Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

January 7, 2010

SUBJECT: FAI Route 55 (I-55)
Project ESP-055-6 (238) 241
Section 88 (B & B-1) BR
Will County
Contract No. 62930
Item No. January 15, 2010 Letting
Addendum A

NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Replaced the Schedule of Prices.
2. Revised page ii of the Table of Contents to the Special Provisions.
3. Revised page 1 of the Special Provisions.
4. Added pages 120 - 129 to the Special Provisions.
5. Revised sheets 1 – 5, & 21 of the plans.
6. Added sheets 4A, 5A, 21A & 72A - 72C to the Plans.

Prime contractors must utilize the enclosed material when preparing their bid and must include any Schedule of Prices changes in their bidding proposal.

Bidders using computer-generated bids are cautioned to reflect any and all Schedule of Prices changes, if involved, into their computer programs.

Very truly yours,

Charles Ingersoll, Chief
Bureau of Design and Environment

By: Ted B. Walschleger, P. E.
Engineer of Project Management

cc: Diane O'Keefe, Region 1, District 1; Mike Renner; R. E. Anderson; Estimates

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 62930

State Job # - C-91-166-05
PPS NBR - 1-75969-0100
County Name - WILL- -
Code - 197 - -
District - 1 - -
Section Number - 88(B&B-1)BR

Project Number: ESP-0556/238/241

Route: FAI 55

* REVISED : JANUARY 5, 2010

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
XX003686	REM EX CONC END SEC	EACH	1.000				
XX007164	CLEAN & RELAMP EX LUM	EACH	57.000				
X0320887	POLYMER CONCRETE	CU FT	0.500				
X0322185	BR DK LTX C OLY 2 1/4	SQ YD	8,611.000				
* X0322729	MATL TRANSFER DEVICE	TON	10,138.000				
* X0322256	TEMP INFO SIGNING	SQ FT	1,414.000				
* DELETED							
* X0324685	TEST STRIP SMA	EACH	2.000				
X0324744	REM EX PRECAST UNITS	SQ FT	180.000				
X0325085	TEMP PAVT INTERSTATE	SQ YD	7,044.000				
X0325303	STR REP CON DP OVER 5	SQ FT	17.000				
X0325305	STR REP CON DP = < 5	SQ FT	621.000				
X0325349	TEMP CON BAR (PERM)	FOOT	1,038.000				
X0325416	TRAF CONT/PROT DETOUR	L SUM	1.000				
X0325426	PCC SUR REM 1 3/4	SQ YD	850.000				

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	Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
	X0325590	HT CBL MED BAR TERM	EACH	4.000				
	X0325775	WET RF TEM TAPE T3 4	FOOT	37,110.000				
	X0326676	REPL SUR SEN TEMP PRB	L SUM	1.000				
	X0326677	REM HT CBL MEDIAN BAR	FOOT	2,390.000				
*	X4067107	POL LB MM IL4.75 N50	TON	56.000				
	X5121800	PERM STEEL SHT PILING	SQ FT	468.000				
	X7011015	TR C-PROT EXPRESSWAYS	L SUM	1.000				
	X7013820	TR CONT SURVEIL EXPWY	CAL DA	80.000				
	Z0001050	AGG SUBGRADE 12	SQ YD	7,044.000				
	Z0006201	BR DECK HY-SCAR 1	SQ YD	8,611.000				
	Z0013798	CONSTRUCTION LAYOUT	L SUM	1.000				
	Z0014700	CULVERT TO BE CLEANED	EACH	14.000				
	Z0016001	DECK SLAB REP (FD-T1)	SQ YD	6.000				
	Z0016002	DECK SLAB REP (FD-T2)	SQ YD	238.000				
	Z0018500	DRAINAGE STR CLEANED	EACH	14.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
Z0030150	IMPACT ATTEN NRD TL3	EACH	4.000				
Z0030250	IMP ATTN TEMP NRD TL3	EACH	2.000				
Z0030350	IMP ATTN REL NRD TL3	EACH	2.000				
Z0040530	PIPE UNDERDRAIN REMOV	FOOT	4,000.000				
Z0043800	P P CONC I-BM REPAIR	SQ FT	11.500				
Z0065740	SLOT DR 12" W/VAR SL	FOOT	466.000				
Z0065760	SLOT DR 15" W/VAR SL	FOOT	573.000				
Z0076600	TRAINEES	HOUR	1,000.000		0.800		800.000
Z0076870	UNDR CONNECT TO STR	EACH	4.000				
20200100	EARTH EXCAVATION	CU YD	3,610.000				
20201200	REM & DISP UNS MATL	CU YD	500.000				
20400800	FURNISHED EXCAV	CU YD	200.000				
20800150	TRENCH BACKFILL	CU YD	120.000				
25000210	SEEDING CL 2A	ACRE	0.560				
25000400	NITROGEN FERT NUTR	POUND	50.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
25000500	PHOSPHORUS FERT NUTR	POUND	50.000				
25000600	POTASSIUM FERT NUTR	POUND	50.000				
25100630	EROSION CONTR BLANKET	SQ YD	2,713.000				
28000500	INLET & PIPE PROTECT	EACH	4.000				
* 40600300	AGG PR CT	TON	223.000				
40600895	CONSTRUC TEST STRIP	EACH	1.000				
* 40600982	HMA SURF REM BUTT JT	SQ YD	144.000				
* 40601005	HMA REPL OVER PATCH	TON	530.000				
* 40603085	HMA BC IL-19.0 N70	TON	2,286.000				
* 40603148	P HMA BC SMA N80	TON	5,069.000				
* 40603153	P HMA SC SMA N80	TON	5,069.000				
* 40603340	HMA SC "D" N70	TON	1,524.000				
* DELETED							
* 40800020	BIT MATLS PR CT	TON	45.000				
42001300	PROTECTIVE COAT	SQ YD	8,802.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
* DELETED							
* DELETED							
* 44000164	HMA SURF REM 3 3/4	SQ YD	18,147.000				
* 44000165	HMA SURF REM 4	SQ YD	37,548.000				
* 44002216	HMA RM OV PATCH 4	SQ YD	2,366.000				
44004250	PAVED SHLD REMOVAL	SQ YD	2,670.000				
* 44201765	CL D PATCH T2 10	SQ YD	901.000				
* 44201769	CL D PATCH T3 10	SQ YD	676.000				
* 44201771	CL D PATCH T4 10	SQ YD	676.000				
* 44300900	STRIP REF CR CON TR A	FOOT	10,915.000				
48203003	HMA SHOULDERS 1 1/2	SQ YD	10,680.000				
50102400	CONC REM	CU YD	93.000				
50104400	CONC HDWL REM	EACH	10.000				
50200100	STRUCTURE EXCAVATION	CU YD	10.000				
50300225	CONC STRUCT	CU YD	46.800				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
50300255	CONC SUP-STR	CU YD	90.800				
50300260	BR DECK GROOVING	SQ YD	8,306.000				
50500505	STUD SHEAR CONNECTORS	EACH	19.000				
50800205	REINF BARS, EPOXY CTD	POUND	18,740.000				
52000110	PREF JT STRIP SEAL	FOOT	92.000				
52000325	NEOPRENE EXP JT 2 1/2	FOOT	97.000				
52000340	NEOPRENE EXPAN JT 4	FOOT	191.000				
542A0217	P CUL CL A 1 12	FOOT	339.000				
542A0220	P CUL CL A 1 15	FOOT	475.000				
542A0223	P CUL CL A 1 18	FOOT	30.000				
54213657	PRC FLAR END SEC 12	EACH	2.000				
54213660	PRC FLAR END SEC 15	EACH	1.000				
54247090	GRATING-C FL END S 12	EACH	2.000				
54247100	GRATING-C FL END S 15	EACH	1.000				
55039700	SS CLEANED	FOOT	850.000				

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Route: FAI 55

* REVISED : JANUARY 5, 2010

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
59000200	EPOXY CRACK INJECTION	FOOT	902.000				
60100060	CONC HDWL FOR P DRAIN	EACH	4.000				
60107600	PIPE UNDERDRAINS 4	FOOT	4,000.000				
60236200	INLETS TA T8G	EACH	3.000				
60615400	PAVED DITCH TA-15	FOOT	517.000				
* 63500105	DELINEATORS	EACH	133.000				
63801200	MOD GLARE SCRN SYS	FOOT	4,300.000				
* 64200105	SHOULDER RUMBLE STRIP	FOOT	16,053.000				
67000400	ENGR FIELD OFFICE A	CAL MO	12.000				
67100100	MOBILIZATION	L SUM	1.000				
70106800	CHANGEABLE MESSAGE SN	CAL MO	12.000				
70300240	TEMP PVT MK LINE 6	FOOT	12,250.000				
70301000	WORK ZONE PAVT MK REM	SQ FT	12,370.000				
70400100	TEMP CONC BARRIER	FOOT	6,125.000				
70400200	REL TEMP CONC BARRIER	FOOT	6,125.000				

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*** REVISED : JANUARY 5, 2010**

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
78000200	THPL PVT MK LINE 4	FOOT	20,080.000				
78000500	THPL PVT MK LINE 8	FOOT	2,690.000				
78000600	THPL PVT MK LINE 12	FOOT	660.000				
78003120	PREF PL PM TB LINE 5	FOOT	4,450.000				
78005110	EPOXY PVT MK LINE 4	FOOT	5,220.000				
78100100	RAISED REFL PAVT MKR	EACH	350.000				
78300100	PAVT MARKING REMOVAL	SQ FT	6,430.000				
78300200	RAISED REF PVT MK REM	EACH	350.000				

STATE OF ILLINOIS

SPECIAL PROVISIONS

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction," adopted January 1, 2007, the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways," and the "Manual of Test Procedures for Materials" in effect on the date of invitation for bids, and the Supplemental Specifications and Recurring Special Provisions indicated on the Check Sheet included herein which apply to and govern the construction of FAI Route 55 (I-55), Project ESP-055-6 (238) 241, Section: 88(B&B-1)BR in Will County and in case of conflict with any part or parts of said Specifications, the said Special Provisions shall take precedence and shall govern.

FAI Route 55 (I-55)
Project: ESP-055-6 (238) 241
Section: 88(B&B-1)BR
County: Will
Contract No. 62930

LOCATION OF PROJECT

The project begins at a point on Interstate Route 55 approximately 3,900 feet south of the centerline of the bridges carrying I-55 over the Kankakee River and extends in a northerly direction to a point approximately 2,420 feet north of the bridges, for a total distance of approximately 6,320 feet (1.2 miles).

DESCRIPTION OF PROJECT

This project consists of the rehabilitation of the two structures carrying I-55 over the Kankakee River, and the construction of two permanent median crossovers. The work to be performed under this contract consists of bridge deck repair; installation of a latex concrete overlay on the northbound structure and a thin polymer overlay on the southbound structure; PPC I-Beam repair; neoprene expansion joint replacement; wingwall rehabilitation and substructure repair; HMA **mainline pavement and shoulder resurfacing within the above limits; HMA resurfacing of the northbound and southbound exit ramps at the River Road interchanges**; median crossover construction; traffic control using a moveable temporary barrier wall system; and all incidental and collateral work necessary to complete this improvement as shown on the plans and as described herein.

STATUS OF UTILITIES TO BE ADJUSTED

Effective: January 30, 1987 Revised: July 1, 1994

Utility companies involved in this project have provided the following:

No conflicts are anticipated.

Revised 01/07/2010

STONE MATRIX ASPHALT (SMA)(DIST 1)
Effective: April 1, 1997 Revised: August 1, 2009

Description. This Special Provision establishes and describes the responsibilities of the Contractor in producing and constructing Polymerized Hot Mix Asphalt Binder Course, Stone Matrix Asphalt, N 80, or Polymerized Hot Mix Asphalt Surface Course, Stone Matrix Asphalt, N 80. The work shall be according to Sections 406, 1030, and 1032 of the Standard Specifications except as modified herein.

Materials.

(a) Aggregates. All aggregates shall be Class B Quality or better. The aggregate water absorption shall be 2.0 percent or less.

(1) Coarse Aggregate. No individual coarse aggregate gradation is specified. The coarse aggregate gradation(s) used shall be capable of being combined with FA 20 stone sand and mineral filler to meet the approved mix design and the mix requirements noted herein.

For surface course, coarse aggregate shall be Class B Quality; the coarse Aggregate can be crushed steel slag, crushed quartzite, and crushed diabase.*

For binder course, coarse aggregate shall be crushed stone (dolomite), crushed gravel crushed granite, crushed quartzite, and crushed diabase.

(2) Fine Aggregate. Fine aggregate shall be Class B Quality stone sand meeting gradation FA 20.

(3) Mineral Filler. Mineral filler shall be commercially manufactured mineral filler meeting Article 1011.01 of the Standard Specifications with the following additional requirement:

Additional minus No. 200 (minus 75 µm) material required by the mix design shall be mineral filler.

***** Blending of coarse Aggregate will be permitted.

(b) Fiber Additive. A fiber additive shall be included in the SMA mixture. Typical ranges of dosage rates are shown but the actual dosage rate will be determined by the Engineer.

A stabilizer such as cellulose fiber or Mineral fibers shall be added to the mixture. The dosage rate for cellulose shall be approximately 0.4 percent by total mixtures mass and sufficient to prevent drain down. Cellulose used in SMA mixtures shall conform to the properties outlined in Table 1. For mineral fiber, the dosage rate shall be approximately 0.5 percent by total mixture mass and sufficient to prevent drain down. Mineral fibers used in SMA mixtures shall conform to the properties outlined in table 2.

Added 01/07/2010

Table 1. Cellulose Fiber Quality Requirements

Property	**Requirement**
Sieve Analysis Method A – Alpine Sieve [1/] Analysis Fiber Length Passing No. 100 (0.015 mm) sieve	0.25 in. (6 mm) maximum 70 ± 10 %
Method B – Mesh Screen [2/] Analysis Fiber Length Passing No. 20 (850 µm) sieve No. 40 (425 µm) sieve No. 140 (106 µm) sieve Ash Content [3/] pH [4/] Oil Absorption [5/] Moisture Content [6/]	0.25 in (6 mm) maximum 85 ± 10 % 65 ± 10 % 30 ± 10 % 18 ± 5 % NON VOLATILES 7.5 + 1.0 5.0 ± 1.0 (Times fiber mass) Less than 5 % (by mass)

1/ Method A – Alpine Sieve Analysis. This test is performed using an Alpine Air Jet Sieve (Type 200 LS). A representative five gram sample of fiber is sieved for 14 minutes at a controlled vacuum of 11 psi (75 kPa) of water. The portion remaining on the screen is weighed.

2/ Method B – Mesh Screen Analysis. This test is performed using standard No. 20, No. 40, No. 60, No. 80, No. 100 and No. 140 (850 µm, 425 µm, 250 µm, 180 µm, 150 µm and 106 µm) sieves, nylon brushed and a shaker. A representative 0.35 oz. (10 g) sample of fiber is sieved, using a shaker and two nylon brushes on each screen. The amount retained in each sieve is weighed and the percentage passing calculated. Repeatability of this method is suspect and needs to be verified.

3/ Ash Content. A representative 0.07 to 0.11 oz. (2 to 3 g) sample of fiber is placed in a tared crucible and heated between 1100 and 1200 °F (595 and 650 °C) for not less than 2 hours. The crucible and ash are cooled in a desiccator and weighed.

4/ pH Test. A representative 0.176 oz. (5 g) of fiber is added to 0.10 quarts (100 mL) of distilled water, stirred and let sit for 30 minutes. The pH is determined with a probe calibrated with pH 7.0 buffer.

5/ Oil Absorption Test. A representative 0.176 oz. (5 g) of fiber is accurately weighed and suspended in an excess of mineral spirits for not less than 5 minutes to ensure total saturation. It is then placed in a screen mesh strainer (approximately 0.0008 sq. in. (0.5 sq mm) opening size) and shaken on a wrist action shaker for 10 minutes [approximately 1 1/4 in. (32 mm) motion at 240 shakes per minute]. The shaken mass is then transferred without touching to a tared container and weighed. Results are reported as the amount (number or times its own weight) the fibers are able to absorb.

6/ Moisture content. A representative 0.35 oz. (10 g) of fiber is weighed and placed in a 250 °F (121 °C) forced air oven for 2 hours. The sample is then reweighed immediately upon removal from the oven.

Added 01/07/2010

Table 2. Mineral Fiber Quality Requirements

Property	**Requirements**
Sieve Analysis	
Fiber Length [1/]	0.25 in. (6 mm) Maximum mean test value
Thickness [2/]	0.0002 in (0.005 mm) Maximum mean test value
Shot Content [3/]	
Passing No. 230 (63 µm) Sieve	70 ± 10 %

1/ The fiber length is determined according to the Bauer McNett Fractionation.

2/ The fiber diameter is determined by measuring at least 200 fibers in a phase contrast microscope.

3/ Shot content is a measure of non-fibrous material. The shot content is determined on vibration sieves. Two sieves, No. 60 and No. 230 (250 µm and 63 µm), are typically utilized.

Prior to approval and use of the mineral fiber, the Contractor shall submit a notarized certification by the producer of these materials, stating they meet these requirements.

(c) Reclaimed Asphalt Pavement (RAP). RAP use will be permitted at max of 10%. If the RAP Materials is sized to 5/8" to 3/8".

(d) Asphalt Binder (AB)

At the contractor's option, the asphalt bider shall be SBS/SBR PG 76-22 or SBS/SBR PG 76-28 meeting the requirements Article 1032.05(b) of the Standard Specifications. The elastic recovery of the Asphalt Binder used shall be a minimum of 80.

Plant Requirements.

(a) Asphalt Cement. The polymer modified asphalt cement shall be shipped, maintained and stored at the mix plant according to the manufacturer's requirements. Polymer asphalt cement shall be placed in an empty tank and not blended with other asphalt cements.

(b) Mineral Filler System. The mineral filler system shall accurately proportion the large amounts of mineral filler required for the mixture. Alteration or adjustment of the current system may be required.

Mineral filler shall not be stored in the same silo as collected dust. As an option, collected bag-house dust may be used in lieu of manufactured mineral filler, provided; 1) there is enough is available for the production of the SMA mix for the entire project and 2) a mix design was prepared with collected bag-house dust.

Added 01/07/2010

(c) Mineral Fiber Additive. Adequate dry storage shall be provided for the fiber additive. A separate feed system shall be provided to proportion the fiber into the mixture uniformly and in desired quantities. The feed system shall be interlocked with the aggregate feed or weigh system to maintain the correct proportions for all rates of production and batch sizes. The proportion of fibers shall be controlled accurately to within ± 10 percent of the amount of fibers required. Flow indicators or sensing devices for the fiber system shall be provided and interlocked with plant controls so mix production shall be interrupted if fiber introduction fails.

(1) Batch Plant. Loose fiber shall be pneumatically added through a separate inlet directly into the weigh hopper above the pugmill. The addition of fiber shall be timed to occur during the hot aggregate charging of the hopper. Adequate mixing time will be required to ensure proper blending of the aggregate and fiber additive. Both the wet and dry mixing times shall each be increased a minimum of 5 seconds. The actual mixing time increase shall be determined by the Engineer based on individual plant characteristics. The batch size shall not exceed 75 percent of pugmill size as rated by the Department.

(2) Drum Mix Plant. Loose fiber shall be introduced using specialized equipment which mixes asphalt cement with the loose fiber at the time of introduction into the drum mixer. This equipment shall be approved by the Engineer. Care shall be taken to ensure the loose fiber does not become entrained in the exhaust system of the drier or plant.

(3) Fiber Supply System: When fiber stabilizing additives are required as an ingredient of the mixture, a separate feed system shall be utilized to accurately proportion by weight the required quantity into the mixture in such a manner that uniform distribution will be obtained. The fiber system shall be interlocked with the aggregate feed or weigh system so as to maintain the correct proportions for all rates of production and batch sizes. The proportion of fibers shall be controlled accurately to within plus or minus 10 percent of the amount of fibers required and the fiber system shall automatically adjust the feed rate to maintain the material within this tolerance at all times. The fiber system shall provide in-process monitoring consisting of either a digital display or output or a printout of feed rate, in pounds per minute to verify feed rate. Flow indicators or sensing devices for the fiber system shall be provided and interlocked with plant controls so that mixture production will be interrupted if introduction of the fiber fails, or if the output rate is not within the tolerances given above.

When a batch type plant is used, the fiber shall be added to the aggregate in the weigh hopper or as approved and directed by the Engineer. The fibers are to be uniformly distributed prior to the injection of asphalt cement into the mixes.

Added 01/07/2010

When a continuous or drier-drum type plant is used, the fiber shall be added to the aggregate and uniformly dispersed prior to the injection of asphalt cement. The fiber shall be added in such a manner that it will not become entrained in the exhaust system of the drier or plant.

(d) Hot-mix Storage. The mixture shall not be stored more than four hours without the approval of the Engineer. The engineer will assess the drain down of the mix in making this determination.

Mix Design. Add the following to the list of Illinois Modified AASHTO references in Article 1030.04 of the Standard Specifications:

AASHTO T 305 Method for determining drain down from the loose mixture.

The drain down shall be determined at the JMF AB content at the mixing temperature plus 30 F.

Each specific SMA mixture design shall be submitted to and verified by the Department as detailed in the Department's current "Bituminous Mixture Design Verification Procedure". The Contractor shall submit samples of all appropriate materials to the Department at least six weeks prior to production for mixture design verification.

The polymer asphalt supplier shall provide the Contractor with the temperature viscosity curves.

The Contractor shall supply the average gradation and the gradation ranges (including the Master Band on the critical sieve, if required) for each aggregate designated for use in the mixture. This information shall be used to judge whether the aggregates are compatible to produce an acceptable mix.

The mix design shall meet the following Gyratory Design (80-Gyration) parameters:

Design Air Voids	3.50 % @ 80 Gyrations
VFA	75 - 85
VMA (Surface Mixtures) VMA (Surface Mixtures) VMA (Binder Mixtures)	17 minimum, if Spec. Gravity of course is 2.76 or above. 16 minimum, If Spec. Gravity of Coarse is below 2.75. 16 minimum
Drain down (%)	0.3 maximum
Dust to AC Ratio	1.5 maximum

The surface and binder mixture gradation shall be according to the requirements in Table 5 for the mixture specified on the plans.

Added 01/07/2010

Table 5
Stone Matrix Asphalt Gradation

Mixture Gradation Target Value Range	
Sieve	Percent Passing
3/4 in. (19.0 mm)	100
1/2 in. (12.5 mm)	82 – 100
3/8 in. (9.5 mm)	68 max
No. 4 (4.75 mm)	20 – 30
No. 8 (2.36 mm)	16 – 24
No. 30 (600 μm)	12 – 16
No. 50 (300 μm)	10 – 15
No. 200 (75μm)	8 – 10

Weather Requirements. The mixtures shall be placed on a dry surface when the temperature of the roadbed is above 60 °F (15 °C).

Hauling/Laydown Equipment. The Contractor shall provide a release agent that minimizes sticking to equipment and is acceptable to the Engineer. The Contractor shall furnish a laborer to ensure that all truck beds are clean and no excess release agent is used prior to being loaded. All trucks shall be insulated and tarped when hauling the mixture to the paver.

The Contractor shall provide two steel-wheeled tandem rollers for breakdown (T_b) meeting the requirements of Article 406.07(a) of the Standard Specifications, except one of the tandems shall be 84 inches (2.14 m) wide and a weight of 315 pound per linear inch (PLI) (5.63 kg/mm). Also one finish steel-wheeled roller meeting the requirements of Article 1101.01(e) of the Standard Specifications. Pneumatic-tired rollers will not be allowed.

Mix Placement. The mixture shall be placed at a minimum mixture temperature recommended by the polymer asphalt supplier and approved by the Engineer. The mixture temperature shall be measured in the truck just prior to placement in the paver.

The paver speed shall not exceed 20 ft/min (7 m/min) during placement.

Compaction shall commence immediately after the mixture has been placed. The breakdown rollers shall maintain an effective rolling distance of not more than 100 ft. (38 m) behind the paver. Rollers shall move at a uniform speed not to exceed 3 mph (5 km/h) with the drive roll nearest the paver.

Compaction shall continue until the required density range has been achieved. The required density range shall be 94 to 97 percent of theoretical maximum specific gravity (G_{mm}). Care shall be taken to avoid excessive aggregate breakage.

Added 01/07/2010

Mix Production. The mixtures shall be produced at a temperature range recommended by the polymer asphalt supplier and approved by the Engineer to allow adequate compaction. The actual production temperature will be selected from the range by the Engineer based on individual plant characteristics and modifier used in the mixtures.

A manufacturer's representative from the polymer asphalt cement producer shall be present to during each polymer mixture start-up and shall be available at all times during production and lay-down of the mix. A manufacturer's representative for the supplier/manufacture of the fibers and the equipment to introduce fibers into the mixture shall be present for calibration and first day of production (test strip).

A QC/QA mixture Test Strip will be required. The Test Strip shall be constructed at a location approved by the Engineer to determine the mix properties, density, and laydown characteristics. These test results and visual inspections on the mixture shall be used to make corrective adjustments if necessary.

Prior to the start of mix production and placement, The Engineer will review and approve all test strip results and rolling pattern.

The Test Strip performed as follows:

(a) Team Members. The start-up team, if required, shall consist of the following:
- (1) Resident Engineer
- (2) District Materials Mixtures Control Engineer, or representative
- (3) District Nuclear Density Gauge Specialist
- (4) Contractor's QC Manager
- (5) Contractor's Density Tester

(b) Communication. The Contractor shall advise the team members of the anticipated start time of production for the test strip. The QC Manager shall direct the activities of the test strip team. A Department-appointed representative from the start-up team will act as spokesperson for the Department.

(c) The Test Strip shall consist of approximately 400 tons (375 metric tons). It shall contain two growth curves which shall be compacted by a static steel-wheeled roller and tested as outlined herein.

(1) Mix Information. On the day of construction of the Test strip, the Contractor shall provide the start-up team documentation of test data showing the combined hot-bin or the combined aggregate belt sample and mineral filler at a drier-drum plant.

(2) Mix and Gradation Test Strip Samples. The first and second sets of mixture and gradation samples shall be taken by the Contractor at such times as to represent the mixture between the two growth curves and the rolling pattern area, respectively. All test strip samples shall be processed by the Contractor for determination of mix composition and Hot-Mix Asphalt properties including air voids.

Added 01/07/2010

This shall include washed gradation tests. This information shall then be compared to the JMF and required design criteria.

(3) Compaction Equipment. It shall be the responsibility of the start-up team to verify roller compliance before commencement of growth curve construction.

All paving and rolling equipment intended for use on a project shall be utilized on the test strip.

(4) Constructing of the Test Strip. After the Contractor has produced the mix, transported the mix, and placed approximately 100 to 150 tons (90 to 140 metric tons) of mix, placement of the mix shall stop, and a growth curve shall be constructed. After completion of the first growth curve, paving shall resume for 50 to 100 tons (45 to 90 metric tons) of mix, placement shall stop, and the second growth curve shall be constructed within this area. Additional growth curves may be required if an adjustment/plant change is made during the test strip. The Contractor shall use the specified rolling procedures for all portions of the test strip except for the growth curve areas which shall be compacted as directed by the Engineer.

(5) Location of Test Strip. The test strip shall be located on a pavement type similar to the contract pavement and acceptable to the Engineer. It shall be on a relatively flat portion of the roadway. Descending/Ascending grades or ramps shall be avoided.

(6) Compaction Temperature. In order to make an accurate analysis of the density potential of the mixture, the temperature of the mixture on the pavement at the beginning of the growth curve shall be 325 °F (152 °C).

(7) Compaction and Testing. The Engineer will specify the roller(s) speed and number of passes required to obtain a completed growth curve. The nuclear gauge shall be placed near the center of the hot mat and the position marked for future reference. With the bottom of the nuclear gauge and the source rod clean, a 15 seconds nuclear reading (without mineral filler) shall be taken after each pass of the roller. Rolling shall continue until the maximum density is achieved and three consecutive passes show no appreciable increase in density or no evidence of destruction of the mat. The growth curve shall be plotted. No testing of initial passes shall be taken until the fourth pass is completed.

(8) Final Testing. After the growth curve information is obtained, a final one minute nuclear reading, using mineral filler to eliminate surface voids, shall be taken at the marked position. This reading is used to adjust the maximum density reading obtained during the growth curve.

(9) Evaluation of Growth Curves. Mixtures which exhibit density potential less than 94 percent or greater than 97 percent of the maximum theoretical density (D) shall be considered as sufficient cause for mix adjustment.

Added 01/07/2010

If a mix adjustment is made, an additional test strip may be constructed. The Department will pay half the cost of the contract unit price for a test strip if additional one is required. The information shall then be compared to the AJMF and required design criteria.

If the nuclear density potential of the mixture does not exceed 91 percent, the operation will cease until all test data is analyzed or a new mix design is produced.

In addition, other aspects of the mixture, such as appearance, segregation, texture, or other evidence of mix problems, should be noted and corrective action taken at this time.

(d) Documentation. The Test Strip and rolling pattern information (including growth curves) will be tabulated by the contractor with copies provided to each team member, and the original submitted to the Engineer. Any change to the rolling pattern shall be approved by the Engineer.

(e) Density. The density of the finished SMA binder course shall be measured either by nuclear test methods or from cores obtained by the contractor at random locations. For the SMA surface course, only the core method will be accepted.

Control Charts/Limits. Control charts/limits shall be according to QC/QA requirements except density and air voids shall be plotted on the control charts within the following control limits:

Parameter	Individual Test	Moving Average
Density	94 % - 97 %	
Air Voids	± 1.0 % (of design)	± 0.80 % (of design)

Basis of Payment. This work will be measured and paid for according to Article 406.14 of the Standard Specifications at the contract unit price per ton (metric ton) for POLYMERIZED HOT-MIX ASPHALT BINDER COURSE, STONE MATRIX ASPHALT, N 80 or POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, STONE MATRIX ASPHALT, N 80. The plan quantities shall be adjusted using the actual binder and surface approve Mix Designs GMb.

The test strip will be paid for at the contract unit price each for TEST STRIP (STONE MATRIX ASPHALT), which price shall not include the 400 tons (360 metric tons) of mix, as well as the appropriate testing, which will be paid for at the unit price in the contract for the item being placed.

MATERIAL TRANSFER DEVICE (BDE)
Effective Date: June 15, 1999 Revised Date: January 1, 2009

Description. This work shall consist of placing HMA binder and surface course mixtures according to Section 406 of the Standard Specifications, except that these materials shall be placed using a material transfer device.

Added 01/07/2010

Materials and Equipment. The material transfer device shall have a minimum surge capacity of 15 tons (13.5 metric tons), shall be self-propelled and capable of moving independent of the paver, and shall be equipped with the following:

(a) Front-Dump Hopper and Conveyor. The conveyor shall provide a positive restraint along the sides of the conveyor to prevent material spillage. Material Transfer devices having paver style hoppers shall have a horizontal bar restraint placed across the foldable wings which prevents the wings from being folded.

(b) Paver Hopper Insert. The paver hopper insert shall have a minimum capacity of 14 tons (12.7 metric tons).

(c) Mixer/Agitator Mechanism. This re-mixing mechanism shall consist of a segmented, anti-segregation, re-mixing auger or two full-length longitudinal paddle mixers designed for the purpose of re-mixing the hot-mix asphalt (HMA). The longitudinal paddle mixers shall be located in the paver hopper insert.

CONSTRUCTION REQUIREMENTS

General. The material transfer device shall be used for the placement of all HMA binder and surface course mixtures placed with a paver, including ramps, but excluding all shoulders. The material transfer device speed shall be adjusted to the speed of the paver to maintain a continuous, non-stop paving operation.

Use of a material transfer device with a roadway contact pressure exceeding 20 psi (138 kPa) will be limited to partially completed segments of full-depth HMA pavement where the thickness of binder in place is 10 in. (250 mm) or greater.

Structures. The material transfer device may be allowed to travel over structures under the following conditions:

(a) Approval will be given by the Engineer.

(b) The vehicle shall be emptied of HMA material prior to crossing the structure and shall travel at crawl speed across the structure.

(c) The tires of the vehicle shall travel on or in close proximity and parallel to the beam and/or girder lines of the structure.

Method of Measurement. This work will be measured for payment in tons for all HMA binder and surface course materials placed with a material transfer device.

Basis of Payment. This work will be paid for at the contract unit price per ton for MATERIAL TRANSFER DEVICE.

The various HMA mixtures placed with the material transfer device will be paid for as specified in their respective specifications. The Contractor may choose to use the material transfer device for other applications on this project; however, no additional compensation will be allowed.

Added 01/07/2010