



**STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION**

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NASHVILLE, TN 37243-0349
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JOHN C. SCHROER
COMMISSIONER

BILL HASLAM
GOVERNOR

November 23, 2011

ADDENDUM #4

**Re: I-40, Widening from Central Pike to East of SR-109, Wilson County
PROJECT NUMBER IM-40-5(140); 95100-0105-44, PIN 114169.00
CONTRACT NO. DB1101**

To Whom It May Concern:

This addendum revises the RFP Contract Book 2 (Contract). All changes are in red. Replaced revised SP107FP, replaced revised Sp109A which deleted the fuel adjustment for grading work items, replaced revised SP109B, and replaced revised SP407DEN. Removed SP718NB. The noise barrier is reflective in the subject project, TDOT has not issued SPs for reflective barriers, and the notes regarding the proposed noise wall (location, specifications, type, formliners, etc.) are already in the structure scope of work in the RFP contract book 3.

You must acknowledge this addendum by completing the "Addendum Letter Acknowledgement" screen found in the Miscellaneous Data folder of the EBS bid file within your Price Proposal and found in RFP Contract Book 2 (Design-Build Contract) on the Technical Proposal Signature Page (Form TPSP) within your Technical Proposal. It is the bidder's responsibility to notify all affected manufacturers, suppliers and subcontractors of this change.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Lia Baird'.

Alternative Contracting Office

DESIGN-BUILD

RFP CONTRACT BOOK 2 CONTRACT

TENNESSEE DEPARTMENT OF TRANSPORTATION
I-40

Widening from Central Pike to East of SR-109
Wilson County- TENNESSEE

PROJECT IDENTIFICATION NUMBER (PIN 114169.00)
PROJECT NUMBER IM-40-5(140); 95100-0105-44

DB CONTRACT NO. DB1101



September 16, 2011

Addendum #1 – October 19, 2011

Addendum #3 – November 17, 2011

Addendum #4 – November 23, 2011

E-mail: _____
Telephone Number: _____
Fax Number: _____

4. KEY PERSONNEL AND DESIGN PROFESSIONALS

The Design Builder’s Key Personnel, Design Professionals, shall perform the functions established under the Contract for the duration of the Contract and are listed below.

a. KEY PERSONNEL

Design Builder’s Project Management Personnel (Level “1” Personnel) shall consist of the following:

- Project Manager: _____
- Construction **Quality Manager/Superintendent**: _____
- Design Manager: _____
- Traffic Engineering Manager: _____
- Traffic Control Supervisor: _____
- Environmental Compliance Manager: _____

b. DESIGN PROFESSIONALS

The Design Builder’s design professionals (Level “2” Personnel) shall consist of the following:

- Utilities Design Engineering/Coordination Supervisor: _____
- Design Lead Engineer - Structures: _____
- Design Lead Engineer - Roadway: _____
- Erosion Prevention/Sediment Control Inspector: _____

5. SUBSTITUTION OF KEY PERSONNEL AND/OR DESIGN PROFESSIONALS

The Parties agree that each Key Personnel, Design Professional and Subcontractor is unique, and that the Department has relied upon their qualifications in selecting the Design Builder to perform the Contract. Therefore, the Design Builder shall not replace any Key Personnel or Design Professional during the term of the Contract. Notwithstanding the foregoing, in those limited circumstances in which the Department elects to consider substitutions, the process shall be governed by the



APPENDIX B**SPECIAL PROVISIONS**

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B

Design-Build Project
TD↑T

PIN 114169.00, I-40
FROM WEST OF SR-171
TO EAST SR-109
WILSON COUNTY

STATE

OF

TENNESSEE

Revised 04-03-2006
Revised 11-22-2011

March 1, 2006

SPECIAL PROVISION

REGARDING

WATER QUALITY AND STORM WATER PERMITS

Scope

The conditions of this Special Provision apply to all construction on this project pursuant to the following:

1. Section 404 of the Federal Clean Water Act (33 U.S.C. §1344), and all implementing regulations, including without limitation regulations of the U.S. Army Corps of Engineers governing permits for discharges of dredged or fill material into waters of the United States in 33 CFR Part 323; and
2. The Tennessee Water Quality Control Act (T.C.A. §69-3-101, et seq.) and all implementing regulations, including without limitation the Rules of the Tennessee Department of Environment and Conservation governing NPDES permits in Chapter 1200-4-10, and Aquatic Resource Alteration permits in Chapter 1200-4-7; and
3. Section 26a of the TVA Act of 1933 as amended (49 Stat. 1079, 16 U. S. C. sec. 831y1.) and all implementing regulations, including without limitation the regulations of the Tennessee Valley Authority governing construction in the Tennessee River System in 18 C.F.R., Part 1304; and
4. The Tennessee Wildlife Resources Agency Reelfoot Lake Watershed Management permit program (T.C.A. section 70-5-1.), and all implementing regulations, including without limitation regulations authorizing any activity, practice, or project which has or is likely to have the effect of diverting surface or subsurface water from the Lake or have the effect of draining or otherwise removing water from Reelfoot Lake; and
5. Coast Guard Bridge Permit (USCG) (Section 9 of the Rivers and Harbors Appropriation Act of 1899) and all implementing regulations, including but not without limitation for projects which impact streams deemed navigable by the U.S. Coast Guard.

Responsibility

It is understood and agreed that the Contractor assumes all responsibilities of the permittee as indicated in the permit that relates to protection of the "waters of the United States" and/or "waters of the State of Tennessee."

It is also understood and agreed that the Contractor shall be responsible for obtaining any additional permits required by the Contractor's method of construction, including without

limitation haul roads, temporary channels or temporary ditches, or off-site waste and/or borrow areas.

It is also understood that the Contractor shall be responsible for implementing the provisions of the Water Quality (including, but not limited to, TDEC ARAP, USACE 404, TVA Section 26a, Coast Guard, TWRA) and Storm Water [including, but not limited to, National Pollution Discharge Elimination System (NPDES), Statewide Stormwater Management Plan (SSWMP)] Permits and requirements that pertain to construction activities.

The Contractor by signing this contract is indicating that the Contractor has reviewed a copy of the permit provisions, including NPDES Permit provisions at <http://www.tdot.state.tn.us/construction/permits/npdes.pdf>, the site specific SWPPP, the contract plans, Standard Specifications and contract Special Provisions and finds the permit requirements and erosion prevention and sediment control (EPSC) procedures to be reasonable, workable, and binding.

It is also understood that the Contractor shall not be released from the project site responsibilities under the NPDES permit provisions until the Notice of Termination (NOT) is submitted to TDEC by the TDOT Regional Construction Supervisor. The NOT is a certification that the construction project site is permanently stabilized and that all construction related discharges have ceased. This means that the use of EPSC measures to alleviate concerns of surface erosion and transport of sediment to surface water conveyances or to waters of the state is no longer necessary. Furthermore, it means that permanent controls, hard surfaces and/or vegetation, employed at the site are deemed adequate to prevent erosion and sediment transport and no other potential sources of construction-related pollution are on the project.

It is also understood that the Contractor shall not be released from any warranty provided for EPSC plantings, including sod and trees. If the entire project is complete as outlined in **Subsection 105.15** of the **Standard Specifications**, the Contractor shall be required to supply a performance bond as outlined in **Subsection 802.15** of the **Standard Specifications** to cover any warranty for EPSC plantings.

NPDES Permit Required Action

The Contractor (or their representative) shall accompany the EPSC inspector (TDOT personnel or TDOT hired consultant) on all EPSC inspections of the entire construction project including permitted locations and potentially impacted streams as well as attend all QA/QC Project Assessments.

EPSC Inspections shall be conducted as required in the most current TN Construction General Permit.

EPSC inspections shall be performed on the schedule established in the TN Construction General Permit until the site is permanently stabilized to determine if the permit requirements are being met. Where sites or portion(s) of construction sites have been temporarily stabilized, or runoff is unlikely due to winter conditions (e.g. site covered with snow or ice), such inspection only has to be conducted once per month until thawing or precipitation results in runoff or construction activity resumes. Written notification of the intent to change the inspection frequency and the justification for such request must be submitted to the TDOT Project Supervisor and the TDEC Central Office before proceeding.

An individual representing the Contractor, who holds a current TDEC “*Fundamentals of Erosion Prevention and Sediment Control Level I*” certification shall accompany the EPSC

inspector on all required EPSC inspections. The Contractors project supervisor(s) shall also hold a current TDEC "*Fundamentals of Erosion Prevention and Sediment Control Level I*" certification. Proof of required personnel training for the individual(s) shall be provided to the TDOT Project Supervisor prior to beginning of construction.

The TDOT EPSC inspector shall document all deficiencies on the required TDOT EPSC Inspection Report form (provided in the SWPPP). The Contractor (or their representative) shall sign the TDOT EPSC Inspection Report form and any supporting documentation indicating that he is in agreement with the report, recommendations and repair schedule as stated within the documentation.

Additionally, the Contractor shall make necessary maintenance and repairs relative to deficiencies in these permit conditions or requirements within twenty-four (24) hours after an inspection identifies the maintenance or repair need, and/or when directed to do so by the TDOT Project Supervisor, unless conditions make a particular activity impracticable. Any such conditions that make immediate repairs impracticable shall be documented and provided to the TDOT Project Supervisor, via the inspection report, and be accompanied by an expected repair schedule based on forecasted weather conditions.

The Contractor further agrees that he will execute two (2) copies of the Notice of Intent (NOI) form of the permit (provided by the Department), indicating his acceptance of the stipulations contained therein. The Contractor further agrees, that should he fail to execute said copies and return them to the TDOT Construction Division within ten (10) calendar days after submittal of the contract proposal to him, that the Department may at its discretion cancel the award with the Contractor forfeiting his bid bond.

Further, the Contractor agrees to review the site specific Stormwater Pollution Prevention Plan (SWPPP) that will be made available prior to or at the pre-construction conference, for any additional EPSC requirements. The Contractor shall sign and submit two copies of the SWPPP signature page (provided by the Department within the site specific SWPPP). The Contractor may submit for review and approval changes/revisions to the SWPPP to better prevent erosion and sediment transport at any time after contract execution. Rejection of any submittals does not relieve the contractor of any liability for appropriate Best Management Practices (BMPs).

If at any time during this contract, the requirements for the Water Quality Permits and/or the Storm Water Permits for Construction Related Activities are changed/revised/updated, the Contractor shall be notified in writing by the Department of such requirements. The Contractor shall comply with the new requirements within thirty (30) days of the Department notification.

If at any time the Contractor becomes aware that sedimentation is occurring or has occurred in streams impacted by the specified project, the Contractor shall immediately notify the TDOT Project Supervisor to evaluate the EPSC measures employed. A determination of the cause for sedimentation will be made by the Department. The Contractor shall immediately repair or replace defective EPSC measures, and install, as applicable, additional or other EPSC measures with the goal of eliminating future sedimentation. Once a remediation plan is provided by the Department, the Contractor shall, within twenty-four (24) hours after notification, begin the remediation as required. Based on the cause of sedimentation, the Department will determine if the cost of remediation will be performed at the Contractor's expense.

Failure to Comply

In the event a Notice of Violation (NOV) or Order pursuant to the Tennessee Water Quality Control Act or the Federal Clean Water Act is issued on this project, any and all fines will be the

sole responsibility of the Contractor as outlined in **Subsection 107.01** of the **Standard Specifications for Road and Bridge Construction**.

Failure of the Contractor to comply with this Special Provision or take immediate corrective actions required within twenty-four (24) hours (unless documented conditions make a particular maintenance or repair activity impracticable immediately) shall be reason for the TDOT Project Supervisor to suspend all other work on the Project, except erosion prevention and sediment control (EPSC) and traffic control, applying non-refundable deductions of monies from the Contract per calendar day from monies due to the Contractor for any EPSC work on the Project. This deduction can be made for each location, as determined by the TDOT Project Supervisor, for each calendar day that the deficiency is allowed to remain and charged as item description "*Failure to Comply with Permit Deduction*". A deduction shall be made from monies due the Contractor, not as a penalty, but as liquidated damages, as indicated in **Subsection 108.07** of the **Standard Specifications for Road and Bridge Construction March 1, 2006**, as amended.

If the Contractor does not make necessary corrections/adjustments in a timely manner as required above, the Department will implement the provisions of **Subsection 209.07 and Subsection 109.08** of the **Standard Specifications for Road and Bridge Construction** that provides for the Department making repairs and recovering the costs thereof from the Contractor.

The Department will not participate in any payment or reimbursement for fines and will not authorize time extensions due to delays in project progress for work stoppage, to remedy the violations stated within the NOV, required by the TDOT Project Supervisor as stated in **Subsection 105.01** of the **Standard Specifications for Road and Bridge Construction**.

STATE

OF

TENNESSEE

REV. 11-23-11

County: Wilson

Project No.: IM-40-5(140)

Contract No. :DB1101

SPECIAL PROVISION

REGARDING

PAYMENT ADJUSTMENT FOR FUEL

This special provision covers the method of payment adjustment for fuel price increases or decreases. Payment adjustments will be made in monthly increments based on the estimated fuel consumed on major items of work, the estimated price per gallon of fuel at the time of letting, and the percentage change of the Producer Price Index for Light fuel oils, Series ID Number WPU0573, published by the U.S. Department of Labor, Bureau of Labor Statistics.

The estimated price per gallon of fuel for this contract is \$ 3.13.

The November, 2011 Price Index (Ib) for light fuel oils shall be used for this contract. Adjustments will be based on the price index in effect for the month in which the item was installed.

Fuel consumption for payment adjustment shall be based on the following:

Item Number	Description of Work	Gallons per unit	Unit of measure
203	Any Road and Drainage Excavation	0.25	Cubic Yard
203	Any Borrow Excavation (Rock)	0.36	Cubic Yard
203	Any Borrow Excavation (Other than Solid Rock)	0.25	Cubic Yard
203	Any Borrow Excavation (Rock)	0.16	Ton
203	Any Borrow Excavation (Other than Solid Rock)	0.11	Ton
203-05	Undereutting	0.25	Cubic Yard
203	Any Embankment (in-place)	0.25	Cubic Yard
303, 309, 312	Any Aggregate Base	0.79	Ton
313, 501	Treated Permeable Base or Lean Concrete Base	0.10	Square Yard
307	Any Bituminous Plant Mix Base (HM)	2.98	Ton
411	Any Bituminous Concrete Surface (HM)	2.98	Ton
501	Any Portland Cement Concrete Pavement		
	≤10 in. thickness	0.25	Square Yard
	> 10 in. thickness	0.30	Square Yard

No payment adjustment for fuel shall be made on any item of work which is not listed above.

No payment adjustment for fuel shall be made unless the price index varies five percent or more from the index indicated in this Special Provision.

Where the price index varies five percent or more, the payment adjustment will be made as follows:

$$PA = [(Ic \div Ib) - 1] \times Fe \times Fp$$

Where:

PA =Payment Adjustment (may be plus or minus)

Ic =Index for Current Month

Ib =Index for Bidding

Fe =Estimated Fuel in Gallons used based on above table and work paid for during adjustment month. [Σ (Pay quantity x Gallons per unit)= Fe]

Fp = Fuel Price for Bidding

Payment adjustment errors on items of work which have occurred because of quantity errors in previous months for which the time period in which the work was performed cannot be established will be rectified on a subsequent estimate according to the following formula:

$$Fa = \Sigma [(Fq \div Pq) \times Ea] - Ea$$

Where,

Fa = Final Adjustment (Item of work)

Fq = Final Quantity of work

Pq = Total Quantity of work on previous estimates

Ea = Total amount paid on previous estimates for Fuel Adjustment for this Item of work

The Project Engineer will compute the payment adjustment for fuel on work sheets similar to the ones attached and will furnish a copy of the calculations upon request to the prime contractor and approved subcontractors.

Upon the expiration of the allocated working time, as set forth in the original contract or as extended by Supplemental Agreement, all payment adjustments for fuel will discontinue, except that when the current price indexes are less than the price index for bidding, payment adjustments will continue to be made.

Payment Adjustment for fuel will be made under:

Item No.	Description	Pay Unit
109-01.01	Payment Adjustment for Fuel	Dollar

Monthly Payment Adjustment for Fuel Worksheet

Project No. _____ Contract No. _____

County _____

Fuel Price (Fp) _____ Price Index Bidding (Ib) _____ Current Price Index (Ic) _____

Estimate Period: Work Performed _____ Adjustment Paid _____
(Month/Yr)

Item	Unit	Quantity	Fuel Factor		Total Fuel
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____
_____	_____	_____	X	=	_____

Total Fuel for Month (Fe) _____

$$PA = [(Ic \div Ib) - 1] \times Fe \times Fp$$

Final Payment Adjustment for Fuel Worksheet

Project No. _____ Contract No. _____

County _____

Item	Final Quantity of Work (Fq) for Specified Item	Total Quantity on Monthly Estimates (Pq) for Specified Item	Total Previous Adjustment (Ea) for Specified Item	Final Adjustment (FA) for Specified Item
------	--	---	---	--

_____ [(_____ ÷ _____) x _____] - _____ = _____

_____ [(_____ ÷ _____) x _____] - _____ = _____

_____ [(_____ ÷ _____) x _____] - _____ = _____

_____ [(_____ ÷ _____) x _____] - _____ = _____

_____ [(_____ ÷ _____) x _____] - _____ = _____

_____ [(_____ ÷ _____) x _____] - _____ = _____

_____ [(_____ ÷ _____) x _____] - _____ = _____

_____ [(_____ ÷ _____) x _____] - _____ = _____

_____ [(_____ ÷ _____) x _____] - _____ = _____

_____ [(_____ ÷ _____) x _____] - _____ = _____

_____ [(_____ ÷ _____) x _____] - _____ = _____

Total Final Adjustment (Fa) = _____

$Fa = \Sigma [(Fq \div Pq) \times Ea] - Ea$

STATE

OF

TENNESSEE

(Rev. 6-1-00)

(Rev. 8-1-00)

(Rev. 8-2-00)

March 1, 2006

SPECIAL PROVISION

REGARDING

PRICE ADJUSTMENT FOR BITUMINOUS MATERIAL

This Special Provision covers the method of price adjustment for bituminous materials.

The normal bid items in the contract covering the bituminous material shall remain the same, but the contract unit bid prices for these items will be adjusted to compensate for increases and decreases in the contractor's bituminous material cost in the following manner:

A "Basic Bituminous Material Index" will be established by the Tennessee Department of Transportation prior to the time the bids are opened. This "Basic Bituminous Material Index" is the average of the current quotations on P.G. 64-22 from suppliers furnishing asphalt cement to contractors in the State of Tennessee. These quotations are the cost per ton f.o.b. supplier's terminal.

The "Basic Bituminous Material Index" for this project is \$ 554.55 per ton.

The "Monthly Bituminous Material Index" is also established on the first day of each month by the same method. The "Monthly Bituminous Adjustment Factor" is the difference (+/-) between the "Basic Bituminous Material Index" and the "Monthly Bituminous Material Index".

The "Monthly Bituminous Adjustment Factor" shall be applied to the contract unit price bid provided the increase or decrease differs 5% or more from the "Basic Bituminous Material Index". The Engineer reserves the right to alter the quantities of material or modify the design if the change in prices warrants material or design substitution. If adjustments are made in quantities or design, the contractor shall accept the unit price bid or the applicable monthly adjusted unit prices as full compensation for all work performed according to the provisions of Subsection 104.02 of the Standard Specifications.

The unit price for bituminous material used after the expiration of the allocated working time as set forth in the contract, or as extended by Supplemental Agreement, will revert to the original contract unit bid price or the adjusted unit price as set forth herein, whichever is less.

The adjustment will be calculated in accordance with the following formula only when the percent change of price indexes is five or greater:

$$PA = [Ic - Ib] \times T$$

Where,

- PA = Price Adjustment for Adjustment Month
- Ib = Basic Bituminous Material Index
- Ic = Monthly Bituminous Material Index
- T = Tons bituminous material for Adjustment Month

Price adjustment will be applied to all asphalt cement, asphalt emulsion, or bituminous material used for paving on this project.

The quantity of virgin asphalt cement in tons subject to price adjustment in recycled mixes shall be the product of the total tons of each mix multiplied by the difference between (1) the percent of asphalt cement specified for bidding purposes and (2) the percent of asphalt cement obtained from the recycled asphaltic material used in each mix. No price adjustment under this special provision for increases and decreases in the contractor's cost for virgin asphalt cement in recycled mixes will be allowed for asphalt cement content in excess of the percent specified for bidding purposes, as all payment adjustments for asphalt cement in the mix design of recycled mixes in excess of the percent of asphalt cement specified for bidding purposes will be made in accordance with the Standard Specifications.

The price adjustment for increases and decreases in the contractor's cost for virgin asphalt cement in recycled mixes will be calculated as follows when the percent change in price indexes is five or greater:

$$PA = [Ic - Ib] \times \frac{[BA - RA]}{100} \times Tm$$

Where,

- PA = Price Adjustment for Adjustment Month
- Ib = Basic Bituminous Material Index
- Ic = Monthly Bituminous Material Index
- BA = Percent asphalt specified for bidding purposes
- RA = Percent asphalt obtained from recycled asphaltic material used in each mix
- Tm = Tons asphalt mix for adjustment month

The above procedure for calculating price adjustments for recycled mixes is also applicable to mixes consisting of one hundred percent virgin material when the asphalt cement is not a separate bid item and the asphalt content in each mix is established for bidding purposes. A totally virgin mix is a special case in which the percent of asphalt obtained from recycled asphaltic material is zero (i.e., RA = 0).

STATE

OF

TENNESSEE

REV. 11-23-11

County: Wilson
Project No.: IM-40-5(140)
Contract No.: DB1101

SPECIAL PROVISION

REGARDING

BITUMINOUS PLANT MIX PAVEMENTS (HOT MIX)

ROADWAY DENSITY

Description: This specification covers the requirements for obtaining proper compaction and roadway density for the various layers of bituminous plant mix.

All sections of Section 407 of the Standard Specification, and Supplemental Specifications are applicable except as modified herein.

Section 407.03(D)2.(c)8.- Contractor Quality Control System- Replace the first paragraph of this section with:

8. Mix Design/Production Verification. The Contractor will be required to sample and test asphaltic concrete base and surface mixes throughout production to verify that the mix being produced is within the criteria listed below. This information shall also be recorded on control charts. This requirement applies only to mixes designed in keeping with the Marshall Method of Mix Design. In addition, the Contractor will be required to conduct quality control testing of surface and binder mixes for roadway density throughout placement to verify that the mixture being placed meets specified density requirements. A Quality Control Plan (QCP) for this density testing is required. Acceptable methods of quality control testing include coring, nuclear gauge testing, and non-nuclear gauge testing.

Section 407.07- Rollers. Replace the entire section with the following:

The Contractor shall use a sufficient number and type of rollers to obtain proper compaction and obtain the specified densities.

When the Contractor is paving the inside shoulder concurrently with the inside traffic lane, an additional roller, no more than 1 ft.(300 mm) wider than the inside shoulder being paved, shall be required to compact the shoulder. Neither the roller(s) on the inside traffic lane nor the roller on the shoulder shall be allowed to traverse between the inside shoulder and the inside traffic lane.

Section 407.15- Compaction. – Replace the entire section with the following:

After the bituminous mixture has been spread, struck off, and surface irregularities adjusted, it shall be thoroughly compacted. The method employed must be determined by the contractor and be capable of compacting the mixture to the specified density while it is in a workable condition. Rollers shall not park on the bituminous pavement nor shall rollers be refueled on the bituminous pavements.

Density Requirements.

- Mix Types: B, BM, BM-2, D, E
- All levels of ADT
- %Gmm values specified here are for lot averages.

Travel Lane Density **		
% Gmm		\$ Incentive/ Disincentive
Min	Max	
99.1	100	-4000
98.1	99	-2400
97.1	98	-800
96.1	97	0
95.1	96	+400
94.1	95	+800
93.1	94	+400
92.1	93	0
91.1	92	-800
90.1	91	-2400
89.1	90	-4000
88.1	89	-5600
87.1	88	*
86.1	87	*
85.1	86	*
<85	85	*

Joint Density Incentive/Disincentive		
%Gmm		\$/L.F./Lot
Min	Max	
99.1	100	*
98.1	99	*
97.1	98	-0.70
96.1	97	-0.42
95.1	96	0.00
94.1	95	0.00
93.1	94	0.07
92.1	93	0.14
91.1	92	0.07
90.1	91	0.00
89.1	90	-0.14
88.1	89	-0.42
87.1	88	-0.70
86.1	87	-0.98
85.1	86	*
<85	85	*

*Shall be removed and replaced at the contractors expense or as directed by the engineer.

** Density Incentive/ Disincentive amounts for 15,000 LF/Lot. Incentive/ Disincentive shall be prorated for fractional lots. (e.g. if acceptance Lot is 8000 LF, and density is 93.5%, the incentive is $8000/15000 \times \$400 = 213.33$)

Payment shall be for travel lanes only, even when the shoulder and travel lane are placed concurrently. No incentive shall be paid for the second travel lane mat unless the joint for that lot is a minimum of 90.1%.

Any lot of joint density tests averaging below 87% shall be sealed by a department-approved longitudinal joint sealer at the Contractor's expense. Sealing of deficient longitudinal joint lots will only be required for surface mixes.

- Mix Types: All shoulder mixes
- All levels of ADT
- %Gmm values specified here are for lot averages.

Shoulders		
%Gmm		Adjustment
Min	Max	\$
99.1	100	*
98.1	99	*
97.1	98	-\$1,600.00
96.1	97	-\$800.00
95.1	96	\$0.00
94.1	95	\$0.00
93.1	94	\$0.00
92.1	93	\$0.00
91.1	92	\$0.00
90.1	91	\$0.00
89.1	90	\$0.00
88.1	89	\$0.00
87.1	88	-\$800.00
86.1	87	-\$2,400.00
85.1	86	-\$4,000.00
<85	85	*

*Unacceptable or as directed by the engineer.

% Pay for shoulders shall be applied to the quantity of mix on the shoulder even when the travel lane and shoulder are place concurrently.

The density (bulk specific gravity) determination for a compacted asphalt mixture shall be performed in accordance with AASHTO T-166, Method A only. All core samples shall be COMPLETELY DRY before testing. Air drying is permitted provided core samples are weighed at 2-hour intervals until dry in accordance with AASHTO T166, Section 6.1. Cores may also be dried in accordance with ASTM D 7227.

Along forms, curbs, headers, walls and other places not accessible to the rollers, the mixture shall be compacted thoroughly with hot hand tampers, smoothing irons, or with mechanical tampers. On depressed areas, a trench roller may be used to compact the mix.

Any defective mixture shall be repaired or replaced to the satisfaction of the Engineer.

Test Strips.

The Contractor will be responsible for constructing Test Strips for all mixes to establish rolling patterns, to verify that the base course or surface course meets the density requirements of the specifications, and for mix design/ production verification as required.

1. The base course or other pavement course upon which a test strip is constructed shall have been approved by the Engineer prior to the construction of the test strip.
2. Equipment proposed for use in the compaction of test strips, shall meet the requirements set forth in this subsection and **Subsection 407.07**.

The test strip shall be constructed at the beginning of work on the pavement course. New test strips shall be required when:

1. A change in the job mix formula is necessary .
2. A change in the source of materials occurs
3. A change in the material from the same source is observed
4. There is reason to believe that the test strip density is not representative of the bituminous mixture being placed.

Each test strip shall be constructed with approved bituminous mixture and shall remain in place as a section of the completed work. Each test strip shall be 1 paver width wide and have an area of at least 400 s.y.(350 m²) and shall be of the depth specified for the pavement course concerned.

The Contractor shall provide the roller pattern, volumetric properties, and density results to TDOT which demonstrate the mixture meets all TDOT specifications.

In the event the density of the asphaltic concrete in the test strip does not meet specification requirements, the Contractor shall make whatever changes are necessary to obtain the specified density. Other sources and combinations of aggregates shall be used as required, subject to approval of the Engineer, to produce a mix meeting the required density.

Acceptance Testing

Mat Density- For density acceptance purposes, the pavement shall be divided into lots of 15,000 linear feet and sublots of 3,000 linear feet, or fraction thereof, per paving width per mixture type. Control strips shall not be included as part of acceptance lots. At the beginning

of the project, the first lot will begin immediately after the end of the control strip. When possible, attention should be provided to avoid cutting cores in areas where signal/loop wire may be affected. If random number selections indicate testing locations in these areas, a new random number should be selected.

Five randomly selected cores (4" min./ 6" max. diameter), from the travel lane, will be tested to determine density compliance and acceptance. One core shall be taken from each subplot. The Bulk Specific Gravity (G_{mb}) of the cores shall be determined as stated above and the average calculated. The maximum theoretical gravity (G_{mm}) from acceptance testing for that shift's production will be averaged and the percent density will be determined for compliance by dividing the G_{mb} average by the G_{mm} average. The Contractor will be responsible for obtaining the cores at the locations randomly selected by TDOT. Cores shall be tested by TDOT, by a certified plant technician.

Turn lane and ramp density cores shall be determined as described above when the total turn lane or ramp length is 15,000 linear feet or greater. When the total turn lane or ramp length is less than 15,000 linear feet, one density core shall be taken for each 3,000 linear feet. An average density shall be determined from the total number of cores taken from the turn lane or ramp.

Longitudinal Joints - Longitudinal density cores shall be taken after placement of adjoining traffic lane. The longitudinal joint shall be divided into lots of 15,000 linear feet and sublots of 3,000 linear feet.

For density acceptance purposes, one joint core (4" min./ 6" max. diameter) shall be cut at a randomly determined location along the longitudinal joint within each subplot. Each core taken shall be centered over the longitudinal joint. Joint density cores will be required only on the longitudinal joint between travel lanes and not on shoulder joints.

Longitudinal joint densities between travel lanes and turn lanes or ramps shall be determined as described above when the total turn lane or ramp longitudinal joint length is 15,000 linear feet or greater. When the total turn lane or ramp joint length is less than 15,000 linear feet, one longitudinal joint density core shall be taken for each 3,000 linear feet. An average density shall be determined from the total number of cores taken from the turn lane or ramp.

The Bulk Specific Gravity (G_{mb}) of the cores shall be determined as stated above and the average calculated. The maximum theoretical gravity (G_{mm}) from acceptance testing for both travel lanes will be averaged and the percent density will be determined for compliance by dividing the G_{mb} average by the G_{mm} average. The Contractor will be responsible for obtaining the cores at the locations randomly selected by TDOT. Cores shall be tested by TDOT, by a certified plant technician.

It is intended that acceptance density testing will be accomplished as soon as is practicable. If the average density of the lot does not conform to the requirements stated herein, or if an individual test value does not meet the requirements stated herein above, adjustments will be made as specified in section 407.20 B.5.

After obtaining the cores, all core holes shall be properly filled and compacted in kind with hot mix asphalt. There will be no additional compensation to comply with this section.

Cores shall be clearly labeled in a discrete, sequential manner (i.e. – M1, M2,...,M30; J1, J2,...,J15) throughout the course of the project. After testing, cores shall be retained along with copies of test results and will be periodically obtained by the regional materials office for spot-check verification testing.

Section 407.20, Basis of Payment, Revise section B.5. as follows:

5. Acceptance for Mix Density on the Roadway:

Mat Density -A deduction in payment, not as a penalty but as liquidated damages, shall be made for failure to meet the density requirements as outlined in Subsection 407.15. As soon as practical after the final rolling is completed on each lot, 5 density tests (1 per subplot) shall be performed by the Department at locations determined by the Engineer, and an average of all such tests shall be computed. Any deduction for failure to meet density requirements or incentive for exceeding density requirements shall be computed to the nearest 0.1% as a percentage of the total payment otherwise due for each lot. No incentive shall be paid for the second travel lane mat unless the joint for that lot is a minimum of 90.1%.

The percent of total payment shall be in accordance with tables shown in “Density Requirements” above. Any deduction in monies due the Contractor for failure to meet the Density Requirements shall be made under the item for Density Deduction.

Longitudinal Joints – The total incentive/disincentive payment shall be in accordance with tables shown in “Density Requirements” above. Any deduction in monies due the Contractor for failure to meet the Density Requirements shall be made under the item for Density Deduction. Any incentive payment due the contractor shall be under item Density Incentive. Any lot of joint density tests averaging below 87% shall be sealed by a department-approved longitudinal joint sealer at the Contractor’s expense. Sealing will be required for surface mixes only.