



Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

January 10, 2012

SUBJECT: FAP Route 348 (IL 43)
Section 2010-090-RS
Cook County
Contract No. 60L86
Item No. 4, January 20, 2012 Letting
Addendum B

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 the Table of Contents to the Special Provisions.
3. Revised pages 4 - 17 of the Special Provisions.
4. Revised sheets 1 & 3 - 21 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,

Scott E. Stitt, P.E.
Acting Engineer of Design and Environment

A handwritten signature in cursive script, reading "Ted B. Walschleger P.E.".

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

cc: Diane O'Keefe, Region 1, District 1; Mike Renner; Estimates

TBW:MS:jc

ILLINOIS DEPARTMENT OF TRANSPORTATION
 SCHEDULE OF PRICES
 CONTRACT
 NUMBER - 60L86

State Job # - C-91-053-11
 PPS NBR - 1-78035-0000
 County Name - COOK- -
 Code - 31 - -
 District - 1 - -
 Section Number - 2010-090-RS

Project Number
 ACNHF-0348/048/

Route
 FAP 348

*REVISED: JANUARY 05, 2012

| Item Number | Pay Item Description | Unit of Measure | Quantity | x | Unit Price | = | Total Price |
|---------------|-----------------------|-----------------|-----------|---|------------|---|-------------|
| X5537800 | SS CLEANED 12 | FOOT | 1,750.000 | | | | |
| *REV X6030310 | FR & LIDS ADJUST SPL | EACH | 325.000 | | | | |
| Z0004562 | COMB C C&G REM & REPL | FOOT | 1,650.000 | | | | |
| Z0018500 | DRAINAGE STR CLEANED | EACH | 50.000 | | | | |
| *REV Z0030850 | TEMP INFO SIGNING | SQ FT | 308.400 | | | | |
| Z0048665 | RR PROT LIABILITY INS | L SUM | 1.000 | | | | |
| 21101615 | TOPSOIL F & P 4 | SQ YD | 110.000 | | | | |
| 25000400 | NITROGEN FERT NUTR | POUND | 3.000 | | | | |
| 25000500 | PHOSPHORUS FERT NUTR | POUND | 3.000 | | | | |
| 25000600 | POTASSIUM FERT NUTR | POUND | 3.000 | | | | |
| 25200110 | SODDING SALT TOLERANT | SQ YD | 110.000 | | | | |
| *REV 40600200 | BIT MATLS PR CT | TON | 138.000 | | | | |
| *REV 40600300 | AGG PR CT | TON | 687.000 | | | | |
| *REV 40600400 | MIX CR JTS FLANGEWYS | TON | 257.000 | | | | |
| *REV 40600827 | P LB MM IL-4.75 N50 | TON | 7,200.000 | | | | |

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|------------------|-----------------------|-----------------|----------------------|---|------------|---|-------------|
| 40600895 | CONSTRUC TEST STRIP | EACH | 2.000 | | | | |
| *REV 40600982 | HMA SURF REM BUTT JT | SQ YD | 1,300.000 | | | | |
| *REV 40601005 | HMA REPL OVER PATCH | TON | 2,488.000 | | | | |
| *REV 40603595 | P HMA SC "F" N90 | TON | 16,785.000 | | | | |
| 42001300 | PROTECTIVE COAT | SQ YD | 530.000 | | | | |
| 42400200 | PC CONC SIDEWALK 5 | SQ FT | 1,500.000 | | | | |
| *DELETE 44000156 | HMA SURF REM 1 3/4 | SQ YD | 5,240.000 | | | | |
| *REV 44000159 | HMA SURF REM 2 1/2 | SQ YD | 171,200.000 | | | | |
| 44000600 | SIDEWALK REM | SQ FT | 1,500.000 | | | | |
| *REV 44002218 | HMA RM OV PATCH 4 1/2 | SQ YD | 9,870.000 | | | | |
| 44003510 | MEDIAN REMOVAL (PD) | SQ FT | 5,250.000 | | | | |
| *REV 44201753 | CL D PATCH T2 9 | SQ YD | 2,145.000 | | | | |
| *REV 44201757 | CL D PATCH T3 9 | SQ YD | 3,000.000 | | | | |
| *REV 44201759 | CL D PATCH T4 9 | SQ YD | 3,435.000 | | | | |
| 67000400 | ENGR FIELD OFFICE A | CAL MO | 6.000 | | | | |

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|---------------|-----------------------|-----------------|------------|---|------------|---|-------------|
| 67100100 | MOBILIZATION | L SUM | 1.000 | | | | |
| 70102625 | TR CONT & PROT 701606 | L SUM | 1.000 | | | | |
| 70102635 | TR CONT & PROT 701701 | L SUM | 1.000 | | | | |
| *REV 70300100 | SHORT TERM PAVT MKING | FOOT | 65,240.000 | | | | |
| *REV 70300210 | TEMP PVT MK LTR & SYM | SQ FT | 2,963.000 | | | | |
| *REV 70300220 | TEMP PVT MK LINE 4 | FOOT | 69,155.000 | | | | |
| *REV 70300240 | TEMP PVT MK LINE 6 | FOOT | 18,925.000 | | | | |
| 70300250 | TEMP PVT MK LINE 8 | FOOT | 960.000 | | | | |
| 70300260 | TEMP PVT MK LINE 12 | FOOT | 1,910.000 | | | | |
| 70300270 | TEMP PVT MK LINE 16 | FOOT | 90.000 | | | | |
| *REV 70300280 | TEMP PVT MK LINE 24 | FOOT | 2,475.000 | | | | |
| *REV 70301000 | WORK ZONE PAVT MK REM | SQ FT | 43,105.000 | | | | |
| *REV 78000100 | THPL PVT MK LTR & SYM | SQ FT | 2,963.000 | | | | |
| *REV 78000200 | THPL PVT MK LINE 4 | FOOT | 69,155.000 | | | | |
| *REV 78000400 | THPL PVT MK LINE 6 | FOOT | 18,925.000 | | | | |

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|---------------|-----------------------|-----------------|------------|---|------------|---|-------------|
| 78000500 | THPL PVT MK LINE 8 | FOOT | 960.000 | | | | |
| 78000600 | THPL PVT MK LINE 12 | FOOT | 1,910.000 | | | | |
| 78000610 | THPL PVT MK LINE 16 | FOOT | 90.000 | | | | |
| *REV 78000650 | THPL PVT MK LINE 24 | FOOT | 2,475.000 | | | | |
| *REV 78100100 | RAISED REFL PAVT MKR | EACH | 2,620.000 | | | | |
| *REV 78300200 | RAISED REF PVT MK REM | EACH | 2,360.000 | | | | |
| 88600600 | DET LOOP REPL | FOOT | 12,210.000 | | | | |

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Revised 01/10/12

Chicago Transit Authority (CTA)
567 West Lake Street
P.O.Box 7598
Chicago IL 60680-7598

Green Line
264 trains/day@55mph.

-0-

DOT/AAR No.: N/A
RR Division: CTA

RR Mile Post: N/A
RR Sub-Division: Green Line

For Freight/Passenger Information Contact: Mr. David Heard Phone: 312/681-3862
For Insurance Information Contact: Mike Wrenn Phone: 312/681-3646

Approval of Insurance. The original and one certified copy of each required policy shall be submitted to the following address for approval:

Illinois Department of Transportation
Bureau of Design and Environment
2300 South Dirksen Parkway, Room 326
Springfield, Illinois 62764

The Contractor will be advised when the Department has received approval of the insurance from the railroad(s). Before any work begins on railroad right-of-way, the Contractor shall submit to the Engineer evidence that the required insurance has been approved by the railroad(s). The Contractor shall also provide the Engineer with the expiration date of each required policy.

Basis of Payment. Providing Railroad Protective Liability and Property Damage Liability Insurance will be paid for at the contract unit price per Lump Sum for RAILROAD PROTECTIVE LIABILITY INSURANCE.

FINE AGGREGATE FOR HOT- MIX ASPHALT (HMA) (D-1)

Effective: May 1, 2007

Revised: January 1, 2012

Revise Article 1003.03 (c) of the Standard Specifications to read:

“(c) Gradation. The fine aggregate gradation for all HMA shall be FA1, FA 2, FA 20, FA 21 or FA 22. When Reclaimed Asphalt Pavement (RAP) is incorporated in the HMA design, the use of FA 21 Gradation will not be permitted.

HOT MIX ASPHALT MIXTURES, EGA MODIFIED PERFORMANCE GRADED (PG) ASPHALT BINDER

Effective: March 16, 2009

Description. This work shall consist of constructing Hot Mix Asphalt (HMA) mixtures containing ethylene-glycidyl-acrylate (EGA) Modified Performance Graded (PG) Asphalt Binder. Work shall be according to Sections 406, 1030, and 1032 of the Standard Specifications, except as modified herein.

Revised 01/10/12

The asphalt binder shall meet the following requirements:

EGA Modified Performance Graded (PG) Asphalt Binder. The asphalt binder shall meet the requirements of AASHTO M 320, Table 1 "Standard Specification for Performance Graded Asphalt Binder" for the grade shown on the plans. An ethylene-glycidyl-acrylate (EGA) terpolymer with a maximum of 0.3 percent polyphosphoric acid by weight of asphalt binder, shall be added to the base asphalt binder to achieve the specified performance grade. Asphalt modification at hot-mix asphalt plants will not be allowed. The modified asphalt binder shall be smooth, homogeneous, and be according to the requirements shown in the following table for the grade shown on the plans.

| Ethylene-Glycidyl-Acrylate (EGA) Modified Asphalt Binders | | |
|--|---|---|
| Test | Asphalt Grade EGA PG 70-22 EGA PG 70-28 | Asphalt Grade EGA PG 76-22 EGA PG 76-28 |
| Separation of Polymer Illinois Test Procedure, "Separation of Polymer from Asphalt Binder" Difference in °F (°C) of the softening point between top and bottom portions. | 4 (2) max. | 4 (2) max. |
| TEST ON RESIDUE FROM ROLLING THIN FILM OVEN TEST (AASHTO T 240) | | |
| Elastic Recovery ASTM D 6084, Procedure A, 77 °F (25 °C), 100 mm elongation, % | 60 min. | 70 min. |

HOT MIX ASPHALT MIXTURE IL-4.75 (DIST 1)

Effective: January 1, 2007

Revised: January 1, 2012

Description. This work shall consist of constructing Hot-Mix Asphalt (HMA) surface course or leveling binder with an IL-4.75 mixture. Work shall be according to Sections 406, 1030, 1031 and 1032 of the Standard Specifications except as modified herein.

Materials.

Revise Article 1030.02 of the Standard Specifications to read:

- (b) Fine aggregate (Note 1 and 3)

Note 3. The gradation for IL-4.75 shall be FA 1, FA 2, FA 20 or FA 22.

- (b) Reclaimed or recycled material. Only processed FRAP or RAS will be permitted in the 4.75 mm mix. Refer to D1 version for Use of Recycle Materials specification(s).
- (d) Mineral Filler. Mineral filler shall conform to the requirements of Article 1011.01 of the Standard Specifications. Collected HMA baghouse dust may be used as Mineral Filler provided it meets the gradation outlined in Article 1011 of the Standard Specifications and a separate mix design is created.

Revised 01/10/12

(g) Asphalt Binder (AB). The AB shall be either Elvaloy or SBS/SBR with a PG 76-22 value. The AB shall meet the requirements of Article 1032.05(b) of the Standard Specifications; however the elastic recovery of the AB shall be 80 minimum.

The AB shall be shipped, maintained, and stored at the mix plant according to the manufacturer's requirements. It shall be placed in an empty tank and not blended with other asphalt cements.

Mixture Design. Add the following to Article 1030.04(b) of the Standard Specifications

“(4) IL 4.75 Mixture.

| Volumetric Parameter | Requirement |
|--------------------------------------|--------------------|
| Design Air Voids | 3.5% at Ndesign 50 |
| Voids in the Mineral Aggregate (VMA) | 18.5% minimum |
| Voids Filled with Asphalt (VFA) | 72 - 85% |
| Dust/AC Ratio | 1.0 |
| Density (% of Max Specific Gravity) | 93.0 - 97.4 |
| Maximum Drain-down | 0.3% |

The percentage of new natural sand shall not exceed 25% if FRAP or RAS is used. For designs without FRAP or RAS the sand fraction of the final blend shall be at least 50% manufacture stone sand.

Mixture Production. Plant modifications may be required to accommodate the addition of higher percentages of mineral filler as required by the JMF.

During production, mineral filler shall not be stored in the same silo as collected dust. This may require any previously collected bag house dust in a storage silo prior to production of the IL-4.75 mixture to be wasted. Only metered bag house dust may be returned back directly to the mix. Any additional minus No. 200 (75 µm) material needed to produce the IL-4.75 shall be mineral filler.

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 IL-4.75 mix for the entire project and 2) a mix design was prepared with collected bag-house dust.

The mixture shall be produced within the temperature range recommended by the asphalt cement producer; but not less than 325 °F (165 °C).

The amount of moisture remaining in the finished mixture (at silo discharge) shall be less than 0.3 percent based on the weight of the test sample after drying.

Mixtures contain steel slag sand or aggregate having absorptions ≥ 2.5 percent shall have a silo storage plus haul time of not less than 1.5 hours.

Control Charts/Limits.

Add the following to Control Limits table in Article 1030.04(d)(4) of the Standard Specifications:

Revised 01/10/12

| Parameter | Individual Test | Moving Average |
|------------------------|--------------------|--------------------|
| % Passing | | |
| No. 16 (1.18 mm) | ± 4% | ± 3% |
| No. 200 (75 µm) | ± 1.5% | ± 1.0% |
| Asphalt Binder Content | ± 0.3% | ± 0.2% |
| Air Voids | ± 1.2% (of design) | ± 1.0% (of design) |
| No. 200 (75 µm) | ± 1.5% | ± 1.0% |

RECLAIMED ASPHALT PAVEMENT AND SHINGLES (D-1)

Effective: January 1, 2012

Revise Section 1031 of the Standard Specifications to read:

“SECTION 1031. RECLAIMED ASPHALT PAVEMENT AND SHINGLES

1031.01 Description. RAP is reclaimed asphalt pavement resulting from cold milling and crushing of an existing hot-mix asphalt (HMA) pavement. RAP will be considered processed FRAP after completion of both crushing and screening to size. The Contractor shall supply written documentation that the RAP originated from routes or airfields under federal, state, or local agency jurisdiction.

RAS is reclaimed asphalt shingles resulting from the processing and grinding of either preconsumer or post consumer shingles.

RAS shall be a clean and uniform material with a maximum of 0.5 percent unacceptable materials, as defined in Bureau of Materials and Physical Research Policy (BMPR) Memorandum *Reclaimed Asphalt Shingle (RAS) Sources*, by weight of RAS. All RAS used shall come from a BMPR approved processing facility.

RAS shall meet either Type 1 or Type 2 requirements as specified herein.

- (a) Type 1. Type 1 RAS shall be processed, preconsumer asphalt shingles salvaged from the manufacture of residential asphalt roofing shingles.
- (b) Type 2. Type 2 RAS shall be processed post-consumer shingles only, salvaged from residential, or four unit or less dwellings not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP).

1031.02 Stockpiles. The Contractor shall construct individual, sealed RAP or RAS stockpiles meeting one of the following definitions. No additional RAP or RAS shall be added to the pile after the pile has been sealed. Stockpiles shall be sufficiently separated to prevent intermingling at the base. All stockpiles (including unprocessed RAP and Processed FRAP) shall be identified by signs indicating the type as listed below (i.e. “crushed natural aggregate, ACBF and steel slag, crystalline structure or Type 2 RAS”, etc...).

- (a) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, Superpave (High ESAL), HMA (High ESAL), or equivalent mixtures.

Revised 01/10/12

The coarse aggregate in FRAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality. All FRAP shall be processed prior to testing and sized into fractions with the separation occurring on or between the #4 (4.75mm) and ½ in. (12.5mm) sieves. Agglomerations shall be minimized such that 100 percent of the RAP in the coarse fraction shall pass the maximum sieve size specified for the mix the RAP will be used in.

- (b) Restricted FRAP (B quality) stockpiles shall consist of RAP from Class I, Superpave (High ESAL), or HMA (High ESAL). If approved by the Engineer, the aggregate from a maximum 3.0 inch single combined pass of surface/binder milling will be classified as B quality. All millings from this application will be processed into FRAP as described previously.
- (c) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, Superpave (High ESAL), HMA (High ESAL), or equivalent mixtures. The coarse aggregate in this RAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality. This RAP may have an inconsistent gradation and/or asphalt binder content prior to processing. All conglomerate RAP shall be processed (FRAP) prior to testing. Conglomerate RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department.
- (d) Conglomerate "D" Quality (DQ). Conglomerate DQ RAP stockpiles shall consist of RAP from HMA shoulders, bituminous stabilized subbases or Superpave (Low ESAL)/HMA (Low ESAL) IL-19.0L binder mixture. The coarse aggregate in this RAP may be crushed or processed (FRAP DQ) but shall be at least D quality. This RAP may have an inconsistent gradation and/or asphalt binder content. Conglomerate DQ RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department.
- (e) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as "Non-Quality".

RAP/FRAP containing contaminants, such as earth, brick, sand, concrete, sheet asphalt, bituminous surface treatment (i.e. chip seal), pavement fabric, joint sealants, plant cleanout etc., will be unacceptable unless the contaminants are removed to the satisfaction of the Engineer. Sheet asphalt shall be stockpiled separately.

Type 1 and Type 2 RAS shall be stockpiled separately and shall not be intermingled. Each stockpile shall be signed indicating what type of RAS is present. However, a RAS source may submit a written request to the Department for approval to blend mechanically a specified ratio of type 1 RAS with type 2 RAS. The source will not be permitted to change the ratio of the blend without the Department prior written approval.

The Engineer's written approval will be required, to mechanically blend RAS with any fine aggregate produced under the AGCS, up to an equal weight of RAS, to improve workability. The fine aggregate shall be "B Quality" or better from an approved Aggregate Gradation Control System source. The fine aggregate shall be one that is approved for use in the HMA mixture and shall be accounted for in the mix design and during HMA production.

Revised 01/10/12

Records identifying the shingle processing facility supplying the RAS, RAS type and lot number shall be maintained by project contract number and kept for a minimum of 3 years.

1031.03 Testing. When used in HMA, the RAS/RAP/FRAP shall be sampled and tested either during processing or after stockpiling.

(a) RAS shall be sampled and tested as follows:

During stockpiling, washed extraction, and testing for unacceptable materials shall be run at the minimum frequency of one sample per 200 tons (180 metric tons) for the first 1000 tons (900 metric tons) and one sample per 1000 ton (900 metric ton) thereafter. A minimum of five tests are required for stockpiles less than 1000 ton (900 metric ton). Once a ≤ 1000 ton, five-test stockpile has been established it shall be sealed. Additional incoming RAS shall be stockpiled in a separate working pile as designated in the Quality Control plan and only added to the sealed stockpile when the test results of the working pile are complete and are found to meet the tolerances specified herein for the original sealed RAS stockpile.

All of the test results, with the exception of percent unacceptable materials, shall be compiled and averaged for asphalt binder content, and gradation. Individual test results, when compared to the averages, will be accepted if within the tolerances listed below.

| Parameter | RAS |
|-----------------------------|--------------|
| No. 8 (2.36 mm) | $\pm 5 \%$ |
| No. 16 (1.18 mm) | $\pm 5 \%$ |
| No. 30 (600 μm) | $\pm 4\%$ |
| No. 200 (75 μm) | $\pm 2.0 \%$ |
| Asphalt Binder Content | $\pm 1.5 \%$ |

(b)RAP/FRAP shall be sampled and tested as follows:

For testing during stockpiling, washed extraction samples shall be run at the minimum frequency of one sample per 500 tons (450 metric tons) for the first 2000 tons (1800 metric tons) and one sample per 2000 tons (1800 metric tons) thereafter. A minimum of five tests shall be required for stockpiles less than 4000 tons (3600 metric tons).

For testing after stockpiling, the Contractor shall submit a plan for approval to the District proposing a satisfactory method of sampling and testing the RAP/FRAP pile either in-situ or by restockpiling. The sampling plan shall meet the minimum frequency required above and detail the procedure used to obtain representative samples throughout the pile for testing.

All of the RAP/FRAP extraction results shall be compiled and averaged for asphalt binder content and gradation and, when applicable (for slag) G_{mm} . Individual extraction test results, when compared to the averages, will be accepted if within the tolerances listed below.

Revised 01/10/12

| Parameter | RAP or FRAP | Conglomerate "D" Quality RAP |
|-------------------|-----------------------|------------------------------|
| 1 in. (25 mm) | | ± 5 % |
| 1/2 in. (12.5 mm) | ± 8 % | ± 15 % |
| No. 4 (4.75 mm) | ± 6 % | ± 13 % |
| No. 8 (2.36 mm) | ± 5 % | |
| No. 16 (1.18 mm) | | ± 15 % |
| No. 30 (600 μm) | ± 5 % | |
| No. 200 (75 μm) | ± 2.0 % | ± 4.0 % |
| Asphalt Binder | ± 0.4 % ^{1/} | ± 0.5 % |
| G _{mm} | ± 0.03 ^{2/} | |

1/ The tolerance for FRAP shall be ± 0.3 %

2/ for slag and steel slag

Before extraction, each field sample whether, RAS, RAP or FRAP, shall be split to obtain two samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedure. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

If more than 20 percent of the individual sieves are out of the gradation tolerances, or if more than 20 percent of the asphalt binder content test results fall outside the appropriate tolerances, the RAS, RAP or FRAP shall not be used in HMA unless the RAS, RAP or FRAP representing the failing tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

With the approval of the Engineer, when testing for RAP or FRAP, the ignition oven may be substituted for extractions according to the Illinois Test Procedure, "Calibration of the Ignition Oven for the Purpose of Characterizing Reclaimed Asphalt Pavement (RAP)".

1031.04 Quality Designation of Aggregate in RAP/FRAP.

(a) The aggregate quality of the RAP, Fractionated RAP, Restricted FRAP, Conglomerate, and conglomerate "D" quality stockpiles shall be set by the lowest quality of coarse aggregate in the stockpile and are designated as follows:

- (1) RAP from Class I, Superpave (High ESAL)/HMA (High ESAL), or HMA (Low ESAL) IL-9.5L surface mixtures are designated as containing Class B quality coarse aggregate.
- (2) RAP from Superpave (Low ESAL)/HMA (Low ESAL) IL-19.0L binder mixture is designated as Class D quality coarse aggregate.
- (3) RAP from Class I, Superpave (High ESAL), or HMA (High ESAL) binder mixtures, bituminous base course mixtures, and bituminous base course widening mixtures are designated as containing Class C quality coarse aggregate.
- (4) RAP from bituminous stabilized subbase and BAM shoulders are designated as containing Class D quality coarse aggregate.

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(b) The aggregate quality of FRAP shall be determined as follows.

- (1) If the Engineer has documentation of the quality of the FRAP aggregate, the Contractor shall use the assigned quality provided by the Engineer. If the quality is not known, the quality shall be determined according to note (2) herein:
- (2) Fractionated RAP stockpiles containing plus #4 (4.75 mm) sieve coarse aggregate shall have a maximum tonnage of 5000 tons (4500 metric tons). The Contractor shall obtain a representative sample witnessed by the Engineer. The sample shall be a minimum of 50 lb (25 kg). The sample shall be extracted according to Illinois Modified AASHTO T 164 by a consultant prequalified by the Department for the specified testing. The consultant shall submit the test results along with the recovered aggregate to the District Office. The cost for this testing shall be paid by the Contractor. The District will forward the sample to the BMPR Aggregate Lab for MicroDeval Testing, according to Illinois Modified AASHTO T 327. A maximum loss of 15.0 percent will be applied for all HMA applications.

The fine aggregate portion of the fractionated RAP shall not be used in any HMA mixtures that require a minimum of "B" quality aggregate or better, until the coarse aggregate fraction has been determined to be acceptable thru a MicroDeval Testing.

1031.05 Use of RAS, RAP or FRAP in HMA. The use of RAS, RAP or FRAP shall be a Contractor's option when constructing HMA in all contracts.

The use of RAS shall be as follows:

Type 1 or Type 2 RAS may be used alone or in conjunction with, Fractionated Reclaimed Asphalt Pavement (FRAP) or Reclaimed Asphalt Pavement (RAP), in all HMA mixtures up to a maximum of 5.0 percent by weight of total mix.

Reclaimed asphalt shingles (RAS) meeting Type 1 or Type 2 requirements will be permitted in all HMA mixtures for overlay applications. RAS will also be permitted in all Low ESAL full depth pavement and ALL other Mixtures (Stabilized Subbase and shoulder HMA). RAS shall not be used in full depth HMA High ESAL main line pavement.

The use of RAP/FRAP shall be as follows:

- (a) Coarse Aggregate Size (after extraction), The coarse aggregate in all RAP or FRAP shall be equal to or less than the maximum size requirement for the HMA mixture to be produced.
- (b) Steel Slag Stockpiles. RAP stockpiles containing steel slag or other expansive material, as determined by the Department, shall be homogeneous and will be approved for use in HMA (High ESAL and Low ESAL) surface mixtures only.
- (c) Use in HMA Surface Mixtures (High and Low ESAL). RAP/FRAP and Restricted FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall in which the coarse aggregate is Class B quality or better. RAP/FRAP shall be considered equivalent to Limestone for frictional considerations unless produced/screened to minus 3/8 inch.

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- (d) Use in HMA Binder Mixtures (High and Low ESAL), HMA Base Course, and HMA Base Course Widening. RAP/FRAP stockpiles for use in HMA binder mixtures (High and Low ESAL), HMA base course, and HMA base course widening shall be FRAP, in which the coarse aggregate is Class C quality or better.
- (e) Use in Shoulders and Subbase. RAP/FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall RAP, Restricted FRAP, Conglomerate, or Conglomerate DQ.

When the Contractor chooses the RAP option, the percentage of virgin asphalt binder replaced by the asphalt binder from the RAP shall not exceed the percentages indicated in the table below for a given N Design:

Max Asphalt Binder Replacement RAP Only
 Table 1

| HMA Mixtures ^{1/, 3/} | Maximum % Asphalt Binder replacement (ABR) | | |
|--------------------------------|--|---------|------------------|
| | Binder/Leveling Binder | Surface | Polymer Modified |
| Ndesign | | | |
| 30L | 25 | 15 | 10 |
| 50 | 25 | 15 | 10 |
| 70 | 15 | 10 | 10 |
| 90 | 10 | 10 | 10 |
| 105 | 10 | 10 | 10 |

- 1/ For HMA “All Other” (shoulder and stabilized subbase) N-30, the percent asphalt binder replacement shall not exceed 50% of the total asphalt binder in the mixture.
- 2/ When the asphalt binder replacement exceeds 15 percent, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent binder replacement would require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28).

When the Contractor chooses either the RAS or FRAP option, the percent binder replacement shall not exceed the amounts indicated in the tables below for a given N Design.

Max Asphalt Binder Replacement RAS or FRAP
 Table 2

| HMA Mixtures ^{1/, 2/} | Level 1 - Maximum % ABR | | |
|--------------------------------|-------------------------|---------|------------------------------------|
| | Binder/Leveling Binder | Surface | Polymer ^{3/, 4/} Modified |
| Ndesign | | | |
| 30L | 35 | 30 | 15 |
| 50 | 30 | 25 | 15 |
| 70 | 30 | 20 | 15 |
| 90 | 20 | 15 | 15 |
| 105 | 20 | 15 | 15 |

- 1/ For HMA “All Other” (shoulder and stabilized subbase) N-30, the percent asphalt binder replacement shall not exceed 50% of the total asphalt binder in the mixture.

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2/ When the asphalt binder replacement exceeds 15 percent for all mixes, except for SMA and IL-4.75, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent binder replacement will require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28).

3/ For SMA, when the FRAP option is used, the maximum ABR is 15 percent. When the RAS option is used, the maximum ABR is 20 percent. When the asphalt binder replacement in SMA exceeds 10 percent, the high and low virgin asphalt binder grade shall each be reduced by one grade (i.e. 15 percent asphalt binder replacement would require a virgin asphalt binder grade of PG76-22 to be reduced to a PG70-28).

4/ For IL 4.75 mix, when the FRAP option is used, the maximum ABR is 15 percent. When the RAS option is used, the maximum ABR is 20 percent. When the RAS option is used, a maximum of 5 percent RAS by weight of the mix, shall be permitted. When the ABR in the IL-4.75 exceeds 15 percent, the high and low virgin asphalt binder grade shall each be reduced by one grade (i.e. 16 percent asphalt binder replacement would require a virgin asphalt binder grade of PG76-22 to be reduced to a PG70-28).

When the Contractor chooses the RAS with FRAP combination, the percent asphalt binder replacement shall split equally between the RAS and the FRAP, and the total replacement shall not exceed the amounts indicated in the tables below for a given N Design.

Max Asphalt Binder Replacement RAS and FRAP Combination
 Table 3

| HMA Mixtures ^{1/, 2/} | Level 2 - Maximum % ABR | | |
|--------------------------------|-------------------------|---------|------------------------------------|
| Ndesign | Binder/Leveling Binder | Surface | Polymer Modified ^{3/, 4/} |
| 30L | 40 | 40 | 20 |
| 50 | 40 | 30 | 20 |
| 70 | 40 | 30 | 20 |
| 90 | 40 | 30 | 20 |
| 105 | 40 | 30 | 20 |

1/ For HMA "All Other" (shoulder and stabilized subbase) N-30, the percent asphalt binder replacement shall not exceed 50% of the total asphalt binder in the mixture.

2/ When the binder replacement exceeds 15 percent for all mixes, except for SMA and IL-4.75, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent binder replacement will require a virgin asphalt binder grade of PG64-22 to be reduced to a PG58-28).

3/ For SMA, 20 percent ABR from RAS may be combined with a maximum of 10 percent ABR from FRAP.

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When the asphalt binder replacement in SMA exceeds 10 percent, the high and low virgin asphalt binder grade shall each be reduced by one grade (i.e. 15 percent asphalt binder replacement would require a virgin asphalt binder grade of PG76-22 to be reduced to a PG70-28).

4/ For IL 4.75, a 20 percent ABR from RAS maybe combined with a maximum of 20 percent ABR from FRAP. When the asphalt binder replacement in the IL-4.75 exceeds 15 percent, the high and low virgin asphalt binder grade shall each be reduced by one grade (i.e. 16 percent asphalt binder replacement would require a virgin asphalt binder grade of PG76-22 to be reduced to a PG70-28).

1031.06 HMA Mix Designs. All HMA mixtures will be required to be tested, prior to submittal for Department verification, according to Illinois Modified AASHTO T324 (Hamburg Wheel) and shall meet the following requirements:

| Asphalt Binder Grade | # Repetitions | Max Rut Depth (mm) |
|----------------------|---------------|--------------------|
| PG76-XX | 20,000 | 12.5 |
| PG70-XX | 20,000 | 12.5 |
| PG64-XX | 10,000 | 12.5 |
| PG58-XX | 10,000 | 12.5 |

Note: For SMA Designs (N-80) the maximum rut depth is 6.0 mm at 20,000 repetitions.
 For IL 4.75 mm Designs (N-50) the maximum rut depth is 9.0 mm at 15,000 repetitions.

1031.07 HMA Production. All HMA mixtures shall be sampled within the first 500 tons on the first day of production or during start up, with a split reserved for the Department. The mix sample shall be tested according to Illinois Modified AASHTO T324 and shall meet the requirements specified herein. The production of such mixture, shall not exceed 1,500 tons or one days production, whichever comes first, until the testing is completed and the mixture is found to be in conformance. The requirement to cease mix production may be waived if the plant produced mixture is demonstrated prior to start of mix production for the contract.

To remove or reduce agglomerated material, a scalping screen, gator, crushing unit, or comparable sizing device approved by the Engineer shall be used in the RAS, RAP and FRAP feed system to remove or reduce oversized material. If material passing the sizing device adversely affects the mix production or quality of the mix, the sizing device shall be set at a size specified by the Engineer.

If the RAS, RAP and FRAP control tolerances or QC/QA test results require corrective action, the Contractor shall cease production of the mixture containing RAs, RAP or FRAP and either switch to the virgin aggregate design or submit a new RAS, RAP or FRAP design.

HMA plants utilizing RAS, RAP and FRAP shall be capable of automatically recording and printing the following information.

(a) Dryer Drum Plants.

(1) Date, month, year, and time to the nearest minute for each print.

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- (2) HMA mix number assigned by the Department.
 - (3) Accumulated weight of dry aggregate (combined or individual) in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).
 - (4) Accumulated dry weight of RAS, RAP and FRAP in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).
 - (5) Accumulated mineral filler in revolutions, tons (metric tons), etc. to the nearest 0.1 unit.
 - (6) Accumulated asphalt binder in gallons (liters), tons (metric tons), etc. to the nearest 0.1 unit.
 - (7) Residual asphalt binder in the RAS, RAP and FRAP material as a percent of the total mix to the nearest 0.1 percent.
 - (8) When producing mixtures with FRAP and/or RAS, a positive dust control system shall be utilized.
 - (9) Accumulated mixture tonnage.
 - (10) Dust removed (accumulated to the nearest 0.1ton)
 - (11) Aggregate RAS, RAP and FRAP moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAS, RAP FRAP are printed in wet condition.)
- (b) Batch Plants.
- (1) Date, month, year, and time to the nearest minute for each print.
 - (2) HMA mix number assigned by the Department.
 - (3) Individual virgin aggregate hot bin batch weights to the nearest pound (kilogram).
 - (4) Mineral filler weight to the nearest pound (kilogram).
 - (5) RAS, RAP and FRAP weight to the nearest pound (kilogram).
 - (6) Virgin asphalt binder weight to the nearest pound (kilogram).
 - (7) Residual asphalt binder in the RAS, RAP and FRAP material as a percent of the total mix to the nearest 0.1 percent.

The printouts shall be maintained in a file at the plant for a minimum of one year or as directed by the Engineer and shall be made available upon request. The printing system will be inspected by the Engineer prior to production and verified at the beginning of each construction season thereafter.

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1031.08 RAP in Aggregate Surface Course and Aggregate Shoulders. The use of RAP or FRAP in aggregate surface course and aggregate shoulders shall be as follows.

- (a) Stockpiles and Testing. RAP stockpiles may be any of those listed in Article 1031.02, except “Non-Quality” and “FRAP”. The testing requirements of Article 1031.03 shall not apply.
- (b) Gradation. One hundred percent of the RAP material shall pass the 1 1/2 in. (37.5mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded, FRAP, or single sized will not be accepted for use as Aggregate Surface Course and Aggregate Shoulders.”

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**HOT MIX ASPHALT - PAY FOR PERFORMANCE USING PERCENT WITHIN LIMITS -
PLANT SAMPLING (BMPR)**

Effective: April 4, 2008

Revised: December 6, 2010

Description. This special provision describes the procedures used for production, placement and payment for hot-mix asphalt (HMA).

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