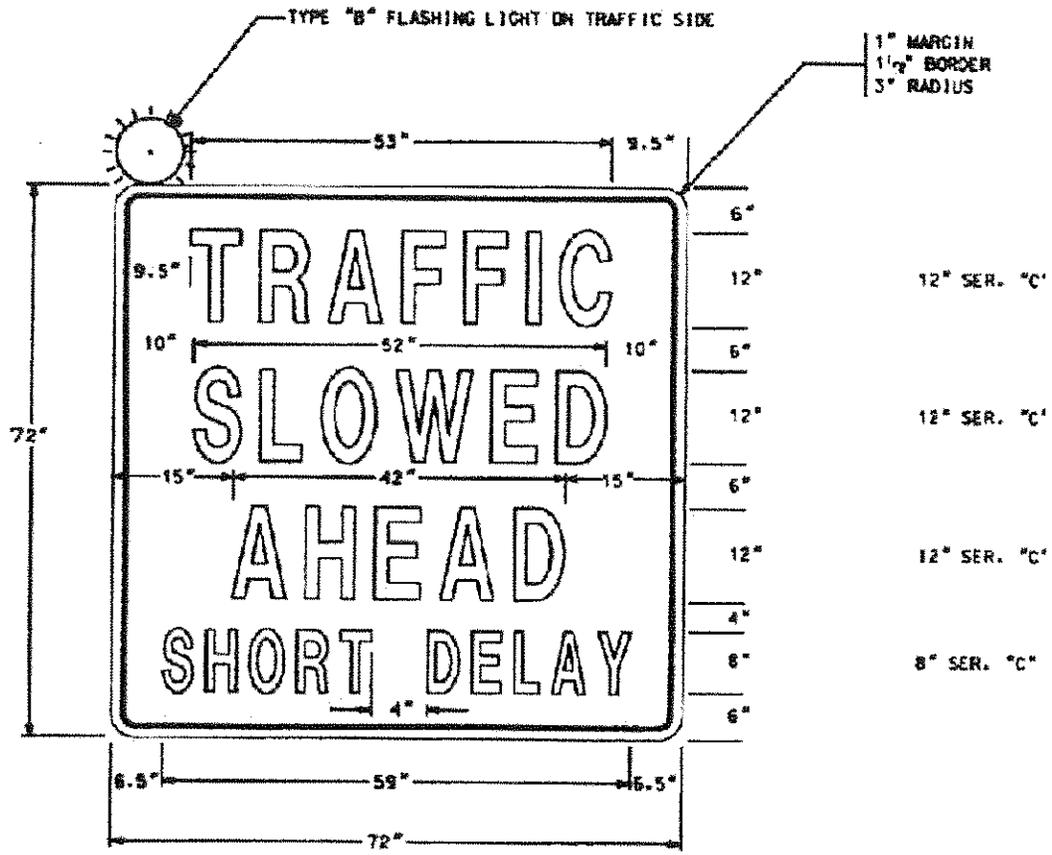
When ready to start the work activity, the police vehicle will act as a pilot vehicle slowing the traffic thereby providing a gap in traffic allowing the Contractor to perform the Work. Any on-ramps between the pace and the work area shall be blocked during pacing of traffic, with a flagger properly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

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

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

2. Methods Of Signing For Traffic Pacing

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



W-SPECIAL SIGN (TEMPORARY POST MOUNTED)

SIGN SHALL HAVE BLACK LEGEND AND BORDER ON ORANGE REFLECTORIZED BACKGROUND

DETAIL 150-A

E. CONSTRUCTION VEHICLE TRAFFIC

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

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

F. ENVIRONMENTAL IMPACTS TO THE TEMPORARY TRAFFIC CONTROL (TTC) PLAN

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

Areas within the limits of the project which are determined by the Engineer to be disturbed or damaged due either directly or indirectly from the progress or the lack of progress of the work shall be cleaned up, redressed, and regressed. All surplus materials shall be removed and disposed of as required. Surplus materials shall be disposed of in accordance with [Section 201](#) of the Specifications.

G. EXISTING STREET LIGHTS

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

H. NIGHTWORK

Adequate temporary lighting shall be provided at all nighttime work sites where workers will be immediately adjacent to traffic.

I. CONSTRUCTION VEHICLES IN THE WORKZONE

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

J. ENCROACHMENTS ON THE TRAVELED-WAY

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

K. PEDESTRIAN CONSIDERATIONS

All existing pedestrian facilities, including access to transit stops, shall be maintained. Where pedestrian routes are closed, alternate routes shall be provided. Closures of existing, interim and final pedestrian facilities shall have the prior written approval of the Engineer. When existing pedestrian facilities are disrupted, closed or relocated in a TTC zone, the temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility. Pedestrian facilities are considered improvements and provisions made to accommodate or encourage walking. Whenever a sidewalk is to be closed, the Engineer shall notify the maintaining agency two (2) weeks prior to the closure. Prior to closure, detectable barriers (that are detectable by a person with a visual disability traveling with the aid of a long cane), as described by the MUTCD, shall be placed across the full width of the closed sidewalk. Barriers and channelizing devices used along a temporary pedestrian route shall be in compliance with the MUTCD.

Temporary Traffic Control devices used to delineate a Temporary Traffic Control zone pedestrian walkway shall be in compliance with [Subsection 150.01.E](#). Temporary Traffic Control devices and construction material shall not intrude into the usable width of the pedestrian walkway. Signs and other devices shall be placed such that they do not narrow or restrict any pedestrian passage to less than 48 inches.

A pedestrian walkway shall not be severed or relocated for non-construction activities such as parking for construction vehicles and equipment. Movement by construction vehicles and equipment across designated pedestrian walkways should be minimized. When necessary, construction activities shall be controlled by flaggers. Pedestrian walkways shall be kept free of mud, loose gravel or other debris.

When temporary covered walkways are used, they shall be lighted during nighttime hours. When temporary traffic barrier is used to separate pedestrian and vehicular traffic, the temporary barrier shall meet NCHRP-350 Test Level Three. The barrier ends shall be protected in accordance with Georgia Standard 4960. Curbing shall not be used as a substitute for temporary traffic barriers when temporary traffic barriers are required. Tape, rope or plastic chain strung between temporary traffic control devices are not considered as detectable and shall not be used as a control for pedestrian movements.

The WTCS shall inspect the activity area daily to ensure that effective pedestrian TTC is being maintained. The inspection of TTC for pedestrian traffic shall be included as part of the TC-1 report.

1. Temporary Pedestrian Facilities

Temporary pedestrian facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility. The geometry, alignment and construction of the facility should meet the applicable requirements of the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)".

a. Temporary Walkways with Detectable Edging

A smooth, continuous hard surface (firm, stable and slip resistant) shall be provided throughout the entire length of the temporary pedestrian facility. Compacted soils, sand, crushed stone or asphaltic pavement millings shall not be used as a surface course for walkways.

Temporary walkways shall include detectable edging as defined in the MUTCD. When temporary traffic barrier is included as a pay item in the contract and where locations identified on the plans for positive protection will also allow them to serve as pedestrian detectable edging, payment will be made for the temporary traffic barrier in accordance with [Section 622](#). No payment will be made for temporary walkways with Detectable Edging where existing pavements or existing edging (that meets the requirements of MUTCD) are utilized as temporary walkways. Payment for temporary detectable edging, including approved barriers and channelizing devices, installed on existing pavements shall be included in Traffic Control-Lump Sum.

Regardless of the materials used, temporary walkways shall be constructed of sufficient thickness and durability to withstand the intended use for the duration of the construction project. If concrete or asphalt is used as the surface course for the walkway, it shall be a minimum of one and one-half inches (1-1/2") thick. Temporary walkways constructed across unimproved streets and drives shall be a minimum thickness of four inches (4") for concrete and three inches (3") for asphalt. Joints formed in concrete sidewalks shall be in accordance with [Section 441](#). Concrete surfaces shall have a broom finish.

If plywood is used as a walkway, it must be a minimum of three quarters of an inch (3/4") thick pressure treated and supported with pressure treated longitudinal joists spaced a maximum of sixteen inches (16") on center. The plywood shall be secured to the joist with galvanized nails or galvanized deck screws. Nails and screws shall be countersunk to prevent snagging or tripping the pedestrians. A slip resistant friction course shall be applied to any plywood surface that is used as a walkway. Any slip resistant material used shall have the prior written approval of the engineer.

The contractor may propose alternate types of Temporary Walkways provided the contractor can document that the proposed walkway meets the requirements of the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)". Alternate types of Temporary Walkways shall have the prior written approval of the engineer.

Temporary walkways shall be constructed and maintained so there are no abrupt changes in grade or terrain that could cause a tripping hazard or could be a barrier to wheelchair use. The contractor shall construct and maintain the walkway to ensure that joints in the walkway have a vertical difference in elevation of no more than one quarter (1/4") of an inch and that the horizontal joints have gaps no greater than one half (1/2") of an inch. The grade of the temporary walkway should parallel the grade of the existing walkway or roadway and the cross slope should be no greater than 2%.

A width of sixty (60") inches, if practical, should be provided throughout the entire length of any temporary walkway. The temporary walkway shall be a minimum width of forty eight inches (48"). When it is not possible to maintain a minimum width of sixty inches (60") throughout the entire length of temporary walkway, a sixty inch (60") by sixty inch (60") passing space should be provided at least every two hundred feet (200 Ft.), to allow individuals in wheelchairs to pass.

Temporary walkways shall be constructed on firm subgrade. Compact the subgrade according to [Section 209](#). Furnish and install any needed temporary pipes prior to constructing any walkway to ensure positive drainage away from or beneath the temporary walkway. Once the walkway is no longer required, remove any temporary materials and restore the area to the original conditions or as shown in the plans.

b. Temporary Curb Cut Wheelchair Ramps

Temporary curb cut wheelchair ramps shall be constructed in accordance with [Section 441](#) and Detail A-3. Ramps shall also include a detectable warning surface in accordance with Detail A-4. Other types of material for the construction of the temporary curb cut wheelchair ramps, including the detectable warning surface, may be used provided the contractor can provide documentation that the material to be used meets the requirements of the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)". When a wheelchair ramp is no longer required, remove the temporary materials and restore the area to existing conditions or as shown in the plans. For the items required to restore the area to original conditions or as shown in the plans, measures for payment shall be covered by contract pay items. If pay items are not included in the contract, then payment for these items shall be included in Traffic Control-Lump Sum.

c. Temporary Audible Information Device

Temporary audible information devices, when shown in the plans, shall be installed in compliance with the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)". The devices shall be installed in accordance with the manufacturer's recommendations. Prior to installation, the contractor shall provide the engineer with a set of manufacturer's drawings detailing the proper installation procedures for each device. When no longer required, the devices shall remain the property of the contractor.

L. TRAFFIC SIGNALS

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

When construction operations necessitate an existing traffic signal to be out of service, the Contractor shall furnish off-duty police officers to regulate and maintain traffic control at the site. Off-duty police officers should be used to regulate and maintain traffic control at signal sites when lane closures or traffic shifts block or restrict movements causing interference with normal road user flows and will not allow the activated traffic signal to guide the traffic through the signal site.

M. REMOVAL/REINSTALLATION OF MISCELLANEOUS ITEMS

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

N. Signalized Intersections

Off duty police officers shall be used to regulate and maintain traffic control at functioning signalized intersections when lane closures or traffic shifts block or restrict movements causing interference with road user flows and will not allow the activated traffic signal to guide the traffic through the signal site. This work is considered incidental and shall be included in the overall price bid for traffic control.

150.03 SIGNS:

A. SIGNING REQUIREMENTS OF THE TEMPORARY TRAFFIC CONTROL (TTC) PLAN

When existing regulatory, warning or guide signs are required for proper traffic and pedestrian control the Contractor shall maintain these signs in accordance with the temporary traffic control (TTC) plan. The Contractor shall review the status of all existing signs, interim signs added to the work, and permanent sign installations that are part of the work to eliminate any conflicting or non-applicable signage in the TTC Plan. The Contractor's review of all signs in the TTC Plan shall establish compliance with the requirements of the MUTCD and Section 150. Any conflicts shall be reported to the Engineer immediately and the WTCS shall take the necessary measures to eliminate the conflict.

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

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

Existing street name signs shall be maintained at street intersections.

B. CONFLICTING OR NON-APPLICABLE SIGNS

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

Failure to promptly eliminate conflicting or non-applicable signs shall be considered as non-performance under [Subsection 150.08](#).

C. REMOVAL OF EXISTING SIGNS AND SUPPORTS

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

D. INTERIM GUIDE, WARNING AND REGULATORY SIGNS

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

Portable signs may be used when the duration of the work is less than three (3) days or as allowed by the special conditions in Subsection 150.11. Portable signs shall be used for all punchlist work. All portable signs and sign mounting devices utilized in work shall be NCHRP 350 compliant. Portable interim signs shall be mounted a

minimum of one (1') foot above the level of the pavement edge for directional traffic of two (2) lanes or less and a minimum of seven (7') feet for directional traffic of three (3) or more lanes. Signs shall be mounted at the height recommended by the manufacturer's crashworthy testing requirements. Portable interim signs which are mounted at less than seven (7') feet in height may have two 18 inch x 18 inch fluorescent red-orange or orange-red warning flags mounted on each sign.

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

Any permanent mount height interim sign that is designed to fold in half to cover a non-applicable message on the sign shall have reflectorized material on the folded over portion of the sign. The reflectorized material shall be orange in color with a minimum of ASTM Type I engineering grade sheeting with a minimum area of six inches by six inches (6" x 6") facing the direction of traffic at all times when the sign is folded.

Interim signs may be either English or metric dimensions.

E. EXISTING SPECIAL GUIDE SIGNS

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

1. Special Guide Signs

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

2. Interim Special Guide Signs

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

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

3. Interim Overhead Guide Sign Structures

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

4. Permanent Special Guide Signs

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

F. MATERIALS- INTERIM SIGNS:

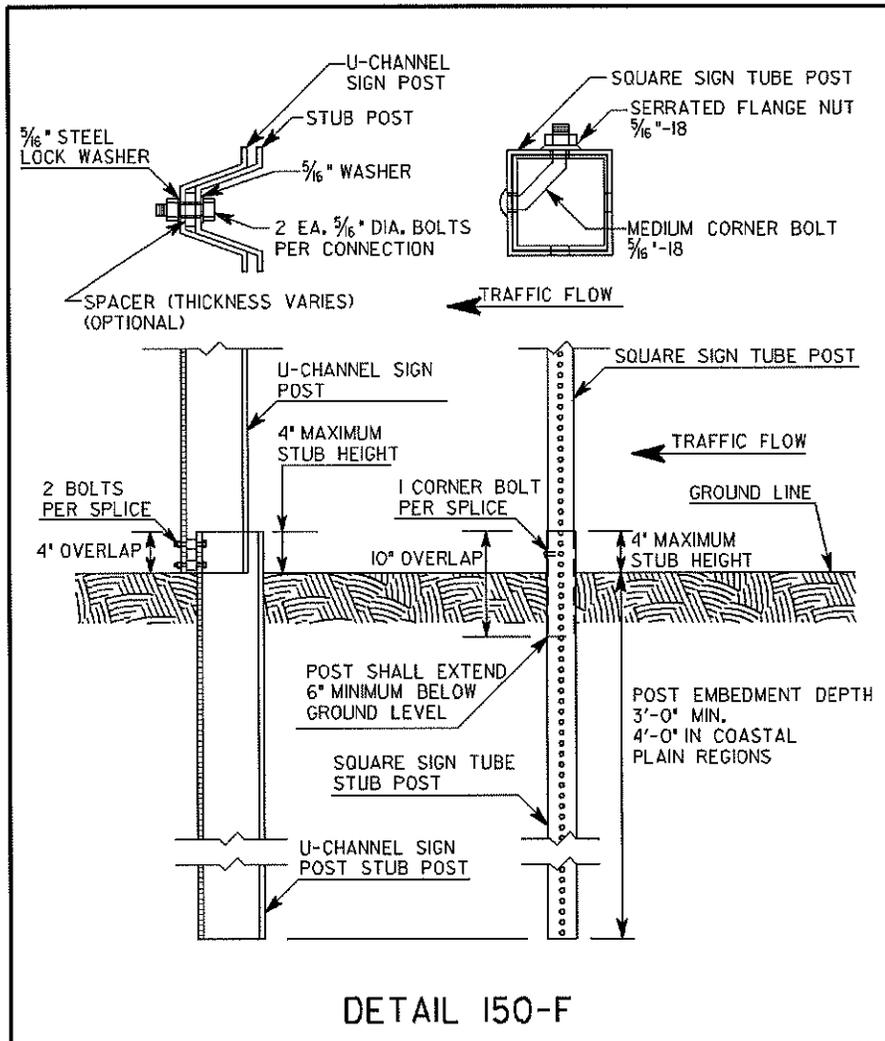
1. Posts

Permanent mounting height of seven (7') feet- Posts for all interim signs shall meet the requirements of Section 911 except that green or silver paint may be used in lieu of galvanization for steel posts or structural shape posts. Within the limits of a single project, all metal posts shall be the same color. Wood posts are not required to be pressure treated. Ground mounted sign(s) greater than nine (9) square feet shall be mounted on two posts.

Interim posts may be either metric or English in dimensions.

Posts for all interim signs shall be constructed to yield upon impact unless the posts are protected by guardrail, portable barrier, impact attenuator or other type of positive barrier protection. Unprotected posts shall meet the breakaway requirements of the "1994 AASHTO Standard Specifications for Structural Support for Highway Signs, Luminaries and Traffic Signals". Unprotected interim posts shall be spliced as shown in [Detail 150-F](#) unless full length unspliced posts are used.

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



- 2. Sign Blanks And Panels- Permanent mounting height of seven (7') feet-**
All sign blanks and panels shall conform to [Section 912](#) of the Specifications except that blanks and panels may be ferrous based or other metal alloys. Type 1 and Type 2 sign blanks shall have a minimum thickness of 0.08 inches regardless of the sign type used. Alternative sign blank materials (composites, poly carbonates, fiberglass reinforced plastics, recycled plastics, etc.) shall have a letter of approval from the Office of Materials and Research for use as interim construction signs before these materials are allowed to be incorporated into the work unless these rigid sign blanks are currently approved as a crashworthy sign blank material under QPL 34. The back side of sign panels shall be painted orange to prevent rust if other metals are used in lieu of aluminum. Plywood blanks or panels will not be permitted. The use of flexible signs will not be permitted for permanent mount height signs.

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

- 3. Portable Sign Mounting Devices, Portable Sign Blanks-**
All portable sign mounting devices and sign blanks utilized in the work shall be NCHRP 350 Test Level III compliant. All portable sign mounting devices and sign blanks shall be from the Qualified Products List. Any sign or sign mounting device shall have an identifying decal, logo, or manufacturer's stamping that clearly identifies the device as NCHRP 350 compliant. The required decal, logo or manufacturer's stamping shall not be displayed on the message face of the sign. The Contractor may be required to provide certification from the Manufacturer as proof of NCHRP 350 compliance. All portable signs shall be mounted according to height requirements of [Subsection 150.03.D](#).

G. SIGN VISIBILITY AND OFFSETS

All existing, interim and new permanent signs shall be installed so as to be completely visible for an advance distance in compliance with the MUTCD. Any clearing required for maintaining the line of sight to existing, interim or permanent signs shall be done as part of the requirements of the TTC plan. The clearing shall include any advance warning signs, both interim and permanent, that are installed as a part of the work including advance warning signs that are installed outside the limits of the project. Any sign installed behind W-beam or T-beam guardrail with non-breakaway posts shall be installed with the leading edge of the sign a minimum of four feet and three inches (4'3") behind the face of the guardrail with five feet (5') of clearance being desirable. Limbs, brush, construction equipment and materials shall be kept clear of the driver's line of sight to all signs that are part of the TTC plan.

H. ADVANCE WARNING SIGNS:

1. All Type Of Highways

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

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

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

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

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

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

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

2. Interstate, Limited Access And Multilane Divided Highways

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

The W20-1 advance warning signs for ROAD WORK 500 FEET; 1000 FEET; and 1500 FEET shall be temporarily covered when work involving the advanced warning signs for lane shifts and lane closures overlap these signs. The ROAD WORK 1/2 MILE, ROAD WORK 1 MILE, and ROAD WORK 2 MILES shall be in place when the 500, 1000 and 1500 feet signs are temporarily covered.

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

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

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

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

I. PORTABLE CHANGEABLE MESSAGE SIGN

Unless specified as a paid item in the contract the use of a portable changeable message sign will not be required. When specified, a portable changeable message sign (PCMS) shall meet the minimum requirements of [Section 632](#) and the MUTCD. The maximum amount of messages allowed to be flashed on one PCMS is two phases (flashes). The language and the timing of the messages shall comply with the MUTCD and Section 632.

When used as an advanced device the PCMS should typically be placed ahead of the construction activities. If the PCMS is used as a substitute for another device then the requirements for the other device apply.

J. FLASHING BEACON

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

K. RUMBLE STRIP SIGNAGE

Signage for rumble strips located in the travelway shall be as required in [Subsection 150.01.C](#) and [Subsection 150.02.A.9](#).

L. LOW/SOFT SHOULDER SIGNAGE

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

CONSTRUCTION/RECONSTRUCTION PROJECTS:

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

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

"SHOULDER DROP-OFF" (W8-9a) signs shall be used when a difference in elevation, less than four (4') feet from the traveled way, exceeds three (3") inches and is not protected by positive barrier protection. These warning signs shall be placed in advance of the drop-off.

For a continuous drop-off condition, the W8-9a) signs shall, as a minimum, be spaced in accordance with the above requirements for "Low/soft shoulder" signs.

PROJECTS CONSISTING PRIMARILY OF ASPHALTIC CONCRETE RESURFACING ITEMS:

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

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

SHOULDER BUILDING NOT INCLUDED IN THE CONTRACT: The Department will furnish the "Low/Soft Shoulder" signs, "Shoulder Drop-off" signs and the posts. The signs shall be erected to meet the minimum requirements of [Subsection 150.03](#). The Contractor shall include the cost of furnishing installation hardware (bolts, nuts, and

washers), erection and maintenance of the signs in the bid price for Traffic Control-Lump Sum. The Contractor shall maintain the signs until final acceptance. The Department will remove the signs.

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

M. BUMP SIGNAGE:

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

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

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

N. PEDESTRIAN SIGNAGE:

Appropriate signs as described in the MUTCD shall be maintained to allow safe passage of pedestrian traffic or to advise pedestrians of walkway closures (Refer to MUTCD Figures TA-28 and TA-29 for guidance). Advance closure signing should be placed at intersections rather than midblock locations so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing. Signs and other devices mounted lower than seven (7) feet above the temporary pedestrian walkway shall not project more than four (4) inches into the accessible pedestrian facilities. Signs and other devices shall be placed such that they do not narrow any pedestrian passage to less than 48 inches.

150.04 PAVEMENT MARKINGS

A. GENERAL

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

1. Resurfacing Projects

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

2. Widening And Reconstruction Projects

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

3. New Location Construction Projects

Pavement marking plans will be provided.

B. MATERIALS

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

C. INSTALLATION AND REMOVAL OF PAVEMENT MARKINGS:

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

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

REMOVAL: Markings no longer applicable shall be removed in accordance with [Subsection 656.3.05](#).

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

INTERMEDIATE SURFACE: Interim markings shall be removed by methods that will cause minimal damage to the pavement surface while also ensuring that traveling public will not be confused or misdirected by any residual markings remaining on the intermediate surface. The use of approved black-out tape and black-out paint (manufactured for the sole purpose of covering existing pavement markings) may be permitted on some interim surfaces, provided the results are satisfactory to the Engineer.

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

Traffic shifts that are done on the final surface shall be accomplished using interim traffic marking tape that can be removed without any blemishing of the final surface. Interim traffic marking tape shall be used on any of the following final surfaces; asphaltic concrete, Portland cement concrete, and bridge deck surfaces. The contractor may propose alternate traffic markings and removal methods on the final surface. Submitted proposals shall include the type of material, method of removal and a cost comparison to the traffic marking tape method. Prior to any approval, the contractor shall field demonstrate to the satisfaction of the Engineer that the proposed traffic markings can be removed without any blemishing of the final surface. If the proposal is determined to be acceptable, a supplemental agreement will be executed prior to the installation of the proposed alternate traffic markings. The supplemental agreement shall denote the type of traffic marking materials, method of removal and any cost and/or time savings to the Department. The Department will not consider or participate in any cost increase that may result from implementing the proposed alternate method.

PAY FACTOR REDUCTION FOR ASPHALTIC CONCRETE FINAL SURFACES: When the correction of an error in the layout of the final pavement markings requires the final surface to be grounded, blemished, scarred, or polished the pay factor shall be reduced to 0.95 for the entire surface area of the final topping that has a blemish, polished or a scarred surface. The reduced pay factor shall not be confined to only the width and length of the stripe or the dimensions of the blemished areas, the whole roadway surface shall have the reduced pay factor applied. The area of the

reduced pay factor shall be determined by the total length and the total width of the roadway affected. If the affected area is not corrected, the reduction in pay shall be deducted from the final payment for the topping layer of asphaltic concrete. The Engineer shall make the final determination whether correction or a reduced pay factor is acceptable.

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

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

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

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

Except for the final surface, markings on asphaltic concrete may be obliterated by an overlay course, when approved by the Engineer. When an asphaltic concrete overlay is placed for the sole purpose of eliminating conflicting markings and the in place asphaltic concrete section will allow, said overlay will be eligible for payment only if designated in the Plans. Overlays to obliterate lines will be paid for only once and further traffic shifts in the same area shall be accomplished with removable markings. Only the minimum asphaltic concrete thickness required to cover lines will be allowed. Excessive build-up will not be permitted. When an overlay for the sole purpose of eliminating conflicting markings is not allowed, the markings no longer applicable shall be removed in accordance with [Subsection 656.3.05](#).

D. RAISED PAVEMENT MARKERS

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

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

1. Interstate Highways

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

2. Multi-Lane Divided Highways

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

a. SUPPLEMENTING LANE LINES

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

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

20 foot centers on curves over six degrees.

20 foot centers on lane transitions or shifts.

b. SUPPLEMENTING RAMP GORE LINES

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

c. OTHER LINES

As shown on the plans or directed by the Engineer.

3. Other Highways

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

a. SUPPLEMENTING LANE LINES AND SOLID LINES

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

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

b. SUPPLEMENTING DOUBLE SOLID LINES

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

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

E. EXCEPTIONS FOR INTERIM MARKINGS

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

1. Two-Lane, Two-Way Roadways

a. SKIP LINES

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

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

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

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

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

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

Passing zones shall be re-established in the locations existing prior to resurfacing. No changes to the location of passing zones shall be done without the written approval of the Engineer. For periods not to exceed three calendar days where interim skip centerlines are in place, no-passing

zones shall be identified by using post or portable mounted DO NOT PASS regulatory signs (R4-1 24" x 30") at the beginning and at intervals not to exceed 1/2 mile within each no-passing zone. A post or portable mounted PASS WITH CARE regulatory sign (R4-1 24" x 30") shall be placed at the end of each no-passing zone. Post mounted signs shall be placed in accordance with the MUTCD. Portable signs shall conform to the requirements of the MUTCD and shall be NCHRP 350 compliant. Portable signs shall be secured in such a manner to prevent misalignment and minimize the possibility of being blown over by weather conditions or traffic.

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

c. EDGELINES

1) Bituminous Surface Treatment Paving

Edgelines will not be required on intermediate surfaces (including asphaltic concrete leveling for bituminous surface treatment paving) that are in use for a period of less than 60 calendar days except at bridge approaches, on lane transitions, lane shifts, and in such other areas as determined by the Engineer. On the final surface, edgelines shall be placed within 30 calendar days of the time that the final surface was placed.

2) All Other Types of Pavement

Edgelines will not be required on intermediate surfaces that are in use for a period of less than 30 calendar days except at bridge approaches, on lane transitions, lane shifts, and in such other areas as determined by the Engineer. On the final surface, edgelines shall be placed within 14 calendar days of the time that the surface was placed.

2. Multi-Lane Highways – With No Paved Shoulder(S) Or Paved Shoulder(S) Four Feet Or Less

a. UNDIVIDED HIGHWAYS (INCLUDES PAVED CENTER TURN LANE)

1) Centerlines and No-Passing Barrier-Full Pattern centerlines and no-passing barriers shall be restored before opening to traffic.

2) Lanelines- Interim skip (broken) stripe as described in [Subsection 150.04E.1.a.](#) may be used for periods not to exceed three calendar days. Skiplines are not permitted in lane shift areas. Solid lines shall be used.

3) Edgelines- Edgelines shall be placed on intermediate and final surfaces within three calendar days of obliteration.

b. DIVIDED HIGHWAYS (GRASS OR RAISED MEDIAN)

- 1) Lanelines- Full pattern skip stripe shall be restored before opening to traffic. Skip lines are not permitted in lane shift areas. Solid lines shall be required.
- 2) Centerline/Edgeline- Solid lines shall be placed on intermediate and final surfaces within three calendar days of obliteration.

3. Limited Access Roadways And Roadways With Paved Shoulders Greater Than Four Feet

a. Same as [Subsection 150.04.E.2](#) except as noted in (b) below.

b. EDGELINES-

- 1) Asphaltic Concrete Pavement- Edgelines shall be placed on intermediate and final surfaces prior to opening to traffic.
- 2) Portland Cement Concrete Pavement- Edgelines shall be placed on any surface open to traffic no later than one calendar day after work is completed on a section of roadway. All water and residue shall be removed prior to daily striping.

4. Ramps For Multi-Lane Divided Highways

A minimum of one solid line edge stripe shall be placed on any intermediate surface of a ramp prior to opening the ramp to traffic. The other edge stripe may be omitted for a maximum period of three (3) calendar days on an intermediate surface. Appropriate channelization devices shall be spaced at a maximum of twenty-five (25') feet intervals until the other stripe has been installed.

The final surface shall have both stripes placed prior to opening the ramp to traffic.

5. MISCELLANEOUS PAVEMENT MARKINGS:

FINAL SURFACE: School zones, railroads, stop bars, symbols, words and other similar markings shall be placed on final surfaces conforming to [Section 652](#) within fourteen (14) calendar days of completion of the final surface. Final markings shall conform to the type of pay item in the plans. When no pay item exists in the plans the final markings shall conform to [Section 652](#) for painted markings.

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

F. MOBILE OPERATIONS

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

1. All Roadways

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

2. Two-Lane Two-Way Roadways

a. Lead Vehicles

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

b. Work Vehicles

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

c. Protection Vehicles

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

3. MULTI-LANE ROADWAYS

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

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

150.05 CHANNELIZATION

A. GENERAL

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

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

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

a. DRUMS:

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

TABLE 150-1

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

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

The length of shifting tapers should be at least $\frac{1}{2}$ L.

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

Night time conditions: When a merge taper exists into the night all drums located in the taper shall have, for the length of the taper only, a six (6") inch fluorescent orange (ASTM Type VI, VII, VIII, IX or X) reflectorized top stripe on each drum. The top six-inch stripe may be temporarily attached to the drum while in use in a taper. The Engineer may allow the fluorescent orange reflectorized six (6") inch top stripe on each drum in a merging taper to remain in place during daylight hours provided there is a lane closure(s) with a continuous operation that begins during one nighttime period and ends during another nighttime period. All drums that have the six-inch top stripe permanently attached shall not be used for any other conditions.

Multiple Lane Closures:

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

4) LONGITUDINAL CHANNELIZATION: Drums shall be spaced as listed below for various roadside work conditions except as modified by

Subsection 150.06. Spacing shall be used for situations meeting any of the conditions listed as follows:

(a) 40 FOOT SPACING MAXIMUM

- (1) For difference in elevation exceeding two inches.
- (2) For heeled sections no steeper than 4:1 as shown in Subsection 150.06, Detail 150-E.

(b) 80 FOOT SPACING MAXIMUM

- (1) For difference in elevation of two inches or less.
- (2) Flush areas where equipment or workers are within ten feet of the travel lane.

(c) 200 FOOT SPACING MAXIMUM: Where equipment or workers are more than ten feet from travel lane. Lateral offset clearance to be four feet from the travel lane.

- (1) For paved areas eight feet or greater in width that are paved flush with a standard width travel lane.
- (2) For disturbed shoulder areas not completed to typical section that are flush to the travel lane and considered a usable shoulder.

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

b. VERTICAL PANELS

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

c. CONES

- 1) DESIGN: All cones shall be a minimum of 28 inches in height regardless of application and shall meet the requirement of the MUTCD. Reflectorization may be deleted from all cones.

- 2) APPLICATION: For longitudinal channelizing only, cones will be permitted for daylight closures or minor shifts. (Drums are required for all tapers.) The use of cones for nighttime work will not be permitted. Cones shall not be stored or allowed to be visible on the worksite during nighttime hours.

d. BARRICADES

DESIGN: Type III barricades shall meet the minimum requirements of the MUTCD and shall be reflectorized as required in [Subsection 150.01.D](#). The Contractor has the option of choosing Type III barricades from the Qualified Products List or the Contractor may utilize generic barricades that are approved by the Federal Highway Administration (FHWA). When barricades have been specifically crash tested with signs attached, the contractor has the responsibility to attach the signs as per the manufacturer's recommendations to ensure crashworthiness. If signs are attached to generic barricades or to barricades from the Qualified Products List (QPL) that have not been crash tested with signs attached then the responsibility for crashworthiness and the liability for mounting these signs to the barricades are assumed by the Contractor and the Contractor shall certify that the barricades are crashworthy under FHWA workzone guidelines for NCHRP 350 crashworthy compliance. Any generic barricades used in the work shall be stamped or stenciled to show compliance with NCHRP 350. The use of Type I and Type II barricades will not be permitted.

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

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

e. WARNING LIGHTS:

- 1) DESIGN: All warning lights shall meet the requirements of the MUTCD.

- 2) APPLICATION

- (a) Type A low-intensity flashing lights shall be used as shown in the Plans, the Standards, and as directed by the Engineer. Flashing lights are not required for advance warning signs in [Subsection 150.03.H](#).

- (b) Type C Steady-Burn lights shall be used as shown in the Plans, the Standards, and as directed by the Engineer. Steady-burn lights are not required on drums for merging tapers that exist into the night.

f. TEMPORARY BARRIERS

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

The reflectors shall be 100 square inches (ASTM Type VII or VIII) reflective sheeting mounted on flat-sheet blanks. The reflectors shall be mounted approximately two inches above the top of the barrier. The reflectors shall be attached to the barrier with adhesive or by a drilled-in anchor type device. The reflectors shall not be attached to a post or board that is placed between the gap in the barrier sections.

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

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

B. PORTABLE IMPACT ATTENUATORS:

1. DESCRIPTION

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

2. MATERIALS

Materials used in the Attenuator shall meet the requirements of [Section 648](#) for Portable Impact Attenuators.

3. CONSTRUCTION

Portable Impact Attenuator Unit/Arrays installation shall conform to the requirements of [Section 648](#), Manufacturer's recommendations and Georgia Standard 4960 and shall be installed at locations designated by the Engineer, and/or as shown on the plans.

C. TEMPORARY GUARDRAIL ANCHORAGE- Type 12:

1. DESCRIPTION

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

2. MATERIALS

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

3. CONSTRUCTION

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

150.06 DIFFERENCES IN ELEVATION BETWEEN TRAVEL LANES AND SHOULDERS (SEE [SUBSECTION 150.06.G](#) FOR PROJECTS CONSISTING PRIMARILY OF ASPHALTIC CONCRETE RESURFACING ITEMS)

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

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

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

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

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

GENERAL/TIME RESTRICTIONS:

A. STONE BASES, SOIL AGGREGATE BASE AND SOIL BASES

1. All Highways

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

2. LIMITED ACCESS HIGHWAY RAMP (INTERSTATES):

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

B. ASPHALT BASES, BINDERS AND TOPPING

1. DIFFERENCES IN ELEVATION BETWEEN THE SURFACES OF ADJACENT TRAVELWAYS

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

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

EMERGENCY SITUATIONS: Inclement weather, traffic accidents, and other events beyond the control of the Contractor may prevent the work from being completed as required above. The Contractor shall notify the Engineer in writing stating the conditions and reasons that have prevented the Contractor from complying with the time limitations. The Contractor shall also outline a plan detailing immediate steps to complete the work. Failure to correct these conditions on the first calendar day that conditions will allow corrective work shall be considered as non-performance of Work under [Subsection 150.08](#).

2. Differences in Elevation Between Asphalt Travelway and Paved Shoulders

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

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

[Detail 150-C](#) conditions will not be allowed for more than 48 hours.

[Detail 150-D](#) conditions will not be allowed for more than 30 calendar days.

[Detail 150-E](#) conditions will not be allowed for more than 60 calendar days.

Failure to meet these requirements shall be considered as non-performance of Work under [Subsection 150.08](#).

C. PORTLAND CEMENT CONCRETE

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

1. Cement Stabilized Base

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

2. Asphaltic Concrete Base

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

3. Concrete Paved Shoulders

Concrete paved shoulders shall be placed within sixty (60) calendar days after the removal of each section of existing shoulder regardless of the type of base materials being placed on the shoulders. During the placement period, traffic control devices shall be in accordance with the appropriate detail based on the depth of the change in elevation. Differences in elevation of more than two inches between the travel way and the shoulder will not be allowed for more than a 24-hour period. A single length of excavated area that does not exceed 1000 feet in total length may be left open as a start up area for periods not to exceed 48 hours provided the Contractor can demonstrate the ability to continuously excavate and backfill in a proficient manner. Prior approval of the Engineer shall be obtained before any startup area may be allowed. Any other disturbed shoulder areas shall be healed as in [Detail 150-E](#).

4. Asphaltic Concrete Shoulders

A difference in elevation that meets the requirements of [Detail 150-B](#) shall not be allowed to exist for a period greater than forty-eight (48) hours. After the removal of the existing shoulder the section or segment of travelway may be healed with stone as per [Detail 150-E](#) for a maximum of fourteen (14) calendar days. Asphaltic concrete shoulders shall be placed within two (2") inches or less of the traveled way surface within fourteen (14) calendar days after the removal of the stone healed section or the removal of each section of the existing shoulder. The two (2") inches or less difference in elevation shall not remain in existence for a period that exceeds thirty (30) calendar days unless the paved shoulder is utilized as a detour for the traveled way. During the placement period, traffic control shall be in accordance with the appropriate detail based on the depth of the change in elevation.

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

D. MISCELLANEOUS ELEVATION DIFFERENTIALS FOR EXCAVATIONS ADJACENT TO THE TRAVELWAY

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

any circumstances. Failure to correct this condition shall be considered as non-performance of Work under [Subsection 150.08](#).

E. CONDUIT INSTALLATION IN PAVED AND DIRT SHOULDERS

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

1. Differences in Elevation of Two (2") Inches or Less

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

2. Differences in Elevation Greater Than Two (2") Inches

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

Failure to meet these requirements shall be considered as non-performance of Work under [Subsection 150.08](#).

F. MODIFICATIONS TO TIME RESTRICTIONS

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

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

If the proposed shifting of the traffic to obtain a buffer space and maintain a minimum travel lane(s) of ten (10') feet requires the use of any existing paved shoulders then the cost of maintenance and repair of the existing paved shoulder(s) shall be the responsibility of the Contractor. The Contractor is responsible for the costs of maintenance and repairs even if the existing paved shoulder(s) is to be removed in a later stage of the work. Existing shoulders that have rumble strips shall have the rumble strips removed before the shoulder can be utilized as part of the travel lane. The cost of the removal of the rumble strips shall be done at no cost to the Department even if the shoulder is to be removed in a later stage of the work.

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

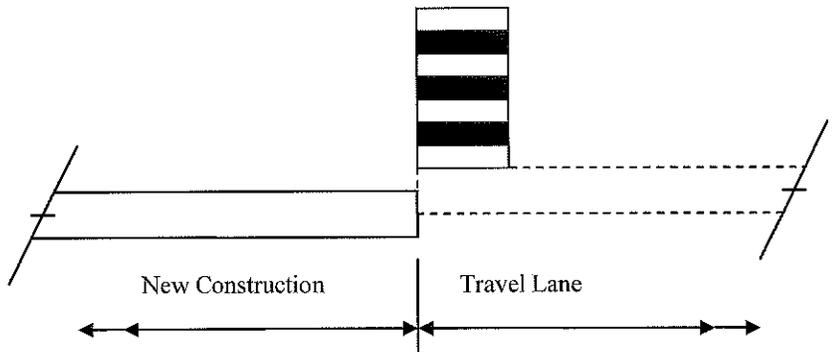
G. ASPHALTIC CONCRETE RESURFACING PROJECTS

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

SHOULDER CONSTRUCTION NOT INCLUDED AS A PART OF THE CONTRACT: When the placement of asphaltic concrete materials creates a difference in elevation greater than two (2") inches between the earth shoulder (grassed or un-grassed) and the edge of travelway or between the earth shoulder and a paved shoulder that is less than four (4') feet in width, the Contractor shall notify the Engineer, in writing, when the resurfacing work including all punchlist items has been completed.

See [Subsection 150.03.L](#) for the requirements for "LOW/SOFT SHOULDERS" and "SHOULDER DROP-OFF" signage.

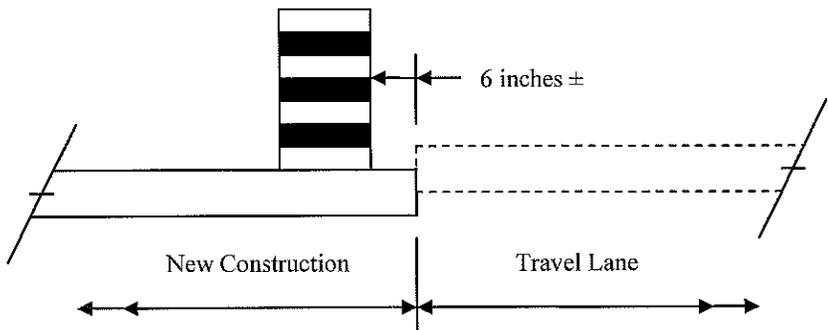
<p>Location of drums when Elevation Difference exceeds 4 inches. Drums spaced at 20 foot intervals. Note: If the travel way width is reduced to less than 10 feet by the use of drums, vertical panels shall be used in lieu of drums.</p>	
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ELEVATION DIFFERENCE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

DETAIL 150-B

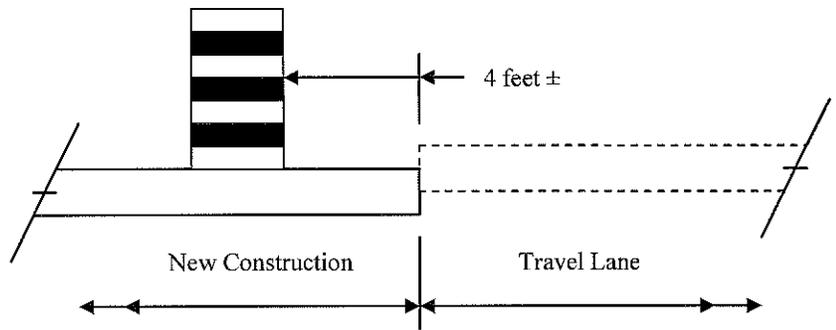
Drums spaced at 40 foot intervals.	Location of drums when Elevation Difference is 2+ inches to 4 inches.
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ELEVATION DIFFERENCE 2+ to 4 inches

DETAIL 150-C

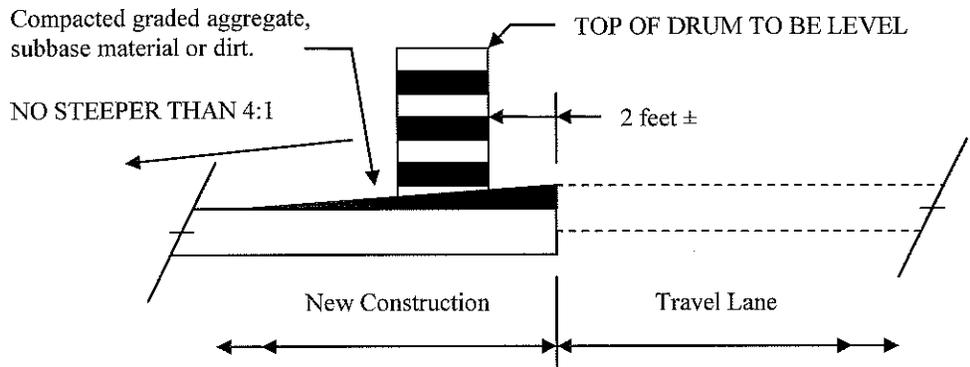
Drums spaced at 80 foot intervals.	Location of drums when Elevation Difference is 2 inches or less.
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ELEVATION DIFFERENCE OF 2 INCHES OR LESS

DETAIL 150-D

	Location of drums immediately after completion of healed sections spaced at 40 foot intervals.
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HEALED SECTION

DETAIL 150-E

150.07 FLAGGING AND PILOT CARS:

A. FLAGGERS

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

B. FLAGGER CERTIFICATION

All flaggers shall meet the requirements of the MUTCD and shall have received training and a certificate upon completion of the training from one of the following organizations:

National Safety Council
Southern Safety Services
Construction Safety Consultants
Ivey Consultants
American Traffic Safety Services Association (ATSSA)

Certifications from other agencies will be accepted only if their training program has been approved by any one of the organizations listed above.

Failure to provide certified flaggers as required above shall be reason for the Engineer suspending work involving the flagger(s) until the Contractor provides the certified flagger(s). Flaggers shall have proof of certification and valid identification (photo I.D.) available any time they are performing flagger duties.

C. FLAGGER APPEARANCE AND EQUIPMENT

Flaggers shall wear high-visibility clothing in compliance with [Subsection 150.01.A](#). The apparel background (outer) material color shall be fluorescent orange-red, fluorescent yellow-green, or a combination of the two as defined in the ANSI standard. The retroreflective material shall be orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of one thousand (1000) feet. The retroreflective safety apparel shall be designed to clearly identify the wearer as a person. They shall use a Stop/Slow paddle meeting the requirements of the MUTCD for controlling traffic. The Stop/Slow paddles shall have a shaft length of seven (7) feet minimum. The Stop/Slow paddle shall be retro-reflectorized for both day and night usage. In addition to the Stop/Slow paddle, a flagger may use a flag as an additional device to attract attention. This flag shall meet the minimum requirements of the MUTCD. The flag shall, as a minimum, be 24" inches square and red or red/orange in color. For night work, the vest shall have reflectorized stripes which meet the requirements of the MUTCD.

D. FLAGGER WARNING SIGNS

Signs for flagger traffic control shall be placed in advance of the flagging operation in accordance with the MUTCD. In addition to the signs required by the MUTCD, signs at regular intervals, warning of the presence of the flagger shall be placed beyond

the point where traffic can reasonably be expected to stop under the most severe conditions for that day's work.

E. PILOT VEHICLE REQUIREMENTS

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

F. PORTABLE TEMPORARY TRAFFIC CONTROL SIGNALS

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

150.08 ENFORCEMENT

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

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

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

150.09 MEASUREMENT

A. TRAFFIC CONTROL

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

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

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

B. SIGNS

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

1. Interim ground mounted or interim overhead special guide signs will be measured for payment by the square foot. This payment shall be full compensation for furnishing the signs, including supports as required, erecting,

illuminating overhead signs, maintaining, removing, re-erecting, and final removal from the Project. Payment will be made only one time regardless of the number of moves required.

2. Remove and reset existing special guide signs, ground mount or overhead, complete, in place, will be measured for payment per each. Payment will be made only one time regardless of the number of moves required.
3. Modify special guide signs, ground mount or overhead, will be measured for payment by the square foot. The area measured shall include only that portion of the sign modified. Payment shall include materials, removal from posts or supports when necessary, and remounting as required.

C. TEMPORARY BARRIER

Temporary Barrier shall be measured as specified in [Section 622](#).

D. CHANGEABLE MESSAGE SIGN, PORTABLE

Changeable Message Sign, Portable will be measured as specified in [Section 632](#).

E. TEMPORARY GUARDRAIL ANCHORAGE, Type 12

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

F. TRAFFIC SIGNAL INSTALLATION- TEMPORARY

Traffic Signal Installation- Temporary will be measured as specified in [Section 647](#).

G. FLASHING BEACON ASSEMBLY

Flashing Beacon Assemblies will be measured as specified in [Section 647](#).

H. PORTABLE IMPACT ATTENUATORS

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

I. PAVEMENT MARKINGS

Pavement markings will be measured as specified in Section 150.

J. TEMPORARY WALKWAYS WITH DETECTABLE EDGING

Temporary walkways with detectable edging will be measured in linear feet (meters), complete in place and accepted, which shall include all necessary materials, equipment, labor, site preparation, temporary pipes, passing spaces, maintenance and removal. Excavation and backfill are not measured separately for payment. No payment will be made for temporary walkways where existing pavements or existing edging (that meets the requirements of MUTCD) are utilized for the temporary walkway. Payment for temporary detectable edging, including approved barriers and channelizing devices, installed on existing pavement shall be included in Traffic Control-Lump Sum.

K. TEMPORARY CURB CUT WHEELCHAIR RAMPS

Temporary curb cut wheelchair ramps are measured as the actual number formed and poured, complete and accepted, which shall include all necessary materials, equipment, labor, site preparation, maintenance and removal. No additional payment will be made for sawing existing sidewalk and removal and disposal of removed material for temporary wheelchair ramp construction. No additional payment will be made for constructing the detectable warning surface.

L. TEMPORARY AUDIBLE INFORMATION DEVICE

Temporary audible information devices are measured as the actual number furnished and installed in accordance with the manufacturer's recommendations, which shall include all necessary materials, equipment, labor, site preparation, maintenance and removal. Each temporary audible information device will be paid for only one time regardless of the number of times it's reused during the duration of The Work. These devices shall remain the property of the Contractor.

150.10 PAYMENT:

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

Item No. 150. Traffic Control	Lump Sum
Item No. 150. Traffic Control, Solid Traffic Stripe _ Inch, (Color)....	per Linear Mile
Item No. 150. Traffic Control, Skip Traffic Stripe _ Inch, (Color)	per Linear mile
Item No. 150. Traffic Control, Solid Traffic Stripe, Thermoplastic ____ Inch, (Color)	per Linear Mile
Item No. 150. Traffic Control, Skip Traffic Stripe, Thermoplastic ____ Inch, (Color)	per Linear Mile
Item No. 150. Traffic Control, Pavement Arrow with Raised Reflectors	per Each
Item No. 150. Traffic Control, Raised Pavement Markers-All Types.	per Each

Item No. 150. Interim Ground Mounted Special Guide Signs Foot	per Square
Item No. 150. Interim Overhead Special Guide Signs Foot	per Square
Item No. 150. Remove & Reset Existing Special Guide Signs, Ground Mount, Complete in Place	per Each
Item No. 150. Remove & Reset, Existing Special Guide Signs, Overhead, Complete in Place	per Each
Item No. 150. Traffic Control, Portable Impact Attenuator.....	per Each
Item No. 150. Traffic Control, Pavement Markers, Words and Symbols	per Square
Foot	
Item No. 150. Traffic Control, Pavement Arrow (Painted) with Raised Reflectors	per Each
Item No. 150. Traffic Control, Workzone Law Enforcement.....	per Hour
Item No. 150. Modify Special Guide Sign, Ground Mount..... Foot	per Square
Item No. 150. Modify Special Guide Sign, Overhead..... Foot	per Square
Item No. 150. Temporary Walkways With Detectable Edging.....	per Linear foot
Item No. 150. Temporary Curb Cut Wheelchair Ramps.....	per Each
Item No. 150. Temporary Audible Information Device.....	per Each
Item No. 620. Temporary Barrier.....	per Linear Foot
Item No. 632. Changeable Message Sign, Portable	per Each
Item No. 641. Temporary Guardrail Anchorage, Type 12	per Each
Item No. 647. Traffic Signal Installation, Temp	Lump Sum
Item No. 647. Flashing Beacon Assembly, Structure Mounted	per Each
Item No. 647. Flashing Beacon Assembly, Cable Supported	per Each

GEORGIA DEPARTMENT OF TRANSPORTATION

STATE OF GEORGIA

SPECIAL PROVISION

Section 400—Hot Mix Asphaltic Concrete Construction

Delete Section 400 and substitute the following:

400.1 General Description

This work includes constructing one or more courses of bituminous plant mixture on the prepared foundation or existing roadway surface. The mixture shall conform with lines, grades, thicknesses, and typical cross sections shown on the Plans or established by the Engineer.

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

Work will be accepted on a lot-to-lot basis according to the requirements of this Section and [Section 106](#).

400.1.01 Definitions

Segregated Mixture: Mixture lacking homogeneity in HMA constituents of such a magnitude that there is a reasonable expectation of accelerated pavement distress or performance problems. May be quantified by measurable changes in temperature, gradation, asphalt content, air voids, or surface texture.

New Construction: A roadway section more than 0.5 mile (800 m) long that is not longitudinally adjacent to the existing roadway. If one or more lanes are added longitudinally adjacent to the existing lane, the lane(s) shall be tested under the criteria for a resurfacing project. If work is performed on the existing roadway including leveling, grade changes, widening and/or resurfacing then that lane shall be tested under the criteria for a resurfacing project.

Trench Widening: Widening no more than 4 ft. (1.2 m) in width.

Comparison sample: Opposite quarter of material sampled by the Contractor.

Independent Sample (Quality Assurance Sample): A sample taken by the Department to verify an acceptance decision without regard to any other sample that may also have been taken to represent the material in question.

Referee sample: A sample of the material retained during the quartering process which is used for evaluation if a comparison of Contractor and Departmental test results is outside allowable tolerances.

400.1.02 Related References

A. Standard Specifications

[Section 106—Control of Materials](#)

[Section 109—Measurement and Payment](#)

[Section 152—Field Laboratory Building](#)

[Section 413—Bituminous Tack Coat](#)

[Section 424—Bituminous Surface Treatment](#)

[Section 802—Coarse Aggregate for Asphaltic Concrete](#)

Section 400—Hot Mix Asphaltic Concrete Construction

[Section 820 – Asphalt Cement](#)

[Section 828—Hot Mix Asphaltic Concrete Mixtures](#)

B. Referenced Documents

AASHTO T 315

AASHTO T 209

AASHTO T 202

AASHTO T 49

[Georgia Department of Transportation Standard Operating Procedure \(SOP\) 27](#)

[Georgia Department of Transportation Standard Operating Procedure \(SOP\) 15](#)

[Georgia Department of Transportation Standard Operation Procedure \(SOP\) 40](#)

[GDT 38](#)

[GDT 73](#)

[GDT 78](#)

[GDT 83](#)

GDT 93

[GDT 119](#)

[GDT 125](#)

[GDT 134](#)

[GSP 15](#)

[GSP 21](#)

[QPL 1](#)

[QPL 2](#)

[QPL 7](#)

[QPL 26](#)

[QPL 30](#)

[QPL 39](#)

[QPL 41](#)

[QPL 45](#)

[QPL 65](#)

[QPL 67](#)

QPL 70

[QPL 77](#)

400.1.03 Submittals

A. Invoices

Furnish formal written invoices from a supplier for all materials used in production of HMA when requested by the Department. Show the following on the Bill of Lading:

- Date shipped
- Quantity in tons (megagrams)
- Included with or without additives (for asphalt cement)

Section 400—Hot Mix Asphaltic Concrete Construction

Purchase asphaltic cement directly from a supplier listed on [Qualified Products List 7](#) and provide copies of Bill of Lading at the Department's request.

B. Paving Plan

Before starting asphaltic concrete construction, submit a written paving plan to the Engineer for approval. Include the following on the paving plan:

- Proposed starting date
- Location of plant(s)
- Rate of production
- Average haul distance(s)
- Number of haul trucks
- Paver speed feet (meter)/minute for each placement operation
- Mat width for each placement operation
- Number and type of rollers for each placement operation
- Sketch of the typical section showing the paving sequence for each placement operation
- Electronic controls used for each placement operation
- Temporary pavement marking plan

If staged construction is designated in the Plans or contract, provide a paving plan for each construction stage.

If segregation is detected, submit a written plan of measures and actions to prevent segregation. Work will not continue until the plan is submitted to and approved by the Department.

C. Job Mix Formula

After the Contract has been awarded, submit to the Engineer a written job mix formula proposed for each mixture type to be used based on an approved mix design. Furnish the following information for each mix:

- Specific project for which the mixture will be used
- Source and description of the materials to be used
- Mixture I.D. Number
- Proportions of the raw materials to be combined in the paving mixture
- Single percentage of the combined mineral aggregates passing each specified sieve
- Single percentage of asphalt by weight of the total mix to be incorporated in the completed mixture
- Single temperature at which to discharge the mixture from the plant
- Theoretical specific gravity of the mixture at the designated asphalt content
- Name of the person or agency responsible for quality control of the mixture during production

Do the following to have the formulas approved in accordance with [SOP 40 "Approval of Contractor Job Mix Formulas"](#) and to ensure their quality:

1. Submit proposed job mix formulas for review at least two weeks before beginning the mixing operations.
2. Do not start hot mix asphaltic concrete work until the Engineer has approved a job mix formula for the mixture to be used. No mixture will be accepted until the Engineer has given approval.
3. Provide mix designs for all Superpave and 4.75 mm mixes to be used. The Department will provide mix design results for other mixes to be used.
4. After a job mix formula has been approved, assume responsibility for the quality control of the mixtures supplied to the Department according to [Subsection 106.01, "Source of Supply and Quantity of Materials."](#)

D. Quality Control Program

Submit a Quality Control Plan to the Office of Materials and Research for approval. The Quality Control Program will be included as part of the certification in the annual plant inspection report.

Section 400—Hot Mix Asphaltic Concrete Construction

400.2 Materials

Ensure that materials comply with the specifications listed in Table 1.

Table 1—Materials Specifications

Material	Subsection
Asphalt Cement, Grade Specified	820.2
Coarse Aggregates for Asphaltic Concrete	802.2.02
Fine Aggregates for Asphaltic Concrete	802.2.01
Mineral Filler	883.1
Heat Stable Anti-Stripping Additive	831.2.04
Hydrated Lime	882.2.03
Silicone Fluid (When approved by the Office of Materials and Research)	831.2.05
Bituminous Tack Coat: PG 58-22, PG 64-22, PG 67-22	820.2
Hot Mix Asphaltic Concrete Mixtures	828

400.2.01 Delivery, Storage, and Handling

Storage of material is allowed in a properly sealed and insulated system for up to 24 hours except that Stone Matrix Asphalt (SMA), Open-Graded Friction Course (OGFC), or Porous European Mix (PEM) mixtures shall not be stored more than 12 hours. Mixtures other than SMA, OGFC, or PEM may be stored up to 72 hours in a sealed and insulated system, equipped with an auxiliary inert gas system, with the Engineer's approval. Segregation, lumpiness, drain-down, or stiffness of stored mixture is cause for rejection of the mixture. The Engineer will not approve using a storage or surge bin if the mixture segregates, loses excessive heat, or oxidizes during storage.

The Engineer may obtain mixture samples or recover asphalt cement according to [GDT 119](#). AASHTO T 315, AASHTO T 202 and T 49 will be used to perform viscosity and penetration tests to determine how much asphalt hardening has occurred.

A. Vehicles for Transporting and Delivering Mixtures

Ensure trucks used for hauling bituminous mixtures have tight, clean, smooth beds.

Follow these guidelines when preparing vehicles to transport bituminous mixtures:

1. Use an approved releasing agent from [QPL 39](#) in the transporting vehicle beds, if necessary, to prevent the mixture from sticking to the bed. Ensure that the releasing agent is not detrimental to the mixture. When applying the agent, drain the excess agent from the bed before loading. Remove from the project any transporting vehicles determined to contain unapproved releasing agents.
2. Protect the mixture with a waterproof cover large enough to extend over the sides and ends of the bed. Securely fasten the waterproof cover before the vehicle begins moving.
3. Insulate the front end and sides of each bed with an insulating material with the following specifications:
 - Consists of builders insulating board or equivalent
 - Has a minimum "R" value of 4.0
 - Can withstand approximately 400 °F (200 °C) temperatures

Install the insulating material so it is protected from loss and contamination. A "Heat Dump Body" may be used in lieu of insulation of the bed. "Heat Dump Body" refers to any approved transport vehicle that is capable of diverting engine exhaust and transmitting heat evenly throughout the dump body to keep asphalt at required temperature. Mark the "Heat Dump Body" clearly with "OPEN" and "CLOSE" position at the exhaust diverter. Install a padlock and lock it in the "OPEN" position when the "Heat Dump Body" is used to transport bituminous mixtures.

4. Mark each transporting vehicle with a clearly visible identification number.
5. Create a hole in each side of the bed so that the temperature of the loaded mixture can be checked. The placement of these holes shall be located to assure that the thermometer is being placed in the hot mix asphaltic concrete.

Section 400—Hot Mix Asphaltic Concrete Construction

Ensure the mixture is delivered to the roadway at a temperature within ± 20 °F (± 11 °C) of the temperature on the job mix formula.

If the Engineer determines that a truck may be hazardous to the Project or adversely affect the quality of the work, remove the truck from the project.

B. Containers for Transporting, Conveying, and Storing Bituminous Material

To transport, convey, and store bituminous material, use containers free of foreign material and equipped with sample valves. Bituminous material will not be accepted from conveying vehicles if material has leaked or spilled from the containers.

400.3 Construction Requirements

400.3.01 Personnel

General Provisions 101 through 150.

400.3.02 Equipment

Hot mix asphaltic concrete plants that produce mix for Department use are governed by [Quality Assurance for Hot Mix Asphaltic Concrete Plants in Georgia, Laboratory Standard Operating Procedure No. 27](#).

The Engineer will approve the equipment used to transport and construct hot mix asphaltic concrete. Ensure that the equipment is in satisfactory mechanical condition and can function properly during production and placement operations. Place the following equipment at the plant or project site:

A. Field Laboratory

Provide a field laboratory according to [Section 152](#).

B. Plant Equipment

1. Scales

Provide scales as follows:

- a. Furnish (at the Contractor's expense) scales to weigh bituminous plant mixtures, regardless of the measurement method for payment.
- b. Ensure that the weight measuring devices that provide documentation comply with [Subsection 109.01, "Measurement and Quantities."](#)
- c. When not using platform scales, provide weight devices that record the mixture net weights delivered to the truck. A net weight system will include, but is not limited to:
 - Hopper or batcher-type weight systems that deliver asphaltic mixture directly to the truck
 - Fully automatic batching equipment with a digital recording device
- d. Use a net weight printing system only with automatic batching and mixing systems approved by the Engineer.
- e. Ensure that the net weight scale mechanism or device manufacturer, installation, performance, and operation meets the requirements in [Subsection 109.01, "Measurement and Quantities"](#)
- f. Provide information on the Project tickets according to [Department of Transportation SOP-15](#).

2. Time-Locking Devices

Furnish batch type asphalt plants with automatic time-locking devices that control the mixing time automatically. Construct these devices so that the operator cannot shorten or eliminate any portion of the mixing cycle.

3. Surge- and Storage-Systems

Provide surge and storage bins as follows:

- a. Ensure bins for mixture storage are insulated and have a working seal, top and bottom, to prevent outside air infiltration and to maintain an inert atmosphere during storage. Bins not intended as storage bins may be used as surge bins to hold hot mixtures for part of the working day. However, empty these surge bins completely at the end of the working day.
- b. Ensure surge and storage bins can retain a predetermined minimum level of mixture in the bin when the trucks are loaded.
- c. Ensure surge and storage systems do not contribute to mix segregation, lumpiness, drain-down, or stiffness.

Section 400—Hot Mix Asphaltic Concrete Construction

- d. Ensure the scale mechanism or device manufacture, installation, performance, and operation meets the requirements in [Subsection 109.01"Measurement and Quantities"](#).
4. Controls for Dust Collector Fines

Control dust collection as follows:

- a. When collecting airborne aggregate particles and returning them to the mixture, have the return system meter all or part of the collected dust uniformly into the aggregate mixture and waste the excess. The collected dust percentage returned to the mixture is subject to the Engineer's approval.
 - b. When the collected dust is returned directly to the hot aggregate flow, interlock the dust feeder with the hot aggregate flow and meter the flow to maintain a flow that is constant, proportioned, and uniform.
5. Hydrated Lime Treatment System

When hydrated lime is required as a mixture ingredient:

- a. Use a separate bin and feed system to store and proportion the required quantity into the mixture.
- b. Ensure that the aggregate is uniformly coated with hydrated lime aggregate before adding the bituminous material to the mixture. Add the hydrated lime so that it will not become entrained in the exhaust system of the drier or plant.
- c. Control the feeder system with a proportioning device that meets these specifications:
 - Is accurate to within ± 10 percent of the amount required
 - Has a convenient and accurate means of calibration
 - Interlocks with the aggregate feed or weigh system to maintain the correct proportions for all rates of production and batch sizes and to ensure that mixture produced is properly treated with lime

Provide flow indicators or sensing devices for the hydrated lime system and interlock them with the plant controls to interrupt mixture production if hydrated lime introduction fails to meet the required target value after no longer than 60 seconds.

6. Net Weight Weighing Mechanisms

Certify the accuracy of the net weight weighing mechanisms by an approved registered scale serviceperson at least once every 6 months. Check the accuracy of net weight weighing mechanisms at the beginning of Project production and thereafter as directed by the Engineer. Check mechanism accuracy as follows:

- a. Weigh a load on a set of certified commercial truck scales. Ensure that the difference between the printed total net weight and that obtained from the commercial scales is no greater than 4 lbs/1,000 lbs (4 kg/Mg) of load. Check the accuracy of the bitumen scales as follows:
 - Use standard test weights.
 - If the checks indicate printed weights are out of tolerance, have a registered scale serviceperson check the batch scales and certify the accuracy of the printer.
 - While the printer system is out of tolerance and before its adjustment, continue production only if using a set of certified truck scales to determine the truck weights.
- b. Ensure plants using batch scales maintain ten 50 lb (25 kg) standard test weights at the plant site to check batching scale accuracy.
- c. Ensure plant scales that are used only to proportion mixture ingredients, and not to determine pay quantities, are within two percent throughout the range.

C. Equipment at Project Site

1. Cleaning Equipment

Provide sufficient hand tools and power equipment to clean the roadway surface before placing the bituminous tack coat. Use power equipment that complies with [Subsection 424.3.02.F, "Power Broom and Power Blower."](#)

2. Pressure Distributor

To apply the bituminous tack coat, use a pressure distributor complying with [Subsection 424.3.02.B, "Pressure Distributor."](#)

3. Bituminous Pavers

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To place hot mix asphaltic concrete, use bituminous pavers that can spread and finish courses that are:

- As wide and deep as indicated on the Plans
 - True to line, grade, and cross section
 - Smooth
 - Uniform in density and texture
- a. Continuous Line and Grade Reference Control. Furnish, place, and maintain the supports, wires, devices, and materials required to provide continuous line and grade reference control to the automatic paver control system.
 - b. Automatic Screed Control System. Equip the bituminous pavers with an automatic screed control system actuated from sensor-directed mechanisms or devices that will maintain the paver screed at a pre-determined transverse slope and elevation to obtain the required surface.
 - c. Transverse Slope Controller. Use a transverse slope controller capable of maintaining the screed at the desired slope within ± 0.1 percent. Do not use continuous paving set-ups resulting in unbalanced screed widths or off-center breaks in the main screed cross section unless approved by the Engineer.
 - d. Screed Control. Equip the paver to permit the following four modes of screed control. The method used shall be approved by the Engineer.
 - Automatic grade sensing and slope control
 - Automatic dual grade sensing
 - Combination automatic and manual control
 - Total manual control

Ensure the controls are referenced with a taut string or wire set to grade, or with a ski-type device or mobile reference at least 30 ft (9 m) long when using a conventional ski. Approved non-contacting laser or sonar-type skis listed on QPL 91 "Georgia's List of Approved Non-contacting Laser and Sonar-type Electronic Grade and Slope Controls" may be used in lieu of conventional 30 ft (9m) skis. Under limited conditions, a short ski or shoe may be substituted for a long ski on the second paver operating in tandem, or when the reference plane is a newly placed adjacent lane.

Automatic screed control is required on all Projects; however, when the Engineer determines that Project conditions prohibit the use of such controls, the Engineer may waive the grade control, or slope control requirements, or both.

- e. Paver Screed Extension. When the laydown width requires a paver screed extension, use bolt-on screed extensions to extend the screeds, or use an approved mechanical screed extension device. When the screed is extended, add auger extensions to assure a length of no more than 18 inches (0.5 m) from the auger to the end gate of the paver. Auger extensions may be omitted when paving variable widths. Ensure the paver is equipped with tunnel extensions when the screed and augers are extended.

NOTE: Do not use extendible strike-off devices instead of approved screed extensions. Only use a strike-off device in areas that would normally be luted in by hand labor.

4. Compaction Equipment

Ensure that the compaction equipment is in good mechanical condition and can compact the mixture to the required density. The compaction equipment number, type, size, operation, and condition is subject to the Engineer's approval.

400.3.03 Preparation

A. Prepare Existing Surface

Prepare the existing surface as follows:

1. Clean the Existing Surface. Before applying hot mix asphaltic concrete pavement, clean the existing surface to the Engineer's satisfaction.
2. Patch and Repair Minor Defects
Before placing leveling course:

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- a. Correct potholes and broken areas requiring patching in the existing surface and base as directed by the Engineer.
 - b. Cut out, trim to vertical sides, and remove loose material from the areas to be patched.
 - c. Prime or tack coat the area after being cleaned. Compact patches to the Engineer’s satisfaction. Material for patches does not require a job mix formula, but shall meet the gradation range shown in [Section 828](#). The Engineer must approve the asphalt content to be used.
3. Apply Bituminous Tack Coat
Apply the tack coat according to [Section 413](#). The Engineer will determine the application rate, which must be within the limitations Table 2.

Table 2—Application Rates for Bituminous Tack, gal/yd² (L/m²)

	Minimum	Maximum
All Mixes *	0.04 (0.180)	0.06(0.270)
*On thin leveling courses and freshly placed asphaltic concrete mixes, reduce the application rate to 0.02 to 0.04 gal/yd ² (0.09 to 0.18 L/m ²).		

B. Place Patching and Leveling Course

- 1. When the existing surface is irregular, bring the surface area to the proper cross section and grade with a leveling course of hot mix asphaltic concrete materials.
- 2. Place leveling at the locations and in the amounts directed by the Engineer.
- 3. Use leveling course mixtures meeting the requirements of the job mix formulas defined in:
 - [Subsection 400.3.05.A, “Observe Composition of Mixtures”](#)
 - [Section 828](#)
 - Leveling acceptance schedules in [Subsection 400.3.06.A, “Acceptance Plans for Gradation and Asphalt Cement Content”](#)
- 4. If the leveling and patching mix type is undesignated, determine the mix type by the thickness or spread rate according to Table 3, but do not use 4.75 mm mix on interstate projects.

Table 3—Leveling and Patching Mix Types

Thickness	Rate of Spread	Type of Mix
Up to 0.75 in (19 mm)	Up to 85 lbs/yd ² (45 kg/m ²)	4.75 mm Mix or 9.5 mm Superpave Type 1
0.75 to 1.5 in (19 to 38 mm)	85 to 165 lbs/yd ² (45 to 90 kg/m ²)	9.5 mm Superpave Type 2
1.5 to 2 in (38 to 50 mm)	165 to 220 lbs/yd ² (90 to 120 kg/m ²)	12.5 mm Superpave *
2 to 2.5 in (50 to 64 mm)	220 to 275 lbs/yd ² (120 to 150 kg/m ²)	19 mm Superpave *
Over 2.5 in (64 mm)	Over 275 lbs/yd ² (150 kg/m ²)	25 mm Superpave

* These mixtures may be used for isolated patches no more than 6 in. (150 mm) deep and no more than 4 ft. (1.2 m) in diameter or length.

400.3.04 Fabrication

General Provisions 101 through 150.

400.3.05 Construction

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

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A. Observe Composition of Mixtures

1. Calibration of plant equipment

If the material changes, or if a component affecting the ingredient proportions has been repaired, replaced, or adjusted, check and recalibrate the proportions.

Calibrate as follows:

- a. Before producing mixture for the Project, calibrate by scale weight the electronic sensors or settings for proportioning mixture ingredients.
- b. Calibrate ingredient proportioning for all rates of production.

2. Mixture control

Compose hot mix asphaltic concrete from a uniform mixture of aggregates, bituminous material, and if required, hydrated lime, mineral filler, or other approved additive.

Ensure the constituents are proportional to produce mixtures that meet the requirements in [Section 828](#). The general composition limits prescribed are extreme ranges within which the job mix formula must be established. Base mixtures on a design analysis that meets the requirements of [Section 828](#).

Ensure that the field performance of the in-place mixtures meet the requirements of [Subsection 828.2.B](#) for Permeability, Moisture Susceptibility, Rutting Susceptibility and Fatigue. In-place mix may be evaluated for compliance with requirements of [Subsection 828.2.B](#) at the discretion of the State Bituminous Construction Engineer under the following conditions:

- Deviates greater than 10 percent on gradation for mixture control sieves from the approved Job Mix Formula based on Acceptance or Independent Samples.
- Deviates greater than 0.7 percent in asphalt cement content from the approved Job Mix Formula based on Acceptance or Independent Samples.
- The calculated mean pavement air voids result in an adjusted pay factor less than 0.80 or any single sub lot result in mean pavement air voids exceeding 10.5 percent.
- Mix produced not using an approved mix design and/or job mix formula.

Remove and replace (at the Contractor's expense) any areas determined to not meet the requirements of [Subsection 828.2.B](#)

If control test results show that the characteristic tested does not conform to the job mix formula control tolerances given in [Section 828](#), take immediate action to ensure that the quality control methods are effective.

Control the materials to ensure that extreme variations do not occur. Maintain the gradation within the composition limits in [Section 828](#).

B. Prepare Bituminous Material

Uniformly heat the bituminous material to the temperature specified in the job mix formula with a tolerance of ± 20 °F (± 11 °C).

C. Prepare the Aggregate

Prepare the aggregate as follows:

1. Heat the aggregate for the mixture, and ensure a mix temperature within the limits of the job mix formula.
2. Do not contaminate the aggregate with fuel during heating.
3. Reduce the absorbed moisture in the aggregate until the asphalt does not separate from the aggregate in the prepared mixture. If this problem occurs, the Engineer will establish a maximum limit for moisture content in the aggregates. When this limit is established, maintain the moisture content below this limit.

D. Prepare the Mixture

Proportion the mixture ingredients as necessary to meet the required job mix formula. Mix until a homogenous mixture is produced.

1. Add Hydrated Lime

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When hydrated lime is included in the mixture, add it at a rate specified in [Section 828](#) and the job mix formula. Use methods and equipment for adding hydrated lime according to [Subsection 400.3.02.B.6, “Hydrated Lime Treatment System.”](#)

Add hydrated lime to the aggregate by using Method A or B as follows:

Method A—Dry Form—Add hydrated lime in its dry form to the mixture as follows, according to the type of plant:

- a. Batch Type Asphalt Plant: Add hydrated lime to the mixture in the weigh hopper or as approved and directed by the Engineer.
- b. Continuous Plant Using Pugmill Mixer: Feed hydrated lime into the hot aggregate before it is introduced into the mixer so that dry mixing is complete before the bituminous material is added.
- c. Continuous Plant Using Drier-Drum Mixer: Add hydrated lime so that the lime will not become entrained into the air stream of the drier and so that thorough dry mixing will be complete before the bituminous material is added.

Method B—Lime/Water Slurry—Add the required quantity of hydrated lime (based on dry weight) in lime/water slurry form to the aggregate. This solution consists of lime and water in concentrations as directed by the Engineer.

Equip the plant to blend and maintain the hydrated lime in suspension and to mix it with the aggregates uniformly in the proportions specified.

2. Add Gilsonite Modifier

When approved by the Office of Materials and Research and required by the Contract, add the Gilsonite modifier to the mixture at a rate to ensure eight percent by weight of the asphalt cement is replaced by Gilsonite. Use either PG 64-22 or PG 67-22 asphalt cement as specified in [Subsection 820.2.01](#). Provide suitable means to calibrate and check the rate of Gilsonite being added. Introduce Gilsonite modifier by either of the following methods.

- a. For batch type plants, incorporate Gilsonite into the pugmill at the beginning of the dry mixing cycle. Increase the dry mix cycle by a minimum of 10 seconds after the Gilsonite is added and prior to introduction of the asphalt cement. For this method, supply Gilsonite in plastic bags to protect the material during shipment and handling and store the modifier in a waterproof environment. The bags shall be capable of being completely melted and uniformly blended into the combined mixture.

Gilsonite may also be added through a mineral filler supply system as described in [Subsection 400.3.02.B.5, “Mineral Filler Supply System.”](#) The system shall be capable of injecting the modifier into the weigh hopper near the center of the aggregate batching cycle so the material can be accurately weighed.

- b. For drum drier plants, add Gilsonite through the recycle ring or through an acceptable means which will introduce the Gilsonite prior to the asphalt cement injection point. The modifier shall be proportionately fed into the drum mixer at the required rate by a proportioning device which shall be accurate within ± 10 percent of the amount required. The entry point shall be away from flames and ensure the Gilsonite will not be caught up in the air stream and exhaust system.

3. Materials from Different Sources

Do not use mixtures prepared from aggregates from different sources intermittently. This will cause the color of the finished pavement to vary.

E. Observe Weather Limitations

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

Table 4—Lift Thickness Table

Lift Thickness	Minimum Temperature
1 in (25 mm) or less	55 °F (13 °C)
1.1 to 2 in (26 mm to 50 mm)	45 °F (8 °C)
2.1 to 3 in (51 mm to 75 mm)	40 °F (4 °C)
3.1 to 4 in (76 mm to 100 mm)	35 °F (2 °C)
4.1 to 8 in (101 mm to 200 mm)	32 °F (0 °C) and rising. Base Material must not be frozen.

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F. Perform Spreading and Finishing

Spread and finish the course as follows:

1. Determine the course's maximum compacted layer thickness by the type mix being used according to Table 5.

Table 5—Maximum Layer Thickness

Mix Type	Minimum Layer Thickness	Maximum Layer Thickness	Maximum Total Thickness
25 mm Superpave	2 1/2 in (64 mm)	4 in (100 mm) *	—
19 mm Superpave	1 3/4 in (44 mm)	3 in (75 mm) *	—
12.5 mm Superpave	1 3/8 in (35 mm)	2 1/2 in (64 mm)**	8 in (200 mm)
9.5 mm Superpave Type II	1 1/8 in (28 mm)	1 1/2 in (38 mm)**	4 in (100 mm)
9.5 mm Superpave Type I	7/8 in (22 mm)	1 1/4 in (32 mm)	4 in (100 mm)
4.75 mm Mix	3/4 in (19 mm)	1 1/8 in (28 mm)	2 in (50 mm)

* Allow up to 6 in (150 mm) per lift on trench widening. **Place 9.5 mm Superpave and 12.5 mm Superpave up to 4 in (100 mm) thick for driveway and side road transition.

2. Unload the mixture into the paver hopper or into a device designed to receive the mixture from delivery vehicles.
3. Except for leveling courses, spread the mixture to the loose depth for the compacted thickness or the spread rate. Use a mechanical spreader true to the line, grade, and cross section specified.
4. For leveling courses, use a motor grader equipped with a spreader box and smooth tires to spread the material or use a mechanical spreader meeting the requirements in [Subsection 400.3.02.C, "Equipment at Project Site."](#)
5. Obtain the Engineer's approval for the sequence of paving operations, including paving the adjoining lanes. Minimize tracking tack onto surrounding surfaces.
6. Ensure the outside edges of the pavement being laid are aligned and parallel to the roadway center line.
7. For New Construction or Resurfacing Contracts containing multiple lifts or courses, arrange the width of the individual lifts so the longitudinal joints of each successive lift are offset from the previous lift at least 1 ft (300 mm). This requirement does not apply to the lift immediately over thin lift leveling courses.
Ensure the longitudinal joint(s) in the surface course and the mix immediately underneath asphaltic concrete OGFC or PEM are at the lane line(s).

NOTE: Perform night work with artificial light provided by the Contractor and approved by the Engineer.

8. Where mechanical equipment cannot be used, spread and rake the mixture by hand. Obtain the Engineer's approval of the operation sequence, including compactive methods, in these areas.
9. Keep small hand raking tools clean and free from asphalt build up. Do not use fuel oil or other harmful solvents to clean tools during the work.
10. Do not use mixture with any of these characteristics:
 - Segregated
 - Nonconforming temperature
 - Deficient or excessive asphalt cement content
 - Otherwise unsuitable to place on the roadway in the work
11. Remove and replace mixture placed on the roadway that the Engineer determines has unacceptable blemish levels from segregation, raveling, streaking, pulling and tearing, or other deficient characteristics. Replace with acceptable mixture at the Contractor's expense. Do not continually place mixtures with deficiencies.
Do not place subsequent course lifts over another lift or courses placed on the same day while the temperature of the previously placed mix is 140 °F (60 °C) or greater.

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12. Obtain the Engineer's approval of the material compaction equipment. Perform the rolling as follows:
 - a. Begin the rolling as close behind the spreader as possible without causing excessive distortion of the asphaltic concrete surface.
 - b. Continue rolling until roller marks are no longer visible.
 - c. Use pneumatic-tired rollers with breakdown rollers on all courses except asphaltic concrete OGFC, PEM and SMA or other mixes designated by the Engineer.
13. If applicable, taper or "feather" asphaltic concrete from full depth to a depth no greater than 0.5 in (13 mm) along curbs, gutters, raised pavement edges, and areas where drainage characteristics of the road must be retained. The Engineer will determine the location and extent of tapering.

G. Maintain Continuity of Operations

Coordinate plant production, transportation, and paving operations to maintain a continuous operation. If the spreading operations are interrupted, construct a transverse joint if the mixture immediately behind the paver screed cools to less than 250 °F (120 °C).

H. Construct the Joints

1. Construct Transverse Joints

- a. Construct transverse joints to facilitate full depth exposure of the course before resuming placement of the affected course.
- b. Properly clean and tack the vertical face of the transverse joint before placing additional material.

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

- c. Straightedge transverse joints immediately after forming the joint.
- d. Immediately correct any irregularity that exceeds 3/16 in. in 10 ft (5 mm in 3 m).

2. Construct Longitudinal Joints

Clean and tack the vertical face of the longitudinal joint before placing adjoining material. Construct longitudinal joints so that the joint is smooth, well sealed, and bonded.

I. Protect the Pavement

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

J. Modify the Job Mix Formula

If the Engineer determines that undesirable mixture or mat characteristics are being obtained, the job mix formula may require immediate adjustment.

400.3.06 Quality Acceptance

A. Acceptance Plans for Gradation and Asphalt Cement Content

The Contractor will randomly sample and test mixtures on a lot basis. The Department will monitor the Contractor testing program and perform comparison and quality assurance testing. The Contractor's Quality Control Technicians shall participate in the Department's Independent Assurance Systems Basis Program.

1. Determine Lot Amount

A lot consists of the tons (megagrams) of asphaltic concrete produced and placed each production day. If this production is less than 500 tons (500 Mg), or its square yard (meter) equivalent, production may be incorporated into the next working day. The Engineer may terminate a lot when a pay adjustment is imminent if a plant or materials adjustment resulting in a probable correction has been made. Terminate all open lots at the end of the month, except for materials produced and placed during the adjustment period. If the final day's production does not constitute a lot, the production may be included in the lot for the previous day's run; or, the Engineer may treat the production as a separate lot with a corresponding lower number of tests.

2. Determine Lot Acceptance

If the Engineer determines that the material is not acceptable to leave in place, the materials shall be removed and replaced at the Contractor's expense.

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3. Provide Quality Control Program

Provide a Quality Control Program as established in SOP 27 which includes:

- Assignment of quality control responsibilities to specifically named individuals who have been certified by the Office of Materials and Research
- Provisions for prompt implementation of control and corrective measures
- Provisions for communication with Project Manager, Bituminous Technical Services Engineer, and Testing Management Operations Supervisor at all times
- Provisions for reporting all test results daily through the Office of Materials and Research computerized Field Data Collection System; other checks, calibrations and records will be reported on a form developed by the Contractor and will be included as part of the project records
- Notification in writing of any change in quality control personnel

a. Certification Requirements:

- Use laboratory and testing equipment certified by the Department. (Laboratories which participate in and maintain AASHTO accreditation for testing asphaltic concrete mixtures will be acceptable in lieu of Departmental certification.)
- Provide certified quality control personnel to perform the sampling and testing. A Quality Control Technician (QCT) may be certified at three levels:
 - 1) Temporary Certification – must be a technician trainee who shall be given direct oversight by a certified Level 1 or Level 2 QCT while performing acceptance testing duties during the first 5 days of training. The trainee must complete qualification requirements within 30 GDOT production days after being granted temporary certification. A trainee who does not become qualified within 30 GDOT production days will not be re-eligible for temporary certification. A certified Level 1 or Level 2 QCT shall be at the plant at all times during production and shipment of mixture to monitor work of the temporarily certified technician.
 - 2) Level 1 – must demonstrate they are competent in performing the process control and acceptance tests and procedures related to hot mix asphalt production and successfully pass a written exam.
 - 3) Level 2 – must meet Level 1 requirements and must be capable of and responsible for making process control adjustments, and successfully pass a written exam.
 - Technician certification is valid for 3 years from the date on the technician’s certificate unless revoked or suspended. Eligible technicians may become certified through special training and testing approved by the Office of Materials and Research. Technicians who lose their certification due to falsification of test data will not be eligible for recertification in the future unless approved by the State Materials and Research Engineer.

b. Quality Control Management

- 1) Designate at least one Level 2 QCT as manager of the quality control operation. The Quality Control Manager shall meet the following requirements:
 - Be accountable for actions of other QCT personnel
 - Ensure that all applicable sampling requirements and frequencies, test procedures, and Standard Operating Procedures are adhered to
 - Ensure that all reports, charts, and other documentation is completed as required
- 2) Provide QCT personnel at the plant as follows:
 - If daily production for all mix types is to be greater than 250 tons (megagrams), have a QCT person at the plant at all times during production and shipment of mixture until all required acceptance tests have been completed
 - If daily production for all mix types will not be greater than 250 tons (megagrams) a QCT may be responsible for conducting tests at up to two plants, subject to random number sample selection
 - Have available at the plant or within immediate contact by phone or radio a Level 2 QCT responsible for making prompt process control adjustments as necessary to correct the mix
- 3) Sampling, Testing, and Inspection Requirements.

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Provide all sample containers, extractants, forms, diaries, and other supplies subject to approval of the Engineer.

Perform daily sampling, testing, and inspection of mixture production that meets the following requirements:

- (a) Randomly sample mixtures according to [GSP 15](#), and [GDT 73 \(Method C\)](#) and test on a lot basis. In the event less than the specified number of samples are taken, obtain representative 6 in (150 mm) cores from the roadway at a location where the load not sampled was placed. Take enough cores to ensure minimum sample size requirements are met for each sample needed.
- (b) Maintain a printed copy of the computer generated random sampling data as a part of the project records.
- (c) Perform sampling, testing, and inspection duties of [GSP 21](#).
- (d) Perform extraction or ignition test ([GDT 83](#) or [GDT 125](#)) and extraction analysis ([GDT 38](#)). If the ignition oven is used, a printout of sample data including weights shall become a part of the project records. For asphalt cement content only, digital printouts of liquid asphalt cement weights may be substituted in lieu of an extraction test for plants with digital recorders. Calculate the asphalt content from the ticket representing the mixture tested for gradation.
- (e) Save extracted aggregate, opposite quarters, and remaining material (for possible referee testing) of each sample as follows:
 - Store in properly labeled, suitable containers
 - Secure in a protected environment
 - Store for three working days. If not obtained by the Department, within three days they may be discarded in accordance with [GSP 21](#).
- (f) Add the following information on load tickets from which a sample or temperature check is taken:
 - Mixture temperature
 - Signature of the QCT person performing the testing
- (g) Calibrate the lime system when hydrated lime is included in the mixture:
 - Perform a minimum of twice weekly during production
 - Post results at the plant for review
 - Provide records of materials invoices upon request (including asphalt cement, aggregate, hydrated lime, etc.)
- (h) Take action if acceptance test results are outside Mixture Control Tolerances of [Section 828](#).
 - One sample out of tolerance
 - (1) Contact Level 2 - QCT to determine if a plant adjustment is needed
 - (2) Immediately run a process control sample. Make immediate plant adjustments if this sample is also out of tolerance
 - (3) Test additional process control samples as needed to ensure corrective action taken appropriately controls the mixture
 - Two consecutive acceptance samples of the same mix type out of tolerance regardless of Lot or mix design level, or three consecutive acceptance samples out of tolerance regardless of mix type
 - (1) Stop plant production immediately
 - (2) Reject any mixture already in storage that:
 - Deviates more than 10 percent in gradation from the job mix formula based on the acceptance sample
 - Deviates more than 0.7 percent in asphalt content from the job mix formula based on the acceptance sample
 - (3) Make a plant correction to any mix type out of tolerance prior to resuming production

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- Do not send any mixture to the project before test results of a process control sample meets Mixture Control Tolerances
 - Reject any mixture produced at initial restarting that does not meet Mixture Control Tolerances
- 4) Comparison Testing and Quality Assurance Program
- Periodic comparison testing by the Department will be required of each QCT to monitor consistency of equipment and test procedures. The Department will take independent samples to monitor the Contractor's quality control program.

a) Comparison Sampling and Testing

Retain samples for comparison testing and referee testing if needed as described in [Subsection 400.3.06.A.3.b.3](#). Discard these samples only if the Contractor's acceptance test results meet a 1.00 pay factor and the Department does not procure the samples within three working days.

The Department will test comparison samples on a random basis. Results will be compared to the respective contractor acceptance tests and the maximum difference shall be as follows:

Table 6—Allowable Percent Difference Between Department and Contractor Acceptance Tests

<u>SIEVE SIZE</u>	<u>SURFACE</u>	<u>SUB-SURFACE</u>
1/2 in. (12.5 mm)		4.0%
3/8 in. (9.5 mm)	3.5%	4.0%
No. 4 (4.75 mm)	3.5%	3.5%
No. 8 (2.36 mm)	2.5%	3.0%
No. 200 (75 μm)	2.0%	2.0%
A.C.	0.4%	0.5%

- (1) If test comparisons are within these tolerances:
- Continue production
 - Use the Contractor's tests for acceptance of the lot
- (2) If test comparisons are not within these tolerances:
- Another Departmental technician will test the corresponding referee sample
 - Results of the referee sample will be compared to the respective contractor and Departmental tests using the tolerance for comparison samples given above.
 - (a) If referee test results are within the above tolerances when compared to the Contractor acceptance test, use the Contractor's test for acceptance of the effected lot.
 - (b) If referee test results are not within the above tolerances when compared to the Contractor acceptance test, the Department will review the Contractor's quality control methods and determine if a thorough investigation is needed.
- b) Independent Verification Sampling and Testing
- (1) Randomly take a minimum of two independent samples from the lesser of five days or five lots of production regardless of mix type or number of projects.
 - (2) Compare test deviation from job mix formula to Mixture Control Tolerances in [Section 828](#). If results are outside these tolerances, another sample from the respective mix may be taken.

NOTE: For leveling courses less than 110 lb/yd² (60 kg/m²) having quality assurance test results outside the Mixture Control Tolerances of [Section 828](#), use the Department's test results only.

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If test results of the additional sample are not within Mixture Control Tolerances, the Department will take the following action:

- Take random samples from throughout the subject lot(s) as established in [Subsection 400.3.06.A.3.b.3](#) and use these test results for acceptance and in calculations for the monthly plant rating. Determine if the Contractor's quality control program is satisfactory and require prompt corrective action by the Contractor if specification requirements are not being met.
- Determine if the QCT has not followed Departmental procedures or has provided erroneous information.
- Take samples of any in-place mixture represented by unacceptable QCT tests and use the additional sample results for acceptance and in calculations for the monthly plant rating. The Contractor QCT tests will not be included in the monthly plant rating.

B. Compaction

Determine the mixture compaction using either [GDT 39](#), [GDT 59](#) or AASHTO T-331. The method of GDT-39 for “Uncoated Specimens, Dense Graded Mixtures Only” shall not apply when the water absorption of a sample exceeds 2.0 percent, as measured according to AASHTO T-166. In this case, either AASHTO T-331 or the paraffin method of GDT-39 shall apply. The compaction is accepted in lots defined in [Subsection 400.3.06. A “Acceptance Plans for Gradation and Asphalt Cement Content”](#) and is within the same lot boundaries as the mixture acceptance.

1. Calculate Pavement Mean Air Voids

The Department will calculate the pavement air voids placed within each lot as follows:

- a. One test per sub-lot.
 - Lots ≥ 500 tons of mix should be divided into 5 sub-lots of equal distance.
 - Lots < 500 tons of mix should be comprised of a sub-lot or sub-lots consisting of up to 100 tons of mix each. There may be less than 5 sub-lots.
- b. Average the results of all tests run on randomly selected sites in that lot.
- c. Select the random sites using [GDT 73](#).

Density tests are not required for asphaltic concrete placed at 125 lbs/yd² (68 kg/m²) or less, 4.75 mm mix and mixes placed as variable depth or width leveling. Compact these courses to the Engineer's satisfaction. Density tests will not be performed on turn-outs and driveways.

The targeted maximum Pavement Mean Air Void content for all Superpave mixtures is 5.0 percent. Ensure that the maximum Pavement Mean Air Voids for all Superpave mixtures does not exceed 7.8 percent. The maximum Pavement Mean Air Voids for 2 foot shoulder widening is 9.0 percent. The adjustment period for density shall be three lots or three production days, whichever is less, in order for the contractor to ensure maximum compactive effort has been achieved which will yield no more than the specified maximum allowed Mean Air Voids. If the contractor needs to adjust the mixture to improve density results, a change in the job mix formula may be requested for approval during the adjustment period so long as the following values are not exceeded:

- Coarse pay sieve $\pm 4\%$
- No. 8 (2.36 mm) sieve $\pm 2\%$
- No. 200 (75 μm) sieve $\pm 1\%$
- Asphalt Content $\pm 0.2\%$
- All value changes must still be within specification limits

If the Office of Materials and Research is satisfied that the contractor has exerted the maximum compactive effort and is not able to maintain Pavement Mean Air Voids at no more than 7.8%, the Engineer may establish a maximum target for Pavement Mean Air Voids.

If the Pavement Mean Air Voids within a Lot exceeds 7.8 (or 100% of the maximum target air voids, if established is not maintained); the Engineer may stop the paving operation until appropriate steps are taken by the Contractor to correct the deficiency. Upon approval of the Engineer, the paving operation may be restarted but will be limited to a

Section 400—Hot Mix Asphaltic Concrete Construction

1000 ft (300 m) test section to verify that the corrective action taken will result in satisfactory density. Continued operation may not be permitted if the Pavement Mean Air Voids fail to meet the specified density requirements.

2. Parking Facilities Pavement Mean Air Voids

- 7.8 percent or less for state funded Park and Ride Parking Lots
- 8.3 percent or less for all other parking facilities on Contracts with \geq 1000 tons combined of all asphaltic concrete mix types.
- 9.0 percent or less for all other parking facilities on Contracts with $<$ 1000 tons combined of all asphaltic concrete mix types.
- If the Office of Materials and Research is satisfied that the contractor has exerted the maximum compactive effort and is not able to maintain the specified Pavement Mean Air Voids, the Engineer may establish a maximum allowable percent Pavement Mean Air Voids. To determine a maximum allowable percent Pavement Mean Air Voids, a Control Strip (100 feet minimum) shall be placed to the same width and thickness to be utilized during construction of that mix type. The materials used in the construction of the Control Strip shall conform to the requirements of the approved Job Mix Formula as defined in Sub-Section 400.1.03. The materials shall be furnished from the same source and shall be of the same type used in the remainder of the pavement course and mix type represented by the Control Strip. The in-place air voids of the Control Strip, if accepted, shall be the maximum allowable percent Pavement Mean Air Voids for the remainder of the pavement course which it represents. The in-place air voids of the Control Strip will be determined by averaging the results of five density tests taken at randomly selected sites within the Control Strip. The density tests shall be tested in accordance with GDT 73, Procedure 2.a (Cores) or Procedure 2.b (Nuclear Gauge). Compaction of the Control Strip shall be continued until no appreciative increase in density can be obtained by additional roller coverages.

3. Obtain Uniform Compaction

For a lot to be accepted for compaction, the air void range cannot exceed 4 percent for new construction or 5 percent for resurfacing projects. The range is the difference between the highest and lowest acceptance test results within the affected lot.

C. Surface Tolerance

In this Specification, pavement courses to be overlaid with an Open-Graded Friction Course or PEM are considered surface courses. Asphalt paving is subject to straightedge and visual inspection and irregularity correction as shown below:

1. Visual and Straightedge Inspection

Paving is subject to visual and straightedge inspection during and after construction operations until Final Acceptance. Locate surface irregularities as follows:

- a. Keep a 10 ft (3 m) straightedge near the paving operation to measure surface irregularities on courses. Provide the straightedge and the labor for its use.
- b. Inspect the base, intermediate, and surface course surfaces with the straightedge to detect irregularities.
- c. Correct irregularities that exceed 3/16 in. in 10 ft (5 mm in 3 m) for base and intermediate courses, and 1/8 in. in 10 ft (3 mm in 3 m) for surface courses.

Mixture or operating techniques will be stopped if irregularities such as rippling, tearing, or pulling occur and the Engineer suspects a continuing equipment problem. Stop the paving operation and correct the problem.

D. Reevaluation of Lots

Reevaluation of Lots and acceptance will be based on Department evaluations. The Department will be reimbursed by the Contractor for all costs of these evaluations. Request for reevaluation shall be made within 5 working days of notification of the lot results.

E. Segregated Mixture

Prevent mixture placement yielding a segregated mat by following production, storage, loading, placing, and handling procedures. Ensure needed plant modifications and provide necessary auxiliary equipment. (See [Subsection 400.1.01, "Definitions."](#))

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

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4. Unquestionably Unacceptable Segregation

When the Engineer determines the segregation in the finished mat is unquestionably unacceptable, follow these measures:

- d. Suspend Work and require the Contractor to take positive corrective action. The Department will evaluate the segregated areas to determine the extent of the corrective work to the in-place mat as follows:
 - Perform extraction and gradation analysis by taking 6 in (150 mm) cores from typical, visually unacceptable segregated areas.
 - Determine the corrective work according to [Subsection 400.3.06.E.3](#).
- e. Require the Contractor to submit a written plan of measures and actions to prevent further segregation. Work will not continue until the plan is submitted to and approved by the Department.
- f. When work resumes, place a test section not to exceed 500 tons (500 Mg) of the affected mixture for the Department to evaluate. If a few loads show that corrective actions were not adequate, follow the measures above beginning with step 1.a. above. If the problem is solved, Work may continue.

2. Unacceptable Segregation Suspected

When the Engineer observes segregation in the finished mat and the work may be unacceptable, follow these measures:

- g. Allow work to continue at Contractor's risk.
- h. Require Contractor to immediately and continually adjust operation until the visually apparent segregated areas are eliminated from the finished mat. The Department will immediately investigate to determine the severity of the apparent segregation as follows:
 - Take 6 in (150 mm) cores from typical areas of suspect segregation.
 - Test the cores for compliance with the mixture control tolerances in [Section 828](#).

When these tolerances are exceeded, suspend work for corrective action as outlined in [Subsection 400.3.06.E.3](#).

3. Corrective Work

- a. Remove and replace (at the Contractor's expense) any segregated area where the gradation on the control sieves is found to vary 10 percent or more from the approved job mix formula, the asphalt cement varies 1.0% or more from the approved job mix formula, or if in-place air voids exceed 13.5% based on [GDT 39](#). The control sieves for each mix type are shown in [Subsection 400.5.01.B "Determine Lot Acceptance."](#)
- b. Subsurface mixes. For subsurface mixes, limit removal and replacement to the full lane width and no less than 10 ft. (3 m) long and as approved by the Engineer.
- i. Surface Mixes. For surface mixes, ensure that removal and replacement is not less than the full width of the affected lane and no less than the length of the affected areas as determined by the Engineer.

Surface tolerance requirements apply to the corrected areas for both subsurface and surface mixes.

400.3.07 Contractor Warranty and Maintenance

A. Contractor's Record

Maintain a dated, written record of the most recent plant calibration. Keep this record available for the Engineer's inspection at all times. Maintain records in the form of:

- Graphs
- Tables
- Charts
- Mechanically prepared data

400.4 Measurement

Thickness and spread rate tolerances for the various mixtures are specified in [Subsection 400.4.A.2.b, Table 11, Thickness and Spread Rate Tolerance at Any Given Location](#). These tolerances are applied as outlined below:

A. Hot Mix Asphaltic Concrete Paid for by Weight

1. Plans Designate a Spread Rate

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- a. Thickness Determinations. Thickness determinations are not required when the Plans designate a spread rate per square yard (meter).

If the spread rate exceeds the upper limits outlined in the [Subsection 400.4.A.2.b, Table 11, “Thickness and Spread Rate Tolerance at Any Given Location”](#), the mix in excess will not be paid for.

If the rate of spread is less than the lower limit, correct the deficient course by overlaying the entire lot.

The mixture used for correcting deficient areas is paid for at the Contract Unit Price of the course being corrected and is subject to the [Mixture Acceptance Schedule—Table 9 or 10](#).

- b. Recalculate the Total Spread Rate. After the deficient hot mix course has been corrected, the total spread rate for that lot is recalculated, and mix in excess of the upper tolerance limit as outlined in the [Subsection 400.4.A.2.b, Table 11, “Thickness and Spread Rate Tolerance at Any Given Location”](#) is not paid for.

The quantity of material placed on irregular areas such as driveways, turnouts, intersections, feather edge section, etc., is deducted from the final spread determination for each lot.

2. Plans Designate Thickness

If the average thickness exceeds the tolerances specified in the [Subsection 400.4.A.2.b, Table 11, “Thickness and Spread Rate Tolerance at Any Given Location”](#), the Engineer shall take cores to determine the area of excess thickness. Excess quantity will not be paid for.

If the average thickness is deficient by more than the tolerances specified in the Thickness and Spread Rate Tolerance at Any Given Location table below, the Engineer shall take additional cores to determine the area of deficient thickness. Correct areas with thickness deficiencies as follows:

- a. Overlay the deficient area with the same mixture type being corrected or with an approved surface mixture. The overlay shall extend for a minimum of 300 ft (90 m) for the full width of the course.
- b. Ensure that the corrected surface course complies with [Subsection 400.3.06.C.1, “Visual and Straightedge Inspection.”](#) The mixture required to correct a deficient area is paid for at the Contract Unit Price of the course being corrected.

The quantity of the additional mixture shall not exceed the required calculated quantity used to increase the average thickness of the overlaid section to the maximum tolerance allowed under the following table.

Table 11—Thickness and Spread Rate Tolerance at Any Given Location

Course	Thickness Specified	Spread Rate Specified
Asphaltic concrete base course	± 0.5 in (±13 mm)	+40 lbs, -50 lbs (+20 kg, -30 kg)
Intermediate and/or wearing course	± 0.25 in (± 6 mm)	+20 lbs, -25 lbs (+10 kg, -15 kg)
Overall of any combination of 1 and 2	± 0.5 in (±13 mm)	+40 lbs, -50 lbs (+20 kg, -30 kg)

Note: Thickness and spread rate tolerances are provided to allow normal variations within a given lot. Do not continuously operate at a thickness of spread rate not specified.

When the Plans specify a thickness, the Engineer may take as many cores as necessary to determine the average thickness of the intermediate or surface course. The Engineer shall take a minimum of one core per 1,000 ft (300 m) per two lanes of roadway. Thickness will be determined by average measurements of each core according to [GDT 42](#).

If the average exceeds the tolerances specified in the [Subsection 400.4.A.2.b, Table 11, “Thickness and Spread Rate Tolerance at Any Given Location”](#), additional cores will be taken to determine the area of excess thickness and excess tonnage will not be paid for.

B. Hot Mix Asphaltic Concrete Paid for by Square Yard (Meter)

1. The thickness of the base course or the intermediate or surface course will be determined by the Department by cutting cores and the thickness will be determined by averaging the measurements of each core.

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2. If any measurement is deficient in thickness more than the tolerances given in the table above, additional cores will be taken by the Department to determine the area of thickness deficiency. Correct thickness deficiency areas as follows:
 - a. Overlay the deficient area with the same type mixtures being corrected or with surface mixture. Extend the overlay at least 300 ft (90 m) for the full width of the course.
 - b. Ensure that the corrected surface course complies with [Subsection 400.3.06.C.1, Visual and Straightedge Inspection](#) .
 - c. The mixture is subject to the [Mixture Acceptance Schedule—Table 9 or 10](#).
3. No extra payment is made for mixtures used for correction.
4. No extra payment is made for thickness in excess of that specified.

C. Asphaltic Concrete

Hot mix asphaltic concrete, complete in place and accepted, is measured in tons (megagrams) or square yards (meters) as indicated in the Proposal. If payment is by the ton (megagram), the actual weight is determined by weighing each loaded vehicle on the required motor truck scale as the material is hauled to the roadway, or by using recorded weights if a digital recording device is used.

The weight measured includes all materials. No deductions are made for the weight of the individual ingredients. The actual weight is the pay weight except when the aggregates used have a combined bulk specific gravity greater than 2.75. In this case the pay weight is determined according to the following formula:

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

Where:

T1	Pay weight, tonnage (Mg)
T=	Actual weight
% AC=	Percent asphalt cement by weight of total mixture
% Aggregate =	Percent aggregate by weight of total mixture
Combined Bulk Sp. Gr.=	Calculated combined bulk specific gravity of various mineral aggregates used in the mixture
% Y=	Percent hydrated lime by weight of mineral aggregate

D. Bituminous Material

Bituminous material is not measured for separate payment.

E. Hydrated Lime

When hydrated lime is used as an anti-stripping additive, it is not measured for separate payment.

F. Field Laboratory

The field laboratory required in this Specification is not measured for separate payment.

G. Asphaltic Concrete Leveling

Payment of hot mix asphaltic concrete leveling, regardless of the type mix, is full compensation for furnishing materials, bituminous materials, and hydrated lime (when required) for patching and repair of minor defects, surface preparation, cleaning, hauling, mixing, spreading, and rolling.

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Mixture for leveling courses is subject to the acceptance schedule as stated in [Subsection 400.3.06.A](#) and [Subsection 400.3.06.B](#).

H. Asphaltic Concrete Patching

Hot mix asphaltic concrete patching, regardless of the type mix, is paid for at the Contract Unit Price per ton (Megagram), complete in place and accepted. Payment is full compensation for:

- Furnishing materials such as bituminous material and hydrated lime (when required)
- Preparing surface to be patched
- Cutting areas to be patched, trimmed, and cleaned
- Hauling, mixing, placing, and compacting the materials

400.4.01 Limits

When the asphaltic concrete is paid for by the square yard (meter) and multiple lifts are used, the number and thickness of the lifts are subject to the Engineer's approval and are used to prorate the pay factor for the affected roadway section.

400.5 Payment

Hot mix asphaltic concrete of the various types are paid for at the Contract Unit Price per ton (megagram) or per square yard (meter). Payment is full compensation for furnishing and placing materials including asphalt cement, hydrated lime when required, approved additives, and for cleaning and repairing, preparing surfaces, hauling, mixing, spreading, rolling, and performing other operations to complete the Contract Item.

Payment will be made under:

Item No. 400	Asphaltic concrete <u>type</u> Superpave, <u>group-blend</u> , Including polymer-modified bituminous materials and hydrated lime	Per ton (megagram)
Item No. 400	Asphaltic concrete <u>type</u> , Superpave, <u>group-blend</u> , including bituminous materials and hydrated lime	Per ton (megagram)
Item No. 400	Asphaltic concrete <u>type</u> Superpave, <u>group-blend</u> , Including bituminous materials, Gilsonite modifier, and hydrated lime	Per ton (megagram)

Item No. 400	<u> </u> inches asphaltic concrete, <u>type</u> Superpave, <u>group-blend</u> including bituminous materials, Gilsonite modifier and hydrated lime	Per square yard (meter)
Item No. 400	Asphaltic concrete <u>type</u> Stone Matrix Asphalt, <u>group-blend</u> , including polymer-modified bituminous materials and hydrated lime	Per ton (megagram)
Item No. 400	Asphaltic concrete <u>type</u> OGFC, <u>group 2</u> only, including bituminous materials and hydrated lime	Per ton (megagram)
Item No. 400	Asphaltic concrete <u>type</u> OGFC, <u>group 2</u> only, including polymer-modified bituminous materials and hydrated lime	Per ton (megagram)
Item No. 400	Asphaltic concrete <u>type</u> Porous European Mix, <u>group 2</u> only, including polymer-modified bituminous materials and hydrated lime	Per ton (megagram)

400.5.01 Adjustments

A. Determine Lot Acceptance

The control sieves used in the mixture acceptance schedule for the various types of mix are indicated below:

Control Sieves Used in the Mixture Acceptance Schedule	
Asphaltic concrete 25 mm Superpave	1/2 in., No. 8 (12.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 19 mm Superpave	3/8 in., No. 8 (9.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 12.5 mm Superpave	3/8 in., No. 8 (9.5 mm, 2.36 mm) sieves and asphalt cement

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Control Sieves Used in the Mixture Acceptance Schedule	
Asphaltic concrete 9.5 mm Superpave	No. 4, No. 8 (4.75 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 4.75 mm Mix	No. 8 (2.36 mm) sieve and asphalt cement

The Department will perform the following tasks:

1. Determine the mean of the deviations from the job mix formula per test results per lot.
2. Determine this mean by averaging the actual numeric value of the individual deviations from the job mix formula; disregard whether the deviations are positive or negative amounts.

C. Calculate Pavement Mean Air Voids

The Department will determine the percent of maximum air voids for each lot by dividing the pavement mean air voids by the maximum pavement mean air voids acceptable.

D. Asphaltic Concrete For Temporary Detours

Hot mix asphaltic concrete placed on temporary detours not to remain in place as part of the permanent pavement does not require hydrated lime. Hot mix used for this purpose is paid for at an adjusted Contract Price. The payment for this item shall cover all cost of construction, maintenance and removal of all temporary mix. Hot mix asphaltic concrete placed as temporary mix shall meet requirements established in [Subsection 400.3.05.F](#).

Where the Contract Price of the asphaltic concrete for permanent pavement is let by the ton (megagram), the Contract Price for the asphaltic concrete placed on temporary detours is adjusted by subtracting \$0.75/ton (\$0.85/mg) of mix used.

Where the Contract price of the mix in the permanent pavement is based on the square yard (meter), obtain the adjusted price for the same mix used on the temporary detour by subtracting \$0.04/yd² (\$0.05/ m²) per 1-in (25-mm) plan depth.

Further price adjustments required in [Subsection 400.3.06. "Quality Acceptance."](#) are based on the appropriate adjusted Contract Price for mix used in the temporary detour work.

E. Determine Lot Payment

If the Engineer determines that the material is not acceptable to leave in place, remove and replace the materials at the Contractor's expense.

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

SPECIAL PROVISION

Section 828—Hot Mix Asphaltic Concrete Mixtures

Delete Section 828 and substitute the following:

828.1 General Description

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

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

828.1.01 Definitions

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

828.1.02 Related References

A. Standard Specifications

[Section 400-Hot Mix Asphaltic Concrete Construction](#)

[Section 800-Coarse Aggregate](#)

[Section 802-Aggregates for Asphaltic Concrete](#)

[Section 819-Fiber Stabilizing Additives](#)

[Section 820-Asphalt Cement](#)

[Section 831-Admixtures](#)

[Section 882-Lime](#)

[Section 883-Mineral Filler](#)

B. Referenced Documents

AASHTO R30

AASHTO R35

AASHTO T-321

AASHTO T 112

AASHTO T 209

AASHTO T 305

AASHTO T 312

AASHTO T-245

AASHTO TP63

[SOP-36](#)

[SOP-2](#)

[GDT 1](#)

[GDT 56](#)

[GDT 63](#)

[GDT 66](#)

[GDT 114](#)

[GDT 115](#)

[GDT 123](#)

[QPL 1](#)

[QPL 2](#)

[QPL 7](#)

[QPL 26](#)

[QPL 41](#)

[QPL 77](#)

[QPL 81](#)

828.2 Materials

A. Requirements

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

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

Pay Item Designation	Allowable Aggregate Groups
Group I or II	Group I, Group II, or Blend I
Group II only	Group II only
Blend I	Either 100% Group II material or a blend of Group I and Group II. Do not use Group I material for more than 60%, by weight, of the total aggregate nor more than 50%, by weight, of the coarse aggregate fraction.

7. For patching or leveling use Group I, Group II, or Blend I. Mix types for patching and leveling are specified in [Subsection 400.3.03.B](#).
8. Include lime (hydrated lime) from an approved source and meeting the requirements of [Section 882](#) in all paving courses except as otherwise provided in the Contract. For a list of approved sources of lime, see [QPL 41](#).
 - a. Add lime to each mixture at the rate prescribed in the approved mix design.
 - b. Ensure mix designs using only virgin aggregate include lime at a minimum rate of 1.00 % of the total dry aggregate weight. Ensure mix designs using RAP include lime at a minimum rate equal to 1.00 % of the virgin aggregate fraction plus 0.50 % of the aggregate in the RAP fraction.
 - c. Add more lime or add lime plus an approved Heat-Stable Anti-Stripping Additive that meets the requirements of [Section 831](#), if necessary to meet requirements for mixture properties, and pursuant to an approved mix design. However, the Department will not make additional payment for these materials. For a list of sources of Heat-Stable Anti-Stripping Additives, see [QPL 26](#).
 - d. Where specifically allowed in the contract on LARP, airport, and parking lot projects, an approved Heat-Stable Anti-Stripping Additive that meets the requirements of [Section 831](#) may be substituted for hydrated lime. Ensure the mix gradation is adjusted to replace the lime with an equivalent volume of fines passing the 0.075 mm sieve. Add Heat-Stable Anti-stripping Additive at a minimum rate of 0.5 percent of the asphalt cement portion.
9. Use performance grade PG 64-22 or PG 67-22 asphalt cement in all mix designs and mixtures except as follows:
 - a. The State Bituminous Construction Engineer will determine the performance grade to be used, based on Table 2 – Binders Selection Guideline for Reclaimed Asphalt Pavement (RAP) Mixtures, AASHTO M323 and laboratory testing results as required in [Section 828.2.B](#) for mixtures containing $\geq 25\%$ equivalent binder replacement for RAP/RAS mixtures.
 - b. Use only grade PG 76-22, excluding shoulder construction in the following mixes: all SMA, 12.5 mm PEM, 9.5 mm and 12.5 mm OGFC, 12.5 mm Superpave, on projects with ADT greater than 25,000; and in all mixtures for which polymer-modified asphalt is specified in the pay item.
10. Use of local sand is restricted as follows:
 - a. Do not place mixtures containing local sand on the traveled way of the mainline or ramps of the Interstate System. Mixtures with local sand may be used for shoulder construction on these facilities.
 - b. Ensure local sand will not constitute more than 20 % of the total aggregate weight of any mix design or production mix.
 - c. Subject to the above limits, 19 mm, 12.5 mm, and 9.5 mm Superpave mix designs and 4.75 mm mix designs containing local sand may be used on projects with a current ADT not exceeding 2,000.
 - d. 25 mm Superpave mix designs containing not more than 20 % local sand may be used on all facilities except the main line and ramps of the Interstate System.
 - e. Obtain local sand for use in asphalt mixtures from a source approved by the Department.
 - f. Approval of local sand sources: The Department will sample, test, and approve sources of local sand. Local sand shall not contain more than 7.0 % clay by weight and shall be free of foreign substances, roots, twigs, and other organic matter. Ensure sand is free of clay lumps, as determined by AASHTO T 112, and shall have a sand equivalent value exceeding 25%, as determined by [GDT 63](#).

B. Fabrication

1. Design procedures: For all Superpave and 4.75 mm mixes, ensure conformance with the Superpave System for Volumetric Design (AASHTO T 312 and AASHTO R30), as adapted in SOP-2. Ensure Superpave mixes are designed at a design gyration number (N_{des}) of 65 gyrations and initial gyration number (N_{ini}) of 6 gyrations. For 4.75 mm mixes, (N_{des}) shall be 50 gyrations, and (N_{ini}) shall be 6 gyrations. Open-graded mix designs will be designed in accordance with [GDT 114](#) by the Department. In all cases, the procedure for measuring Maximum Specific Gravity (G_{mm}) shall be AASHTO T 209. In addition to gradation and volumetric analysis, mix designs shall include the following performance tests, as applicable.
2. Performance Test:
 - a. Permeability test: Superpave and Stone Matrix mix designs shall include testing according to [GDT -1 Measurement of Water Permeability of Compacted Asphalt Paving Mixtures](#). Specimen air voids for this test shall be $6.0 \pm 1.0\%$. The average permeability of three specimens may not exceed 3.60 ft per day (125×10^{-5} cm per sec).
 - b. Moisture susceptibility test: Mix designs of all types except open-graded surface mixes shall include testing for moisture susceptibility according to [GDT 66](#). Specimen air voids for this test shall be $7.0 \pm 1.0\%$ for all mixes excluding Stone Matrix mixes. Specimen air voids for this test shall be $6.0 \pm 1.0\%$ for Stone Matrix

mixes. The minimum tensile splitting ratio is 0.80, except that a tensile splitting ratio of no less than 0.70 may be acceptable if all individual strength values exceed 100 psi (690 kPa). Average splitting strength of the three conditioned and three controlled samples shall be not less than 60 psi (415 kPa) for either group. Retention of coating as determined by [GDT 56](#) shall be not less than 95%.

- c. Rutting susceptibility test: Mix designs of all types except Open-graded Surface Mixes (OGFC and PEM), and mixtures designed exclusively for trench widening shall include testing according to [GDT 115 or AASHTO TP63](#). Design limits for this test are as follows: Specimen air voids for this test shall be $6.0 \pm 1.0\%$ for all mix types. Testing temperature shall be 64°C (147°F) for all mix types except 19 mm and 25 mm Superpave mixes, which shall be tested at 49°C (120°F). Maximum deformation shall be 5.0 mm for all mixes except 4.75 mm mix, 9.5 mm Type I and 9.5 mm Type II Superpave mixes. Maximum deformation for the 9.5 mm Type II Superpave mix shall be 6.0 mm at 64°C (147°F) and 8.0 mm at 64°C (147°F) for the 4.75 mm and 9.5 mm Type I Superpave mix.
- d. Fatigue testing: The Department may verify dense-graded mix designs by fatigue testing according to AASHTO T 321 or other procedure approved by the Department.
- e. Hamburg Wheel-Tracking Test: The Department may verify Warm Mix Asphalt dense-graded mix designs or mix designs incorporating Polyphosphoric Acid (PPA) modified binders by Hamburg Wheel-tracking testing according to AASHTO T 324.

C. Acceptance

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

D. Materials Warranty

See General Provisions 101 through 150.

828.2.01 Open-Graded Surface Mixtures

A. Requirements

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

Sieve Size	Mixture Control Tolerance, %	Design Gradation Limits, % Passing		
		9.5 mm OGFC	12.5 mm OGFC	12.5 mm PEM
3/4 in (19 mm) sieve	±0.0		100*	100*
1/2 in (12.5 mm) sieve	±6.1	100*	85-100	80-100
3/8 in (9.5 mm) sieve	±5.6	85-100	55-75	35-60
No. 4 (4.75 mm) sieve	±5.7	20-40	15-25	10-25
No. 8 (2.36 mm) sieve	±4.6	5-10	5-10	5-10
No. 200 (75 µm) sieve	±2.0	2-4	2-4	1-4
Range for % AC	±0.4	6.0-7.25	5.75-7.25	5.5-7.0
Class of stone (Section 800)		"A" only	"A" only	"A" only
Drain-down (AASHTO T305), %		<0.3	<0.3	<0.3

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

1. In 12.5 mm and 9.5 mm OGFC and 12.5 mm PEM mixes, use only PG 76-22 asphalt cement (specified in [Section 820](#)).
2. All OGFC and PEM mixes shall include a stabilizing fiber of the type (cellulose or mineral) specified in the mix design and meeting the requirements of [Section 819](#). The dosage rate shall be as specified in the mix design and shall be sufficient to prevent drain-down exceeding the above tolerance.

B. Fabrication

See Section 400.

828.2.02 Stone Matrix Asphalt Mixtures

A. Requirements

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

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		9.5 mm SMA	12.5 mm SMA	19 mm SMA
1- in (25 mm) sieve	±0.0			100*
3/4 in (19 mm) sieve	±7.0	100*	100*	90-100
1/2 in (12.5 mm) sieve	±6.1	98-100**	85-100	44-70
3/8 in (9.5 mm) sieve	±5.6	70-100	50-75	25-60
No. 4 (4.75 mm) sieve	±5.7	28-50	20-28	20-28
No. 8 (2.36) mm sieve	±4.6	15-30	16-24	15-22
No. 50 (300 µm) sieve	±3.8	10-17	10-20	10-20
No. 200 (75 µm) sieve	±2.0	8-13	8-12	8-12
Range for % AC (Note 1)	±0.4 (Note 2)	6.0-7.5	5.8-7.5	5.5-7.5
Design optimum air voids (%)		3.5 ±0.5	3.5 ±0.5	3.5 ±0.5
% aggregate voids filled with AC (VFA)		70-90	70-90	70-90
Tensile splitting ratio after freeze-thaw cycle GDT-66		80%	80%	80%
Drain-down (AASHTO T305), %		<0.3	<0.3	<0.3

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

**Mixture control tolerance shall be ± 2.0% for this sieve for 9.5 mm SMA mixes placed at spread rates greater than 135 lb/yd². For 9.5 mm SMA mixes placed at spread rates of 135 lb/yd² or less, 100 % passing is required on this sieve.

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

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

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

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

B. Fabrication

See [Section 400](#).

828.2.03 Superpave Asphalt Concrete Mixtures

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

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

1. Gradation limits for Superpave mixtures are as follows:

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

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

** Mixture control tolerance shall be ± 10.0% for this sieve for 25 mm Superpave.

***Mixture control tolerance shall be ± 8.0% for this sieve for 19 mm Superpave.

****Mixture control tolerance shall be ± 2.0% for this sieve for 12.5 mm and 9.5 mm mixes.

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

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

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

2. Volumetric limits are as follows:

Design Parameter	Mix Type	Limits
% of Max. Specific Gravity (Gmm) at design gyrations, (Ndes)	All	96%
% Gmm at the initial number of gyrations, Ni	All	91.5% maximum
	9.5 mm Type I	Min. 72; Max. 80

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

*Superpave Mixtures approved prior to January 31, 2012, may be grandfathered in adjusted to meet Minimum Film Thickness requirement by mixture adjustments made by the State Bituminous Construction Engineer.

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

1. Surface Layers for parking facilities:

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

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

****Mixture control tolerance shall be ± 2.0% for this sieve for 12.5 mm and 9.5 mm mixes.

2. Subsurface Layers for parking facilities:

Sieve Size	Mixture Control Tolerance	Design Gradation Limits, Percent Passing		
		12.5 mm Superpave	19 mm Superpave	25 mm Superpave
				100*
1- in (25.0 mm) sieve	± 8.0	100*	100*	90-100

3/4 in (19.0 mm) sieve	±8.0**	98-100****	90-100	55-89**
1/2 in (12.5 mm) sieve	±6.0***	90-100	60-89***	50-70
3/8 in (9.5 mm) sieve	±5.6	70-89	55-75	
No. 8 (2.36 mm) sieve	±4.6	38-46	32-36	30-36
No. 200 (75 µm) sieve	±2.0	4.5-7.0	4.0-6.0	3.5-6.0
Range for Total AC	+ 0.4	5.00 - 6.25	4.25 - 5.50	4.00 - 5.25

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

**Mixture control tolerance shall be ±10.0% for this sieve for 25 mm Superpave mixes.

***Mixture control tolerance shall be ±8.0% for this sieve for 19 mm Superpave mixes.

****Mixture control tolerance shall be ±2.0% for this sieve for 12.5 mm and 9.5 mm Superpave mixes.

3. Volumetric limits for parking facilities are as follows:

Design Parameter	Mix Type	Limits
% of Max. Specific Gravity (Gmm) at design gyrations, Ndes)	All	96%
% Gmm at the initial number of gyrations, Ni	All	91.5 % maximum
% voids filled with asphalt (VFA) at Ndes	9.5 mm Type I	Min. 72; Max. 80
	9.5 Type II and 12.5 mm	Min. 72; Max. 78
	19 and 25 mm	Min. 71; Max 76
Fines to effective asphalt binder ration (F/Pbe)	9.5 mm Type I	0.6 to 1.4
	All other types	0.8 to 1.6
Minimum Film Thickness (microns)*	4.75 mm	> 6.00
	All other types	> 7.00
Minimum % Voids in Mineral Aggregate (VMA) Note: VMA shall be calculated using the effective specific gravity of the aggregate (Gse). See SOP-2	25 mm	13.0
	19 mm	14.0
	12.5 mm	15.0
	9.5 mm Types I, II	16.0

*Mixtures approved prior January 31, 2012, may be grandfathered in adjusted to meet Minimum Film Thickness requirement by mixture adjustments made by the State Bituminous Construction Engineer.

C. Fabrication

See [Section 400](#).

828.2.04 Fine-Graded Mixtures

A. Requirements

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

ASPHALTIC CONCRETE - 4.75 mm Mix		
Sieve Size	Mixture Control Tolerance	Design Gradation Limits, % passing
1/2 in (12.5 mm) sieve*	±0.0	100*
3/8 in (9.5 mm) sieve	±5.6	90-100
No. 4 (4.75 mm) sieve	±5.7	75-95

No. 8 (2.36 mm) sieve	±4.6	60-65
No. 50 (300 µm) sieve	±3.8	20-50
No. 200 (75 µm) sieve	±2.0	4-12
Range for % AC	±0.4	6.00 – 7.50
Design optimum air voids (%)		4.0 – 7.0
% Aggregate voids filled with AC		60 - 80
Minimum Film Thickness (microns)**		> 6.00

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

** 4.75 mm Mixtures approved prior January 31, 2012, may be grandfathered in adjusted to meet Minimum Film Thickness requirement by mixture adjustments made by the State Bituminous Construction Engineer.

B. Fabrication

See [Section 400](#).

C. Acceptance

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

D. Materials Warranty

See General Provisions 101 through 150.

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SPECIAL PROVISION

Section 882—Lime

Delete Section 882 and substitute the following:

882.1 General Description

This Section includes the requirements for agricultural lime; lime for subbase and subgrade stabilization; and lime for asphaltic concrete.

882.1.01 Related References

A. Specifications

General Provisions 101 through 150.

[Section 163 – Miscellaneous Erosion Control Items](#)

[Section 700 – Grassing](#)

[GSP 18](#)

B. Referenced Documents

AASHTO M 303

ASTM C 25

ASTM C 110

ASTM C 977

Liming Materials Act of 1996

882.2 Materials

882.2.01 Agricultural Lime

A. Requirements

Apply agricultural lime use rates made of ground or pelletized dolomitic limestone based on recommendations from a public or private Soil Laboratory that participates in a national proficiency testing program. Proof of testing is the responsibility of the Contractor. Provide a soil test report to the Engineer prior to application. Take soil test samples in accordance with [GSP 18 Sampling Testing and Inspection Specifications](#). Agricultural lime will meet the following requirements:

Requirements	Percent by Weight
Calcium Carbonates Equivalent, min.	85
Elemental magnesium derived from magnesium carbonate, min.	6
Passing No. 10 (2.00 mm) sieve, min	90
Passing No. 100 (150 µm) sieve, min	25

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

The Department will accept agricultural lime that meets the above requirements.

D. Materials Warranty

General Provisions 101 through 150.

882.2.02 Lime for Subbase and Sub-Grade Stabilization

A. Requirements

Use either a commercial dry hydrated lime or a commercial granular quicklime for soil stabilization.

1. Hydrated Lime: Use hydrated lime that meets the requirements of ASTM C 977, except use lime that has at least 85 percent by weight passing the No. 200 (75 μ m) sieve.
2. Quicklime: Use quicklime that meets the requirements of ASTM C 977, except use lime that has 100 percent by weight passing the 3/8-inch (9.5 mm) sieve. If slurry is to be made from slaking quicklime, use quicklime containing at least 94 percent total calcium oxide and magnesium oxide (CaO + MgO), and at least 90 percent total available calcium oxide (CaO).
 - a. Furnish certified test reports with each shipment of lime attesting that the lime meets the requirements of the Specification. However, the Engineer may inspect, test, and reject the material at any time.
 - b. Lime from more than one source or more than one type on the same Project may be used, but do not mix lime of different types or from different sources.
 - c. Protect the lime from exposure until used. Ensure that the lime is dry enough to flow freely when handled.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test the hydrated and quicklime used for soil stabilization according to ASTM C 977.

D. Materials Warranty

General Provisions 101 through 150.

882.2.03 Lime for Asphaltic Concrete

A. Requirements

Use hydrated lime that meets the chemical and physical properties of AASHTO M 303, Type I.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

1. Run the chemical analysis of hydrated lime used in asphaltic concrete according to ASTM C 25.
2. Test the physical properties of the hydrated lime according to the residue test in ASTM C 110.

NOTE: QPL 41 for lime is used in asphaltic concrete only.

3. See QPL 41 for acceptable hydrated lime that meets the requirements of this Specification.

D. Materials Warranty

General Provisions 101 through 150.

Section 301—Soil-Cement Construction

301.1 General Description

This work includes constructing a base, subbase, or shoulder course composed of soil, or a mixture of soils, and stabilizing with Portland cement. Construct according to these Specifications and conform to the lines, grades, and typical sections shown on the Plans or established by the Engineer.

The provisions in [Section 300](#) apply to this Item.

301.1.01 Definitions

General Provisions 101 through 150.

301.1.02 Related References

A. Standard Specifications

[Section 109—Measurement and Payment](#)

[Section 205—Roadway Excavation](#)

[Section 300—General Specifications for Base and Subbase Courses](#)

[Section 412—Bituminous Prime](#)

[Section 814—Soil Base Materials](#)

[Section 821—Cutback Asphalt](#)

[Section 830—Portland Cement](#)

[Section 831—Admixtures](#)

[Section 880—Water](#)

B. Referenced Documents

[GDT 19](#)

[GDT 20](#)

[GDT 21](#)

[GDT 59](#)

[GDT 67](#)

[GDT 86](#)

AASHTO T 134

301.1.03 Submittals

Before constructing a test section, submit a Construction Work Plan to the Engineer for approval.

Section 301—Soil-Cement Construction

301.2 Materials

Ensure that materials meet the requirements of the following Specifications:

Material	Specification
Soil-Cement Material	Subsection 814.2.02
Portland cement	Subsection 830.2.01
Water	Subsection 880.2.01
Fly Ash and Slag	Subsection 831.2.03
Cutback Asphalt RC-30, RC-70, RC-250, or MC-30, MC-70, MC-250	Subsection 821.2.01
Blotter Material (Sand)	Subsection 412.3.05.G.3

When fly ash or slag is specified as an admixture in the soil-cement base, use fly ash or slag that meets the physical requirements of [Subsection 831.2.03](#).

301.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

301.3 Construction Requirements

A. General

1. Methods

This Specification is based on the mixed-in-place and central plant mix methods. Supplement in-place or plant mixing with plow, harrow, or blade mixing when the Engineer permits.

When the Plans and Proposal indicate that the material will be paid by the ton (megagram), use the central plant mixing method. If the work will be paid by the square yard (meter), the Plans and Proposal will indicate the required thickness and the mixing method to be used.

When payment is made by the square yard (meter) and a roadway mixer is used, the Engineer will determine if the materials in the roadbed are suitable for use. If the Engineer approves, use materials in the roadbed without payment, except for the payment per cubic yard (meter) provided in [Subsection 301.5.A, "Soil-Cement Material"](#) below.

If it is necessary to add other materials to those in the roadbed to meet the desired thickness or to modify the physical properties of the existing materials, these materials will be measured and paid by the cubic yard (meter).

2. Fly Ash and Slag

Unless otherwise specified in the Contract, fly ash and slag shall be used only in central plant mix construction. Apply fly ash and slag to the mix according to the procedures for cement established in [Subsection 300.3.02.A, "Central Mix Plants"](#) and [Subsection 301.3.05.A.4, "Cement."](#)

3. Weather Limitations

Ensure the following:

Section 301—Soil-Cement Construction

Mix and place cement-treated base or subbase only when the weather permits the course to be finished without interruption in the time specified.

Mix and place materials only when the moisture content of the soil to be used in the mixture meets the limits specified in this Subsection.

Begin mixing only when the air temperature is above 40 °F (4 °C) in the shade, and rising.

Ensure that the temperature of the soil to be used in the mixture and the subbase or subgrade is above 50 °F (10 °C).

4. Interruption of Work

If the work is interrupted for more than two hours after cement has been added, or if rain increases the cement's moisture content outside the limits specified in [Subsection 301.3.05.B.7.c, "Moisture Control,"](#) remove and replace the affected portion at no additional cost to the Department.

301.3.01 Personnel

Ensure that only experienced and capable personnel operate equipment.

301.3.02 Equipment

Use equipment that meets the requirements of [Subsection 300.3.02](#) and this subsection. The Engineer will approve equipment type and condition before construction begins.

Provide sufficient equipment in good working condition to do the following:

- Allow continuous prosecution of the Work.
- Mix, place, and compact within the required time limits.

Use any applicable equipment specified in [Subsection 412.3.02, "Equipment"](#) for bituminous prime.

301.3.03 Preparation

A. Subgrade or Subbase Preparation

Prepare the subgrade or subbase as specified in [Subsection 300.3.03.C, "Preparing the Subgrade"](#) or [Subsection 300.3.03.D, "Preparing the Subbase"](#) if the base, subbase, or shoulders will be composed entirely of new materials, whether mixed-in-place or central plant mixed. Place materials only on dry, thawed subgrade or subbase.

301.3.04 Fabrication

General Provisions 101 through 150.

301.3.05 Construction

A. In-Place Mixing

1. Soil

If additional soil is needed on the roadbed, place and spread the soil uniformly to the proper depth to obtain the specified thickness.

2. Pulverization

Section 301—Soil-Cement Construction

Pulverize the roadbed materials as follows:

- a. Loosen and pulverize roadbed materials to the width and depth to be stabilized without disturbing or damaging the underlying subgrade.
- a. Continue pulverizing until 100 percent of roadbed material passes through a 1-1/2 in (37.5 mm) sieve, and until at least 80 percent of the soil, excluding any stone or gravel, passes through a No. 4 (4.75 mm) sieve.
- b. Add water to assist pulverization if necessary.
- c. Remove all roots, sod, and rocks that exceed 3 in (75 mm) in diameter.
- d. Remove all other harmful materials.

3. Moisture Adjustments

Immediately before spreading cement, adjust the moisture content of the in-place material so it will stabilize to within 100 to 120 percent of optimum moisture (amount of moisture in the mixture at maximum dry density).

4. Cement

Spread cement as follows:

- a. Uniformly spread the required amount of Portland cement with a cyclone-type mechanical spreader or its equivalent.
- b. Apply the Portland cement at a rate that ensures the pounds spread are within ± 10 percent of the amount specified. Furnish a square-yard cloth, scales and personnel for checking the spread rate of cement placed.
- c. Apply cement on soils with a moisture content less than 120 percent of optimum.
- d. Apply cement on days when wind will not interfere with spreading.
- e. If the cement content is below the 10 percent limit in the mixing area, add additional cement to bring the affected area within the tolerance specified and recalibrate the mechanical spreader's spread rate. If the cement content is more than the 10 percent limit in the mixing area, the excess quantity will be deducted from the Contractor's pay for cement.
- f. Regulate operations to limit the application of cement to sections small enough so that all of the compacting and finishing operations specified in [Subsection 301.3.05.B.7, "Compacting and Finishing"](#) can be completed within the required time limits.
- g. Pass only spreading and mixing equipment over the spread cement. Operate this equipment so that it does not displace cement.
- h. Replace damaged cement at no additional cost the Department when damage is caused by:
 - Hydration due to rain, before or during mixing operations
 - Spreading procedures contrary to the requirements mentioned above
 - Displacement by the Contractor's equipment or other traffic

5. Mixing

Mix the material as follows:

Section 301—Soil-Cement Construction

- a. Uniformly windrow the material if the mixing plant requires it. Otherwise, shape the material to the proper line, grade, and cross-section before mixing.
- b. Mix the material according to either roadmix method in [Subsection 301.3.05.A.6, "Road Methods."](#)
- c. Begin mixing as soon as practical after the cement is spread, and continue until a homogeneous and uniform mixture is produced. If the equipment does not produce a homogeneous and uniform mixture meeting these Specifications, make any necessary changes to meet the Engineer's requirements.

6. Road Methods

a. Multiple Pass Mixing

Perform multiple pass mixing as follows:

- 1) After spreading the cement, mix it with the material to be treated.
- 2) Ensure that the material has been adjusted for moisture as stated in [Subsection 301.3.05.B.7.c, "Moisture Control."](#)
- 3) Continue mixing with successive passes until a uniform mixture of cement and soil, or soil-aggregate is obtained.
- 4) Immediately after the preliminary mixing of cement and soil or soil-aggregate, add water as needed to maintain or bring the mixture to within the moisture requirements of [Subsection 301.3.05.B.7.c, "Moisture Control."](#)
- 5) Uniformly mix the additional water to incorporate it into the full depth of the mixture.

b. Traveling Plant Mixing

Perform traveling plant mixing as follows:

- 1) After spreading the cement, mix it with an approved traveling plant mixer.
- 2) Ensure that the mixer picks up the full depth of material from the windrow on the roadbed onto the bottom shell or pan.
- 3) Mix at a speed that ensures a uniform mixture of soil, cement, and water.
- 4) Apply water through a water-metering device on the plant to uniformly distribute the proper amount of water to the loose material on the shell or pan. Distribute the water so that cement balls do not form.
- 5) Continue to mix the cement and water so that all material to be treated is mixed at once.
- 6) Ensure that there is enough mixture to produce, after final compaction, a course within allowable tolerances.

7. Compacting and Finishing

Compact and finish according to [Subsection 301.3.05.B.7, "Compacting and Finishing"](#).

B. Central Plant Mixing

1. Soil

Do the following:

Section 301—Soil-Cement Construction

- a. Before introducing any soil into the mixer, pulverize it until 100 percent passes a 1-1/2 in (37.5 mm) sieve.
 - b. Ensure that at least 80 percent of the soil, excluding any stone or gravel, passes through a No. 4 (4.75 mm) sieve.
 - c. Have enough stockpile material meeting the requirements of [Subsection 300.3.05.B, "Mining And Mixing In A Pit"](#) for at least one day of base construction before operations begin.
2. Cement
- Do the following:
- a. Measure cement by weight.
Uniformly add cement into the mixture. The cement incorporated, per ton (megagram) of soil, shall be within ± 5 percent of the amount prescribed by the Engineer.
 - b. Perform cement checks that compare the actual percent cement in the mixture with the required percent cement specified in the approved Mix Design for the Project on each of the first two tankers supplying cement to the plant. If these checks are within the specified tolerance, one cement check per day will be required.
 - c. Perform and make available to the Engineer a minimum of four daily comparison checks between the certified scales and the plant computer to ensure the proper percentage of cement is being incorporated into the mixture between cement checks.
 - d. When a cement check is out of the specified tolerance, at least two, passing one-tanker checks, are required before returning to a one cement check per day basis. When three consecutive cement checks fail to meet the specified tolerance, discontinue soil-cement plant production. Correct the problem, and recalibrate the plant as specified in [Subsection 300.3.06.A "Monitoring Quality Control"](#) before resuming the work.
 - e. When the cement content exceeds the specified tolerance, the Department will deduct the excess cement from the Contractor's pay for cement. When the cement content does not meet the specified tolerance, the Engineer will evaluate the strength of the affected area after 7 days.
 - f. Correct any areas of base with deficient strength as specified in the Strength Correction Chart at no additional cost to the Department, regardless of the percent of compaction. This correction also applies to the test section described in [Subsection 301.3.05.B.7.a, "Test Section."](#)
 - g. Quantities of cement used in calibrating the plant will also be deducted from the Contractor's pay for cement.
3. Mixing
- Do the following:
- a. Measure proportions of soil, cement, and water separately and accurately before mixing.
 - b. Charge all materials into the mixer together. Begin mixing immediately.
 - c. Mix until a homogeneous and uniform mixture is produced. If the final blend of materials is not homogeneously mixed or does not meet the moisture range specified in [Subsection 301.3.05.B.7.c,](#)

Section 301—Soil-Cement Construction

[“Moisture Control,”](#) cease plant operations until corrections are made in the plant or to the materials.

4. Hauling

Do the following:

- a. Deliver soil-cement material to the Project.
- b. Spread soil-cement material so that compaction can begin within 45 minutes after the soil, cement, and water have been charged into the mixer.
- c. Protect the mixture in transit by using a securely fastened waterproof cover large enough to extend down over the sides and the end of the bed of each haul vehicle.

5. Spreading

Spread the soil-cement mixture as follows:

- a. Use an approved mixture spreader as specified in [Subsection 300.3.02.D, “Mixture Spreader”](#) to obtain the specified thickness. Spread the mixture the full width of the area to be covered.
- b. Ensure that trucks and other construction equipment, including motor graders, do not travel over the material until compaction equipment has made initial passes over the mixture.
- c. Ensure that less than 30 minutes elapse between the placement of cement-treated material in adjacent lanes at any location, unless longitudinal joints are specified.

6. Thickness of Course

Compact the soil-cement base to a maximum thickness of 8 in (200 mm). Place the full thickness in one course only and compact as specified in [Subsection 301.3.05.B.7, “Compacting and Finishing”](#) below.

7. Compacting and Finishing

a. Test Section

Construct a test section as follows:

- 1) Use the first section of each constructed soil-cement base course as a test section.
- 2) Use a test section between 350 ft (100 m) and 500 ft (150 m) long for the designated width.
- 3) Before constructing a test section, submit a Construction Work Plan to the Engineer for approval. The Construction Work Plan must indicate proposed equipment and compaction procedures.
- 4) If the Construction Work Plan is approved, the Engineer will evaluate the Work Plan during test section construction. The Engineer will evaluate compaction, moisture, homogeneity of mixture, thickness of course, and laminations or compaction planes (scabbing).
- 5) If the Engineer determines that the Work Plan is not satisfactory, revise the compaction procedure and augment or replace equipment, as necessary, to complete work according to the Specifications.

b. Time Limits

Observe the following time limits:

- 1) Begin compaction within 45 minutes of the time water is added to the soil-cement mixture.

Section 301—Soil-Cement Construction

- 2) Complete compaction within 2 hours.
 - 3) Complete all operations in four hours, from adding cement to finishing the surface.
- c. Moisture Control
- Control moisture as follows:
- 1) During compaction, ensure a uniform moisture content of the mixture that is between 100 and 120 percent of the optimum moisture content.
 - 2) If the moisture content exceeds the tolerance at any time, cease operations immediately and make the adjustments necessary to bring the moisture content within tolerance.
 - 3) Do not use materials that “pump” under construction traffic, regardless of moisture content.
- d. Additional Compaction Requirements
- Perform the following additional compaction requirements:
- 1) Compact the soil-cement base, subbase, or shoulder course to at least 98 percent of the maximum dry density as determined in this Subsection.
 - 2) Do not perform vibratory compaction on materials more than 1-1/2 hours old, measured from the time the cement was added to the mixture.
 - 3) Uniformly compact the mixture and then fine-grade the surface to the line, grade, and cross-section shown on the Plans.
 - 4) Loosened material accumulated during this process is considered waste and is to be removed from the Project. Do not use additional layers of cement-treated materials in order to conform to cross-sectional or grade requirements.
 - 5) Use a pneumatic-tired roller to roll the finished surface until the surface is smooth, closely knit, free from cracks, and in conformance with the proper line, grade, and cross-section.
If the Engineer requires, lightly apply water to the finished surface to aid in sealing the completed base and preparing the surface for priming.
 - 6) At any place inaccessible to the roller, secure the required compaction with mechanical tampers approved by the Engineer. The same compaction requirements stated in the above Subsection apply.
- e. Additional Finishing Requirements
- Perform the following additional finishing requirements:
- 1) Use the automatically controlled screed equipment when required by [Subsection 300.3.03.H, “Fine Grading Machine”](#) of the Specifications. Control fine-grading for this requirement with sensing wires or a taut stringline. Furnish, install, and maintain this operation as a part of this Pay Item. When automatically controlled screed equipment is not required, fine-grading with motor graders is permitted.
 - 2) Fine-grade the surface of the cement-stabilized subbase for Portland cement concrete pavement or the cement-stabilized base for asphaltic concrete pavement.
 - 3) Fine-grade immediately after placement and compaction. Roll the subbase again according to this Subsection.

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8. Construction Joints

Form construction joints as follows:

- a. Form a straight transverse joint at the end of each day's construction or when the work is interrupted so that the material cannot be compacted within the time limit specified in this Subsection.
- b. Create the straight transverse joint by cutting back into the completed work to form a true vertical face free of loose or shattered material.
- c. Form the joint at least 2 ft (600 mm) from the point at which the strike-off plate of the spreader comes to rest at the end of the day's work, or at the point of interruption.
- d. Form a longitudinal joint as described above if the soil-cement mixture is placed over a large area where it is impractical to complete the full width during one day's work. Use the procedure for forming a straight transverse joint. Ensure that waste material is removed from the compacted base.

9. Prime

Apply bituminous prime to the finished surface of the base course at the end of each day or as soon as the Engineer determines it is practical. Apply prime only to an entirely moist surface.

If weather delays prime application, apply prime as soon as the surface moisture is adequate. Apply prime according to [Section 412](#).

10. Opening To Traffic

No traffic or equipment is permitted to operate on the finished base, subbase, or shoulders until the prime has hardened enough so that it does not pick up under traffic. For the first seven days after priming, traffic is restricted to lightweight vehicles such as passenger cars and pickup trucks. Vehicles with an average axle load exceeding 20,000 pounds (9 Mg) will not be allowed on the finished base or subbase at any time.

Correct any failures caused by traffic at no additional cost to the Department.

11. Protection of Course

Maintain the base, subbase, or shoulder course constructed under these Specifications until the Engineer determines that it has sufficiently cured and is ready to be covered with the next base or pavement course. Make repairs specified in Subsection [300.3.06.B, "Repairing Defects"](#) whenever defects appear. This preservation action does not relieve the Contractor of his responsibility to maintain The Work until final acceptance as specified in [Section 105](#).

301.3.06 Quality Acceptance

A. Compaction Tests

Test compaction as follows:

1. Determine the maximum dry density for central plant mix construction from representative samples of the material to be compacted according to [GDT19](#) (AASHTO T 134).
2. Determine the maximum dry density for mixed-in-place construction according to [GDT 19](#) or [GDT 67](#).

Section 301—Soil-Cement Construction

3. Determine the in-place density of the cement-stabilized base, subbase, or shoulders as soon as possible after compaction, but before the cement sets. Determine in-place density according to [GDT 20](#), [GDT 21](#), or [GDT 59](#).

B. Finished Surface Tests

Test the finished surface as follows:

1. Check the finished surface of the cement stabilized base, subbase, or shoulder course transversely.
2. Place a 15 ft (4.5 m) straightedge parallel to the centerline. Additionally, use one of the following tools:
 - A template, cut true to the required cross-section and set with a spirit level on nonsuperelevated 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 foot (6 mm) from the required readings.
4. Correct any variations from requirements immediately, as specified in [Subsection 300.3.05.D](#).

C. 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. Do the following:
- 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 by more than 1/2 in (13 mm) to the design thickness by using one of the following methods according to these Specifications:
 - Apply Asphaltic Concrete 9.5 mm Superpave.
 - Remove material to the full depth of the course and reconstruct to the required thickness.

No payment will be made for any 9.5 mm Superpave asphaltic concrete applied to correct deficiencies nor will payment be made for removing and reconstructing the deficient work.

3. Average Thickness

Average thickness is measured as follows:

- a. The average thickness per linear mile (kilometer) is determined from all measurements within the mile (kilometer) increments.
- b. The average thickness shall not exceed the specified thickness by more than 1/2 in (13 mm).

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- c. If the unit of payment is by the ton (megagram) or cubic yard (meter), and the average thickness for any mile (kilometer) increment exceeds the allowable 1/2 in (13 mm) tolerance, payment for the excess quantity in that increment will be deducted.
- 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, as applicable.

4. Strength

Do the following:

- a. Ensure that the strength of the soil-cement base, subbase, or shoulder course is at least 300 psi (2070 kPa), as determined from testing the unconfined compressive strength of cores from the completed course in accordance with [GDT 86](#).
- b. If a strength test falls below 300 psi (2070 kPa), do the following:
 - 1) Isolate the affected area by securing additional cores.
 - 2) Average all compressive strengths in the affected area to determine the basis for corrective work according to the table below or the Engineer's directions.

5. Compaction

The compaction requirement for soil-cement base, subbase, or shoulder course shall be a minimum of 98 percent of the specified theoretical density.

If any compaction test falls below 98 percent, core and retest the represented area for compressive strength determination after 7 days. If the strength is 300 psi (2070 kPa) or greater, no correction will be required. If the strength is less than 300 psi (2070 kPa), isolate the affected area by obtaining additional cores.

Average all compressive strengths in the affected area to determine the basis for corrective work, according to the following table.

Compressive Strength	Correction Work
300 psi (2070 kPa) or greater	None
200 psi (1380 kPa) to 299 psi (2069 kPa)	6 in & 8 in (150 mm & 200 mm) base—add 135 lbs/yd ² (75 kg/m ²) asphaltic concrete
Less than 200 psi (1380 kPa)	Reconstruct affected area

Ensure that a corrected area requiring asphaltic concrete is at least 150 ft (45 m) long.

Perform corrective work requiring asphaltic concrete or reconstruction at no additional cost to the Department.

301.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

Section 301—Soil-Cement Construction

301.4 Measurement

A. Soil-Cement Material

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

B. Soil-Cement Stabilized Base, Subbase, and Shoulder Course

Soil-cement stabilized base, subbase, and shoulder course are measured as follows:

1. The surface length is measured along the centerline when payment is specified by the square yard (meter). The width is specified on the Plans.
 - a. Irregular areas, such as turnouts and intersections, are measured by the square yard (meter).
 - b. Material is measured in tons (megagrams), as mixed and accepted, when payment is specified by the ton (megagram).

The actual weight is determined by weighing each loaded vehicle on a required motor truck scale as the material is hauled to the roadway. The actual weight will be the pay weight; no deduction will be made for the weight of the cement.

C. Portland Cement

Portland cement is measured by the ton (megagram).

D. Fly Ash and Slag

Fly ash and slag are measured by the ton (megagram) according to this Specification.

E. Prime

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

F. Unsuitable Material

Unsuitable materials that have been removed are measured and paid for according to the Earthwork Item in the Contract.

301.4.01 Limits

General Provisions 101 through 150.

301.5 Payment

A. Soil-Cement Material

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

Section 301—Soil-Cement Construction

B. Soil-Cement Stabilized Base, Subbase, and Shoulder Course

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

C. Pre-mixed Soil-Cement Stabilized Base, Subbase, and Shoulder Course

Where specified, pre-mixed soil-cement stabilized base, subbase, and shoulder course, in place and accepted, will be paid at the Contract Price per ton (megagram) or square yard (meter).

Payment will be full compensation for roadbed preparation; all materials except Portland cement; loading, hauling, and unloading; mixing; spreading; watering; rolling and shaping; and maintenance.

D. Portland Cement

Portland cement will be paid at the Contract Price per ton (megagram). Payment is full compensation for furnishing, hauling, and applying the material. Only Portland cement incorporated in the finished course will be paid; no payment will be made for cement used to correct defects due to the Contractor's negligence, faulty equipment, or plant calibration error.

E. Fly Ash and Slag

Fly ash and slag will be paid at the Contract Price per ton (megagram), according to this Subsection. Payment will be full compensation for hauling and applying the materials. Only fly ash and slag incorporated into the finished course will be paid; no payment will be made for fly ash and slag used to correct defects due to the Contractor's negligence, faulty equipment, or plant calibration error.

Payment will be made under:

Item No. 301	Soil-cement material—including material and haul	per cubic yard (meter)
Item No. 301	Soil-cement stabilized base, subbase, and shoulder course ___in (mm)	per square yard (meter)
Item No. 301	Pre-mixed soil-cement stabilized base, subbase, and shoulder course—including material and haul	per ton (megagram) or per square yard (meter)
Item No. 301	Pre-mixed soil-cement stabilized base and shoulder course—including material and haul	per ton (megagram) or per square yard (meter)
Item No. 301	Portland cement	per ton (megagram)
Item No. 301	Fly ash and slag	per ton (megagram)

301.5.01 Adjustments

General Provisions 101 through 150.

GEORGIA DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SUPPLEMENTAL SPECIFICATION

Section 402—Hot Mix Recycled Asphaltic Concrete

Delete Section 402 and substitute the following:

402.1 General Description

This work includes producing and placing hot mix recycled asphaltic concrete that incorporates reclaimed asphalt pavement (RAP), reclaimed asphalt shingles (RAS), virgin aggregate, hydrated lime, and neat asphalt cement.

402.1.01 Definitions

General Provisions 101 through 150.

402.1.02 Related References

A. Standard Specifications

[Section 400—Hot Mix Asphaltic Concrete Construction](#)

[Section 800—Coarse Aggregate](#)

[Section 828—Hot Mix Asphaltic Concrete Mixtures](#)

B. Referenced Documents

SOP 41 “Guidelines for RAP Stockpile Approval”

402.1.03 Submittals

A. Certified Weight Tickets

Notify the Engineer before removing RAP from a stockpile that belongs to the Department. Submit to the Engineer the certified weight tickets of materials removed from the stockpile.

B. Affidavit

Submit to the laboratory an affidavit stating the sources of stockpiled materials to be used on a State project. Include the following information in the letter:

- State project number
- Location from which the material was removed
- Approximate removal dates
- Mix types removed and the estimated quantity of each type in the stockpiles
- Other available information about the stockpiled material such as percentage of local sand in the RAP

Obtain specific approval from the laboratory to use RAP or RAS stockpiles.

Adhere to Guidelines for RAP Stockpile Approval.

402.2 Materials

A. RAP Material Composition

Use RAP materials from any of the following:

- Existing roadway
- Contractor's RAP stockpile that has been approved by the Department
- Department stockpile

NOTE: The location of Department RAP material stockpiles will be given on the Plans.

Do not use RAP materials that contain alluvial gravel or local sand in any mixture placed on interstate projects except for mixtures used in shoulder construction. When used in shoulder construction, limit RAP containing local sand or alluvial gravel so that the sand or gravel contributes no more than 20% of the total aggregate portion of the mix.

1. RAP Percentage

For non-interstate projects, limit the percentage of RAP allowed in recycled mixes so that the overall amount of alluvial gravel does not exceed 5 percent of the total mix. The percentage of alluvial gravel, local sand, and Group I material in the RAP will be determined through petrographic analysis or available records.

RAP furnished to the Contractor but not used in the work remains the Contractor's property.

RAP used in the recycled mixtures for mainline or ramps (if applicable) may make up from 0 to 40 percent of the mixture depending on the amount of RAP available, the production facilities, and whether the mixture meets the requirements in [Section 828](#).

The maximum ratio of RAP material to the recycled mixture is 40 percent for continuous mix type plants and 25 percent for batch type plants.

2. Process RAP Material

Process RAP material to be used in the recycled mixture so that 100 percent will pass the 2 in (50 mm) sieve.

Additional crushing and sizing may be required if the RAP aggregate exceeds the maximum sieve size for the mix type as shown in [Section 828](#). Obtain representative materials from the RAP stockpile for the mix design.

B. RAS Material

RAS materials are produced as a by-product of manufacturing roofing shingles and/or discarded shingle scrap from the reroofing of buildings.

1. Limit the amount of RAS material used in the recycled mixture to no greater than 5 percent of the total mixture weight.
2. Shred the RAS material before incorporating it into the mix to ensure that 100 percent of the shredded pieces are less than 1/2 in (12.5 mm) in any dimension.
3. Remove all foreign materials such as paper, roofing nails, wood, or metal flashing.
4. Provide test results for Bulk Sample Analysis, known as Polarized Light Microscopy, if post-consumer shingles are used to certify the RAS material is free of asbestos. Test stockpiles at the rate of one test per 1000 tons (megagrams) prior to processing.

Other than as specifically stated in this Subsection, ensure that RAS material is used according to the same requirements as described for RAP material.

C. Asphaltic Concrete Removed from an Existing Roadway

Asphaltic concrete removed from an existing roadway becomes the Contractor's property unless specified otherwise on the Plans. RAP material retained by the Department is designated on the Plans, and the RAP shall be stockpiled at the location specified on the Plans.

D. Local Sand and Group I Material in RAP

Use of local sand in recycled mixes is restricted as stipulated in [Section 828](#) for the Project. However, RAP which contains local sand may be used in surface and intermediate layers of non-interstate projects so long as the RAP percentage used does not contribute more than 5% local sand to the total aggregate portion of the mix. The amount of local sand in the RAP material shall be considered when determining the percentage of local sand in the total mix.

Where Pay Items specify that Group II only aggregate is to be used, RAP which consists primarily of Group II aggregate, but contains some Group I aggregate, shall be limited such that the Group I aggregate makes up no more than 5% of the total aggregate portion of the mix. When a Blend I mix is specified, any Group I materials in the RAP will be considered when determining the Group I portion allowed in the total mix as specified in [Subsection 828.2.A.2](#).

E. Asphalt Cement

Using laboratory evaluations, the Department will determine the asphalt cement grade to be used in the recycled mixture. The asphalt cement shall meet the requirements of [Section 820](#).

When the asphalt cement is blended with asphalt cement recovered from the RAP material and after tests on residue from thin film oven tests, the asphalt cement shall have a viscosity of 6,000 to 16,000 poises (600 to 1600 Pa) or as approved by the Engineer. Recover asphalt cement from the recycled mixture to verify that the specified viscosity is being met.

If the Engineer determines during construction that the selected asphalt cement grade is not performing satisfactorily, the Department may change the asphalt cement grade in the mixture, with no change in the Contract Unit Price.

F. Recycled Mixture

The recycled mixture shall be a homogenous mixture of RAP or RAS material, virgin aggregate, hydrated lime, and neat asphalt cement. Ensure that the mixture conforms to an approved mixture design outlined in [Section 828](#).

402.2.01 Delivery, Storage, and Handling

Separate the stockpiles by Project sources and by Group I and Group II aggregate types. Erect a sign on each stockpile to identify the source(s).

If RAP material from different project sources becomes intermixed in a stockpile, only use those materials when approved by the laboratory.

The Department may reject by visual inspection stockpiles that are not clean and free of foreign materials.

402.3 Construction Requirements

402.3.01 Personnel

General Provisions 101 through 150.

402.3.02 Equipment

A. Hot Mix Plant

Use a hot mix plant for the recycling process with necessary modifications approved by the Engineer to process recycled material. Design, equip, and operate the plant so that the proportioning, heating, and mixing yields a uniform final mixture within the job mix formula tolerances.

B. Cold Feed Bin

Proportion the RAP or RAS material using a separate cold feed bin. Ensure that the material meets the size requirements in [Subsection 402.2, "Materials."](#) The ratio of the RAP or RAS to virgin aggregate shall be controlled gravimetrically.

C. Electronic Belt Weighing Devices

Use electronic belt weighing devices to monitor the flow of RAP or RAS and the flow of virgin aggregate. For batch-type plants, the RAP or RAS portion of the mix may be weighed in a weigh hopper before incorporating it into the pugmill. The RAP shall be screened through a 2-inch maximum sized screen prior to crossing the cold feed weigh.

Ensure the amount of RAP material incorporated into the asphalt plant does not change after this final measurement is processed by the asphalt plant computer.

D. Feeders and Conveyors

Equip plants with an interlocking system of feeders and conveyors that synchronize the RAP or RAS material flow with the virgin aggregate flow. Ensure that the electronic controls track the flow rates indicated by the belt weighing devices and develop the signal to automatically maintain the desired ratio at varying production rates. Design the RAP or RAS feeder bins, conveyor system, and auxiliary bins (if used) to prevent RAP material from segregating and sticking.

402.3.03 Preparation

General Provisions 101 through 150.

402.3.04 Fabrication

General Provisions 101 through 150.

402.3.05 Construction

Follow the requirements in Section 400 for hot mix recycled asphaltic concrete production and placement, materials, equipment, and acceptance plans except as noted or modified in this Specification.

402.3.06 Quality Acceptance

The Department may require additional quality control tests to determine the RAP stockpile consistency and the RAP aggregate quality. In this case, conduct at least three extraction/gradation tests from each individual source. Ensure that aggregate meets the quality standards in [Section 800](#).

402.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

402.4 Measurement

Recycled asphaltic concrete mixture, complete in place and accepted, is measured in tons (megagrams). The weight is determined by recorded weights if an approved recording device is used. Or, the weight is determined by weighing each loaded vehicle on an approved motor truck scale as the material is hauled to the roadway.

402.4.01 Limits

General Provisions 101 through 150.

402.5 Payment

The work performed and the materials furnished as described in this Specification will be paid for at the Contract Unit Price per ton (megagram). Payment is full compensation for providing materials, hauling and necessary crushing, processing, placing, rolling and finishing the recycled mixture, and providing labor, tools, equipment, and incidentals necessary to complete the work, including hauling and stockpiling RAP or RAS material.

Payment will be made under:

Item No. 402	Recycled asphaltic concrete ___ mm Superpave, group-blend, including bituminous materials	Per ton (megagram)
Item No. 402	Recycled asphaltic concrete ___ mm Superpave, group-blend, including bituminous materials and hydrated lime	Per ton (megagram)
Item No. 402	Recycled asphaltic concrete ___ mm Superpave, group-blend, including polymer-modified bituminous materials and hydrated lime	Per ton (megagram)
Item No. 402	Recycled asphaltic concrete ___ mm Superpave, Type __, group-blend, including bituminous materials and hydrated lime	Per ton (megagram)
Item No.	Recycled asphaltic concrete _____ mm mix, group-blend,	Per ton (megagram)

402	including bituminous materials and hydrated lime	
Item No. 402	_____ in (mm) recycled asphaltic concrete <u>type</u> Superpave, group-blend, including bituminous materials	Per square yard (meter)
Item No. 402	_____ in (mm) recycled asphaltic concrete <u>type</u> Superpave, group-blend, including bituminous materials and hydrated lime	Per square yard (meter)
Item No. 402	_____ in (mm) recycled asphaltic concrete <u>type</u> Superpave, group-blend, including polymer-modified bituminous materials and hydrated lime	Per square yard (meter)
Item No. 402	_____ in (mm) recycled asphaltic concrete _____ mm mix, group-blend, including bituminous materials and hydrated lime	Per square yard (meter)
Item No. 402	Recycled asphaltic concrete patching including bituminous materials	Per ton (megagram)
Item No. 402	Recycled asphaltic concrete patching including bituminous materials and hydrated lime	Per ton (megagram)
Item No. 402	Recycled asphaltic concrete leveling including bituminous materials	Per ton (megagram)
Item No. 402	Recycled asphaltic concrete leveling including bituminous materials and hydrated lime	Per ton (megagram)

402.5.01 Adjustments

A. Determine Lot Acceptance

The control sieves used in the mixture acceptance schedule for the various types of mix are indicated below:

Control Sieves Used in the Mixture Acceptance Schedule	
Asphaltic concrete 25 mm Superpave	1/2 in., No. 8 (12.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 19 mm Superpave	3/8 in., No. 8 (9.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 12.5 mm Superpave	3/8 in., No. 8 (9.5 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 9.5 mm Superpave	No. 4, No. 8 (4.75 mm, 2.36 mm) sieves and asphalt cement
Asphaltic concrete 4.75 mm Mix	No. 8 (2.36 mm) sieve and asphalt cement

The Department will perform the following tasks:

5. Determine the mean of the deviations from the job mix formula per test results per lot.
2. Determine this mean by averaging the actual numeric value of the individual deviations from the job mix formula; disregard whether the deviations are positive or negative amounts.

B. Calculate Pavement Mean Air Voids

The Department will determine the percent of maximum air voids for each lot by dividing the pavement mean air voids by the maximum pavement mean air voids acceptable.

C. Asphaltic Concrete for Temporary Detours

Hot mix asphaltic concrete placed on temporary detours that will not remain in place as part of the permanent pavement does not require hydrated lime. Hot mix used for this purpose is paid for at an adjusted Contract Price. The payment for this item shall cover all cost of construction, maintenance and removal of all temporary mix. Hot mix asphaltic concrete placed as temporary mix shall meet requirements established in Subsection 400.3.05.F.

Where the Contract Price of the asphaltic concrete for permanent pavement is let by the ton (megagram), the Contract Price for the asphaltic concrete placed on temporary detours is adjusted by subtracting \$0.75/ton (\$0.85/mg) of mix used.

Where the Contract price of the mix in the permanent pavement is based on the square yard (meter), obtain the adjusted price for the same mix used on the temporary detour by subtracting \$0.04/yd² (\$0.05/ m²) per 1-in (25-mm) plan depth.

Further price adjustments required in [Subsection 400.3.06, "Quality Acceptance."](#) are based on the appropriate adjusted Contract Price for mix used in the temporary detour work. Hot mix asphalt produced as temporary mix containing no

hydrated lime, when required in the permanent mix, shall be removed and replaced with permanent mix containing hydrated lime.

D. Determine Lot Payment

If the Engineer determines that the material is not acceptable to leave in place, remove and replace the materials at the Contractor's expense.

Office of Materials and Research

DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA

SUPPLEMENTAL SPECIFICATION

Section 802—Aggregates for Asphaltic Concrete

Delete Section 802 and substitute the following:

802.1 General Description

This section includes the requirements for fine and coarse aggregates used in asphaltic concrete.

802.1.01 Definitions

Fine Aggregate: All aggregate passing a No. 8 (2.36 mm) sieve

Coarse Aggregate: All aggregate retained on a No. 8 (2.36 mm) sieve

802.1.02 Related References

A. Standard Specifications

[Section 800—Coarse Aggregate](#)

[Section 828—Hot Mix Asphaltic Concrete Mixtures](#)

B. Referenced Documents

AASHTO T 27

AASHTO T 96

ASTM C 295

[GDT 63](#)

GDT 76

[SOP 1](#)

802.2 Materials

802.2.01 Fine Aggregate for Asphaltic Concrete

A. Requirements

Use the appropriate type, group, class, and grade of fine aggregate.

1. Types

Use fine aggregate made of sharp, strong, angular material meeting the required performance characteristics when combined into a mixture.

a. Ensure that the aggregate meets the following requirements:

- Does not contain any deleterious substances.
- Natural sand is free of organic matter, roots, or twigs.
- Aggregate is manufactured from Class A or B crushed stone, gravel, slag, or synthetic aggregate that meets the requirements of [Section 800](#).
- A combination of natural and manufactured sands meets the requirements in [Subsection 802.2.01.A.3](#) and [Subsection 802.2.01.A.4](#) after being combined.

- b. Do not use crushed alluvial gravel as virgin aggregate in any mixture.
2. Groups
 Fine aggregate groups include:
- Group I—Limestone, dolomite, marble, or combination thereof
 - Group II—Gravel, slag, granitic and gneissic rocks, quartzite, natural sand, or a combination thereof
3. Sand Equivalent
 Use these sand equivalent values:

Material	Sand Equivalent Value
Group I	At least 28
Group II	At least 40
Natural sand	At least 25
Blended sand*	Natural sand at least 20; combined blend at least 25
*Blended natural sands or natural sand blended with stone screenings that meet the Group I or Group II sand equivalent limits.	

4. Mica
- Use fine aggregate with no more than 35 percent free mica in asphaltic concrete surface mixes.
 - When approved by the Engineer, use fine aggregate with more than 35 percent mica if blended with natural sand or sand manufactured from Group II aggregates. Ensure the blend has no more than 35 percent free mica and meets all other requirements of this Section, [Section 800](#) and [Section 828](#).
5. Aggregate for Stone Matrix Asphalt
 Manufactured screenings will be considered as fine aggregate and shall contain no more than 20 percent by weight coarser than a No. 4 (4.75 mm) sieve.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test the fine aggregate as follows:

Test	Method
Aggregate gradation	AASHTO T 27
Sand equivalent	GDT 63
Mica content	GDT 76 or ASTM C 295

D. Materials Warranty

General Provisions 101 through 150.

802.2.02 Coarse Aggregate for Asphaltic Concrete

A. Requirements

1. Types

Ensure coarse aggregate meets the following requirements:

- Class A or B crushed stone, gravel, slag, or synthetic aggregate as in [Subsection 800.2](#).
- Have uniform quality throughout without any deleterious substances.
- Meet the required performance characteristics when combined into a mixture.

NOTE: Do not use alluvial gravel as virgin aggregate.

2. Groups

Coarse aggregate shall be one of either group below as specified in the composition Table in [Subsection 828.2.A.2](#):

- Group I—Limestone, dolomite, marble, or combination thereof
- Group II—Gravel, slag, granite and gneissic rocks, quartzite, or combination thereof

3. Aggregate for Stone Matrix Asphalt

Use coarse aggregate that meets requirements of this Section and [Section 800](#) except as follows:

- Use Class A aggregate only with percent wear of each individual size not to exceed 45 percent based on the B grading of AASHTO T 96
- Use aggregate which contains no more than 20 percent flat and elongated pieces (length greater than three times the average thickness) for that portion of the blend of all aggregate retained on the No. 4 (4.75 mm) sieve.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test as follows:

Test	Method
Coarse Aggregate	Subsection 800.2.01.C

D. Materials Warranty

General Provisions 101 through 150.

GEORGIA DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
SUPPLEMENTAL SPECIFICATION

Section 819—Fiber Stabilizing Additives

Delete Section 819 and substitute the following:

819.1 General Description

This Section covers the general requirements for fiber stabilizing additives incorporated into asphaltic concrete mixtures. These fibers are used to stabilize the asphalt film surrounding aggregate particles to reduce drain-down of the asphalt cement., use cellulose or mineral fiber stabilizer listed on [QPL 77](#), Fiber Stabilizing Additives.

819.1.01 Related References

A. Standard Specifications

General Provisions 101 through 150.

B. Referenced Documents

AASHTO T 245

AASHTO T 305

ASTM D 128

[GDT 130](#)

[QPL 77](#)

819.2 Materials

Use an approved mineral or cellulose fiber stabilizing additive currently listed in [QPL 77](#). Approved additives shall meet the requirements below. Dosage rates below are typical ranges. Use the dosage rate prescribed in the Job Mix Formula, as approved by the Office of Materials and Research.

A. Requirements for all fiber types

1. Use a fiber stabilizer of the type and properties appropriate to the plant's metering and delivery system.

When tested in a standard mixture according to AASHTO T 305, the fiber stabilizing additive shall limit drain-down to not more the 0.2% of the weight of the mixture. For the purpose of evaluating these additives, the following test conditions apply.

- The mixture tested shall consist of a standard No. 7 stone and 6.4% asphalt cement.

- Mixing and compaction temperatures for the test shall be as prescribed in AASHTO T 245, Section 3.3.1.
- Wet mixing time shall be 60 ± 2 seconds.
- Unseparated fibers, determined by visual inspection of the mixture after the drain-down test, shall not exceed 5% of total fiber content.

B. Cellulose Fibers

Add cellulose fibers at a dosage rate between 0.2% and 0.4% by weight of the total mix, according to the approved Job Mix Formula. Fiber properties shall be as follows:

- Ash Content by ASTM D 128: 23% maximum non-volatile content
- pH: 7.0 to 12.0
- Moisture Content: 5.0% maximum

C. Cellulose Pellets

Use cellulose fiber stabilizing additive in pellet form that meets the requirements of [Subsection 819.2.A](#) and [Subsection 819.2.B](#). Use pellets that disperse sufficiently at mixing temperature to blend uniformly into the asphalt mixture. Use pellets that do not exceed 0.24 in (6.0 mm) average pellet diameter. Pellets may contain binder ingredients such as asphalt cement, wax, or polymer. Do not use pellets if the binder ingredient exceeds 20.0% of the total weight of the pellets. Use binder that produces no measurable effect on the properties of the asphalt cement. Do not use fiber pellets which soften or clump together when stored at temperatures up to 122 °F (50 °C).

Add approved palletized fiber stabilizing additive at a dosage rate between 0.2% and 0.4% by weight of the total mix, according to the approved Job Mix Formula established by the Office of Materials and Research.

NOTE: If the binder material constitutes more than 3% of the pellet weight, the dosage rate shall be based upon the net fiber content.

D. Mineral Fibers

Use mineral fibers made from virgin basalt, diabase, slag or other silicate rock. Add the fiber at a dosage rate prescribed in the approved Job Mix Formula, between 0.3% and 0.6% by weight of the total mix. Use approved mineral fiber from [QPL 77](#), meeting the following requirements for Shot content, as tested according to [GDT 130](#):

Sieve	Minimum Percent Passing
No 60	90
No. 230	60

E. Materials Warranty

General Provisions 101 through 150.

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

SUPPLEMENTAL SPECIFICATION

Section 830—Portland Cement

Delete Section 830 and substitute the following:

830.1 General Description

This section includes the requirements for Portland cement, including Portland blast-furnace slag cement and Portland-Pozzolan cement.

830.1.01 Related References

A. Standard Specifications

[Section 831—Admixtures](#)

B. Referenced Documents

AASHTO M 85

AASHTO M 240

[QPL 3](#)

830.2 Materials

830.2.01 Portland Cement

A. Requirements

Use only Portland cements that are listed in [QPL 3](#).

1. Types

Use Portland cement that meets the requirements in AASHTO M 85. Portland cement types include:

Use	High Early Strength Concrete	Remaining Portland Cement Concrete
*Portland cement	Types I or III	Types I or II

*Portland cement – a hydraulic cement produced by pulverizing clinker consisting essentially of hydraulic crystalline calcium silicates, and usually containing one or more of the following: water, calcium sulfate, up to 5% limestone, and processing additions.

2. Ensure that the Portland cement concrete meets the low alkali and the false set requirements of AASHTO M 85.
3. Do not use cement that is damaged, partially set, lumpy, or caked.
4. Mixing and Storing

Do not mix or store different brands or types of cement in the same bin. Do not mix or store the same brand of cement from different mills in the same bin.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

See the requirements in AASHTO M 85.

D. Materials Warranty

General Provisions 101 through 150.

830.2.02 Portland Blast-Furnace Slag Cement

A. Requirements

Use Portland blast-furnace slag cement in cement stabilization that meets the requirements of AASHTO M 240, Type IS.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

See requirements of AASHTO M 240, Type IS.

D. Materials Warranty

General Provisions 101 through 150.

830.2.03 Portland-Pozzolan Cement

A. Requirements

Use Portland-Pozzolan cement that meets the requirements of AASHTO M 240, Type IP, with the following modifications:

1. Limit the fly ash content to a maximum of 25 percent by weight.
2. Limit the Pozzolan to fly ash that meets the requirements of [Subsection 831.2.03](#).
3. If grinding fly ash with Portland cement clinker to produce Portland-Pozzolan cement, do the following:
Exclude the fineness and the loss-on-ignition requirements of [Subsection 831.2.03](#).
Ensure that the final blend of Portland-Pozzolan cement meets AASHTO M 240, Type IP requirements.
4. Wherever the Standard Specifications allow or specify Portland cement that meets the requirements of [Subsection 830.2.01](#), you may substitute Portland-Pozzolan cement that meets the requirements of this Subsection.
5. If the substitute cement results in a higher cement factor than required for Type I cement, the cost of the additional cement will be borne by the Contractor.

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

See the requirements of AASHTO M 240, Type IP.

D. Materials Warranty

General Provisions 101 through 150.

**DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA**

SUPPLEMENTAL SPECIFICATION

Section 883—Mineral Filler

Delete Section 883 and substitute the following:

883.1 General Description

This section covers mineral filler used as an ingredient in bituminous paving mixtures. Use mineral filler listed in the approved Asphalt Mix Design and Job Mix Formula and in Qualified Products List (QPL) 81. Use an approved mineral filler that meets the requirements below and consist of finely divided rock dust, slag dust, hydrated lime, hydraulic cement, or fly ash. Other fine, inert, non-toxic materials produced as by-products of industrial processes and meeting the requirements below may be approved as mineral filler based on satisfactory performance in the asphalt mix design procedure. Ensure mineral filler is sufficiently dry, flows freely, and is free from lumps.

883.1.01 Related References

A. Standard Specifications

General Provisions 101 through 150.

B. Referenced Documents

QPL81

AASHTO R 28

AASHTO T 240

AASHTO T 313

AASHTO T 315

GDT-22

GDT 123

883.2 Materials

883.2.01 Mineral Filler

A. Requirements

Use mineral filler meeting the following gradation limits:

Sieve Size	Percent Passing
No. 30 (600 μm)	100
No. 50 (300 μm)	95-100
No. 200 (75 μm)	55-100

Ensure that the mineral filler is free from impurities.

Subject mineral filler for use in Stone Matrix Asphalt (SMA) to mortar property testing according to AASHTO T-240, AASHTO R-28, AASHTO T-313, and AASHTO T-315. Mineral filler may be rejected and removed from QPL-81 for unsatisfactory performance as an ingredient in an asphalt mixture, as determined in these procedures or in the SMA Mix design procedure, GDT-123. Ensure the total fine mortar meets the following requirements:

Test	Specification
Unaged DSR, $G^*/\sin\delta$ (kPa)	5 minimum
RTFO Aged DSR, $G^*/\sin\delta$ (kPa)	11 minimum
PAV Aged BBR, Stiffness (MPa)	1500 maximum

B. Fabrication

General Provisions 101 through 150.

C. Acceptance

Test gradation according to GDT-22.

D. Materials Warranty

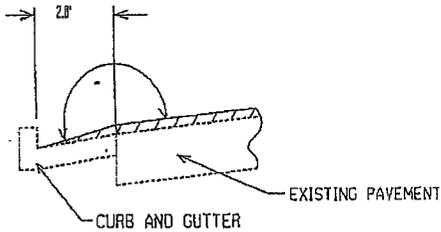
General Provisions 101 through 150.

FY 2016 L.M.I.G. TYPICAL RESURFACING SECTION

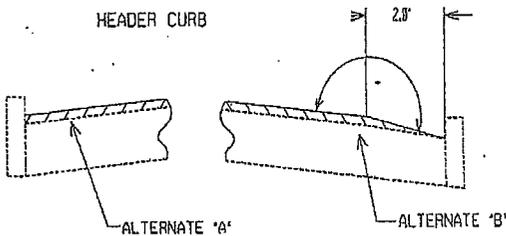
CURB AND GUTTER DETAIL

DETAIL FOR FEATHERING SURFACING

CURB AND GUTTER



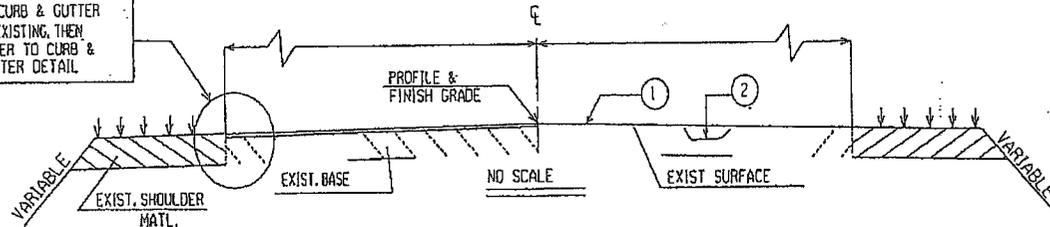
HEADER CURB



NOTE: METHOD OF FEATHERING AT PAVEMENT EDGE ALTERNATE A OR ALTERNATE B) SHALL BE DETERMINED BY THE COUNTY UNDER NORMAL CONDITIONS, ALTERNATE A SHALL BE USED FOR FEATHERING UNLESS RESURFACING HAS REDUCED THE 'EFFECTIVE HEIGHT' OF THE EXISTING CURB TYPE FACILITY. IN THIS EVENT, ALTERNATE 'B' SHALL BE USED.

NOTE: * THE ALGEBRAIC DIFFERENCE BETWEEN THE NEW RIDING SURFACE AND THE FEATHERING IN THE CURB AND GUTTER SHALL NOT EXCEED 7 %.

IF CURB & GUTTER IS EXISTING, THEN REFER TO CURB & GUTTER DETAIL



* SEE ROADWAY SUMMARY FOR PAVEMENT WIDTHS

REQ'D ① 125 LBS PER SY ASPH CONC 9.5 MM SUPERPAVE, TP 1, BLEND 1, INCL BITUM MATL & H. LIME

REQ'D ② ASPH CONC LEVELING, INCL BITUM MATL & H. LIME TO BE PLACED AS DIRECTED BY THE COUNTY

NOTE: THE COUNTY WILL CERTIFY ALL NECESSARY R/W, REMOVE OR ADJUST ALL UTILITIES.

NOTE: THE WIDTH OF PAVING OF TURNOUTS FOR SIDEROADS AND DRIVES SHALL BE AS REQUIRED TO PROVIDE A SMOOTH AND WELL DRAINED TRANSITION TO AND FROM PUBLIC ROADS AND DRIVEWAYS, AS APPROVED BY THE COUNTY

* SEE ROADWAY SUMMARIES FOR PATCHING REQUIREMENTS.

THIS TYPICAL SECTION APPLIES TO PRIORITY #'S:

- UNION GROVE CHURCH ROAD
- HARMONY GROVE CHURCH ROAD
- CARL-CEDAR HILL ROAD
- KILCREASE ROAD
- ROCKWELL CHURCH ROAD
- HOYT KING ROAD
- WRIGHT STREET

PROJECT NO.

RFB2016-16 FY 2016
L.M.I.G.

COUNTY

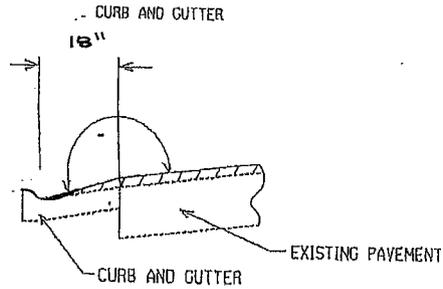
BARROW PROJECT # SR 041 + SR 042

CITY

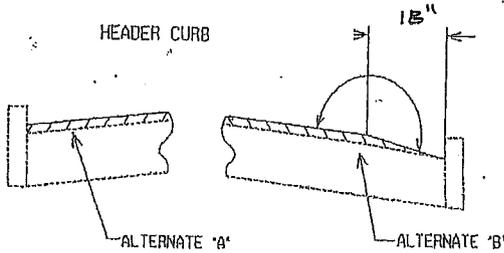
FY 2016 L.M.I.G. TYPICAL RESURFACING SECTION MIDLAND AVENUE

CURB AND GUTTER DETAIL

DETAIL FOR FEATHERING SURFACING

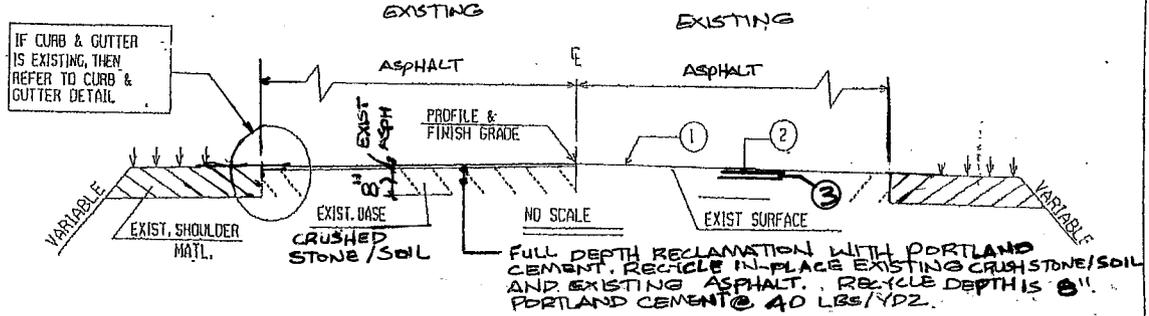


HEADER CURB



NOTE: METHOD OF FEATHERING AT PAVEMENT EDGE ALTERNATE A OR ALTERNATE B SHALL BE DETERMINED BY THE COUNTY UNDER NORMAL CONDITIONS, ALTERNATE A SHALL BE USED FOR FEATHERING UNLESS RESURFACING HAS REDUCED THE 'EFFECTIVE HEIGHT' OF THE EXISTING CURB TYPE FACILITY, IN THIS EVENT, ALTERNATE 'B' SHALL BE USED.

NOTE: * THE ALGEBRAIC DIFFERENCE BETWEEN THE NEW RIDING SURFACE AND THE FEATHERING IN THE CURB AND GUTTER SHALL NOT EXCEED 7 %.



- REQ'D ① 165 LBS PER SY ASPH CONC. 2.5MM SUPERPAVE, TP I, BLEND I, INCL BITUM MATL & H. LIME
- ② 220 LBS PER SY ASPH CONC. 19MM, BINDER, INCL BITUM MATL & H. LIME.
- REQ'D ③ BITUMINOUS PRIME COAT, AFTER FULL DEPTH RECLAIM HAS BEEN COMPACTED

NOTE: THE WIDTH OF PAVING OF TURNOUTS FOR SIDEROADS AND DRIVES SHALL BE AS REQUIRED TO PROVIDE A SMOOTH AND WELL DRAINED TRANSITION TO AND FROM PUBLIC ROADS AND DRIVEWAYS, AS APPROVED BY THE COUNTY

NOTE: THE COUNTY WILL CERTIFY ALL NECESSARY R/W, REMOVE OR ADJUST ALL UTILITIES.

THIS TYPICAL SECTION APPLIES TO PRIORITY #'S [] MIDLAND AVENUE

NOTE: FULL DEPTH RECLAMATION WITH PORTLAND CEMENT @ 40 LBS/YD2. RECYCLE IN-PLACE THE EXISTING CRUSHED STONE/SOIL AND ASPHALT MATERIAL. RECYCLE DEPTH IS 8". BITUMINOUS PRIME COAT INCLUDED TO AID IN THE CURING PROCESS, PRIOR TO WEARING COURSE.

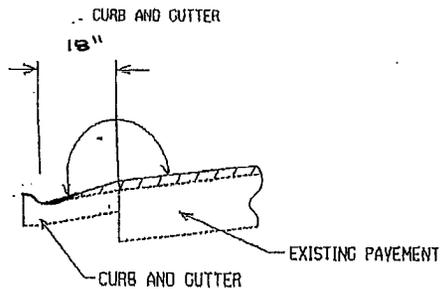
PROJECT NO.	RFBZ016-16	FY 2016
		L.M.I.G.
COUNTY	BARROW, PROJECT # SR041	
CITY		

→ SR042

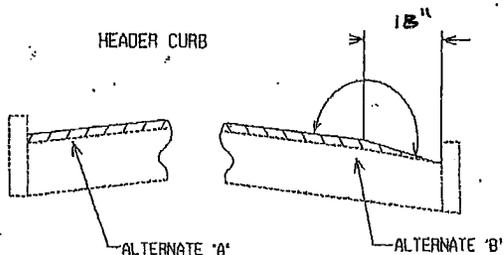
FY 2016 L.M.I.G. TYPICAL RESURFACING SECTION BEAVER DAM ROAD

CURB AND GUTTER DETAIL

DETAIL FOR FEATHERING SURFACING

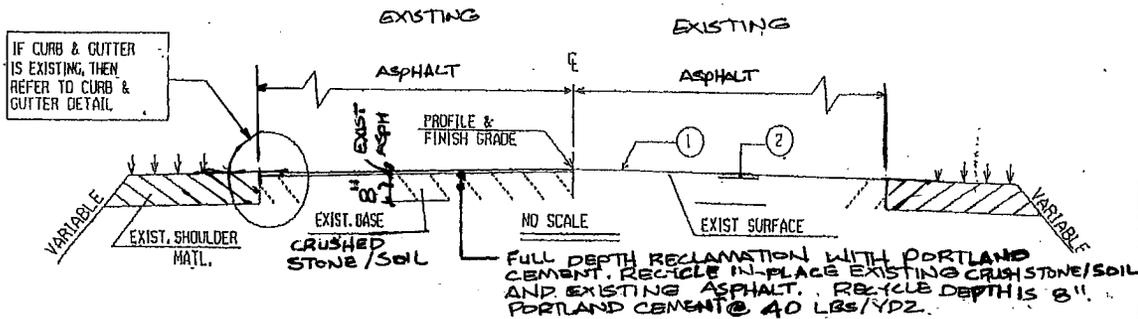


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NOTE: METHOD OF FEATHERING AT PAVEMENT EDGE ALTERNATE A OR ALTERNATE B SHALL BE DETERMINED BY THE COUNTY UNDER NORMAL CONDITIONS, ALTERNATE A SHALL BE USED FOR FEATHERING UNLESS RESURFACING HAS REDUCED THE 'EFFECTIVE HEIGHT' OF THE EXISTING CURB TYPE FACILITY. IN THIS EVENT, ALTERNATE 'B' SHALL BE USED.

NOTE: • THE ALGEBRAIC DIFFERENCE BETWEEN THE NEW RIDING SURFACE AND THE FEATHERING IN THE CURB AND GUTTER SHALL NOT EXCEED 7%.



REQ'D ① 220 LBS PER SY ASPH CONC 12.5MM SUPERPAVE, TP 1, BLEND 1, INCL BITUM MATL & H. LIME

REQ'D ② BITUMINOUS PRIME COAT, AFTER FULL DEPTH RECLAIM HAS BEEN COMPLETED

NOTE: THE WIDTH OF PAVING OF TURNOUTS FOR SIDEROADS AND DRIVES SHALL BE AS REQUIRED TO PROVIDE A SMOOTH AND WELL DRAINED TRANSITION TO AND FROM PUBLIC ROADS AND DRIVEWAYS, AS APPROVED BY THE COUNTY

NOTE: THE COUNTY WILL CERTIFY ALL NECESSARY R/W, REMOVE OR ADJUST ALL UTILITIES.

THIS TYPICAL SECTION APPLIES TO PRIORITY #1(S)

BEAVER DAM ROAD

NOTE: FULL DEPTH RECLAMATION WITH PORTLAND CEMENT @ 40 LBS/YD². RECYCLE IN-PLACE THE EXISTING CRUSHED STONE/SOIL AND ASPHALT MATERIAL. RECYCLE DEPTH IS 8". BITUMINOUS PRIME COAT INCLUDED TO AID IN THE CURING PROCESS, PRIOR TO WEARING COURSE.

PROJECT NO.

RFBZD16-16 FY 2016 L.M.I.G.

COUNTY

BARRROW PROJECT # SR041 → SR042

CITY

BARROW COUNTY
 FY 2016 LMIG
 RFB 2016-16,
 PROJECT # SR 041 + SR 042



HALL COUNTY

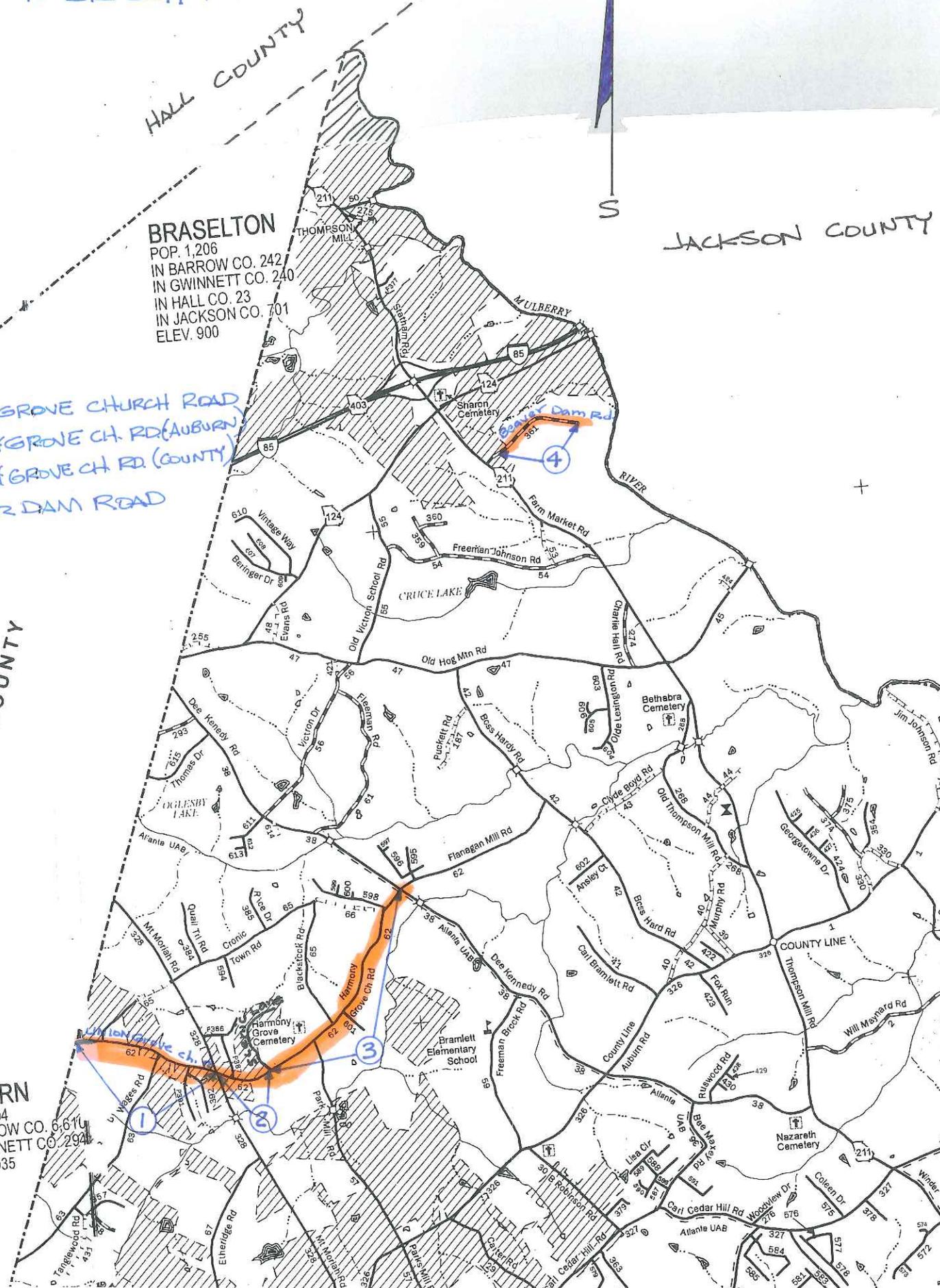
JACKSON COUNTY

BRASELTON
 POP. 1,206
 IN BARROW CO. 242
 IN GWINNETT CO. 240
 IN HALL CO. 23
 IN JACKSON CO. 701
 ELEV. 900

- ① UNION GROVE CHURCH ROAD
- ② HARMONY GROVE CH. RD (AUBURN)
- ③ HARMONY GROVE CH RD (COUNTY)
- ④ BEAVER DAM ROAD

GWINNETT COUNTY

AUBURN
 POP. 6,904
 IN BARROW CO. 6,614
 IN GWINNETT CO. 294
 ELEV. 1035



2
N
COUNTY
GWINNETT

AUBURN

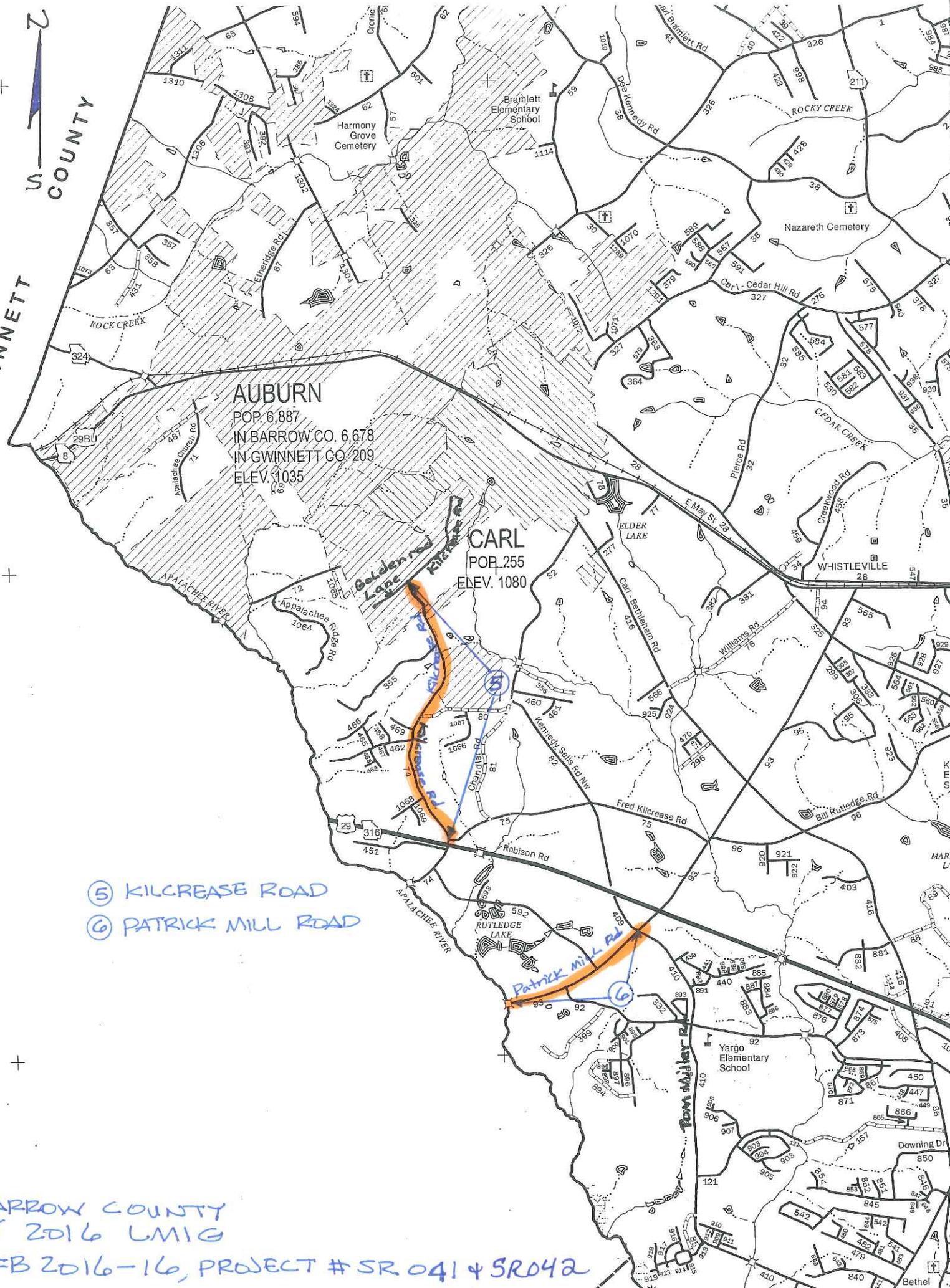
POP. 6,887
IN BARROW CO. 6,678
IN GWINNETT CO. 209
ELEV. 1,035

CARL

POP. 255
ELEV. 1,080

- ⑤ KILCREASE ROAD
- ⑥ PATRICK MILL ROAD

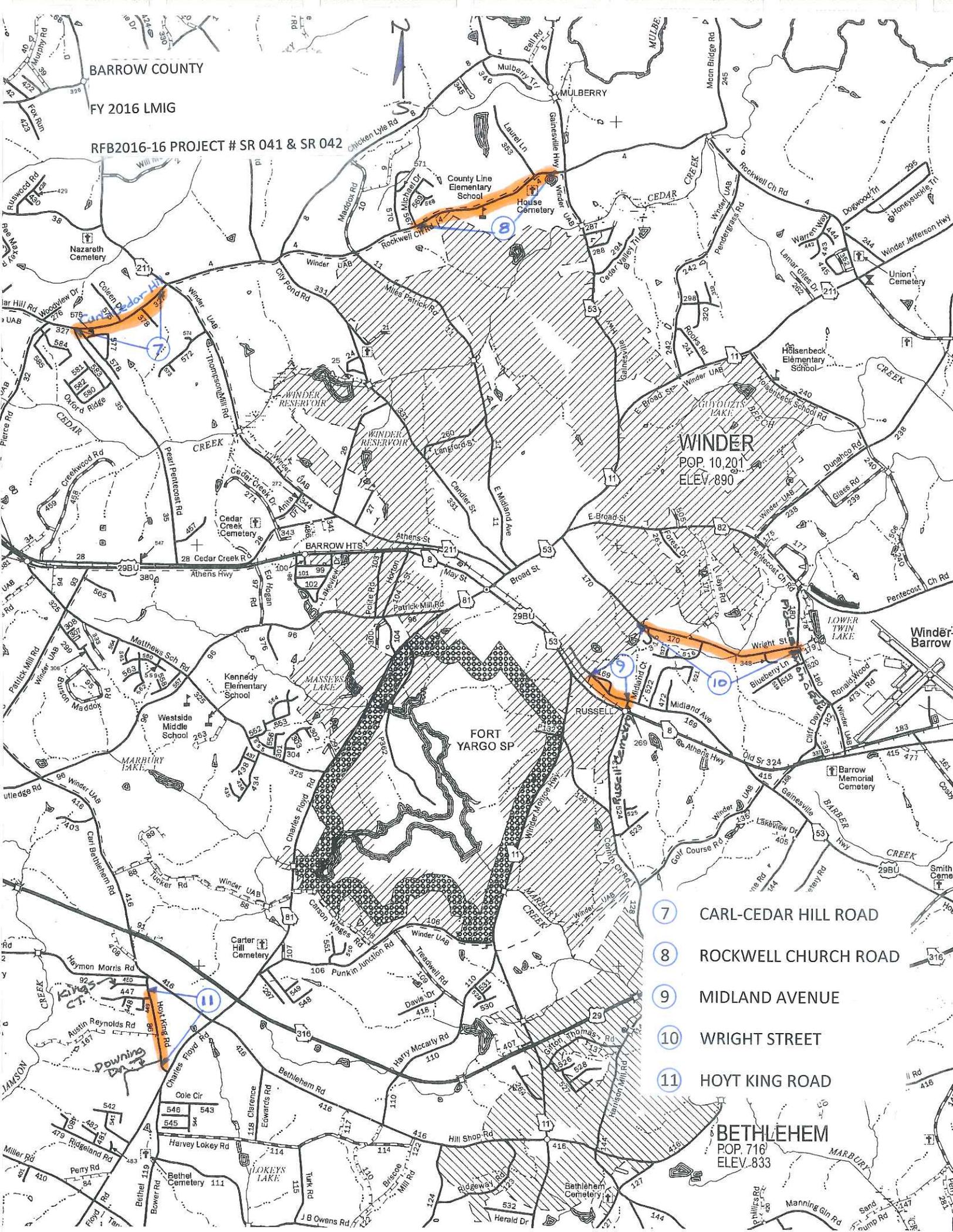
BARROW COUNTY
FY 2016 LMIG
RFB 2016-16, PROJECT # SR 041 & SR 042



BARROW COUNTY

FY 2016 LMIG

RFB2016-16 PROJECT # SR 041 & SR 042



- 7 CARL-CEDAR HILL ROAD
- 8 ROCKWELL CHURCH ROAD
- 9 MIDLAND AVENUE
- 10 WRIGHT STREET
- 11 HOYT KING ROAD

BETHLEHEM
POP. 716
ELEV. 833

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 2)**

HARMONY GROVE CHURCH ROAD (CITY OF AUBURN PORTION)

2016

City of Auburn

From: Mount Moriah Road

To: Scenic Lane

1,954 Lin. Ft. 0.37 Mile 20' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Recycled Asphaltic Concrete Patching, 19MM Including Bituminous Material & Hydrated Lime, 440 lbs/yd ² , 4" compacted depth Also Include Bituminous Tack Coat, Milling, Disposal of Millings/Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed.	TON	300
Recycled Asphaltic Concrete Leveling Including Bituminous Material, Hydrated Lime & Haul, 40 lbs/yd ² or as required.	TON	90
Recycled Asphaltic Concrete 9.5 MM Superpave, Type 1, Blend 1, Including Bituminous Material, Hydrated Lime & Haul. 125 lbs/yd ² .	TON	280
Bituminous Tack Coat	GALLONS	400
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint	LINEAR FOOT	3,910
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), Yellow, Paint	LINEAR FOOT	3,910

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 2 OF 2)**

**HARMONY GROVE CHURCH ROAD (CITY OF AUBURN PORTION)
(Continued)**

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Temporary and Permanent (stripe twice) Solid Traffic Stripe, 24" (inch), White, Paint	LINEAR FOOT	14
Temporary & Permanent (stripe twice) Pavement Marking Word, "STOP", Type 2, White, Paint	EACH	1
Temporary & Permanent (stripe twice) Pavement Marking Word, "AHEAD", Type 4, White, Paint	EACH	1
Shoulder Re-Construction & Turf Establishment	SHOULDER MILE	0.74
Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 2)**

HARMONY GROVE CHURCH ROAD

2016 L.M.I.G.

Barrow County

From: Dee Kennedy Road

To: Scenic Lane

7,762 Lin. Ft. 1.47 Mile 20' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Recycled Asphaltic Concrete Patching, 19MM Including Bituminous Material & Hydrated Lime, 440 lbs/yd ² , 4" compacted depth Also Include Bituminous Tack Coat, Milling, Disposal of Millings/Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed.	TON	1,200
Recycled Asphaltic Concrete Leveling Including Bituminous Material, Hydrated Lime & Haul, 40 lbs/yd ² or as required.	TON	380
Recycled Asphaltic Concrete 9.5 MM Superpave, Type 1, Blend 1, Including Bituminous Material, Hydrated Lime & Haul. 125 lbs/yd ² .	TON	1,170
Bituminous Tack Coat	GALLONS	1,690
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint	LINEAR FOOT	15,600
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), Yellow, Paint	LINEAR FOOT	15,600

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 2 OF 2)**

HARMONY GROVE CHURCH ROAD (Continued)

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Temporary and Permanent (stripe twice) Skip Traffic Stripe, 5" (inch), White, Paint	GROSS LINEAR FOOT	300
Temporary and Permanent (stripe twice) Solid Traffic Stripe, 24" (inch), White, Paint	LINEAR FOOT	20
Re-Stripe, Solid Traffic Stripe, 24" (inch), White, Paint, (re-stripe once, existing stop bars at subdivision entrances & side roads).	LINEAR FOOT	130
Re-Stripe, Pavement Marking Turn Arrow Type 2, White, Paint (re-stripe once, turn arrows at existing subdivisions decel lanes).	EACH	6
Temporary & Permanent (stripe twice) Pavement Marking Word, "STOP", Type 2, White, Paint	EACH	1
Temporary & Permanent (stripe twice) Pavement Marking Word, "AHEAD", Type 4, White, Paint	EACH	1
Shoulder Re-Construction & Turf Establishment	SHOULDER MILE	2.94
Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 2)**

BEAVER DAM ROAD

2016 L.M.I.G.

Barrow County

From: Pavement Joint near State Route 211

To: Dead End at Cul-De-Sac

3,274 Lin. Ft. 0.62 Mile 19.5' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Full Depth Reclamation with Portland Cement, Including pulverization/recycling of existing soil/ crushed stone base and existing asphalt pavement materials. Recycle depth to be 8" inches. Reconstruction to include reshaping, grading, proper compaction and curing. 40 lbs/yd ² of Portland Cement to be used. Bituminous Prime Coat included.	SQUARE YARDS	8,520
Recycled Asphaltic Concrete 12.5 MM Superpave wearing course, Type 1, Blend 1, Including Bituminous Material, Hydrated Lime & Haul. 220 lbs/yd ² .	TON	940
Bituminous Tack Coat	GALLONS	430
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint	LINEAR FOOT	6,550
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), Yellow, Paint	LINEAR FOOT	6,550

RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 2 OF 2)

BEAVER DAM ROAD (Continued)

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Shoulder Re-Construction & Turf Establishment	SHOULDER MILE	1.24
Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 2)**

CARL-CEDAR HILL ROAD

2016 Non - L.M.I.G.

Barrow County

From: Pearl Pentecost Road

To: Pavement joint west of State Route 211 north

3,432 Lin. Ft. 0.65 Mile 21' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Recycled Asphaltic Concrete Patching, 19MM Including Bituminous Material & Hydrated Lime, 440 lbs/yd ² , 4" compacted depth Also Include Bituminous Tack Coat, Milling, Disposal of Millings/Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed.	TON	620
Recycled Asphaltic Concrete Leveling Including Bituminous Material, Hydrated Lime & Haul, 40 lbs/yd ² or as required.	TON	200
Recycled Asphaltic Concrete 9.5 MM Superpave, Type 1, Blend 1, Including Bituminous Material, Hydrated Lime & Haul. 125 lbs/yd ² .	TON	600
Bituminous Tack Coat	GALLONS	860
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint	LINEAR FOOT	6,320
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), Yellow, Paint	LINEAR FOOT	6,900

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 2 OF 2)**

CARL-CEDAR HILL ROAD (Continued)

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Temporary and Permanent (stripe twice) Skip Traffic Stripe, 5" (inch), White, Paint	GROSS LINEAR FOOT	550
Re-Stripe, Solid Traffic Stripe, 24" (inch), White, Paint, (re-stripe once, existing stop bars at subdivision entrances & side roads).	LINEAR FOOT	140
Re-Stripe, Pavement Marking Turn Arrow Type 2, White, Paint (re-stripe once, turn arrows at existing subdivisions decel lanes).	EACH	6
Shoulder Re-Construction & Turf Establishment	SHOULDER MILE	1.30
Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 2)**

HOYT KING ROAD

2016 Non - L.M.I.G.

Barrow County

From: Pavement joint south of Downing Drive

To: Pavement joint south of King's Court

2,693 Lin. Ft. 0.51 Mile 21' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Recycled Asphaltic Concrete Patching, 19MM Including Bituminous Material & Hydrated Lime, 440 lbs/yd ² , 4" compacted depth Also Include Bituminous Tack Coat, Milling, Disposal of Millings/Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed.	TON	870
Recycled Asphaltic Concrete Leveling Including Bituminous Material, Hydrated Lime & Haul, 40 lbs/yd ² or as required.	TON	140
Recycled Asphaltic Concrete 9.5 MM Superpave, Type 1, Blend 1, Including Bituminous Material, Hydrated Lime & Haul. 125 lbs/yd ² .	TON	440
Bituminous Tack Coat	GALLONS	640
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint	LINEAR FOOT	5,300
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), Yellow, Paint	LINEAR FOOT	5,400

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 2 OF 2)**

HOYT KING ROAD (Continued)

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Temporary and Permanent (stripe twice) Skip Traffic Stripe, 5" (inch), White, Paint	GROSS LINEAR FOOT	100
Re-Stripe, Solid Traffic Stripe, 24" (inch), White, Paint, (re-stripe once, existing stop bars at subdivision entrances & side roads).	LINEAR FOOT	60
Re-Stripe, Pavement Marking Turn Arrow Type 2, White, Paint (re-stripe once, turn arrows at existing subdivisions decel lanes).	EACH	2
Shoulder Re-Construction & Turf Establishment	SHOULDER MILE	1.02
Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 2)**

KILCREASE ROAD

2016 Non - L.M.I.G.

Barrow County

From: State Route 316

To: Goldenrod Lane

9,715 Lin. Ft. 1.84 Mile 20' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Recycled Asphaltic Concrete Patching, 19MM Including Bituminous Material & Hydrated Lime, 440 lbs/yd ² , 4" compacted depth Also Include Bituminous Tack Coat, Milling, Disposal of Millings/Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed.	TON	1640
Recycled Asphaltic Concrete Leveling Including Bituminous Material, Hydrated Lime & Haul, 40 lbs/yd ² or as required.	TON	500
Recycled Asphaltic Concrete 9.5 MM Superpave, Type 1, Blend 1, Including Bituminous Material, Hydrated Lime & Haul. 125 lbs/yd ² .	TON	1,530
Bituminous Tack Coat	GALLONS	2,200
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint,	LINEAR FOOT	18,840
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), Yellow, Paint	LINEAR FOOT	20,540

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 2 OF 2)**

KILCREASE ROAD (Continued)

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Temporary and Permanent (stripe twice) Skip Traffic Stripe, 5" (inch), White, Paint	GROSS LINEAR FOOT	600
Temporary and Permanent (stripe twice) Solid Traffic Stripe, 24" (inch), White, Paint	LINEAR FOOT	50
Re-Stripe, Solid Traffic Stripe, 24" (inch), White, Paint, (re-stripe once, existing stop bars at subdivision entrances & side roads).	LINEAR FOOT	140
Re-Stripe, Pavement Marking Turn Arrow Type 2, White, Paint (re-stripe once, turn arrows at existing subdivisions decel lanes).	EACH	8
Shoulder Re-Construction & Turf Establishment	SHOULDER MILE	3.68
Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 2)**

MIDLAND AVENUE

2016 L.M.I.G.

Barrow County

From: Winder City Limits

To: Russell Cemetery Road

1,584 Lin. Ft. 0.30 Mile 21.5' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Full Depth Reclamation with Portland Cement, Including pulverization/recycling of existing soil/ crushed stone base and existing asphalt pavement materials. Recycle depth to be 8" inches. Reconstruction to include reshaping, grading, proper compaction and curing. 40 lbs/yd ² of Portland Cement to be used. Bituminous Prime Coat included.	SQUARE YARDS	4,000
Recycled Asphaltic Concrete Binder , 19 MM, Including Bituminous Material, Hydrated Lime & Haul. 220 lbs/yd ² .	TON	460
Recycled Asphaltic Concrete 12.5 MM Superpave wearing course, Type 1, Blend 1, Including Bituminous Material, Hydrated Lime & Haul. 165 lbs/yd ² .	TON	350
Bituminous Tack Coat	GALLONS	500
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint	LINEAR FOOT	3,170
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), Yellow, Paint	LINEAR FOOT	3,170

RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 2 OF 2)

MIDLAND AVENUE (Continued)

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Re-Stripe, Solid Traffic Stripe, 24" (inch), White, Paint, (re-stripe once, existing stop bars at subdivision entrances & side roads).	LINEAR FOOT	50
Shoulder Re-Construction & Turf Establishment	SHOULDER MILE	0.60
Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 1)**

PATRICK MILL ROAD (patch only)
2016 Non - L.M.I.G.
Barrow County

From: Tom Miller Road
To: Gwinnett County Line

5,122 Lin. Ft. 0.97 Mile 20' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Recycled Asphaltic Concrete Patching, 12.5 MM Superpave, Type 1, Blend 1, Including Bituminous Material & Hydrated Lime, 440 lbs/yd ² , 4" compacted depth Also Include Bituminous Tack Coat, Milling, Disposal of Millings/Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed.	TON	630
Re-Stripe (stripe once) Solid Traffic Stripe, 5" (inch), Yellow, Paint At patches	LINEAR FOOT	5,500
Re-Stripe (stripe once) Solid Traffic Stripe, 5" (inch), White , Paint At patches	LINEAR FOOT	5,500

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 2)**

ROCKWELL CHURCH ROAD

2016 Non - L.M.I.G.

Barrow County

From: Michael Drive

To: Pavement joint west of State Route 53 north

5,438 Lin. Ft. 1.03 Mile 21' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Recycled Asphaltic Concrete Patching, 19MM Including Bituminous Material & Hydrated Lime, 440 lbs/yd ² , 4" compacted depth Also Include Bituminous Tack Coat, Milling, Disposal of Millings/Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed.	TON	1000
Recycled Asphaltic Concrete Leveling Including Bituminous Material, Hydrated Lime & Haul, 40 lbs/yd ² or as required.	TON	300
Recycled Asphaltic Concrete 9.5 MM Superpave, Type 1, Blend 1, Including Bituminous Material, Hydrated Lime & Haul. 125 lbs/yd ² .	TON	900
Bituminous Tack Coat	GALLONS	1,260
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint,	LINEAR FOOT	10,600
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), Yellow, Paint	LINEAR FOOT	9,600

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 2 OF 2)**

ROCKWELL CHURCH ROAD (Continued)

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Temporary and Permanent (stripe twice) Skip Traffic Stripe, 5" (inch), White, Paint	GROSS LINEAR FOOT	300
Temporary and Permanent (stripe twice) Skip Traffic Stripe, 5" (inch), Yellow, Paint	GROSS LINEAR FOOT	1,300
Temporary and Permanent (stripe twice) Solid Traffic Stripe, 24" (inch), White, Paint	LINEAR FOOT	60
Re-Stripe, Solid Traffic Stripe, 24" (inch), White, Paint, (re-stripe once, existing stop bars at subdivision entrances & side roads).	LINEAR FOOT	15
Re-Stripe, Pavement Marking Turn Arrow Type 2, White, Paint (re-stripe once, turn arrows at existing subdivisions decel lanes).	EACH	8
Shoulder Re-Construction & Turf Establishment	SHOULDER MILE	2.06
Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 2)**

UNION GROVE CHURCH ROAD

2016 L.M.I.G.

Barrow County

From: Mount Moriah Road

To: Gwinnett County Line

4,646 Lin. Ft. 0.88 Mile 20' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Recycled Asphaltic Concrete Patching, 19MM Including Bituminous Material & Hydrated Lime, 440 lbs/yd ² , 4" compacted depth Also Include Bituminous Tack Coat, Milling, Disposal of Millings/Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed.	TON	1,250
Recycled Asphaltic Concrete Leveling Including Bituminous Material, Hydrated Lime & Haul, 40 lbs/yd ² or as required.	TON	230
Recycled Asphaltic Concrete 9.5 MM Superpave, Type 1, Blend 1, Including Bituminous Material, Hydrated Lime & Haul. 125 lbs/yd ² .	TON	700
Bituminous Tack Coat	GALLONS	1,010
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint	LINEAR FOOT	9,400
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), Yellow, Paint	LINEAR FOOT	9,400

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 2 OF 2)**

UNION GROVE CHURCH ROAD (Continued)

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Temporary and Permanent (stripe twice) Skip Traffic Stripe, 5" (inch), White, Paint	GROSS LINEAR FOOT	200
Temporary and Permanent (stripe twice) Solid Traffic Stripe, 24" (inch), White, Paint	LINEAR FOOT	15
Re-Stripe, Solid Traffic Stripe, 24" (inch), White, Paint, (re-stripe once, existing stop bars at subdivision entrances & side roads).	LINEAR FOOT	130
Re-Stripe, Pavement Marking Turn Arrow Type 2, White, Paint (re-stripe once, turn arrows at existing subdivisions decel lanes).	EACH	4
Temporary & Permanent (stripe twice) Pavement Marking Word, "STOP", Type 2, White, Paint	EACH	1
Temporary & Permanent (stripe twice) Pavement Marking Word, "AHEAD", Type 4, White, Paint	EACH	1
Shoulder Re-Construction & Turf Establishment	SHOULDER MILE	1.76
Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 1 OF 2)**

WRIGHT STREET

2016 Non - L.M.I.G.

Barrow County

From: Picklesimon Road

To: Winder City Limits

6,653 Lin. Ft. 1.26 Mile 20.5' Wide Pavement

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Recycled Asphaltic Concrete Patching, 19MM Including Bituminous Material & Hydrated Lime, 330 lbs/yd ² , 3" compacted depth Also Include Bituminous Tack Coat, Milling, Disposal of Millings/Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed.	TON	360
Recycled Asphaltic Concrete Leveling Including Bituminous Material, Hydrated Lime & Haul, 40 lbs/yd ² or as required.	TON	330
Recycled Asphaltic Concrete 9.5 MM Superpave, Type 1, Blend 1, Including Bituminous Material, Hydrated Lime & Haul. 125 lbs/yd ² .	TON	1,060
Bituminous Tack Coat	GALLONS	1,480
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint	LINEAR FOOT	13,300
Temporary & Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), Yellow, Paint	LINEAR FOOT	13,300

**RFB2016-16 -- PROJECT #SR041 & SR042
ROADWAY SUMMARY
(PAGE 2 OF 2)**

WRIGHT STREET (Continued)

<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>APPROX. QUANTITY</u>
Temporary and Permanent (stripe twice) Skip Traffic Stripe, 5" (inch), White, Paint	GROSS LINEAR FOOT	200
Temporary and Permanent (stripe twice) Solid Traffic Stripe, 24" (inch), White, Paint	LINEAR FOOT	40
Re-Stripe, Solid Traffic Stripe, 24" (inch), White, Paint, (re-stripe once, existing stop bars at subdivision entrances & side roads).	LINEAR FOOT	100
Re-Stripe, Pavement Marking Turn Arrow Type 2, White, Paint (re-stripe once, turn arrows at existing subdivisions decel lanes).	EACH	2
Temporary & Permanent (stripe twice) Pavement Marking Word, "STOP", Type 2, White, Paint	EACH	1
Temporary & Permanent (stripe twice) Pavement Marking Word, "AHEAD", Type 4, White, Paint	EACH	1
Shoulder Re-Construction & Turf Establishment	SHOULDER MILE	2.52
Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %

RFB2016-16 BID FORM – Page 1 of 4
(Submit an Original and Two Copies)

PROJECT#SR041 & SR042 RFB2016-16 -- 2016 L.M.I.G. ROADWAY PATCHING AND RESURFACING

SUBMITTED TO: Barrow County Board of Commissioners

SUBMITTED BY: _____(Hereinafter called “Bidder”)

NAME, ADDRESS AND TELEPHONE NUMBER OF PRIME/GENERAL CONTRACTOR:

Barrow County Board of Commissioners:

Having carefully examined the Request For Bid and Specifications for RFB2016-16, as well as the premises and conditions affecting the Work, the undersigned proposes to furnish all services, labor and materials as called for by RFB2016-16, and complete all Work within SIXTEEN (16) weeks of generation of a Notice To Proceed, in accordance with said documents, for a total bid amount of (complete Pages 2, 3, & 4 and furnish with Page 1):

_____ (\$_____)

It is understood that Barrow County is only obligated for actual quantities installed and that payment(s) will be made based upon material tickets and satisfactory inspections. Included and attached is a Bid Bond in the amount of five percent (5%) of this Bid.

Signed, sealed, and dated this ____ Day of _____, 2016.

Bidder: _____(Seal)
(Company Name)

By: _____

Title: _____

By: _____

Title: _____

**RFB2016-16 (PROJECT #SR041 & SR042) BID FORM – Page 2 of 4
(Submit an Original and Two Copies)**

Line No.	Item Description	Unit of Measure	Approx. Qty	Unit Price (Dollars/Cents)	Bid Amount (Dollars/Cents)
1	Recycled Asphaltic Concrete PATCHING, 19 MM, including Bituminous Material & Hydrated Lime. Also include Bituminous Tack Coat, Milling, Disposal of Millings, Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed	TON	7,240		
2	Recycled Asphaltic Concrete PATCHING, 12.5 MM, Superpave, Type 1, Blend 1. including Bituminous Material & Hydrated Lime. Also include Bituminous Tack Coat, Milling, Disposal of Millings, Haul & Traffic Control & Temporary Yellow Tape along center line of road where needed	TON	630		
3	Full Depth Reclamation with Portland Cement, including pulverization/recycling of existing soil/crushed stone base and existing asphalt pavement materials. Recycle depth to be 8" inches. Reconstruction to include reshaping, grading, proper compaction, and curing. 40 lbs/yd ² of Portland Cement to be used. Bituminous Prime Coat included.	SQUARE YARDS	12,520		
4	Recycled Asphaltic Concrete Leveling including Bituminous Material, Hydrated Lime and Haul.	TON	2,170		
5	Recycled Asphaltic Concrete 9.5 MM Superpave Wearing Course, Type 1, Blend 1, including Bituminous Material, Hydrated Lime and Haul. 125 lbs/yd ² .	TON	6,680		

6	Recycled Asphaltic Concrete 12.5 MM Superpave Wearing Course, Type 1, Blend 1, including Bituminous Material, Hydrated Lime and Haul.	TON	1,290		
7	Recycled Asphaltic Concrete Binder, 19 MM, including Bituminous Material, Hydrated Lime and Haul. 220 lbs/yd ² .	TON	460		
8	Bituminous Tack Coat	GALLONS	10,470		
9	Temporary and Permanent (stripe twice) Solid Traffic Stripe, 5" (inch), White, Paint	LINEAR FOOT	92,990		
10	Temporary and Permanent (stripe twice) Solid Traffic Stripe, 5"(inch), Yellow, Paint	LINEAR FOOT	94,370		
11	Temporary and Permanent (stripe twice) Skip Traffic Stripe, 5" (inch), White, Paint	GROSS LINEAR FOOT	2,250		
12	Temporary and Permanent (stripe twice) Skip Traffic Stripe, 5" (inch), Yellow, Paint	GROSS LINEAR FOOT	1,300		
13	Temporary and Permanent (stripe twice) Solid Traffic Stripe, 24"(inch), White, Paint	LINEAR FOOT	199		
14	Temporary and Permanent (stripe twice) Pavement Marking Word, "STOP", Type 2, White, Paint	EACH	4		
15	Temporary and Permanent (stripe twice) Pavement Marking Word, "AHEAD", Type 4, White, Paint	EACH	4		
16	Re-Stripe (stripe once), Pavement Marking Turn Arrow, Type 2, White, Paint (re-stripe turn arrows at existing decel lanes)	EACH	36		

17	Re-Stripe (stripe once), Solid Traffic Stripe, 24" (inch), White, Paint (re-stripe existing stop bars at side road intersections)	LINEAR FOOT	765		
18	Re-Stripe (stripe once) Solid Traffic Stripe, 5" (inch), White, Paint	LINEAR FOOT	5,500		
19	Re-Stripe (stripe once) Solid Traffic Stripe, 5"(inch), Yellow, Paint	LINEAR FOOT	5,500		
20	Shoulder Re-Construction and Turf Establishment	SHOULDER MILE	17.86		
21	Traffic Control (to also include temporary yellow tape along center line of road if required)	LUMP	100 %		
	TOTAL BID				\$

BID BOND

BARROW COUNTY, GEORGIA

BIDDER (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (hereinafter referred to as the "County" (Name and Address):

Barrow County, Georgia
30 North Broad Street
Winder, Georgia 30680

BID

BID DUE DATE:

PROJECT (Brief Description Including Location):

BOND

BOND NUMBER:

DATE (Not later than Bid due date):

PENAL SUM: _____
(Words) (Figures)

IN WITNESS WHEREOF, Surety and Bidder, intending to be legally bound hereby to the County, subject to the terms printed below or on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent or representative.

BIDDER

SURETY

_____(Seal)
Bidder's Name and Corporate Seal

_____(Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title:

By: _____
Signature and Title:
(Attach Power of Attorney)

Attest: _____
Signature and Title:

Attest: _____
Signature and Title:

- Note:
- (1) Above addresses are to be used for giving any notice required by the terms of this Bid Bond.
 - (2) Any singular reference to Bidder, Surety, the County or any other party shall be considered plural where applicable.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to the County upon Default of Bidder the penal sum set forth on the face of this Bond.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension of that time agreed to in writing by the County) the executed Agreement required by the Bidding Documents and any performance and payment Bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 The County accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension of that time agreed to in writing by the County) the executed Agreement required by the Bidding Documents and any performance and payment Bonds required by the Bidding Documents; or

3.2 All Bids are rejected by the County; or

3.3 The County fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension of that time agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon Default by Bidder within 30 calendar days after receipt by Bidder and Surety of a written Notice of Default from the County, which Notice will be given with reasonable promptness and will identify this Bond and the Project and include a statement of the amount due.

5. Surety waives notice of, as well as any and all defenses based on or arising out of, any time extension to issue a Notice of Award agreed to in writing by the County and Bidder, provided that the total time, including extensions, for issuing a Notice of Award shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall be commenced under

this Bond either prior to 30 calendar days after the Notice of Default required in paragraph 4 above is received by Bidder and Surety or later than one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the State of Georgia.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer or proposal, as applicable under the particular circumstances.

12. The terms of this Bid Bond shall be governed by the laws of the State of Georgia.

PAYMENT BOND

BARROW COUNTY, GEORGIA

KNOW ALL MEN BY THESE PRESENTS THAT _____ (as CONTRACTOR, hereinafter referred to as the “Principal”), and _____ (as SURETY COMPANY, hereinafter referred to as the “CONTRACTOR’S SURETY”), are held and firmly bound unto Barrow County, Georgia (as OWNER, hereinafter referred to as the “County”), for the use and benefit of any “Claimant,” as hereinafter defined, in the sum of Dollars (\$_____), lawful money of the United States of America, for the payment of which the Principal and the Contractor’s Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written agreement with the County, dated _____, which is incorporated herein by reference in its entirety (hereinafter referred to as the “CONTRACT”), for the construction of a project known as RFB2016-16 (PROJECT #SR041 & SR042) 2016 L.M.I.G. ROADWAY PATCHING & RESURFACING, (hereinafter referred to as “the PROJECT”).

NOW THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payment to any Claimant, as hereinafter defined, for all labor, services and materials used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise to remain in full force and effect.

A "Claimant" shall be defined herein as any Subcontractor, person, Party, partnership, corporation or other entity furnishing labor, services or materials used or reasonably required for use in the performance of the Contract, without regard to whether such labor, services or materials were sold, leased or rented, and without regard to whether such Claimant is or is not in privity of the Contract with the Principal or any Subcontractor performing Work on the Project.

In the event of any claim made by the Claimant against the County, or the filing of a Lien against the property of the County affected by the Contract, the Contractor's Surety shall either settle or resolve the Claim and shall remove any such Lien by bond or otherwise as provided in the Contract.

The Parties further expressly agree that any action on this Bond may be brought within the time allowed by Georgia law for suit on contracts under seal.

IN WITNESS WHEREOF, the Principal and Contractor's Surety have hereunto affixed their corporate seals and caused this obligation to be signed by their duly authorized officers on this ____ day of _____, 20____.

(Name of Principal)

By: _____ (Print/Type)

_____ (Signature)

Title: _____ (SEAL)

(Signatures Continued on Next Page)

Attest:

_____ (Print/Type)

_____ (Signature)

Title: _____

Date: _____

(Name of Contractor's Surety)

By: _____ (Print/Type)

_____ (Signature)

Title: _____ (SEAL)

Attest:

_____ (Print/Type)

_____ (Signature)

Title: _____

Date: _____

(ATTACH SURETY'S POWER OF ATTORNEY)

PERFORMANCE BOND

BARROW COUNTY, GEORGIA

KNOW ALL MEN BY THESE PRESENTS THAT _____ (as CONTRACTOR, hereinafter referred to as the “Principal”), and _____ (as SURETY COMPANY, hereinafter referred to as the “CONTRACTOR’S SURETY”), are held and firmly bound unto Barrow County, Georgia (as OWNER, hereinafter referred to as the “County”), for the use and benefit of any “Claimant,” as hereinafter defined, in the sum of Dollars (\$ _____), lawful money of the United States of America, for the payment of which the Principal and the Contractor’s Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered, or is about to enter, into a certain written agreement with the County, dated the ____ of _____, 20__ which is incorporated herein by reference in its entirety (hereinafter referred to as the “CONTRACT”), for the construction of a project known as RFB2016-16 (PROJECT #SR041 & SR042) 2016 L.M.I.G. ROADWAY PATCHING AND RESURFACING, (hereinafter referred to as “the PROJECT”).

NOW THEREFORE, the conditions of this obligation are as follows:

1. That if the Principal shall fully and completely perform each and all of the terms, provisions and requirements of the Contract, including and during the period of any warranties or guarantees required thereunder, and all modifications, amendments, changes, deletions, additions, and alterations thereto that may hereafter be made, and if the Principal and the Contractor’s Surety shall indemnify

and hold harmless the County from any and all losses, liability and damages, claims, judgments, liens, costs and fees of every description, including but not limited to, any damages for delay, which the County may incur, sustain or suffer by reason of the failure or default on the part of the Principal in the performance of any and all of the terms, provisions and requirements of the Contract, including all modifications, amendments, changes, deletions, additions, and alterations thereto and any warranties or guarantees required thereunder, then this obligation shall be void; otherwise to remain in full force and effect;

2. In the event of a failure of performance of the Contract by the Principal, which shall include, but not be limited to, any breach of default of the Contract:
 - a. The Contractor's Surety shall commence performance of its obligations and undertakings under this Bond no later than thirty (30) days after written notice from the County to the Contractor's Surety; and
 - b. The means, method or procedure by which the Contractor's Surety undertakes to perform its obligations under this Bond shall be subject to the advance written approval of the County.

The Contractor's Surety hereby waives notice of any and all modifications, omissions, additions, changes and advance payments or deferred payments in or about the Contract, and agrees that the obligations undertaken by this Bond shall not be impaired in any manner by reason of any such modifications, omissions, additions, changes, and advance payments or deferred payments. The Parties further expressly agree that any action on this Bond may be brought within the time allowed by Georgia law for suit on contracts under seal.

IN WITNESS WHEREOF, the principal and Contractor's Surety have hereunto affixed their corporate seals and caused this obligation to be signed by their duly authorized officers or attorneys-in-fact, this _____ day of _____, 20____.

(Name of Principal)

By: _____ (Print/Type)

_____ (Signature)

Title: _____ (SEAL)

Attest:

_____ (Print/Type)

_____ (Signature)

Title: _____

Date: _____

(Name of Contractor's Surety)

By: _____ (Print/Type)

_____ (Signature)

Title: _____ (SEAL)

Attest:

_____ (Print/Type)

_____ (Signature)

Title: _____

Date: _____

(ATTACH SURETY'S POWER OF ATTORNEY)

CONSTRUCTION SERVICES AGREEMENT
FOR THE 2016 L.M.I.G. ROADWAY PATCHING AND RESURFACING PROJECT

This Construction Services Agreement (the "Agreement") is made and entered into this ____ day of _____, 20__, by and between BARROW COUNTY, a political subdivision of the State of Georgia, acting by and through its governing authority, the Barrow County Board of Commissioners ("County"), and _____, a _____ with its principal place of business located at _____, ("Contractor"), collectively referred to as the "Parties".

WITNESSETH:

WHEREAS, the County desires to employ a contractor to perform services for the construction of a Project, as defined below; and

WHEREAS, the County solicited bids for construction of the Project pursuant to Barrow County Request for Bid 2016-16, Project Numbers SR041& SR042, dated June 15, 2016; (the "RFB" a copy of which is maintained in the files of the Barrow County Purchasing Department); and

WHEREAS, the Contractor submitted a complete and timely bid and met all bid requirements such that the County awarded Project Numbers SR041 & SR042 to the Contractor; and

WHEREAS, the County finds that specialized knowledge, skills, and training are necessary to perform the Work contemplated under this Agreement; and

WHEREAS, the Contractor has represented that it is qualified by training and experience to perform the Work; and

WHEREAS, based upon Contractor's bid to perform the construction services described herein, the County has selected Contractor as the successful bidder, and

WHEREAS, Contractor desires to perform the Work as set forth in this Agreement under the terms and conditions provided in this Agreement; and

WHEREAS, the public interest will be served by this Agreement; and

WHEREAS, Contractor has familiarized itself with the nature and extent of the Contract Documents, the Project, and the Work, with all local conditions and federal, state and local laws, ordinances, rules and regulations in any manner that may affect cost, progress or performance of Work, and Contractor is aware that he must be licensed to do business in the State of Georgia.

NOW THEREFORE, for and in consideration of the mutual promises contained herein and

other good and adequate consideration, the sufficiency of which is hereby acknowledged, the Parties hereto do mutually agree as follows:

Section 1. Contract Documents

The following documents, attached hereto and incorporated herein by reference, constitute the Contract Documents:

- A. This Agreement;
- B. Request for Bid (maintained on file with the Purchasing Department);
- C. Bid Documents from Contractor, dated _____, _____, with portions attached hereto as Exhibit "A";
- D. Performance Bond and Payment Bond (included in the RFB maintained on file with the Purchasing Department);
- E. Noncollusion Affidavit of Prime Bidder, attached hereto as Exhibit "B";
- F. Final Affidavit, attached hereto as Exhibit "C";
- G. Alien Employment affidavits attached hereto as Exhibits "D" and "E";
- H. Plans and specifications, including but not limited to the Specifications, the Georgia Department of Transportation Specifications Standards, and Special Provisions, the Typical Resurfacing Sections, Location Maps, and Roadway Summaries (included in the RFB maintained on file with the Purchasing Department), with any modifications (if issued) attached hereto as Exhibit "F";
- I. Key Personnel, attached hereto as Exhibit "G";
- J. Notice of Award, attached hereto as Exhibit "H";
- K. Barrow County Code of Ethics;
- L. The following, which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents if properly adopted in writing and executed by the Parties.

In the event of any discrepancy among the Contract Documents, that provision that inures most to the benefit of the County, as determined by the County in its sole discretion, shall govern.

Section 2. Project Description

The Project is defined generally as follows: RFB2016-16 Project Numbers SR041 & SR042, 2016 L.M.I.G. Roadway Patching and Resurfacing, which is described generally as asphalt patching and resurfacing of various roadways throughout Barrow County (the “Project”).

Section 3. The Work

The Work to be completed under this Agreement (the “Work”) includes, but shall not be limited to, the Work described in the Specifications, Bid Form, Roadway Summaries, the Georgia Department of Transportation Specifications, Standards, and Special Provisions, the Typical Resurfacing Sections, Location Maps, and elsewhere in the Contract Documents. The Work includes all material, labor, insurance, tools, equipment, and any other miscellaneous items and work reasonably inferable from the Contract Documents. The term “reasonably inferable” takes into consideration the understanding of the Parties that some details necessary for completion of the Work may not be shown on the drawings or included in the specifications, but they are a requirement of the Work if they are a usual and customary component of the Work or are otherwise necessary for complete installation and operation of the Work. Contractor shall complete the Work in strict accordance with the Contract Documents. In the event of any discrepancy among the terms of the various Contract Documents, the provision most beneficial to the County, as determined by the County in its sole discretion, shall govern.

The County will issue a Notice to Proceed, which Notice to Proceed shall state the dates for beginning Work and for achieving Final Completion of Work. Work shall commence within five (5) days of County’s issuance of the Notice to Proceed.

Unless otherwise approved, the Contractor shall perform its obligations under this Agreement as expeditiously as is consistent with reasonable skill and care and the orderly progress of the Work.

Section 4. Contract Periods; Liquidated Damages

- A. Contract Periods/Contract Term. Contractor warrants and represents that it will perform its Work in a prompt and timely manner, which shall not impose delays on the progress of the Work. The Contractor shall commence Work pursuant to this Agreement on or before a date to be specified on a written “Notice to Proceed” provided by the County (the “Commencement Date”), and the Parties intend that all Work shall be completed on or before the date **sixteen (16) weeks following the Commencement Date specified in the Notice to Proceed.** Every effort shall be made by Contractor to shorten this period. If the Term of this Agreement is longer than one year, the Parties agree that this Agreement, as required by O.C.G.A. § 36-60-13, shall terminate absolutely and without further obligation on the part of the County on December 31 each calendar year of the Term, and further, that this Agreement shall automatically renew on January 1 of each subsequent calendar

year absent the County's provision of written notice of non-renewal to Contractor at least five (5) days prior to the end of the then current calendar year. Title to any supplies, materials, equipment, or other personal property shall remain in Contractor until fully paid for by the County.

- B. Liquidated Damages. The County and Contractor recognize that time is of the essence of this Agreement and that County will suffer financial loss if the Work is not completed in accordance with the deadlines specified in Section 4(A) above and within the Contract Documents. The County and Contractor also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by the County if the Work is not completed within the specified times. Accordingly, instead of requiring any such proof, the County and Contractor agree that, as liquidated damages for delay (but not as a penalty), the Contractor shall pay to the County **One Hundred Fifty and 00/100 Dollars (\$150.00)** for each and every day that expires after the deadlines provided herein, or agreed to in writing by both Parties in a change order.
- C. Expediting Completion. The Contractor is accountable for completing the Work within the time period provided in the Contract Documents, or as otherwise amended by a change order. If, in the judgment of the County, the Work is behind schedule and the rate of placement of work is inadequate to regain scheduled progress to insure timely completion of the entire Work or a separable portion thereof, the Contractor, when so informed by the County, shall immediately take action to increase the rate of work placement by:
- (1) An increase in working forces;
 - (2) An increase in equipment or tools;
 - (3) An increase in hours of work or number of shifts;
 - (4) Expediting delivery of materials; and/or
 - (5) Other action proposed if acceptable to County.

Within five (5) calendar days after such notice from County that the Work is behind schedule, the Contractor shall notify the County in writing of the specific measures taken and/or planned to increase the rate of progress. The Contractor shall include an estimate as to the date of scheduled progress recovery. Should the County deem the plan of action inadequate, the Contractor shall take additional steps to make adjustments as necessary to its plan of action until it meets with the County's approval.

Section 5. Contractor's Compensation; Time and Method of Payment

- A. The total amount paid under this Agreement as compensation for Work performed and reimbursement for costs incurred shall not, in any case, exceed \$_____, except as outlined in Section 6 below (the "Contract Price"). The compensation for

Work performed shall be based upon the unit price shown on the Contractor's Bid Form and actual quantities installed.

- B. County agrees to pay the Contractor for the Work performed and costs incurred by Contractor upon certification by the County that the Work was actually performed and costs actually incurred in accordance with this Agreement. Compensation for Work performed and reimbursement for costs incurred shall be paid to the Contractor upon receipt and approval by the County of invoices setting forth in detail the Work performed, actual quantities installed and costs incurred. Invoices shall be submitted on a monthly basis, and such invoices shall reflect charges incurred versus charges budgeted. Each invoice shall be accompanied by an Interim Waiver and Release upon Payment (or a Waiver and Release upon Final Payment in the case of the invoice for final payment) procured by the Contractor from all subcontractors in accordance with O.C.G.A. § 44-14-366.
- C. County and Contractor shall comply with the provisions of O.C.G.A. § 13-10-80. The Contractor through each invoice may request payment of no more than ninety percent (90%) of that portion of the Work completed during the term covered by such invoice until fifty percent (50%) of the Contract Price, as may be adjusted, is due and the manner of completion of the Work and its progress are reasonably satisfactory to the County. Payment for the remaining ten percent (10%) of Work completed and covered by such invoices shall be retained by the County until Final Completion. Once fifty percent (50%) of the Contract Price, as may be adjusted, is due and the manner of completion of the Work and its progress are reasonably satisfactory to the County, no additional retainage shall be withheld, except as provided below. At the discretion of the County and with the written approval of the Contractor, the retainage of each subcontractor may be released separately as the subcontractor completes his or her work.

If, after discontinuing the retention, the County determines that the Work is unsatisfactory or has fallen behind schedule, retention may be resumed at the previous level. If retention is resumed by the County, the Contractor and subcontractors shall be entitled to resume withholding retainage accordingly. At Final Completion of the Work and as the County determines the Work to be reasonably satisfactory, the County shall, within 30 days after the invoice and other appropriate documentation as may be required by the Contract Documents are provided to the County, pay the retainage to the Contractor. If at that time there are any remaining incomplete minor items, an amount equal to 200 percent of the value of each item as determined by the County shall be withheld until such item or items are completed. The reduced retainage shall be shared by the Contractor and subcontractors as their interests may appear.

The Contractor shall, within ten (10) days from its receipt of retainage from the County, pass through payments to subcontractors and shall reduce each

subcontractor's retainage in the same manner as the Contractor's retainage is reduced by the County; provided, however, that the value of each subcontractor's work complete and in place equals fifty percent (50%) of his or her subcontract value, including approved change orders and other additions to the subcontract value, provided, further, that the work of the subcontractor is proceeding satisfactorily and the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his or her work including any warranty work as the Contractor in his or her reasonable discretion may require, including, but not limited to, a payment and performance bond. The subcontractor shall, within ten (10) days from the subcontractor's receipt of retainage from the Contractor, pass through payments to lower tier subcontractors and shall reduce each lower tier subcontractor's retainage in the same manner as the subcontractor's retainage is reduced by the Contractor; provided, however, that the value of each lower tier subcontractor's work complete and in place equals fifty percent (50%) of his or her subcontract value, including approved change orders and other additions to the subcontract value; provided, further, that the work of the lower tier subcontractor is proceeding satisfactorily and the lower tier subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his or her work including any warranty work as the subcontractor in his or her reasonable discretion may require, including, but not limited to, a payment and performance bond.

Neither final payment nor any retained percentage shall become due until the Contractor submits to the County: (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the County or County property might be responsible or encumbered (less amounts withheld by County) have been paid or otherwise satisfied; (2) a certificate evidencing that insurance, required by the Contract Documents to remain in force after final payment, is currently in effect and will not be canceled or allowed to expire until at least thirty (30) calendar days prior written notice has been given to the County; (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents; (4) consent of surety, if any, to final payment; (5) a release or waiver of liens, claims, security interests, and encumbrances by all subcontractors and material suppliers; and (6), if required by the County, other data establishing payment or satisfaction of obligations, such as receipts, to the extent and in such form as may be designated by the County. If a subcontractor or material supplier refuses to furnish a release or waiver as required by the County, the Contractor may furnish a bond satisfactory to the County to indemnify the County against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the County all money that the County may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

Acceptance of final payment by the Contractor, a subcontractor or material supplier shall constitute a waiver of claims by that payee, except those claims previously made in writing and identified by that payee as unsettled at the time of final application for payment.

- D. Any material deviations in tests or inspections performed, or times or locations required to complete such tests or inspections, and like deviations from the Work described in this Agreement shall be clearly communicated to the County *before charges are incurred* and shall be handled through change orders, as described in Section 6 below. The County shall pay the Contractor within thirty (30) days after approval of the invoice by County staff, less any retainage as described in this Section. No payments will be made for unauthorized work. Upon the County's certification of Completion of the Project, an invoice should be submitted to the Barrow County Engineering Department, 30 North Broad Street, Winder, Georgia 30680 for approval, with a copy submitted electronically to payables@barrowga.org. Payment will be sent to the designated address by U. S. Mail only; payment will not be hand-delivered, though the Contractor may arrange to pick up payments directly from the County or may make written requests for the County to deliver payments to the Contractor by Federal Express delivery at the Contractor's expense.

Section 6. Change Orders

- A. "Change order" means a written modification of the Contract Documents, signed by the County and the Contractor.
- B. The County reserves the right to order changes in the Work to be performed under this Agreement by altering, adding to, or deducting from the Work. All such changes shall be incorporated in written change orders and executed by the Contractor and the County. Such change orders shall specify the changes ordered and any necessary adjustment of compensation and completion time. If the Parties cannot reach an agreement on the terms for performing the changed work within a reasonable time to avoid delay or other unfavorable impacts as determined by the County in its sole discretion, the County shall have the right to determine reasonable terms, and the Contractor shall proceed with the changed work.
- C. Any work added to the scope of this Agreement by a change order shall be executed under all the applicable conditions of this Agreement. No claim for additional compensation or extension of time shall be recognized, unless contained in a written change order duly executed on behalf of the County and the Contractor.
- D. The County Manager has authority to execute without further action of the Barrow County Board of Commissioners, any number of change orders so long as their total effect does not materially alter the terms of this Agreement or materially

increase the total amount to be paid under this Agreement, as set forth in Section 5 above. Any such change orders materially altering the terms of this Agreement, or increasing the total amount to be paid under this Agreement in excess of \$25,000.00, must be approved by the resolution of the Barrow County Board of Commissioners.

Section 7. Covenants of Contractor.

A. Ethics Code

Contractor agrees that it shall not engage in any activity or conduct that would result in a violation of the Barrow County Code of Ethics or any other similar law or regulation.

B. Time is of the Essence

Contractor specifically acknowledges that TIME IS OF THE ESSENCE for completion of the Project.

C. Expertise of Contractor

Contractor accepts the relationship of trust and confidence established between it and the County, recognizing that the County's intention and purpose in entering into this Agreement is to engage an entity with the requisite capacity, experience, and professional skill and judgment to provide the Work in pursuit of the timely and competent completion of the Work undertaken by Contractor under this Agreement. The Contractor agrees to use its best efforts, skill, judgment, and abilities to perform its obligations and to further the interests of County and the Project in accordance with County's requirements and procedures.

Contractor represents that it has familiarized itself with the nature and extent of the Contract Documents, the Work, work site(s), locality, and all local conditions, laws and regulations that in any manner may affect cost, progress, performance, or furnishing of the Work. Contractor further represents and agrees that it has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents. Contractor represents that it has given the County written notice of all conflicts, errors, or discrepancies that the Contractor has discovered in the Contract Documents, and the written resolution thereof by the County is acceptable to the Contractor.

Contractor agrees that it will perform its services in accordance with the usual and customary standards of the Contractor's profession or business and in compliance with all applicable federal, state, and local laws, regulations, codes, ordinances, or

orders applicable to the Project. Further, the Contractor agrees to bear the full cost of correcting the Contractor's negligent or improper Work, the negligent or improper work of its contractors and subcontractors, and any harm caused by such negligent Work.

The Contractor's duties shall not be diminished by any approval by the County of Work completed or produced; nor shall the Contractor be released from any liability by any approval by the County of Work completed or produced, it being understood that the County is ultimately relying upon the Contractor's skill and knowledge in performing the Work required under the Contract Documents.

In the event that during the course of performing the Work, the Contractor discovers or reasonably should discover that there exists in any drawings, specifications, plans, sketches, instructions, information, requirements, procedures, and other data supplied to the Contractor (by the County or any other party) that is, in the Contractor's opinion, unsuitable, improper, or inaccurate for the purposes for which the document or data is furnished, Contractor shall promptly inform the County of such inaccuracies, impropriety, issues or concerns.

D. Budgetary Limitations

Contractor agrees and acknowledges that budgetary limitations are not a justification for breach of sound principals of Contractor's profession and industry. Contractor shall take no calculated risk in the performance of the Work. Specifically, Contractor agrees that, in the event it cannot perform the Work within the budgetary limitations established without disregarding sound principals of Contractor's profession and industry, Contractor will give written notice immediately to the County.

E. County's Reliance on the Work

The Contractor acknowledges and agrees that the County does not undertake to approve or pass upon matters of expertise of the Contractor and that therefore, the County bears no responsibility for Contractor's Work performed under this Agreement. The Contractor acknowledges and agrees that the acceptance of Work by the County is limited to the function of determining whether there has been compliance with what is required to be produced under this Agreement. The County will not, and need not, inquire into adequacy, fitness, suitability or correctness of Contractor's performance. Contractor further agrees that no approval of designs, plans, or specifications by any person, body, or agency shall relieve Contractor of the responsibility for adequacy, fitness, suitability, and correctness of Contractor's Work under professional and industry standards, or for performing services under this Agreement in accordance with sound and accepted professional and industry principals.

F. Contractor's Reliance on Submissions by the County

Contractor must have timely information and input from the County in order to perform the Work required under this Agreement. Contractor is entitled to rely upon information provided by the County, but Contractor shall be required to provide immediate written notice to the County if Contractor knows or reasonably should know that any information provided by the County is erroneous, inconsistent, or otherwise problematic.

G. Contractor's Representative

_____ shall be authorized to act on Contractor's behalf with respect to the Work as Contractor's designated representative.

H. Assignment of Agreement

The Contractor covenants and agrees not to assign or transfer any interest in, nor delegate any duties of this Agreement, without the prior express written consent of the County. As to any approved subcontractors, the Contractor shall be solely responsible for reimbursing them, and the County shall have no obligation to them.

I. Responsibility of Contractor and Indemnification of County

The Contractor covenants and agrees to take and assume all responsibility for the Work rendered in connection with this Agreement. The Contractor shall bear all losses and damages directly or indirectly resulting to it and/or the County on account of the performance or character of the Work rendered pursuant to this Agreement. Contractor shall defend, indemnify, and hold harmless the County, its officers, boards, commissions, elected and appointed officials, employees, servants, volunteers and agents (hereinafter referred to as "County Parties") from and against any and all claims, injuries, suits, actions, judgments, damages, losses, costs, expenses, and liability of any kind whatsoever, including but not limited to, attorney's fees and costs of defense (hereinafter "Liabilities"), which may be the result of willful, negligent, or tortious conduct arising out of the Work, performance of contracted services, or operations by the Contractor, any subcontractor, anyone directly or indirectly employed by the Contractor or subcontractor, or anyone for whose acts the Contractor or subcontractor may be liable, regardless of whether or not the negligent act is caused in part by a party indemnified hereunder. This indemnity obligation does not include Liabilities caused by or resulting from the sole negligence of the County or County Parties. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this provision.

In any and all claims against the County or County Parties, by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by the Contractor or subcontractor, or anyone for whose acts the Contractor or subcontractor may be liable, the indemnification obligation set forth in this provision shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or any subcontractor under workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts. This obligation to indemnify, defend, and hold harmless the County and County Parties shall survive expiration or termination of this Agreement, provided that the claims are based upon or arise out of actions that occurred during the performance of this Agreement.

J. Independent Contractor

Contractor hereby covenants and declares that it is engaged in an independent business and agrees to perform the Work as an independent contractor and not as the agent or employee of the County. The Contractor agrees to be solely responsible for its own matters relating to the time and place the services are performed; the instrumentalities, tools, supplies, and/or materials necessary to complete the Work; hiring of subcontractors, agents, or employees to complete the Work; and the payment of employees, including compliance with Social Security, withholding, and all other regulations governing such matters. The Contractor agrees to be solely responsible for its own acts and those of its subordinates, employees, and subcontractors during the life of this Agreement. Any provisions of this Agreement that may appear to give the County the right to direct Contractor as to the details of the services to be performed by Contractor or to exercise a measure of control over such services will be deemed to mean that Contractor shall follow the directions of the County with regard to the results of such services only.

Inasmuch as the County and the Contractor are independent of each other, neither has the authority to bind the other to any third person or otherwise to act in any way as the representative of the other, unless otherwise expressly agreed to in writing signed by both parties hereto. The Contractor agrees not to represent itself as the County's agent for any purpose to any party or to allow any employee of the Contractor to do so, unless specifically authorized, in advance and in writing, to do so, and then only for the limited purpose stated in such authorization. The Contractor shall assume full liability for any contracts or agreements the Contractor enters into on behalf of the County without the express knowledge and prior written consent of the County.

K. Insurance

- (1) Requirements: The Contractor shall have and maintain in full force and effect for the duration of this Agreement, insurance insuring against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the Work by the Contractor, its agents, representatives, employees or subcontractors. All policies shall be subject to approval by the County Attorney to form and content. These requirements are subject to amendment or waiver if so approved in writing by the County Manager.
- (2) Minimum Limits of Insurance: Contractor shall maintain the following insurance policies with limits no less than:
 - (a) Comprehensive General Liability policy of \$1,000,000 (one million dollars) combined single limit per occurrence \$2,000,000 (two million dollars) aggregate for bodily and personal injury, sickness, disease or death, injury to or destruction of property, including loss of use resulting therefrom.
 - (b) Comprehensive Automobile Liability policy (covering owned, non-owned, and hired automobiles) of \$1,000,000 (one million dollars) combined single limit per occurrence \$2,000,000 (two million dollars) aggregate for bodily and personal injury, sickness, disease or death, injury to or destruction of property, including loss of use resulting therefrom.
 - (c) Workers' Compensation policy with limits as required by the State of Georgia and Employers Liability limits of \$1,000,000 (one million dollars) per accident.
- (3) Deductibles and Self-Insured Retentions: Any deductibles or self-insured retentions must be declared to and approved by the County in writing.
- (4) Other Insurance Provisions: The policy is to contain, or be endorsed to contain, the following provisions:
 - (a) General Liability and Automobile Liability Coverage.
 - (i) The County and County Parties are to be covered as insureds as respects: liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of the Contractor; premises owned, leased, or used by the Contractor; automobiles owned, leased, hired, or

borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to the County or County Parties.

- (ii) The Contractor's insurance coverage shall be primary noncontributing insurance as respects to any other insurance or self-insurance available to the County or County Parties. Any insurance or self-insurance maintained by the County or County Parties shall be in excess of the Contractor's insurance and shall not contribute with it.
 - (iii) Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the County and County Parties.
 - (iv) Coverage shall state that the Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought.
 - (v) Coverage shall be provided on a "pay on behalf" basis, with defense costs payable in addition to policy limits. There shall be no cross liability exclusion.
 - (vi) The insurer shall agree to waive all rights of subrogation against the County and County Parties for losses arising from work performed by the Contractor for the County.
- (b) Workers' Compensation Coverage: The insurer providing Workers' Compensation Coverage will agree to waive all rights of subrogation against the County and County Parties for losses arising from work performed by the Contractor for the County.
- (c) All Coverages:
- (i) Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled, reduced in coverage or in limits except after thirty (30) days prior written notice by certified mail, return receipt requested, has been given to the County.
 - (ii) Policies shall have concurrent starting and ending dates.

- (5) Acceptability of Insurers: Insurance is to be placed with insurers licensed to do business in Georgia and with an A.M. Bests' rating of no less than A:VII.
- (6) Verification of Coverage: Contractor shall furnish the County with certificates of insurance and endorsements to the policies evidencing coverage required by this Section prior to the start of Work. The certificate of insurance and endorsements shall be on a form utilized by Contractor's insurer in its normal course of business and shall be received and approved by the County prior to execution of this Agreement by the County. The County reserves the right to require complete, certified copies of all required insurance policies, at any time. The Contractor shall provide proof that any expiring coverage has been renewed or replaced at least two (2) weeks prior to the expiration of the coverage.
- (7) Subcontractors: Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated in this Agreement, including but not limited to naming the County and County Parties as additional insureds.
- (8) Claims-Made Policies: Contractor shall extend any claims-made insurance policy for at least six (6) years after termination or final payment under the Agreement, whichever is later.
- (9) County as Additional Insured and Loss Payee: The County and County Parties shall be named as additional insureds and loss payees on all policies required by this Agreement, except the County need not be named as an additional insured and loss payee on any Professional Liability policy or Workers' Compensation policy.

L. Bonds

The Contractor shall provide Performance and Payment bonds on the forms attached and with a surety licensed to do business in Georgia and listed on the Treasury Department's most current list (Circular 570 as amended). Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

M. Employment of Unauthorized Aliens Prohibited

(1) E-Verify Affidavit

It is the policy of the County that unauthorized aliens shall not be employed to perform work on County contracts involving the physical performance of services. Therefore, the County shall not enter into a contract for the physical performance of services within the State of Georgia unless the Contractor shall provide evidence on County-provided forms, attached hereto as Exhibits "D" and "E" (affidavits regarding compliance with the E-Verify program to be sworn under oath under criminal penalty of false swearing pursuant to O.C.G.A. § 16-10-71), that it and Contractor's subcontractors have conducted a verification, under the federal Employment Eligibility Verification ("EEV" or "E-Verify") program, of the social security numbers, or other identifying information now or hereafter accepted by the E-Verify program, of all employees who will perform work on the County contract to ensure that no unauthorized aliens will be employed. The Contractor hereby verifies that it has, prior to executing this Agreement, executed a notarized affidavit, the form of which is provided in Exhibit "D", and submitted such affidavit to County. In the event the Contractor employs or contracts with any subcontractor(s) in connection with the covered contract, the Contractor agrees to secure from such subcontractor(s) attestation of the subcontractor's compliance with O.C.G.A. § 13-10-91 by the subcontractor's execution of the subcontractor affidavit, the form of which is attached hereto as Exhibit "E", and such subcontractor affidavit shall become part of the contractor/subcontractor agreement. Further, Contractor agrees to provide completed copies of Exhibit "E" to the County within five (5) business days of receipt from any subcontractor.

The County Manager or his/her designee shall be authorized to conduct an inspection of the Contractor's and Contractor's subcontractors' verification process at any time to determine that the verification was correct and complete. The Contractor and Contractor's subcontractors shall retain all documents and records of their respective verification process for a period of three (3) years following completion of the contract.

The County Manager or his/her designee shall further be authorized to conduct periodic inspections to ensure that no County contractor or contractor's subcontractors employ unauthorized aliens on County contracts. By entering into a contract with the County, the Contractor and Contractor's subcontractors agree to cooperate with any such investigation by making their records and personnel available upon reasonable notice for inspection and questioning. Where a Contractor or Contractor's subcontractors are found to have employed an unauthorized alien, the County Manager or his/her designee may report same to the Department of Homeland Security. The Contractor's failure to cooperate with the

investigation may be sanctioned by termination of the contract, and the Contractor shall be liable for all damages and delays occasioned by the County thereby.

The above requirements shall be in addition to the requirements of State and federal law, and shall be construed to be in conformity with those laws.

N. Records, Reports and Audits

(1) Records:

(a) Records shall be established and maintained by the Contractor in accordance with requirements prescribed by the County with respect to all matters covered by this Agreement. Except as otherwise authorized, such records shall be maintained for a period of three years from the date that final payment is made under this Agreement. Furthermore, records that are the subject of audit findings shall be retained for three years or until such audit findings have been resolved, whichever is later.

(b) All costs shall be supported by properly executed payrolls, time records, invoices, contracts, or vouchers, or other official documentation evidencing in proper detail the nature and propriety of the charges. All checks, payrolls, invoices, contracts, vouchers, orders, or other accounting documents pertaining in whole or in part to this Agreement shall be clearly identified and readily accessible.

(2) Reports and Information: Upon request, the Contractor shall furnish to the County any and all statements, records, reports, data, and information related to matters covered by this Agreement in the form requested by the County.

(3) Audits and Inspections: At any time during normal business hours and as often as the County may deem necessary, there shall be made available to the County for examination all records with respect to all matters covered by this Agreement. The Contractor will permit the County to audit, examine, and make excerpts or transcripts from such records, and to audit all contracts, invoices, materials, payrolls, records of personnel, conditions of employment, and/or data relating to all matters covered by this Agreement.

O. Confidentiality

Contractor acknowledges that it may receive confidential information of the County and that it will protect the confidentiality of any such confidential information and will require any of its subcontractors, contractors, and/or staff to likewise protect such confidential information. The Contractor agrees that confidential information it receives or such reports, information, opinions, or conclusions that Contractor creates under this Agreement shall not be made available to, or discussed with, any individual or organization, including the news media, without prior written approval of the County. Contractor shall exercise reasonable precautions to prevent the unauthorized disclosure and use of County information whether specifically deemed confidential or not.

Contractor acknowledges that the County's disclosure of documentation is governed by Georgia's Open Record's Act, and Contractor further acknowledges that, if Contractor submits records containing trade secret information and if Contractor wishes to keep such records confidential, Contractor must submit and attach to such records an affidavit affirmatively declaring that specific information in the records constitutes trade secrets pursuant to Article 27 of Chapter 1 of Title 10, and the Parties shall follow the requirements of O.C.G.A. § 50-18-72(a)(34) related thereto.

P. Licenses, Certifications and Permits

The Contractor covenants and declares that it has obtained all diplomas, certificates, licenses, permits, or the like required by any and all national, state, regional, county, local boards, agencies, commissions, committees or other regulatory bodies in order to perform the Work contracted for under this Agreement; provided that some permits or licenses related to the Project may be obtained as part of the Work and shall be obtained as required. All work performed by Contractor under this Agreement shall be in accordance with applicable legal requirements and shall meet the standard of quality ordinarily expected of competent professionals. The Contractor shall furnish copies of all such permits, licenses, or approvals to the County within ten (10) days after issuance.

Q. Key Personnel

All of the individuals identified in Exhibit "G" are necessary for the successful completion of the Work due to their unique expertise and depth and breadth of experience. There shall be no change in Contractor's Project Manager or members of the project team, as listed in Exhibit "G", without written approval of the County. Contractor recognizes that the composition of this team was instrumental in the County's decision to award the work to Contractor and that compelling reasons for substituting these individuals must be demonstrated for the County's consent to be

granted. Any substitutes shall be persons of comparable or superior expertise and experience. Failure to comply with the provisions of this Section shall constitute a material breach of Contractor's obligations under this Agreement and shall be grounds for termination. Contractor shall not subcontract with any third party for the performance of any portion of the Work without the prior written consent of the County. Contractor shall be solely responsible for any such subcontractors in terms of performance and compensation.

R. Authority to Contract

The Contractor covenants and declares that it has obtained all necessary approvals of its board of directors, stockholders, general partners, limited partners, or similar authorities to simultaneously execute and bind Contractor to the terms of this Agreement, if applicable.

S. Ownership of Work

All reports, designs, drawings, plans, specifications, schedules, work product, and other materials prepared or in the process of being prepared for the Work to be performed by the Contractor ("materials") shall be the property of the County, and the County shall be entitled to full access and copies of all such materials. Any such materials remaining in the hands of the Contractor or subcontractor upon completion or termination of the Work shall be delivered immediately to the County. The Contractor assumes all risk of loss, damage or destruction of or to such materials. If any materials are lost, damaged, or destroyed before final delivery to the County, the Contractor shall replace them at its own expense. Any and all copyrightable subject matter in all materials is hereby assigned to the County, and the Contractor agrees to execute any additional documents that may be necessary to evidence such assignment.

T. Meetings

The Contractor is required to meet with the County's personnel, or designated representatives, to resolve technical or contractual problems that may occur during the term of the contract at no additional cost to the County. Meetings will occur as problems arise and will be coordinated by the County. The Contractor will be given a minimum of three (3) full business days' notice of meeting date, time, and location. Face-to-face meetings are desired. However, at the Contractor's option and expense, a conference call meeting may be substituted. Consistent failure to participate in problem resolution meetings, two consecutive missed or rescheduled meetings, or to make a good faith effort to resolve problems, may result in termination of the contract.

U. Nondiscrimination

During the performance of this Agreement, the Contractor agrees as follows:

1. Compliance with Regulations

The Contractor shall comply with the Regulations, hereinafter defined, relative to nondiscrimination in federally-assisted programs of the Department of Transportation (the "DOT"), Title 49, Code of Federal Regulations, part 21, as they may be amended from time to time (the "Regulations"), which are herein incorporated by reference and made a part of this Agreement.

2. Nondiscrimination

The Contractor, with regard to the Work performed by it during the contract, shall not discriminate on the grounds of race, color, sex, or national origin in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The Contractor shall not participate either directly or indirectly in discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the Agreement covers a program set forth in Appendix B of the Regulations.

3. Solicitations for Subcontracts, Including Procurement of Materials and Equipment

In all solicitations either by competitive bidding or negotiations made by the Contractor for Work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the Contractor of the Contractor's obligations under this Agreement and the Regulations relative to nondiscrimination on the ground of race, color, sex, or national origin.

4. Information and Reports

The Contractor shall provide all information and reports required by the Regulations or directives issued pursuant thereto, and shall permit access to its books, records, accounts, and other sources of information and its facilities as may be determined by the County, Georgia Department of Transportation ("GDOT"), or the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations, orders, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the County, or GDOT or the Federal Highway Administration, as appropriate, and shall set forth what efforts it has made to obtain such information.

5. Sanctions for Noncompliance

In the event of the Contractor's noncompliance with the nondiscriminatory provision of this Agreement, County shall impose contract sanctions as it or

GDOT or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

- (a) Withholding of payments to the Contractor under the Agreement until Contractor complies; and/or
- (b) Cancellation, termination, or suspension of the Agreement, in whole or in part.

6. Incorporation of Provisions

The Contractor shall include the provisions of paragraphs (1) through (5) in every subcontract, procurement of materials and leases of equipment, unless exempt by the Regulations, or directives issue thereto.

The Contractor shall take such action with respect to any subcontractor or procurement as the County or GDOT or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctioning noncompliance: Provided, however, that in the event a Contractor becomes involved in, or is threatened with litigation with a subcontractor or supplier as a result of such direction, the Contractor may request the County to enter into such litigation to protect the interest of the County and, in addition, the Contractor may request the Georgia Department of Transportation to enter into such litigation to protect the interests of the State and the United States to enter into such litigation to protect the interests of the United States.

Section 8. Covenants of the County

A. Right of Entry

The County shall provide for right of entry for Contractor to enter the respective property in order for Contractor to complete the Work.

Section 9. Warranty

The Contractor shall repair or replace all defects in materials, equipment, or workmanship appearing within one year from the date of Final Completion at no additional cost to the County. Further, Contractor shall provide all maintenance services, including parts and labor, for one year from the date of Final Completion at no additional cost to the County. An inspection shall be conducted by the County or its representative(s) near the completion of the one-year general warranty period to identify any issues that must be resolved by the Contractor. After the expiration of such warranty period, County shall be responsible for repairing issues resulting from normal wear and tear and shall be responsible for general maintenance of the Work; however, expiration of such warranty period shall not affect the Contractor's continued liability under an implied warranty of merchantability and fitness. All other warranties implied by law, including fitness for a particular purpose and suitability, are hereby preserved and shall apply in full force and effect beyond the one-year period.

Section 10. Termination

- A. The County may terminate this Agreement for convenience at any time upon providing written notice thereof to Contractor at least seven (7) calendar days in advance of the termination date. In the event of a termination for convenience, Contractor shall take immediate steps to terminate work as quickly and effectively as possible and shall terminate all commitments to third-parties, unless otherwise instructed by the County. Provided that no damages are due to the County for Contractor's failure to perform in accordance with this Agreement, the County shall pay Contractor for work performed to date in accordance with Section 5 herein. The County shall have no further liability to Contractor for such termination. Further, at its sole discretion, the County may pay Contractor for additional value received as a result of Contractor's efforts, but in no case shall said payment exceed any remaining unpaid portion of the Contract Price.
- B. The County may terminate this Agreement for cause if Contractor breaches any material provision of this Agreement. The County shall give Contractor seven (7) days written notice of its intent to terminate the Agreement and the reasons therefore, and if Contractor, or its Surety, fails to cure the default within that period, the termination shall take place without further notice. The County shall then make alternative arrangements for completion of the Project. The County will make no payment to the Contractor or its Surety until all costs of completing the Project are paid. If the unpaid balance of the amount due the Contractor, according to this Agreement, exceeds the cost of finishing the Project, County shall provide payment to the Contractor (or its Surety) for services rendered and expenses incurred prior to the termination date, provided that such payment shall not exceed the unpaid balance of the amount otherwise payable under this Agreement minus the cost of completing the Project. If the costs of completing the Project exceed the unpaid balance, the Contractor or its Surety will pay the difference to the County.

The County reserves the right in termination for cause to take assignment of all contracts between the Contractor and its subcontractors, vendors, and suppliers. The County will promptly notify the Contractor of the contracts the County elects to assume. Upon receipt of such notice, the Contractor shall promptly take all steps necessary to effect such assignment.

- C. If the County terminates this Agreement for cause, and it is later determined that the County did not have grounds to do so, the termination will be treated as a termination for convenience under the terms of Section 10(A) above.
- D. Upon termination, the Contractor shall: (1) promptly discontinue all services affected, unless the notice directs otherwise; and (2) promptly deliver to the County

all data, drawings, reports, summaries, and such other information and materials as may have been generated or used by the Contractor in performing this Agreement, whether completed or in process, in the form specified by the County.

- E. The Contractor shall have no right to terminate this agreement prior to completion of the Work, except in the event of the County's failure to pay the Contractor within thirty (30) days of Contractor providing the County with notice of a delinquent payment and an opportunity to cure.
- F. The rights and remedies of the County and the Contractor provided in this Section are in addition to any other rights and remedies provided under this Agreement or at law or in equity.

Section 11. Miscellaneous

- A. Defined Terms. Terms used in this Agreement shall have their ordinary meaning, unless otherwise defined below or elsewhere in the Contract Documents.
 - (i) "Final Completion" means when the Work has been completed in accordance with terms and conditions of the Contract Documents.
- B. Complete Agreement. This Agreement, including the Contract Documents, constitutes the complete agreement between the Parties and supersedes any and all other agreements, either oral or in writing, between the Parties with respect to the subject matter of this Agreement. No other agreement, statement, or promise relating to the subject matter of this Agreement not contained in this Agreement or the Contract Documents shall be valid and binding. This Agreement may be modified or amended only by a written document signed by representatives of both Parties with appropriate authorization.
- C. Governing Law. This Agreement shall be governed by and construed under the laws of the State of Georgia. Any action or suit related to this Agreement shall be brought in the Superior Court of Barrow County, Georgia.
- D. Counterparts. This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which together shall constitute one and the same instrument.
- E. Invalidity of Provisions; Severability. Should any article(s) or section(s) of this Agreement, or any part thereof, later be deemed unenforceable by a court of competent jurisdiction, the offending portion of the Agreement should be severed, and the remainder of this Agreement shall remain in full force and effect to the extent possible as if this Agreement had been executed with the invalid portion hereof eliminated, it being the intention of the parties that they would have executed

the remaining portion of this Agreement without including any such part, parts, or portions which may for any reason be hereafter declared invalid.

F. Business License. Prior to commencement of the Work to be provided hereunder, Contractor shall apply to the County for a business license, pay the applicable business license fee, and maintain said business license during the term of this Agreement.

G. Notices.

(1) Communications Relating to Day-to-Day Activities.

All communications relating to the day-to-day activities of the Work shall be exchanged between _____ for the County and _____ for the Contractor.

(2) Official Notices.

All other notices, requests, demands, writings, or correspondence, as required by this Agreement, shall be in writing and shall be deemed received, and shall be effective, when (1) personally delivered, or (2) on the third day after the postmark date when mailed by certified mail, postage prepaid, return receipt requested, or (3) upon actual delivery when sent *via* national overnight commercial carrier to the Parties at the addresses given below, or at a substitute address previously furnished to the other Parties by written notice in accordance herewith:

NOTICE TO THE COUNTY shall be sent to:

County Manager
c/o Barrow County Board of Commissioners
30 North Broad Street
Winder, Georgia 30680

NOTICE TO CONTRACTOR shall be sent to:

Future changes in address shall be effective only upon written notice being given by the County to the Contractor or by the Contractor to the County Manager via one of the delivery methods described in this Section.

H. Waiver of Agreement. No failure by the County to enforce any right or power

granted under this Agreement, or to insist upon strict compliance by Contractor with this Agreement, and no custom or practice of the County at variance with the terms and conditions of this Agreement shall constitute a general waiver of any future breach or default or affect the County's right to demand exact and strict compliance by Contractor with the terms and conditions of this Agreement.

- I. Sovereign Immunity. Nothing contained in this Agreement shall be construed to be a waiver of the County's sovereign immunity or any individual's qualified good faith or official immunities.
- J. No Personal Liability. Nothing herein shall be construed as creating any individual or personal liability on the part of any County Party. No County Party shall be personally liable to the Contractor or any successor in interest in the event of any default or breach by the County or for any amount which may become due to the Contractor or successor or on any obligation under the terms of this Agreement. Likewise, Contractor's performance of services under this Agreement shall not subject Contractor's individual employees, officers, or directors to any personal liability. The Parties agree that their sole and exclusive remedy, claim, demand, or suit shall be directed and/or asserted only against Contractor or the County, respectively, and not against any employee, officer, director, or elected or appointed official.
- K. Force Majeure. Neither the County nor Contractor shall be liable for their respective non-negligent or non-willful failure to perform or shall be deemed in default with respect to the failure to perform (or cure a failure to perform) any of their respective duties or obligations under this Agreement or for any delay in such performance due to: (i) any cause beyond their respective reasonable control; (ii) any act of God; (iii) any change in applicable governmental rules or regulations rendering the performance of any portion of this Agreement legally impossible; (iv) earthquake, fire, explosion, or flood; (v) strike or labor dispute, excluding strikes or labor disputes by employees and/or agents of CONTRACTOR; (vi) delay or failure to act by any governmental or military authority; or (vii) any war, hostility, embargo, sabotage, civil disturbance, riot, insurrection, or invasion. In such event, the time for performance shall be extended by an amount of time equal to the period of delay caused by such acts, and all other obligations shall remain intact.
- L. Headings. All headings herein are intended for convenience and ease of reference purposes only and in no way define, limit, or describe the scope or intent thereof, or of this Agreement, nor in any way affect this Agreement.
- M. No Third Party Rights. This Agreement shall be exclusively for the benefit of the Parties and shall not provide any third parties with any remedy, claim, liability, reimbursement, cause of action, or other right.

N. Successors and Assigns. Each Party binds itself, its partners, successors, assigns, and legal representatives to the other Party hereto, its partners, successors, assigns, and legal representatives with respect to all covenants, agreements, and obligations contained in the Contract Documents.

IN WITNESS WHEREOF, the County and the Contractor have executed this Agreement effective as of the date first above written.

[SIGNATURES ON FOLLOWING PAGE]

CONTRACTOR: _____

BARROW COUNTY, GEORGIA

By: _____

_____, _____
[NAME AND TITLE]

_____, _____
[NAME AND TITLE]

[CORPORATE SEAL]

[COUNTY SEAL]

SIGNED, SEALED, AND DELIVERED
in the presence of:

SIGNED, SEALED, AND DELIVERED
in the presence of:

Witness

Witness

Notary Public

Notary Public

[NOTARY SEAL]

[NOTARY SEAL]

My Commission Expires:

My Commission Expires:

EXHIBIT “A”

[BID DOCUMENTS]

EXHIBIT "B"

NONCOLLUSION AFFIDAVIT OF PRIME BIDDER

**STATE OF GEORGIA
COUNTY OF BARROW**

_____, being first duly sworn, deposes and says that:

(1) He is _____ (Owner, Partner, Officer, Representative, or Agent) of _____ (the "Bidder") that has submitted the attached Bid;

(2) He is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

(3) Such Bid is genuine and is not a collusive or sham Bid;

(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, included in this affidavit, has in any way colluded, conspired, connived, or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted to or refrain from bidding in connection with such Contract, or has in any collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against Barrow County or any person interested in the proposed Contract; and,

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, included in this affidavit.

(6) Bidder has not directly or indirectly violated any law, ordinance or regulation related to the Bid.

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE _____ DAY OF _____,
20__.

Notary Public

[NOTARY SEAL]

My Commission Expires:

EXHIBIT "C"

FINAL AFFIDAVIT

TO BARROW COUNTY, GEORGIA

I, _____, hereby certify that all suppliers of materials, equipment and service, subcontractors, mechanics, and laborers employed by _____ or any of its subcontractors in connection with the construction of Project Numbers SR041 & SR042 2016 L.M.I.G. Roadway Patching and Resurfacing for Barrow County have been paid and satisfied in full as of _____, 20____, and that there are no outstanding obligations or claims of any kind for the payment of which Barrow County on the above named project might be liable, or subject to, in any lawful proceeding at law or in equity.

Signature

Title

Personally appeared before me this ____ day of _____, 20____. _____, who under oath deposes and says that he is _____ of the firm of _____, that he has read the above statement, and that to the best of his knowledge and belief same is an exact true statement.

Notary Public

[NOTARY SEAL]

My Commission Expires

EXHIBIT "D"

STATE OF GEORGIA

COUNTY OF BARROW

CONTRACTOR AFFIDAVIT AND AGREEMENT

By executing this affidavit, the undersigned contractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm, or corporation which is engaged in the physical performance of services on behalf of Barrow County has registered with, is authorized to use, and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91.

Furthermore, the undersigned contractor will continue to use the federal work authorization program throughout the contract period, and the undersigned contractor will contract for the physical performance of services in satisfaction of such contract only with subcontractors who present an affidavit to the contractor with the information required by O.C.G.A. § 13-10-91(b).

Contractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User Identification
Number

Date of Authorization

Name of Contractor

Name of Project

Name of Public Employer

I hereby declare under penalty of perjury that the foregoing is true and correct.
Executed on _____, ____, 20__ in _____
(city), _____ (state).

Signature of Authorized Officer or Agent

Printed Name and Title of Authorized Officer or
Agent

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE _____ DAY OF _____,
20__.

Notary Public

[NOTARY SEAL]

My Commission Expires:

EXHIBIT "E"

STATE OF GEORGIA

COUNTY OF BARROW

SUBCONTRACTOR AFFIDAVIT

By executing this affidavit, the undersigned subcontractor verifies its compliance with O.C.G.A. § 13-10-91, stating affirmatively that the individual, firm or corporation which is engaged in the physical performance of services under a contract with _____ (name of contractor) on behalf of Barrow County has registered with, is authorized to use, and uses the federal work authorization program commonly known as E-Verify, or any subsequent replacement program, in accordance with the applicable provisions and deadlines established in O.C.G.A. § 13-10-91. Furthermore, the undersigned subcontractor will continue to use the federal work authorization program throughout the contract period, and the undersigned subcontractor will contract for the physical performance of services in satisfaction of such contract only with sub-subcontractors who present an affidavit to the subcontractor with the information required by O.C.G.A. § 13-10-91(b). Additionally, the undersigned subcontractor will forward notice of the receipt of an affidavit from a sub-subcontractor to the contractor within five (5) business days of receipt. If the undersigned subcontractor receives notice that a sub-subcontractor has received an affidavit from any other contracted sub-subcontractor, the undersigned subcontractor must forward, within five (5) business days of receipt, a copy of the notice to the contractor.

Subcontractor hereby attests that its federal work authorization user identification number and date of authorization are as follows:

Federal Work Authorization User Identification
Number

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

Date of Authorization

Executed on _____, ____, 201__ in _____(city),
_____(state).

Name of Subcontractor

Signature of Authorized Officer or Agent

Name of Project

Printed Name and Title of Authorized Officer or
Agent

Name of Public Employer

SUBSCRIBED AND SWORN BEFORE ME
ON THIS THE _____ DAY OF
_____,201__.

NOTARY PUBLIC

[NOTARY SEAL]

My Commission Expires:

EXHIBIT "F"

EXHIBIT “H”

[INSERT NOTICE OF AWARD]

NOTICE OF AWARD

TO: _____

PROJECT TITLE: RFB2016-16 -- 2016 L.M.I.G. ROADWAY PATCHING AND RESURFACING (PROJECT # SR041 & SR042)

Barrow County Board of Commissioners (Owner) has considered the Bid submitted by you for the above described Project which was opened and read on _____, 2016. You are hereby notified that your Bid has been accepted for the Project in the amount of \$_____ dollars.

You are required in the bid documents to furnish the required Payment Bond and Performance Bond each in the amount of one hundred percent (100%) of the Contract amount. Also, a Certificate(s) of Insurance is to be submitted as called for in the bid documents. Attached please find the fully executed Construction Agreement for your use. Upon Barrow County's receipt of the other stated documents, a NOTICE TO PROCEED will be generated.

If you fail to furnish the other stated documents within ten (10) days from the date of receipt of this document, Owner will be entitled to such rights as may be granted by law to insure Project is completed on schedule.

Please acknowledge a copy of this Notice of Award and return it to: Cindy Clack, Purchasing Agent, Barrow County Board of Commissioners, 30 North Broad Street, Winder, GA 30680.

Dated this _____ day of _____, 2016.

BARROW COUNTY BOARD OF COMMISSIONERS (OWNER)

By: _____

Michael R. Renshaw, County Manager

ACCEPTANCE OF NOTICE OF AWARD:

RECEIPT OF THIS NOTICE OF AWARD IS HEREBY ACKNOWLEDGED:

BY: _____ TITLE: _____

DATED THIS THE _____ DAY OF _____, 2016.

NOTICE TO PROCEED

TO: _____

PROJECT DESCRIPTION: RFB2016-16 -- 2016 L.M.I.G. ROADWAY PATCHING AND RESURFACING (PROJECT # SR041 & SR042)

You are hereby notified to commence Work in accordance with the Agreement dated _____ on or before _____ and you are to complete the Work in accordance with Agreement.

Date this ___ day of _____, 2016.

BY: _____, Michael R. Renshaw, County Manager
BARROW COUNTY BOARD OF COMMISSIONERS (OWNER)

Receipt of the above "Notice to Proceed" is hereby acknowledged by _____
_____ this the _____ day of
_____, 2016.

BY: _____ (CONTRACTOR)
TITLE: _____

COUNTY OF BARROW

STATE OF GEORGIA

BARROW COUNTY ETHICS ORDINANCE

AN ORDINANCE TO AMEND THE CODE OF ORDINANCES OF BARROW COUNTY, TO ESTABLISH THE CODE OF ETHICS FOR BARROW COUNTY; TO FURTHER AND INCORPORATE THE POLICIES AND LAWS OF THE STATE OF GEORGIA RELATING TO ETHICAL STANDARDS; TO CREATE THE BOARD OF ETHICS AND PROVIDE FOR ITS CONSTITUENT MEMBERSHIP, DUTIES, AND RESPONSIBILITIES; TO PROVIDE FOR THE INVESTIGATION OF ETHICS COMPLAINTS; TO PROVIDE FOR THE ENFORCEMENT OF ETHICAL STANDARDS; TO PROVIDE FOR SEVERABILITY; TO PROVIDE FOR AN EFFECTIVE DATE; AND FOR OTHER PURPOSES.

WHEREAS, the Constitution of the State of Georgia, approved by the voters of the State in November of 1982, and effective July 1, 1983, provides in Article IX, Section II, Paragraph I Thereof, that the governing authority of the county may adopt clearly reasonable ordinances, resolutions and regulations;

WHEREAS, O.C.G.A. § 36-1-20 authorizes counties to enact ordinances for protection and preserving the public health, safety and welfare of the population of the unincorporated areas of the County;

WHEREAS, the governing authority of Barrow County, to wit, the Board of Commissioners, desires to exercise its authority in adopting this Ordinance;

WHEREAS, it is essential to the proper operation of democratic government that public officials of independent and impartial, that governmental decisions and policy be made in the proper channels of the governmental structure, that public office not be used for private gain other than the remuneration provided by law, and that there be public confidence in the integrity of government;

WHEREAS, the attainment of one or more of these ends is impaired whenever there exists a conflict between the private interests of an elected official or a governmental employee and his duties as such;

WHEREAS, the public interest, therefore, requires that the law protect against such conflicts of interest and establish appropriate ethical standards with respect to the conduct of elected officials and government employees in situations where conflicts exist;

WHEREAS, it is also essential to the proper operation of government that those best qualified be encouraged to serve the government. Accordingly, legal safeguards against conflicts of interest must be so designed as not unnecessarily or unreasonably to impede the recruitment and retention by the government of those men and women who are best qualified to serve it;

WHEREAS, an essential principle underlying the staffing of our government structure is that its elected officials and employees should not be denied the opportunity, available to all other citizens, to acquire and retain private economic and other interests, except where conflicts with the responsibility of such elected officials and employees to the public cannot be avoided;

WHEREAS, in recognition of these goals and principles, it is the policy of the Board of Commissioners to institute, establish, promote and enforce standards of ethical conduct for all of Barrow County's officers and employees; and

WHEREAS, it is a further policy of the Board of Commissioners that the proper administration of Barrow County's government and the promotion and enforcement of standards of ethical conduct for Barrow County's officers and employees would be best served by the creation of a Barrow County Board of Ethics for the investigation of complaints related to ethical standards;

NOW, THEREFORE, BE IT ORDAINED AND RESOLVED BY THE BOARD OF COMMISSIONERS OF BARROW COUNTY, GEORGIA AS FOLLOWS:

ARTICLE ONE: GENERAL PROVISIONS

Section One. Short Title.

This Ordinance shall be known as "The Barrow County Ethics Ordinance," and may be Cited and referred to as such.

Section Two. Definitions.

For the purposes of this Ordinance, the following terms, phrases, words and their derivations shall have the meaning provided herein. When no inconsistent with the context, words used in the present tense include the future, words in the plural number included the singular number and words in the singular number include the plural number.

- (A) **"Board"** means the Barrow County Board of Commissioners.
- (B) **"Board of Ethics"** means the Barrow County Board of Ethics as formed and described herein.
- (C) **"Business Entity"** means any business of whatever nature regardless of how designated or formed, whether a sole proprietorship, partnership, joint venture, association, trust, corporation, limited liability company, or any other type of business enterprise and whether a person acting on behalf of, or as a representative or agent of, the business entity.
- (D) **"Confidential Information"** means any information that, by law or practice, is not reasonably available to the public.
- (E) **"County Official"** means the Barrow County Board of Commissioners, any member of a board, commission or authority appointed by the Board, the Chief of

Operations or his/her equivalent and any other elected or appointed officer or employee of Barrow County, including those employees who are exempt from the Barrow County Civil Service System, except to the extent prohibited by law.

- (F) **“Employee”** means all those persons employed on a regular or part-time basis by The County, as well as those persons whose services are retained under the terms of a contract with the County, including those employees who are exempt from the Barrow County Civil Service System, except to the extent prohibited by law.
- (G) **“Family”** means the spouse, parents, children, brothers and sisters, related by blood or marriage of a county official or employee.
- (H) **“Interest”** means direct or indirect pecuniary or material benefit accruing to a County Official or Employee as a result of a contract or transaction which is or may be the subject of an official act or action by or with the County, except for such contracts or transactions which, by their terms and by the substance of their provisions, confer the opportunity and right to realize the accrual of similar benefits to all other persons and/or property similarly situated. The term “interest” shall not include any remote interest. For purposes of this Ordinance, a County Official or Employee shall be deemed to have an interest in the affairs of:
- (1) His or her family;
 - (2) Any business entity in which the county official or employee is a member, officer, director, employee or prospective employee;
 - (3) Any business entity as to which the stock, legal ownership, or beneficial ownership of a county official or employee is in excess of five percent (5%) of the total stock or total legal and beneficial ownership, or which is

controlled or owned directly or indirectly by the county official or employee.

- (l) **“Official Act” or “Official Duties”** means any legislative, administrative, appointive or discretionary act of any County Official or Employee of the County or any agency, board, authority or commission thereof.

ARTICLE TWO: CODE OF ETHICS FOR COUNTY SERVICE GENERALLY AND FOR EMPLOYEES

This Article Two is intended to adopt and incorporate herein for local enforcement the ethical standards of O.C.G.A. § 45-10-1, as it may be amended from time to time.

Any person in County service shall;

Section One.

Put loyalty to the highest moral principles and to country above loyalty to person, party, or government department.

Section Two.

Uphold the Constitution, laws and legal regulations of the United States and the State of Georgia and of all governments therein and never be a party to their evasion.

Section Three.

Give a full day's labor for a full day's pay and give to the performance of his duties his earnest effort and best thought.

Section Four.

Seek to find and employ more efficient and economical ways of getting tasks accomplished.

Section Five

Never discriminate unfairly by the dispensing of special favors or privileges to anyone, whether for remuneration or not, and never accept, for himself or his family, favors or benefits under circumstances which might be construed by reasonable persons as influencing the performance of his governmental duties.

Section Six

Make no private promises of any kind binding upon the duties of office, since a government employee has no private word that can be binding on public duty.

Section Seven.

Engage in no business with the government, either directly or indirectly, which is inconsistent with the conscientious performance of his governmental duties.

Section Eight.

Never use any information coming to him confidentially in the performance of governmental duties as a means for making private profit.

Section Nine.

Expose corruption wherever discovered.

Section Ten.

Uphold these principles, ever conscious that public office is a public trust.

ARTICLE THREE: CODE OF ETHICS FOR COUNTY OFFICIALS AND DEPARTMENT DIRECTORS

This Article Three is intended to adopt and incorporate herein for local enforcement the ethical standards of O.C.G.A. § 45-10-3, as it may be amended from time to time.

All County Officials and Department Directors shall:

Section One.

Uphold the Constitution, laws and regulations of the United States, the State of Georgia, the County of Barrow and all governments therein and never be a party to their evasion.

Section Two.

Never discriminate by the dispensing of special favors or privileges to anyone, whether or not for remuneration.

Section Three.

Not engage in any business with the government, either directly or indirectly, which is inconsistent with the conscientious performance of his governmental duties.

Section Four.

Never use any information coming to him confidentially in the performance of governmental duties as a means for making private profit.

Section Five.

Expose corruption wherever discovered.

Section Six.

Never solicit, accept, or agree to accept gifts, loans, gratuities, discounts, favors, hospitality or services from any person, association or corporation under circumstances from which it could reasonably be inferred that a major purpose of the donor is to influence the performance of the member's official duties.

Section Seven.

Never accept any economic opportunity under circumstances where he knows or should know that there is a substantial possibility that the opportunity is being afforded him with intent to influence his conduct in the performance of his official duties.

Section Eight.

Never engage in other conduct which is unbecoming to a member or which constitutes a breach of public trust.

Section Nine.

Never take any official action with regard to any matter under circumstances in which he knows or should know that he has a direct or indirect monetary interest in the subject matter of such matter or in the outcome of such official action.

ARTICLE FOUR: SPECIFIC PROVISIONS RELATED TO CONFLICT OF INTEREST TRANSACTIONS AND DISCLOSURES

The following provisions related to conflict of interest transactions and disclosures are intended to supplement and elaborate upon the Code of Ethics set forth in Articles Two and Three above and all such provisions shall be read and interpreted in accordance therewith.

Section One. Compliance with Applicable Law.

No County Official or Employee shall engage in any activity or transaction that is prohibited by law, now existing or hereafter enacted, which is applicable to him or her by virtue of his or her office or employment. Other provisions of law or regulations shall apply when any provisions of this Ordinance shall conflict with the laws of the State of Georgia or the United States, except to the extent that this Ordinance permissibly sets forth a more stringent standard of conduct. The laws of the State of Georgia or the United States shall apply when this Ordinance is silent.

Section Two. Conflict of Interest Transactions.

- (A) No County Official or Employee shall acquire or maintain an interest in any contract or transaction if a reasonable basis exists that such an interest will be affected directly by his or her official act or action or by official acts or actions of

the County, which the County Official or Employee has a reasonable opportunity to influence, except consistent with the disclosure and abstention provisions set forth herein.

(B) Barrow County shall not enter into any contract involving services or property with a County Official or Employee or with a business entity in which the County Official or an Employee has an interest. Provided that the disclosure and abstention provisions set forth herein are followed, this paragraph shall not apply to the following:

- (1) The designation of a bank or trust company as a depository for county funds;
- (2) The borrowing of funds from any bank or lending institution which offers competitive rates for such loans;
- (3) Contracts entered into with a business which employs a consultant, provided that the consultant's employment with the business is not incompatible with this Ordinance;
- (4) Contracts for services entered into with a business which is the only available source for such goods or services; and
- (5) Contracts entered into under circumstances that constitute an emergency situation, provided that a record explaining the emergency is prepared by the Board and submitted to the Chief of Operations (or his/her equivalent) to be kept on file.

Section Three. **Financial Disclosures.**

Financial disclosures shall be governed by federal and state law as it may be amended from time to time and this Ordinance shall not require any additional financial disclosure reports to be filed other than those required by federal and state law.

Section Four. **Zoning Application Disclosures.**

All disclosures with regard to zoning applications shall be governed in their entirety by the Conflict of Interest in Zoning Actions provisions contained in O.C.G.A. § 36-67A-1, et seq., as it may be amended from time to time.

Section Five. **Disclosures Related to Submission of Bids or Proposals for County Work or Contract.**

Persons submitting bids or proposals for county work who have contributed \$250.00 or more to a County Official must disclose on their bid or proposal the name of the County Official(s) to whom the contribution was made and the amount contributed. Such a disclosure must also be made prior to a request for any change order or extension of any contract awarded to the person who submitted the successful bid or proposal.

Section Six. **Withholding of Information.**

No County Official or Employee shall knowingly withhold any information that would impair the proper decision making of the Board or any of the County's boards, agencies, authorities or departments.

Section Seven. **Incompatible Service.**

No County Official or Employee shall engage in or accept private or public employment or render service for any private or public entity, when such employment or service is incompatible with the proper discharge of his or her official duties or would tend to impair his or her independence of judgment or action in the performance of his or her official duties, unless

otherwise permitted by law and unless public disclosure is made.

Section Eight. **Unauthorized Use of Public Property.**

No County Official or Employee shall request or permit the unauthorized use of county-owned vehicles and equipment, including but not limited to computers, pagers and cellular telephones, materials or property for personal convenience or profit.

Section Nine. **Political Recrimination and Activity.**

- (A) No County Official or Employee, whether elected or appointed, shall either cause the dismissal or threaten the dismissal from any county position as a reward or punishment for any political activity. No County Official or Employee shall direct any person employed by the County to undertake political activity on behalf of such County Official or Employee, any other County Official or Employee, or any other individual, political party, group or business organization, during such time that the Employee is required to conduct county business. This section does not prohibit incidental telephone calls made for the purpose of scheduling a County Official's daily county business.
- (B) Employees of the county are encouraged to exercise their right to vote, but no employee shall make use of government time or equipment to aid a political candidate, party or cause; or use a government position to influence, coerce, or intimidate any person in the interest of a political candidate, party or cause. No employee shall be hired, promoted, favored or discriminated against with respect to employments because of his or her political opinions or affiliations.
 - (1) *Seeking elective office.* A government employee seeking elective office within the county may, upon declaring candidacy, either resign or submit a

request in writing to the Chief of Operations (or his/her equivalent) for a leave of absence without pay from the date of his or her announcement through the duration of the campaign or announcement of the election results. In the alternative, the government employee seeking elective office within the County may continue to work for the County, provided, however, that the employee shall not engage in election activities during his or her County working hours or with use of County equipment. If elected to office, the employee shall immediately, upon the date of election, be separated from employment with the county upon written request and approval of the Chief of Operations (or his/her equivalent).

- (2) *Political campaign involvement.* A government employee may not be involved in any political activity which would constitute a conflict of interest; including participation in any aspect of any political campaign for any office in Barrow County Government.
- (3) *Solicitation of contributions.* A government employee may not knowingly solicit, accept or receive political contributions from any person, to be used in support of or opposition to any candidate for office in the county.

Section Ten. **Appearance Before County Entities.**

No County Official or Employee shall appear on behalf of any private person other than himself or herself, his or her spouse, or his or her minor children, before any county agency, authority or board. However, a member of the Board of Commissioners may appear before such groups on behalf of his constituents in the course of his duties as a representative of the electorate or in the performance of public or civic obligations.

Section Eleven. Timely Payment of Debts to the County and Fiscal Responsibility.

All County Officials and Employees shall pay and settle, in a timely and prompt fashion, all accounts between them and Barrow County, including the prompt payment of all taxes and shall otherwise demonstrate personal fiscal responsibility.

Section Twelve. Solicitation or Acceptance of Gifts.

(A) County Officials and employees shall not accept gifts, gratuities or loans from organizations, business concerns, or individuals with whom he or she has official relationships on business of the county government. These limitations are not intended to prohibit the acceptance of articles of negligible value which are distributed generally, nor to prohibit employees from accepting social courtesies which promote good public relations, or to prohibit employees from obtaining loans from regular lending institutions. It is particularly important that inspectors, contracting officers and enforcement officers guard against relationships which might be construed as evidence of favoritism, coercion, unfair advantage or collusion.

(B) Consistent with the provisions set forth in Articles Two and Three and Section 12(A) above, there shall be no violation of this Ordinance in the following circumstances:

- (1) Meals and beverages given in the usual course of entertaining associated with normal and customary business or social functions.
- (2) An occasional gift from a single source of \$101.00 or less in any calendar year.
- (3) Ceremonial gifts or awards.

- (4) Gifts of advertising value only or promotional items generally distributed
To public officials.
- (5) Awards presented in recognition of public service.
- (6) Reasonable expenses of food, travel, lodging and scheduled entertainment
for a meeting that is given in return for participation in a panel or speaking
engagement at the meeting.
- (7) Courtesy tickets or free admission extended for an event as a courtesy or
for ceremonial purposes, given on an occasional basis and not to include
season tickets of any nature.
- (8) Gifts from relatives or members of the County Official or Employee's
household.
- (9) Honorariums or awards for professional achievement.
- (10) Courtesy tickets or free admission to educational seminars, educational or
information conventions or other similar events.

Section Thirteen. Disclosure of Interest.

Any member of the Board who has a financial or personal interest in any proposed legislation or action before the Board shall immediately disclose publicly the nature and extent of such interest.

Any other County Official or Employee who has a financial or personal interest in any proposed legislation or action before the Board and who participates in discussion with or gives an official opinion or recommendation to the Board in connection with such proposed legislation or action shall disclose publicly the nature and extent of such interest.

Section Fourteen. Abstention to Avoid Conflicts of Interest.

- (A) Except as otherwise provided by law, no County Official or Employee shall participate in the discussion, debate, deliberation, vote or otherwise take part in the decision-making process on any item before him in which the County Official or Employee has a conflict of interest as set forth above.
- (B) To avoid the appearance of impropriety, if any County Official or Employee has a conflict of interest or has an interest that he or she has reason to believe either violates this Ordinance or may affect his or her official acts or actions in any matter, the County Official or Employee shall immediately leave the meeting room, except that if the matter is being considered at a public meeting, the County Official or Employee may remain in the meeting room.
- (C) In the event of a conflict of interest, the County Official or Employee shall announce his or her intent to abstain prior to the beginning of the discussion, debate, deliberation or vote on the item, shall not participate in any way, and shall abstain from casting a vote.

ARTICLE FIVE: THE BOARD OF ETHICS

Section One. Creation and Composition of Board of Ethics.

There is hereby created a five-member Barrow County Board of Ethics, which shall consist of the following members:

- (A) One appointee by the Board of Directors of the Barrow County Chamber of Commerce.
- (B) One appointee selected by a majority of the voting County elected officials (not including the members of the Board of Commissioners) who shall each have one vote for such appointee:

- (C) One appointee selected by a majority of the voting employees of Barrow County (not including the County elected officials or the members of the Board of Commissioners) who are in the employ of Barrow County on a full-time basis on The effective date of the vote, which vote shall be conducted by the Director of Human Resources or his/her designee;
- (D) One appointee of the Barrow County Personnel Review Board; and
- (E) One appointee of the Barrow County Board of Commissioners, which appointee Shall be selected by a majority vote of the Board of Commissioners.

Section Two. **Appointment Procedures.**

The initial appointments of the members of the Board of Ethics shall be accomplished as follows: Within five (5) business days of the effective date of this Ordinance, the Barrow County Chief of Operations (or his/her equivalent) or his/her designee shall notify the respective appointing body or individuals of the duty to appoint or vote upon a member for placement on the Board of Ethics. The body or individuals so notified shall have thirty (30) days in which to conduct their appointment process and provide the Chief of Operations (or his/her equivalent) with the name of the appointment, or the name of the individual for whom he or she is voting as the appointee in the case of the elected officials. Within five (5) business days of receipt of the appointment information or calculation of the votes as the case may be, the Chief of Operations (or his/her equivalent) shall thereafter provide the names of the appointees to the Board of Commissioners. The Board of Commissioners shall appoint the five persons so identified at the next regular meeting of the Board of Commissioners following receipt of the names of the appointees from the Chief of Operations (or his/her equivalent).

All appointments following the expiration of the initial terms and all appointments made

In the cases of vacancies created during a particular term shall be made by the applicable body or individuals as indicated in Section One of this Article. The Chief of Operations (or his/her equivalent) or his/her designee shall notify the applicable body or individuals responsible for making an appointment at least forty-five (45) days prior to the expiration of the respective term or immediately upon knowledge of a vacancy created during a term. Upon such notification, the appointment process shall proceed as set forth above in this Section.

Section Three. **Qualifications of Members of Board of Ethics.**

A person is eligible to be appointed as a member of the Board of Ethics if the person, while serving:

- (A) Resides in the County and is a registered voter;
- (B) Is not an Employee or County Official and has not been an Employee or County Official during the three (3) months immediately preceding his or her appointment
Or be the spouse, parent, child or sibling of an Employee or County Official;
- (C) Is not an officer or employee of any political party;
- (D) Does not hold any elected or appointed office and is not a candidate for office of the United States, this State or the County and has not held any elected or appointed office during the three (3) months immediately preceding his or her appointment.

Section Four. **Terms; Vacancies.**

Members of the Board of Ethics shall each serve a two (2) year term without compensation, and shall continue to serve until their successors are appointed and qualified. The Board positions appointed pursuant to sub-sections (A), (B), and (C) of Section One of this

Article shall serve an initial full two-year term and shall thereafter serve two-year terms upon appointment. The Board positions appointed pursuant to sub-sections (D) and (E) of Section One of this Article shall serve an initial one-year term and shall thereafter serve two-year terms upon appointment. If any vacancy occurs during a term, the remaining members shall at that time choose an alternate member mutually agreed upon to temporarily serve until the position is filled by appointment as provided in Section One and Section Two to fulfill the remainder of the then existing term.

Section Five. **Removal of Member.**

The Board of Commissioners may remove a member of the Board of Ethics on the grounds of neglect of duty, misconduct in office or engagement in political activity in violation of this Ordinance. Before initiating the removal of a member from the Board of Ethics, the Board of Commissioners shall give the member written notice of the reason for the intended action and the member shall have the opportunity to reply. Thereafter, the Board of Commissioners shall afford such member an opportunity for a hearing before the Board of Commissioners.

Section Six. **Organization and Internal Operating Regulations.**

- (A) Members of the Board of Ethics shall not be compensated.
- (B) The Board of Ethics shall elect one of its members to act as Chairperson for a term of one year or until a successor is duly elected. The Board of Ethics shall also elect one of its members to act as Vice-Chairperson for the same term and to act for the Chairperson in his or her absence, because of disqualification or vacancy.
- (C) There shall be no regularly scheduled monthly or bimonthly meetings of the

Board of Ethics, however, the Board of Ethics shall meet at least once annually in January of each year for purposes of election of officers and such other business as the Board of Ethics deems proper and in accordance with this Ordinance. Meetings shall be called by majority vote or by call of the chairperson. Meetings of the Board of Ethics shall be conducted in the public hearing room utilized by the Board of Commissioners, shall be duly publicized, and shall be otherwise conducted in accordance with the open meetings requirements under state law.

- (D) Three members of the Board of Ethics shall constitute a quorum for the transaction of business. The Chairperson shall be entitled to the same voting rights as the other members of the Board of Ethics.
- (E) No official action concerning complaints shall be taken by the Board of Ethics, except by the affirmative vote of at least four (4) members of the Board of Ethics.

Section Seven. Duties and Powers.

The Board of Ethics shall have the following duties and powers:

- (A) To establish any procedures, rules and regulations governing its internal organization and conduct of its affairs, provided that such procedures, rules and regulations do not conflict with any provision contained herein.
- (B) To receive and hear complaints of violations of standards required by this Ordinance.
- (C) To make investigations as it deems necessary to determine whether any person has violated this Ordinance, but only after a least four (4) members of the Board of Ethics have voted affirmatively to conduct the investigation.
- (D) To take such action as provided in this Ordinance as deemed appropriate because of any violation of this Ordinance.

- (E) To perform any other function authorized by this Ordinance.
- (F) To issue advisory opinions as provided in this Ordinance.

Section Eight. Staffing and Expenses.

The Board of Ethics shall be provided sufficient meeting space and other reasonable supportive services to carry out its duties required under this Ordinance. The Chief of Operations (or his/her equivalent) shall designate an administration employee who shall serve as the filing clerk for the Board of Ethics and who shall be authorized to receive all filings before the Board of Ethics to publish notices of all meetings upon request of the Board of Ethics' Chairperson and to serve as the recording clerk for the Board of Ethics.

Section Nine. Counsel.

The Board of Ethics may petition the Barrow County Board of Commissioners for appointment of counsel on a case-by-case basis to assist it in carrying out its responsibilities or to act as a hearing officer. Any such appointed counsel shall be approved by the Board of Commissioners, shall perform services at an approved hourly rate, and shall serve at the joint pleasure of the Board of Ethics and the Board of Commissioners.

Section Ten. Adherence to the Ethics Ordinance.

The Board of Ethics shall be governed by and subject to this Ordinance, except as to any requirements related to financial disclosures. If a member of the Board of Ethics has a conflict of interest or must disqualify himself under this Ethics Code or by law, the remaining members shall at that time choose an alternate person mutually agreed upon to hear that matter.

Section Eleven. Prohibition Against Certain Conflicting Political Activity.

(A) **Definitions.** The following words, terms and phrases, when used in this section, shall have the meanings ascribed to them, except where the context clearly indicates a different meaning:

- (1) **“Member of the Board of Ethics”** means an individual who occupies the position of a member of the Board of Ethics or a prospective member of the Board of Ethics.
- (2) **“Political Party”** means a national political party, a state political party, a political action committee, and/or any affiliated organization.
- (3) **“Election”** includes a primary, special and general election.
- (4) **“Nonpartisan Election”** means:
 - (a) An election at which none of the candidates is to be nominated or elected as representing a political party, any of whose candidates for presidential elector received votes in the last preceding election at which presidential electors were selected; and
 - (b) An election involving a question or issue which is not specifically identified with a political party, such as a constitutional amendment, referendum, approval of a governmental ordinance, or any question or issue of similar character
- (5) **“Partisan”** when used as an adjective, refers to a political party.
- (6) **“Political Fund”** means any fund, organization, political action committee or other entity that, for purposes of influencing in any way the outcome of any partisan election, receives or expends money or

anything of value or transfers money or anything of value to any other fund, political party, candidate, organization, political action committee or other entity.

- (7) “**Contribution**” means any gift, subscription, loan, advance, deposit of money, allotment of money, or anything of value given or transferred by one person to another, including in cash, by check, by draft, through a payroll deduction or allotment plan, by pledge or promise, whether or not enforceable, or otherwise.

(B) **Permissible Activities.** All members of the Board of Ethics are free to engage in political activity to the widest extent consistent with the restrictions imposed in this Section, which restrictions are imposed for the sole purpose of ensuring neutrality and the appearance of neutrality of the Board of Ethics. Each member of the Board of Ethics retains the right to:

- (1) Register and vote in any election;
- (2) Participate in the nonpartisan activities of a civic, community, social, labor, or professional organization or of a similar organization;
- (3) Be a member of a political party or other political organization and participate in its activities to the extent consistent with law;
- (4) Attend a political convention, rally, fundraising function, or other political gathering;
- (5) Sign a political petition as an individual;
- (6) Make a financial contribution to a political party or organization;
- (7) Take an active part, as a candidate or in support of a candidate, in a

nonpartisan election;

- (8) Be politically active in connection with a question which is not specifically identified with a political party, such as a constitutional amendment, referendum, approval of a governmental ordinance or any other question or issue of a similar character;
- (9) Serve as an election judge or clerk or in a similar position to perform nonpartisan duties as prescribed by state or local law; and
- (10) Otherwise participate fully in public affairs in a manner which does not materially compromise his or her efficiency or integrity as a member of the Board of Ethics or the neutrality, efficiency or integrity of the Board of Ethics.

(C) Prohibited Activities.

- (1) A member of the Board of Ethics may not take an active part in political management or in a political campaign, except as permitted by subsection of this section.
- (2) A member of the Board of Ethics shall not take part in or be permitted to do any of the following activities:
 - (a) Serve as an officer of a political party, a member of a national, state or local committee of a political party, an officer or member of a committee of a partisan political club, or be a candidate for any of these positions;
 - (b) Organize or reorganize a political party organization or political club;
 - (c) Directly or indirectly solicit, receive, collect, handle, disburse, or

account for assessments, contributions or other funds for a partisan political purpose;

- (d) Organize, sell tickets to, promote or actively participate in a fundraising activity of a candidate in a partisan election or of a political party or political club;
- (e) Take an active part in managing the political campaign of a Candidate for public office in a partisan election or a candidate for political party office;
- (f) Become a candidate for, or campaign for, an elective public office In a partisan election;
- (g) Solicit votes in support of or in opposition to a candidate for Public office in a partisan election;
- (h) Act as recorder, watcher, challenger or similar officer at the polls on behalf of a political party or a candidate in a partisan election;
- (i) Drive voters to the polls on behalf of a political party or a candidate in a partisan election;
- (j) Endorse or oppose a candidate for public office in a partisan election or a candidate for political party office in a political advertisement, broadcast, campaign literature, or similar material;
- (k) Serve as a delegate, alternate or proxy to a political party convention;
- (l) Address a convention, caucus, rally or similar gathering of a political party in support of or in opposition to a partisan

candidate for public office or political party office;

(m) Initiate or circulate a partisan nominating position.

- (3) Nothing contained in this section shall prohibit activity in political management or in a political campaign by any member of the Board of ethics connected with a nonpartisan election or a nonpartisan issue of any type.

Section Twelve. Limitation of Liability.

No member of the Board of Ethics, or any person acting on behalf of the Board of Ethics, shall be liable to any person for any damages arising out of the enforcement or operation of this Ethics Ordinance, except in the case of willful or wanton conduct. This limitation of liability shall apply to the County, the members of the Board of Ethics, the employees of the Board of Ethics and any person acting under the direction of the Board of Ethics.

Section Thirteen. Advisory Opinion.

The Board of Ethics shall render an advisory opinion based on a real or hypothetical set of circumstances when requested to do so in writing by a County Official or Employee related to that County Official's or Employee's conduct or transaction of business. Such advisory opinions shall be rendered pursuant only to a written request, fully setting forth the circumstances to be reviewed by the Ethics Board. The proceedings of the Ethics Board pursuant to this section shall be held in public to the extent consistent with state law and the opinions of the Ethics Board shall be made available to the public.

Section Fourteen. Complaints.

The Board of Ethics shall be responsible for hearing and deciding any complaints filed regarding alleged violations of this Ordinance by any person. The following procedures shall be followed when filing a complaint:

(A) Any person may file a complaint alleging a violation of any of the provisions of This Ordinance by submitting it to the Chief of Operations (or his/her equivalent), who shall immediately deliver such complaint to the Chairman of the Board of Ethics or his or her designee. A copy of such complaint shall immediately be forwarded by registered mail to the County Official or Employee against whom the complaint was filed. The complaint must be supported by affidavits based on personal knowledge, shall set forth such facts as would be admissible in evidence, and shall show affirmatively that the affiant is competent to testify to the matters stated therein. All documents referred to in an affidavit(s) should be attached to the affidavits(s). The person filing the complaint shall verify the complaint by his or her signature thereon. A complaint must be filed within six (6) months of the date the alleged violation is said to have occurred, or in case of concealment or nondisclosure within six (6) months of the date the alleged violation should have been discovered after due diligence. In the event the Board of Ethics makes an initial determination that a complaint is technically deficient, the Board of Ethics shall submit a list of deficiencies to the complainant and offer the complainant the opportunity to correct the deficiencies within seven (7) days prior to the complaint being dismissed for technical deficiencies.

(B) Upon receipt of a complaint alleging misconduct, the County Official or Employee against whom the complaint was filed may reply to the complaint within thirty (30) days, unless such time for reply is extended by the Board of Ethics upon good cause shown. The response of the County Official or Employee must be supported by affidavits based on personal knowledge, must set forth such facts as would be admissible in evidence and must show

affirmatively that the affiant is competent to testify to the matters stated therein.

All documents referred to in an affidavit(s) should be attached to the affidavit(s).

- (C) Within sixty (60) days of receipt of a complaint, the Board of Ethics shall conduct an investigatory review to determine whether specific substantiated evidence from a credible source(s) exists to support a reasonable belief that there has been a violation of this Ordinance. If after reviewing the complaint the Board of Ethics by vote determines that no specific, substantiated evidence from a credible source(s) exists to support a reasonable belief that there has been a violation of this Ordinance or determines that no violation occurred, it may dismiss the complaint without further proceedings. In the event a complaint is dismissed based upon the merits of the complaint, the complaint may not be re-filed.
- (D) If the Board of Ethics determines that specific, substantiated evidence from a credible sources(s) exists to support a reasonable belief that there has been a violation of this Ordinance, certified written notice of a hearing, containing the time, date and place of such hearing, shall be given to each party by the Board of Ethics and a formal public hearing shall be conducted and both parties afforded an opportunity to be heard. Any formal public hearing shall be conducted in accordance with the requirements of due process. The Board of Ethics is authorized to swear witnesses.
- (E) Any final determination resulting from the hearing shall include written findings of fact and conclusions of law. The Board of Ethics shall determine if clear and convincing evidence shows any violation of this Ordinance.
- (F) Nothing in this section shall be considered to limit or encumber the right of the Board of Ethics to initiate an investigation on its own cognizance as it deems

Necessary to fulfill its obligations under this Ordinance.

Section Fifteen. Disciplinary Action.

- (A) Upon a determination that an employee has violated this Ordinance, the Board of Ethics may recommend the following penalties and actions:
 - (1) Written warning or reprimand;
 - (2) Suspension without pay;
 - (3) Termination of employment; and
 - (4) Repayment to the County of any unjust enrichment.

- (B) Upon a determination that a County Official has violated this Ordinance, the Board of Ethics may recommend the following penalties and actions:
 - (1) Written warning, censure or reprimand;
 - (2) Removal from office to the extent provided by Georgia law; and
 - (3) Repayment to the County of any unjust enrichment.

- (C) Upon direction of the Board of Ethics, a petition may be filed for injunctive relief, or any other appropriate relief, in the county superior court or in any other court having proper venue and jurisdiction, for the purpose of requiring compliance with the provisions of this Ordinance. In addition, the court may issue an order to cease and desist from the violation of the Ordinance. The court also may void an official action that is the subject of the violation, provided that the legal action to void the matter was brought within ninety (90) days of the occurrence of the official action, if the court deems voiding the action to be in the best interest of the public. The Court, after hearing and considering all the circumstances in the case, may grant all or part of the relief sought. However, the court may not void any official action appropriating public funds, levying taxes or providing for the

issuance of bonds, notes or other evidence of public obligation under this Ordinance.

- (D) In addition to any other remedy provided herein, upon determination of a Violation of this Ordinance, the Board of Ethics may recommend to the Board of Commissioners in writing that any contract, bid or change order that was the Subject of the violation should be cancelled or rescinded. The Board of Commissioners, however, shall retain the discretion to determine whether such a Cancellation or rescission would be in the best interest of the County and shall not be bound in any way by a recommendation of the Board of Ethics.
- (E) The Ethics Board may also forward its findings of fact and conclusions of law to the Barrow County District Attorney's Office and/or the Office of the Governor for appropriate action.

Section Sixteen. Judicial review.

- (A) Any party against whom a decision of the Board of Ethics is rendered may obtain judicial review of the decision by writ of certiorari to the superior court of the County. The application for the writ must be filed within thirty (30) days from the date of the written decision. Judicial review shall be based upon the record. No party shall be entitled to a de novo appeal.
- (B) Upon failure to timely request judicial review of the decision by writ of certiorari as provided in this section, the decision shall be binding and final upon all parties.
- (C) The appellate rights afforded hereunder shall be in lieu of any right to appeal an adverse employment action under the Barrow County Civil Service

System, to the extent the County Official or employee may be subject to the Civil Service System.

ARTICLE SIX: MISCELLANEOUS

Section One. Severability.

If any provision of this Ordinance is found by a court of competent jurisdiction to be invalid or unconstitutional, or if the application of this Ordinance to any person or circumstances is found to be invalid or unconstitutional, such invalidity or unconstitutionality shall not affect other provisions or applications of this Ordinance which can be given effect without the invalid or unconstitutional provision or application.

Section Two. Repealer

All laws, resolution, or ordinances or parts thereof that conflict with the provisions of this Ordinance are repealed.

Section Three. Effective Date.

The effective date of this Ordinance shall be July 1, 2004.

AMENDED:

Article Five, Section 1, Subparagraph (A) January 25, 2005

Article Five, Section 6, Subparagraph (C) January 8, 2008