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

September 8, 2006

SUBJECT: FAI Route 55
Section 2006-032BY
Will County
Contract No. 60B86
Item No. 49, September 22, 2006 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. Revised pages 5 & 14 at the Schedule of Prices.
2. Revised the entire Table of Contents to the Special Provisions.
3. Revised pages 7, 8, 9 and 18 of the Special Provisions.
4. Added pages 246 -- 263 to the Special Provisions.
5. Revised sheets 4, 8, 11, 16 & 58 of 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,

Michael L. Hine
Engineer of Design
and Environment

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

cc: Diane O'Keefe, Region 1, District 1; Roger Driskell; R. E. Anderson; Estimates; Design & Environment File

MS/cab

ILLINOIS DEPARTMENT OF TRANSPORTATION
SCHEDULE OF PRICES
CONTRACT NUMBER - 60B86

State Job # - C-91-411-06
PPS NBR - 1-74984-2100
County Name - WILL- -
Code - 197 - -
District - 1 - -
Section Number - 2006-032BY

Project Number

Route FAI 55

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
20700420	POROUS GRAN EMB SUBGR	CU YD	530.000				
20800150	TRENCH BACKFILL	CU YD	3,897.000				
* 21001000	GEOTECH FAB F/GR STAB	SQ YD	1,586.000				
21101505	TOPSOIL EXC & PLAC	CU YD	1,540.000				
21101625	TOPSOIL F & P 6	SQ YD	17,486.000				
21101815	COMPOST F & P 4	SQ YD	11,480.000				
25000210	SEEDING CL 2A	ACRE	9.250				
25000310	SEEDING CL 4	ACRE	2.000				
25000314	SEEDING CL 4B	ACRE	0.250				
25000400	NITROGEN FERT NUTR	POUND	813.000				
25000500	PHOSPHORUS FERT NUTR	POUND	813.000				
25000600	POTASSIUM FERT NUTR	POUND	813.000				
25002024	SEEDING CL 4B MOD	ACRE	0.500				
25100115	MULCH METHOD 2	ACRE	14.250				
25100630	EROSION CONTR BLANKET	SQ YD	107,733.000				
28000250	TEMP EROS CONTR SEED	POUND	1,412.000				
		* REVISED : SEPTEMBER 5, 2006					

ILLINOIS DEPARTMENT OF TRANSPORTATION
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County Name - WILL- -
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Route FAI 55

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
60300105	FR & GRATES ADJUST	EACH	102.000				
60500040	REMOV MANHOLES	EACH	2.000				
60600605	CONC CURB TB	FOOT	120.000				
60900315	TY D INLET BOX 609006	EACH	2.000				
63000000	SPBGR TY A	FOOT	2,850.000				
63000015	SPBGR TY D	FOOT	300.000				
63100045	TRAF BAR TERM T2	EACH	5.000				
63100070	TRAF BAR TERM T5	EACH	4.000				
63100085	TRAF BAR TERM T6	EACH	5.000				
63100167	TR BAR TRM T1 SPL TAN	EACH	3.000				
63200310	GUARDRAIL REMOV	FOOT	13,970.000				
63304700	TRAF BAR TERM REM T5	EACH	1.000				
63304805	TRAF BAR TERM REM T6	EACH	2.000				
63700805	CONC BAR TRANS	FOOT	98.000				
64200105	SHOULDER RUMBLE STRIP	FOOT	17,907.000				
* 67000600	ENGR FIELD LAB	CAL MO	12.000				
		* REVISED : SEPTEMBER 5, 2006					

TABLE OF CONTENTS

Revised 9/8/2006

Revised 9/8/2006

Revised 9/8/2006

Revised 9/8/2006

Revised 9/8/2006

ADVANCE PUBLIC NOTIFICATION

Description.

This work shall consist of furnishing, installing, maintaining, relocating for various stages of construction, and eventually removing the advanced signing.

General.

The Contractor shall provide notice to the public a minimum of 14 days in advance of any work that requires the closure of lanes or ramps through the use of a changeable message sign or temporary information signing.

Method of Measurement.

Temporary information signs will be measured for payment in place and the surface area of the front of the sign computed in square feet. The surface area is determined by calculating the area of the smallest rectangle, measured from edge-to-edge (horizontally and vertically), that will circumscribe an individual sign.

Basis of Payment.

This work will be paid for at the contract unit price per calendar month for each sign for CHANGEABLE MESSAGE SIGN: or at the contract unit price per square foot for TEMPORARY INFORMATION SIGN.

FAILURE TO OPEN TRAFFIC LANES TO TRAFFIC
Rev. 2-09-05

Should the Contractor fail to completely open and keep open all the traffic lanes to traffic in accordance with the limitations specified under the Special Provisions for "Keeping the Expressway Open to Traffic", the Contractor shall be liable to the Department for the amount of:

One lane or ramp blocked = $ 3,000 per 15 min

Not as a penalty but as liquidated and ascertained damages for each and every 15 minute interval or a portion thereof that a lane is blocked outside the allowable time limitations. Such damages may be deducted by the Department from any monies due the Contractor. These damages shall apply during the contract time and during any extensions of the contract time.

Revised 9/8/2006

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Revised 9/8/2006

MAINTENANCE OF ROADWAYS
Effective: September 30, 1985 Revised: November 1, 1996

Beginning on the date that work begins on this project, the Contractor shall assume responsibility for normal maintenance of all existing roadways within the limits of the improvement. This normal maintenance shall include all repair work deemed necessary by the Engineer, but shall not include snow removal operations. Traffic control and protection for maintenance of roadways will be provided by the Contractor as required by the Engineer.

MAINTENANCE OF ROADWAYS FOR TRAFFIC STAGING

Beginning on the date that the proposed shoulders and pavement constructed within the median are opened to traffic as shown on Stage II of the plans, the Contractor shall assume responsibility for normal maintenance of these shoulders and pavement. This normal maintenance shall include all repair work deemed necessary by the Engineer. Traffic control and protection for maintenance of roadways will be provided by the Contractor as required by the Engineer.

If items of work have not been provided in the contract, or otherwise specified for payment, such items, including the accompanying traffic control and protection required by the Engineer, will be paid for in accordance with Article 109.04 of the Standard Specifications.

Revised 9/8/2006

When tested for density in place each lift shall have a maximum moisture content as follows.

a) A maximum of 110 percent of the optimum moisture for all forms of clay soils.

b) A maximum of 105 percent of the optimum moisture for all forms of clay loam soils.

POLYMERIZED BITUMINOUS CONCRETE PAVEMENT (FULL-DEPTH) SUPERPAVE

Description. This work shall consist of designing, producing and constructing Full Depth Bituminous Concrete Pavement, Superpave in accordance with the special provision Superpave Bituminous Concrete Mixtures (BDE). SMA binder and surface course shall conform to Stone Matrix Asphalt (SMA) special provisions.

Construction Requirements. This work shall meet the construction requirements of Section 407 of the Standard Specifications.

Method of Measurement. This work will be measured for payment in accordance with the requirements of Article 355.12 of the Standard Specifications.

Basis of payment. This work will be paid for at the contract unit price per square yard for BITUMINOUS BASE COURSE, SUPERPAVE of the Ndesign and thickness specified. SMA binder and surface course will be measured and paid as stated in Stone Matrix Asphalt (SMA) special provisions.

AGGREGATE SUBGRADE, 300 MM (12")

Effective: May 1, 1990 Revised June 20, 2006

This work shall be done in accordance with the applicable portions of Section 207 of the Standard Specifications. The material shall conform to Article 1004.06 of the Standard Specifications except as follows:

1. Crushed Stone, Crushed Blast Furnace Slag, and Crushed Concrete will be permitted. Steel slag and other expansive materials as determined through testing by the Department will not be permitted.

Sieve Size	Percent Passing
150 mm (6 inches)	97±3
100 mm (4 inches)	90±10
50 mm (2 inches)	45±25
75 μm (#200)	5±5

2. Gravel, Crushed Gravel, and Pit Run Gravel

Sieve Size	Percent Passing
150 mm (6 inches)	97±3
100 mm (4 inches)	90±10
50 mm (2 inches)	55±25
4.75 mm (#4)	30±20
75 μm (#200)	5±5

Revised 9/8/2006

KEEPING THE EXPRESSWAY OPEN TO TRAFFIC
Effective: 3/22/96 Revised: 2/9/05

Whenever work is in progress on or adjacent to an expressway, the Contractor shall provide the necessary traffic control devices to warn the public and to delineate the work zone as required in these Special Provisions, the Standard Specifications, the State Standards, and the District Freeway Details. All Contractor's personnel shall be limited to these barricaded work zones and shall not cross the expressway.

The Contractor shall request and gain approval from the Illinois Department of Transportation's Expressway Traffic Operations Engineer (847-705-4151) twenty-four (24) hours in advance of all daily lane, ramp and shoulder closures and seventy-two (72) hours in advance of all permanent and weekend closures on all Freeways and/or Expressways in District One. This advance notification is calculated based on a work week of Monday through Friday and shall not include weekends or Holidays.

LOCATION: I-55 from I&M Canal to Weber Road (Before 3rd lane is built):

WEEK NIGHT	TYPE OF CLOSURE	ALLOWABLE LANE CLOSURE HOURS					
		INBOUND			OUTBOUND		
Sunday thru Thursday	One Lane	9:00PM	to	5:00 AM	10:00PM	to	7:00 AM
Friday	One Lane	10:00PM	to	9:00 AM (Sat)	11:00PM	to	9:00 AM (Sat)
Saturday	One Lane	9:00 PM	to	10:00AM(Sun)	10:00PM	to	11:00AM(Sun)

LOCATION: I-55 from I&M Canal to Weber Road (After 3rd lane has opened to traffic):

WEEK NIGHT	TYPE OF CLOSURE	ALLOWABLE LANE CLOSURE HOURS					
		INBOUND			OUTBOUND		
Sunday thru Thursday	One Lane	8:00 PM	to	5:00 AM	9:00 PM	to	8:00 AM
	Two Lanes	9:00 PM	to	5:00 AM	10:00 PM	to	7:00 AM
Friday	One Lane	9:00 PM	to	11:00 AM (Sat)	9:00 PM	to	11:00 AM (Sat)
	Two Lanes	10:00 PM	to	9:00 AM (Sat)	11:00 PM	to	9:00 AM (Sat)
Saturday	One Lane	8:00 PM	to	11:00 AM (Sun)	9:00 PM	to	11:00 AM (Sun)
	Two Lanes	9:00 PM	to	10:00 AM (Sun)	10:00 PM	to	10:00 AM (Sun)

In addition to the hours noted above, temporary shoulder and partial ramp closures are allowed weekdays between 9:00 AM and 3:00 PM.

Narrow lanes and permanent shoulder closures will not be allowed between Dec. 1st and April 1st.

Added 9/8/2006

Full Expressway Closures will only be permitted for a maximum of 15 minutes at a time during the low traffic volume hours of 1:00a.m. to 5:00 a.m. Monday thru Friday and from 1:00 a.m. to 7:00 a.m. on Sunday. During Full Expressway Closures, the Contractor will be required to close off all lanes except one, using Freeway Standard Closures. Police forces should be notified and requested to close off the remaining lane at which time the work item may be removed or set in place. The District One Traffic Operations Department **shall be** notified (847-705-4151) and a Maintenance of Traffic plan submitted and approved at least 3 working days (weekends and holidays DO NOT count into this 72 hours notification) in advance of the proposed road closure and will coordinate the closure operations with police forces.

Temporary ramp closures will only be permitted at night during the restricted hours listed for temporary one-lane closures within the project limits. However, no two (2) adjacent entrance and exit ramps in one direction of the expressway shall be closed at the same time.

Interstate to Interstate ramp closures are only permitted for a maximum of two (2) hours between the hours of 11:00 p.m. and 5:00 a.m. on Monday thru Friday
between the hours of 12:01 a.m. and 6:00 a.m. on Saturday, and
between the hours of 12:01 a.m. and 7:00 a.m. on Sunday. The Contractor shall furnish and install large (48" X 48") "DETOUR with arrow" signs as directed by the Engineer for all interstate ramp closures. The cost of these signs shall be considered incidental to traffic control and protection (6 signs maximum per closure).

Should the Contractor fail to completely open, and keep open, the ramps to traffic in accordance with the above limitations, the Contractor shall be liable to the Department for liquidated damages as noted under the Special Provision, "Failure to Open Traffic Lanes to Traffic".

All stage changes requiring the stopping and/or the pacing of traffic shall take place during the allowable hours for Full Expressway Closures and shall be approved by the Department.

All daily lane closures shall be removed during adverse weather conditions such as rain, snow, and/or fog and as determined by the Engineer.

Additional lane closure hour restrictions may have to be imposed to facilitate the flow of traffic to and from major sporting events and/or other events.

All lane closure signs shall not be erected any earlier than one-half (1/2) hour before the starting hours listed above. Also, these signs should be taken down within one-half (1/2) hour after the closure is removed.

The Contractor will be required to cooperate with all other contractors when erecting lane closures on the expressway. All lane closures (includes the taper lengths) without a three (3) mile gap between each other, in one direction of the expressway, shall be on the same side of the pavement. Lane closures on the same side of the pavement with a half (1/2) mile or less gap between the end of one work zone and the start of taper of next work zone should be connected. The maximum length of any lane closure on the project and combined with any adjacent projects shall be three (3) miles. Gaps between successive permanent lane closures shall be no less than two (2) miles in length.

Added 9/8/2006

Private vehicles shall not be parked in the work zone. Contractor's equipment and/or vehicles shall not be parked on the shoulders or in the median during non-working hours. The parking of equipment and/or vehicles on State right-of-way will only be permitted at the locations approved by the Engineer.

BITUMINOUS QUANTITY CALCULATIONS

Add the following to the fifth paragraph of Article 406.23 of the Standard Specifications: "The quantity specified by the Engineer is defined as the calculated quantity of material based on the limits shown in the plans and unit weights from the approved mix design and does not include any wedge of bituminous concrete mixture that may form beyond these limits."

USE OF MULTIPLE CONCRETE PLANTS IN THE SAME CONSTRUCTION ITEM
Effective: June 16, 2006

The Contractor has the option to simultaneously use central-mixed, truck-mixed, or shrink-mixed concrete from more than one plant, in the same construction item, on the same day, and in the same pour. However, the following criteria shall be met:

(a) Each plant shall use the same cement, finely divided minerals, aggregates, admixtures, and fibers.
(b) Each plant shall use the same mix design material proportions and water/cement ratio. However, material proportions may be altered slightly in the field to meet slump and air content criteria. Field water adjustments shall not result in a difference that exceeds 0.02 between plants for water/cement ratio. The required cement factor for central-mixed concrete shall be increased to match truck-mixed or shrink-mixed concrete, if the latter two types of mixed concrete are used in the same pour.
(c) The maximum slump difference between deliveries of concrete shall be 19 mm (0.75 in.) when tested at the jobsite. If the difference is exceeded, but test results are within specification limits, the concrete may be used. The Contractor shall take immediate corrective action and shall test subsequent deliveries of concrete until the slump difference is corrected. For each day, the first three truck loads of delivered concrete from each plant shall be tested for slump by the Contractor. Thereafter, when a specified test frequency for slump is to be performed, it shall be conducted for each plant at the same time.
(d) The maximum air content difference between deliveries of concrete shall be 1.5 percent when tested at the jobsite. If the difference is exceeded, but test results are within specification limits, the concrete may be used. The Contractor shall take immediate corrective action and shall test subsequent deliveries of concrete until the air content difference is corrected. For each day, the first three truck loads of delivered concrete from each plant shall be tested for air content by the Contractor. Thereafter, when a specified test frequency for air content is to be performed, it shall be conducted for each plant at the same time.

Added 9/8/2006

(e) Strength tests shall be performed and taken at the jobsite for each plant. When a specified strength test is to be performed, it shall be conducted for each plant at the same time. The difference between plants for their mean strength shall not exceed 3100 kPa (450 psi) compressive and 550 kPa (80 psi) flexural. The strength standard deviation for each plant shall not exceed 4480 kPa (650 psi) compressive and 760 kPa (110 psi) flexural. The mean and standard deviation requirements shall apply to the test of record. If the strength difference requirements are exceeded, the Contractor shall take corrective action

(f) The maximum haul time difference between deliveries of concrete shall be 15 minutes. If the difference is exceeded, but haul time is within specification limits, the concrete may be used. The Contractor shall take immediate corrective action and check subsequent deliveries of concrete until the haul time difference is corrected.

If the Contractor does not consistently meet all criteria for providing uniform concrete during construction, the Engineer will either shut down delivery from a plant or require the Contractor to take additional corrective action. If the Engineer allows additional corrective action and it is unsuccessful, delivery from a plant will be shut down.

BITUMINOUS SURFACE REMOVAL (VARIABLE DEPTH)

Description. This work shall consist of the removal and satisfactory disposal of bituminous surfaces in preparation for subsequent resurfacing in accordance with the details shown in the plans and the applicable portions of Section 440 of the Standard Specifications.

Method of Measurement. Bituminous Surface Removal (Variable Depth) will be measured for payment in place and the area computed in square yards.

Basis of Payment. This work will be paid for at the contract unit price per square yard for BITUMINOUS SURFACE REMOVAL (VARIABLE DEPTH).

MATERIAL TRANSFER DEVICE (BDE)

Effective Date: June 15, 1999
Revised Date: March 1, 2001

Description. This work shall consist of placing POLYMERIZED BITUMINOUS CONCRETE SURFACE COURSE, STONE MATRIX ASPHALT, SUPERPAVE, N80 and POLYMERIZED BITUMINOUS CONCRETE BINDER COURSE, STONE MATRIX ASPHALT, SUPERPAVE, N80, except that these materials shall be placed using a material transfer device.

Materials and Equipment. The Material Transfer Device shall have a minimum surge capacity of 13.5 metric tons (15 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.

Added 9/8/2006

(b) Paver Hopper Insert. The paver hopper insert shall have a minimum capacity of 12.7 metric tons (14 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 bituminous material. The longitudinal paddle mixers shall be located in the paver hopper insert.

Construction Requirements. The material transfer device shall be used for the placement of POLYMERIZED BITUMINOUS CONCRETE SURFACE COURSE, STONE MATRIX ASPHALT, SUPERPAVE, N80 and POLYMERIZED BITUMINOUS CONCRETE BINDER COURSE, STONE MATRIX ASPHALT, SUPERPAVE, N80. The material transfer device speed shall be adjusted to the speed of the paver to maintain a continuous, non-stop paving operation.

The material transfer device will be permitted on partially completed segments of full-depth bituminous concrete pavement if the thickness of binder in place is 250 mm (10 in.) 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 bituminous 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 metric tons (tons) for POLYMERIZED BITUMINOUS CONCRETE SURFACE COURSE, STONE MATRIX ASPHALT, SUPERPAVE, N80 and POLYMERIZED BITUMINOUS CONCRETE BINDER COURSE, STONE MATRIX ASPHALT, SUPERPAVE, N80 materials placed with a material transfer device.

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

The various bituminous 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 9/8/2006

STONE MATRIX ASPHALT (SMA)

Effective: April 1, 2003
Revised: February 3, 2006

Description. This Special Provision establishes and describes the responsibilities of the Contractor in producing and constructing polymer/mineral fiber large (12.5-mm) Stone Matrix Asphalt (SMA) surface course and binder course. This work shall be according to the applicable portions of Section 406 of the Standard Specifications.

Materials.

(a) Aggregates.

(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 crushed steel slag.

For binder course, coarse aggregate shall be Class B Quality crushed stone (dolomite only) or crushed sandstone.

The coarse crushed stone, crushed steel slag and crushed sandstone aggregate for both courses shall meet the following additional requirement:

Water Absorption — 2.0 % maximum

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

(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.

Added 9/8/2006

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% by total mixtures mass and sufficient to prevent draindown. 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% by total mixture mass and sufficient to prevent draindown. Mineral fibers used in SMA mixtures shall conform to the properties outlined in table 2.

Table 1. Cellulose Fiber Quality Requirements

Property	**Requirement**
Sieve Analysis Method A – Alpine Sieve[1/] Analysis Fiber Length Passing 0.015 mm (No. 100) sieve	6mm (025 in.) maximum 70 ± 10%
Method B – Mesh Screen[2/] Analysis Fiber Length Passing 850 um (no. 20) sieve 425 um (no. 40) sieve 106 um (no. 140) sieve Ash Content[3/] PH[4/] Oil Absoption[5/] Moisture Content[6/]	6 mm (0.25 in) 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 75 kPa (11 psi) of water. The portion remaining on the screen is weighed.

2/ Method B – Mesh Screen Analysis. This test is performed using standard 8500, 425-, 250-, 180-, 150-, and 106- um sieves, nylon brushed and a shaker. A representative 10-gram 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 2- to 3-gram sample of fiber is placed in a tared crucible and heated between 595 and 650 °C (1100 and 1200 °F) for not less than 2 hours. The crucible and ash are cooled in a desiccator and weighed.

4/ Ph Test. Five grams of fiber is added to 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. Five grams 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 0.5 mm^2 opening size) and shaken on a wrist action shaker for 10 minutes [approximately 32 mm (1 ¼ in.) 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. Ten grams of fiber is weighed and placed in a 121 °C (250 °F) forced air oven for 2 hours. The sample is then reweighed immediately upon removal from the oven.

Table 2. Mineral Fiber Quality Requirements

Property	**Requirements**
Sieve Analysis	
Fiber Length [1/]	6 mm (0.25 in.) Maximum mean test value
Thickness[2/]	0.005 mm (0.0002 in) Maximum mean test value
Shot Content[3/]	
Passing 50 um (no. 230) 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, 250-um and 63-um, 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 will not be permitted.

(d) Asphalt Cement

At the contractor's option, the asphalt cement shall be SBS/SBR PG 76-22 or SBS/SBR PG 76-28 meeting the requirements Article 1009.05 of the Standard Specification for Road and Bridge Construction Adopted January 1, 2002. The elastic recovery of the asphalt cement 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. Collected dust shall not be used as mineral filler.

Added 9/8/2006

(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% 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% 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 9/8/2006

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 draindown of the mix in making this determination.

Mix Design. The Contractor will provide mix designs for each type of required mixture. Mix designs shall be developed by Level III personnel who have successfully completed the course, "Superpave Mix Design Upgrade". The mixtures shall be performed and documented according to the respective Illinois-Modified AASHTO reference listed below:

AASHTO MP 2 Standard Specification for Superpave Volumetric Mix Design

AASHTO PP 2 Standard Practice for Short and Long Term Aging of Hot Mix Asphalt

AASHTO PP 19 Standard Practice for Volumetric Analysis of Compacted Hot Mix Asphalt (HMA)

AASHTO PP 28 Standard Practice for Designing Superpave (HMA)

AASHTO TP 4 Method of Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the SHRP Gyratory Compactor.

AASHTO T 308 Method for determining the Asphalt Cement Content of Hot Mix Asphalt (HMA) by Ignition Method.

AASHTO T 305 Method for determining draindown from the loose mixture.

The draindown shall be determined at the JMF AC content at the mixing temperature plus 30 F.

The mix design shall be developed, performed and tested by a laboratory approved by the Department.

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 four weeks prior to production for mixture design verification.

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

Added 9/8/2006

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	17 minimum
Draindown (%)	0.3 maximum

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

Table 5
Stone Matrix Asphalt Gradation

Mixture Gradation Target Value Range	
Sieve	Percent Passing
19.0 mm (3/4")	100
12.5 mm (1/2")	82 – 100
9.5 mm (3/8")	65 max
4.75 mm (No. 4)	20 – 30
2.36 mm (No. 8)	16 – 24
600 μm (No. 30)	12 - 16
300 μm (No. 50)	10 – 15
75μm (No. 200)	8 – 10

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

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.

Added 9/8/2006

The Contractor shall provide two steel-wheeled tandem rollers for breakdown (T_b) meeting the requirements of Article 406.16(a) of the Standard Specifications, except one of the tandems shall be 84" wide and a weight of 315 pound per linear inch (PLI). 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 7 m/min (20 ft/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 38 m (100 ft.) behind the paver. Rollers shall move at a uniform speed not to exceed 5 km/h (3 mph) 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% of theoretical maximum specific gravity (G_{mm}). Care shall be taken to avoid excessive aggregate breakage.

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 Construction Supervising Field Engineer, or representative
  (3) District Materials Mixtures Control Engineer, or representative
  (4) District Nuclear Density Gauge Specialist

Added 9/8/2006

(5) Contractor's QC Manager
(6) Bureau of Materials and Physical Research representative
(7) Bureau of Construction representative
(8) Contractor's Density Tester
(9) AC Supplier representative

(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 M 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 Superpave properties including air voids. 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 90 to 140 metric tons (100 to 150 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 45 to 90 metric tons (50 to 100 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.

Added 9/8/2006

(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 152 °C (325 °F).

(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. 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.

Added 9/8/2006

(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	$\pm$ 1.0 % (of design)	$\pm$ 0.80 % (of design)

Basis of Payment. This work will be measured and paid for according to Article 406.23 and 406.24 of the Standard Specifications at the contract unit price per metric ton (ton) for POLYMERIZED BITUMINOUS CONCRETE SURFACE COURSE, STONE MATRIX ASPHALT, SUPERPAVE, of the Ndesign specified and POLYMERIZED BITUMINOUS CONCRETE BINDER COURSE, STONE MATRIX ASPHALT, SUPERPAVE, of the Ndesign specified.

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 M 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.

RAILROAD FLAGGERS (BDE)
Effective: April 1, 2006

Revise the fourth and fifth paragraphs of Article 107.12 of the Standard Specifications to read:

"At the preconstruction conference, the Contractor shall furnish the Railroad with the approximate dates flagging services are needed. The approximate date of initiation of flagging services shall be at least 30 calendar days after the conference. The Contractor shall also notify the Railroad at least 48 hours in advance of the actual initiation and termination of flagging services.

The Contractor shall pay the costs of Railroad flaggers required solely for transporting material or equipment across the track. These costs shall be considered as included in the contract unit prices bid for the various items of work involved, and no additional compensation will be allowed."

Added 9/8/2006

REFLECTIVE CRACK CONTROL TREATMENT (BDE)
Effective: April 1, 2006 Revised: August 1, 2006

Revise the third sentence of the first paragraph of Article 443.01 of the Standard Specifications to read:

"Strip reflective crack control treatment shall be either System A, B, C, or D at the option of the Contractor."

Add the following to Article 443.02 of the Standard Specifications:

"(g) Hot-Poured Joint Sealer.....1050.02"

Revise Article 443.09 of the Standard Specifications to Article 443.10.

Revise Article 443.10 of the Standard Specifications to Article 443.11.

Add the following Article to the Standard Specifications:

"**Article 443.09 Reflective Crack Control System D.** The stress relief membrane shall be applied when the surface temperature is a minimum of 10 ºC (50 ºF) and rising.

(a) Tack Coat Placement for Membrane. The tack coat shall be applied to the existing surface using one of the following methods.

(1) A hand held wand with a nozzle that produces a fan shaped spray to apply the tack coat evenly according to the rate specified by the manufacturer.

(2) A hand held wand without a spray nozzle. The tack coat shall be spread with a squeegee according to the rate specified by the manufacturer.

(3) A distributor bar attached to a distributor truck, for longitudinal applications only. The distributor bar nozzles shall be set at 20 degrees to the axis of the bar and the tack coat shall be applied according to the rate specified by the manufacturer. Application of the tack coat directly from a distributor bar attached to a distributor truck will not be permitted for transverse applications.

The maximum width of the tack coat application shall be such that the tack coat extends a maximum 40 mm (1 1/2 in.) on both sides of the stress relief membrane strip.

The use of emulsified asphalts and/or cutbacks is prohibited for use as a tack to bond the stress relief membrane to the existing pavement surface.

(c) Stress Relief Membrane Placement. The open grid woven polyester side of the material shall be placed up with the nonwoven side placed into the tack. The stress relief membrane shall be centered over the crack or joint on the existing surface and with a minimum of 150 mm (6 in.) of the membrane extending beyond the edges of the joint.

Added 9/8/2006

The material shall be laid smooth with no uplifted edges. The stress relief membrane shall be placed and rolled immediately with a riding static drum roller or a rubber tire roller. A maximum of three minutes shall pass between the first and second rolling efforts.

The stress relief membrane shall be butted where transverse and longitudinal joints meet or where two rolls must be joined. When required, the stress relief membrane shall be cut with a razor knife from the woven polyester side.

The stress relief membrane shall be placed at least two hours in advance of paving operations. If application must immediately precede the paving operation, hot-poured joint sealer may be required as a tack coat to bond the stress relief membrane to the existing surface.

(c) Traffic Exposure. Exposing the membrane to traffic shall be minimized. Small amounts of washed sand may be used to blot excess asphalt cement tack coat when necessary to facilitate movement of traffic or construction equipment over the membrane prior to placement of the overlay. Damaged membranes shall be removed and replaced.

(d) Paving Tack Coat/Paving. Paving operations shall only begin when the membrane is thoroughly bonded to the existing surface. The membrane may be exposed to moisture and rain prior to the application of the overlay, however, the stress relief membrane must be dry at the time the overlay is placed.

A slow-set emulsified asphalt paving tack coat (such as SS-1, SS-1h, CSS-1, or CSS-1h) shall be applied prior to paving over the membrane. Cutback asphalts shall not be used. Hot-mix asphalt or dry washed sand may be placed ahead of the paver if the membrane is sticking to the tires of the paving equipment. The minimum asphalt overlay thickness (total) shall be 50 mm (2 in.) compacted.

When using a vibratory roller for compaction, it shall be set to the lowest amplitude and highest frequency settings."

Added 9/8/2006

Add the following Article to the Standard Specifications:

"**1062.04 Reflective Crack Control System D.** The stress relief membrane shall be 900 mm (36 in.) wide and 4 mm (0.15 in.) thick and shall be a system of materials manufactured in a composite three layer fashion with the following properties.

Stress Relief Membrane		
Property	Value	Test Method
Cold Flex	No cracking or separation of fabric	ASTM D 146 (modified)
Tensile Strength (Peak)	700 N/mm (4,000 psi) min.	ASTM D 412 (modified)
Elongation (at Peak Tensile)	10 % min.	ASTM D 412 (modified)
Weight	3.7 kg/sq m (0.76 lbs/sq ft)	
Density (mastic)	1100 kg/cu m (69 lbs/cu ft) min.	ASTM D 70
Thickness	4 mm (0.15 in.)	ASTM E 154-93 Subsection 10.0 ASTM D 1790
Absorption (mastic)	1 % max.	ASTM D 517
Brittleness	Passes	ASTM D 517
Softening Point (mastic)	104 ºC (220 ºF)	ASTM D 36

The bottom layer of the composite shall be a low strength, nonwoven, geotextile and shall be according to AASHTO M 288-92. The bottom geotextile shall be designed to fully bond with the existing pavement with the help of a tack coat. It shall be capable of accommodating sufficiently large stresses at the joint/crack without breaking its bond with the slab. The middle layer of the composite shall be a viscoelastic membrane designed to prevent water entry into the pavement through the cracks and/or joints in the pavement. It also acts as a stress absorbing member interlayer between the overlay and the underlying pavement. The top layer shall be a high strength woven geotextile with a tensile strength of 700 N/mm (4,000 psi) at five percent strain according to ASTM D 4595. The top geotextile shall be designed to fully bond with the overlay and provide high stiffness and reinforcement to the overlay.

The stress relief membrane shall be stored in an inside enclosure with temperatures not exceeding 49 ºC (120 ºF). Any material that becomes wet prior to installation shall be removed from the jobsite and discarded.

The grade of asphalt binder tack coat shall be PG 64-22, PG 58-28, or PG 52-28 and shall meet the requirements of Article 1009.05.

Emulsified asphalt for tack coat shall be SS-1, SS-1h, CSS-1, CSS-1h, CSS1hP, or SS-1hP and shall meet the requirements of Article 1009.07.

The manufacturer shall furnish a certification with each shipment of stress relief membrane, stating the amount of product furnished, and that the material complies with these requirements."

Added 9/8/2006