



Department of Property & Procurement

Government of the United States Virgin Islands

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[HTTP://DPP.VI.GOV](http://DPP.VI.GOV)



AMENDMENT ONE (1)

June 29, 2017

TO:

**SUBJECT: IFB017DPWC17(C) Sion Valley Road Pavement
Rehabilitation & Drainage Improvements, St. Croix.**

INSERT: Questions & Answers

**SEE ATTACHED: Pre Bid Conference, Supplemental
Specification 159 on the Job Training, Warm Mix Asphalt &
Answers to Questions**

All other terms and conditions remain the same.

A copy of this amendment must be returned with your bid.

PRE-BID CONFERENCE

June 21, 2017 10:00 AM

VI-81(002)

Sion Valley Road Pavement Rehabilitation
and Drainage Improvement Project , St. Croix



IFB: 017DPWC 17C

Agenda

Bid Opening Date:	At 10:00 am on July 7, 2017
Contract Time:	365 Calendar Days (Contract Book, D-1)
DBE Goal:	20%
Project Management & Inspection by:	DPW – Office of Highway Engineering John Paul David P.E, Construction Program Manager Bradford Marshall Jr, Project Engineer Frederick Mohammed Jr, Materials Control/Construction Inspector, Reshaun Burke Construction Inspector
DBE Program Management:	Shelton Schulerbrandt, DBE Program Coordinator
Funding:	100% Funded by Federal Highway Administration
Office of Civil Rights:	Sharon Challenger OJT Program Manager

Discussion Items:

- Suggest Prospective Bidders read carefully and follow the Notice To Bidders sheet B-3 & B4 in particular, the last paragraph on mathematically and materially unbalanced bids. Sheet B-5 includes a checklist to which prospective bidders should also pay close attention. Please read carefully the "BID SCHEDULE NOTES TO BIDDERS" Page D-1. These notes state all of the rules that apply when filling out your bid schedule.

- Disadvantaged Business Enterprise goal is 20%. DBE staff will assist with any questions or clarifications on compliance with DBE requirements for this IFB.- ***Mr. Shelton Schulerbrandt informed the meeting that the signatures of both the contractor and the subcontractor must be carried on the completed A585 forms at the time of submittal. In addition, the quotations obtained from DBE's must be attached at the time of submittal of forms.***

In response to a query from Mr. Daniel Schierloh about verbal quotes. Mr. Schulterbrandt's response was that only written quotes as attached to the A585's will be acknowledged.

- It is policy for all documents required for bid submittal (for the awarded bidder) to be bound in the Contract Book for execution of the contract. If you are awarded a contract you will be required to submit your Contract Book for this purpose.

- Bidders should pay particular attention to the requirements of the Buy America Requirements of this contract. The requirements under moving Ahead for Progress in the 21st century (MAP-21) as summarized in the last paragraph extends Buy America requirements to non FHWA funded utility relocations. This requirement is raised in particular on this project which requires the relocation of WAPA lines poles and Viya overhead lines which will be paid under separate utility agreements. ***—In response to a query from Mr. Daniel Schierloh, the meeting was informed that in addition to the utilities referenced earlier underground utilities from Viya are to be adjusted at the Sion Farm Intersection of the project.***

Project Description – Installation of sidewalks, paved waterways, culvert pipes, handrails, pavement reconstruction and rehabilitation, asphalt overlay, striping of roadway, replacement of new signage and traffic signal upgrade.

Bidders attention is directed to the following Sections: General Provisions (F1-F48), Supplemental Specifications (S1 – S12), and Special Specifications (T1 – T25).

The successful bidder will be provided with a copy of the current Earth Change and Building Permits issued by Department of Planning and Natural Resources (DPNR).- ***Any other permits that will be required will be the responsibility of the contractor.***

Utility Agreement have been executed with Innovative Telephone (Viya) Company to adjust overhead telephone and cable TV lines and with WAPA for the relocation of a number of utility poles and overhead lines.

Item 15201-Construction Survey and Stakeout- Bidders must pay attention to the full scope of this item as per FP-14 and as amended by the Special Specifications. Survey work must be undertaken by a professionally qualified land surveyor. In order to properly execute this project, it is necessary that the contractor establish a centerline profile of the existing roadway as the basis of construction to establish horizontal and vertical controls for construction according to the typical cross section details.

Item 154 of the Special Specifications requires that the contractor provide a full time technically qualified materials technician to perform testing in a timely and accurate manner whenever testing is required.

Item 40301A, B and C- Hot Asphalt Concrete Pavement- Warm mix Asphalt should be used in all applications as part of the implementation of Every Day Count initiative (EDC). In addition, safety edge should be used on paving machines so as to bring out the desired effects. This is the second EDC initiative to be implemented in this project. ***-Addendum number 1 has been issued to DP&P for distribution to bidders as the Specifications for Warm Mix Asphalt***

Further information can be obtained from the materials control manager, Mr. Frederick Mohammed.

Information on the application of safety edge may be obtained at https://www.youtube.com/watch?v=wjqCLp_KqN8

A second brochure will be forwarded on the EDC initiative on application of safety edge is issued as Addendum number 2.

Addendum number 3 was handed in to DP&P as the On the Job Training Program Specification.

Arising from Addendum 3 was Addendum 4 which is the amended Bid Schedule to include the item 15901 which was handed in to DPP.

Discussion Items by Contracting Officer (Property and Procurement): ***A representative from Herzog requested an extension on the bid opening date of July 7, 2017 it was explained that the bid has been advertised for 30 days and we were unable to facilitate this request.***

Questions / Comments / Clarifications

All sidewalks to be constructed with ADA compliant ramps at ends and transitions. –This was clarified to the meeting to specify the locations of sidewalk ends and ramps.

All queries are to be submitted by close of business on Tuesday June 27, 2017.

In response to the query submitted by VI Paving Inc. (attached) dated June 21, 2017, our response is that any system which meets the specification requirements is acceptable. We cannot recommend manufacturer's names for proprietary products.

In response to a query submitted by Herzog (attached) . The DPP is unable to extend the bid opening date beyond the July 7, 2017 opening date.

VIRGIN ISLANDS PAVING, INC.

PO Box 4720, Kingshill, VI 00851-4720
TEL (340) 778-5220 FAX (340) 773-5233

June 21, 2017

Sion Valley Road Pavement Rehabilitation

VI-81(002)

Pre-Bid Questions

1. After analysis of the project specifications neither the specifications found in pages T15-T20 of the Contract Book, nor Item 11 found under Signalization Notes on drawing sheet G37 are descriptive of the video system that is currently in use in STX. The specification as it is written in T15-T20 appears to be a conglomerate of performance requirements that no one system might be able to meet. Is the system currently in use in STX acceptable? If not, is there a particular product that is part of the basis of design that the specification is written around so that we can get appropriate pricing and/or find acceptable substitutes?

Sincerely,



Daniel Schierloh, P.E.

Project Manager

Herzog

954-851-0774

June 22, 2017

Virgin Islands Department of Property and Procurement
3274 Estate Richmond
Christiansted, St. Croix
US Virgin Islands 00802

Sent via email to alexis.leycock@dpp.vi.gov

RE: Sion Valley Pavement Rehabilitation and Drainage Improvements
Invitation No: IFB017DPWC17(C)
PROJECT # VI-0081(002)

From: Herzog
14201 W. Sunrise, Blvd.
Suite 104
Sunrise, FL 33323

No.	Section and Page No. (or general)	Question/Comment	Response
1		Will the Department of Property and Procurement consider an extension to the bid submittal due date?	NO

U.S. Department of Transportation

Federal Highway Administration

1200 New Jersey Avenue, SE
Washington, DC 20590
202-366-4000

Center for Accelerating Innovation

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Safety Edge™

Pavement edge drop-off on highways has been linked to many serious crashes, including fatal collisions. To mitigate vertical drop-offs, FHWA advocates installing the Safety Edge™ on pavements during paving or resurfacing projects. This technology allows drivers who drift off highways to return to the pavement safely.

Roadway departures account for over half of all fatal crashes. Not all of these crashes involve speeders and drunk drivers. Some could have been easily prevented if a vertical pavement edge drop-off had not been present.

Many of these tragedies might have been prevented by a cutting-edge technology known as the Safety Edge™. This simple, inexpensive solution is a focus of the FHWA's *Every Day Counts* program.

Pavement Edge Drop-offs

Drop-offs occur when there are height differences between a paved road and the adjacent graded material. Conventional paving techniques result in vertical or nearly vertical pavement edges, which can cause safety concerns when they are exposed.

National crash data is lacking on edge drop-off issues, but the existing data is compelling. In Iowa, pavement edges may have contributed to as many as 18% of rural run-off road crashes on paved roads with unpaved shoulders during 2002-2004. In Missouri, that percentage was nearly 25%. These statistics were strong motivation for the FHWA's ground-breaking Safety Edge™ initiative.

Why Vehicles Leave the Road

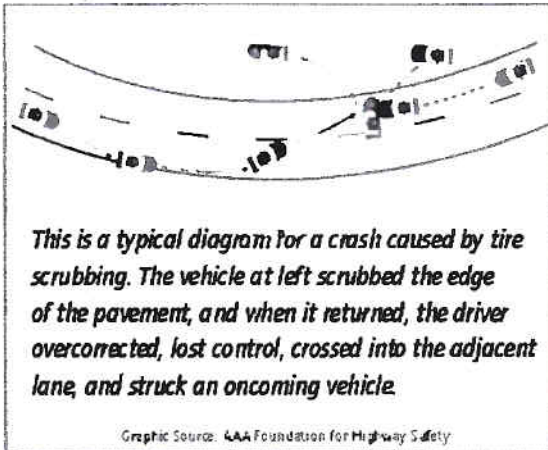
Drivers leave the paved road for many reasons. Some may need to avoid a drunk driver or a roadway obstruction. Others are drowsy or distracted by a phone call, a text message, a GPS device, or a passenger. It is particularly easy to leave the paved road when visibility is low.

Returning to the paved road can be challenging when vertical edge drop-offs are present. A driver who doesn't slow down before attempting to steer back onto the pavement can easily lose control of the car. One State found that drop-off crashes are four times as likely to include a fatality than other types of crashes on similar roads.

The Safety Edge™ Solution



The Safety EdgeSM is an uncomplicated and effective solution to mitigate pavement edge-related crashes. When done correctly, simply shaping the edge of the pavement to 30 degrees can eliminate the problem of vertical drop-off. Research has shown this "shape is considered conservative in that the transition from on-roadway surface to shoulder and back is so smooth it defies assignment of any degree of severity, except when the elevation change from pavement to shoulder causes a noticeable tilt in the vehicle."



The Safety EdgeSM provides a strong, durable transition for all vehicles that are particularly vulnerable, such as smaller, lighter cars or motorcycles. Even at relatively high speeds, vehicles can return to the paved road smoothly and easily.

As with conventional paving, the graded material adjacent to the Safety EdgeSM should be brought flush with the top of the pavement following paving. The Safety EdgeSM concept is that when drop-offs recur, they will not be vertical, but a shape that will not induce tire scrubbing.

Avoiding Tire Scrubbing

Without the Safety Edge, a vertical or near-vertical pavement edge can become exposed. Attempts to return to the road can create "tire scrubbing" as the tire rubs intensely against the vertical edge, causing friction between the wheel and the pavement.

If the driver overcompensates by steering too hard, the vehicle can fishtail, swerve into another lane, or go off the road entirely. The vehicle may roll over or be thrown into oncoming traffic.

Inexperienced drivers are not the only victims of tire scrubbing. Smaller, lighter vehicles have a harder time climbing a steep pavement edge. At high speeds, the climb is particularly dangerous.

Whereas a vertical drop-off of 2.5 inches or greater has been shown to be problematic at speeds of 55-60 mph, drop-offs of up to 5 inches with the Safety EdgeSM are traversable at these speeds.

Added Benefits to the Safety EdgeSM

The Safety EdgeSM also improves density at the pavement edge, which makes the pavement more durable. Less frequent road maintenance may be needed as edge raveling is reduced.

The Safety EdgeSM is also easy to install. A commercially available shoe can be mounted on asphalt resurfacing equipment. An attachment acts as a screed extension. As the asphalt is extruded, it confines the asphalt into the desired 30 degree shape.

Although generic devices that provide a 30-degree angled shape can also be used, they typically only cut the pavement into the correct angle, but do not consolidate the asphalt. This leaves the edge more open to breaking off.

The Safety EdgeSM is inexpensive to install. Typically less than 1% additional asphalt is required, since the Safety EdgeSM technology compacts the loose asphalt that would otherwise crumble.

The Safety EdgeSM is also recommended for concrete pavements where the edge is adjacent to an unpaved surface. This may call for other considerations, including an increase in materials.

The Safety EdgeSM Challenge

The Safety EdgeSM is a proven solution that requires minimal cost and time. By including the Safety EdgeSM detail while paving, this countermeasure can be implemented system-wide at a very low cost. FHWA's goal is to accelerate the implementation of the Safety EdgeSM technology, so that more lives can be saved.

The FHWA has joined with state and local agencies in 20 states to sponsor or initiate project demonstrations installing this technology. Working together with State partners, contractors, equipment manufacturers, and the industry on this 21st century initiative, we can prevent the tragedy of pavement edge drop-offs.

Contact

Cathy Satterfield
FHWA Office of Safety
(708) 283-3552
Cathy.Satterfield@dot.gov

Resources

[Brochure](#)

[FHWA Evaluation of the Safety Edge Treatment](#)

[Guide Specification for Safety Edge™](#)

[Safety Edge™ Design and Construction Guide](#)

Case Studies

[Jasper County, Iowa Project](#)

[County Highway E34 Iowa Project](#)

[Turner, Maine Project](#)

[Columbus, Mississippi Project](#)

[Brogden Road, Johnston County, North Carolina Project](#)

[Little Divine Road, Johnston County, North Carolina Project](#)

[Kearney, Nebraska Project](#)

[Elizabethtown, Pennsylvania](#)

[Seaford, Delaware Project](#)

[Menominee County, Wisconsin Project](#)

Page last modified on November 14, 2016

**SUPPLEMENTAL SPECIFICATION 159
ON THE JOB TRAINING (OJT)
PROGRAM**

DESCRIPTION

- 159.01** **Scope and Goal** - This work shall consist of providing on-the-job training aimed at developing workers to the full journey person level in the types of trades involved in the project and indicated in the contract documents. Journey person as used herein means a craftsperson considered capable of performing all the major duties of a particular trade. The employment and training program will consist of no less than 500 (3 months of training) and no more than 2,000 hours (1 year approx.) depending on contract time of the project.

MATERIALS

- 159.02** The Contractor shall provide all the materials required for the training in the trades specified. This includes all safety equipment necessary.
- 159.03** The Contractor shall provide, for each participant, the following work clothes:
- a. *one (1) pair of work boots*
 - b. *Required safety equipment to perform the job skill selected (goggles, hardhats, reflective vests etc.)*

*The Department will reimburse up to \$150.00 per trainee selected
The Contractor shall provide evidence of purchase for the clothing. Program participant must sign receipt of items given.*

CONSTRUCTION REQUIREMENTS

- 159.04** Prior to commencing construction, the Contractor shall submit to the Authority (Civil Rights Office) for approval, a training utilization schedule which shall be correlated to the Contractor's construction schedule and a training program to be used for each trade. Trainees will be required to train for the number of hours specified in the proposal schedule. Approval of all training programs shall be obtained from the Authority (Civil Rights Office) prior to commencing work on the project. The Contractor will be credited for each trainee employed on the contract work who is currently enrolled or has become enrolled in an approved program and will be reimbursed for such trainee as provided hereinafter.

**SUPPLEMENTAL SPECIFICATION 159
ON THE JOB TRAINING (OJT)
PROGRAM**

- 159.05** Training and upgrading of women toward journeyman status is the primary objective of this specification. Accordingly, the Contractor shall make every effort to enroll women (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield women trainees) to the extent that such persons are available within a reasonable area of recruitment. The Contractor shall be responsible for demonstrating the steps that he has taken in pursuance thereof, prior to a determination as to whether the Contractor is in compliance with this specification.
- 159.06** No employee shall be employed as trainee in any classification in which he has successfully completed a training course leading to journeyman status or in which he has been employed as a journeyman. The Contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used, the Contractor's records should document the findings in each case.
- 159.07** The minimum length and type of training for each classification will be as established in the training program selected by the Contractor and approved by the Authority. The Authority will approve a program if it is reasonably calculated to meet the equal employment opportunity obligations of the Contractor and to qualify the average trainee for journeyman status in the classification concerned by the end of the training period. Approval or acceptance of a training program shall be obtained from the Authority prior to commencing work on the classifications covered by the program. Some offsite training is permissible as long as the training is an integral part of an approved training program and does not comprise a significant part of the overall training.
- 159.08** Except as otherwise noted below, the Contractor will be reimbursed at the unit bid price per hour of training given an employee on this contract in accordance with an approved training program. As approved by the Engineer, reimbursement will be made for training persons in excess of the number specified herein. This reimbursement will be made even though the Contractor receives additional training program funds from other sources, provided such other sources does not specifically prohibit the Contractor from receiving other reimbursement. Reimbursement for offsite training indicated above may only be made to the Contractor where he/she does one or more of the following and the trainees are concurrently employed on a Federal-aid project; contributes to the cost of the training, provides the instruction to the trainee or pays the trainee's wages during the offsite training period.

**SUPPLEMENTAL SPECIFICATION 159
ON THE JOB TRAINING (OJT)
PROGRAM**

- 159.09** Participants (trainees) of the Program will be paid no less than the **current Federal minimum wage**. Also, all fringes that correspond to the trainees such as those for unskilled labor and/or depending on classification of work being done.
- 159.10** The Contractor shall furnish the trainee a copy of the program he/she will follow in providing the training. The Contractor shall provide each trainee with a certificate indicating the type and length of training satisfactorily completed.
- 159.11** The Contractor shall assume responsibility for the success of the training program and shall enforce rules and disciplinary measures on behavior, tardiness, absences and such other action as may be required.
- 159.12** The Contractor must take into consideration at the moment of bidding that the trainees, if eligible, will be able to join a labor union, with all the rights and privileges that these provide. The Authority nor its representatives have jurisdiction nor will mediate with the arrangement between the trainee and a labor union. The trainees are entitled to receive the same fringe benefits as the other employees of the Contractor, even though they are not members of a labor union. The trainees will be covered by all the labor laws and decrees included in the contract documents.
- 159.13** The Contractor shall provide for the maintenance of records and furnish periodic reports documenting the trainees' performance under this specification.
- 159.14** In the event that a Contractor subcontracts a portion of the contract work, the Contractor must determine how many, if any, hours of training and what trades trainees are to be trained by the sub-contractor. The Contractor shall retain the primary responsibility for meeting the training requirement imposed by this specification. The Contractor shall also insure that this training specification is made applicable to such subcontract.
- 159.15** Where training is provided under a multi-phase training program it is expected that training will be provided continually through all phases to the extent that opportunity for such training exist on the project. Upon satisfactory completion of a phase of training under a multi-phase training program, when further appropriate training is not available and work in the completed phase is available, the trainee shall continue employment, and be compensated at the prevailing wage rate for such work as approved by the Authority.

**SUPPLEMENTAL SPECIFICATION 159
ON THE JOB TRAINING (OJT)
PROGRAM**

PENALTY FOR NONCOMPLIANCE

- 159.16** No payment will be made to the Contractor if either the failure to provide the required training, or the failure to hire the trainee as a journeyman, is caused by the Contractor and evidences a lack of good faith on the part of the Contractor in meeting the requirements of this specification. It is normally expected that a trainee will begin his/her training on the project as soon as feasible after start of work utilizing the skill involved and remain on the project as long as training opportunities exist in her work classification or until she has completed her training program. It is not required that all trainees be on board at the same time. A Contractor will have fulfilled his/her responsibilities under this if he/she has provided acceptable training to the number of trainees specified and/or utilized hours indicated. The number trained shall be determined on the basis of the total number of hours indicated in the contract.
- a. If the Contractor's failure to either provide the required training or to employ and compensate a trainee at the prevailing wage rate or minimum federal wage specified for the occupation in which training was provided, following certification of satisfactory completion of such training is caused by the Contractor's failure to meet the requirements of this specification, no reimbursement will be made for any Trainee Man Hours (TMH) recorded as provided to the trainee involved. The foregoing is in addition to any other sanctions for non-compliance with required contract provisions which may be imposed.
 - b. In the event the Contractor fails to provide training as specified in the approved Training Program, the Authority shall withhold payment to the Contractor in an amount equal to three (3) times the wages that would have been earned by trainees had such training been provided. In the event the Contractor fails to pay wages or other compensation due to trainees, the Authority may pay such unpaid amounts directly to the applicable trainees on the Contractor's behalf and deduct as a penalty an amount equal to three (3) times such amount from the payment to the Contractor for the work.

METHOD OF MEASUREMENT

- 159.17** The quantity to be paid for under this item will be the number of Trainee Man Hours (TMH) used and approved in accordance with this specification. Documentation of the number of Trainee Man Hours shall be made by the Contractor in a manner and form satisfactory to the Authority.

**SUPPLEMENTAL SPECIFICATION 159
ON THE JOB TRAINING (OJT)
PROGRAM**

BASIS OF PAYMENT

159.18 The number of Trainee Man Hours determined as provided above will be paid for at the contract unit price per TMH. Such price and payment shall constitute full compensation for providing and administering the required training including all labor, equipment, materials and incidentals necessary to complete this work as specified.

159.19 Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
Trainee Man Hours	Each

Warm Mix Asphalt (WMA) Guide Specification for Highway Construction

Division 400 - Asphalt Pavements and Surface Treatments

SECTION 406 - WARM MIX ASPHALT (WMA) PAVEMENT

Warm mix asphalt (WMA) is the generic term used to describe the reduction in production, paving, and compaction temperatures achieved through the application of one of several WMA technologies.

Some modifications to HMA plants may be necessary to accommodate the WMA technologies as noted in Section 406.03 Construction.

Production and paving temperatures may need to be increased for higher recycled asphalt pavement (RAP) contents, increased haul distances, decreased ambient temperatures, or other WMA project specific conditions.

All provisions for the production and placement of conventional HMA mixtures as stipulated in Standard Specification for Construction and Bridges on Federal Highway Projects (FP), Section 403 are in force except as noted below.

406.01 Description

Construct one or more courses of plant produced warm mix asphalt (WMA) pavement on a prepared foundation, using virgin aggregate or a combination of virgin and/or reclaimed aggregate material (RAM) and prescribed manufactured WMA additives and/or WMA plant process modifications. Use of RAP materials, consisting of cold milled, crushed, or processed bituminous asphalt mixture are permitted at the current 25 percentages, provided that the mixture meets all the requirements of these specifications.

406.02 Material

WMA may be produced by one or a combination of several technologies involving HMA plant foaming processes and equipment, mineral additives, or chemicals that allow the reduction of mix production temperatures to within 185°F to 275°F. *(Note: The upper temperature range is appropriate for modified asphalt binders and WMA mixtures which include higher percentages of reclaimed asphalt pavement.)*

Provide materials as specified in:

Aggregate	Subsection 703.07 or 703.17
Antistrip additive	Subsection 702.08
Asphalt binder	Subsection 702.01
Mineral Filler	Subsection 725.05
Recycled Asphalt Pavement	Subsection 703.19
Recycling Agent	Subsection 702.06

406.03 Construction

A. Mix Design. Develop and submit a job mix formula for each mixture according to AASHTO R 35. Each job mix formula must be capable of being produced, placed, and compacted as specified. Apply all mix design requirements for HMA to the development of the WMA mix design.

Submit a written job mix formula for review and approval at least 28 days before production, or when sources of asphalt binder, aggregates, WMA additives, or other components of the mix change.

Submit the following information:

1. All information required in the report section of AASHTO R 35.
2. WMA technology and/or WMA additives information.
3. WMA technology manufacturer's established recommendations for usage.
4. WMA technology manufacturer's established target rate for water and additives, the acceptable variation for production, and documentation showing the impact of excessive production variation.
5. WMA technology material safety data sheets (MSDS).
6. Documentation of past WMA technology field applications including project type, project owner, tonnage, location, mix design, mixture volumetrics, field density, and performance.
7. Temperature range for mixing.
8. Temperature range for compacting.
9. Asphalt binder performance grade test data over the range of WMA additive percentages proposed for use.
10. WMA mixture performance test results.
11. Laboratory test data, samples and sources of all mixture components, and asphalt binder viscosity-temperature relationships.

B. Additives. Use anti-stripping additives, silicone additives, WMA additives, and WMA technologies as specified. Comply with approved mix design quantities. Confirm the addition rate through field tests performed during production. Comply with the manufacturer's recommendations for incorporating additives and WMA technologies into the mix. Comply with manufacturer's recommendations regarding receiving, storage, and delivery of additives. Maintain supplier recommendations on file at the asphalt mixing plant and make available for reference while producing WMA.

C. Sampling. Perform sampling according to the following standards:

1. *Aggregate.* AASHTO T 2.
2. *Asphalt Binder.* AASHTO T 40.
3. *Warm Mix Asphalt (WMA) Plant Mix.* AASHTO T 168.

D. Weather Limitations.

1. Place WMA mixtures only on dry, unfrozen surfaces and only when weather conditions allow for proper production, placement, handling, and compacting.
2. Meet Table 401-2 placement temperatures.

E. Equipment. Use equipment and WMA technologies capable of producing an asphalt mixture that meet specification requirements and is workable at the minimum placement and compaction temperature desired, regardless of storage or haul distance considerations.

1. *Asphalt Mixing Plant.* Meet AASHTO M 156 and FP Subsection 401.04.

Modify the asphalt mixing plant as required by the manufacturer to introduce the WMA technology.

Plant modifications may include additional plant instrumentation, the installation of asphalt binder foaming systems and/or WMA additive delivery systems, tuning the plant burner and adjusting the flights in order to operate at lower production temperatures and/or reduced tonnage.

(Note: Implementation of best management practices in the control of aggregate moisture content prior to introduction to the drying or mixing drum is highly recommended in order to achieve the maximum benefit of WMA technology.)

Combine and mix the dried aggregates and asphalt binder to meet the job mix formula. Ensure a minimum of 95 percent uniform coating of aggregates according to AASHTO T 195.

Correct procedures if storing or holding causes segregation, excessive heat loss, or a reduced quality mixture. Properly dispose of mixture which does not meet specifications.

G. *Preparing Base or Existing Surface.* Clear surface of debris and deleterious material. Apply and cure tack coat before placing the WMA. Apply a tack coat on all surfaces, curbs, gutters, manholes, or other structure surfaces, that will be in contact with the WMA.

Repair damaged areas of the base or existing surface. Restore the existing surface or base to a uniform grade and cross section before placing the mix.

H. *Pre-paving Requirements.* Prior to placing any WMA mix, produce a sufficient amount of WMA mix to properly calibrate the plant and procedures using the mix design approved for mainline construction. The Engineer will sample and test the WMA mix thus produced for the following:

1. Voids in mineral aggregate (VMA);
2. Asphalt binder content;
3. Gradation;
4. Air voids; and
5. Tensile strength ratio (or Hamburg wheel tracking test for moisture damage)

Heat WMA field samples, transported to the laboratory, to the field production temperature, or lower, when reheating is required for WMA mixture testing.

(Note: Field produced WMA loose mix samples which are immediately compacted and tested, without reheating, may produce lower voids in mineral aggregate and lower air voids test results when compared to reheated samples. This should be validated during the test strip or initial production lot. One possible remedy is to cool the WMA sample to room temperature and reheat to a temperature that is less than or equal to the WMA field production temperature before laboratory compaction. This will minimize the WMA technology's effects on the test results and ensures the sample is not excessively aged.)

Place no WMA mixture that fails to meet specification requirements. WMA mixture not meeting the requirements may be used in the construction of temporary facilities when approved by the Engineer.

Construct a control strip or initial production lot with production materials and equipment. Select compacting methods to meet the specified density. The Engineer will take random loose mix and core samples to verify compliance with job mix and specification requirements. Reconstruct the test strip or initial production lot if the job mix formula, the compacting method, or compacting equipment changes,

or if results do not meet specifications.

I. Spreading and Finishing. Spread and finish the mixture with asphalt pavers to specified grade and thickness.

Hand place material in areas inaccessible to mechanical spreading and finishing equipment. Maintain a consistent supply of mixture to ensure uninterrupted paving.

Minimize inconvenience to traffic and protect existing and finished surfaces. Leave only short lane sections, normally less than [26 ft (8 m)], where the abutting lane is not placed the same day, or according to Manual on Uniform Traffic Control Devices (MUTCD) traffic safety requirements.

J. Compacting. Compact immediately after spreading and before the WMA mixture falls below the minimum job mix design compaction temperature. Discontinue paving if unable to achieve the specified density before the mixture cools below the minimum recommended WMA job mix design compaction temperature.

Provide the number, weight, type, and sequence of rollers necessary to compact the mixture without displacing, cracking, or shoving. Roll the WMA mixture parallel to the centerline. Begin rolling superelevated curves at the low side and continue to the high side, overlapping longitudinal passes parallel to the centerline.

Maintain a uniform roller speed with the drive wheels nearest the paver. Operate vibratory rollers uniformly at the manufacturer's recommended speed and frequency.

Continue rolling to eliminate all roller marks and to achieve the minimum 92 percent of laboratory density as determined according to AASHTO T 209.

Maintain the line and grade of the edge during rolling.

Prevent the mixture from adhering to the rollers by using very small quantities of detergent or other approved release material.

Hand compact areas inaccessible to rollers.

The Engineer will take random tests of the compacted pavement to verify specification compliance. At no cost to the Agency, remove and replace mixture that does not meet specification requirements or that becomes contaminated with foreign materials. Remove defective materials for the full thickness of the course by saw cutting the sides perpendicular and parallel to the direction of traffic. Coat saw cut edges with bituminous materials and replace the defective material with specification materials.

K. Joints. Protect ends of a freshly laid mixture from damage by rollers. Form transverse joints to expose the full depth of the course. Apply a tack coat on transverse and longitudinal joint contact surfaces immediately before paving. Construct all longitudinal joints within 12 in. (300 mm) of the lane lines. Offset longitudinal and transverse joints on succeeding lifts 6 inches (150 mm) to 12 inches (300 mm) from the joint in the layer immediately below. Create the longitudinal joint in the top layer along the centerline of two-lane highways or at the lane lines of roadways with more than two lanes.

L. Surface Tests. The Engineer will test pavement surfaces to verify compliance with FP Subsection 401.16, smoothness and texture requirements.

Correct pavement surfaces that do not meet specification requirements by cold milling, diamond grinding, overlaying, or removing and replacing according to the following:

a. *Diamond Grinding.* Diamond grind final pavement surfaces exposed to vehicle traffic to the required surface tolerance and cross section. Remove and dispose of all waste material.

b. *Cold Milling.* Cold mill intermediate pavement surfaces to the required surface tolerance and cross section. Remove and dispose of all waste materials.

c. *Overlaying.* Use specification materials for overlays. Overlay the full width of the underlying pavement surface. Place a minimum recommended overlay thickness of [1.6 in. (40 mm)]. Use only one overlay.

d. *Removing and Replacing.* Replace rejected areas with WMA pavement materials that meet specification requirements. Test the corrected surface area. Complete all corrections before determining pavement thickness.

406.04 Measurement

The Engineer will measure work acceptably completed as specified in Subsection 109.02. The Engineer will base quantities of asphalt binder on the theoretical mass incorporated into accepted product as verified by samples taken according to Subsection 702.01.

406.05 Payment

Include costs of plant startup operations, considering both labor and materials, in the price bid for the mixture in place.

The Agency will pay for accepted quantities at the contract unit price as follows:

Pay Item Pay Unit

(A) Asphalt Binder ton (Mg), gal (L)

(B) WMA Plant Mix—Type _____ ton (Mg), yd² (m²)

Such payment is full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as specified.